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Return on Investment in Graduates of the DOD Service Academies: Assessment and Improvements

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July 2023*

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IDA Paper P-22745

Log: H 21-000263

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About this Publication

This work was conducted by the Institute for Defense Analyses under contract HQ0034-14-D-0001, project BE-6-4776, "Review of Service Academy Active-Duty Service Obligation and Return on Investment," for the Office of the Undersecretary of Defense for Personnel and Readiness (OUSD(P&R)). The views, opinions, and findings should not be construed as representing the official position of either the Department of Defense or the sponsoring organization.

Acknowledgments

The research team would like to acknowledge our project reviewers and our sponsor, Ms. Stephanie Miller, Director of Military Accession Policy; and her staff, to include Mr. Dennis Drogo, Lt Col Naomi Henigin, and Lt Col David Nuckles. We sincerely appreciate their support throughout this research effort.

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*This research was conducted from May 2020 to August 2021.

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Executive Summary

***This research was conducted from May 2020 to August 2021.**

The Department of Defense (DOD) operates three service academies: the United States Military Academy (USMA), the United States Naval Academy (USNA), and the United States Air Force Academy (USAFA). These service academies provide undergraduate education and training in preparation for commissioning into the uniformed services. Each academy produces roughly 1,000 graduates per year. Officers commissioned through the service academies incur a five-year active duty service obligation (ADSO). The other primary commissioning sources – the Reserve Officers' Training Corps, Officer Candidate School/Officer Training School, and direct commissioning – entail smaller investments per officer and shorter ADSOs.

The ADSO is an important mechanism for managing DOD's return on its investment in academy graduates. An ADSO that is too low may diminish that return by reducing the number of years graduates serve or by attracting cadets and midshipmen who are more interested in gaining credentials for post-service employment than serving. An ADSO that is too high may discourage promising students from accepting appointments as cadets or midshipmen. Congress increased the ADSO from five years to six years in 1989, but undid that change in 1996 following opposition to the increase from DOD.* The ADSO has not changed since 1996.

The 11 June report of the Senate Armed Services Committee on the 2020 National Defense Authorization Act directed the Secretary of Defense to submit a report on the costs and retention rates of academy graduates and the options for and potential effects of policies that could ensure an adequate return on investment (ROI) in academy graduates. Those options would include a change to the ADSO. To support the Secretary's response to Congress, the Office of the Undersecretary of Defense for Personnel and Readiness (OUSD(P&R)) asked the Institute for Defense Analyses (IDA) to assess ROI in academy graduates and analyze policy options that could improve ROI.

ROI in academy graduates is a synthesis of many costs and benefits, some of which are unquantifiable. Academy graduates serve on active duty, with high rates of selection for command and senior service colleges. After their service on active duty, academy graduates contribute to civilian communities as business leaders, researchers, and civil servants. Some academy graduates also serve in the Selected Reserve. Experts interviewed

* Congressional Record, 101st Congress, Amendment No. 595, 135, pt. 13 (August 2, 1989): 17620-17626. <https://www.congress.gov/bound-congressional-record/1989/08/02/senate-section>.

for this assessment, with and without academy backgrounds, agreed that an academy education prepares students not only for a military career, but for a lifetime of dutiful, honorable, and loyal contribution to the United States.

The academies are by far the most expensive commissioning source. However, high or increasing cost is not a valid justification for modifying the ADSO. Modifying the ADSO trades off quality of service for quantity of service; this tradeoff does not affect and is not affected by the cost of an academy education. Further, high or increasing cost is not necessarily evidence of a failure by the academies. An intensely resourced commissioning source is a key element of an officer commissioning system that is varied enough to support the diversity of potential future missions. In anticipation of those missions, a high level of investment per academy commission can be considered warranted as a hedge against potential future missions that justify that investment.

A positive effect on retention could be a valid justification for increasing the ADSO, however, increasing the ADSO would likely dissuade some students from accepting an academy appointment or applying in the first place. A 2020 pilot by the United States Military Academy provides suggestive evidence that a one-year ADSO increase would dissuade 8% of potential applicants, and disproportionately dissuade top academic performers, non-whites, and women. Diversity among cadets and midshipmen has only become more important since Congress undid the most recent ADSO increase in 1996.

Other ADSO changes that could improve ROI in academy graduates include decreasing the ADSO, supplementing the ADSO with an obligation to serve in the Selected Reserve, an ADSO bidding mechanism where applicants can select a longer ADSO to improve their competitiveness for admission, and offering special experiences to cadets and midshipmen in exchange for an ADSO extension. The bidding mechanism and ADSO extension options have the advantage of empowering students and academies to act on their preferences and self-interests. From a mathematical perspective, this advantage is critical to optimizing ROI. However, this advantage comes with serious risks in that stakeholders will perceive unfairness in the selection process, whether or not any unfairness exists; that applicants will come to regret their obligations as future officers; that academy classes will divide socially along ADSO durations; and that the transactional nature of the options will harm the ethos of service as a military officer.

This assessment includes a design of a pilot program for the bidding mechanism and for the ADSO extension option. For the bidding mechanism, after the academies estimate and declare how much they value higher ADSO bids, each applicant could bid between zero and three additional years. For ADSO extensions, the academies decide the quantity and quality of special experiences to offer, including existing experiences such as study abroad and academy exchanges. Then cadets and midshipmen decide which experiences are worth an ADSO extension.

Policy changes that could improve ROI go far beyond the ADSO and even the academies. Any policy change that encourages officers and future officers to serve longer and/or better could improve ROI. Such policy changes could prevent toxic leadership, personalize assignments to officer preferences, inform officers about the drawbacks of leaving active duty, or diversify the education roles of the academies. The benefits of these policy changes could extend beyond academy graduates to officers from all commissioning sources.

The following questions are pulled directly from the June 11 Senate report that provided the impetus for this assessment.

How has the real cost per military service academy graduate changed since 1996?

We estimate that the real cost per academy graduate rose 12.8% from FY1996 to FY2020, after accounting for trend deviations in the start and end years.

How do service academy graduate retention rates compare to those of other commissioning sources after service members' initial Active Duty service obligation is complete?

Between five and 15 years of service, USMA graduates exhibit lower retention, USNA graduates exhibit comparable retention, and USAFA graduates exhibit higher retention compared to other sources. Low attrition between 15 and 20 years of service leads each academy's retention rates to be comparable with or higher than that of each other source after 20 years of service.

What effect would an increase in the initial Active Duty service obligation for service academy graduates have on academy application rates?

An increase to the initial ADSO would likely decrease academy applications. Limited experimental evidence suggests that applications would decrease by 8%.

How could service academies implement a policy that awards preference for admission to a service academy in exchange for an agreement to serve on Active Duty longer than the required amount of time?

Empower each applicant to select a longer ADSO on their initial application to improve their competitiveness for admission.

What other policies could the Services implement to ensure an adequate return on investment for a service academy graduate?

Any policy that improves cadet, midshipman, and/or officer experiences could improve ROI, including preventing toxic leadership and personalizing assignments to officer preferences. Policies to improve officer experiences need not be limited to academy graduates.

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1. Introduction

The U.S. military service academies provide undergraduate education and training in preparation for commissioning into the uniformed services. The Army, Navy, and Air Force operate academies, with each producing roughly 1,000 graduates per year.² Officers commissioned through the service academies incur a five-year active duty service obligation (ADSO). Many graduates serve far longer than their ADSO, many of whom as distinguished leaders. Other graduates leverage their impressive education and experience to obtain additional schooling or lucrative civilian employment soon after their ADSO ends.

Most of the costs of operating the Service academies reflect investments in future officers. The military careers of those future officers constitute a return on those investments. The ADSO is an important mechanism for managing that return. An ADSO that is too low may diminish that return by reducing the number of years graduates serve or by attracting cadets and midshipmen who are more interested in gaining credentials for post-service employment than serving. An ADSO that is too high may discourage promising students from accepting appointments as cadets or midshipmen. Congress enacted an ADSO of three years in 1950, four years in 1962, five years in 1964, six years in 1989, and five years again in 1996. The ADSO has not changed since 1996.

The 11 June report of the Senate Armed Services Committee on the 2020 National Defense Authorization Act (NDAA) directed the Secretary of Defense to submit a report on the costs and retention rates of academy graduates and the options for and potential effects of policies that could ensure an adequate return on investment (ROI) in academy graduates. Those options would include a change to the ADSO. To support the Secretary's response to Congress, the Office of the Undersecretary of Defense for Personnel and Readiness (OUSD(P&R)) asked the Institute for Defense Analyses (IDA) to assess adequate ROI in Service Academy graduates, explore policies to promote increased ROI, assess how increasing service obligations would affect service academy applications, and plan a pilot to implement one or more policies explored.

² There are two other U.S. service academies: the United States Coast Guard Academy, under the Department of Homeland Security, and the United States Merchant Marine Academy, under the Department of Transportation. We use "service academies" throughout this paper to refer to the U.S. service academies under the Department of Defense.

A. The Military Service Academies under the Department of Defense

There are three military service academies under the Department of Defense (DOD), one for each military department: the United States Military Academy (USMA) at West Point, New York; the United States Naval Academy (USNA) in Annapolis, Maryland; and the United States Air Force Academy (USAFA) near Colorado Springs, Colorado. These institutions are publicly funded and highly selective in their admissions processes. They prepare students to serve as officers in the armed forces, often at the highest ranks. The academies contribute to military leadership development and have a significant influence on military culture.

1. Missions

The mission statements of the academies are not static, instead they change over time in response to a variety of factors. As an example, the mission statement of West Point has changed over time in response to policy changes, high-profile scandals, retention issues, or other developments that impact how they characterize their mission. In his 2006 article, “Getting West Point Back on Mission,” General William Richardson provided context for one of the most substantive recent changes. In 1987, as a result of the perceived impacts of the reduction in force, Lieutenant General David Palmer, Superintendent, altered the mission statement of the institution such that it read: “To educate and train the Corps of Cadets so that each graduate shall have the attributes essential to professional growth as an officer of the Regular Army, and to inspire each to a lifetime of service to the nation.”³ According to Richardson, Palmer and the committee he appointed felt that by emphasizing “lifetime of service to the nation,” they might ameliorate any self-esteem issues associated with having one’s duration of time in uniform decided by exogenous, political factors.⁴

In 2005, the mission statement changed again. Lieutenant General William Lennox sought to return USMA to the mission of educating, training, and inspiring “our cadets to become our Army’s future officers.”⁵ The mission statement now read: “To educate, train, and inspire the Corps of Cadets so that each graduate is a commissioned leader of character committed to the values of Duty, Honor, Country; and prepared for a career of professional excellence and service to the nation as an officer in the United States Army.”⁶ General Richardson contended Lieutenant General Lennox made this change because the previous

³ William R. Richardson, “Getting West Point Back on Mission,” *Military Review* 86, no. 2 (2006): 69-70.

⁴ Ibid.

⁵ United States Military Academy, *USMA Faculty Manual*, (West Point, New York: United States Military Academy, 2005), p. 2, [https://www.westpoint.edu/sites/default/files/inline-images/CFD/Faculty_Manual_Signed%20\(1\).pdf](https://www.westpoint.edu/sites/default/files/inline-images/CFD/Faculty_Manual_Signed%20(1).pdf).

⁶ Richardson, “Getting West,” 69.

wording was negatively affecting West Point graduate retention.⁷ Based on more recent documents, this version is still the current mission statement for the institution.⁸

2. Admissions

Applicants to the academies face a highly selective and extensive application process with requirements greatly in excess of what is associated with applying for admission to a civilian college or university. First, the individual must submit a preliminary application to the academy. This application is called a “Candidate Questionnaire” and it formalizes their interest in becoming an official candidate.⁹

Candidates must also secure a nomination to be considered for admission. The two most common types of nominations are congressional and non-congressional. To obtain a congressional nomination, an applicant must apply to a member of Congress, of the U.S. Senate or House of Representatives. A congressional nomination usually requires a separate application and interview process; the specifics of this process vary by congressional member.¹⁰

At any point in time, individual members of Congress may have up to five cadets or midshipmen they nominated enrolled at each academy. Each time an individual they nominated graduates or withdraws from the academy, the member of Congress may nominate up to 10 new candidates for consideration.

Non-congressional nominations are considered “service-connected nominations.”¹¹ These include:

⁷ Ibid.

⁸ United States Military Academy, *The USMA Strategy*, (West Point, New York: United States Military Academy, 2019), https://s3.amazonaws.com/usma-media/inline-images/about/g5/USMA_Strategy_2019.pdf.

⁹ “How do I Apply,” United States Air Force Academy website, accessed June 24, 2021, <https://www.academyadmissions.com/apply/>; United States Military Academy website, “The 8 Steps of Applying to West Point,” accessed June 24, 2021, <https://www.westpoint.edu/admissions/steps-to-admission>; United States Naval Academy website, “Steps for Admission: Preliminary Application,” accessed June 24, 2021, <https://www.usna.edu/Admissions/Apply/index.php#fndtn-panel2-Steps-for>.

¹⁰ Connecticut Veterans Legal Center, Veterans Inclusion Project, *Gatekeepers to Opportunity: Racial Disparities in Congressional Nominations to the Military Service Academies*, (n.p.: March 17, 2021), <http://ctveteranslegal.org/wp-content/uploads/2021/03/3.16.2021-Final-Embargoed-Gatekeepers-to-Opportunity-Racial-Disparities-in-Congressional-Nominations-to-the-Service-Academies.pdf>; This process will be more streamlined as a result of the PANORAMA Act; U.S. Congress, Senate, Public Accountability on Nominations Offered that Result in Admissions to Military Academies (PANORAMA ACT) Act of 2020, S. 3783, 116th Cong., 2nd sess., <https://www.govinfo.gov/content/pkg/BILLS-116s3783is/pdf/BILLS-116s3783is.pdf>.

¹¹ “Nomination Information,” United States Military Academy website, accessed June 24, 2021, <https://www.westpoint.edu/admissions/prospective-cadets/nomination-information>.

- Children of service members, active component, reserve, and national guard service members;
- Children of Medal of Honor recipients; (these candidates may also apply for a Presidential nomination);
- Sons and daughters of deceased or disabled armed forces veterans (service academy superintendents may also submit nominations for these candidates);
- Junior and senior Reserve Officers' Training Corps (ROTC) programs and honor ROTC units (service secretaries may nominate these candidates);
- The Vice President is also authorized to nominate candidates and is the only authority authorized to nominate U.S. citizens without geographical restrictions.¹²

The majority of candidates selected to be cadets and midshipmen receive congressional nominations. According to the 2021 Connecticut Veterans Legal Center's "Gatekeepers to Opportunity" report, candidates with congressional nominations "make up 60-70% of each academy's student body."¹³ The Congressional Research Service 2019 report on congressional nominations references historical records stating that these nominations "ensured that academy appointees represented all geographic areas of the United States, came from a diverse set of family backgrounds, and would not be subject to executive branch political patronage."¹⁴

After securing a nomination, the candidate submits a full application package, called the Candidate Kit. This package includes transcript(s), Scholastic Aptitude Test (SAT) or American College Testing (ACT) test scores, the Personal Data Record, a candidate statement (essays), Department of Defense (DOD) Medical Examination Review Board results, the Candidate Fitness Assessment results, and a personal interview. Successful candidates receive a Letter of Assurance, which communicates to candidates "that he or she will most likely be offered admission upon completion of their application (Candidate Kit)."¹⁵

¹² Eric Petersen and Sarah J. Eckman, "Congressional Nominations to US Service Academies: An Overview and Resources for Outreach and Management," (research report, updated December 2019), p. 7, https://www.everycrsreport.com/files/20191218_RL33213_f3a4006314d3a115f3b527e698866af2075056c5.pdf.

¹³ Connecticut Veterans Legal Center, Veterans Inclusion Project, *Gatekeepers to Opportunity*, 12.

¹⁴ Petersen and Eckman. "Congressional Nominations to US Service Academies," p. 1.

¹⁵ "Admissions Frequently Asked Questions (FAQs)," United States Military Academy website, accessed March 8, 2021, <https://www.westpoint.edu/admissions/frequently-asked-questions>.

As referenced in greater detail later in this paper, there is a relationship between how selective an academic institution is, and enrollment, retention, and graduation.¹⁶ Based on data from the National Center for Education Statistics (NCES), there are noteworthy differences when one compares the military service academies to the senior military colleges.¹⁷ The Fall 2020 admission rates, as a percentage of applicants admitted, at the military service academies is between 9% and 13%.¹⁸ When compared with other senior military colleges, all military service academies have significantly lower admission rates.¹⁹ The Fall 2020 enrollment rates, as a percentage of applicants accepted who then enrolled, at the military service academies is between 79% and 84%.²⁰ When compared with other senior military colleges, all military service academies have significantly higher enrollment rates.²¹ The current graduation rates at the academies is 85% or higher.²² When compared with other senior military colleges, with the exception of Virginia Polytechnic Institute and State University, all military service academies have higher graduation rates.²³ Table 1 contains admission, enrollment, and graduation rates in percentages for the academies and the senior military colleges.²⁴ The patterns seen here reinforce that there is a relationship

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- ¹⁶ Shomon Shamsuddin, “Berkeley or Bust? Estimating the Causal Effect of College Selectivity on Bachelor’s Degree Completion,” *Research in Higher Education* 57, no. 7 (November 2016): 795-822, <https://doi.org/10.1007/s11162-016-9408-0>; Scott Heil, Liza Reisel, and Paul Attewell, “College Selectivity and Degree Completion,” *American Educational Research Journal* 51, no. 5 (October 2014): 913-935, <https://doi.org/10.3102%2F0002831214544298>.
- ¹⁷ “College Navigator,” National Center for Education Statistics website, accessed June 9, 2021, <https://nces.ed.gov/collegenavigator>.
- ¹⁸ The admission rates for the Service Academies are as follows: USMA, 9%; USNA, 9%; USAFA, 13%. National Center for Education Statistics, “College Navigator.”
- ¹⁹ The admission rates for the Senior Military Colleges are as follows: The Citadel, 80%; Norwich, 74%; Texas A&M, 63%; the University of North Georgia, 81%; Virginia Military Institute, 60%; and Virginia Polytechnic Institute and State University, 66%. National Center for Education Statistics, “College Navigator.”
- ²⁰ The enrollment rates for the Service Academies are as follows: USMA, 82%; USNA, 84%; USAFA, 78%. National Center for Education Statistics, “College Navigator.”
- ²¹ The enrollment rates for the Senior Military Colleges are as follows: The Citadel, 29%; Norwich, 22%; Texas A&M, 41%; the University of North Georgia, 47%; Virginia Military Institute, 52%; and Virginia Polytechnic Institute and State University, 33%. National Center for Education Statistics, “College Navigator.”
- ²² The graduation rates for the Service Academies are as follows: USMA, 85%; USNA, 90%; USAFA, 87%. National Center for Education Statistics, “College Navigator.”
- ²³ The rates graduation rates for the Senior Military Colleges are as follows: The Citadel, 71%; Norwich, 57%; Texas A&M, 82%; the University of North Georgia, 39%; Virginia Military Institute, 79%; and Virginia Polytechnic Institute and State University, 89%. National Center for Education Statistics, “College Navigator.”
- ²⁴ Rates are based on responses to the IPEDS survey item “Provide the number of first-time, degree/certificate-seeking undergraduate students who applied, who were admitted, and who enrolled (either full- or part-time) at your institution for Fall 2020. Include early decision, early action, and students who began studies during the summer prior to Fall 2020.” See National Center for Education

between how selective an academic institution is and enrollment, retention, and graduation rates.

Table 1. Comparison of the Service Academies to the Senior Military Colleges

School	Admission (%)	Enrollment (%)	Graduation (%)
USMA	9	82	85
USNA	9	84	90
USAFA	13	78	87
The Citadel	80	29	71
Norwich University	74	22	57
Texas A&M	63	41	82
University of North Georgia	81	47	39
Virginia Military Institute	60	52	79
Virginia Tech	66	33	89

Note: Source: National Center for Education Statistics (NCES), College navigator, <https://nces.ed.gov/collegenavigator>

Based on what we saw with the comparison of the academies with the senior military colleges, we also compared them with other selective schools, schools that vie for the same talent as the academies. Table 2 contains admission, enrollment, and graduation rates in percentages for the academies and the Ivy League schools. The patterns seen here again reinforce that there is a relationship between how selective an academic institution is and both enrollment and graduation rates. It should be noted that not all of these Ivy League schools offer ROTC programs for every military service.²⁵

Table 2. Comparison of the Service Academies to the Ivy League Schools

School	Admission (%)	Enrollment (%)	Graduation (%)
USMA	9	82	85
USNA	9	84	90
USAFA	13	78	87
Brown University	8	62	95
Columbia University	7	56	96

Statistics, “IPEDS 2020-21 Data Collection System: 2020-21 Survey Materials: Form” National Center for Education Statistics, n.d., https://nces.ed.gov/ipeds/UseTheData/ArchivedSurveyMaterialPdf?year=2020&fileName=package_14_102.pdf.

²⁵ Cornell University has the largest ROTC program, followed by Princeton University. Dartmouth and the University of Pennsylvania also have ROTC programs. Some of the Ivy League schools offer only Navy ROTC. “Brown Committee on the ROTC Report: Frequently Asked Questions,” Brown University website, accessed June 9, 2021, <https://www.brown.edu/reports/rotc/faq/frequently-asked-questions>.

School	Admission (%)	Enrollment (%)	Graduation (%)
Cornell University	11	59	95
Dartmouth College	9	54	95
Harvard University	5	70	96
University of Pennsylvania	9	61	98
Princeton University	6	64	96
Yale University	7	55	96

Note: Source: National Center for Education Statistics (NCES), College navigator, <https://nces.ed.gov/collegenavigator>

In the next section, we describe attrition at the military service academies, followed by a discussion on the ADSO.

B. Attrition

In this section, we look at military service academy attrition rates; attrition being defined as not matriculating through the course of study until graduation and subsequent military officer commissioning. We also describe the personal consequences associated with attrition, distribution of attrition by years of education, and the reasons associated with the attrition. This section concludes by addressing the types of students that tend to struggle at the military service academies.

1. Attrition Rates

In materials provided to IDA from the military departments, student attrition over the past 10 years tends to be approximately 20% or so of each entering year group for both USAFA and USMA, but these numbers do fluctuate from year to year.²⁶ During the past 10 years at USNA, attrition ranged from a high of 15.6% in 2010, to a low of 9.8% in 2019.²⁷

2. Personal Consequences of Attrition

Personal consequences associated with attrition from a military service academy vary based on the number years the student has matriculated through the program of study. Generally speaking, if a student departs an academy during their first two years, they do so without obligation.

²⁶ Major Andrew L. Bond (United States Military Academy, Chief, G5 Office of Institutional Research), data transfer to interviewer James Bishop, February 19, 2021; Anthony “Ryan” McDonald (United States Air Force Academy, Officer Accessions and USAFA Affairs), data transfer to interviewer Heidi C. Reutter, January 27, 2021.

²⁷ Steve Vahsen (United States Naval Academy), data transfer to interviewer Heidi C. Reutter, December 8, 2020.

For example, in a military department response to an IDA data call for this research project:

“Cadets are free to leave the academy at any point within their first two years; they suffer no penalty nor any financial obligation, and they keep whatever college credits they have accumulated. If you attrite after the two-year point, you can either pay back what you would owe or enlist in the Army.”²⁸

We have a similar response from another military department:

“Midshipmen who are dis-enrolled prior to the start of the fall academic semester of their junior year do so with no consequences. Juniors or seniors who are dis-enrolled may be (a) transferred to the Reserve in an enlisted status and ordered to active duty for not less than two years, but not more than four years, or (b) discharged from the Naval Service and be subject to monetary recoupment.”²⁹

Since students can voluntarily attrite without penalty prior to the start of their third year, one would expect to see higher attrition rates during the first two years of study. There is a greater discussion on this topic in section 1.C on the ADSO.

3. Attrition by Year

Attrition can take place at any point during a student’s military service academy experience and many decide within the first few months of attendance to resign. For example, at USMA, classes from year groups 2010 to 2020 experienced a high of 53 cadets resigning prior to the completion of new cadet training.³⁰ Similarly, at USAFA, the class of 2024 had 31 cadets resign during basic cadet training.³¹

In general, more students depart prior to the point of receiving any penalty. At USNA, attrition is highest during the freshman and sophomore years and decreases each year thereafter. As an example, attrition by a graduating year group would look as follows: 4.3% freshman, 4.3% sophomore, 1.8% junior, and 1.0% senior.³²

²⁸ Major Andrew L. Bond (United States Military Academy, Chief, G5 Office of Institutional Research), data transfer to interviewer James Bishop, February 19, 2021.

²⁹ Steve Vahsen (United States Naval Academy), data transfer to interviewer Heidi C. Reutter, December 8, 2020.

³⁰ Major Andrew L. Bond (United States Military Academy, Chief, G5 Office of Institutional Research), data transfer to interviewer James Bishop, February 19, 2021.

³¹ Anthony “Ryan” McDonald (United States Air Force Academy, Officer Accessions and USAFA Affairs), data transfer to interviewer Heidi C. Reutter, January 27, 2021.

³² Steve Vahsen (United States Naval Academy), data transfer to interviewer Heidi C. Reutter, December 8, 2020.

Another way to look at attrition would be to consider the total number of students in a year group that attrite by count, and then look at the percentage of that total count that departed by calendar year. For example, for the USMA graduating classes of 2010 to 2020, an average of 50% of attritions took place in either the year of the cadet's academy arrival, or in the very next calendar year (well before the two-year tenure point).³³

In data provided by the Air Force, over a 10-year average, 55% of class attrition took place in the first two years of a cadet's tenure.³⁴ Next, we look at some of the reasons why students attrite from the military service academies and which categories of reasons occur with greater numbers.

4. Reasons for Attrition

Attrition can be categorized as voluntary or involuntary. Students who attrite for voluntary reasons resign from the military service academies, whereas students who involuntarily attrite are deemed to have separated from the academies. Some students, unfortunately, become deceased prior to graduation, which is another reason for attrition.

Voluntary attrition often makes up the largest portion of a graduating class' attrition. For example, on average 56% of the attrition from the USNA classes of 2002 to 2020 were due to voluntary reasons.³⁵ Similarly, the USMA classes of 2010 to 2020 had an average of 62% of their class attrition associated with voluntary reasons.³⁶ Some of the reasons captured by the academies for voluntary attrition include resigning as a result of or during: new cadet training, motivation, conduct/misconduct, honor system, and physical fitness.³⁷ USAFA conducted exit interviews with 27 cadets who resigned during basic cadet training and the indicated reasons included: not committed to the military, not a good fit, different career goals, medical, and family influence.³⁸

Involuntary attrition, or separation, is the second broad category that we describe. Students of the military service academies can be separated for conduct/misconduct, medical, physical fitness, and honor system violations, some of which are the same reasons

³³ Major Andrew L. Bond (United States Military Academy, Chief, G5 Office of Institutional Research), data transfer to interviewer James Bishop, February 19, 2021.

³⁴ Anthony "Ryan" McDonald (United States Air Force Academy, Officer Accessions and USAFA Affairs), data transfer to interviewer Heidi C. Reutter, January 27, 2021.

³⁵ Steve Vahsen (United States Naval Academy), data transfer to interviewer Heidi C. Reutter, December 8, 2020.

³⁶ Major Andrew L. Bond (United States Military Academy, Chief, G5 Office of Institutional Research), data transfer to interviewer James Bishop, February 19, 2021.

³⁷ Ibid.

³⁸ Anthony "Ryan" McDonald (United States Air Force Academy, Officer Accessions and USAFA Affairs), data transfer to interviewer Heidi C. Reutter, January 27, 2021.

why some students resigned voluntarily. Additionally, students can also be involuntarily separated for academic and military development reasons associated with lack of performance.

5. Which Students Struggle

We asked the military departments for any insights that they could provide us regarding which students struggle at the military service academies, and received similar responses. For example:

“Students who have lower SAT/ACT scores and less college-level academic preparation (Honors, Advanced Placement, college credit) prior to coming to the academy tend to struggle. The academy computes an academic composite based on the student's qualifications. Students with low composites are considered to be at risk academically and are tracked/monitored closely. Per class year, we have approximately 70 cadets at risk.”³⁹

“Students who do not have a strong foundation in mathematics and the sciences, or students whose high school curriculum did not force them to develop solid time management and study skills tend to struggle at the academy. While not necessarily struggling, due to their high school academic background, those students who matriculate to the academy via the Preparatory School tend to graduate at a lower rate than those students who matriculate directly.”⁴⁰

Literature corresponds with the two statements above. For one, SAT/ACT scores are significantly associated with higher graduation probabilities at USMA based on research conducted by the RAND Corporation in 2015.⁴¹ In a subsequent report, SAT scores were a significant predictor of success at USAFA, with higher scores associated with a higher likelihood of graduation.⁴² The researchers recommended increasing the academic composite weighting of academy applicants, since these increased the likelihood of graduation.⁴³

³⁹ Anthony “Ryan” McDonald (United States Air Force Academy, Officer Accessions and USAFA Affairs), data transfer to interviewer Heidi C. Reutter, January 27, 2021.

⁴⁰ Steve Vahsen (United States Naval Academy), data transfer to interviewer Heidi C. Reutter, December 8, 2020.

⁴¹ Lawrence M. Hanser, and Mustafa Oguz, *United States Service Academy Admissions: Selecting for Success at the Military Academy/West Point and as an Officer* (Santa Monica, CA : RAND National Defense Research Institute, 2015) p. 22, https://www.rand.org/pubs/research_reports/RR723.html.

⁴² Chaitra Hardison, Susan Burkhauser, and Lawrence M. Hanser, *United States Service Academy Admissions: Selecting for Success at the Air Force Academy and as an Officer* (Santa Monica, CA: RAND National Defense Research Institute, 2016) p. 35, https://www.rand.org/pubs/research_reports/RR744.html.

⁴³ Ibid, 37.

Based on these responses, those that struggle academically at the military service academies are ultimately in a position where other demands on their limited time can make it even more difficult for successful completion, graduation, and commissioning. Demands can be from some of those reasons for attrition, such as military development, physical fitness, etc.

C. Active Duty Service Obligation

1. History

When USMA was established in 1802, there was no service obligation.⁴⁴ In 1810, the Secretary of War ordered a four years of service requirement following graduation from the academy. In 1812, it became law that cadets must serve five years including time at the academy (which varied). When four years of education became the standard, Congress increased the term of service to eight years, four at the academy and four following graduation.⁴⁵ The ADSO remained at four years until a law in 1950 reduced it to three years for both USMA and USNA.⁴⁶ When USNA was established in 1845, it was typical for midshipmen to spend time in service at sea in between periods of education, and there was no standard post-graduation requirement.⁴⁷ Beginning with the class of 1962, DOD regulations required four years for all academies (USNA had already set the obligation to four years with the class of '58). Congress intervened again in 1964 and increased the ADSO to five years active duty for all three academies, beginning with the class of '68.⁴⁸ In 1989 congressional debate again arose over the ADSO that was not resolved until the passage of law in 1996. In 1989,

ADSO TIMELINE

1802 – Military Academy is established
 1810 – 4 years
 1812 – varies ~ 1 year
 1838 – 4 years
 1950 – 3 years
 1962 – 4 years
 1964 – 5 years
 1989 – 6 years
 1996 – 5 years

⁴⁴ Robert L. Goldich, "The DOD Service Academies: Issues for Congress," (n.p. Congressional Research Service, the Library of Congress, 1997), https://www.everycrsreport.com/files/19970206_97-217_4cd9921af044d8ba4e10f38148d920f399b3d14b.pdf.

⁴⁵ Ibid.

⁴⁶ Patrick A. Toffler, "Service Obligation of Graduates of USMA," *Assembly* 49, no. 1-3 (1990): 194-196, <https://play.google.com/books/reader?id=T88aK94nDkcC&hl=en&pg=GBS.RA1-PA55>.

⁴⁷ Goldich, "The DOD Service Academies."

⁴⁸ Toffler, "Service Obligation" 194-196.

legislation was introduced to increase the ADSO to eight years,⁴⁹ but there was resistance and Congress settled on six years as part of the 1990 Defense Authorization Act, beginning with the class of 1996.⁵⁰ This increase was opposed by the DOD, service chiefs, and the academies.⁵¹ In 1996 the law was overturned and the ADSO was reduced back to five years.⁵² Currently, the ADSO remains at five years, and has not changed since 1996.⁵³

In 1996, Congress mandated that DOD analyze the impact of the ADSO on the number and quality of applicants.⁵⁴ The 1997 congressional report that documented ADSO history indicated that arguments in favor of increasing the ADSO have always been motivated by concerns over high academy costs and a desire to increase return on investment (ROI).⁵⁵ Table 3 includes arguments heard in Congress in 1989-1996, data from USMA, news reports regarding the debate, and analysis from the mandated congressional report.

Table 3. Rationales for Active Duty Service Obligation Length

Arguments for ADSO increase	Arguments against ADSO increase
<ul style="list-style-type: none"> • Academy education is expensive, must get sufficient ROI.ⁱ • Academy budgets have grown well beyond inflation.ⁱⁱ • ROTC obligation is four years and less expensive, a longer ADSO for cadets makes sense.^v 	<ul style="list-style-type: none"> • Academy graduates have better retention rates.ⁱⁱⁱ They are selected for promotion, advanced education, command positions, and serve in technical positions at greater rates.^{iv} • A shorter ADSO may cause recruits to favor ROTC, and ROTC graduates may feel comparatively less valued.^{vi}

⁴⁹ Amendment No. 595. 101st Cong., *Congressional Record* 135, pt. 13 (August 2, 1989): 17620-17626, <https://www.congress.gov/bound-congressional-record/1989/08/02/senate-section>.

⁵⁰ National Defense Authorization Act For Fiscal Years 1990 And 1991, H.R. 2461, 103 Stat. 1439, 101st Cong. (1989), <https://www.congress.gov/bill/101st-congress/house-bill/2461>.

⁵¹ Duty Commissions Upon Service Academy Graduations, 141, 104th Cong., 1st sess., *Congressional Record* 112 (July 12, 1995); Toffler, "Service Obligation" 194-196, <https://www.govinfo.gov/app/details/CREC-1995-07-12/CREC-1995-07-12-pt1-PgE1414-2/summary>.

⁵² National Defense Authorization Act For Fiscal Year 1996, Pub. L. 104–106, 110 Stat. 186, 104th Cong. (1996), <https://www.congress.gov/bill/104th-congress/senate-bill/1124/>.

⁵³ Cadets Agreement to Serve as Officer, Pub. L. 10 USC 7448, Ch. 753 United States Military Academy (July 19, 2021), <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section7448&num=0&edition=prelim>.

⁵⁴ National Defense Authorization Act For Fiscal Year 1996, Pub. L. 104-106.

⁵⁵ Goldich, "The DOD Service Academies."

Arguments for ADSO increase	Arguments against ADSO increase
<ul style="list-style-type: none"> Only 60% of academy graduates become career officers, it should be higher.^{vii} Chiefs expressed some concerns but did not indicate opposition.^x DOD has not offered any data or analysis to support five years over six years.^{xi} Education is unique: students receive leadership training, travel abroad, monthly payments, and job security upon graduation.^{xiv} A longer ADSO will improve recruiting into training-intensive career fields.^{xvii} With so many applicants, high quality will be preserved after filtering out the less committed.^{xix} GPA and SAT scores did not decline following the six-year ADSO.^{xx} The fewer applicants following the ADSO increase is on par with the reduced number of enlisted people.^{xxi} The decline in applications began prior to the six-year ADSO. It's better explained by military drawdowns, small numbers of desirable positions, and lack of guaranteed active duty commissions.^{xxii} A decline in applications when Academies are reducing class size is not a problem.^{xxiii} The Pentagon reported no change in numbers of minority applications.^{xxiv} Academies are supposed to produce career officers, filtering out less committed candidates is good.^{xxxii} 	<ul style="list-style-type: none"> The Army is drawing down and fewer officers are needed.^{viii} Forcing higher retention than the military needs will increase the promotion pass-over rate, damage morale, and reduce flexibility for personnel management.^{ix} DOD is opposed.^{xii} The Academies are opposed.^{xiii} Academy education is very demanding, academics and physical training.^{xv} Academy students have less personal freedom than other students.^{xvi} Academy graduates serve in technical positions at greater rates.^{xviii} Quality of recruits will diminish.^{xxv} There's an anticipated decline in high school graduates for the next decade.^{xxvi} Pentagon reports only 2 out of 15 applicants are fully qualified to attend.^{xxvii} Number of applicants did decrease following a longer ADSO.^{xxviii} 24% of accepted applicants withdrew due to ADSO.^{xxix} The Academies report five years is better for recruiting, especially minorities.^{xxx} A long obligation deters minorities and women, who are needed to correct imbalances between officers and enlisted in the military.^{xxxi} High school students are too young to make such long commitments.^{xxxiii} Service length is not determined by ADSO, but rather conflicts, economy, and the political climate.^{xxxiv} There is no direct correlation between ADSO length and career service.^{xxxv}

Arguments for ADSO increase	Arguments against ADSO increase
<ul style="list-style-type: none"> The Academies' intended purpose is to create career officers, not professional athletes. Difficulty recruiting them is no loss.^{xxxvi} Lowering the ADSO could provoke efforts to cut academy budgets or shut them down all together.^{xxxix} 	<ul style="list-style-type: none"> Extended ADSO will also destroy intercollegiate sports because athletes wouldn't agree to a longer ADSO.^{xxxvii} A-1 sports finance other sports at the academies, increase morale and acclaim for the academy, and help recruiting.^{xxxviii} Closing Academies might not save money because of the cost of expanding ROTC and OCS and repurposing academy physical plants.^{xi} It would be bad for public image, suggesting the academies couldn't be fixed or high-quality military officers were not needed.^{xii} The academies offer a unique learning environment that isn't available in civilian schools.^{xiii} Academies have produced a long list of acclaimed leaders.^{xliii}

Note: See endnotes at the end of this chapter for table citations. OCS = Officer Candidate School.

This current research effort is in response to congressional inquiry, which was prompted by rising academy costs and a decline in length of service from academy graduates.⁵⁶ Increasing the ADSO for students upon entry to the academies is being considered as a solution, but recent experiences with a pilot program at USMA suggest that perhaps other options may be a better way to improve ROI. Section 4.D discusses the USMA pilot and Chapter 5 discusses options for improving ROI. Offering additional years of obligation in trade for coveted branch, post, and education, after students have begun their education and are better informed about the demands of a military career, could prove more effective than a longer ADSO at the time of entry to the academy.⁵⁷

2. Implementation

Students become bound by the ADSO upon enrollment in their third year at the academy. They may choose at any time during their first two years to resign with no service

⁵⁶ National Defense Authorization Act for Fiscal Year 2020, Pub. L. S. 1790, 116th Cong., (2019), <https://www.congress.gov/bill/116th-congress/senate-bill/1790>.

⁵⁷ Office of Economic and Manpower Analysis, "CSP Program Analysis," PowerPoint presentation, Office of Economic and Manpower Analysis, West Point, NY, January 2020.

obligation whatsoever.⁵⁸ Students who voluntarily resign after the start of their third year of studies, students who are separated at any time during their enrollment at an academy, and graduates who decline appointment will all have a service obligation. Those who have a service obligation but did not attain a degree are permitted to enlist unless they are determined to be unfit to serve (ex. serious misconduct), in which case they could be required to pay tuition costs equal to the time they spent at the academy.⁵⁹ No data or statistics were identified that indicate how often academy candidates fail to fulfill their service obligation. News reports indicate that students who are expelled from an academy and are not permitted to enlist and are often not able to locate good paying employment and find tuition costs to be a significant burden.⁶⁰ In some cases, students who were expelled for misconduct or failure to meet physical fitness standards have appealed their debt and succeeded in having it waived. In one instance, a member of the U.S. Senate spoke out in defense of a midshipman.⁶¹

All officers incur an initial ADSO, but duration varies depending on commissioning source. For academy graduates, the obligation is five years, four-year ROTC scholarship graduates incur a four-year obligation, and Officer Candidate School graduates incur an ADSO of three to four years varying by service.⁶² Officers may acquire additional service obligations for actions not limited to “Warrant officer appointment, promotion, Permanent change of station, military schooling, and civilian schooling.”⁶³

Common occupations that incur additional ADSOs for training are the medical fields and those in aviation fields. The DOD minimum obligation for navigators, flight officers, and pilots is six years, and eight years for jet pilots.⁶⁴ Doctors incur seven years of service if they receive training through their service at the Uniformed Services University School

⁵⁸ Department of Defense, “Service Academies,” DoDI 1322.22 (Washington, DC: USD(P&R), September 24, 2015), 14, <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/132222p.pdf>.

⁵⁹ Ibid.

⁶⁰ Amy Argetsinger, “Where Expulsion Can Be Expensive,” *Washington Post*, November 29, 1998, <https://www.washingtonpost.com/archive/local/1998/11/29/where-expulsion-can-be-expensive/44a5dd3d-8c78-4fd5-835a-69166c103750/>; Bradley Olsen, “Seconds Short, Mid Bitter Over Expulsion,” *Baltimore Sun*, May 25, 2006, <https://www.baltimoresun.com/bal-mid0525-story.html>.

⁶¹ Argetsinger, “Where Expulsion Can Be Expensive.”

⁶² “DOPMA/ROPMA Policy Reference Tool: Military Service Obligation and Active Duty Service Obligation,” RAND Corporation website, accessed February 2, 2020, <http://dopma-ropma.rand.org/military-service-obligation.html>.

⁶³ Headquarters, Department of the Army, “Officer Active Duty Service Obligations,” AR 350–100 (Washington, DC: HQDA, September 26, 2017) https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/ARN2513_AR350-100_Web_FINAL.pdf.

⁶⁴ Minimum Service Requirement for Certain Flight Crew Positions, Pub. L. 10 USC 653 (2018), <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section653&num=0&edition=prelim>.

of Medicine.⁶⁵ The Air Force, Army, Navy, and Marine Corps all have the same obligation as DOD for their doctors. This obligation begins once training has been completed, and after they have completed their academy ADSO, for a minimum of 12 years of service.⁶⁶

Aviation obligations vary by service. The Department of the Navy requirements are the closest to the DOD standard, eight years for pilots and six years for Naval flight officers.⁶⁷ The ADSO can be served concurrently with the Academy ADSO, but does not begin until completion of training, so a pilot's overall service obligation would be greater than eight years.⁶⁸ In the Navy, flight training can last up to three years.⁶⁹ The Air Force requires a longer commitment from jet pilots – the 10 year ADSO is concurrent with the Academy ADSO,⁷⁰ and begins upon completion of training.⁷¹ The Army also has a 10 year ADSO for their aviation officers, which they recently increased from six years due to rising training costs and retention challenges.⁷² Unlike the other services, the Army does not have jet pilots; most aviators fly helicopters or transports.⁷³ Differences in service commitment

⁶⁵ Students: Selection; Status; Obligation, Pub. L. 10 USC 2114 (2018), <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section2114&num=0&edition=prelim>.

⁶⁶ Headquarters, Department of the Air Force, “Military Utilization and Classification,” Air Force Manual 36-2100 (Washington, DC: HQDAF, April 7, 2021), https://static.e-publishing.af.mil/production/1/af_a1/publication/afman36-2100/afman36-2100.pdf; Headquarters, Department of the Army, “Professional Education and Training Programs of the Army Medical Department,” AR 351-3 (Washington, DC: HQDA, October 15, 2007), https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/AR%20351-3.pdf; Headquarters, Department of the Navy, “Enlisted To Officer Commissioning Programs Application Administrative Manual,” OPNAVINST 1420.1B (Washington, DC: HQDN N13, December 14, 2009), https://www.usna.edu/Admissions/_files/documents/Fleet/OPNAVINST.pdf.

⁶⁷ Headquarters, Department of the Navy, “Lateral Transfer Into Naval Aviation,” MILPERSMAN 1542-010 (Washington, DC: HQDA, February 22, 2020), <https://www.public.navy.mil/bupers-npc/reference/milpersman/1000/1500Training/Documents/1542-010.pdf>.

⁶⁸ Ibid.

⁶⁹ Carol S. Moore, *Are Aviation Obligations Driving Students Away?* (Alexandria, VA: Center for Naval Analysis, October 2000), <https://apps.dtic.mil/sti/pdfs/ADA212189.pdf>.

⁷⁰ Headquarters, Department of the Air Force, “Military Utilization and Classification,” Air Force Manual 36-2100, https://static.e-publishing.af.mil/production/1/af_a1/publication/afman36-2100/afman36-2100.pdf.

⁷¹ “Frequently Asked Questions: Get Answers Now,” U.S. Air Force website, accessed February 4, 2020, <https://www.airforce.com/frequently-asked-questions/make-a-decision,how-things-work/what-is-the-service-commitment-i-d-be-making-to-the-air-force#:~:text=Pilots%20incur%20a%2010%2Dyear,the%20completion%20of%20this%20commitment>.

⁷² Kyle Rempfer, “New Army Aviators Will Incur 10-Year Service Obligations, up from Six, Starting in October,” *Army Times*, August 21, 2020, <https://www.armytimes.com/news/your-army/2020/08/21/new-army-aviators-will-incur-10-year-service-obligations-up-from-six-starting-in-october/>.

⁷³ “About the Army: Aircraft, Helicopters and UAV,” U.S. Army website, accessed February 8, 2021, <https://www.goarmy.com/about/army-vehicles-and-equipment/army-helicopters-and-uavs.html>.

requirements among the military components could be one influencing factor in where people choose to serve.

Table 4 summarizes ADSOs specific to occupational training.

Table 4. ADSOs for Military and Civilian Schooling

Occupation Field	DOD Minimum	Air Force	Army	Navy	Marine Corps
Medical physicians (DOD-trained)	7 years	7 years	7 years	7 years	7 years
Pilots, flight officers, navigators	6 years	6 years	10 years	6 years	6 years
Jet pilots	8 years	10 years	N/A	8 years	8 years

Only a few historical studies on the effects of service obligations for aviation were identified, and they did not provide conclusive evidence on the relationship between ADSOs and pilot quality. In 1987, the ADSO for pilot training in the Navy was increased from five to six years.⁷⁴ At that time, Naval researchers concluded that a seven-year obligation was ideal when considering training costs and typical tours and cycles. This assessment acknowledged a further increase could impact recruiting numbers and quality, especially because the Marine Corps aviation ADSO was only four and a half years, but they did not actually analyze recruiting data.⁷⁵ The current six- and eight-year obligations for aviation in the Navy began in 1991, and an analysis of aviation test scores in 2000 found no evidence the ADSO was responsible for a decline in quality; the data indicated the decline was due to increased accessions.⁷⁶ A study using data on USAFA graduates from 1985-2000 drew contrary conclusions. During that period, the Air Force aviation ADSO increased twice, and regression analysis indicated that increasing the ADSO did decrease the probability of all graduates to attend pilot training. The effect was greater for high performers as measured by graduation order of merit.⁷⁷

⁷⁴ Donald J. Cymrot, and Patricia E. Byrnes, *An Analysis of the Active Duty Service Obligation (ADSO) for Navy Pilots*, (Arlington, VA: Center for Naval Analysis, September 11, 1989), <https://apps.dtic.mil/sti/pdfs/ADA212189.pdf>.

⁷⁵ Ibid.

⁷⁶ Moore, *Are Aviation Obligations Driving Students Away?*

⁷⁷ Justin L. Ramey, "Does Increased Pilot Training Commitments Ground High Flyers?" (MA thesis, University of Florida, February 2002), <https://apps.dtic.mil/sti/pdfs/ADA399364.pdf>.

3. Relationship to Return on Investment

The purpose of the ADSO is to improve retention. However, retention is one of many benefits of an academy education, and not the only benefit that the ADSO affects. A rational public servant chooses an ADSO to optimize some combination of these heterogeneous benefits. Thus, choosing the ADSO is a matter of weighing retention effects against other effects, including effects on the quality and diversity of academy graduates. Note that cost is not relevant to this effect-weighting exercise. If an ADSO change would improve ROI, that change would do so independent of whether costs were high, low, had risen, or had fallen.

The most straightforward tradeoff in choosing the optimal ADSO is between quantity of service (retention) and quality of service. A higher ADSO increases retention, but dissuades some students that the academies would have admitted. The academies must then admit less-preferred students. If the academies' preferences over potential applicants are entirely aligned with future quality, increasing the ADSO will decrease mean officer quality.

To the extent that the academies' preferences over potential applicants are not aligned with future quality, the ADSO serves a second purpose—a mechanism for screening applicants on their willingness to serve. If the academies could know during the admissions process how long and how well each applicant would serve, this screening mechanism would be redundant. However, we cannot expect the academies to know how long or how well applicants will serve if appointed. Some cadets and midshipmen resign halfway through their educations every year and do not serve at all; they would not have been cadets and midshipmen in the first place if the academies anticipated their resignations.

Collecting more informative responses from applicants could help the academies anticipate future career quality. However, uncertainty would remain because applicants have an incentive to overstate their willingness to serve. A 2020 experiment by USMA provides evidence that applicants follow that incentive. When asked on the initial application (“Candidate Questionnaire”) whether they preferred a five-year or six-year ADSO, 59% of applicants responded with a preference for the six-year ADSO. Yet, when applicants who stated a preference for a six-year ADSO were randomly assigned a five- or six-year ADSO in their offer of appointment, 85% assigned the five-year ADSO accepted compared to 77% assigned the six-year ADSO. Thus, the applicants' choices contradicted their stated preference.

The USMA experiment demonstrates how the ADSO screens out applicants who are not willing to serve a given duration, no matter what they signal in their applications. The value of the experiment goes far beyond this demonstration. The USMA experiment also allows us to examine the effects of increasing the ADSO on the diversity and other characteristics of the student body, reveals the reactions of stakeholders such as applicants'

family members and alumni, and informs the design of similar and complementary experiments.

D. Structure of this Paper

In the next chapter, chapter 2, we detail officer development and undergraduate experiences at the military service academies. In chapter 3 we assess the costs and benefits of commissioning officer through the academies. In chapter 4 we discuss potential effects of increasing the ASDO for academy graduates and report insights from the recent USMA ADSO pilot. In chapter 5 we describe options for ensuring adequate ROI in military service academy graduates, and in chapter 6 we describe potential pilot programs for two specifications of those options. Conclusions can be found in Chapter 7.

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- ⁱ Amendment No. 595, 101st Cong., *Congressional Record*; Amendment No. 2123: SEC. 502: Review of Period of Obligation Active Duty Service for Graduates of Service Academies. 104th Cong., *Congressional Record* 141, no. 129 (August 4, 1995): S11413-S11419.
 - ⁱⁱ Patrick E. Tyler, “Overseeing Academies Deadly Minefield,” *Washington Post*, April 5, 1990, <https://www.washingtonpost.com/archive/politics/1990/04/05/overseeing-academies-deadly-minefield/4eb35b91-096d-499a-8827-5d22a5a19760/>.
 - ⁱⁱⁱ *Retain Our Service Academies: Hearing before the House of Representatives*, 104th Cong., 1st sess., (June 14, 1995), <https://www.govinfo.gov/content/pkg/CREC-1995-06-14/html/CREC-1995-06-14-pt1-PgE1244-3.htm>; Toffler, “Service Obligation,” 194-196.
 - ^{iv} Toffler, “Service Obligation,” 194-196.
 - ^v Amendment No. 595, *Congressional Record*.
 - ^{vi} Amendment No. 2123, *Congressional Record*.
 - ^{vii} Amendment No. 595, *Congressional Record*.
 - ^{viii} Goldich, “The DOD Service Academies.”; Tyler, “Overseeing Academies.”
 - ^{ix} Amendment No. 2123, *Congressional Record*.
 - ^x Amendment No. 595, *Congressional Record*.
 - ^{xi} Amendment No. 2123, *Congressional Record*.
 - ^{xii} Amendment No. 595, *Congressional Record*.
 - ^{xiii} Toffler, “Service Obligation” 194-196; Amendment No. 2123, *Congressional Record*.
 - ^{xiv} Amendment No. 595, *Congressional Record*.
 - ^{xv} Amendment No. 595, *Congressional Record*.
 - ^{xvi} Duty Commissions Upon Service Academy Graduations, *Congressional Record*.
 - ^{xvii} Amendment No. 595, *Congressional Record*.
 - ^{xviii} Toffler, “Service Obligation,” 194-196.
 - ^{xix} Amendment No. 595, *Congressional Record*.
 - ^{xx} Amendment No. 2123, *Congressional Record*.
 - ^{xxi} Kris Antonelli, “Senate Panel Votes to Ease Academy Service Requirement,” *The Baltimore Sun*, July 14, 1995, <https://www.baltimoresun.com/news/bs-xpm-1995-07-14-1995195049-story.html>.
 - ^{xxii} Amendment No. 2123, *Congressional Record*.
 - ^{xxiii} Amendment No. 2123, *Congressional Record*.

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- xxiv Amendment No. 2123, *Congressional Record*.
- xxv Amendment No. 595, *Congressional Record*.
- xxvi Amendment No. 595, *Congressional Record*.
- xxvii Amendment No. 595, *Congressional Record*.
- xxviii Antonelli, "Senate Panel Votes."
- xxix Antonelli, "Senate Panel Votes."
- xxx Amendment No. 2123, *Congressional Record*.
- xxxi Amendment No. 2123, *Congressional Record*.
- xxxii Amendment No. 595, *Congressional Record*.
- xxxiii Amendment No. 595, *Congressional Record*.; Amendment No. 2123, *Congressional Record*.
- xxxiv Toffler, "Service Obligation," 194-196.
- xxxv Amendment No. 2123, *Congressional Record*.
- xxxvi Amendment No. 595, *Congressional Record*.
- xxxvii Tyler, "Overseeing Academies."
- xxxviii Goldich, "The DOD Service Academies."
- xxxix Amendment No. 2123, *Congressional Record*.
- xl Goldich, "The DOD Service Academies."
- xli Goldich, "The DOD Service Academies."
- xlii Goldich, "The DOD Service Academies."
- xliii *Retain Our Service Academies*, 104th Cong., 1st sess.; Amendment No. 2123, *Congressional Record*.

2. Officer Development and Undergraduate Experiences at the Academies

In this chapter, we describe both the officer development and undergraduate experiences of those that attend the military service academies. We commence with a discussion on the effects associated with cohort camaraderie and peers, then delve into other aspects of the academy experience and their effect on officer development.

A. Cohort Camaraderie and Peers

1. Cohort Camaraderie

The concept of camaraderie has not been the focus of much research, but it has been connected to the idea of coworker social support.⁷⁸ USNA states “the impact of cohort camaraderie is significant in forming the foundation of service, sacrifice, selflessness and teamwork... lifelong bonds form, as do the normative values of camaraderie that are essential to mission success in the fleet.”⁷⁹ Military service academies are more stressful environments than civilian colleges in part due to added military obligations.⁸⁰ Research on stressful occupations with nurses, substance abuse counselors, and correctional officers indicate that coworker social support predicts lower levels of emotional exhaustion,⁸¹

⁷⁸ Lori J. Ducharme, Hannah K. Knudsen, and Paul M. Roman, “Emotional Exhaustion and Turnover Intention in Human Service Occupations: The Protective Role of Coworker Support,” *Sociological Spectrum* 28, no. 1 (2007): 81-104, <https://doi.org/10.1080/02732170701675268>; Eric G. Lambert, Irshad Altheimer, and Nancy L. Hogan, “Exploring the Relationship Between Social Support and Job Burnout Among Correctional Staff,” *Criminal Justice and Behavior* 37, no. 11 (2010): 1217-1236, <https://doi.org/10.1177%2F0093854810379552>; Angela Simmons, and Linda Yoder, “Military Resilience: A Concept Analysis,” *Nursing Forum* 48, no. 1, (2013): 17-25, doi.org/10.1111/nuf.12007; R. J. Taormina, and C-M. Law, “Approaches to Preventing Burnout: The Effects of Personal Stress Management and Organizational Socialization,” *Journal of Nursing Management* 8, no. 2 (March 2000): 89-99, <https://doi.org/10.1046/j.1365-2834.2000.00156.x>.

⁷⁹ Steve Vahsen (United States Naval Academy), e-mail to interviewer Heidi C. Reutter, December 8, 2020.

⁸⁰ Jason M. Siniscalchi, Karen D. Kimmel, Lynn E. Couturier, and Robert Murray, “Stress Management and the Motives of Restorative Events at the United States Coast Guard Academy,” *Military Psychology* 23, no. 3 (2011): 332-349, <https://doi.org/10.1080/08995605.2011.570601>; Jane E. Myers, and Ashleah Bechtel, “Stress, Wellness, and Mattering Among Cadets at West Point: Factors Affecting a Fit and Healthy Force,” *Military Medicine* 169, no. 6 (June 2004): 475-482, <https://doi.org/10.7205/MILMED.169.6.475>.

⁸¹ Ducharme, Knudsen, and Roman, “Emotional Exhaustion and Turnover Intention in Human Service Occupations,” 81-104; Taormina, and Law, “Approaches to Preventing Burnout,” 89-99.

depersonalization, feelings of ineffectiveness,⁸² and intentions to quit.⁸³ In military populations, social support and feelings of camaraderie have been found to positively impact resilience and reduce the likelihood of Post-Traumatic Stress Disorder (PTSD) symptoms.⁸⁴ The few studies conducted at the service academies provide inconclusive evidence on how camaraderie impacts stress reduction. A study comparing USMA cadets with other undergraduates found that cadets reported higher friendship scores, as well as connectedness and feelings of importance to others. However, the relationship between these factors and perceived stress was nonsignificant.⁸⁵

2. Peers

At USNA peers are considered integral to character development and social support. The academy has carefully developed peer programs such as Plebe Summer Detailers, Brigade 'Stripers,' and varsity sports to train leaders to maximize peer contributions to teaching and learning.⁸⁶ A study on peer effects at USAFA found freshman squadron grade point average (GPA) and physical education average (PEA) scores significantly affect individual freshman GPA and PEA, and the effect is greater than those found in other college studies at “the roommate, dorm floor, or dorm-level.”⁸⁷ USMA emphasizes “growing together as a team,” and holding one another accountable to the standards, as part of physical education, and has piloted performance psychology training in development of their peer mentorship program.⁸⁸ Peers’ role in holding each other accountable to the honor code is well documented. Both USMA and USAFA specifically state in their honor codes they will “not lie, cheat or steal, nor tolerate those who do.”⁸⁹ However, recent research at USMA indicates that cadets are disinclined to report each other. Some of the reasons given include loyalty to one another, the significant time commitment associated with getting

⁸² Ducharme, Knudsen, and Roman, “Emotional Exhaustion and Turnover Intention in Human Service Occupations,” 81-104; Lambert, Altheimer, and Hogan, “Exploring the Relationship Between Social Support,” 1217-1236; Taormina, and Law, “Approaches to Preventing Burnout,” 89-99.

⁸³ Ducharme, Knudsen, and Roman, “Emotional Exhaustion and Turnover Intention in Human Service Occupations,” 81-104.

⁸⁴ Simmons and Yoder, “Military Resilience,” 17-25.

⁸⁵ Myers and Bechtel, “Stress, Wellness, and Mattering Among Cadets at West Point,” 475-482.

⁸⁶ Steve Vahsen (United States Naval Academy), e-mail to interviewer Heidi C. Reutter, December 8, 2020.

⁸⁷ Scott E. Carrell, Richard L. Fullerton, Robert Gilchrist, and James E. West. “Peer and Leadership Effects in Academic and Athletic Performance” (MA thesis, Dartmouth College, 2007), <https://apps.dtic.mil/sti/pdfs/ADA608374.pdf>.

⁸⁸ Major Andrew L. Bond (United States Military Academy, Chief, G5 Office of Institutional Research) data transfer to interviewer James Bishop, February 19, 2021.

⁸⁹ Richard J. Ryan, “An Inductive Study of the Development, Application, and Sociological Impact of Ethics Instruction at the United States Naval Academy” (MA thesis, Naval Post Graduate School, March 1999), <https://apps.dtic.mil/sti/pdfs/ADA362516.pdf>.

involved, and perceptions of inequality in and severity of the justice system.⁹⁰ This small body of research suggests the academies are working hard to foster peer influence, with some positive effects, but have not yet perfected all aspects of the application.

B. Academy Experiences and Impact to Officer Development

1. Supervisory Presence

USNA links supervisory presence to “good order and discipline,” opportunities for mentoring, and helping midshipmen to align their interests and abilities with potential service assignments.⁹¹ USMA also emphasizes the importance of mentoring. “Institutionally, every faculty member has a responsibility to be a role model and mentor or coach who guides cadets through opportunities for learning in and out of the classroom.”⁹² Mentoring is a function which is likely to exist at greater levels at the military service academies than most other colleges, and research and measures are readily available.

In a qualitative assessment interviewing a small group of USNA faculty, nearly all the faculty mentors expressed a preference for informal mentorships. When mentorships are informal, they are mutually selected by mentor and protégé; faculty mentors indicated mentor relationships are more likely to be satisfactory when protégés want to participate and admire and respect their mentors.⁹³ However, there is some evidence mentorships can be beneficial even when they are formally assigned. In the Army, battalion commanders are responsible for mentoring multiple captains and the relationship consists of counseling, continuous feedback, and annual evaluations.⁹⁴ A study of Army captains serving as company commanders found that the captains were more likely to be promoted early when they were assigned to battalion commanders who were also promoted “below the zone” to

⁹⁰ United States Military Academy, *Character Development Strategy* (West Point, New York: United States Army, December 2014), <https://www.westpoint.edu/sites/default/files/pdfs/SCPME/CharacterDevelopmentStrategy.pdf>.

⁹¹ Steve Vahsen (United States Naval Academy), e-mail to interviewer Heidi C. Reutter, December 8, 2020.

⁹² United States Military Academy, *Educating Army Leaders: Developing Intellect And Character To Navigate A Diverse And Dynamic World* (West Point, NY: USMA, June 2018), 22, <https://www.westpoint.edu/sites/default/files/pdfs/Academics/Educating%20Army%20Leaders%20-%20June%202018.pdf>.

⁹³ Jeffrey R. Raithel, “Mentors in the Classroom: An Exploratory Qualitative Study of the Beliefs and Behaviors of Faculty Mentor Exemplars at the United States Naval Academy” (MA thesis, Naval Postgraduate School, June 2002), <https://apps.dtic.mil/sti/pdfs/ADA405947.pdf>.

⁹⁴ David S. Lyle, and John Z. Smith, “The Effect of High-Performing Mentors on Junior Officer Promotion in the US Army,” *Journal of Labor Economics* 32, no. 2 (April 2014): 229-258, <https://doi.org/10.1086/673372>.

the rank of major. The effect of this relationship was stronger when the captains were high performers as measured by SAT scores.⁹⁵

Students have been surveyed regarding mentoring outcomes at both USNA and USAFA with the same results. At both academies, more than half the sample population had experienced a mentor relationship, and mentored students reported significantly more satisfaction with the academy, viewed mentorships as more important, and engaged in more mentoring themselves. However, mentor relationships did not significantly impact GPA, class standing or order of merit.⁹⁶ These results suggest that in terms of officer development the primary function of mentorships at the academies is to prepare graduates for their roles as mentors to subordinates in the military. A thesis conducted at USNA among junior officers stationed there found supporting evidence; officers who had previously experienced mentorship chose to mentor midshipmen at the academy significantly more often than junior officers who had not been mentored.⁹⁷

2. High Level of “Touch Time”

USNA considers touch time to be “critical to the development of every midshipman,” and they often refer to leadership as a “contact sport.” Touch time is achieved both by instilling a culture of interaction, and with unusually small classes.⁹⁸ At the academies, average class size is rarely more than 20 students, and could be as little as five.⁹⁹ This is compared to an average of 37.55 students per class for 92 universities across the country, or 30 students on average at the eight Ivy League schools, or 30.25 students at twelve other

⁹⁵ Lyle, and Smith, “The Effect of High-Performing Mentors,” 229-258.

⁹⁶ Brett T. Baker, Susan P. Hocesvar, and W. Brad Johnson, “The Prevalence and Nature of Service Academy Mentoring: A Study of Navy Midshipmen,” *Military Psychology* 15, no. 4 (2003): 273-283, https://doi.org/10.1207/S15327876MP1504_2; Shawn P. O'Mailia, “The Nature and Existence of Mentoring Relationships at the United States Air Force Academy” (PhD diss., Auburn University, 2010), http://etd.auburn.edu/bitstream/handle/10415/2107/OMailia_Dissertation_final_14_Apr_10.pdf?sequence=4&ts=1435925309188.

⁹⁷ Benjamin W. Oakes, “The Propensity for Mentorship at the United States Naval Academy: A Study of Navy and Marine Corps Junior Officers” (MA thesis, Naval Postgraduate School, June 2005), <https://apps.dtic.mil/sti/citations/ADA435602>.

⁹⁸ Steve Vahsen (United States Naval Academy), e-mail to interviewer Heidi C. Reutter, December 8, 2020.

⁹⁹ United States Naval Academy, *The Blue and Gold Book*, <https://www.usna.edu/BlueAndGoldBook/>; “Academics,” United States Military Academy website, accessed February 26, 2021, <https://www.westpoint.edu/academics>; United States Air Force Academy, “Minutes Of The Regular Meeting Board of Visitors (BoV),” September 25, 2014, [https://www.usafa.af.mil/Portals/21/documents/Leadership/BOV/Reports/2014/USAFA%20September%20Meeting%20Minutes%20\(134k_%20pdf\).pdf?ver=2015-12-07-173838-177](https://www.usafa.af.mil/Portals/21/documents/Leadership/BOV/Reports/2014/USAFA%20September%20Meeting%20Minutes%20(134k_%20pdf).pdf?ver=2015-12-07-173838-177).

universities with undergraduate populations of less than 7,000 students.¹⁰⁰ Smaller class sizes at the college level predict higher retention and graduation rates.¹⁰¹ Small classes positively affect test scores, grades, good discipline, persistence, and self-esteem, and effects are even greater for poor and minority students, closing education gaps.¹⁰² Additionally, students report greater levels of learning as class size goes down, even when controlling for other factors such as instructor quality and availability.¹⁰³

The military service academies' culture of interaction also sets it apart from civilian institutions. Academy students have reported that military instructors are more available than civilian instructors,¹⁰⁴ and USAFA leaders have cited their requirements for faculty to be available to students most of the work day as one of the challenges for attracting and hiring more civilian faculty, who are unaccustomed to that standard.¹⁰⁵

A great deal of research on the potential benefits of student-faculty interactions (SFIs) has occurred over the past few decades. In 1982, researchers determined informal interaction with faculty positively affects students' ratings of their skills, knowledge, development, and satisfaction with education. However, formal interaction was negatively associated with satisfaction.¹⁰⁶ Other benefits associated with SFI include student

¹⁰⁰ "Estimated Class Sizes: More Than 90 National Universities," Public University Honors website, last updated September 15, 2019, <http://publicuniversityhonors.com/2015/10/20/estimated-class-sizes-more-than-90-national-universities/>.

¹⁰¹ Meghan Millea, R. Wills, Anastasia Elder, and Danielle Molina, "What Matters in College Student Success? Determinants of College Retention and Graduation Rates," *Education* 138, no. 4 (2018): 309-322, <https://eric.ed.gov/?id=EJ1180297>.

¹⁰² William J. Mathis, "The Effectiveness of Class Size Reduction," *Psychosociological Issues in Human Resource Management* 5, no. 1 (2017): 176-183, <https://www.ceeol.com/search/article-detail?id=537960>.

¹⁰³ Edward C. Kakkelenberg, Michael Dillon, and Sean M. Christy, "The Effects of Class Size on Student Grades at a Public University," *Economics of Education Review* 27, no. 2 (April 2008): 221-233, <https://doi.org/10.1016/j.econedurev.2006.09.011>; Lauren Chapman, and Larry Ludlow, "Can Downsizing College Class Sizes Augment Student Outcomes? An Investigation of the Effects of Class Size on Student Learning," *Journal of General Education* 59, no. 2 (2010): 105-123, <https://doi.org/10.1353/jge.2010.0012>.

¹⁰⁴ Goldich, "The DOD Service Academies."

¹⁰⁵ Kirsten M. Keller, et al., *The Mix of Military and Civilian Faculty at the United States Air Force Academy: Finding a Sustainable Balance for Enduring Success* (Santa Monica, CA: RAND Project Air Force, 2013), <https://apps.dtic.mil/sti/pdfs/ADA575849>.

¹⁰⁶ Jean J. Endo, and Richard L. Harpel, "The Effect of Student-Faculty Interaction on Students' Educational Outcomes," *Research in Higher Education* 16, no. 2 (1982): 115-138, <https://doi.org/10.1007/BF00973505>.

perceptions of academic ability,¹⁰⁷ intrinsic motivation for attending college,¹⁰⁸ and higher GPA.¹⁰⁹ Connectedness with faculty is also related to reduced test anxiety,¹¹⁰ and student satisfaction with faculty interaction is a significant positive predictor of their commitment to their educational institution.¹¹¹

In the 1990s surveys were conducted at institutions of higher education across the country and results indicated SFIs at colleges, universities, and community colleges positively predict academic effort, and educational gains.¹¹² Interactions with faculty can also affect career preparation and personal development.¹¹³ Data from focus groups in the early 2000s¹¹⁴ suggest the service academies foster much more SFI than most other colleges and universities. Touch time at the academies is likely to increase positive outcomes for cadets and midshipmen that they might not otherwise enjoy at other academic institutions.

3. Moral and Ethical Training

A unique feature of the military service academies is the amount of effort they put into developing student moral reasoning and leadership skills. The U.S. Army dedicates a chapter to character in their leadership doctrine because they believe a person's character

¹⁰⁷ Michael D. Thompson, "Informal Student-Faculty Interaction: Its Relationship to Educational Gains in Science and Mathematics Among Community College Students," *Community College Review* 29, no. 1 (2001): 35-57, <https://doi.org/10.1177/02F009155210102900103>; Meera Komarraju, Sergey Musulkin, and Gargi Bhattacharya, "Role of Student-Faculty Interactions in Developing College Students' Academic Self-Concept, Motivation, and Achievement," *Journal of College Student Development* 51, no. 3 (2010): 332-342, <https://doi.org/10.1353/csd.0.0137>.

¹⁰⁸ Teniell L. Trolan, Elizabeth A. Jach, Jana M. Hanson, and Ernest T. Pascarella, "Influencing Academic Motivation: The Effects of Student-Faculty Interaction," *Journal of College Student Development* 57, no. 7 (October 2016): 810-826, <https://doi.org/10.1353/csd.2016.0080>; Komarraju, Musulkin, and Bhattacharya, "Role of Student-Faculty Interactions," 332-342.

¹⁰⁹ Ibid.

¹¹⁰ Gary Creasey, Patricia Jarvis, and Elyse Knapcik, "A Measure to Assess Student-Instructor Relationships," *International Journal for the Scholarship of Teaching and Learning* 3, no. 2 (July 2009): 1-12, <https://doi.org/10.20429/ijstl.2009.030214>.

¹¹¹ Linda C. Strauss, and J. Fredericks Volkwein, "Predictors of Student Commitment at Two-Year and Four-Year Institutions," *The Journal of Higher Education* 75, no. 2 (2004): 203-227, <https://doi.org/10.1080/00221546.2004.11778903>.

¹¹² Thompson, "Informal Student-Faculty Interaction" 35-57; George D. Kuh, and Shouping Hu, "The Effects of Student-Faculty Interaction in the 1990s," *Review of Higher Education: Journal of the Association for the Study of High Education* 24, no. 3 (2001): 309-332, <https://doi.org/10.1353/rhe.2001.0005>.

¹¹³ Kuh, and Hu, "The Effects of Student-Faculty," 309-332; Ibtesam Halawah, "The Impact of Student-Faculty Informal Interpersonal Relationships on Intellectual and Personal Development," *College Student Journal* 40, no. 3 (September 2006): 670-678, link.gale.com/apps/doc/A150965834/AONE.

¹¹⁴ Shelia R. Cotten, and Bonnie Wilson, "Student-Faculty Interactions: Dynamics and Determinants," *Higher Education* 51, no. 4 (June 2006): 487-519, <https://doi.org/10.1007/s10734-004-1705-4>.

and reputation for good character has significant impacts on their ability to lead and maintain the trust of subordinates.¹¹⁵ Research in this area indicates ethical leadership is positively related with wellbeing, happiness, and self-esteem.¹¹⁶ It also positively predicts follower happiness and life satisfaction, leader effectiveness, follower performance,¹¹⁷ and having ethical followers.¹¹⁸ When compared to other leader characteristics like bravery, social intelligence, and perspective, leader integrity is a significant predictor for middle-management performance, but it becomes the most important factor for top-level management.¹¹⁹ All of the academies have honor codes they actively enforce, as well as extensive programs that develop leadership and character.¹²⁰

USMA indicates character development leads to officers that adhere to Army values, can build trust and lead resilient teams, and are accountable for their actions and the actions of their subordinates.¹²¹ The West Point Leader Development System (WPLDS) consists of character, academic, military, and physical programs, and spans the full 47 months of education beginning in the plebe summer prior to freshman classes.¹²² The character program has three main parts. There are three to five lessons each semester (non-academic) on subjects including the honor code, military values, and personal virtues intended to stimulate growth as a person and a leader. There is an “Officership” capstone course which teaches moral and ethical leadership, and there is program assessment using interviews,

¹¹⁵ Headquarters, Department of the Army, “Army Leadership and the Profession,” ADP 6-22 (Washington, DC: HQDA, 2019), 2-1, https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN20039-ADP_6-22-001-WEB-0.pdf.

¹¹⁶ John J. Sosik, Jae Uk Chun, Ziya Ete, Fil J. Arenas, and Joel A. Scherer, “Self-Control puts Character into Action: Examining how Leader Character Strengths and Ethical Leadership Relate to Leader Outcomes,” *Journal of Business Ethics* 160, no. 3 (December 2019): 765-781, <https://doi.org/10.1007/s10551-018-3908-0>.

¹¹⁷ Gordon Wang, and Rick D. Hackett, “Conceptualization and Measurement of Virtuous Leadership: Doing well by Doing Good,” *Journal of Business Ethics* 137, no. 2 (2016): 321-345, <https://doi.org/10.1007/s10551-015-2560-1>.

¹¹⁸ Wang and Hackett, “Conceptualization and Measurement of Virtuous Leadership,” 321-345; Fabian Hattke, and Judith Hattke. “Lead by Example? The Dissemination of Ethical Values Through Authentic Leader Inspiration,” *International Journal of Public Leadership* 15, no. 4 (2019), <https://doi.org/10.1108/IJPL-06-2019-0034>.

¹¹⁹ William A. Gentry et al., “Integrity’s Place Among the Character Strengths of Middle-Level Managers and Top-Level Executives,” *The Leadership Quarterly* 24, no. 3 (June 2013): 395-404, <https://doi.org/10.1016/j.leaqua.2012.11.009>.

¹²⁰ Ryan, “An Inductive Study of the Development, Application, and Sociological Impact.”

¹²¹ United States Military Academy. *Character Development Strategy*.

¹²² “Character Program,” West Point website, accessed February 10, 2021, <https://www.westpoint.edu/character-program>.

surveys, and tests to evaluate the effectiveness of the program and inform improvements.¹²³ The character development strategy at USMA is intended to permeate all activities at the academy, it is the responsibility of all faculty and staff to promote, and is meant to be a way of life, not just rules to follow.¹²⁴ For example, during Cadet Character Education Program Leadership Challenges, faculty serve as cadet company coaches to lead conversations on moral and ethical decision-making.¹²⁵

USNA teaches character development with the goal of helping midshipmen determine right from wrong, and to develop the courage to do the right thing even at personal risk.¹²⁶ Producing leaders of character begins with selection for admission and development is embedded in all programs, policies, curriculum, and daily activities.¹²⁷ The USNA's Leadership Education and Development (LEAD) Division also implements a four-year program including academic courses, experiential learning, and mentorship.¹²⁸ The Center for Experiential Leadership Development (ELD) oversees the leadership development programs including offshore and summer training.¹²⁹ The Department of Leadership, Ethics, and Law (LEL) administers a core course each year in leadership and ethics, and provides additional elective courses.¹³⁰ There is also a capstone seminar for midshipmen to discuss leadership and character issues and reflect on their own development.¹³¹

USFA describes outcomes of character development as leaders adhering to Air Force values who uplift others to their best selves and elevate performance.¹³² Their Center for Character and Leadership Development (CCLD) contains the Development division, which creates and implements programs for leader and character development, education

¹²³ United States Military Academy, *Character Program (Goldbook)* (West Point, New York: United States Military Academy, 2019), [https://s3.amazonaws.com/usma-media/inline-images/centers_research/simon_center_for_the_professional_military_ethic/Goldbook%20\(2019\).pdf](https://s3.amazonaws.com/usma-media/inline-images/centers_research/simon_center_for_the_professional_military_ethic/Goldbook%20(2019).pdf).

¹²⁴ United States Military Academy. *Character Development Strategy*.

¹²⁵ Major Andrew L. Bond (United States Military Academy, Chief, G5 Office of Institutional Research), data transfer to interviewer James Bishop, February 19, 2021.

¹²⁶ "Division Of Leadership Education And Development: 1/C Character Capstone Seminars," United States Naval Academy, accessed February 11, 2021, <https://www.usna.edu/LEAD/capstone.php>.

¹²⁷ Steve Vahsen (United States Naval Academy), e-mail to interviewer Heidi C. Reutter, December 8, 2020.

¹²⁸ United States Naval Academy Website, "Division Of Leadership Education And Development."

¹²⁹ Ibid.

¹³⁰ "Department Of Leadership, Ethics, And Law: Courses," United States Naval Academy website, accessed February 11, 2021, <https://www.usna.edu/LEL/Courses/index.php>.

¹³¹ United States Naval Academy Website, "Division Of Leadership Education And Development."

¹³² "Center For Character And Leadership Development," United States Air Force Academy website, accessed February 12, 2021, <https://www.usafa.edu/character/#:~:text=The%20Academy's%20mission%20is%20to,heart%20of%20accomplishing%20that%20mission.>

on healthy relationships and empathy, experiential learning, and hosts an annual national symposium.¹³³ Each year cadets participate in a seminar with applications throughout the year,¹³⁴ and they complete a required core course on character and leadership development.¹³⁵ There are additional ethics educational requirements some years.¹³⁶ The CCLD also has a Research & Scholarship Division that evaluates the character development programs and studies new strategies, and a Support division which coordinates between the CCLDs and the rest of the academy.¹³⁷

The limited peer-reviewed research on character development at the academies provides no conclusive answers regarding the benefits of character training, but is favorable to the academies. Project Arête, a longitudinal study of character development at USMA, measured development using Periodic Development Reviews (PDRs). PDRs are completed by instructors, peers, and cadets (self-evaluating) each semester. Results indicated instructor and self-PDRs improve significantly over time.¹³⁸ From a human resource management perspective, the USMA character development program is regarded as highly effective and an appropriate model for other organizations. The training is rigorous, and the leadership is actively involved in development and facilitating culture shifts.¹³⁹ The academies are also regarded as a model example for leadership training. Seniors from an undisclosed service academy were surveyed and most reported having extensive leadership experience. Those with the most experience rated themselves more highly with regard to honesty and integrity.¹⁴⁰

¹³³ United States Air Force Academy website, “Center For Character.”

¹³⁴ “Character & Leadership Seminars” United States Air Force Academy website, accessed February 12, 2021, <https://www.usafa.edu/character/development/character-leadership-seminars/>.

¹³⁵ “Core Curriculum,” United States Air Force Academy website, accessed February 12, 2021. <https://www.usafa.edu/academics/core-curriculum/>.

¹³⁶ United States Air Force Academy website, “Core Curriculum.”

¹³⁷ United States Air Force Academy website, “Center For Character.”

¹³⁸ Hillary S. Schaefer, et al., “Examining Diversity in Developmental Trajectories of Cadets’ Performance and Character at the United States Military Academy,” *Journal of Character Education* 17, no. 1 (2021): 59-80.

¹³⁹ Evan H. Offstein, and Ronald L. Dufresne, “Building Strong Ethics and Promoting Positive Character Development: The Influence of HRM at the United States Military Academy at West Point,” *Human Resource Management* 46, no. 1 (2007): 95–114, <https://doi.org/10.1002/hrm.20147>.

¹⁴⁰ Clifford West, “Teaching Leadership To Undergraduates: Lessons From U.S. Military Colleges,” *Journal of College Teaching & Learning*, 9, no. 2 (2012): 135-146, <https://doi.org/10.19030/tlc.v9i2.6909>.

4. High Level of Scrutiny and Oversight

The Navy regards a high level of oversight and frequent feedback as essential to a midshipman's development and growth.¹⁴¹ At the military service academies, students must meet extensive requirements and are graded on physical and military performance as well as academics.¹⁴² Students overall ranking can also be impacted by character evaluations.¹⁴³ At USMA, students receive PDRs every semester that rate their character and officer development and are completed by teachers, peers, and cadets (self-evaluations).¹⁴⁴ Peer monitoring and oversight is part of leadership training. Students at the academies begin with rotational leadership roles their first year at the academies and take on additional leadership and mentoring responsibilities as they progress through each year over newer class members. Newer class member development and effectiveness are the responsibility of their more senior leaders.¹⁴⁵

Academy students also have much less freedom of movement than other college students. At the academies, students must be granted leave passes for vacations, weekends, and over-night absences, with more senior class members enjoying more privileges.¹⁴⁶ Leave privileges may be revoked if a student is placed on academic probation,¹⁴⁷ and at

¹⁴¹ Steve Vahsen (United States Naval Academy), e-mail to interviewer Heidi C. Reutter, December 8, 2020.

¹⁴² Schaefer, et al., "Examining Diversity in Developmental Trajectories," 59-80; "Graduating from the Academy: Curriculum," United States Air Force Academy website, accessed March 8, 2021, <https://www.usafa.edu/academics/registrar/curriculum/>; Department of the Navy, "Class Standings," USNA INSTRUCTION 1531.51B (Annapolis, MD: USNA, 2017), <https://www.usna.edu/AdminSupport/Inst/1000-1999/USNAINST%201531.51B%20Class%20Standings.pdf#search=order%20of%20merit>.

¹⁴³ Schaefer, et al., "Examining Diversity in Developmental Trajectories," 59-80; Department of the Navy, "Class Standings."

¹⁴⁴ Schaefer, et al., "Examining Diversity in Developmental Trajectories," 59-80.

¹⁴⁵ United States Military Academy, *Military Program (Greenbook)* (West Point, New York: United States Military Academy, 2020), https://s3.amazonaws.com/usma-media/inline-images/about/cadet_consumer_information/pdfs/AY_20_Greenbook.pdf; "Military," United States Air Force Academy website, accessed March 8, 2021, <https://www.usafa.edu/military/>; United States Naval Academy, *The Blue and Gold Book*.

¹⁴⁶ United States Military Academy website, "Admissions"; "Frequently Asked Questions," United States Air Force Academy website, accessed March 8, 2021, <https://www.usafa.edu/cadet-life/faq/>; United States Naval Academy, *The Blue and Gold Book*.

¹⁴⁷ United States Military Academy, *USMA Academic Program (Redbook)* (West Point, New York: United States Military Academy, 2020), https://www.westpoint.edu/sites/default/files/pdfs/ABOUT/Student%20Consumer%20Info/Grading%20Policy%20%20from%20RedBook_GY2020_20170803-2.pdf; United States Air Force Academy, *2020-2021 Curriculum Handbook* (Colorado Springs, CO: United States Air Force Academy, 2020), <https://www.usafa.edu/app/uploads/CHB.pdf>; John D. Gremillion, "Undergraduate Academic Achievement as an Indicator of Fleet Performance and Retention" (MA thesis, Naval Postgraduate School, 1998), <https://apps.dtic.mil/sti/pdfs/ADA354302.pdf>.

USMA, cadets may lose other privileges including extracurricular activities, attending on-campus sports events, or socializing in the mess hall.¹⁴⁸

5. Leadership Roles and Promotion

Interviews with USMA cadet commanders in 2016 reveal several ways in which leadership positions and roles may positively impact development.¹⁴⁹ Cadets indicated their experience in leadership positions was positive overall; they identified with and modeled good peer leaders, learned the value of seeking criticism, used leadership styles they were not naturally inclined to, learned how senior leaders' decisions impacted lower ranks, and learned to appreciate the importance of different branches to mission success. Cadets learned being a leader is not just about command, it is supporting others that are struggling, teaching them to overcome overwhelming obstacles, and the value of trust with delegating tasks.

There is evidence that the type of position cadets are assigned to can impact future leadership assignments. Data from USAFA for students from 1980-2011 indicated cadets who were wing, group, or squadron commanders, or in staff positions that report to those commanders, were more likely than cadets assigned to instructor, administrative, or logistic positions, to be promoted to lieutenant colonel by the time they reached the promotion zone, regardless of academic grades or demographics.¹⁵⁰

6. Military-relevant Coursework

Each of the academies require military and officer-ship courses as part of their curriculum each year,¹⁵¹ as well as other military training and special events.¹⁵² At USAFA, there are military studies, which are intended to elevate the quality of education.

¹⁴⁸ United States Military Academy. *USMA Academic Program (Redbook)*.

¹⁴⁹ Robert K. Carl, "Developing Leaders: The Use Of Challenge And Support To Develop USMA Cadets" (EdD diss., University of New England (UNE), August 2017), <https://dune.une.edu/theses/138/>.

¹⁵⁰ Jeremy M. Didier, "Evaluating Cadet Leadership Position at the US Air Force Academy," (PhD diss., Pardee RAND Graduate School, 2012), <https://apps.dtic.mil/sti/pdfs/ADA570534.pdf>.

¹⁵¹ United States Military Academy. *Military Program (Greenbook)*; United States Air Force Academy website, "Core Curriculum."; "Academics: USNA Core Curriculum," United States Naval Academy website, accessed March 26, 2021, <https://www.usna.edu/Academics/Majors-and-Courses/Course-Requirements-Core.php>.

¹⁵² United States Military Academy. *Military Program (Greenbook)*; United States Air Force Academy website, "Center For Character."; "LEAD Division," United States Naval Academy website, accessed March 26, 2021, <https://www.usna.edu/LEAD/>.

USMA offers a military major, and USNA has a department for nautical skills, but without a naval/military major.¹⁵³

USFA's approach to military education focuses on enabling strategic thinking, with a military studies department that has an inter-disciplinary faculty, including social sciences and humanities, enabling them to teach "the context, theory, and application of military power demands."¹⁵⁴ USMA requires cadets to study subjects before class and then be prepared to present what they learned to the class; a method in which cadets learn public speaking, how to explain their work in a clear way, get regular feedback, and are able to measure their performance against their peers'.¹⁵⁵ At USNA, military courses are considered to be critical for midshipmen to develop into effective officers, and the regular review of academic programs include input from external experts in military leadership and the program evolves to meet national priorities.¹⁵⁶

Although students have rated value to their military courses, they rate military training and experiential learning more highly for their development as officers.¹⁵⁷ Interviews with USMA cadets found that students used what they learned in class for their leadership responsibilities, therefore drawing from this experience was paramount.¹⁵⁸ Leadership development is not the only benefit of military training and experiential training. Military training and experiential training develop practical individual competencies and capabilities in future officers, such as marksmanship, flying, and Survival, Evasion, Resistance, and Escape (SERE).

¹⁵³ Thomas Drohan, and Steven Pomeroy, *Who Speaks for Our Profession? Military and Strategic Studies at the USAF Academy* (Colorado Springs, CO: US Air Force Academy, Dept. of Military and Strategic Studies, 2011), p. 6, <https://apps.dtic.mil/sti/pdfs/ADA559058.pdf>.

¹⁵⁴ Ibid, 6.

¹⁵⁵ Amy E. Shell, "The Thayer Method of Instruction at the United States Military Academy: A Modest History and a Modern Personal Account," *Primus: Problems, Resources, and Issues in Mathematics Undergraduate Studies* 12, no. 1 (March 2002): 27-38, <https://doi.org/10.1080/10511970208984015>.

¹⁵⁶ Steve Vahsen (United States Naval Academy), e-mail to interviewer Heidi C. Reutter, December 8, 2020.

¹⁵⁷ Derek A. West, and Benjamin L. Dilla, "Cadets' Perceptions of Leadership Development Activities at the United States Air Force Academy" (MA thesis, Ohio State University, April 1992), <https://apps.dtic.mil/sti/pdfs/ADP006920.pdf>; Robert W. Thomas, "Teaching Tomorrow's Leaders: A Comparison of Leadership Development at the United States Military Academy and United States Naval Academy" (MA thesis, Naval Postgraduate School, June 2000), <https://apps.dtic.mil/sti/citations/ADA380918>.

¹⁵⁸ Ibid.

7. Educational Achievements

USFA often issues press releases regarding students' academic achievements, such as scholarship winners and academy graduates attending graduate school.¹⁵⁹ USMA also announces academic accomplishments by their students. USMA's releases often include general information about West Point as well,¹⁶⁰ suggesting that these announcements are used for recruiting purposes or to otherwise signal the quality of the school through its students. USNA has a section of its website dedicated to "notable graduates," which lists records for several kinds of scholarship winners as well as other accomplishments like holding political office and obtaining military awards.¹⁶¹ By 2020, "USNA had 52 Rhodes Scholar graduates, the ninth most in the nation, and a number competitive with the most prestigious institutions of higher education in the United States."¹⁶² Students' academic achievements reflect well on the quality of education at the academy and the caliber of students who choose to attend. For students, academic performance at the academies is linked to privileges including liberty to leave campus,¹⁶³ increased likelihood of being selected for leadership positions,¹⁶⁴ and a higher order of merit which impacts the branches or communities a graduate can select.¹⁶⁵

8. Physical Education and Achievements in Athletics and Sports

Each of the three military service academies have physical education programs that require students to participate in fitness activities like boxing, swimming, and basic

¹⁵⁹ "Senior Cadet Selected As Academy's 39th Rhodes Scholar," United States Air Force Academy, accessed April 9, 2021, <https://www.usafa.edu/news/senior-cadet-selected-academys-39th-rhodes-scholar/>; "Dozens Of Class Of '17 Grads Bound For Grad School," United States Air Force Academy website, accessed April 9, 2021, <https://www.usafa.edu/news/dozens-class-17-grads-bound-grad-school/>; "Air Force Academy Cadets Earn Prestigious Scholarships" United States Air Force Academy website, accessed April 9, 2021, <https://www.usafa.edu/news/air-force-academy-cadets-earn-prestigious-scholarships/>.

¹⁶⁰ "West Point Cadets Earn Esteemed Scholarships," United States Military Academy website, accessed April 9, 2021, <https://www.westpoint.edu/news/press-releases/west-point-cadets-earn-esteemed-scholarships/>; "West Point Cadet Selected for Marshall Scholarship," United States Military Academy website, accessed April 9, 2021, <https://www.westpoint.edu/news/press-releases/west-point-cadet-selected-marshall-scholarship/>; "Two West Point Cadets Named Truman Scholars," United States Military Academy website, accessed April 9, 2021, <https://www.westpoint.edu/news/press-releases/two-west-point-cadets-named-truman-scholars/>.

¹⁶¹ "Notable Graduates," United States Naval Academy website, accessed April 9, 2021, <https://www.usna.edu/Notables/index.php>.

¹⁶² Steve Vahsen (United States Naval Academy), e-mail to interviewer Heidi C. Reutter, December 8, 2020.

¹⁶³ United States Military Academy, *USMA Academic Program (Redbook)*; United States Air Force Academy, 2020-2021; Gremillion, "Undergraduate Academic Achievement."

¹⁶⁴ *Ibid.*

¹⁶⁵ *Ibid.*; Ramey, "Does Increased Pilot Training Commitments."

military training.¹⁶⁶ USNA regards physical fitness as a necessity for attaining mission readiness and developing effective leaders.¹⁶⁷ The USAFA objectives for physical education are to learn leadership characteristics such as discipline and self-confidence, teamwork, stamina, and lifetime fitness habits that exceed Air Force standards.¹⁶⁸ The USMA mission is to develop leaders of character that are mentally and physically strong and prepared to meet the challenges of military service.¹⁶⁹ Physical education is still a common college requirement; approximately 40% of four-year colleges require some physical education to earn a bachelor's degree. However, some schools award no credit hours for physical education, three credit hours being the most common, and only Northwest Nazarene University requires as many as the United States Military Academy.¹⁷⁰ When USMA cadets were asked to write about their positive experiences with the physical education program, a frequent theme was positive experiences with teacher encouragement and learning to overcome.¹⁷¹

In addition to the physical fitness requirements students must meet to graduate, the academies also require participation in intercollegiate, club, or intramural sports.¹⁷² At USNA, participation in sports is intended to develop skills in team-building, decision-making, and coping with stress to prepare for military service and possible combat.¹⁷³

¹⁶⁶ United States Naval Academy, "Physical Education Requirements for Graduation from the United States Naval Academy," Director Of Athletics Instruction 6100.1, (Annapolis, MD: United States Naval Academy, November 20, 2015) https://www.usna.edu/AthleticDirector/_files/documents/instructions/DIRATHINST6100.1PE-Graduation-Requirements-from-USNA.pdf#search=physical%20education; "Athletics At A Different Altitude," United States Air Force Academy website, accessed April 19, 2021, <https://www.usafa.edu/athletics/>; United States Military Academy, *Physical Program (Whitebook)* (West Point, New York: United States Military Academy, 2020), https://s3.amazonaws.com/usma-media/inline-images/about/cadet_consumer_information/pdfs/AY_20_WhiteBook.pdf.

¹⁶⁷ United States Naval Academy website, "Physical Education Requirements for Graduation."

¹⁶⁸ "Physical Education Program," United States Air Force Academy website, accessed April 19, 2021, <https://goairforcefalcons.com/sports/2018/6/21/ot-afa-phys-ed-html.aspx>.

¹⁶⁹ Ibid.

¹⁷⁰ Bradley J. Cardinal, Spencer D. Sorensen, and Marita K. Cardinal, "Historical Perspective and Current Status of the Physical Education Graduation Requirement at American 4-Year Colleges and Universities," *Research Quarterly for Exercise and Sport* 83, no. 4 (December 2012): 503-512, <https://doi.org/10.1080/02701367.2012.10599139>.

¹⁷¹ Jeffrey D. Coelho, "Student Perceptions of Physical Education in a Mandatory College Program," *Journal of Teaching in Physical Education* 19, no. 2 (January 2000): 222-245, <https://doi.org/10.1123/jtpe.19.2.222>.

¹⁷² Steve Vahsen (United States Naval Academy), e-mail to interviewer Heidi C. Reutter, December 8, 2020; United States Air Force Academy website, "Athletics at a Different Altitude."; United States Military Academy, *Physical Program (Whitebook)*.

¹⁷³ Steve Vahsen (United States Naval Academy), e-mail to interviewer Heidi C. Reutter, December 8, 2020.

USMA also emphasizes the importance of sports in developing leadership and teamwork, as well as forging personal bonds with others.¹⁷⁴ All three academies provide links from their athletics page to separate websites for their intercollegiate sports programs.¹⁷⁵ For many in the nation, televised sporting events are the primary interaction they have with the Navy, therefore, USNA views participation in sports at the National Collegiate Athletic Association (NCAA) level as an important factor in generating positive public knowledge and support.¹⁷⁶ At USAFA, athletes are told that they are role models at the Academy and in the community, and they must behave as representatives of the Air Force at all times.¹⁷⁷ A congressional report on the academies from 1997 concluded intercollegiate athletics were a net good, providing positive attention to the academies and benefiting recruiting.¹⁷⁸

Division I athletes report moderate levels of growth from the adversity they experience in sports, with the most development in personal strength.¹⁷⁹ College athletes also report significantly higher levels of mental toughness than non-athletes,¹⁸⁰ and athletes with high levels of mental toughness employ more psychological skills and strategies (e.g. goal setting, relaxation, avoiding negative talk) during competition.¹⁸¹ Athletes in individual sports reported even higher mental toughness and positivity scores than athletes in team sports.¹⁸² Development of mental toughness and strength in adversity through competitive sports is related to performance off the field. At USMA, students are evaluated for their sports participation, and students who were rated by their instructors and peers as

¹⁷⁴ “Athletics: NCAA,” United States Military Academy website, accessed April 19, 2021, <https://www.westpoint.edu/athletics>.

¹⁷⁵ “ATHLETICS,” United States Naval Academy website, accessed April 19, 2021, <https://www.usna.edu/Athletics/>; United States Air Force Academy website, “Athletics at a Different Altitude.”

¹⁷⁶ Steve Vahsen (United States Naval Academy), e-mail to interviewer. Heidi C. Reutter, December 8, 2020.

¹⁷⁷ “Cadet-Athlete Guide,” United States Air Force Academy website, accessed April 19, 2021. <https://goairforcefalcons.com/sports/2019/6/13/student-athlete-guide.aspx>.

¹⁷⁸ Goldich, “The DOD Service Academies.”

¹⁷⁹ Nick Galli, and Justine J. Reel, “Can Good Come from Bad? An Examination of Adversarial Growth in Division I NCAA Athletes,” *Journal of Intercollegiate Sport* 5, no. 2 (2012): 199-212, <https://doi.org/10.1123/jis.5.2.199>.

¹⁸⁰ Félix Guillén, and Sylvain Laborde, “Higher-Order Structure of Mental Toughness and the Analysis of Latent Mean Differences Between Athletes from 34 Disciplines and Non-Athletes,” *Personality and Individual Differences* 60 (April 2014): 30-35, <https://doi.org/10.1016/j.paid.2013.11.019>.

¹⁸¹ S. Jemmy, and Veena Easvaradoss, “Mental Toughness and Positivity as Predictors of Performance Strategies Used Among Competing Athletes,” *International Journal of Sports Sciences & Fitness* 8, no. 2 (2018) 98-119; Mick G. Mack, “An Examination of the Relationship Between Mental Toughness, Psychological Skills, Coaches' Ratings, and Athletic Performance,” *Journal of Sport Behavior* 42, no. 2 (June 2019): 142-157.

¹⁸² Jemmy, and Easvaradoss, “Mental Toughness and Positivity,” 98-119.

displaying high levels of positive behaviors like resilience also had higher military and academic scores.¹⁸³

Physical education and competitive sports can contribute to the development of academy students, and help build valuable skills for graduates' service as officers in the military. NCAA level sports attract positive attention to the Academies and military services, can be used as a recruiting strategy, and the profits can be used to offset other costs at the academies.

¹⁸³ Schaefer, et al., "Indexing Character in the Context of Sport Participation Within the United States Military Academy: The Character in Sport Index," *Journal of College and Character* 20, no. 4 (2019): 287-309, <https://doi.org/10.1080/2194587X.2019.1669464>.

3. Benefits and Costs of Commissioning Officers Through the Service Academies

The Services' investment in cadets and midshipmen entail a variety of costs. The primary return on that investment (the benefit associated with the costs) is those students' future service on active duty. Service on active duty includes quantity (years served) and quality (characteristics of service) components. Secondary returns include:

- Service in the reserve component;
- Contributions to the nation beyond military service; and
- Maintaining and increasing the prestige of the institution.

In this chapter we use decades of data to quantify and categorize the benefits and costs of commissioning officers through the Service academies. We also discuss benefits and costs that defy quantification. We acknowledge the implication that ROI, too, defies quantification.

A. Career Outcomes

1. Data

We use monthly data on all active duty commissioned officers from January 2000 through June 2020 from the Defense Manpower Data Center (DMDC). We observe accession source, total months of active service (MoAS) since officer commission date, pay grade, days deployed, service in a special operations unit, service as a commander currently or ever, Professional Military Education (PME) level, Joint Professional Military Education (JPME) level, and election to join the Selected Reserve (SELRES) for each officer in each month (except for missing values). SELRES status was calculated by recording if an officer appeared in the SELRES data after leaving active duty. Our reserve data prior to 2012 does not distinguish SELRES or another type of reserve service, so we can only observe this behavior if an officer was in the SELRES during 2012-2020. When appropriate, observed values are forward-filled for an individual to minimize the proportion of missing values. In this section, missing values are marked with "Unknown."

Table 5. Officers by Accession Source

Accession Source	Total Officers	Largest Number of Officers in any MoAS
USAFA	32,672	19,245
USMA	31,381	20,591
USNA	31,906	20,542
All	95,857	59,623

We observe 95,857 unique officers that were commissioned after attending USAFA, USMA, or USNA. We remove all observations of service members prior to their accession from an academy. Our calculation of MoAS comes from the observed Officer Appointment Date, which allowed us to observe officers whose careers began before January 2000, the first observed date in our data. This allows us to have a fuller picture of the long-term careers of officers accessing from the academies, as some of the officers in our data are observed to serve more than twenty years, as can be seen in Figure 1. Each MoAS has a different number of officers, and the maximum number of individual officers in any MoAS is shown in the right-most column in Table 5.

This calculation of MoAS also contributes to the somewhat surprising shape in Figure 1. The periodic upticks in the number of officers in our subset represent each May, when recent academy graduates commission. Each new bump in the number of officers is each cohort of officers from a year prior to 2000 that appear in waves with more than zero MoAS in our first month of data. For instance, the second bump is largely due to officers who commissioned almost two years before our first observed date, which means they entered the data with 20 MoAS. The decreases between each May represent the normal attrition of some officers during the year. The non-monotonic nature of this data does not prevent rigorous analysis.

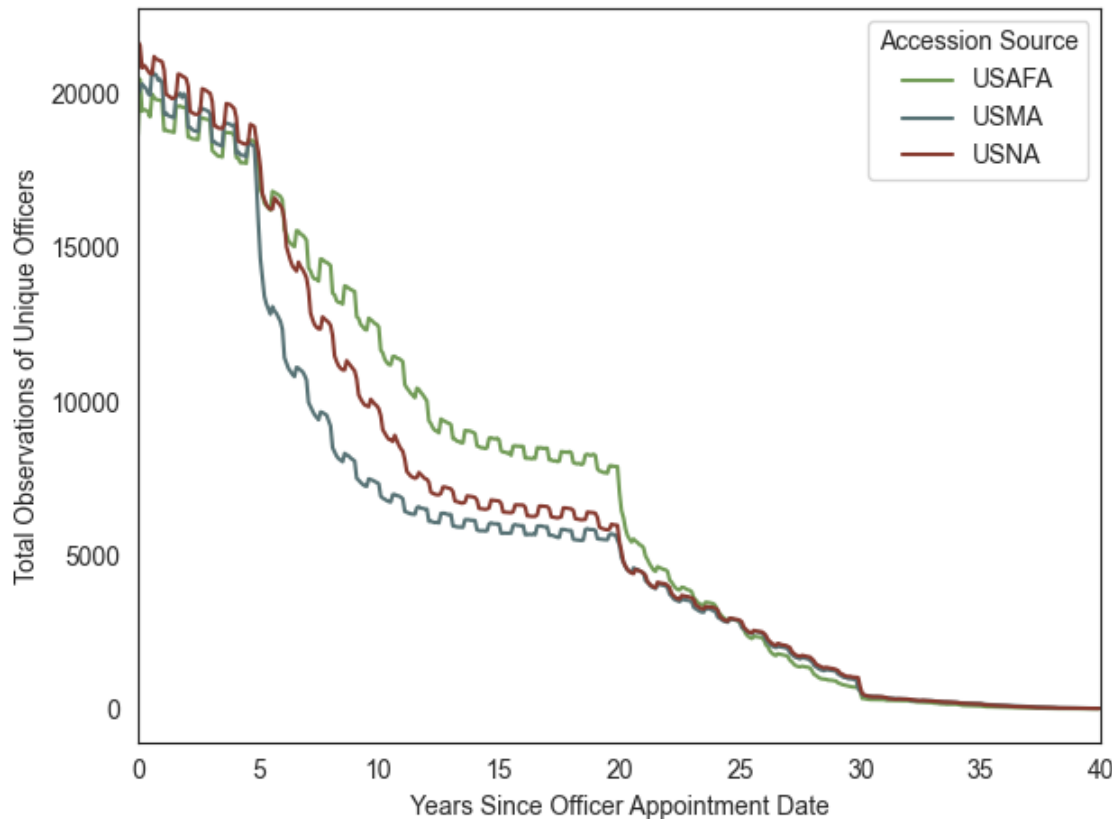


Figure 1. Total Observations of Commissioned Officers from each Academy over Officer Careers

a. Comparison Data

In addition to our data on academy graduates, we selected a simple random sample of 20% of all officers on active duty that did not come from USAFA, USMA, or USNA. This sample allows us to compare academy graduates to other officers, as discussed in section **Error! Reference source not found..** We observe the same features for this sample as for the main analytic subset. Table 6 describes the sample in the same manner as Table 5.

Table 6. Officers by Accession Source in 20% Comparison Sample

Accession Source	Total Officers in 20% Sample	Largest Number of Officers in any MoAS
Direct Appointment, Other	6,242	2,325
Direct Appointment, Professional	16,449	8,496
OCS, AOCS, OTS, or PLC	28,659	16,951
Other ¹⁸⁴	8,822	3,782

¹⁸⁴ The “Other” category is an aggregation of officers accessing from the U.S. Coast Guard Academy, U.S. Merchant Marine Academy, Air National Guard Academy of Military Sciences, Aviation Cadet Program, National Guard State OCS, Other Aviation Training Program, Direct Appointment Authority

Accession Source	Total Officers in 20% Sample	Largest Number of Officers in any MoAS
ROTC-NROTC Non-Scholarship	19,383	9,742
ROTC-NROTC Scholarship	25,339	14,667

Note: AOCS = Aviation Officer Candidate School, OTS = Officer Training School, PLC = Marine Corps Platoon Leaders Course, NROTC = Navy Reserve Officers' Training Corps

b. Race and Sex

As aforementioned, an officer's race and sex can be associated with certain experiences at the Academies and after commissioning. Figures Figure 2 and Figure 3 show the distribution by MoAS for six demographic groups represented in the final month of our data, December 2020. The "Other" category represents all ethnic and sex groups not explicitly defined in the other groups. We combined all non-White women in the "Other" category as this group was too small to distinguish visually without aggregation.

Figure 2 shows the share of White male officers on active duty in December 2020 ranges from about 0.5 to more than 0.9 at greater MoAS, with most staying around 0.7. This increase in the proportion of White mean is mostly due to the diminishing proportion of women of all racial groups. Other women, in particular, have very small proportions after around 10 Years of Active Service (YoAS). This group has a much larger share (0.23) at 16.3 YoAS, while White men have the noticeable dip. Men of color consistently represent about 0.2 overall until about 20 YoAS, with Black males being the largest group. There is also a noticeable increase in the proportion of White males with less than one YoAS compared to subsequent years.

(Warrant Officer), Direct Appointment Authority (Commissioned Warrant Officer), Warrant Officer Aviation Training Program, or other categories not enumerated.

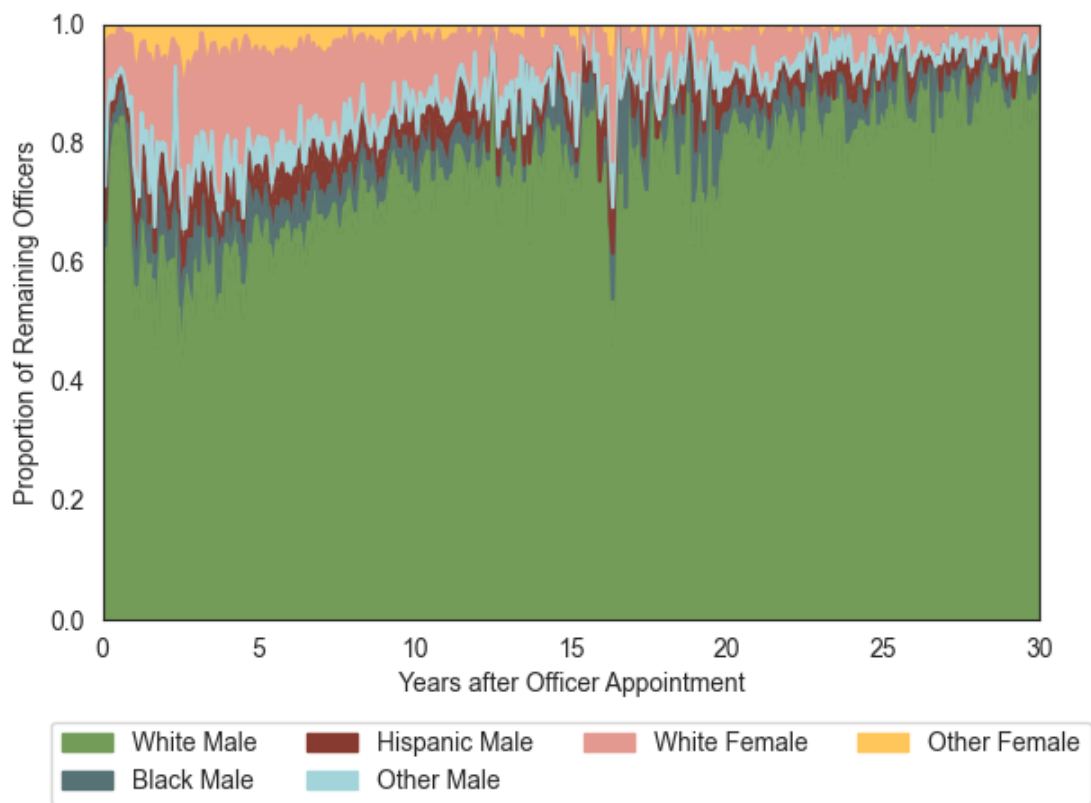


Figure 2. Distribution of Race and Sex Groups in December 2020

Table 7. Race and Sex Distribution Maximum Values

Demographic Group	Largest Proportion of Remaining Active Duty Officers	MoAS (YoAS) of Largest Proportion
White Male	1.0	198 (16.5)
Black Male	0.23	233 (19.4)
Hispanic Male	0.23	201 (16.8)
Other Male	0.11	41, 195, 208 (3.4, 16.3, 17.3)
White Female	0.29	54 (4.5)
Other Female	0.23	196 (16.3)

Compared with officers from the academies, officers in the comparison sample are less White and less male overall. Although the largest proportions for all groups are all larger for the academy graduates (Table 7 versus Table 8), the trend for the groups shows a larger proportion for all groups other than White males. Most of this difference comes

from Other females, who consistently have a much larger proportion than officers from the Academies.

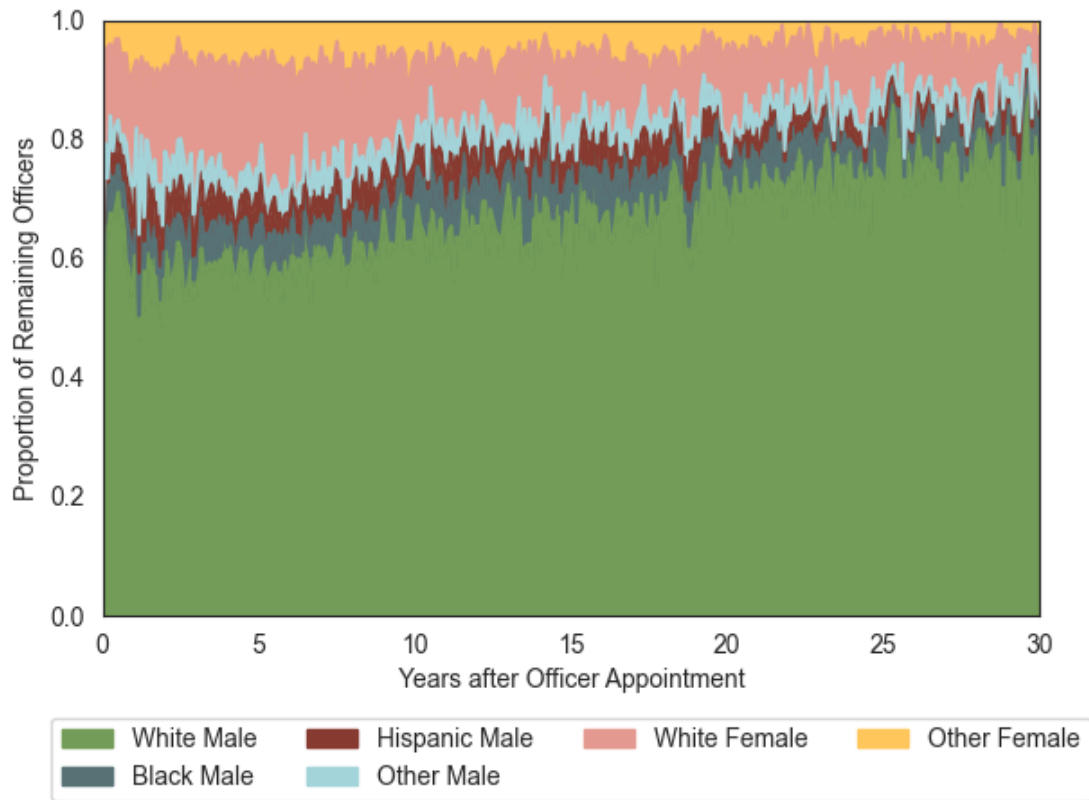


Figure 3. Distribution of Race and Sex Groups in December 2020 in Comparison Sample

Table 8. Race and Sex Distribution Maximum Values in Comparison Sample

Demographic Group	Largest Proportion of Remaining Active Duty Officers	MoAS (YoAS) of Largest Proportion
White Male	0.89	356 (19.7)
Black Male	0.16	162 (13.5)
Hispanic Male	0.12	170, 226 (14.2, 18.8)
Other Male	0.09	206 (17.2)
White Female	0.27	0 (0)
Other Female	0.12	101 (8.4)

2. Retention

Our 20.5 years of personnel data allow us to estimate retention by accession source over the entire military career. For each possible number of months served on active duty, we can observe the share of officers that served an additional month.¹⁸⁵ For example, 95.5% of USMA graduates we observe to have served 60 months served a 61st month. By taking the product of these shares up to a given month, we estimate the share of officers that would serve that many months. For example, if 99% of officers that served one month served a 2nd month, and 98% of officers that served two months served a third month, we can expect 97.02% of officers to serve at least three months.¹⁸⁶ We use this method to estimate the share of officers remaining at each possible number of months in an active duty career.

We caveat that the retention rates we compute are based on a shifting population of officers, as discussed above. The officers for whom we estimate early-career retention rates accessed later than the officers for whom we estimate late-career retention rates. This shifting is a natural consequence of the fixed time frame of our data. For example, the only officers we can observe having so far served 12 months must have accessed no earlier than January 1999. The only officers we can observe having so far served 252 months (21 years) must have accessed no later than June 1999. Therefore, the shares remaining on active duty we report should be interpreted as estimates based on a 20.5-year window of personnel records, not actual shares for a specific set of individuals. In particular, we are not able to calculate retention rates for any specific cohort over the entire potential military career. For the 2000 cohort we would only be able to observe retention up to 20.5 YoAS. For any more recent cohort the observed number of years is even shorter. For any less recent cohort we cannot observe retention in the years prior to 2000. However, by combining our observations across cohorts we can estimate retention rates over the entire potential military career.

Figure 4 plots our estimates of shares of officers remaining on active duty by months served for each service academy. For graduates of each of the academies, retention exhibits four phases:

- Zero to 60 months: 13% to 18% of graduates exit before the end of their ADSO
- 60 to 240 months: 46% to 55% of graduates exit after fulfilling their ADSO but before becoming eligible for retirement

¹⁸⁵ Because June 2020 is the most recent month in our data, we must exclude observations of officers in June 2020 from our calculation of the share serving an additional month.

¹⁸⁶ The retention rates in this example are unrealistically low for ease of exposition.

- 240 to 360 months: 23% to 29% of graduates retire before serving 30 years after serving for 20 years
- 360 to 480 months: Between 1.7% and 3% of graduates serve 30 or more years, some of whom are required to retire upon completing 30 YoAS¹⁸⁷

Differences in retention across the service academies are greatest in the middle two phases, between five and 30 YoAS. Between five and 20 YoAS, retention is greatest among USAFA graduates and least among USMA graduates. This pattern changes between 20 and 30 YoAS, where USNA graduates exhibit the highest retention and USAFA graduates exhibit the lowest retention. Up to six YoAS, all academies have a similar retention profile, with USAFA and USMA being the most similar; afterwards USNA and USMA graduates' retention is more similar, although all academies have distinct patterns over this time period.

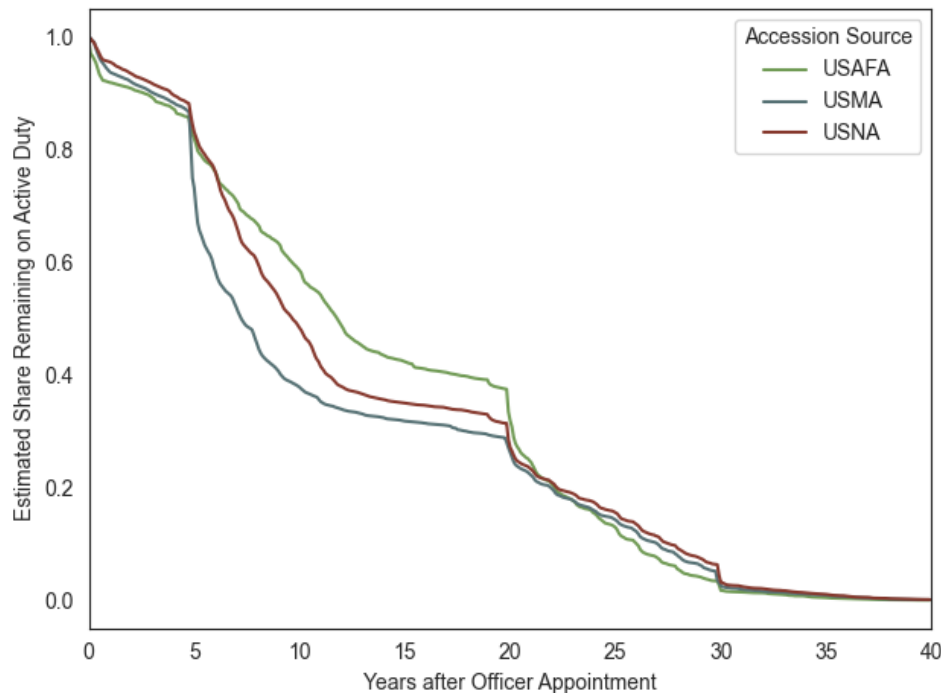


Figure 4. Active Duty Career Retention of Academy Graduates, January 2000 through June 2020

¹⁸⁷ 10 U.S. Code requires O-6s not recommended for promotion to retire upon completing 30 YoAS; Retirement for Years of Service: Regular Colonels and Navy Captains, 10 USC 634 (July 19, 2021), <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section634&num=0&edition=prelim>.

For each service academy, our estimate of the mean months served per graduate is the area under the corresponding curve in Figure 4. Table 9 reports those means. We estimate that USMA, USNA, and USAFA graduates serve for a mean of roughly 11.8, 13.1, and 13.8 years on active duty, respectively.

Table 9. Estimated Graduate Mean Months Served by Service Academy

Service Academy	Estimated Mean Months Served per Graduate	Estimated Mean Years Served Per Graduate
USAFA	165.1	13.8
USMA	141.2	11.8
USNA	157.2	13.1

Recall that our estimates depend on the time frame of available data. The time frame we choose represents a tradeoff between the quantity and recency of data. Using different time frames will change our results to the extent that academy graduates' retention behavior changed over time. To examine the sensitivity of our findings to the time frame, we repeat our analysis for time frames of January 2010 to June 2020, January 2015 to June 2020, and January 2019 to June 2020. Figures Figure 5, Figure 6, and Figure 7 plot shares remaining of academy graduates by months served in the same manner as Figure 4.

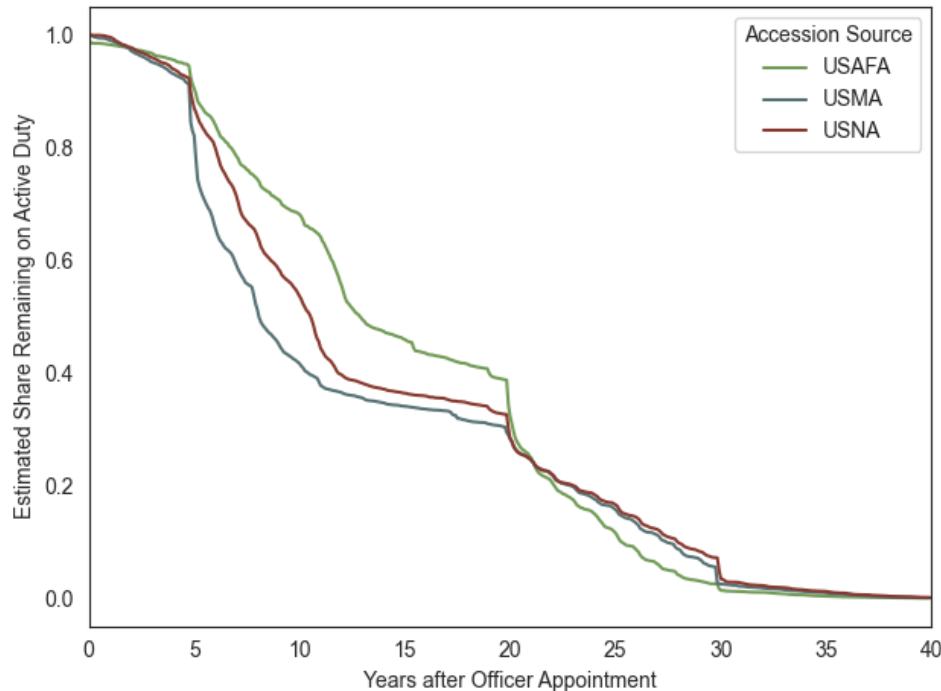


Figure 5. Active Duty Career Retention of Academy Graduates, January 2010 through June 2020

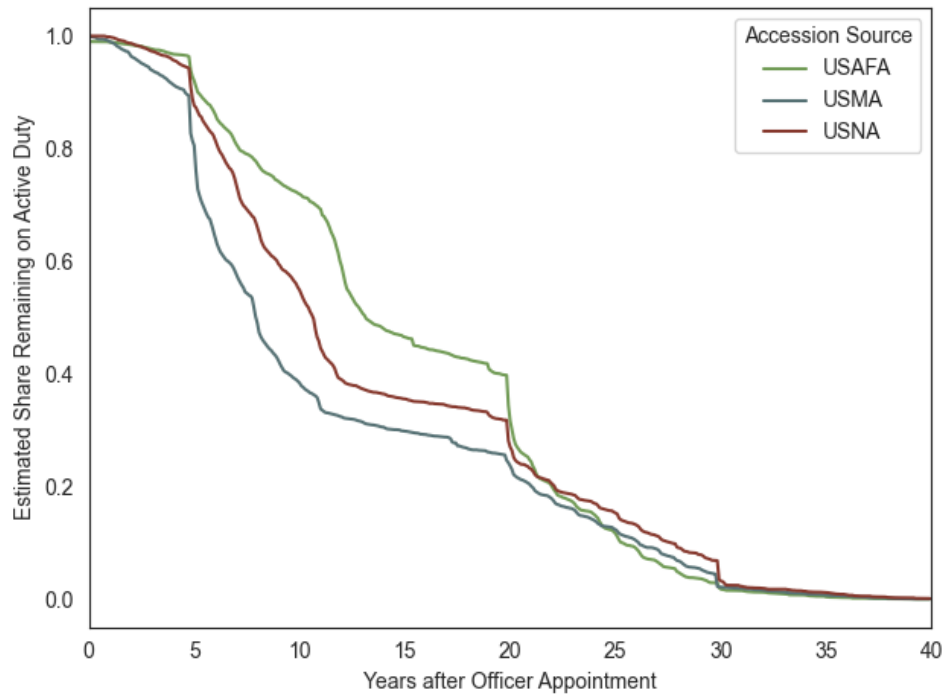


Figure 6. Active Duty Career Retention of Academy Graduates, January 2015 through June 2020

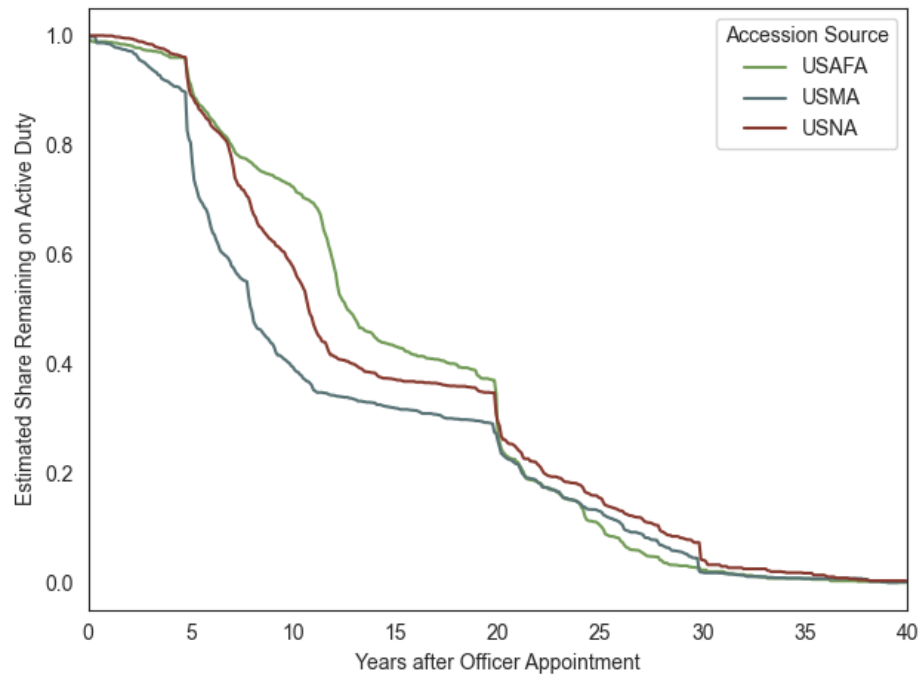


Figure 7. Active Duty Career Retention of Academy Graduates, January 2019 through June 2020

Table 10 reports estimated mean months served per graduate for each service academy for each of the time frames we considered. Our estimates for shorter but more recent time frames indicate that our original estimates of mean months served are low, if anything. Retention was higher for graduates of each academy in the 2010s than in the 2000s, and has remained higher in the most recent year of our data.

Table 10. Estimated Graduate Mean Months Served by Time Frame

Service Academy	2000-2020	2010-2020	2015-2020	2019-2020
USAFA	165.1	178.2	182.9	178.2
USMA	141.2	152.3	141.6	145.2
USNA	157.2	165.7	165.2	171.1

a. Explanation of Retention Differences Across Services

As discussed in section 1.C.2, some careers, especially pilots, have longer ADSOs than other officers. More pilots graduate from USAFA and USNA than USMA, which may provide some explanation for why the survival curve for these service academies have a higher predicted probability than USMA until 20 YoAS. To interrogate this hypothesis, we investigated the survival probabilities for those officers that served in pilot occupation codes at some point in their career during our 20 years of data.

In Figure 8, we show the estimated share of officers serving as pilots remaining on active duty over our full dataset. As expected, the share remaining on active duty is much higher for USAFA, in particular, than for the overall population of all graduates from USAFA in Figure 4. The mean YoAS that the average USAFA officer survives is three years longer for pilots than the population overall. Pilots in the Air Force have a six-year ADSO, while jet pilots have a 10-year ADSO, compared to the typical five years. For the other two service academies, the average survival is 2.1 years longer (13.9 YoAS versus 11.8 for USMA) and 2.8 years longer (15.9 YoAS versus 13.1 for USNA). Pilots are included in our population, so all following sections discussing career quality include both pilots and officers in other careers.

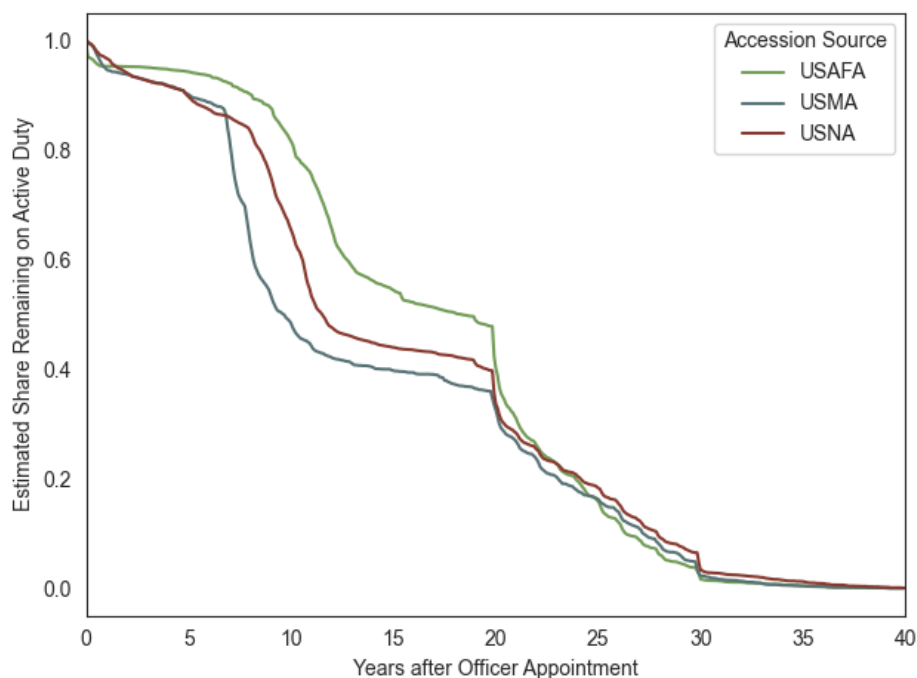


Figure 8. Active Duty Career Retention of Academy Graduates Serving as Pilots, January 2000 through June 2020

Table 11. Estimated Graduate Mean Months Served by Service Academy Pilots

Service Academy	Estimated Mean Months Served per Graduate	Estimated Mean Years Served Per Graduate
USAFA	201.3	16.8
USMA	167.4	13.9
USNA	183.8	15.9

b. Comparison to Other Accession Sources

Using our comparison sample, we can investigate the retention rates of officers not coming from a service academy. We do so in Table 12. Compared with USMA, USNA, and USAFA mean service times of 11.8, 13.1, and 13.8 years, officers from other accession sources serve an average of between 11.7 and 13.2 years. However, the only accession type that has an average service time above 13 years is non-scholarship ROTC/NROTC.

Table 12. Estimated Graduate Mean Months Served in the 20% Comparison Sample

Accession Source	Estimated Mean Months Served per Officer	Estimated Mean Years Served Per Officer
Direct Appointment, Other	145.0	12.1
Direct Appointment, Professional	139.8	11.7
OCS, AOCS, OTS, or PLC	148.9	12.4
Other	142.0	11.8
ROTC-NROTC Non-Scholarship	157.9	13.2
ROTC-NROTC Scholarship	150.9	12.6

We examine survival curves by accession source in Figure 9. Graduates of the service academies remain longer on average in the first five years, showing the impact of the five-year ADSO. From six to 15 YoAS, accessing from USMA results in the smallest survival probabilities, while accessing from USAFA results in the largest survival probabilities, and accessing from USNA is in the middle. After 15 YoAS, the DOD academies and ROTC/NROTC-accessed officers have the highest survival probabilities. After 20 YoAS, USAFA, USMA, and USNA graduates return to having the highest survival probabilities. In other words, graduates of these academies are most likely to stay through the first five years or after 20 years, but are sometimes more likely to leave than other officers during the crucial mid-career horizon of six to 20 years. ROTC/NROTC, in particular, are comparable or more likely to stay on active duty than academy graduates in many time horizons.

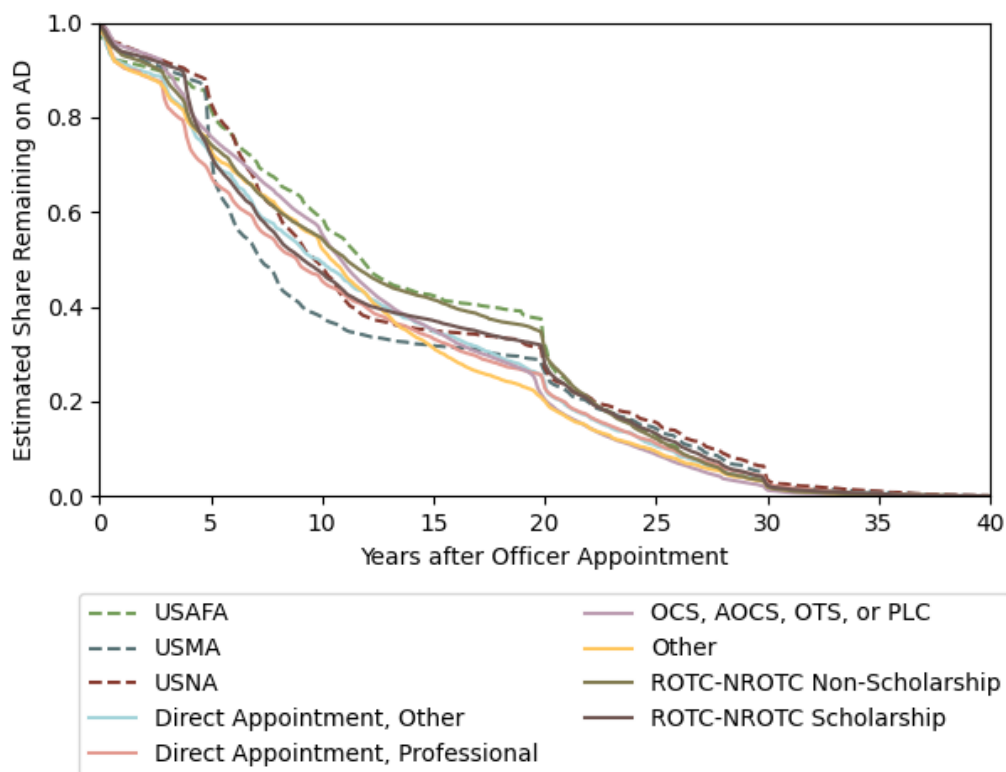


Figure 9. Survival Probabilities by Academies versus other Accession Sources

3. Career Quality

The benefits to the nation of an officer’s military career is not limited to the length of the time they serve. In this section, we examine many dimensions of career quality, including pay grade over time, days deployed, service as a commander currently or ever, service in special operations units, PME level, JPME level, and election to join the SELRES. For each dimension, we compute the distribution of outcomes over the careers of officers accessing from USAFA, USMA, and USNA. We use our results from the previous section on career duration to account for the outcome of leaving active duty. We then compare our results to analogous results for officers in the comparison subset.

a. Promotion

A service-member’s pay grade is an obvious indicator of success in a career. As is shown in Figure 10, the vast number of academy graduates progress over their careers at approximately the same points, with a small proportion being promoted earlier or later than their peers. Those officers that promote early are “Below the Zone,” those that promote at the regular time are “In the Zone,” while those that promote late are “Above the Zone.” While the specifics of this practice differ by service, 10 U.S. Code § 616 mandates that promotion boards may not allow “Below the Zone” to represent more than 10% of available

promotions unless this number is changed by the Secretary of Defense, who can only increase the maximum to 15%.¹⁸⁸ A very small proportion of graduates also decide to enlist or become Warrant Officers.

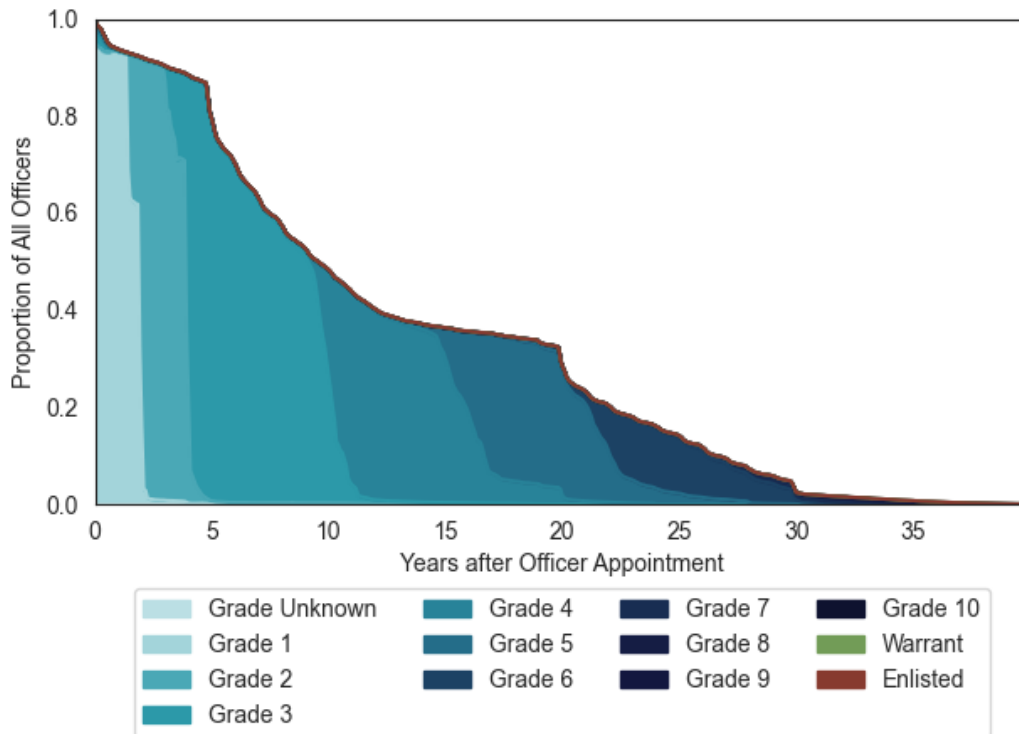


Figure 10. Pay Grade over Academy Graduate Careers

Figure 11 clarifies the patterns in Figure 10 by plotting the distribution of pay grades for those that remain at each MoAS. At the end of the five-year ADSO, nearly every graduate has reached Officer Grade 3, a Captain (Army, Air Force, and Marine Corps) or Lieutenant (Navy), the highest company grade or junior grade, respectively. Nearly every graduate that remains on active duty for more than 10 years is promoted to O-4, a Major (Army, Air Force, and Marine Corps) or Lieutenant Commander (Navy). Officers who do not progress to O-5 generally must retire by 20 YoAS¹⁸⁹, and the decision to remain is then determined by whether an officer can be promoted to higher grades. After 30 years, a high proportion of the academy graduates are Flag Officers, pay grades O-7 or higher. After 35

¹⁸⁸ Recommendations for Promotion by Selection Boards, 10 USC 616, U.S. (July 19, 2021), <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section616&num=0&edition=prelim>.

¹⁸⁹ Effect of Failure of Selection for Promotion: Captains and Majors of the Army, Air Force, and Marine Corps and Lieutenants and Lieutenant Commanders of the Navy, Pub. L. 10 USC 632 (July 19, 2021), <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section632&num=0&edition=prelim>.

years, however, the proportion of Flag Officers steadily decreases. Additional figures with proportions of officers being promoted, broken down by academy, are available in 7.Appendix C.

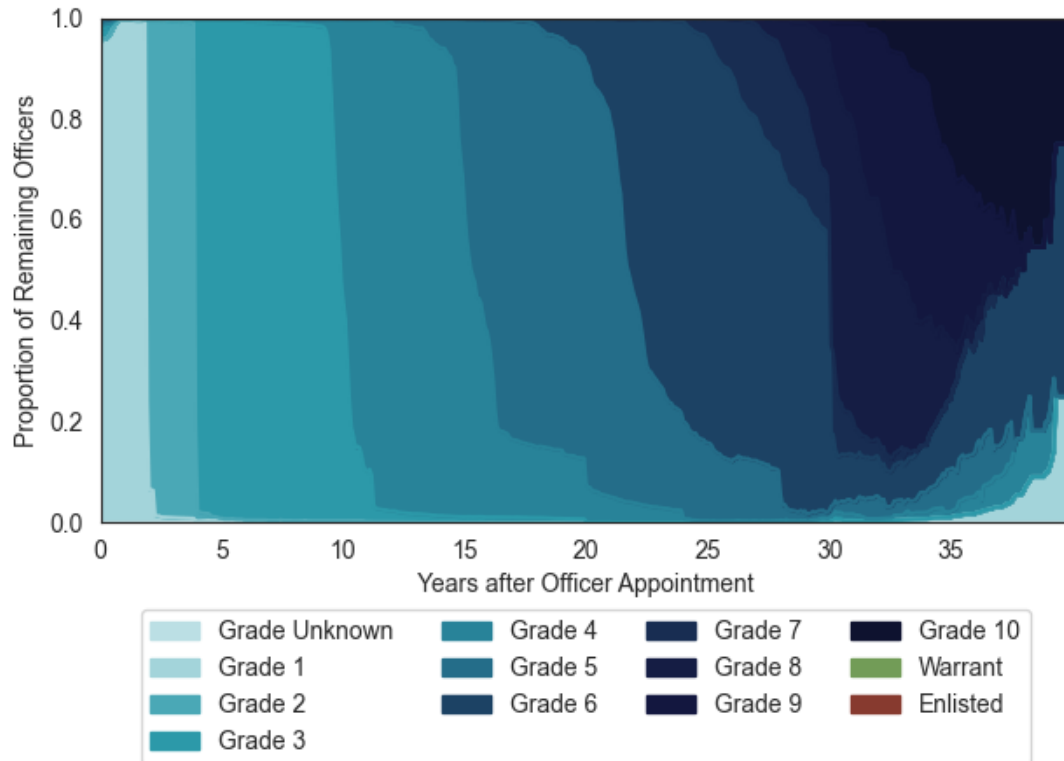


Figure 11. Pay Grade Distribution for Remaining Active Duty Officers

We also illustrate the differences in pay grade scales between academy graduates in Figure 10 and non-academy graduates in Figure 12, which are overall quite small. Unsurprisingly, non-academy graduates have greater variation in promotion dates within year, as these other types of officers are more dissimilar to each other than the graduates of the three academies. This dissimilarity can also be seen in that the comparison sample includes officers in medical and legal occupations who begin their careers at a pay grade above O-1. Another notable difference is that academy graduates that remain are more likely to be promoted to O-3, but are also more likely to stay at O-4 and finish out their twenty years. The shape of the survival probability plot, and why the curve in Figure 12 is much smoother than the curve in Figure 10, is explained by Figure 9. In summary, academy graduates exhibit sharper retention “cliffs” at five, 20, and 30 YoAS than other officers.

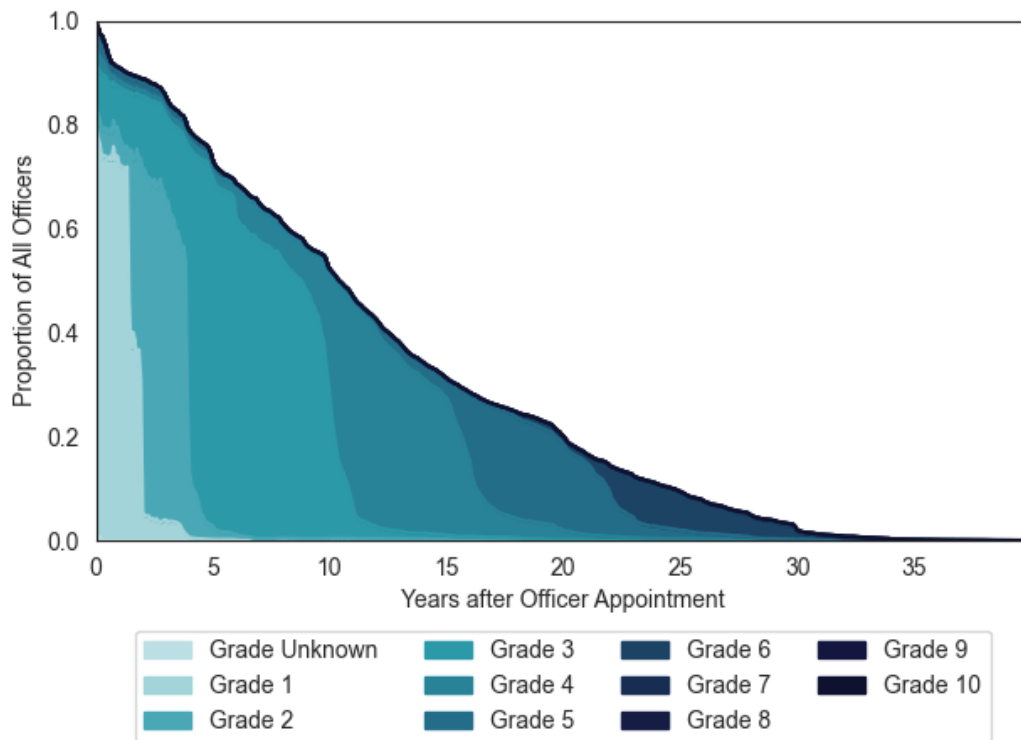


Figure 12. Pay Grade in Comparison Sample over Officer Careers

b. Command Selection

For an officer, the opportunity to command others is another obvious indicator of success and trust. Figure 13 illustrates the proportion of academy graduates that have never commanded, are currently commanding, formerly commanded, or are unknown. A small group of academy graduates gain command around their tenth year, as can be more easily seen in Figure 14. By around year 25, approximately 22% of remaining officers are commanding at any given time. The percentage of commanding officers stays large until around 34 YoAS when the proportion of currently commanding academy graduates begins to decrease again. Within this 23 to 34-year time period, between 40% and 50% of all remaining officers have previously commanded. The jump in “Never Commanded” at five years appears to be an artifact of how the Services reported command status over officers’ careers. DMDC confirmed that we cannot be sure that “Unknown” is the same as “Never Commanded.” Additional figures with the distributions of command status for remaining officers, broken down by academy, are available in 7. Appendix C.

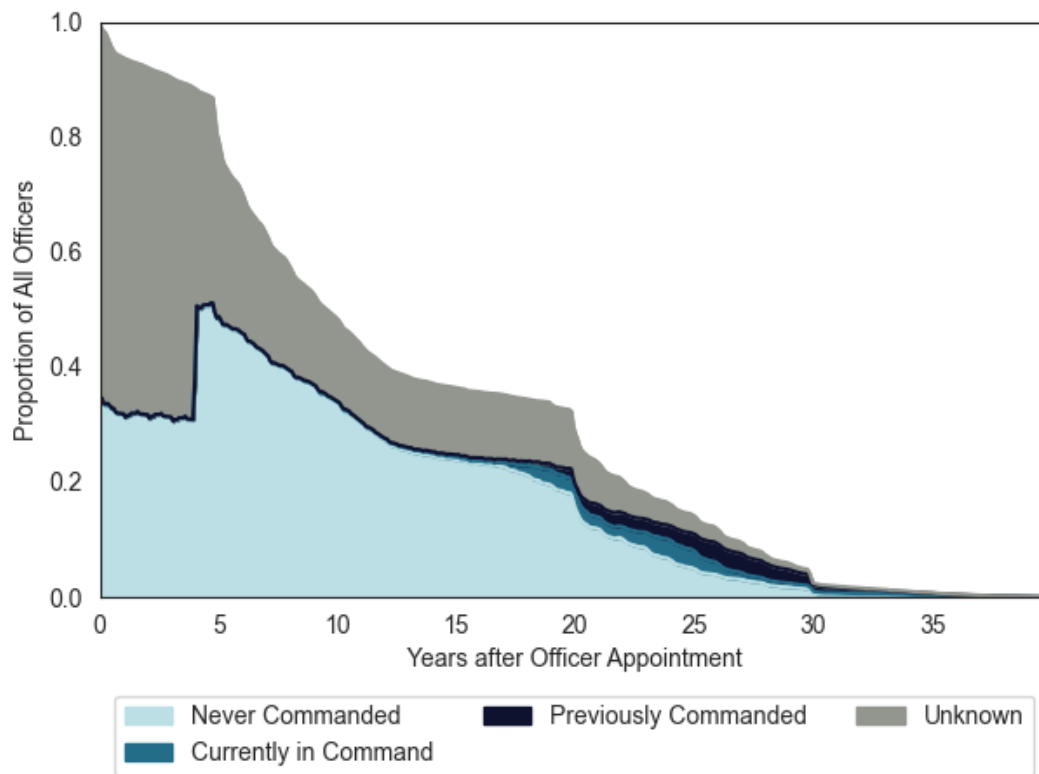


Figure 13. Command Status over Academy Graduate Career

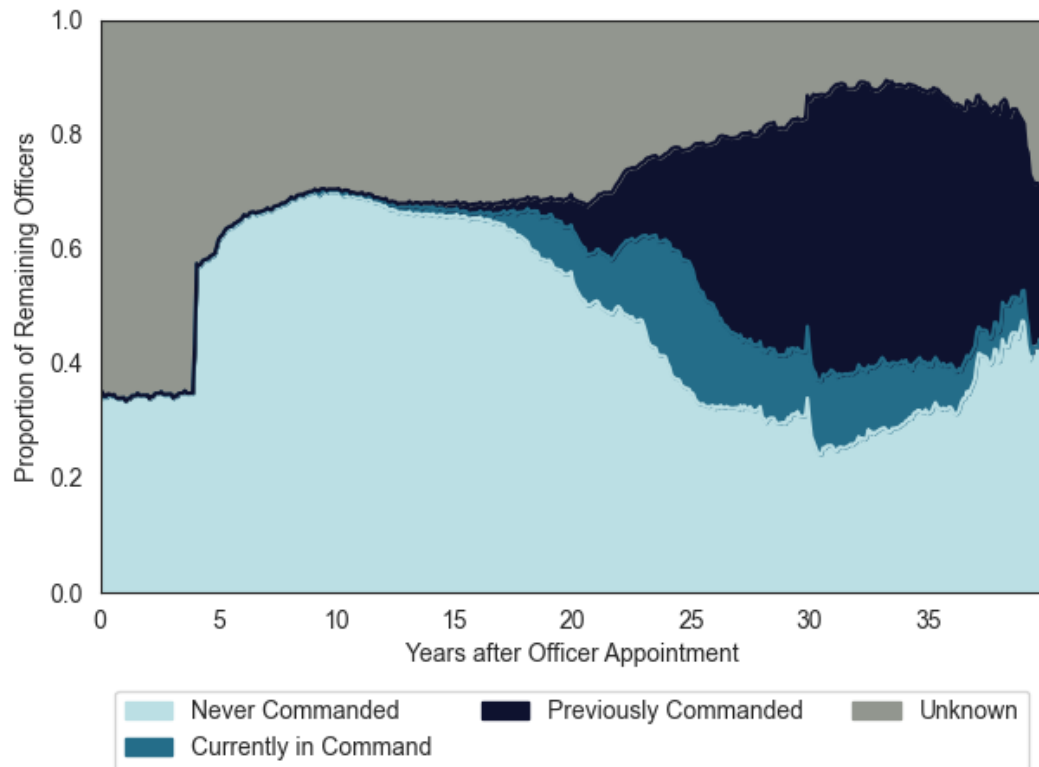


Figure 14. Command Status Distribution for Remaining Active Duty Officers

Table 13. Command Status Distribution Maximum Values

Command Status	Largest Proportion of Remaining Active Duty Officers	MoAS (YoAS) of Largest Proportion
Never Commanded	0.70	114 (9.5)
Currently in Command	0.22	293 (24.2)
Previously Commanded	0.51	374 (31.2)
Unknown	0.67	13 (1.1)

The differences between the command status distribution between academy graduates in Figure 14 and non-academy officers in Figure 15 is quite stark. At around 24 years, when about 22% of graduates are currently in command (Table 13), non-academy graduates reach about 17% in command. When we compare Table 13 and Table 14, academy graduates have a larger maximum proportion of both Previously Commanded (0.51 compared to 0.32) and Currently in Command (0.22 compared to 0.19) categories. It is important to point out, however, that non-academy graduates also have a much higher proportion of Unknown overall, even if the maximum number is very similar.

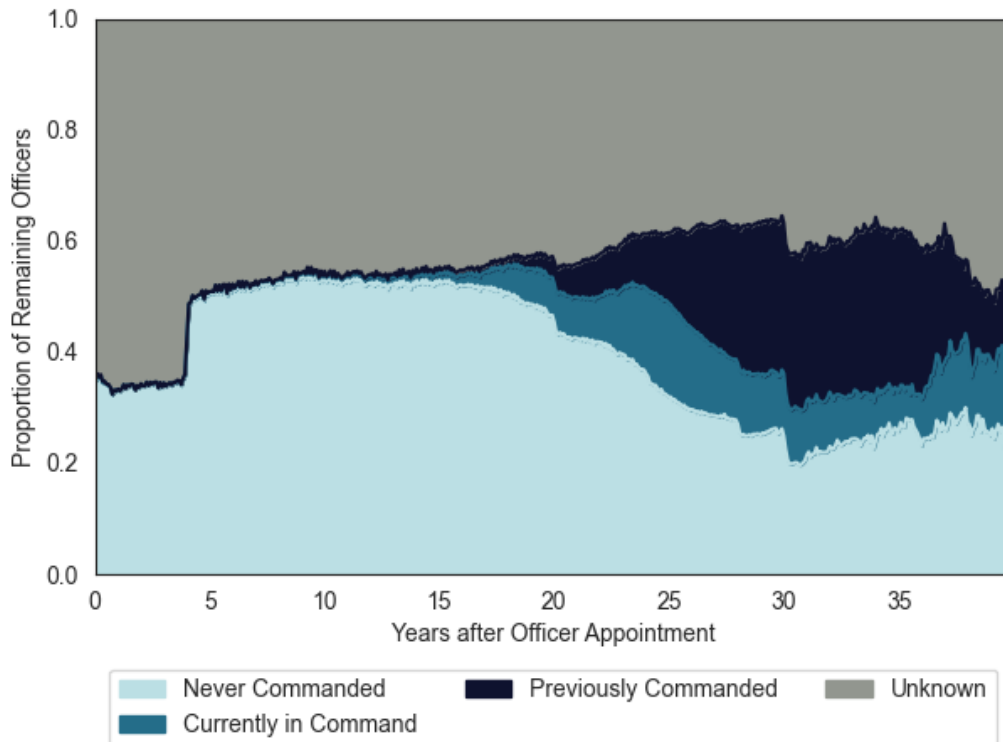


Figure 15. Command Status for Remaining Active Duty Officers in Comparison Sample

Table 14. Command Status Distribution Maximum Values for Comparison Sample

Command Status	Largest Proportion of Remaining Active Duty Officers	MoAS (YoAS) of Largest Proportion
Never Commanded	0.54	111 (0.8)
Currently in Command	0.19	479 (39.9)
Previously Commanded	0.32	408 (34.0)
Unknown	0.68	9 (1.1)

c. Selection to Senior Service Colleges

PME and JPME are types of education available to both enlisted service members and officers. For promotion, both officers and non-commissioned officers must oftentimes be selected for and then complete specific PME courses tied to their current or future pay grade. JPME is a specific type of PME that teaches cooperation between two or more services, created in part by the Joint Chiefs of Staff. The rules that govern these types of education are outlined in Officer Professional Military Education Policy, first created in 2005 and last updated on May 15, 2020.¹⁹⁰ Completion of courses from PME or JPME shows success in an officer's career, as well as the desire to learn and improve in their leadership and skills. Additional figures with the distributions of PME and JPME levels for remaining officers, broken down by academy, are available in 7.Appendix C.

1) PME

The majority of academy graduates participate in some type of PME before the end of their ADSO. As can be seen in Figure 16, at 59 months, about 54% of remaining academy graduates have participated in PME, the vast majority of them at the level of Initial Skill School. Between five and 10 YoAS, the proportion of remaining academy graduates having participated in PME rapidly increases from about half to about 80%, with most graduates at the level of Skill Progression School. After 10 years, officers begin to earn selection to Intermediate and Senior Service School at high rates, with almost 60% of remaining officers in Senior Service School by 36 years (Table 15).

¹⁹⁰ Joint Chiefs of Staff, "Officer Professional Military Education Policy," CJCSI 1800.01F (Washington, DC: JCS, May 2020), https://www.jcs.mil/Portals/36/Documents/Doctrine/education/cjcsi_1800_01f.pdf?ver=2020-05-15-102430-580.

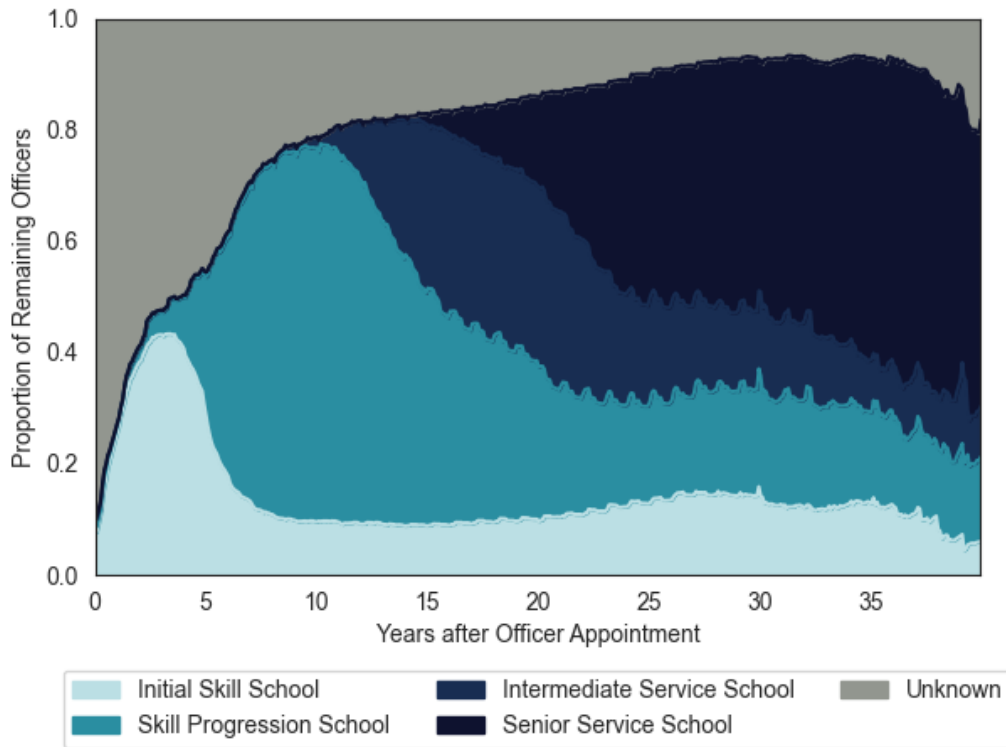


Figure 16. PME Level Distribution for Remaining Active Duty Officers

Table 15. PME Level Distribution Maximum Values

PME Level	Largest Proportion of Remaining Active Duty Officers	MoAS (YoAS) of Largest Proportion
Initial Skill School	0.43	41 (3.4)
Skill Progression School	0.68	122 (10.2)
Intermediate Service School	0.34	199 (16.6)
Senior Service School	0.59	437 (36.4)
Unknown	0.90	0 (0.0)

Like command status, the results in Figure 16 are quite different than Figure 17. From five through about 25 YoAS, about 45% of remaining officers from non-academy commissioning sources have participated in PME courses, which is vastly different than academy graduates, who reach this percentage before five years and then continue to always increase until after 35 YoAS. Additionally, although the maximum proportions are similar for Initial Skill School (0.43 versus 0.45) and Intermediate Service School (0.34 versus 0.37), according to Tables Table 15 and Table 16, the maximum proportions for Skill Progression School and Senior Service School are much higher for academy graduates than non-academy officers (0.68 versus 0.59 and 0.59 versus 0.41, respectively).

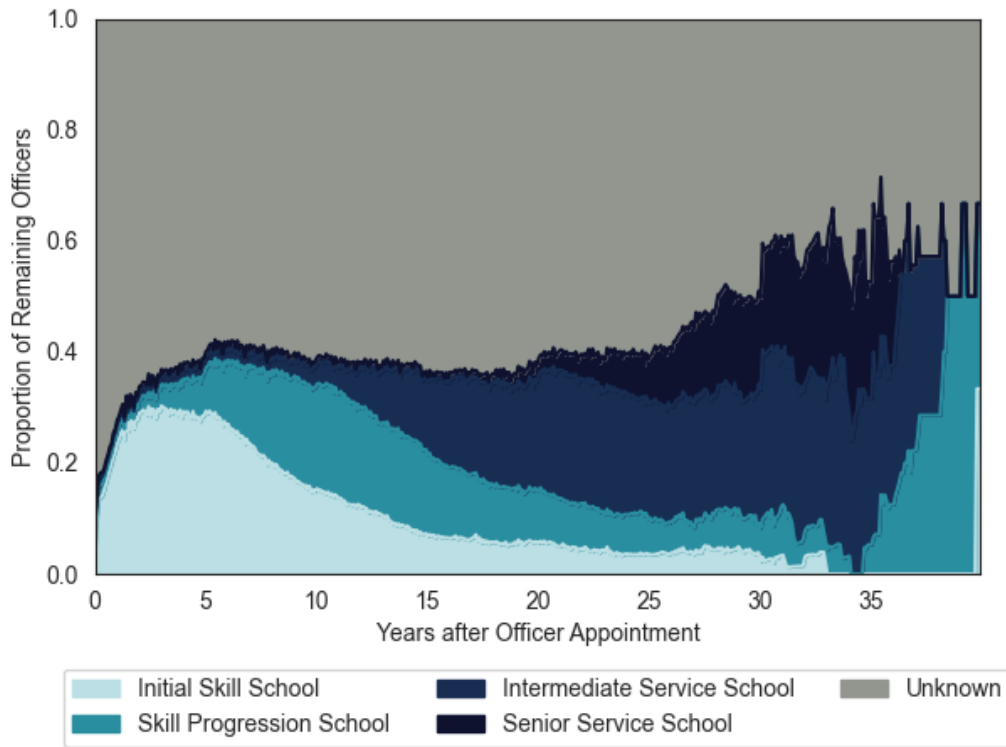


Figure 17. PME Level Distribution for Remaining Active Duty Officers in Comparison Sample

Table 16. PME Level Distribution Maximum Values in Comparison Sample

PME Level	Largest Proportion of Remaining Active Duty Officers	MoAS (YoAS) of Largest Proportion
Initial Skill School	0.45	37 (3.1)
Skill Progression School	0.59	114 (9.5)
Intermediate Service School	0.37	242 (20.2)
Senior Service School	0.41	426 (35.5)
Unknown	0.88	1 (0.1)

2) JPME

Officers graduating from the academies do not enroll in JPME courses until around nine YoAS, but do not reach a majority enrolled until after 15 YoAS, as can be seen in Figure 18. Academy graduates remain between 50% and 60% at the Initial JPME level from 15 to approximately 28 YoAS. Officers begin to attend Advanced courses at around 20 YoAS, peaking at 18% around 36 years, according to Table 17. Overall JPME qualification in our data peaks at about 75% around 25 YoAS.

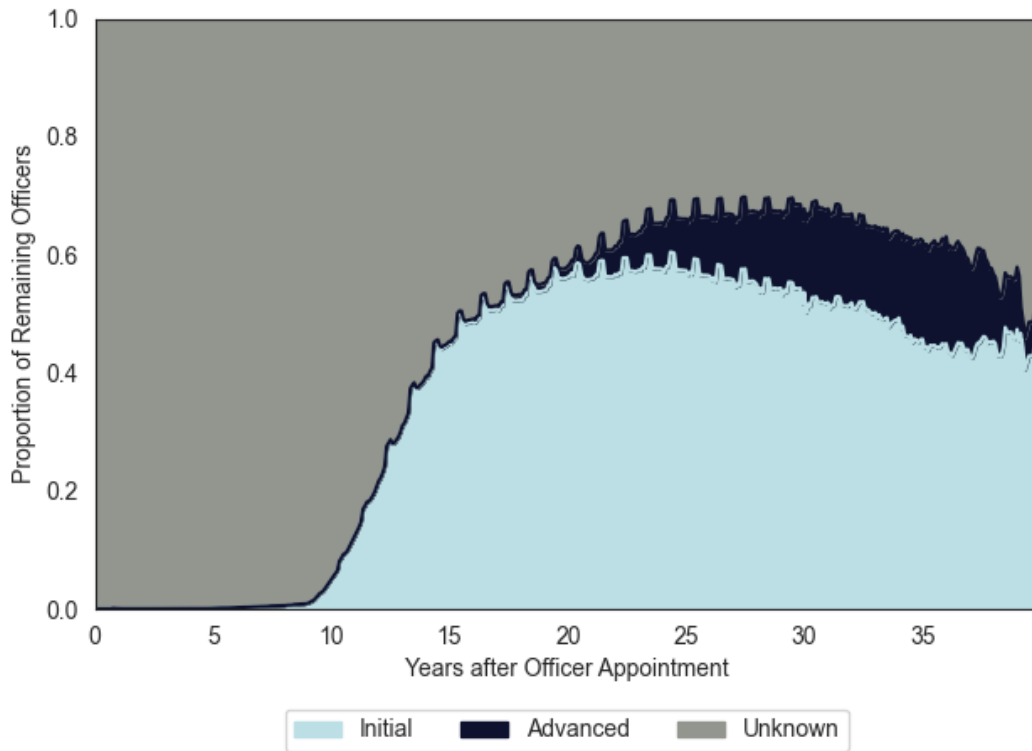


Figure 18. JPME Level Distribution for Remaining Active Duty Officers

Table 17. JPME Level Distribution Maximum Values

JPME Level	Largest Proportion of Remaining Active Duty Officers	MoAS (YoAS) of Largest Proportion
Initial	0.60	292 (24.3)
Advanced	0.18	122 (36.2)
Unknown	1.0	8 (0.67)

Like PME level, the distribution for JPME level for the comparison sample shows that proportionally less officers attend JPME courses if they did not graduate from an academy. Officers in the comparison sample do start attending JPME courses earlier, even within the first YoAS, although this is a very small proportion. Overall, the slope of the increase in the proportion of officers attending these courses is much less steep than that of officers from the academies. The proportion of “Unknown” is much higher overall, much like the PME results. Although the peak proportion of Advanced JPME for the comparison officers is similar (0.18 versus 0.16) according to Tables Table 17 and Table 18, officers from the academies have a much higher maximum proportion attending Initial JPME (0.60 versus 0.53). Overall, officers graduating from the academies are more likely to be selected for and attend PME or JPME courses if they remain on active duty.

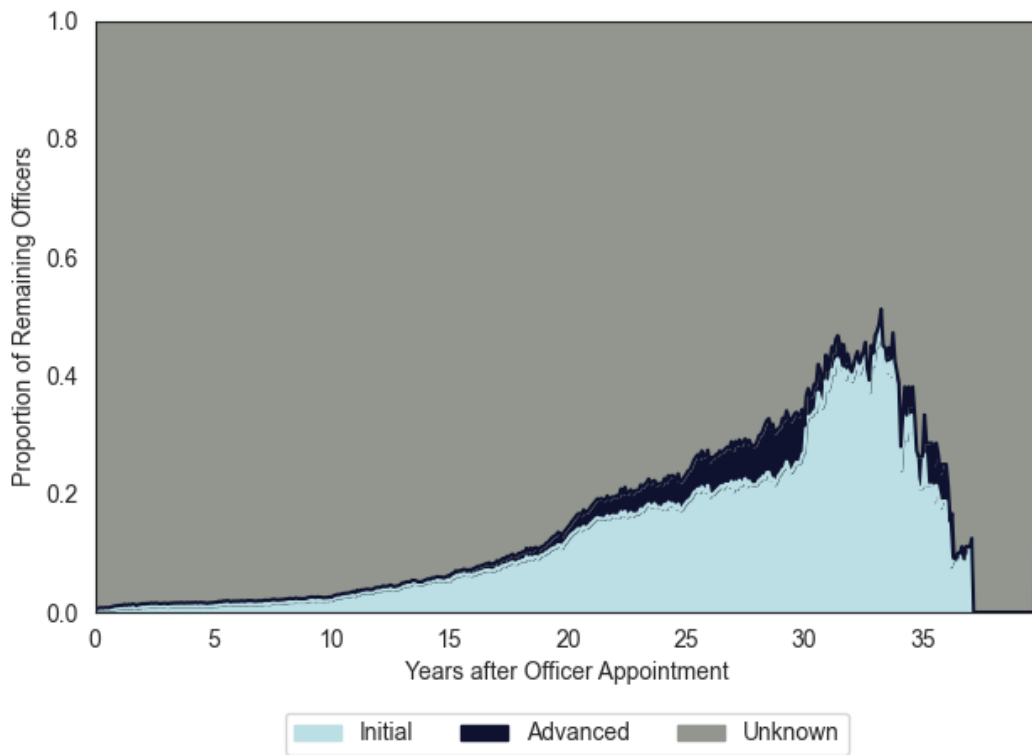


Figure 19. JPME Level Distribution for Remaining Active Duty Officers in Comparison Sample

Table 18. JPME Level Distribution Maximum Values in Comparison Sample

JPME Level	Largest Proportion of Remaining Active Duty Officers	MoAS (YoAS) of Largest Proportion
Initial	0.53	291 (24.3)
Advanced	0.16	464 (38.7)
Unknown	1.0	2 (0.2)

3) Election to Join the Selected Reserve

The continuation of a career with the military through the Selected Reserve after leaving active duty service shows that an officer continues to have dedication to service. The SELRES is the first reserve group in the reserves activated. Therefore, we investigate entrance into the SELRES as an element of career success. Figure 20 shows the proportion of officers leaving active duty at a certain MoAS that join or do not join the SELRES. It is important to note that, although we can observe a service-member entering the reserves, our data regarding the type of reserve service is only populated after May 2012. Thus,

anyone who left active duty and entered the reserves before 2013 are marked as “Unknown.” Due to this, we have truncated the figures at 20 YoAS, as basically all information about SELRES status is unknown after this point.

For officers that accessed through the academies, our populated data shows that until around seven YoAS, less than 30% of officers join the SELRES at the end of their active duty service. This proportion continues to increase overall, meaning that more MoAS before leaving the active duty correlates with more people joining the SELRES. This proportion peaks at 12.4 YoAS, where 77% of officers join the SELRES. After 16 YoAS, we can detect SELRES status less as the “Unknown” category begins to encompass larger proportions.

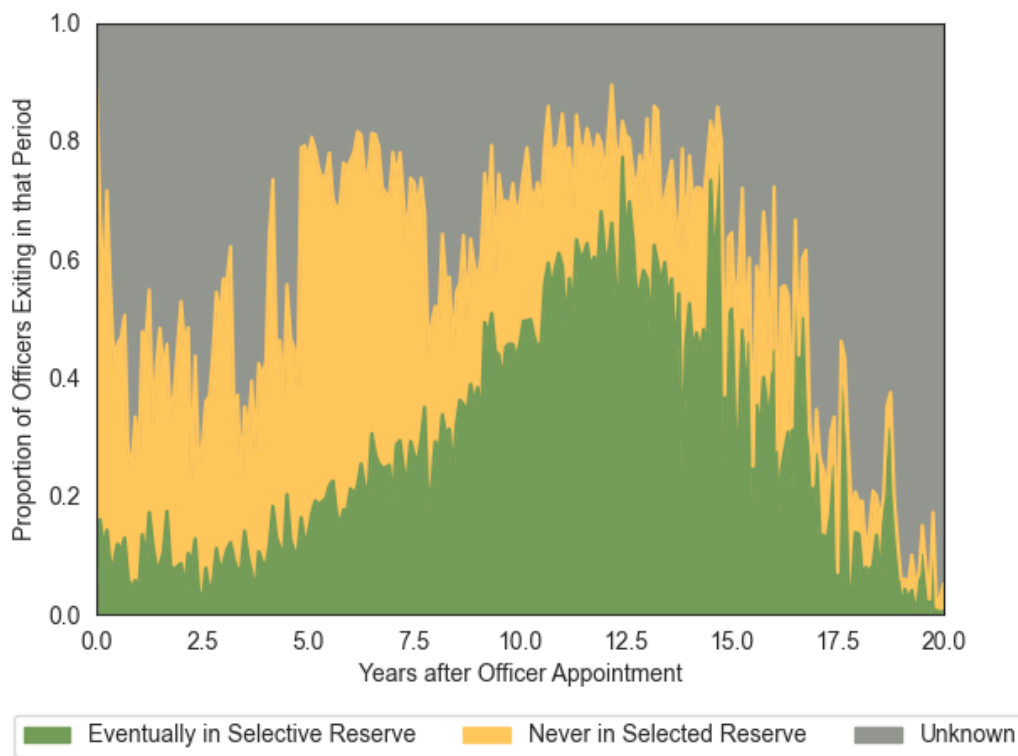


Figure 20. Election to the Selected Reserve at the end of Active Duty Service

Table 19. Election to the Selected Reserve Maximum Values

Election to the Selected Reserve	Largest Proportion of Officers Leaving at that MoAS	MoAS (YoAS) of Largest Proportion
Selective Reserve	0.77	149 (12.4)
Never in the Selected Reserve	0.88	0 (0.0)
Unknown	0.99	238 (19.8)

In the comparison sample, we have higher proportions of officers that left after 2013 with smaller total YoAS, which is why exit before 10 YoAS has smaller proportions of “Unknown” than those officers that graduated from the academies. Even though we can know the SELRES status for a greater share of officers from the comparison sample as a result, this confirms that officers not accessing from an academy are much less likely to join the SELRES after leaving active duty. The highest proportion for joining the SELRES at any exit time period is 53%, which occurs at 0 MoAS. Overall, the proportion of officers we know joined the SELRES hovers between about 15 and 40%, with the average being around 20%.

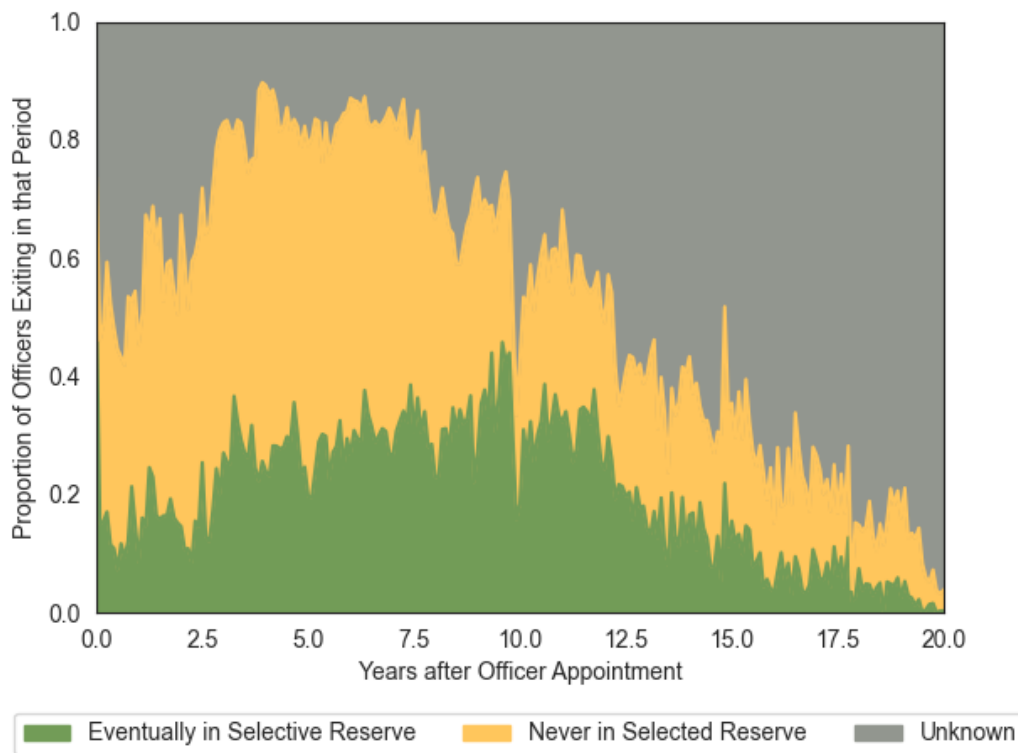


Figure 21. Election to the Selected Reserve at the end of Active Duty Service in Comparison Sample

Table 20. Election to the Selected Reserve Maximum Values in Comparison Sample

Election to the Selected Reserve	Largest Proportion of Officers Leaving at that MoAS	MoAS (YoAS) of Largest Proportion
Selective Reserve	0.53	0 (0)
Never in the Selected Reserve	0.66	46 (3.8)
Unknown	0.97	239 (19.9)

d. Time Spent Deployed

Like the other measures of career quality discussed here, deployment is a measure of the trust the service has in an officer. Deployment can also lead to faster advancement in promotion status, for instance. Officers that graduate from the academies are very unlikely to deploy before 40 MoAS, which represents a small peak in deployment of 17%. This rate stays fairly steady, slightly decreasing to around 12% until 30 YoAS, where the proportion increases to 20%. This rate then slowly increases over time, peaking at 33% at almost 40 YoAS. It is important to note that our deployment data, based on the deployment files from DMDC, counts a different duty station from a flag officer's normal assignment as a deployment. We believe this accounts for the increases in the proportion of deployed officers after 30 YoAS.

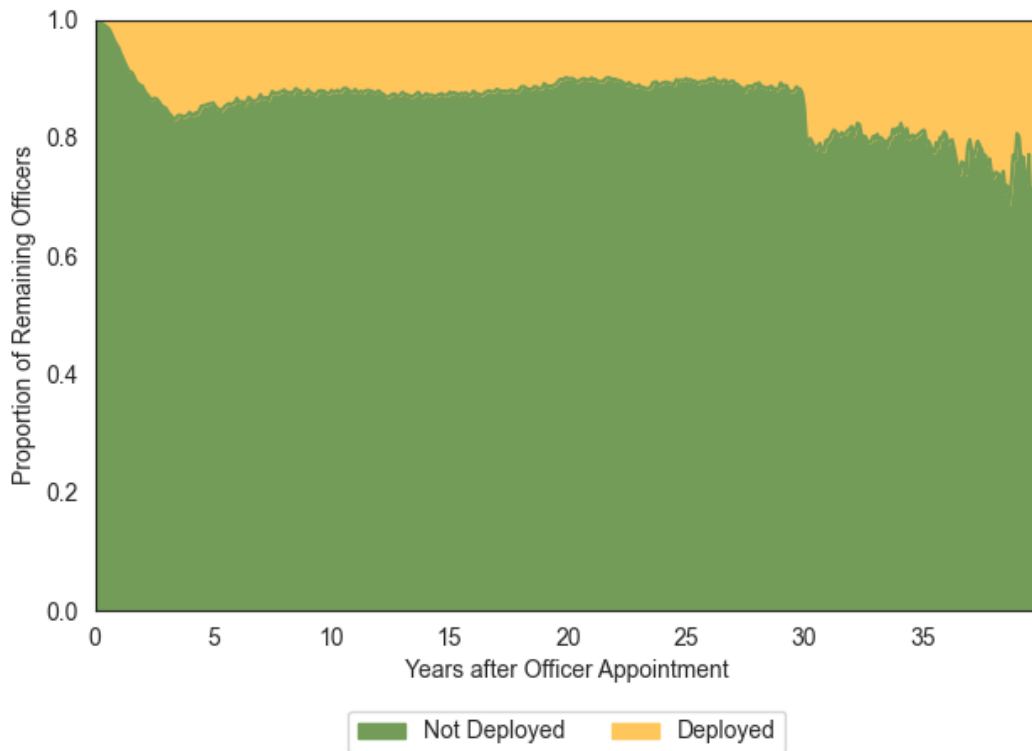


Figure 22. Deployment Status Distribution for Remaining Active Duty Officers

Table 21. Deployment Status Distribution Maximum Values

Deployment Status	Largest Proportion of Remaining Active Duty Officers	MoAS (YoAS) of Largest Proportion
Deployed	0.33	469 (39.9)
Not Deployed	1.0	0 (0)

The comparison sample has a similar-looking distribution to officers from the academies, but we can see that at all points in the careers of the comparison officers, a smaller proportion is deployed. The increase in deployment in the first few years also happens in the comparison sample, but the peak is lower (13.5% at 38 MoAS). The steady period until around 30 YoAS hovers around 9% deployed. The deployments for flag officers are also much less for the comparison officers, with the max deployed proportion being 23% at 463 MoAS compared to 33% at 469 MoAS. Even beyond the smaller maximum proportion, the proportion of officers deployed after 30 YoAS for graduates of the academies is much larger over the whole period from 30 to 40 YoAS.

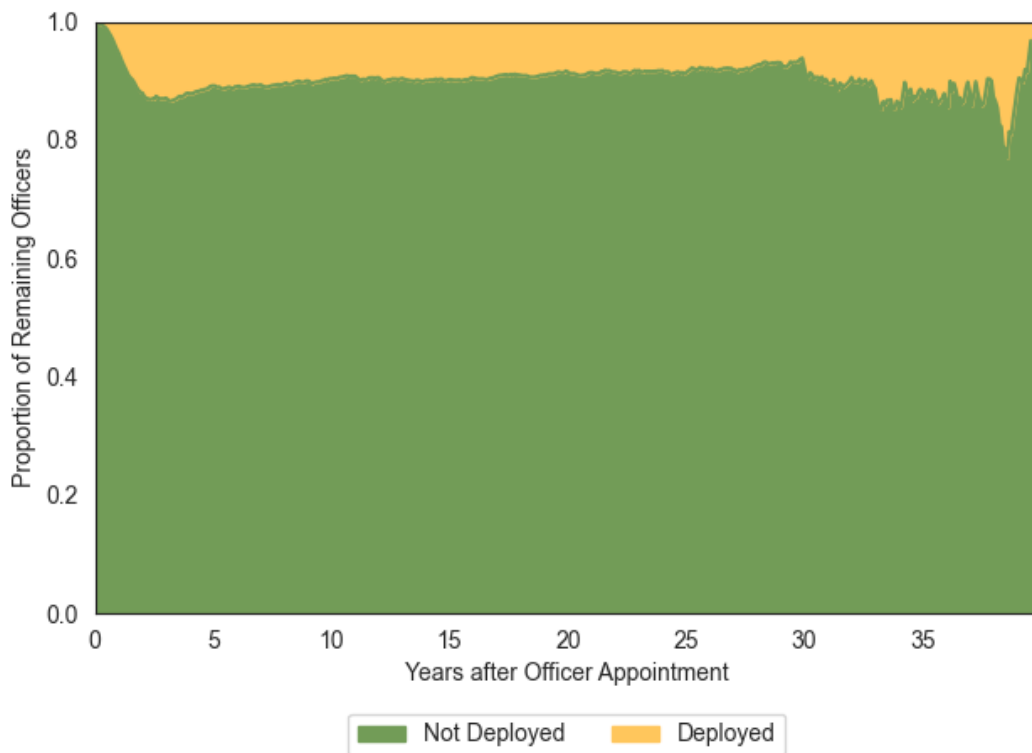


Figure 23. Deployment Status Distribution for Remaining Active Duty Officers in Comparison Sample

Table 22. Deployment Status Distribution Maximum Values in Comparison Sample

Deployment Status	Largest Proportion of Officers Leaving at that MoAS	MoAS (YoAS) of Largest Proportion
Deployed	0.23	463 (38.6)
Not Deployed	1.0	0 (0)

B. Contributions to the Nation Beyond Military Service

While excellence in military service is necessarily a key aspect of the importance of the military academies, graduates also contribute in impactful ways in many private and public sectors. Notable alumni of the academies have aided through leadership and innovation to public service, international relations, business, academia and education, and charity, to name a few. Throughout this section, we will highlight some notable alumni, but we recognize we cannot discuss all of the significant accomplishments completed by graduates. We pick examples with an eye toward recency, using information from the alumni pages on the academy websites along with data provided to us by the West Point Association of graduates.

The academy websites show that many alumni pursue jobs in the public sector, with positions ranging from mayors, directors of government agencies, cabinet members, and members of Congress, to even the presidency. An USAFA graduate, Chuck Reed, Class of 1970, served as the Mayor of San Jose, California, from 2007 to 2014.¹⁹¹ USAFA has had two elected members of Congress, Heather Wilson, Class of 1982, and Martha McSally, Class of 1988.¹⁹² USMA also has notable public servants, including Barry R. McCaffrey, Class of 1964, the former Director of the Office of National Drug Control Policy John Block, Class of 1957, former Secretary of Agriculture; Mike Pompeo, Class of 1986, former representative of Kansas' 4th District, CIA Director and Secretary of State; and Mark Esper, former Secretary of the Army and Secretary of Defense.¹⁹³ USNA's Anthony Principi, Class of 1967, served as the Secretary of Veteran's Affairs under the Bush Administration from 2000 to 2005.¹⁹⁴ USNA has also had 26 graduates become members of Congress, including as recently as 2019, when Representative Elaine Luria, Class of 1997, was elected to Virginia's 2nd District and Representative Mikie Sherrill, Class of 1994, was elected to New Jersey's 11th District.¹⁹⁵ Dennis C. Blair, Class of 1968 and a Rhodes Scholar, served as the president of the Institute for Defense Analyses and the third Director of National Intelligence before becoming the Knott Professor of Practice at the University of North Carolina.¹⁹⁶ President Jimmy Carter also graduated from USNA in the

¹⁹¹ "USAFA Grads in Public Service," Association of Graduates, United States Air Force Academy website, accessed June 11, 2021, https://www.usafa.org/Heritage/Public_Service.

¹⁹² Association of Graduates, United States Air Force Academy website, "USAFA Grads."

¹⁹³ "Notable Graduates," United States Military Academy website, accessed June 11, 2021, <https://www.westpoint.edu/about/history-of-west-point/notable-graduates>.

¹⁹⁴ Ibid.

¹⁹⁵ "Notable Graduates: Members of Congress," United States Naval Academy, accessed June 11, 2021, <https://www.usna.edu/Notables/congress/index.php>.

¹⁹⁶ "Dennis C. Blair," The National Bureau of Asian Research website, accessed June 11, 2021, <https://www.nbr.org/people/dennis-c-blair/>.

Class of 1947. He was awarded the Nobel Peace Prize in 2002, earning the second Nobel Prize for the academy.¹⁹⁷

The academies also admit and train a select number of international students from partner nations, encouraging strong alliances for the United States. These graduates then return to their home nations and often become leaders in their militaries and governments. This education is especially exemplified through the International Cadet program at USMA. Antonio Barrios, Class of 1889, was West Point's first graduate of this program. He eventually became the minister of public works in Guatemala.¹⁹⁸ Fidel V. Ramos, Class of 1950, worked his way through the military and government of the Philippines and eventually became the President of the Republic of the Philippines from 1992 through 1998.¹⁹⁹ The data supplied by the West Point Association of Graduates shows that USMA's International Cadets have also served, and currently serve, in the militaries and governments of countries such as Guatemala, the Philippines, Slovenia, Turkey, the Republic of Korea, Malaysia, Singapore, Thailand, Cameroon, Taiwan, Paraguay, the Czech Republic, Nigeria, Colombia, Venezuela, Cambodia, Romania, and Zimbabwe.

Graduates from the academies have also made significant impacts in the business world, including founding, running, and leading many large corporations. Some recent graduates of USMA include Anthony Noto, Class of 1991, the Chief Financial Officer (CFO) of Twitter; Joe DePinto, Class of 1986, the Chief Executive Officer (CEO) of 7-Eleven; Alex Gorsky, Class of 1986, the CEO of Johnson & Johnson; and James V. Jimsey, Class of 1962, the founder and chairman of American On Line (AOL) and founder of the Kimsey Foundation.²⁰⁰ Graduates from the Air Force Academy include Scott Kirby, Class of 1989, President of United Airlines; Linda Cubero, Class of 1980, the first Hispanic woman to graduate from the academy and a businesswoman named in the "100 Most Influential Hispanics" by *Hispanic Business Magazine*; Dave Yost, Class of 1969, former CEO of AmerisourceBergen and ranked in the top 100 CEOs in the world; and Harry Pearce, Class of 1964, former Vice Chairman and former director of General Motors Corporation and former director of Hughes Electronics Corporation.²⁰¹ USNA, likewise, has influential

¹⁹⁷ "President of the United States," United States Naval Academy website, accessed June 11, 2021, <https://www.usna.edu/Notables/presidents/index.php>.

¹⁹⁸ United States Military Academy website, "Notable Graduates."

¹⁹⁹ Ibid.

²⁰⁰ Ibid.

²⁰¹ "Graduate Displays," Association of Graduates, United States Air Force Academy website, accessed June 11, 2021, <https://www.usafa.org/Heritage/FalconCenter>; William Arthur Atkins, "Dave Yost 1947—," reference for Business, accessed June 11, 2021, <https://www.referenceforbusiness.com/biography/S-Z/Yost-Dave-1947.html>.

alumni in this sphere. John Geisse, Class of 1941, was the founder of Target Stores.²⁰² Steve Reinemund, Class of 1970, graduated from the Academy and then served as the chairman and CEO of PepsiCo from 2001 to 2006 before becoming the dean of the Schools of Business at Wake Forest University, eventually becoming a Senior Advisor in 2014. He also sits on many influential boards, including Walmart, Chick-fil-a, and the Naval Academy Foundation, to name a few.²⁰³

Mr. Reinemund is also not alone in leading a department in a university. Many academy graduates have gone on to teach at, lead in, or head universities. Heather Wilson, USAFA Class of 1982, former Congresswoman, and former Secretary of the United States Air Force, is the current president of the University of Texas at El Paso.²⁰⁴ Chris Howard, USAFA Class of 1991, distinguished college football athlete, and Rhodes Scholar, is the president of Robert Morris University.²⁰⁵ Ronald K. Machtley, USNA Class of 1970 and a former member of the US House of Representatives, is also the former president of Bryant University.²⁰⁶

The data provided by the West Point Association of Graduates provides a more in-depth picture of the manner in which graduates can be impactful in academia and education. The graduates listed include a few presidents of universities, but also include vice presidents, deans, directors, and chairs. Graduates also lead by educating the next generation, both in universities, colleges, and lower schools, through being professors, lecturers, instructors, coaches, and teachers. These graduates are employed in numerous fields, from science to art to history.

Graduates are also researchers. Most famously, Albert A. Michelson, USNA Class of 1873, earned the Nobel Prize in Physics in 1907, making him the first American to earn a Nobel Prize in the sciences.²⁰⁷ The West Point Association of Graduates data shows many

²⁰² “J. F. Geisse, 71, Who Founded Discount Stores,” *The New York Times*, February 27, 1992, <https://www.nytimes.com/1992/02/27/us/j-f-geisse-71-who-founded-discount-stores.html>.

²⁰³ “Steve Reinemund - Senior Advisor,” G100 website, accessed June 11, 2021, <https://g100network.com/team/steve-reinemund>.

²⁰⁴ “President’s Biography,” University of Texas at El Paso website, accessed June 11, 2021, <https://www.utep.edu/about/presidents-bio.html>.

²⁰⁵ “Dr. Howard’s Biography,” Robert Morris University website, accessed June 11, 2021, <https://www.rmu.edu/about/president/bio>.

²⁰⁶ Bryant University Staff Writer, “Bryant University President Ronald K. Machtley Steps down After 24 Years, Leaving a Transformed Institution as His Legacy,” Bryant University, June 25, 2020, <https://news.bryant.edu/bryant-university-president-ronald-k-machtley-steps-down-after-24-years-leaving-transformed>.

²⁰⁷ Isaac Asimov, “A.A. Michelson: American Scientist,” *Encyclopedia Britannica*, May 5, 2021, <https://www.britannica.com/biography/A-A-Michelson>.

researchers and scientists in fields such as data science, engineering, and robotics. Many of these scientists hold senior positions in their respective fields.

Academy graduates have also significantly contributed to charity work by running charitable organizations, founding major non-profits, and giving back to their own communities. The Air Force Academy particularly highlights charity on their alumni websites. An example is Richard “Dick” Schlosberg, III, Class of 1965, the former Publisher and CEO of the *Los Angeles Times*, who was the former CEO of the David and Lucile Packard Foundation, a foundation that contributes billions of dollars to non-profit organizations, and the former chair of the board at the Kaiser Family Foundation.²⁰⁸

Beyond just the biggest charitable organizations, the Air Force Academy particularly highlights alumni that participate in charity and service, both through corporations and individually on their website. Some of the recent stories include that of Brigadier General (Ret.) Bob Ranck, Class of 1982, president and CEO of Orbis International, a non-profit that flies into countries to perform free eye care for communities in need. As of the time of the story, Orbis International has flown to 22 different countries.²⁰⁹ Another USAFA graduate, Kristine Marlow, Class of 1992, is the president and CEO of the Montgomery County Food Bank in Texas.²¹⁰ Other graduate stories include that of Sal Speziale, Class of 1978, the owner of an Italian Restaurant called Cioa Osteria, who has donated over 7,000 meals to first-responders in the COVID-19 pandemic; and Diann Boyle, Class of 1983, who volunteered with the Siyafunda Endangered Species Project and Wildlife Conservation in South Africa.²¹¹

C. Contributions to the Prestige of the Academies

The Service Academies are for the most part held in high regard by the public, media, and their peers. Factors this report will discuss regarding the prestige of the academies include their admissions selectivity, the quality of faculty, how they compare to other colleges and universities, and how they are viewed in the press. This section will also touch on how the academies draw in and connect to the public, how they interact with the

²⁰⁸ “Board of Directors,” United States Air Force Academy Foundation website, accessed June 11, 2021, <https://www.afacademyfoundation.org/s/1885/rd19/interior.aspx?sid=1885&gid=2&pgid=552>.

²⁰⁹ “AOG Service Spotlight: Bob Ranck ‘82,” Association of Graduates, United States Air Force Academy website, accessed June 11, 2021, <https://www.usafa.org/Service/Spotlight-Mar2020>.

²¹⁰ “AOG Service Spotlight: Kristine Marlow ‘92,” Association of Graduates, United States Air Force Academy, accessed June 11, 2021, <https://www.usafa.org/Service/Spotlight-December2020>.

²¹¹ “AOG Service Spotlight: Grads Answering the COVID-19 Call,” Association of Graduates, United States Air Force Academy website, accessed June 11, 2021, <https://www.usafa.org/Service/Spotlight-Apr2020>; “AOG Service Spotlight: Service Before Self Challenge Participants,” Association of Graduates, United States Air Force Academy website, accessed June 11, 2021, <https://www.usafa.org/Service/Spotlight-August2020>.

Nation’s lawmakers to determine the best way to develop young officers, and the success of academy graduates when they complete their military service and begin contributing to civilian employment.

1. Student-Faculty Ratio and Service Academy Selectivity

As discussed in chapter 2, small class sizes and frequent interaction with faculty are associated with many positive impacts for students. The academies have unusually small class sizes compared to other prestigious institutions as well as other colleges their size.²¹² As of 2019, both USMA and USAFA have a student-to-faculty ratio of 7:1, and USNA is 8:1. Historical data indicates the ratio has not exceeded 10:1 for any of the service academies since 2009.²¹³

Another commonly used indicator of an institution’s quality is a large number of applicants, allowing the school to select students with the greatest ability. Figure 24 shows the academies receive numerous applications each year, with USNA consistently receiving the most (this may be a reflection of USNA ranking high among other higher education institutions across the country as discussed in the next section). Figure 24 also shows the difference in number of applicants between academies has grown over time. The lighter lines indicating male applicants, show all the academies are attracting more males than females, but the male majority has gone down from an average of 78% in 2009 to an average of 71% in 2019. In recent years, the largest proportion of women (~31%) are applying to USAFA, but the difference between academies is slight.

²¹² United States Naval Academy. *The Blue and Gold Book*; United States Military Academy website, “Academics”; United States Air Force Academy, “Minutes Of The Regular Meeting Board of Visitors (BoV).”

²¹³ “Integrated Postsecondary Education Data System,” National Center for Education Statistics, accessed May 5, 2021, <https://nces.ed.gov/ipeds/datacenter/InstitutionByName.aspx?goToReportId=1>.

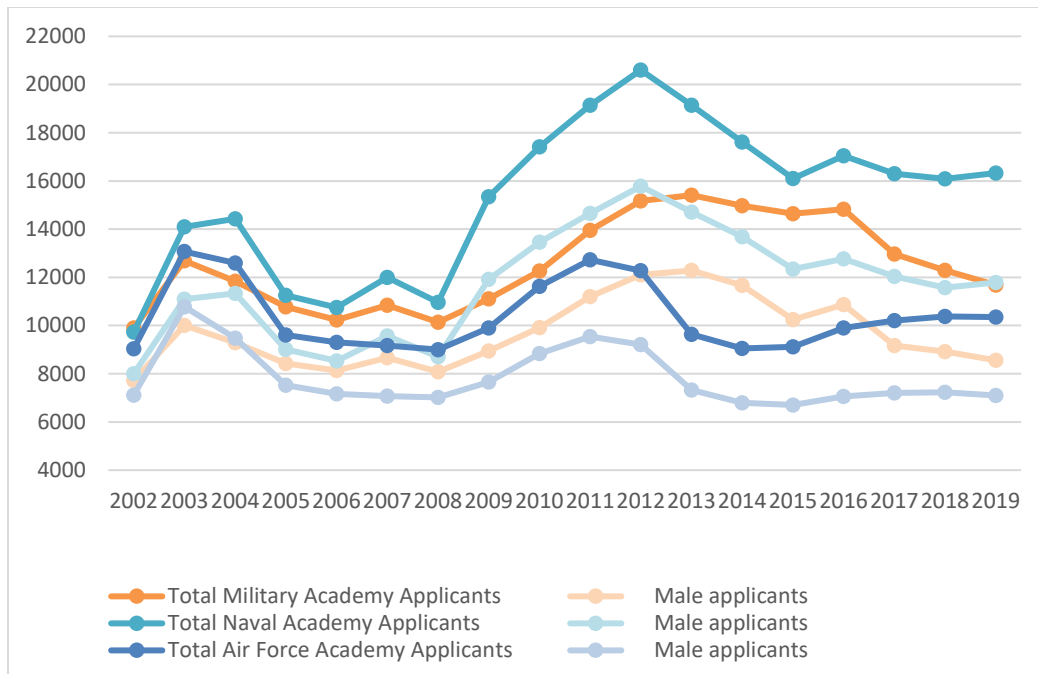


Figure 24. Number of Applicants to the Service Academies, 2002-2019²¹⁴

Attendance at a highly selective college that accepts only a small percentage of applicants is associated with higher college graduation rates²¹⁵ and greater career success as measured by earnings.²¹⁶ Though the data suggests these positive relationships are more likely due to the high student quality that selective schools are able to obtain.²¹⁷ College selectivity also positively predicts job performance and promotion for Naval officers.²¹⁸ All three academies were in the top 35 colleges with the lowest acceptance rates of 2021.²¹⁹ As depicted in Figure 25, all three service academies offer admission to only a small fraction of the students who apply and have grown more selective over the past 20 years, accepting an average of 14% in 2009 and 10% in 2019. As expected by the number of

²¹⁴ National Center for Education Statistics, “Integrated Postsecondary Education.”

²¹⁵ Shamsuddin, “Berkeley or Bust?”; Heil, Reisel, and Attewell, “College Selectivity.”

²¹⁶ Stacy Dale, and Alan B. Krueger, “Estimating the Return to College Selectivity Over the Career Using Administrative Earnings Data” (NBER working paper no. 17159, National Bureau of Economic Research, Cambridge, MA: June 2011), <https://doi.org/10.3386/w17159>; Scott L. Thomas, “Longer-Term Economic Effects of College Selectivity and Control,” *Research in Higher Education* 44, no. 3 (June 2003): 263-299, <https://doi.org/10.1023/A:1023058330965>.

²¹⁷ Heil, Reisel, and Attewell, “College Selectivity”; Dale, and Krueger, “Estimating the Return to College Selectivity.”

²¹⁸ William R. Bowman, and Stephen L. Mehay, “College Quality and Employee Job Performance: Evidence from Naval Officers,” *Industrial and Labor Relations Review* 55, no. 4 (July 2002): 700-714, <https://doi.org/10.1177/001979390205500408>.

²¹⁹ “Top 100 - Lowest Acceptance Rates,” U.S. News and World Report website, accessed May 7, 2021, <https://www.usnews.com/best-colleges/rankings/lowest-acceptance-rate>.

applicants to each academy, USNA has consistently offered admission to the smallest number of applicants while USAFA is the least selective and most variable. USNA has the best record for admitting women, often admitting a slightly higher proportion of female applicants than males, while USMA has consistently admitted a slightly lower proportion of female applicants than male applicants (See 7.Appendix B).

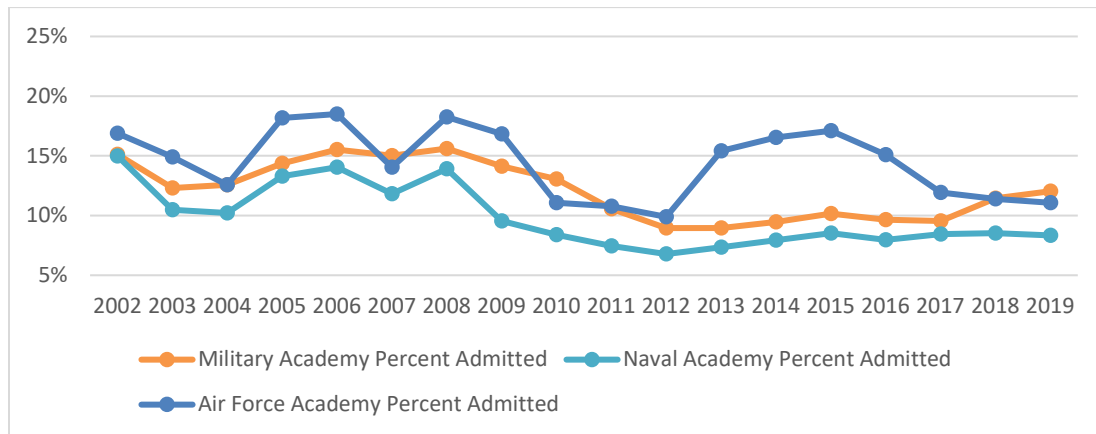


Figure 25. Percentage of Applicants Admitted at the Service Academies 2002-2019²²⁰

USAFA (1st), USMA (2nd), and USNA (3rd) also have the highest enrollment rates (percentage of students who were admitted that go on to attend) of any college in the nation as of 2021.²²¹ One influencing factor is likely the free tuition the academies offer. Research shows lower tuition costs and greater financial aid leads to higher enrollment in private and public schools.²²² Enrollment is also positively influenced by ranking in the top 25 of the U.S. News chart,²²³ but being ranked as a party school, or success in Division I athletics are not significant predictors.²²⁴ Figure 26 shows all three academies have had high enrollment rates, but the Air Force has much greater variability than the others, just as it did with admission rate. Their enrollment rate is often the lowest of the three, but has hit

²²⁰ National Center for Education Statistics, “Integrated Postsecondary Education.”

²²¹ Josh Moody, “Universities, Colleges Where Students Are Eager to Enroll,” *U.S. News and World Report*, January 25, 2021, accessed May 7, 2021, <https://www.usnews.com/education/best-colleges/articles/universities-colleges-where-students-are-eager-to-enroll>.

²²² Christian Buss, Jeffrey Parker, and Jon Rivenburg, “Cost, Quality and Enrollment Demand at Liberal Arts Colleges,” *Economics of Education Review* 23, no. 1 (February 2004): 57-65, [https://doi.org/10.1016/S0272-7757\(03\)00047-5](https://doi.org/10.1016/S0272-7757(03)00047-5); D. Randall Smith, “The Lure of Academic and Social Reputations Versus Athletic Success: Influences on Enrollment Yield at NCAA Division I institutions,” *Research in Higher Education* 60, no. 6 (September 2019): 870-904, <https://doi.org/10.1007/s11162-018-9537-8>.

²²³ Buss, Parker, and Rivenburg, “Cost, Quality and Enrollment Demand”; Smith, “The Lure of Academic and Social Reputations.”

²²⁴ Ibid.

100% twice in the past 20 years. Women often enroll at lower rates than men at all three academies (See 7.Appendix B), which suggest that the academies need to continue to improve their reputations for being accepting and giving equal treatment to female students.

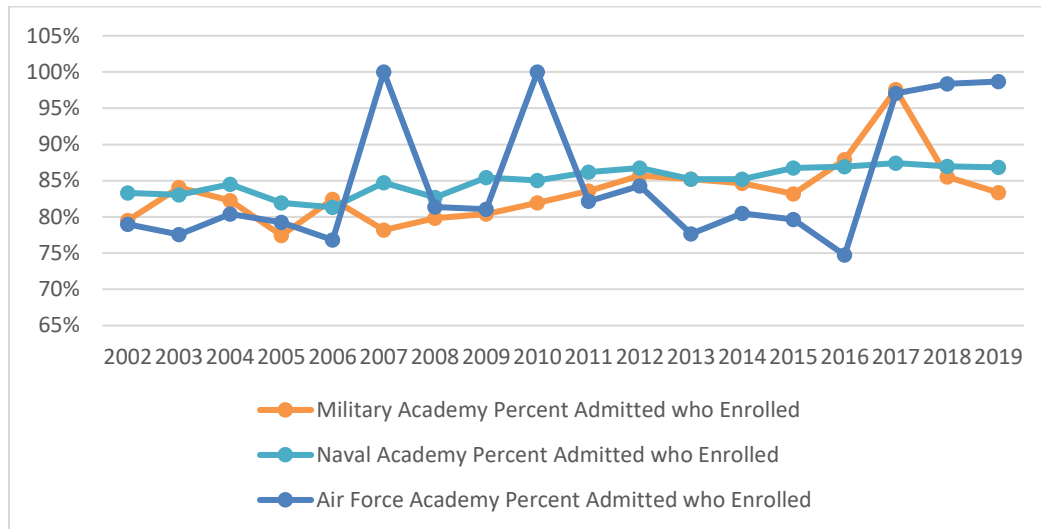


Figure 26. Percentage of Admitted Applicants who Enrolled at the Service Academies 2002-2019²²⁵

2. Academic Standing

The value of college rankings to the students making their selections is a subject for debate, but a high rank is cause for much celebration and publicity for the featured institutions. Rankings influence students' and parents' decisions, colleges' ability to be selective, and the amount of tuition they can charge.²²⁶ A high U.S. News & World Report (USNWR) rank positively predicts greater numbers of applications since 1995, when USNWR started making ranking more explicit by listing schools in rank-order rather than alphabetically.²²⁷ In 1999, a study of the top 30 USNWR ranked private universities and colleges indicated a drop in position is associated with a significant increase in admission rate, decrease in students accepting, and decrease in average SAT scores. There was no decrease in *stated* tuition, but schools dropping in position increased access to student loans and work study, and increased grants and financial aid, effectively lowering tuition without

²²⁵ National Center for Education Statistics, "Integrated postsecondary Education."

²²⁶ Luke Myers, and Jonathan Robe, *College Rankings: History, Criticism and Reform* (Washington D.C.: Center for College Affordability and Productivity (NJ1) 2009), <https://eric.ed.gov/?id=ED536277>.

²²⁷ Michael Luca, and Jonathan Smith, "Salience in Quality Disclosure: Evidence from the US News College Rankings," *Journal of Economics & Management Strategy* 22, no. 1 (March 2013): 58-77, <https://doi.org/10.1111/jems.12003>.

suggesting a drop in quality to students.²²⁸ A more recent assessment of both public and private schools indicated similar results for acceptance rates and student ability, but when comparing public and private schools, results were only significant for public schools.²²⁹ Results for SAT scores were contrary and may reflect a change in practice over time. Because of the significant impact ratings have, colleges have been known to make changes to administrative processes that have nothing to do with education quality to get ahead in the rankings.²³⁰ In the later assessment, SAT scores went up with rank for public schools, but went up as rank decreased at private schools. Researchers speculated private schools are better able to adjust tuition (through grants and scholarships) to increase student ability when they were down in the rankings.²³¹

Each ranking system is governed by a different methodology that is so precise, small changes can have greater effects on a school's rating than an actual change in institution quality.²³² College ranking is intended to help prospective students make decisions, but it is important to look carefully at the actual measures used to rank each school. An assessment focused on known positive learning practices determined after controlling for student demographics and ability, high overall USNWR ratings (top schools) were negatively associated with cooperative learning and faculty interaction. Only sub-ratings of faculty or financial resources positively predict being academically challenging, quality teaching, diversity experience, and faculty interaction.²³³ U.S. News and World Report rankings are the most popular, but Forbes rankings are more focused on student outcomes and do not incentivize institutions to overspend per student for a higher rank.²³⁴ *U.S. News* has been criticized for its weighting system which favors wealth, reputation, and selectivity.²³⁵ On the other hand, the results indicate Forbes tends to rank private schools more highly than public schools. There were only 14 public schools in the top 100 in 2015.

²²⁸ James Monks, and Ronald G. Ehrenberg, "US News & World Report's College Rankings: Why They Do Matter," *Change: The Magazine of Higher Learning* 31, no. 6 (1999): 42-51, <https://doi.org/10.1080/00091389909604232>.

²²⁹ Marc Meredith, "Why do Universities Compete in the Ratings Game? An Empirical Analysis of the Effects of the US News and World Report College Rankings," *Research in Higher Education* 45, no. 5 (August 2004): 443-461, <https://doi.org/10.1023/B:RIHE.0000032324.46716.f4>.

²³⁰ Myers, and Robe, *College Rankings*.

²³¹ Meredith, "Why do Universities Compete in the Ratings Game?"

²³² Myers, and Robe, *College Rankings*.

²³³ Jeongeun Kim, and Woo-jeong Shim, "What Do Rankings Measure? The US News Rankings and Student Experience at Liberal Arts Colleges," *The Review of Higher Education* 42, no. 3 (2019): 933-964, <http://doi.org/10.1353/rhe.2019.0025>.

²³⁴ Myers, and Robe, *College Rankings*.

²³⁵ Michael T. Nietzel, "Comparing The Major College Ranking Systems: How Methodology Matters," *Forbes*, September 20, 2020, <https://www.forbes.com/sites/michaelt Nietzel/2020/09/20/comparing-the-college-ranking-systemshere-are-the-major-differences/?sh=3f01ed7d5c12>.

Methodology changes that year deepened the private school favoritism, increasing the weight for student debt and decreasing the weight for academic awards, which caused the average rating of public schools to drop by 14 places.²³⁶ The problem with outcomes-based ranking is the time lag between student graduation and eventual professional success.²³⁷ Other measures such as *Washington Monthly* favor low tuition and contributions to the public good.²³⁸ However, this ranking system does not include the military service academies.²³⁹ One alternative ranking method that has been suggested is using web-based technology to personalize college rankings so an individual can select and prioritize a range of factors to rank schools that fit their needs.²⁴⁰ USNWR now offers this kind of service for a fee.²⁴¹

Over the years USNWR has made small changes to their methodology many times, which explains some volatility in individual school ratings that has nothing to do with changes at the school.²⁴² Figure 27 shows the service academies have ranked highly over time and have a slightly upward trajectory overall. Currently, USNWR assesses 15,000 schools using 17 measures and school reported data. The weighted score is 40% outcomes (graduation, retention, Pell grant successes, student indebtedness), 20% faculty resources (salary, class size), 20% expert opinion (college administrators rate other institutions they are familiar with), 10% financial resources (spending per student), 7% student excellence (student class standing and test scores), and 3% for alumni giving.²⁴³ USMA creates their own annual report to assess their place in the major ratings systems and how they compare to their fellow service academies because they acknowledge the ratings are a driving factor in students' decisions to apply.²⁴⁴

²³⁶ "Forbes College Rankings 2015: Still Unfriendly to Public Universities," Public University Honors website, August 1, 2015, <https://publicuniversityhonors.com/2015/08/01/forbes-college-rankings-2015-still-unfriendly-to-public-universities/>.

²³⁷ Myers, and Robe, *College Rankings*.

²³⁸ Nietzel, "Comparing The Major College Ranking Systems."

²³⁹ Washington Monthly website, "Washington Monthly's 2020 College Guide and Rankings," accessed May 5, 2021, <https://washingtonmonthly.com/2020college-guide>.

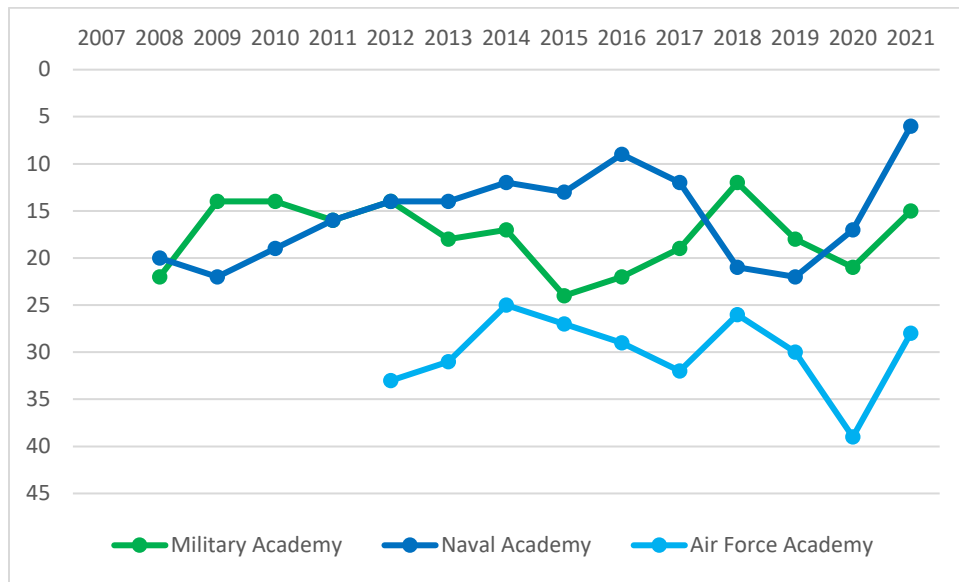
²⁴⁰ Myers, and Robe, *College Rankings*; David A. R. Richards, Janet T. Awokoya, Brian K. Bridges, and Christine Clark, "One Size Does Not Fit All: A Critical Race Theory Perspective on College Rankings," *The Review of Higher Education* 42, no. 1 (Fall 2018): 269-312, <http://doi.org/10.1353/rhe.2018.0030>.

²⁴¹ Morse, Robert, and Eric Brooks, "How U.S. News Calculated the 2021 Best Colleges Rankings," *U.S. News & World Report*, September 13, 2020, <https://www.usnews.com/education/best-colleges/articles/how-us-news-calculated-the-rankings>.

²⁴² Monks and Ehrenberg, "US News & World Report's College Rankings"; Luca and Smith, "Salience in Quality Disclosure."

²⁴³ Morse and Brooks, "How U.S. News Calculated."

²⁴⁴ Kellie Delmonico, *United States Military Academy Annual College Rankings 2020-2021* (West Point, NY: United States Military Academy, Office of Institutional Research, 2020),



Note: None of the academies were ranked the first year. The Air Force Academy did not place until 2012.

Figure 27. U.S. News & World Report National Liberal Arts Colleges Rankings²⁴⁵

Table 23. U.S. News & World Report 2021 Academy Rankings²⁴⁶

Institution	Military Academy	Naval Academy	Air Force Academy
National Liberal Arts Colleges	15 (tie)	6 (tie)	28 (tie)
Best Undergrad Teaching	43 (tie)	43 (tie)	43 (tie)
Most Innovative Schools	-	-	29 (tie)
Top Public Schools	2	1	3
Business Programs	-	-	67 (tie)
Computer Science	71 (tie)	71 (tie)	87 (tie)
First-Year Experiences	-	-	63 (tie)

For 2021, Table 23. U.S. News & World Report 2021 Academy Rankings indicates USNA is the most highly rated overall, but does not place in some relevant sub-categories

<https://s3.amazonaws.com/usma-media/inline-images/about/g5/2020-USMA-College-Rankings-Report.pdf>.

²⁴⁵ Major Andrew L. Bond (United States Military Academy, Chief, G5 Office of Institutional Research), data transfer to interviewer James Bishop, February 19, 2021; Andrew G. Reiter, “U.S. News & World Report Historical Liberal Arts College and University Rankings,” accessed December 1, 2020, <http://andyreiter.com/datasets/>.

²⁴⁶ Delmonico, *United States Military Academy*.

where USAFA does. USNA and USAFA are also currently outperforming USMA in selectivity of students (test scores, class standing) and financial resources.²⁴⁷

Given the focus of this report, the Forbes rating system may be a better indicator of the service academies' value. Forbes evaluates 650 colleges and universities with an emphasis on return-on-investment, academic quality, and career success post-graduation.²⁴⁸ Ratings are based on six categories:

- 20% for graduate salary,
- 20% student satisfaction,
- 20% student debt,
- 15% alumni that are leaders in their industry or public service,
- 12.5% graduation rate, and
- 12.5% for academic success measured by scholarship and fellowship awards.²⁴⁹

Forbes 'Top Colleges' ranking evaluates universities and liberal arts colleges together, while USNWR ranks them separately, so a Forbes ranking for a school would often be a larger number than a USNWR rank.²⁵⁰ Figure 28 indicates the service academies rank highly in the Forbes rating system as well (this ranking includes public and private colleges). USMA was ranked #1 in 2009 and excelled with a high graduation rate, numerous academic scholars, small class sizes, and no student debt.²⁵¹ However, the academies have gone down in rank over time. Like with USNWR, Forbes methodology changes probably explain some of the variability. For example, in 2011 Forbes rankings were based on five general categories:

- Graduate salary and prominence (30%),
- Student satisfaction (27.5%),
- Student debt (17.5%),
- Graduation rate (17.5%) and

²⁴⁷ Ibid.

²⁴⁸ "Forbes Releases Annual Ranking of America's Top Colleges." Forbes website, August 15, 2019, <https://www.forbes.com/sites/forbespr/2019/08/15/forbes-releases-annual-ranking-of-americas-top-colleges/?sh=1e48a96a924f>.

²⁴⁹ "America's Top Colleges 2019: Methodology Behind the Ranking," Forbes website, accessed December 7, 2020, <https://www.forbes.com/top-colleges/#261ad2951987>.

²⁵⁰ Public University Honors website, "Forbes College Rankings 2015."

²⁵¹ "America's Best College," Forbes website, August 6, 2009, <https://www.forbes.com/forbes/2009/0824/colleges-09-education-west-point-america-best-college.html?sh=404565145a00>.

- Academic success (7.5%).

The leadership and salary categories were combined.²⁵² In 2008, only prominence was considered, graduate salary was not included at all, and the categories were weighted differently.²⁵³ Among public schools, the three military service academies have consistently ranked in the top 10 since 2008, and are frequently all in the top five schools.²⁵⁴ For 2019 (the most recent year Forbes released its ratings), Table 24 indicates USNA is the most highly rated overall in the Forbes ranking categories, but all three academies performed well.²⁵⁵

²⁵² Michael Noer, "America's Top Colleges," *Forbes*, August 03, 2011, <https://www.forbes.com/sites/michaelnoer/2011/08/03/americas-top-colleges/?sh=251582714c01>.

²⁵³ "America's Best Colleges 2008," Forbes website, August 13, 2008, accessed May 4, 2021, https://www.forbes.com/2008/08/13/college-university-rankings-oped-college08-cx_rv_mn_0813intro.html?sh=4e8e7f52b65d.

²⁵⁴ Delmonico, *United States Military Academy*; Forbes website, "America's Best Colleges," August 13, 2008, https://www.forbes.com/2008/08/13/best-public-colleges-oped-college08-cx_mn_de_0813public_slide.html?sh=62b1d6d522e6; Forbes website, "America's Best Public Colleges," accessed August 5, 2009, <https://www.forbes.com/2009/08/06/best-public-colleges-opinions-colleges-09-top.html?sh=40fd129102f5>; Forbes website, "Best Public Colleges," August 3, 2011, <https://www.forbes.com/pictures/eidm45hge/united-states-naval-academy-2/?sh=4a8bb4d02460#content>; Forbes website, "Top Colleges 2013: Public Colleges," July 24, 2013, <https://www.forbes.com/pictures/eidm45fhmi/united-states-air-force-academy-11/?sh=66e232fb7b4d>; Forbes website, "Top 25 Best Public Colleges 2014" June 30, 2014, <https://www.forbes.com/sites/zheyanni/2014/07/30/top-25-best-public-colleges-2014/?sh=7756ec2a6982>; Forbes website, "Top 25 Public Colleges 2015," June 13, 2015, <https://www.forbes.com/pictures/55a40e01e4b05c2c3431defe/2-united-states-naval-aca/?sh=f8f7e266d7be>.

²⁵⁵ "#24 United States Naval Academy," Forbes website, accessed December 7, 2020, <https://www.forbes.com/colleges/united-states-naval-academy/?list=top-colleges/&sh=55246824534d>; "#32 United States Military Academy," Forbes website, accessed December 7, 2020, <https://www.forbes.com/colleges/united-states-military-academy/?list=top-colleges/&sh=549520a37b77>; "#43 United States Air Force Academy," Forbes website, accessed December 7, 2020, <https://www.forbes.com/colleges/united-states-air-force-academy/?list=top-colleges/&sh=7d7573a54c5e>.

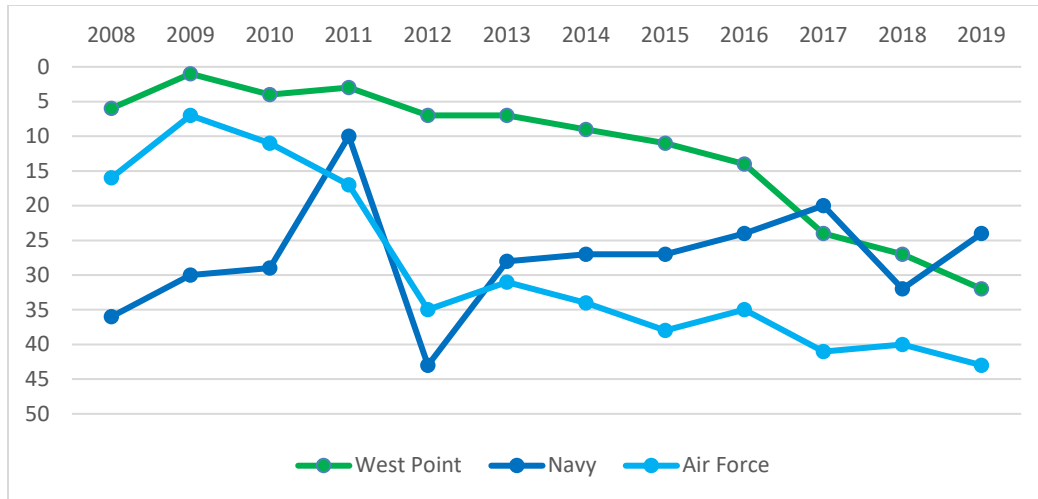


Figure 28. Forbes America's Best Colleges List²⁵⁶

Table 24. Forbes 2019 Academy Rankings²⁵⁷

Institution	Military Academy	Naval Academy	Air Force Academy
Top Colleges 2019	#32	#24	#43
In Public Colleges	#4	#3	#7
In Liberal Arts Universities	#9	#4	#14
In the Region	#17	#13	#9

Princeton Review bases its ratings entirely on student report. They survey an average of 370 students each at 386 schools to rank the top 20 schools in 62 categories, many of which are dichotomous to each other (e.g. Best College Dorms, Is That a Dorm?). Categories cover academics, extracurricular activities, and students' social lives.²⁵⁸ No

²⁵⁶ Delmonico, *United States Military Academy*; Public University Honors website, Forbes website, "Forbes College Rankings 2015"; "America's Best Colleges 2008," Forbes website, accessed August 13, 2020, https://www.forbes.com/2008/08/13/college-university-rankings-oped-college08-cx_rv_mn_0813intro.html?sh=5f99c6072b65; Forbes website, "America's Best Colleges 2009," August 5, 2009, <https://www.forbes.com/2009/08/02/colleges-university-ratings-opinions-colleges-09-intro.html?sh=2d0317119454>; Forbes website, "America's Best Colleges," August 11, 2010, https://www.forbes.com/2010/08/01/best-colleges-university-ratings-rankings-opinions-best-colleges-10-intro_slide.html?sh=1096a1e23da8; Forbes website, "America's Top Colleges," August 2, 2011, <https://www.forbes.com/sites/michaelnoer/2011/08/03/americas-top-colleges/?sh=bb266a54c017>; Forbes website, "Top 200 Colleges 2012," August 1, 2012, <https://www.forbes.com/pictures/mgg45egkl/1-princeton-university/?sh=2ef07d0d64ec>.

²⁵⁷ Ibid.

²⁵⁸ "Surveying Students: How It Works," Princeton Review website, accessed December 8, 2020, <https://www.princetonreview.com/college-rankings/how-it-works>; "The Princeton Review's College Ranking Methodology," The Princeton Review website, Accessed December 8, 2020, <https://www.princetonreview.com/college-rankings/ranking-methodology>.

source of historical Princeton Review rankings was identified, but Table 25 includes some of the most relevant categories the academies placed in for 2020. The table shows student reports highly favor USMA, which ranks in the top 20 in many of the positive categories. The other two service academies only rank in a few categories. Two categories none of the service academies ranked in are “happiest students” and “quality of life,” but this could be because of how challenging the academies are known to be.

Table 25. Princeton Review 2020 Academy Rankings²⁵⁹

Criteria	Military Academy	Naval Academy	Air Force Academy
Best Classroom Experience	#2	-	-
Students Study the Most	#8	-	-
Professors Get High Marks	#12	-	-
Most Accessible Professors	#1	-	#20
Best Science Lab Facilities	#2	#3	#13
Their Students Love These Colleges	#17	-	-
Lots of Race/Class Interaction	#2	#9	#5
Most Engaged in Community Service	#8	-	-

The college rankings by any system suggest the service academies are amongst the best colleges in the nation. They are prestigious amongst college administrators, very selective, have positive outcomes for students, and are rated highly by students.

3. Faculty Intellect and Productivity

Currently, approximately 71% of the USMA faculty is military and 29% is civilian. Civilian faculty are split between junior and senior professors, but 91% of civilian faculty have Ph.Ds. Only a small number of military faculty are Ph.D.-holding senior instructors (15% of faculty).²⁶⁰ Most military faculty are junior rotating instructors (56% of total

²⁵⁹ “United States Air Force Academy - The Princeton Review College Rankings & Reviews,” The Princeton Review website, accessed December 8, 2020, <https://www.princetonreview.com/college/united-states-air-force-academy-1023678?ceid=best-colleges#!academics>; “United States Military Academy - The Princeton Review College Rankings & Reviews,” The Princeton Review website, accessed December 8, 2020, <https://www.princetonreview.com/college/united-states-military-academy-1023919?ceid=best-colleges#!academics>; “United States Naval Academy - The Princeton Review College Rankings & Reviews,” The Princeton Review website, accessed December 8, 2020, <https://www.princetonreview.com/college/united-states-naval-academy-1022813?ceid=best-colleges#!academics>.

²⁶⁰ United States Military Academy, *United States Military Academy Self-Study 2020: For the Middle States Commission on Higher Education* (West Point, NY: United States Military Academy, February

faculty).²⁶¹ They serve three year terms²⁶² and usually have a Master's degree.²⁶³ Most classes at USMA are taught by faculty who do not have Ph.Ds., but have obtained Masters degrees from top universities in the country.²⁶⁴ Senior faculty provide expertise, course continuity, and guidance for the junior faculty. The mix of USMA faculty is regarded as mission essential.²⁶⁵ USMA regards the junior rotating military faculty as students as well as instructors; assignment as an instructor at the academy is intended to develop the young officers' communication skills, ability to lead, and ability to take on senior level positions later in their careers.²⁶⁶ Junior military faculty have recent Army experience, are familiar with new ideas and research, and serve as role-models to cadets. Military faculty provide military experience and culture, and civilian faculty provide good teaching practices. Faculty learn from each other and their combined skills are intended to provide the best learning environment for cadets.²⁶⁷

The USNA faculty is approximately half military and half civilian. Most of the military faculty complete two- or three-year assignments, which is intended to continuously infuse new ideas and a working knowledge of current operational experiences. The rest of the military faculty tends to have Ph.Ds. and teach for an average of 10 years. Civilian faculty also usually have doctorates and are promoted based on their teaching quality and research accomplishments as they would be at a civilian institution.²⁶⁸ USAFA has a military/civilian faculty mix comparable to USMA, 71% military and 29% civilian, however, the civilian portion is sometimes closer to 40% because the academy struggles to find enough military officers that are available for assignment and have the

2020). Obtained by data transfer from Major Andrew L. Bond (United States Military Academy, Chief, G5 Office of Institutional Research) to interviewer James Bishop, February 19, 2021.

²⁶¹ United States Military Academy, *United States Military Academy Self-Study 2020*.

²⁶² United States Military Academy, *Educating Army Leaders*.

²⁶³ "Center for Faculty Excellence: New Instructor Information," United States Military Academy website, accessed May 13, 2021, <https://www.westpoint.edu/centers-and-research/center-for-teaching-excellence/new-instructor/west-point-faculty>.

²⁶⁴ Major Andrew L. Bond (United States Military Academy, Chief, G5 Office of Institutional Research), data transfer to interviewer James Bishop, February 19, 2021.

²⁶⁵ United States Military Academy, *Educating Army Leaders*.

²⁶⁶ United States Military Academy, *USMA Campaign Plan (2019-2024)* (West Point, New York: United States Military Academy, 2019), <https://www.westpoint.edu/about/superintendent/governance-and-strategic-documents>; United States Military Academy, *Educating Army Leaders*.

²⁶⁷ Ibid.

²⁶⁸ Steve Vahsen (United States Naval Academy), e-mail to interviewer Heidi C. Reutter, December 8, 2020.

appropriate qualifications and advanced degrees. Only a third of the military faculty have doctoral degrees while nearly 90% of the civilian faculty have terminal degrees.²⁶⁹

USMA and USNA also struggle to field the desired number of military officers with terminal degrees.²⁷⁰ Until Congress changed the requirements in 1993, nearly all of the faculty at USMA and USAFA were military, which some officials, including accrediting bodies, took issue with.²⁷¹ At USMA, the military faculty are Army leaders who are used to being responsible for the success of their unit and therefore take their student's academic success very seriously. They are also operating on a system of annual review that determines their future selection for command or additional education. However, military faculty may be as much or more focused on teaching the "military profession" rather than the subject of their classes.²⁷² Arguments that were made for increasing the civilian faculty included presenting academy students with a broader, non-military viewpoint on issues of the day and making students feel less inhibited in class. Arguments against increasing civilian faculty were military faculty are more dedicated and available to students, students have personal access to civilian norms and do not need to learn them from instructors, increased civilian presence could degrade military atmosphere, and military officers provide vital role models.²⁷³

Others believe the mandate to increase the proportion of civilian faculty at the academies was primarily a strategy for reducing costs rather than improving teaching quality or a diversity of ideas.²⁷⁴ An analysis of the USAFA faculty conducted in 2013 concluded that even if an Air Force officer obtained their Master's degree at their own expense, they were more expensive than most civilian faculty with a doctorate. If an officer had a graduate degree funded by the Air Force, they were more expensive than civilian faculty at the highest rank (a full-professor). The analysis also found that officers who completed faculty tours missed out on other operational and command opportunities and were less likely to be promoted. Researchers concluded that increasing the civilian faculty would solve many problems the academy and Air Force were experiencing and the only risk was the possible impact of fewer military mentors and role models for students.²⁷⁵

²⁶⁹ Kirsten M. Keller et al., *The Mix of Military and Civilian Faculty at the United States Air Force Academy*.

²⁷⁰ Ibid.

²⁷¹ Goldich, "The DOD Service Academies."

²⁷² George B. Forsythe, and Anita Gandolfo, "Promoting Exemplary Teaching: The Case of the US Military Academy," *New Directions for Teaching and Learning*, no. 65 (1996): 99-104, <https://doi.org/10.1002/tl.37219966517>.

²⁷³ Goldich, "The DOD Service Academies."

²⁷⁴ Major Andrew L. Bond (United States Military Academy, Chief, G5 Office of Institutional Research), data transfer to interviewer James Bishop, February 19, 2021.

²⁷⁵ Keller et al., *The Mix of Military and Civilian Faculty at the United States Air Force Academy*.

Increasing civilian staff with doctoral degrees could reduce investment costs at the academies while simultaneously boosting prestige as it relates to intellectual talent of the faculty.

Some costs at the academies are vital to keeping up the prestige and quality of the education. A review of the literature in higher education indicates good instructional quality is strongly associated with higher institutional costs, but there are no studies that have analyzed the relationship between instructional quality and institutional revenue. The research that does exist suggests that good faculty quality increases retention which saves institutions money in recruiting costs and effective allocation of resources, and could fully offset increased investments in instructional quality.²⁷⁶ A couple studies were identified which suggest high ranking professors with terminal degrees elicit superior student outcomes. For most subject areas, students who take the same course with an adjunct or graduate instructor are less likely to take a subsequent course in that subject than students who were taught by a full-time instructor, even after controlling for the instructor's age and education, which does account for some of the effect.²⁷⁷ At USAFA, after controlling for student characteristics, professors with more experience and higher professor rank facilitated deeper learning in math courses. The effect for doctoral degrees was insignificant but followed the same trend. Students learning from professors with doctorates demonstrated deeper learning than those with instructors that did not have a doctorate.²⁷⁸

The academies all have organizations for promoting faculty development. They provide programs and workshops on pedagogical practices, facilitate cross-departmental research, and support opportunities such as grant applications, fellowships, and conference attendance.²⁷⁹ At USNA, recruiting and developing a high-quality faculty is one of their three strategic goals. They state the high value they place on a diverse faculty, the

²⁷⁶ Jessie Brown, and Martin Kurzweil, *Instructional Quality, Student Outcomes, and Institutional Finances* (Washington, D.C.: American Council on Education (ACE) 2018), <https://www.acenet.edu/Documents/Instructional-Quality-Student-Outcomes-and-Institutional-Finances.pdf>.

²⁷⁷ Eric Bettinger, and Bridget Terry Long, "Do College Instructors Matter? The Effects of Adjuncts and Graduate Assistants on Students' Interests and Success" (NBR Working Paper no. 10370, *National Bureau of Economic Research*, March 2004), <https://doi.org/10.3386/w10370>.

²⁷⁸ Scott E. Carrell, and James E. West, "Does Professor Quality Matter? Evidence from Random Assignment of Students to Professors," *Journal of Political Economy* 118, no. 3 (June 2010): 409-432, <https://doi.org/10.1086/653808>.

²⁷⁹ United States Military Academy, *Educating Army Leaders*; "Center For Teaching And Learning," United States Naval Academy website, accessed May 13, 2021, <https://www.usna.edu/CTL/>; "Center for Educational Innovation: About Us," United States Air Force Academy website, accessed May 14, 2021, <https://www.usafa.edu/cei/about-us/>.

importance of providing professional development, and the need to create a desirable workplace in order to attract high quality instructors.²⁸⁰

The role of faculty development in the prestige of an institution is indirect at best, but logically we expect that access to professional development (PD) enhances faculty quality and student learning, which then reflects well on the institution. Research that thoughtfully evaluates the effectiveness of PD is limited. In a large-scale survey, teachers reported PD programs did significantly increase their knowledge, practice, and efficacy in teaching as well as student learning. Programs that were actively engaging, required reflection, and opportunities to try new teaching strategies were particularly strong predictors of teacher improvement.²⁸¹ However, there is some evidence that teachers' positive reports exaggerate improvements on their practices. Another assessment that surveyed undergraduate biology professors who had completed a PD course and evaluated videotapes of a sub-sample while teaching, concluded that while 89% of survey respondents indicated that they improved their curriculum to make it more learner-centered, 75% of those in the videotape sample were still providing lecture-heavy, teacher-centered instruction.²⁸² No baseline measurements were taken, so the PD may have had some small effect, but the assessment demonstrates the importance of objective measures in evaluation. Another assessment conducted qualitative assessments of the effects of faculty PD on student assignments and learning using a critical-thinking rubric with two different samples. They found significant improvements in students' work at the first school where the rubric was designed to address the material in the PD course, but found no significant improvement in student assignments at a second school which used a different method for PD even though the Faculty at the second school reported the PD did improve their course design and learning.²⁸³ This assessment indicates some support for the value of PD, but the program and program evaluation must be designed to accurately measure the intended effects. The best evidence we identified for PD at the college level is evaluation of a program for Science, Technology, Engineering, and Mathematics (STEM) instructors which matched each post-doctoral instructor that had taken the PD with a co-

²⁸⁰ "STRATEGIC PLAN 2030: Strategic Goals & Objectives," United States Naval Academy website, accessed May 13, 2021, <https://www.usna.edu/StrategicPlan/goals.php#panel2>.

²⁸¹ Lawrence Ingvarson, Marion Meiers, and Adrian Beavis, "Factors Affecting the Impact of Professional Development Programs on Teachers' Knowledge, Practice, Student Outcomes & Efficacy," *Professional Development for Teachers and School Leaders* (2005): 1, https://research.acer.edu.au/cgi/viewcontent.cgi?article=1000&context=professional_dev.

²⁸² Diane Ebert-May et al., "What We Say is Not What We Do: Effective Evaluation of Faculty Professional Development Programs," *BioScience* 61, no. 7 (July 2011): 550-558, <https://doi.org/10.1525/bio.2011.61.7.9>.

²⁸³ Carol Rutz et al., "Faculty Professional Development and Student Learning: What is the Relationship?" *Change: The Magazine of Higher Learning* 44, no. 3 (May 2012): 40-47, <https://doi.org/10.1080/00091383.2012.672915>.

worker teaching a comparable course. The faculty who completed the PD program reported using more learner-centered teaching practices than their peers who did not complete the PD, and these reports were supported by external reviewers who evaluated the faculty teaching and also found that the PD faculty teaching practices were significantly more learner-centered when controlling for faculty and class differences.²⁸⁴ Thus, we may conclude that if the academies are providing professional development programs which they have evaluated for effectiveness, they can enhance instructor quality and student learning which may indirectly impact their prestige.

All three academies also give out awards annually to faculty who have demonstrated exceptional teaching practices;²⁸⁵ past winners are recognized on the USNA website.²⁸⁶ No historical listing of external awards or grants the faculty may have received was identified, but it appears that the academies do publish press releases when such events occur. At USMA, the engineering and computer science department won a lucrative Defense University Research Instrumentation Program (DURIP) award in 2020.²⁸⁷ At USAFA, two instructors were recognized with research awards in 2021.²⁸⁸

A search of the literature to determine whether internal or external awards has an impact on institutional prestige or student achievement yielded few results. Washington Monthly includes faculty research awards in their institutional rankings,²⁸⁹ but faculty awards are not considered in any of the other rankings discussed in this report. Teaching awards have been common place at colleges and universities since the 1990s, and they are expected to indirectly improve student outcomes. Awards are intended to show appreciation to instructors for their teaching activities, encourage excellence, set standards for other faculty to model, and create publicity to satisfy government interests and attract

²⁸⁴ Terry L. Derting et al., “Assessing Faculty Professional Development in STEM Higher Education: Sustainability of Outcomes,” *Science Advances* 2, no. 3 (March 2016): e1501422, <https://doi.org/10.1126/sciadv.1501422>.

²⁸⁵ “Center for Faculty Excellence: Annual Awards for Excellence in Teaching and Service,” United States Military Academy website, accessed May 14, 2021, <https://www.westpoint.edu/centers-and-research/center-for-teaching-excellence/teaching-awards>; “Academics: Faculty Awards,” United States Naval Academy website, accessed May 13, 2021, <https://www.usna.edu/Academics/Faculty-Information/Faculty-Awards.php#panel5ApgarAwardforExcellenceinTeaching>; “Center for Educational Innovation: Awards & Recognitions,” United States Air Force Academy website, accessed May 14, 2021, <https://www.usafa.edu/cei/recognitions/>.

²⁸⁶ United States Naval Academy website, “Academics: Faculty Awards.”

²⁸⁷ United States Military Academy, “US Military Academy Selected for DoD Research Award,” *West Point Public Affairs*, December 29, 2020, <https://www.westpoint.edu/news/press-releases/us-military-academy-selected-dod-research-award>.

²⁸⁸ “Air Force Academy Dean, Former Faculty Member Receive Research Awards,” United States Air Force Academy website, accessed May 14, 2021, <https://www.usafa.edu/news/air-force-academy-dean-former-faculty-member-receive-research-awards/>.

²⁸⁹ Nietzel, “Comparing The Major College Ranking Systems.”

students and faculty to the institution.²⁹⁰ Results primarily from small samples of faculty and administrator interviews indicate awards do provide recognition and validation of faculty efforts,²⁹¹ motivate faculty to sustain or improve their teaching efforts,²⁹² motivate instructors to pursue professional development,²⁹³ and create positive publicity.²⁹⁴ However, respondents also report teaching awards could be dismissed as lacking value in comparison to research pursuits,²⁹⁵ or could single out the winners for jealous peers to attack.²⁹⁶ When researchers analyzed class ratings of teacher effectiveness at one college, they found no effect for the teaching award and grant program.²⁹⁷ Given the research available, faculty awards cannot be directly linked to student achievement or development, but there is limited evidence they could contribute to the prestige of the institution.

USMA faculty generally do not publish research or obtain grants and patents as often as other civilian faculty in their fields, and they have not produced any ground-breaking or paradigm shifting ideas.²⁹⁸ At USMA the focus is on teaching and solving problems. Although USMA continues to put an emphasis on faculty teaching, it is working to increase faculty research scholarship for the stated purpose of enhancing the learning environment for students and providing intellectual service to the Army and country. Since 2016, faculty publications have increased three-fold.²⁹⁹ Both USNA and USAFA indicate an emphasis

²⁹⁰ Nancy Van Note Chism, and Borbála L. Szabó, “Teaching Awards: The Problem of Assessing Their Impact,” *To Improve the Academy* 16, no. 1 (1997): 181-199, <https://doi.org/10.1002/j.2334-4822.1997.tb00327.x>.

²⁹¹ Mary Fitzpatrick, and Sarah Moore, “Exploring Both Positive and Negative Experiences Associated with Engaging in Teaching Awards in a Higher Education Context,” *Innovations in Education and Teaching International* 52, no. 6 (November 2015): 621-631, <https://doi.org/10.1080/14703297.2013.866050>; Mark Israel, *The Key to the Door? Teaching Awards in Australian Higher Education*, (Australian Learning and Teaching Council Ltd., 2011), https://ltr.edu.au/resources/Israel%2C%20M%20UWA%20Fellowship%20report%202011_0.pdf.

²⁹² Rhonda Hustedt Jacobsen, “The Impact of Faculty Incentive Grants on Teaching Effectiveness” (Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, March 27-31, 1989); Fitzpatrick, and Moore, “Exploring Both Positive and Negative Experiences,” 621-631.

²⁹³ Mardee Jenrette, and Karen Hays, “Honoring Exemplary Teaching: The Two-Year College Setting,” *New Directions for Teaching and Learning*, no. 65 (1996): 77-83, <https://doi.org/10.1002/tl.37219966514>.

²⁹⁴ Ibid; Susan Kahn, “Awards to Groups: The University of Wisconsin System's Departmental Teaching Award,” *New Directions for Teaching and Learning*, no. 65 (1996): 11-16, <https://doi.org/10.1002/tl.37219966505>; Israel, “The key.”

²⁹⁵ Fitzpatrick, and Moore, “Exploring”; Israel, *The Key to the Door?*

²⁹⁶ Ibid.

²⁹⁷ Jacobsen, “The Impact of Faculty Incentive.”

²⁹⁸ Major Andrew L. Bond (United States Military Academy, Chief, G5 Office of Institutional Research), data transfer to interviewer James Bishop, February 19, 2021.

²⁹⁹ United States Military Academy, *United States Military Academy Self-Study 2020*.

on faculty and student research collaborations.³⁰⁰ USNA states research is an opportunity for growth for both the faculty and student participants, and midshipmen gain experience solving real Navy problems.³⁰¹ USAFA also states the value of research in the development of officers, indicating its importance in creating advantages over adversaries. USAFA advertises the research expertise amongst its faculty, and has been recognized as the number one undergraduate research institution in the country by the National Science Foundation.³⁰²

Faculty research activities were by far the most cited factor in considering the impact of faculty on institutional prestige. A regression analysis using U.S. News rankings, faculty publications, and student SAT scores indicates faculty research productivity positively affects institutional reputation. Productivity does not affect the quality of students directly, but quality of students does increase with institutional reputation.³⁰³ Faculty activities that confer prestige on themselves and their institutions include publications, citations, winning grants and academic prizes, and membership in national academies.³⁰⁴ Institutions which are able to be highly selective and have high performing students attract the most prestigious faculty who want to teach them, which can then attract additional resources through donors who want to be associated with prestigious schools. As a result, faculty wages are positively predicted by their number of peer reviewed articles, book chapters, being a principle investigator on a grant, and the selectivity of the degree granting institution in a national sample. However, time spent on teaching has a significant negative effect on wages, though the effect is very small.³⁰⁵

The academies indicated their focus on research was for the development of students. This focus contrasts with comparable civilian universities' focus on research for the purpose of novel contributions to human knowledge. Unlike the academies, comparable civilian universities operate graduate education programs. Graduate students pursue novel

³⁰⁰ Anthony "Ryan" McDonald (United States Air Force Academy, Officer Accessions and USAFA Affairs), e-mail to interviewer Heidi C. Reutter, January 27, 2021; "Academic Research," United States Naval Academy website, accessed May 13, 2021, <https://www.usna.edu/AcResearch/>; Lt Col Don Rhymer, "Research At Academy Is Unparalleled Among Undergrad Institutions," *United States Air Force Academy*, Nov. 1, 2018, <https://www.usafa.edu/news/research-at-the-academy-is-unparalleled-among-undergraduate-institutions/>.

³⁰¹ United States Naval Academy website, "Academic Research."

³⁰² Rhymer, "Research At Academy is Unparalleled."

³⁰³ Stephen R. Porter, and Robert K. Toutkoushian, "Institutional Research Productivity and the Connection to Average Student Quality and Overall Reputation," *Economics of Education Review* 25, no. 6 (December 2006): 605-617, <https://doi.org/10.1016/j.econedurev.2005.06.003>.

³⁰⁴ Tatiana Melguizo, and Myra H. Strober, "Faculty Salaries and the Maximization of Prestige," *Research in Higher Education* 48, no. 6 (September 2007): 633-668, <https://doi.org/10.1007/s11162-006-9045-0>.

³⁰⁵ Ibid.

contributions to human knowledge as assistants to research professors and through their own research.

There is evidence to support the benefits of undergraduate student participation in research. Faculty that are active in research and have funding for conducting studies positively predict student participation in research.³⁰⁶ Furthermore, students who participate in college research programs have higher retention rates for all races³⁰⁷ in both STEM and non-STEM fields of study.³⁰⁸ Participants also gain valuable research skills, transferrable skills such as communication and critical thinking, and increase their interest in graduate education.³⁰⁹ However, high faculty research productivity does not appear to confer any significant benefit to students in class. Qualitative interviews with faculty from an institution striving to increase its national ranking indicated the faculty perceive their prestige is tied to research and publications, and they feel a tension between conducting research and providing high quality teaching and student interactions. They considered small course loads (ideally, three per year) necessary to achieve both goals.³¹⁰ This sentiment is supported by a national study on student faculty engagement which found faculty who worked at research intensive institutions were less likely to take part in teaching strategies and student interactions known to increase engagement.³¹¹ From the students' perspectives, ratings of instructors from 16 institutions indicated overall ratings were not significantly correlated to the number of publications or citations an instructor

³⁰⁶ Shouping Hu, Kathyrine Scheuch, and Joy Gaston Gayles, "The Influences of Faculty on Undergraduate Student Participation in Research and Creative Activities," *Innovative Higher Education* 34, no. 3 (August 2009): 173-183, <https://doi.org/10.1007/s10755-009-9105-4>.

³⁰⁷ Biren A. Nagda et al., "Undergraduate Student-Faculty Research Partnerships Affect Student Retention," *Review of Higher Education* 22, no. 1 (1998): 55-72, <https://doi.org/10.1353/rhe.1998.0016>.

³⁰⁸ Jennifer S. Stanford et al., "Early Undergraduate Research Experiences Lead to Similar Learning Gains for STEM and Non-STEM Undergraduates," *Studies in Higher Education* 42, no. 1 (2017): 115-129. <https://doi.org/10.1080/03075079.2015.1035248>.

³⁰⁹ Ibid.

³¹⁰ KerryAnn O'Meara, and Alan Bloomgarden, "The Pursuit of Prestige: The Experience of Institutional Striving from a Faculty Perspective," *Journal of the Professoriate* 4, no. 1 (2011), https://www.researchgate.net/profile/Alan-Bloomgarden/publication/263505661_The_Pursuit_of_Prestige_The_Experience_of_Institutional_Striving_from_a_Faculty_Perspective/links/5ec3deb8299b1c09ac98c65/The-Pursuit-of-Prestige-The-Experience-of-Institutional-Striving-from-a-Faculty-Perspective.pdf.

³¹¹ Paul D. Umbach, and Matthew R. Wawrzynski, "Faculty Do Matter: The Role of College Faculty in Student Learning and Engagement," *Research in Higher education* 46, no. 2 (March 2005): 153-184, <https://doi.org/10.1007/s11162-004-1598-1>.

has gained through research, though instructors with more publications were rated as more knowledgeable.³¹²

The academies increase their prestige through faculty services and activities by recruiting high quality faculty with doctoral degrees, continuing to offer professional development to enhance teaching skills and facilitate research collaborations, and promoting and awarding faculty for teaching and research accomplishments. The academies should also continue to support or increase support for faculty research which would enhance institutional prestige and confer benefits on students who participate, but faculty research goals should not be allowed to overshadow the primary mission of teaching and developing all cadets and midshipmen into high-quality military officers.

4. Factors that Affect Public Sentiment Regarding the Academies

Some primary influences on public sentiment for the academies include college rankings, success of academy sports teams, how they're portrayed in the media, how they appear in social media, visits to the academy campuses, and alumni activities.³¹³ Since most of these factors are discussed in other sections of the report, this section will focus primarily on how the academies are portrayed in the media and social media. Each of the academies have a Facebook page where they regularly post about events and activities around campus (See Table 26).

Table 26. Facebook Activity in April 2021³¹⁴

Institution	Number of posts	Average Likes	Average Comments	Average Shares
USMA	35	3,467	73	220
without Sandhurst week	24	964	45	97
USNA	40	749	37	42
USAFA	60	736	23	53
Wellesley College	27	134	3	6
Harvard University	23	1,885	56	146

³¹² Arnold S. Linsky, and Murray A. Straus, "Student Evaluations, Research Productivity, and Eminence of College Faculty," *Journal of Higher Education* 46, no. 1 (1975): 89-102, <https://doi.org/10.1080/00221546.1975.11780630>.

³¹³ Steve Vahsen (United States Naval Academy), e-mail to interviewer Heidi C. Reutter, December 8, 2020.

³¹⁴ "West Point - The U.S. Military Academy," Facebook website, accessed May 26, 2021. <https://www.facebook.com/WestPointUSMA/>; "United States Naval Academy," Facebook website, accessed May 26, 2021. <https://www.facebook.com/search/videos/?q=west%20point%20military%20academy>; "U.S. Air Force Academy," Facebook website, accessed May 26, 2021, <https://www.facebook.com/USAFA.Official/>; "Wellesley College," Facebook website, accessed May 27, 2021, <https://www.facebook.com/WellesleyCollege>; "Harvard University," Facebook website, accessed May 27, 2021, <https://www.facebook.com/Harvard>.

The USAFA page is the most popular with 500,906 followers. For the month of April 2021, the academy also posted the most frequently with an average of two posts per day,³¹⁵ while the other academies posted closer to once a day. However, USMA attracted the most public interest per post through “likes,” “comments,” and “shares.” The month of April is likely skewed above average for USMA because of the Sandhurst military competition that occurred and generated a lot of attention, but even with that week of data removed, USMA generated the most social interaction of the three academies. For comparison with other schools, Wellesley College is ranked higher than any of the academies by *U.S. News*, but the college has a tenth of the followers. Their Facebook page posted less than once a day and garnered less than 20% of the public interest the academies enjoyed through likes, shares, and comments. Harvard University on the other hand, has more than 10 times as many followers as any of the academies. And though they posted less than Wellesley, they generated about three times the public interest as USAFA per post, but less interest on average than USMA when counting reactions to the Sandhurst competition. Facebook videos from 2019-2021 featuring the academies that generated the most attention include: President Trump attending the Army-Navy football game (934k views),³¹⁶ USNA midshipmen climbing the Herndon monument (1 million views),³¹⁷ and the USAFA superintendent speaking out against racism (2.1 million views).³¹⁸

Activity on the popular website Twitter is comparable to what we find on Facebook, the academies are well regarded and generate above average interest for a college their size (See Table 27). This data is a snapshot in time, taken May 27, 2021 at 2:30 p.m.

³¹⁵ Facebook website, “U.S. Air Force Academy.”

³¹⁶ “Search Results: Air Force Academy,” Facebook website, accessed May 27, 2021, <https://www.facebook.com/search/videos/?q=air%20force%20academy>.

³¹⁷ “Search Results: Naval Academy,” Facebook website, accessed May 27, 2021, <https://www.facebook.com/search/videos/?q=naval%20academy>.

³¹⁸ “Search Results: West Point Military Academy,” Facebook website, accessed May 27, 2021, <https://www.facebook.com/search/videos/?q=air%20force%20academy>.

Table 27. Twitter Activity from Academy Accounts as of May 27, 2021³¹⁹

User account	USMA	USNA	USAFA	Wellesley	Harvard
Followers:	115,600	77,700	87,900	18,400	1,200,000
Tweets:	200	200	200	199	200
Timeframe:	50 days	143 days	65 days	72 days	35 days
Reach:	115,613	77,776	87,981	18,490	1,234,296
Impressions:	22,311,965	11,970,466	15,656,724	3,642,138	244,390,214
Total ReTweets:	4,171	5,381	2,835	991	5,096
Total Favorites:	26,483	33,132	16,741	6,572	29,828
Replies:	7	46	22	2	2
Sentiment:	Great (31.0%) Good (22.5%) Neutral (42.0%) Bad (4.0%) Terrible (0.5%)	Great (19.5%) Good (32.5%) Neutral (41.0%) Bad (5.5%) Terrible (1.5%)	Great (30.5%) Good (24.5%) Neutral (38.5%) Bad (4.0%) Terrible (2.5%)	Great (34.2%) Good (30.2%) Neutral (27.1%) Bad (5.0%) Terrible (3.5%)	Great (23.5%) Good (25.0%) Neutral (36.0%) Bad (9.0%) Terrible (6.5%)

Among the academies, the USMA Twitter account has the most followers.³²⁰ For the last 200 tweets, USMA tweeted more frequently than the other academies, created the most impressions (number of times a tweet was seen³²¹), and the greatest reach (number of accounts that displayed the tweet in their timeline³²²). However, the USNA account had the most “retweets” and “favorited” tweets. Wellesley College has less than a quarter of

³¹⁹ “User search & analytics for '@westpoint_usma',” Social Bearing website, accessed May 27, 2021, https://socialbearing.com/search/user/westpoint_usma; “User search & analytics for '@NavalAcademy',” Social Bearing website, accessed May 27, 2021, <https://socialbearing.com/search/user/NavalAcademy>; “User search & analytics for '@AF_Academy',” Social Bearing website, accessed May 27, 2021, https://socialbearing.com/search/user/AF_Academy; “User search & analytics for '@Wellesley',” Social Bearing website, accessed May 27, 2021, <https://socialbearing.com/search/user/Wellesley>; “User search & analytics for '@Harvard',” Social Bearing website, accessed May 27, 2021, <https://socialbearing.com/search/user/Harvard>.

³²⁰ “U.S. Military Academy at West Point,” Twitter website, accessed May 27, 2021, https://twitter.com/WestPoint_USMA; “U.S. Naval Academy,” Twitter website, accessed May 27, 2021, <https://twitter.com/NavalAcademy>; “U.S. Air Force Academy,” Twitter website, accessed May 27, 2021, https://twitter.com/AF_Academy.

³²¹ Jenn Chen, “What Are Twitter Impressions & Why Are They So Important to Twitter?,” *SproutSocial*, June 11, 2018, accessed May 27, 2021, <https://sproutsocial.com/insights/twitter-impressions/>.

³²² Ibid.

the followers, impressions, and reach as USNA.³²³ Harvard has 10 times the followers, reach, and impressions as USMA, but only slightly more “retweets” and “favorited” tweets than USMA, and less than USNA.³²⁴ The academies are also more positively received by Twitter users. USNA had the worst sentiment of the three, with 7% of tweets categorized as “bad” or “terrible,” while 15.5% of Harvard’s tweets were bad/terrible. Data for when the schools are tweeted about from other accounts is also available (See 7.Appendix E) and indicates similar results.

The data from Facebook and Twitter indicate the academies have above average social support for a liberal arts college of their caliber, and their supporters are as much or more actively engaged as those of the most famous university in the country. The academies also have a presence on other social media platforms such as Instagram, YouTube, and TikTok, and appear to be active in promoting themselves to the public.

Although the academies generate mostly positive news coverage, the biggest news story regarding the academies this past year was the cheating scandal at USMA. Over 70 cadets, mostly first-year students, were caught cheating on a remotely proctored math test.³²⁵ First revealed in December of 2020 by *USA Today*, the media was still referring to the event the following May when covering the class of 2021 graduation, even though none of those students were involved.³²⁶ This instance of cheating was bad publicity for all the academies because it dredged up stories of past cheating scandals at USMA, USNA, and USAFA.³²⁷ It also led to further revelations, such as USNA conducting an investigation of a physics exam where cheating was suspected,³²⁸ but no further stories indicated any evidence was found, as well as an USAFA investigation that found evidence of cheating amongst 249 cadets.³²⁹

³²³ “Wellesley College,” Twitter website, accessed May 27, 2021, <https://twitter.com/Wellesley>.

³²⁴ “Harvard University,” Twitter website, accessed May 27, 2021, <https://twitter.com/Harvard>.

³²⁵ Tom Vanden Brook, “West Point Accuses More than 70 Cadets of Cheating in Worst Academic Scandal in Nearly 45 Years,” *USA Today*, December 21, 2020, <https://www.usatoday.com/story/news/politics/2020/12/21/west-point-catches-70-cadets-worst-cheating-scandal-50-years/5856130002/>.

³²⁶ The Associated Press, “Defense Secretary Tells West Point Cadets They’re Ready,” *Army Times*, May 23, 2021, <https://www.armytimes.com/news/your-army/2021/05/22/defense-secretary-lloyd-austin-will-address-graduating-west-point-cadets/>.

³²⁷ Ed Shanahan, “West Point Scraps Second-Chance Program After Major Cheating Scandal,” *The New York Times*, April 16, 2021, <https://www.nytimes.com/2021/04/16/nyregion/west-point-cheating-scandal.html>; Vanden Brook, “West Point.”

³²⁸ Ryan Browne, “Naval Academy Exams Being Reviewed for ‘Inconsistencies,’” *CNN*, December 22, 2020, <https://www.cnn.com/2020/12/22/politics/naval-academy-exams-west-point/index.html>.

³²⁹ Hope Hodge Seck, “Dismissals and Discipline at Air Force Academy After 249 Cadets Investigated for Cheating,” *Military.com*, January 29, 2021, <https://www.military.com/daily-news/2021/01/29/dismissals-and-discipline-air-force-academy-after-249-cadets-investigated-cheating.html>.

The USMA 2020 cheating scandal led to the cancellation of a 2015 policy of leniency for students who self-reported their wrong-doing. The policy was intended to encourage confessions of rule-breaking, but was judged to be ineffective.³³⁰ The policy cancellation was at least in part a reaction to various government and military officials who indicated the punishment for the cheating cadets was too lenient.³³¹ However, the academy's treatment of the situation was in-line with policies at other schools,³³² and some argued the opportunity for redemption should be part of teaching integrity to officers.³³³ When cheating was discovered at USAFA, only one cadet was expelled and nearly all the others entered a probationary period which the superintendent defended as being effective, with 95% of participants having no further honor violations.³³⁴

Other reactions to the cheating scandal at USMA included questions about why cheating has often been connected to athletes and whether some athletics are contrary to the academy mission.³³⁵ Concerns about transparency were brought up because the cheating scandal was revealed by a news expose rather than by the academy,³³⁶ and also sympathy for the cheaters who were performing in extraordinary conditions given the pandemic.³³⁷ Academy students operate in a difficult environment in the best of times. The 1997 congressional report on the academies discussed the influence of a highly competitive environment and intentionally challenging schedule academy students are placed under, which does not allow for deep reflection and learning of material, and might also inspire cheating.³³⁸ This stressful environment which forces cadets to prioritize tasks and leave some work undone continues at USMA, and is likely an influencing factor on end of term

³³⁰ Shanahan, "West Point Scraps Second-Chance Program"; Desiree D'iorio, "West Point Honor Code Under Scrutiny As The Military Academy Grapples With Another Cheating Scandal," *WSHU Public Radio*, March 8, 2021, <https://www.wshu.org/post/west-point-honor-code-under-scrutiny-military-academy-grapples-another-cheating-scandal#stream/0>; Craig Bruce Smith, "West Point's Honor Code Returns to the 18th Century," *The Hill*, April 25, 2021, <https://thehill.com/opinion/civil-rights/550168-west-points-honor-code-returns-to-the-18th-century>.

³³¹ Tim Bakken, "West Point Professor On Cheating Scandal At The U.S. Military Academy," interview by Ari Shapiro, *All Things Considered*, NPR, December 22, 2020, <https://www.npr.org/2020/12/22/949309336/west-point-professor-on-cheating-scandal-at-the-u-s-military-academy>; Vanden Brook, "West Point Accuses More than 70 Cadets"; D'iorio, "West Point Honor Code Under Scrutiny"; Smith, "West Point's Honor Code Returns."

³³² D'iorio, "West Point Honor Code Under Scrutiny"; Smith, "West Point's Honor Code Returns."

³³³ D'iorio, "West Point Honor Code Under Scrutiny."

³³⁴ Rachel S. Cohen, "USAFA Boss Defends School's Discipline Approach Amid Cheating Investigation," *Air Force Magazine*, March 2, 2021, <https://www.airforcemag.com/usafa-boss-defends-schools-discipline-approach-amid-cheating-investigation/>.

³³⁵ Shanahan, "West Point Scraps Second-Chance Program."

³³⁶ Bakken, "West Point Professor on Cheating Scandal."

³³⁷ *Ibid.*

³³⁸ Goldich, "The DOD Service Academies."

grades.³³⁹ This story became part of a larger conversation about the pandemic, the rise in technology, and a wave of cheating scandals that have hit many other colleges and universities as well.³⁴⁰

Even amidst the discussion over the cheating scandal, USMA was still acknowledged for producing the best of Army officers;³⁴¹ and following the scandal, the academy continues to be described in glowing terms by the press using adjectives such as “prestigious,”³⁴² “legendary,”³⁴³ “premier,”³⁴⁴ and “elite.”³⁴⁵ It is common for local newspapers to publish features on high school graduates who obtain appointments to the academy or cadets who succeed in graduating.³⁴⁶ This is true for USNA³⁴⁷ and USAFA as well.³⁴⁸ Additionally, USMA received positive attention for its participation in Division I

³³⁹ J. D. Caddell, and Daniel Newell. “Evaluating Teacher Impact on Student Performance: A Case Study at the United States Military Academy,” (presented at IEEE International Systems Conference (SysCon), Orlando, FL, April 8-11, 2019), pp. 1-5.

³⁴⁰ Vanden Brook, “West Point”; Tawnell D. Hobbs, “Cheating at School Is Easier Than Ever—and It’s Rampant,” *The Wall Street Journal*, May 12, 2021, <https://www.wsj.com/articles/cheating-at-school-is-easier-than-everand-its-rampant-11620828004>.

³⁴¹ Vanden Brook, “West Point Accuses More than 70 Cadets.”

³⁴² Mike Jr. Fleming, “‘Riverdale’s KJ Apa To Star In Rod Lurie-Directed Military Academy Drama ‘West Pointer’ For Lionsgate,” *Deadline*, May 26, 2021, <https://deadline.com/2021/05/riverdale-kj-apa-rod-lurie-military-academy-west-pointer-lionsgate-1234764397/>; Makayla Grijalva, “BOUND FOR WEST POINT: SODA Student Accepted to Elite U.S. Military Academy,” *News-Bulletin*, April 29, 2021, http://www.news-bulletin.com/news/education/soda-student-accepted-to-elite-u-s-military-academy/article_f6940542-a83d-11eb-b526-e7ba013d81df.html.

³⁴³ Fleming, “‘Riverdale’s KJ Apa To Star.”

³⁴⁴ Erik Martin, “Local Cadet Graduates from West Point,” *The Daily Advocate*, May 25, 2021, <https://www.dailyadvocate.com/news/97615/local-cadet-graduates-from-west-point>.

³⁴⁵ Grijalva, “BOUND FOR WEST POINT”; Michelle T. Bernard, “Lincoln Charter Student to Become One of the Elites at West Point Academy,” *Lincoln Times News*, May 10, 2021, https://www.lincolntimesnews.com/news/lincoln-charter-student-to-become-one-of-the-elites-at-west-point-academy/article_6d9b94e6-ada9-11eb-ae62-83ec0ff35ca4.html.

³⁴⁶ Brianne Fleming, “Schlimm of St. Marys Graduates From West Point Military Academy,” *Courier Express*, May 24, 2021, http://www.thecourierexpress.com/news/schlimm-of-st-marys-graduates-from-west-point-military-academy/article_b4a2bcf5-14be-5ae4-8ac4-0e25a8af6c17.html; Martin, “Local Cade Graduates”; Bernard, “Lincoln Charter Student to Become”; Grijalva, “BOUND FOR WEST POINT.”

³⁴⁷ Staff Writer, “Carson High School Senior Jeremy Heaton Accepted to Naval Academy,” *Nevada Appeal*, May 29, 2021, <https://www.nevadaappeal.com/news/2021/may/29/carson-high-school-senior-jeremy-heaton-accepted-n/>; Staff Writer, “Naval Academy Midshipman Schieuer Awarded Scholarship,” *Lincoln Journal Star*, May 28, 2021, updated July 3, 2021, https://journalstar.com/niche/neighborhood-extra/kids-and-classrooms/naval-academy-midshipman-schieuer-awarded-scholarship/article_1bc6ae45-fcb7-5d6a-89b0-7cc43620c0f9.html.

³⁴⁸ Staff Writer, “Keating Graduates Air Force Academy,” *Alberta Lea Tribune*, June 1, 2021, <https://www.albertleatribune.com/2021/06/keating-graduates-air-force-academy/>; Andrea Earnest, “Mokena Honors Resident Heading To Air Force Academy,” *Patch*, May 25, 2021, <https://patch.com/illinois/mokena/mokena-honors-resident-heading-air-force-academy>.

sports.³⁴⁹ USNA was featured in connection to two different professional football players in the past year, Joe Cardona called it his “dream school,”³⁵⁰ and Cameron Kinley lauded it as his best opportunity for growth and development.³⁵¹ The news also recognized USNA for producing four astronauts who have been to the moon, with two more female officers preparing to follow in their footsteps.³⁵² These stories provide America’s youth with a range of influential role models who attribute their accomplishments at least in part to their education at the academies.

Another controversial topic in the news was a former female cadet’s challenge to the sexual assault policies at USMA.³⁵³ The assault programs of all three academies underwent evaluation in 2017 after USAFA cadets spoke out about retaliation they experienced for reporting sexual assault.³⁵⁴ Sexual assault is a national issue,³⁵⁵ but media coverage on this topic could be very influential with women, who remain a significant minority, when considering matriculation to one of the academies.

Lastly, there was a letter to USMA administrators sent by alumni that called for greater efforts to address racism, including renaming campus buildings and monuments that glorified officers from the Confederacy.³⁵⁶ The media reported this call for change was answered by Congress who activated a commission to address the naming of military

³⁴⁹ Scott McDonald, “U.S. Military Academy to Save One College Bowl Game From COVID Cancellation,” *Newsweek*, December 21, 2020, <https://www.newsweek.com/us-military-academy-save-one-college-bowl-game-covid-cancellation-1556549>.

³⁵⁰ CBS Baltimore Staff, “New England Patriots Long Snapper Joe Cardona: ‘The Naval Academy Was My Dream School’,” *CBS Baltimore*, May 27, 2021, <https://baltimore.cbslocal.com/2021/05/27/joe-cardona-naval-academy-interview/>.

³⁵¹ Rick Stroud, “Navy’s Cameron Kinley Takes Command of his NFL Future,” *Tampa Bay Times*, May 11, 2021, <https://www.tampabay.com/sports/bucs/2021/05/11/navys-cameron-kinley-takes-command-of-his-nfl-future/>.

³⁵² Katherine Fominykh, “Naval Academy Grads Hope to Walk on the Moon with NASA Team,” *The Navy Times*, February 7, 2021, <https://www.navytimes.com/news/your-navy/2021/02/07/naval-academy-grads-hope-to-walk-on-the-moon-with-nasa-team/>.

³⁵³ Pete Williams, “Justice Clarence Thomas says ex-West Point Cadet Should be Able to Sue over Alleged Rape,” *NBC News*, May 3, 2021, <https://www.nbcnews.com/politics/supreme-court/justice-clarence-thomas-says-ex-west-point-cadet-should-be-n1266144>.

³⁵⁴ Patricia Kime, “Naval Academy Needs to Better Track Its Support for Sexual Assault Victims, IG Finds,” *Military.com*, May 2021, accessed June 1, 2021, <https://www.military.com/daily-news/2021/05/26/naval-academy-needs-better-track-its-support-sexual-assault-victims-ig-finds.html>.

³⁵⁵ Greta Anderson, “Deadline Time for New Federal Sexual Assault Policies,” *Inside Higher Ed.*, August 14, 2020, <https://www.insidehighered.com/news/2020/08/14/colleges-implement-changes-meet-title-ix-deadline>.

³⁵⁶ NPR News, “West Point Graduates’ Letter Calls For Academy To Address Racism,” *WSKG* (Public radio), July 6, 2020, <https://wskg.org/news/west-point-graduates-letter-calls-for-academy-to-address-racism/>.

installations where the Confederacy is honored, including the Military³⁵⁷ and Naval academies.³⁵⁸ All the academies are working toward a less racist future, though they still have obstacles to overcome. In 2020 a racial slur was found on a white board at the preparatory academy; the USAFA superintendent responded with a zero-tolerance stance by saying anyone who could not respect others should get out.³⁵⁹ The current superintendent, who took up the post in Fall of 2020 is the first black superintendent in the Academy's history.³⁶⁰ USMA, which since 2018 also has its first black superintendent, was recognized this year with graduating a record number of black female cadets in 2019 and again in 2020 (34 and 38, respectively). Promoting diversity there has been a major initiative.³⁶¹ USNA also continues to make strides; it had its first black female brigade commander in 2021,³⁶² and was in the press this year for its graduation ceremony, where Vice President Kamala Harris served as the school's first female commencement speaker.³⁶³ USNA also recently expelled a student for making racist statements on social media, but the court system ultimately overturned the expulsion and the student was allowed to graduate and commission.³⁶⁴ Combatting racism at the academies and in the military is an ongoing struggle, and their successes and failures will likely impact their ability to attract a diverse force.

³⁵⁷ Barbara Starr, "Commission Reviewing Military Base Names to Visit West Point Next Week," *CNN Politics*, May 21, 2021, <https://www.cnn.com/2021/05/21/politics/west-point-commission-visit/index.html>.

³⁵⁸ Robert Burns, "Commission on Confederate Names to Visit Naval Academy During Fall Semester," *Capital Gazette*, May 24, 2021, <https://www.capitalgazette.com/education/naval-academy/bc-us-military-base-names-confederacy-2021525-20210524-2aoukxxfb5cd7mupkaqi24ucgq-story.html>.

³⁵⁹ Tom Rieder, "Air Force Academy General's Fight Against Racism Resonates," *Air Force Times*, September 20, 2020, <https://www.airforcetimes.com/news/your-air-force/2020/09/20/air-force-academy-generals-fight-against-racism-resonates/>.

³⁶⁰ Tom Roeder, "General Becomes First Black Superintendent of the Air Force Academy," *Military.com*, September 24, 2020, <https://taskandpurpose.com/news/air-force-academy-superintendent-clark/>.

³⁶¹ Michelle Ruiz, "A Record Number of African American Women Graduated from West Point in 2020," *Vogue*, June 15, 2020, <https://www.vogue.com/article/record-number-african-american-female-graduates-west-point>.

³⁶² The Associated Press, "A Midshipman at the U.S. Naval Academy has Become the First Black Woman Selected for the Academy's Top Student Leadership Position," *U.S. News & World Report*, December 5, 2020, <https://www.usnews.com/news/us/articles/2020-12-02/naval-academy-midshipman-reaches-a-milestone-for-black-women>.

³⁶³ Katie Rogers, "At Naval Academy Graduation, Harris Focuses on Strengthening a 'Fragile' World," *The New York Times*, May 28, 2021, <https://www.nytimes.com/2021/05/28/us/politics/kamala-harris-commencement-speech-naval-academy.html>.

³⁶⁴ Heather Mongilio, "After Settling Lawsuit Against Head of Naval Academy, Midshipman who Faced Expulsion over Tweets Graduates and Commissions," *CapitalGazette.com*, May 29, 2021, <https://www.stripes.com/branches/navy/2021-05-29/After-lawsuit-settlement-with-head-of-Naval-Academy-midshipman-who-had-faced-expulsion-over-tweets-graduates-1602390.html>.

Altogether, the academies do not enjoy a spotless reputation in the news and social media, but they are well regarded overall and appear to be actively working to eliminate deficiencies that have been identified in the areas of racial equity, sexual assault prevention, and the academic integrity of their students.

5. Congressional Support and Oversight of the Academies

The three primary ways in which the academies leverage congressional support is through congressional nominations of students applying for admission, the Board of Visitors which meets regularly to review academy operations and activities,³⁶⁵ and congressional appropriations for the academy budgets, which involves more oversight and control than federal funding to other higher education institutions.³⁶⁶

As described in the admissions section of this report, congressional nominations are intended to acquire an even distribution of America's youth from across the country, involve an extensive review and interview process for the congressperson and student applicant prior to the academy admission process, and make up 60% to 70% of the students at each academy.³⁶⁷ Congressional nomination of students to the academies is stipulated by U.S. Code, which states each senator and congressperson may nominate five people for selection at each academy. However, as previously described in chapter 1, for each of those five vacancies, the congressperson is actually entitled to nominate 10 people for consideration, some of which may be admitted under other provisions in the Code once the congressperson's allowance has been met.³⁶⁸ Many of these qualified nominees are also admitted.³⁶⁹

The Board of Visitors (BOV) at each academy is also mandated by U.S. Code, which states each Board is to be made up of four Senators and five members of the House of Representatives (including representation from the Committee on Armed Services and the Committee on Appropriations), as well as six presidential designees. Each board must meet at its academy at least once a year, they have oversight over operations, the physical plant,

³⁶⁵ Anthony "Ryan" McDonald (United States Air Force Academy, Officer Accessions and USAFA Affairs), e-mail to interviewer Heidi C. Reutter, January 27, 2021; Steve Vahsen (United States Naval Academy), e-mail to interviewer Heidi C. Reutter, December 8, 2020.

³⁶⁶ Ibid.

³⁶⁷ Connecticut Veterans Legal Center, Veterans Inclusion Project, *Gatekeepers to Opportunity*.

³⁶⁸ United States Air Force Academy, Pub. L. 10 USC Ch. 953 (2018), <https://uscode.house.gov/view.xhtml?path=/prelim@title10/subtitleD/part3/chapter953&edition=prelim>; United States Military Academy, Pub. L. 10 USC Ch. 753 (2018), <https://uscode.house.gov/view.xhtml?path=/prelim@title10/subtitleB/part3/chapter753&edition=prelim>; United States Naval Academy, Pub. L. 10 USC Ch. 853 (2018), <https://uscode.house.gov/view.xhtml?path=/prelim@title10/subtitleC/part3/chapter853&edition=prelim>.

³⁶⁹ "U.S. Senators, Representatives, and Delegates," United States Naval Academy website, accessed June 3, 2021, <https://www.usna.edu/Admissions/Apply/US-Senators-Representatives-and-Delegates.php>.

academic methods and other academy activities, and they provide an annual report to the President making recommendations for maintenance or improvements.³⁷⁰ Currently, the BOV chooses to meet two to three times a year. Both academy and service leadership work closely with the BOV to insure efficient operations, and the BOV regularly makes recommendations to the superintendent which are recorded in the meeting minutes.³⁷¹ The most recent publicly available annual report is from USMA in 2017. It indicates the Board made inquiries in a number of areas not limited to character development, sexual assault prevention, administration of the athletic program, academic methods, fiscal matters, and academy effectiveness. The Board enumerated several conclusions and made five recommendations to the President, including emphasizing the importance of sustained funding for physical renovations and maintaining high educational quality.³⁷²

As mentioned above, academy and service leadership have the opportunity to present their needs to members of Congress who make up the Board of Visitors, and the BOV in turn makes their own judgement and recommendations to the President to inform his budget. Congressional influence over the academies' budgets is paramount to their ability to function. In addition to contact with Congress through the BOV, the academy superintendents also have the opportunity to address members of the appropriations committee who determine the budget for the academies, the services, and the DOD.³⁷³ The superintendents of the academies testify to Congress on a range of issues at the academies. In 2019 they presented plans to combat sexual assaults on campus at the appropriations hearing for their budget.³⁷⁴ Even though Congress allocates the budget for each academy,

³⁷⁰ Board of Visitors. Pub L. 10 USC 9455. Chapter 753 United States Air Force Academy. (July 24, 2021), <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section9455&num=0&edition=prelim>; Board of Visitors. Pub L. 10 USC 7455. Chapter 753 United States Military Academy. (July 24, 2021), <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section7455&num=0&edition=prelim>; Board of Visitors. Pub L. 10 USC 8468. Chapter 753 United States Naval Academy. (July 24, 2021), <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section8468&num=0&edition=prelim>.

³⁷¹ “DOD - 399 - United States Naval Academy Board of Visitors - Statutory (Congress Created),” FacaDatabase.gov website, accessed June 3, 2021, <https://www.facadatabase.gov/FACA/apex/FACAPublicCommittee?id=a10t0000001gzjnAAA>; “DOD - 75 - United States Military Academy Board of Visitors - Statutory (Congress Created),” FacaDatabase.gov, accessed June 3, 2021, <https://www.facadatabase.gov/FACA/apex/FACAPublicCommittee?id=a10t0000001gznlAAQ>; “DOD - 398 - Board of Visitors of the U.S. Air Force Academy - Statutory (Congress Created),” FacaDatabase.gov, accessed June 3, 2021, <https://www.facadatabase.gov/FACA/apex/FACAPublicCommittee?id=a10t0000001gzoOAAQ>.

³⁷² United States Military Academy Board Of Visitors, *2017 Annual Report* (West Point, NY: United States Military Academy, December 2017), https://s3.amazonaws.com/usma-media/inline-images/about/board_of_visitors/board_of_visitors_2017_annual_report.pdf.

³⁷³ *Department of Defense Appropriations for 2020: Hearing Before the Subcommittee on Defense Committee on Appropriations, House of Representatives*, 116th Cong., 1st Sess. (February 13, 2019), https://fas.org/irp/congress/2019_hr/dod-approps-fy20.pdf.

³⁷⁴ Ibid.

the budgets are also managed by their individual service departments; delays in renovation funding at USNA were due in part to the 2013 sequestration which cut spending, leading to the Naval department's decision to divert money designated for the academies to other expenses in the department to meet warfighting and readiness needs.³⁷⁵ Congress could strengthen their control of the academies with even stricter control over the funding they receive.

Altogether, academy leadership and members of Congress cooperate on every facet of academy activities, beginning with the selection of students; the daily operations that develop the students morally, physically, and academically; management of the budget that determines the resources available; and ultimately the quality of education cadets and midshipmen receive.

6. Tourism at the Academies

An article in *The New York Times* in 1894 describing visitors to the academy suggests that USMA has been a tourist destination for over a hundred years.³⁷⁶ USMA's community engagement office estimates they receive 500,000 to 1 million visitors each year. Different attractions at the campus include the Visitor's Center (200k to 300k), bus tours (100k to 150k), ticketed sporting events (250k), and other on-post activities including Sunday brunch buffets at West Point Club, cadet club events, and marching band rehearsals.³⁷⁷ Tripadvisor.com helps capture what people think about the academy, for example the Visitor's Center is listed as #1 of the 13 things to do in West Point, and it has a 4.5 out of 5 rating.³⁷⁸ The other academies may receive even more visitors because of their locations near large cities. USNA estimates they receive two million visitors each year.³⁷⁹ This academy is rated as the #1 attraction in Annapolis,³⁸⁰ and there are far more

³⁷⁵ Ibid.

³⁷⁶ "West Point Now Attracts Tourists," *The New York Times*, September 2, 1894, <https://timesmachine.nytimes.com/timesmachine/1894/09/02/109721836.html?pageNumber=17>.

³⁷⁷ Major Andrew L. Bond (United States Military Academy, Chief, G5 Office of Institutional Research) data transfer to interviewer James Bishop, February 19, 2021.

³⁷⁸ "United States Military Academy Visitors Center," Tripadvisor website, accessed June 4, 2021, https://www.tripadvisor.com/Attraction_Review-g48855-d186206-Reviews-United_States_Military_Academy_Visitors_Center-West_Point_New_York.html.

³⁷⁹ Steve Vahsen (United States Naval Academy), e-mail to interviewer Heidi C. Reutter, December 8, 2020.

³⁸⁰ "U.S. Naval Academy," Tripadvisor website, accessed June 4, 2021, https://www.tripadvisor.com/Attraction_Review-g29494-d258251-Reviews-U_S_Naval_Academy-Annapolis_Maryland.html; Staff Writer, "Best Things to do in Annapolis: #1 United States Naval Academy," *U.S. News & World Report*, accessed June 4, 2021, https://travel.usnews.com/Annapolis_MD/Things_To_Do/United_States_Naval_Academy_63106/.

things to do there. Tripadvisor ratings give it a top score of 5.0 out of 5.³⁸¹ USAFA also receives over a million visitors each year. It is considered to be one of the top attractions in the entire state of Colorado, and is well known for its beautiful and unusual chapel.³⁸² The chapel is the #1 man-made attraction in the state and draws over 500k visitors annually.³⁸³ Tripadvisor lists the academy as #7 out of 135 things to do in Colorado Springs, and it has a 4.5 out of 5 rating.³⁸⁴ Tourism to the academies is an opportunity for the military services to connect with people that might not have any other links to military personnel and is therefore an important avenue to make a good impression.

7. The Value of an Academy Education to Civilian Employers

Very little current research was identified that measured academy graduates' success with civilian employment, and nothing was found that conveyed civilian employers' perspective on academy graduates. More broadly, veterans have had lower employment rates than non-veterans in every age group except 18-24 from 2000-2013.³⁸⁵ In 2011, eleven companies formed a coalition with the goal of hiring 100,000 veterans, and by 2014, the coalition had expanded to 175 companies and had nearly doubled their hiring goal.³⁸⁶ Representatives from a sample of member companies were interviewed and reasons they gave for joining the coalition included the opportunity to cooperate and share best practices with other companies as well as helping to resolve an important social issue while gaining valuable employees.³⁸⁷ A workshop in 2015 for stakeholders in veteran employment including federal agencies, civilian companies, and researchers concluded companies were seeing that employing veterans is good for business, and consequently veterans are in demand.³⁸⁸ Coalition members did not express a bias towards college graduates, rather they

³⁸¹ Tripadvisor website, "U.S. Naval Academy."

³⁸² Visit Colorado Springs website, "U.S. Air Force Academy." Accessed June 4, 2021.
<https://www.visitcos.com/things-to-do/history-and-heritage/landmarks/us-air-force-academy-in-colorado/>.

³⁸³ Carol M. Highsmith, "The Cadet Chapel in Colorado Springs is the Most Popular Man-Made Attraction in Colorado, with More than a Half Million Visitors Every Year" (Colorado Springs, CO: n.p. [1980-2006], accessed June 4, 2021, photograph, <https://www.loc.gov/item/2011632993/>).

³⁸⁴ "United States Air Force Academy," Tripadvisor website, accessed June 4, 2021,
https://www.tripadvisor.com/Attraction_Review-g33364-d103508-Reviews-United_States_Air_Force_Academy-Colorado_Springs_El_Paso_County_Colorado.html.

³⁸⁵ Caroline Batka, and Kimberly Curry Hall, *More Research on Veteran Employment Would Show What's Good for Business and for Veterans*, (RAND Corporation Perspectives, 2016),
<https://apps.dtic.mil/sti/pdfs/AD1014106.pdf>.

³⁸⁶ Kimberly Curry Hall et al., *Veteran Employment: Lessons From the 100,000 Jobs Mission* (Santa Monica, CA: RAND Corporation, 2014), https://www.rand.org/pubs/research_reports/RR836.html.

³⁸⁷ Ibid.

³⁸⁸ Batka and Hall, *More Research on Veteran Employment Would Show*.

avored the skills that met the needs of the company. They described veteran employees as having good leadership and teamwork skills, as well as being loyal and dependable, and nearly all the companies who were measuring retention found that veteran retention rates were equal to or higher than other employees.³⁸⁹

The best quantitative measure of academy graduates' value to civilian employers is salary. The website Payscale compiles a College Salary Report and ranks USNA as third in the nation for graduate income potential.³⁹⁰ USMA and USAFA are also highly ranked at 7th and 19th respectively.³⁹¹ Unfortunately, Payscale does not distinguish between employers, so the average salaries they report include academy graduates who are still currently serving in the military.³⁹² Other data that more directly compares academy graduate income to others is older. In 2004, USNA graduates from the classes of 1986 through 1996, who had already separated from the service, were surveyed regarding their civilian employment and salary. A comparison of their average salary with the average salary for U.S. workers indicated USNA graduates with a bachelor's degree had higher salaries than the U.S. average for workers with bachelor's degrees and those with graduate degrees from 1994-2002.³⁹³ Other data is older still. Using a survey of reservists from 1986, researchers determined being a military academy graduate (USMA, USNA, and USAFA graduates) positively predicted a higher income than civilians (reservists who served less than two years on active duty), while being an ROTC or OCS officer had no significant impact on income. Another survey of academy graduates from 1959-1960 indicated USMA graduates reported significantly higher incomes than graduates of USAFA or USNA, as well as significantly more job satisfaction and feelings of achievement. Researchers speculated the skills learned at USMA were broader and therefore more transferable than

³⁸⁹ Hall et al., *Veteran Employment*.

³⁹⁰ "Salaries for United States Naval Academy (USNA) at Annapolis Graduates," Payscale website, accessed June 8, 2021, [https://www.payscale.com/research/US/School=United_States_Naval_Academy_\(USNA\)_at_Annapolis/Salary](https://www.payscale.com/research/US/School=United_States_Naval_Academy_(USNA)_at_Annapolis/Salary).

³⁹¹ "Salaries for United States Air Force Academy (USAFA) Graduates," Payscale website, accessed June 8, 2021, [https://www.payscale.com/research/US/School=United_States_Air_Force_Academy_\(USAFA\)/Salary](https://www.payscale.com/research/US/School=United_States_Air_Force_Academy_(USAFA)/Salary); "Salaries for United States Military Academy (USMA) at West Point Graduates," Payscale website, accessed June 8, 2021, [https://www.payscale.com/research/US/School=United_States_Military_Academy_\(USMA\)_at_West_Point/Salary](https://www.payscale.com/research/US/School=United_States_Military_Academy_(USMA)_at_West_Point/Salary).

³⁹² Steve Vahsen (United States Naval Academy), e-mail to interviewer Heidi C. Reutter, December 8, 2020.

³⁹³ Jeanette M. Bederman, "Beyond Military Service: An Analysis of United States Naval Academy Graduates' Civilian Career Experiences" (MA thesis, Naval Postgraduate School, 2005), <https://apps.dtic.mil/sti/pdfs/ADA439307.pdf>.

the specific, technical skills learned at the other two academies.³⁹⁴ Anecdotal evidence from civilian companies, modern salary comparisons, and historical research all suggest that academy graduates are on average likely to be highly sought after in the civilian labor market.

8. Conclusions Regarding the Prestige of the Academies

In this section of the paper we summarize the ways in which the academies maintain and grow their prestige. Positive student outcomes at the academies are in part due to their unusually small student to faculty ratio. The academies are also able to be very selective, only accepting ~10% of students that apply because application rates are high. Enrollments are high as well, 80-100% of students accepted for admission attend. The Academies are highly ranked, which positively influences their ability to be selective despite requiring a service obligation. However, rankings are highly dependent on the methodology used, so even though high rank is good for an institution's image, it does not guarantee high educational quality. Rankings do generally indicate positive outcomes for students such as high graduation rates and good starting salaries.

Academy faculties are a mix of military and civilian professors. A majority of classes are taught by junior military officers with Master's degrees who are guided by full professors with Ph.Ds. Obtaining enough military professors with advanced degrees is much more difficult and expensive than civilian professors, and research suggests full-time, experienced professors elicit greater interest in courses and deeper learning. Those in opposition to expanding civilian faculty are concerned about maintaining a primarily military culture and atmosphere, which is a unique feature of the academies compared to ROTC programs at other universities. The academies support their faculty with professional development and with awards that acknowledge outstanding efforts, which have some evidence for enhancing educational quality and output. Faculty research is the primary way that university faculty contribute to institutional prestige, so programs that support faculty research have unique potential to improve it.

All three academies are active in social media and generate much more interest and interactions than other schools their size. With some events, they can even rival Harvard University in popularity. The academies are generally praised in the news media; when a local teen is admitted to one of these prestigious institutions, it is cause for celebration. However, their reputations are constantly on the line with controversial issues including cheating, sexual assault, and racial equality. These issues are national and all colleges are struggling with them, but the academies must strive to model the best behavior to maintain

³⁹⁴ Richard Milhollin Coffman, "Second Career Choices, Salary Differential, Job Satisfaction, and Achievement Needs of Selected Service Academy Graduate Resignees and Retirees of Classes 1959 to 1961 (Military)" (PhD diss., University of South Carolina, 1987).

their high prestige. No other college or university receives as much attention from Congress as the academies. Members of Congress heavily influence the students who are admitted, academy education and operations, and the funding they have to work with. When it comes to tourism, the academies are top destinations in their regions, drawing one half to two million visitors each annually, which provide them another avenue to directly connect to the civilian population.

And finally, when academy graduates complete their military service to their country, they are highly sought after by civilian employers who recognize them for their leadership skills and good work ethics. All three academies make a top 20 list of colleges and universities with graduates that have the highest earning potential both in and out of service. The combination of factors in this section make the military service academies some of most well regarded, respected, and admired educational institutions in the nation.

D. Diversity of Commissioning Sources

Another unquantifiable benefit of investment in academy graduates is in the diversity of commissioning sources among officers for a military service. Commissioning sources vary in how they prepare future officers for future missions. Officers commissioned through OCS oftentimes have experience in and special empathy for the enlisted corps. Officers commissioned through ROTC/NROTC have exposure to the vast array of world views endemic to a civilian undergraduate experience. Academy graduates have special understanding of military tradition and leadership. The relative value of these different commissioning sources is as uncertain as the future mission set. Thus, having officers from different commissioning sources is valuable in a way analogous to diversification of a stock portfolio. DOD does not know exactly what kinds of officers they will want in the future, so a mix is shrewd, even if the optimal proportions of the mix are unknown.

E. Costs

1. Data

The service academies provided estimates of the cost per graduate from annual reports they have prepared for their own analysts, their respective headquarters, and OSD.³⁹⁵ The method for computing the estimates is standardized across the academies. The estimates reflect direct costs over the four years of education for a graduating class; they exclude non-direct costs such as major construction and support to dependents and retirees.

³⁹⁵ Lieutenant Colonel Brian Novoselich (U.S. Military Academy), July 2021, data transfer to interviewer James Bishop; Steve Vahsen (United States Naval Academy), data transfer to interviewer James Bishop, July 2021; Lieutenant Colonel Thomas Cook (United States Air Force Academy), data transfer to interviewer James Bishop, July 2021.

USMA, USNA, and USAFA provided cost estimates in each year through FY2020 since FY2003, FY1990, and FY1999, respectively. To support our goal of estimating the change in the cost of an academy education since 1996, we impute earlier USMA and USAFA costs with public data from the Integrated Postsecondary Education Data System (IPEDS) maintained by the National Center for Education Statistics.³⁹⁶ IPEDS offers data on costs and completions (among many other topics) for each service academy (among many other institutions) in each fiscal year since 1991 for USMA and 1989 for USNA and USAFA. IPEDS data reporting methods changed over the period of available data. We harmonize the data in accordance with IPEDS documentation to allow comparisons over time. We adjust all costs for inflation with the fiscal year average Gross Domestic Product (GDP) deflator.³⁹⁷

We seek to estimate the academies' mean cost of producing a commissioned officer in each year. Estimating these costs is not straightforward because producing a commissioned officer entails many different costs incurred over time. The academies incur some costs, such as costs of instruction, in each year of appointment. Other costs, such as costs of renovation, are investments in future cadets and midshipmen. We observe only current year costs in IPEDS. To account for costs incurred in each year of appointment in the same manner as the cost estimates from the academies' annual reports, we compute the mean cost over the fiscal year of graduation and the three years prior. Thus, we underestimate the mean cost of producing a commissioned officer in a given year to the extent that relevant costs were incurred four or more years prior. We overestimate the mean cost of producing a commissioned officer in a given year to the extent that costs incurred in the current and three prior years are relevant to future cohorts.

We do not compute a cost per student because the product of the academies relevant to our analysis is a graduate, not a student, and not all students become graduates. For a given dollar value of costs and a given number of appointments, fewer graduates means a higher cost per graduate. Thus, our estimates account for completion rates as a determinant of ROI.

Some costs, such as costs of research, are not direct costs of producing officers. IPEDS categorizes costs as shown in Table 28. We include only the categories that we consider to be direct costs of producing officers.

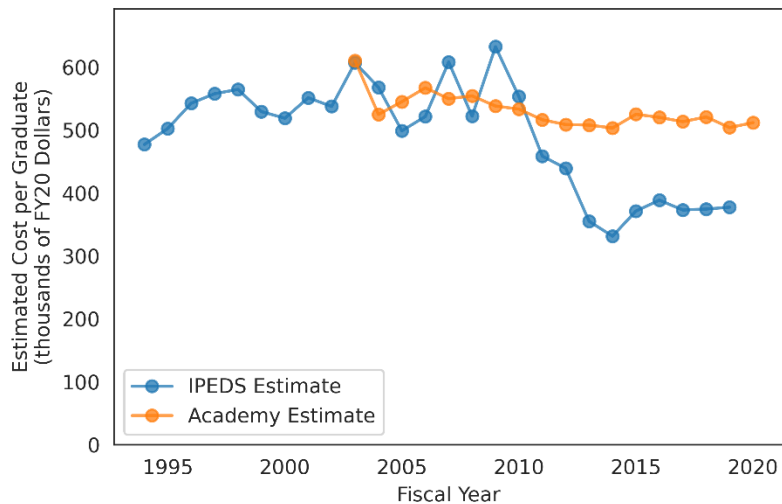
³⁹⁶ IPEDS is accessible at <https://nces.ed.gov/ipeds/>.

³⁹⁷ GDP deflator data are available at <https://fred.stlouisfed.org/series/GDPDEF>.

Table 28. Included and Excluded IPEDS Cost Categories

Cost Category	Included as Cost of Producing Officers
Instruction	Yes
Academic support	Yes
Student services	Yes
Institutional support	Yes
Operation and maintenance of plant	Yes
Scholarships and fellowships	Yes
Auxiliary enterprises	Yes
Other current funds expenditure	Yes
Research	No
Public service	No
Mandatory transfers	No
Nonmandatory transfers	No
Hospital expenditures	No
Independent operations	No

We can use the years for which we have cost estimates from IPEDS and the academies' annual reports to validate our use of IPEDS to impute costs from early years. Figure 29, Figure 30, and Figure 31 plot estimated costs per graduate from both sources. Our IPEDS estimates are lower than the USMA estimates after FY2010 and higher than the corresponding USAFA estimates for most years. Otherwise, our IPEDS estimates match the academy estimates reasonably well.

**Figure 29. Estimated USMA Costs per Graduate**

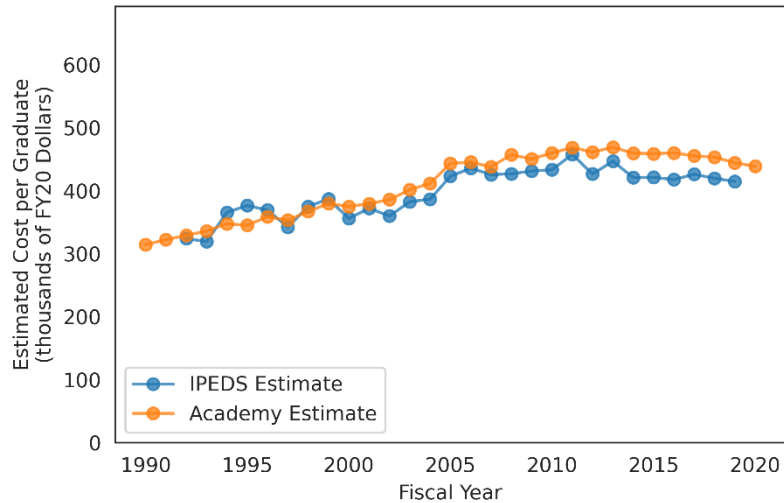


Figure 30. Estimated USNA Costs per Graduate

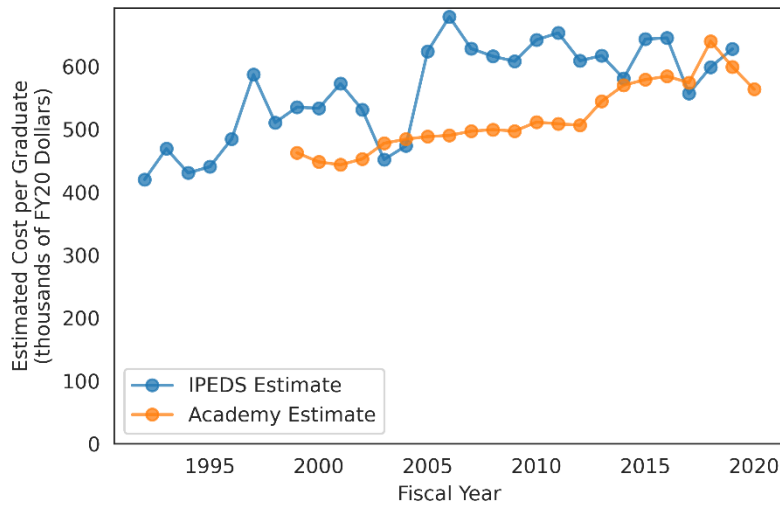


Figure 31. Estimated USAFA Costs per Graduate

2. Results

In this section, we report changes in the real mean cost per graduate across all three academies. We estimate that the real cost of an academy graduate rose 9.1% from FY1996 to FY2020. This estimate is the top-left entry of Table 29. Two issues warrant further analysis. First, this cost growth estimate depends on our FY1996 cost estimates for each academy, two of which come from IPEDS. By using later start years, we can reduce or eliminate error due to imputation. Second, this cost growth estimate is sensitive to the chosen start and end years. A spike in the start year or temporary drop in the end year would produce a low-cost growth estimate, regardless of the trend in the intervening years. Indeed, Figures 29, 30, and 31 show a drop in the cost per graduate for all three academies in FY2020.

To address the issue of imputation error, we extend Table 29 with estimates of cost growth since FY1999, the first year for which we have USAFA data, and FY2003, the first year for which we have USMA data. Our estimates of cost growth from FY2003 do not involve IPEDS data. We estimate that the real cost of an academy graduate rose by 9.8% from FY1999 to FY2020 and by 2.5% from FY2003 to FY2020.

To address the issue of sensitivity to start and end years, we fit an exponential (i.e., constant percentage growth rate) trend to the annual estimates. In the bottom row of Table 29, we report the cost growth over the given period implied by the fitted growth rate. The costs fitted to data from FY1996 through FY2020 increase by 12.8% between those years. The costs fitted to data from FY1999 through FY2020 increase by 13.2% between those years. The costs fitted to data from FY2003 through FY2020 increase by 6.5% between those years. For each start year, the fitted-trend estimation method yields a cost growth estimate between three and four percentage points higher than the start-to-end method. This observation is consistent with the real cost per graduate being below-trend in FY2020.

Table 29: Estimated Percent Changes in Real Cost per Academy Graduate through FY2020

Estimation Method	Start Year		
	FY1996	FY1999	FY2003
Start-to-end	9.1%	9.8%	2.5%
Fitted trend	12.8%	13.2%	6.5%

By both estimation methods, we estimate larger annual cost growth between FY1996 and FY2003 than in the years after. We do not know how much to attribute this difference to actual changes in cost growth over time, as opposed to imputation error. However, our results suggest that our use of IPEDS is more likely to yield overestimates of cost growth than underestimates.

3. Opportunity Costs

Every academy appointment entails a forgone alternative, or “opportunity cost,” to the taxpayer. Instead of attending an academy, an appointee could have attended a civilian university, worked in private industry, or joined a humanitarian organization, just for a few examples. Academy graduates could have graduated from medical or law school, sold a startup, or written a dissertation by the time they fulfill their ADSO. If the forgone alternative is enlistment, civilian service in the DOD, or commissioning through ROTC/NROTC, the opportunity cost accrues through DOD. In all cases, however, the opportunity cost accrues to the taxpayer. The heterogeneous nature of appointee opportunities, the diffuse ways each opportunity would benefit the taxpayer, and our inability to observe the benefits of opportunities forgone make these opportunity costs generally unquantifiable.

Consideration of opportunity cost implies that academies, as taxpayer-funded institutions, should not necessarily appoint the most qualified applicants. Some of those applicants' alternative life paths may provide greater benefits to the taxpayer than attending the academy. Rather, the academies should appoint applicants for whom an appointment provides the most expected value to the taxpayer in excess of the value of those applicants' alternatives.

Though we cannot know any particular appointee's forgone alternative, we can examine the most similar alternative to commissioning through the academy—commissioning through ROTC. For comparison with our academy cost estimates, we consider ROTC costs per graduate in FY2018. According to DOD budget books, mean enacted amounts per year from FY2015 through FY2018 were \$587 million, \$169 million, and \$110 million for Army ROTC, Navy ROTC, and Air Force ROTC, respectively.³⁹⁸ According to CNA's Population Representation in the Military Services report, those programs produced 3,495; 924; and 1,694 graduates in FY2018, respectively.³⁹⁹ Therefore,

³⁹⁸ Department of Defense, *Military Personnel Programs (M-1): Department of Defense Budget: Budget Amendment to the Fiscal Year 2018 President's Budget Request for BASE + Emergency + Overseas Contingency Operations (OCO)* (Washington, DC: OUSD(C), November 2017), https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2018/November2017Amended/fy2018_m1a.pdf; Department of Defense, *Operation and Maintenance Programs (O-1): Department of Defense Budget: Budget Amendment to the Fiscal Year 2018 President's Budget Request for BASE + Emergency + Hurricane Recovery + Overseas Contingency Operations (OCO)* (Washington, DC: OUSD(C), November 2017), https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2018/November2017HurricaneAmended/fy2018_o1a.pdf; Department of Defense, *Military Personnel Programs (M-1): Department of Defense Budget: March Budget Amendment to the Fiscal Year 2017 President's Budget Request for BASE + Overseas Contingency Operations (OCO)* (Washington, DC: OUSD(C), March 2017), https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2017/marchAmendment/fy2017_m1a.pdf; Department of Defense, *Operation and Maintenance Programs (O-1): Department of Defense Budget: March Budget Amendment to the Fiscal Year 2017 President's Budget Request for BASE + Overseas Contingency Operations (OCO)* (Washington, DC: OUSD(C), March 2017), https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2017/marchAmendment/fy2017_o1a.pdf; Department of Defense, *Operation and Maintenance Overview Fiscal Year 2016 Budget Estimates* (Washington, DC: OUSD(C), February 2017), https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2016/fy2016_OM_Overview.pdf; Department of Defense, *Military Personnel Programs (M-1): Department of Defense Budget: Budget Amendment to the Fiscal Year 2015 President's Budget Request for Overseas Contingency Operations (OCO)* (Washington, DC: OUSD(C), June 2014), https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2015/amendment/fy2015_m1a.pdf; Department of Defense, *Operation and Maintenance Programs (O-1): Revolving and Management Funds (RF-1): Department of Defense Budget: Budget Amendment to the Fiscal Year 2015 President's Budget Request for Overseas Contingency Operations (OCO)* (Washington, DC: OUSD(C), June 2014), https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2015/amendment/fy2015_o1a_rfla.pdf.

³⁹⁹ "Table B-30. Active Component Commissioned Officer Gains, FY18: by Source of Commission, Service, and Gender," CNA website, accessed June 25, 2021, https://www.cna.org/pop-rep/2018/appendixb/b_30.html.

we estimate costs per FY2018 ROTC active duty commission of \$168,000; \$183,000; and \$65,000, respectively.

Our estimates of average ROTC costs are substantially less than our estimates for USMA, USNA, and USAFA, as shown in the figures in section 3.E.1. However, because average costs include fixed costs, we should be careful not to interpret average costs as marginal costs. For example, we should not expect a one-officer decrease in USAFA commissioning to save over \$500,000 because USAFA would be unlikely to decrease its spending on plant operation and instruction proportionally, if at all.

Another reason to be careful with comparisons of commissioning source costs is that the high cost of commissioning officers through the academies comes with unique benefits. We describe unique features of an academy education in chapter 2. Those unique features lead to unique contributions during and beyond military service, some of which we quantify in the previous sections of this chapter.

F. Summary

In this chapter we consider many inputs to ROI in academy graduates, only some of which we can quantify. In particular, opportunity costs, benefits beyond U.S. military service, and benefits to the diversity of accession sources defy quantification. Further, the values of these costs and benefits change over time as missions, markets, and public preferences change. Therefore, we consider any attempt to distill ROI in academy graduates to a single quantity to be futile, irresponsible, and misguided. This consideration is not unique to the academies, but applies to any publicly-funded higher education. Blagg and Blom (2018) find that “precisely calculating the aggregate ‘benefits to education’ for a state is close to impossible. Such a calculation relies on several assumptions, as well as the personal values of policymakers.”⁴⁰⁰

Being unable to quantify ROI does not preclude us from improving it. Improving ROI begins with identifying policy options that would improve specific inputs to ROI. We discuss such options in the next chapter.

⁴⁰⁰ Kristin Blagg, and Erica Blom, *Evaluating the Return on Investment in Higher Education: An Assessment of Individual-and State-Level Returns* (Washington, DC: Urban Institute, 2018), https://www.urban.org/sites/default/files/publication/99078/evaluating_the_return_on_investment_in_higher_education.pdf.

4. Potential Effects of Increasing the ADSO for Academy Graduates

In response to the 2020 NDAA requirement, IDA began multiple research efforts simultaneously, employing a blended methodology that drew on both qualitative and quantitative data. This blended-research approach enabled IDA to examine the costs and benefits of commissioning officers through the service academies, consider the potential effects of extending the ADSO, and identify options for ensuring adequate return on investment in service academy graduates.

A. Literature

IDA reviewed the relevant literature available, to include academic articles, theses, and dissertations; technical reports; Service/Academy internal reports and materials; external reports (e.g. Government Accountability Office (GAO); Congressional Research Service (CRS); Federally Funded Research and Development Centers (FFRDCs); newspaper reporting; as well as materials from the NCES and other data sources). This body of literature is copious, which reflects that the military service academies are not only an “Item of Special Interest” for the Senate Armed Services Committee.

B. Interviews

The qualitative data collection centered on not-for-attribution interviews and focus groups. Using a semi-structured interview protocol, research participants were asked to describe the value associated with a military service academy education and experience, as well as the costs and benefits of that education to the individual, the military, and to the country. They were also asked to provide their views on options for ensuring adequate ROI in military service academy graduates, and the effects of altering the ADSO associated with the quality of applicants applying to the service academies. Research participants were asked about their perspectives on the associated benefits and risks (including risk of infeasibility) of the aforementioned options. Finally, they were asked about what a pilot program for extending the ADSO might look like.

Research participants include graduates and non-graduates from each of the military services; professors, educators, and administrators from each service academy, but also from civilian colleges and universities; senior leaders from across DOD; leaders of industry; as well as former members of Congress (House and Senate). The insights and perspectives gathered during these not-for-attribution interviews are reflected throughout

this report. For the complete list of the research participants represented, see 7. Appendix D.

C. Qualitative Insights

As referenced, research participants were asked to describe their perspectives regarding the value associated with a military service academy education and experience, as well as the ultimate costs and benefits of that education to the individual, to the military, and to the country. They were also asked to provide their views on options for ensuring adequate ROI, as well as the effects of altering the ADSO. Research participants were asked about their perspectives regarding the associated benefits and risks (including risk of infeasibility) of the aforementioned options. Finally, they were asked about what a pilot program for extending the ADSO might look like.

With regards to value or ROI of the service academy experience, a common theme irrespective of the research participants' backgrounds, was that the value was not quantifiable; multiple individuals suggested that there is no tangible metric for the ROI of the service academy experience. Of note, some of the most emphatic statements regarding the value of the academy experience came from members of Congress. One individual whose only affiliation with the service academies was that they ran against graduates during reelections, served in Congress with academy graduates, and of course nominated individuals to be applicants stated, "It's not just their commitment to service of the country. When they go in to the private sector, whether for profit, educational, or nonprofit, they make real contributions, they bring leadership skills and perspective." Another former congressional member, whose only stated affiliation was to have nominated individuals to be applicants, reflected on academy graduates as "lifelong leaders" who uphold our values through selfless service. That congressional member stated,

Our military technology is superior to others, but it is our military operating under the rule of law, protecting and defending our society. The academies instill value-based leadership to serve and protect the nation. [...] Graduates add value to the nation by being lifelong leaders to our society.

From their perspective, "Rather than a dollar metric to ascribe value, the primary metric has to be 'service' over 'self.'"

Individuals who served in the military from other commissioning sources emphasized the academies' extensive emphasis on officer development. One former senior civilian in the Air Force Secretariat, a retired colonel commissioned through the Air Force OTS, described the academies as follows: "They serve a broader purpose to keep the flame lit on pieces of military expertise you don't get in summer training or at a university—history and tactics of war and learning a significant amount about their service as a leader." An industry leader and retired Army lieutenant colonel, commissioned through ROTC, emphasized both leadership and drive, stating, "Graduates are very loyal to the

organization and towards each other. They are driven, successful, and will find a way to get things done. They are also organized and used to working with and leading people—something that you cannot take for granted.” A graduate likewise referenced the lifelong connections forged through the Academy experience and education, stating that these are “Life-long friendships. Connections you make that help businesses succeed, help government succeed. Shared experience.”

A retired admiral addressed the shared experiences and bonds formed. He described it as follows,

Bonds formed there penetrate years of service, confidence, familiarity, trust, that makes things work. Not only within a class but the three before you and after you—a shared experience that 7 classes can tag up to. You will be serving with someone from those classes. You cannot replicate that anywhere else. There’s no way to measure the intangibles.

Many research participants referenced the Service Academy education and experience as fundamental for developing leadership and building up the team. As one graduate stated, “You get the leadership out of it, the ability to solve hard problems, lead teams to solve hard problems. The sense of team—breaking down the ‘me’ and building up the team.”

Graduates and non-graduates alike emphasized the honor code and character development that forms the foundation for the Academy education and experience. A graduate who also served in Congress referenced the motto of his academy, emphasizing that the experience and education “prepares you morally for duty and honor, not just for service, but also for citizenship and government. This is the biggest thing academies tend to give.” Another graduate who is currently on the USAFA Board of Visitors stated:

The value I received—is not the education, I could get a chemistry degree anywhere, I could not have gotten the honor code anywhere. And I wouldn’t have understood that depth of honor going to a 6-month [ROTC Leadership] program; it’s just not the same. You know that.

Another theme referenced especially by graduates was adversity. A retired Navy captain, who is now a senior executive, described the value of the service academy experience from his perspective as “The ability to endure uncomfortable or challenging situations, ability to persevere, and optimism that you’re going to succeed.”

With regards to the effect of modifying the ADSO and the quality of applicants applying to the service academies, a common theme irrespective of the research participant’s background was that it would result in fewer applicants, as well as a decrease in the quality of applicants. A former congressman and former senior civilian in the Army and Air Force Secretariats referenced that

The service academies are more selective than most schools that have ROTC programs. The selection process at that stage, and self-selection, it’s a tough, rigorous college experience. Because it is so selective they are the

men and women who have the most options and will see their buddies getting good jobs and saving money—will have more choices than others.

Several individuals expressed concerns about the impact an increase in ADSO may have on diversity, especially for female applicants.

As described, research participants expressed common views on the risks associated with changes to the ADSO. Multiple participants cautioned against “trying to fix what is not broken.” As one retired Air Force Colonel stated, “We really have to spend 59 minutes out of the hour thinking about what the problem is that we’re trying to solve. Do we want longer service or better service?”

A graduate who served as a senior civilian in the Office of the Secretary of Defense described the perspective he could imagine a potential applicant might have:

You are dealing with a 17 year old kid. And you are already talking about 9 years of their developmental life at the point when they’re changing the most—the service obligation is not the way to go. We should be actively engaging them in service and the journey, it’s much more powerful and superior.

Research participants did identify some ideas regarding how to make an increased ADSO more palatable. Some examples of incentives identified include graduate school options, choice of branch, choice of assignment, or other types of professional development investments that would be value added for the individual in the long-term. One non-graduate who served in Congress (House and Senate) suggested that a six-year ADSO might be incentivized if applicants were offered “exciting things in that last year of service that would be added value for adding the sixth year.”

D. The USMA ADSO Pilot

For the 2019-20 admissions cycle (Class of 2024), USMA conducted a pilot program of an ADSO increase from five to six years. The USMA pilot provides limited but precious quantitative experimental evidence of the effects of an ADSO increase. IDA obtained information on the USMA pilot through direct communication with the USMA admissions office and the Office of Economic and Manpower Analysis (OEMA).

On the initial application form (“Candidate Questionnaire”), USMA asked applicants if they preferred a five-year or a six-year ADSO. Then USMA randomly selected 200 qualified applicants among those who stated a preference for a six-year ADSO. Among those applicants, USMA randomly selected 100 applicants to receive an offer of appointment with a six-year ADSO. The remaining 100 applicants served as a control group, each receiving an offer with a five-year ADSO. OEMA, in partnership with USMA, analyzed differences in applicant quality and demographics across stated ADSO preferences and accepted ADSO durations.

Of the 4,099 applicants, 2,436 (59%) stated a preference for a six-year ADSO. Applicants who stated a preference for a six-year ADSO had lower leadership and fitness scores and were less likely to be non-white, female, or a recruited athlete.

The result that any applicants would state a preference for a six-year ADSO, let alone a majority of applicants, is surprising. The application did not express any benefit to the applicant of stating a preference to be obligated to serve an additional year. Our best explanation for this result is that applicants considered the question an opportunity to improve their probability of admission by signaling a high willingness to serve. This explanation is consistent with the result that less attractive applicants were more likely to state a preference for a six-year ADSO. Applicants who were already confident that they would be admitted had less to gain from signaling a high willingness to serve. However, having less to gain does not explain why applicants would not signal a high willingness to serve; another consideration would have needed to convince applicants that doing so would be an expected net loss. We postulate two such considerations. First, applicants may have preferred to be honest, and would have incurred a psychic cost of giving a false signal. Second, applicants may have suspected that their stated preference had a chance of materializing in their offer letter, despite no such explicit statement in the application. Indeed, this suspicion was valid—the chance came out to be 100 out of 2,436, or 4.1%.

If applicants were sending false signals of willingness to serve, comparisons of quality and diversity across signals do not inform us about the effects of an ADSO increase. On the other hand, the acceptance decisions of applicants offered different ADSOs directly inform us about how an ADSO increase would affect acceptance rates and the composition of the group of accepters. Those decisions also directly test our hypothesis of false signaling. If applicants who state a preference for a six-year ADSO over a five-year ADSO accept the latter at a higher rate, some of those stated preferences must have been false.

Among the 100 qualified applicants selected to receive an offer of appointment with a six-year ADSO, 77% accepted the offer, compared to 85% of applicants in the control group. A one-sided test of independent sample proportions yields a p-value of 0.0749.⁴⁰¹ Therefore, the difference in acceptance rates between the two groups is significant at the 10% level. Thus, we have evidence that 1) increasing the ADSO would decrease acceptance rates among academy applicants; and 2) applicants falsely signaled their willingness to serve.

OEMA also found suggestive evidence that increasing the ADSO would decrease quality and diversity among accepters. Among participants in the top half of academic scores, 62% of those offered a six-year ADSO accepted compared to 85% of those offered

⁴⁰¹ In other words, if applicants in the two groups were all equally likely to accept, the experiment had a 7.49% probability of producing a difference in group acceptance rates at least as negative as what we observe.

a five-year ADSO. This difference in acceptance rates is significant at the 1% level. For those in the top half of leadership scores and those in the top half of fitness scores, the treatment-control difference in acceptance rates was negative, but not as large as the overall difference, and not statistically significant at the 10% level. Among non-white participants, 71% of those offered a six-year ADSO accepted compared to 88% of those offered a five-year ADSO. Women exhibited a similar pattern as non-whites in that 71% of women offered a six-year ADSO accepted compared to 89% of those offered a five-year ADSO. The differences in acceptance rates for minorities and women are significant at the 10% level.

The USMA pilot also provides some indications of stakeholder reactions to increasing the ADSO. USMA conducted the pilot upon direction from the Office of the Undersecretary for Defense for Personnel and Readiness, which came at the request of a member of the Senate Armed Services Committee. According to a USMA official, the pilot stoked pushback from USMA alumni, but not from applicants or their parents and guardians. Limiting this pushback was the primary reason USMA did not select a larger sample.⁴⁰²

The USMA pilot has some limitations in its ability to inform us about the total effects of increasing the ADSO from five years to six. These limitations reflect not faults of the pilot design on the part of the designers (USMA and OEMA), but difficulties in translating the results beyond the designers' objectives. First, the pilot was conducted at a single academy; the results may not generalize to USNA and USAFA. USNA and USAFA graduates exhibit higher six-year retention rates than USMA graduates (see section 3.A.2), so they may respond differently to a six-year ADSO. Second, the pilot was conducted with a small sample size, so most results, even if practically significant, are not statistically significant at the 5% level. For example, an eight-percentage point decrease in acceptance rates would be a regrettable consequence of increasing the ADSO, but even in the absence of any true effect, there is a non-negligible (7.49%, estimated in this case) probability of a difference that large between 100-person treatment and control groups. Third, we do not know what applicants who were dissuaded by the six-year ADSO did instead. Perhaps some attended another academy (that did not offer six-year ADSOs at the time of the USMA pilot), or enrolled in ROTC at another university, or enlisted. From the perspective of DOD, or more broadly the U.S. taxpayer, each alternative represents a different opportunity cost of keeping the ADSO at the status quo.

Fourth, the USMA ADSO pilot did not examine the effect of changing the ADSO on applications, but on acceptance. Multiple secondary effects complicate the translation of an effect on acceptance into an effect on applications. Some, but perhaps not all, applicants

⁴⁰² Another reason against a larger sample was that pilot implementation effort had been diverted to other activities in response to the COVID-19 pandemic.

who did not accept an offer with a six-year ADSO would not have applied in the first place if they knew their ADSO would be six years instead of five. Even some applicants who accepted a six-year ADSO may not have taken the effort to apply if they knew the ADSO would be six years, but were willing to accept with that effort already expended. Furthermore, perhaps some students who did not apply would have applied if the ADSO was six years because the dissuasion of other potential applicants would have raised their chances of admission. In the absence of evidence on the relative strengths of these secondary effects, we cannot bound the effect of a one-year ADSO increase on applications. Under a pragmatic assumption that these secondary effects would cancel out, the USMA ADSO pilot provides suggestive evidence that a one-year ADSO increase would decrease applications by 8%.

Despite its limitations, the USMA pilot, as a recent controlled experiment in a real admissions environment, is an unrivaled source of information on the potential effects of increasing the ADSO. The USMA pilot provides suggestive evidence that increasing the ADSO would decrease acceptance rates and decrease academic quality and diversity among accepters. In the next chapter, we consider policy options that may improve ROI, including increasing the ADSO, but also other options that do not entail the same drawbacks. In the subsequent chapter, we describe how the academies could pilot two of those options. For those pilot designs, the USMA pilot acts as guidance, complement, and inspiration. “Guidance” because we can learn from the experience of executing the pilot, “complement” because we can design pilots to give results that build on the results of the USMA pilot rather than being redundant or unrelated, and “inspiration” because the USMA pilot shows how controlled experimental evidence is uniquely valuable for informing policy.

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5. Options for Improving Return on Investment in Service Academy Graduates

In this chapter we describe and analyze numerous options for ensuring an adequate return on investment in military service academy graduates. We describe the options in rough order of their conceptual proximity to current and considered policies, as referenced in the June 11 Senate report that provided the impetus for this assessment. Therefore, we begin with the status quo, next we consider increasing the ADSO, afterwards other invariant changes to the ADSO, then options that would produce variation in ADSOs across cadets and midshipmen, and finally options beyond ADSO changes that could improve ROI.

A. Status Quo

In this section we consider the current ADSO, the “status quo” of five years, with additional years of ADSO added for post-commissioning certifications such as pilot training. The feasibility, potential benefits, and potential risks of the status quo are described next.

1. Feasibility

Keeping the status quo of a five-year ADSO is certainly feasible since this is what the military departments are currently executing in terms of their academy personnel processes from recruitment through commissioning. Each of the military departments have aligned their officer personnel and talent management systems with the knowledge of this existing ASDO and those from other commissioning sources.

2. Potential Benefits

Potential benefits of remaining with the status quo manifest in several ways. For one, the military departments and the service academies could continue to focus their recruitment and selection processes towards quality and diversity goals without the introduction of an additional variable associated with a changed ADSO. As highlighted in the 2021 Gatekeepers to Opportunity report, Congress could assist in greater military service academy diversity and service attempts to reach their goals via the individuals that they nominate to enter the academies.⁴⁰³ Additionally, since each of the military services

⁴⁰³ Connecticut Veterans Legal Center, Veterans Inclusion Project, *Gatekeepers to Opportunity*.

align their selection and promotion processes based on statute, policy, and needs, the status quo permits existing procedures to continue, to include the winnowing of lesser performing officers.

3. Potential Risks

Potential risks associated with the status quo option of a five-year ADSO come in the form of lost opportunities to improve ROI. Modifications to the current ADSO may improve ROI, but entail their own risks, as was seen in the USMA pilot. We describe potential risks and benefits associated with various ADSO modifications in the remaining sections of this chapter.

B. ADSO Modifications

1. Increasing the ADSO

The impetus for this assessment, within the 11 June Senate report on the 2020 NDAA, explicitly mentions one policy option, “an increase in the initial Active Duty service obligation for service academy graduates.” This language is not the first instance where Congress has considered increasing the ADSO. Congress increased the ADSO from five years to six years in 1989, but undid the increase in 1996. Thus, we have a historical benchmark where Congress tested an ADSO increase and the increase failed the test. If increasing the ADSO is worthwhile, it must be because of one or more changes since 1996. We detail public arguments for and against increasing the ADSO in Table 3.

U.S. defense strategy and personnel policy have changed in many ways since 1996. These changes may warrant increasing the ADSO only if the change increases the positive effects or decreases the negative effects of increasing the ADSO. As we discuss in section 1.C.3, changes to the cost of an academy education do not change the effects of increasing the ADSO. Therefore, high or increasing cost is not alone a valid justification for modifying the ADSO.

We follow a two-step framework to consider the merits of increasing the ADSO. First, we anticipate the effects of increasing the ADSO in qualitative terms. Second, we evaluate how those effects may be more or less important today compared to 1996.

Informed by historical arguments for and against an ADSO increase (section 1.C.1), qualitative insights from experts (section 4.C), and results from the USMA ADSO pilot (section 4.D), we anticipate the following effects of increasing the ADSO:

- Academy graduates who would have served five years on active duty serve six years instead
- Students whose maximum acceptable ADSO is between five and six years choose not to attend an academy, so:
 - Academy classes become less diverse
 - Academy classes become less academically qualified at admission
 - Academy classes become more willing to serve
 - Academy intercollegiate sports teams become less competitive
 - Opposite, but smaller changes occur for other commissioning sources, especially ROTC/NROTC.

Therefore, an ADSO increase could be justified if, compared to 1996, class diversity, academic qualifications, or intercollegiate sports competitiveness are now less important overall or at the academies in particular, or if the sixth year of active duty officer service or willingness to serve are now more important overall or at the academies in particular. However, among these five desiderata, class diversity stands out as being *more* important now than in 1996, both overall and at the academies in particular. USMA launched over \$22 million in diversity and inclusion initiatives in 2020.⁴⁰⁴ USNA published a 16-action diversity and inclusion strategic plan in March 2021.⁴⁰⁵ Following his speech on racism and diversity to USAFA, Lt. Gen. Jay Silveria wrote in 2018:⁴⁰⁶

Over the course of my career, waging war and preserving peace has grown infinitely more complex. Today, the leaders we prepare must be able to understand ideas, languages and customs that span continents and cultures as they never have before. Furthermore, they must be able to harness the unique talents of the airmen they will lead... Diversity is a force multiplier.

There is no evidence for a decrease in the importance of academic qualifications. All the academies assign weights to different factors they consider in the admissions process. Both USMA and USAFA consider academic quality as measured by high school GPA, test scores, and class standing, which has made up 60% of an applicant's score since before

⁴⁰⁴ West Point Association of Graduates, *West Point Diversity and Inclusion Initiatives* (West Point, New York: West Point Association of Graduates, December 2020), <https://www.westpointaog.org/file/westpointdiversityandinclusion.pdf>.

⁴⁰⁵ United States Naval Academy Office of Diversity, Equity, and Inclusion, *U.S. Naval Academy Diversity and Inclusion Strategic Plan* (Annapolis, MD: United States Naval Academy, March 2021), https://www.usna.edu/Diversity/_files/documents/D_I_PLAN.

⁴⁰⁶ Lt. Gen. Jay Silveria, "Why Diversity?" *United States Air Force Academy*, February 14, 2018, <https://www.usafa.edu/news/why-diversity/>.

1996.⁴⁰⁷ It is unclear whether the Naval Academy has changed its weighting of academic qualifications since 1996; in 2001 it made up 63% of an applicant's score and no changes after that have been identified.⁴⁰⁸ Data for entering students' SAT scores was only available from 2002 to 2019 and it shows students' academic qualifications have increased slightly over time,⁴⁰⁹ indicating no drop in importance since 2001.

An increase in the ADSO is also not justified based on the importance of intercollegiate sports competitiveness because there is evidence that it has become more important since 1996. In 2015, DOD Instruction 1322.22 made it permissible for academy graduates to apply for a waiver to participate in professional sports after only two years of service, when the anticipated media attention was judged to be helpful to public affairs and recruiting efforts.⁴¹⁰ In 2020, Directive Type Memorandum-19-011 made it possible for academy graduates to join a professional sports team immediately upon graduation with the stipulation that they serve after their professional careers or repay their tuition.⁴¹¹ These directives suggest the government is willing to forego any service obligation to attract the most desirable athletes to the academies.

Completing a sixth year of service has fluctuated in importance. In the Navy, the 9/11 attack and 2007 recession were periods of increased officer retention, while 2011-2014 was a period of record lows.⁴¹² From 1992-2004 the Army had to re-designate many captain-level duties to majors because the loss of high quality junior officers led to a lack of qualified Captains.⁴¹³ As of 2018, the Army succeeded in solving their problems with

⁴⁰⁷ Hardison, Burkhauser, and Hanser, *United States Service Academy Admissions*; Hanser, and Oguz, *United States Service Academy Admissions*; "US Air Force Academy – USAFA," Service Academy Coach website, accessed June 16, 2021, <http://www.serviceacademycoach.com/air-force-academy-usafa.html>; "FAQ: The Admissions Process," West-Point.org website, accessed June 16, 2021, <https://www.west-point.org/academy/malo-wa/educators/faqs.html>.

⁴⁰⁸ Brian S. FitzPatrick, "The Performance of Preparatory School Candidates at the United States Naval Academy" (MA thesis, Naval Postgraduate School, 2001), <https://apps.dtic.mil/sti/pdfs/ADA397259.pdf>; Phoebe M. Kotlikoff, "Estimating the Effects of Pre-College Education on College Performance" (research paper, United States Naval Academy, October 2013), <https://apps.dtic.mil/sti/pdfs/ADA581860.pdf>.

⁴⁰⁹ "Integrated Postsecondary Education Data System," National Center for Education Statistics, accessed May 5, 2021, <https://nces.ed.gov/ipeds/datacenter/InstitutionByName.aspx?goToReportId=1>.

⁴¹⁰ Department of Defense, "Service Academies," DoDI: 1322.22, p. 17.

⁴¹¹ Department of Defense, "Military Service Academy Graduates Seeking to Participate in Professional Sports," DTM-19-011 (Washington, DC: SecDef, October 19, 2020), <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/132222p.pdf>.

⁴¹² Guy M. Snodgrass, "Keep a Weather Eye on the Horizon: A Navy Officer Retention Study," *Naval War College Review* 67, no. 4 (Autumn 2014): 64-92, <https://digital-commons.usnwc.edu/nwc-review/vol67/iss4/7/>.

⁴¹³ Casey Wardynski, David S. Lyle, and Michael J. Colarusso, *Towards a US Army Officer Corps Strategy for Success: Retaining Talent* (Carlisle, PA: U.S. Army War College, January 2010), <https://apps.dtic.mil/sti/pdfs/ADA513158.pdf>.

retaining junior and mid-grade officers partially because of a reduction in deployments and the overall size of the Army,⁴¹⁴ but their success is also attributed to their Career Satisfaction Program (CSP), which allows officers to make more decisions about their career trajectories in trade for additional years of service.⁴¹⁵ The Navy and Air Force are also meeting their numbers⁴¹⁶ with the exception of pilots.⁴¹⁷ The CSP has been recommended as a model for the Air Force, allowing pilots to have a say in their location or aircraft for a service commitment.⁴¹⁸ The Marine Corps has also had success with providing agency to their force; Marines who are assigned to their preferred duty stations have higher performance rates and higher retention rates among top performers.⁴¹⁹ The services are now focused on retaining the very best performers for senior leadership, which is not specific to Academy graduates, but rather focused on incentivizing and promoting those officers of greatest merit.⁴²⁰

When retaining junior officers does become a need again, as the need appears to be cyclical in nature,⁴²¹ one should not conclude extending the ADSO of academy graduates as the best or only solution to this issue. USMA graduates leave at greater rates than the other commissioning sources unless officer retention is broken down by level of incentive, in which case USMA officers retain at higher rates than ROTC graduates with four-year scholarships. USMA graduates that demonstrated the best performance and ability while attending USMA retain at higher rates than other USMA graduates who did not perform as well.⁴²² Past researchers who have studied junior officer retention did not consider

⁴¹⁴ Thomas D. Koh, “Army Officer Retention: How to Retain the Best and Brightest” (MA thesis, Johns Hopkins University, April 2018), <https://jscholarship.library.jhu.edu/handle/1774.2/59905>.

⁴¹⁵ Tobias Switzer, *Three Recommendations for Improving Air Force Pilot Retention* (Washington DC: Center for Strategic and International Studies (CSIS), October 2020), <https://www.csis.org/analysis/three-recommendations-improving-air-force-pilot-retention>.

⁴¹⁶ Snodgrass, “Keep a Weather Eye on the Horizon”; Scott Maucione, “After a Year of High Retention, the Navy is Thinking About Force Balance,” *Federal News Network*, December 30, 2020, accessed June 21, 2021, <https://federalnewsnetwork.com/navy/2020/12/after-a-year-of-high-retention-the-navy-is-thinking-about-force-balance/>.

⁴¹⁷ United States Government Accountability Office, *Military Personnel: DOD Needs to Reevaluate Fighter Pilot Workforce Requirements*, GAO-18-113 (Washington, DC: U.S. Government Accountability Office, April 11, 2018), <https://www.gao.gov/assets/gao-18-113.pdf>.

⁴¹⁸ Switzer, *Recommendations for Improving*.

⁴¹⁹ Ansley White, “Effects of Preferred Duty Station Assignment on the Performance and Retention of USMC Personnel” (PhD diss., Naval Postgraduate School, March 2021), <https://calhoun.nps.edu/handle/10945/67191>.

⁴²⁰ Koh, “Army Officer Retention”; Snodgrass, “Keep a Weather Eye on the Horizon.”

⁴²¹ Ibid.

⁴²² Wardynski, Lyle, and Colarusso, *Towards a US Army Officer Corps Strategy for Success*.

retention rates by commissioning source as sufficient evidence for determining that the ROI in the academies was too low.⁴²³

The importance of willingness to serve is the most difficult to quantify. We are not aware of a direct measure of an officer's enthusiasm for service or the quality of service they are willing to provide, before or after 1996, which by itself could indicate a change in importance. Of the three academies, only USNA includes a measure for likelihood of retaining for a 20-year career as part of their admissions process. Their career interest measure was weighted at a high of 19% of an applicant's score in 1984, and has reportedly been adjusted repeatedly over the years, dropping as low as 3% as of 2001.⁴²⁴ We do not find evidence that willingness to serve has increased in importance to justify an increased ADSO.

Altogether, we find no greater justification for an increased ADSO today than when the most recent ADSO increase was repealed in 1996. However, our inferences about policymakers' current valuations of the effects of an ADSO increase do not substitute for those preferences themselves. Even if our inferences are accurate, leaders of the academies, among the military departments, and in DOD may change their valuations of each effect over time. When they do, they can return to the two-step framework to understand how changes in valuations translate to arguments for increasing or decreasing the ADSO. They can also use the framework to re-evaluate the justification for an ADSO change as experimental evidence reveals unanticipated effects.

2. Decreasing the ADSO

Given our expectation that increasing the ADSO would decrease class diversity, academic qualifications, and intercollegiate sports competitiveness, we may expect that the opposite change would produce opposite effects. In the previous section we found that class diversity in particular has become more important since Congress undid the most recent ADSO increase in 1996. By the same logic as our framework in the previous section, this increased importance of class diversity offers justification for *decreasing* the ADSO.

In general, decreasing the ADSO would allow the academies to attract students who would otherwise decline an appointment or not apply in the first place. Students who would make special contributions to diversity, academics, or athletics are special cases of this primary benefit. The primary drawback of decreasing the ADSO would be decreased

⁴²³ Michael L. Hansen, and Shanthi Nataraj, *Expectations About Civilian Labor Markets and Army Officer Retention* (Santa Monica, CA: RAND Corporation, 2011), <https://apps.dtic.mil/sti/pdfs/ADA554299.pdf>.

⁴²⁴ Thomas A Sheppard, "A Validation of the Strong Campbell Interest Inventory as Part of the Admissions Process at the United States Naval Academy" (MA thesis, Naval Postgraduate School, March 2002), <https://apps.dtic.mil/sti/pdfs/ADA403572.pdf>.

retention in the fifth year of graduates' active duty service (and earlier years of service if the ADSO were decreased by more than one year).

A concern at least as old as the 1990/91 NDAA is that decreasing the ADSO to four years would equate the initial ADSOs for academy and four-year ROTC graduates, and that equal ADSOs between these two sources contradict their unequal levels of investment.⁴²⁵ This concern could arise from multiple perspectives. From an efficiency perspective, this concern could arise from the premise that greater investment is only justified if it yields greater retention. However, there are many facets of ROI beyond retention, as we explored in chapter 3. Also, precedents abound where services invest intensely in a selection of members without imposing a longer ADSO. Such precedents include Army Ranger School, Navy Nuclear Power School, and the Air Force Combat Rescue Officer Development course.

Concern about equal ADSOs for academy and four-year ROTC/NROTC graduates may also arise from a fairness perspective in that academy graduates receive greater investments, so perhaps they should be obligated to serve longer. However, cadets and midshipmen gain their status through a selective application process. Thus, fairness across commissioning sources manifests not in those sources' relative ADSOs, but in their selection processes. If cadets and midshipmen gain their scarce status on the basis of merit, their enjoyment of greater investment for the same ADSO is not necessarily unfair.

3. Supplementing the ADSO with an Obligation to Serve in the Selected Reserve

Another option for changing the ADSO would be to increase the duration, but allow officers to serve any of the increase in the SELRES. For example, officers could be obligated to serve five years on active duty and a sixth year on active duty or in the SELRES. This option represents a compromise between the status quo and a six-year ADSO.

The SELRES option presents potential benefits beyond the obligated year itself. First, reserve units could benefit from academy graduates who have just served five years on active duty sharing their knowledge and experience. Second, academy graduates who would not have served in the SELRES at all may decide to continue serving in the SELRES based on positive experiences in their obligated year.

The SELRES option also presents unique potential risks. First, short SELRES obligations would invite frequent turnover in reserve units. Second, officers leaving active duty are experiencing major life transitions, including moving residence and starting a full-time civilian job, which make it difficult to transition to a SELRES position. Officers' opportunities to join the SELRES are limited to vacancies in their area for which they are

⁴²⁵ Amendment No. 595, *Congressional Record*.

qualified. Applicants to those vacant positions are not entitled to them; any given location and/or unit may have more applicants than vacancies.

The SELRES option could include a waiver for officers who cannot find a SELRES position in their area. However, such a waiver would dilute the effect of the option on years served and give officers leaving active duty an incentive to locate in areas where SELRES opportunities are most scarce. This incentive would further dilute the effect of the option on years served and interfere with former active duty officers' contributions to civilian communities.

4. Variable Initial ADSO

In this section we consider the option of offering initial ADSOs of varying durations to applicants. Varying the ADSO serves to capture the benefits of increasing and decreasing the ADSO in a targeted fashion. By offering longer ADSOs to some applicants, the services could improve retention among graduates. By offering shorter ADSOs to some applicants, the services could recruit applicants who otherwise would not have accepted.

Ideally, academy admissions offices could identify the maximum ADSO each applicant would accept. Then, offering to each desired applicant their maximum acceptable ADSO would maximize those applicants' retention. In practice, admissions offices have imperfect information about applicants' maximum acceptable ADSOs. One option for admissions offices to use their imperfect information would be to offer shorter ADSOs to more desirable applicants, and vice versa. This option entails the risk that more desirable applicants would have accepted a longer ADSO. A simple implementation without that risk would be to offer a six-year ADSO to wait-listed applicants. The risk of that implementation would be decreased acceptance rates among those applicants, and therefore decreased quality among those that accept. Another option would be for admissions offices to estimate each applicant's maximum acceptable ADSO and offer each desired applicant their respective estimate. However, estimating each applicant's maximum acceptable ADSO would strain the admissions decisions process and entail some error.

Another option would be to implement a mechanism by which each applicant reveals their maximum acceptable ADSO in their application. As we discussed in section 4.D, we can expect applicants to overstate their maximum acceptable ADSO unless that stated ADSO materializes in their offer of appointment. On the other hand, applicants lack an incentive to state any willingness to accept a greater-than-minimum ADSO unless doing so improves their probability of admission. Therefore, an effective mechanism would involve an item on the academy application that asks the applicant to state the maximum ADSO they would be willing to accept, prefaced by the following information:

- The admissions office will favor higher stated ADSOs in its evaluation of applications.
- If an applicant is admitted, their offer of appointment will include their stated ADSO.

Ideally, the item would quantify the value of a higher stated ADSO. As a notional example, the item could state “the admissions office expects that each additional year of ADSO will be worth a 10-point increase in the SAT score or a 0.1-point increase in GPA for the average applicant.” The potential responses could be limited to whole years or whole months, and could be bounded above and/or below.

This mechanism is an implementation of a sealed-bid multi-unit auction, which Maskin and Riley (2000) show maximizes seller revenue as long as bids have an appropriate lower bound. In the context of academy admissions, “seller revenue” translates to ROI, “bid” translates to all features of each applicant, including their stated ADSO, and “appropriate lower bound” translates to the policy-mandated minimum ADSO and all other admission requirements. The minimum ADSO is currently five years, but decreasing the minimum ADSO could give admissions offices the flexibility to consider higher-quality applicants who are not willing to accept a five-year ADSO.

In asserting that the sealed-bid multi-unit auction maximizes revenue, we presume that admissions offices are willing and able to evaluate the ROI in applicants, at least in expectation. The admissions offices are already responsible for evaluating candidates over the variety of benefits that constitute ROI, but currently do not need to consider ADSO variation. Part of introducing a mechanism like that described above would be for the services to deliberate on how to value higher stated ADSOs among applicants. That deliberation may involve not only the admissions offices, but officials responsible for managing the distribution of experience levels throughout the force. Outputs of such deliberation may include expected exchange rates of stated ADSO with the SAT score and/or GPA, separate admission standards for each level of stated ADSO, and/or hypothetical examples of comparable applications with different stated ADSOs.

The optimality of the mechanism also presumes that applicants understand and believe academy claims about how their stated ADSO affects their probability of admission. The academies should make such claims and outputs of deliberation on them clear in the application. Then the academies should evaluate applicants in a manner faithful to those claims. Transparency and consistency in how ADSO bids will be used and are actually used to evaluate applicants are not only virtuous aspirations, they are essential to the success of the sealed-bid ADSO mechanism. Transparency and consistency also mitigate the risk that applicants, their families, alumni, officials, or the public perceive unfairness in how ADSO bids are used to evaluate applicants whether or not any unfairness exists.

Compared to constant changes to the ADSO, the auction mechanism has advantages for DOD and for applicants. DOD enjoys greater retention (from high bidders) and/or greater flexibility in considering applicants (from low bidders). The auction grants agency to applicants in that applicants with a high willingness to serve have a way to credibly communicate that willingness, and thereby improve their chances of admission. The mechanism does not impose a particular ADSO on any applicant, deterring outcry from stakeholders who oppose a particular duration.

On the other hand, agency is only valuable to applicants to the extent that they are rational and informed. Applicants, some who may be as young as 16 years old, already consider a commitment of at least nine years of their lives (four years in the academy and at least five years on active duty).⁴²⁶ The auction mechanism would ask applicants to consider their willingness to serve additional years on active duty 10and/or more years into the future. The auction mechanism entails a risk of a “winner’s curse,” where some high bidders are not those most sure of their willingness to serve, but rather those most misinformed about their willingness to serve. The result would be a group of disgruntled officers who regret their long ADSOs. Such disgruntlement presents a risk to readiness and is antithetical to the concept of an “all-volunteer force.” Note that this risk exists in the status quo, where an academy graduate may regret accepting a five-year ADSO before that ADSO ends. However, granting applicants the ability to accept longer ADSOs exacerbates the risk.

A variable initial ADSO also risks social division among cadets, midshipmen, and academy graduates along initial ADSO durations. On one hand, those who gave high bids may be viewed by their peers as inferior, having needed to bid higher to gain an appointment. On the other hand, those who gave high bids may be viewed as more devoted to military service. Either way, variable initial ADSOs could harm cohesion within academy classes. This harm would be unquantifiable and could take multiple classes to manifest, which would make it impossible to detect in a one-class pilot.

Beyond social effects, a variable initial ADSO could harm the ethos of service as a military officer by making that service more transactional. Ideally, an officer serves in an all-volunteer force because they desire to do so, not because they are obligated to do so, and because DOD deems them the most qualified volunteer for their current and future positions, not because they agreed to an obligation. A variable initial ADSO is a shift toward rewarding applicants’ willingness to serve as opposed to other qualifications, including leadership, fitness, academic excellence, honor, and diversity. Any resulting harm to the ethos of military service, like the aforementioned social harm, would be unquantifiable and potentially insidious. The risks of these two harms show that, if DOD

⁴²⁶ Applicants must be at least 17 years of age by July 1 of their year of admission.

and Congress seek greater return on the investment in academy graduates without lengthening ADSOs for all, they are on a collision course with the core values that the academies strive to inculcate.

5. ADSO Extensions for Cadets and Midshipmen

In this section we describe options for DOD to offer ADSO extensions to cadets and midshipmen. These options have three primary advantages over options to change the initial ADSO. First, ADSO extensions empower students to use information they gain about military service and themselves during their first year(s) at an academy. Compared to offering longer ADSOs at the time of application, offering ADSO extensions to experienced cadets and midshipmen entails a smaller risk of disgruntlement among future officers who regret their longer obligations. However, the risk of making service more transactional, as discussed in the previous section, remains.

Second, ADSO extensions allow DOD to turn special academy experiences or privileges into improved retention. Each academy offers special experiences, such as study abroad programs, to a subset of cadets or midshipmen. Some cadets and midshipmen may be willing to extend their ADSOs to gain these experiences. This willingness is more likely for experiences with a shortage of availability, where interested students must apply and only some are selected.

Third, tying ADSO extensions to special experiences enables the academies to fine-tune the level of participation from year to year. Thus, the academies can control the resulting boost to obligated service to match service demands. If the services demand greater mid-career retention from academy graduates, the academies can offer more and more attractive experiences. Otherwise, the academies can keep those experiences selective and cost-effective.

The ADSO extension option permits any of a wide array of creative offerings. Academies could offer any of the following items to cadets and midshipmen in exchange for an ADSO extension of one or more years:

- Study abroad
- Study at another academy
- Study at a civilian U.S. university
- Graduate education
- Preference for assigned branch after graduation
- Preference for assigned location after graduation
- Monetary bonus

ADSO extension offerings are ripe for experimentation. The academies already offer some items and others would take minimal effort to begin offering. If cadets and midshipmen were unwilling to accept such an item for an ADSO extension, the academies can try other items. Whether or not a given item made for a worthwhile offering, the academies will learn about which items cadets and midshipmen value.

All else equal, an item is more likely to be a worthwhile offering the more it:

- Entices the most desirable cadets and midshipmen,
- Improves participants' quality of service,
- Is immediately conferred to participants,
- Avoids interfering with officer career paths, and
- Avoids straining academy and military department budgets.

Thus, each item has advantages and disadvantages. For example, graduate education may particularly entice the brightest cadets and midshipmen and have special potential to improve participants' quality of service, but incurs large direct and opportunity costs and cannot be conferred immediately. A bonus can be conferred immediately and does not interfere with officers' career paths, but does not particularly entice the most desirable cadets or midshipmen, does not improve quality of service, and incurs large direct costs. The optimal combination of offerings depends on the relative importance of these advantages and disadvantages to the military departments.

Some of the military departments already offer items in exchange for an ADSO extension. For example, the Army Career Satisfaction Program (CSP) offers preference for branch assignment, preference for post assignment, or formerly, graduate education in exchange for a three-year ADSO extension.⁴²⁷ The Army offers the CSP to academy and ROTC graduates alike.

C. Non-ADSO Options

ADSO changes are a single constellation in a vast space of policy options for improving ROI in academy graduates. Any policy option that improves the experiences of cadets, midshipmen, or commissioned officers could improve ROI through retention and/or quality of service. Policy options that improve the experiences of commissioned officers could improve ROI not only for academy graduates, but throughout the officer corps. Despite this assessment's focus on academy graduates, this section embraces such more

⁴²⁷ "Home," Career Satisfaction Program website, accessed June 25, 2021, <https://www.career-satisfaction.army.mil/>.

general policy options, and so should policymakers. However, some policy options would be unique to or uniquely facilitated by the academy experience.

1. Prevent Toxic Leadership

One avenue for improving quality and quantity of officer service is to reduce the prevalence of toxic leaders. Toxic leadership can reduce retention by discouraging subordinates to continue serving. Reed and Bullis (2009) finds that 57% of senior military officers and civilians attending the U.S. Army War College “seriously considered leaving their service or agency because of the way they were treated by a supervisor.”⁴²⁸ Reed and Olsen (2010) posed the same item to Army majors attending the Command and General Staff College, of whom 61% responded affirmatively.⁴²⁹ Langkamer and Ervin (2008) and Steele (2011) find that toxic leadership affects retention through reduced morale.⁴³⁰ Thus, toxic leadership can affect any facet of career quality that depends on morale. For example, Hannah, et al. (2013) finds that abusive supervision increased unethical behaviors among U.S. Soldiers serving in Iraq.⁴³¹

Most of the large literature on toxic leadership in the armed forces focuses on active duty members. Boger (2016) recommends 360-degree assessments and unit climate surveys adapted to detect traits of toxic leaders.⁴³² Daniel and Metcalf (2015) echoes those recommendations and adds recommendations to make officers more accountable for development of their subordinate officers and to expand emotional intelligence training.⁴³³ Lorenzo, et al. (2017) also recommends 360-degree assessments in addition to educating

⁴²⁸ George E. Reed, and R. Craig Bullis, “The Impact of Destructive Leadership on Senior Military Officers and Civilian Employees,” *Armed Forces & Society* 36, no. 1 (October 2009): 5-18, <https://doi.org/10.1177%2F0095327X09334994>.

⁴²⁹ George E. Reed, and Richard A. Olsen, “Toxic leadership: Part Deux,” *Military Review* 90, no. 6 (2010): 58-64, <https://apps.dtic.mil/sti/citations/ADA531886>.

⁴³⁰ Krista L. Langkamer, and Kelly S. Ervin, “Psychological Climate, Organizational Commitment and Morale: Implications for Army Captains' Career Intent,” *Military Psychology* 20, no. 4 (October 2008): 219-236, <https://doi.org/10.1080/08995600802345113>; John P. Steele, *Antecedents and Consequences of Toxic Leadership in the US Army: A Two Year Review and Recommended Solutions*, ADA545383 (Fort Leavenworth, Kansas: Center for Army Leadership, June 2011), <https://apps.dtic.mil/sti/pdfs/ADA545383.pdf>.

⁴³¹ Sean T. Hannah, John M. Schaubroeck, Ann C. Peng, Robert G. Lord, Linda K. Trevino, Steve W. J. Kozlowski, Bruce J. Avolio, Nikolaos Dimotakis, and Joseph Doty, “Joint Influences of Individual and Work Unit Abusive Supervision on Ethical Intentions and Behaviors: A Moderated Mediation Model,” *Journal of Applied Psychology* 98, no. 4 (July 2013): 579-592, <https://doi.org/10.1037/a0032809>.

⁴³² Michael Boger, *Identifying Toxic Leadership Behaviors and Tools to Facilitate Their Discovery* (Air War College, Air University, Maxwell Air Force Base, 2016), <https://apps.dtic.mil/sti/pdfs/AD1037499.pdf>.

⁴³³ Teresa A. Daniel, and G. S. Metcalf, “Crossing the Line: An Examination of Toxic Leadership in the US Army” (Technical report, Sullivan University, February 2015), https://www.academia.edu/43649052/Crossing_the_Line_An_Examination_of_Toxic_Leadership_in_the_U.S._Army.

service members to identify toxic leadership in themselves and others.⁴³⁴ Steele (2011) argues that mitigating toxic leadership is primarily a matter of shrewd leader assessment and selection rather than rehabilitation of toxic leaders, and identify the 360-degree assessment as an important tool for mitigating toxic leadership.

Dobbs and Do (2019) performed semi-structured interviews of USAFA cadets on toxic leadership and organizational cynicism.⁴³⁵ The interviews revealed a high prevalence of cynicism among cadets due to toxic leadership:

“...almost all cadets (26 of 29) mentioned feelings of cynicism toward the organization without prompting. Most cadets attributed their cynicism to treatment by their leadership in several specific circumstances: the use of a classic trope “When I Was Your Age” (specifically used at the Academy as “We Had It Tougher Last Year” [WHITLY]), [authoritarian leadership] in the form of micromanagement, perception that commanders did not care for cadets, and the experience of unmet expectations.”

In addition to 360-degree assessments, the Dobbs and Do recommends educating administrators, supervisors, and other leaders about toxic leadership and cynicism.

2. Personalize Assignments to Officer Preferences

Officers have preferences over the location, timing, and other characteristics of their assignments. We may expect that officers whose assignments better match their preferences are more likely to continue serving. Falk and Rogers (2011) finds evidence for this expectation through interviews of officers who separated from active service between the pay grades of O-2 and O-5 (predominantly O-3's).⁴³⁶ Lack of career control and quality of life were the most common important reasons, exceeding military bureaucracy, weak superiors, operational tempo, and compensation. Yet career and life preferences vary widely from officer to officer, which complicates efforts to cater to those preferences.⁴³⁷ Markets allow each member to pursue their own preferences, effectively decentralizing the

⁴³⁴ Mansell et al., “Toxic Leadership: A Systemic Approach to Shift from Reactive to Proactive Solutions” (Technical report, Air Command and Staff College, Maxwell Air Force, Base, 2017), <https://apps.dtic.mil/sti/citations/AD1037957>.

⁴³⁵ James M. Dobbs, and James J. Do, “The Impact of Perceived Toxic Leadership on Cynicism in Officer Candidates,” *Armed Forces & Society* 45, no. 1 (January 2019): 3-26, <https://doi.org/10.1177%2F0095327X17747204>.

⁴³⁶ Sayce Falk, and Sasha Rogers, *Junior Military Officer Retention: Challenges and Opportunities* (n.p.: John F. Kennedy School of Government, Harvard University, 2011), <https://nation.time.com/wp-content/uploads/sites/8/2011/04/falk-rogers-pae-03-11-vf.pdf>.

⁴³⁷ Peter J. Coughlan, William R. Gates, and Noah Myung, “One Size Does Not Fit All: Personalized Incentives in Military Compensation,” *Defense & Security Analysis* 30, no. 4 (August 2014): 360-378, <https://doi.org/10.1080/14751798.2014.948283>.

assignment process. Each of the military departments has implemented a talent marketplace.⁴³⁸ Continuing to improve these marketplaces will help to improve ROI.

3. Inform Officers About the Drawbacks of Leaving Active Duty

Hansen and Nataraj (2011) hypothesizes that officers have optimism bias regarding the prospect of leaving active duty for civilian employment.⁴³⁹ In particular, it hypothesizes that officers overestimate the ease of finding comparable civilian employment and underestimate the costs of separating. Under this hypothesis, informing officers to correct their biases would improve retention. The authors note that the academy and ROTC environments could facilitate the dissemination of this information through leaders who are already responsible for preparing future officers.

Hansen and Nataraj (2011) elaborates on options for assembling information about the benefits and opportunity costs of active duty employment. However, those options deserve reconsideration after a decade of advancement in social media and other mechanisms for information collection and dissemination.

4. Offer Briefer Education Opportunities at the Academies

The academies currently focus on providing four years of baccalaureate education to future officers. Students enrolled at other universities may apply to the academies, but they enter as first-year students (“plebes”) regardless of their previous course credit. Allowing ROTC cadets and midshipmen to transfer into later years could liberate first-year appointments, increasing the number of officers with a five-year ADSO. As officers, ROTC-academy transfers could embody a cultural bridge between the two commissioning sources. This program would entail three primary challenges. First, the academies would need to ensure that a two-year academy experience is sufficient to instill accepted ROTC transfers with the academic, military, and cultural proficiencies expected of an academy graduate. Second, the academies would need to preserve class cohesion between ROTC transfers and four-year cadets and midshipmen. Third, the academies would need to establish new nomination and evaluation processes for transfer applicants.

⁴³⁸ Sean Kimmons, “Army Talent Management Program Growing,” *Fort Leavenworth Lamp*, January 30, 2020, <https://www.fleavenworthlamp.com/departments-of-defense/2020/01/30/army-talent-management-program-growing/>; Jared Serbu, “Navy Opens ‘Marketplace’ to Help Move Itself into Modern Age of Talent Management,” *Federal News Network*, June 10, 2020, <https://federalnewsnetwork.com/federal-insights/2020/06/navy-opens-marketplace-to-help-move-itself-into-modern-age-of-talent-management/>; Kat Bailey, “Talent Marketplace Assignment System Expands to all Officer Specialty Codes,” *U.S. Air Force News*, January 31, 2019, <https://www.af.mil/News/Article-Display/Article/1745057/talent-marketplace-assignment-system-expands-to-all-officer-specialty-codes/>.

⁴³⁹ Hansen, and Nataraj, *Expectations About Civilian Labor Markets*.

A more extreme option would be for the academies to change from four-year baccalaureate programs to shorter commissioning programs. Foreign academies such as the British Royal Military Academy Sandhurst and the French École navale commission college-educated officers through a one-year course. Both foreign academies also offer a commissioning program analogous to the Officer Candidate Schools of the U.S. Army and Navy. The academies could offer one-year commissioning courses to selected college graduates, rising college seniors, and/or enlisted members. Such a program could support the same number of attendees as the academies currently support, but all would graduate (or resign) after one year, quadrupling the number of officers commissioned through the academies each year. The effect of changing to such a program would be to spread the academy experience four times as thinly across the officer corps. In eliminating DOD's most intensely resourced officer commissioning program, this option would damage diversity in commissioning sources.

6. Designs of Pilot Programs to Extend the Active Duty Service Obligation for Academy Graduates

In this chapter we describe how DOD could pilot two of the options discussed in the previous chapter. A pilot would serve to inform DOD on the feasibility, benefits, and risks of the given option. Whereas the previous chapter discussed choices within different options, the designs in this chapter specify those choices. We do not claim these designs to maximize information gained, nor should these designs be considered authoritative or immutable prescriptions. Rather, these designs make some reasonable possibilities more concrete, illustrate how DOD could learn more about how to improve ROI, and establish baselines for those who intend to conduct a pilot to modify in accordance with their expert judgment.

In section 4.D we describe the USMA pilot of an ADSO increase from five to six years. The USMA pilot already offers a design that DOD could extend to the other academies and/or to a larger sample. Our choice of pilot designs in this chapter reflects our desire to avoid redundancy with the USMA pilot. In other words, given the information we have gained from the USMA pilot, we prefer pilot designs that are more likely to provide new information. Therefore, we do not present a design of a pilot of an invariant ADSO change.

On the other hand, we prefer pilot designs that better leverage the unique experience of the USMA pilot, including information on the administrative process of modifying the ADSO, stakeholder reactions, and important evaluation metrics. Also, the Congressional impetus for this assessment emphasized ADSO-based options for improving ROI in academy graduates. Therefore, despite our exploration of non-ADSO options in section 5.C, our pilot designs are ADSO-based. In section 5.B we discussed two options that would produce variation in ADSOs across cadets and midshipmen—variable initial ADSOs and ADSO extensions. In this chapter we present a pilot design for each of those options.

We organize each pilot design into three stages: planning, implementation, and evaluation. Planning refers to identifying essential roles and ensuring that a person or system is ready to serve each of those roles. Implementation refers to communicating the option to stakeholders (most importantly applicants), recording option enrollment, and following through with the implications of the option, such as longer ADSOs. Evaluation refers to measuring the effects of the option relative to the status quo.

A. Design of a Pilot of a Sealed-bid ADSO

The sealed-bid mechanism empowers applicants to select a higher ADSO to improve their competitiveness for admission. The essential parameters of the sealed-bid mechanism to specify include the ADSO values applicants can select and how much each ADSO value improves an applicant's competitiveness. Informative messaging to applicants and the public about the sealed-bid mechanism is just as important.

The sealed-bid mechanism relies on applicants' incentives to outbid each other to improve their chances of admission. Therefore, each applicant's bidding behavior depends not only on their own opportunity to bid a higher ADSO, but on every other applicant's ability to bid a higher ADSO. Therefore, the sealed-bid mechanism does not support a treatment-control framework like that of the USMA pilot. If only some applicants had the ability to bid, they would have weaker incentives to bid for a higher ADSO than if all applicants had the ability to bid. Such a treatment-control framework could not provide an unbiased estimate of the effects of the option.

Fortunately, planning, implementing, and evaluating the sealed-bid ADSO for all applicants is administratively and methodologically feasible. The most burdensome activity that scales with the size of the sample is incorporating the bids in applicant evaluations. Activities such as agreeing on advance guidance for evaluating applications, modifying the initial application, and performing statistical analyses are not more burdensome with a larger sample.⁴⁴⁰ From the perspective of methodological feasibility, we are not concerned about a decrease in applications because applicants retain the ability to select the status quo five-year ADSO. While we are concerned about changes to class quality and diversity ("class composition"), we explain in section 6.A.3 how a statistical distribution of the incoming class under the status quo can allow us to estimate effects on class composition in lieu of a control group.

1. Planning

The academies would each assign responsibility for each the following roles to one or more people:

- Modify the initial application
- Change the online version of the application to reflect modifications
- Release information about the pilot to the public

⁴⁴⁰ In this section, we use the term "initial application" to refer to the USMA "Candidate Questionnaire," the USNA "Preliminary Application," and the USAFA "Pre-candidate Questionnaire." For each academy, the initial application requests basic identifying information and college entrance exam scores, is the first form applicants submit, and is due 31 December.

- Answer questions about the pilot from applicants, officials, and the public
- Record bids
- Evaluate applications with and without considering bids
- Ensure sensible consideration of bids
- Modify offer letters
- Perform statistical analyses to quantify effects

The academies would also each convene a panel to decide how to incorporate ADSO bids into admissions decisions. Each panel would be led by the academy director of admissions and include the individual(s) responsible for releasing information about the pilot to the public, the individual(s) responsible for evaluating applications, and a representative from the service assistant secretariat for manpower and reserve affairs. The panel would agree on expected “exchange rates” between an additional year of ADSO and SAT and ACT scores. The panel would also compose a press release to announce the pilot to the public. The press release would include contact information for the individual(s) responsible for answering questions about the pilot.

2. Implementation

Implementation would begin with modification of the initial application to inform applicants about the sealed-bid mechanism and allow them to bid. The following item would appear in offline and online versions of the application with the bracketed placeholders filled:

As a graduate of [academy], you would incur an eight-year military service obligation, the first five years of which you would be obligated to serve on active duty, and the remainder of which you could serve on active duty, in the selected reserve [link to official DOD or military department description of the SELRES], or in the individual ready reserve [link to official DOD or military department description of Individual Ready Reserve (IRR)]. You may increase the number of years you would be obligated to serve on active duty up to three years. This increase would not change your eight-year military service obligation. You would serve this increase only after fulfilling any other active duty service obligations, such as obligations specific to your career field. Agreeing to a longer obligation will improve the competitiveness of your application. The admissions office expects that each additional year will be equivalent to a [SAT exchange rate]-point higher SAT score or [ACT exchange rate]-point higher ACT score for the average applicant.

How many additional years do you agree to serve on active duty after graduation?

☐ 0 years ☐ 1 year ☐ 2 years ☐ 3 years

Before releasing the modified application, each academy would announce the pilot in a press release and post the announcement on their respective websites. The individual(s) responsible for answering questions about the pilot from applicants, officials, and the public would not withhold any information about the pilot, but would be as transparent, responsive, and informative as law and resources allow.

The academies would produce two evaluations of each application, one evaluation that incorporates the bid, and another that does not. For applicants who bid zero additional years, these evaluations would be identical. The academies would record separate applicant rankings for each type of evaluation, but only send offers based on evaluations that incorporate the bid. The academies ensure that each offer letter contains the ADSO duration to which the applicant agreed.

The individual(s) responsible for ensuring sensible consideration of bids would check the two rankings for consistency with the statement that “a longer obligation will improve the competitiveness of your application.” Specifically, if applicant A bid higher than applicant B, and applicant A is ranked higher than applicant B without bids incorporated, applicant A should be ranked higher than applicant B with bids incorporated. This basic condition should hold for all possible pairs of evaluated applicants throughout the applicant evaluation process. The individual(s) responsible for ensuring sensible consideration of bids should check this condition (or provide an automated way to check the condition) immediately prior to each offer or batch of offers. If the condition fails for one or more pairs, evaluators should revise their evaluations to resolve the failures.

3. Evaluation

The primary effect of the sealed-bid ADSO is on the durations of ADSOs of appointees. For each appointee, this effect is the amount of their bid in excess of five years. The overall effect is the sum of effects over all appointees. This sum is the primary benefit of the sealed-bid ADSO to DOD. However, this benefit will not accrue to DOD for appointees who elect not to affirm. On one hand, we may expect cadets and midshipmen facing a longer ADSO to be less likely to affirm, which would dilute the primary benefit of the option. On the other hand, we may expect cadets and midshipmen who voluntarily bid for a longer ADSO, and thereby credibly signaled a high willingness to serve, to be more likely to affirm. Given our lack of prior information on the relationship between affirmation and ADSO bid, empirical affirmation rates by ADSO duration are precious for evaluating the option. DOD will need to wait for the incoming class to complete their second year to observe these rates.

The secondary effect of the sealed-bid ADSO is on the composition of the incoming class. Ideally, we could compare the composition of the class under the sealed-bid ADSO to the composition under the status quo. However, we can only partially observe the class

under the status quo because we only observe the acceptance decisions of those who received an offer.

Consider the status quo ranking of applicants who did not reject an offer under the sealed bid. “N” of those applicants accepted an offer and the remainder did not receive an offer. The N-highest ranked applicants under the status quo would have received an offer under the status quo, and we safely assume that those among them who accepted an offer under the sealed bid would also have accepted under the status quo. Therefore, we know part of the incoming class composition that the sealed bid did not affect.

For appointees below the N-highest ranked non-rejection applicants under the status quo, their inclusion in the incoming class under the status quo depends on the acceptance decisions of higher-ranked applicants who did not receive an offer under the sealed bid. For applicants below the N-highest ranked non-rejection applicants under both options, their inclusion in the incoming class also depends on their own acceptance decision conditional on receipt of an offer. We at least know that applicants ranked below all N appointees under the sealed bid would not receive an offer under the status quo.

In summary, class composition under the status quo depends on the acceptance decision of each applicant who ranks lower than the last appointee under the sealed bid but higher under the status quo. If we suppose an acceptance probability for each such applicant, we define a statistical distribution over the set of possible incoming classes. Then we can estimate measures of class composition under the status quo and compare them to observed measures under the sealed bid.

One way to impute acceptance probabilities would be to use the overall acceptance rate among applicants offered an appointment. This way would be problematic because acceptance probabilities may differ across the groups in which we are interested. Another way to impute acceptance probabilities would be to use group-specific acceptance rates. For example, we could impute each black woman's acceptance probability as the observed acceptance rate of black women, then do the same for black men, white women, etc. This way would be problematic because some groups may offer small samples and therefore risk unrealistic probabilities. For example, if five American Indian/Alaskan Native (AIAN) women received an offer and all accepted, we would impute a 100% acceptance probability for all other AIAN women. This way would also be problematic if no applicants from a group received an offer, because we would not have a rate for that group.

To resolve the problems with the two issues, we recommend a hybrid method, where we take the weighted average of the overall acceptance rate and group-specific acceptance

rate. This method is known as “parametric empirical Bayes.”⁴⁴¹ The relative weights on the two rates depends on their relative variances. Thus, when a given group is larger, the rate is more certain, so the group-specific rate gets a larger weight relative to the overall rate. If no applicants from a group received an offer, only the overall acceptance rate receives any weight.

Having imputed acceptance probabilities, we can theoretically derive a probability for every possible class under the status quo. However, the number of possible classes grows exponentially with the number of imputations. If 10 applicants were ranked below the last appointee under the sealed bid but not under the status quo, there are $2^{10} = 1,024$ such classes, and tracking the probability of each would be computationally feasible. If there were instead 100 such applicants, there would be 2^{100} , or over one trillion trillion million possible classes. Without knowing how many such applicants there will be, we desire an estimation method that does not require deriving the probability of each class. We recommend simulation, where we sample randomly from the distribution of possible classes. Each simulation gives a hypothetical class under the status quo with known measures of class composition.

Class composition measures include mean grade point average, mean college entrance exam score, share female, share non-white, and any evaluation measures the academies use to score applicants, such as academic, leadership, and fitness, and overall scores. Evaluation differs at each academy, but the overall categories are similar for all. At USAFA, according to a 2016 RAND study, the final scoring of an applicant is composed of 60% academic metrics, 20% leadership metrics, and 20% panel scoring. Academic metrics are an aggregation of at least GPA, SAT/ACT scores, class rank, and national high-school competitiveness. Leadership metrics are a combination of extracurricular activities and leadership in these activities. Finally, the panel score is a combination of rankings from the selection panel, including rankings of the written parts of the application, interviews, and the candidate fitness assessment.⁴⁴² USNA has been less forthright with its selection breakdown and did not participate in two RAND admission studies,⁴⁴³ but we can surmise important criteria via USNA’s published Class of 2024 profile.⁴⁴⁴ 91% of the incoming class participated in varsity athletics in high school, with 73% being the captain or co-

⁴⁴¹ George Casella, “An Introduction to Empirical Bayes Data Analysis,” *The American Statistician* 39, no. 2 (1985): 83-87, <https://doi.org/10.1080/00031305.1985.10479400>.

⁴⁴² Hardison, Burkhauser, and Hanser. *United States Service Academy Admissions*.

⁴⁴³ Hardison, Burkhauser, and Hanser, *United States Service Academy Admissions*, iii; Hanser, and Oguz, *United States Service Academy Admissions*, 1.

⁴⁴⁴ United States Naval Academy, “Class Portrait: Snapshot: Class of 2024” (United States Naval Academy, Annapolis, MD), https://www.usna.edu/Admissions/_files/documents/ClassPortrait.pdf.

captain of a sports team.⁴⁴⁵ Other categories with a high percentage of admitted students include community service with 90%, National Honor Society with 73 percent, and “Student Body Leader” with 66%.⁴⁴⁶ Along with high SAT/ACT median scores, admitted students are then generally expected to have significant leadership, fitness, and high academic standards coming out of high school. This is similar to USAFA. Additionally, admission to USNA may consider life experience or life challenges, as “Primary Language in Home Not English,” “First to Attend College in the Family,” “First Generation American,” and “Hardship or Adverse Life Experience” are listed at 20%, 13%, 13%, 12%, and 11%, respectively.⁴⁴⁷ It also appears likely that having at least one parent that is an alumnus of the Naval Academy is helpful, as 52 sons and 20 daughters out of 1,194 admitted students have alumni as parents.⁴⁴⁸

The mean of a composition measure over all simulations estimates the expected value of that composition measure under the status quo. Then we can compare that estimate with the observed value of the composition measure under the sealed bid. The estimate is subject to error that diminishes with the size of the sample, so more simulations are better to the extent that computational resources facilitate.

The sealed-bid pilot may produce unfavorable results, for example if the sealed-bid mechanism leads to a much less diverse class. However, unfavorable results do not indicate failure of the sealed-bid mechanism, but an unfavorable valuation of bids. The academies must decide how to value bids in advance of implementation, but can use results of the pilot to revise those valuations. The simulation method permits examination of any counterfactual ranking, so academies can explore alternative valuation schemes to the extent that they can evaluate applications under those schemes. Alternative valuation schemes may be more complex than constant exchange rates between bids and exam scores. For example, the exchange rates may vary with applicant characteristics, or be larger for the third additional obligated year than the first.

B. Design of a Pilot of ADSO Extensions for Cadets and Midshipmen

In section 5.B.5 we present a list of items academies could offer to cadets and midshipmen in exchange for an ADSO extension. In this section we describe how DOD could pilot a one-year ADSO extension requirement for study abroad and academy exchange programs. We choose these two items for two reasons. First, each of the academies has an existing (but not ADSO-related) program for each item, which would

⁴⁴⁵ United States Naval Academy, “Class Portrait.”

⁴⁴⁶ United States Naval Academy, “Class Portrait.”

⁴⁴⁷ United States Naval Academy, “Class Portrait.”

⁴⁴⁸ United States Naval Academy, “Class Portrait.”

facilitate planning and implementation. Second, these existing programs are “highly competitive,” so cadets and midshipmen would likely be willing to extend their ADSOs to participate.⁴⁴⁹

1. Planning

The academies would each assign responsibility for each the following roles to one or more people:

- Release information about the ADSO extension requirement
- Modify the program application form to clarify the ADSO extension requirement
- Answer questions about the pilot
- Recover applications from past application cycles
- Compare applicant pools to applicant pools from previous application cycles

Applications from past application cycles may not be available during consideration of the pilot. If past applications are not available, academies will need to save applications from the next application cycle in advance of implementing the pilot for a subsequent cycle. Academies should not reveal their intent to conduct the pilot in advance of a status quo application cycle in order to prevent increasing competition for that cycle in anticipation of the ADSO extension requirement.

2. Implementation

In advance of opening applications for the study abroad and academy exchange programs, the academies would notify cadets and midshipmen of the new one-year ADSO extension requirement. The notification would clarify that applications would still be reviewed so that willingness to accept the ADSO extension would not alone be sufficient for participation. To help justify the ADSO extension requirement, the notification would mention that the requirement will filter the applicant pools into those who most value the opportunity. The program application forms would require the applicant to acknowledge their agreement to a one-year ADSO extension if they participate.

Application reviewers would review applications as usual and award program participation as bounded by program capacity and/or qualification standards. The academies would adjust qualification standards in response to low participation at their discretion.

⁴⁴⁹ “Academics: Special Academic Program Opportunities,” United States Naval Academy website, accessed May 13, 2021, <https://www.usna.edu/Academics/Special-Programs/index.php>.

3. Evaluation

The primary effect of the pilot is simple to quantify, as it is one year for each program participant. The pilot would likely produce secondary effects on applicant quantity and quality. Ideally, we would compare applicant pools under the pilot and the counterfactual status quo. However, conducting the pilot prevents us from observing the status quo scenario for the same application cycle. Our next best alternative is to compare the pilot applicant pools to applicant pools from past application cycles.

Estimating the effect on applicant quantity is as simple as comparing the number of applicants under the pilot to the mean number of applicants from past application cycles. To estimate the effect on applicant quality, the academies would rank applications from the pilot among applications from past cycles. Then the Mann-Whitney U test (also called the Wilcoxon rank sum test) provides the level of statistical evidence for decreased quality among pilot applicants relative to previous applicants. Intuitively, the Mann-Whitney U statistic is, among all possible comparisons of a pilot applicant and a past applicant, the number of comparisons for which the pilot applicant is ranked higher. A lower U statistic means that pilot applicants tended to be ranked lower compared to past applicants.

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7. Conclusion

Graduates of the DOD service academies contribute to the U.S. in a variety of ways. Their contributions are not limited to a number of years served, but include quality of service, as evidenced by academy graduates' high rates of selection for command and PME. Their contributions are not limited to military service, as evidenced by international cadets and midshipmen, who do not serve a day in the U.S. military but embody unique connections between U.S. and allied forces. Their contributions are not limited to quantifiable benefits, as evidenced by the academies' emphasis on honor and leadership. Unquantifiable benefits of investment in academy graduates include graduates' contributions to economies and communities beyond their military service.

Academy graduates are expensive investments. Depending on the academy, we estimate that FY2020 graduates costed about \$500,000 from appointment to commissioning. An intensely resourced commissioning source is a key element of an officer commissioning system that is diverse enough to support the diversity of potential future missions. In anticipation of those missions, a high level of investment per academy commission is not wasteful, but warranted—a hedge against potential future missions that will have justified that investment.

An increase in the cost of educating academy graduates is not itself a justification for a policy change to improve ROI in academy graduates. An increase in cost alone does not answer why, if a policy change would have improved ROI today, the same change was not justified in the past. Policy changes can be justified when they increase benefits and/or decrease costs, independent of how costs have changed. Though some inputs to ROI, and therefore ROI itself, defy quantification, we can identify promising policy changes by identifying specific inputs they improve. We can begin to evaluate policy changes by considering their second-order effects. However, no amount of consideration can substitute for experimental evidence.

One potential policy change would be to increase the initial ADSO associated with academy commissioning from five to six years. Congress passed this policy change in 1989, but undid it in 1996 following outcry from the DOD, service chiefs, and the academies. The ADSO has not changed since 1996. Increasing the ADSO would increase retention, but decrease the number of students willing to accept an appointment. The USMA pilot provides experimental evidence that an ADSO increase would disproportionately dissuade top academic performers, non-whites, and women from accepting an offer of appointment. An ADSO increase would dissuade some of those

students from applying in the first place. If anything, diversity among cadets and midshipmen has become more important since Congress undid the last ADSO increase.

Other ADSO changes that could improve ROI in academy graduates include decreasing the ADSO, supplementing the ADSO with an obligation to serve in the SELRES, a variable initial ADSO implemented through a sealed-bid mechanism, and offering special experiences to cadets and midshipmen in exchange for an ADSO extension. For the variable initial ADSO, the academies would decide how much to value higher ADSO bids, then each applicant would decide how high they are willing to bid. Any applicant can bid the minimum ADSO, just as they would under the status quo. For ADSO extensions, the academies would decide the quantity and quality of special experiences to offer, and cadets and midshipmen would decide which are worth an ADSO extension.

Piloting the sealed-bid mechanism would entail more effort than piloting ADSO extensions. Deciding how to value higher ADSO bids, incorporating ADSO bids into applicant evaluations, communicating about the pilot with applicants, officials, and the public, and evaluating the results of the pilot would each require significant effort and expertise. However, allowing applicants to bid up to three additional obligated years, and allowing the academies to use those bids to craft incoming classes has greater potential for improving retention than obtaining one-year ADSO extensions from a subset of cadets and midshipmen.

The variable initial ADSO and ADSO extension options have the advantage of empowering students and academies to act on their preferences. From a mathematical perspective, this advantage is critical to optimizing ROI. However, this advantage comes with serious risks, such as that stakeholders will perceive unfairness in the selection process, whether or not any unfairness exists; that applicants will come to regret their obligations as future officers; that academy classes will divide socially along ADSO durations; and that the transactional nature of the options will harm the ethos of service as a military officer. These risks may be insidious, such that a pilot would not reveal them, but they would emerge after years of implementation of the option.

Policy changes that could improve ROI go far beyond the ADSO and even the academies. Any policy change that encourages officers and future officers to serve longer and/or better could improve ROI. Such policy changes could prevent toxic leadership, personalize assignments to officer preferences, inform officers about the drawbacks of leaving active duty, or diversify the education roles of the academies. We refer interested readers to option-specific papers in section 5.C.

Whether ADSO-based or otherwise, iterative experimentation of options to improve ROI is vital to informing policy. No amount of anticipation and consideration of possible effects of a policy change can substitute for experimental experience and evidence. The USMA ADSO pilot is a pioneering and admirable step forward in our understanding of

policy options. Even failed policies, such as the 1989 ADSO increase that Congress undid in 1996, are valuable as they inform new attempts to improve ROI. The potential pilots we describe in this assessment can facilitate further policy experiments, but they represent only single points in a vast space of policy possibilities and on an interminable timeline of iterative experimentation. More important than any specific experiment is that DOD and the academics keep experimenting, and thus keep discovering how better to serve the U.S.

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Appendix A.

Answers to Senate Report Questions on ROI in Academy Graduates

The June 11 Senate report that provided the impetus for this assessment asked five questions. This appendix pulls those questions directly from the Senate report and provides a one-page summary of the answers in this assessment.

How has the real cost per military service academy graduate changed since 1996?

We estimate that the real cost per academy graduate rose 12.8% from FY1996 to FY2020, after accounting for trend deviations in the start and end years.

How do service academy graduate retention rates compare to those of other commissioning sources after service members' initial Active Duty service obligation is complete?

Between five and 15 years of service, USMA graduates exhibit lower retention, USNA graduates exhibit comparable retention, and USAFA graduates exhibit higher retention compared to other sources. Low attrition between 15 and 20 years of service leads each academy's retention rates to be comparable with or higher than that of each other source after 20 years of service.

What effect would an increase in the initial Active Duty service obligation for service academy graduates have on academy application rates?

An increase to the initial ADSO would likely decrease academy applications. Limited experimental evidence suggests that applications would decrease by 8%.

How could service academies implement a policy that awards preference for admission to a service academy in exchange for an agreement to serve on Active Duty longer than the required amount of time?

Empower each applicant to select a longer ADSO on their initial application to improve their competitiveness for admission.

What other policies could the services implement to ensure an adequate return on investment for a service academy graduate?

Any policy that improves cadet, midshipman, and/or officer experiences could improve ROI, including preventing toxic leadership and personalizing assignments to

officer preferences. Policies to improve officer experiences need not be limited to academy graduates.

Appendix B.

Service Academy Admission and Enrollment Statistics

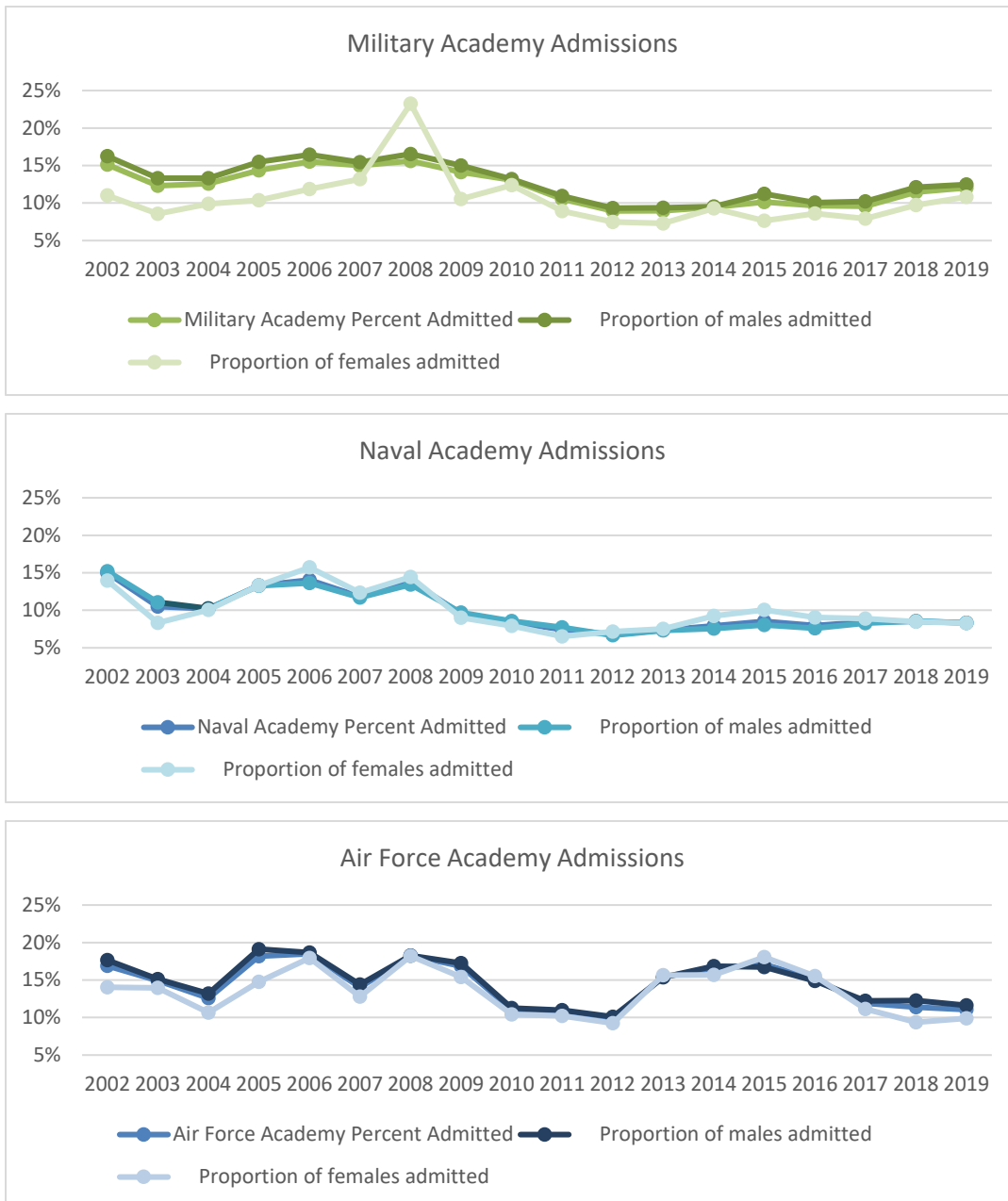


Figure 32. Percentage of Applicants Admitted at the Service Academies by Gender 2002-2019⁴⁵⁰

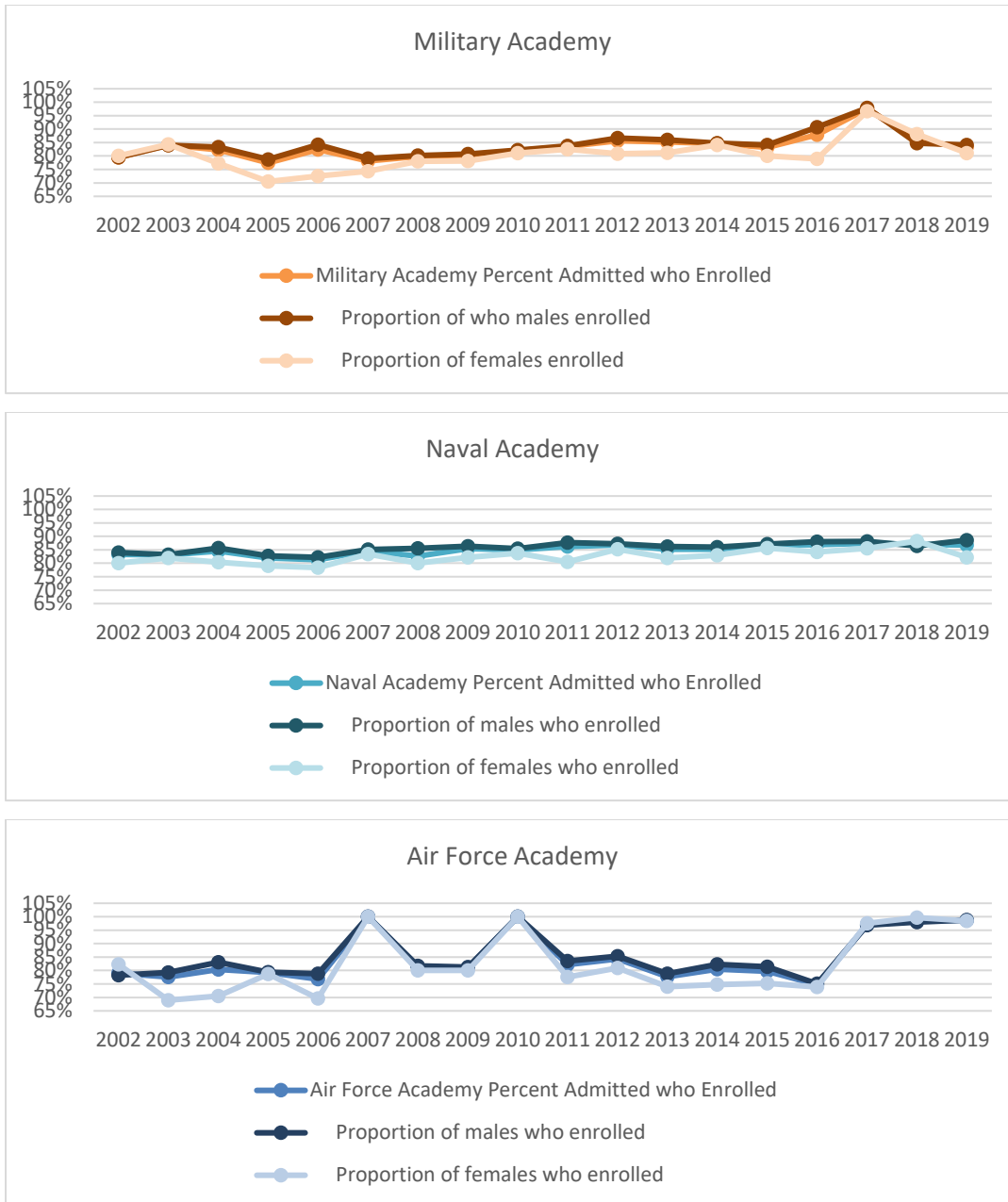


Figure 33. Percentage of Admitted Applicants who Enrolled at the Service Academies by Gender 2002-2019⁴⁵¹

⁴⁵⁰ National Center for Education Statistics, “Integrated.”

⁴⁵¹ National Center for Education Statistics, “Integrated.”

Appendix C.

Supplemental Material for Officer Career Measures

Promotion

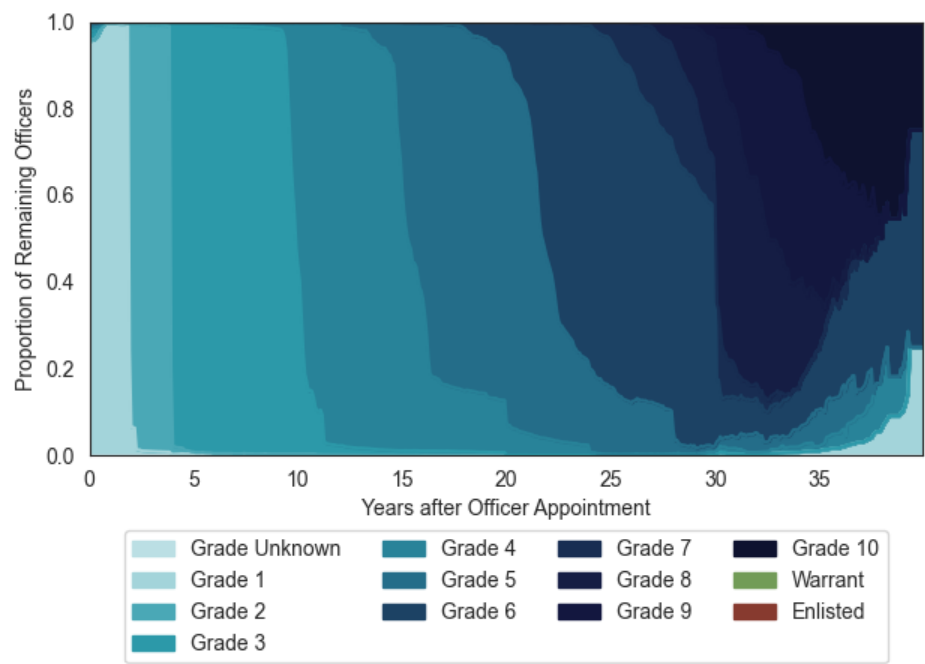


Figure 34. Distribution of Pay Grade over Careers for USAFA Graduates

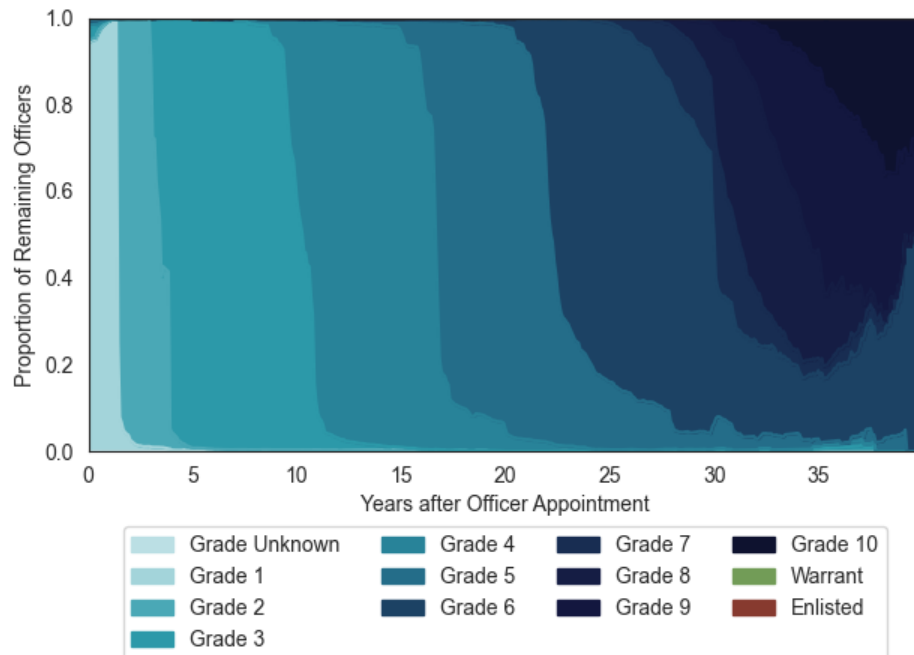


Figure 35. Distribution of Pay Grade over Careers for USMA Graduates

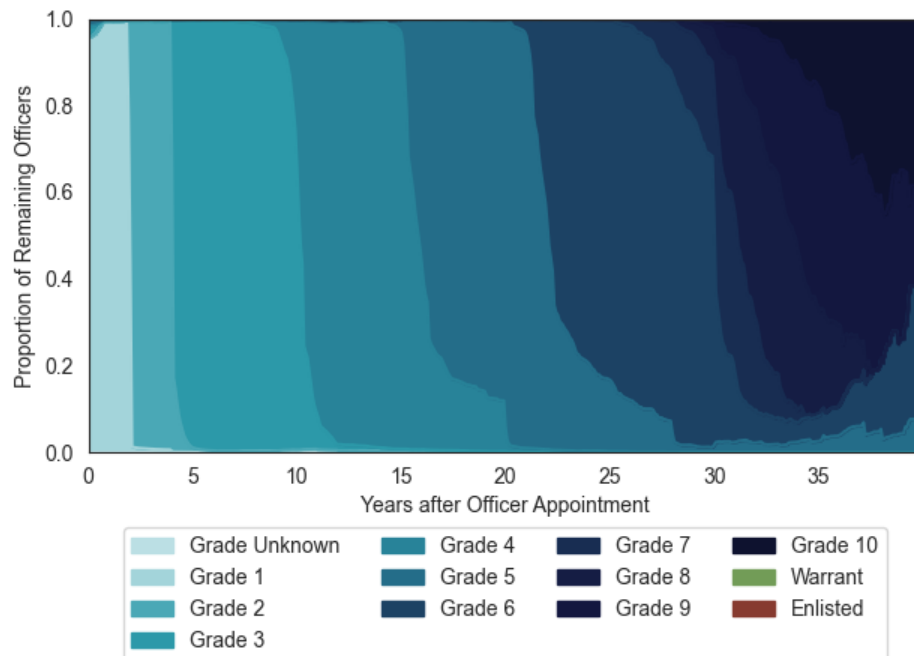


Figure 36. Distribution of Pay Grade over Careers for USNA Graduates

Command Status

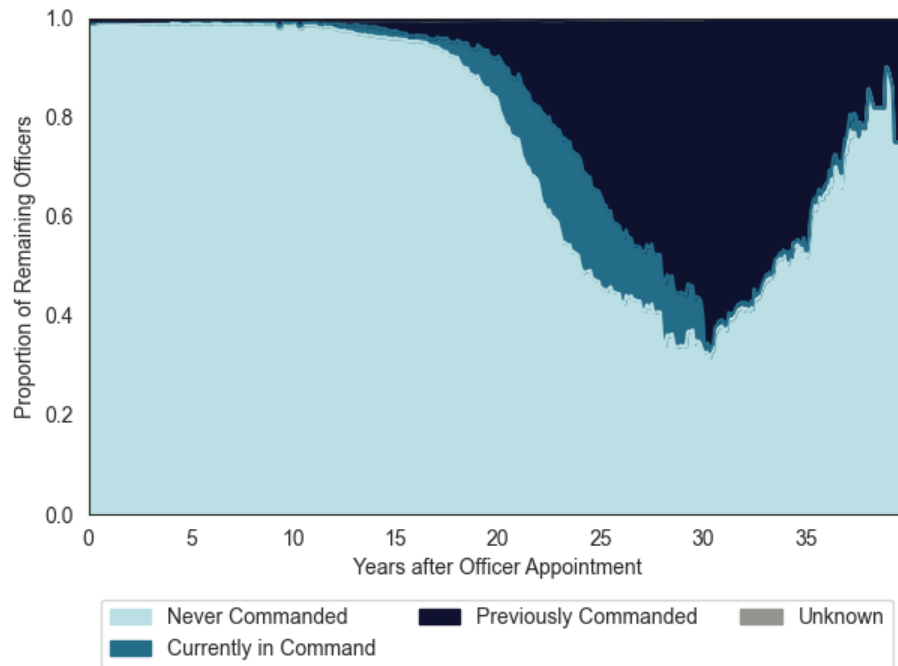


Figure 37. Distribution of Command Status over Careers for USAFA Graduates

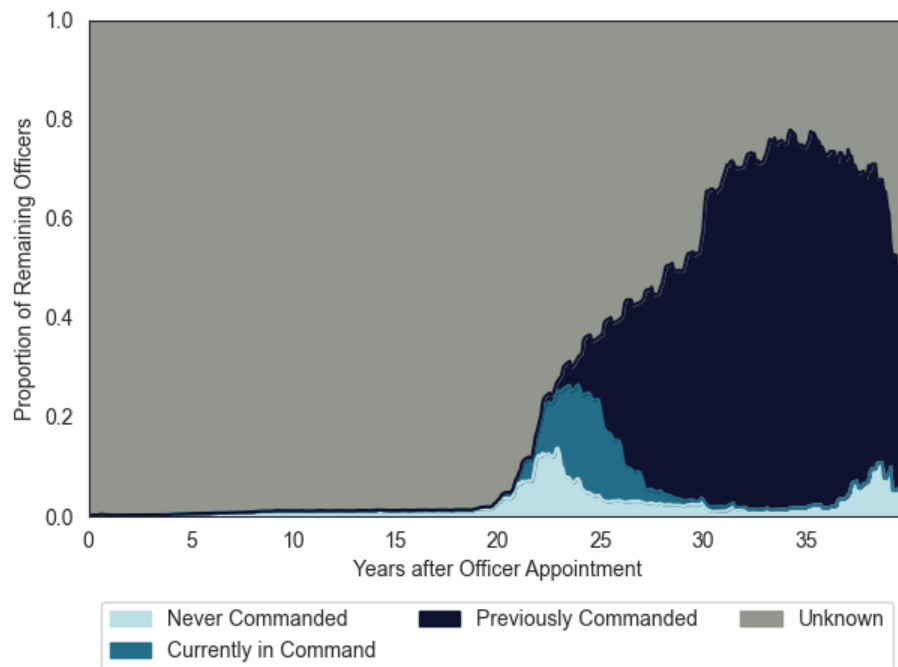


Figure 38. Distribution of Command Status over Careers for USMA Graduates

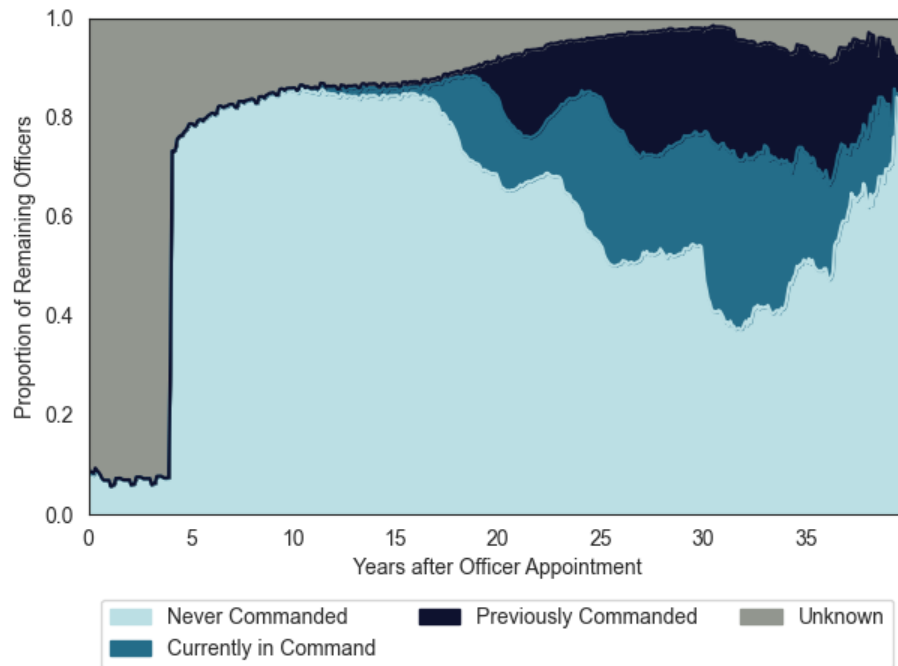


Figure 39. Distribution of Command Status over Careers for USNA Graduates

Selection to Senior Service Colleges

PME

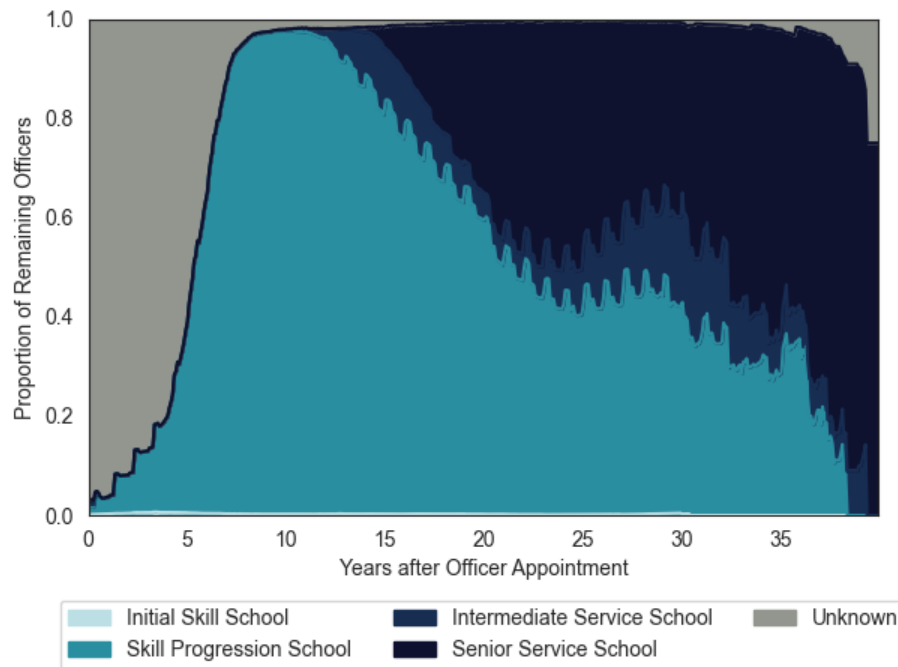


Figure 40. Distribution of PME Level over Careers for USAFA Graduates

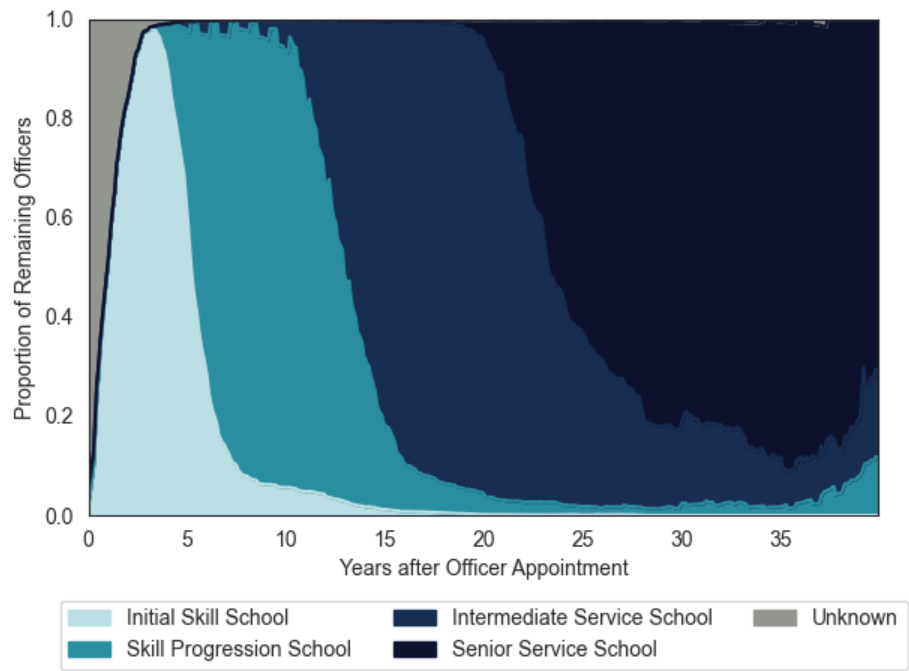


Figure 41. Distribution of PME Level over Careers for USMA Graduates

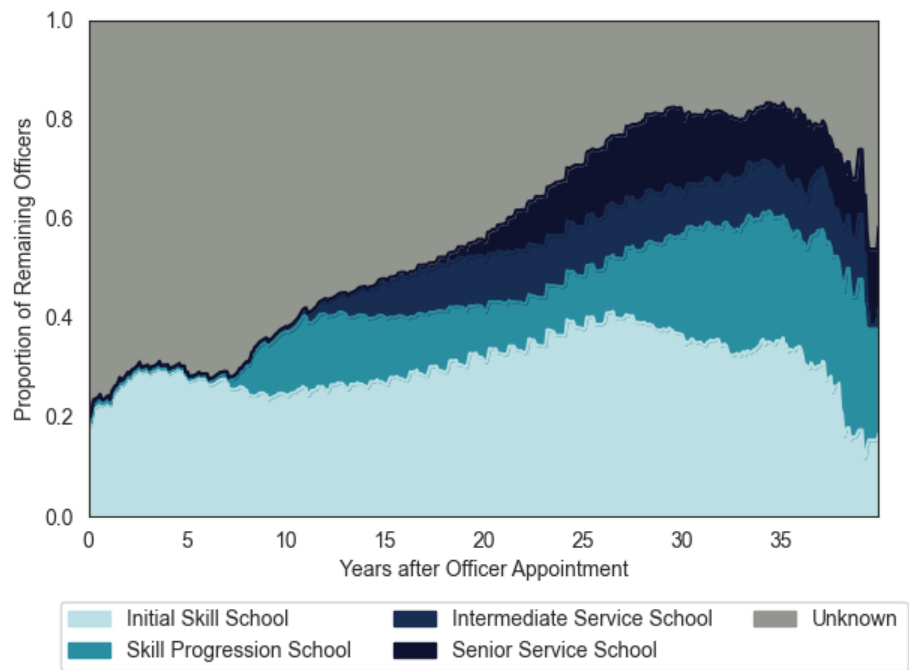


Figure 42. Distribution of PME Level over Careers for USNA Graduates

JPME

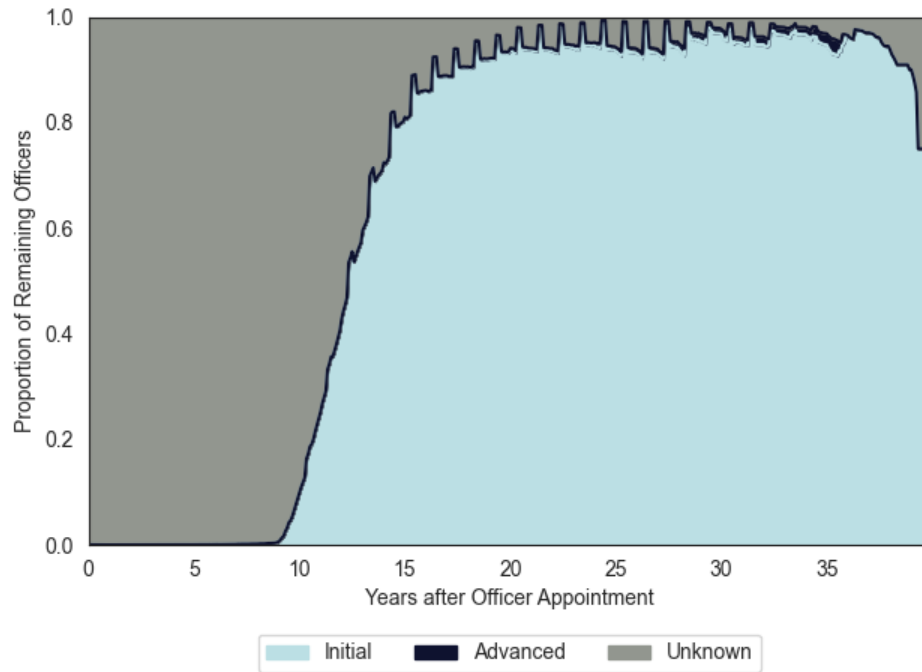


Figure 43. Distribution of JPME Level over Careers for USAFA Graduates

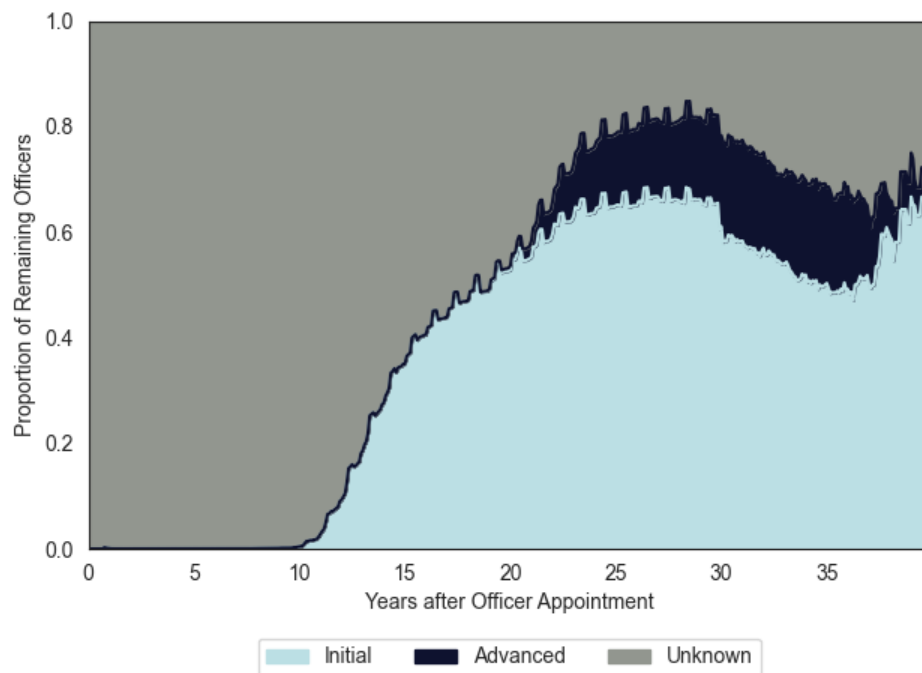


Figure 44. Distribution of JPME Level over Careers for USMA Graduates

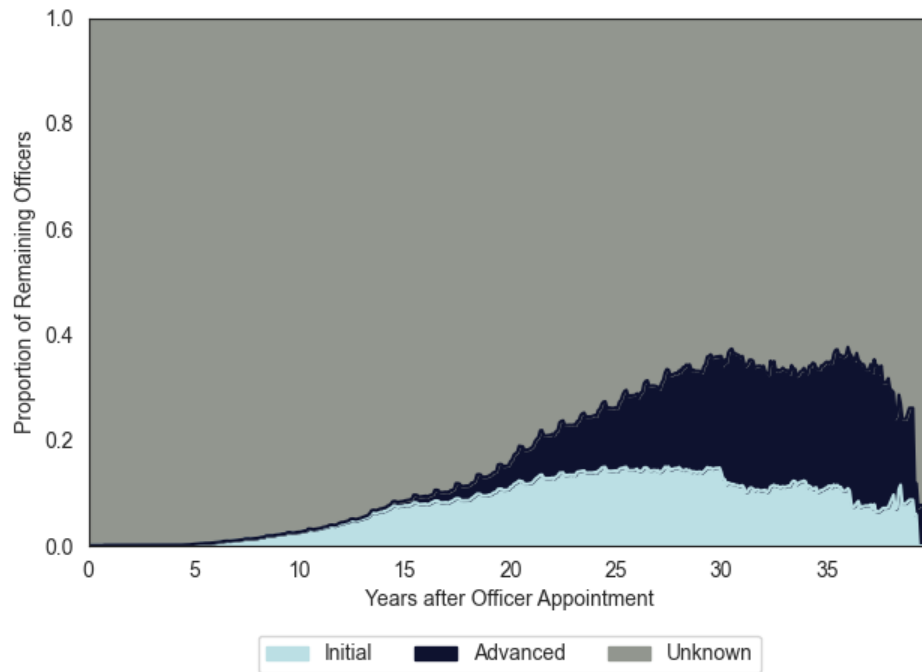


Figure 45. Distribution of JPME Level over Careers for USNA Graduates

SELRES

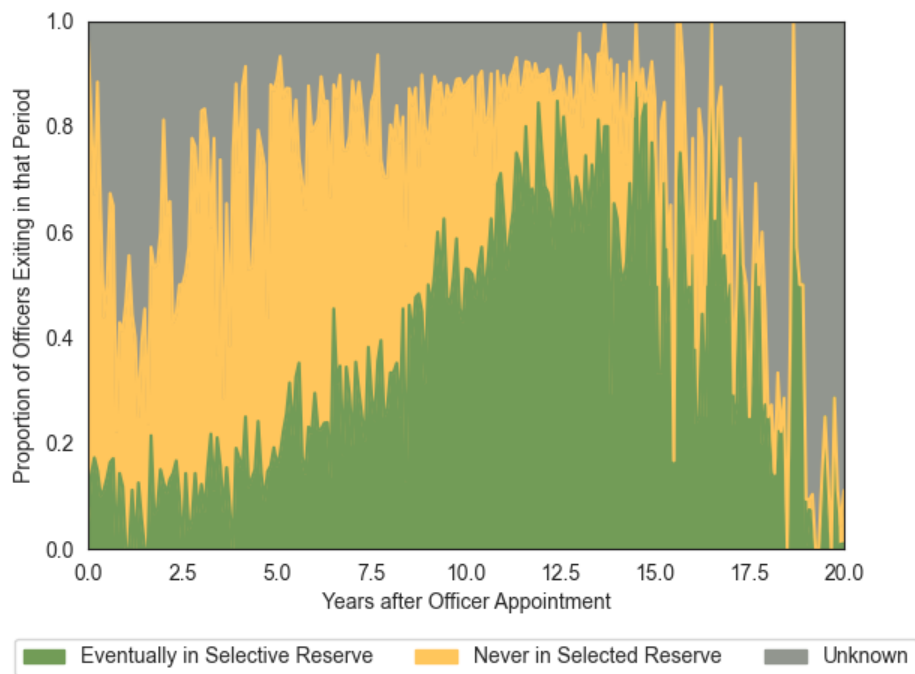


Figure 46. Distribution of Election to SELRES by MoAS Exit for USAFA Graduates

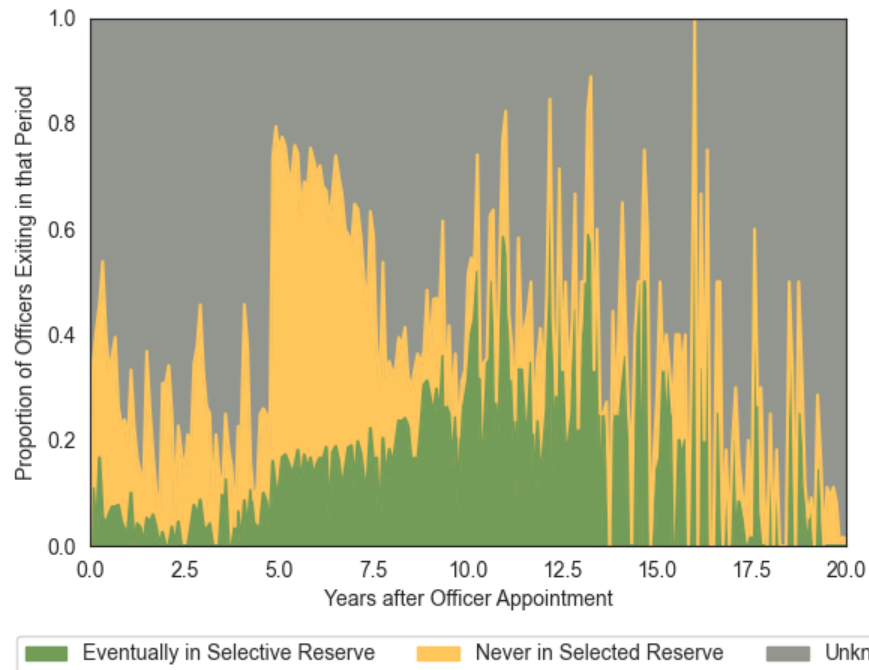


Figure 47. Distribution of Election to SELRES by MoAS Exit for USMA Graduates

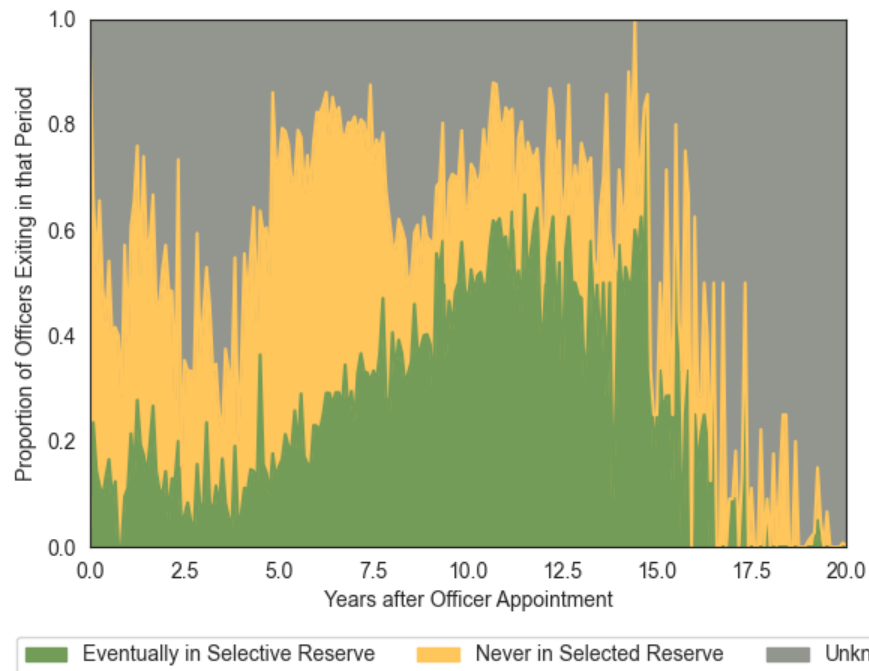


Figure 48. Distribution of Election to SELRES by MoAS Exit for USNA Graduates

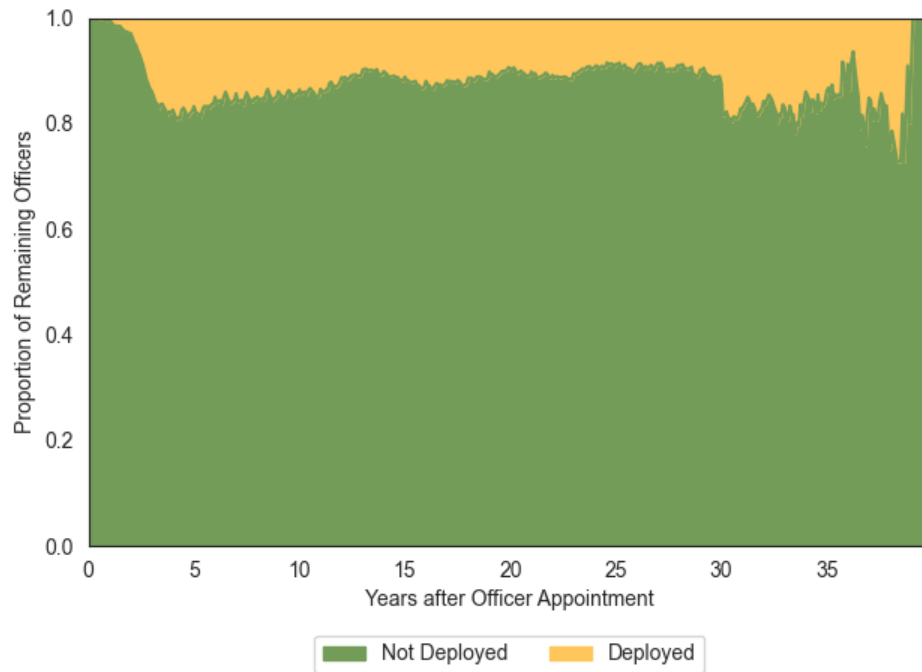


Figure 49. Distribution Status Distribution over Careers for USAFA Graduates



Figure 50. Distribution Status Distribution over Careers for USMA Graduates

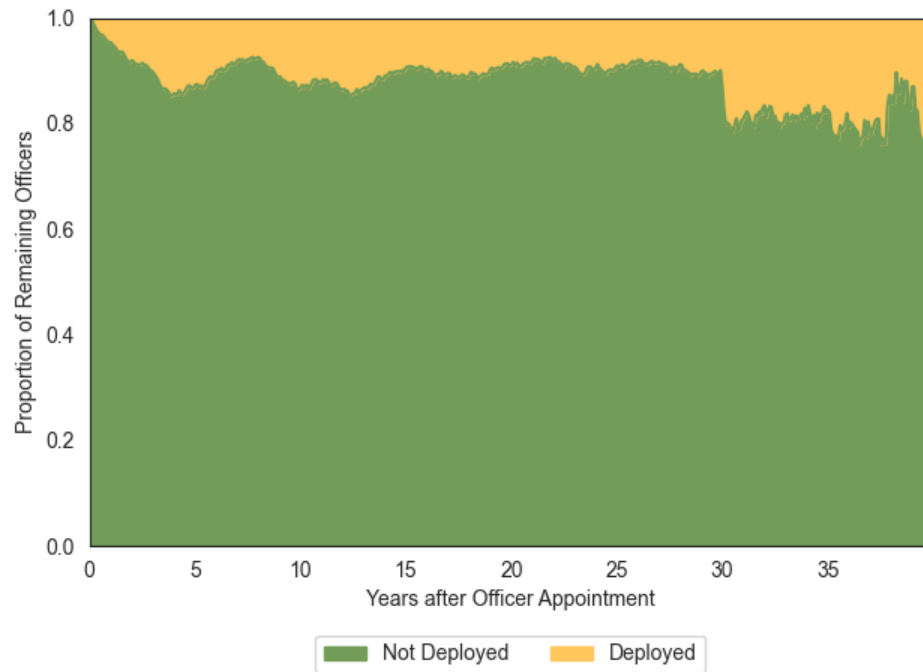


Figure 51. Distribution Status Distribution over Careers for USNA Graduates

Appendix D. Research Participants

Name	Position
James Belanich	Doctor, Research Staff Member, IDA
Todd Browne	President and Chief Executive Officer, West Point Association of Graduates
Kathleen Conley	Research Staff Member, IDA; Former DoD Executive
David Cotting	Doctor, Research Staff Member, IDA; Former USMA faculty
Lisa Disbrow	Honorable Former Under Secretary of the Air Force
Michael Dominguez	Honorable Former Principal Deputy Under Secretary of Defense (P&R)
Preston Geren	Honorable Former Secretary of the Army; Former U.S. Congressional Member
Jeffrey Lemmons	Rear Admiral Retired U.S. Navy Reserve
Douglas Lengenfelder	USAFA Board of Visitors; Retired U.S. Air Force; Retired Colonel U.S. Air Force
Joseph Martz	Lieutenant General Retired U.S. Army
Deborah McDonald	Colonel, Director of Admissions, USMA
Barbara Mikulski	Honorable Former U.S. Senator
Norman Reitter	Chief Analytics Officer and Senior Vice President, CANA Advisors
Aaron Roof	Director, Center for Leadership, University of Colorado
Glen Roussos	Vice President of Program Management, L3Harris Technologies
Hillary Schaefer	Doctor, Researcher, Project Arete, Tufts University
Joseph Sestak	Honorable Former U.S. Congressional Member; Retired U.S. Navy
Zachary Szlendak	Doctor, Research Staff Member, IDA
Mark Udall	Honorable Former U.S. Senator
John VanBrabant	Vice President, Maritime Mission Requirements, L3Harris Technologies
Carl Wojtaszek	Colonel, Director, U.S. Army Office of Economic and Manpower Analysis

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Appendix E.

Additional Data Tables

Table 30. Twitter Activity from Other Accounts as of May 27, 2021⁴⁵²

User account	West Point	Naval Academy	Air Force Academy	Wellesley	Harvard
Tweets:	100	100	100	100	100
Timeframe:	4 hours	17 hours	3 hours	7 days	44 minutes
Reach:	209,809	148,906	642,458	102,545	282,321
Impressions:	216,576	153,643	643,024	236,439	283,208
Total Retweets:	733	651	972	133	535
Total Favorites:	3695	4,023	6,075	635	4,967
Replies:	19	12	28	23	47
Sentiment:	Great (11.0%) Good (42.0%) Neutral (23.0%) Bad (22.0%) Terrible (2.0%)	Great (33.0%) Good (20.0%) Neutral (34.0%) 33% Bad (13.0%)	Great (27.0%) Good (28.0%) Neutral (42.0%) Bad (2.0%) Terrible (1.0%)	Great (25.0%) Good (44.0%) Neutral (17.0%) Bad (3.0%) Terrible (11.0%)	Great (25.0%) Good (32.0%) Neutral (39.0%) Bad (3.0%) Terrible (1.0%)

⁴⁵² Social Bearing website, “Twitter search & analytics for '@westpoint_usma',” accessed May 27, 2021. https://socialbearing.com/search/user/westpoint_usma; Social Bearing website, “Twitter search & analytics for '@NavalAcademy',” accessed May 27, 2021, <https://socialbearing.com/search/user/NavalAcademy>; Social Bearing website, “Twitter search & analytics for '@AF_Academy',” accessed May 27, 2021, https://socialbearing.com/search/general/@AF_Academy; Social Bearing website, “Twitter search & analytics for '@Wellesley',” accessed May 27, 2021, <https://socialbearing.com/search/user/Wellesley>; Social Bearing website, “Twitter search & analytics for '@Harvard',” accessed May 27, 2021. <https://socialbearing.com/search/user/Harvard>.

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Appendix G.

References

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- “West Point Now Attracts Tourists.” *The New York Times*, September 2, 1894. <https://timesmachine.nytimes.com/timesmachine/1894/09/02/109721836.html?pageNumber=17>.
- Amendment No. 2123: Sec. 502: Review of Period of Obligation Active Duty Service for Graduates of Service Academies. 104th Cong., *Congressional Record* 141, no. 129 (August 4, 1995): S11413-S11419. <https://www.congress.gov/104/crec/1995/08/04/CREC-1995-08-04-senate.pdf>.
- Amendment No. 595, 101st Cong., *Congressional Record* 135, pt. 13 (August 2, 1989): 17620-17626. <https://www.congress.gov/bound-congressional-record/1989/08/02/senate-section>.
- Anderson, Greta. “Deadline Time for New Federal Sexual Assault Policies.” *Inside Higher Ed.*, August 14, 2020. <https://www.insidehighered.com/news/2020/08/14/colleges-implement-changes-meet-title-ix-deadline>.
- Antonelli, Kris. “Senate Panel Votes to Ease Academy Service Requirement.” *The Baltimore Sun*, July 14, 1995. <https://www.baltimoresun.com/news/bs-xpm-1995-07-14-1995195049-story.html>.
- Argetsinger, Amy. “Where Expulsion Can Be Expensive.” *Washington Post*, November 29, 1998. <https://www.washingtonpost.com/archive/local/1998/11/29/where-expulsion-can-be-expensive/44a5dd3d-8c78-4fd5-835a-69166c103750/>.
- Asimov, Isaac. “A.A. Michelson: American Scientist.” *Encyclopedia Britannica*, May 5, 2021. <https://www.britannica.com/biography/A-A-Michelson>.
- Association of Graduates, United States Air Force Academy website. “AOG Service Spotlight: Bob Ranck ‘82.” Accessed June 11, 2021. <https://www.usafa.org/Service/Spotlight-Mar2020>.
- Association of Graduates, United States Air Force Academy website. “AOG Service Spotlight: Grads Answering the COVID-19 Call.” Accessed June 11, 2021. <https://www.usafa.org/Service/Spotlight-Apr2020>.
- Association of Graduates, United States Air Force Academy website. “AOG Service Spotlight: Kristine Marlow ‘92.” Accessed June 11, 2021. <https://www.usafa.org/Service/Spotlight-December2020>.

- Association of Graduates, United States Air Force Academy website. "AOG Service Spotlight: Service Before Self Challenge Participants." Accessed June 11, 2021. <https://www.usafa.org/Service/Spotlight-August2020>.
- Association of Graduates, United States Air Force Academy website. "Graduate Displays." Accessed June 11, 2021. <https://www.usafa.org/Heritage/FalconCenter>.
- Association of Graduates, United States Air Force Academy website. "USAFA Grads in Public Service." Accessed June 11, 2021. https://www.usafa.org/Heritage/Public_Service.
- Atkins, William Arthur. "Dave Yost 1947—." *Reference for Business*. Accessed June 11, 2021. <https://www.referenceforbusiness.com/biography/S-Z/Yost-Dave-1947.html>.
- Bailey, Kat. "Talent Marketplace Assignment System Expands to all Officer Specialty Codes." *U.S. Air Force News*, January 31, 2019. <https://www.af.mil/News/Article-Display/Article/1745057/talent-marketplace-assignment-system-expands-to-all-officer-specialty-codes/>.
- Baker, Brett T., Susan P. Hocevar, and W. Brad Johnson. "The Prevalence and Nature of Service Academy Mentoring: A study of Navy midshipmen." *Military Psychology* 15, no. 4 (2003): 273-283. https://doi.org/10.1207/S15327876MP1504_2.
- Bakken, Tim. "West Point Professor On Cheating Scandal At The U.S. Military Academy." Interview by Ari Shapiro. *All Things Considered*, NPR, December 22, 2020. <https://www.npr.org/2020/12/22/949309336/west-point-professor-on-cheating-scandal-at-the-u-s-military-academy>.
- Batka, Caroline, and Kimberly Curry Hall. *More Research on Veteran Employment Would Show What's Good for Business and for Veterans*. RAND Corporation Perspectives, 2016. <https://apps.dtic.mil/sti/pdfs/AD1014106.pdf>.
- Bederman, Jeanette M. "Beyond Military Service: An Analysis of United States Naval Academy Graduates' Civilian Career Experiences." MA thesis, Naval Postgraduate School, 2005. <https://apps.dtic.mil/sti/pdfs/ADA439307.pdf>.
- Bernard, Michelle T. "Lincoln Charter Student to Become One of the Elites at West Point Academy." *Lincoln Times-News*, May 10, 2021. https://www.lincolntimesnews.com/news/lincoln-charter-student-to-become-one-of-the-elites-at-west-point-academy/article_6d9b94e6-ada9-11eb-ae62-83ec0ff35ca4.html.
- Bettinger, Eric, and Bridget Terry Long. "Do College Instructors Matter? The Effects of Adjuncts and Graduate Assistants on Students' Interests and Success." NBER Working Paper no. 10370, *National Bureau of Economic Research*, (March 2004). <https://doi.org/10.3386/w10370>.
- Blagg, Kristin, and Erica Blom. *Evaluating the Return on Investment in Higher Education: An Assessment of Individual- and State-Level Returns*. Washington, DC: Urban Institute, 2018. https://www.urban.org/sites/default/files/publication/99078/evaluating_the_return_on_investment_in_higher_education.pdf.

- Board of Visitors. Pub L. 10 USC 7455. Chapter 753 United States Military Academy. (July 24, 2021). <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section7455&num=0&edition=prelim>.
- Board of Visitors. Pub L. 10 USC 8468. Chapter 753 United States Naval Academy. (July 24, 2021). <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section8468&num=0&edition=prelim>.
- Board of Visitors. Pub L. 10 USC 9455. Chapter 753 United States Air Force Academy. (July 24, 2021). <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section9455&num=0&edition=prelim>.
- Boger, Michael. *Identifying Toxic Leadership Behaviors and Tools to Facilitate Their Discovery*. Air War College, Air University, Maxwell Air Force Base, 2016. <https://apps.dtic.mil/sti/pdfs/AD1037499.pdf>.
- Bond, Major Andrew L. (United States Military Academy, Chief, G5 Office of Institutional Research) data transfer to interviewer James Bishop, February 19, 2021.
- Bowman, William R., and Stephen L. Mehay. "College Quality and Employee Job Performance: Evidence from Naval Officers." *Industrial and Labor Relations Review* 55, no. 4 (July 2002): 700-714. <https://doi.org/10.1177/001979390205500408>.
- Brook, Tom Vanden. "West Point Accuses More than 70 Cadets of Cheating in Worst Academic Scandal in Nearly 45 Years." *USA Today*, December 21, 2020. <https://www.usatoday.com/story/news/politics/2020/12/21/west-point-catches-70-cadets-worst-cheating-scandal-50-years/5856130002/>.
- Brown University website. "Brown Committee on the ROTC Report: Frequently Asked Questions." Accessed June 9, 2021. <https://www.brown.edu/reports/rotc/faq/frequently-asked-questions>.
- Brown, Jessie, and Martin Kurzweil. *Instructional Quality, Student Outcomes, and Institutional Finances*. Washington D.C.: American Council on Education (ACE), 2018. <https://www.acenet.edu/Documents/Instructional-Quality-Student-Outcomes-and-Institutional-Finances.pdf>.
- Browne, Ryan. "Naval Academy Exams Being Reviewed for 'Inconsistencies'." *CNN*. December 22, 2020. <https://www.cnn.com/2020/12/22/politics/naval-academy-exams-west-point/index.html>.
- Bryant University Staff Writer. "Bryant University President Ronald K. Machtley Steps down After 24 Years, Leaving a Transformed Institution as His Legacy." Bryant University, June 25, 2020. <https://news.bryant.edu/bryant-university-president-ronald-k-machtley-steps-down-after-24-years-leaving-transformed>.
- Burns, Robert. "Commission on Confederate Names to Visit Naval Academy During Fall Semester." *Capital Gazette*, May 24, 2021. <https://www.capitalgazette.com/education/naval-academy/bc-us-military-base-names-confederacy-2021525-20210524-2aoukxxfb5cd7mupkaqi24ucgq-story.html>.

- Buss, Christian, Jeffrey Parker, and Jon Rivenburg. "Cost, Quality and Enrollment Demand at Liberal Arts Colleges." *Economics of Education Review* 23, no. 1 (February 2004): 57-65. [https://doi.org/10.1016/S0272-7757\(03\)00047-5](https://doi.org/10.1016/S0272-7757(03)00047-5).
- Caddell, J. D., and Daniel Newell. "Evaluating teacher impact on student performance: A case study at the United States Military Academy." Presented at IEEE International Systems Conference (SysCon), Orlando, FL, April 8-11, 2019.
- Cadets Agreement to Serve as Officer. Pub L. 10 USC 7448. Chapter 753 United States Military Academy. (July 19, 2021). <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section7448&num=0&edition=prelim>.
- Cardinal, Bradley J., Spencer D. Sorensen, and Marita K. Cardinal. "Historical Perspective and Current Status of the Physical Education Graduation Requirement at American 4-Year Colleges and Universities." *Research Quarterly for Exercise and Sport* 83, no. 4 (December 2012): 503-512. <https://doi.org/10.1080/02701367.2012.10599139>.
- Career Satisfaction Program website. "Home." Accessed June 25, 2021. <https://www.career-satisfaction.army.mil/>.
- Carl, Robert K. "Developing Leaders: The Use Of Challenge And Support To Develop USMA Cadets." EdD diss., University of New England (UNE), August 2017. <https://dune.une.edu/theses/138/>.
- Carrell, Scott E., and James E. West. "Does Professor Quality Matter? Evidence from Random Assignment of Students to Professors." *Journal of Political Economy* 118, no. 3 (June 2010): 409-432. <https://doi.org/10.1086/653808>.
- Carrell, Scott E., Richard L. Fullerton, Robert Gilchrist, and James E. West. "Peer and Leadership Effects in Academic and Athletic Performance." Dartmouth College, 2007. <https://apps.dtic.mil/sti/pdfs/ADA608374.pdf>.
- Casella, George. "An introduction to empirical Bayes data analysis." *The American Statistician* 39, no. 2 (1985): 83-87. <https://doi.org/10.1080/00031305.1985.10479400>.
- CBS Baltimore Staff. "New England Patriots Long Snapper Joe Cardona: 'The Naval Academy Was My Dream School'." *CBS Baltimore*. May 27, 2021. <https://baltimore.cbslocal.com/2021/05/27/joe-cardona-naval-academy-interview/>.
- Chapman, Lauren, and Larry Ludlow. "Can Downsizing College Class Sizes Augment Student Outcomes? An Investigation of the Effects of Class Size on Student Learning." *Journal of General Education* 59, no. 2 (2010): 105-123. <https://doi.org/10.1353/jge.2010.0012>.
- Chen, Jenn. "What Are Twitter Impressions & Why Are They So Important to Twitter?" *SproutSocial*, June 11, 2018. Accessed May 27, 2021. <https://sproutsocial.com/insights/twitter-impressions/>.

- Chism, Nancy Van Note, and Borbála L. Szabó. "Teaching Awards: The Problem of Assessing Their Impact." *To Improve the Academy* 16, no. 1 (1997): 181-199. <https://doi.org/10.1002/j.2334-4822.1997.tb00327.x>.
- CNA website. "Table B-30. Active Component Commissioned Officer Gains, FY18: by Source of Commission, Service, and Gender." Accessed June 25, 2021. https://www.cna.org/pop-rep/2018/appendixb/b_30.html.
- Coelho, Jeffrey D. "Student Perceptions of Physical Education in a Mandatory College Program." *Journal of Teaching in Physical Education* 19, no. 2 (January 2000): 222-245. <https://doi.org/10.1123/jtpe.19.2.222>.
- Coffman, Richard Milhollin. "Second Career Choices, Salary Differential, Job Satisfaction, and Achievement Needs of Selected Service Academy Graduate Resignees and Retirees of Classes 1959 to 1961 (Military)." PhD diss., University of South Carolina, 1987. <https://www.proquest.com/dissertations-theses/second-career-choices-salary-differential-job/docview/303630772/se-2?accountid=11558>.
- Cohen, Rachel S. "USFA Boss Defends School's Discipline Approach Amid Cheating Investigation." *Air Force Magazine*, March 2, 2021. <https://www.airforcemag.com/usafa-boss-defends-schools-discipline-approach-amid-cheating-investigation/>.
- Connecticut Veterans Legal Center, Veterans Inclusion Project. *Gatekeepers to Opportunity: Racial Disparities in Congressional Nominations to the Military Service Academies*. n.p.: March 17, 2021. <http://ctveteranslegal.org/wp-content/uploads/2021/03/3.16.2021-Final-Embargoed-Gatekeepers-to-Opportunity-Racial-Disparities-in-Congressional-Nominations-to-the-Service-Academies.pdf>.
- Cotten, Shelia R., and Bonnie Wilson. "Student-Faculty Interactions: Dynamics and Determinants." *Higher Education* 51, no. 4 (June 2006): 487-519. <https://doi.org/10.1007/s10734-004-1705-4>.
- Coughlan, Peter J., William R. Gates, and Noah Myung. "One Size Does Not Fit All: Personalized Incentives in Military Compensation." *Defense & Security Analysis* 30, no. 4 (August 2014): 360-378. <https://doi.org/10.1080/14751798.2014.948283>.
- Creasey, Gary, Patricia Jarvis, and Elyse Knapcik. "A Measure to Assess Student-Instructor Relationships." *International Journal for the Scholarship of Teaching and Learning* 3, no. 2 (July 2009): 1-12. <https://doi.org/10.20429/ijstol.2009.030214>.
- Cymrot, Donald J. and Patricia E. Byrnes. *An Analysis of the Active Duty Service Obligation (ADSO) for Navy Pilots*. Arlington, VA: Center for Naval Analysis, 1989. <https://apps.dtic.mil/sti/pdfs/ADA212189.pdf>.
- Dale, Stacy, and Alan B. Krueger. "Estimating the Return to College Selectivity Over the Career Using Administrative Earnings Data." NBER Working Paper No. 17159, National Bureau of Economic Research, Cambridge, MA, June 2011. <https://doi.org/10.3386/w17159>.
- Daniel, Teresa A., and G. S. Metcalf. "Crossing the Line: An Examination of Toxic Leadership in the US Army." Technical report, Sullivan University, February 2015.

https://www.academia.edu/43649052/Crossing_the_Line_An_Examination_of_Toxic_Leadership_in_the_U.S._Army.

Delmonico, Kellie. *United States Military Academy Annual College Rankings 2020-2021*. West Point, NY: United States Military Academy, Office of Institutional Research, 2020. <https://s3.amazonaws.com/usma-media/inline-images/about/g5/2020-USMA-College-Rankings-Report.pdf>.

Department of Defense Appropriations for 2020: Department of Defense Appropriations For 2020: Hearing before the Subcommittee on Defense Committee on Appropriations, House of Representatives. 116th Cong., 1st Sess. (February 13, 2019). https://fas.org/irp/congress/2019_hr/dod-approps-fy20.pdf.

Department of Defense. "Military Service Academy Graduates Seeking to Participate in Professional Sports." DTM-19-011. Washington, DC: SecDef, October 19, 2020. <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dtm/XDTM%20P19-X011.PDF?ver=2019-12-13-150830-960>.

Department of Defense. "Service Academies." DoDI 1322.22. Washington, DC: USD(P&R), September 24, 2015. <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/132222p.pdf>.

Department of Defense. *Military Personnel Programs (M-1): Department of Defense Budget: Budget Amendment to the Fiscal Year 2015 President's Budget Request for Overseas Contingency Operations (OCO)*. Washington, DC: OUSD(C), June 2014. https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2015/amendment/fy2015_m1a.pdf.

Department of Defense. *Military Personnel Programs (M-1): Department of Defense Budget: March Budget Amendment to the Fiscal Year 2017 President's Budget Request for BASE + Overseas Contingency Operations (OCO)*. Washington, DC: OUSD(C), March 2017. https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2017/marchAmendment/fy2017_m1a.pdf.

Department of Defense. *Military Personnel Programs (M-1): Department of Defense Budget: Budget Amendment to the Fiscal Year 2018 President's Budget Request for BASE + Emergency + Overseas Contingency Operations (OCO)*. Washington, DC: OUSD(C), November 2017. https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2018/November2017Amended/fy2018_m1a.pdf.

Department of Defense. *Operation and Maintenance Overview Fiscal Year 2016 Budget Estimates*. Washington, DC: OUSD(C), February 2017. https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2016/fy2016_OM_Overview.pdf.

Department of Defense. *Operation and Maintenance Programs (O-1): Department of Defense Budget: Budget Amendment to the Fiscal Year 2018 President's Budget Request for BASE + Emergency + Hurricane Recovery + Overseas Contingency Operations (OCO)*. Washington, DC: OUSD(C), November 2017. https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2018/November2017HurricaneAmended/fy2018_o1a.pdf.

- Department of Defense. *Operation and Maintenance Programs (O-1): Department of Defense Budget: March Budget Amendment to the Fiscal Year 2017 President's Budget Request for BASE + Overseas Contingency Operations (OCO)*. Washington, DC: OUSD(C), March 2017. https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2017/marchAmendment/fy2017_o1a.pdf.
- Department of Defense. *Operation and Maintenance Programs (O-1): Revolving and Management Funds (RF-1): Department of Defense Budget: Budget Amendment to the Fiscal Year 2015 President's Budget Request for Overseas Contingency Operations (OCO)*. Washington, DC: OUSD(C), June 2014. https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2015/amendment/fy2015_o1a_rfla.pdf.
- Derting, Terry L., Diane Ebert-May, Timothy P. Henkel, Jessica Middlemis Maher, Bryan Arnold, and Heather A. Passmore. "Assessing Faculty Professional Development in STEM Higher Education: Sustainability of Outcomes." *Science Advances* 2, no. 3 (March 2016): e1501422. <https://doi.org/10.1126/sciadv.1501422>.
- Didier, Jeremy M. "Evaluating Cadet Leadership Position at the US Air Force Academy." PhD diss., Pardee RAND Graduate School, 2012. <https://apps.dtic.mil/sti/pdfs/ADA570534.pdf>.
- D'orio, Desiree. "West Point Honor Code Under Scrutiny As The Military Academy Grapples With Another Cheating Scandal." *WSHU Public Radio*, March 8, 2021. <https://www.wshu.org/post/west-point-honor-code-under-scrutiny-military-academy-grapples-another-cheating-scandal#stream/0>.
- Dobbs, James M., and James J. Do. "The Impact of Perceived Toxic Leadership on Cynicism in Officer Candidates." *Armed Forces & Society* 45, no. 1 (January 2019): 3-26. <https://doi.org/10.1177%2F0095327X17747204>.
- Drohan, Thomas, and Steven Pomeroy. *Who Speaks for Our Profession? Military and Strategic Studies at the USAF Academy*. Colorado Springs, CO: US Air Force Academy, Dept. of Military and Strategic Studies, 2011). <https://apps.dtic.mil/sti/pdfs/ADA559058.pdf>.
- Ducharme, Lori J., Hannah K. Knudsen, and Paul M. Roman. "Emotional Exhaustion and Turnover Intention in Human Service Occupations: The Protective Role of Coworker Support." *Sociological Spectrum* 28, no. 1 (2008): 81-104. <https://doi.org/10.1080/02732170701675268>.
- Duty Commissions Upon Service Academy Graduations. 141. 104th Cong., 1st sess., *Congressional Record* 112 (July 12, 1995). <https://www.govinfo.gov/app/details/CREC-1995-07-12/CREC-1995-07-12-pt1-PgE1414-2/summary>.
- Earnest, Andrea. "Mokena Honors Resident Heading To Air Force Academy." *Patch*, May 25, 2021. <https://patch.com/illinois/mokena/mokena-honors-resident-heading-air-force-academy>.
- Ebert-May, Diane, Terry L. Derting, Janet Hodder, Jennifer L. Momsen, Tammy M. Long, and Sarah E. Jardeleza. "What We Say is Not What We Do: Effective

Evaluation of Faculty Professional Development Programs.” *BioScience* 61, no. 7 (July 2011): 550-558. <https://doi.org/10.1525/bio.2011.61.7.9>.

Effect of Failure of Selection for Promotion: Captains and Majors of the Army, Air Force, and Marine Corps and Lieutenants and Lieutenant Commanders of the Navy. Pub. L. 10 USC 632. (July 19, 2021). <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section632&num=0&edition=prelim>.

Endo, Jean J., and Richard L. Harpel. “The Effect of Student-Faculty Interaction on Students' Educational Outcomes.” *Research in Higher Education* 16, no. 2 (1982): 115-138. <https://doi.org/10.1007/BF00973505>.

FacaDatabase.gov website. “DOD - 398 - Board of Visitors of the U.S. Air Force Academy - Statutory (Congress Created).” Accessed June 3, 2021. <https://www.facadatabase.gov/FACA/apex/FACAPublicCommittee?id=a10t0000001gzoOAAQ>.

FacaDatabase.gov website. “DOD - 399 - United States Naval Academy Board of Visitors - Statutory (Congress Created).” Accessed June 3, 2021. <https://www.facadatabase.gov/FACA/apex/FACAPublicCommittee?id=a10t0000001gzjnAAA>.

FacaDatabase.gov website. “DOD - 75 - United States Military Academy Board of Visitors - Statutory (Congress Created).” Accessed June 3, 2021. <https://www.facadatabase.gov/FACA/apex/FACAPublicCommittee?id=a10t0000001gznLAAQ>.

Facebook website. “Harvard University.” Accessed May 27, 2021. <https://www.facebook.com/Harvard>.

Facebook website. “Search Results: Air Force Academy.” Accessed May 27, 2021. <https://www.facebook.com/search/videos/?q=air%20force%20academy>.

Facebook website. “Search Results: Naval Academy.” Accessed May 27, 2021. <https://www.facebook.com/search/videos/?q=naval%20academy>.

Facebook website. “Search Results: West Point Military Academy.” Accessed May 27, 2021. <https://www.facebook.com/search/videos/?q=west%20point%20military%20academy>.

Facebook website. “U.S. Air Force Academy.” Accessed May 26, 2021. <https://www.facebook.com/USAF.A.Official/>.

Facebook website. “United States Naval Academy.” Accessed May 26, 2021. <https://www.facebook.com/USNavalAcademy/>.

Facebook website. “Wellesley College.” Accessed May 27, 2021. <https://www.facebook.com/WellesleyCollege>.

Facebook website. “West Point - The U.S. Military Academy.” Accessed May 26, 2021. <https://www.facebook.com/WestPointUSMA/>.

- Falk, Sayce, and Sasha Rogers. *Junior Military Officer Retention: Challenges and Opportunities*. n.p.: John F. Kennedy School of Government, Harvard University, 2011. <https://nation.time.com/wp-content/uploads/sites/8/2011/04/falk-rogers-pae-03-11-vf.pdf>.
- FitzPatrick, Brian S. "The Performance of Preparatory School Candidates at the United States Naval Academy." MA thesis, Naval Postgraduate School, 2001. <https://apps.dtic.mil/sti/pdfs/ADA397259.pdf>.
- Fitzpatrick, Mary, and Sarah Moore. "Exploring Both Positive and Negative Experiences Associated with Engaging in Teaching Awards in a Higher Education Context." *Innovations in Education and Teaching International* 52, no. 6 (November 2015): 621-631. <https://doi.org/10.1080/14703297.2013.866050>.
- Fleming, Brianne "Schlimm of St. Marys Graduates From West Point Military Academy," *Courier Express*, May 24, 2021. http://www.thecourierexpress.com/news/schlimm-of-st-marys-graduates-from-west-point-military-academy/article_b4a2bcf5-14be-5ae4-8ac4-0e25a8af6c17.html.
- Fleming, Mike Jr. "'Riverdale's KJ Apa To Star In Rod Lurie-Directed Military Academy Drama 'West Pointer' For Lionsgate." *Deadline*, May 26, 2021. <https://deadline.com/2021/05/riverdale-kj-apa-rod-lurie-military-academy-west-pointer-lionsgate-1234764397/>.
- Fominykh, Katherine. "Naval Academy Grads Hope to Walk on the Moon with NASA Team." *The Navy Times*, February 7, 2021. <https://www.navytimes.com/news/your-navy/2021/02/07/naval-academy-grads-hope-to-walk-on-the-moon-with-nasa-team/>.
- Forbes website, "America's Best Colleges." August 11, 2010, https://www.forbes.com/2010/08/01/best-colleges-university-ratings-rankings-opinions-best-colleges-10-intro_slide.html?sh=1096a1e23da8.
- Forbes website, "America's Top Colleges," August 3, 2011, <https://www.forbes.com/sites/michaelnoer/2011/08/03/americas-top-colleges/?sh=bb266a54c017>.
- Forbes website, "American's Best Colleges 2009." August 5, 2009, <https://www.forbes.com/2009/08/02/colleges-university-ratings-opinions-colleges-09-intro.html?sh=2d0317119454>.
- Forbes website, "Top 200 Colleges 2012." August 1, 2012, <https://www.forbes.com/pictures/mgg45egkl/1-princeton-university/?sh=2ef07d0d64ec>.
- Forbes website. "#24 United States Naval Academy." Accessed December 7, 2020. <https://www.forbes.com/colleges/united-states-naval-academy/?list=top-colleges/&sh=55246824534d>.
- Forbes website. "#32 United States Military Academy." Accessed December 7, 2020. <https://www.forbes.com/colleges/united-states-military-academy/?list=top-colleges/&sh+549520a37b77>.

- Forbes website. “#43 United States Air Force Academy.” Accessed December 7, 2020. <https://www.forbes.com/colleges/united-states-air-force-academy/?list=top-colleges/&sh=7d7573a54c5e>.
- Forbes website. “America’s Best Colleges.” August 13, 2008. https://www.forbes.com/2008/08/13/best-public-colleges-oped-college08-cx_mn_de_0813public_slide.html?sh=62b1d6d522e6.
- Forbes website. “America’s Best Public Colleges.” August 5, 2009. <https://www.forbes.com/2009/08/06/best-public-colleges-opinions-colleges-09-top.html?sh=40fd129102f5>.
- Forbes website. “America’s Best College.” August 6, 2009. <https://www.forbes.com/forbes/2009/0824/colleges-09-education-west-point-america-best-college.html?sh=404565145a00>.
- Forbes website. “America’s Best Colleges 2008.” August 13, 2008. https://www.forbes.com/2008/08/13/college-university-rankings-oped-college08-cx_rv_mn_0813intro.html?sh=4e8e7f52b65d.
- Forbes website. “Best Public Colleges.” August 3, 2011. <https://www.forbes.com/pictures/eidm45hge/united-states-naval-academy-2/?sh=4a8bb4d02460#content>.
- Forbes website. “Forbes Releases Annual Ranking of America’s Top Colleges.” August 15, 2019. <https://www.forbes.com/sites/forbespr/2019/08/15/forbes-releases-annual-ranking-of-americas-top-colleges/?sh=1e48a96a924f>.
- Forbes website. “America’s Top Colleges 2019: Methodology Behind the Ranking.” Accessed December 7, 2020. <https://www.forbes.com/top-colleges/#261ad2951987>.
- Forbes website. “Top 25 Best Public Colleges 2014.” June 30, 2014. <https://www.forbes.com/sites/zheyanni/2014/07/30/top-25-best-public-colleges-2014/?sh=7756ec2a6982>.
- Forbes website. “Top 25 Public Colleges 2015.” June 13, 2015. <https://www.forbes.com/pictures/55a40e01e4b05c2c3431defe/2-united-states-naval-aca/?sh=f8f7e266d7be>.
- Forbes website. “Top Colleges 2013: Public Colleges.” July 24, 2013. <https://www.forbes.com/pictures/eidm45fhmi/united-states-air-force-academy-11/?sh=66e232fb7b4d>.
- Forsythe, George B., and Anita Gandolfo. “Promoting Exemplary Teaching: The Case of the US Military Academy.” *New Directions for Teaching and Learning*, no. 65 (1996): 99-104. <https://doi.org/10.1002/tl.37219966517>.
- G100 website. “Steve Reinemund - Senior Advisor.” Accessed June 11, 2021. <https://g100network.com/team/steve-reinemund>.
- Galli, Nick, and Justine J. Reel. “Can Good Come from Bad? An Examination of Adversarial Growth in Division I NCAA Athletes.” *Journal of Intercollegiate Sport* 5, no. 2 (2012): 199-212. <https://doi.org/10.1123/jis.5.2.199>.

- Gentry, William A., Kristin L. Cullen, John J. Sosik, Jae Uk Chun, Christopher R. Leupold, and Scott Tonidandel. "Integrity's Place Among the Character Strengths of Middle-Level Managers and Top-Level executives." *The Leadership Quarterly* 24, no. 3 (June 2013): 395-404. <https://doi.org/10.1016/j.leaqua.2012.11.009>.
- Goldich, Robert L. "The DOD Service Academies: Issues for Congress." n.p: Congressional Research Service, The Library of Congress, 1997. https://www.everycrsreport.com/files/19970206_97-217_4cd9921af044d8ba4e10f38148d920f399b3d14b.pdf.
- Gremillion, John D. "Undergraduate Academic Achievement as an Indicator of Fleet Performance and Retention." MA thesis, Naval Postgraduate School, 1998. <https://apps.dtic.mil/sti/pdfs/ADA354302.pdf>.
- Grijalva, Makayla. "BOUND FOR WEST POINT: SODA Student Accepted to Elite U.S. Military Academy." *News-Bulletin*, April 29, 2021. <https://news-bulletin.com/soda-student-accepted-to-elite-u-s-military-academy/>.
- Guillén, Félix, and Sylvain Laborde. "Higher-Order Structure of Mental Toughness and the Analysis of Latent Mean Differences Between Athletes from 34 Disciplines and Non-Athletes." *Personality and Individual Differences* 60 (April 2014): 30-35. <https://doi.org/10.1016/j.paid.2013.11.019>.
- Halawah, Ibtesam. "The Impact of Student-Faculty Informal Interpersonal Relationships on Intellectual and Personal Development." *College Student Journal* 40, no. 3 (September 2006): 670-678. link.gale.com/apps/doc/A150965834/AONE.
- Hall, Kimberly Curry, Margaret C. Harrell, Barbara A. Bicksler, Robert Stewart, and Michael P. Fisher. *Veteran Employment: Lessons From the 100,000 Jobs Mission*. Santa Monica, CA: RAND Corporation, 2014. https://www.rand.org/pubs/research_reports/RR836.html.
- Hannah, Sean T., John M. Schaubroeck, Ann C. Peng, Robert G. Lord, Linda K. Trevino, Steve W.J. Kozlowski, Bruce J. Avolio, Nikolaos Dimotakis, and Joseph Doty. "Joint Influences of Individual and Work Unit Abusive Supervision on Ethical Intentions and Behaviors: A Moderated Mediation Model." *Journal of Applied Psychology* 98, no. 4 (July 2013): 579-592. <https://doi.org/10.1037/a0032809>.
- Hansen, Michael L., and Shanthi Nataraj. *Expectations About Civilian Labor Markets and Army Officer Retention*. Santa Monica, CA: RAND Corporation, 2011. <https://apps.dtic.mil/sti/pdfs/ADA554299.pdf>.
- Hanser, Lawrence M., and Mustafa Oguz. *United States Service Academy Admissions: Selecting for Success at the Military Academy/West Point and as an Officer*. Santa Monica, CA: RAND Corporation, 2015. https://www.rand.org/pubs/research_reports/RR723.html.
- Hardison, Chaitra M., Susan Burkhauser, and Lawrence M. Hanser. *United States Service Academy Admissions: Selecting for Success at the Air Force Academy and as an Officer*. Santa Monica CA: RAND Corporation, 2016. https://www.rand.org/pubs/research_reports/RR744.html.

- Hattke, Fabian, and Judith Hattke. "Lead by Example? The Dissemination of Ethical Values Through Authentic Leader Inspiration." *International Journal of Public Leadership* 15, no. 4 (2019). <https://doi.org/10.1108/IJPL-06-2019-0034>.
- Headquarters, Department of the Air Force. "Military Utilization and Classification." Air Force Manual 36-2100. Washington, DC: HQDAF, April 7, 2021. https://static.e-publishing.af.mil/production/1/af_a1/publication/afman36-2100/afman36-2100.pdf.
- Headquarters, Department of the Army. "Army Leadership and the Profession." ADP 6-22. Washington, DC: HQDA, 2019. https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN20039-ADP_6-22-001-WEB-0.pdf.
- Headquarters, Department of the Army. "Officer Active Duty Service Obligations." AR 350-100. Washington, DC: HQDA, 2017. https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/ARN2513_AR350-100_Web_FINAL.pdf.
- Headquarters, Department of the Army. "Professional Education and Training Programs of the Army Medical Department." AR 351-3. Washington, DC: HQDA, 2007. https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/AR%20351-3.pdf.
- Headquarters, Department of the Navy. "Class Standings." USNA INSTRUCTION 1531.51B Annapolis, MD: USNA, 2017. <https://www.usna.edu/AdminSupport/Inst/1000-1999/USNAINST%201531.51B%20Class%20Standings.pdf#search=order%20of%20merit>.
- Headquarters, Department of the Navy. "Enlisted To Officer Commissioning Programs Application Administrative Manual," OPNAVINST 1420.1B (Washington, DC: HQDN N13, December 14, 2009) https://www.usna.edu/Admissions/_files/documents/Fleet/OPNAVINST.pdf.
- Headquarters, Department of the Navy. "Lateral Transfer Into Naval Aviation." MILPERSMAN 1542-010. Washington, DC: HQDA, February 22, 2020. <https://www.mynavyhr.navy.mil/Portals/55/Reference/MILPERSMAN/1000/1500Trailing/1542-010.pdf>.
- Heil, Scott, Liza Reisel, and Paul Attewell, "College Selectivity and Degree Completion." *American Educational Research Journal* 51, no. 5 (October 2014): 913-935. <https://doi.org/10.3102%2F0002831214544298>.
- Highsmith, Carol M. "The Cadet Chapel in Colorado Springs is the Most Popular Man-Made Attraction in Colorado, with More than a Half Million Visitors Every Year." Colorado Springs, CO: n.p., [1980-2006]. Accessed June 4, 2021. Photograph. <https://www.loc.gov/item/2011632993/>.
- Hobbs, Tawnell D. "Cheating at School Is Easier Than Ever—and It's Rampant." *The Wall Street Journal*, May 12, 2021. <https://www.wsj.com/articles/cheating-at-school-is-easier-than-everand-its-rampant-11620828004>.
- Hu, Shouping, Kathyrine Scheuch, and Joy Gaston Gayles. "The Influences of Faculty on Undergraduate Student Participation in Research and Creative Activities."

- Innovative Higher Education* 34, no. 3 (August 2009): 173-183.
<https://doi.org/10.1007/s10755-009-9105-4>.
- Ingvarson, Lawrence, Marion Meiers, and Adrian Beavis. "Factors Affecting the Impact of Professional Development Programs on Teachers' Knowledge, Practice, Student Outcomes & Efficacy." *Education Policy Analysis Archives* 13, no. 10 (2005).
https://research.acer.edu.au/cgi/viewcontent.cgi?article=1000&context=professional_dev.
- Israel, Mark. *The Key to the Door? Teaching Awards in Australian Higher Education*. Australian Learning and Teaching Council Ltd., 2011. https://ltr.edu.au/resources/Israel%2C%20M%20UWA%20Fellowship%20report%202011_0.pdf.
- Jacobsen, Rhonda Hustedt. "The Impact of Faculty Incentive Grants on Teaching Effectiveness." Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA, March 27-31, 1989.
<https://www.proquest.com/docview/303807297>.
- Jemmy, S., and Veena Easvaradoss. "Mental Toughness and Positivity as Predictors of Performance Strategies Used Among Competing Athletes." *International Journal of Sports Sciences & Fitness* 8, no. 2 (2018): 98-119.
<https://www.proquest.com/docview/2185007847>.
- Jenrette, Mardee, and Karen Hays. "Honoring Exemplary Teaching: The Two-Year College Setting." *New Directions for Teaching and Learning*, no. 65 (1996): 77-83.
<https://doi.org/10.1002/tl.37219966514>.
- Joint Chiefs of Staff. "Officer Professional Military Education Policy." CJCSI 1800.01F. Washington, DC: JCS, May 2020. https://www.jcs.mil/Portals/36/Documents/Doctrine/education/cjcsi_1800_01f.pdf?ver=2020-05-15-102430-580.
- Kahn, Susan. "Awards to Groups: The University of Wisconsin System's Departmental Teaching Award." *New Directions for Teaching and Learning*, no. 65 (1996): 11-16. <https://doi.org/10.1002/tl.37219966505>.
- Keller, Kirsten M., Nelson Lim, Lisa M. Harrington, Kevin O'Neill, and Abigail Haddad. *The Mix of Military and Civilian Faculty at the United States Air Force Academy: Finding a Sustainable Balance for Enduring Success*. Santa Monica, CA: RAND Project Air Force, 2013. <https://www.rand.org/pubs/monographs/MG1237.html>.
- Kim, Jeongeun, and Woo-jeong Shim. "What Do Rankings Measure? The US News Rankings and Student Experience at Liberal Arts Colleges." *The Review of Higher Education* 42, no. 3 (2019): 933-964. <http://doi.org/10.1353/rhe.2019.0025>.
- Kime, Patricia. "Naval Academy Needs to Better Track Its Support for Sexual Assault Victims, IG Finds." *Military.com*, May 2021. Accessed June 1, 2021.
<https://www.military.com/daily-news/2021/05/26/naval-academy-needs-better-track-its-support-sexual-assault-victims-ig-finds.html>.
- Kimmons, Sean. "Army talent management program growing." *Fort Leavenworth Lamp*, January 30, 2020. <https://www.ftleavenworthlamp.com/departments-of-defense/2020/01/30/army-talent-management-program-growing/>.

- Koh, Thomas D. "Army Officer Retention: How to Retain the Best and Brightest." MA thesis, Johns Hopkins University, April 2018.
<https://jscholarship.library.jhu.edu/handle/1774.2/59905>.
- Kokkelenberg, Edward C., Michael Dillon, and Sean M. Christy. "The Effects of Class Size on Student Grades at a Public University." *Economics of Education Review* 27, no. 2 (April 2008): 221-233. <https://doi.org/10.1016/j.econedurev.2006.09.011>.
- Komarraju, Meera, Sergey Musulkin, and Gargi Bhattacharya. "Role of Student-Faculty Interactions in Developing College Students' Academic Self-Concept, Motivation, and Achievement." *Journal of College Student Development* 51, no. 3 (2010): 332-342. <https://doi.org/10.1353/csd.0.0137>.
- Kotlikoff, Phoebe M. "Estimating the Effects of Pre-College Education on College Performance." Research paper, United States Naval Academy, October 2013.
<https://apps.dtic.mil/sti/pdfs/ADA581860.pdf>.
- Kuh, George D., and Shouping Hu. "The Effects of Student-Faculty Interaction in the 1990s." *Review of Higher Education: Journal of the Association for the Study of High Education* 24, no. 3 (2001): 309-332. <https://doi.org/10.1353/rhe.2001.0005>.
- Lambert, Eric G., Irshad Altheimer, and Nancy L. Hogan. "Exploring the Relationship Between Social Support and Job Burnout Among Correctional Staff." *Criminal Justice and Behavior* 37, no. 11 (November 2010): 1217-1236.
<https://doi.org/10.1177%2F0093854810379552>.
- Langkamer, Krista L., and Kelly S. Ervin. "Psychological Climate, Organizational Commitment and Morale: Implications for Army Captains' Career Intent." *Military Psychology* 20, no. 4 (October 2008): 219-236. <https://doi.org/10.1080/08995600802345113>.
- Linsky, Arnold S., and Murray A. Straus. "Student Evaluations, Research Productivity, and Eminence of College Faculty." *Journal of Higher Education* 46, no. 1 (1975): 89-102. <https://doi.org/10.1080/00221546.1975.11780630>.
- Luca, Michael, and Jonathan Smith. "Salience in Quality Disclosure: Evidence from the US News College Rankings." *Journal of Economics & Management Strategy* 22, no. 1 (March 2013): 58-77. <https://doi.org/10.1111/jems.12003>.
- Lyle, David S., and John Z. Smith. "The Effect of High-Performing Mentors on Junior Officer Promotion in the US Army." *Journal of Labor Economics* 32, no. 2 (April 2014): 229-258. <https://doi.org/10.1086/673372>.
- Mack, Mick G. "An Examination of the Relationship Between Mental Toughness, Psychological Skills, Coaches' Ratings, and Athletic Performance." *Journal of Sport Behavior* 42, no. 2 (June 2019): 142-157.
<https://www.proquest.com/docview/2272727976>.
- Mansell, Matthew, Lorenzo, Daniel, Troy Lane, and Garway Thomas-Johnson. "Toxic Leadership: A Systemic Approach to Shift From Reactive to Proactive Solutions." Technical report, Air Command and Staff College, Maxwell Air Force Base, 2017.
<https://apps.dtic.mil/sti/citations/AD1037957>.

- Martin, Erik. "Local Cadet Graduates from West Point." *The Daily Advocate*, May 25, 2021. <https://www.dailyadvocate.com/news/97615/local-cadet-graduates-from-west-point>.
- Mathis, William J. "The Effectiveness of Class Size Reduction." *Psychosociological Issues in Human Resource Management* 5, no. 1 (2017): 176-183. <https://www.cceol.com/search/article-detail?id=537960>.
- Maucione, Scott. "After a year of high retention, the Navy is thinking about force balance." *Federal News Network*, December 30, 2020. Accessed June 21, 2021. <https://federalnewsnetwork.com/navy/2020/12/after-a-year-of-high-retention-the-navy-is-thinking-about-force-balance/>.
- McDonald, Scott. "U.S. Military Academy to Save One College Bowl Game From COVID Cancellation." *Newsweek*, December 21, 2020. <https://www.newsweek.com/us-military-academy-save-one-college-bowl-game-covid-cancellation-1556549>.
- Melguizo, Tatiana, and Myra H. Strober. "Faculty Salaries and the Maximization of Prestige." *Research in Higher Education* 48, no. 6 (September 2007): 633-668. <https://doi.org/10.1007/s11162-006-9045-0>.
- Meredith, Marc. "Why do Universities Compete in the Ratings Game? An Empirical Analysis of the Effects of the US News and World Report College Rankings." *Research in Higher Education* 45, no. 5 (August 2004): 443-461. <https://doi.org/10.1023/B:RIHE.0000032324.46716.f4>.
- Millea, Meghan, R. Wills, Anastasia Elder, and Danielle Molina. "What Matters in College Student Success? Determinants of College Retention and Graduation Rates." *Education* 138, no. 4 (2018): 309-322. <https://eric.ed.gov/?id=EJ1180297>.
- Minimum Service Requirement for Certain Flight Crew Positions. Pub. L. 10 USC 653. (July 19, 2021). <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section653&num=0&edition=prelim>.
- Mongilio, Heather. "After Settling Lawsuit Against Head of Naval Academy, Midshipman who Faced Expulsion over Tweets Graduates and Commissions." *Capital Gazette.com*, May 29, 2021. <https://www.stripes.com/branches/navy/2021-05-29/After-lawsuit-settlement-with-head-of-Naval-Academy-midshipman-who-had-faced-expulsion-over-tweets-graduates-1602390.html>.
- Monks, James, and Ronald G. Ehrenberg. "US News & World Report's College Rankings: Why They Do Matter." *Change: The Magazine of Higher Learning* 31, no. 6 (1999): 42-51. <https://doi.org/10.1080/00091389909604232>.
- Moody, Josh. "Universities, Colleges Where Students Are Eager to Enroll," *U.S. News and World Report*, January 25, 2021. Accessed May 7, 2021. <https://www.usnews.com/education/best-colleges/articles/universities-colleges-where-students-are-eager-to-enroll>.
- Moore, Carol S. *Are Aviation Obligations Driving Students Away?* Alexandria, VA: Center for Naval Analysis, 2000. <https://apps.dtic.mil/sti/pdfs/ADA388391.pdf>.

- Morse, Robert, and Eric Brooks. "How U.S. News Calculated the 2021 Best Colleges Rankings." *U.S. News & World Report*, September 13, 2020. <https://www.usnews.com/education/best-colleges/articles/how-us-news-calculated-the-rankings>.
- Myers, Jane E., and Ashleah Bechtel. "Stress, Wellness, and Mattering Among Cadets at West Point: Factors Affecting a Fit and Healthy Force." *Military Medicine* 169, no. 6 (June 2004): 475-482. <https://doi.org/10.7205/MILMED.169.6.475>.
- Myers, Luke, and Jonathan Robe. *College Rankings: History, Criticism and Reform*. Washington D.C.: Center for College Affordability and Productivity (NJ1), 2009. <https://eric.ed.gov/?id=ED536277>.
- Nagda, Biren A., Sandra R. Gregerman, John Jonides, William Von Hippel, and Jennifer S. Lerner. "Undergraduate Student-Faculty Research Partnerships Affect Student Retention." *Review of Higher Education* 22, no. 1 (1998): 55-72. <https://doi.org/10.1353/rhe.1998.0016>.
- National Center for Education Statistics website. "College Navigator." Accessed June 9, 2021. <https://nces.ed.gov/collegenavigator>.
- National Center for Education Statistics website. "Integrated Postsecondary Education Data System." Accessed May 5, 2021. <https://nces.ed.gov/ipeds/datacenter/InstitutionByName.aspx?goToReportId=1>.
- National Center for Education Statistics. "IPEDS 2020-21 Data Collection System: 2020-21 Survey Materials: Form." National Center for Education Statistics, n.d. https://nces.ed.gov/ipeds/UseTheData/ArchivedSurveyMaterialPdf?year=2020&fileName=package_14_102.pdf.
- National Defense Authorization Act For Fiscal Year 1996. Pub. L. 104–106. 110 Stat. 186. 104th Cong. (1996). <https://www.congress.gov/bill/104th-congress/senate-bill/1124/>.
- National Defense Authorization Act For Fiscal Year 2020. Pub. L. S. 1790. 116th Cong., (2019). <https://www.congress.gov/bill/116th-congress/senate-bill/1790>.
- National Defense Authorization Act For Fiscal Years 1990 And 1991. H.R. 2461. 103 Stat. 1439. 101st Congress (1989). <https://www.congress.gov/bill/101st-congress/house-bill/2461>.
- Nietzel, Michael T. "Comparing The Major College Ranking Systems: How Methodology Matters." *Forbes*, September 20, 2020. <https://www.forbes.com/sites/michaelnietzel/2020/09/20/comparing-the-college-ranking-systemshere-are-the-major-differences/?sh=3f01ed7d5c12>.
- Noer, Michael. "America's Top Colleges." *Forbes*, August 3, 2011. <https://www.forbes.com/sites/michaelnoer/2011/08/03/americas-top-colleges/?sh=251582714c01>.
- NPR News. "West Point Graduates' Letter Calls For Academy To Address Racism," *WSKG* (Public radio), July 6, 2020. <https://wskg.org/news/west-point-graduates-letter-calls-for-academy-to-address-racism/>.

- Oakes, Benjamin W. "The Propensity for Mentorship at the United States Naval Academy: A Study of Navy and Marine Corps Junior Officers." MA thesis, Naval Postgraduate School, June 2005. <https://apps.dtic.mil/sti/citations/ADA435602>.
- Office of Economic and Manpower Analysis. "CSP Program Analysis." PowerPoint presentation, Office of Economic and Manpower Analysis, West Point, NY, January 2020.
- Offstein, Evan H., and Ronald L. Dufresne. "Building Strong Ethics and Promoting Positive Character Development: The Influence of HRM at the United States Military Academy at West Point." *Human Resource Management*, 46, no. 1 (2007): 95–114. <https://doi.org/10.1002/hrm.20147>.
- Olsen, Bradley. "Seconds Short, Mid Bitter Over Expulsion." *Baltimore Sun*, May 25, 2006. <https://www.baltimoresun.com/bal-mid0525-story.html>.
- O'Mailia, Shawn P. "The Nature and Existence of Mentoring Relationships at the United States Air Force Academy." PhD diss., Auburn University, 2010. http://etd.auburn.edu/bitstream/handle/10415/2107/OMailia_Dissertation_final_14_Apr_10.pdf?sequence=4&ts=1435925309188.
- O'Meara, KerryAnn, and Alan Bloomgarden. "The Pursuit of Prestige: The Experience of Institutional Striving from a Faculty Perspective." *Journal of the Professoriate* 4, no. 1 (2011). https://www.researchgate.net/profile/Alan-Bloomgarden/publication/263505661_The_Pursuit_of_Prestige_The_Experience_of_Institutional_Striving_from_a_Faculty_Perspective/links/5ec3deb8299b1c09ac98c65/The-Pursuit-of-Prestige-The-Experience-of-Institutional-Striving-from-a-Faculty-Perspective.pdf.
- Payscale website. "Salaries for United States Air Force Academy (USAFA) Graduates." Accessed June 8, 2021. [https://www.payscale.com/research/US/School=United_States_Air_Force_Academy_\(USAFA\)/Salary](https://www.payscale.com/research/US/School=United_States_Air_Force_Academy_(USAFA)/Salary).
- Payscale website. "Salaries for United States Military Academy (USMA) at West Point Graduates." Accessed June 8, 2021. [https://www.payscale.com/research/US/School=United_States_Military_Academy_\(USMA\)_at_West_Point/Salary](https://www.payscale.com/research/US/School=United_States_Military_Academy_(USMA)_at_West_Point/Salary).
- Payscale website. "Salaries for United States Naval Academy (USNA) at Annapolis Graduates." Accessed June 8, 2021. [https://www.payscale.com/research/US/School=United_States_Naval_Academy_\(USNA\)_at_Annapolis/Salary](https://www.payscale.com/research/US/School=United_States_Naval_Academy_(USNA)_at_Annapolis/Salary).
- Petersen, Eric R., and Sarah J. Eckman. "Congressional Nominations to US Service Academies: An Overview and Resources for Outreach and Management." Research report, updated December 2019, p. 7. https://www.everycrsreport.com/files/20191218_RL33213_f3a4006314d3a115f3b527e698866af2075056c5.pdf.
- Porter, Stephen R., and Robert K. Toutkoushian. "Institutional Research Productivity and the Connection to Average Student Quality and Overall Reputation." *Economics of Education Review* 25, no. 6 (December 2006): 605–617. <https://doi.org/10.1016/j.econedurev.2005.06.003>.
- Public Accountability on Nominations Offered that Result in Admissions to Military Academies (PANORAMA ACT) Act of 2020. S. 3783. 116th Cong., 2nd sess. (May

20, 2020). <https://www.govinfo.gov/content/pkg/BILLS-116s3783is/pdf/BILLS-116s3783is.pdf>.

Public University Honors website. "Estimated Class Sizes: More Than 90 National Universities." Last updated September 15, 2019. <http://publicuniversityhonors.com/2015/10/20/estimated-class-sizes-more-than-90-national-universities/>.

Public University Honors website. "Forbes College Rankings 2015: Still Unfriendly to Public Universities." August 1, 2015. <https://publicuniversityhonors.com/2015/08/01/forbes-college-rankings-2015-still-unfriendly-to-public-universities/>.

Raithel, Jeffrey R. "Mentors in the Classroom: An Exploratory Qualitative Study of the Beliefs and Behaviors of Faculty Mentor Exemplars at the United States Naval Academy." MA thesis, Naval Postgraduate School, June 2002. <https://apps.dtic.mil/sti/pdfs/ADA405947.pdf>.

Ramey, Justin L. "Does Increased Pilot Training Commitments Ground High Flyers?" MA thesis, University of Florida, February 2002. <https://apps.dtic.mil/sti/pdfs/ADA399364.pdf>.

RAND Corporation Website. "DOPMA/ROPMA Policy Reference Tool: Military Service Obligation and Active Duty Service Obligation." Accessed February 2, 2020. <http://dopma-ropma.rand.org/military-service-obligation.html>.

Recommendations for promotion by selection boards. 10 USC 616.U.S. (July 19, 2021). <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section616&num=0&edition=prelim>.

Reed, George E., and R. Craig Bullis. "The Impact of Destructive Leadership on Senior Military Officers and Civilian Employees." *Armed Forces & Society* 36, no. 1 (October 2009): 5-18. <https://doi.org/10.1177%2F0095327X09334994>.

Reed, George E., and Richard A. Olsen. "Toxic Leadership: Part Deux." *Military Review* 90, no. 6 (2010): 58-64. <https://apps.dtic.mil/sti/citations/ADA531886>.

Reiter, Andrew G. "U.S. News & World Report Historical Liberal Arts College and University Rankings." Accessed December 1, 2020. <http://andyreiter.com/datasets/>.

Rempfer, Kyle. "New Army Aviators Will Incur 10-Year Service Obligations, up from Six, Starting in October." *Army Times*, August 21, 2020. <https://www.armytimes.com/news/your-army/2020/08/21/new-army-aviators-will-incur-10-year-service-obligations-up-from-six-starting-in-october/>.

Retain Our Service Academies: Hearing before the House of Representatives. 104th Cong., 1st sess., (June 14, 1995). <https://www.govinfo.gov/content/pkg/CREC-1995-06-14/html/CREC-1995-06-14-pt1-PgE1244-3.htm>.

Retirement for Years of Service: Regular Colonels and Navy Captains. 10 USC 634. (July 19, 2021). <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section634&num=0&edition=prelim>.

Rhymer, Lt Col Don. "Research At Academy Is Unparalleled Among Undergrad Institutions." *United States Air Force Academy*, Nov. 1, 2018.

<https://www.usafa.edu/news/research-at-the-academy-is-unparalleled-among-undergraduate-institutions/>.

- Richards, David A. R., Janet T. Awokoya, Brian K. Bridges, and Christine Clark. "One Size Does Not Fit All: A Critical Race Theory Perspective on College Rankings." *The Review of Higher Education* 42, no. 1 (Fall 2018): 269-312. <http://doi.org/10.1353/rhe.2018.0030>.
- Richardson, William R. "Getting West Point Back on Mission." *Military Review* 86, no. 2 (2006): 69-70. <https://www.proquest.com/docview/225305504>.
- Rieder, Tom. "Air Force Academy General's Fight Against Racism Resonates." *Air Force Times*, September 20, 2020. <https://www.airforcetimes.com/news/your-air-force/2020/09/20/air-force-academy-generals-fight-against-racism-resonates/>.
- Robert Morris University website. "Dr. Howard's Biography." Accessed June 11, 2021. <https://www.rmu.edu/about/president/bio>.
- Roeder, Tom. "General Becomes First Black Superintendent of the Air Force Academy." *TaskAndPurpose.com*. September 24, 2020. <https://taskandpurpose.com/news/air-force-academy-superintendent-clark/>.
- Rogers, Katie. "At Naval Academy Graduation, Harris Focuses on Strengthening a 'Fragile' World." *The New York Times*, May 28, 2021. <https://www.nytimes.com/2021/05/28/us/politics/kamala-harris-commencement-speech-naval-academy.html>.
- Ruiz, Michelle. "A Record Number of African American Women Graduated from West Point in 2020." *Vogue*, June 15, 2020. <https://www.vogue.com/article/record-number-african-american-female-graduates-west-point>.
- Rutz, Carol, William Condon, Ellen R. Iverson, Cathryn A. Manduca, and Gudrun Willett. "Faculty Professional Development and Student Learning: What is the Relationship?" *Change: The Magazine of Higher Learning* 44, no. 3 (May 2012): 40-47. <https://doi.org/10.1080/00091383.2012.672915>.
- Ryan, Richard J. "An Inductive Study of the Development, Application, and Sociological Impact of Ethics Instruction at the United States Naval Academy." MA thesis, Naval Post Graduate School, March 1999. <https://apps.dtic.mil/sti/pdfs/ADA362516.pdf>.
- Schaefer, Hillary S., Craig A. Yunker, Kristina Schmid Callina, Brian Burkhard, Diane Ryan, and Richard M. Lerner. "Indexing Character in the Context of Sport Participation Within the United States Military Academy: The Character in Sport Index." *Journal of College and Character* 20, no. 4 (2019): 287-309. <https://doi.org/10.1080/2194587X.2019.1669464>.
- Schaefer, Hillary S., Kristina Schmid Callina, Jeremiah Powers, Gerald Kobylski, Diane Ryan, and Richard M. Lerner. "Examining Diversity in Developmental Trajectories of Cadets' Performance and Character at the United States Military Academy." *Journal of Character Education* 17, no. 1 (2021): 59-80. <https://www.proquest.com/docview/2544288151>.

- Seck, Hope Hodge. "Dismissals and Discipline at Air Force Academy After 249 Cadets Investigated for Cheating." *Military.com*, January 29, 2021. <https://www.military.com/daily-news/2021/01/29/dismissals-and-discipline-air-force-academy-after-249-cadets-investigated-cheating.html>.
- Serbu, Jared. "Navy Opens 'Marketplace' to Help Move Itself into Modern Age of Talent Management." *Federal News Network*, June 10, 2020. <https://federalnewsnetwork.com/federal-insights/2020/06/navy-opens-marketplace-to-help-move-itself-into-modern-age-of-talent-management/>.
- Service Academy Coach website. "US Air Force Academy – USAFA." Accessed June 16, 2021. <http://webcache.googleusercontent.com/search?q=cache:IutkGbZ6v5gJ:www.serviceacademycoach.com/air-force-academy-usafa.html+&cd=1&hl=en&ct=clnk&gl=us>. Maybe the site is down temporarily?.
- Shamsuddin, Shomon. "Berkeley or Bust? Estimating the Causal Effect of College Selectivity on Bachelor's Degree Completion." *Research in Higher Education* 57, no. 7 (November 2016): 795-822. <https://doi.org/10.1007/s11162-016-9408-0>.
- Shanahan, Ed. "West Point Scraps Second-Chance Program After Major Cheating Scandal." *New York Times*, April 16, 2021. <https://www.nytimes.com/2021/04/16/nyregion/west-point-cheating-scandal.html>.
- Sharra, Matthew D. "US Naval Officer Accession Sources: Promotion Probability and Evaluation of Cost." MA thesis, Naval Postgraduate School, June 2015. <https://apps.dtic.mil/sti/citations/ADA632424>.
- Shell, Amy E. "The Thayer Method of Instruction at the United States Military Academy: A Modest History and a Modern Personal Account." *Primus: Problems, Resources, and Issues in Mathematics Undergraduate Studies* 12, no. 1 (March 2002): 27-38. <https://doi.org/10.1080/10511970208984015>.
- Sheppard, Thomas A. "A Validation of the Strong Campbell Interest Inventory as Part of the Admissions Process at the United States Naval Academy." MA thesis, Naval Postgraduate School, March 2002. <https://apps.dtic.mil/sti/pdfs/ADA403572.pdf>.
- Silveria, Lt. Gen. Jay. "Why Diversity?" *United States Air Force Academy*, February 14, 2018. <https://www.usafa.edu/news/why-diversity/>
- Simmons, Angela, and Linda Yoder. "Military Resilience: A Concept Analysis." *Nursing Forum*, 48, no. 1, (2013): 17-25. doi.org/10.1111/nuf.12007.
- Siniscalchi, Jason M., Karen D. Kimmel, Lynn E. Couturier, and Robert Murray. "Stress Management and the Motives of Restorative Events at the United States Coast Guard Academy." *Military Psychology* 23, no. 3 (2011): 332-349. <https://doi.org/10.1080/08995605.2011.570601>.
- Smith, Craig Bruce. "West Point's Honor Code Returns to the 18th Century." *The Hill*, April 25, 2021. <https://thehill.com/opinion/civil-rights/550168-west-points-honor-code-returns-to-the-18th-century>.
- Smith, D. Randall. "The Lure of Academic and Social Reputations Versus Athletic Success: Influences on Enrollment Yield at NCAA Division I Institutions."

Research in Higher Education 60, no. 6 (September 2019): 870-904.
<https://doi.org/10.1007/s11162-018-9537-8>.

Smith, Marvin M., and Jonathan Ladinsky. "Officer Commissioning Programs: Costs and Officer Performance." Congressional Budget Office (US Congress). Washington, DC: June 1990. <https://apps.dtic.mil/sti/pdfs/ADA529542.pdf>.

Snodgrass, Guy M. "Keep a Weather Eye on the Horizon: A Navy Officer Retention Study." *Naval War College Review* 67, no. 4 (Autumn 2014): 64-92. <https://digital-commons.usnwc.edu/nwc-review/vol67/iss4/7/>.

Social Bearing website. "Twitter search & analytics for '@AF_Academy'." Accessed May 27, 2021. https://socialbearing.com/search/general/@AF_Academy.

Social Bearing website. "Twitter search & analytics for '@Harvard'." Accessed May 27, 2021. <https://socialbearing.com/search/general/@Harvard>.

Social Bearing website. "Twitter search & analytics for '@NavalAcademy'." Accessed May 27, 2021. <https://socialbearing.com/search/general/@NavalAcademy>.

Social Bearing website. "Twitter search & analytics for '@Wellesley'." Accessed May 27, 2021. <https://socialbearing.com/search/general/@Wellesley>.

Social Bearing website. "Twitter search & analytics for '@westpoint_usma'." Accessed May 27, 2021. https://socialbearing.com/search/general/@westpoint_usma.

Social Bearing website. "User search & analytics for '@AF_Academy'." Accessed May 27, 2021. https://socialbearing.com/search/user/AF_Academy.

Social Bearing website. "User search & analytics for '@Harvard'." Accessed May 27, 2021. <https://socialbearing.com/search/user/Harvard>.

Social Bearing website. "User search & analytics for '@NavalAcademy'." Accessed May 27, 2021. <https://socialbearing.com/search/user/NavalAcademy>.

Social Bearing website. "User search & analytics for '@Wellesley'." Accessed May 27, 2021. <https://socialbearing.com/search/user/Wellesley>.

Social Bearing website. "User search & analytics for '@westpoint_usma'." Accessed May 27, 2021. https://socialbearing.com/search/user/westpoint_usma.

Sosik, John J., Jae Uk Chun, Ziya Ete, Fil J. Arenas, and Joel A. Scherer. "Self-Control puts Character into Action: Examining how Leader Character Strengths and Ethical Leadership Relate to Leader Outcomes." *Journal of Business Ethics* 160, no. 3 (December 2019): 765-781. <https://doi.org/10.1007/s10551-018-3908-0>.

Staff Writer. "Best Things to do in Annapolis: #1 United States Naval Academy." *U.S. News & World Report*, updated February 11 2021. Accessed June 4, 2021. https://travel.usnews.com/Annapolis_MD/Things_To_Do/United_States_Naval_Academy_63106/.

Staff Writer. "Carson High School Senior Jeremy Heaton Accepted to Naval Academy." *Nevada Appeal*, May 29, 2021. <https://www.nevadaappeal.com/news/2021/may/29/carson-high-school-senior-jeremy-heaton-accepted-n/>.

- Staff Writer. "Keating Graduates Air Force Academy." *Alberta Lea Tribune*, June 1, 2021. <https://www.albertleatribune.com/2021/06/keating-graduates-air-force-academy/>.
- Staff Writer. "Naval Academy Midshipman Schieuer Awarded Scholarship." *Lincoln Journal Star*, May 28, 2021. Updated July 3, 2021. https://journalstar.com/niche/neighborhood-extra/kids-and-classrooms/naval-academy-midshipman-schieuer-awarded-scholarship/article_1bc6ae45-fcb7-5d6a-89b0-7cc43620c0f9.html.
- Stanford, Jennifer S., Suzanne E. Rocheleau, Kevin P. W. Smith, and Jaya Mohan. "Early Undergraduate Research Experiences Lead to Similar Learning Gains for STEM and Non-STEM Undergraduates." *Studies in Higher Education* 42, no. 1 (2017): 115-129. <https://doi.org/10.1080/03075079.2015.1035248>.
- Starr, Barbara. "Commission Reviewing Military Base Names to Visit West Point Next Week." *CNN Politics*, Updated May 21, 2021. <https://www.cnn.com/2021/05/21/politics/west-point-commission-visit/index.html>.
- Steele, John P. *Antecedents and Consequences of Toxic Leadership in the US Army: A Two Year Review and Recommended Solutions*. ADA545383. Fort Leavenworth, KA: Center for Army Leadership, June 2011. <https://apps.dtic.mil/sti/pdfs/ADA545383.pdf>.
- Strauss, Linda C., and J. Fredericks Volkwein. "Predictors of Student Commitment at Two-Year and Four-Year Institutions." *Journal of Higher Education* 75, no. 2 (2004): 203-227. <https://doi.org/10.1080/00221546.2004.11778903>.
- Stroud, Rick. "Navy's Cameron Kinley Takes Command of his NFL Future." *Tampa Bay Times*, May 11, 2021. <https://www.tampabay.com/sports/bucs/2021/05/11/navys-cameron-kinley-takes-command-of-his-nfl-future/>.
- Students: Selection; Status; Obligation. Pub. L. 10 USC 2114 (July 19, 2021). <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section2114&num=0&edition=prelim>.
- Switzer, Tobias. *Three Recommendations for Improving Air Force Pilot Retention*. Washington, DC: Center for Strategic and International Studies (CSIS), October 2020. <https://www.csis.org/analysis/three-recommendations-improving-air-force-pilot-retention>.
- Taormina, R. J., and C-M. Law. "Approaches to Preventing Burnout: The Effects of Personal Stress Management and Organizational Socialization." *Journal of Nursing Management* 8, no. 2 (March 2000): 89-99. <https://doi.org/10.1046/j.1365-2834.2000.00156.x>.
- The Associated Press. "A Midshipman at the U.S. Naval Academy has Become the First Black Woman Selected for the Academy's Top Student Leadership Position." *U.S. News & World Report*, December 5, 2020. <https://www.usnews.com/news/us/articles/2020-12-02/naval-academy-midshipman-reaches-a-milestone-for-black-women>.

- The Associated Press. "Defense secretary tells West Point cadets they're ready." *Army Times*, May 23, 2021. <https://www.armytimes.com/news/your-army/2021/05/22/defense-secretary-lloyd-austin-will-address-graduating-west-point-cadets/>.
- The National Bureau of Asian Research website. "Dennis C. Blair." Accessed June 25, 2021. <https://www.nbr.org/people/dennis-c-blair/>.
- The Princeton Review website. "Surveying Students: How It Works." Accessed December 8, 2020. <https://www.princetonreview.com/college-rankings/how-it-works>.
- The Princeton Review website. "The Princeton Review's College Ranking Methodology." Accessed December 8, 2020. <https://www.princetonreview.com/college-rankings/ranking-methodology>.
- The Princeton Review website. "United States Air Force Academy - The Princeton Review College Rankings & Reviews." Accessed December 8, 2020. <https://www.princetonreview.com/college/united-states-air-force-academy-1023678?ceid=best-colleges#!academics>.
- The Princeton Review website. "United States Military Academy - The Princeton Review College Rankings & Reviews." Accessed December 8, 2020. <https://www.princetonreview.com/college/united-states-military-academy-1023919?ceid=best-colleges#!academics>.
- The Princeton Review website. "United States Naval Academy - The Princeton Review College Rankings & Reviews." Accessed December 8, 2020. <https://www.princetonreview.com/college/united-states-naval-academy-1022813?ceid=best-colleges#!academics>.
- Thomas, Robert W. "Teaching Tomorrow's Leaders: A Comparison of Leadership Development at the United States Military Academy and United States Naval Academy." MA thesis, Naval Postgraduate School, June 2000. <https://apps.dtic.mil/sti/citations/ADA380918>.
- Thomas, Scott L. "Longer-Term Economic Effects of College Selectivity and Control." *Research in Higher Education* 44, no. 3 (June 2003): 263-299. <https://doi.org/10.1023/A:1023058330965>.
- Thompson, Michael D. "Informal Student-Faculty Interaction: Its Relationship to Educational Gains in Science and Mathematics Among Community College Students." *Community College Review* 29, no. 1 (2001): 35-57. <https://doi.org/10.1177%2F009155210102900103>.
- Toffler, Patrick A. "Service Obligation of Graduates of USMA." *Assembly* 49, no. 1-3 (1990): 194-196, <https://play.google.com/books/reader?id=T88aK94nDkcC&hl=en&pg=GBS.RA1-PA55>.
- Tripadvisor website. "U.S. Naval Academy." Accessed June 4, 2021. https://www.tripadvisor.com/Attraction_Review-g29494-d258251-Reviews-U_S_Naval_Academy-Annapolis_Maryland.html.

- Tripadvisor website. "United States Air Force Academy." Accessed June 4, 2021. https://www.tripadvisor.com/Attraction_Review-g33364-d103508-Reviews-United_States_Air_Force_Academy-Colorado_Springs_El_Paso_County_Colorado.html.
- Tripadvisor website. "United States Military Academy Visitors Center." Accessed June 4, 2021. https://www.tripadvisor.com/Attraction_Review-g48855-d186206-Reviews-United_States_Military_Academy_Visitors_Center-West_Point_New_York.html.
- Trolian, Teniell L., Elizabeth A. Jach, Jana M. Hanson, and Ernest T. Pascarella. "Influencing Academic Motivation: The Effects of Student-Faculty Interaction." *Journal of College Student Development* 57, no. 7 (October 2016): 810-826. <https://doi.org/10.1353/csd.2016.0080>.
- Twitter website. "Harvard University." Accessed May 27, 2021. <https://twitter.com/Harvard>.
- Twitter website. "U.S. Air Force Academy." Accessed May 27, 2021. https://twitter.com/AF_Academy.
- Twitter website. "U.S. Military Academy at West Point." Accessed May 27, 2021. https://twitter.com/WestPoint_USMA.
- Twitter website. "U.S. Naval Academy." Accessed May 27, 2021. <https://twitter.com/NavalAcademy>.
- Twitter website. "Wellesley College" Accessed May 27, 2021. <https://twitter.com/Wellesley>.
- Tyler, Patrick E. "Overseeing Academies Deadly Minefield." *Washington Post*, April 5, 1990. <https://www.washingtonpost.com/archive/politics/1990/04/05/overseeing-academies-deadly-minefield/4eb35b91-096d-499a-8827-5d22a5a19760/>.
- U.S. Air Force Website. "Frequently Asked Questions: Get Answers Now." Accessed February 4, 2020. <https://www.airforce.com/frequently-asked-questions/make-a-decision,how-things-work/what-is-the-service-commitment-i-d-be-making-to-the-air-force#:~:text=Pilots%20incur%20a%2010%2Dyear,the%20completion%20of%20this%20commitment>.
- U.S. Army website. "About the Army: Aircraft, Helicopters and UAV." Accessed February 8, 2021. <https://www.goarmy.com/about/army-vehicles-and-equipment/army-helicopters-and-uavs.html>.
- U.S. News and World Report website. "Top 100 - Lowest Acceptance Rates." Accessed May 7, 2021. <https://www.usnews.com/best-colleges/rankings/lowest-acceptance-rate>.
- Umbach, Paul D., and Matthew R. Wawrzynski. "Faculty do Matter: The Role of College Faculty in Student Learning and Engagement." *Research in Higher education* 46, no. 2 (March 2005): 153-184. <https://doi.org/10.1007/s11162-004-1598-1>.

United States Air Force Academy Foundation website. “Board of Directors.” Accessed June 11, 2021. <https://www.afacademyfoundation.org/s/1885/rd19/interior.aspx?sid=1885&gid=2&pgid=552>.

United States Air Force Academy website. “Air Force Academy Cadets Earn Prestigious Scholarships” Accessed April 9, 2021. <https://www.usafa.edu/news/air-force-academy-cadets-earn-prestigious-scholarships/>.

United States Air Force Academy website. “Air Force Academy Dean, Former Faculty Member Receive Research Awards.” Accessed May 14, 2021. <https://www.usafa.edu/news/air-force-academy-dean-former-faculty-member-receive-research-awards/>.

United States Air Force Academy website. “Athletics At A Different Altitude.” Accessed April 19, 2021. <https://www.usafa.edu/athletics/>.

United States Air Force Academy website. “Awards.” Accessed April 1, 2021. <https://www.usafa.edu/about/awards/>.

United States Air Force Academy website. “Cadet-Athlete Guide.” Accessed April 19, 2021. <https://goairforcefalcons.com/sports/2019/6/13/student-athlete-guide.aspx>.

United States Air Force Academy website. “Center For Character And Leadership Development.” Accessed February 12, 2021. <https://www.usafa.edu/character/#:~:text=The%20Academy's%20mission%20is%20to,heart%20of%20accomplishin g%20that%20mission>.

United States Air Force Academy website. “Center for Educational Innovation: About Us.” Accessed May 14, 2021. <https://www.usafa.edu/cei/about-us/>.

United States Air Force Academy website. “Center for Educational Innovation: Awards & Recognitions.” Accessed May 14, 2021. <https://www.usafa.edu/cei/recognitions/>.

United States Air Force Academy website. “Character & Leadership Seminars” Accessed February 12, 2021. <https://www.usafa.edu/character/development/character-leadership-seminars/>.

United States Air Force Academy website. “Core Curriculum.” Accessed February 12, 2021. <https://www.usafa.edu/academics/core-curriculum/>.

United States Air Force Academy website. “Dozens Of Class Of ’17 Grads Bound For Grad School.” <https://www.usafa.edu/news/dozens-class-17-grads-bound-grad-school/>.

United States Air Force Academy website. “Frequently Asked Questions.” Accessed March 8, 2021. <https://www.usafa.edu/cadet-life/faq/>.

United States Air Force Academy website. “How Do I Apply.” Accessed June 24, 2021, <https://www.academyadmissions.com/apply/>.

United States Air Force Academy website. “Military.” Accessed March 8, 2021. <https://www.usafa.edu/military/>.

- United States Air Force Academy website. “Physical Education Program.” Accessed April 19, 2021. <https://goairforcefalcons.com/sports/2018/6/21/ot-afa-phys-ed-html.aspx>.
- United States Air Force Academy website. “Senior Cadet Selected As Academy’s 39th Rhodes Scholar.” Accessed April 9, 2021. <https://www.usafa.edu/news/senior-cadet-selected-academys-39th-rhodes-scholar/>.
- United States Air Force Academy. “Minutes Of The Regular Meeting Board of Visitors (BoV).” September 25-26, 2014. [https://www.usafa.af.mil/Portals/21/documents/Leadership/BOV/Reports/2014/USAF%20September%20Meeting%20Minutes%20\(134k_%20pdf\).pdf?ver=2015-12-07-173838-177](https://www.usafa.af.mil/Portals/21/documents/Leadership/BOV/Reports/2014/USAF%20September%20Meeting%20Minutes%20(134k_%20pdf).pdf?ver=2015-12-07-173838-177).
- United States Air Force Academy. *2020-2021 Curriculum Handbook*. Colorado Springs, CO: United States Air Force Academy, 2020. <https://www.usafa.edu/app/uploads/CHB.pdf>.
- United States Air Force Academy. Pub. L. 10 USC Ch. 953 (2018). <https://uscode.house.gov/view.xhtml?path=/prelim@title10/subtitleD/part3/chapter953&edition=prelim>.
- United States General Accounting Office. *DOD Service Academies: Improved Cost and Performance Monitoring Needed*. GAO/NSIAD-91-79. Washington, DC: U.S. General Accounting Office, July 1991. <https://www.gao.gov/assets/nsiad-91-79.pdf>.
- United States Government Accountability Office. *Military Personnel: DOD Needs to Reevaluate Fighter Pilot Workforce Requirements*. GAO-18-113. Washington, DC: U.S. Government Accountability Office, April 2018. <https://www.gao.gov/assets/gao-18-113.pdf>.
- United States Military Academy Board Of Visitors. *2017 Annual Report*. West Point, New York: United States Military Academy, December 2017. https://s3.amazonaws.com/usma-media/inline-images/about/board_of_visitors/board_of_visitors_2017_annual_report.pdf.
- United States Military Academy website. “Academics.” Accessed February 26, 2021. <https://www.westpoint.edu/academics>.
- United States Military Academy website. “Admissions Frequently Asked Questions (FAQs).” Accessed March 8, 2021. <https://www.westpoint.edu/admissions/frequently-asked-questions>.
- United States Military Academy website. “Athletics: NCAA.” Accessed April 19, 2021. <https://www.westpoint.edu/athletics>.
- United States Military Academy website. “Center for Faculty Excellence: Annual Awards for Excellence in Teaching and Service.” Accessed May 14, 2021. <https://www.westpoint.edu/centers-and-research/center-for-teaching-excellence/teaching-awards>.
- United States Military Academy website. “Center for Faculty Excellence: New Instructor Information.” Accessed May 13, 2021. <https://www.westpoint.edu/centers-and-research/center-for-teaching-excellence/new-instructor/west-point-faculty>.

- United States Military Academy website. "Character Program." Accessed February 10, 2021. <https://www.westpoint.edu/character-program>.
- United States Military Academy website. "Notable Graduates." Accessed June 11, 2021. <https://www.westpoint.edu/about/history-of-west-point/notable-graduates>.
- United States Military Academy website. "The 8 Steps of Applying to West Point." Accessed June 24, 2021. <https://www.westpoint.edu/admissions/steps-to-admission>.
- United States Military Academy website. "Two West Point Cadets Named Truman Scholars" *West Point Public Affairs*, April 22, 2019. Accessed April 9, 2021. <https://www.westpoint.edu/news/press-releases/two-west-point-cadets-named-truman-scholars>.
- United States Military Academy website. "West Point Cadet Selected for Marshall Scholarship." *West Point Public Affairs*, December 7, 2020. Accessed April 9, 2021. <https://www.westpoint.edu/news/press-releases/west-point-cadet-selected-marshall-scholarship>.
- United States Military Academy website. "West Point Cadets Earn Esteemed Scholarships." *West Point Public Affairs*, December 9, 2019. Accessed April 9, 2021. <https://www.westpoint.edu/news/press-releases/west-point-cadets-earn-esteemed-scholarships>.
- United States Military Academy website." Accessed June 24, 2021. <https://www.westpoint.edu/admissions/prospective-cadets/nomination-information>.
- United States Military Academy, *United States Military Academy Self-Study 2020: For the Middle States Commission on Higher Education* (West Point, NY: United States Military Academy, February 2020). Obtained by data transfer from Major Andrew L. Bond (United States Military Academy, Chief, G5 Office of Institutional Research) to interviewer James Bishop, February 19, 2021
- United States Military Academy. "US Military Academy Selected for DoD Research Award." *West Point Public Affairs*, December 29, 2020. <https://www.westpoint.edu/news/press-releases/us-military-academy-selected-dod-research-award>.
- United States Military Academy. *Character Development Strategy*. West Point, New York: United States Army, December 2014. <https://www.westpoint.edu/sites/default/files/pdfs/SCPME/CharacterDevelopmentStrategy.pdf>.
- United States Military Academy. *Character Program (Goldbook)*. West Point, New York: United States Military Academy, September 2019. [https://s3.amazonaws.com/usma-media/inline-images/centers_research/simon_center_for_the_professional_military_ethic/Goldbook%20\(2019\).pdf](https://s3.amazonaws.com/usma-media/inline-images/centers_research/simon_center_for_the_professional_military_ethic/Goldbook%20(2019).pdf).
- United States Military Academy. *Educating Army Leaders: Developing Intellect And Character To Navigate A Diverse And Dynamic World*. West Point, NY: United States Military Academy, June 2018: 22. <https://www.westpoint.edu/sites/default/files/pdfs/Academics/Educating%20Army%20Leaders%20-%20June%202018.pdf>.

- United States Military Academy. *Military Program (Greenbook)*. West Point, New York: United States Military Academy, 2020. https://s3.amazonaws.com/usma-media/inline-images/about/cadet_consumer_information/pdfs/AY_20_Greenbook.pdf.
- United States Military Academy. *Physical Program (Whitebook)*. West Point, New York: United States Military Academy, 2020. https://s3.amazonaws.com/usma-media/inline-images/about/cadet_consumer_information/pdfs/AY_20_WhiteBook.pdf.
- United States Military Academy. Pub. L. 10 USC Ch. 753 (2018). <https://uscode.house.gov/view.xhtml?path=/prelim@title10/subtitleB/part3/chapter753&edition=prelim>.
- United States Military Academy. *The USMA Strategy*. West Point, New York: United States Military Academy, 2019. https://s3.amazonaws.com/usma-media/inline-images/about/g5/USMA_Strategy_2019.pdf.
- United States Military Academy. *USMA Academic Program (Redbook)*. West Point, New York: United States Military Academy, 2020. https://www.westpoint.edu/sites/default/files/pdfs/ABOUT/Student%20Consumer%20Info/Grading%20Policy%20from%20RedBook_GY2020_20170803-2.pdf.
- United States Military Academy. *USMA Campaign Plan (2019-2024)*. West Point, New York: United States Military Academy, 2019. <https://www.westpoint.edu/about/superintendent/governance-and-strategic-documents>.
- United States Military Academy. *USMA Faculty Manual*. West Point, New York: United States Military Academy, December 2005, p. 2. [https://www.westpoint.edu/sites/default/files/inline-images/CFD/Faculty_Manual_Signed%20\(1\).pdf](https://www.westpoint.edu/sites/default/files/inline-images/CFD/Faculty_Manual_Signed%20(1).pdf).
- United States Naval Academy Office of Diversity, Equity, and Inclusion. *U.S. Naval Academy Diversity and Inclusion Strategic Plan*. Annapolis, MD: United States Naval Academy, March 2021. https://www.usna.edu/Diversity/_files/documents/D_I_PLAN.
- United States Naval Academy website. “Academic Research.” Accessed May 13, 2021. <https://www.usna.edu/AcResearch/>.
- United States Naval Academy website. “Academics: Faculty Awards.” Accessed May 13, 2021. <https://www.usna.edu/Academics/Faculty-Information/Faculty-Awards.php#panel5ApgarAwardforExcellenceinTeaching>.
- United States Naval Academy website. “Academics: Special Academic Program Opportunities.” Accessed May 13, 2021. <https://www.usna.edu/Academics/Special-Programs/index.php>.
- United States Naval Academy website. “Academics: USNA Core Curriculum.” Accessed March 26, 2021. <https://www.usna.edu/Academics/Majors-and-Courses/Course-Requirements-Core.php>.
- United States Naval Academy website. “ATHLETICS.” Accessed April 19, 2021. <https://www.usna.edu/Athletics/>.

United States Naval Academy website. “Center For Teaching And Learning.” Accessed May 13, 2021. <https://www.usna.edu/CTL/>.

United States Naval Academy website. “Department Of Leadership, Ethics, And Law: Courses.” Accessed February 11, 2021. <https://www.usna.edu/LEL/Courses/index.php>.

United States Naval Academy website. “Division Of Leadership Education And Development: 1/C Character Capstone Seminars.” Accessed February 11, 2021. <https://www.usna.edu/LEAD/capstone.php>.

United States Naval Academy website. “Division of Leadership Education and Development.” Accessed February 11, 2021. <https://www.usna.edu/LEAD/index.php>.

United States Naval Academy website. “LEAD Division.” Accessed March 26, 2021. <https://www.usna.edu/LEAD/>.

United States Naval Academy website. “Notable Graduates: Members of Congress.” Accessed June 11, 2021. <https://www.usna.edu/Notables/congress/index.php>.

United States Naval Academy website. “Notable Graduates” Accessed April 9, 2021. <https://www.usna.edu/Notables/index.php>.

United States Naval Academy website. “President of the United States.” Accessed June 11, 2021. <https://www.usna.edu/Notables/presidents/index.php>.

United States Naval Academy website. “Steps for Admission: Preliminary Application.” Accessed June 24, 2021. <https://www.usna.edu/Admissions/Apply/index.php#fndtn-panel2-Steps-for>.

United States Naval Academy website. “STRATEGIC PLAN 2030: Strategic Goals & Objectives.” Accessed May 13, 2021. <https://www.usna.edu/StrategicPlan/goals.php#panel2>.

United States Naval Academy website. “U.S. Senators, Representatives, and Delegates.” Accessed June 3, 2021. <https://www.usna.edu/Admissions/Apply/US-Senators-Representatives-and-Delegates.php>.

United States Naval Academy. “Class Portrait: Snapshot: Class of 2024.” United States Naval Academy, Annapolis, MD. https://www.usna.edu/Admissions/_files/documents/ClassPortrait.pdf.

United States Naval Academy. “Physical Education Requirements for Graduation from the United States Naval Academy” Director Of Athletics Instruction 6100.1. Annapolis, MD: United States Naval Academy, November 20, 2015. https://www.usna.edu/AthleticDirector/_files/documents/instructions/DIRATHINST6100.1PE-Graduation-Requirements-from-USNA.pdf#search=physical%20education.

United States Naval Academy. Pub. L. 10 USC Ch. 853 (2018). <https://uscode.house.gov/view.xhtml?path=/prelim@title10/subtitleC/part3/chapter853&edition=prelim>.

- United States Naval Academy. *The Blue and Gold Book*. Accessed July 9, 2020. <https://www.usna.edu/BlueAndGoldBook/>.
- United States Air Force Academy website. "Graduating from the Academy: Curriculum." Accessed March 8, 2021. <https://www.usafa.edu/academics/registrar/curriculum/>.
- University of Texas at El Paso website. "President's Biography." Accessed June 11, 2021. <https://www.utep.edu/about/presidents-bio.html>.
- Visit Colorado Springs website. "U.S. Air Force Academy." Accessed June 4, 2021. <https://www.visitcos.com/things-to-do/history-and-heritage/landmarks/us-air-force-academy-in-colorado/>.
- Wang, Gordon, and Rick D. Hackett. "Conceptualization and Measurement of Virtuous Leadership: Doing well by Doing Good." *Journal of Business Ethics* 137, no. 2 (2016): 321-345. <https://doi.org/10.1007/s10551-015-2560-1>.
- Wardynski, Casey, David S. Lyle, and Michael J. Colarusso. *Towards a US Army Officer Corps Strategy for Success: Retaining Talent*. Carlisle, PA: U.S. Army War College, January 2010. <https://apps.dtic.mil/sti/pdfs/ADA513158.pdf>.
- Washington Monthly website. "Washington Monthly's 2020 College Guide and Rankings." Accessed May 5, 2021. <https://washingtonmonthly.com/2020college-guide>.
- West Point Association of Graduates. *West Point Diversity and Inclusion Initiatives*. West Point, New York: West Point Association of Graduates, December 2020. <https://www.westpointaog.org/file/westpointdiversityandinclusion.pdf>.
- West Point website. "Character Program." Accessed February 10, 2021. <https://www.westpoint.edu/character-program>.
- West, Clifford. "Teaching Leadership To Undergraduates: Lessons From U.S. Military Colleges." *Journal of College Teaching & Learning* 9, no. 2 (2012): 135-146. <https://doi.org/10.19030/tlc.v9i2.6909>.
- West, Derek A., and Benjamin L. Dilla. "Cadets' Perceptions of Leadership Development Activities at the United States Air Force Academy." MA thesis, Ohio State University, April 1992. <https://apps.dtic.mil/sti/pdfs/ADP006920.pdf>.
- West-Point.org website. "FAQ: The Admissions Process." Accessed June 16, 2021. <https://www.west-point.org/academy/malo-wa/educators/faqs.html>.
- White, Ansley. "Effects of Preferred Duty Station Assignment on the Performance and Retention of USMC Personnel." PhD diss., Naval Postgraduate School, March 2021. <https://calhoun.nps.edu/handle/10945/67191>.
- Williams, Pete. "Justice Clarence Thomas says ex-West Point Cadet Should be able to Sue over Alleged Rape." *NBC News*, May 3, 2021. <https://www.nbcnews.com/politics/supreme-court/justice-clarence-thomas-says-ex-west-point-cadet-should-be-n1266144>.

Appendix H.

Abbreviations

ACT	American College Testing
ADSO	Active Duty Service Obligation
AIAN	American Indian/Alaskan Native
AOCS	Aviation Officer Candidate School
AOL	America On Line
BOV	Board of Visitors
CCLD	Center for Character and Leadership Development
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CRS	Congressional Research Service
CSP	Career Satisfaction Program
DMDC	Defense Manpower Data Center
DOD	Department of Defense
DURIP	Defense University Research Instrumentation Program
ELD	Experiential Leadership Development
FFRDC	Federally Funded Research and Development Center
GAO	Government Accountability Office
GDP	Gross Domestic Product
GPA	Grade Point Average
IDA	Institute for Defense Analyses
IPEDS	Integrated Postsecondary Education Data System
IRR	Individual Ready Reserve
JPME	Joint Professional Military Education
LEAD	Leadership Education and Development
LEL	Leadership, Ethics, and Law
MoAS	Months of Active Service
NCAA	National Collegiate Athletic Association
NCES	National Center for Education Statistics
NDAA	National Defense Authorization Act
NROTC	Navy Reserve Officers' Training Corps

OCS	Officer Candidate School
OEMA	Office of Economic and Manpower Analysis
OTS	Officer Training School
OUSD P&R	Office of the Under Secretary of Defense for Personnel and Readiness
PD	Professional Development
PDR	Periodic Development Reviews
PEA	Physical Education Average
PLC	Marine Corps Platoon Leaders Course
PME	Professional Military Education
PTSD	Post-Traumatic Stress Disorder
ROI	Return on Investment
ROTC	Reserve Officers' Training Corps
SAT	Scholastic Aptitude Test
SERE	Survival, Evasion, Resistance, and Escape
SFI	Student-Faculty Interactions
SELRES	Selected Reserve
STEM	Science, Technology, Engineering, and Mathematics
USAFA	United States Air Force Academy
USMA	United States Military Academy
USNA	United States Naval Academy
USNWR	United States News and World Report
WPLDS	West Point Leader Development System
YoAS	Years of Active Service

REPORT DOCUMENTATION PAGE			<i>Form Approved</i> OMB No. 0704-0188		
<p>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p> <p>PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.</p>					
1. REPORT DATE (DD-MM-YY) XX-07-23		2. REPORT TYPE Final		3. DATES COVERED (From - To) May 2020 - August 2021	
4. TITLE AND SUBTITLE Return on Investment in Graduates of the DOD Service Academies: Assessment and Improvements			5a. CONTRACT NO. HQ0034-19-D-0001		
			5b. GRANT NO.		
			5c. PROGRAM ELEMENT NO(S).		
6. AUTHOR(S) Heidi C. Reutter James M. Bishop Rachel G. Augustine Amy A. Alrich Joseph F. Adams			5d. PROJECT NO.		
			5e. TASK NO. BE-6-4776		
			5f. WORK UNIT NO.		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) INSTITUTE FOR DEFENSE ANALYSES 730 E. Glebe Road Alexandria, Virginia 22305			8. PERFORMING ORGANIZATION REPORT NO. IDA Paper P-22745 Log: H 21-000263		
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Assistant Director, Accession Policy, Officer Commissioning Programs Pentagon: 3D1066			10. SPONSOR'S / MONITOR'S ACRONYM(S) OUSD (P&R)		
			11. SPONSOR'S / MONITOR'S REPORT NO(S).		
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release, distribution is unlimited.					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT Officers commissioned through the three service academies under the Department of Defense (DOD) incur a five-year active duty service obligation (ADSO). The ADSO is an important mechanism for managing DOD's return on its investment (ROI) in academy graduates. The ADSO has not changed since 1996. This research assesses ROI in academy graduates and analyzes policy options that could improve ROI. ROI in academy graduates is a synthesis of many costs and benefits, some of which are unquantifiable. Increasing the ADSO risks shrinking the pool of acceptable applicants and decreasing class diversity. Yet, testable options exist to better serve the preferences of future officers, DOD, and the taxpayer. These options include 1) an ADSO bidding mechanism where applicants can select a longer ADSO to improve their competitiveness for admission; and 2) offering special experiences to cadets and midshipmen in exchange for an ADSO extension. This research includes a design of a pilot program for each of the two options. This research also includes a discussion of policy options for improving ROI beyond the ADSO.					
15. SUBJECT TERMS Military Service Academy, Active Duty Service Obligation, return on investment, Congress, nominations, appointments, commissioning					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT U	18. NO. OF PAGES 216	19a. NAME OF RESPONSIBLE PERSON Lt Col Julie Anne Rudy
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER (Include Area Code) (703) 695-5529

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