INSTITUTE FOR DEFENSE ANALYSES

The Price and Purity of Illicit Drugs: 1981 – 2007

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About This Publication

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PREFACE

This document was prepared by the Institute for Defense Analyses (IDA) for the Office of National Drug Control Policy (ONDCP), in partial fulfillment of the task Drug Use Indicators. As directed by ONDCP, the primary objective of this report, the *Results Report*, is to update previous estimates published in the 2004 ONDCP report entitled *The Price and Purity of Illicit Drugs: 1981 Through the Second Quarter of 2003*, using the same Expected Purity Hypothesis (EPH) modeling methodology that produced the estimates given in the 2004 report. This *Results Report* is accompanied by an associated *Technical Report* that addresses related descriptions and analyses of the System To Retrieve Information from Drug Evidence (STRIDE) data.

All price and purity estimates were derived from records in the STRIDE database maintained by the Drug Enforcement Administration (DEA) and provided to ONDCP and IDA. As noted in the following DEA disclaimer, these records should be considered to be "unvalidated DEA data":

> *Official Disclaimer: DEA responses to external data requests include all releasable records requested, without regard to analytic value. DEA analyses, by contrast, may exclude selected records, as closer inspection of such records may reveal errors, inaccuracies, or otherwise unverifiable data. External analyses of DEA data, accordingly, may not always yield conclusions consistent with DEA's own findings. Your acceptance and/or use of the information accompanying this disclaimer indicates your agreement (1) to refer to same information as "unvalidated DEA data," (2) to apply the guidance provided with same information competently, (3) to claim authorship/responsibility for any inferences/conclusions you may draw from same information, and (4) not to transmit same information to any other party without including this Official Disclaimer in your transmission.*

The IDA Technical Review Committee was chaired by Rear Admiral Richard B. Porterfield, USN (Ret.), and consisted of Mr. William B. Simpkins and Dr. Richard H. White of the Intelligence Analyses Division, and Mr. Saul A. Grandinetti of the Operational Evaluation Division.

The authors are indebted to Dr. Michael A. Cala, our ONDCP sponsor, and Dr. Rosalie Liccardo Pacula and Dr. Jeremy Arkes from the RAND Drug Policy Research

Center – for furnishing the software modules that constituted the EPH modeling, and for numerous related amplifying discussions. Quest Diagnostics, Inc., and Dr. Barry Sample, Director of Science and Technology at the Employer Solutions business unit, are acknowledged for providing workforce drug testing data. Finally, the authors thank the DEA for review comments on an earlier draft of this document.

The viewpoints, results, and conclusions expressed in this document are solely those of the authors. No official endorsement by or attribution to ONDCP, the Rand Drug Policy Research Center, Quest Diagnostics, Inc., or the DEA is intended or should be inferred.

THE PRICE AND PURITY OF ILLICIT DRUGS: 1981 – 2007

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EXECUTIVE SUMMARY

Through the years, policymakers and researchers have constructed estimates of the price and purity of illicit drugs as a means to monitor the status of drug markets and to gauge the effectiveness of efforts to cope with the illegal drug problem. Notwithstanding the acknowledged challenges that confront the meaningful collection, analysis, and interpretation of data on illicit drugs, it is widely recognized that price and purity affect actual drug use and consumption, and that estimates of price and purity can shed light on the workings of drug markets as well as provide insights on the utility of counter-drug policies, initiatives, and specific intervention events.

This document, the *Results Report*, updates estimates of the price and purity of five specific illicit drugs published by the Office of National Drug Control Policy (ONDCP) in 2004:[1] powder cocaine, crack cocaine,[2] heroin, d-methamphetamine, and marijuana. The time period spanned by the present analyses is 1981 through 2007, adding 18 quarters to the period covered in the preceding report.

All estimates were derived from records in the System To Retrieve Information from Drug Evidence (STRIDE) database maintained by the Drug Enforcement Administration (DEA), and furnished to IDA by ONDCP. STRIDE data records, totaling more than a million in number, are based on seizures and undercover purchases of illicit drugs. No other database encompasses as much spatial and temporal data on the price and purity of illicit drugs.

As directed by ONDCP, the estimation methodology for generating the price and purity time series given in this current *Results Report* is essentially identical to the formal

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1 Office of National Dug Control Policy (2004). *The Price and Purity of Illicit Drugs: 1981 Through the Second Quarter of 2003*, Washington, D.C.: Executive Office of the President (Publication Number NCJ 207768), electronically accessible through the following World Wide Web address http://www.whitehousedrugpolicy.gov/publications/price_purity/. The accompanying *Technical Report* is available at http://www.whitehousedrugpolicy.gov/publications/price_purity_tech_rpt/. Sponsored by ONDCP, both reports were produced at RAND's Drug Policy Research Center and Public Safety and Justice Division.

2 Following the convention adopted in the 2004 ONDCP report, we apply the label "crack cocaine" to results derived from the analysis of cocaine base observations in STRIDE, the majority but not necessarily all of which are literally crack.

econometric modeling approach used in the 2004 study. We provide descriptions of that "Expected Purity Hypothesis (EPH)" modeling construct in Chapter I of this *Results Report* as well as in Chapter II of the accompanying *Technical Report*.[3] The STRIDE database reduces down to about 163,000 records for estimating prices of our subject illicit drugs – with respective proportions being 31 percent for powder cocaine, 35 percent for crack cocaine, 20 percent for heroin, 10 percent for d-methamphetamine, and 3 percent for marijuana. Given the thousands of parameters that the EPH methodology estimates for constructing a single time line of estimates for any drug, the STRIDE data content is considered to be sparse for marijuana and d-methamphetamine, and limited for heroin (due to the inherent variability of those data).

Our initial execution of the EPH modeling methods replicated the data count totals, estimates, figures, and tables presented in the 2004 ONDCP *Results Report* and *Technical Report*. We then incorporated a few modest software modifications, and executed the revised code to generate the price and purity estimates published in the present report.[4] These updates to the previous results can be viewed as a continuation of those provided in 2004. Although the new results are not always numerically identical to past counterparts (e.g., prices for all years in this report are expressed in terms of constant 2007 dollars and zero purity observations are discarded for all drugs but marijuana), they generally are very similar and past major trends and features were reproduced.

In Section A, we report national quarterly EPH estimates for each illicit drug for three or four quantity levels, and, where sufficient data exist, for sets of selected major cities.[5] For powder cocaine, crack cocaine, heroin, and d-methamphetamine, all

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3 In a simple overview sense, the output of the EPH modeling can be viewed as regression-based estimates of the expected purity and expected price per pure gram for distinct combinations of illicit drugs, quantity levels, and geographical locations. National indices are constructed as population-based weighted averages of results across different cities and Census regions. In the estimation of prices, each STRIDE transaction price is normalized by the local value of the expected purity, vice by the assayed purity of the specific transaction sample (which is the basis for the designation of this methodological approach as the "Expected Purity Hypothesis").

4 Our revisions updated inputs to encompass the 2007 timeframe, reconciled the descriptions of the code provided in the 2004 ONDCP *Technical Report* with the actual content of the code, and incorporated new information about STRIDE from the DEA. Chapter II of the accompanying *Technical Report* provides details. It also documents our replication of the results from the 2004 ONDCP report.

5 The portrayals for selected cities update the depictions in the 2004 ONDCP *Results Report*. For d-methamphetamine, the four subject cities, all in the southwest, are Los Angeles, Phoenix, San Diego, and San Francisco. For the other drugs, excluding marijuana, the common set of five major cities is Atlanta, Chicago, New York, San Diego, and Washington, D.C. For marijuana, insufficient sample sizes precluded the construction of meaningful time series for individual cities.

estimated prices reflect adjustments to account for customers' perceptions of expected purities; i.e., we report estimated price per expected pure gram (sometimes shortened to estimated *adjusted* price). The lack of purity data for marijuana limits estimation to purchase prices only; i.e., we report estimated price per bulk gram. With the exception of some supplementary purity analyses that incorporate STRIDE records from seizures, all of the price and purity estimates were based exclusively on STRIDE purchase transactions. Section B follows with a discussion of the roles and utilities of specific methodological approaches for constructing price and purity time series from STRIDE data – including the EPH modeling construct (that generated the results presented in Section A) and alternative analytical techniques. Possible future methodological enhancements and research topics also are addressed.

A. SUMMARY OF EPH RESULTS

Below we summarize EPH modeling results for national indices in turn for each individual illicit drug under study. Topics include estimated price, estimated purity,[6] commonality of trends, and correlations to external databases – 2005 price compilations from law enforcement sources (including local police and DEA) reported by the National Drug Intelligence Center (NDIC), and general workforce drug testing results (an indicator of drug consumption patterns) spanning 2002 to 2007. Our summaries also incorporate selected results from the *Technical Report* that accompanies this *Results Report*.

Nearly two dozen detailed graphical portrayals and associated summaries of the entire history of annual price and purity estimates (i.e., time series of national indices) for all quantity levels are given in Chapters II to VI of this present *Results Report*. The few figures that we exhibit in this summary, Figures 1 to 5, focus on "retail" transactions[7] that portray paired time series of quarterly estimates of prices and purities spanning the time period of 2003 through 2007, i.e., updating the results published in the 2004 ONDCP report.[8] Descriptions of time series that follow are not necessarily limited to this most recent 5-year period. They discuss observable trends and patterns without asserting any formal statistical significance.

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6 Only about 0.05 percent of the marijuana records in our STRIDE database include information on purity. Consequently, estimates of price cannot be normalized for purity, and only bulk prices can be analyzed.

7 The definitions of "retail" are made explicit in the figure titles.

8 Straight line segments are used to connect the depicted quarterly values, but they have no physical interpretation.

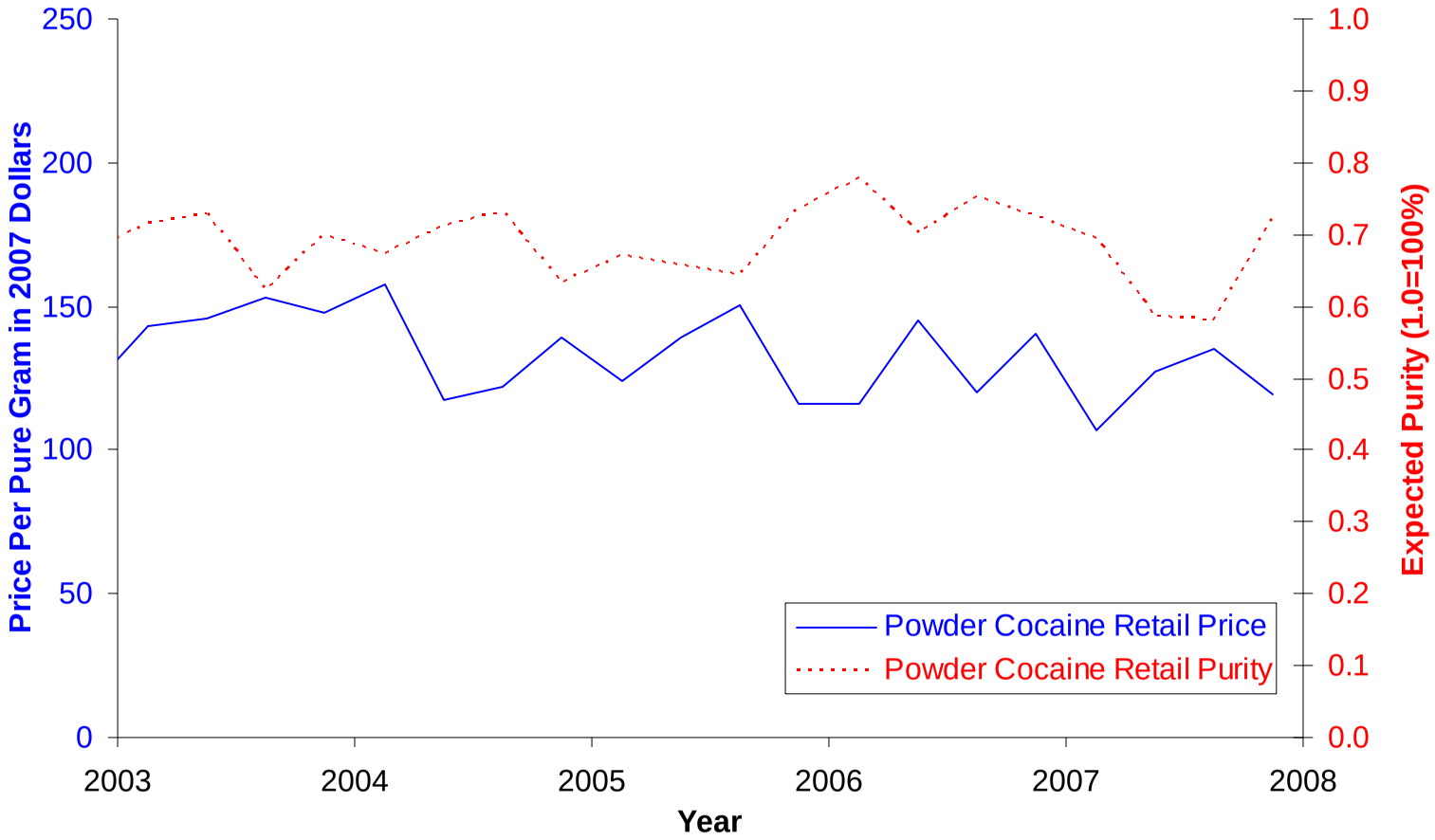

Figure 1. EPH Quarterly Estimates of Price per Expected Pure Gram (Constant 2007 Dollars) and Expected Purity of Powder Cocaine at the Retail Transaction Level (0.1 to 2.0 Grams, Evaluated at 0.75 grams)

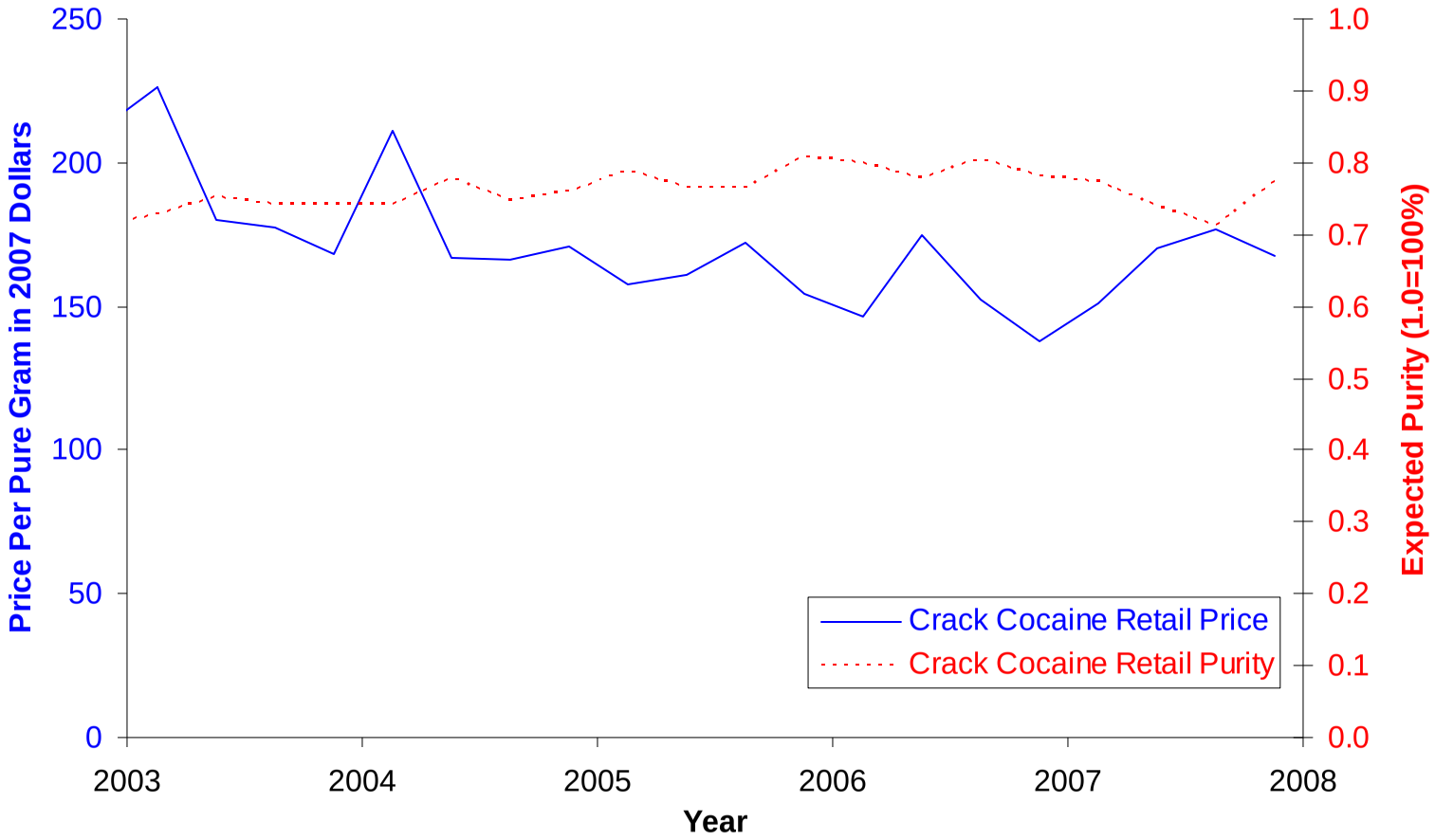

Figure 2. EPH Quarterly Estimates of Price per Expected Pure Gram (2007 Dollars) and Expected Purity of Crack Cocaine at the Retail Transaction Level (Constant 0.1 to 1.0 Grams, Evaluated at 0.3 grams)

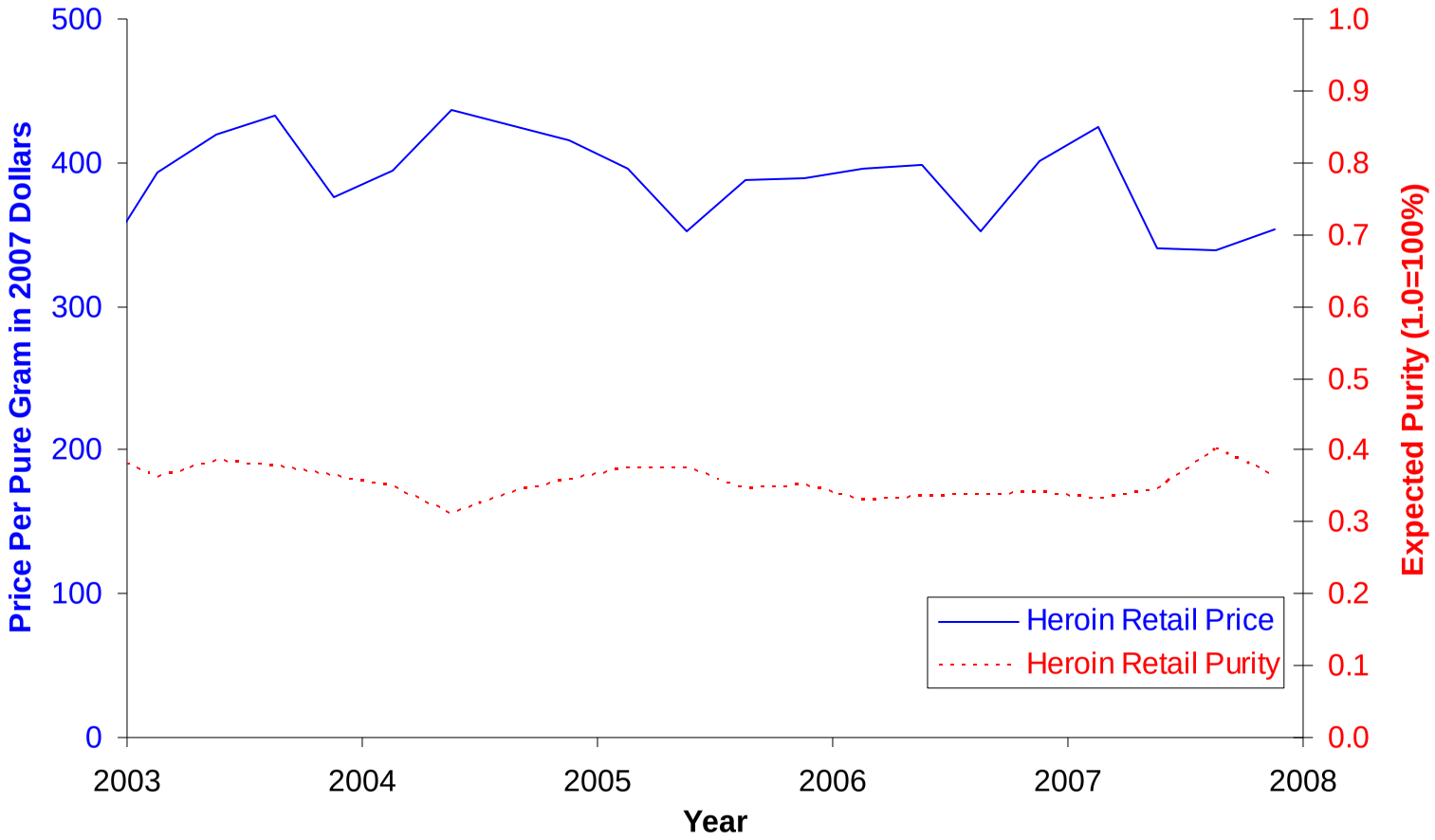

Figure 3. EPH Quarterly Estimates of Price per Expected Pure Gram (Constant 2007 Dollars) and Expected Purity of Heroin at the Retail Transaction Level (0.1 to 1.0 grams, Evaluated at 0.4 grams)

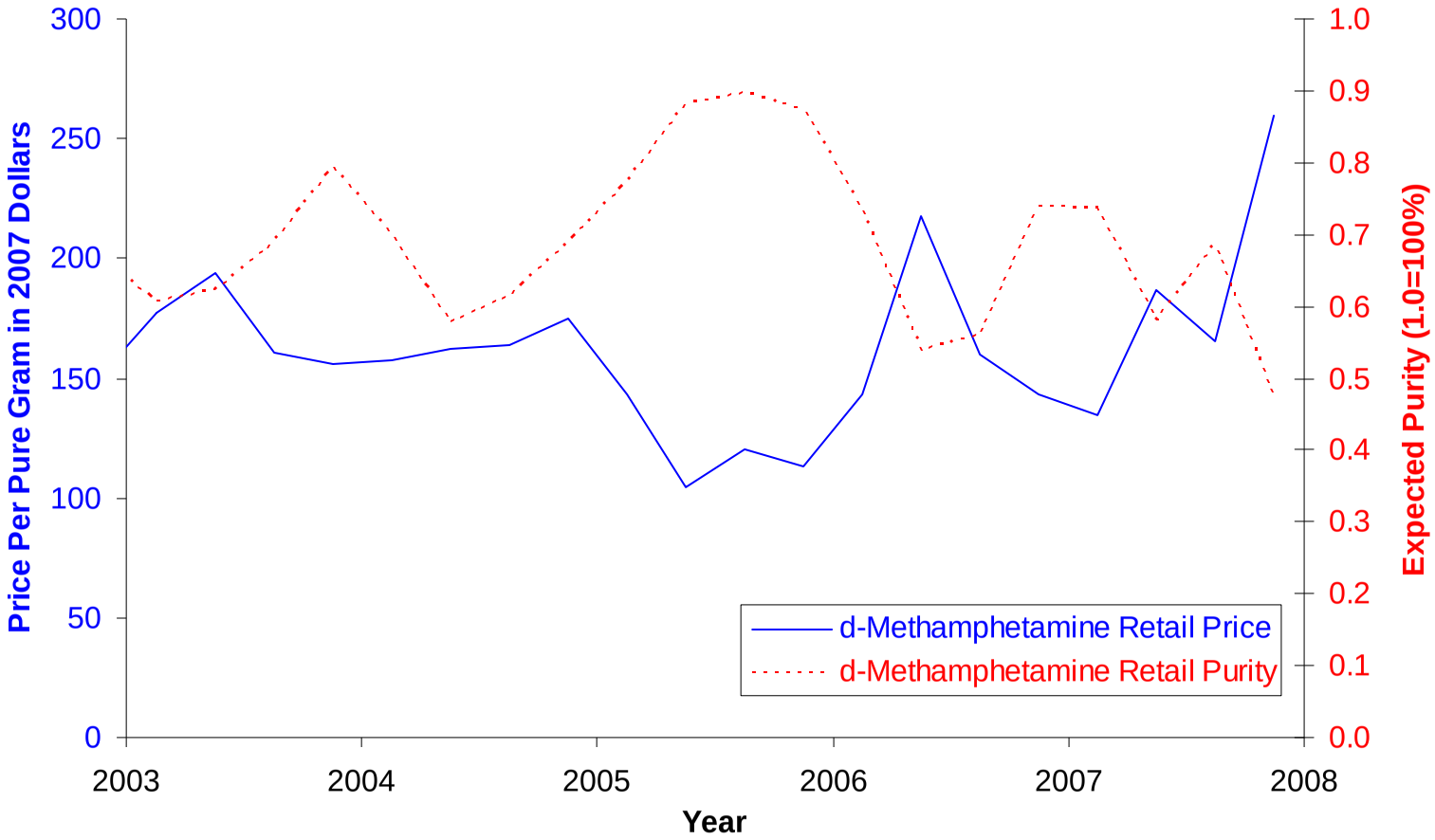

Figure 4. EPH Quarterly Estimates of Price per Expected Pure Gram (Constant 2007 Dollars) and Expected Purity of d-Methamphetamine at the Retail Transaction Level (0.1 to 10.0 grams, Evaluated at 2.5 grams)

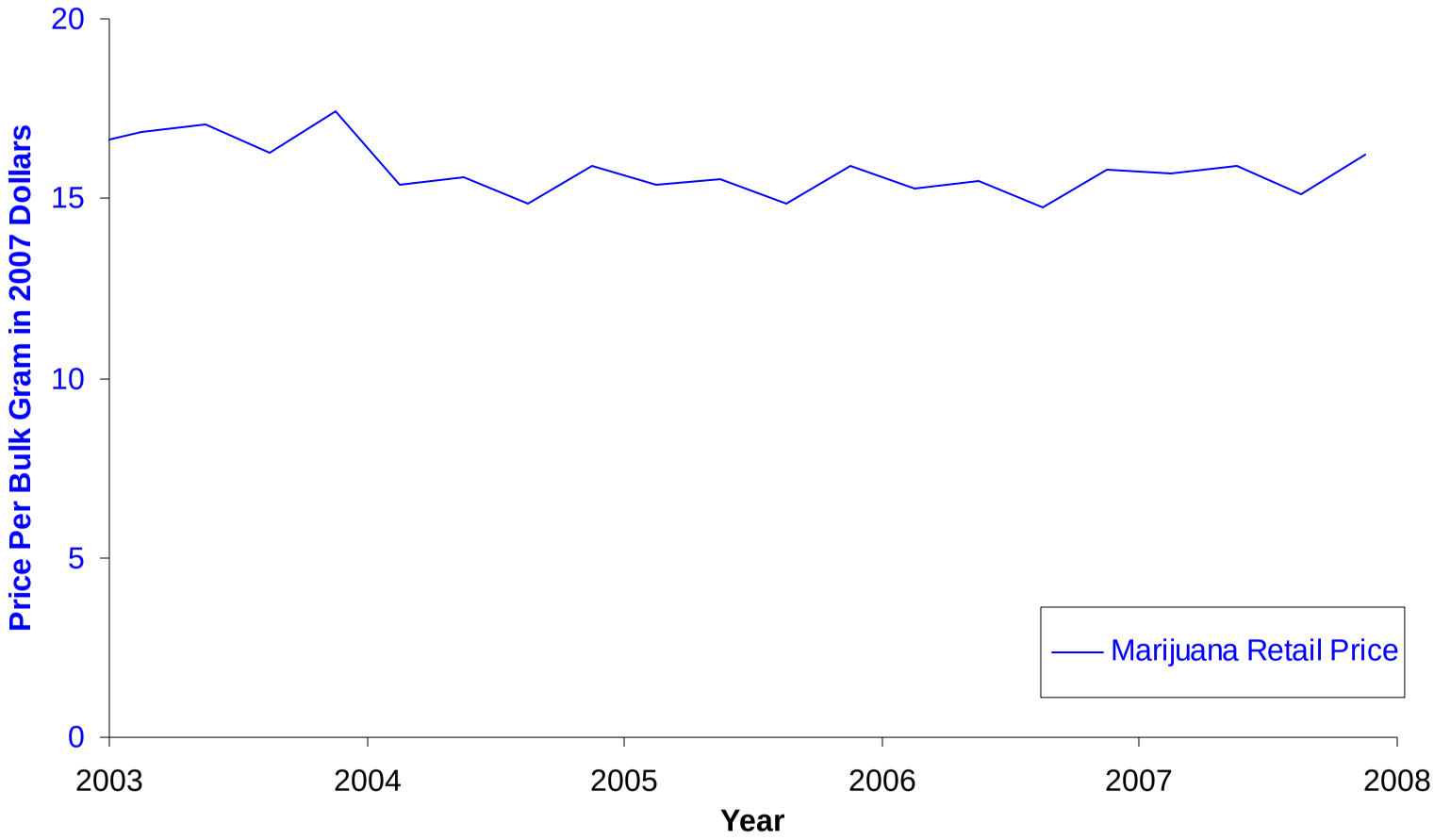

Figure 5. EPH Quarterly Estimates of Price per Bulk Gram (Constant 2007 Dollars) of Marijuana at the Retail Transaction Level (0.1 to 10.0 grams, Evaluated at 2.5 grams)

As was noted in the 2004 ONDCP *Results Report*, the EPH modeling results rely on the content of the STRIDE database, a collection of "convenience samples" that generally have not been systematically collected to comply with any prescribed random sampling processes. The times series generated by the EPH methodology thus should not be interpreted as precise estimates of true nationwide averages of prices and purities. On the other hand, and more importantly, there are a number of reasons why relative changes in EPH time series, manifested as strong features and trends, can be interpreted as plausible indicators of illicit drug market dynamics. Among these are internal consistencies within the STRIDE database, robustness across analysis methods, and general compatibility with external data sources.[9]

1. Powder Cocaine

After having held fairly steady at the end of the 1990s, the annual predicted price of one expected pure gram of powder cocaine increased around 2000-2001, both in the national indices (across all quantity levels) and in major cities (at the retail transaction level). This trend was mirrored by coincident decreases in expected purity. For the national indices, these trends were reversed shortly thereafter, and the new directions have persisted through 2007. For the most part, the estimated adjusted prices experienced a modest but continuously gradual decline, whereas estimated purities increased to a much higher degree – increasing from the 55 to 65 percent purity level in 2001 to the 70 to 80 percent region in 2006, depending on the particular quantity level of interest. Purity fell to 50 to 60 percent in the second and third quarter of 2007, but increased in the fourth quarter of 2007 to 55 to 75 percent. Conclusions at the national level are unaffected when purity data from seizures are incorporated into the analyses.

For the period of the last five years depicted in Figure 1 (also see the supplementary Tables B-1 and B-6 in Appendix B), quarterly estimates of the retail adjusted price for powder cocaine generally drifted slightly downward, roughly from the vicinity of $145 to about $125. During that same span of time, quarterly estimates of the retail purity for powder cocaine hold approximately constant in the 65 to 70 percent range, except for the excursions down to slightly less than 60 percent in the two middle quarters of 2007.

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9 Additional discussions on these points are provided in Section C below, Chapter VII of this *Results Report*, and Chapters III, V, and VI of the accompanying *Technical Report*.

Prior to 2001, the cocaine market (both for powder cocaine and crack cocaine) exhibited the classic features of a supply-driven market, i.e., when estimated price went up/down, estimated purity moved down/up and indirect indicators of cocaine consumption (i.e., general workforce drug testing results) likewise shifted down/up. These regularities persisted post-2001 for powder cocaine (as well as for crack cocaine). For the year 2005, STRIDE powder cocaine prices in selected cities with ample sample sizes agreed reasonably well with counterpart prices published by NDIC. The general correspondence between STRIDE and external databases enhances the plausibility of the trends and features evident in the EPH time series for powder cocaine.

2. Crack Cocaine

Beginning with the late 1990s, trends for the estimated adjusted price time series for crack cocaine, at the national and city levels, generally closely tracked those noted above for powder cocaine. The same held for estimated purity.

Contrary to what one might expect, the expected purity values for crack cocaine consistently were highest at the lowest quantity level (below 1 gram) and lowest at the highest quantity level (above 15 grams). Also, the common inverse relationship between expected price and expected purity changes did not hold in the 1990s, when both measures generally drifted downward.

For the period of the last five years depicted in Figure 2 (also see the supplementary Tables B-2 and B-7 in Appendix B), quarterly estimates of the retail adjusted price for crack cocaine generally drifted slightly downward, roughly from the vicinity of $180 (with a larger $220 peak for the first quarter of 2003) to about $170. During that same span of time, quarterly estimates of the retail purity for crack cocaine hold approximately constant in the 75 to 80 percent range.

As was the case for powder cocaine, post-2001 the price and purity time series for crack cocaine correlated in the expected manner with general workforce drug testing results for cocaine. Also, STRIDE crack cocaine prices for selected cities in 2005 reasonably matched counterpart prices published by NDIC. Again, the plausibility of the major characteristics of the EPH time series for crack cocaine is supported by the general agreement between STRIDE and external databases.

3. Heroin

Since the local peaks in 1990, the national indices for the annual predicted price of one expected pure gram of heroin steadily decreased, with the possible exception of

small increases in 2004 and 2006. Over the last 10 years, estimated adjusted prices dropped about 30 percent for all quality levels. Similar behavior generally was exhibited at the major city level, although there was more variability.

Since 1997, expected purities at the national level typically decreased from year to year, with the possible exception of minor upward bumps in 2002, 2005, and 2007. Similar trends apply to major cities, although steady declines did not begin until 2000 or so for some of the cities. The incorporation of purity results from seizures did not alter the national trends.

For the period of the last five years depicted in Figure 3 (also see the supplementary Tables B-3 and B-8 in Appendix B), quarterly estimates of the retail adjusted price for heroin generally drifted slightly downward, roughly from the vicinity of $400 to about $360 (with high variability associated with each of these values). During that same span of time, quarterly estimates of the retail purity for heroin held approximately constant close to 35 percent.

Heroin STRIDE results did not correlate strongly with general workforce drug testing positives for opiates. Since these positives can be triggered by a number of different substances (heroin and other opiates), further study is required to establish a clearer story for heroin.

The agreement between STRIDE data and NDIC reports for heroin prices in 2005 was mixed. There was some degree of correspondence for the cities of Baltimore, Chicago, and New York, but differences were clear for Orlando at the lowest quantity level and for all of the levels of Washington, D.C. Further study would be required to understand these differences.

4. d-Methamphetamine

STRIDE d-methamphetamine data are sparse and volatile. The time series for the annual predicted price of one expected pure gram of d-methamphetamine behaved similarly at the national and major southwest city levels. There were peaks in 1995-1996, 1998, and 2006-2007 coincident with the introductions of methamphetamine precursor chemical regulations. In between peaks, estimated prices declined steadily, e.g., falling more than 50 percent between 1998 and 2005.

The expected purities mirrored the trends in estimated adjusted prices, and the two sets of curves were strongly negatively correlated. By 2005, estimated purities increased to about 80 to 90 percent at the national level, and to as high as 95 percent in

major cities. By the end of 2007, estimated purities at both the national and local levels had fallen to about 40 to 55 percent. Since 1995 or so, the expected purity values were generally highest at the lowest quantity level, and they were lowest at the highest quantity level. National trends for purities were unaffected when results from seizures where incorporated into the analyses.

For the period of the last five years depicted in Figure 4 (also see the supplementary Tables B-4 and B-9 in Appendix B), quarterly estimates of the retail adjusted price for d-methamphetamine were fairly constant for the first two years and then generally increased sharply from the vicinity of roughly $125 to about $160 (with a high value of $260 for the last quarter of 2007). During that same span of time, quarterly estimates of the retail purity for d-methamphetamine reflected the trends in prices, with the near 90 percent peaks in mid-2005 falling to the 50 to 60 percent range at the end of 2007.

Through the years, d-methamphetamine estimated adjusted prices, estimated purities, and workforce drug testing results all adhered to the classical model of a supply-driven market. This suggests that analysis for trends in the STRIDE database (with its limited number of d-methamphetamine records), especially at the local levels, can be supplemented by workforce drug testing results (which, because of their very large sample sizes, can be a powerful statistical tool). Additionally, for selected cities in 2005, NDIC published prices for d-methamphetamine reasonably matched available STRIDE prices. The general correspondence between STRIDE and external databases reinforces the plausibility of the major d-methamphetamine trends evident in EPH modeling results.

5. Marijuana

STRIDE marijuana records are sparse, and data variability is high. Since 1997, trends in the estimated price of one bulk gram of marijuana have varied across quantity levels – up about 30 percent at the lowest quantity level (less than 10 grams), up about 70 percent at the middle quantity level (between 10 and 100 grams), and down about 30 percent at the highest quantity level (above 100 grams).

Comparing 2002 to 2007, there was essentially no change in price at the lowest quantity level, a decline of about 10 percent at the medium quantity level, and a decline of almost 50 percent at the highest quantity level. During this same time period, general workforce drug testing results exhibited steady declines in positivity rates for marijuana.

For the period of the last five years depicted in Figure 5 (also see the supplementary Table B-5 in Appendix B), quarterly estimates of the retail bulk price for marijuana generally were fairly stable as they drifted modestly downward – roughly from the vicinity of $17 to about $16.

Our examination of bulk prices for marijuana reported by NDIC for 2005 revealed extremely wide variations across different NDIC categorizations of marijuana, i.e., domestic, Mexican, Canadian, and hydroponic. Comparisons of the NDIC data to 2005 STRIDE bulk prices for marijuana, which are not classified by type of marijuana, also exhibited large differences. If feasible, follow-on studies should explore the degree to which price disparities across marijuana variants influence the current construction of national and local level price estimates.

B. DISCUSSION

1. General Merits of EPH Modeling

Illicit drug traffickers conduct their production, transportation, and transaction activities clandestinely. Precise knowledge of the prices and purities of illicit drugs is thus unattainable, but policy makers and law enforcement do not necessarily require extraordinarily accurate estimates. Often a plausible sense of the relative magnitude and the approximate timing of sustained trends and excursions can be extremely insightful, provided that the information over time has been derived consistently and with some degree of rigor. This level of surety can facilitate objective assessments of the accomplishments of implemented strategies, initiatives, and operations, and guide the development of new policy and specific law enforcement actions.

It is from this perspective that the merits of the EPH modeling construct and alternative analysis approaches should be judged. Numerical EPH estimates to a great extent, but certainly not universally, have been shown to be internally consistent – across the individual quantity levels, for different geographical locations, and for the two distinct variants of cocaine. When there are inconsistencies, they tend to be short-lived and/or of minor consequence. Whether these sorts of divergences reflect true differences or are artifacts of the sampling processes that populate the STRIDE database and the inherent extreme variability in the underlying data themselves requires further study. Given the widely acknowledged sampling and data variability endemic to STRIDE data, it can be argued that only a very strong true “signal” could arise above the massive “noise” to form a coherent feature or sustained trend.

Much of the volatility in the EPH estimates themselves can be masked within standard figures displaying only yearly results, as these are averages of the constituent quarterly values. Although the reported major trends and features remain evident, those quarterly numbers exhibit much greater variability. Consequently, the general observation can be made that excessive significance should not be attached to apparent excursions that may be indicated by only one or two updated quarterly estimates, unless supported by considerable corroboration from external information sources.

2. EPH and Median Methods

The accompanying *Technical Report* compares the EPH-based national indices to time series constructed from simple median estimates. Each point of a median-based index is obtained as the sample median, or 50^{th} percentile, of the *entire* population of relevant STRIDE data points, i.e., aggregated across all geographic locations irrespective of the perceived importance or weight ordinarily attributable to each locale.[10] In other words, the sampling and reporting frequencies of the DEA (and other agencies contributing to STRIDE) induce an implicit weighting function. This is in contrast to regression-based methods, such as the EPH formulation, that *disaggregate* STRIDE data into distinct geographical units, estimate a summary statistic for each, and then re-assemble all these into a nationally representative metric via a weighted linear combination. The individual combinations of geographical unit, calendar quarter, drug type, and quantity level can parse the STRIDE database so fine that few data are available to support statistical calculations. Moreover, what data are present can be extremely variable (considering intrinsic data randomness as well as volatility in sampling processes).

The median values plotted in the accompanying *Technical Report* are not purported to be estimates of national values of price and purity *per se*, but merely serve as simple representations of the observable data and indicators of trends against which the EPH-derived results can be compared. The medians thus provide an alternative perspective for potential detailed assessments that could motivate possible enhancements to the EPH formulation and/or suggest suitable alternative methodologies.

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[10] For any sample set of subject STRIDE records, the median purity is simply the 50^{th} percentile of all of the purity values. The median normalized price is likewise obtained from the set of normalized prices, in which each transaction price is divided by the associated amount for that transaction and by the associated purity for that transaction.

The side-by-side comparisons of the EPH-based estimates and their median counterparts reveal nearly universal agreement in major trends and features, although there are some differences in precise levels and timing. This general agreement can be viewed as a confirmatory direct comparison of the EPH results to the raw data. There are some instances when the absolute magnitudes of the two sets of estimates vary substantially, but the trends nonetheless remain common. Detailed study of some of these examples points to small sample circumstances. Here, the EPH model weights very heavily the few available observations from major cities and discounts the many but disparate data from the remainder of the country. In contrast, the median method weights all of the STRIDE samples equally.

When there are substantial differences between the two sets of estimates, the EPH model result generally is less extreme than the median-based estimate, i.e., high and low median values are associated with EPH counterparts that are not as close to the possible extreme values (e.g., 100 percent purity and 0 percent, respectively). At times, coherent trends observable in the quarterly median estimates are not readily discernible in the EPH results. Reasons for these differences remain under study.

The summaries of price and purity time series presented in this *Results Report* have not attempted to incorporate any formal statistical confidence procedures into assessments of what constitutes a trend, departure, or feature. This would add considerable complexity to the analyses, for each of the many depicted time series, and is well beyond the scope of this present study. The 2004 ONDCP *Technical Report* proposed an *ad hoc* procedure for computing surrogate confidence bounds around individual estimates, but its interpretability is unclear. The median- and mean-based methods readily support the construction of legitimate statistical confidence bounds via standard procedures (by repeating median/mean calculations thousands of times for various permutations of the original data). This approach, however, cannot be applied to the EPH regression models since generating even one set of EPH estimates already takes considerable computing time. To stay within the existing EPH construct, one would have to introduce appropriate modifications to the current software. The present calculation of confidence bounds for expected price and purity estimates associated with individual locations would have to be extended to encompass their consolidation in the form of a weighted linear combination.

Neither median- nor regression-based estimates by themselves address the widely acknowledged limitations of the STRIDE database – including the reliance on "convenience samples" that generally have not been systematically collected to comply

with any prescribed random sampling processes. Likewise, additional layers of sophisticated statistical modeling cannot overcome entirely this fundamental shortcoming (although analysis of clusters of STRIDE samples could lead to practical adjustments). Within this context, however, constructing different sets of indices based on disparate methodological approaches can prove insightful. Comparable results can be interpreted as plausible portrayals of the STRIDE content, laying the groundwork for additional checks with relevant external databases and/or sources of information. Substantially different results, and an understanding of the underlying causes, can motivate the development of appropriate methodological enhancements.

Given the many analytical challenges that confront a comprehensively rigorous examination of STRIDE data, the merits of alternative methodologies for developing price and purity indices cannot be argued persuasively solely on theoretical grounds. For example, for a given location-time combination, regression-based methods that mimic established sample survey techniques must contend with small sample sizes that can be dominated by statistical noise. Median-based methods might have a better chance to extract a real signal from the midst of noise, but the interpretation of the results can be more problematic when the underlying sampling processes that populate the STRIDE database are not consistent over time. In addition, using medians to capture changes in STRIDE data might not be prudent under specific small sample size circumstances. For instance, sampling processes could concentrate purchases at particular quantity amounts in such a way that the 50^{th} percentile of the observed price essentially is "trapped" into a narrow range of possible variation. Under these circumstances, sample means might prove to be more insightful. Both median- and mean-based methodologies can be enhanced by incorporating simple adjustments, i.e., regression models, which permit estimated prices and purities for individual transactions within some data aggregation to vary with the precise quantity amounts associated with the transactions. Simulation studies, which can interject various representations of nominal STRIDE data, could be pursued to explore the relative performance of these and other specific analytical approaches for detecting and characterizing short- and long-term trends.

For the present, use of complementary methodologies is a reasonable analysis strategy for intermittently monitoring data trends. For non-standard investigations (e.g., focused on smaller geographical regions, especially if areas do not correspond one-to-one with the formal definition of geographical divisions prescribed within the EPH construct), median-based methods will be much easier to implement. In any case, median estimates

will be generated much more expeditiously, since it ordinarily takes multiple days to finish a single EPH run for all of the drug types.

3. Potential Future Work

There are a number of research paths that could be pursued in an attempt to enhance the viability and utility of time series representations of the price and purity of illicit drugs. Some are specific to the EPH modeling construct, some are more relevant for median-based and other alternative methodologies, and some have dual applicability. Also, the incorporation of additional external information sources could add to the interpretability of STRIDE-centric analyses.

Here we outline potential future research activities, incorporating notions presented in both this *Results Report* as well as in the companion *Technical Report*. The order of the proposals is not intended to imply any prioritization.

Specific to the EPH methodology, follow-on analyses could:

- Compute model predictions based on non-quarterly time partitions (that can suffer from small sample size problems)
  - Directly on a yearly basis, vice quarterly followed by averaging of quarterly results
  - Dynamic partitions, chosen to ensure adequate sample sizes
- Incorporate alternative weighting schemes for consolidating estimates across geographical locales
  - Prescribing different relative weights between major cities and regions (currently set arbitrarily to a 29:1 ratio)
  - Based on relevant workforce drug testing results
- Recast the regression model structure so that quantity adjustments yield continuous results across the entire range of quantity values (vice within individual quantity levels, without any continuity checks at the endpoints)
- Exploit the random effects modeling paradigm and supporting statistical software to construct legitimate confidence bounds for yearly prices and purities, as well as for differences between consecutive years.

Specific to non-EPH methods, follow-on analyses could:

- Incorporate straightforward regression-based adjustments to account for the contribution of varying amounts within a given quantity level

- Check whether the fractions of samples for individual geographical entities remain fairly steady over time, and, if not, assess the effect on overall conclusions
- Utilize fixed-sample size data bins, vice partitions based on fixed periods of time
- Compute separate simple estimates (e.g., medians) for individual cities and regions, and then assimilate via appropriate weighting schemes (e.g., *à la* the EPH construct) to construct national indices
- Extend current resampling-based confidence interval procedures to encompass differences between time points (e.g., adjacent years).

Finally, generally applicable potential enhancements could:

- Exploit the known structure of illicit drug markets – transactions cluster about either one of a set of standard quantities (e.g., kilogram, ounce) or for small quantities a set of standard prices
- Update existing checks of the degree of correspondence between STRIDE and external databases
  - Independent compilations of illicit drug prices obtained from local sources (including police and DEA) as reported in NDIC Intelligence Bulletins
  - Time series of positivity rates (i.e., percent of tests with a "positive" outcome) from general workforce drug tests
- Study the feasibility and viability of expanding the correspondence investigations to include other external databases[11]
  - NDIC Intelligence Information Reports
  - Treatment Episode Data Set
  - Drug Abuse Warning Network
  - National Survey on Drug Use and Health.

[11] Chapter VIII provides additional information on these databases.

CHAPTER I

INTRODUCTION

I. INTRODUCTION

This introductory chapter includes four sections. These focus respectively on background material, a database overview, summary of the principal analysis methodology, and an outline of the remainder of the report.

A. BACKGROUND

This document updates estimates of the price and purity of selected illicit drugs published by the Office of National Drug Control Policy (ONDCP) in 2004.[1] All estimates are derived from records in the System To Retrieve Information from Drug Evidence (STRIDE) database maintained by the Drug Enforcement Administration (DEA) and furnished to ONDCP. An overview discussion of the advantages and challenges of constructing meaningful time series of price and purity estimates based on STRIDE data is presented in Section B below.

As noted in the following DEA disclaimer, the STRIDE records that we based our analyses on should be considered to be "unvalidated DEA data":

> *Official Disclaimer: DEA responses to external data requests include all releasable records requested, without regard to analytic value. DEA analyses, by contrast, may exclude selected records, as closer inspection of such records may reveal errors, inaccuracies, or otherwise unverifiable data. External analyses of DEA data, accordingly, may not always yield conclusions consistent with DEA's own findings. Your acceptance and/or use of the information accompanying this disclaimer indicates your agreement (1) to refer to same information as "unvalidated DEA data," (2) to apply the guidance provided with same information competently, (3) to claim authorship/responsibility for any inferences/conclusions you may draw from same information, and (4) not to transmit same information to*

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1 Office of National Dug Control Policy (2004). *The Price and Purity of Illicit Drugs: 1981 Through the Second Quarter of 2003*, Washington, D.C.: Executive Office of the President (Publication Number NCJ 207768), electronically accessible through the following World Wide Web address http://www.whitehousedrugpolicy.gov/publications/price_purity/. The accompanying *Technical Report* is available at http://www.whitehousedrugpolicy.gov/publications/price_purity_tech_rpt/. Sponsored by ONDCP, both reports were produced at RAND's Drug Policy Research Center and Public Safety and Justice Division.

any other party without including this Official Disclaimer in your transmission.

The five major illicit drugs addressed here, characterized by generic name and specific sub-category, are:

- Powder cocaine (i.e., cocaine hydrochloride)
- Crack cocaine (i.e., cocaine base)[2]
- Heroin (i.e., heroin base and heroin hydrochloride)
- d-Methamphetamine (i.e., d-forms of methamphetamine)
- Marijuana (i.e., plant material, and not whole plants or seeds).

Estimates of both price and purity are obtained for each drug type, except that the general lack of purity information for marijuana in our STRIDE database precludes the calculation of purity estimates for marijuana. For powder cocaine, crack cocaine, heroin, and d-methamphetamine, all estimated prices reflect adjustments to account for customers' perceptions of expected purities, i.e., we report estimated price per expected pure gram (or estimated *adjusted* price). The lack of purity data for marijuana limits estimation to purchase prices only, i.e., we report estimated price per bulk gram.

For each drug, subsequent figures and tables present prices and purities at several quantity levels, corresponding notionally to different steps in the drug distribution chain. Precise values for the quantity levels (or "distribution levels") vary with the drug type, as indicated in Table I-1. Representative quantity values, used to convert regression results to specific estimates, also are given. All of the entries in Table I-1 coincide with those used in the 2004 study.

As an illustrative example, consider the Q2 level for d-methamphetamine. For this combination of drug and quantity level, only STRIDE samples recorded to be between 10 and 100 grams (unadjusted for purity) are utilized to estimate purity and price per pure gram. The regression models used in the EPH construct produce a pair of estimated price and pure values for each quantity number between 10 and 100 grams, i.e., the amount is an explicit factor in the model. To report a unique pair for Q2, the specific representative quantity value of 27.5 grams is prescribed. Thus, the estimates of expected

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[2] Following the convention adopted in the 2004 ONDCP report, we apply the label "crack cocaine" to results derived from the analysis of cocaine base observations in STRIDE, the majority but not necessarily all of which are literally crack.

purity and price per expected pure gram that are reported for the Q2 level are in fact the estimates calculated at the representative quantity value of 27.5 grams.

Table I-1. Quantity Levels and Representative Quantity Values (grams, Unadjusted for Purity) – By Drug Type

	Powder Cocaine	Crack Cocaine	Heroin	d-Metham-phetamine	Marijuana
Q1	0.1 – 2.0 0.75	0.1 – 1.0 0.3	0.1 – 1.0 0.4	0.1 – 10.0 2.5	0.1 – 10.0 2.5
Q2	2.0 – 10.0 5.0	1.0 – 15.0 5.0	1.0 – 10.0 2.5	10.0 – 100.0 27.5	10.0 – 100.0 26.0
Q3	10.0 – 50.0 27.0	> 15.0 38.0	> 10.0 27.5	> 100.0 225.0	> 100.0 443.0
Q4	> 50.0 108.0				

Note: Each Q1 interval encompasses both of the listed endpoints, while each Q2 interval, as well as the Q3 interval for powder cocaine, encompasses the larger endpoint value.

It is important to note that quantity levels Q1, Q2, and Q3 for crack differ from those levels for powder cocaine. For example, Q1 for powder cocaine includes observations up to 2.0 grams, a larger range than is specified for crack. Because drugs are sold with substantial quantity discounts, this depresses the average prices for powder at the Q1 level relative to what would be recorded if Q1 for powder cocaine matched the range identified for crack. Hence, direct comparisons should not be made of the *levels* of prices for crack and powder cocaine.

The estimation methodology for generating the price and purity time series given in this current *Results Report* is essentially identical to that used in the preceding 2004 ONDCP *Results Report*, except that zero purity observations were deleted for all drugs but marijuana,[3] prices were recast in terms of constant 2007 dollars, and modest statistical software code modifications were incorporated.[4] An overview description of this "Expected Purity Hypothesis (EPH)" modeling construct is presented in Section C below.

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3 Per DEA Office of Forensic Science, zero purity is entered in STRIDE in lieu of a purity value when a quantitation is not performed. Thus, "zero purity" records in STRIDE are not necessarily indicative of samples that necessarily had zero or even low purity.

4 Our revisions updated inputs to encompass the 2007 timeframe, and reconciled the descriptions of the code provided in the 2004 ONDCP *Technical Report* with the actual content of the code. Details are documented in Chapter II of the accompanying *Technical Report*.

Our initial execution of the EPH modeling methods, undertaken before any revisions to the code were introduced, replicated the data count totals, estimates, figures, and tables presented in the 2004 ONDCP *Results Report* and *Technical Report*.[5] Using the STRIDE data that supported the earlier study, our execution of the EPH methodology nearly universally replicated almost identically (out to five decimal places) the former results. For a few specific combinations of variables of interest, some very minor differences were obtained.[6] These occurrences, however, were traced to modest modifications in the details of the implementation that we introduced in order to reconcile some inconsistencies in the earlier 2004 descriptions.

Our revised software generated updates to the previous results that can be viewed as a continuation of those provided in 2004. Although the new results are not always numerically identical to past counterparts, they generally are very similar and past major trends and features were reproduced. The time period encompassed by the present analyses is 1981 through 2007, adding 18 quarters onto the extent covered in the 2004 ONDCP *Results Report*. The year 1981 coincides with the advent of STRIDE data records within the ONDCP database.

B. STRIDE

Various law enforcement agencies, at the local, state, and federal levels, seize illicit drugs, conduct undercover operations that purchase illicit drugs, and otherwise obtain samples of illicit drugs. The STRIDE database includes records only for those acquisitions that are sent to a DEA laboratory for analysis, and thus excludes the great majority of purchases and seizures made by local and state agencies. Numerous descriptive and quantitative characterizations of these acquisitions (e.g., date, city, purchase or seizure, and organization) and samples (e.g., drug type, amount, purity, and purchase price) are recorded in STRIDE. There are more than a million drug samples with data records in STRIDE.

Included in the STRIDE database, and contributing to the results summarized in this *Results Report*, are observations obtained by the Washington DC Metropolitan Police Force (DCMP). The 2004 ONDCP *Technical Report* explored the extent to which these data influence national purity and price time series. It was shown that, with one

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5 Documentation is provided in Chapter II of the accompanying *Technical Report*.

6 In some isolated instances, heroin price estimates varied by no more than 0.40 percent and d-methamphetamine price estimates were off by no more than 0.01 percent.

exception, the national purity and price time series are not substantially changed when the DCMP data are removed. The marijuana price time series exhibited additional volatility at the Q1 quantity level, and to a much smaller degree at the Q2 level, upon deletion of the DCMP records.

While the overall sample size is large, STRIDE's inherent limitations necessarily curtail its utility for supporting comprehensive price and purity evaluations. The DEA Statistical Analysis Unit includes explicit caveats with any STRIDE-based summaries it provides. For instance, for cocaine the caveat reads: "STRIDE is a database of drug exhibits sent to DEA laboratories from the DEA, FBI [Federal Bureau of Investigation], CBP [Customs and Border Protection], ICE [Immigration and Customs Enforcement], USCG [United States Coast Guard] and other agencies. STRIDE is not a representative sample of drugs available in the United States, but reflects all evidence submitted to DEA laboratories for analysis. STRIDE data are not collected to reflect national market trends; however, until data from DEA's Cocaine Domestic Monitor Program (CDMP, established in 2006) become available, STRIDE data reflect the best available information on changes in cocaine price and purity."

Similar concerns, emphasizing that STRIDE is a collection of "convenience samples," are noted and documented in the 2004 ONDCP *Results Report*:

- STRIDE data generally do not constitute a random sample from a known population.[7]
- The location and timing of STRIDE acquisition events can be sporadic and highly variable.
- The unrepresentative nature of STRIDE is varying and unknown.

The 2004 ONDCP *Results Report* also presents and documents several motivations for using the STRIDE database despite its acknowledged analytical shortcomings:

- No other database encompasses as much spatial and temporal data on the price and purity of illicit drugs.

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7 One exception is the subset of Heroin Domestic Monitor Program (HDMP) data that is collected under significant controls for location, date, time and source for samples of heroin. With the initiation in 2007 of pilot retail purchase programs patterned after the HDMP for cocaine and methamphetamine, over time, the DEA hopes to build a DMP repository that is robust and tailored to support meaningful statistical modeling.

- Relative changes and trends in STRIDE price and purity data can be insightful, especially when they are compatible with data from independent sources.[8]

Expanding on this last point, we note that the following types of observations can provide additional support for conclusions based on analysis of STRIDE data:

- Major trends and features in STRIDE time series persist when subsets of data are removed from analysis or weighted differently.[9]
- Regional differences remain steady over years.
- Relative changes and trends adhere to logical and/or persistent orderings (e.g., across quantity levels) and patterns (e.g., geographically).

Further amplification of the utility of STRIDE analyses is provided in Chapter III of the accompanying *Technical Report.* That chapter first identifies STRIDE analysis topics of potential value to the counter-drug policy and law enforcement communities. It then describes many of the inherent and technical limitations of STRIDE data in supporting such analyses. Finally, within the context of each limitation, the *Technical Report* discusses the prospects of, and methods for, reducing the uncertainty associated with the limitation.

C. ANALYSIS METHODS

1. Construction of National Indices for Estimated Price and Purity

Our data analysis processes consist of two fundamental phases – reduction of the complete STRIDE database, from 1981 through 2007, down to specific data records of interest, and subsequent application of statistical tools to generate price and purity estimates. We adhered to the sequence of data reduction steps detailed in the 2004 ONDCP *Technical Report*. An overview of these steps can be discerned from the far left column in Table I-2, which shows the progression of data counts from the original one

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8 For instance, U.S. cocaine (combined powder and base) price and purity values through 2001 correlated impressively with source zone prices, the timing and impact of major source zone and transit zone operations, and four independent time series indicators of the domestic availability of cocaine. References include: Office of National Dug Control Policy (2001). *Measuring the Deterrent Effect of Enforcement Operations on Drug Smuggling, 1991-1999*, Washington, D.C.: Executive Office of the President (Publication Number NCJ 189988); and R. Anthony and A. Fries, "Empirical Modelling of Narcotics Trafficking from Farm Gate to Street," *Bulletin on Narcotics*, United Nations Office on Drugs and Crime, Volume LVI, Nos. 1 and 2, 2004, pp. 1-48.

9 For example, price indices for cocaine were shown to be robust to changes in population weights assigned to individual states (including completely random assignments). See R. Anthony, *ibid*.

million records down to 163,000 purchase records for the estimation of prices and purities.

Table I-2. Data Counts for STRIDE Processing Steps

	Marijuana	Meth.	Heroin	DMP	Other	Cocaine			All
						All	Powder	Crack	
Starting number	274,384	127,217	122,228	14,379	93,407	417,043			1,048,658
Restrict to 4 main drug classes	274,384	127,217	122,228	14,379		417,043			955,251
Only U.S.	272,072	124,362	112,968	13,797		402,805			926,004
Non-missing state	272,057	124,362	112,896	13,797		402,799			925,911
Purchases and seizures only	264,282	117,145	103,807	13,724		382,985			881,943
Raw weight > 0	263,850	116,831	103,298	13,708		381,315			879,002
Measured in grams	257,066	101,182	101,130	13,547		374,653			847,578
Purity is non-missing and 0 < purity <= 100*	257,064	76,958	90,155	13,547		326,430			764,154
Narrowing drug codes	253,175	62,934	66,586	12,824			173,354	141,959	710,832
Reassigning heroin DMP	253,175	62,934	78,483				173,354	141,959	709,905
Weight >= 0.1 gram	243,930	62,716	75,876				171,822	136,227	690,571
Final sample for purity analysis: purchases and seizures		62,716	75,876				171,822	136,227	446,641
Price > 0 and non-missing	6,141	16,539	34,629				52,470	60,323	170,102
Remove other gross outliers	6,014	16,448	34,458				52,263	60,135	169,318
Delete crack if year < 1986	6,014	16,448	34,458				52,263	59,904	169,087
Delete obs in quarters with < 5 obs.**	6,014	16,393	34,458				52,259	59,904	169,028
Stage 1: sample for purity models		**16,393**	**34,415**				**52,259**	**59,904**	**162,971**
Stage 2: final sample for price models	**5,634**	**15,745**	**32,957**				**50,609**	**57,727**	**162,672**

*For marijuana, retain observations with 0 purity.

**For marijuana, delete data with < 5 observations in a year.

"Gross outliers" are defined to be STRIDE records for which the nominal price is untenably low, or the real price per pure gram is either unrealistically low or excessively high. Specific thresholds, unique to the individual drug types, are prescribed in the 2004 ONDCP *Technical Report*. "Extreme residuals," with a standardized magnitude above a value of 3.09, also were eliminated during the statistical estimation of adjusted price. Again, details can be found in the ONDCP *Technical Report*.

Statistical estimation is undertaken separately for each combination of drug type and quantity level, and proceeds in three stages. Within each stage, price and purity estimates are generated for each combination of calendar quarter and mutually exclusive geographic locales (29 major cities and nine Census divisions). The major cities are Atlanta, Baltimore, Boston, Buffalo, Chicago, Cleveland, Dallas, Denver, Detroit, Houston, Kansas City, Los Angeles, Miami, Milwaukee, Minneapolis-St. Paul, New Orleans, New York, Newark, Philadelphia, Phoenix, Pittsburgh, Portland, San Antonio,

San Diego, San Francisco, Seattle, Saint Louis, Tampa, and Washington, D.C.[10] The nine Census divisions are defined as follows:

- Pacific: Alaska, Hawaii, Washington, Oregon, California
- Mountain: Arizona, Idaho, Montana, Colorado, New Mexico, Utah, Nevada, Wyoming
- West North Central: North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri
- East North Central: Wisconsin, Illinois, Michigan, Indiana, Ohio
- West South Central: Texas, Oklahoma, Louisiana, Arkansas
- East South Central: Mississippi, Alabama, Kentucky, Tennessee
- South Atlantic: Florida, Georgia, South Carolina, North Carolina, Virginia, District of Columbia, Maryland, Delaware, West Virginia
- Mid Atlantic: New Jersey, New York, Pennsylvania
- New England: Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, Maine.

Each STRIDE record is associated uniquely with either a single city or a single division.

Note that each of the 29 major cities and nine Census divisions is used in the computation of any national index for estimated price or purity, for every combination of illicit drug and quantity level. Separate results, also based on EPH modeling, are displayed for selected subsets of cities, varying with the drug of interest. These sets of cities match those specified in the 2004 ONDCP report, to facilitate comparisons of results.

The first stage of the statistical processing is to compute a time series of purity estimates, one value per calendar quarter, for each of the 38 different geographic areas – using a common random effects regression model structure separately for each area. The starting time point is the first quarter of 1981, except for crack cocaine which does not begin until the first quarter of 1986 (due to STRIDE sample size limitations).

Each regression model treats the estimated purity for a given area as a weighted linear combination of factors, where the factors include the calendar quarter and the amount of the drug sample (unadjusted for purity). The weights are unknown parameters

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[10] A "city" designation typically entails an aggregation of nearby cities into one large metropolitan statistical area. The 2004 ONDCP *Technical Report* provides details.

(one for the city term, i.e., the intercept), 108 for the quarter terms, and one for the amount term) that are estimated from the available data.[11] Note that there are tens of thousands of parameters that require estimation when one considers the total number of areas, parameters per regression, quantity levels, and different drugs. For a given set of circumstances (i.e., combination of area, drug, and quantity level), the representative quantity value from Table I-1 and all of the associated parameter estimates from the fitted regression equation are inserted into the general expression for estimated purity to obtain the specific purity time series.

Consistent with the exposition in the 2004 ONDCP *Results Report*, quarterly estimates are combined via a simple averaging process to obtain annual estimates exhibiting less variability. It is these annual estimates that are displayed in the time series depictions presented in the subsequent chapters. The original quarterly estimates are provided in Appendix B of this present report.

The second stage of the statistical processing generates expected price estimates via a similar approach. One difference, however, is that the amount factor is now normalized by multiplying it first by its corresponding expected purity obtained from the first stage of statistical estimation. Thus, price is linked to the expected pure amount of the transaction and not the actual pure amount (which is the basis for the designation of this methodological approach as the "Expected Purity Hypothesis").[12] The regression model assumed for price also differs from the formulation imposed on purity. The estimated *logarithm* of price is equated to a weighted linear combination of the calendar quarter factors and the *logarithm* of the normalized amount factor.

To construct all of the national indices for price[13] and purity, and to complete the third stage of the statistical processing, each set of related 38 time series (for the individual cities and divisions) is combined via a simple linear weighting scheme. The assignment of individual weights is based on Census Bureau population estimates for the 29 major cities and for the nine non-overlapping divisions. The cities as a whole are assigned a weight of 29/30, with the specific weight for each city varying over time

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11 The crack cocaine modeling uses fewer quarter terms, and the estimated price model for marijuana is slightly modified to overcome sample size limitations.

12 This construct is supported by the argument that buyers base their actions on the purity they expect to receive, not on the actual purity which generally is unknown to them (as well as to the sellers).

13 All prices in this report are expressed in terms of constant 2007 dollars. See the present *Technical Report* (Chapter II) for related details.

according to available estimates for 1980, 1990, and 2000, linear trend interpolations for the intermediate years, and linear trend extrapolations for the post-2000 years. The divisions as a whole are assigned a weight of 1/30, with the specific weight for each division similarly varying across the years.[14]

The 29:1 split between major cities and remaining areas is arbitrary. No studies have been undertaken to assess the sensitivity of conclusions to this specific allocation. The general principle of applying population-based weights is reasonable for illicit drugs whose use is widespread and not concentrated in specific geographical regions. The relevance for d-methamphetamine, which originated on the west coast and then spread eastwards, may not be as compelling. One alternative might be to formulate weights based on other direct or indirect indicators of illicit drug use, e.g., workforce drug testing results compiled for three-digit zip code areas. Such data, however, only address portions of the total user population. Also, the time periods covered by such data sets do not encompass the entirety of the STRIDE timelines. Nonetheless, future research could explore the viability of alternative weighting schemes and the robustness of overall conclusions.

2. Purity Estimation from Purchase-Seizure Aggregations

An additional analysis introduced in the 2004 ONDCP *Results Report* was to combine STRIDE purchase and seizure records, aggregated across all U.S. locations, and to calculate a simple arithmetic average, after deleting 0-purity observations, for each time period of interest. This approach was not applied for marijuana, which lacks purity information within STRIDE. Nor was it implemented for crack cocaine, because the seizure data may contain a sizable number of observations from different forms of cocaine base. For powder cocaine, heroin, and d-methamphetamine, aggregation of purchase and seizure records was justified from the viewpoint that "including all of the data gives the best sense of general trends experienced by the nation as a whole." Since seizures often entail larger amounts than purchases, a different set of quantity levels was defined for this analysis (Table I-3).

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[14] Additional details on all aspects of the three-stage statistical processing can be found in the 2004 *Technical Report*.

Table I-3. Quantity Levels (Grams, Unadjusted for Purity) for Calculating Average Actual Purity from Purchase-Seizure Aggregations – By Drug Type

	Powder Cocaine	Heroin	d-Methamphetamine
Q1	0.1 – 10.0	0.1 – 1.0	0.1 – 10.0
Q2	10.0 – 50.0	1.0 – 10.0	10.0 – 100.0
Q3	50.0 – 250.0	10.0 – 200.0	100.0 – 500.0
Q4	> 250.0	> 200.0	> 500.0

Note: Each Q1 interval encompasses both of the listed endpoints, while each Q2 and Q3 interval encompasses the larger endpoint value.

D. REPORT OUTLINE

The remainder of this report consists of seven chapters and three appendices. Chapters II through VI present and characterize price and purity time series individually for each the five drug types. These include national indices, corresponding time series for selected cities (with adequate sample sizes over time), and additional purity depictions that incorporate STRIDE seizure data. Throughout, summaries of estimates focus on observable trends and patterns vice formal statistical significance. Chapter VII provides a summary of EPH modeling results and related discussions on the interpretability of price and purity time series. Chapter VIII discusses the roles and utilities of specific methodological approaches for analyzing STRIDE data, including potential future enhancements. Appendix A is a glossary of acronyms. Data tables listing quarterly price and purity estimates appear in Appendix B (for national indices) and Appendix C (for selected major cities).

A *Technical Report* accompanies this *Results Report.* Topics addressed in that supplementary report include:

- IDA modifications to the implementation steps undertaken in support of the 2004 ONDCP report
- Expanded discussions of the value, limitations, and methods to compensate for limitations associated with STRIDE-centric studies
- Scatter plots of pure quantity-price data
- A median-based methodology for conveniently portraying the STRIDE data and facilitating direct simple comparisons to the EPH model results – to provide a context for assessing the EPH formulation and to motivate potential future enhancements

- Correlation analyses comparing STRIDE estimates to independent databases – price compilations from law enforcement sources (including local police and DEA) reported by the National Drug Intelligence Center (NDIC), and general workforce drug testing results.

CHAPTER II

POWDER COCAINE

II. POWDER COCAINE

STRIDE-based estimates of the annual predicted price of one expected pure gram of powder cocaine and the expected purity of powder cocaine are presented in Sections A and B, respectively. Each section includes national-level time series depictions for each of four distribution levels and similar plots for Atlanta, Chicago, New York, San Diego, and Washington, D.C. at the retail transaction level (Q1) only.[1] Section B also reports on the analysis or a merged purity data set, aggregating STRIDE seizures and STRIDE purchases.

All supporting figures are provided at the end of the chapter, with one price or one purity value depicted for each year. Straight line segments are used to connect the annual values, but they have no physical interpretation. Each figure is an update to the associated depiction presented in the 2004 ONDCP report.

A. PRICE

1. National

The 2004 ONDCP report noted the following major trends in the national indices for the annual predicted price of one expected pure gram of powder cocaine through mid-2003:

- Dramatic declines (about 70 percent) from 1981 through 1989
- Sharp spike (22 to 35 percent) from 1989 to 1990
- Gradual declines in the 1990s (down to 30 to 40 percent of the1989 value)
- Apparent jump between 1999 and 2000, sustained until about 2001 (at least for the lowest quantity level)

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[1] Per the format utilized in the 2004 ONDCP report, quarterly estimates for a given year are consolidated via a simple averaging procedure to generate each of the displayed yearly estimates. While the STRIDE data encompassing 1981 through 2002 have not changed since the 2004 ONDCP was published, the corresponding estimates displayed in this present *Results Report* will not always exactly match their historical counterparts. The reasons are twofold. First, there are the few minor methodological revisions incorporated by IDA. Second, even without these modifications, the estimates would experience minor changes due to the construct of the imposed regression model structure.

- Uniform decline from 2001 to 2003 (down to 12 to 21 percent less than the 1999 value)
- High degree of correlation across the four time series.

As evidenced by the updated Figure II-1, all of the above observations remain applicable. The near-term behavior for estimated price, since 2003, generally has been a continuation of the gradual decrease that began in 2000-2001. The non-retail levels, however, experienced a minor increase in 2007.

2. Cities

The 2004 ONDCP report also observed that major nationwide trends for the estimated adjusted price of powder cocaine were corroborated at the Q1 distribution across five geographically disperse major cities: Atlanta, Chicago, New York, San Diego, and Washington, D.C. Specifically, the conclusions of a downward trend in the estimated adjusted prices during the 1980s appeared to be reasonably robust.

Despite the inherent variability due to limited sample sizes, the updated Figure II-2 indicates that this cited inference remains plausible through the 2003 time period. From 2002 to 2007, estimated retail adjusted prices declined about ten percent in Atlanta, Chicago, and Washington, D.C., and were approximately constant in New York and San Diego. Overall, there is no strong disagreement with the exhibited national trend.

B. PURITY

1. National

The 2004 ONDCP report noted the following major trends in the national indices for the annual expected purity of powder cocaine through mid-2003:

- A peak in 1987-1988
- Declines near 1990 and perhaps around 2001 for Q1 (lowest quantity level)
- Highs in 2003 at the two lower quantity levels
  - At Q1, near an all-time high
  - At Q2, higher than for the preceding 5 years
- Extended slides since the late 1980s for Q3 and Q4, followed by partial recovery.

All of the above observations are supported by the updated Figure II-3. Expected purity estimates increased from 2003 to 2006, but dropped back to 2002 levels in 2007.

For each of the four quantity levels, the 2007 expected purity estimates were between 5 and 15 percent higher than their 2001 counterparts.

Stepping down the distribution chain, from Q4 to Q1, purity levels ordinarily would be expected to progressively decline, reflecting trafficker dilution or adulteration, or remain constant. The reversals in relative rankings evident in Figure II-3 beginning in 2001 are most plausibly attributable to some combination of random variability and biases inherent in the sampling processes that populate the STRIDE database.

Trends in expected purity generally mirror those for expected price, i.e., upward excursions for one time series are accompanied by nearly time-coincident downward movements for the associated time series. This sort of negative correlation would be expected as the definition of expected price incorporates normalization by expected purity.

2. Cities

Comparing national-level results at the lowest quantity level to those for the cities of Atlanta, Chicago, New York, San Diego, and Washington, D.C., the 2004 ONDCP report noted general agreement. Specifically, the trend of an upward movement in purity estimates during the mid-1980s followed by a leveling off appeared to be reasonably robust.

The updated Figure II-4 continues to support this observation. Turning to 2003-2007, the city-specific behavior generally mimics that noted above for the nationwide trend. For all five cities, the 2007 retail purity estimates were between 5 and 20 percent higher than their 2002 counterparts.

3. Aggregated National Purchase and Seizure Data

The 2004 ONDCP report observed that aggregating purchase and seizure STRIDE records did not substantially alter trends evident in the results obtained from the purchase data only. Some overlapping of estimated purity trends across quality levels remained, but the average purity at the highest quantity level (above 750 grams) was substantially higher than that for the other three markets.

Similar conclusions hold for the updated time series for the time period 1981 to 2003 displayed in Figure II-5. The aggregated data show modest increases in average purities (computed for every combination of year and quantity level) between 2003 and 2006, followed in 2007 by a decrease back down to 2003 levels.

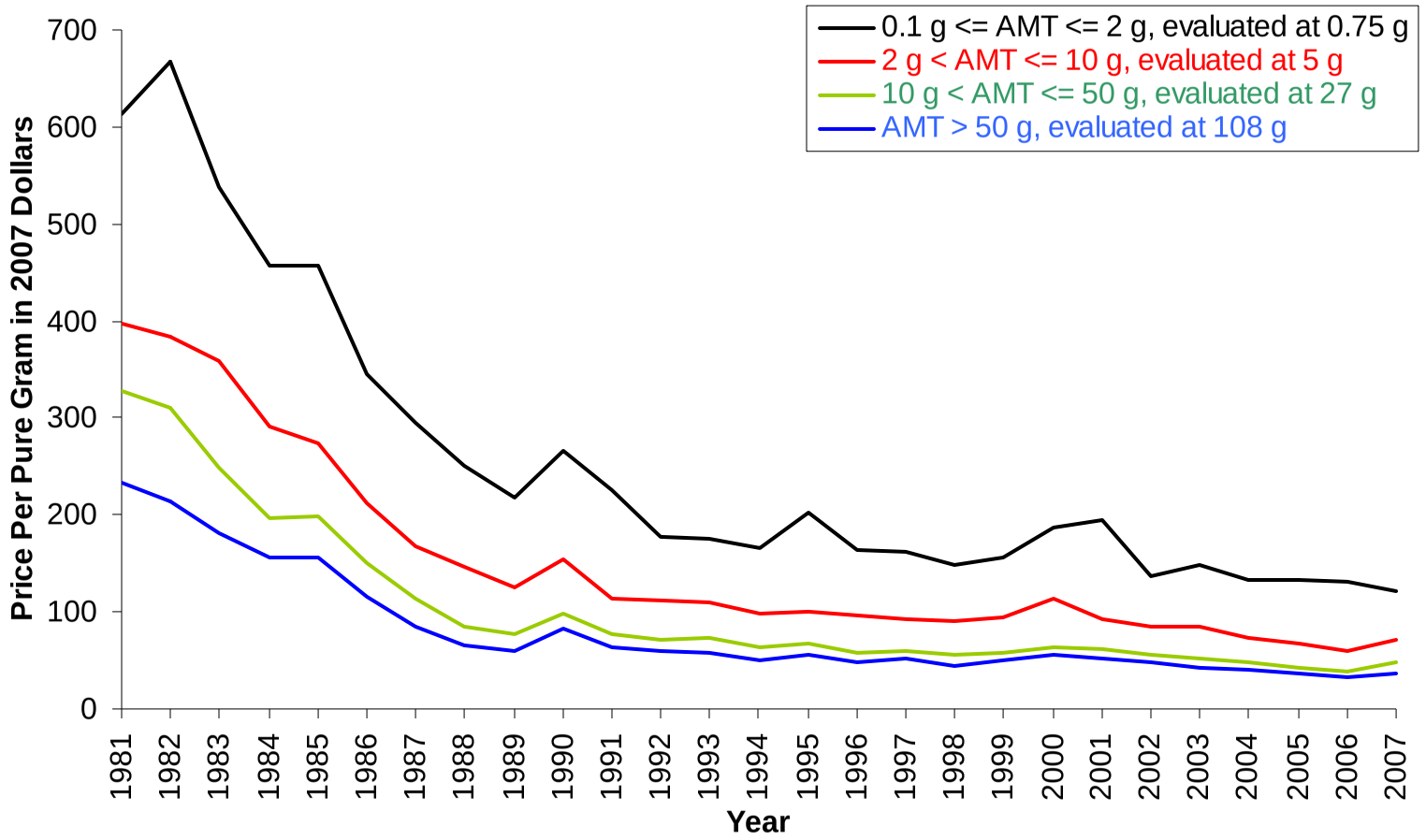

Figure II-1. Annual Predicted Price of One Expected Pure Gram of Powder Cocaine

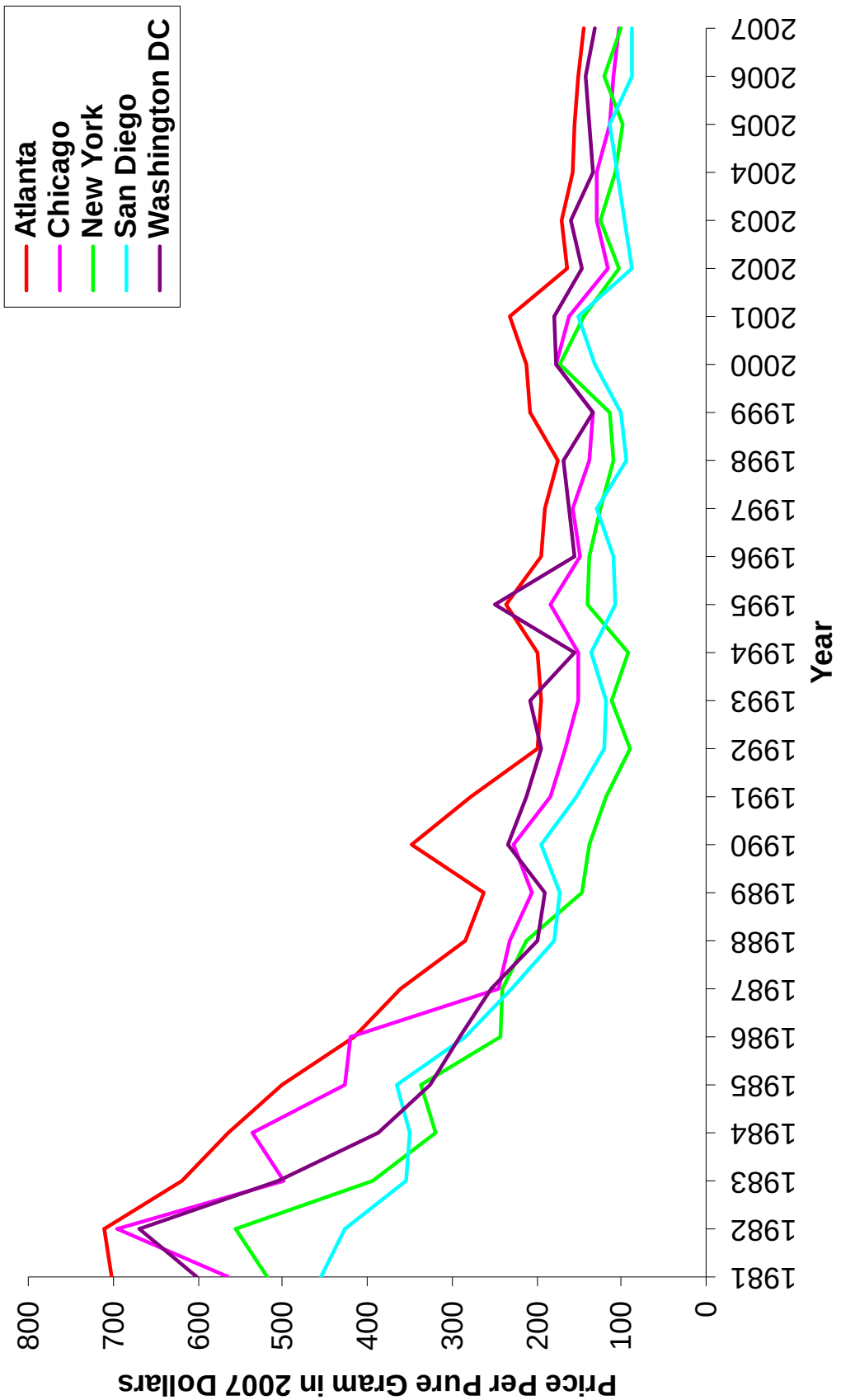

Figure II-2. City Trends in Retail Price of One Expected Pure Gram of Powder Cocaine (0.1-2.0 g, Evaluated at 0.75 g)

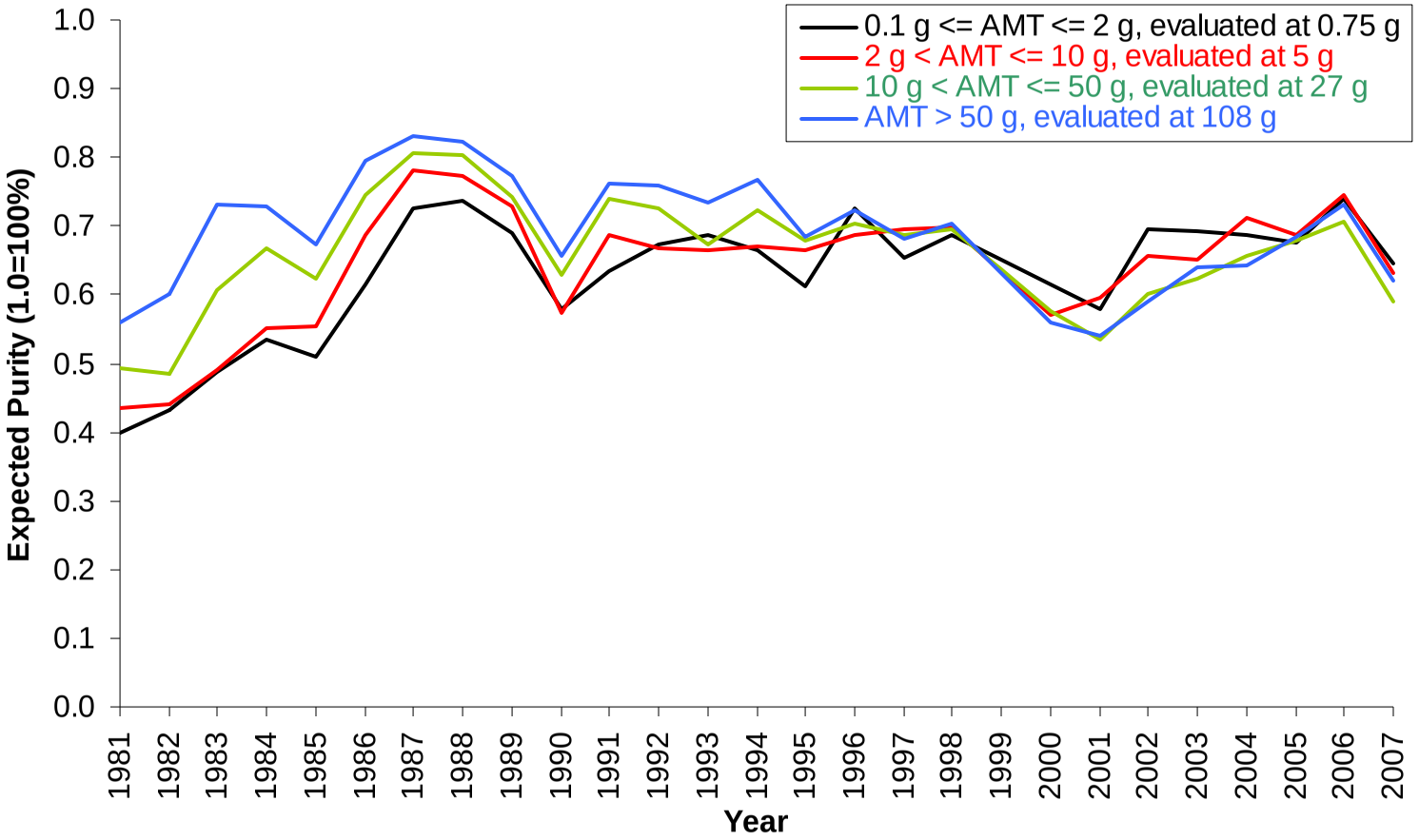

Figure II-3. Expected Purity of Powder Cocaine

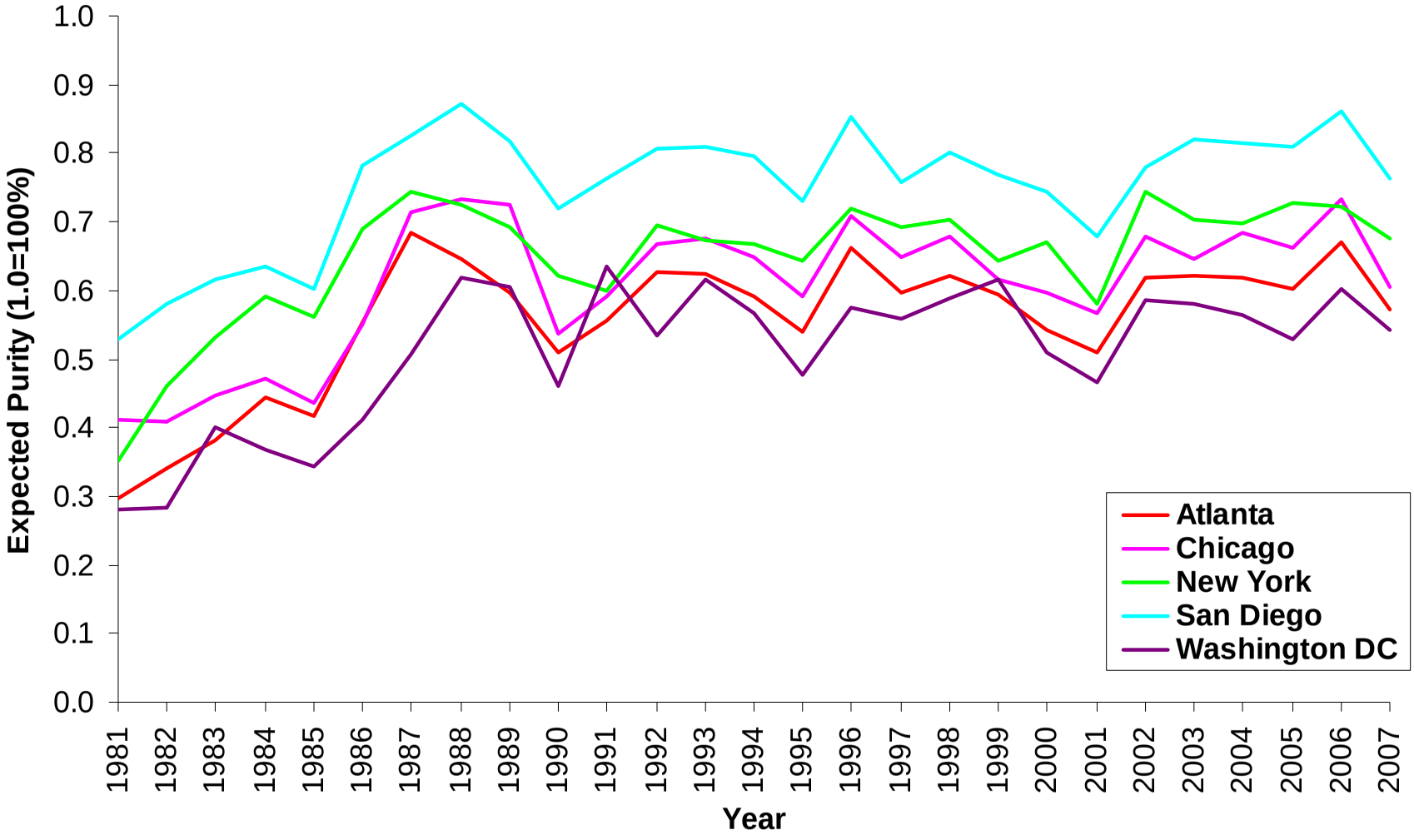

Figure II-4. City Trends in Retail Expected Purity of Powder Cocaine (0.1 – 2.0 g, Evaluated at 0.75 g)

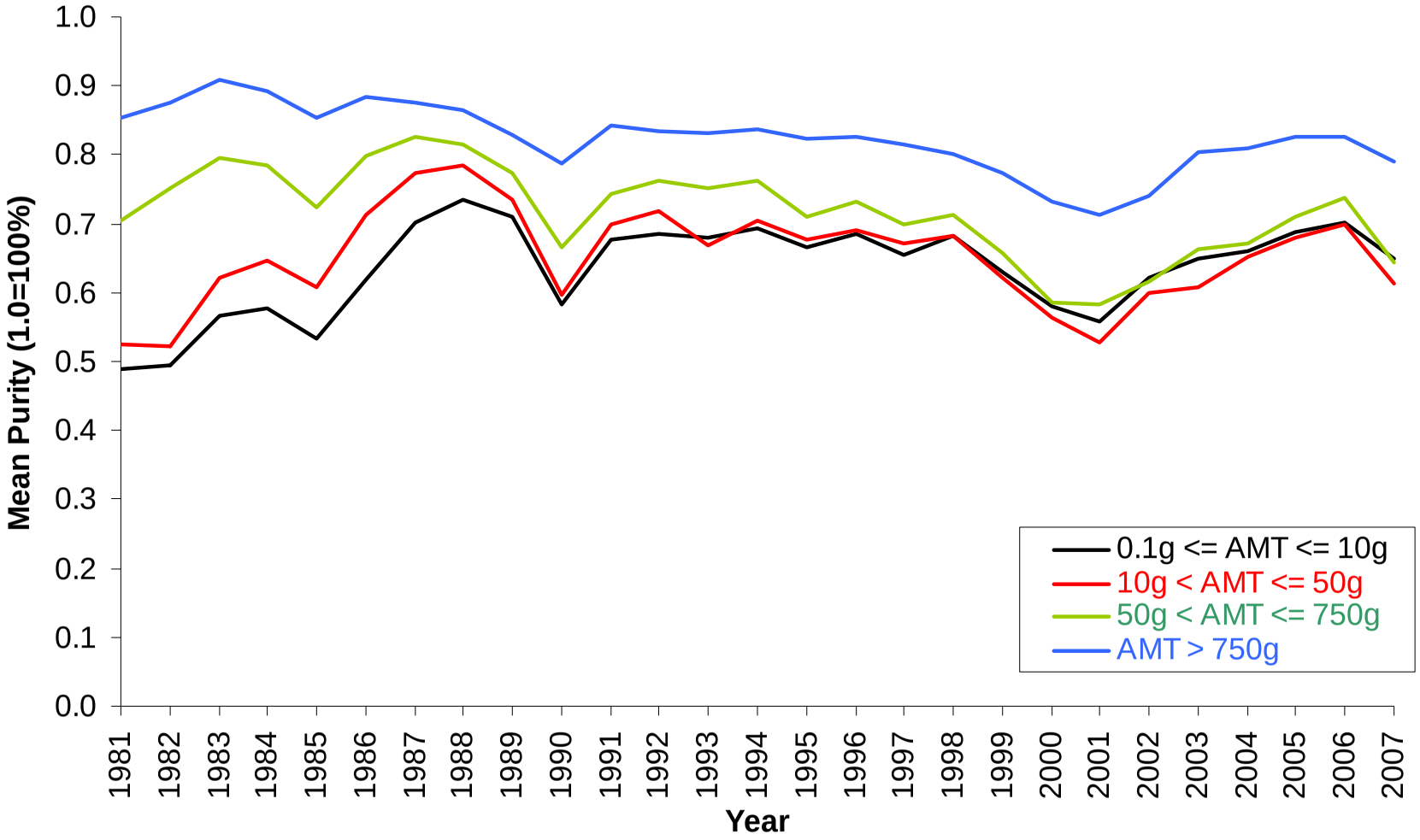

Figure II-5. Mean Purity of Powder Cocaine When Seizures Are Included

CHAPTER III

CRACK COCAINE

III. CRACK COCAINE

STRIDE-based estimates of the annual predicted price of one expected pure gram of crack cocaine and the expected purity of crack cocaine are presented in Sections A and B, respectively. Each section includes national-level time series depictions for each of three distribution levels and similar plots for Atlanta, Chicago, New York, San Diego, and Washington, D.C. at the retail transaction level (Q1) only. Recall that, following the convention adopted in the 2004 ONDCP report, we apply the label "crack cocaine" to results derived from the analysis of cocaine base observations in STRIDE, the majority but not necessarily all of which are literally crack.

All supporting figures are provided at the end of the chapter, with one price or one purity value depicted for each year. Straight line segments are used to connect the annual values, but they have no physical interpretation. Each figure is an update to the associated depiction presented in the 2004 ONDCP report.

A. PRICE

1. National

The 2004 ONDCP report noted the following major trends in the national indices for the annual predicted price of one expected pure gram of crack cocaine from 1986 through mid-2003:

- Sharp declines from 1986 through 1989
- Large spike (30 to 45 percent) from 1989 to 1990
- Gradual modest declines in the 1990s (down to 10 percent of the 1989 value) for the Q2 and Q3 quantity levels, reaching all time lows in 2003
- All three crack series increased from 1996 to 1997, from 1998 to 1999, and from 1999 to 2000
- Estimated prices at the lowest quantity level did not trend downward in the 1990s.

As evidenced by the updated Figure III-1, the above observations generally, but not universally, remain applicable. Specifically, the cited 10 percent decline relative to

1989 values would seem to be an underestimate, and, further, one could quibble that in the updated Figure III-1 the Q1 transaction level may in fact exhibit a general albeit very modest decline throughout the 1990s.[1] For each of the quantity levels, prices since 2003 exhibit a continuation of the gradual decreases that began after 2000, but there are slight increases between 2006 and 2007.

2. Cities

The 2004 ONDCP report noted substantial differences across geographically dispersed cities for the estimated adjusted price of one expected pure gram of crack cocaine at the lowest quantity level. In particular, between 1986 and 1987 the estimated retail price dramatically increased in New York City while it dropped sharply in Atlanta, Chicago, San Diego, and Washington, D.C. Afterwards, while New York, Chicago, and, to a lesser degree, Washington D.C. experienced increases in the estimated adjusted price of crack between 1999 and 2000, the estimated price in San Diego appeared to increase a year earlier and fall back in 2000. The earlier ONDCP report concluded that except for the broad decline in the 1980s, the national average trends for crack is a weighted average of sometimes divergent city-specific trends (incorporating consideration of diverse year-to-year fluctuations exhibited in numerous cities other than the five major ones).

The details in the updated Figure III-2 are consistent with the earlier observations. Post 2003, each of the cities exhibited an overall modest decline in estimated retail adjusted price, generally consistent with the nationwide trend. The degree to which price time series for different cities occasionally may deviate in the presence or timing of specific features may be attributable to some combination of random variability, biases in sampling processes, and actual market differences.

B. PURITY

1. National

The 2004 ONDCP report noted the following major trends in the national indices for the annual expected purity of crack cocaine from 1986 through mid-2003:

- Increasing since 2000
- 2003 values well below the record levels seen in the 1980s.

---

[1] The corresponding figure in the 2004 *Results Report*, Figure 10, is consistent with both of our observations here.

These two features remain clearly evident in the updated Figure III-3. The general decline from the early maximums in estimated purity persisted through 2001, at which point general increases were initiated. These upward trends continued generally through 2005-2006, with slight decreases in estimated purity between 2006 and 2007.

Figure III-3 shows that expected purity values for crack cocaine are higher for the lower quantity levels, which might seem to be counterintuitive. A detailed examination of the STRIDE database confirms that these rankings – consistent over more than 20 years – accurately portray the contents of the STRIDE database. The 2004 ONDCP *Results Report* suggests that some of the differences between the lower two quantity levels could reflect sampling variability or spatial-aggregation issues. Whether these results are artifacts of sampling biases or reflect actual properties of crack cocaine production processes cannot be determined from a study of STRIDE data alone.

The intuitive inverse relationship between expected price and expected purity changes did not hold universally for crack cocaine. Throughout the 1990s, both measures drifted generally downwards.

2. Cities

Comparing national-level results at the lowest quantity level to those for the cities of Atlanta, Chicago, New York, San Diego, and Washington, D.C., the 2004 ONDCP report concluded that there was general agreement. Specifically, the trend of a decline in expected purity between 1988 and 1999 appeared to be reasonably robust. Isolated differences across the individual cities also were noted.

The updated Figure III-4 continues to support these observations. Further, from 2001 to 2006 each of the cities matched the national trend of a steady increase in estimated purity, followed by slight decreases between 2006 and 2007.

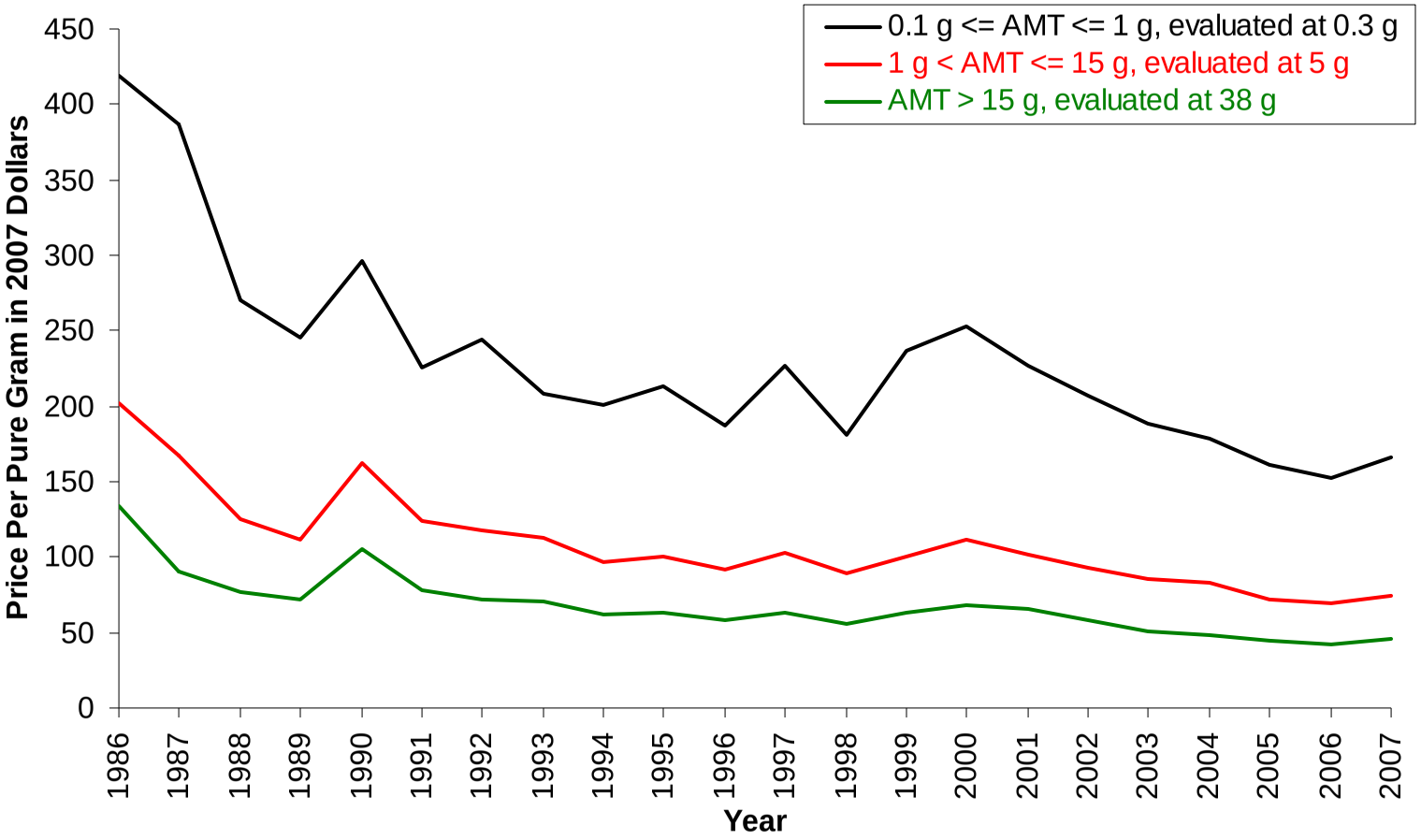

Figure III-1. Annual Predicted Price of One Expected Pure Gram of Crack Cocaine

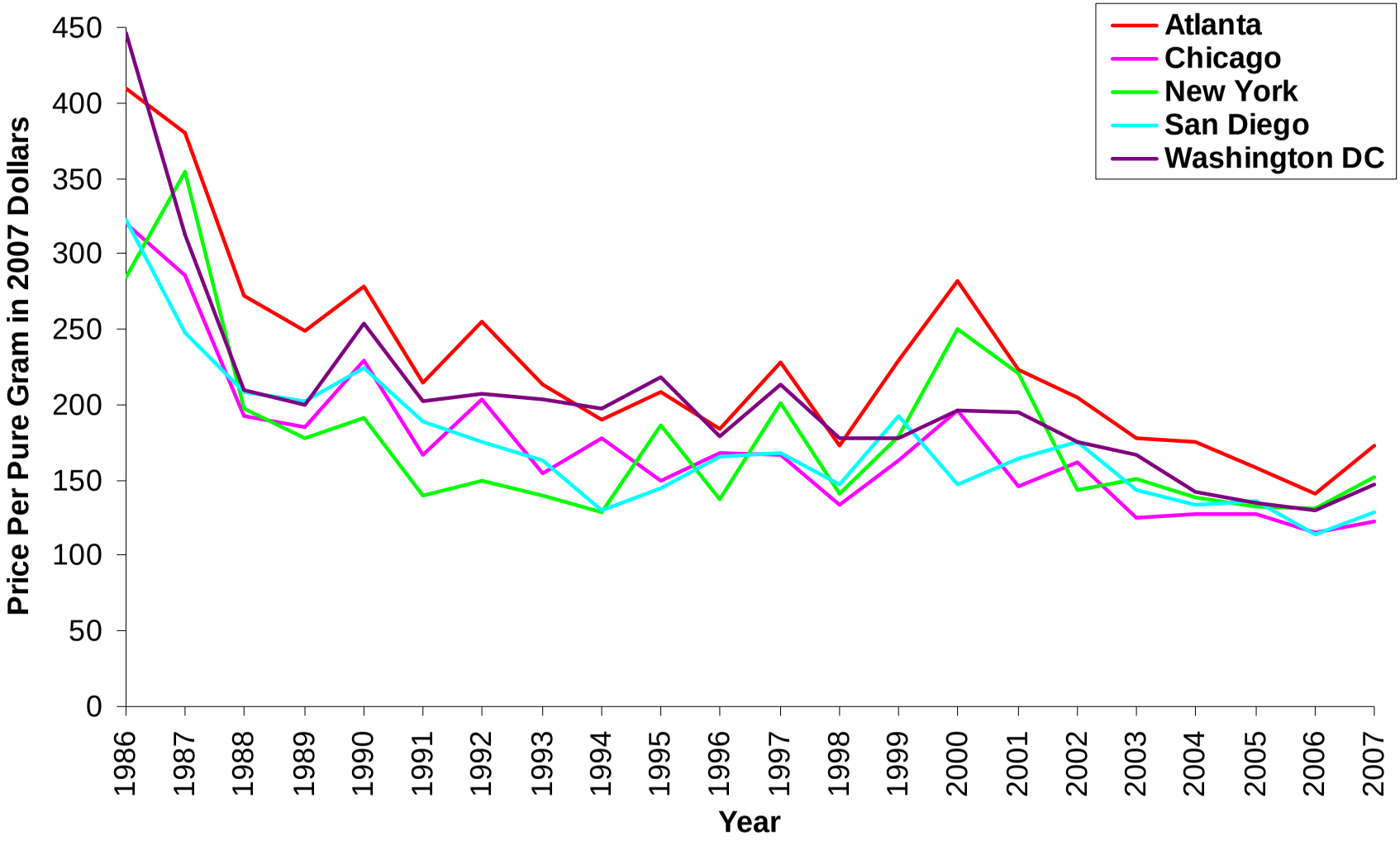

Figure III-2. City Trends in Retail Price for One Expected Pure Gram of Crack Cocaine (0.1 – 1.0 g, Evaluated at 0.3 g)

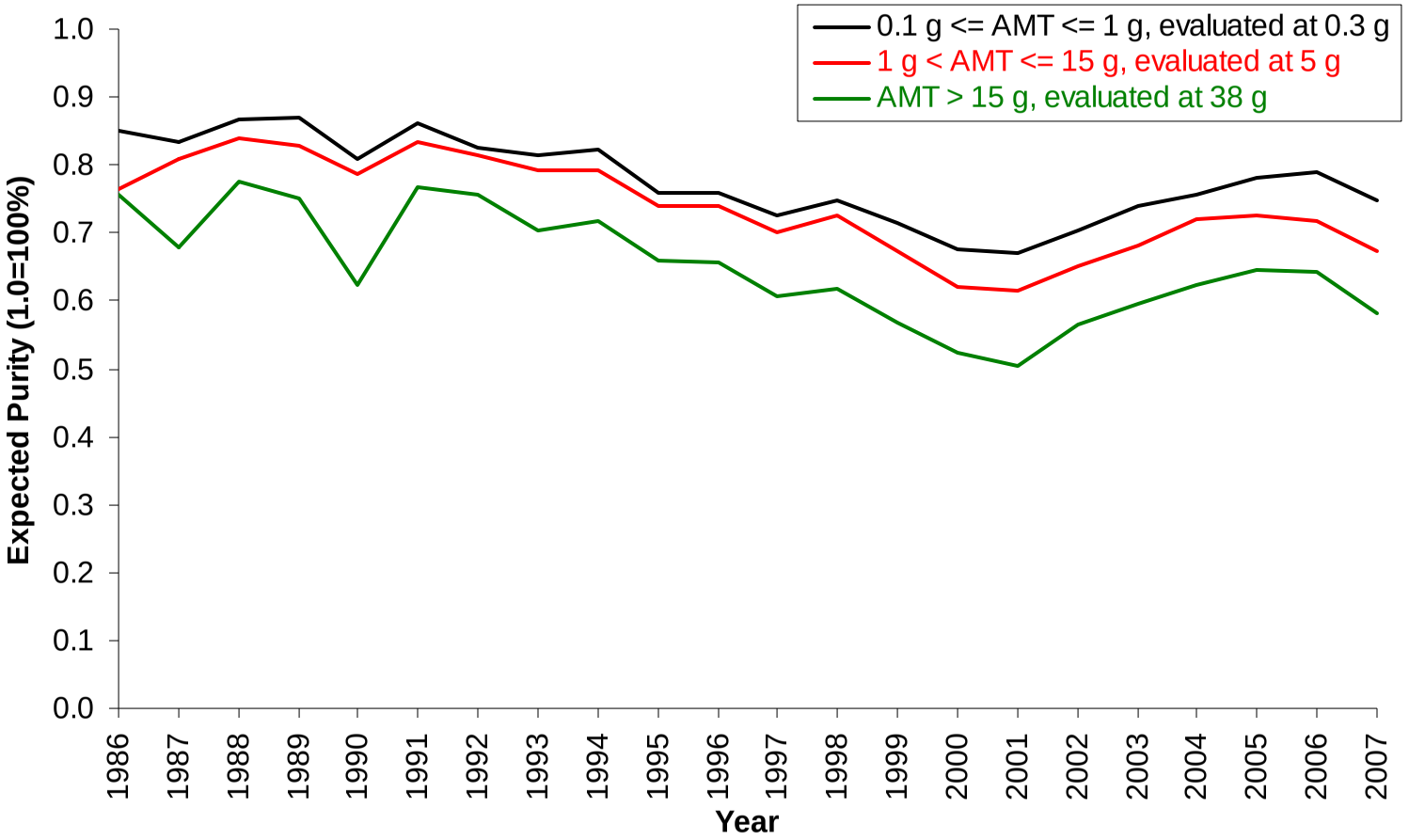

Figure III-3. Expected Purity of Crack Cocaine

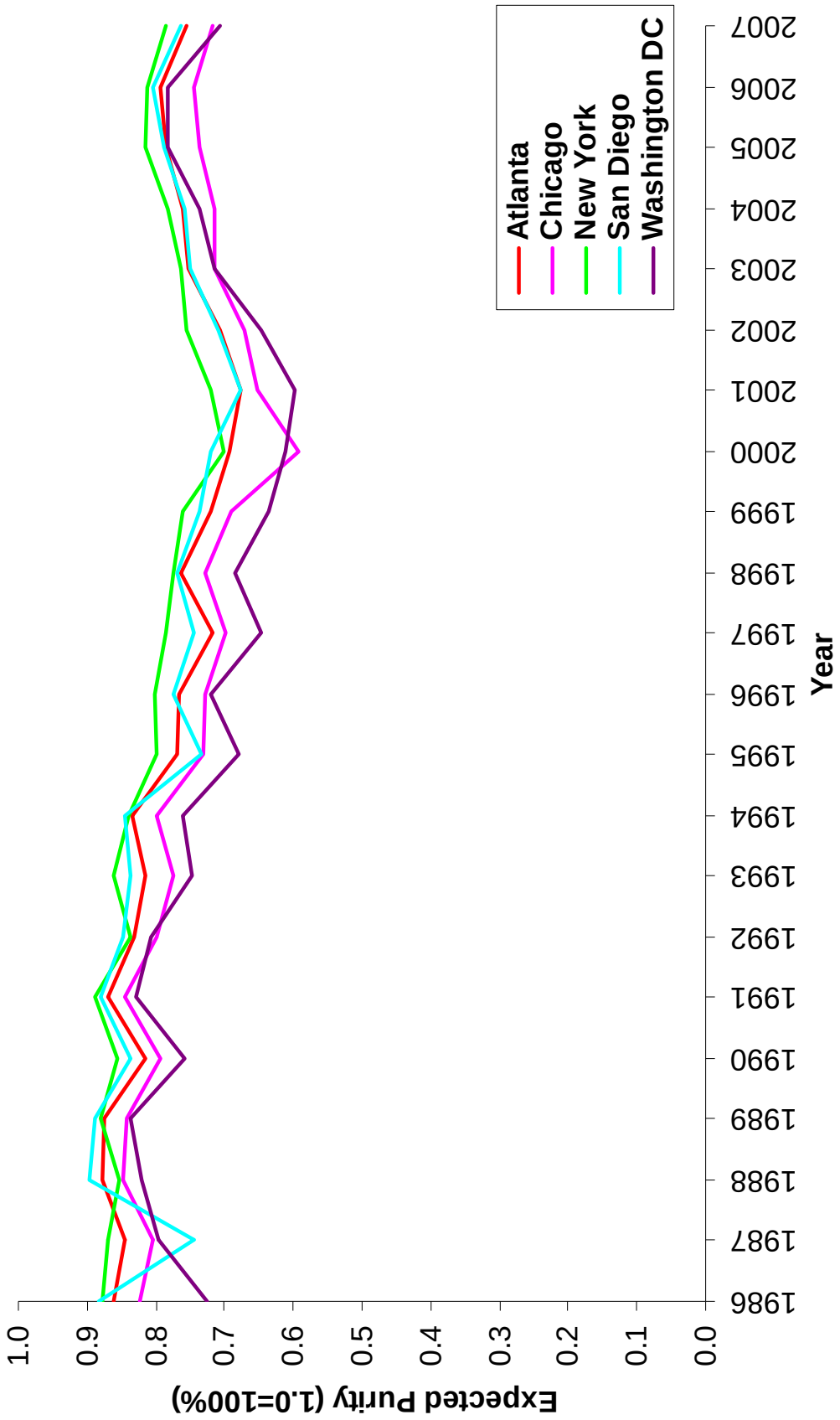

Figure III-4. City Trends in Retail Expected Purity of Crack Cocaine (0.1 – 1.0 g, Evaluated at 0.3 g)

CHAPTER IV

HEROIN

IV. HEROIN

STRIDE-based estimates of the annual predicted price of one expected pure gram of heroin and the expected purity of heroin are presented in Sections A and B, respectively. Each section includes national-level time series depictions for each of three distribution levels and similar plots for Atlanta, Chicago, New York, San Diego, and Washington, D.C. at the retail transaction level (Q1) only. Section B also reports on the analysis or a merged purity data set, aggregating STRIDE seizures and STRIDE purchases.

All supporting figures are provided at the end of the chapter, with one price or one purity value depicted for each year. Straight line segments are used to connect the annual values, but they have no physical interpretation. Each figure is an update to the associated depiction presented in the 2004 ONDCP report.

A. PRICE

1. National

The 2004 ONDCP report noted the following major trends in the national indices for the annual predicted price of one expected pure gram of heroin through mid-2003:

- Dramatic declines (about 55 percent) from 1981 through 1989
- A large (30 to 50 percent) jump from 1989 to 1990 at Q2 and Q3
- 10 to 20 percent declines since the late 1990s
- All-time lows in 2002 followed by stabilization in 2003.

As seen in the updated Figure IV-1, all of the above observations remain applicable. After decreasing 10 to 20 percent between 2003 and 2007, the estimated adjusted price of heroin is at all-time lows for the three distribution levels.

2. Cities

The 2004 ONDCP report noted substantial differences in estimates of retail heroin adjusted prices across the five major cities of interest, i.e., Atlanta, Chicago, New York, San Diego, and Washington, D.C. These differences were observed to become

progressively smaller advancing through the 1990s and up to 2003. No comparisons in trends were offered.

The differences between cities remain readily apparent in the updated Figure IV-2, driven by the relatively high prices in Washington, D.C. The general decline from 1981 to 2007 evident in Figure IV-1 is mimicked reasonably well by the individual cities. Two exceptions are the initial upsurge in New York City from 1981 to 1984, and the increase from 2005 to 2006 for Washington, D.C.

B. PURITY

1. National

The 2004 ONDCP report noted the following major trends in the national indices for the annual expected purity of heroin through mid-2003:

- Pronounced rise from 1981 through the early 1990s
- Peaks in the mid- to late-1990s, depending on the quantity level.

Both observations remain supported by the updated Figure IV-3. Since 2000, expected purity generally decreased steadily – with the possible exception of minor upward bumps in 2002, 2005, and 2007.

2. Cities

As was the case for estimated price, the 2004 ONDCP report noted substantial differences in the level of estimated heroin purities across the five major cities of interest. For example, estimated purity consistently was much higher for New York City than for Chicago and Washington, D.C.

The updated Figure IV-4 continues to support the observations from the 2004 ONDCP report. From 2003 to 2007, no consistent purity trend is evident across all of the cities.

3. Aggregated National Purchase and Seizure Data

When comparing the purchase-only data to the aggregation of purchase and seizure data, the 2004 ONDCP report noted general agreement in expected purity trends. Also, at the highest quantity levels the purity estimates for the aggregated data generally exceeded that for the reduced data set, suggesting that, at those levels, heroin purity is higher for STRIDE seizures than for STRIDE purchases.

After 2003, the trends of the average values (computed for every combination of year and quantity level) depicted in the updated Figures IV-2 and IV-5 continue to be in general agreement. Likewise, at the highest quality levels, the purity estimates remain higher for the aggregated data. For both sets of data, since 2004 the estimated purity for the lowest quantity level has been slightly higher than the estimated purity for the next highest purity level. Direct comparisons of seizure data to purchase data for heroin confirm the cited relative ranking of estimated purities.

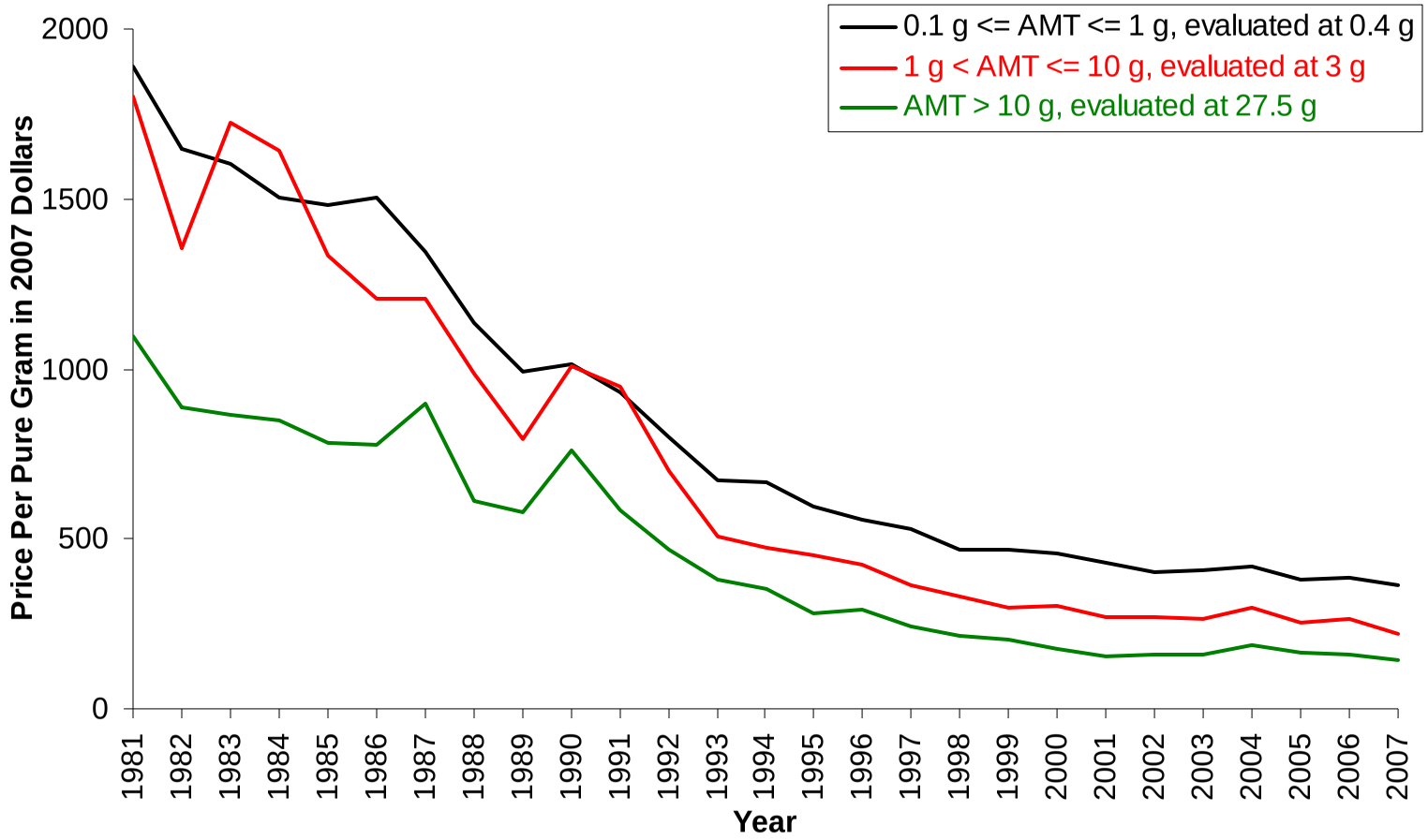

Figure IV-1. Annual Predicted Price of One Expected Pure Gram of Heroin

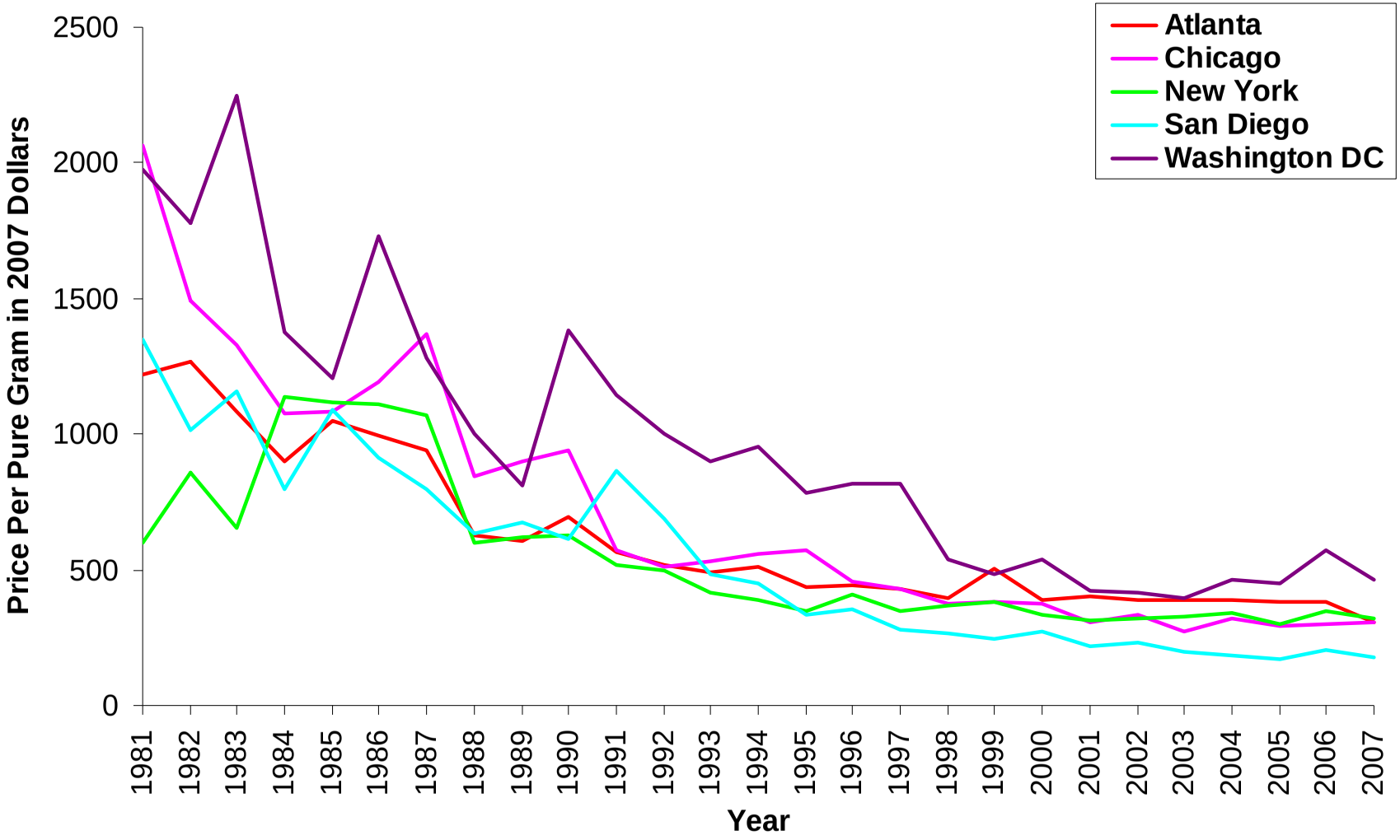

Figure IV-2. City Retail Price of Once Expected Pure Gram of Heroin (0.1 – 1.0 g, Evaluated at 0.4 g)

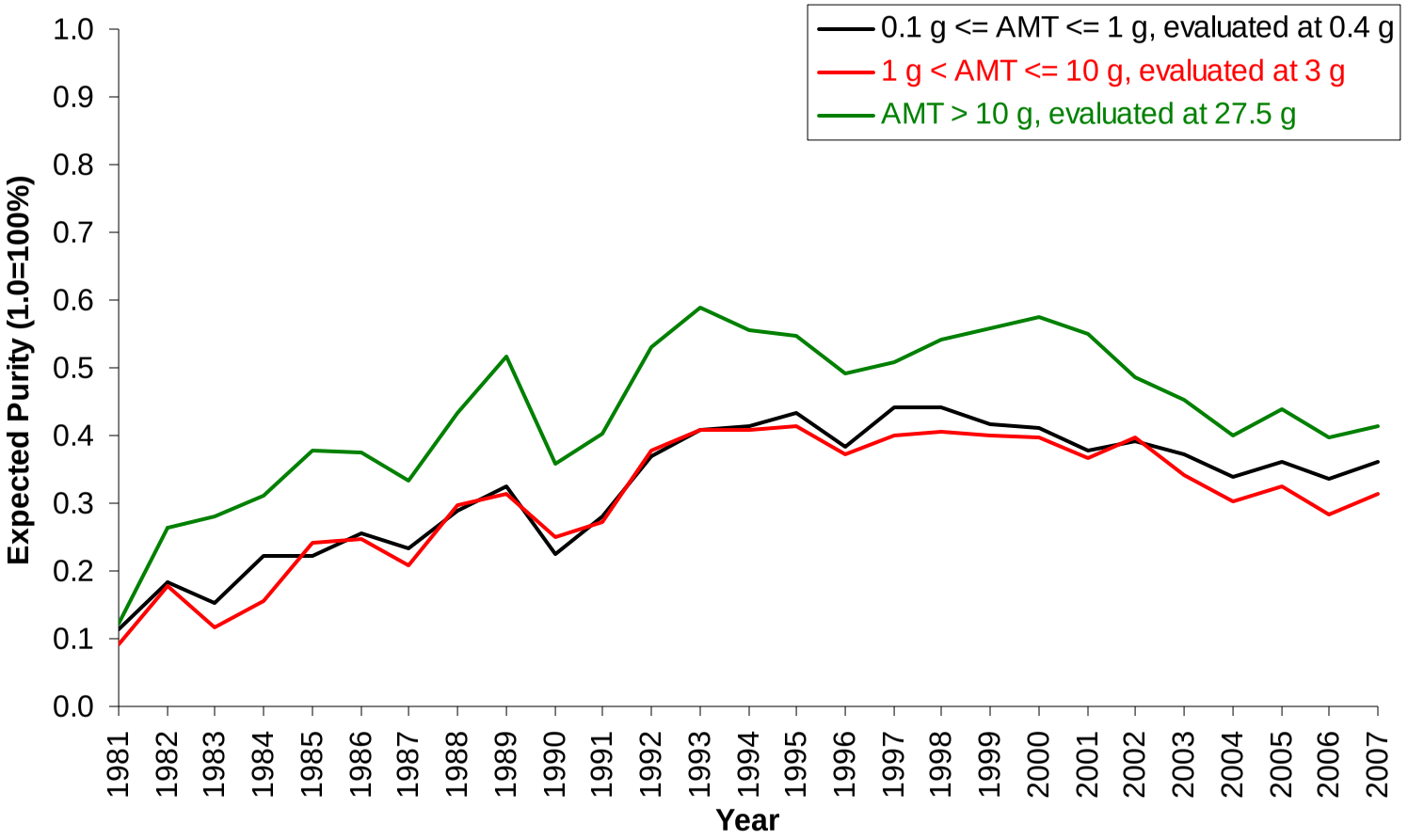

Figure IV-3. Expected Purity of Heroin

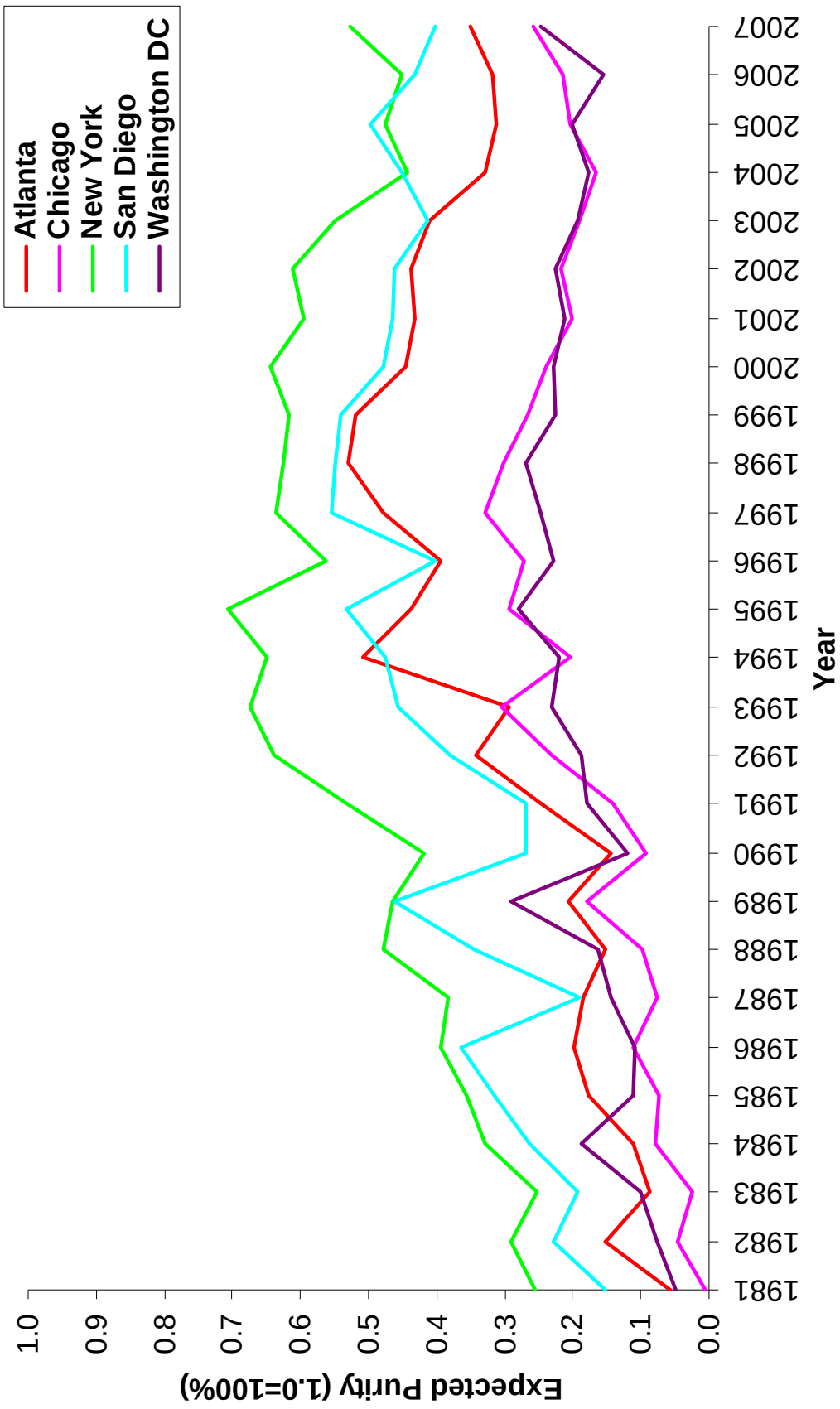

Figure IV-4. City Retail Expected Purity of Heroin (0.1 – 1.0 g, Evaluated at 0.4 g)

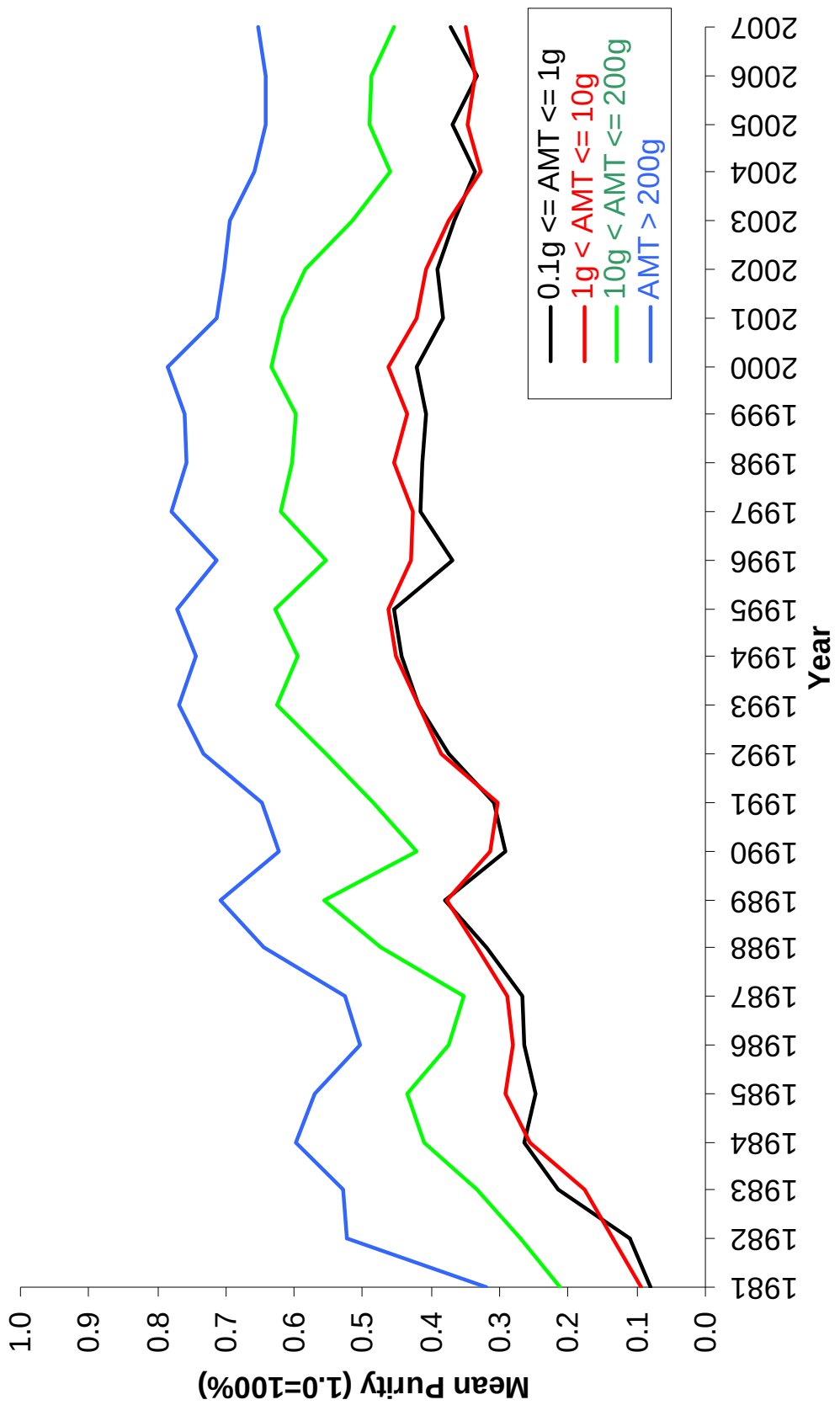

Figure IV-5. Mean Purity of Heroin When Seizures are Included

CHAPTER V

D-METHAMPHETAMINE

V. D-METHAMPHETAMINE

STRIDE-based estimates of the annual predicted price of one expected pure gram of d-methamphetamine and the expected purity of d-methamphetamine are presented in Sections A and B, respectively. Each section includes national-level time series depictions for each of three distribution levels and similar plots for Los Angeles, Phoenix, San Francisco, and San Diego at the second quantity level (Q2) only.[1] Section B also reports on the analysis or a merged purity data set, aggregating STRIDE seizures and STRIDE purchases.

All supporting figures are provided at the end of the chapter, with one price or one purity value depicted for each year. Straight line segments are used to connect the annual values, but they have no physical interpretation. Each figure is an update to the associated depiction presented in the 2004 ONDCP report.

STRIDE d-methamphetamine data are sparse and volatile, constituting slightly less than 10 percent of the STRIDE counts input into the EPH modeling processes (Table I-2).

A. PRICE

1. National

The 2004 ONDCP report noted the following major trends in the national indices for the annual predicted price of one expected pure gram of d-methamphetamine through mid-2003:

- Declining prices through 1984 for Q1
- Increasing prices through 1984 for Q2
- Common price spikes in around 1990, 1995, and 1998
- Near all-time lows in 2003.

---

[1] STRIDE transactions for d-methamphetamine are concentrated in the western regions, especially in the early years. The Q2 quantity level provides adequate sample sizes to construct time series for these specific cities.

The updated Figure V-1 continues to support all of these observations. The declining trends since 1999 held fairly steady through 2005 (the all-time lows), but there were increases between 2005 and 2007. Credibility is added to the interpretation of the spikes in the 1990s and in 2006-2007, as they each occur shortly after the introduction of methamphetamine precursor chemical regulations.

2. Cities

The 2004 ONDCP report presented a figure displaying estimated adjusted prices for the four subject southwest cities, but provided no related commentary. By visual inspection, the updated Figure V-2 presented here closely matches the corresponding plot that appeared in the 2004 *Results Report*.

The correspondence between the cities extended beyond 2000 through 2007, and the overall trends match those evident in Figure V-1. Each of the four city time series of estimated adjusted price exhibited the three sets of upward spikes seen in the national-level depiction.

B. PURITY

1. National

The 2004 ONDCP report noted the following major trends in the national indices for the annual expected purity of d-methamphetamine through mid-2003:

- Across quantity levels, different trends through 1988, but concordant thereafter
- Troughs in around 1990, 1995 and 1998
- No spread between the extreme quantity levels until 1988
- Increasing expected purities after 1998.

All of these observations remain supported by the updated Figure V-3. The increasing trend beginning after 1998 generally persisted through 2005, at which point record high levels of expected purity were attained. This peak was followed by a sharp decline for 2006 and a shallower decline in 2007. Throughout, the estimated purities tracked quite well their estimated price counterparts (i.e., they were negatively correlated). Since 1995 or so, the expected purity values were highest at the lowest quantity level, and they were lowest at the highest quantity level.

2. Cities

The high degree of negative correlation between d-methamphetamine time series for estimated prices and estimated purities also clearly was evident for the four subject southwestern cities. The set of spikes in Figure V-2 coincided with the troughs in the updated Figure V-4, and the overall trends remained consistent through 2007. Again, the 2004 ONDCP report offered no explicit commentary, but visual inspection confirmed that the updated Figure V-4 is a near match to the corresponding plot that appeared in the 2004 *Results Report*.

3. Aggregated National Purchase and Seizure Data

The 2004 ONDCP report noted no change in expected purity trends when adding the seizure transactions to the purchase subset. Also, for all of the quantity levels the purity estimates for the aggregated data generally exceeded that for the reduced data set, suggesting that d-methamphetamine purity was higher for STRIDE seizures than for STRIDE purchases.

After 2003, the general agreement in trends persisted in the updated Figures V-3 and V-5. Again, the purity estimates, as reflected by averages computed for every combination of year and quantity level, remained higher for the aggregated data. However, direct comparisons did not reveal profound differences in d-methamphetamine purity between STRIDE seizures and STRIDE purchases.

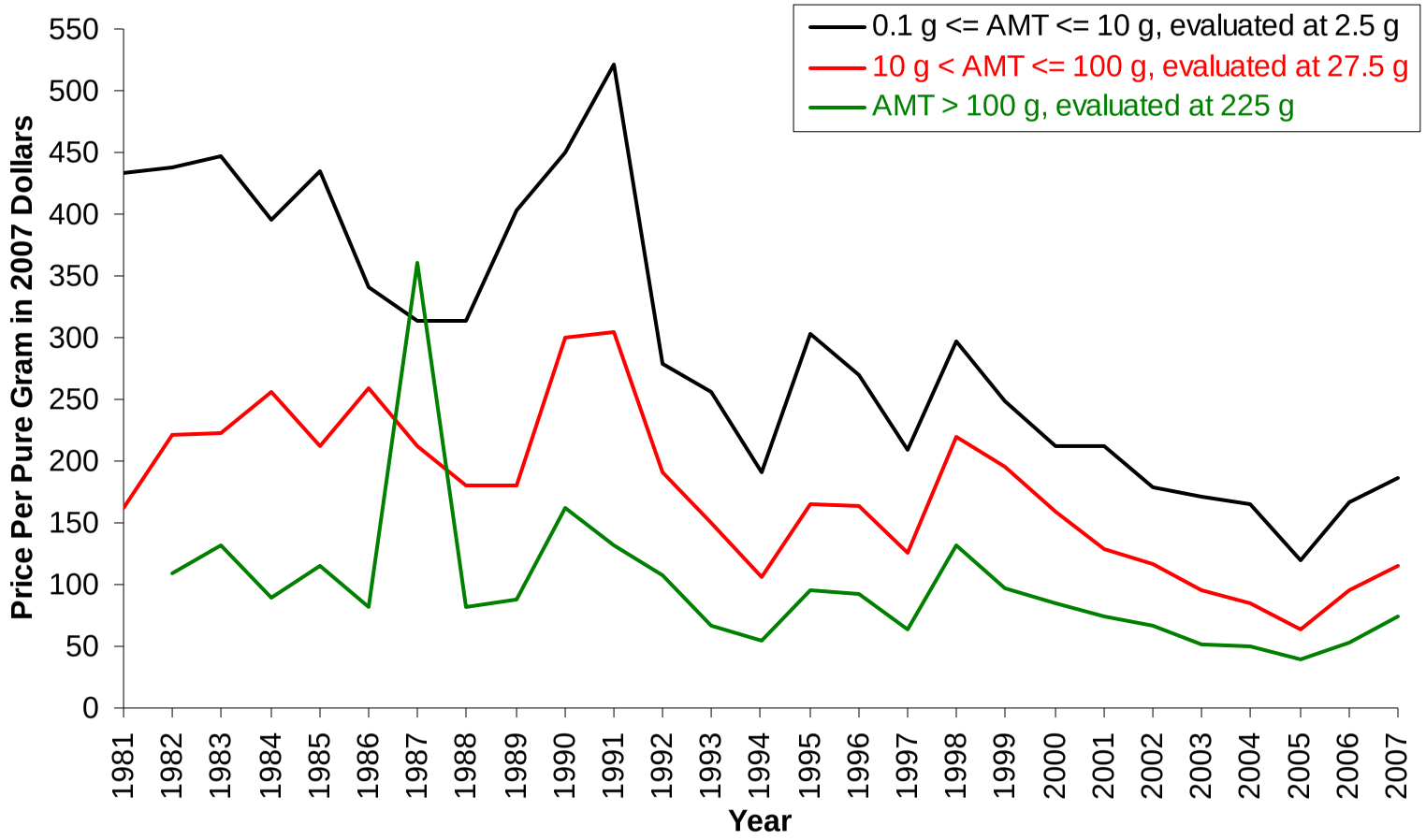

Figure V-1. Annual Price of One Expected Pure Gram of d-Methamphetamine

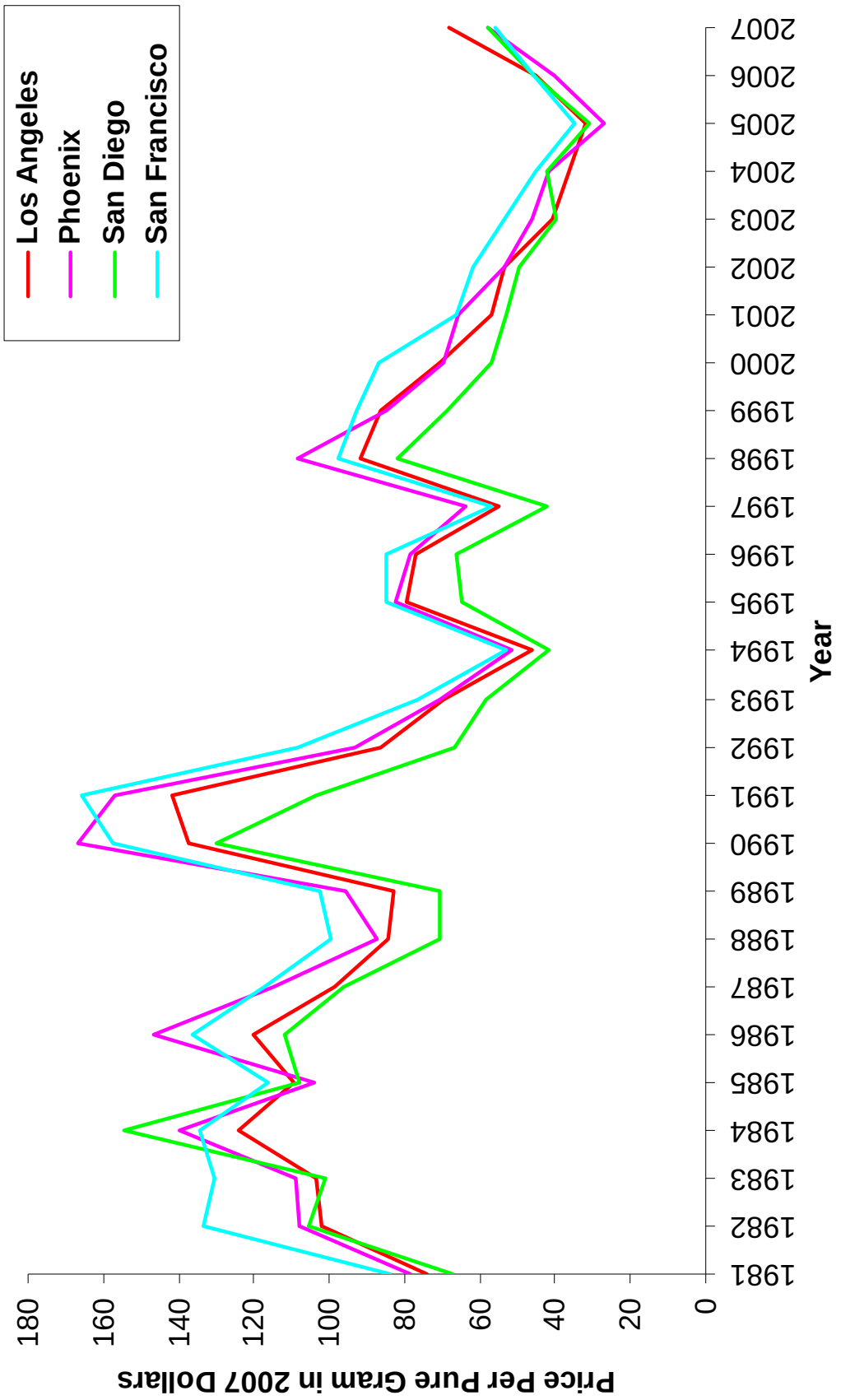

Figure V-2. City Trends in Price of One Expected Pure Gram of d-Methamphetamine – Mid-Level (10 – 100 g, Evaluated at 27.5 g)

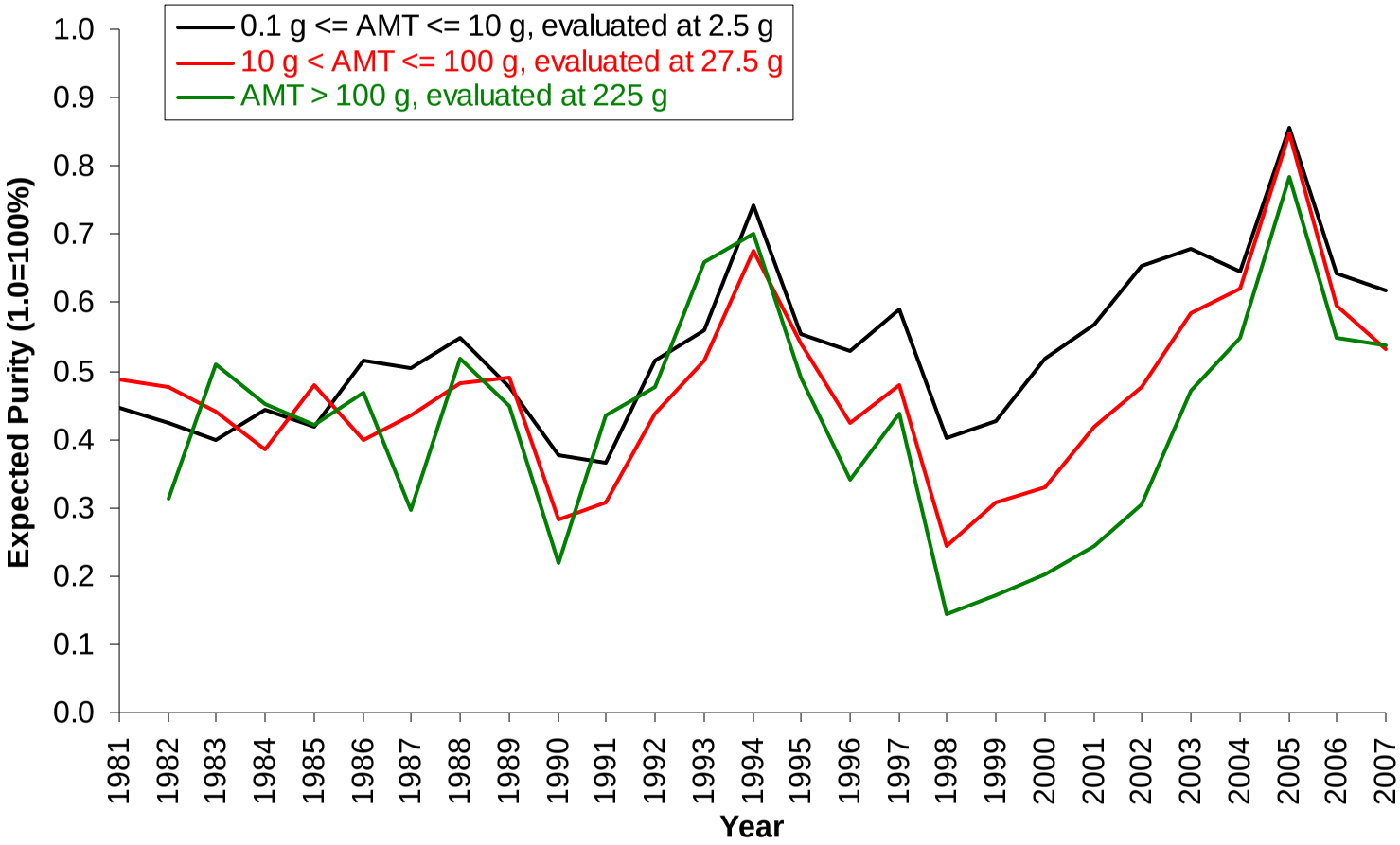

Figure V-3. Expected Purity of d-Methamphetamine

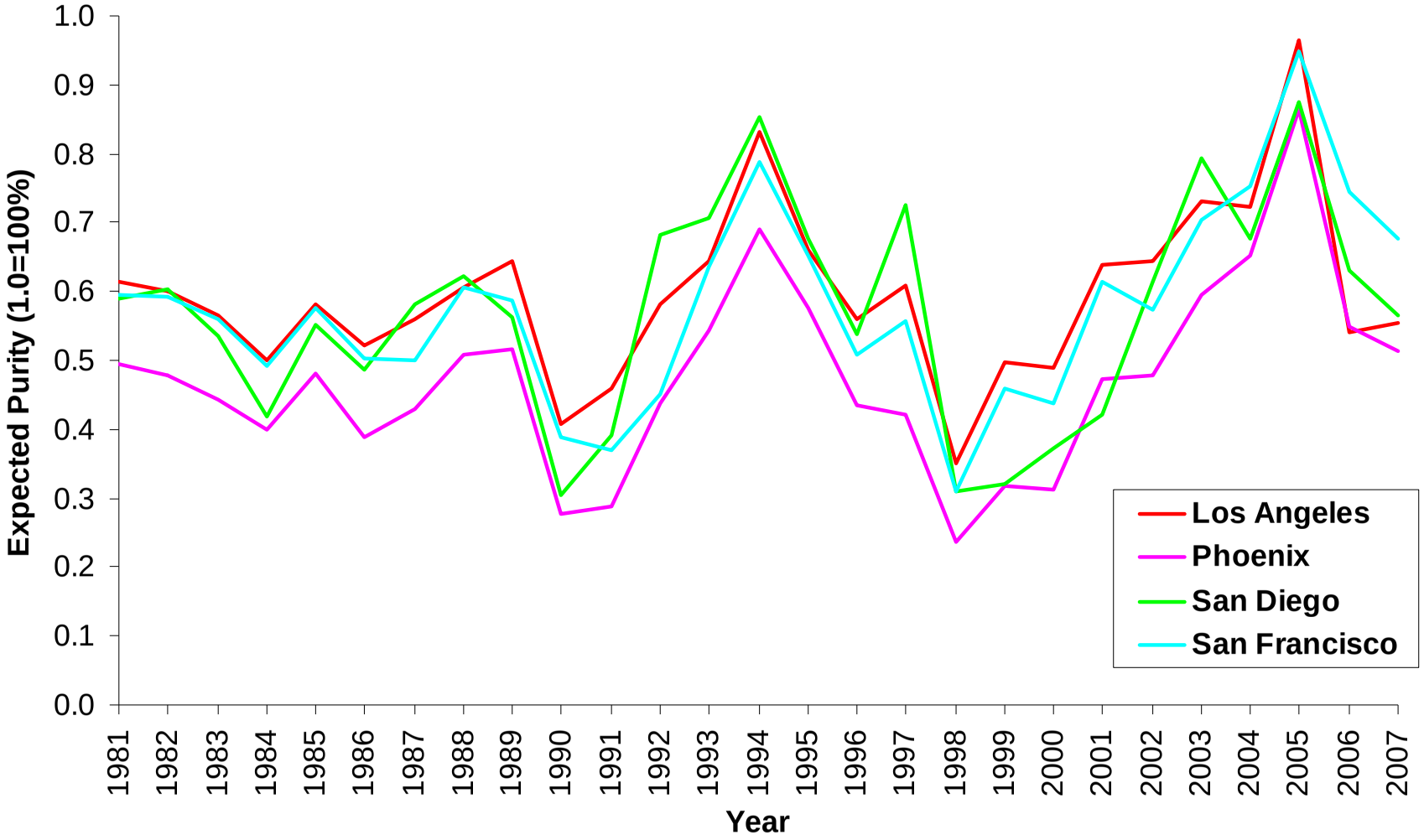

Figure V-4. City Trends in Expected Purity of d-Methamphetamine – Mid-Level (10 – 100 g, Evaluated at 27.5 g)

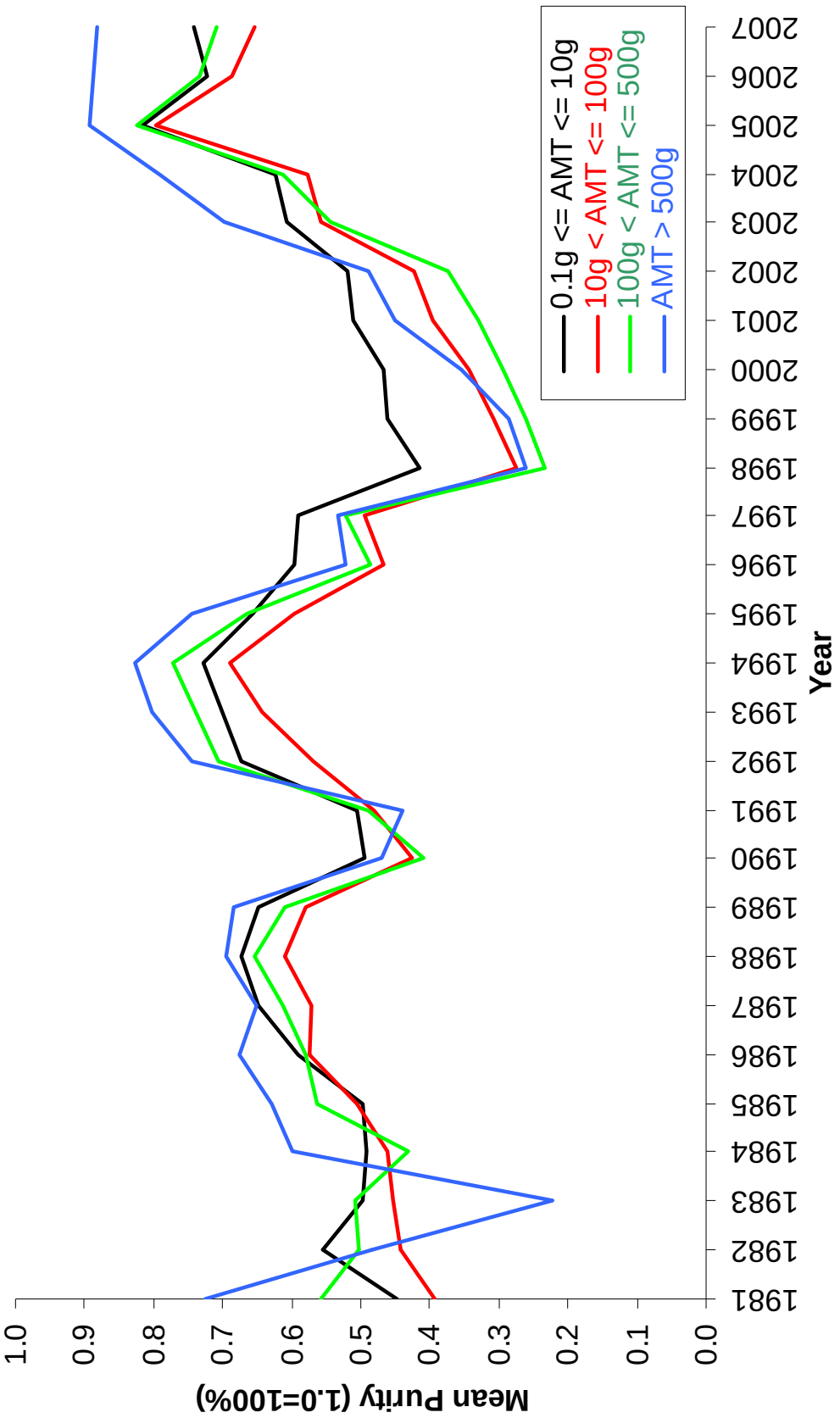

Figure V-5. Mean Purity of d-Methamphetamine When Seizures are Included

CHAPTER VI

MARIJUANA

VI. MARIJUANA

The focus here is on estimated bulk prices for marijuana, i.e., purchase prices irrespective of actual or anticipated purity. Figure VI-1, an update to the associated depiction presented in the 2004 ONDCP report, depicts one price value for each year. Straight line segments are used to connect the annual values, but they have no physical interpretation.

There are no purity results (due to lack of data in our STRIDE database) and no city-specific time series (due to insufficient sample sizes).

Marijuana data in STRIDE are extremely sparse, comprising less than 4 percent of the total data records available for EPH modeling (Table I-2), and data variability is high.

The 2004 ONDCP report noted the following major trends in the national indices for the annual price of one bulk gram of marijuana through mid-2003:

- Generally increasing prices through the 1980s
- Peak in 1991 for Q1 and Q3, and peak for Q2 in 1993-1994
- Subsequent declines through 2000, followed by a slight upwards trend.

The updated Figure VI-1 continues to support these conclusions, but the 1986 peak at the lowest quantity level is considerably more pronounced here than what appeared in the 2004 *Results Report*. Moreover, the revised values at that same Q1 level are consistently higher over the entire time period of 23 years.

Since 1997, trends in the estimated price of one bulk gram of marijuana have varied across quantity levels – up about 30 percent, up about 70 percent, and down about 30 percent respectively at Q1, Q2, and Q3.

Comparing 2002 to 2007, there were no substantial price changes at the lower two quantity levels and a 45 percent decline at the highest quantity level.

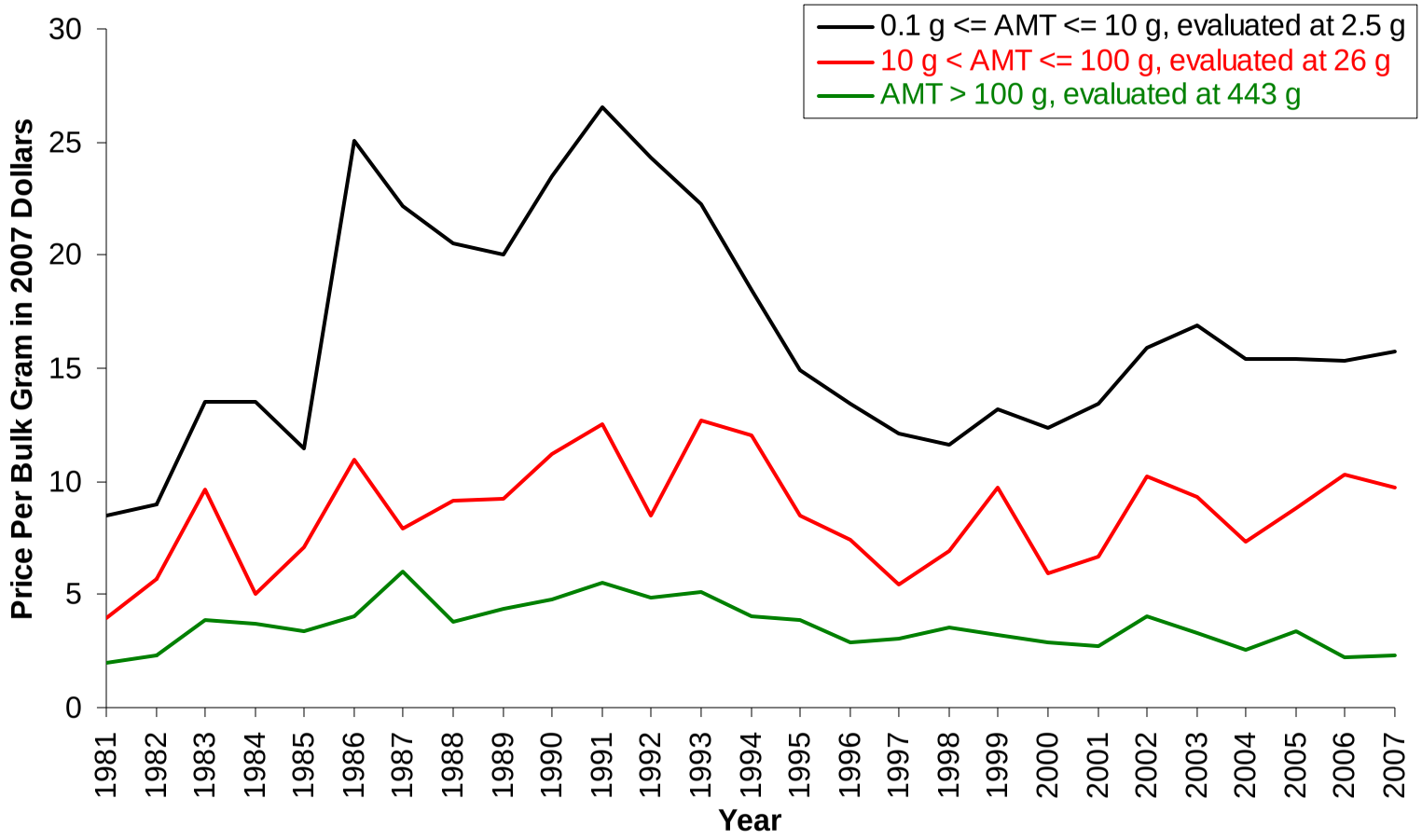

Figure VI-1. Price of One Bulk Gram of Marijuana

CHAPTER VII

SUMMARY OF RESULTS

VII. SUMMARY OF RESULTS

Section A of this chapter summarizes the results documented earlier for the individual illicit drugs under study: powder cocaine, crack cocaine, heroin, d-methamphetamine, and marijuana. The focus is on major near-term trends and features extending back 5 to 10 years. We do not attempt to describe all facets of the more detailed graphical portrayals and summaries of the price and purity time series that appear in Chapters II to VI. Section B presents an overview of selected *Technical Report* results related to the interpretability of our price and purity time series.

A. PRICE AND PURITY OF INDIVIDUAL ILLICIT DRUGS

Our initial execution of the EPH modeling methods replicated the data count totals, estimates, figures, and tables presented in the 2004 ONDCP *Results Report* and *Technical Report*.[1] After incorporating a few modest modifications,[2] our revised software generated updates to the previous results, extending the earlier period of record of 1981 to mid-2003 up through the end of 2007. While the new results are not numerically identical to past counterparts (e.g., prices are now expressed in terms of constant 2007 dollars and zero purity observations are discarded for all drugs but marijuana), they generally are very similar and major trends and features were reproduced. The price and purity estimates given in this report thus can be viewed as continuations of those provided in 2004.

1. Powder Cocaine

After having held fairly steady at the end of the 1990s, the annual predicted price of one expected pure gram of powder cocaine increased around 2000-2001 – both in the national indices (across all quantity levels) and in major cities (at the Q1 or retail transaction level). This trend was mirrored by coincident decreases in expected purity.

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1 Chapter II of the accompanying *Technical Report* presents details.

2 Our revisions updated inputs to encompass the 2007 timeframe, reconciled the descriptions of the code provided in the 2004 ONDCP *Technical Report* with the actual content of the code, and incorporated new information about STRIDE from the DEA. Details are documented in Chapter II of the accompanying *Technical Report*.

For the national indices, these trends were reversed shortly thereafter and the new directions have persisted through 2007. For the most part, estimates of adjusted prices experienced a modest but continuously gradual decline, whereas estimated purities increased to a much higher degree – increasing from the 55 to 65 percent purity level in 2001 to the 70 to 80 percent region in 2006. Purity fell to 50 to 60 percent in the second and third quarter of 2007, but increased in the fourth quarter of 2007 to 55 to 75 percent.

2. Crack Cocaine

Beginning with the late 1990s, trends for the estimated adjusted price time series for crack cocaine, at the national and city levels, generally closely tracked those noted above for powder cocaine. Recall that here, following the convention adopted in the 2004 ONDCP report, we apply the label "crack cocaine" to results derived from the analysis of cocaine base observations in STRIDE, the majority but not necessarily all of which are literally crack.

Contrary to what one might expect, the expected purity values for crack cocaine were highest at the lowest quantity level (below 1 gram) and lowest at the highest quantity level (above 15 grams). This reversal, consistent over a 20-year period, warrants further study.

3. Heroin

Since the local peaks in 1990, the national indices for the annual predicted price of one expected pure gram of heroin steadily decreased, with the possible exception of small increases in 2004 and 2006. Over the last 10 years, estimates of adjusted prices dropped about 30 percent for all quality levels. Similar behavior generally was exhibited at the major city level, although there was more variability.

Since 1997, expected purities at the national level typically decreased from year to year, with the possible exception of minor upward bumps in 2002, 2005, and 2007. Similar trends apply to major cities, although steady declines did not begin until about 2000 for some of the cities. The incorporation of purity results from seizures did not alter the national trends.

4. d-Methamphetamine

STRIDE d-methamphetamine data are sparse and volatile. The time series for the annual predicted price of one expected pure gram of d-methamphetamine behaved

similarly at the national and local (i.e., major southwest city) levels. There were peaks in 1995-1996, 1998, and 2006-2007 coincident with the introductions of methamphetamine precursor chemical regulations. In between peaks, estimates of adjusted prices declined steadily, e.g., falling more than 50 percent between 1998 and 2005.

The expected purities mirrored the trends in estimated prices, and the two sets of curves were strongly negatively correlated. By 2005, estimated purities increased to about 80 to 90 percent at the national level, and to as high as 95 percent in major cities. By the end of 2007, estimated purities at both the national and local levels had fallen to about 40 to 55 percent. Since 1995 or so, the expected purity values were generally highest at the lowest quantity level, and they were lowest at the highest quantity level. National trends for purities were unaffected when results from seizures where incorporated into the analyses.

5. Marijuana

STRIDE marijuana records are sparse, especially for purity, and data variability is high. Since 1997, trends in the estimated price of one bulk gram of marijuana have varied across quantity levels – up about 30 percent at the lowest quantity level (less than 10 grams), up about 70 percent at the middle quantity level (between 10 and 100 grams), and down about 30 percent at the highest quantity level (above 100 grams).

Comparing 2002 to 2007, there was essentially no change in price at the lowest quantity level, a decline of about 10 percent at the medium quantity level, and a decline of almost 50 percent at the highest quantity level.

B. INTERPRETABILITY OF TIME SERIES

Here we summarize two sets of analyses involving non-STRIDE data sets that are documented in Chapter VI of the companion *Technical Report*. Similar results serve to corroborate the interpretability of STRIDE results. Gross departures, on the other hand, signal the need for follow-on research to understand the differences and ultimately possibly motivate specific enhancements to STRIDE data collection processes and/or analysis approaches.

First, we contrast price data from selected cities with ample STRIDE sample sizes to independent compilations of illicit drug prices obtained from local law enforcement sources (including police and DEA) and reported by NDIC within a series of NDIC Intelligence Bulletins entitled *National Illicit Drug Prices*. These publications compile

prices recorded in 126 cities for the five illicit drugs central to our STRIDE studies (as well as 3,4-methylenedioxymethamphetamine, i.e., ecstasy). Our analyses in this section are based on results appearing in the December 2005 and June 2006 editions of *National Illicit Drug Prices*, encompassing data recorded in 2005.

Second, we compare STRIDE-based estimated price and purity time series for specific illicit drugs with associated time series of positivity rates (i.e., percent of tests with a "positive" outcome) from general workforce drug tests. In a classical supply-driven drug market, all three drug use indicators would move in concert – price up/down, purity down/up, and positivity rate down/up. Departures from this classic model signal a waning user demand or highlight situations that warrant further study. Conformance, on the other hand, can be a partial affirmation of the credibility of the major features exhibited by the subject data sets.

1. STRIDE - NDIC

There are a number of reasons why the NDIC and STRIDE data should not necessarily be expected to match closely. They are obtained from different sources and via different data selection processes. The fundamental characteristics of the underlying sets of purchase transactions may vary substantially. Illicit drug prices are inherently volatile, and our sample sizes are limited. Finally, purity information is not an explicit factor in the NDIC depictions and yet the STRIDE transactions can span a wide range of purity values. Thus, the degree of comparability of our NDIC and STRIDE data sets should be judged accordingly, i.e., rough correspondence is likely the best that could be attained.

From this perspective, we consider the NDIC and STRIDE price data to match reasonably well for powder cocaine, crack cocaine, and d-methamphetamine. The agreement is somewhat less so for heroin, particularly for Washington, D.C. and the Orlando lower quantity level. The marijuana price data match reasonably well for Washington, D.C., but the two sets of numbers for San Diego differ substantially. Additional research is required to resolve the apparent differences.

Our examination of bulk prices for marijuana reported by NDIC for 2005 revealed extremely wide variations across different NDIC categorizations of marijuana, i.e., domestic, Mexican, Canadian, and hydroponic. Comparisons of the NDIC data to 2005 STRIDE bulk prices for marijuana, which are not classified by type of marijuana, also exhibited large differences. If feasible, follow-on studies should explore the degree to

which price disparities across marijuana variants influence the current construction of national and local level price estimates.

2. STRIDE - General Workforce

The correspondences between matched data sets are strong for powder cocaine, crack cocaine, and d-methamphetamine. Across STRIDE quantity levels, all STRIDE price time series are negatively correlated with general workforce positivity time series. Likewise, all STRIDE purity time series are positively correlated with general workforce positivity time series. Moreover, all of the numerical magnitudes of the correlation coefficients are substantial.

The degree of agreement between marijuana data sets is much weaker. The potential impact of different marijuana varieties (as noted in Section B.1 above) on the correlation statistics is unknown.

For the comparisons of STRIDE heroin to the general workforce positivity results for the opiates drug class, the signs of the correlation coefficients are all exactly opposite to the expected structure of a supply driven market. What is driving this pattern is unknown. One possible contributing cause identified in the *Technical Report* is that the opiates drug class includes multiple drugs in addition to heroin.

CHAPTER VIII

ON METHODOLOGIES FOR CONSTRUCTING PRICE AND PURITY TIME SERIES FOR ILLICIT DRUGS

VIII. METHODOLGIES FOR CONSTRUCTING PRICE AND PURITY TIME SERIES FOR ILLICIT DRUGS

This chapter discusses the roles and utilities of specific methodological approaches for constructing price and purity time series from STRIDE data – including the EPH modeling construct (Section A) and alternative analytical techniques (Section B). Possible future methodological enhancements and research topics are addressed in Section C. More complete expositions on the topics presented here can be found in Chapters III to VI of the companion *Technical Report*.

A. GENERAL MERITS OF EPH MODELING

Illicit drug traffickers conduct their production, transportation, and transaction activities clandestinely. Precise knowledge of the prices and purities of illicit drugs is thus unattainable, but policy makers and law enforcement do not necessarily require extraordinarily accurate estimates. Often a plausible sense of the relative magnitude and the approximate timing of sustained trends and excursions can be extremely insightful, provided that the information over time has been derived consistently and with some degree of rigor. This level of surety can facilitate objective assessments of the accomplishments of implemented strategies, initiatives, and operations, and guide the development of new policy and specific law enforcement actions.

It is from this perspective that the merits of the EPH modeling construct should be judged. Numerical results to a great extent, but certainly not universally, have been shown to be internally consistent – across the individual quantity levels, for different geographical locations, and for the two distinct variants of cocaine. When there are inconsistencies, they tend to be short-lived and/or of minor consequence. Whether these sorts of divergences reflect true differences or are artifacts of the sampling processes that populate the STRIDE database and the inherent extreme variability in the underlying data themselves requires further study. Given the widely acknowledged sampling and data variability endemic to STRIDE data, it can be argued that only a very strong true “signal” could arise above the massive “noise” to form a coherent feature or sustained trend.

Much of the volatility in the EPH estimates themselves is masked within the standard figures displaying only yearly results, as these are averages of the constituent quarterly values. While the reported major trends and features remain evident, the quarterly numbers exhibit much greater variability. Consequently, the general observation can be made that excessive significance should not be attached to apparent excursions that may be indicated by a solitary one or two updated quarterly estimates, unless supported by considerable corroboration from external information sources.

B. EPH AND MEDIAN METHODS

The accompanying *Technical Report* compares quarterly values of EPH-based national indices to corresponding time series constructed from simple median estimates. Each point of a median-based index is obtained as the sample median, or 50-th percentile, of the *entire* population of relevant STRIDE data points, i.e., aggregated across all geographic locations irrespective of the perceived importance or weight ordinarily attributable to each locale. In other words, the sampling and reporting frequencies of the DEA (and other agencies contributing to STRIDE) induce an implicit weighting function. This is in contrast to regression-based methods, such as the EPH formulation, that *disaggregate* STRIDE data into distinct geographical units, estimate a summary statistic for each, and then re-assemble all these into a nationally representative metric via a weighted linear combination. The individual combinations of geographical unit, calendar quarter, drug type, and quantity level can parse the STRIDE database so fine that little data is available to support statistical calculations. Moreover, what data are present can be extremely variable (considering intrinsic data randomness as well as volatility in sampling processes).[1]

Each median purity value is calculated directly from the recorded purities for the subset of data of interest. Each median price is derived from an adjusted set of price observations in which each recorded transaction price is normalized to account for the associated measured purity for that same sample (vice an overall expected purity as in the EPH modeling). It can be seen that, in a relative sense compared to the EPH method, this median approach accentuates to a greater degree adjusted prices when the market

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[1] Within this context, the 2004 *Technical Report* (p. 28) notes "We recognize that developing a national average from these relatively sparse and unrepresentative data is not advisable for a number of reasons."

responds to times of stress by cutting purities and increasing the frequency of very low purity sales.

The median values are not purported to be estimates of national values of price and purity *per se*, but merely serve as simple representations of the observable data and indicators of trends against which the EPH-derived results can be contrasted. The medians thus provide an alternative perspective for potential detailed assessments that could motivate possible enhancements to the EPH formulation and/or suggest suitable alternative methodologies.

The side-by-side comparisons of the EPH-based estimates and their median counterparts reveal nearly universal agreement in major trends and features, although there certainly are differences in precise levels and timing. This general agreement can be viewed as a confirmatory direct comparison of the EPH results to the raw data. There are some instances when the absolute magnitudes of the two sets of estimates vary substantially, but the trends nonetheless remain common. Detailed study of some of these examples points to small sample circumstances. Here, the EPH model weights very heavily the few available observations from major cities and discounts the many but disparate data from the remainder of the country.[2] In contrast, the median method weights all of the STRIDE samples equally.

When there are substantial differences between the two sets of estimates, the EPH model result generally is less extreme than the median-based estimate, i.e., high and low median values are associated with EPH counterparts that are not as close to the possible extreme values (e.g., 100 percent purity and 0 percent, respectively). At times, coherent trends observable in the quarterly median estimates are not readily discernable in the EPH results. Reasons for these differences remain under study. Chapter V in the accompanying *Technical Report* discusses some possibilities.

Neither median- nor regression-based estimates by themselves address the widely acknowledged limitations of the STRIDE database – including the non-scientific sampling processes that generate the data recorded within STRIDE. Likewise, additional layers of sophisticated statistical modeling cannot overcome entirely this fundamental

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[2] In one instance, two dozen d-methamphetamine records scattered across only five or so different sets of cities per quarter essentially determined the national index values for that year.

shortcoming.[3] Within this context, however, constructing different sets of indices based on disparate methodological approaches can prove insightful. Comparable results can be interpreted as plausible portrayals of the STRIDE content, laying the groundwork for additional checks with relevant external databases and/or sources of information. Substantially different results, and an understanding of the underlying causes, can motivate the development of appropriate methodological enhancements.

For the present, utilization of complementary methodologies is a reasonable analysis strategy for intermittently monitoring data trends. For non-standard investigations (e.g., focused on smaller geographical regions, especially if areas do not correspond one-to-one with the formal definition of divisions prescribed within the EPH construct), median-based methods or other simple approaches will be much easier to implement and estimates will be generated much more expeditiously. Depending on the computer system used, it could take two days or more to finish a single EPH run for all five drug types.

C. POSSIBLE FUTURE WORK

There are a number of research paths that could be pursued in an attempt to enhance the viability and utility of time series representations of the price and purity of illicit drugs. Some are specific to the EPH modeling construct, some are more relevant for median-based and other alternative methodologies, and some have dual applicability. Also, the incorporation of additional external information sources could add to the interpretability of STRIDE-centric analyses. Below we discuss potential future work activities, incorporating notions presented earlier in this *Results Report* as well as in the companion *Technical Report*.

1. Specific to EPH Modeling

The EPH modeling approach parses the STRIDE data into many small subsets (based on combinations of drug type, quantity level, geography, and time), characterizes the price and purity of each, and then re-aggregates results via a layered weighting process. Generally, estimates are computed for each calendar quarter, and then averaged to report yearly estimates. At times, the data for particular city-quarter and region-

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[3] Analysis of clusters of STRIDE samples, in time or location, relative to neighboring sampling rates may provide some useful adjustments to account for sampling variability driven by law enforcement practices.

quarter pairings can be quite limited, and the resultant quarterly estimates can be volatile. Since the quarterly estimates subsequently are averaged, consideration could be given to eschewing quarterly estimation completely and focusing solely on yearly estimation. Alternatively, the modeling could be structured to accommodate dynamic time periods (vice *a priori* specifications of fixed quarter and year end points) selected to ensure adequate sample sizes for stable statistical processing. Interpolation would provide estimates that encompassed the entire time spectrum.

Within the EPH methodology, relative weights (over time) for an individual major city within the collection of prescribed 29 major cities are determined via population estimates. The same holds true for the relative weights (over time) for an individual region within the group of prescribed 9 regions. The general principle of applying population-based weights is reasonable for illicit drugs whose use is widespread and not concentrated in specific geographical regions. The relevance for d-methamphetamine, whose popularity initiated on the west coast and then spread eastwards, may not be as compelling. One alternative might be to formulate weights based on other direct or indirect indicators of illicit drug use, e.g., workforce drug testing results compiled for three-digit zip code areas. Such data, however, only address portions of the total use population. Also, the time periods covered by such data sets do not encompass the entirety of the STRIDE timelines. Nonetheless, future research could explore the viability of alternative weighting schemes and the robustness of overall conclusions.

National indices constructed via EPH modeling combine estimates for 29 major cities and 9 regions (partitioning the nation into 38 distinct non-overlapping geographical areas). As a whole, the major cities are given a weight of 29/30, while the regions are assigned a 1/30 weighting. The 29:1 split between major cities and regions is arbitrary (e.g., not reflecting the relative ratios of underlying populations). Sensitivity studies can be undertaken to assess the sensitivity of overall conclusions to this specific allocation.

The EPH method invokes a correction factor accounting for the amount of the illicit drug involved in any purchase transaction. This adjustment is applied separately *within* each quantity level, but no attempt is made to constrain the results to ensure continuity *across* quantity levels. Ideally, the EPH regression model structure could be modified so that final sets of estimates are compatible across the entire range of transaction amounts.

Finally, we note that the summaries of price and purity time series presented in this *Results Report* have not attempted to incorporate any formal statistical confidence

procedures into assessments of what constitutes a trend, departure, or feature.[4] This would add considerable complexity to the analyses, for each of the many depicted time series, and is well beyond the scope of this present study. The 2004 ONDCP *Technical Report* proposed an *ad hoc* procedure for computing surrogate confidence bounds around individual estimates, but its interpretability is unclear. The median-based methods readily support the construction of legitimate statistical confidence bounds via standard bootstrap procedures (by repeating median calculations thousands of times for various permutations of the original data, i.e., bootstrap procedures).[5] This approach, however, cannot be applied to the EPH regression models since generating even one set of EPH estimates already takes considerable time. To stay within the existing EPH construct, one would have to introduce appropriate modifications to the current software. The present calculation of confidence bounds for expected price and purity estimates associated with individual locations would have to be extended to encompass their consolidation in the form of a weighted linear combination.

2. Specific to Alternative Methods

The classical median method aggregates all of the subject data without any consideration of the specific value of the quantity for a given STRIDE sample (other than it falls within some prescribed quantity level). This suggests that a plausible first-order adjustment to median-based methodologies can be introduced, by incorporating a straightforward regression structure that accounts for the contribution of varying amounts within a given quantity level. Likewise, a similar adjustment procedure could be applied to methods based on means vice medians.

Since non-EPH methods aggregate across cities and regions, they may be sensitive to systematic shifts in STRIDE sampling emphasis. Thus, the fraction of samples for individual geographical entities should be checked to see if they remain fairly

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4 There is some precedence for formal time series analyses of price and purity time series: Office of National Dug Control Policy (2001). *Measuring the Deterrent Effect of Enforcement Operations on Drug Smuggling, 1991-1999*, Washington, D.C.: Executive Office of the President (Publication Number NCJ 189988); S. Soneji, R. Anthony, A. Fries and B. Crane, "Time Series Intervention Analyses on U.S. Cocaine Prices," in *Proceedings of the Fifth Annual U.S. Army Conference on Applied Statistics*, United States Military Academy, West Point, New York, October 19-21 1999, B.B. Bodt (ed.), Army Research Laboratory: ARL-SR-110, Aberdeen Proving Ground, Maryland, July 2001, pp. 67-76; and R. Anthony and A. Fries, "Empirical Modelling of Narcotics Trafficking from Farm Gate to Street," *Bulletin on Narcotics*, United Nations Office on Drugs and Crime, Volume LVI, Nos. 1 and 2, 2004, pp. 1-48.

5 B. Efron and R. Tibshirani, *An Introduction to the Bootstrap*, Chapman & Hall Ltd., New York, New York, 1993.

steady over time. If not, the effect of such fluctuations on overall conclusions should be assessed. Alternatively, for some sufficiently large time interval, separate sets of median- or mean-based estimates of price and purity could be calculated for each of the major city and regional areas prescribed by the EPH approach, and then consolidated into national indices using EPH-like weighting schemes.

Median-based estimates presented in the accompanying *Technical Report* are computed on a quarterly basis, irrespective of the number of samples within each quarter. To avoid small-sample volatility, these estimates could be calculated for equal sample-size bins.[6]

Finally, the bootstrap procedures available to construct confidence bounds for prices and purities at specific time points could be extended to encompass differences between adjacent time points (e.g., yearly differences).

3. Dual Applicability

The accompanying *Technical Report* establishes that there are several variants of marijuana whose prices, as reported by NDIC, differ considerably. The STRIDE database has no categorizations of marijuana types. If feasible, follow-on studies should explore the degree to which the reported price disparities influence the current construction of national and local level price estimates.

Neither the EPH method nor common alternative approaches take advantage of the known structure of illicit drug markets – nearly all transactions cluster about either one of a set of standard quantities (e.g., kilogram, ounce) or for small quantities a set of standard prices. Average purities and prices could be computed for each standard quantity (or price) level in the market, and prices per pure gram could then be computed for each standard quantity. The relationships across standard levels could be exploited to guide the assimilation of individual standard estimates into meaningful local metrics and national indices.

The *Technical Report* presents several analyses documenting the extent of general agreement between STRIDE and two external databases – independent compilations of illicit drug prices obtained from local law enforcement sources (including police and

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6 As was done in: B. Crane, A. Rivolo and G. Comfort, *An Empirical Examination of Counterdrug Interdiction Program Effectiveness*, Paper P-3219, Institute for Defense Analyses, Alexandria, Virginia, January 1997.

DEA) as reported in NDIC Intelligence Bulletins, and time series of positivity rates (i.e., percent of tests with a "positive" outcome) from general workforce drug tests. Both of these analyses should be extended to encompass data updates. In addition, follow-on research should include more detailed examinations of NDIC Intelligence Bulletins and NDIC Intelligence Information Reports (summaries of regular interviews conducted with federal, state, and local law enforcement officials, often detailing trends related to availability and short-term disruptions in drug prices for a region).

Finally, further study would be needed to explore the viability of incorporating other external databases into similar sorts of correlation analyses. Some candidate databases include the Treatment Episode Data Set (TEDS), a compilation of data on the demographic and substance abuse characteristics of admissions to (and more recently, on discharges from) substance abuse treatment; the Drug Abuse Warning Network (DAWN), a public health surveillance system that monitors drug-related visits to hospital emergency departments and drug-related deaths investigated by medical examiners and coroners; and the National Survey on Drug Use and Health (NSDUH), estimates of the prevalence of alcohol, tobacco, and illegal drug use and abuse in the general U.S. civilian non-institutionalized population, age 12 and older. Unlike STRIDE whose data span over a continuum of time, these other data sources only yield annual estimates. In addition, over time each has experienced structural changes that affect the interpretability of reported results.

APPENDIX A

ACRONYMS

APPENDIX A
ACRONYMS

CBP	Customs and Border Protection
CDMP	Cocaine Domestic Monitor Program
DAWN	Drug Abuse Warning Network
DCMP	Washington DC Metropolitan Police Force
DEA	Drug Enforcement Administration
DMP	Domestic Monitor Program
EPH	Expected Purity Hypothesis
FBI	Federal Bureau of Investigation
ICE	Immigration and Customs Enforcement
IDA	Institute for Defense Analyses
NDIC	National Drug Intelligence Center
NSDUH	National Survey on Drug Use and Health
ONDCP	Office of National Drug Control Policy
STRIDE	System To Retrieve Information from Drug Evidence
TEDS	Treatment Episode Data Set
USCG	United States Coast Guard

APPENDIX B

DATA TABLES –
NATIONAL INDICES FOR ESTIMATED PRICES AND PURITIES

APPENDIX B
DATA TABLES – NATIONAL INDICES FOR ESTIMATED PRICES AND PURITIES

Tables B-1 through B-9 encompasses five illicit drugs (powder cocaine, crack cocaine,[1] heroin, d-methamphetamine, or marijuana) and two types of time series (estimated price or estimated purity). There are nine such national-level tables, since marijuana purity data are not available.

Within each table, data are listed for every combination of calendar quarter (1981Q1 to 2007Q4) and quantity levels (1, 2, 3, 4 for powder cocaine, and 1, 2, 3 for the other drugs). A blank line indicates that the EPH statistical modeling procedures did not yield estimates, usually because there were fewer than five observations in a particular quarter for a particular drug and distribution level.

Note that in the specification of the quantity levels, the lowest level only goes down to 0.1 grams inclusive. Also, each given interval includes the larger endpoint value.

The individual sets of data items include:

- "Num" = number of relevant STRIDE observations
- "Median" = 50-th percentile of all of the relevant data that went into the EPH regression modeling processes (after passing initial data scrubbing checks)
- "EPH" = EPH model estimate, evaluated at a specific quantity amount prescribed for each quantity level (see Table I-1, Chapter I).

The figures in Chapters II through VI are annual time series created by averaging all four quarters shown in Tables B-1 through B-9 for each year. Quarterly time series based on Tables B-1 through B-9 are shown in Chapter V of the accompanying *Technical Report*.

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[1] Recall that, following the convention adopted in the 2004 ONDCP report, we apply the label "crack cocaine" to results derived from the analysis of cocaine base observations in STRIDE, the majority but not necessarily all of which are literally crack.

Table B-1. Estimated Quarterly Price of Powder Cocaine – Median per Pure Gram and EPH per Expected Pure Gram, National Index, Constant 2007 Dollars

Period	0.1 - 2 grams			2 - 10 grams			10 - 50 grams			> 50 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1981Q1	55	$1,162.78	$727.30	84	$484.66	$368.76	126	$490.14	$359.60	25	$336.43	$249.93
1981Q2	53	$767.65	$630.05	67	$581.67	$443.01	111	$438.56	$327.29	13	$280.90	$205.59
1981Q3	45	$585.91	$494.34	52	$534.01	$385.81	113	$417.07	$317.67			
1981Q4	52	$856.03	$602.47	49	$634.96	$389.96	53	$377.01	$304.96	6	$332.14	$243.62
1982Q1	83	$1,020.75	$673.35	86	$784.32	$434.23	134	$459.12	$323.37	15	$290.00	$225.16
1982Q2	64	$1,010.73	$761.67	95	$492.83	$369.15	91	$419.16	$319.93	17	$232.08	$210.34
1982Q3	95	$798.18	$583.63	116	$533.69	$382.59	146	$406.43	$298.37	12	$290.54	$223.22
1982Q4	85	$786.25	$653.57	71	$490.09	$351.67	105	$390.05	$303.49	8	$206.97	$199.41
1983Q1	103	$866.87	$652.08	110	$498.18	$370.95	150	$341.41	$267.59	30	$222.26	$202.51
1983Q2	53	$710.96	$535.77	132	$534.55	$377.27	183	$362.76	$275.43	37	$173.00	$186.86
1983Q3	61	$689.81	$484.08	100	$495.57	$366.36	164	$285.94	$238.31	45	$156.81	$175.10
1983Q4	110	$661.40	$479.66	145	$424.79	$317.99	215	$260.89	$217.25	44	$178.13	$160.94
1984Q1	123	$592.01	$425.37	128	$420.33	$297.49	225	$242.66	$197.25	57	$152.24	$148.08
1984Q2	97	$589.23	$497.81	128	$404.28	$281.30	225	$241.39	$194.25	64	$171.80	$149.96
1984Q3	78	$610.50	$453.22	121	$408.13	$298.89	246	$257.07	$201.31	59	$185.61	$170.78
1984Q4	104	$566.67	$452.12	142	$415.66	$283.69	279	$263.57	$196.85	58	$174.40	$159.30
1985Q1	127	$702.83	$520.66	180	$357.58	$271.40	295	$263.25	$201.41	68	$173.19	$156.45
1985Q2	167	$609.90	$432.52	160	$420.73	$282.21	325	$285.44	$218.97	90	$188.50	$168.56
1985Q3	156	$600.32	$456.76	166	$385.37	$264.97	378	$242.70	$192.02	84	$184.68	$157.79
1985Q4	143	$515.38	$416.67	140	$369.57	$277.00	385	$209.00	$179.27	110	$143.80	$144.55
1986Q1	158	$524.77	$350.48	165	$320.10	$230.99	393	$191.72	$160.58	111	$129.92	$125.66
1986Q2	164	$438.75	$379.77	183	$279.38	$221.73	367	$188.57	$158.99	109	$132.41	$124.13
1986Q3	140	$495.75	$354.28	146	$268.06	$202.02	331	$170.38	$148.06	97	$113.25	$110.22
1986Q4	131	$460.32	$296.13	124	$237.37	$196.30	331	$162.25	$136.99	123	$114.15	$102.08
1987Q1	138	$482.41	$368.14	85	$214.24	$173.22	280	$150.22	$131.36	127	$95.73	$90.98
1987Q2	92	$432.88	$320.82	116	$201.02	$174.88	404	$144.40	$118.98	192	$94.77	$94.16
1987Q3	88	$324.43	$246.30	114	$228.43	$171.29	429	$131.30	$109.45	207	$88.42	$83.35
1987Q4	91	$334.48	$242.71	111	$212.09	$153.25	357	$114.53	$96.87	178	$78.35	$74.35
1988Q1	87	$273.71	$228.31	134	$226.81	$156.88	380	$104.70	$87.68	161	$66.49	$65.76
1988Q2	115	$298.24	$239.42	109	$215.93	$157.21	352	$102.78	$92.00	177	$74.41	$69.99
1988Q3	104	$345.42	$301.41	124	$169.23	$141.32	339	$96.83	$84.59	241	$66.43	$64.90
1988Q4	85	$325.94	$235.35	106	$197.67	$129.05	329	$91.43	$77.27	223	$64.13	$60.77
1989Q1	79	$293.35	$213.91	138	$187.21	$127.39	377	$85.17	$76.39	236	$64.18	$59.88
1989Q2	80	$253.46	$216.26	86	$152.42	$109.55	366	$85.12	$72.25	199	$58.26	$56.82
1989Q3	80	$329.65	$236.67	87	$167.82	$125.10	291	$91.38	$75.61	253	$63.86	$58.26
1989Q4	80	$261.89	$207.91	98	$194.04	$141.50	236	$104.53	$86.24	184	$74.18	$67.81
1990Q1	94	$326.12	$241.47	109	$205.10	$143.00	226	$120.68	$87.42	175	$86.71	$76.90
1990Q2	47	$349.53	$260.57	64	$334.41	$189.06	190	$137.62	$100.36	135	$99.55	$88.02
1990Q3	74	$411.76	$310.15	77	$201.15	$139.76	230	$136.82	$108.05	170	$97.65	$90.26
1990Q4	68	$282.77	$249.41	67	$235.63	$142.78	250	$125.17	$97.02	157	$80.85	$74.34

Period	0.1 - 2 grams			2 - 10 grams			10 - 50 grams			> 50 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1991Q1	141	$267.68	$221.51	118	$179.02	$122.20	333	$107.69	$86.21	235	$73.33	$70.33
1991Q2	66	$272.29	$219.40	85	$146.63	$112.76	305	$94.93	$81.61	303	$67.55	$65.07
1991Q3	46	$381.38	$247.57	96	$153.27	$112.24	318	$85.82	$75.45	287	$65.08	$63.39
1991Q4	46	$268.12	$215.18	76	$139.23	$107.31	269	$80.30	$68.87	231	$59.09	$58.23
1992Q1	68	$174.79	$178.38	88	$146.59	$98.15	278	$77.24	$66.71	235	$56.18	$52.82
1992Q2	47	$212.21	$178.51	62	$184.97	$121.18	191	$101.53	$83.34	152	$74.66	$71.32
1992Q3	66	$163.48	$168.25	58	$160.30	$115.34	223	$85.52	$71.61	221	$63.76	$61.96
1992Q4	45	$216.34	$186.17	44	$158.27	$112.20	160	$76.65	$67.21	99	$58.47	$55.35
1993Q1	43	$176.09	$176.41	47	$127.02	$112.47	99	$92.61	$71.70	73	$56.75	$55.42
1993Q2	44	$210.16	$204.63	54	$130.25	$101.79	141	$95.46	$75.01	65	$61.35	$60.66
1993Q3	51	$147.43	$153.75	54	$151.31	$118.98	143	$85.26	$75.34	94	$60.39	$56.19
1993Q4	44	$259.88	$164.73	51	$124.42	$107.05	110	$82.89	$73.41	78	$60.26	$56.01
1994Q1	49	$189.61	$158.35	55	$125.13	$102.19	141	$79.62	$66.45	92	$55.91	$52.36
1994Q2	28	$144.38	$178.38	51	$119.43	$103.65	150	$70.83	$66.28	99	$57.24	$51.30
1994Q3	55	$201.01	$156.05	45	$116.72	$90.51	167	$84.36	$66.02	148	$55.06	$51.08
1994Q4	28	$188.35	$170.89	46	$129.93	$97.44	138	$69.21	$59.22	105	$47.60	$45.20
1995Q1	31	$215.66	$183.65	63	$100.73	$79.91	136	$66.11	$56.29	96	$53.40	$48.72
1995Q2	24	$219.73	$218.96	44	$96.52	$86.29	103	$68.01	$61.13	108	$57.50	$52.36
1995Q3	32	$237.26	$199.85	55	$151.38	$117.36	105	$99.44	$80.58	104	$73.80	$61.58
1995Q4	47	$204.69	$207.65	36	$130.47	$114.74	113	$88.62	$69.90	99	$73.39	$61.08
1996Q1	27	$195.87	$179.17	50	$139.79	$92.59	120	$78.81	$63.93	111	$55.19	$50.92
1996Q2	44	$153.31	$162.98	55	$131.80	$105.67	140	$76.13	$60.44	166	$56.19	$50.90
1996Q3	29	$232.38	$193.75	54	$106.66	$93.16	158	$70.98	$59.19	186	$53.28	$49.40
1996Q4	24	$137.20	$121.27	46	$108.85	$93.58	150	$62.12	$51.61	148	$49.27	$44.69
1997Q1	26	$165.00	$159.57	77	$104.63	$87.59	146	$66.77	$55.45	114	$54.64	$47.27
1997Q2	53	$208.42	$168.67	72	$123.84	$100.90	97	$84.35	$69.04	88	$78.33	$60.77
1997Q3	50	$201.59	$158.36	79	$92.75	$89.08	153	$76.41	$63.95	166	$64.95	$54.80
1997Q4	38	$196.38	$158.36	58	$118.35	$95.10	156	$67.81	$54.09	155	$53.54	$47.08
1998Q1	33	$133.61	$121.60	56	$96.29	$78.94	171	$67.87	$55.13	144	$53.29	$45.32
1998Q2	32	$165.21	$171.33	68	$109.19	$90.67	165	$62.56	$56.13	192	$49.30	$43.60
1998Q3	49	$168.48	$139.93	71	$88.12	$83.06	187	$64.76	$53.76	174	$45.47	$43.76
1998Q4	38	$221.70	$161.69	55	$137.81	$108.99	147	$69.59	$55.17	158	$53.48	$45.20
1999Q1	81	$172.79	$166.19	87	$124.81	$105.79	135	$69.71	$55.70	106	$64.46	$53.36
1999Q2	32	$238.30	$136.69	71	$98.49	$89.90	133	$74.33	$61.33	161	$59.21	$50.67
1999Q3	61	$152.31	$154.40	55	$122.51	$88.69	187	$73.52	$58.38	238	$49.81	$47.20
1999Q4	36	$175.80	$164.34	64	$119.26	$93.72	145	$68.24	$57.03	123	$59.48	$49.13
2000Q1	50	$169.46	$183.61	71	$123.91	$102.03	131	$81.29	$62.61	113	$64.97	$57.47
2000Q2	29	$154.89	$165.99	58	$129.37	$107.76	150	$92.24	$71.48	174	$70.85	$61.43
2000Q3	29	$259.27	$242.13	63	$125.17	$108.71	174	$79.22	$63.53	167	$56.40	$53.62
2000Q4	39	$186.69	$153.73	65	$161.11	$134.04	166	$75.40	$58.55	111	$61.13	$49.33

Period	0.1 - 2 grams			2 - 10 grams			10 - 50 grams			> 50 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
2001Q1	41	$194.01	$188.47	81	$140.49	$102.78	190	$85.82	$62.32	181	$62.87	$51.52
2001Q2	20	$176.96	$166.12	62	$147.51	$103.16	157	$93.91	$62.94	181	$62.06	$50.84
2001Q3	15	$247.11	$218.70	37	$117.89	$84.40	128	$85.64	$61.57	175	$65.60	$50.13
2001Q4	15	$341.67	$203.44	34	$123.55	$83.73	94	$75.82	$63.30	123	$60.37	$53.77
2002Q1	17	$230.03	$137.97	57	$110.37	$83.81	117	$83.25	$60.78	152	$58.63	$49.60
2002Q2	21	$153.37	$119.45	60	$131.98	$90.71	100	$73.46	$56.15	196	$53.26	$49.06
2002Q3	21	$186.50	$170.86	47	$126.83	$84.74	151	$63.35	$50.92	209	$52.08	$46.15
2002Q4	26	$150.59	$120.25	41	$106.59	$78.16	119	$71.20	$52.05	136	$57.30	$45.86
2003Q1	28	$133.33	$143.38	78	$99.65	$79.11	165	$67.68	$49.66	136	$58.30	$46.77
2003Q2	19	$131.27	$145.71	35	$133.08	$90.90	152	$76.95	$54.27	149	$46.92	$42.96
2003Q3	33	$138.71	$153.31	48	$117.44	$85.34	131	$73.76	$54.27	180	$47.17	$41.56
2003Q4	33	$181.16	$147.77	65	$141.08	$87.84	146	$65.50	$49.61	132	$44.29	$40.40
2004Q1	28	$176.46	$157.72	42	$103.21	$79.36	196	$58.17	$46.33	166	$51.85	$42.57
2004Q2	31	$109.87	$117.16	74	$95.93	$71.22	116	$65.77	$51.00	144	$51.89	$43.93
2004Q3	37	$161.90	$122.12	47	$86.45	$80.90	140	$63.12	$50.12	195	$44.28	$40.17
2004Q4	38	$222.76	$139.07	60	$93.75	$63.83	134	$60.78	$45.59	129	$44.80	$36.50
2005Q1	29	$177.10	$123.84	75	$107.40	$78.79	157	$59.59	$47.40	211	$40.56	$38.21
2005Q2	31	$143.57	$138.99	51	$94.97	$63.44	149	$55.32	$42.49	185	$38.42	$34.06
2005Q3	24	$186.63	$150.40	60	$107.29	$60.98	150	$54.84	$42.51	200	$39.54	$36.30
2005Q4	40	$103.96	$115.89	54	$77.78	$63.74	115	$49.14	$39.26	126	$40.92	$38.29
2006Q1	17	$93.44	$115.83	60	$73.43	$60.04	155	$54.02	$40.37	199	$34.23	$31.84
2006Q2	44	$143.02	$144.99	72	$92.37	$67.86	131	$46.14	$39.92	175	$36.12	$32.39
2006Q3	24	$139.71	$119.96	42	$65.84	$54.32	125	$49.46	$37.88	200	$33.96	$31.86
2006Q4	18	$139.80	$140.68	47	$80.24	$57.68	96	$47.76	$38.51	144	$31.59	$31.28
2007Q1	24	$141.35	$107.09	57	$67.26	$55.45	136	$49.01	$41.89	128	$34.58	$30.35
2007Q2	27	$145.06	$127.08	49	$100.78	$77.87	100	$66.88	$47.73	116	$48.63	$40.50
2007Q3	28	$141.12	$135.33	66	$105.25	$75.79	113	$70.26	$52.91	170	$51.47	$42.44
2007Q4	23	$148.28	$119.24	60	$114.72	$73.46	128	$69.12	$50.22	142	$44.79	$35.94

Table B-2. Estimated Quarterly Price of Crack Cocaine – Median per Pure Gram and EPH per Expected Pure Gram, National Index, Constant 2007 Dollars

Period	0.1 - 1 gram			1 - 15 grams			> 15 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1986Q1	24	$536.60	$510.66	8	$208.68	$200.44	6	$150.01	$132.89
1986Q2	44	$397.54	$394.51	22	$252.06	$186.58	4	$105.94	$183.69
1986Q3	46	$476.90	$421.74	21	$193.48	$185.04	8	$135.12	$121.32
1986Q4	24	$464.65	$347.90	14	$352.14	$238.55	7	$99.10	$97.17
1987Q1	39	$503.19	$576.97	16	$217.38	$215.36	14	$101.43	$102.74
1987Q2	67	$370.48	$365.42	33	$181.62	$173.09	37	$117.52	$109.66
1987Q3	97	$328.94	$377.04	99	$143.03	$146.38	15	$80.73	$72.18
1987Q4	120	$247.96	$228.72	25	$141.86	$135.25	24	$70.91	$77.83
1988Q1	113	$258.22	$260.89	39	$125.67	$108.75	21	$76.95	$89.01
1988Q2	169	$236.82	$257.47	49	$122.15	$118.99	34	$76.02	$76.15
1988Q3	221	$230.61	$268.64	81	$140.24	$142.99	66	$78.12	$71.18
1988Q4	249	$196.37	$292.56	68	$111.95	$131.38	45	$81.53	$73.55
1989Q1	271	$202.01	$274.90	75	$126.33	$113.79	71	$70.88	$69.34
1989Q2	388	$215.23	$260.54	102	$119.85	$105.50	80	$75.97	$68.75
1989Q3	301	$211.87	$233.04	116	$152.35	$110.14	102	$74.38	$65.67
1989Q4	210	$241.13	$211.79	54	$162.36	$116.17	54	$91.95	$85.27
1990Q1	284	$282.43	$247.88	86	$171.90	$142.12	81	$110.28	$98.18
1990Q2	203	$302.18	$309.48	86	$224.58	$180.82	62	$150.06	$118.91
1990Q3	335	$334.10	$329.09	114	$236.98	$170.93	94	$127.85	$115.12
1990Q4	235	$278.28	$297.55	124	$209.60	$154.18	74	$111.89	$88.81
1991Q1	322	$261.15	$252.59	166	$180.48	$146.32	142	$99.46	$84.34
1991Q2	329	$232.38	$250.30	161	$159.49	$133.64	195	$92.58	$81.49
1991Q3	306	$242.07	$226.79	115	$132.77	$110.32	181	$90.89	$78.57
1991Q4	260	$227.32	$170.97	148	$110.85	$104.72	147	$77.45	$69.93
1992Q1	225	$214.37	$224.58	219	$118.73	$101.18	185	$79.32	$66.95
1992Q2	199	$280.90	$286.93	152	$163.13	$131.44	133	$98.28	$81.56
1992Q3	210	$247.99	$257.33	243	$141.77	$119.75	206	$87.22	$74.35
1992Q4	171	$249.82	$209.28	177	$125.50	$117.80	165	$83.74	$65.92
1993Q1	141	$229.96	$208.79	159	$125.28	$111.48	128	$78.22	$68.25
1993Q2	126	$250.63	$225.13	195	$144.95	$117.88	159	$97.73	$80.55
1993Q3	102	$234.96	$190.56	177	$141.25	$119.92	166	$80.30	$69.48
1993Q4	120	$207.35	$207.92	182	$135.82	$103.10	136	$76.94	$65.38
1994Q1	105	$216.24	$211.51	211	$114.82	$93.82	188	$75.21	$63.90
1994Q2	115	$185.77	$192.83	250	$113.72	$104.28	175	$75.56	$63.98
1994Q3	135	$184.23	$199.22	327	$120.28	$97.15	269	$74.32	$62.91
1994Q4	80	$195.51	$201.08	302	$102.60	$90.96	268	$71.53	$58.92
1995Q1	88	$232.96	$192.46	367	$108.07	$90.17	294	$71.11	$58.45
1995Q2	116	$227.68	$198.08	236	$113.53	$97.92	205	$75.08	$61.01
1995Q3	190	$233.65	$207.23	215	$143.53	$115.43	188	$87.42	$68.39
1995Q4	102	$235.99	$253.34	205	$136.41	$99.82	180	$84.60	$67.19
1996Q1	98	$226.74	$177.19	293	$122.08	$93.72	253	$74.21	$60.23

Period	0.1 - 1 gram			1 - 15 grams			> 15 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1996Q2	135	$197.11	$184.46	301	$118.48	$87.76	304	$71.85	$59.31
1996Q3	125	$204.59	$194.04	299	$122.42	$91.48	305	$69.71	$56.23
1996Q4	171	$195.28	$195.48	348	$119.08	$93.86	262	$70.70	$57.76
1997Q1	187	$184.31	$189.85	349	$110.32	$91.56	326	$71.22	$56.58
1997Q2	186	$290.22	$271.72	319	$165.11	$118.82	251	$88.63	$72.56
1997Q3	177	$244.16	$224.62	307	$128.78	$103.82	386	$82.07	$65.11
1997Q4	94	$217.10	$219.74	269	$116.74	$95.22	317	$68.83	$56.87
1998Q1	96	$219.00	$187.07	336	$115.08	$86.53	390	$70.59	$57.55
1998Q2	152	$200.65	$188.14	312	$115.88	$88.60	396	$68.23	$55.16
1998Q3	143	$202.22	$166.67	337	$120.99	$90.97	353	$67.89	$53.81
1998Q4	179	$205.70	$184.11	333	$110.39	$90.69	299	$74.72	$58.31
1999Q1	218	$257.08	$285.84	344	$153.93	$111.19	241	$99.58	$72.71
1999Q2	206	$215.93	$226.79	353	$133.58	$94.89	323	$83.39	$62.91
1999Q3	331	$196.02	$206.12	406	$126.26	$92.47	383	$75.11	$60.14
1999Q4	287	$207.44	$229.47	442	$154.03	$102.80	288	$78.26	$59.49
2000Q1	273	$239.06	$236.89	495	$170.65	$112.51	292	$97.32	$72.54
2000Q2	226	$275.46	$272.21	458	$177.55	$109.90	384	$99.68	$71.29
2000Q3	161	$287.18	$253.23	446	$163.34	$113.24	458	$86.41	$66.84
2000Q4	217	$250.82	$247.29	377	$135.29	$110.70	318	$83.69	$61.03
2001Q1	206	$282.32	$245.86	507	$148.34	$106.43	410	$90.37	$65.53
2001Q2	245	$274.87	$213.97	415	$153.07	$104.45	416	$93.66	$67.38
2001Q3	165	$237.91	$218.85	353	$134.51	$95.52	364	$90.48	$62.40
2001Q4	202	$269.51	$228.72	241	$145.75	$99.42	229	$96.07	$67.09
2002Q1	197	$237.21	$228.93	365	$139.25	$92.18	380	$82.80	$62.08
2002Q2	140	$242.22	$199.68	323	$143.60	$100.95	429	$85.06	$62.01
2002Q3	120	$213.00	$187.91	349	$124.25	$93.92	429	$71.90	$56.95
2002Q4	124	$272.50	$211.22	251	$126.57	$85.66	268	$64.77	$54.16
2003Q1	126	$222.16	$226.25	333	$110.99	$86.49	371	$68.29	$51.42
2003Q2	120	$242.34	$179.81	313	$119.19	$84.36	384	$61.67	$50.77
2003Q3	104	$195.03	$177.64	404	$113.00	$83.71	382	$62.37	$51.45
2003Q4	94	$210.60	$167.95	287	$131.37	$89.35	278	$66.74	$51.96
2004Q1	132	$175.64	$210.85	277	$98.04	$81.47	349	$60.72	$47.01
2004Q2	117	$185.34	$166.76	241	$107.94	$87.65	296	$59.97	$47.29
2004Q3	121	$160.82	$166.20	319	$95.59	$81.84	361	$60.36	$49.86
2004Q4	160	$150.05	$170.85	281	$98.08	$81.66	297	$57.43	$47.75
2005Q1	173	$154.66	$157.37	388	$83.23	$70.38	377	$58.13	$45.25
2005Q2	185	$146.50	$160.95	361	$89.86	$72.85	351	$54.60	$44.70
2005Q3	151	$164.98	$172.36	275	$100.31	$76.70	335	$59.21	$44.66
2005Q4	99	$159.76	$154.23	285	$89.84	$68.98	299	$55.82	$43.70

Period	0.1 - 1 gram			1 - 15 grams			> 15 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
2006Q1	145	$147.44	$146.50	351	$85.52	$69.21	416	$56.23	$42.79
2006Q2	194	$165.58	$174.55	457	$89.62	$71.90	434	$50.74	$41.81
2006Q3	166	$155.31	$152.06	397	$84.58	$72.09	390	$49.91	$42.15
2006Q4	159	$150.22	$137.73	323	$83.70	$65.34	311	$49.60	$40.84
2007Q1	143	$152.79	$150.92	412	$81.23	$71.59	368	$48.76	$41.91
2007Q2	145	$184.87	$170.42	322	$109.59	$80.12	265	$59.63	$47.79
2007Q3	173	$231.90	$176.65	343	$105.74	$76.82	361	$64.16	$48.87
2007Q4	80	$179.93	$167.30	273	$89.70	$68.44	300	$55.38	$45.18

Table B-3. Estimated Quarterly Price of Heroin – Median per Pure Gram and EPH per Expected Pure Gram, National Index, Constant 2007 Dollars

Period	0.1 - 1 gram			1 - 10 grams			> 10 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1981Q1	108	$9,625.06	$2,312.97	88	$6,114.99	$1,659.76	69	$2,718.31	$1,274.41
1981Q2	92	$6,476.75	$1,681.76	80	$7,235.36	$1,965.24	78	$2,231.22	$956.30
1981Q3	109	$6,509.46	$1,899.71	98	$5,397.18	$1,916.43	70	$2,809.48	$1,378.71
1981Q4	157	$5,498.01	$1,664.51	67	$4,435.06	$1,662.56	42	$1,893.38	$785.78
1982Q1	138	$6,538.21	$1,657.98	143	$4,562.73	$1,413.95	67	$1,578.15	$787.93
1982Q2	121	$6,969.92	$1,472.30	89	$5,520.18	$1,574.22	75	$1,852.08	$940.90
1982Q3	133	$5,719.93	$1,876.10	91	$4,478.04	$1,335.10	61	$1,764.99	$827.66
1982Q4	55	$6,014.71	$1,589.08	59	$4,795.20	$1,098.76	44	$1,902.69	$995.21
1983Q1	88	$5,944.32	$1,604.68	83	$4,457.72	$2,043.89	54	$2,266.82	$1,013.46
1983Q2	64	$5,564.80	$1,852.39	64	$3,714.58	$1,779.41	55	$2,147.81	$895.06
1983Q3	78	$4,007.58	$1,352.75	87	$5,072.14	$1,727.38	83	$2,211.77	$1,001.26
1983Q4	58	$5,614.44	$1,595.66	52	$4,741.99	$1,354.44	43	$1,612.42	$542.39
1984Q1	59	$5,630.02	$1,529.03	53	$4,419.17	$1,857.82	60	$1,389.62	$928.93
1984Q2	59	$7,622.28	$1,756.97	48	$4,039.58	$1,552.57	53	$1,503.68	$815.34
1984Q3	56	$4,054.76	$1,457.92	68	$3,706.55	$1,842.30	63	$1,689.64	$773.51
1984Q4	43	$2,646.20	$1,261.74	35	$2,854.63	$1,320.22	59	$1,312.36	$883.47
1985Q1	59	$3,988.54	$1,586.85	75	$2,309.20	$1,450.00	61	$1,066.57	$650.73
1985Q2	42	$3,742.84	$1,449.25	66	$2,717.01	$1,520.67	75	$1,131.71	$748.61
1985Q3	51	$4,751.07	$1,263.22	68	$2,391.09	$1,502.25	84	$1,225.30	$825.35
1985Q4	52	$3,514.98	$1,618.74	41	$1,438.76	$850.05	62	$1,166.42	$899.17
1986Q1	54	$2,630.66	$1,484.85	52	$1,682.58	$931.91	87	$1,286.68	$775.24
1986Q2	42	$2,986.22	$1,572.10	50	$1,783.33	$962.39	62	$953.64	$663.62
1986Q3	45	$2,919.85	$1,511.98	27	$2,443.91	$1,131.50	55	$1,271.56	$851.18
1986Q4	31	$3,739.45	$1,450.99	17	$4,097.68	$1,800.21	56	$1,128.67	$812.62
1987Q1	38	$2,922.57	$1,543.23	21	$2,430.34	$1,329.41	66	$1,490.80	$1,090.33
1987Q2	43	$2,035.55	$1,315.94	36	$1,828.23	$1,353.63	60	$1,183.10	$855.12
1987Q3	48	$1,849.42	$1,193.28	34	$2,113.63	$1,237.31	63	$962.88	$881.26
1987Q4	91	$2,355.74	$1,325.20	58	$1,362.15	$908.50	60	$1,038.09	$771.05
1988Q1	84	$2,198.70	$1,105.77	45	$1,508.22	$912.48	77	$797.67	$577.03
1988Q2	133	$2,497.30	$1,146.18	42	$1,892.02	$921.97	70	$802.19	$627.22
1988Q3	112	$1,739.00	$1,183.84	64	$1,843.17	$1,184.01	74	$847.85	$639.20
1988Q4	86	$2,692.29	$1,095.56	48	$1,533.32	$929.89	50	$731.05	$600.45
1989Q1	66	$1,556.55	$930.30	47	$1,592.39	$856.99	53	$591.52	$636.90
1989Q2	56	$1,915.25	$986.80	33	$1,657.13	$911.52	58	$747.37	$573.38
1989Q3	81	$1,482.33	$972.29	53	$1,175.71	$714.62	79	$515.07	$556.89
1989Q4	58	$1,508.12	$1,087.64	37	$1,010.10	$699.35	70	$580.93	$551.45
1990Q1	100	$2,000.61	$1,186.86	47	$2,104.54	$1,083.41	58	$830.48	$710.39
1990Q2	110	$2,073.02	$961.38	28	$1,913.63	$929.37	69	$1,146.26	$712.89
1990Q3	86	$2,563.02	$1,145.94	43	$2,177.61	$1,081.71	56	$1,070.87	$706.08
1990Q4	90	$1,303.56	$764.51	25	$1,276.58	$938.40	47	$797.73	$906.38

Period	0.1 - 1 gram			1 - 10 grams			> 10 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1991Q1	161	$2,217.20	$972.67	55	$2,183.23	$1,174.38	46	$966.11	$726.41
1991Q2	180	$2,052.39	$985.48	67	$1,605.26	$1,010.04	61	$731.38	$607.37
1991Q3	150	$2,051.52	$981.58	65	$1,548.10	$852.87	69	$747.55	$480.35
1991Q4	81	$1,631.19	$786.15	32	$1,613.31	$747.87	40	$637.95	$513.90
1992Q1	126	$1,662.06	$911.49	50	$1,328.47	$698.59	53	$600.18	$496.36
1992Q2	112	$1,765.64	$791.08	37	$1,970.04	$745.10	77	$649.79	$492.09
1992Q3	91	$1,212.69	$802.63	43	$1,318.01	$821.87	71	$532.77	$458.15
1992Q4	130	$1,602.58	$696.93	37	$902.45	$542.77	53	$378.11	$434.78
1993Q1	168	$1,314.78	$717.04	67	$1,082.58	$559.11	55	$382.13	$394.58
1993Q2	156	$1,370.79	$666.72	71	$941.45	$431.96	58	$369.93	$368.21
1993Q3	165	$1,059.36	$659.63	99	$862.16	$501.84	118	$423.86	$359.43
1993Q4	116	$1,098.03	$640.13	60	$696.36	$534.95	48	$370.82	$397.63
1994Q1	196	$1,030.57	$709.49	93	$714.43	$456.21	67	$363.44	$387.81
1994Q2	166	$1,031.46	$635.80	83	$801.22	$494.22	79	$383.41	$399.36
1994Q3	191	$944.61	$699.36	84	$644.48	$471.85	85	$329.06	$327.07
1994Q4	168	$996.80	$626.04	82	$601.94	$470.75	68	$286.84	$285.55
1995Q1	188	$823.12	$593.80	74	$598.95	$454.56	104	$262.53	$289.93
1995Q2	213	$826.80	$580.02	92	$512.92	$402.09	76	$254.63	$255.95
1995Q3	191	$792.69	$642.50	103	$727.85	$469.66	102	$265.02	$278.44
1995Q4	171	$824.11	$554.73	67	$667.65	$476.16	54	$304.84	$294.09
1996Q1	209	$952.78	$545.66	93	$649.02	$438.26	62	$356.94	$303.85
1996Q2	222	$847.86	$580.68	110	$608.01	$432.94	99	$340.80	$325.24
1996Q3	187	$802.00	$545.41	94	$614.86	$420.85	93	$244.04	$279.39
1996Q4	193	$891.92	$556.27	92	$556.70	$396.49	73	$287.16	$260.32
1997Q1	265	$900.21	$536.73	90	$621.81	$366.82	86	$227.73	$259.22
1997Q2	228	$877.09	$558.99	119	$534.55	$383.21	106	$233.96	$221.86
1997Q3	214	$756.69	$533.76	99	$551.87	$345.61	95	$278.91	$264.86
1997Q4	50	$1,191.20	$482.51	39	$477.12	$355.83	79	$265.02	$233.06
1998Q1	310	$755.52	$499.20	141	$458.39	$323.53	99	$227.31	$236.76
1998Q2	208	$605.48	$470.10	136	$414.39	$320.25	140	$203.74	$196.67
1998Q3	156	$593.50	$480.73	124	$433.82	$325.86	105	$226.15	$202.29
1998Q4	200	$590.80	$423.43	117	$471.98	$341.99	100	$243.85	$231.49
1999Q1	246	$715.11	$459.24	160	$468.32	$303.70	111	$241.25	$229.24
1999Q2	246	$811.41	$474.22	159	$398.82	$314.45	98	$276.27	$215.50
1999Q3	246	$642.65	$447.66	161	$382.67	$302.30	111	$176.40	$193.16
1999Q4	187	$607.37	$485.20	104	$417.53	$271.72	87	$185.07	$179.10
2000Q1	243	$606.19	$467.21	132	$393.29	$286.61	98	$186.67	$176.44
2000Q2	202	$607.36	$455.84	163	$413.30	$310.35	114	$145.59	$166.88
2000Q3	201	$674.90	$458.41	152	$366.31	$279.75	112	$193.96	$201.62
2000Q4	204	$700.32	$447.48	86	$324.34	$326.01	64	$187.95	$163.05

Period	0.1 - 1 gram			1 - 10 grams			> 10 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
2001Q1	211	$834.75	$430.78	165	$343.68	$285.99	84	$206.39	$176.16
2001Q2	207	$648.84	$436.60	137	$323.26	$262.18	103	$151.99	$159.78
2001Q3	208	$710.55	$421.93	120	$400.36	$287.03	103	$155.60	$153.27
2001Q4	215	$630.95	$434.22	79	$399.26	$250.19	60	$147.93	$132.68
2002Q1	209	$688.50	$427.03	109	$427.65	$285.63	81	$171.70	$167.45
2002Q2	219	$633.62	$443.53	146	$364.18	$258.59	82	$156.23	$149.50
2002Q3	219	$660.19	$418.60	132	$404.07	$291.87	111	$188.54	$170.87
2002Q4	78	$549.90	$328.58	68	$319.43	$248.00	50	$176.34	$150.85
2003Q1	233	$673.51	$393.43	119	$349.72	$248.47	62	$181.30	$152.40
2003Q2	215	$665.60	$420.04	143	$394.24	$266.90	63	$163.23	$137.03
2003Q3	220	$635.34	$432.51	142	$374.47	$252.94	91	$164.25	$162.05
2003Q4	209	$667.30	$375.85	144	$476.74	$295.34	83	$239.37	$181.39
2004Q1	204	$680.79	$393.98	148	$465.16	$281.98	82	$233.64	$182.54
2004Q2	219	$844.38	$436.13	110	$476.65	$300.91	95	$180.74	$191.65
2004Q3	174	$739.44	$425.69	109	$549.26	$329.98	95	$243.90	$197.97
2004Q4	182	$788.45	$415.22	128	$500.63	$279.70	59	$199.24	$172.10
2005Q1	198	$732.40	$395.49	95	$501.06	$256.91	63	$212.49	$172.21
2005Q2	218	$685.16	$352.30	107	$426.71	$250.69	72	$185.42	$161.66
2005Q3	207	$679.97	$388.46	95	$442.71	$257.08	64	$194.82	$158.81
2005Q4	197	$620.06	$389.53	80	$407.61	$253.29	33	$242.05	$179.34
2006Q1	206	$715.04	$395.57	135	$432.13	$265.47	55	$254.74	$165.30
2006Q2	213	$831.53	$397.93	86	$374.36	$293.28	39	$184.02	$167.67
2006Q3	203	$722.40	$352.75	76	$437.90	$239.45	64	$232.59	$177.74
2006Q4	207	$775.16	$401.17	74	$491.05	$264.09	30	$145.28	$133.99
2007Q1	223	$765.58	$424.62	79	$423.81	$253.08	30	$162.57	$153.94
2007Q2	209	$626.82	$340.54	71	$292.10	$204.69	36	$117.11	$119.38
2007Q3	233	$556.28	$338.48	89	$405.75	$215.51	53	$204.79	$160.37
2007Q4	215	$653.08	$352.97	79	$354.22	$218.04	47	$130.94	$139.42

Table B-4. Estimated Quarterly Price of d-Methamphetamine – Median per Pure Gram and EPH per Expected Pure Gram, National Index, Constant 2007 Dollars

Period	0.1 - 10 grams			10 - 100 grams			> 100 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1981Q1	19	$487.52	$355.69	20	$300.58	$167.34			
1981Q2	11	$720.22	$507.34	7	$226.49	$165.39			
1981Q3	8	$815.83	$404.19	10	$267.33	$150.71			
1981Q4	7	$437.03	$467.60	8	$209.75	$166.15			
1982Q1	14	$588.73	$398.17	19	$349.97	$240.58	8	$186.80	$109.64
1982Q2	16	$667.77	$527.64	8	$324.69	$204.03			
1982Q3	22	$341.26	$409.16	13	$202.30	$241.25			
1982Q4	25	$469.33	$414.89	16	$256.45	$196.92			
1983Q1	29	$748.82	$605.82	8	$234.70	$207.18			
1983Q2	31	$584.91	$404.56	12	$414.82	$306.53			
1983Q3	17	$606.43	$442.72	14	$158.74	$210.99			
1983Q4	25	$465.80	$336.37	8	$182.08	$166.90	7	$137.95	$131.21
1984Q1	31	$503.43	$382.97	8	$378.76	$364.40	8	$261.26	$100.98
1984Q2	29	$518.18	$337.55	28	$218.62	$246.43	12	$146.87	$70.59
1984Q3	18	$595.31	$456.25	12	$373.60	$205.65	12	$136.01	$76.95
1984Q4	31	$537.29	$403.89	19	$200.25	$208.85	6	$283.47	$109.91
1985Q1	35	$607.95	$505.35	31	$274.10	$235.46	12	$201.10	$78.65
1985Q2	11	$341.75	$360.36	13	$240.95	$277.99			
1985Q3	21	$446.34	$405.89	9	$112.36	$138.10			
1985Q4	28	$604.12	$465.26	16	$240.44	$197.93	8	$151.55	$150.62
1986Q1	38	$361.55	$386.87	22	$339.34	$257.82			
1986Q2	22	$350.95	$308.33	14	$353.51	$302.35	6	$233.47	$105.80
1986Q3	28	$414.91	$390.10	14	$245.09	$308.02	6	$94.71	$58.27
1986Q4	21	$305.38	$278.25	9	$176.90	$168.93			
1987Q1	25	$238.12	$340.18	18	$239.94	$219.80	5	$5,003.46	$361.01
1987Q2	29	$238.44	$319.34	25	$193.02	$206.45			
1987Q3	22	$311.86	$247.68	12	$205.65	$221.48			
1987Q4	41	$254.53	$347.23	18	$172.89	$198.21			
1988Q1	64	$235.20	$275.19	38	$143.61	$168.18	9	$73.47	$88.64
1988Q2	59	$197.24	$344.04	30	$184.04	$160.77	9	$67.86	$83.59
1988Q3	29	$304.63	$299.75	36	$143.76	$223.61	8	$161.51	$85.09
1988Q4	29	$228.07	$335.94	27	$107.18	$170.46	8	$46.66	$68.13
1989Q1	34	$255.63	$301.76	33	$124.85	$173.39	8	$60.33	$87.68
1989Q2	26	$180.92	$295.07	20	$160.57	$176.73			
1989Q3	23	$226.02	$540.86	21	$182.66	$160.97			
1989Q4	30	$256.65	$475.93	17	$117.70	$210.45			
1990Q1	25	$340.46	$303.35	25	$347.85	$312.56			
1990Q2	16	$847.02	$608.57	25	$515.30	$381.13	7	$287.24	$238.13
1990Q3	18	$565.25	$418.99	25	$228.46	$214.71	9	$278.16	$131.49
1990Q4	16	$422.91	$468.68	15	$302.17	$289.94	8	$107.41	$115.18

Period	0.1 - 10 grams			10 - 100 grams			> 100 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1991Q1	32	$814.43	$677.95	22	$259.10	$220.29	10	$89.35	$114.40
1991Q2	17	$672.12	$501.61	28	$466.43	$399.93	9	$130.28	$91.75
1991Q3	16	$538.63	$533.42	21	$453.07	$269.63	8	$257.53	$142.37
1991Q4	9	$623.94	$371.63	25	$479.73	$331.24	8	$164.17	$177.38
1992Q1	10	$446.16	$265.85	31	$341.38	$215.19	8	$266.04	$181.15
1992Q2	17	$287.38	$286.42	28	$188.41	$210.22	13	$100.33	$101.76
1992Q3	22	$475.44	$274.07	28	$218.28	$176.68	12	$35.83	$67.60
1992Q4	12	$337.63	$285.93	28	$186.30	$159.76	8	$44.56	$81.20
1993Q1	27	$338.13	$263.52	18	$272.61	$182.23	7	$86.38	$85.91
1993Q2	21	$459.34	$298.19	20	$312.58	$169.22			
1993Q3	25	$384.52	$291.18	34	$134.33	$126.61	16	$51.76	$57.81
1993Q4	37	$205.95	$174.01	31	$80.25	$124.21	11	$34.04	$56.44
1994Q1	25	$247.29	$209.60	34	$108.37	$117.67	28	$34.76	$60.87
1994Q2	31	$221.01	$212.91	53	$80.32	$115.04	22	$28.50	$49.74
1994Q3	31	$162.94	$139.03	57	$95.58	$96.59	20	$30.92	$53.67
1994Q4	38	$132.07	$199.16	41	$72.46	$93.39	23	$32.87	$52.83
1995Q1	49	$211.52	$202.83	70	$121.68	$126.02	25	$23.43	$43.55
1995Q2	39	$206.23	$215.41	102	$81.29	$105.80	41	$23.84	$46.26
1995Q3	65	$289.00	$214.76	57	$183.40	$129.36	24	$66.85	$77.42
1995Q4	52	$1,005.88	$580.47	32	$591.69	$300.30	16	$348.92	$215.78
1996Q1	27	$525.00	$282.17	55	$288.66	$222.10	16	$140.36	$129.94
1996Q2	40	$345.38	$248.15	53	$177.30	$153.52	32	$77.42	$77.47
1996Q3	23	$439.01	$341.32	40	$198.34	$154.85	46	$60.09	$78.15
1996Q4	34	$247.48	$205.21	77	$147.77	$125.21	50	$80.67	$81.11
1997Q1	45	$121.92	$214.00	98	$90.63	$114.95	41	$47.28	$55.05
1997Q2	45	$175.85	$176.40	112	$109.99	$126.35	57	$56.90	$67.34
1997Q3	56	$216.23	$192.32	133	$108.84	$123.61	51	$53.97	$60.70
1997Q4	71	$337.32	$254.32	142	$130.64	$138.43	66	$66.89	$69.91
1998Q1	76	$285.63	$260.13	154	$138.15	$148.89	78	$79.05	$78.82
1998Q2	68	$432.11	$279.90	144	$398.97	$260.83	63	$175.45	$145.15
1998Q3	60	$533.16	$362.17	130	$254.46	$260.90	84	$198.45	$173.57
1998Q4	41	$421.51	$288.27	145	$233.60	$205.36	93	$120.31	$130.82
1999Q1	60	$436.61	$297.99	111	$251.93	$253.13	90	$126.09	$118.11
1999Q2	53	$237.99	$235.07	101	$192.95	$195.53	87	$101.97	$95.95
1999Q3	70	$250.47	$244.05	152	$168.27	$150.74	116	$109.94	$91.38
1999Q4	62	$248.93	$214.42	120	$162.49	$180.15	96	$77.71	$82.60
2000Q1	65	$248.10	$176.24	129	$138.01	$155.12	127	$96.84	$83.20
2000Q2	77	$311.45	$244.04	166	$168.63	$174.94	107	$91.27	$96.42
2000Q3	45	$266.18	$231.62	139	$138.59	$158.42	122	$84.00	$83.56
2000Q4	38	$251.70	$197.09	95	$152.85	$146.23	100	$89.44	$78.79

Period	0.1 - 10 grams			10 - 100 grams			> 100 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
2001Q1	66	$290.48	$208.23	123	$141.48	$137.02	108	$91.52	$83.01
2001Q2	57	$213.32	$224.34	147	$175.68	$134.13	140	$73.26	$73.17
2001Q3	72	$234.09	$207.04	143	$134.37	$111.95	155	$77.89	$67.21
2001Q4	66	$280.05	$207.76	127	$146.91	$129.10	85	$92.56	$76.22
2002Q1	72	$246.85	$206.84	142	$96.79	$112.66	110	$76.28	$69.41
2002Q2	86	$242.63	$172.79	152	$139.71	$118.63	104	$85.23	$66.44
2002Q3	59	$231.93	$185.92	145	$128.27	$117.37	110	$86.21	$73.42
2002Q4	52	$179.07	$148.91	99	$125.42	$115.91	79	$67.34	$56.83
2003Q1	82	$204.10	$177.44	187	$84.41	$102.91	88	$58.54	$53.02
2003Q2	67	$203.33	$193.70	158	$109.52	$100.37	87	$57.25	$54.80
2003Q3	83	$240.19	$160.64	195	$80.79	$92.04	153	$45.38	$50.30
2003Q4	64	$224.36	$155.65	162	$68.98	$84.83	93	$41.94	$47.71
2004Q1	81	$182.69	$157.34	209	$93.71	$81.76	79	$51.72	$50.91
2004Q2	67	$180.11	$162.43	197	$83.75	$92.99	78	$51.60	$50.88
2004Q3	62	$171.45	$163.98	201	$79.82	$91.17	103	$42.61	$47.79
2004Q4	62	$244.01	$175.11	174	$65.62	$75.08	89	$43.87	$47.79
2005Q1	74	$149.64	$142.89	166	$51.73	$70.72	91	$41.84	$46.04
2005Q2	76	$109.46	$104.88	138	$51.80	$63.08	70	$26.51	$36.85
2005Q3	68	$132.68	$119.95	139	$41.77	$57.09	62	$25.82	$35.83
2005Q4	64	$109.22	$113.44	64	$64.00	$66.43	17	$33.33	$41.08
2006Q1	30	$141.23	$143.02	44	$75.75	$100.82	12	$66.03	$58.08
2006Q2	22	$212.68	$217.56	50	$73.47	$106.05	18	$47.23	$56.75
2006Q3	29	$179.20	$160.26	88	$59.19	$86.75	37	$40.03	$50.89
2006Q4	44	$135.98	$143.11	108	$57.22	$88.06	31	$37.85	$48.68
2007Q1	29	$180.04	$134.55	96	$48.60	$79.46	42	$40.13	$44.99
2007Q2	28	$171.36	$186.64	87	$91.23	$88.16	22	$84.08	$87.89
2007Q3	16	$195.67	$165.13	66	$115.56	$143.84	19	$59.28	$78.85
2007Q4	18	$277.37	$259.67	31	$85.61	$148.87	9	$70.59	$87.30

Table B-5. Estimated Quarterly Price of Marijuana – Median per Bulk Gram and EPH per Bulk Gram, National Index, Constant 2007 Dollars

Period	0.1 - 10 grams			10 - 100 grams			> 100 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1981Q1	16	$6.57	$8.43	24	$4.01	$4.22	3	$2.00	$2.10
1981Q2	31	$6.25	$8.53	7	$4.29	$3.81	2	$2.49	$1.93
1981Q3	37	$5.34	$8.14	13	$2.90	$3.89	11	$1.18	$1.96
1981Q4	36	$5.45	$8.72	12	$4.04	$3.95	1	$5.45	$2.08
1982Q1	9	$5.84	$8.92	11	$4.18	$6.00	6	$1.79	$2.38
1982Q2	14	$6.33	$9.03	12	$5.79	$5.43	3	$1.54	$2.18
1982Q3	8	$7.90	$8.61	9	$4.84	$5.54	8	$3.11	$2.22
1982Q4	9	$7.05	$9.23	4	$6.22	$5.63	14	$1.16	$2.35
1983Q1	8	$9.02	$13.47	10	$6.37	$10.28	2	$2.79	$3.99
1983Q2	25	$7.37	$13.64	10	$7.57	$9.29	6	$3.89	$3.67
1983Q3	13	$10.94	$13.00	8	$5.75	$9.49	8	$4.04	$3.73
1983Q4	8	$8.55	$13.93	19	$6.39	$9.63	18	$2.41	$3.95
1984Q1	16	$8.74	$13.52	9	$7.04	$5.34	5	$2.90	$3.88
1984Q2	28	$10.44	$13.68	10	$4.28	$4.83	9	$3.52	$3.56
1984Q3	18	$8.13	$13.05	9	$4.39	$4.93	7	$2.83	$3.62
1984Q4	14	$8.23	$13.98	13	$4.44	$5.01	7	$3.92	$3.83
1985Q1	16	$10.33	$11.42	12	$6.75	$7.55	13	$3.10	$3.49
1985Q2	16	$9.03	$11.56	9	$5.58	$6.83	17	$2.54	$3.20
1985Q3	9	$42.14	$11.03	5	$7.09	$6.97	6	$3.18	$3.26
1985Q4	8	$6.47	$11.81	6	$7.24	$7.08	9	$2.94	$3.45
1986Q1	8	$41.09	$24.95	5	$7.64	$11.66	6	$3.13	$4.18
1986Q2	10	$28.60	$25.26	2	$10.61	$10.54	3	$2.17	$3.84
1986Q3	11	$28.61	$24.08	2	$3.88	$10.76	3	$3.88	$3.91
1986Q4	17	$20.87	$25.80	4	$11.14	$10.93	5	$4.19	$4.14
1987Q1	28	$23.22	$22.14	5	$5.16	$8.39	11	$4.03	$6.30
1987Q2	20	$17.24	$22.42	4	$9.83	$7.59	26	$3.63	$5.78
1987Q3	9	$14.56	$21.38	5	$13.17	$7.74	9	$3.14	$5.88
1987Q4	4	$12.69	$22.90	6	$5.46	$7.87	3	$3.96	$6.23
1988Q1	13	$13.25	$20.48	3	$12.41	$9.71	10	$2.92	$3.99
1988Q2	12	$17.42	$20.73	10	$10.46	$8.78	3	$4.30	$3.66
1988Q3	10	$14.60	$19.77	3	$8.86	$8.96	2	$4.92	$3.72
1988Q4	6	$19.88	$21.18	9	$11.75	$9.10	8	$2.62	$3.94
1989Q1	8	$14.40	$19.96	5	$13.59	$9.77	16	$3.12	$4.54
1989Q2	6	$14.59	$20.20	6	$7.35	$8.84	6	$4.00	$4.17
1989Q3	10	$15.80	$19.26	4	$6.81	$9.02	8	$2.66	$4.24
1989Q4	10	$17.14	$20.64	2	$3.08	$9.16	2	$3.66	$4.49
1990Q1	8	$10.95	$23.39	9	$9.37	$11.92	17	$6.26	$4.99
1990Q2	10	$16.70	$23.68	4	$9.12	$10.78	11	$5.25	$4.58
1990Q3	8	$19.67	$22.58	1	$3.57	$11.00	4	$5.58	$4.65
1990Q4	14	$16.53	$24.19	12	$12.41	$11.18	23	$7.94	$4.93

Period	0.1 - 10 grams			10 - 100 grams			> 100 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1991Q1	14	$17.34	$26.43	30	$11.49	$13.30	32	$5.06	$5.74
1991Q2	16	$21.45	$26.76	8	$9.97	$12.03	11	$6.83	$5.27
1991Q3	5	$32.86	$25.51	5	$10.07	$12.28	5	$7.93	$5.36
1991Q4	4	$21.01	$27.34		$38.16	$12.47	31	$5.11	$5.67
1992Q1	12	$23.98	$24.20	7	$11.31	$9.01	20	$5.93	$5.03
1992Q2	18	$20.11	$24.50	12	$10.18	$8.15	23	$5.91	$4.61
1992Q3	25	$22.45	$23.36	7	$8.89	$8.32	35	$4.32	$4.69
1992Q4	14	$16.77	$25.03	8	$6.06	$8.45	26	$4.19	$4.97
1993Q1	23	$20.87	$22.15	4	$14.75	$13.46	14	$5.56	$5.31
1993Q2	27	$18.89	$22.43	8	$15.41	$12.17	13	$4.07	$4.87
1993Q3	37	$17.38	$21.38	13	$12.21	$12.42	14	$5.54	$4.96
1993Q4	27	$18.77	$22.91	9	$14.44	$12.61	12	$2.36	$5.25
1994Q1	11	$15.87	$18.43	6	$15.54	$12.82	18	$4.10	$4.22
1994Q2	21	$14.65	$18.66	3	$9.02	$11.59	26	$4.10	$3.87
1994Q3	9	$7.32	$17.79	6	$4.60	$11.84	15	$2.97	$3.94
1994Q4	15	$15.43	$19.06	22	$4.03	$12.02	13	$3.48	$4.17
1995Q1	13	$11.78	$14.87	17	$6.33	$9.00	21	$3.11	$4.02
1995Q2	9	$10.25	$15.06	8	$6.20	$8.14	36	$3.06	$3.69
1995Q3	13	$9.04	$14.36	4	$5.70	$8.30	20	$2.99	$3.76
1995Q4	43	$7.94	$15.38	18	$5.74	$8.44	18	$3.73	$3.98
1996Q1	23	$7.44	$13.40	16	$6.59	$7.87	23	$3.71	$3.02
1996Q2	21	$8.17	$13.56	11	$6.74	$7.11	23	$2.99	$2.77
1996Q3	15	$7.20	$12.93	14	$6.09	$7.26	27	$2.44	$2.82
1996Q4	12	$6.48	$13.86	6	$5.88	$7.37	13	$3.04	$2.98
1997Q1	44	$5.65	$12.05	16	$6.27	$5.78	28	$2.67	$3.22
1997Q2	39	$6.02	$12.20	28	$5.00	$5.22	33	$3.07	$2.95
1997Q3	26	$11.21	$11.63	16	$4.97	$5.33	35	$2.84	$3.00
1997Q4	20	$20.77	$12.46	7	$5.56	$5.41	18	$2.97	$3.18
1998Q1	9	$9.15	$11.62	13	$4.85	$7.37	27	$3.06	$3.68
1998Q2	34	$6.37	$11.76	12	$6.61	$6.66	35	$2.23	$3.38
1998Q3	24	$5.34	$11.21	6	$8.76	$6.80	27	$2.43	$3.43
1998Q4	25	$5.99	$12.01	10	$4.99	$6.91	18	$3.76	$3.64
1999Q1	31	$7.63	$13.12	7	$8.65	$10.29	23	$2.46	$3.34
1999Q2	61	$6.94	$13.28	11	$12.17	$9.30	29	$2.56	$3.07
1999Q3	97	$6.74	$12.67	11	$5.85	$9.50	26	$2.58	$3.12
1999Q4	22	$7.73	$13.57	11	$5.49	$9.65	22	$2.79	$3.30
2000Q1	31	$7.69	$12.33	11	$4.36	$6.33	33	$2.27	$2.99
2000Q2	23	$8.05	$12.48	3	$3.79	$5.73	26	$2.33	$2.75
2000Q3	11	$9.58	$11.90	6	$6.67	$5.85	26	$2.04	$2.79
2000Q4	39	$6.53	$12.75	10	$4.92	$5.94	19	$2.66	$2.96

Period	0.1 - 10 grams			10 - 100 grams			> 100 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
2001Q1	27	$8.31	$13.43	14	$6.11	$7.13	31	$2.26	$2.84
2001Q2	39	$17.73	$13.60	4	$6.43	$6.45	9	$2.61	$2.60
2001Q3	48	$7.29	$12.97	9	$4.77	$6.58	20	$3.19	$2.65
2001Q4	74	$9.00	$13.89	12	$6.77	$6.68	12	$3.05	$2.80
2002Q1	54	$10.13	$15.90	12	$6.57	$10.90	17	$3.42	$4.25
2002Q2	60	$10.48	$16.09	8	$11.23	$9.85	24	$2.42	$3.90
2002Q3	51	$9.70	$15.35	3	$4.78	$10.06	11	$3.13	$3.96
2002Q4	77	$15.26	$16.44	3	$11.78	$10.22	19	$3.10	$4.20
2003Q1	72	$12.36	$16.87	14	$4.80	$9.94	27	$2.40	$3.47
2003Q2	20	$11.88	$17.08	16	$5.91	$8.98	30	$2.33	$3.19
2003Q3	29	$10.21	$16.28	10	$4.40	$9.17	23	$2.59	$3.24
2003Q4	25	$12.14	$17.45	6	$8.47	$9.32	31	$2.39	$3.43
2004Q1	39	$10.87	$15.40	8	$5.68	$7.77	46	$2.85	$2.66
2004Q2	33	$10.45	$15.59	10	$5.92	$7.02	24	$2.35	$2.44
2004Q3	29	$9.31	$14.86	11	$5.95	$7.17	27	$1.83	$2.48
2004Q4	50	$11.76	$15.93	14	$8.77	$7.28	26	$2.19	$2.62
2005Q1	69	$10.29	$15.37	14	$5.21	$9.35	32	$3.42	$3.53
2005Q2	31	$10.15	$15.56	5	$15.51	$8.46	17	$2.65	$3.24
2005Q3	26	$9.57	$14.84	8	$10.73	$8.63	28	$2.65	$3.29
2005Q4	19	$13.54	$15.90	20	$13.55	$8.77	19	$2.47	$3.48
2006Q1	37	$10.42	$15.27	10	$7.82	$10.92	24	$2.09	$2.32
2006Q2	41	$10.01	$15.46	13	$6.37	$9.87	18	$2.42	$2.13
2006Q3	32	$9.27	$14.74	13	$13.69	$10.08	17	$2.13	$2.16
2006Q4	36	$14.69	$15.79	14	$8.74	$10.24	8	$2.10	$2.29
2007Q1	28	$18.01	$15.69	19	$4.43	$10.31	22	$2.75	$2.38
2007Q2	20	$14.47	$15.88	23	$8.36	$9.33	28	$1.69	$2.18
2007Q3	37	$10.48	$15.14	21	$7.38	$9.52	57	$1.75	$2.22
2007Q4	22	$13.54	$16.22	22	$6.07	$9.67	24	$2.76	$2.35

Table B-6. Estimated Quarterly Expected Purity of Powder Cocaine – National Index

Period	0.1 - 2 grams			2 - 10 grams			10 - 50 grams			> 50 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1981Q1	56	0.2450	0.3246	86	0.4355	0.4822	127	0.4400	0.4664	25	0.5400	0.5644
1981Q2	53	0.3600	0.3885	67	0.3600	0.4095	113	0.4300	0.4997	13	0.6000	0.6033
1981Q3	48	0.5100	0.4762	53	0.3700	0.4219	113	0.4400	0.5032			
1981Q4	52	0.4150	0.4100	52	0.3850	0.4259	53	0.4400	0.5078	6	0.4895	0.5075
1982Q1	87	0.3100	0.3845	86	0.3000	0.3654	138	0.4300	0.4841	15	0.5800	0.5724
1982Q2	64	0.3600	0.4163	96	0.4100	0.4622	92	0.4220	0.4595	21	0.6800	0.6209
1982Q3	95	0.3800	0.4703	116	0.3875	0.4404	150	0.4330	0.5000	19	0.4810	0.5121
1982Q4	86	0.4300	0.4526	72	0.4385	0.4976	107	0.4500	0.4981	8	0.7795	0.7041
1983Q1	111	0.4000	0.4535	112	0.4255	0.4736	151	0.5300	0.5850	30	0.7050	0.6579
1983Q2	56	0.4585	0.5114	133	0.3920	0.4803	184	0.5000	0.5529	38	0.7900	0.7292
1983Q3	61	0.3900	0.4738	100	0.4200	0.4665	169	0.5900	0.6234	45	0.8500	0.7492
1983Q4	116	0.4150	0.5079	147	0.4900	0.5398	217	0.6400	0.6656	46	0.8800	0.7845
1984Q1	129	0.4580	0.5227	128	0.4960	0.5328	227	0.6700	0.6867	60	0.8370	0.7613
1984Q2	98	0.4655	0.5627	131	0.5480	0.5921	230	0.6750	0.6868	64	0.7450	0.7385
1984Q3	81	0.4410	0.5305	125	0.4600	0.5466	246	0.5885	0.6534	61	0.7270	0.6961
1984Q4	106	0.4600	0.5259	146	0.4715	0.5380	282	0.5610	0.6471	60	0.7280	0.7214
1985Q1	129	0.4000	0.5046	183	0.4900	0.5655	295	0.5830	0.6207	71	0.7400	0.7173
1985Q2	172	0.3850	0.5171	163	0.4500	0.5319	332	0.5025	0.5691	94	0.6300	0.6035
1985Q3	162	0.3925	0.4888	170	0.4550	0.5400	384	0.5800	0.6315	87	0.6700	0.6669
1985Q4	145	0.4100	0.5298	145	0.5100	0.5814	390	0.6400	0.6677	110	0.7600	0.7030
1986Q1	161	0.4100	0.5459	168	0.5610	0.6185	400	0.7300	0.7251	113	0.8400	0.7685
1986Q2	170	0.5000	0.6015	184	0.6380	0.6728	369	0.7500	0.7304	112	0.8300	0.7589
1986Q3	142	0.4680	0.6184	150	0.6750	0.7281	335	0.7900	0.7531	102	0.8700	0.8120
1986Q4	135	0.4370	0.6904	128	0.7300	0.7253	346	0.7800	0.7737	124	0.8800	0.8444
1987Q1	150	0.5900	0.7206	88	0.7200	0.7625	291	0.8200	0.7980	136	0.8850	0.8442
1987Q2	96	0.5090	0.7335	121	0.8500	0.7930	411	0.8100	0.7904	200	0.8600	0.7901
1987Q3	95	0.6400	0.7340	121	0.7600	0.7749	440	0.8200	0.8057	214	0.8800	0.8344
1987Q4	94	0.7400	0.7135	113	0.7900	0.7941	369	0.8500	0.8299	182	0.8800	0.8557
1988Q1	88	0.7800	0.7642	136	0.7650	0.7631	397	0.8600	0.8361	171	0.8800	0.8336
1988Q2	121	0.6800	0.6708	115	0.6900	0.7379	362	0.8350	0.7769	181	0.8600	0.8114
1988Q3	111	0.7600	0.7331	127	0.8000	0.7905	353	0.8100	0.7812	255	0.8800	0.8241
1988Q4	87	0.8000	0.7745	112	0.7900	0.7986	348	0.8400	0.8191	239	0.8900	0.8212
1989Q1	84	0.7550	0.7429	144	0.7300	0.7476	387	0.8500	0.7971	247	0.8500	0.8121
1989Q2	81	0.7800	0.7433	89	0.8000	0.7899	374	0.7800	0.7442	206	0.8400	0.7843
1989Q3	84	0.6350	0.6681	92	0.7150	0.7120	309	0.7400	0.7363	265	0.8300	0.7692
1989Q4	81	0.5300	0.6069	102	0.6050	0.6641	250	0.6700	0.6877	185	0.7500	0.7225
1990Q1	96	0.5350	0.6140	111	0.4900	0.6045	231	0.5900	0.6564	180	0.6350	0.6725
1990Q2	49	0.5290	0.5904	66	0.4050	0.5030	196	0.5050	0.6001	142	0.6000	0.6240
1990Q3	74	0.4300	0.5231	82	0.5450	0.5769	240	0.5600	0.5989	184	0.6300	0.6220
1990Q4	70	0.5400	0.5899	73	0.5200	0.6120	263	0.6200	0.6632	161	0.7370	0.7115

Period	0.1 - 2 grams			2 - 10 grams			10 - 50 grams			> 50 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1991Q1	145	0.7900	0.6036	126	0.5100	0.6208	342	0.6700	0.7024	238	0.7900	0.7301
1991Q2	66	0.5200	0.6226	87	0.6300	0.7012	311	0.7400	0.7252	309	0.7900	0.7498
1991Q3	49	0.6400	0.6664	101	0.6100	0.6734	325	0.7700	0.7556	298	0.8200	0.7665
1991Q4	49	0.6300	0.6464	78	0.7650	0.7560	276	0.8200	0.7796	241	0.8500	0.7954
1992Q1	70	0.7150	0.6695	90	0.6450	0.6684	295	0.8000	0.7551	241	0.8400	0.7949
1992Q2	47	0.5600	0.6333	66	0.6200	0.6467	193	0.7000	0.6639	156	0.7650	0.7110
1992Q3	68	0.7100	0.6847	61	0.6300	0.6608	229	0.7600	0.7305	224	0.8200	0.7355
1992Q4	45	0.7800	0.7087	46	0.6400	0.6960	165	0.7700	0.7534	103	0.8400	0.7918
1993Q1	43	0.6700	0.6805	48	0.6200	0.6486	100	0.6200	0.6796	78	0.8390	0.7570
1993Q2	44	0.5750	0.6902	57	0.7100	0.7236	148	0.6600	0.6705	71	0.7800	0.7071
1993Q3	52	0.6950	0.6883	54	0.6050	0.6452	147	0.6700	0.6739	97	0.7800	0.7400
1993Q4	46	0.6600	0.6839	52	0.5400	0.6416	113	0.6700	0.6672	84	0.7750	0.7361
1994Q1	51	0.7800	0.6998	56	0.7100	0.7156	143	0.7200	0.7087	96	0.7950	0.7429
1994Q2	30	0.6500	0.6344	54	0.6550	0.6759	156	0.7815	0.7370	101	0.8100	0.7802
1994Q3	61	0.5600	0.6407	53	0.6700	0.6813	171	0.6800	0.7040	151	0.8300	0.7656
1994Q4	29	0.6800	0.6856	47	0.5600	0.6129	141	0.7600	0.7384	109	0.8200	0.7754
1995Q1	32	0.7050	0.7056	69	0.7300	0.7505	145	0.7800	0.7557	102	0.7450	0.7253
1995Q2	25	0.4500	0.5278	45	0.6600	0.6734	112	0.7500	0.7115	112	0.7500	0.7038
1995Q3	33	0.5800	0.6124	57	0.5500	0.6224	107	0.5600	0.5986	108	0.6250	0.6501
1995Q4	48	0.6300	0.6021	38	0.5350	0.6183	118	0.6400	0.6439	102	0.6300	0.6566
1996Q1	29	0.7600	0.6798	53	0.6800	0.6949	124	0.6400	0.6778	114	0.7800	0.7269
1996Q2	45	0.6900	0.6890	55	0.6200	0.6378	143	0.6300	0.6700	173	0.7300	0.7080
1996Q3	31	0.6600	0.7030	59	0.7100	0.6861	164	0.7200	0.6951	193	0.7700	0.7233
1996Q4	24	0.8850	0.8338	46	0.7450	0.7305	155	0.8100	0.7703	151	0.7800	0.7364
1997Q1	29	0.7400	0.6863	79	0.6400	0.6897	149	0.7200	0.7251	117	0.7800	0.7187
1997Q2	55	0.5600	0.5911	74	0.6600	0.6776	99	0.6000	0.6237	90	0.6700	0.6394
1997Q3	50	0.6650	0.6531	80	0.6250	0.7047	160	0.6600	0.6608	172	0.6900	0.6699
1997Q4	40	0.6450	0.6853	63	0.7100	0.7043	158	0.7600	0.7371	164	0.7300	0.6949
1998Q1	34	0.7650	0.7533	57	0.7100	0.7110	178	0.6850	0.6813	149	0.7400	0.6877
1998Q2	34	0.7250	0.6745	71	0.6900	0.7234	169	0.7400	0.7189	195	0.7900	0.7358
1998Q3	52	0.6250	0.6320	75	0.6300	0.6650	199	0.7000	0.7082	181	0.7500	0.7186
1998Q4	38	0.7200	0.6923	56	0.7200	0.6940	157	0.6900	0.6689	164	0.6600	0.6756
1999Q1	81	0.6300	0.6193	92	0.6300	0.6290	141	0.6000	0.6450	107	0.5900	0.5916
1999Q2	34	0.5450	0.6145	71	0.6500	0.6487	134	0.6100	0.6314	168	0.6700	0.6341
1999Q3	61	0.7300	0.6742	57	0.6100	0.6239	193	0.6200	0.6245	239	0.6900	0.6590
1999Q4	36	0.7500	0.6968	67	0.6300	0.6374	148	0.6250	0.6431	127	0.6600	0.6378
2000Q1	51	0.6200	0.6350	74	0.5150	0.5589	137	0.5900	0.5987	117	0.5100	0.5454
2000Q2	32	0.6900	0.6231	58	0.5750	0.5827	156	0.4550	0.5251	178	0.4500	0.4970
2000Q3	29	0.6200	0.5839	65	0.5600	0.5858	181	0.5500	0.6047	172	0.5800	0.5965
2000Q4	40	0.6500	0.6177	65	0.4700	0.5524	171	0.5400	0.5759	119	0.5700	0.5947

Period	0.1 - 2 grams			2 - 10 grams			10 - 50 grams			> 50 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
2001Q1	41	0.6100	0.6038	85	0.5400	0.5997	193	0.4200	0.5336	186	0.5400	0.5705
2001Q2	21	0.5200	0.5522	64	0.6050	0.6177	169	0.5000	0.5365	188	0.5400	0.5522
2001Q3	15	0.6100	0.6391	37	0.5200	0.5715	131	0.4700	0.5447	178	0.4850	0.5257
2001Q4	17	0.5500	0.5205	38	0.5950	0.5920	98	0.4900	0.5222	126	0.4600	0.5139
2002Q1	17	0.6900	0.6519	59	0.6500	0.6615	119	0.5000	0.5430	157	0.5800	0.5693
2002Q2	21	0.7500	0.7066	63	0.6400	0.6319	109	0.6400	0.5864	202	0.6400	0.5859
2002Q3	21	0.7100	0.7466	48	0.6050	0.6518	156	0.6750	0.6606	218	0.6300	0.6002
2002Q4	27	0.6900	0.6760	44	0.7200	0.6819	123	0.5600	0.6136	138	0.5800	0.5996
2003Q1	30	0.7500	0.7163	82	0.6550	0.6643	177	0.6000	0.6272	142	0.6000	0.6073
2003Q2	19	0.7500	0.7290	38	0.5400	0.6434	159	0.5300	0.5987	152	0.6550	0.6334
2003Q3	36	0.6500	0.6225	51	0.6100	0.6582	133	0.5600	0.6239	182	0.7150	0.6630
2003Q4	33	0.7000	0.7003	68	0.5550	0.6396	148	0.6500	0.6434	133	0.7000	0.6507
2004Q1	28	0.6500	0.6737	44	0.6250	0.6702	201	0.6800	0.6594	167	0.6200	0.6215
2004Q2	32	0.7000	0.7111	75	0.7000	0.7003	122	0.6750	0.6273	147	0.6300	0.6101
2004Q3	38	0.6050	0.7299	51	0.7400	0.7588	152	0.6800	0.6665	196	0.7100	0.6628
2004Q4	39	0.5100	0.6332	68	0.7500	0.7192	136	0.6750	0.6723	131	0.6800	0.6718
2005Q1	29	0.6500	0.6715	80	0.6300	0.6651	169	0.6600	0.6440	215	0.7700	0.6917
2005Q2	37	0.6600	0.6563	58	0.6200	0.6360	156	0.7100	0.6635	190	0.7500	0.6953
2005Q3	26	0.5750	0.6430	67	0.6100	0.7154	161	0.6700	0.6817	207	0.7500	0.6950
2005Q4	41	0.7000	0.7361	56	0.7550	0.7271	122	0.7650	0.7218	127	0.7200	0.6591
2006Q1	17	0.7600	0.7791	64	0.7400	0.7373	161	0.7400	0.6784	205	0.8100	0.7455
2006Q2	44	0.7800	0.7021	75	0.7600	0.7011	138	0.7600	0.7316	176	0.8000	0.7154
2006Q3	24	0.8000	0.7531	45	0.7700	0.7646	129	0.7500	0.7227	202	0.7800	0.7311
2006Q4	18	0.7715	0.7243	50	0.7950	0.7762	102	0.7550	0.6958	145	0.7900	0.7363
2007Q1	32	0.6785	0.6947	61	0.7000	0.7091	147	0.7320	0.6729	130	0.7660	0.7317
2007Q2	27	0.6360	0.5855	51	0.5900	0.6076	104	0.5440	0.5880	118	0.5585	0.5666
2007Q3	29	0.5680	0.5809	67	0.5640	0.5912	119	0.5020	0.5336	177	0.5290	0.5694
2007Q4	24	0.7325	0.7213	62	0.6380	0.6201	132	0.5070	0.5657	148	0.6230	0.6166

Table B-7. Estimated Quarterly Expected Purity of Crack Cocaine – National Index

Period	0.1 - 1 gram			1 - 15 grams			> 15 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1986Q1	24	0.9150	0.8851	8	0.8100	0.7613	6	0.7300	0.7301
1986Q2	45	0.9100	0.8557	23	0.8800	0.7681	6	0.6800	0.7280
1986Q3	50	0.8900	0.7969	21	0.8400	0.7796	9	0.7100	0.7509
1986Q4	25	0.9320	0.8667	14	0.8550	0.7544	10	0.8050	0.8115
1987Q1	42	0.8500	0.7661	16	0.8800	0.7926	18	0.8250	0.7189
1987Q2	68	0.8450	0.7509	35	0.8800	0.7762	39	0.7200	0.6383
1987Q3	103	0.9100	0.9069	100	0.9050	0.7897	17	0.8500	0.6584
1987Q4	122	0.9100	0.9063	26	0.9150	0.8742	24	0.8350	0.6982
1988Q1	116	0.8900	0.8872	42	0.9100	0.8302	21	0.7800	0.6859
1988Q2	172	0.8700	0.8019	51	0.8900	0.8421	35	0.8700	0.7681
1988Q3	228	0.8900	0.8692	83	0.8630	0.8276	70	0.8450	0.8071
1988Q4	253	0.9100	0.9111	71	0.8800	0.8585	52	0.8750	0.8368
1989Q1	285	0.8900	0.8745	79	0.8700	0.8424	72	0.7900	0.7411
1989Q2	399	0.8800	0.8684	104	0.8650	0.8381	85	0.8200	0.7841
1989Q3	313	0.8800	0.8654	120	0.8500	0.8124	108	0.7950	0.7567
1989Q4	216	0.8600	0.8715	59	0.8400	0.8160	54	0.8050	0.7247
1990Q1	298	0.8200	0.7961	88	0.8300	0.7862	85	0.6300	0.6097
1990Q2	213	0.8000	0.7966	88	0.8200	0.7441	65	0.5100	0.5397
1990Q3	349	0.8000	0.7878	119	0.8100	0.7712	101	0.5700	0.6109
1990Q4	240	0.8500	0.8598	130	0.8600	0.8491	78	0.7350	0.7298
1991Q1	339	0.8900	0.8728	171	0.8600	0.8316	148	0.8050	0.7668
1991Q2	339	0.8800	0.8436	166	0.8600	0.8304	198	0.7900	0.7810
1991Q3	312	0.8600	0.8606	121	0.8500	0.8311	186	0.7900	0.7413
1991Q4	269	0.8600	0.8722	150	0.8700	0.8471	150	0.8100	0.7785
1992Q1	233	0.8600	0.8315	228	0.8700	0.8510	190	0.8000	0.7879
1992Q2	207	0.7900	0.7875	154	0.8300	0.7938	136	0.7600	0.7254
1992Q3	221	0.8400	0.8341	256	0.8100	0.7729	210	0.7800	0.7529
1992Q4	178	0.8600	0.8491	177	0.8400	0.8348	168	0.8100	0.7617
1993Q1	147	0.8400	0.8090	164	0.8100	0.7997	134	0.7050	0.6986
1993Q2	135	0.8400	0.8348	202	0.8050	0.7871	164	0.6800	0.6868
1993Q3	108	0.8000	0.7934	183	0.8000	0.7856	171	0.7300	0.7195
1993Q4	125	0.8400	0.8234	191	0.8300	0.8008	139	0.6900	0.7071
1994Q1	108	0.8500	0.8202	226	0.8200	0.8042	190	0.7250	0.7282
1994Q2	122	0.8200	0.8027	257	0.7900	0.7799	185	0.7100	0.7200
1994Q3	142	0.8400	0.8213	346	0.8100	0.7859	271	0.7000	0.7064
1994Q4	84	0.8600	0.8438	311	0.8100	0.8008	274	0.7200	0.7169
1995Q1	92	0.8000	0.8142	385	0.8100	0.7834	300	0.7250	0.7077
1995Q2	124	0.7850	0.7682	241	0.7800	0.7542	208	0.6900	0.6649
1995Q3	201	0.6500	0.7117	217	0.7000	0.6853	196	0.6000	0.6117
1995Q4	105	0.8000	0.7441	208	0.7200	0.7352	191	0.6300	0.6522

Period	0.1 - 1 gram			1 - 15 grams			> 15 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1996Q1	102	0.7850	0.7759	301	0.7700	0.7590	263	0.6400	0.6541
1996Q2	143	0.7100	0.7218	313	0.7300	0.7242	321	0.6200	0.6581
1996Q3	133	0.7700	0.7588	307	0.7300	0.7280	317	0.6100	0.6484
1996Q4	187	0.8100	0.7828	362	0.7500	0.7476	271	0.6300	0.6662
1997Q1	191	0.7900	0.7778	354	0.7200	0.7341	341	0.5800	0.6374
1997Q2	192	0.5700	0.6447	326	0.5850	0.6296	258	0.5400	0.5557
1997Q3	183	0.7500	0.7517	318	0.7100	0.6923	398	0.5500	0.5851
1997Q4	101	0.7800	0.7288	279	0.7600	0.7424	335	0.6000	0.6429
1998Q1	98	0.7500	0.7512	350	0.7700	0.7423	405	0.6000	0.6282
1998Q2	156	0.7500	0.7656	328	0.7500	0.7370	412	0.6100	0.6373
1998Q3	150	0.7550	0.7756	345	0.7400	0.7104	367	0.5900	0.6028
1998Q4	184	0.6800	0.7011	342	0.7300	0.7093	312	0.5900	0.5972
1999Q1	227	0.6700	0.6870	352	0.6900	0.6706	247	0.5100	0.5333
1999Q2	224	0.6900	0.7141	368	0.6500	0.6709	333	0.5500	0.5820
1999Q3	335	0.7100	0.7257	424	0.6700	0.6876	393	0.5800	0.5840
1999Q4	300	0.7100	0.7309	451	0.6400	0.6624	292	0.5700	0.5702
2000Q1	285	0.7000	0.6981	501	0.6300	0.6357	299	0.4900	0.5201
2000Q2	236	0.6200	0.6519	475	0.5600	0.5903	400	0.4700	0.4960
2000Q3	171	0.7100	0.6832	455	0.5800	0.6093	476	0.4900	0.5249
2000Q4	229	0.6600	0.6745	388	0.6400	0.6517	331	0.5100	0.5549
2001Q1	225	0.6500	0.6857	532	0.5800	0.6397	426	0.4700	0.5127
2001Q2	252	0.6600	0.6553	421	0.5400	0.6078	427	0.4600	0.5027
2001Q3	173	0.6600	0.6864	359	0.6200	0.6317	373	0.4500	0.5011
2001Q4	211	0.6200	0.6587	246	0.5500	0.5800	236	0.4500	0.4981
2002Q1	201	0.6600	0.6992	373	0.6100	0.6398	392	0.4800	0.5384
2002Q2	141	0.6500	0.6963	336	0.6200	0.6407	436	0.4700	0.5383
2002Q3	127	0.7300	0.7055	365	0.6000	0.6420	444	0.5200	0.5723
2002Q4	131	0.6800	0.7108	260	0.6300	0.6801	272	0.5450	0.6079
2003Q1	132	0.7300	0.7290	349	0.6800	0.6842	386	0.5500	0.5973
2003Q2	127	0.7200	0.7508	324	0.7000	0.7064	396	0.5700	0.5890
2003Q3	117	0.7600	0.7426	414	0.6200	0.6639	391	0.5600	0.5921
2003Q4	105	0.7600	0.7403	301	0.6700	0.6749	286	0.5700	0.6037
2004Q1	139	0.7700	0.7409	290	0.7200	0.7074	360	0.5900	0.6264
2004Q2	122	0.7800	0.7772	251	0.7300	0.7353	307	0.6100	0.6344
2004Q3	125	0.7400	0.7456	334	0.7000	0.7012	369	0.5800	0.6029
2004Q4	169	0.8000	0.7607	290	0.7600	0.7400	312	0.6200	0.6338
2005Q1	182	0.8200	0.7897	410	0.7600	0.7548	388	0.6400	0.6626
2005Q2	195	0.8000	0.7646	374	0.6800	0.7007	359	0.6600	0.6509
2005Q3	163	0.7900	0.7644	291	0.7000	0.7015	345	0.6000	0.6269
2005Q4	100	0.8300	0.8081	296	0.7200	0.7435	307	0.6100	0.6453
2006Q1	152	0.8000	0.7986	368	0.7300	0.7227	434	0.6200	0.6378
2006Q2	202	0.7950	0.7788	473	0.7200	0.7206	441	0.6300	0.6556
2006Q3	172	0.8200	0.8056	418	0.7200	0.7061	406	0.6150	0.6175
2006Q4	172	0.8000	0.7801	341	0.7300	0.7236	322	0.6300	0.6565

Period	0.1 - 1 gram			1 - 15 grams			> 15 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
2007Q1	157	0.7800	0.7736	425	0.7200	0.7270	397	0.6200	0.6180
2007Q2	147	0.7770	0.7379	338	0.6185	0.6469	279	0.5620	0.5741
2007Q3	190	0.7620	0.7115	363	0.5990	0.6385	376	0.5040	0.5528
2007Q4	84	0.7720	0.7733	284	0.6565	0.6759	314	0.5495	0.5867

Table B-8. Estimated Quarterly Expected Purity of Heroin – National Index

Period	0.1 - 1 gram			1 - 10 grams			> 10 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1981Q1	128	0.0390	0.1094	104	0.0300	0.1001	85	0.0270	0.0565
1981Q2	114	0.0385	0.0972	93	0.0280	0.0948	101	0.0340	0.1520
1981Q3	126	0.0415	0.1030	123	0.0410	0.0994	95	0.0530	0.1403
1981Q4	174	0.0380	0.1418	78	0.0330	0.0719	64	0.0820	0.1393
1982Q1	160	0.0460	0.1373	168	0.0370	0.1766	90	0.0475	0.2381
1982Q2	145	0.0450	0.1798	95	0.0420	0.1907	98	0.0530	0.2374
1982Q3	143	0.0580	0.2152	104	0.0425	0.2280	74	0.0790	0.2867
1982Q4	61	0.0790	0.2005	78	0.0460	0.1203	51	0.0810	0.2974
1983Q1	100	0.0715	0.1172	90	0.0525	0.0928	69	0.0670	0.2351
1983Q2	84	0.1155	0.1388	86	0.0465	0.1239	73	0.0880	0.2683
1983Q3	94	0.1570	0.1772	93	0.0440	0.1141	89	0.1600	0.2970
1983Q4	66	0.0715	0.1805	60	0.0510	0.1385	67	0.2300	0.3260
1984Q1	71	0.0870	0.1331	55	0.0920	0.1315	61	0.3450	0.3290
1984Q2	65	0.1100	0.2844	49	0.1400	0.1432	54	0.2255	0.2614
1984Q3	66	0.2070	0.2639	71	0.1810	0.1667	63	0.2700	0.3287
1984Q4	44	0.1775	0.2057	40	0.0855	0.1833	61	0.3800	0.3235
1985Q1	62	0.1400	0.2187	80	0.1660	0.2179	64	0.3580	0.3486
1985Q2	48	0.1225	0.2025	67	0.1830	0.2915	75	0.4500	0.3800
1985Q3	60	0.1200	0.2517	69	0.1600	0.2074	87	0.4800	0.3817
1985Q4	55	0.1500	0.2196	43	0.2600	0.2547	62	0.4150	0.3963
1986Q1	56	0.2400	0.3075	59	0.3500	0.3158	87	0.2700	0.3939
1986Q2	47	0.1400	0.2250	53	0.1900	0.2064	64	0.3200	0.4035
1986Q3	45	0.1980	0.3255	30	0.1650	0.2473	55	0.3200	0.3499
1986Q4	39	0.1400	0.1682	17	0.1800	0.2194	57	0.3400	0.3539
1987Q1	43	0.1100	0.1781	21	0.1300	0.1462	66	0.2500	0.2623
1987Q2	46	0.2100	0.2366	36	0.2950	0.2308	60	0.3200	0.2976
1987Q3	53	0.2000	0.2939	37	0.2000	0.2494	64	0.4250	0.4131
1987Q4	96	0.1720	0.2204	62	0.3000	0.2099	60	0.3600	0.3658
1988Q1	90	0.2140	0.2689	46	0.3250	0.2987	78	0.4900	0.4343
1988Q2	142	0.2805	0.2744	53	0.3400	0.2498	71	0.4900	0.4296
1988Q3	117	0.4100	0.3467	66	0.2750	0.3056	75	0.4200	0.4481
1988Q4	87	0.2200	0.2658	53	0.2900	0.3295	52	0.4600	0.4213
1989Q1	67	0.4100	0.3293	48	0.3100	0.2746	53	0.5800	0.4963
1989Q2	60	0.2735	0.3142	37	0.2200	0.2630	62	0.4400	0.4905
1989Q3	83	0.3450	0.3727	55	0.3800	0.3578	79	0.5800	0.5368
1989Q4	58	0.2675	0.2821	40	0.3115	0.3582	71	0.6800	0.5428
1990Q1	108	0.1715	0.2135	53	0.1400	0.2223	58	0.3600	0.3714
1990Q2	119	0.1720	0.2305	31	0.2800	0.2313	69	0.2900	0.3442
1990Q3	89	0.1600	0.2035	46	0.1500	0.2214	61	0.3200	0.3561
1990Q4	99	0.4200	0.2522	26	0.2950	0.3227	48	0.5000	0.3572

Period	0.1 - 1 gram			1 - 10 grams			> 10 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1991Q1	167	0.2200	0.2524	56	0.1210	0.2355	46	0.4050	0.3152
1991Q2	188	0.2395	0.2981	68	0.2015	0.2722	61	0.4400	0.3973
1991Q3	156	0.2105	0.2830	68	0.2450	0.3204	71	0.3300	0.4368
1991Q4	83	0.2150	0.2871	33	0.1300	0.2629	40	0.5050	0.4603
1992Q1	131	0.2980	0.3187	52	0.2625	0.3813	53	0.5200	0.5335
1992Q2	117	0.3200	0.4066	41	0.2800	0.3486	81	0.3400	0.4518
1992Q3	93	0.3450	0.3530	43	0.3400	0.3704	72	0.5400	0.5329
1992Q4	131	0.2450	0.4037	38	0.4300	0.4112	54	0.7300	0.6088
1993Q1	174	0.3440	0.3751	70	0.2250	0.4026	56	0.6250	0.5590
1993Q2	157	0.3400	0.4201	72	0.2250	0.4303	60	0.6550	0.6043
1993Q3	170	0.4240	0.4164	100	0.3200	0.3633	118	0.5950	0.5727
1993Q4	120	0.4330	0.4199	60	0.4450	0.4346	48	0.7450	0.6145
1994Q1	199	0.3540	0.3616	96	0.4200	0.4000	68	0.6600	0.5608
1994Q2	175	0.4655	0.4138	85	0.5500	0.3849	81	0.5600	0.5370
1994Q3	203	0.5130	0.4454	87	0.3000	0.4114	87	0.6200	0.5623
1994Q4	176	0.4750	0.4339	85	0.4100	0.4409	70	0.6600	0.5674
1995Q1	198	0.4780	0.4120	77	0.4500	0.4111	106	0.6750	0.5619
1995Q2	223	0.4270	0.4664	92	0.4600	0.4244	77	0.6600	0.5853
1995Q3	196	0.4650	0.4307	107	0.4000	0.3973	102	0.6050	0.5548
1995Q4	181	0.4300	0.4220	69	0.4900	0.4206	55	0.5500	0.4867
1996Q1	216	0.4300	0.3615	95	0.3700	0.3446	62	0.4550	0.4829
1996Q2	225	0.3720	0.3712	113	0.4500	0.3722	101	0.4300	0.3920
1996Q3	191	0.3680	0.4027	102	0.4850	0.3609	94	0.5850	0.5318
1996Q4	197	0.3470	0.3968	94	0.3550	0.4082	73	0.5900	0.5637
1997Q1	269	0.4000	0.4245	94	0.2950	0.3653	87	0.5900	0.4857
1997Q2	236	0.3890	0.3952	120	0.3090	0.3927	107	0.5300	0.5069
1997Q3	220	0.5400	0.4462	103	0.2940	0.4025	95	0.5400	0.4956
1997Q4	50	0.6600	0.4963	42	0.5400	0.4384	79	0.5900	0.5428
1998Q1	318	0.4300	0.4345	147	0.4600	0.4093	100	0.6000	0.5450
1998Q2	215	0.5140	0.4625	142	0.5700	0.4248	141	0.5800	0.5564
1998Q3	160	0.4550	0.4145	127	0.4500	0.3773	108	0.5300	0.5018
1998Q4	206	0.4755	0.4604	118	0.3950	0.4123	101	0.5600	0.5649
1999Q1	258	0.4570	0.4139	167	0.4850	0.4109	111	0.5800	0.5335
1999Q2	255	0.3900	0.4111	162	0.4600	0.3719	98	0.5350	0.4891
1999Q3	250	0.4290	0.4315	167	0.5100	0.4222	112	0.6300	0.6084
1999Q4	190	0.4040	0.4139	108	0.3625	0.3940	88	0.6650	0.5978
2000Q1	252	0.4550	0.4208	136	0.4400	0.4105	101	0.6000	0.5612
2000Q2	205	0.5230	0.4232	167	0.4700	0.3782	114	0.6300	0.5432
2000Q3	212	0.4160	0.3977	155	0.5300	0.4225	113	0.6200	0.5848
2000Q4	210	0.4120	0.4024	87	0.5500	0.3754	65	0.6600	0.6146
2001Q1	218	0.4055	0.3887	168	0.4500	0.3699	87	0.6200	0.5343
2001Q2	219	0.3760	0.3839	140	0.4850	0.4030	103	0.6400	0.5855
2001Q3	217	0.3220	0.3553	121	0.4400	0.3441	104	0.6100	0.5289
2001Q4	217	0.3610	0.3783	79	0.2225	0.3542	60	0.5950	0.5544

Period	0.1 - 1 gram			1 - 10 grams			> 10 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
2002Q1	217	0.4330	0.4050	112	0.4400	0.3973	82	0.5500	0.4812
2002Q2	225	0.3560	0.3766	147	0.4500	0.4012	83	0.5800	0.5080
2002Q3	229	0.4360	0.3874	136	0.3570	0.3830	113	0.5600	0.4712
2002Q4	81	0.4050	0.3990	70	0.4750	0.4096	50	0.5200	0.4882
2003Q1	252	0.3520	0.3607	120	0.4200	0.3507	63	0.4900	0.4600
2003Q2	220	0.3885	0.3847	146	0.4000	0.3449	69	0.5500	0.4780
2003Q3	223	0.3850	0.3777	144	0.3800	0.3858	92	0.5150	0.4654
2003Q4	222	0.3190	0.3646	147	0.2600	0.2842	85	0.4000	0.4089
2004Q1	212	0.3315	0.3475	148	0.2520	0.3361	82	0.3900	0.4027
2004Q2	223	0.2800	0.3104	114	0.2500	0.2909	95	0.4000	0.4270
2004Q3	179	0.3560	0.3410	109	0.2300	0.2749	97	0.4200	0.4099
2004Q4	186	0.3100	0.3587	128	0.2900	0.3091	59	0.3700	0.3629
2005Q1	200	0.3720	0.3738	98	0.2550	0.3204	63	0.4400	0.4091
2005Q2	223	0.3610	0.3740	110	0.2475	0.3151	72	0.5050	0.4787
2005Q3	214	0.3315	0.3459	96	0.3100	0.3297	64	0.3800	0.4577
2005Q4	198	0.3720	0.3512	84	0.3150	0.3301	33	0.4000	0.4112
2006Q1	209	0.3275	0.3295	138	0.2600	0.3105	55	0.2900	0.3994
2006Q2	213	0.3050	0.3344	88	0.2310	0.2611	40	0.3750	0.3955
2006Q3	208	0.3255	0.3386	79	0.1900	0.2837	67	0.3700	0.3651
2006Q4	209	0.3085	0.3408	74	0.1620	0.2827	30	0.4250	0.4309
2007Q1	225	0.2830	0.3337	79	0.2090	0.2998	31	0.4190	0.4123
2007Q2	215	0.3290	0.3444	69	0.2290	0.3189	36	0.4190	0.4169
2007Q3	237	0.3690	0.4014	89	0.2680	0.3227	53	0.3330	0.3801
2007Q4	222	0.3635	0.3640	82	0.2690	0.3183	47	0.4730	0.4515

TableB-9. Estimated Quarterly Expected Purity of d-Methamphetamine – National Index

Period	0.1 - 10 grams			10 - 100 grams			> 100 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1981Q1	20	0.1930	0.3595	20	0.1165	0.4708			
1981Q2	11	0.3740	0.4913	7	0.3640	0.5372			
1981Q3	8	0.1725	0.3633	10	0.3105	0.4824			
1981Q4	7	0.5000	0.5660	8	0.2715	0.4620			
1982Q1	14	0.3140	0.4320	19	0.2270	0.4665	8	0.2320	0.3119
1982Q2	16	0.2830	0.4004	8	0.2160	0.4353			
1982Q3	22	0.4900	0.4818	13	0.4700	0.5189			
1982Q4	27	0.3500	0.3826	16	0.3975	0.4810			
1983Q1	29	0.2300	0.3259	8	0.4120	0.4485			
1983Q2	32	0.4000	0.4201	12	0.1720	0.3134			
1983Q3	17	0.3100	0.3794	15	0.3500	0.4514			
1983Q4	25	0.4700	0.4723	8	0.5425	0.5529	7	0.4660	0.5094
1984Q1	31	0.3300	0.3671	8	0.2100	0.2882	8	0.2700	0.4489
1984Q2	29	0.4200	0.5399	28	0.3530	0.4363	12	0.3575	0.4871
1984Q3	18	0.3550	0.4240	13	0.1700	0.3566	12	0.3645	0.5261
1984Q4	32	0.4050	0.4393	19	0.4240	0.4539	6	0.2060	0.3450
1985Q1	37	0.2800	0.3218	32	0.3100	0.4046	13	0.2360	0.4550
1985Q2	11	0.4100	0.4542	13	0.3400	0.4019			
1985Q3	21	0.4500	0.5000	9	0.7300	0.6475			
1985Q4	28	0.2600	0.3981	16	0.3750	0.4680	8	0.3050	0.3889
1986Q1	39	0.3900	0.4874	22	0.2300	0.4183			
1986Q2	22	0.4400	0.5744	14	0.2250	0.3872	6	0.3600	0.3814
1986Q3	29	0.4800	0.4552	14	0.3600	0.4230	6	0.3850	0.5570
1986Q4	23	0.4100	0.5429	9	0.3000	0.3636			
1987Q1	25	0.6200	0.5508	18	0.4300	0.4970	5	0.0610	0.2960
1987Q2	29	0.4500	0.5296	25	0.3600	0.4110			
1987Q3	22	0.5900	0.5059	13	0.4400	0.4116			
1987Q4	41	0.5200	0.4314	18	0.3650	0.4233			
1988Q1	66	0.6500	0.5512	40	0.4500	0.4686	9	0.5600	0.4926
1988Q2	59	0.7700	0.5503	30	0.4400	0.5108	9	0.5300	0.4810
1988Q3	29	0.5500	0.5299	36	0.4750	0.4458	8	0.2000	0.4335
1988Q4	29	0.4600	0.5649	27	0.5300	0.5074	8	0.9150	0.6605
1989Q1	35	0.5200	0.5654	33	0.4900	0.5071	8	0.5350	0.4480
1989Q2	27	0.5900	0.5489	20	0.4800	0.5485			
1989Q3	23	0.4800	0.4207	22	0.4100	0.4881			
1989Q4	30	0.3300	0.3759	17	0.3700	0.4198			
1990Q1	25	0.2700	0.4233	25	0.1800	0.2454			
1990Q2	16	0.1775	0.3294	27	0.1300	0.2307	8	0.1700	0.1328
1990Q3	19	0.2900	0.3528	26	0.2400	0.3336	10	0.1600	0.1857
1990Q4	18	0.2050	0.3984	16	0.2400	0.3182	8	0.2850	0.3390

Period	0.1 - 10 grams			10 - 100 grams			> 100 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
1991Q1	32	0.2400	0.3609	27	0.2800	0.3667	10	0.4050	0.3507
1991Q2	17	0.2700	0.3915	28	0.2350	0.3245	10	0.3780	0.4322
1991Q3	17	0.4100	0.4339	26	0.2300	0.2737	9	0.2400	0.3090
1991Q4	10	0.1950	0.2713	25	0.1300	0.2611	8	0.9150	0.6431
1992Q1	11	0.2800	0.4364	31	0.2300	0.3525	9	0.1400	0.1670
1992Q2	17	0.5800	0.6005	28	0.3100	0.3963	14	0.6250	0.4401
1992Q3	24	0.6500	0.6153	32	0.5700	0.5060	12	0.8950	0.6996
1992Q4	12	0.4250	0.4106	29	0.4100	0.4929	8	0.7450	0.5942
1993Q1	28	0.4450	0.6174	18	0.3350	0.4594	8	0.9100	0.6692
1993Q2	22	0.2650	0.5394	21	0.2700	0.4147			
1993Q3	25	0.3100	0.3987	35	0.5600	0.6178	17	0.7900	0.6275
1993Q4	37	0.8400	0.6829	33	0.6600	0.5735	11	0.8600	0.6793
1994Q1	28	0.9250	0.7070	37	0.8300	0.6526	32	0.8850	0.6763
1994Q2	31	0.8400	0.7658	55	0.7700	0.6435	26	0.9400	0.7272
1994Q3	37	0.9200	0.7584	59	0.7900	0.7210	20	0.9350	0.7239
1994Q4	39	0.8900	0.7371	46	0.8750	0.6824	23	0.8600	0.6785
1995Q1	50	0.8200	0.6693	74	0.7000	0.6601	26	0.9250	0.7587
1995Q2	40	0.7850	0.6820	105	0.7700	0.6836	41	0.9000	0.6877
1995Q3	71	0.5700	0.5523	57	0.3400	0.5727	24	0.3100	0.4257
1995Q4	54	0.1400	0.3172	35	0.0730	0.2434	17	0.0870	0.0912
1996Q1	29	0.3300	0.5125	61	0.2000	0.3841	16	0.1550	0.1934
1996Q2	44	0.3350	0.4690	60	0.3150	0.3647	32	0.3900	0.3755
1996Q3	25	0.5100	0.5259	49	0.3200	0.4547	47	0.3700	0.4140
1996Q4	38	0.5850	0.6044	85	0.3900	0.4960	52	0.3550	0.3761
1997Q1	46	0.8600	0.6537	101	0.4200	0.5388	44	0.4700	0.4450
1997Q2	45	0.6700	0.7012	118	0.4000	0.4771	57	0.4200	0.4502
1997Q3	56	0.4700	0.5338	141	0.4000	0.4900	52	0.4000	0.4458
1997Q4	74	0.3500	0.4660	151	0.3300	0.4155	66	0.3600	0.4151
1998Q1	76	0.3800	0.5285	164	0.2900	0.3513	79	0.2600	0.2597
1998Q2	71	0.2300	0.3656	156	0.1000	0.1966	65	0.1300	0.1127
1998Q3	63	0.1700	0.3363	143	0.1400	0.1696	86	0.1200	0.0914
1998Q4	47	0.2000	0.3802	153	0.1400	0.2604	95	0.1500	0.1074
1999Q1	64	0.1800	0.3538	125	0.1600	0.2229	93	0.1600	0.1122
1999Q2	58	0.3100	0.4159	105	0.2100	0.2931	89	0.1700	0.1599
1999Q3	73	0.3000	0.4557	166	0.2500	0.3682	120	0.2000	0.2070
1999Q4	67	0.2600	0.4778	127	0.2000	0.3423	97	0.2300	0.2103
2000Q1	72	0.2700	0.4416	136	0.2150	0.3004	132	0.1900	0.2250
2000Q2	82	0.2650	0.5470	170	0.2050	0.2953	108	0.1900	0.1945
2000Q3	49	0.3000	0.5018	154	0.2150	0.3466	124	0.2100	0.1901
2000Q4	39	0.3700	0.5861	106	0.2550	0.3716	102	0.2050	0.2010
2001Q1	69	0.2700	0.5096	134	0.2300	0.4029	111	0.2000	0.1913
2001Q2	57	0.3300	0.5865	157	0.2300	0.3879	145	0.2000	0.2283
2001Q3	74	0.6400	0.6336	155	0.2700	0.4912	158	0.2200	0.2925
2001Q4	66	0.5000	0.5470	136	0.2500	0.3857	85	0.1900	0.2665

Period	0.1 - 10 grams			10 - 100 grams			> 100 grams		
	Num	Median	EPH	Num	Median	EPH	Num	Median	EPH
2002Q1	73	0.6900	0.6565	157	0.4500	0.4701	118	0.2000	0.2544
2002Q2	95	0.5600	0.6314	161	0.2700	0.4478	104	0.1850	0.2884
2002Q3	61	0.5000	0.6591	155	0.3200	0.4976	116	0.1800	0.3157
2002Q4	56	0.6300	0.6725	103	0.3900	0.4869	79	0.2100	0.3611
2003Q1	84	0.4650	0.6076	194	0.5800	0.5496	90	0.2300	0.3529
2003Q2	70	0.5800	0.6239	169	0.5100	0.5510	88	0.4150	0.4669
2003Q3	86	0.6500	0.6882	198	0.6350	0.6019	155	0.5900	0.5224
2003Q4	66	0.7200	0.7933	169	0.6600	0.6383	95	0.5800	0.5384
2004Q1	82	0.5450	0.6986	213	0.5200	0.5905	79	0.5600	0.5097
2004Q2	68	0.5600	0.5778	202	0.5450	0.5725	78	0.5200	0.5016
2004Q3	63	0.5400	0.6154	205	0.5800	0.6205	104	0.6200	0.5256
2004Q4	65	0.5900	0.6888	177	0.6200	0.6959	89	0.6500	0.6563
2005Q1	80	0.7800	0.7730	173	0.7800	0.7691	92	0.7100	0.6666
2005Q2	78	0.9150	0.8803	141	0.8500	0.8284	74	0.9300	0.8130
2005Q3	69	0.9300	0.8977	147	0.9200	0.8939	65	0.8800	0.8261
2005Q4	65	0.8900	0.8727	65	0.8900	0.8953	18	0.9050	0.8303
2006Q1	31	0.5800	0.7329	45	0.4700	0.4933	12	0.3850	0.4305
2006Q2	22	0.4850	0.5388	51	0.4700	0.5319	19	0.4400	0.4642
2006Q3	29	0.4700	0.5605	89	0.6900	0.6776	41	0.8000	0.6143
2006Q4	45	0.8200	0.7383	115	0.8000	0.6740	31	0.7500	0.6867
2007Q1	29	0.7210	0.7360	97	0.7900	0.6933	45	0.8670	0.7180
2007Q2	28	0.5505	0.5806	92	0.5015	0.5586	23	0.4180	0.3462
2007Q3	18	0.7130	0.6866	66	0.4000	0.4752	19	0.5510	0.5381
2007Q4	18	0.4195	0.4727	31	0.4110	0.4030	9	0.5020	0.5456

APPENDIX C

DATA TABLES –
ESTIMATED PRICES AND PURITIES FOR MAJOR CITIES

APPENDIX C
DATA TABLES –
ESTIMATED PRICES AND PURITIES FOR MAJOR CITIES

The construct of Tables C-1 through C-8 is similar to that of the tables in the preceding appendix, but the focus here is on selected major cities. There are only eight such tables, as there is insufficient marijuana data in STRIDE to construct meaningful time series for individual cities. For d-methamphetamine, there are four subject cities, all in the southwest: Los Angeles, Phoenix, San Diego, and San Francisco. For the other drugs, a common set of five major cities is addressed: Atlanta, Chicago, New York, San Diego, and Washington, D.C. These are the same sets of selected cities given in the 2004 ONDCP *Results Report*.

The depicted estimated adjusted price or estimated purity data are given on a yearly basis only, reflecting various aggregations of results for the individual quarters in a year. For each combination of city and year, three data items are provided:

- "EPH" = average of the 4 quarter estimates computed by the EPH methodology
- "Lower" = minimum of the lower endpoints of the 4 quarterly 95 percent statistical confidence bounds computed by the EPH methodology
- "Upper" = maximum of the upper endpoints of the 4 quarterly 95 percent statistical confidence bounds computed by the EPH methodology.

When purity values are small, calculated lower confidence bounds using the EPH methods can be negative. In the tables presented here, we have suppressed these instances by rewriting them as "0.0000". Likewise, calculated upper confidence bounds that exceed 1 have been rewritten as "1.0000".

Table C-1. Estimated Annual Price per Expected Pure Gram of Powder Cocaine – Various Cities, Retail Level (0.1 – 2.0 g, Evaluated at 0.75 g), Constant 2007 Dollars

Year	Atlanta			Chicago			New York			San Diego			Washington DC		
	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper
1981	$378.20	$701.92	$1,328.04	$295.51	$562.85	$1,036.95	$269.04	$518.32	$863.51	$320.93	$455.46	$601.77	$322.41	$600.31	$959.17
1982	$400.87	$709.83	$1,595.77	$357.64	$694.14	$1,626.19	$362.41	$555.33	$868.64	$295.36	$425.79	$630.17	$353.91	$667.85	$1,002.92
1983	$331.16	$618.49	$1,191.09	$293.90	$498.52	$741.83	$241.36	$393.97	$723.18	$250.21	$353.25	$464.83	$350.71	$504.47	$698.02
1984	$259.72	$563.53	$909.14	$310.83	$534.50	$978.81	$177.58	$318.84	$599.28	$266.95	$350.12	$502.77	$289.16	$386.16	$528.78
1985	$278.80	$500.91	$972.35	$261.19	$425.46	$618.16	$171.34	$337.49	$592.68	$295.53	$364.90	$459.37	$245.52	$325.91	$497.23
1986	$205.96	$415.43	$724.00	$207.10	$420.54	$861.38	$125.20	$243.05	$408.49	$215.51	$284.83	$399.08	$241.16	$290.45	$346.71
1987	$167.84	$359.77	$725.79	$106.84	$244.53	$539.00	$98.34	$241.19	$452.46	$159.67	$229.64	$366.87	$203.92	$252.92	$302.62
1988	$152.42	$283.61	$528.07	$105.50	$231.00	$425.70	$100.44	$212.18	$387.29	$79.37	$178.86	$258.60	$148.64	$198.50	$259.85
1989	$135.29	$262.94	$530.13	$125.10	$204.72	$313.40	$95.99	$146.60	$240.37	$109.89	$173.48	$277.57	$124.04	$191.18	$295.60
1990	$162.32	$347.47	$692.34	$120.84	$226.83	$508.16	$93.71	$138.51	$240.42	$107.04	$194.48	$322.10	$166.75	$234.31	$324.72
1991	$137.44	$276.58	$571.98	$128.90	$182.77	$349.33	$74.01	$117.81	$211.47	$91.33	$153.07	$263.56	$144.68	$212.39	$318.93
1992	$106.59	$198.06	$391.86	$87.52	$165.60	$317.99	$59.02	$89.06	$126.28	$71.99	$120.94	$249.02	$110.32	$195.03	$305.89
1993	$95.50	$195.23	$443.52	$89.59	$150.51	$238.72	$69.54	$112.06	$271.18	$61.18	$118.13	$267.23	$109.86	$208.67	$350.48
1994	$97.97	$198.01	$408.08	$76.54	$151.72	$314.04	$64.26	$90.98	$141.56	$61.60	$134.73	$235.92	$92.00	$155.40	$331.48
1995	$116.64	$236.77	$491.53	$91.12	$183.57	$378.28	$68.02	$139.34	$300.64	$68.44	$106.71	$248.30	$101.25	$249.42	$500.56
1996	$91.40	$193.56	$430.39	$57.35	$148.62	$331.16	$68.34	$138.11	$283.65	$40.38	$108.41	$231.29	$78.86	$156.19	$323.81
1997	$96.83	$190.07	$359.07	$75.65	$157.30	$272.38	$61.72	$125.43	$213.35	$59.44	$128.28	$276.32	$81.90	$161.35	$291.56
1998	$86.82	$175.70	$381.60	$70.52	$138.31	$293.63	$47.12	$109.00	$233.35	$51.73	$93.90	$154.02	$76.44	$168.25	$369.56
1999	$87.65	$207.55	$381.63	$59.44	$132.34	$280.50	$54.65	$114.61	$217.23	$53.82	$99.89	$187.75	$85.61	$134.31	$188.71
2000	$94.74	$211.99	$530.25	$74.02	$177.40	$408.04	$59.06	$172.74	$445.02	$58.16	$130.23	$319.54	$78.37	$176.58	$430.69
2001	$102.95	$230.87	$492.43	$83.59	$162.84	$378.95	$77.60	$144.09	$301.16	$74.04	$150.85	$292.80	$85.14	$178.83	$400.00
2002	$74.24	$163.62	$381.23	$40.32	$115.72	$293.38	$48.01	$102.06	$203.20	$34.95	$86.86	$229.77	$61.41	$146.18	$314.56
2003	$87.11	$171.01	$335.16	$68.04	$128.59	$248.05	$54.85	$124.31	$261.07	$53.57	$95.86	$201.96	$72.78	$159.65	$347.16
2004	$70.59	$157.15	$344.61	$55.15	$128.84	$277.10	$46.08	$107.95	$190.18	$52.79	$105.70	$227.05	$58.39	$133.51	$279.88
2005	$71.41	$155.15	$347.25	$60.66	$113.34	$233.52	$45.13	$98.67	$212.45	$54.94	$114.53	$251.16	$67.17	$137.95	$282.18
2006	$69.93	$151.48	$314.51	$57.57	$110.10	$208.40	$43.58	$120.14	$242.43	$42.92	$87.98	$188.30	$57.83	$141.82	$282.43
2007	$66.08	$144.06	$304.66	$51.62	$102.70	$205.62	$41.19	$101.49	$198.11	$40.56	$87.62	$183.57	$54.65	$131.06	$284.67

Table C-2. Estimated Annual Expected Purity of Powder Cocaine – Various Cities, Retail Level (0.1 – 2.0 g, Evaluated at 0.75 g)

Year	Atlanta			Chicago			New York			San Diego			Washington DC		
	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper
1981	0.0597	0.2963	0.5647	0.1453	0.4124	0.7237	0.1422	0.3526	0.6166	0.3731	0.5274	0.6925	0.0841	0.2814	0.5672
1982	0.1258	0.3405	0.5575	0.1814	0.4095	0.6170	0.2054	0.4594	0.7740	0.4663	0.5804	0.6982	0.1045	0.2840	0.4371
1983	0.1695	0.3822	0.6595	0.2805	0.4462	0.6553	0.3057	0.5308	0.7722	0.4666	0.6166	0.7606	0.2628	0.3992	0.5510
1984	0.2779	0.4446	0.6479	0.3401	0.4706	0.6200	0.4121	0.5904	0.7908	0.4421	0.6343	0.7967	0.2627	0.3675	0.4832
1985	0.2126	0.4174	0.6198	0.3149	0.4372	0.6044	0.3251	0.5617	0.8064	0.4822	0.6014	0.7147	0.2741	0.3440	0.4213
1986	0.2944	0.5524	0.8315	0.2597	0.5508	0.8582	0.5009	0.6894	0.9151	0.6300	0.7833	0.9711	0.2947	0.4105	0.5144
1987	0.4330	0.6839	0.8966	0.4857	0.7138	0.9269	0.5287	0.7429	0.9688	0.6629	0.8248	0.9631	0.4095	0.5077	0.6368
1988	0.3178	0.6453	0.9007	0.5351	0.7321	0.9391	0.4696	0.7251	0.9580	0.7203	0.8708	1.0000	0.4984	0.6178	0.7601
1989	0.3165	0.5980	0.8695	0.5170	0.7254	0.9297	0.4462	0.6920	0.9233	0.6468	0.8178	1.0000	0.4405	0.6044	0.7806
1990	0.2432	0.5086	0.7930	0.2980	0.5363	0.7964	0.4243	0.6210	0.8409	0.4952	0.7202	0.9050	0.2907	0.4606	0.6136
1991	0.3099	0.5557	0.7981	0.4272	0.5913	0.8516	0.4011	0.6005	0.8963	0.5328	0.7621	0.9891	0.4218	0.6346	0.8478
1992	0.3485	0.6273	0.8612	0.4023	0.6670	0.8901	0.4548	0.6938	0.8842	0.5925	0.8066	1.0000	0.3143	0.5331	0.7533
1993	0.3981	0.6237	0.8411	0.4777	0.6768	0.8897	0.4952	0.6720	0.9123	0.5843	0.8097	1.0000	0.3667	0.6164	0.8448
1994	0.3435	0.5911	0.8345	0.3971	0.6496	0.8892	0.5244	0.6667	0.8780	0.5911	0.7968	1.0000	0.2772	0.5679	0.8738
1995	0.2345	0.5395	0.8467	0.2880	0.5900	0.8940	0.3280	0.6443	0.9366	0.4450	0.7293	1.0000	0.1832	0.4755	0.7353
1996	0.3964	0.6623	0.9762	0.4501	0.7076	1.0000	0.4678	0.7191	1.0000	0.6075	0.8535	1.0000	0.2929	0.5746	0.8390
1997	0.3142	0.5960	0.8517	0.3674	0.6494	0.9045	0.4360	0.6929	0.9078	0.4697	0.7580	1.0000	0.3566	0.5573	0.7732
1998	0.3482	0.6222	0.8985	0.4020	0.6791	0.9404	0.4420	0.7041	0.9792	0.6166	0.8017	0.9877	0.3261	0.5877	0.8738
1999	0.3271	0.5941	0.8628	0.3443	0.6155	0.8817	0.4146	0.6423	0.9203	0.5230	0.7680	0.9684	0.4357	0.6156	0.7710
2000	0.2897	0.5414	0.7732	0.3433	0.5963	0.8149	0.4262	0.6697	0.8718	0.4855	0.7426	0.9616	0.2496	0.5082	0.7325
2001	0.2225	0.5084	0.7960	0.2760	0.5674	0.8435	0.3160	0.5810	0.8822	0.4549	0.6797	0.9345	0.1822	0.4646	0.7475
2002	0.3413	0.6197	0.8952	0.3948	0.6798	0.9427	0.4774	0.7436	0.9366	0.5369	0.7806	1.0000	0.3341	0.5859	0.8575
2003	0.3537	0.6225	0.8798	0.3740	0.6468	0.9273	0.3578	0.7018	0.9609	0.5496	0.8193	1.0000	0.3138	0.5791	0.8163
2004	0.3405	0.6191	0.8641	0.3942	0.6834	0.9192	0.4342	0.6978	0.9565	0.5363	0.8142	1.0000	0.3287	0.5643	0.8069
2005	0.3371	0.6026	0.8710	0.4234	0.6628	0.8997	0.4305	0.7283	0.9560	0.5326	0.8084	1.0000	0.2851	0.5275	0.8130
2006	0.4247	0.6706	0.9336	0.5149	0.7329	0.9859	0.4875	0.7217	1.0000	0.6204	0.8614	1.0000	0.3290	0.6035	0.8851
2007	0.2927	0.5717	0.8696	0.3159	0.6043	0.9171	0.3681	0.6746	0.9620	0.4885	0.7636	1.0000	0.2552	0.5414	0.8388

Table C-3. Estimated Annual Price per Expected Pure Gram of Crack Cocaine – Various Cities, Retail Level (0.1 – 1.0 g, Evaluated at 0.3 g), Constant 2007 Dollars

Year	Atlanta			Chicago			New York			San Diego			Washington DC		
	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper
1986	$184.44	$409.64	$945.23	$141.70	$319.47	$704.62	$153.57	$284.69	$597.22	$150.65	$322.71	$579.99	$296.51	$446.22	$864.13
1987	$121.59	$380.37	$891.31	$93.41	$285.41	$771.85	$137.42	$354.45	$759.97	$146.24	$248.25	$501.48	$219.92	$312.25	$434.14
1988	$139.78	$272.01	$530.51	$107.40	$193.07	$395.16	$92.98	$197.99	$405.00	$157.55	$208.53	$287.52	$182.65	$209.62	$237.82
1989	$106.30	$249.39	$500.91	$89.60	$185.62	$374.67	$102.34	$178.25	$286.09	$146.46	$201.76	$265.10	$175.98	$200.05	$225.26
1990	$131.98	$278.73	$592.29	$101.43	$229.64	$441.01	$130.63	$190.90	$281.21	$135.15	$224.30	$377.76	$220.89	$253.25	$284.74
1991	$88.22	$214.28	$466.85	$71.09	$167.27	$314.81	$81.84	$140.01	$313.23	$108.75	$188.74	$351.27	$192.14	$202.45	$216.30
1992	$116.69	$254.86	$484.52	$104.30	$204.12	$491.34	$95.15	$150.04	$248.91	$94.50	$175.08	$393.71	$178.13	$207.27	$231.87
1993	$102.45	$212.83	$379.43	$98.41	$154.59	$225.60	$87.91	$139.60	$205.71	$80.03	$163.52	$285.53	$179.42	$203.68	$225.67
1994	$105.70	$189.82	$368.26	$84.99	$177.80	$306.39	$96.64	$128.75	$193.57	$86.38	$130.46	$277.07	$142.87	$196.83	$241.78
1995	$107.40	$208.87	$433.61	$75.87	$149.04	$351.83	$93.55	$186.25	$285.78	$97.13	$144.88	$194.36	$188.53	$217.75	$263.09
1996	$95.45	$183.57	$350.76	$73.38	$168.58	$309.39	$70.13	$137.02	$206.65	$74.58	$165.09	$283.34	$120.32	$179.62	$249.83
1997	$101.17	$228.57	$488.64	$77.78	$166.64	$363.82	$121.07	$200.63	$336.62	$79.06	$167.70	$367.60	$155.47	$213.40	$264.54
1998	$101.07	$173.14	$343.08	$69.90	$133.74	$255.41	$75.99	$141.45	$260.71	$71.04	$146.75	$228.06	$159.46	$177.99	$209.71
1999	$114.63	$229.79	$471.27	$84.09	$162.63	$350.85	$95.80	$178.87	$321.99	$89.58	$192.69	$329.36	$156.42	$177.61	$221.07
2000	$134.06	$282.34	$636.10	$131.88	$196.36	$252.61	$106.81	$249.83	$401.06	$89.29	$147.57	$308.73	$156.85	$196.62	$241.93
2001	$114.82	$222.75	$438.08	$88.28	$145.60	$281.74	$127.83	$221.14	$328.95	$89.72	$164.79	$284.67	$165.68	$195.11	$234.49
2002	$101.36	$204.63	$419.94	$77.92	$161.44	$312.64	$86.75	$143.59	$260.45	$84.12	$175.00	$347.79	$140.77	$175.91	$216.03
2003	$93.70	$178.39	$322.18	$68.76	$124.67	$303.65	$74.25	$150.76	$260.93	$73.21	$143.48	$306.81	$129.17	$166.34	$220.40
2004	$89.34	$175.27	$376.98	$69.47	$127.29	$280.68	$70.78	$138.57	$249.15	$69.79	$134.24	$303.01	$124.51	$141.96	$160.08
2005	$83.98	$158.38	$305.88	$64.55	$127.37	$255.74	$71.62	$132.36	$166.76	$67.24	$136.23	$244.52	$123.33	$135.35	$148.82
2006	$74.82	$140.68	$306.06	$63.68	$114.79	$227.86	$91.45	$131.68	$192.83	$58.37	$113.97	$230.24	$119.18	$130.23	$143.82
2007	$79.65	$172.64	$318.20	$61.23	$122.16	$236.94	$104.23	$152.43	$242.80	$62.24	$129.00	$235.92	$109.82	$147.39	$182.51

Table C-4. Estimated Annual Expected Purity of Crack Cocaine – Various Cities, Retail Level (0.1 – 1.0 g, Evaluated at 0.3 g)

Year	Atlanta			Chicago			New York			San Diego			Washington DC		
	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper
1986	0.6801	0.8603	1.0000	0.6687	0.8244	0.9900	0.7305	0.8785	1.0000	0.7471	0.8820	0.9991	0.4684	0.7261	0.9603
1987	0.6256	0.8447	1.0000	0.5926	0.8042	1.0000	0.6860	0.8686	1.0000	0.4678	0.7433	0.9936	0.6205	0.7962	0.9046
1988	0.6887	0.8778	1.0000	0.6558	0.8483	1.0000	0.6273	0.8526	1.0000	0.7725	0.8967	1.0206	0.7498	0.8209	0.8952
1989	0.7561	0.8761	1.0000	0.7169	0.8424	0.9696	0.7836	0.8805	0.9859	0.7665	0.8896	0.9838	0.7882	0.8366	0.8663
1990	0.6643	0.8145	0.9702	0.6315	0.7948	0.9517	0.7558	0.8572	0.9971	0.7074	0.8368	0.9586	0.7157	0.7580	0.8140
1991	0.7386	0.8700	1.0000	0.7204	0.8458	0.9681	0.7674	0.8883	1.0000	0.7288	0.8794	1.0000	0.8026	0.8289	0.8560
1992	0.6845	0.8325	0.9816	0.6767	0.7999	0.9279	0.6803	0.8374	0.9770	0.6824	0.8478	0.9841	0.7367	0.8067	0.8516
1993	0.6773	0.8165	0.9601	0.6182	0.7747	0.9006	0.7160	0.8607	0.9734	0.6869	0.8379	0.9630	0.6994	0.7466	0.7971
1994	0.6919	0.8341	0.9705	0.6724	0.7981	0.9133	0.7396	0.8410	0.9779	0.7149	0.8462	0.9527	0.6986	0.7598	0.8417
1995	0.5991	0.7687	0.9476	0.5923	0.7322	0.8977	0.6574	0.7977	0.9340	0.5820	0.7347	0.9308	0.6040	0.6794	0.7480
1996	0.6089	0.7668	0.9115	0.5856	0.7282	0.8639	0.6504	0.8004	0.9389	0.6329	0.7751	0.9041	0.5902	0.7209	0.8221
1997	0.5272	0.7165	0.9072	0.4945	0.6974	0.8667	0.6328	0.7851	0.9251	0.5370	0.7457	0.9069	0.5423	0.6463	0.7266
1998	0.6263	0.7645	0.9085	0.5562	0.7275	0.8667	0.6179	0.7737	0.9124	0.6423	0.7693	0.9069	0.6340	0.6861	0.7293
1999	0.5750	0.7191	0.8562	0.5423	0.6910	0.8157	0.6277	0.7608	0.8729	0.6090	0.7371	0.8558	0.5027	0.6358	0.7124
2000	0.5430	0.6918	0.8348	0.4957	0.5934	0.6875	0.5998	0.7013	0.8310	0.5986	0.7212	0.8302	0.5525	0.6113	0.6834
2001	0.5376	0.6760	0.8142	0.5049	0.6517	0.7715	0.5989	0.7201	0.8558	0.5474	0.6765	0.8231	0.5606	0.5975	0.6377
2002	0.5747	0.7055	0.8372	0.5496	0.6706	0.7968	0.6207	0.7546	0.8588	0.5844	0.7101	0.8227	0.5921	0.6466	0.7245
2003	0.6207	0.7522	0.8778	0.5768	0.7137	0.8516	0.6496	0.7639	0.8880	0.6193	0.7498	0.8775	0.6511	0.7146	0.7778
2004	0.6243	0.7616	0.9051	0.5620	0.7144	0.8745	0.6417	0.7822	0.9229	0.6339	0.7595	0.9049	0.6956	0.7374	0.7812
2005	0.6456	0.7859	0.9376	0.5924	0.7352	0.8776	0.7290	0.8158	0.9502	0.6554	0.7870	0.9119	0.7456	0.7832	0.8211
2006	0.6620	0.7934	0.9385	0.6151	0.7457	0.8774	0.7178	0.8134	0.9004	0.6717	0.8037	0.9411	0.7359	0.7817	0.8246
2007	0.5926	0.7564	0.9031	0.5598	0.7172	0.8628	0.6302	0.7845	0.9043	0.6310	0.7636	0.9030	0.6170	0.7056	0.7918

Table C-5. Estimated Annual Price per Expected Pure Gram of Heroin – Various Cities, Retail Level (0.1 – 1.0 g, Evaluated at 0.4 g), Constant 2007 Dollars

Year	Atlanta			Chicago			New York			San Diego			Washington DC		
	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper
1981	$566.55	$1,218.14	$2,802.01	$650.25	$2,066.15	$6,261.15	$223.81	$601.13	$1,163.11	$879.16	$1,347.40	$2,128.66	$1,329.57	$1,974.08	$2,740.47
1982	$613.86	$1,265.40	$2,432.23	$577.75	$1,491.05	$3,648.84	$215.85	$856.23	$2,435.47	$753.16	$1,016.01	$1,259.29	$1,014.11	$1,776.76	$2,492.50
1983	$589.97	$1,080.68	$2,895.33	$533.79	$1,329.28	$2,568.34	$404.61	$656.76	$986.20	$690.43	$1,154.72	$1,731.27	$1,136.83	$2,246.09	$3,801.78
1984	$476.02	$896.61	$1,914.79	$429.01	$1,079.53	$2,533.69	$638.77	$1,138.32	$2,010.56	$572.76	$798.68	$1,147.95	$583.47	$1,373.45	$2,834.90
1985	$355.00	$1,049.65	$3,750.83	$470.54	$1,082.76	$2,397.69	$645.73	$1,118.83	$1,717.00	$651.07	$1,092.58	$1,525.40	$588.90	$1,204.99	$1,999.70
1986	$409.63	$994.14	$2,418.97	$544.10	$1,193.86	$2,518.18	$545.36	$1,111.90	$1,731.20	$515.33	$909.55	$1,348.49	$1,178.00	$1,728.59	$2,254.41
1987	$434.77	$940.84	$2,088.51	$526.15	$1,368.72	$2,721.32	$514.41	$1,072.22	$2,824.10	$421.82	$797.08	$1,457.06	$762.44	$1,281.50	$2,063.84
1988	$430.11	$626.68	$839.82	$434.76	$846.80	$1,510.52	$443.92	$602.35	$734.32	$306.12	$630.35	$901.35	$603.03	$1,001.47	$1,567.83
1989	$319.61	$603.26	$1,043.56	$504.07	$902.29	$1,316.30	$496.08	$619.36	$782.17	$417.25	$672.24	$1,129.29	$417.79	$809.30	$1,276.71
1990	$299.82	$694.69	$1,223.65	$445.55	$937.55	$1,521.01	$493.26	$624.61	$764.63	$277.63	$613.59	$1,368.68	$790.70	$1,384.17	$2,301.34
1991	$404.12	$562.20	$869.19	$323.26	$569.44	$1,275.27	$448.35	$519.02	$611.20	$671.60	$865.77	$1,154.07	$739.45	$1,141.23	$1,709.97
1992	$270.52	$515.65	$1,056.89	$252.73	$513.46	$885.34	$376.69	$494.20	$621.20	$488.48	$687.69	$891.72	$722.87	$1,000.15	$1,308.21
1993	$334.69	$490.02	$678.93	$259.78	$529.87	$1,018.94	$331.36	$415.36	$510.27	$303.43	$484.56	$676.08	$719.21	$896.60	$1,126.69
1994	$378.29	$511.26	$665.26	$392.92	$560.87	$771.78	$310.58	$386.94	$488.47	$345.71	$448.72	$582.86	$731.56	$953.38	$1,310.83
1995	$339.34	$438.36	$549.51	$364.83	$571.17	$803.01	$292.50	$348.98	$404.56	$185.78	$333.25	$519.55	$533.41	$780.42	$1,061.58
1996	$347.24	$442.34	$573.30	$216.14	$454.03	$837.60	$307.92	$409.46	$505.19	$257.78	$354.96	$573.32	$575.23	$817.97	$1,080.76
1997	$253.62	$431.88	$805.97	$193.95	$431.54	$772.63	$285.21	$350.24	$451.05	$157.63	$277.97	$369.88	$514.47	$814.68	$1,318.16
1998	$317.64	$395.49	$513.56	$241.61	$377.82	$579.61	$294.98	$367.42	$437.05	$215.02	$267.90	$348.14	$385.84	$540.63	$856.43
1999	$309.92	$503.54	$1,259.34	$260.74	$381.56	$589.12	$290.19	$381.37	$508.02	$163.49	$247.55	$373.21	$379.98	$480.91	$646.26
2000	$317.54	$390.38	$501.48	$226.03	$375.16	$532.22	$260.00	$335.26	$459.24	$183.68	$271.48	$386.08	$418.24	$539.20	$699.82
2001	$309.07	$399.68	$567.24	$216.30	$304.41	$418.84	$260.97	$316.23	$401.20	$142.72	$215.81	$277.36	$326.70	$424.37	$568.18
2002	$308.99	$387.83	$499.61	$179.62	$333.86	$550.52	$258.06	$319.54	$398.42	$179.48	$234.89	$309.03	$304.66	$414.95	$554.87
2003	$305.44	$391.58	$502.47	$177.74	$273.65	$394.20	$266.45	$323.91	$386.29	$153.53	$199.44	$242.83	$269.24	$393.35	$514.20
2004	$278.49	$389.17	$547.89	$205.82	$322.77	$459.16	$276.78	$340.19	$442.40	$153.66	$186.46	$233.43	$368.27	$466.60	$607.96
2005	$282.10	$382.29	$519.19	$175.71	$290.37	$425.80	$245.68	$301.51	$386.48	$133.46	$169.17	$215.84	$341.21	$452.02	$614.48
2006	$234.53	$381.26	$561.50	$158.64	$297.49	$569.26	$271.38	$345.90	$411.90	$135.76	$204.60	$339.07	$379.18	$569.78	$766.16
2007	$234.44	$308.36	$397.45	$155.06	$306.52	$708.27	$259.31	$319.63	$389.25	$133.79	$177.07	$222.56	$280.72	$465.00	$684.44

Table C-6. Estimated Annual Expected Purity of Heroin – Various Cities, Retail Level (0.1 – 1.0 g, Evaluated at 0.4 g)

Year	Atlanta			Chicago			New York			San Diego			Washington DC		
	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper
1981	0.0000	0.0569	0.2672	0.0000	0.0050	0.1998	0.1208	0.2561	0.3787	0.0000	0.1526	0.3722	0.0000	0.0483	0.1120
1982	0.0000	0.1512	0.4066	0.0000	0.0469	0.3117	0.1611	0.2921	0.4298	0.1146	0.2295	0.3585	0.0095	0.0754	0.2491
1983	0.0000	0.0858	0.3589	0.0000	0.0252	0.2740	0.1042	0.2523	0.4457	0.0590	0.1936	0.4051	0.0000	0.1016	0.3098
1984	0.0000	0.1111	0.4331	0.0000	0.0782	0.3642	0.1039	0.3282	0.5689	0.0691	0.2648	0.4565	0.0000	0.1869	0.4011
1985	0.0000	0.1759	0.5153	0.0000	0.0742	0.3294	0.1464	0.3562	0.5652	0.0994	0.3159	0.4995	0.0000	0.1119	0.2838
1986	0.0000	0.1972	0.5559	0.0000	0.1106	0.4274	0.2204	0.3942	0.5715	0.0323	0.3651	0.6133	0.0000	0.1092	0.3031
1987	0.0000	0.1841	0.5059	0.0000	0.0773	0.3520	0.1495	0.3822	0.6104	0.0742	0.1914	0.3233	0.0044	0.1430	0.3102
1988	0.0212	0.1535	0.2750	0.0000	0.0988	0.2791	0.3531	0.4791	0.6237	0.1470	0.3455	0.5315	0.0000	0.1635	0.3068
1989	0.0350	0.2075	0.4191	0.0000	0.1803	0.4264	0.3609	0.4660	0.5853	0.2564	0.4627	0.6503	0.0149	0.2909	0.5515
1990	0.0000	0.1437	0.4749	0.0000	0.0919	0.3021	0.3016	0.4193	0.5325	0.0327	0.2683	0.5259	0.0013	0.1209	0.2515
1991	0.0993	0.2482	0.4118	0.0000	0.1409	0.3635	0.4258	0.5334	0.6557	0.1107	0.2690	0.4311	0.0518	0.1796	0.3157
1992	0.0796	0.3419	0.6018	0.0179	0.2300	0.4570	0.4054	0.6383	0.8062	0.2331	0.3809	0.5637	0.0336	0.1875	0.3270
1993	0.0850	0.2945	0.4675	0.0377	0.3038	0.5037	0.5318	0.6734	0.8051	0.2952	0.4578	0.6117	0.1139	0.2299	0.3426
1994	0.2657	0.5090	0.7272	0.0515	0.2041	0.3792	0.5533	0.6487	0.7519	0.2429	0.4744	0.6650	0.0934	0.2192	0.3307
1995	0.2090	0.4381	0.6033	0.1538	0.2928	0.4371	0.5846	0.7074	0.8507	0.3001	0.5320	0.6673	0.1402	0.2798	0.4109
1996	0.1838	0.3950	0.5536	0.0000	0.2711	0.4563	0.4077	0.5627	0.7068	0.1437	0.4016	0.5783	0.1314	0.2276	0.3305
1997	0.2605	0.4779	0.7032	0.1152	0.3276	0.5918	0.4524	0.6368	0.7693	0.4053	0.5532	0.7881	0.1137	0.2474	0.4239
1998	0.4006	0.5302	0.6495	0.1761	0.3009	0.4104	0.5338	0.6242	0.7472	0.3798	0.5502	0.6862	0.1372	0.2695	0.3815
1999	0.2481	0.5184	0.6547	0.0923	0.2669	0.4605	0.4729	0.6179	0.7635	0.3669	0.5411	0.7114	0.1634	0.2254	0.3172
2000	0.2905	0.4467	0.6081	0.0927	0.2402	0.3848	0.4994	0.6429	0.7905	0.2903	0.4793	0.6884	0.1156	0.2273	0.3251
2001	0.2306	0.4319	0.6000	0.0488	0.2004	0.3594	0.4523	0.5962	0.6884	0.2972	0.4634	0.5892	0.1208	0.2107	0.2951
2002	0.2637	0.4368	0.6413	0.0369	0.2171	0.4139	0.4960	0.6123	0.7023	0.3433	0.4630	0.5776	0.1250	0.2258	0.3265
2003	0.2644	0.4092	0.5571	0.0770	0.1900	0.3262	0.4640	0.5501	0.6366	0.2745	0.4130	0.5806	0.1115	0.1926	0.2760
2004	0.1405	0.3297	0.5154	0.0127	0.1662	0.3821	0.3220	0.4426	0.5445	0.3268	0.4499	0.5889	0.0740	0.1762	0.2623
2005	0.1180	0.3131	0.4790	0.0100	0.2040	0.4132	0.3659	0.4752	0.5697	0.3738	0.4967	0.6116	0.0509	0.2005	0.3253
2006	0.1576	0.3181	0.5327	0.0000	0.2143	0.4419	0.3166	0.4508	0.5590	0.2858	0.4313	0.5589	0.0606	0.1548	0.2729
2007	0.1420	0.3499	0.5680	0.0418	0.2591	0.4557	0.4097	0.5261	0.6485	0.2656	0.4035	0.5333	0.1261	0.2464	0.3986

Table C-7. Estimated Annual Price per Expected Pure Gram of d-Methamphetamine – Various Cities, Mid-Level (10 – 100 g, Evaluated at 27.5 g), Constant 2007 Dollars

Year	Los Angeles			Phoenix			San Diego			San Francisco		
	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper
1981	$37.32	$74.20	$145.77	$39.25	$78.25	$154.10	$33.92	$67.20	$131.58	$42.30	$84.10	$165.20
1982	$51.52	$102.18	$193.55	$54.19	$107.75	$204.70	$46.83	$105.54	$209.32	$71.72	$133.37	$223.51
1983	$41.59	$103.33	$259.54	$43.75	$108.97	$274.41	$37.80	$100.90	$234.20	$64.63	$130.23	$294.15
1984	$54.66	$123.98	$285.10	$57.48	$139.90	$310.96	$91.39	$154.49	$273.35	$61.94	$134.45	$333.31
1985	$35.93	$109.14	$228.79	$37.79	$103.90	$234.98	$32.67	$108.00	$216.82	$58.05	$116.31	$200.56
1986	$44.36	$120.22	$248.65	$46.66	$146.41	$347.97	$35.56	$111.89	$215.14	$50.28	$136.26	$281.85
1987	$53.28	$98.51	$179.30	$56.03	$115.00	$225.53	$74.78	$96.21	$137.90	$60.38	$117.20	$185.74
1988	$44.16	$84.24	$172.17	$47.84	$87.20	$182.10	$54.73	$70.84	$91.88	$50.05	$99.57	$172.25
1989	$43.25	$82.85	$153.31	$45.48	$95.57	$160.25	$52.74	$70.87	$98.87	$52.99	$102.75	$190.37
1990	$62.62	$137.20	$299.49	$77.02	$166.75	$316.79	$74.61	$130.14	$229.19	$66.19	$157.28	$339.50
1991	$58.79	$141.53	$320.41	$75.44	$157.18	$281.24	$70.82	$103.49	$161.72	$66.62	$165.56	$363.23
1992	$43.52	$86.15	$168.11	$45.76	$93.07	$177.82	$49.73	$66.62	$89.56	$49.31	$108.43	$184.24
1993	$34.03	$69.58	$144.90	$35.05	$70.59	$153.25	$39.48	$58.61	$90.14	$38.56	$76.59	$151.60
1994	$26.89	$46.15	$87.64	$28.31	$51.40	$97.79	$31.59	$41.51	$61.35	$29.23	$52.87	$104.81
1995	$34.97	$79.64	$236.54	$29.70	$82.20	$241.01	$27.03	$64.50	$181.29	$34.15	$84.90	$268.15
1996	$33.18	$77.22	$169.25	$43.75	$78.38	$179.03	$40.79	$66.00	$115.18	$38.04	$84.74	$191.86
1997	$30.54	$55.13	$104.53	$46.39	$63.94	$89.04	$33.75	$42.03	$51.98	$36.21	$56.74	$100.55
1998	$49.56	$91.52	$163.22	$55.53	$108.41	$172.67	$42.33	$82.04	$116.85	$49.36	$97.61	$170.38
1999	$53.97	$86.25	$149.33	$42.05	$84.80	$157.98	$54.47	$68.43	$91.06	$52.74	$92.61	$221.45
2000	$42.27	$70.45	$117.69	$40.37	$69.59	$123.86	$45.16	$57.02	$71.87	$48.08	$86.76	$143.62
2001	$30.31	$56.96	$90.60	$38.33	$65.52	$117.30	$43.52	$52.85	$66.59	$41.31	$66.35	$115.00
2002	$32.74	$53.44	$77.28	$31.71	$53.63	$97.68	$39.87	$49.70	$58.58	$42.30	$61.85	$100.33
2003	$31.08	$40.54	$53.81	$25.18	$45.86	$74.93	$31.72	$39.63	$50.83	$27.14	$53.56	$83.28
2004	$21.02	$36.47	$57.63	$24.74	$41.66	$76.16	$32.85	$42.06	$50.80	$32.99	$45.18	$59.30
2005	$15.84	$31.79	$65.71	$18.26	$26.99	$43.72	$23.21	$31.11	$38.80	$19.95	$34.98	$55.15
2006	$32.91	$45.28	$61.16	$24.73	$40.13	$70.08	$34.88	$45.65	$61.58	$23.79	$45.83	$88.80
2007	$34.00	$68.05	$125.20	$30.79	$57.80	$129.80	$30.46	$58.07	$80.82	$16.10	$55.77	$139.13

Table C-8. Estimated Annual Expected Purity of d-Methamphetamine – Various Cities, Mid-Level (10 – 100 g, Evaluated at 27.5 g)

Year	Los Angeles			Phoenix			San Diego			San Francisco		
	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper	Lower	EPH	Upper
1981	0.2614	0.6151	0.9657	0.1395	0.4936	0.8447	0.2383	0.5898	0.9381	0.2429	0.5964	0.9469
1982	0.2614	0.6010	0.9160	0.1395	0.4795	0.7950	0.2385	0.6041	0.8851	0.3005	0.5934	0.8849
1983	0.1400	0.5650	0.9819	0.0181	0.4435	0.8608	0.1172	0.5350	0.9542	0.1214	0.5601	0.9162
1984	0.1361	0.5008	0.8368	0.0073	0.3995	0.7158	0.1056	0.4187	0.7001	0.1106	0.4905	0.8180
1985	0.2556	0.5816	1.0000	0.1395	0.4815	0.9303	0.2231	0.5506	1.0000	0.2606	0.5754	0.9793
1986	0.2014	0.5222	0.8190	0.0795	0.3877	0.6822	0.2470	0.4873	0.8041	0.1828	0.5035	0.8002
1987	0.2626	0.5602	0.8787	0.1407	0.4282	0.6880	0.3604	0.5814	0.8469	0.2259	0.5001	0.8017
1988	0.3245	0.6063	0.8823	0.2025	0.5091	0.8181	0.4411	0.6211	0.7909	0.3547	0.6049	0.8742
1989	0.3592	0.6451	0.9481	0.2372	0.5162	0.8054	0.3490	0.5629	0.7430	0.2552	0.5882	0.9039
1990	0.1081	0.4083	0.7021	0.0000	0.2761	0.5832	0.0673	0.3047	0.5214	0.0895	0.3896	0.6949
1991	0.1415	0.4600	0.7500	0.0174	0.2893	0.5729	0.1743	0.3917	0.6298	0.0415	0.3705	0.7313
1992	0.2328	0.5809	0.8779	0.1108	0.4374	0.7569	0.4036	0.6825	0.9539	0.1053	0.4504	0.8451
1993	0.2726	0.6433	0.9885	0.1740	0.5427	0.8966	0.4810	0.7056	0.9325	0.2773	0.6353	0.9610
1994	0.5381	0.8304	1.0000	0.4121	0.6912	0.9648	0.6695	0.8536	1.0000	0.5154	0.7873	1.0000
1995	0.1227	0.6612	1.0000	0.0160	0.5751	0.9586	0.0531	0.6774	1.0000	0.1040	0.6528	1.0000
1996	0.2731	0.5609	0.8466	0.1405	0.4361	0.7321	0.2301	0.5378	0.8373	0.2215	0.5068	0.8052
1997	0.3189	0.6095	0.9271	0.2167	0.4200	0.5945	0.5570	0.7249	0.8835	0.2954	0.5566	0.8763
1998	0.0713	0.3500	0.6548	0.0162	0.2356	0.4979	0.1371	0.3101	0.6168	0.0580	0.3106	0.5548
1999	0.0966	0.4967	0.8638	0.0590	0.3182	0.6260	0.1800	0.3215	0.4505	0.1007	0.4591	0.7165
2000	0.1982	0.4902	0.8045	0.0604	0.3137	0.5993	0.2524	0.3727	0.5273	0.1795	0.4372	0.7160
2001	0.2939	0.6377	0.8808	0.1510	0.4715	0.7939	0.2233	0.4213	0.6296	0.2543	0.6138	0.8495
2002	0.4135	0.6437	0.8704	0.2508	0.4790	0.7178	0.4987	0.6146	0.7630	0.2851	0.5747	0.7884
2003	0.5192	0.7320	0.9207	0.3496	0.5942	0.8665	0.6890	0.7926	0.9014	0.5035	0.7027	0.9687
2004	0.3985	0.7222	0.9841	0.3267	0.6515	0.9901	0.5672	0.6774	0.8051	0.5211	0.7515	0.9540
2005	0.7200	0.9650	1.0000	0.5984	0.8633	1.0000	0.6673	0.8752	1.0000	0.7118	0.9482	1.0000
2006	0.2978	0.5421	0.7605	0.2530	0.5487	0.8819	0.4422	0.6312	0.8263	0.3761	0.7448	1.0000
2007	0.3715	0.5546	0.7604	0.1441	0.5135	0.7371	0.3643	0.5659	0.9220	0.2474	0.6762	1.0000

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14. ABSTRACT

This paper updates estimates of the price and purity of selected illicit drugs (powder cocaine, crack cocaine, heroin, d-methamphetamine, and marijuana) published by the Office of National Drug Control Policy (ONDCP) in 2004. The time period spanned by the present analyses is 1981 through 2007, adding 18 quarters onto the extent covered in the preceding report. All estimates are derived from records in the System To Retrieve Information from Drug Evidence (STRIDE) database maintained by the Drug Enforcement Administration, and furnished to IDA by ONDCP. STRIDE data records, more than a million in number, are based on seizures and undercover purchases of illicit drugs. As directed by ONDCP, the primary estimation methodology for generating our price and purity time series is essentially identical to the formal econometric modeling approach used in the 2004 study. This paper is accompanied by a Technical Report, IDA Paper P-4370, which provides supporting and related analyses.

15. SUBJECT TERMS
Illicit drugs, price, purity, powder cocaine, crack cocaine, heroin, d-methamphetamine, marijuana, STRIDE

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