The Extent of Trafficking in the Food Stamp Program: 2002–2005

Final Report

The Office of Analysis, Nutrition and Evaluation

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EXECUTIVE SUMMARY

This is the fourth in a series of periodic analyses to estimate the extent of trafficking in the Food Stamp Program. Trafficking occurs when food stamp recipients sell their benefits at a discount to food retailers. Although trafficking does not represent a cost to the Federal Government, it is a diversion of program benefits. Benefits are intended to help low-income households access a nutritious diet, and trafficking impedes the program's mission and undermines its integrity. This trafficking update:

- Uses new and more comprehensive data to estimate recent program performance, and
- Examines changes in the amount, frequency, and location of trafficking over time.

Together, the findings provide an important overview of food stamp integrity from late 2002 through 2005.

APPROACH

As with previous analyses, current trafficking estimates are based on two types of Food and Nutrition Service (FNS) investigations: those occurring in stores and those based on Electronic Benefit Transfer (EBT) administrative (i.e., food stamp purchase) records. Both data sources focus on retailers that exhibit suspicious behavior; therefore, estimates calculated simply by comparing the number of violating stores or trafficked benefits to the total number of suspicious stores or transactions exaggerate the extent of trafficking. In order to correct for at least some of

this bias, estimates in this and prior reports adjust the trafficking figures to reflect the population of food stamp redemptions and stores authorized to redeem them.

The report contains three sets of trafficking estimates. While the statistical procedures are the same for each set, the completeness of the available information has improved over time. In order to provide the most comprehensive assessment, one set of estimates for 2002–2005 relies on all the relevant information now available. These are referred to as "current estimates," and they include data on investigations conducted not only by FNS but also by the U.S. Department of Agriculture's Office of the Inspector General, the U.S. Department of Justice, and State law enforcement agencies. The current estimates also incorporate a broader population of stores with suspect redemption patterns that have been identified through the Agency's automated screening system, the Anti-fraud Locator using EBT Retailer Transactions (ALERT) system.

Two other sets of trafficking estimates are included to support consistent comparisons over time. The "original estimates" are based only on in-store investigations conducted by FNS staff; these data have been available since the first estimates were made in 1993. The "revised estimates" rely on both FNS in-store investigations and trafficking determinations based on suspect transaction records. First calculated for 1999–2002 as EBT was being implemented nationwide, the revised estimates were also computed for 2002–2005.

Each set of estimates includes the following indicators:

- Total value of food stamp redemptions that were trafficked;

- Trafficking rate, or the proportion of food stamp redemptions that were trafficked; and a

- Store violation rate, or the proportion of active, authorized stores that engaged in trafficking.

TRAFFICKING IN 2002–2005

Based on the most complete data available for 2002–2005, current estimates indicate that:

- Food stamp trafficking diverted an estimated $241 million annually from food stamp benefits;

- Overall, 1 cent of each benefit dollar was trafficked; and

- About 7 percent of all authorized food stamp stores engaged in trafficking.

A variety of store characteristics and settings were related to the level of trafficking. Although large stores accounted for 90 percent of all food stamp redemptions, they exhibited much lower rates of trafficking than small retailers (0.2 cents versus 7.6 cents per benefit dollar redeemed). Trafficking was less likely to occur among publicly owned stores than privately owned ones, and among retailers in areas with less poverty rather than more.

TRENDS OVER TIME

When using the same estimation procedures previously applied, the analyses show that:

- **Both the value and rate of trafficking continued to decline.** Whether comparing the original or revised estimates across study periods, food stamp trafficking decreased

consistently and substantially. Original estimates, based on FNS store investigations, indicate that the annual amount of benefits trafficked during 2002–2005 was more than 50 percent less than comparable figures for 1999–2002. The more comprehensive revised estimates, which combined trafficking determinations based on EBT data with those from store investigations, show a 29-percent decrease over the same time. The rate of trafficking in 2002–2005 (about 1 cent per dollar) was less than half the rate in 1999–2002 (about 2.5 cents per dollar).

- **Trafficking declined even as food stamp participation and total benefits increased.** Between 1999 and 2005, the number of participants increased from 18 million to nearly 26 million in an average month, and the annual value of food stamp redemptions grew from $15.8 billion to $28.6 billion.

- **Time trends for store violation rates were mixed and not easily interpreted.** The original and revised estimates do not show a consistent pattern. Depending on the estimate used, the percentage of stores found to be trafficking in 2002–2005 either decreased substantially or increased modestly from 1999–2002.

Exhibit A. Value of Food Stamp Benefits Trafficked Annually
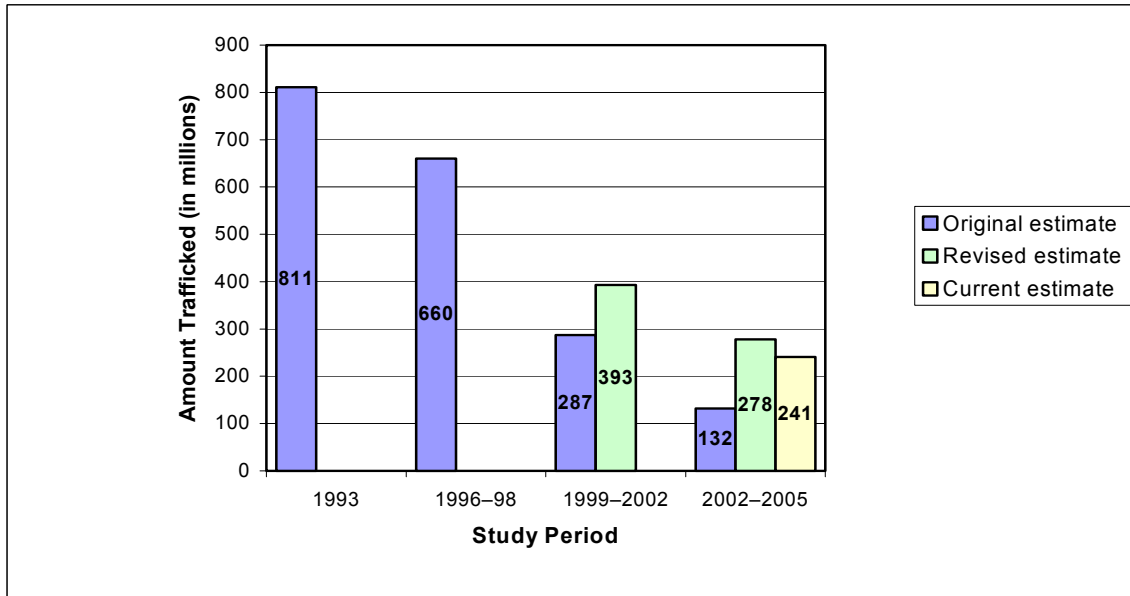
NOTE: Data have been annualized.

Exhibit B. Trafficking Rate
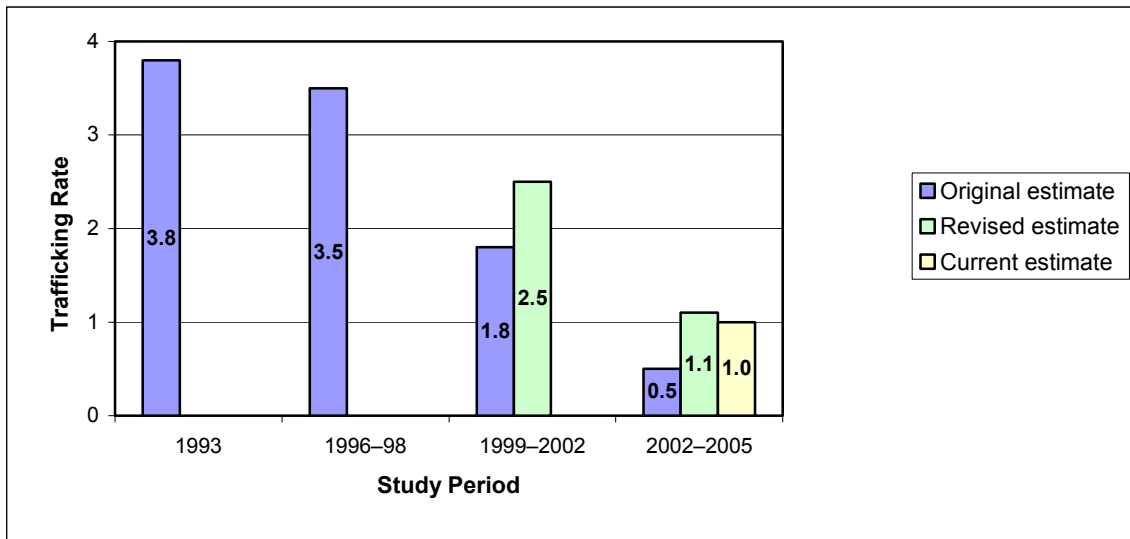
Exhibit C. Store Violation Rate
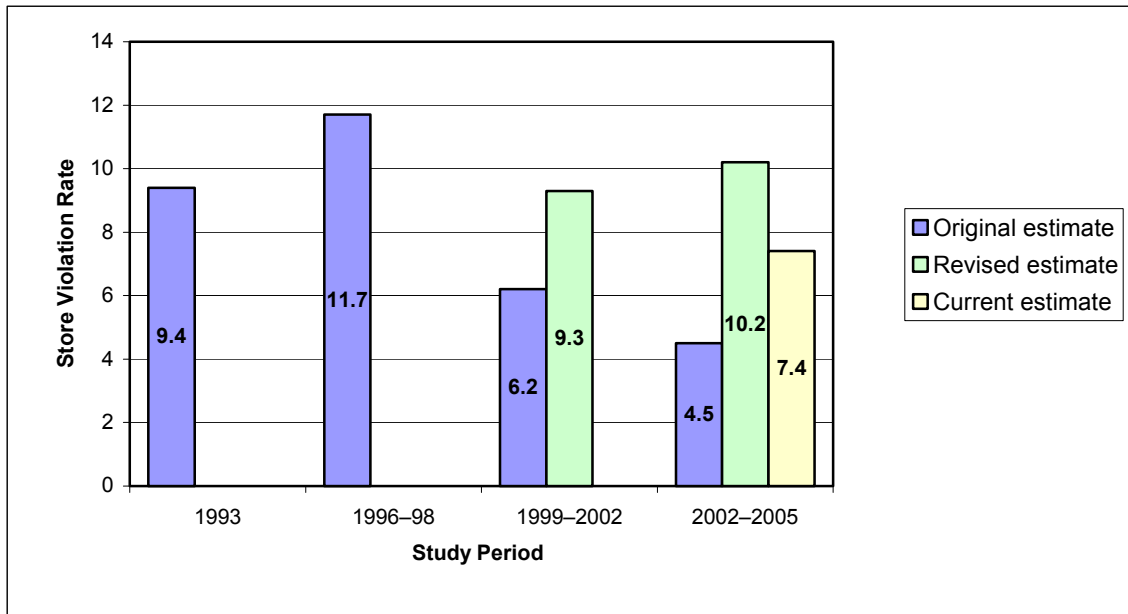
POSSIBLE FACTORS IN THE DECLINE OF TRAFFICKING OVER TIME

- **Large stores accounted for a somewhat larger share of redemptions and a smaller proportion of benefits that were trafficked.** The decline in trafficking reflected, at least in part, the mix of stores participating in the Food Stamp Program, as well as the use of these stores by program participants.

- **As EBT systems expanded nationwide, food stamp trafficking declined.** The proportion of redemptions transacted through EBT increased from 64 percent in 1996 to virtually 100 percent in 2005, which suggests that EBT may have helped to curb trafficking.

CONCLUSIONS

Overall, the analysis shows that food stamp trafficking continued to decline even as program benefits grew substantially. Results confirm previous findings regarding the positive relationship between the extent of trafficking, store size, and neighborhood poverty. Although the methodology used to generate these estimates has some limitations, improvements in the available data and the consistency in the trend across different estimates strengthens these conclusions. Further improvements to the precision of trafficking estimates would require new resources to assess the prevalence of trafficking in a random sample of stores.

1. INTRODUCTION

1.1. BACKGROUND AND PURPOSE

The Food and Nutrition Service (FNS) administers the Food Stamp Program, the largest U.S. nutrition assistance program. In fiscal year (FY) 2005, about $29 billion in food stamp benefits were issued to almost 26 million low-income participants to help them obtain a nutritious diet.[1]

Food stamp benefits can be used to purchase only eligible food items from authorized food retailers. When individuals sell benefits for cash, both program intent and law are violated. The practice of trafficking compromises the program's mission and undermines public perception of the program's integrity.

While individuals can illegally sell their benefits for a cash discount on the street, only authorized retailers can redeem benefits for cash from the Federal Government. FNS is responsible for authorizing and managing retailer participation. As part of this responsibility, FNS maintains monitoring and investigations staff to identify and curb food stamp trafficking. These efforts, which include covert investigations as well as ongoing review of food stamp transactions, are sometimes supplemented by investigations initiated by the U.S. Department of Agriculture's (USDA) Office of the Inspector General (OIG), the U.S. Department of Justice, and State law enforcement agencies. Although these activities can provide a general sense of the

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[1] In total, the program cost $31 billion, of which $29 billion were distributed in the form of benefits and about $2 billion were spent on administrative costs.

extent of trafficking, they do not provide a quantitative estimate of the value of benefits diverted through trafficking.

This is the fourth in a series of periodic reports[2] that update estimates of the:

- Total value of food stamp redemptions that were trafficked;
- Trafficking rate, or the proportion of food stamp redemptions that were trafficked; and
- Store violation rate, or the proportion of authorized stores that engaged in trafficking.

The estimates reflect redemption activity beginning on November 1, 2002, and ending on December 31, 2005.

1.2. APPROACH

Ideally an estimate of food stamp trafficking would be based on the redemption practices of a representative sample of food retailers. This approach would provide an unbiased estimate with a known degree of precision. However, it would also require diverting limited resources from identifying and investigating retailers with suspicious redemption practices.

Consequently FNS trafficking estimates have been generated from a systematic analysis of the best available data on redemption monitoring and investigations of authorized retailers. Because

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[2] Previous estimates are reported in Macaluso, T. (1995) *The Extent of Trafficking in the Food Stamp Program;* Macaluso, T. (2000) *The Extent of Trafficking in the Food Stamp Program: An Update;* and Macaluso, T. (2003) *The Extent of Trafficking in the Food Stamp Program: 1999–2002.*

these data represent suspicious cases, they provide a somewhat biased perspective on food stamp trafficking, one that could potentially overestimate its extent. On the other hand, investigations and monitoring activities do not catch all instances of trafficking, thereby introducing some downward bias in the estimates. On balance, the analysis and approach adopted err on the side of overestimation when possible. (See Appendix A for a discussion of sources of overestimation and underestimation.)

1.3.   REPORT OVERVIEW

Chapter 2 provides an overview of the procedures used to estimate trafficking, along with descriptions of their key strengths and limitations.

Chapter 3 provides best estimates of trafficking indicators for calendar years 2002–2005. With the nationwide implementation of the Electronic Benefit Transfer (EBT) screening system, the sources of information used to identify and record trafficking have expanded, and current trafficking estimates made use of these additional sources of data. Chapter 3 also presents the results of some subgroup analyses comparing types of stores and store locations.

Chapter 4 examines trafficking trends over time using estimates based on procedures used previously to ensure comparability.

2. METHODS

2.1. GENERAL APPROACH

The estimates presented here were generated using the same strategy as in the previous three studies. This approach is based on identifying trafficking retailers from among those retailers who were investigated or subject to additional monitoring and then weighting these retailers to project the number of violating stores and the dollar amount of trafficked redemptions in the retailer population as a whole.

Information on trafficking came from two sources:

- Investigations—These are covert activities pursued by FNS, the USDA OIG, the U.S. Department of Justice, the States, and others. Investigations target stores with suspicious behavior and identify stores in this group that manifest trafficking behavior.

- EBT data-based cases—These are stores considered to be suspicious as a result of screening EBT transaction records. Such cases are resolved through an administrative process that may eventually result in permanent disqualification.

This information allowed us to define a trafficking rate. (See Appendix B for more details on these sources.) The denominator in that rate is all stores that have been investigated or examined, and the numerator includes stores that have trafficked or been permanently disqualified. This rate overestimates trafficking in that it is based on stores that have exhibited suspicious behavior. An

unbiased estimate would require examining a sample that is representative of all authorized and redeeming stores.[3]

To partially correct for this bias, we used a post-stratification raking approach to adjust the sample estimates to better represent the retailer population as a whole. The raking approach provides weights based on store characteristics that project the sample value to a population value. For example, if fewer supermarkets are in the sample than in the population, the supermarkets in the sample are weighted more heavily than other stores. Since supermarkets tend to have a lower rate of trafficking, this would decrease the overall trafficking rate found in the sample.

The post-stratification raking procedure weights sample stores to the population based on variables that relate to the identification of suspicious stores and trafficking outcomes. (See Appendix C for a description of the raking process.) For this and previous analyses, the following variables were used (see Appendix D for information on how these dimensions are defined):

- Store size and type (e.g., supermarket, grocery, convenience store),

- Ownership (public or private),

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[3] A representative sampling of the population has not been attempted due to the burden on already limited FNS resources. For the 2002–2005 estimates, a more inclusive list of retailers, the Watch List, has been used for the denominator. This list is still focused on stores that exhibit suspicious behavior, but the selection screen is so broad that almost 1 out of every 5 stores is included. This allowed us to examine a less selective sample than those used in previous studies and thus ameliorated the bias issue to some extent.

- Poverty level of the store's neighborhood,

- Urbanization level of the store's neighborhood, and

- Food stamp redemption level.

The calculated weights were applied to information for each retailer in the sample to estimate the overall number of stores that trafficked and the total amount of trafficked redemptions in the population. Redemptions were further adjusted to account for legitimate food stamp sales that occur in trafficking stores.[4] The store violation rate and trafficking rates were calculated as the percentage of all active food stamp stores that trafficked and the proportion of all benefits that were trafficked, respectively. Estimates were calculated for various subgroups of stores, that is, type of ownership, poverty level, and degree of urbanization.

2.2. LIMITATIONS

There are three key limitations associated with our approach. (See Appendix E for a more complete discussion of limitations, assumptions, and sensitivity analyses). First, although post-stratification reduces potential bias, it cannot eliminate it. Estimates of trafficking are based on the activities of *suspicious* retailers, and these estimates are extrapolated to the population. Estimates based on a sample of suspected retailers are likely to overstate the population value of trafficking. Second, the variables and the cut points used to calculate adjusted weights may affect the estimate. For example, we use four levels of poverty to define the location of a store. The

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[4] Among stores that trafficked, 60 percent of all redemptions in large stores and 10 percent of all redemptions in small stores were assumed to have been legitimate sales. This is a potential source of overestimation if a larger portion of the redemptions represents legitimate transactions.

estimates might be different if we used different poverty levels. (The variables and cut points were determined by an analysis performed as part of the 1993 estimates.) Third, the adjustment to account for legitimate redemptions in trafficking stores was set purposefully low to minimize the risk of underestimating the prevalence of trafficking.

2.3.   CONSISTENT METHODS WITH IMPROVED DATA

When compared with previous analyses, this study is based on improved data sources that allow us to represent a broader range of FNS trafficking-related activities. In addition to FNS investigations and EBT data-based cases, this study includes investigations conducted by OIG, the States, and other entities. Furthermore, the introduction of the retailers on the Watch List provides a larger group of stores that have undergone scrutiny in terms of their behaviors. Specifically, the Watch List provides an extensive list of retailers that manifest a wider range of suspicious transactions than groups used as denominators in previous studies. The data are therefore more likely to be more consistent with a representative sample.

2.4.   ESTIMATES

This report presents three measures of trafficking:

- Original estimate—This estimate uses only Retailer Investigations Branch (RIB) investigations and corresponds to estimates generated in the 1993, 1996–98, and 1999–2002 studies. It allows us to examine long-term trends in trafficking. As with the previous studies, the denominator includes all RIB investigations, and the numerator includes all retailers flagged as trafficking stores.

- Revised estimate—For the 1999–2002 study, a more comprehensive estimate was developed to include EBT data-based cases. Replicating this measure for the current study and comparing the results with those from 1999–2002 provides an improved measure of short-term trends. The denominator for this estimate is any store investigated by RIB and any store that was sent a charge letter based on analysis of administrative transaction records. The numerator is any store flagged for trafficking or permanently disqualified from the program.

- Current estimate—For this update, we used a number of additional data sources to generate an estimate more reflective of all activities related to detecting trafficking. We augmented the denominator in two ways, by including closed cases on the Watch List (cases that manifested some suspicious activity as detected through EBT scans) and by including retailers investigated by OIG, the U.S. Department of Justice, the States, and other entities. The numerator included the retailers used in the numerator of the revised estimate and retailers found to be trafficking through investigations by OIG, the U.S. Department of Justice, and the States.

Each set of estimates includes the following indicators:

- Total dollar amount of food stamp redemptions that are trafficked;

- Trafficking rate, or the proportion of food stamp redemptions that are trafficked; and

- Store violation rate, or the proportion of authorized stores that engaged in trafficking.

See Appendix F for more detailed definitions of the estimates.

3. FOOD STAMP TRAFFICKING IN 2002–2005

3.1. NATIONAL ESTIMATES

Between 2002 and 2005, we found that:

- Food stamp trafficking diverted an estimated $241 million annually from food stamp benefits,

- Overall, 1 cent of each benefit dollar was trafficked, and

- About 7 percent of all active, authorized food stamp stores engaged in trafficking.

These figures are in the context of a program in which retailers redeemed an average of approximately $24 billion of benefits per year during this period.

3.2. TRAFFICKING BY STORE TYPE

Supermarkets and large groceries had the lowest trafficking rates. As observed in previous studies, large stores (supermarkets[5] and large groceries) were less likely to be involved in trafficking than other stores. These large stores accounted for 21.1 percent of the $241 million trafficked, although they redeemed 90.0 percent of food stamp redemptions (see Exhibit 1). Of all stores, small groceries accounted for 45.5 percent of all dollars trafficked, yet they accounted for only 3.5 percent of all redemptions.

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[5] Superstores were classified along with self-identified supermarkets for the purposes of the study.

Supermarkets and large groceries were trafficking at a rate of 0.2 percent, compared with 7.6 percent for small stores. While only 2.2 percent of large retailers were estimated to have trafficked, 9.3 percent of small retailers were estimated to have done so.[6]

Exhibit 1. Trafficking Measures by Store Type, 2002–2005

Type of Store	Total Redemptions (in thousands)	Amount of Trafficking (in thousands)	Trafficking Rate	Store Violation Rate
Large Stores				
Supermarkets	$21,662,043	$42,178	0.2%	1.5%
Large groceries	$932,455	$8,579	0.9%	4.4%
Subtotal	$22,594,498	$50,757	0.2%[7]	2.2%
Small Stores				
Small groceries	$885,358	$109,616	12.4%	12.4%
Convenience	$466,734	$48,136	10.3%	14.0%
Specialty	$572,263	$11,955	2.1%	3.5%
Gas/grocery	$203,380	$14,207	7.0%	9.6%
Other types	$371,015	$6,002	1.6%	1.3%
Subtotal	$2,498,750	$189,916	7.6%	9.3%
All stores	**$25,093,248**	**$240,673**	**1.0%**	**7.4%**

NOTE: Redemption totals have been annualized.

3.3. TRAFFICKING BY STORE OWNERSHIP

Trafficking rarely occurred in publicly owned stores. Publicly owned stores had a trafficking rate close to zero and a store violation rate of 0.1 percent. In contrast, privately owned stores had a trafficking rate close to 1.6 percent and a store violation rate of 9.5 percent (see Exhibit 2).

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[6] The estimated average amount trafficked per store was $966 for large stores and $1,323 for small stores. Examining only the population of stores that trafficked, the average amounts were $43,410 for large stores and $14,297 for small stores.

[7] This value reflects that the overwhelming value of trafficked redemptions is associated with supermarkets.

When we divided the stores into large stores (supermarkets and large groceries) and small stores (i.e., stores other than supermarkets and large groceries), we found further distinctions between privately owned and publicly owned stores. The trafficking rate for small, privately owned stores was 8.5 percent. These stores accounted for just 8.9 percent of all food stamp redemptions but almost 80 percent of benefit dollars trafficked.

Exhibit 2. Trafficking Measures by Store Ownership Status, 2002–2005[8]

Store Ownership Status	Amount of Trafficking (in thousands)	Percentage of Total	Trafficking Rate	Store Violation Rate	Percentage of All	
					Stores	Redemptions
Publicly Owned Stores						
Large stores	$262	0.0%	0.0%	0.1%	7.3%	38.1%
Small stores	$115	0.0%	0.0%	0.0%	15.2%	1.1%
Subtotal	$377	0.0%	0.0%	0.1%	22.5%	39.2%
Privately Owned Stores						
Large stores	$50,496	21.0%	0.4%	3.0%	19.4%	51.9%
Small stores	$189,800	78.9%	8.5%	11.6%	58.1%	8.9%
Subtotal	$240,296	99.9%	1.6%	9.5%	77.5%	60.8%
All stores	**$240,673**	**100.0%**	**1.0%**	**7.4%**	**100.0%**	**100.0%**

NOTE: Redemption totals have been annualized. Detail may not add to totals due to rounding.

3.4. TRAFFICKING AND POVERTY LEVEL OF STORE LOCATION

Trafficking was more likely to occur in poorer neighborhoods. In total, about 10 percent of all stores were located in areas where the percentage of households in poverty exceeds 30 percent (see Exhibit 3). These stores accounted for 10 percent of all redemptions and 31 percent of all trafficked redemptions. In these poorer neighborhoods, the trafficking rate was

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[8] For information on the number of stores and amount of redemptions in each category, see Exhibit G4.

2.9 percent, more than 14 times greater than the trafficking rate in areas with poverty levels of 10 percent or less.

Likewise, almost 12 percent of the stores in areas with the highest concentration of poverty trafficked. In contrast, 3.2 percent of the stores in areas with the lowest share of households in poverty trafficked.

Exhibit 3. Trafficking Measures by Neighborhood Poverty, 2002–2005

Percentage of Households in Poverty in ZIP Code Where Store Is Located	Trafficking				Percentage of All	
	Amount of Trafficking (in thousands)	Percentage of Total	Trafficking Rate	Store Violation Rate	Stores	Redemptions
0–10%	$15,007	6.2%	0.2%	3.2%	28.1%	25.8%
11–20%	$87,004	36.2%	0.8%	7.1%	41.5%	43.3%
21–30%	$64,111	26.6%	1.2%	11.5%	20.0%	20.6%
More than 30%	$74,550	31.0%	2.9%	11.7%	10.4%	10.3%
All stores	**$240,673**	**100.0%**	**1.0%**	**7.4%**	**100.0%**	**100.0%**

NOTE: Redemption totals have been annualized.

3.5.   TRAFFICKING AND POPULATION DENSITY OF STORE LOCATION

The percentage of authorized stores, share of food stamp redemptions, and amount of benefits trafficked generally increased with population density. Stores in the most urban areas accounted for almost 60 percent of authorized retailers, 81 percent of all redemptions, and 82 percent of trafficked benefit dollars (see Exhibit 4).

Exhibit 4. Redemption Share and Trafficking by Population Density, 2002–2005

Percentage Urban of ZIP Codes Where Stores Are Located	Trafficking				Percentage of All	
	Amount of Trafficking (in thousands)	Percentage of Total	Trafficking Rate	Store Violation Rate	Stores	Redemptions
0–10%	$12,297	5.1%	1.1%	7.3%	12.1%	5.7%
11–50%	$10,718	4.5%	0.7%	6.5%	6.1%	3.7%
51–90%	$20,521	8.5%	1.3%	4.2%	21.9%	9.6%
91–100%	$197,137	81.9%	1.2%	8.3%	59.8%	81.1%
All stores	**$240,673**	**100.0%**	**1.0%**	**7.4%**	**100.0%**	**100.0%**

NOTE: Redemption totals have been annualized.

4.   TRENDS OVER TIME

In addition to providing a current estimate of food stamp trafficking (see Chapter 3), this study compares trafficking amounts and rates for calendar years 1993–2005. Meaningful comparisons require that the same approach be used to calculate estimates at each point in time. Because the current estimates presented in Chapter 3 are based on newly available and more comprehensive information, they are intrinsically different from earlier calculations. Consequently it is necessary to introduce additional estimates for 2002–2005 that are based on the same kinds of data and procedures used previously. While these additional estimates for 2002–2005 add complexity to the results, they allow us to draw credible conclusions about trends in food stamp trafficking.

4.1.   APPROACH TO EARLIER ESTIMATES

There have been three previous trafficking reports: for 1993, 1996–98, and 1999–2002. Each includes a set of estimates based on RIB investigations alone, since these are the only data available for all three periods. The same approach was used to produce comparable figures for 2002–2005. These are referred to as original estimates in this and previous reports.

As more States implemented EBT systems, administrative records of purchase transactions became an increasingly important tool for identifying food stamp trafficking. For the first time, the 1999–2002 study provided a set of estimates based on both EBT information and RIB investigations. This approach also was used to estimate trafficking for 2002–2005. The results are referred to as revised estimates in this report and as EBT estimates in the previous report.

Details on the data sources and calculation procedures for the original and revised estimates are provided in Appendix B.

4.2. AMOUNT OF BENEFITS TRAFFICKED

Overall, the amount of trafficked benefits declined over time. Using the original source of information from RIB investigations, the total annual amount of redemptions trafficked has decreased from $811 million in 1993 to $132 million between late 2002 and 2005 (see Exhibit 5).

**Exhibit 5. Amount of Trafficking, by Study Period and Data Source**
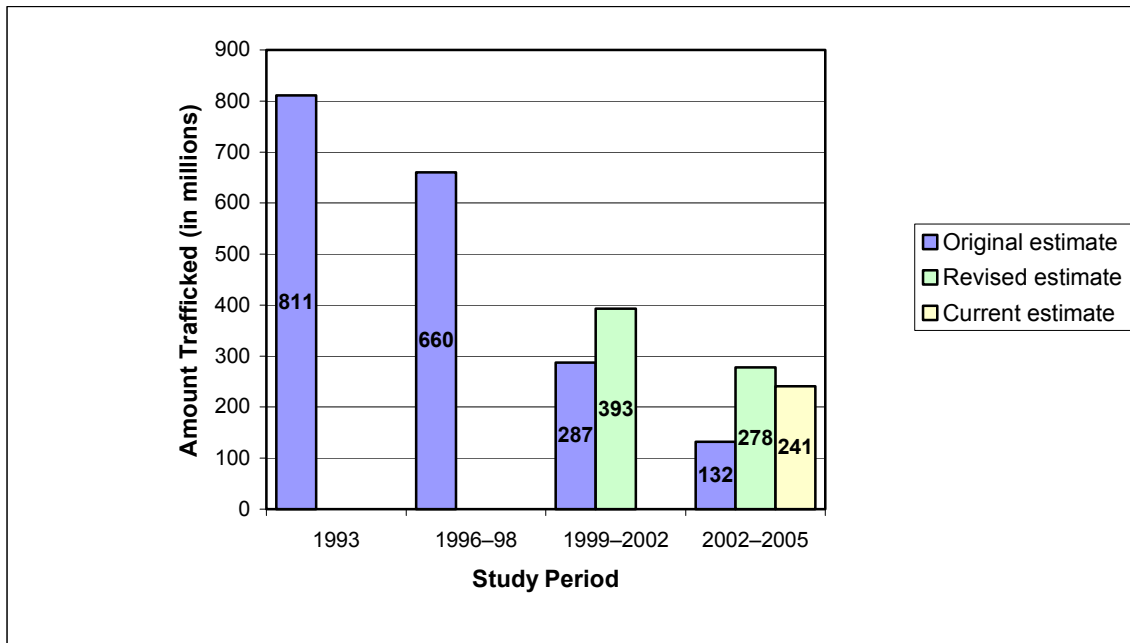
NOTE: Redemption totals have been annualized.

The revised estimate, first calculated for 1999–2002, combined data from onsite investigations and administrative review of benefit redemption data. For 1999–2002, the revised estimate is

approximately 37 percent higher than the RIB-only estimate. Looking over time, however, the revised estimate for 2002–2005 is about two-thirds of the 1999–2002 estimate (see Exhibit 5). Thus, the annual amount of trafficking decreased over time, regardless of the estimation method.

The proportion of redemptions trafficked also declined. The trafficking rate provides an estimate of the proportion of redemptions that were trafficked. This measure indicates the extent of trafficking, holding the total value of redemptions constant. Exhibit 6 presents trends in the trafficking rate using both the original and revised estimates.

Exhibit 6. Trafficking Rate, by Study Period and Data Source
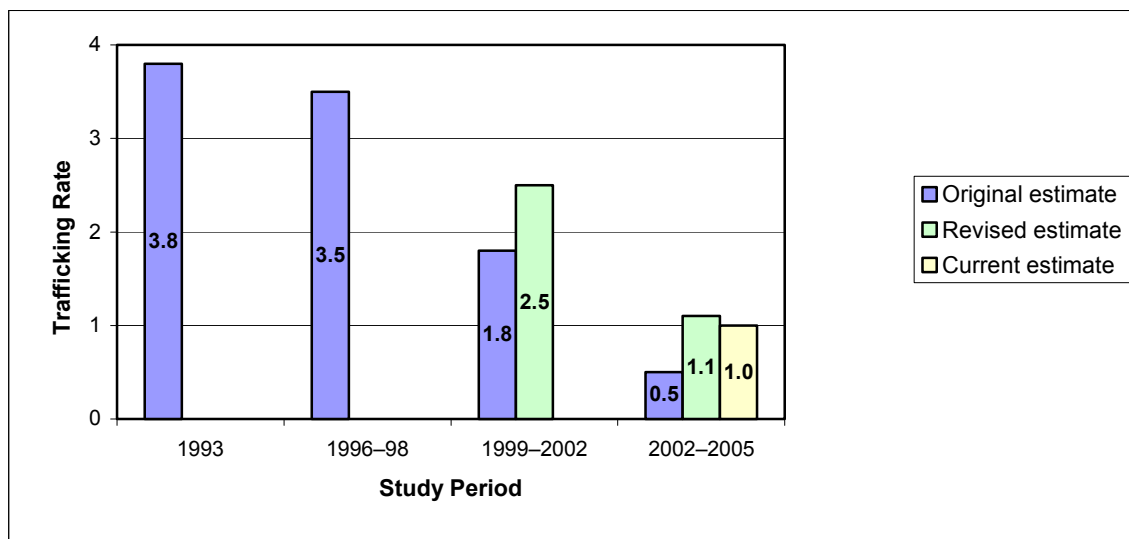
NOTE: Trafficking rate = percentage of total benefit redemptions trafficked

Again, the data indicate a decrease in trafficking rates over time, independent of the estimation method used. Relying on the original estimates, approximately 3.8 cents of every dollar were trafficked in 1993, 1.8 cents of every dollar in 1999–2002, and about 0.5 cent of every dollar in

2002–2005. The revised estimates show that 1.1 cents of every dollar were trafficked, down from the 2.5 cents estimated for the 1999–2002 study.[9]

4.3. STORE VIOLATIONS

No clear trend for store violation rates emerged. The original and revised estimates do not show a consistent pattern. The proportion of trafficking stores increased and then decreased, when examined in terms of the original estimates, i.e., those based on only RIB investigations (see Exhibit 7). For 2002–2005, about 4.5 percent of stores engaged in trafficking, more than a 50-percent decrease since 1993.

Exhibit 7. Store Violation Rate, by Study Period and Data Source

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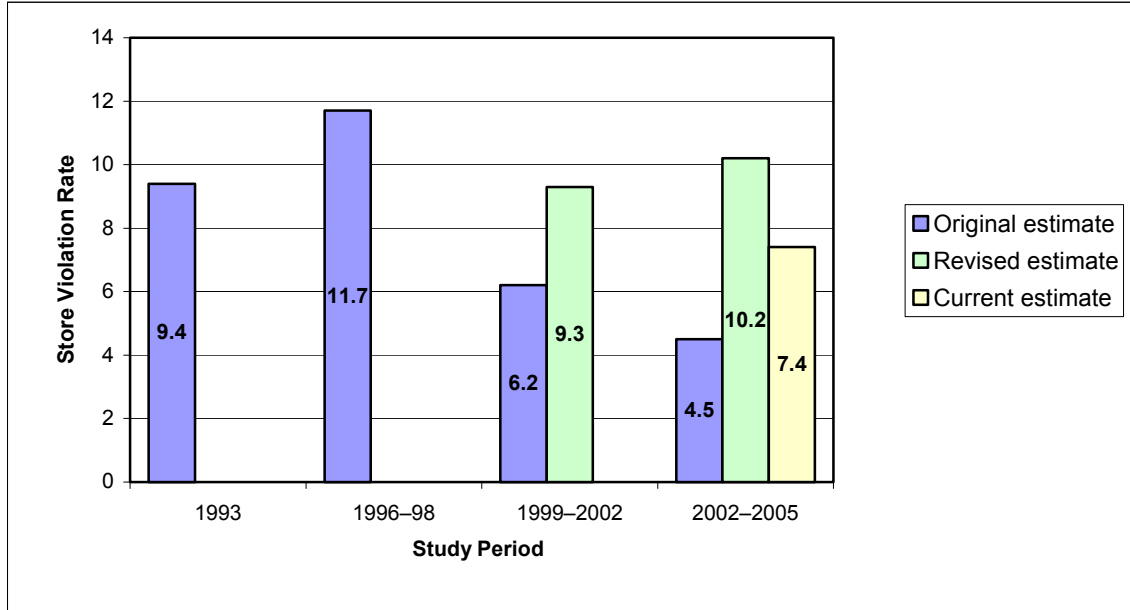
[9] It is important to recall that these estimates were calculated and presented as an indicator of trends. Our best estimate of the trafficking rate in 2002–2005 is actually 1 cent of every dollar.

In contrast, the revised estimates of store violators increased from 1999–2002 to 2002–2005, from 9.3 percent to 10.2 percent. This may result from differences in the retailer samples selected for RIB investigations and administrative reviews during these two time periods.[10]

4.4. EXPLAINING THE DECREASE IN TRAFFICKING

In the previous study, some possible explanations for the decrease in trafficking were explored. These factors are reexamined in the following sections.

4.4.1. Size of the Food Stamp Program

The value of trafficked benefits fell, even as total benefits increased. The 1999–2002 study suggested that the observed decline in trafficking might be due to changes in the size of the Food Stamp Program (i.e., redemption volume). At that time, yearly redemptions, along with caseloads, were in decline. The report attributed 32 percent of the decrease in trafficking to this factor, using the assumption of a constant trafficking rate.

Exhibit 8 presents annual food stamp redemptions for calendar years 1999–2005. Redemption amounts declined until 2001 and then increased to their current level of $29 billion. The amount

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[10] The revised estimate focused on retailers receiving charge letters. A new mechanism, the Watch List, was introduced and used during the 2002–2005 period to help identify which stores should receive charge letters. Although stores on the Watch List were not explicitly used in the 2002–2005 revised estimate, activities related to screening out stores on the Watch List may have led to greater discretion in selecting retailers that should receive a charge letter. Therefore, stores receiving a charge letter may include a higher concentration of violators in 2002–2005 than in previous years.

of benefits trafficked continued to decrease, however, suggesting that growth in redemptions does not imply an increase in the total amount of trafficking.

Exhibit 8. Trends in Food Stamp Redemption Value (in Billions), by Calendar Year
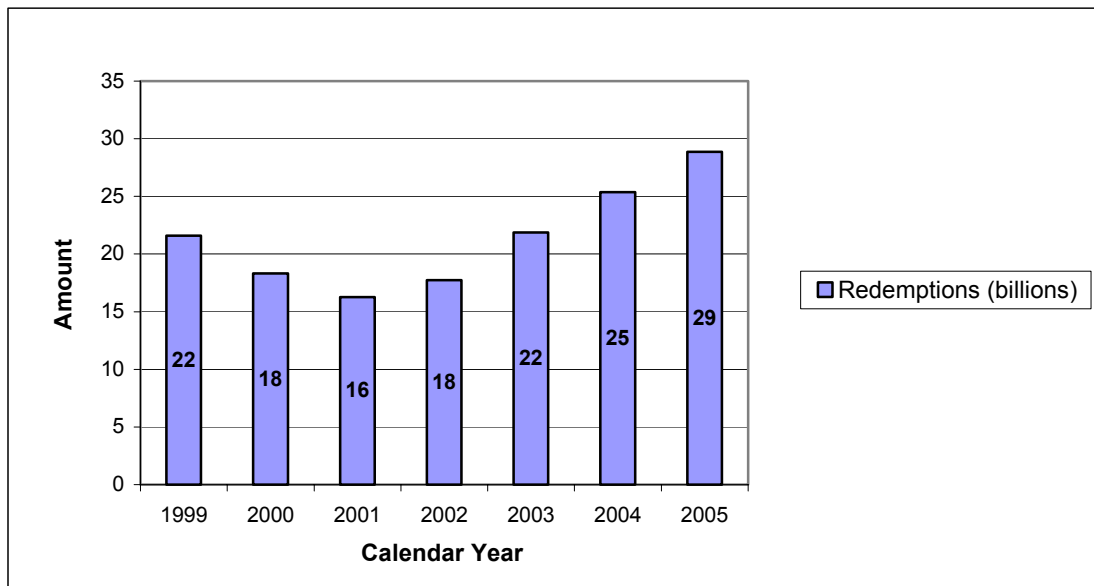
4.4.2. State Adoption of EBT

As EBT expanded, trafficking declined. While EBT systems may not stop those determined to traffic, they do create a more secure transaction environment. This may deter many traffickers. The general assumption had been that as EBT became more widespread, trafficking would decline. Benefits redeemed through EBT increased from 64.6 percent of benefit dollars in 1999 to nearly all (99.9 percent) benefits in 2005 (see Exhibit 9). Although it is not possible to infer a causal link between EBT implementation and the reduction in trafficking rates, the EBT rollout tracks well with the decline in trafficked benefits.

Exhibit 9. Trends in Share of Redemptions Transacted Through EBT
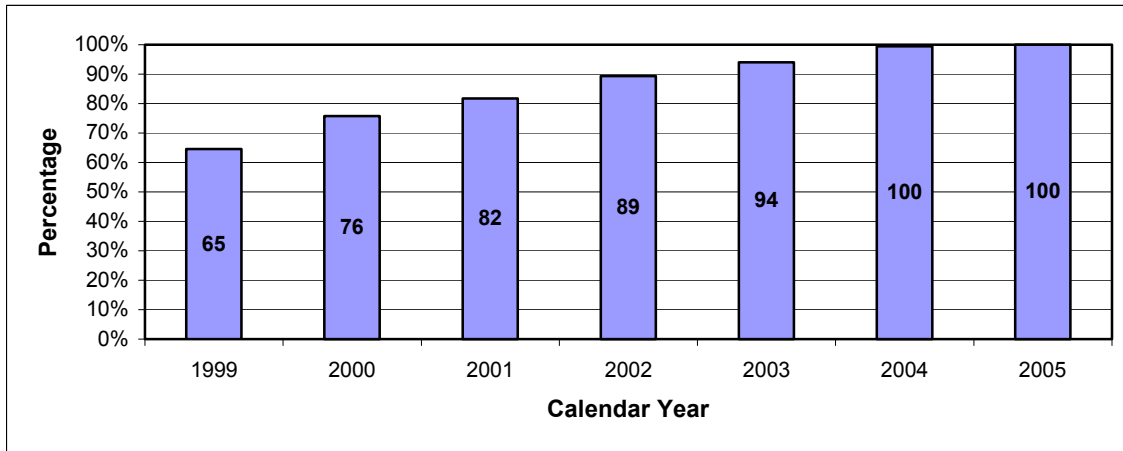
4.4.3. Type of Retailers

The share of total redemptions increased for large stores. Although large stores (supermarkets and large groceries) constituted only 27 percent of the 197,000 retailers that redeemed food stamps between late 2002 and 2005, they accounted for 90 percent of the redemptions. This represents an increase in redemption share since 1996–98 of about 6 percentage points (see Exhibit 10). By comparison, small retailers represented 73 percent of authorized retailers during 2002–2005 but only 10 percent of all food stamp redemptions. See Appendix G for detailed tables on trafficking trends by store type.

Exhibit 10. Share of Total Redemptions for Large and Small Stores
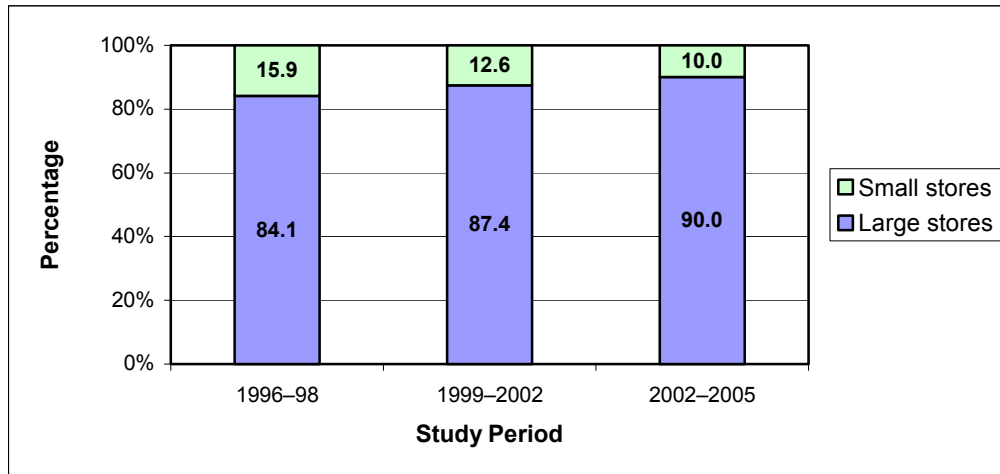
NOTE: There are no available data on total redemptions from the 1993 study period.

Trafficking in large stores is generally considered more difficult. These stores have multiple registers, little cover for an illegal transaction, electronic scanning, strong record-keeping systems, and corporate personnel policies (e.g., training, higher benefits, behavioral rules) that discourage or make it disadvantageous to traffic.

Exhibit 11 presents the portion of trafficked benefit dollars for large and small stores using the original estimate (i.e., RIB cases only). There has been a dramatic decrease in the relative dollars trafficked in large stores, from 40 percent in 1993 to about 12 percent in 2002–2005. In contrast, the share of trafficked benefits among small stores declined in 1996–98 but has increased since then. The increase is particularly sharp between 1999–2002 and 2002–2005, from 60 percent to 88 percent.

Exhibit 11. Trends in Share of Trafficked Benefit Dollars, by Store Size
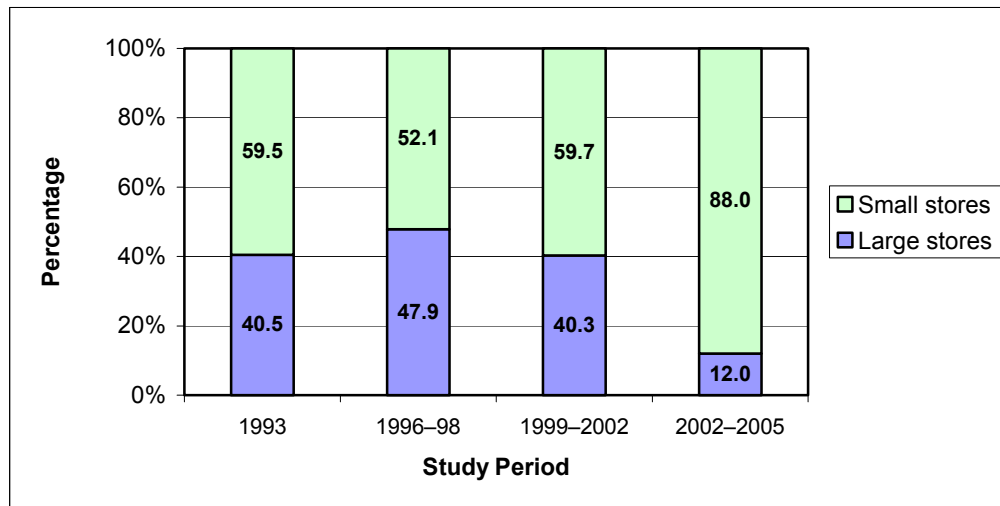
NOTE: These figures are based on the original estimates, i.e., RIB investigations only.

A similar pattern occurred with the revised estimates (i.e., a combination of cases based on RIB investigations and EBT transaction data). In 1999–2002, large stores accounted for 35.4 percent of all trafficked benefits; in 2002–2005, their share decreased to 10 percent.

Exhibit 12 presents the relationship between store size and trafficking from another perspective. The rates shown indicate the percentage of each benefit dollar diverted by trafficking. Large store rates decreased from 1.9 cents in 1993 to 0.1 cent per benefit dollar during 2002–2005. Small store rates were consistently higher than large store rates for each time period. With respect to trends over time, rates for small stores also decreased during all four study periods, although to a proportionately smaller degree.

The revised estimate also shows a decline. For large stores, the rate decreased from 1 percent to 0.1 percent between 1999–2002 and 2002–2005. Among small stores, the decrease was from 13 percent to 10 percent.

Exhibit 12. Trends in Trafficking Rate, by Store Size
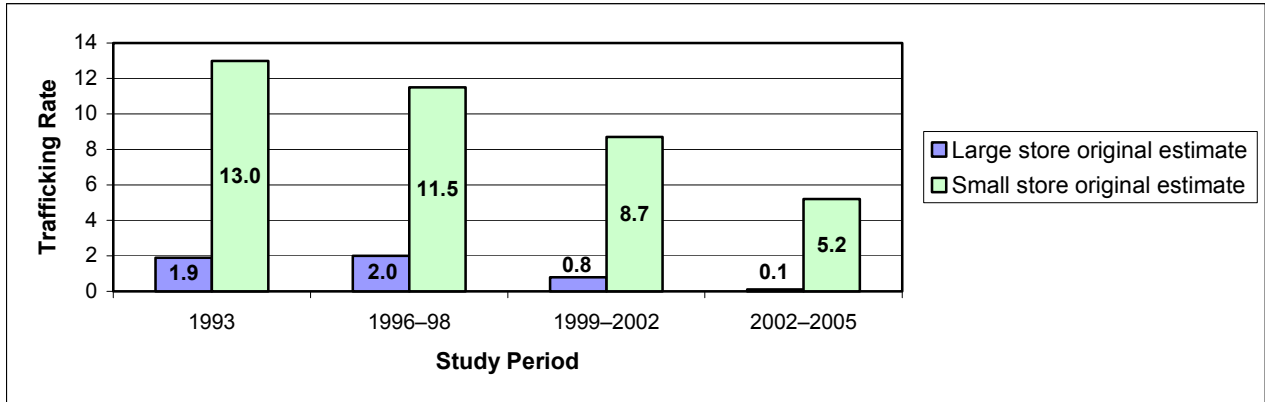
NOTE: These figures are based on the original estimates, i.e., RIB investigations only.

Finally, consider the relationship between store size and store violation rates (see Exhibit 13). Using the original estimates, the percentage of trafficking violators, among both large and small stores, has declined since 1996–98. The rate of decline for large retailers is steeper, however. When revised estimates are used, only large stores show a decline (see Exhibit G3). The rates for small stores increased from 11.4 percent in 1999–2002 to 13.2 percent in 2002–2005.

Exhibit 13. Trends in Store Violation Rate, by Store Size
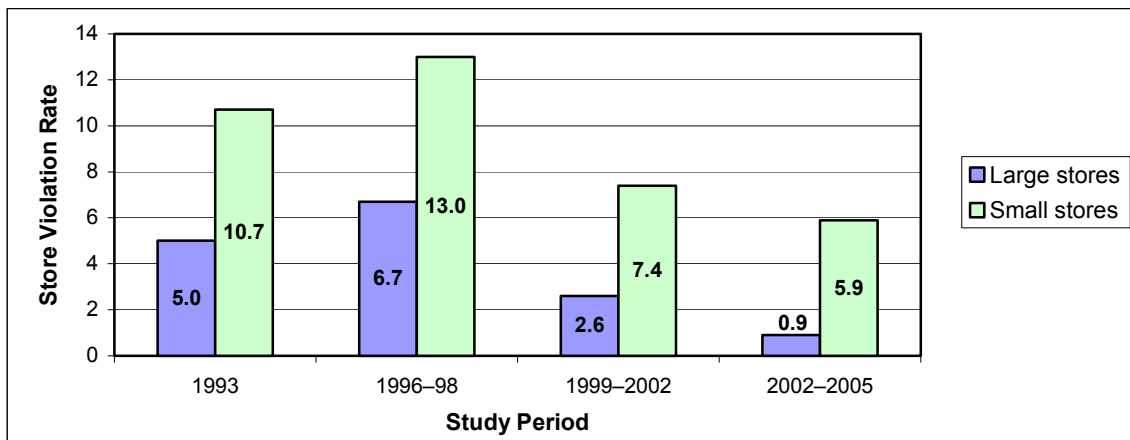

NOTE: These figures are based on the original estimates, i.e., RIB investigations only.

Section 4.4.3 began with the question of whether there is a relationship between the continuing decline in food stamp trafficking and the amount of store benefit redemptions. The shift in food stamp redemptions from small to large stores does help to explain the overall trafficking decline. Large stores were less likely to be violators, and the associated trafficking rates were lower.

4.4.4. Retailer Location

In a previous study,[11] the poverty level of the ZIP Code in which a store is located predicted trafficking. The same relationship can be observed in Exhibit 14. While store violation and trafficking rates declined over time regardless of poverty level, they were uniformly higher in areas with greater poverty.

Exhibit 14. Trends for Trafficking, Store Distribution, and Redemptions, by Poverty Level

Percentage of Households in Poverty in ZIP Code Where Store Is Located	Trafficking						Percentage of All					
	Store Violation Rate			Trafficking Rate			Stores			Redemptions		
	1996–98	1999–2002	2002–2005	1996–98	1999–2002	2002–2005	1996–98	1999–2002	2002–2005	1996–98	1999–2002	2002–2005
0–10%	9.5	4.7	2.65	2.0	0.9	0.17	26.5	28.3	25.8	23.2	21.6	28.1
11–20%	10.7	8.8	4.40	3.1	1.7	0.35	40.5	41.7	43.3	40.1	43.1	41.5
21–30%	13.2	13.0	5.38	3.3	4.0	0.71	20.5	19.9	20.6	21.6	23.0	20.0
More than 30%	16.8	17.3	8.64	7.1	5.3	1.78	12.4	10.2	10.3	15.1	12.2	10.4
All stores	11.7	9.3	4.5	3.5	2.5	10.2	100.0	100.0	100.0	100.0	100.0	100.0

NOTE: These figures are based on the original estimates, i.e., RIB investigations only.

The data in Exhibit 14 also indicate a shift in redemptions from areas with the most concentrated poverty and higher trafficking rates to areas with the least poverty. There was also a modest shift

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[11] Mantovani, R.E. (1995) *Violation Prone Profile Update Analysis.* Food and Nutrition Service, Washington, DC.

in the distribution of stores to areas of less-concentrated poverty. Both changes are consistent

with and may be a factor in the overall decline in trafficking.

APPENDIX A

ESTIMATION ERROR

ESTIMATION ERROR

The trafficking figures in this report are estimates and may be subject to both understatement and overstatement.

SOURCES OF UNDERESTIMATION

Our procedures underestimate trafficking to the extent that the available data and detection procedures do not capture all instances of trafficking. To the best of our knowledge, neither systematically underestimates any particular form of trafficking.

A possible exception is network trafficking. Some violating retailers will traffic with strangers, while others restrict their illegal activities to known individuals. Investigators can and do catch this type of trafficking, but it involves a more complicated investigation. As a result, some network trafficking may not be included in our original (investigations-only) estimates.

Electronic Benefit Transfer (EBT) data-based cases, which depend on observed EBT transaction patterns, can have greater success at identifying network trafficking. Given the range of filters used to detect suspicious cases in the Anti-fraud Locator using EBT Retailer Transactions (ALERT) system, it is possible to identify potential traffickers without an onsite investigation. Thus, the addition of EBT data-based cases to the revised estimate decreases, but does not eliminate, concern about underestimating this form of trafficking.

SOURCES OF OVERESTIMATION

Our procedures may also overestimate the prevalence of trafficking. One source of possible overestimation is the decision rule used to specify the relative amount of legitimate and illegitimate food sales among stores that traffic. Investigations and administrative data tell us only whether a store has trafficked, not the extent to which trafficking occurred. In establishing an estimate, we assumed that if a large store (i.e., a supermarket or large grocery) trafficked, 40 percent of all the store's redemptions were illegitimate (even if the trafficking involved only a single clerk away from the register area). Among small stores caught trafficking, we assumed that 90 percent of redemptions were trafficked. We therefore assumed that throughout the study period, a retailer that was caught trafficking did so many times. While these figures are unrealistically high, we purposefully chose them because they serve our goal—that is, to minimize the risk of understating the value of benefits diverted by trafficking.

A major source of overestimation is the nature of the stores considered. Original estimates rely on in-store investigations to find fraud. Those estimates would decrease substantially if investigators selected a representative sample of cases from all stores, rather than intentionally targeting stores that raised suspicions. Likewise, the 1999–2002 revised estimate would be considerably smaller if the charge letters elicited from analysis of administrative data were sent to a representative sample of all stores, rather than just those identified by the screens for unusual EBT transaction patterns. This bias was somewhat remedied for the current estimates by including all closed cases on the Watch List as part of the denominator. The larger list of retailers allowed us to incorporate stores with varying degrees of "suspicious" behavior. The resulting sample was not as selective as those

used in previous studies. Still, store selection bias is arguably the one with the largest impact on our estimate.

APPENDIX B

APPROACHES FOR DETECTING TRAFFICKING, DATA SOURCES, AND

CREATION OF ANALYSIS FILES

APPROACHES FOR DETECTING TRAFFICKING, DATA SOURCES, AND CREATION OF ANALYSIS FILES

APPROACHES FOR DETECTING TRAFFICKING

Trafficking occurs as a transaction between a retailer and an individual possessing an Electronic Benefit Transfer (EBT) card or, very rarely, coupons. It may be a one-time or infrequent occurrence, or it may represent a continuing relationship between a retailer and a customer. In either case, the transaction is generally private. The Food and Nutrition Service (FNS) has two ways of identifying actual or potential trafficking and dealing with the retailers involved:

- Investigations—One approach to identifying trafficking is through covert activities that simulate a buy. After obtaining information that identifies a suspicious retailer, a Retailer Investigations Branch (RIB) investigator or confidential informant attempts to traffic with the retailer. Retailers caught trafficking by investigators are charged. Investigations of large scale trafficking are handled by the Office of the Inspector General (OIG), which may work with a variety of partners and investigative strategies.

- Administrative or EBT data analysis cases—With the growth in EBT redemptions, FNS introduced the Anti-fraud Locator using EBT Retailer Transactions (ALERT) system. The ALERT system analyses EBT transaction data and identifies those transaction patterns that suggest fraud. FNS reviews the information, along with store-type demographics. If after examination, the store is judged to be in violation, a charge letter is issued.

All stores charged with trafficking have an opportunity to respond prior to the Agency's determination. Following a formal trafficking determination, retailers may request an administrative review followed by an opportunity for judicial review.

DATA SOURCES AND ESTABLISHING MASTER DATA FILES

The data used in deriving these estimates are from the Store Tracking and Redemption Systems (STARS) II database, the Watch List, and Census 2000.

STARS II

The primary source of data for this study was STARS II. The data generated from STARS II included retailer characteristics, redemption histories, and compliance activities.

Authorized Food Retailer Characteristics and Redemption Histories

STARS II contains characteristics for all food retailers ever authorized under the Food Stamp Program. Although this database file contains extensive information on authorized food stamp retailers, only a few data fields were relevant to this study. They include:

- Store identification number,
- Self-declared store type,
- Location information (including ZIP Code),
- Ownership status (public or private),
- Gross sales, and
- FNS region.

This information is provided by retailers when they apply or reapply to the program. Sometimes retailers make errors in their applications. For example, stores may identify themselves as grocery stores although they report more than $2 million in gross sales (the amount that determines whether a store is defined as a grocery store or supermarket). While FNS acts to minimize missing or inaccurate data, some level of measurement error exists.

STARS II also contains redemption histories for all stores authorized and active at any time between 2002 and 2005. Redemption histories contain monthly coupon and EBT redemption amounts. Store identification allowed us to link the redemption information to the retailer characteristics information.

Investigations and Administrative Action Data

In previous studies, data files maintained by RIB were used for investigations. In general, these files offered the following data elements for each investigated case:

- Store identification number,
- Case number, and
- Outcome (trafficking/no trafficking).

For this study, the data on investigation-based and EBT data-based cases came from STARS II. Histories for all cases scrutinized by FNS are maintained and described by a series of event and outcome codes. The identification of trafficking can be inferred from the events, activities, and activity outcomes (see Appendix F for details).

WATCH LIST

The Watch List includes authorized food retailers that exceeded the ALERT score and met other criteria that trigger additional scrutiny. It was used in the denominator of the current trafficking estimate. Only closed Watch List cases were used for this analysis, and the store identification number was the single data element extracted.

CENSUS DATA

Data from the Census 2000 long form (SF3 file) were used for identifying the degree of poverty and urbanization associated with retailer locations. The geographic unit of focus for this study is the Census ZIP Code Tabulation Area (ZCTA), which closely corresponds to U.S. Postal Service ZIP Code areas. Although many retailers can be associated with a particular ZCTA, some cannot; therefore, a labor-intensive effort was undertaken to determine the nearest ZCTA to those stores.

CREATION OF ANALYSIS FILES

Two analysis files were created from the data sources described above. The first contained information about all retailers that had positive redemptions between November 2002 and December 2005.[1] Household poverty and urbanization levels associated with each retailer's Census ZCTA designation were added. Edits were made to modify and collapse some data fields, such as store type.

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[1] There were a handful of retailers who had negative redemption amounts for this period; they were not included in the analysis file.

A second analysis file was a composite of the following files:

- All investigations conducted by RIB and closed during the timeframe;

- All investigations conducted by OIG, the States, or other authorities during the timeframe;

- All cases in which a charge letter was sent to the retailer during the timeframe; and

- All cases on the Watch List that were closed during the timeframe.

Within each of these files and within the timeframe of this study, a particular retailer may be represented by more than one trafficking case. To avoid multiple representations of a single retailer, we included only one case per retailer, selecting the case that represented a positive trafficking determination. Thus, if a retailer was represented in two cases, one with no finding of trafficking and one with a finding of trafficking, the latter was kept.

A retailer could also be represented more than once across files. For example, a retailer may have been issued a charge letter based on EBT data and may have been investigated by RIB. Again, we created one record per case. A trafficking flag was set to positive if trafficking or a permanent disqualification was found in any of the files.

APPENDIX C

POST-STRATIFICATION ESTIMATE METHODOLOGY

KEY STEPS FOR USING POST-STRATIFICATION TO ESTIMATE TRAFFICKING

Estimates for 2002–2005 were based on the approach used previously. The steps are as follows:

1. Retailers that were examined or investigated based on questionable transaction patterns were assigned to categories associated with five variables: type of store, type of ownership, level of food stamp redemption, population density associated with the store's ZIP Code, and poverty level associated with the store's ZIP Code. Each store was counted only once and only if the investigation/examination was complete. The same procedure was applied to the corresponding amount of food stamp redemptions transacted by each retailer. This activity produced two five-dimensional tables.

2. All stores and the dollar value of food stamp benefits redeemed during the 2002–2005 timeframe were aggregated by the five variables described in step 1 to create five separate marginal distributions, each corresponding to a particular dimension.

3. An analytic procedure known as raking was used to create weights for each category of store type and location. Raking is an iterative process by which the cell frequencies from the sample (the tables generated in step 1) are adjusted to the marginal frequencies (the product of step 2). Weights were obtained separately for stores and redemptions.

4. The weights produced in step 3 were applied to the file of food stamp retailers examined or investigated during the 2002–2005 timeframe in order to estimate the total number of stores engaging in trafficking and the amount of benefits redeemed that were trafficked.

5. Adjustments were made to the estimated dollar value of trafficked benefits because even among violating stores, it is unlikely that all food stamp sales are trafficked. We made the assumption that 90 percent of redemptions in violating small stores were trafficked and 40 percent in violating large stores were trafficked

6. The trafficking rate (i.e., the percentage of all redemptions estimated to be trafficked) and store violation rate (i.e., the percentage of stores trafficking) were calculated.

See Appendix E for details of sensitivity analyses that were conducted with respect to some of the methodological decisions and assumptions associated with these procedures.

APPENDIX D

VARIABLES EMPLOYED IN THE RAKING MODEL

DESCRIPTION OF STRATIFICATION VARIABLES

The five dimensions we employed consist of three that categorize stores (type of store, ownership status, and amount of food stamp redemptions) and two that categorize the ZIP Codes in which stores were located (degree of urbanization and percentage of households below the poverty level). Specific definitions are provided in the following sections.

TYPE OF STORE

Based on each retailer's indication of store type on the Food and Nutrition Service (FNS) application form, store types were collapsed into the following categories to ensure an adequate number of cases of each type:

- Supermarket—Any store identifying itself as a superstore, supermarket, or grocery with gross annual sales of more than $2 million;

- Large grocery—Any store identifying itself as a superstore, supermarket, or grocery with gross annual sales of between $500,000 and $2 million;

- Small grocery—Any store identifying itself as a superstore, supermarket, or grocery with gross annual sales of less than $500,000;

- Convenience—Any store identifying itself by this title, regardless of gross sales;

- Specialty—Any store identifying itself by this title, regardless of gross sales. These stores conduct their *primary* business in a single product line and include meat markets, fish markets, and dairy stores;

- Gas/grocery—Any store identifying itself by this title, regardless of gross sales; and

- Other types—Any store identifying itself by a title different from any of the preceding categories, regardless of gross sales. Examples include produce stands, general stores, combination grocery/bars, health/natural food stores, and milk and/or bread routes.

OWNERSHIP STATUS

Ownership types as indicated on the FNS application form were collapsed into the following categories to ensure an adequate number of cases of each type:

- Public—Any store identifying itself as a public corporation (i.e., a retailer whose stock is publicly traded), and
- Private—Any store identifying itself as other than publicly owned. This includes private (i.e., closely held) corporations as well as partnerships, sole proprietorships, and co-ops.

AMOUNT OF FOOD STAMP REDEMPTIONS

Stores were categorized into deciles on the basis of food stamp redemptions. The purpose was statistical, rather than analytical, i.e., to ensure that large disparities in redemptions by stores did not distort results.

DEGREE OF URBANIZATION

The degree of urbanization was based on U.S. Census data for the ZIP Code in which each store is located. Four categories were used:

- 0–10 percent urban population,
- 11–50 percent urban population,

- 51–90 percent urban population, and

- More than 90 percent urban population.

These categories resulted from an analysis conducted in 1993 for the first trafficking study. Their selection reflects our attempt to distribute stores across a range of categories to achieve some balance as well as create meaningful distinctions.

PERCENTAGE OF HOUSEHOLDS BELOW THE POVERTY LEVEL

The percentage of households below the poverty level was based on U.S. Census data for the ZIP Code in which each store is located. Four categories were used:

- 0–10 percent of the residential population below the poverty level,

- 11–20 percent of the residential population below the poverty level,

- 21–30 percent of the residential population below the poverty level, and

- More than 30 percent of the residential population below the poverty level.

As with the urbanization categories, the poverty level categories were established for the 1993 study. Again, we attempted to establish a meaningful range for describing neighborhoods by poverty level while creating some balance in store totals across categories.

APPENDIX E

SENSITIVITY ANALYSES

SENSITIVITY TESTING

The focus on investigations and Electronic Benefit Transfer (EBT) data screening was expected to result in estimates that overstate the actual prevalence of trafficking. Implementing our analytic model also included several key decision points. The specific choices may, in turn, have affected the estimates. The most important factors were the:

- Selection of variables or dimensions for calculating the weights used to extrapolate from compliance cases to the general population of retailers,

- Use of particular percentages that reflect the proportion of redemptions that are trafficked in violating stores, and

- Degree to which stores selected for compliance review affect the estimates.

ASSUMPTIONS CONCERNING THE SELECTION OF DIMENSIONS FOR THE MODEL

In this and previous studies, five variables or dimensions were selected for the raking process. Within each dimension, decisions about category definitions were made. For example, authorized retailers could be classified into more than 20 categories, ranging from supermarkets to farmers markets; we reduced the number of categories to seven. This was done primarily to obtain a large enough representation (i.e., number of stores) within each category to develop valid conclusions. Categories for each dimension were established during the 1993 Food and Nutrition Service (FNS) study on food stamp trafficking and retailer access. Although these categories or cut points were based on empirical observation of store distributions, other choices

could be made. Both the selection of variables and identification of variable categories influenced how well we generalized from the sample to the entire retailer population.

As an example of the effects of changing the variables in the raking algorithm, we examined how the overall trafficking estimate varies when one dimension was eliminated (the redemption strata dimension) and another was added (FNS region). We found that the amount of trafficked benefits decreased from $240.6 million to $115.2 million due to this substitution. We expect that the redemption amount better accounts for store size variations in developing the weights.

ASSUMPTION ABOUT THE PROPORTION OF REDEMPTIONS TRAFFICKED IN DIFFERENT TYPES OF STORES

In this and previous studies, the amount of trafficked redemptions was first calculated by assuming that all redemptions in violating stores involved trafficking. Since this is unlikely to be true, the next step assumes that even in violating stores only a certain percentage of redemptions were actually trafficked, with the remainder being legitimate transactions. Thus, after calculating the weighted redemption amounts in violating stores, an adjustment was made. For large stores (supermarkets and large groceries), 40 percent of redemptions were considered to be trafficked versus 90 percent for smaller stores.

If the basis for these adjustments were wrong, the total amount of trafficking would be affected. Exhibit E1 shows how the estimates vary under different assumptions. If we assumed that all redemptions in violating stores were trafficked, the total amount trafficked would be almost $340 million. If we assumed that both large and small stores trafficked at the same rate (for example, at 20 percent), the trafficking estimate would be reduced to $67–68 million.

Exhibit E1. Sensitivity Analysis of Assumptions Concerning the Proportion

of Redemptions Trafficked in Trafficking Stores

Percentage of Redemptions Trafficked	Large Stores		Small Stores	
	Amount (in thousands)	Trafficking Rate	Amount (in thousands)	Trafficking Rate
100	126,978	0.56	211,305	8.45
90	114,280	0.50	189,916	7.61
80	101,582	0.45	169,044	6.76
70	88,885	0.39	147,914	5.92
60	76,187	0.34	126,783	5.07
50	63,489	0.28	105,653	4.23
40	50,757	0.22	84,522	3.38
30	38,093	0.17	63,392	2.54
20	25,396	0.11	42,261	1.69
10	12,698	0.06	21,131	0.85

NOTE: Shaded areas reflect the current assumptions of the model.

ASSUMPTIONS CONCERNING THE SAMPLE OF STORES SUBJECT TO INVESTIGATION OR EXAMINATION BASED ON EBT DATA

STORES INVESTIGATED OR EXAMINED FOR TRAFFICKING

Current estimates were based on a sample of 32,916 retailers that were investigated or examined as potential violators. Data were compiled from Retailer Investigations Branch (RIB) investigations; administrative case files; investigations conducted by the Office of the Inspector General (OIG), the States, and other agencies; and the Watch List. The number represents about 17 percent of the total number of retailers that were active during the period. Exhibit E2 shows the number of retailers associated with each source and the outcome of the investigative/compliance activity.

Exhibit E2. Number of Violators Based on Different Store Samples

| Source	Total Number of Retailers	Total Number With Trafficking Violations	Percentage Trafficking
RIB investigations	13,808	957	6.9
EBT data-based cases	5,331	2,328	43.7
Other investigations, including OIG and State activities	630	117	18.6
Watch List	25,806	*	*
Total	**32,916****	**2,530****	**7.7**

* Watch List cases were used only in the denominator. Trafficking violations were determined through RIB investigations, administrative case review, or other investigations.
** Retailers could be identified by multiple sources, but since they are included only once, adding the numbers by source will exceed the total.

RIB INVESTIGATIONS

RIB investigations were an important component of the last three studies. EBT has changed the way these investigations are conducted, as well as the procedures for identifying cases for review. With the introduction of the Watch List, stores that may have previously been the subject of onsite investigation are now handled as EBT data-based cases. Consequently we might expect the number of RIB investigations to decrease. However, as Exhibit E3 shows, the total number of investigations has remained fairly constant over the years.

Exhibit E3. Trends in the Number of Cases Investigated by RIB

and Number of Trafficking Violations
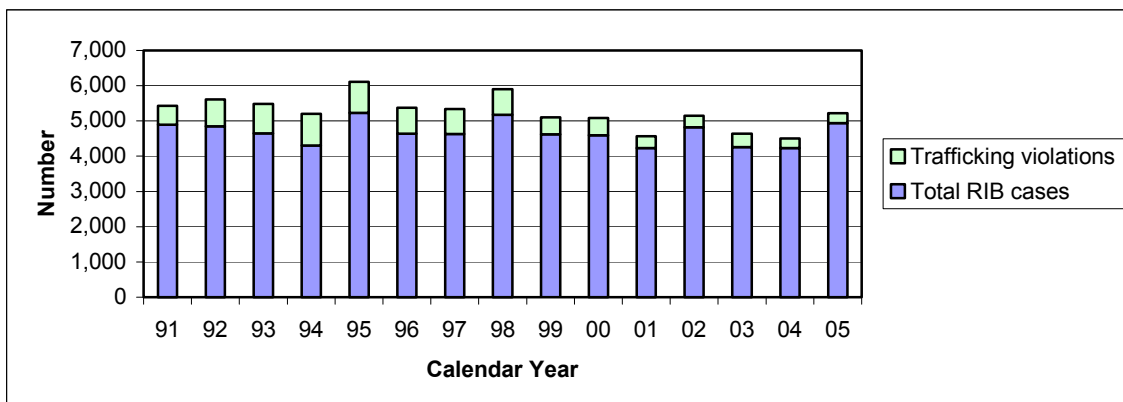
More notable is that violations as a percentage of all RIB investigations have decreased. Exhibit E4 shows a dramatic decline, from more than 20 percent in 1994 to approximately 5.5 percent in 2005.

Exhibit E4. Trends in Trafficking Determinations Among RIB Cases and All Stores
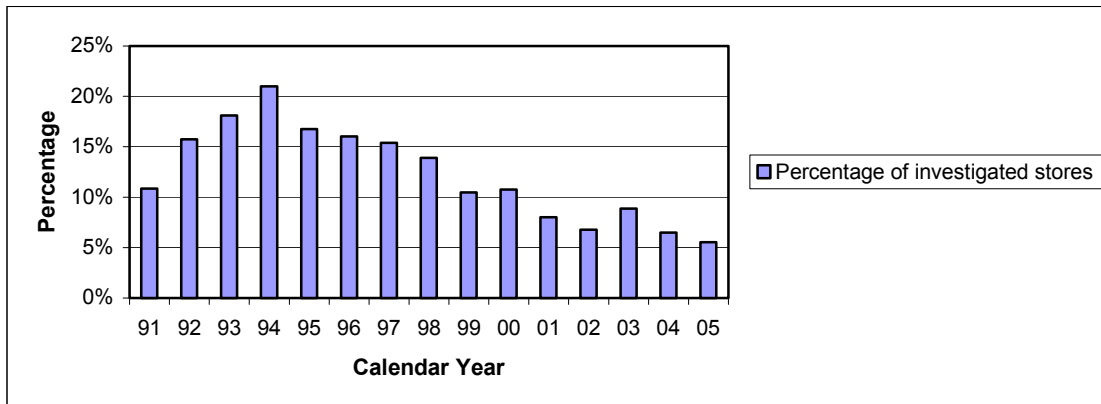
Other possible explanations for this pattern reported in the last study include the following:

- **To some degree, RIB investigations have a spillover effect, reducing trafficking among other stores.** An investigation that finds trafficking results in a store sanction. News circulates that may increase voluntary compliance, which in turn reduces food stamp trafficking. Some of the decline in the percentage of investigations that find trafficking may reflect the cumulative effect of RIB actions.

- **Retailers may have become better able to avoid being caught trafficking.** While the quality of investigations is difficult to measure, continuing experience, routine information sharing among investigators, and greater use of EBT data to target investigations make it likely that the

quality of investigations has improved. This would tend to compensate for any changes in the behavior of traffickers.

- **Investigative techniques that worked for trafficking with paper food stamp coupons do not work as well under EBT.** While the degree to which this is true is unknown, the addition of EBT data-based cases compensates for any difficulty in conducting investigations under EBT.

The addition of cases based on EBT data analysis has affected the estimate primarily because of the large percentage of these retailers that is eventually disqualified. More than 5,000 stores received a charge letter based on such data during the study period. About 44 percent were permanently disqualified, which is indicative of a trafficking violation. The total number of violations discovered has increased slightly over the years, with EBT data-based cases accounting for an increasingly larger share.

Exhibit E5. Trends in Trafficking Violations, by Type of Case
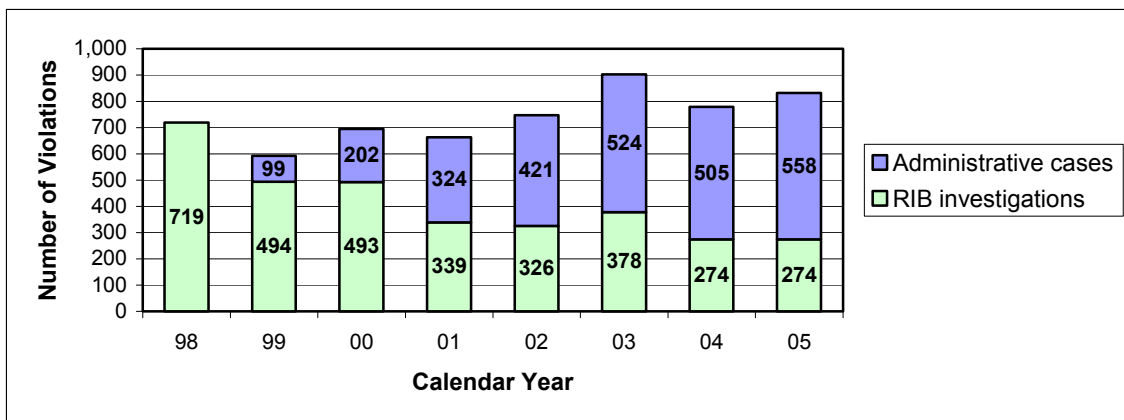
ASSUMPTIONS CONCERNING THE SAMPLE

The sample used to generate current estimates can be characterized as a group of retailers manifesting some suspicious activity. Although there is no information available to determine the degree of trafficking among those who were not included in the sample, we can compare trafficking estimates among randomly generated subsamples of the study's retailer sample. This procedure tests the precision of the reported estimate.

We used a bootstrap procedure to generate statistics on 250 subsamples of retailers, each containing 7,500 retailers.[1] These subsamples were passed through the same raking process that was used to generate the main estimates in this study. Each subsample produced a specific annualized trafficking estimate and a trafficking rate. The means and standard deviations of these measures are presented in Exhibit E6. The standard deviation for the amount of trafficking is $46 million. The minimum value across the subsamples is $166 million, and the maximum value is $386 million. For the trafficking rate, the standard deviation is about 0.2 percent, with a minimum rate of 0.7 percent and a maximum of 1.5 percent.

Exhibit E6. Bootstrap Estimates of the Amount Trafficked and the Trafficking Rate

	Mean	Standard Deviation	Minimum Value	Maximum Value
Amount trafficked (in thousands)	239,913	45,801	166,321	385,738
Trafficking rate	0.96	0.18	0.66	1.54

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[1] A bootstrap is a procedure in which subsamples of retailers in the sample are selected and processed through the raking and estimation procedure. Retailers in these subsamples are drawn with an equal probability of selection. The idea is to estimate the variance were certain members not used in the raking calculations.

Together, these statistics generally indicate that the level of overall trafficking is lower than previous estimates. That is, regardless of which subsample of suspicious stores had been used, the resulting estimates would have been less than the figures for 1999–2002.

APPENDIX F

ESTIMATE DEFINITIONS

ESTIMATE DEFINITIONS

The post-stratification procedures described in Appendix C were applied to generate all three sets of estimates. Producing the three types of estimates for 2002–2005 allows us to:

- Provide consistency with previous estimates (original and revised estimates); and

- Provide estimates that incorporate evidence from Office of the Inspector General (OIG) and State activities, in addition to Food and Nutrition Service (FNS) investigations and Electronic Benefit Transfer (EBT) data-based reviews (current estimate)

ORIGINAL ESTIMATE: RIB INVESTIGATIONS ONLY

This is the core estimate that has been published in previous reports. It is based on covert purchases by Retailer Investigations Branch (RIB) investigators at the stores in question. For any case with a trafficking flag, the associated retailer was counted as a trafficker, and a certain portion of redemptions was identified as trafficked.

The procedures for initiating an investigation changed over the years as FNS incorporated EBT data, Anti-fraud Locator using EBT Retailer Transactions (ALERT) system scans, and the Watch List to identify suspicious stores. Retailers that were formerly handled through RIB investigations may now be examined by relying on administrative records and actions. As a result, the original estimate calculated for 2002–2005 may not be fully comparable with earlier estimates based on investigations. However, it is still likely to be the one most consistent with prior estimates.

Unlike previous years, when data from the local investigator offices were used, this study relied on compliance activity tracking information from the Store Tracking and Redemption Systems (STARS) II database. The following definitions were used:

- Denominator—All cases in which STARS II Event Code = "03" (completed investigation) and Investigation Agency = "CB" (previously the Compliance Branch, now RIB) where the case was completed between November 1, 2002, and December 31, 2005. These codes define an investigation attempt.

- Numerator—Any case in the denominator for which the trafficking flag was "1" (indicating that the retailer trafficked with the investigator).

Since there may have been more than one case per retailer during the study period, we counted a retailer only once for both the denominator and numerator. Where the outcomes were different (i.e., no trafficking in one case and trafficking in another case), we included the trafficking case.

REVISED ESTIMATE: RIB INVESTIGATIONS AND EBT DATA-BASED CASES

For the 1999–2002 study, we added an estimate based on combining RIB and EBT data-based cases. At that time, suspicious activity was increasingly being identified by EBT data and ALERT scans. These cases were sometimes referred to RIB for investigation. In other cases, the retailer was sent a charge letter, and a subsequent decision was sometimes made to disqualify the retailer (an implicit indication of trafficking). With guidance from FNS, we defined denominators and numerators from STARS II. The definitions for the denominator and numerator for the revised estimate are:

- **Denominator:**

  - All cases in which Event Code = "03" (completed investigation) and Investigation Agency = "CB" (i.e., RIB), plus
  - All cases that were identified with EBT as the basis of the request and in which a charge letter was sent to the retailer.

- **Numerator:**

  - Any RIB case for which the trafficking flag was "1" (indicating the retailer trafficked), or
  - Any case in which a charge letter was issued and the retailer was permanently disqualified or provided compensation in lieu of disqualification.

Both the denominator and numerator were based on unduplicated lists of retailers meeting the relevant conditions. In other words, a retailer was counted only once.

CURRENT ESTIMATE: RIB AND EBT DATA-BASED CASES WITH OIG AND STATE ACTIVITY

The introduction of the Watch List had two effects. First, more retailers came under special systematic scrutiny (i.e., their status had to be resolved by field office staff). This increase meant a broader base of retailers subject to additional review, and we expect that this larger population is less biased. Second, the Watch List created an interactive system among investigators and those conducting retailer reviews that may have influenced the kinds of cases that are referred for

investigation. In other words, we suspect that cases referred for a RIB investigation may be more difficult.

The current estimate included all currently available data sources for FNS investigations. It also included OIG investigations, State investigations, and investigations by other agencies. Key terms were defined as follows:

- **Denominator:**

  - All cases in which Event Code = "03" (completed investigation) and Investigation Agency = "CB," "OI," "SL," or "OT" (i.e., RIB, OIG, States, or other agency); and

  - All cases in which a retailer was sent a charge letter; and

  - Any retailer on the Watch List with a status of closed.

- **Numerator:**

  - Any case in which the Event Code = "03" (completed investigation) and Investigation Code = "CB" (i.e., RIB) and the trafficking flag is "1;" or

  - Any case in which the Event Code = "03" (completed investigation) and Investigation Code = "OI," "SL," or "OT" (i.e., OIG, States, or other agency) and the result is a positive violation; or

  - Any case in which the retailer was permanently disqualified or provided compensation in lieu of disqualification.

Both the denominator and numerator come from unduplicated lists of retailers meeting one or more of these conditions. In other words, a retailer was counted only once, regardless of the number of times it was identified.

APPENDIX G

SUPPORTING TABLES FOR THE ANALYSIS OF TRENDS

IN TRAFFICKING MEASURES

Exhibit G1. Dollar Amount of Trafficking, by Store Type and Study Period

(in thousands)

Type of Store	Using RIB Cases				Using RIB and Administrative Review Cases	
	1993	1996–98	1999–2002	2002–2005	1999–2002	2002–2005
Large Stores						
Supermarkets	$282,058	$279,163	$99,746	$9,998	$117,180	$16,976
Large groceries	$46,632	$35,255	$16,073	$5,899	$ 21,981	$10,836
Subtotal	$328,690	$314,418	$115,819	$15,897	$139,161	$27,812
Small Stores						
Small groceries	$177,809	$154,109	$111,747	$78,678	$159,114	$147,124
Convenience	$78,090	$66,809	$23,676	$16,416	$40,617	$48,741
Specialty	$117,004	$55,782	$16,608	$10,530	$22,904	$19,658
Gas/grocery	$27,528	$21,784	$6,193	$4,157	$10,315	$17,285
Other types	$82,605	$43,892	$13,377	$6,290	$20,684	$17,345
Subtotal	$483,036	$342,376	$171,601	$116,071	$253,634	$250,153
All stores	**$811,726**	**$656,794**	**$287,420**	**$131,968**	**$392,795**	**$277,965**

NOTE: Data have been annualized.

Exhibit G2. Trends in Trafficking Rate, by Store Type and Study Period

Type of Store	Using RIB Cases				Using RIB and Administrative Review Cases	
	1993	1996–98	1999–2002	2002–2005	1999–2002	2002–2005
Large Stores						
Supermarkets	1.7	1.9	0.8	0.1	0.9	0.1
Large groceries	3.7	3.2	2.2	0.6	3.0	1.2
Subtotal	1.9	2.0	0.8	0.1	1.0	0.1
Small Stores						
Small groceries	15.7	15.8	16.3	8.9	23.3	16.6
Convenience	9.6	10.8	6.5	3.5	11.2	10.4
Specialty	14.2	8.1	3.5	1.8	4.8	3.4
Gas/grocery	10.4	9.7	4.5	2.0	7.4	8.5
Other types	12.4	9.4	4.3	1.7	6.7	4.7
Subtotal	13.0	11.5	8.7	5.2	12.9	10.0
All stores	**3.8**	**3.5**	**1.8**	**0.5**	**2.5**	**1.1**

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Exhibit G3. Trends in the Store Violation Rate, by Store Type and Study Period

Type of Store	Using RIB Cases				Using RIB and Administrative Review Cases	
	1993	1996–98	1999–2002	2002–2005	1999–2002	2002–2005
Large Stores						
Supermarkets	4.2	5.3	1.8	0.3	2.1	1.1
Large groceries	6.7	9.8	4.8	2.6	7.1	5.3
Subtotal	5.0	6.7	2.6	0.9	3.4	2.2
Small Stores						
Small groceries	12.8	14.4	12.3	10.1	18.3	18.3
Convenience	8.1	11.7	6.1	6.1	9.5	15.6
Specialty	17.6	10.7	7.3	3.6	10.0	7.9
Gas/grocery	8.7	12.8	4.5	4.0	7.5	10.6
Other types	10.2	16.2	5.2	2.8	8.5	7.7
Subtotal	10.7	13.0	7.4	5.9	11.4	13.2
All stores	**9.4**	**11.7**	**6.2**	**4.5**	**9.3**	**10.2**

Exhibit G4. Number and Distribution of Stores and Redemptions, by Store Type and

Ownership Status, 2002–2005

Store Type	Stores		Redemptions	
	Number	Percentage.	Amount (in millions)	Percentage
Publicly Owned Stores				
Large stores	14,374	7.3%	9,574	38.1%
Small stores	29,676	15.2%	256	1.1%
Subtotal	44,050	22.5%	9,830	39.2%
Privately Owned Stores				
Large stores	38,145	19.4%	13,021	51.9%
Small stores	113,923	58.1%	2,243	8.9%
Subtotal	152,068	77.5%	15,264	60.8%
All stores	**196,118**	**100.0%**	**25,094**	**100.0%**

NOTE: Redemption totals have been annualized. Detail may not add to totals due to rounding.