



PRICE CHECK

A Report on the Accuracy of Checkout Scanners

A REPORT BY THE STAFF OF THE FEDERAL TRADE COMMISSION,
TECHNOLOGY SERVICES OF THE NATIONAL INSTITUTE OF STANDARDS
AND TECHNOLOGY, THE STATES OF FLORIDA, MICHIGAN,
TENNESSEE, VERMONT AND WISCONSIN AND
THE COMMONWEALTH OF MASSACHUSETTS

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This Report represents the views of the staff of the Bureau of Consumer Protection. It does not necessarily represent the views of the Federal Trade Commission or any individual Commissioner.

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- * The Missouri Department of Agriculture, Weights and Measures, also participated in the collection of data for this study.

Executive Summary

Almost \$2 trillion is spent in retail stores every year, and a large portion of those sales is rung up with electronic checkout scanners. Checkout scanners have been in use for over 20 years, but there are ongoing concerns about their accuracy. These concerns led to this study of scanner practices across the country. The staff of the Federal Trade Commission, Technology Services of the National Institute of Standards and Technology, the States of Florida, Michigan, Missouri, Tennessee, Vermont and Wisconsin and the Commonwealth of Massachusetts participated in this study.

Since their introduction in the 1970s, electronic checkout scanners have provided benefits for both retailers and consumers. For retailers, scanner technology has increased checkout productivity and has improved sales and inventory records that create greater efficiencies in reordering and shelf space allocation. The use of checkout scanners has also resulted in lower labor costs because stores no longer have to mark prices on individual items, unless required to do so by law. Consumers have benefited from faster checkout times and detailed cash register receipts that provide both product and price information.

The replacement of manual cash registers with checkout scanners was also supposed to reduce the number of pricing errors. In recent years, however, state and local enforcement of pricing accuracy laws has resulted in large fines against a number of retailers using scanners, evidencing the continuing concerns about scanner accuracy that led to this study.

For this study, the states, using an inspection procedure developed by the National

undercharges was greater than the number and total dollar amount of overcharges.

How do errors happen? Some scanner errors are probably inevitable. Store employees must maintain shelf tags and signs for thousands of items and make sure that the posted prices match the prices in the store's computer. In addition, stores may change prices on hundreds of items every week. Errors can occur when prices in the store's computer are not updated in a timely and correct fashion. Errors can also occur when shelf tags and sale signs are not changed to correspond to the new computer prices.

The study shows that scanner errors adversely affect retailers and consumers. Retailers lose profits on undercharges and see a decrease in consumer satisfaction as a result of overcharges. A failure to comply with pricing accuracy laws can lead to the imposition of substantial fines and administrative or judicial orders. Consumers are injured when they pay too much because of overcharges and are inconvenienced when they bring errors to the store's attention. In addition, consumers are thwarted in their efforts to make price comparisons due to inaccurate posted or advertised prices.

The study results suggest that inattentiveness or carelessness is the cause of many scanner errors—not wilfulness. This report addresses how retailers can increase and

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Introduction

Almost \$2 trillion is spent in retail stores every year and a large portion of those sales is rung up with electronic checkout scanners. Checkout scanners have been in use since the 1970s, but there are ongoing concerns about their accuracy. These concerns led to this study of scanner practices across the country.

To examine the issue of checkout scanner accuracy, the staff of the Federal Trade Commission (FTC) coordinated this joint study with Technology Services at the National Institute of Standards and Technology (NIST), state Attorneys General, and state and local weights and measures offices. To obtain data on scanner pricing accuracy, Florida, Massachusetts, Michigan, Missouri, Tennessee, Vermont and Wisconsin conducted inspections of pricing accuracy in a variety of retail stores. In addition, other government officials and industry members have provided information contained in this report.

Part Two of this report provides information about scanner technology. The role of the organizations participating in this study is discussed in Part Three of this report. Data from the state inspections of pricing accuracy have been compiled for this report and are presented in Part Four. Part Five of this report provides an overview of some of the measures taken thus far by industry and government to reduce scanner pricing errors. Part Six discusses the adverse effects of scanner errors on retailers and consumers and why retailers need to take additional steps to improve scanner accuracy. Part Seven offers recommendations on what retailers can do to reduce scanner errors. Part Eight describes steps consumers can take to detect and avoid scanner errors.

Overall, this study shows that checkout scanners usually result in fewer errors than manual entry of prices at checkout, but that scanner errors may be a significant problem for some individual stores and retail chains. This study also shows that scanner pricing errors adversely affect retailers and consumers. Stores lose profits on undercharges, and see a decrease in customer satisfaction as a result of overcharges. Consumers pay too much because of overcharges, and may be thwarted in their efforts to make price comparisons due to inaccurate posted or advertised prices.

The organizations participating in this study hope that increased public attention to the problem of scanner pricing errors will lead retailers to examine and, if necessary, reform their pricing practices voluntarily. Retailers that fail to pay sufficient attention to their pricing practices run the risk of government enforcement actions with the possibility of fines and government mandates to change their practices. Furthermore, if retailers do not achieve high levels of scanner pricing accuracy, consumer mistrust in scanner technology may increase and may lead to calls for a return to item pricing.³In the future, FTC staff, NIST and state and local officials will continue to coordinate their efforts to monitor pricing accuracy and to ensure that consumers are charged the correct price at checkout.

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Scanner Technology

From lollipops to laundry detergent, most everyday items bear a Universal Product Code (UPC). This symbol--a series of numbers and vertical bars of varying thicknesses--is shorthand for price and other product information. When a cashier passes the UPC symbol over an electronic scanner, a computer decodes the symbol, sending the price and other product information to the register. At the same time, the price is shown on the display screen and a receipt is printed for the consumer.

Electronic scanner technology has been around since the 1970's. The first checkout scanner was installed in a Marsh Supermarket store on a trial basis in Troy, Ohio in 1974. Although food stores were the first to use scanners extensively, many other types of retail stores--such as department, hardware, discount, drug, automotive supply, convenience, toy, and club stores--have also adopted electronic scanner technology.

Retailers report that electronic scanner technology has several advantages, such as improved checkout productivity, lower labor costs, and improved sales and inventory records that create greater efficiencies in reordering and shelf space allocation.⁵ In particular, retailers save money when they no longer mark individual items with a price. It is estimated that item pricing costs the average supermarket \$154,000 a year.⁶ Retailers also say that electronic scanning results in fewer pricing errors than manual entry. Studies showed that manual entry of prices by a cashier resulted in 4.4 percent to 16 percent errors in the prices charged to consumers.⁷

Some scanner pricing errors are probably inevitable. Retail stores must post prices for thousands of items. For example, a typical food, drug or discount store may stock 10,000 to 40,000 different items and must maintain shelf tags and signs for all of these items.⁸ In addition, stores may change prices on hundreds of items each week. Many chains, especially larger ones, have a central database that electronically sends anywhere from several hundred to several thousand weekly price changes to each store. Errors can occur when prices in the store's computer are not updated in a timely and correct fashion. Errors can also occur when shelf tags and sale signs are not changed to correspond to the new computer prices.

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Organizations Participating in this Study

The role and interests of each of the organizations participating in this study are described below.

Bureau of Consumer Protection of the Federal Trade Commission

The Federal Trade Commission is a law enforcement agency charged by Congress to protect the public against deceptive or unfair practices and anticompetitive behavior. The FTC, through its Bureau of Consumer Protection, has been involved in issues concerning retail pricing for many years. In 1971, the FTC promulgated the Trade Regulation Rule Concerning Retail Food Store Advertising and Marketing Practices, 16 C.F.R. Part 424.

confidence in scanner technology. The NCWM found that pricing inspection procedures and enforcement practices varied widely from state to state. For example, a number of states conducted periodic inspections of scanner prices in food stores, while other states conducted pricing inspections only in response to consumer complaints.

Weights and measures and other public officials, retailers and trade associations worked together to develop uniform test procedures and uniform enforcement practices. In 1995, the NCWM adopted the **Examination Procedure for Price Verification** (NCWM Procedure).¹² The NCWM Procedure sets forth a sampling and inspection procedure that can be used by weights and measures officials to conduct price verification inspections in all kinds of retail stores.

State Enforcement Agencies

Many states have been active in the area of pricing accuracy. Generally, weights and measures officials have authority to check the accuracy of prices in stores and can impose fines for violations of the state weights and measures act. The state Attorneys General may bring actions based on the state's consumer protection act or business and professions act. In addition, city and county attorneys often bring actions pursuant to state and local laws prohibiting price misrepresentations.

For example, in 1994, the California Attorney General, the Riverside District Attorney and the San Diego City Attorney assessed a large discount store chain \$985,000 in civil penalties and costs for alleged scanner overcharges. In addition, the 1994 order requires that, if a customer is overcharged, the store must pay a bounty of a \$3 reduction in price or, if the price is under \$3, give the item free to the customer. The order further requires the store chain to initiate a three-year program in each of its California stores to correct pricing errors reported by customers.

The Department of Trade, Agriculture and Consumer Protection in Wisconsin, in early 1996, negotiated a consent with a mass merchandiser based on allegations of scanner overcharges. The consent requires payment of a bonus

Weights and Measures Act.

The Consumer Affairs Unit of the Department of Finance of the City of Seattle, Washington, has recently instituted a pricing inspection program. In the last two years, the City of Seattle obtained one-year settlement agreements with six chain stores that repeatedly failed inspections. These agreements obligated the store chains to institute frequent self-inspection programs, assign pricing managers, and post refund policies for price scanning errors.

Because of ongoing concerns about scanner practices, a number of states agreed to participate with FTC staff and NIST in a joint study of scanner accuracy.



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Joint Study

In 1994, FTC staff, working with NIST, began to explore the issue of checkout scanner pricing accuracy. The NCWM Procedure was still in development and there was limited data on the extent of scanner pricing errors in different types of retail stores over a diverse geographic area. To obtain more information about scanner accuracy, FTC staff invited a number of states to participate in a joint study. Florida, Massachusetts, Michigan, Missouri, Tennessee, Vermont and Wisconsin agreed to conduct scanner pricing inspections using the current draft of the NCWM Procedure¹³. Each state randomly selected retail stores for inspections¹⁴. The inspections were begun in late 1994 and were completed in mid-1996.

NCWM Procedure

Under the NCWM Procedure, a pricing error occurs when the price charged for an item at checkout does not agree with the lowest advertised, quoted, posted or marked price. The NCWM Procedure recognizes that some pricing errors are inevitable due to human and other errors. Thus, rather than requiring 100 percent accuracy, the procedure provides that a store “passes” an inspection if 98 percent or more of the items sampled are priced accurately. The total error rate--both undercharges and overcharges--is used to determine whether a store should be inspected more frequently. Higher levels of enforcement, such as fines or penalties, are based only on overcharges¹⁵.

The NCWM Procedure is based on the randomized selection of merchandise to be price checked and provides for two sampling procedures. In the “randomized” sample, all of the items in an “area” of the store (such as a section or an aisle) have an equal chance of being included in the sample. For example, an inspector may randomly select 25 items from each of the toy, sports, linen and men's wear sections of a department store, for a total sample of 100 items. In the “stratified” sample, items are selected from specific merchandise groups, such as advertised specials, in-store specials, and end of aisle displays. For example, an inspector in a food store may randomly select 10 advertised items, 10 in-store specials, 10 end-of-aisle items, and 70 items from the rest of the store. For both randomized and stratified sampling, the NCWM Procedure provides illustrations on how to choose items in a random fashion.

The NCWM Procedure divides retail stores into two groups--small stores, such as convenience stores, and larger stores, such as food, department or drug stores. Sampling

can be done in a single or two stage process. In the single stage process for small stores, the inspector will check a single sample of 50 items. With one error or less, the store passes inspection. If there are two or more errors, the store fails inspection. In a two-

Table I

**SUMMARY OF INSPECTION RESULTS
FOOD V. NON-FOOD STORES**

	FOOD (113 Stores)	NON-FOOD (181 Stores)	TOTAL (294 Stores)
Total No. Of Overcharges	115	273	388
Percentage of Overcharges			

Table II

**SUMMARY OF INSPECTION RESULTS
BY STORE CLASSIFICATION**

Classification (No. of Stores)	AUTO (4)	DEPT (30)	DISC (80)	DRUG (39)	FOOD (113)	HOME (17)	TOY (9)	MISC (2)	TOTAL (294)
Total No. Of Overcharges	6	60	95	79	115	32	1	0	388
Percentage of Overcharges	2.02%	3.25%	1.87%	3.56%	1.92%	2.52%	0.20%	0.00%	2.24%
Total \$ of Overcharges	\$6.90	\$457.41	\$249.64	\$80.69	\$60.47	\$313.49	\$4.02	\$0.00	\$1,172.01
Average \$ of Overcharges	\$1.15	\$7.62	\$2.63	\$1.02	\$0.53	\$9.80	\$4.02	\$0.00	\$3.02
Total No. of Undercharges	2	109	136	61	93	36	8	1	446
Percentage of Undercharges	0.67%	5.90%	2.68%	2.75%	1.55%	2.84%	1.60%	1.01%	2.58%
Total \$ of Undercharges	\$2.09	\$576.92	\$298.64	\$59.12	\$70.30	\$262.98	\$39.62	\$10.00	\$1,319.67
Average \$ of Undercharges	\$1.05	\$5.29	\$2.20	\$0.97	\$0.76	\$7.31	\$4.95	\$10.00	\$2.96
Total No. of Items Checked	297	1846	5071	2218	5999	1269	499	99	17298
Total % of Errors	2.69%	9.15%	4.56%	6.31%	3.47%	5.36%	1.80%	1.01%	4.82%

Table III

**DISTRIBUTION OF FOOD V. NON-FOOD STORES
BY PRICING ACCURACY¹⁶**

	FOOD (113 Stores)	NON-FOOD (181 Stores)	TOTAL (294 Stores)
100 percent	32	34	66
98 - 99.9 percent	26	40	66
96 - 97.9 percent	24	27	51
94 - 95.9 percent	13	24	37
92 - 93.9 percent	7	17	24
90 - 91.9 percent	5	11	16
Less than 90 percent	6	28	34

These data show that pricing accuracy varies widely. First, all types of stores experience pricing errors. For all stores as a group, the accuracy rate is 95.18 percent. Food stores as a group have a higher accuracy rate (96.53 percent) than drug stores (93.69 percent), discount stores (95.44 percent) or department stores (90.85 percent). (Table II.) The higher accuracy rate for food stores may stem in part from the fact that food stores have the most experience with scanner technology.

Second, the data show that, overall, the number and total dollar amount of undercharges (446 undercharges totaling \$1,319.67) was greater than the number and total dollar amount of overcharges (388 overcharges totaling \$1,172.62). (Table I.) There were, however, differences among categories of stores. For example, for department stores, there were 109 undercharges totaling \$576.92 compared to 60 overcharges, totaling \$457.41. For food stores, there were more overcharges than undercharges (115 to 93), but the total dollar amount of overcharges (\$60.47) was less than the total dollar amount of undercharges (\$70.30). For drug stores, there were more overcharges than undercharges, both in number (79 to 61) and dollar amount (\$80.69 to \$59.12). (Table II.)

Third, there is a wide variation in pricing accuracy from chain to chain and store to store. Inspection results for each retail chain are provided in Appendix¹⁷B. Of the 16 retail chains with five or more stores included in the study, pricing accuracy ranged from

88.31 percent to 98.89 percent. (Appendix B.) The data also show that, of the 294 stores inspected, 45 percent (132 stores) had accuracy rates of 98 percent or more, and thus would have complied with requirements of the NCWM Procedure. Of the food stores, 51 percent (58 of 113) had accuracy rates of 98 percent or more. Of the non-food stores, 41 percent (74 of 181) had accuracy rates of 98 percent or more. (Table III.)

Fourth, the data show that overcharges and undercharges do not balance out for most individual retailers. For some retailers, the dollar amount of overcharges outweighs the dollar amount of undercharges, resulting in a net overcharge. For other retailers, the undercharges outweigh overcharges and result in a net undercharge. (Appendix B.)

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Industry & Government Efforts to Improve Pricing Accuracy

Because pricing accuracy affects all retailers and all consumers, industry and government representatives have undertaken a variety of efforts to improve pricing accuracy.

Certification and Inspection Programs

Industry Certification and Inspection Programs

To promote and ensure scanner accuracy, some retailers have set up their own certification and inspection programs. In 1991, the Pennsylvania Food Merchants Association (PFMA), representing food retailers throughout the state, set up the first industry inspection program--the "Scanning Certification Program." This is a voluntary program that provides public recognition for stores that have established standards of accuracy in the administration of their pricing and scanning programs.

To be certified under this program, stores must earn at least a 98 percent accuracy rate on a random sample of 200 items taken from throughout the store. Once a store has been certified, periodic inspections are made to assess continued compliance. Participating stores also agree, that in the event of an overcharge, one item will be given free to the customer, up to a limit of \$10. There are additional program requirements for the size and content of shelf tags and training of store employees. Since its inception, the PFMA certification program reports an increase in overall pricing accuracy from 96.9 percent to 98.55 percent in 1995.¹⁸ Currently 232 stores are certified under this voluntary program.¹⁹

Associated Grocers, Inc., of Seattle, Washington, has recently instituted a similar program for its customers. Associated Grocers, Inc., is a food wholesaler that has about 240 customers operating about 350 stores. The program is voluntary and is similar to the PFMA program. Thus far, about 50 stores are participating in this program.²⁰

Government Inspection Programs

State weights and measures offices in 42 states and the District of Columbia currently have a price verification program in place.²¹ Of these jurisdictions, 32 base their inspections on the NCWM Procedure. NIST has offered week-long training programs to

states interested in using the NCWM Procedure. Thus far, over 30 states have sent weights and measures officials to these training sessions.

Several state and local jurisdictions have or are setting up formal inspection programs that include development of baseline data. For example, in 1994, the Consumer Affairs Unit of the City of Seattle instituted a periodic price inspection program covering all types of retail stores. Initial baseline data collected in 1994 store inspections showed an overall pricing error rate of 6.7 percent. Since then, with continuing inspections, overall pricing error rates have decreased to 3.7 percent in 1996. The average percentage of overcharges has dropped from 4 percent in 1994 to 2.5 percent in 1995 and 1.4 percent in 1996.

Louisiana's Division of Weights and Measures is currently setting up a division that will focus on scanner pricing using the NCWM Procedure. The Division of Weights and Measures is conducting a series of inspections to develop baseline data for retail stores in Louisiana. Similarly, the Division of Weights and Measures of Kansas is setting up a program for inspections of all types of retail stores. Initially, they will select a random sample of retail stores to inspect, using the NCWM Procedure. After the random sample is completed and the results have been analyzed, Kansas Weights and Measures may shift resources to concentrate on problem areas.

Nationwide Information Sharing

Recognizing that information sharing is essential to efficient state and federal enforcement, NCWM is considering the creation of a computer database that would link

an electronic shelf labeling system with the approval of the commissioner of consumer protection.²⁶ Massachusetts and California require item pricing in grocery stores and in food departments in other retail stores.²⁷

The City of Philadelphia does not impose any general item pricing requirement. As a remedial measure, however, the law requires that retail food stores item price when the store has a three to one, or greater, ratio of overcharges to undercharges for three consecutive inspections. The store must item price until it passes four consecutive inspections.²⁸

Cash Register Display

Massachusetts has adopted a law requiring any retailer using a cash register at a counter to total the dollar amount of customer purchases to make sure that the total dollar amount of the purchases can be seen by the customer.²⁹

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Injurious Effects of Pricing Errors on Retailers

undercharges average 39 cents and overcharges average 30 cents, and that undercharges outnumber overcharges 70 to 30³². If accuracy rates fall below 98 percent, retailers risk even higher losses from undercharges³³.

Consumer Dissatisfaction

Retailers also are injured when poor pricing practices result in consumer dissatisfaction. Consumers are affected in several ways by scanner pricing errors. First, consumers lose money when they are overcharged and they are not likely to be mollified by the knowledge that other consumers are being undercharged. Second, consumers are inconvenienced by errors. If a consumer points out a mistake at checkout, whether an overcharge or an undercharge, the consumer (and everyone in line) must wait while the cashier corrects the mistake. In addition, consumers complain that some stores are not helpful and may even be rude.

Consumers also complain that, in many stores, they cannot see the price of items being rung up at cash registers. Thus, they must wait until the transaction is completed before they receive the receipt and can check the prices charged for the items. Getting errors corrected at that point often involves a wait at the customer service desk.

Inadequate or poor customer service practices can lead to consumers taking their business elsewhere. It is estimated that between one and three percent of customers will stop shopping at a particular store if they discover they have been overcharged³⁴.

The next part of this report describes steps that retailers can take to ensure they comply with applicable laws and increase customer satisfaction with their practices for handling pricing errors.

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Recommendations for Retailers

There are a number of steps that a retailer can take to increase and maintain pricing accuracy.³⁵ Implementing good pricing practices may involve some initial expense, but, in the long run, is likely to provide net benefits to the retailer.³⁶ Some practices that can help involve designing and implementing better procedures. Others can involve using technological advancements that are now available.

As a first step, retailers can obtain information about good pricing practices, which is readily available from a variety of sources.³⁷ For example, the Food Marketing Institute and the National Retail Institute, the research foundation of the National Retail Federation, publish and sell detailed manuals on pricing procedures, and have sponsored conferences dealing with pricing issues.³⁸ Retailers can also contact their local weights and measures officials for information about the NCWM Procedure and pricing accuracy laws. Some local weights and measures offices are providing training to local retailers. NIST has also opened its training sessions to retailers.

Once the retailer makes a commitment to achieve higher pricing accuracy, that retailer can evaluate the adequacy of its pricing practices and implement necessary changes. The most basic question is: Can the retailer state with any certainty its pricing accuracy rate?

Some retailers may believe that good pricing practices are largely a matter of devoting substantial resources to computer technology and the development of software. The focus of good pricing practices, however, is not on whether, for example, the prices in the store's computer file match the prices in the company's central computer file. To the customer, the price in the store's computer is not the important price. Instead, the customer expects to be charged the lowest price posted or advertised. Thus, good pricing practices focus on whether the price at checkout matches the posted or advertised price--a goal that can be achieved through proper procedures, employee training and periodic price inspections.

Best Practices

No one set of pricing practices will guarantee pricing accuracy. There are, however, a number of practices that make a lot of sense and are used by retailers with outstanding pricing accuracy.

Most basic is the adoption of written procedures for all forms of pricing activity in the store. Adopting procedures for immediate correction of pricing errors, whether discovered by state or local inspectors, employees or customers, is important to reduce exposure to possible law enforcement action and to ensure customer satisfaction. On-going training of employees, with an emphasis on the store's commitment to pricing accuracy, ensures that the procedures are properly implemented.

Designating one person as the pricing coordinator, with overall responsibility for pricing accuracy, also is important. In some stores, such as grocery and drug stores, it may be useful to make one employee responsible for the accuracy of prices on all Direct Store Delivery items.³⁹

An essential component of good pricing practices is periodic price audits. Price audits of a randomized sample, perhaps 50 items, can be done on a daily basis. Regular price audits of the entire store can be done several times a year. At a minimum, an audit of the entire store can be done at the same time that an inventory is done. Procedures for checking and replacing damaged or missing shelf tags and signs on a regular basis will help ensure that consumers can determine the correct price of items.

Special procedures may be necessary when prices of sale items cannot be entered into the store's computer. For example, a store may offer "Buy one, get the second one at half price" sale where the cashier must manually enter the sale price of the second item. In such cases, a cashier who is not aware that the item is on sale may scan the second item at full price, thus overcharging the consumer. To avoid this problem, a store may, for example, mark all such sale items with a color-coded tag, thus alerting the cashier that the item is on special.

Other practices that can benefit stores by increasing consumer satisfaction include: (1) arranging the checkout set-up so that customers can see the prices as they are rung up at the register; (2) training employees to treat customers reporting pricing errors politely; and (3) adopting a policy of rewarding consumers who report pricing errors--such as giving the consumer one item free.

Advances in Technology

Improvements in technology can help retailers achieve greater pricing accuracy at a lower cost. One of the most important developments in shelf price verification is the use of the hand-held scanning device. These portable devices enable an employee to walk

down an aisle, scan the UPC code on an item and immediately check the posted or advertised price against the price in the store's computer⁴⁰. Hand-held scanners can reduce the labor required for price checks, which otherwise might require taking items to a cash register for scanning or taking a printout of prices around the store and checking it against shelf and sign prices.

Another very useful tool is the portable label printer. Once a section of a store has been scanned and checked, with a portable printer missing and incorrect shelf labels can be printed and replaced immediately⁴¹. Without the portable printer, the retailer likely has to make a list of missing shelf tags, request replacement tags from headquarters or print them elsewhere in the store and then have an employee go back in the aisle and find the right spots for the replacement labels.

Another recent development is the use of electronic shelf tags. These are relatively new devices that a number of chains have been testing out in selected stores⁴². The shelf tags are connected to the same data base as the checkout scanner. Thus, the shelf price and the scanner price are always the same. When a price is changed in the computer it is automatically changed on the shelf tag. The advantages are pricing conformity between posted and scanned price and savings in labor costs associated with replacing paper shelf labels, which are no longer needed. Currently, however, there are several disadvantages. At the present time, installation of electronic shelf tags throughout a store is fairly costly. The estimated cost per store for approximately 20,000 electronic shelf tags is between \$120,000 and \$150,000⁴³. Second, electronic shelf tags cannot be used everywhere in a store. They generally cannot be used in freezers or coolers, and can be damaged by shopping carts when used on bottom shelves. Third, the liquid crystal readout is not always as clear and easy to read as printed shelf labels.

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Recommendations for Consumers

Consumers expect and demand accurate pricing. Obviously, consumers do not want to lose money from overcharges. They also want to be able to make informed and correct purchasing decisions based on shelf tags and signs. For example, a consumer may be led into making value comparisons that are incorrect because of inaccurate posted prices. Thus, a consumer may choose to buy Brand X because its posted price is lower than the price posted for Brand Y. This decision turns out to be incorrect if the price actually charged for Brand X at checkout is higher than the price of Brand Y.

The FTC has published a "Facts for Consumers" pamphlet that focuses on the issue of scanner accuracy and what consumers can do to ensure that the price charged is the right price.⁴⁴ Below, some of the key steps consumers can take to protect themselves against scanner errors are described.

Spotting Scanner Errors

There are simple steps consumers can take to avoid paying the wrong price. First, consumers can watch the display screen for prices as they are rung up. If an error occurs, consumers can immediately point the error out to the cashier, ask about the store's policy on pricing errors, and ask the cashier to make the appropriate adjustment before paying. Although some stores simply adjust the price, other stores may offer a bonus, such as giving the consumer one item free. Even after consumers have left the checkout line, but before leaving the store, consumers can review their receipt and identify and report errors to the store manager or customer service desk.

If the store is having a sale, consumers can bring a copy of the store's flyer or newspaper ad to the checkout counter and compare prices as they are rung up. Some advertised specials--15 percent off an item for two hours, for example, or a two-for-one promotion--may not be in the computer and must be entered manually by the cashier. These types of promotions merit particular attention from consumers to ensure they are charged the correct price.

When purchasing more than a few items, consumers may want to consider jotting down prices or special sale prices as they walk through the store. Some grocery stores may provide a marking pen so that consumers can write the prices on the packages.

Effective Complaining

Consumers who notice a pattern of electronic scanning errors in a particular store may want to talk to the customer service department or the store manager. Consumers can also write a letter to the company's corporate headquarters. The retailer may not realize a problem exists until it is pointed out.

Consumers can also report recurring problems to their state Attorney General's office, state or local consumer protection office, or state or local weights and measures officials. In many states, weights and measures offices will follow up on consumer complaints with an inspection of the store's prices.

Finally, consumers can file a complaint with the Federal Trade Commission. Although the FTC usually does not intervene in individual cases, the information provided by consumers will assist the FTC in its continued monitoring of scanner pricing accuracy. Letters should be addressed to: Correspondence Branch, Federal Trade Commission, Washington, D.C. 20580.

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Conclusion

Overall, this study shows that the news is fairly positive for consumers. Many retailers have already achieved high levels of pricing accuracy. Furthermore, when averaged across all retail categories, undercharges exceed overcharges in both number and dollar amount. On the other hand, scanner errors continue to be prevalent, and overcharges outnumber undercharges for some retail categories and some retail chains. Thus, scanner pricing errors continue to be a problem meriting increased retailer attention.

The government participants in this study are hopeful that increased public attention to the problem of scanner pricing errors will lead retailers to examine and reform their pricing practices voluntarily. Achieving higher levels of scanner accuracy will benefit both consumers and retailers. By reducing the number of scanner errors, stores ensure compliance with pricing accuracy laws, reduce losses from undercharges and prevent customer dissatisfaction caused by overcharges.

In the future, FTC staff, NIST and state and local officials will continue to coordinate their efforts to monitor retailers' pricing accuracy. It is hoped that information contained in this report will assist retailers in their efforts to reduce scanner errors and consumers in their efforts to ensure that they pay the correct price at checkout.



APPENDIX A

**DISTRIBUTION OF FOOD V. NON-FOOD STORES
BY PRICING ACCURACY**

	FOOD (113 Stores)	NON-FOOD (181 Stores)	TOTAL (294 Stores)
100 percent	32	34	66
99 - 99.9 percent	1	4	5
98 - 98.9 percent	25	36	61
97 - 97.9 percent	3	6	9
96 - 96.9 percent	21	21	42
95 - 95.9 percent	3	8	11
94 - 94.9 percent	10	16	26
93 - 93.9 percent	4	3	7
92 - 92.9 percent	3	14	17
91 - 91.9 percent	0	3	3
90 - 90.9 percent	5	8	13
89 - 89.9 percent	0	3	3
88 - 88.9 percent	3	5	8
87 - 87.9 percent	0	3	3
86 - 86.9 percent	2	7	9
85 - 85.9 percent	0	0	0
84 - 84.9 percent	1	3	4
83 - 83.9 percent	0	1	1
82 - 82.9 percent	0	1	1
81 - 81.9 percent	0	1	1
75 - 75.9 percent	0	1	1
72 - 72.9 percent	0	1	1
69 - 69.9 percent	0	1	1

68 - 68.9 percent

0

1

1



APPENDIX B

“Scanner” Summary by Retailer

Store Pseudonym	Total # of Stores Checked	Total # of Items Checked	Total # of Over Charges	Total \$ of Over Charges	Ave \$ of Over Charges	Total % of Over Charges	Total # of Under Charges	Total \$ of Under Charges	Ave \$ of Under Charges	% of Under Charges	Total % of Error
Auto1	1	50	0	0.00	0.00	0.00%	0	0.00	0.00	0.00%	0.00%
Auto2	1	99	5	4.90	0.98	5.05%	0	0.00	0.00	0.00%	5.05%
Auto3	1	98	0	0.00	0.00	0.00%	0	0.00	0.00	0.00%	0.00%
Auto4	1	50	1	2.00	2.00	2.00%	2	2.09	1.05	4.00%	6.00%
Department1	2	150	5	12.20	2.44	3.33%	0	0.00	0.00	0.00%	3.33%
Department2	1	50	0	0.00	0.00	0.00%	0	0.00	0.00	0.00%	0.00%
Department3	2	200	1	3.00	3.00	0.50%	2	39.49	19.75	1.00%	1.50%
Department4	10	650	32	276.56	8.64	4.92%	44	191.07	4.34	6.77%	11.69%
Department5	1	50	0	0.00	0.00	0.00%	8	59.04	7.38	16.00%	16.00%
Department7	1	50	2	1.70	0.85	4.00%	6	10.89	1.82	12.00%	16.00%
Department8	1	50	2	14.50	7.25	4.00%	5	10.40	2.08	10.00%	14.00%
Department9	10	596	17	147.05	8.65	2.85%	42	264.51	6.30	7.05%	9.90%
Department10	1	50	1	2.40	2.40	2.00%	2	1.52	0.76	4.00%	6.00%
Discount1	1	50	1	3.00	3.00	2.00%	3	4.01	1.34	6.00%	8.00%
Discount2	41	2,546	62	179.99	2.90	2.44%	76	147.49	1.94	2.99%	5.42%
Discount7	1	40	0	0.00	0.00	0.00%	10	67.91	6.79	25.00%	25.00%
Discount3	1	99	0	0.00	0.00	0.00%	2	0.50	0.25	2.02%	2.02%
Discount4	2	147	4	5.53	1.38	2.72%	6	2.85	0.48	4.08%	6.80%
Discount5	4	200	3	3.39	1.13	1.50%	12	15.65	1.30	6.00%	7.50%
Discount6	32	2,039	28	58.26	2.08	1.37%	31	62.31	2.01	1.52%	2.89%
Drug1	3	197	6	7.84	1.31	3.05%	2	0.30	0.15	1.02%	4.06%
Drug2	7	350	7	7.91	1.13	2.00%	5	1.33	0.27	1.43%	3.43%
Drug3	1	98	3	0.70	0.23	3.06%	2	1.13	0.56	2.04%	5.10%
Drug4	1	50	0	0.00	0.00	0.00%	0	0.00	0.00	0.00%	0.00%
Drug5	1	50	0	0.00	0.00	0.00%	6	4.05	0.67	12.00%	12.00%

Store Pseudonym	Total # of Stores Checked	Total # of Items Checked	Total # of Over Charges	Total \$ of Over Charges	Ave \$ of Over Charges	Total % of Over Charges	Total # of Under Charges	Total \$ of Under Charges	Ave \$ of Under Charges	% of Under Charges	Total % of Error
Drug7	3	200	6	6.80	1.13	3.00%	5	12.75	2.55	2.50%	5.50%
Drug8	1	41	2	0.76	0.38	4.88%	0	0.00	0.00	0.00%	4.88%
Drug9	21	1,182	52	56.15	1.08	4.40%	37	37.48	1.01	3.13%	7.53%
Food1	5	245	3	1.58	0.53	1.22%	6	2.84	0.47	2.45%	3.67%
Food2	8	416	11	2.39	0.22	2.64%	5	2.44	0.49	1.20%	3.85%
Food3	6	296	2	0.18	0.09	0.68%	5	2.09	0.42	1.69%	2.36%
Food4	1	100	0	0.00	0.00	0.00%	0	0.00	0.00	0.00%	0.00%
Food5	1	50	0	0.00	0.00	0.00%	0	0.00	0.00	0.00%	0.00%
Food6	1	100	2	1.10	0.55	2.00%	2	1.63	0.81	2.00%	4.00%
Food7	1	50	0	0.00	0.00	0.00%	0	0.00	0.00	0.00%	0.00%
Food8	2	149	3	0.42	0.14	2.01%	3	1.40	0.47	2.01%	4.03%
Food9	1	100	1	0.10	0.10	1.00%	3	0.36	0.12	3.00%	4.00%
Food10	11	549	34	9.48	0.28	6.19%	9	3.57	0.40	1.64%	7.83%
Food11	1	100	0	0.00	0.00	0.00%	1	0.10	0.10	1.00%	1.00%
Food12	1	50	0	0.00	0.00	0.00%	0	0.00	0.00	0.00%	0.00%
Food13	1	50	1	0.11	0.11	2.00%	0	0.00	0.00	0.00%	2.00%
Food14	1	50	0	0.00	0.00	0.00%	0	0.00	0.00	0.00%	0.00%
Food15	15	749	20	9.09	0.45	2.67%	25	7.59	0.30	3.34%	6.01%
Food16	3	150	2	2.02	1.01	1.33%	1	0.15	0.15	0.67%	2.00%
Food17	1	50	0	0.00	0.00	0.00%	0	0.00	0.00	0.00%	0.00%
Food18	7	349	3	1.70	0.57	0.86%	2	0.90	0.45	0.57%	1.43%
Food19	1	49	2	0.80	0.40	4.08%	0	0.00	0.00	0.00%	4.08%
Food20	1	50	3	0.34	0.11	6.00%	0	0.00	0.00	0.00%	6.00%
Food21	10	498	6	1.58	0.26	1.20%	4	2.37	0.59	0.80%	2.01%

“Scanner” Summary by Retailer

Store Pseudonym	Total # of Stores Checked	Total # of Items Checked	Total # of Over Charges	Total \$ of Over Charges	Ave \$ of Over Charges	Total % of Over Charges	Total # of Under Charges	Total \$ of Under Charges	Ave \$ of Under Charges	% of Under Charges	Total % of Error
Food23	2	150	3	0.30	0.10	2.00%	3	1.57	0.52	2.00%	4.00%
Food24	3	150	0	0.00	0.00	0.00%	1	0.05	0.05	0.67%	0.67%
Food25	3	150	3	0.72	0.24	2.00%	1	2.72	2.72	0.67%	2.67%
Food26	1	100	4	0.66	0.17	4.00%	0	0.00	0.00	0.00%	4.00%
Food27	9	450	1	0.60	0.60	0.22%	4	1.83	0.46	0.89%	1.11%
Food28	2	100	1	0.30	0.30	1.00%	1	0.30	0.30	1.00%	2.00%
Home Improvement1	1	100	2	5.15	2.58	2.00%	0	0.00	0.00	0.00%	2.00%
Home Improvement2	1	43	4	26.52	6.63	9.30%	2	22.01	11.01	4.65%	13.95%
Home Improvement3	1	100	1	2.00	2.00	1.00%	3	4.04	1.35	3.00%	4.00%
Home Improvement4	6	279	7	177.04	25.29	2.51%	8	159.00	19.88	2.87%	5.38%
Home Improvement5	1	100	7	17.03	2.43	7.00%	4	11.69	2.92	4.00%	11.00%



Endnotes



sell advertised specials at or below the advertised price. See Albertson's, Inc., 85 F.T.C. 500 (1975); The Great Atl. & Pac. Tea Co., Inc., 85 F.T.C. 601 (1975); Baza'r, Inc., 86 F.T.C. 1026 (1975); Pacific Gamble Robinson Co., 86 F.T.C. 1034 (1975); Freis, In Teyer, Jr., 87 F.T.C. 112 (1976); Mayfair Super Markets, Inc., 87 F.T.C. 286 (1976); The Kroger Co., 90 F.T.C. 459 (1977); Fisher Foods, Inc., 90 F.T.C. 473 (1977); Food Fair Stores, Inc., 90 F.T.C. 491 (1977); Shop Rite Foods, Inc., 90 F.T.C. 500 (1977); and Safeway Stores, Inc., 91 F.T.C. 975 (1978).

10. See, e.g., *Dateline* (NBC television broadcast, Dec. 12, 1995); *PrimeTime Live* (ABC television broadcast, Apr. 8, 1993); Kristi Grimsley, "At the Register, Getting Rung Up ... and Riled," *The Washington Post* June 8, 1994, at A1; Vanessa O'Connell, "Don't Get Cheated by Supermarket Scanners," *Mon T* Apr. 1993, at 132; and Doug Bartholomew, "The Price is Wrong," *InformationWeek*, Sept. 14, 1992, at 26.

11. NCWM Price Verification Working Group, "Report of First , In eting, Recommendations for Regulations, and Examination Procedure for Price Verification" (First Draft), at 5 (Oct. 1, 1993).

12. NCWM Publication 19 (Aug. 1995).

13. The inspections generally followed the procedures outlined in the fourth draft of the NCWM Procedure. The procedures used in the study did not differ in material ways from the procedures set forth in the final NCWM Procedure.

14. Stores with a history of pricing problems were not singled out for this study. Some may have been included as part of the random selection process.

15. The FTC, in authorizing the release of this Report, does not intend to endorse any particular

Box 3763, Seattle, WA 98124.

21. In response to a telephone survey conducted by NIST in September 1996, state offices of weights and measures in the following eight states reported that they did not have a price verification program in place: Indiana, Nevada, New York, North Dakota, Oregon, Pennsylvania, Rhode Island, Wyoming. In several of these states, such as New York and Pennsylvania, city and county weights and measures officials may conduct price verification inspections.

22. City of Seattle, Department of Finance, Consumer Affairs *UnPrice Scanning Inspection Report Card, 1994-1996* at 3 (June 10, 1996).

23. A multi-state analysis of pricing accuracy is currently being undertaken by Professors Jim Overstreet and Richard Clodfelter at the University of South Carolina. A number of state offices that conduct pricing inspections of retail stores are providing copies of these reports to Professors Overstreet and Clodfelter so that the results can be tabulated and analyzed. States participating in

as potato chips. Pricing errors can occur when a route salesperson changes prices without informing a store employee.

40. See Richard Shulman, "How Weights & Measures Will Test Your Prices, and How to Get Ready," *Supermarket Business* May 1994, at 21. These devices either retain a "batch" file of entered prices and item identities for later comparison to the point-of-sale database, or operate "on-line" via FM radio to the point-of-sale database, which is also hooked up to the checkout scanner.

41. See Richard Shulman, "Get Ready Now to Meet Coming Price Accuracy Laws," *Supermarket Business* Apr. 1994, at 21.

42. A study of pricing accuracy in 15 food stores in California found significantly lower error rates when electronic shelf tags were employed in conjunction with scanners than when scanners were employed alone. Ronald C. Goodstein and Jennifer E. Escalas, "Improving Pricing Accuracy at the Supermarket: Electronic Shelving Systems and Public Policy," *Journal of Public Policy and Marketing* Vol. 14 (Fall 1995), at 216.

43. Michael Garry, "Scanners: Error Control," *Progressive Grocer*, June 1993, at 105, 106.

44. For copies, contact: Public Reference, Federal Trade Commission, Washington, D.C. 20580; (202)326-2222 or TDD (202)326-2502. You can also access this pamphlet electronically at: <http://www.ftc.gov>.