

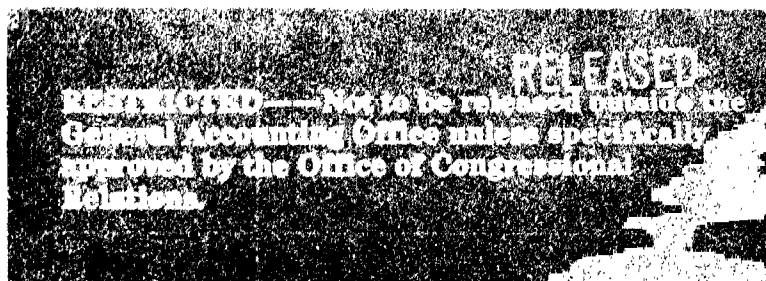
November 1990

SOLID WASTE

Trade-offs Involved in Beverage Container Deposit Legislation



142685





United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

B-240985

November 14, 1990

The Honorable Mark O. Hatfield
United States Senate

The Honorable James M. Jeffords
United States Senate

The Honorable Paul B. Henry
House of Representatives

In response to your August 4, 1989, letter and subsequent discussions with your offices, we agreed to provide information on the potential effects of a national beverage container deposit law. In your request, you noted that the debate on bills that you have introduced to provide for beverage container reuse and recycling has been hampered by a lack of data. For this reason, you asked us to obtain and analyze available information in response to the following questions:

- What do existing studies say about the business and environmental effects of beverage container deposit laws?
- Are beverage container deposit programs compatible with curbside recycling programs?
- Does the American public support national beverage container deposit legislation?

Results in Brief

Existing studies generally conclude that beverage container deposit laws entail additional capital and operating costs to the beverage industry but also benefit the environment by reducing litter, conserving energy and natural resources, and diverting solid waste away from landfills. However, these studies generally disagree about the magnitude of both the costs and benefits. We believe that quantifying a national law's potential costs and benefits with a high degree of confidence is unlikely.

Although deposit systems can divert potential revenue away from curbside recycling programs, most states with a deposit law have found that local curbside programs can coexist with deposit systems. Curbside and deposit systems in combination are more costly than either is alone, but deposit systems' costs are borne primarily by the beverage industry while curbside program costs are borne by municipalities. If curbside and deposit systems in combination continue to divert a greater amount of solid waste away from landfills, as landfill disposal costs increase, a

dual curbside/deposit system becomes more cost-effective for municipalities.

A telephone survey we conducted indicates that the vast majority of Americans would support a national beverage container deposit law. Further, a number of surveys conducted by others show a high level of public support for deposit legislation at the state and/or national level.

Background

Over the past 20 years, Americans have become increasingly concerned about the need to reduce litter, conserve energy and natural resources, and reduce the amount of solid waste that enters the nation's dwindling landfills. To address these concerns, between 1972 and 1983 nine states¹ enacted beverage container deposit laws. In addition, national deposit legislation has been proposed in the Congress since 1970. Under such laws, consumers pay a per-container deposit that can be redeemed only if they return their empty containers to retailers. The empty containers are then eventually refilled or recycled.

Although deposit laws have been in place for nearly 20 years, their costs and benefits continue to be debated by the laws' advocates and opponents. Advocates maintain that the laws are an effective and efficient means to significantly reduce litter, energy and natural resource consumption, and solid waste. However, opponents maintain that the laws result in substantial additional costs to the beverage industry and are incompatible with more comprehensive curbside recycling programs. Under curbside recycling, residents separate materials—such as glass, aluminum, and newspaper—from their garbage and place them at the curb. The municipality then collects, processes, and eventually recycles these materials.

Business and Environmental Effects

Studies examining the effects of deposit laws have not quantified the laws' costs and benefits to the extent that they can be weighed to determine the overall merits of such legislation. Although the studies do not agree about the magnitude of related costs, most of the studies conclude that beverage distributors and retailers incur additional net capital and operating costs for the additional container handling, transportation, and storage to implement deposit systems. In addition to the costs, a concern on the part of industry, especially glass manufacturers, is that

¹Connecticut, Delaware, Iowa, Maine, Massachusetts, Michigan, New York, Oregon, and Vermont have beverage container deposit laws.

national deposit legislation would affect beverage packaging and consumption. For example, the glass industry believes that the additional container handling, transporting, and storing required by a deposit system would encourage distributors, retailers, and consumers to choose plastic bottles or cans over glass bottles, which are heavier, more susceptible to breaking, and not as easy to store.

Our analysis shows that glass containers' market share has fluctuated in both deposit and nondeposit states but, overall, has been declining as the use of cans and plastic bottles has increased rapidly. Glass containers' share of the beverage market decreased in some states and increased in others after implementation of state deposit laws. However, in addition to deposit laws, other factors, such as consumer preference for cans or plastic bottles, could have affected the market share of glass and other beverage containers. Department of Commerce industry specialists told us that beverage packaging decisions are also influenced by factors such as the price of the container to the bottler and the price of the beverage to the consumer. Our analysis also shows that beverage consumption has fluctuated in both deposit and nondeposit states, likely due to a variety of factors such as health consciousness, demographics, and income. (App. II contains more information on the business effects of deposit legislation.)

Regarding environmental benefits, most of the studies conclude that deposit laws have reduced litter, conserved some energy and natural resources, and reduced the amount of solid waste for disposal. For example, studies estimate that state deposit laws have reduced the volume of beverage container litter between 79 percent and 83 percent and the overall amount of solid waste by as much as 6 percent by weight and up to 8 percent by volume. A recent study concluded that deposit law states account for a disproportionately high percentage of the nation's recycling of beverage containers. Accordingly, deposit laws could play a significant role in helping the nation meet the Environmental Protection Agency's (EPA) 25-percent by-weight recycling goal. (App. III contains more information on the environmental effects of deposit legislation.)

Compatibility of Deposit Laws and Curbside Recycling Programs

Although sufficient data do not exist to determine the extent to which curbside recycling programs could be adversely affected by national deposit legislation, deposit systems can divert potential revenues—particularly the proceeds from the sale of aluminum cans—that help offset these programs' operating costs. However, scrap revenues do not fully offset curbside programs' operating costs. For example, in a Rhode Island curbside program, total beverage container scrap revenue offsets less than 19 percent of its curbside program's operating costs. Other curbside programs' beverage container and other scrap revenues are reported to offset only 15 percent to 40 percent of program operating costs. Further, officials from most deposit law states believe that curbside and deposit systems are compatible, and all nine deposit law states have some type of curbside or other recycling program.

Although curbside and deposit programs in combination are more costly than either one alone, deposit systems' costs are borne primarily by the beverage industry and its consumers whereas curbside program costs are borne by municipalities. Further, if both systems in combination continue to divert a greater amount of waste away from landfills, as landfill disposal costs rise, a dual curbside/deposit system becomes more cost-effective for municipalities. (App. IV contains more information on the compatibility of deposit systems and curbside programs.)

Public Support for Deposit Legislation

To assess the level of public support for deposit legislation, we designed a survey instrument and contracted with a private research firm to conduct a nationwide telephone survey. Our telephone survey results indicate that the vast majority of Americans would support a national beverage container deposit law. Forty-four percent would strongly support, and 26 percent would somewhat support, such a law. In contrast, 11 percent would strongly oppose, and 7 percent would somewhat oppose, such legislation. The remaining 12 percent either did not support or oppose such a law or did not respond. Further, the majority of respondents in deposit law states approve of their states' laws. Sixty-three percent strongly approve, and an additional 19 percent somewhat approve, of their state's law. In contrast, 6 percent strongly disapprove and 3 percent somewhat disapprove of the laws. The remaining 9 percent either did not approve or disapprove or did not respond. A number of similar surveys conducted by others have also shown a high level of public support for deposit legislation at either the national or state level. (App. V provides more details on public support of deposit legislation.)

Conclusions

Although nine states currently have deposit laws and various studies on the effects of these laws have been conducted, we do not believe that the effects of deposit legislation have been quantified to the extent that it can be conclusively determined whether a mandatory national deposit system would be advantageous from a strict cost/benefit standpoint. Moreover, on the basis of our review of these studies and discussions with various deposit state officials and others, we believe that quantifying the potential costs and benefits with a high degree of confidence is unlikely. Many variables, such as differing marketing considerations and local solid waste conditions and programs, would have to be taken into account; and many assumptions about industry operations, marketing decisions, economic conditions, and consumer reactions would have to be made. Given this situation, we believe that the desirability of national beverage container deposit legislation is essentially a public policy decision in which value judgments must be made about the trade-offs between costs and environmental benefits and the desirability of federal involvement in solid waste management, an area that has generally been a local responsibility.

To respond to your questions, we identified applicable studies through a literature search and discussions with representatives of EPA, the Department of Commerce, and selected state, local, industry, and environmental advocacy groups. With these representatives, we also discussed the business and environmental effects of mandatory beverage container deposit programs and their compatibility with curbside recycling programs. In addition, we analyzed data on beverage consumption and container market shares for states with and without deposit laws and visited deposit and nondeposit states with curbside recycling programs. Furthermore, we conducted a nationwide telephone survey to determine public acceptance and support for national legislation. More details on beverage container deposit legislation and our objectives, scope, and methodology are contained in appendix I.

We discussed the information contained in this report with EPA and Department of Commerce officials and representatives of the National Soft Drink Association, the Beer Institute, and the National Container Recycling Coalition. These officials and representatives generally agreed with the information contained in this report. We have incorporated their comments as appropriate. However, as you requested, we did not obtain official comments on a draft of this report.

As agreed with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 15 days from the date of this letter. At that time, we will send copies to appropriate congressional committees; the Administrator, EPA; Director, Office of Management and Budget; and other interested parties. Copies will be made available to others on request.

If you have any questions, please call me on (202) 275-6111. Major contributors to this report are listed in appendix VII.



Richard L. Hembra
Director, Environmental Protection
Issues

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Abbreviations

EPA	Environmental Protection Agency
GAO	General Accounting Office
NSDA	National Soft Drink Association

Background and Methodology

Over the past 20 years, Americans have become increasingly concerned about the environment and the need to reduce litter, conserve energy and natural resources, and reduce reliance on landfills. Many solutions to these problems have been offered, including litter control laws, bans on certain types of packaging, and comprehensive recycling programs. One action that several states have taken and that has been proposed on a national basis is beverage container deposit legislation, which for the most part focuses on beer and soft drink containers.

Advocates of such legislation assert that deposit laws reduce litter and solid waste, conserve energy and resources, and increase environmental awareness at no governmental expense. Opponents assert that deposit legislation addresses only a small portion of the waste stream at the expense of selected industries, hurts more comprehensive recycling efforts, and is a costly and inefficient way to reduce litter and waste.

History of Deposits on Beverage Containers

Late in the 1800s, beer and soft drinks were available almost entirely at taverns or drug stores. Beer was stored in kegs, soft drinks in dispensers, and both were served for consumption on the premises. Both beverages gradually became more available in bottles that were filled at local breweries or soft drink bottlers and sold for home consumption. Until late in the 1940s, beer was packaged almost exclusively in refillable glass bottles that could be reused up to 30 times. Most soft drinks were also sold in refillable bottles through the 1950s. A deposit, voluntarily imposed by the brewer or bottler, helped ensure that the consumer returned the bottle.

In 1935, brewers began packaging beer in nonrefillable cans. The glass industry later introduced a one-time-use bottle, commonly referred to as the "one-way" bottle. During World War II, beer was shipped in cans and one-way bottles to the Armed Forces. In the postwar period, the can industry and its chief supplier, the steel industry, joined in a concerted, effective promotion of the beverage can. By 1970, nearly 40 percent of packaged soft drinks and 76 percent of packaged beer were sold in one-way bottles and cans. By 1986, the market share of one-way bottles and cans¹ increased to about 86 percent for soft drinks and over 91 percent for beer. Representatives from the beer industry state that the switch to one-way containers for beer was due to consumer acceptance of its convenience. Others interpret the switch as a result of dual pressures from

¹The aluminum can was introduced in the early 1960s. Since 1978, the majority of beverage cans have been made out of aluminum rather than steel.

the metal can industries to sell containers and from retail stores to reduce handling of returned containers.

As the market share of refillable bottles and thus the portion of beverage containers with deposits dwindled, interest grew in proposals to mandate deposits on beverage bottles and cans. Between 1972 and 1983, deposit laws became effective in nine states—Connecticut, Delaware, Iowa, Maine, Massachusetts, Michigan, New York, Oregon, and Vermont. The primary goal of these laws was to reduce litter and conserve energy in an attempt to counteract the effects of a “throwaway” society. Deposit laws have also been seen as a way to reduce solid waste and save dwindling landfill space. California in 1987 enacted a beverage container redemption law in which redemption centers rather than retailers redeem beverage containers. In 1988, Florida adopted a disposal-fee system that affects beverage and other containers. As of October 1, 1992, a disposal fee of 1 cent will be levied on any container that is not recycled at a 50-percent rate. Several other states have also recently considered enacting some form of deposit legislation. Table I.1 shows the major provisions of the nine state deposit laws.

Table I.1: Summary of State Deposit Laws

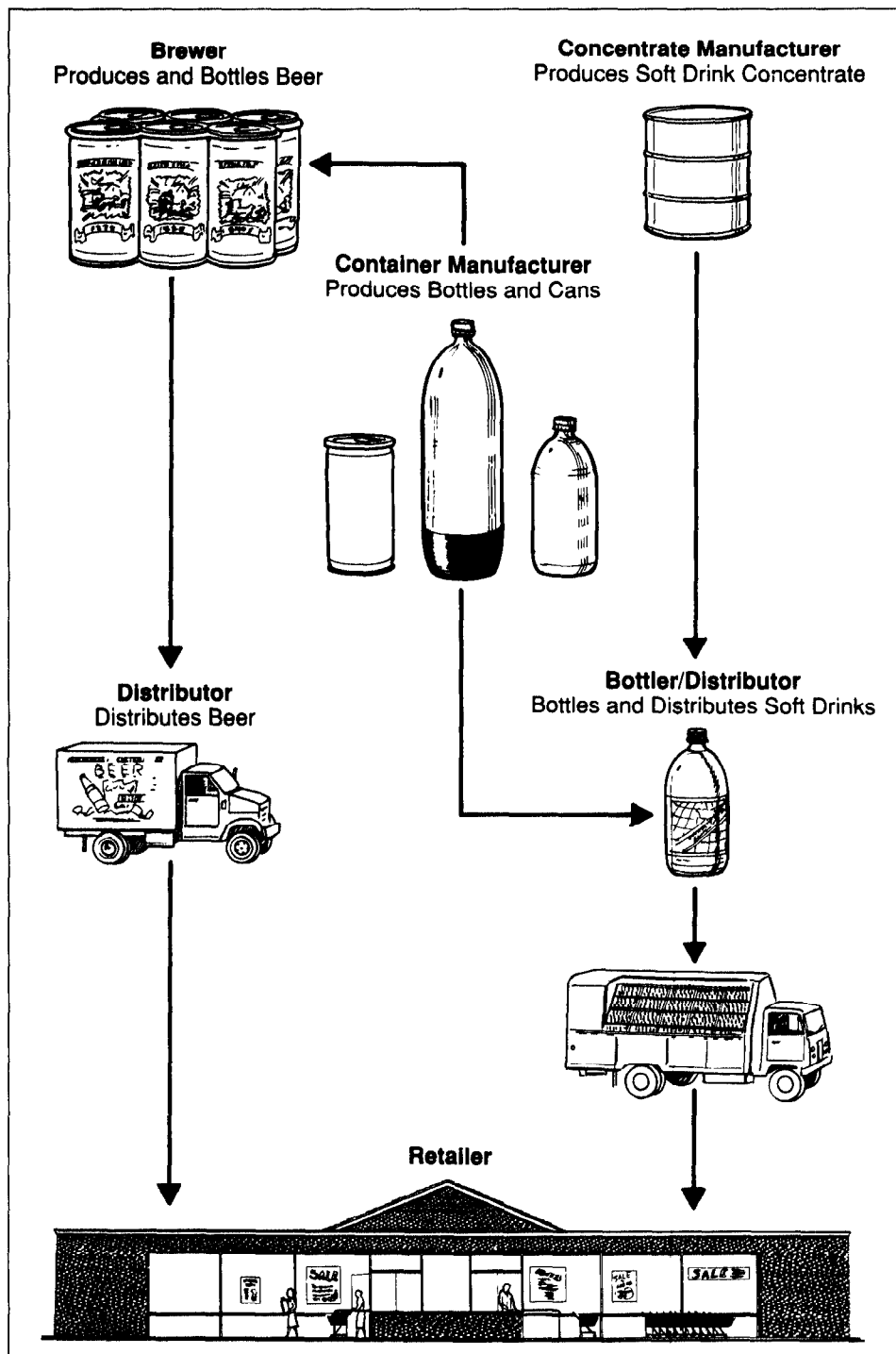
State	Date deposit law effective	Provisions
Connecticut	January 1980	Minimum 5-cent deposit Handling fee: 2 cents for soft drinks, 1.5 cents for beer
Delaware	January 1983	Minimum 5-cent deposit Exempts aluminum cans Exempts containers larger than 2 quarts Handling fee: 20 percent of deposit
Iowa	July 1979	Minimum 5-cent deposit Handling fee: 1 cent
Maine	January 1978	Minimum 5-cent deposit Handling fee: 3 cents
Massachusetts	January 1983	Minimum 5-cent deposit Handling fee: 2 cents
Michigan	December 1978	Minimum 10-cent deposit Handling fee: none
New York	September 1983	Minimum 5-cent deposit Exempts containers larger than 2 gallons Handling fee: 1.5 cents
Oregon	October 1972	Minimum 2-cent deposit on refillable containers, 5-cent deposit on others Handling fee: none
Vermont	July 1973	Minimum 5-cent deposit Handling fee: the greater of 20 percent of the deposit amount or 3 cents

National deposit legislation has been proposed in the Congress since 1970. In 1989, national beverage container deposit bills H.R. 586 and S. 932 were introduced. The purposes of the bills are to combat litter, conserve energy and resources, and reduce municipal solid waste. The bills mandate a minimum deposit of 5 cents on every container of soda, beer, and mineral water sold.

The Beverage Industry and How Deposit Legislation Works

The soft drink and beer industries operate differently. Soft drink manufacturers make concentrate, which they sell to bottlers. The bottlers make the concentrate into soft drinks, package soft drinks in bottles and cans, and distribute them to retailers. For beer, the brewer is also the bottler. Brewers sell beer to wholesalers, which then distribute the beer to retailers. Retailers for soft drinks and beer include grocery stores, restaurants, and bars. (See fig. I.1.)

Figure I.1: How the Beer and Soft Drink Industries Work

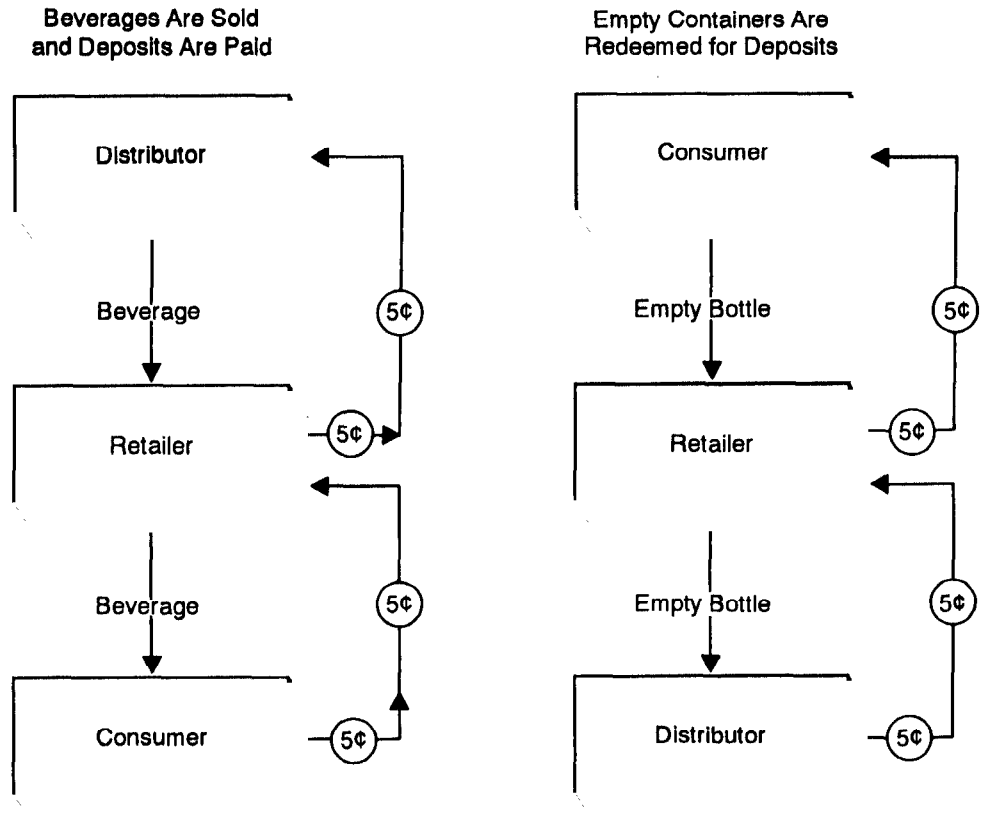


In recent years, soft drink concentrate manufacturers have purchased bottling companies and other bottlers have been merging. Consequently, many soft drink bottlers have consolidated their operations. Likewise, brewers have become more centralized in recent years and dwindled in number.

Deposit laws require that retailers pay a deposit, typically a 5-cent minimum,² for each bottle or can of soda or beer they purchase from distributors. In turn, each consumer pays a deposit to retailers for each bottle or can of soft drinks or beer purchased. The consumer then redeems the empty bottle or can at a store and recovers the deposit. The retailer returns the empty container to the distributor who refunds the retailer's deposit. In seven of the nine states, the retailer also receives a handling fee from the distributor, ranging from 1 cent to 3 cents for each container redeemed. The beverage distributor may recycle, refill, or landfill the empty bottles and cans. Figure I.2 displays how deposit systems operate.

²Although each of the nine state deposit laws establishes minimum deposit amounts, none of the laws limit the deposit amount that distributors may charge retailers. Further, while all of the deposit laws apply to beer and soft drinks, several of the laws also apply to liquor, wine, wine coolers, and mineral water. Two of these laws place higher deposit amounts on wine and/or liquor bottles.

Figure I.2: How a Deposit System Works



The Merits of Deposit Legislation Are Debated

Beverage container deposit legislation involves many aspects of the beverage industry, including can and bottle manufacturing; beverage production; and beverage bottling, distribution, and sales. A number of container, beverage, and retailer trade associations recently formed the Coalition Against Forced Deposits. Those who support deposit bills include the League of Women Voters, the United States Public Interest Research Group, environmental groups, and other nonprofit organizations. Such groups are represented in the National Container Recycling Coalition, which supports deposit laws. Arguments against mandatory deposit legislation generally center around the adverse effects on industry, while the arguments for deposit laws focus on benefits to the environment. Detailed discussions of these arguments and the business and environmental effects of deposit legislation are contained in appendixes II and III.

Objectives, Scope, and Methodology

By letter dated August 4, 1989, Senators Mark O. Hatfield and James M. Jeffords and Representative Paul B. Henry requested that we provide information on the potential effects of national beverage container deposit legislation. Their letter noted that the congressional debate on bills that they had introduced to provide for beverage container reuse and recycling has been hampered by a lack of data. In subsequent discussions with their offices, we agreed to obtain, analyze, and provide information on the following:

1. What do existing studies say about the business and environmental effects of beverage container deposit laws?
2. Are beverage container deposit programs compatible with curbside recycling programs?
3. Does the American public support beverage container deposit legislation?

To answer question one, we performed a literature search and held discussions with representatives from the Environmental Protection Agency (EPA), Department of Commerce, beverage industry, solid waste management organizations, the National Container Recycling Coalition, and deposit law states to identify studies relating to the potential effects of a national deposit law or the effects of state deposit laws. As agreed with the requesters' offices, we did not test the validity of the individual studies. In addition, we supplemented our review of the studies with discussions of business and environmental effects with the representatives noted above. These studies are listed in the bibliography.

To obtain additional information on the potential business effects of deposit legislation, we performed our own analyses of packaging trends and consumption for soft drinks and beer based on beverage container market shares and consumption data provided by the soft drink and beer industries. These analyses included comparisons between deposit and nondeposit states and between deposit states' trends before and after passage of their deposit laws. Although we tried to obtain data for the years 1965-1989, comparisons were limited for soft drinks because we were unable to obtain soft drink container market shares by state and were able to obtain soft drink consumption data by state only for the years 1976-1978 and 1981-1984. For beer, we obtained container market shares by state from the Beer Institute for all the states for the years 1977 and 1982-1989. In addition, we obtained container market

shares for several deposit states for some of the other years, specifically 1970, 1971, 1976, and 1978-81.

From state recycling officials, we obtained beer and soft drink container redemption rates for seven of the nine deposit law states: Connecticut, Iowa, Massachusetts, Michigan, New York, Oregon, and Vermont. These data were not available for Delaware and Maine and the nondeposit law states.

To address question two, we examined three major studies and other information on the compatibility of deposit systems and curbside recycling programs. We also visited three deposit and two nondeposit states with curbside recycling programs to interview state officials and private research organizations. Municipalities with curbside recycling programs keep inconsistent financial data, and different municipalities have different ways of accounting for recycling rates and costs. In addition, often landfill fees do not reflect the real cost of landfill space. Without knowing the real cost of landfilling, we were not able to determine conclusively the financial impact of taking beverage containers from curbside recycling. In any event, different municipalities have various types of curbside programs. Thus, it is difficult to compare programs or draw conclusions about all curbside recycling programs from an examination of a specific community's program.

To answer question three, we designed a survey instrument and contracted with Westat, a private research corporation, to conduct a nationwide telephone survey. As discussed in appendix V, the survey polled respondents on their support for a national beverage container deposit law and their own state's deposit law, if appropriate.

Study Design

We hired a contractor to conduct a national telephone survey using a stratified, random digit dialing procedure. Random digit dialing is a method to obtain random samples of households and to minimize problems of access to nonlisted and yet-to-be listed telephones. This procedure does not, however, address the issue of random selection of household members to ensure the best representation of the public views. Several techniques are available to obtain a representative sample of the population. When cost and time factors were considered, we instructed the contractor to use an "informant" approach.

In an informant approach, we asked the respondents to indicate their views and those of members of their household over the age of 18. By

weighting these views together, we obtained an estimate of the adult public's views on the questions. The weighted aggregated results are reported in appendixes V and VI.

Sampling Procedure

Respondents were drawn from two strata. The first consisted of residential telephone numbers located in the nine states that currently had deposit laws in effect. These states were Connecticut, Delaware, Iowa, Maine, Massachusetts, Michigan, New York, Oregon, and Vermont. The second stratum consisted of the remaining 39 states (excluding Hawaii and Alaska).

The contractor was directed to complete about 500 calls in each of the two strata, using up to 3 retries before abandoning that telephone number. In total, 3,487 calls were placed to complete 1,016 calls. We obtained 359 refusals and 184 incompletes (including 133 callbacks, 48 language problems, and 3 other problems). Consequently, we obtained a 65.2-percent response rate (i.e., completes/(completes + refusals + incompletes)). An additional 1,928 calls were made to obtain the 1,016 completed calls. These additional calls resulted in busy, no answer, non-working, or nonresidential telephone numbers.

The results of the telephone calls were weighted for census characteristics, and aggregated estimates were made to about 182 million adults. Deposit state results are estimated for about 33.4 million adults, and nondeposit state results are estimated for about 148.6 million adults. Estimates and the accompanying sampling errors are reported in appendix VI.

As with all sample surveys, this survey is subject to sampling error, which defines the upper and lower bounds of the estimates made from the survey. Sampling errors for the estimates in this report were calculated at the 95-percent confidence level; this means that 19 out of 20 times, the sample survey procedure used would produce an interval capturing the true value. All sampling errors for the estimates in this report are listed in appendix VI on a copy of the questionnaire.

Limitations

The reader should be aware of some limitations in this study. First, because a random digit dialing procedure was used, people who do not have a telephone are not represented in this study. The bias this introduces is represented to the extent that behavior associated with deposit legislation is related to telephone ownership.

A second limitation comes from the use of the informant approach. This approach introduces bias to the extent that the person who is answering the telephone is able to know the views of other household members. Since the activity of collecting and returning bottles and cans would affect the entire household, we assumed that members in the household would know the views of other household members. We chose not to use the alternative approach of randomly selecting a respondent once a household was contacted because of cost and time factors.

A third limitation exists since we achieved a 65.2-percent response rate. Our results are limited to the extent that the remaining 34.8 percent, who did not participate in the study, may hold views that differ from our respondents'.

We discussed the information presented in this report with EPA and Department of Commerce officials and representatives from the National Soft Drink Association, the Beer Institute, and the National Container Recycling Coalition. These officials and representatives generally agreed with the information contained in this report. We incorporated their comments where appropriate. However, as requested, we did not obtain official comments on a draft of this report.

We performed our work from November 1989 to August 1990 in accordance with generally accepted government auditing standards.

Business Effects

Opponents of beverage container deposit legislation assert that the laws increase costs to the beverage industry, reduce sales, and cause changes in the way beverages are packaged, thereby adversely affecting some container manufacturers. Although most of the studies we examined concluded that deposit laws entail additional costs to the beverage industry, these studies' assessments of the magnitude of the costs differed. While many of the studies observed changes in beverage consumption and/or container market shares following the enactment of deposit laws, several of these studies noted that the changes were short-lived and/or not resulting solely from the deposit laws. Similarly, our analysis and discussions with government officials suggest that the observed changes may be due to such factors as changing consumer demographics and preferences rather than only the presence of deposit laws. However, because data on the multitude of factors that affect beverage consumption and container selection could not be quantified, we could not determine the contribution of these various factors to changes in container mix or consumption.

Effects on Beverage Retailers and Distributors

Representatives of beverage retailers and distributors assert that the capital and operating costs to implement deposit systems hurt retailers and distributors because of the additional transportation, storage, and labor costs that are required under deposit laws. In addition, they maintain that deposit laws lower beverage consumption. Advocates of deposit legislation argue that unclaimed deposits and scrap revenue offset the distributors' costs. Furthermore, they point out that under deposit laws, the cost of disposing of used beverage containers is borne by those who produce, distribute, sell, and consume beverages. In contrast, in states without deposit laws, public funds help pay for the disposal of used beverage containers, which, in effect, subsidizes distributors, retailers, and consumers of beverages.

We identified and reviewed seven studies on the business effects that beverage container deposit legislation has on beverage retailers and distributors. Three of these studies were commissioned by the beverage industry, one was commissioned by a food retailer trade association, and three studies were prepared for deposit state governments. These studies are listed in the bibliography.

Retailer Costs

Retailers incur additional costs under deposit laws because they must sort, store, and account for redeemed beverage containers. These costs are partially offset in most deposit states by a handling fee paid by the

distributor to the retailer. These fees range from 1 cent to 3 cents per container.

Three of the studies we examined addressed retailer costs. A study performed by the Food Marketing Institute in 1986 found that retailers' redemption costs ranged from 2.4 cents to 3.2 cents per container, depending on the size of the store and type of container. The study noted that 70.2 percent of this cost was for labor, 18.4 percent for storage space, and 11.4 percent for other expenses such as investment and operating costs. A March 1990 study of New York's deposit law commissioned by the governor of New York concluded that the retailer cost of handling containers is greater than the 1.5-cent handling fee that retailers receive from distributors under New York's deposit law. The report also indicated that these costs are generally passed on to consumers through increases in the retail price of beverages or in the prices of other goods sold by the retailers. A 1985 study of deposit law costs to retailers in New York, commissioned by the state of New York, also concluded that costs exceed the 1.5-cent handling fee. The study also points out that the discrepancy between handling costs and the handling fee varies greatly across types of stores, return systems, and geographic areas.

Distributor Costs

To collect empty beverage containers from retailers, distributors incur additional transportation, storage, and labor costs. In addition, as mentioned previously, most deposit laws require distributors to pay retailers a small handling fee per container. These costs are partially offset by revenue that distributors receive from selling empty beverage containers as scrap and, in most states, by deposits not claimed by consumers.

The three studies that examined the costs of deposit laws to distributors reached different conclusions about the net cost of the law. Two studies sponsored by the soft drink industry—one prepared in 1989 for the Michigan Soft Drink Association and the other in 1988 for the Massachusetts Soft Drink Association—concluded that distributors' costs of deposit legislation exceed scrap revenue and unclaimed deposits by \$14.2 million in Michigan and \$1.4 million in Massachusetts. The third study, prepared in 1989 for the state of Michigan's Department of Natural Resources, estimated that distributors' costs of complying with the state's deposit law in 1988 was \$70 million but that scrap revenues and unclaimed deposits totaled between \$113 million and \$118 million.

Accordingly, the report implies a net gain to distributors of between \$43 million and \$48 million.

An additional study examined the combined costs of deposit laws to beer and soft drink distributors and retailers. This 1989 study, sponsored by Anheuser-Busch Companies, Inc., a large brewer, examined the costs of Vermont's and New York's deposit laws and concluded that the net cost to retailers and distributors is \$2.6 million per year for operating Vermont's deposit law and \$124 million per year for operating New York's law. The study further concluded that in Vermont these costs resulted in higher beverage prices to consumers.

A draft report by the Research Triangle Institute, a research firm that has studied deposit legislation issues for EPA in the past, indicated that, based on their review of the issue, whatever the direction of the price change caused by deposit laws, the magnitude is quite small.

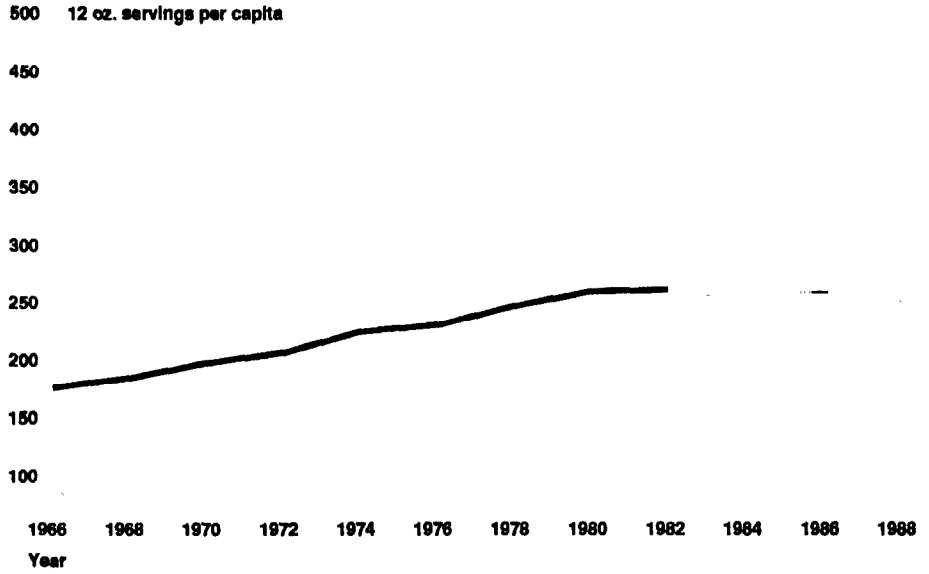
Effects on Beverage Consumption

Beverage and container manufacturing industry representatives argue that higher beverage prices and the inconvenience of the deposit system to consumers lower beverage consumption. Decreases in consumption could adversely affect beverage retailers, distributors, and producers as well as beverage container manufacturers who would produce and sell fewer bottles and cans. However, other factors also affect beverage consumption.

Although several of the studies observed some declines in beverage consumption in states following the enactment of deposit legislation, most of the studies concluded that the declines are short-term and only partially attributable to deposit laws. For example, studies that examined deposit laws' effects on consumption in New York and Michigan noted that increased legal drinking ages and/or price increases unrelated to deposit legislation contributed to the declines in consumption.

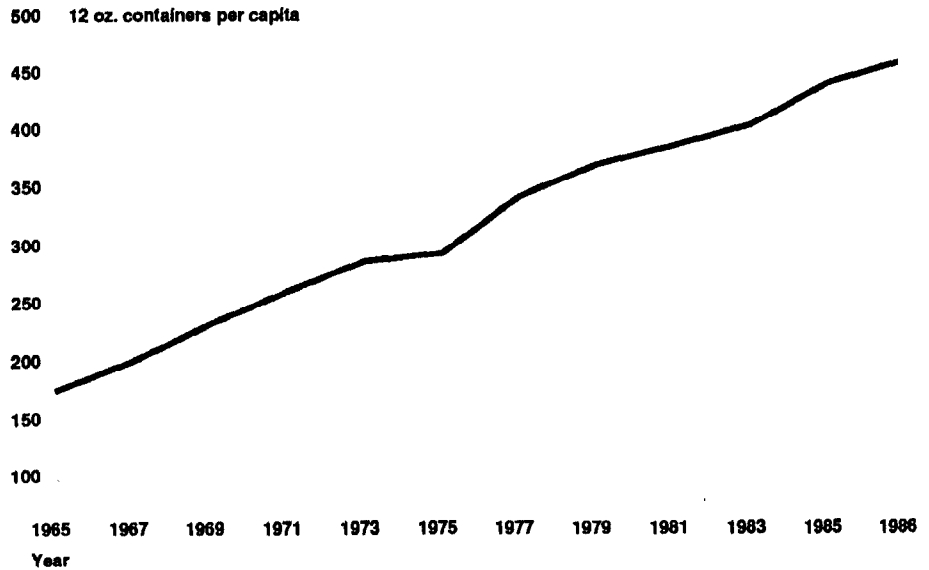
Since 1970, Americans have increased their per capita consumption of beer and soft drinks. (See figs. II.1 and II.2.) Rates of beer consumption rose annually between 3 percent and 9 percent in the 1970s, at a slower rate in the early 1980s. Since the mid-1980s, beer consumption has remained essentially steady with periodic slight increases and decreases. Soft drink consumption has risen at a higher rate than beer consumption.

Figure II.1: National Beer Consumption
Rose From 1966 to 1988



Source: GAO with Beer Institute data

Figure II.2: National Soft Drink
Consumption Rose From 1965 to 1986



Source: GAO with NSDA data

On the basis of consumption data we obtained during our review, per capita beer consumption dropped in seven of nine states after implementation of deposit laws. In five of these seven states, the declines reversed the previous year's growth in consumption. However, in two of these five states, within 5 years per capita consumption returned to and exceeded the levels experienced in the year before the deposit laws had become effective. Such soft drink data are available only for three states and show that consumption decreased in two of the states after implementation of deposit legislation.

Our analysis shows that per capita beer consumption changed substantially even in states without deposit laws during the early 1980s when most deposit laws were in effect. Between 1980 and 1984, beer consumption increased in 16 states without deposit laws and decreased in the remaining 25 states. The increases ranged from 0.5 percent to 12.3 percent while the decreases ranged from 0.1 percent to 16.3 percent. Although soft drink per capita consumption increased between 1981 and 1984 for nearly all states without deposit laws, the increases ranged from 4.6 percent to 40.6 percent while the decreases ranged from 4.5 percent to 17.1 percent. The variety of consumption changes in states without deposit laws indicates that factors other than deposit laws affect consumption.

We also discussed consumption trends with beverage industry specialists at the Department of Commerce who study beer and soft drink consumption trends. According to their statements, several factors influence beverage consumption patterns, including income, health consciousness, and changing demographics.

Effects on Beverage Container Market Shares

Some deposit law opponents are concerned that deposit laws may cause significant changes in the way beverages are packaged and thereby adversely affect some container manufacturers. For example, glass container manufacturers argue that deposit laws cause distributors, retailers, and consumers to choose cans and plastic bottles over glass bottles because cans and plastic bottles are lighter in weight, do not break easily, and are easy to store.¹ As a result, the glass container manufacturing industry maintains that deposit laws cause a loss of jobs in

¹In the past, many assumed that deposit laws would cause a shift towards refillable glass bottles. Although this shift could increase the glass containers' overall market share, it could reduce the number of glass bottles manufactured—and so the number of jobs in the glass industry—because refillable bottles can be reused many times. However, glass container manufacturers' current concern is that deposit laws cause market shifts away from glass bottles towards cans and plastic bottles.

their industry. To assess deposit laws' effects on beverage packaging, we (1) examined existing studies on this issue, (2) analyzed available national and state beverage-packaging trend data, and (3) discussed with government container specialists the factors that influence beverage-packaging decisions.

Existing Studies

Although several studies predicted that deposit laws would cause shifts away from nonrefillable bottles and cans towards refillable bottles, other studies concluded that the shift may be short-lived. In addition, some of these studies emphasize that (1) major packaging changes have also occurred in states without deposit laws and (2) not all of the packaging changes in deposit law states can be attributed to deposit legislation.

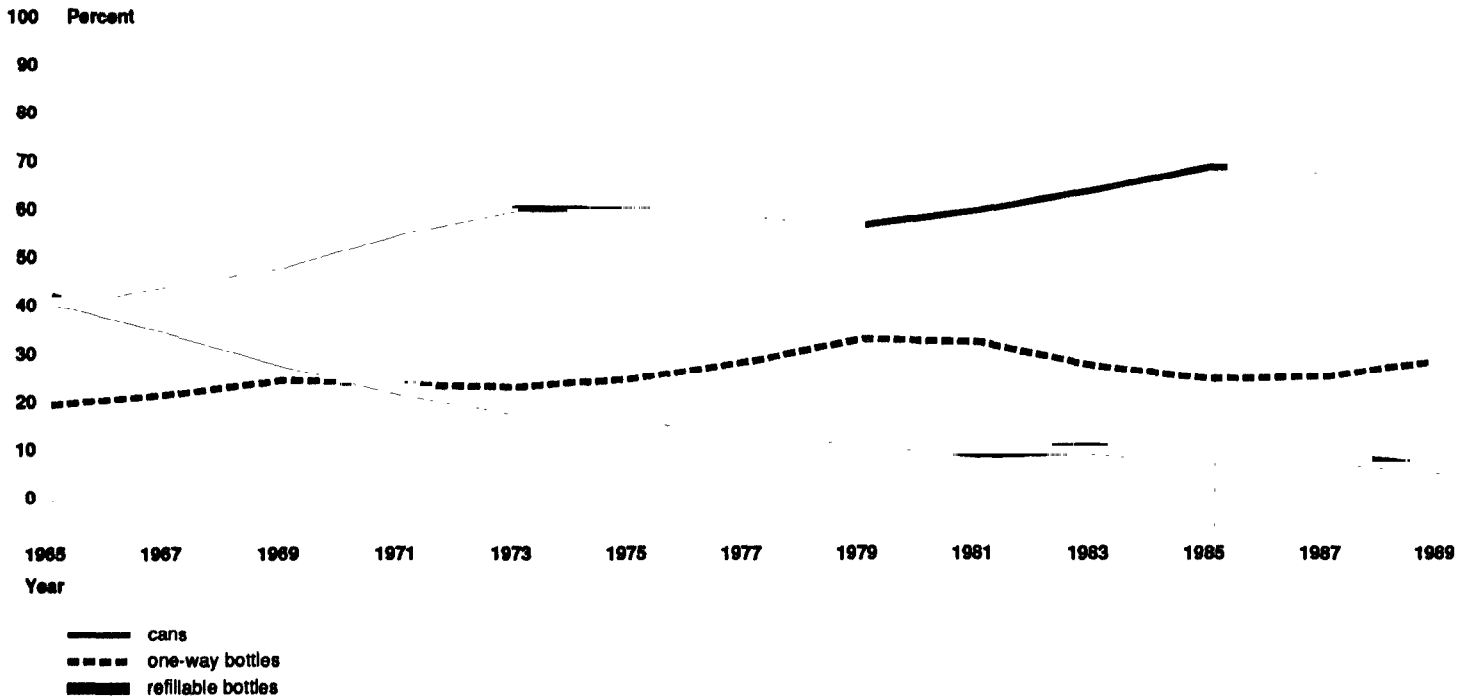
GAO's Analysis of Beverage-Packaging Trend Data

We obtained and analyzed available packaging trend data for the deposit law states. Because packaging trends have been changing nationwide, we also obtained and analyzed available packaging data for the nation and for states without deposit laws.

National packaging trend data for soft drinks were available for the years 1965 through 1985. National packaging trend data for beer were available for the years 1965 through 1989. State packaging trend data for beer were available for only 1977 and 1982-1989. Since two of the nine state deposit laws were enacted prior to 1977, we were able to provide a "before and after" deposit law packaging analysis for only the remaining seven deposit law states. Because state packaging trend data are not available for soft drinks, we could not provide an analysis for changes in state soft drink packaging trends.

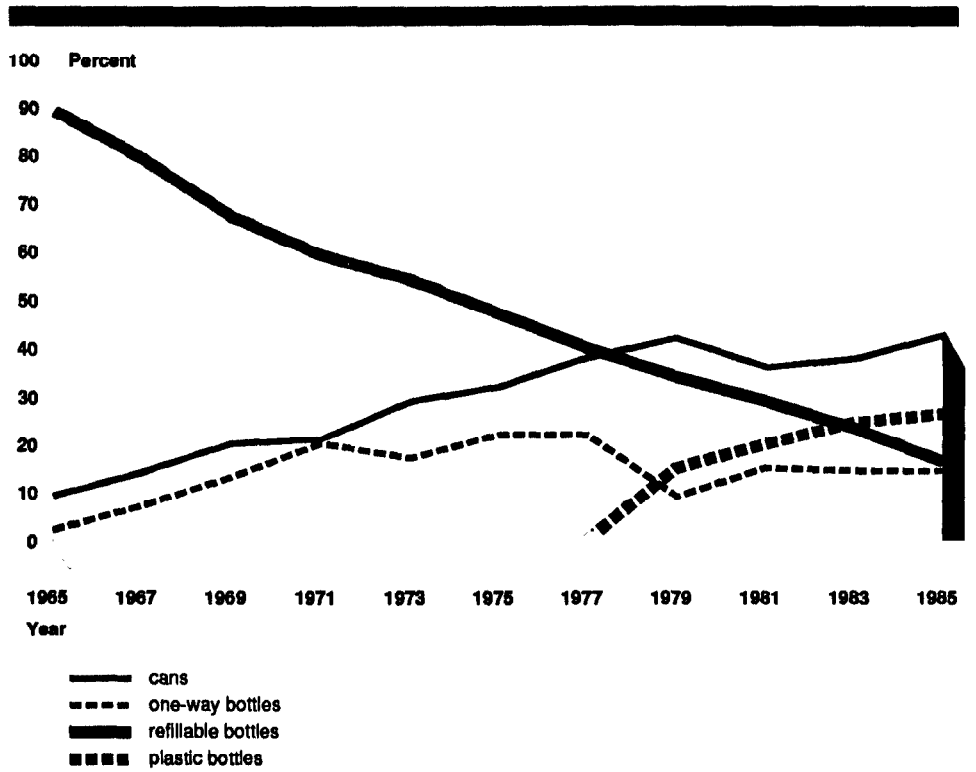
Our analysis shows that national beverage container market shares for soft drinks and beer have changed dramatically since 1965. As figures II.3 and II.4 show, the most dramatic change in national packaging trends has been the decline in the use of refillable bottles. During this period, the market share of cans has steadily grown while the market share of one-way bottles has remained relatively steady. For soft drinks, plastic bottles' market share grew rapidly after plastic bottles were introduced in 1978 but has leveled off in recent years.

Figure II.3: National Beer Container Market Shares From 1965 to 1989



Source: GAO with Beer Institute data

Figure II.4: National Soft Drink Container Market Shares From 1965 to 1985



Source: GAO with NSDA data

As shown in tables II.1 through II.3, changes in packaging trends have occurred in states both with and without deposit laws. For example, table II.1 shows that the use of one-way beer bottles declined in five of the seven deposit law states we examined. About half of the states without deposit laws also experienced declines in the use of one-way bottles during this period.

Table II.1: Changes in Market Shares of One-Way Beer Bottles in Deposit and Nondeposit States Between 1977 and 1989

	Decline	No change	Increase
Deposit states ^a	5	0	2
Nondeposit states	21	2	18

^aData from Oregon and Vermont are not included because they enacted deposit laws before 1977.

As shown in table II.2, beer cans' market share increased in most deposit and nondeposit states.

Table II.2: Changes in Market Shares of Beer Cans in Deposit and Nondeposit States Between 1977 and 1989

	Decline	No change	Increase
Deposit states ^a	2	0	5
Nondeposit states	9	2	30

^aData from Oregon and Vermont are not included because they enacted state deposit laws before 1977.

As shown in table II.3, the market share increased for refillable beer bottles in deposit states. Nonetheless, such an increase also occurred in 6 of the 41 nondeposit states.

Table II.3: Changes in Market Shares of Refillable Beer Bottles in Deposit and Nondeposit States Between 1977 and 1989

	Decline	No change	Increase
Deposit states ^a	0	1	6
Nondeposit states	24	11	6

^aData from Oregon and Vermont are not included because they enacted state deposit laws before 1977.

Although deposit law states experienced substantive changes in container market shares, not all of these changes were in the same direction. Further, states without deposit laws also experienced changes in container market shares, again, not all in the same direction. Accordingly, it is clear that factors other than deposit legislation also affect beverage packaging decisions—an observation made by industry specialists at the Department of Commerce. According to officials from the Department of Commerce, in addition to other factors, packaging decisions are influenced by consumer preferences and, most importantly, the price of the container to bottlers and the price of the beverage to consumers. A draft report by the Department of the Interior's Bureau of Mines shows that cans and plastic containers are less expensive to produce, fill, and transport than glass bottles. Accordingly, the glass bottle's static market share may be largely due to its higher costs. Because it is difficult to determine the precise extent that deposit laws affect container market shares, it is not clear to what extent the laws result in job losses in the container manufacturing industry.

Environmental Effects

Although opponents of beverage container deposit legislation disagree, most of the studies we examined concluded, and officials from deposit states generally concurred, that deposit laws have resulted in environmental benefits. The studies and officials maintain that the laws have significantly reduced litter, conserved some energy and natural resources, and diverted waste away from landfills. Further, several studies concluded that a disproportionately large percentage of the nation's recycling is taking place in deposit law states. Accordingly, deposit laws could play a significant role in helping the nation meet EPA's 25-percent solid waste recycling goal.

Views of Deposit Legislation, Opponents and Advocates

The arguments of opponents against and advocates for deposit legislation generally do not center on whether certain environmental benefits could be realized through deposit legislation but rather on the relative importance of such legislation to overall efforts to address the nation's solid waste problem.

Opponents' Arguments Against Legislation

Opponents of beverage container deposit legislation claim that such laws do not appreciably improve the environment. They give the following reasons:

- Solid waste is not reduced significantly, because beverage containers comprise less than 5 percent of the waste stream.
- Deposit legislation creates a costly network for recycling because beverage distributors are not efficient collectors of used beverage containers.
- Beverage containers are already recycled at a high rate without deposit legislation.

Advocates' Arguments for Legislation

Deposit law advocates claim that deposit laws have a substantial and beneficial effect on the environment in the following ways:

- Litter is dramatically reduced.
- Solid waste is reduced, and a significant portion of EPA's recycling goal can be met.
- Energy and resource savings are realized as industry uses recycled rather than virgin material.
- Recycling of other materials is encouraged, because deposit laws create a recycling infrastructure and make the public more aware of the need to recycle.

Results of Prior Studies

The studies we examined address the above arguments to the extent that they document that deposit laws have reduced litter and solid waste by encouraging recycling of beverage containers. They further document that recycling enables reuse of the container or the materials out of which they are made, resulting in some energy and natural resource savings. The studies, however, do not quantify the benefits in relation to costs of implementing a deposit system. In addition, the studies do not measure the effectiveness of deposit laws compared with other means of recycling. A complete list of the studies we consulted is presented in the bibliography.

Litter Reduction

When states first began to consider deposit legislation in the 1970s, one of the most often cited benefits was litter reduction. Although it receives less attention as an issue in the 1990s than it did in the 1970s, litter reduction is one of the few areas where the effects of a deposit law are documented.

Studies we examined described litter as composed of from 10 percent to 20 percent beverage containers by weight and 40 percent to 60 percent by volume. As shown in table III.1, many studies cite reductions in beverage container litter in deposit law states as a result of the legislation.

Table III.1: Roadside Litter Reductions in Deposit States as Cited by Prior Studies

State	Year	Percent reduction beverage container litter	Percent reduction total litter
Iowa	1980	78.7 (volume)	38.1 (volume)
Maine	1979	56.0 (by item)	10.0 (by item)
Michigan	1986		24.4 (by item)
Cans		78.4 (by item)	
Bottles		51.1 (by item)	
Oregon	1974	83.0 (by item)	39.0 (by item)

Energy and Resource Savings

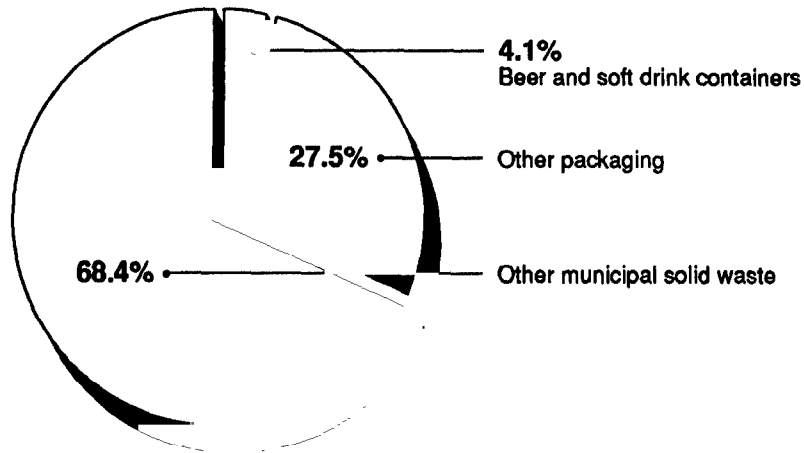
The energy and resource savings from recycling are also documented. According to the Aluminum Association, the energy saved from making a can from recycled aluminum saves 95 percent of the energy that would be needed to make an aluminum can from virgin material. According to the Glass Packaging Institute, a trade association representing the glass bottle manufacturing industry, for each 1 percent of recycled glass contained in a bottle, 1/4 of 1 percent of the energy that would be required to produce a bottle from virgin material is conserved. For example, according to the Bureau of Mines, glass manufacturers

find the optimum amount of recycled glass to use when making a new bottle is 25 percent. Using the Glass Packaging Institute's index for energy savings, a bottle containing 25-percent recycled glass saves 6.25 percent of the energy that would be required to make a bottle from virgin material. Some of these savings during production are offset by the energy consumed by trucks and recycling equipment used to collect and process empty containers. Still, the studies we examined report that making beverage containers from recycled materials results in net energy savings. A 1989 report prepared for the state of Michigan concluded that Michigan's deposit law resulted in an estimated energy savings of 37 percent of the beer can and bottle production, container filling, and brewing processes. The amount of resource and energy savings due to a deposit law would vary by state or region depending on such factors as the market shares of the different types of container, distance from distribution centers, and container redemption rate.

Solid Waste Reduction

In 1988 (the last year for which data are available), the United States generated approximately 180 million tons of solid waste, of which 4.1 percent was beer and soft drink containers. (See figure III.1). EPA predicts that 80 percent of all existing landfills will fill up and close within 20 years. Finding suitable land for additional sites or disposal alternatives is increasingly expensive and a growing public concern. In light of this concern, EPA recently established a recycling goal of 25 percent of the municipal solid waste stream by weight. Recently, deposit laws have been seen as a way to help meet this recycling goal and reduce our dependence on landfills.

Figure III.1: Beer and Soft Drink Containers as a Portion of the Municipal Solid Waste Stream (by Weight)



Source: GAO with EPA data

State recycling and deposit law officials in seven of the nine deposit law states estimate that between 72 percent and 98 percent of all beverage containers are redeemed for their deposit.¹ Given these redemption rates and that beverage containers comprise about 4.1 percent of the waste stream, it follows that deposit laws reduce solid waste by about 3 percent to 4 percent by weight.² These figures are not significantly different than those presented in reports we reviewed that concluded that deposit laws reduced solid waste by 1 percent to 6 percent by weight and up to 8 percent by volume. Accordingly, deposit laws could play a significant role in helping the nation to meet EPA's recycling goal.

Although state recycling rates for glass, aluminum, and plastic beverage containers are not available, deposit law states appear to account for a disproportionately high percentage of the nation's recycling of beverage containers. For example, a 1990 draft study on markets for recycled glass performed by the firm of Temple, Barker and Sloane for EPA estimated that deposit states, although comprising about 18 percent of the nation's population, recycled nearly two-thirds of the glass recycled nationwide.

¹Redemption rates were not available for Delaware and Maine.

²These figures may be somewhat lower because not all redeemed beverage containers are recycled.

Some state officials and representatives from the plastics recycling industry claim that deposit laws have fostered recycling markets, particularly plastics recycling. According to the officials, without the large, steady supply of plastic soft drink bottles, plastics recycling may never have evolved so rapidly. The Office of Technology Assessment reported in 1989 that 98 percent of the nation's recycled plastic soft drink bottles in 1986 came from deposit states. According to a representative of Wellman Plastics, Inc., one of the largest plastics recycling firms in the nation, nearly 98 percent of the beverage container plastic the firm receives comes from deposit states.

Compatibility of Curbside Recycling and Deposit Legislation

Deposit systems divert valuable scrap materials and revenues away from curbside recycling programs. However, these revenues, even without deposit systems, do not fully offset curbside program operating costs. Further, officials from most deposit law states believe that deposit systems and curbside programs are compatible, and all nine deposit law states have some type of curbside or other recycling program. While a dual curbside/deposit system costs more than either program alone, the costs of a curbside program are borne primarily by municipalities, whereas the costs of a deposit system are borne primarily by the beverage industry and its consumers. Accordingly, if both systems in combination continue to divert a greater amount of waste away from landfills, as waste disposal costs increase, a dual curbside/deposit system becomes more cost-effective for municipalities.

Views of Deposit Legislation, Opponents and Advocates

Opponents of deposit legislation claim that deposit systems hurt comprehensive curbside recycling programs by taking away revenues needed to pay operating costs. Beverage container scrap—aluminum in particular—provides nearly half the scrap revenue a curbside recycling program earns. Without this revenue, deposit law opponents conclude, recycling programs will be forced to obtain other funding or discontinue operation.

Those who support deposit legislation state that curbside recycling is compatible with deposit systems. They say that deposit laws and curbside programs together can reduce municipal solid waste more than either program alone. They also claim that the scrap revenue from beverage containers is insignificant compared with the total program costs of curbside programs. Advocates further claim that recycling centers in deposit states can redeem the beverage containers that individuals recycle through curbside programs. Finally, advocates point out that many rural areas of the United States are not likely to have curbside recycling programs.

Results of Available Studies

We examined three studies on the compatibility of curbside recycling and beverage container deposit legislation. The first study was commissioned by Anheuser-Busch Companies, Inc. and prepared by Franklin Associates, Ltd. in 1989. The second study was an academic paper published in the *Journal of Environmental Systems* in 1985. The third study was commissioned by EPA and prepared by the Tellus Institute in 1989. These studies deal primarily with the comparative cost of these programs. The studies are listed in the bibliography.

The Franklin Associates report for Anheuser-Busch concludes that in Vermont and New York, respectively, curbside recycling and deposit legislation together cost 2 and 2-1/2 times more than curbside recycling alone. However, the report assumes a fairly high statewide participation rate of 80-90 percent under mandatory curbside recycling. According to the Research Triangle Institute, typical participation rates for voluntary curbside programs are in the range of 30-40 percent of households and mandatory programs' rates are in the range of 40-90 percent. Further, the report combines both industry and municipal costs and does not explicitly state that the costs of curbside programs are borne primarily by municipalities while deposit system costs are borne primarily by the beverage industry and its consumers.

In contrast, the academic paper published in the Journal of Environmental Systems emphasizes that the costs of deposit systems are borne primarily by the private sector, whereas curbside recycling costs are borne primarily by municipalities. Using a computer simulation model for several model communities, the study analyzed the effect of deposit legislation on municipal curbside and other recycling programs, with the net benefit to the community's solid waste management system as "the bottom line." Although the study acknowledged that deposit legislation reduces curbside recycling program revenues, it stated that this reduction would not likely cause severe damage to municipal recycling programs with adequate resource bases. Further, because a dual curbside/deposit program would remove more materials from the waste stream than either program alone and deposit systems cost municipalities nothing, the article concluded that the two programs complement each other and should be seen as compatible tools for managing municipal solid waste.

The Tellus Institute draft report for EPA similarly concluded that curbside recycling programs can be compatible with deposit systems. Because deposit systems divert solid waste away from landfills at no cost to municipalities, overall municipal solid waste disposal costs are minimized with such a system in place. However, because a dual curbside/deposit system diverts more waste away from landfills than either program alone, a municipality's solid waste costs are minimized with both programs in place after landfill use fees reach a certain level. The study also concluded that a dual curbside/deposit system might be a cost-effective option even if the beverage industry's deposit system costs are considered. However, landfill use fees would have to be significantly higher when both industry and municipal costs are considered for a dual system to be cost-effective.

Curbside Program Costs and Benefits

All deposit states have some form of curbside or other recycling program in addition to beverage container deposit systems. On the basis of this experience, most of the deposit state officials we talked to believe that deposit legislation is compatible with curbside and other recycling programs.

Municipalities do not calculate the costs and benefits of curbside programs on a consistent basis. Collecting recyclable materials, preparing them for market, and educating the public are some of the curbside recycling programs' costs. Diverting solid waste from landfills—which in turn extends the useful life of landfills and reduces landfill use fees—is the primary benefit of these programs. Revenue from sales of recyclable materials is another benefit of curbside programs. However, revenues from recyclable materials do not fully offset operating costs. For example, a survey conducted by the National Solid Wastes Management Association indicates that total scrap revenues—from beverage containers and other recyclable material—offset program operating costs by 15 percent to 40 percent. Financial data from a Rhode Island curbside program show that revenue from total beverage container scrap offsets less than 19 percent of the program's operating expenses. Accordingly, curbside programs are not totally dependent on the revenue from scrap beverage containers.

Some deposit law advocates maintain that states with curbside programs can add deposit laws and increase their revenues. According to these advocates, curbside programs in a deposit state could redeem for a deposit the beverage containers that curbside participants put out for collection instead of returning for a deposit. Even if the curbside program collected fewer beverage containers than it would without a deposit system in place, each container collected would be worth the value of its 5-cent deposit, which exceeds its scrap value. For example, supporters of a proposed state deposit law estimated that if 10 percent of a community's beverage containers are recycled through a curbside program, the program could increase its revenues by about 32 percent after a deposit law is implemented if it redeemed the beverage containers it collected rather than selling them as scrap.

This theory will, in effect, be tested by a materials recovery facility planned to open in Connecticut, a deposit state, in 1991. According to the operator of this facility, the facility has been designed to collect beverage containers put out for curbside recycling and redeem them for their deposit value.

Public Support for Beverage Container Deposit Legislation

To assess the level of public support for deposit legislation, we designed a survey instrument and contracted with a private research firm to conduct a nationwide telephone survey. Our survey results indicated that the vast majority of Americans support a national deposit law. Further, the majority of respondents from deposit law states approved of their states' laws. A number of surveys conducted by others have yielded similar results.

Results of GAO's Public Opinion Survey

The results of our nationwide telephone survey indicate that the vast majority of Americans, in both deposit and nondeposit states, would support a national deposit law. (The complete results of our survey, including sampling errors, are included in app. VI.) As shown in figure V.1, about 44 percent of the public would strongly support a national deposit law and about 26 percent would somewhat support such a law. In contrast, about 11 percent of the public would strongly oppose national deposit legislation, and about 7 percent would somewhat oppose such a law.

Support for a national deposit law is higher among residents in deposit states. As shown in figure V.2, over 61 percent of the residents of deposit states would strongly support a national law, and about 16 percent would somewhat support such legislation. In states without deposit laws, about 40 percent of the public would strongly support a national deposit law, and over 28 percent would somewhat support such a law.

Appendix V
Public Support for Beverage Container
Deposit Legislation

Figure V.1: Nationwide Support for
National Deposit Law Is Strong

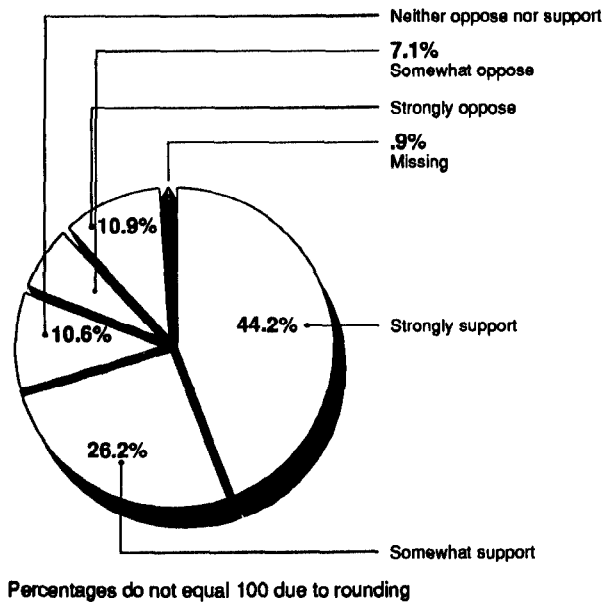
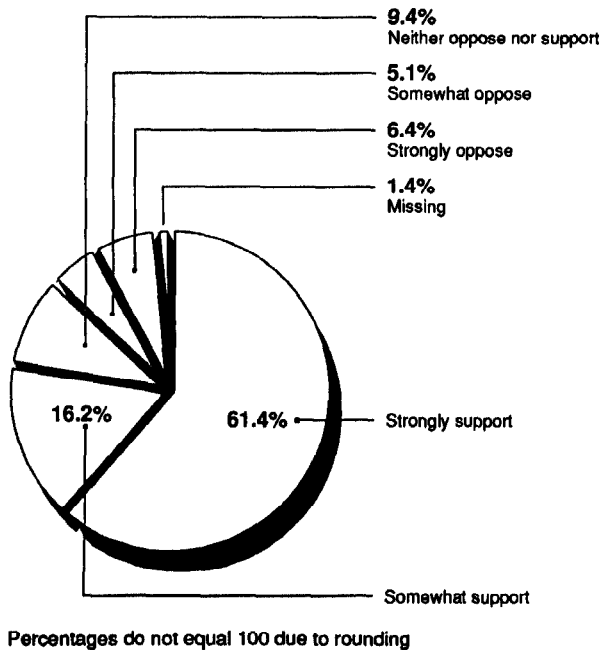


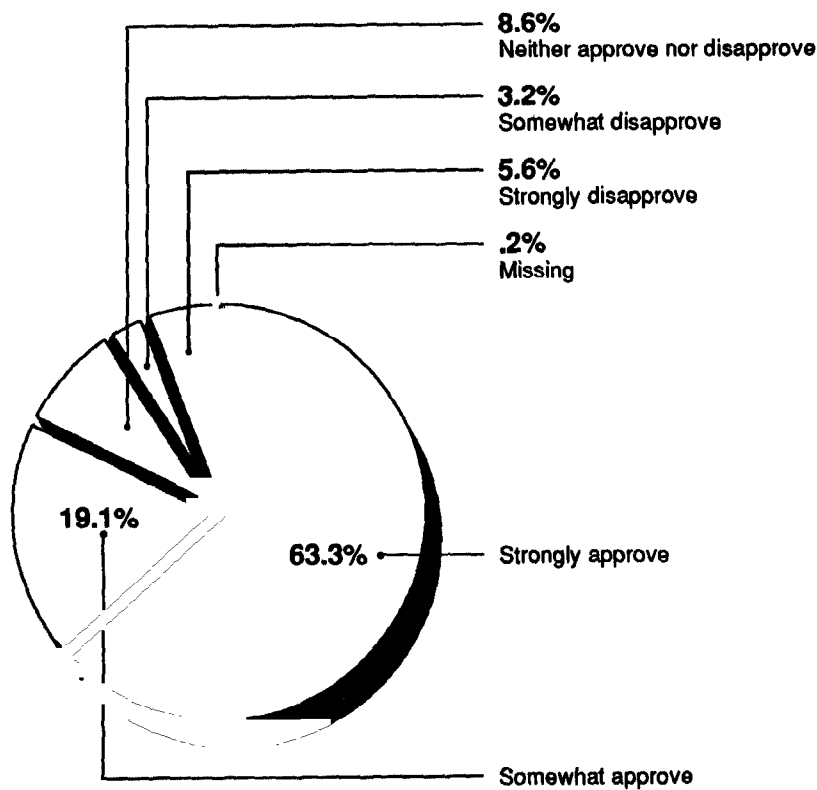
Figure V.2: Support for National Deposit
Law Is High Among Residents of Deposit
States



As well as strongly supporting a national deposit law, residents of deposit states showed strong approval of their states' deposit laws. As

shown in figure V.3, about 63 percent of deposit state residents strongly approve of their state's deposit law, and about 19 percent somewhat approve of the law. Only about 6 percent strongly disapprove of their state's deposit law, and about 3 percent somewhat disapprove of the law.

Figure V.3: Approval of State Deposit Laws Is High Among Residents of Deposit States



Percentages may not equal 100 due to rounding

Other Surveys Also Show Support for Deposit Legislation

We identified several national and state public opinion polls conducted by others. These surveys also showed support for deposit legislation. For example, a 1989 survey conducted for a packaging trade magazine indicated that about 54 percent of the respondents living in states without deposit laws would vote for a deposit law. Another example is a 1987 survey conducted in Michigan for a conservation organization. That survey found that about 82 percent of the respondents strongly supported the state's existing deposit law and about 8 percent somewhat supported it. As shown in table V.1, other polls and a referendum

Appendix V
Public Support for Beverage Container
Deposit Legislation

conducted after states adopted deposit legislation show support for the law.

**Table V.1: Public Support for State
Deposit Laws as Cited by Prior Surveys**

State	Year	Percent approval
Iowa	1979	56
Maine	1979 ^a	84
Massachusetts	1989	78
Michigan	1987	90
Oregon	1975	90
Vermont	1989	83

^aReferendum results

GAO's Public Opinion Survey

United States General Accounting Office



Telephone Interview on National Beverage Container Deposit Legislation

Hello. My name is _____. I am calling on behalf of the U.S. General Accounting Office. The GAO is an agency which assists the Senate and House of Representatives by reviewing federal programs. We have been asked to conduct a national survey on the public's opinion of a proposed national law.

1. There has been talk about a national bottle and can deposit law, which would require people like yourself to pay a 5 cent deposit for each bottle and can of soft drinks, beer and other such drinks you buy. You would receive your 5 cent back when you return each empty bottle or can to the store. How much (if at all) would you personally oppose or support this national law? Would you say you...(READ RESPONSES) (Check one.)

	%	SE*
1. <input type="checkbox"/> Strongly oppose,	9.7	2.5
2. <input type="checkbox"/> Somewhat oppose,	6.9	2.1
3. <input type="checkbox"/> Neither oppose nor support,	8.7	2.4
4. <input type="checkbox"/> Somewhat support, or	26.4	3.7
5. <input type="checkbox"/> Strongly support this law if passed?	47.4	4.2
6. <input type="checkbox"/> Don't know	0.8	0.8

2. Are there any other adults over 18 years old living in your household? (Check one.)

	%	SE
1. <input type="checkbox"/> No --> SKIP TO QUESTION 3	14.5	3.0
2. <input type="checkbox"/> Yes --> CONTINUE	85.4	3.0

3. Could you give me the first name of the other adults over 18 years old who lives in this household? (ENTER NAMES)

- 1. _____
- 2. _____
- 3. _____
- .
- .
- .
- 11. _____
- 12. _____

* SE denotes the sampling error.

Note: Figures may not equal 100 percent due to rounding.
Screening questions used for sampling purposes have been deleted.

**Appendix VI
GAO's Public Opinion Survey**

4. What do you think (READ EACH NAME OF HOUSEHOLD MEMBER) might feel? Do you think (READ EACH NAME OF HOUSEHOLD MEMBER) would...(READ RESPONSES) (Check one for each.)*

N=91,537,000**

Responses	Aggregate	
	Estimate	Sampling Error
1. Strongly oppose	10.9	2.2
2. Somewhat oppose	7.1	1.8
3. Neither oppose nor support	10.6	2.2
4. Somewhat support, or	26.2	3.1
5. Strongly support this law if passed	44.2	3.8
6. Missing	0.9	

N=16,721,000

Responses	Deposit State	
	Estimate	Sampling Error
1. Strongly oppose	6.4	2.2
2. Somewhat oppose	5.1	1.9
3. Neither oppose nor support	9.4	2.6
4. Somewhat support, or	16.2	3.3
5. Strongly support this law if passed	61.4	4.3
6. Missing	1.4	

N=74,816,000

Responses	Nondeposit State	
	Estimate	Sampling Error
1. Strongly oppose	11.8	2.8
2. Somewhat oppose	7.6	2.3
3. Neither oppose nor support	10.9	2.7
4. Somewhat support, or	28.5	4.0
5. Strongly support this law if passed	40.4	4.0
6. Missing	0.8	

* These estimates represent the combination of the respondent and all other household members.

** "N" denotes the estimated number of responses in the population from which our sample was drawn.

Appendix VI
GAO's Public Opinion Survey

5. If there were a national law requiring a 5 cent deposit, some think that people will bring back bottles and cans of soft drinks, beer and other such drinks they buy so that they could get back their 5 cent deposit. In your opinion, how likely or unlikely is it that other people will do this? Would you say it is...(READ RESPONSES) (Check one.)

N=181,961,000

	%	SE
1. <input type="checkbox"/> Very unlikely,	7.9	2.3
2. <input type="checkbox"/> Somewhat unlikely,	10.6	2.6
3. <input type="checkbox"/> Neither unlikely nor likely,	3.0	1.4
4. <input type="checkbox"/> Somewhat likely, or	36.5	4.0
5. <input type="checkbox"/> Very likely?	40.9	4.1
6. <input type="checkbox"/> Don't know	1.0	0.8

6. How about you? How likely or unlikely is it that you would bring back bottles and cans so that you could get your 5 cent deposit back? Would you say it is...(READ RESPONSES) (Check one.)

N=181,961,000

	%	SE
1. <input type="checkbox"/> Very unlikely,	8.9	2.4
2. <input type="checkbox"/> Somewhat unlikely,	3.7	1.6
3. <input type="checkbox"/> Neither unlikely nor likely,	1.0	0.8
4. <input type="checkbox"/> Somewhat likely, or	12.9	2.8
5. <input type="checkbox"/> Very likely?	73.4	3.7
6. <input type="checkbox"/> Missing	0.1	0.3

7. When you have empty bottles or cans of soft drinks, beer and other such drinks you buy, do you generally...(READ RESPONSES) (Check one.)

N=181,961,000

	%	SE
1. <input type="checkbox"/> Throw them out with other trash,	28.8	3.8
2. <input type="checkbox"/> Separate these items from other garbage and have it picked up for recycling,	16.1	3.1
3. <input type="checkbox"/> Bring them to a local center for recycling,	24.9	3.6
4. <input type="checkbox"/> Bring them back to the store to get your deposit back,	17.6	3.2
5. <input type="checkbox"/> Give them to charity, or	6.6	2.1
6. <input type="checkbox"/> Something else? (PROBE FOR A BRIEF DESCRIPTION)	5.8	2.0
7. <input type="checkbox"/> Missing	0.1	0.3

**Appendix VI
GAO's Public Opinion Survey**

8. If there were a national law requiring you to pay a 5 cent deposit on each bottle and can of soft drinks, beer and other such drinks you buy, would you generally...(READ RESPONSES) (Check one.) (N=181,961,000)

	<u>%</u>	<u>SE</u>
1. <input type="checkbox"/> Throw them out with other trash,	4.9	1.8
2. <input type="checkbox"/> Separate these items from other garbage and have it picked up for recycling,	7.4	2.2
3. <input type="checkbox"/> Bring them to a local center for recycling,	7.8	2.3
4. <input type="checkbox"/> Bring them back to the store to get your deposit back,	71.0	3.8
5. <input type="checkbox"/> Give them to charity, or	6.0	2.0
6. <input type="checkbox"/> Something else? (PROBE FOR A BRIEF DESCRIPTION)	2.6	1.3
7. <input type="checkbox"/> Don't know	0.2	0.4
8. <input type="checkbox"/> Missing	0.1	0.3

DEPOSIT STATES ONLY

A. Are you aware that your state has a law requiring a deposit for soft drinks, beer and other such drinks you buy? (Check one.) (N=33,386,000)

	<u>%</u>	<u>SE</u>
1. <input type="checkbox"/> Yes	94.9	2.2
2. <input type="checkbox"/> No → SKIP TO QUESTION 9	4.9	2.1
3. <input type="checkbox"/> Missing	0.2	0.4

B. How much have you increased or decreased the amount of soft drinks, beer and other such drinks you buy because of the deposit your state required you to make? Would you say you have...(READ RESPONSES) (Check one.)

N=31,683,795

	<u>%</u>	<u>SE</u>
1. <input type="checkbox"/> Greatly increased,	1.7	1.3
2. <input type="checkbox"/> Somewhat increased,	6.4	2.4
3. <input type="checkbox"/> Neither increased nor decreased,	85.3	3.5
4. <input type="checkbox"/> Somewhat decreased, or	3.8	1.9
5. <input type="checkbox"/> Greatly decreased the amount you buy?	2.1	1.4
6. <input type="checkbox"/> Don't know	0.5	0.7
7. <input type="checkbox"/> Missing	0.2	0.4

C. How much do you approve or disapprove your state's current law which requires you to make a deposit for soft drinks, beer, and other such drinks you buy? Would you say you...(READ RESPONSES) (Check one.)

	<u>%</u>	<u>SE</u>
1. <input type="checkbox"/> Strongly approve,	64.4	4.7
2. <input type="checkbox"/> Somewhat approve,	19.3	3.9
3. <input type="checkbox"/> Neither approve nor disapprove,	8.2	2.7
4. <input type="checkbox"/> Somewhat disapprove,	3.4	1.8
5. <input type="checkbox"/> Strongly disapprove of your state's law?	4.6	2.1
6. <input type="checkbox"/> Don't know	0.1	0.3

CHECK QUESTION 2, IF NO OTHER HOUSEHOLD MEMBERS, SKIP TO QUESTION 9

D. What do you think (READ EACH NAME OF HOUSEHOLD MEMBER) might feels toward your state's current bottle and can return deposit law? Do you think (READ EACH NAME OF HOUSEHOLD MEMBER THEN READ RESPONSES) (Check one for each) *

Responses	N=15,904,096	
	Estimate	Sampling Error
1. Strongly approves	63.3	4.3
2. Somewhat approves	19.1	3.6
3. Neither approves nor disapproves	8.6	2.6
4. Somewhat disapproves, or	3.2	1.6
5. Strongly disapproves of your state's current deposit law	5.6	2.1
6. Missing	0.2	

* These estimates represent the combination of the respondent and all other household members.

NONDEPOSIT STATES

A. If a 5 cent deposit were required, how much would you increase or decrease the amount of soft drinks, beer and other such drinks you buy because of the deposit you would have to make? Would you expect you to...**(READ RESPONSES) (Check one.)**

	%	SE
N=148,575,000		
1. <input type="checkbox"/> Greatly increased,	0.1	0.3
2. <input type="checkbox"/> Somewhat increased,	3.2	1.8
3. <input type="checkbox"/> Neither increased nor decreased,	85.1	3.6
4. <input type="checkbox"/> Somewhat decreased, or	8.0	2.7
5. <input type="checkbox"/> Greatly decreased the amount you buy?	3.1	1.7
6. <input type="checkbox"/> Don't know	0.2	0.5
7. <input type="checkbox"/> Missing	0.3	0.0

ALL STATES

9. In the past year, have you made a deposit on any soft drinks, beer or other such drinks you can buy where you would get back your deposit if you returned the bottle or can to the store? **(Check one.)** (N=181,961,000)

	%	SE
1. <input type="checkbox"/> No	65.1	4.0
2. <input type="checkbox"/> NOT SURE/DON'T REMEMBER	0.3	0.5
3. <input type="checkbox"/> Missing	0.2	0.4
4. <input type="checkbox"/> Yes →	35.4	4.0

How frequently (if at all) did you bring back your empty bottles or cans where you already had paid a deposit? **(READ RESPONSES) (Check one.)**

	%	SE
N=64,393,645		
1. <input type="checkbox"/> Always or almost always,	81.5	4.7
2. <input type="checkbox"/> Sometimes, or	6.9	3.1
3. <input type="checkbox"/> Rarely, if ever?	11.6	3.9

Finally, I'd like to ask you a few questions about yourself.

10. In what state do you live?

PLEASE ENTER SEX OF RESPONDENT. [IF UNSURE, PROBE:]

N=181,961,000

	%	SE
11. Are you male or female? (Check one.)		
1. <input type="checkbox"/> Male	47.8	4.2
2. <input type="checkbox"/> Female	52.0	4.2
3. <input type="checkbox"/> Missing	0.1	0.3

**Appendix VI
GAO's Public Opinion Survey**

12. What was the highest grade of school you completed? (DO NOT READ RESPONSES) (Check one.)

N=181,961,000		
	%	SE
1. <input type="checkbox"/> No/Some high school	16.1	3.1
2. <input type="checkbox"/> High school graduate/no college	35.8	4.0
3. <input type="checkbox"/> Some college	26.6	3.7
4. <input type="checkbox"/> College graduate or more	21.0	3.4
5. <input type="checkbox"/> Missing	0.5	0.6

13. How old were you on your last birthday?

_____ years old

14. Would you say your gross income last year was... (READ RESPONSES) (Check one.)

N=181,961,000		
	%	SE
1. <input type="checkbox"/> Under \$10,000	19.6	3.3
2. <input type="checkbox"/> Between \$10,000 and \$30,000	41.8	4.1
3. <input type="checkbox"/> Between \$30,000 and \$50,000	21.4	3.4
4. <input type="checkbox"/> Over \$50,000	10.9	2.6
5. <input type="checkbox"/> Dont' know	3.3	1.5
6. <input type="checkbox"/> Missing	2.9	1.4

Thank you for your time. Your answers will be very helpful to our review.

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