

SWEATING THE LITTER THINGS

ALTHOUGH BOTTLE BILLS HAVE PROVEN EFFECTIVE AT RECOVERING BEVERAGE CONTAINERS, REDUCING LITTER IS BETTER LEFT TO MORE COMPREHENSIVE PROGRAMS.

by Steven R. Stein

Paper scraps line the roadsides as far as the eye can see. Large strips of tire treads, also known as “road alligators,” are also fairly common, sprinkled with an occasional bottle or aluminum can. Yet many of these items could have been recycled, and some are still recoverable. Litter, which has frequently been defined as “solid waste in the wrong place” can now be more appropriately called “solid waste or recyclables in the wrong place.”

Why is litter important to the waste management and recycling communities? Consider the thousands of tons per year of litter found on roads that could have been recycled, and then consider the costs to handle it. Data from across the country shows that litter cleanup is by far the most expensive form of waste management.

Litter results from two distinctive problems: deliberate littering and accidental littering. Items that fall off of uncovered trucks are considered accidental, while items tossed

from open windows or by pedestrians are usually regarded as deliberate.

Studying litter

Gershman, Brickner & Bratton, Inc. (Fairfax, Virginia) performed a litter study to characterize New Jersey’s litter and identify the principal sources to be targeted in a statewide litter-reduction effort. The project surveyed and documented New Jersey’s current litter situation including its composition, litter rates, trends, litter quantities, quantities of recyclable materials, and identification of problem areas and compared this data with surveys from New Jersey and other states.

All data was compiled by calculating the number of items littered rather than the weight of items. Since the impact of litter is primarily visual and thus volume-based rather than

weight-related, calculating litter by weight would distort the visual impact of litter and yield a higher margin of error.

Composition of litter

Figure 1 shows the composition of visible litter observed in New Jersey with the components shown in decreasing order of their percentage of total items of litter counted. The largest category of litter, by far, is take-out food packaging, which comprises 21.3 percent of all litter. This category, which includes items such as cups, lids, straws, condiments, bags, boxes and napkins, has been increasing steadily over the last three decades.

When take-out packaging is grouped with the snack and candy wrappers category, the combination accounts for almost 37 percent of all visible litter. Other studies have also

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shown that, in the U.S., these two categories have become a larger percent of the total over time, while tobacco-related products, excluding cigarette butts, and beverage packaging have been declining more recently.

In the New Jersey 2004 survey, beverage containers normally associated with bottle bills (soft drinks and beer) comprised 6.1 percent of the total litter, compared with 6.4 percent nationally. Table 1 shows the percentage of containers, typically associated with bottle bills, which were found in 15 litter surveys conducted between 1989 and 2004.

Container packaging (e.g., bottle caps, six-pack rings and cartons) and beverage containers not included by some bottle-bill legislation, such as water bottles, teas, new age beverages and container packaging, comprised an additional 4.1 percent of litter in New Jersey, compared with a national average of 1.3 percent. Since most of these other surveys in Table 2 were conducted before 2002, the data shows a significant move from carbonated beverages to non-carbonated drinks that are perceived as healthier.

Bottle bills as litter control mechanisms

The financial inducements implemented under container-deposit legislation can modify littering behavior, but only with regard to containers covered under the program. Reductions have been found to be noticeably less effective in rural areas than in urban areas due to the travel times required to reach most rural areas. Additionally, when states with such legislation increase spending for litter cleanup, these additional expenditures will likely result in cleaner roadways, but the public will tend to credit the cleaner environment to container-deposit legislation instead.

While New Jersey does not currently have beverage-container deposit legislation, previous before-and-after surveys conducted in Michigan, California, New York and Pennsylvania indicate that such a system does not appear to have a significant effect in reducing non-container litter and thus is an expensive system for reducing litter.

As a consequence, the additional handling costs are absorbed solely by the reduction of littered containers covered by such legislation. Less than 0.6 percent of all containers sold now are littered. If only one of every 164 containers sold ends up as litter, the handling costs for 164 containers would be spent to prevent a single potential item of litter.

Based on an estimate of approximately 2.5 cents per container to maintain a bottle bill program, preventing the littering of one container would then cost approximately \$4.24 within the specific context of litter prevention. In addition, bottle bills create an additional level of bureaucracy, duplicating

Table 1 Percentage of beer and soft drink containers in litter

State	Year	Percentage
Washington	1990	9.80%
Mississippi	2000	9.10%
Florida	1989	8.80%
Newfoundland	1992	7.80%
Louisiana	1990	7.50%
North Carolina	2001	7.40%
Hawaii	1993	7.30%
Ontario	1990	7.30%
New Jersey	2004	6.10%
Texas	1990	5.90%
Minnesota	1990	5.60%
Kentucky	1998	5.30%
Pennsylvania	1999	3.50%
California	1993	2.10%
Alberta	1990	2.10%
Average		6.37%

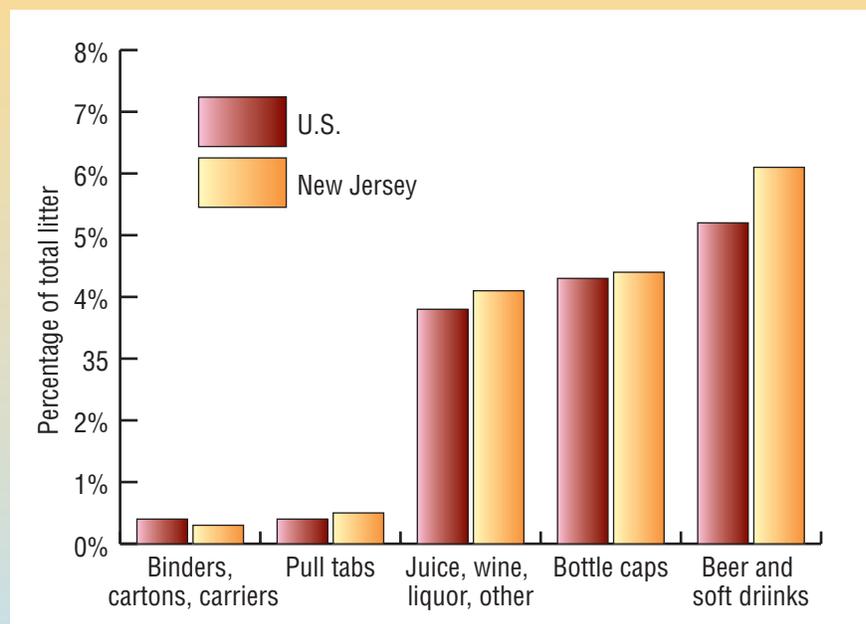
Source: Gershman, Brickner & Bratton, Inc., 2004.

Table 2 Percentage of other beverage containers in litter

State	Year	Percentage
New Jersey	2004	4.10%
Florida	1989	1.80%
North Carolina	2001	1.60%
Kentucky	1998	1.50%
Mississippi	2000	1.40%
Alberta	1990	1.40%
Ontario	1990	1.20%
Pennsylvania	1999	1.20%
Louisiana	1990	1.10%
Hawaii	1993	1.00%
Texas	1990	1.00%
Newfoundland	1992	0.90%
Washington	1990	0.70%
Minnesota	1990	0.70%
California	1993	0.50%
Average		1.34%

Source: Gershman, Brickner & Bratton, Inc., 2004.

Figure 1 Comparison of New Jersey versus U.S. litter composition



Source: Gershman, Brickner & Bratton, Inc., 2004.

many of the tasks of state agencies that oversee recycling.

Escheating the consumer?

Some of the unclaimed deposits charged for bottle-bill containers end up going, not for litter prevention or recycling programs, but into the states' general funds, thus constituting a consumer tax. Using a legal mechanism known as escheating, whereby unclaimed property reverts to the government, these states seize unclaimed deposits.

For example, Massachusetts law is written to require distributors and bottlers to pay unclaimed deposits to the state. Michigan law requires distributors and bottlers to pay 75 percent of unclaimed deposits to the state. The Connecticut and New York legislatures are successfully pushing similar bills, using this mechanism as a backdoor method of taxing consumers.

While some of these funds may have been diverted into solid waste management programs, once an escheating mechanism is put

into place, funds can be easily diverted into general funds, especially when states are experiencing deficit spending.

Distribution of beverage-container products

Figure 2 shows the distribution of items observed in the beverage container and packaging category. All packaging related to beverage containers make up 14.4 percent of the visible litter in New Jersey. Beer and soft drink containers themselves constitute 6.1 percent overall, while juice, wine, liquor and other containers constitute 4.1 percent for a total of 10.2 percent. The percentage of beverage containers was found to vary within the locales.

A steady decline in both the rate and percentage of beer and soft drink containers accompanies increased litter control program duration. This trend is less noticeable in juice, wine, liquor and other containers, where New Jersey's rate was higher, due to the increasing consumption of new age beverages, sports drinks and water over the past four years.

Cost-effectiveness of litter-abatement methods

The five options for controlling litter in order of increasing cost to remove or prevent a single item of litter are shown in Figure 3. To calculate the cost effectiveness of a given litter-abatement method, the annual cost to operate the program was divided by the litter reduction obtained in a year.

Paid litter pickup

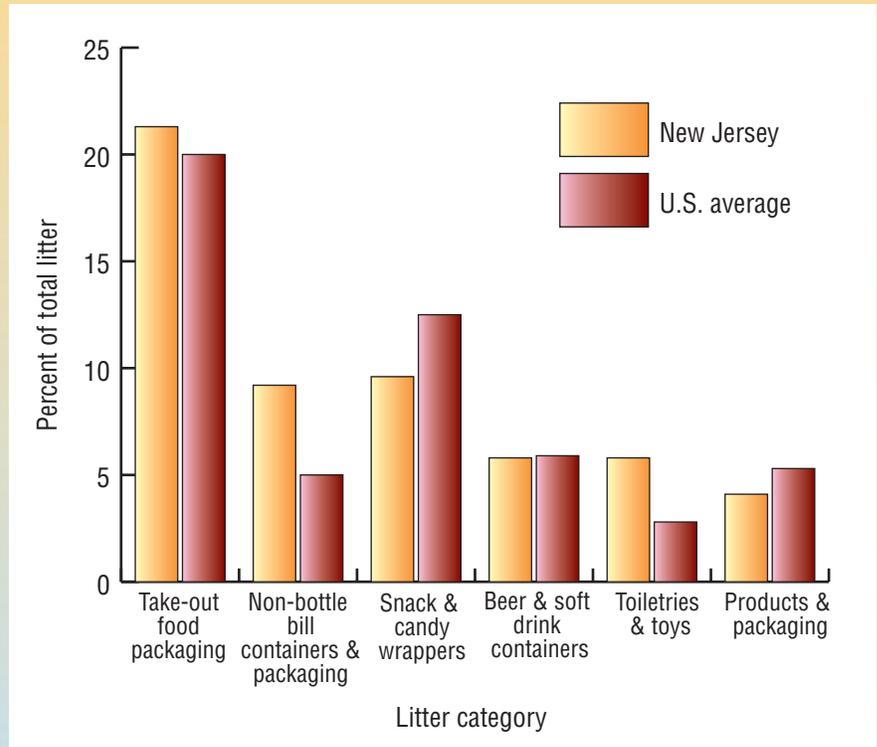
The cost for paid litter pickup has been estimated from the Institute for Applied Research (Sacramento) data on litter rates and time to clean typical stretches of streets and roadways, along with contemporary data on costs of labor, crew and litter transport, and disposal costs. The analysis assumed that, depending on the locale, from two to eight cleanings per year were required to cut litter by 50 percent. This reflects the fact that picking up litter is essentially a self-defeating program since additional litter is constantly being generated.

Studies show that litter will build back up to the same level it was before cleaning within an average of seven to 31 weeks, depending on the locale. Furthermore, some anecdotal evidence shows that the sight of organized groups picking up litter will convince some persons that littering is acceptable behavior since it appears to get picked up.

Adopt-a-Highway

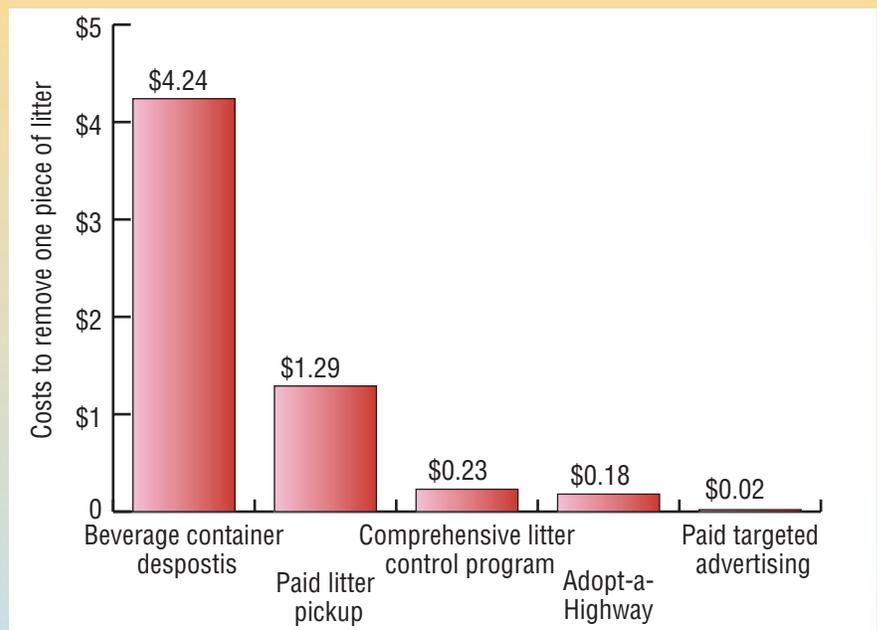
While the Adopt-a-Highway option is able to remove an item of litter for 18 cents (compared to the cost of \$1.29 for a paid crew), there are still limits to the number of miles that can be adopted, particularly in rural counties. Currently, an average of 45 percent of

Figure 2 Beverage packaging litter in New Jersey versus U.S. average



Source: Gershman, Brickner & Bratton, Inc., 2004.

Figure 3 Cost effectiveness of litter control programs



Source: Gershman, Brickner & Bratton, Inc., 2004.

the state highway systems, nationally, are adopted. Most rural local roads and urban streets, which constitute 90 percent of all U.S. street and highway mileage, are not affected.

Beverage-container deposit

Beverage container deposit programs are an expensive way to reduce litter since they do not appear to have any significant effect in

reducing non-container litter. As a consequence, the added handling cost of about 2.5-cents-per-container must be absorbed solely by the reduction of beverage containers in litter covered by container-deposit legislation.

According to the Container Recycling Institute (Arlington, Virginia), a supporter of bottle-bill legislation, redemption rates have continued to decline since 1997 as the value of the nickel deposit has dropped. CRI data shows that even in Michigan, which boasts a 10-cent deposit, the redemption rate has dropped. As a result, the amount of unclaimed deposits available to the state or to the beverage and grocery industries has been increasing. For example, unclaimed deposits in Massachusetts went from \$20 million in 1997 to \$31 million in 2001, as the state's redemption rate dropped from 78.3 percent to 69.8 percent.

Data from IAR studies indicate that the reduction effects are greater in urban areas than in rural, as the decreasing percentage of containers being found in litter makes excursions to many rural areas to recover containers a losing proposition.

Comprehensive litter-control programs

Comprehensive litter control programs (along with paid-advertising litter-control programs) are oriented primarily towards preventing, rather than removing, litter. Most of the comprehen-

sive control programs studied by IAR operate on a statewide level and typically employ a variety of elements simultaneously, such as voluntary cleanups, elementary school education, enhanced litter law enforcement, litter hot lines, beautification projects and media events. The data shows that such programs can be quite effective and have reduced total litter by as much as 74 percent in Hawaii and 76 percent in Wash-

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ington. Beverage container litter was reduced by 90 percent in both states.

The primary shortcoming of the above mentioned programs are that they took 15 and eight years, respectively, to achieve these reductions and incurred large staffing turnover and other program costs in the process. The data from these two states, plus results from similar programs monitored for shorter periods in Kentucky, Alaska and Nebraska, showed that, on average, it cost about 23 cents

to reduce litter by one item using this approach.

The data also showed that such comprehensive litter control programs must be maintained continuously, particularly if population growth and migration into a state occur. In the state of Washington, for example, after a 76-percent reduction had been achieved, the program funding was cut back and shifted toward recycling. Subsequently, population and traffic growth occurred and, within seven years, the litter rate climbed back up again, wiping out a third of the litter rate reduction that had been achieved.

When police officers ticket motorists for speeding, drivers tend to slow down. When the importance of wearing seat belts is advertised more frequently, people tend to buckle up. When cleanup costs and the damage to economic development caused by littering are also raised as a community concern through strong education programs and enforcement of litter laws, people may think twice before throwing food wrappers and beverage containers onto roadsides and recreation areas. They may start sweating the litter things after all. **RR**

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