

**Recycling in Delaware:
Public Actions and Perceptions**

prepared for the

Pennsylvania Resources Council

by

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Introduction

The services of the Pennsylvania Resources Council (PRC) were obtained by the State of Delaware for the express purpose of increasing the amount of information available about recycling that takes place in Delaware. This information can then be used by policymakers to evaluate the existing mix of recycling programs and to make changes, if any are deemed necessary. It may be possible, for example, to increase the amount of recycled waste by volume from an estimated 15.3% to a level closer to that achieved in surrounding states.

In order to better understand the recycling behavior of Delawareans, the Pennsylvania Resources Council (PRC) was commissioned to conduct a survey. The survey was carried out during August and September by the Center for Applied Demography & Survey Research (CADSR) at the University of Delaware.

The survey was designed to address four basic areas. First, how is trash removal accomplished in Delaware? Second, what is the current status of recycling in Delaware's households? Third, what are the current attitudes about recycling? Fourth, what are the reactions to some potential options designed to increase the level of recycling in Delaware?

This report is intended to present the basic information found by the survey. It is not intended to be prescriptive or to be an in-depth analysis of recycling. However, if policymakers are exposed to this information, it may help in the development of actions that could improve the current performance of recycling programs in Delaware.

Methodology

The study utilizes a disproportionate stratified sample by county. Equal numbers of interviews (n=200) were to be gathered from each county. This approach will produce estimates of reasonable accuracy at the county-level. The data then must be weighted to the proper proportions to produce statewide estimates. The result is that the state estimates are less precise by 20% than would have been the case had a proportionate stratified sample been used. However, any county-level analysis in Kent and Sussex counties would have been 50% less accurate.

The survey itself was designed with input from PRC, CADSR, and the State of Delaware. The survey instrument is found in Appendix A.

The survey was executed in the CATI (computer assisted telephone interviewing) laboratory operated by the Center for Applied Demography and Survey Research, at the University of Delaware. Randomly generated phone numbers were called up to 15 times in order to obtain an interview. Calls were conducted during the daytime (3), weekend (3), and the nighttime (6). The other three calls occurred either at night or on the weekend. On the average each number was called 5.6 times in order to reach a disposition. Those that refused to participate were called a second time several days later in an attempt to complete the interview.

Overall, 647 adult Delawareans were interviewed; 205 in Kent County, 227 in New Castle County, and 215 in Sussex County. Households were selected using random-digit dialing (RDD) techniques and one person 18 years of age or older was randomly selected, from among all eligible respondents in the household, to respond to the survey.

After all the data was collected, respondents were weighted to adjust for the number of eligible respondents and the number of residential phone numbers in that household. At the end of this process, the age-sex distribution obtained was adjusted to match the latest age-sex distribution provided by the Delaware Population Consortium. The respondents' demographics are reported in Appendix B.

The estimates obtained from the survey are approximately +/- 6.7% at the county level and +/- 4.7% at the state level. Both estimates of precision assume that the sampling and interviewing procedures used have obtained a random sample. After 15 callbacks within the time period of the survey, 71% of the sample was contacted. (Many of the non-contacts are undoubtedly associated with phones that are used for special purposes such as personal computers). The survey was completed by 60% of the randomly selected respondents. This is a somewhat lower completion rate than that experienced on other statewide surveys of a broader focus executed by the Center this year. However, this is consistent with and somewhat higher than two other surveys with specialized topics conducted during the same time period.

Throughout the report references will be made to differences that are statistically significant. Unless otherwise stated, the statistic used is Chi-square evaluated at the 95% confidence level.

Structure

The report that follows this introduction is divided into three substantive sections. In the first section, the current status of trash removal in Delaware is assessed.

The second section examines the current status of recycling in Delaware. The next section is concerned with the attitudes and perceptions on recycling.

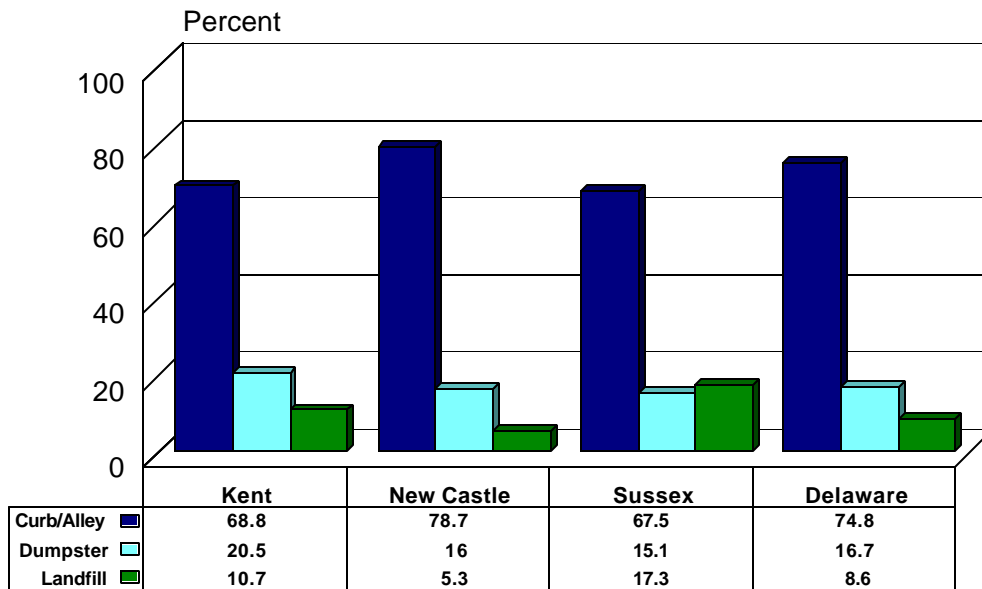
The final section deals with several options on recycling used elsewhere in the US, and the respondent's reaction to those options.

The questionnaire and respondent demographics are provided in Appendix A and Appendix B, respectively.

Current Status of Trash Removal

In order to better understand how trash is removed from Delaware households today, a series of questions was asked about that service. The manner in which trash is currently removed is likely to impact and may even limit the way additional recycling can be accomplished. The results of the first question in this series are found in Figure 2.1 below.

Figure 2.1
How Do You Dispose of Your Household Trash?
by County¹



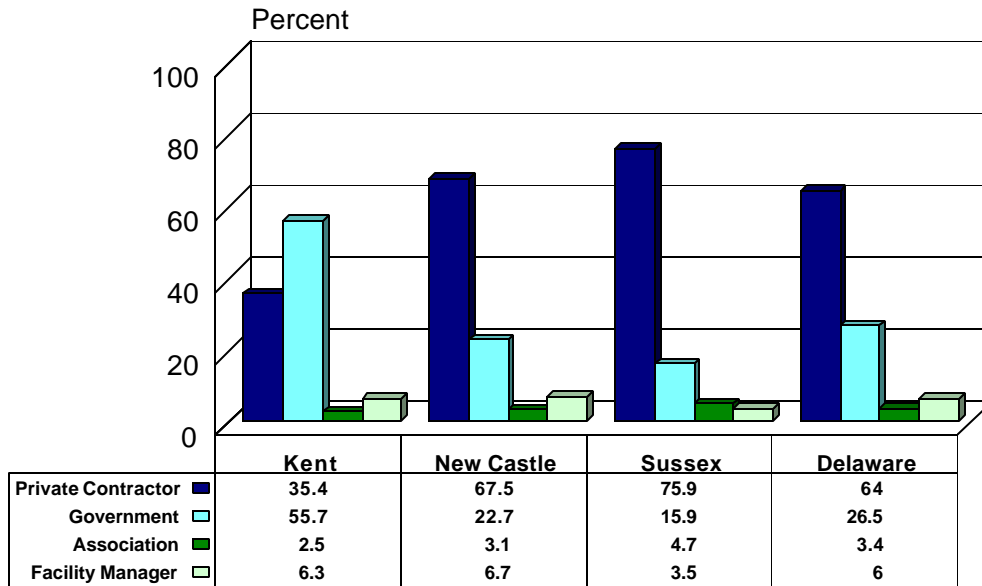
Source: Center for Applied Demography & Survey Research, University of Delaware

Over 70% of adult Delawareans have their trash removed at the curbside. This corresponds largely to the fact that Delaware is predominantly (76%), a state of single-family homes. There are statistically significant differences between the counties and that is largely attributed to the proportion using a landfill, in particular the difference in the distribution between New Castle County respondents and those from Sussex County.

Recycling options may be affected by the manner in which trash is removed but it also may depend on who removes it. Respondents were asked to provide information as to who provided their trash removal. The responses are summarized in Figure 2.2, below.

¹ All 647 respondents were asked and 642 provided specific information.

Figure 2.2
Who Provides Your Trash Collection Service?
by County ²



Source: Center for Applied Demography & Survey Research, University of Delaware

Over 60% of Delaware’s households that have onsite removal of their trash, use a private contractor. In contrast, government serviced less than 30% of the respondents. That does not necessarily mean that municipal employees remove the refuse, since many municipalities contract with private firms for trash collection services.

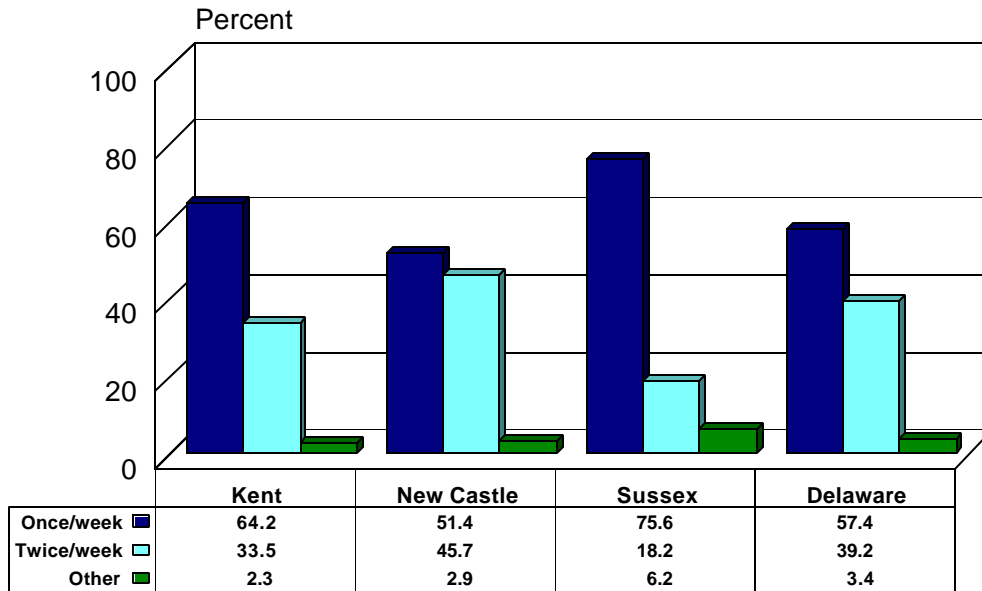
Once again there are significant differences between the counties. In this case however, the difference is caused by Kent County. More than twice as many respondents are served by government in Kent County than in either New Castle or Sussex counties. The reason is probably because a larger proportion of Kent County residents live within a municipality and the size of the municipalities is sufficient to warrant the provision of the service.

When those that reported using a private contractor for trash removal were asked to name the contractor, only a little more than half (54.5%) could do so. Of those thirty-three companies that were identified, only three had a significant portion of the market and one of the three was clearly the dominant firm.³ It is not really possible to provide true measures of market share with the large numbers of respondents who could not answer the question.

² Those 571 who had onsite removal responded and 522 provided specific information.

³ The most mentioned companies were BFI (116), Waste Management (29), Home Waste (22), Harvey & Harvey (12) and Shore Disposal (11).

Figure 2.3
How Frequently is Your Household Trash Collected?
by County⁴



Source: Center for Applied Demography & Survey Research, University of Delaware

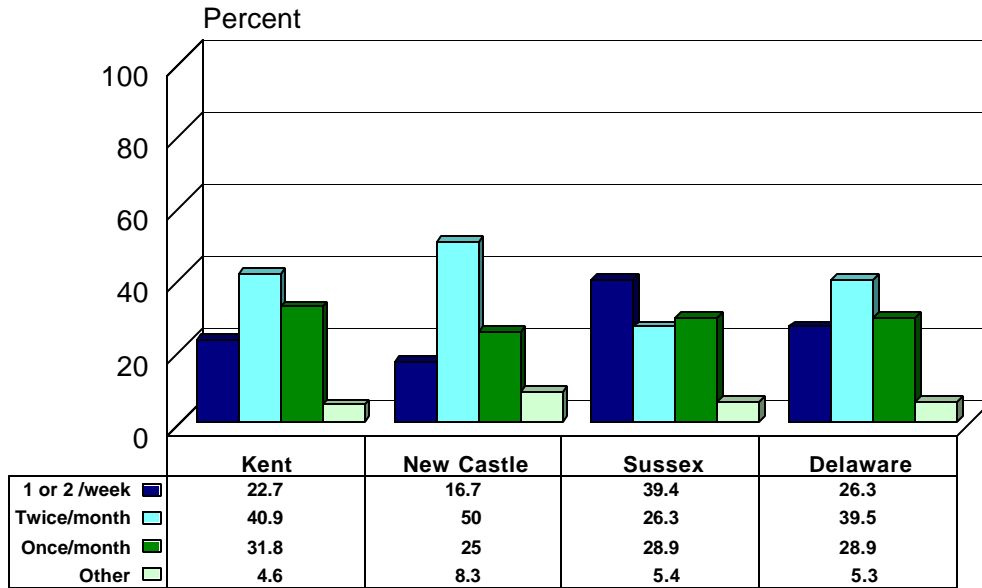
Frequency of trash removal can have an impact on the type of recycling program that can work efficiently. For this reason, respondents were asked how often trash was removed from their premises by the service provider or how often they went to the landfill, if that was the disposal method.

The results for those respondents who use a trash removal service are found in Figure 2.3, above. The majority of the respondents reported once-a-week trash collection. There is however considerable variation within the state. New Castle County residents are almost equally likely to have twice a week trash removal as once a week. The differences increase as housing and population density decreases. The differences between New Castle County and Sussex County are substantial while Kent County is in the middle.

The results for those respondents who use a landfill are found in Figure 2.4, below. While it is difficult to make definitive statements with such a small sample, it appears that the frequency of trash removal to the landfill is far lower than for those who have on-site removal. Only about one quarter of landfill users remove their trash once a week in comparison with 97% with on-site removal.

⁴ Those 571 who had onsite removal responded and 559 provided specific information.

Figure 2.4
How Frequently Do You Take Your Trash to the Landfill?
by County ⁵



Source: Center for Applied Demography & Survey Research, University of Delaware

One might suspect that landfill users would be more likely to recycle since they are holding material on their property longer. In fact they do report recycling at a higher rate but the differences are statistically significant only at the 90% confidence level.

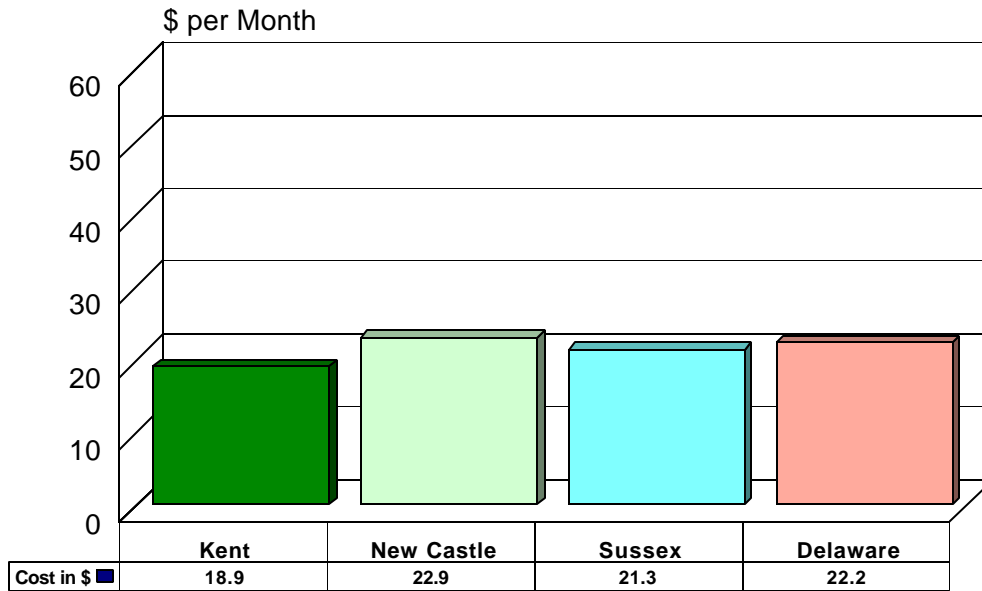
The final area addressed is the cost of trash removal service. Unfortunately there is a lot of variation in the way people pay for trash removal service. Roughly 65% of households use a private contractor and thus might be expected to know what the fee is. The others will pay through taxes or rent and can't provide a specific value. Among the remainder, many did not know the cost since they did not pay the bill. The result is a much smaller sample on which to base the estimates of cost. Those results are found in Figure 2.5, below.

The average household in Delaware appears to pay in the vicinity of \$20 per month for trash removal based upon the respondents supplying usable information. The amount is slightly higher in New Castle County but the frequency of collection is significantly higher as well.

These cost estimates are important in two ways. First, any additional cost for implementing alternative methods of recycling will be obscured for one third of the population since it will be hidden in the overall tax rate. Second, additional monthly costs will be assessed

⁵ The 72 respondents who used a landfill responded and 72 provided specific information

Figure 2.5
How Much Do You Pay for Your Trash Disposal?
by County ⁶



Source: Center for Applied Demography & Survey Research, University of Delaware

relative to the current cost of trash removal. For example, a program that might cost \$3 extra per month would be seen as a 15% price increase. These base prices will be important when looking at the responses to recycling options discussed in the last section of this report.

In the next section of this report the current state of recycling in Delaware will be reviewed. Of particular interest will be the level of awareness of recycling among the adult population of Delaware and how they are using the current “Recycle Delaware” program operated by the Delaware Solid Waste Authority at 125 locations in Delaware.

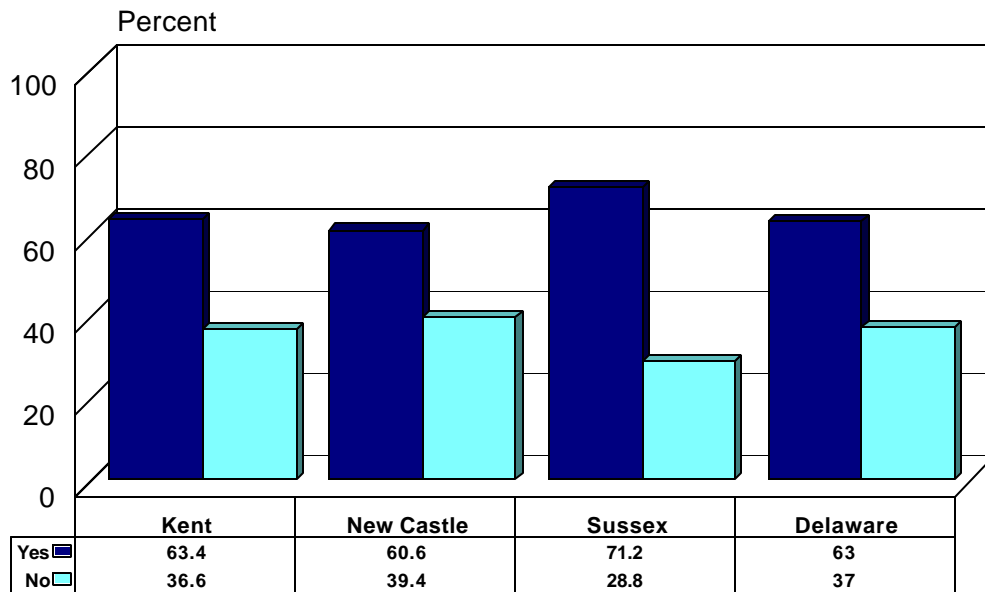
⁶ All 647 respondents were asked this question, but only 191 could give a response suitable for calculating a monthly rate.

Current Status of Recycling

If the goal is to encourage people to recycle more of their solid waste, then one of the keys is to understand how they are currently behaving with respect to recycling. In this section, the current status of recycling in Delaware, as reported by the respondents to the survey, will be addressed.

In order to understand any differences that are observed, different contrasts will be used. The primary contrast remains the county of residence. In addition, contrasts for age, gender, income, inside and outside of a municipality, and housing tenure; i.e., owner versus renter will be used. For the most part only differences that are statistically significant at the 95% confidence level will be mentioned.

Figure 3.1
Are You Aware of Any Recycling Programs in Your Area?
by County⁷



Source: Center for Applied Demography & Survey Research, University of Delaware

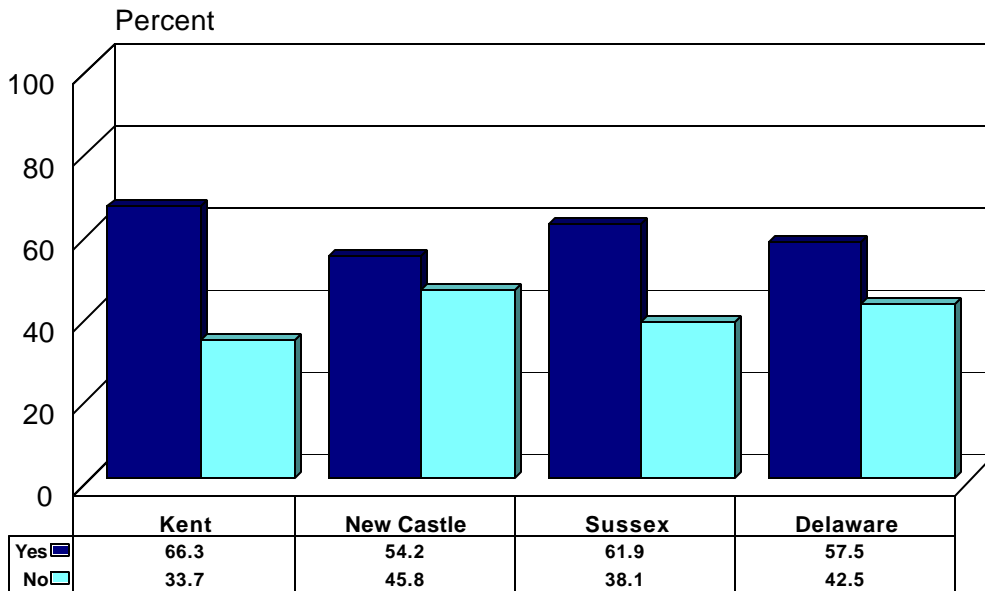
The first issue addressed in this series of questions was the general awareness of recycling programs. Those results are tabulated in Figure 3.1, above. Nearly two thirds of adult Delawareans are aware of recycling programs. This holds true for the counties as well where the observed differences do not quite rise to the 95% confidence level of statistical significance.

⁷ All 647 respondents were asked and 647 responded.

There are a number of differences within the contrast groups. First, respondents in the higher income group (\$50,000 and above) are significantly more aware than the lower income group although not by a great deal (69.9% to 58.2%). Recall that the margin of error is +/- 4.7% at the state level, thus any difference exceeding about 9.4% will be statistically significant.

Differences were also observed with respect to age where the middle age group (35-50) is significantly more aware than those that are younger (72.6% to 53.3%). They are also more aware than the older age group (72.6% to 63.2%) although the difference is not significant. Those who live outside of municipalities (as defined by the respondent) are less aware of recycling programs than those who live inside (70.5% to 58.6%). Finally, those that own their home are more aware than those who are renting (68.6% to 41.5%). These last two categories certainly are related to the nature of their trash removal service. City/town dwellers and renters see the issue less directly, since most do not directly contract for it.

Figure 3.2
Are You Aware of the “Recycle Delaware” Igloo Program?
by County ⁸



Source: Center for Applied Demography & Survey Research, University of Delaware

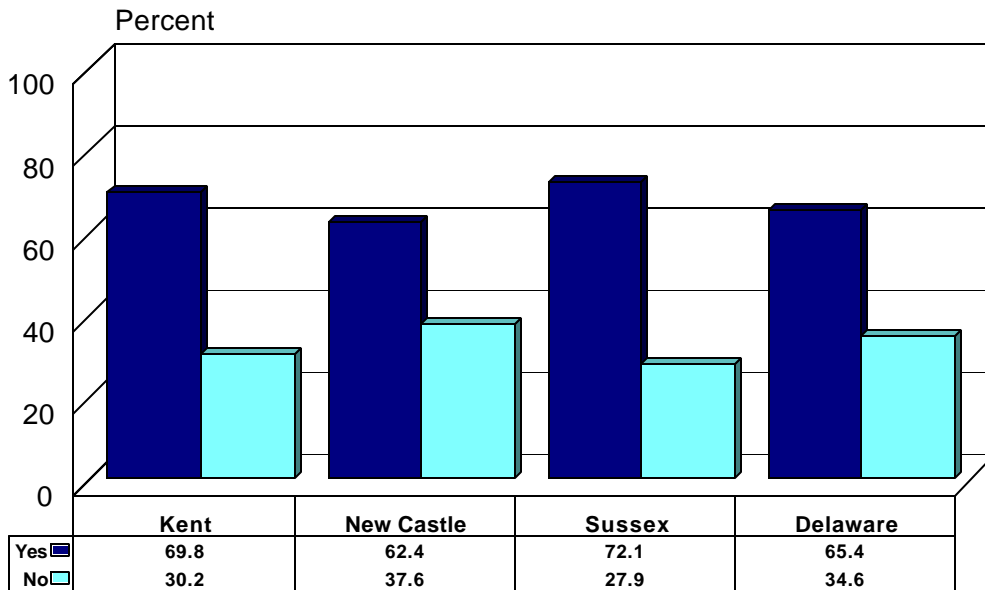
A more specific question was addressed with respect to the “Recycle Delaware” program. Overall, the respondents were only slightly less aware of this program than were aware of recycling programs in general (Figure 3.2, above). Almost 84% of those who were aware of

⁸ All 647 respondents were asked and 647 responded.

a recycling program, knew about “Recycle Delaware”. It is interesting to note that 23% of those that said they were aware of recycling programs were not aware of “Recycle Delaware”.

Respondents in New Castle County seemed to be less informed about the program than those in Kent and Sussex counties and the differences are statistically significant. In addition, the differences within the other contrast groups mirror those found with the previous question. Respondents in the higher income group (\$50,000 and above) were significantly more aware about “Recycle Delaware” than the lower income group although not by much (62.9% to 53.8%). Those in the middle age group (35-50) were significantly more aware of the Delaware program than those that were younger (69.7% to 45.0%). Those who lived outside of municipalities were less aware of “Recycle Delaware” than those who lived inside (68.1% to 51.2%). Finally, those that owned their home were more aware than those who were renting (64.3% to 33.0%).

Figure 3.3
Do You Recycle Any Trash in Your Home?
by County⁹



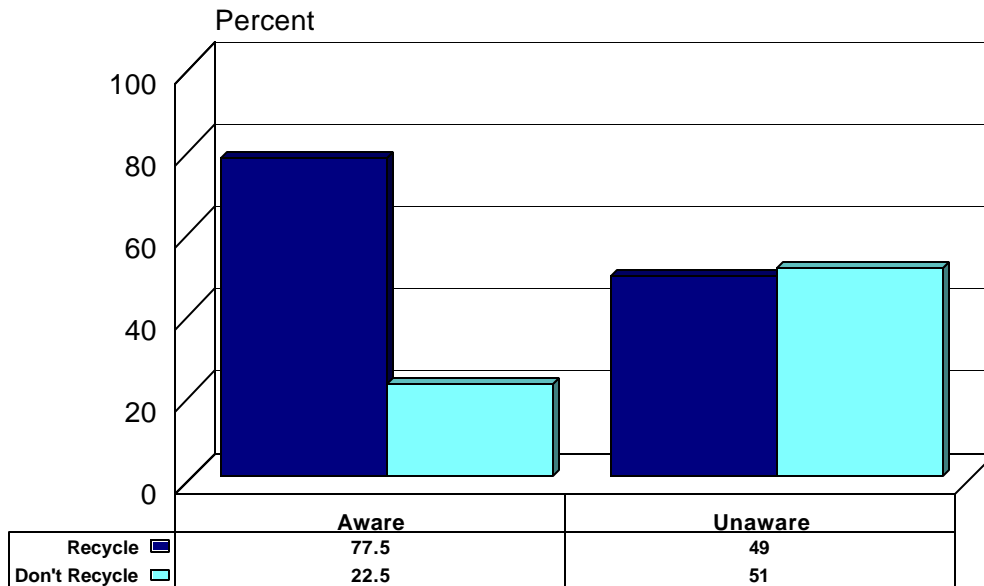
Source: Center for Applied Demography & Survey Research, University of Delaware

Current participation in a recycling program is probably a good indicator of participation in an expanded program. For that reason each respondent was asked about their current recycling habits. The responses are tabulated in Figure 3.3, above.

⁹ All 647 respondents were asked and 647 responded.

Almost two thirds of adult Delawareans questioned reported participating in recycling at some level. The rates observed in the county detail are quite similar and none of the differences are large enough to be significant. The overall levels are similar to what was observed with respect to the “awareness” questions. The relationship between those variables is shown more clearly in Figure 3.4, below. Respondents are more likely to recycle if they know about the “Recycle Delaware” program (77.5% to 49%). About 42.5% of the respondents are estimated to be *unaware* of the program (see Figure 3.2,earlier) and 51% of those don’t currently recycle. Thus, 22% of the respondents are both unaware of the “Recycle Delaware” program and do not currently recycle. Not all of those would recycle even if they were aware of the program.

Figure 3.4
Do You Currently Recycle Any Trash in Your Home?
by Awareness of “Recycle Delaware”¹⁰

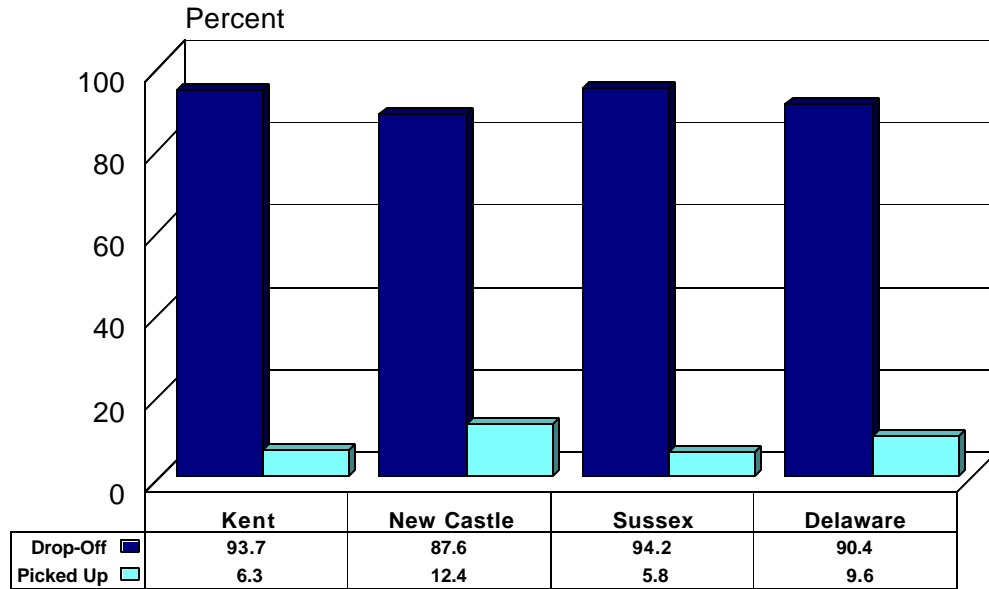


Source: Center for Applied Demography & Survey Research, University of Delaware

Returning once again to the issue of current recycling behavior, a few differences between the contrast groups do emerge. Respondents in the higher income group (\$50,000 and above) were significantly more likely to recycle than those in the lower income group (70.8% to 57.9%). Participation rates of homeowners continue to be higher than that observed for renters (70.3% to 48.9%). Finally, no differences were observed for age, gender, or residence in a municipality.

¹⁰ All 647 respondents were asked and 647 responded.

Figure 3.5
Take Recyclables to a Drop-off Center or Picked Up at Home?
by County ¹¹



Source: Center for Applied Demography & Survey Research, University of Delaware

While the majority of adult Delawareans are aware of the “Recycle Delaware” igloo drop-off centers, there are apparently other types of programs available. This is evidenced in Figure 3.5, above where respondents were asked about how they recycled.

There were few surprises in the data other than perhaps that some respondents report recyclables being picked up at their home. However, the proportions were small. In addition, the differences between counties as well as those for all of the other contrast groups are insignificant.

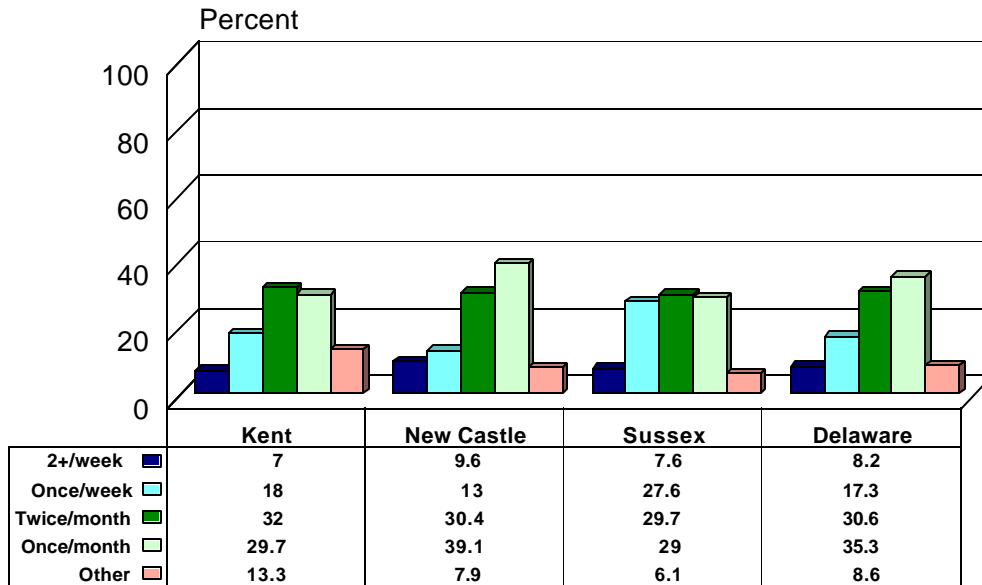
Having established the participation rates for recycling within this sample, it is important to find a measure of the intensity of that participation. There are those that participate regularly and there are those that think of it when they clean out the garage. One way of measuring intensity is to find out how often the respondent actually goes to the dominant point of recycling, the drop-off center. Those results are found in Figure 3.6, below.

There is wide variation in the frequency of recycling. About one in four of the respondents recycle at least once a week. Earlier it was shown that 97% have trash removal at

¹¹ The 440 that recycled were asked and 434 responded.

least once a week. The most obvious reason for differences in frequency might be the amount of recyclables, however there is no significant relationship between household size and frequency of using a drop-off center. Since there are no significant differences on this issue for any of the contrast groups, it is reasonable to conclude that this is a household-by-household decision related to variables not analyzed here.

Figure 3.6
How Often Do You Take Material to a Drop-off Center?
by County¹²

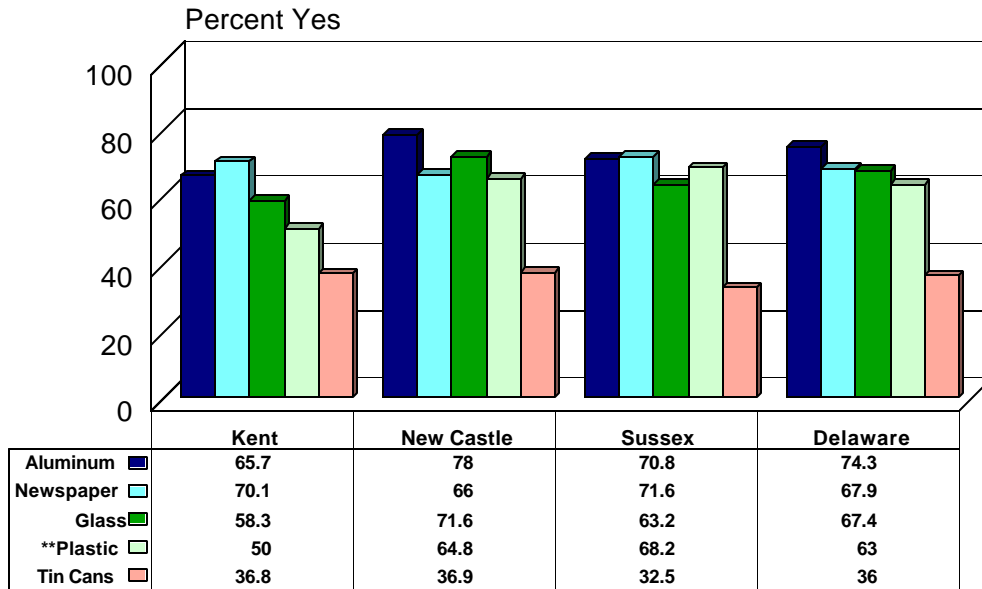


Source: Center for Applied Demography & Survey Research, University of Delaware

It is important to know what it is that the respondents are recycling for several reasons. First, the information may suggest strategies for increasing the volume of recycling by focusing on sub-areas of the material spectrum. Second, the options addressed later on might focus on only part of the potential set of recyclables and the current program may be an effective complement. The results are tabulated in Figure 3.7 through Figure 3.9. The materials are presented in the order of the respondents’ participation rates throughout the state. If a double asterisk (**) appears next to a material label in the table, it indicates that there is a significant difference between the counties on that material.

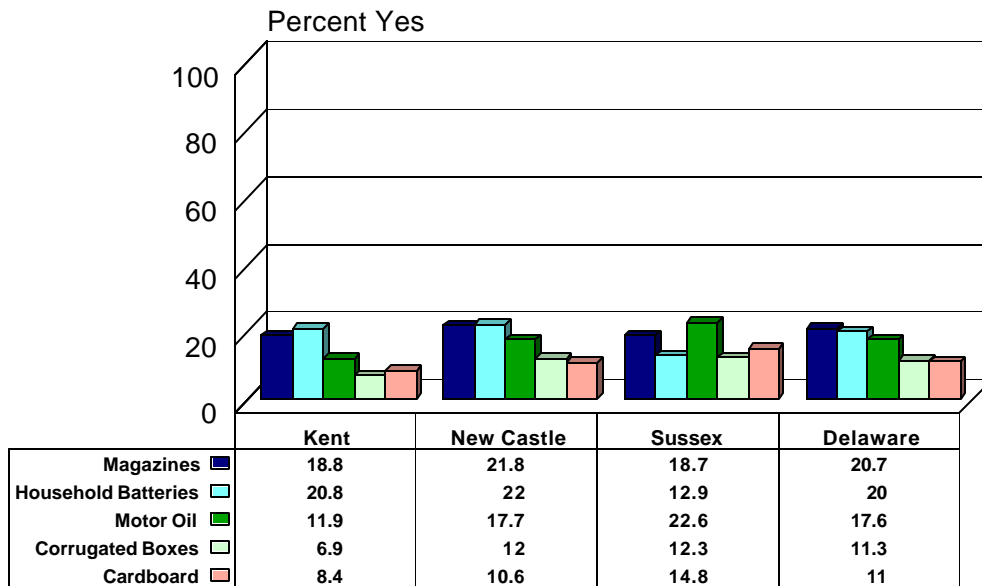
¹² The 399 that used a drop-off center were asked and 389 responded.

Figure 3.7
Do You Recycle Any of the Following Materials? (1)
by County¹³



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 3.8
Do You Recycle Any of the Following Materials? (2)
by County¹⁴

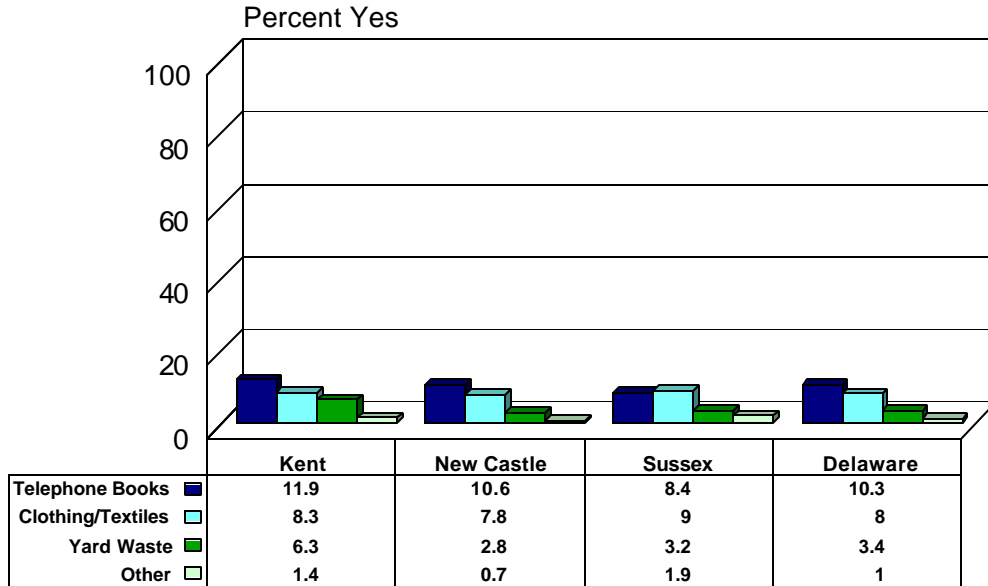


Source: Center for Applied Demography & Survey Research, University of Delaware

¹³ The 440 that recycled were asked and 440 responded.

¹⁴ The 440 that recycled were asked and 440 responded.

Figure 3.9
Do You Recycle Any of the Following Materials? (3)
by County ¹⁵



Source: Center for Applied Demography & Survey Research, University of Delaware

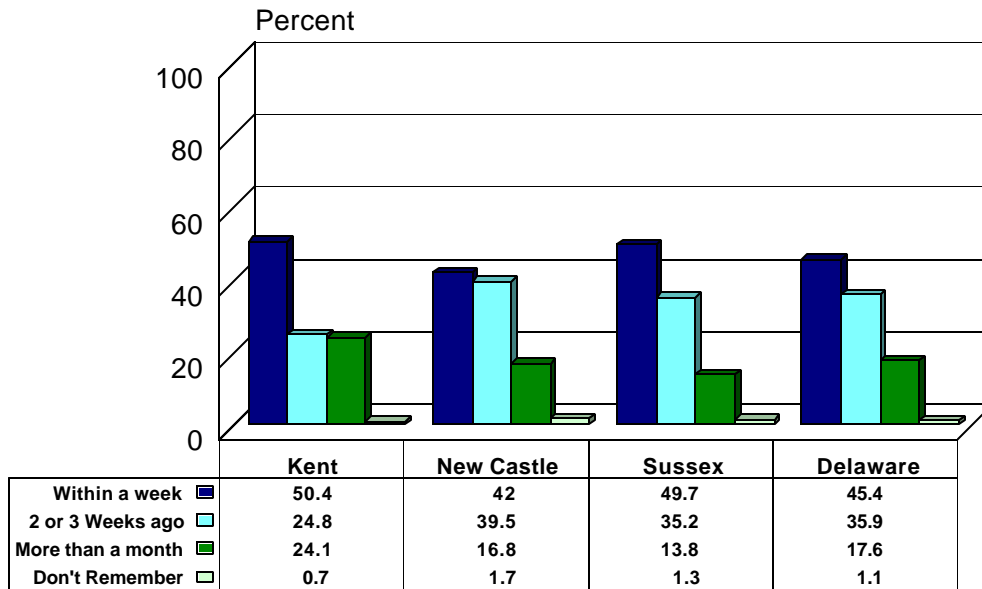
There are clearly different tiers operating within the recycled materials. More than 60% of the respondents report recycling the top four choices, each of which has its own separate igloo within the drop-off centers. With the single exception of *plastics*, which can probably be interpreted as meaning plastic bottles, the rates are similar within the tier throughout the state. Recycling of *tin cans* is at a lower level presumably because the volume is lower than for *aluminum*. The same can be said for *household batteries* that have a much lower volume and thus may be less likely to be recycled even though there is a container in most if not all drop-off sites.

There were a few differences within the contrast groups of which the most notable was by age. The two older age groups were more likely to recycle newspapers by a considerable margin (76% to 48%) and magazines (25% to 11%). This result probably says more about the difference in reading patterns than it does about recycling. Older people are far more likely to read newspapers and magazines than younger people and thus have a larger volume of material to dispose of which seems to encourage recycling. Homeowners were also more likely to recycle newspapers than renters (70.4% to 54.3%). That may reflect both age differences and differences in the room for storage. One of the few differences between men and women is found in this area

¹⁵ The 440 who recycled were asked and 440 responded.

with men being far more likely to recycle motor oil (22.5% to 13.3%). This may mean more men change the oil in their cars than women or, more likely, it means they know that their service station recycles used motor oil.

Figure 3.10
When Did You Last Take Material to a Drop-off Center?
by County¹⁶



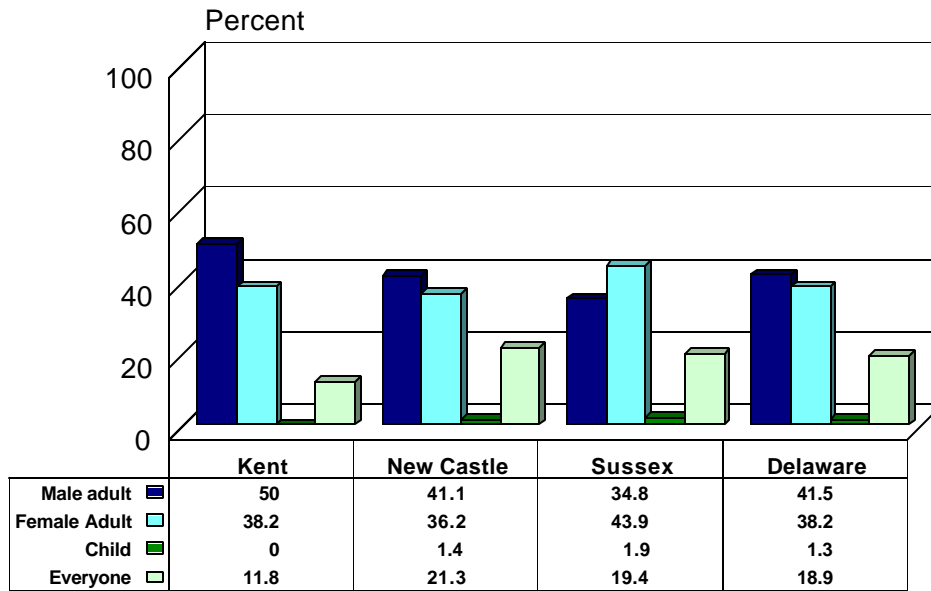
Source: Center for Applied Demography & Survey Research, University of Delaware

In order to check on the frequency of recycling, another question was asked to ascertain when the respondent had last recycled. Earlier the more general question was asked as to how often the respondent recycled material (Figure 3.6, earlier). Those results suggested that 25% of the respondents recycled at least once a week and 45% recycled once a month or less. The results shown in Figure 3.10, above are suggestive of a higher level of intensity than those in Figure 3.6. However, the results in Figure 3.10 probably reflect the common problem with respondents, and people in general, in assuming events in the past were closer than they were in actuality. It probably would be safe to assume that the true frequency lies somewhere in between.

The pattern observed within the counties is similar and in fact there are no statistically significant differences between the counties. Neither are there significant differences within any of the contrast groups.

¹⁶ The 399 that used a drop off center were asked and 397 responded.

Figure 3.11
Who in Your Household Takes Responsibility for Recycling?
by County¹⁷



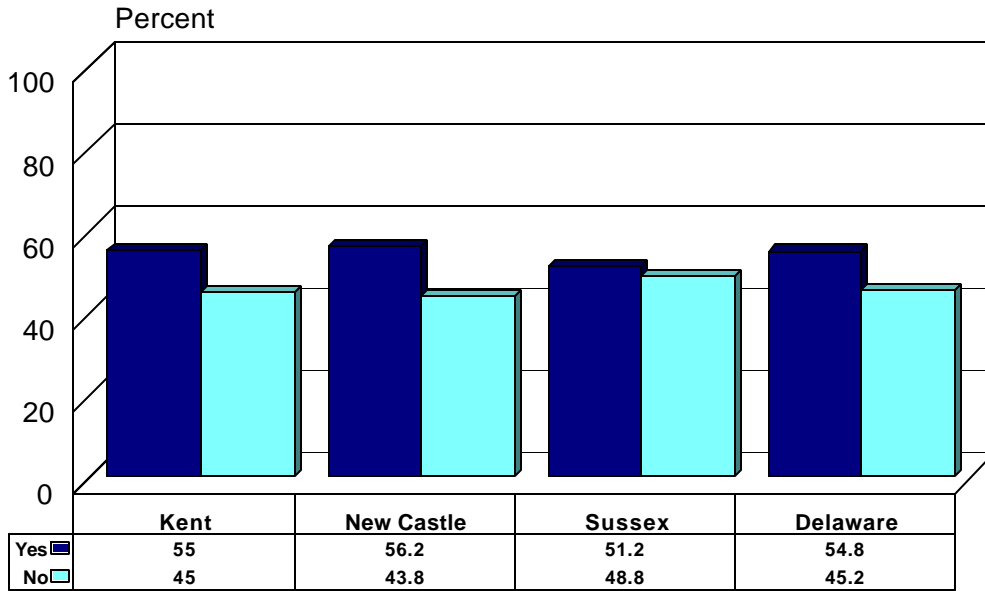
Source: Center for Applied Demography & Survey Research, University of Delaware

Respondents were asked who took responsibility for recycling in the household. The results are found in Figure 3.11, above. Apparently the responsibility is evenly split between men and women according to the table. However, the gender contrast suggests that male respondents are much more likely to say it's the *male adult* and female respondents are much more likely to say it's *the female adult*. If the respondents are ordered by family size, women tend to gain responsibility as the household size grows. The shared responsibility i.e., *everyone*, remains at a consistent 20% for all households larger than one.

One approach to increasing recycling, reducing roadside litter, and reducing the use of landfill space has been to require deposits on various containers. The idea is not complicated and the deposits are being collected. The question is how effective a program is it to increase recycling? The information in this survey should not in any way be considered a rigorous analysis of this program. However, it can provide some insight into how people's behavior conforms to what had been hoped for. Figure 3.12 and Figure 3.13, below contain results that reflect on participation in the program.

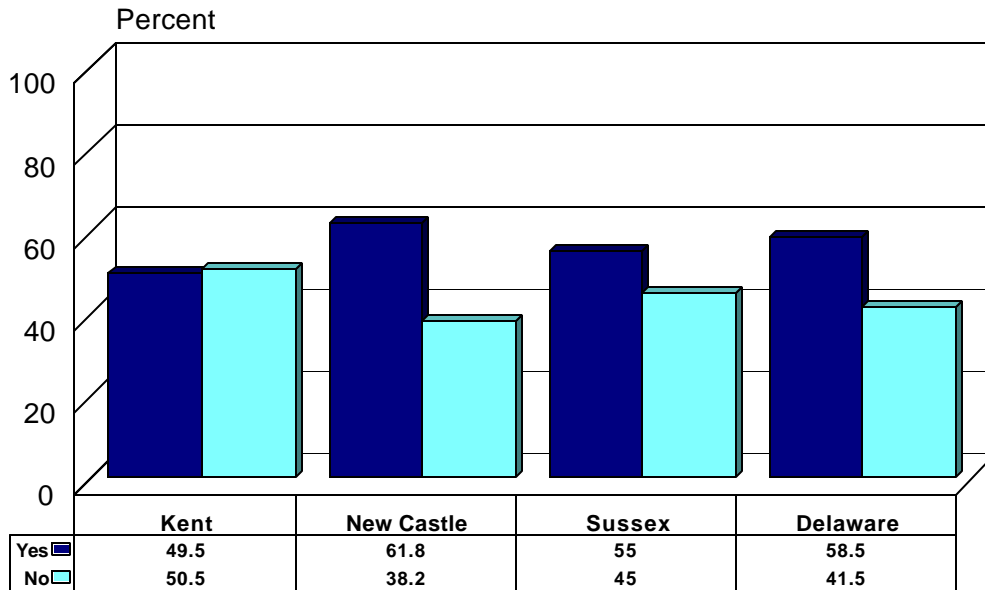
¹⁷ The 440 that recycled were asked and 440 responded.

Figure 3.12
Do You Buy Bottles that Have Deposits?
by County¹⁸



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 3.13
Do You Return these Bottles for the Deposit?
by County¹⁹



Source: Center for Applied Demography & Survey Research, University of Delaware

¹⁸ All 647 were asked and 632 responded.

¹⁹ The 343 that bought bottles with deposits were asked and 343 responded.

Somewhat more than half of adult Delawareans buy containers that require a deposit. Apparently the balance either do not use the products typically requiring the deposit, do not realize they are paying a deposit, or are able to buy it in a form not requiring a deposit. The results are nearly identical across the counties with no statistically significant differences.

There are several significant differences within the contrast groups. The youngest age group buys far more of the products that have deposits than do the oldest age group (72.6% to 34.2%). This probably reflects different consumption patterns with bottled drinks. The middle age group is also significantly higher than the oldest age group (59.9% to 34.2%). A larger proportion of the higher income group buys products with deposits in comparison to the lower income group (62.8% to 48.7%). This is somewhat predictable since lower income people are trying to preserve their income while those in the higher income group are not sensitive to the deposit.

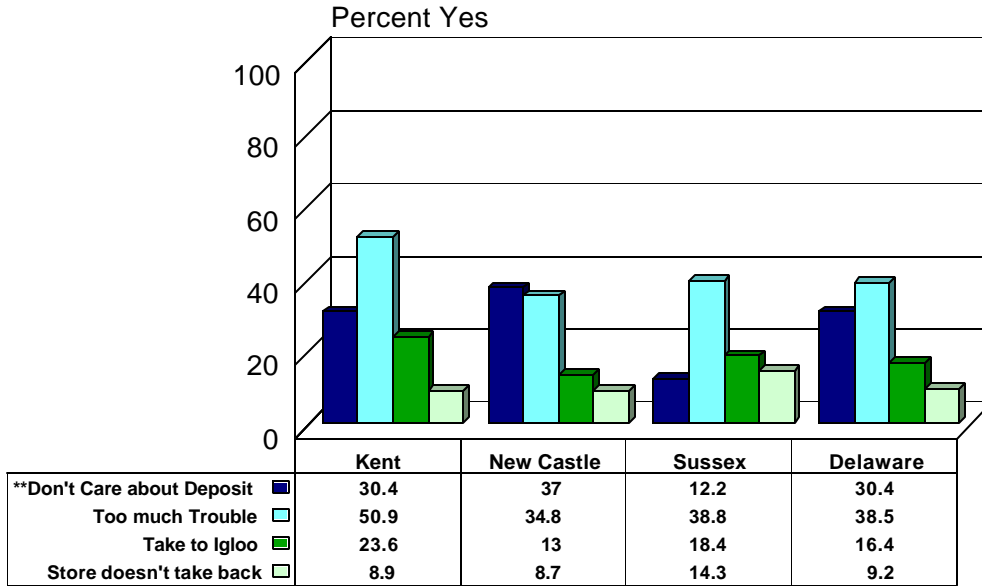
Almost 60% of those responding returned the empty containers to retrieve the deposit. This result should not be interpreted to mean that 60% of all containers are returned for the deposit since those that generally retrieve the deposit may not do so with 100% efficiency. In addition, the 40% that don't usually return the containers may do so infrequently or someone else may recover the deposit after the purchaser discards it.

The differences by county are not statistically significant and none of the contrast groups exhibits any variation of consequence on this question.

Respondents were also asked why they didn't return the bottles for the deposit. Those results are found in Figures 3.14 and 3.15, below. The two most frequent responses are *don't care about the money* and *too much trouble*, both of which really mean the same thing. The size of the deposit relative to the price of the product is not consequential to this group and the time cost of dealing with the containers is much greater than the loss of the deposit. The fact that 16% of the respondents simply recycle them at a drop-off center further suggests that the time cost is too high.

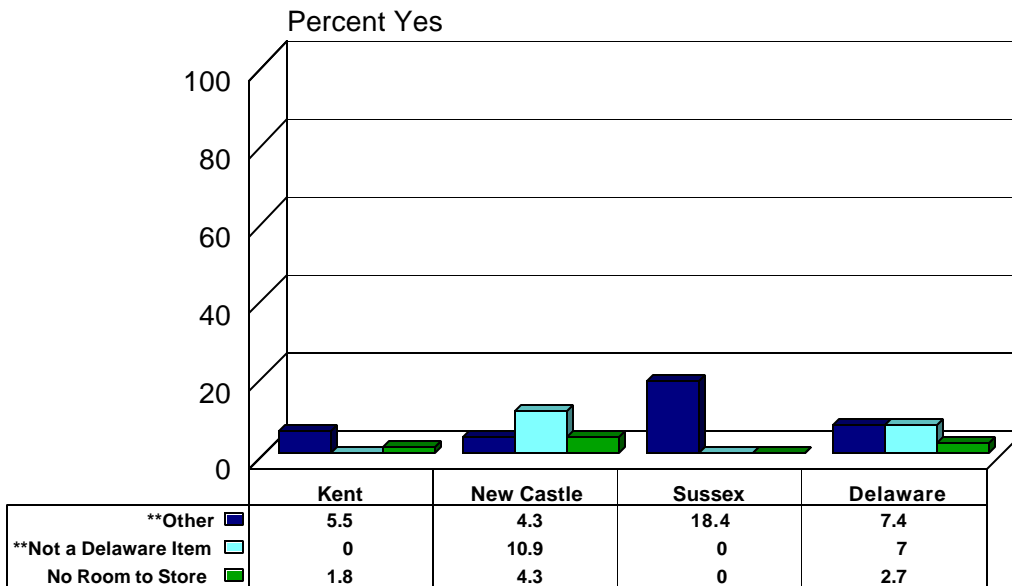
This time there are differences between the counties with respect to *don't care about the deposit*. This may reflect the fact that Sussex County has the lowest income structure in the state with 71.4% in the low-income group compared with 51.4% overall. Respondents in Sussex County were also more likely to specify a choice that wasn't specified. Most of these can be classified in the too much trouble or simply forget to do it categories. None of the other contrasts was significant.

Figure 3.14
Reasons for Not Returning the Bottles? (1)
by County²⁰



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 3.15
Reasons for Not Returning the Bottles? (2)
by County²¹



Source: Center for Applied Demography & Survey Research, University of Delaware

²⁰ The 151 that did not return the bottles were asked and 151 responded.

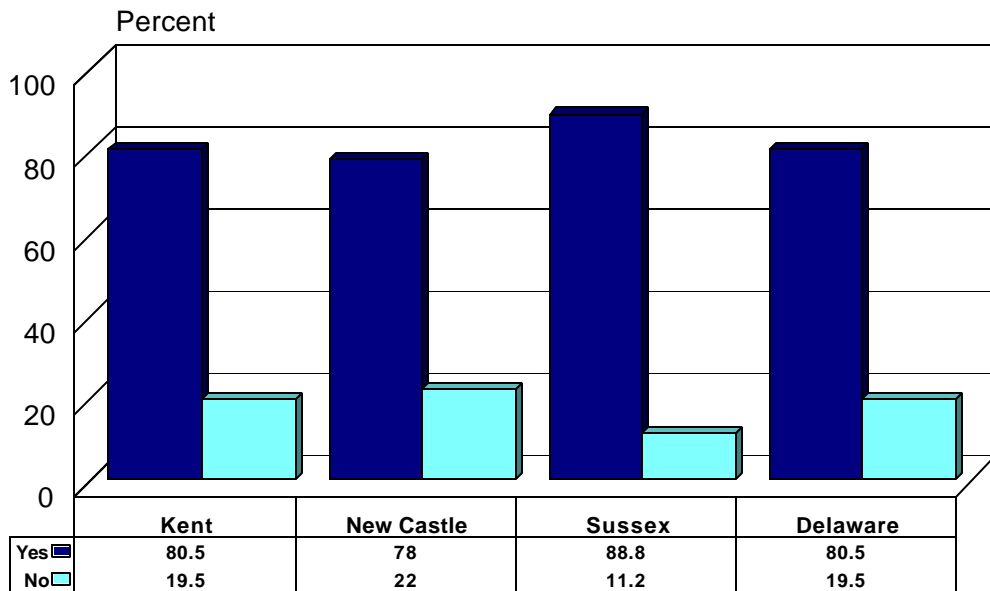
²¹ The 151 that did not return the bottles were asked and 151 responded.

The remaining questions in this section of the survey deal with the respondents’ handling of yard waste to include grass clippings, leaves, and tree/bush trimmings. All of this material is outside the scope of “Recycle Delaware” but can consume significant space in a landfill even though in the long run it is biodegradable.

Delaware’s households are predominantly housed in single-family homes. As a result, more than 80% of the respondents report that they have a lawn to mow (Figure 3.16, below). All of those households will have to dispose of the grass clippings in one or more ways. Over half of the respondents used mulching lawn mowers and simply left the clippings on the grass.

There were significant differences within some of the contrast groups. New Castle respondents were far less likely to *leave the clippings on the grass* and more likely to *put them out for trash removal*. Men were more likely than women to *leave the clippings on the lawn* (64.8% to 51.8%). One other interesting difference occurred between those who lived in a municipality compared with those that didn’t. Those living in a town (who had a lawn) were almost twice as likely to put the clippings in the trash for removal than their counterparts in the suburbs (21.2% to 11.2%).

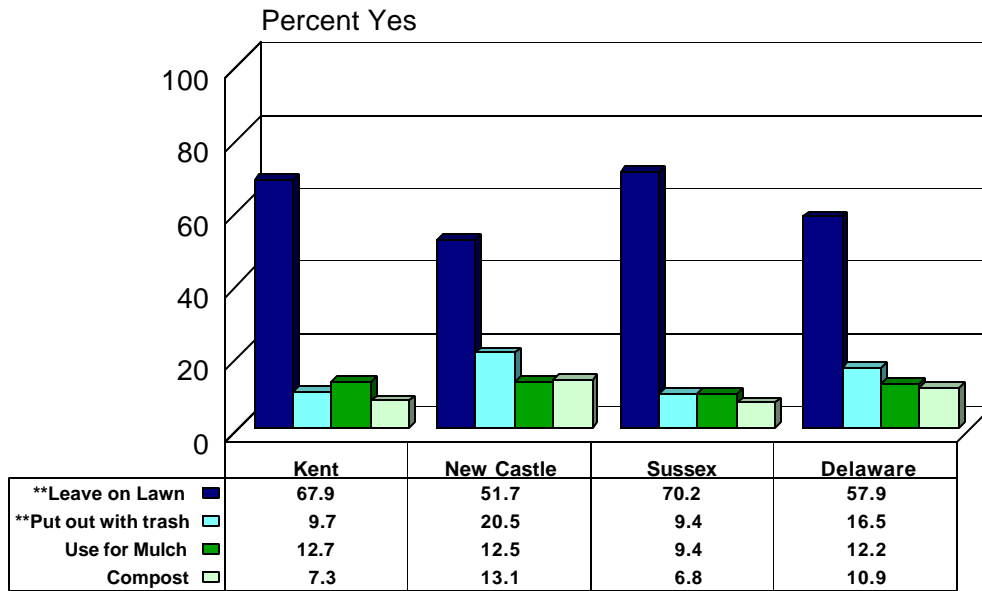
Figure 3.16
Does Your Home Have a Lawn that Requires Cutting?
by County²²



Source: Center for Applied Demography & Survey Research, University of Delaware

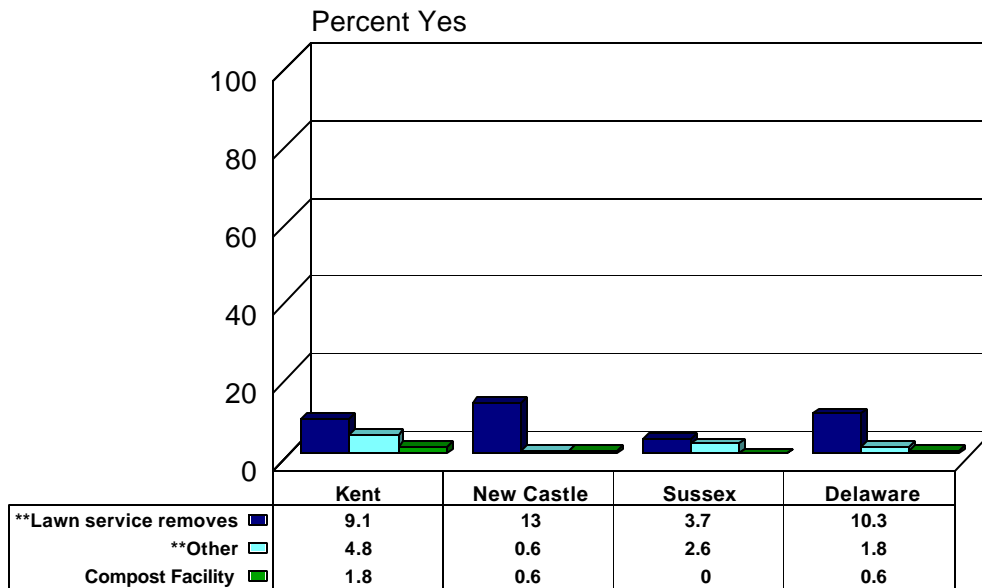
²² All 647 were asked and 647 responded.

Figure 3.17
How Do You Dispose of the Lawn Clippings? (1)
by County ²³



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 3.18
How Do You Dispose of the Lawn Clippings? (2)
by County ²⁴

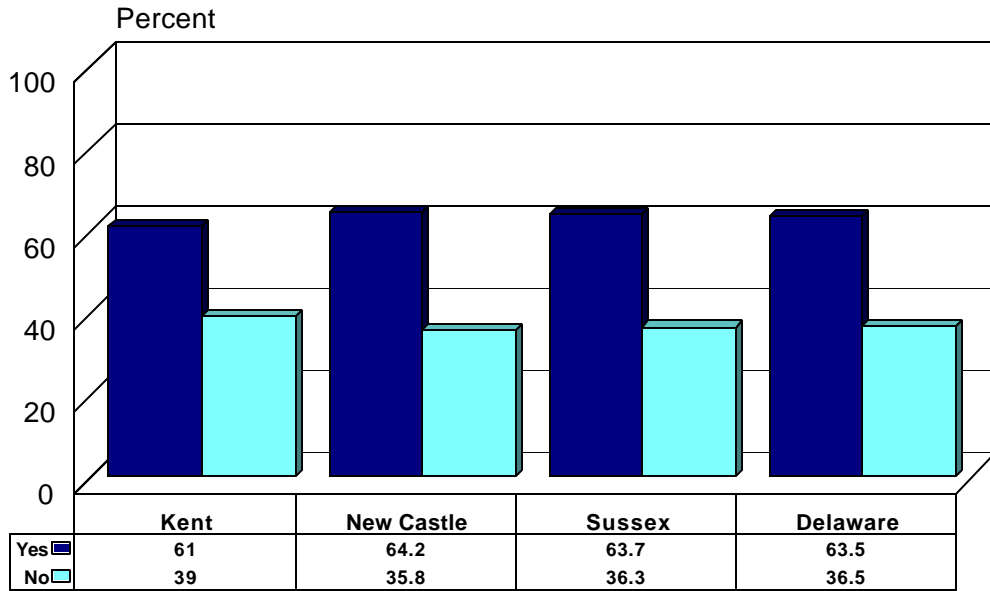


Source: Center for Applied Demography & Survey Research, University of Delaware

²³ The 533 that had a lawn were asked and 533 responded.

²⁴ The 533 that had a lawn were asked and 533 responded.

Figure 3.19
Do You Have Leaves on Your Property in the Fall?
by County ²⁵



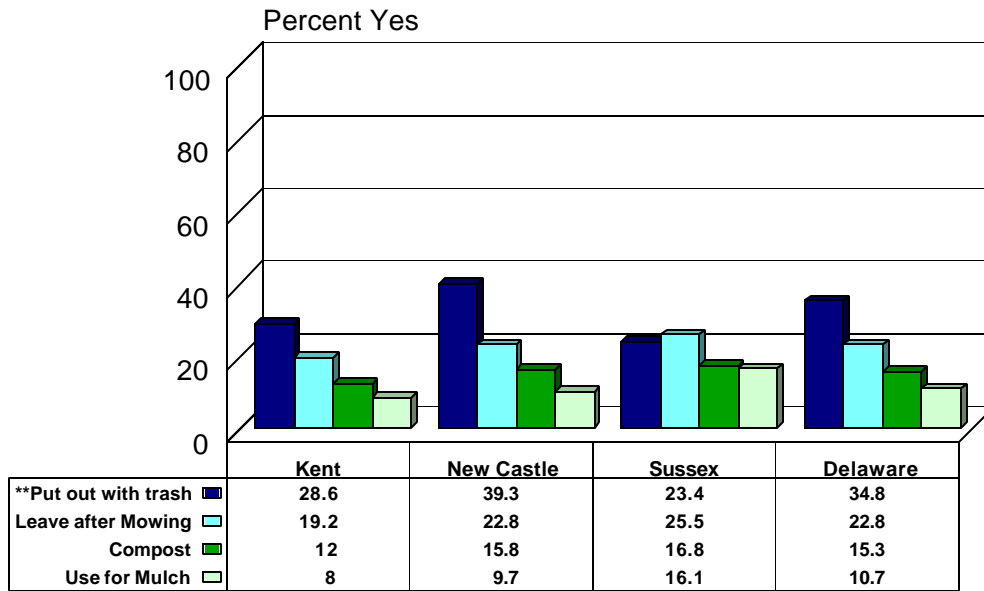
Source: Center for Applied Demography & Survey Research, University of Delaware

Most households that have a lawn will probably have trees. Most, but not all trees have leaves and those leaves have to be removed in some manner in the Fall. As is shown in Figure 3.19, above, almost two thirds of adult Delawareans have a leaf removal problem to deal with annually. There is no variation in this fact by county and it doesn't matter if you live in town or out of town.

What does vary is how the respondents deal with the leaves. This information is provided in Figures 3.20 and 3.21, below. More than a third of adult Delawareans put their leaves in the trash for removal to the landfill. The others are spread across multiple options. Once again, New Castle County respondents are significantly more likely to put their leaves out with the trash. Respondents who live in a city/town continue to rely more on trash pickup for yard waste removal than those in the unincorporated area (43.9% to 24.6%). There was also a difference between the age groups with the middle age group being far less likely (23.9%) to use the trash removal service for leaf removal than either the younger age group (43%) or the older age group (37.2%).

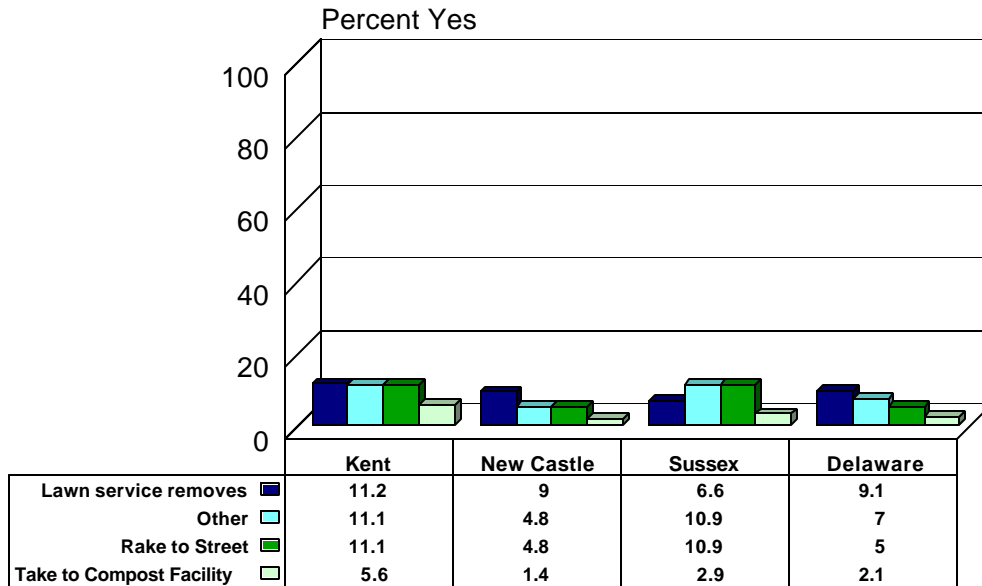
²⁵ All 647 were asked and 647 responded.

Figure 3.20
How Do You Dispose of the Leaves? (1)
by County ²⁶



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 3.21
How Do You Dispose of the Leaves? (2)
by County ²⁷

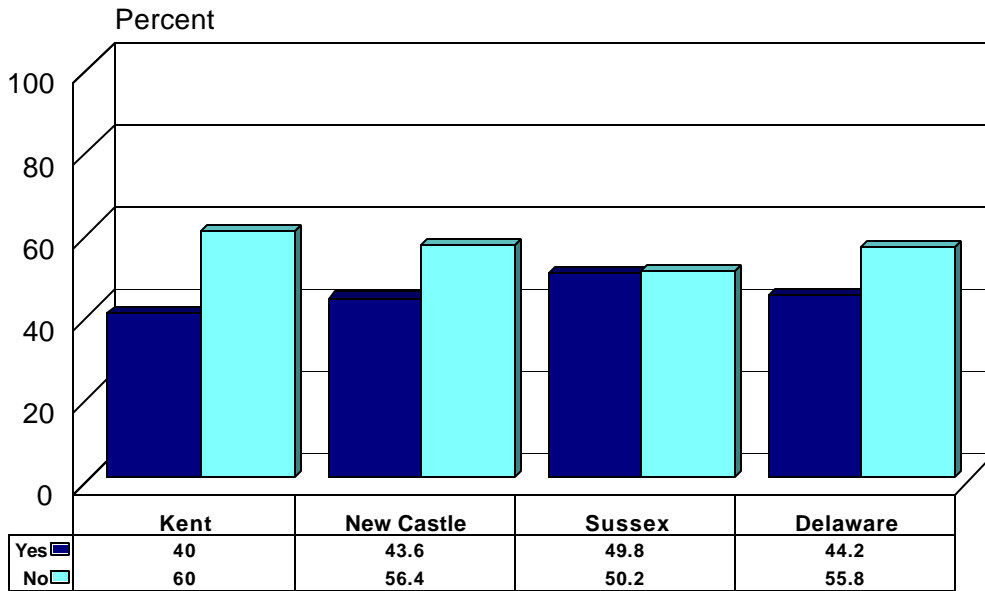


Source: Center for Applied Demography & Survey Research, University of Delaware

²⁶ The 408 with leaves were asked and 408 responded.

²⁷ The 408 with leaves were asked and 408 responded.

Figure 3.22
Does Your Household Generate Tree and Bush Trimmings?
by County ²⁸



Source: Center for Applied Demography & Survey Research, University of Delaware

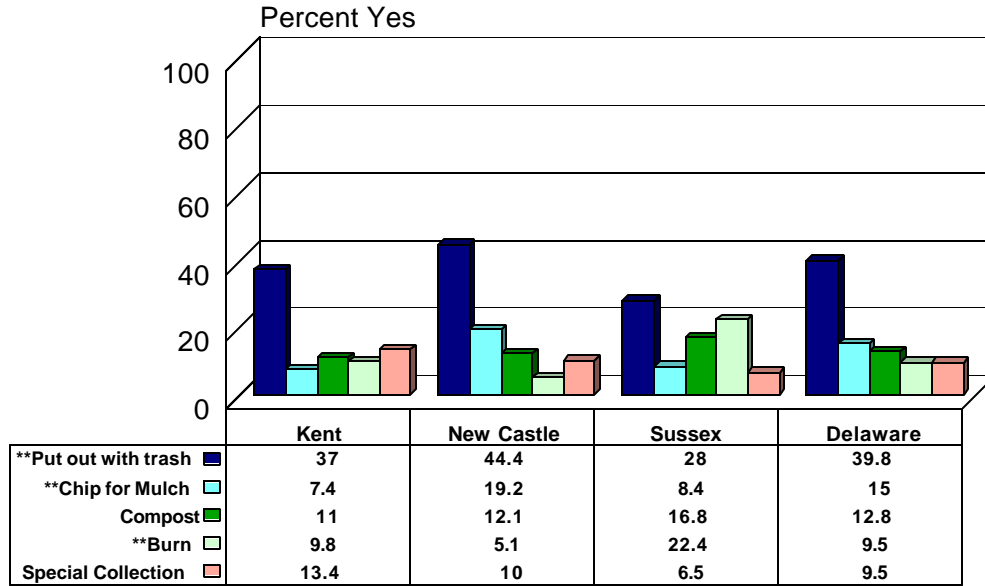
Just under half of the respondents had to contend with waste from trimming trees and bushes on their property and this was fairly consistent across the counties. Almost 40% of those with the problem rely on their trash collection service to remove the waste material. Once again, New Castle County respondents were more likely to proceed in this fashion and significantly so. That difference is primarily between New Castle and Sussex counties.

Two other significant differences exist. The first is a larger number of New Castle County residents used a chipper to dispose of tree branches. This requires a special piece of equipment to accomplish the task. It was no surprise to see that the high-income group was nearly five times more likely to use that equipment than the low income group (21.5% to 4.1%).

The second area involved burning of the waste material. That was far more likely to occur in Sussex County than in either New Castle or Kent counties. There are also ordinances that restrict burning of waste material in populated areas. This undoubtedly contributes to the difference. That fact was also confirmed by noting that the respondents who lived in the unincorporated area were more than four times more likely to burn their tree trimmings (16.5% to 3.8%).

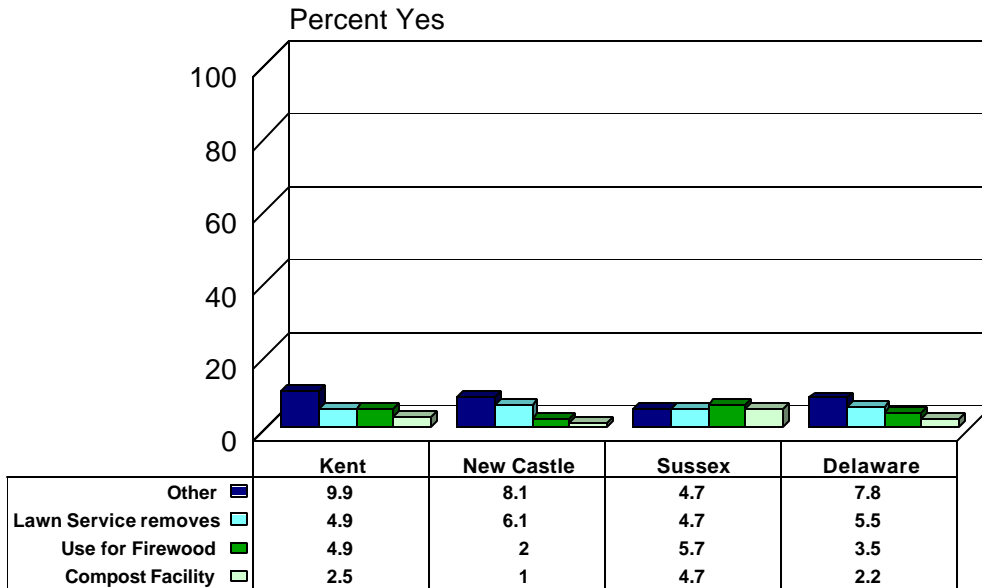
²⁸ All 647 were asked and 647 responded.

Figure 3.23
How Do You Dispose of the Tree/Bush Waste? (1)
by County ²⁹



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 3.24
How Do You Dispose of the Tree/Bush Waste? (2)
by County ³⁰



Source: Center for Applied Demography & Survey Research, University of Delaware

²⁹ The 288 with tree/bush trimmings were asked and 288 responded.

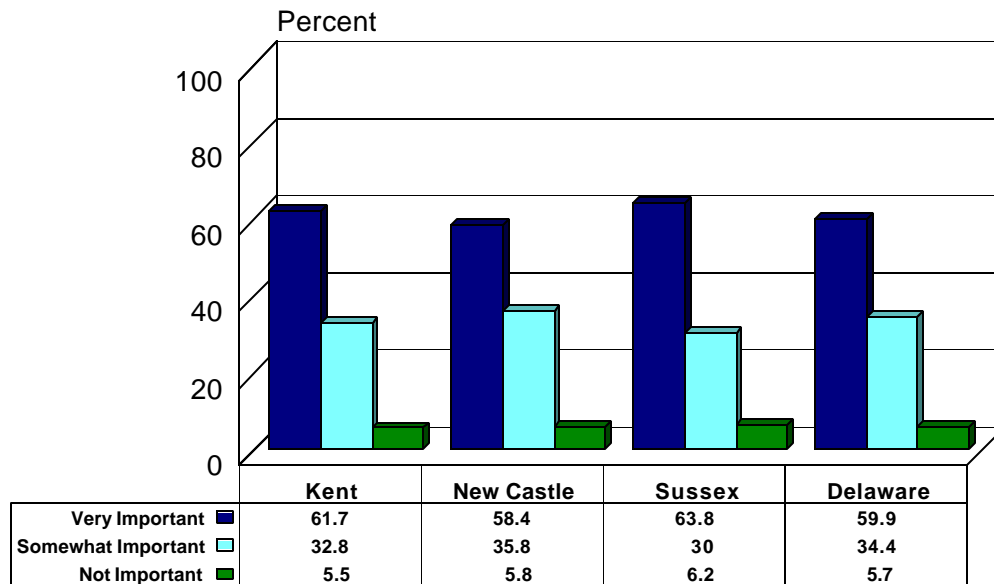
³⁰ The 288 with tree/bush trimmings were asked and 288 responded.

The material presented in this section shows that there is significant variation in existing recycling behavior throughout the state. It also shows that there may be opportunities to change and improve upon the activities that are already underway. In the next section, the attitudes of the respondents with respect to a wide range of recycling issues will be presented.

Attitudes Toward Recycling

The recycling practices detailed in the previous section are the result of attitudes and perceptions held by both those that recycle and those that don't. If the goal is to expand the scope of recycling then understanding and changing these views is imperative. The alternative is to implement programs by legislative mandate and that itself may not be an easy task. In this section, the respondents' perceptions of recycling will be gauged. In addition, their assessment of the "Recycle Delaware" program will be examined. Finally, the respondents will be asked about ways of expanding the existing programs.

Figure 4.1
How Important is it to Recycle Household Trash?
by County³¹



Source: Center for Applied Demography & Survey Research, University of Delaware

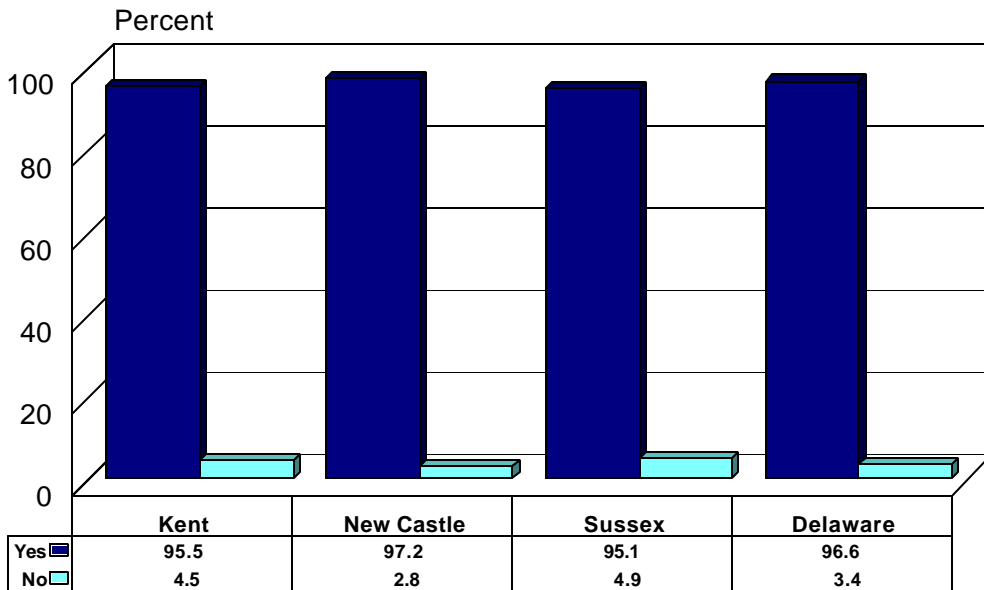
More than 90% of the survey respondents believe that recycling is important and nearly 60% would classify this activity as *very important* (Figure 4.1, above). The pattern of responses is basically the same across the counties with no statistically significant differences present.

Within the other contrast groups, the only significant difference was between the youngest age group and the older groups. Respondents in the younger age group rated recycling as *very important* 49.3% of the time in comparison to 63.3% and 66.7% for the middle age group and the oldest age group respectively.

³¹ All 647 were asked and 640 gave specific responses.

Probably more interesting was the relationship between current recycling practices and the respondent’s feeling about recycling. Over 80% of those that say recycling is *very important* currently recycle. Of those that said its *somewhat important*, 50% recycled. For those that thought recycling was *not important*, only 7.7% currently recycle. If this information is accurate, changing perceptions may change actions.

Figure 4.2
Do You Believe there are Benefits to Recycling?
by County³²



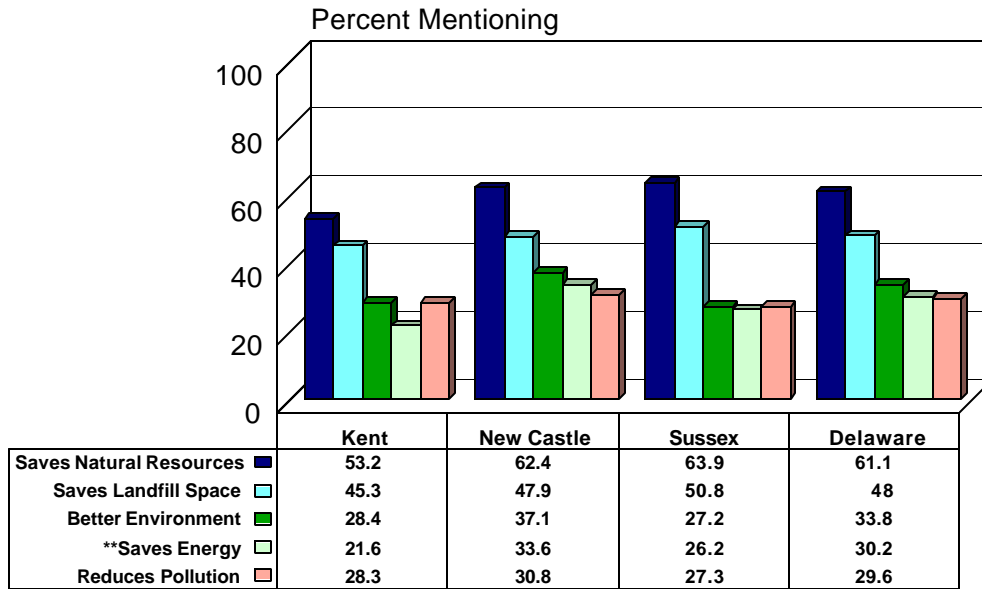
Source: Center for Applied Demography & Survey Research, University of Delaware

The respondents were asked if recycling produced any benefits and more than 96% agreed that it did (Figure 4.2, above). Most of those in the negative column also stated that recycling was *not important*. The agreement was also uniform across the counties and all of the other contrast groups.

Those that felt recycling produced benefits were then asked to name some of those benefits. Their responses are found in Figures 4.3 and 4.4, below. The most frequently mentioned benefit by far was *saving natural resources*. This was generally agreed upon within the counties and within all other contrast groups. It is also perhaps the most direct impact of recycling along with *saving landfill space*.

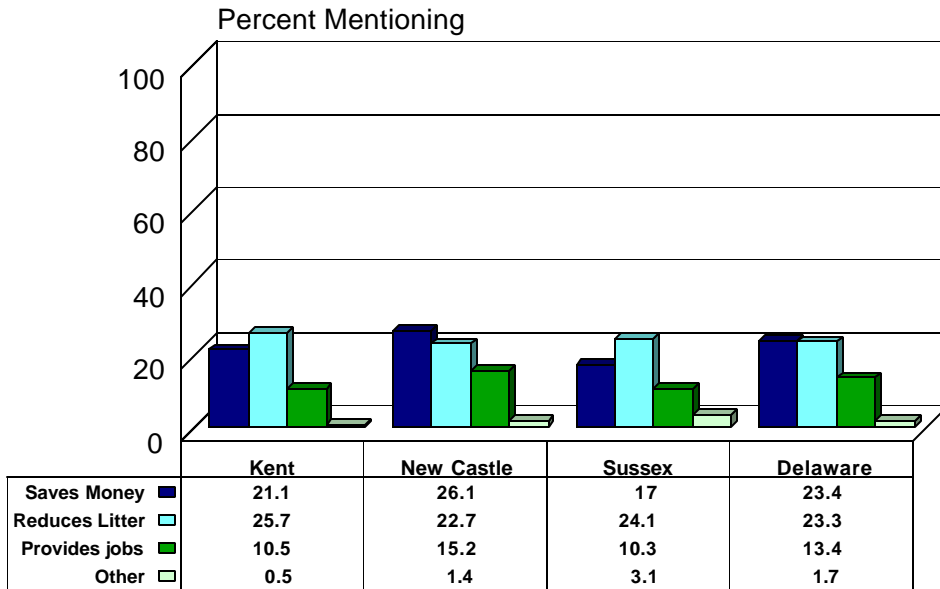
³² All 647 were asked and 621 gave specific responses.

Figure 4.3
Can You Name Some Benefits of Recycling? (1)
by County³³



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 4.4
Can You Name Some Benefits of Recycling? (2)
by County³⁴



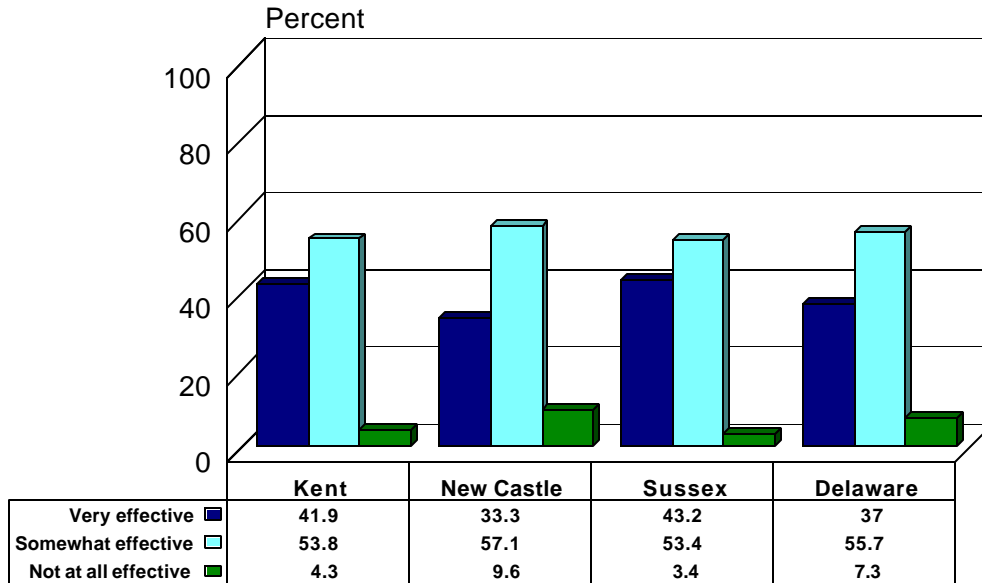
Source: Center for Applied Demography & Survey Research, University of Delaware

³³ All 647 were asked and 597 gave specific responses.

³⁴ All 647 were asked and 597 gave specific responses.

It is also interesting to see that the environmental benefits are generally mentioned less although the landfill benefit could be judged as either a resource or an environmental benefit. *Saving energy* was more often mentioned by New Castle County respondents compared to Kent County respondents. Both women (53.2% to 42.1%) and those who lived in the unincorporated areas (56.7% to 42.2%) mentioned *saving landfill space* more often than their counterparts. The higher income group mentioned *reducing pollution* more often than those in the lower income group (35.8% to 24.6%). Similarly, the younger age group thought *reducing pollution* was a benefit more often than the older age group (37% to 22.8%).

Figure 4.5
How Effective is the “Recycle Delaware” Program?
by County³⁵



Source: Center for Applied Demography & Survey Research, University of Delaware

“Recycle Delaware” is the primary effort toward recycling in the state and, for that reason, it is important to see how people perceive it. In the previous section, 57.5% of the respondents stated that they were aware of the program. Those that were aware were asked about the effectiveness of the program. Those results are found in Figure 4.5, above.

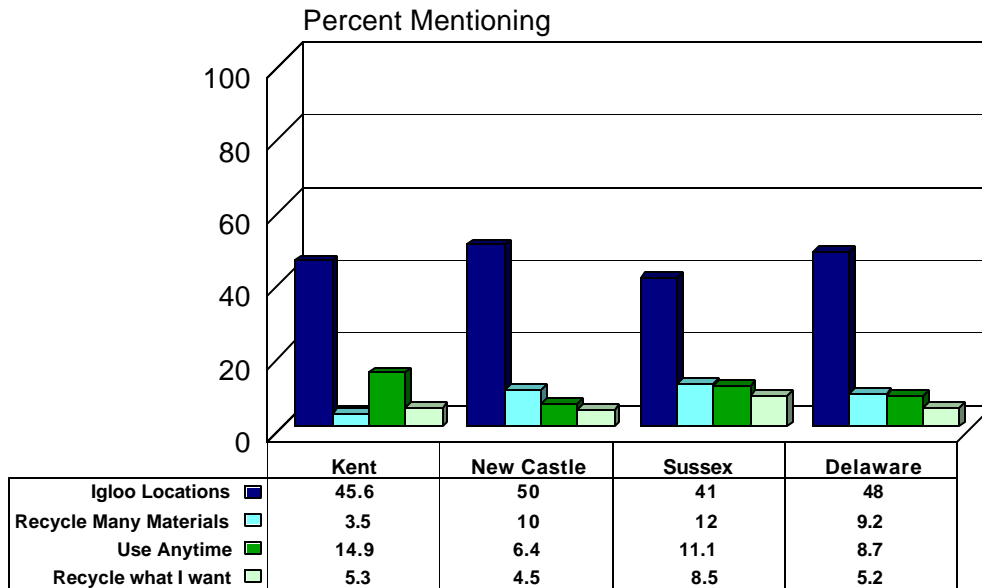
More than 92% of the respondents stated that the program was effective at some level, although only 37% thought it was *very effective*. There was no statistical difference between the

³⁵ The 392 who knew of Recycle Delaware were asked and 340 gave specific responses.

top two groups with respect to their recycling behavior (84.7% to 77.7%). Even half of those that thought the program was *not at all effective* still recycled their household trash.

While there seem to be some differences between the counties, the smaller sample size makes them statistically insignificant. There are however differences within the contrast groups. Women see the program more favorably than men with 43.7% of women rating the program very effective compared with 30.3% of men. In addition, 12.8% of men rated the program not at all effective compared with 1.7% of women. Those that lived within a town had a higher opinion of the program than those in the unincorporated area although the differences were not large. There were disagreements between the age groups as well with the oldest group having the most favorable view and the middle age group the least (49.4% to 27.9%, *very effective*).

Figure 4.6
What Do You Like Most about “Recycle Delaware”? (1)
by County³⁶



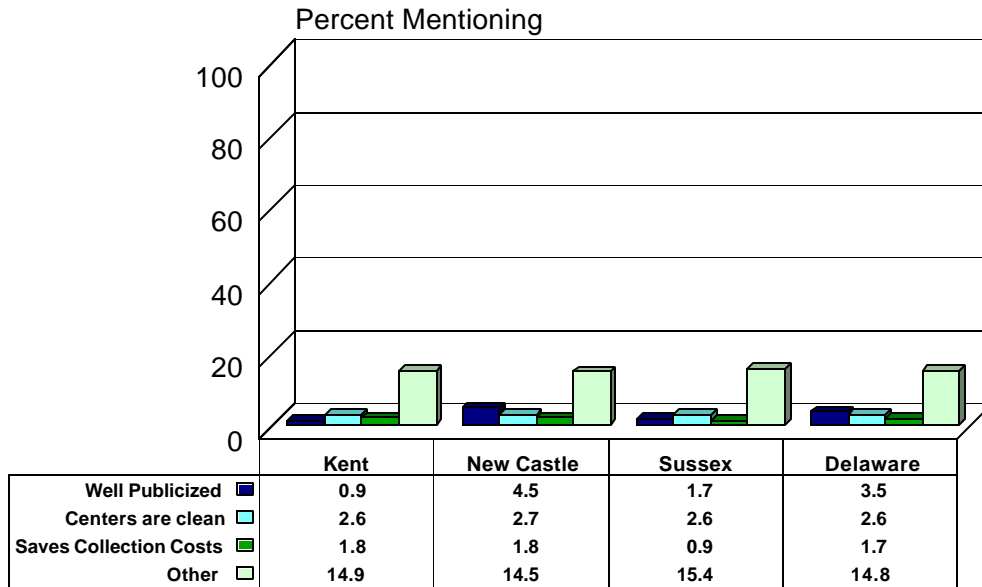
Source: Center for Applied Demography & Survey Research, University of Delaware

Respondents were also asked for the aspects of the “Recycle Delaware” program that they liked the most. Their responses are summarized in Figure 4.6, above and Figure 4.7, below. The most frequent response by far was the *convenience* of the igloo locations. This pattern held true for the counties as well. This result is not particularly surprising since time cost is one of the most sensitive aspects of life in the 1990s. The other three items in Figure 4.6 are also associated

³⁶ The 392 who knew of Recycle Delaware were asked and 340 gave specific responses.

with the convenience of the igloo program, however they probably would not compensate for the lack of a nearby location. There were small differences between the contrast groups but the small numbers responding to many of the choices limit the statistical interpretation of the differences. The only exception was the clear choice of convenience of igloo location for the youngest age group when compared with the other two (66.7% to 41.4%, and 39.3%)

Figure 4.7
What Do You Like Most about “Recycle Delaware”? (2)
by County³⁷



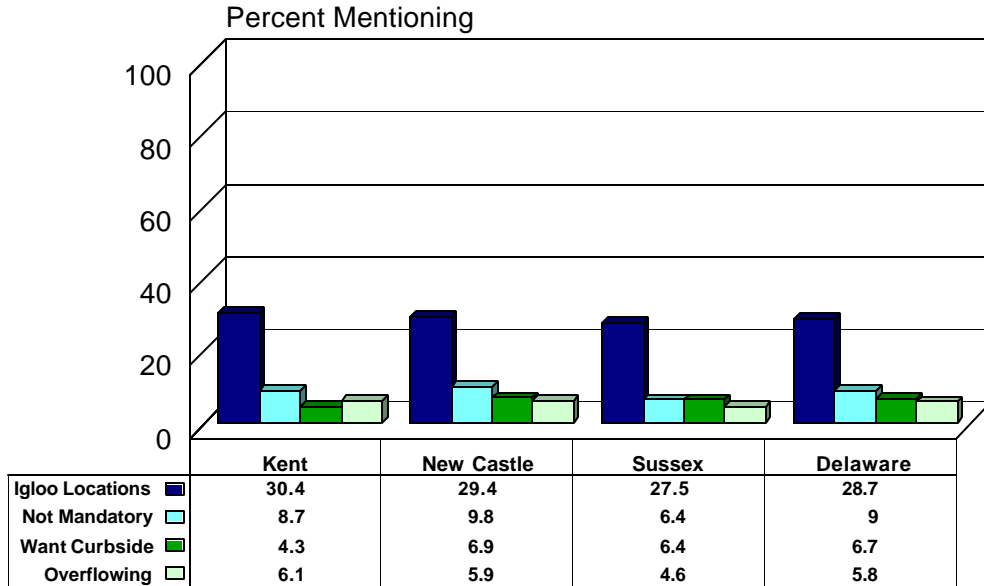
Source: Center for Applied Demography & Survey Research, University of Delaware

While every program has its positive features, they will also have negative aspects. Respondents were also asked what they liked least about “Recycle Delaware”. Those results are found in Figures 4.8 and 4.9, below.

Just as the convenience of igloo locations was the dominant positive aspect, it also is the dominant negative aspect of the program. This may suggest that there are areas where the journey to recycle is just too long or the person wants another pattern of location such as near employment or shopping as opposed to near home. Two other interesting features of the data are the fact that lack of curbside pickup is mentioned by about 7% of the respondents and the lack of mandatory participation is seen as a negative by 9% of the respondents.

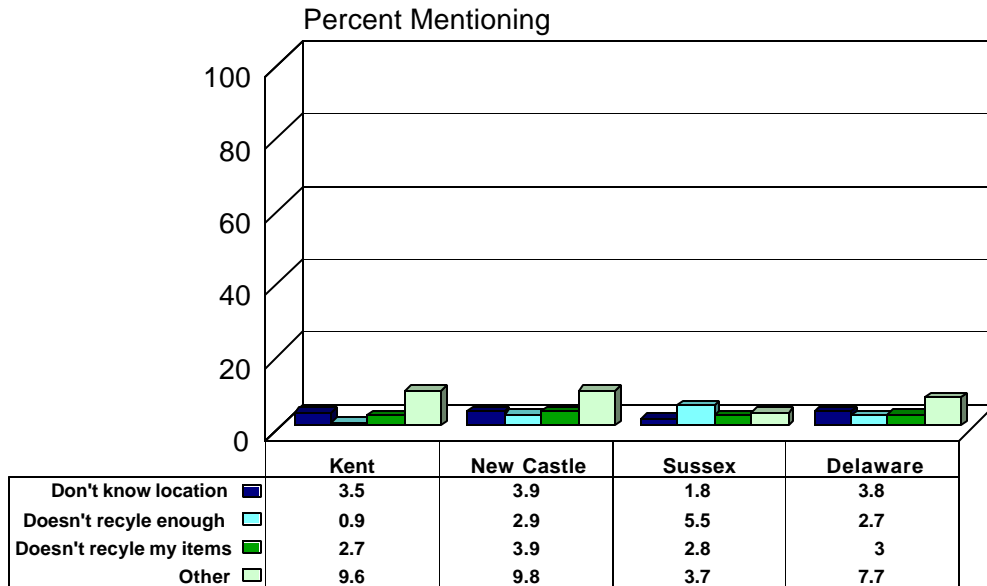
³⁷ The 392 who knew of Recycle Delaware were asked and 340 gave specific responses.

Figure 4.8
What Do You Like Least about “Recycle Delaware”? (1)
by County³⁸



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 4.9
What Do You Like Least about “Recycle Delaware”? (2)
by County³⁹



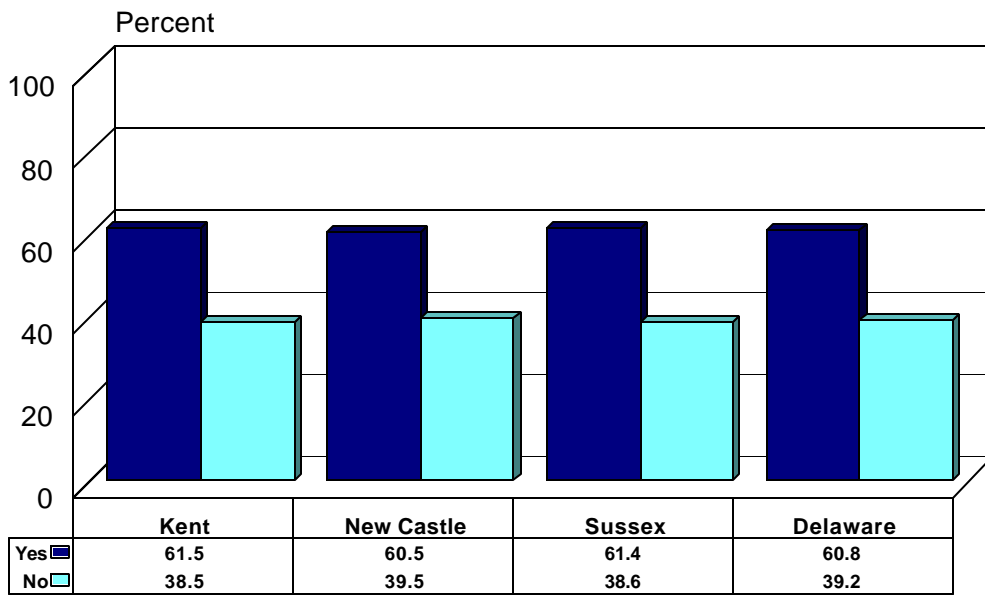
Source: Center for Applied Demography & Survey Research, University of Delaware

³⁸ The 392 who knew of Recycle Delaware were asked and 326 gave specific responses.

³⁹ The 392 who knew of Recycle Delaware were asked and 326 gave specific responses.

Apparently the structure of the program is not a major problem since less than 5% had anything negative to say about the material that was recycled. It also may be important to note that fewer respondents were willing to say something positive about the cleanliness of the igloo locations than were saying igloos were overflowing. Probably the most noteworthy item is not reflected in the chart and that was that around 30% of the respondents could find nothing negative to say about the program. This was true for all of the contrast groups as well.

Figure 4.10
Would You Like to Recycle More Materials?
by County⁴⁰



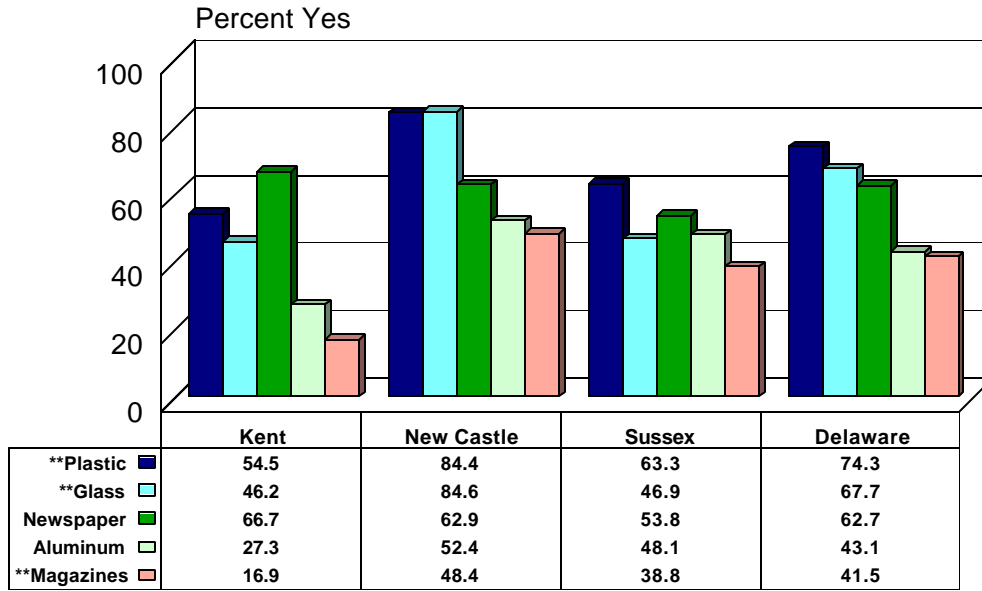
Source: Center for Applied Demography & Survey Research, University of Delaware

Respondents that were already recycling were asked if they would like to recycle more types of material. The response was a quite positive 60.8% (Figure 4.10, above). Since almost 60% of the respondents currently recycle with “Recycle Delaware”, an estimated 36% of adult Delawareans would be willing to do even more. This is a substantial number even if no new recyclers are found. The result holds for the counties and all of the contrast groups.

To follow this line of reasoning even further, respondents were asked what materials they would like to add to their current recyclables. It should be noted that items that had been previously mentioned as being recycled were not repeated. Those results are found in Figures 4.11, 4.12, and 4.13, below.

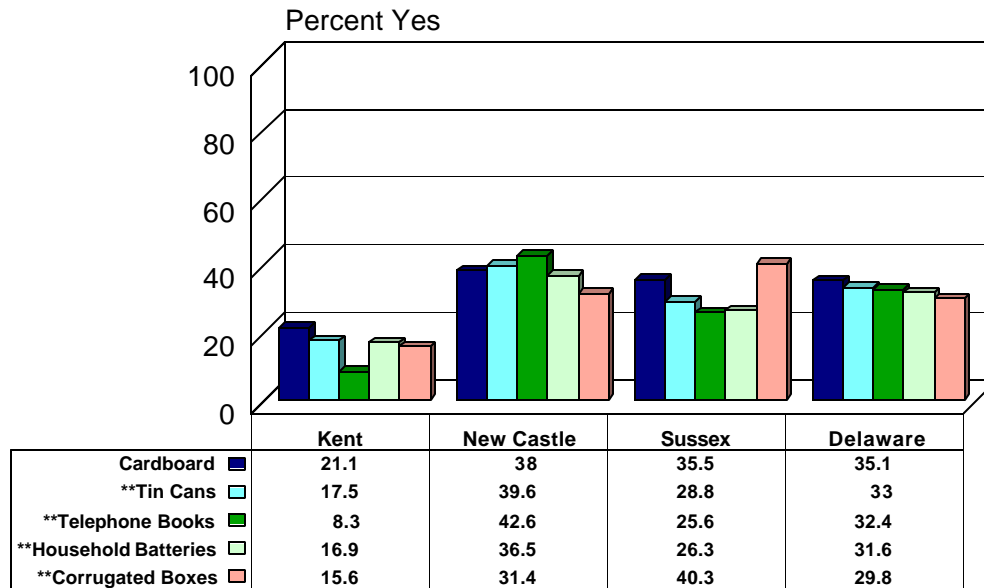
⁴⁰ The 440 that recycled were asked and 409 gave specific responses.

Figure 4.11
What Other Materials Would You Like to Recycle? (1)
by County ⁴¹



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 4.12
What Other Materials Would You Like to Recycle? (2)
by County ⁴²

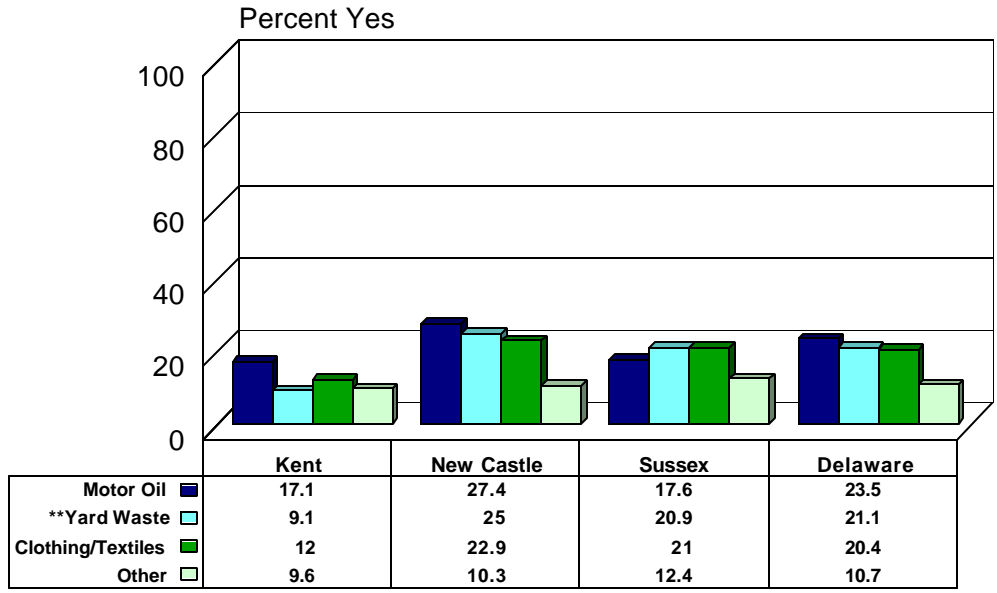


Source: Center for Applied Demography & Survey Research, University of Delaware

⁴¹ The 250 who wanted to recycle more were asked only about those materials they were not currently recycling.

⁴² The 250 who wanted to recycle more were asked only about those materials they were not currently recycling.

Figure 4.13
What Other Materials Would You Like to Recycle ? (3)
by County ⁴³



Source: Center for Applied Demography & Survey Research, University of Delaware

Items made of plastic were mentioned most often (74.3%). Currently, 64.3% of those that recycle are already recycling plastic. This must mean either that there are sites that do not accept plastic or there is a need for collection of additional types of plastic. Each item on the list must be looked at with reference to the items already being recycled. One interesting result is the fact that New Castle County respondents have an interest in recycling yard waste. Those respondents were also the most likely to put yard waste out for trash removal. There is also a substantial interest in recycling of magazines beyond current levels. About twice as many respondents say they would like to recycle more magazines than are currently doing so.

There are significant differences between the counties in the level of interest in particular materials. Primarily, this difference is attributable to Kent County. On almost every item, the level of interest expressed by respondents is below that from the other two counties. They simply pick fewer items.

There are a few minor instances of differences between the contrast groups, but none is particularly meaningful.

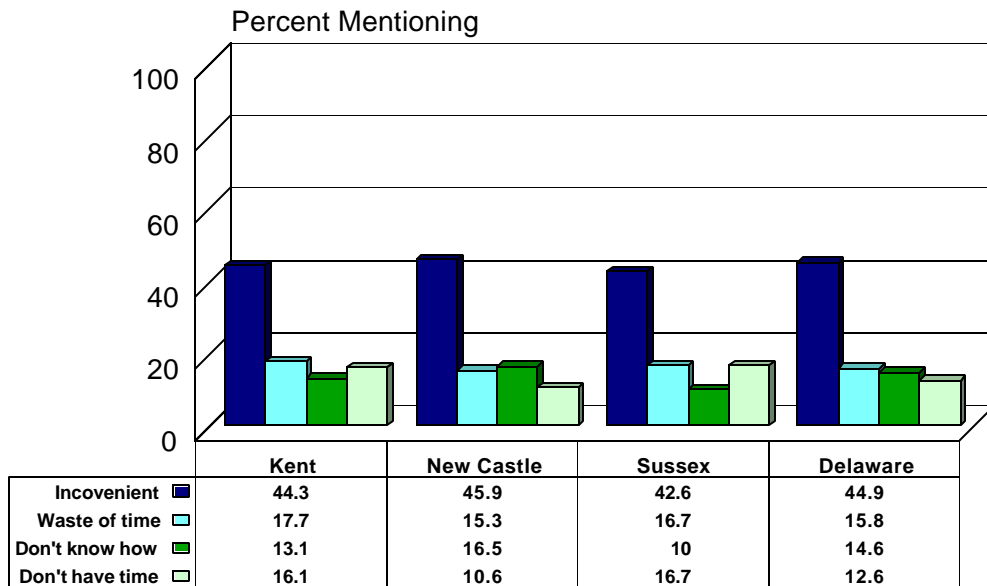
⁴³ The 250 who wanted to recycle more were asked only about those materials they were not currently recycling.

The other possible solution for increasing the amount of recycling is to convince those that do not recycle to begin to do so. For that reason, the respondents who were among the 35% of adult Delawareans that don't recycle were asked about their reasons for not recycling. Those results are found in Figures 4.14 through 4.16, below.

The dominant reason stated for not recycling is that it's *inconvenient*. That result holds across the counties and for almost all of the contrast groups. The one exception was within the owner/renter group. A significant proportion of renters relative to homeowners responded that they *did not know what to do* (29.8% to 9.3%).

Convenience will always be a recurrent theme when a program is voluntary. The more convenient recycling is, the more likely people will chose to participate. Earlier, information was presented that the location of igloos was both what respondents liked most and least about the "Recycle Delaware" program. At the same time, very few respondents mentioned that the program was well publicized. That may be part of the problem expressed by renters and that may be part of any effort to improve the existing recycling program.

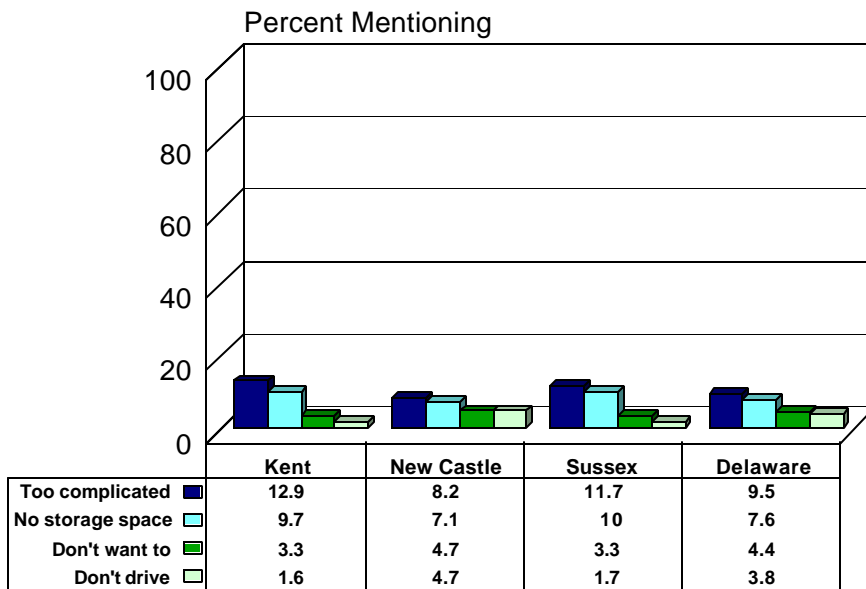
Figure 4.14
Is There a Reason Why You Don't Recycle? (1)
by County ⁴⁴



Source: Center for Applied Demography & Survey Research, University of Delaware

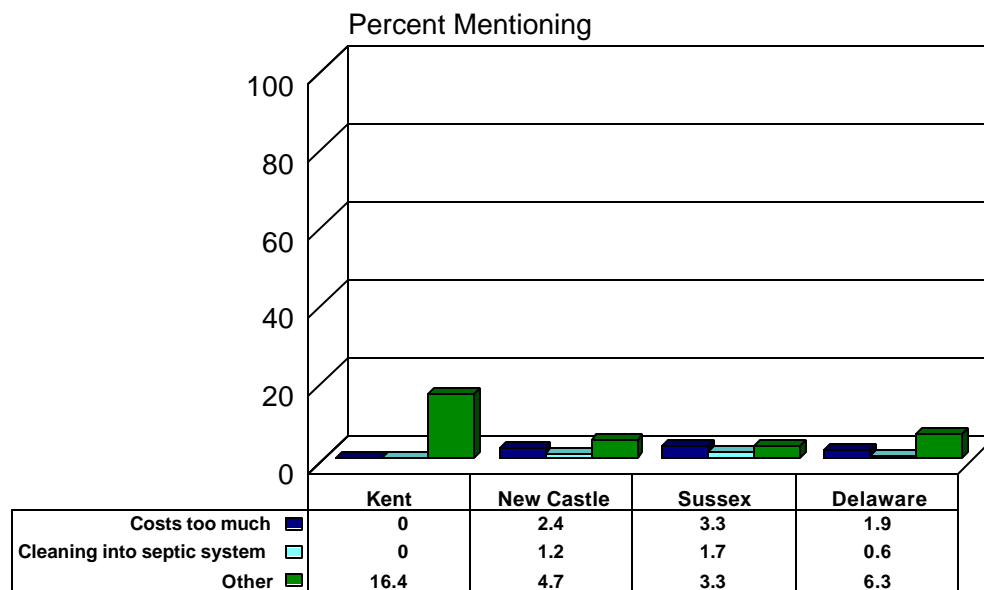
⁴⁴ The 207 who did not recycle were asked and 207 provided specific answers.

Figure 4.15
Is There a Reason Why You Don't Recycle? (2)
by County ⁴⁵



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 4.16
Is There a Reason Why You Don't Recycle? (3)
by County ⁴⁶

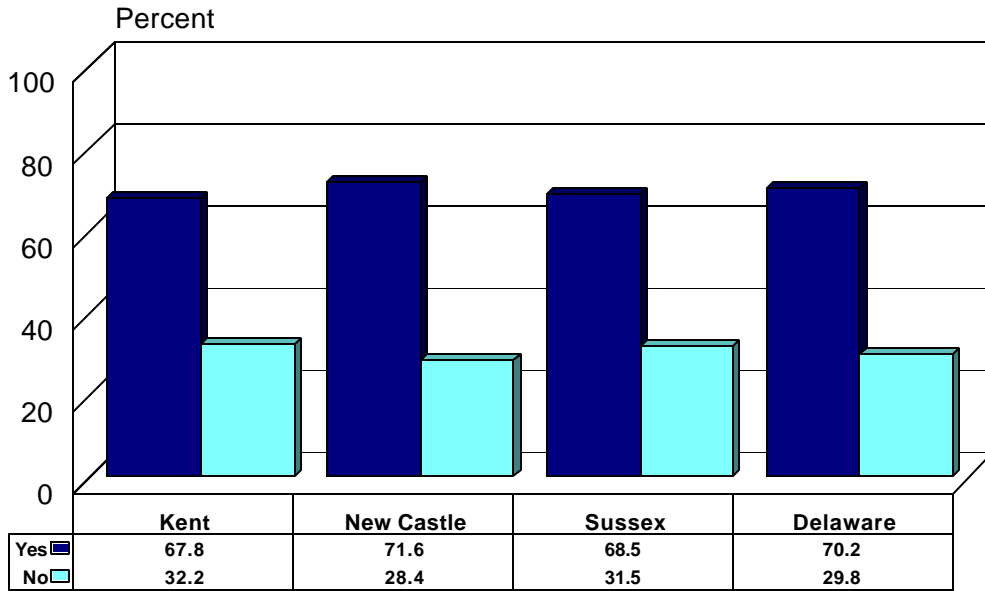


Source: Center for Applied Demography & Survey Research, University of Delaware

⁴⁵ The 207 who did not recycle were asked and 207 provided specific answers.

⁴⁶ The 207 who did not recycle were asked and 207 provided specific answers.

Figure 4.17
Would You Like to Recycle?
by County⁴⁷



Source: Center for Applied Demography & Survey Research, University of Delaware

The final question in this series was addressed to those who were currently not recycling. They were asked if they would like to recycle and a substantial proportion (70.2%) responded affirmatively (Figure 4.17, above). This means that about 10% of Delaware’s adult population has absolutely no interest in recycling, at least under the current program.

Finally, there are no statistically significant differences between counties on this point, however there are some to report for two other contrast groups. The proportion of those who want to recycle declines as age increases. The difference between the youngest age group and the oldest age group is significant (82.1% to 56.3%). The city dwellers that don’t recycle are far more willing to say they would like to recycle than the respondents in the unincorporated areas (81.6% to 59.3%).

In the next section, the focus will be on finding out what actions could lead to an increase in recycling. In addition, the respondents’ reactions to various new options will be explored.

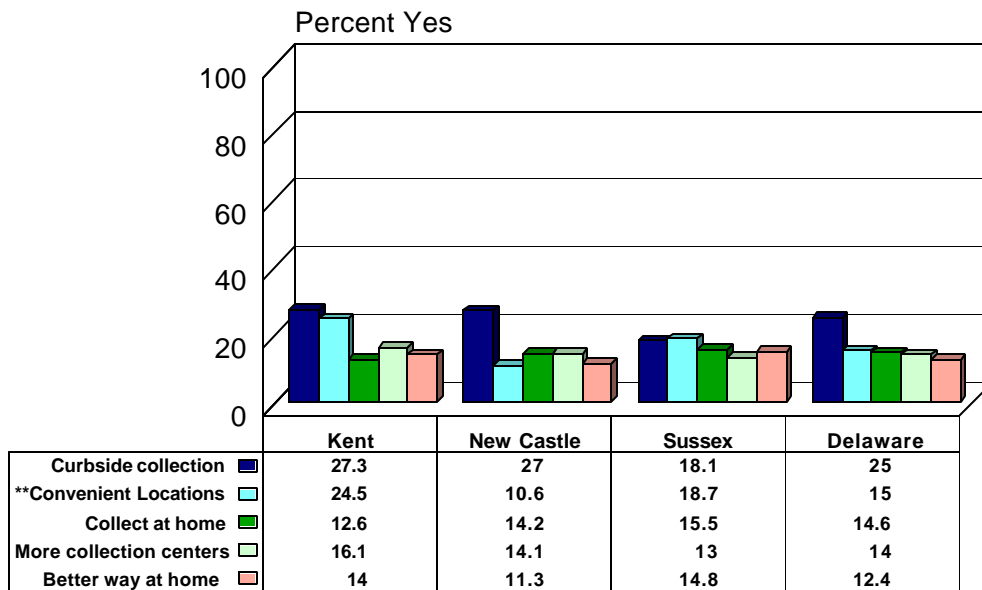
⁴⁷ The 207 who did not recycle were asked and 194 responded.

Recycling Options

If recycling in Delaware is to increase in the future, either current recyclers must increase the level of their activities or those that are not currently recycling will have to begin to do so. For this to happen, either the current program must expand or new programs must be implemented. In the prior section, evidence was presented that current recyclers might be willing to do more and some of those that do not currently recycle might be willing to begin. In this section, both areas will be addressed by detailing the survey respondents' reactions to various proposals.

The first issue was to determine what might be done to get current recyclers to do more within the current recycling framework. Respondents that were currently recycling were asked what might influence them to do more. The results are summarized in Figures 5.1, 5.2, and 5.3, below.

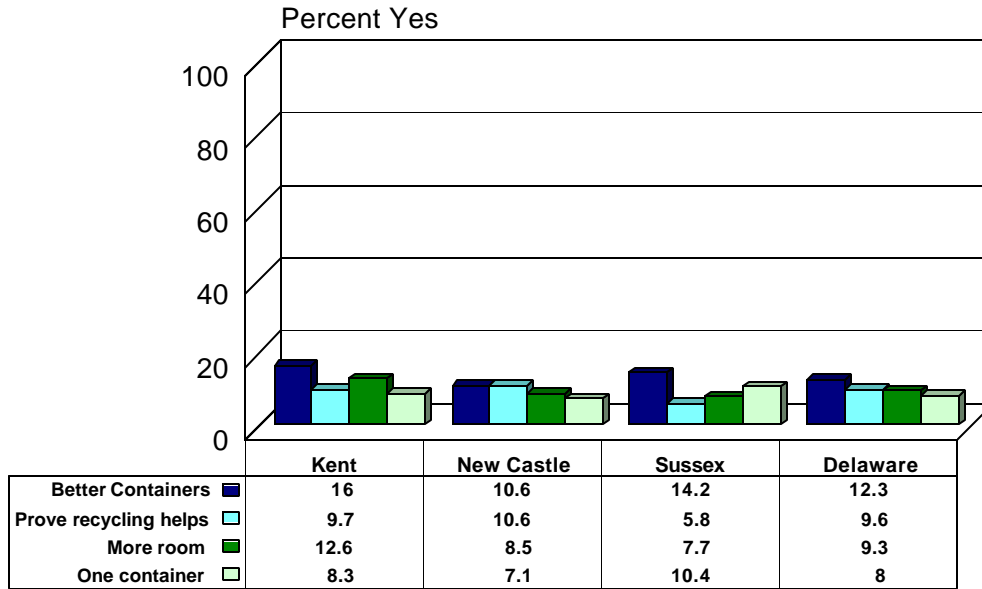
Figure 5.1
What Would It Take for You to Recycle More? (1)
by County⁴⁸



Source: Center for Applied Demography & Survey Research, University of Delaware

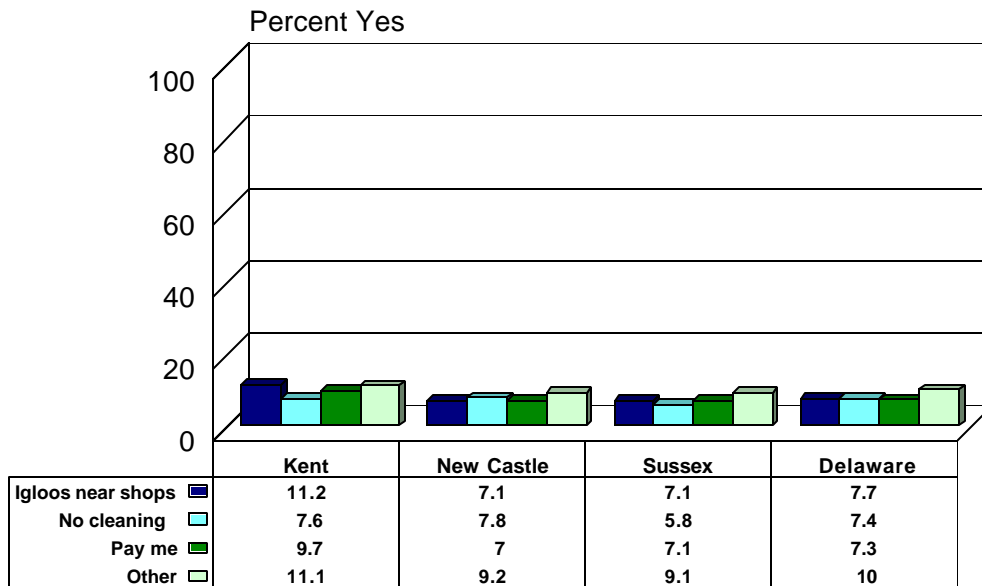
⁴⁸ The 440 who recycled were asked and 440 responded.

Figure 5.2
What Would It Take for You to Recycle More? (2)
by County ⁴⁹



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 5.3
What Would It Take for You to Recycle More? (3)
by County ⁵⁰



Source: Center for Applied Demography & Survey Research, University of Delaware

⁴⁹ The 440 who recycled were asked and 440 responded.

⁵⁰ The 440 who recycled were asked and 440 responded.

There are two dominant themes within these figures. The first theme is *curbside collection*. When combined with *collection at home*, which is essentially the same thing, it is mentioned by 35.4% of the respondents. This would require a significantly different program than what is currently in place. The second theme involves the igloo program, i.e. *more collection centers, more convenient locations*, and igloos *near shopping*. Together these responses were given by 27.5% of the recycling respondents. Given sampling error alone these measurements are not statistically different although it approaches significance. New Castle County respondents are more likely to pick the curbside theme than either those from Kent or Sussex counties. The differences are significant but they are not dramatic. Further, Kent County respondents were more than twice as likely to pick more convenient locations than respondents from New Castle County (24.5% to 10.8%).

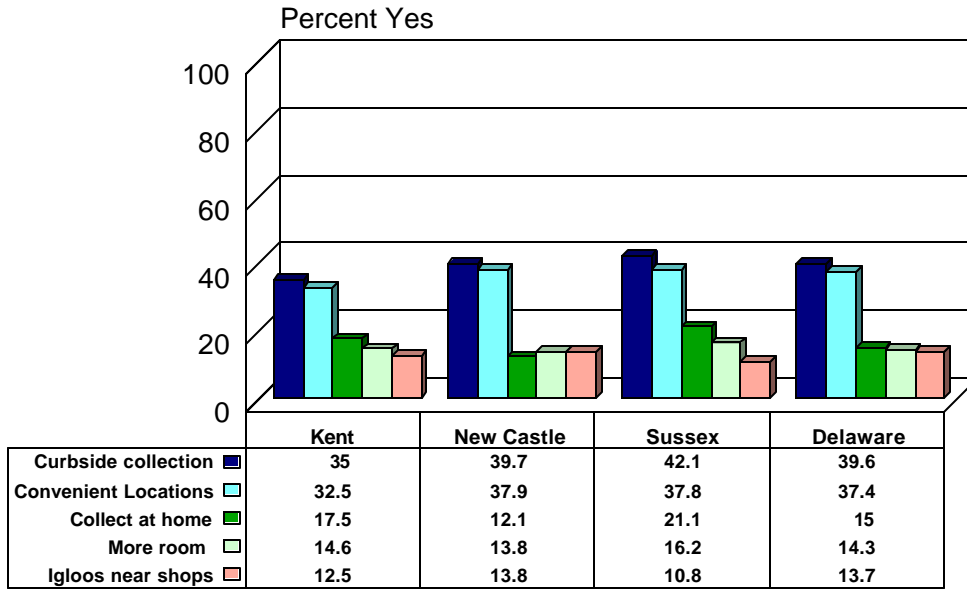
There were a few differences of note between the contrast groups. Renters wanted *collection curbside* (39.1% to 22.9%) and in a *single container* (15.6% to 6.7%) compared to homeowners. Lower income respondents requested *igloos near shopping* (11.4% to 4.6%). Finally, the middle age group diverged from the other age groups in wanting better containers (18.6% to 6.7%).

The other piece of the puzzle is those who are not currently recycling, but would like to start. The same alternatives provided to the current recyclers were posed to this group too. The results are found in Figures 5.4, 5.5, and 5.6, below.

Basically the same two themes are present although the differences were not as large. Approximately 49% of those responding reported that they wanted *curbside* collection. This compares with 45% who wanted *more convenient* access to the igloos. The respondents fall roughly into four equal groups. About one quarter of the respondents don't fall into either category. Another quarter will take either solution. The remainder split evenly between curbside and more igloos. If you choose one of the two approaches approximately 50% of the non-recyclers may start.

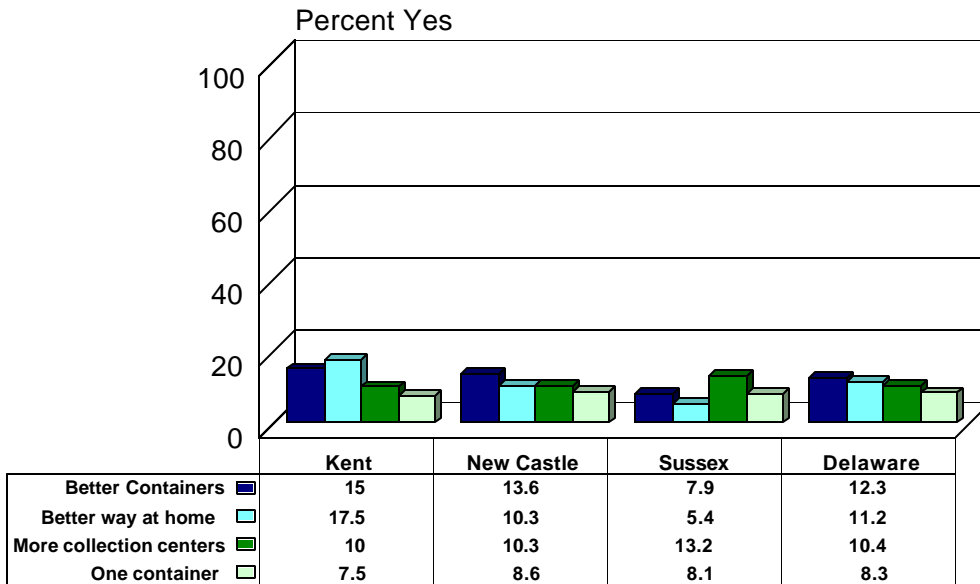
There were no significant differences to report between the counties but there was one interesting difference between the age groups. Once again the middle age group stands out. Only 18% of these non-recyclers want curbside collection in comparison with 47.8% and 53.6% for the younger and older age groups respectively.

Figure 5.4
What Would It Take for You to Recycle? (1)
by County⁵¹



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 5.5
What Would It Take for You to Recycle? (2)
by County⁵²

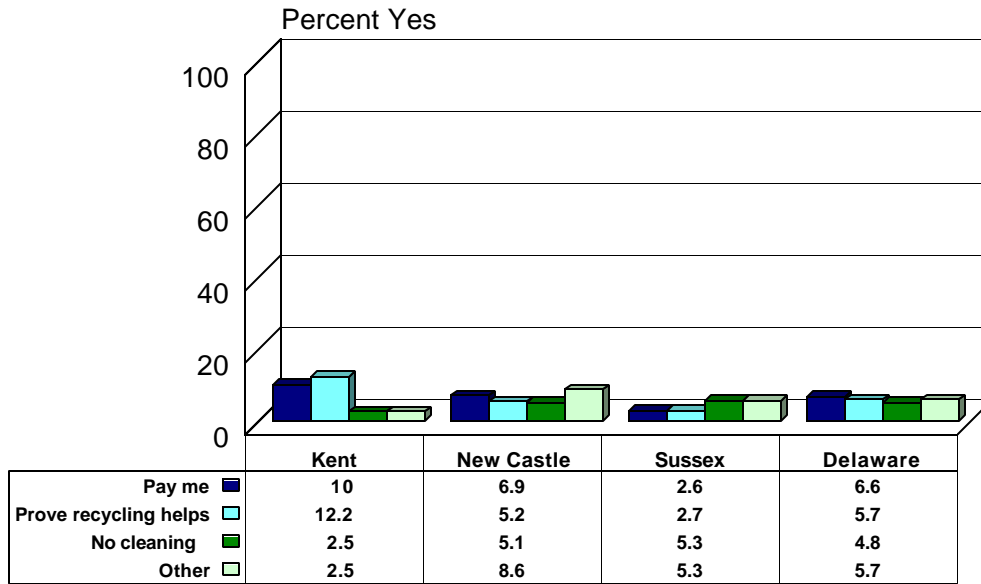


Source: Center for Applied Demography & Survey Research, University of Delaware

⁵¹ The 135 who did not recycle but would like to were asked and 135 responded.

⁵² The 135 who did not recycle but would like to were asked and 135 responded.

Figure 5.6
What Would It Take for You to Recycle? (3)
by County ⁵³



Source: Center for Applied Demography & Survey Research, University of Delaware

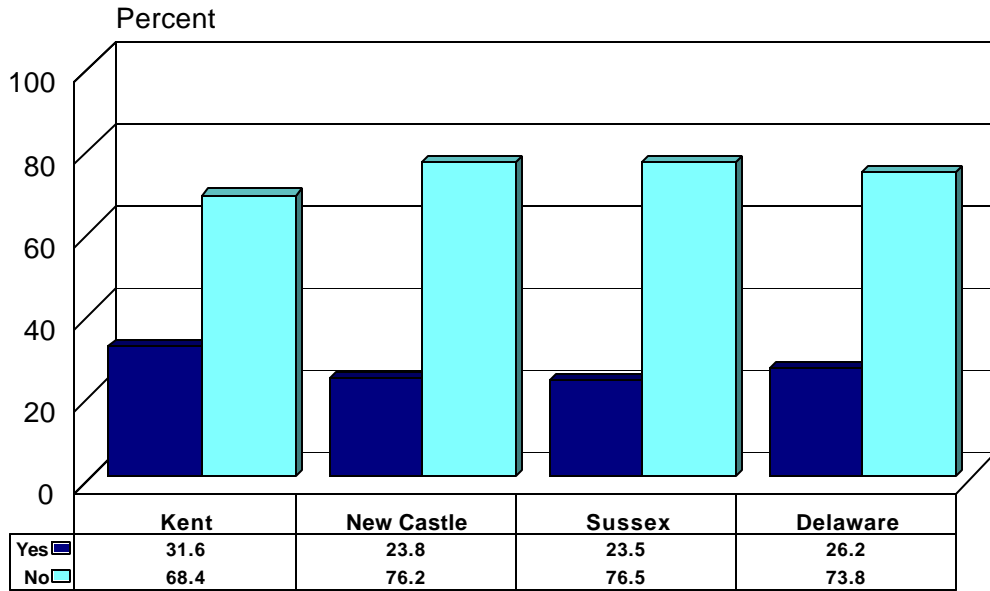
Those respondents that said they did not want to recycle were asked two additional questions. The results of the first question are found in Figure 5.7, below. These hardcore non-recyclers are relatively unimpressed by *more convenient igloos*. Only 26% of those respondents expressed an interest. That is only half as much interest as was expressed by the previous group of non-recyclers. The results do not vary by county or within the contrast groups. This is not surprising given the small sample size for this subset of respondents.

The second question provides an interesting contrast with the first option. These non-recyclers who did not express an interest in starting to recycle were asked if they wanted *curbside* pickup. These results are found in Figure 5.8, below. About half of this subset of respondents expressed an interest in curbside pickup. Just over 41% of these respondents were negative toward both options.

Using the information for both groups of non-recyclers, it appears that about half might be amenable to one solution or the other with a slight edge going to the curbside collection option.

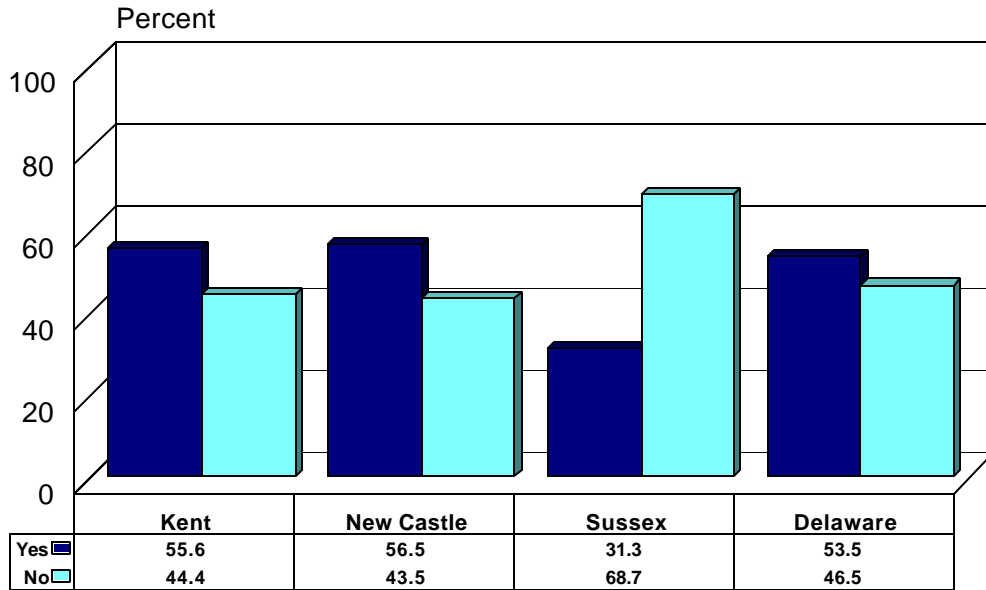
⁵³ The 135 who did not recycle but would like to were asked and 135 responded.

Figure 5.7
Would You Recycle if Igloos Were More Convenient?
by County ⁵⁴



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 5.8
Would You Recycle if Recyclables Were Picked up at Home?
by County ⁵⁵

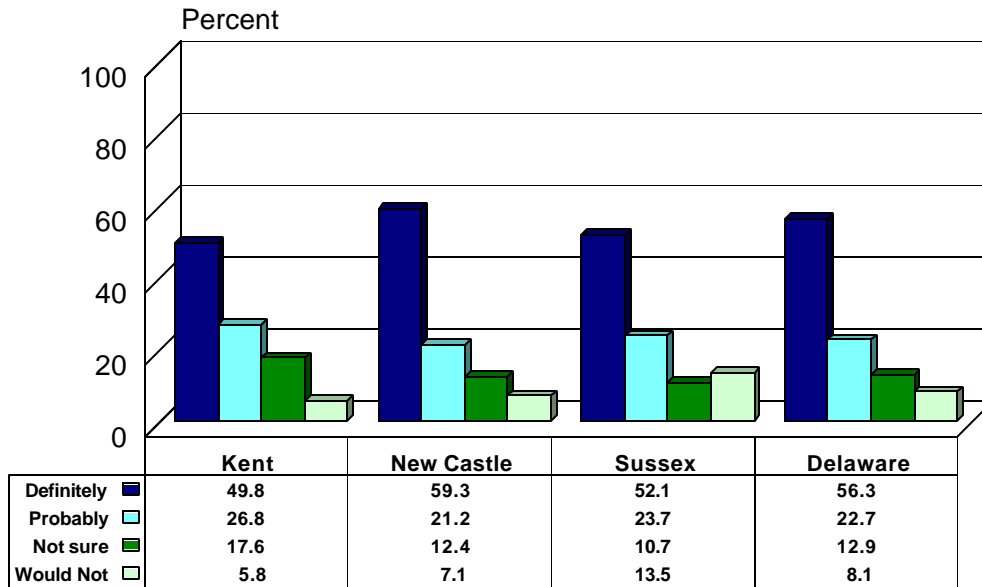


Source: Center for Applied Demography & Survey Research, University of Delaware

⁵⁴ The 57 non-recyclers who did not want to start recycling were asked and 57 responded.

⁵⁵ The 57 non-recyclers who did not want to start recycling were asked and 57 responded.

Figure 5.9
Participate if Recyclables Were Picked Up with Household Trash?
by County ⁵⁶



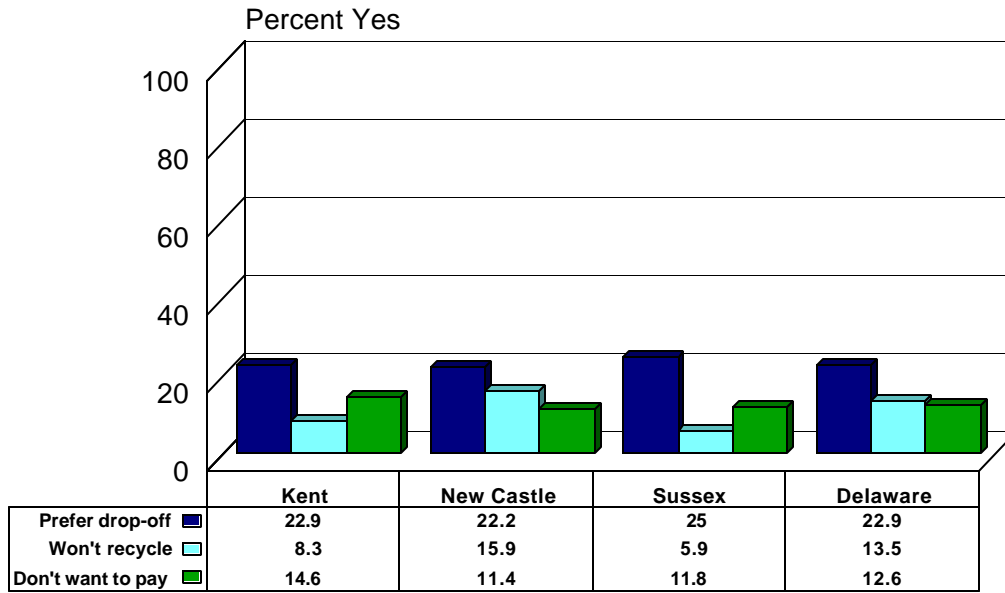
Source: Center for Applied Demography & Survey Research, University of Delaware

All respondents were asked whether they would be willing to participate in a recycling program using curbside pickup. Their responses are summarized in Figure 5.9, above. Almost 80% of the sample responds positively to the idea. There are significant differences between the counties with New Castle County respondents being the most positive, with Kent County respondents being the most unsure, and with Sussex County respondents being the most negative. There were no differences within the other contrast groups.

Those respondents who were either negative or unsure about the proposed curbside pickup program were asked why. Those results are found in Figures 5.10 and 5.11, below. The most interesting finding is that about 23% of those who are less than positive about the new program prefer their igloos. If it were assumed that this new program would replace “Recycle Delaware”, then there could be a net gain of as much as 11% to the recycling ranks. This includes a gain of 116 who are currently not recycling and a loss of 45, if those that are less than positive stop recycling. This estimate excludes any consideration of price or the number of containers used. The impact of those variables is estimated later on.

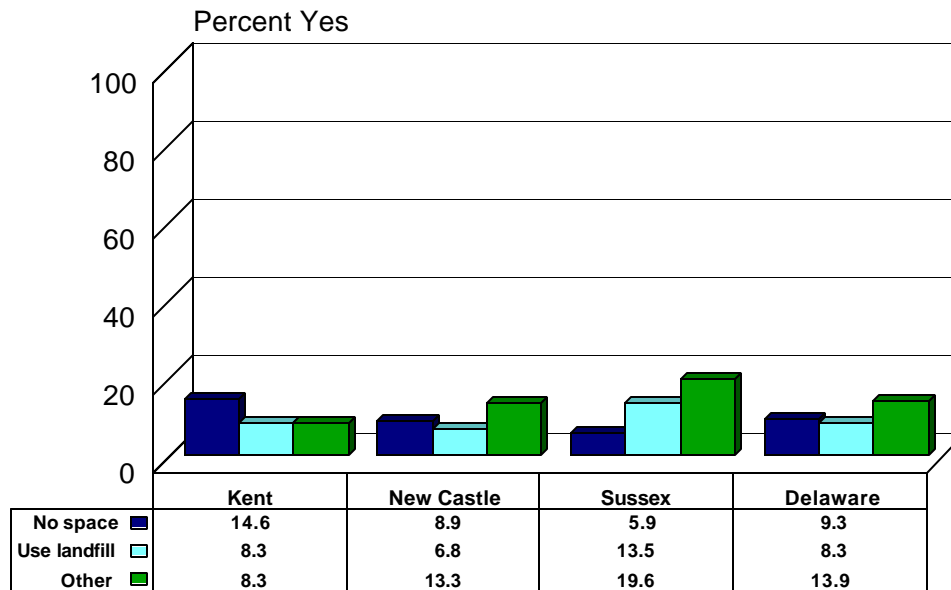
⁵⁶ All 647 were asked and 647 responded.

Figure 5.10
Why Won't You Participate? (1)
by County⁵⁷



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 5.11
Why Won't You Participate? (2)
by County⁵⁸



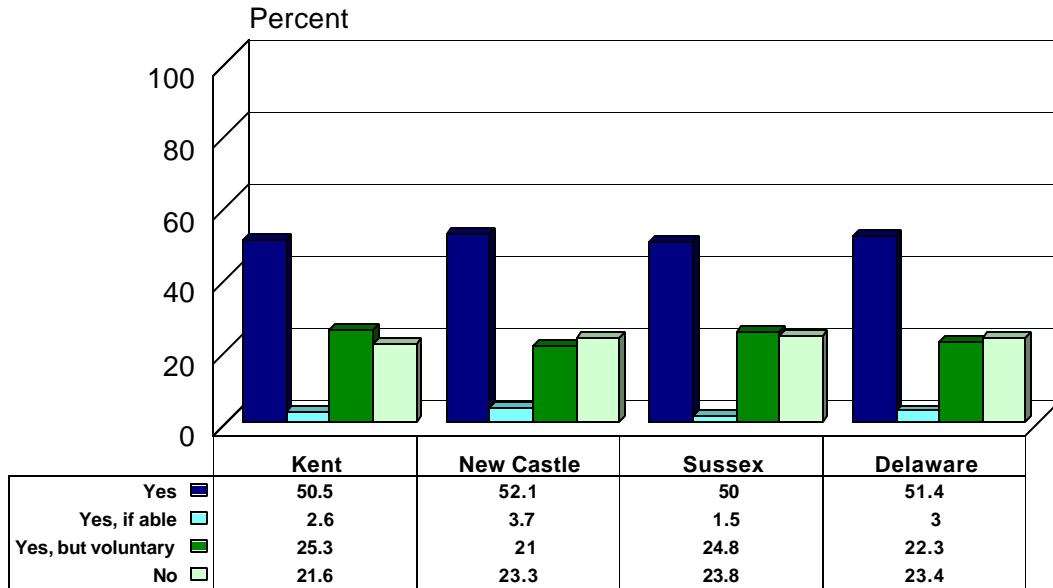
Source: Center for Applied Demography & Survey Research, University of Delaware

⁵⁷ The 145 who were either unsure or would not participate were asked and 145 responded.

⁵⁸ The 145 who were either unsure or would not participate were asked and 145 responded

Earlier in this report, there was concern expressed by 9% of the respondents that “Recycle Delaware” was not a mandatory program (see Figure 4.8, earlier). To test how serious a concern this was with the entire sample, respondents were asked directly with reference to the curbside program. The results are found in Figure 5.12, below.

Figure 5.12
Should a Program with Home Pickup be Mandatory?
by County⁵⁹



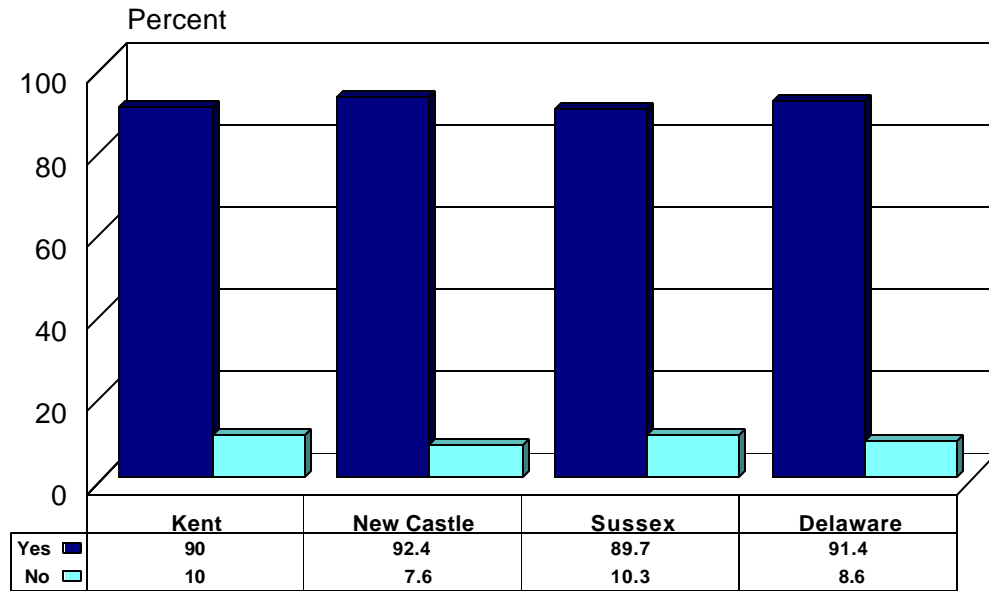
Source: Center for Applied Demography & Survey Research, University of Delaware

The interpretation of the responses is somewhat ambiguous because of the choice of answers. Just over 54% would make the program mandatory with an exception for those who were not physically able. This approach would require an ordinance or legislation that presumably would have some penalties for non-compliance. Slightly more than 23% would not make the program mandatory at all. Those that are left, about 22%, seem to favor a program that expects everyone to participate but there would be no penalties if you didn't.

There are no statistically significant differences between the counties on this issue. The only contrast group that had a disagreement was the homeowner versus the renter. Homeowners were more likely to choose no mandate compared to renters (25.2% to 14.6%). However, roughly the same proportion said yes to required participation (51.3% to 52.3%). Thus, the disagreement was really between the last two options.

⁵⁹ All 647 were asked and 619 responded with a specific answer.

Figure 5.13
Would You Participate if the Program was Mandatory?
by County ⁶⁰



Source: Center for Applied Demography & Survey Research, University of Delaware

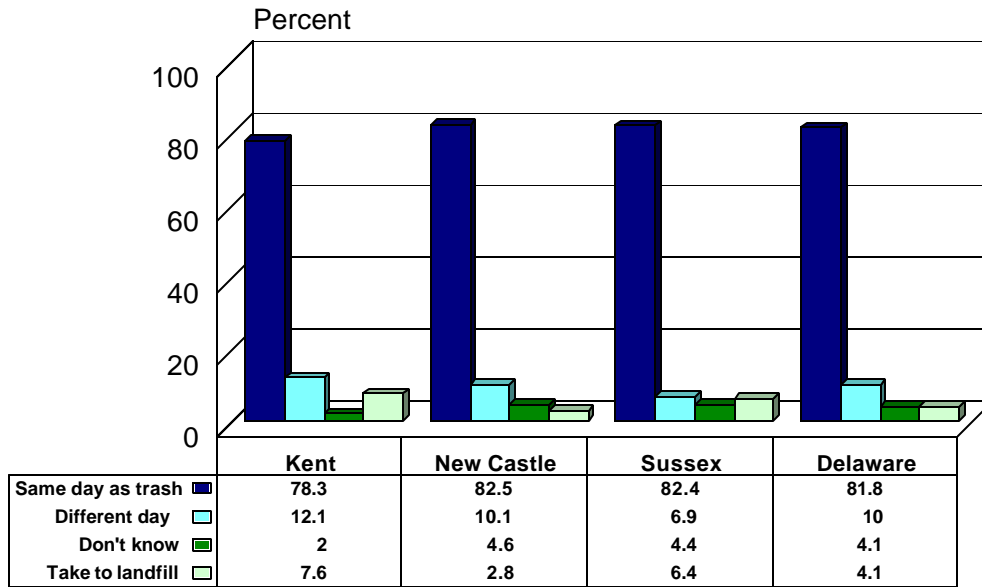
Respondents were also asked if they would participate if the program were mandatory. The interesting point is that those who answer negatively are almost equally split between current recyclers and non-recyclers. This suggests that the reaction against the proposal is related to broader political or personal concerns with government mandates.

There were no discernible differences between the counties. The only contrast group within which there was a difference was gender. The difference was statistically significant, but it was not substantively important. Women were more likely to participate than men (94.4% to 88.1%). That difference is statistically significant since the variance is so small and the 95% confidence interval is +/- 2.6%.

Curbside programs can be designed in a variety of ways and one of the variations is the pickup schedule. Respondents were asked what type of schedule they would prefer and the results are found in Figure 5.14, below. There was little disagreement anywhere in the data with almost 82% wanting *same day* pickup. That result held across counties and for all contrast groups.

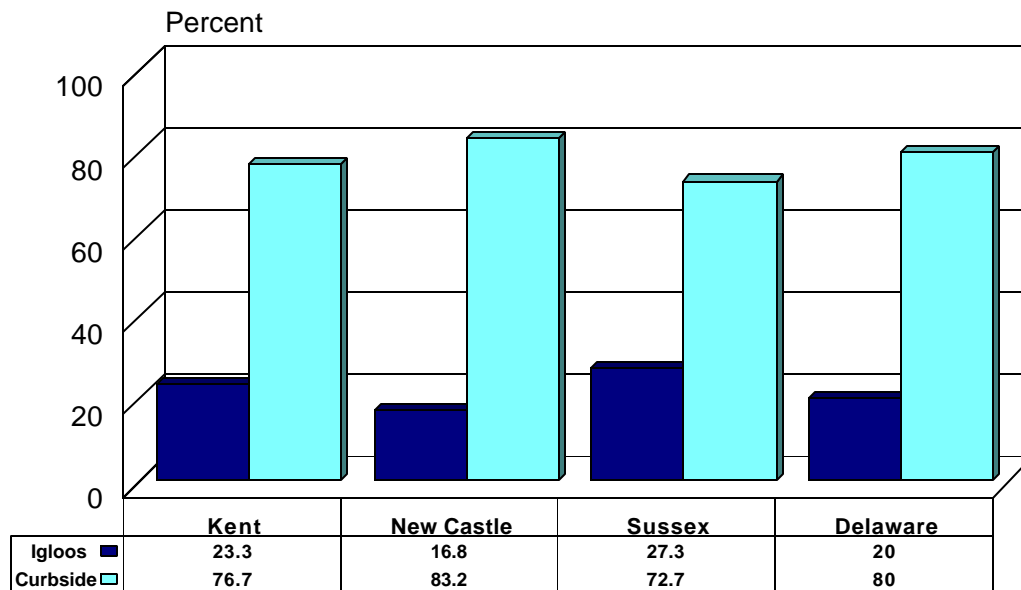
⁶⁰ All 647 were asked the question and 636 responded with a specific answer.

Figure 5.14
Which Type of Pickup would You Prefer?
by County ⁶¹



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 5.15
Which Program would You Prefer?
by County ⁶²



Source: Center for Applied Demography & Survey Research, University of Delaware

⁶¹ All 647 were asked and 619 provided a specific response.

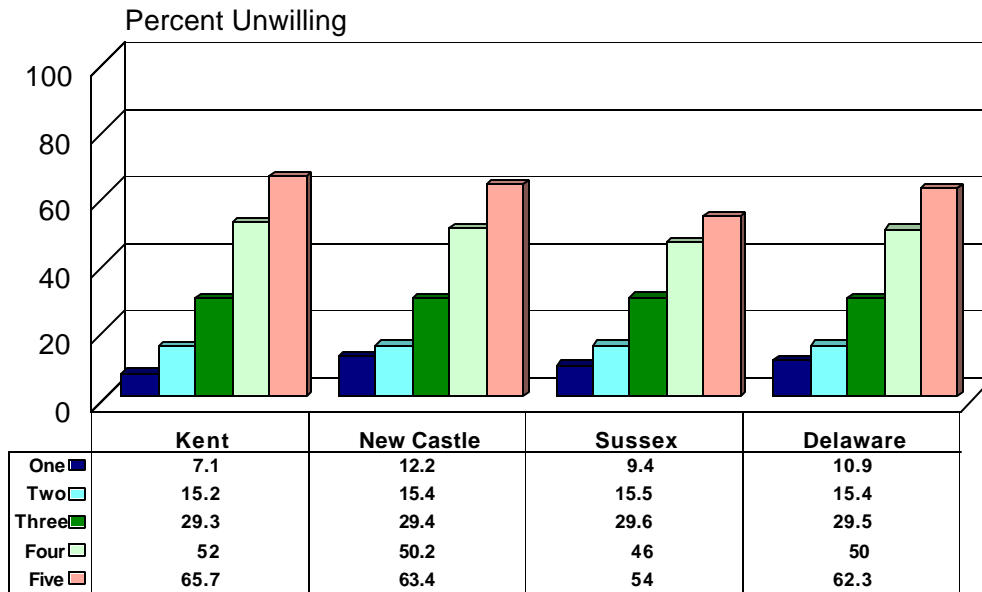
⁶² All 647 were asked and 631 provided a specific response.

At the end of this sequence of questions, respondents were asked to choose between the current “Recycle Delaware” program and the proposed curbside program. Their choices are contained in Figure 5.15, above.

The result is predictable based on the responses to the previous series of questions on participation in the curbside program. Eighty percent of the respondents prefer the curbside program in comparison to the current program. As would be predicted, New Castle County respondents are significantly more in favor of the curbside program, although the vast majority in all three programs preferred the curbside approach. This result has been consistent throughout the report.

The only difference of note within the other contrast groups finds homeowners and renters disagreeing once again. Homeowners are slightly less favorable toward the curbside program than renters (78% to 89%). This may reflect the fact that renters may be less mobile than homeowners and thus recycling is more difficult with the drop-off centers.

Figure 5.16
How Many Containers Would You Be Unwilling to Use?
by County⁶³



Source: Center for Applied Demography & Survey Research, University of Delaware

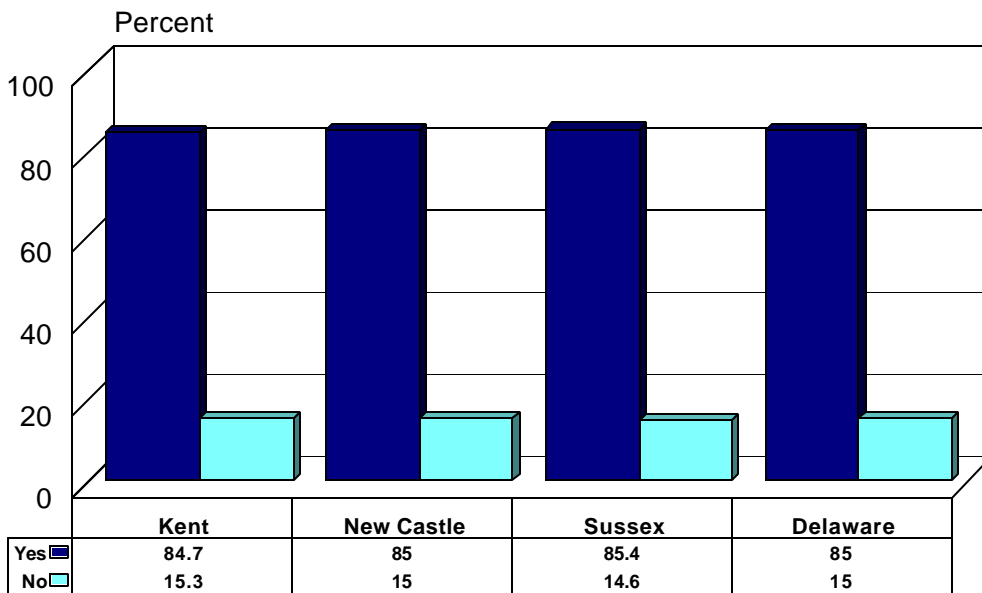
Frequently it is said that “the devil is in the details” when developing policy alternatives like those discussed here. When people are given an unconstrained choice they quite often will

⁶³ All 647 were asked and 632 provided specific responses.

respond differently when conditions are added or other information is supplied. One of the issues associated with the curbside program is how many different containers will be required to hold the sorted materials. As the number of containers increases so too does the time cost of sorting and the space required for the containers.

This is a sensitive issue as is shown in Figure 5.16, above. As the number of containers increases, the percentage of respondents who are unwilling to participate increases. Recalling that 80% of the people preferred the curbside program, the support decreases significantly with the number of containers. By the time five containers is reached about 50% of the support for the program has evaporated. This result holds across all three counties as well.

Figure 5.17
Would You Be More Willing if Special Containers Were Provided?
by County ⁶⁴

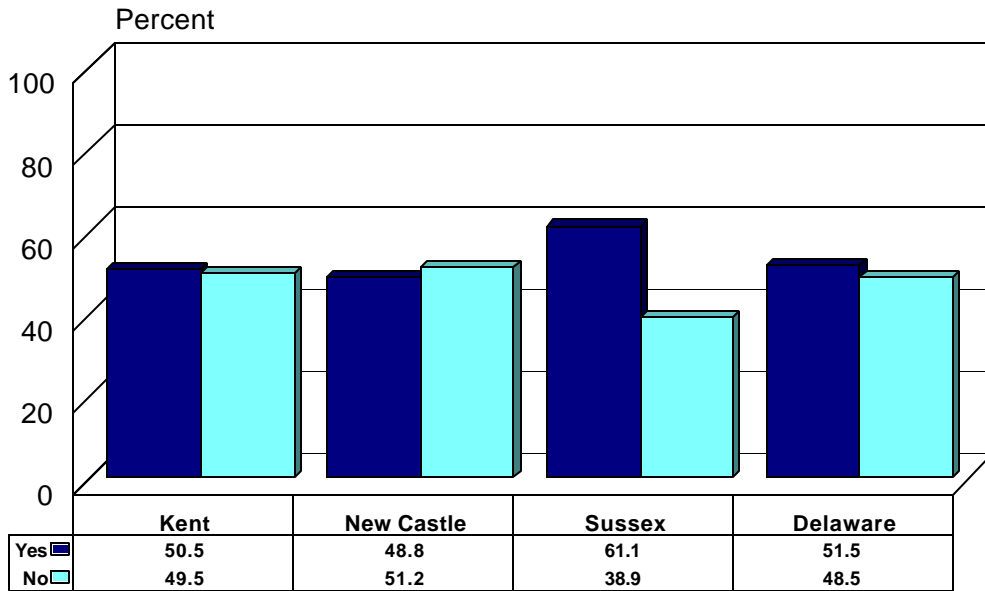


Source: Center for Applied Demography & Survey Research, University of Delaware

To partially offset this negative reaction, an offer is made to the respondents that special containers could be made available to aid the sorting process. The result is found in Figure 5.17, above. The response to this proposal is overwhelmingly positive and the result holds for all three counties. However, it is not possible to tell definitively, how much the data in Figure 5.16 would be altered by this information.

⁶⁴ All 647 were asked and 629 provided specific responses.

Figure 5.18
Would You Still Use the Igloos if Only Selected Materials were Picked Up?
by County ⁶⁵



Source: Center for Applied Demography & Survey Research, University of Delaware

One of the other design issues with respect to a curbside program is the number and type of materials that will be collected. This may be limited by people’s willingness to sort the materials into a number of containers as was shown earlier. The current “Recycle Delaware” program accepts a significant number of materials. It may not be possible to replicate that with a curbside program. For this reason respondents were asked if they would still use the igloos for materials not collected curbside. The results are shown in Figure 5.18, above.

About half of the respondents would be willing to continue using the igloos. Of those who would not use the igloos in this manner, there is close to an even split in whether they currently recycle. Thus, one would expect to see about a 25% reduction in the material given to the igloos after the implementation of the curbside program for selected materials.

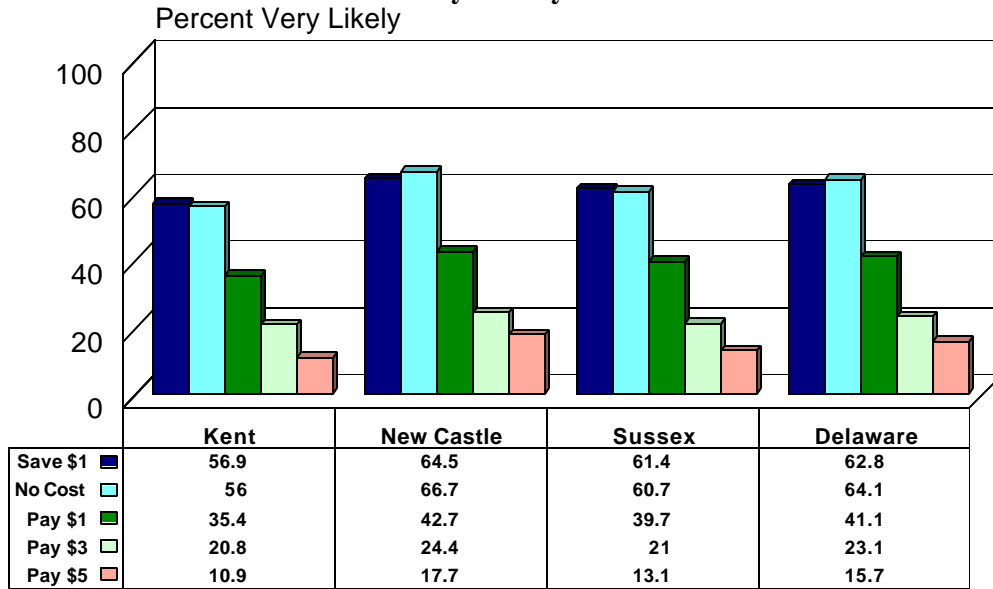
Respondents from Sussex County are significantly more likely to continue to use the igloos than those in New Castle County (61.1% to 48.8%). No other contrast group exhibited any statistically significant differences.

People are sensitive to time-cost issues, but they are also sensitive to economic costs. Respondents, until now, have not been confronted with any price information on the curbside

⁶⁵ All 647 were asked and 619 provided specific answers.

program. To add some sense of reality to the proposition, respondents were asked about their willingness to pay for the new program with several different prices attached. The results are found in Figure 5.19, below.

Figure 5.19
Would You Participate in the New Program at the Following Cost?
by County⁶⁶



Source: Center for Applied Demography & Survey Research, University of Delaware

Respondents were asked how likely they would be to participate in the program with each price. Only the responses for very likely are shown, but the result is essentially the same if *very likely* and *somewhat likely* are combined. The participation rate drops significantly as soon as there is a positive price. However, it does fall at a decreasing rate. The first dollar reduces participation by 20%, the next two dollars also reduces the participation by 20%, and the final two dollars only cuts it by less than 10%. It is also interesting to see that *save \$1* and *no cost* are equivalent. The result holds across all three counties as well.

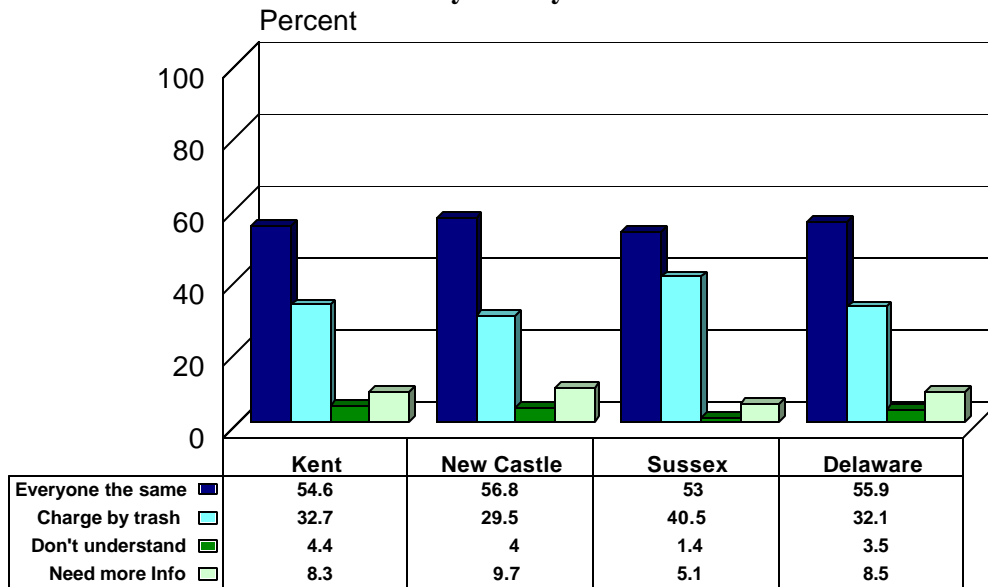
The final question in this section deals with the basis of the payment. This is another feature that could be implemented. The results are found in Figure 5.20, below. There are really two camps, namely *everybody pays the same* and *pay by quantity of trash*. The former contains about half of the respondents while the latter includes another third.

There is no significant difference between the counties, but there are differences between two of the contrast groups. Support for everybody paying the same depends on age. The older the

⁶⁶ All 647 were asked and 619 responded with specific answers.

respondent the more likely one is to want to pay by quantity. The difference between the youngest, middle, and oldest group is significant on this issue (67.1%, 54.8%, and 47%) respectively. Renters are also more likely to favor a system where everyone pays the same (68.1% to 52.4%). The age of the respondent and being a homeowner are also correlated, thus this result is not particularly surprising. It is somewhat surprising that there is no income effect.

Figure 5.20
What Type of Payment Plan Would You Prefer?
by County⁶⁷



Source: Center for Applied Demography & Survey Research, University of Delaware

It would be reasonable to suspect that household size would influence the responses to this question. An analysis involving household sizes of one person, two persons, and three or more persons showed a slight decline in the percentage of people favoring *charge by trash*. The percentage declined from 36.4% to 29.9% over the range. However the difference did not quite reach the level required for statistical significance.

This concludes the discussion of the basic survey results. Additional background material is provided in the appendices that follow.

⁶⁷ All 647 were asked and 647 provided a specific response.

APPENDIX A

Delaware Public Opinion Survey on Recycling
August 1999

Do you live in the city limits of a municipality or town?

- Yes → Which one? _____
- No

What is your zipcode? _____

1. Please select the statement which best describes how you dispose of your household trash?

- I put my trash out by the street or alley where it is picked up by a trash truck → GO TO 2
- I put my trash into a dumpster or common collection bin → GO TO 2
- I take my trash to a landfill or collection station → GO TO 4

- (If none of above) Please describe how you dispose of your trash _____ → GO TO 2

2. Who provides your trash collection service?

- Private Contractor → Could you tell me which one? _____
- Local government (town, municipal, county or city pickup)
- Homeowners or Condo Association
- Apartment or trailer home management

3. How frequently is your household trash collected?

- Once per week
- Twice per week
- Every other week
- Once per month
- Other (Please specify) _____
- DK

SKIP TO Question 5

4. How frequently do you take your trash to the landfill or collection station?

- Once per week
- Twice per week
- Every other week
- Once per month
- Other (Please specify) _____
- DK

5. How much do you pay for your trash disposal? \$ _____

- Refused → GO TO Q6
- Don't Know → GO TO Q6

5A. Is that Monthly, Quarterly, by the bag or can, or by car or truckload?

- Monthly
 Quarterly
 By the bag or can
 By car or truck load
 Other (please specify) _____

6. Many communities separate out materials from their household trash to have them recycled. How important do you believe it is to recycle your household trash? Is it...

- Very Important
 Somewhat Important
 Not Important

7. Do you believe there are any benefits to recycling?

- Yes
 No → GO TO Q8

7A. Can you name some of these benefits?

(DO NOT READ LIST OR PROMPT -- Check all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Saves Natural Resources / trees / minerals | <input type="checkbox"/> Reduces Pollution |
| <input type="checkbox"/> Saves Energy | <input type="checkbox"/> Saves Money |
| <input type="checkbox"/> Saves Landfill Space | <input type="checkbox"/> Better for the Environment |
| <input type="checkbox"/> Reduces Litter | (How?) _____ |
| <input type="checkbox"/> Provides jobs | |
| <input type="checkbox"/> DK | <input type="checkbox"/> REF |

8. Are you aware of any recycling programs in your area?

- Yes
 No

9. Are you aware of the “Recycle Delaware” Igloo recycling program?

- Yes
 No → GO TO 10

9A. Do you feel this program is: (READ LIST)

- Very effective
 Somewhat effective
 Not effective at all
 DK (Don't Read)

9B. What do you like most about the program?

(DON'T READ LIST)

- Convenience of Igloo locations
- Can drop-off anytime I need to
- Well publicized
- Drop off (Igloo) centers are clean
- I can collect only the materials I want to
- I can recycle lots of materials
- Saves on collection costs
- Other (get specifics) _____
- Nothing, I don't like the program
- DK

9C. What do you like least about the program?

(DON'T READ LIST)

- Don't know what to collect
- Don't know where to take materials
- Igloos not convenient / not enough locations / too far away
- Overflowing Igloos
- Can't recycle materials I want to
- Doesn't collect enough materials/ Not diverting enough from landfill
- Concerned about washing containers into septic system
- Doesn't take _____ materials (Fill in)
- Not everyone is required to participate
- Other (get specifics) _____
- Nothing, I like everything about the program
- DK

10. Do you recycle any of the trash in your home?

- Yes
- No → GO TO 10H

10A. Do you take materials to a drop off center or are they collected from your home by a service for recycling?

- Drop off center → Do you go to an Igloo center or another drop off center?
 - Igloo
 - Another place (which one?) _____
- Collected by a service → Do you separate out materials from your trash for recycling?
 - Yes
 - No

10B. How often do you take materials out to a drop off center for recycling?If collected by a service read: How often are your materials collected by this service?

- More than once a week
- Once a week
- Every other week
- Once a month
- Other (please specify) _____

10G. Who in your household takes primary responsibility for recycling:

- Male Adult
- Female Adult
- Child
- Everyone
- DK / REF

SKIP TO Question 11

10H. Is there any particular reason why you do not recycle?

(DON'T READ -- Check all that apply)

- Inconvenient
- Can't Be Bothered / Waste of Time
- Don't have time
- No room to store
- Don't drive, can't get to drop-off center
- Too Complicated / Too Difficult
- Don't believe in recycling / Don't Want to do it
- Costs too much / Recycling is not economical
- Concern about cleaning containers into septic system
- Don't know what to do
- Other (please specify) _____
- DK / REF

10I. Would you like to recycle?

- Yes
- No

IF YES:

What would it take for you to recycle?

(DON'T READ -- Check all that apply)

- More convenient drop-off locations
- Igloo locations near where I shop
- Collect everything together in one container
- Room to store in my home
- Better / more collection containers
- Curbside Collection
- More drop off collection centers
- Collect material with my trash from home
- Reduce what I pay for regular trash disposal / pay me to do it
- Eliminate need to clean containers
- Better way to collect materials in my home
- Proof that recycling makes a difference
- Other (please specify) _____

SKIP TO Question 11

IF NO:**Would you recycle if there were more convenient Igloo locations?**

- Yes
 No

Would you re cycle if there was a regular collection for recyclables from your home?

- Yes
 No

11. Many communities offer a recycling program in which materials are collected at the same location your household trash would normally be collected. If such a program were available in your area, how likely would you be to participate?

- Definitely would → Go to Q12
 Probably would → Go to Q12
 Not Sure
 Would Not

11A. Why?

(DON'T READ -- Check all that apply)

- Prefer to take to drop-off locations
 Prefer not to recycle
 Don't want to pay for such a program
 No room to store
 Take trash to the dump
 Other (please specify) _____

12. If there was a recycling program that collected materials from your home, where your trash is normally collected, should everyone in your community be required to participate?

- Yes
 Yes, if they are physically able
 Yes, should be made voluntary
 No

13. Would you participate in a program that collects materials from your home for recycling if it were made mandatory?

- Yes
 No

“There are a number of ways in which materials can be collected for recycling. The next questions will give you two choices, please tell me which one you prefer.”

14. Which type of recycling program would you prefer:

The “Recycle Delaware” Igloo Program

OR

A program that picks up recyclables from your home, at the same location where your household trash is normally collected

15. Would you prefer:

To have your recyclables collected on the same day as your household trash would normally be collected

OR

To have your recyclables collected on a day **other than** when your household trash would normally be collected

Don’t Know when trash is collected (DONT READ)

Take trash to landfill / collection station (DONT READ)

16. In some recycling programs, people sort materials by type in their homes before they are put out for collection. If a recycling program that collected materials from your home were available in your community, how willing would you be to:

INTERVIEWER: Read answer choices / Skip to next question once a “not willing” answer is given.

	Very Willing	Somewhat Willing	Not Willing	REF	DK
Collect materials in your home in one container	1	2	3	7	9
Sort materials by type into two different containers (for example paper / bottles)	1	2	3	7	9
Sort materials by type into three different containers	1	2	3	7	9
Sort materials by type into four different containers	1	2	3	7	9
Sort materials by type into five different containers	1	2	3	7	9

17. Would you be more willing to separate materials by type if you were provided with special containers for sorting recyclables?

Yes

No

18. If a new program that collected from your home recycled only a select number of materials, would you use the “Recycle Delaware” Igloo centers to recycle materials not included in the new program that you still want to recycle?

Yes

No

19. Assuming that households in Delaware pay \$20-22 per month for trash collection and disposal, how willing would you be to participate in a recycling program that collected materials from your home if:

	Very likely	Somewhat Likely	Not sure	Somewhat Unlikely	Very Unlikely
It would save each household \$ 1 per month	1	2	3	4	5
No change in cost	1	2	3	4	5
It would cost each household an extra \$ 1 per month	1	2	3	4	5
It would cost each household an extra \$ 3 per month	1	2	3	4	5
It would cost each household an extra \$ 5 per month	1	2	3	4	5

20. Currently most households in Delaware pay the same flat fee for the collection and disposal of their household trash, regardless of how much trash they generate. Some communities use a different system where they pay for each bag or container of trash they generate. Would you prefer a system that:

- Charges everyone the same, no matter how much trash they generate
- OR
- Charges people based on the amount of trash they actually generate
- Don't understand question Needs more information / not sure

21. Many bottles have deposits that can be redeemed at stores. Do you buy products in bottles that have deposits?

- Yes
- No → Go to Q 24

22. Do you return these bottles to the store to get your deposit money back?

- Yes → Go to Q 24
- No

23. Why not?

(DON'T READ CHOICES – Check all that apply)

- Don't care about the money / deposit
- Too much trouble to return
- Store doesn't take them back
- Not redeemable in Delaware
- Take to igloo centers
- No room to store them in house
- Other (please specify) _____

24. Does your house have a lawn that requires cutting?

- Yes
- No → Go to Q26

25. How do you usually dispose of your lawn cuttings?

(DON'T READ -- Check all that apply)

- Leave on the lawn / mulching mower
- Put out with regular trash
- Compost lawn cuttings in backyard
- Use cuttings for mulch
- Lawn / Landscape Service takes away
- Take yard waste to local compost facility
- Other (please specify) _____

26. Do you have any leaves on your property in the Fall?

- Yes
- No → Go to Q28

27. How do you usually dispose of the leaves?

(DON'T READ -- Check all that apply)

- Put out with regular trash
- Compost leaf waste in backyard
- Take leaf waste to local compost facility
- Leave on ground / mulching mower
- Use as mulch
- Lawn / Landscape Service takes away
- Rake to the street for pick-up
- Other (please specify) _____

28. Does your household generate any waste from tree branches or trimmings from bushes?

- Yes
- No → Go to Q30

29. How do you usually dispose of the branches and trimmings?

(DON'T READ -- Check all that apply)

- Put out with regular trash
- Use for fire wood
- Burn
- Landscape / Lawn Service takes away
- Compost in backyard
- Chip tree and shrub/bush clippings for mulch in backyard
- Take yard waste to local compost facility
- Picked up at curb for special collection
- Other (please specify) _____

“Now, I’d like to ask a few questions about you and your household that will help us analyze the information you have given us”

30. How many people live in this household? _____**31. What is the highest level of education that you have completed?**

- Less than 8th grade
- Some high school, but no diploma or GED
- High school graduate (or equivalent, GED)
- Some college, vocational/trade school graduate or associate’s degree
- Four year college graduate
- Advanced degree (including master's, professional degree, or doctorate)
- REF

32. Are you of Hispanic, Latino, or Spanish origin?

- Yes
- No
- REF

33. What is your race?

- White
- African American /black
- Asian or Pacific Islander
- Native American or American Indian
- Eskimo or Aleut
- Other (please specify) _____
- REF

34. Is your age:

- 18 to 24
- 25 to 34
- 35 to 49
- 50 to 69
- 70 or over
- REF

35. Is your total Household Income:

- Less than \$15,000
- Less than \$25,000
- Less than \$35,000
- Less than \$50,000
- Less than \$100,000
- \$100,000 or more
- REF

36. Please select the description that best fits your residence:

- Single Family Home → Detached Garage Attached Garage No Garage
- Condo or Townhouse
- Apartment → Complex Within a house
- Trailer Home
- REF

37. To ensure that we have proper geographic randomization of our survey respondents could you please tell me what is the name of your development or the nearest street intersection to your home?

- REFUSED

38. Does your home have a septic system or public sewers?

- Septic System
- Public Sewer
- DK

39. Do you own or rent your home?

- Own
- Rent
- Other (please specify)_____

40. Do you own a computer?

- Yes → Does it have internet access? Yes No
- No

41. Do you have more than one telephone number?

- Yes (How many residential numbers do you have? _____)
- No

“That’s all the questions I have. Thank you for taking the time to complete our survey.”

APPENDIX B

Respondent Demographics⁶⁸

Respondent's Location

- [55.7%] Inside municipality
- [41.6%] Outside municipality
- [2.7%] Don't know

Number of persons in the household?

- [14.3%] One person
- [39.1%] Two persons
- [19.4%] Three persons
- [18.5%] Four persons
- [8.7%] Five or More persons
- [0.0%] Refused

Respondent's highest level of education completed

- [1.0%] Less than 8th grade
- [5.2%] Some high school, but no diploma or GED
- [27.9%] High school graduate (or equivalent, GED)
- [28.2%] Some college, vocational/trade school graduate or associate's degree
- [24.2%] Four year college graduate
- [12.6%] Advanced degree (including master's, professional degree, or doctorate)
- [0.9%] Refused

Respondent's Hispanic, Latino, or Spanish origin

- [2.3%] Yes
- [97.2%] No
- [0.5%] Refused

Respondent's race

- [82.3%] White
- [10.4%] African American /black
- [2.4%] Asian or Pacific Islander
- [0.9%] Native American or American Indian
- [0.0%] Eskimo or Aleut
- [0.0%] Other (please specify) _____
- [4.0%] Refused

⁶⁸ All of the proportions reported are based on the statewide data after weighting the counties proportionately by age and gender.

Respondent's age

[11.8%] 18 to 24
[20.6%] 25 to 34
[31.6%] 35 to 49
[23.4%] 50 to 69
[12.0%] 70 or over
[0.6%] Refused

Respondent's household income

[6.5%] Less than \$15,000
[6.8%] Less than \$25,000
[8.5%] Less than \$35,000
[21.0%] Less than \$50,000
[31.0%] Less than \$100,000
[9.5%] \$100,000 or more
[16.7%] Refused

Respondent's type of residence

[72.0%] Single Family Home with: [16.6%] Detached Garage
[50.3%] Attached Garage
[33.1%] No Garage
[8.6%] Condo or Townhouse
[9.8%] Apartment within: [85.4%] Complex
[14.6%] House
[8.8%] Trailer Home
[0.8%] Refused

Type of waste disposal system

[29.8%] Septic System
[65.8%] Public Sewer
[3.6%] Don't know
[0.8%] Refused

Housing tenure

[78.5%] Own
[20.5%] Rent
[0.2%] Don't know
[0.8%] Refused

Respondent's Gender

[47.8%] Male
[52.2%] Female