

Appendix A

Survey Methodology



April 11, 2006

Memorandum

To: Jan Aceti

Fr: Richard Greif

Re: Survey methodology

Target Population and Sampling Design Used in Conducting the Survey

The target population of the study was adults 18 years of age or older residing in the thirteen Connecticut municipalities that are members of the Tunxis Recycling Operating Committee. The member communities include Berlin, Bristol, Burlington, Meriden, Morris, New Britain, Plainville, Plymouth, Prospect, Southington, Warren, Washington and Wolcott

Opinion Dynamics Corporation (ODC) developed a sampling frame for the study based on the 2004 U.S. Census Estimate of populations for each of the thirteen Connecticut municipalities. The sampling frame was designed in relative proportion to the population distribution for the thirteen community region, as indicated in the table below.

	Population as Percentage of 13 community region*
Berlin	6.0%
Bristol	18.8
Burlington	2.8
Meriden	18.2
Morris	.7
New Britain	22.1
Plainville	5.4
Plymouth	3.7
Prospect	2.8
Southington	12.9
Warren	.4
Washington	1.1
Wolcott	5.0

* Based on 2004 U.S. Census Estimate of 324,371 residents in the thirteen community region.

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ODC purchased a list of randomly selected phone numbers based on the telephone exchanges within the region and age distribution within each community. The sample was derived using a simple random, probability sample approach.

In total, 891 respondents answered the question "Could I please speak to the member of your household who is primarily responsible for rubbish or recycling?". Of the 891 respondents, 500 (or 56%) answered "yes" to the question and completed the full survey instrument. An additional 24 (3%) respondents also answered "yes" to the question but did not complete the full interview. The remaining 367 respondents (41%) answered "no" to the question and did not complete the survey. A refusal survey was not conducted. However, telephone interviewers documented any stated reasons for not participating in the survey. The two primary reasons for non-participation included "no interest in participating in the survey" and the "person primarily responsible for rubbish or recycling is not available". No indications of refusal were given due to specific behaviors related to recycling specifically.

The final study population of 500 was conducted in relative proportion to the 2004 U.S. Census estimate for the thirteen community region, as indicated in the table below.

	Percentage of Study Population (n=500)	Population as Percentage of 13 community region*
Berlin	5.6%	6.0%
Bristol	20.2	18.8
Burlington	4.6	2.8
Meriden	18	18.2
Morris	.6	.7
New Britain	23.6	22.1
Plainville	7.2	5.4
Plymouth	2.8	3.7
Prospect	2	2.8
Southington	10	12.9
Warren	.8	.4
Washington	.6	1.1
Wolcott	3.8	5.0

* Based on 2004 U.S. Census Estimate

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The final sample was also found to be in relative proportion to the average age distribution in the thirteen community region. In the study sample, the age distribution was as follows:

18-30	22%
31-40	20
41-50	17
51-60	15
61-70	12
71-80	10
81-90	3
91-100	-
(Refused)	2

While Census data is not available in a similar age format, the average age distribution for the thirteen community region is as follows*:

18-24	12%
25-44	38
45-64	30
65 and older	20

* Based on 2000 U.S. Census

Margin of Error

The margin of error for the survey of 500 residents within the thirteen community region is +/- 4.4% at the 95% confidence level, and is higher for certain questions where the response was less than 500.

Ensuring Only Qualified Respondents Were Included in the Survey

All respondents were given the following introduction by an interviewer:

Hello. My name is _____. I am calling on behalf of your town, which belongs to a non-profit recycling agency serving thirteen Connecticut communities.

We are conducting a survey that looks at recycling services in your town. The information from this survey will be used to improve the delivery of these services. We have randomly selected households to call in the region, of which yours is one. Could I please speak to the member of your household who is primarily responsible for rubbish or recycling? The survey will take less than 10 minutes to complete.

Following this introduction, individuals who responded "yes" were asked, "Just confirm, what town or city do you live in?" to ensure they were residents of the thirteen community region of study. Individuals who responded "no" were thanked and any reasons for refusal were recorded.

Mode of Data Collection

The survey was conducted by telephone, by trained interviewers at ODC's in-house calling center near Philadelphia, Pennsylvania. The survey was conducted March 20-27, 2006.

ODC project staff in Cambridge, Massachusetts conducted an in-house pre-test of the questionnaires in order to reveal any problems or inconsistencies before interviewer training was initiated. After this testing, we conducted training and briefing sessions for all interviewers being used for the study. Each interviewer did a minimum of three practice interviews to make sure they were completely familiar with and can efficiently administer the questionnaire.

To ensure objectivity, the survey was conducted as a blind study where the interviewers were never made aware of the survey's sponsor or its specific purpose.

The surveys were programmed in CATI (computer-assisted telephone interviewing). CATI has the advantage of immediate data entry and sophisticated skip-pattern capability. ODC's telephone interviewing facility is operated from 8:00 a.m. to 9:30 p.m. Monday through Friday, from 10:00 a.m. to 4:00 p.m. on Saturdays, and from 1:00 p.m. to 9:30 p.m. on Sundays. During all calling hours, the facility is staffed with interviewers who have been extensively trained for each individual project. ODC monitors a minimum of 10% of every individual interviewer's work, with feedback provided to interviewers when appropriate to improve performance. We also maintain logs for each project to identify any problems early on. After the first calling shift, all data is checked by looking at frequencies and cross-tabulations to ensure all skip patterns are working properly and that questions are collecting the intended data.

All survey data was transferred to an electronic database for use in our in-house system. All data processing and development of open-ended codes was conducted in-house. We established the codes for open-ended questions. If at any time the "other" category becomes greater than 10% of the responses, the verbatim responses were reviewed to determine if new codes should be developed. We also use range standard data checks and cross-validation logic to search and flag all incorrect data. In the case of the CATI programmed surveys, many of these checks are automated, further ensuring the most reliable results possible.

Data Reporting

Copies of the survey instrument, topline data, and relevant crosstabulation tables have been provided for the study.

Appendix B

Profiles of Respondents at Different Recycling Participation Levels

Profile of Those Who Recycle All the Time (6 on a 1 – 6 Scale)

- Are more likely to live in single detached home than in other types of buildings
- Are more satisfied than others with the curbside pick up service provided
- Agree more strongly than others that recycling is picked up frequently enough
- Are more likely than others to have recycling instructions
- Think that recycling instructions are easier to use than others do.
- Agree more strongly than others that it is easy to obtain paper bags
- Disagree more strongly than others that recycling takes too much time
- Agree more strongly than others that is easy to find a place to store the recycling container
- Are more likely to be aware than others that magazines and catalogs can be recycled.
- Are more likely to receive a daily newspaper than others
- More likely than others to learn what is going on in their community through the local newspaper (but levels for everyone are surprisingly high)

Moderate/Strong Recyclers (4-5 on a 1-6 Scale) Share the Following Characteristics with People Who Recycle All the Time

- Likelihood that they put their trash at the curb for pick up
- Likelihood that they live in an apartment building
- Similar awareness levels about the recyclability of the following materials:
 - Glass containers
 - Metal food cans
- Percent of plastic bottles and jugs that they recycle
- Disagree similarly that the rules for recycling are too complicated
- Agree similarly that it is easy to obtain paper bags for recycling
- Disagree similarly that recycling doesn't accomplish anything significant
- Likelihood that they have instructions less than a year old
- Likelihood of having a recycling bin
- Equally likely to say that they (the survey respondent) has higher expectations for household recycling than other family members
- Similar likelihood of reporting that their 8-16 year old children have learned about recycling in school
- Likelihood of being a college graduate

Moderate/Strong Recyclers (4-5 on a 1-6 Scale) Are Significantly Different from Others in the Following Ways

Likelihood that they put their trash in a dumpster or elsewhere on the property
Awareness that cardboard boxes can be recycled

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Percent of junk mail that they recycle
Percent of newspaper that they recycle
Percent of magazines and catalogs that they recycle
Percent of office paper that they recycle
Percent of cardboard boxes that they recycle
Percent of glass containers that they recycle
Ease with which they can find a convenient place to store the recycling container
Belief that recycling takes too much time
Family expectations for household recycling
Likelihood of having recycling instructions
Likelihood of being a homeowner

Moderate/Strong Recyclers (4-5 on a 1-6 Scale) Share the Following Characteristics with People Who Recycle Less or Not at All (1-3 on a 1-6 Scale)

- Likelihood that they live in a duplex or triplex (the numbers in each group are so small that it would probably be unwise to draw conclusions)
- Similar awareness levels about the recyclability of the following materials:
 - magazines and catalogs
 - milk and juice cartons
- Level of satisfaction with curbside pick up service
- Agree similarly about whether recycling should be picked up more frequently
- Perception of ease of using recycling instructions
- Similar likelihood of learning what is going on in their community through the local newspaper

Profile of Those Who Recycle Less or Not at All (1-3 on a 1 – 6 Scale)

- Are more likely to live in an apartment building than others
- Less likely to put their trash at the curb for pick up
- More likely to strongly disagree that the curbside pick up service is satisfactory
- Less likely to have a bin than others
- Agree less strongly than others that it is easy to find a place to store the recycling bin
- Are less likely than others to have recycling instructions
- Are less likely than others to have instructions less than a year old
- Agree more strongly than others that recycling takes too much time
- Agree more strongly than others that the rules for recycling are too complicated
- Disagree more strongly than others that it is easy to obtain paper bags for recycling
- Agree more strongly than others that recycling doesn't accomplish anything significant
- Agree less strongly than others that their family expects the household to recycle
- Survey respondents are less likely than others to say that their own expectations regarding their household's recycling are stronger than other members of the family.

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- Less likely than others to say that their children have learned about recycling in school
- Are less likely to be aware than others that the following material can be recycled:
 - cardboard boxes
 - glass containers
 - metal food cans
- Recycle less of the following items than others:
 - junk mail
 - newspaper
 - magazines and catalogs
 - office paper
 - cardboard
 - glass
 - plastic bottles and jugs
- Are more likely than others not to receive any monthly magazines

Appendix C

Calculation of the Potential for Increased Newspaper and Magazine/Catalog Recycling in a Hypothetical TROC “Population” of 500 Households

The calculation of the potential for increased newspaper recycling (lbs/year) among those who participate in recycling less or not at all (1-3/6) will be used as an example to illustrate the steps involved in preparing the estimates shown in the table below.

Participation Level (1 = not at all; 6 = all the time)	Potential for Increased Newspaper Recycling (Lbs/Year)	Potential for Increased Magazine/Catalog Recycling (Lbs/Year)	Total Potential for Increased Newspaper and Magazine/Catalog Recycling (Lbs/Yr)
1-3/6	9,970	5,916	15,886
4-5/6	8,212	5,250	13,462
6/6	5,965	7,003	12,968

Step 1. Calculate an annual household generation rate for newspaper. All survey respondents were asked how many daily, Sunday and weekly newspapers they receive. The average of the responses for those who participate in recycling less or not at all (1-3/6) was used to calculate the average pounds of newspaper generated per household per year by households in this group: 240.35 lbs/hshld/yr

Step 2. Calculate how much of the newspaper generated per household per year could potentially be recovered. For the 1-3/6 participation group, it was assumed that 75% of the newspaper generated by a household could potentially be recovered through recycling.¹ Therefore, for this group, it was assumed that 75% of 240.35 lbs/hshld/yr could potentially be recovered, or 180.27 lbs/hshld/yr.

¹ The highest potential recovery rate for each participation group was taken from a report prepared for the City of Cambridge, MA by DSM Environmental Services in April 2004 entitled “City of Cambridge Analysis of Curbside and Drop-off Recycling Programs.” In this document, DSM reported high recovery rates for various materials that they had measured in different parts of the United States. Different high rates were reported for three income categories: high, medium and low. In most cases, the different high rates do not reflect differences due to income per se, but more likely to the more transient nature of lower income households.

For the calculation described above, the high newspaper recovery rate for the high-income population was used as the highest potential newspaper recovery rate for the 6/6 participation group. The high newspaper recovery rate for the medium-income population was used as the highest potential newspaper recovery rate for the 4-5/6 participation group. The high newspaper recovery rate for the low-income population was used as the highest potential newspaper recovery rate for the 1-3/6 participation group.

Assuming that high recovery rates for these three income categories are appropriate to use for the three participation categories in the Tunxis study is just that – an assumption. However, using the results of a waste/recycling composition study conducted in Cambridge, DSM does report the annual household generation of newspaper for each income category. The ratios between the amounts of newspaper generated by each income category are very similar to the ratios between the amounts of newspaper generated by each participation group in the Tunxis study. This provides

Step 3. Calculate the potential change in the amount of newspaper recycled per household per year. The potential change in the amount recycled is the difference between the amount of newspaper currently recycled by the 1-3/6 participation group, 55.64 lbs/hshld/yr², and the estimated upper limit calculated in Step 2: 180.27 lbs/hshld/yr. The potential change in the amount recycled is 124.63 lbs/hshld/yr.

Step 4. Calculate the potential change in the amount of newspaper recycled by the 1-3/6 participation group as a whole. Of a hypothetical population of 500 households, the 1-3/6 participation group constitutes 16%, or 80 households. If each of those 80 households recycles an additional 124.63 pounds of newspaper each year, the result is an additional 9,970 lbs of newspaper recovered from the waste stream each year, as shown in the table on the previous page.

The table below displays the figures used in calculating the potential for increased newspaper recycling for each participation group.

Participation Level (1 = not at all; 6 = all the time)	Annual Household Generation Rate for Newspaper (Lbs/Hshld/Year)	Highest Potential Recovery Rate	Highest Potential Amount Recycled (Lbs/Hshld/Yr)	Current Amount Recycled (Lbs/Hshld/Yr)	Potential Change in Amount Recycled (Lbs/Hshld/Yr)	Number of Households
1-3/6	240.35	75%	180.27	55.64	124.63	80
4-5/6	358.52	90%	322.67	242.16	80.51	102
6/6	457.20	90%	411.48	392.48	19.00	314

The table below displays the figures used in calculating the potential for increased magazine and catalog recycling for each participation group.

Participation Level (1 = not at all; 6 = all the time)	Annual Household Generation Rate for Mags/Catalogs (Lbs/Hshld/Year)	Highest Potential Recovery Rate [1]	Highest Potential Amount Recycled (Lbs/Hshld/Yr)	Current Amount Recycled (Lbs/Hshld/Yr)	Potential Change in Amount Recycled (Lbs/Hshld/Yr)	Number of Households
1-3/6	104.90	75%	78.67	4.73	73.94	80
4-5/6	117.43	90%	105.69	54.22	51.47	102
6/6	120.47	90%	108.42	86.12	22.30	314

Notes to Magazine/Catalog Table:

some evidence that there are similarities between the three income categories described by DSM and the three participation categories used in the Tunxis study.

² The average amount of newspaper currently recycled per household per year in this participation group was calculated by starting with the average amount of newspaper generated per household per year. To this figure was applied data from the survey results regarding the percentage of households in this participation group who recycle and are aware that newspaper is recyclable and the percentage of newspaper received that these households recycle.

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[1] The report that DSM prepared for the City of Cambridge did not include high recovery rates for magazines and catalogs. It did include rates for mixed paper. However, the highest potential recovery rates for mixed paper are probably lower than for magazines and catalogs alone. The highest potential recovery rates for newspaper were used as a more appropriate estimation for magazines and catalogs.