

A STUDY OF SOCIOECONOMIC FACTORS WHICH INFLUENCE
RECYCLING PARTICIPATION IN TWO OREGON COMMUNITIES:
BEAVERTON AND CORVALLIS

by

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ABSTRACT

Seven socioeconomic factors common to two Oregon communities, Beaverton and Corvallis, were examined and compared for the influences they might have on participation in recycling programs. Sampling technique involved the use of a prepared survey questionnaire through which the data necessary for the appropriate statistical methodology used in the study were collected. Findings revealed significant differences between the two communities with regard to probabilities in occupation, income per year, age and level of education. No significant differences were detected in probabilities for sex and marital status. The personal philosophies for recycling in both communities centered upon three primary reasons: environmental concern, stop unnecessary waste and conservation of natural resources. Location analysis proved a correlation between distance of home location to recycling center, and recycling participation. KEY WORDS: Socioeconomic factors, Recycling participation, Sampling technique, Survey questionnaire, Statistical methodology.

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CHAPTER I
INTRODUCTION

American recycling programs have been in existence in one form or another since the inception of this country. Unfortunately, however, down through the years most U.S. disposal practices have focused only on getting rid of solid waste. Reuseability has been generally absent as an objective. Only in the last ten years or so have large scale public recycling programs been initiated. Until recently, the idea that waste should be reclaimed was too new to be widely received. Fortunately a new concept of solid waste management involving widespread community recycling programs is evolving. Public apathy, long one of the main causes for today's crisis, has begun a gradual transformation into public awareness. Evidence of this trend in the state of Oregon appears through the establishment of community recycling depots. Most of the larger Oregon communities now have, or are in the process of adding,

at least one community recycling center. In the Portland area alone there are now approximately 200 recycling depots. Recycling has proven itself to be a feasible and utilitarian solution to the problem of solid waste disposal in the United States.

Statement of the Problem

The problem faced by this study has evolved from the aforementioned trend of increasing public awareness of recycling and the resultant increase in public recycling participation. Several assumptions have been made with regard to why people recycle, but not many studies have dealt with the socioeconomic framework of a recycler and how these factors might have affected his or her decision to recycle. Specifically, this study is concerned with socioeconomic factors that are common to recycling participants in two Oregon communities (Beaverton and Corvallis). These same socioeconomic factors could be applied in communities of any other section of the country.

This study was conceived and developed in order that more information could be obtained about which types of people recycle, which socioeconomic factors might have influenced their decision to recycle, and why they themselves thought they recycled. In addition, the study was planned so that recycling participants from two separate population

bases, belonging to two separate communities, could be analyzed and compared.

Purpose of the Study

The general purpose of the study is to determine some of the socioeconomic factors that influence recycling participation in two Oregon communities. More specifically, the purposes of this study are: 1) to determine which socioeconomic factors may have been instrumental in affecting recycling participation; 2) to compare and contrast the extent to which these socioeconomic factors affect recycling participation in Beaverton and Corvallis; 3) to survey the reasons why recycling participants think they recycle, and to compare and contrast these reasons for Beaverton and Corvallis; and 4) to plot spatially the home locations of a random sample of recyclers from each community so as to determine the geographic size and degree of attraction that each recycling center asserts on its population base.

Limitations of the Study

The study was limited to a random sample of 200 recycling participants, 100 from each community, who filled out a survey questionnaire (Appendix A) at either the Beaverton or Corvallis recycling center during the time period of

March 1, 1973 to June 15, 1973. The study proceeded upon the assumptions that the sample size, questionnaire format, sampling technique, and statistical methods utilized were appropriate for collection and analysis of the desired data.

The study was limited by the fact that no pretest was administered. The omission of a pretest allowed for an important flaw in the questionnaire to escape undetected. This flaw was in the wording of question number six, asking for the participant to check one of four categories under the heading income per year. The wording of the question created considerable misinterpretation. Many of the participants took the question to mean personal income per year, while many others assumed that it referred to family income per year. The effect of this error upon the study is undetermined.

The study was further limited by the lack of homogeneity between the two recycling centers. The Beaverton recycling center accepts newspaper, while the Corvallis recycling center does not. However, the Corvallis recycling center accepts tin and other metals, while the Beaverton recycling center does not. Certainly these facts have affected recycling participation at both recycling centers. Again, the extent to which these facts have affected the study has not been determined. Finally, it is always possible

that some uncontrolled variables could have affected the responses of the recycling participants.

Research Hypotheses

In order to facilitate the statistical treatment of the data, the following research hypotheses were formulated in null form:

1. There will be no significant difference between the marital status of recycling participants in Beaverton and those in Corvallis.
2. There will be no significant difference between the sex of recycling participants in Beaverton and those in Corvallis.
3. There will be no significant difference between occupations of recycling participants in Beaverton and those in Corvallis.
4. There will be no significant difference between the income per year of recycling participants in Beaverton and those in Corvallis.
5. There will be no significant difference between the mean Beaverton income per year and the mean Corvallis income per year of recycling participants.
6. There will be no significant difference between the mean Beaverton age and the mean Corvallis age of recycling participants.

7. There will be no significant difference between the mean Beaverton level of education and the mean Corvallis level of education of recycling participants.

CHAPTER II

METHODOLOGY AND PROCEDURE

Design of the Study

The objective of this study as outlined in Chapter I was to evaluate the extent to which certain socioeconomic factors influence participation in recycling in the two selected Oregon communities, Beaverton and Corvallis. The data for the study were gathered by means of a prepared questionnaire. The survey instrument contained eight question items. The following socioeconomic factors were used: age, sex, marital status, occupation, level of education, income per year and address. These seven socioeconomic factors were selected due to their simplicity, conformity, and universality. In addition, one personal philosophical question was included, which asked participants why they recycle. The entire questionnaire format was designed to be primarily expeditious, clear, and simplistic.

Preliminary steps in the design and development of the questionnaire involved a review of the literature related to recycling. Other literature, such as directives in social research, sampling techniques, and statistical methods, provided supplementary information.

The questionnaire is included in Appendix A. The listed groupings found in questions six and seven, dealing with

income per year and level of education, were selected arbitrarily. The responses to question five, dealing with occupation, were placed for data analysis in one of ten categories. These ten categories were formalized by the author as a modification of the ten occupational categories, divisions and groups, found in the 1965 Dictionary of Occupational Titles (Appendix B). The author condensed five of their categories and added five new categories, which pertained to the study. The five new categories were: student, retired, unemployed, homemaker and no response.

The sample size used in this study was 100 recycling participants per community ($N=100$), or a total sample of 200 participants for both Beaverton and Corvallis. This sample size mirrored several considerations.

1. A minimum sample size of 100 should be obtained before any mean or proportion can be considered to have a sufficiently normal distribution.
2. There was a degree of uncertainty concerning the heterogeneity of both populations, necessitating at least a $N=100$ sample size from both communities to properly reflect their populations.
3. The ease of data analysis using a $N=100$ sample size was a consideration.
4. The limitations on time and travel expenses experienced by the sampler was a consideration.

The size of the population bases from which the two

recycling centers had drawn was a major consideration. The following 1971 census figures were taken from the Estimates of Incorporated Cities, prepared by the Center for Population Research and Census, Portland State University, July 1, 1973:

Beaverton 19,580 people

Corvallis 36,850 people

However, these estimates are somewhat illusionary. Beaverton is one of the fastest growing communities in Oregon and receives a considerable population influx each year. In addition, Beaverton has the proximity of populous southwest Portland on its eastern fringe, an area from which came a full 31 percent of the total surveyed participants at the Beaverton recycling center. Corvallis, meanwhile, has a somewhat transitory population, based to a large extent on whether or not Oregon State University is in session. After the previously mentioned factors were taken into consideration, the population bases from which the two recycling centers had drawn was not so dissimilar.

Another reason for the selection of Beaverton and Corvallis was that the author, after having lived in both of the communities, had accumulated a limited knowledge pertaining to the geography of each location. Ease in data collection with particular regard to travel time was another important criteria in community selection.

Both Beaverton and Corvallis possess well established,

efficient recycling centers, which experience heavy and continuous useage. The Beaverton recycling center, operated by Beaverton Recycling Corporation, is located at Lombard and Broadway streets, and will handle all properly prepared glass, newspaper, aluminum, cardboard and Kraft paper. The Corvallis recycling center, operated by Eco-Alliance Recycling, is located at 26th and Monroe streets, and will handle all properly prepared glass, aluminum, tin and other metals, cardboard and Kraft paper.

The Collection of Data

Data for the study were personally collected at each recycling center through the use of the survey questionnaire (Appendix A). Data were collected as impartially and unequivocally as was deemed feasible. All questionnaires were personally distributed to the participants immediately upon their arrival at the recycling center. The data collector initiated only the conversation appropriate for the introduction of the questionnaire to the participant. The questionnaires were collected as soon as they had been completed. The average amount of time taken by a participant to fill out a questionnaire was approximately two to three minutes. All participants who were contacted agreed to fill out the questionnaire, although several participants declined to answer one or more of the questions.

The collection of data at both recycling centers was undertaken during the time period of March 1, 1973 to June 15, 1973. The questionnaires were distributed and collected at random times, irrespective of hour or day. Variation in time of data collection was necessary so as to avoid any collections from the same population spectrum of participants, who might favor a particular day, or time of day, for their recycling activity.

Certain time periods in certain days were observed to receive significantly heavier useage than other time periods. Weekends normally generated the heaviest recycling participational response. Particularly heavy participation time periods were recorded for each recycling center. They were: a) Beaverton: Saturday 9AM to 12 noon and 3PM to 6PM, Sunday 9AM to 2PM; b) Corvallis: Friday 3PM to 7PM, Saturday 9AM to 12 noon and 3PM to 6PM.

The Statistical Design

The facilities and resources of the Oregon State University Computer Center were utilized in compiling the numerical data collected through the questionnaire. In order to statistically test the hypotheses, two tests were utilized: a) Chi-square test; and b) Hotelling's T-square test.

1. Chi-square test

This test was used in the analysis of data for sex,

$$\bar{x}_2 = \begin{matrix} \text{Beaverton} & \begin{pmatrix} \text{mean age} \\ \text{mean education} \\ \text{mean income} \end{pmatrix} \end{matrix}$$

N_1 = total sample size for Corvallis (100)

N_2 = total sample size for Beaverton (100)

$$S = \frac{1}{N_1 + N_2 - 2} (N_1 S_1 + N_2 S_2)$$

S_1 = Corvallis

$$\begin{Bmatrix} \text{(variance age)} & \text{(cov age, income)} & \text{(cov age, edu.)} \\ \text{(cov age, income)} & \text{(var income)} & \text{(cov income, edu.)} \\ \text{(cov age, edu.)} & \text{(cov income, edu.)} & \text{(var education)} \end{Bmatrix}$$

S_2 = Beaverton

$$\begin{Bmatrix} \text{(variance age)} & \text{(cov age, income)} & \text{(cov age, edu.)} \\ \text{(cov age, income)} & \text{(var income)} & \text{(cov income, edu.)} \\ \text{(cov age, edu.)} & \text{(cov income, edu.)} & \text{(var education)} \end{Bmatrix}$$

Differences in confidence intervals for age, income and education were calculated using:

$$a' (\bar{x}_1 - \bar{x}_2) - \sqrt{a' S_a \frac{N_1 + N_2}{N_1 N_2}} \quad T_{\alpha, p, N_1 N_2 - p - 1}$$

where

age $a = (100)$

income $a = (010)$

education $a = (001)$

In order to obtain results with a high degree of accuracy, significance levels of both .05 and .01 were tested on all data.

CHAPTER III

ANALYSIS OF DATA

This chapter is divided into seven main sections. The first four sections involve data analysis of sex, marital status, occupation and income per year, based upon the Chi-square test. Age, level of education and income per year are considered together in section five, as necessitated by the utilization of Hotelling's T-square test. Income per year was tested by both Chi-square and Hotelling's T-square tests because assumptions of normality for Corvallis and Beaverton income distributions were based upon only four possible responses, so that the approximation of continuity could be imprecise. Section six on personal philosophy is an analysis of the answers to questionnaire question number eight (Appendix A). Section seven is a presentation of recycling participation location analysis for each community, aided by visual interpretation in the forms of two maps (Figure 4 and Figure 5).

Sex

Null Hypothesis (H_0) : Probability of a male in Corvallis =
probability of a male in Beaverton.

	Corv.	Beav.	Total
Female	44	35	79
Male	56	65	121
Total	100	100	200

H_0 : $O_{ij} = E_{ij}$ for all i, j where

O_{ij} is the observed frequency and

E_{ij} is the expected frequency

$$\chi^2 = \underline{1.68}$$

Since 1.68 is less than $\chi^2_{.05} = 5.99$ and less than $\chi^2_{.01} = 9.21$, the H_0 that there is no difference in the probabilities is not rejected.

Marital Status

H_0 : Probability of being single in Corvallis = probability of being single in Beaverton.

	Corv.	Beav.	Total
Single	32	16	48
Married	68	81	149
Total	100	97	197

(Note: Three participants failed to answer this question.)

$H_0 : O_{ij} = E_{ij}$ for all i, j where

O_{ij} is the observed frequency and

E_{ij} is the expected frequency

$$\chi^2_2 = \underline{6.30}$$

Since 6.30 is less than $\chi^2_2 .01 = 9.21$, and but slightly greater than $\chi^2_2 .05 = 5.99$, it can be considered an insignificant difference, thus, the H_0 is not rejected at the .01 significance level.

Occupation

H_0 : Probability of being in a given occupational category (1-10) in Corvallis = probability of being in a given occupational category (1-10) in Beaverton.

		Corv.	Beav.	Total
Occupation Code	1	23	30	53
	2	8	19	27
	3	3	10	13
	4	3	1	4
	5	6	8	14

(continued)

		Corv.	Beav.	Total
Occupation Code	6	30	5	35
	7	6	6	12
	8	5	1	6
	9	16	14	30
	10	0	6	6
Total		100	100	200

(Refer to Figure 1 for Occupation Code: 1-10)

H_0 : $O_{ij} = E_{ij}$ for all i, j where

O_{ij} is the observed frequency and

E_{ij} is the expected frequency

$$\chi^2_{10} = \underline{37.05}$$

Since 37.05 is greater than $\chi^2_{10} .05 = 18.31$ and greater than $\chi^2_{10} .01 = 23.21$, the H_0 that there is no difference in the probabilities is rejected.

Income Per Year

H_0 : Probability of being in a given income category (a-d) in Corvallis = probability of being in a given income category (a-d) in Beaverton.

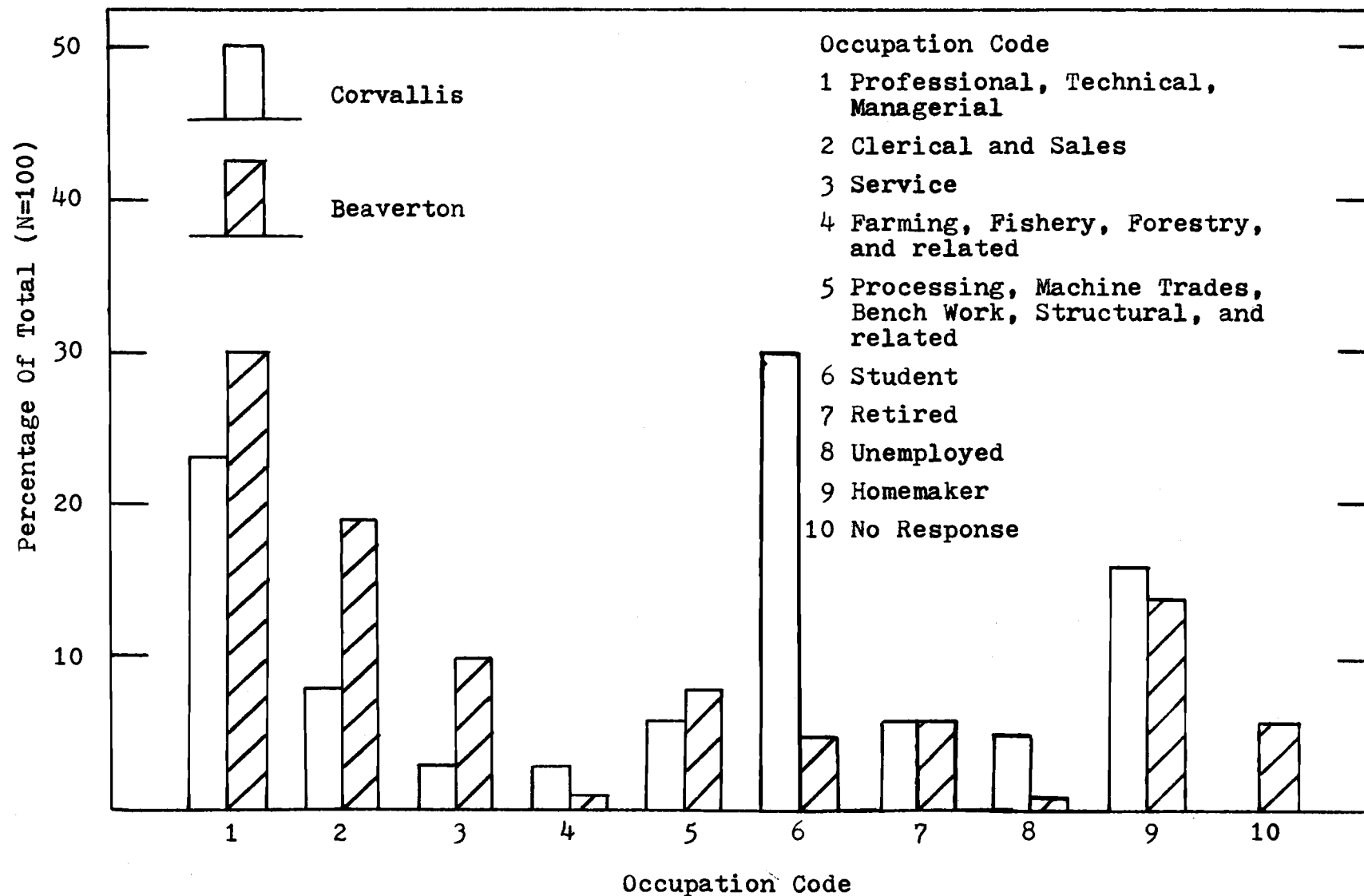


Figure 1 Occupational Categories

		Corv.	Beav.	Total
Income Code	a.	37	14	51
	b.	24	13	37
	c.	20	30	50
	d.	9	35	44
Total		90	92	182

(Note: 18 participants failed to answer this question)

(Refer to Figure 2 for Income Code)

$H_0 : O_{ij} = E_{ij}$ where

O_{ij} is the observed frequency and

E_{ij} is the expected frequency

$$\chi^2_{4} = \underline{30.90}$$

Since 30.90 is greater than $\chi^2_{4} .05 = 9.49$, and also greater than $\chi^2_{4} .01 = 13.28$, the H_0 that there is no difference in the probabilities is rejected.

Age, Income, Education

Age, income per year, and level of education were tested together for differences in mean values, using Hotelling's T^2 test. After computation of the T^2 and F values, each factor (age, income, education) was then tested individually for differences in confidence inter-

vals at the .05 and .01 significance levels. The hypotheses were:

1. H_0 : Probability that mean Corvallis age = mean Beaverton age.
2. H_0 : Probability that mean Corvallis income level per year = mean Beaverton income level per year.
3. H_0 : Probability that mean Corvallis level of education = mean Beaverton level of education.

A simultaneous test of the hypotheses may be obtained by working out a function of the differences of the means and finding whether this exceeds a critical value which would be obtained at a chosen probability level, were the hypotheses true. The mean values were:

	Corv. (u_1)	Beav. (u_2)	$u_1 - u_2$
Age	35.09	42.06	-6.97
Income	2.17	3.09	-.92
Education	5.22	4.50	+.72

$$T^2 = \underline{63.32}$$

$$F = \underline{20.89}$$

3 degrees of freedom

Age contrast: $a = (100)$

$$u_1 - u_2 = \underline{-6.97}$$

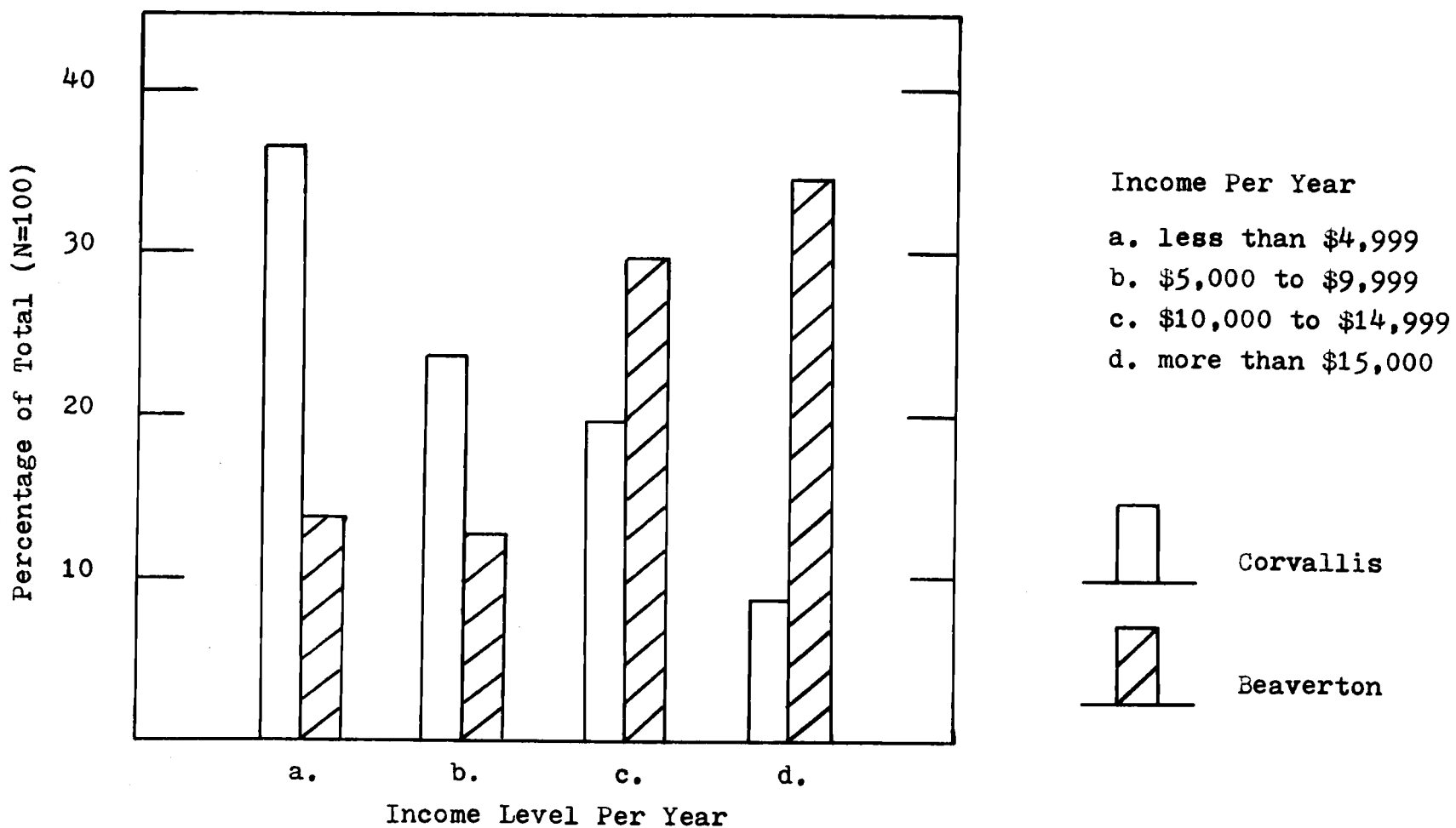


Figure 2 Income Per Year Levels

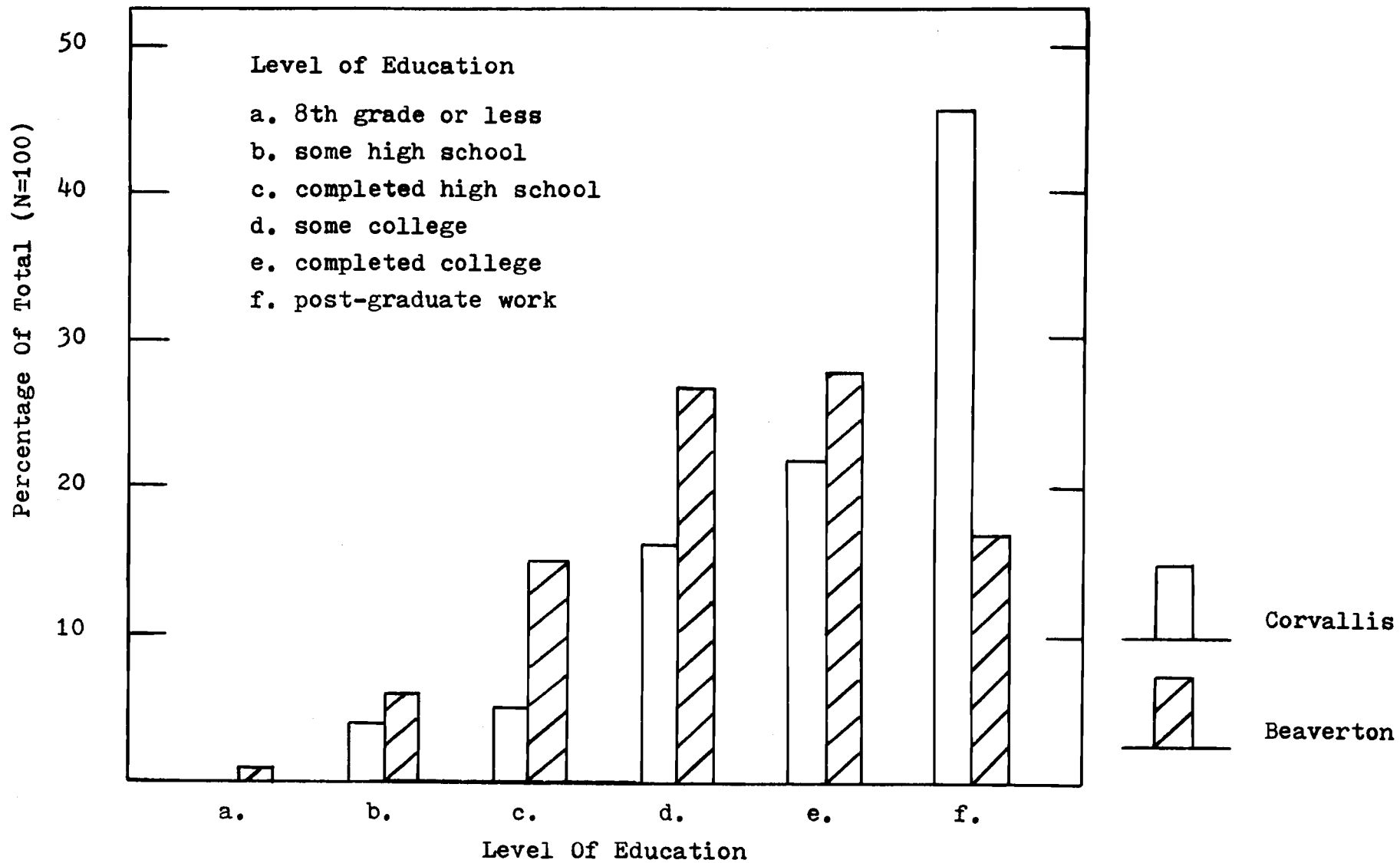


Figure 3 Levels of Education

Since $.05 = -12.80 \leq -6.97 \leq -1.14$ and

$$.01 = -13.99 \leq -6.97 \leq +.05$$

The H_0 is rejected, there are significant differences.

Income contrast: $a = (010)$

$$u_1 - u_2 = \underline{-.92}$$

Since $.05 = -1.28 \leq -.92 \leq -.36$ and

$$.01 = -1.37 \leq -.92 \leq -.27$$

The H_0 is rejected, there are significant differences.

Education contrast: $a = (001)$

$$u_1 - u_2 = \underline{+.72}$$

Since $.05 = +.23 \leq +.72 \leq +1.21$ and

$$.01 = +.17 \leq +.72 \leq +1.76$$

The H_0 is rejected, there are significant differences.

Personal Philosophy

The findings presented in this section are the analyzed results to question number eight of the survey questionnaire. This question asked why the participant recycled. Analysis of these data consisted of grouping all the responses which followed a mutual theme into separate groups, after which the number of responses in each group were totaled and recorded. Many of the participants listed more than one reason for recycling, so each reason was individually

grouped and recorded. Three main groups soon established themselves during the analysis of data. A majority of participants in both Beaverton and Corvallis listed environmental concern, stop unnecessary waste, conservation of natural resources or a combination of these groups in their responses. The groupings and number of responses recorded for each group in both communities are as follows:

Beaverton:

- environmental concern (29)
- stop unnecessary waste (25)
- conservation of natural resources (20)
- save money (10)
- no response (8)
- get rid of unwanted items (7)
- the need (4)
- another person's idea (3)
- convenience (2)
- community project (1)
- inadequate local garbage collection (1)
- health reasons (1)
- global economics (1)
- to make terrariums (1)
- don't know (1)

Corvallis:

- conservation of natural resources (33)
- environmental concern (32)

stop unnecessary waste (30)
conscience (7)
get rid of unwanted items (6)
save money (3)
the need (3)
no response (2)
community cooperation (2)
tired of noisy garbage truck in AM (1)
habit (1)
encourage others by example (1)
convenience (1)
save space at home (1)
advancement of society (1)
another person's idea (1)
logical idea (1)
help future generations (1)

Location Analysis

As previously discussed in Chapter II, each recycling center draws from a specified population base. This section is devoted to the spatial distribution, or location analysis, of each population base. Data were compiled from survey questionnaire question number one, asking for the address (number, street, city) of the participant. A total of 97 Beaverton and 95 Corvallis recycling participants answered

the question. The number of participants living in different cities who utilized each recycling center, were as follows:

Beaverton Recycling Center:

Beaverton (56)
Portland (34)
Hillsboro (3)
Aloha (2)
Forest Grove (1)
Tigard (1)

Corvallis Recycling Center:

Corvallis (89)
Albany (3)
Philomath (2)
Newport (1)

The locational data were then analyzed further so as to plot, where possible, the individual home location of each participant. The data were taken to the City of Beaverton offices (4950 S.W. Hall Blvd.), and City of Corvallis offices (501 S.W. Madison), where exact address locations for the data were pinpointed on respective maps in each tax assessor's office. Data were then transferred and plotted on appropriate base maps. The results of this effort may be viewed on Figures 4 and 5.

Figure 4 CORVALLIS, OREGON
RECYCLING PARTICIPANT HOME LOCATIONS

Surveyed by random sample,
March 1, 1973 to June 15, 1973

★ Recycling center
● Participant home location

Scale: 1:1500

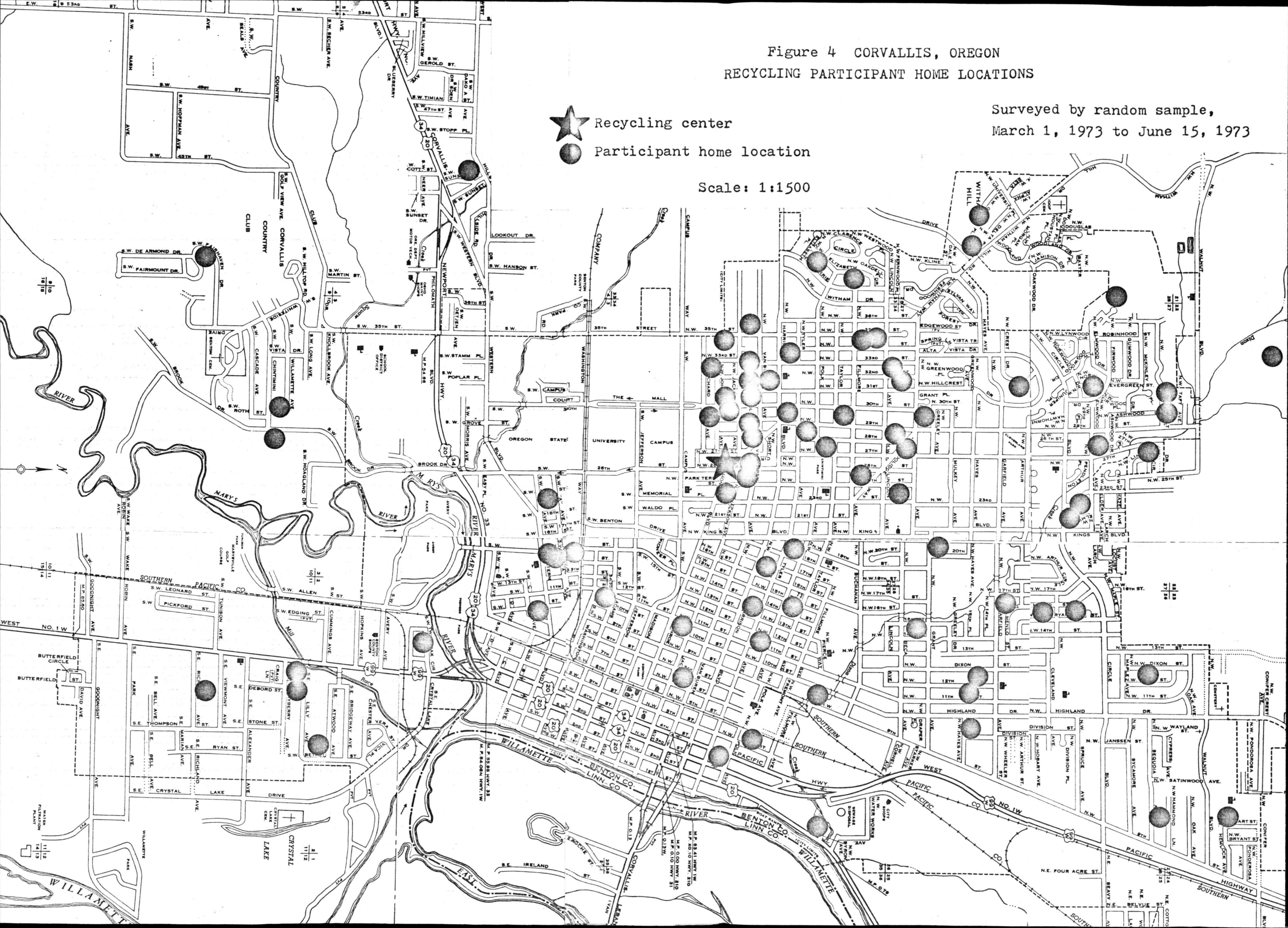
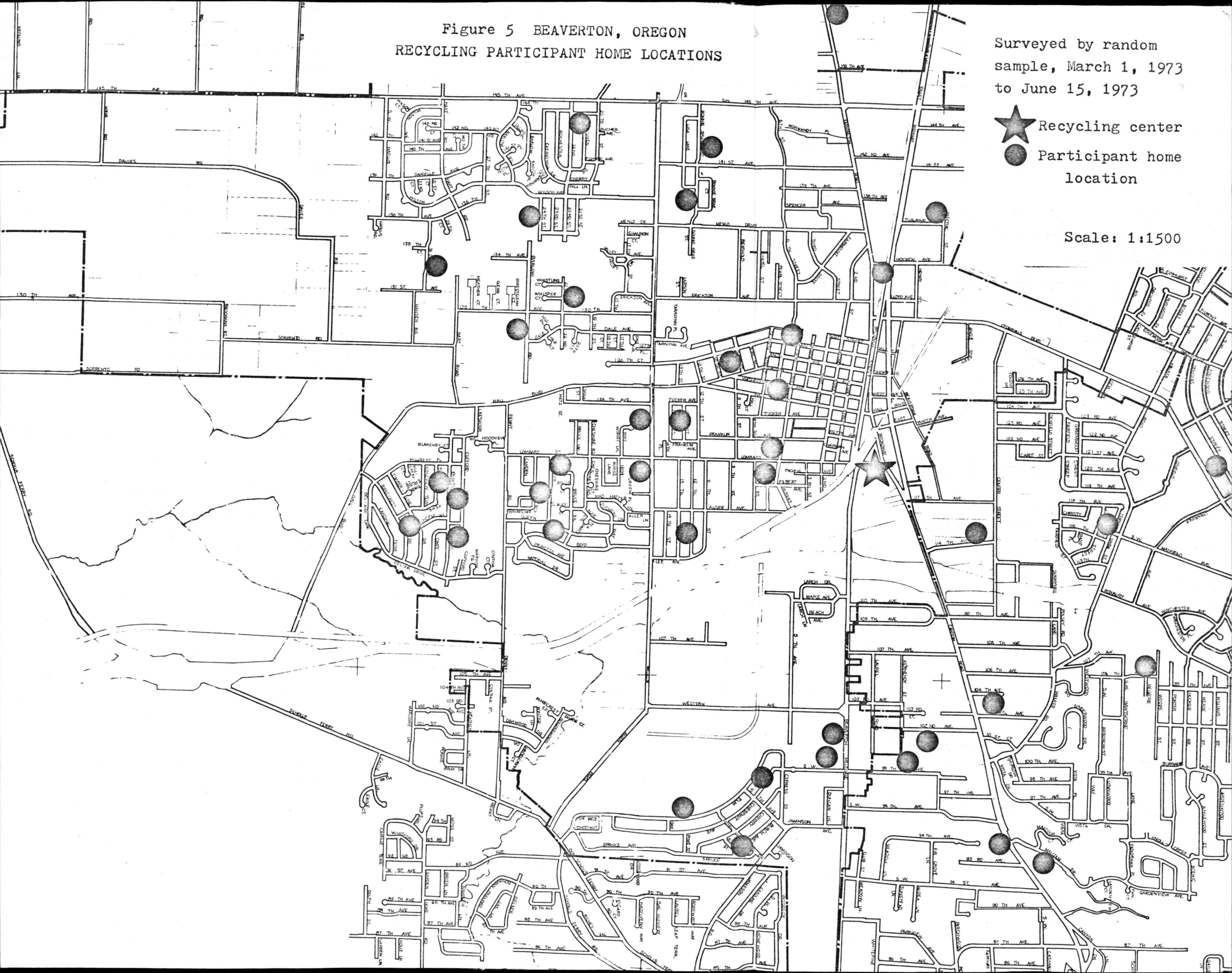


Figure 5 BEAVERTON, OREGON
RECYCLING PARTICIPANT HOME LOCATIONS

Surveyed by random
sample, March 1, 1973
to June 15, 1973

★ Recycling center
● Participant home
location

Scale: 1:1500



CHAPTER IV

SUMMARY AND CONCLUSIONS

This chapter consists of two sections. In the first section, the purpose, problem, procedures and findings based upon data analyzed in Chapter III are reviewed. The second section presents the conclusions which were based upon the findings.

Summary

The purpose of this study was to ascertain and compare socioeconomic factors influencing recycling participation in two selected Oregon communities. The study was formulated so that additional information would be available dealing with which types of people recycle, what factors might have affected their decision to recycle, and why they themselves thought they recycled. The study provided an opportunity for comparison of data by selecting two geographically distinct population bases for the study areas. Data were collected by utilization of a prepared questionnaire administered at each recycling center. The sample size consisted of 100 recycling participants from each community, or 200 total recycling participants. The socioeconomic factors analyzed were: sex, marital status, occupation, income per year, level of education, age and address.

Hypotheses were formulated and then tested statistically by utilization of either Chi-square or Hotelling's T-square tests. In addition, the personal recycling philosophies of the participants in the two communities were analyzed and compared. The following findings were based upon the analysis of the statistical data gathered:

Hypothesis 1: The probability of a male recycling participant in Corvallis is equal to the probability of a male recycling participant in Beaverton.

There were no significant differences in the probabilities tested. Therefore, the first null hypothesis was accepted.

Hypothesis 2: The probability of a Corvallis recycling participant having single marital status is equal to the probability of a Beaverton recycling participant having single marital status.

There were slight differences in the probabilities tested at the .05 significance level and no differences at the .01 significance level. Therefore, the second hypothesis was accepted at the .01 significance level.

Hypothesis 3: The probability of a Corvallis recycling participant being in a given occupational category is equal to the probability of a Beaverton recycling participant being in a given occupational category.

There were significant differences in the probabilities

tested. Therefore, the third null hypothesis was rejected.

Hypothesis 4: The probability of a Corvallis recycling participant being in a given income category is equal to the probability of a Beaverton recycling participant being in a given income category.

There were significant differences in the probabilities tested. Therefore, the fourth null hypothesis was rejected.

Hypothesis 5: The Corvallis recycling participant mean income per year level is equal to the Beaverton recycling participant mean income per year level.

There were significant differences in the probabilities tested. Therefore, the fifth null hypothesis was rejected.

Hypothesis 6: The Corvallis recycling participant mean age is equal to the Beaverton recycling participant mean age.

There were significant differences in the probabilities tested. Therefore, the sixth null hypothesis was rejected.

Hypothesis 7: The Corvallis recycling participant mean level of education is equal to the Beaverton recycling participant mean level of education.

There were significant differences in the probabilities tested. Therefore, the seventh null hypothesis was rejected.

Conclusions

From the findings of this study the following conclu-

sions were drawn about the surveyed populations of recyclers from Beaverton and Corvallis.

1. It can be concluded that there are no significant differences between the sex of recyclers in Beaverton and Corvallis.

The study also disclosed a slight tendency for the average recycler to be a male. Beaverton participants were 65 percent male, while those of Corvallis were 56 percent male, or a combined average of 60.5 percent male recyclers.

2. It can be concluded that there are no significant differences between the marital status of recyclers in Beaverton and Corvallis.

The study also disclosed a tendency for the average recycler to be married. Beaverton participants were 81 percent married, while those of Corvallis were 68 percent married, or a combined average of 74.5 percent married recyclers.

3. It can be concluded that there are significant differences between the occupational bases of recyclers in Beaverton and Corvallis.

Beaverton participants exhibited a proclivity towards four occupational categories. Heading the list were the participants in category 1 (Professional, Technical and Managerial), with 30 percent of the total. Category 1 was followed by category 2 (Clerical and Sales) 19 percent, category 9 (Homemaker) 14 percent, and category 3 (Service) 10 percent.

Corvallis participants exhibited a somewhat different occupational listing. Category 6 (Student) with 30 percent led the list. Other categories of importance in Corvallis were category 1 with 23 percent and category 9 with 16 percent. At this particular stage in time, participants in Beaverton proved to be considerably more business oriented than the student- and homemaker-dominated Corvallis occupational listing.

4. It can be concluded that there are significant differences in the income per year levels of recyclers in Beaverton and Corvallis.

Income per year provided one of the most significant differences between the two communities studied. The greatest number of Beaverton participants (35 percent) fell into level d. (more than \$15,000). On the other hand, the greatest number of Corvallis participants (37 percent) fell into level a. (less than \$4,999). Generally speaking, Beaverton recyclers make more money per year than Corvallis recyclers.

5. It can be concluded that there are significant differences between the Corvallis recycling participant mean income per year and the Beaverton recycling participant mean income per year.

As discussed above, this further testing proved that Beaverton recycling participants make more money per year than their counterparts in Corvallis.

6. It can be concluded that there are significant differences between the Corvallis recycling participant mean age and the Beaverton recycling participant mean age.

Beaverton participants proved to be somewhat older when compared with recyclers in Corvallis. The Beaverton mean age was 42.06 years, while that of Corvallis was 35.09 years, or a difference in mean ages of almost 7 years.

7. It can be concluded that there are significant differences between the Corvallis recycling participant mean level of education and the Beaverton recycling participant mean level of education.

The study showed that Corvallis participants tended to be somewhat better educated than those in Beaverton. The majority of the Beaverton participants (55 percent) fell either in level 4 (some college) or in level 5 (completed college). The greatest number of the Corvallis recyclers (46 percent) fell into level 6 (post-graduate work). However, these figures are disproportioned somewhat by the location in Corvallis of Oregon State University.

8. It can be concluded that recycling participants in both communities felt that they recycled for much the same reasons.

Both Beaverton and Corvallis participants listed primarily three reasons in response to the question asking why they recycled. The three reasons were environ-

mental concern (61 responses), stop unnecessary waste (55 responses) and conservation of natural resources (53 responses). The reasons with the next highest response totals, with just 13 each, were save money and get rid of unwanted items.

9. It can be concluded that the degree of recycling participation is in direct proportion to the distance the recycler lives from the recycling center.

Spatial analysis of data from question one proved, as expected, that the number of recyclers using each center diminished as the distance from home location to recycling center became greater. Visual interpretation of Figure 4 and Figure 5 confirms that the majority of the recycling participants live within a three mile radius of the recycling center.

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APPENDICES

APPENDIX A
Survey Questionnaire

RECYCLING PARTICIPATION SURVEY

This survey is being conducted as part of a research project by a graduate student of geography at Oregon State University. The purpose is to survey socioeconomic factors determining recycling participation in two Oregon communities (Beaverton and Corvallis), and to measure their relative importance. Your cooperation will be appreciated, and all responses will remain anonymous.

1. Your address (number, street, city):

2. Sex: M F

3. Age: _____

4. Marital status: _____

5. Occupation (be specific):

6. Income per year:
a. less than \$4,999
b. \$5,000 to \$9,999
c. \$10,000 to \$14,999
d. more than \$15,000

7. Level of education:
a. 8th grade or less
b. some high school
c. completed high school
d. some college
e. completed college
f. post-graduate work

8. Personally speaking, why do you recycle?

APPENDIX B

Occupational Categories

(Modified from 1965 Dictionary of Occupational Titles)

1. Professional, Technical and Managerial occupations
2. Clerical and Sales occupations
3. Service occupations
4. Farming, Fishery, Forestry and related occupations
5. Processing, Machine Trades, Bench Work, Structural Work and related occupations
6. Student
7. Retired
8. Unemployed
9. Homemaker
10. No response

1. Professional, Technical and Managerial Occupations

Occupations in:

architecture and engineering
 mathematics and physical sciences
 life sciences
 social sciences
 medicine and health
 education
 museum, library and archival sciences
 law and jurisprudence
 religion and theology
 writing
 art
 entertainment and recreation
 administrative specializations
 managers and officials
 miscellaneous professional, technical and managerial

2. Clerical and Sales Occupations

Occupations in:

stenography, typing and related
computing and account-recording
material and production recording
information and message distribution
miscellaneous clerical
salesman, services
salesmen and salespersons, commodities
merchandising occupations, except salesmen

3. Service Occupations

Occupations in:

domestic service
food and beverage preparation
lodging and related services
barbering, cosmetology and related services
amusement and recreation
miscellaneous personal services
apparel and furnishings service
protective services
building and related services

4. Farming, Fishery, Forestry and Related Occupations

Occupations in:

plant farming
animal farming
miscellaneous farming
fishery and related
forestry
hunting, trapping and related
agricultural services

5. Processing, Machine Trades, Bench Work, Structural and Related Occupations

Occupations in:

processing of metal
 ore refining and foundry
 processing of food, tobacco and related products
 processing of paper and related products
 processing of petroleum, coal, natural and manu-
 factured gas and related products
 processing of chemicals, plastics, synthetics,
 rubber, paint and related products
 processing of wood and wood products
 processing of stone, clay, glass and related
 products
 processing of leather, textiles, and related
 products
 metal machining
 metalworking
 mechanics and machinery repairmen
 paperworking occupations
 printing
 wood machining
 machining stone, clay, glass, and related
 materials
 textiles
 machine trades
 fabrication, assembly, and repair of metal products
 fabrication and repair of scientific and medical
 apparatus, photographic and optical goods,
 watches and clocks and related products
 assembly and repair of electrical equipment
 fabrication and repair of products made from
 assorted materials
 painting, decorating and related
 fabrication and repair of plastics, synthetics,
 rubber and related products
 fabrication and repair of wood products
 fabrication and repair of sand, stone, clay, and
 glass products
 fabrication and repair of textile, leather and
 related products
 bench work
 metal fabricating
 welders, flame cutters and related
 electrical assembling, installing and repairing
 painting, plastering, waterproofing, cementing
 and related
 excavating, grading, paving and related
 construction occupations
 structural work

6. Student

7. Retired

8. Unemployed

9. Homemaker

10. No Response