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Judy Seppanen Davis
Portland State University

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THE MOTIVATIONS OF EXURBAN
COMMUTERS WITHIN A REGION

by

Judy S. Davis

November 1989

Center for Urban Studies
Portland State University
Portland, OR 97207

This study was supported by a grant from the U.S. Department of Transportation. Judy Davis is a candidate in the Ph.D. program in Urban Studies: Regional Science at Portland State University.

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During the 1970's and 1980's many Americans moved to rural residential areas on the fringes of cities. These movers expected to enjoy large lots, open space, and other advantages of rural living while having access to urban areas for jobs, shopping, and cultural events. This low-density development beyond the suburbs is known as exurban development and is expected to continue to attract residents in the coming decades.

Exurban development has been described by a number of authors, but there is no standard definition of it (Joseph and Smit 1981). This paper follows urban field theory as developed by Friedman and Miller (1965) and applied by Berry and Guillard (1977). The rural residential area beyond the suburbs but within the commuting range of the urban/suburban area is called exurbia.

There has been much speculation and disagreement about the forces sustaining exurban development and the impacts of this type of development on individuals and society. It is generally assumed that a major link of exurbanites with urban and suburban areas is jobs. Despite this assumed link, little is actually known about the relationships of exurban households to places of work. It is not known whether exurbanites endure or even enjoy long commutes (Herbers 1986), commute no longer in time or distance than their more urban neighbors due to the suburbanization of

employment (Dueker et al. 1983) and ease of travel on less congested highways (Zimmer 1985), commute less often due to flexible work times and places (Clawson 1971) or use of telecommuting (Howland 1982), or commute to nearby jobs in exurbia or in small towns.

In his recent analysis of U.S. commuting trends, Pisarski (1987) points out that we tend to think of work trips in outdated images from the 1950's and 1960's. Jobs were once concentrated in the central business district but are now spread out within and even beyond metropolitan areas. Babyboomers and women of all ages have swelled the size of the workforce and hence the number of commuting trips. Services, which have different work schedules than manufacturing, have become the predominant growth sector. Today more people commute within the suburbs than either within central cities or from the suburbs to central cities. Commuting out of central cities to the suburbs and commuting across metropolitan boundaries are also increasing. In general commuting has become more spread out both in time and space.

Pisarski (1987) concludes that additional research is needed to better understand today's commuting and its implications for transportation policy and planning. One type of research that he recommends is case studies to provide more detail about commuting trends.

This case study of the Portland, Oregon, region analyzes and compares the emerging commuting patterns of exurban, small town, and suburban households. The analysis is based on a mail survey of 1408 households who purchased homes in 1987. By examining the types of households moving to exurbia, their reasons for moving, and the impacts of their moves on journey-to-work a picture is drawn of the forces shaping exurban development and the implications of this type of development for transportation planning and policy.

THEORETICAL PERSPECTIVES ON EXURBAN DEVELOPMENT

According to the standard model of urban form developed by Alonso (1960,1964), exurban development is the result of higher income households seeking more space at lower prices farther from the city center. These households have decided that location is more important than accessibility. In other words, they are willing to commute longer distances to have the type of housing they desire. Muth (1969) concludes that this is typical of Americans with rising incomes who choose more space and other low-density housing amenities despite the additional cost and bother of longer commutes.

There are a number of problems with this approach to modeling exurban development. First, exurbanites may not be making longer commutes, especially when measured in time, because of the suburbanization of employment (Dueker et al.

1983) and faster speeds of travels on less congested roads (Zimmer 1985). Second, exurbanites may value their commutes as a needed separation between home and work (Salomon and Salomon 1984) or a form of leisure (Herbers 1986). Third, commuting may not be very important in residential decision-making because people frequently underestimate its actual cost (Mitchelson and Fisher 1981) or they minimize costs by strategies such as using flextime to avoid rush hour traffic. Fourth, increasing numbers of people are less concerned with accessibility to the urban area because they do some or all of their work at home or have mobile workplaces (Herbers 1986, Howland 1982). In sum, people may be able to have an exurban lifestyle without making a trade-off between accessibility and space. Hence other reasons for exurban growth must be investigated.

Another approach is to look at the forces which have shaped suburban residential development. Jackson (1985) identifies urban population growth, anti-urbanism, racism, and cheap housing as the primary forces behind suburban residential growth. Cheap housing is the result of high personal incomes, low land costs, transportation improvements, new housing construction methods, federal programs encouraging home ownership and automobile use, and the free enterprise system of land and housing development. Anas and Moses (1978) and Muller (1981) add the suburbanization of employment to this list of attitudes,

technological changes, and government policies shaping suburban residential choice.

Hanson (1989) goes farther and contends that a major reason for the extensive spread of urban areas in the United States is the long-term subsidization of automobile use. Although user fees, especially gasoline taxes and registration fees, pay some of the costs of highway construction and maintenance, Hanson argues that automobile use currently receives direct and indirect subsidies equivalent to a gasoline tax of \$1.27 per gallon. These subsidies have encouraged automobile use and urban sprawl. Without them cities would be more compact and exurban living less attractive.

Another source of ideas about exurban development is the literature on the nonmetropolitan population turnaround of the 1970's. A major emphasis of that research has been cognitive-behavioral theories emphasizing quality-of-life and residential preference. Numerous surveys have reported that most Americans prefer small town or rural life, especially if they would be near a large town or city (Zuiches 1981). It is not clear whether these preferences are latent desires which it has recently become feasible to act upon (Wardwell 1980), the same pro-rural biases that influenced suburban development (Elazer 1987), or new attitudes about the ideal place to live (Lessinger 1985). Whatever the source of these preferences, many have argued

that they have had more influence on recent nonmetropolitan residential decision-making than economic factors (Williams and Sofranko 1980, Zelinsky 1977) although some disagree (Hicks and Glickman 1983, Carlinio 1985).

This review of theories suggests a variety of factors that could be supporting exurban residential development. They include:

1. Pro-rural attitudes about the ideal place to live;
2. High household incomes which allow greater residential choice;
3. Metropolitan population growth;
4. Lower housing costs at greater distances from the city center which offset higher transportation costs of living farther out;
5. Cheap personal transportation;
6. The suburbanization of employment;
7. The pleasures of rural driving;
8. Work schedules that allow more flexibility in commuting or require fewer trips to a fixed work location.

Some of these factors might override any negative aspects of long commutes while others suggest that long commutes may not be necessary.

METROPOLITAN AND EXURBAN COMMUTING PATTERNS

Metropolitan commuting patterns have been evolving from a simple set of flows converging on the CBD into a much more complex arrangement which includes extensive intrasuburban and reverse flows. In 1980, the most common type of work trip in SMSA's had both origin and destination outside the central city; 40.1 percent of all SMSA work trips took place totally within suburbia. Only 20.1 percent of work trips were from suburb to central city, 33.0 percent were within the central city, and 6.8 percent were reverse flows from central city to suburbs (Bureau of Census, 1984). This shift in commuting patterns is the result of changes in the locations of homes and jobs, in the kinds of occupations and associated work schedules, and in the types of individuals within the workforce.

Both people and jobs have been deconcentrating for some time. While some predict that this will ultimately result in short commutes for nearly everyone (Leven 1979), this is not yet the case. People still commute considerable distances because CBD's often retain a surplus of jobs over residents, jobs and people do not necessarily deconcentrate at the same rates, and the skills of the residents of a zone may not match the jobs within or near that zone. The length of exurbanites commutes will thus depend in part on where they work.

The shift from an industrial to a service economy also affects commuting because it influences the location of jobs, the occupational structure, and work schedules. For the past 25 years the number of goods-producing jobs has remained fairly constant while the number of service-producing jobs has increased (Kutscher and Personik 1986). Many of the new service jobs have been created in suburbs as services have moved closer to the populations they serve and as CBD's have become more specialized business centers.

Occupation affects commuting because it is related to income, to job location, to socio-economic status and therefore to residential location, and possibly to attitudes about commuting. For example, Gera and Kuhn (1981) found that some occupational groups, particularly skilled blue collar workers, traveled considerably longer distances than the spatial structure implied they must. Cubukgil and Miller (1982) attribute this to both the high income of skilled blue collar workers--the same as middle managers and semi-professional--and to a greater propensity to commute. The variable job locations of construction workers might also be a factor.

Cubukgil and Miller (1982) ranked occupational groups on sensitivity to travel time, beginning with the least sensitive, as follows: 1) skilled blue collar/foreman, 2) high management/professional, 3) middle management/semi-professional, 4) supervisor, 5) semi/unskilled blue collar,

and 6) clerical/sales/services. This suggests that if exurban living does require longer commutes, skilled blue collar workers and managers and professionals would be more likely to be moving there.

Another factor influencing commuting time may be modifications in work schedules. The shift to a service economy has changed the hours and places that many people work. A smaller proportion of the workforce may be commuting at rush hour because of evening and weekend work or because of working at home. If commuting is less of a hassle, people might be willing to do more of it.

In addition, more women are participating in the workforce, which results in many households with two people commuting to work. Because of dispersed workplaces, the spouses or partners are likely to work in different locations. It has often been assumed that the man's job has determined residential location while residential location has constrained women's jobs choices. Singell and Lillydahl (1986) confirm that two-wage earner families who move are most likely to keep the husband's commute constant while increasing the wife's commute. If moving to exurbia means longer trips for both earners, these findings suggest that two-wage earner households would not move there. If, on the other hand, exurban living does not require longer commutes, especially for primary wage earners, exurbia might be attractive to two-wage earner households.

Studies on the actual commuting patterns of exurban residents are scarce. Some studies use commuting data to help define exurbia and one compares the commuting distances of exurbanites and suburbanites.

Berry and Guillard (1977) have mapped the commuting fields of all U.S. Standard Metropolitan Statistical Areas (SMSA's) using 1960 and 1970 census data. They demonstrated that commuting ranges were expanding. However, Taaffe, Gauthier and Maraffa (1980) in a study of Appalachian Ohio found that in this region commuting ranges were intensifying rather than extending. In other words, more people in the exurban area were commuting to SMSA's, but the exurban areas were not spreading farther into the countryside. Fisher and Mitchelson (1981a) in a study of Northeast Georgia-Northwest South Carolina found both expansion and intensification occurring.

Although Berry and Guillard's maps have not been replicated for the 1980 census, nonmetropolitan counties adjacent to SMSA's grew rapidly in the 1970's (Richter, 1985). Many of these counties have subsequently been added to SMSA's reflecting both their population growth and their commuting ties to the urban/suburban area.

In the one study which compares exurban and suburban commuting distances, Dueker et al. (1983) used rural non-farm residents within SMSA's as their definition of exurban residents. They found no significant differences in the

commuting lengths of exurbanites and suburbanites or among various types of exurbanites where the categories are based on housing type and cost and household income.

It is not clear from these studies whether exurban living requires longer trips to work. Exurban living may not require longer commutes if exurban residents hold suburban jobs or have work schedules that reduce travel to work or avoid travel at congested times. Conversely, exurban living may require longer commutes and would therefore be most attractive to people willing to commute longer distances. Thus people with skilled blue collar or managerial and professional jobs or households with only one wage earner may be more prevalent in exurbia.

RESEARCH METHODS

This case study of the Portland, Oregon, region is based on a mail survey of 1408 households who purchased homes in the exurban, small town, and suburban areas around Portland in 1987. A survey of households who recently moved should produce a clearer picture of emerging trends than a survey of the same number of households in the general population.

Portland, Oregon, was selected as a representative urban field because it is a large metropolitan area with a moderate growth rate (Price 1987) and it has followed the national trends of increasing suburbanization of jobs and

people which results in more commuting within suburbia (Roberts 1986). The study results should, therefore, be fairly typical of large United States urban areas.

Oregon has statewide land use planning that restricts urban sprawl, and therefore exurban development, more than any of the 48 contiguous states. On the one hand, this aids the study since a metropolitan urban growth boundary (UGB) separates suburban and exurban land uses. On the other hand, it means the generalizability of the results may be tempered.

The commuting patterns of Portland's exurban residents may be affected by land use planning because it restricts the supply of land available for certain uses (Healy and Short 1981). For example, the cost of large lots may exclude some typical exurban buyers from the market. Exurban jobs may also be less prevalent because commercial and industrial development is directed to the urban/suburban area or to small towns.

The study area is illustrated in Figure 1 and includes all of Washington County and parts of Clackamas, Columbia, Marion and Yamhill counties. All exurban census block groups or enumeration districts with developable land where at least ten percent of the resident workers commute to the Portland metropolitan area are included. The study area is divided by the metropolitan UGB into suburban and exurban zones. The cities of Wilsonville and Forest Grove whose

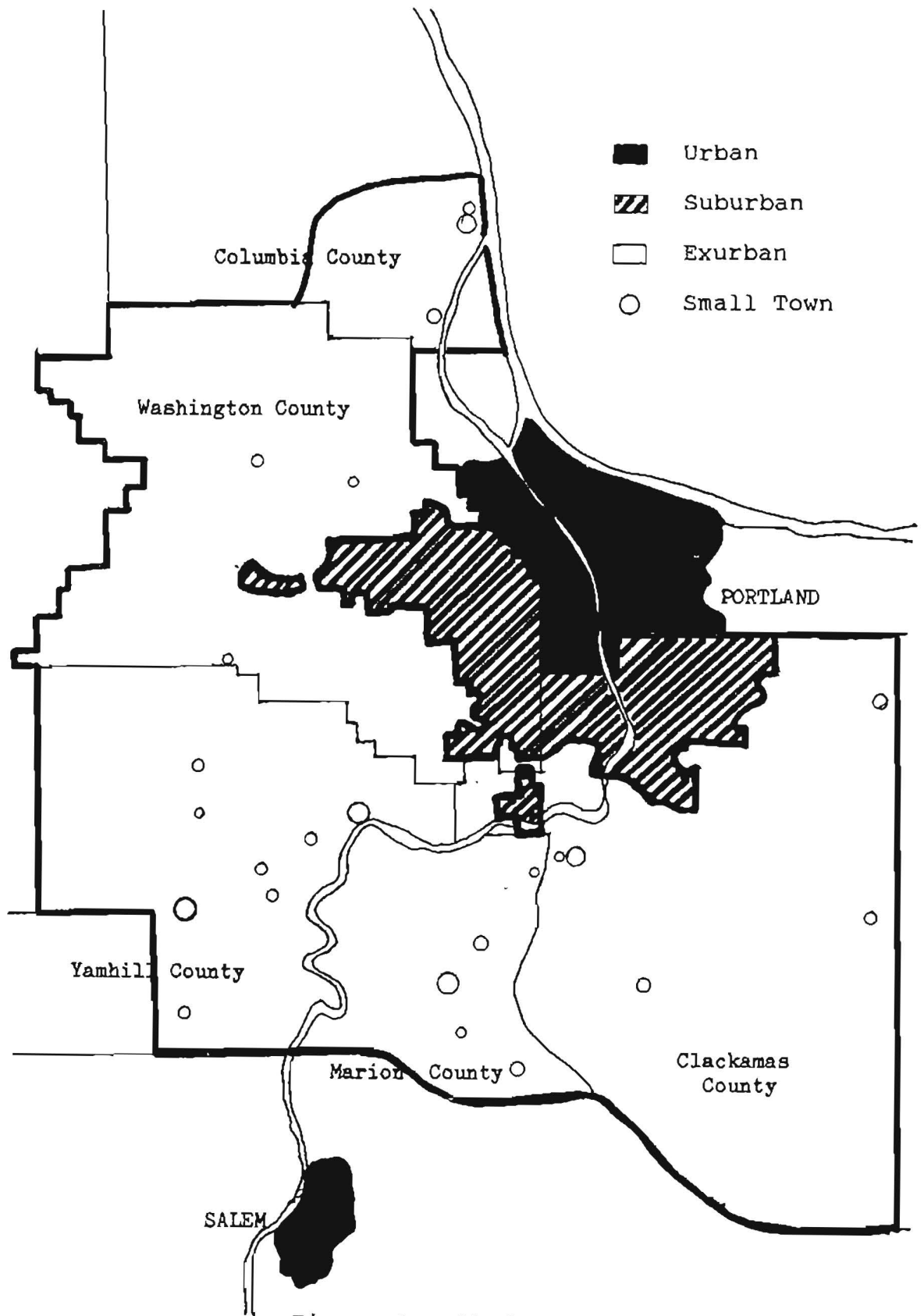


Figure 1. Study Area

UGB's are nearly contiguous with the metropolitan UGB are included in the suburban zone. Scattered throughout the exurban zone are 24 small towns ranging in size from 110 to almost 16,000 residents. This produces three subareas-- exurban, small town, and suburban.

Names and address of households who purchased and occupied homes in the study area in 1987 were obtained from lists of property sales kept by each county assessor's office. One out of every four exurban/small town and one out of every ten suburban owner-occupied house purchased in 1987 were selected for the study.

Each household in the sample was contacted by mail to learn about their move and its effects on household members' travel to work. Dillman's (1978) total design method was used in designing and implementing the survey. (See the Appendix for a copy of the survey.) The primary data from the survey were matched with secondary data from the county assessor's records including purchase price and property tax rates and with some neighborhood characteristics obtained from other public data sources.

The final response rate for the survey was 67.3 percent. A comparison of the purchase price of homes of respondents and non-respondents indicates that little bias should be introduced because of non-response (Davis 1990).

Two types of analysis are used. First descriptive statistics are used to clarify the types of households who

purchased homes in each part of the study area, the household's view of the role of journey-to-work in their decision to move, their job locations and other work characteristics, and the characteristics of their commuting trips. Regression analysis is then used to clarify the relationship between commuting time and the commuters' residential location and individual, family, and job characteristics. Another regression equation is used to determine the impact of residential location on housing prices. The trade-off between housing prices and transportation is then examined.

DESCRIPTIVE RESULTS

Commuting trips are usually thought of as by-products of the major decisions of where to live and where to work. These decisions are influenced by characteristics of the individual and of his or her household. It is, therefore, important to know who exurbanites are and what they are seeking when moving to exurbia before examining their commuting trips.

Who Are the Exurbanites?

The typical household buying an exurban home near Portland, Oregon, in 1987 was a family with children and two adult wage earners. They previously lived in a suburb of Portland. The primary wage earner holds a managerial,

professional, or blue collar job while the secondary wage earner has a technical, sales, or clerical position. Both commute to the urban or suburban area. Their household income is in the \$40,000-\$49,999 range.

While this typical exurban household closely resembles an average suburban home-buying household, what they are buying differs. The exurban home purchasers are looking for land, open space, quiet, and privacy which are not available in the city or suburbs. They are willing to commute more to obtain these rural amenities. In comparison, suburban home buyers are more interested in housing quality and quantity.

Naturally this portrait of a typical exurban household does not fit all exurban households perfectly. The following tables and discussion provide more detailed information on exurban home purchasers as well as comparing them with their small town and suburban neighbors.

Former Residence

As Table I shows about four out of five exurbanites made local moves with over half coming from Portland and its suburbs. Only a quarter of the exurban buyers already lived in the exurban/small town zone. Nearly the same proportions of small town and suburban home purchasers made local moves, but the majority of home purchasers in these areas already lived in the zone in which they purchased their new home. In addition small towns attracted a greater proportion of

households moving from other parts of Oregon, while suburbs became home to more households from out-of-state.

TABLE I
PLACE OF FORMER RESIDENCE OF HOME PURCHASERS
BY RESIDENTIAL SUBAREAS

<u>Moved from</u>	Exurban	<u>Moved to</u> Small Town	Suburban
<u>Local Area</u>			
Urban	16%	8%	13%
Suburban	36%	15%	55%
Exurban/Small Town	<u>27%</u>	<u>53%</u>	<u>3%</u>
Total	79%	76%	71%
<u>Other Areas</u>			
Other Oregon	5%	11%	6%
Out-of-state	<u>16%</u>	<u>13%</u>	<u>24%</u>
Total	21%	24%	30%
	n=248	n=185	n=433

Household Types

Most home-buying households include employed persons. Table II shows that exurban households have the lowest rate of being out of the workforce and the highest rate of having two adults in the workforce. Most of the households with no wage earners are retired although in a few cases unemployment is the cause. Small town home buyers have the highest rate of non-participation in the workforce. In part this is due to the large number of home sales in a retirement community in Woodburn, but it also reflects the general popularity of small towns as places for retirement.

TABLE II
 WORKFORCE PARTICIPATION OF HOMEBUYERS
 BY RESIDENTIAL SUBAREAS

	Exurban	Small Town	Suburban
No wage earners	4.8%	20.6%	9.8%
One wage earner	32.7%	34.4%	38.6%
Two wage earners	<u>62.5%</u>	<u>45.0%</u>	<u>51.6%</u>
	100.0%	100.0%	100.0%
	n=251	n=189	n=500

One of the reasons that so many exurban households include two wage earners is that single working adults rarely purchase exurban homes as shown in Table III. Note that the proportion of exurban households with two wage earners and children is the highest for all types and all areas.

TABLE III
 FAMILY CHARACTERISTICS OF HOUSEHOLDS IN WORKFORCE
 BY RESIDENTIAL SUBAREAS

	Exurban	Small Town	Suburban
Households with one adult			
No children	3.3%	6.0%	9.1%
With children	1.3%	7.3%	3.5%
Households with two or more adults			
One wage earner			
No children	8.8%	10.7%	10.4%
With children	20.9%	19.3%	19.7%
Two wage earners			
No children	23.8%	20.0%	22.4%
With children	<u>41.8%</u>	<u>36.7%</u>	<u>34.8%</u>
Total	99.9%	100.0%	99.9%
	n=239	n=150	n=451

Noncommuters

Some of the wage earners from these households of movers do not fit the study's definition of commuter. That is, they do not travel to a fixed place of work at least once a week. Either they work at home, their work places are variable, or their travel to work is infrequent. About six percent of both primary and secondary workers from all areas belong in one of these classifications. All of those who do not fit the commuting definition are omitted from the following discussion which focuses on commuters.

Job Location

As was expected with predominantly local moves, about 65 percent of the principal and 60 percent of the secondary wage earners work at the same location as before their move. Approximately 20 percent of the principal and 15 percent of the secondary wage earners changed jobs along with their moves, as movers from outside the region would do. The remaining 15 percent of the principal and 25 percent of the secondary wage earners have changed jobs or entered the workforce between their moves and the time of the survey.

Given that many exurbanites previously lived in the suburbs and have not changed jobs, their job locations should resemble those of suburbanites. Table IV confirms that this is true. Seventy-seven percent of the exurban principal wage earners and 71 percent of the secondary wage earners commute to urban or suburban jobs. More hold urban

than suburban jobs. That makes exurbanites the most likely group to commute out of their residential zone. But about one-fourth of the exurbanites do work in the exurban/small town zone where they live. That gives them somewhat lower rates of holding urban and suburban jobs than suburbanites who rarely commute out to exurban/small town jobs.

TABLE IV
WORK LOCATIONS OF COMMUTERS BY TYPE OF EARNER AND
RESIDENTIAL SUBAREAS

Job Zone	<u>Primary Wage Earners</u>			<u>Secondary Wage Earners</u>		
	Exurb	SmTown	Suburb	Exurb	SmTown	Suburb
Urban	41%	17%	49%	37%	16%	40%
Suburban	36%	33%	48%	34%	25%	58%
Exurban/Sm.Twn	21%	47%	2%	28%	60%	2%
Out-of-area	3%	3%	1%	2%	0%	0%
	n=195	n=118	n=389	n=135	n=76	n=216

Although exurban and small town home-buyers both live some distance from the urban core, they have very different patterns of job location. Unlike the exurbanites, almost half of the small town principal wage earners and 60 percent of the secondary earners work in the exurban/small town zone where they live. This group is least likely, by a wide margin, to commute to urban areas, although about one-third of the primary earners and one-fourth of the secondary earners commute to suburbs.

Occupation and Income

Occupations are important in determining work and home locations as well as commuting characteristics. The

occupations of the commuting home purchasers are outlined in Table V. Once again exurban and suburban residents are similar with most principal wage earners holding managerial and professional or technical, sales, and clerical positions. A major difference is that exurban principal wage earners are twice as likely to be blue collar workers as suburban primary wage earners. In contrast, small town principal wage earners are least likely to hold managerial and professional positions and most likely to have low skill blue collar jobs.

TABLE V

OCCUPATIONS OF COMMUTERS BY TYPE OF EARNER AND RESIDENTIAL SUBAREAS

<u>Classification</u>	<u>Exurban</u>	<u>Small Town</u>	<u>Suburban</u>
<u>Principal Wage Earners</u>			
Management, Prof.	42%	31%	50%
Tech,Sales,Clerical	18%	22%	31%
Service	2%	6%	3%
Ag,Forest,Fish	3%	2%	0%
Hi Skill Blue Collar	18%	14%	8%
Lo Skill Blue Collar	<u>17%</u>	<u>25%</u>	<u>8%</u>
Total	100%	100%	100%
	n=215	n=136	n=423
<u>Secondary Wage Earners</u>			
Management, Prof	31%	22%	38%
Tech,Sales,Clerical	46%	54%	50%
Service	10%	20%	7%
Ag,Forest,Fish	1%	0%	0%
Hi Skill Blue Collar	3%	4%	2%
Lo Skill Blue Collar	<u>8%</u>	<u>1%</u>	<u>4%</u>
Total	99%	101%	101%
	n=150	n=82	n=242

Secondary wage earners from all residential areas are concentrated in technical, sales, and clerical positions followed by managerial and professional occupations. Here the exurbanites have rates in between those of suburban and small town secondary workers, except that more are low skill blue collar workers than elsewhere.

The differences in occupational structure of the areas combine with other factors such as the proportion of two-wage earner families to produce different income patterns. In each residential area there are households at all income levels from less than \$20,000 annual household income to over \$100,000. Median household income for both exurban and suburban home buyers is in the \$40,000-\$49,999 range while median household income for small town purchasers is in the \$30,000-\$39,999 range.

But another factor is also at work. Even within the same occupational classifications, small town residents tend to make less. For example small town households headed by technical, sales, and clerical workers are clustered at the low end of the income range while exurban and suburban households whose principal wage earners hold the same types of occupations have incomes more evenly distributed from low to very high.

Summary

In sum, exurbanites resemble suburbanites more than small town residents. Like suburbanites exurban home

purchasers often lived in the urban or suburban area before their move, have white collar jobs, work in urban and suburban places, and earn higher incomes. Unlike suburbanites and more like small town residents, exurbanites hold a substantial number of blue collar jobs. About one-fourth also lived in the exurban/small town zone prior to their move and some hold exurban/small town jobs. Differing from both groups, exurban households rarely have only one adult member and most often having two wage earners.

Why Did They Move?

As will be documented more thoroughly later, the moves to exurbia usually require longer commutes. Why then are household leaving suburbs and city to move to rural residential areas? What are they getting in exchange for more time spent commuting?

Motivations For Moving

Many exurbanites are seeking larger lots, access to outdoor recreation, country views, privacy, and quiet that are not available in the urban/suburban regional center. Table VI clearly shows this. (Note that all households including those who are retired or do not fit the definition of commuting are included here.) Sixty-one percent of the exurban households gave owning large lots or acreage as one of their three main reason for moving. Living in a more

rural area was also important to half the exurban households.

TABLE VI
THE THREE MOST IMPORTANT REASONS FOR MOVING OF HOME
PURCHASERS BY RESIDENTIAL SUBAREAS

<u>Reason for moving</u>	<u>Exurban</u>	<u>Small Town</u>	<u>Suburban</u>
Job related			
New job or transfer	11%	11%	19%
To be closer to work	13%	15%	19%
To be farther from work	1%	2%	1%
Family/life cycle			
Retirement	5%	16%	7%
Married, widowed, etc.	3%	11%	11%
Better for raising family	27%	25%	28%
Other family/personal	11%	22%	17%
Housing related			
Better quality house	17%	19%	27%
Different size house	18%	26%	29%
Less expensive house	4%	18%	7%
Own instead of rent	36%	43%	46%
Rural living			
Large lot or acreage	61%	10%	8%
Live in more rural area	50%	17%	9%
Urban living			
Live in more urban area	1%	4%	4%
Public services/costs			
Better schools	6%	6%	14%
Lower taxes	4%	6%	4%
Former neighborhood was changing	11%	15%	16%
All other responses	12%	21%	15%
	n=254	n=185	n=503

No single reason was so compelling for the small town and suburban purchasers. Instead a mix of traditional reasons for moving related to housing and family were most important for those groups. But housing and family reasons, especially owning instead of renting and having a better

place to raise a family, were also important to many exurbanites.

Job and commuting reasons were only of moderate importance for moving to any residential subarea. Job change would of course be a factor in many of the interstate moves, but 70-75 percent of the moves were local. Other surveys of households making local moves also have found that housing needs and family characteristics are the primary reasons given for moving. Job changes or being closer to work are seldom mentioned as the reasons for moving within a metropolitan area, even when the household does move closer to work (Clark and Burt 1980).

When it comes to choosing a particular neighborhood the motivations of all movers are more alike. All groups selected finding the best or most affordable house and the looks/design of the neighborhood as their top reasons for neighborhood selection. All also ranked convenience to job and good schools as the third and fourth most important reasons for selecting a neighborhood.

Many exurbanites found, however, that the list of housing and neighborhood attributes and accessibility factors that was provided did not adequately describe their reasons for selecting a rural neighborhood. About 28 percent of the exurban purchasers added reasons such as being near forested land or open space, owning acreage, raising wine grapes, having horses, or wanting quiet and

privacy. Added to the strong preference for rural living previously noted as reasons for moving, this strengthens the argument that rural amenities unavailable in small towns, suburbs, or cities are what draw many people to exurban places.

Summary

Exurbanites are a diverse group in terms of occupation and income but are generally united in their desires for space and rural amenities. Many were seeking a better life. One respondent states, "We hated living in a suburban neighborhood. The houses are crammed together with little or no privacy. We were willing to give up convenient access to Portland to get out of it." Another says, "We moved from a wealthy suburb in Washington State to a more peaceful--less stressful--environment in Oregon. [We] wanted land to grow organic produce and maintain a woodland element." Even one person who has changed jobs since moving and now has a long commute says, "I do not want to move closer to my job because I very much like rural living."

How Did Moving Affect Commuting?

One way exurban home purchasers paid for the desired rural attributes was with longer commutes, though some find positive benefits to commuting through the countryside. This section first compares the commutes and work schedules of exurban home buyers with those of homebuyers from small

towns and suburbs and then compares present work trips with trips before moving.

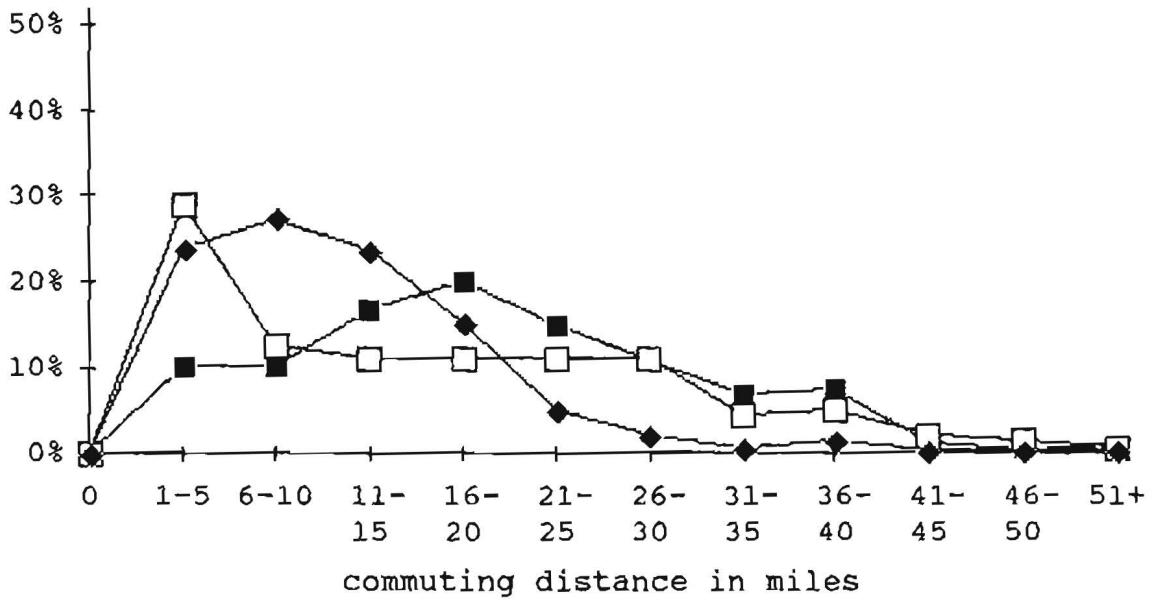
Commuting Trip Characteristics

Trip Length. More exurbanites have long commutes, whether measured in time or distance, than members of the other groups. Figure 2 illustrates this using miles per one-way trip. This figure compares the distribution of trip lengths of commuters from each residential area. Note that the distributions for primary and secondary wage earners from each residential subarea are closely related even though secondary wage earners tend to travel shorter distances which produces more peaked distributions.

The fairly flat exurban distributions with their peaks at 16-20 and 11-15 miles indicate that few exurbanites commute short distances and many travel longer distances than the average commuter from the other areas. In sharp contrast, small town buyers have the most peaked distributions of trip length with 29 percent of the principal wage earners and 49 percent of the secondary earners commuting five miles or less. Most suburban home purchasers travel 15 miles or less to work with fairly high frequencies in each interval between one and 15 miles.

Trip lengths measured in time follow a similar pattern. Table VII summarizes the trip lengths, measured in both miles and minutes. Although exurban principal wage earners do not have the longest maximum trips, their averages are

Principal Wage Earners



Secondary Wage Earners

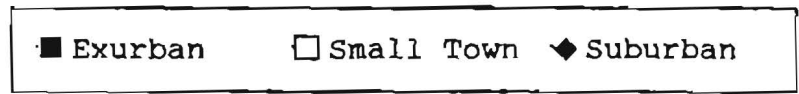
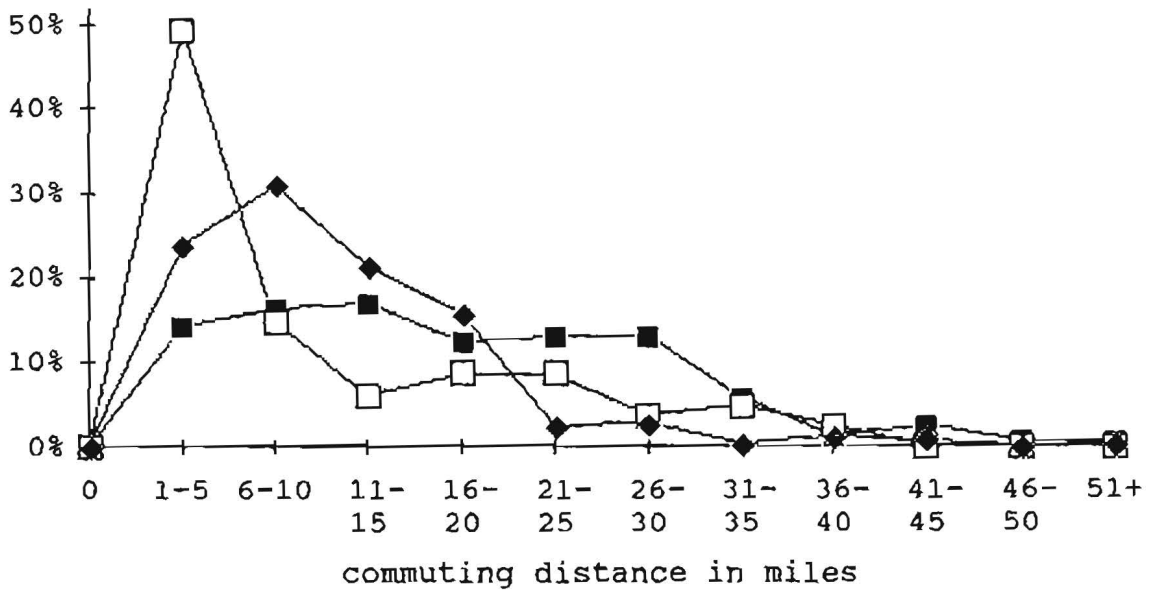


Figure 2. Relative frequency of commuting distances by residential subareas and type of wage earners.

longer than elsewhere. Also a few secondary wage earners have longer trips than principal wage earners, but the averages are always less in each residential subarea.

TABLE VII

COMMUTING TIMES AND DISTANCES BY TYPES OF WAGE EARNER AND RESIDENTIAL SUBAREAS

<u>Residential Location</u>		<u>Min</u>	<u>Max</u>	<u>Median</u>	<u>Mean</u>
<u>Principal Wage Earners</u>					
Exurban	Minutes	2	80	30	29.7
	Miles	1	60	20	20.2
Small Town	Minutes	2	90	20	23.6
	Miles	1	75	15	13.6
Suburban	Minutes	2	50	20	20.6
	Miles	1	47	10	11.9
<u>Secondary Wage Earners</u>					
Exurban	Minutes	2	105	27	27.7
	Miles	1	95	16	18.4
Small Town	Minutes	1	60	10	16.7
	Miles	1	40	5	11.2
Suburban	Minutes	2	65	20	20.2
	Miles	1	66	10	8.0

The means for suburban residents are close to those reported by Gordon, Kumar and Richardson (1989) for morning rush hour trips by private vehicle in 1983. They found mean trips of 21.1 minutes or 10.6 miles for non-central city residents of metropolitan areas with 1-3 million residents. Thus Portland's suburban home buyers have trip lengths much like suburban residents of similar sized areas in the United States.

Mode. Nearly all the commuters regardless of residential area drive alone to work as demonstrated in Table VIII. Carpooling is the second most common mode followed by use of public transit. It should be noted that public transit is not available in many of the small towns and in much of the exurban area. Even when it is available it may not be convenient to use for work trips, as a number of respondents pointed out. A few workers use other modes such as walking or bicycling.

TABLE VIII
MODE OF TRAVEL TO WORK BY TYPE OF WAGE EARNER AND
RESIDENTIAL SUBAREAS

Mode	<u>Primary Wage Earners</u>			<u>Secondary Wage Earners</u>		
	<u>Exurb</u>	<u>SmTown</u>	<u>Suburb</u>	<u>Exurb</u>	<u>SmTown</u>	<u>Suburb</u>
Drives alone	91.9%	89.8%	88.3%	92.8%	87.8%	88.9%
Carpools	5.9%	8.8%	5.6%	6.5%	7.3%	8.2%
Rides bus	1.4%	0.7%	4.2%	0.6%	1.2%	2.0%
Other	0.9%	0.7%	1.9%	0.0%	3.7%	0.8%
	n=221	n=137	n=430	n=154	n=82	n=244

Stops. Driving alone makes it easy to make stops on the way to and from work as most commuters do. The types of stops made are outlined in Table IX. Exurban residents are most likely to make stops, especially for personal business and shopping. Since they are less likely to live near banks, grocery stores, and other commercial activities, stopping on work trips seems very reasonable. Small town residents are the least likely to make stops perhaps because of the short lengths of their trips.

TABLE IX

STOPS MADE ON WAY TO OR FROM WORK
BY TYPE OF WAGE EARNER AND
RESIDENTIAL SUBAREAS

<u>Purpose</u>	<u>Principal Wage Earners</u>		
	<u>Exurban</u>	<u>Sm. Town</u>	<u>Suburban</u>
Personal Business	55%	44%	49%
Shop	42%	31%	35%
Pick up or drop off family members at daycare/school	18%	13%	17%
Eat at restaurant	17%	11%	18%
Visit friends or relatives	14%	10%	8%
Recreation	11%	7%	13%
Other	11%	8%	6%
Makes no stops	23%	31%	34%
	n=218	n=135	n=428
<u>Purpose</u>	<u>Secondary Wage Earners</u>		
	<u>Exurban</u>	<u>Sm. Town</u>	<u>Suburban</u>
Personal Business	70%	45%	62%
Shop	74%	48%	56%
Pick up or drop off family members at daycare/school	36%	34%	35%
Eat at restaurant	21%	11%	14%
Visit friends or relatives	28%	19%	10%
Recreation	10%	4%	10%
Other	3%	8%	6%
Makes no stops	11%	24%	16%
	n=151	n=80	n=244

Secondary wage earners make stops more frequently than primary wage earners especially for doing personal business, shopping, transporting children, and visiting. Since secondary wage earners are mostly female and more work part-time, these stops probably reflect their larger share of household responsibilities.

Work Schedules and Commuting. It was expected that exurbanites would use flextime and working at home to help manage their commutes. But Table X indicates that

TABLE X

WORK SCHEDULES OF COMMUTERS BY TYPE OF WAGE EARNER AND
BY RESIDENTIAL SUBAREAS

Principal Wage Earners

	Exurban	Small Town	Suburban
<u>Days Travels to Work/Week</u>			
Less than 5	6.9%	7.4%	6.1%
5	80.7%	79.4%	82.6%
More than 5	12.4%	13.3%	11.3%
<u>Flexitime - Wage and Salary Workers only</u>			
Available	34.6%	23.1%	33.2%
Use to avoid rush hour traffic	19.9%	14.0%	20.8%
<u>Working at home</u>			
Does some regularly scheduled work at home	18.3%	17.8%	22.5%
Works 8 or more hours/week at home	8.2%	7.4%	8.7%
Working at home reduces number of work trips	2.7%	0.6%	4.7%
	n=219	n=135	n=427

Secondary Wage Earners

<u>Days Travels to Work/Week</u>			
Less than 5	31.1%	34.5%	28.4%
5	65.6%	53.1%	67.5%
More than 5	2.7%	11.1%	4.1%
<u>Flexitime - Wage and Salary Workers only</u>			
Available	30.5%	19.1%	22.8%
Use to avoid rush hour traffic	18.3%	10.3%	12.8%
<u>Working at home</u>			
Does some regularly scheduled work at home	14.5%	17.5%	12.8%
Works 8 or more hours/week at home	5.9%	5.0%	8.3%
Working at home reduces number of work trips	5.3%	1.2%	3.3%
	n=152	n=80	n=242

exurbanites do not differ substantially from suburbanites in their use of these trip management strategies.

In 1985, 12.3 percent of the wage and salary workers reported that they had work schedules that allowed them to adjust the times they arrive at or leave from work (Mellor 1986). All groups of commuters in this study report much higher rates of flextime availability. Over half of those having flextime also report using it to avoid some or all of rush hour traffic. Some exurbanites and small town residents who do not use flextime to avoid traffic commented that there is no rush hour traffic where they live and work. Managers and professionals have the highest rates of flextime use followed by technical, sales, and clerical workers for primary wage earners and service workers for secondary wage earners.

While Table X shows that 14.5 to 22.5 percent of the commuters do some regularly scheduled work for their principal employer at home, few use working at home to reduce the number of trips they make to work each week. Most of the working at home would best be described as bringing work home. Few are scheduling regular days to work at home. Those who report fewer trips to work are managerial and professional or technical, sales, and clerical workers.

The major difference between primary and secondary wage earners in Table X is the number of days that each group

travels to work. More of the secondary wage earners travel less than 5 days a week because about one-third of them work part-time. In contrast, almost all of the principal wage earners work full-time.

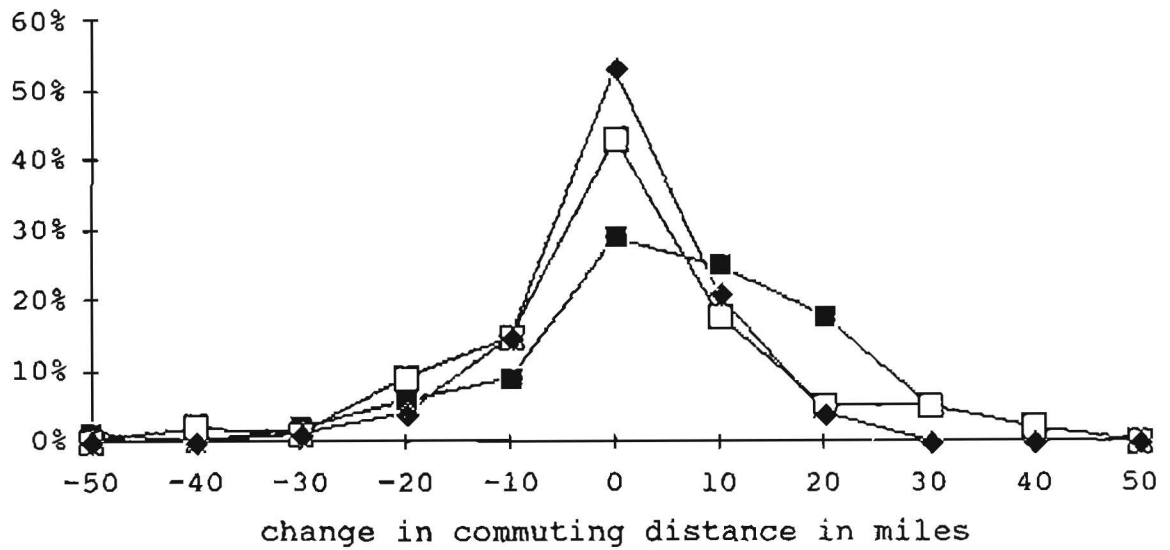
Changes in Commuting Trips

Over half the exurban home purchasers report having longer work trips because of their move. Small town and suburban home purchasers give more mixed responses with some having longer trips, some shorter, and some the same length. Exurban home buyers are also more likely than the others to report faster speeds and more scenic drives. All groups report little change in trips per week, transit use, carpooling, stops, and road conditions, and all give mixed responses on congestion.

Figure 3, based on reported mileage before and after the move, confirms that trips of exurban home buyers became longer. Exurban commuters have skewed trip change distributions because many make longer trips. The secondary wage earners especially have longer trips with more reporting trip changes of 5 to 15 extra miles than any other category. On the other hand, small town and suburban commuters have symmetric distributions indicating a balance of longer and shorter trips, and most trips changed by less than five miles.

To help compensate for longer trip lengths about half of the rural residents report faster speeds of travel.

Principal Wage Earners



Secondary Wage Earners

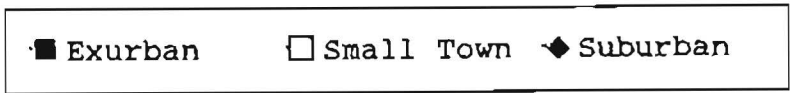
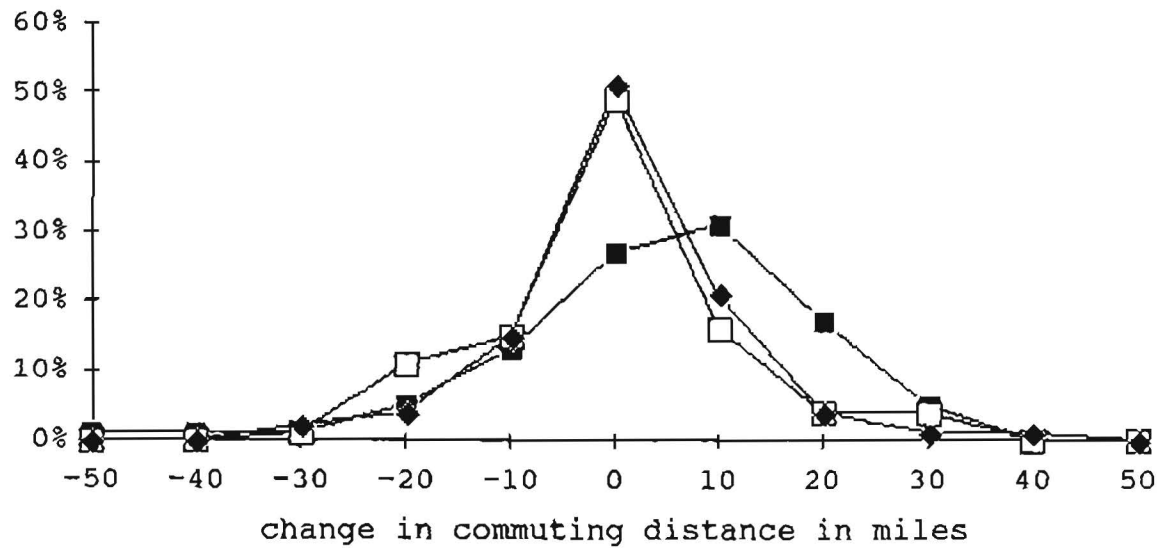


Figure 3. Relative frequency of change in commuting distances by residential subareas and type of wage earners.

Table XI shows that exurbanites do have faster average speeds than other groups and that their moves increased average speed more.

TABLE XI

COMMUTERS' MEAN SPEEDS OF TRAVEL BY TYPE OF WAGE EARNER AND RESIDENTIAL SUBAREAS

Speed (mph)	Principal Wage Earners			Secondary Wage Earners		
	Exurb	Sm.Twn	Suburb	Exurb	Sm.Twn	Suburb
Present	40.2	38.2	33.8	38.9	36.9	33.3
Former	35.7	35.9	31.9	35.4	33.5	32.3
Change	4.6	2.3	1.9	3.5	3.4	1.0
	n=199	n=126	n=424	n=129	n=68	n=205

Though the suburban speeds are the slowest, they are faster than those reported by Gordon, Kumar and Richardson (1989). They report 1983 work trip speeds during morning rush hour of 28.2 miles per hour for non-central city residents of metropolitan areas with 1-3 million residents. Apparently congestion is less of a problem in Portland than in many other cities.

About two-thirds of the exurban home buyers also find their trips more scenic while members of other groups tend to find the quality of scenery unchanged. For some exurban residents this scenic drive is an important part of what they gain in exchange for a longer drive to work. One commented, "Travel to work offers peaceful and serene countryside." Another states, "The principal wage earner likes the relaxing drive home through the countryside."

Summary

Thus moving to exurban areas often results in longer commutes in comparison both with their previous trips and with their suburban and small town neighbors. These trips may be faster and more scenic, but they still take more time than trips of suburban and small town resident.

The exurban home purchasers are aware of the trade-offs they are making. One states, "The quality of life in our rural setting (lower crime rate, privacy, clean air and quiet) is worth the additional commute time." Another says, "You couldn't pay me to live where I work [in Portland]!"

Some do have problems with or regrets about these tradeoffs. One states, "In some ways our 'quality of life' has decreased [due to recreational noise from dirt bikes and gunfire and other population pressures] and, at many times, we wonder if our long commute to work is really worth our rural environment." Some have found the commutes unbearable and have changed jobs. Others changed work locations after moving and now find their commutes questionably long. But in general, exurbanites seem pleased with their moves to rural areas.

REGRESSION RESULTS

The average exurban home buyer commutes farther than the average suburban home buyer in order to have more space and a more rural environment. But do all exurbanites follow

the same pattern? Are some willing to commute more than others? Does family structure or type of job influence commuting decisions? Are there advantages, such as cheaper housing, to longer commutes? This section seeks answers to these questions.

Estimation of Commuting Time

Commutes can be measured in either time or distance. Time is the dependent variable in this study because individuals and households have time budgets, not distance budgets. They must allocate the hours of the day to work, home responsibilities, leisure, sleep, commuting, and other activities. The time allocations of one individual in a household may also affect the time allocations of others. The commuting analysis includes variables that measure some of the ways that individuals use time, making time the crux of the analysis.

Distance is, of course, closely related to commuting time. But the previous analysis showed that speeds of travel are faster for exurbanites than for suburbanites. A time measure takes this into account while a distance measure would not. Therefore time is the preferred measure of commuting length.

The variables used in the regressions are defined in Table XII. The results for principal wage earners are presented in Table XIII and for secondary wage earners in

TABLE XII

DEFINITION OF VARIABLES IN COMMUTING TIME ESTIMATION

Dependent Variable

CT One way commuting time in minutes

Residential Location Variables

EXURB Dummy variable equals 1 if exurban, 0 if suburban (used only with combined samples)
 DCBD Distance from traffic zone centroid to center of downtown Portland

Household Variables

INCOME Household income measured in \$10,000 intervals
 KIDS Number of children under age 18 in household
 ADULTS Number of adults (age 18 and over) in household
 HOURS(Sp) Number of hours of work per week of spouse or other adult
 TWOWAGE Dummy variable equals 1 if second adult wage earner in household (used only with principal wage earners)

Individual Variables

SEX Dummy variable equal to 1 if commuter is male
 MODE Dummy variable equal to 1 if drives alone

Job Variables

HOURS(Com) Number of hours of work per week of commuter
 WORKHM Number of hours works at home each week
 FLEXTM Dummy variable equals 1 if has flextime and uses it to avoid rush hour traffic
 JOBCHG Dummy variable equals 1 if earner has changed job locations since moving
 MAN&PROF Dummy variable equals one if holds managerial or professional job
 TS&C Dummy variable equals one if holds technical, sales or clerical job
 SERVICE Dummy variable equals one if holds service job (used only with secondary wage earners)
 HISKILBLU Dummy variable equals one if holds high skill blue collar job (used only with principal wage earners)
 LOSKILBLU Dummy variable equals one if holds low skill blue collar job (used only with principal wage earners)

Table XIV. Each table includes results for the combined exurban and suburban sample and for the samples from each subarea. No results are presented for small town residents because regression analysis explains very little about their commuting times and the descriptive analysis has shown that small town home purchasers are quite different from both exurban and suburban home buyers.

General Results

The regressions produce many interesting results although they explain only a small portion of the variability in commuting time, as indicated by the adjusted R^2 's. Much of the unexplained variability is probably due to the transportation network and the distribution of jobs. All equations are statistically significant at the one percent level. Most of the variables have the expected signs, and many are statistically significant.

The Chow test was used to determine whether the set of variables has the same influence on exurban and suburban home buyers. The tests indicate that the variables have different impacts on each subgroup, and it is therefore appropriate to use separate equations for each residential subarea. The F-ratios of the Chow tests are 2.550 (significant at the one percent level) for principal wage earners and 1.886 (significant at the five percent level) for secondary wage earners.

TABLE XIII

REGRESSION EQUATIONS OF COMMUTING TIME OF PRINCIPAL WAGE
EARNERS FOR COMBINED SAMPLE, EXURBAN SAMPLE,
AND SUBURBAN SAMPLE

<u>Variable</u>	<u>Combined</u>	<u>Exurban</u>	<u>Suburban</u>
<u>Residential Location</u>			
EXURB	6.985 (4.482)*		
DCBD	0.218 (1.948)***	0.059 (0.329)	0.397 (2.508)**
<u>Household</u>			
INCOME	-0.222 (-0.906)	-0.186 (-0.332)	-0.304 (-1.191)
KIDS	-0.377 (-0.954)	-0.362 (-0.417)	-0.351 (-0.849)
ADULTS	-1.302 (-1.318)	-4.519 (-2.043)**	0.167 (0.162)
HOURS(Sp)	0.110 (2.077)**	0.157 (1.497)	0.061 (1.023)
TWOWAGE	-3.381 (-1.629)	-8.471 (-2.092)**	-0.253 (-0.109)
<u>Individual</u>			
SEX	0.661 (0.481)	-0.595 (-0.185)	0.027 (0.020)
MODE	-5.421 (-3.531)*	-6.921 (-1.883)***	-4.984 (-3.185)*
<u>Job</u>			
HOURS(Com)	0.057 (0.967)	-0.015 (-0.110)	0.074 (1.218)
WORKHM	-0.014 (-0.115)	-0.279 (-1.061)	0.113 (0.903)
FLEXTM	3.055 (2.747)*	5.049 (2.067)**	1.837 (1.579)
JOBCHG	3.974 (2.912)*	4.149 (1.479)	3.467 (2.304)**
MAN&PROF	4.683 (2.205)**	6.929 (1.666)***	2.785 (1.156)

TABLE XIII (CONTINUED)

<u>Variable</u>	<u>Combined</u>	<u>Exurban</u>	<u>Suburban</u>
TS&C	6.757 (3.109)*	11.391 (2.581)**	3.380 (1.381)
HISKILBLU	7.196 (3.019)*	9.750 (2.269)**	4.793 (1.685)***
LOSKILBLU	5.633 (2.337)**	7.489 (1.736)***	3.516 (1.218)
CONSTANT	17.197 (4.188)*	39.524 (3.984)*	13.745 (3.162)*
Adjusted R ²	0.165	0.090	0.049
F-ratio	8.597	2.337	2.357
Degrees of freedom	17,623	16,200	16,407
<u>Mean of commute time</u>	<u>23.7</u>	<u>29.7</u>	<u>20.6</u>

Numbers in parentheses are t-scores.

* indicates two-tailed significance at 0.01 level

** indicates two-tailed significance at 0.05 level

*** indicates two-tailed significance at 0.10 level

TABLE XIV

REGRESSION EQUATIONS OF COMMUTING TIME OF SECONDARY WAGE
EARNERS FOR COMBINED SAMPLE, EXURBAN SAMPLE,
AND SUBURBAN SAMPLE

<u>Variable</u>	<u>Combined</u>	<u>Exurban</u>	<u>Suburban</u>
<u>Residential Location</u>			
EXURB	6.306 (4.531)*		
DCBD	0.185 (1.211)	0.148 (0.647)	0.258 (1.145)
<u>Household</u>			
INCOME	-0.305 (-0.862)	-0.393 (-0.535)	-0.240 (-0.632)
KIDS	-2.080 (-3.539)*	-3.792 (-3.319)*	-1.081 (-1.655)***
ADULTS	-2.900 (-1.627)	-5.346 (-1.436)	-1.619 (-0.838)

TABLE XIV (CONTINUED)

<u>Variable</u>	<u>Combined</u>	<u>Exurban</u>	<u>Suburban</u>
HOURS(Sp)	0.099 (1.449)	0.226 (1.928)***	0.001 (0.009)
<u>Individual</u>			
SEX	-0.896 (-0.454)	3.089 (0.739)	-2.403 (-1.122)
MODE	-8.469 (-3.896)*	-10.165 (-2.131)**	-7.823 (-3.438)*
<u>Job</u>			
HOURS(Com)	0.191 (3.258)*	0.291 (2.673)*	0.145 (2.116)**
WORKHM	0.141 (0.788)	0.195 (0.617)	0.122 (0.571)
FLEXTM	3.863 (2.254)**	3.514 (1.096)	4.603 (2.345)**
JOBCHG	-1.439 (-0.949)	0.559 (0.195)	-2.791 (-1.622)
MAN&PROF	-4.218 (-1.646)	-4.071 (-0.881)	-3.423 (-1.087)
TS&C	-4.545 (-1.914)***	-4.640 (-1.123)	-3.960 (1.340)
SERVICE	-7.934 (-2.54)**	-8.870 (-1.721)***	-6.740 (-1.690)***
CONSTANT	28.198 (4.531)*	34.597 (2.688)*	28.487 (3.969)*
Adjusted R ²	.183	.156	.084
F-ratio	6.962	2.998	2.588
Degrees of freedom	15,379	14,137	14,228
Mean of commute time	22.9	27.7	20.2

Numbers in parentheses are t-scores.

* indicates two-tailed significance at 0.01 level

** indicates two-tailed significance at 0.05 level

*** indicates two-tailed significance at 0.10 level

The only variables that are significant in all cases are the constant term and the MODE dummy variable. The large size of the constant terms results in part from the large amount of variability in commuting time unexplained by the variables. The coefficients for MODE demonstrate that driving alone saves 5 to 10 minutes over carpooling, transit, walking or bicycling. Comparing these time savings with mean commuting times reveals that driving alone reduces commuting times by about one-fourth for primary wage earners and by more than one-third for secondary wage earners.

Results For Residential Location Variables

Given the differences in commuting time of exurbanites and suburbanites that were discussed previously, the regressions should show that exurbanites travel farther than suburbanites. The combined regression equations do that. The EXURB coefficients indicate that exurban principal wage earners commute about 7.0 minutes more than their suburban colleagues while exurban secondary wage earners commute about 6.3 minutes more. These results are similar to the 9.1 minute and 7.5 minute differences in mean commuting time. The rest of the discussion will focus on the separate exurban and suburban equations.

Distance from the central business district would be positively correlated with commuting time if everyone worked in or near the city center. But with the decentralization of employment, distance to city center may have no effect.

In this study, only suburban principal wage earners have longer commutes if they live farther from Portland's central business district, and they are only willing to increase commutes by 0.4 minute per mile from the city center. The insignificance of DCBD for all other workers implies that all commuters within each group spend the same amount of time commuting, holding other characteristics constant, whether they live close to the city center or far out. Workers living farther out must therefore work at more suburban locations (or exurban/small town locations for exurbanites) than those living closer in. This is even true for suburban principal wage earners since 0.4 additional minute per mile from the city center is not enough time to commute to the same job sites as closer in workers. The suburbanization of jobs must therefore be a factor encouraging exurban residential development, especially development farther from the urban center.

This result was expected for the mostly female secondary wage earners, since women usually work closer to home (Madden 1981). That exurban principal wage earners behave differently than their suburban counterparts is more interesting. Apparently the longer commutes required for exurban living results in some sorting with those holding urban jobs living closer to the urban center than those holding suburban, exurban, or small town jobs.

This conclusion is confirmed by Figure 4 which compares job locations of exurban principal wage earners with the distances of their residences from downtown Portland. The grey area shows the overall pattern. The lines for job locations clearly show that urban job holders live closest to the city center with almost half living 15-19 miles out. Exurban job holders live farthest out with few at 15-19 miles from Portland, where urban and suburban job holders are most prevalent, and more than urban or suburban job holders from 25 to 39 miles out. The proportions of exurban, suburban, and urban job holders are about equal only at 20-24 miles from Portland.

Figure 4 also provides an outer boundary to exurban living in the Portland region. Very few urban or suburban workers live 30 or more miles from downtown Portland and none live 35 or more miles out.

Results For Family Variables

The family variables show that exurban residential choice is constrained by other family members more than suburban residential choice. None of the family variables are significant for suburban principal wage earners and only KIDS for suburban secondary wage earners. But the coefficients of KIDS show a reduction of 3.8 minutes per child for exurban secondary wage earners and only 1.1 minute per child for suburban secondary earners.

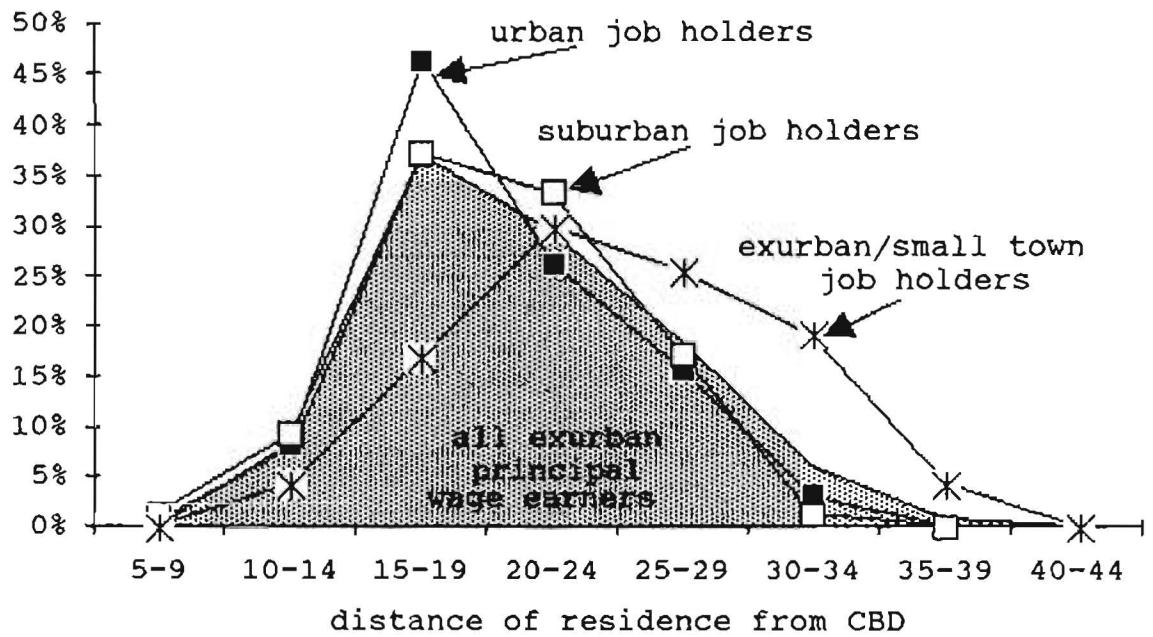


Figure 4. Distribution of distances of residences from Portland's central business district of exurban principal wage earners by job location.

The significant and negative coefficients on ADULTS and TWOWAGE show that exurban principal wage earners live closer to work if there are other adults in the household and if there is a secondary wage earner. Thus a principal wage earner with a spouse who is not employed would live 4.5 minutes closer to work than a single adult, but if that spouse were employed the principal wage earner would live an additional 8.5 minutes closer to work. Madden (1981) reported the shortest mean commutes for singles; so the few singles (4.6 percent of exurbanites) selecting exurban living must be different from the norm.

The commuting patterns of two-wage earner households are complicated by the various work and home roles of the two earners. Other studies do not agree on whether a second wage earner will increase, decrease, or have no effect on the primary wage earner's commute (Madden 1981, White 1986). Exurbanites in this study may be reducing commuting time when the household includes a second wage earner because living closer to the primary wage earner's job probably means living closer to jobs in general.

Confounding this analysis is the small, but positive and significant, coefficient on HOURS(Sp) for exurban secondary wage earners. This implies that the secondary earners have slightly longer commutes if their spouse or partner works longer hours. That obviously leaves less time for other activities, and the opposite effect was expected.

However, the longer commute could be caused by giving greater consideration to the primary wage earner's commute when selecting a residence and therefore disadvantaging the secondary wage earner somewhat.

It is not surprising that family responsibilities, as measured by the number of children, reduce the commuting time of secondary wage earners although the previous empirical results are mixed (Madden 1981; Singell and Lillydahl 1986). The insignificance of KIDS for primary wage earners may be due to conflicting forces rather than a lack of influence. Some households may move farther from work to find a better place to raise their families. Recall that this was an important reason for moving for over one-fourth of the households. Others may locate closer to work because of the additional time needed for family responsibilities.

Results For Individual Variables

The results for mode of travel have already been discussed and the remaining individual variable SEX is statistically insignificant in all cases. This lack of significance does not mean that men and women have no differences in commuting, which would be contrary to all other studies. Rather SEX merely indicates that male and female primary wage earners cannot be distinguished from one another; nor can male and female secondary wage earners.

There are, however, differences between the explanatory variables of primary and secondary wage earners which should take into account the different household and employment roles of these two groups. These differences are related to gender as 84 percent of the principal wage earners are male while 86 percent of the secondary wage earners are female.

Results For Job Variables

The results for the job variables vary with residential location and type of worker. For example, hours of work is only significant for secondary wage earners. Since about one-third of this group works part-time, the results show that full time secondary wage earners consistently travel farther than part-timers. The coefficients indicate that a secondary wage earner who works 40 hours per week travels 5.8 more minutes per one-way trip if exurban and 2.9 more minutes if suburban than a similar secondary wage earner who works 20 hours per week. Work may have more intrinsic value for full-time secondary wage earners, and they may therefore be willing to commute farther to have the right job.

Flextime, which gives some the ability to adjust their work schedules to avoid traffic congestion, results in longer commuting times for exurban principal wage earners and suburban secondary wage earners. The FLEXTM coefficients show an increase of 5.0 minutes for exurbanites primary workers and 4.6 minutes for suburban secondary workers. This seems paradoxical since avoiding rush hour

should allow a faster commute which takes less time. Apparently workers who use flextime to manage their commutes move farther away from work than can be compensated for by higher speeds. Perhaps traveling at off-peak hours makes commuting more pleasant, and these workers are willing to do more of it. Or it may be that simply having some personal control over commuting schedules makes commuting seem less onerous and thus results in living farther from work.

Changing jobs after moving also results in longer commutes, but only for suburban primary wage earners who happen to have the lowest rate of post-move job change. Only 13 percent of that group changed jobs after moving compared to 16 percent of exurban primary wage earners, 19 percent of suburban secondary wage earners, and 22 percent of exurban secondary wage earners. Apparently job changes in the other groups result in a mix of longer and shorter commutes which fails to produce significant results.

The occupational dummy variables produced some interesting results for principal wage earner's which are summarized in Table XV. Surprisingly, technical, sales and clerical workers rank first among exurbanites in commuting length. Additional analysis reveals that three out of four of these principal wage earners are male and that there is only one secretary, one bookkeeper, and no sales clerks among the 37 in this group. Most are technicians or salespersons with moderate to very high incomes.

TABLE XV

ADDITIONAL TIME PRINCIPAL WAGE EARNERS IN VARIOUS
OCCUPATIONAL GROUPS COMMUTE BY RESIDENTIAL SUBAREAS

Rank	Occupational Group	Additional Minutes Commute per one way trip
<u>Exurban</u>		
1	Technical, Sales, and Clerical	11.4
2	High Skill Blue Collar	9.8
3	Low Skill Blue Collar	7.5
4	Managerial and Professional	6.9
5	Service; Agriculture or Forestry	0.0
<u>Suburban</u>		
1	High Skill Blue Collar	4.8
2	All other	0.0

The high ranking of high skill blue collar workers in both exurban and suburban areas was expected. Based on Cubikgil and Miller's (1986) findings that managers and professionals follow high skill blue collar workers in propensity to commute, manager and professionals were expected to commute longer distances. Certainly the fact the low skill blue collar workers who have modest incomes commute farther than managers and professionals is surprising.

Secondary workers are not included in Table XV because the only results for them are that service workers from both residential areas work closer to home than all others.

The interpretation of these results is complicated by the fact that the occupational variables measure willingness to commute, given the region's spatial structure. It isn't possible to determine how much of the occupational influence on commuting time is determined by the location of jobs

relative to desirable and affordable residences and how much by attitudes toward commuting. For example, it could be that the location of jobs (such as at high tech firms in the outer reaches of Washington County suburbs) allows managers and professionals to live closer to their work than other exurbanites even though they might be willing to live farther away, if necessary, to have an exurban home. It is also unclear whether suburban high skill blue collar workers have longer commutes because they cannot find suitable residences near their jobs or because they don't mind commuting.

Summary

As a group, exurbanites spend more time commuting than suburbanites. But within this group, commuting times vary. Exurban principal wage earners' commuting times depend on the mode of travel, on the presence and employment status of other adults in the family, on the use of flextime, and on occupation. Secondary wage earners are also influenced by mode and somewhat by occupation. In addition, their travel times vary with the number of children in the family and the hours they and their spouses or partners work.

Exurbanites' commuting times do not vary, however, with distance from downtown Portland. Instead close in exurbanites behave like suburbanites holding mostly urban and suburban jobs while distant exurbanites resemble small town residents who prefer exurban/small town jobs. Very few

urban or suburban job holders live more than thirty miles from downtown Portland.

Estimation of Housing Prices

Regression analysis was also used to determine how residential location affects housing prices. The analysis controls for housing characteristics and the cost and provision of some public services. The analysis is only for homes purchased by households with commuting principal wage earners. The variables used are defined in Table XVI. The results for the combined sample and for both exurban and suburban samples are presented in Table XVII. Again, small town residents are omitted.

General Results

The equations are all statistically significant at the one percent level. The coefficients of the control variables, housing characteristics and public services and costs, have the expected influences on housing prices. The residential location variables are mainly of interest here.

The Chow test was used to determine whether separate equations are appropriate for exurban and suburban homes. The F-ratio of the Chow test is 2.43 which is significant at the one percent level. Thus separate equations should be used for each subarea.

TABLE XVI

DEFINITION OF VARIABLES IN PRICE ESTIMATION

Dependent Variable

PRICE Sale price of house in \$1000's

Residential Location Variables

EXURB Dummy variable equals 1 if exurban, 0 if suburban (used only with combined samples)
 DCBD Distance from traffic zone centroid to center of downtown Portland

Housing Variables

ROOMS Number of rooms in house (not counting baths)
 BATHS Number of full bathrooms in house
 LOTSIZE Size of lot in 1000 square feet
 HSAGE Age of house in years
 MOBILEHM Dummy variable equal to 1 if house is a mobilehome (not applicable in suburbs)
 CONDO Dummy variable equal to 1 if house is a condominium (not applicable in exurbs)
 WATERHK Dummy variable equal to 1 if main source of water is a city or public water district
 SEWERHK Dummy variable equal to 1 if connected to a public sewer system
 GARAGE Dummy variable equal to 1 if house has a garage
 AGFORLU Dummy variable equal to 1 if property has agriculture or forestry land use designation (not applicable in suburbs)

Public Services/Costs Variables

TAXR FY 1986-87 property tax rate in dollars per thousand dollars of assessed valuation
 SCHLEXP FY 1986-87 mean expenditure per pupil of local school district(s)

TABLE XVII

REGRESSION EQUATIONS FOR PRICES OF HOMES PURCHASED BY
COMMUTING PRIMARY WAGE EARNERS FOR COMBINED SAMPLE, EXURBAN
SAMPLE, AND SUBURBAN SAMPLE

<u>Variable</u>	<u>Combined</u>	<u>Exurban</u>	<u>Suburban</u>
<u>Residential Location</u>			
EXURB	0.114 (0.016)		
<u>Housing Characteristics</u>			
DCBD	-1.265 (-3.715)*	-1.997 (-4.760)*	0.053 (0.085)
ROOMS	4.886 (6.192)*	2.765 (2.476)*	6.211 (5.913)*
BATHS	13.551 (5.856)*	12.741 (4.002)*	13.788 (4.440)*
LOTSIZE	0.030 (3.417)*	0.030 (3.865)*	0.198 (2.913)*
HSAGE	-0.351 (-3.994)*	-0.107 (0.949)	-0.502 (-3.931)*
MOBILEHM	-26.471 (-3.131)*	-23.903 (-2.835)*	N.A.
CONDO	-6.434 (-0.894)	N.A.	-3.114 (-0.404)
WATERHK	-9.134 (-1.830)**	-9.767 (-2.024)**	9.756 (0.650)
SEWERHK	-2.219 (-0.378)	9.021 (0.987)	10.344 (1.209)
GARAGE	4.248 (0.842)	5.117 (0.876)	1.407 (0.168)
AGFORLU	11.009 (1.607)***	14.391 (2.396)*	N.A.
<u>Public Services/Costs</u>			
TAXR	-0.939 (-2.447)*	-0.619 (-1.415)***	-2.708 (-3.465)*
SCHLEXP	0.011 (1.619)***	0.014 (2.396)*	0.016 (1.341)***

TABLE XVII (CONTINUED)

<u>Variable</u>	<u>Combined</u>	<u>Exurban</u>	<u>Suburban</u>
CONSTANT	24.879 (0.917)	30.678 (1.071)	-6.988 (0.134)
Adjusted R ²	0.318	0.391	0.323
F-ratio	22.355	12.544	19.376
Degrees of freedom	14,626	12,204	11,412
Mean of PRICE	80.656	78.192	81.916

Numbers in parentheses are t-scores.

* indicates one-tailed significance at 0.01 level

** indicates one-tailed significance at 0.05 level

*** indicates one-tailed significance at 0.10 level

Results For Residential Location Variables

The residential location variables, EXURB and DCBD, show that housing prices decline the farther away from the city center the house is located, but only in the exurban area. Contrary to the bid-rent model of urban form, housing prices do not vary with distance from the city center in the suburbs. Furthermore, the EXURB variable in the combined regression equation indicates that there is no jump in housing prices to either a higher or lower level at the urban growth boundary. Thus exurbanites are the only ones making a trade-off between lower housing prices and higher transportation costs. But this trade-off does not affect all exurbanites equally as illustrated in Figure 5.

Because commuting time is constant for all exurbanites, those who live farthest out have the lowest housing prices but approximately the same commuting costs as households living closer to the urban center. Exurban households near

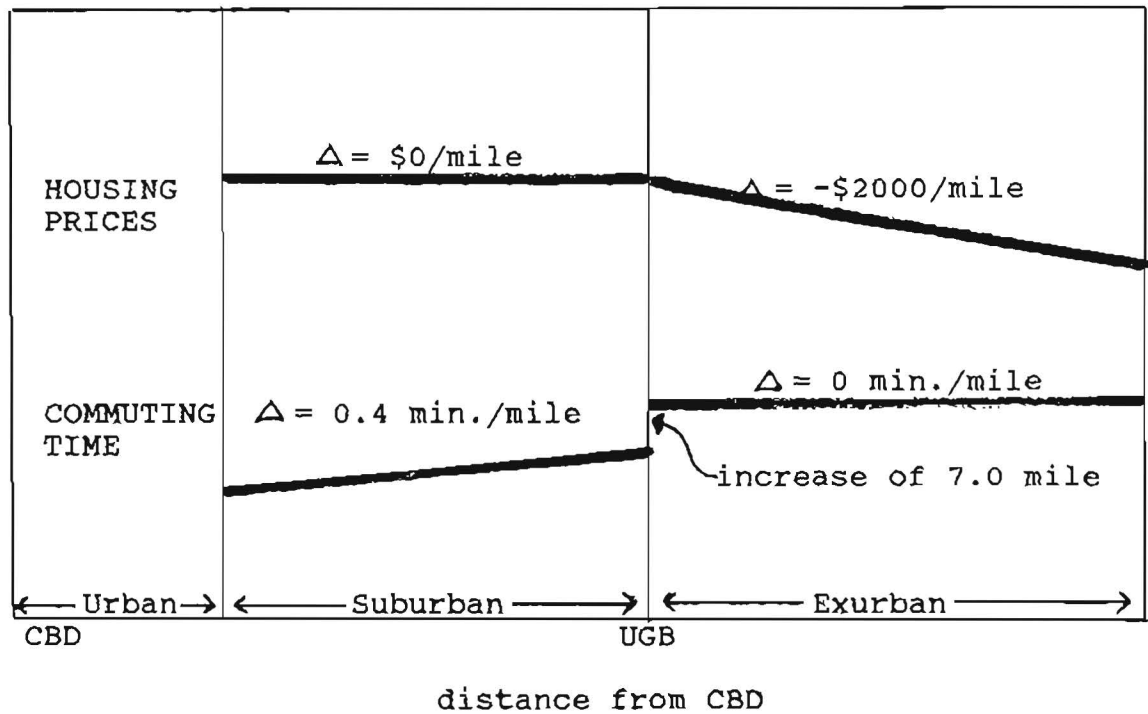


Figure 5. Effects of the distance from the central business district (CBD) and the urban growth boundary (UGB) on suburban and exurban housing prices and principal wage earner's commuting times.

the urban growth boundary, on the other hand, may be paying a premium for exurban living. They may not have enough housing price savings over suburbanites to recoup the additional cost of commuting. In fact, exurban housing prices near the urban growth boundary might be higher than suburban prices across the boundary because of strong demand for close-in rural lots.

Among the suburbanites, those who live farther out have higher costs. Housing prices appear to be constant throughout the suburbs, but residents of the outer suburbs commute farther to work than those living closer-in and therefore have higher transportation costs. It may be that the suburban bid-rent curve has peaks at suburban employment centers which are averaged with an overall decline in housing prices with distance from the city center to produce a flat rate. Further analysis using suburban employment centers is needed to determine whether this is the case. If the suburban bid-rent curve is actually flat, it may be encouraging outer suburbanites to move a little farther out where they can exchange slightly longer commutes for lower housing costs.

Summary

Some exurbanites are making a trade-off between lower housing prices and higher transportation costs, but this trade-off does not affect all exurbanites equally. Those who live farthest out may be reaping a windfall while those

living closer in may be paying a premium. Suburbanites do not make a housing-transportation trade-off. Those living farther out pay more in transportation costs than those living closer-in, but all have the same housing costs. This makes exurban living an economically rational alternative to outer suburban living.

DISCUSSION

This study shows that moving to exurban homes in the Portland, Oregon, region increases commuting time. The workers' commutes after their moves are longer than both their commutes at their former residences and the commutes of suburban and small town home-buyers. The finding of longer commutes than suburbanites is contrary to the results reported by Dueker et al. (1983).

The discrepancy between the two studies may be due to different definitions of exurbia (rural residential parts of the urban field vs. rural residents of metropolitan areas), different study areas (one region vs. many), different home owners (recent buyers vs. all), or different times (1989 vs. 1975). It may be that exurban commuting trips are no longer than suburban trips in other places and the Portland region is simply different from the norm. Alternatively, long term exurban residents could behave more like small town residents and work closer to home than recent movers do. Finally, expectations about commuting costs were different

in 1975 when there were fears of unpredictable supplies of gasoline and large price increases. Since the 1970's oil crises have been forgotten, more people may be acting on their desires for a rural lifestyle despite the longer commutes this entails. Further research, particularly in different parts of the country, is needed to ascertain which of these explanations is correct.

What motivates exurbanites to commute farther? They clearly show pro-rural attitudes about the desirable place to live and raise their families. In addition, they may be saving enough in housing costs to offset the cost of longer commutes, especially if they live farther out.

Furthermore, many do not seem to mind the longer commutes. Although it may just be rationalization, exurbanites say that the drive home through the countryside is relaxing and is a positive aspect of their location. The analysis did show that principal wage earners with the ability to adjust commuting times actually moved farther from work than those who do not have that flexibility.

Low transportation costs are probably a factor influencing the willingness to commute longer distances, although this study does not address that issue. Even if commuting has positive aspects, longer commutes require more gasoline and cause more wear-and-tear on vehicles. If exurbanites paid the full social costs of commuting as

calculated by Hanson (1989), they might be less willing to live so far from work.

The study did show that the suburbanization of employment is also a factor influencing exurban development even though it did not eliminate longer commutes. The decentralization of employment brings more remote areas within an acceptable commuting range of jobs and, therefore, increases the demand for exurban living.

The willingness of exurbanites to commute long distances is tempered by several factors. Exurban households with two workers tend to live closer-in than households with only one worker. If the household includes children, the residence will also be closer to the secondary wage earner's job. In addition, some occupational groups seem to be less willing to commute long distances than others.

Implications for Transportation Planning and Policy

If more households move to exurbia, they will put more traffic on county roads and on highways leading into the urban/suburban area. Although exurbanites have some complaints about the quality of county roads, they do not complain of exurban congestion. Rather it is in suburbia that the congested roads are found. Because most exurbanites commute into or through the suburbs, they are part of suburban transportation problems. More exurbanites will only exacerbate current problems.

If light rail lines or new highways are built to solve the current problems they might encourage more exurban growth which could create future problems. For example, light rail lines with suburban park-and-ride stations could make it easier to get from exurbia to jobs in downtown Portland. Freeway bypasses could also improve accessibility of exurban areas to suburban jobs. Both could increase the demand for rural living. Thus transportation planners and policy makers need to consider both current problems and future needs when planning changes in transportation systems.

When making projections of the impacts of projects, planners need to rely on sound information which has previously been lacking. Not only should outdated thinking about commuting be avoided, as Pisarski (1987) points out, but simple assumptions need to be checked with reality. For example, previous research suggested that exurban lifestyles would not be attractive to two-wage earner households. Yet they turned out to be most prevalent in exurbia.

Research Needs

Clearly the greatest need is for more studies on exurban development and commuting patterns in other parts of the U.S. Because of Oregon's restrictions on exurban development, the results in other areas could be different. However, the large proportion of small exurban lots

purchased in 1987 suggests that land use restrictions have not had much effect yet. Therefore, the results should apply to other similar-sized metropolitan areas.

Additional research is also needed to better understand the attitudes and beliefs related to commuting behavior. The dynamics of two-wage earner households is one area where such research is needed. Even though two-wage earner households have been a focus of recent commuting research, their complex nature is only partially understood. Studies need to look deeper than demographic characteristics and commuting times. More information is needed on the home and work roles of members of two-wage earner households and about their attitudes toward work, home, and commuting.

Another area needing additional research is occupation's impact on commuting. Some means of separating the two aspects of occupation's influence--attitudes towards commuting and the spatial structure of a region--is needed. One possibility is the use of a national data set such as the American Housing Survey or the 1990 Census to clarify which occupational groups are willing to travel more than others. A large data set would allow finer occupational distinctions than were used in this study. That could improve results since the occupational groups used here were not homogeneous with respect to commuting. Another potential type of research on this issue is survey research

to clarify how occupation and attitudes towards commuting are related.

Surveys on attitudes toward commuting are also needed to clarify the positive aspects of commuting. Ideas about home-work separation and commuting as leisure could all benefit from further study.

Conclusions

This case study of commuting patterns of recent home-buyers in the Portland, Oregon, region has expanded the information base on exurban residents and their work trips. Transportation planning and policy should benefit from knowing what type of people are moving to exurbia, why they want to live there, and how exurban living affects travel to work.

The study has shown that exurban living is attractive to many urban and suburban job holders. They are acting on their desires for a more rural lifestyle even though the move to exurbia requires longer commutes. Despite the fears of some that this type of low density development is bad for society, people can be expected to continue to follow their individual aspirations. The challenge is to determine how to best accommodate people's desires for exurban living without incurring undue social costs.

REFERENCES

- Alonso, W. 1960. A theory of the urban land market. Papers and Proceedings of the Regional Science Association 6: 149-157.
- Alonso, W. 1964. Location and Land Use. Cambridge: Harvard University Press.
- Anas, A. and L.N. Moses. 1978. Transportation and land use in the mature metropolis. In The mature metropolis, ed. C.L. Leven, 149-168. Lexington, MA: Lexington Books.
- Berry, B.J.L. and Q. Gillard. 1977. The changing shape of metropolitan America: Commuting patterns, urban fields and decentralization processes, 1960-1970. Cambridge, MA: Ballinger Publishing Co.
- Bureau of Census. 1984. 1980 Census of Population. Journey to Work - Metropolitan commuting flows. Washington, D.C.: U.S. Government Printing Office.
- Carlino, G.A. 1985. Declining city productivity and the growth of rural regions: a test of alternative explanations. Journal of Urban Economics, 18: 11-27.
- Clark, W.A.V. and J.E. Burt. 1980. The impact of workplace on residential location. Annals of the Association of American Geographers 70(1): 59-67
- Clawson, M. 1971. Suburban Land Conversion in the U.S. Baltimore: The Johns Hopkins Press.
- Cubukgil, A. and E.J. Miller. 1982. Occupational Status and the journey-to-work. Transportation, 11: 251-276.
- Davis, J.S. 1990. Exurban Commuting Patterns. Unpublished Ph.D. dissertation. Portland, OR.: Portland State University.
- Dillman, D.A. 1978. Mail and telephone surveys: the total design method. New York: John Wiley and Sons.
- Dueker, K.J., J.G. Strathman, I.P. Levin and A.G. Phipps. 1983. Rural residential development within metropolitan areas. Computers, Environment and Urban Systems 8(2): 121-129.

- Elazar, D.J. 1987. Building cities in America: Urbanization and suburbanization in a frontier society. Lanham, MD: Hamilton Press.
- Fisher, J.S. and R.L. Mitchelson. 1981. Extended and internal commuting in the transformation of the intermetropolitan periphery. Economic Geography 57(3): 189-207.
- Friedmann, J. and J. Miller. 1965. The urban field. Journal of the American Institute of Planners 31: 312-320.
- Gera, S. and P. Kuhn. 1981. Occupation and the journey-to-work: some further analysis. Socio-economic Planning Sciences, 15: 83-93.
- Gordon, P., A. Kumar and H.W. Richardson. 1989. Congestion, changing metropolitan structure, and city size in the United States. International Regional Science Review, 12: 45-56.
- Hanson, M.E. 1989. Automobile subsidies, land use, and transportation policy. Madison, WI.: Department of Urban and Regional Planning and Institute for Environmental Studies, mimeo.
- Healy, R.G. and J.L. Short. 1981. The market for rural land. Washington, D.C.: Conservation Foundation.
- Herbers, J. 1986. The new heartland: America's flight beyond the suburbs and how it is changing our future. New York: Timesbooks.
- Hicks, D.A. and N.J. Glickman. 1983. Transition to the 21st century: prospects and policies for economic and urban-regional transformation. Greenwich, CN: JAI Press.
- Howland, L. 1982. Communications technology: Shifting the work place. Urban Land 41(October): 22-23.
- Jackson, K.T. 1985. Crabgrass frontier: The suburbanization of the United States. New York: Oxford University Press.
- Joseph, A. and B. Smit. 1981. Implications of exurban residential development: A review. The Canadian Journal of Regional Science 4(2): 207-224.
- Kutscher, R.E. and V.A. Personick. 1986. Deindustrialization and the shift to services. Monthly Labor Review, 109 (June): 3-13.

- Lessinger, J. 1986. Regions of opportunity. New York: Timesbooks.
- Leven, C.L. 1979. Economic maturity and metropolis evolving physical form. In The changing structure of the city, ed. G.A. Tobin, 21-44. Vol. 16 of Urban affairs annual reviews. Beverly Hills: Sage.
- Madden, J.F. 1981. Why women work closer to home. Urban Studies, 18: 181-194.
- Mellor, E.F. 1986. Shift work and flexitime: how prevalent are they? Monthly Labor Review, 109 (Nov.): 14-21.
- Mitchelson, R.L. and J.S. Fisher. 1981. Commuting cost visibility: a contemporary case study. Southeastern Geography, 21(2): 130-147.
- Muller, P.O. 1981. Contemporary suburban America. Englewood Cliffs, N.J.: Prentice Hall.
- Muth, R. 1969. Cities and Housing. Chicago: University of Chicago Press.
- Pisarski, A.E. 1987. Commuting in America. Westport, CN: Eno Foundation for Transportation, Inc.
- Price, L.W., ed. 1987. Portland's changing landscape. Portland, OR: Portland State University.
- Richter, K. 1985. Nonmetropolitan growth in the late 1970's: the end of the turnaround? Demography, 22(2): 245-263.
- Roberts, R. 1986. Analysis of demographic trends and travel pattern: Implications for the future of the Portland Transit Market. In Transportation Research Record 1067, 1-8. Washington, D.C.: Transportation Research Board.
- Salomon I. and M. Salomon. 1984. Telecommuting: the employees perspective. Journal of Technological Forecasting and Social Change, 25(1): 15-28.
- Singell, L.D. and J. H. Lillydahl. 1986. An empirical analysis of the commute to work patterns of males and females in two-earner households. Urban Studies 23(2): 119-129.
- Stevens, J.B. 1980. The demand for public goods as a factor in the nonmetropolitan migration turnaround. In New directions in urban-rural migration, ed. D.L. Brown and J.M. Wardwell, 115-134. New York: Academic Press.

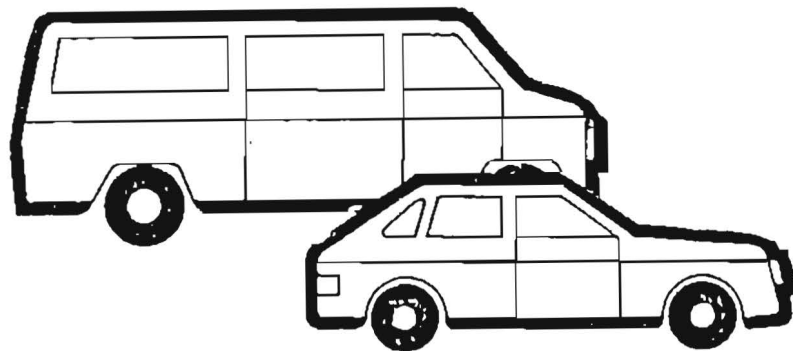
- Taaffe, E.J., H.L. Gauthier, and T.A. Maraffa. 1980. Extended commuting and the intermetropolitan periphery. Annals of the Association of American Geographers 70(3): 313-329.
- Wardwell, J.M. 1980. Toward a theory of urban-rural migration in the developed world. In New directions in urban-rural migration, ed. D.L. Brown and J.M. Wardwell, 71-114. New York: Academic Press.
- White, M.J. 1986. Sex differences in urban commuting patterns. American Economic Review, 76(2): 368-372.
- Williams, J.D. and A. J. Sofranko. 1979. Motivations for the in-migration component of population turnaround in nonmetropolitan America. Demography 16: 239-255.
- Zelinsky, W. 1977. Coping with the migration turnaround: The theoretical challenge. International Regional Science Review 2(2): 175-178.
- Zimmer, B.G. 1985. Metropolitan development and the changing journey to work. Social Science Quarterly 66(3): 519-532.
- Zuiches, J.J. 1981. Residential preferences in the United States. In Nonmetropolitan America in transition, ed. A.H. Hawley and S.M. Mazie, 72-115. Chapel Hill: University of North Carolina Press.

APPENDIX

SURVEY INSTRUMENT

PLANNING TRANSPORTATION TO SERVE
SUBURBAN, SMALL TOWN AND RURAL RESIDENTS

A survey of households who purchased
homes near Portland, Oregon, in 1987



Please return this questionnaire to:
Center for Urban Studies
Portland State University
P.O. Box 751
Portland, Oregon 97207

Please answer all questions as directed. If you wish to comment on any question, feel free to write in the margins or use the space on the back cover. Thank you for your help.

1. When you moved to this house, what were the THREE most important reasons for your move? (Please circle the numbers of the THREE most important reasons.)

- 1 New job or job transfer
- 2 Retirement
- 3 To be closer to work
- 4 To be farther from work
- 5 Married, widowed, divorced, or separated
- 6 Wanted better place to raise our family
- 7 Other family or personal reasons
- 8 Former neighborhood was changing
- 9 Wanted better quality house
- 10 Wanted different size house
- 11 Wanted less expensive house
- 12 Wanted to own instead of rent
- 13 Wanted large lot or acreage
- 14 Wanted to live in more rural area
- 15 Wanted to live in more urban area
- 16 Wanted better schools
- 17 Wanted lower taxes
- 18 Other (please tell us):

If neighborhood change was a main reason for moving, how was your neighborhood changing? (circle numbers of ALL that apply)

- 1 More people living there
- 2 More traffic
- 3 More crime
- 4 Different type of people
- 5 Other _____

(please describe)

2. What were the THREE most important reasons for choosing this particular neighborhood? (Please circle the numbers of the THREE most important reasons.)

- 1 Convenient to job
- 2 Close to friends or relatives
- 3 Close to parks/recreation
- 4 Availability of public transit
- 5 Access to freeways/major highways
- 6 Good schools
- 7 Quality of public services
- 8 Looks/design of neighborhood
- 9 People who live here are like us
- 10 Near shopping
- 11 Best or most affordable house located here
- 12 Other (please tell us):

3. How would you describe your present and former neighborhoods? (Please circle one word in each column.)

Present Neighborhood	Former Neighborhood
URBAN	URBAN
SUBURBAN	SUBURBAN
SMALLTOWN	SMALLTOWN
RURAL	RURAL

4. Is your present neighborhood different than your former neighborhood? For each characteristic listed below, please indicate how your present neighborhood compares with your former neighborhood. For example, if the amount of traffic in your new neighborhood is more than in your old neighborhood circle the word MORE after "Amount of traffic".

Compare present neighborhood with former
please circle your answer

- a. Amount of traffic MORE LESS SAME DON'T KNOW
- b. People per square mile MORE LESS SAME DON'T KNOW
- c. Open space MORE LESS SAME DON'T KNOW
- d. Clean air MORE LESS SAME DON'T KNOW
- e. Crime MORE LESS SAME DON'T KNOW
- f. Property tax rate MORE LESS SAME DON'T KNOW
- g. Access to outdoor recreation ... BETTER WORSE SAME DON'T KNOW
- h. Quality of schools BETTER WORSE SAME DON'T KNOW
- i. Quality of public services BETTER WORSE SAME DON'T KNOW
- j. Access to shopping BETTER WORSE SAME DON'T KNOW
- k. Access to jobs BETTER WORSE SAME DON'T KNOW

5. Is your present home different from your former home? For each characteristic listed below, please indicate how your present home compares with your former home.

Compare present home with former home
please circle your answer

- a. Lot size BIGGER SMALLER SAME DON'T KNOW
- b. House size BIGGER SMALLER SAME DON'T KNOW
- c. Number of bedrooms MORE LESS SAME DON'T KNOW
- d. Age OLDER NEWER SAME DON'T KNOW
- e. Quality of construction BETTER WORSE SAME DON'T KNOW
- f. View from home or yard BETTER WORSE SAME DON'T KNOW
- g. Kitchen BETTER WORSE SAME DON'T KNOW

Another important purpose of this study is to learn about the kinds of jobs recent movers hold and how they travel to them. Therefore, we would like to ask some questions about the jobs and travel to work of the PRINCIPAL WAGE EARNER (the person who currently earns the most income) and his or her SPOUSE or OTHER ADULT member of the household, if any. Please answer the first question in both columns even if no one in your household is employed or travels to work.

About the PRINCIPAL WAGE EARNER

1. Is the principal wage earner employed? (circle number)

1 Yes

2 No → If not employed, is the principal wage earner:

- 1 Retired
- 2 Unemployed
- 3 A homemaker
- 4 Other _____

(please describe)

If not employed, please answer questions for spouse/other adult in column 2.

→ If employed,

2. Does the principal wage earner work at a location away from home? (circle number)

1 Yes

2 No → If works at home, please answer questions for spouse/other adult in column 2. If neither person works away from home, skip to page 9.

→ If works away from home,

3. How many minutes does it usually take for the principal wage earner to travel to work?

_____ minutes/one-way trip

About the SPOUSE/OTHER ADULT (if none, check here ___ and skip this column.)

1. Is the spouse/other adult employed? (circle number)

1 Yes

2 No → If not employed, is the spouse/other adult:

- 1 Retired
- 2 Unemployed
- 3 A homemaker
- 4 Other _____

(please describe)

If not employed, please answer questions for principal wage earner in column 1. If neither person is employed, skip to page 9.

→ If employed,

2. Does the spouse/other adult work at a location away from home? (circle number)

1 Yes

2 No → If works at home, please answer questions for principal wage earner in column 1. If neither person works away from home, skip to page 9.

→ If works away from home,

3. How many minutes does it usually take for the spouse/other adult to travel to work?

_____ minutes/one-way trip

Please continue answering questions in this column if the PRINCIPAL WAGE EARNER travels to work.

4. How many miles does the principal wage earner usually travel to work?

_____ miles/one-way trip

5. How many days per week does the principal wage earner usually travel to and from work?

_____ days/week

6. How many hours per week does the principal wage earner usually work?

_____ hours/week

7. What time does the principal wage earner usually leave home to go to work? (please circle one number)

- 1 Before 7:30 a.m.
- 2 Between 7:30 and 9:00 a.m.
- 3 After 9 a.m.
- 4 Time varies

8. What time does the principal wage earner usually leave work to go home? (circle a number)

- 1 Before 4 p.m.
- 2 Between 4 and 6 p.m.
- 3 After 6 p.m.
- 4 Time varies

9. What is the principal wage earner's main mode of travel to and from work? (circle a number)

- 1 Drives alone
- 2 Drives or rides in a carpool, vanpool, or ride-share
- 3 Rides the bus (including park-and-ride)
- 4 Other mode of travel

_____ (please describe)

Please continue answering questions in this column if the SPOUSE/OTHER ADULT travels to work.

4. How many miles does the spouse/other adult usually travel to work?

_____ miles/one-way trip

5. How many days per week does the spouse/other adult usually travel to and from work?

_____ days/week

6. How many hours per week does the spouse/other adult usually work?

_____ hours/week

7. What time does the spouse/other adult usually leave home to go to work? (please circle one number)

- 1 Before 7:30 a.m.
- 2 Between 7:30 and 9:00 a.m.
- 3 After 9 a.m.
- 4 Time varies

8. What time does the spouse/other adult usually leave work to go home? (circle a number)

- 1 Before 4 p.m.
- 2 Between 4 and 6 p.m.
- 3 After 6 p.m.
- 4 Time varies

9. What is the spouse/other adult's main mode of travel to and from work? (circle a number)

- 1 Drives alone
- 2 Drives or rides in a carpool, vanpool, or ride-share
- 3 Rides the bus (including park-and-ride)
- 4 Other mode of travel

_____ (please describe)

Please continue answering questions in this column if the **PRINCIPAL WAGE EARNER** travels to work.

10. During a typical week, what types of stops does the principal wage earner make on the way to or from work? (Please circle the numbers of ALL that apply.)

- 1 Drop off or pick up other household members at daycare, school, or other activities.
- 2 Shop
- 3 Do personal business (bank, doctor, haircut, etc.)
- 4 Visit friends or relatives
- 5 Eat at restaurant
- 6 Recreation
- 7 Other _____
(please describe)
- 8 Does not make stops on the way to or from work

11. Does the principal wage earner use new technologies such as cellular phones to do work while traveling to and from work?

- 1 Yes Please explain _____
- 2 No _____

12. Does the principal wage earner's workplace have flextime or some other schedule that allows varying the time to begin and end work? (Circle a number)

- 1 Yes → If yes, does the principal wage earner use flextime to avoid some or all of rush hour traffic?
1 Yes
2 No
- 2 No

13. Does the principal wage earner usually report to the same location to begin work each day?

- 1 Yes
- 2 No

Please continue answering questions in this column if the **SPOUSE/OTHER ADULT** travels to work.

10. During a typical week, what types of stops does the spouse/other adult make on the way to or from work? (Please circle the numbers of ALL that apply.)

- 1 Drop off or pick up other household members at daycare, school, or other activities.
- 2 Shop
- 3 Do personal business (bank, doctor, haircut, etc.)
- 4 Visit friends or relatives
- 5 Eat at restaurant
- 6 Recreation
- 7 Other _____
(please describe)
- 8 Does not make stops on the way to or from work.

11. Does the spouse/other adult use new technologies such as cellular phones to do work while traveling to and from work?

- 1 Yes Please explain _____
- 2 No _____

12. Does the spouse/other adult's workplace have flextime or some other schedule that allows varying the time to begin and end work? (Circle a number)

- 1 Yes → If yes, does the spouse/other adult use flextime to avoid some or all of rush hour traffic?
1 Yes
2 No
- 2 No

13. Does the spouse/other adult usually report to the same location to begin work each day?

- 1 Yes
- 2 No

Please continue answering questions in this column if the **PRINCIPAL WAGE EARNER** travels to work.

14. Does the principal wage earner usually spend most working hours at the same place? (circle a number)

- 1 Yes
- 2 No

15. Does the principal wage earner work at the same job location as before moving? (circle a number)

- 1 Yes
- 2 No, changed job locations along with moving
- 3 No, changed job locations since moving

16. Is the principal wage earner self-employed?

- 1 Yes
- 2 No

17. Is the principal wage earner's work:

- 1 Full-time?
- 2 Part-time?
- 3 On call?

18. Does the principal wage earner work:

- 1 Days?
- 2 Evenings?
- 3 Nights?
- 4 Rotating shifts?
- 5 Other schedule?

19. Does the principal wage earner usually work on Saturdays or Sundays?

- 1 Yes
- 2 No

20. What is ZIP code of the principal wage earner's workplace?

_____ ZIP Code

Please continue answering questions in this column if the **SPOUSE/OTHER ADULT** travels to work.

14. Does the spouse/other adult usually spend most working hours at the same place? (circle a number)

- 1 Yes
- 2 No

15. Does the spouse/other adult work at the same job location as before moving? (circle a number)

- 1 Yes
- 2 No, changed job locations along with moving
- 3 No, changed job locations since moving

16. Is the spouse/other adult self-employed?

- 1 Yes
- 2 No

17. Is the spouse/other adult's work:

- 1 Full-time?
- 2 Part-time?
- 3 On call?

18. Does the spouse/other adult work:

- 1 Days?
- 2 Evenings?
- 3 Nights?
- 4 Rotating shifts?
- 5 Other schedule?

19. Does the spouse/other adult usually work on Saturdays or Sundays?

- 1 Yes
- 2 No

20. What is ZIP code of the spouse/other adult's workplace?

_____ ZIP Code

Please continue answering questions in this column if the **PRINCIPAL WAGE EARNER** travels to work.

21. Does the principal wage earner do any regularly scheduled work for his or her principal employer at home. (circle number)

- 1 No → If no, please skip to question 25 below.
 2 Yes →

If some work is done at home.

22. About how many hours per week are spent working at home?

_____ hours/week

23. Does working at home reduce the number of trips to work each week? (circle number)

- 1 Yes
2 No

24. When working at home, does the principal wage earner communicate with co-workers or customers by: (circle the numbers of ALL that apply.)

- 1 Telephone
2 Electronic mail
3 Regular mail
4 Facsimile machine
5 Other _____

_____ (please describe)

- 6 Does not communicate with co-workers or customers when working at home.

25. Please think about travel to work from your former residence. Before you moved, how far did the principal wage earner travel to work?

_____ miles/one way trip

AND _____ minutes/one-way trip

Please continue answering questions in this column if the **SPOUSE/OTHER ADULT** travels to work.

21. Does the spouse/other adult do any regularly scheduled work for his or her principal employer at home. (circle number)

- 1 No → If no, please skip to question 25 below.
 2 Yes →

If some work is done at home.

22. About how many hours per week are spent working at home?

_____ hours/week

23. Does working at home reduce the number of trips to work each week? (circle number)

- 1 Yes
2 No

24. When working at home, does the spouse/other adult communicate with co-workers or customers by: (circle the numbers of ALL that apply.)

- 1 Telephone
2 Electronic mail
3 Regular mail
4 Facsimile machine
5 Other _____

_____ (please describe)

- 6 Does not communicate with co-workers or customers when working at home.

25. Please think about travel to work from your former residence. Before you moved, how far did the spouse/other adult travel to work?

_____ miles/one-way trip

AND _____ minutes/one-way trip

If you have been answering questions about the **PRINCIPAL WAGE EARNER** who travels to work, please answer question 26. Otherwise skip to question 27.

26. Is the principal wage earner's travel to and from work at this house different from the travel to and from work at the former residence? For each characteristic listed below, please indicate how the principal wage earner's travel to work has changed or if it is the same. For example, if the distance is longer now, circle MORE after the word "Miles".

Compare present travel to work with former
please circle your answer

- | | | | | |
|-------------------------------------|--------|--------|------|------------|
| a. Miles | MORE | LESS | SAME | DON'T KNOW |
| b. Minutes | MORE | LESS | SAME | DON'T KNOW |
| c. Trips each week | MORE | LESS | SAME | DON'T KNOW |
| d. Use of public transit | MORE | LESS | SAME | DON'T KNOW |
| e. Carpooling or ride-sharing | MORE | LESS | SAME | DON'T KNOW |
| f. Number of stops on way | MORE | LESS | SAME | DON'T KNOW |
| g. Amount of congestion | MORE | LESS | SAME | DON'T KNOW |
| h. Speed of travel | FASTER | SLOWER | SAME | DON'T KNOW |
| i. Road conditions | BETTER | WORSE | SAME | DON'T KNOW |
| j. Scenery along route | BETTER | WORSE | SAME | DON'T KNOW |

If you have been answering questions about the **SPOUSE/OTHER ADULT** who travels to work, please answer question 27. Otherwise go to the next page.

27. Is the spouse/other adult's travel to and from work at this house different from the travel to and from work at the former residence? For each characteristic listed below, please indicate how the spouse/other adult's travel to work has changed or if it is the same. For example, if the distance is longer now, circle MORE after the word "Miles".

Compare present travel to work with former
please circle your answer

- | | | | | |
|-------------------------------------|--------|--------|------|------------|
| a. Miles | MORE | LESS | SAME | DON'T KNOW |
| b. Minutes | MORE | LESS | SAME | DON'T KNOW |
| c. Trips each week | MORE | LESS | SAME | DON'T KNOW |
| d. Use of public transit | MORE | LESS | SAME | DON'T KNOW |
| e. Carpooling or ride-sharing | MORE | LESS | SAME | DON'T KNOW |
| f. Number of stops on way | MORE | LESS | SAME | DON'T KNOW |
| g. Amount of congestion | MORE | LESS | SAME | DON'T KNOW |
| h. Speed of travel | FASTER | SLOWER | SAME | DON'T KNOW |
| i. Road conditions | BETTER | WORSE | SAME | DON'T KNOW |
| j. Scenery along route | BETTER | WORSE | SAME | DON'T KNOW |

All home purchasers, please continue answering questions here.

Next, we would like ask some questions about your new home and your household to help interpret the results.

1. How many rooms (not counting bathrooms) does your house have?

_____ rooms

2. How many bathrooms?

_____ bathrooms

3. How large is your lot?

_____ square feet

OR _____ feet by _____ feet.

OR _____ acres

4. How large is your house?

_____ square feet of living space

5. About how old is your home?

_____ years

6. Is your home a: (please circle a number)

- 1 Condominium?
- 2 Mobile home?
- 3 Standard single-family house?

7. What is your main source of household water? (circle a number)

- 1 City or public water district
- 2 Private water system with more than one user
- 3 Own well
- 4 Other _____

(please describe)

8. What is your means of sewage disposal?

- 1 Public sewer system hookup
- 2 Septic tank or cesspool
- 3 Other _____

(please describe)

9. Do you have a garage?

- 1 Yes
- 2 No

10. How many adults (age 18 or older) usually live here?

_____ adults

11. How many children (under age 18) usually live here?

_____ children

12. How many members of your household are licensed drivers?

_____ licensed drivers

13. How many cars, light trucks, and vans are normally kept at your house?

_____ cars, light trucks and vans

14. What is the Zip code of your home address?

_____ Zip code

15. Where was your former home?

_____ city

_____ state

_____ Zip code

16. Which category best describes your household's annual income? (Circle number)

- 1 Less than \$20,000
- 2 \$20,000 - \$29,999
- 3 \$30,000 - \$39,999
- 4 \$40,000 - \$49,999
- 5 \$50,000 - \$59,999
- 6 \$60,000 - \$69,999
- 7 \$70,000 - \$79,999
- 8 \$80,000 - \$89,999
- 9 \$90,000 - \$99,999
- 10 More than \$100,000

Finally, we would like to ask a few questions about the PRINCIPAL WAGE EARNER and his or her SPOUSE or OTHER ADULT member of the household. Please answer the questions in both columns if there are two adults in the household.

About the PRINCIPAL WAGE EARNER

About the SPOUSE/OTHER ADULT, if any

17. Is the principal wage earner:

- 1 Male?
- 2 Female?

17. Is the spouse/other adult:

- 1 Male?
- 2 Female?

18. What is the highest level of education that the principal wage earner has completed? (Circle one number)

- 1 No formal education
- 2 Some grade school
- 3 Completed grade school
- 4 Some high school
- 5 Completed high school
- 6 Some college
- 7 Completed college
- 8 Graduate school

18. What is the highest level of education that the spouse/other adult has completed? (Circle one number)

- 1 No formal education
- 2 Some grade school
- 3 Completed grade school
- 4 Some high school
- 5 Completed high school
- 6 Some college
- 7 Completed college
- 8 Graduate school

19. What is the occupation of the principal wage earner? (If retired, please describe the usual occupation before retirement.)

Kind of work: _____

Kind of company or workplace: _____

19. What is the occupation of the spouse/other adult? (If retired, please describe the usual occupation before retirement.)

Kind of work: _____

Kind of company or workplace: _____

Thank you for completing this questionnaire. Any additional comments may be written on the back cover.