Travel Impacts of Mixed Land Use Neighborhoods in Seattle, Washington

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In response to suburban transportation problems, developers and planners have suggested that mixing land uses can reduce automobile dependency by making more goods and services available within walking, biking, and short driving distances. This view has resulted in a neotraditional planning movement that promotes neighborhoods designed with traditional characteristics including a mix of land uses. However, few studies have empirically explored the transportation implications for these neighborhoods. This issue is addressed by using a travel diary collected in three greater Seattle area neighborhoods characterized by neotraditional neighborhood elements including mixed land use. These data were compared with those collected in an identical diary from individuals throughout the region. It was found that residents of the mixed land use study neighborhoods in Seattle traveled 28 percent fewer kilometers (miles) than residents in adjacent areas and up to 120 percent fewer kilometers than residents in suburban areas. This trend of lower travel distances held across different socioeconomic characteristics. However, the differences in travel distances among the areas were not seen when travel time was considered. The daily travel time was about 90 min/person (including walking), regardless of where that person lived and that person’s socioeconomic status. One implication of this finding is that if a neotraditional neighborhood development does make shopping and other chores less time-consuming, there may simply be more time in the travel budget for additional regional travel. This suggests that travel from the neotraditional neighborhoods needs to be examined in a regional context.

Over the past 40 years, a notable change in land use has been the growth of residentially oriented suburban neighborhoods located some distance from employment and service centers. Linked with this growth are increasing levels of traffic congestion, pollution, and general disenchantment with suburban life (1, 2). These negative impacts have focused on the potential transportation benefits of traditionally oriented neighborhoods (i.e., neotraditional neighborhoods) characterized by more diverse land use development patterns (3, 4). Developers and planners have suggested that mixing land uses can reduce the level of dependency on the automobile by making goods and services available within walking, biking, and short driving distances.

The new interest in mixed land use represents an about-face with regard to the basic assumptions that have shaped urban development patterns over the past 20 or 30 years and has resulted in a body of literature concerned with the relationship between land use and transportation. Much of this literature has been reviewed and analyzed previously and will not be repeated here [see, for example, the work by Rutherford et al. (5)]. Despite this growing body of literature, the impact of the neotraditional mixed land use neighborhood on transportation remains to be demonstrated. For example, a recent study by Bournet and Sarmiento failed to show a link between land use patterns and nonwork travel (6).

In a 1991 article, Handy summarized (and anticipated) the complexity and ambiguity of this issue (7). She noted that neotraditional neighborhood proponents claim fewer and shorter automobile trips, more walking trips, and a greater sense of community in these developments. However, she found that critics and skeptics indicate that these claims are not proven and that people may not want to live in these neighborhoods. She concluded that the entire debate over the neotraditional neighborhood issue “is greatly in need of substantive arguments, of testing and exploration of issues at a much greater depth than has occurred to date” (7, p. 143).

The research described here helps to address this gap in the literature by using a 2-day travel diary and demographic survey of 900 households collected specifically to explore the travel characteristics of residents of mixed land use neighborhoods. This data set was then compared with identical countywide household travel data collected by the Puget Sound Regional Council (PSRC). The data were analyzed to see whether the travel behaviors of residents of mixed land use neighborhoods differed significantly from the travel behaviors of residents of areas with more homogeneous land use patterns.

DATA

This research was based on a comparison of two data sets. The first data set, collected for this study, collected travel data in November 1992 from three mixed land use neighborhoods in the greater Seattle, Washington (King County), area. The mixed land use neighborhoods selected for the study had characteristics identified by the neotraditional neighborhood movement as being important for reducing automobile usage (3, 4, 8). This included more than one distinct land use (residential as well as other uses such as commercial and recreational), a grid structure, a pedestrian-friendly environment, and frequent transit service.

Queen Anne, an older neighborhood located in the city of Seattle, is the smallest of the three study areas. The study area is roughly 0.8 by 1.1 km (0.5 by 0.7 mi) and is centered on a busy shopping street with supermarkets, banks, restaurants, and retail shops. The rest of the study area has many older single-family residents, a few multi-family apartments, a handful of retail and office facilities, and several small parks. The streets in this neighborhood form a grid pattern and have sidewalks and on-street parking.

Wallingford is also an older neighborhood in the city of Seattle. The study area is approximately 1.3 by 2.1 km (0.8 by 1.3 mi) long.
The neighborhood’s land use is diverse, with parks, residences, and a variety of retail and commercial buildings. Two busy arterial streets with concentrations of retail activity cross the area. The area includes many small single-family houses but also a number of two- and three-story apartment buildings. The streets in this neighborhood form a grid pattern and have sidewalks and on-street parking.

Kirkland is a suburban neighborhood across Lake Washington from Seattle and is the largest study area, being approximately 3.2 by 1.9 km (2.0 by 1.2 mi). The area includes a renovated downtown and a mix of housing types. Kirkland’s shopping and commercial facilities are somewhat more scattered than those of the other two study neighborhoods, but there are concentrations along a major arterial and at a downtown core, where two major arterial streets intersect. The core area is notably pedestrian friendly and includes wide sidewalks with street furniture. Although much of Kirkland is made up of single-family residences on large lots, pockets of commercial and retail establishments as well as parks are scattered throughout the area. Kirkland has a combination of a grid pattern and curvilinear streets with cul-de-sacs. This pattern is different from the strictly grid pattern of streets in Wallingford and Queen Anne. There are both on-street parking and parking lots in the area. Kirkland’s land use pattern in many ways represents a transition between a mixed land use area and other suburban developments.

Individuals in each of the three mixed land use study neighborhoods were initially contacted through a random-dialing phone survey. After demographic information was collected, each family member in the survey household over the age of 15 years was requested to fill out a 2-day travel diary describing every trip taken over that period. Forty-three percent of the people contacted agreed to complete the travel diary, and 76 percent of those who agreed to complete the survey returned a completed diary, resulting in a data set that included 15,600 trips from 1,620 individuals. A project report details the data collection methodology, the characteristics of the study neighborhoods, and preliminary data analysis (9).

The second data set, used for comparative county-level travel characteristics, was PSRC’s Transportation Panel Survey. This survey was part of a major effort aimed at collecting data on the effects of transportation conditions and demographic characteristics on household travel behavior in urban areas. PSRC collected demographic information that was combined with a 2-day travel diary conducted on weekdays from September through November 1989. Because the PSRC data collection effort was started before the mixed land use neighborhood survey project was initiated, the PSRC survey was used as the basis for the design of the mixed land use neighborhood survey, and the same contractor randomly contacted all the households and administered both travel diaries. Only part of the PSRC survey effort (the first wave was conducted in 1989) was used for the present study. The PSRC data used for the present study involved 663 households in King County that made almost 12,000 trips [Murakami and Watterson have provided detailed information on the survey methodology (10)].

DATA ANALYSIS

For the data analysis, the travel characteristics of the respondents to the mixed land use neighborhood survey and the PSRC survey were compared. The measure of travel frequently used in this paper is average daily travel distance per person (over age 15). This figure expresses the average per-person travel distance of all trips made in 1 day and is based on the responses of all survey respondents who fit into the category of interest. Because the PSRC respondents were asked to include only trips 5 min or longer, only weekday trips of more than 5 min in duration for respondents to the mixed land use neighborhood survey are included in the comparisons.

Because this study was focused on the geographic locations of households, the analysis frequently compared respondents and households from different zones (Figure 1). The mixed land use survey neighborhoods of Queen Anne, Wallingford, and Kirkland made up three zones with 300 households each. The city of Seattle is represented by North Seattle. Since North Seattle encompasses the Queen Anne and Wallingford study areas but does not have the same mixed land use, these areas are frequently compared in this research. In the PSRC survey data, 176 households were in North Seattle. Two analysis zones were also created on the basis of when the cities or census tracts in the county were initially developed. One zone, which includes the Kirkland mixed land use neighborhood, is an inner ring; it contains about 30 cities that surround Seattle and that were developed in the 1940s, 1950s, and early 1960s and included 163 households. The outer ring includes both newer suburban developments and the remaining rural and unincorporated portion of King County and includes 248 households.

A summary of demographic characteristics of the mixed land use neighborhoods and the King County analysis zones is shown in Table 1. Overall characteristics for urbanized King County are also included. The two mixed land use neighborhoods within Seattle are similar. The third mixed land use neighborhood, Kirkland, has a higher median age and considerably lower residential density. With the exception of income, North Seattle is much like Queen Anne and Wallingford. The inner and outer areas of King County are also similar to each other and have larger household sizes and higher automobile ownership levels than areas in Seattle.
Travel Distance

Because travel distance is often a primary indicator of transportation activity, much of the analysis focused on comparison of daily travel distance by the respondents in the analysis zones. During this analysis, an effort was made to control for sample bias, which was achieved by comparing travel distance between areas of similar socioeconomic categories. In some cases, because of small sample sizes, analysis zones were aggregated.

The average daily travel distance by mode for Queen Anne and Wallingford combined (the Seattle mixed land use neighborhoods), Kirkland, North Seattle, and the inner and outer areas (the King County suburban areas) is shown in Figure 2. For all modes the following progression was observed: the Seattle mixed land use neighborhoods had the lowest travel distance per day and North Seattle had the next lowest; this was followed by Kirkland. The King County suburban areas had the highest daily travel distance. Across modes, automobile users had the highest travel distance. For transit users the difference in average travel distance for the two mixed land use neighborhoods and the King County suburban areas was 23 km (14 mi) per day. For automobile users, this difference was almost 26 km (16 mi) per day.

The travel distance data can be broken down in more detail by location. Figure 3 shows some of the same data described above, but disaggregated into the three mixed land use neighborhoods and the three King County zones. As with the previous figure, the Seattle mixed land use neighborhoods had the lowest daily travel distance per person and the suburban King County areas had the highest. The respondents from the Kirkland mixed land use neighborhood had higher travel distances than the respondents from the other mixed land use neighborhoods and North Seattle but lower travel distances than individuals in the King County suburban zones. This finding supports the idea that Kirkland is a transitional neighborhood between a mixed land use neighborhood and a suburban land use neighborhood.

Regional Work Trips

One concern when comparing the mixed land use neighborhood and King County data was confounding effects due to differential

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### TABLE 1 Summary of Household Characteristics

<table>
<thead>
<tr>
<th>Location</th>
<th>Average Household Size</th>
<th>Average Number of Employees/ Household</th>
<th>Average Number of Vehicles/ Household</th>
<th>Median Age of Persons over 15</th>
<th>Percent Household Income over $35,000</th>
<th>Gross Density-Households per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queen Anne</td>
<td>2.2</td>
<td>1.4</td>
<td>1.7</td>
<td>39</td>
<td>67%</td>
<td>7.6</td>
</tr>
<tr>
<td>Wallingford</td>
<td>2.1</td>
<td>1.3</td>
<td>1.6</td>
<td>37</td>
<td>56%</td>
<td>7.2</td>
</tr>
<tr>
<td>North Seattle</td>
<td>1.9</td>
<td>1.2</td>
<td>1.8</td>
<td>37</td>
<td>41%</td>
<td>5.4</td>
</tr>
<tr>
<td>Kirkland</td>
<td>2.0</td>
<td>1.0</td>
<td>1.9</td>
<td>47</td>
<td>61%</td>
<td>3.1</td>
</tr>
<tr>
<td>Inner</td>
<td>2.5</td>
<td>1.4</td>
<td>2.1</td>
<td>35</td>
<td>56%</td>
<td>1.2</td>
</tr>
<tr>
<td>Outer</td>
<td>2.7</td>
<td>1.4</td>
<td>2.2</td>
<td>37</td>
<td>55%</td>
<td>0.2</td>
</tr>
<tr>
<td>Urbanized King Co.</td>
<td>2.5</td>
<td>1.3</td>
<td>2.1</td>
<td>37</td>
<td>51%</td>
<td>2.0</td>
</tr>
</tbody>
</table>

*Note: 1 acre = 0.405 ha.
accessibility to Seattle’s central business district (CBD). The CBD is a major employment center for King County, and as such it can be expected to attract a large number of work trips. Both Queen Anne and Wallingford are close to the CBD; Queen Anne is about 3.2 km (2 mi) away and Wallingford is 6.4 km (4 mi) away. This proximity raised concerns that any average trip length for these two neighborhoods would be shorter than those for other locations simply because work trips to the CBD would reduce the average trip length and could obscure some of the transportation effects related to mixed land use.

As a means of investigating the CBD’s capture of work trips, the location of each respondent’s workplace was identified for both the mixed land use neighborhood and King County data. The percentages of work trips that traveled to the Seattle CBD and to other zones were identified, and it is apparent that the Seattle CBD is indeed a significant work trip destination for Queen Anne (31 percent) and Wallingford (25 percent) respondents. However, the CBD also attracts the same proportion of work trips from the North Seattle zone (31 percent). This finding is particularly relevant to this research because the North Seattle study area includes the Queen Anne and Wallingford neighborhoods. Because of the equal percentages of work trips to the CBD from each of these areas, it can be concluded that differences in average trip lengths between these areas are probably not unduly influenced by travel to the CBD.

The analysis also indicates that Seattle’s CBD attracts relatively few work trips from King County’s inner (13 percent) and outer (7 percent) zones. As expected, most of the work locations for these two zones remained internal to the zones. The majority of the work locations for the Kirkland residents remained within the inner King County zone.

Household Location and Commercial Establishments

One tenet of the neotraditional neighborhood movement is that mixed land use in a neighborhood promotes local trips because the presence of commercial establishments nearby reduces the need to drive. Because the address of each household in a mixed land use neighborhood was geographically coded, it was possible to calculate the straight-line distance between each household and the nearest commercial street and quantify the accessibility of each household to commercial opportunities. Commercial streets were selected on the basis of the concentrations of establishments that provide goods and services used on a routine basis, including grocery stores, convenience stores, restaurants, dry cleaners, and drugstores.

The ability of local opportunities to reduce the need to drive was then tested by comparing the levels of walking for mixed land use neighborhood residents living at different distances from commercial areas. Figure 4 shows the percentage of shopping trips that were completed on foot by households at five different distances from the commercial streets. This analysis includes only shopping trips that have at least one trip end within a census tract that includes the mixed land use neighborhoods. As expected, Figure 4 indicates that the farther that mixed land use neighborhood inhabitants lived from a commercial street, the less likely it was that their shopping trips would be on foot (and the more likely it was that their shopping trips would be in an automobile). This trend is particularly noticeable for the Queen Anne and Wallingford data. More than 65 percent of the residents from Queen Anne and 50 percent of those from Wallingford who also lived within 0.16 km (0.1 mi) of a commercial street walked to shop. In contrast, less than 25 percent of those respondents who lived more than 0.32 km (0.2 mi) from commercial establishments walked (these walking trips could be to anywhere, not just to the local commercial street).

The Kirkland data showed a less obvious trend because of low numbers of walking trips and small survey sample sizes. Kirkland also had a more dispersed pattern of commercial activity than the other two mixed land use neighborhoods, rendering any patterns less obvious.

Trip Stops

Given the neotraditional neighborhood movement’s emphasis on trips to locations near home, one factor of interest is how many trip desti-
nations are within a short distance from home. An analysis of trip ends from each respondent’s household that were local [less than 3.2 roadway km (less than 2 roadway mi)] shows that the respondents in the mixed land use neighborhoods made almost twice (39 versus 18 percent) as many trips to local stops as the King County respondents did. The difference between the data sets is even more evident for local stops within 1.6 km (1 mi) of a household. Mixed land use neighborhood residents made 17 percent of their stops locally, whereas those living in King County made only 5 percent of their daily stops within 1.6 km (1 mi) of their home.

Transit

Neotraditional developments are often interchangeably labeled as transit-oriented developments, highlighting the potential role of transit in these areas (8). In an effort to further explore the use of transit, the survey respondents were classified as transit users if they used transit for any trip during a day. Those living in Queen Anne and Wallingford had the most transit users (16 percent of all respondents). North Seattle had a slightly higher percentage of transit users (18 percent). The percentage of transit users in Kirkland (6 percent) was similar to the percentages in inner (7 percent) and outer (6 percent) King County. These findings suggest that neighborhood design may not be the most important factor influencing transit use. Other factors such as stop location and route frequencies may matter more.

Pedestrian Trips

One commonly stated goal of the neotraditional neighborhood movement is increased pedestrian activity. In the mixed land use neighborhoods, 11.3 percent of all trips were by pedestrians, whereas in King County, 3.6 percent of all trips were by pedestrians. It should be recognized that these percentages may underestimate the number of daily walking trips because they include only trips longer than 5 min in duration. A distribution of walking trips by geographic area is shown in Table 2. Table 2 shows that the mixed land use neighborhoods of Queen Anne and Wallingford had the highest level of walking, with about 18 percent of all trips being on foot. North Seattle and Kirkland had fewer walking trips, with 7 to 9 percent of all trips being on foot. In the suburbs of King County less than 3 percent of all trips were on foot. The most common purpose for walking trips is personal. This is reasonable because many personal trips include walking and running for exercise as well as recreational walking.

Number of Trips

The average number of trips made by each survey respondent per day (Table 3) was about five for each location. Given that the respondents from mixed land use neighborhoods travel fewer numbers of kilometers per day, it is suggested that the trips made by respondents from mixed land use neighborhoods, although as frequent, are shorter than the trips made by respondents from other locations. This average of five trips per day holds up for different incomes. Households with children make more trips per day than other households across all locations. Females make slightly more trips per day than males across all locations.

<table>
<thead>
<tr>
<th>Location</th>
<th>Average Daily Travel Minutes</th>
<th>Average Daily Travel Mileage</th>
<th>Average Travel Speed (mph)</th>
<th>Average No. of Daily Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queen Anne</td>
<td>92</td>
<td>18.2</td>
<td>11.9</td>
<td>5.6</td>
</tr>
<tr>
<td>Wallingford</td>
<td>91</td>
<td>16.9</td>
<td>11.1</td>
<td>5.0</td>
</tr>
<tr>
<td>North Seattle</td>
<td>86</td>
<td>22.4</td>
<td>15.6</td>
<td>5.0</td>
</tr>
<tr>
<td>Kirkland</td>
<td>90</td>
<td>27.1</td>
<td>18.1</td>
<td>5.2</td>
</tr>
<tr>
<td>Inner</td>
<td>90</td>
<td>30.3</td>
<td>20.2</td>
<td>5.1</td>
</tr>
<tr>
<td>Outer</td>
<td>93</td>
<td>38.5</td>
<td>24.8</td>
<td>4.9</td>
</tr>
</tbody>
</table>

NOTE: 1 mi = 1.61 km.
Travel Time

As with travel distance, the travel times for the survey respondents can be compared. Table 3 indicates that the great difference in travel distance between the mixed land use neighborhoods and the King County area is not nearly as apparent as the difference in travel times. The travel time for all groups was about 90 min. These observations seem to be confirmed by other analyses. Hupkes summarized trip rates and travel times for the United States and European countries and reported the average daily travel time per person ranges from 65 to 84 min (11). The U.S. travel time in Hupkes’s paper was 83 min for 1965–1966 and was an average for 44 urban areas. Purvis calculated an average travel time of 82.5 min/person for the San Francisco Bay Area in 1990 (12). The average of about 90 min for the Seattle area compares fairly well with that for the Bay Area when one considers that the Seattle survey collected no travel data from those younger than age 15 and that the Bay Area survey collected travel data for those age 5 and older. The Nationwide Personal Transportation Survey reports shorter and fewer trips for younger people (13), and leaving them out of the data analysis raises the average travel time for those remaining.

Travel Speed

The average travel speed for each area shows that travel speeds are notably lower for the Queen Anne and Wallingford respondents compared with those for the respondents from other areas (Table 3). Given that these areas had higher levels of use of the slower transit, bike, and walking modes and higher levels of congestion, this finding is reasonable.

Travel and Socioeconomic Characteristics

A detailed, descriptive breakdown of the socioeconomic characteristics of the respondents by analysis zone is found in the work by Rutherford et al. (5). That study found patterns that indicated that the travel characteristics of the respondents varied depending on whether they lived in a mixed land use neighborhood or the King County analysis zones but showed some stability across socioeconomic categories. Some of the more relevant travel patterns controlled for by sex, income, and household categories are summarized in Table 4. The four household categories used for this research were selected because of characteristics (age, number of children, number of adults) that are key determinants of travel behavior. For each of these socioeconomic categories, daily travel distance increased from Seattle mixed land use zones to North Seattle to Kirkland to suburban King County. In most cases, the respondents in the various socioeconomic groups in the Queen Anne and Wallingford mixed land use neighborhoods traveled half the distance per day that those living in suburban King County traveled.

Because of concerns that travel patterns could be associated with the residents’ socioeconomic characteristics instead of the neighborhood location, it was important to further explore socioeconomic characteristics by an analysis of variance (ANOVA) (14). ANOVA is a way of testing a null hypothesis that several group means are equal for the population by comparing the sample variance estimated from the group means with that estimated within the group. ANOVA was applied to the household categories, and the results indicated that for each household category differences were greater between the groups than within the groups (Table 5). This was an indication that these categories are able to represent different socioeconomic elements in the survey data.

ANOVA techniques were then used to demonstrate the significance of the variations in travel measures between the analysis zones while also accounting for the household categories. The F-statistic in Table 6 indicates the level of variability of several daily travel characteristics within both zone and household categories. For travel distance and transit use, the zonal effect is a stronger determinant (a greater F-statistic) of travel characteristics than household characteristics, suggesting that the location of the household influences these travel characteristics more than the household category does. The household category had a greater influence on the total number of trips and daily travel time, but as discussed above, these two characteristics had minimal variability across all travel zones, suggesting that the impact of either location or household is minimal.

<table>
<thead>
<tr>
<th>Location</th>
<th>Sex</th>
<th>Household Income</th>
<th>Household Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>&lt; $35K</td>
</tr>
<tr>
<td>Queen Anne</td>
<td>18.7</td>
<td>16.8</td>
<td>14.9</td>
</tr>
<tr>
<td>Wallingford</td>
<td>16.8</td>
<td>16.2</td>
<td>15.3</td>
</tr>
<tr>
<td>North Seattle</td>
<td>23.5</td>
<td>20.7</td>
<td>20.3</td>
</tr>
<tr>
<td>Kirkland</td>
<td>28.1</td>
<td>25.9</td>
<td>22.4</td>
</tr>
<tr>
<td>Inner</td>
<td>31.4</td>
<td>28.7</td>
<td>27.6</td>
</tr>
<tr>
<td>Outer</td>
<td>39.1</td>
<td>36.3</td>
<td>36.7</td>
</tr>
</tbody>
</table>

Note: 1 mi = 1.61 km.

TABLE 4 Daily Travel Distance for Location Versus Sex, Income, and Household Category (in Miles)
CONCLUSION

Residents of the two mixed land use neighborhoods in Seattle traveled 28 percent fewer kilometers (miles) than the residents in the remainder of North Seattle, 73 percent fewer kilometers than the residents of the inner suburbs, and 120 percent fewer kilometers than the residents of the outer suburbs. The trend of traveling fewer kilometers per day held across different socioeconomic characteristics. The mixed land use neighborhood resident also walked more and traveled closer to home than residents in other areas in King County. If one of these mixed land use neighborhoods were somehow relocated to the outer suburbs, would the travel characteristics remain the same? It is doubtful, but indications from this research, based on examination of various breakdowns of trip and household categories, suggest that substantial reductions in travel distances can be accomplished with appropriate urban design.

This paper also gives credence to the work of the few researchers who have looked at travel time instead of distance as a principal measure. The large differences in travel distance among the areas are not seen when travel time is considered. The travel time was about 90 min per person, regardless of where that person lived. The variation by age and family life cycle stage was also remarkably small. This “travel time budget” of about 90 min is an interesting finding and compares favorably to data from previous studies.

This difference in travel distance for the mixed land use neighborhood inhabitants, combined with the stability of the travel times, indicates that the mixed land use neighborhood resident traveled at slower speeds than inhabitants of other areas of King County. This is reasonable because this research found that the mixed land use neighborhood inhabitants used slower modes of travel (mainly transit and walking). Gordon and Richardson, in a review that used Nationwide Personal Transportation Survey data, pointed out that although work trip distances have increased, so have travel speeds, supporting the inverse relationship between travel time and speeds found in the present data analysis (15).

This slower travel speed in mixed land use neighborhoods combined with a travel time budget has an interesting implication for the neotraditional neighborhood movement. If a mixed land use does make shopping and other chores more convenient and quicker, this may simply leave more time to be used for additional travel. Crane recognized this when he noted that the improved access associated with a mixed land use neighborhood would reduce the cost of travel and could lead to travel by automobile becoming more attractive (16). He noted that this could result in the benefits of mixed land use neighborhoods being greatly overstated.

As Handy suggests, the effectiveness of the neotraditional neighborhood movement depends on the travel and destination choices available (14). The findings from this research suggest that this is true in the sense that travel from neotraditional neighborhoods needs to be examined in a larger regional context. Although this study’s mixed land use neighborhoods did have about three times as many stops within a kilometer (four times as many stops within a mile) of the neighborhood than areas with less mixed land uses, this number was still less than 20 percent of all stops. Clearly, most trips taken by the mixed land use neighborhood resident are out into the region. Thus, access and opportunities in the region will have a notable impact on a resident’s travel patterns, perhaps more so than neighborhood design by itself.

On the basis of the findings of the present study, it does appear that neighborhood characteristics can be associated with travel differences. These differences highlight two challenges for understanding the neotraditional neighborhood movement. The first is to determine if these changes can truly be linked to land use. The second is to determine if these travel differences contain within them a potential solution to worsening urban congestion.

REFERENCES


*Publication of this paper sponsored by Committee on Transportation and Land Development.*