PEDESTRIAN TRANSPORTATION FOR RETIRED PEOPLE

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Retirement is rapidly becoming a phase of the normal life history. Transportation is a serious problem for many retired people. For economic and health reasons, they tend to be unusually dependent on and handicapped for walking. This paper presents the pedestrian data from a study of the mobility behaviors and attitudes of 709 retired people. They suggest that walking is not at present a satisfactory means of transportation for retired people, and that the more dependent a person is on walking, the more negative he is toward it. However, walking was seen to have advantages. If distances between homes and desired destinations were within 15 minutes of walking time and if walkways were clear and safe, dependence on walking would be less onerous and its advantages—social contact, economy, independence, convenience, and health—might be realized.

•RETIRED people compose a sizable and rapidly growing sector of the population. In 1900, 4 percent of the population of the United States was 65 years of age or older; by 1930 that figure had risen to 5 percent and by 1960, to nearly 9 percent. It is estimated that by 1975 nearly 10 percent of the population will be aged 65 or older (1). Meanwhile, age at retirement continues to decline. For increasing numbers of people, retirement is on the life schedule before age 65. In 1900, 68 percent of men 65 and over remained in the labor force, while in 1960 only 32 percent of them were still working. It is projected that by 1975 the figure will drop to 23 percent (1). In the years from 1962 to 1966, over half of the men who retired did so before becoming 65, despite the fact that they thereby accepted a reduced retirement benefit (2).

As health care improves and medical research advances, more people live into later life, and there is some extension in longevity (3). Much of the recent change in life-expectancy tables is the result of prevention and amelioration of childhood diseases. As the killers and cripplers of later life are brought under better management, more people will live longer; and they should be healthier and more vigorous during the later years of life (4, 5).

The interaction of these medical and economic advances is creating a sizable population subgroup whose lives are no longer organized by the requirements of economic productivity (6) and whose time can be spent in a new period of retirement leisure (7). Theoretically, leisure has long been considered a prerequisite for personal enrichment and cultural advance (8, 9, 10). However, "leisure" is not synonymous with "free time" (11), which has been recognized as a problem (12). Studies of older people tend to reveal problems rather than advantages, both in regard to personal fulfillment (13, 14, 15) and in regard to social integration (16, 17, 18).

ROLE OF TRANSPORTATION

Whether retirement provides personally meaningful and socially constructive leisure or personally onerous and socially wasteful free time may depend in part on the retired individual's access to society—to other people and to activities and services. Many retired persons perceive transportation to be the major problem in regard to personal satisfaction and social integration (19).

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LIMITATIONS ON VEHICULAR TRANSPORTATION

Ordinarily, "transportation" refers to vehicles. However, walking is another way for people to get where they need and want to go (20). Pedestrianism is a neglected form of transportation in this automobile-oriented world (21). Most young adults drive wherever they go, and the multicar family is no longer a novelty. However, automobile travel is far less accessible to retired people. Households headed by older persons are less likely to own automobiles, and the automobiles they own are likely to be old also (22). Therefore, these vehicles tend to be less safe and efficient, and more costly in upkeep. The cost factor is more pressing because of the low incomes of retired people (23).

Compared with young adults, older people are less likely to be able to drive, even if they can afford automobiles. Brotman (24) estimates that only 14 percent of persons aged 65 and older in the United States today hold valid drivers' licenses. A smaller percentage of people past retirement age today ever learned to drive (25). This is particularly true of women. Moreover, with increasing age there is increasing liability to loss of the driver's license, and ex-drivers experience particularly severe problems in getting about (26). Furthermore, some older drivers do not drive anywhere. Many acknowledge limitations on the places or the times of day they drive. These limitations are due largely to visual-motor changes with age, in interaction with the speed and complexity of traffic (25). The offer of rides with other drivers is quite inadequate to meet the needs of retired persons (27). Public transit is another possibility for getting about. However, it involves serious problems for older persons and does not seem to facilitate the mobility appropriate to satisfactory retirement life style (28). In addition to the vehicular inconveniences and hazards of public transportation, it requires walking to and from the place where the vehicle stops.

WALKING AS A FORM OF TRANSPORTATION

Therefore, walking is of doubly determined significance for retired persons. Because of the limitations on vehicular transport for older people, foot travel is important as a means of reaching destinations. Walking is also important as an adjunct to public transportation. Yet, as the Administration on Aging has recently pointed out, "We lack systematic data on the nature and frequency of older people's pedestrianism" (29).

Unfortunately, the visual-motor decrements and the increasing incidence of health problems that limit vehicular transit for older people also inhibit pedestrian travel. Losses in visual and auditory acuity, constriction of peripheral vision, slowed response time, and reduced competence with complex tasks, especially under time pressure (30), contribute to ending the driving career, to problems with public transit vehicles, and to difficulties in going places on foot. Other age-related changes such as reduction in muscular strength, coordination, agility, and speed of movement; gait changes, instability, and the tendency to fall (31, 32); and increasing bone fragility (33), especially among women, compound the problems of getting about on foot.

Walking is more dangerous for the old than for the young. In 1966, people 65 and over accounted for 25 percent of the nation's pedestrian deaths, though they constituted only 10 percent of its population (34). Fear of traffic injury, fear of falling and breaking a bone, and fear of attack are reasonable among older pedestrians (35). The conditions of walking—the sidewalks, the pedestrian traffic zones and regulations, and the complexity and speed of vehicular traffic and of control signals—may further increase the negative valence of pedestrianism.

Unfortunately, older people are both unusually dependent on and unusually handicapped for pedestrian travel. Their goals for the use of retirement leisure may be particularly frustrated by difficulties in walking to places they need and want to go. As the span of retirement years increases and the number of people in retirement expands, the needs of this population subgroup will become more pressing and perhaps more vocal.

It may be joined by other population subgroups which, voluntarily or involuntarily, will learn to live without automobiles. If ecologists have their way, the universality of the automobile may cease to be an American dream. The gasoline engine is now

widely recognized as a major contributor to smog, and there is increasing evidence of the far-reaching and long-range negative effects of this pollution (36, 37, 38, 39). It has been pointed out also that human adaptability may be atrophied by overreliance on "labor-saving devices," and some experts exhort people to "rediscover walking" in order to maintain the adaptability of the human organism (40). Few would deny that there are health benefits.

Furthermore, for some purposes walking may be the most effective means of locomotion. For example, "If you wish casual opportunities for meeting your neighbors, and for profiting by chance contacts with acquaintances and colleagues, a stroll ... will alone meet your need" (21, p. 186). Walking may have additional real and potential advantages over other modes of transportation, for people of any age. Information about the pedestrianism of retired people may have broader implications. Improvements of pedestrian facilities with them in mind may prove beneficial to walkers in other age groups.

THE STUDY

This study focuses on pedestrianism during the retirement period of life. How do retired people use walking as a means of getting somewhere? Where do they go on foot? To what extent does walking meet their needs to get about outside their homes? Are certain types of retired persons more likely than others to use walking as transportation? What are the problems with walking as a means of getting to places? What are the advantages? What is the relationship between frequency of walking and satisfaction with it? These questions are being explored in a study of the mobility of retired persons that is being conducted in San Antonio and San Francisco. Both are metropolitan areas undergoing typical urban growth and change, yet the two are very different in topography and climate, making possible a reasonable test of the extent to which generalizations are justified. This is a report on the pedestrian data from the first phase of the study, which involves a 1.3 percent sample of the retired population of San Antonio.

SAMPLING PLAN

The San Antonio sample was drawn to provide sufficient numbers of persons in various categories to test hypotheses regarding the effects of certain locational and neighborhood characteristics on mobility. The results will be checked with data from the second-phase sample that was drawn according to census figures to represent the 65 and older population of San Francisco.

Location of Residence

Where an individual lives within the urban-suburban complex probably is related to all of his mobility habits. Surely walking as a means of reaching most destinations is far different for the inner-city resident than for the person who lives in the suburbs. In order to clarify the effects of location on mobility behaviors and attitudes, equal numbers of respondents were drawn from each of 5 zones based on distance from the city center. San Antonio is outlined by an almost circular highway. The central downtown intersection lies almost exactly at the geographic center. (San Francisco, on the other hand, is asymmetric.) This intersection was used as the focus for concentric circles that were drawn to define 5 zones. Radii were adjusted so that approximately equal numbers of retired people lived in each zone, and equal numbers of subjects were drawn from each for the sample. For convenience the 5 zones were named central city; downtown but outside the central zone; urban-suburban interface; old, inner suburbs; and new, outer suburbs.

Age Composition of Neighborhood

Another issue of major importance is the effect of the age of neighbors on retirement behavior and experience. Clark and Anderson conclude that "the immediate neighborhood is of great importance to many old people—as important as their own living quarters" (41, p. 342). Rosow (17) has demonstrated that older persons form personal re-

lationships more readily when they live in a neighborhood in which there are many other persons of the same age, and that there is more mutual assistance in illness and misfortune. It is reasonable to predict, then, that persons in age-homogeneous neighborhoods would go about more within them, probably on foot, and that they would feel less need for transportation to other parts of town in order to avoid loneliness and to feel useful.

However, Rosow based his conclusions on observation of people in one area of one city, and his findings should be tested in another urban area and throughout the various types of residential zones. This is particularly true because other investigators make different observations. Bracey reports "a great deal of appreciation of the many acts of kindness or consideration the younger generation accorded the older. This partnership between older and younger neighbors was ... the most surprising, and at the same time the most gratifying fact the enquiry uncovered" (16, p. 63). The pros and cons of age-segregated versus age-integrated neighborhoods are not yet clear. Evidence regarding mobility differences is relevant. Therefore, in each of the 5 zones based on distance from the city center, half of the subjects were drawn from age-homogeneous neighborhoods and half from age-heterogeneous neighborhoods.

Ethnicity of Neighborhood

Transportation facilities may be less good (42), and mobility needs and habits different, in ethnic minority neighborhoods. Though there is some mixing, most residential neighborhoods in San Antonio are easily identified as Mexican-American, Afro-American, and Anglo-American (other). (The San Francisco data include a fourth ethnic group, Chinese-American.) Mexican-American neighborhoods comprise a proportion of San Antonio sufficient that any reasonable sampling plan would provide adequate representation of them. However, to ensure that there were, for statistical purposes, sufficient numbers from Afro-American neighborhoods required that they be oversampled. Neighborhood ethnicity was predetermined throughout the city by two observers and coded on the map. Arbitrary quotas were set for selection of respondents according to the predominant ethnicity of the neighborhoods in which they lived: 15 to 20 percent Afro-American, 25 to 30 percent Mexican-American, and 55 to 60 Anglo-American.

Selection of Individuals

Every effort was made to select individuals by chance, within these locational and neighborhood categories. Within the locational units, and in view of the neighborhood-ethnicity and age-composition quotas, selection was random within the retired population so far as possible. Further predesignation of subjects would bias the findings. Characteristics of persons that affect transportation habits and preferences are also related to locational and neighborhood characteristics. For example, elderly single persons with low incomes congregate in old downtown hotels (41), while more affluent couples tend to reside in the suburbs or in retirement villages (43). To find out the habits and preferences of retired people in various parts of the urban complex, and to clarify the roles of factors such as sex, income, marital status, household composition, and health as they interact with locational and neighborhood characteristics, we selected persons only on the basis of the zone of residence and the age and ethnic composition of the neighborhood.

Retirement Status

The only additional requirement was retirement status, which may be defined in several ways (7). The person's own perception of his situation was the criterion used in this study: Men must be self-defined as retired, and women must not be in the labor force. Many of the women were housewives who had never worked and whose husbands had retired. Only one member of a married couple was interviewed.

Location of Subjects

The selection of subjects was carried out by following different procedures for age-homogeneous and age-heterogeneous neighborhoods. For the purpose of this study, age-homogeneous neighborhoods were defined as apartment houses, hotels, or nursing homes limited to the elderly or retired, or residential blocks within which every household included at least one retired member. [This is a more stringent definition than Rosow's (17).] Prior to data collection, a list of age-homogeneous residences within each of the locational units was compiled by means of the phone directory and with the assistance of the Community Welfare Council and Senior Community Services, and the number of residents in each was recorded. From this, a "dummy" roster of residents (without names) was prepared for each zone. It designated each retired individual by place of residence and room or apartment number. From this roster subjects were drawn by using a table of random numbers to make up the sample for that age-homogeneous neighborhood. If no one was at home the interviewer called back until the potential subject was contacted, except that the maximum number of call-backs was six, and, thus, bias was minimized from missing data. Refusals were recorded.

Residents of age-heterogeneous neighborhoods were selected by numbering the residential blocks within each locational zone and by selecting blocks by a table of random numbers. The interviewer drove to one corner of the block so selected; he then alternated starting at the northwest, northeast, southwest, and southeast corner. To avoid the bias introduced by collection of disproportionate amounts of data from houses on corner lots, the interviewer rolled dice to determine the dwelling to approach first. If there was no retired person in that house, the interviewer proceeded around the block in the direction in which he started. If there was no retired person in that block, he went to the next block selected by the table of random numbers. Again, if a retired person was located but was not at home, call-backs were made to the limit of six, and refusals were recorded.

SUBJECTS

The criterion for selection of an individual was that he be a retired person or the wife or widow of a retired man. Over 80 percent were 65 or over, the stereotypic age for retirement. However, 4 percent were under the age of 50. Another 4½ percent were 85 years of age or older. The mean age was 67.5.

The San Francisco subjects were drawn as a stratified random sample of the population, based on most recent census figures. However, the San Antonio subjects were drawn to conform to locational specifications and to allow statistical tests of neighborhood ethnicity effects. Therefore, it is particularly important to compare these subjects with the older population at large. Forty percent of the sample were men and 60 percent women, which approximates the sex ratio in national figures for people 65 and older (22). Socioeconomically also the group was fairly typical. The median yearly retirement income of $1,797 is very close to the national median for persons 65 and older (44). During working years most of the men and most of the women's husbands had held jobs in the middle levels (45). Only 9 percent had held jobs at the professional or top managerial level, and only 8 percent had been unskilled laborers.

DATA COLLECTION

Data were collected in individual interviews at the respondent's convenience and usually in his home. No other person was present during the interview, which typically lasted 2 or 2½ hours. It was conducted in the language preferred by the respondent. Interviewers in Mexican-American neighborhoods were bilingual persons who were members of the Mexican-American community in the city. Most of the mobility data were given in response to questions of the "What do you usually ..." variety. A 7-day activity diary of trips outside the home was recorded, as perhaps more factual. More "projective" or emotional material was elicited by means of a set of specially designed pictures.

Information on mobility and transportation habits and attitudes was collected in relation to various destinations (doctor, children, other relatives, friends, and grocery) because mobility and transportation generally are means to ends. Information was also collected in relation to each transportation mode: driving and riding in an automobile, public transit, taxi, airplane, train, and walking. In all discussions of pedestrianism, respondents were asked to limit their answers to the use of walking as a means of getting somewhere. Walking for pleasure, exercise, or with a pet was excluded. (These uses of walking are included in the San Francisco phase of study.)

WALKING USED AS TRANSPORTATION

Nearly half the respondents (44 percent) habitually used their feet as a means of transportation several times a week, and 1 person in every 5 went somewhere on foot every day (Table 1). However, 2 people in 5 (41 percent) walked to some destination less often than once a month, and nearly a third of the respondents never used walking as a means of transportation. There was a tendency for the respondents to divide into two groups: those who walked most of the places they went, and those who rarely or never went anywhere on foot.

THOSE WHO WALK

In order to determine the characteristics that distinguished people who walked much from those who walked little or none at all, a stepwise multiple-regression analysis was performed. The strongest correlate of the frequency of walking was location of the person's home in the urban complex ($r = 0.48$). Residents of the centermost zone walked most, and the incidence of walking as a means of transportation diminished, zone by zone, to be least among residents of the new suburbs at the periphery of the city. For example, 50 percent of the residents of the city center usually walked somewhere every day, while less than 1 percent of the residents of the new, outer suburbs did so. On the other hand, only 5 percent of the central-city residents said they never walked as a means of getting somewhere, while this response was given by half the residents of the new suburbs.

Next in importance was the ethnic composition of the neighborhood. If the retired person lived in a neighborhood that was largely composed of ethnic-minority residents (Afro-American and Mexican-American), he was more likely to use his feet as a means of locomotion than was the person who lived in a predominantly Anglo-American neighborhood ($r = 0.46$). Nearly 40 percent of those in Anglo-American neighborhoods never walked, while this was true for only a quarter of the Afro-Americans and less than 10 percent of the Mexican-Americans.

These two correlates of walking—location in the urban area and neighborhood ethnicity—do not just duplicate each other. Residents of both the new, outer suburbs and the inmost zone of the city were predominantly Anglo-Americans. Most of the ethnic-minority neighborhoods lay in the intermediate zones, the "middle city" (40).

Next in importance as a correlate of tendency to walk was car ownership. People who had automobiles were less likely to go places on foot ($r = 0.30$). Though there is a relationship between automobile ownership and distance of residence from the city center, and one between car ownership and ethnicity, each of these variables adds to an understanding of pedestrianism. The 3 variables in combination account for more of the variance in pedestrian behavior than does any one alone or any combination of two of them ($r = 0.58$).

TABLE 1

EXTENT OF WALKING AS TRANSPORTATION

Frequency	Percent of 709 Respondents
Daily	21
2 to 3 times per week	23
Once a week	8
2 to 3 times per month	4
Once a month	3
Rarely	10
Never	31

Additional variables were related to the incidence of pedestrianism as a form of transportation and accounted for additional variance in it. Interestingly, ex-drivers used walking as a means of transportation to a greater extent than did either current drivers or people who had never driven. They seemed to have

special difficulty in obtaining rides with other drivers and with public transit and to suffer severely from the loss of independence entailed (26).

The indexes of socioeconomic status used in the study—level of job held during the major working years, current income, and quality of present housing—were consistent in their relationship to incidence of walking as a means of getting to where one needed to go. All three showed a tendency for the poorest to walk most and for the relatively affluent to walk little or not at all. There was a sex difference. Men were more likely than women to depend on their feet to take them places. One-third of the men, compared with only 13 percent of the women, usually went somewhere on foot daily. There was also a difference related to marital status. Both men and women who were living with their spouses were less likely to walk places than were those who had never married or were widowed, divorced, or separated from the spouse. People who lived alone and those who had no children living in the area were more likely to be walkers than were retired people who lived with someone else and those who had children nearby. People who evaluated their health negatively were less likely to walk places than were those who gave optimistic views of their health.

WHERE THEY WALK

Table 2 gives information on the destinations to which these retired people usually walked. A quarter of the respondents usually went on foot to visit their friends. Smaller numbers paid family visits, whether to their children or to other relatives, by walking. Over half of the respondents had children (52 percent) and other relatives (57 percent) in the same city, but relatively few of these kin-group members lived within walking distance. On the other hand, any neighbor is eligible to become a friend, and Rosow (17) suggests that this conversion becomes more common with advancing age.

Slightly more than a quarter of the group usually walked to fetch their groceries; nearly a quarter usually went to religious services on foot; about 1 person in 5 walked to shop for articles other than food; and 1 person in 6 or 7 usually walked to his physician's office. Smaller numbers ordinarily transported themselves on foot for purposes of recreation and entertainment: to meetings, the library, theaters and concerts, senior centers, and sports events.

Generally, places to which the most people walked involved basic physical subsistence needs (food, other supplies, and medical care) and basic psychological needs (religious services and friendship). Contact with the kin-group was provided through other means of transportation (20), which was fortunate, considering that in most cases the distances involved were too great for walking.

TABLE 2

WALKING TO VARIOUS DESTINATIONS

Destination	Respondents Going to Destination		Percent of Total Respondents Who Walked
	Number	Percent Who Walked	
Grocery	584	31	26
Friends	425	42	25
Religious services	476	34	23
Other shopping	548	23	18
Doctor	645	16	15
Children	389	16	9
Other family	385	16	9
Library	92	67	9
Meetings	203	25	7
Entertainment	149	31	7
Senior center	64	45	4
Other places	66	23	2
Sports	75	8	>1

Length of trip was measured, throughout the study of mobility, in terms of time rather than distance. This was done both because a common denominator was needed for the several transportation modes and because the respondents seemed to prefer and feel more sure about trip time than about distance traversed. The large majority of pedestrian trips took less than 15 minutes each way, and none took more than half an hour. (In the second phase of the study, a finer time scale is being used to determine more precisely the duration of the typical walking trip.) Obviously, then, the place to which these people felt willing, or were able, to walk lay within a rather small area surrounding their homes.

The data given in Table 2 show how walking compared with all other forms of transportation as a means of reaching each destination. In general, walking accounted for much of the mobility to places relatively few of the respondents ever went—senior centers, libraries, meetings, theaters, and other places of entertainment. (Sports events did not follow this pattern, probably because of the location of the stadium and ball parks on the periphery of the urban area, where they could be reached on foot by very few people.) None of these is essential to life maintenance. However, some of them may be requisite to the development of a meaningful and satisfying life style in retirement.

The sparse utilization of services for the elderly is a matter of serious concern (46, 47, 48, 49, 50). These results suggest that, if facilities for recreation, sociability, and community involvement were within convenient walking distance for more retired people, these facilities would be more frequently used and would better serve the purposes for which they are intended in the lives of retired people. Part of the explanation for the low rate of utilization of services for older people may be that most of the people they are designed to serve cannot arrange or afford vehicular transportation for these purposes, and the distances involved are too great for walking.

EVALUATIONS OF PEDESTRIAN TRANSPORTATION

Walking was not highly regarded as a means of going to places among these retired people generally, and those who went about on foot tended to be least sanguine. Table 3 gives evaluations of pedestrian transportation by the entire group and by the 492 people who used walking as transportation. (It is interesting that only 11 nonwalkers felt unable to evaluate walking as a means of getting places.) Two-thirds of those who had at least occasional experience with pedestrian transportation considered it unsatisfactory, while only one-third evaluated it favorably.

PROBLEMS WITH WALKING

The foremost deficiency of walking as a form of transportation was that the places people needed to go were too far from their homes (Table 4). (These are the reactions of walkers. In this phase of the study, people who never went any place on foot were not asked to name good and bad features of pedestrian travel. In San Francisco, the reasons for not going about on foot are being explored with nonwalkers.) This must be a common complaint of city dwellers because of the tendency toward cen-

TABLE 3

EVALUATION OF WALKING AS TRANSPORTATION

Rating	Percent of 709 Respondents	Percent of 492 Walkers
Very good	28	10
Good	14	10
Fairly good	11	13
Neither; cannot say	2	
Rather poor	25	37
Poor	16	23
Very poor	4	7

TABLE 4

ADVANTAGES AND DISADVANTAGES OF WALKING

Item	Percent of 492 Walkers Who Mentioned
Bad things	
Distance	74
Fears	63
Health condition	32
Feet hurt	15
Weather	—
Good things	
Health, exercise	99
Sociability	17
Economy	15
Independence	12
Convenience	7

tralization of services, with the result that most services are located far from residential zones. Except for nearby destinations, these respondents found that walking took too much time and was too tiring.

Next in importance was a list of fears: fear of being alone and helpless in the event of attack; fear of not being able to get across the street before the light changed; fear of being hit by a car; fear of falling, particularly because of the poor condition of sidewalks; and fear of becoming lost. It is a poignant comment on present-day urban society that so many of these people felt "alone" as they walked about in a big city. They not only believed that other people would not risk "becoming involved" in order to help them if they were attacked, but they also felt that no one would even take time to assist them with information should they lose their way. Attack seemed possible because of what they saw on television and read in the newspapers every day, and a few respondents had witnessed or experienced attack. Becoming lost was a possibility, particularly for those with poor vision and for those who had moved or who were trying to get to an unfamiliar destination or to a familiar one when highway construction blocked the old route.

About a third of the respondents mentioned health problems that made it difficult for them to depend on walking as a means of getting to places they needed to go. This is consistent with estimates by the Administration on Aging that more than 30 percent of older people are limited in activity because of chronic illness (29). An additional 15 percent said their feet hurt when they walked any distance. A few mentioned the discomfort of walking in the intense heat of the long Texas summer.

ADVANTAGES OF WALKING

On the other hand, they found some values in going by foot. To the question, "What are the good things about walking?" practically all replied that it is good for one's health or that it provides needed exercise (Table 4). Fewer of them named advantages other than this socially stereotypic one. Foremost among them was sociability. Some people enjoyed walking because it allows the traveler to be among other people. For some lonely old people, simply being in the physical proximity of other people is welcome. Some liked to walk because it is cheap. Economy is understandably important among people living on retirement incomes. Some liked walking because it allowed them to feel independent. They did not have to ask their children or friends to take them places to which they could walk, and they could go whenever they wanted. Even smaller numbers evaluated walking favorably because it is convenient. Unlike the automobile driver, the walker does not have to worry with traffic and parking and, unlike the public transit user, he does not have to wait on street corners, climb up and down difficult stairs, dodge through threatening doors, and suffer the impatience of fellow passengers. A few mentioned the advantage of taking shortcuts, partly for the sheer delight of making better time than an automobile, and partly because of the excuse to walk through stores when no purchase is intended.

CORRELATES OF SATISFACTION-DISSATISFACTION

Frequency

It was reported that attitudes toward walking as a means of transportation tended to be more sanguine among those who never went anywhere on foot than among those who did. In addition, among the walkers, those who walked most tended to be least pleased. The relationship between frequency of walking and evaluation of it was negative and fairly strong. The results of another stepwise multiple-regression analysis emphasize this point. Frequency of walking was the closest correlate of satisfaction with it as a means of transportation. The relationship was, of course, inverse (Table 5). In general, the more a person walked, the less he liked it. Most of the other correlates of satisfaction-dissatisfaction, discussed later, also reflect this trend, though each makes a unique contribution toward accounting for the variance in satisfaction.

Location of Residence

In general, the farther toward the periphery of town a person lived, the less he

walked and the more favorable was his evaluation of walking. The central-city residents who walked most gave it lowest marks.

TABLE 5

CORRELATES OF SATISFACTION WITH PEDESTRIAN TRANSPORTATION

Variables	r	R
Frequency of walking	-0.78[a]	
Location of residence	0.42[a]	
Ethnicity	0.24[a]	
Health	-0.22[a]	
Sex	0.12[a]	
Location + ethnicity + health + sex		0.55[a]
f + location + ethnicity + health + sex		0.91[a]

Note: Number of respondents = 709.

[a]Significant at the 0.01 level of confidence.

Ethnic-Group Differences

Again in the analysis of responses by ethnic groups, the reverse relationship between usage and satisfaction with walking was apparent. Satisfaction was least among the ethnic group who walked most, and satisfaction was highest among the ethnic group least dependent on pedestrian transportation. The Mexican-Americans, who were most dependent on walking, rated it least satisfactory; the Afro-Americans held the intermediate position in regard to both frequency of walking and satisfaction with it.

Specific criticisms varied, also, among ethnic groups. Mexican-Americans were particularly likely to mention the fear of gang attack. Probably these attacks were more common in the neighborhoods in which they lived; at least, this was indicated by the news media. Anglo-Americans were the most likely to complain about fear of falling on account of the poor condition or the absence of sidewalks. Because of the scarcity of ethnic-minority neighborhoods in the new, outer suburbs, this difference might be thought to be due to location of residence rather than to ethnicity of respondents. However, most of the complaints about broken and rough sidewalks came from the Anglo-Americans who lived in the old suburbs and in the zone of urban-suburban interface, which they shared with the ethnic minorities.

Health

Respondents who rated their health negatively—and who walked little—gave walking relatively high marks as a means of transportation compared to those who considered themselves to be in good health and who tended to walk more.

Sex Differences

There was a slight tendency for men—among whom walking was more common—to rate walking more negatively than for women, among whom walking was less common. It is interesting that, despite their more favorable overall rating, women were more likely to give specific criticisms when asked how walking is unsatisfactory. More women mentioned physical problems and especially the fear of falling. This is, of course, understandable in view of the greater problems experienced by women in maintaining equilibrium, in both standing and walking (35), and the greater fragility of their bones (33). Women were also more likely than were men to mention that their feet hurt when they walked. This may reflect a podiatric sex difference stemming from shoe styles during earlier years. Men were less likely than women to mention fear of being attacked while walking, perhaps because they are less vulnerable to attack or perhaps because of the social stereotype in regard to acknowledgment of such fears.

Combination of Correlates of Satisfaction

Consistently, walking looked better as a means of locomotion to those who used it little or not at all than those who often depended on their feet to take them where they needed to go. Frequency of walking as a means of transportation was the best "predictor" of satisfaction with walking. Even without it, the 4 other factors—location in the urban complex, ethnicity of neighborhood, health rating, and sex—accounted for much of the individual difference in evaluations of walking (R = 0.55). Frequency is related to the other 4 variables, so its addition to the multiple-regression equation involves considerable overlap. Nevertheless, frequency makes an important unique contribution. Its inclusion raises the multiple-correlation coefficient significantly, and to an impres-

sive size. The 5 variables in combination account for the major part (83 percent) of the variance among individuals in their evaluations of walking as a mode of transportation (R = 0.91). This very high coefficient will no doubt undergo considerable "shrinkage" in the cross-validation with phase 2 data.

PROJECTIVE DATA

Crossing a Busy Street

In addition to questionnaire and activity-diary data, responses were obtained to pictures of 2 pedestrian situations. One drawing was of a busy street or road (background details were purposely vague) filled with heavy, fast traffic. Verbal description confirmed the situation of "fast traffic." Instructions were to imagine that it was necessary to cross the street in order to get to an important destination. The task was to describe what one would do and how one would feel in such a situation. Many respondents said they would walk to the next crossing, or to the next crossing at which traffic was controlled by a light, and cross. Others answered that they would never cross such a street, no matter how badly they wanted to get to something on the other side. They would simply go back home. This avoidance reaction was more common among people who walked a good deal than among those who did not (chi-square = 12.82, df = 1).

An even more clear-cut difference between walkers and nonwalkers appeared in manifestations of anxiety while dealing with this picture. Less than 25 percent of the people who habitually drove to places exhibited signs of anxiousness while responding to this pedestrian problem, while more than half of the people who depended on walking to get them to places exhibited such signs. The walkers also gave evidence of greater involvement in the situation. A larger number of them used the first person in telling the stories (chi-square = 9.64, df = 1). This projective material provides one more indication that walking may be a strongly negative experience and that it tends to be most threatening to those who are most dependent on it as a means of getting to places.

Automobile Invasion of Pedestrian Territory

The second picture showed a crowded city intersection with complex signal lights and many other directional signs. Two pedestrians, a man and a woman, stood on the curb facing toward the intersection, in which there was a car. The stimulus material and instructions were prepared to elicit reactions to the complex sensory-motor task, under pressure for speed, that the typical urban crossing presents to the pedestrian. However, with almost 100 percent consistency, the respondents focused on a problem that was not intentionally built into the stimulus material and that had not occurred to the investigator. The prepared scoring system was totally irrelevant.

Most respondents were enraged that the car had stopped in the pedestrian-crossing zone so that it blocked direct passage across the intersection between the safety lines and required the pedestrian to detour. Feeling ran high as respondents went into great detail about the inconvenience and danger this causes—and the frequency with which it occurs in their own experiences. They pointed to the increased hazard of falling when it is necessary to maneuver around an obstacle while crossing the street. They stressed that detouring preempts time they badly need. Because signals are paced quickly, if there is any delay or difficulty they feel extremely anxious about getting across before the traffic starts. They "know" the cars will not run over them, but that knowledge does little to allay their anxiety in the situation or even when talking about it. Reactions tended to be quite emotional.

Some respondents, when they had finished responding to the pictured situation, put down the card and went on to speak of other situations in which automobiles preempt pedestrian territory. In addition to the intersection problem, cars parked across sidewalks are a source of extreme irritation. They are not only a nuisance for the person walking but also a hazard to him. One course of action is to give up the trip. Another is to go out into the street, which is "automobile territory" where the pedestrian is in danger from other cars. This requires two negotiations of the curb, which is a serious obstacle for some people. The only other way to get around the barrier is to go up into

the yard, which may provide uneven footing and which some home-owners and their dogs disapprove.

The concept of "territoriality" (51) seems applicable to the behavior of these people in response to the second picture. They emphatically distinguished automobile territory, walker territory, and private property. They felt strongly that vehicles should not invade pedestrian territories; and they, as pedestrians, did not go willingly into automobile territory or onto private property.

SUMMARY AND IMPLICATION

The results of this study suggest that pedestrianism is not at present a highly satisfactory means of transportation for retired people. While practically everyone pronounced walking beneficial to health, very few said that it met well their needs for getting from one place to another. In general, the more the person walked, the more negative was his evaluation of it as a means of transportation. People who went about in vehicles held relatively sanguine views of walking in comparison to people who used their feet to take them places. Among walkers, those most dependent on their feet were most negative about walking.

The major problem is that most places to which people need and want to go are too far. In addition, the walker is exposed to various dangers—falling, being struck by a vehicle, being attacked, and becoming lost. Some retired people have health problems that make it especially difficult or hazardous for them to go about on foot. On the other hand, walking was seen as advantageous in that it puts one among other people. In addition, it allows a retired person to maintain independence in getting about, it is economical, and it is the most convenient way to get to some destinations. These favorable comments suggest that, if retired people could live nearer the places to which they want to go, and if some of the hazards could be eliminated, walking might become an agreeable and salutary means of getting about.

The most common uses of walking were to meet maintenance needs—to get to stores, religious services, and the doctor—and to visit friends. Very few people walked to places of entertainment, recreation, or community service. However, these few constituted a significant proportion of the people who went. Generally, attendance was low at places that might be thought to provide enrichment of life in retirement. People managed, somehow, to get groceries and medical care and to go to church. However, unless facilities such as the library, theater, or senior center were within walking distance, few people went to them. The relatively large number of walkers among those who went to places of entertainment, community participation, and enrichment suggests that these facilities might be more widely used if more people could walk to them.

Retirement life styles in the urban-suburban matrix within which most people will live out their retirement years might be more rewarding and fulfilling if services designed for retired people, and other community resources relevant to their needs and interests, were within walking distance of where retired people live, and if the walkways to them were safe and unobstructed. Proximity of person to services may be implemented by locating retirement housing near service centers and by distributing services on a neighborhood basis. (The absence of differences between residents of age-segregated and age-integrated neighborhoods in this study suggests that living in housing for the elderly is not, per se, beneficial to pedestrianism.) Some of the hazards can be eliminated or reduced by repair of sidewalks and better design of curbs and by coordination of pedestrian and vehicular facilities. The indifference and hostility of other people remain a problem. However, if there were clear pedestrian rights-of-way that gave safe access to a variety of facilities and services that were within a 15-minute walk of home, dependence on walking should become less onerous and anxiety-provoking; the advantages in sociability, economy, independence, and convenience, as well as the health benefits, should become more apparent. Walking might then better serve both maintenance and enrichment needs of retired people and others.

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