WALK TIME FROM VEHICLE TO FINAL DESTINATION

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This report presents data from the linked-trip file of the Tri-State Regional Planning Commission's 1963-1964 home interview survey. It analyzes the elapsed time during a vehicle trip in which a person walks from the final vehicle used to the trip's destination and explores this walk element in both CBD and non-CBD areas. General results show an average time walked from final mode to destination in the survey area of 1.5 min. This varies with the mode last used. Trips from automobile and taxicab average less walk time than those from mass transit. Most trips involve less than a 5-min walk at the destination end. Very few exceed 10 min. Final walks total 40 million min daily within the region out of a total of more than 700 million min of vehicle trip time.

•THE average walk from vehicle to destination increases as development becomes more dense. This is a result of the increase of trips being made by transit. Generally, the average number of minutes walked from transit remains at approximately 4.5 min, CBD or non-CBD. The average number of minutes walked from the automobile increases somewhat, from less than 0.4 min in the less dense counties to more than 1.2 min in CBD areas (Table 1). With more people using transit as the final mode in CBD areas and with the average time walked from the automobile increasing, the average minutes walked increase.

VARIATION IN WALK TIME BY MODE

The number of minutes walked to final destination varies substantially depending on the mode involved (Table 2). The longest elapsed times involve walking to CBD destinations from ferry and railroad. In non-CBD areas, the longest times are from railroad and subway. Commercial bus involves less final walk than subway or railroad, and school and charter bus is less than commercial bus. The shortest walks are generally those of the non-CBD automobile user and the CBD and non-CBD truck and taxicab passenger. The automobile passenger has a shorter walk than the automobile driver in the CBD and about the same walk as the automobile driver in the non-CBD.

The difference between CBD and non-CBD ferry and airplane walk times indicates that, at the CBD end of the trip (ferry) there is extensive walking, whereas at the non-CBD end (both ferry and airplane) most persons transfer to a second mode (automobile, bus, or railroad) so that the remainder who walk directly have relatively short walks. An estimated average of the minutes walked from ferry alone at the non-CBD end of the trip is 4.1 min.

VARIATIONS IN LENGTH OF WALK TIME

The length of walk time from final mode ranges up to more than 1 hour, but the majority of all walk trips involves an average of less than 5 min. Approximately 1 percent (260,000) of all trips involve a walk from final mode of 15 min or longer. An additional 3 percent (846,000) of all trips involve a final walk of 10 to 14 min. Eleven percent (2,815,000 trips) involve 5 to 9 min of walking, and 85 percent (22.3 million trips) involve less than 5 min of walking (Table 3).

*The author was employed by the Tri-State Regional Planning Commission when he wrote this paper.

Nearly 90 percent of all trips with a non-CBD destination involve less than 5 min of walk, whereas for CBD destinations 60 percent of the trips involve less than 5 min. The majority of trips from mass transit involve final walks of 5 min or more, whereas a substantial majority of all nontransit trips involve final walks of less than 5 min (Table 4).

COUNTIES AND CENTRAL BUSINESS DISTRICT

Walk Time by County as Related to Mode and Density

From a comparison of counties totally within the survey area, it is apparent that the CBD/non-CBD relation among density of development, final mode used, and the length of time that people walk from final mode is borne out on a county basis. The more developed (floor space/net developed land area) counties tend to have higher transit use and in turn tend to have the higher walk times. Manhattan stands far above the density of the other counties; however, the average walk is not much more than that in other dense New York counties because the percentage of trips by transit is only a little higher. Richmond, a relatively undeveloped borough of New York City, has an abnormal amount of transit trips and a high walk average. Hudson, Essex, and Union have relatively low walk averages compared with equivalent New York counties because of lower transit use (Table 5).

Walk Time in CBD and Trip Density

A comparison of major ¼-square mile trip destination areas in the region indicates that, in the areas of extreme activity, there is a relatively uniform average number of minutes walked. The only major exception to this rule is ¼ square mile in downtown Newark where the average amount of time walked from automobile is quite high (more than 2 min) and the average amount of time walked from transit is exceptionally low (less than 3 min) (Fig. 1).

The CBD in Newark contains the only ¼ square mile in the region having a high level of trip destinations (50,000+) and yet no major subway network feeding it. Newark's heavy transit work is accomplished by bus. Presumably, if there were an effective subway net feeding the downtown area, there would be an increase in walk time from final mode transit as fewer people walked from bus and more from subway. There would also likely be a decrease in walk time from final mode automobile as the competition for available parking spaces diminished because of the shift from automobile to subway.

The Manhattan CBD reveals several interesting relations. In zones where taxicabs represent a majority of total automobile-related travel, the average number of minutes walked from automobile driver trips is very high (2 to 3 min). Apparently taxicabs are used to minimize walk time and other inconveniences. In intense trip destination areas, the amount of time devoted to walk from automobile for the passenger is approximately 1 min less on the average than for the driver. However, the instance of automobile passenger trips does not increase much above that for other CBD areas.

CBD as a Major Stimulus of Final Walk

Of the total of 40 million min of final walk time generated within the region, 10 million min occur in the three CBDs. In addition, a sizable percentage of the non-CBD's 30 million min remaining is generated by the same CBD travelers on their journeys in the opposite direction. Although many of these opposite-direction trips involve automobiles for the final leg of the trip, many also involve walk from transit. Thus, of the total of 40 million min, a good percentage is generated by travel to and from the CBD.

IMPLICATIONS OF STUDY

Walk from final mode represents approximately 5 percent of total elapsed trip time. It apparently is an element in how people make travel decisions. Most people choose

Table 1. Final walk times, CBD and non-CBD.

Item	Final Walk, Non-CBD	Final Walk, CBD
Average walk from all modes (min)	1.26	3.91
Average walk from automobile mode (min)	0.41	1.17
Average walk from mass transit (min)	4.41	4.66
Percent using transit as final mode	20.5	78.6

Table 2. Average walk times (in minutes) from final mode.

Area	Automobile Driver	Automobile Passenger	Truck/ Taxi	School, Charter Bus	Railroad	Subway	Commuter Bus	Ferry/ Plane	Total
Non-CBD	0.4	0.4	0.5	1.1	7.1	5.6	3.4	2.2	1.3
CBD	1.8	1.3	0.4	1.0	8.5	4.7	3.6	10.2	3.9

Table 3. Walk times from final vehicle.

Minutes Walked	Non-CBD Trip Destination (thousands)	CBD Trip Destination (thousands)	Total (thousands)
0 to 4	20,733.0	1,585.4	22,318.4
5 to 9	1,975.6	839.3	2,814.9
10 to 14	582.3	263.9	846.2
15 to 19	136.4	66.5	202.9
20 to 24	26.0	13.3	39.3
25+	10.9	6.6	17.5
	23,464.2	2,775.0	26,239.2

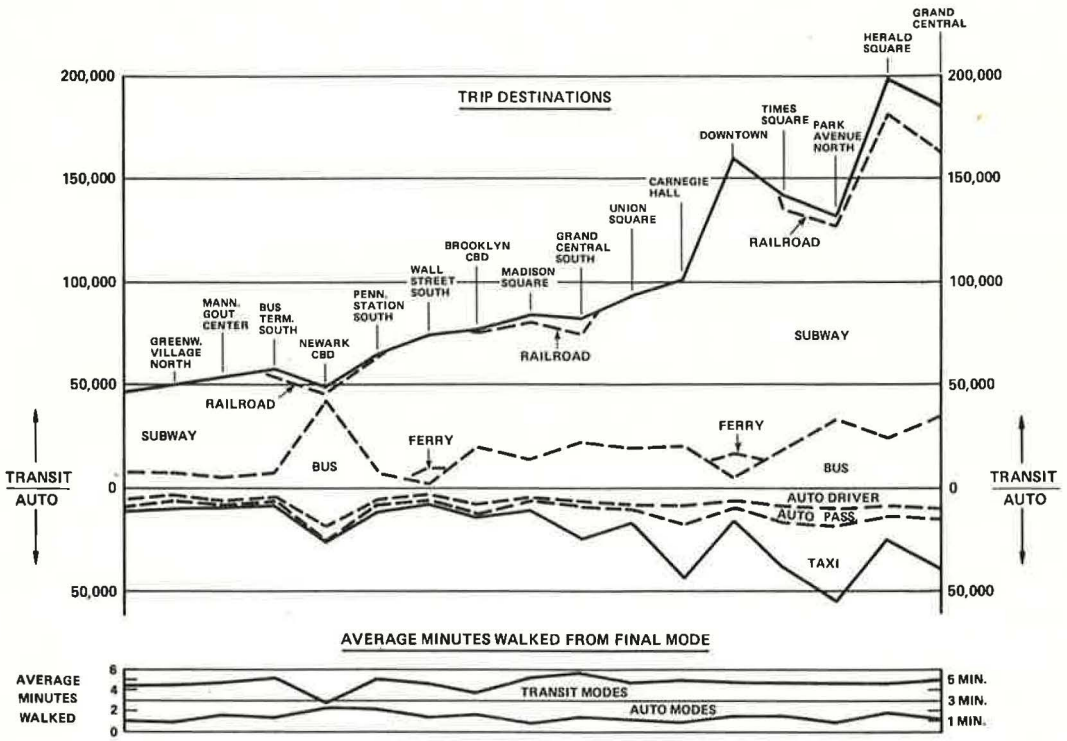
Table 4. Walk times, transit and other modes.

Minutes Walked	Trips From Transit	Trips From Other Modes	Total
0 to 4	3,537.1	18,781.3	22,318.4
5 to 9	2,420.0	394.9	2,814.9
10 to 14	783.7	62.5	846.2
15 to 19	190.9	12.0	202.9
20 to 24	35.5	3.9	39.4
25+	15.1	1.4	16.5
	6,982.3	19,256.0	26,238.3
Total minutes (millions)	31.3	9.0	40.3

Table 5. Density, transit use, and final walk times by counties.

County	Density, Floor Space per Net Developed Land	Mass Transit as Final Mode (percent)	Average Final Walk (min)
Manhattan	4.195	77.1	3.9
Bronx	1.241	56.5	3.3
Kings	1.121	55.0	2.8
Hudson	0.539	25.0	1.4
Queens	0.515	38.1	1.9
Essex	0.288	18.6	1.1
Union	0.173	6.2	0.5
Richmond	0.162	27.4	1.2
Nassau	0.139	3.0	0.4
Bergen	0.137	5.1	0.6
East Connecticut districts	0.106	4.9	0.4
West Connecticut districts	0.092	3.5	0.5

Figure 1. CBD ¼-square mile destination areas.



to walk the minimum possible. More than 85 percent of all trips involve 4 min or less of walk time at the destination end. Use of the automobile permits the minimum walk time, 0.4 min average non-CBD and 1.2 min average CBD. Use of transit demands more walk time, 4.4 min average non-CBD and 4.6 min average CBD.

Because of transit use, density generates walks at both the developed and less developed ends of the trip. However, even these walks have limits. Transit users are willing to walk a substantial amount of time, but still only 15 percent walk 10 min or more.

New areas or buildings or transit routes being laid out without thought to avoiding long walk from final mode of transportation represent an unsatisfactory design. People prefer to be transported rather than walk more than 10 min. If the automobile is any indication, they really do not intend to walk even 5 min. Fewer than 3 percent of total automobile users walk 5 min or more.