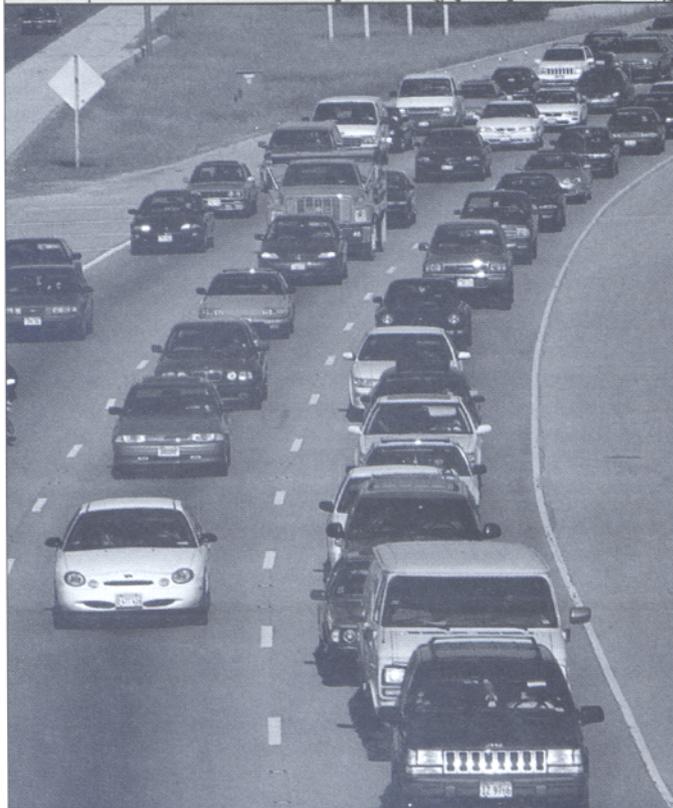
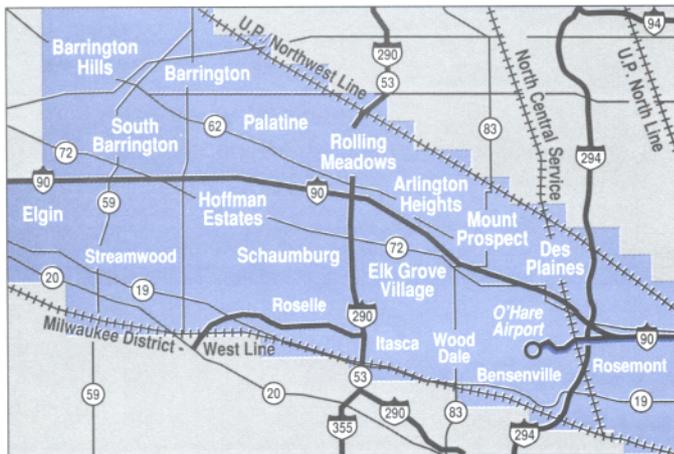


Market Analysis

Northwest Corridor Transit Feasibility Study



Prepared by the
Regional Transportation Authority
System Planning Division



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Executive Summary

The Northwest Corridor Transit Feasibility Study is a comprehensive examination of the transit and transportation needs of the Northwest Corridor located in the six-county Northeastern Illinois region. The corridor is centered on the I-90 Northwest Tollway, and is bounded by Harlem Avenue on the east, the Kane/Cook County line on the west, the Metra Union Pacific-Northwest commuter rail line on the north and the Milwaukee District-West commuter rail line on the south. This study, conducted jointly by the Regional Transportation Authority (RTA), the Illinois State Toll Highway Authority (ISTHA), Elk Grove Village, Hoffman Estates, Rolling Meadows, Rosemont, and Schaumburg will identify and evaluate a range of transportation improvement options, resulting in the recommendation of a small set of feasible, cost-effective transportation improvements.

As the first major document of the Northwest Corridor Transit Feasibility Study, this market analysis evaluates transportation markets and facilities, identifies mobility problems, assesses the extent of these problems, and lays the groundwork for the generation of conceptual alternatives. This analysis takes the basic approach of assessing transportation supply and demand. Transportation problems result from inadequate supply in a given market, geographic area, direction or time of day. These supply shortfalls are symptomized by congestion and longer travel times. The conflict between these symptoms and goals for the corridor's transportation system provide the basis for defining transportation problems.

A major distinguishing characteristic of the northwest corridor is its abundance of jobs. It has as many jobs, totaling some 537,000 in 1995, as the total population of the District of Columbia. Even more significant is that the job total greatly exceeds resident workers in the corridor. In fact some 300,000 workers travel to the corridor to work. Most of the workers coming to the corridor are from Chicago, Suburban Cook County, and DuPage County. The importation of such a large a number of workers increases demand for and use of transportation capacity. This imbalance will increase as employment growth is expected to far outpace population increases through 2020.

The existing arterial and expressway system in the corridor is straining to meet travel demands. Although the roadway capacity in the corridor in many cases is exceeded by demand, the automobile is the primary mode of transportation in the corridor. Transit offers limited alternatives to the automobile with most service geared to peak period work trips. Transit's recent record in the corridor is mixed. It carries more than 50 percent of the work trips from the corridor to the Chicago Central Business District, but 10 percent or less of work trips to the corridor. Total transit ridership has increased west of O'Hare Airport since the mid-1980s. The characteristics of transit users and their reasons for using transit vary. Those traveling to the corridor are generally captive riders using Pace and/or CTA, particularly those headed west of O'Hare Airport. Corridor residents using transit are generally choice riders who use Metra.

Several travel markets play key roles in the corridor's transportation system. Work trips dominate travel both during the morning and evening peaks, with those traveling in the

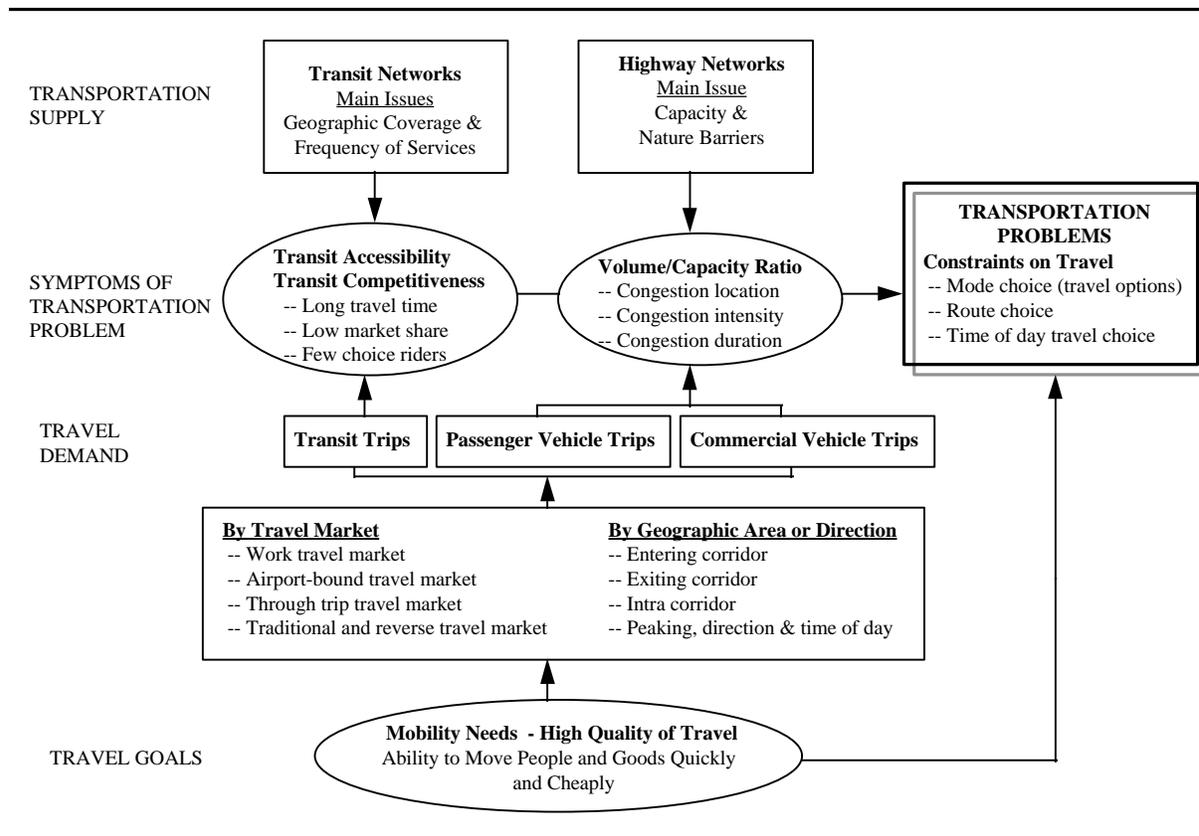
corridor experiencing longer travel times than their regional counterparts. Trips to and from O'Hare International Airport are also an important part of travel in the corridor.

The northwest corridor's transportation system cannot comfortably service current travel demand. That inability is caused to a significant degree by the large number of workers entering and leaving the corridor in automobiles during the morning and afternoon peaks. Consequences of the system's deficiencies include congestion, delay and increased travel times. Meanwhile, transit carries a relatively low market share, particularly in the western two-thirds of the corridor. All indications are that underlying trends will continue, leading to less mobility in the corridor. Transportation deficiencies have constrained travel choices, particularly with regard to mode choice, route choice, and time of day travel choice.

1. Summary of Findings

The purpose of this market analysis is to identify transportation problems in the northwest corridor. Figure 1-1 displays the framework followed to determine transportation problems in the corridor. The analysis takes a basic approach of assessing the relationship between transportation supply and demand. Transportation supply includes the roadway network and capacity together with available transit services. For transit supply, the main issues include geographic coverage and service levels. For highway systems, capacity is the central focus. Transportation demand includes volumes of traffic, transit trips and travel markets, e.g.: work travel, airport-bound travel, and through trip travel. Travel demand is segmented by geographic areas, direction, and time of day. Transportation problems result from mismatches between transportation supply and demand. These mismatches are symptomized by congestion and longer travel times. The conflict between these symptoms and goals for the transportation system in the corridor provide the basis for defining transportation problems.

Figure 1-1: Northwest Corridor Market Analysis Framework



Source: RTA System Planning Division

1.1 Transportation Problems

1.1.1 Constraints on Mode Choice

Travel options within the corridor, particularly west of O'Hare airport, are limited.

Auto travel in most cases is the only attractive choice for persons traveling to the west of O'Hare Airport. Although transit services are provided in the corridor to all identified activity centers, service levels and travel times currently limit the attractiveness of transit as a choice. Few transit services are available outside of the peak morning and evening hours. In addition, existing transit services west of O'Hare Airport must rely on congested roadways as a means of travel.

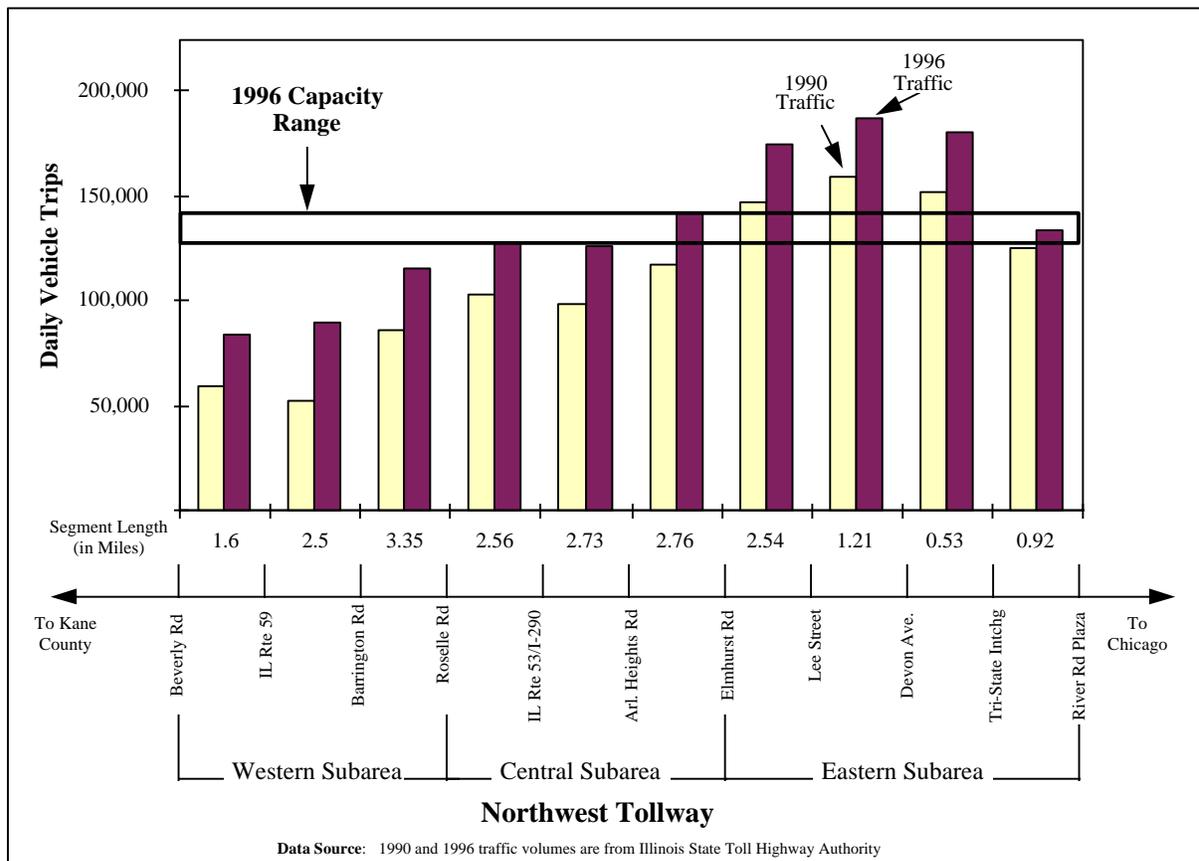
The demographic and tripmaking profiles of transit riders traveling to the corridor indicate the limited attractiveness of transit as a travel option. Transit users traveling west of O'Hare Airport are overwhelmingly captive riders. Despite severe levels of congestion in the corridor and substantial travel times, those with the means are continuing to travel by automobile. The exception is a small number of Metra riders traveling to the corridor. The number of transfers required for travel by transit and consequently high travel times make transit a much less competitive travel option for most travelers. For those who do choose to travel by bus to the corridor, they must also rely on the congested expressway and arterial system. As a result, bus travel has a travel time disadvantage relative to the automobile within the corridor. Together, the requirement for multiple transfers, uncompetitive travel times, and the perception that transit does not offer a reasonable travel choice given that it relies on congested roadways limit its competitiveness west of O'Hare Airport. In contrast, transit is an attractive option for travel from the corridor to the Chicago central business district where it captures more than 50% of work trip travel.

1.1.2 Constraints on Route Choice

Travelers throughout the corridor have little choice but to tolerate congestion and endure poor levels of service. The arterial and expressway system in the study area is strained. Insufficient capacity is more widespread east of Roselle Road on both the expressway and arterial system, but is also found on many of the major arterials to the west of Roselle Road. Despite capacity constraints on the roadway system in the corridor, traffic volumes are increasing.

Figure 1-2 displays daily Northwest Tollway traffic and capacity. The capacity problem is most severe on the tollway in the eastern two-thirds of the corridor. Currently, volumes are near to or above capacity to the east of Roselle Road. East of Elmhurst Road, congestion is particularly acute with daily volumes exceeding capacity by up to 30 percent. As traffic volumes grow, operating conditions on the Northwest Tollway will deteriorate. Severe congestion will likely spread west to Roselle Road.

Figure 1-2: Comparison of Northwest Tollway Daily Capacity and Traffic¹

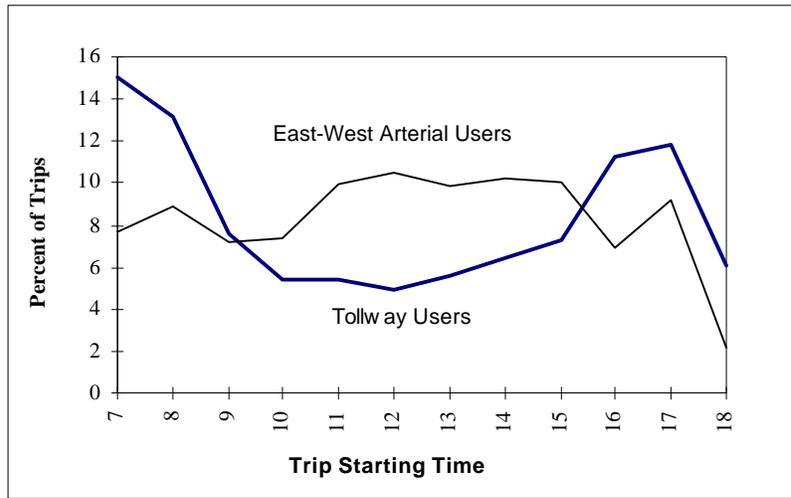


The major east-west arterials also are experiencing capacity problems. The corridor arterials not only carry peak hour commuter trips, but also serve a significant amount of midday and afternoon traffic as shown in Figure 1-3. Although the arterial capacity problem is less intense than that of the Northwest Tollway, with the volume/capacity ratio ranging from 0.9 to 1.1, arterials are carrying high volumes for longer periods during the day. In addition to during peak hours, the arterials also experience midday and afternoon volumes close to capacity.

Limited route options particularly affect travel between the city of Chicago and the northwest corridor. Major barriers, such as O’Hare Airport and Busse Woods forest preserve confine east-west travel options to a small number of routes. The result is a higher demand for travel on those routes and few alternatives to roadways with poor service levels. O’Hare and Busse Woods also limit the coverage of local streets and minor arterials which often provide alternatives to congested roadways, particularly for shorter trips. Again, the result is increased demand on a few major roadways.

¹ The study area is divided into three subareas: 1) East of Elmhurst Road/York Road 2) Elmhurst Road/York Road to Roselle Road and 3) West of Roselle Road. Additional detail provided in Chapter 2.

Figure 1-3: Tollway and Non-Tollway Weekday Users

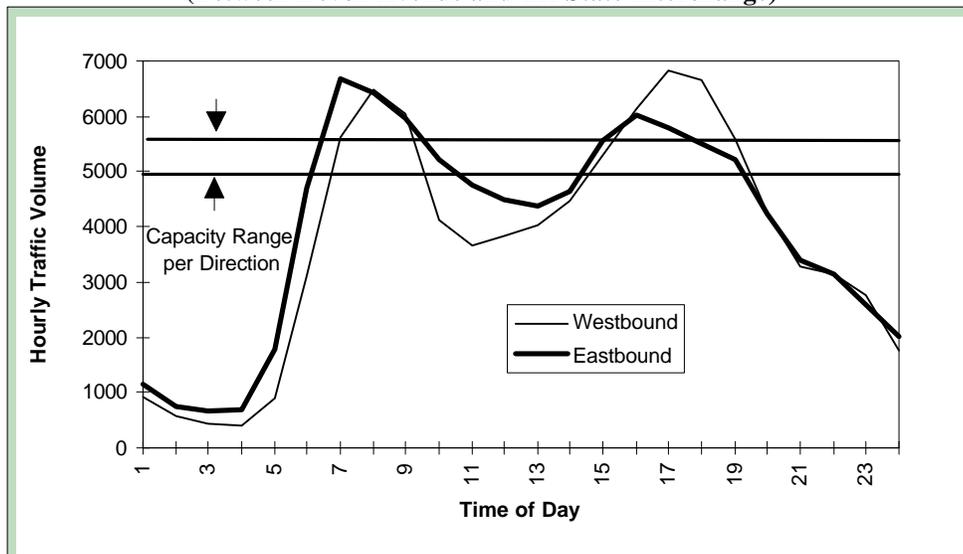


Data Source: Illinois State Toll Highway Authority, 1992 & 1994 Surveys

1.1.3 Constraints on Time of Day of Travel

Insufficient transportation supply is available during the extended peak hours. As indicated in Figure 1-4, traffic on the Northwest Tollway in the eastern subarea exceeds capacity for nine hours during the day; from 6 to 10 a.m. and from 2:30 to 7:30 p.m. As a result, users of the tollway experience significant delay during these periods. The hourly traffic variation also indicates that this capacity constraint is in both directions in the eastern subarea. Furthermore, the overwhelming trip purpose during peak hours is work related.

Figure 1-4: Northwest Tollway Hourly Traffic Volume (Between Devon Avenue and Tri-State Interchange)



Data Source: Illinois State Toll Highway Authority, 1996 Traffic Counts

Note: Capacity ranges correspond to 2,000-2,300 passenger cars per hour per lane (pcphpl) under the ideal operating conditions. Using CATS 18% reduction factors, the range of 1650-1885 pcphpl is derived (see Page 4-3 footnote)

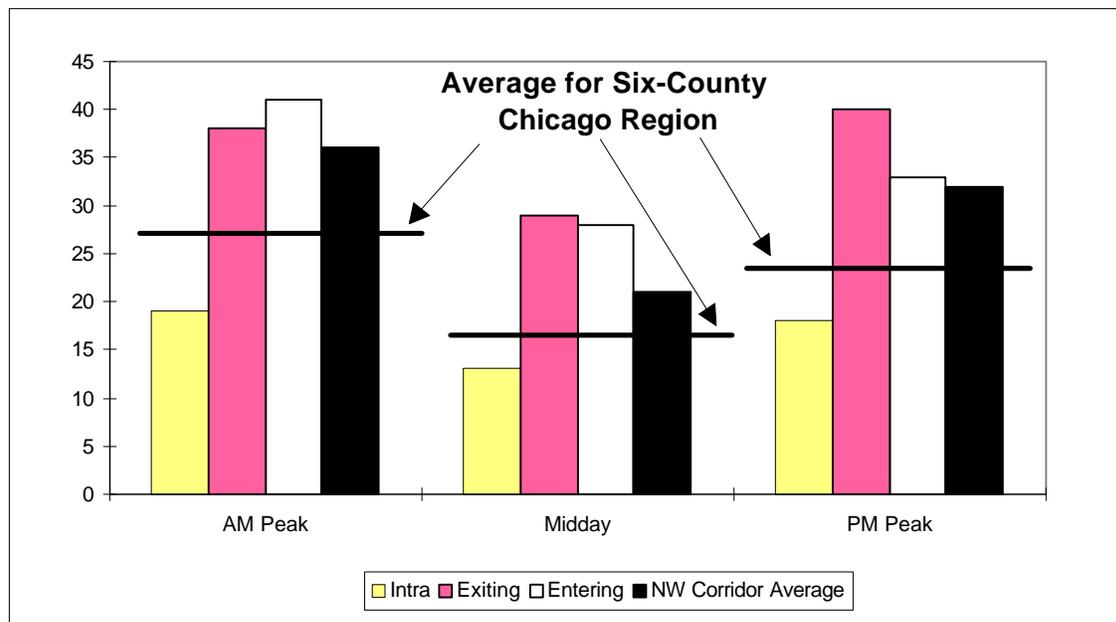
Work trips dominate the traffic volumes during peak hours and commuters generally have limited control over the time of travel. Given the severity and duration of the congestion period, few employees will have the ability to shift travel times to periods outside of these congested times. The peak hours now number four hours in the morning and five hours in the evening. While the corridor arterial system may not experience as much congestion as the tollway, traffic volumes are high for much of the day, as was discussed previously and shown in Figure 1-3.

Airport bound trips also add strain to the corridor roadway system. More than 17 percent of total airport trips originate from the northwest corridor. Analysis of time of day of travel shows much higher traffic in the afternoon, evening, and late night, adding to congestion during the extended evening peak hours.

1.1.4 Limited Mobility in the Corridor

Given the congestion on both the tollway and arterials, travelers have few alternatives to the congested roadway system. Trips to the corridor will continue to experience extended travel times. These times can be attributed to limited mode choices available, the number of corridor workers traveling west of the airport and the continued growth in the number of workers traveling to the corridor. As depicted in Figure 1-5, in 1990 the average travel times for persons traveling to the corridor for employment exceeded the average for the six-county Chicago region by more than 50 percent. Projections by NIPC indicate that employment growth in the corridor will substantially exceed population growth through 2020. As a result,

Figure 1-5: Comparison of Average Travel Time



Data Source: 1990 CATS Household Travel Survey

the number of persons traveling to the corridor for work will continue to increase. However, increasing commute times and limited mode choices may reduce the mobility of those traveling to the corridor.

1.1.5 Summary

In summary, this analysis reveals that corridor transportation demand significantly exceeds supply. This deficiency has led to fewer travel choices, particularly with regard to **mode choice, route choice, and time of day travel choice.** Though the capacity of the expressway and arterial systems are constrained, if not exceeded by demand, the automobile serves as the primary mode of transportation in the corridor. As a result, individual travelers experience constraints on their route and when they travel. Long term prospects indicate that the existence of relatively few transit options will further limit mobility in the corridor. The corridor's transportation problems are defined based on an extensive analysis of its transportation system and travel patterns, as summarized in the next section.

1.2 Corridor Characteristics

1.2.1 Employment Concentration

A major distinguishing characteristic of the northwest corridor is its abundance of jobs. Its current job total is some 537,000. What is significant from a transportation standpoint is that the job total greatly exceeds the resident workers in the corridor. In fact some 300,000 workers travel to the corridor to work. This fact significantly increases demand for and use of transportation capacity. This imbalance will increase. NIPC forecasts corridor employment growth to far outpace population growth over the next 25 years. By 2020, the corridor is expected to add more than 250,000 jobs, but only 30,000 residents.

Employment is concentrated in the eastern two-thirds of the corridor. Population, meanwhile, is more evenly dispersed. Several major activity centers, each with an appreciable number of employees, have a significant effect on the corridor's transportation system:

- I-90/Cumberland Ave;
- Rosemont;
- O'Hare Airport;
- Elk Grove Village/Bensenville Industrial Areas;
- Rolling Meadows/Golf Road;
- Woodfield Regional Center; and
- Prairie Stone.

1.2.2 Auto Travel

Data provided by the Illinois State Toll Highway Authority (ISTHA), the Illinois Department of Transportation (IDOT) and the Chicago Area Transportation Study (CATS) indicates that the existing transportation system in the northwest corridor is failing to meet travel demands, particularly in the central and eastern subareas. The corridor's expressway system and most of its major arterials carry daily traffic volumes that exceed the capacity of the roadways, particularly east of Roselle Road. Despite capacity constraints on the roadway system, traffic volumes continue to increase. The continued growth in volumes is resulting in a deterioration of conditions on both the expressway and arterial systems. Detail on the corridor's expressway and arterial system is contained in Chapter 4.

Auto travel is by far the dominant mode choice in the corridor. According to the 1990 Chicago Area Transportation Study Household Travel Survey (CATS HHTS), on an average weekday, almost 2.3 million auto trips, 15 percent of the total for the six-county region, begin or end within the boundaries of the study area. Auto travel in the corridor peaks during the morning and evening with an evening peak that is longer in duration and more severe than the morning peak. Detail on auto travel in the corridor is contained in Chapter 5.

1.2.3 Transit's Role

Transit service in the corridor is limited, with most service geared to peak period work trips. Development is relatively dispersed which presents a challenge to the provision of transit services. Despite the limited service, boarding data provided by the region's service boards indicate that transit ridership has increased in the central and western subareas since the mid-1980s. Bus routes serving Elk Grove Village and Woodfield/Rolling Meadows have experienced the most substantial increases, in some cases doubling or tripling in ten years. Ridership on Metra's reverse commute service (those headed to the corridor in the morning) has increased from approximately 350 to just under 1,000 since 1985. Ridership at the O'Hare and Rosemont stations has also increased. However, in the same period, ridership has declined in the eastern subarea, particularly on CTA bus routes and at the two easternmost Blue Line stations in the corridor, Harlem and Cumberland. Transit boardings on an average weekday in the corridor total more than 21,000 on CTA rail and more than 23,000 on Metra. Detail on the corridor's transit system is contained in Chapter 7.

As discussed in Chapter 8, the characteristics of transit users vary within the corridor. According to 1996 Metra survey data, among those living in the corridor, persons who use Metra are generally choice riders. These transit users typically have high incomes and autos available for their trips. Most Metra users are traveling to work in downtown Chicago and walk to their final destination. People riding Metra outbound to the corridor have a demographic profile similar to CBD-bound Metra commuters.

By contrast, CTA survey data from 1994 shows that CTA rail users with destinations in the corridor by and large have lower incomes and lower rates of auto ownership than do their Metra counterparts. This difference is accentuated for those persons using both CTA rail and

Pace to reach their final destinations in the central and western subareas. These transit users are generally captive riders who often transfer two or more times to reach their destinations in the corridor. They are traveling almost exclusively for work purposes.

As discussed in Chapter 9, journey-to-work data from the 1990 Census shows that transit carries only a small portion of the corridor's work trips. Metra carries most of the transit users living in the corridor, while CTA and Pace services carry most transit users headed to the corridor. The eastern subarea has the highest transit share within the corridor at 10 percent of work trips, both entering and leaving the subarea. Within the central subarea, the transit share is 6 percent of those traveling from the subarea and just 2 percent of those traveling to the subarea. Within the western subarea, transit carries just 4 percent among residents of the subarea and 1 percent of those traveling to the subarea.

Despite a relatively low overall market share in the corridor, transit carries a high proportion of work trips to and from select locations. Transit consistently carries more than 50 percent of work trips originating in each of the corridor's subareas headed to the Chicago CBD. Transit also carries a relatively high proportion of work trips made by Chicago residents to corridor job sites. This is particularly true among those persons headed to the eastern subarea, where the transit share is almost one-quarter of work trips coming from Chicago. By contrast, the transit share is low for work trips made entirely within the corridor where it captures just 1 to 3 percent of the total.

1.2.4 Work Trips

Work trips are predominant both during the morning and evening peaks, with those traveling in the corridor experiencing longer travel times than their regional counterparts. Traffic congestion, as well as longer distances, contribute to the corridor's relatively longer travel times. The portion of corridor work related travel significantly exceeds its regional equivalent. During the morning peak, almost 90 percent of corridor trips begin or end at a workplace, compared to 77 percent regionwide. Work related trips account for some 68 percent of the corridor's afternoon peak, compared to 52 percent for the region. The corridor's all-day work related percentage is 60, whereas the region's is only 44. As discussed in Chapter 6, Illinois State Toll Highway Authority (ISTHA) survey data collected in 1992 and 1994 also indicates that on some facilities, including the Northwest Tollway and selected arterials, more than 80 percent of trips conducted during the day are for work purposes. Travel into the corridor occurs more during the morning peak while travel out of the corridor occurs more during the evening peak. All of these data sources consistently indicate the significance of travel related to work in the corridor.

Work trip data from the 1990 Census indicates that travel patterns and mode choice for work trips vary substantially within the corridor by subarea. The corridor has strong connections to both the city of Chicago and Suburban Cook County which together account for almost 40% of its workers. These locations also serve as an employment destination for almost 40% of resident workers in the corridor. However, this connection to Chicago and Suburban Cook

declines in significance from east to west while the connection to DuPage County and the region's collar counties increases. Detail on work trip travel is contained in Chapter 9.

1.2.5 O'Hare

Trips to and from O'Hare International Airport are an important part of travel in the corridor. Based on data from a 1989 Landrum and Brown report and the O'Hare Intermodal Station Study Final Feasibility by CATS, of the approximately 120,000 estimated trips entering or exiting O'Hare Airport on a daily basis, 17 percent, or 20,400, have an origin or destination in the northwest corridor. Apart from airport employees, of whom 18 percent use CTA rail to access O'Hare, the auto accounts for the vast majority of such trips. Travel to and from O'Hare peaks in the evening. Detail on O'Hare Airport is contained in Chapter 9.

1.2.6 Through Trips

Through trips and commercial vehicles account for a small proportion of total traffic in the corridor. Estimates made using the 1990 CATS HHTS show that through trips account for 2 to 5 percent of total trips in the corridor, with the higher proportion in the western subarea. Data on commercial traffic gathered from ISTHA, the Illinois Department of Transportation and the Chicago Area Transportation Study show that commercial traffic accounts for 3 to 15 percent of total traffic, with the higher proportion in the western subarea. Detail on through trips and commercial traffic is contained in Chapter 9.

1.2.7 Summary

Overall, the northwest corridor's transportation system cannot service current travel demand. The system's inability to meet demand is largely due to the large number of workers entering and leaving the corridor in automobiles during morning and afternoon peaks. The results of the system's deficiencies are congestion, delay and increased travel times and all of their attendant externalities. Despite the high levels of congestion, transit use throughout the corridor is low and in the central and western subareas is negligible. What is worse, all indications are that the underlying conditions will continue on their present courses, leading to greater shortfalls. Transportation deficiencies have constrained travel choices in the corridor.