

Chapter 5:

Future Transit Needs and Demand for Service

Transit Need versus Transit Demand

Generally, "**transit need**" is defined as the identification of various market segments that are transit dependent and are in need of public transit services, e.g. senior citizens, disabled persons, low income persons, those without access to a vehicle, and youth. "**Transit demand**" is the number of trips that people make.

Gauging the need for transit is different from estimating demand for transit services. Need is always greater than demand and it exists whether or not public transit is available. This planning effort included quantifying the need for mobility to provide a sense for the overall "gap" across Greater Minnesota. The analysis used household trip rates for varying levels of personal vehicle ownership along with projections of future vehicle ownership to establish the broad level of need.

Demand reflects the number of trips actually made given the level of transit service provided in an area and fare cost to the rider. A constrained estimate of future demand for Greater Minnesota transit services was developed for this plan using per capita usage rates from Greater Minnesota peer systems. This method estimates demand based on transit service performance targets, utilizing the 80th percentile of the passengers per capita rate as a reasonable performance target.

Establishing the Broad Level of Service Need

The identification of local service needs is the ongoing responsibility of the individual transit systems across the state. The regional workshops along with the survey and interview outreach efforts conducted as part of this plan confirmed a wide range of service needs exist at the local level. These include expanding the span of daily hours of service, extending the geographic reach of service, broadening coordination activities within the family of service providers, and finding better ways of addressing commuter needs. The major urban areas, through their detailed service planning efforts, also continue to identify additional fixed-route and paratransit service expansion needs including more frequent service, greater overall capacity, expanding beyond the current borders of the service areas, and better handling of commuter needs.

One approach to quantifying need is the Mobility Gap, in which trip rates observed for households owning one or more personal vehicles are compared to trip rates observed for households having similar characteristics but owning no personal vehicles. The basis of this approach is that households with a personal automobile have few limitations and therefore, make all the trips they "need". The difference in trip rates—the "gap"—is then multiplied by the number of households in an area, yielding an estimate of the number of additional trips that might be taken if all households had equal access to a personal vehicle or other high-quality transportation service. However, one could argue that people use cars for more trips than they really "need" and that all personal vehicles do not guarantee high quality transportation service.

The Greater Minnesota mobility gap estimate used data from the 2001 National Household Transportation Survey - West North Central Division, which includes North Dakota, South Dakota, Nebraska, Kansas, Missouri, Iowa, and Minnesota. Table 5.1 illustrates the daily household trip rate by vehicle ownership. Households with one vehicle make about 5.4 trips per day and households with no

vehicles make about 2.3 trips per day. The difference between these rates, approximately three trips per day, represents the potential mobility gap for households owning no vehicle.

Table 5.1 Daily Household Trip Rate vs. Vehicle Ownership

Vehicles in Household	Urban	Rural	Total
0	2.4	2.3	2.3
1	5.5	5.1	5.4
2	11.6	10.3	11.1
Overall	9.5	9.3	9.5

Source: 2001 National Household Transportation Survey

As illustrated in the calculation below, the Mobility Gap was calculated by multiplying the trip rate difference for households without vehicles available compared to households with one vehicle by the number of households without vehicles in each county:

Trip Rate Difference (between zero- and one- vehicle households) (Table 5.1)	x	Number of households with no vehicle available	x	Number of Days (365)	=	Mobility Gap (Number of Annual Trips) (Table 5.2)
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The Mobility Gap approach yields high estimates of travel need in Greater Minnesota, summarized in Table 5.2. While this method may provide a measure of the relative mobility limitations experienced by households that lack access to a personal vehicle, it is important to acknowledge that these estimates far exceed actual demand observed by local transit systems.

Table 5.2 Mobility Gap Summary for Greater Minnesota

	2010	2020	2030
Mobility Gap (Annual Trips)	66.4 Million	72.2 Million	76.4 Million

Estimating Demand for Public Transit

The method of forecasting demand for transit service that best represents the characteristics of the population and existing transportation programs makes use of data from in-state peers. This method builds on per capita demand rates observed for Greater Minnesota peer group transit providers. Transit providers were assigned to peer groups based on service area and type of service provided. For this analysis, the systems were divided into six peer groups: urban fixed-route, ADA paratransit, county, multi-county, small urban (population over 10,000), and small urban (population under 10,000).

The passengers per capita demand rate was identified for each peer group based on 2007 data from each service provider. As illustrated in Figure 5.1 for county systems, the demand rate was defined as the 80th percentile value for each peer group. For clarification, the 50th percentile demand rate represents the value at which half the service category’s demand rate is above and below that level. At the 80th percentile, eighty percent of the service category’s demand rate is below the value.

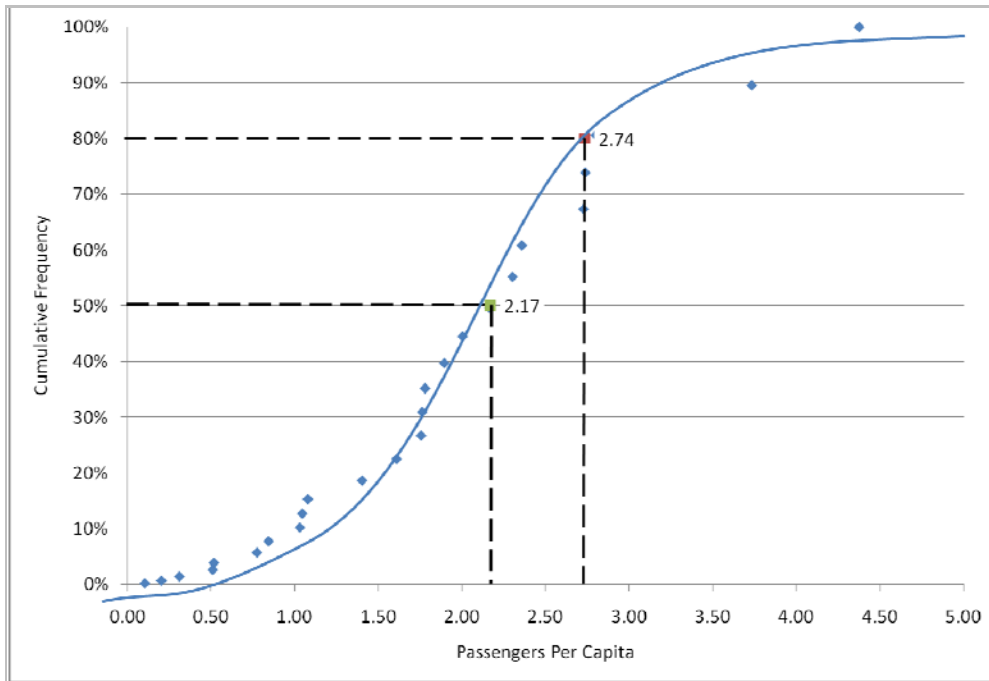


Figure 5.1 Passengers per Capita for County Systems, 2007

The 80th percentile value was selected as the base rate from which demand will be estimated because it represents the transition point from moderate performance outcomes, where a good number of systems can be expected to perform, to upper levels of performance where only a few systems can consistently perform. Table 5.3 shows the 2007 80th percentile passengers per capita rate for all of the in-state peer groups. Demand for the systems already performing above the 80th percentile rate was estimated using their current rates. Demand is typically related to population density and land-use patterns.

The 80th percentile passengers per capita rate is different than the 80% transit service goal as contained in Minnesota Statute 174.24, Subd. 1a. Transit service needs implementation plan. It is important to acknowledge that most transit providers will need to modify and expand services to reach the 80th percentile demand rate. Reaching optimum demand rates will take time and resources, but the growth is considered reasonable. This method represents the level of passenger demand that would result should all systems eventually reach the 80th percentile per capita rate across the state.

Table 5.3 80th Percentile Passengers Per Capita Rates

Peer Group	80th Percentile Passengers Per Capita (2007)
Urban Fixed-Route	23.3
ADA Paratransit	1.0
County	2.7
Multi-County	2.2
Small Urban (Population over 10,000)	5.4
Small Urban (Population under 10,000)	14.5

The passengers per capita rates for demand in each peer group were applied to population projections for the existing service areas. The results were then grouped by urban, small urban and rural areas resulting in an overall estimate for the state for those areas currently operating public transit services. Estimates were also produced for underserved areas of the state as well as unserved areas. Underserved areas are counties within which a portion of the population is served by a small urban transit system but county-wide transit service is not available to all residents. Unserved areas are those counties without any public transit service available.

80th percentile passengers per capita rate by peer group (Table 5.3)	x	Area Population	=	Annual Demand by Number of Trips (Table 5.4)
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Table 5.4 summarizes the demand estimates. Demand in urban areas is expected to increase by 30 percent between 2010 and 2030 representing 62 percent of the statewide total by 2030. This indicates that over the next 20 years the largest increases in Greater Minnesota transit demand are expected to occur in the urban areas. Demand in small urban and rural areas is expected to grow by 18 percent over the same period. By 2030, it is also estimated that areas of the state that are currently under- or unserved by transit service will generate demand for over one million transit trips annually.

Table 5.4 Summary of Estimated Demand

Service Grouping	Annual Trips (millions)			
	Actual 2008	2010	2020	2030
Urban Areas	7.61	8.41	9.81	10.97
Small Urban/Rural Areas	3.58	4.78	5.27	5.64
Underserved/Unserved Areas	N/A	1.02	1.11	1.16
Total	11.19	14.21	16.18	17.77

Figure 5.2 illustrates the actual passenger ridership for years 2000 and 2005 along with future year estimates for passenger demand. Beginning in 2010, future year estimates incorporate areas that are unserved or underserved by transit systems. Actual ridership was over 11 million in 2008. By 2030, demand for transit in Greater Minnesota is anticipated to increase by 25 percent over 2010 levels and climb to nearly 18 million trips per year.

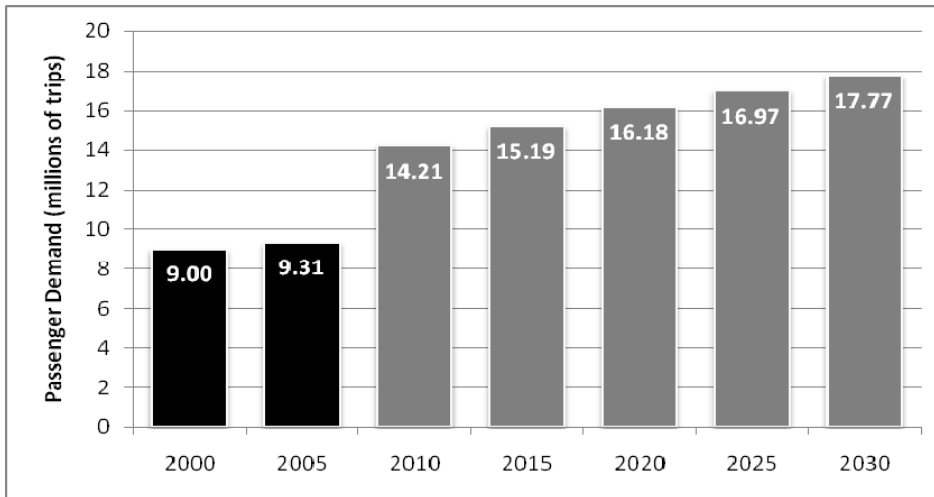


Figure 5.2 Total Actual/Estimated Greater Minnesota Transit Passenger Demand, 2000–2030

Service Hours to Meet Future Demand Estimates

Service hours are used as a budgeting tool and in estimating the future costs to operate transit services. Estimates of service hours were developed using an approach similar to that used to develop estimates of future demand. Passengers per revenue hour data reported for each transit provider was plotted to identify the productivity rate for each service category. Table 5.5 shows the rates used to prepare the estimate of service hours. A recent significant ridership gain by transit systems in the absence of additional service hours indicates that systems are able to operate at a higher productivity rate. There is some question as to the sustainability of this gain in ridership due to moderating factors such as fuel costs and an economic recovery.

Table 5.5 Productivity Rate for Passengers per Revenue Hour

Peer Group	Passengers Per Revenue Hour
Urban Fixed-Route	
Duluth	21.9
Mankato	15.1
Moorhead	18.0
Rochester	19.0
St. Cloud	25.8
ADA Paratransit	
Duluth	1.5
Mankato	2.3
Moorhead	2.2
Rochester	3.3
St. Cloud	3.6
County	2.74
Multi-County	2.23
Small Urban (Population over 10,000)	5.38
Small Urban (Population under 10,000)	14.47

The productivity rates represent 2007 conditions for the transit systems. For the purposes of projecting service needs, it was assumed that the urban systems would maintain their current levels of productivity. For other systems, it was assumed that each should provide the 80th percentile productivity rate for its corresponding service category. This 80th percentile productivity rate is different than the 80% transit service goal as described in Minnesota Statute 174.24, Subd. 1a. Transit service needs implementation plan.

Annual Passenger Trips (by Peer Group)	=	Annual Service Hours
Hourly Productivity (by Peer Group)		(Table 5.6)

Table 5.6 presents the estimated annual service hour targets in Greater Minnesota to meet 80% of projected future demand. All service hour targets represent 80% of estimated future demand which correspond to the transit service goal contained within Minnesota Statute 174.24, Subd. 1a. By 2030, an estimated 1.7 million annual service hours will be required to meet demand targets for transit services in Greater Minnesota. Over one third of this requirement will go toward meeting demand targets in Greater Minnesota urban areas. Nearly 200,000 of these hours will be needed in areas that are currently without transit service or underserved by a nearby system.

Table 5.6 Estimate of Service Hours Required to Meet Estimated 80% Demand Target

Service Classification	Annual Service Hours (thousands)			
	2008 (Actual)	2010 (Target)	2020 (Target)	2030 (Target)
Urban Areas	389	471	545	608
Small Urban/Rural Areas	626	782	867	930
Underserved Areas/Unserved Areas	N/A	167	181	190
TOTAL	1,013	1,420	1,593	1,728

Figure 5.3 shows the bus service hour estimates along with actual and projected levels of service assuming funding remains at current levels. Funding is the major determining factor for what level of service is able to be put in place. For example, the number of service hours provided didn't go up when fuel prices rose despite increased ridership. In recent years, the actual level of service provided has not kept pace with demand due to funding limitations. The gap between fully meeting demand targets and service actually provided is anticipated to widen in future years unless additional resources are available for investing in Greater Minnesota transit services.

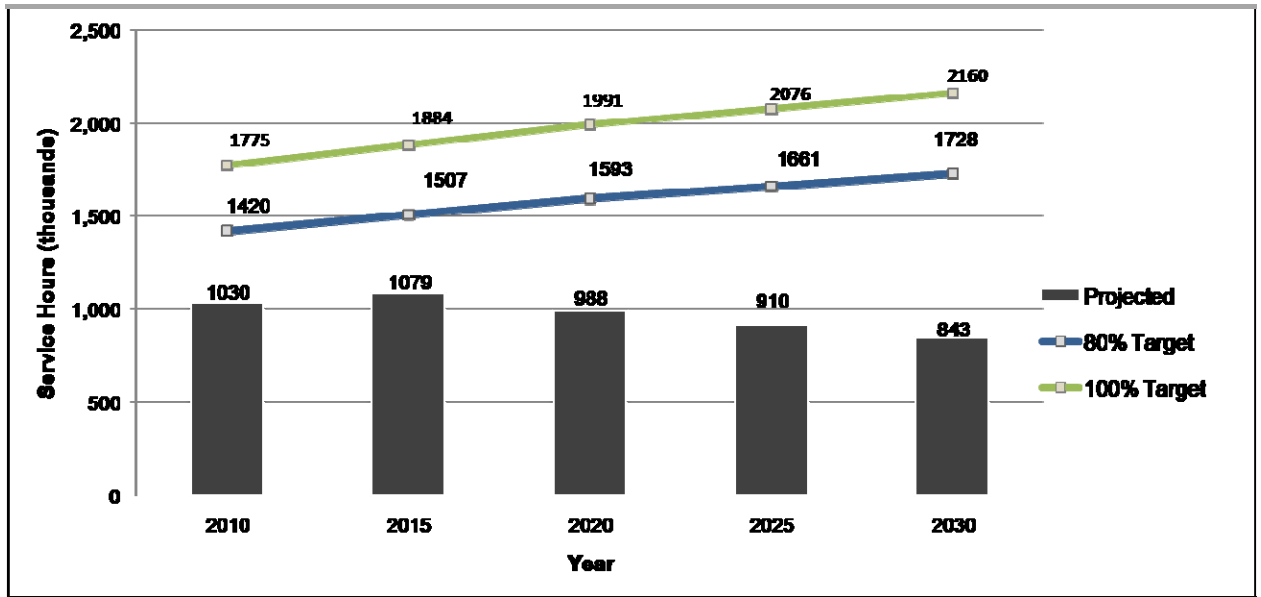


Figure 5.3 Greater Minnesota Transit Targeted and Projected Bus Service Hours, 2010–2030