

Travel Demand

Much of the mobility-related information necessary to support the Mason Street decision-making process comes from the travel demand model developed specifically for this project. Travel demand models have been in use since the 1950s and are required for transportation planning activities in metropolitan areas in order for projects to be eligible for federal funding. They utilize a market-based approach by considering both the transportation supply and travel demand for producing mobility characteristics such as roadway traffic volumes and transit ridership.

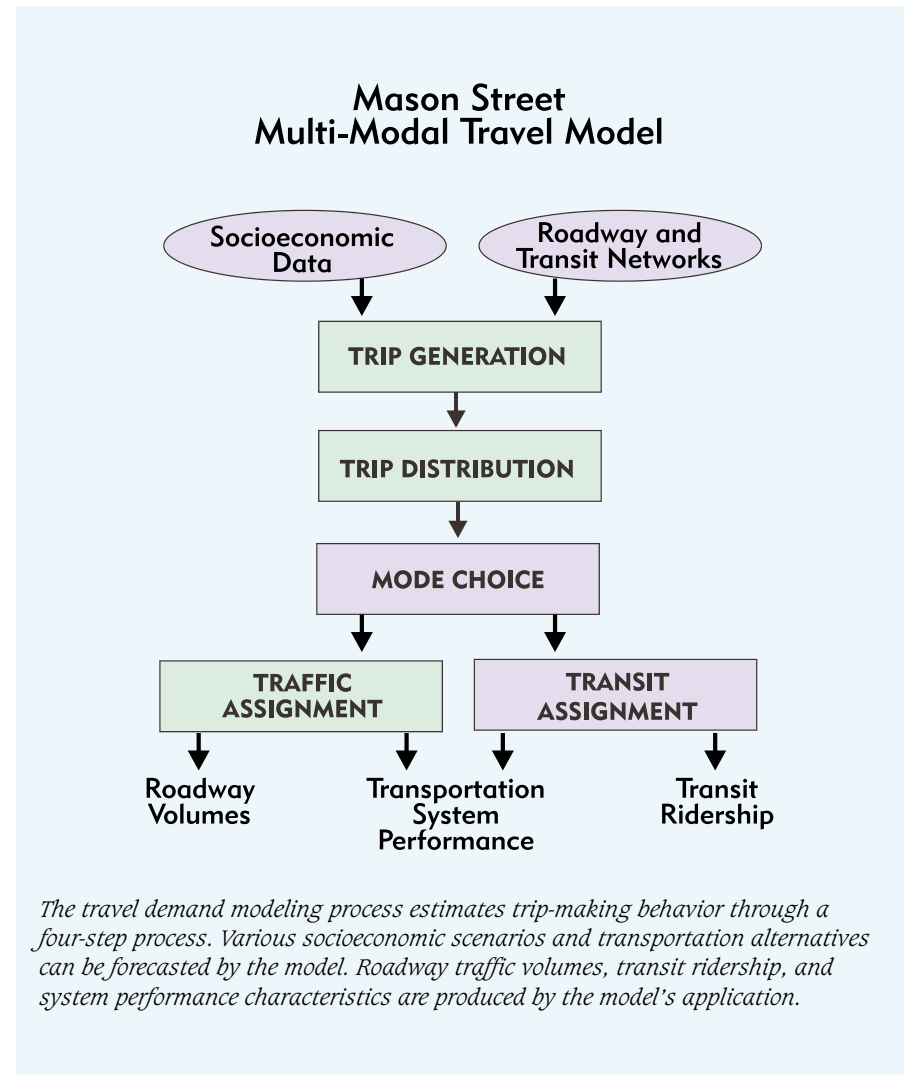
Before a model can be used for predicting future volumes and ridership, it must first be calibrated to ensure existing conditions can be properly produced. Current travel behavior information is obtained from travel surveys and other data collection techniques and incorporated into the model through mathematical representations. Once the

model is satisfactorily calibrated, it can be applied to provide mobility results on various land use/socioeconomic and transportation alternatives.

Travel Behavior Data

In the fall of 1999, the City of Fort Collins conducted three travel surveys designed to provide specific travel behavior information for the Mason Street and College Avenue corridors:

- The **Vehicle Intercept Survey** was conducted on the streets in and around the Mason corridor using a postcard-mailback technique to determine origin-destination patterns, trip purposes, vehicle occupancies, trip occurrence times, and other pertinent information from vehicle users in the corridor.
- Surveyors distributed questionnaires to bus patrons during the **Transfort Onboard Transit Survey** to obtain travel behavior information from transit users. A count of the daily bus system ridership was recorded as part of this survey.



- For the Colorado State University Special Generator Study, trips to and from campus were recorded and employees, students, and visitors were randomly surveyed so that the travel activity to and from the campus could be accurately represented in the travel model.

In each of these surveys, socioeconomic data was collected from each respondent so that relationships can be developed for determining who, why, and how much people travel. Information from

individual trips provides insight into when, where, and how trips are made.

In addition to the three Mason Street surveys, travel behavior data was also acquired from a regional household survey conducted by the North Front Range Transportation and Air Quality Planning Council. In the 1998 Mobility Report Card Household Survey, approximately 1,100 households in the region recorded detailed information for each trip taken

by each household member over the course of a day. Since much of the trip-making characteristics embedded in the travel model are household-based, the household survey yielded important information for the travel model development effort.

Travel Model Development

The Mason Street Multi-Modal Travel Model was built from the results of the aforementioned data collection activities. Travel behavior data from other regions of similar size and character augmented the effort. The model covers the geographic region of the North Front Range and incorporates the travel effects of trips in, through, and across the region. Bike, walk, transit, and vehicle trips are all included. The model can be applied to produce roadway traffic volumes, transit ridership, and a multitude of travel-related characteristics such as vehicle miles of travel, congestion delay, air quality results, and many others. It can test variations in future land

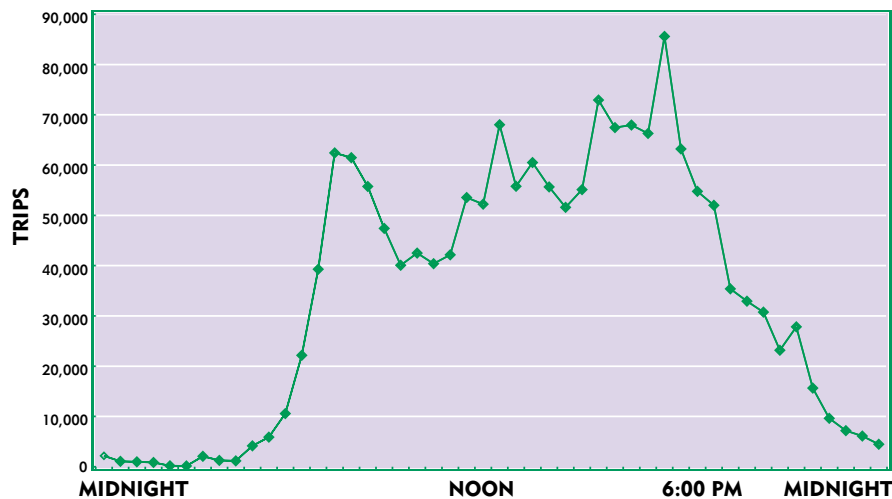
use/socioeconomic assumptions and transportation alternatives.

Travel behavior characteristics of the North Front Range region, and specifically the Mason Street Transportation Corridor, have been embedded in the model. Using a market-based approach, the model relies on socioeconomic data (e.g., households, employment) to determine travel demand and system attributes (e.g., roadway capacity, speeds, distances, transit routes, etc.) to represent the transportation supply. Through a four-step process described below, the model provides the mobility-related information necessary to support the decision-making process for the Mason Street project.

The model's four-step process includes the following components:

- **Trip Generation** determines the location, magnitude, and purpose of trip-making based on land use and socioeconomic input data.
- **Trip Distribution** identifies origin and destination travel patterns by calculating trip lengths and travel

Daily Trip Making



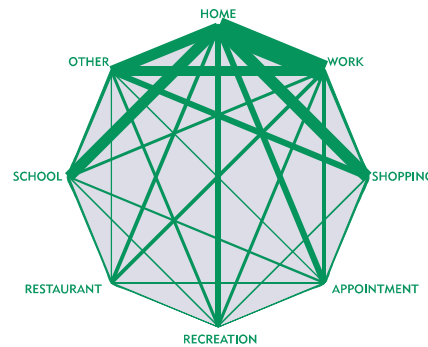
Prominent morning and evening peak periods combined with a growing midday peak in the Mason Street Transportation Corridor are indicative of congestion effects and the need for transportation investments.

times from transportation system attributes.

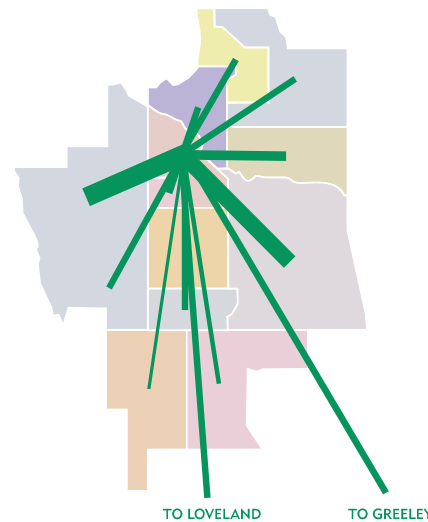
- In **Mode Choice**, trips are sorted into the various bike, walk, transit, and vehicle modes.
- Through **Trip Assignment**, routing paths for vehicle and transit trips are determined for several time periods throughout the day.

Roadway traffic volumes and transit ridership are among the mobility results produced by the vehicle and transit trip assignment routines. Several validation tests were performed for each phase to ensure that the model represents base year 1998 conditions to the greatest extent possible. The most basic, and perhaps most important, validation tests compare the base year traffic volumes and transit ridership predicted by the model to actual traffic and transit counts. In this regard and based on several other checks, the model performs well and is suitable for use in forecasting future year 2020 travel demand for transportation and land use alternatives.

Population and employment increases are essential to the economic prosperity



The Mason Street Transportation Corridor supports a variety of activities as indicated by the types of trips that occur within it. Many of these trips have high propensities for transit usage.



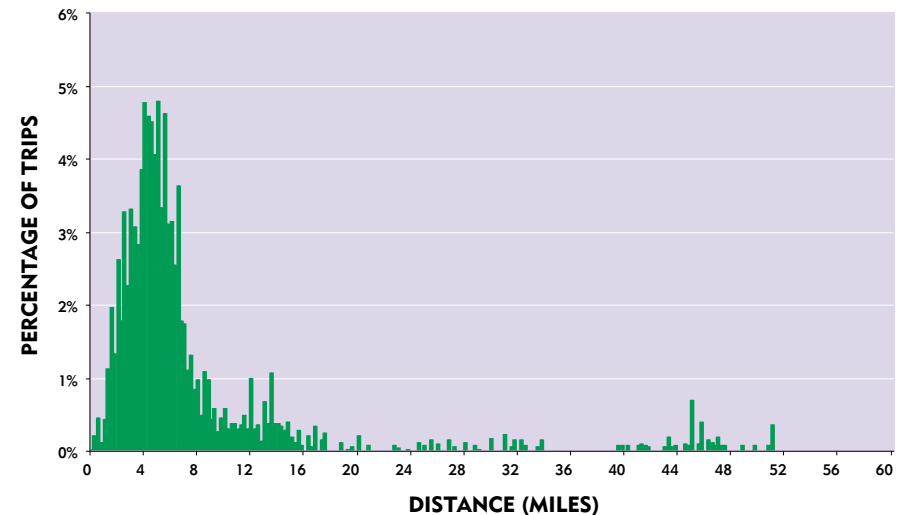
A significant number of trips to and from Old Town occur within the Mason Street Transportation Corridor and could benefit from additional transportation alternatives to the congested College Avenue.

of the city because they provide the basis for activities upon which economic growth occurs. The transportation system provides the avenues for accommodation of growth. The Mason Street Transportation Corridor, including College Avenue, is one of the fastest growing and most congested areas in the North Front Range region. In order to ensure the future economic viability of the Mason Street Transportation Corridor additional transportation improve-

ments will be necessary. Otherwise, traffic congestion will strangle the corridor and new jobs could move elsewhere to competing locations.

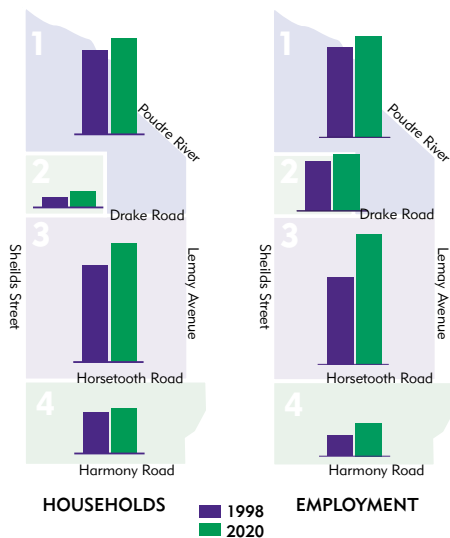
Recent trends suggest that the Mason Street Transportation Corridor's strong socioeconomic growth will continue as long as transportation infrastructure improvements keep pace. The Mason corridor has seen tremendous growth and some areas are fully developed.

Commuter (Home to Work) Trips in Mason Corridor

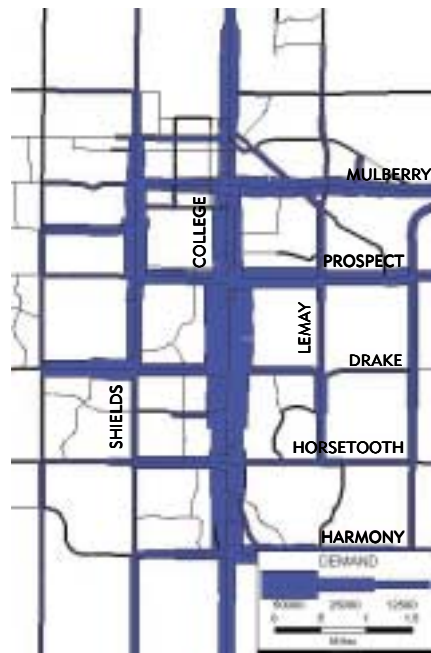


Half of the trips in the Mason Street Transportation Corridor are less than 6 miles in length and within a reasonable range for bicyclists.

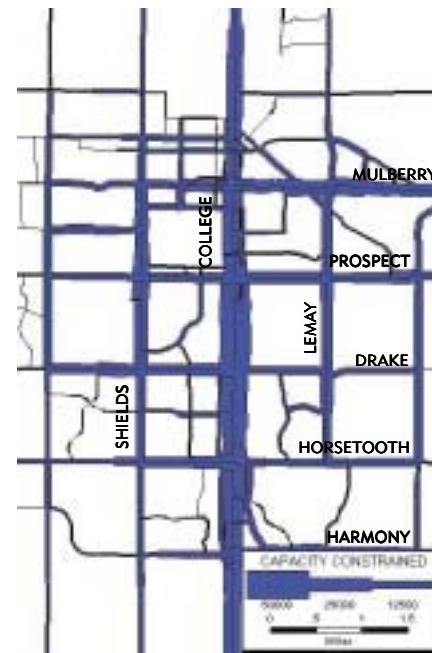
However, many parcels in the corridor show promise for new developments, redevelopment to higher economic uses, or increased density developments. This is especially true for the commercial and retail sectors. Opportunities still exist for higher density dwelling units and, to a lesser extent, single-family dwellings. City Plan estimates call for about one percent per year growth in socioeconomic activity through the year 2020, which amounts to 19 and 30 percent overall increases in households and employment between 1998 and 2020.



Travel with No Capacity Constraints



Travel Constrained by Capacity



Difference

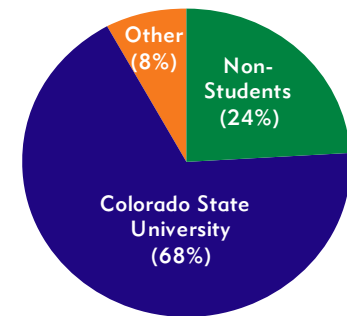


The network plot on the left shows the current desired demand for travel on roadways in the Mason Street Transportation Corridor regardless of capacity limitations. Travel demand shown on the center plot is the real-world scenario with travel constrained by available capacity in the corridor. The difference, those travelers that divert their trips to avoid the congested College Avenue, is displayed on the right-most plot. The green indicates trips that are diverted to other facilities because of limited capacity. The red indicates facilities which attract traffic from congested streets. This situation will continue to be exacerbated as growth in the corridor continues to increase.

Population growth will continue to fuel the need for transportation infrastructure improvements in the Mason Street Transportation Corridor.

Recent and future employment growth trends establish the Mason Street Transportation Corridor as one of the major economic engines of the North Front Range.

Transfort Bus Rider Profile



Colorado State University (CSU) is located at the heart of the Mason Street Transportation Corridor. As expected, given Transfort's current configuration that targets the CSU market, 68 percent of bus system riders are students.