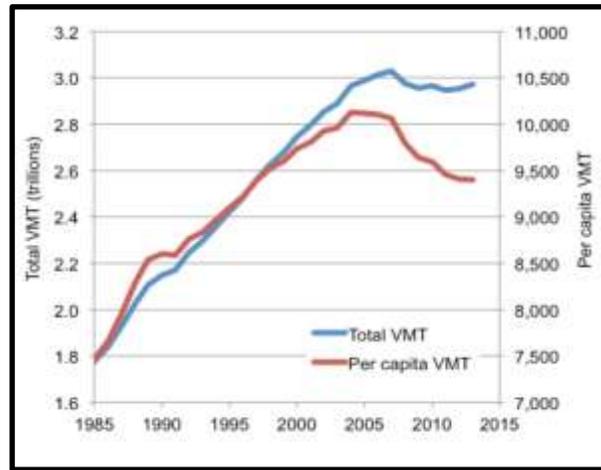


Chapter 4 – Projected Transportation Demand

Prior to the MPO designation, the City of St. George put in place a regional traffic model using the QRS II platform. In 2002, the MPO supported a contract to re-calibrate the model to Census 2000 data and subsequently in 2004 another MPO contract generated year 2015 and 2035 traffic projections based on updated population and employment data from the Governor's Office of Economic Development. During 2005 and 2006, several corridor studies were undertaken using the model, including SR-9 in Hurricane where a new model was created.



Because of new land use information and population assumption changes identified, these corridor “models” influenced the need to expand the regional model and to re-calibrate. The model structure added the cities of Hurricane/LaVerkin Urban Cluster, Toquerville, Leeds Town, and the four cities in the Dixie MPO Planning Boundary, Ivins, Santa Clara, St. George and Washington along with Washington County areas adjacent to the cities/towns.

A change in model platform (software) was undertaken in 2010. This change came about as a result of discussions addressing the effectiveness of the expanded QRS II Dixie Model beginning as far back as 2007-2008. The QRS II model was migrated to the CUBE model in late 2010. The change also included all of Washington County to better predict traffic movements on a county-wide basis. A rigorous effort to update socio-economic data was completed as a part of the process with input from Washington County and each of the cities/towns in the County. The CUBE model is the platform used for the State Travel Demand Model; supported by UDOT and other MPO's.

In 2013, the four Eastern communities of Hurricane, LaVerkin, Toquerville and Leeds became a part of the Dixie MPO. These communities now each have representation on both the Transportation Advisory Committee and the Transportation Executive Council. As noted above, the four communities had already been added to the Travel Demand Model (TDM).

Also in the summer of 2013 the DMPO again commissioned an update of the Travel Demand Model. This update was to incorporate the results of the 2012 Household Travel Survey and the 2010 Census and to make the model current with updates being made to the other travel demand models throughout Utah. Socioeconomic forecasts were also refreshed based on the Governor's Office of Planning and Budget (GOPB) 2012 forecasts. Completed in October of 2013, it became Version 2 of the DMPO Travel Demand Model.

Model Structure

Travel demand models are computer-based mathematical models that use socioeconomic and roadway network and land use data to forecast traffic under various scenarios. To forecast traffic the Dixie Travel Demand Model uses the traditional 4-step process. The four basic phases are:

1. Trip Generation – Trip generation determines how many trips are made in a region. To simplify the process, large geographical areas are broken up into smaller areas called traffic analysis zones (TAZ). Using information from sources like the Census Bureau and city land use plans, each TAZ is given certain attributes such as the number of households, employees, and average income levels. These attributes are then used to calculate the number of trip productions and attractions for each TAZ.
2. Trip Distribution – Trip distribution determines where the trips are going. Trip productions and attractions from different TAZ’s are linked together using a gravity model to form origin-destination patterns. The gravity model states that the trip attraction between two zones is proportional to the size of the zones (number of households/employees) and the distance between them.
3. Mode Choice – What modal method of reaching a trip’s destination is determined in step 3. Looking at factors such as cost, convenience and travel time it is determined if the trip will be made by walking, transit or vehicle.
4. Trip Assignment – The route the trip will take to reach its destination is then determined. Link attributes contained in the highway network such as capacity and travel speed are used to determine the shortest travel path to a destination. The trips are then assigned to the roadway network.

The 2010 DMPO US census defined population was estimated at 105,336. With a 2010 county population of 138,115 over 76 percent of the county population lives within the DMPO urbanized census boundaries. The 2010 US census population estimate for the Hurricane Urban Cluster was 16,336.

Each step of the process is calibrated to observed travel behavior. Base model forecasts are checked against observed traffic counts to ensure reasonable accuracy. Once the model is developed so that it replicates existing travel behavior, it is then used to evaluate future scenarios and alternatives.

Socio-Economic Characteristics

The characteristics of population distribution in the MPO area are vital to the development and degree of transportation infrastructure that should be planned for over the life of the plan. Information gained from work

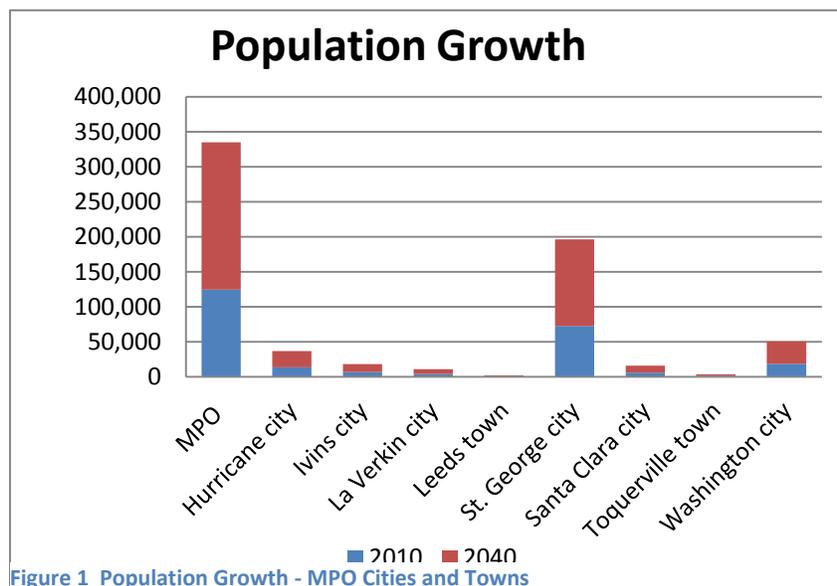


Figure 1 Population Growth - MPO Cities and Towns

done over the last few years helps to paint a picture of current and projected population growth. With the merging of the Hurricane Urban Cluster (population 16,336) with the DMPO Urbanized Area, the combined urban area population, based on the 2010 Census is 121,672 which means that over 88% of the county population now lives within the DMPO census defined "Urban" boundaries. Other cities and towns within the county include Apple Valley Town, Enterprise City, Hildale City, New Harmony Town, Rockville Town, Springdale Town, and Virgin Town as well as unincorporated County.

The following figures include population depictions for towns/cities within the "Planning Boundary" of the DMPO. Note that 100% of the member cities populations (124,412) live within the DMPO "Planning Boundary. The County-wide population is expected to increase from 138,115 in 2010 to 371,743 in 2040 with over 90% of the county population living within the cities of the DMPO Planning Boundary.

Note that the populations shown in Figures 1 & 2 represent the population for each of the cities that are members of the MPO. Since portions of the cities are not within the current census defined MPO urban boundary the populations shown are slightly higher than those of the urbanized area as detailed above. However, all cities represented are within the planning boundary as noted. Figure 3 represents historical population growth in Washington County.

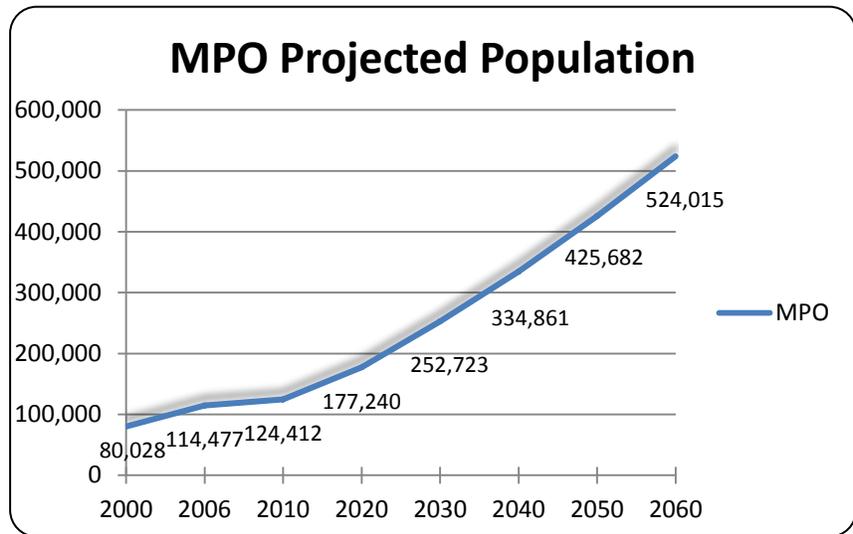


Figure 2 MPO Projected Population - MPO Cities and Towns

The distribution of the current population and projected growth are illustrated on Map 3, the "Population Change Map" in Appendix A. The mapping includes a 2014 population distribution as well as identifies projected areas of growth out to 2040.

Employment and Commuting

According to the Utah Department of Workforce Services there were approximately 4,648 employment establishments operating in Washington County in 2013 (see Appendix C for table of major employers). It should be realized that companies come and go. In 2013, the number of employment centers in Washington County with

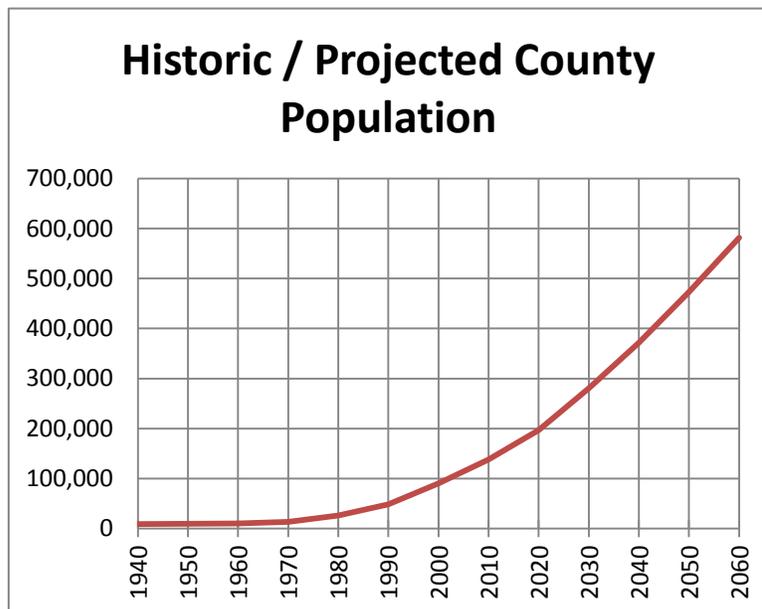


Figure 3 Historic / Projected Population - Washington County

more than 100 employees was 52. As is the case with many businesses, there are seasonal peaks in employment, such as the Christmas holiday season at retail establishments. The largest employer in the urbanized area is the Washington County School District. Their employees, however, and their work destinations, are spread throughout the urbanized area.

As of 2014 Washington County has experienced two full years of strong employment expansion. It is anticipated that additions to the county's employment base should continue to strengthen Washington County's numbers in the months ahead. According to the Department of Workforce Services; "in December 2013 the County's year-to-year employment gain clocked in at 5 percent, representing a net increase of roughly 2500 jobs." Leisure/hospitality services and construction were very close for the top honors with retail trade, government (including public education) and healthcare/social services all adding good numbers of new positions. As growth continues, so too will the need for adequate transportation facilities. The distribution of current employment and projected employment growth are illustrated on Map 4, the "Employment Change Map" in Appendix A.

Objectives and Goals

To plan for future transportation demands upon the transportation network, the DMPO will strive to meet necessary goals and objectives to recognize the impacts of the area growth on transportation.

Objective

To recognize population growth and land uses as the key drivers of future transportation demand.

Goals

1. Stay abreast of changes in population growth and projections in the area.
2. Be aware of changes in land development patterns and how those changes affect population growth and transportation demand.
3. Stay current on socio-economic factors and changes that may affect the demand for transportation.
4. Provide for regular updates of the Transportation Demand Model and look for opportunities to update the model within localized studies.
5. Keep up with Model platform updates and changes in technology that can improve the accuracy of the Transportation Demand Model.
6. Become more educated and efficient in the execution and use of the Transportation Demand Model in keeping the model current and useful to the DMPO and its partners.