WHAT'S NEW? - VERSION 9.1.1

WFRC / MAG

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1 Documentation

Documentation of the Wasatch Front Travel Demand Model (WF TDM) has been separated into three documents:

- What's New Document – describes the changes made to the WF TDM since the last model release
- Model Validation Report – provides the base year validation of the current version of the WF TDM, as well as a reasonableness check of the model as a forecasting tool
- Model Process Report – provides an overview of the model, a summary of the model's input data sets, and an outline of the model's primary steps and logic

These reports will be available as PDF documents in the "_Notes" folder in the WF TDM's root directory. However, it is expected that the primary means of accessing the model's documentation will be online at the following links:

- What's New Document
- Model Validation Report
- Model Process Report (in progress)

2 Overview

Version 9.1.1 of the Wasatch Front Travel Demand Model includes key updates across the network, access to opportunity (ATO) metrics, and socioeconomic inputs. The highway network was revised to reflect WFRC's Amendment #3 to the 2023–2050 RTP, incorporating minor changes to support improved connectivity, mobility, and consistency with fiscally constrained project phases.

The ATO calculation methodology was expanded to include additional travel modes (bike, walk, and drive-to-transit) and now uses distance-based factors tailored to each mode. These updates create a more robust and intuitive metric for evaluating accessibility. Additionally, a secondary household and population forecast was added for Utah County, accounting for growth from 2019 to 2025. This alternate dataset offers users an option to explore how recent development trends may influence future travel demand.

3 Highway Network Updates

3.1 Changes due to Amendment #3

Minor updates to the highway network were made to accommodate projects from WFRC's adopted Amendment #3 2023-2050 RTP. Figure 3.1 shows the areas that were updated for Amendment #3, followed by a description of each project update.

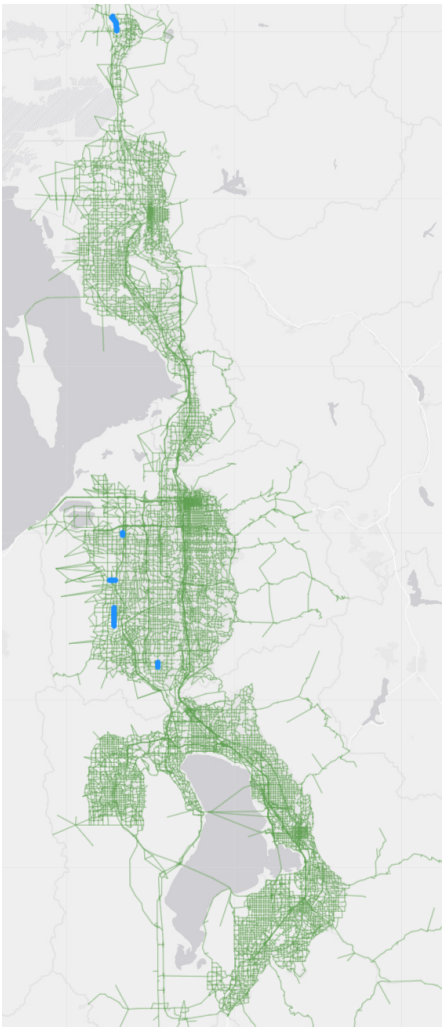

Figure 3.1: Updated Lane and Operational Lane Fields (blue)

1200 West (Brigham City)

- R-B-3 is a 1.6-mile widening project of 1200 West from Forest Street to Promontory Road / SR-13. This amendment will update the project from 2 to 5 lanes changing it from an operational project to

a widening project and move the project from Phase 2 Need and Fiscal Constraint to Phase 1 Need and Fiscal Constraint.
- Benefits: increases mobility, enhances travel corridor, prepares for future growth demands

6200 South (West Valley City)

- Project R-S-84 is a 0.7-mile widening project of 6200 South from SR-111 to Mountain View Corridor. This amendment will update the project from 3 lanes to 5 lanes and move the project from Phase 2 Need and Phase 3 Fiscal Constraint to Phase 1 Need and Fiscal Constraint.
- Benefits: increases mobility, enhances connection, reduces delay

Frontage Road (West Valley City – South)

- Project R-S-59 is a 0.3-mile new construction project of the southern frontage road to Mountain View Corridor connecting Beagley road to Parkway Boulevard. This amendment will move the project from Phase 3 Need and Unfunded Fiscal Constraint to Phase 1 Need and Fiscal Constraint.
- Benefits: creates a connection, enhances access, improves truck travel

6700 West (West Jordan)

- R-S-125 is a two-mile new construction project on 6700 West connecting 8600 South to Old Bingham Hwy /10200 South. The amendment moved the 3-lane collector road from Phase 2 Need and Phase 3 Fiscal Constraint to Phase 1 Need and Fiscal Constraint.
- Benefits: enhances mobility, increases connectivity, prepares for future growth demands

2700 West (Riverton)

- R-S-192 is a 0.5-mile widening project on 2700 West from 13400 South to Bangerter Hwy. This amendment will update the project from 3 to 5 lanes and move the project from Phase 2 Need and Phase 3 Fiscal Constraint to Phase 1 Need and Fiscal Constraint.
- Benefits: increases mobility, provides consistency, prepares for future growth demands

3.2 Volume Comparison

The changes due to Amendment #3 resulted in slight changes to roadway volumes along corridors near the project areas. Figure 3.2 shows the impacted segments for the 2032, 2042, and 2050 fiscally constrained scenarios.

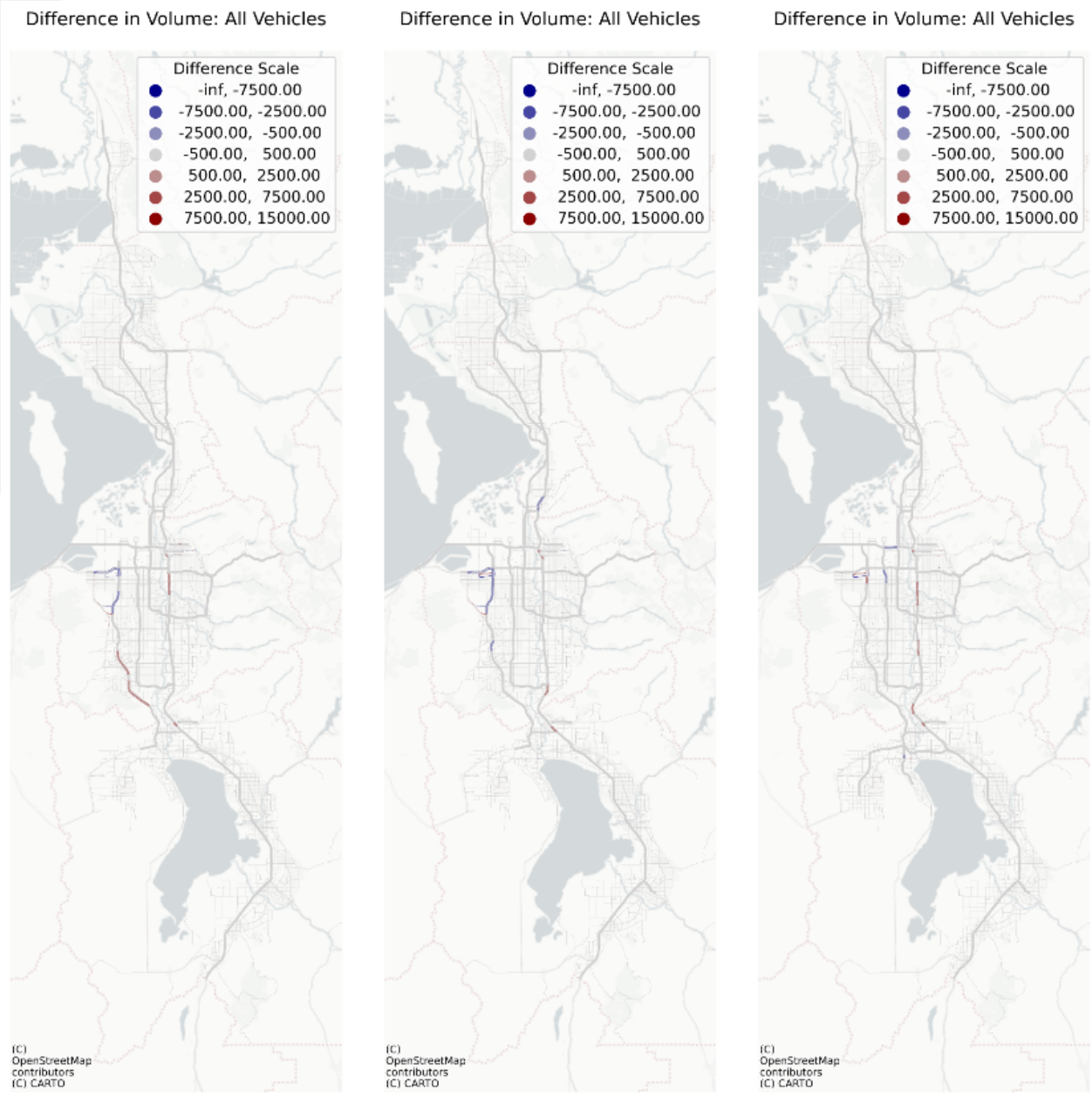

Figure 3.2: v9.1.1 vs v9.1.0 Volume Comparison (2032,2042,2050 - Fiscally Constrained)

4 Access to Opportunity Updates

4.1 ATO Calculation Updates

In previous model versions, access to opportunity (ATO) was calculated using a decay curve. The same decay factor was used for both auto trips and transit trips (walk-to-transit only). In version 9.1.1, the ATO factor curve was updated and expanded. A distance-based factoring methodology is now applied to an expanded mode set including auto, walk-to-transit, drive-to-transit, bike, and walk. See Figure 4.1 to view a comparison of the new ATO factor curves and the previous decay curve. Note that each mode has a different factor curve based on perceived behavior and benefit. Also note that all trips within 10 minutes count in full regardless of mode.

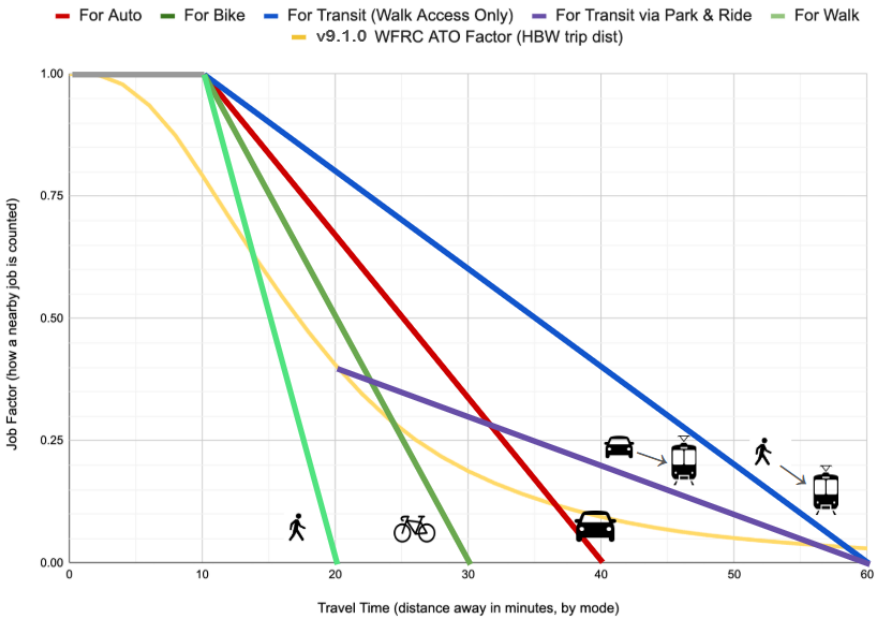

Figure 4.1: ATO Factor Comparison

The changes to the ATO calculation were made for a variety of reasons, some of which are listed below:

- a calculation rooted in visioning
- a methodology consistent over time
- a metric that is easy to communicate
- a methodology that can be applied uniformly across Unified Planning processes
- the inclusion of other travel choices (bike, walk, drive-to-transit)

Overall, the new ATO methodology is more robust and better represents a planner's perspective on travel behavior.

4.2 Model Updates

The specific updates made to the ATO calculation were implemented in the `2_ModelScripts/5_AssignHwy/08_Access` script. A folder with ATO weights and presentation materials presenting the new methodology has been added in the `0_GlobalData\7_ATO` folder.

In addition to adjusting the decay curve to match the factors in Figure 4.1, new comparison fields were added. These comparisons include:

- **ATO (Job & Household) Loss due to Congestion** shows the loss in auto access due to congestion as compared to free flow access.
- **ATO (Job & Household) Loss due to Network Inefficiencies** shows the loss in auto access due to free-flow network connectivity as compared to a free-flow straight-line access.
- **ATO (Job & Household) Total Loss** is the total of both Congestion and Network Inefficiencies.
- **ATO (Job & Household) compared to Geographic ATO Averages** is the ratio of average number of jobs or households that are reachable within a typical commute to the average for a given geography.

The ATO compared to the geographic averages was calculated in a new python script `as_AccessToOpportunity.py`. This script runs as an intermediate step between the TDM voyager script for ATO output and the vizTool scripts.

The vizTool was adjusted accordingly to visualize the new attributes. For specific updates to the vizTool, please refer to the vizTool source code GitHub repository.

5 Socioeconomic Data Updates

5.1 Utah County Household & Population Adjustments

Version 9.1.1 includes a secondary (revised) household and population forecast reflecting new housing developments in the Utah County (MAG) region from 2019 to 2025. These forecasts are based on the 2023 5-year estimates from the American Community Survey (ACS). This revised forecast incorporates observed growth between 2019 and 2025 and is then aligned as closely as possible with the existing 2050 forecast. The employment forecast remains unchanged. The new socioeconomic (SE) files can be found in the `1_Inputs\2_SEData\3_MAG` directory, within the `Adjusted_to_NewGrowth` folder.

These forecasts have not been formally adopted as an amendment to the 2023–2050 RTP and therefore are not the default socioeconomic inputs to the model. However, this secondary dataset is available and may be used at the modeler's discretion.

5.1.1 Household & Population Adjustments Across Districts

Figure 5.1 and Figure 5.2 show household and household population forecasted adjustments at the district level. Across the region, household projections for 2050 show slight changes: The large districts of Central Utah Valley and South Utah Valley see a modest decline in households, while the Cedar Valley and Goshen Valley districts remain relatively consistent. In contrast, North Utah Valley shows an increase in projected households.

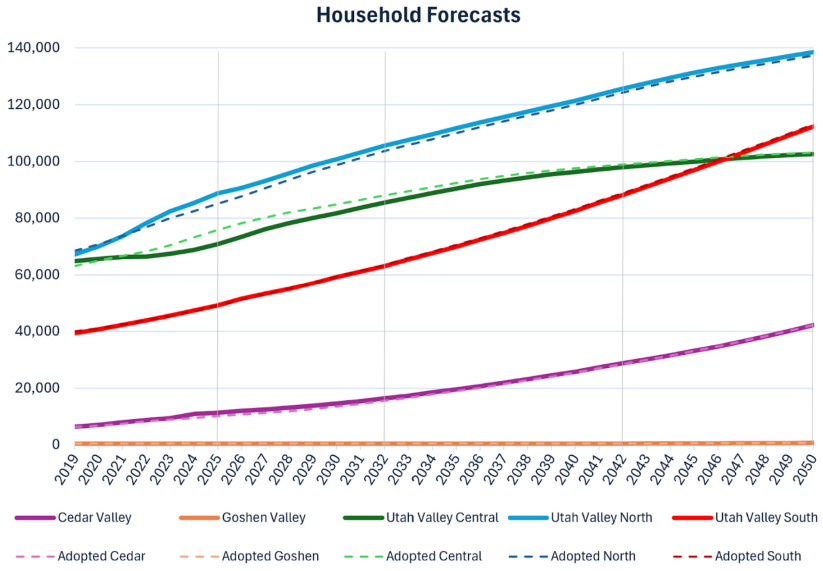

Figure 5.1: Revised Household Forecasts (City Groups))

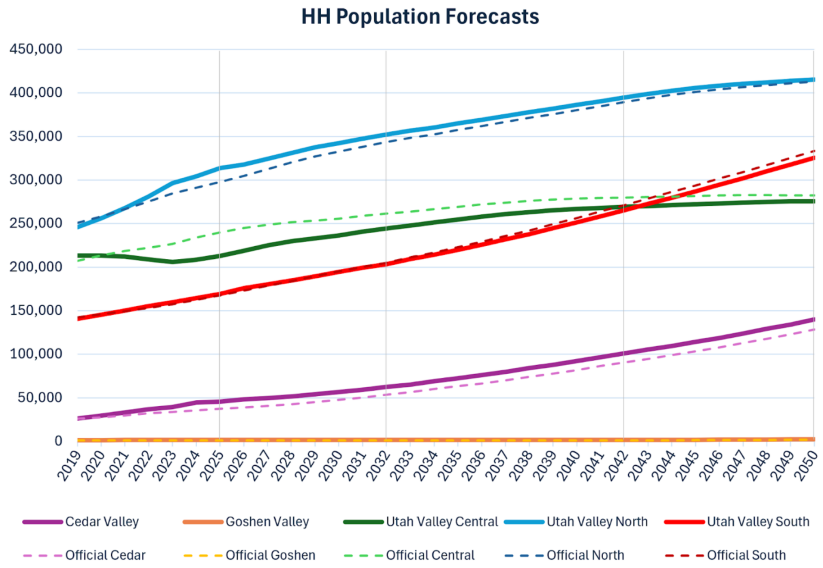

Figure 5.2: Revised Household Population Forecasts (City Groups)

5.1.2 Household & Population Adjustments Across Cities

Please view the online documentation to view the household, household population, and household size forecast revisions at the city level. The online charts show that similar patterns that exist at the district geography exist at the city level geography. For example, Provo and Orem show a lower level of household population (like with Utah Valley Central) and Lehi and Draper show an higher level of household population (like with Utah Valley North). However, the patterns may not be entirely consistent across all cities.

5.2 Effect of Household & Population Adjustments on Roadway Volumes

Figure 5.3 through Figure 5.6 compares the roadway volumes between the revised and the adopted socioeconomic data. These figures show how the revised socioeconomic data affects the roadway volumes with blue segments showing a decrease in traffic and red showing an increase. In 2023, an increase in volumes along I-15 exists along North Utah County into South Salt Lake County. A similar pattern of higher volumes exist along other major roadways in North Utah County and South & Central Salt Lake County from 2032 to 2050. Alternatively, a decrease in roadway volumes seem to occur along Central to South Utah County from 2032 to 2050. These shifts in volumes are relatively consistent with where population estimates were revised – higher volumes along corridors with higher population and vice versa.

5.2.1 Volume Change - 2023

Figure 5.3: Segment-Level Revised vs Adopted Comparison - 2023

5.2.2 Volume Change - 2032

Figure 5.4: Segment-Level Revised vs Adopted Comparison - 2032

5.2.3 Volume Change - 2042

Figure 5.5: Segment-Level Revised vs Adopted Comparison - 2042

5.2.4 Volume Change - 2050

Figure 5.6: Segment-Level Revised vs Adopted Comparison - 2050