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COMMUNITY PLANNING ASSOCIATION
of Southwest Idaho

Complete Streets Level of Service

Report No. 05-2014

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COMPLETE STREETS

Executive Summary

In August 2009, the Board of Directors of the Community Planning Association of Southwest Idaho (COMPASS) adopted a “Complete Streets” policy, providing a vision for Complete Streets in the Treasure Valley. Complete Streets are streets that are designed for users of all transportation modes including pedestrians, bicyclists, motorists, and public transportation.

This document provides an introduction to Complete Streets, a description of some of the federal and regional policies regarding Complete Streets, and a description of the process used to determine the current, optimal, and “percent complete” Complete Streets “level of service” for bicycles, pedestrians, and transit.

Introduction

What are Complete Streets?

Complete Streets are street designs that consider all transportation modes including pedestrians, bicyclists, motorists, and public transportation, focusing on the operation of safe and accessible streets for all users. Complete Streets are for everyone regardless of age or ability, whether they are commuting by bicycle to work, walking to school, or just crossing the street.¹

The design of Complete Streets varies throughout the Treasure Valley, depending on the context of the community. A Complete Street will look different in an urban setting versus a rural setting, but the overall theme emphasizes safety, accessibility, and convenience for all users.¹

While Complete Street designs will differ, some typical elements include sidewalks and safe crossing opportunities for pedestrians, bicycle lanes (or wide shoulders), and accessible bus stops with benches or shelters.

Why Complete Streets?

Complete Streets promote a variety of benefits:

- Transportation options
- Provide a safe environment for all users
- Promote physical health by providing opportunities for walking and biking
- Support economic development
- Provide a “sense of place” by connecting people to their surroundings

Background

Federal Policy Statements and Guidance

Over the past two decades the United States Department of Transportation (U.S. DOT) has prescribed a more balanced transportation system with the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991 and the Transportation Equity Act for the 21st Century (TEA-21) in 1998. Following the passage of these acts, the U.S. DOT issued a series of policy statements to bolster the integration of pedestrian and bicycle facilities into transportation planning.² In the policy statement titled, “Updated Bicycle and Pedestrian Accommodation Regulations” (2010)³ the US DOT advises state departments of transportation to:

- Treat walking and bicycling as equals with other transportation modes
- Ensure convenient access for people of all ages and abilities
- Go beyond minimum design standards

¹ <http://www.smartgrowthamerica.org/complete-streets/complete-streets-fundamentals>

² <http://www.ipa.udel.edu/healthyDEtoolkit/completestreets/sectionPDFs/chapter5.pdf>

³ http://www.fhwa.dot.gov/environment/bicycle_pedestrian/overview/policy_accom.cfm

- Collect data on walking and biking trips
- Set a mode-share target for walking and bicycling
- Protect sidewalks and shared-use paths the same way roadways are protected
- Improve non-motorized facilities during maintenance projects⁴

Complete Streets in the Treasure Valley

Coordination of policies from a regional perspective is an important aspect in the implementation of Complete Streets. As the metropolitan planning organization for the Treasure Valley (Ada and Canyon Counties), COMPASS initiated a Complete Streets work group as part of the Regional Technical Advisory Committee in 2008-2009. The work group, comprised of COMPASS member agencies⁵, crafted guiding principles and a vision statement to create the COMPASS Complete Streets policy.

COMPASS Complete Streets Policy

COMPASS adopted a Complete Streets policy in August 2009 to promote roadways with an appropriate balance for motorists, bicyclists, transit, and pedestrians of all ages and abilities.⁶ By considering all users of roads, communities can increase their safety, efficiency, and economic vitality.

The COMPASS Complete Streets policy includes the following objectives:

- Identify how all users will be served when designing new or reconstructed roadways.
- Provide opportunities for involvement with stakeholders throughout the planning process.
- Consider context of existing and planned land uses.
- Provide practical and affordable solutions which balance user needs, construction costs, and environmental benefits.
- Network transportation modes to optimally connect homes, jobs, schools, shops, families and friends.
- Include appropriate access management practices for safe and efficient movement of users.
- Promote a visually appealing environment to improve the transportation experience.

(Adopted 8/17/09)

⁴ http://www.fhwa.dot.gov/environment/bicycle_pedestrian/overview/policy_accom.cfm

⁵ <http://www.compassidaho.org/about.htm#members>

⁶ <http://www.compassidaho.org/documents/prodserv/reports/dmr/COMPASSPolicyFinal.pdf>

The COMPASS Complete Streets Policy Vision statement reads:

We envision a Treasure Valley where roadways are designed to be safe, efficient, and viable and provide an appropriate balance for all users including, motorists, bicyclists, transit, and pedestrians of all ages and abilities.

Other Complete Streets Policies in the Treasure Valley

Since 2009, many COMPASS member agencies including municipal governments, state and local highway/road jurisdictions, and the local transit authority, have supported the Complete Streets policies (or similar) as part of their design considerations. For example, Ada County Highway District enacted a Complete Streets Policy in 2009, which the City of Boise adopted and currently references as a service standard for community planning purposes.^{7,8}

Complete Streets in the Regional Long-Range Transportation Plan

With the August 2009 adoption of the COMPASS Complete Streets Policy, COMPASS increased its focus on Complete Streets issues, and Complete Streets became more formally tied to other COMPASS project and programs, including the regional long-range transportation plan.

COMPASS develops, or updates, a regional long-range transportation plan (*Communities in Motion*) for Ada and Canyon Counties every four years. Complete Streets were first highlighted in the COMPASS *Communities in Motion 2030* plan, adopted in 2006⁹, prior to adoption of the Complete Streets Policy. The Complete Streets elements in this plan provided the foundation for the 2009 COMPASS Complete Streets policy, discussed above. Some of the commonalities include:

- A vision of a multimodal transportation system
- Providing options for safe access and mobility for transit, walking, and biking
- Increasing inter-jurisdictional coordination and acknowledging future needs
- Minimizing transportation impacts to people, cultural resources, and the environment.

The *Communities in Motion 2040* regional long-range transportation plan¹⁰ identifies several goals related to Complete Streets:

Transportation

- 1.1 Enhance the transportation system to improve accessibility to jobs, schools, and services; allow the efficient movement of people and goods; and ensure the reliability of travel by all modes considering social, economic, and environmental elements.

⁷http://www.achdidaho.org/departments/PP/Docs/TLIP/TLIP_cities_discussion_draft/Adopted_Docs/Complete_Streets_Policy_Resolution-895.pdf

⁸ http://pds.cityofboise.org/media/151829/Blueprint_0.pdf, pds.cityofboise.org/media/151839/bb_chapter_2.pdf

⁹ <http://www.compassidaho.org/prodserv/reg-archives.htm>

¹⁰ <http://www.compassidaho.org/prodserv/cim2040.htm>

- 1.2 Improve safety and security for all transportation modes and users.
- 1.4 Develop a transportation system with high connectivity that preserves capacity of the regional system and encourages walk and bike trips.

Land Use

- 2.4 Strive for more walkable, bikeable, and livable communities with a strong sense of place and clear community identity and boundaries.

Health

- 5.1 Promote a transportation system and land-use patterns that enhance public health, protect the environment, and improve the quality of life.

Classifying Complete Streets Level of Service

Beginning in 2012, COMPASS completed the multimodal analysis of every expressway, principal arterial, minor arterials, and selected collectors within the region using the Q/LOS software. Treasure Valley based on the functional street classification map¹¹, created as a cooperative effort between Ada and Canyon Counties for the *Communities in Motion 2035* plan.¹²

The goal of the Complete Streets analysis was to identify a level of service (LOS) for pedestrian, bicycle, and transit modes of transportation, displaying current and future roadway conditions. Since local and regional automobile LOS methodologies have been successfully developed and are currently in use, COMPASS has not pursued additional automobile LOS analysis.

Two software programs were used in this analysis: Multimodal Level of Service (MMSLOS) software toolkit, developed by Kittelson and Associates, and Quality/Level of Service (Q/LOS) planning software from the Florida Department of Transportation (FDOT). The use of the MMLOS software signified an important step towards the first objective of the COMPASS Complete Streets to *identify how all users will be served when designing new or reconstructed roadways*, analyzing current and future conditions.

Both programs have been effective and are based on the same methodology; however, the time requirements and level of detail needed for the MMLOS software resulted in the use of the tool only for individual roadways and/or gauging the effects of large-scale developments. The Q/LOS software is the current primary method of Complete Streets analysis, as it is more efficient in identifying regional level priorities (and planning implications) of applicable roadways for current and future scenarios.

¹¹ <http://www.compassidaho.org/prodserv/func-maps.htm>

¹² <http://www.compassidaho.org/prodserv/cim2035.htm>

Complete Street Level of Service Methodology

COMPASS used the Q/LOS software to score and map the LOS for pedestrians, bicyclists, and transit along arterial roadways in Ada and Canyon Counties using the methodology described below.

Quality and Level of Service Concepts

The Q/LOS software is directed toward engineers, planners, and policy makers in the development and review of roadway capacity and quality/LOS for planning and preliminary analysis. The software is primarily designed for signalized arterials and is based on the Highway Capacity Manual 2010 (HCM 2010) and the Transit Capacity and Quality Service Manual (TCQSM).^{13,14} The software can enhance preliminary engineering, also known as conceptual planning, which can determine:

- The design concept and scope for a roadway facility (e.g., four through lanes with a raised median and bicycle lane)
- Conducting alternative analyses (e.g., four through lanes undivided vs. two through lanes with a two-way left turn lane)

COMPASS used the software to define current LOS (including alternative scenarios based on different roadway configurations) as well as provide a qualitative and quantitative analysis of different modes of transportation.

The Q/LOS software uses "quality of service" to rate the level of service. Q/LOS defines "quality of service" as "*...a traveler-based perception of how well a transportation service or facility operates. ...LOS is a quantitative stratification of quality of service into six letter grade levels (A-F).*"¹⁵ Figure 1 illustrates examples of LOS for various modes throughout the Treasure Valley.

¹³ http://www.dot.state.fl.us/planning/systems/sm/intjus/pdfs/2009FDOTQLOS_Handbook.pdf (p.9)

¹⁴ TCRP Report 165, *Transit Capacity and Quality of Service Manual, Third Edition*

¹⁵ http://www.dot.state.fl.us/planning/systems/sm/intjus/pdfs/2009FDOTQLOS_Handbook.pdf (p.12-13)

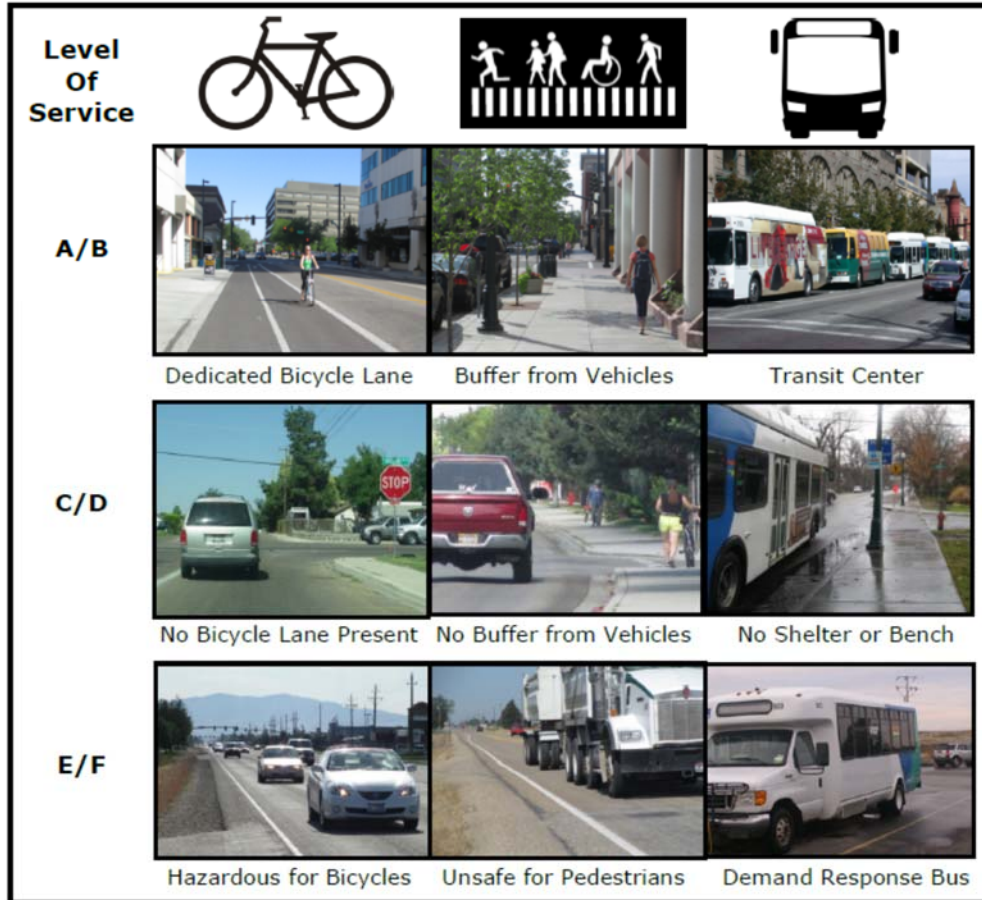


Figure 1: Local images of LOS, COMPASS, 2013

Level of Service Misconceptions

Two common misconceptions about level of service often arise.

Misconception 1: LOS is applicable only to automobile analysis, while quality of service is related to the non-automobile modes.

Truth: Bicycle, pedestrian, and transit analyses are as quantitative and as rigorously developed as those for automobiles.

Misconception 2: LOS letter A-F grades are comparable to American school letter grades.

Truth: Unlike school grades, LOS A is not necessarily a desirable goal and the meaning of A-F is not entirely consistent across modes.¹⁶

Overall, LOS is only one way to measure Complete Streets, though other measurements exist. Other measurements for non-automobile modes include:

- Safety and health of users
- Number of users
- Connections to other facilities

¹⁶ 2013 Quality/Level of Service Handbook, State of Florida Department of Transportation 2013.

- Accessibility (ease to which people can connect to the transportation system)
- Impacts on commerce¹⁷

Configuration of Analysis: Points, Segments, Sections, and Facilities

The Q/LOS software tool is based on upon the primary highway system structure of the Highway Capacity Manual as seen in Figure 2, where the analysis techniques of the Q/LOS are central to the facility level. COMPASS has conducted the analysis of the LOS scores of individual segments.

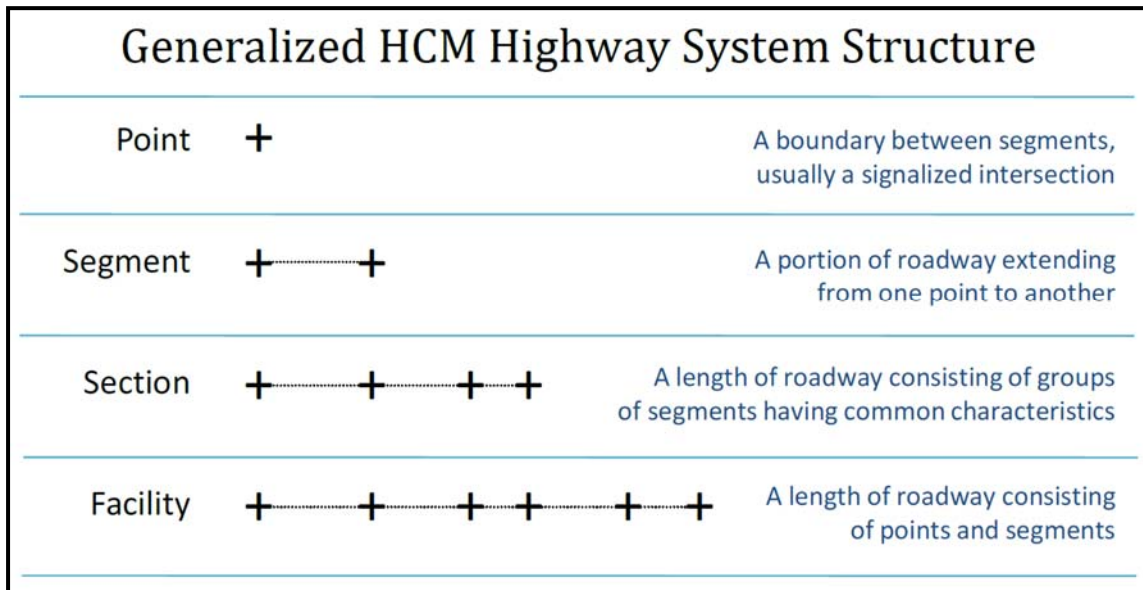


Figure 2: Generalized Highway Capacity Manual Highway System Structure (FDOT Quality/LOS Handbook, p.17, 2009)¹⁸

Inputs, Tool Sensitivity, and Result Output

The Q/LOS software contains a series of general and mode (auto, transit, bike, pedestrian) specific input tabs. The input screens include places for the user to input data on roadway properties, intersection characteristics, and variables for the different modes of transportation. The procedure for data input requires a variety of transportation data sources and interactive maps or imagery (see below). The Q/LOS program allows for the calibration of a roadway facility to a local or regional context.

The input variable types are based upon general roadway variables, traffic variables, and roadway controls (signalization or other controlled intersections). Tradeoffs exist between modes, where pedestrian orientated environments may be contrary to roadway objectives of bicycle and automobile modes. The overall relationships of inputs for all modes are illustrated in Figure 3.

¹⁷ 2013 Quality/Level of Service Handbook, State of Florida Department of Transportation 2013.

¹⁸ <http://www.dot.state.fl.us/planning/systems/programs/sm/los/pdfs/2013%20QLOS%20Handbook.pdf>

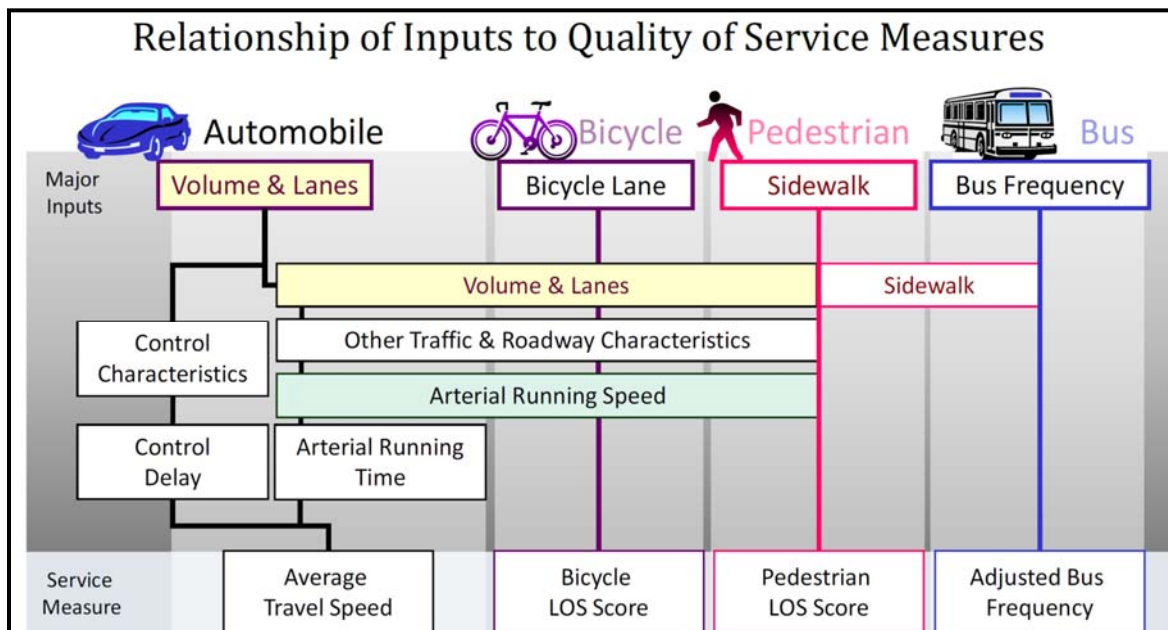


Figure 3: Relationship of Inputs to Quality of Service Measures (FDOT Quality/LOS Handbook, p.22, 2009)¹⁹

The LOS results are based on the interactions of the input variables above and produce ranked scores (A-F) for each designated roadway segment as well as an overall score for one direction of traffic. Specific model factors affect each mode of transportation. For example, one factor affecting transit LOS is the ease of access to transit based on the pedestrian level of service, representing connection between the pedestrian and transit infrastructure as seen above in the pink bordered “sidewalk” box.

Pedestrian LOS Model

Pedestrian LOS in the Q/LOS software is based on four primary variables, ranked in order of relative importance:

- Existence of a sidewalk
- Sidewalk/roadway separation
- Motorized vehicle volumes
- Motorized vehicle speeds²⁰

The pedestrian LOS analysis looks at sidewalks that are adjacent to the roadway, nearby roadside environments such as shared use paths, and nearby exclusive pedestrian facilities; paved roadway shoulders are not included in the analysis.²¹

¹⁹ 2013 Quality/Level of Service Handbook, State of Florida Department of Transportation 2013.

²⁰ 2013 Quality/Level of Service Handbook, State of Florida Department of Transportation 2013.

²¹ 2013 Quality/Level of Service Handbook, State of Florida Department of Transportation 2013. (p.63)

Sidewalk/roadway separation includes the distance between the sidewalk and the roadway, as well as physical barriers between the sidewalk and roadway, such as trees and planters, streetscape lighting or furniture, and on-street parking. Q/LOS enables users to select the width of the sidewalk/roadway separation and existence of physical barriers to use in the analysis.

Other secondary variables include safety characteristics of crossing a road, the width of the outside automobile travel lane (closest to a sidewalk), and the width of a bicycle lane. The pedestrian crossing factor is classified in three ways by a restrictive median, non-restrictive median, or no median.²²

Figure 4 shows the Q/LOS pedestrian results for the entire study region and select city centers, using ArcGIS mapping software. The maps demonstrate the pedestrian LOS (scored on an A-F basis) for one side of the road, traveling one direction.

The figure shows the entire two-county region, and only includes every expressways, principal arterial, minor arterials, and selected collectors. This bird's eye view of the region identifies major trends, such as the prevalence of LOS rankings within the A and B range in proximity to city centers. This is a logical finding, since city centers often focus on pedestrian scale environments that attract visitors, contain the largest number of employees, and contain other historical, cultural, or arts amenities that may be within walking distance of each other.

The inset maps, showing a closer look at downtown Nampa and downtown Boise, reaffirm the finding of more favorable LOS. Within pedestrian scale environments, inherent tradeoffs are apparent, for example automobiles, buses, and bicycles may experience a lesser or unfavorable LOS score due to shorter distances between signalized intersections and lower speed limits.

²² 2013 Quality/Level of Service Handbook, State of Florida Department of Transportation 2013.

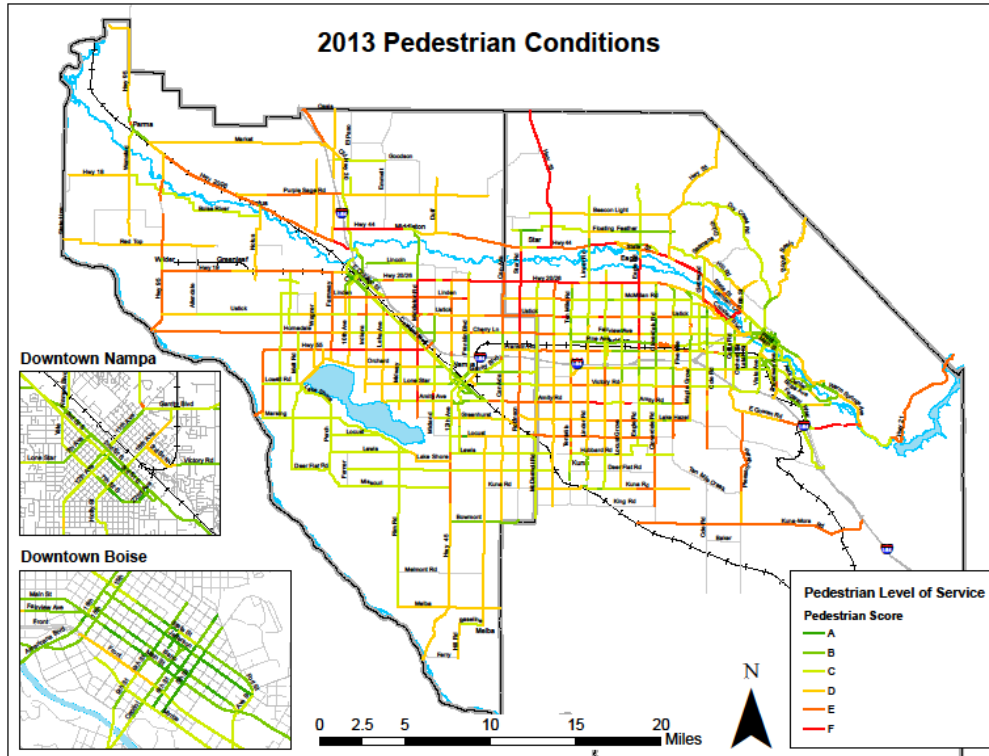


Figure 4: 2013 Pedestrian Level of Service Conditions

Bicycle LOS Model

The bicycle LOS in the Q/LOS software is based on five variables, ranked in order of relative importance:

- Average width of the outside (automobile) through lane
- Motorized vehicle volumes
- Motorized vehicle speeds
- Heavy vehicle/truck volume
- Pavement condition

Given the close proximity of bicyclists and automobiles on the roadway, bicycle LOS within the Q/LOS software is heavily dependent on the roadway cross section. (The model is not applicable to off-street facilities, such as shared use paths or sidewalks.²³) A strong relationship exists between bicycle and automobile LOS; FDOT explains the relationship in the following statement:

The bicycle LOS drops dramatically as motorized vehicle volumes initially rise, but then tends to deteriorate more slowly at higher volumes. Another example is the effect of motorized vehicle speed. At low speeds, the variable is not as significant in determining

²³ 2013 Quality/Level of Service Handbook, State of Florida Department of Transportation 2013.

bicycle LOS; however at higher speeds it plays an ever increasing role.²⁴

The existence and condition of a paved shoulder or dedicated bicycle lane is an important safety and efficiency aspect to bicycle LOS. A dedicated bicycle lane is defined as a portion of a roadway, at least 4 feet in width, which has been designated by striping, signing, and/or pavement markings for the preferential or exclusive use of bicyclists. Within Q/LOS, the user has the ability to select the presence of a paved shoulder or bike lane as well as the bicycle pavement condition. Pavement condition is classified as “desirable” (new or recently resurfaced), “typical” (most common and default value), and “undesirable” (noticeable cracks, broken pavement, ruts, or the presence of grates).

Where a paved shoulder or dedicated bicycle lane does not exist, the average effective width of the outside (automobile) through lane is also important in the determination of the bicycle LOS. The Q/LOS user specifies the width of the outside lane within four classifications (excluding the gutter): narrow (10 feet), typical (12 feet), wide (14 feet), and custom (user defined).

Overall, the two most important variables in the Q/LOS software regarding bicycle LOS is the presence of a bicycle lane and the number of motorized vehicles.²⁵ In the Treasure Valley, the Ada County Highway District (ACHD) manages the largest network of bicycle lanes. ACHD has created more than 220 miles of on-street bicycle lanes, and is currently implementing a Bike Facility Pilot Project for shared lane markings and green colored/painted bicycle lanes.²⁶

Figure 5 shows the Q/LOS bicycle results for the entire study region, using ArcGIS mapping software. The map shows the bicycle LOS (scored on an A-F basis) for one side of the road, traveling one direction.

²⁴ 2013 Quality/Level of Service Handbook, State of Florida Department of Transportation 2013.

²⁵ 2013 Quality/Level of Service Handbook, State of Florida Department of Transportation 2013

²⁶ <http://www.achdidaho.org/Community/BikeFacilityPilotProject2012.asp>

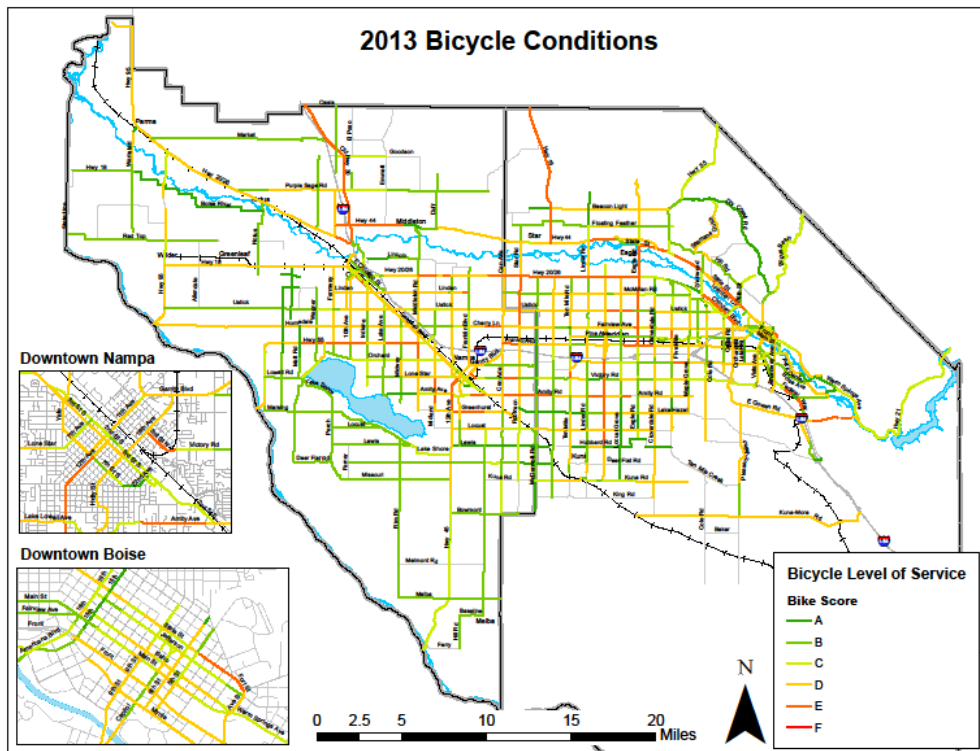


Figure 5: 2013 Bicycle Level of Service Conditions

The figure shows the entire two-county region, and expressways, principal arterial, minor arterials, and selected collectors. This bird's eye view of the region identifies major trends, such as the prevalence of most favorable bicycle LOS rankings at the periphery of the region and the relative uneven dispersion of favorable LOS rankings throughout the center of the region as well as the city centers of the region.

The higher ranking LOS scores at the periphery exist because of the low volumes of vehicles that occur in the rural or rural developing locations, most likely not including a dedicated bicycle lane; although may contain a paved shoulder.

A closer look at city centers in the region (see inset) show that Boise and Nampa contain a majority of A-D LOS scores, relatively few E LOS scores, and a lack F LOS scores.

Transit LOS Model

Public transportation provides options for people to meet their travel needs and is a key component of the overall transportation system. The *Transit Capacity and Quality of Service Manual (TCQSM)* authored by the Transportation Research Board, is the fundamental reference document for public transit practitioners and policy

makers.²⁷ The manual provides a framework for measuring transit availability and quality of service from the passenger point of view. The Q/LOS software uses the TCQSM techniques, supplemented by FDOT’s proprietary Transit Level of Service (TLOS) software to evaluate bus LOS at the operational level.²⁸ In the Q/LOS software, the primary factor that determines bus LOS is service frequency (Table 1).

Table 1: Transit Capacity and Quality of Service Manual (TCQSM) Level of Service Standards

COMPASS LOS Scoring Standards		
Transit Level of Service	Transit LOS Score	Generalized Frequency (minutes)
A	6+	<10
B	4.1-5.9	10-14
C	3-4	15-20
D	2-2.9	21-30
E	1-1.9	31-60
F	<1	60+

COMPASS, working with Valley Regional Transit, defined the transit LOS letter grade based on the Transit LOS score. This enabled a broader transit LOS scoring to be used which is more applicable to the transit frequencies experienced in the area (Table 2).

Table 2: COMPASS Transit Level of Service Standards

COMPASS LOS Scoring Standards		
Transit Level of Service	Transit LOS Score	Generalized Frequency (minutes)
A	4+	10-14
B	3-3.9	15-20
C	2-2.9	21-30
D	1-1.9	31-60
E	<1	60+
F	N/A	Demand Response Service

Secondary factors also contribute to the level of service for transit in the Q/LOS program, including:

- Bus stop amenities (poor, fair, good, and excellent)
- Bus stop type (none, typical, or major)
- Passenger load factor²⁹

Bus stop amenities are comprised of benches, shelters, and accessible features available at a bus stop (in compliance with the Americans with Disabilities Act). The bus stop type and load factor are aspects of bus use that contribute to the rider experience. The bus stop type relates to the ease of bus stop identification

²⁷ TCRP Report 165, Transit Capacity and Quality of Service Manual, Third Edition

²⁸ 2013 Quality/Level of Service Handbook, State of Florida Department of Transportation 2013

²⁹ 2013 Quality/Level of Service Handbook, State of Florida Department of Transportation 2013

communicated to the user, where the passenger load factor relates to the number of persons or crowding present on the bus.

FDOT notes that pedestrian considerations are an important determinant of bus LOS for a transit route segment or facility. To accommodate this consideration, three factors are built into the transit LOS model of the Q/LOS software; pedestrian LOS, roadway crossing difficulty (traffic signal density, crossing length, and motorized vehicle volume), and obstacles to bus stops (fences or swales), determining a transit LOS.³⁰

Figure 6 represents the Q/LOS bus results for the entire study region, using ArcGIS mapping software. The maps demonstrate the bus LOS (scored on an A-F basis) for one side of the road, traveling one direction. Q/LOS scores the bus LOS based on the bus frequency and other factors mentioned, weighted by the distance of the segment lengths.

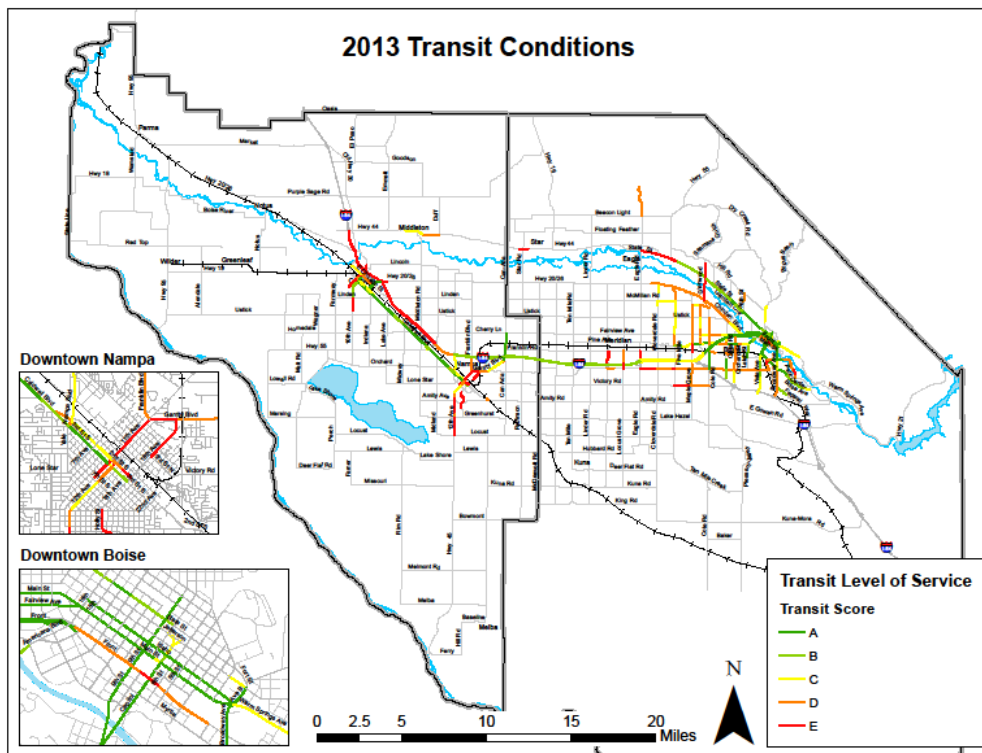


Figure 6: 2013 Transit Level of Service Conditions

Figure 6 provides shows that favorable scores are concentrated in proximity to city centers and major bus routes. Inter-county circulation is located mainly on Interstate 84 and State Highway 44, enabling residents on opposite ends of the Treasure Valley the ability to reach work or services, given limited schedules and frequencies. The downtown Boise inset map shows the most favorable LOS scores in the region (A – C). This area includes a “Transit Mall” for the local bus system

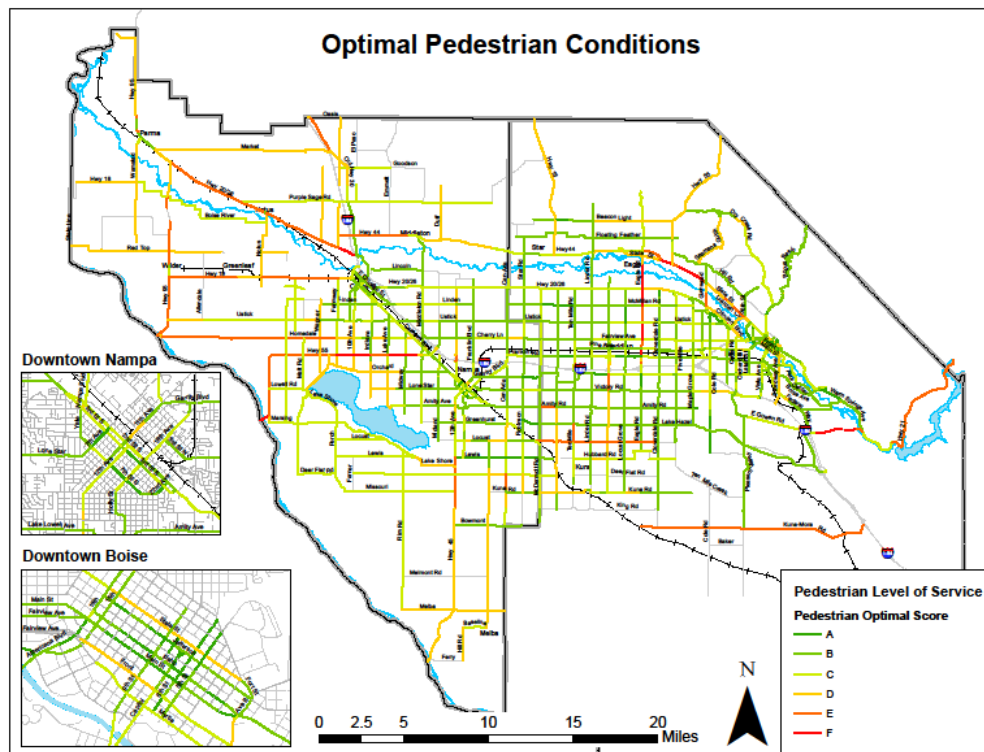
³⁰ 2013 Quality/Level of Service Handbook, State of Florida Department of Transportation 2013

and includes the highest bus frequencies and greatest relative proximity of routes in the region.

Complete Streets LOS Future Model

In addition to monitoring the current Complete Streets LOS within the Treasure Valley for pedestrians, bicyclists, and transit, COMPASS also examined what service conditions would be like in the future if local transportation and transit plans are achieved. COMPASS examined local and state planning documents including city comprehensive plans, Ada County Highway District's *Master Street Map* and *Livable Streets Design Guide*, and Valley Regional Transit's *valleyconnect* plan, and met with local planners, to determine what future routes and improvements are planned for the bicycle, pedestrian, and transit systems, and defined those future improvements as the "optimal" system for each mode.^{31 32 33}

Once the "optimal" system was defined, results were obtained by incorporating future construction projects to the current LOS model. For example, this optimal system analysis may include the addition of a bike lane, transit stop, and center median on a certain road. Current traffic data was kept static to establish the independent variable. Once again the ArcGIS software was used to map the optimal street conditions found in Figures 7, 8, and 9 below.



³¹http://www.achdidaho.org/departments/PP/Docs/TLIP/TLIP_cities_discussion_draft/Adopted_Docs/Master_Street_Map.pdf

³²http://www.achdidaho.org/departments/PP/Docs/TLIP/TLIP_cities_discussion_draft/Adopted_Docs/Livable_Street_Design_Guide_Adopted_5-27-09.pdf

³³ <http://www.valleyregionaltransit.org/Portals/0/valleyconnect/valleyconnect.pdf>

Figure 7: Optimal Pedestrian Level of Service Conditions

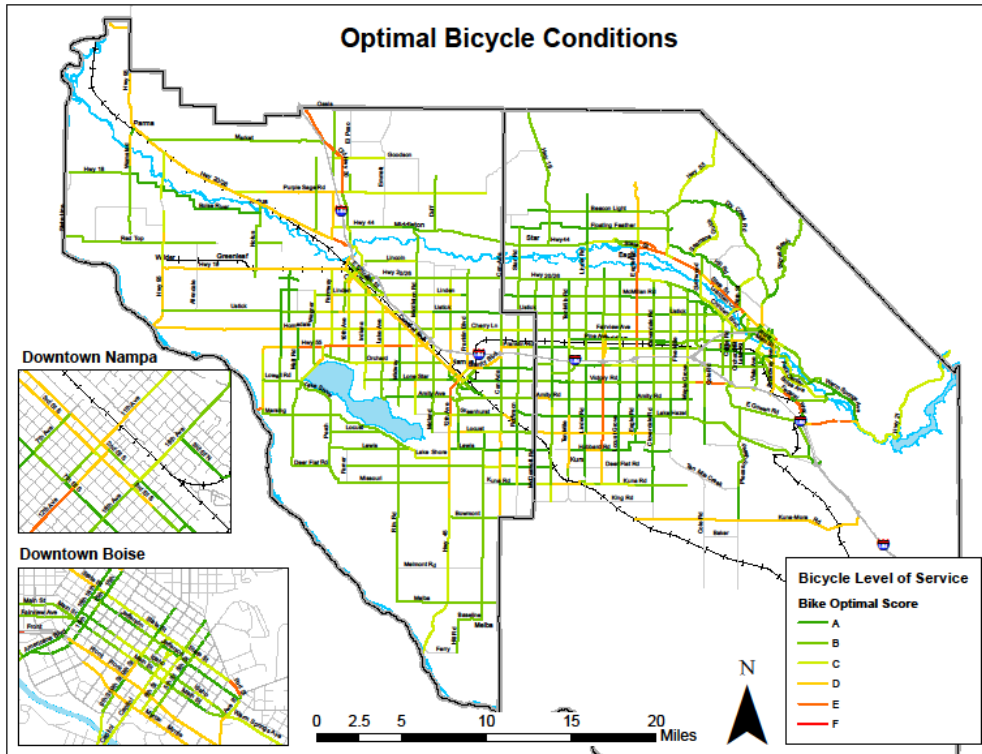


Figure 8: Optimal Bicycle Level of Service Conditions

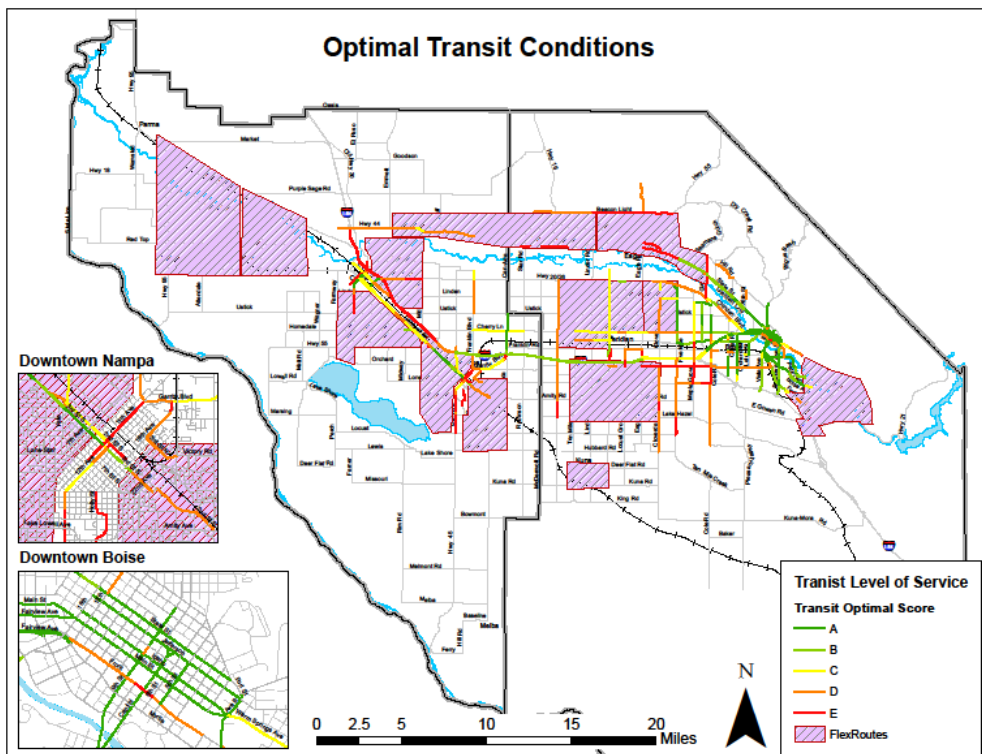


Figure 9: Optimal Transit Level of Service Conditions

Examining these optimal system maps provides another avenue to help understand the overall completeness of the Treasure Valley's future transportation network. This analysis helps demonstrate locations that perhaps could use more attention if additional funds were to become available. For example, in Figure 8, sections of 12th Avenue in Nampa continue remain at an "E" LOS grade for optimal bicycling conditions in the future.

Complete Streets LOS "Percent Complete" Comparison

To provide further interpretation to the Complete Streets modeling, one final analysis was completed. Comparing the numerical current LOS scores of each transportation mode to their respective optimal score, the "percent complete" of each road segment was determined. This process is particularly beneficial to the Complete Streets analysis due to the ability of the user to see how far along a certain area is in reaching its optimal goal. The "percent complete" is shown for each mode in Figures 10, 11, and 12.

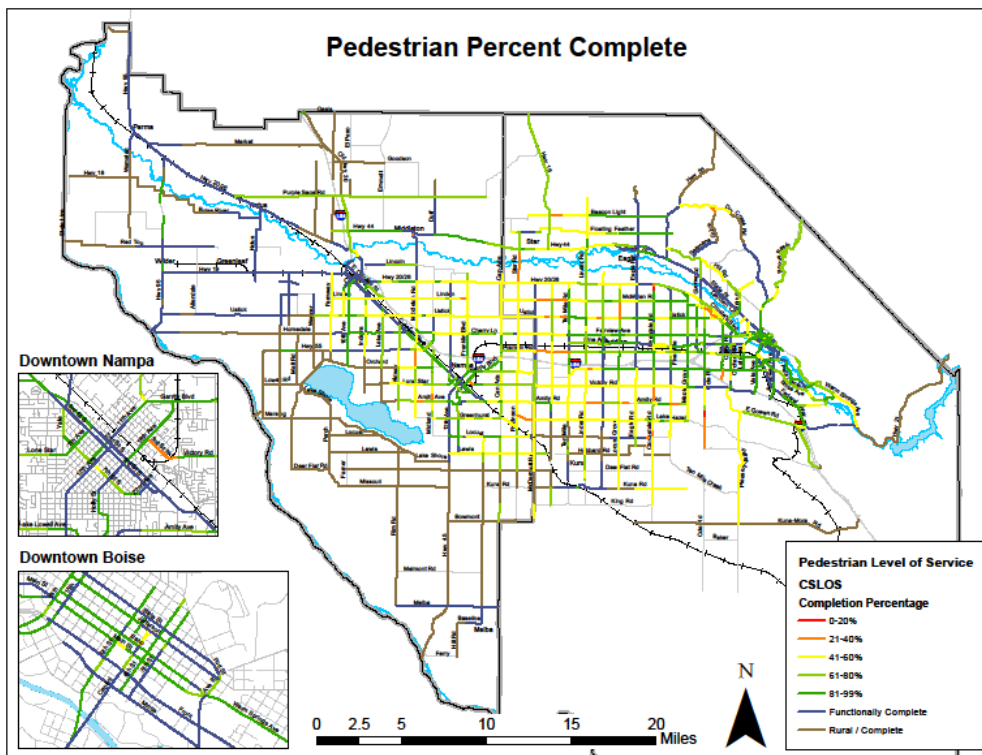


Figure 10: Pedestrian LOS Percent Complete

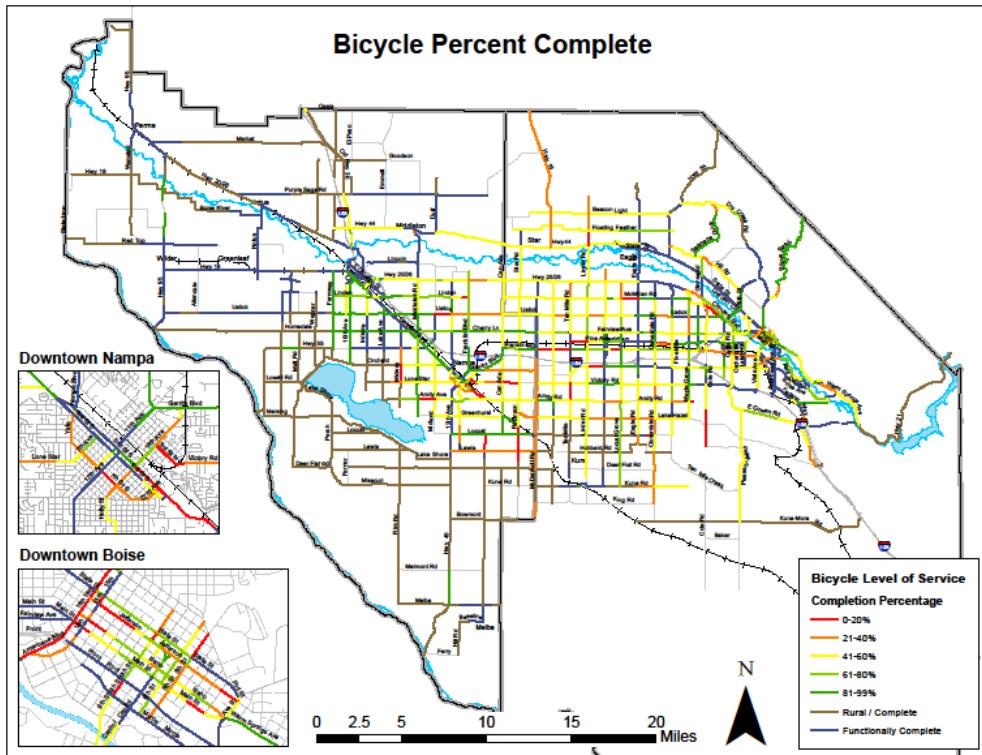


Figure 11: Bicycle LOS Percent Complete

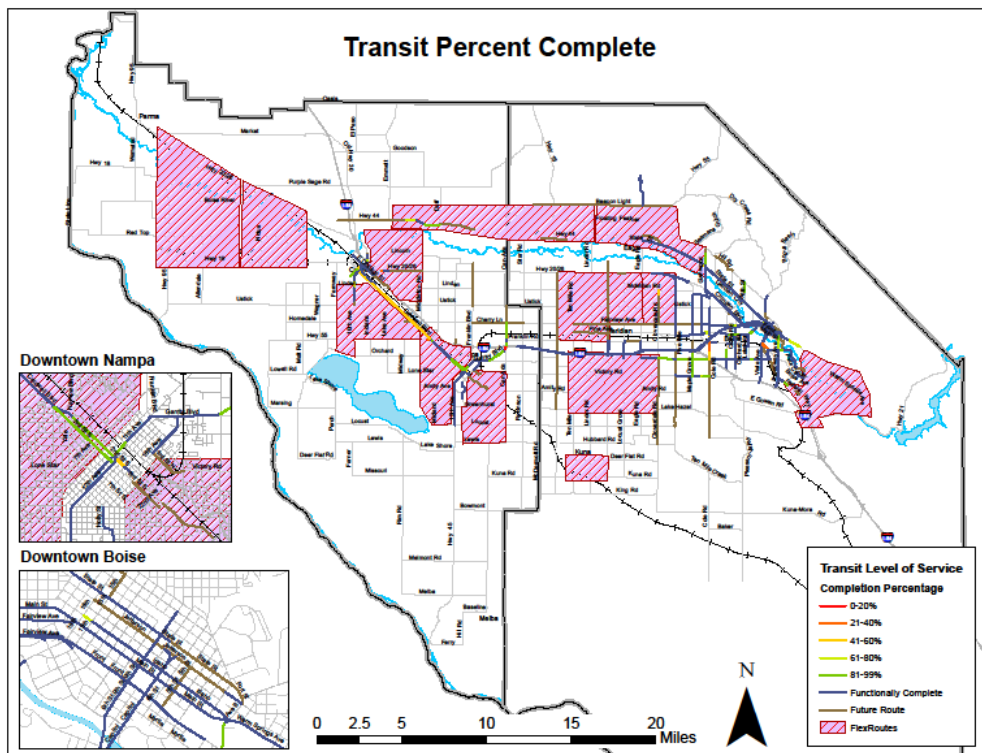


Figure 12: Transit LOS Percent Complete

As when examining the optimal system results, the “percent complete” analysis provides detailed information on which road segments are near their optimal LOS goals and which are further behind. For example, the bicycle percent complete analysis in Figure 11 shows that 10th Avenue in Boise is 20-40% of its optimal LOS. Information such as this can be greatly beneficial because it brings to focus road segments that perhaps need more attention to reach their optimal LOS compared to ones that are already almost there.

Conclusion

Complete Streets are an integral component of any transportation system, and the use of current of best practices in multimodal assessment methods (software and mapping) stands to aid evaluation, prioritization, and design of roadways.

COMPASS recognizes that the Complete Streets policy and evaluation is not a cure-all for multimodal transportation issues. Ultimately, realizing the vision of Complete Streets throughout particular areas of the Treasure Valley will require complementary policies among multiple agencies and regional collaboration for implementation. Complete Streets present one aspect of livable communities and provide insight to the larger relationship between land use and transportation.

Complete Streets Resources

National

National Complete Streets Coalition:

Reports, Articles, Presentations, Fact Sheets, and Design Guidance
www.smartgrowthamerica.org/complete-streets/complete-streets-fundamentals/resources

American Planning Association:

Complete Streets Resource List
www.planning.org/research/streets/resources.htm

State and Local

Idaho Transportation Department:

Bicycle and Pedestrian Resources, National, Statewide, and Local Organizations
(*Over 50 Useful Links*)

itd.idaho.gov/bike_ped/resources.htm

Transit, Bicycle, and Pedestrian Mobility Funding Guide

www.itd.idaho.gov/bike_ped/Funding%20Guide.pdf

Ada County Highway District:

Livable Streets Design Guide and Complete Streets Policy

www.achdidaho.org/departments/PP/TLIP.aspx

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