

Mosaic Presentation to OTC



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Objectives of this Presentation

- Review project goals and accomplishments
- Introduce the new Mosaic website, User Guide, and analysis tool
- Discuss next steps and goals for beta-testing activities

Introduction

Legislature's Definition:

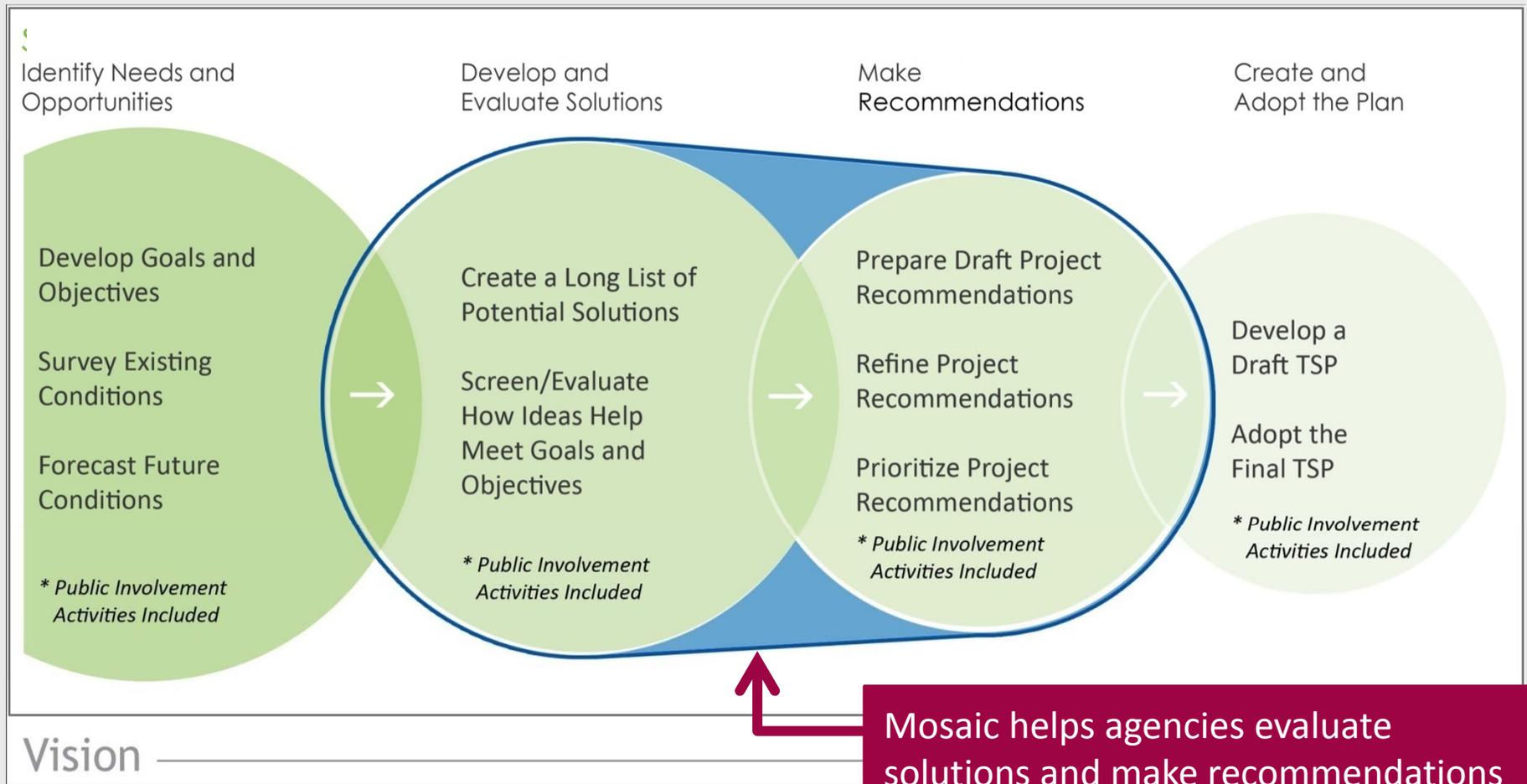
“Least cost planning means a process of comparing direct and indirect costs of demand and supply options to meet transportation goals, policies or both, where the intent of the process is to identify the most cost-effective mix of options.”

HB 2001 (passed in 2009) directed ODOT to develop a least cost planning methodology “for use as a decision-making tool in the development of plans and projects at both the state and regional level”.

ODOT's Goals

- Meet the legislative definition with Mosaic
- Strive to enable fair and transparent analysis of many different kinds of solutions
- Create useful products that can be employed during the planning process to help decision making

How Mosaic Fits into the Planning Process



Mosaic: What it is, What it Does

- A web-based resource for use in transportation planning decision-making.
- An effective and efficient way to evaluate the social, environmental and financial costs and benefits of transportation plans.
- A method that is scalable based on a jurisdiction's transportation staff, available data and particular needs.
- Establishes a common set of measures to evaluate options and assist selection of the best actions and investments.
- Offers a transparent record of the evaluation process for transportation actions and investments.

Who's Been Involved?

- The STIP Stakeholder Committee
 - A diverse group of transportation stakeholders
- The Work Group
 - Affected ODOT and MPO staff
- Indicator Development Teams
 - Technical experts for each analysis category
- Tool Team
 - Small, diverse team of possible users with technical experience

What's Been Accomplished

- Discussion paper with case studies completed
- Key Mosaic framing questions answered
 - E.g. focus on planning level first
- Nine categories of transportation impacts to evaluate
 - Categories relate closely to OTP goals and policies
- Comparison process determined
 - Benefit-Cost plus MODA
- Mosaic User Guide and Tool developed and ready to test



Website Tour



November 2, 2012

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Programs Guide

Download Tool



Mosaic is designed to be used within the transportation planning and decision-making process

Home

Mosaic is Oregon's value and cost informed transportation planning tool, developed by the Oregon Department of Transportation (ODOT) in collaboration with a group of stakeholders representing a diverse range of interests. It offers Oregon transportation planners and decision makers an efficient, transparent way to evaluate the social, environmental, and economic costs and benefits of transportation programs and investments. By supporting decision makers with identifying investments that provide the best value for money, it will help make the most of limited resources.

Mosaic can be used at the local, regional, and state levels, and is scalable to accommodate varying staff sizes, available data, and unique community needs and goals. It is user friendly, designed to be used frequently within the transportation planning process. [Learn more . . .](#)

Benefits

For decision makers

For citizens

For transportation professionals

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Background

What Is Mosaic

Benefits

Mosaic is Oregon's value and cost informed Mosaic Framework tool, developed by the Oregon Department of Transportation Library in collaboration with stakeholders

representing the federal government; metropolitan planning organizations (MPOs); area commissions on transportation (ACTs); and the public transit, environmental, and business communities.

The development of Mosaic was initiated by Oregon's 2009 Jobs and Transportation Act, which called for ODOT to develop a least cost planning tool to help inform transportation decision making. The term "least cost" is defined by the Act (now Oregon Revised Statutes [ORS] 184.653) as: "a process of comparing direct and indirect costs of demand and supply options to meet transportation goals, policies or both, where the intent of the process is to identify the most cost effective mix of options."



In 2009, the Oregon State Legislature adopted the Oregon Jobs and Transportation Act, which directed ODOT to explore developing a "least cost planning" decision-making tool.

Background

Mosaic was initially called "ODOT's Least Cost Planning Tool." While the concept of the least cost planning still forms the foundation of the tool, it was renamed to help eliminate confusion over the tool's purpose and intent.

A least cost planning (LCP) analysis identifies some mix of capacity expansion (supply-side) and demand reduction (demand-side) options to meet future needs, and results in a cost-minimizing combination of the two sets of options. Least cost planning also involves the evaluation of a wide variety of options (including demand management) and the consideration of the financial, environmental, and social costs of options to meet the needs.

Read more info on the history of the project by clicking the titles below.

Roots in the Electric Utility Industry

Applying Least Cost Planning to Transportation

In the 1990s, some transportation planners—faced with rising highway construction costs and mounting environmental concerns—turned to the utility industry for guidance on how to improve decision-making processes. Of particular interest were the methods used by utilities and energy planning agencies to compare demand-side options on an equal footing with capacity expansion, while considering a broad range of effects.

However, it was found that LCP, as used by the utility industry, could not be directly applied to transportation because supply networks function differently and the tradeoffs in transportation are highly complex. In the electric utility industry, for example, all decisions come down to one common unit—kilowatt hours—and the supply of electricity can be easily moved around the network. In transportation, however, individuals make trips each day from varied origins and destinations. Unlike a kilowatt, a trip varies widely in its key characteristics, including value, duration, mode, and direction.



History of LCP

More information on the history of Least Cost Planning (LCP) and its application to transportation is available in the 2010 discussion paper, "The History and Application of Least Cost Planning to Transportation."



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User's Guide

Mosaic is designed to be used within the transportation planning process, from beginning to end. Before a work must be done and to

Before you start: outline

Engaging mosaic, explain

- Step 1: Identify Bundles
- Step 2: Establish the Framework
- Step 3: Weight Modal Indicators
- Step 4: Populate the Tool
- Step 5: Interpret the Results
- Step 6: Use the Results to Make Decisions

Before You Start . . .

Engaging Mosaic

Step 1: Identify Bundles Of Actions

Step 2: Establish The Framework

Step 3: Weight Modal Indicators With Stakeholders

Step 4: Populate The Tool

Step 5: Interpret The Results

Step 6: Use The Results To Make Decisions



Home > User's Guide > Step 2: Establish the Framework

Step 2: Establish the Framework

During this step, users determine which Mosaic categories apply to their project, program, or policy. To do that, you must first understand the Mosaic Framework and key terms (see below). Once categories are determined, Specific Indicators for each can be identified. These indicators, in turn, provide the basis for "scoring" various alternatives.

The Mosaic Framework

The Mosaic framework is based on the goals and policies of the [Oregon Transportation Plan \(OTP\)](#). The framework includes [nine categories](#) for transportation system performance, each with its own objective and set of general and specific indicators, which are the backbone of Mosaic. Understanding how this framework works and how it corresponds to the state's long-range transportation plan is critical to successfully using the tool.

The nine categories are similarly to the evaluation criteria typically established at the beginning of any planning process. Using Mosaic to evaluate potential transportation investments, an agency can help ensure its plan is consistent with the goals and objectives of the OTP, and that it fulfills the intent of the consistency clause in the Transportation Planning Rule (TPR).

Definition of Key Terms

Developing specific indicators

Indicator development teams (IDTs) were established for each category of transportation system performance. The IDTs worked collaboratively to establish the specific indicators. The IDT recommendations were incorporated into Mosaic and are also documented on ODOT's website.

[Home](#) > [Categories & Indicators](#)

Scoring Categories & Indicators

- ▶ Accessibility
- ▶ Economic Vitality
- ▶ Environmental Stewardship
- ▶ Equity
- ▶ Funding the Transportation System/Finance
- ▶ Land Use and Growth Management
- ▶ Mobility
- ▶ Quality of Life and Livability
- ▶ Safety and Security

Categories & Indicators

Click on the icons below to learn more about each Mosaic Category and its General and Specific Indicators.



ACCESSIBILITY



ECONOMIC VITALITY



ENVIRONMENTAL STEWARDSHIP



EQUITY



FUNDING THE TRANSPORTATION SYSTEM/FINANCE



LAND USE AND GROWTH MANAGEMENT



MOBILITY



QUALITY OF LIFE AND LIVABILITY



SAFETY AND SECURITY

Scoring Categories & Indicators

- Accessibility
- Economic Vitality
- Environmental Stewardship
- Equity
- Funding the Transportation System/Finance
- Land Use and Growth Management
- Mobility
- **Quality of Life and Livability**
 - Journey Ambiance
 - Noise
 - Physical Activity
- Safety and Security



Quality of Life and Livability

Does the “bundle of actions” improve the quality of living and working environments, and the experience for people in communities across Oregon?



GENERAL INDICATORS

Journey Ambiance

Noise

Physical Activity

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Home > Categories & Indicators > General Indicator

Scoring Categories & Indicators

- Accessibility
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- ▾ Quality of Life and Livability
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QUALITY OF LIFE AND LIVABILITY

Physical Activity

Transportation systems can influence the amount of physical activity residents of a community get by the presence or absence of active mode infrastructure. Active modes are generally considered to include non-motorized modes, such as biking and walking, and transit (which must often be accessed by foot or bike). Increased levels of physical activity have been shown to increase both physical and mental health, which enhances overall quality of life.

SPECIFIC INDICATORS

Lives saved due to active transportation

Reduced incidence of disease due to active transportation

Home > Categories & Indicators > Category

Scoring Categories & Indicators

- ▶ Accessibility
- ▶ Economic Vitality
- ▶ Environmental Stewardship
- ▶ Equity
- ▶ Funding the Transportation System/Finance
- ▶ Land Use and Growth Management
- ▶ **Mobility**
 - Out-of-Pocket Costs
 - Quality of Service
 - Travel Characteristics
 - Travel Time
- ▶ Quality of Life and Livability
- ▶ Safety and Security



Mobility

Does the "bundle of actions" help to reduce travel costs (out-of-pocket expenses and travel time) and improve travel time reliability for all modes?



GENERAL INDICATORS

Out-of-Pocket Costs

Quality of Service

Travel Characteristics

Travel Time

Scoring Categories & Indicators

- ▶ Accessibility
- ▶ Economic Vitality
- ▶ Environmental Stewardship
- ▶ Equity
- ▶ Funding the Transportation System/Finance
- ▶ Land Use and Growth Management
- ▼ Mobility
 - Out-of-Pocket Costs
 - Quality of Service
 - Travel Characteristics
 - Travel Time**
- ▶ Quality of Life and Livability
- ▶ Safety and Security



MOBILITY

Travel Time

Travel time refers to the amount of time it takes to travel between an origin and destination. It is often considered to be a user cost and/or impediment to travel (though not always). Transportation decision making can affect travel times by either increasing or decreasing the capacity and connectivity of transportation networks (for all modes).

SPECIFIC INDICATORS

Hours of Congestion

Travel Time

Programs Guide

What is the Programs Guide?

The Mosaic Programs Guide includes transportation actions that can help meet the goals of the nine Mosaic Categories of transportation system performance, but that would not typically be included in a capital improvement plan. These are the “soft side” approaches that address travel demand and complement more traditional approaches to managing travel supply and capacity. The Guide includes programs designed to enhance access, equity, mobility, quality of life, safety, environmental quality, and economic vitality through means other than direct public investment in physical infrastructure.

What's included in the Programs Guide?

The Guide includes a variety of **programs** within eight subject areas:

- Bicycle and Pedestrian
- Equity
- Land Use and Built Environment
- Operations/ Intelligent Transportation System (ITS)
- Pricing
- Public Transportation
- Safety
- Transportation Demand Management

Each program is described in a cutsheet that describes the program and its benefits, how it relates to the Mosaic Categories of transportation system performance and General Indicators, what is known about its effectiveness, examples of best practices, and implementation resources. These are designed to be easy-to-use reference guides to aid users in identifying and implementing the mix of programs best suited to their communities needs.

How does it work with Mosaic?

How to use the Programs Guide

These are the “soft side” approaches that address travel demand and complement more traditional approaches to managing travel supply and capacity. When one or more of the programs are included in a bundle of transportation actions, this information is used to inform the Mosaic output summary tables.

[Home](#) > [About](#) > [Library](#) > [Programs Guide](#) > [Bicycle/Pedestrian](#)

Bicycle and Pedestrian Programs

Below are the Bicycle and Pedestrian Programs, click on the program names below to download the PDFs.

- [Bike Sharing Program](#) (PDF, 490KB)
- [Complete Streets Program](#) (PDF, KB)
- [Safe Routes to School](#) (PDF, KB)



[Home](#) > [About](#) > [Library](#) > [Programs Guide](#) > [Bicycle/Pedestrian](#)

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bike-sharing-program (4).pdf - Adobe Acrobat Pro

File Edit View Document Comments Forms Tools Advanced Window Help

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Find

Bike Sharing

What is it?

Bike sharing programs typically include a fleet of bicycles strategically placed throughout a city that are available for short-term rental. Programs usually involve distinctive and recognizable bicycles; docking stations; and an information technology (IT) system to facilitate reservations, pick-up and drop-off, and location tracking. Membership fees and usage fees are typically modest and available in various time increments (e.g., daily, weekly, or annually). Many bike share programs also offer members brief rental periods for free (e.g., 30 minutes), after which they are charged a usage fee based on the length of the rental.

What are the benefits?

Which Mosaic Categories does the program support?

- ACCESSIBILITY
- EQUITY
- MOBILITY
- QUALITY OF LIFE

Step 3: Weight Modal Indicators with Stakeholders

Some Mosaic information can be measured in dollars and some in other units of measure (time, area, etc.). All monetary benefits and costs are summed easily. All non-monetary information is weighted before being summed.

The critical elements of weighting are that it should be done by stakeholders (insert sidebar on stakeholders), and that it should be used to express the (range of) value, or "weight" associated with each Indicator. This weight reflects stakeholders assessment of the relative importance of one Indicator as compared with another.

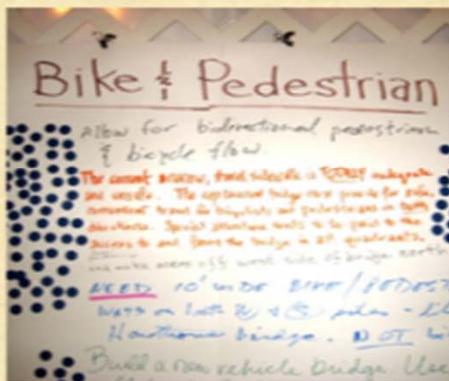


Before weighting, stakeholders should be in agreement that they represent, as a group, a reasonable cross section of interests and perspectives. They should be familiar with the definitions of the Categories and Indicators they will be weighting. At that point, they should consider and discuss the relative value of each Indicator.

A community may choose to approach the weighting process by first weighting General Indicators and then Categories of transportation system performance, or vice versa. Weights can only be assigned to Categories and General Indicators that have a MODA specific indicator. Weighting should be done with stakeholders in small groups, preferably groups that include people with different interests who can, together, discuss tradeoffs. Most weighting requires one to two meetings.

Weighting provides these benefits:

- It is a proven, useful approach for evaluating multiple criteria.
- It can be conducted as part of the MODA approach is particularly good at facilitating insight, learning, and consensus building with stakeholders.
- Testing the sensitivity of results to changes in the weightings of different groups or individuals enhances clarity and consensus.
- Results provide clear documentation for the reasons an alternative is selected.
- The weighting process builds a sense of stakeholder ownership in decisions made.



Weights can be applied in one of two ways: by Category, followed by Indicator; or by direct weighting of an Indicator.

Involve the public

Weighting typically is done in small groups of stakeholders. It can also be done with the general public via an interactive activity on a website.



Home > Download Tool

Download Tool

After doing the necessary preliminary work (see [User's Guide: Steps 1-4](#)), you are ready to download and use the Mosaic tool.

After you download the Excel file to your computer, you will be able to use the tool on its own. However, you may want to refer to this website for more information (or at least have access to the internet in order to make use of embedded links).

Download Mosaic Tool (Excel, 1,604 KB)

Use the Microsoft Excel Viewer to view and print Excel spreadsheet files (.xls) if you do not have Excel on your computer.

Download a free version of Microsoft® Excel Viewer (Supported Operating Systems: Windows Server 2003, Windows Vista, Windows XP Windows 7; Windows Server 2008)

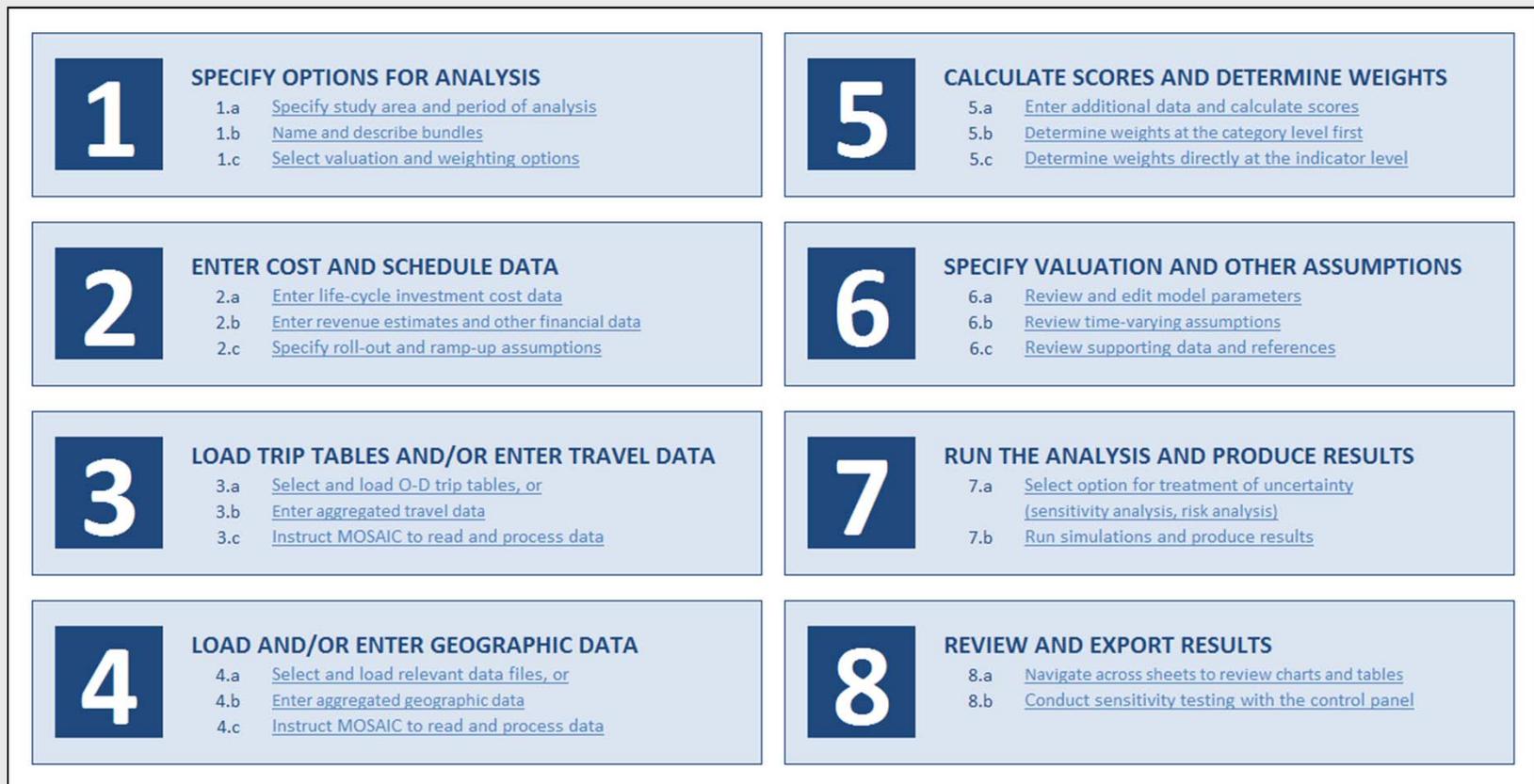


Mosaic Tool



November 2, 2012

The Mosaic tool is an Excel workbook



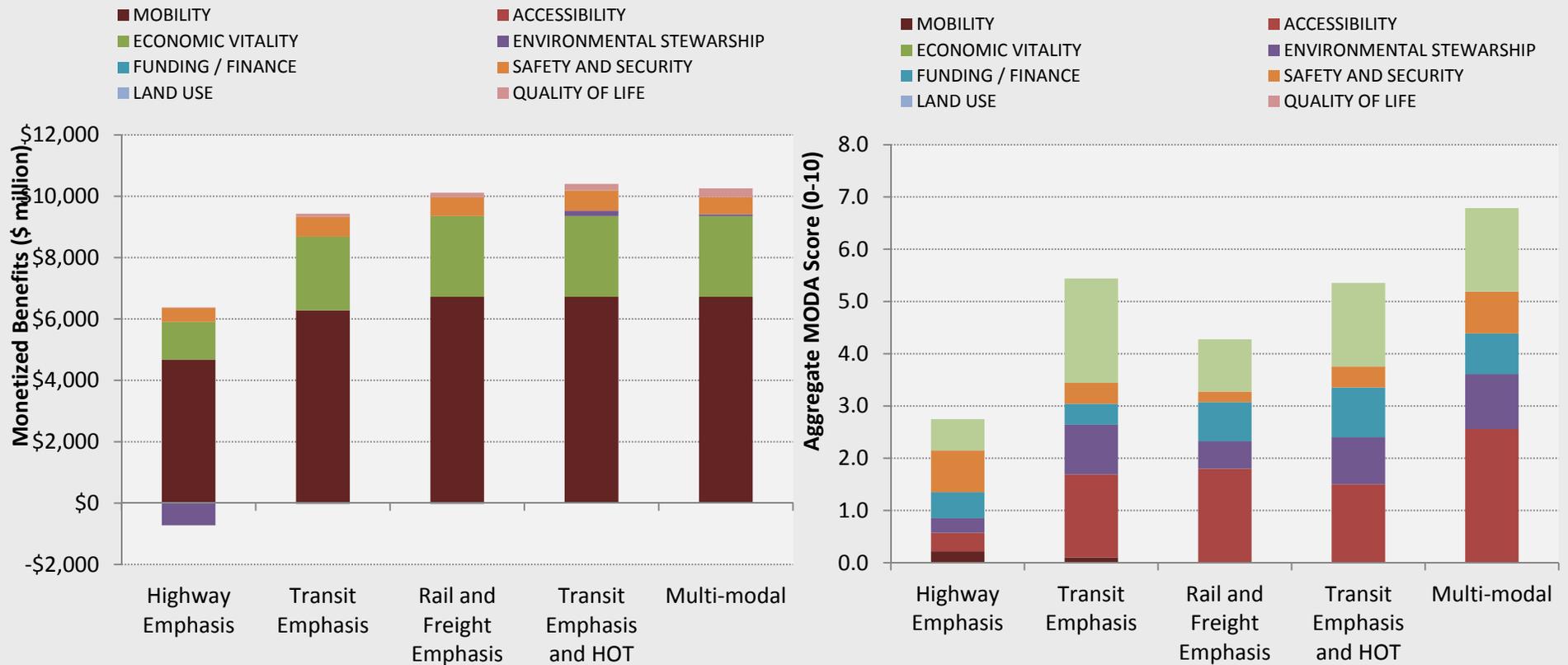
With a set of linked spreadsheets:

1	WELCOME
2	CONTENT
3	HELP
4	BUNDLES INFO
5	CONTROL PANEL
6	INDICATORS
7	COST & SCHEDULE
8	MODEL PARAMETERS
9	TIME-VARYING ASSUMPTIONS
10	O-D TRAVEL DATA
11	AGGREGATE TRAVEL DATA
12	OTHER INPUT DATA
13	WEIGHT CATEGORIES
14	WEIGHT INDICATORS

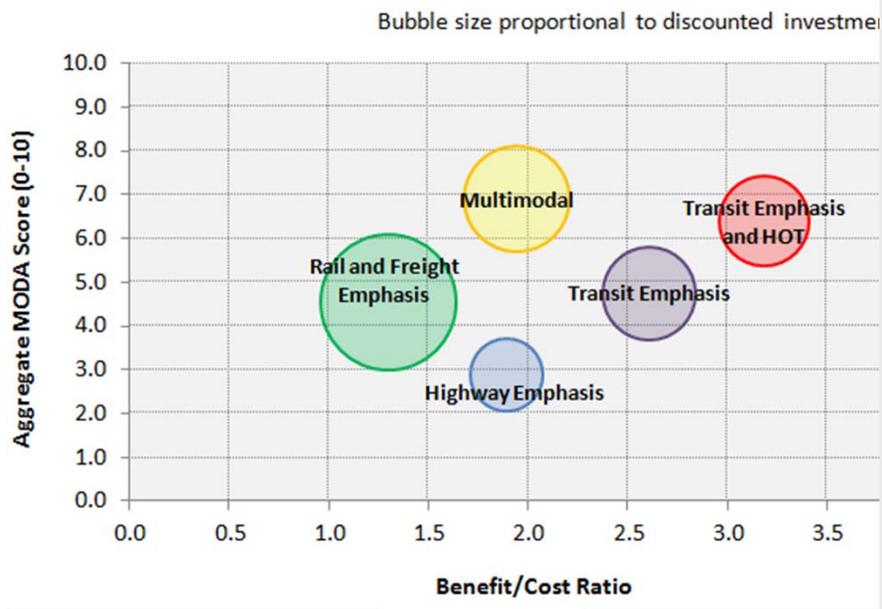
15	MOBILITY
16	ACCESSIBILITY
17	SAFETY & SECURITY
18	ENVIRONMENT
19	ECONOMIC VITALITY
20	FUNDING & FINANCE
21	LAND USE
22	QUALITY OF LIFE
23	EQUITY

24	NPV CALC
25	OUTPUT TABLES
26	OUTPUT CHARTS
27	OUTPUT SHEETS
28	PROGRAMS
29	PROGRAMS IMPACTS
30	ECONOMIC DATA
31	SUPPORTING DATA
32	SKETCH MODELS
33	REFERENCES
34	LISTS & LOOKUP

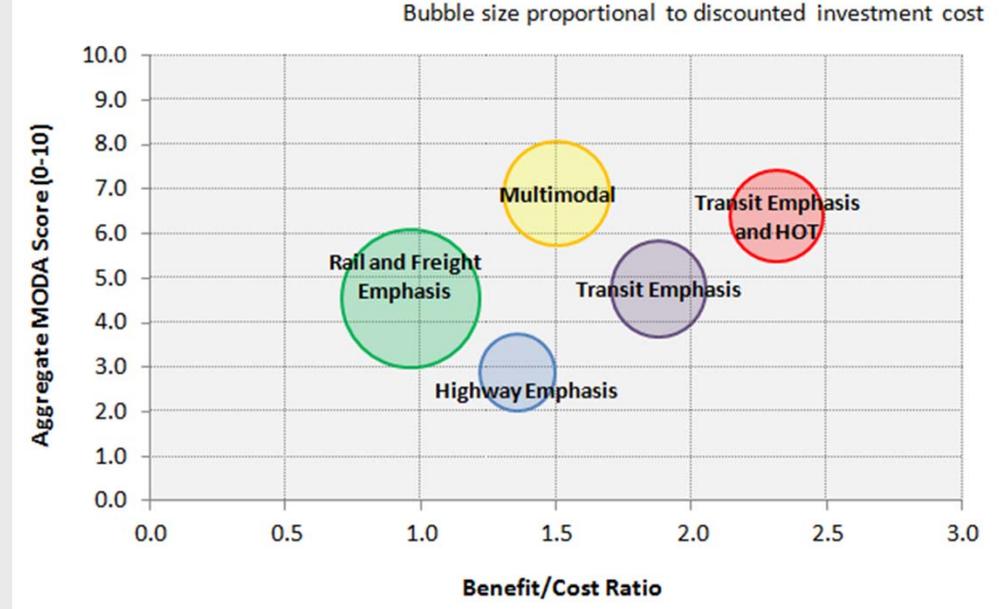
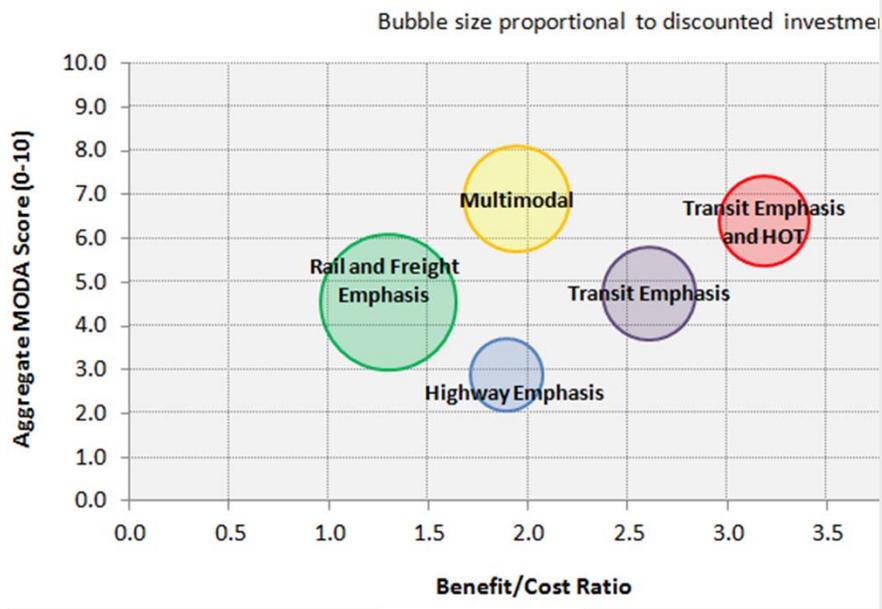
Here's a sample of what you'll learn



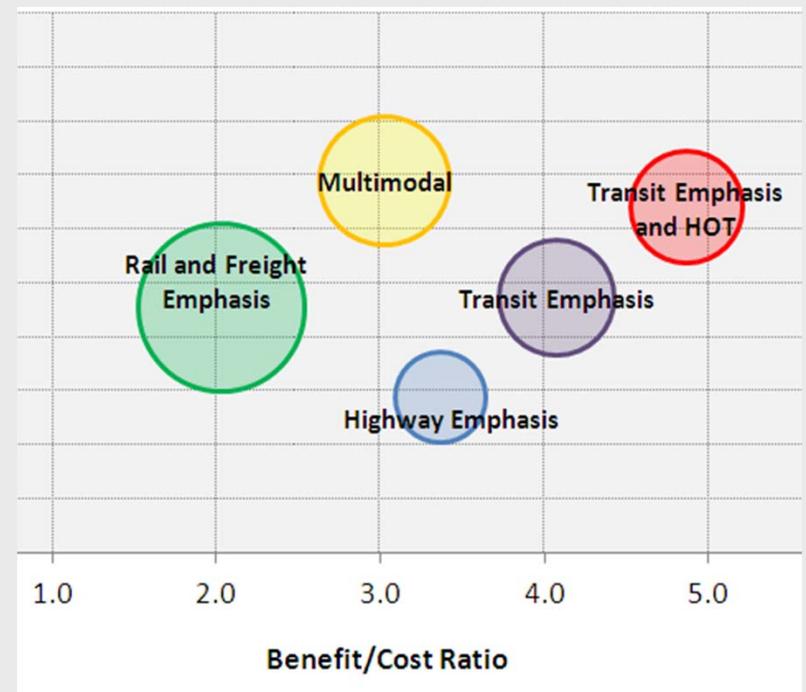
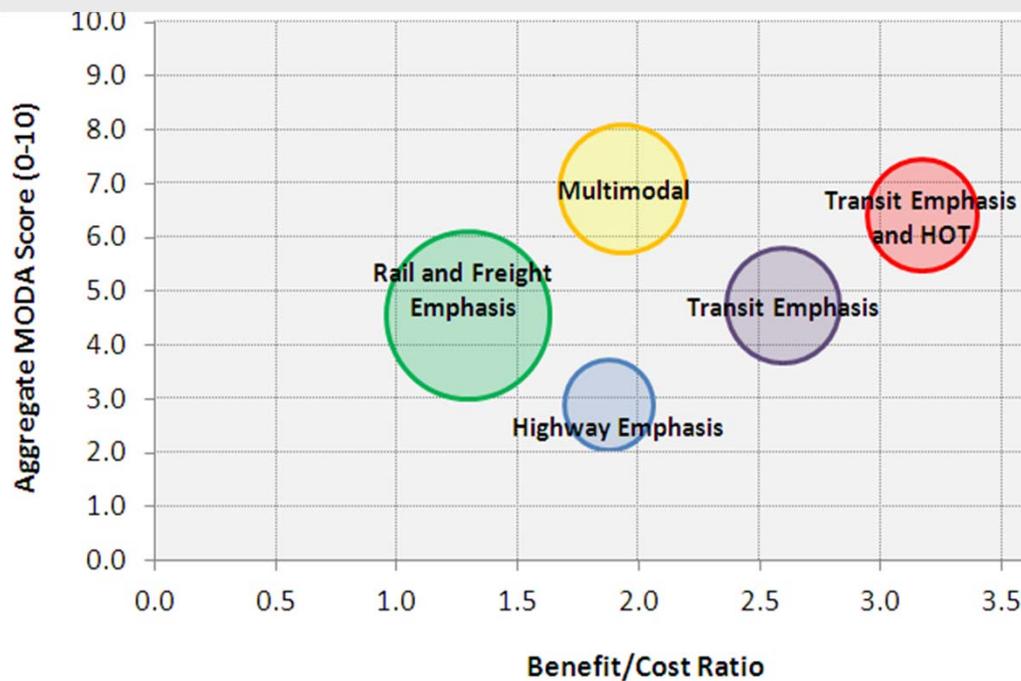
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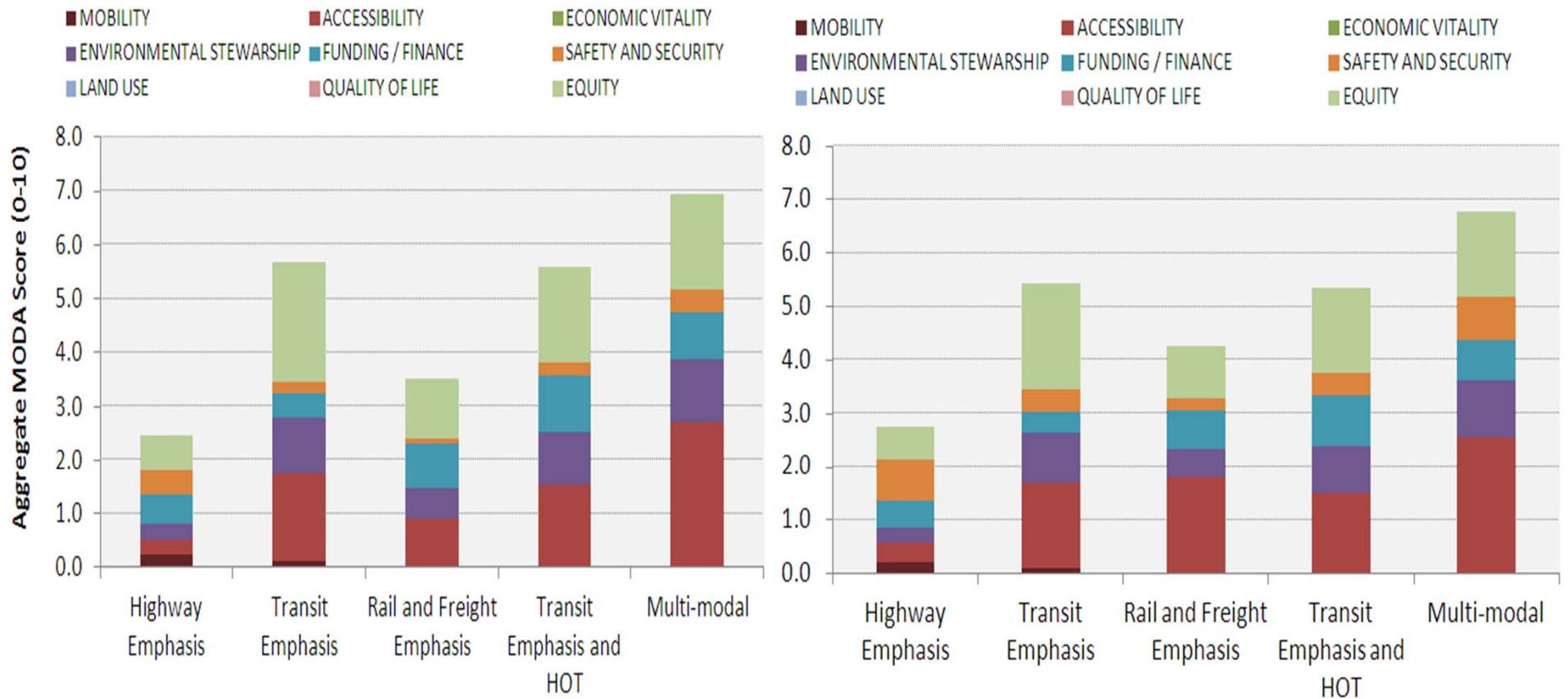
What if: costs go up?



What if: economic growth accelerates?



What if: people weight categories differently?



Conclusions and Next Steps

- Developing the least cost planning process and tool requested by the JTA is almost complete
- Accompanying the tool is a User Guide and website with info, instructions, and resources
- In 2013, TDD will test the tool to verify its processes and ensure helpful outputs

Stage 3 Testing Goals

- Testing is to demonstrate that the Mosaic process and tool can work and provide information helpful to a planning process
 - Learn what works well or needs improvement
 - Learn what resources are needed to successfully employ Mosaic
 - Learn the most appropriate kinds of uses for current Mosaic tool

Questions and Discussion

Project Website:

<http://www.oregon.gov/ODOT/TD/TP/pages/lcp.aspx>