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Metro | *Agenda*

2018 REGIONAL TRANSPORTATION PLAN UPDATE

Transportation Equity Work Group - Meeting # 5

Date: September 29, 2016
Time: 9 – 11 a.m.
Place: Metro Regional Center, Room 370 A&B
600 NE Grand Avenue, Portland, OR 97232

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Agenda items

9:00	**Welcome, Introductions, and Quick Staff Updates**	Cliff Higgins
9:05	**Partner Updates** *Who have you talked to about this work? What have you heard?*	Everyone
9:20	**Spring Engagement Update** *Summary of results and key messages*	Cliff Higgins/Peggy Morell
9:30	**2018 RTP Transportation Equity System Evaluation – Methods Recomendations** *Present the recommended methods to-date, overarching assumptions, and gather input on key areas for the recommended methods.*	Grace Cho/Everyone
10:45	**Next Steps**	Grace Cho
11:00	**Adjourn**	

Meeting Packet	Next Meeting
• Agenda • Memorandum – Transportation Equity Recommended Methods for System Evaluation Measures • Attachment A – Draft Transportation Equity Evaluation Methods and Overarching System Assumptions • 2018 RTP Assessing Directional Change Methods Overview • Meeting Summary – Transportation Equity Work Group #4	**Thursday, November 17, 2016** 2018 RTP Transportation Equity Work Group Meeting # 6 1:00 – 3:00 pm, Room 401, Metro

Directions, travel options and parking information
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Metro | *Meeting Summary*

2018 RTP Transportation Equity Work Group – Meeting #4
Thursday, June 30, 2016
1:00 – 3:00 p.m.
Metro Regional Center, Council Chambers

Committee Members	**Affiliation**	**Attendance**
Jessica Berry	Multnomah County	Present
Stephanie Caldera	Oregon Department of Environmental Quality	Present
Brad Choi	City of Hillsboro	Present
Courtney Duke	City of Portland – Transportation	Present
Aaron Golub	Portland State University	Present
Scotty Ellis	Metro	Present
Eric Hesse	TriMet	Present
Cora Potter	Ride Connection	Present
Steve Williams	Clackamas County	Present
Kari Schlosshauer	Oregon Walks/National Safe Routes to School Partnership	Present
Karen Savage	Washington County	Present
Steven Nakana	Port of Portland	Present
Kay Durtschi	Citizen Member of MTAC	Present
Terra Lingley	ODOT	Present
Nicole Phillips	Bus Riders Unite	Present
Interested Parties		
Katie Selin	Portland State University	Present
Bradley Buselli	Portland State University	Present
Metro Staff		
Grace Cho	Metro	Present
Lake McTighe	Metro	Present
Cliff Higgins	Metro	Present
Jamie Snook	Metro	Present
John Mermin	Metro	Present
Peggy Morell	Metro	Present
Cindy Pederson	Metro	Present

I. WELCOME AND STAFF UPDATES

Cliff Higgins welcomed meeting attendees and walked through the agenda for the work group meeting. He also gave a brief staff update on the progress of the spring engagement activities and stated a summary report on the spring engagement will be available by the September work group meeting.

II. INTRODUCTIONS AND PARTNER UPDATES

In efforts to provide enough time for discussion on the third item in the agenda, Mr. Higgins asked any new work group members to introduce themselves. Mr. Steven Nakana, from the Port of Portland, introduced himself and provided a brief background on his work as the equity officer at the Port. Following introductions of new members, Mr. Higgins asked if any members had any updates or communication to the work group.

III. 2018 RTP DRAFT TRANSPORTATION EQUITY SYSTEM EVALUATION MEASURES RESEARCH AND STAFF RECOMMENDATIONS

Ms. Cho reminded members at the May work group meeting, the work group gave the "green light" for staff to move into a research phase to identify how the priority areas identified by historically underrepresented communities could be measured in a system-wide transportation evaluation. She then explained the focus of this June work group meeting is to discuss the results of the research phase and the staff recommendations for the 2018 RTP transportation equity system evaluation measures. Prior to beginning the presentation on the research results, she reminded the work group that the charge is to define system evaluation measures around the priority topics identified by historically underrepresented communities. She then showed a list of the priority topics which were discussed in May.

Following, Ms. Cho walked through the research process undertaken by PSU. She discussed the research work was to identify system evaluation measures which could assess the priorities identified by historically underserved communities. The PSU research efforts looked into three different areas to identify measures: 1) equity assessments undertaken by other regional agencies; 2) work published by think tank and advocacy organizations; and 3) academic literature. The PSU work identified over 120 system evaluation and monitoring measures that address the different priority topic areas identified by historically underrepresented communities. The PSU team screened 120 system evaluation and monitoring measures for those which could be used in a system evaluation of future transportation conditions, which narrowed the number of measures. Upon further review, the PSU team determined many were minor variations of approximately 20 system evaluation measures. These 20 system evaluation measures were recommended to forward to Metro staff for further consideration.

Once the PSU team had brought forward a set of recommendations to Metro staff, Ms. Cho then explained a screening process was used to determine which measures would be recommended to the work group. Metro staff used four screening questions:

1) Is the measure able to assess future conditions and can the measure provide information from an equity perspective in the future conditions?
2) Can the measure inform the 2018 RTP performance targets or system evaluation?

3) Does the measure align and inform other 2018 RTP focus areas?
4) Can the system measure be completed in the timeframe of the 2018 RTP?

Based on the screening questions applied by Metro staff, Ms. Cho said 11 evaluation measures were being recommended for the transportation equity analysis. Ms. Cho noted seven of the 11 measures are confirmed recommendations, while four recommendations remain pending at this time because they warrant further discussion with public health partners and potential partnership to conduct the analysis for the measure.

Ms. Cho also discussed several key assumptions for the overall system evaluation which are necessary in order to conduct the transportation equity analysis with the 11 recommended measures. She mentioned these are the key assumptions Metro staff has identified to date, but others may emerge staff continues to develop and apply the system evaluation measures.

At this point, Mr. Higgins paused the presentation to allow work group members to ask any questions regarding the information presented.

Mr. Hesse asked how the transportation equity analysis will consider the transportation needs of people with disabilities. Ms. Cho responded with Metro staff's struggle to with data related to people with disabilities. She said the intention is to incorporate different recommendations and considerations from TriMet's Coordinated Transportation Plan for Seniors and Persons with Disabilities into the work group recommendations.

Mr. Williams asked as to why the transportation equity analysis is considering the race and ethnicity rather than emphasizing income as the main driver for the work. He suggested the transportation needs are likely the same between people of different race and ethnicity, but of a similar income group. He also asked for data to support difference in travel patterns by race and ethnicity. He asked whether the Oregon Household Activity Survey (OHAS) indicates different travel patterns by race and ethnicity. Ms. Phillips responded to Mr. Williams question about why an income-only focused approach misses a number of the different institutional barriers which are driven by race and ethnicity. Additionally, Mr. Golub cited different research which illustrates differences in travel patterns based on race and ethnicity.

A work group member suggested the system evaluation measures take into account a person's preference for travel rather than how the person has to travel because of a lack of options. She noted that the lack of viable options can force the use of a specific travel option and while investment in that option may improve travel, it is not addressing or supporting the preferred travel option.

Ms. Phillips made a comment about one of the key assumptions for the overall system evaluation. She expressed concerns that community change is happening at a rapid pace and that even making certain static assumptions about communities for the next ten-years maybe a false assumption.

Ms. Caldera commented on her support for proposed measure #9 which is taking a more expansive look at environmental impacts.

Ms. Berry asked Metro staff to elaborate more about the underlying land use, population, and employment forecast for the system evaluation. She asked more specifically how staff gathers the data to understand where low-income populations shift or move to in the future. Ms. Cho explained as part of Metro's work related to the urban growth management decision process, Metro uses a modeling tool which takes in land use and zoning information from local jurisdictions and projects out information certain population, demographic, and employment information in a spatial context.

Another work group member commented that some of the measures seemed circular.

Mr. Williams suggested the measures which have an air quality component should focus on those air pollutants which are transportation-related and harmful to communities.

Mr. Ellis also asked for the specific reasons as to why the nine measures were not recommended to move forward. Ms. Cho responded that many of these measures might have been duplicative or were interesting system measures, but they did not make it through the screening process applied by staff. Mr. Ellis asked that staff provide a document which illustrates the justification for the nine measures which were removed from consideration. Ms. Schlosshauer concurred with Mr. Ellis' suggestion.

IV. BREAK

Mr. Higgins excused everyone for a short stretch break.

V. 2018 RTP DRAFT TRANSPORTATION EQUITY SYSTEM EVALUATION MEASURES RESEARCH AND STAFF RECOMMENDATIONS

Following the break, Ms. Cho continued with the presentation. She mentioned in addition to the key assumptions for the overall system evaluation, there are a number of areas in need of further resolution for each of the individual system evaluation measures. She noted some staff has identified to date.

Ms. Cho also discussed how the work to define the transportation equity system evaluation measures is intended to help shape and support discussions for the 2018 RTP performance measures and targets. She outlined the request by the performance measures work group to gather feedback on certain key performance targets and system evaluation measures. Ms. Cho mentioned several of the transportation equity system evaluation measures overlap with the performance measures work group request. She also said she would being a proposal forward at the September work group meeting on refinements and suggestions for the performance measures.

At the end of the presentation, Ms. Cho paused to take any questions.

A work group member suggested including walking was not identified as part of the accessibility measures which are looking at destinations reachable by different modes by different timeframes.

Ms. Potter mentioned the accessibility measures should not solely focus on physical accessibility, but also temporal accessibility. She noted that while a transportation option may be available to someone during regular work hours, access may not be available at other times limiting options.

Ms. Schlosshauer suggested adding medical care facilities into the list of essential destinations for the accessibility measure. Another work group member suggested adding cultural venues and cultural destinations to the essential destinations list.

Ms. Potter commented that the job profile selected for the access to jobs measure should consider those jobs with wages that a single wage earner could support an average household.

Mr. Hesse commented that TriMet's Transit Equity Advisory Committee has been working on defining different essential destinations to access by transit. He offered to help bring that information if interested by Metro.

Ms. Durtschi commented that travel to, from, and between, non-residential areas are incredibly important and suggested this consideration be integrated into the accessibility measures.

Mr. Williams stated that in today's society it is not possible to define what a family wage job.

Another work group member commented that access will differ by community because there will be different barriers different communities face. These different barriers and considerations of access should be incorporated as to how Metro conducts the accessibility analysis for the system evaluation.

Mr. Hesse suggested that the transit access disadvantage measure be coupled with other metrics, such as demand and productivity, to help provide a full picture.

Mr. Choi commented he appreciated that the accessibility measures to jobs and essential destinations will be considering automobile travel. He noted that for people who have shift jobs, the temporal considerations of traffic congestion during peak travel times may not be as significant.

Mr. Ellis suggested reframing the recommended public health measures as all the system evaluation measures proposed are considered a part of public health.

Another work group member asked how the consideration of street design and safety would be considered as part of the transportation equity analysis system evaluation. Ms. Cho mentioned that project specific details, such as the design will vary from project-to-project, and she reiterated the work group charge. However, Ms. Cho also mentioned there will be future

opportunity through the 2018 RTP process to provide input to staff on various policy recommendations which can help influence design considerations in projects. Ms. Cho alluded to the next item on the agenda in addressing the different opportunities.

Ms. Cho mentioned that at the end of the discussion, her ask of the work group is to give Metro staff a "green light" to continue to move forward with the recommended transportation equity system evaluation measures and work through a number of the areas in need of resolution. Metro staff will report back the information at the September work group meeting.

Additionally, Ms. Cho mentioned for work group members interested digging into the details of the different measures, she is holding an informal and optional work session at the end of July to work through several of the areas in need of resolution.

Recognizing the remaining time for the agenda item is running short, Mr. Higgins took a "thumbs up or thumbs down" vote to the ask put forward by Ms. Cho regarding moving the recommended transportation equity system evaluation measures forward. Work group members voted unanimously to move the work forward.

VI. PROPOSED PRODUCTS TO RESULT FROM THE TRANSPORTATION EQUITY ANALYSIS

Ms. Cho provided a brief overview of the proposed products to come from the transportation equity analysis work. Ms. Cho noted, to date, six products have been identified. Ms. Cho walked through the timeframe of when the proposed products are likely to be developed and noted the work for these proposed products will kick off in 2017 after the assessment of the 2018 RTP investment package.

At the end of the presentation, Ms. Cho asked the work group if they had questions or comments regarding the proposed products.

Ms. Selin commented that the proposed products do not speak to broader audience aside from technical and policy wonks. In recognizing the transportation equity work is intended to connect community desires for the transportation system to policies, the work products should somehow connect with a community audience as well.

VII. QUESTIONS AND ANSWERS/NEXT STEPS

Ms. Cho asked if there were any further questions regarding the materials presented at the work group meeting.

Ms. Schlosshauer asked how Metro staff is coordinating among the different work groups; particularly she asked how the transportation equity work group is working with the finance work group. Ms. Cho responded that the finance work group scope is fairly narrowly defined in determining the overall financial projection for the 2018 RTP. She explained the process for defining the financial projection usually entailing taking historical revenues the region has received in the past and trending those revenues at an inflation rate into the future. Mr. Hesse stepped in, as someone who has been sitting in as an alternate on the finance work group, by

saying the projection of past revenue streams has been the main focus of the finance work group, but as the discussion moves forward towards new revenue streams there is the opportunity to discuss equity considerations of those revenue streams. Ms. Cho said she'd follow up with the finance work group to get a better understanding of the work group's scope of work and report back at the following work group meeting.

Mr. Golub commented that the combined housing and transportation expenditure measure may help identify the equity issues in the financing system. He also expressed progressive revenue sources to fund the transportation system should be part of the discussions in the finance work group.

Ms. Cho walked through a preview of the material to be covered at the September work group meeting. She also confirmed the work group will be meeting in November. Lastly, Ms. Cho walked through the homework assignments for the work group. She asked between the June and September work group meeting, for members to complete the following "homework" assignments:

- Report back to your people what was discussed at the work group meeting and bring any feedback.
- Participate in the optional work session in late July.
- Lastly come prepared at the next work group meeting to make recommendations on the draft transportation equity evaluation measures for the 2018 RTP investment package.

VIII. <u>ADJOURN</u>

There being no further business, Ms. Cho and Mr. Higgins adjourned the meeting at 3:00 p.m.

Meeting summary prepared by: Grace Cho, Transportation Equity Project Manager

Meeting materials:

Item	Topic	Document Date	Description
1	Agenda	05/12/16	Meeting Agenda
2	Meeting Overview Memorandum	05/12/16	Overview of what is covered in the packet of materials and anticipated for the meeting.
3	Work Group Meeting 2 Summary	02/18/16	Summary of transportation equity work group meeting #2.
4	2018 RTP Status Report	04//16	Summary of 2018 RTP activities to date.
5	Updated Schedule	05/12/16	Updated schedule of Transportation Equity work group meetings.
6	Federal, State, and Regional Policy Overview Memorandum	04/06/16	Background information about federal, state, and regional policies which address transportation and social equity.
7	Memorandum Synthesizing Feedback, Findings, and Draft Measures	05/12/16	Overview of findings of community priorities and process for defining draft transportation equity measures.
8	Memorandum Outlining Potential Products	05/12/16	Overview of potential products to result from the Transportation Equity work.
9	Presentation	05/12/16	TE Work Group Presentation
10	Mtg. Evaluation	05/12/16	TE Meeting #3 Meeting Evaluation

600 NE Grand Ave.
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Metro | *Memo*

Date: September 29, 2016

To: Transportation Equity Working Group and interested parties

From: Grace Cho, Associate Transportation Planner

Subject: Transportation Equity Recommended Methods for System Evaluation Measures

Purpose
Provide an overview of the staff recommended transportation equity system evaluation measures and related methodologies for assessing the 2018 Regional Transportation Plan (RTP) investment strategy and the 2018-2021 Metropolitan Transportation Improvement Program (MTIP).

Action requested
Metro staff requests work group support to move forward with the recommended methodologies for the transportation equity system evaluation measures.

Introduction
As the Portland region prepares to make its next set of investments in the transportation system, an equity analysis will help inform how transportation investments affect the communities where people have the fewest options for travel to meet everyday needs. Understanding these effects helps the region make more informed, equitable decisions about where transportation dollars go, especially as the region weighs many needs and competing priorities for investment in the transportation system.

The Transportation Equity Analysis (TEA) for the 2018 RTP and the 2018-2021 MTIP will provide a better understanding of how near and long-term transportation investments are effecting:

- communities of color;
- households with lower-income;
- communities with limited English proficiency;
- older communities; and
- youth

Why system evaluation and not project evaluation?

The work plan for the 2018 RTP calls for a system evaluation of investment packages. A number of questions have emerged regarding the why the Transportation Equity Analysis is focused on system evaluation. In response, Metro staff is exploring with the technical and policy committees on whether to pursue a supplemental project evaluation, and how such an evaluation would be conducted.

Regardless of the outcome of the discussion, the work group can recommend conducting project evaluation for the next scheduled RTP update.

Transportation Equity System Evaluation Measures: Recap and Updates

At the June 30th work group meeting, the Transportation Equity work group discussed the staff recommended transportation equity measures for the system evaluation of the 2018 RTP and the 2018-2021 MTIP. (See Table 1.) Metro staff reviewed the process used to recommend system evaluation measures to the work group. The work group discussed a number of areas still in need of further definition and refinement. After a robust discussion, the work group supported Metro staff moving forward to define a methodology for each recommended system evaluation measure.

Table 1. Recommended Transportation Equity System Evaluation Measures for the 2018 RTP and 2018-2021 MTIP

No.	Community Priority	System Evaluation Measure and Methodology Description	Other Considerations
1.	Affordability	Combined Housing and Transportation Expenditure: The sum of the housing and transportation expenditures in historically underrepresented communities. Determine a potential cost burden to assess which households are experiencing the greatest combined housing and transportation expenditure. Assess the change of the expenditures in the given geography and key communities with added transportation investments. Look at the change of combined housing and transportation expenditure.	Must be developed in coordination with other Metro Planning and Development Dept. efforts, including equitable housing and urban growth management process.
2.	Accessibility – Access to Places*	Access to Jobs: The sum of the total number of family wage jobs which are accessible to historically underrepresented communities by automobile, transit, bicycle, and walking in a given commute time window. Assess the change in historically underrepresented communities with added transportation investments.	Must be developed in coordination with the Regional Transit Strategy & Work Group
3.	Accessibility – Access to Places	Access to Existing Essential Destinations OR Existing Daily Needs: The sum of the total number of existing essential destinations or existing daily needs which are accessible to historically underrepresented communities by automobile, transit, and bicycle in a given travel time window. Depending on whether essential destinations or daily needs is selected, the travel times will change. Assess the change in historically underrepresented communities with added transportation investments.	
4.	Accessibility – Access to Places	Transit Access Disadvantage: The sum of the total number of existing essential destinations or existing daily needs which are accessible to historically underrepresented communities by automobile and transit. For the historically underrepresented communities, look at the ratio of essential destinations accessible by transit compared to automobile. Attention is paid to lower	

No.	Community Priority	System Evaluation Measure and Methodology Description	Other Considerations
		transit/automobile access ratio community geographies to determine how the ratio changes with added future transportation investments.	
5.	Accessibility – Infrastructure	Intersection of Transportation Investments, Timing, and Communities: Transportation investments are mapped to illustrate which overlap with historically underrepresented communities. Transportation investments are also categorized by time frame to assess whether investments are being made evenly over time in certain communities and addressing near-term transportation needs.	Must be coordinated with the overall 2018 RTP system evaluation
6.	Safety – Infrastructure Disparities	Safety Investments on the High Injury Network: Identified transportation safety investments are mapped to illustrate which overlap with the high injury network and in historically underrepresented communities. Assess whether investments are being made evenly in certain communities with evident transportation safety issues (as indicated by the categorization as a high injury corridor).	Must be coordinated in detail with the Regional Transportation Safety Action Plan & Safety Work Group
7.	Safety – Exposure	Non-Interstate Vehicles Miles Traveled Exposure: The sum of all non-interstate vehicle miles traveled (VMT) would be totaled for historically underrepresented communities and based on the transportation investment program, look at how VMT changes in historically underrepresented communities and correlate traffic safety exposure.	
8.	Public Health – Environmental and Health Impacts	Vehicles Miles Traveled Exposure: The sum of all vehicle miles traveled (VMT) would be totaled for historically underrepresented communities and based on the transportation investment program, look at how VMT changes in historically underrepresented communities and correlate air pollution emissions exposure.	These measures may or may not be part of the transportation equity analysis; pending the partnership with Multnomah County Public Health
9.	Public Health – Environmental and Health Impacts*	Intersection of Transportation Investments, Resource Habitats, and Communities: Transportation investments are mapped to illustrate which overlap with historically underrepresented communities and resource habitats to determine whether environmental quality degradation from transportation is overly represented in certain communities.	
10.	Public Health – Environmental and Health Impacts**	Assessing Directional Change: Use public health literature findings to assess the transportation investments package and its role in directional change in health outcomes. Based on mapping of investments relative to historically underrepresented communities and the directional	This analysis would be conducted in partnership with Multnomah County Public Health and others, pending

No.	Community Priority	System Evaluation Measure and Methodology Description	Other Considerations
		relationship, determine whether health outcome disparities would widen or narrow as a result.	resources.
11.	Public Health – Environmental and Health Impacts**	Assessing the Magnitude of Transportation Impact to Public Health (Burden of Disease and Premature Death): Utilize the Integrated Transportation ad Health Impacts Model (ITHIM) to look at the transportation investment effects to public health under the lens of disease burden and premature death in the context of air quality, physical activity, and traffic safety conditions.	

**Indicates staff adjusted modification*
***Indicates the system evaluation measure is pending based on potential partnerships and resources.*

Staff Recommendation for the 2018 RTP Transportation Equity System Evaluation Measures
Since the June 30th meeting, Metro staff has consulted with Metro's Research Center, Metro's Diversity, Equity, and Inclusion staff, and the other 2018 RTP work groups to define a methodology for each system evaluation measure. Using the feedback provided by the work group as a starting place for developing the individual methods for each system evaluation measure, Metro staff has been working through definitions, key assumptions, and considering what outputs are available. From the internal work undertaken to-date, a set of summary descriptions for each of the following transportation equity system evaluation measures has been developed. (See attachments for summary descriptions.) These summary descriptions are still in and remain in draft form.

- Access to Jobs
- Access to Places
- Access Travel Options – System Completeness
- Transportation Safety Investments on High Injury Corridors
- Non-Freeway Vehicle Miles Traveled Exposure
- Resource Habitats and Transportation Investments
- Assessing Directional Change of Public Health Outcomes[1]

Three transportation equity system evaluation measures initially proposed and discussed at the June 30th work group meeting are recommended for significant adjustments as to how they will be approached as part of the transportation equity analysis. A description and rationale for the recommended adjustments are summarized below and found in Table 2.

- Transit Access Disadvantage – *recommended to be combined with another transportation equity measure.*
- Assessing Directional Change of Health Outcomes – *recommended to be applied to the results of the transportation equity system evaluation results as an environmental health lens.*
- Assessing the Magnitude of Transportation and Public Health – *recommended to be part of overall RTP system evaluation)*

[1] See Table 2 for further information.

Table 2. Transportation Equity System Evaluation Measures recommended to be incorporated with other measures or to be addressed as part of the overall RTP system evaluation

System Evaluation Measure	Reasoning	Outcome
Transit Access Disadvantage	After further review, this measure appears as an additional step within one of the accessibility system evaluation measures. In efforts to reduce redundancy this measure is being proposed as part of the methodology for the Access to Jobs system evaluation measure.	Incorporated as part of Access to Jobs system measure.
Assessing Directional Change of Health Outcomes	After further discussions with Multnomah County Public Health partners, this measure would be more appropriately applied as a lens to the results of the transportation equity analysis measures to provide further context and understanding of the results, particularly as it pertains to the directional change of environmental health outcomes.	Applying this measure as a lens to the Transportation Equity Analysis results.
Assessing the Magnitude of Transportation and Public Health	Further exploration identified that this measure would not be able to identify the differences for historically underrepresented communities and the overall region and therefore would not be a reasonable transportation equity system measure. This measure is still considered an important system evaluation for the 2018 RTP and will be considered as a supplemental analysis, pending resources.	Being further explored as part of an evaluation for the 2018 RTP

For the eight (8) transportation equity system evaluation measures in which a draft methodology has been developed, two (2) have fairly well defined method and are being recommended to the work group for support to move forward. These include the following:

- Transportation Safety Investments on High Injury Corridors
- Non-Freeway Vehicle Miles Traveled Exposure[2]

In the development of the methods of four (4) of the transportation equity system evaluation measures, questions have emerged in which Metro staff seeks input from work group members. The methodology related questions are identified for each individual system evaluation measure in Table 3.

Table 3. Methodology Questions Remaining for Transportation Equity System Evaluation Measures

System Measure	Remaining Methodology Questions
Access to Travel Options – System Completeness	1. Should this measure primarily focus on looking at system completeness for active transportation projects proposed in the 2018 RTP? Or should street connectivity (i.e. roadway projects) be included in this analysis? 2. How should active transportation investments be defined? Should only those transportation investments on the regional bikeway and

[2] Metro staff is currently conducting statistical analysis to determine the strength of correlation between non-freeway vehicle miles traveled (VMT) and crashes to determine whether a VMT single factor can identify potential crash risk. Depending on the nature of the statistical analysis, Metro staff may recommend removal of this system measure from consideration. Therefore, the measure is considered tentative.

	pedestrian pathway network considered or are all local active transportation investments acceptable?
Access to Jobs	1. What should be the threshold for determining when an area is "transit access disadvantaged?" Meaning, at what level of transit access to jobs relative to automobile access to jobs is tolerable (recognizing generally the discrepancy in transit service relative to automobile service) and what is not tolerable? When should an area be considered transit disadvantaged? For example, should it be at when 50%, 60%, 70% jobs are not reachable by transit?
Access to Places	1. Should the automobile travel time shed (places reached by automobile within 30 minutes) threshold be shortened?
Resource Habitats and Transportation Investments	1. Should only certain types of transportation investments (e.g. roadway) be considered for this analysis and not others (active transportation)? Or should all transportation investments proposed be assessed under this system measure?

Additionally, two (2) recommended measures still have major underlying methods undefined at this time. Table 4 outlines the different questions and issues which have emerged in which these measures do not have a defined methodology to date and the potential strategy for addressing these issues.

Table 4. Transportation Equity System Measures Where Methods Remain to Be Defined

System Measure	Issue Preventing a Method to Date
Combined Housing and Transportation Expenditure and Cost Burden	Upon further coordination with Metro's Research Center, this post-processed measure would require additional model update activities not currently scoped in the RTP work plan. The system evaluation measure continues to remain as a recommended system evaluation measure for the Transportation Equity Analysis, but information regarding the methodology for the measure is currently unavailable as staff continues to scope the details of updating the Combined Housing and Transportation Expenditure model.
Vehicle Miles Traveled Exposure	Metro staff has recommended a set of refinements to the RTP system measure for clean air. The recommended refinements are in need of further technical consultation with air quality partners at DEQ as well as with public health partners. At this time, the initial method appears feasible and would complement the planned system-wide air quality analysis; , however, certain key details with technical staff are necessary to confirm.

Discussion Questions

Based on the work to-date in defining the methods for each individual system measure for the Transportation Equity Analysis, Metro staff seeks input from the work group members on the following questions:

1. Are the recommended methods to the individual transportation equity system evaluation measures headed in the desired direction of the work group? Do work group members feel the community identified priorities continue to be reflected in the system evaluation measures?

2. Are there other methodological concerns for the system evaluation measures which need to be addressed that have not been identified or reflected?

3. Does the work group feel comfortable with staff recommending these system evaluation measures to the performance measure work group, other work groups, TPAC, and MTAC?

Next Steps

Prior to the November 17th work group meeting, Metro staff will continue to refine and finalize the methodology for the measures to be used in the transportation equity analysis conducted for the 2018 RTP and 2018-2021 MTIP. This work will include:

1. Refine the system evaluation measures based on feedback and input provided at the September work group meeting. Follow up with any staff commitments made at the meeting.

2. Briefing the performance measures work group and other works groups on the individual methods for the transportation equity analysis system measures. *(October 14th – Performance Measures Work Group; October – 20th Safety Work Group; October 5th – Regional Transit Strategy Work Group)*

3. Briefing the Transportation Policy Alternatives Committee (TPAC) and the Metro Technical Advisory Committee (MTAC) on the status of this work. *(October 28th – TPAC; November 17th – MTAC)*

4. Continuing to develop the Combined Housing and Transportation Expenditure and Cost Burden work scope and recommended method; an update will be sent to the work group via email.

5. Continuing to develop the vehicle miles traveled emissions exposure system measure and assessment method; an update will be sent to the work group via email.

6. For the applicable system measures to the overall performance management program, begin to document the proposed the refinements to the system evaluation measures.

7. Identify potential 2018 RTP performance target refinements and recommendations for the work group to review and discuss in 2017.

Attachment A – Transportation Equity Analysis System Evaluation Measures – Methodology Profiles and Key Assumptions

Definition of Historically Underrepresented Communities & Geography

Community	Definition	Geography Threshold*	Date Source
People of Color	Persons who identify as non-white.	Census tracts above the regional rate (26.5%) for people of color.	2010 Decennial Census
Low-Income	Households which have an income less than $50,000, regardless of household size.	Census tracts above the regional rate (42.8%) for Household with Lower-Income	American Community Survey, 2009-2013
Limited English Proficiency	Persons who identify as unable "to speak English very well."	Census tracts above the regional rate (8.5%) for Limited English Proficiency	
Older Adults	Persons 65 years of age and older	Census tracts above the regional rate for Older Adults (11%) AND Young People (22.8%)	2010 Decennial Census
Young People	Persons 17 years of age and younger		

*See attached map of historically underrepresented communities.

Analysis Years Assumptions and Inputs

Analysis Year	Transportation Inputs	Land use Inputs
Base Year (2015)	All transportation projects completed by 2015	Adopted growth distribution (2016) from MetroScope[1]
Interim Year (2027)	Proposed transportation projects to be completed by 2027 (financially constrained only)	
Future Year (2040)	All proposed transportation to be completed by 2040 (financially constrained and strategic project lists)	

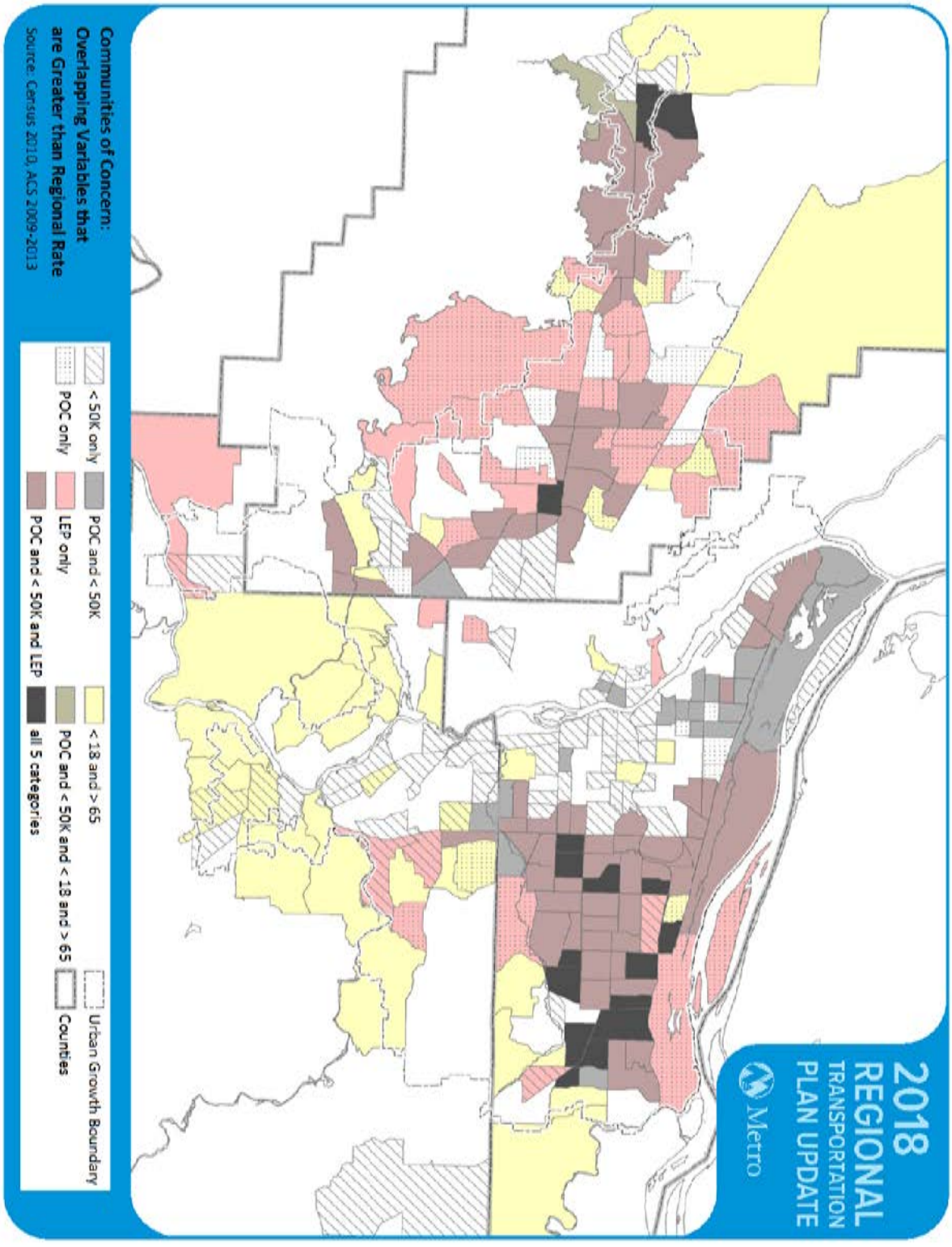
Forecasted Methods Approach for Historically Underrepresented Communities

Community	Base Year	Interim Year	Horizon Year
People of Color	Identifying the correlating transportation analysis zones (TAZ) to census tracts which have greater than the regional rate of people of color.		Will not produce results for the horizon year.
Low-Income	Identifying the correlating transportation analysis zones (TAZ) to census tracts which have greater than the regional rate for young people.	Forecasted spatial distribution of households with incomes under $50K.	
Limited English	Identifying the correlating transportation analysis		Will not produce

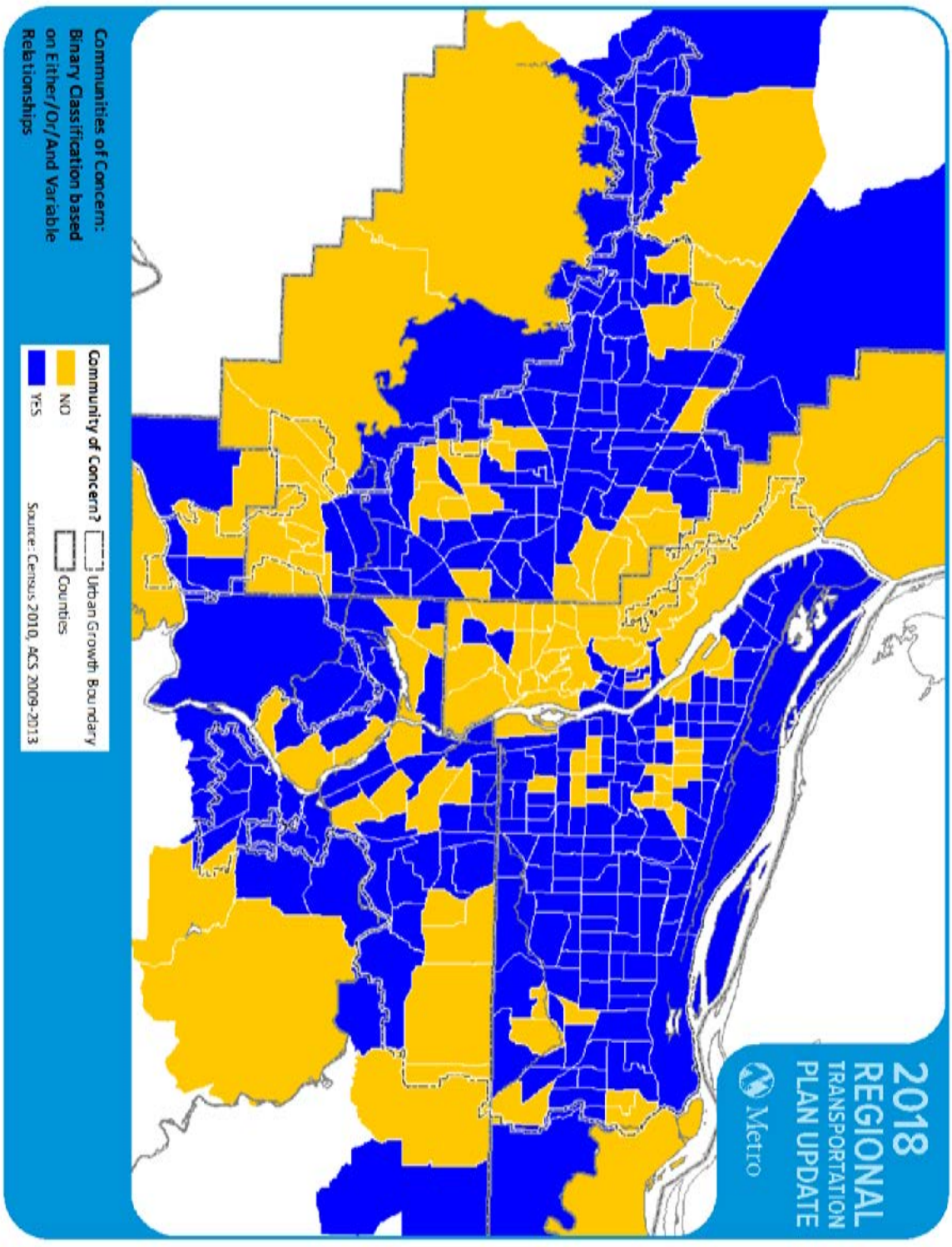
[1] Metro Ordinance No. 16-1371. More information regarding the 2016 land use forecast can be found at: oregonmetro.gov

Community	Base Year	Interim Year	Horizon Year
Proficiency	zones (TAZ) to census tracts which have greater than the regional rate of limited English proficiency.		results for the horizon year.
Older Adults	Identifying the correlating transportation analysis zones (TAZ) to census tracts which have greater than the regional rate for older adults.	Forecasted spatial distribution of households with older adults.	
Young People	Identifying the correlating transportation analysis zones (TAZ) to census tracts which have greater than the regional rate for young people.	Forecasted spatial distribution of households with older adults.	

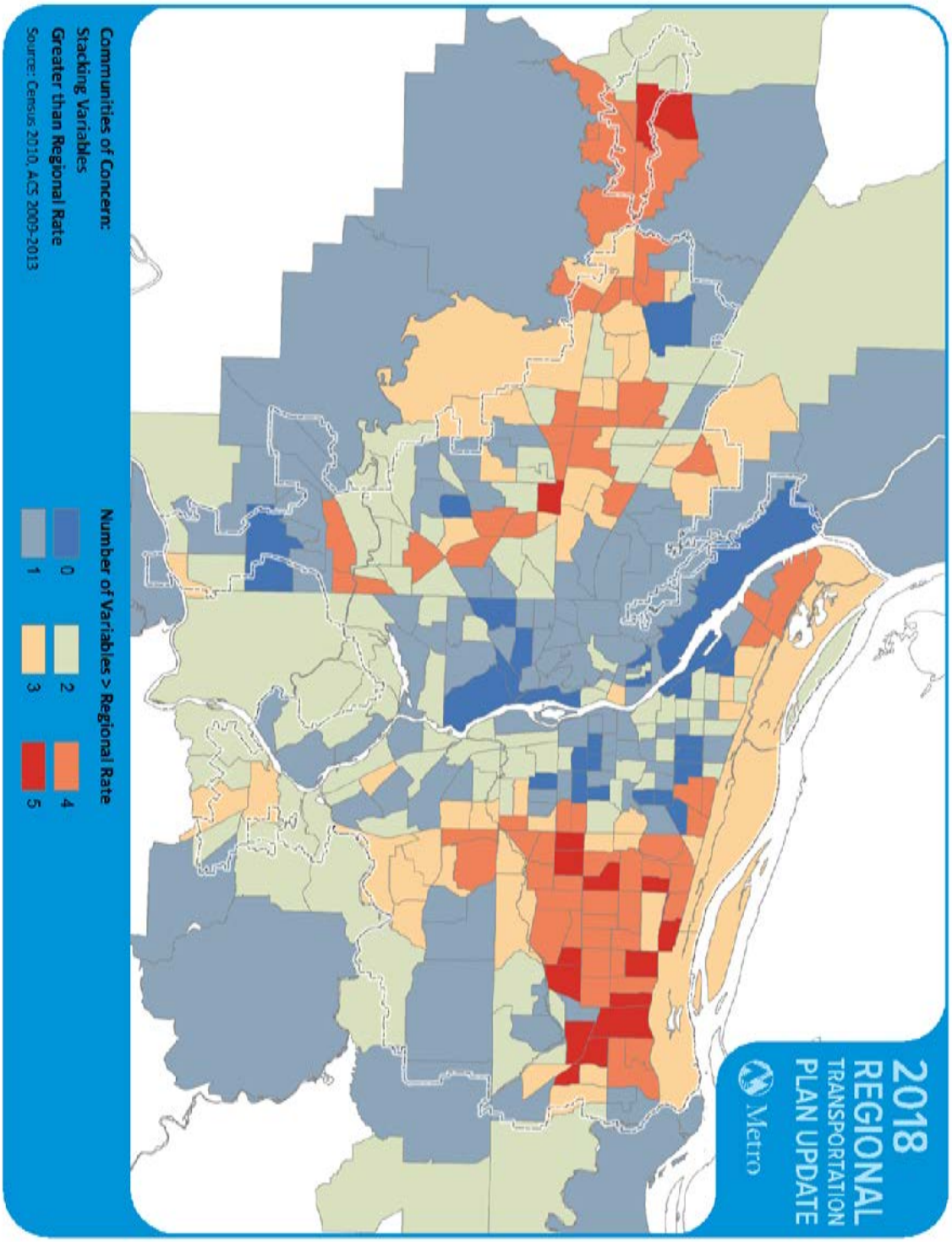
Historically Underrepresented Communities – Census Tracts Above the Regional Rate



Historically Underrepresented Communities – Proposed Census Geographies for Analysis Purpose



Historically Underrepresented Communities – Census Tracts with Greater than the Regional Rate for Any Community (and Stacking of Communities Above the Regional Rate)



Evaluation Measure Title: **Transportation Safety – Vehicle Miles Traveled (VMT) Exposure**

Purpose: To identify whether the package of future transportation investments will increase transportation safety, by reducing per capita vehicle miles traveled exposure for the region's residents and look at the difference in exposure between historically underrepresented communities and the region.

RTP Goals

	Foster vibrant communities and compact urban form		Promote environmental stewardship
●	Sustain economic competitiveness and prosperity	●	Enhance human health
	Expand transportation choices		Demonstrate leadership at reducing greenhouse gas emissions
	Effective and efficient management of system	●	Ensure equity
●	Enhance safety and security		Ensure fiscal stewardship
●	Deliver accountability		

Function of Evaluation Measure

●	System Evaluation		Project Evaluation		System Monitoring	●	Performance Target

Associated RTP Performance Measures: By 2035 eliminate fatal and serious crashes for all users of the region's transportation system, with a 15% reduction by 2020 and 50%reduction by 2025.

Methodology Description:
The **Transportation Safety – Vehicle Miles Traveled Exposure** performance measure looks to assess the following questions for the region's transportation system:

1) What is the region's vehicle miles traveled (per capita) and how does it change with the proposed package of transportation investments?
2) What is the difference in exposure to vehicle miles traveled (per capita) for historically underrepresented communities? Has the proposed transportation investment program held steady or decreased the vehicle miles traveled exposure in historically underrepresented communities?

The **Transportation Safety – Vehicle Miles Traveled Exposure** performance measure is calculated by aggregating the non-freeway vehicle miles traveled within each transportation analysis zone (TAZ). The non-freeway vehicle miles traveled in each TAZ would be aggregated together to gather a non-freeway VMT for the entire region. To determine the exposure, the non-freeway VMT for the entire region is divided by the population of the entire region. Additionally, the non-freeway VMT in each TAZ is divided by the population of TAZ. The TAZs which overlap with historically underrepresented communities are flagged to determine the non-freeway VMT exposure per capita for historically underrepresented communities. Then the non-freeway VMT exposure per capita is looked and compared for historically underrepresented communities to the region, as well as for the base year to the future year.

Output Units: Vehicle miles traveled per capita (VMT/per person)

Potential Output of Assessment:

	Base Year	Interim Year	Future Year – Financially Constrained	Future Year – Strategic
Region-wide	VMT/per person*			
Historically Underrepresented Communities				

Key Assumptions to Method:
Dataset Used:

Dataset	Type of Data
Geospatial project information for proposed transportation projects	Observed
Vehicle miles traveled	Forecasted

Tools Used for Analysis: Metro's travel demand model and ArcGIS

Vehicles Miles Traveled Considerations:
Non-freeway miles exposure were calculated for the **Transportation Safety – Vehicle Miles Traveled Exposure** performance measure to account for more human-scale interactions between vehicles, pedestrians, bicyclists, transit riders, and other users of the street and the potential exposure to crashes and serious injury by between vehicles and other users.

The vehicle miles traveled exposure was calculated by assessing the vehicle miles traveled seen within each transportation analysis zone (TAZ) and dividing the overall VMT by the number of people in the TAZ. The measure is not speaking to who is generating the VMT, rather looking at human-scale exposure.

Evaluation Measure Title: **Transportation Safety – Infrastructure Disparities**

Purpose: To identify whether the package of future transportation investments will increase transportation safety, through the development of transportation infrastructure with proven safety affects, for the region's residents and to look at the difference in access between historically underrepresented communities and the region.

RTP Goals

	Foster vibrant communities and compact urban form		Promote environmental stewardship
●	Sustain economic competitiveness and prosperity	●	Enhance human health
	Expand transportation choices		Demonstrate leadership at reducing greenhouse gas emissions
	Effective and efficient management of system	●	Ensure equity
●	Enhance safety and security		Ensure fiscal stewardship
	Deliver accountability		

Function of Evaluation Measure

●	System Evaluation		Project Evaluation		System Monitoring	●	Performance Target

Associated RTP Performance Measures: By 2035 eliminate fatal and serious crashes for all users of the region's transportation system, with a 15% reduction by 2020 and 50%reduction by 2025.

Methodology Description:
The **Transportation Safety – Infrastructure Disparities** performance measure looks to assess the following questions for the region's transportation system:

1) What percentage of the region's proposed transportation investments are addressing known transportation safety issues?
2) What percentage of transportation safety investments are located in historically underrepresented communities? Is there a difference of transportation safety investment levels in areas with historically underrepresented communities?

The method for calculating the **Transportation Safety – Infrastructure Disparities** performance measure will entail a geospatial analysis the region's proposed transportation safety investments which intersect identified high injury corridors and historically underrepresented communities. The percentage of transportation safety projects which intersect high injury corridors will be looked at region-wide and also looked at for historically underrepresented communities.

Output Units: Percentage (%) of transportation safety projects on High Injury Corridors and/or Safe Routes to Schools projects

Potential Output of Assessment:

	Base Year	**Interim Year**	**Future Year – Financially Constrained**	**Future Year – Strategic**
Region-wide	% Safety			

	Projects			
Historically Underrepresented Communities				

Key Assumptions to Method:
Dataset Used:

Dataset	Type of Data
Geospatial project information for proposed transportation projects	Observed
Regional High Injury Corridors	Observed

Tools Used for Analysis: ArcGIS

Definition of a Safety Project:
Safety Investments are projects that are constructed on a Regional High-Injury Corridor, and allocate a majority of the project cost to a documented safety countermeasure(s)* to address a specific documented risk, and/or improve safety for vulnerable users, including people walking and bicycling, older adults and youth, and/or are Safe Routes to School projects (which do not need to be located on a High Injury Corridor).
**Example safety countermeasures include, but are not limited to, FHWA's nine proven safety countermeasures: road diets, medians and pedestrian crossing islands, pedestrian hybrid beacons, roundabouts, access management, retroreflective backplates, safety edge, enhanced curve delineation, and rumble strips.*

Definition of Safe Routes to Schools Project: TBD

Definition of High Injury Corridor:
Regional High Injury Corridors (HICs) provide a quantitative assessment of the crash performance of every roadway in the metropolitan region in order to identify the subset of roadways where the highest concentrations of severe crashes involving a motor vehicle occur. Regional HICs were identified to support planning and prioritization of corridor safety efforts, and represent 7% of the region's streets but 60% of its severe crashes. To identify the HICs, 2010-2014 crash data from the Oregon Department of Transportation was analyzed weighting crashes for each mode of travel by severity. Each corridor was divided into segments, which were given an aggregate crash score based on the frequency of severe crashes, normalized by the length of the segment. The corridors identified as HICs are the roadway segments with the highest number of severe crashes per mile in the region. The HICs do not replace state or locally identified high crash corridors.

Evaluation Measure Title: **Resource Habitats and Infrastructure**

Purpose: To identify whether the package of future transportation investments will have potential impacts to the region's resource habitats and to look at the difference in those potential between historically underrepresented communities and the region.

RTP Goals

●	Foster vibrant communities and compact urban form	●	Promote environmental stewardship
	Sustain economic competitiveness and prosperity	●	Enhance human health
	Expand transportation choices		Demonstrate leadership at reducing greenhouse gas emissions
	Effective and efficient management of system	●	Ensure equity
	Enhance safety and security		Ensure fiscal stewardship
●	Deliver accountability		

Function of Evaluation Measure

●	System Evaluation		Project Evaluation		System Monitoring		Performance Target

Associated RTP Performance Measures: Percent of projects which intersect high value habitats

Methodology Description:
The **Resource Habitats and Infrastructure** performance measure looks to assess the following questions for the region's transportation system:

1) What percentage of the region's proposed transportation investments have a potential impact/conflict with the region's resource habitats and needs further assessment through project development?
2) What percentage of resource habitats overlap with historically underrepresented communities? Are these resource habitats in historically underrepresented communities seeing a greater percentage of proposed transportation investments which may have a potential impact/conflict with the region's resource habitats? Is the percentage greater than the region?

The method for calculating the **Resource Habitats and Infrastructure** performance measure will entail a geospatial analysis the region's proposed transportation investments which intersect the region's resource habitats and historically underrepresented communities. The percentage of projects which intersect resource habitats will be looked at region-wide and also looked at for historically underrepresented communities.

Output Units: Percentage (%) of transportation projects intersecting identified resource habitats.

Potential Output of Assessment:

	Base Year	Interim Year	Future Year – Financially Constrained	Future Year – Strategic

Region-wide				
Historically Underrepresented Communities				

Key Assumptions to Method:
Dataset Used:

Dataset	Type of Data
Geospatial project information for proposed transportation projects	Observed
Geospatial resource conservation information from Metro identified resource and conservation habitat areas (Parks and Nature department)	Observed

Tools Used for Analysis: ArcGIS

Definition of Resource Habitats: TBD – Metro staff is working with the Parks and Nature Department to gather the technical detail and information.

Evaluation Measure Title: **Access to Places**

Purpose: To identify whether the package of future transportation investments will increase the ability of region's residents to get to existing places that provide/serve daily or weekly needs and look at the differences in access to these existing places between historically underrepresented communities and the region.

RTP Goals

●	Foster vibrant communities and compact urban form	●	Promote environmental stewardship
●	Sustain economic competitiveness and prosperity	●	Enhance human health
●	Expand transportation choices		Demonstrate leadership at reducing greenhouse gas emissions
	Effective and efficient management of system	●	Ensure equity
	Enhance safety and security		Ensure fiscal stewardship
●	Deliver accountability		

Function of Evaluation Measure

●	System Evaluation		Project Evaluation		System Monitoring	●	Performance Target

Associated RTP Performance Measure: RTP Target – By 2040, increase by 50% the number of essential destinations accessible within 30 minutes by bicycling & public transit for low-income, minority, senior and disabled populations compared to 2005

Methodology Description:
The **Access to Places** performance measure looks to assess the following questions for the region's transportation system:

1) What are the number of existing daily needs (i.e. places which provide services or items) that can be reached on the existing transportation system by travel mode (e.g. drive, transit, bike, and walk) in a given travel time?
2) How does accessibility, measured by the number of existing daily needs reached, change (across travel modes) with the proposed set of transportation investments?
3) What are the differences between the number of daily needs accessible by historically underrepresented communities and the entire region? Are there large differences seen between travel modes? Are there significant differences (or lack of differences) seen between historically underrepresented communities and the region once the proposed transportation investments are added?

The **Access to Places** performance measure is calculated by using existing data from the U.S. Bureau of Labor Statistics to identify the existing places which provide key services and/or daily needs (defined in assumptions). The analysis will first determine the number of places reached using existing transportation system and looking at the differences in places accessed by travel mode (automobile, transit, bicycle, and walking) in a given travel time window the entire region and for historically underrepresented communities to determine base year conditions. Conduct the same assessment, but use the proposed package of transportation investments in the long-range

regional transportation plan as the input to determine the future year accessibility to places by mode for the entire region and historically underrepresented communities. Look at the change in the accessibility to these existing places between the base year and future year, with an emphasis on the change in historically underrepresented communities with added transportation investments.

Output Units: Number of places accessed by mode (# - Auto; # - Transit; # - Bike; # - Walk)

Potential Output of Assessment:

	Base Year				**Interim Year**				**Future Year – Financially Constrained**				**Future Year – Strategic**			
	A	T	B	W	A	T	B	W	A	T	B	W	A	T	B	W
Region-wide																
Historically Underrepresented Communities																

A – Automobile; T – Transit; B – Bicycle; W - Walk

Key Assumptions to Method:
Dataset Used:

Dataset	**Type of Data**
Geospatial project information for proposed transportation projects	Observed
U.S. Bureau of Labor Statistics – Quarterly Census of Employment and Wages (Year TBD – 2013, 2014, or 2015)	Observed

Tools Used for Analysis: Metro Travel Demand Model and ArcGIS

Definitions of Places:
Select North American Industry Classification System (NAICS) codes. Codes include those used as part of TriMet's Transit Equity Index with select additions based on consultation with Metro Planning and Development Department and Diversity, Equity, and Inclusion staff.

Category	**NAICS**	**Description**
Civic/Health	491110	Postal Service
	519120	Libraries and Archives
	611110	Elementary and Secondary Schools
	611210	Junior/Community Colleges
	611310	Colleges, Universities, and Professional Schools
	624110	Child and Youth Services
	624120	Services for the Elderly and Persons with Disabilities
	624190	Other Individual and Family Services
	624210	Community Food Services
	624229	Other Community Housing Services
	624230	Emergency and Other Relief Services
	624310	Vocational Rehabilitation Services
	624410	Child Day Care Services
	624221	Temporary Shelters
	813110	Religious Organizations
Essential Retail	444130	Hardware Stores

	446110	Pharmacies and Drug Stores
	452111	Department Stores
	452990	All Other General Merchandise Stores
	812111	Barber Shops
	812112	Beauty Salons
	812310	Coin-Op Laundry
	812320	Dry Cleaning and Laundry Service
Financial/Retail	522110	Commercial Banking
	522120	Savings Institutions
	522130	Credit Unions
Food	445110	Supermarkets and Other Grocery (except convenience) Stores

For the purpose of the analysis, the existing places which currently provide/serve daily needs are being used to determine access to places. This approach is being taken because Metro's land use forecast model, Metroscope, currently does not project the locations of these types of businesses (i.e. food, commercial, retail, civic, and health-related services). In assessing the access to existing places which provide/serve daily needs, the rational is that greater access to existing places will further increase as new places to provide daily need services open as a result of population and employment growth.

Travel Time Windows by Mode:

- Automobile – 30 minutes*
- Transit – 30 minutes*
- Bicycle – 15 minutes
- Walk – 20 minutes

*Includes access and egress times.

Travel Time Assumptions:
Travel time windows by mode were developed by gathering information from the Oregon Household Activity Survey (OHAS) and gathering research from around the country on travel time by different modes for different types of trips. Additionally, internal Metro staff consultation was conducted.

Transit Service Networks Used:[2]

- Peak – Transit service running from 6am – 9am & 3pm – 6pm
- Off-Peak – Transit service running at any other time

[2] Metro is currently transitioning how it will be developing its transit service networks in the demand model to better reflect transit service within the model. This transition is looking at service typology. If this method is used for the system evaluation, information will be updated in the assumptions and available to the work group.

Evaluation Measure Title: **Access to Jobs**

Purpose: To identify whether the package of future transportation investments will increase the ability of region's residents to get to low and middle-wage jobs and to look at the difference in job accessibility between historically underrepresented communities and the region.

RTP Goals

●	Foster vibrant communities and compact urban form	●	Promote environmental stewardship
●	Sustain economic competitiveness and prosperity	●	Enhance human health
●	Expand transportation choices		Demonstrate leadership at reducing greenhouse gas emissions
	Effective and efficient management of system	●	Ensure equity
	Enhance safety and security		Ensure fiscal stewardship
●	Deliver accountability		

Function of Evaluation Measure

●	System Evaluation		Project Evaluation		System Monitoring		Performance Target

Associated RTP Performance Measure: None to date

Methodology Description:
The **Access to Jobs** performance measure looks to assess the following questions for the region's transportation system:

3) How many low and middle-wage jobs can be reached in a given time window by different travel modes?
4) What are differences in low and middle-wage job access for the region and specifically for historically underrepresented communities?
5) Is the difference in low and middle-wage job access between automobile and transit? Is there a difference which extends beyond a reasonable threshold and creating a "transit access disadvantage" to low and middle-wage jobs in certain areas? If so, do those "transit access disadvantage" areas overlap with historically underrepresented communities?

The **Access to Jobs** performance measure is calculated by using forecasted data from Metroscope to identify the low-wage and middle-wage jobs (defined in assumptions) throughout the region. The analysis will first determine the number of low and middle-wage jobs reached using existing transportation system and looking at the differences in low and middle-wage jobs accessed by travel mode (automobile, transit, bicycle, and walking) in a given travel time window the entire region and for historically underrepresented communities to determine base year conditions. The next step is to conduct the same assessment, but use the proposed package of transportation investments in the long-range regional transportation plan as the input to determine the future year accessibility to forecasted low and middle-wage jobs by mode for the entire region and historically underrepresented communities. Look at the change in the accessibility to these low and middle-wage jobs between the base year and future year, with an emphasis on the change in historically underrepresented communities with added transportation investments.

Furthermore, the number of low and middle-wage jobs accessible by transit and by automobile will be compared and will determine a ratio. A threshold will be applied to determine whether there is a transit access disadvantage to low and middle-wage jobs. (meaning there is significantly less access – from a proportional perspective – to jobs compared to automobile access)

Output Units: Number of low and middle-wage jobs accessed by mode (# - Auto; # - Transit; # - Bike; # - Walk)

Potential Output of Assessment:
Job Access – Low-Wage:

	Base Year				**Interim Year**				**Future Year – Financially Constrained**				**Future Year – Strategic**			
	A	T	B	W	A	T	B	W	A	T	B	W	A	T	B	W
Region-wide																
Historically Underrepresented Communities																

Job Access – Middle-Wage:

	Base Year				**Interim Year**				**Future Year – Financially Constrained**				**Future Year – Strategic**			
	A	T	B	W	A	T	B	W	A	T	B	W	A	T	B	W
Region-wide																
Historically Underrepresented Communities																

Job Access – Transit Access Disadvantage

	Base Year		**Interim Year**		**Future Year – Financially Constrained**		**Future Year – Strategic**	
	Jobs Inaccessible By Transit		Jobs Inaccessible By Transit		Jobs Inaccessible By Transit		Jobs Inaccessible By Transit	
	LW	MW	LW	MW	LW	MW	LW	MW
Region-wide								
Historically Underrepresented Communities								

<u>Key Assumptions to Method</u>:
Dataset Used:

Dataset	**Type of Data**
Geospatial project information for proposed transportation projects	Observed

Employment/jobs outputs from Metroscope[3]	Forecasted

Tools Used for Analysis: Metro's Travel Demand Model, Metro's Metroscope Model

Populations to Apply In this Measure:

- People of Color
- Persons with Limited English Proficiency
- Low-Income Households

Young people and older adults are not being proposed for assessment in this system evaluation as it considered that traveling to and from employment is less likely a priority.

Definition of Low-Wage Jobs:
Jobs which pay an annual salary between $0 - $39,999.[4]

Definitions of Middle-Wage Jobs:
Jobs which pay an annual salary between $40,000 – $65,000. [5]

Methods for Defining and Identifying Low and Middle-Wage Jobs:
The annual salary band was based on the average household size of three (3) and a combination of different income, program eligibility, and self-sufficiency definitions (HUD median income, UW self-sufficiency index, federal poverty level, and uniform relocation assistance and real property acquisition act) The definition of low and middle-wage jobs is not taking into consideration employer benefits provided as part of the identification of wages.

Distribution of Low and Middle-Wage Jobs Assumptions:
The distribution of low and middle-wage jobs is based on underlying U.S. Bureau of Labor Statistics data and assumptions regarding growth for the employment industries in MetroScope. (See MetroScope documentation regarding employment industry forecast assumptions.) The low and middle-wage band will not change according to inflation. Low and middle-wage jobs were determined by the wage profile of each MetroScope industry, looking at the percentage of jobs, which paid within the annual salary range. This range was applied to the employment forecast for the future year to determine the distribution.

Definition of Transit Access Disadvantage: TBD

Travel Time Windows by Mode:

- Automobile – 30 minutes*
- Transit – 45 minutes*
- Bicycle – 30 minutes
- Walk – 20 minutes

*Includes access and egress times.

[3] Forecasted estimates are based on MetroScope assumptions on employment industries and based off U.S. Bureau of Labor Statistics data. Documentation can be found at: http://www.oregonmetro.gov/forecasting-models-and-model-documentation

[4] Wages are set as static for the purposes of the analysis and are not indexed to inflation. Therefore, the wage bands for low-wage and middle wage will not adjust between the based-year and future year.

[5] See Footnote 4.

Travel Time Assumptions:
Travel time windows by mode were developed by gathering information from the Oregon Household Activity Survey (OHAS) and gathering research from around the country on travel time by different modes for different types of trips. Additionally, internal Metro staff consultation was conducted.

Transit Service Networks Used:[6]

- Peak – Transit service running from 6am – 9am & 3pm – 6pm
- Off-Peak – Transit service running at any other time

[6] Metro is currently transitioning how it will be developing its transit service networks in the demand model to better reflect transit service within the model. This transition is looking at service typology. If this method is used for the system evaluation, information will be updated in the assumptions and available to the work group.

Evaluation Measure Title: **Access to Places – System Completeness**[7]

Purpose: To identify whether the package of future transportation investments will increase accessibility, through the development of transportation infrastructure and system completeness of the active transportation network, for the region's residents and to look at the difference in access between historically underrepresented communities and the region.

RTP Goals

●	Foster vibrant communities and compact urban form	●	Promote environmental stewardship
	Sustain economic competitiveness and prosperity	●	Enhance human health
●	Expand transportation choices	●	Demonstrate leadership at reducing greenhouse gas emissions
	Effective and efficient management of system	●	Ensure equity
	Enhance safety and security		Ensure fiscal stewardship
●	Deliver accountability		

Function of Evaluation Measure

●	System Evaluation		Project Evaluation		System Monitoring	●	Performance Target

Associated RTP Performance Measure: RTP Performance Target – Basic Infrastructure: Increase by 50% the miles of sidewalk, bikeways, and trails compared to the regional network in 2010; RTP System Evaluation – Miles of sidewalk, bikeways, and trails

Methodology Description:
The **Access to Places – System Completeness** performance measure looks to assess the following questions for the region's transportation system:

1) How much more of active transportation network being proposed in the region? Is the system being further completed?
2) What are differences in the proposed package of active transportation investments for the region and for historically underrepresented communities? Is there a difference in system completeness of the active transportation network being proposed for these communities?
3) Are the proposed timing of these active transportation infrastructure investments being proposed in the early or later years of the plan? Is the proposed implementation schedule prioritizing investments in historically underrepresented communities earlier in the plan rather than later?

The method for calculating the **Access to Places – System Completeness** performance measure will entail a geospatial analysis the region's proposed active transportation investments. The proposed active transportation investments will be compared to the regional active transportation

[7] Currently this system evaluation measure is being written towards the existing RTP performance target and system evaluation measure which focuses on active transportation projects and would not include any form of roadway connectivity projects. The question as to whether to focus this measure on full system completeness is for consideration by the work group.

network. The percentage of active transportation investments proposed in historically underrepresented communities and compared to the percentage of active transportation projects proposed region-wide and compared to the regional networks established in 2014 Active Transportation Plan (ATP) to determine level of system completeness.

Furthermore, the **Access to Places – System Completeness** performance measure will look at the proposed timing of active transportation investments and calculate the percentage of active transportation investments proposed for the first ten-years of the RTP (from 2017-2027) for the region and within historically underrepresented communities. Then the measure will look at the percentage of proposed active transportation investments for the latter years (2028 – 2040) for the region and historically underrepresented communities. This will help to determine whether there is an imbalance in the timing and locations of the active transportation investments and getting to system completeness.

Output Units: Percentage (%) of active transportation miles completed (pedestrian, bikeways, and trails) region-wide and in historically underrepresented communities

Potential Output of Assessment:

	Base Year			**Interim Year**			**Future Year – Financially Constrained**			**Future Year – Strategic**		
	B	P	T	B	P	T	B	P	T	B	P	T
Region-wide												
Historically Underrepresented Communities												

B – Bikeways; P – Pedestrian Pathways; T – Off-Street Trails

Key Assumptions to Method:
Dataset Used:

Dataset	**Type of Data**
Geospatial project information for proposed transportation projects	Observed
Inventory geospatial information available for pedestrian crossings and ADA features[8]	Observed
Regional bikeways and pedestrian pathways (network)	Observed

Tools Used for Analysis: ArcGIS

Definition of an Active Transportation Project:
TBD (Definition to include stand alone active transportation projects AND (potentially) transportation projects which do not increase automobile capacity.

[8] To the degree that data is available for jurisdictions, crossings and physical ADA features (e.g. curb ramps) will be included as part of the analysis. Not all jurisdictions have this information and data available.

Evaluation Measure Title: **Vehicle Miles Traveled – Transportation Emissions Exposure**

TBD – METHOD UNDER DEVELOPMENT

Evaluation Measure Title: **Combined Housing and Transportation Expenditure and Cost Burden**

TBD – METHOD UNDER DEVELOPMENT

2018 RTP Health Equity Analysis Methods Overview

In cooperation with Metro and other health departments in the region, Multnomah County Health Department will conduct a health equity analysis focused on *directional changes* associated with the 2018 Regional Transportation Plan (RTP).

What is a directional change analysis?

There is not a formal definition of a directional change analysis, but it describes our methodological approach to assessing health and equity impacts from the RTP. For specific causal pathways, County staff will evaluate the published evidence and make findings regarding the likely direction (increase/decrease) of a change in health outcomes resulting from the RTP. For example, if published research supports an association between asthma and traffic pollution, and emissions are expected to decrease as a result of the RTP investment strategy, the analysis could conclude that asthma is likely to decrease as well, all else held constant.

The analysis will specifically examine the distribution of changes across the population, paying special attention to vulnerable groups such as people of color, low income households, people with disabilities, youth, and older adults. Historically, we have observed disparities in exposures and health outcomes related to transportation. In part, this analysis will serve as a tool to scrutinize how equitable the benefits and burdens of the transportation system are distributed.

What is not included?

A directional change analysis can be contrasted with a modeling study that might estimate the *magnitude* of change. Using the asthma example above, such a study might quantify the likely decrease in asthma in terms of the number of hospitalizations reduced. Although this analysis will rely on quantitative published literature, it is a qualitative assessment. What is currently being proposed for the 2018 RTP Transportation Equity Analysis does not include quantitative modeling.

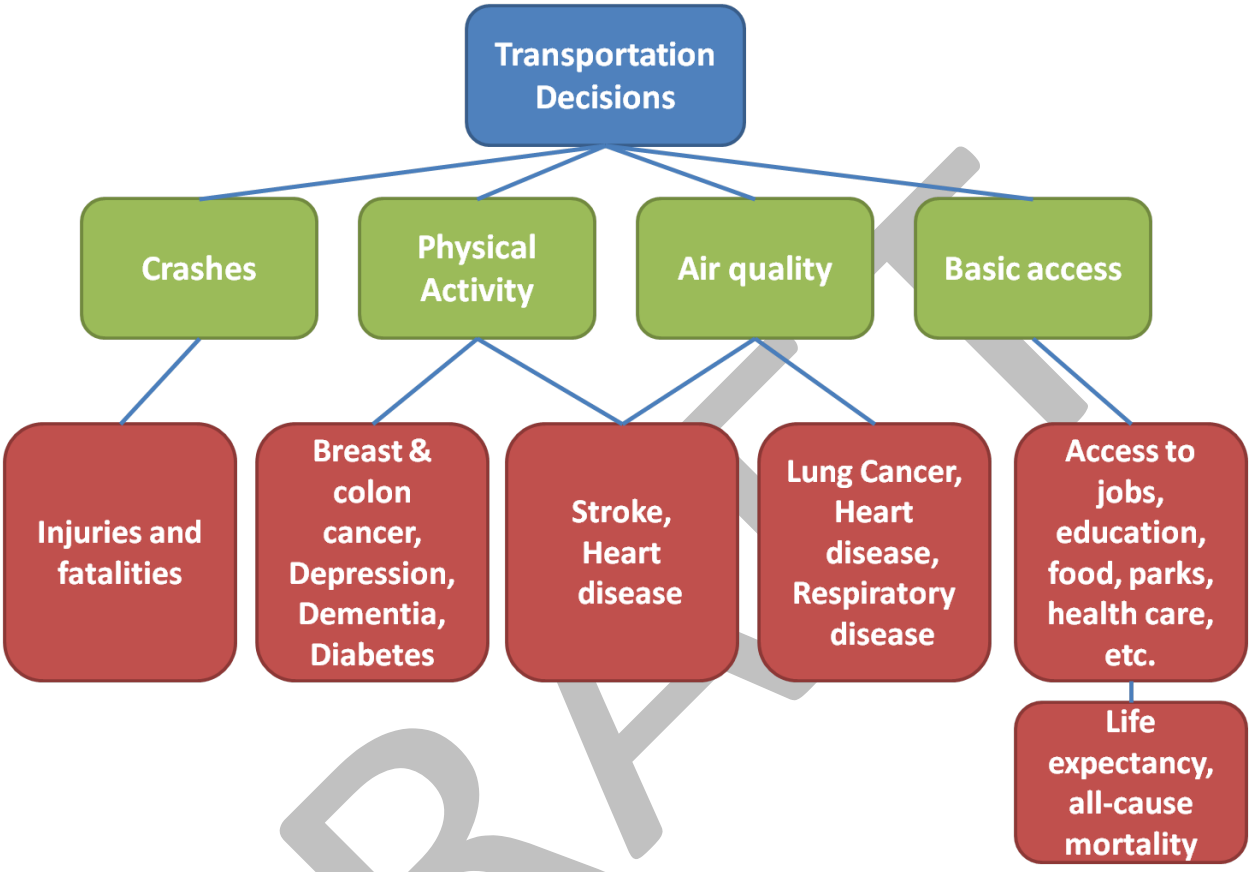
Method

Establish causal pathways

The first step in this process is articulating the relevant causal pathways that translate a change proposed in the RTP (e.g. traffic pollutants) to a health outcome (e.g. asthma). County staff anticipate accomplishing this using expert opinion and published research literature. Pathways are likely to include air quality, injury, physical activity, and access to basic services. These pathways influence a number of

health outcomes, as illustrated in the figure below. For example, changes in physical activity affect rates of depression and diabetes, and changes in air quality influence respiratory disease.

Figure 1. Causal Pathways Diagram[1]



Review evidence

Once causal pathways are established, County staff will review evidence supporting the linkages and make a finding as to the strength of evidence and the strength of association. For example, County staff will review the research linking traffic pollutants to heart attacks. Where transportation projects are expected to impact pollutants, County staff will draw conclusions about the likely impact on heart attacks. Borrowing from Health Impact Assessment methods, County staff will characterize the strength of evidence through clear criteria, such as those described in table 1 below.

Table 1. Strength of evidence framework

Strength of evidence	Study design	Sources
Emerging	Case studies, public health principles and theory	Citable expert opinions, case studies, gray literature, or conference

[1] Note: not all of the measures identified in the causal pathways will be assessed through the 2018 RTP Transportation Equity Analysis. Those which are being assessed through the Transportation Equity Analysis or the over 2018 RTP system evaluation will help to inform the causal pathways analysis work to help provide a health outcomes perspective to the results of the work.

		proceedings
Moderate	Some observational studies or few experimental studies, mostly consistent results or modest effect sizes	Five or more peer-reviewed studies with consistent findings
Strong	Many observational studies or some experimental studies, consistent results or large effect sizes	About five empirical studies or literature reviews
Very Strong	Many observational or experimental studies, consistent results and large effect sizes	About 10 empirical studies or meta-analyses of high-integrity experimental design

The evidence review will conclude by stating the likelihood of an association between changes resulting from the RTP and changes to health determinants or outcomes. Table 2 provides a framework for understanding associations between

Table 2. Example findings from a directional change analysis

Pathway	Directional change	Strength of association	Strength of evidence	Populations of concern
Traffic-air toxics-respiratory illness	Decrease	Strong	Very strong	Low income
Sidewalks-physical activity-cardiovascular disease	Increase	Moderate	Strong	Youth