Quantifying Health Impacts for Three Pathways in Transportation & Climate Scenario Planning

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TRB Moving Active Transportation to Higher Ground
April 2015

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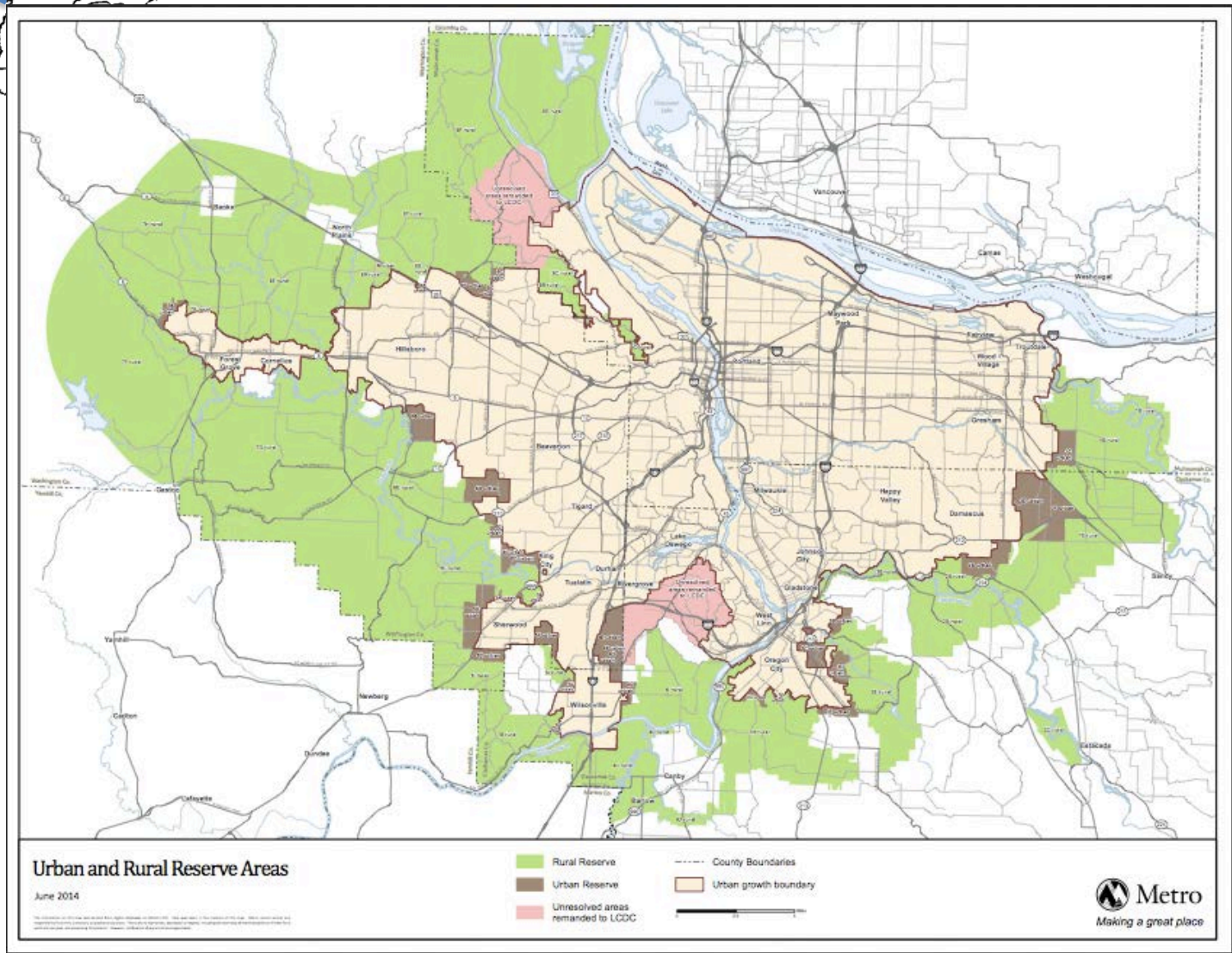
- Health Impact Project, a collaboration of the RWJ Foundation and the Pew Charitable Trust

It uses the Integrated Transport & Health Impact Model (ITHIM) which was provided free of charge. We thank:

- Developer Dr. James Woodcock at the Centre for Diet and Activity Research, Cambridge Institute of Public Health
- Dr. Neil Maizlish at the State of California Department of Public Health for U.S. updates and collaboration

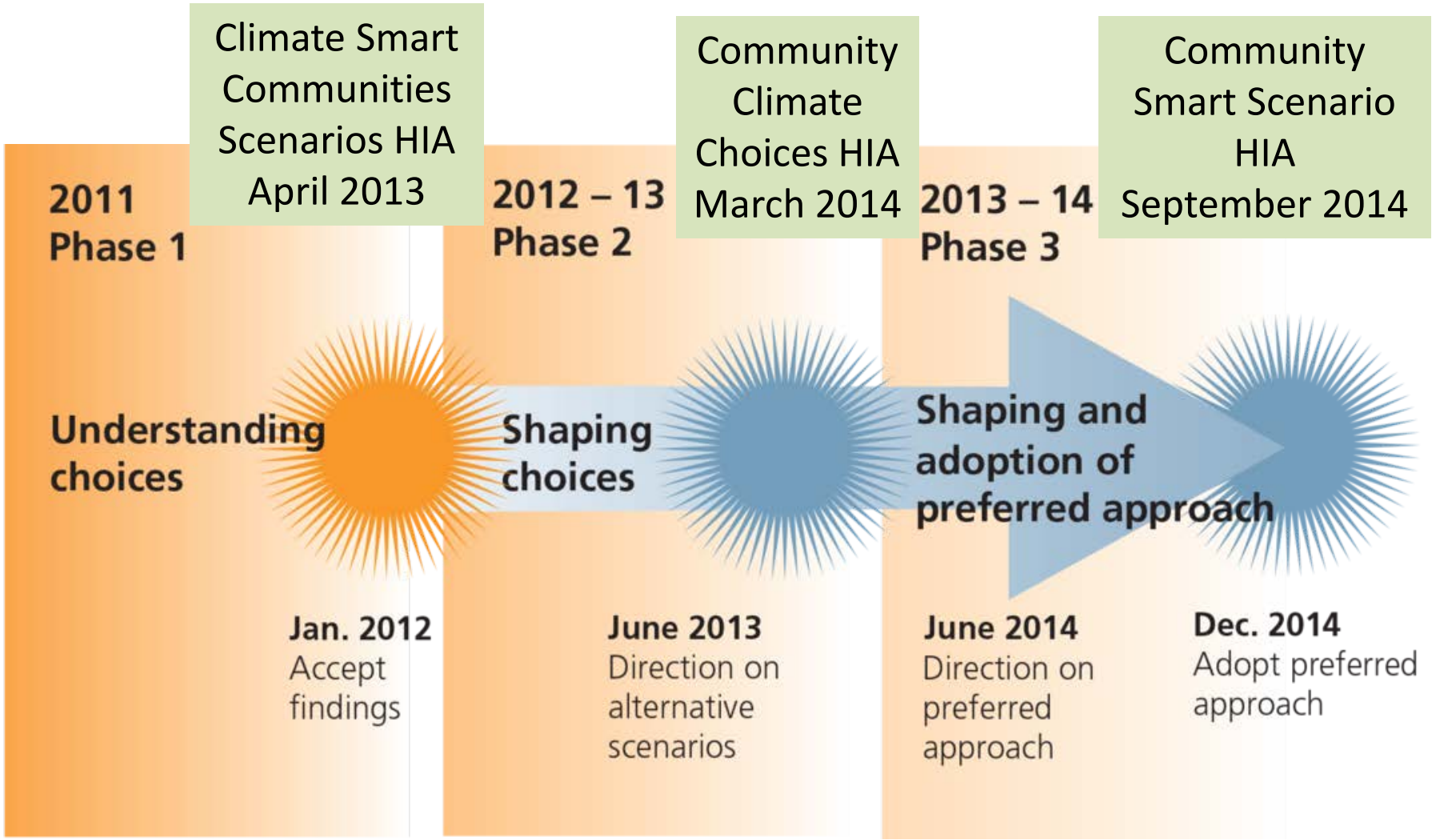
Social and Environmental Determinants of Health

Image source: Whitehead, M. & Dahlgren, G. (1991). What can we do about inequalities in health? *The Lancet, 338*, 1059-1063.


Urban and Rural Reserve Areas
June 2014
Rural Reserve
Urban Reserve
Unresolved areas remanded to LCDC
County Boundaries
Urban growth boundary
Metro
Making a great place


Portland
Oregon

Metro's Climate Smart Communities Scenarios Project



Metro's Climate Smart Communities Scenarios Project

STRATEGIES EVALUATED

COMMUNITY DESIGN

Walkable communities, vibrant downtowns, job centers, housing and transportation options, walk and bike-friendly facilities, frequent transit service, urban growth boundary

PRICING

Gas tax, fees and pay-as-you-drive insurance options

MARKETING AND INCENTIVES

Education and marketing programs that encourage efficient driving, car sharing and use of travel options

ROADS

Clearing breakdowns and crashes quickly, adding capacity and using ramp metering, traffic signal coordination and traveler information to help traffic move efficiently

FLEET

Replacing older cars with more efficient new ones; shifting from light trucks to cars

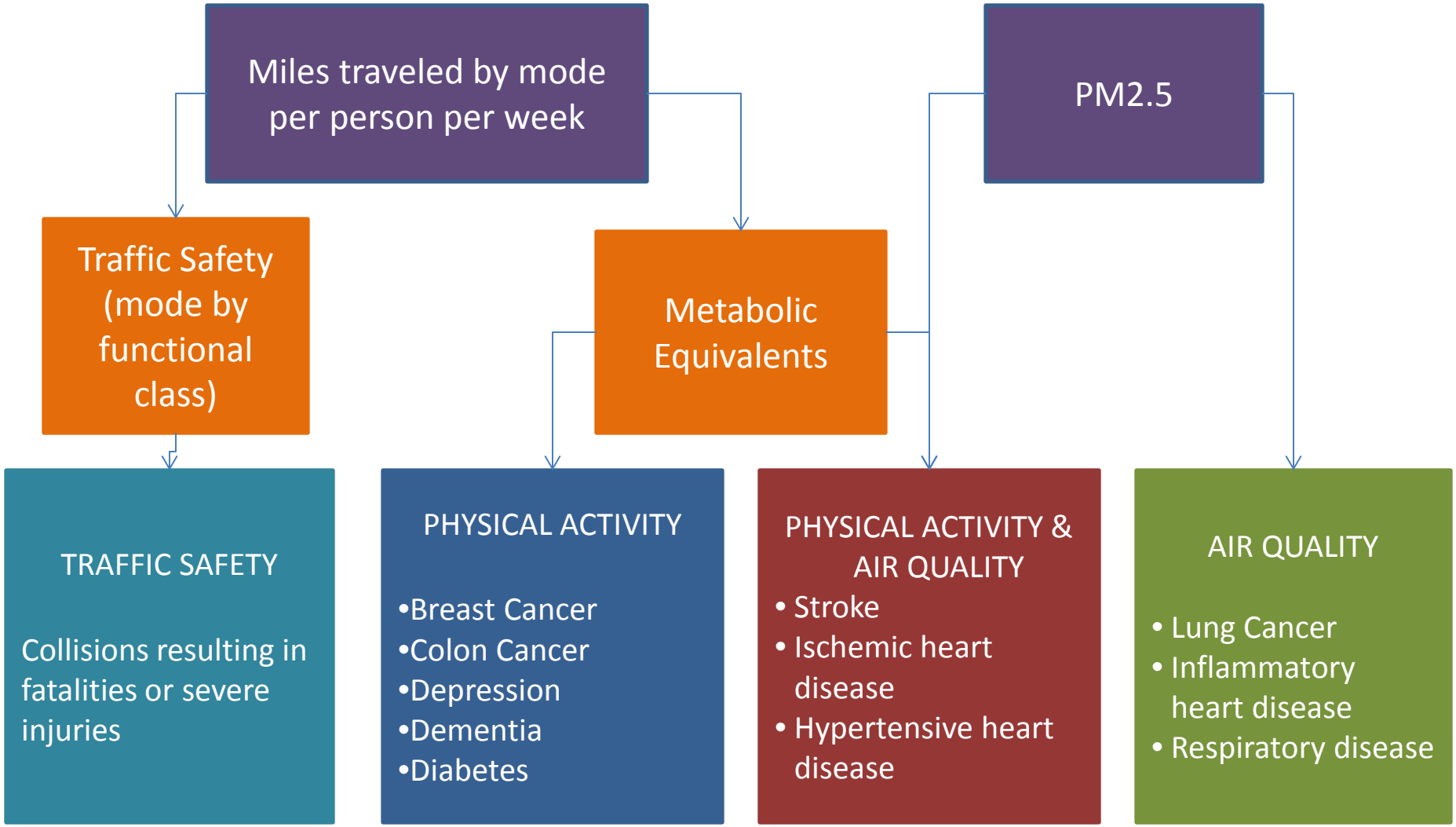
TECHNOLOGY

More fuel-efficient vehicles, cleaner fuels, use of hybrid and electric vehicles

Metro's Climate Smart Communities Scenarios Project

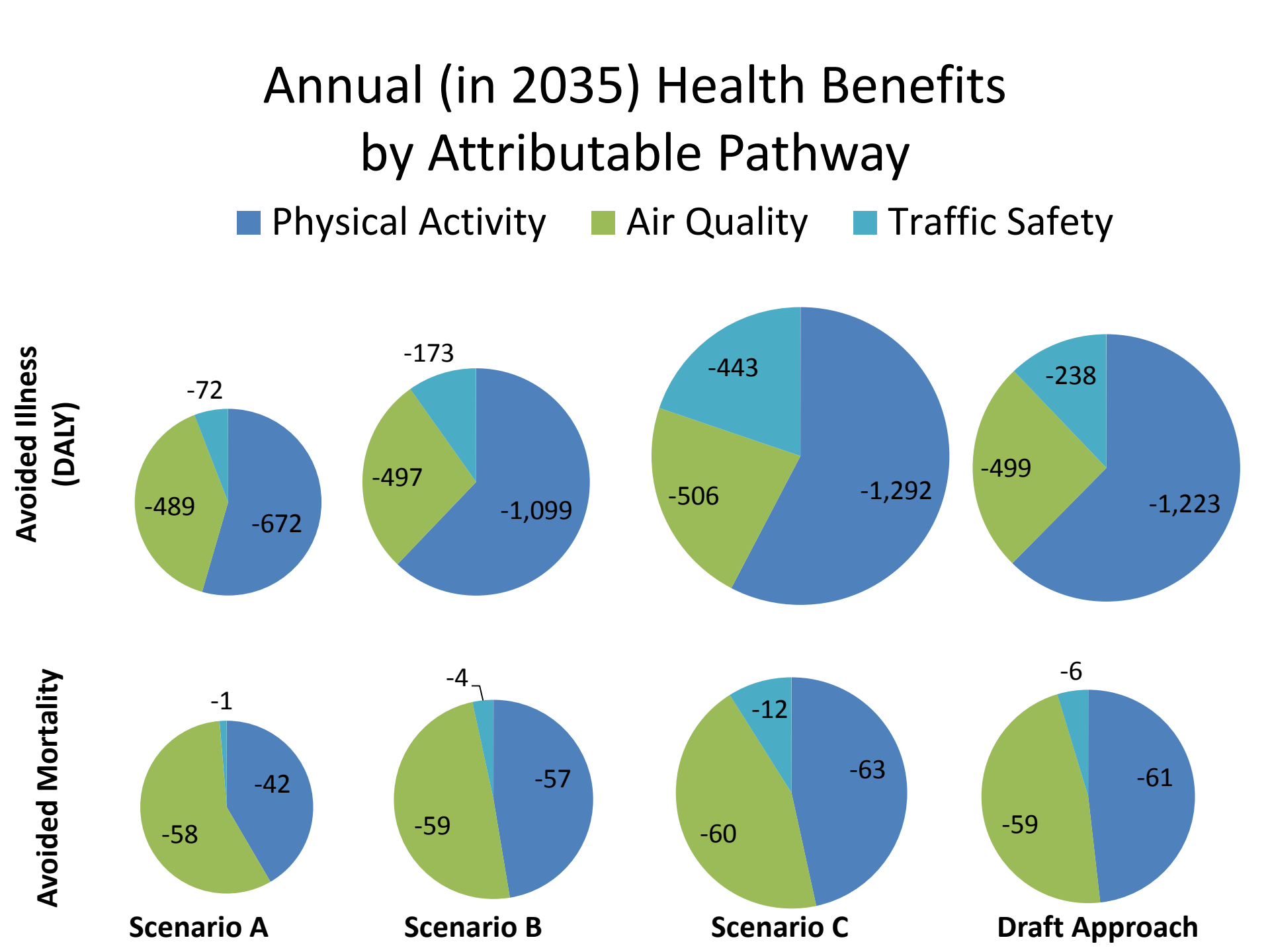
Data Input	**Baseline (2010)**	**Scenario A** Current Trajectory	**Scenario B** Adopted plans with increased revenue	**Scenario C** Scenario B plus additional policy/ infrastructure and new funding sources	**Draft Approach** Adopted 2014 RTP plus investment for transit and lower-cost TSMO and information
Reduction in GHG		↓12%	↓24%	↓36%	↓29%
Miles traveled per person per week	134	125	117	102	112

Integrated Transport Health Impact Model (ITHIM)



Data Input	Baseline (2010)	Scenario A Current Trajectory	Scenario B Adopted plans with increased revenue	Scenario C Scenario B plus additional policy/ infrastructure and new funding sources	Draft Approach Adopted 2014 RTP plus investment for transit and lower-cost TSMO and information
Reduction in GHG		↓12%	↓24%	↓36%	↓29%
Miles traveled per person per week	134	125	117	102	112
Average distance by mode per person per week[1]	Walk=1.3 Bike=2.1 Car=129.9	Walk=1.7 Bike=2.2 Car=120.8	Walk=1.8 Bike=3.0 Car=111.5	Walk=1.8 Bike=3.6 Car=96.3	Walk=1.8 Bike=3.4 Car=106.8
$PM_{2.5}$ (µg/m3)[2]	7.7291 (5-year average)	6.4429	6.4180	6.3925	6.4109
		↓16.6%	↓17.0%	↓17.3%	↓17.1%
UGB population	1,481,118	1,954,716 (2035 Estimate)			

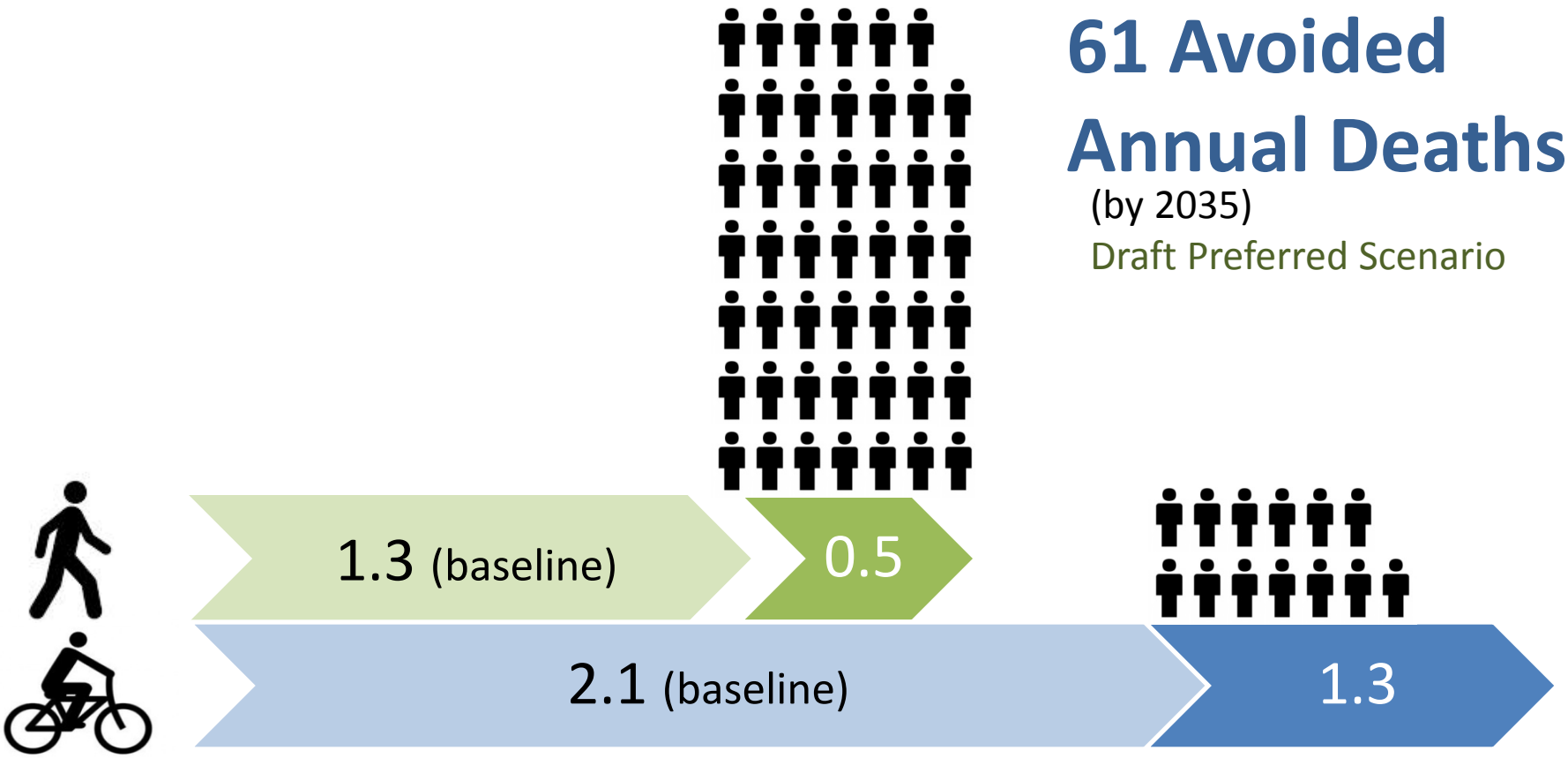
Annual (in 2035) Health Benefits by Attributable Pathway



FINDINGS: Physical Activity

Data Input	Baseline (2010)	Scenario A	Scenario B Adopted plans with increased revenue	Scenario C Scenario B plus additional policy/ infrastructure and new funding sources	Draft Approach Adopted 2014 RTP plus investment for transit and lower-cost TSMO and information
Average distance by mode per person per week[1]	**Walk=1.3** **Bike=2.1** Car=129.9	Walk=1.7 Bike=2.2 Car=120.8	Walk=1.8 Bike=3.0 Car=111.5	Walk=1.8 Bike=3.6 Car=96.3	**Walk=1.8** **Bike=3.4** Car=106.8
Avoided Deaths		-42 (1.0%)	-57 (1.4%)	-63 (1.6%)	-61 (1.5%)
Decrease in Illness (DALYs)		-672 (0.7%)	-1,099 (1.2%)	-1,292 (1.4%)	-1,223 (1.3%)

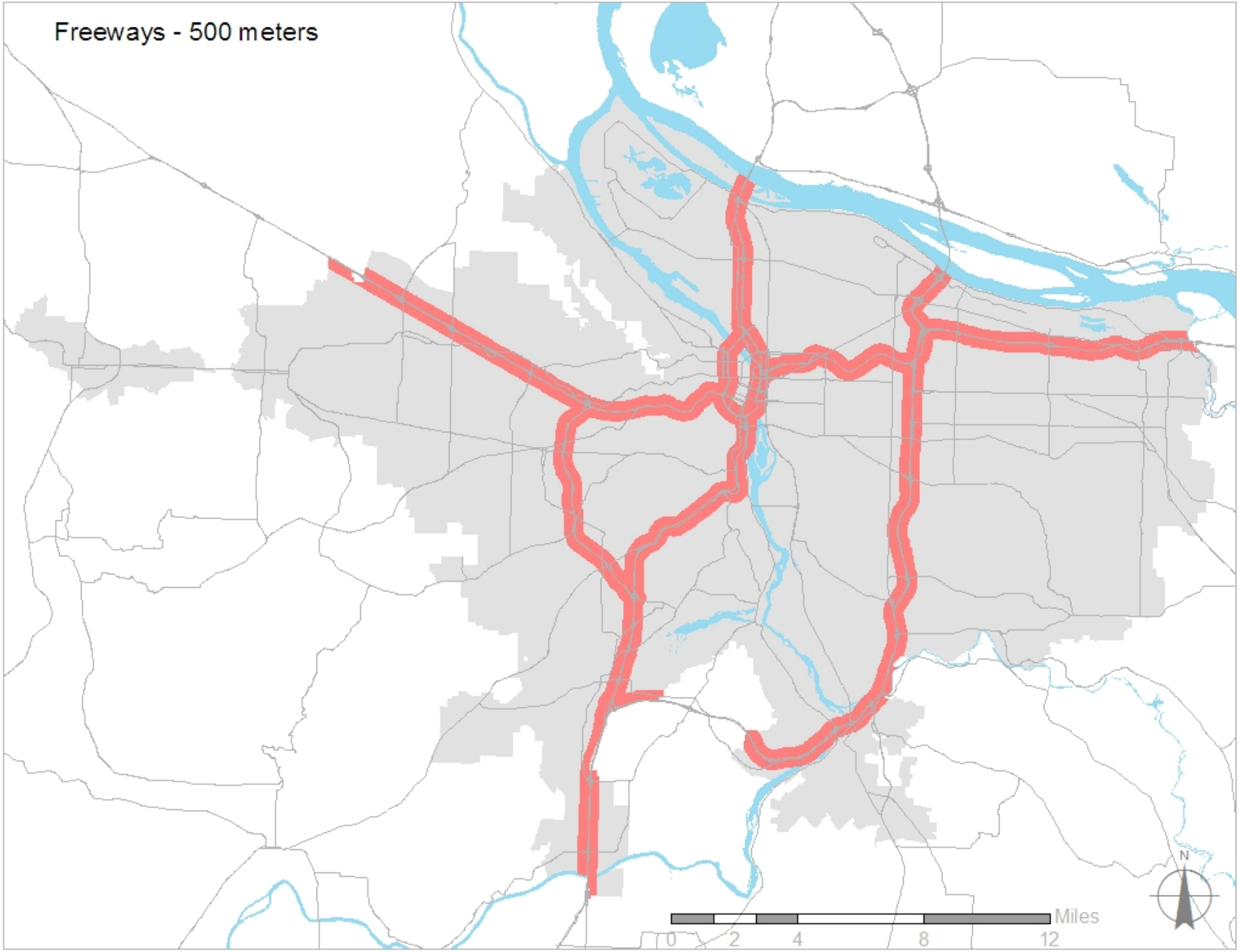
FINDINGS: Physical Activity



Miles Traveled per Person per Week

FINDINGS: Air Quality

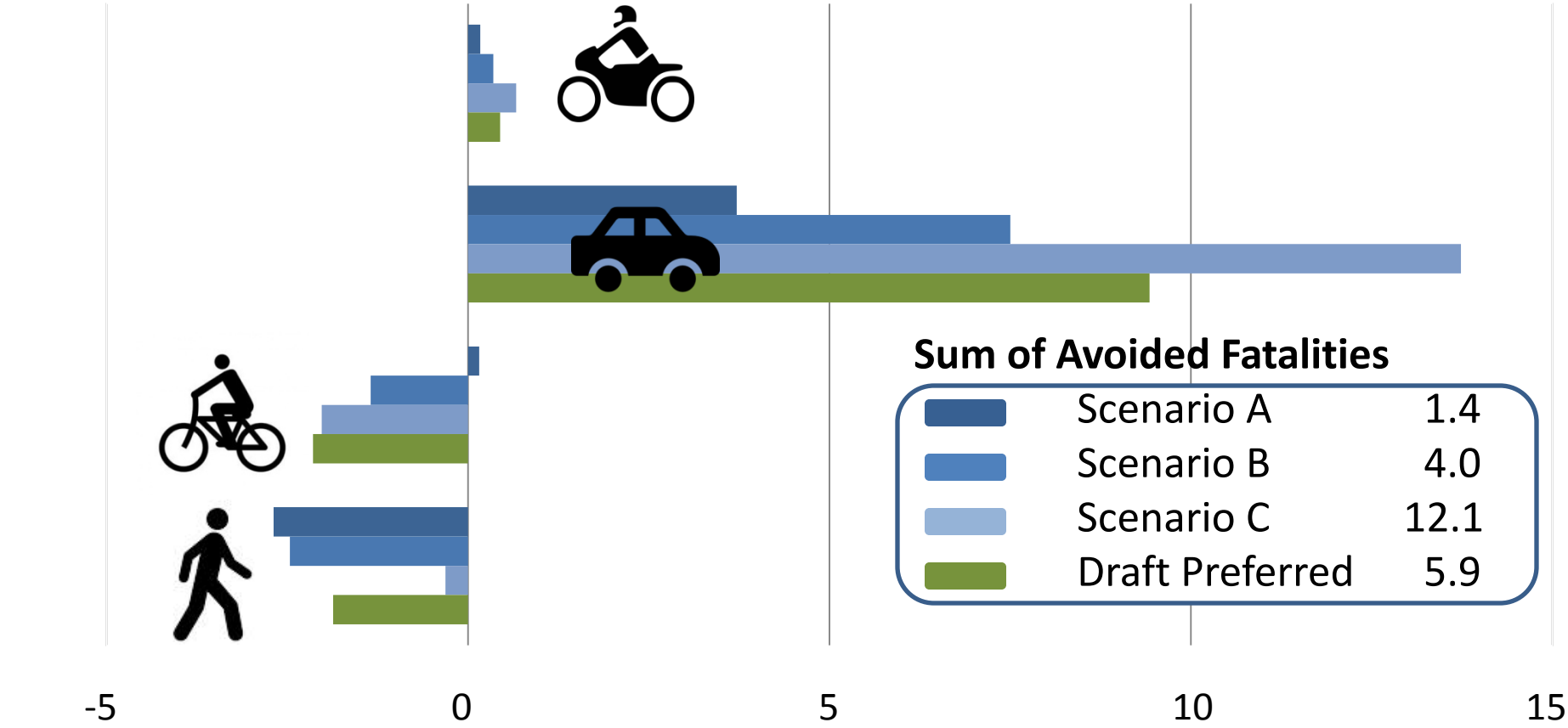
	Baseline (2010)	Scenario A	Scenario B	Scenario C	Draft Preferred
$PM_{2.5}$ (µg/m3)²	7.7291	6.4429 ↓16.6%	6.4180 ↓17.0%	6.3925 ↓17.3%	6.4109 ↓17.1%
Avoided Deaths		-58 (1.8%)	-59 (1.8%)	-60 (1.8%)	-59 (1.8%)
Decrease in Illness (DALYs)		-489 (2.4%)	-497 (2.5%)	-506 (2.5%)	-499 (2.5%)


Freeways - 500 meters
N
Miles
0
2
4
8
12

FINDINGS: Traffic Safety

Lost Lives

Saved Lives



Physical Activity Recommendations

- Implement **Complete Streets** and **design for all users**
- Adequately resource and complete the **active transportation network**
- Bicycle and pedestrian-friendly **designs around transit/bus** stops

Recommendations cont.

- **Use a measure of travel distance or travel time by active mode** rather than mode share or number of trips
- **Exceed the 1.8 miles walked by pedestrians and 3.4 miles bicycled each week** by 2035
- **Reduce per capita VMT**, such as from 130 to under 107 miles per week by 2035 (traffic safety for active modes)

CLIMATE SMART COMMUNITIES SCENARIOS PROJECT

Metro

KEY RESULTS

The Climate Smart Communities Scenarios Project responds to a state mandate to reduce greenhouse gas emissions from cars and small trucks by 2035. Working together, community, business and elected leaders ar
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approach
communit

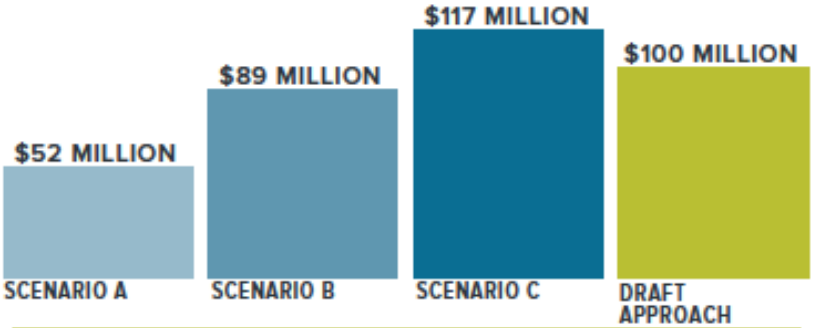
WHAT ARE THE PUBLIC HEALTH AND ECONOMIC BENEFITS?

By 2035, the draft approach can help people live healthier lives and save businesses and households money through benefits like:

- Reduced air pollution and increased physical activity can help **reduce illness and save lives.**
- Reducing the number of miles driven results in **fewer traffic fatalities and severe injuries.**

Our economy benefits from improved public health

ANNUAL HEALTHCARE COST SAVINGS FROM REDUCED ILLNESS (MILLIONS, 2010$)

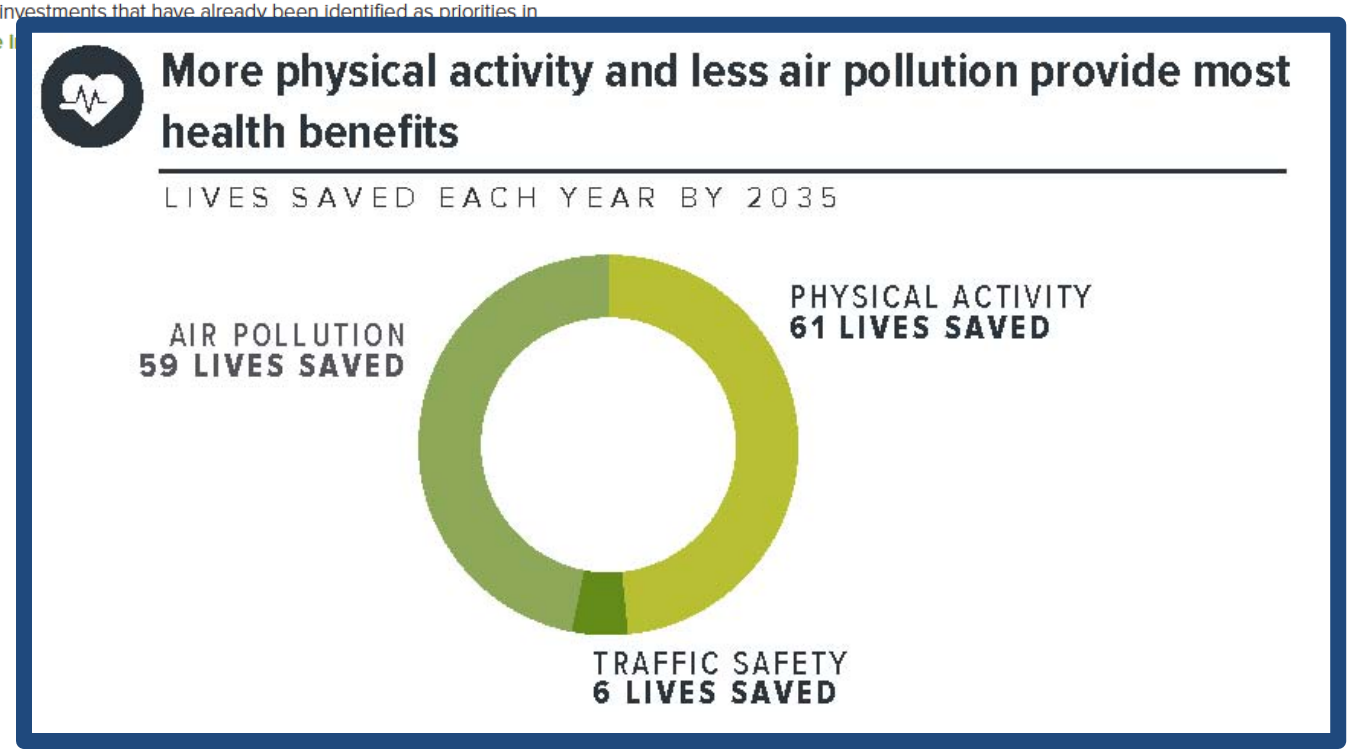


In 2010, our region spent $5-6 billion on healthcare costs related to illness alone. By 2035, the region can save $100 million per year from implementing the draft approach.

http://www.oregonmetro.gov/sites/default/files/CSC-KeyResults-Factsheet-2014_09_15.pdf

KEY RESULTS

The Climate Smart Communities Scenarios Project responds to a state mandate to reduce greenhouse gas emissions from cars and small trucks by 2035. Working together, community, business and elected leaders are shaping a strategy that meets the goal while creating healthy and equitable communities and a strong economy. On May 30, 2014, Metro's policy advisory committees unanimously recommended a draft approach for testing that relies on policies and investments that have already been identified as priorities in communities across the region. **The results are i**



http://www.oregonmetro.gov/sites/default/files/CSC-KeyResults-Factsheet-2014_09_15.pdf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  http://www.oregonmetro.gov/public-projects/climate-smart-communities-scenarios