PEDESTRIAN & BICYCLE PERFORMANCE MEASURES
OHIO TRANSPORTATION ENGINEERING CONFERENCE 10.3.18
TODAY'S SPEAKERS

- Jordan Whisler (ODOT)
- Joe Fish (TDG)
- Patricia Kovacs (OBF)
- Na Chen (UC)
PEDESTRIAN & BICYCLE PERFORMANCE MEASURES

Jordan Whisler, AICP
What are Performance Measures?

- Monitoring change over time
STORY TELLING 101:
Help people care
STORY TELLING 101:
Help people care
HOW CAN WE HELP PEOPLE CARE?

Know your audience and speak in a language they can understand
WHO’S OUR AUDIENCE:

Residents & Visitors
Elected Officials
Economic Development Professionals
Parks & Recreation Professionals
Transportation Professionals
Public Health Professionals
Law Enforcement Professionals
Many more...
# Nonmotorized Performance Measures

## Table 4: Example Applications of Performance Measures by Different Agencies

<table>
<thead>
<tr>
<th>AGENCY/IMPLEMENTATION AREA</th>
<th>10 YEAR IMPROVEMENTS</th>
<th>5 YEAR IMPROVEMENTS</th>
<th>3 YEAR IMPROVEMENTS</th>
<th>1 YEAR IMPROVEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian Safety Planning</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Bicycle Safety Planning</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Traffic Congestion Management</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Impact Analysis</td>
<td></td>
<td></td>
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</tbody>
</table>

## Performance Measure: Level of Service

A level of service (LOS) reflects how users may perceive service conditions (e.g., delay, travel time, speed, comfort). Performance and LOS can be measured through travel time, travel distance, or other metrics.

### Example:

- **Service Quality**
  - LOS A: Highest level of service (easiest to use). Mobile phone users are often primarily used to describe the level of service primarily based on minimum LOS for pedestrians and bicycles.

## Data Needs & Sources

- **LOS**
  - Traffic operations & traffic events
  - Pedestrian and bicycle crashes
  - Pedestrian and bicycle fatalities
  - Pedestrian and bicycle injuries

## Near-Term Standards

- Setting near-term standards that establish a minimum baseline for walking and bicycling performance provides consistency with agency goals and benchmarking measures, and ensures that larger policy goals are reflected in detailed evaluations.

## Long-Term Considerations

- Long-term considerations include the impact of climate change on transportation performance and the need for sustainable transportation solutions.
NONMOTORIZED PERFORMANCE MEASURES

COMMUNITY GOALS:

- Different communities and audiences have different values and goals.
- There are many ways to track trail performance and communicate need.
- It's up to you to connect need for investment to your community's values.
### Nonmotorized Performance Measures

<table>
<thead>
<tr>
<th>Performance Measures</th>
<th>Connectivity</th>
<th>Economic</th>
<th>Environment</th>
<th>Equity</th>
<th>Health</th>
<th>Livability</th>
<th>Safety</th>
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</thead>
<tbody>
<tr>
<td>Level of Service</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Miles of Pedestrian/Bicycle Facilities</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Retail Impacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Mode Split</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
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<td>X</td>
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<td>Crashes</td>
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<td></td>
<td>X</td>
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<td>X</td>
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<tr>
<td>Volume</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**Source:** Guidebook for the Development of Pedestrian and Bicycle Performance Measures
NONMOTORIZED PERFORMANCE MEASURES

CONNECTIVITY MEASURES:

“Interconnected pedestrian and/or bicycle transportation facilities that allow people of all ages and abilities to safely and conveniently get where they want to go.”

COMMUNITY GOALS:

- CONNECTIVITY
- ECONOMY
- ENVIRONMENT
- EQUITY
- HEALTH
- LIVABILITY
- SAFETY
“Describes how transportation decisions impact the economic health of a municipality or region.”
Environmental measures promote the creation and maintenance of a transportation system that minimizes and/or mitigates impacts to the natural environment.
Recognizing the disparate costs and impacts of transportation decisions on populations of different income levels, agencies are beginning to calculate equity factors. Households without access to vehicles may not be well-served by auto-oriented transportation solutions and require walking, bicycling, and transit infrastructure.
Public health impacts of transportation decisions typically include changes to levels of physical activity, safety, and air quality. Increases in walking and bicycling are correlated with higher levels of public health.
Livability measures directly acknowledge the interactions and trade-offs between the needs of travelers passing through an area and those living adjacent to the transportation infrastructure.
NONMOTORIZED PERFORMANCE MEASURES

SAFETY MEASURES:

“These measures addresses the safety of the transportation system for all users. Safety performance measures typically track crashes, injuries, and fatalities, though some are based on estimated changes in numbers of crashes.”

COMMUNITY GOALS:

- CONNECTIVITY
- ECONOMY
- ENVIRONMENT
- EQUITY
- HEALTH
- LIVABILITY
- SAFETY
# Nonmotorized Performance Measures

<table>
<thead>
<tr>
<th>CRASH YEAR</th>
<th>PEDESTRIANS</th>
<th>BICYCLISTS</th>
<th>COMBINED</th>
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<tbody>
<tr>
<td></td>
<td>Fatalities</td>
<td>Serious Injuries</td>
<td>FSI Total</td>
</tr>
<tr>
<td>2006</td>
<td>96</td>
<td>578</td>
<td>674</td>
</tr>
<tr>
<td>2007</td>
<td>107</td>
<td>459</td>
<td>566</td>
</tr>
<tr>
<td>2008</td>
<td>98</td>
<td>511</td>
<td>609</td>
</tr>
<tr>
<td>2009</td>
<td>81</td>
<td>457</td>
<td>538</td>
</tr>
<tr>
<td>2010</td>
<td>91</td>
<td>472</td>
<td>563</td>
</tr>
<tr>
<td>2011</td>
<td>99</td>
<td>494</td>
<td>593</td>
</tr>
<tr>
<td>2012</td>
<td>117</td>
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<td>2013</td>
<td>88</td>
<td>531</td>
<td>619</td>
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<tr>
<td>2014</td>
<td>93</td>
<td>496</td>
<td>589</td>
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<td>2015</td>
<td>118</td>
<td>522</td>
<td>640</td>
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<td>2016</td>
<td>140</td>
<td>556</td>
<td>696</td>
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<tr>
<td>2017</td>
<td>143</td>
<td>520</td>
<td>663</td>
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<tr>
<td>TOTAL</td>
<td>1,271</td>
<td>6,133</td>
<td>7,404</td>
</tr>
</tbody>
</table>
NONMOTORIZED PERFORMANCE MEASURES

PEDESTRIAN FATALITIES & SERIOUS INJURIES

BICYCLIST FATALITIES & SERIOUS INJURIES
## Nonmotorized Performance Measures

### Transportation Safety Performance Measures

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>2015 Benchmark</th>
<th>2020</th>
<th>2040</th>
<th>2017 Grade</th>
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<tr>
<td></td>
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<td>Target</td>
<td>Track</td>
<td>Target</td>
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<tr>
<td>Number of fatalities</td>
<td>96</td>
<td>-10%</td>
<td>10.2%</td>
<td>-39%</td>
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<tr>
<td>Number of serious injuries</td>
<td>890</td>
<td>-10%</td>
<td>-7%</td>
<td>-39%</td>
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<tr>
<td>Number of non-motorized fatal &amp; serious injuries</td>
<td>138</td>
<td>-10%</td>
<td>22.7%</td>
<td>-39%</td>
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<tr>
<td>Rate of fatalities per 100 million VMT</td>
<td>0.69</td>
<td>0.63</td>
<td>0.76</td>
<td>0.42</td>
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<tr>
<td>Rate of serious injuries per 100 million VMT</td>
<td>6.40</td>
<td>5.83</td>
<td>5.95</td>
<td>3.91</td>
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</tbody>
</table>

### Notes
- The benchmark and targets represent five year rolling averages.
- Million Vehicle Miles Traveled (MVMT).
- "TARGET" = Performance target included in the 2016-2040 MTP.
- "TRACK" = Progress should current trends continue.
## NONMOTORIZED PERFORMANCE MEASURES

### YEAR-BY-YEAR COMPARISON OF SAFETY PERFORMANCE

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NUMBER OF FATALITIES</th>
<th>NUMBER OF SERIOUS INJURIES</th>
<th>NUMBER OF NON-MOTORIZED FATAL &amp; SER INJ</th>
<th>RATE OF FATALITIES/100 MVMT</th>
<th>RATE OF SERIOUS INJ/100 MVMT</th>
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<tbody>
<tr>
<td>2010</td>
<td>100</td>
<td>967</td>
<td>113</td>
<td>0.72</td>
<td>6.95</td>
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<tr>
<td>2011</td>
<td>102</td>
<td>949</td>
<td>115</td>
<td>0.74</td>
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<td>2012</td>
<td>104</td>
<td>939</td>
<td>123</td>
<td>0.76</td>
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<td>2013</td>
<td>98</td>
<td>921</td>
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<td>97</td>
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<td>100</td>
<td>883</td>
<td>138</td>
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<td>6.33</td>
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<tr>
<td>2016</td>
<td>104</td>
<td>877</td>
<td>144</td>
<td>0.74</td>
<td>6.26</td>
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**Trend**
- (Increasing)
- (Decreasing)
- (Increasing)
- (Increasing)
- (Decreasing)

**Notes**
- The values shown represent five year rolling averages (ex. for 2004-2008) \((106+113+95+93+121)/5=106\)
- Shaded orange cells indicate the highest value for each respective column
NONMOTORIZED PERFORMANCE MEASURES

TRAIL MILES TRAVELED (TMT) BY TRAIL

[Graph showing trail miles traveled by different trails from 2014 to 2017]
EXISTING CONDITIONS:
What’s the **Average Stress**
I’ll Encounter on my Ride to North Bayshore?

- Low Average Stress
- Medium Average Stress
- High Average Stress

Rail Transit Stops

Source: ALTA
### ODOT NM DATA INITIATIVES:

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Level of Service</th>
<th>Miles of Pedestrian/Bicycle Facilities</th>
<th>Retail Impact</th>
<th>Mode Split</th>
<th>Crashes</th>
<th>Volume</th>
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<tr>
<td>ORIL - LTS Research</td>
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### PERFORMANCE MEASURES:

- Level of Service
- Miles of Pedestrian/Bicycle Facilities
- Retail Impact
- Mode Split
- Crashes
- Volume
NONMOTORIZED DATA RESOURCES

MS2 Non-Motorized Database System:

[Diagram showing data on yearly, monthly, and daily volumes with a map highlighting ADT locations.]
NON-MOTORIZED DATA

NOACA/Cleveland On-Street Pilot:

- Ohio DOT provided ~$150k in seed funding to NOACA (Cleveland area MPO) to kickstart development of an on-street non-motorized count program.

- 3 year pilot (maintenance & data processing)

- 11 Permanent count stations (Installation to begin next month)

- Includes all modes

- Replicable approach
NON-MOTORIZED DATA

2017 - Average Annual Daily

Variation in AADT by trail segment (Cen

Data Source: BOXRC, Metro Parks, Columbus Recreation & Parks, C.
Alum County Park District, Friends of Madison County Parks and Trails

TRAIL MILES TRAVELED (TMT) BY TRAIL

Showing all Add/Remove trip

Start Survey

TRAVEL REPORT

Tue, Dec 22
Mon, Dec 21

Daily Summary

4:01 PM - 4:41 PM
• **Consolidate** historical count data, reformat to TMG format, and populate statewide count database.

• **Provide** formal guidance on volume data collection practices and roles.

• **Pilot** an integrated sensor approach to on-street data collection on both state & local roadway system.
QUESTIONS

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ODOT Office of Program Management

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