E-Scooter Safety and How To Improve It

Eric Valentino
Portland State University

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What is an e-scooter?

• is designed to be operated on the ground with not more than three wheels;
• has handlebars and a foot support or seat for the operator’s use;
• can be propelled by motor or human propulsion; and
• is equipped with a power source that is incapable of propelling the vehicle at a speed of greater than 24 miles per hour on level ground and:
  - if the power source is a combustion engine, has a piston or rotor displacement of 35 cubic centimeters or less regardless of the number of chambers in the power source; or
  - if the power source is electric, has a power output of not more than 1,000 watts

Oregon Revised Statutes (“ORS”) 801.348
Background

- 38.5 Million trips nationally
- 1.9 million in Portland
- Over 100 cities (PBOT, 2019)

- 20 rides out of 100,000 will lead to injury (CDC, 2018)

PBOT E-Scooter Pilot, 2019

(Photography by Viktoria Haiboniuk, PBOT)
Limitations and Constraints

Earlier data might be inaccurate as deployment and public understanding is on the rise

Emergency room visits and news articles have a bias towards severe injury

Surveys have inherit bias

City pilots each had individual limitations, especially related to privacy

- Only considered cities in the US
- Cities with public e-scooter data
- Data from 2018 and beyond

What did I do differently?

Examined 6 major cities

Aggregated multiple data sources

- City Pilots
- ER studies
- Data mined news articles
- Public surveys

Pilot Findings:
Scooter exposure increased, injuries increased

Injury rate
2.2 injuries per 10,000 miles, 2.5 injuries per 10,000 trips
Results

E-Scooter Injuries by City

<table>
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<tr>
<th>City</th>
<th>Designated Parking</th>
<th>RUI Laws</th>
<th>Sidewalk Riding</th>
<th>Helmets Required</th>
<th>Geofencing</th>
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<tr>
<td>Milwaukee</td>
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</tbody>
</table>

Injuries per 10,000 Rides

Austin: 2
Portland: 2.5
Baltimore: 0.87
Chicago: 2.7
Santa Monica: 1.9
Milwaukee: 0.15
Bike Lanes

Photo by Cynthia Rose, Santa Monica Spoke

Photo by Grant Humphries, openstreetmap.org
Final Thoughts

- Safety vs. Ridership
- Comparison with bicycles/e-bikes
- Other forms of infrastructure
  - Designated parking at transit stations
  - Road quality
  - % arterial bike lane miles
Thank You!

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