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# E-Scooter Safety and How To Improve It

Eric Valentino  
*Portland State University*

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# **E-Scooter Safety and How To Improve It**

By: Eric Valentino

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*(Official Bird Facebook Photo)*

# 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

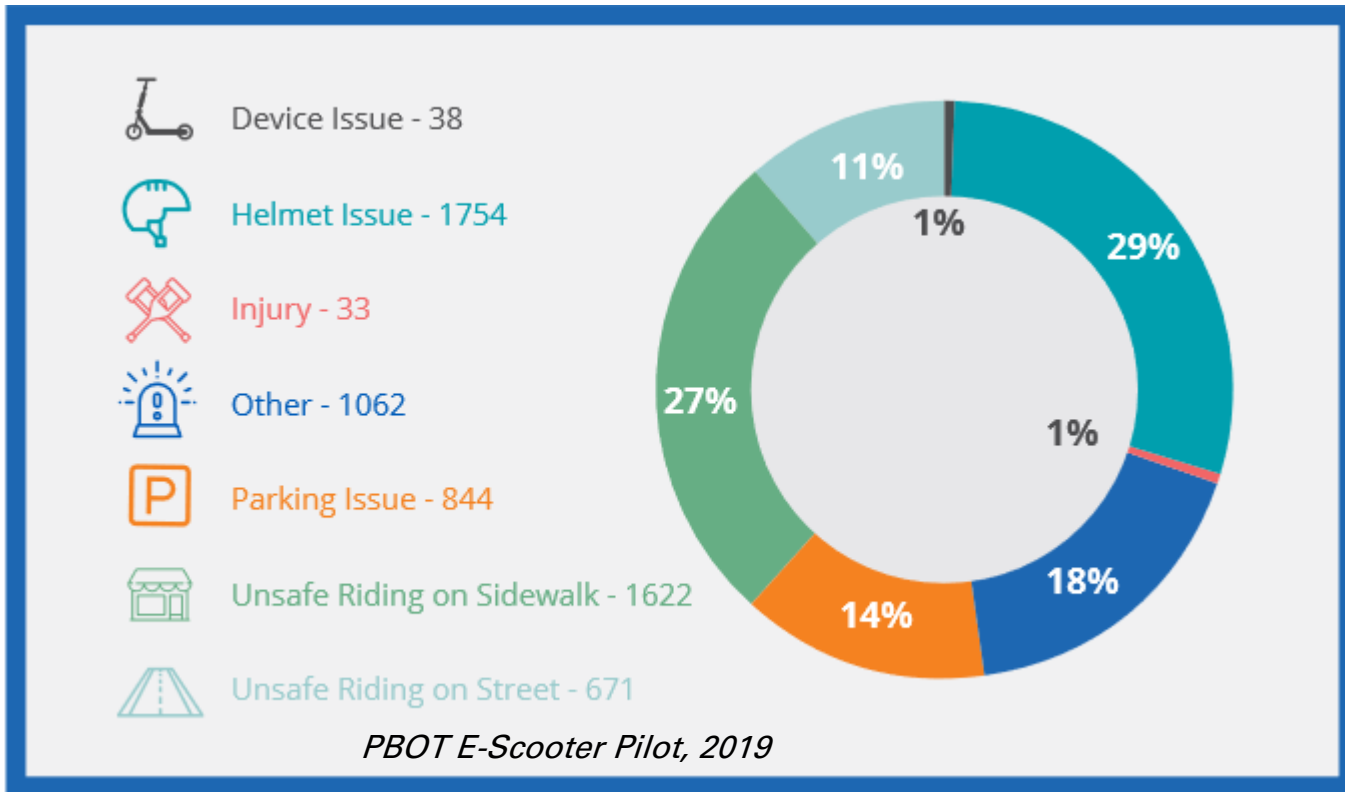
*Oregon Revised Statutes ("ORS") 801.348*



*(Official Skip Facebook Photo)*

# 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)



*(Photo by Viktoria Haiboniuk, PBOT)*



# What did I do differently?

Examined 6 major cities

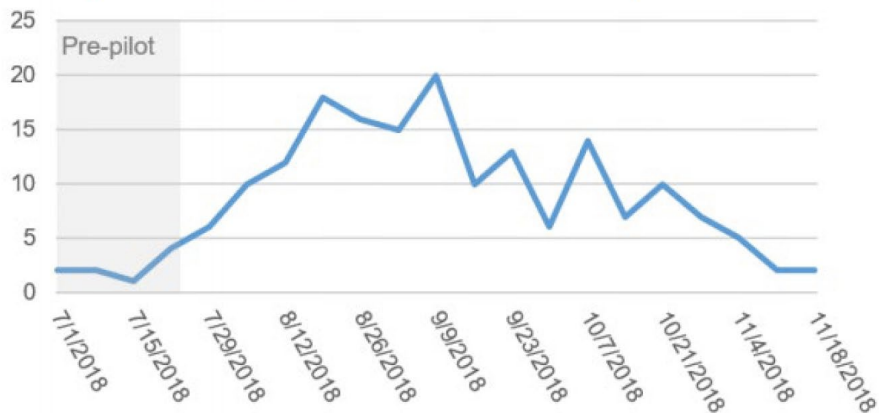
Aggregated multiple data sources

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

## Pilot Findings:

**Scooter exposure increased, injuries increased**

Weekly scooter-related ED visits in Multnomah County



## Injury rate

**2.2 injuries per 10,000 miles, 2.5 injuries per 10,000 trips**

# 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

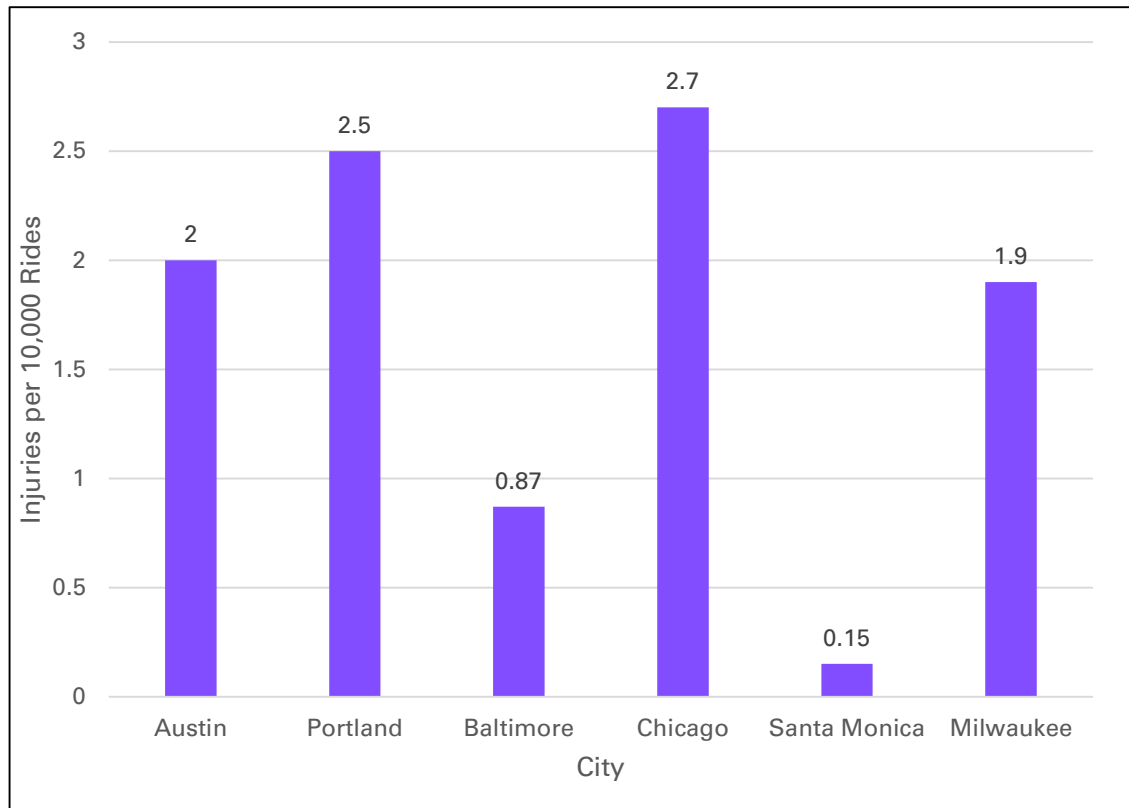
Surveys have inherent bias

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

# Results

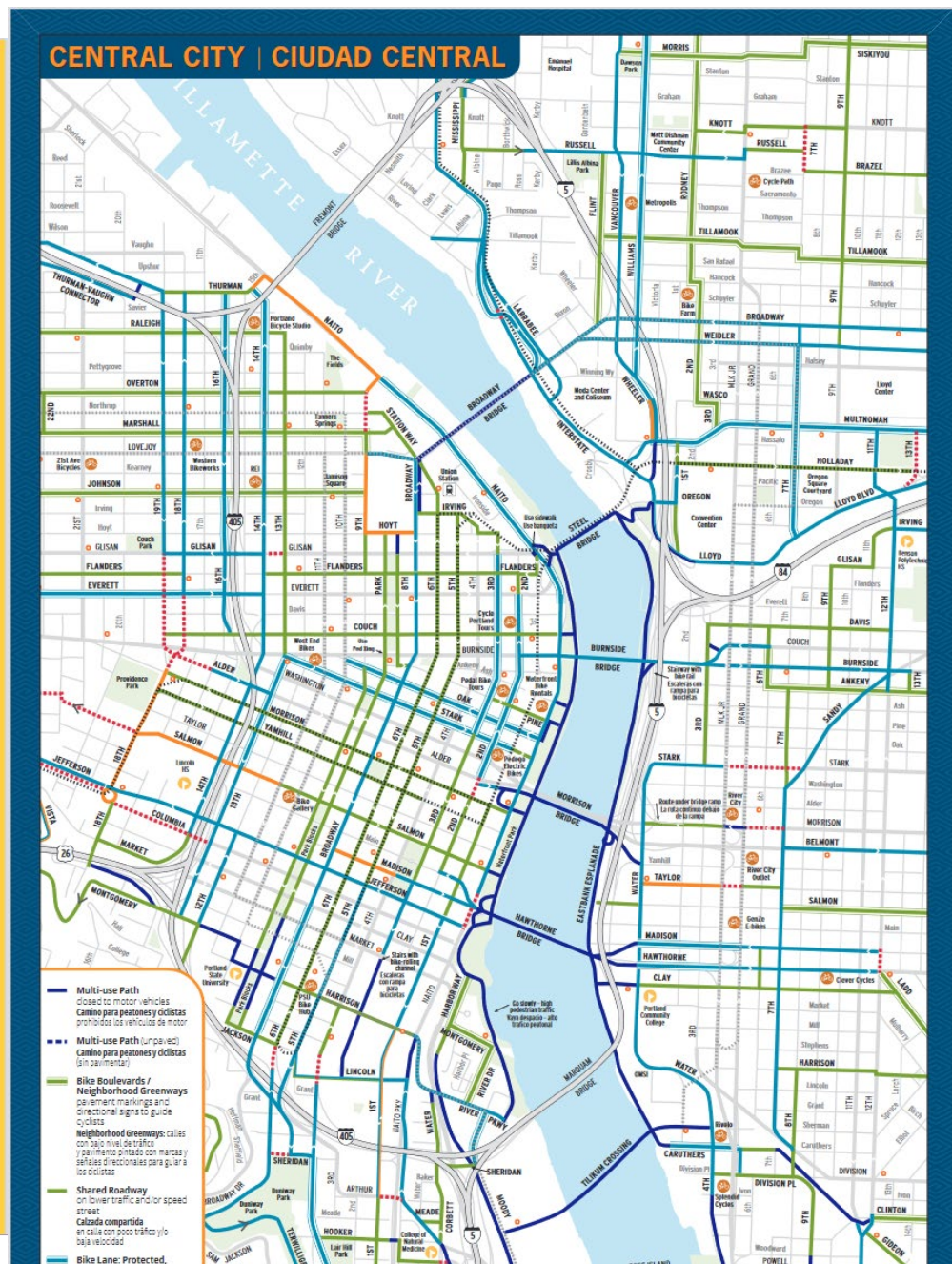
## E-Scooter Injuries by City



## Safety Measures Taken by City

City	Designated Parking	RUI Laws	Sidewalk Riding	Helmets Required	Geofencing
Austin	yes	no	yes	no	n/a
Portland	no	yes	no	yes	yes
Baltimore	yes	yes	no	no	no
Chicago	no	no	yes	no	yes
Santa Monica	yes	no	no	yes	yes
Milwaukee	no	no	no	no	no







# Bike Lanes



*Photo by Cynthia Rose, Santa Monica Spoke*



*Photo by Grant Humphries, [openstreetmap.org](https://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

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# Thank You!



Acknowledgements: Dr. Christof Teuscher, Mike McQueen