Replica pilot summary

Replica is a new tool that has the potential to help Metro and our partners better understand how to make the region's transportation system safer and more efficient for everyone.

Project summary

Metro collects and shares data to support our own operations and transportation planning across the region, and we work to get access to data that better meets our needs and the needs of our partners. Metro, in collaboration the City of Portland and TriMet, is testing a new tool called Replica that provides detailed data on travel patterns while protecting people's privacy. We believe that Replica has the potential to significantly advance Metro and our partner agencies' understanding of how people travel and help us make transportation in the region safer, more equitable, less polluting, and more efficient. We plan to test Replica in a variety of contexts so that we can understand its value, and better assess other emerging data sources in the future.

Why Replica?
- Compared to other available data sources, Replica has the potential to provide Metro with transportation data that:
- Are more comprehensive, including data on ride-hailing and shared bikes/scooters that Metro does not currently have access to, as well as better coverage of bicycle and pedestrian trips.
- Are more detailed. Replica covers not just where and how people are traveling, but what kind of people are traveling (e.g., age, income, race, and sex) and whether they're going to work, shopping, school or another destination, so that we can meet the needs of all travelers.
- Are more frequently updated. Replica is updated every three months, so that we can observe how travel patterns in our region change as new projects are built and new services like dockless scooters begin operating.
- Are regionally consistent. All of our transportation agency partners will have access to Replica, and we make better decisions as a region when everyone is working from the same information.
- Better protect privacy. Replica provides a detailed simulation of how people typically travel – not data on real trips by real people – to give us the insights we need without compromising people's privacy.
- Reduce our risk: We get to test Replica extensively for accuracy and privacy protection before we purchase the data, which lowers the risk involved in working with a new data source.

What data is included in Replica?

Replica provides simulated data for an average seasonal travel week, updated quarterly.
- Modes included: private auto, carpool, walking, bicycling, public transit, for-hire vehicle (taxi/Uber/Lyft), commercial (freight and delivery), potentially shared bike and scooter

- Attributes included: Trip origin and destination, trip distance, trip purpose, primary mode, travelers' home/work location, travelers' demographics (income, age, race and ethnicity, access to private auto)
- Scale: Data are spatially aggregated to Metro travel analysis zones or to the street network, and available for other geographies as well.
- Format: Users will have access to Replica data via a web-based tool that displays aggregate data and allows users to download a limited number of records.

Potential Metro use cases

We expect that Replica will enable Metro to do things that we would not otherwise be able to do without spending the time and effort to collect primary data:

- If we build a new trail or make more space for bikes and pedestrians at an intersection, we can use Replica to examine whether and how people are using those facilities.
- We can understand what destinations, modes, and routes are most important to people of color and low-income people so that we can provide more equitable transportation options.
- We can examine travel patterns on key routes to and from solid waste facilities to help haulers move waste more efficiently.
- We can look at where and how people are using new modes like ride-hailing and shared bikes/scooters to understand how these modes are changing people's behavior.

Timeline

- Currently: Metro, along with the City of Portland and TriMet, is evaluating whether a test dataset from Replica to see whether it meets our criteria for accuracy and privacy. Testing includes comparing Replica to observed data collected by Metro and our agency partners and reviewing documentation of how Replica is created. During this period, we will not be publishing, sharing, or applying Replica data in any planning projects.
- April 2020 (approximate): Metro, the City of Portland and TriMet will complete validation testing of Replica data. If Replica does not pass our tests, we end the project. If it passes, we will proceed with the project and begin paying for a year of access to Replica data.
- April 2020-April 2021: If we accept Replica data, Metro, the City of Portland and TriMet will receive quarterly updates to the data every 3 months, representing Spring 2019, Summer 2019, Fall 2019, and Winter 2019. Data will also be available to other public agency partners in the region that have signed an agreement with Metro to use data responsibly.

April 2021: Metro's current contract with Replica contract ends, and Metro and participating agency partners will evaluate whether to continue using the data.