**MAC**
Mobility Data Analytics Center
Carnegie Mellon University

*A Division of Traffic 21 Research Institute*
**traffic21**
a transportation research institute of Carnegie Mellon University

# Mobility Data Analytics Center
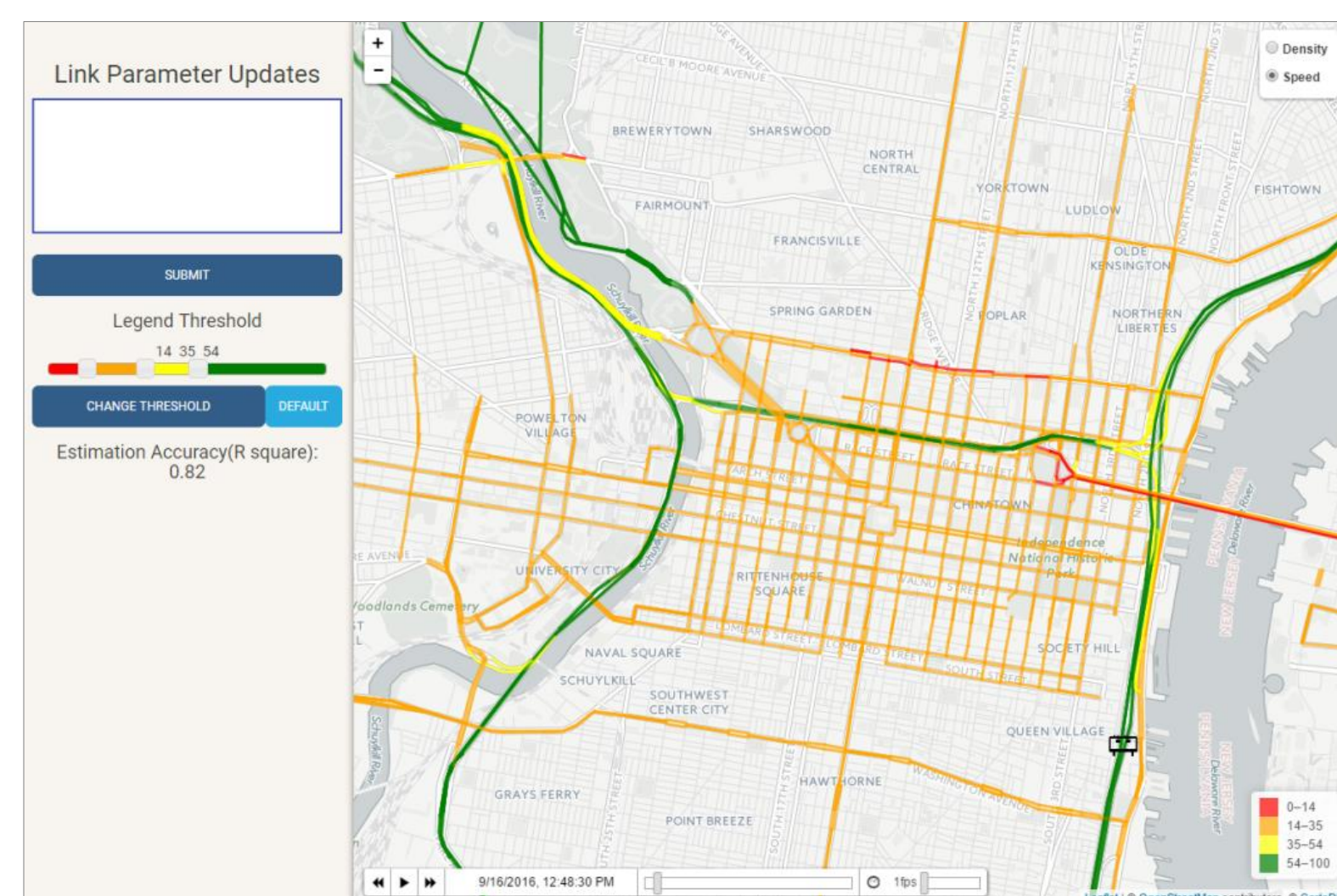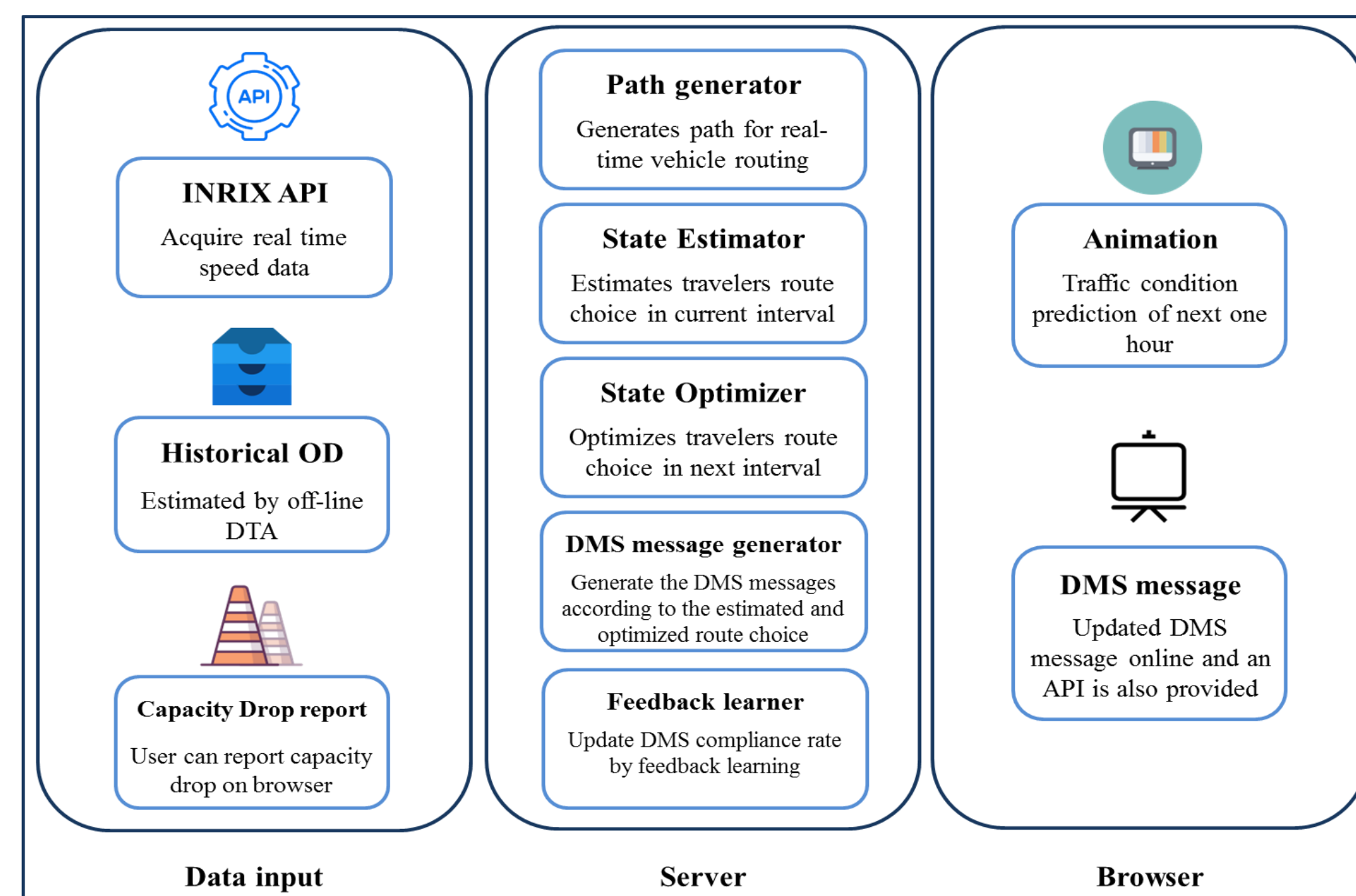*Carnegie Mellon University*

## Introduction

The Mobility Data Analytics Center (MAC) aims to collect, integrate and learn from the massive amounts of mobility data and contribute to the development of smarter multi-modal multi-jurisdictional transportations systems. The ultimate objective of MAC is to:
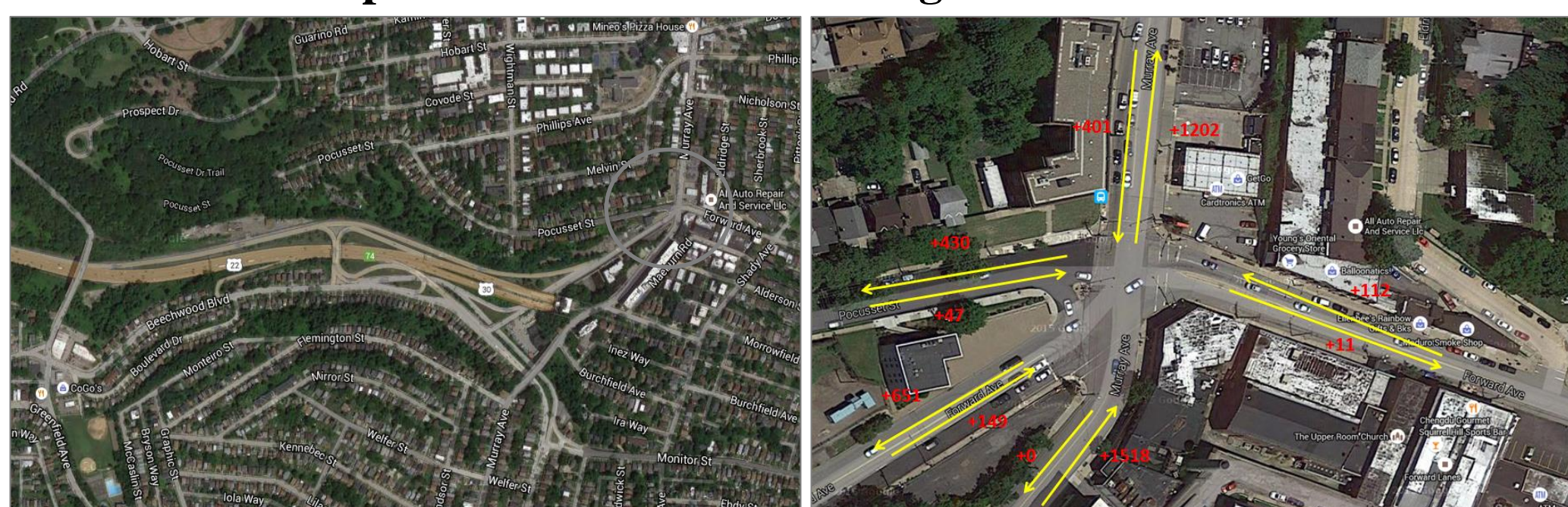
- Provide archived and real-time traffic data of every element of multi-modal transportation systems
- Reveal the behavior information for both passenger transportation and freight transportation
- Serve as a key instrument for managing transportation systems
- Target a range of users including legislators, transportation planners, engineers, researchers, travelers and private companies

## Real-Time DTA / Off-line DTA

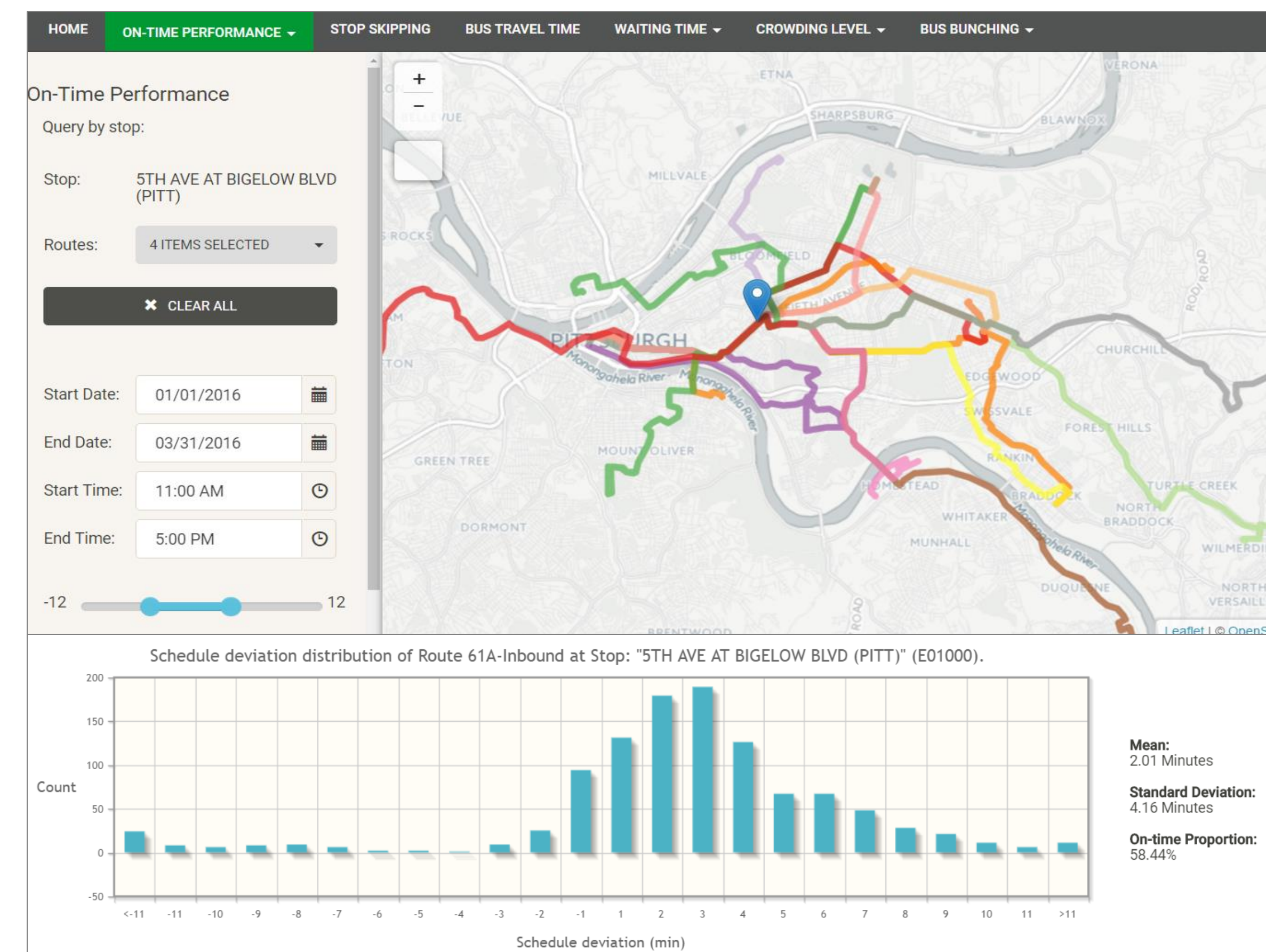### Dynamic Network Analysis & Real-time Traffic Management for Philadelphia Metropolitan Area



| Data input | Server | Browser |
| --- | --- | --- |
| **INRIX API** — Acquire real time speed data | **Path generator** — Generates path for real-time vehicle routing | **Animation** — Traffic condition prediction of next one hour |
| **Historical OD** — Estimated by off-line DTA | **State Estimator** — Estimates travelers route choice in current interval | |
| **Capacity Drop report** — User can report capacity drop on browser | **State Optimizer** — Optimizes travelers route choice in next interval | **DMS message** — Updated DMS message online and an API is also provided |
| | **DMS message generator** — Generate the DMS messages according to the estimated and optimized route choice | |
| | **Feedback learner** — Update DMS compliance rate by feedback learning | |



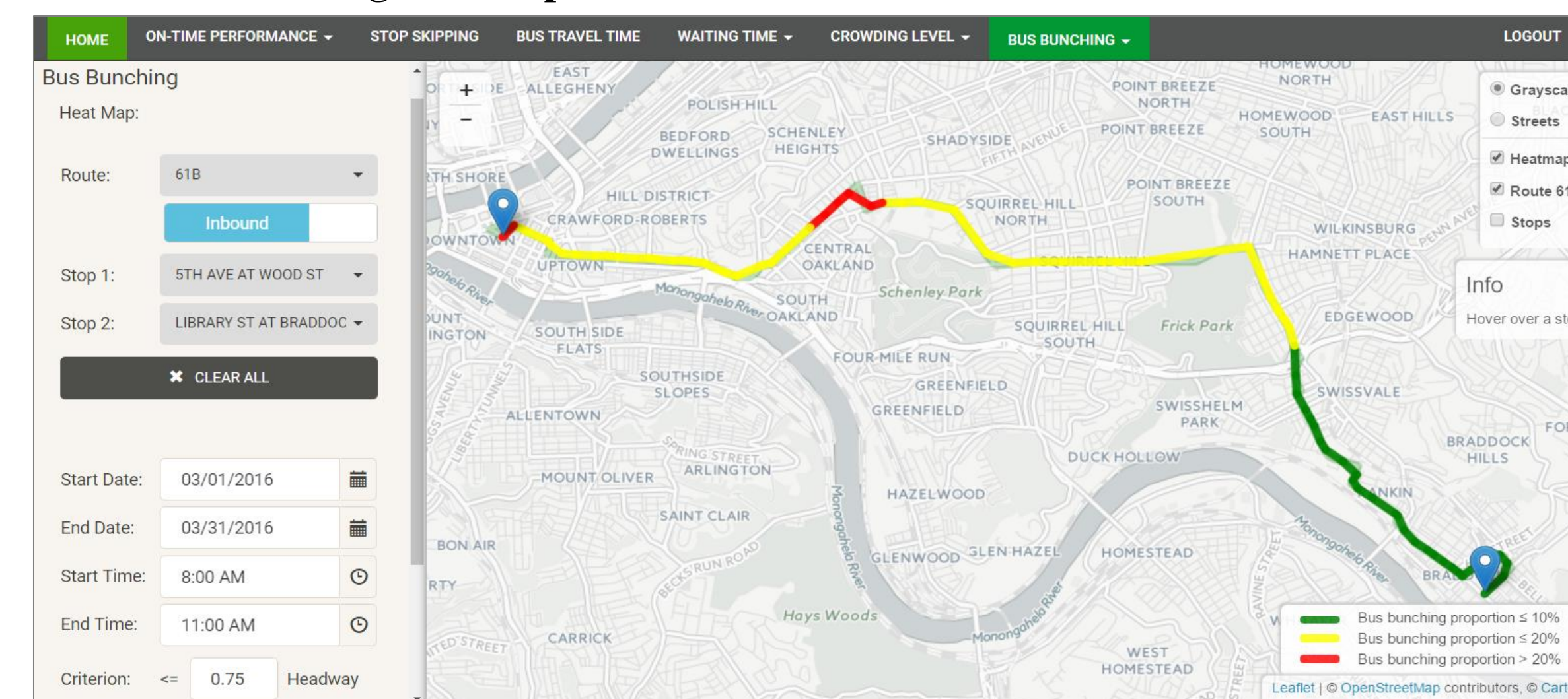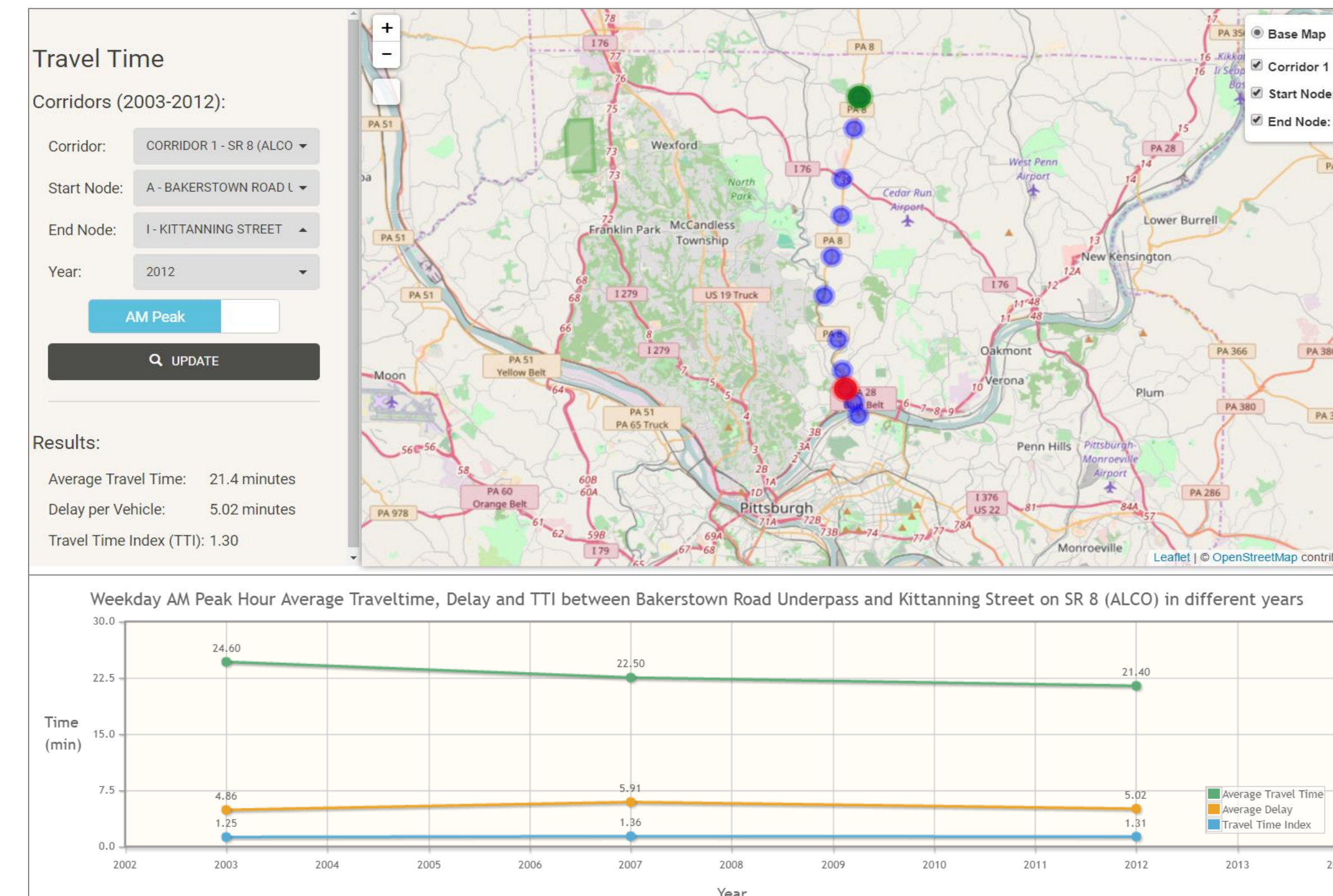### Traffic impact of the Greenfield Bridge closure
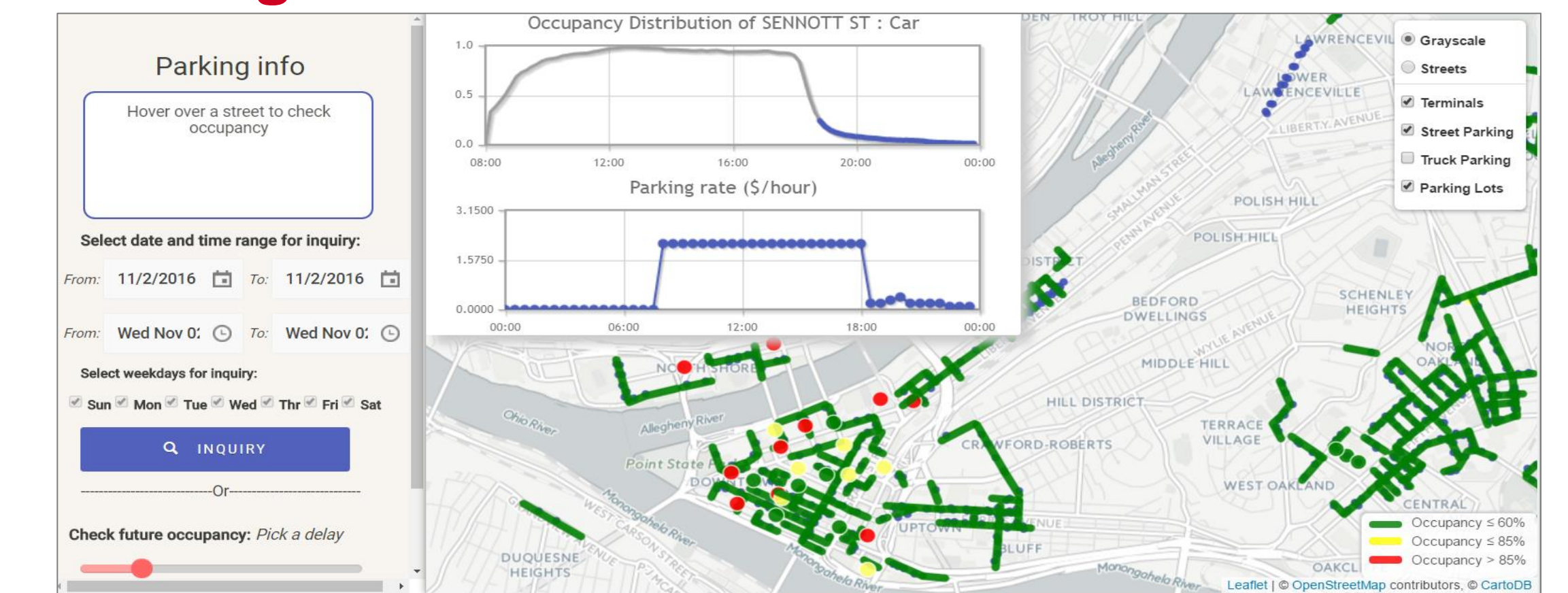


## Transit

### On-time Performance



### Bus Bunching Heatmap
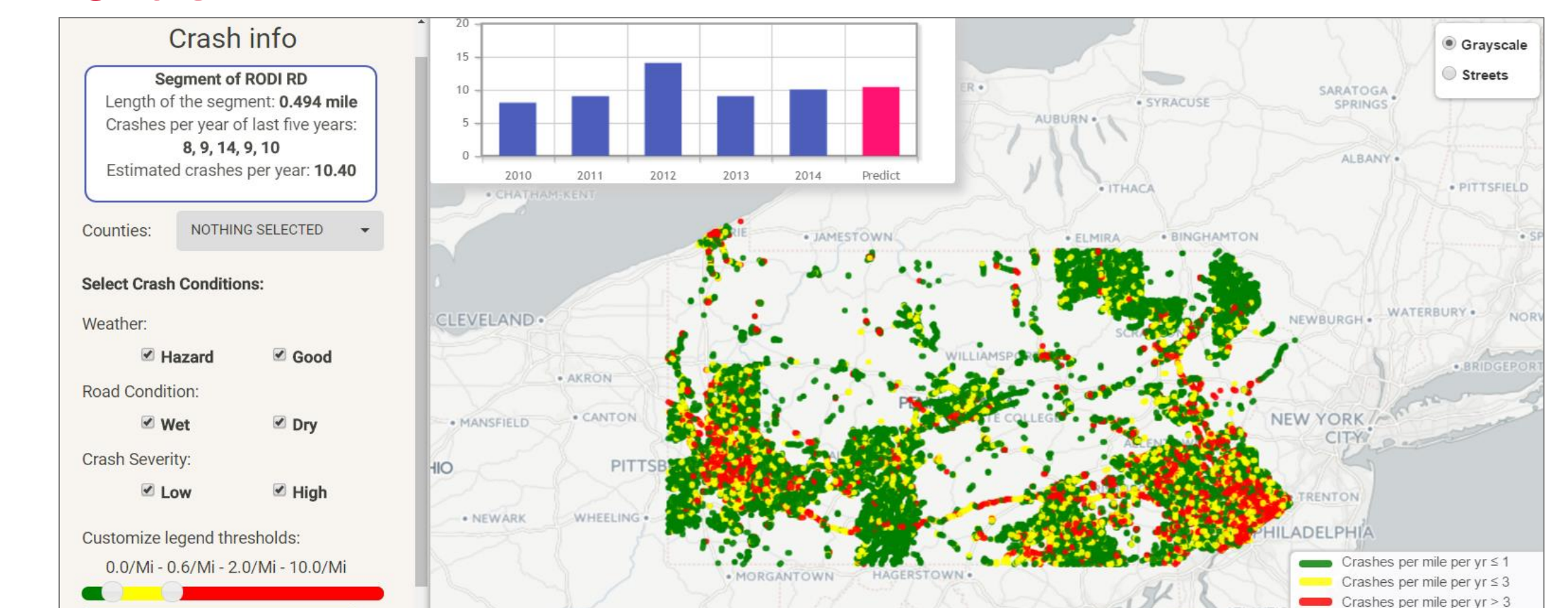


## Corridor Travel Time
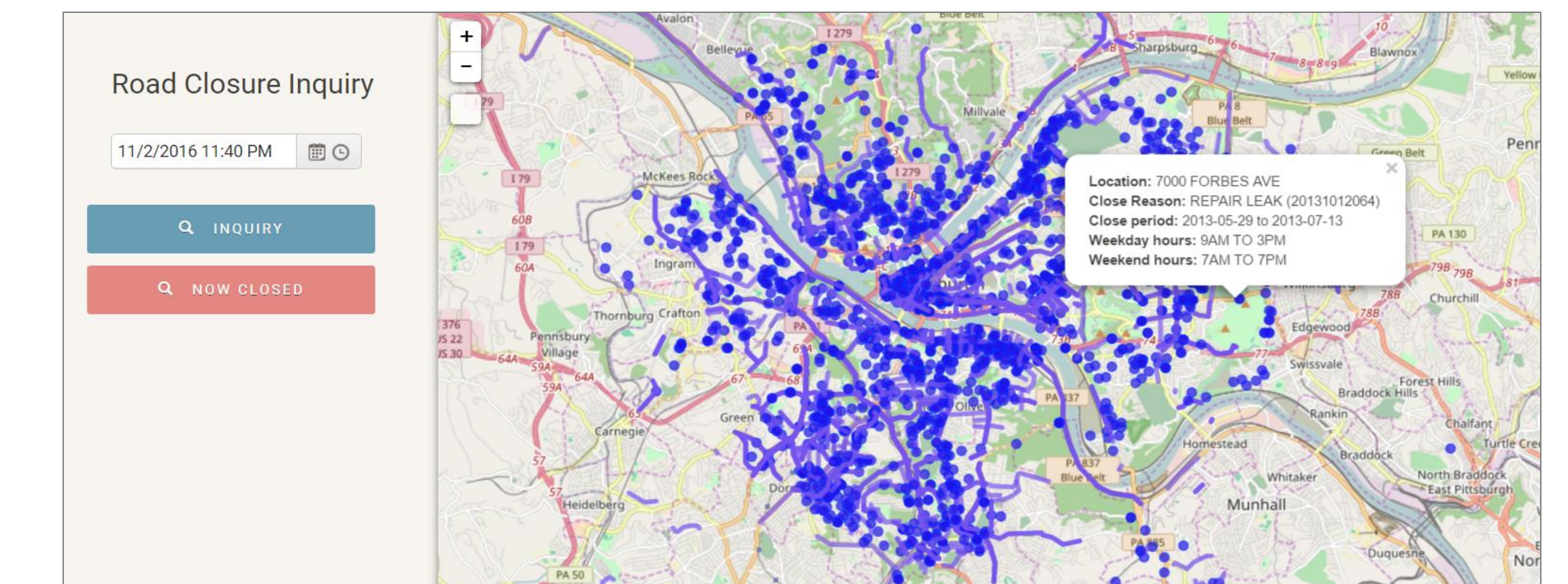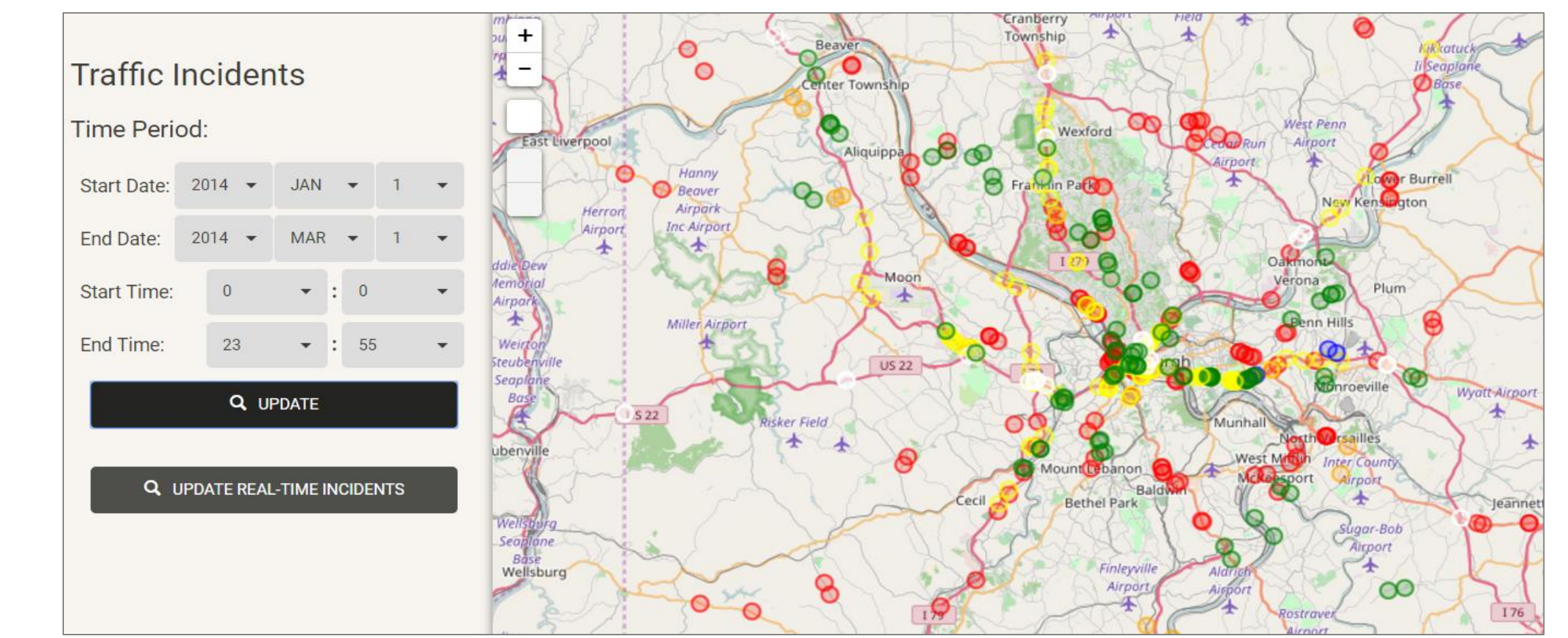


## Parking



## Crash



## Road Closure



## Incident



## Future Work

- We are now working with various deployment partners to conduct research on mobility data analytics, and to develop decision making tools for facilitating transportation system management.
- We also work with private sector to develop travel-related products or service that ultimately improves travelers' experience.