A Public Transportation System Performance Measurement Web Application

Nicholas Lownes, PhD, PE
November 19, 2014
Ground Transportation Technology Symposium
New York, NY
Three topics:

- Application context and background
- Brief demonstration
- New analytical tool development
CONNECTICUT
Population 3.5 million
Land Area 5,500 mi² (14,300 km²)

SEATTLE METRO AREA
Population 3.5 million
Land Area 5,900 mi² (14,400 km²)

New York METRO AREA
Population 20 million
Land Area 13,300 mi² (34,500 km²)

Boston METRO AREA
Population 4.95 million
Land Area 4,500 mi² (11,700 km²)
Connecticut’s 9 Regional Planning Organizations (RPOs)

And its fixed route transit system.
Public Transit Planning Application

- Emergency Response
- The Public Transport Network
- Title VI
- Rider Survey Data
- Active Transport Mgmt
- Land Use
- Public Health

[http://thub.uconn.edu](http://thub.uconn.edu)
t-HUB Chronology

- June 2011: CT Public Transit Working Group
- April 2012: t-HUB proposed
- November 2012: 1st t-HUB workshop
- February 2013: 2nd t-HUB workshop
- December 2013: FHWA Technology Deployment Grant
- September 2014: 3rd t-HUB workshop
  - Web application demo
## t-HUB TEAM

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<tr>
<th>TRANSPORTATION ENGINEERING:</th>
<th>COMPUTER SCIENCE AND ENGINEERING:</th>
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<tbody>
<tr>
<td>Nick Lownes</td>
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<td>Kelly Bertolaccini</td>
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<td>Sha Mamun</td>
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<th>GEOGRAPHY</th>
<th>CT STATE DATA CENTER/UCONN LIBRARIES</th>
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<tr>
<td>Jeff Osleeb</td>
<td>Michael Howser</td>
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<td>Curtis Denton</td>
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<td>Natasha Vorotyntseva</td>
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<th>CT TRANSP. SAFETY RESEARCH CENTER</th>
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<td>Eric Jackson</td>
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Data Elements

Performance Data
- Load factor, on-time %, headways
- Real-time integration

Census Data
- CT State Data Center
- Demographic & socio-economic data

System Data
- GTFS
- Network and schedule structure
A note to those viewing this presentation online: The link below will not work unless you are behind the UConn firewall.

We plan a public launch in August 2015, at which time you will be able to access t-HUB through a public url with a username and password. I’ve inserted a mock up of the Interactive Analysis tool on the next slide for reference.

Please feel free to contact me with any questions or visit the t-HUB website at http://thub.uconn.edu.

**Brief demonstration**

http://mmucc-map.ad.engr.uconn.edu/thub/
Parameters:
Summary of selected parameters

System:
Summary results on the selected system.

Route:
Summary results on the selected route.
t-HUB Next steps

Next year
- AVL/APC – data integration planning
- Public launch
- On-board survey data and methods review
- Move to production environment

1-2 years
- New research integration
- Survey data integration
- Connecting with AVL/APC data

2+ years
- User edit features – expand beyond CT (t-HUB Sydney)
New Analytical Tools
AM Peak

TOI: Transit Opportunity Index

Inter Peak

PM Peak

TOI: Transit Opportunity Index

Off Peak

Who’s on the bus? Advanced modeling integration

Simulated population (PopGen)
Konduri et al. (2013)

Departure time distribution (PopGen)

System configuration (GTFS)

Transit path assignment (Fast-TrIPs)
Khani et al. (2013)
Thank you

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