Collaboration with the Northern Virginia Transit Leaders

RM3P MOBILITY GAP DASHBOARD

Regional Multi-Modal Mobility Program

8/24/2020

The Envisioned Mobility Gap Dashboard

- A multimodal mobility analytical planning collaboration tool –

  - Assist mobility service providers to meet customers' transportation needs

- It is envisioned to start out as a planning tool with no real-time operational decision making –

  - Help make decisions about mobility service investments

  - It can be enhanced in the future to support real-time operational decision making.

- A data-driven regional planning tool –

  - Combines capacity and demand data across all modes in one interface and shows users where demand exceeds capacity ("gaps")

- A highly interactive tool returning scenario results quickly

  - Interactive tool allowing users to quickly experiment with scenarios for estimated growth, service changes or new development

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The Envisioned Mobility Gap Dashboard (Cont'd)

- **Expected Outcomes:**
  - Improve optimization of investments and services
  - Improved first-mile/last-mile service options
  - Common data-driven planning tools facilitate cross-agency coordinated planning
- **Target Audiences:**
  - State, regional and local transit and transportation planners
  - Transportation investment decision makers (e.g., NVTC, NVTA)
  - Private mobility providers

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The Envisioned User Stories

- Resource Planning

  - Example – new office complex being built

  - Estimate demand from all areas within the region

  - Experiment with micro-mobility options to address first/last mile

- Maintenance Planning

  - Example – Metro maintenance over the summer will require single track operations on Blue line

  - Identify bus routes likely to see increased ridership

  - Experiment with enhanced bus service and micro-mobility and on-demand options for FLM

- Weather Planning

  - Example – Major snow storm late weekly afternoon

  - Estimate change of demand due to OPM early release plan

  - Experiment with various OPM release plans for assessing impacts on transportation

- Major Event Planning

  - Examples – World Police & Fire Games & World Series

  - Estimate enhanced demand for spectators and participants

  - Experiment with options for shuttles and on-demand service

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Guidance Team Participants

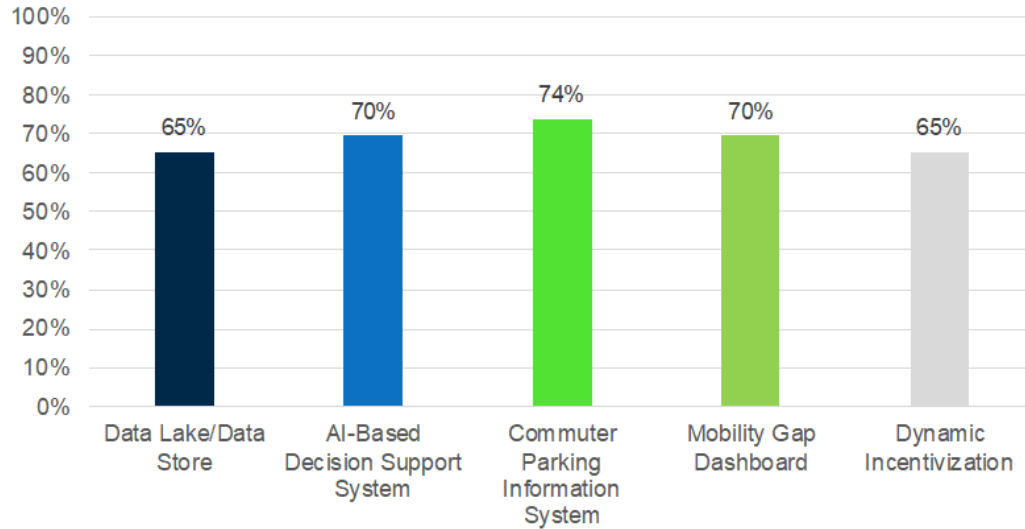| Name	Agency
Charley Dingboom	WMATA
Clinton Edwards	DRPT (agency liaison backup)
Dinah Girma	NVTC
Joe McAndrew	Greater Washington Partnership
Joy Himes	OmniRide
Martin Barna	Alexandria DASH
Patricia Happ	NVTC (technical advisor)
Peter Ohlms	VDOT Research Council (technical document reviewer)
Tiffany Dubinsky	DRPT (agency liaison)

Recommended contacts by the Guidance Team Members:
- Randall White, Fairfax County
- Perrin Palistrant, OmniRide
- Tristan Cunningham, City of Alexandria
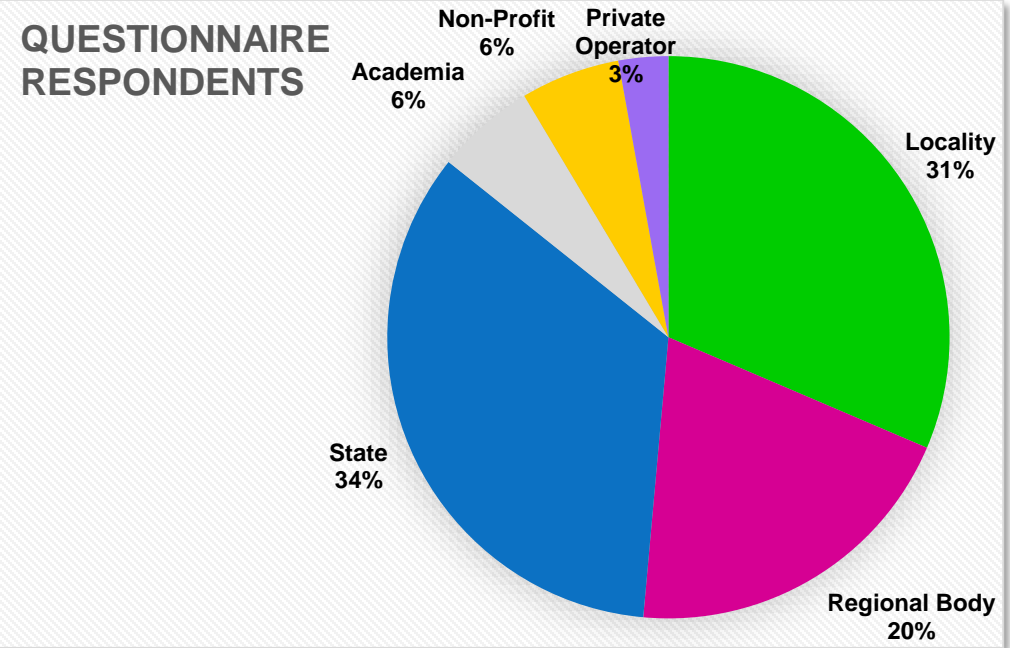- William Jones, Arlington County

What Agency Questionnaire Respondents Told Us

Which of the following RM3P program elements is of interest to your agency? (Select all that apply)

- Data Lake/Data Store: 65%
- AI-Based Decision Support System: 70%
- Commuter Parking Information System: 74%
- Mobility Gap Dashboard: 70%
- Dynamic Incentivization: 65%

QUESTIONNAIRE RESPONDENTS

- Locality 31%
- State 34%
- Regional Body 20%
- Academia 6%
- Non-Profit 6%
- Private Operator 3%

EXPRESSED INTEREST IN USING THE MGD

- Yes 46%
- No Response 54%

Recommended Contacts:

- Bob Garbacz, City of Alexandria
- Christine Hoeffner, VRE
- Kerri Oddenino, City of Falls Church
- Mark Franz, University of Maryland
- Perrin Palistrant, OmniRide
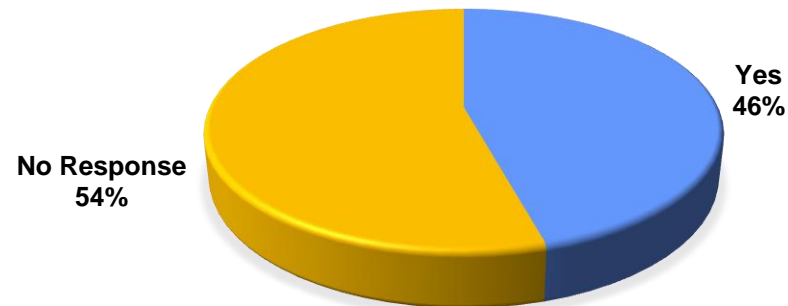
Let's Hear from YOU, the NoVA Transit Leaders

- Can existing agency tools be leveraged without building a new one with RM3P?
    - If so, which ones?

- Do you see any value in a new data-driven regional collaboration planning tool?
    - If so, how likely is it that your agency will use the RM3P MGD?
    - What MGD functions would be the most beneficial to your agency and to our region?

- Do you see value in including private mobility providers in this collaboration platform?
    - If so, under what conditions?
    - Do you view this as a day-one involvement or future add-on?

User Story #1 – Resource Planning

- Bill is an operations manager for the Fairfax Connector. A new budget cycle is coming up and he wants to make sure his projections for new buses are appropriate. He has his own planning tools that he uses within his agency, but he uses RM3P also because it helps him understand multi-modal, inter-jurisdictional issues and validate his own planning assumptions.

  - Tysons Corner is growing in general, and a major employer is putting in a large office complex.

  - Bill starts his mobility gap dashboard session by increasing trip traffic to all locations by 10%. He draws a polygon around the new office building and increases trips to that location by 75%.

  - The tool produces a heatmap of where demand is greater than capacity, and some of the results surprise Bill.

  - The bikeshare docking station nearest the new office complex is completely overwhelmed, so Bill makes a note to start the process for working with CapitalBike to consider a new docking station.

  - The tool also shows more demand on bus services than he expected due to riders from outside jurisdictions needing to transfer from Metro Bus to Fairfax Connector in order to reach the new office complex.

  - Bill makes a note to discuss with WMATA planners and see if they can add a stop at the new office complex.

  - Finally, Bill subsets his view to ADA-accessible services. He experiments with a couple of options including adding a new bus stop and a feeder service for persons with disabilities. He prints off the heat maps from his "what-if" scenarios and makes a note to discuss the options with the leadership team and his local ADA coordinator.

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User Story #2 – Maintenance Planning

- Kadeem is an operations manager for WMATA. The transit agency is planning major track maintenance activities over the upcoming summer.

  - Kadeem uses the Mobility Gap Dashboard to prepare information to share with partner agencies in the region. He calculates the capacity reductions that the planned maintenance activities will cause and creates an entry in the capacity adjustment library.

  - He runs a series of reports showing the impacts at different days and times. Each report shows demand-to-capacity ratios and travel times between major O/D pairs in the region.

  - Kadeem meets regularly with his counterparts at other agencies, and he shares and reviews the reports with them.

  - Some of the transit agencies are considering augmenting bus service to help alleviate the impacts.

  - Each transit agency creates capacity adjustment entries in the library for the service changes they are considering. They run the reports again with all of the service changes under consideration and work together to refine the plans.

- The leadership of each agency reviews the coordinated plan along with the quantitative impacts and determines if they can devote resources to additional bus service.

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User Story #3 – Weather Planning

- Martina is a maintenance manager for VDOT Northern Virginia District (NoVA). The latest weather forecast shows a high probability of a major snow event in two days' time, starting in late afternoon on a weekday with a potential accumulation of 20 inches, which is considered the highest level of VDOT response (Level 5).

    - She starts planning by alerting the NoVA response team to get ready for mobilizing a Level 5 plan.

    - Martina joins the MWCOG regional weather conference call and shares VDOT's mobilization plan and hears other agencies' response plans, including the U.S. Office of Personnel Management (OPM).

    - She uses the Mobility Gap Dashboard to pull up the baseline demand for the appropriate day-of-the-week and time-of-year, manually reduces the capacity on I-395 due to a construction, accesses the library of capacity adjustments to find one suitable for the forecasted snow event and adds that to the capacity model.

    - She pulls up her library of demand adjustments contains a few different release patterns that OPM has used in the past, then runs reports showing the effects of each release pattern given the other conditions.

    - Martina shares this information with her colleagues on the MWCOG regional weather call, including the potential effects of various OPM release timing. She updates her reports as she gets more information.

    - On the last call before the storm hits, OPM announces their release plan.

- Martina quickly reruns her reports using the confirmed OPM release plan and distributes it to her colleagues and wider transit community in Northern Virginia to help them know what to expect.

User Story #4 – Regional Event Planning

- The World Police and Fire Games are returning to Fairfax, VA in 2023. This event draws almost 10,000 athletes and includes competitions at over 50 venues in and around Fairfax. The Fairfax County, WMATA, and VDOT begin a cooperative planning process as soon as the games are awarded.

- Noelle is a planner for Fairfax and is leading the process within the County. She is considering a combination of running regular bus routes on shorter headway and adding shuttles from the Vienna/Fairfax Metro Station to the major venues.

  - She starts with the summertime baseline model, adds a growth factor of 2%, draws a polygon around each major venue and adds an estimated number of trips.

  - She increases the capacity of the existing bus routes to represent decreased headways, adds new bus lines with capacity information to represent the proposed shuttles.

  - She goes through several iterations of adjusting shuttle endpoints and capacity to review several measures to see the full impact of each option.

  - Event organizers have told her that many of the athletes and fans will be staying in Arlington County and Tysons Corner, so she checks travel times from there to all the major venues.

  - She checks for changes in the volume to capacity ratio on I-66, US-29, and US-50 to see if any of the changes are adversely affecting general traffic.

  - For each major venue she checks travel times to all major destinations in NOVA to identify places where there are gaps in service (essentially unreachable by a reasonable trip).

- When she is satisfied that she has properly tuned the plan she presents it to her agency leadership and partnering agencies along with all supporting reports.

User Story #4 – Regional Event Planning

- The Washington Nationals finish the regular season in first place and regional transportation service providers start the process of preparing for a possible World Series in the DC area. Many fans will be streaming from and through Northern Virginia to attend games and enjoy the celebrations.

- Quon is an operations manager for VDOT and an avid Nats fan. Jane is his counterpart at WMATA, and they work together along with other regional partners to plan for the games.

  - They start by estimating the increases to demand. They both worked during the last World Series and depend on their experience.

  - The mobility dashboard does not generate demand adjustments directly from historical data, but Quon and Jane experiment with different demand increases until the results match what they observed previously.

  - They apply a 5% increase to all demand across the region to account for the extra tourists. Their library of demand adjustments includes a sellout game at Nationals Park. They start with that library item and scale it up by 25%.

  - For the capacity side they create three scenarios for extended Metro service. For each scenario, they create a report that includes a heat map of locations where demand exceeds capacity and average travel times to the most common destinations.

- These reports are presented to regional leaders making decisions on what resources and strategy to use during the series.

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