THE TPB REGION HIGH-CAPACITY TRANSIT (HCT) NETWORK

Phase I Analysis

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Regional Public Transportation Subcommittee
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Agenda

- Project Goals

- Detailed Methodology

  - Accessibility Analysis

  - Station Classification

  - Gap Analyses

- Discussion

Web Application

bit.ly/46KqTOV

PROJECT GOALS

Understanding HCT Service

National Capital Region
Transportation Planning Board

Agenda Item 3

Understanding HCT

- Contextualize HCT with analyses of:
  - Service level
  - Accessibility
  - Proximity to Activity Centers and Equity Emphasis Areas
  - Existing and forecast population/employment
  - Gaps in HCT access
- Develop context-dependent, station-level needs

DETAILED METHODOLOGY

Access | Classification | Gaps

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Overview

Accessibility Analysis

- Visualizes average travel time to the nearest HCT station
- Highlights gaps in infrastructure and transit

Station Classification

- Defines level of service and people and destinations served by each HCT station
- Informs station-level needs and facilitates development of context-dependent solutions
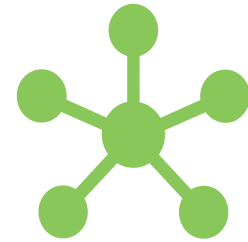
Gap Analysis

- Explores suitability of connections between equity emphasis areas and activity centers
- Provides framework for POI-based accessibility analysis and ultimately the identification of new/improved connections
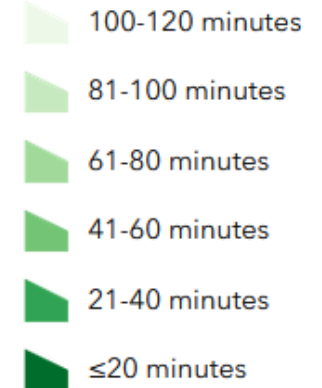
Accessibility Analysis

- Regional network modeling of the median travel time to the closest HCT station

  - Walking, transit

  - Biking, transit

Accessibility Analysis Layer (Foursquare ITP/bit.ly/46KqTOV)

Biking/Transit

Travel Time (Minutes)

- 100-120 minutes
- 81-100 minutes
- 61-80 minutes
- 41-60 minutes
- 21-40 minutes
- ≤20 minutes

Conveyal R5 Routing Engine

- Provides a measure of multimodal travel time
- Utilizes OpenStreetMap (OSM) and GTFS data to model trips every minute over the course of an hour

Conveyal R5 Routing Engine

- OSM allows for regional comparisons
- Replicable

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Geographical Framework

- Uniform
- Hierarchical
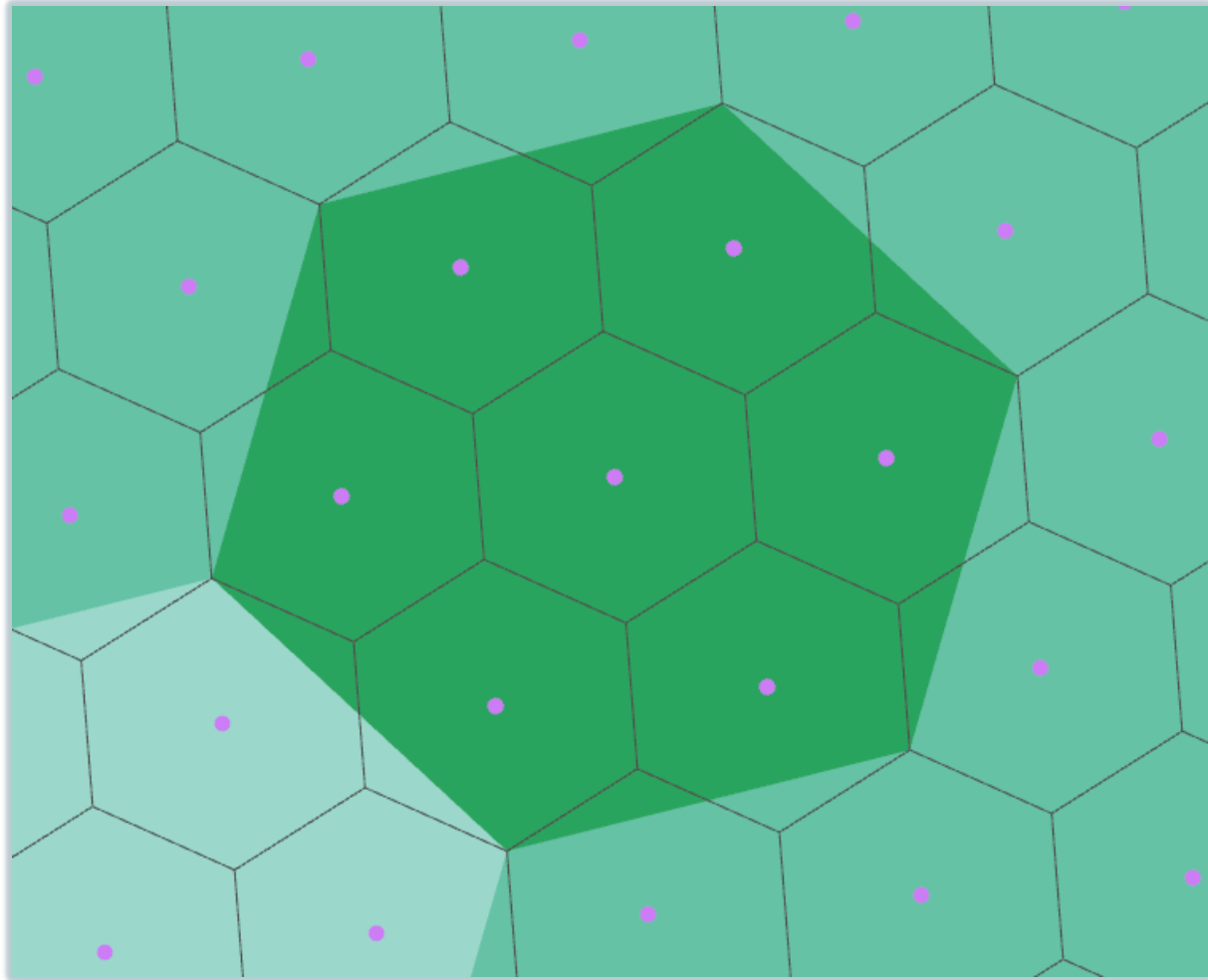
Station Classification

Level of Service

- High-capacity service informs analyses of how well the region's residents and destinations are served by HCT
- Local transit service informs analyses of how well local transit complements HCT

People and Destinations Served

- Transit potential combines the population and employment densities to indicate the viability of transit service; classification incorporates both existing and future transit potential
- The relationship between HCT and Activity Centers provides a means of ensuring planning prioritizes existing towns and urban centers, as well as priority growth areas throughout the region
- Leveraging the EEA index scores of census tracts surrounding HCT provides yet another means of classifying stations to identify gaps in access

Level of Service

- Retrieved GTFS for each agency in COG region
  - Processed and rectified errors
  - Aligned calendars
- Produced hex layer of total trips by stop
  - Summed total daily trips by stop
  - Joined stops to hex grid
  - Disaggregated trips by stop by service type

Level of Service Analysis Layer (Foursquare ITP/bit.ly/46KqTOV)
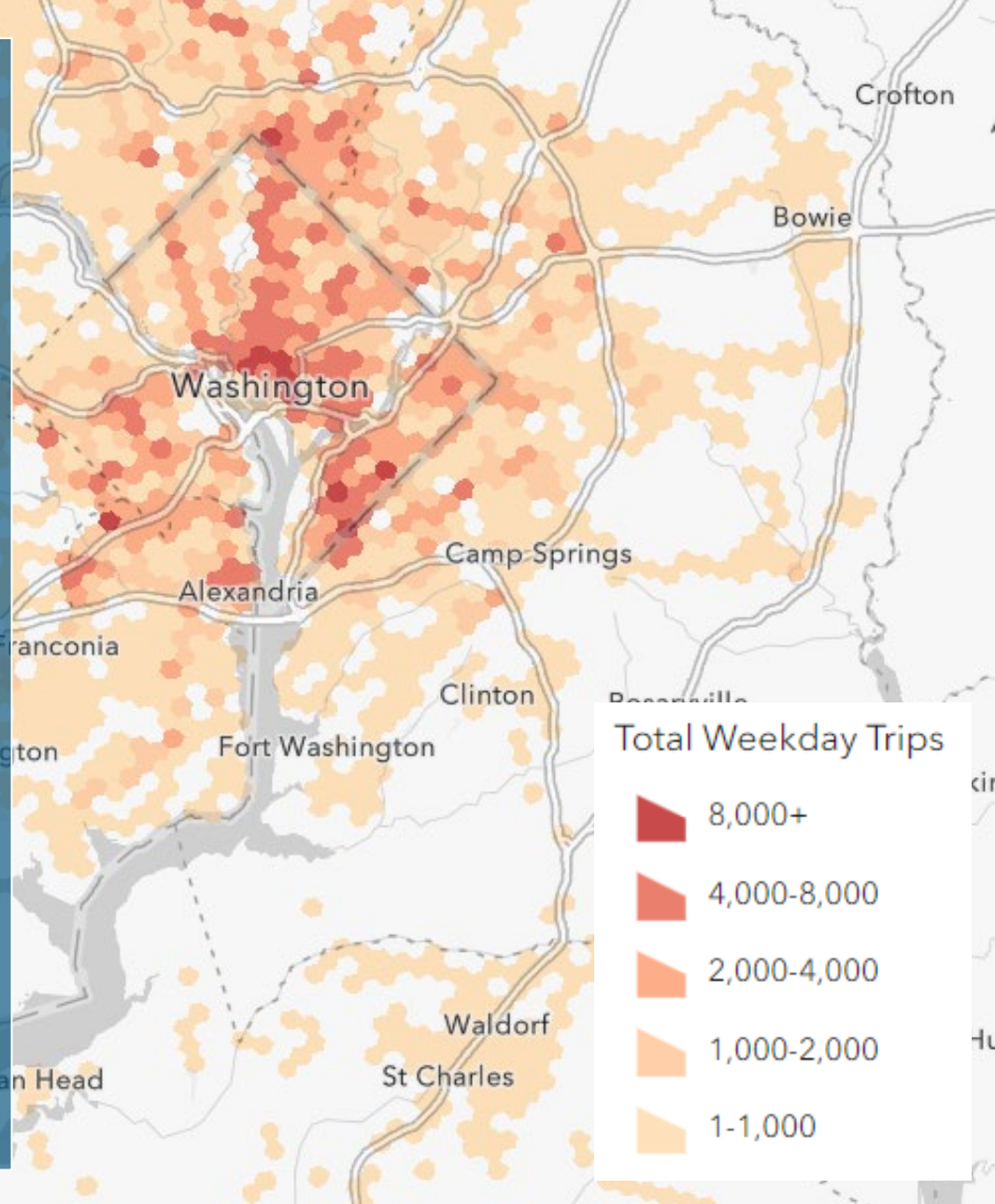
Total Weekday Trips

- 8,000+
- 4,000-8,000
- 2,000-4,000
- 1,000-2,000
- 1-1,000
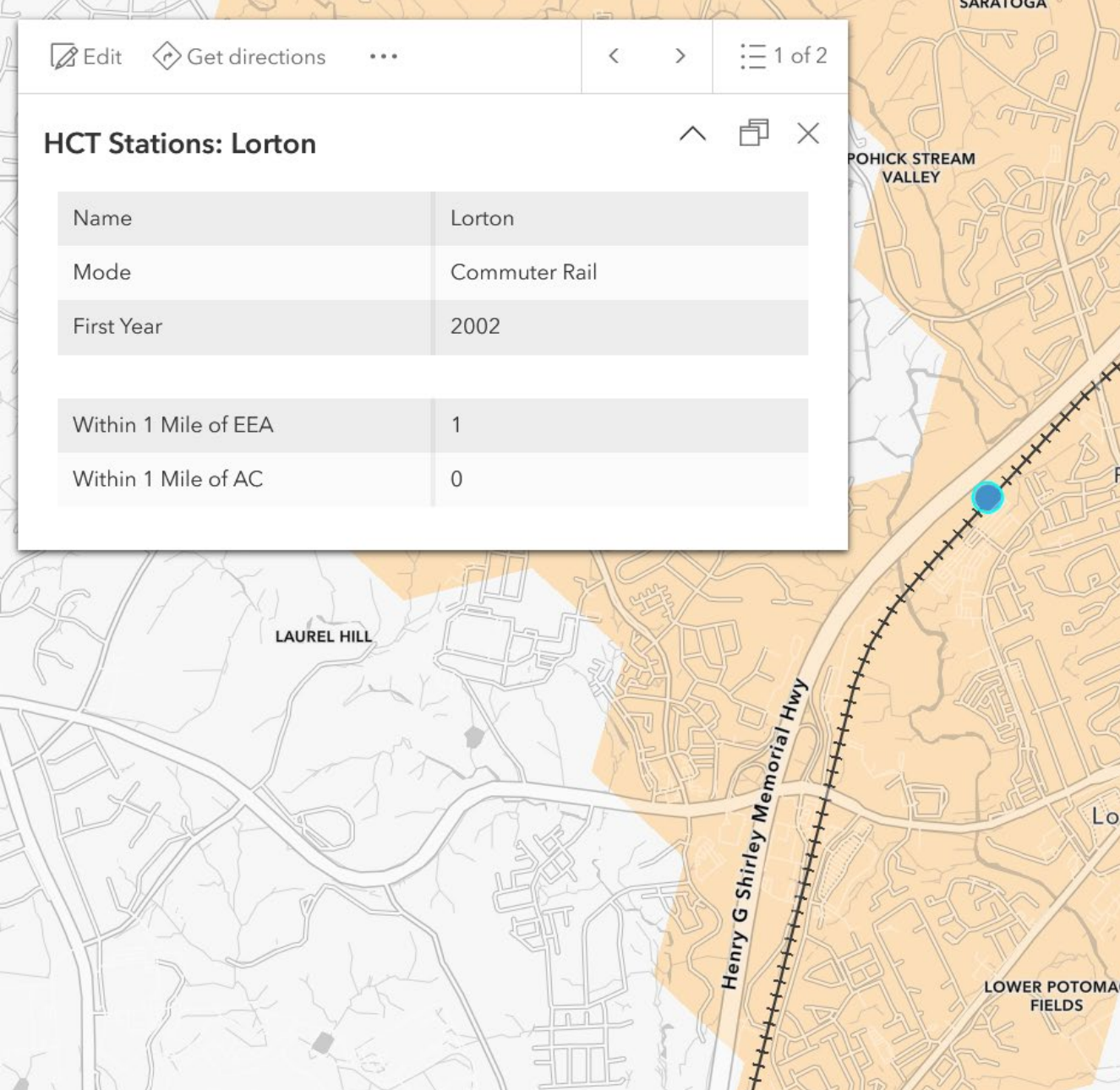
People and Destinations

- Classified stations based on proximity to Equity Emphasis Areas and Activity Centers

- Interpolated population and jobs to station areas using MWCOG 9.2 Forecast

Station Classification Layer (Foursquare ITP/bit.ly/46KqTOV)

Gap Analyses

- Examine relationship between travel time and:
  - Equity Emphasis Areas
  - Activity Centers
  - Points of Interest

Gap Analyses

Equity Emphasis Areas

- Mean travel time between Equity Emphasis Areas and HCT
- Bivariate analysis of equity index and mean travel time
  - Identifies areas where new or improved connections will result in the largest impact

Activity Centers

- Mean travel time between Activity Centers and HCT
- Evaluates the adequacy of HCT service to critical regional hubs

Points of Interest

- Travel time to HCT from regional points of interest within five miles of HCT stations
- Analyzes the effectiveness of connections between HCT stations and nearby points of interest
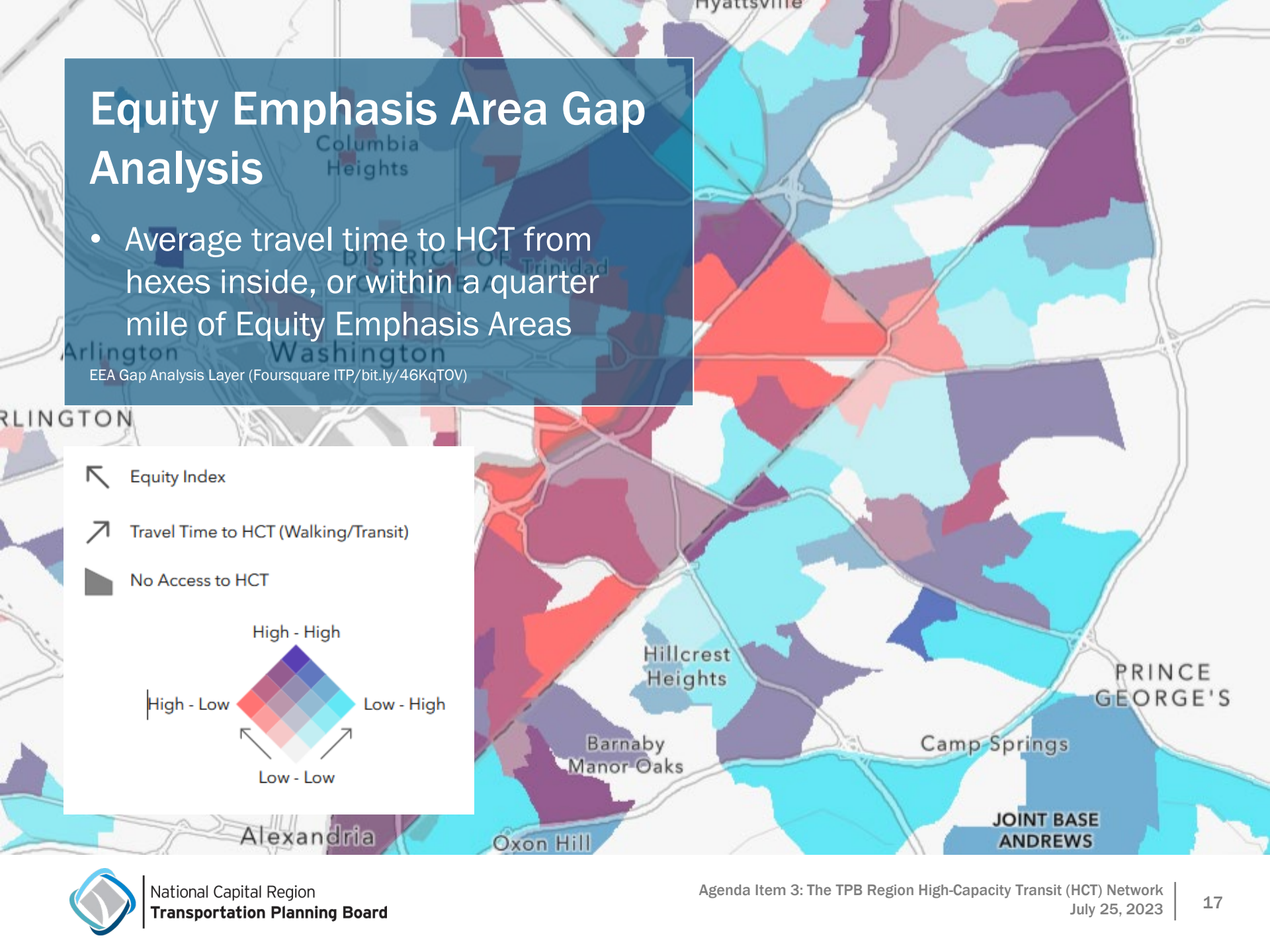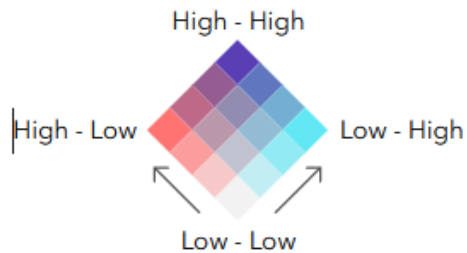
Equity Emphasis Area Gap Analysis

- Average travel time to HCT from hexes inside, or within a quarter mile of Equity Emphasis Areas

EEA Gap Analysis Layer (Foursquare ITP/bit.ly/46KqTOV)

Equity Index

Travel Time to HCT (Walking/Transit)

No Access to HCT

High - High
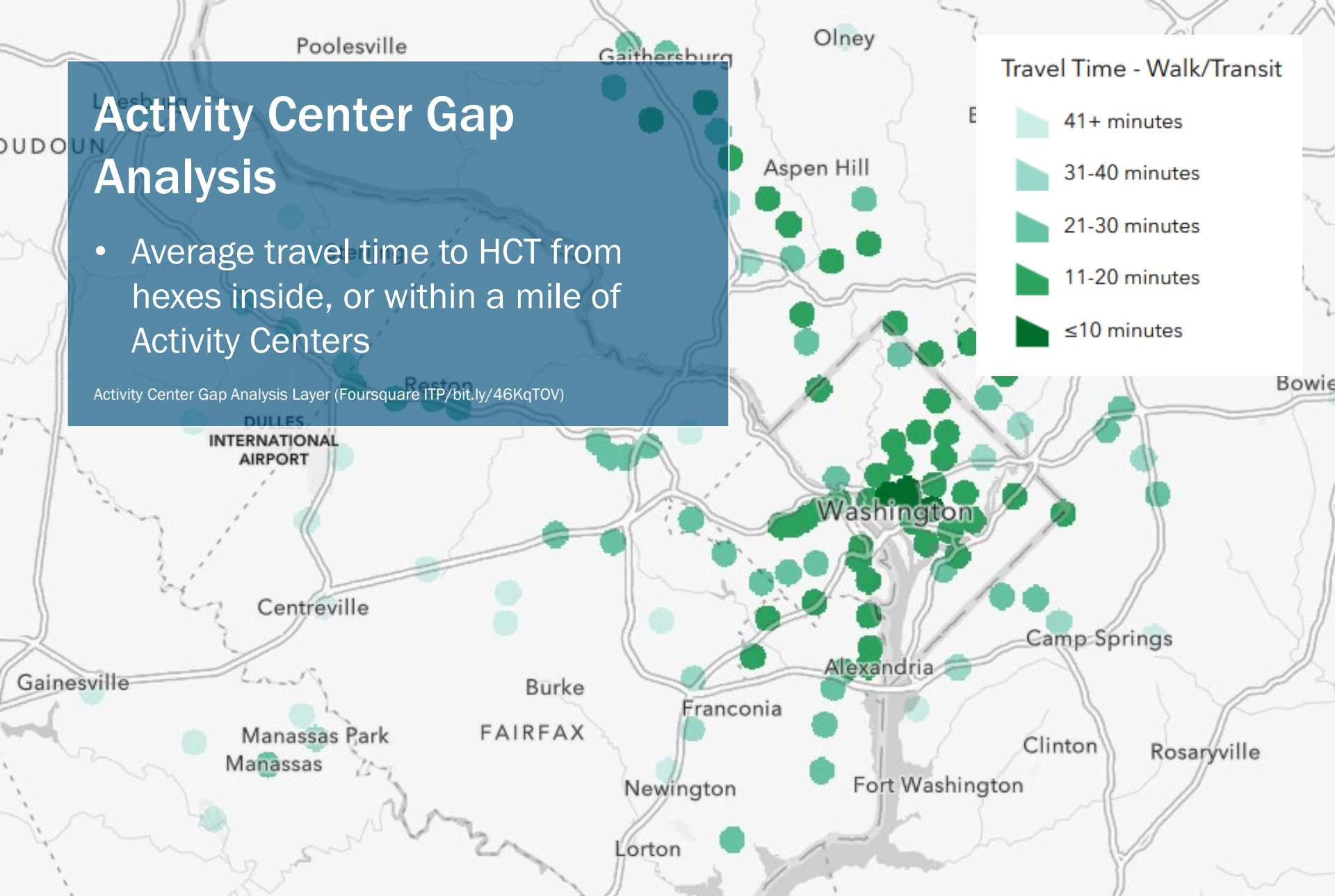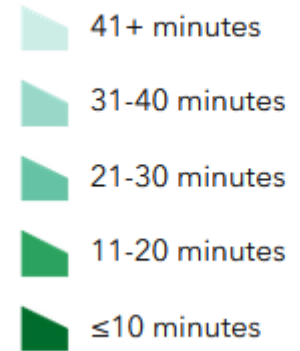
High - Low   Low - High

Low - Low

Activity Center Gap Analysis

- Average travel time to HCT from hexes inside, or within a mile of Activity Centers

Activity Center Gap Analysis Layer (Foursquare ITP/bit.ly/46KqTOV)

Travel Time - Walk/Transit

- 41+ minutes
- 31-40 minutes
- 21-30 minutes
- 11-20 minutes
- ≤10 minutes

Points of Interest Gap Analysis

- Using the Google Places API, identified POI throughout the TPB region within five miles of HCT

- Calculated travel time to the closest HCT station using R5

POI Gap Analysis Layer
(Foursquare ITP/bit.ly/46KqTOV)

DISCUSSION

Future Directions

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Next Steps

- Overview

  - Solicit feedback

  - Refine analyses

  - Identify and prioritize station-level needs

- Schedule

  - HCT station classification by need | Jul. – Oct. 2023

  - Finalize products and develop report | Oct. 2023 – Jan. 2024

Next Steps

- Network-based HCT station accessibility

  - Population

  - Employment opportunities

  - Points of interest

- Synthesize results of station classification and gap analyses to propose contextualized recommendations based on:

  - Local transit need

  - Active transportation need

  - Existing/forecast travel demand

  - Station typology

Feedback

- Questions about:

  - Methodology?

  - Results?

  - Next steps?

- Does what we've presented prompt:

  - Analysis recommendations?

  - Useful application data/functionality?

  - Any other ideas?

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