SHRP2 C20 – Maryland

Freight Modeling System Review

March 29, 2018

MDOT

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Overview

- **Project Goal**
  - Replace 2001 Truck Model in BMC Travel Demand Model with multimodal Freight Modeling System (FMS)
  - Use existing data sources and model components for quick implementation
  - Engage freight stakeholders throughout the process
- **Project Status**
  - Working model delivered in January 2018
  - BMC and MDOT SHA reviewing the FMS
  - Seeking feedback and application suggestions

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Model Input Data

- **Business Data**
  - Establishment Survey: 2003 Ohio Statewide General Establishment Survey
  - Logistics Nodes: Intermodal facilities, warehouses and distribution center locations / Leonard's Guide, Bureau of Transportation Statistics (BTS), Center for Transportation Analysis (CTA) & Maryland county planning departments
  - Employment: Longitudinal Employer-Household Dynamics (LEHD) / US Census

- **Freight Flow Data**
  - Goods Movement: 2012 Freight Analysis Framework (FAF) / FHWA & BTS

- **Modal Data**
  - Truck - Traffic Counts: SHA, MdTA & BMC
  - Truck - GPS: American Transportation Research Institute (ATRI)
  - Port: 2012 State and Port Cargo Movement Data / US Army Corps of Engineers
  - Air: 2012 Air Freight Data (T100) / BTS

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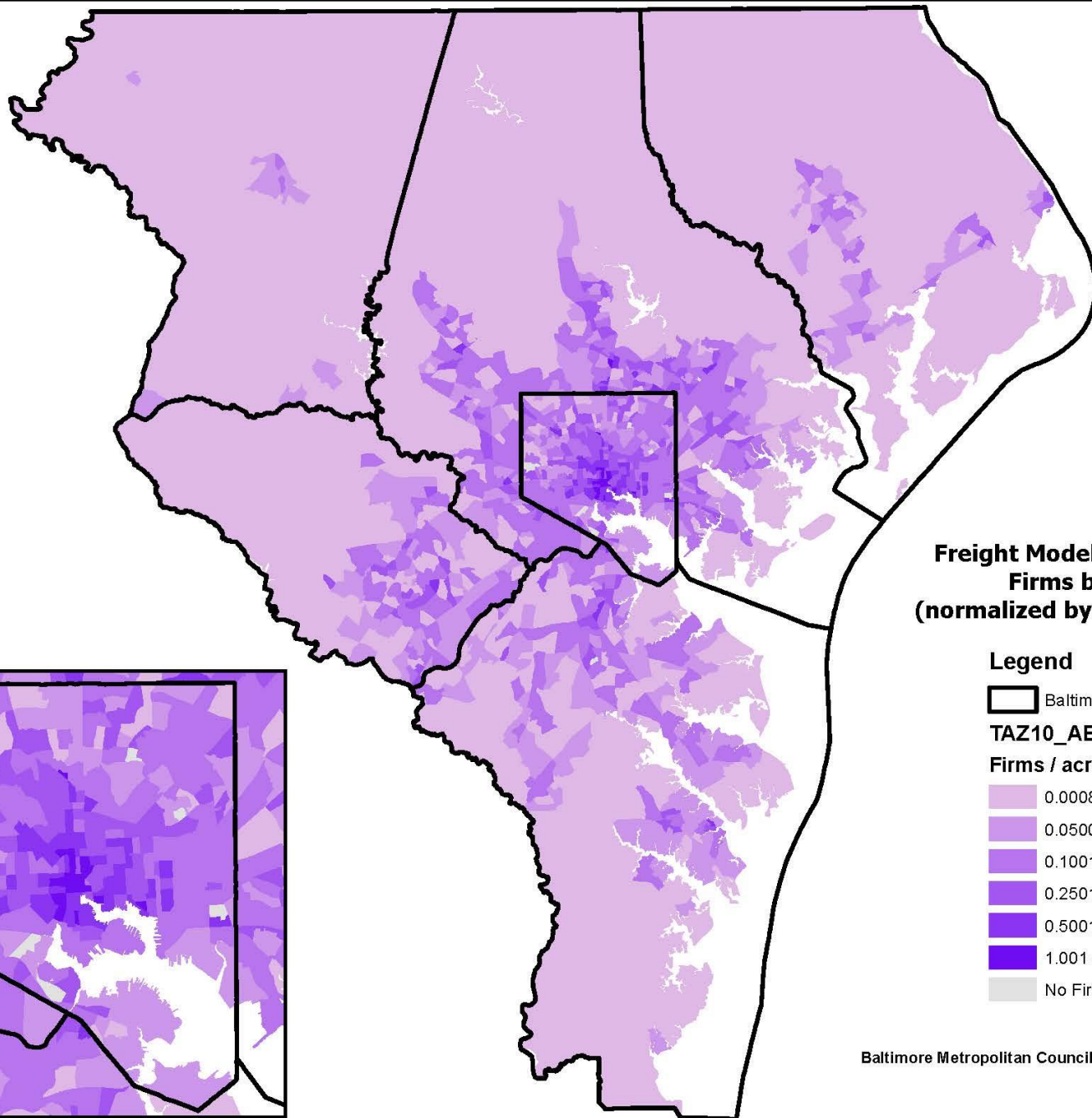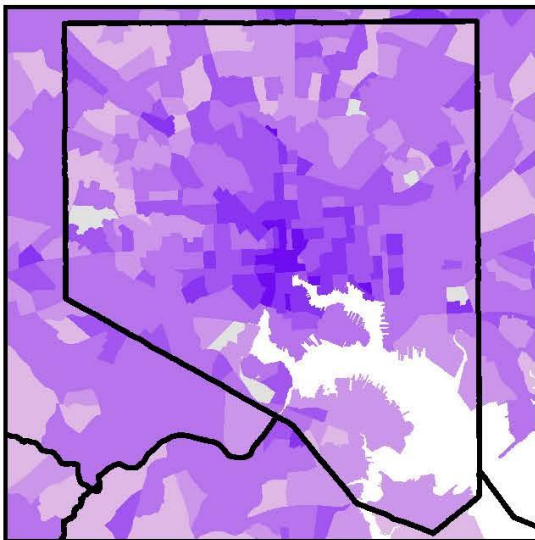
Baltimore City

**Freight Modeling System:
Firms by TAZ
(normalized by TAZ acreage)**

Legend

☐ Baltimore Region

TAZ10_ABM

Firms / acres

	0.0008698 - 0.05000
	0.05001 - 0.1000
	0.1001 - 0.2500
	0.2501 - 0.5000
	0.5001 - 1.000
	1.001 - 4.474
	No Firms

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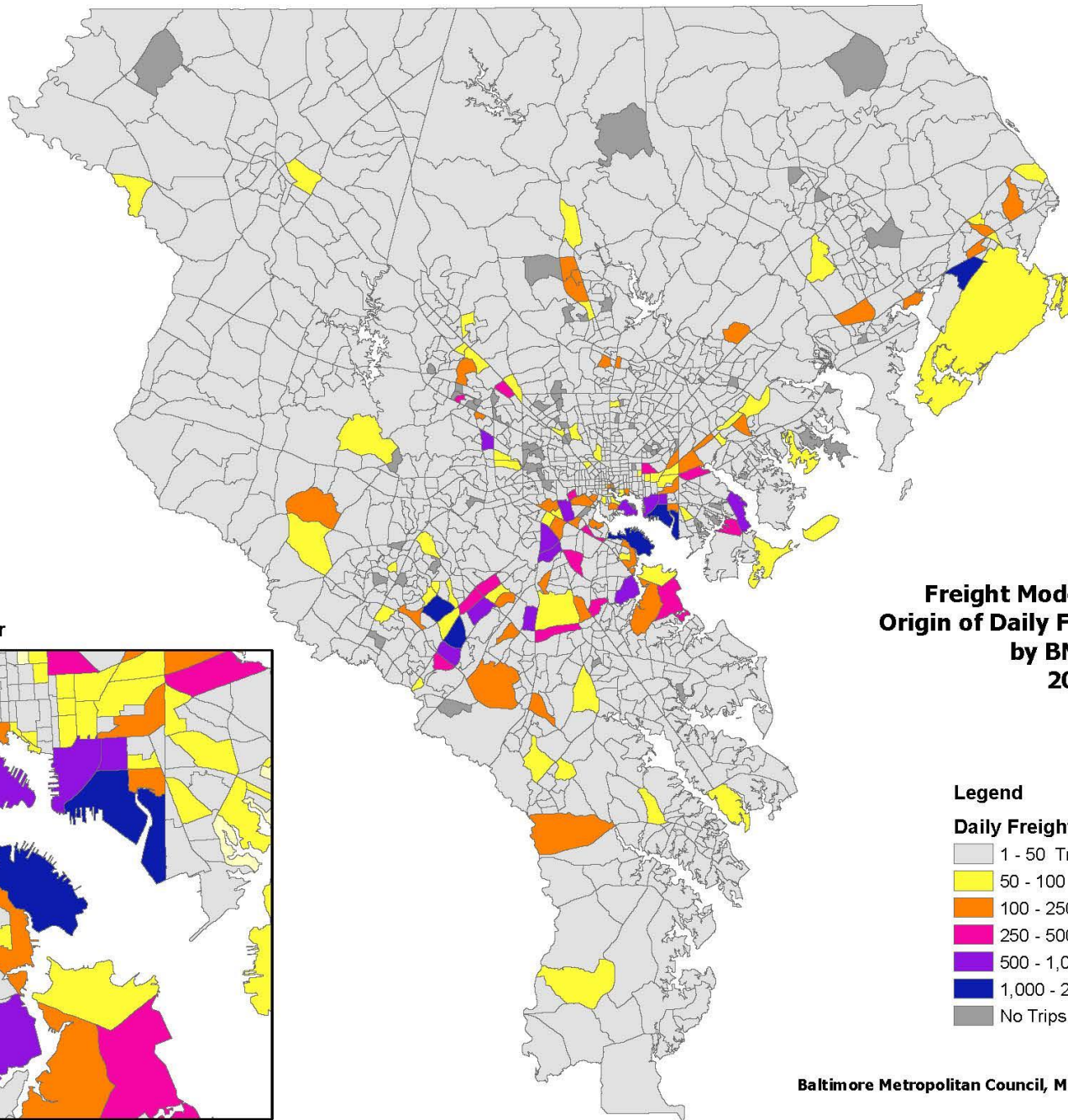
Baltimore Harbor
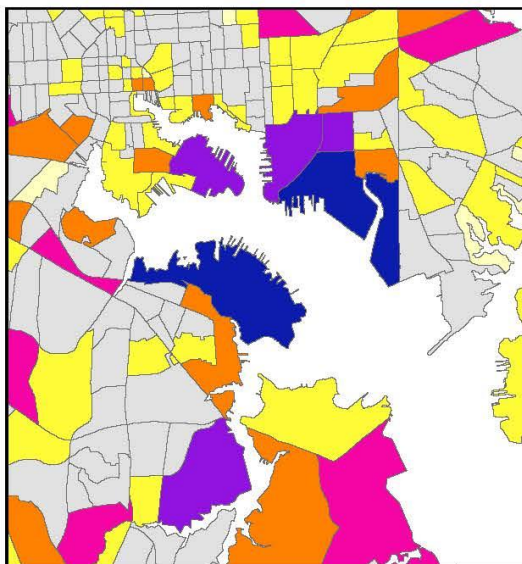
**Freight Modeling System:
Origin of Daily Freight Truck Trips
by BMC TAZ
2012**

Legend

Daily Freight Truck Trip Origins

	1 - 50 Trips
	50 - 100
	100 - 250
	250 - 500
	500 - 1,000
	1,000 - 2,646 (max.)
	No Trips

Baltimore Metropolitan Council, March 2018
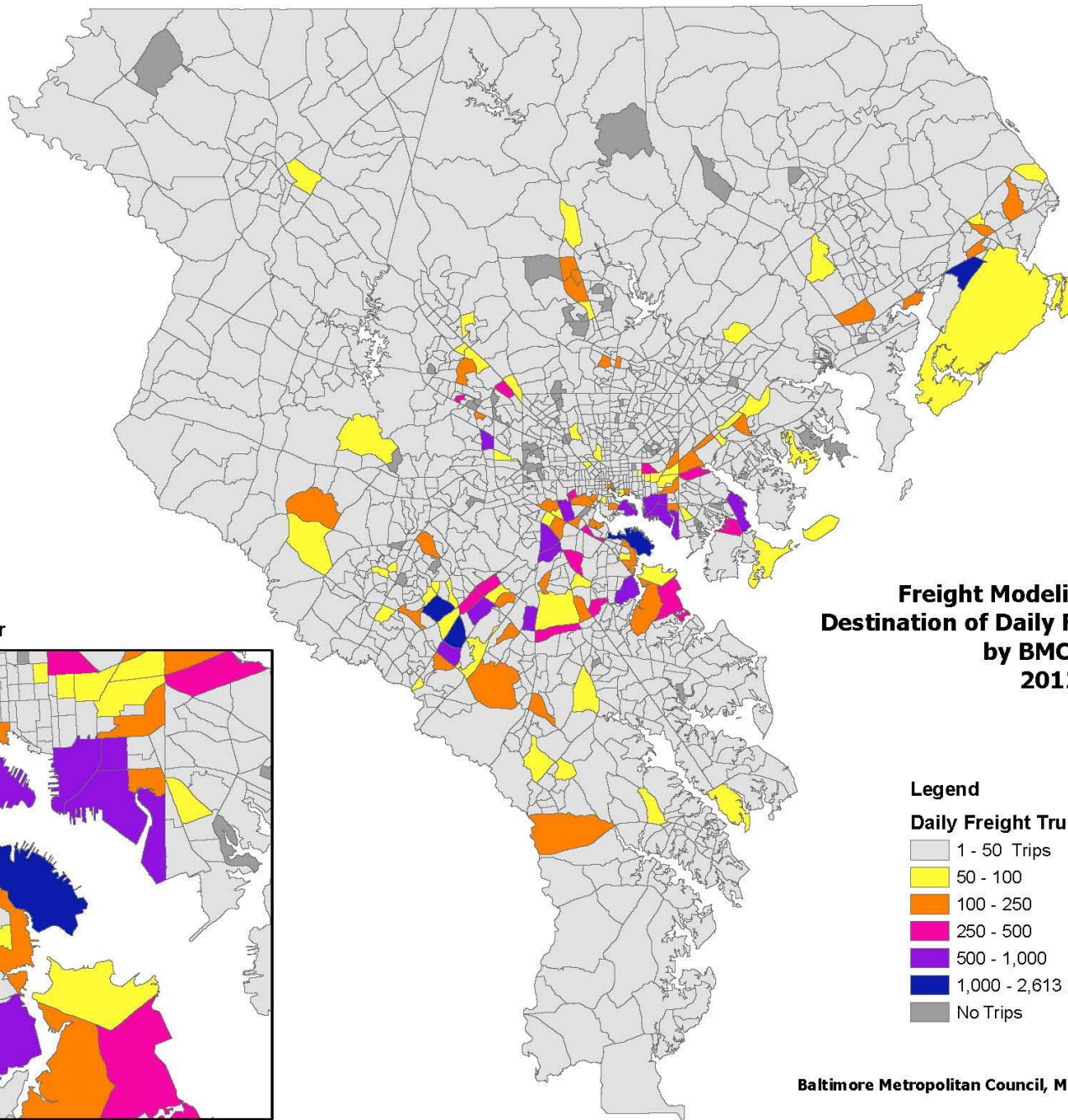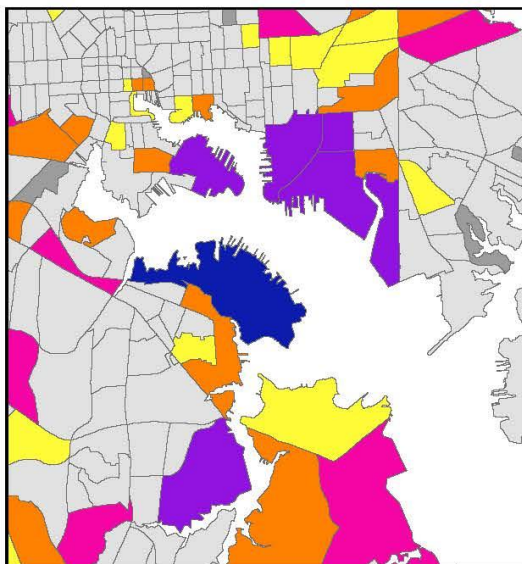
Baltimore Harbor

**Freight Modeling System:
Destination of Daily Freight Truck Trips
by BMC TAZ
2012**

Legend

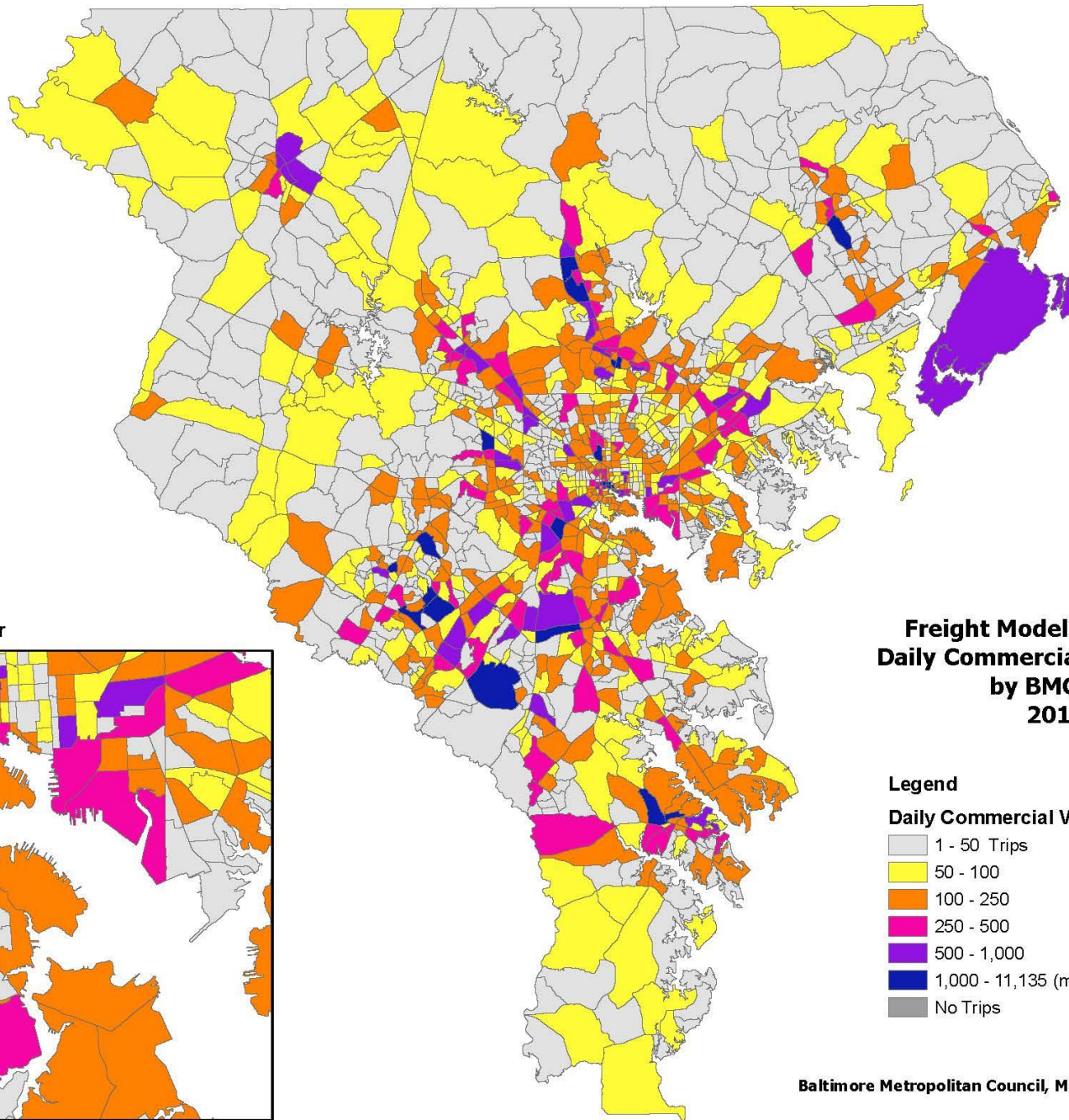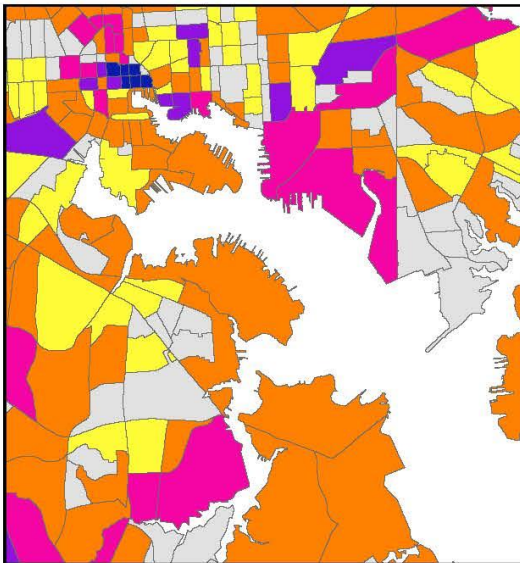**Daily Freight Truck Trip Destinations**

- 1 - 50 Trips
- 50 - 100
- 100 - 250
- 250 - 500
- 500 - 1,000
- 1,000 - 2,613 (max.)
- No Trips

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**Freight Modeling System:
Daily Commercial Vehicle Trips
by BMC TAZ
2012**

Legend

Daily Commercial Vehicle Origins

- 1 - 50 Trips
- 50 - 100
- 100 - 250
- 250 - 500
- 500 - 1,000
- 1,000 - 11,135 (max.)
- No Trips

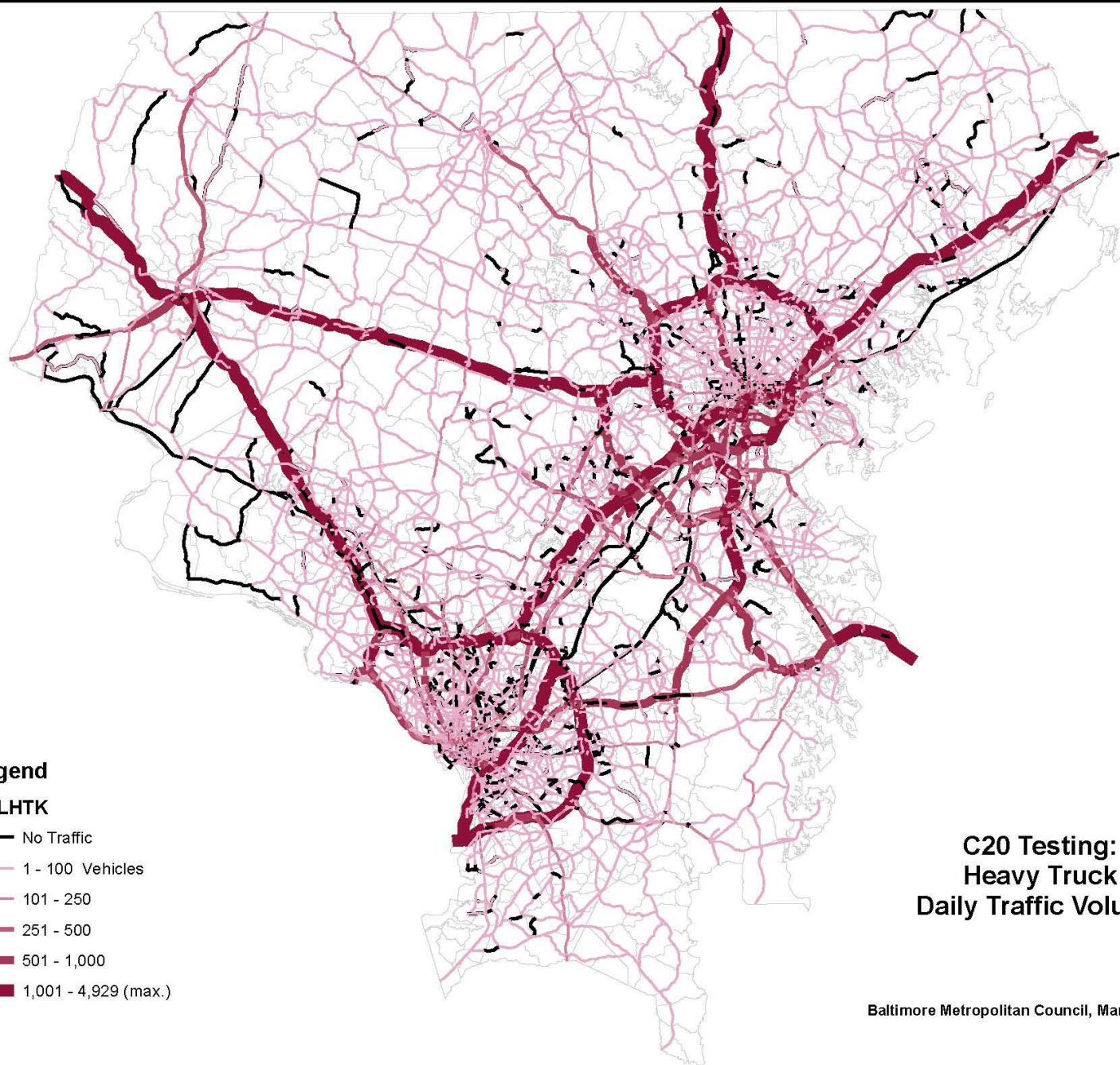**Baltimore Metropolitan Council, March 2018**

Legend

VOLHTK

—— No Traffic

—— 1 - 100 Vehicles

—— 101 - 250

—— 251 - 500

—— 501 - 1,000

—— 1,001 - 4,929 (max.)

C20 Testing:
Heavy Truck
Daily Traffic Volume

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Legend

Daily Traffic Volume

———	No Traffic
———	1 - 100 Vehicles
———	101 - 250
———	251 - 500
———	501 - 1,000
———	1,001 - 4,937 (max.)

C20 Testing:
Medium Truck
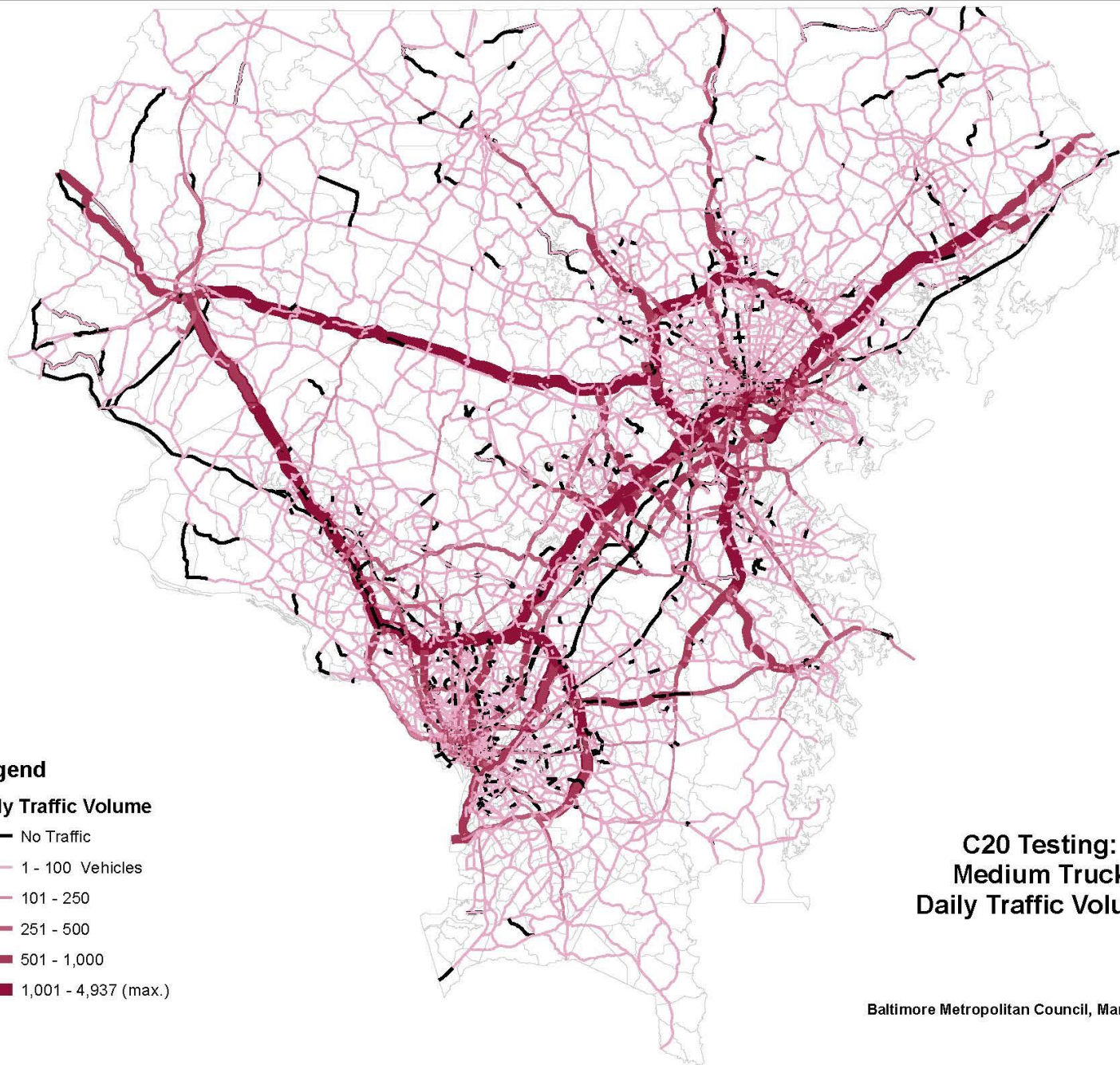Daily Traffic Volume

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Legend

Daily Traffic Volume

— No Traffic
— 1 - 100 Vehicles
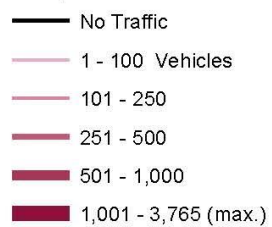— 101 - 250
— 251 - 500
— 501 - 1,000
— 1,001 - 3,765 (max.)

C20 Testing:
Commercial Vehicle
Daily Traffic Volume

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Freight Modeling System Dashboard

Base (2012) Dashboard:

D:\FreightSystem\bmc_model_v0.1.7\scenarios\base\outputs\ReportDashboardBMCCounty.html

2040 Dashboard:

D:\FreightSystem\bmc_model_v0.1.7\scenarios\2040\outputs\ReportDashboardBMCCounty.html

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Implementation

- **Passenger Model / Freight Modeling System Integration**
  - Replace 2001 Truck Model in BMC Travel Demand Model with 2017 Freight Modeling System

- **Validation/Scenario Testing**
  - Continue testing and comparing to 2001 Truck Model outputs
  - Develop a traffic count collection plan
  - Develop scenarios to test the 2017 Freight Modeling System including:
    - Brownfield Redevelopment
    - Port of Baltimore expansion
    - Other Applications?

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Web Sites/Contact Information

BMC's website:
www.baltometro.org

SHA's website:
www.roads.maryland.gov

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