

**Item #7**

**2010**  
**Congestion Management Process (CMP)**  
**Technical Report**

**Travel Forecasting Subcommittee Meeting**  
**May 21, 2010**

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National Capital Region Transportation Planning Board (TPB)  
Metropolitan Washington Council of Governments (COG)

# Outline

1. 2010 Congestion Management Process (CMP) Technical Report (DRAFT)
2. Analyses of I-95 Corridor Coalition/INRIX data

# PART 1

## The 2010 Congestion Management Process (CMP) Technical Report

DRAFT

Version: April 30, 2010

# Background of the CMP

- A Congestion Management Process (CMP) is a requirement in metropolitan transportation planning
  - SAFETEA-LU and associated 2007 Federal regulations for metropolitan planning address CMP requirements
- Metropolitan long-range plans developed after July 1, 2007 must have a CMP
  - The official CMP component is wholly integrated into the CLRP to address the federal requirement
- March 2006 Federal certification of the TPB process recommended demonstrating how the Congestion Management System (CMS, now CMP) was applied at critical stages of the metropolitan planning process, in the CLRP or a stand-alone document
- A 2008 CMP Technical Report was published
- Draft 2010 CMP Technical Report now ready for review

# Connections between the CMP and the Travel Forecasting Subcommittee

- TPB Technical Committee has responsibility for technical oversight of the CMP Technical Report, advised by:
  - ***Travel Forecasting Subcommittee (regarding travel monitoring and forecasting of future recurring congestion)***
  - Commuter Connections Subcommittee (demand management)
  - Travel Management Subcommittee (strategy identification and analyses)
  - MOITS Policy Task Force and Technical Subcommittee (incident management and non-recurring congestion)
- The CMP Report compiles a variety of congestion information (Chapter 2: State of Congestion)
- New congestion and reliability analyses from the I-95 Corridor Coalition/INRIX data

# Outline of the Draft Report

- Executive Summary
  1. Introduction
  2. State of Congestion
  3. Consideration and Implementation of Congestion Management Strategies
  4. Studies of Congestion Management Strategies
  5. How Results of the CMP Are Integrated into the CLRP
  6. Conclusions

## ***The 2010 CMP Technical Report:***

- *Compiles information from a wide range of metropolitan transportation planning activities, and*
- *Provides some additional CMP specific analyses, particularly travel time reliability and non-recurring congestion analyses*

# Chapter 2 – State of Congestion

- Congestion on major highways
  - Freeways (Skycomp and INRIX)
  - Sampled arterials (arterial monitoring program and INRIX)
- Safety and congestion
- Congestion on the area's transit systems
- Park-and-ride facilities
- Airport access
- Freight movement and congestion
- Other congestion monitoring and data consolidation activities
- National comparison of the region's congestion
- 2009 CLRP congestion analysis

# Key Findings: Strategies

- The **transit system** in the Washington region serves as a major alternative to driving alone – transit mode share is among the highest several metropolitan areas in the country
- The **Commuter Connections Program** remains a vital means to assist and encourage people in the Washington region to use alternatives to the single-occupant automobile
- Congestion management strategies of Management, Operations, and Intelligent Transportation Systems (**MOITS**) provide essential ways to make most of the existing transportation facilities
- **Variably priced lanes (VPLs)** are an effective way to provide alternatives to travelers and manage congestion on new capacity
- The Metropolitan Area Transportation Operations Coordination (**MATOC**) program enhances regional coordination for regional-significant incidents and the program is cost-effective with a conservative benefit to cost ratio of 10:1



# Key Findings:

## Skycomp and Arterial Monitoring Studies

- As reported in earlier published TPB travel monitoring reports
- 2008 (when fuel prices were at an all-time high) saw reductions in congestion compared to previous years.
  - Total freeway lane miles with level of service (LOS) F congestion in the AM and PM peak periods dropped by 24 percent from 2005 to 2008, almost back to 2002 levels.
- Arterial congestion
  - Worsened over the years in the PM peak period (4:00-7:00 PM)
    - Especially during the PM peak hour (5:00-6:00 PM)
  - Unchanged or relieved in the PM off-peak period (1:00-4:00 PM & 7:00-8:00 PM)

# Recommendations

- Continue the Commuter Connections Program
- Continue the MATOC program and agency/ jurisdictional transportation management activities
- Consider variable pricing and other management strategies for capacity increasing projects
- Encourage implementation of congestion management for major construction projects
- Continue and enhance the use of continuous, probe-based congestion monitoring data
- Integrate probe-based congestion monitoring data and location-fixed sensor data
- Continue travel time reliability analysis
- Explore the use of INRIX and other emerging data sources to produce online quarterly snapshots of regional congestion

# Priorities for Committee Review

- Executive Summary (pages 7-21)
- State of congestion (Chapter 2, pages 29-88)
- Analyses of INRIX data (pages 48-65)
- Conclusions (Chapter 6, pages 145-147)

# Review Schedule

- Committee presentations
  - Travel Management Subcommittee, April 27
  - TPB Technical Committee, May 7
  - MOITS, May 11
  - Commuter Connections, May 18
  - *Travel Forecasting Subcommittee, May 21*
- DEADLINE for comments May 28
- Finalization at June 4 Technical Committee

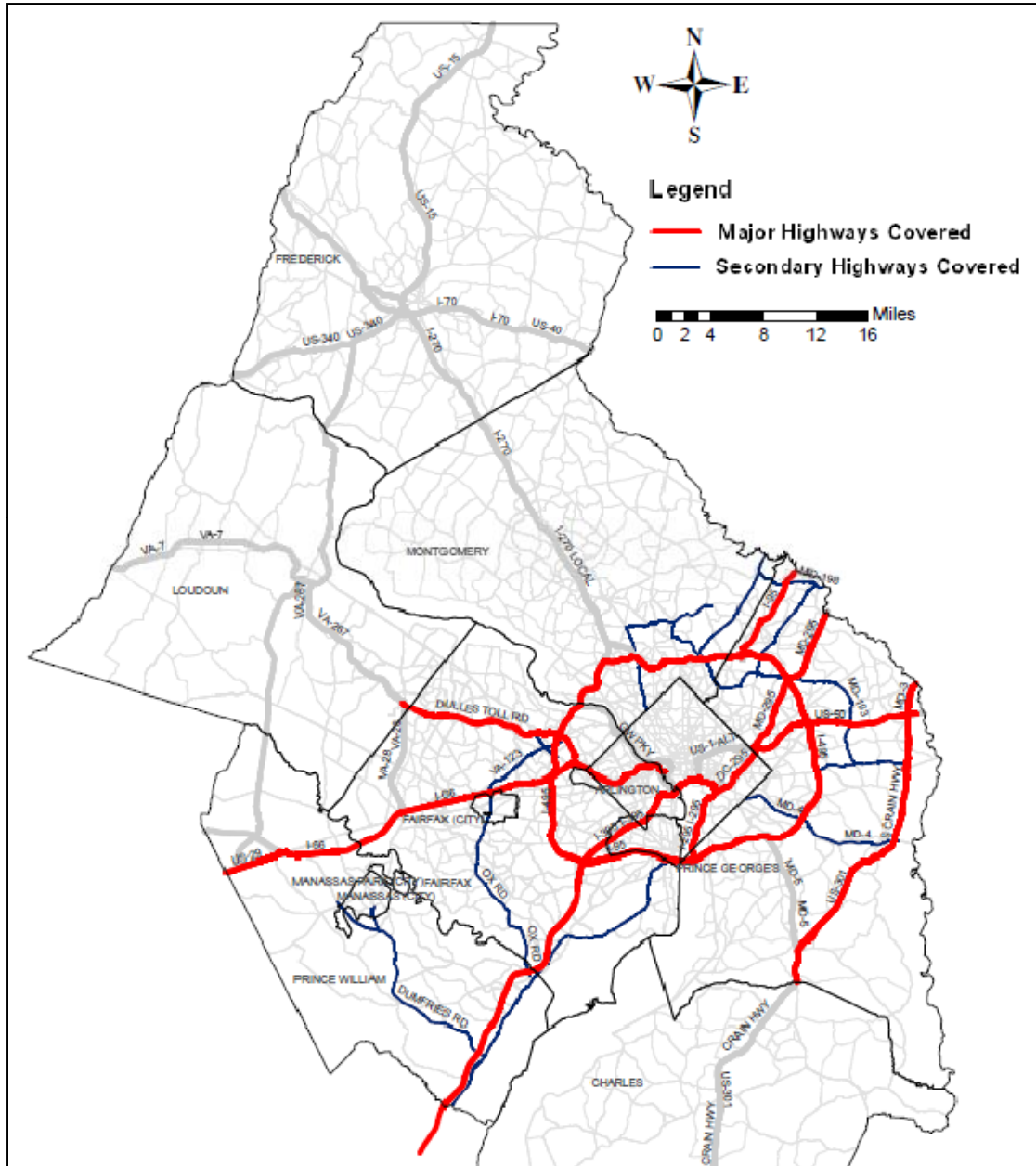
## PART 2

# Analyses of the I-95 Corridor Coalition/INRIX Data

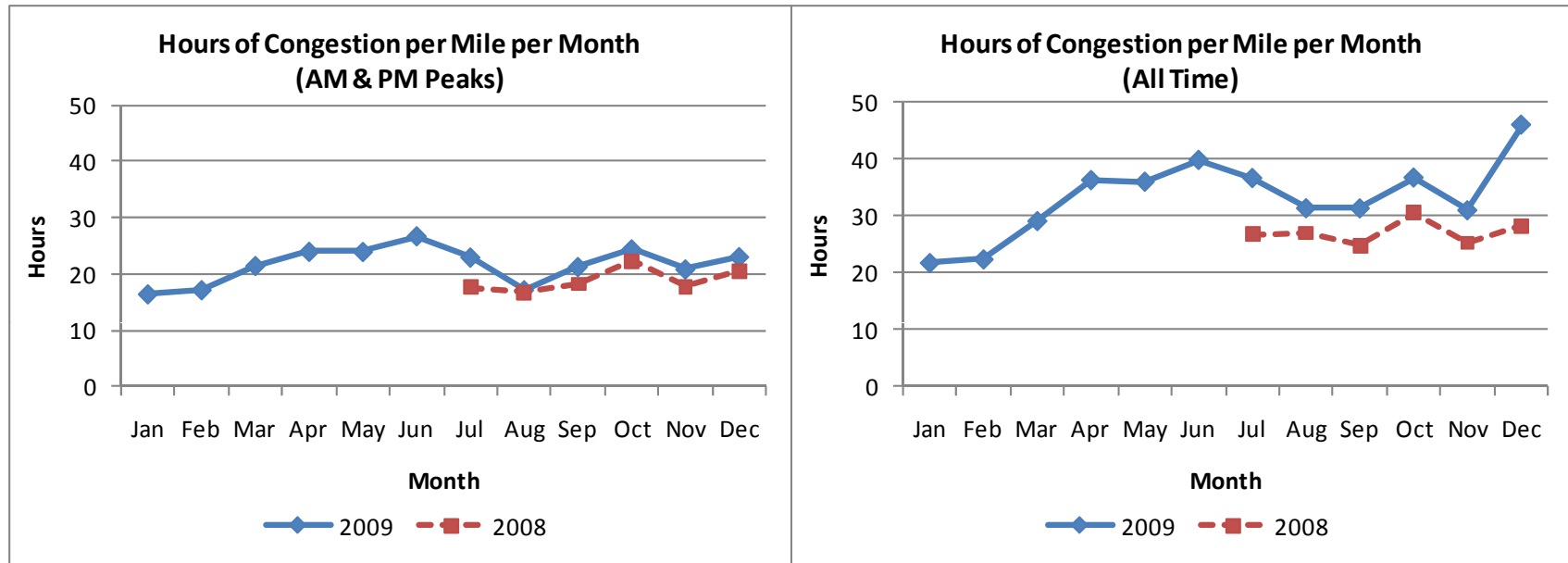
# Analyses of INRIX Data (New for 2010)

- Section 2.1.3 (pages 48-65)
  - A New Data Source for Highway Performance Monitoring
  - Travel time index
  - Mile-hours of congestion
  - Planning time index
  - Buffer time index
- Limited Trial Data Sample
  - Significant but not comprehensive roadway coverage regionally (e.g., data for I-70 & I-270 are not yet available)
  - Data only since July 1, 2008

# I-95 Corridor Coalition/INRIX Data Coverage in the National Capital Region



# Hours of Congestion per Mile per Month



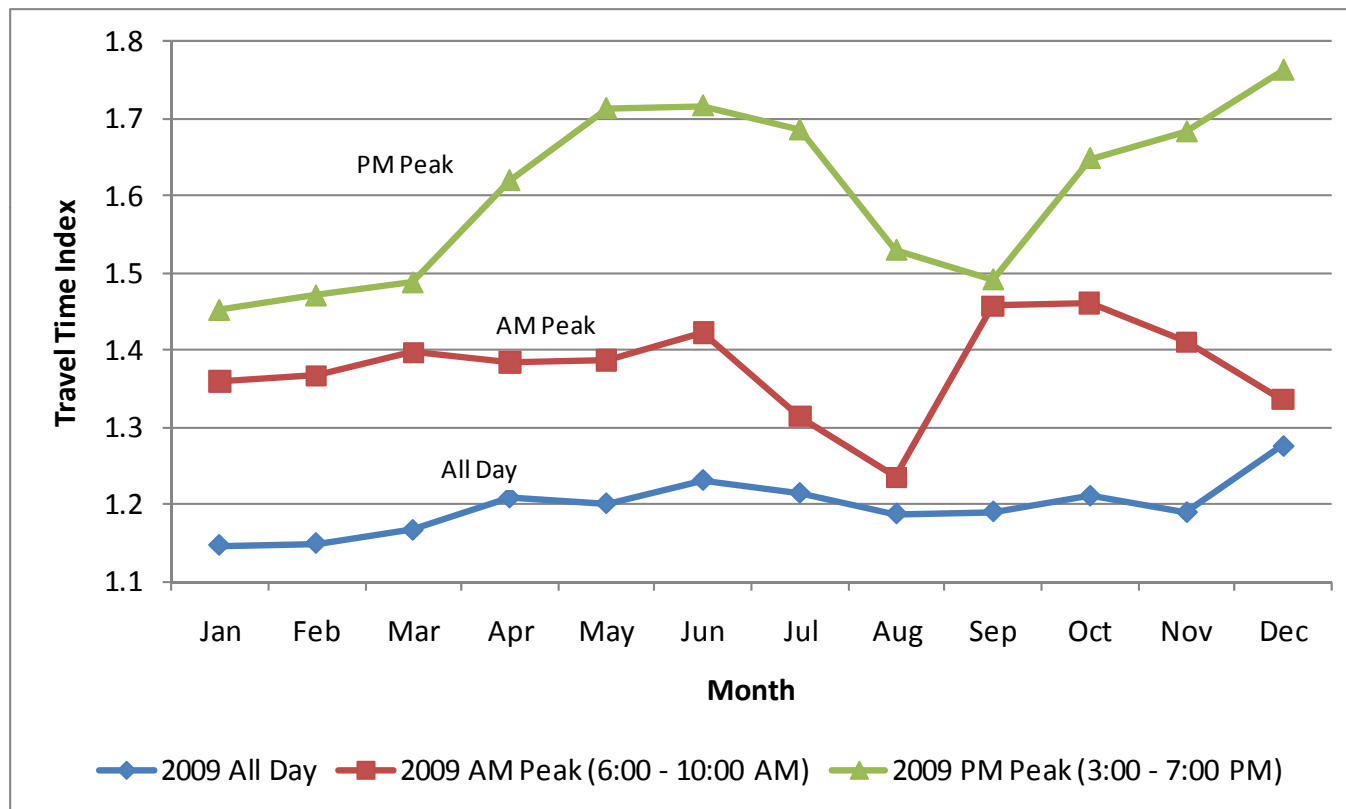
Note: "congestion" is considered when speed  $\leq$  50% of free flow speed.

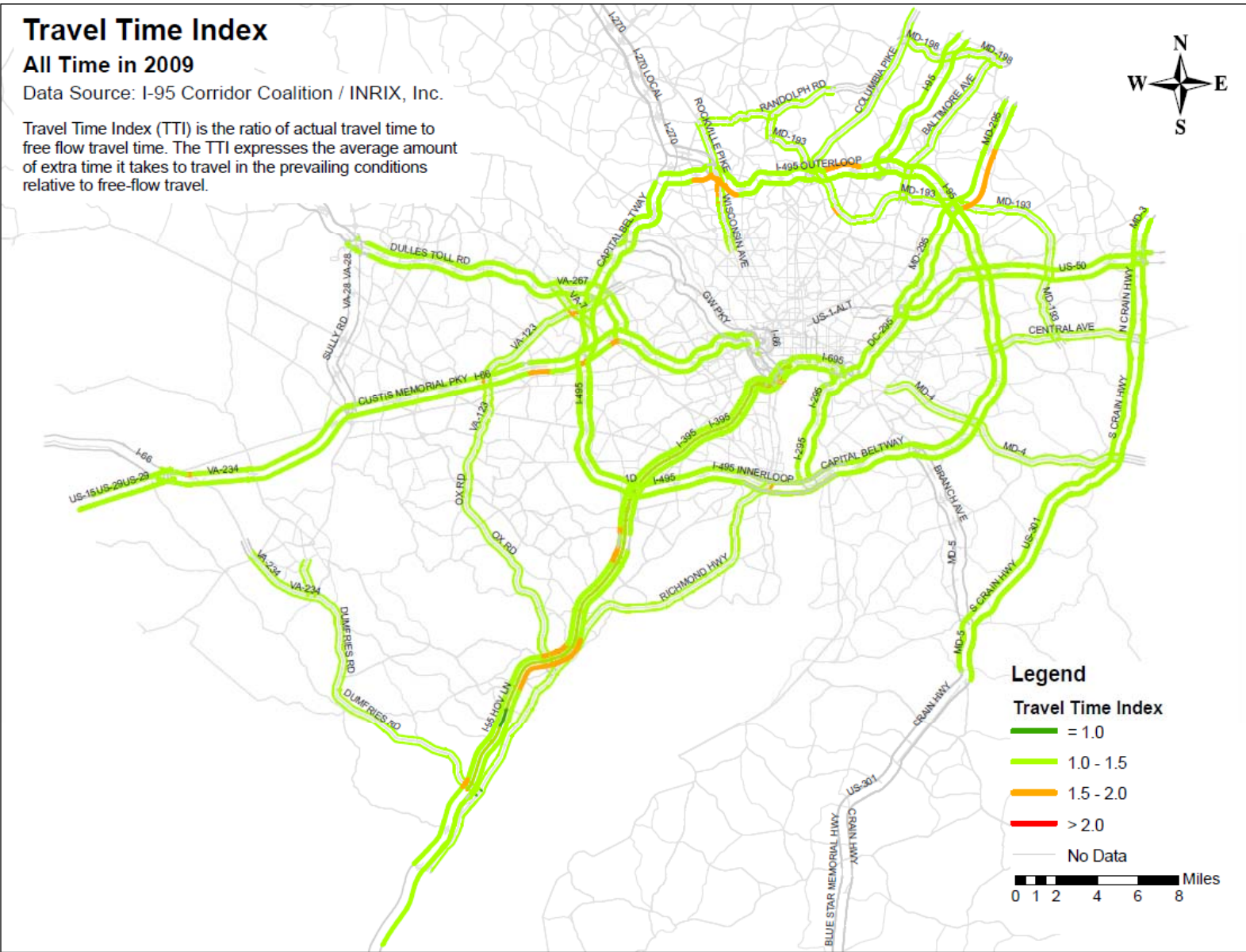
- Congestion increased from 2<sup>nd</sup> half of 2008 to 2<sup>nd</sup> half of 2009:
  - 14% increase for AM & PM peaks
  - 24% increase for all time
- Congestion in 2009:
  - From January to June, increasing
  - From July to December, fluctuating

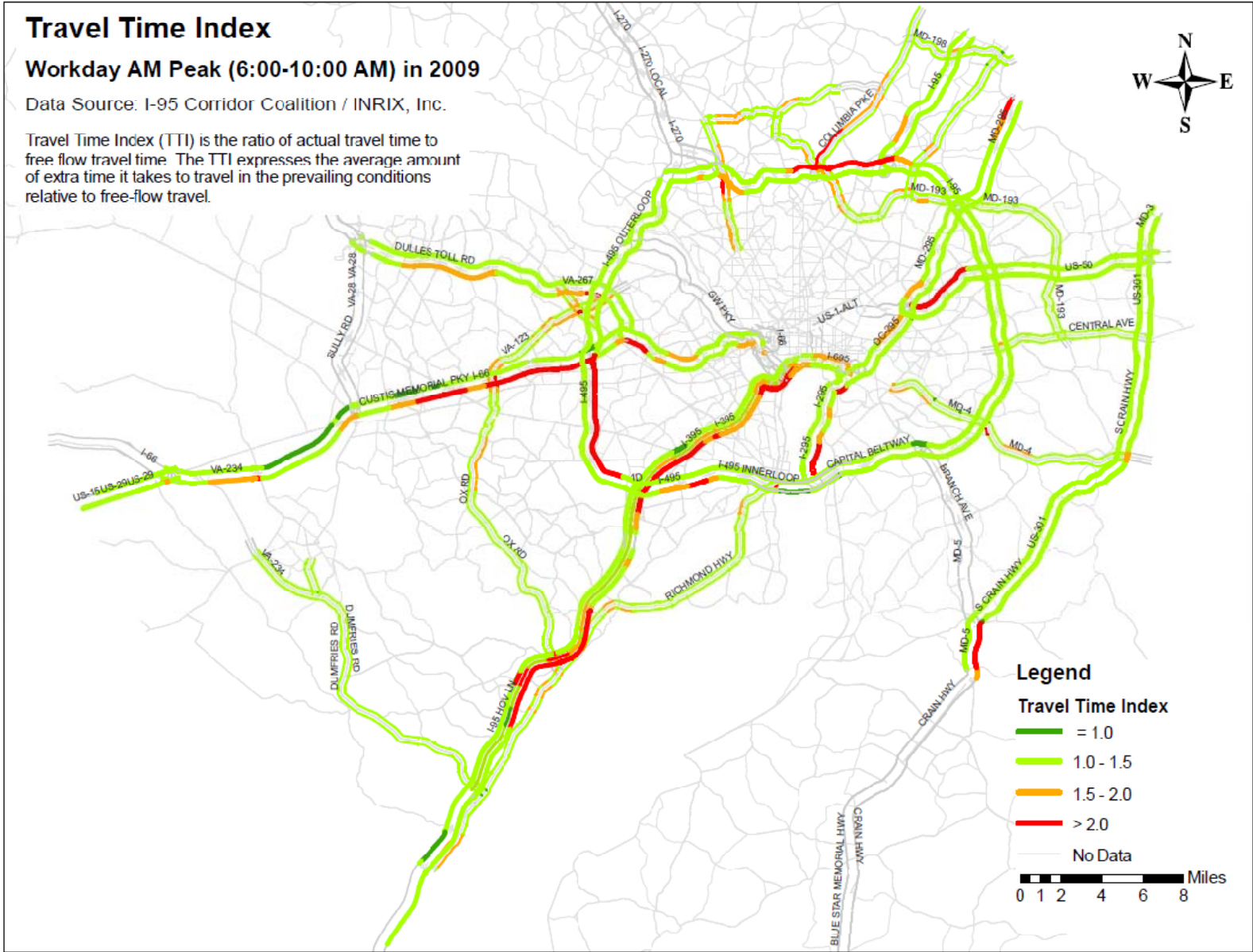


# Travel Time Index

Travel time index = Actual travel time / Free-flow travel time





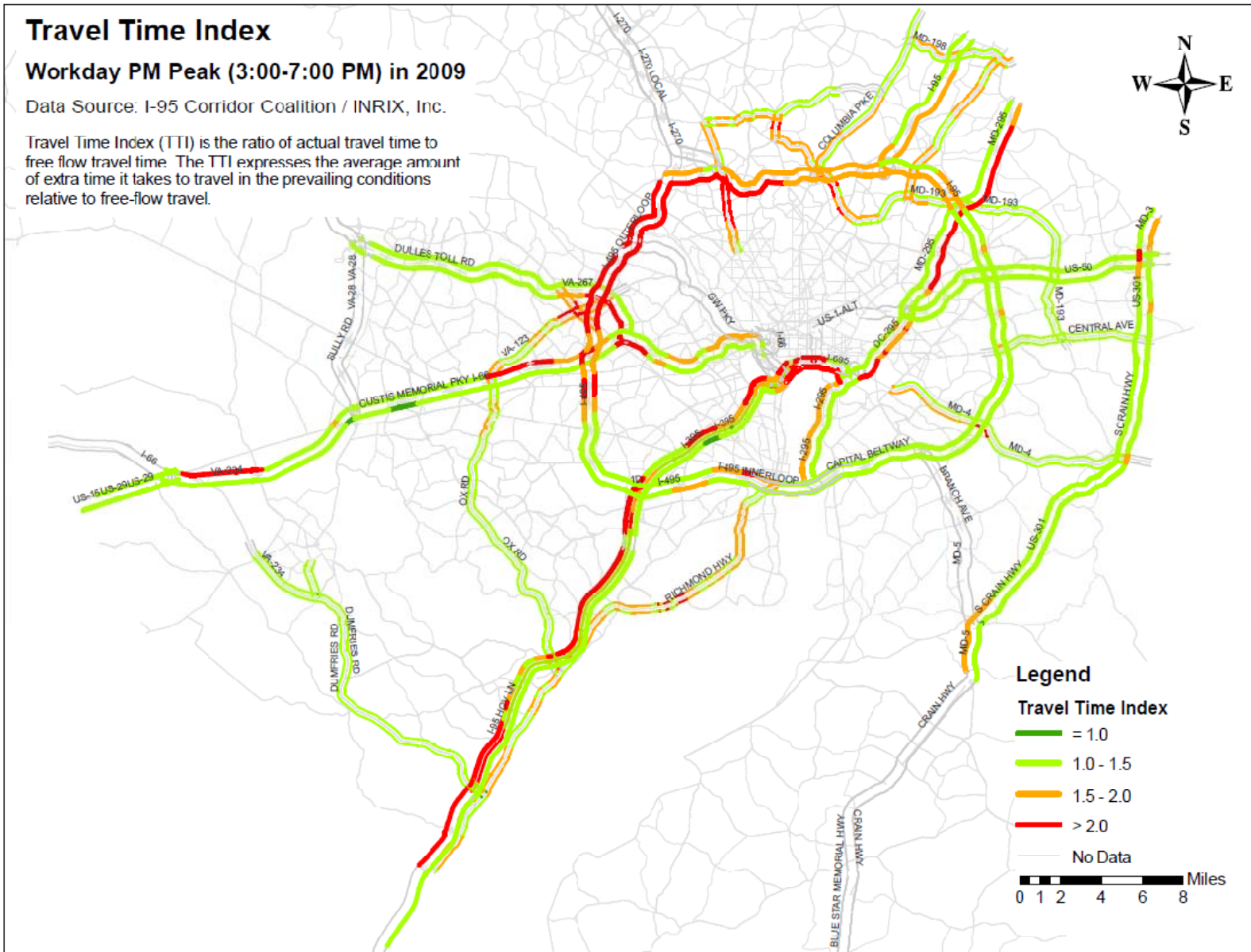


# Travel Time Index

## Workday PM Peak (3:00-7:00 PM) in 2009

Data Source: I-95 Corridor Coalition / INRIX, Inc.

Travel Time Index (TTI) is the ratio of actual travel time to free flow travel time. The TTI expresses the average amount of extra time it takes to travel in the prevailing conditions relative to free-flow travel.

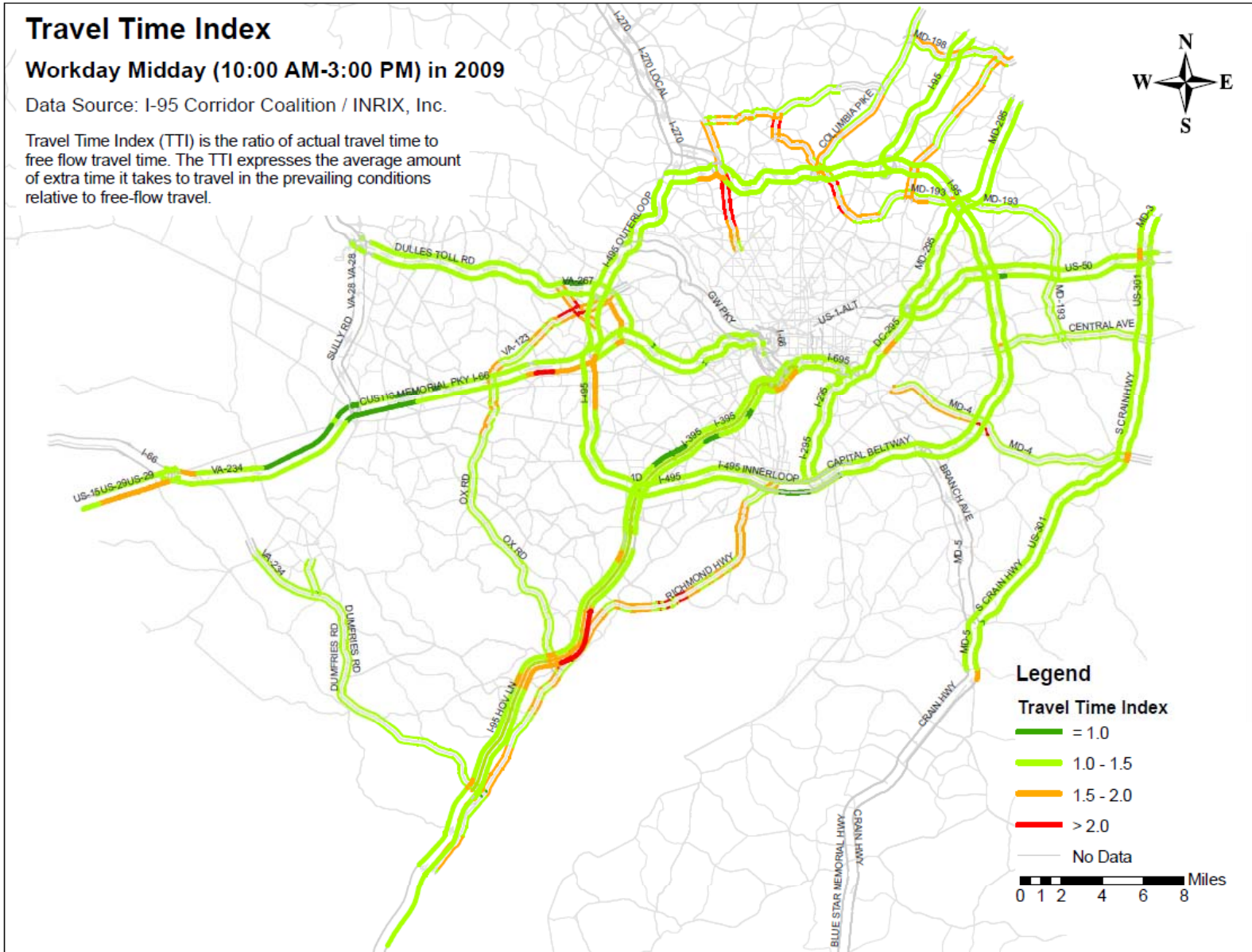


# Travel Time Index

## Workday Midday (10:00 AM-3:00 PM) in 2009

Data Source: I-95 Corridor Coalition / INRIX, Inc.

Travel Time Index (TTI) is the ratio of actual travel time to free flow travel time. The TTI expresses the average amount of extra time it takes to travel in the prevailing conditions relative to free-flow travel.

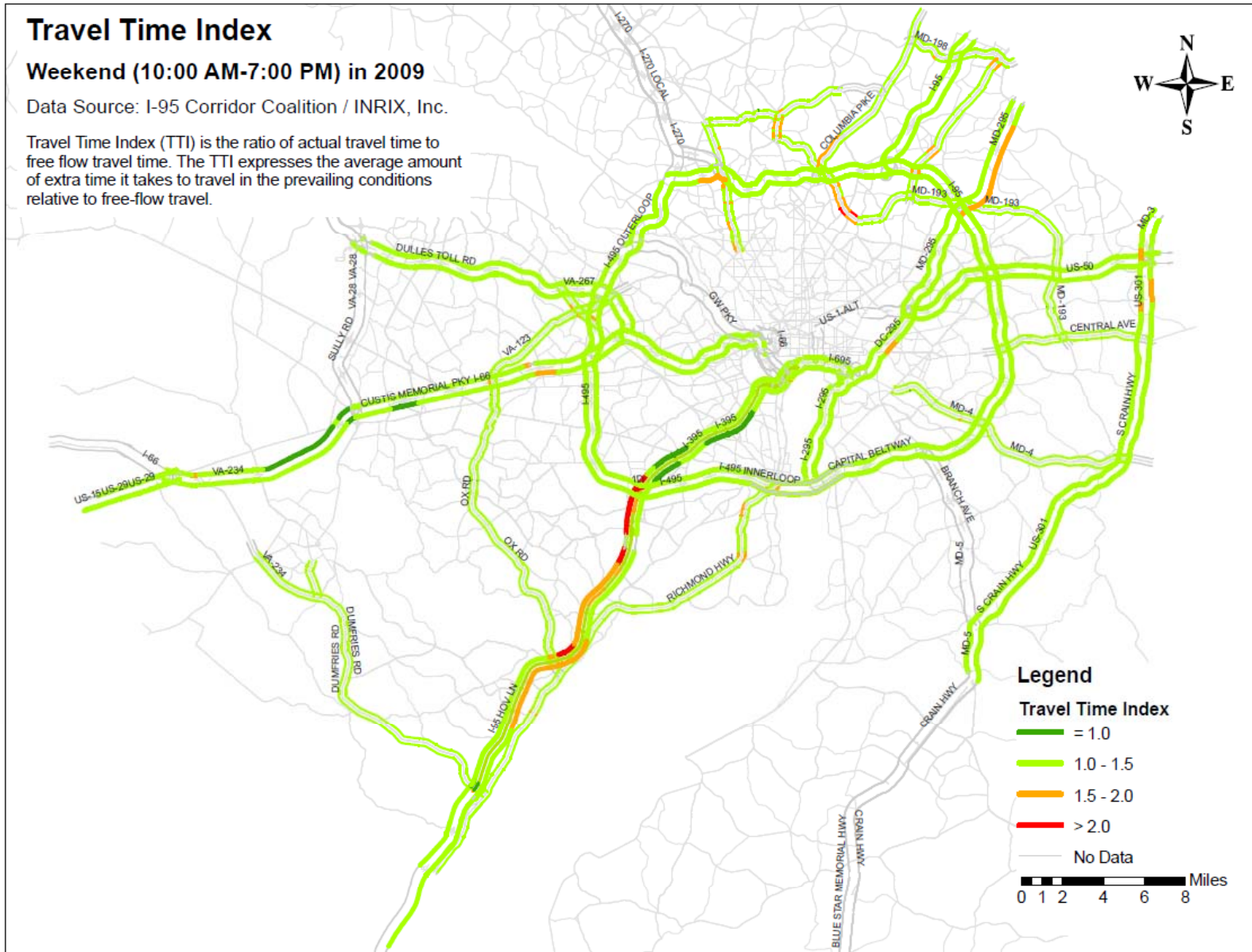


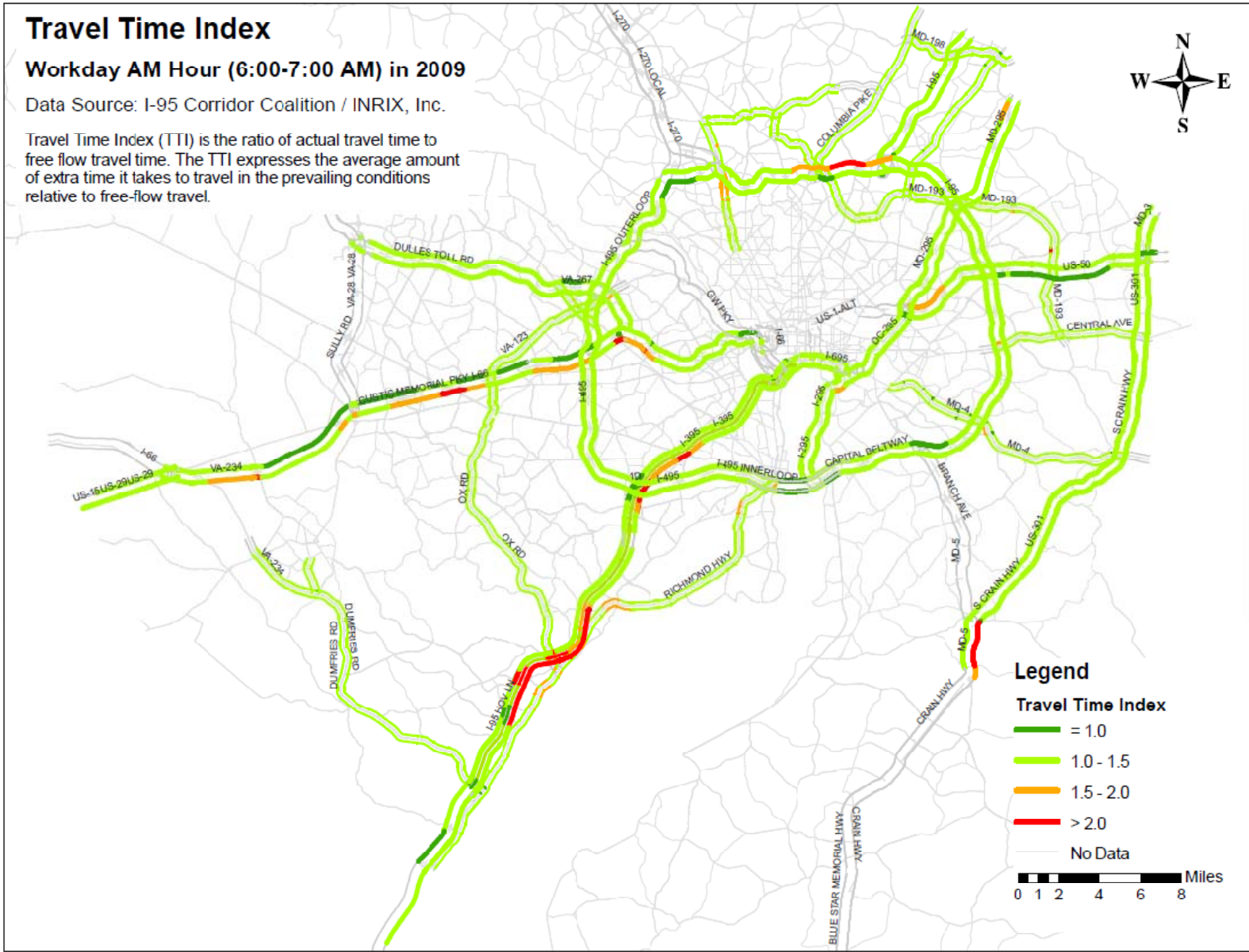
# Travel Time Index

Weekend (10:00 AM-7:00 PM) in 2009

Data Source: I-95 Corridor Coalition / INRIX, Inc.

Travel Time Index (TTI) is the ratio of actual travel time to free flow travel time. The TTI expresses the average amount of extra time it takes to travel in the prevailing conditions relative to free-flow travel.



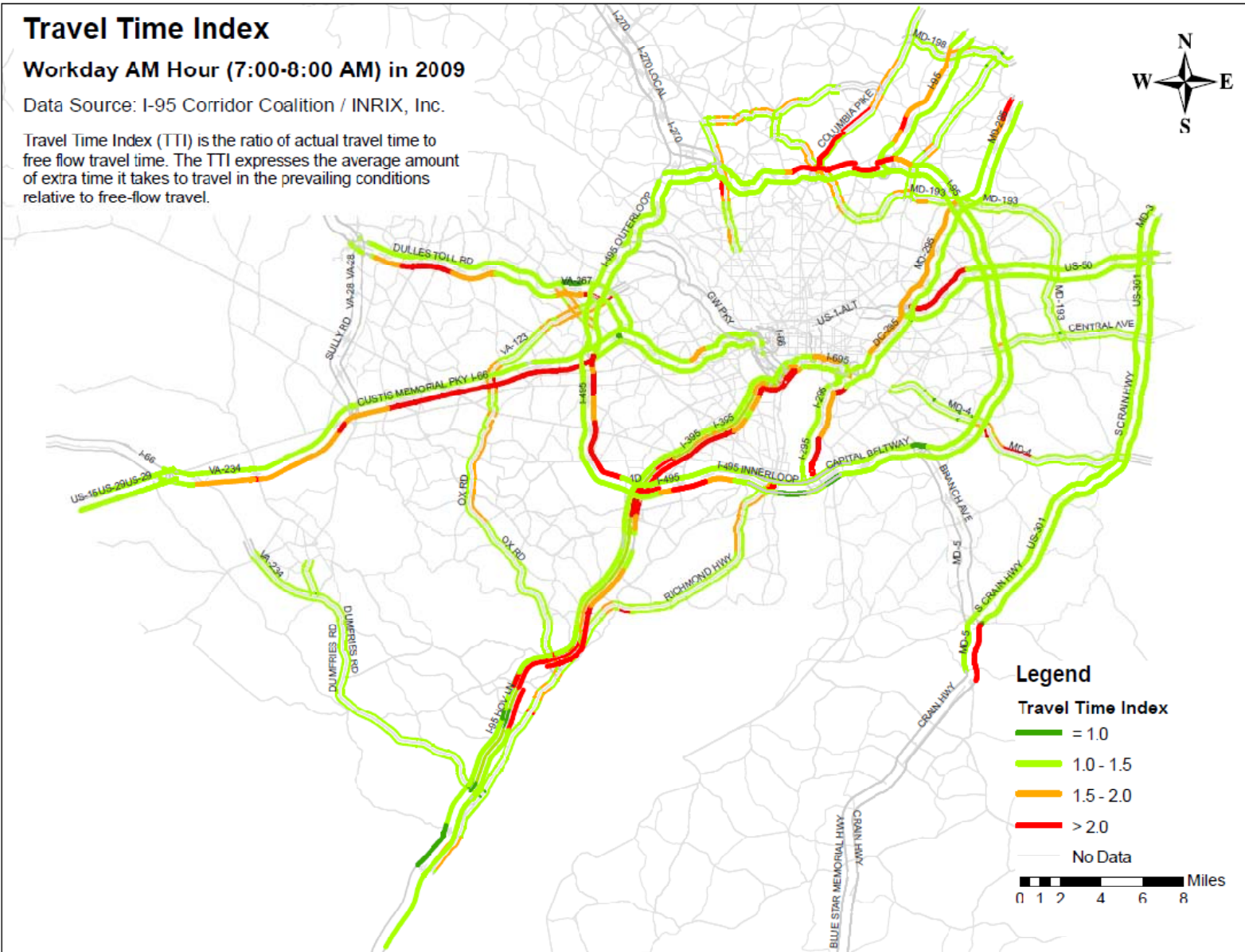


# Travel Time Index

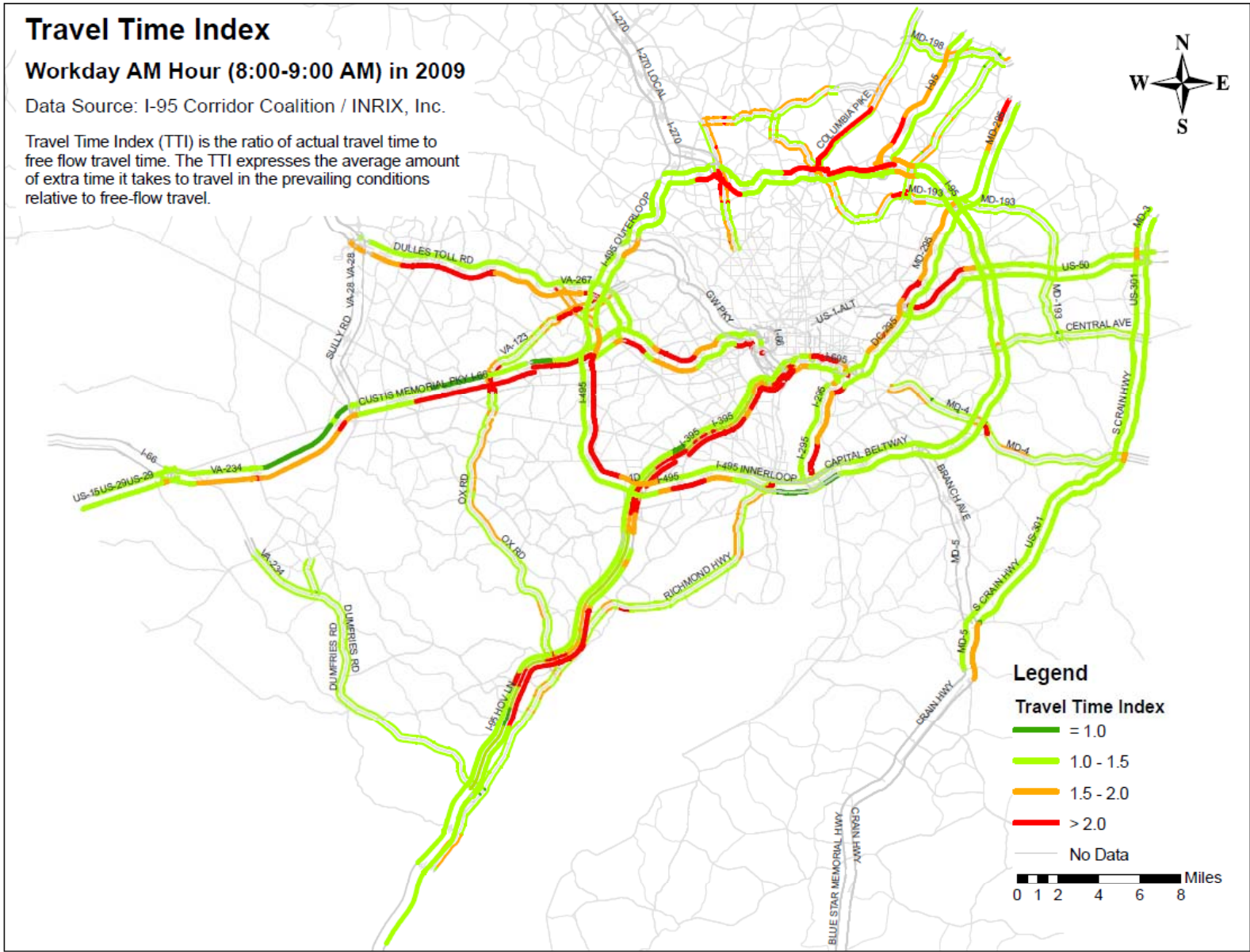
Workday AM Hour (7:00-8:00 AM) in 2009

Data Source: I-95 Corridor Coalition / INRIX, Inc.

Travel Time Index (TTI) is the ratio of actual travel time to free flow travel time. The TTI expresses the average amount of extra time it takes to travel in the prevailing conditions relative to free-flow travel.





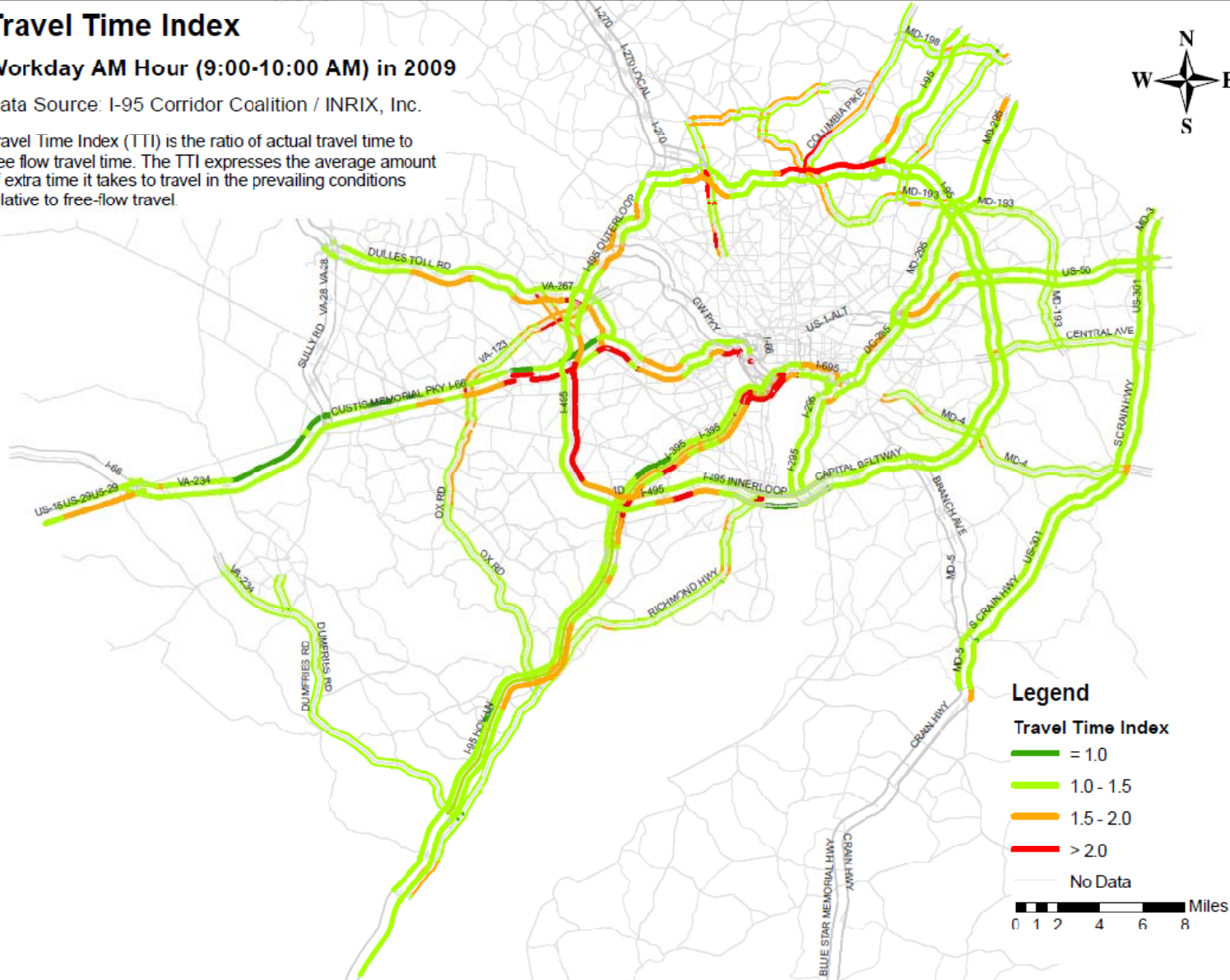


# Travel Time Index

## Workday AM Hour (9:00-10:00 AM) in 2009

Data Source: I-95 Corridor Coalition / INRIX, Inc.

Travel Time Index (TTI) is the ratio of actual travel time to free flow travel time. The TTI expresses the average amount of extra time it takes to travel in the prevailing conditions relative to free-flow travel.

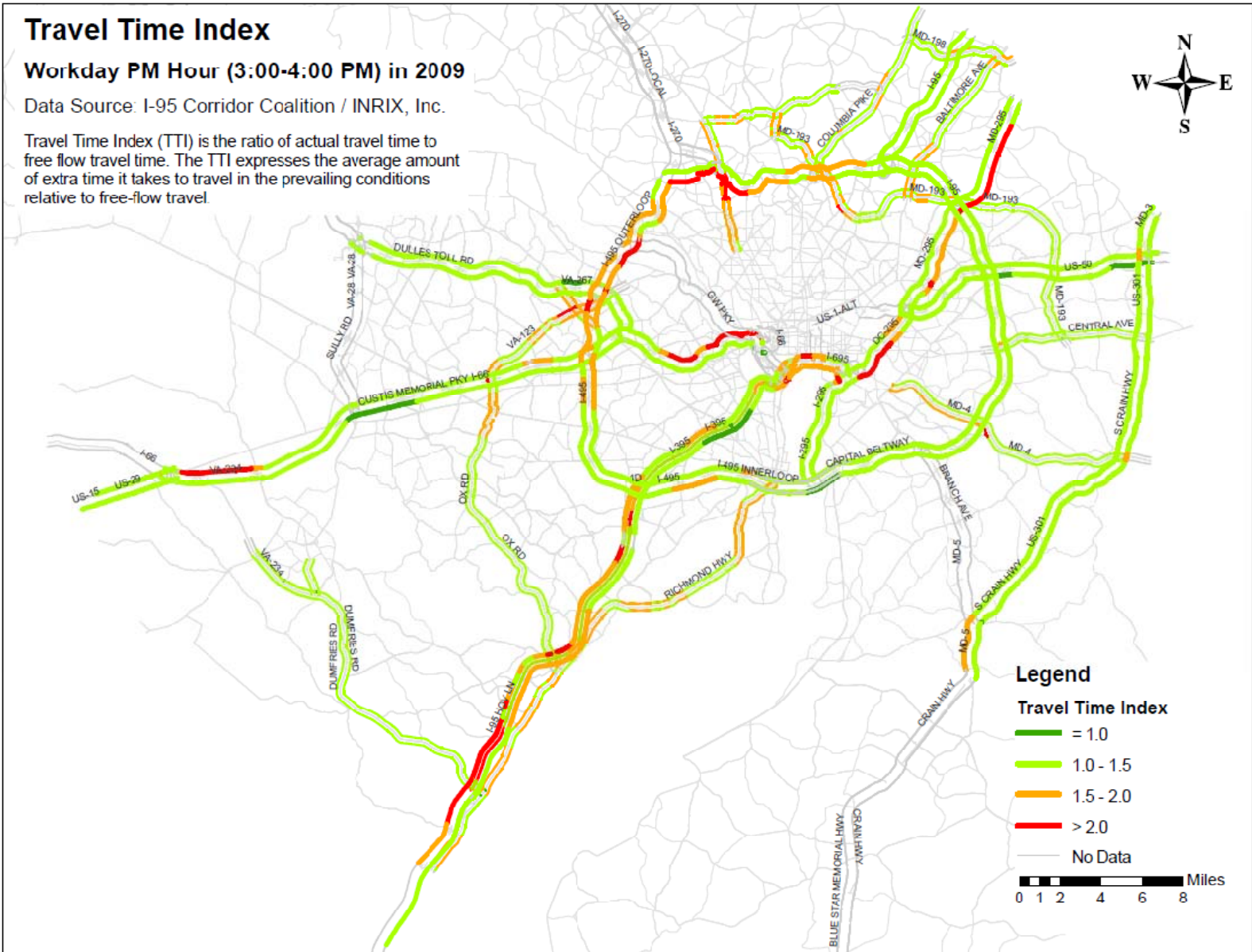


# Travel Time Index

## Workday PM Hour (3:00-4:00 PM) in 2009

Data Source: I-95 Corridor Coalition / INRIX, Inc.

Travel Time Index (TTI) is the ratio of actual travel time to free flow travel time. The TTI expresses the average amount of extra time it takes to travel in the prevailing conditions relative to free-flow travel.

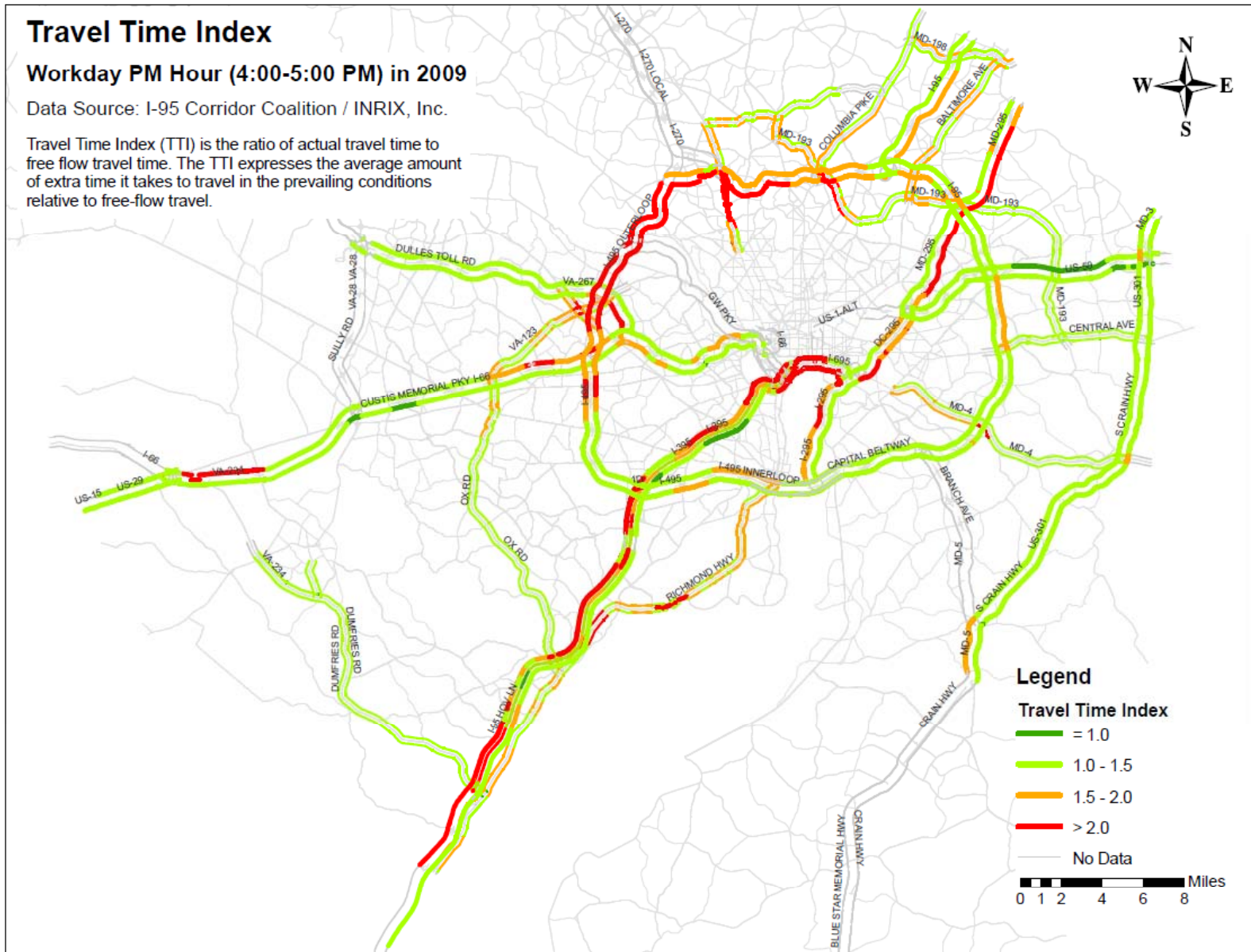


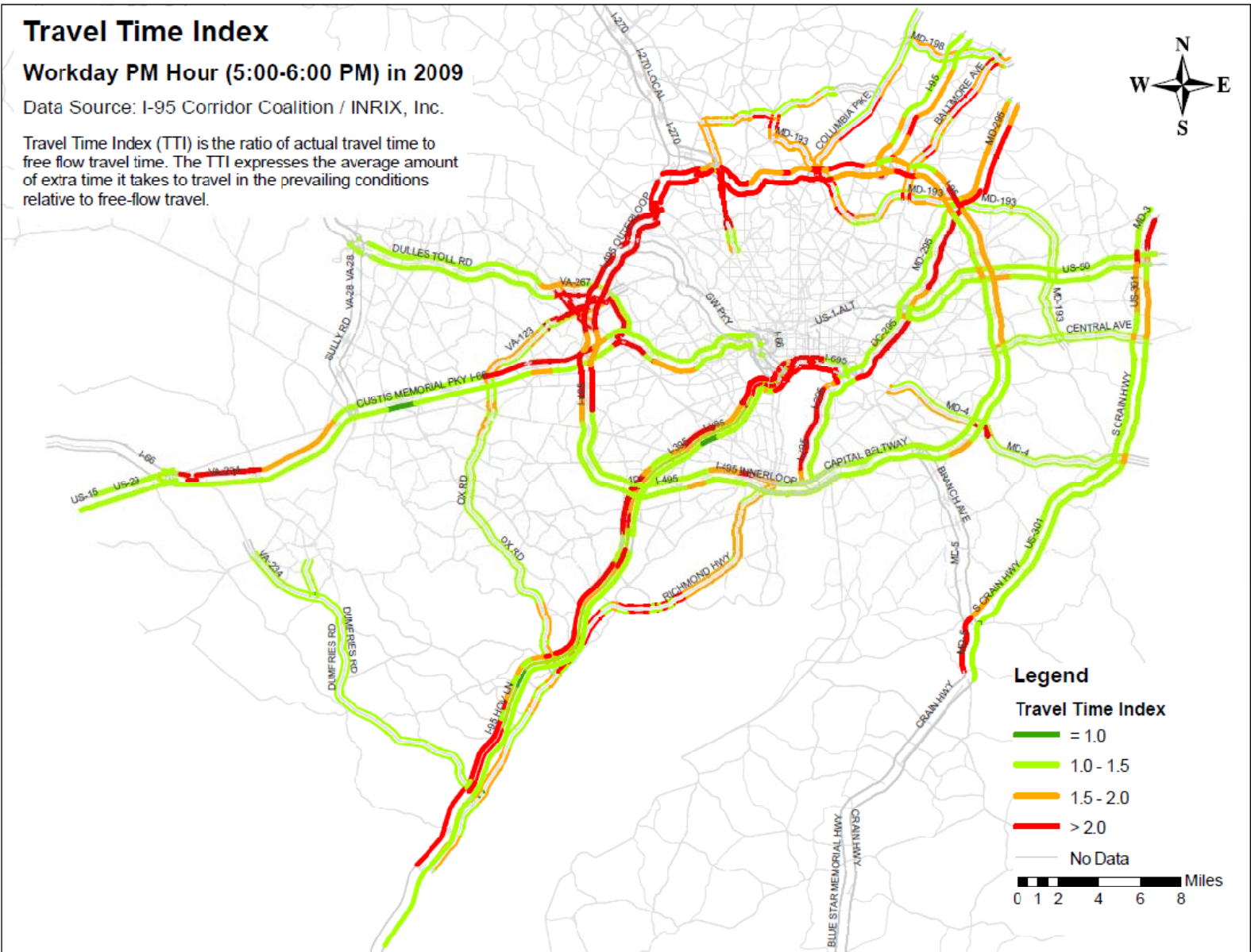
# Travel Time Index

## Workday PM Hour (4:00-5:00 PM) in 2009

Data Source: I-95 Corridor Coalition / INRIX, Inc.

Travel Time Index (TTI) is the ratio of actual travel time to free flow travel time. The TTI expresses the average amount of extra time it takes to travel in the prevailing conditions relative to free-flow travel.



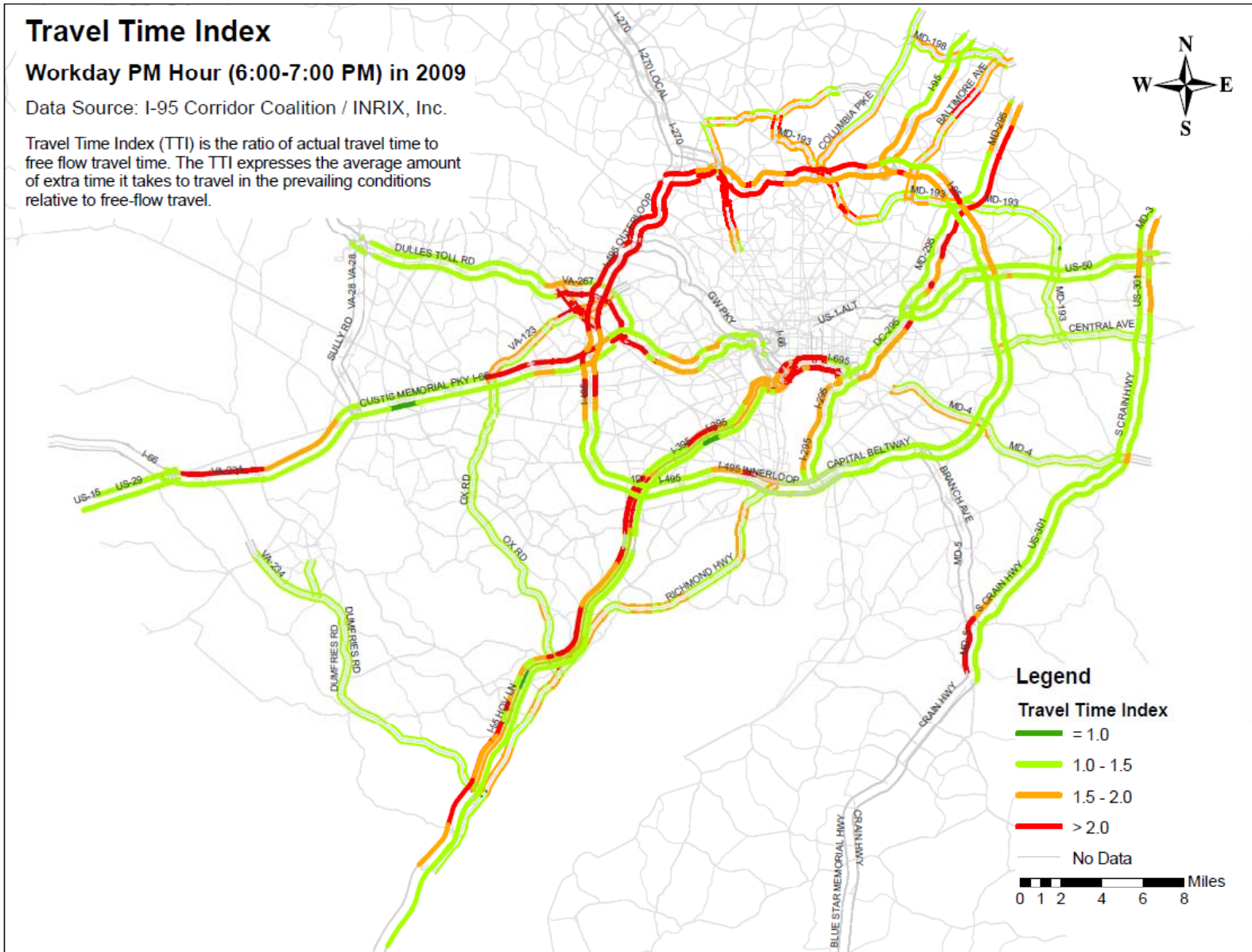


# Travel Time Index

## Workday PM Hour (6:00-7:00 PM) in 2009

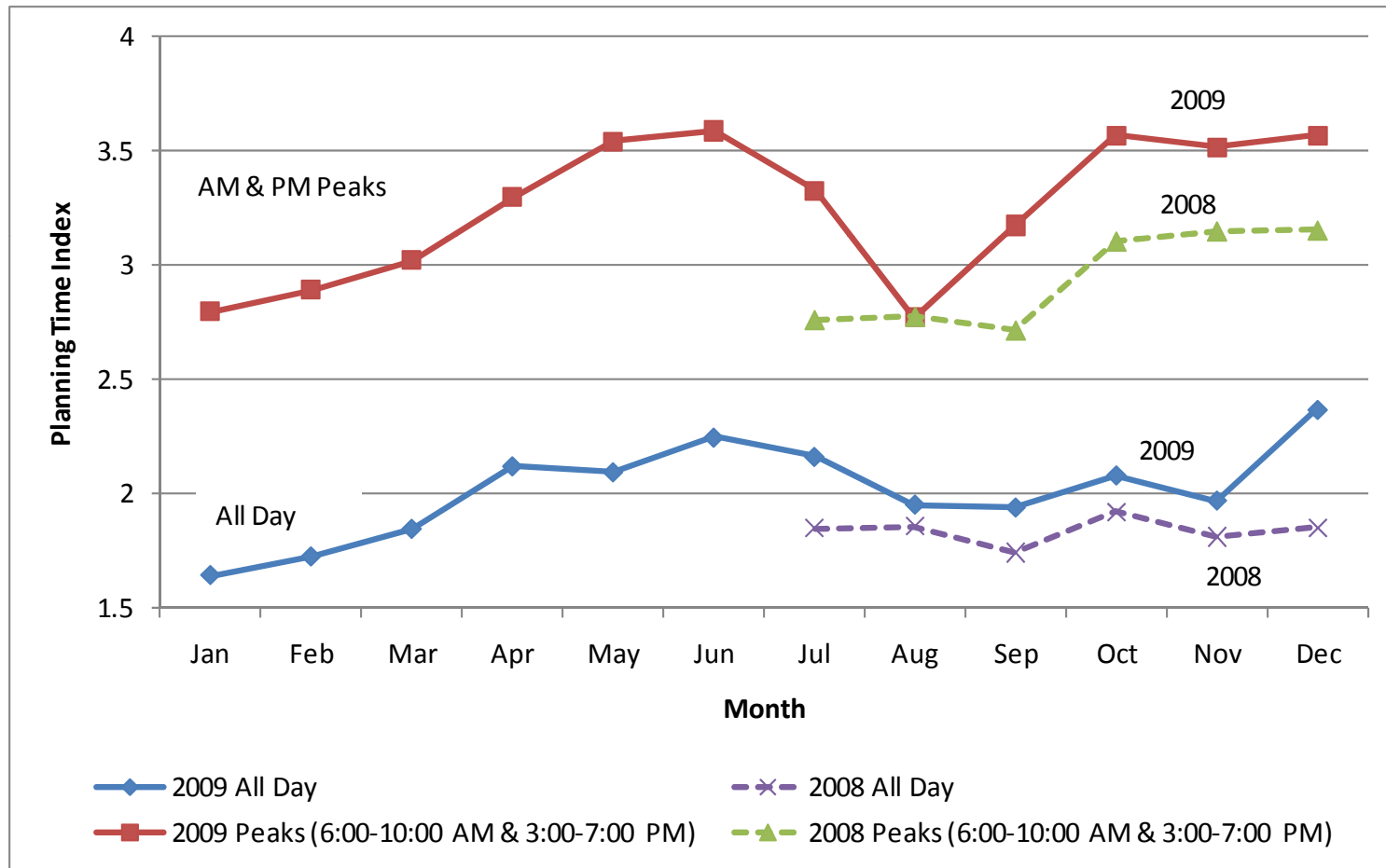
Data Source: I-95 Corridor Coalition / INRIX, Inc.

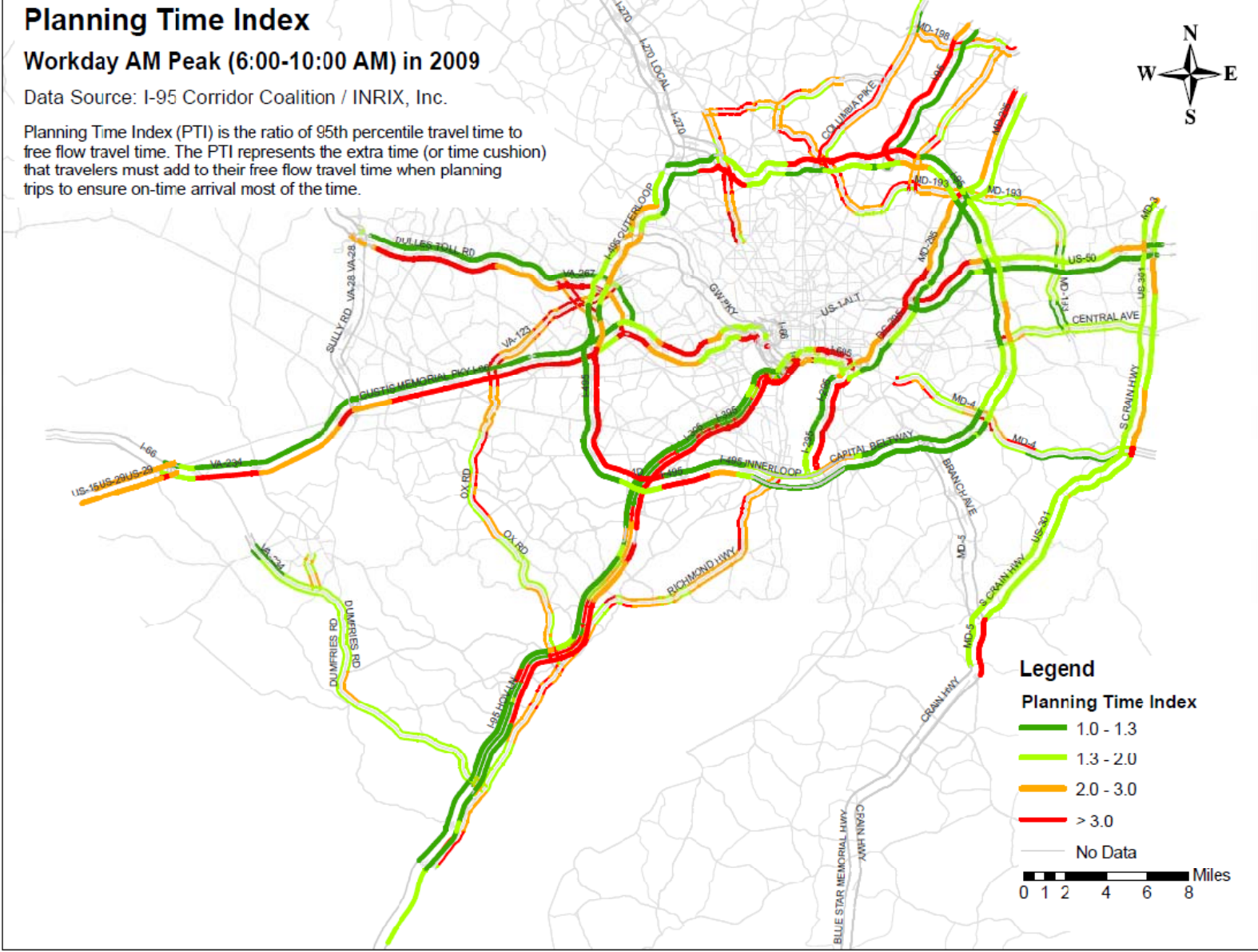
Travel Time Index (TTI) is the ratio of actual travel time to free flow travel time. The TTI expresses the average amount of extra time it takes to travel in the prevailing conditions relative to free-flow travel.



# Planning Time Index

Planning time index = 95<sup>th</sup> percentile travel / free-flow travel time

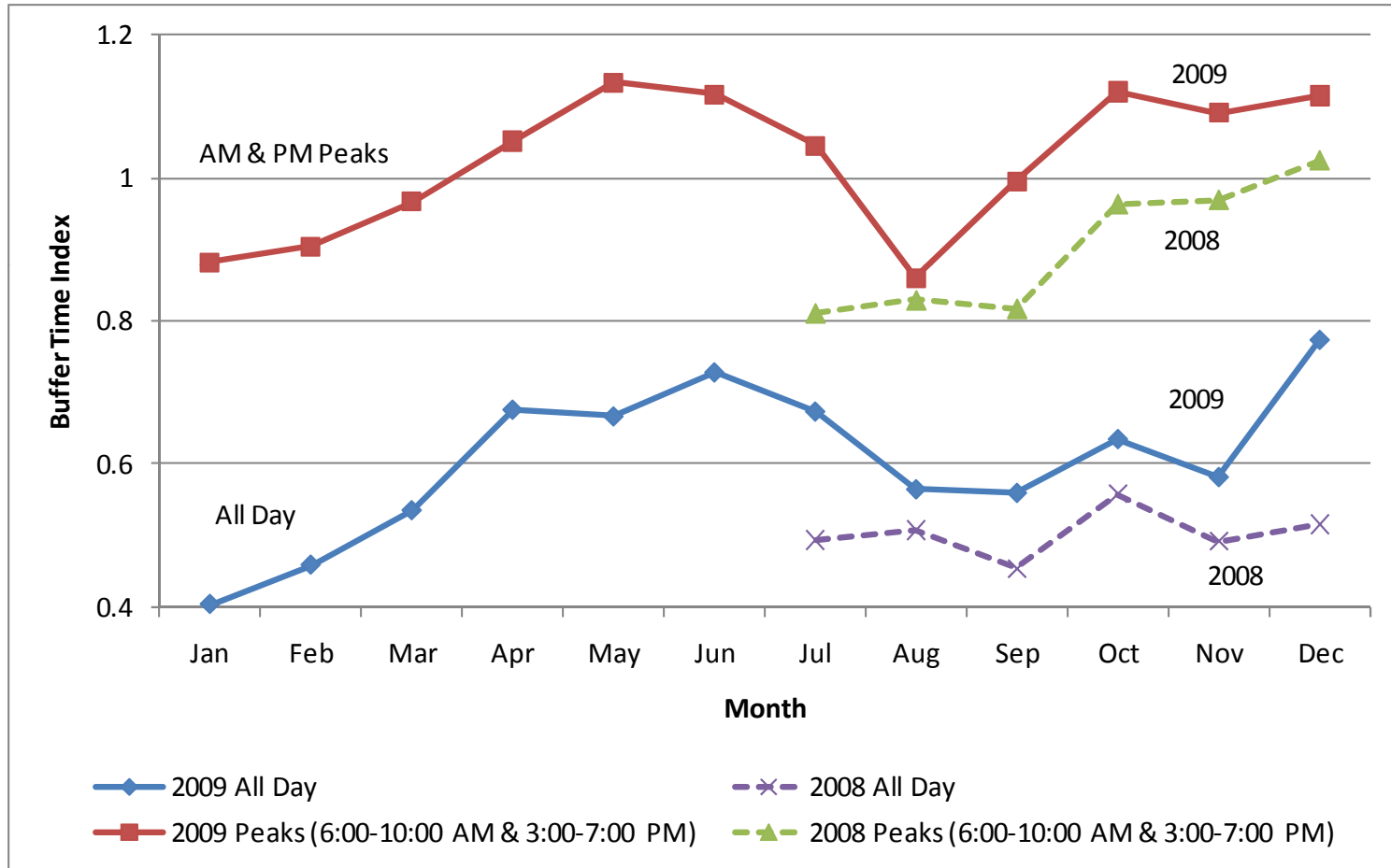






# Buffer Time Index

Planning time index =  $(95^{\text{th}} \text{ percentile travel} - \text{average travel time}) / \text{Average travel time}$

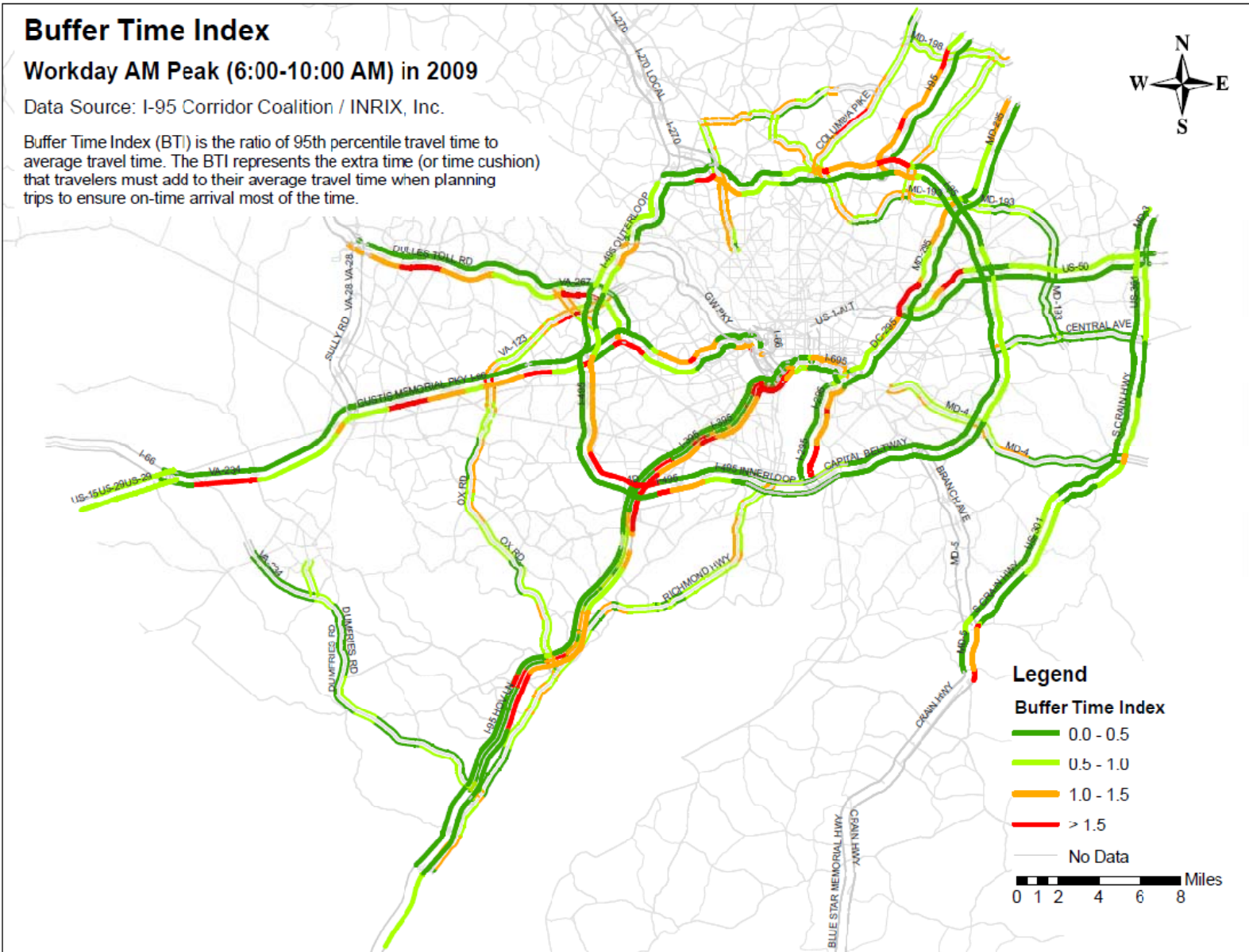


# Buffer Time Index

## Workday AM Peak (6:00-10:00 AM) in 2009

Data Source: I-95 Corridor Coalition / INRIX, Inc.

Buffer Time Index (BTI) is the ratio of 95th percentile travel time to average travel time. The BTI represents the extra time (or time cushion) that travelers must add to their average travel time when planning trips to ensure on-time arrival most of the time.



# Additional Key Findings: INRIX Data(Limited Trial Data Sample)

- Congestion varies seasonally and daily in 2009 on the sampled freeways
  - Most congested and unreliable month: June
  - Least congested and most reliable month: January
  - Most congested and unreliable AM hour: Tuesday 8-9 AM
  - Most congested PM hour: Friday 4-5 PM
  - Most unreliable PM hour: Friday 5-6 PM
  - Congestion kept increasing from January to June, while fluctuated in the 2<sup>nd</sup> half of 2009
- Travel time reliability has been examined in the CMP for the first time
  - On average there was a 13% decrease of travel time reliability from the 2<sup>nd</sup> half of 2008 to the 2<sup>nd</sup> half of 2009

# Thoughts for the Future

- Try to get full coverage for the region
- Quarterly snapshot of regional congestion
- Travel time reliability tour analysis
- Combine probe data and sensor data