

**Item #3**  
Commuter Connections  
May 20, 2014

National Capital Region  
**Congestion Report**  
4th Quarter 2013

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Commuter Connections Subcommittee  
May 20, 2014

# Context

- Congestion monitoring activities
  - Aerial photography survey of freeways
  - Private sector probe-based traffic monitoring:
    - I-95 Vehicle Probe Project/INRIX data
    - HERE data (National Performance Management Research Data Set procured by FHWA)
  - Vehicle volumes in the Regional Transportation Data Clearinghouse (RTDC)
  - Others (e.g., HOV surveys, cordon counts)
- Congestion Management Process (CMP) products:
  - Biennial CMP Technical Report
  - **Proposed quarterly NCR Congestion Report ←**
  - Other studies (e.g., after-fact analysis, strategies reviews)

# Motivation

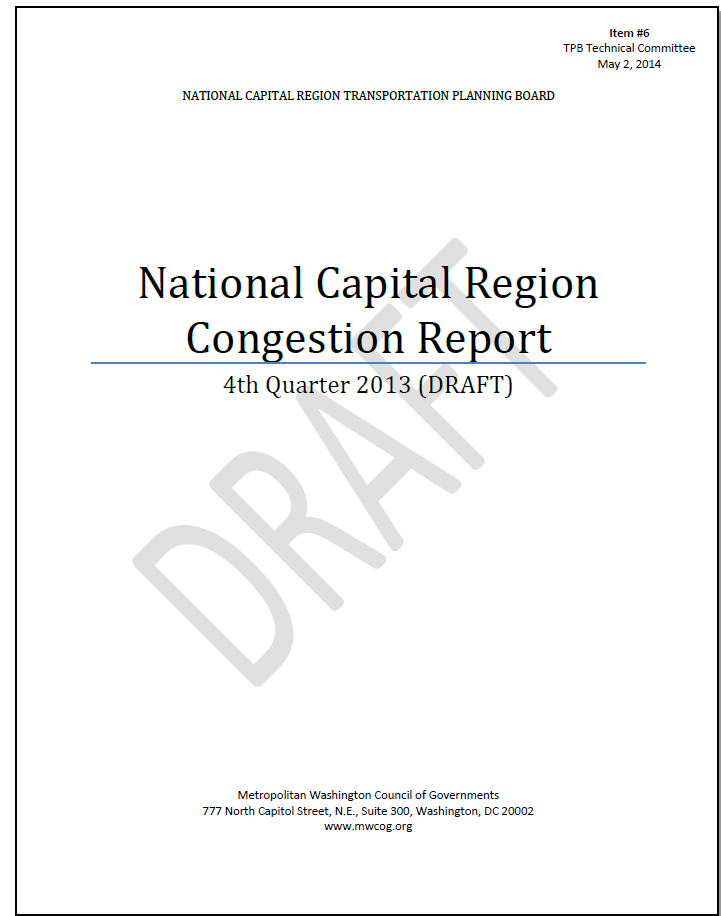
- Timely reporting of congestion and related information
  - A quarterly updated report focusing on the most recent quarter
  - To be posted on [www.mwcog.org/congestion](http://www.mwcog.org/congestion)
  - Enabled by emerging data and analysis tools
- Examine reliability and non-recurring congestion for recent incidents/occurrences, in association with relevant congestion management strategies
- Preparations for MAP-21 performance reporting
  - Traffic congestion
  - Performance of the Interstate system
  - Performance of the non-Interstate NHS
  - Freight movement on the Interstate system

# Keep in mind...

- Focus on a quarter, not annual average
- For quick turnaround, third-party data and analysis tools are employed
  - Data: I-95 Vehicle Probe Project (VPP)/INRIX data
  - Tools: VPP Suite, developed by CATT Lab of UMD
- Performance measures to be updated with forthcoming MAP-21 rulemakings

# The Report

- Congestion – Travel Time Index
- Reliability – Planning Time Index
- Top 10 Bottlenecks
- Congestion Maps
- Quarterly Spotlight
- Background



# Congestion

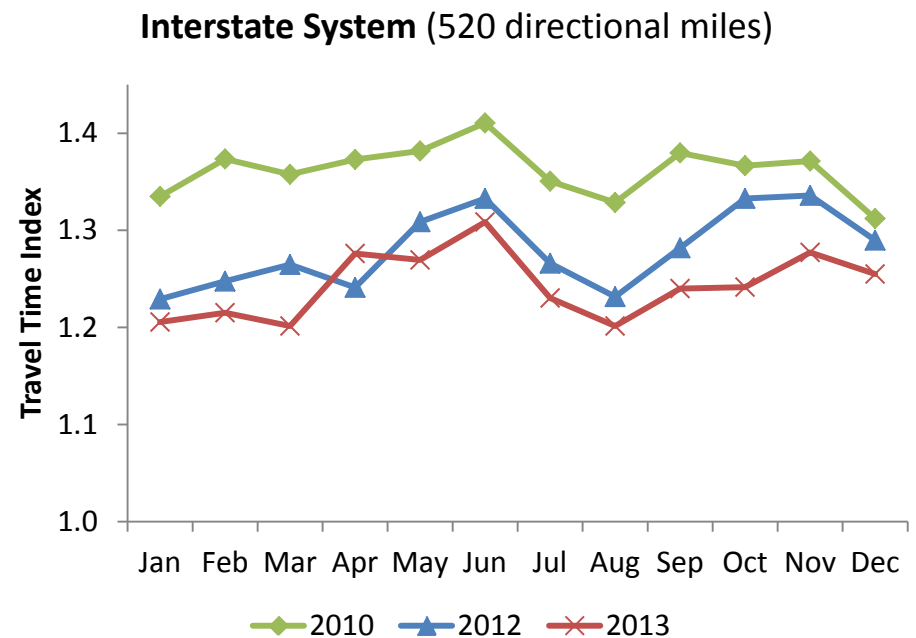
## – Travel Time Index (TTI)

- Regional average TTI
  - for two time periods:
    - Current quarter
    - Trailing 4 quarters
  - by four highway categories:
    - Interstate system (shown)
    - Non-Interstate NHS
    - Non-NHS
    - All roads
- Charts of monthly TTI
- Definition of TTI

### Interstate System

TTI 4<sup>th</sup> Quarter 2013: 1.26 ↓4.7% or 0.06<sup>1</sup>

TTI 2013: 1.24 ↓2.9% or 0.04<sup>2</sup>



<sup>1</sup> Compared to 4<sup>th</sup> quarter 2012; <sup>2</sup> Compared to 2012.

# Reliability

## – Planning Time Index (PTI)

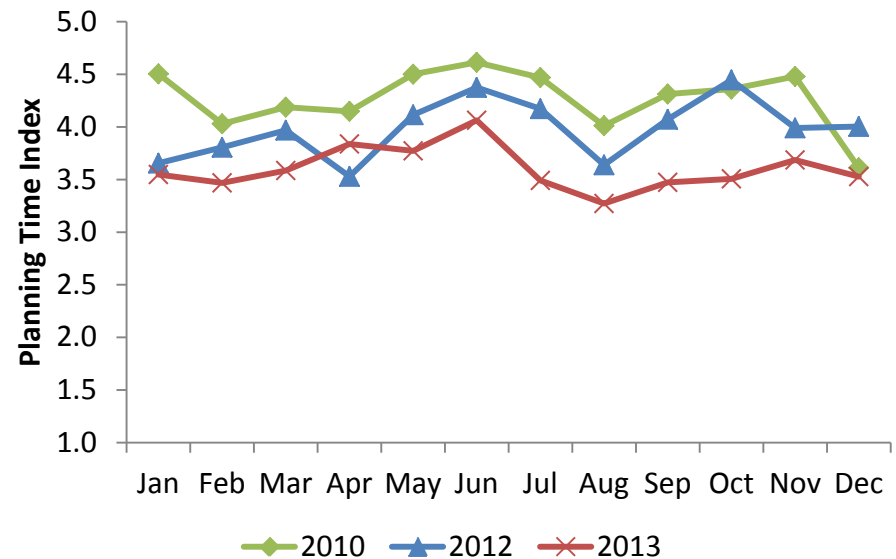
- Regional average PTI
  - for two time periods:
    - Current quarter
    - Trailing 4 quarters
  - by four highway categories:
    - Interstate system (shown)
    - Non-Interstate NHS
    - Non-NHS
    - All roads
- Charts of monthly PTI
- Definition of PTI

### Interstate System

PTI 4<sup>th</sup> Quarter 2013: 3.57 ↓13.8% or 0.57<sup>1</sup>

PTI 2013: 3.60 ↓9.5% or 0.38<sup>2</sup>

Interstate System (520 directional miles)



<sup>1</sup> Compared to 4<sup>th</sup> quarter 2012; <sup>2</sup> Compared to 2012.

# Top 10 Bottlenecks (1/2)

(in current quarter)

Rank	Location	Average duration	Average max length (miles)	Occurrences	Impact factor*
1	I-66 W @ VA-234/Exit 47	2 h 40 m	11.33	122	221,249
2	I-270 Spur S @ I-270	1 h 49 m	7.35	241	192,962
3	I-66 E @ I-495/Exit 64	2 h 5 m	5.18	249	161,128
4	I-495 CW @ American Legion Bridge	2 h 47 m	4.63	190	146,875
5	I-395 N @ 2nd St	2 h 34 m	6.88	129	136,752
6	I-495 CCW @ I-66/Exit 9	2 h 59 m	8.39	90	135,236
7	I-495 CW @ MD-214/Central Ave/Exit 15	2 h 3 m	8.52	129	135,225
8	I-66 E @ Vaden Dr/Exit 62	1 h 48 m	5.21	156	87,859
9	I-270 Local N @ I-270/Washington National Pike	2 h 6 m	4.28	159	85,730
10	I-95 N @ I-395	1 h 38 m	7.94	109	84,822

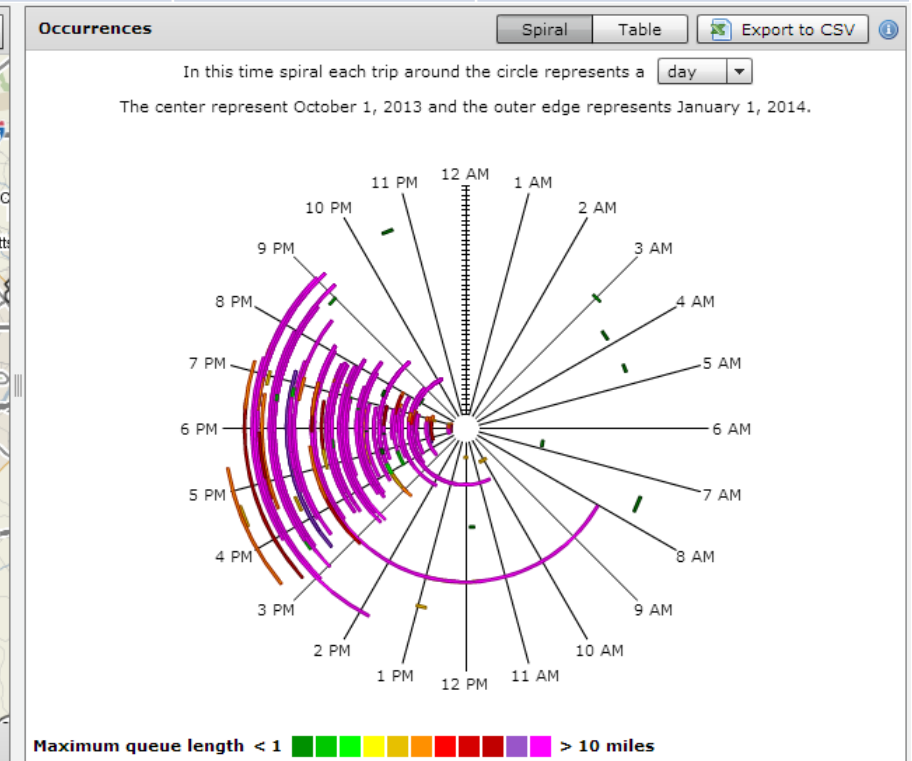
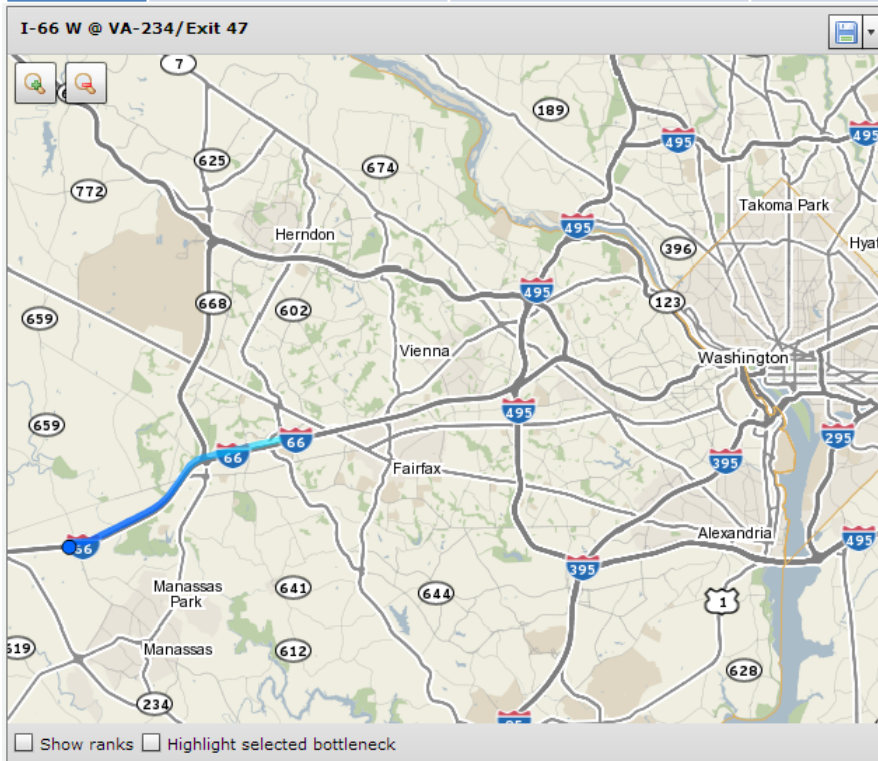
\* The Impact Factor of a bottleneck is simply the product of the Average Duration (minutes), Average Max Length (miles) and the number of occurrences.



# Top 10 Bottlenecks (2/2)

(in current quarter)

Rank	Location	Average duration	Average max length (miles)	Occurrences	Impact factor*
1	I-66 W @ VA-234/Exit 47	2 h 40 m	11.33	122	221,249



\* The Impact Factor of a bottleneck is simply the product of the Average Duration (minutes), Average Max Length (miles) and the number of occurrences.

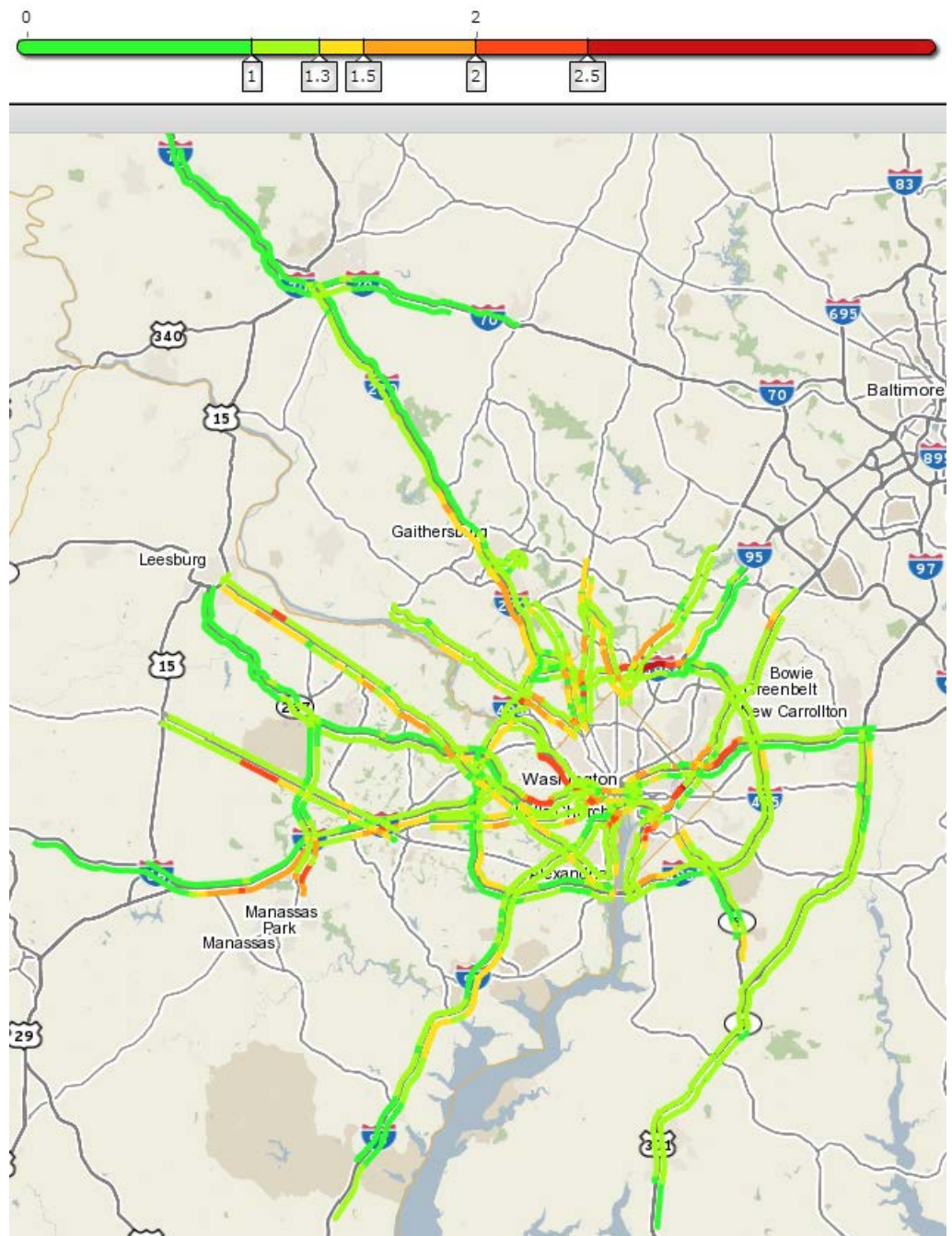
# Congestion Maps

## - AM Peak Hour

Travel Time Index (TTI) during weekday 8:00-9:00 am in current quarter:

- TTI = 1.0: Free flow
- $1.0 < \text{TTI} \leq 1.3$ : Minimal
- $1.3 < \text{TTI} \leq 1.5$ : Minor
- $1.5 < \text{TTI} \leq 2.0$ : Moderate
- $2.0 < \text{TTI} \leq 2.5$ : Heavy
- $2.5 < \text{TTI}$ : Severe

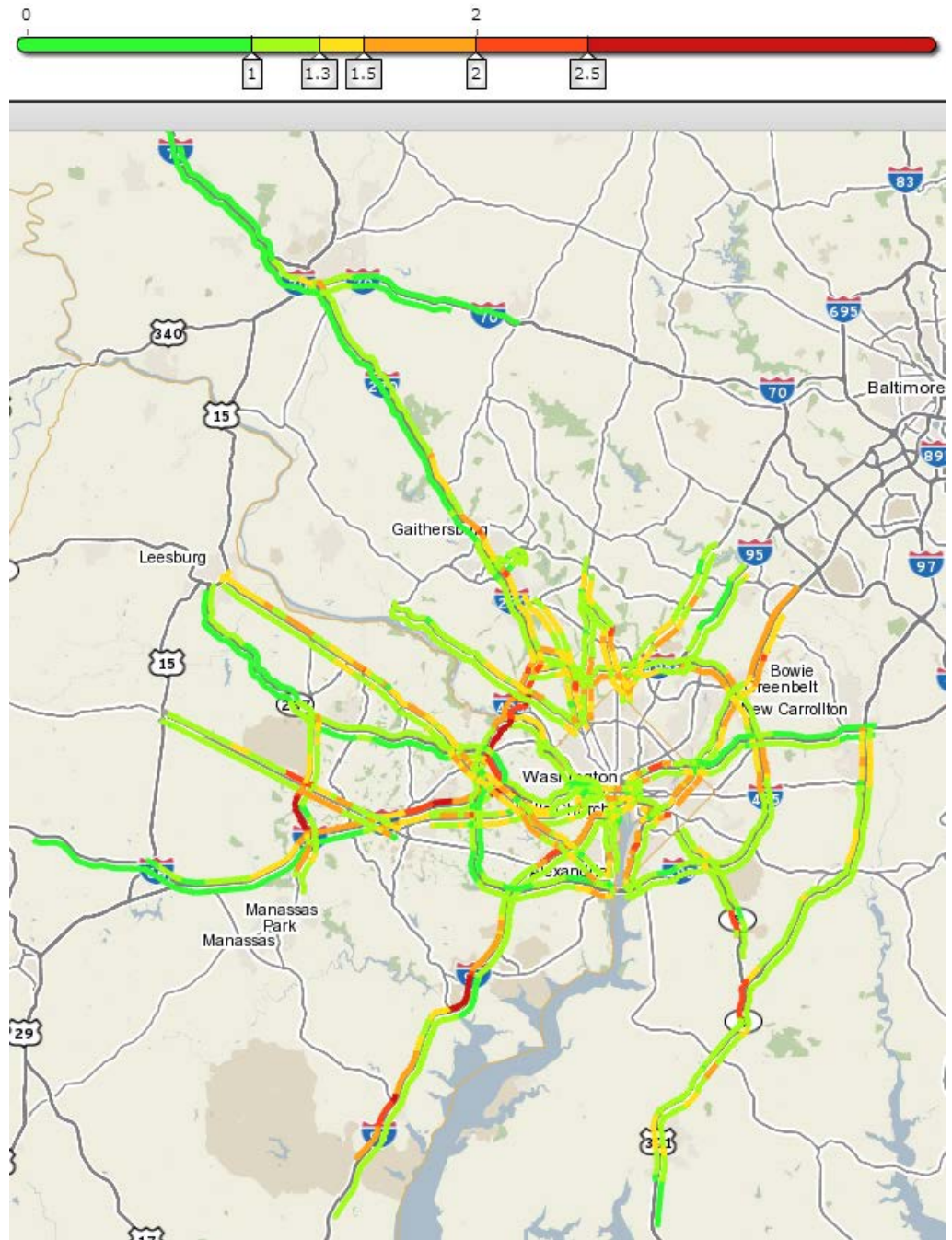
TTI was chosen over Speed in visualization since the latter cannot reflect the differences in speed limits on different roads.



# Congestion Maps

- PM Peak Hour

Travel Time Index during  
weekday 5:00-6:00 pm in  
current quarter

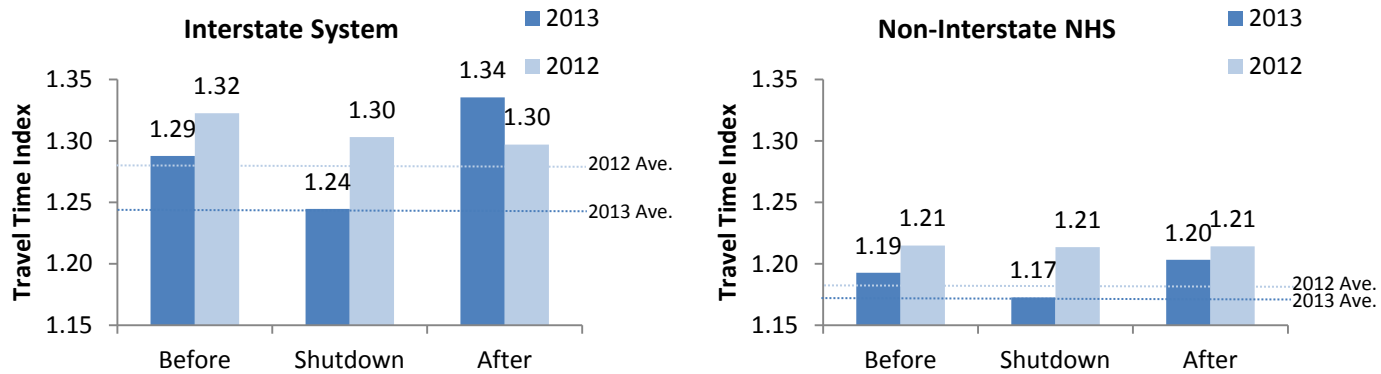




# Quarterly Spotlight

(Transportation Impacts of the 2013 Federal Government Shutdown)

## Travel Time Index in “Before”, “Shutdown” and “After”



	Changes in Travel Time Index from “Before” Weekdays to “Shutdown” Weekdays	
	2013	2012
<b>Interstate System</b>	-3.3%	-1.5%
<b>Non-Interstate NHS</b>	-1.7%	-0.10%
<b>Overall (NHS)</b>	-2.0%	-0.4%

# More details in the report

- Definitions and Methodologies
  - Travel Time Index
  - Planning Time Index
  - National Highway System (NHS), All Roads
  - Bottleneck tracking
  - Congestion maps

# Next Steps

- Reviewed at the TPB Tech May 2 meeting
- Comments are always welcomed
  - Comments to be addressed to COG/TPB staff  
Wenjing Pu ([wpu@mwkog.org](mailto:wpu@mwkog.org))
- Post the 4<sup>th</sup> Quarter 2013 Report online at [www.mwkog.org/congestion](http://www.mwkog.org/congestion)
- With finalized format and process, will produce the next report (1<sup>st</sup> Quarter 2014) and post online soon