

Congestion-Related Findings from the Draft 2012 CMP Tech Report

Travel Forecasting Subcommittee

July 20, 2012

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COG/TPB Staff

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

Acknowledgements

Erin Morrow for working on Chapter 3 and others

Daivamani Sivasailam for working on Chapter 4

Andrew Meese for his oversight and review

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Others who provided input to this document

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
- **MAP-21 retains the CMP requirement while enhances congestion and reliability monitoring and reporting**
- 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
- CMP Technical Reports were released in 2008 and 2010
- 2010 Federal Certification of the TPB Process commended the CMP for its detailed documentation efforts in the 2010 CMP Technical Report
- Draft 2012 CMP Technical Report now ready for review

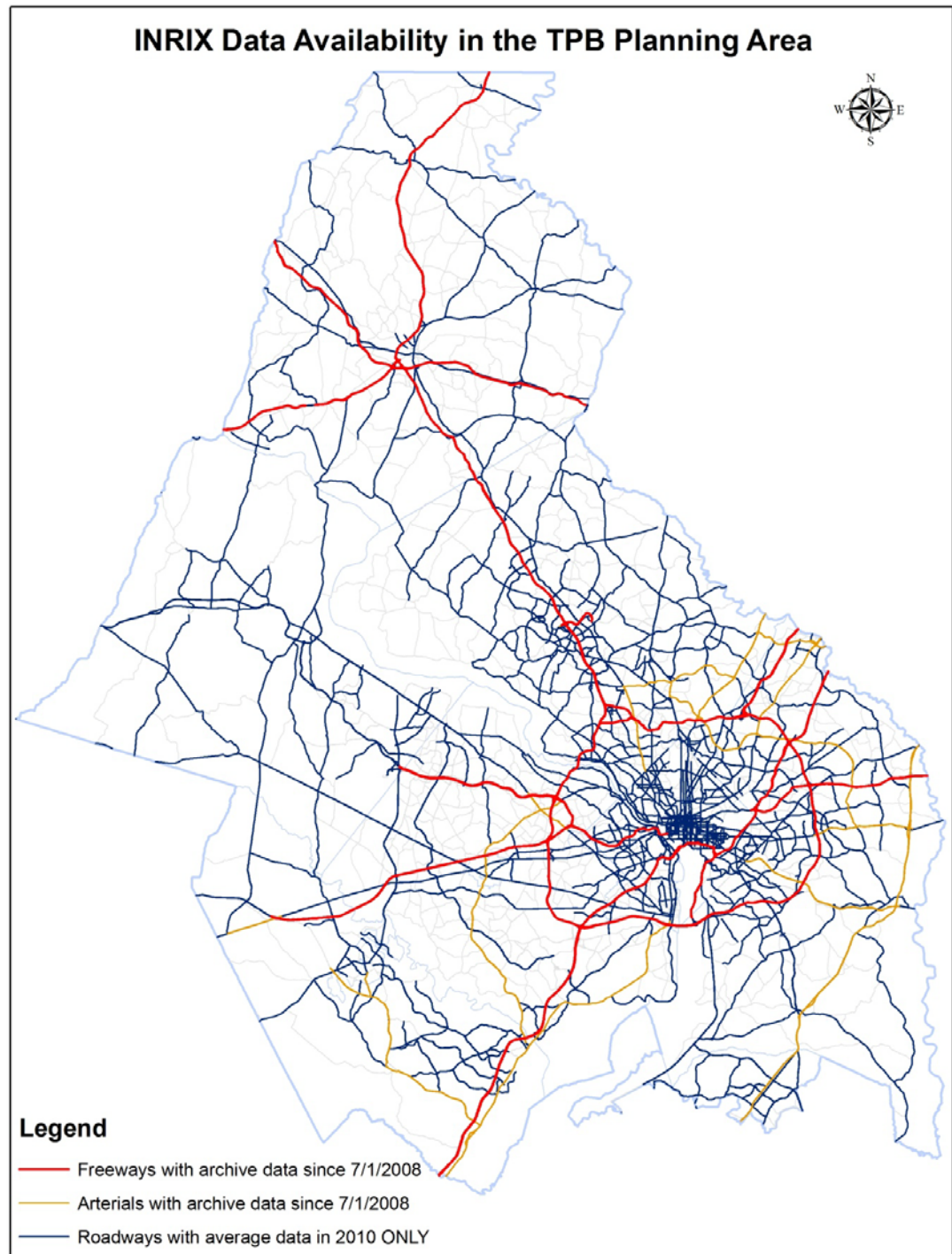
MAP-21 New Requirements

- MAP-21 was signed into law on July 6, 2012
- Establishment of the **National Highway Performance Program**
- **Congestion Reduction and System Reliability** are two of the seven “National Goals”
- Monitoring (data sources)
- Reporting (performance measures)
- Target (progress)

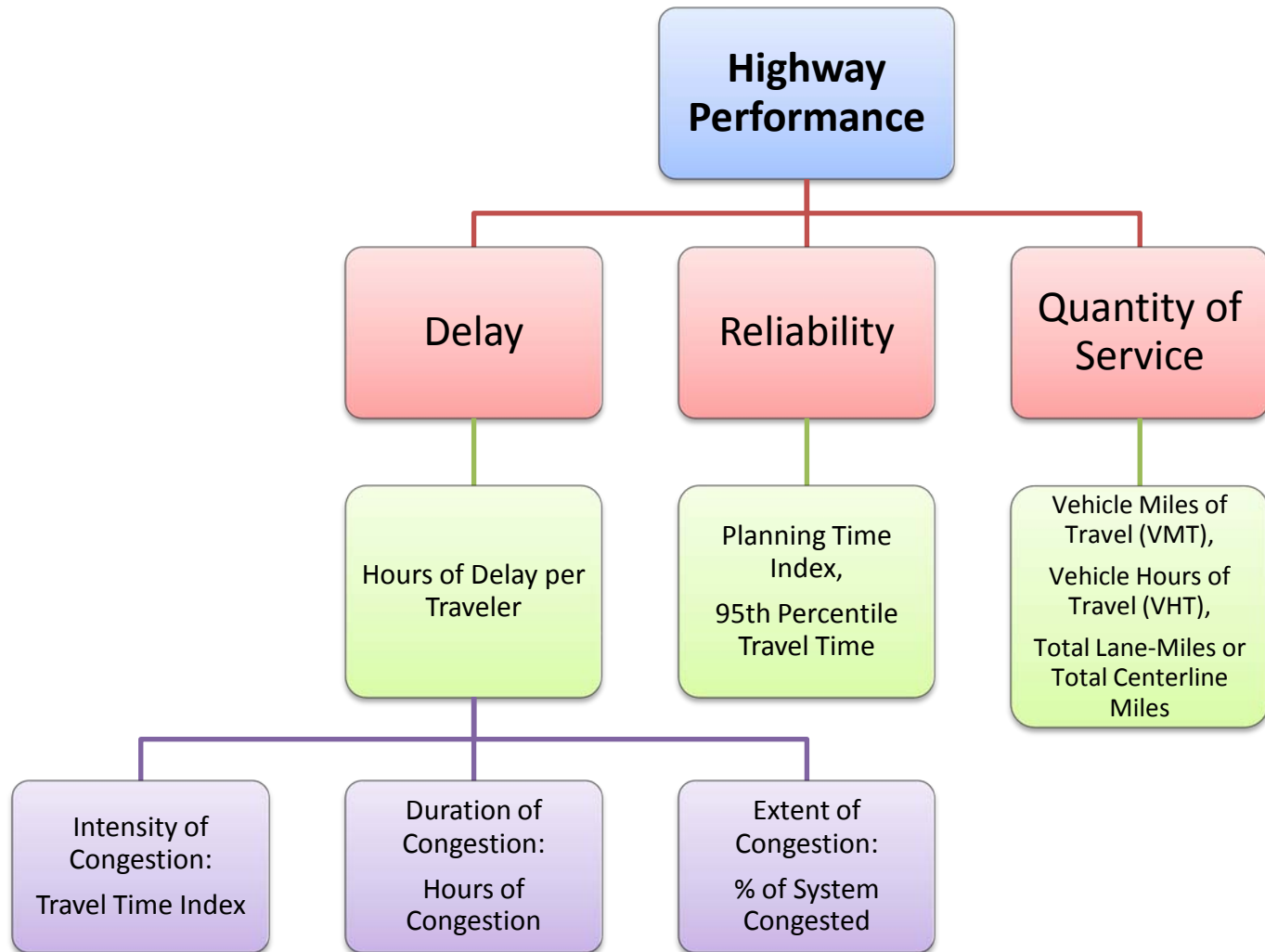
Connections between the CMP and the Travel Forecasting Subcommittee

- 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)
 - MOITS Policy Task Force and Technical Subcommittee (operations strategies, incident management and non-recurring congestion)
- The CMP Report compiles a variety of congestion information (Chapter 2: State of Congestion)
- Updated congestion and reliability analyses from the I-95 Corridor Coalition/INRIX data and related volume data

INRIX Data Availability as of 12/31/2011

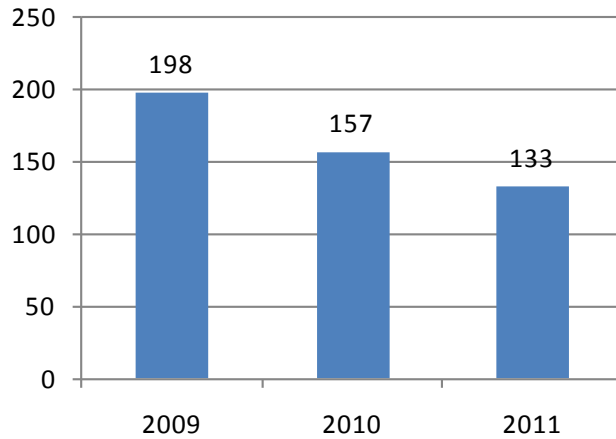


Hierarchical Highway Performance Measures

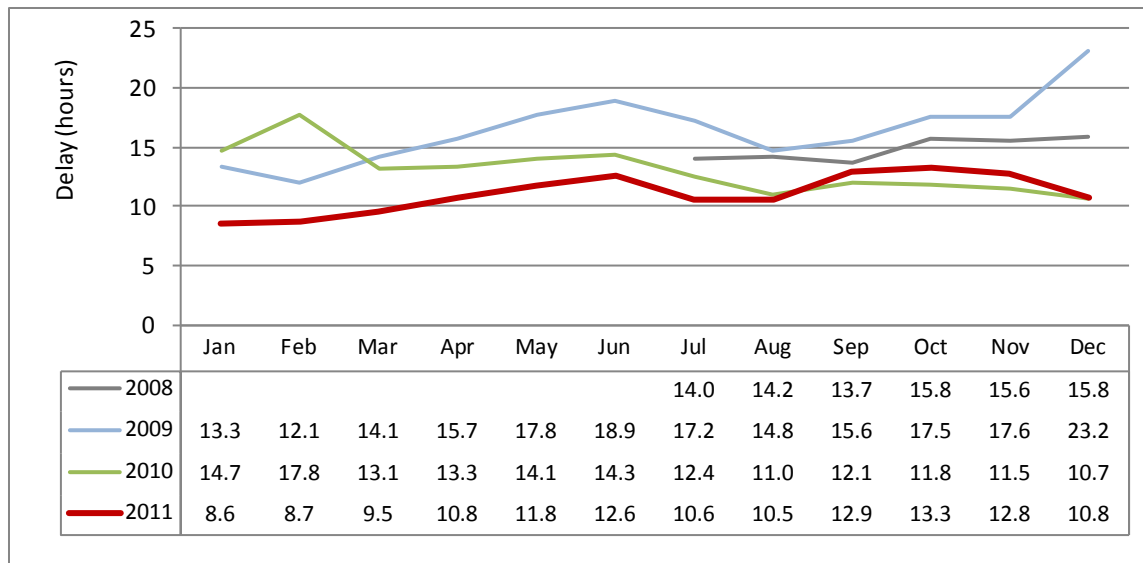
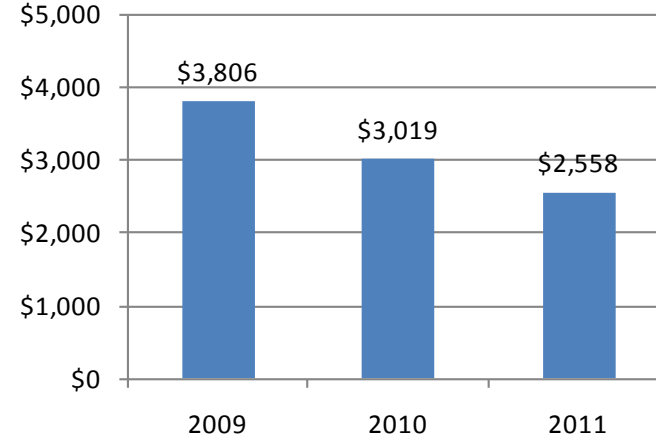


Freeway travelers on average experienced decreasing delays from 2009 to 2011

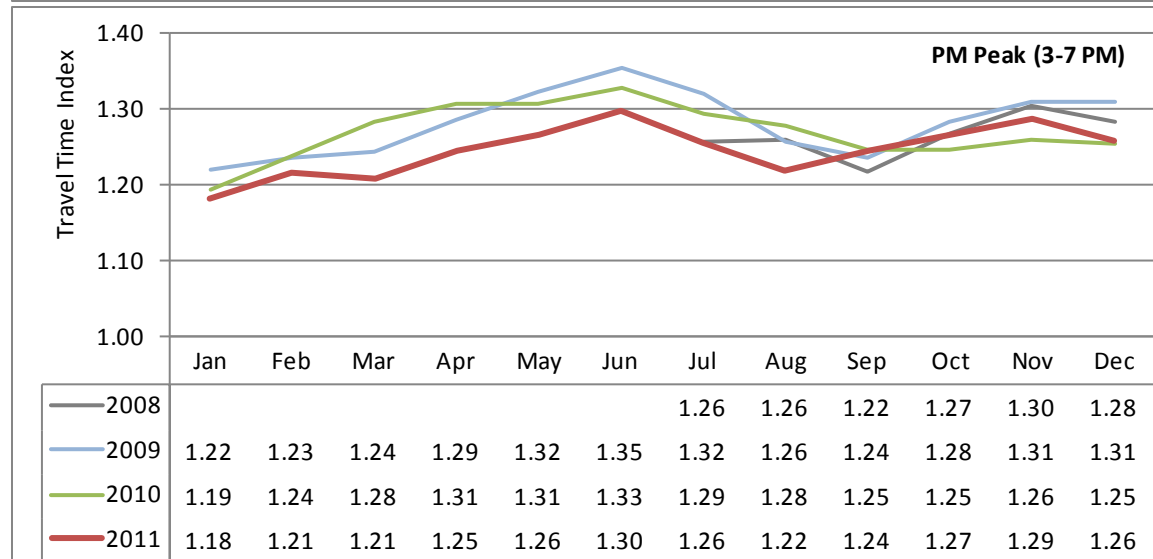
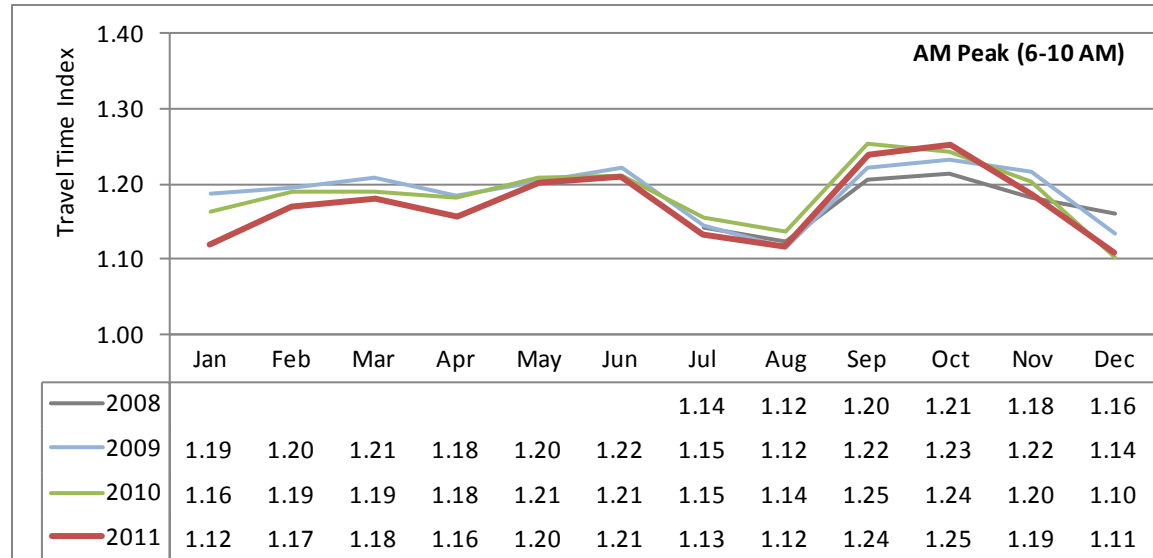
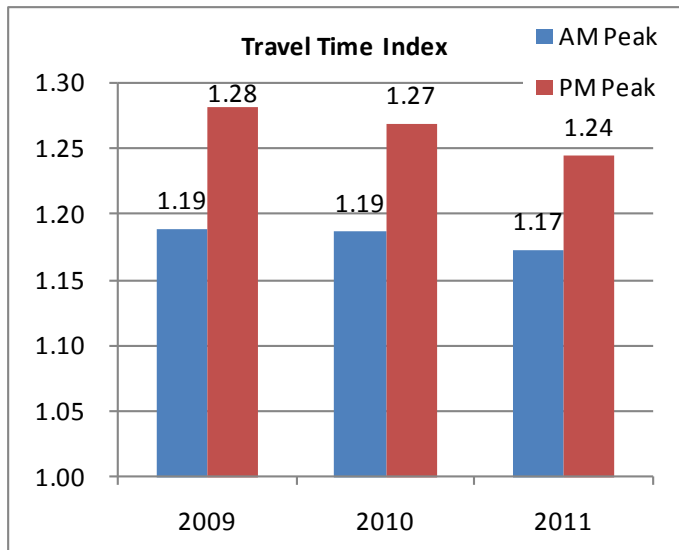
Annual Hours of Delay per Traveler (hours)



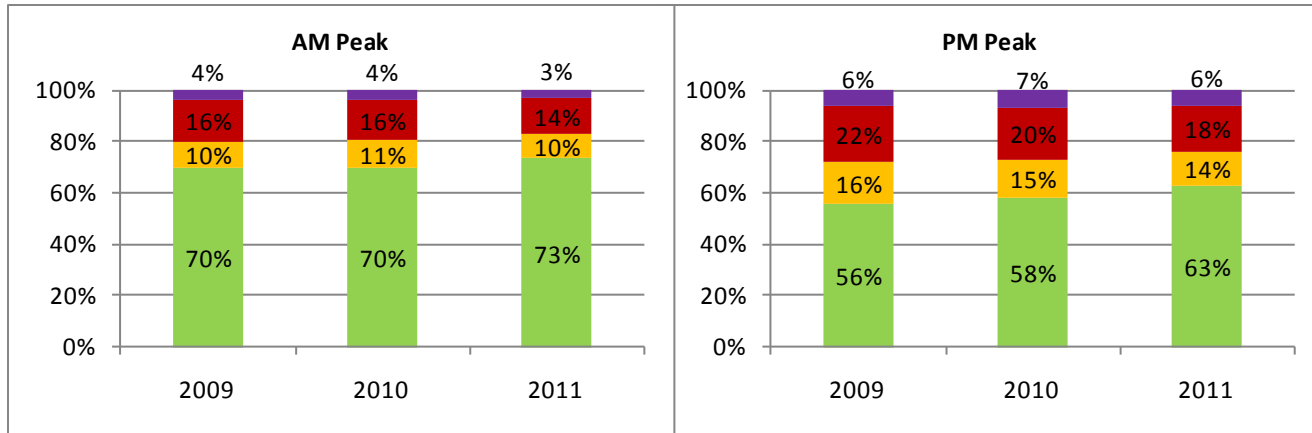
Annual Cost of Delay per Traveler (2011 \$)
(1 hour = \$19.24)



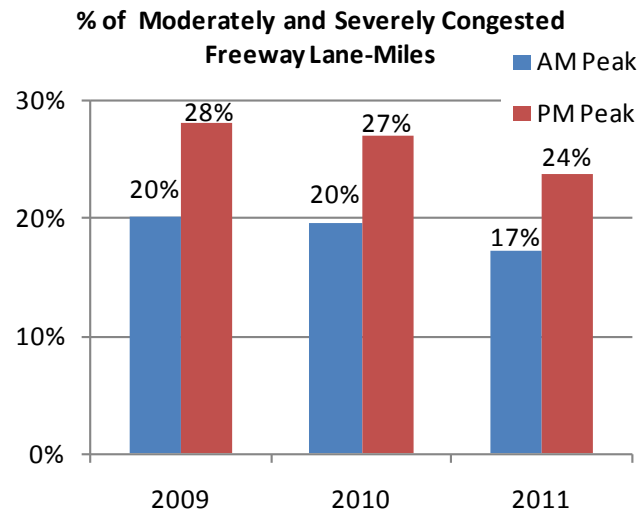
Congestion intensity reduced in AM and PM peaks



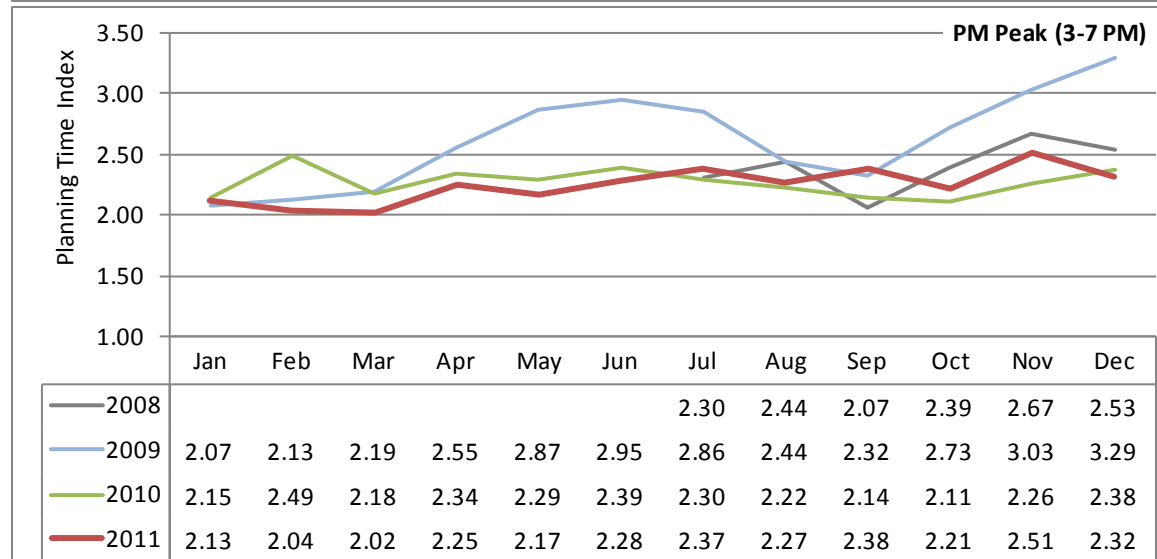
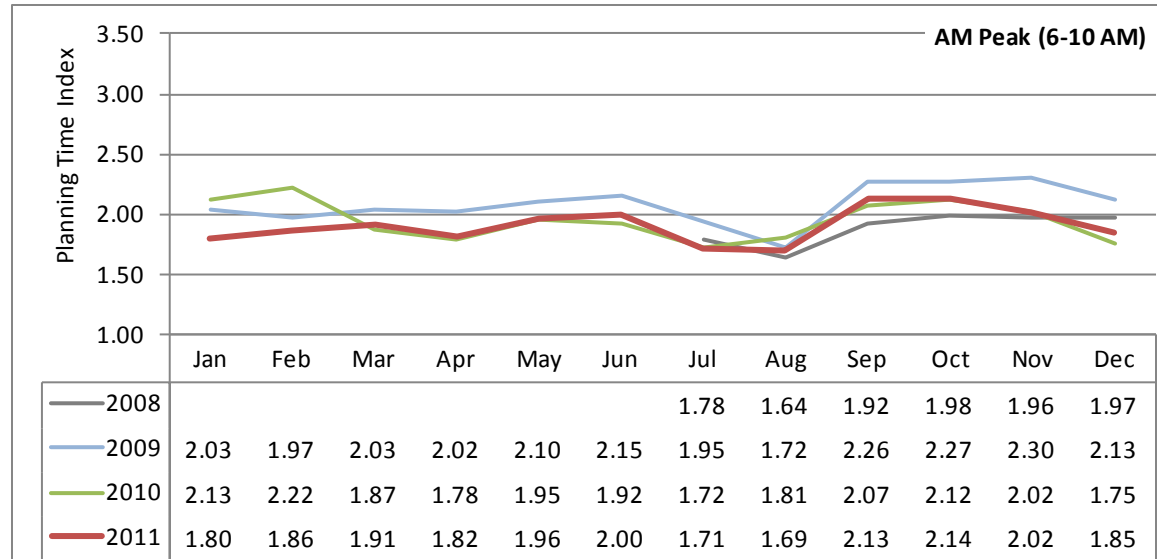
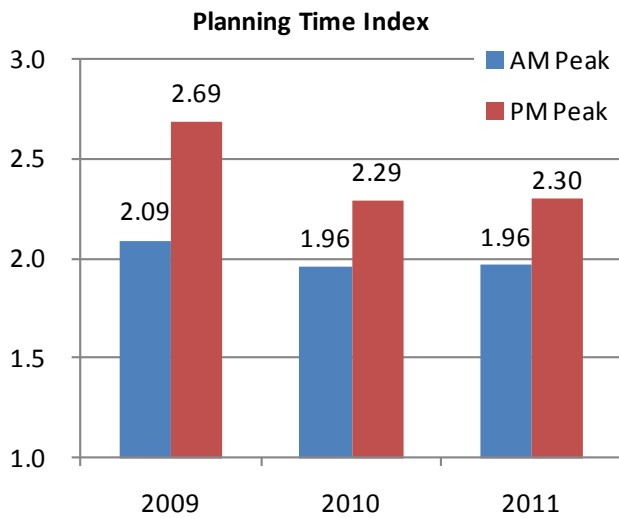
Spatial extent of congestion reduced in AM and PM peaks



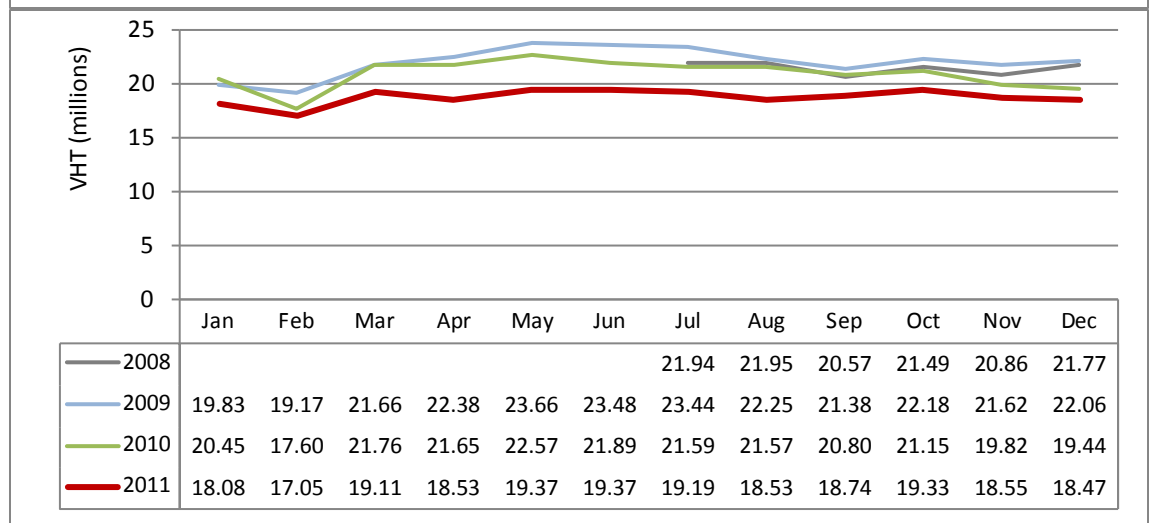
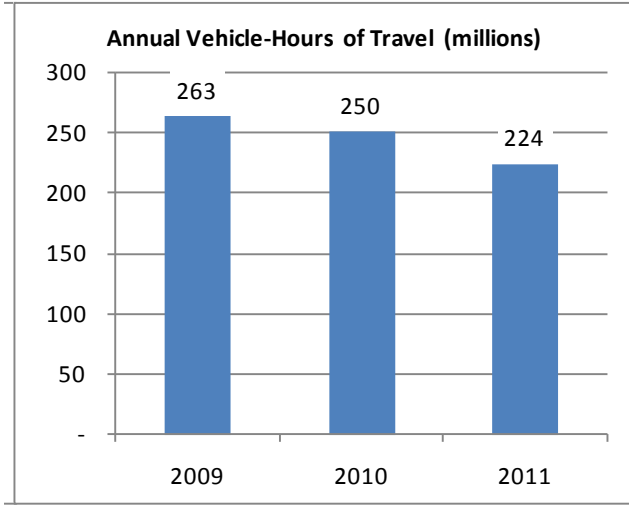
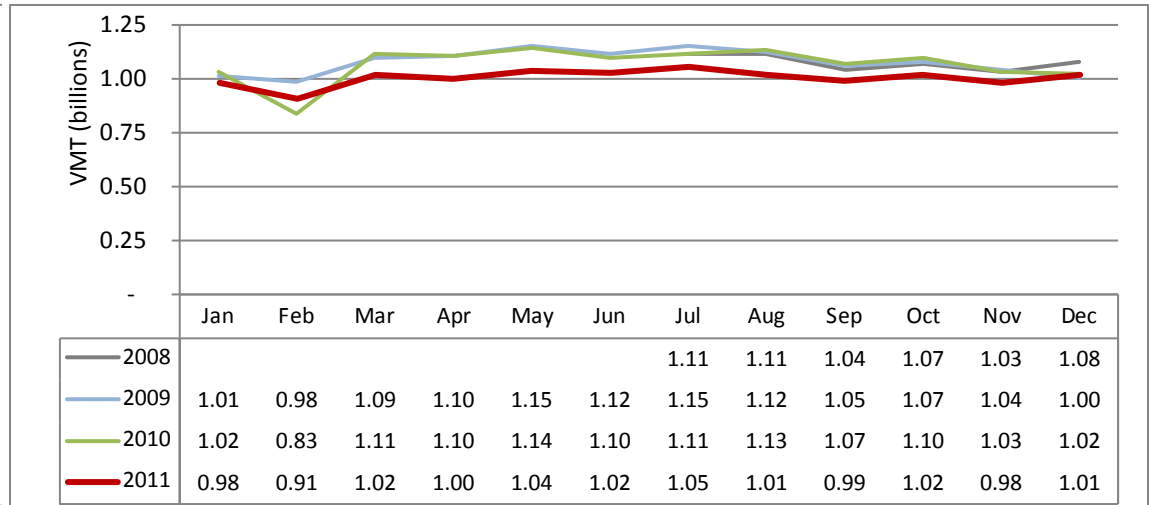
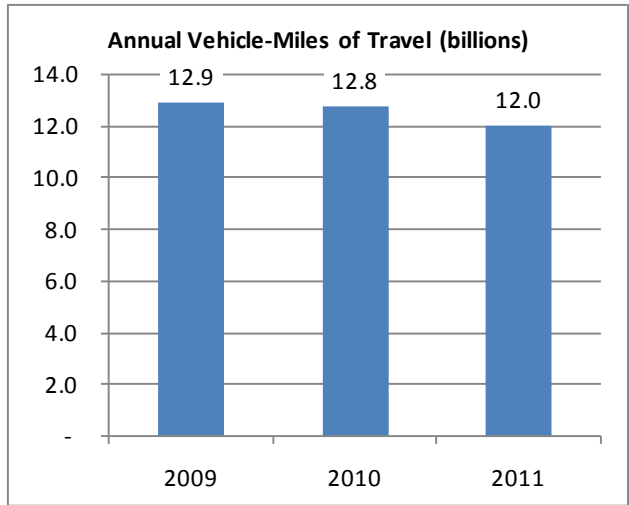
■ Uncongested (TTI < 1.15) ■ Light (1.15 ≤ TTI < 1.30) ■ Moderate (1.30 ≤ TTI < 2.00) ■ Severe (TTI ≥ 2.00)



Travel time reliability improved in the AM and PM peaks



... due to slight reduction in VMT and VHT?



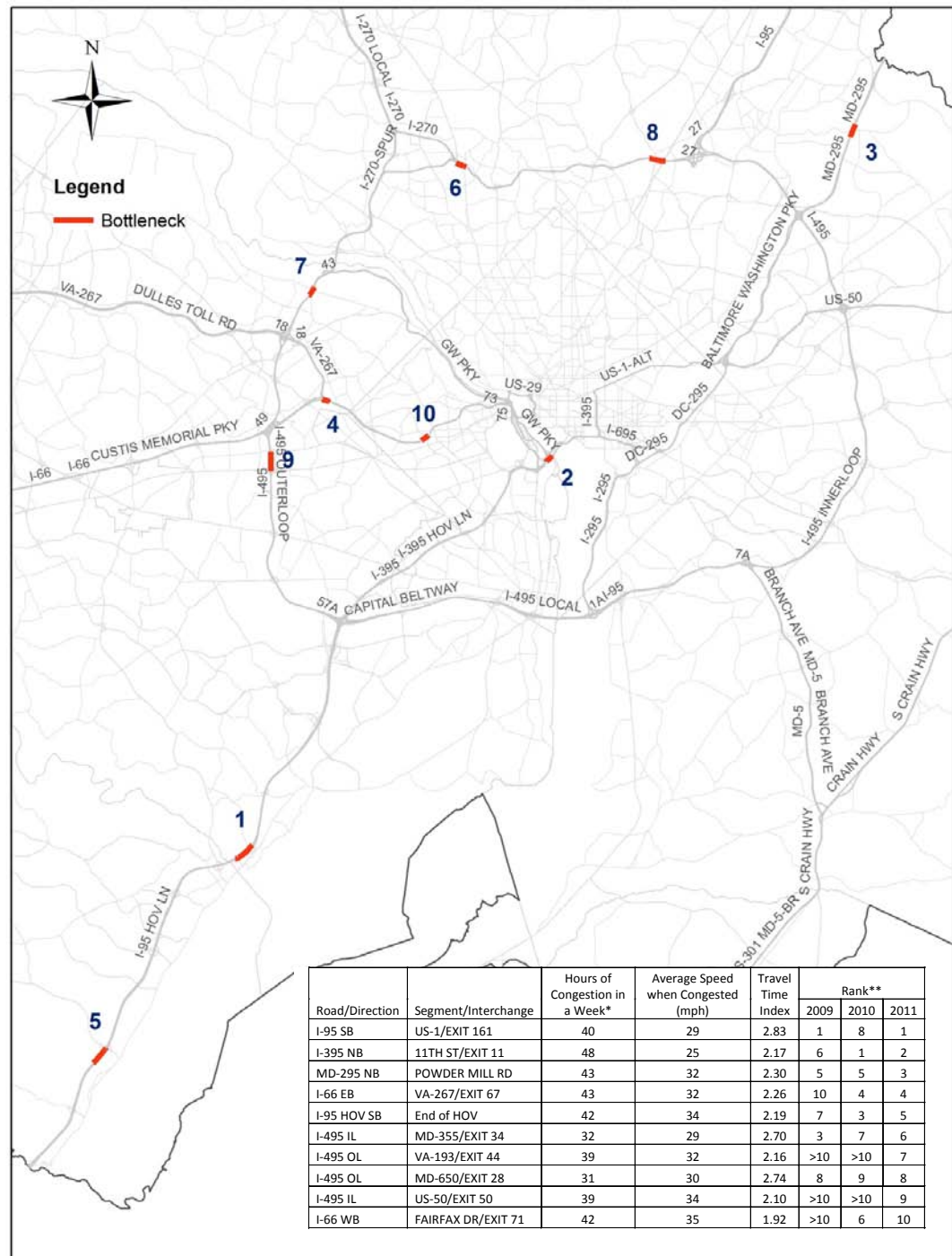
Major Commute Routes (AM Peak)

Route	Free Flow Travel Length (miles)	Free Flow Travel Time (min)	Beginning of Most Congested 5 Minutes			Average Travel Time in Peak Period (min)			Reliable (95th) Travel Time* in Peak Period (min)			2011 Change in Average Travel Time (min)		2011 Change in 95th Travel Time (min)	
			2009	2010	2011	2009	2010	2011	2009	2010	2011	vs. 2009	vs. 2010	vs. 2009	vs. 2010
I-270 SB from I-70 to I-370	23	21	7:35	6:50	6:45	36	34	31	60	56	50	-5	-3	-9	-5
I-270 SB from I-370 to I-495	10	9	8:30	8:05	7:50	17	17	15	32	31	27	-2	-2	-5	-3
VA-267 EB from VA-28 to I-66	15	14	7:55	7:50	8:00	24	22	21	43	37	34	-3	-2	-9	-3
I-66 EB from VA-28 to I-495	11	11	7:45	7:35	7:40	28	23	21	47	38	33	-7	-2	-15	-5
I-66 EB from I-495 to TR Bridge	10	9	9:25	9:25	9:30	15	15	15	24	23	23	0	0	-1	0
I-95 NB from VA-234 to I-495	19	18	6:45	6:35	6:35	41	32	27	76	56	54	-14	-4	-22	-1
I-95 NB HOV from VA-234 to I-495	18	16	7:55	7:45	7:35	25	19	18	39	23	22	-7	-1	-16	-1
I-395 NB from I-495 to Ohio Dr	10	10	7:55	7:50	7:55	26	26	25	49	50	49	-1	-2	0	-1
I-395 NB HOV from I-495 to Ohio Dr	11	10	7:55	7:50	7:45	21	18	15	39	26	23	-6	-3	-16	-4
US-50 WB from US-301 to MD-295	14	13	7:55	7:55	7:55	20	19	18	32	29	29	-1	0	-3	0
MD-295 SB from MD-198 to US-50	15	14	7:55	7:50	7:55	22	21	18	38	37	31	-4	-4	-7	-6
I-95 SB from MD-198 to I-495	8	8	7:55	7:50	7:50	12	12	12	24	24	24	0	-1	0	0
I-495 IL from I-270 to I-95	9	8	8:00	8:45	8:00	10	10	9	12	13	11	-1	-1	-1	-1
I-495 IL from I-95 to US-50	8	8	8:00	8:50	8:40	9	9	9	11	10	11	0	1	0	1
I-495 IL from US-50 to I-95	26	24	8:10	8:05	8:05	29	29	29	42	40	38	-1	-1	-4	-2
I-495 IL from I-95 to I-66	7	7	8:40	8:45	8:40	16	16	14	28	27	25	-1	-2	-3	-2
I-495 IL from I-66 to I-270	13	13	8:45	8:40	8:40	16	16	15	26	25	21	-2	-2	-5	-4
I-495 OL from I-270 to I-66	13	13	9:05	8:55	8:55	16	16	16	21	24	25	1	0	4	1
I-495 OL from I-66 to I-95	9	8	8:15	8:25	7:55	9	9	9	11	10	10	0	0	-1	0
I-495 OL from I-95 to US-50	24	23	8:30	8:30	8:20	28	28	28	37	39	40	-1	0	3	1
I-495 OL from US-50 to I-95	8	7	8:30	8:30	8:25	9	9	8	13	12	13	0	0	0	1
I-495 OL from I-95 to I-270	10	10	8:20	8:30	7:55	23	23	22	39	39	38	-1	-1	-1	-1

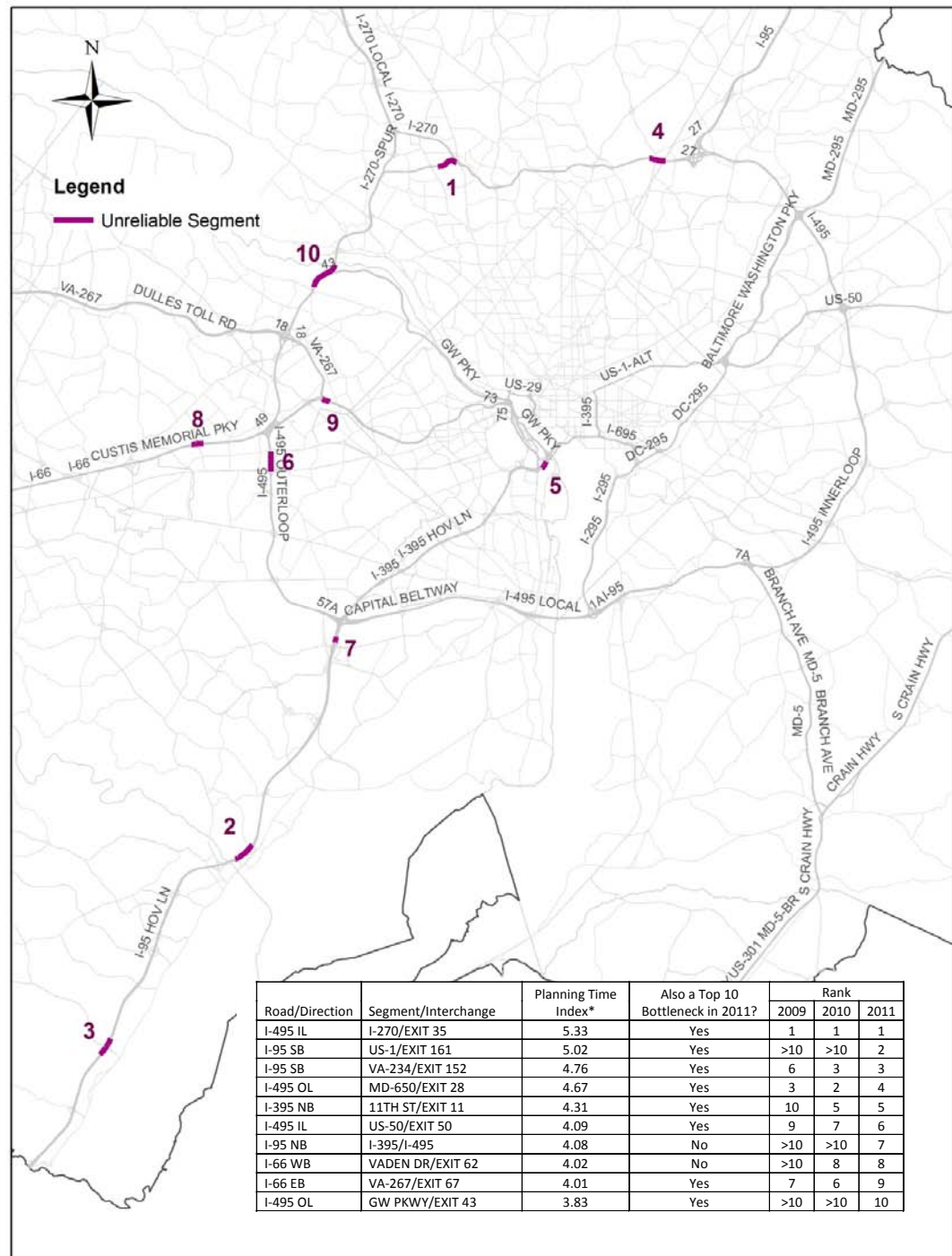
Major Commute Routes (PM Peak)

Route	Free Flow Travel Length (miles)	Free Flow Travel Time (min)	Beginning of Most Congested 5 Minutes			Average Travel Time in Peak Period (min)			Reliable (95th) Travel Time* in Peak Period (min)			2011 Change in Average Travel Time (min)		2011 Change in 95th Travel Time (min)	
			2009	2010	2011	2009	2010	2011	2009	2010	2011	vs. 2009	vs. 2010	vs. 2009	vs. 2010
I-270 NB from I-495 to I-370	9	9	17:50	17:40	17:50	14	14	12	25	22	20	-2	-2	-4	-2
I-270 NB from I-370 to I-70	24	22	17:30	17:35	17:30	36	33	32	56	51	49	-3	-1	-7	-2
VA-267 WB from I-66 to VA-28	15	14	17:55	17:55	17:50	18	17	16	26	23	20	-2	-1	-5	-2
I-66 WB from TR Bridge to I-495	10	10	15:50	15:00	15:45	16	15	16	26	25	27	0	1	1	2
I-66 WB from I-495 to VA-28	12	11	17:50	17:40	17:35	20	22	19	31	34	33	-1	-3	2	-1
I-95 SB from I-495 to VA-234	19	18	17:30	17:35	17:30	53	49	41	120	107	87	-11	-8	-34	-20
I-95 SB HOV from I-495 to VA-234	18	16	16:40	18:40	18:45	29	23	21	56	33	33	-8	-1	-22	0
I-395 SB from Ohio Dr to I-495	11	11	17:35	17:30	17:35	23	21	19	38	32	29	-4	-2	-9	-2
I-395 SB HOV from Ohio Dr to I-495	11	10	18:25	18:25	18:25	17	14	12	27	17	16	-4	-2	-11	-1
US-50 EB from MD-295 to US-301	14	13	17:30	17:30	17:25	16	16	15	20	20	19	-1	-1	-1	-1
MD-295 NB from US-50 to MD-198	12	12	17:35	17:45	17:35	31	26	24	52	39	39	-7	-2	-13	0
I-95 NB from I-495 to MD-198	8	7	17:25	17:30	17:25	12	11	10	18	16	17	-1	0	-1	1
I-495 IL from I-270 to I-95	9	8	17:35	17:40	17:40	17	16	15	28	27	24	-2	-1	-3	-3
I-495 IL from I-95 to US-50	8	8	17:40	17:40	17:40	12	12	13	20	19	23	1	1	3	4
I-495 IL from US-50 to I-95	26	24	17:40	17:30	17:35	31	31	29	44	38	37	-2	-2	-7	-2
I-495 IL from I-95 to I-66	7	7	17:50	15:35	15:00	11	10	9	23	19	15	-2	-1	-8	-4
I-495 IL from I-66 to I-270	13	13	17:50	17:40	17:05	45	39	36	90	70	67	-9	-3	-23	-3
I-495 OL from I-270 to I-66	13	13	17:50	17:40	17:05	29	29	29	53	51	53	0	0	0	1
I-495 OL from I-66 to I-95	9	8	17:45	17:55	17:45	11	11	11	14	16	16	0	0	2	-1
I-495 OL from I-95 to US-50	24	23	17:00	17:30	17:30	30	30	29	46	45	46	-1	0	0	1
I-495 OL from US-50 to I-95	8	7	17:45	17:50	17:50	11	10	10	19	17	17	-1	0	-2	0
I-495 OL from I-95 to I-270	10	10	17:55	17:35	17:40	17	17	15	38	33	31	-3	-2	-7	-2

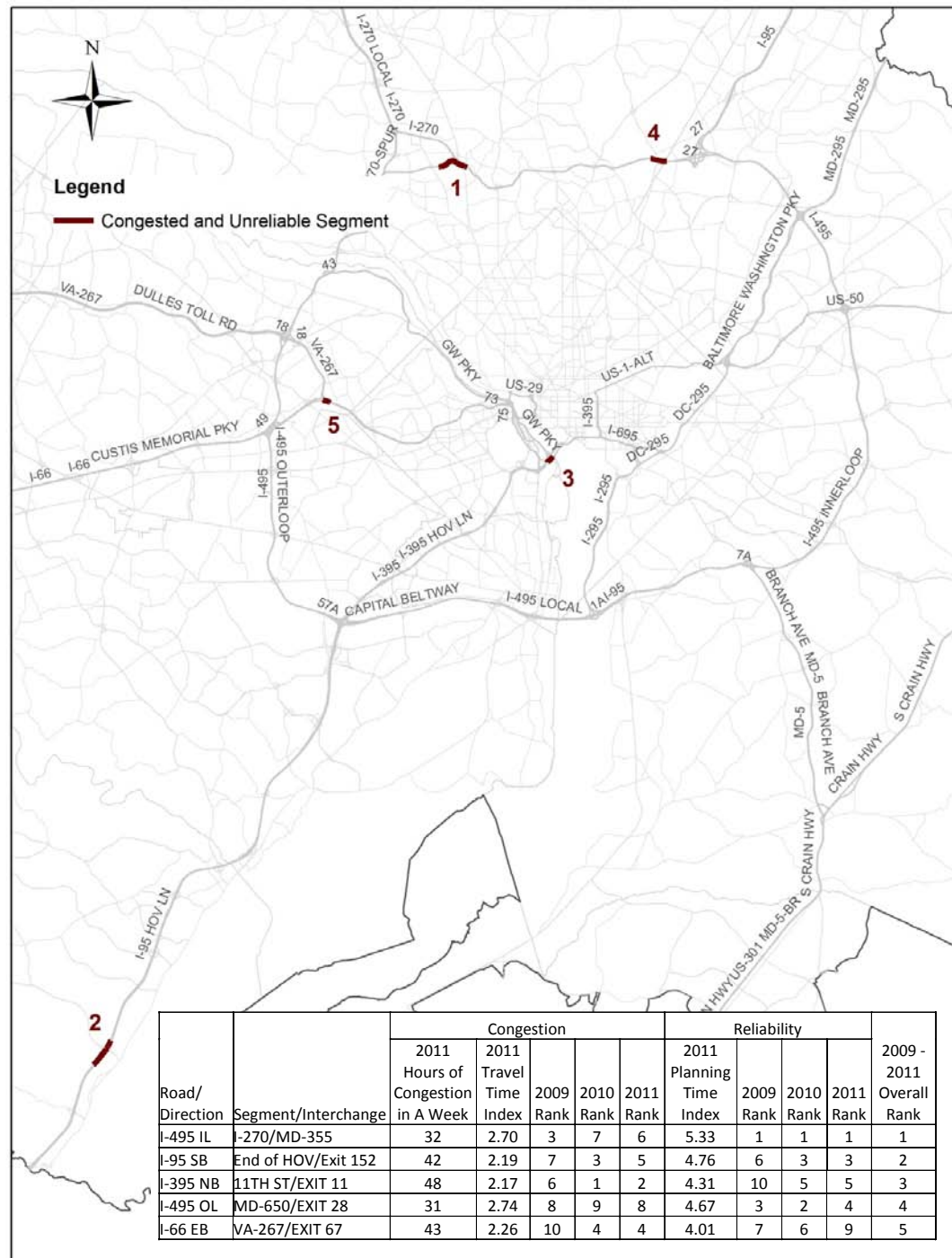
Top 10 Bottlenecks in 2011



Top 10 Most Unreliable Segments in 2011



Top congested and unreliable locations 2009-2011



INRIX 2010 Scan of Arterials

- INRIX 2010 data were procured for the TPB modeled area
 - Total 83,00 route-miles of freeways and arterials
 - 46,00 route-miles of arterials in the TPB member jurisdictions

Table 1: Arterial Route Miles of INRIX 2010 Data Coverage by Jurisdiction

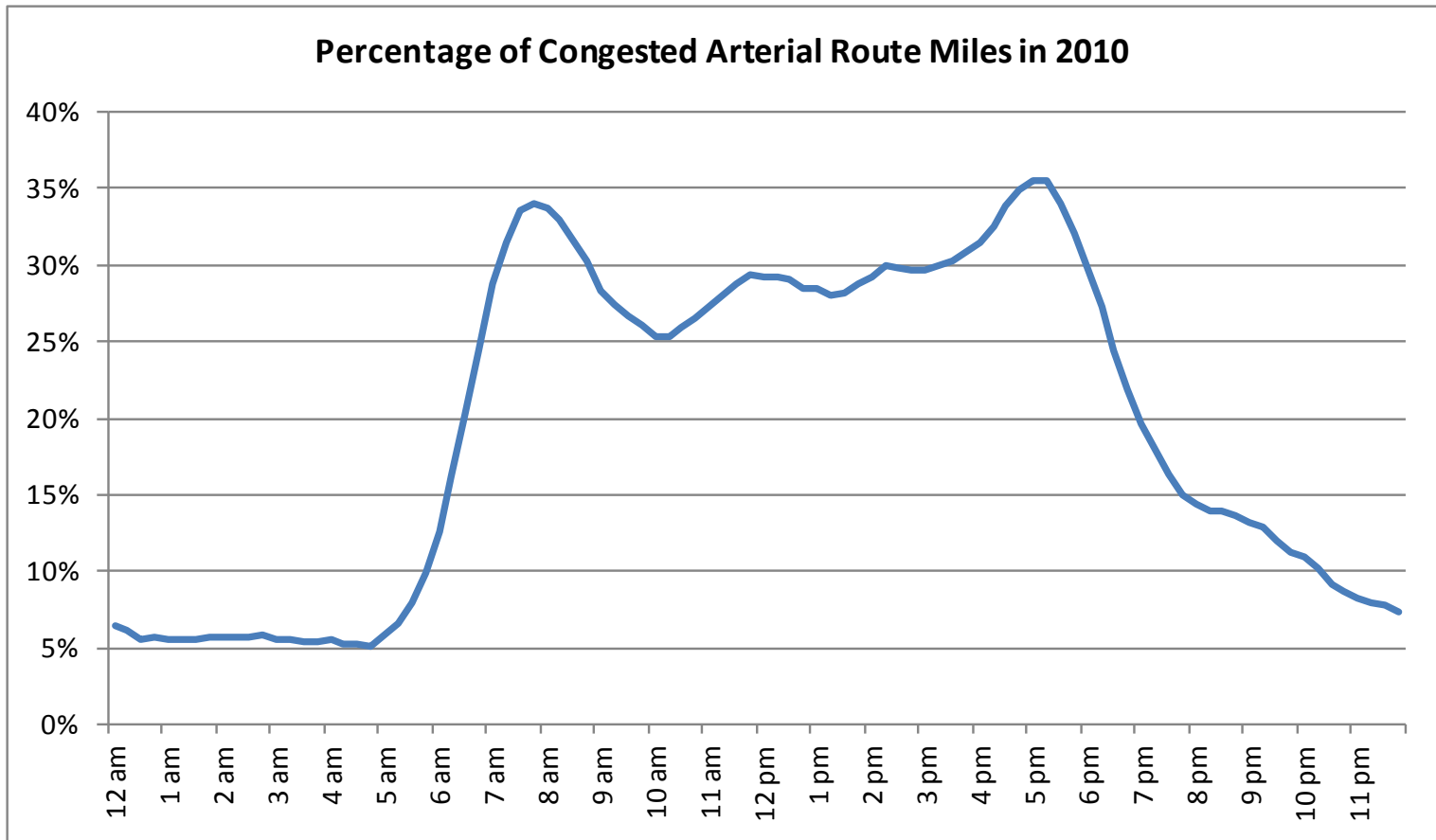
State	County	Number of TMCs	Route Miles
DC	DISTRICT OF COLUMBIA (DC)	1885	501
MD	CHARLES (CHS)	126	128
MD	FREDERICK (FRD)	431	515
MD	MONTGOMERY (MTG)	1722	967
MD	PRINCE GEORGE'S (PG)	1500	867
VA	ALEXANDRIA (ALX)	168	67
VA	ARLINGTON (ARL)	444	146
VA	FAIRFAX (FFX)	905	561
VA	FALLS CHURCH (FCH)	15	7
VA	LOUDOUN (LDN)	418	446
VA	MANASSAS (MNS)	65	36
VA	MANASSAS PARK (MNS PK)	6	4
VA	PRINCE WILLIAM (PW)	389	333
All		8074	4579

What is in the Data?

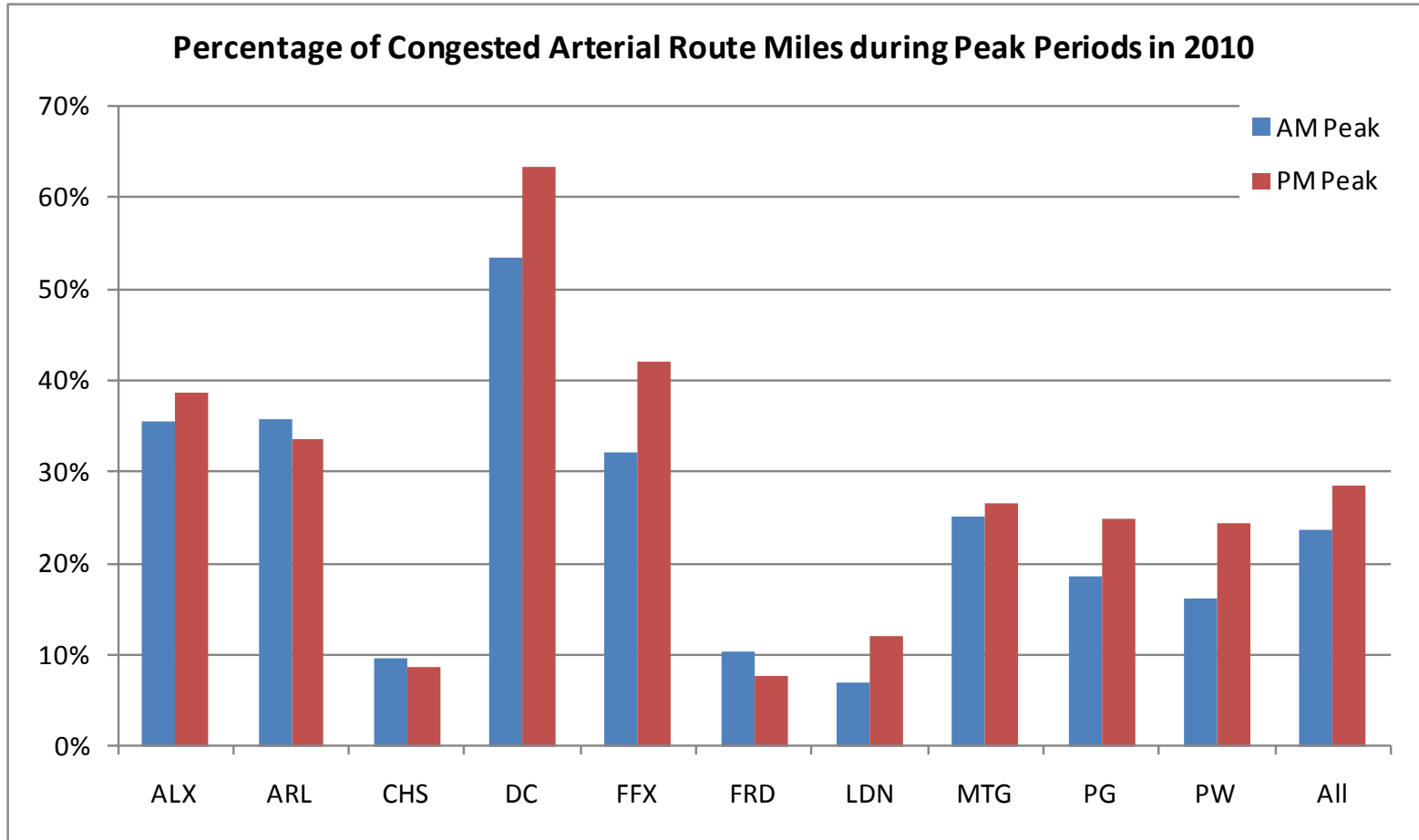
- 15-minute **Average Data**
 - 15-minute increments by day of the week (for each month and the entire year)
 - Statistics derived from **ALL raw data records**
 - Statistics include speed, travel time, **sample size**, standard deviation, percentiles, etc.
 - Most valuable: congestion analysis
- 5-minute **Archived Data**
 - Snapshots of real-time data stream at a frequency of every 5 minutes
 - Statistics: speed only
 - Most valuable: reliability analysis

Regionally, **more than a quarter** of the arterials were congested from 7:00 AM to 6:30 PM on a workday in 2010

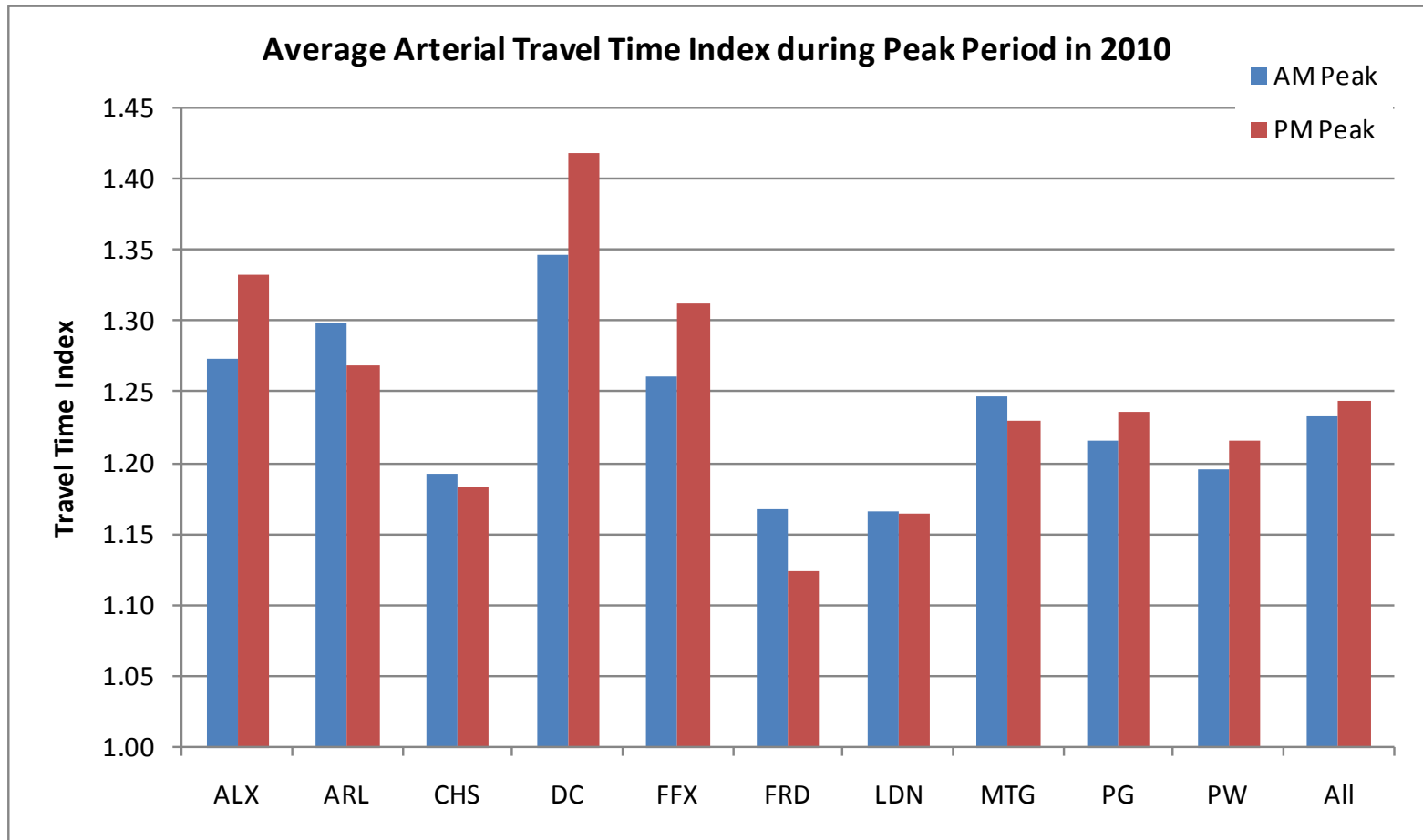
(not necessarily the same set of arterials always congested)



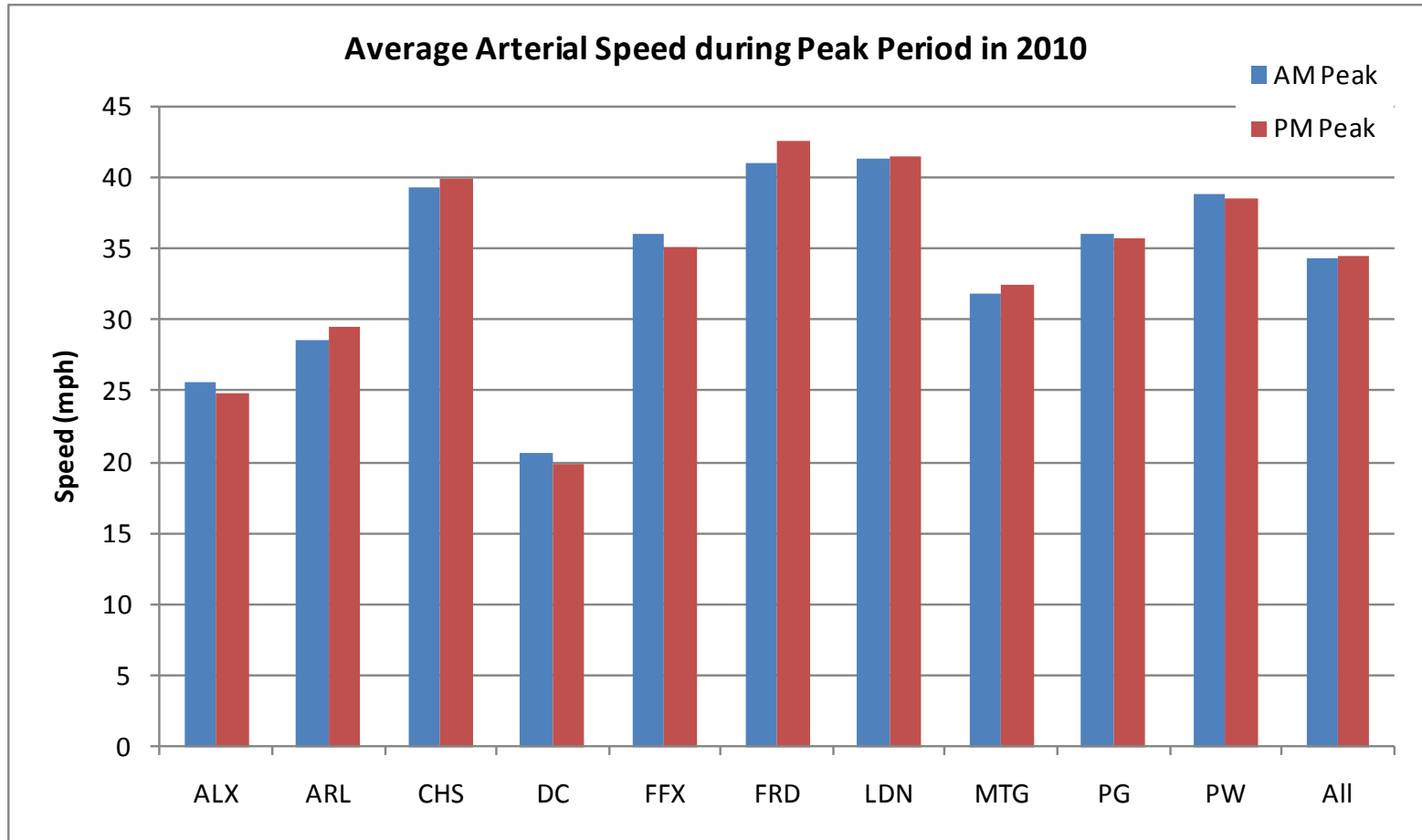
The spatial extent of congestion unevenly distributed in the region



The intensity of congestion unevenly distributed in the region



Average arterial speed by jurisdiction



Review Schedule

- Committee presentations
 - MOITS, June 12, 2012 and July 10, 2012
 - Commuter Connections, July 17, 2012
 - *Travel Forecasting Subcommittee, July 20, 2012*
 - TPB Tech, September 7, 2012 (proposed)
- DEADLINE for comments by TFS participants:
August 20, 2012
- Please send comments to COG/TPB staff
Wenjing Pu: wpu@mwkog.org

Proposed Priorities for TFS Review

- Analyses of INRIX data (pages 50 – 88)
- Executive Summary (pages 7 – 30)