RTC-FAST: Using ITS to Increase the Effectiveness of Traffic Incident Management Programs

Brian Hoeft * RTC-FAST * October 30, 2013

Outline:

- Who we are & What we operate
- Collaboration examples
- Performance Measurement opportunities

Transit Authority

Transit

Traffic Management Systems

FAST

Transportation Planning Agency

MPO

Posted August 31, 2013 - 10:55pm

Giving relief to road worriers

LAS VEGAS REVIEW-JOURNAL

In a sputtering economy that just can't seem to shift into second gear, any idea to raise anybody's taxes deserves serious scrutiny. But even when consumers are strapped, there are times — very rare times — when more money must be available to get important work done.

Such is the case with a proposed fuel tax increase, which will come before the Clark County Commission on Tuesday. If five of the seven commissioners support the tax increase, the funding will pay for much-needed road projects and improvements in Southern Nevada. As reported Aug. 21 by the Review-Journal's Ben Botkin, the tax would increase about 3 cents per gallon, per year for each of the next three years, indexing each uptick to the rate of inflation.

40 Comments

26

County fuel tax increase wins overwhelming approval

By Conor Shine (contact)

Published Tuesday, Sept. 3, 2013 | 12:33 p.m.

Updated Tuesday, Sept. 3, 2013 | 5:35 p.m.

The levy drivers pay on a gallon of gasoline is going up after Clark County commissioners approved a fuel tax increase at their Tuesday meeting.

12 Travel Time signs

79 Dynamic Message signs

70 Ramp Meters

421 CCTVs

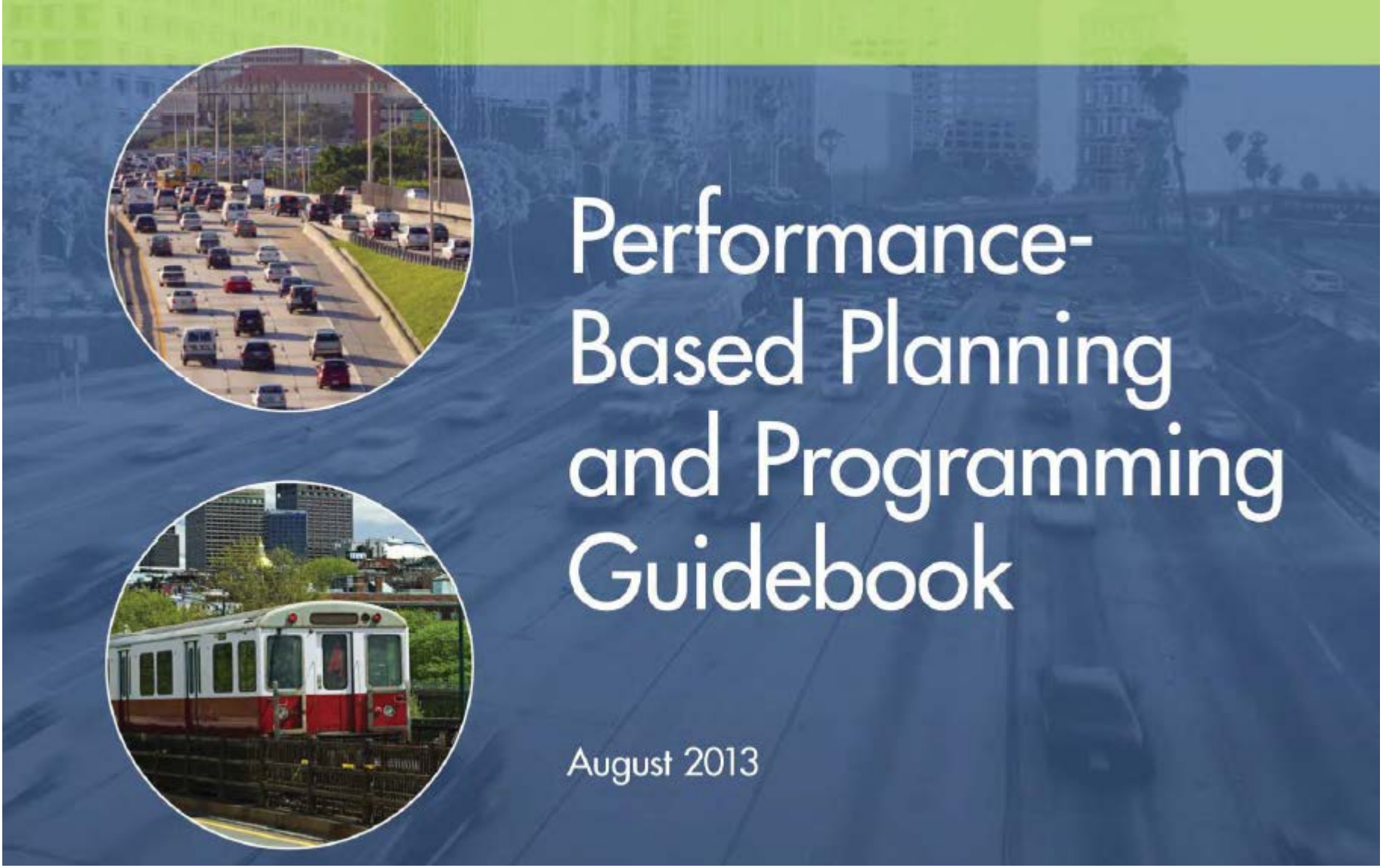
- 121 on freeways
- 300 on arterials

Benefits of Collaboration

103 I-215/I-15
EAST
104 I-15/I-215
203 95/RANCHO
WEST
209 95/TORREY PINES
EAST
109 I-15/SPRING
SOUTH

Collaboration: Construction and Work Zone safety

Safety and time saving construction techniques



Performance Measurement Opportunities

Synthesis of TIM and other operational measures

Performance Measurement Challenges

- Complexity of turning data into information
- Resource intensiveness of
    - data collection
    - performance monitoring
    - baseline assessments
    - data and trend analysis
- Difficulty of using vast amounts of real-time traffic information

ite Institute of Transportation Engineers
2011
Management & Operations/ITS Council
Project Achievement Award
presented to the
Freeway and Arterial System of Transportation
Regional Transportation Commission of
Southern Nevada
in recognition of its project titled
Freeway Performance Monitoring and Measurement System
Robert C. Wunderlich
International President
August 15, 2011

Home | About | Incident | Freeway | Ramp | ITS Device | Report | Contact Us | District II (Reno)

Live Traffic Map | Yesterday | User Defined

Road | Aerial

Toggle Full Screen

Zoom Back

Monday, June 11, 2012 9:39:00 AM
Traffic Map Updated at: 9:37:57 AM

9:39:00 AM

Legend
- < 20 mph
- 20 - 30 mph
- 30 - 40 mph
- 40 - 50 mph
- 50 - 60 mph
- 60 - 70 mph
- > 70 mph

Bruce Woodbury Beltway
N Grand Canyon Dr
N Rampart Blvd
N Rancho Dr
W Craig Rd
N 5th St
Nellis AFB
Nellis Air Force Base
N Nellis Blvd
North Las Vegas
Sunrise Manor
E Lake Mead Blvd
Las Vegas
S Durango Dr
S Rainbow Blvd
W Sahara Ave
E Sahara Ave
S Nellis Blvd
Winchester
Spring Valley
East Las Vegas
Paradise
Boulder Hwy
N Boulder Hwy
E Lake Mead Pkwy
S Eastern Ave
W Windmill Ln
Enterprise
Henderson
Bard
St Rose Pkwy
Anthem Pkwy
Boulder City
5 Miles
© 2012 Microsoft Corporation © 2010 NAVTEQ © AND

Electric Daisy Carnival at Speedway

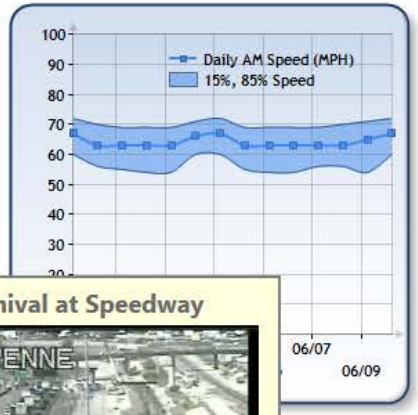
CCTV307 I-15/Cheyenne Ave

View the camera snapshot wall and individual camera.

Close

Daily Peak Speeds

AM | PM



t Year

FAST initial efforts

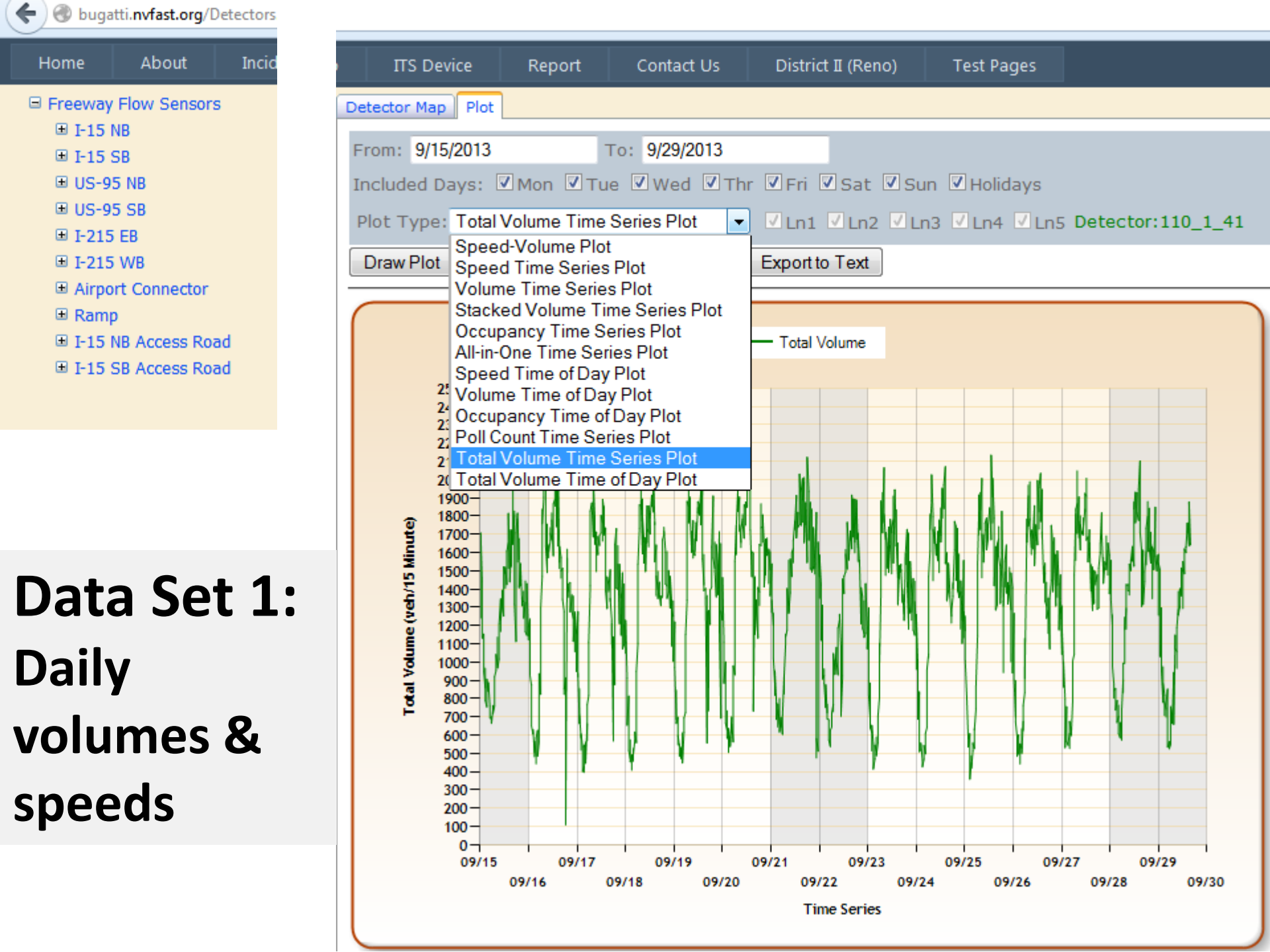
- Four data sets
  - Daily volumes & speeds
  - Travel times
  - Congestion
  - **Incidents**
- Using data to enhance performance activities
- Intention is to overcome challenges listed on previous slide

I-15 SB: Craig to California Stateline

	13	12	11	10	9		13	12	11	10	9
	AM						PM				
Craig-Washington											
holiday											
fall											
summer											
early summer											
spring break											
begin year											
Wash-Sahara											
holiday											
fall											
summer											
early summer											
spring break											
begin year											
Sahara-215											
holiday											
fall											
summer											
early summer											
spring break											
begin year											
215-St Rose											
holiday											
fall											
summer											
early summer											
spring break											
begin year											
St Rose-California											
holiday											
fall											
summer											
early summer											
spring break											
begin year											

I-15 NB: California Stateline to Craig

	13	12	11	10	9		13	12	11	10	9
	AM						PM				
Charleston-Craig											
holiday											
fall											
summer											
early summer											
spring break											
begin year											
Flam-Charleston											
holiday											
fall											
summer											
early summer											
spring break											
begin year											
215-Flamingo											
holiday											
fall											
summer											
early summer											
spring break											
begin year											
St Rose-215											
holiday											
fall											
summer											
early summer											
spring break											
begin year											
California-St Rose											
holiday											
fall											
summer											
early summer											
spring break											
begin year											



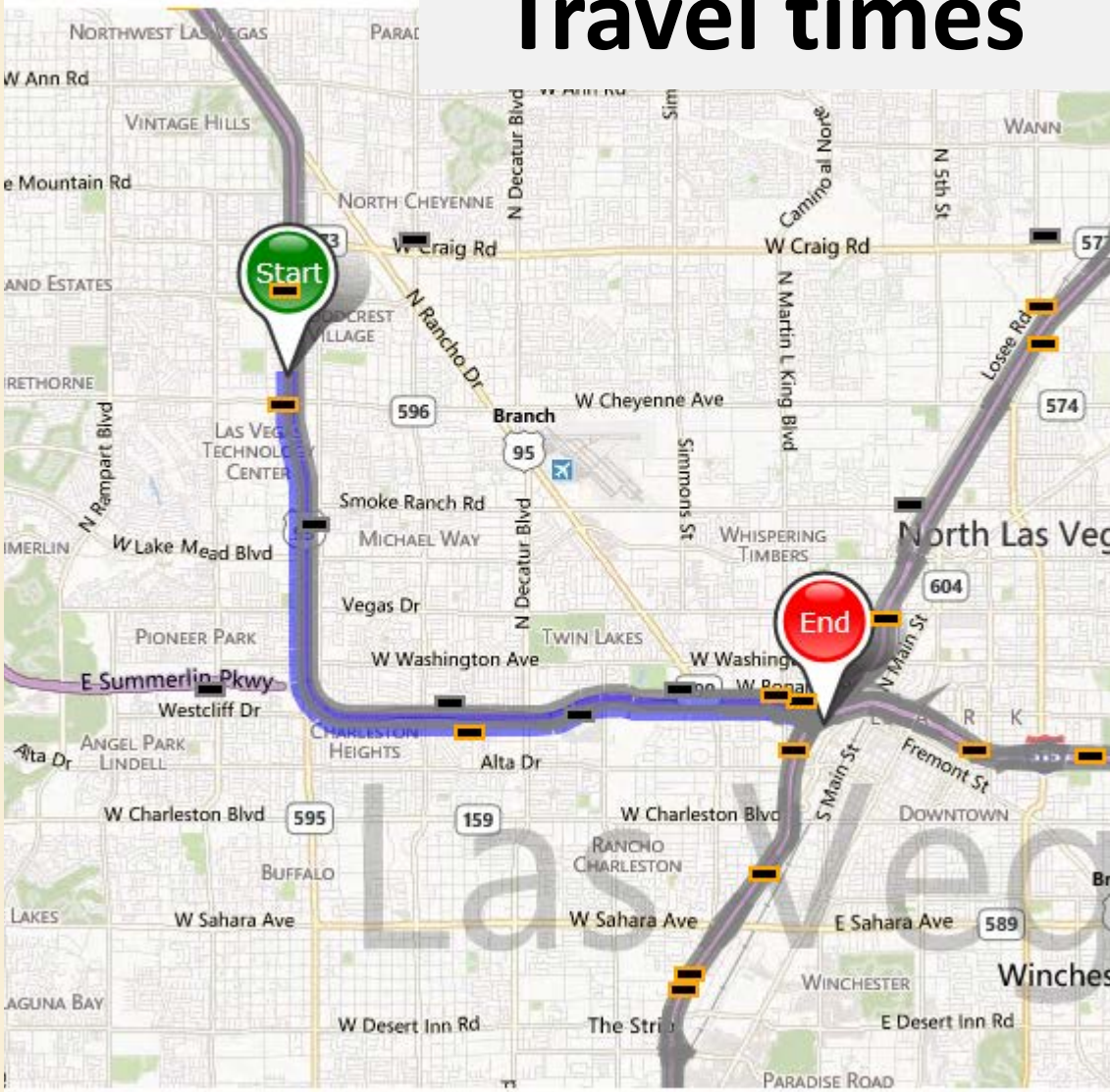
Data Set 1: Daily volumes & speeds

Data Set 2: Travel times

bugatti.nvfast.org/DMSTravelTimes.aspx

Home | About | Incident | Freeway | Ramp

- DMS#34 (US 95 NB JONES)
- DMS#35 (US 95 SB JONES)
- DMS#36 (US 95 NB @ SMOKE RANCH)
- DMS#37 (US-95 SB, South of Cheyenne)
  - DECATUR (5 miles)
  - I-15 (7.8 miles)
  - 15/SAHARA (9.5 miles)
- DMS#38 (US 95 SB @ ALEXANDER)
- DMS#39 (US 95 SB @ TROPICAL)
  - RAINBOW (6.7 miles)
  - I-15 (11.7 miles)
  - BOULDER HWY (17.4 miles)
- DMS#40 (US-95 at Search Light)
- DMS#41 (US-93 NB at Boulder City)
- DMS#42 (I-15SB South of Blue Diamond)
- DMS#43 (I-15 NB South Of Blue Diamond (WZ-CMS))
- DMS#44 (I-15 NB Gowan)
- DMS#45 (I-15 SB Alexander)
  - US-95 (4.4 miles)
  - FLAMINGO (9 miles)
  - I-215 (12.3 miles)
- DMS#46 (I-15NB at Sloan)
- DMS#47 (I-15SB North of Primm)
- DMS#48 (US-95SB at 163 (Laughlin turnoff))
- DMS#49 (US-93SB after 147)
- DMS#50 (US-93SB NV side @ Dam Bridge)
- DMS#51 (US-93NB AZ side @ Dam Bridge)
- DMS#52 (US-93NB AZ mile marker3)
- DMS#54 (I-515/US-95 SB @ Sahara)



Data Set 3: Congestion Score

Corridor Contour Plot

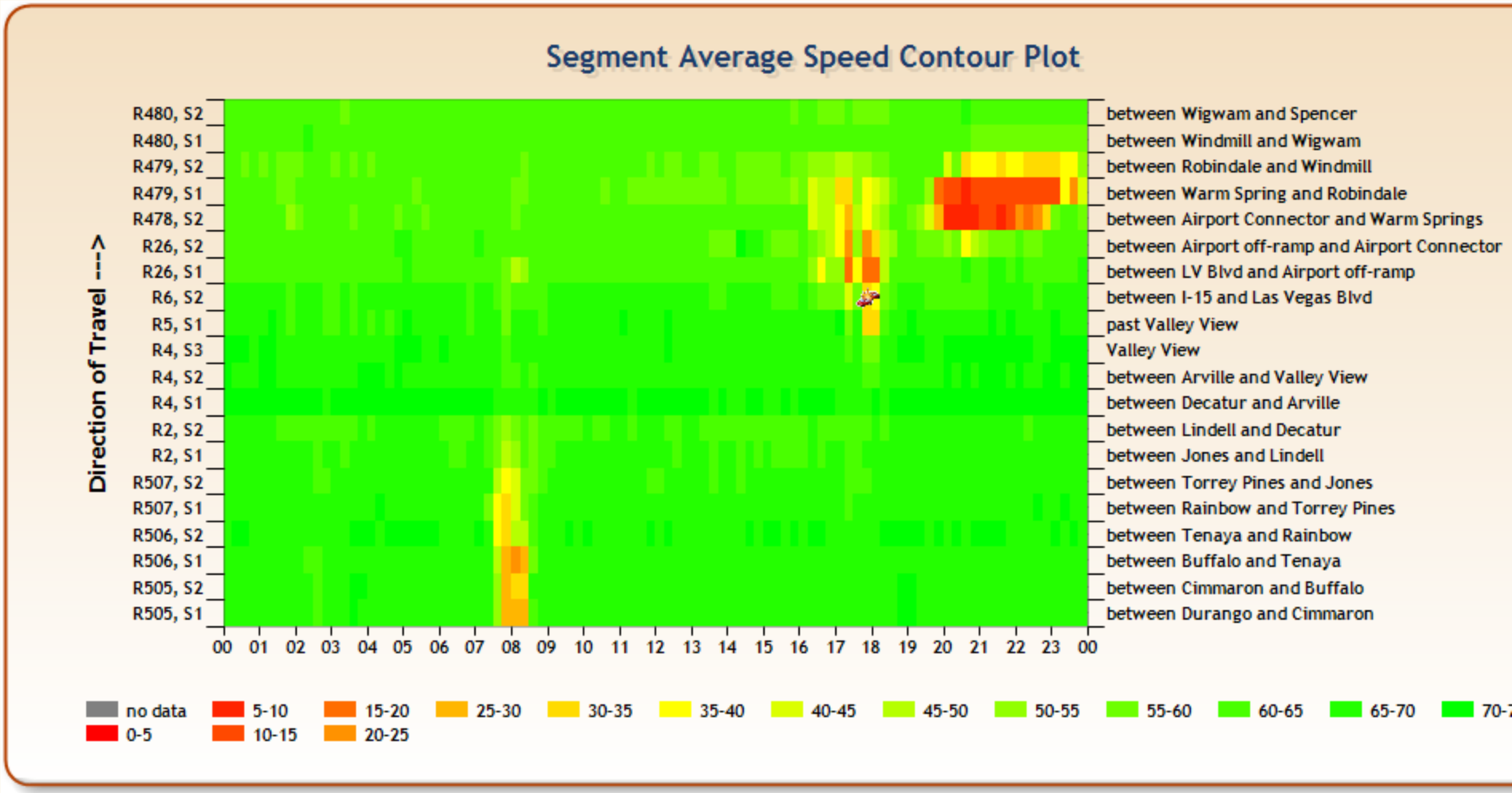
bugatti.nvfast.org/CorridorContour.aspx

Home | About | Incident | Freeway | Ramp | ITS Device | Report | Contact Us | District II (Reno)

Route: I-215 EB | From: between Durango and Cimmaron | To: between Wigwam and Spencer

From: 9/3/2013 | To: 9/3/2013 | Measure: Average Speed | Segment List | Show Incident

Draw Plot | View Table | Export to Excel | Export to Text | << | < | > | >>



Data Set 4 Incidents

Home | About | Incident | Freeway | Ramp | ITS Device | Report | Contact Us | District II (Reno) | Test Pages

From: 5/28/2012 To: 6/11/2012 Time of Day: All 00:00 to 00:59

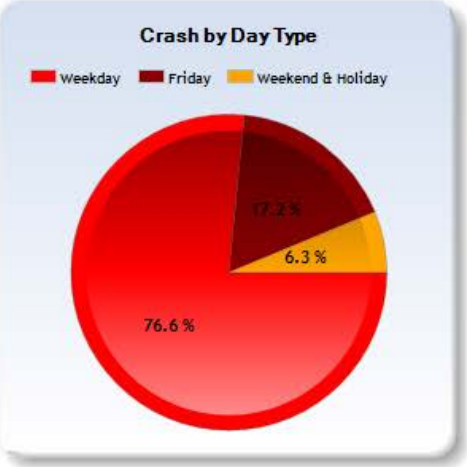
Included Days: Mon Tue Wed Thr Fri Sat Sun

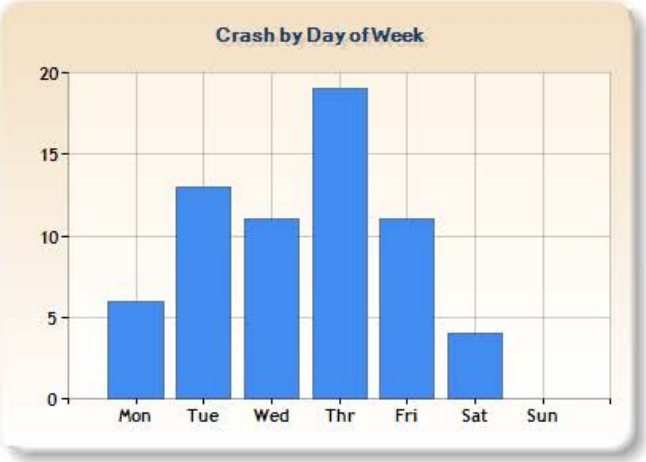
Corridor: All Workzone: All Lanes: All Severity: All

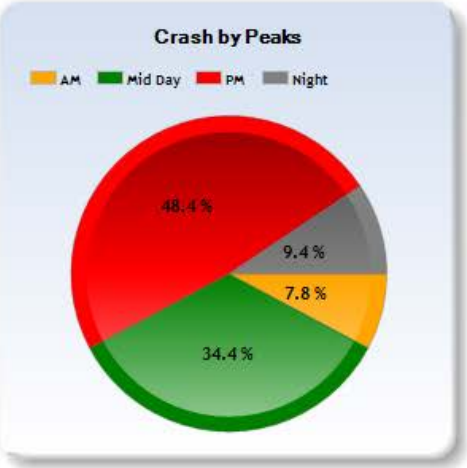
Tow: All Clearance: All Draw Plot

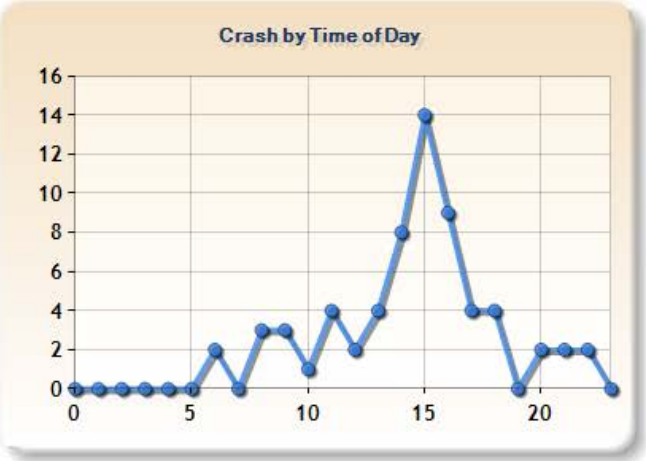
Total Incidents: 74

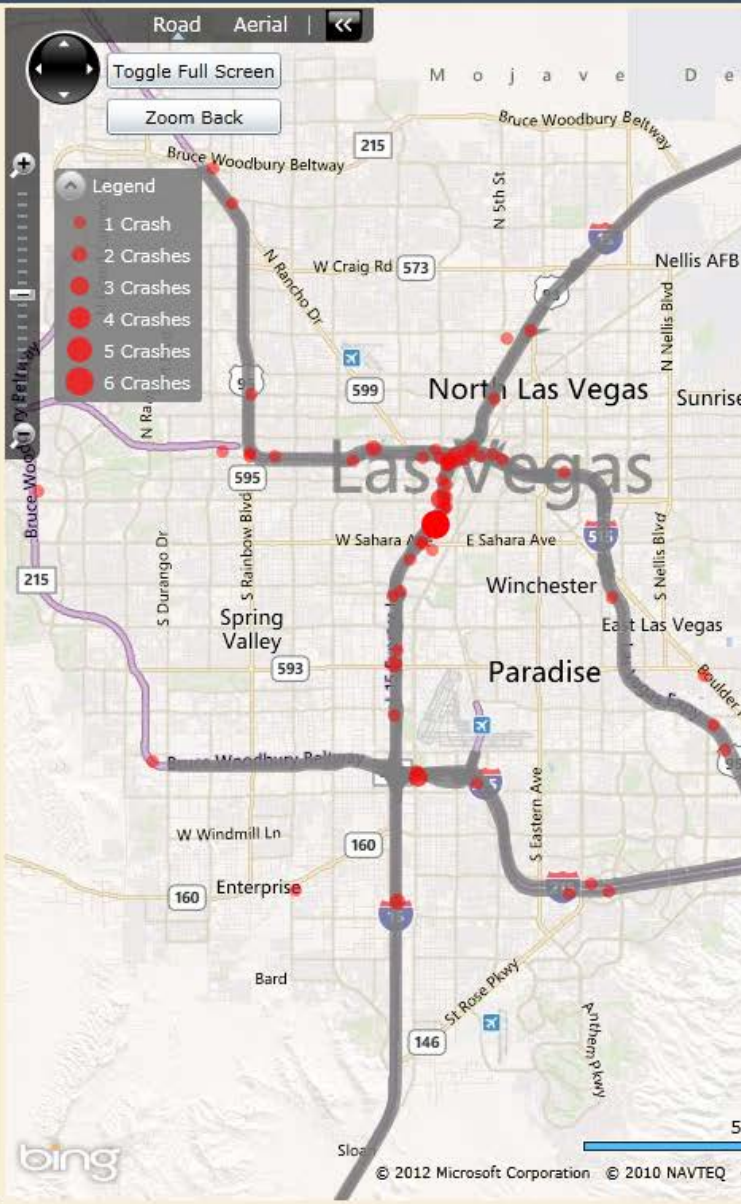
Spatial | Temporal | Severity | Clearance | Data



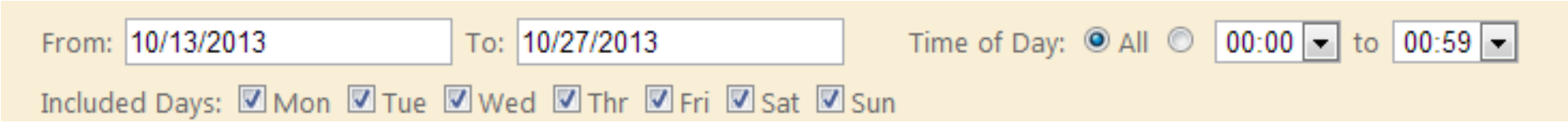




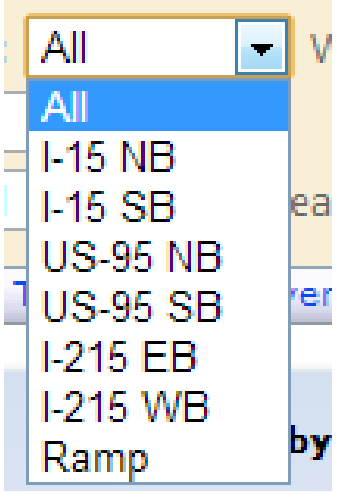




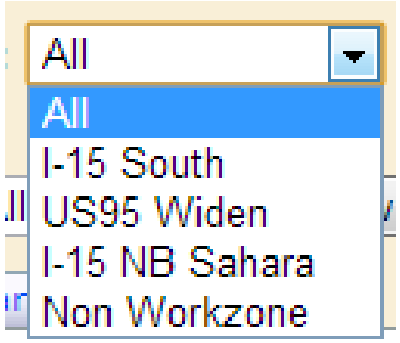
Temporal



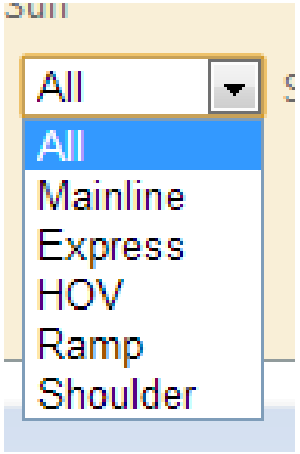
Corridor

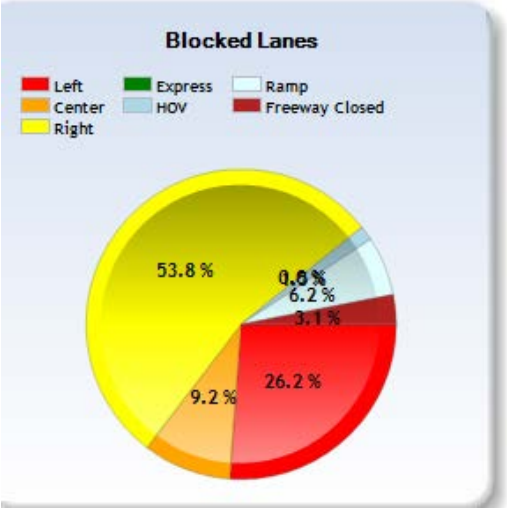


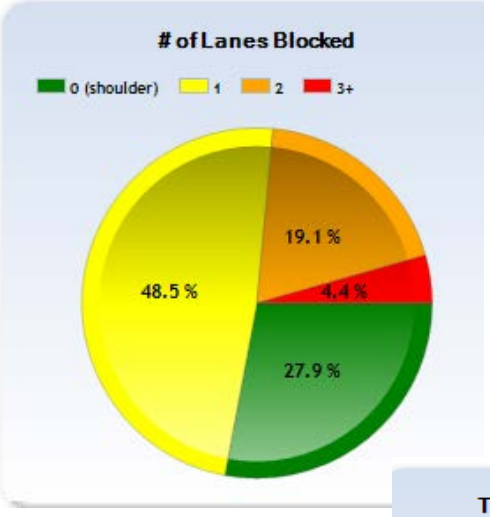
Work zone or other event

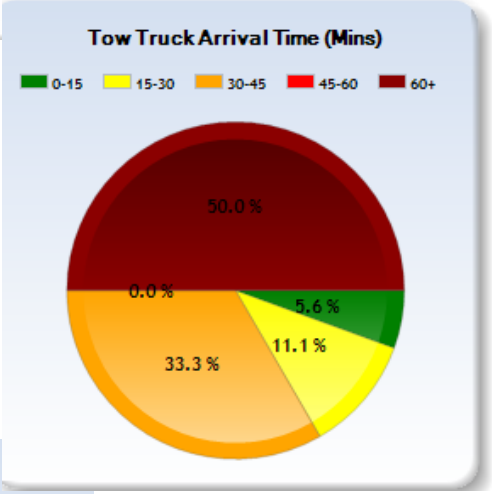


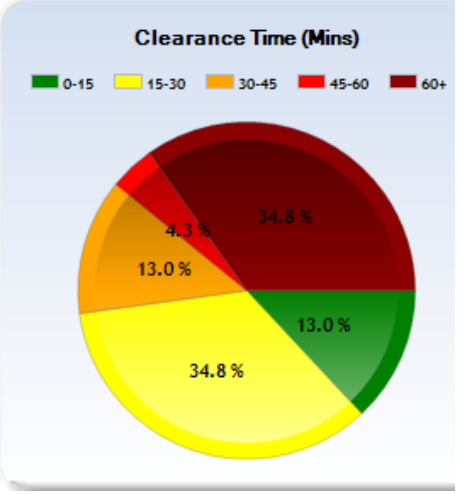
Lane type

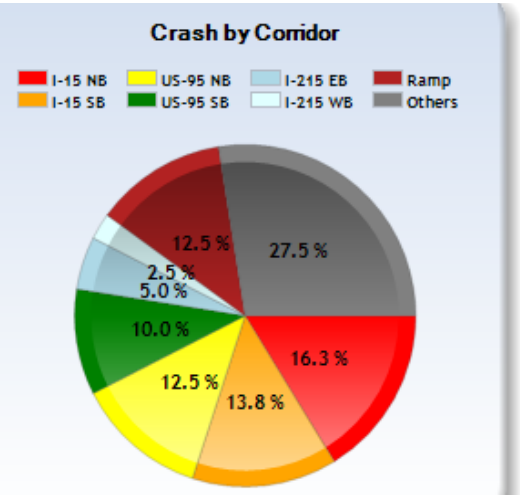


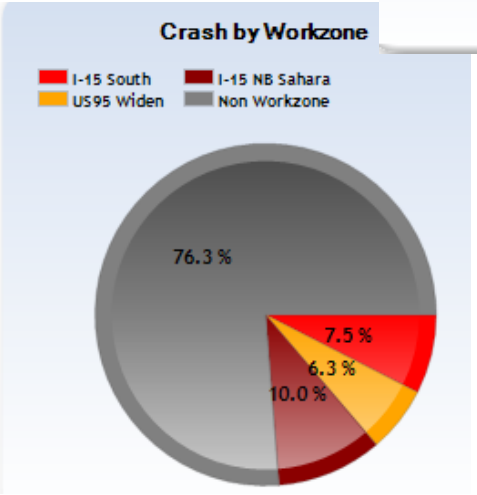

Blocked Lanes
Left
Express
Ramp
Center
HOV
Freeway Closed
Right
53.8 %
0.0 %
6.2 %
3.1 %
26.2 %
9.2 %


# of Lanes Blocked
0 (shoulder)
1
2
3+
19.1 %
48.5 %
4.4 %
27.9 %


Tow Truck Arrival Time (Mins)
0-15
15-30
30-45
45-60
60+
50.0 %
0.0 %
5.6 %
11.1 %
33.3 %


Clearance Time (Mins)
0-15
15-30
30-45
45-60
60+
34.8 %
4.3 %
13.0 %
13.0 %
34.8 %


Crash by Corridor
I-15 NB
US-95 NB
I-215 EB
Ramp
I-15 SB
US-95 SB
I-215 WB
Others
12.5 %
27.5 %
2.5 %
5.0 %
10.0 %
16.3 %
12.5 %
13.8 %

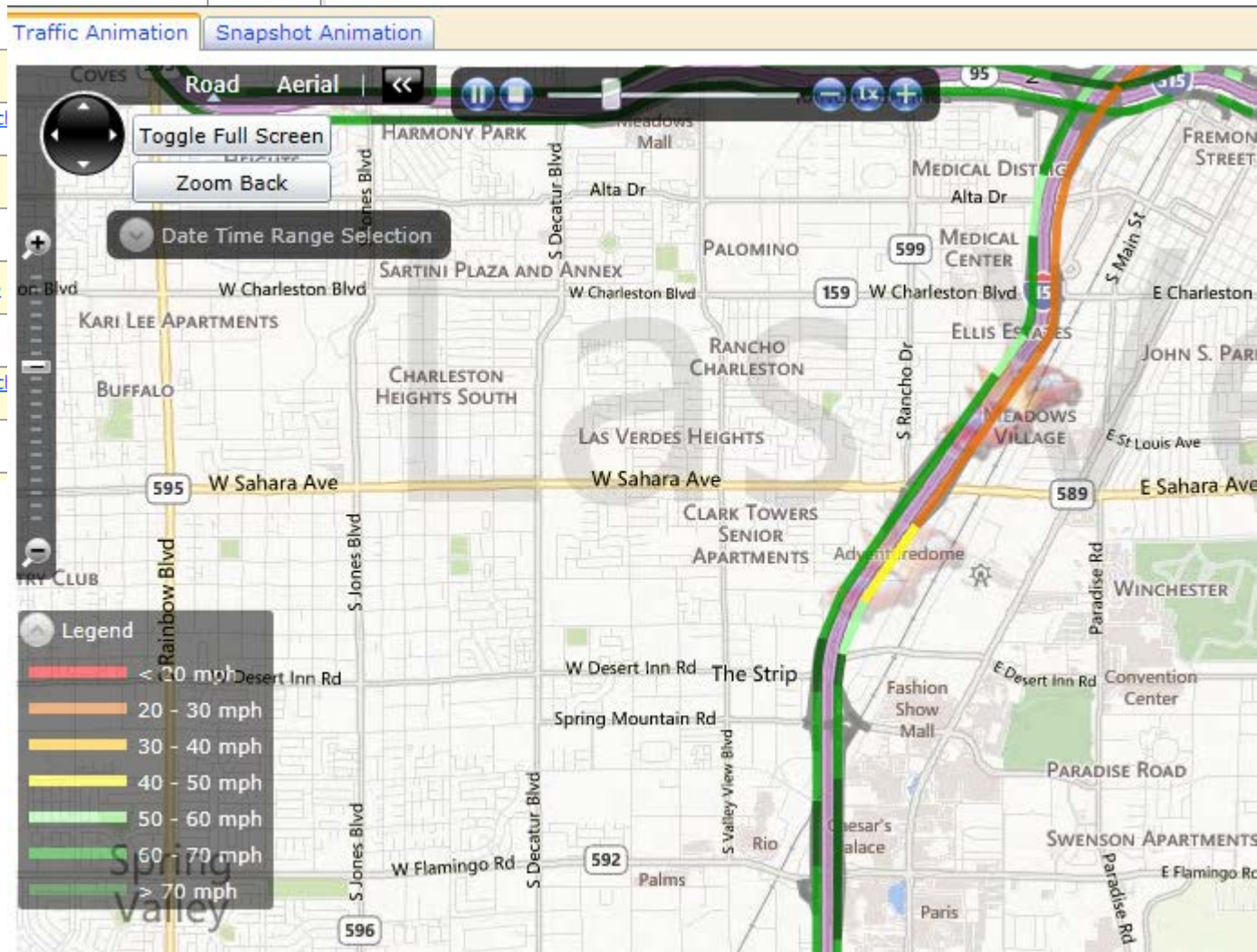

Crash by Workzone
I-15 South
I-15 NB Sahara
US95 Widen
Non Workzone
76.3 %
7.5 %
6.3 %
10.0 %

Query incidents and traffic data

Traffic Incident List (Please get real time incident information by subscribing text or email message from here.)

Year: 2013 Month: 9 Query

9/29/2013 10:55:00 AM	I-215 EB	before Eastern, (Southern Beltway)	right lanes
9/29/2013 6:05:00 AM	I-15 NB	Flamingo Rd	ramp
9/28/2013 5:12:00 PM	I-15 SB	Blue Diamond	ramp
9/28/2013 3:59:00 PM	I-15 NB	before Sahara	center lane
9/28/2013 2:49:00 PM	I-15 NB	past Sahara	
9/27/2013 8:10:00 PM	US-95 NB	Decatur	
9/27/2013 5:43:00 PM	I-215 EB	before I-515 Interch Beltway)	
9/27/2013 5:00:00 PM	US-95 SB	before Rancho Dr	
9/27/2013 11:01:00 AM	US-95 SB	Boulder Hwy	
9/27/2013 10:49:00 AM	I-15 SB	US 95 Interchange	
9/27/2013 8:56:00 AM	US-95 NB	Jones Blvd	
9/26/2013 5:34:00 PM	I-215 EB	before I-515 Interch Beltway)	
9/26/2013 5:11:00 PM	I-15 NB	past Charleston	



Snapshot animation at 15 second intervals

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Year: 2013 Month: 9 Query

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9/29/2013 6:05:00 AM	I-15 NB	Flamingo Rd	ramp
9/28/2013 5:12:00 PM	I-15 SB	Blue Diamond	ramp
9/28/2013 3:59:00 PM	I-15 NB		
9/28/2013 2:49:00 PM	I-15 NB		
9/27/2013 8:10:00 PM	US-95 NB		
9/27/2013 5:43:00 PM	I-215 EB		
9/27/2013 5:00:00 PM	US-95 SB		
9/27/2013 11:01:00 AM	US-95 SB		
9/27/2013 10:49:00 AM	I-15 SB		
9/27/2013 8:56:00 AM	US-95 NB		
9/26/2013 5:34:00 PM	I-215 EB		
9/26/2013 5:11:00 PM	I-15 NB		

Date: 9/28/2013 Start Time: 3:59 PM End Time: 5:04 PM ENTER

4:00:45 PM

CCTV104

CCTV105

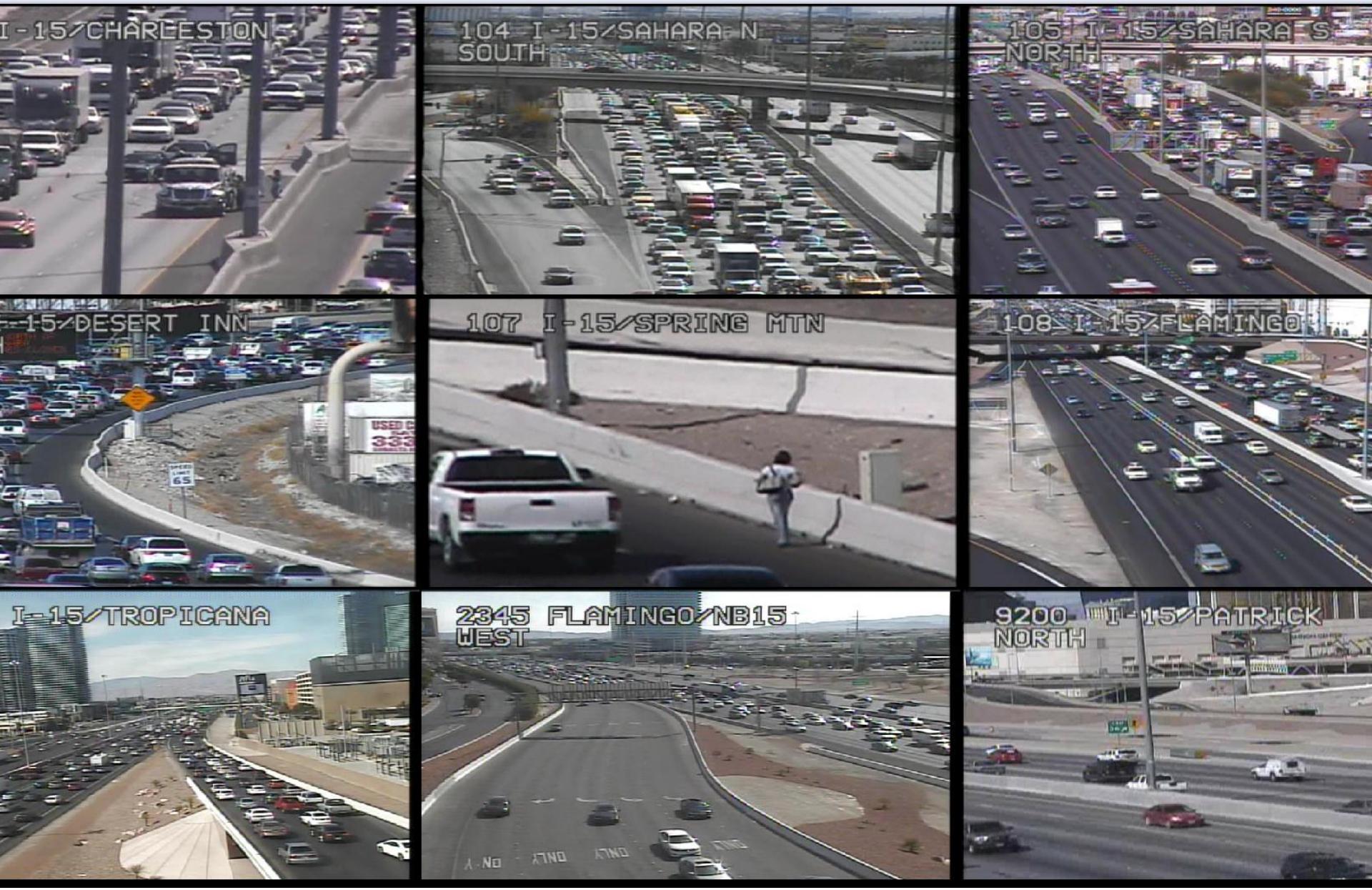
CCTV106

CCTV107

CCTV108

CCTV109

2012 3:17:59 PM



Incidents per day (lanes blocked longer than 10 mins)

I-15 SB: Craig to California Stateline	13	12	11	10
Craig-Washington				
holiday		0.14	0.05	
fall	0.22	0.10	0.06	
summer	0.14	0.25	0.12	
early summer	0.09	0.04	0.11	
spring break	0.00	0.07	0.17	
begin year	0.14	0.12	0.05	
Wash-Sahara				
holiday		0.16	0.23	
fall	0.28	0.29	0.25	
summer	0.19	0.33	0.24	
early summer	0.35	0.31	0.21	
spring break	0.21	0.07	0.40	
begin year	0.24	0.47	0.25	
Sahara-215				
holiday		0.45	0.68	
fall	0.44	0.40	0.54	
summer	0.19	0.22	0.47	
early summer	0.26	0.28	0.51	
spring break	0.11	0.30	0.13	
begin year	0.34	0.44	0.23	

I-15 NB: California Stateline to Craig	13	12	11	10
Charleston-Craig				
holiday		0.18	0.11	
fall	0.39	0.31	0.24	
summer	0.23	0.35	0.28	
early summer	0.22	0.30	0.15	
spring break	0.39	0.27	0.10	
begin year	0.21	0.18	0.13	
Flam-Charleston				
holiday		0.90	1.14	
fall	0.67	0.73	1.05	
summer	0.66	0.84	0.78	
early summer	0.61	0.83	0.74	
spring break	0.64	1.37	0.93	
begin year	0.79	1.12	0.73	
215-Flamingo				
holiday		0.22	0.39	
fall	0.33	0.39	0.26	
summer	0.20	0.22	0.59	
early summer	0.28	0.19	0.62	
spring break	0.25	0.23	0.90	
begin year	0.26	0.34	0.44	

Notes:

- In 2013, incidents that block lanes longer than 10 minutes have been reduced by 50 percent in I-15 NB / Sahara area due to increased efforts by FSP & NHP
- There is a slight increase in incidents in the F-Street workzone
- 2011 incidents were higher on I-15 between Sahara and the 215 due to the Design-Build workzone; those rates have fallen since the completion of the project

Incidents

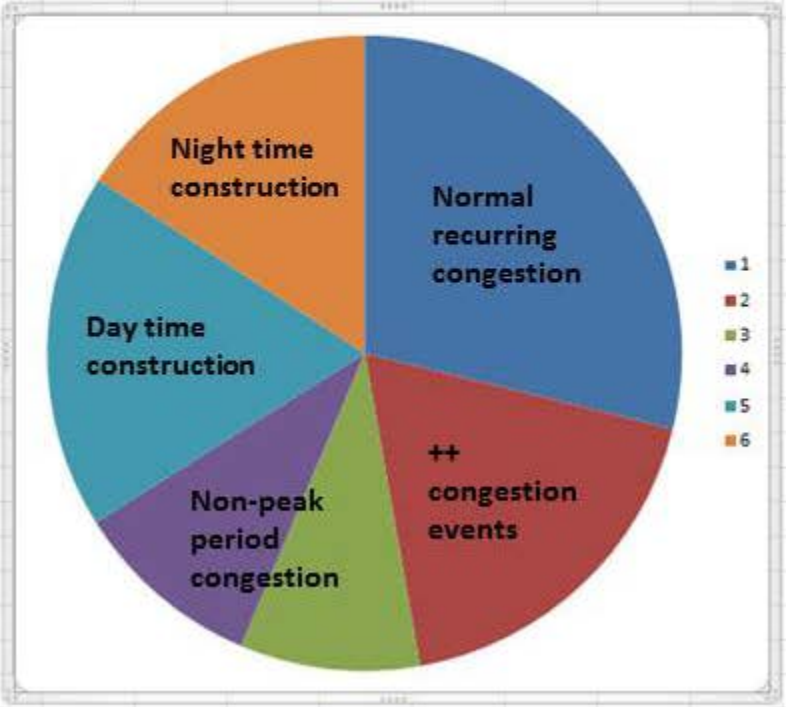
Flam-Charleston			
holiday		0.90	1.14
fall	0.67	0.73	1.05
summer	0.66	0.84	0.78
early summer	0.61	0.83	0.74
spring break	0.64	1.37	0.93
begin year	0.79	1.12	0.73

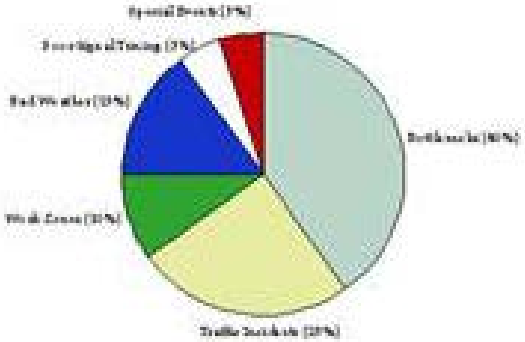
Congestion Score

	273	382	443	428
436	340	472	410	458
363	397	371	422	
304	344	353	319	
357	373	430	400	
309	403	392	396	

- Enhanced awareness and patrolling by TIM Coalition partners
- Use of data to inform positive outcomes
- Operational strategies such as ramp metering
- Congestion has returned recently due to construction but incident rate has stayed the same

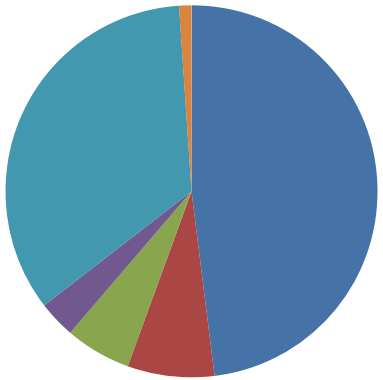
fwy	yr		season	congestion events per day: rec	plus +	day NPk	night NPk	day const	night const	total events per day	change from prev season	pct recurring
15	2013	pm	3-sum	1.3	0.4	0.4	0.3	0.4	0.3	**3.1**	3.3	43.3
15	2013	pm	4-ear sur	1.4	0.2	0.4	0.2	0.1	0.4	**2.7**	14.7	51.4
15	2013	pm	5-spr	1.7	0.2	0.6	0.4	0.0	0.2	**3.0**	16.8	55.3
15	2013	pm	6-beg yr	1.5	0.4	0.4	0.2	0.0	0.0	**2.5**	-9.9	60.1
15	2012	pm	1-hol	1.7	0.2	0.2	0.3	0.0	0.0	**2.3**	-37.0	70.4
15	2012	pm	2-fall	1.6	0.3	0.3	0.3	0.0	0.1	**2.7**	-42.9	60.3
15	2012	pm	3-sum	1.4	0.5	0.4	0.4	0.0	0.3	**3.0**	-33.1	45.7
15	2012	pm	4-ear sur	1.1	0.4	0.2	0.4	0.1	0.2	**2.4**	-44.4	46.5
15	2012	pm	5-spr	1.2	0.5	0.2	0.4	0.1	0.2	**2.6**	-34.5	46.2
15	2012	pm	6-beg yr	1.3	0.5	0.4	0.4	0.1	0.0	**2.8**	-11.8	47.1
15	2011	pm	1-hol	1.7	0.6	0.4	0.5	0.4	0.1	**3.7**	16.8	46.3
15	2011	pm	2-fall	1.3	0.9	0.4	0.5	0.8	0.7	**4.7**	45.2	28.8
15	2011	pm	3-sum	1.3	1.2	0.5	0.4	0.6	0.5	**4.4**	22.5	28.6
15	2011	pm	4-ear sur	1.6	0.8	0.4	0.4	0.9	0.1	**4.3**	25.5	37.1
15	2011	pm	5-spr	1.3	1.0	0.3	0.5	0.7	0.1	**4.0**	3.5	33.6
15	2011	pm	6-beg yr	1.5	0.7	0.3	0.3	0.3	0.1	**3.2**	13.2	47.5
15	2010	pm	1-hol	1.4	0.8	0.4	0.3	0.1	0.2	**3.2**	-29.1	43.3
15	2010	pm	2-fall	1.6	0.6	0.4	0.4	0.1	0.2	**3.2**	-47.9	48.5
15	2010	pm	3-sum	1.4	0.6	0.6	0.3	0.2	0.5	**3.6**		38.9
15	2010	pm	4-ear sur	1.4	0.7	0.4	0.3	0.4	0.2	**3.4**		39.8
15	2010	pm	5-spr	1.0	1.2	0.6	0.4	0.5	0.2	**3.8**		26.1
15	2010	pm	6-beg yr	1.3	0.7	0.4	0.2	0.1	0.1	**2.8**		45.8
15	2009	pm	1-hol	1.0	1.6	0.5	0.2	0.8	0.3	**4.5**		23.3
15	2009	pm	2-fall	1.3	1.9	0.3	0.4	1.3	1.0	**6.2**		20.2



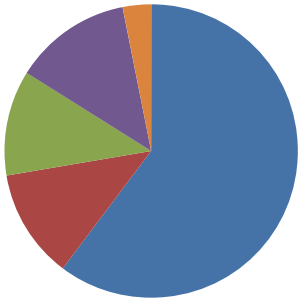


I-15 Congestion events per day: compare Fall 2013 to 2009

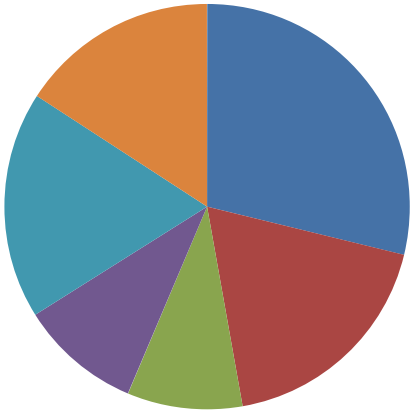
Fall 2013, PM 4.7



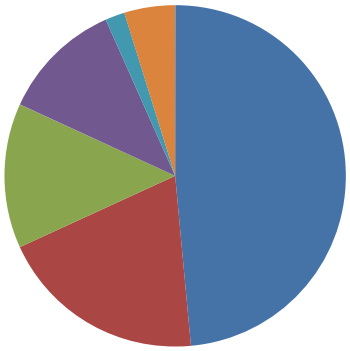
Fall 2012, PM 2.7



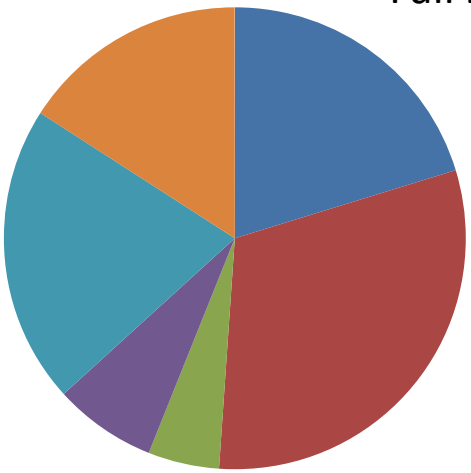
Fall 2011, PM 4.7



Fall 2010, PM 3.2



Fall 2009, PM 6.2



- rec
- plus +
- day NPk
- night NPk
- day const
- night const

104 I-15/I-215
128 215/S DECATUR
WEST
203 95/RANCHO W
WEST
209 95/TORREY
EAST
30 BOULDER US-95
106 I-15/HACIENDA
NORTH
108 I-15/FLAMINGO
NORTH
109 I-15/SPRING MTN
SOUTH
SAHARA
EVBLVD
201 95/MLK N
SOUTH
116 I-15/I-515
WEST

The End