

# Using Integrated Data to Measure Performance at TriMet

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**Conference on Performance Measures for Transportation and  
Livable Communities**

*Session 6: Livable Communities and Transit Performance Measures*

**September 7, 2011**



# Tri-County Metropolitan Transportation District of Oregon (TriMet)

- Service Area Population (2010 Census): 1.5M
- 100 bus routes, 4 light rail lines, one commuter rail line.
- FY 2011 Ridership: 100M
  - Bus: 58.5M
  - Light Rail: 41.2M
  - Commuter Rail: 370.8k
- 650 buses, 127 LRVs, 3 DMUs, 2 RDCs (Budd)

# TriMet Performance Measures

- TriMet Performance Measures Integrate Data from a Variety of Sources:
  - Automatic vehicle location (AVL)/automatic passenger counters (APCs) (ridership, on-time performance)
  - Human Resources (attendance, hours worked)
  - Financial (budget, fare revenue, operations costs)
  - Maintenance (mechanical failures, scheduled maintenance, ticket vending machine [TVM])
  - Operations (“extraboard”, “pullouts”)
  - Safety (incidents/collisions)
  - Customer Service (complaints)

# TriMet Performance Dashboard (external)



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## Performance Dashboard: June 2011

A snapshot of ridership, cost per ride, on-time performance, revenues and collisions

Updated monthly, this dashboard provides a snapshot of TriMet's financial and operating performance. These key indicators help us identify trends and measure our efficiency and effectiveness. We plan to expand this tool over time, so [let us know](#) how we can make it more useful for you.

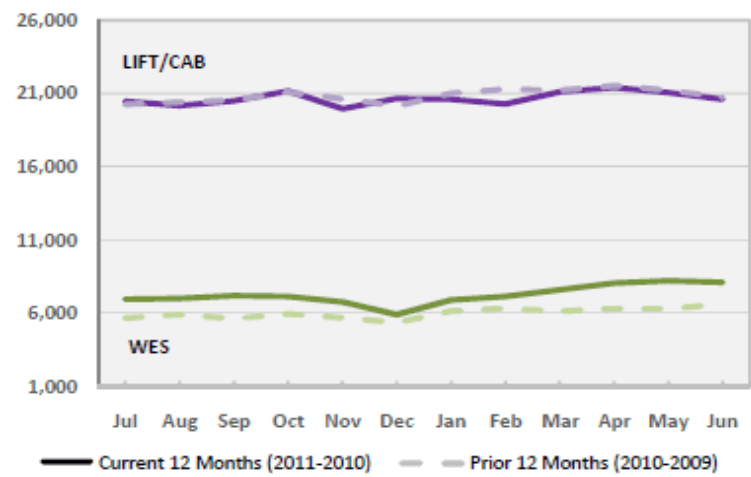
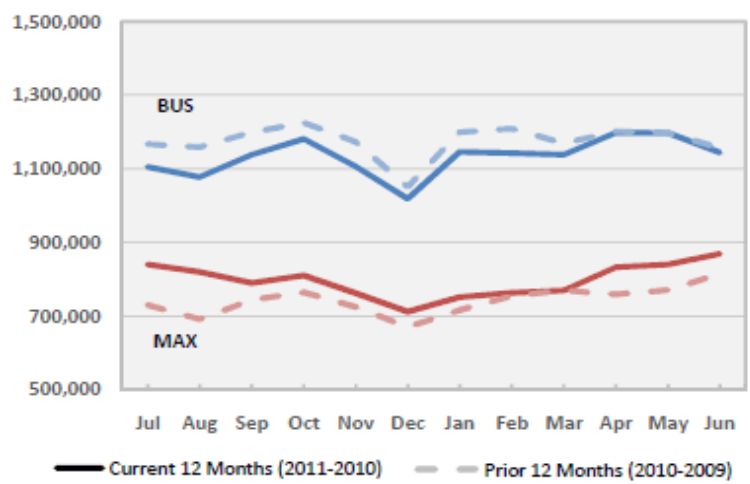
- ▶ [Monthly analysis](#)
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<http://www.trimet.org/about/dashboard.htm>

### RIDERSHIP

#### Weekly Boarding Rides



These graphs show the total weekly boarding rides taken on buses, MAX Light Rail, WES Commuter Rail and LIFT Paratransit Service, including transfers. If a rider takes two buses to get to work, it counts as two boarding rides.

# Selected Performance Measures (internal)



TriMet Operations Monthly Performance		Monthly Target	July 2011	June 2011	July 2010	FY Year to Date
Transportation	Bus On Time Performance	84.0%	80.6%	81.0%	80.3%	80.6%
	Bus Leaving Timepoints Early	4.0%	4.3%	4.2%	4.7%	4.3%
	Bus Leaving Beginning of Route Late	8.0%	11.4%	11.2%	11.2%	11.4%
	MAX On Time Performance	80.0%	78.7%	77.1%	75.4%	78.7%
	MAX Leaving Timepoints Early	5.5%	7.5%	7.1%	5.4%	7.5%
	MAX Leaving Beginning of Route Late	4.0%	3.9%	5.0%	5.8%	3.9%
	SIPs Not Closed within 30 Days	3.0%	5.2%	3.5%	5.7%	3.9%
	Bus Accident Per 100,000 Miles	2.59	2.15	3.15	2.88	2.15
	MAX Accident Per 100,000 Miles	1.13	0.30	1.84	2.27	0.30
	Attendance Rate	91.5%	91.2%	90.8%	89.3%	91.2%
	Bus Operators Actual to Budget	0.0%	-0.01%			-0.01%
	MAX Operatos Actual to Budget	0.0%	-2.88%			-2.88%
	TransOps Actual to Budget	0.0%				
	Non-Operator Unscheduled OT to Budget	0.0%	-6.0%			-6.0%
	Bus Extraboard Pay Factor	1.50	1.52	1.52	1.53	1.52
	Bus Percent Standby Time	12.0%	10.8%	10.5%	11.5%	10.8%
	Bus Extraboard Size	15.0%	14.8%	15.0%	15.1%	14.8%
	Bus Missed Pullouts	30	43	29	49	43
	MAX Extraboard Pay Factor	1.75	1.62	1.62	1.66	1.62
	MAX Percent Standby Time	24.0%	25.4%	22.1%	22.7%	25.4%
MAX Extraboard Size	22.5%	20.6%	20.0%	21.5%	20.6%	
MAX Missed Pullouts	2	0	2	1	0	

TriMet Maintenance Monthly Performance		Monthly Target	July 2011	June 2011	July 2010	FY Year to Date
Bus Maintenance	Scheduled vs. Unscheduled Maintenance	>= 70%	74%	75%	69%	74%
	Miles Between MAJOR Mechanical Failures	Increase	8,610	8,981		8,610
	Miles Between MINOR Mechanical Failures	Increase	5,904	6,242		5,904
	Miles Between Mechanical Failures	Increase	3,503	3,682		3,503
	Miles Between Mechanical Failures - Lost Service	Increase	6,888	6,800		6,888
	PM Schedule Compliance	>= 85%	98.4%	96.3%	98.2%	98.4%
	Deferred Work List Growth	Reduction	244	242	247	244
	Missed Pullouts Due to Vehicle Availability	0	0	0	0	0.0
	Employee Productivity	>= 70%	78.4%	78.1%	77.4%	78.4%
	Attendance Rate	>= 93.5%	94.7%	93.7%	94.1%	94.7%
	Employees FTE to Budget	293	298.0	277.0	281.6	298.0
	Unscheduled Overtime to Budget	0.0%	-10.5%	-18.2%	-6.0%	-10.5%
Injuries	<= 14%	10.5%			10.5%	
Rail Equipment Maintenance	Scheduled vs. Unscheduled Maintenance	> 70%	69%	68%	68%	69%
	Avg. Miles Between Mechanical Failures	> 3,749	2,439	2,706	2,786	2,439
	Avg. Miles Between Mechanical Failures with Lost Service	Increase				
	PM Schedule Compliance	>= 80%	27.1%	23.9%	7.0%	27.1%
	Pending Work List	under dev	912	912		912
	Missed Pullouts Due to Vehicle Availability	0	0	0	0	0.0
	Employee Productivity	> 70%	81.0%	67.9%	72.7%	81.0%
	Attendance Rate	>= 95%	94.2%	94.8%	94.7%	94.2%
	Employees FTE to Budget	162	167.0	157.5	138.8	167.0
	Unscheduled Overtime to Budget	0.0%	58.5%	68.7%	-24.9%	58.5%
	Injuries	<= 9%	7.9%			7.9%
Facilities Management	Scheduled vs. Unscheduled Maintenance	under dev	16.6%	19.0%		16.6%
	PM Schedule Compliance	under dev	0.0%	0.0%		
	Pending Work List	under dev	34	34		
	Employee Productivity	under dev	82.6%			
	Attendance Rate	>= 95%	93.9%	96.4%	94.2%	
	Employees FTE to Budget	82	76.0	64.0	72.0	76.0
	Unscheduled Overtime to Budget	0.0%	26.4%	70.0%	163.4%	26.4%



TriMet Maintenance of Way Monthly Performance		Monthly Target	July 2011	June 2011	July 2010	FY Year to Date
MOW	Attendance Rate	>= 95%	91.6%	91.9%	92.5%	91.6%
	Employees FTE to Budget	95	87.0	77.2	75.0	87.0
	Unscheduled Overtime to Budget	0.0%	13.4%	47.8%	90.5%	13.4%
	Injuries	<= 9%	16.8%			16.8%
Field	Scheduled vs. Unscheduled Maintenance	>= 70%	12.2%	11.0%	10.6%	12.2%
	PM Compliance	>= 90%	66.0%	70.9%	17.2%	66.0%
	TVM Reliability	>= 91%	92.7%	90.8%	93.5%	92.7%
	Pending Work List	under dev	0	0		
	Employee Productivity	>= 70%	77.7%	81.3%	70.9%	77.7%
OCS	Scheduled vs. Unscheduled Maintenance	>= 70%	42.4%	47.5%	29.3%	42.4%
	PM Compliance	>= 95%	0.0%	97.1%	100.0%	0.0%
	Pending Work List	under dev	120	134		120
	Employee Productivity	>= 70%	54.1%	87.6%	67.5%	54.1%
Signals	Scheduled vs. Unscheduled Maintenance	>= 70%	63.4%	59.1%	81.9%	63.4%
	PM Compliance	>= 95%	98.6%	99.1%	99.8%	98.6%
	Pending Work List	under dev	51	48		51
	Employee Productivity	>= 70%	26.3%	27.1%	51.1%	26.3%
Track	Scheduled vs. Unscheduled Maintenance	>= 70%	97.5%	98.8%	83.2%	97.5%
	PM Compliance	>= 95%	94.6%	90.3%	54.6%	94.6%
	Pending Work List	under dev	4	4		4
	Employee Productivity	>= 70%	45.7%	44.7%	25.7%	45.7%
Substations	Scheduled vs. Unscheduled Maintenance	>= 70%	98.8%	82.7%	83.3%	98.8%
	PM Compliance	>= 95%	63.9%	91.3%	69.0%	63.9%
	Pending Work List	under dev	45	11		45
	Employee Productivity	>= 70%	56.6%	91.9%	57.5%	56.6%

# TriMet Performance Dashboard (internal)

# Operations Dashboard

by [Steve Callas](#) — last modified Sep 29, 2010 12:13 PM

## Daily and Weekly Key Performance Measures

 [Bus On Time Performance](#)

 [MAX Light Rail On Time Performance](#)

 [TYM Reliability](#)

 [Bus Mechanical Incidents \(resulting in lost service\)](#)

[Bus ACID Delay & Abandonment Report](#)

 [MAX Mechanical Incidents \(resulting in lost service\)](#)

[MAX ACID Delay & Abandonment Report](#)

 [Fixed Route Bus Accidents](#)

# Operations Dashboard *(Continued)*

by **Steve Callas** — last modified Sep 29, 2010 12:13 PM

## Daily and Weekly Key Performance Measures

 [MAX Light Rail Accidents](#)

 [Accident Descriptions](#)

 [Weekly Operator Attendance](#)

 [Daily Extraboard Report](#)

 [Daily Absence Report](#)

 [MAX Systemwide Headway Adherence](#)

[Bus Daily Performance](#)

[MAX Daily Performance](#)

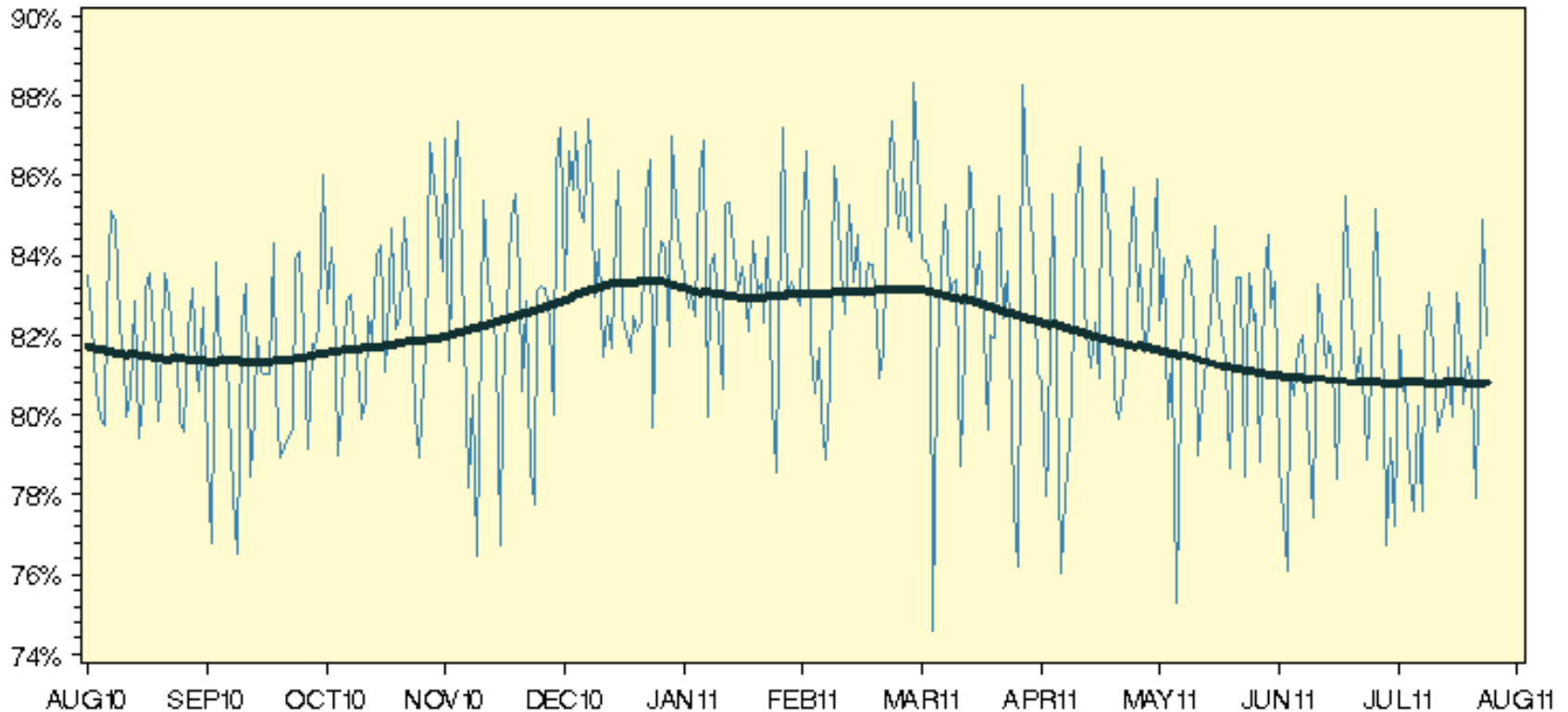
# Fixed Route Bus On Time Performance Report

Tue, Aug 23, 2011   Mon, Aug 22, 2011   Sun, Aug 21, 2011   Previous 31 Day Avg.   Previous 365 Day Avg.

## Bus On Time Performance

	Tue, Aug 23, 2011	Mon, Aug 22, 2011	Sun, Aug 21, 2011	Previous 31 Day Avg.	Previous 365 Day Avg.
On Time	82.0%	84.9%	80.5%	80.7%	82.0%
Early	4.4%	5.4%	4.3%	4.3%	4.5%
Late	13.6%	9.7%	15.2%	15.0%	13.5%

## Bus On Time Performance





***Center Garage - Weekday Route Level On Time Performance  
April 1, 2011 - April 30, 2011***

<b>Route</b>	<b>On Time</b>	<b>Early</b>	<b>Late</b>	<b>Center Trips</b>	<b>Total Trips</b>
1-Vermont	84.3%	4.1%	11.6%	24	24
4-Division/Fessenden	79.0%	5.8%	15.2%	61	167
6-Martin Luther King Jr Blvd	79.5%	3.1%	17.4%	123	123
8-Jackson Park/NE 15th	81.9%	5.6%	12.5%	153	153
9-Powell/Broadway	72.9%	4.8%	22.4%	31	151
10-Harold St	93.3%	0.6%	6.2%	3	73
12-Barbur/Sandy Blvd	75.3%	2.5%	22.2%	62	141
14-Hawthorne	80.8%	2.4%	16.9%	33	162
15-Belmont/NW 23rd	84.5%	6.6%	8.9%	43	154
16-St Johns/Front Ave	77.0%	10.2%	12.8%	22	22
17-Holgate/NW 21st	85.9%	3.1%	11.0%	120	120
19-Woodstock/Glisan	80.9%	4.4%	14.6%	20	124
20-Burnside/Stark	68.7%	1.8%	29.5%	12	119
28-Linwood	80.9%	1.3%	17.8%	11	22
29-Lake/Webster Rd	74.8%	3.9%	21.3%	13	24
30-Estacada	77.5%	16.4%	6.1%	28	42
31-King Rd	79.7%	10.5%	9.8%	53	73
32-Oatfield	74.8%	3.9%	21.3%	39	39
33-McLoughlin	79.5%	6.4%	14.1%	104	104
34-River Rd	96.1%	1.8%	2.1%	30	34
35-Macadam/Greeley	73.9%	5.4%	20.7%	86	86

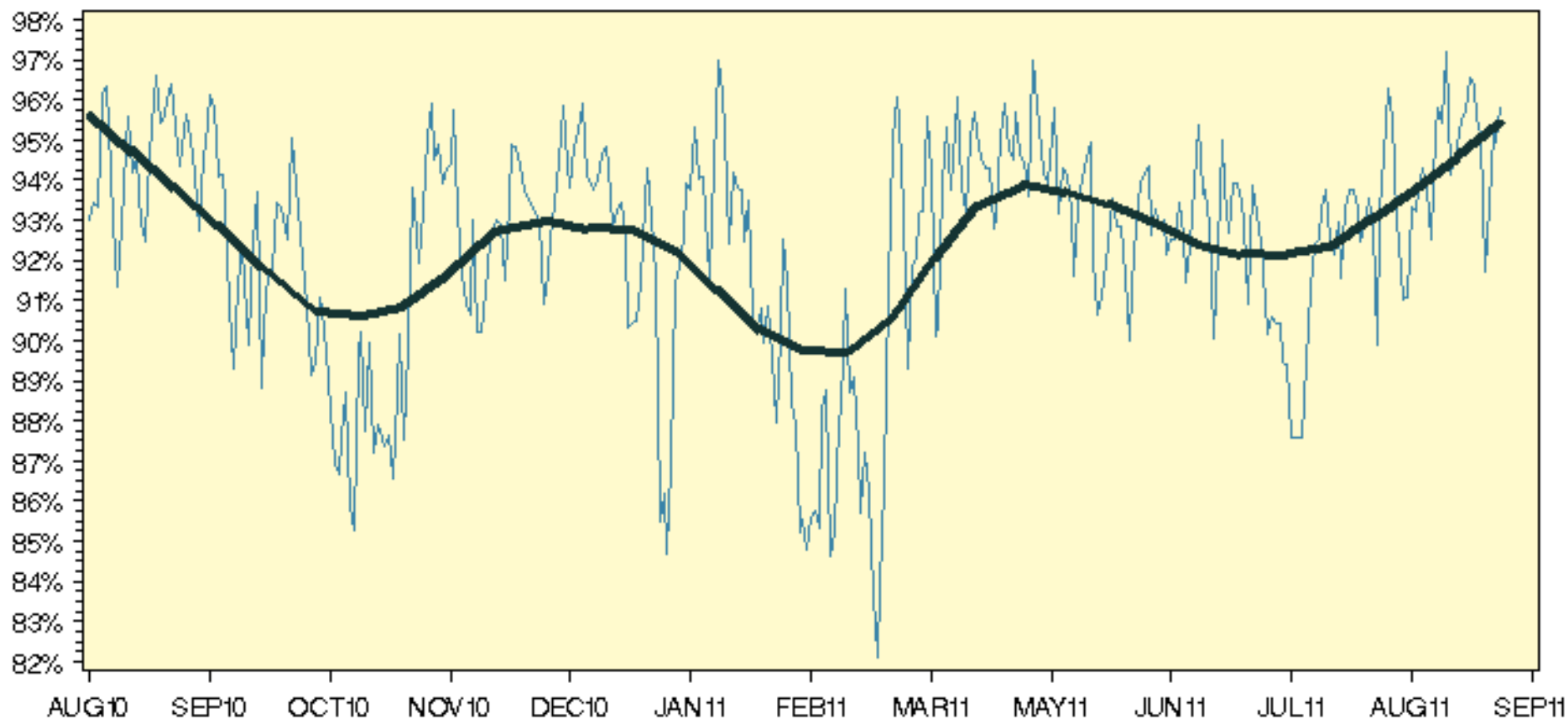
# Daily TVM Reliability Report

Thu, Aug 25, 2011    Wed, Aug 24, 2011    Tue, Aug 23, 2011    Previous 31 Day Avg.    Previous 365 Day Avg.

## TVM Reliability

Reliability Percent	95.8%	94.9%	95.2%	94.4%	92.4%
Hours Down	213.0	256.8	242.8	279.9	384.1

## Daily TVM Reliability



# Daily Fixed Route Bus Accident Report

Thu, Aug 25, 2011    Wed, Aug 24, 2011    Tue, Aug 23, 2011    Previous 31 Day Avg.    Previous 365 Day Avg.

## Bus Accidents

Number of Accidents

3

3

4

1.9

1.8

Miles Between Accidents

18,357

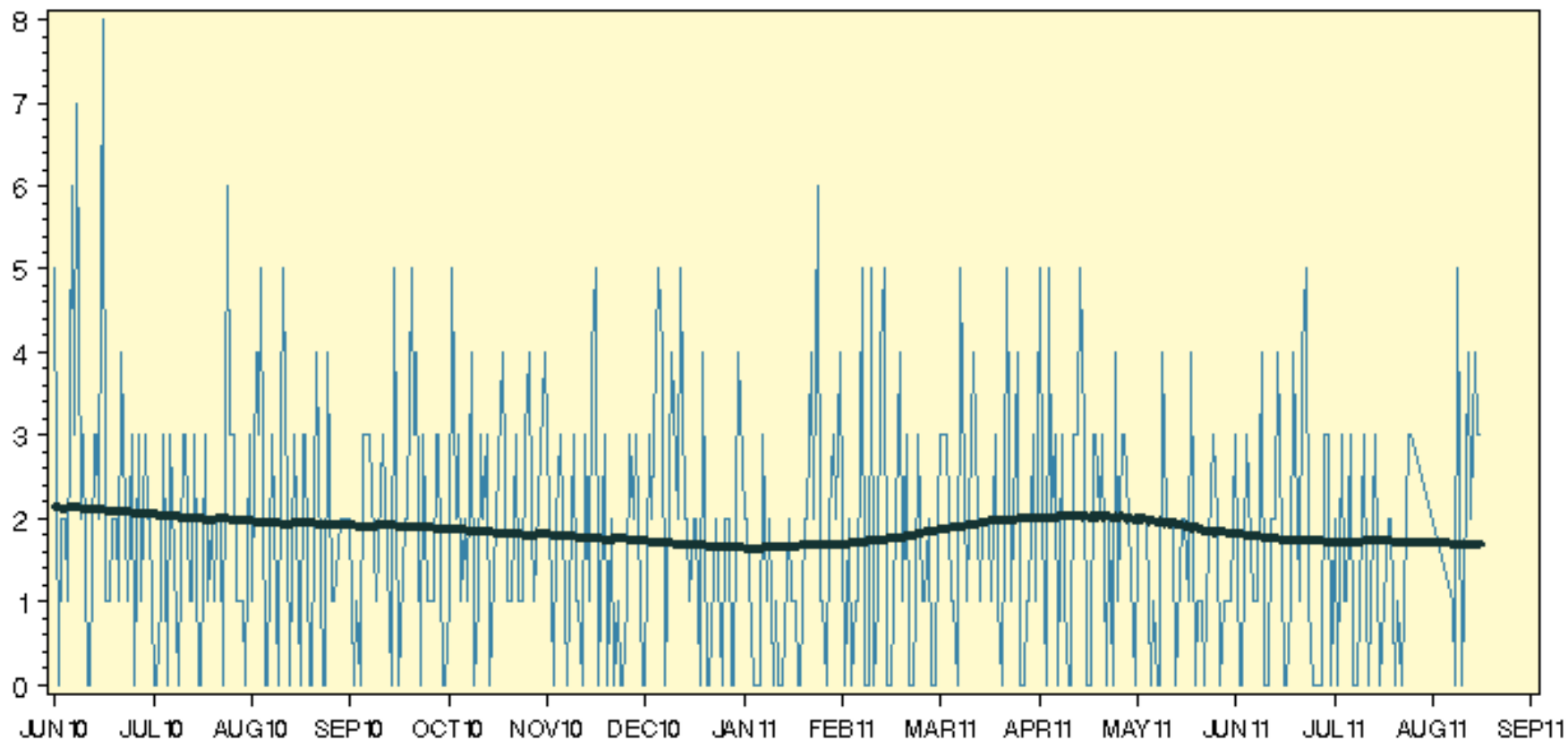
18,405

14,686

30,345

25,309

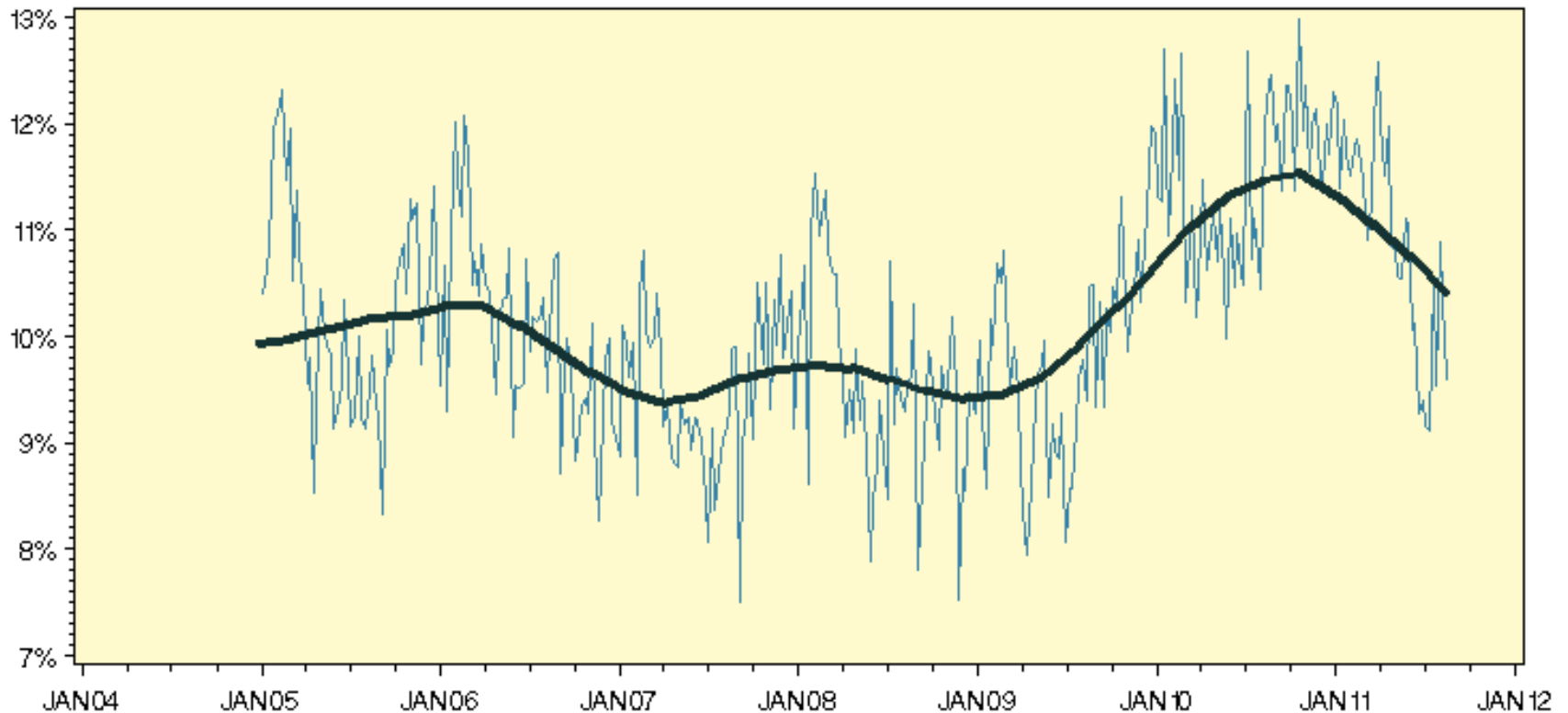
## Daily Fixed Route Bus Accidents



## Operator Absent Report

	Week of Aug 14	Week of Aug 07	Week of Jul 31	Month Avg.	Yearly Avg.
<b>Weekly Operator Absent Percent</b>					
Sick/FMLA Percent	8.0%	8.1%	8.5%	7.9%	8.3%
Workers Comp/Lt. Duty	0.7%	1.0%	1.0%	0.9%	1.7%
Excused Percent	0.9%	1.2%	1.3%	1.3%	1.3%
<b>Total Absent Percent</b>	<b>9.6%</b>	<b>10.3%</b>	<b>10.9%</b>	<b>10.2%</b>	<b>11.3%</b>

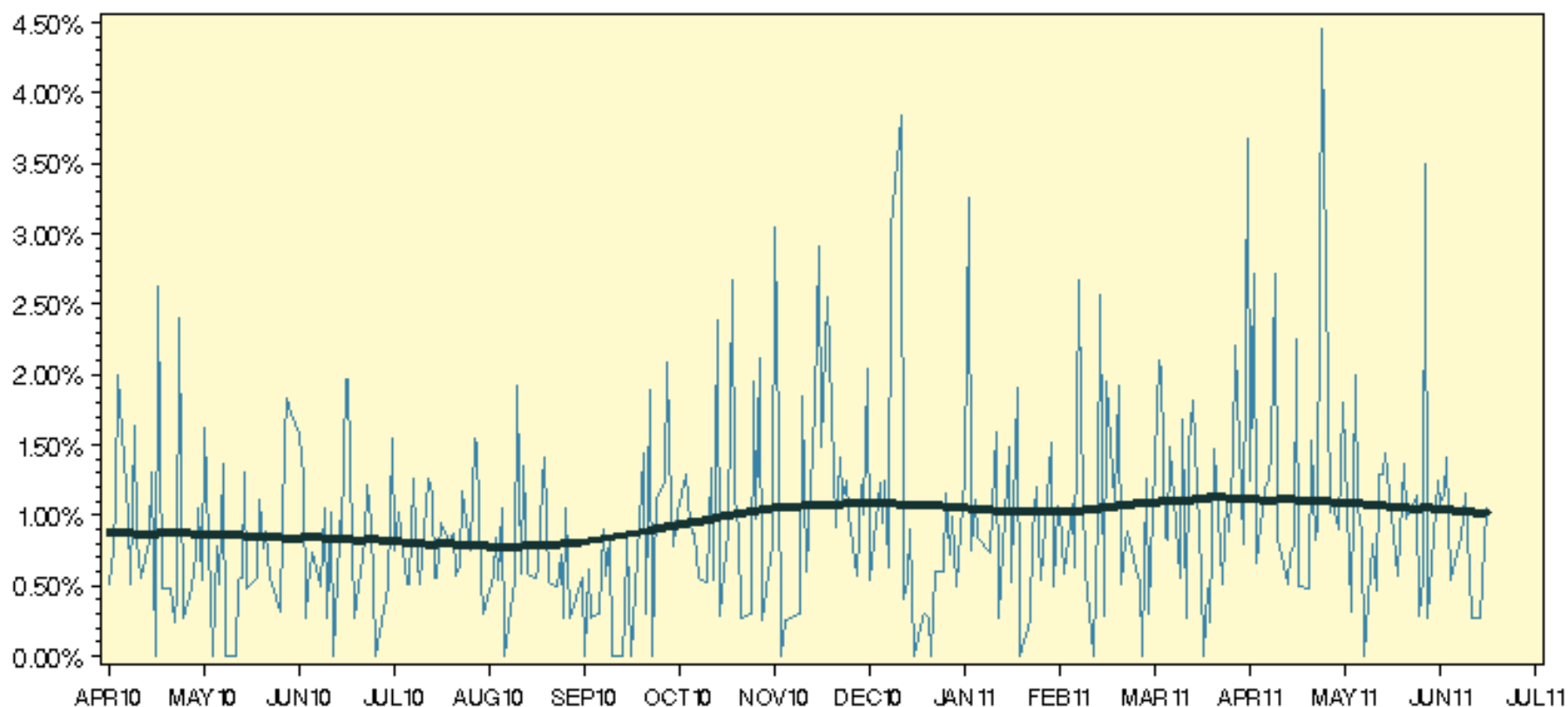
## Operator Total Absent Rate



## Daily MAX Trips Above Achievable Capacity

	Wed, Jun 29, 2011	Tue, Jun 28, 2011	Mon, Jun 27, 2011	Previous 31 Day Avg.	Previous 365 Day Avg.
<b>MAX Achievable Capacity</b>					
Percent of Trips	1.05%	0.79%	0.27%	0.95%	1.00%
Number of Trips	7	5	2	6	7

## Daily Percent of MAX Trips Over Achievable Capacity





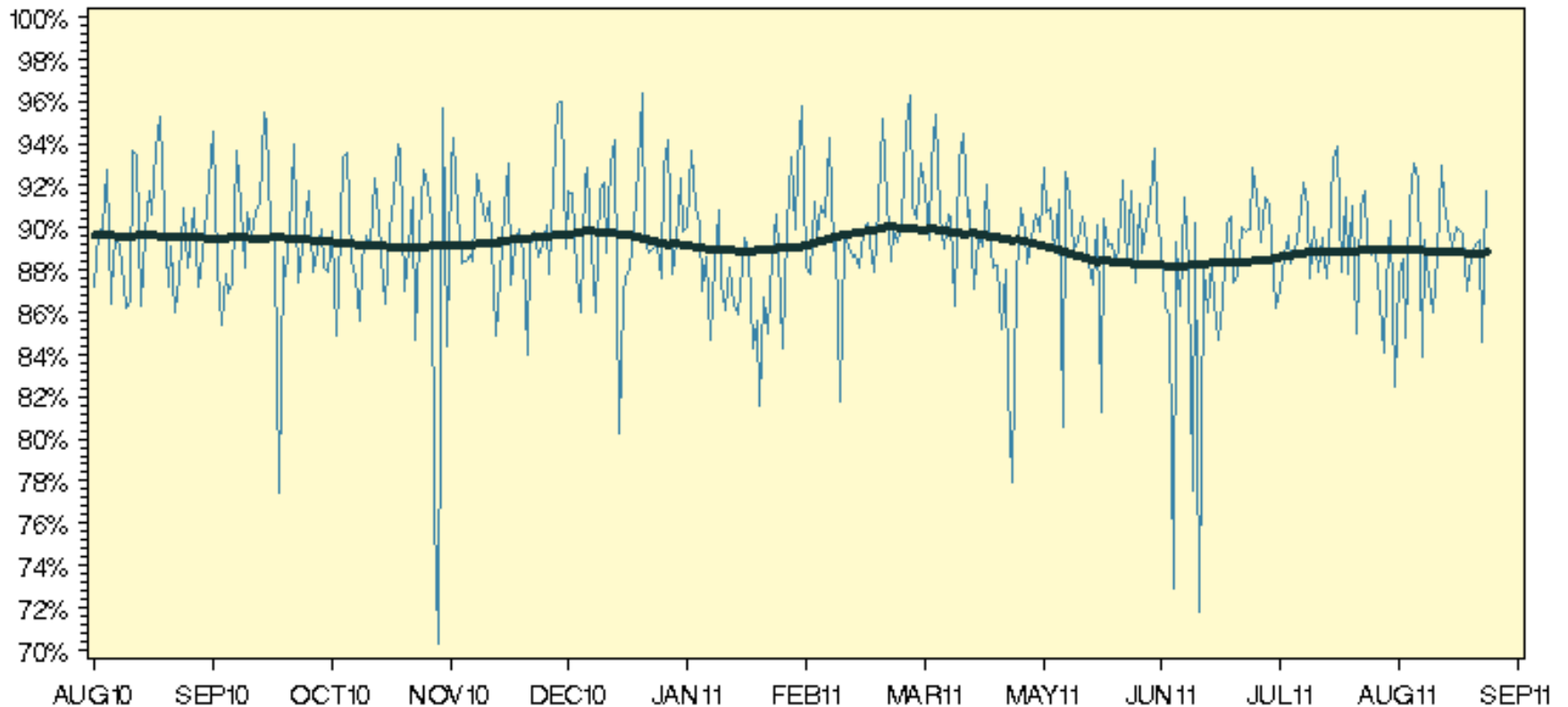
# MAX Headway Performance Report

Thu, Aug 25, 2011    Wed, Aug 24, 2011    Tue, Aug 23, 2011    Previous 31 Day Avg.    Previous 365 Day Avg.

## MAX Headway Adherence

50 to 150%	91.8%	84.6%	89.4%	88.5%	89.2%
66 to 133%	83.9%	72.8%	80.4%	78.9%	80.1%
75 to 125%	75.6%	63.1%	73.2%	71.1%	72.6%

## MAX Headway Adherence — 50% to 150% of Scheduled Headway



# Other Examples of Integrated Performance Reports

*Operator Speeds to Peers Report  
Sorted by Safety Related Complaints*

Badge	Operator		Last Six Months						Last 30 Days		
			Speed Difference (MPH)	Percent Difference	Days Worked	Leaving Beginning of Line Late	No. of Safety Complaints	No. of Incidents	Speed Difference (MPH)	Percent Difference	Days Worked
1190		Full Time	-1.2	( 4.1%)	135	66.7%	12	7	-0.5	( 1.6%)	24
5154		Part Time	1.8	5.3%	128	2.1%	11	1	2.6	7.7%	22
220		Full Time	4.3	12.0%	105	8.0%	9	1	1.6	5.0%	16
4899		Full Time	2.3	7.3%	113	29.5%	9	0	3.1	9.4%	19
844		Full Time	1.4	4.5%	134	7.1%	9	2	-0.6	( 2.2%)	20
260		Full Time	2.1	6.7%	116	22.1%	8	1	2.7	8.8%	21
6482		Part Time	4.1	12.3%	105	2.0%	7	1	2.0	6.7%	19
6534		Full Time	2.4	7.6%	69	6.8%	7	1	3.3	10.4%	13
6093		Full Time	1.3	3.8%	120	6.9%	7	0	1.8	5.5%	20
3969		Full Time	0.5	1.5%	105	43.6%	7	2	0.5	1.6%	20
2716		Full Time	-0.2	( 0.8%)	88	34.8%	7	1	-0.7	( 2.1%)	13
2700		Full Time	0.7	2.3%	110	12.1%	6	0	1.4	4.9%	14
4944		Part Time	-0.2	( 0.6%)	105	5.9%	6	1	-0.4	( 1.6%)	10
1002		Full Time	-0.9	( 3.0%)	88	8.8%	6	0	-1.1	( 4.2%)	11
71		Full Time	-1.2	( 4.7%)	100	2.1%	6	1	-0.0	( 0.1%)	19
2047		Full Time	-2.0	( 6.3%)	101	48.6%	6	0	2.7	7.6%	5
2813		Full Time	-2.4	( 8.5%)	118	8.3%	6	3	-5.1	( 20.1%)	21
1370		Full Time	2.2	7.1%	109	36.7%	5	2	2.1	6.7%	14
2617		Full Time	2.1	6.7%	95	1.3%	5	1	4.7	14.3%	13

**Center Bi-Weekly Operations Report**  
**Badge and Operator:**

Attendance									
Two Week Period Beginning	Sick Rate	FMLA Rate	Unexcused Rate	Light Duty Comp Rate	Excused Rate	Contractual Rate	Number of Oversloops	Total Absent Rate	Total Timeloss Absent Rate
08/07/2011	13.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0	13.2%	13.2%
07/24/2011	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0.0%	0.0%
07/10/2011	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0.0%	0.0%
06/26/2011	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0	12.5%	12.5%
06/12/2011	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0.0%	0.0%
05/29/2011	10.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	10.0%	10.0%
05/15/2011	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0.0%	0.0%
	5.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0	5.1%	5.1%

On Time Performance								
Two Week Period Beginning	On Time Percent	Percent Early	Percent Late	Peer's On Time Percent	Peer Difference	Percent Leaving Late	Average Peer Speed Difference (mph)	Average Peer Speed Percent Difference
08/07/2011	84.8%	3.5%	11.6%	83.1%	1.7%	35.3%	2.1	7.1%
07/24/2011	75.3%	2.6%	22.1%	77.4%	( 2.0%)	25.0%	5.4	18.3%
07/10/2011	77.3%	2.4%	20.3%	78.3%	( 1.0%)	30.0%	3.6	12.7%
06/26/2011	74.4%	2.8%	22.8%	76.2%	( 1.9%)	37.0%	-0.3	( 0.9%)
06/12/2011	74.9%	7.6%	17.4%	81.2%	( 6.3%)	33.3%	-0.8	( 2.6%)
05/29/2011	77.4%	5.0%	16.8%	76.7%	0.7%	27.3%	2.2	7.3%
05/15/2011	84.4%	5.8%	9.7%	81.1%	3.3%	24.1%	2.4	7.7%
	78.3%	4.3%	17.4%	79.1%	( 0.9%)	30.0%	2.5	8.3%

Two Week Period Beginning	SIP's				Incidents							
	Public Relations	Safety Related	Service Delivery	Command-ations	Accidents	Slip & Trips	Injuries	Security	Rule Violations	Fit for Duty	Evasive Action	Hard Stops
08/07/2011	1	1	0	0	0	0	0	1	0	0	0	0
07/24/2011	0	0	1	0	0	1	0	0	0	0	0	0
07/10/2011	0	0	0	0	0	0	0	0	0	0	0	0
06/26/2011	0	0	0	0	0	0	0	0	0	0	0	0
06/12/2011	0	1	0	0	0	0	0	0	0	0	0	0
05/29/2011	0	0	0	0	0	0	0	0	0	0	0	0
05/15/2011	0	0	0	0	0	0	0	0	0	0	0	0
	1	2	1	0	0	1	0	1	0	0	0	0

# TriMet Performance Measures – Next Steps

- Expand external performance dashboard to include more measures.
  - Facilitate public access to data.
- Increase use of internal measures among departments and seek to “institutionalize” them.
- Work with internal stakeholders to adjust performance goals and make them “realistic.”



# Any Questions?

