

# Dashboarding for Fun and Profit

Presentation to the VOUG

Jim Raper

October 14, 2010

# Agenda

- Just what is a dashboard
- Roles that dashboards play
- Best Practices
  - Cost of real estate
  - Using shapes
  - Using colors
- Evaluating and improving your dashboards

# Disclaimer

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# What is a Dashboard?

**Visual display**

of the

**most important** information

needed to **achieve** one or more **objectives**

which

fits entirely on a **single computer screen**

so it can be

monitored at a **glance**

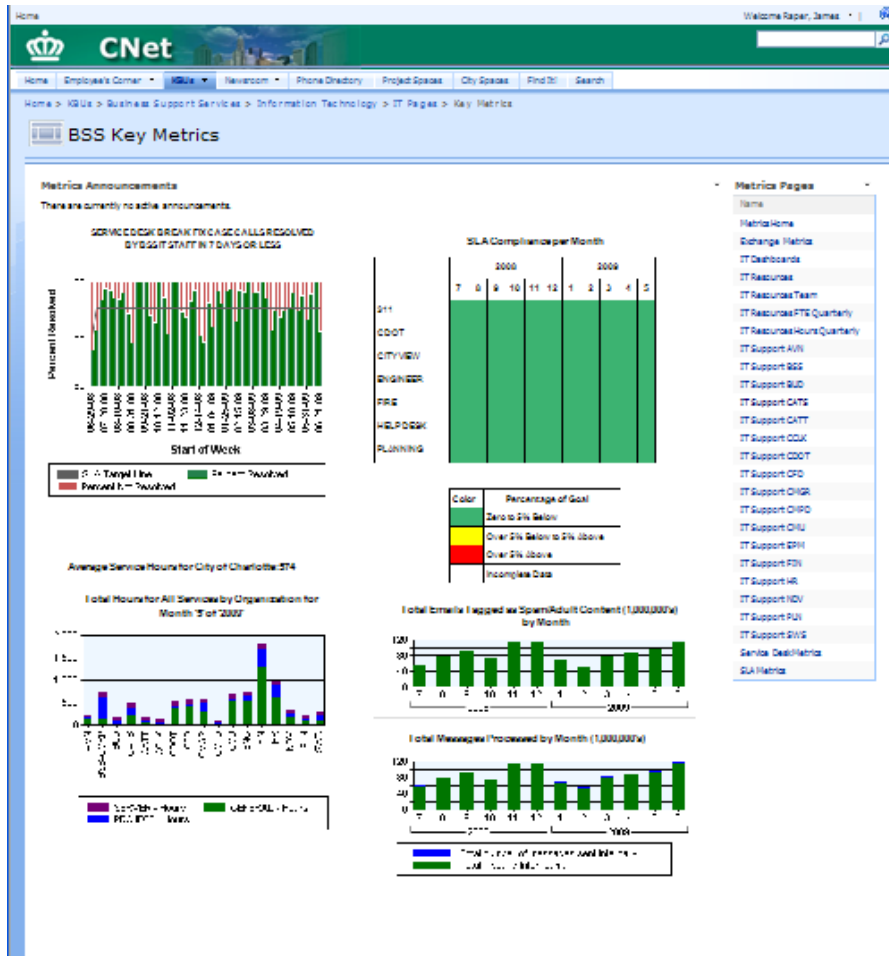
# Roles of Dashboards

- Strategic
- Operational
- Analytical
- Informational

# Strategic Dashboards

- Long term direction
- High level performance measures
- Extremely simple display mechanisms
- Updated daily to monthly

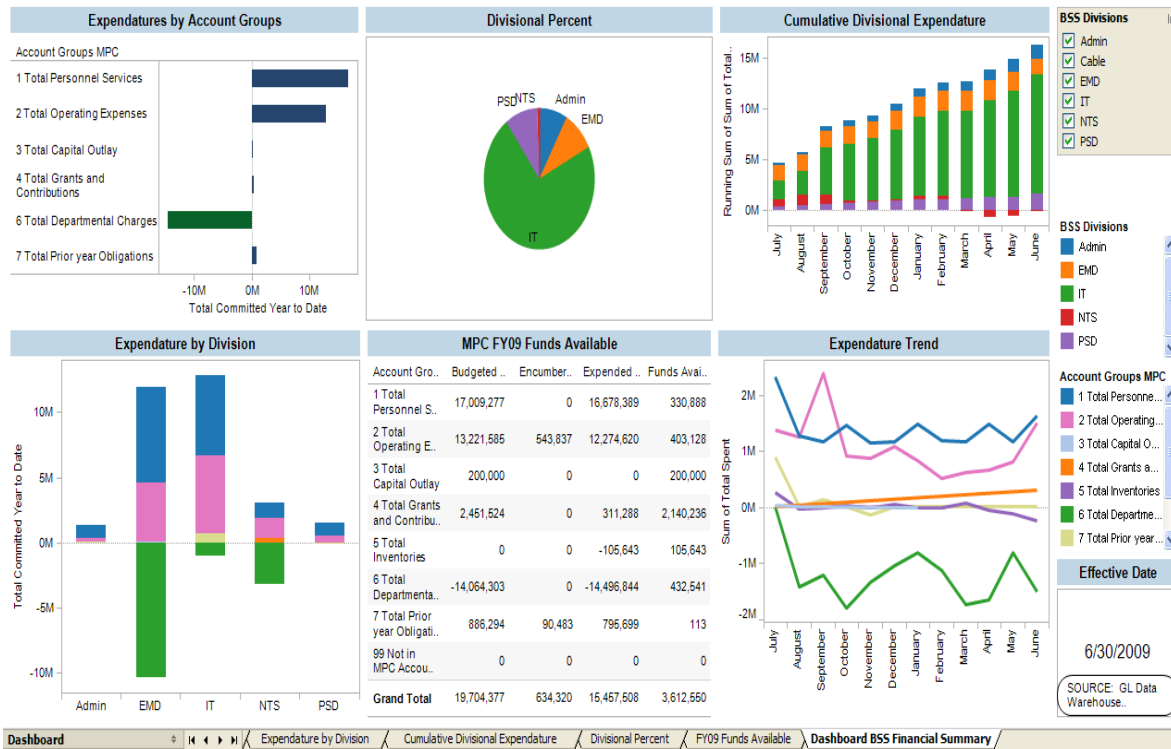
# IT Key Metrics Reporting



- Built In-house
- Use: Monthly Key Metrics Report
- SQL Server
- Tools
  - Microsoft Reporting Services
  - SharePoint

# BSS Financial Trend Analysis

Dashboard BSS Financial Summary

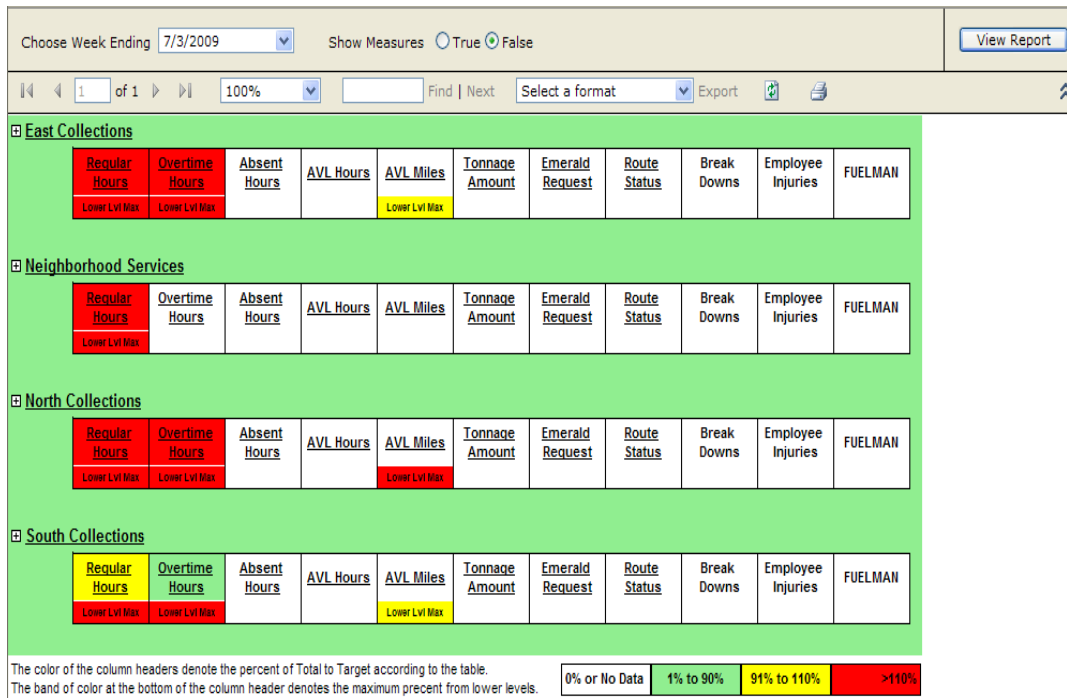


- Built In-house
- Use: Expenditure Planning and Forecasting
- SQL Server
- Tool – Tableau

# Operational Dashboards

- Monitor ongoing operations
- Metrics reflect constantly changing activities
- Extremely simple display mechanisms
- Grab attention rapidly
- Updated at the pace of business activity

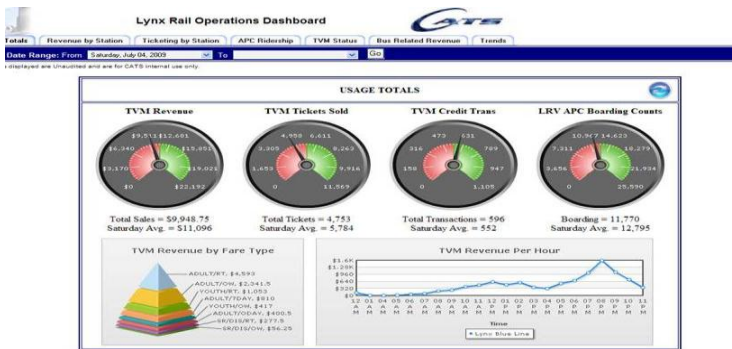
# SWS Operations Dashboard



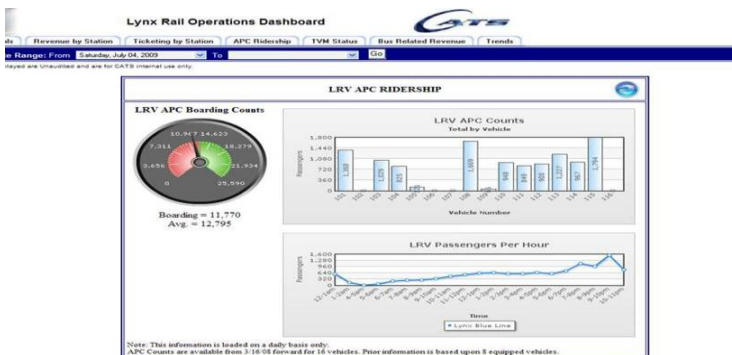
- Built In-house
- Use: Statistics on labor, fuel, tonnage, and routes
- SQL Database
- Tool
  - MS Reporting Services

# CATS Lynx Ticket Sales vs. Ridership Reporting

- Sales

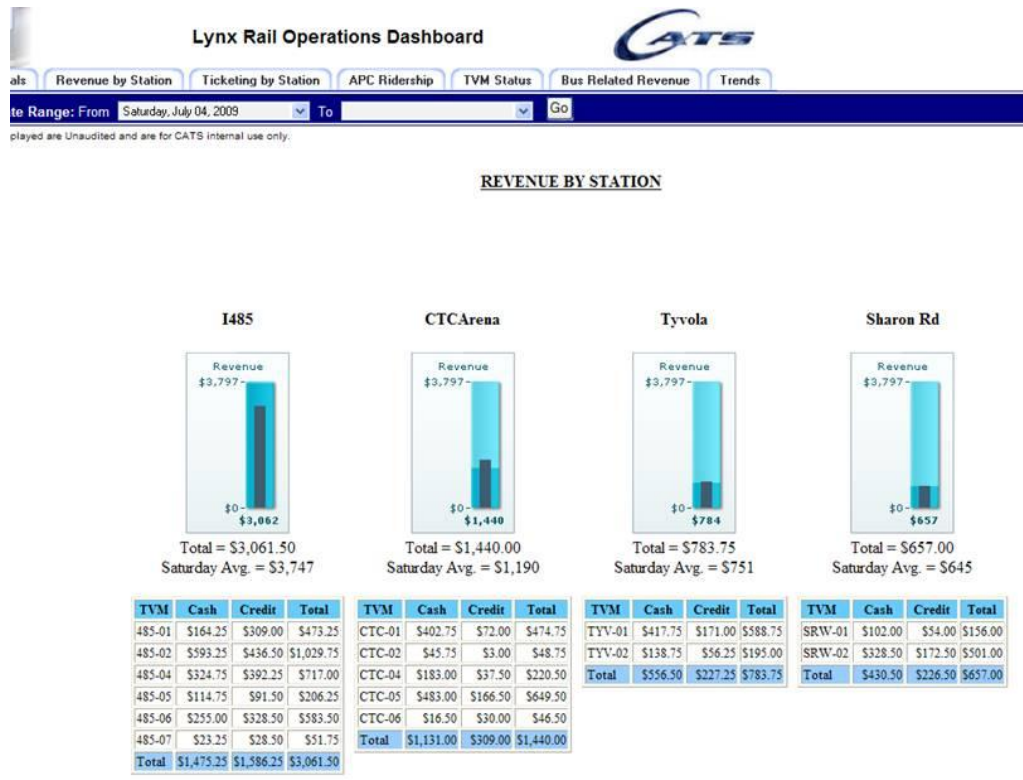


- Ridership



- Built In-house
- Use: Ticket Sales and Ridership Analysis
- SQL Database
- Tools
  - Fusion Gadgets
  - MS SQL
- July 4<sup>th</sup> Sales per hour peaked two hours before ridership

# CATS Lynx Real Time Reporting



- Built In-house
- Use: Revenue by Station
- Real Time from Ticket Machines
- Tool
  - Fusion Gadgets

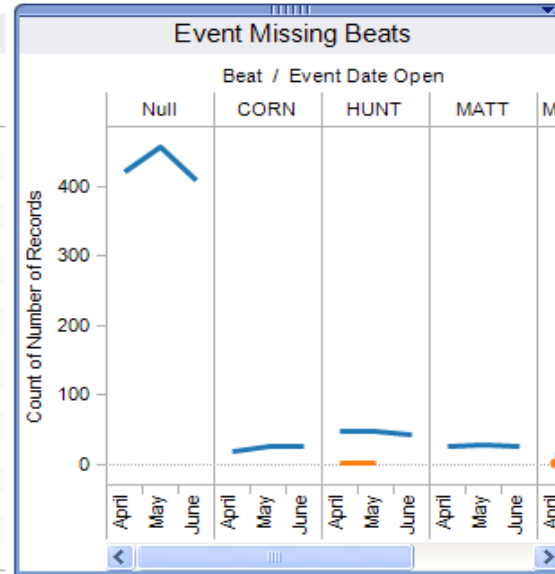
# Analytic Dashboards

- Greater context and history
- Sophisticated display
- Interaction with data
- What to investigate rather than answer

# Prototype BI Data Quality Dashboard

## CMPD QC Dashboard

Event Agency Coding		
Agency Code	Event Type	
	Arrest	Report of Crime Against Property
A	27	
AP		38
C	7,368	
CMPD		10,610
D	21	
DVSN		43
E	111	
F	24	
G	1	
H	195	
M	476	
R	160	
S	1,307	
U	31	
V	3	
W	15	
X	680	



**Event Type**

- Arrest
- Report of Crime Against Prop..

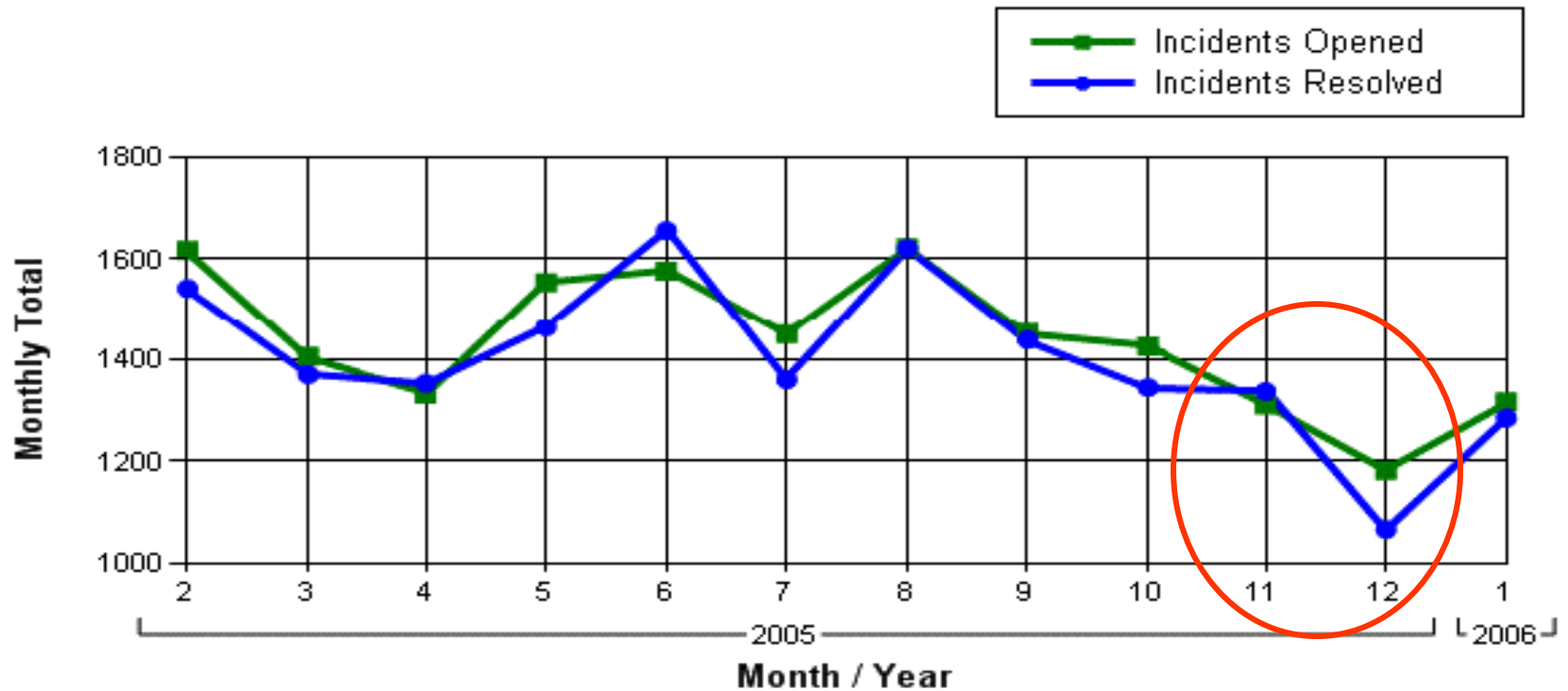
Event MisCoding Gender		
Gender	Event Type	
	Arrest	Report of Crime Against Property
<b>Null</b>		2,427
<b>F</b>	1,963	3,931
<b>M</b>	8,456	4,323
<b>U</b>		10

Event MisCoding Race		
Race	Event Type	
	Arrest	Report of ..
Null		2,427
American Indian/Alaskan Na..	21	11
Asian or Pacific Islander	65	149
Black	6,139	3,509
Hispanic/Latino	1,488	713
Other/Not Listed	4	20
U	17	
Unknown		147
White	2,685	3,715

# “Standard” Graphs

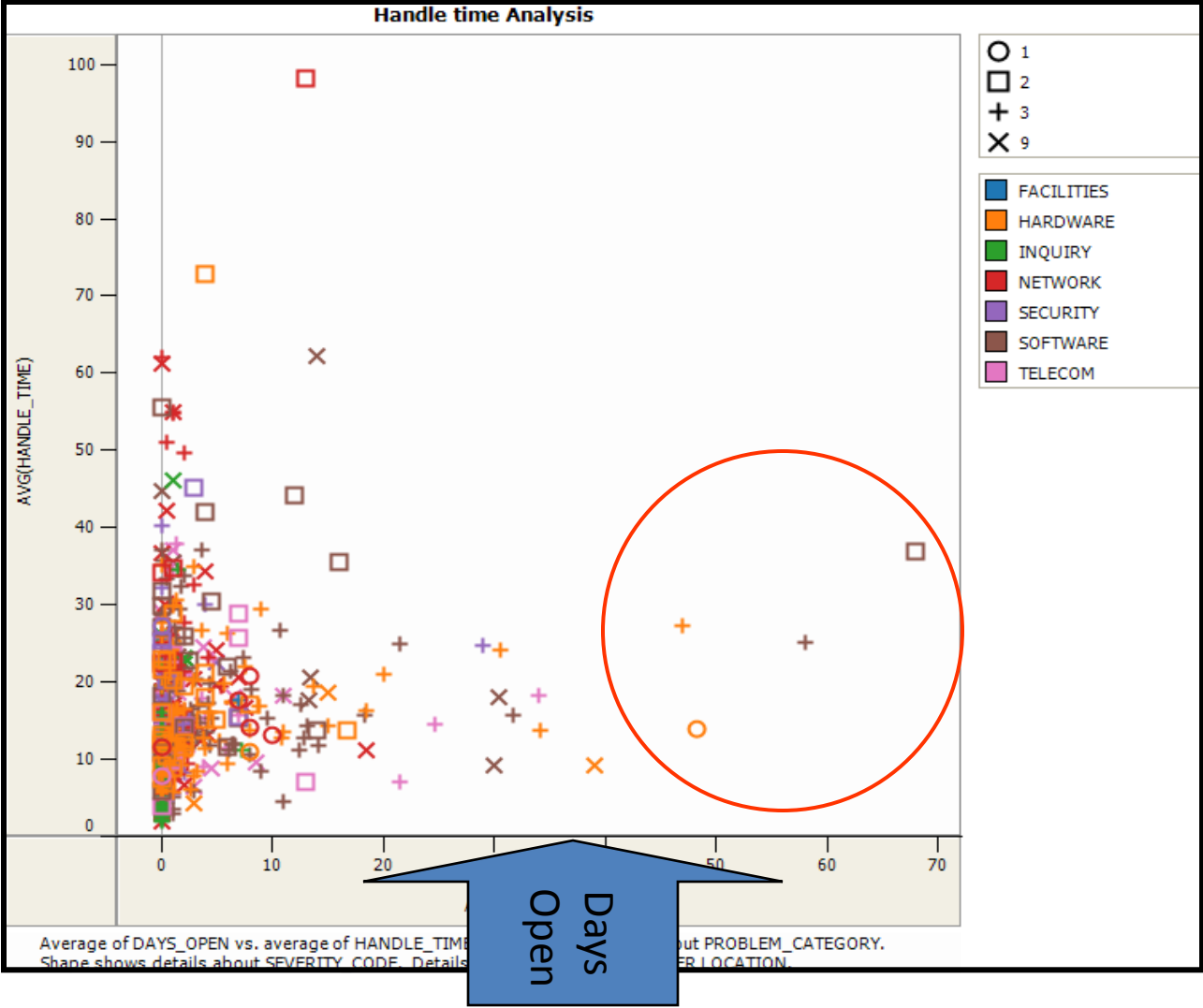
## Monthly Service Desk Incidents by Originator

### IT SERVICE DESK ACTIVITY ORIGINATED BY ALL



# Browsing For Outliers

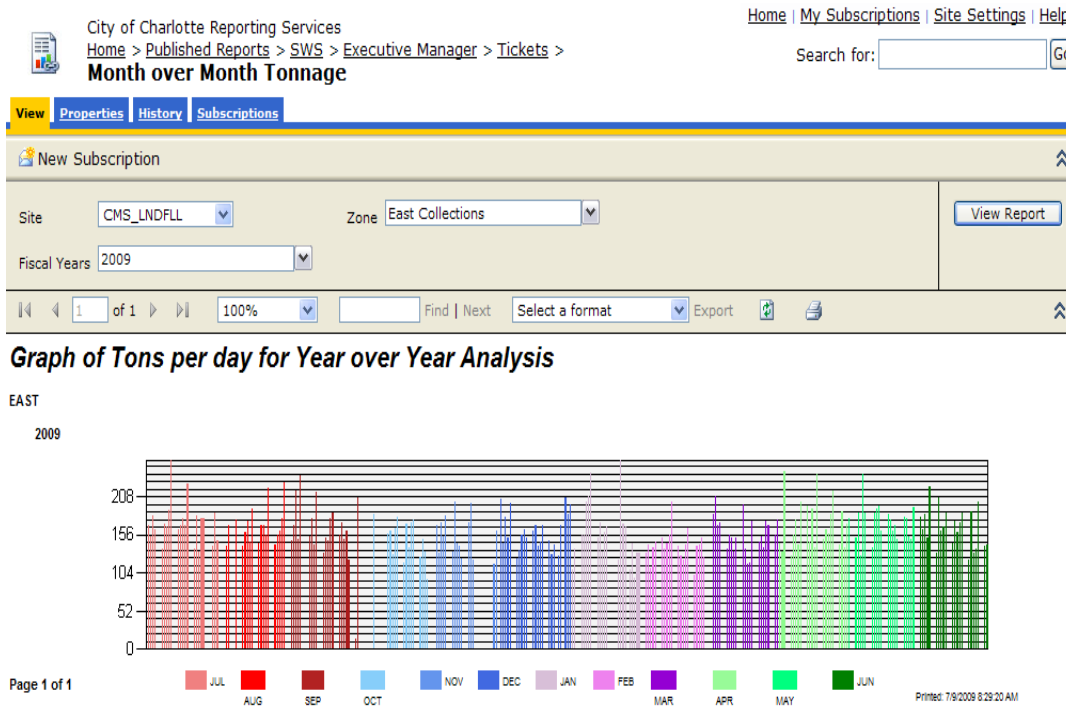
Time to Handle



Priority

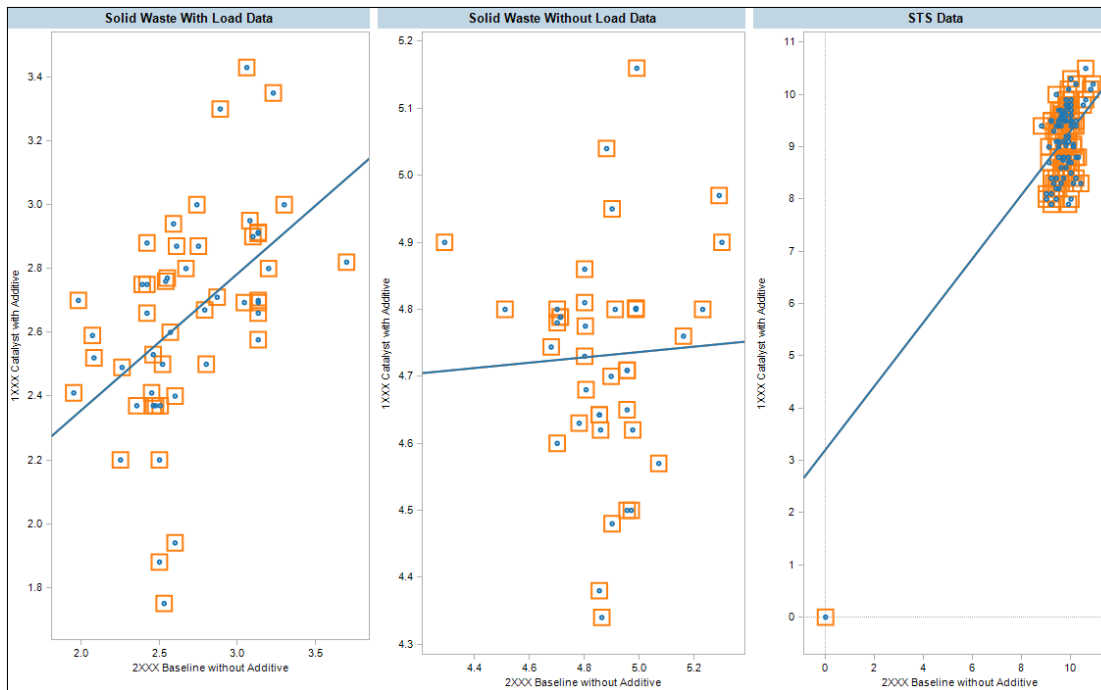
Problem

# SWS Landfill Analysis



- Built In-house
- Use: Tonnage by Zone
- SQL Database
- Tool
  - MS Reporting Services

# BSS/EMD Technical Analysis



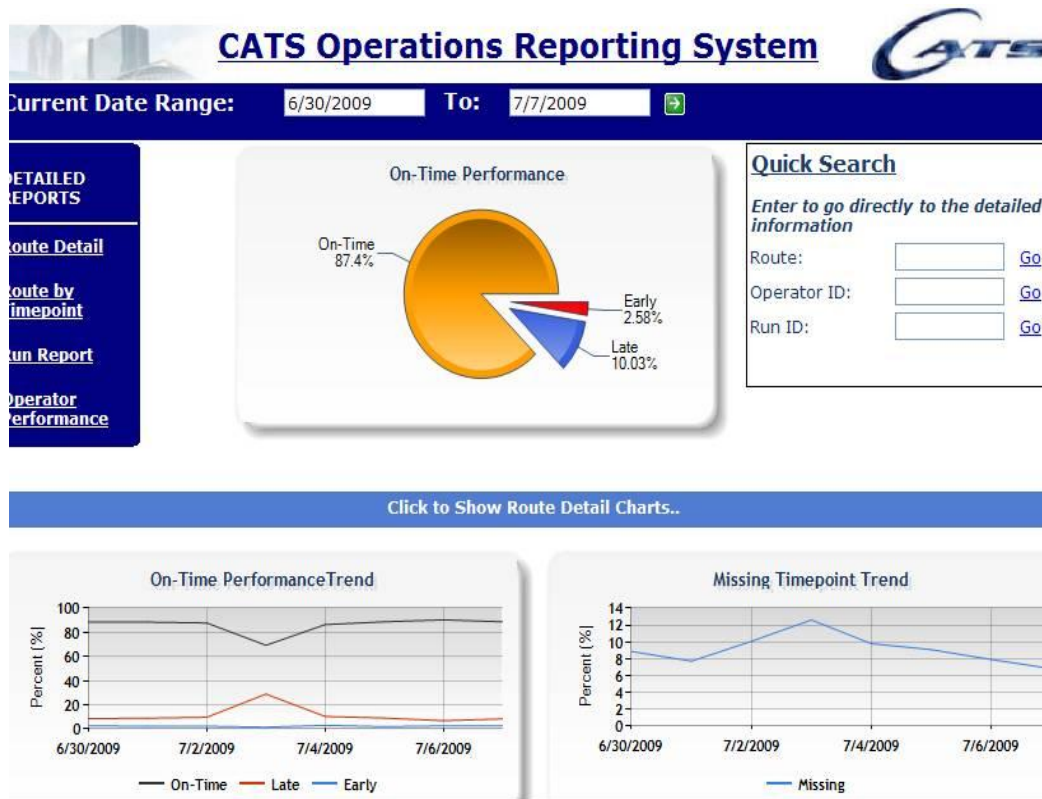
- Built In-house
- Use: Fuel Additive Analysis
- Excel
- Tool
  - Tableau



# Informational Dashboards

- Transparency to Customers
- Customer self service for information
- ‘Pretty display’
- Controlled interaction with data

# CATS Bus Operations Dashboard

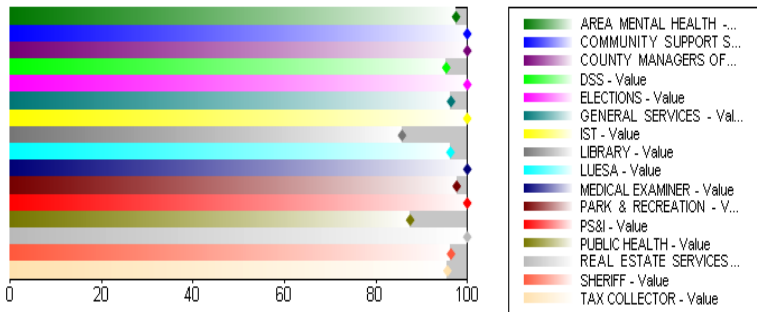


- Built In-house
- Use: Bus On Time
- SQL Database
- Tools
  - Fusion Gadgets
  - MS Reporting Services Drill Thru for Details

# EMD Performance Reporting

## Mecklenburg County Availability by Organization

Date: 7/9/2009 Time: 8:58:45 AM



Organization	% Available:	Total Vehicles:	Total Down:
Entire Fleet Availability	96.74 %	1566	51
AREA MENTAL HEALTH	97.53 %	81	2
COMMUNITY SUPPORT SERVICES	100.00 %	8	0
COUNTY MANAGERS OFFICE	100.00 %	2	0
DSS	95.40 %	239	11
ELECTIONS	100.00 %	2	0
GENERAL SERVICES	96.43 %	28	1
IST	100.00 %	6	0

- Built In-house
- Use: Vehicle Availability
- SQL Database
- Tool
  - MS Reporting Services

# Drill Thru to Measures



















City of Charlotte

Equipment Management Division

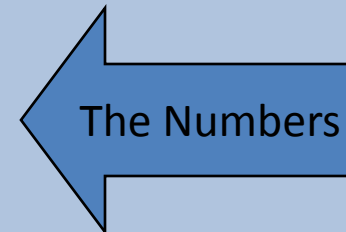
## Vehicle Maintenance Equipment Dashboard

YEAR: 2006

WEEK: 6 /26 - 7 /2

EQUIPMENT GROUP	PM	RM	CD	AM	TOTAL
 <a href="#">AUTOMATED</a>					
ACTUAL	\$0.00	\$1,176.00	\$0.00	\$0.00	\$1,176.00
PLAN	\$799.19	\$976.79	\$860.92	\$333.04	\$2,969.94
PERCENT	0.00 %	120.39 %	0.00 %	0.00 %	39.60 %
 <a href="#">REAR LOADER</a>					
ACTUAL	\$0.00	\$228.00	\$165.00	\$0.00	\$393.00
PLAN	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
PERCENT	--	--	--	--	--
 <a href="#">RECYCLE</a>					
ACTUAL	\$0.00	\$194.00	\$0.00	\$0.00	\$194.00
PLAN	\$529.37	\$647.37	\$536.52	\$342.96	\$2,056.21

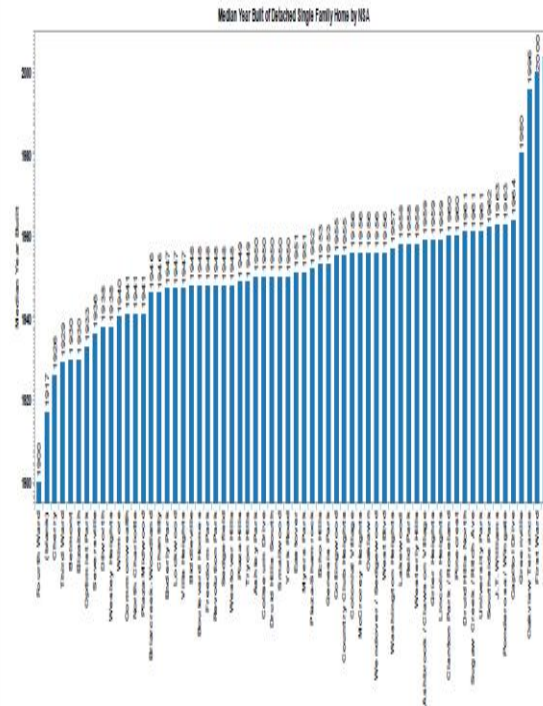
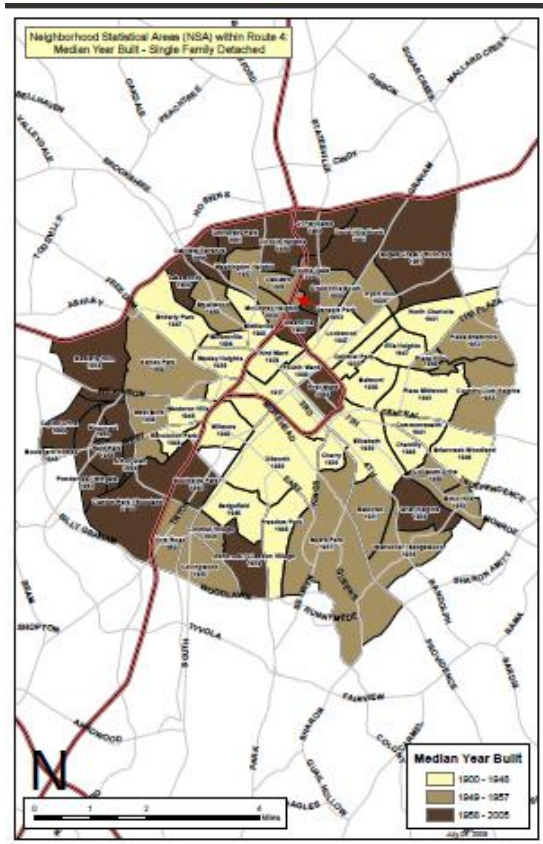
[View Measures](#)



COLOR	PERCENT
Green	Zero to 90%
Yellow	Over 90%
Red	Over 110%
White	Incomplete

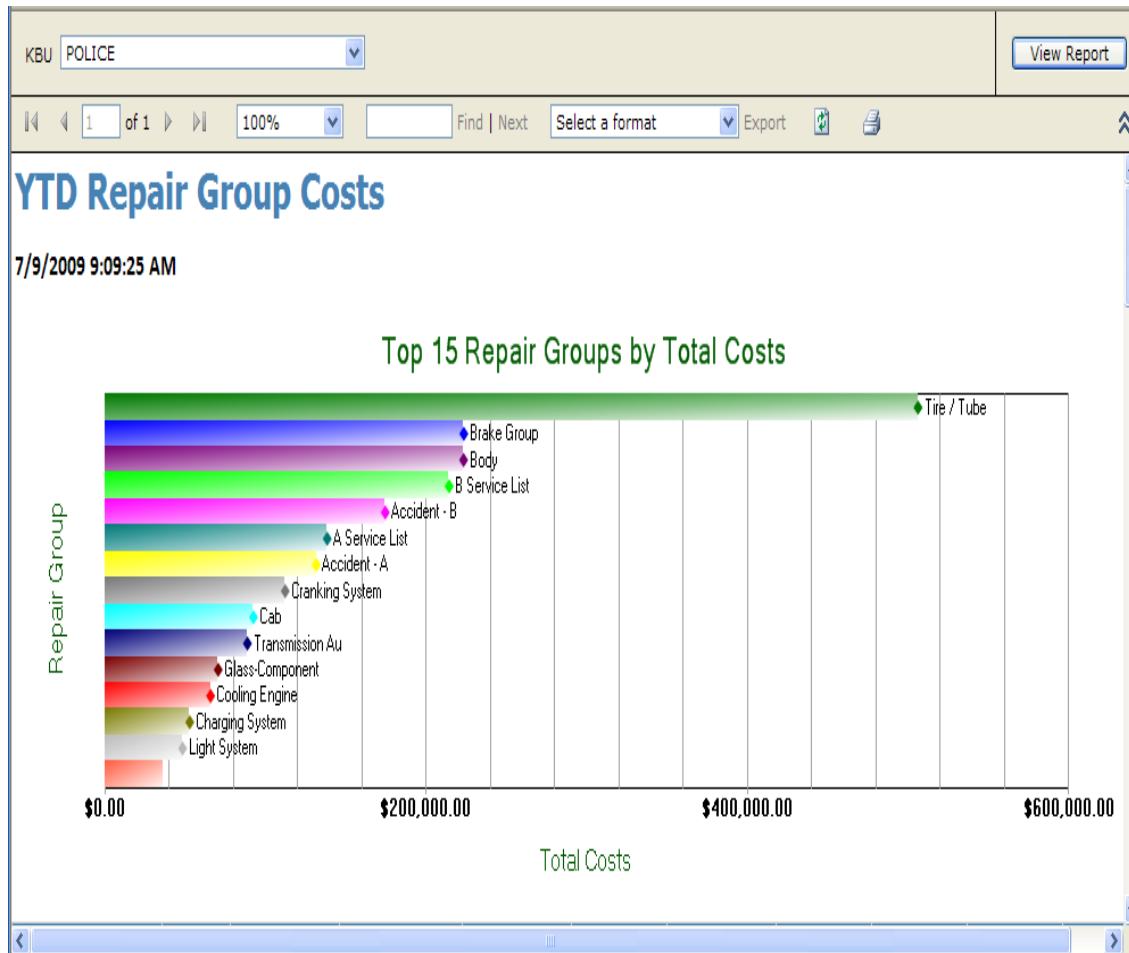
REPAIR CATEGORY	
PM	PREVENTIVE MAINTENANCE
RM	ROUTINE MAINTENANCE

# Planning Historic District Reporting



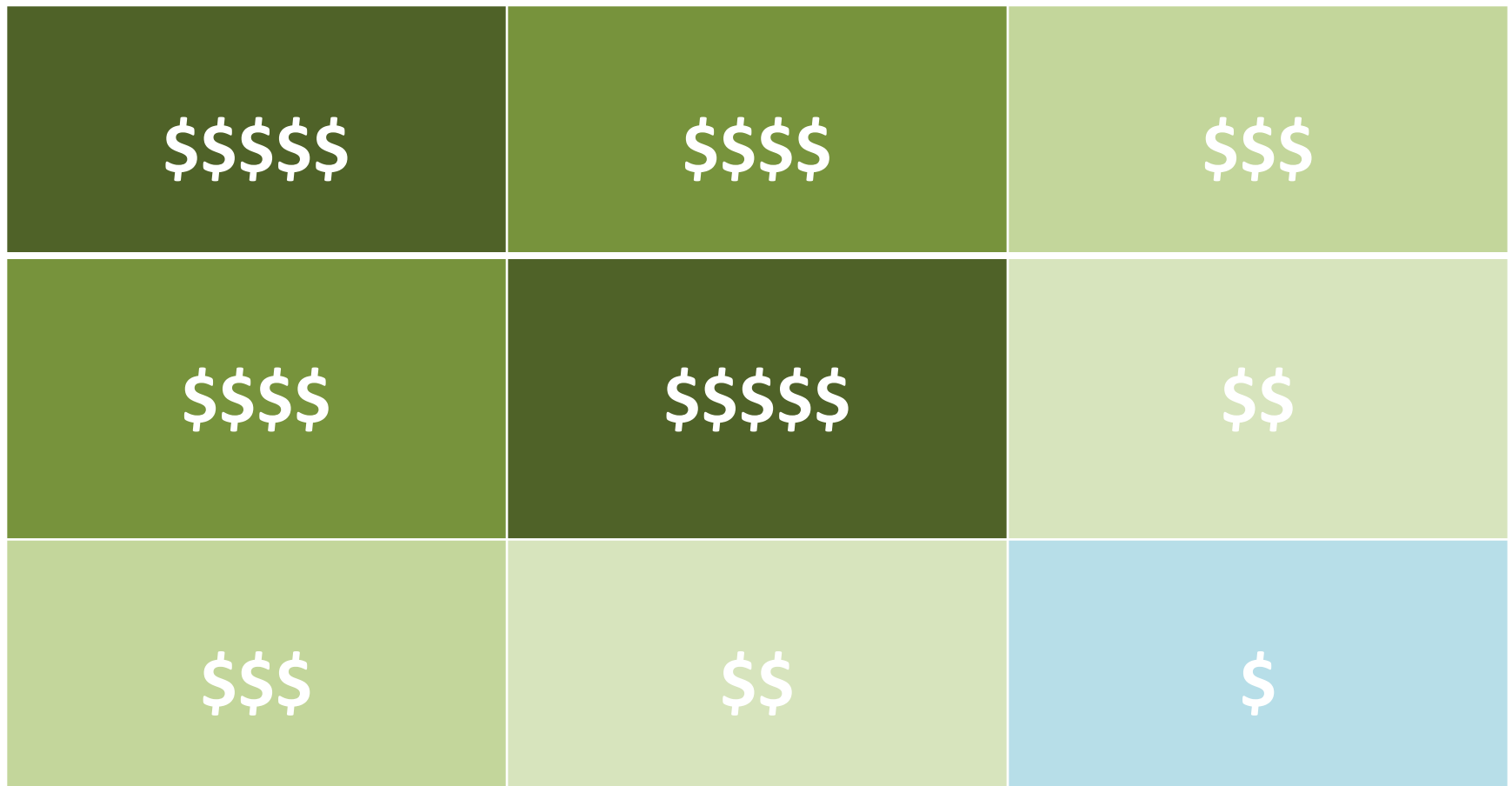
- Built In-house
- Use: Ad Hoc Request
- Tax Parcel and NSA shape files
- Tool
  - Tableau
  - ArcMap

# EMD Vehicle Repair Trending



- Built In-house
- Use: Repair Analysis
- SQL Database
- Tool
  - MS Reporting Services

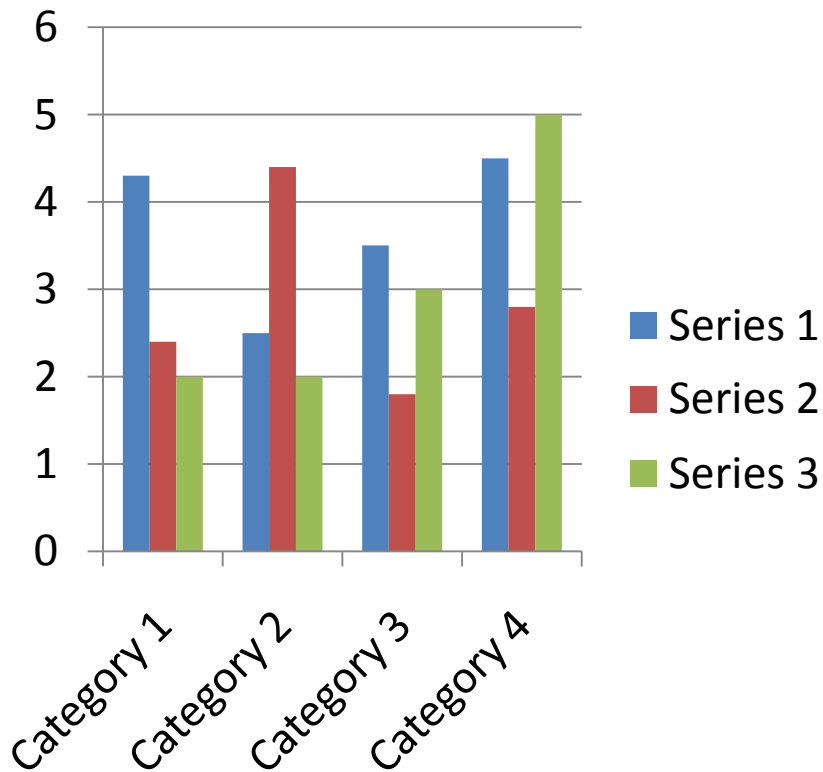
# Value of dashboard real estate



\* Juice, Inc, A Guide to Creating Dashboards People Love to Use, Part 3 Information Design. October 2009, pg 5

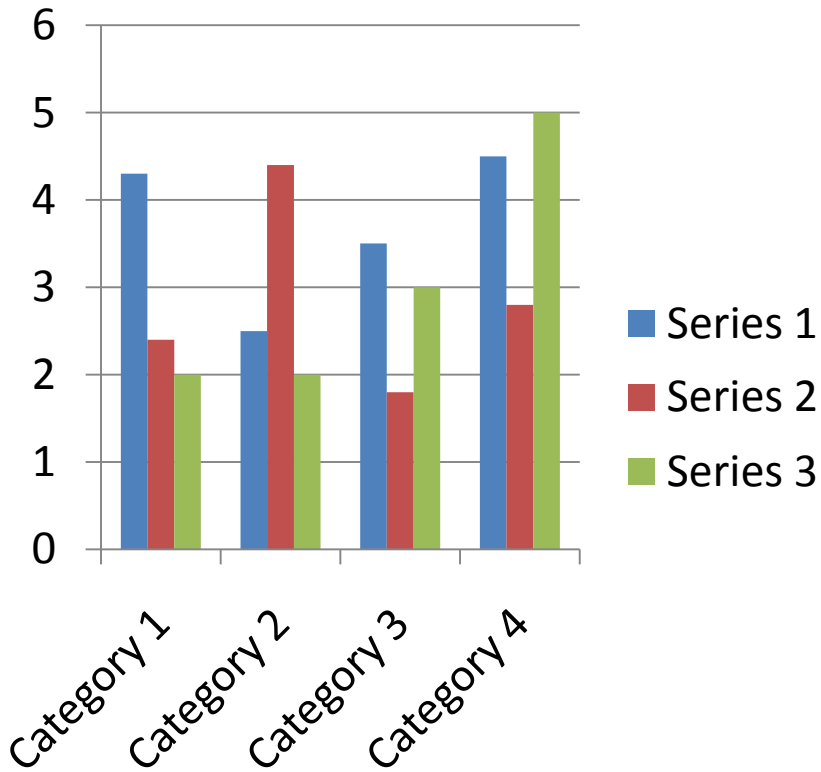
# Shapes Speed Comprehension

## Bar Charts Easy to Compare

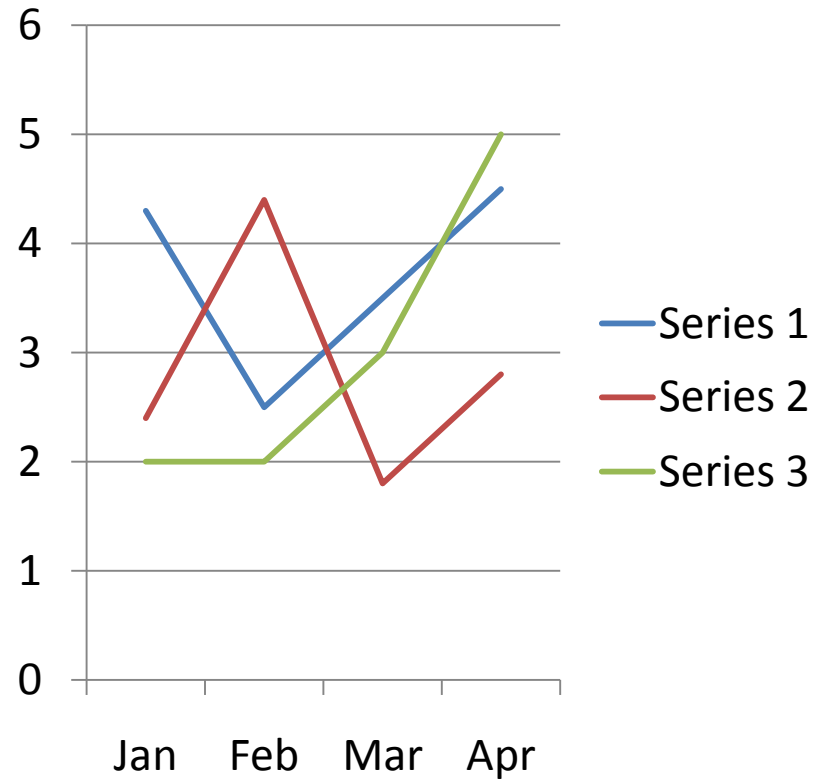


# Shapes Speed Comprehension

## Bar Charts Easy to Compare

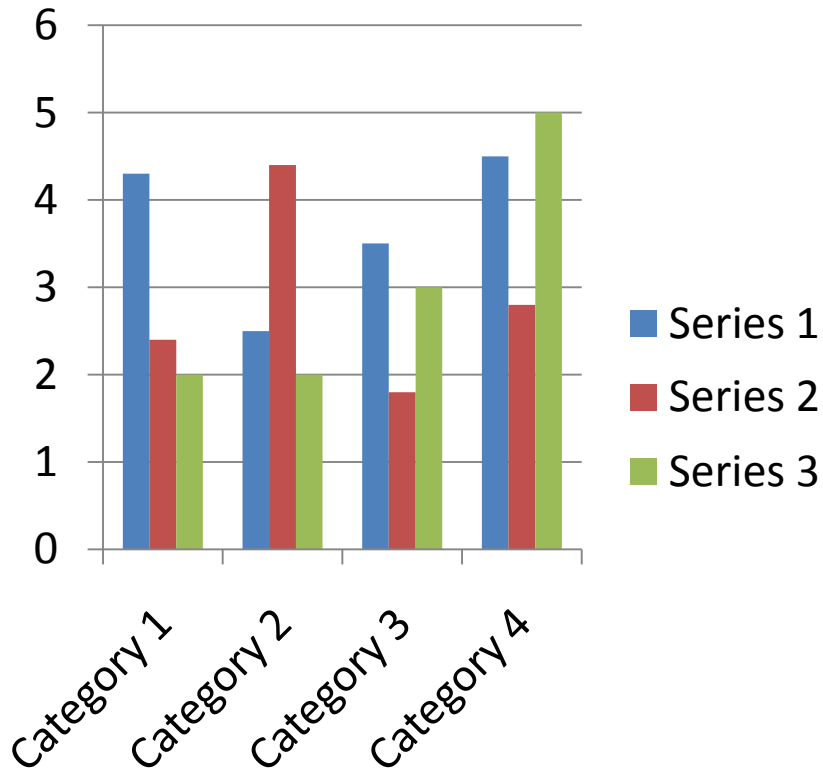


## Line Charts for Time and Patterns

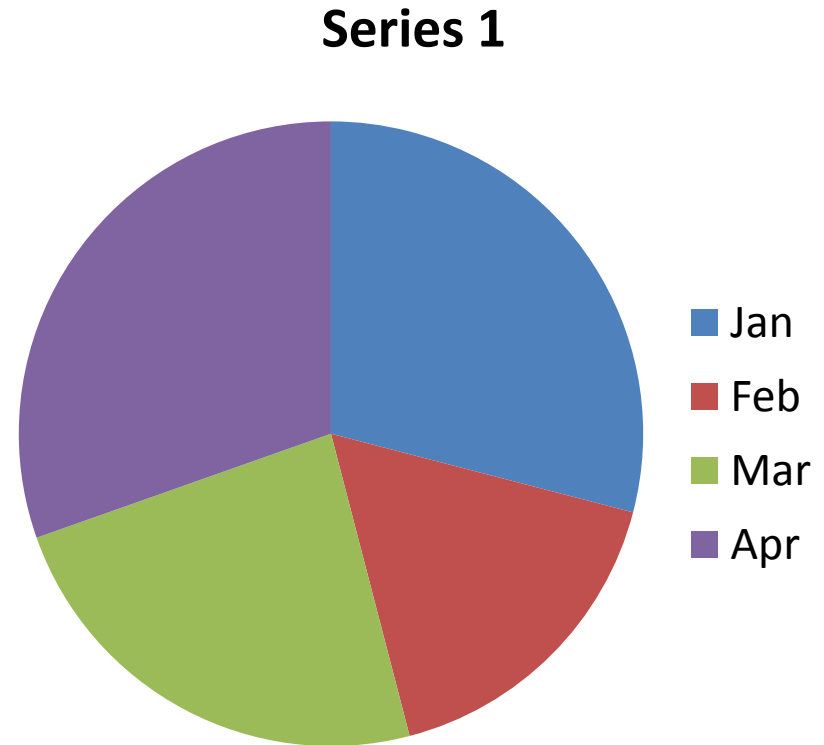


# Shapes Speed Comprehension

Bar Charts Easy to Compare



Pie Chart Values Harder to Compare

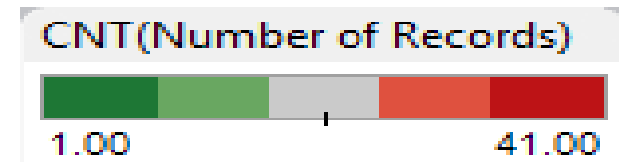
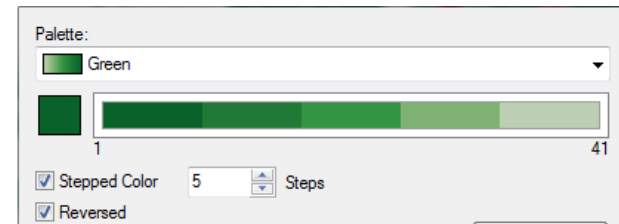


# Colors Add to Comprehension

## Types of Data to Present

- Range Values
  - Sort High to Low or reverse
  - Use sequential color palette
- Diverging Values
  - Good to Bad
  - Use two colors
  - Neutral center value
- Categorical Values
  - Category 1, 2, 3, 4
  - Use distinct colors

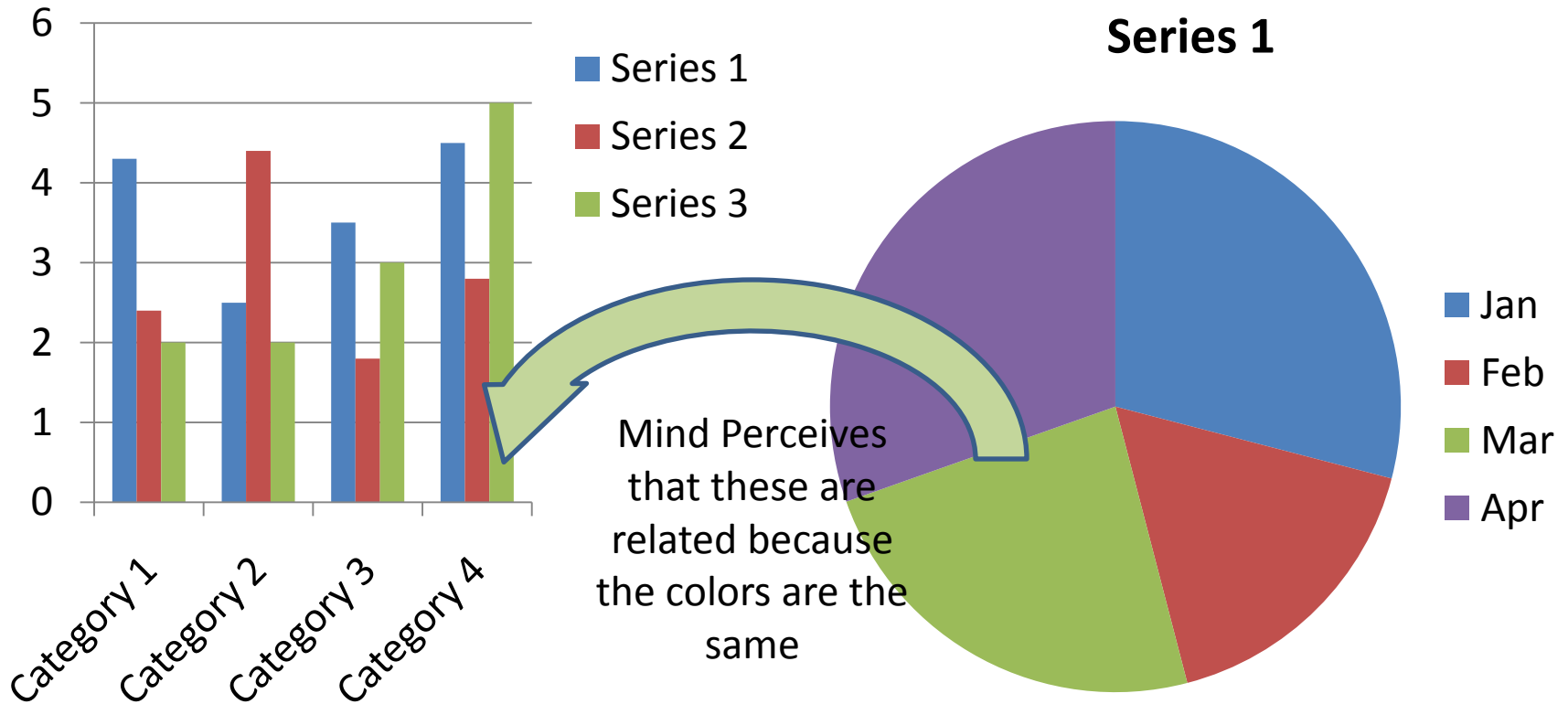
## Examples



# Colors Can Slow Comprehension

## Two Charts invite Comparisons

## Similar Colors are Deceptive



# Evaluate and Improve

- Measure how good your dashboards are
- Develop metrics for best practices
  - Management
  - Technical
- Self-assessment of your own work
- Test your developers' practices
- Use results to drive training

**Charlotte uses Business Intelligence Olympiad**

# Coming Again 12/10/2010



# Summary

- Tailor dashboards to their purpose
- Use 'Best' chart type
- Color can add to comprehension
- Use care to not create unwanted comparisons
- Measure dashboard against 'best practices'

# Contact Information

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