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Decision Analytics

NC General Assembly

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Overview

- Oracle Overview
- Decision Analytics
  - How can analytics improve appropriations?
  - Identify potential areas to build solutions
  - How can the legislature access and use data?
  - Legislative Branch Analytics Center of Excellence
  - Case Studies
- Potential Areas to focus on
- Next Steps

Oracle Overview

- Founded in 1977 by Larry Ellison, Bob Miner & Ed Oates
- First customer was the CIA
- Corporate Headquarters – California
- Public Sector Headquarters – Reston
- 36B FY 2011 revenue
- 109,000 employee's
- A computer industry leader & innovator

Oracle in North Carolina

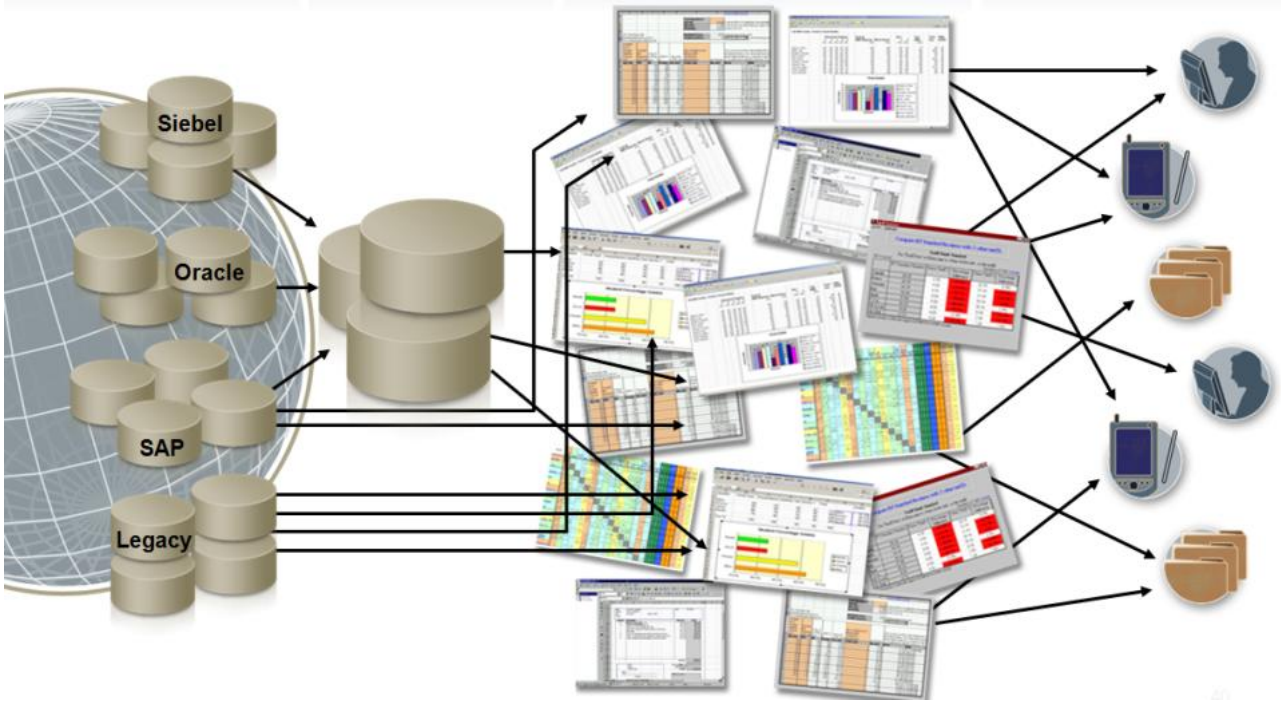
- 500+ North Carolina based employee's
- The Oracle Academy
  - 67 NC Educational Institutions involved
  - Thousands of students participate
- State Agency Customers
  - DPI – NC WISE, CEDARS
  - Dept. of Revenue – TIMS
  - DHHS – NC FAST, Reporting & Analytics
  - OSC, DOT, DOA, DENR, DOI and many more…

Content Chaos

"Looks like you've got all the data—what's the holdup?"

Cartoon by Davis Harbaugh, HBR January 2006

Content Chaos

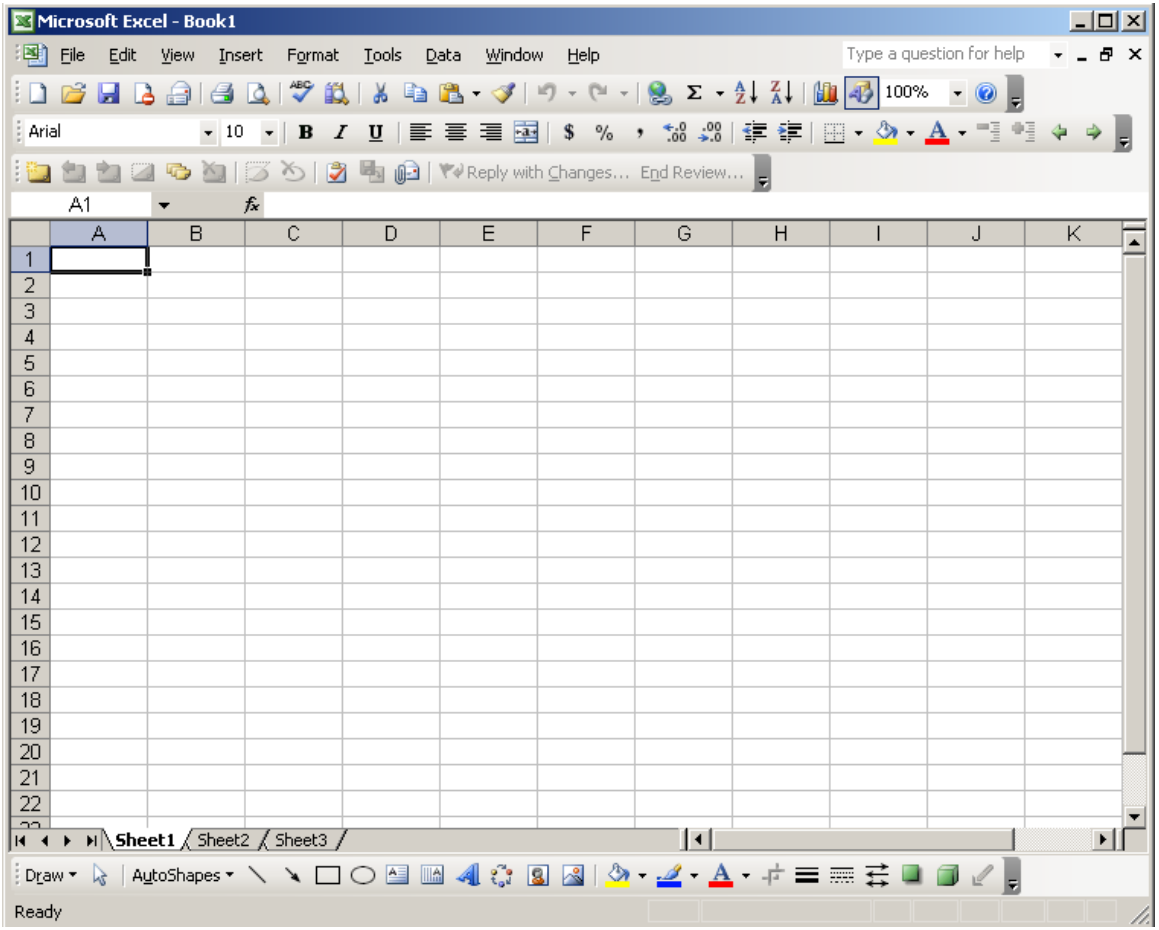


- Multiple “systems of record” in Excel and Access
- Proliferation of “spreadmarts”
- Paper-based forms

The Problem: Proliferation of “Spreadmarts”

Most Modeling is Done Here!

It is the best-known tool, but…



- Disconnected
- Data Security Risks
- 2-Dimensional
- Error-prone
- Doesn’t scale
- No controls / audit trails

“Spreadsheet Hell”

Content Consistency

What You Need to Achieve It

- Ability to access multiple “systems of record” in place
- Consistent view of the truth
- Effective distribution
- Common security model
- Facilitate automated processes

Enterprise Analytics/Business Intelligence Platform

Unified Platform. Multiple Data Sources. Multiple Delivery Channels.

Delivery Channels

Data Integration | Scorecards | Interactive Dashboards | Reporting & Publishing | Ad-hoc Analysis | Office Integration | Search | Detect & Alert | Collaborate | Mobile | Embedded

Federated Query Engine

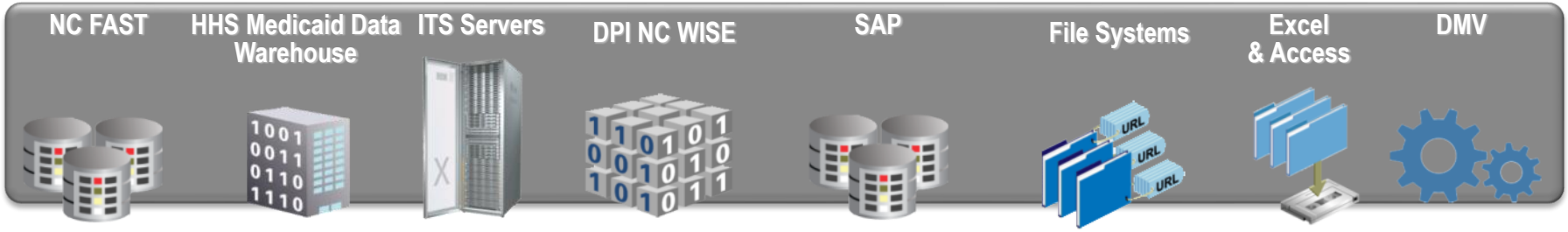
Enterprise BI Server

Common Enterprise Information Model

- Common Metadata Foundation across all Data Sources
- Common Security, Access Control, Authorization, Auditing
- Common Request Generation and Optimized Data Access Services
- Common Clustering, Workload Management, & Deployment
- Common Systems & Operational Lifecycle Management

Data Sources

NC FAST | HHS Medicaid Data Warehouse | ITS Servers | DPI NC WISE | SAP | File Systems | Excel & Access | DMV



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Case Studies:

Leveraging Effective Business Intelligence

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North Carolina Dept of Public Instruction

Average Teacher Salary Analysis

Calculating the Average Teacher Salary is a key component In building the North Carolina public school budget

Challenges

- Current average teacher salary analysis done on spreadsheets and paper
- Spreadsheets make it difficult to compare the year to year data to identify trends
- Lengthy, labor intensive process unable to respond quickly to changes
- The impact of the changes in the Average Teacher Salary on the total state public school budget

Business Intelligence Advantage

- Analysts and executives have the ability to quickly and easily see the impact of changes on the budget
- Users can analyze the information without constant reprogramming by information technology staff

North Carolina Dept of Public Instruction

Average Teacher Salary Analysis

Solution

- Pull data from multiple sources into a consistent and easy to use interface that allows users to see high level budget impacts AND be able to drill down into the details as needed
- Allows finance officers the ability to simulate many possible scenarios to see total budget impacts
- Allows users an easy way to do ad-hoc queries without information technology staff assistance
- Improves visibility into how the budgets are being utilized
- Empowers data driven decisions by the users due to better and easier to use information

State-Wide Teacher Salary Analysis

ORACLE Business Intelligence

Search All | Advanced | Administration | Help | Sign Out

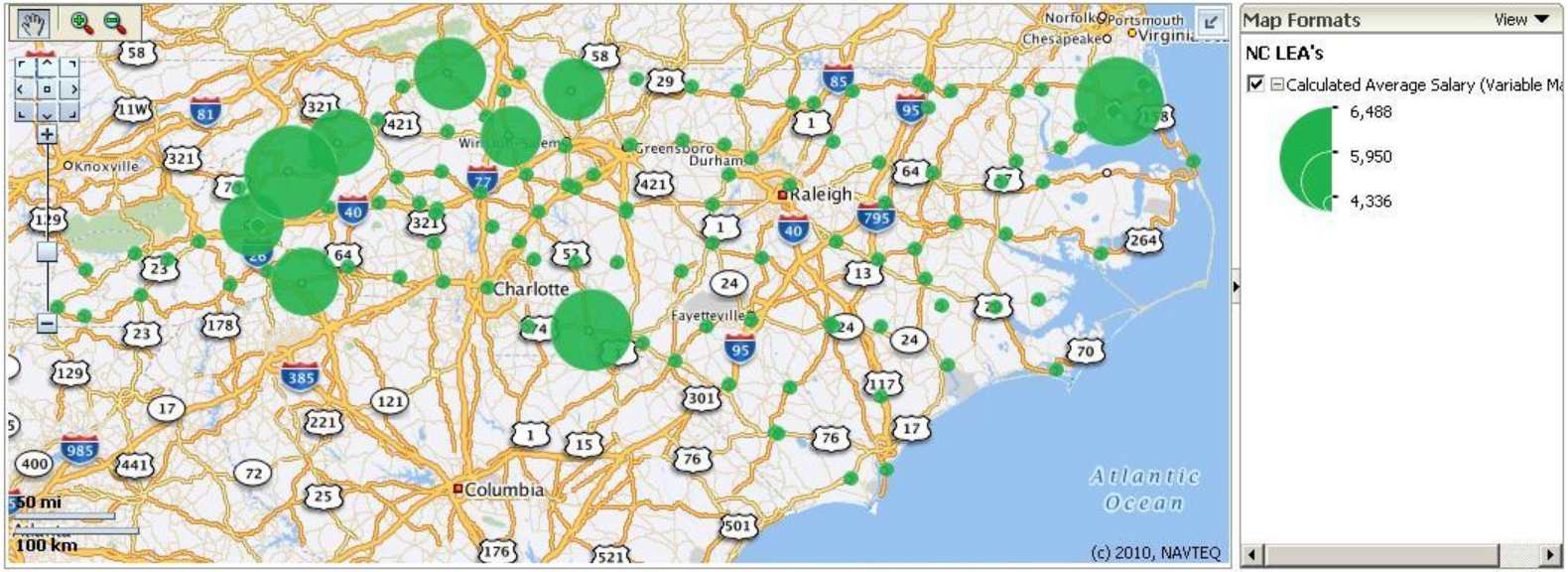
Finance

Home | Catalog | Dashboards | New | Open | Signed In As weblogic

Average Teacher Salary | Analysis of Year | Analysis State vs Local | State vs Local Paid | Multi Year Counts | FTE's Mapped | Test

Average Salary by Unit

Select View: Map



Analyze - Edit - Refresh - Print - Export - Add to Briefing Book

Working Report

Funding Source	Category Code	Category Name	Calculated Expected Salary	Total Certified Salary Amount	Total FTEs	Total FTEs Zero Sal	Total FTEs with Sal	Calculated Average Salary	Employee Ssn Count	Employee Ssn Distinct Count
Local	Local			107,251,077	24,645.91	1,074.79	23,571.12	4,550	28,196	25,402
State	1011	Classroom Teachers	2,618,111,098	261,811,110	60,438.63	773.62	59,665.00	4,388	62,775	61,467
	1042	Family Support Nurses	2,969,980	296,998	59.81		59.81	4,966	64	62
	1050	Principal	139,027,980	11,585,665	2,088.50	5.00	2,083.50	5,561	2,089	2,088
	1070	Instructional Support	360,769,616	36,076,962	6,386.58	144.25	6,242.34	5,779	7,685	6,550
	1131	Voc Ed Months of Employment	264,958,270	26,495,827	5,887.46	140.22	5,747.24	4,610	6,151	5,993

Virginia Dept of Motor Vehicles

Predictive Insight with Unified BI

Challenges – Content Consistency, Decision Speed & Unknown Unknowns:

- Switch from tracking vehicle tags and drivers license numbers to having a 360^{o} view of Citizen lifecycle
- Out-dated reports based on month-old data
- No consistent visibility into volume at 80+ DMV Branch Offices
- Need to predict future staffing requirements to streamline wait-times and eliminate overtime at understaffed locations ***without*** new hires

BI Advantage:

- Role-based views on current status & predicted staffing requirements
- Native integration with eBusiness Suite, Siebel CRM & Oracle RDBMS

Solution – BI Platform, BI Apps, OLAP Cubes & Data Mining:

- Consistent, rapid access to information
- Ability to project future needs based on historical trends
- Factor-based What-If analysis to compare alternate scenarios

Staffing Optimization

Using Predictive Analytics to reach Service Targets

ORACLE Public Sector Demo Server

Search All | Advanced | Administration | Help | Sign Out

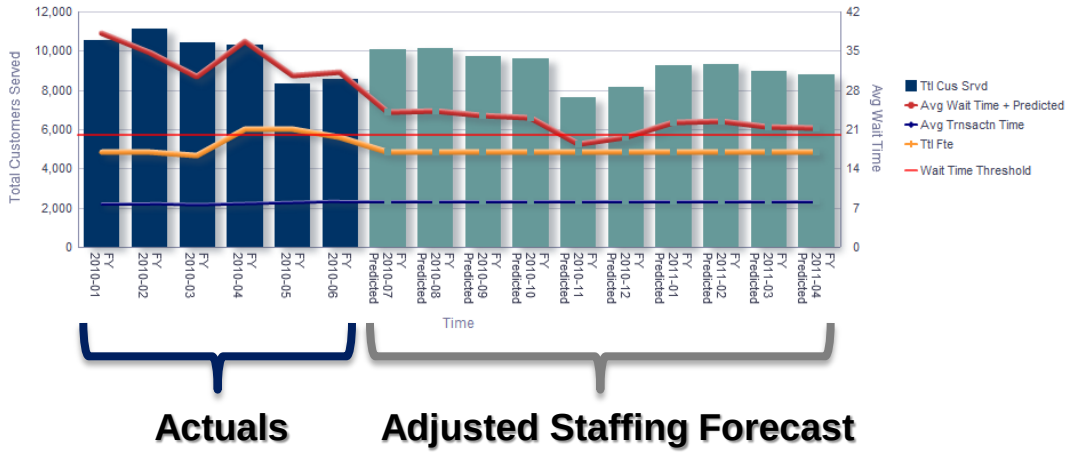
VA DMV Mining and Predictive Analysis

Home | Catalog | Dashboards | New | Open | Signed In As greg

Trends by CSC | Forecasts from Essbase

District: Richmond District CSC: North Henrico Apply Reset

Predicted Wait Times by FTE and Customers Served



Actuals **Adjusted Staffing Forecast**

Richmond District North Henrico

	FY 2010												FY 2011			
	FY 2010-01	FY 2010-02	FY 2010-03	FY 2010-04	FY 2010-05	FY 2010-06	FY 2010-07 Predicted	FY 2010-08 Predicted	FY 2010-09 Predicted	FY 2010-10 Predicted	FY 2010-11 Predicted	FY 2010-12 Predicted	FY 2011-01 Predicted	FY 2011-02 Predicted	FY 2011-03 Predicted	FY 2011-04 Predicted
Ttl Cus Srvd	10,535	11,065	10,415	10,267	8,286	8,543	10,017	10,093	9,724	9,572	7,637	8,113	9,210	9,269	8,919	8,768
Avg Trnsactn Time	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Ttl Fte	17	17	16	21	21	20	17	17	17	17	17	17	17	17	17	17
Avg Wait Time + Predicted	38	35	30	37	31	31	24	24	23	23	18	20	22	22	22	21

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State of Oregon

Policy Impact Analysis

Challenges – Policy Complexity & Decision Speed:

- Need to analyze financial impact of proposed changes to EITC, SNAP, TANF and Child Welfare qualifications
- Need to support and analyze coming impact of HIX requirements

BI + Policy App Advantage:

- Simple MS Word-like interface for entering policy
- Unified system provides easy conversion of policy text into analytical data
- Rapid comparison of competing proposals = effective funding decisions

Solution – BI Platform, Automated Policy Management Application, OLAP Cubes:

- Multiple policy scenarios auto-loaded into analytic cubes
- Easy visibility into policy impact via standard BI dashboards

Policy Impact Analysis

Measuring the Financial Impact of Policy Changes

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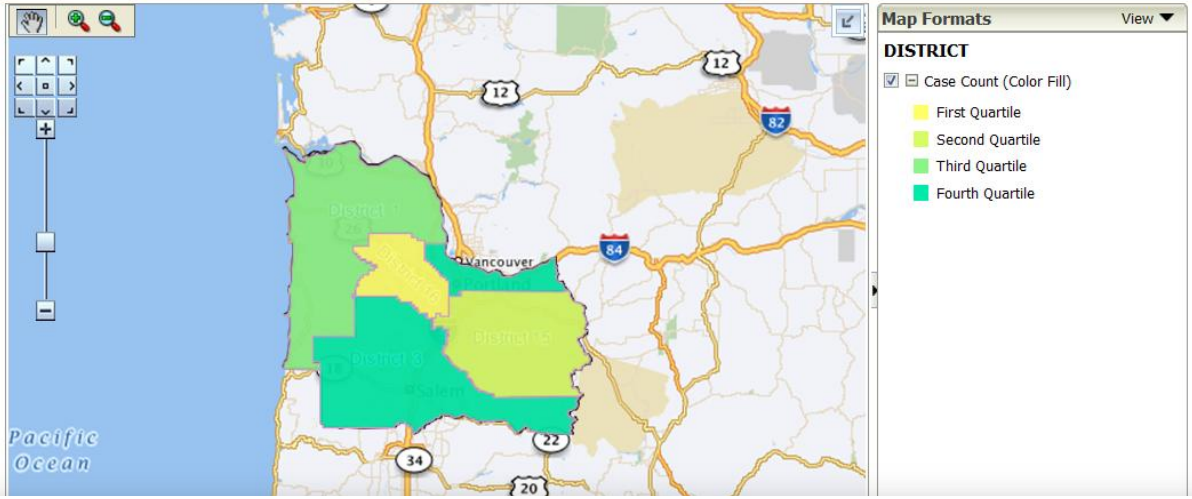
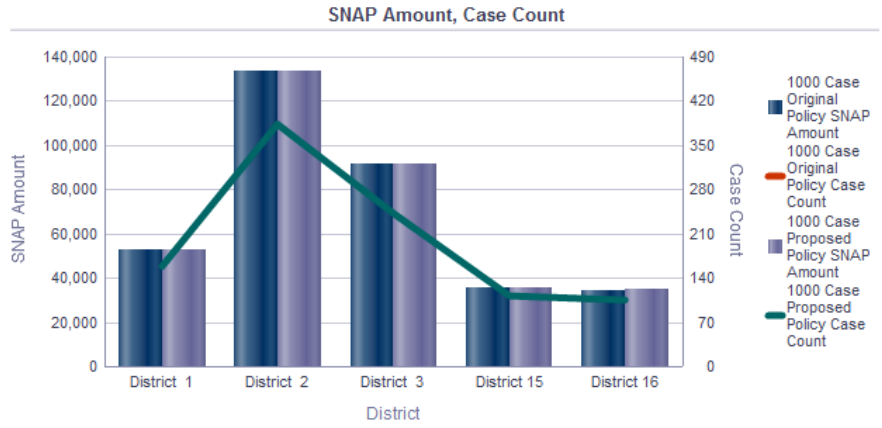
Policy Impact Analysis | Alerts | Home | Catalog | Dashboards | New | Open | Signed In As weblogic

Eligibility Summary | SNAP Overview | SNAP Trends | SNAP Budgeting

SNAP Amount Change Overview



	1000 Case Original Policy		1000 Case Proposed Policy	
	Case Count	SNAP Amount	Case Count	SNAP Amount
District				
District 1	158	52,664	158	52,805
District 2	384	132,841	384	133,121
District 3	242	91,250	242	91,450
District 15	111	35,575	111	35,661
District 16	105	34,557	105	34,634



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NYC Uses Business Intelligence to Power 311 Customer Service Center

COMPANY OVERVIEW

- NYC local government responsible for sanitation, transportation, and roads
- Industry: Public Sector

CHALLENGES

- Institute 311 service to offload millions of non-emergency calls from 911
- Provide better customer service and higher citizen satisfaction by making government transparent to all citizens
- Ensure that City agencies are accountable for their performance
- New Federal requirements for rapid development of ARRA funding reports

SOLUTIONS

- Launched Citywide Performance Reporting (CPR) system based on Enterprise BI platform with performance dashboards, pre-built metrics, alerts & self-service analytics
- Able to leverage existing system to deploy ARRA reports in under 8 weeks.

CUSTOMER PERSPECTIVE

"When we introduced 311, we streamlined and centralized information for New Yorkers like never before, and now we're doing it again. CPR provides anyone - government officials, reporters and most importantly everyday New Yorkers, with a wealth of regularly updated information on City government."

Mayor Michael R. Bloomberg

RESULTS

- **Increase accountability by making it easier to monitor agency performance**
- **Flexibility to rapidly respond to changing Federal mandates**

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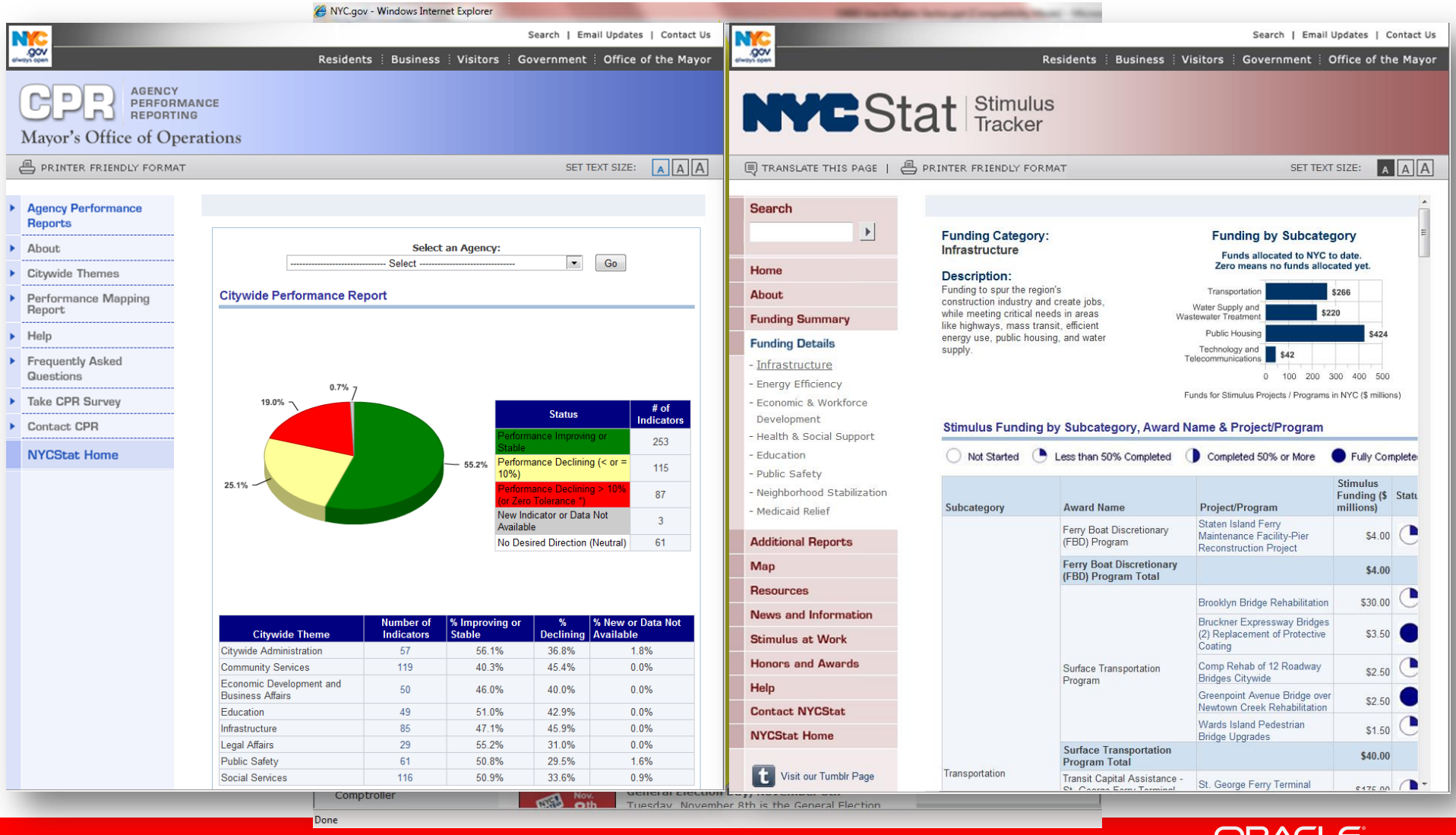
Citizen Access



Effectively Leveraging Business Intelligence

Other Best-Practices Examples

Organization	Application	Benefit Realized from BI
Army Logistics	Supply chain management for 40,000 users	Better understanding of supply utilization rates, more effective re-allocation of assets, reduced customer wait time & operating expenses, plus improved budgeting process
Starbucks	Store and SKU reporting integrated with Hyperion Planning	Effectively monitor store and item profitability, plus add forward-modeling of the impact of store reorganizations
Social Security Admin	Disability Fraud Prevention	Able to prevent enough fraud to pay for the BI system within 1 year
TDBank	Replace old, inflexible Budget/Forecast Modeling	Switch from data entry to data analysis, as well as provide more detailed analysis
US Forest Service	Performance vs Budget Accountability for 10,000 users	Monitor spending, and create better justification for their future budget requests

Potential Areas to focus on first

- Budget Formulation
  - Complex Policy Impact Analysis (Health Benefits Exchange, Tax Law changes, Medicaid changes etc.)
  - Assistance Revenue Forecasting (Corporate Income Tax changes)
- Execution
  - Revenue Collections
    - Fraud Detection and Prevention
    - Probability to Pay Analysis
  - Staff Optimization (Corrections)
  - Expenditure Analysis
    - Spend Rate vs Budget
    - Off-Contract Spending

General Assembly Data Analytics Center of Excellence

- Create a small, focused analytics team with current staffs
- Prioritize solutions based on time to implement and ROI
- Pull data from the sources and aggregate at the Legislature
- Keep it simple….focus on ease of use
- Start small to generate success
- Expand as expertise grows

Next Steps

- Oracle Insight Program
- Demonstration

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Q&A

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