Esri International User Conference | San Diego, CA

Technical Workshops | July 12, 2011

Esri Business Analyst: Overview and Update

James Killick

Part 1: Product Overview

A GIS System for optimizing decisions about
where to locate &
where to market

You have to make a multi-million dollar real estate decision.

Where is the best place to invest?

You need to maximize the performance of your store network.

Which ones should be doing better?

The Market is Changing. You need to plan for the future.

How can you stay competitive?

- Retail & Financial Services
- Commercial Real Estate
- Economic Development

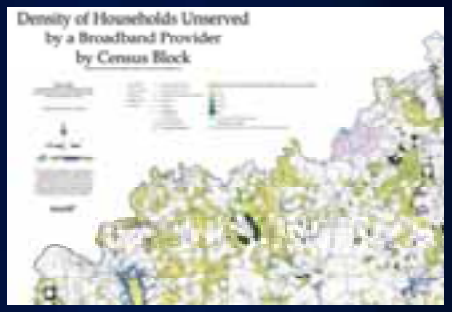
Economic Development & Economic Gardening

Greater New Orleans

Urban & Regional Planning

Community Needs Assessment

Utilities & Telco



Network Planning

Recruiting

US Air Force

Public Safety

Emergency Management

Facility Site Selection

Hospitals, Parks,
Fire Stations et cetera

4

Things Business Analyst Provides

1

Detailed, Current Facts About Any Area

6,000+ Variables. Current Year and 5 Year Forecast.

Access via Dynamic, Customizable Color Coded Maps

- Population
- Households
- Age
- Income
- Family Size
- Education
- Net Worth
- Consumer Spending
- Market Segmentation
- Businesses
- Business Types
- Products Consumption
- Services Consumption
- Supply vs. Demand

… and many, many more

Demo

Esri Data

Leveraging Esri Data for Market Planning

- 35+ years experience in building demographic data
- Processing 5th decennial census
- Current year estimates and 5 year forecasts
- We publish both methodologies and trends

Quote from Trends Documents

2005:

"Affordable housing is becoming an issue and not only among lower income households"

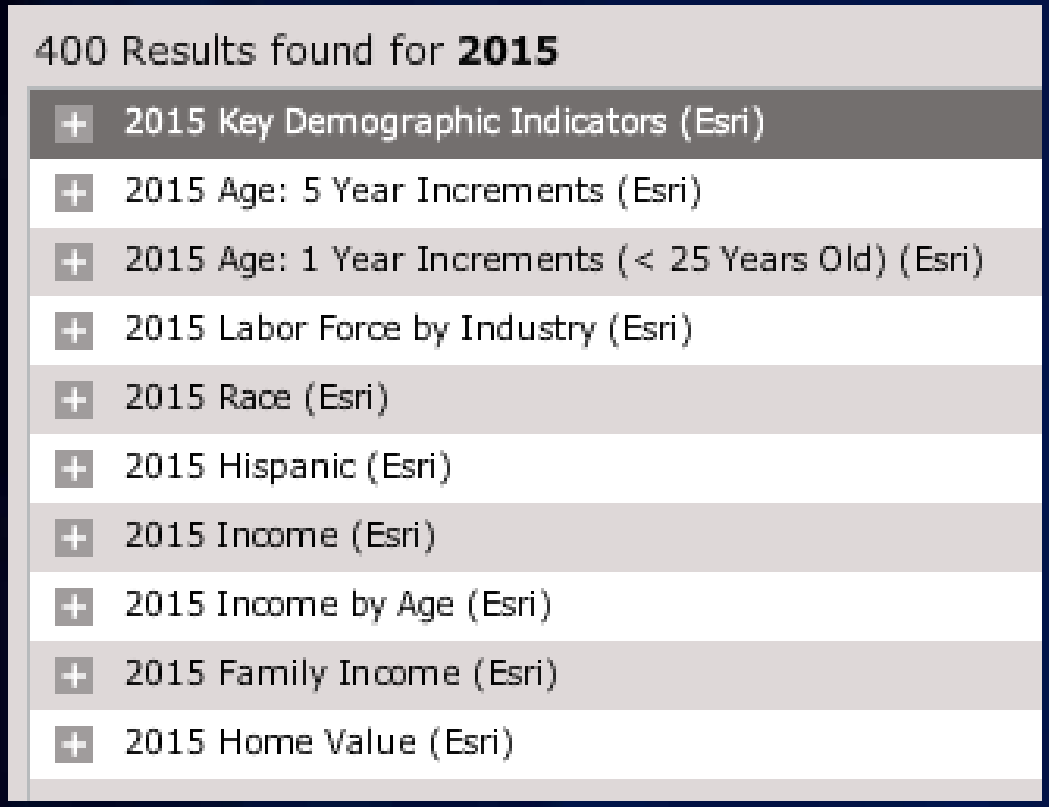
"The era of easy money is definitely over"

2006:

"Increases in short-term interest rates are expected to take their toll on economic activity"

"Without the rapid appreciation of home value, home equity loans are also likely to decrease and decelerate consumer spending"

Using This Brain Trust is Easy…



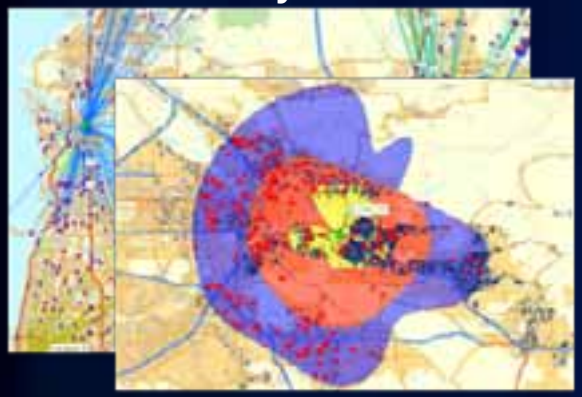
- **400 Variables**
- **Easy to access within software**

2

Powerful Geographic Analysis Tools for Location Analytics

Leveraging the Power of GIS for Analysis

Customer Analytics

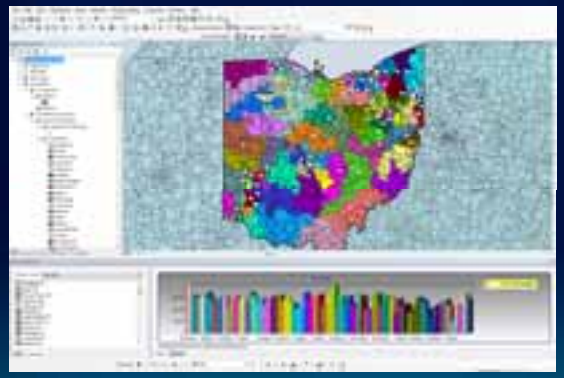


Predictive Sales Modeling

Suitability Mapping

Market Penetration

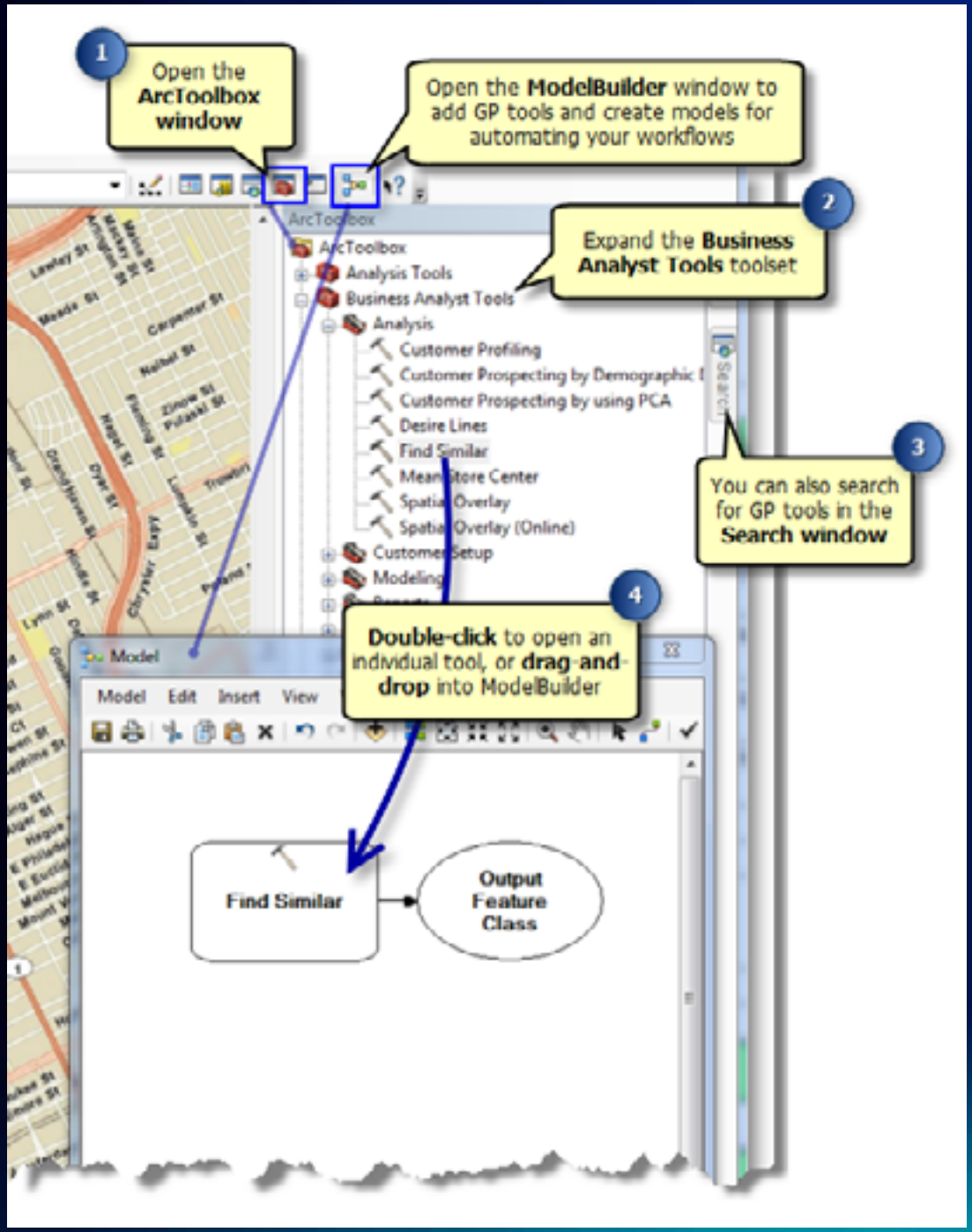
Territory Design & Optimization



Cannibalization

Demo

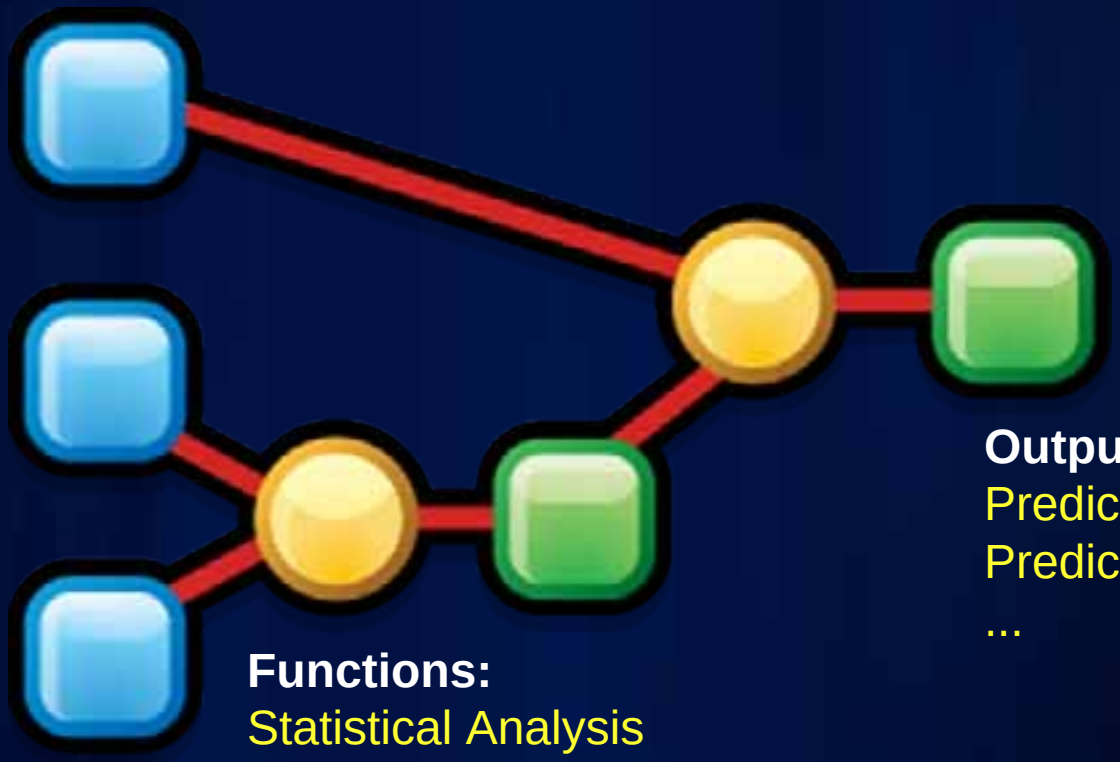
Smart Map Search



- Model Builder Framework
- Python Scripting Framework
- Access Hundreds of Tools:
  - Geo-Analysis
  - Business Analysis
  - Spatial Statistics
- Designed for Analysts!

Predicting Performance using Models

Inputs:
Actual Sales
Demographics
Competitor Locations
Catchment Area
Accessibility
Attractiveness
…



Functions:
Statistical Analysis
Spatial Statistics Tools
Geo-processing Tools
Built in Demand Models

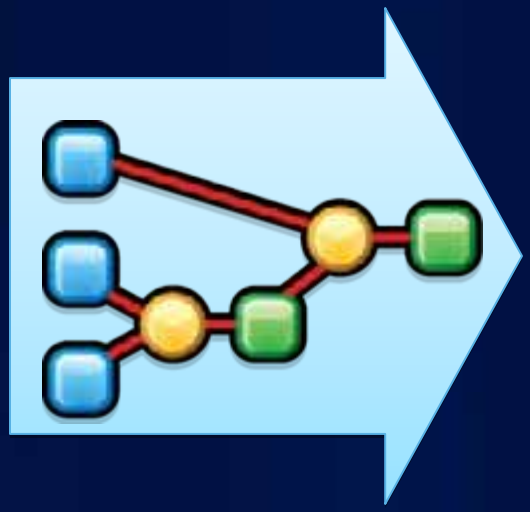
Outputs:
Predicted Sales
Predicted Profit
…

The Huff Demand Model

$$P_{ij} = \frac{A_j^{\gamma} D_{ij}^{\lambda}}{\sum_{j=1}^{N} A_k^{\gamma} D_{ik}^{\lambda}} \quad (1)$$

- P_{ij} = the probability of a consumer at a geographical area i traveling to a given shopping center j;
- A_j = is a measure of attraction of shopping center j;
- γ = a parameter for the sensitivity of P_{ij} associated with attraction characteristic;
- D_{ij} = is a measure of accessibility of shopping center j to a consumer located at i;
- λ = a parameter for the sensitivity of P_{ij} with respect to accessibility;
- N = the number of shopping centers.

Example of How Modeling is Used

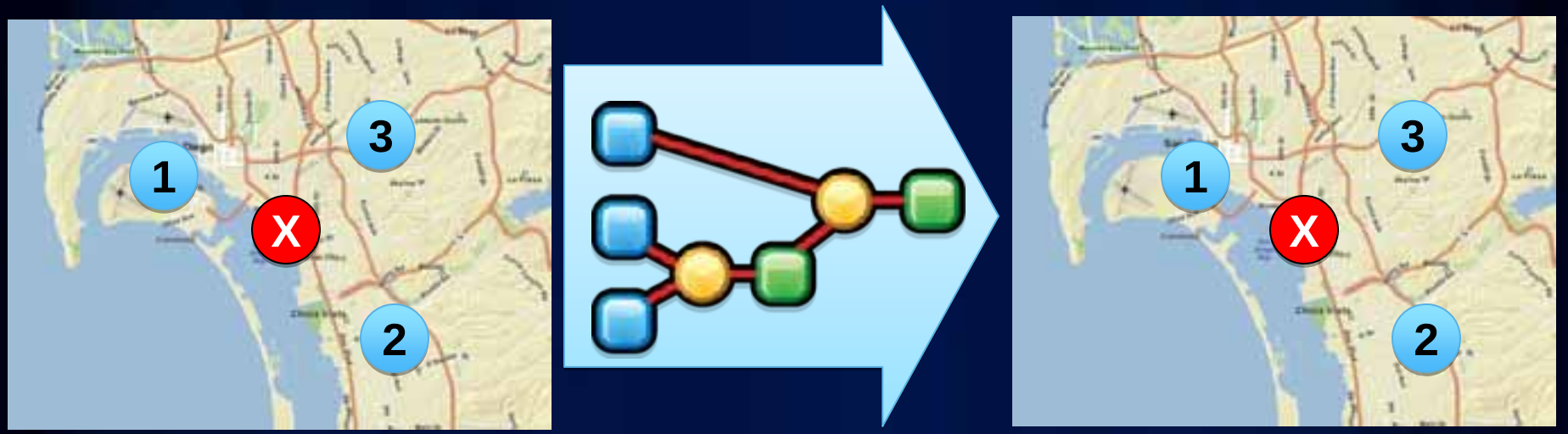


Store	Actual Sales
1	$1,100,000
2	$2,300,000
3	$1,750,000

Store	Predicted Sales
1	$1,310,000
2	$2,150,000
3	$1,600,000

Design & Build a Model That Predicts Actual Sales as Accurately as Possible

Use Model to Predict Sales



- What would the sales be if I opened at location X?
- How would that affect sales at existing stores?

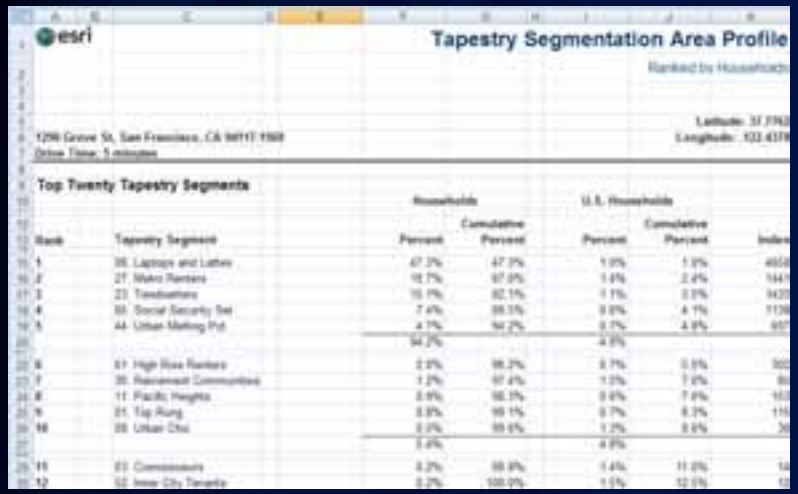
Store	Predicted Sales
1	$1,210,000
2	$1,890,000
3	$1,100,000
X	**$1,300,000**

3

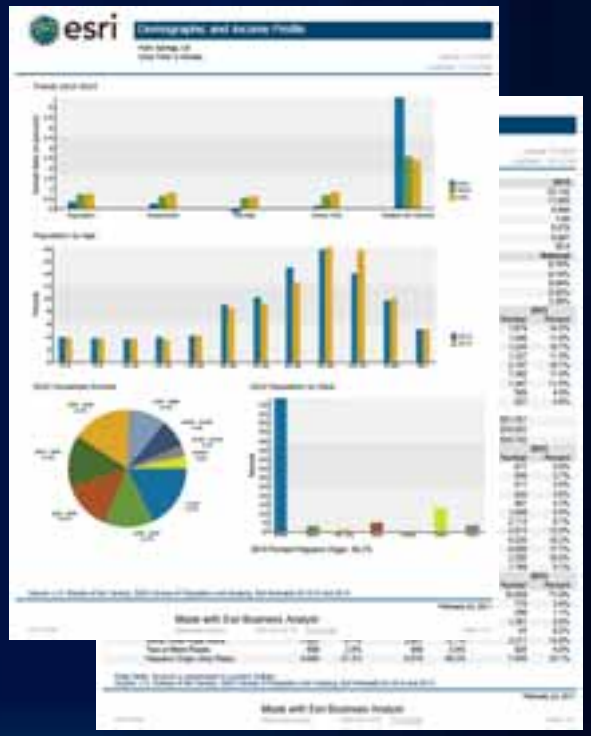
Fully Customizable Reports

Fully Customizable Reports…

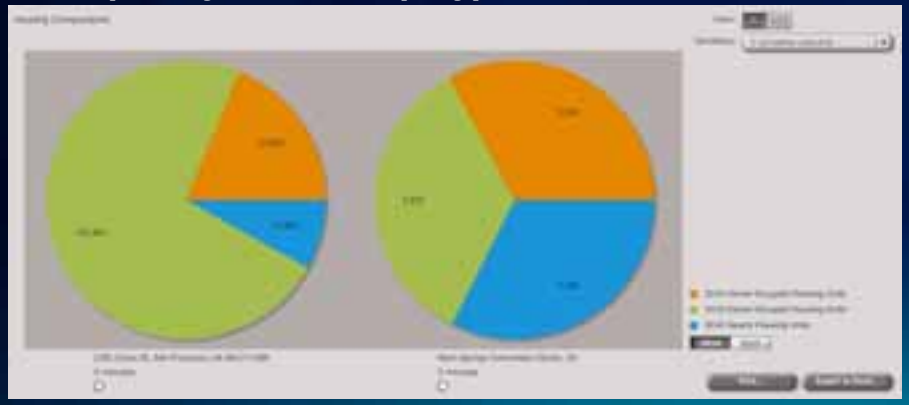
Excel



PDF



XML (for Dynamic Display)



… For Any Shaped Area

- Rings
- Drive Time Areas
- User Defined Areas
- Standard Geographic Areas (e.g. ZIP)

In All Cases Data is Precisely & Accurately Aggregated

4

An API - for Integration of Business Analyst into Your Business Process

Business Analyst API

- Get detailed, current facts about any community or user defined area
- Access analytical tools, charts & reports, create suitability maps
- Easily incorporate into web & mobile apps
- REST, Flex, Silverlight, SOAP
- Choose between Esri hosted API or on-premises server

Web or Desktop

Smartphone

Tablet

Demo

API Resources and UI Components

Esri Business Analyst

A Complete System Built on ArcGIS

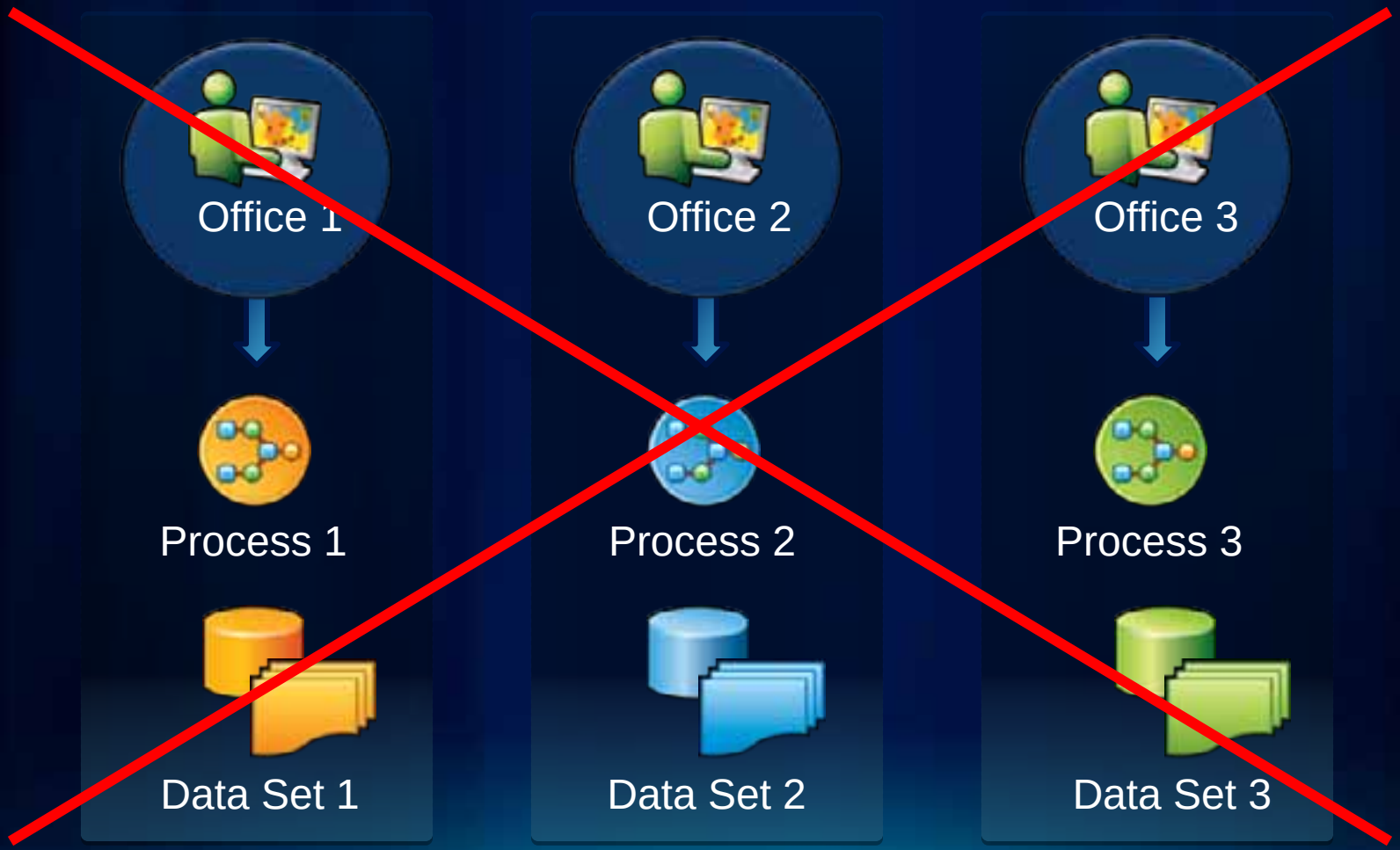
Enterprise:
BA API &
BA Server

Professional Analysts:
BA Desktop

Business Professionals:
BA Web App (BAO)

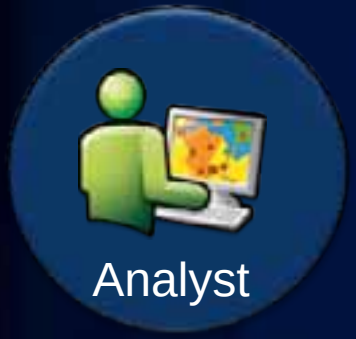
Field Users:
BA Mobile App (BAO)

Enterprise Deployments: Eliminating Silos



Typical Deployments

Desktop Client

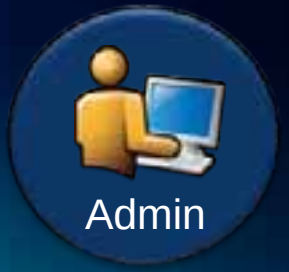


- Ad Hoc Analyses
- Custom Report Development

Server

- Centrally Managed Location Data
- Market & Demographic Data
- Reports & Report Templates
- Workflow Templates

Web/Mobile Clients

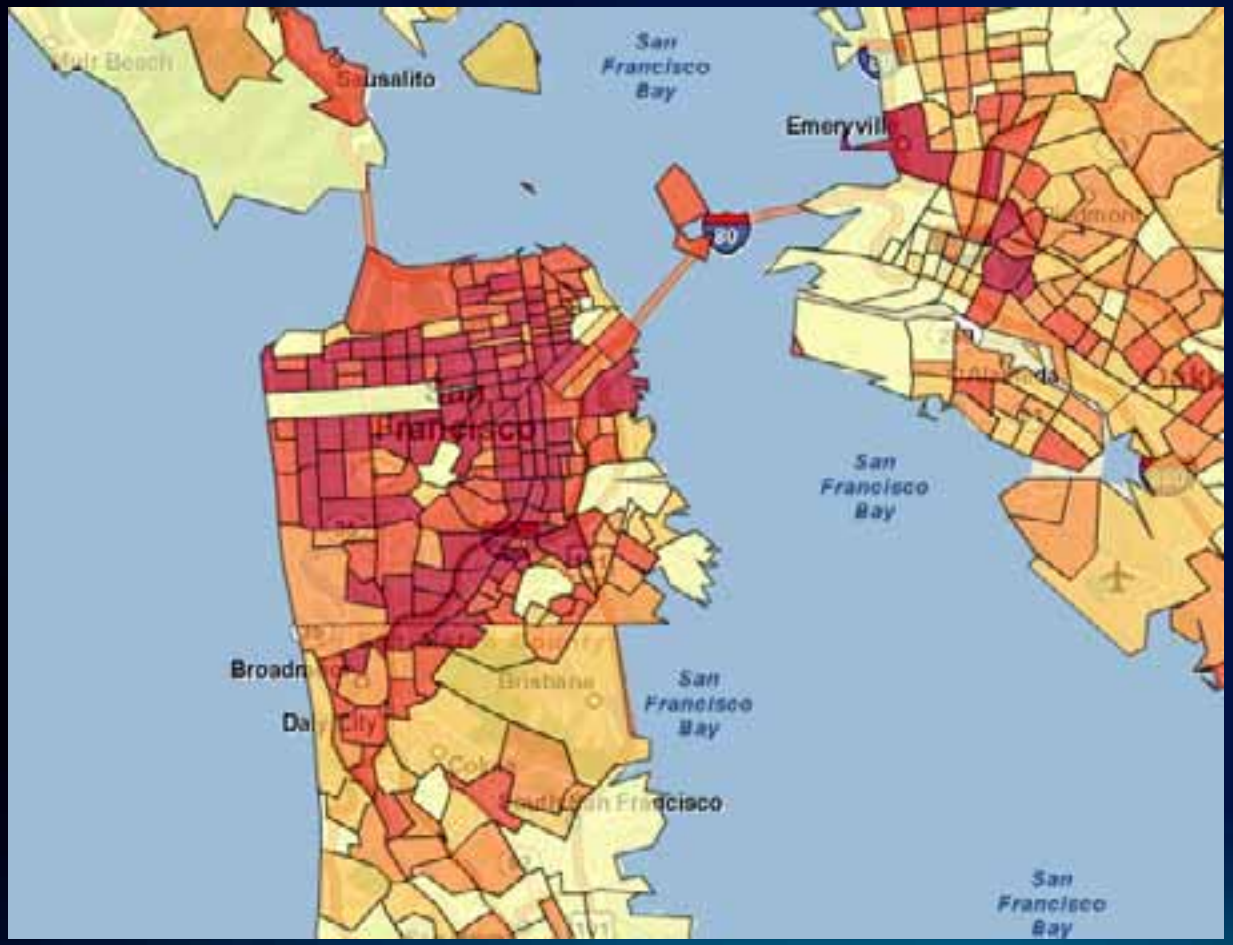


Demo

Enterprise App

Part 2: Product Update

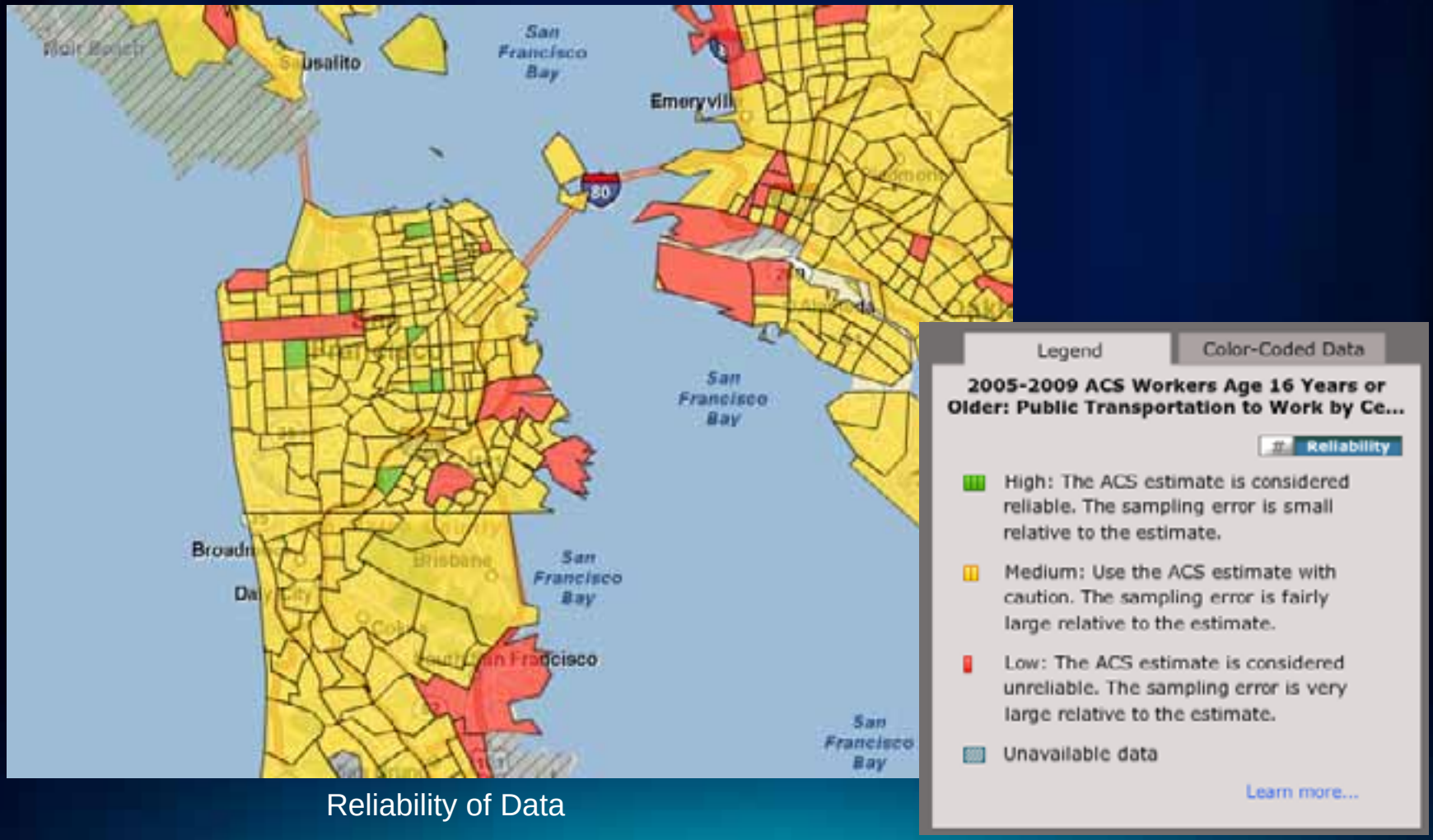
American Community Survey (ACS)



Number of People That Took Public Transportation to Work

- ACS is complex due to Margin of Error in sample data
- You Asked Us to Make ACS Easy…
- So we responded

Esri Reliability Flag for ACS Data



Reliability of Data

Esri Reliability Flag for ACS Data

	2005 - 2009 ACS Estimate	Percent	MOE(±)	Reliability
WORKERS AGE 16+ YEARS BY PLACE OF WORK				
Total	31,007	100.0%	1,744	
Worked in state and in county of residence	24,478	78.9%	1,570	
Worked in state and outside county of residence	6,502	21.0%	724	
Worked outside state of residence	28	0.1%	31	
WORKERS AGE 16+ YEARS BY MEANS OF TRANSPORTATION TO WORK				
Total	31,007	100.0%	1,744	
Drove alone	18,463	59.5%	1,107	
Carpooled	4,637	15.0%	616	
Public transportation (excluding taxicab)	4,486	14.5%	569	
Bus or trolley bus	2,813	9.1%	478	
Streetcar or trolley car	42	0.1%	35	
Subway or elevated	1,575	5.1%	316	
Railroad	57	0.2%	41	
Ferryboat	0	0.0%	0	
Taxicab	14	0.0%	22	
Motorcycle	0	0.0%	0	
Bicycle	72	0.2%	44	
Walked	685	2.2%	252	
Other means	1,554	5.0%	443	
Worked at home	1,096	3.5%	268	

iPhone & iPad App: “BAO”

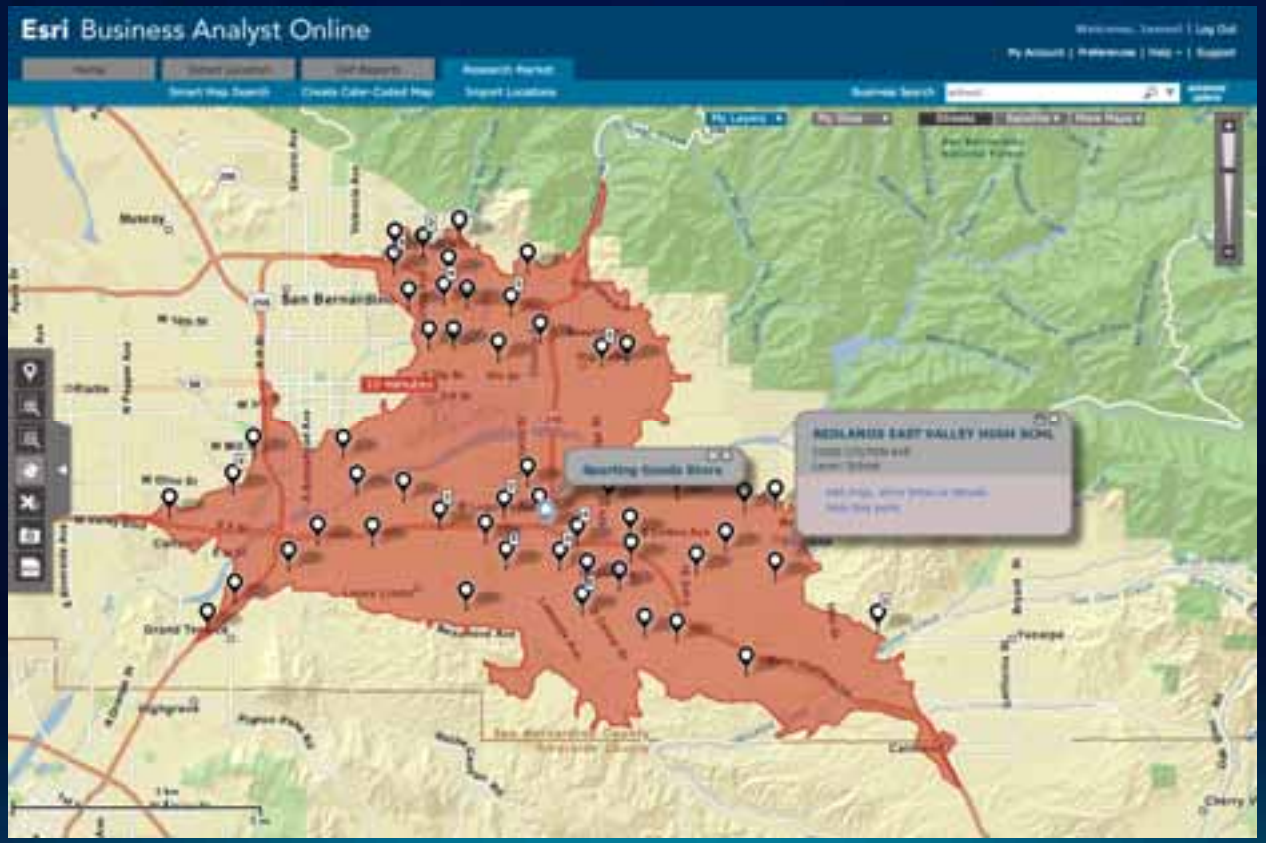
- Free
- Native iPad app
- Subscribers get access to BAO reports
- Provides access to Key Facts and all Reports
- Highly valued by users

Demo

BAO iPad App

BAO Web App

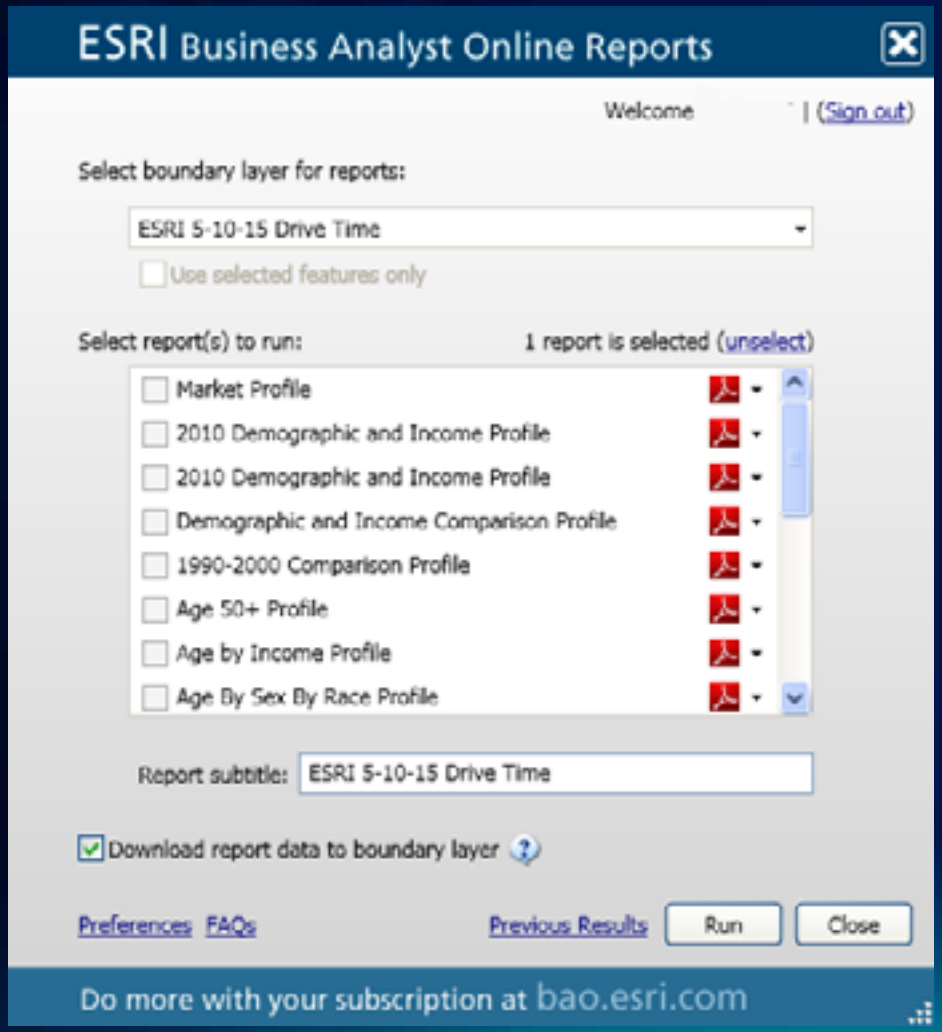
- Advanced Business Search
- ArcGIS.com Access
- ACS and Census 2010 Maps & Reports



Demo

Business Analyst Online

BAO Add-in for ArcGIS

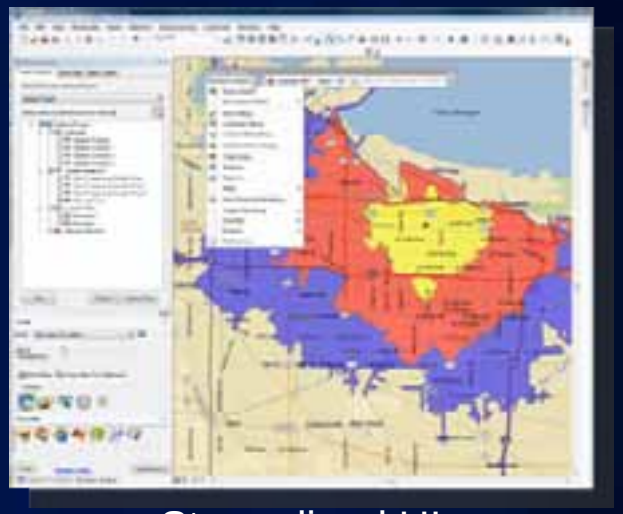


- Works with ArcMap
- Login with your BAO Subscription
- Access any BAO online report
- Run for any area or map layer
- Attaches report variables as attributes to your layer

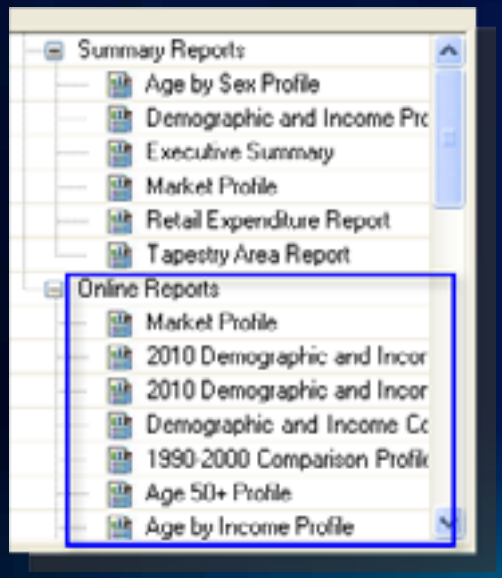
BA Desktop 10

60x

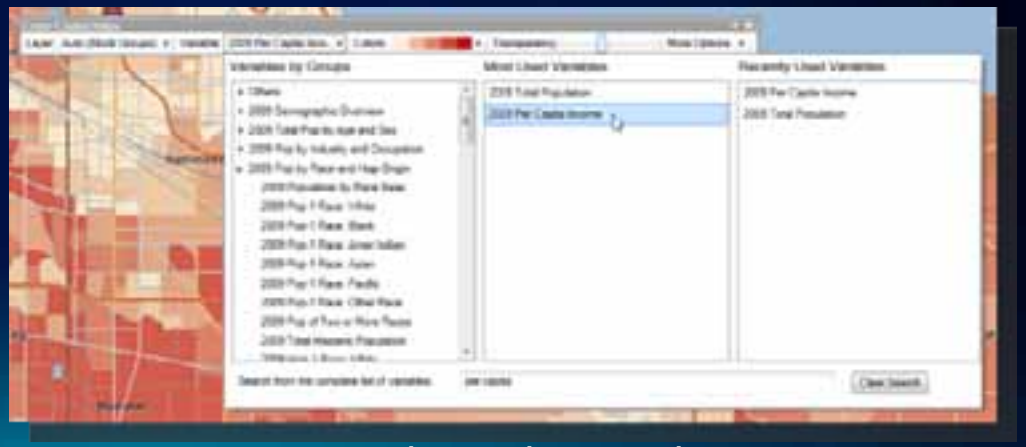
Faster than 9.3.1



Streamlined UI



Cloud Access to Esri Data



Easy Thematic Mapping

BA Server 10

60x

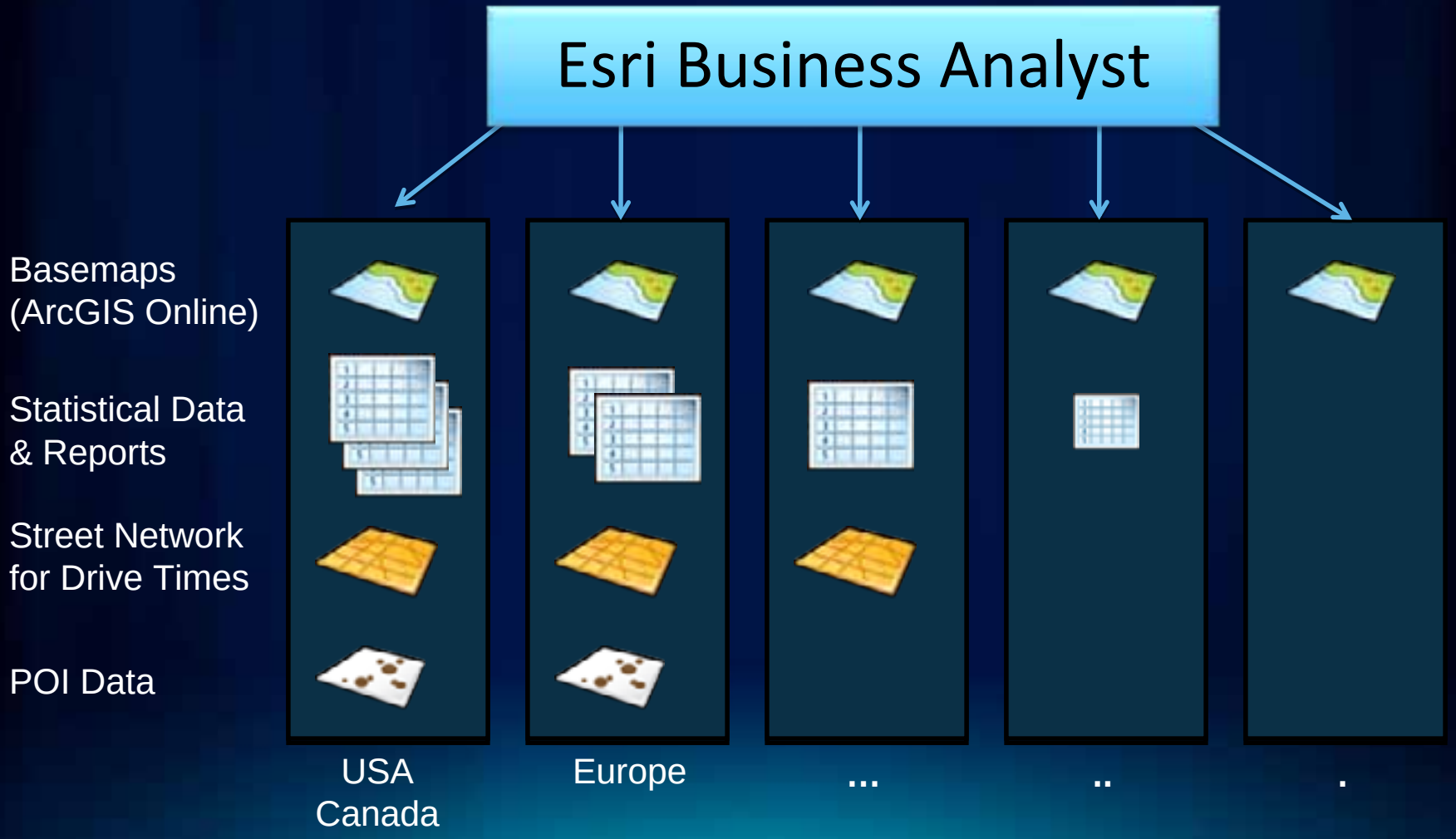
Faster than 9.3.1

Business Analyst UI Components

Native Flex & Silverlight APIs

Part 3: Road Map

Global Solution



Mobile Road Map

1 Mobile Application Template

- Custom Enterprise Apps
- International Support

2 Enterprise Enable our Mobile Apps

Access custom reports

3 Connect to ArcGIS Online

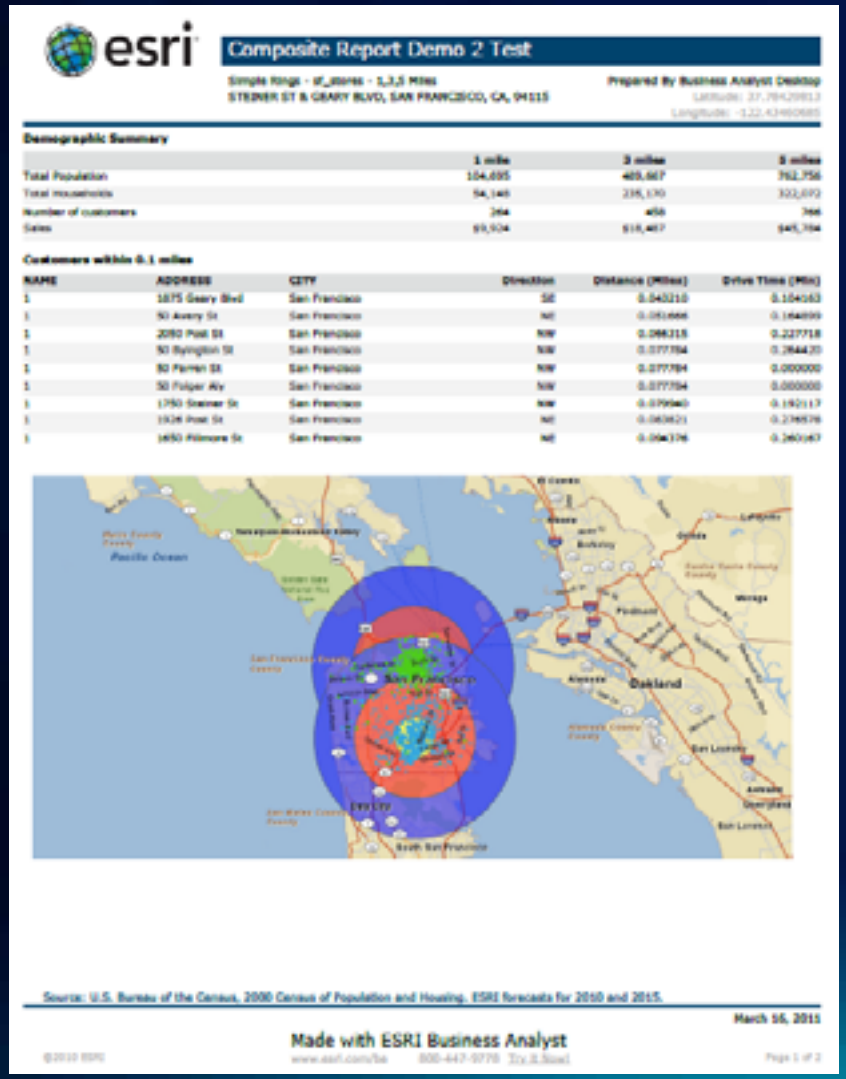
Share work &
Edit Content in Field

4 Support Android Platform

~50% of BA Users have Android

Summer 2011

Desktop 10.1: "Fusion" Reports


esri

Composite Report Demo 2 Test

Simple Rings - sf_stores - 1,3,5 Miles
STEINER ST & GEARY BLVD, SAN FRANCISCO, CA, 94115

Prepared By Business Analyst Desktop

Demographic Summary

	1 mile	3 miles	5 miles
Total Population	104,695	405,867	762,756
Total Households	54,140	195,170	322,692
Number of customers	264	456	766
Sales	$9,924	$16,467	$45,704

Customers within 0.1 miles

NAME	ADDRESS	CITY	Direction	Distance (Miles)	Drive Time (Min)
1	1875 Geary Blvd	San Francisco	SE	0.042210	0.104163
1	50 Avery St	San Francisco	NE	0.051666	0.164099
1	2080 Post St	San Francisco	NW	0.068315	0.227718
1	50 Byington St	San Francisco	NW	0.077704	0.264420
1	50 Perrin St	San Francisco	NW	0.077704	0.000000
1	50 Folger Av	San Francisco	NW	0.077704	0.000000
1	1750 Steiner St	San Francisco	NW	0.079540	0.192117
1	1526 Post St	San Francisco	NE	0.083621	0.236578
1	1650 Fillmore St	San Francisco	NE	0.084376	0.260267

Source: U.S. Bureau of the Census, 2000 Census of Population and Housing. ESRI forecasts for 2010 and 2015.

March 16, 2015

Made with ESRI Business Analyst

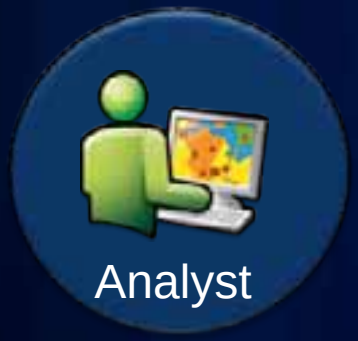
©2010 ESRI

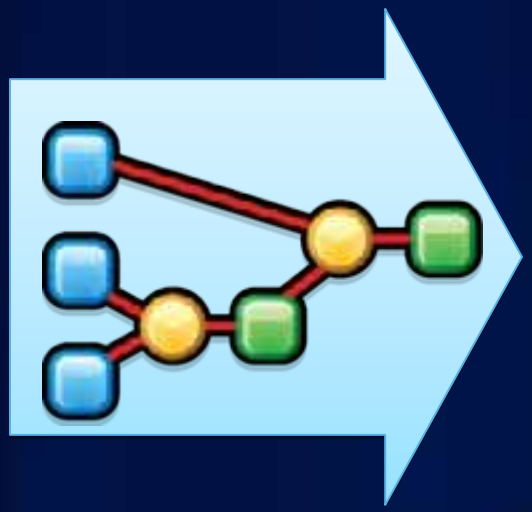
www.esri.com/ba 800-447-9778 Try it Now!

- Quickly combine data from multiple sources
- Examples:
  - Esri demographics
  - Customer data
  - Maps
- Author in minutes… no tweezers required!

Desktop 10.1: Publish BA GP Tools to BA Server

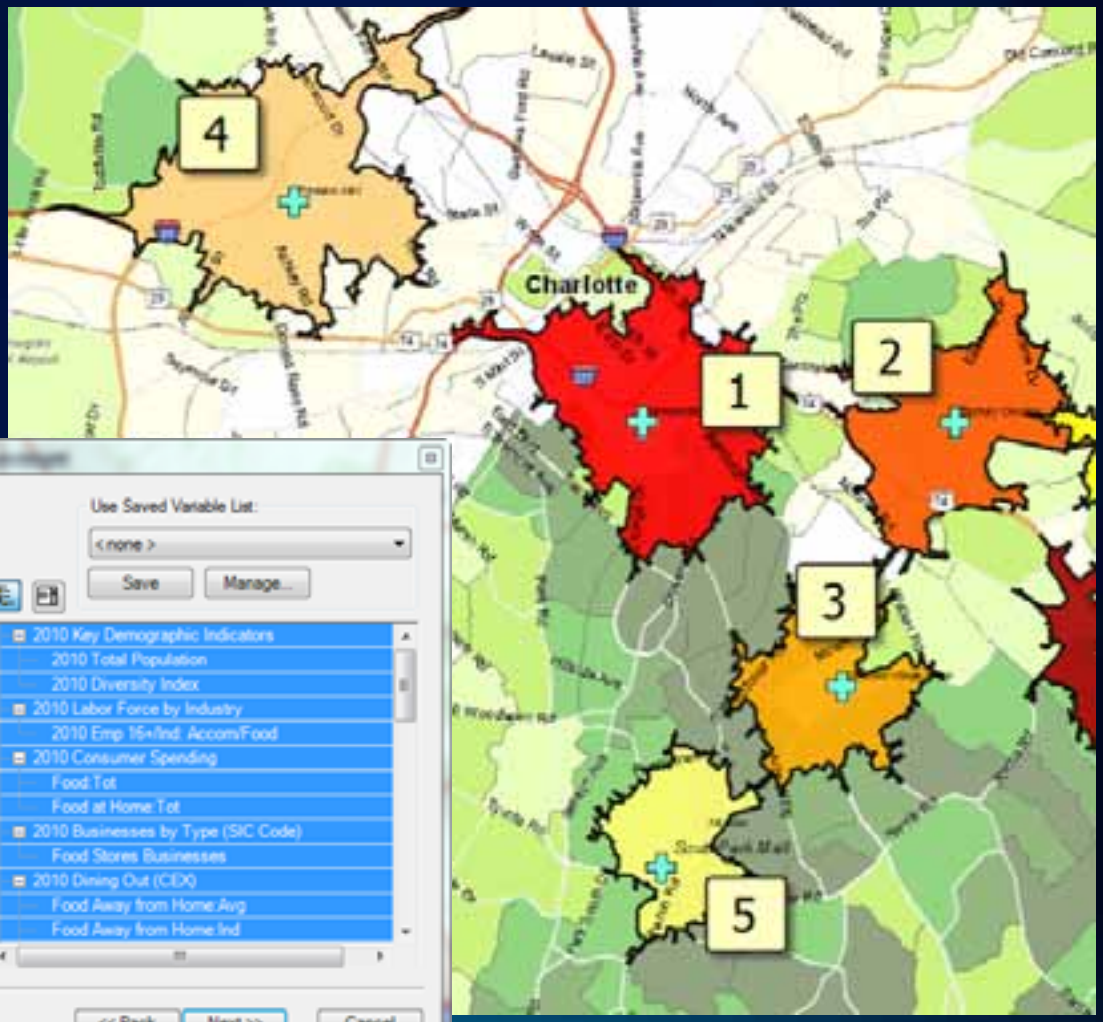
BA Desktop Client

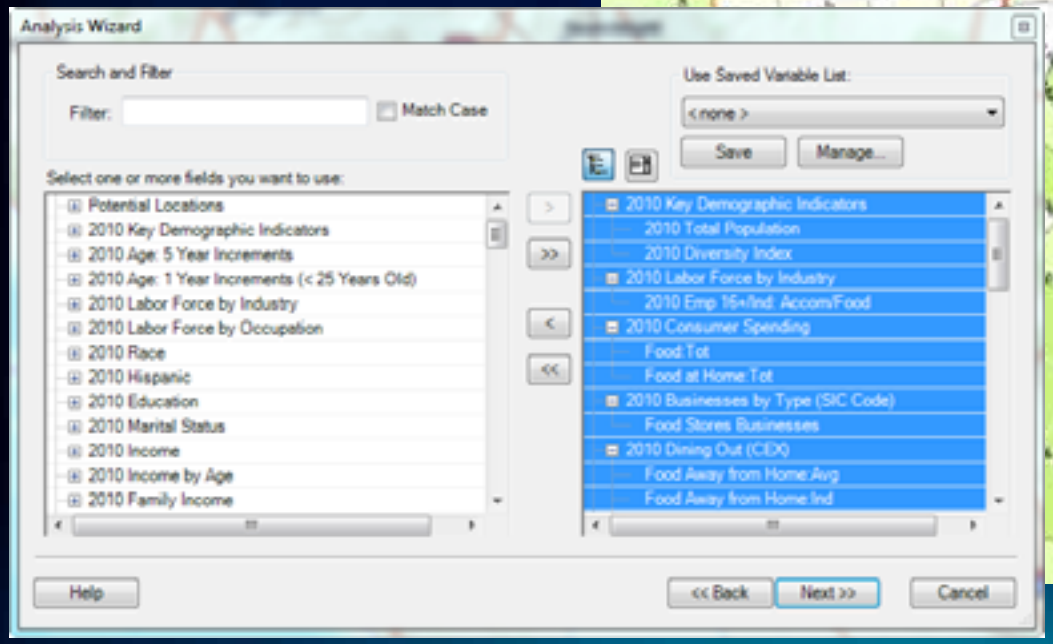




BA Server

Desktop 10.1: Smart Variable Select





The Issue:
You Have to Pick Your Own Variables

Desktop 10.1: Smart Variable Select

Esri Data
& User Data

$$P_{ij} = \frac{A_j^{\gamma} D_{ij}^{\lambda}}{\sum_{j=1}^{N} A_k^{\gamma} D_{ik}^{\lambda}}$$

Statistical Analysis
(PCA)

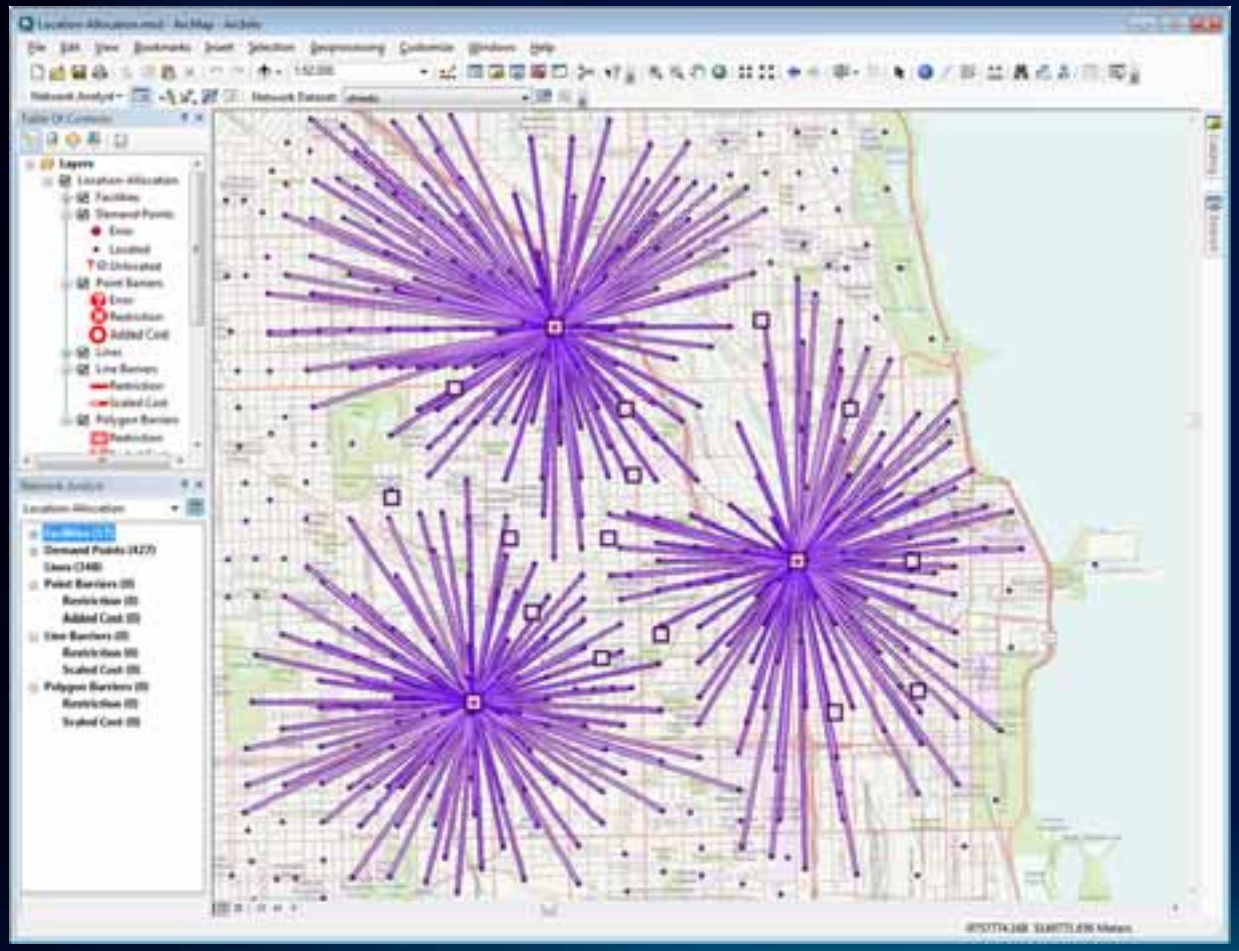
Var 1

Var 12

Var 16

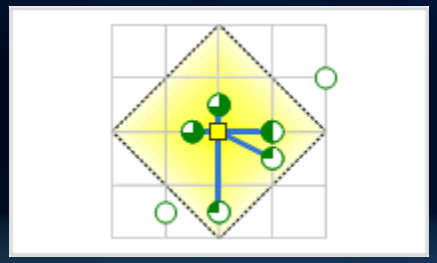
Statistically
Significant
Variables for the
Area in Question

Desktop 10.1: Smart Market Planning



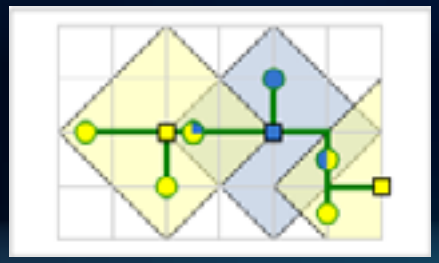
Location / Allocation: determine an optimal location for one or more facilities that will service demand from a given set of customers or prospects

Desktop 10.1: Smart Market Planning



Maximize Attendance:

Maximize Market Share: Given you want to open X new facilities out of a choice of Y possible locations, identify exactly which subset of possible locations will maximize your market share



Target Market Share: chooses the minimum number of facilities necessary to capture a specific percentage of the total market share in the presence of competitors

API Road Map: “2.0” API

Simple APIs…

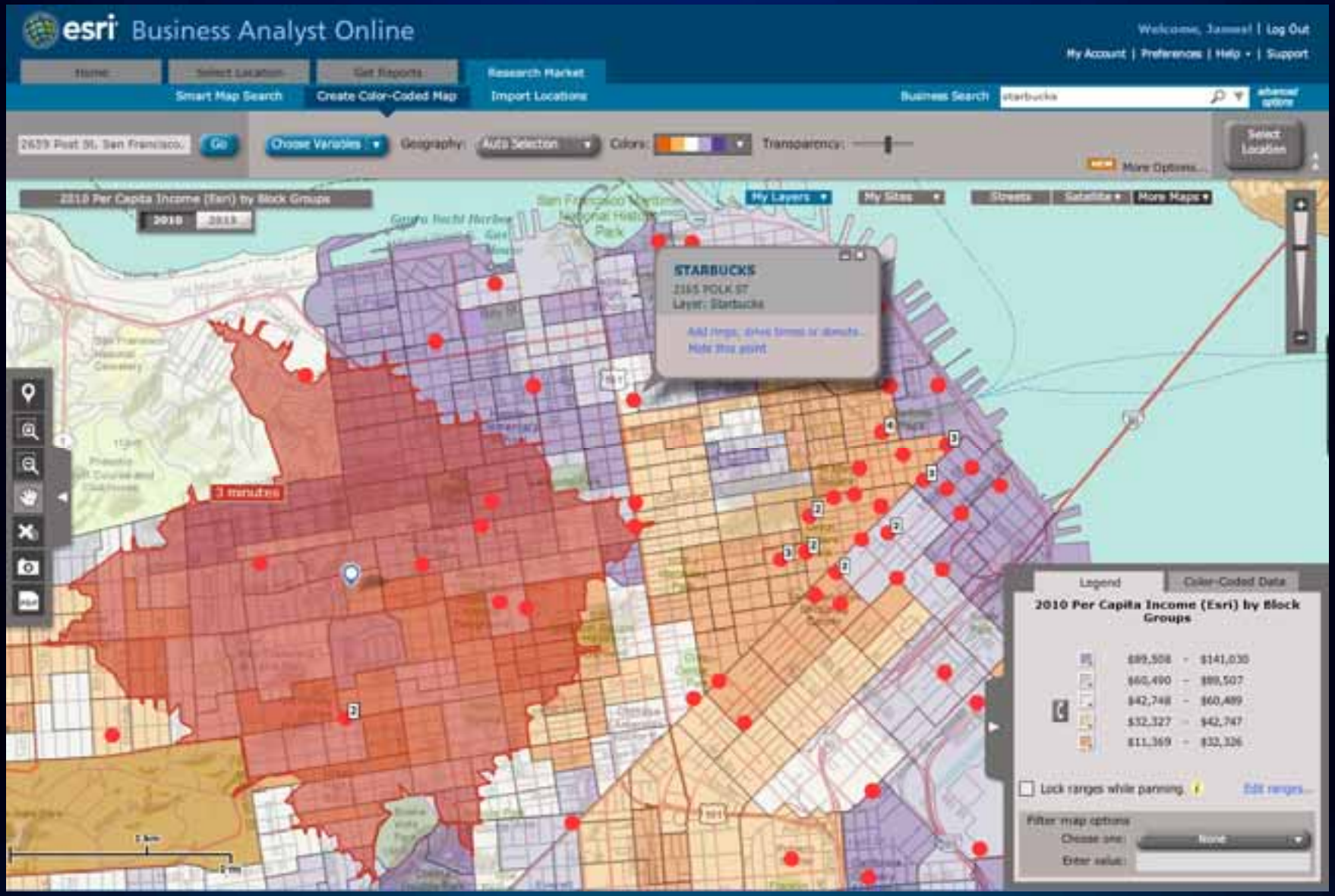
- GetFacts
- MapFacts
- CompareAreas

… Designed to Scale

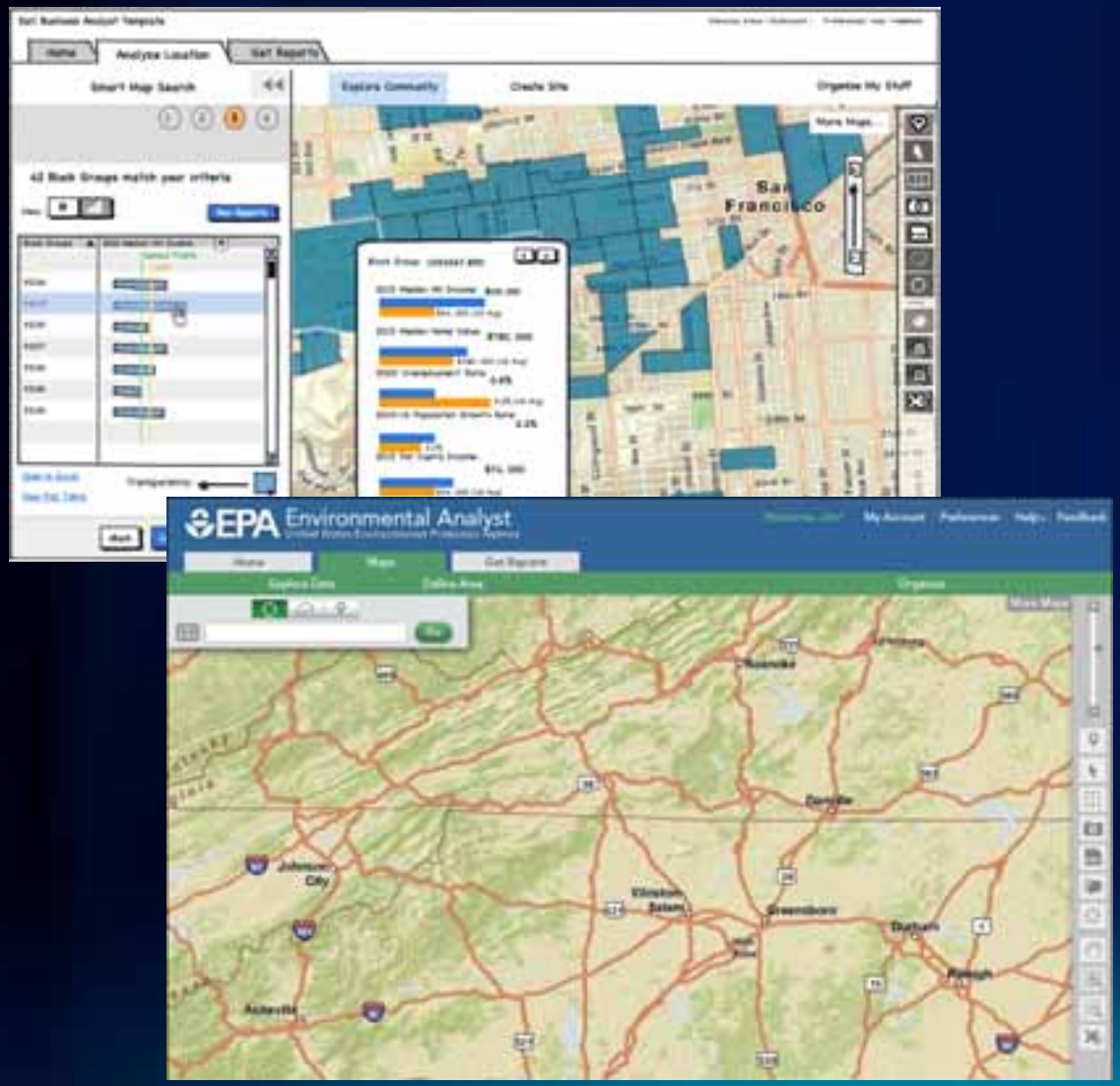
20,000 to 50,000,000 customers

1,000+ records / minute

[API Shown For Example Only]


esri Business Analyst Online
Welcome, Jamaal | Log Out
My Account | Preferences | Help | Support
Home
Select Location
Get Reports
Research Market
Smart Map Search
Create Color-Coded Map
Import Locations
Business Search
starbucks
advanced options
2639 Post St, San Francisco
Go
Choose Variables
Geography:
Auto Selection
Colors:
Transparency:
More Options...
Select Location
2010 Per Capita Income (Esri) by Block Groups
2010
2015
My Layers
My Sites
Streets
Satellite
More Maps
STARBUCKS
2165 POLK ST
Layer: Starbucks
Add rings, drive times or donuts...
Hide this point
3 minutes
Legend
Color-Coded Data
2010 Per Capita Income (Esri) by Block Groups
$89,508 - $141,030
$60,490 - $89,507
$42,748 - $60,489
$32,327 - $42,747
$11,369 - $32,326
Lock ranges while panning
Edit ranges...
Filter map options
Choose one:
None
Enter value:

BA Server 10.1: Application Template



- The App that ships with BA Server
- Extensible, Skinnable, Configurable, Localizable
- Use with hosted BA API or with BA Server

Where to Learn More

Tuesday

General Technical Special Interest

Time	Title	Room
10	Preparing & Using Custom Data in Business Analyst	Demo Theater
11	Adding Location Intelligence to your Apps using the Business Analyst API	Demo Theater
2	What's new in Business Analyst Online	Demo Theater
3	Census 2010 & American Community Survey (ACS): Top 10 Things to Know	Demo Theater
3.15	Retail Special Interest Group Meeting	30C
3.15	Esri Business Analyst: Optimizing Site Selection	32A
3.40	Esri Business Analyst: Optimizing Target Marketing	32A
4.05	Esri Business Analyst: Optimizing Territories & Districts	32A

Wednesday

General Technical Special Interest

Time	Title	Room
8.30	Census 2010 and the Data User	32A
10	A Preview of Business Analyst Desktop 10.1	Demo Theater
10.15	American Community Survey (ACS) and the Data User	32A
11	A Preview of Business Analyst Server 10.1	Demo Theater
1.30	Esri Business Analyst – Economic Gardening & Economic Development	32A
2	Esri Demographic, Lifestyle and Business Data	Demo Theater
3	Perform Site Selection On-the-Go with the Business Analyst Mobile App	Demo Theater
3.15	Segmentation Data for Community & Market Analysis	32A

Thursday

General Technical Special Interest

Time	Title	Room
8.30	Best Practices for App Development: A Case Study of User Centered Design	32A
10.15	Community & Demographic Analysis – Build Your Own Apps and Web Sites	32A

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