



PCG | *Human Services*
Public Focus. Proven Results.™

Comprehensive Child Welfare Evaluation through Data Analytics

Presented by:

Carole Hussey, PMP

Bill Shutt, MSW



Agenda

- Introductions
- Learning Objectives
- Business Intelligence and Data Analytics
- Why do we need it?
- Data Analysis Methodology
- Process Activities
- Examples
- Challenges
- Tools
- Resources



Learning Objectives

- This panel seeks to educate child welfare professionals on the process for creating a business intelligence strategy and data analytics activities.
- The panel will present data dashboard and data visualization models and share how these models could be used to improve and monitor services within their organization.
- The panel seeks to promote a frame work for evaluation that begins at the child level and assesses the effectiveness of care through aggregated individual stories about the provisions of services through multiple agencies and providers.
- This panel seeks to demonstrate methods to leverage existing datasets within child welfare and complementary program areas to identify trends and changes in the population served using simple dashboard tools, with the goal of improving children's wellbeing, identifying factors that place children at risk, replicating practices that promote wellbeing, and identifying areas that require focus.



Data Analytics and Business Intelligence

- Data Analytics is the process of inspecting, cleaning, transforming, and modeling of data with the goal of analyzing the data to support decision making.
- Business Intelligence (BI) is the use of technology in identifying, extracting, and analyzing business data to influence sound business decisions.
- Business Intelligence technologies provide historical, current, and predictive views of business operations.
- Use of BI without proper data analysis, may produce skewed results.



Why do we need Data Analysis & Business Intelligence

- Understanding the population being served, the tracking of overall service type usage, and the ability to identify service needs.
- Identification of Outcomes improvement opportunities to strengthen practice and areas of strength to establish program best practice.
- Business process re-engineering for gaining fiscal efficiencies and expanding capacity.
- Performance Management for workforce and providers and practice improvement.
- Benchmarking and predictive analytics.



PCG's Data Analysis Framework: What We Do...

Focusing Questions

If we ask the right questions

Results

...Then we will help our clients make informed decisions that will lead to improved outcomes

Action

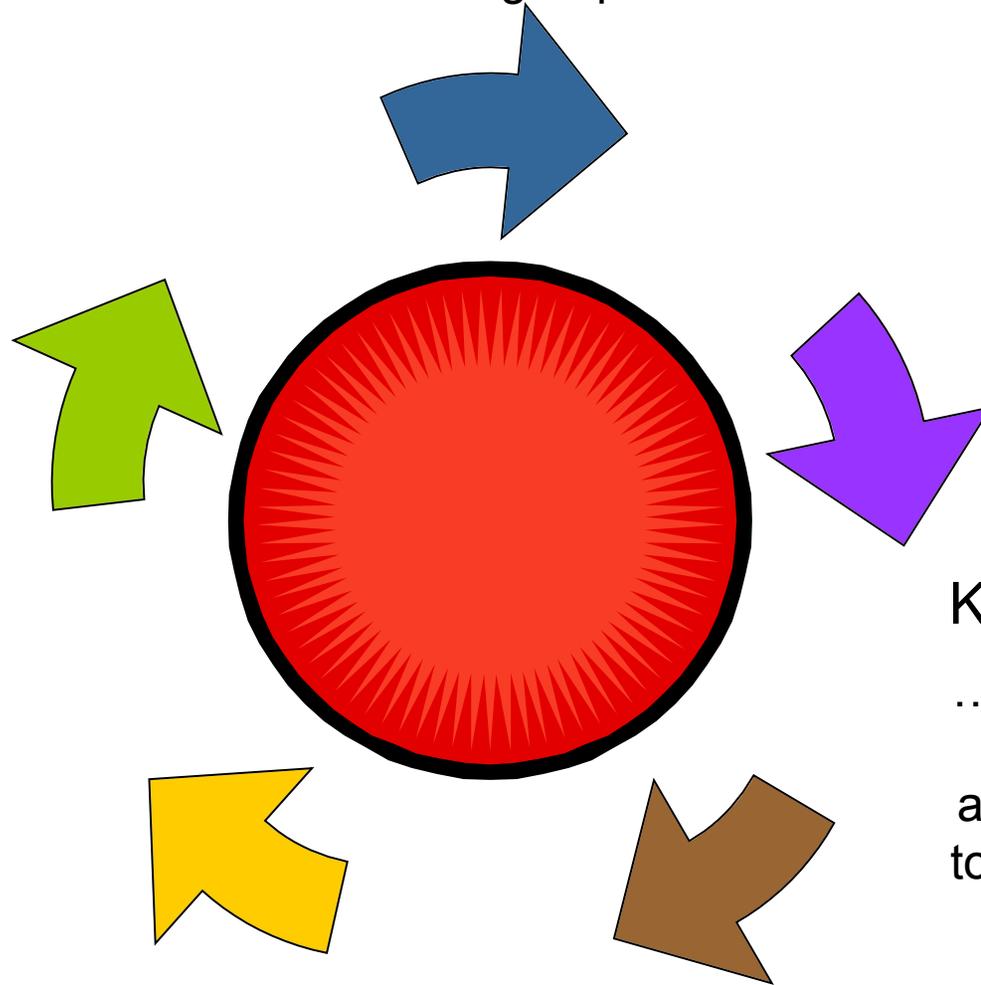
...And apply that meaning when we create data displays and presentations that answer the questions

Information

...Collect data to help us answer those questions

Knowledge

...Analyze the data and use current research and shared experience to make meaning of the data





Process Activities: Understanding the Problem

- What is the problem you are trying to solve; or the outcomes you are trying to achieve?
- Know the business.
- Focusing questions give you a starting point to help you identify the data you need to analyze.
- Clarifying questions are generated from your initial data analysis and may require additional data.
- This is achieved through structured surveys, interviews, and focus groups.



Process Activities: Gathering Data

- Inventory relevant data sources
 - Data locations
 - Data ownership
 - Policy/Privacy issues
- Identify specific data elements/sets
 - Data Architecture
 - Data Models
 - Data Dictionaries



Process Activities: Analyzing the Data

- Data Management Maturity
 - Do you have good quality data
 - Has the data been validated/cleansed
- Create crosswalks or relationship maps to determine usage scenarios
- Statistical analysis
- Use of tools
 - Automate formulas and calculations
 - Merge data





Dashboard Examples

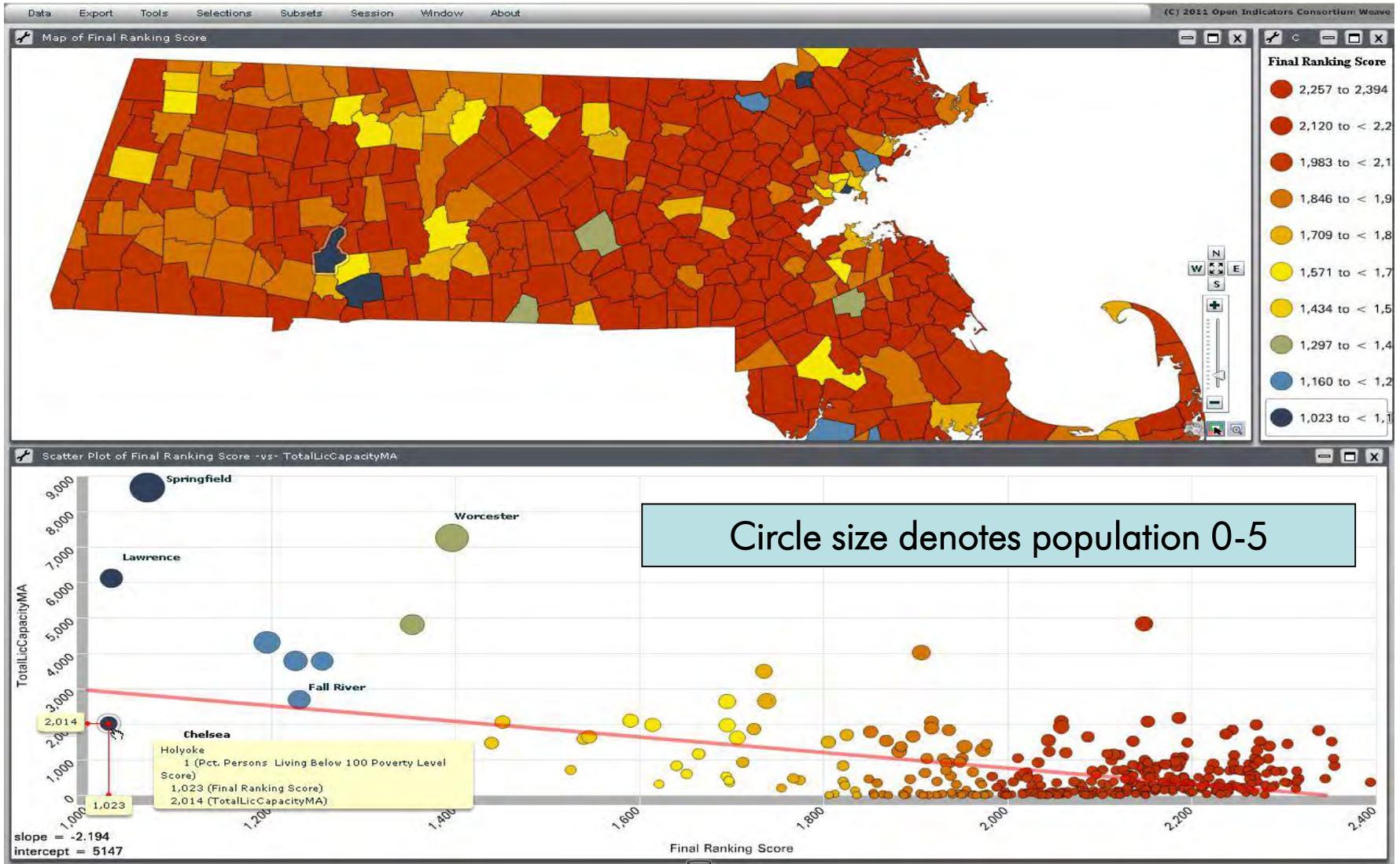


WEAVE: Web-Based Analysis and Visualization Environment

- Developed by the Open Indicators Consortium (OIC) and University of Massachusetts Lowell.
- This is an open source data analysis and visualization platform.
- The following slides are from an Early Childhood Information System Project.

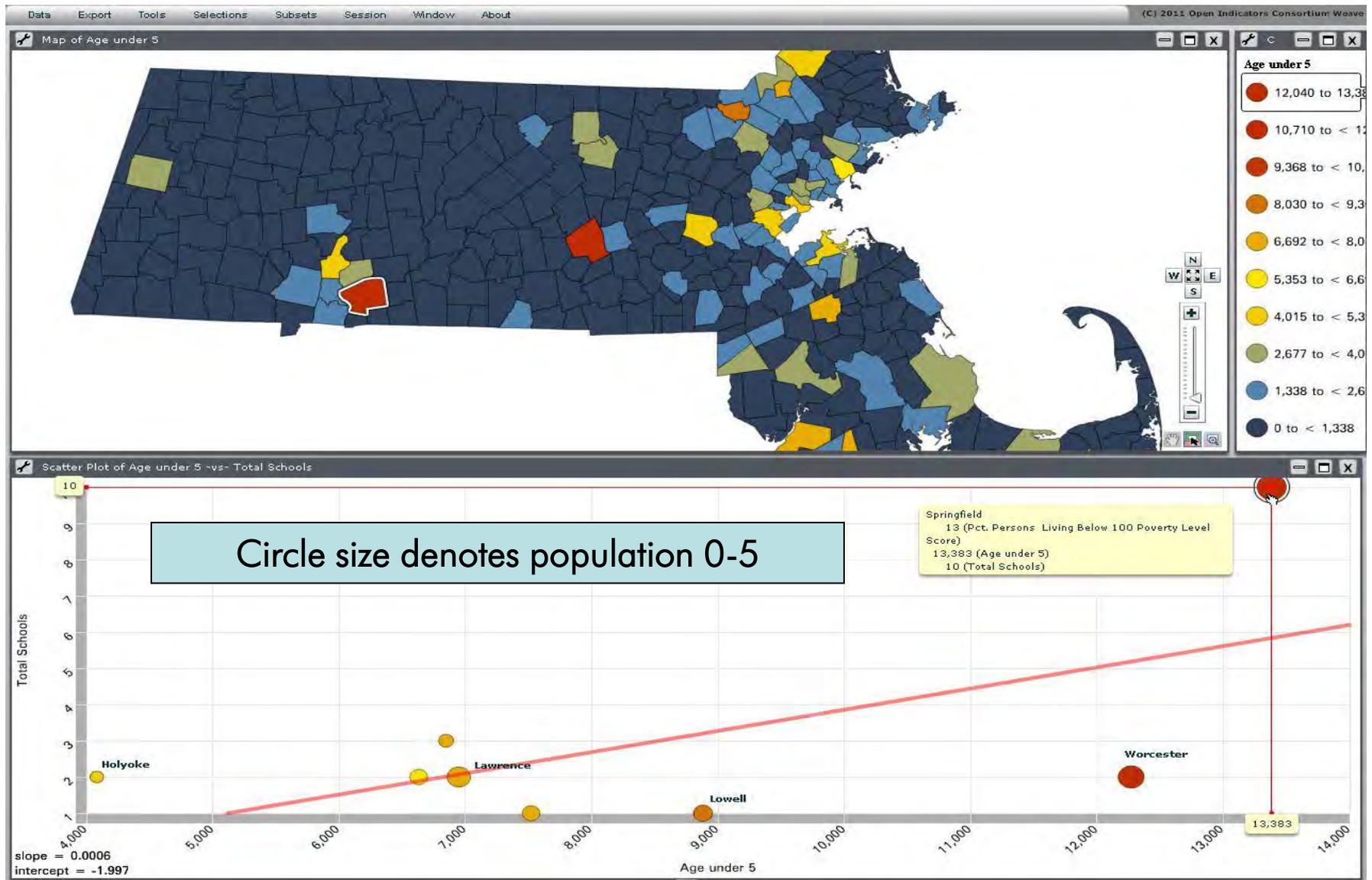


WEAVE Example: Maternal/Child Health Risk and Total Licensed ECE Capacity



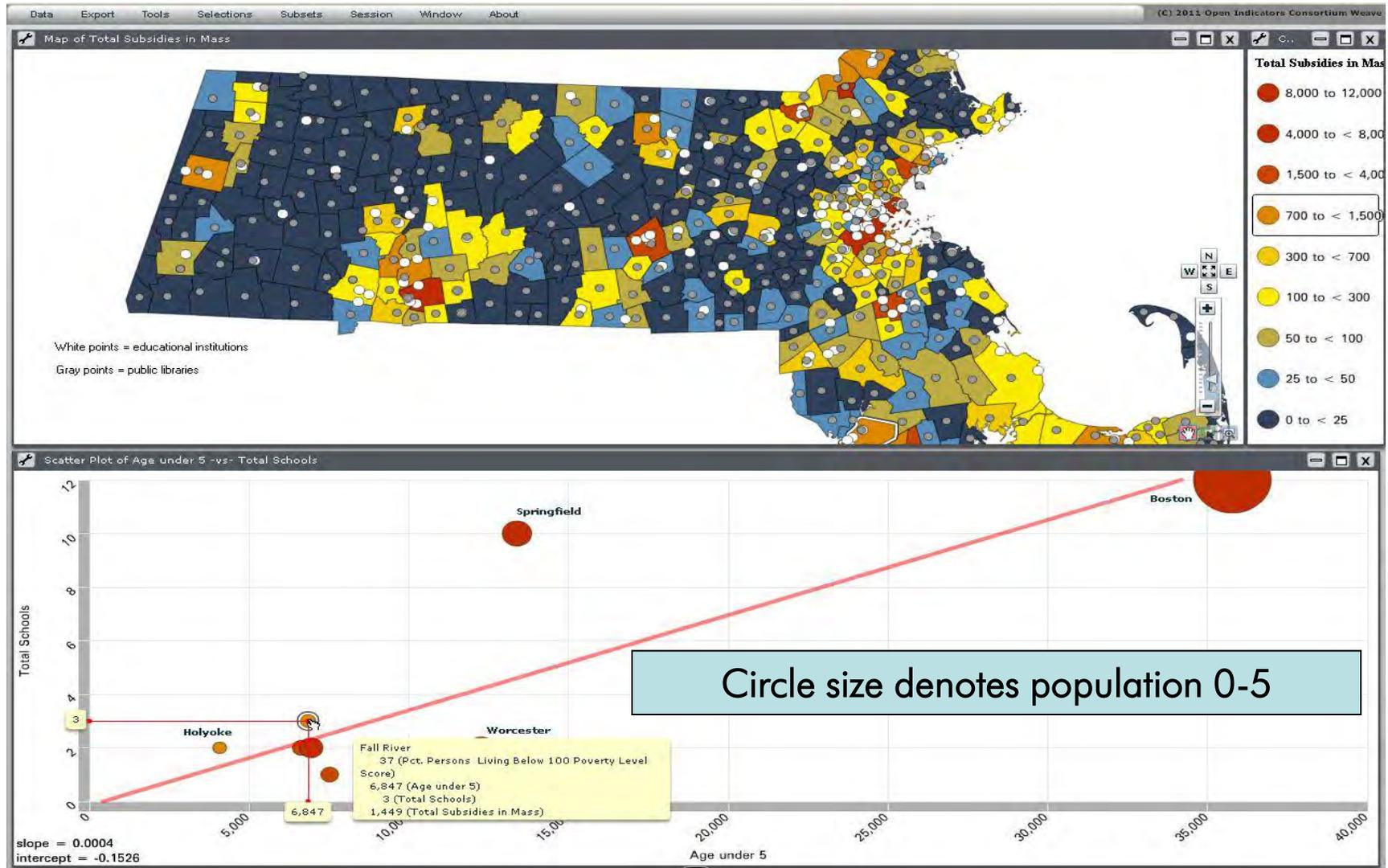


WEAVE Example: Level 4 Schools and Population 0-5



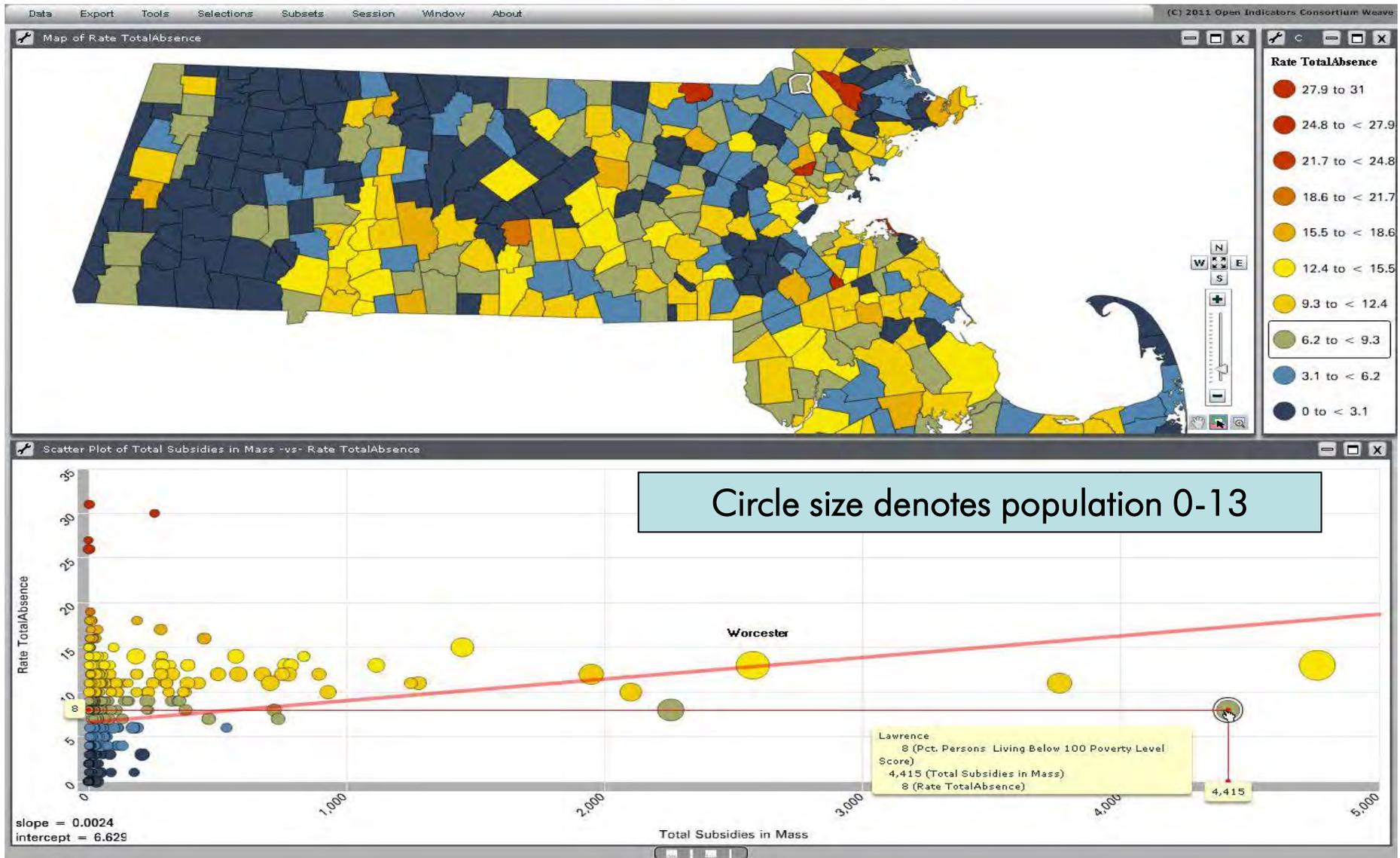


WEAVE Example: Total Subsidies, Level 4 schools and Community Resources





WEAVE Example: Total Subsidies and Rates of Absence in Subsidized Care





Using WEAVE or Similar Products

We Can COMPARE: Location and number of child abuse allegations to risk factors

- Poverty
- Teen Pregnancy
- Unemployment
- Absenteeism
- Total foster home capacity to demographic data on population:

And we can ASK:

- Are there gaps between population and capacity? Ages of children and capacity by age group?
- Is there alignment between location of abuse cases and risk factors?
- Is our foster home capacity adequate for high abuse geographic locations?
- Should outside contracts or recruitment efforts be increased based on risk factor/geographical matches with the child welfare population?



PCG Partnerships



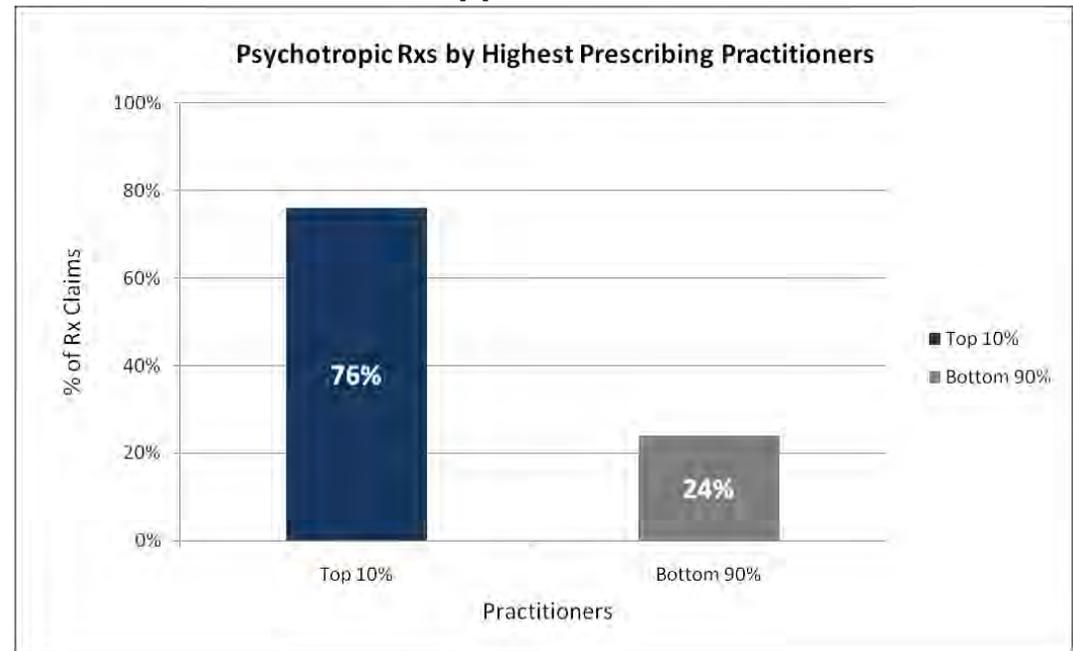
- NTELX works with PCG to implement a holistic approach to complex decision analytics that:
 - links together both Medicaid and human services agency utilization data in order to produce a full picture of all of the health and human services;
 - monitors, analyzes and manages key performance indicators; and
 - plans, analyzes and researches platforms to support client agency programs, policies and initiatives to improve the quality of organizational performance and work processes.



NTELX and PCG Partnership: Data Analytics Example

- Fostering Connections requires states to develop a plan for ongoing oversight and coordination of health care services for children in foster care.
- PCG analyzed Medicaid data to identify children in need of **intensive case management** or **coordination of care**, including:
 - Children receiving psychotropic drugs, including dosage, number of drugs, prescribing provider and whether the drug is appropriate for the child's age

1,502 practitioners wrote 33,479 psychotropic drug prescriptions during 1/9/2008 - 10/29/2009 for foster care children before the children were at the FDA age of approval.



The top 10% highest prescribers (150 practitioners) prescribed 76% of the 33,479 psychotropic drug prescriptions (25,474).

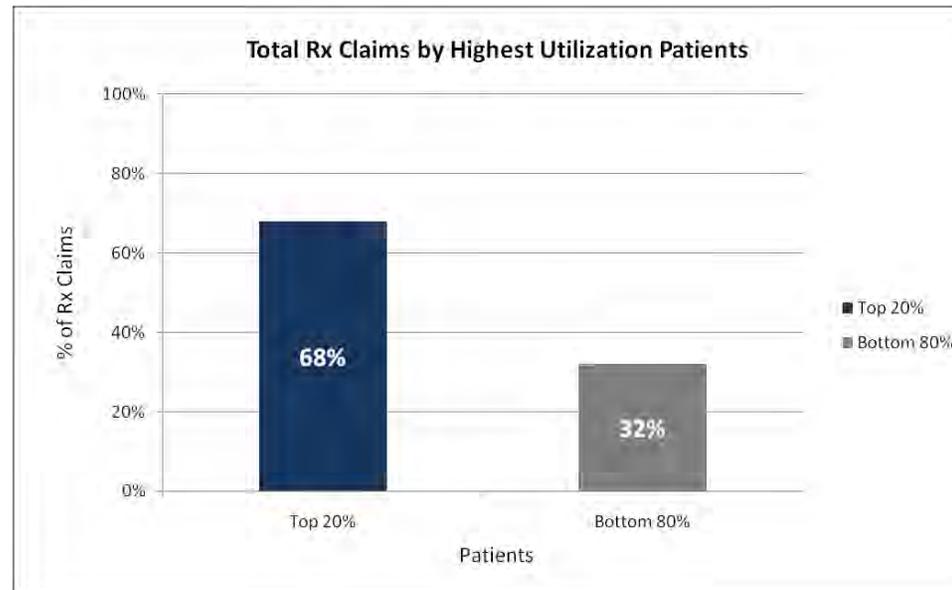
***Analytics Powered by**





Data Analytics Example: Coordination of Care *Prescription Trends*

- How frequently are children in foster care being prescribed medications?



- The top 20% highest utilization patients (2,831 patients) **filled 68%** of the 347,178 drug prescriptions (235,934) filled by children in foster care
- Foster care children had as many as **726 pharmacy claims**, including new prescriptions and refills in no longer than 22 months



Data Analytics Example: Coordination of Care *Psychotropic Drugs*

- **What kinds of psychotropic medications are children in foster care being prescribed and with what frequency?**
 - ***Foster children are receiving as many as 46 distinct active ingredients among all drugs taken during this timeframe***
 - ***Children are receiving as many as 7 distinct psychotropic medications over the course of no longer than 22 months***
 - ***One 6 year-old child in our data set was prescribed 5 different anti-psychotic medications in the span of 5 months***

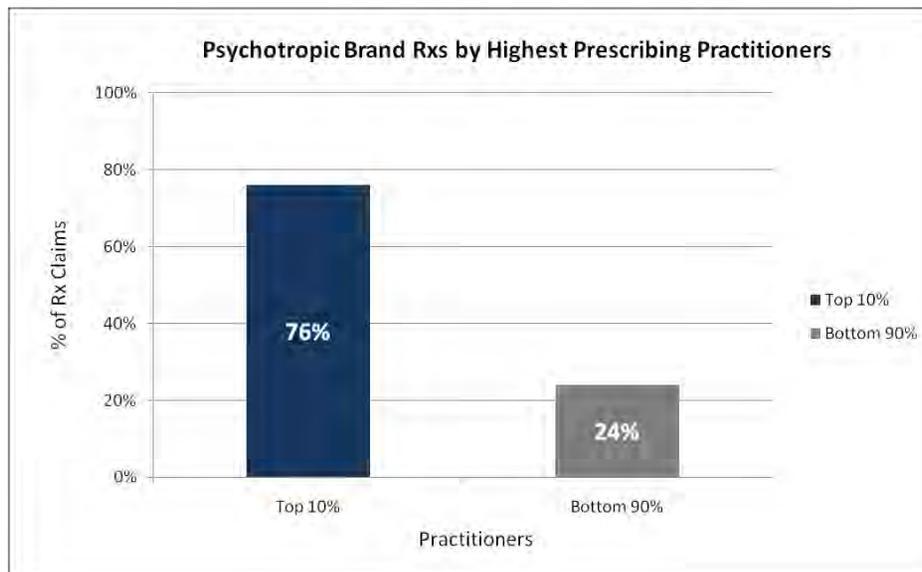


*Graph above includes name brand and generic drugs



Data Analytics Example: Coordination of Care *Psychotropic Drugs*

- Are there practitioners prescribing psychotropic drugs at an unusually high rate?



Some research has found that use of psychotropic drugs by children in foster care is three to four times greater than by other low-income children insured by Medicaid

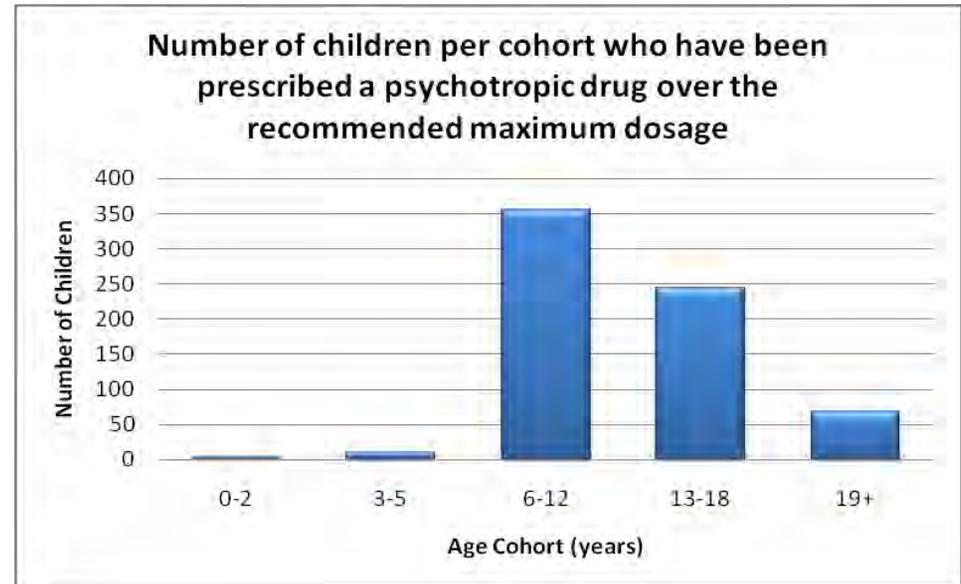
-Julie M. Zito and others, "Psychotropic Medication Patterns Among Youth in Foster Care," *Pediatrics*, vol. 121, no. 1 (2008): e157-e163.

- The top 10% highest prescribers (250 practitioners) prescribed 76% of the 59,624 psychotropic brand drug prescriptions (45,024)



Data Analytics Example: Coordination of Care *Psychotropic Drugs*

- **Are practitioners prescribing psychotropic medication to children in foster care in accordance with FDA standards?**
- **400 different practitioners** prescribed **466 children** more than the FDA recommended dosage for their given age
- **150 different practitioners** prescribed **2,299 children** psychotropic drugs that were not FDA approved for use by children of their given age



*FDA approved dosages and ages of approval based on National Institute of Mental Health, "Mental Health Medications."
<http://www.nimh.nih.gov/health/publications/mental-health-medications/complete-index.shtml#pub11>



Data Analytics Example: Quality Assurance *Comparison to Standards*

- **In the initial phase of treatment (during the initial three months on a particular medication or regiment), visits should take place on at least a monthly basis**

(American Academy of Pediatrics, "Health Care of Young Children in Foster Care", March 3, 2002.

<http://aappolicy.aappublications.org/cgi/content/full/pediatrics;109/3/536>)

- 12.2% of children new to a psychotropic drug had no record of follow up visits to a provider or any kind.
- **Children in foster care need to receive comprehensive assessments of dental health**

(American Academy of Pediatrics, "Health Care of Young Children in Foster Care", March 3, 2002.

<http://aappolicy.aappublications.org/cgi/content/full/pediatrics;109/3/536>)

- *26% of foster care youth did not receive a dental screen every six months*





Data Analytics Example: Quality Assurance

Costs of Care

- Are there certain diagnoses that have unusually high drug treatment costs?
 - *“Other psychoses” diagnosis below corresponds to an average drug cost/patient of \$8,150*

Most Common Diagnoses for Children in Foster Care	# Patients Diagnosed	Total Cost of Drugs to Treat	Avg Drug Cost/Patient	Cost Utilization of Top Patient Decile
NEUROTIC DISORDERS, PERSONALITY DISORDERS, AND OTHER NONPSYCHOTIC MENTAL DISORDERS	4456	\$14,603,740	\$3,277	45.70%
PERSONS ENCOUNTERING HEALTH SERVICES IN CIRCUMSTANCES RELATED TO REPRODUCTION AND DEVELOPMENT	3199	\$1,014,104	\$317	60.20%
PERSONS WITHOUT REPORTED DIAGNOSIS ENCOUNTERED DURING EXAMINATION AND INVESTIGATION OF INDIVIDUALS	1659	\$917,963	\$553	69.50%
OTHER PSYCHOSES	1188	\$9,682,733	\$8,150	32.20%
SYMPTOMS	884	\$1,033,156	\$1,169	67.80%
ACUTE RESPIRATORY INFECTIONS	472	\$232,461	\$493	57.70%
PERSONS WITH POTENTIAL HEALTH HAZARDS RELATED TO COMMUNICABLE DISEASES	349	\$160,696	\$460	75.00%
DISEASES OF THE EAR AND MASTOID PROCESS	291	\$178,073	\$612	54.50%
PERSONS ENCOUNTERING HEALTH SERVICES IN OTHER CIRCUMSTANCES	223	\$464,112	\$2,081	57.70%
DISORDERS OF THE EYE AND ADNEXA	201	\$73,619	\$366	62.40%



Data Dashboard Example: RMTS Information





Tools

- Excel, yes, really!
 - Easy to use, most people have it.
 - Size and automation limitations.
- Access
 - Accessible, easily trained.
 - Size limitations
- Microsoft Suite of Tools: Sharepoint, SQL Server, Microsoft Analytics, PowerPivot, Report Builder
- Oracle Business Intelligence Suite Enterprise Edition Plus (OBIEE)
- IBS Statistical Package for Social Science (SPSS) for predictive analytics





Questions?

Contact Information:



Carole Hussey

office: 617-426-2026, ext. 1296

email: chussey@pcgus.com



Bill Shutt

office: 717-671-6414, ext. 6401

email: wshutt@pcgus.com

www.pcghumanservices.com

www.pcghumanservices.com