



So, You Want to Build a Dashboard?



**Medicaid Innovation
Accelerator Program
- Data Analytics
National Webinar**

***May 17, 2017
3:00 – 4:30 PM EDT***

Logistics for the Webinar

- To participate in a polling question, exit “full screen” mode
- Use the chat box on your screen to ask a question or leave a comment
 - Note: chat box will not be seen in “full screen” mode

Welcome!

- Jessie Parker, GTL and Analyst on Medicaid IAP Data Analytic Team, Data and Systems Group, CMCS

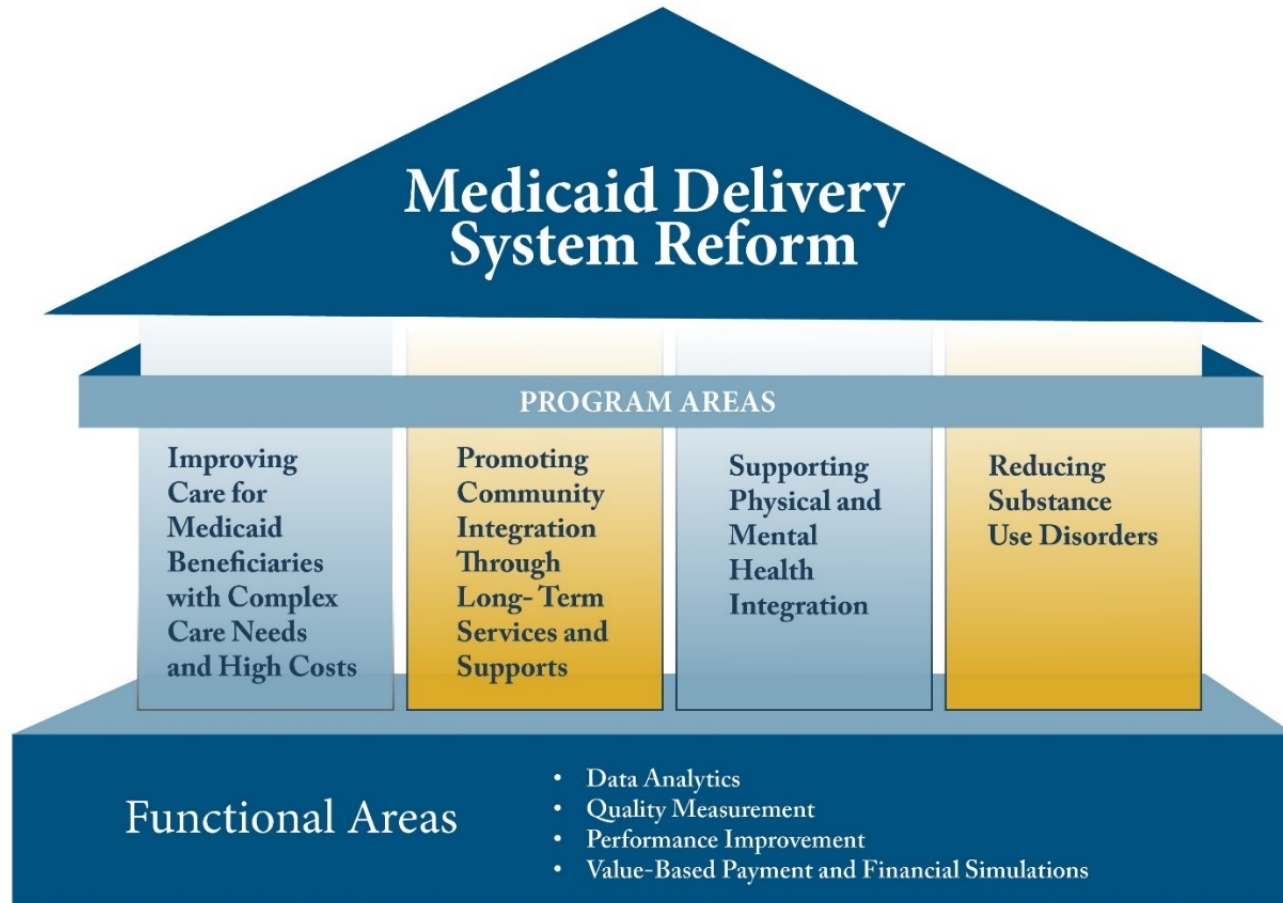
Agenda for Today's Webinar

- Overview of Medicaid Innovation Accelerator Program
- Planning & Preparation for Dashboard Building
- A State-University Partnership in Action: New Hampshire MQIS
- The Process for Designing and Creating Useful Dashboards
- Healthier Washington Data Dashboard Experience
- Questions and Answers

Today's Speakers

- Beth Schneider, Vice President, Practice Leadership, State and Local Government Health and Human Services, Truven Health Analytics
- Doris Lotz, MD, MPH, Chief Medical Officer, NH Department of Health and Human Services
- Jo Porter, MPH, Institute for Health Policy and Practice, University of New Hampshire
- Ashley Peters, MPH, Institute for Health Policy and Practice, University of New Hampshire
- Katherine Rowell, MS, MHA, Co-Founder and Principal, HealthDataViz
- Kirsta Glenn, AIM Director, Washington State Health Care Authority

Medicaid Innovation Accelerator Program (IAP)



Goals for Today's Webinar

In this interactive webinar, states will learn about:

- The process of creating a data dashboard from planning stages through the design;
- Methods and approaches to building the right data team for creating a dashboard;
- Guidelines for designing a useful dashboard; and,
- Common pitfalls to avoid.

Planning & Preparation

Definitions, Uses, Building the Team

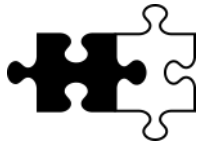
**Beth Schneider, MBA, Truven Health
Analytics, IBM Watson Health**

Why States Use Dashboards

- Gain insight
- Drive action
- Save time
- Provide transparency
- Achieve program goals



Dashboards Defined



Infographics

- Inform, teach or persuade
- On a specific topic, e.g., emerging issue
- 1-2 page composite of words, numbers, graphics
- Usually one-time



Dashboards

- Monitor at-a-glance
- Key trends, patterns and variances
- To inform decisions and actions
- Concise visual and numeric displays
- Ongoing updates



Reports

- Access to detailed information
- By subgroups, e.g., payer, service, etc.
- Longer displays, organized logically
- Ad hoc or scheduled updates

Dashboard Considerations

Audience

- Executive management
- Program managers
- Operations staff
- Key stakeholders
- General public

Purpose

- Executive
- Strategic
- Operational
- Analytic

Dissemination

- Internal vs. Public
- Desktop vs. Mobile
- Static vs. Interactive

Examples of Medicaid Dashboards: Louisiana

www.ldh.la.gov/HealthyLaDashboard/

LOUISIANA DEPARTMENT OF HEALTH

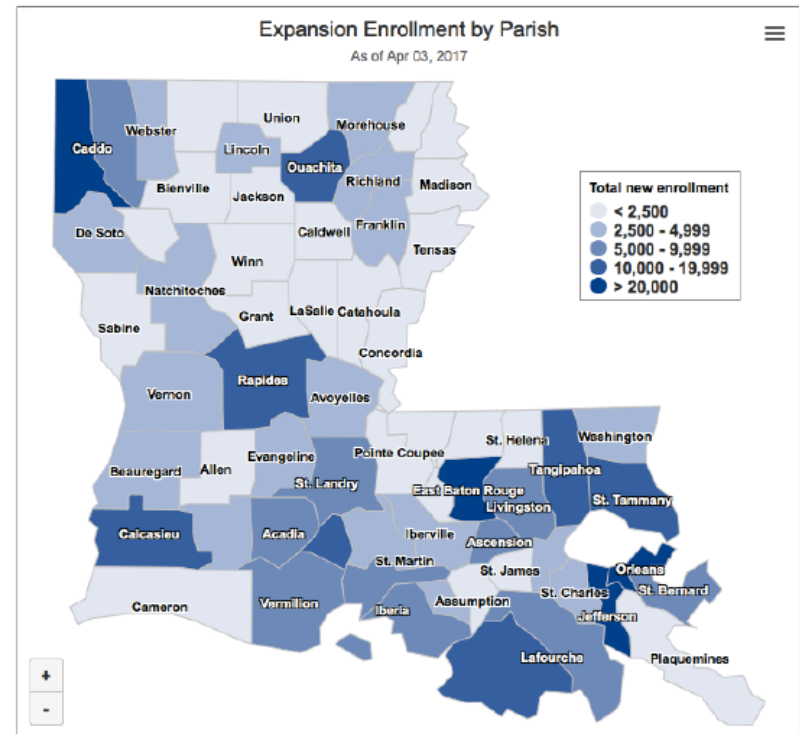
Secretary REBEKAH E. GEE, MD, MPH

BACK TO LDH

Healthy Louisiana | LDH Medicaid Expansion DASHBOARD

LIVES AFFECTED	OUTCOME	Details
 416,855	Health Insurance Adults enrolled in Medicaid Expansion as of April 03, 2017	Details
 72,063	Preventive Care Adults who received preventive healthcare or new patient services*	Details
 5,895 88	Breast Cancer Women who've gotten screening or diagnostic breast imaging* Women diagnosed with breast cancer as a result of this imaging*	Details
 6,921 1,980 70	Colon Cancer Adults who received colon cancer screening* Adults with colon polyps removed: colon cancer averted* Adults diagnosed with colon cancer as a result of this screening*	Details
 1,586	Newly Diagnosed Diabetes Adults newly diagnosed and now treated for Diabetes*	Details
 4,053	Newly Diagnosed Hypertension Adults newly diagnosed and now treated for Hypertension*	Details

*Statistics as of March 20, 2017



Source: <http://www.ldh.la.gov/HealthyLaDashboard/>

Examples of Medicaid Dashboards: Oklahoma

The screenshot shows the Oklahoma HealthCare Authority website's research section. The page title is "Data Analytics" and it features a "WebAlerts" section. Below this, there are five interactive dashboard options, each with an icon and a description of the data it provides.

Oklahoma HealthCare Authority
 about us | individuals | providers | research | contact us | search

Home > Research

Data Analytics

WebAlerts

OHCA's interactive dashboards are designed to provide easy access to customizable data for anyone who is interested. Individuals can tailor data searches to meet specific needs (e.g. particular county, age group, etc.)

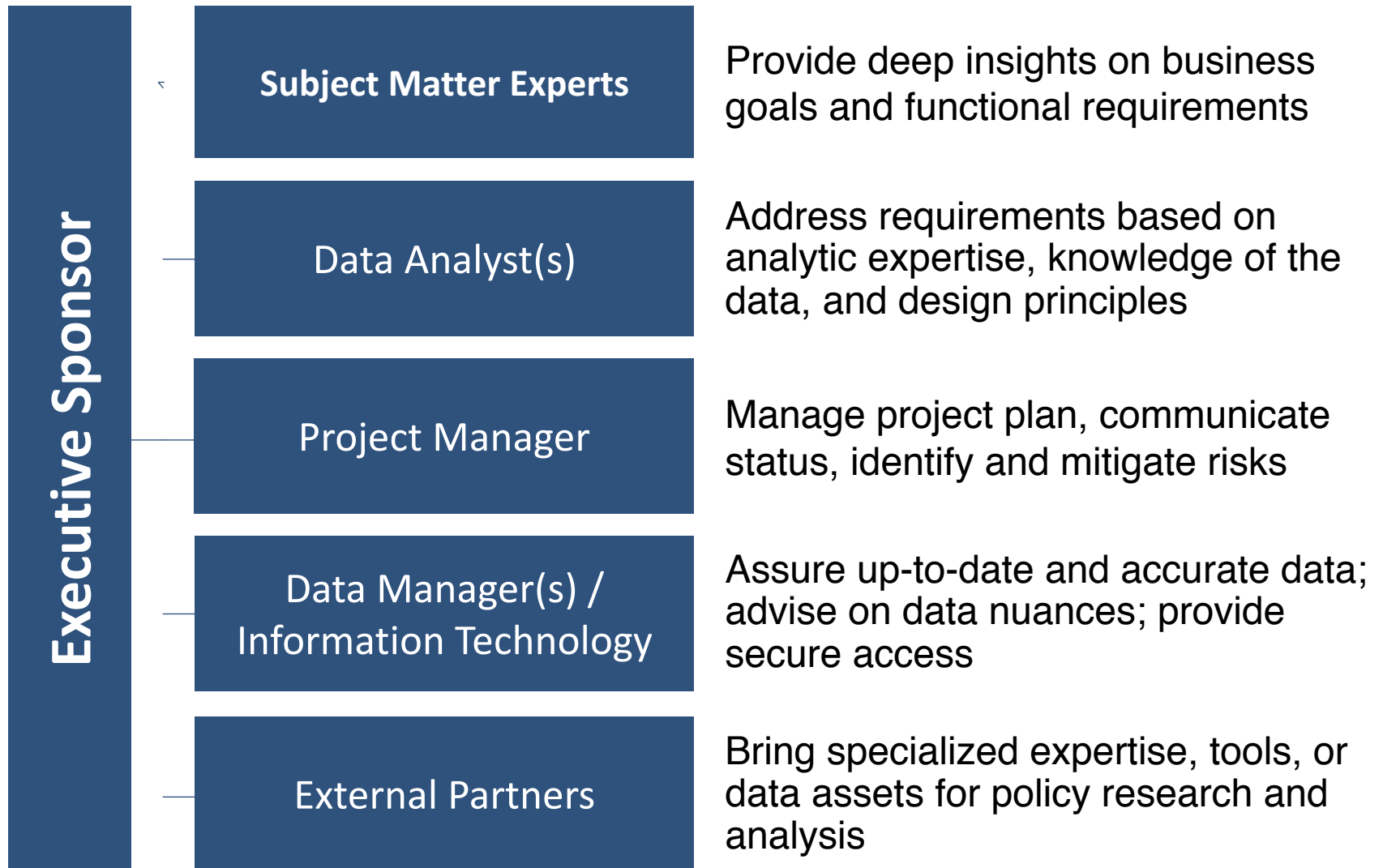
New dashboards are added periodically. You may sign up to receive email alerts when new ones are added, or visit this page to see what's new. For additional SoonerCare or Insure Oklahoma data, click [here](#) to view Fast Facts.

Select which type of data you want to view below:

Expenditures & Members by County	Expenditures and Members by Legislator	Historic Category of Member Services and Expenditures	SoonerCare and Insure Oklahoma Members by Age	SoonerCare Monthly Enrollment 2006 to Present
SoonerCare members, expenditures and percent change by county and SFY	SoonerCare members and expenditures by county, legislator's county and SFY	SoonerCare members, expenditures and average expenditures per member by type of service provided and SFY	Age breakdowns and percent change for SoonerCare and Insure Oklahoma members by SFY	SoonerCare enrollment breakdowns and member demographics by month from 2006 to 2015

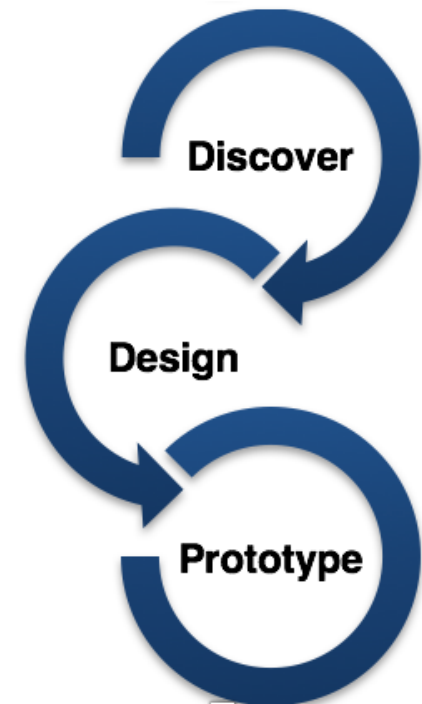
Source: <http://okhca.org/research.aspx?id=46&parts=7447>

Getting Started: Building the Team



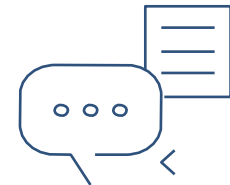
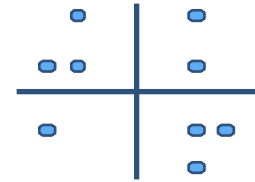
Role of the Subject Matter Expert

- Advise on dashboard-specific requirements and content
 - What questions will it answer?
 - Who is the intended audience?
 - How should measures be selected and defined?
 - Where will the dashboard be accessed?
 - When should data be refreshed?
- Provide input to report specifications
 - Populations/programs/areas of focus
 - Key performance indicators, other metrics
 - Breakouts and comparisons (e.g., to targets)
 - Time periods and views
- Review and comment on draft dashboard



Role of the Data Analyst

- Translate requirements into design & development
 - Select the right data sets & data elements
 - Implement detailed measure specifications
 - Advise on data limitations and work arounds
 - Apply advanced methods as appropriate
 - Create meaningful, compelling displays
- Guide interpretation and use of the dashboard
 - Provide clear data labels and documentation
 - Mitigate risks of misleading or misinterpreted data
 - Relate findings to program implications -- the **“so what”**
 - Work with stakeholders on follow up analysis & action items



Sample Data Analyst Qualifications

- Masters in public health or social science with quantitative focus
- Minimum 3-5 years experience in health data analysis
- Demonstrated skills in math, statistics, health care measures
- Understanding of the data and how it may (or may not) be used
- In-depth knowledge of the underlying database architecture
- Fully leverages reporting and visualization applications
- Applies reporting & visualization best practice

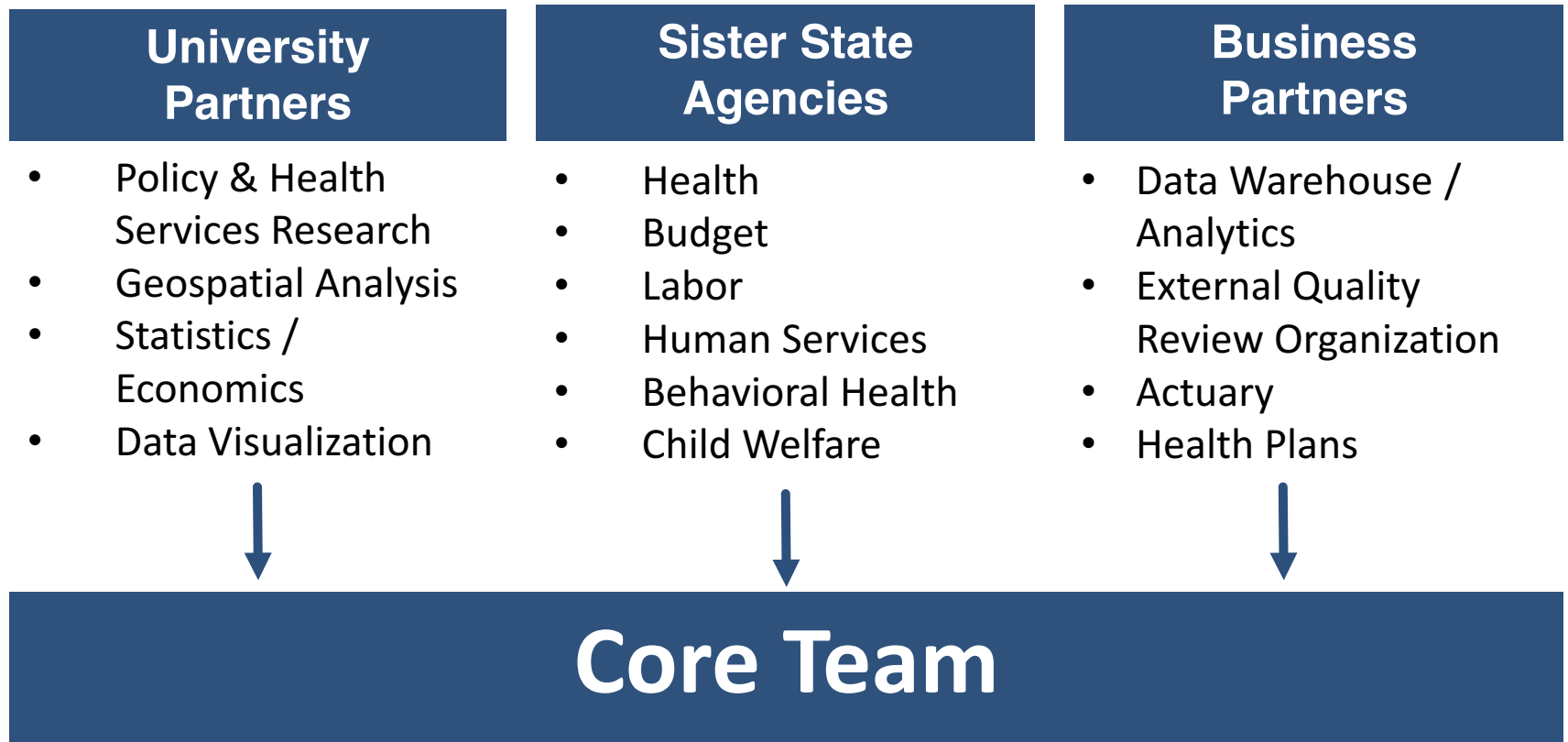
Building a Data Analytic Team: Sample Interview Questions

Tailor questions to dashboard content, data sources, methods

- Analysis:
 - How have you applied statistical techniques in past analysis?
- Software:
 - What is your level of expertise using different statistical analysis and data visualization tools?
- Data Quality:
 - What are some examples of data quality issues to screen for in conducting health data analysis?
- Dashboards:
 - Can you describe a dashboard you helped design and the audience it served?

Engaging External Partners

External partners bring specialized policy knowledge, methodological expertise, and data assets, e.g.:



Polling Question

Has your state agency utilized any of the following for dashboard creation or other data reporting?

- University partners
- Sister state agencies
- Business partners
- None of the above

A State-University Partnership in Action: New Hampshire MQIS

Doris Lotz, MD, MPH
NH Department of Health and Human Services

Jo Porter, MPH
Institute for Health Policy and Practice, University of New Hampshire

Ashley Peters, MPH
Institute for Health Policy and Practice, University of New Hampshire



Overview of Partnership

- Long-standing partnership
 - University of New Hampshire Institute for Health Policy and Practice (IHPP)
 - NH Department of Health and Human Services (NH DHHS), including:
 - Medicaid Business and Policy
 - Elderly and Adult Services
 - Quality Assurance and Improvement
- Contracted for core work
- Can add work specific to projects and grants
 - Medicaid Quality Information System (MQIS) was one example



Why is MQIS important for Medicaid?

The NH DHHS wants to make Medicaid program and other data useful

- Easy to find
- Easy to understand
- And helpful to a great variety of users (including DHHS!)



What is the partnership that brought this forward?

- Who are the players
 - NH DHHS
 - Brought project goals, system and reporting needs
 - Relationship with data submitters
 - Relationship with CMS
 - IHPP
 - Provided a centralized project management approach
 - Brought an understanding and translation of NH DHHS needs to technical team
 - RCC
 - Brought system development as well as methods expertise
- How the team functioned
 - A complete team effort!
- Ongoing
 - Formalized MQIS enhancement request process



Medicaid Quality Information System (MQIS)

New Hampshire Department of HEALTH AND HUMAN SERVICES

Enter keywords here to search our site... Search

NH Medicaid Quality

HOME QUALITY MEASURES A-Z QUALITY MEASURES BY TOPIC REPORTS ABOUT US HELP

Quality Assurance

HIGHLIGHTS

Medicaid Care Management Quality Update March 2017

The Medicaid Care Management Quarterly Quality Updates

The Medicaid Care Management (MCM) quality updates is a MCM program outcomes focused series of presentations. Each quarter a meeting is facilitated by the Office of Quality Assurance and Improvement (QAI), with various guest presenters including Managed Care Organizations or the External Quality Review Organization to review reports and answer questions. Current schedule is available in the Standard Reports section of this website.

[Find Out More](#)

Need help deciding on a NH Medicaid Health Plan?

Click to view New Hampshire Healthy Families and Well Sense quality and member satisfaction data.

NH Health Plan Quality Ratings

The National Committee for Quality Assurance (NCQA) rates the performance of over 1,000 health insurance plans, including New Hampshire Healthy Families and Well Sense, the two NH Medicaid plans. New Hampshire Healthy Families and Well Sense are compared to each other in many key performance areas.

[Find Out More](#)

RECENTLY PUBLISHED

- ✓ Annual Monitoring for Patients on Persistent Medications (MPM): Diuretics
- ✓ Adult CAHPS®: Written Materials or Internet Provide Information Needed about How Health Plan Works: Usually or Always
- ✓ Childhood Immunization Status (CIS, Hybrid Specification): Combination 5
- ✓ Timeliness of Notice Delivery: Expedited Process
- ✓ Behavioral Health Utilization: Percent of Discharges Where Member Was Successfully Contacted Within 3 Calendar Days of Discharge - NHHPP Members

[f](#) Share [t](#) Tweet [in](#) Share [✉](#) Email

MQIS web address: <https://medicaidquality.nh.gov/>



What has made this partnership successful?

- A great team! Bringing together a team to perform necessary functions with open and clear communication makes this project successful.
- Clear goals and expectations from NH DHHS
- Technical expertise from RCC
- A defined and efficient project management structure with participation from all organizations



Thank you!

Doris Lotz, MD, MPH
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NH Department of Health and Human Services
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Designing and Creating Useful Dashboards

**Katherine Rowell, MS, MHA,
HealthDataViz**

Have a Compass, Set a Course, Communicate It Often

“If you don't know where you are going, any road will take you there.” Lewis Carroll



Establish a Process For Discovery, Analysis, Design, Development & Deployment (And Stick With It)



Discovery – Requirements Gathering

- Identify, evaluate **available data**
- Review the **analysis** and ensure you can **explain and defend it**
- Articulate **project goals**
- Interview, create personas, and **research** users' **mental models**
- Establish the right **team**
- Identify **final-sign off authority**
- Create and disseminate **Project Discovery Document**

Identify & Evaluate Available Data

Evaluate Your Data to Ensure It's:

- Accessible
- Accurate
- Well Defined
- Enough (Appropriate Amount of Data)
- Complete
- Understandable
- Objective
- Relevant
- Timely



Explain & Defend the Data Analysis & Statistics

Test Yourself:

- Have the correct **statistics** been used to **analyze** the data?
- Can you explain them in **plain language**?
- Can you **defend** the analysis?



Design – Sketches

AFTER you have **analyzed the data** and have some ideas about what you want to communicate on your dashboard start sketching

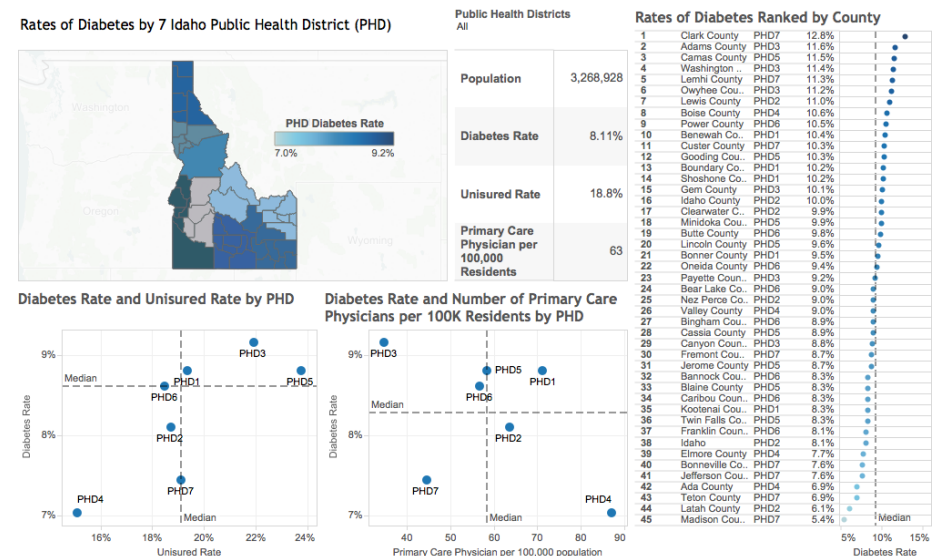
Low Tech -- High Value:

- **Anyone** can do it
- Helps **teams explore and design** in a fast and **collaborative manner**
- Helps teams quickly see **how to group and arrange the data** in a logical and compelling way



Development – Prototypes

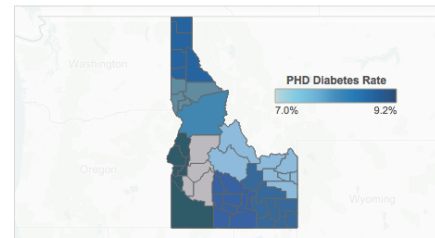
- **Early sample**, or release of dashboard, report or infographic to be built
- **Sample data, limited functionality**
- **Test concepts**, solicit feedback
- **Never** send out prototypes cold
- **ALWAYS** demonstrate the prototype first!



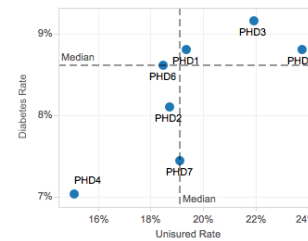
Development – Final Production Ready

- After feedback begin to build **final, or production** ready displays
- Set a **clear direction and plan**
- Perform thorough rounds of quality checks and **regression testing**, i.e., data displayed reconciles to the source data

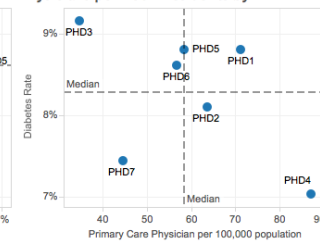
Rates of Diabetes by 7 Idaho Public Health District (PHD)



Diabetes Rate and Uninsured Rate by PHD



Diabetes Rate and Number of Primary Care Physicians per 100K Residents by PHD



Public Health Districts

All	
Population	3,268,928
Diabetes Rate	8.11%
Uninsured Rate	18.8%
Primary Care Physician per 100,000 Residents	63

Rates of Diabetes Ranked by County

Rank	County	PHD	Diabetes Rate
1	Clark County	PHD7	12.8%
2	Adams County	PHD3	11.6%
3	Camas County	PHD5	11.5%
4	Washington	PHD3	11.4%
5	Lemhi County	PHD7	11.3%
6	Owyhee Cou.	PHD3	11.2%
7	Lewis County	PHD2	11.0%
8	Boise County	PHD4	10.6%
9	Power County	PHD6	10.5%
10	Benewah Co.	PHD1	10.4%
11	Custer County	PHD7	10.3%
12	Gooding Cou.	PHD5	10.3%
13	Boundary Co.	PHD1	10.2%
14	Shoshone Co.	PHD1	10.2%
15	Gem County	PHD3	10.1%
16	Idaho County	PHD2	10.0%
17	Clearwater C.	PHD2	9.9%
18	Minidoka Cou.	PHD5	9.9%
19	Butte County	PHD6	9.8%
20	Lincoln County	PHD5	9.6%
21	Bonner County	PHD1	9.5%
22	Oneida County	PHD6	9.4%
23	Payette Count.	PHD3	9.2%
24	Bear Lake Co.	PHD6	9.0%
25	Nez Perce Co.	PHD2	9.0%
26	Valley County	PHD4	9.0%
27	Bingham Cou.	PHD6	8.9%
28	Cassia County	PHD5	8.9%
29	Canyon Count.	PHD3	8.8%
30	Framont Cou.	PHD7	8.7%
31	Jerome County	PHD5	8.7%
32	Bannock Cou.	PHD6	8.3%
33	Blaire County	PHD5	8.3%
34	Caribou County	PHD6	8.3%
35	Kootenai Cou.	PHD1	8.3%
36	Twin Falls Co.	PHD5	8.3%
37	Franklin County	PHD6	8.1%
38	Idaho	PHD2	8.1%
39	Elmore County	PHD4	7.7%
40	Bonneville Co.	PHD7	7.6%
41	Jefferson Cou.	PHD7	7.6%
42	Ada County	PHD4	6.9%
43	Teton County	PHD7	6.9%
44	Latah County	PHD2	6.1%
45	Madison Cou.	PHD7	5.4%

The Pitfalls to Avoid

Pitfalls to Avoid

- Displaying poor quality data
- Providing inadequate context
- Implying correlations that do not or may not exist
- Displaying unimportant and incomplete data
- Displaying unnecessary precision
- Incorrect encoding of the data
- Misuse or overuse of color
- Using incorrect statistics
- Displaying unreconciled data

Not Enough or Incomplete Data

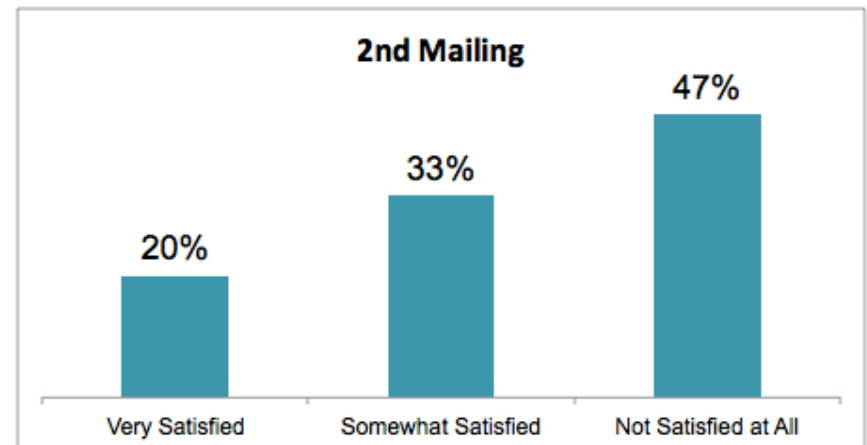
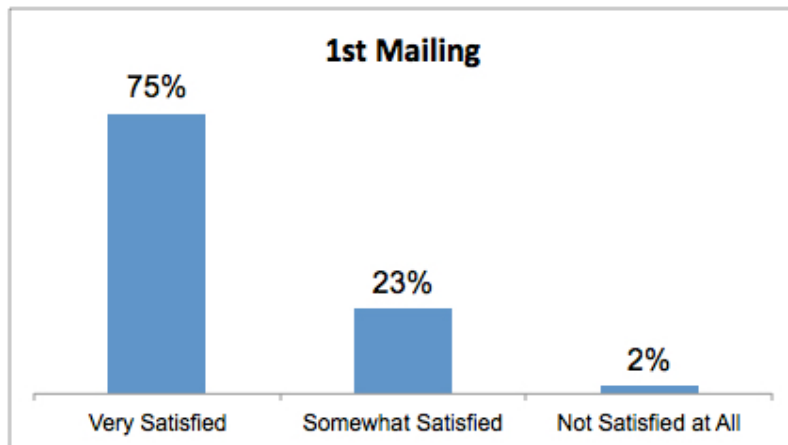
Beneficiary Experience Survey

Results of 1st Mailing

Surveys Sent	1,000
Completed Surveys Received	100
Response Rate	10%

Results After 2nd Mailing

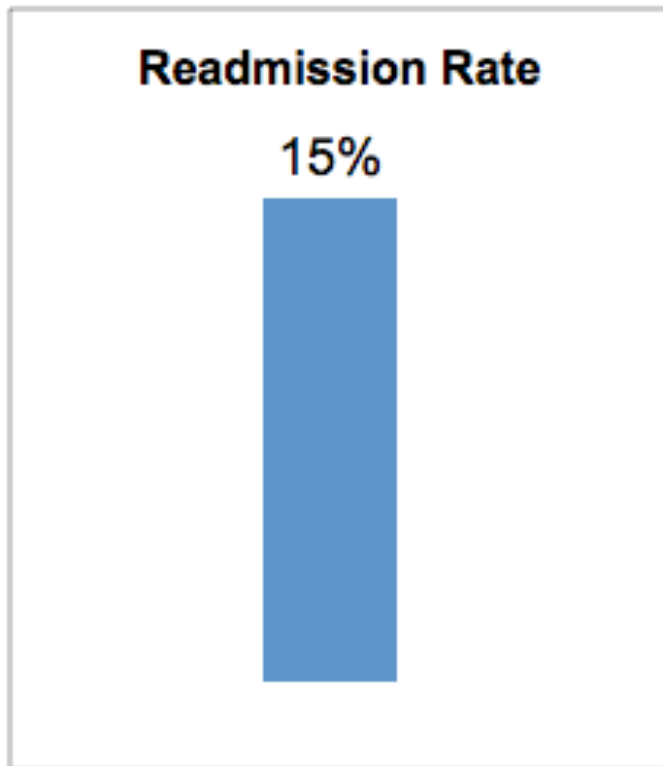
Surveys Sent	1,000
Completed Surveys Received	750
Response Rate	75%



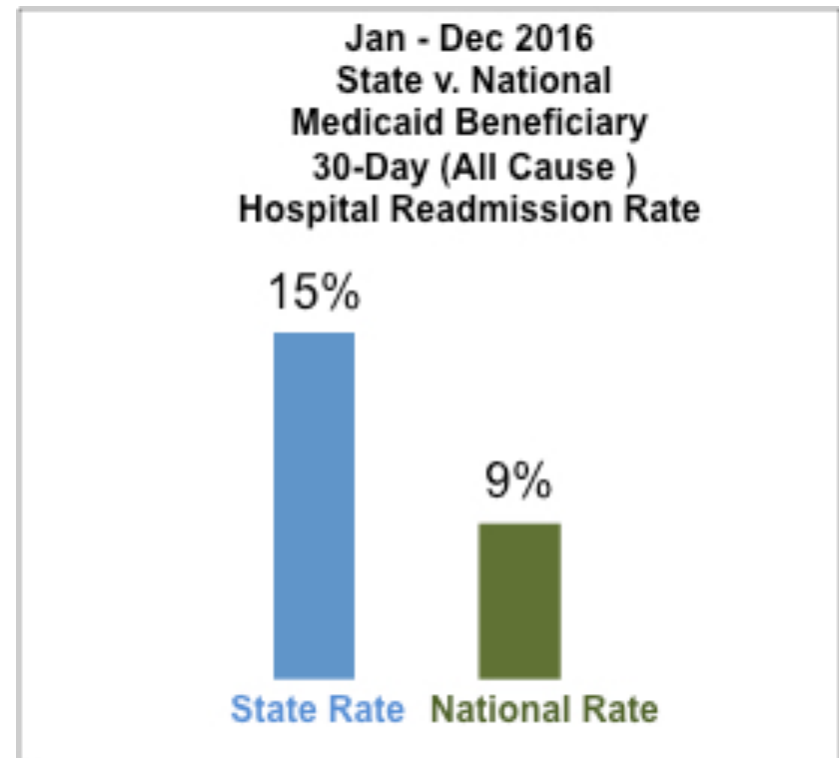
Example Data NOT Actual

Providing Inadequate Context for the Data

Don't Do This:



Do This:

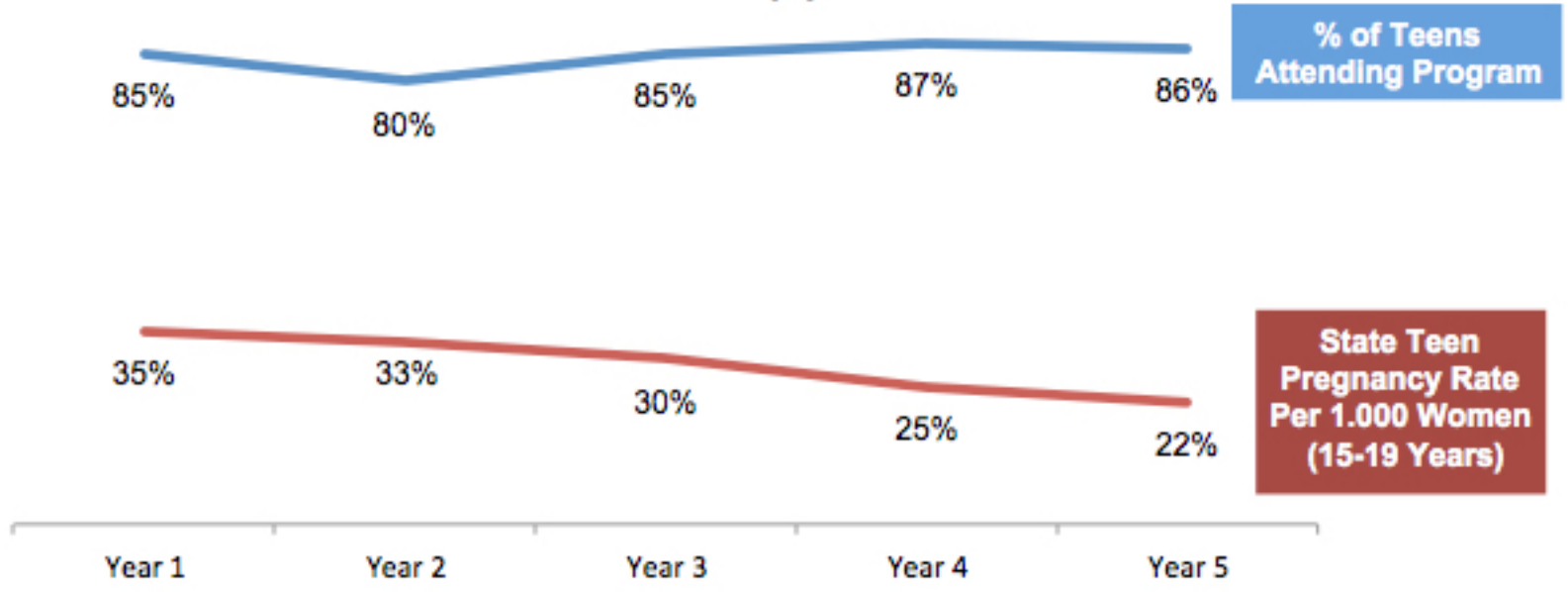


Example Data NOT Actual

Implying Correlations (Relationships/Causality) That Cannot Be Substantiated or Are Not True

State Teen Sexual Behavior Outreach Program Attendance Rates & State Teenage Pregnancy Rates

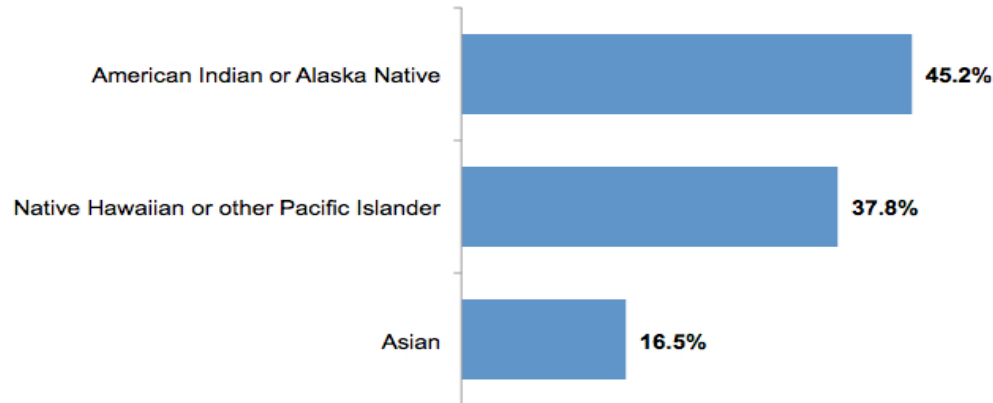
Five (5) Year Trends



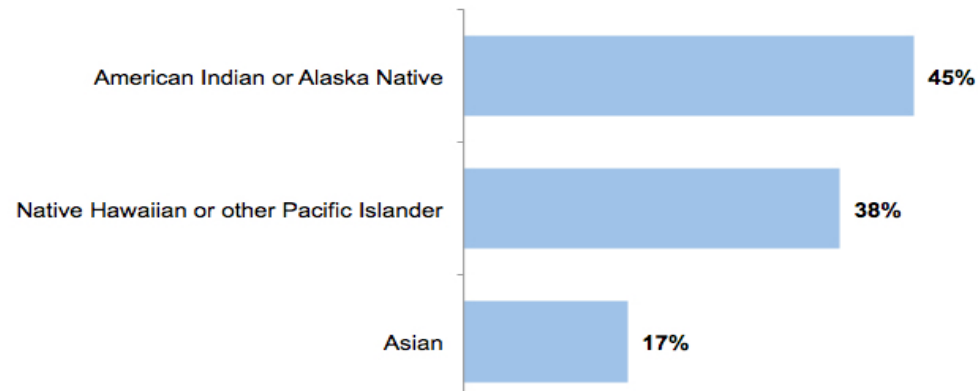
Example Data NOT Actual

Displaying Unnecessary Precision

Too Much Detail is Not Required and Can Be Distracting



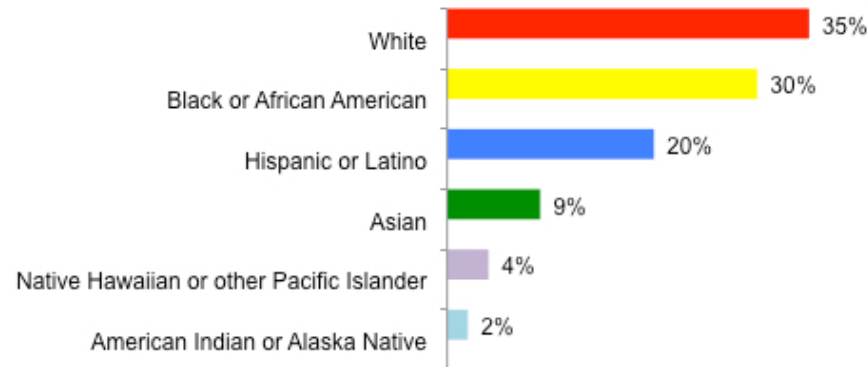
Keep it Simple



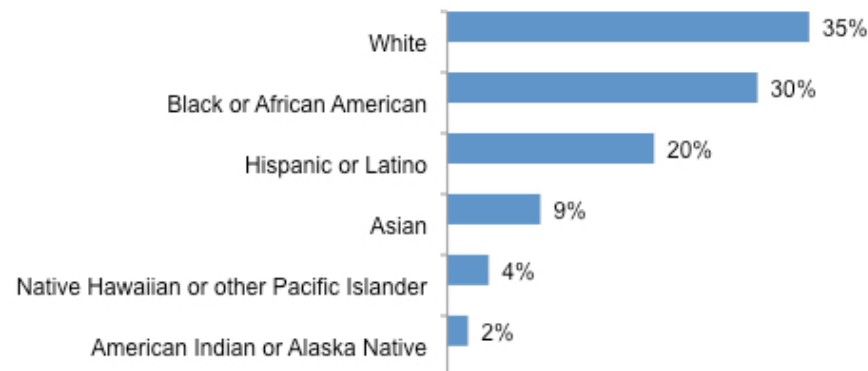
Example Data NOT Actual

Misuse and Overuse of Color

The Overuse of Color Can Be Distracting



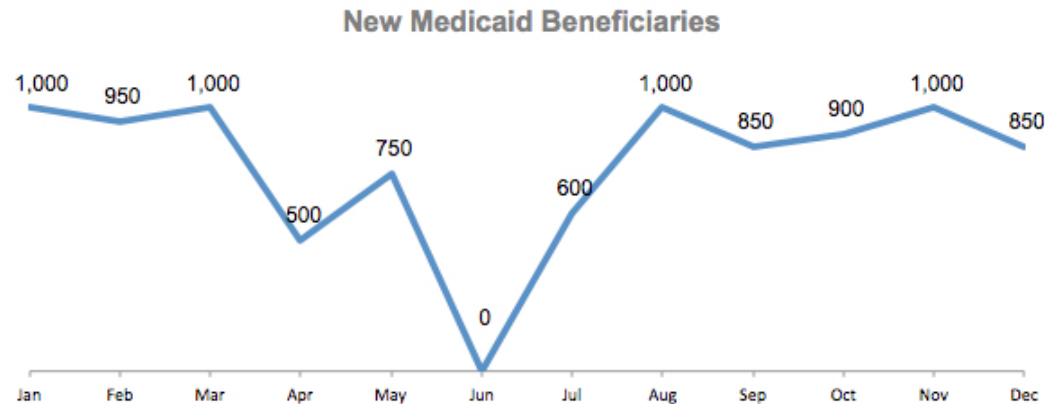
When What We Want Viewers to See Is the Shape of The Data



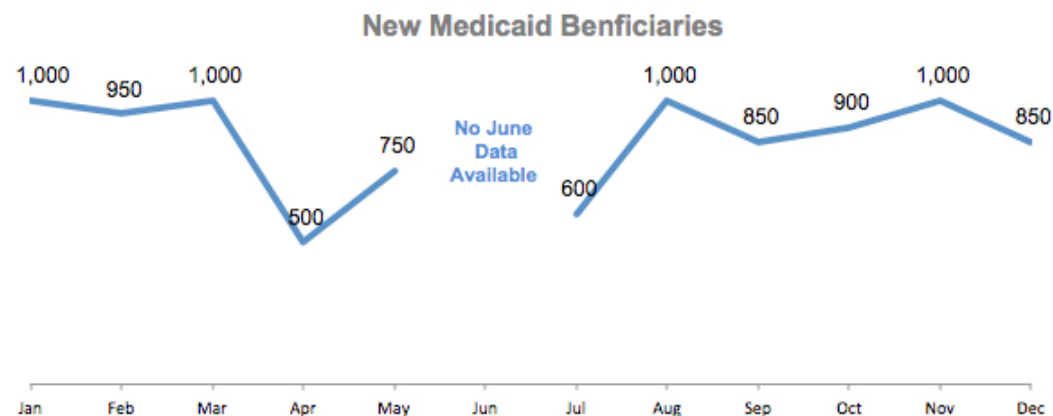
Example Data NOT Actual

Incorrect Encoding of the Data

For Example -- Missing or Incomplete Data Should Not Be Displayed as Zero

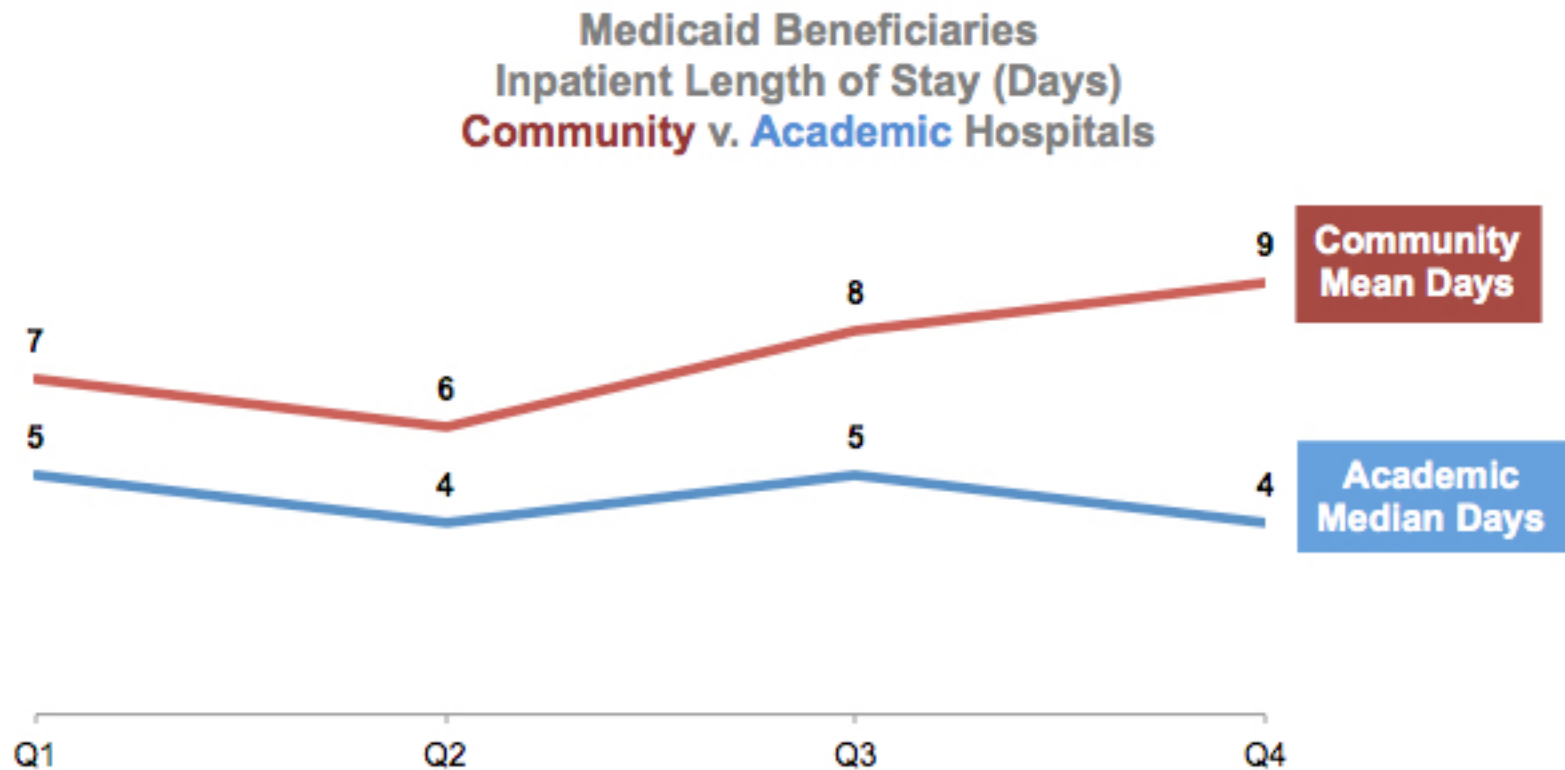


Instead Display the Gap in The Data and Make a Notation



Example Data NOT Actual

Using Incorrect Statistics



Example Data NOT Actual

A Few Other Pitfalls to Avoid

- Trying to do **too much** in one project
- Not having the **right subject matter experts and stakeholders** involved on a project (from day one)
- Trying to display **too much information and detail**
- Not having a clear authority who can **off sign-off** on a dashboard design, build and deployment strategy

Beware of the Weeds

Dashboards are **Executive Summaries** of the information stakeholders need to monitor **At-a-Glance**

Therefore it is essential to:

- Know the **categories** data may be summarized by -- stay anchored in them
- Have an awareness that **too many details** can crowd out the overview summary that is needed
- Remember the details aren't lost, rather, accompanying reports and lists provide **supporting information**



Don't Attempt to “Boil The Ocean”



Select Initial Projects Thoughtfully And Set a Steady Pace

For dashboards try a 3 x 3 x 3 month approach:

- 3 months to research, understand and prove what is possible
- 3 months to a **final**/production ready dashboard
- 3 months to socialize what you have created with users and **foster adoption**

For infographics and reports, try a faster 1 x 1 x 1 month approach

Failure to Identify & Engage the Right Team Will Jeopardize Your Projects



Failure to Identify Who Will Have Final Sign-Off

- Building **consensus** is great
- But at the end of the day someone must have the **authority for FINAL sign-off**
- **Otherwise your entire project may never see the light of day!**



Create Feedback Loops For Improving Your Work

CELEBRATE YOUR SUCCESS!



Healthier Washington Data Dashboard

Washington State's journey to create a data dashboard.

Kirsta Glen, Aim Director

Decided to build a Data Dashboard to provide actionable information:

Supports Washington's **community health transformation** by building a regularly refreshed, **interactive dashboard tool**



Goal: meet data and performance measurement needs of Washington's Accountable Care Organizations (ACHs)* under SIM grant.

* ACHs are composed of managed care organizations, providers, and many other community organizations. They are focused on improving health and transforming care delivery for the populations that live in their regions.

Requirements of Dashboard

- Publically reportable information
- ACH as primary customer
 - Variety of technical skills
 - Interested in community geographic detail
 - Members include public health, clinical, and other local service providers
- Use state health and claims data resources
- Focus initially on state Common Measure set

The Journey

- 2015 start of SIM grant with three staff members:
 - Subject matter expertise
 - IT knowledge
 - Project Management
- Advantages:
 - Well articulated goal
 - Support of leadership
 - Funding

How to quickly complement skills of team to create an interactive dashboard?

- Providence Health & Services Center for Outcomes Research and Education (CORE)
- Contract
 - Calculate measures (analysis)
 - Build dashboard in Tableau (visualization)
 - Knowledge transfer for AIM analysts (sustainability)

Rollout

- June 2016 first quarterly release
- Target to have at least three new measures a quarter and increased functionality
- Added some health outcome measures and diagnosis rates
- Technical documentation
- Underlying data file (in process)
 - Suppressed
 - Unsuppressed
- Trend data (future)

HEALTHIER WA DASHBOARDS

– Front Page

Front Page | About | Population Explorer | Measure Explorer | Statewide Measure Browser | Measure Maps | Measure Sets | VersionHistory



Welcome to the Healthier Washington Dashboards

In this interactive data tool, you'll find the following pages and dashboards:



Navigation

Use the tabs to navigate between the pages and dashboards.

Privacy and Protection

The Healthier Washington Dashboards are only intended for regional and local health assessment and planning. To protect privacy, the dashboards do not display any personally identifiable information. The source data has been aggregated and de-identified in compliance with state and federal law.

Additional data sources

For more information and data, please visit:

Washington Tracking Network: <http://ow.ly/3SLb3065I6j>

Community Checkup: <http://ow.ly/CrvQ309Is4M>

Washington DSHS Research and Data Analysis: <http://ow.ly/epvc308TCQ3>

Transitional Counties

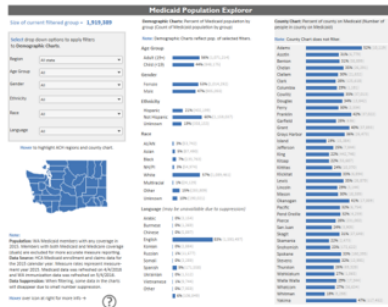
Some counties are in transition between ACH's. [Click here for more information.](#)

We'd love to hear from you

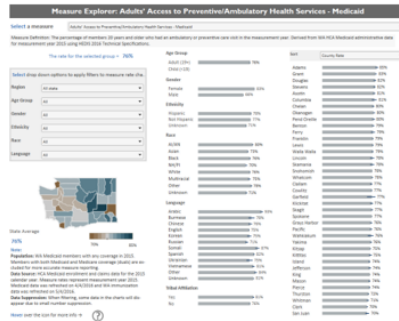
Take our user feedback survey here: <http://ow.ly/4ndDHu>

HEALTHIER WA DASHBOARDS – Some of the Options

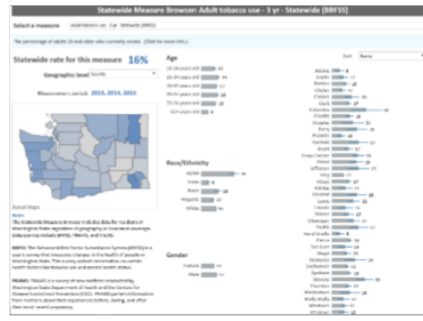
Population Explorer



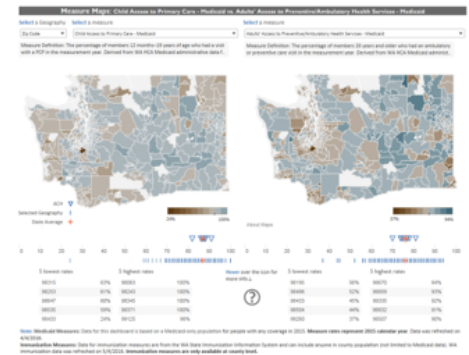
Measure Explorer



Statewide Measures

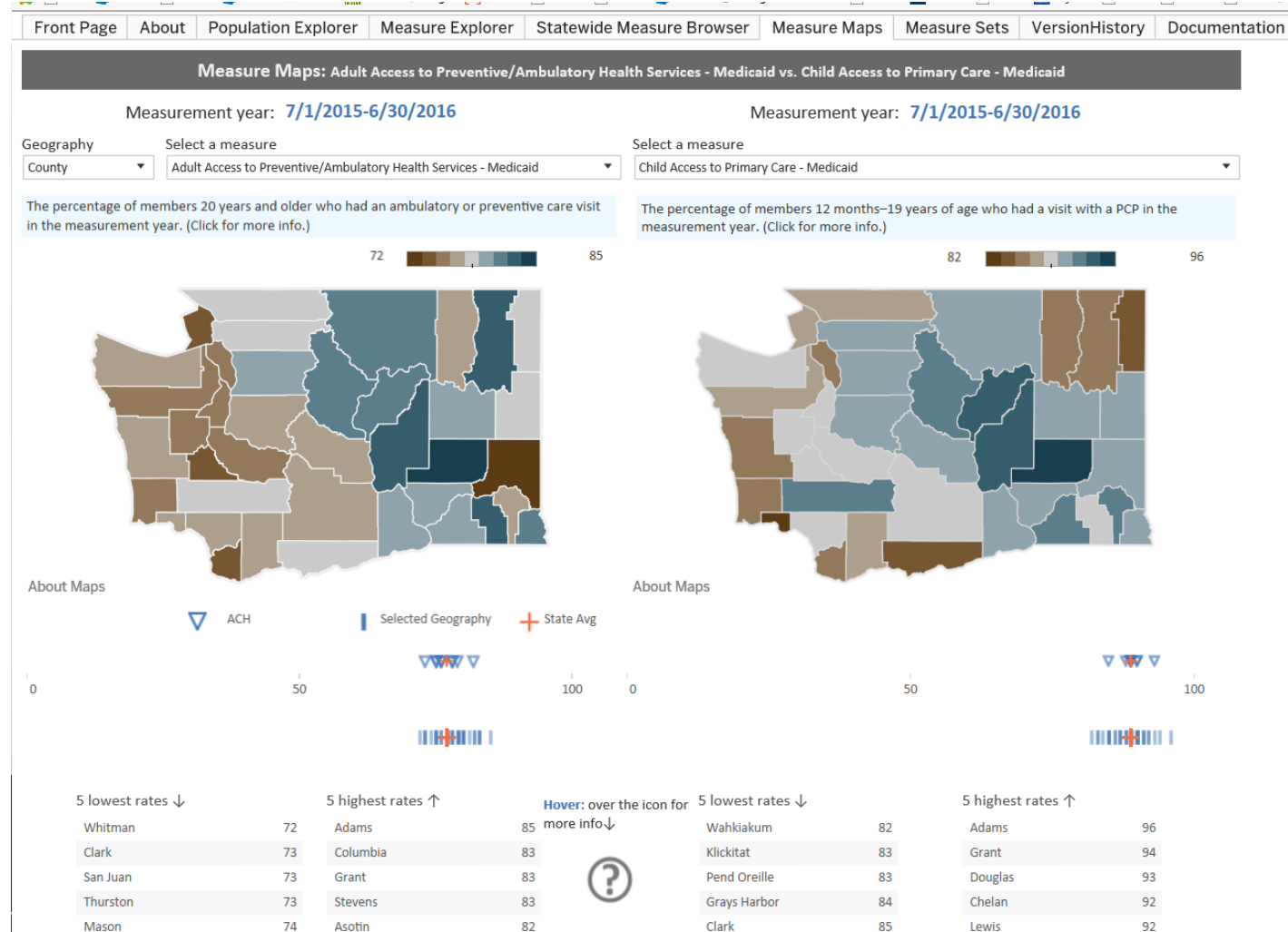


Measure Maps



Note: Medicaid Measure Data for this dashboard is based on a Medicaid-only population for people with any coverage in 2015. Measure rates reported 2015 calendar year. Data was refreshed on 6/15/2016. Informational Measure Data for non-Medicaid populations can be found in the WA State Informational Information System and can include income in county population not tracked in Medicaid data. WA Informational data was refreshed on 6/15/2016. Informational measures are only available at county level.

One Example: Side-by-Side Comparison of Measures by Geography



What We Are Glad We Did

- Used contractor initially; and chose contractor with health claims dashboard experience
- Built team analytic skills over time, and used contractor as mentor
- Based dashboard on our own data
- Carefully constructed underlying database
- Worked closely with customer user-group
- Fully leveraged strengths of visualization tool
- Planned for multiple releases and evolution

Lessons Learned

- Analytic capacity takes time to build
- Clear roles and responsibilities for contractor/home team
- Clear communication and project management between teams
- Customer needs change over deployment timeline
- Align work with other burgeoning dashboards
- Importance of growing external communication
- Technical documentation
- First step in a long process, create flexible and nimble product

Building the Team

Since Spring 2016 we have:

- Hired seven data analysts with broad skills and expertise in large claims based data bases; health services and policy analysis; pharmacy; epidemiology and public health; and actuarial analysis.
- Partnered with other teams in agency who have expertise in health system transformation initiatives; regulations; contracting; finance; eligibility; and clinical care Aligned with an agency initiative to build out data and analytic environment and improve data governance.
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The Future

- Sustainable vision and commitment
- Sustainable funding
- Staffing
 - Competition for talent
 - Analytics as a “team sport”
 - Understanding of a broad array of expertise across many skill sets and disciplines
- Aligning with related efforts

Summary and Wrap-Up

Final Takeaways

- Build a strong data analytic team
- Consider external partners
- Establish a process for data discovery and analysis
- Beware of incomplete or misleading data
- Continuous improvement is key

Questions?

Thank You

Thank you for joining today's webinar!

Please take a moment to complete
the post-webinar survey.

We appreciate your feedback!

For more information & resources, please
contact MedicaidIAP@cms.hhs.gov