CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

Medicaid Innovation Accelerator Program (IAP)

Linking & Merging Data Sources

National Webinar Series

September 28, 2016

3:30pm-5:00pm EDT

IAP Medicaid Innovation Accelerator Program

Logistics

- Please mute your line & do not put the line on hold
- Use the chat box on your screen to ask a question or leave comment
  - Note: chat box will not be seen if you are in “full screen” mode
  - Please also exit out of “full screen” mode to participate in polling questions
- Moderated Q&A will be held periodically throughout the webinar
  - Questions submitted via the chat box will be prioritized
- Please complete the evaluation in the pop-up box after the webinar to help us continue to improve your experience

Purpose & Learning Objectives

1. States will learn about the **benefits of linking** Medicaid SUD data with various other data sources including other state agency sources

2. States will discuss **different strategies for linking** data from 3 case studies & through peer-to-peer discussions

3. States will explore how data can be used to **meet substance use disorder goals & monitor performance**

Agenda

- Benefits of Linking / Merging Data
- State Experience: Connecticut
  - *Discussion Break*
- State Experience: Washington
  - *Discussion Break*
- State Experience: Oregon
  - *Discussion Break*
- Wrap Up & Resources

Speaker (1/3)

- **Minakshi Tikoo, PhD**
- University of Connecticut
  - Director, Business Intelligence & Shared Analytics
  - Health and Human Services Health Information Technology Coordinator
  - Professor, School of Nursing

University of Connecticut
School of Nursing

Speaker (2/3)

- **David Mancuso, PhD**
- Director, Division of Research and Data Analysis, Washington State Department of Social and Health Services

Speaker (3/3)

- **Jon Collins, PhD**
- Director, Office of Health Analytics, Oregon Health Authority

Facilitator

- **Suzanne Fields, MSW**
- Senior Advisor for Health Care Policy & Financing, University of Maryland

UNIVERSITY of MARYLAND
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Introduction: Benefits of Linking / Merging Data

Suzanne Fields, MSW

Senior Advisor, Health Care Policy & Financing, University of Maryland

Barriers to Merging Data Sources

Resources

- Staffing
- Time
- Political Support
- Funding

Technical Complexity

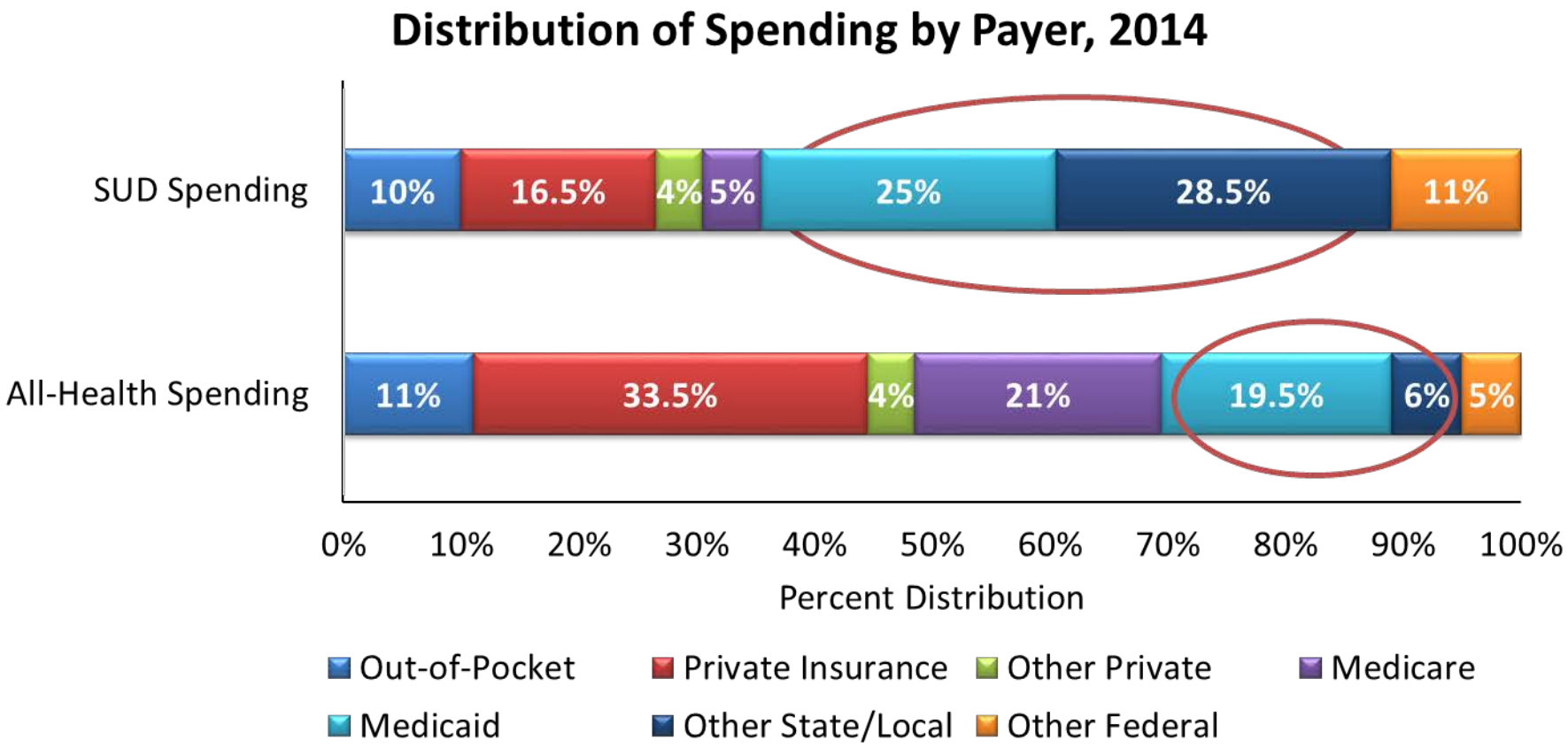
- Linking claims & encounter records
- Varying quality of data sources

Confidentiality

- Working within the confines of 42 CFR Part II

Describing the utility of linked data is key to overcoming these barriers

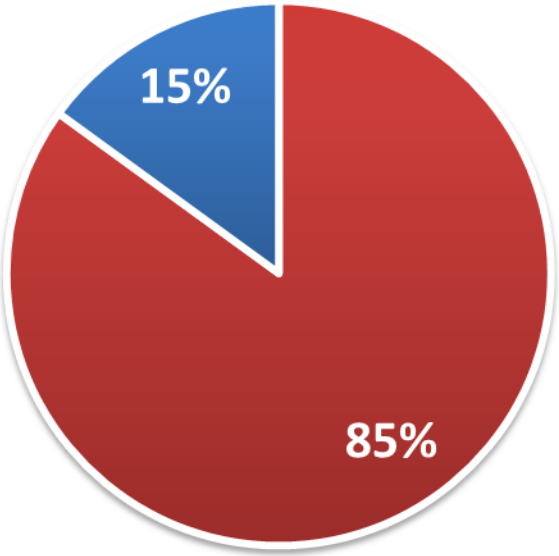
State & Local Payers Fund a Large Portion of SUD Treatment



Source: SAMHSA. (2014). Projections of national expenditures for treatment of mental and substance use disorders, 2010-2020. HHS Publication No. SMA-14-4883. Rockville, MD: SAMHSA.

Much of SUD Treatment Costs Are Paid to Specialty Clinics & Providers

Distribution of SUD Treatment Spending, by Specialty and Non-Specialty Providers, 2014



Specialty Providers

(Psychiatric hospitals/units, psychiatrists, psychologists, social workers, MH/SUD outpatient or residential treatment)

Non-Specialty Providers

(General hospitals & outpatient clinics, PCPs)

Source: SAMHSA. (2014). Projections of national expenditures for treatment of mental and substance use disorders, 2010-2020. HHS Publication No. SMA-14-4883. Rockville, MD: SAMHSA.

Utility of Linked Data: Example Policy Questions

- What are the service utilization trends for SUD patients?
- Are patients being reimbursed under Other/State & local payments that are enrolled in Medicaid?
- Is there a disproportionate share of uninsured patients being treated in SUD specialty provider sector? Are they eligible for Medicaid?
- What are the outcomes from providing SUD treatment under Medicaid?
- What is the return on investment from providing SUD treatment under Medicaid?

Treatment Episode Data Set (TEDS)

- Client-level data
  - Demographic, substance abuse, socioeconomic characteristics
  - Reported at endpoints of treatment
  - Collected in state administrative data systems
- Two data sets
  - Admissions records
  - Discharge records
- Treatment programs receiving any public funds are requested to provide TEDS data on publicly & privately funded clients
- Mandatory key fields
  - Client identifier, client transaction type, type of service/setting, admission & discharge dates, date of last contact, state provider identifier, state code, reporting date

National Outcome Measures (NOMs)

- Required to be reported as part of TEDS
- Provides outcomes measures on 10 domains for all state/federal block grant & formula grant programs

Reduced Morbidity

- Outcome: Abstinence from alcohol/drug use
- Measure: Absolute percent change of clients not using between admission & discharge

Retention

- Length of stay, successfully completing treatment plan

Employment

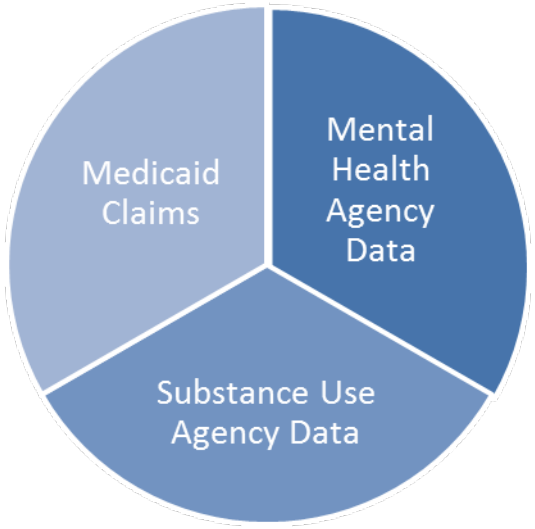
- Increased/retained employment

Crime & Criminal Justice

- Decreased arrests

Case Study: Tracking Outcomes Post Detox

- Integrated database built from claims & other client-level data
  - Data from Medicaid programs, mental health & substance abuse agencies



Source: Mark, T.L., Vandivort-Warren, R. & Montejano, L.B. (2006). Factors affecting detoxification readmission: Analysis of public sector data from three states. *Journal of Substance Abuse Treatment*. 31:439-445.

- Data included for all clients receiving services from state mental health/substance abuse agencies in DE, OK, WA
- Analyzed rate of detox readmissions, factors associated with readmissions

Case Study: Tracking Outcomes Post Detox Cont'd

Index Detox

Readmission Events:

- 25% of clients receiving follow-up
- 28% of clients without follow-up

Readmission for Second Detox

- **73% of sample did not receive follow-up care**
- **Clients receiving follow-up treatment experienced longer time to readmission**

Source: Mark, T.L., Vandivort-Warren, R. & Montejano, L.B. (2006). Factors affecting detoxification readmission: Analysis of public sector data from three states. *Journal of Substance Abuse Treatment*. 31:439-445.

Polling Question (1/5)

- Has your state begun linking/merging different data sources?
  - Yes, we have an operational system
  - Yes, we are building a system
  - No, but we are discussing the process
  - No, this is not a priority for us

University of Connecticut
School of Nursing

State Experience: Connecticut

Minakshi Tikoo, PhD
Health Information Technology Coordinator
Director, Business Intelligence & Shared Analytics
Health and Human Services

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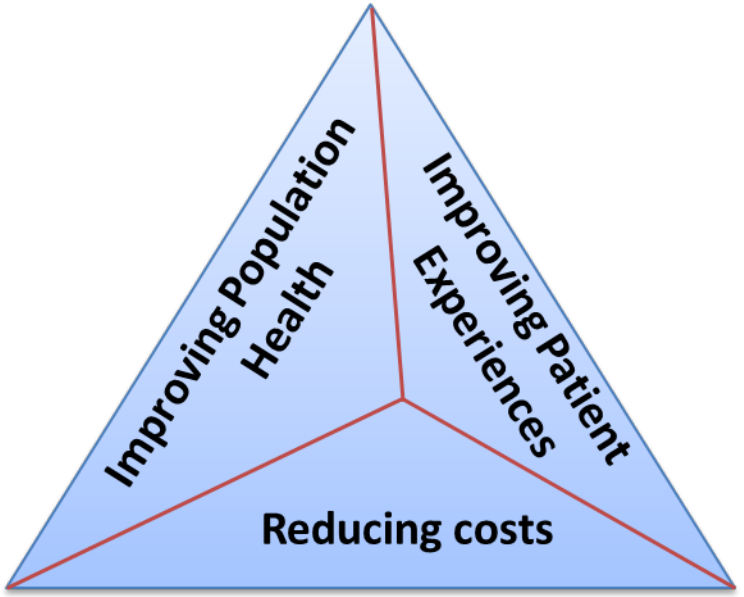
Motivation to Link Data

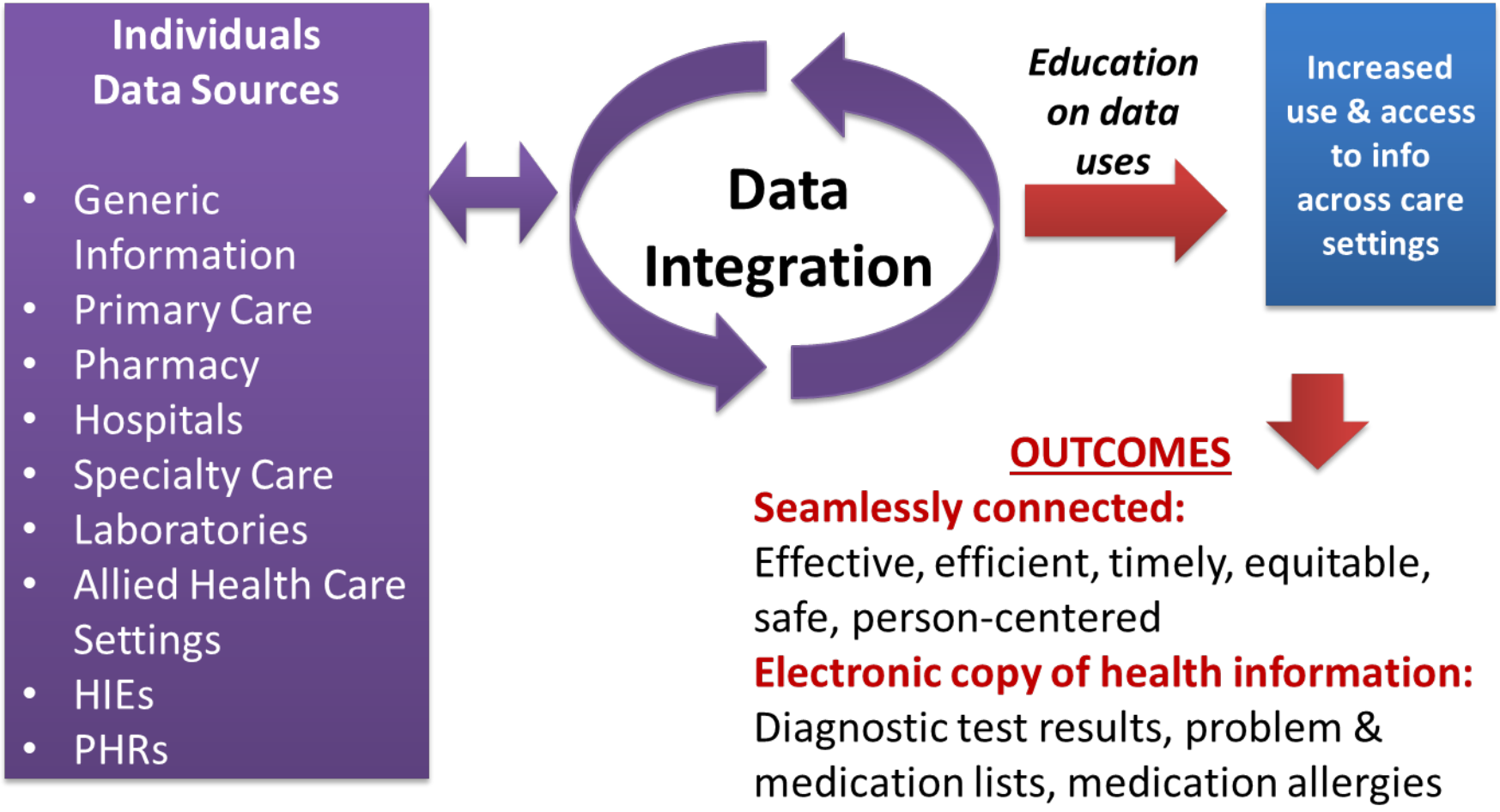
- The “Magic Mantra”– the Triple Aim
  - Requires increased sophistication in the use of data to simultaneously address the Triple Aim



Challenges to Big Data Linkage

- Expensive to build warehouses to combine data
- Data are constantly changing requiring constant updates to data warehouse
- Wealth of data from state agencies
  - Not accounted for in a systematic manner
  - No or limited documentation
  - Need inventory & management process
- Quality of data limits analytics
- Work with small data before getting into big data

Data Integration: the Conceptual Model



Data Integration Using Distributed Data Networks

- Purpose
  - Improve ease of locating data & running analyses
  - Enables you to analyze data across data silos without aggregation
- Zato Health Interoperability Platform
  - Secure federated analysis across data silos
- Cooperative computing ‘at the Edge’ with Cross-Network Information Fusion
  - Processing of indexes in **parallel** across data silos

Advantages to Distributed Data Networks

Traditional Approach	Cross-organizational Data Interoperability Approach
Centralized processing	Decentralized processing
Standardized application for 1 organization	Diverse applications among many organizations
Data warehouses & data lakes	Health information sharing environments
Centralized privacy protection	Decentralized privacy protection
Centralized security	De-centralized security
Not available	Indexes are reusable, performance data are verifiable
Not available	Pricing model with multiple returns on investment
Not available	Decentralized analysis
Not available	Applications are freely distributed

Next Steps for Connecticut

Developing a system that answers all of our questions:

Population

- How many people do we serve within an agency?
- Number of unique people & families served

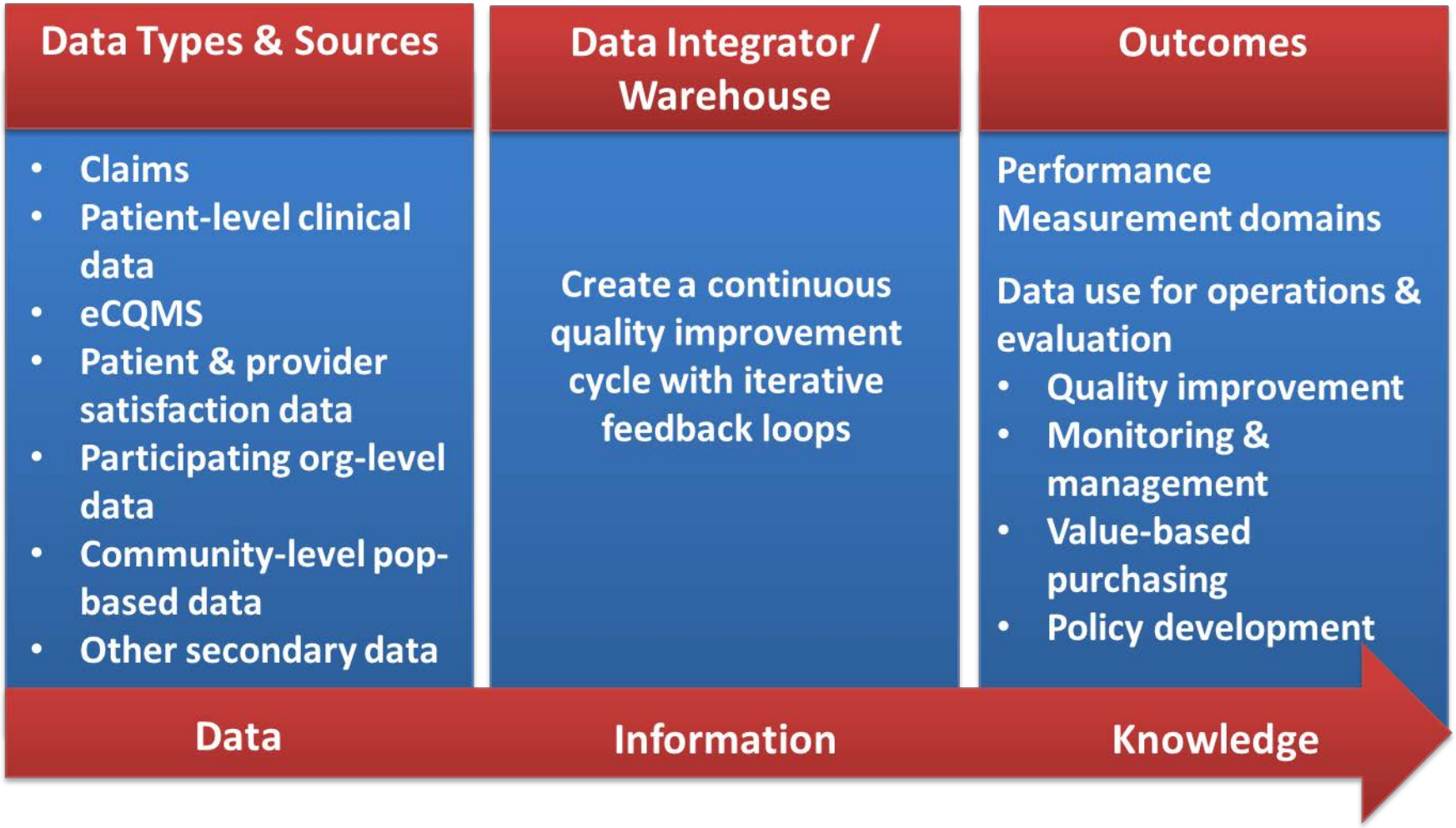
Outcomes

- Who is getting better? Who is getting worse?
- How? Why?
- Are there geographic variations?

Costs

- What are the costs?
- Are we buying the right services?
- Can we predict what needs to be in our service mix?

Next Steps for Connecticut Cont'd



Challenges

- Agencies do not want to share data
  - Data quality is questionable
  - Fear of looking bad
- Iterative learning process
  - Must acknowledge problems to find solutions
  - Logically connected, slow, build-up
- Support for continued systems development
  - Leadership & vision
  - Retaining talented workforce

Polling Question (2/5)

- If your state is currently linking data, which databases are you integrating? Select all that apply.
  - Medicaid claims
  - Mental health agency
  - Substance use agency
  - Department of Corrections
  - Department of Housing
  - Other
  - Not sure

Discussion and Questions (1/3)

State Experience Linking Data: Washington

David Mancuso, PhD,

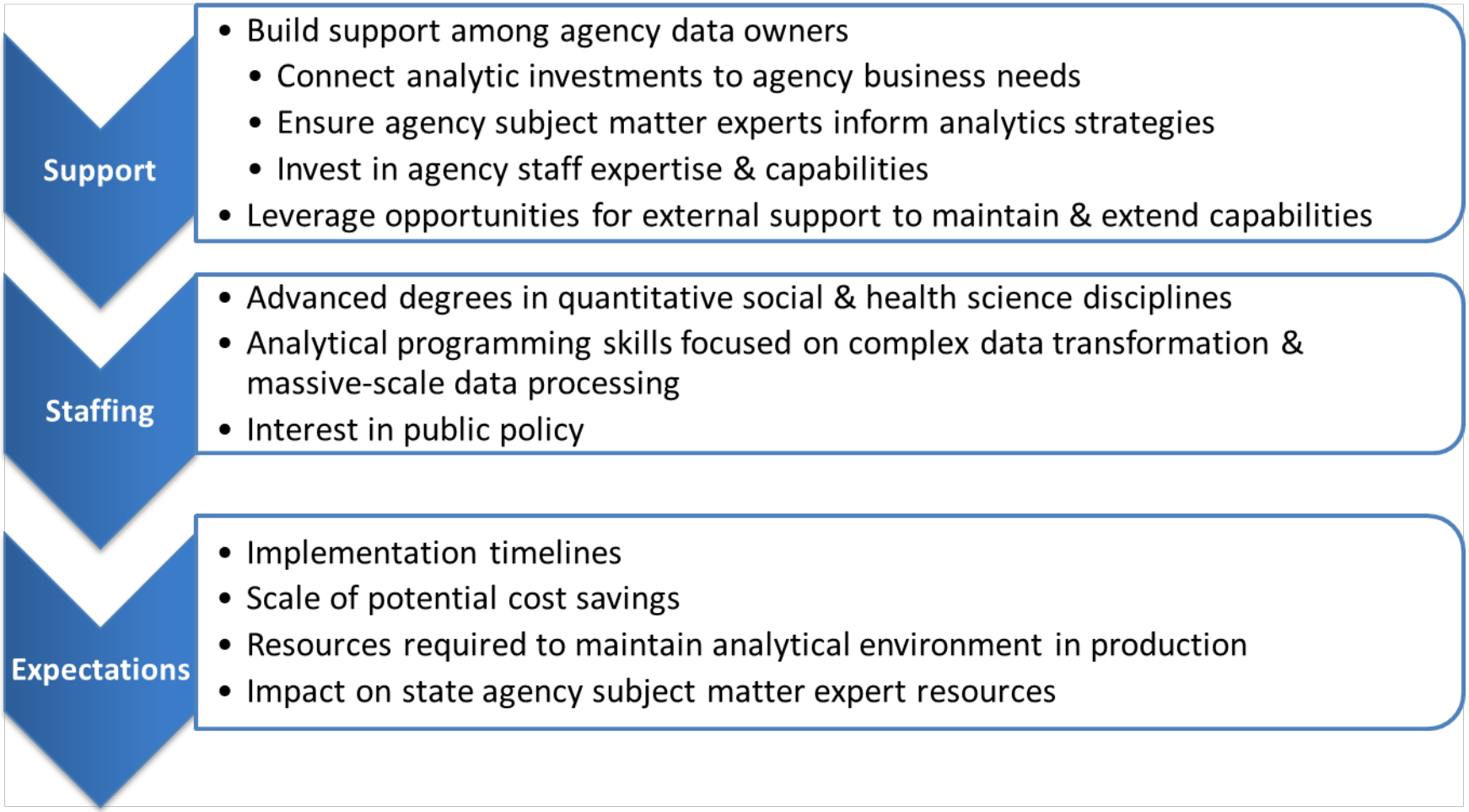
Director, Division of Research and Data Analysis,

Washington State Department of Social and Health Services

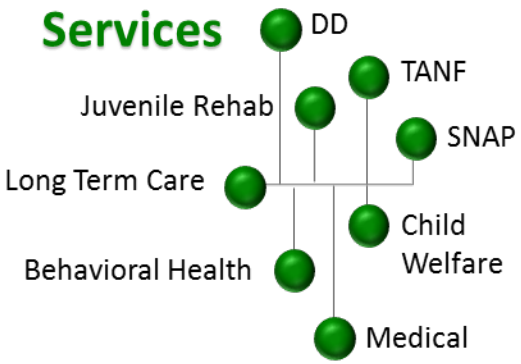
Motivation to Integrate Data

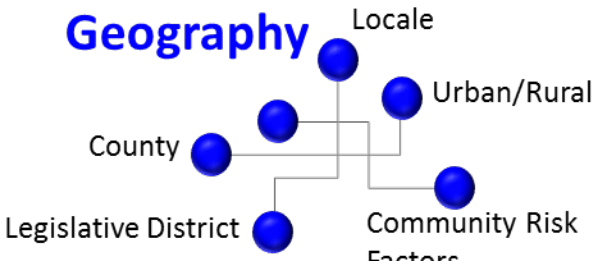
- High Costs & Complex Needs
  - Program costs are often driven by a small proportion of clients with multiple risk factors & service needs
  - High-cost clients often have significant social support needs
  - Persons dually eligible for Medicare & Medicaid comprise a disproportionate share of high-risk, high-cost Medicaid beneficiaries
- Increased emphasis on quality/outcome measurement & performance-based payment structures
- States need analytic capability beyond traditional siloed data warehousing, business intelligence applications

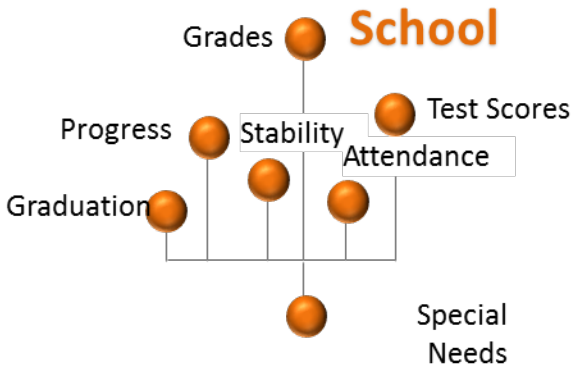
Assessing Capacity for Integrated Data Analytics

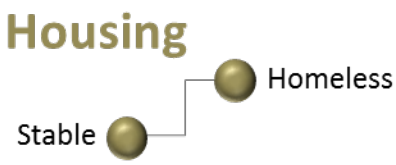


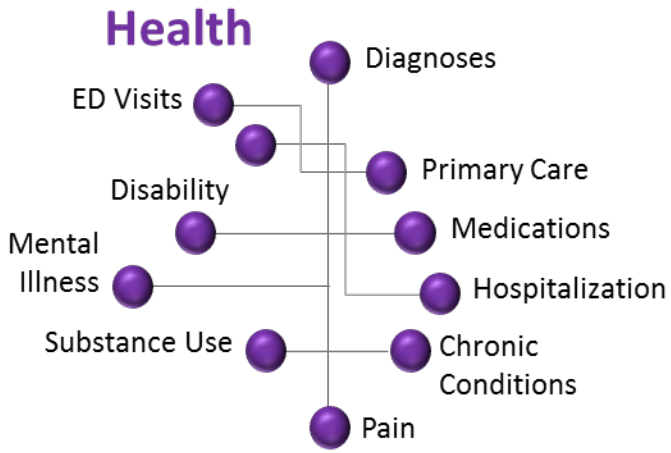
Creating Analytically Meaningful Measurement Concepts

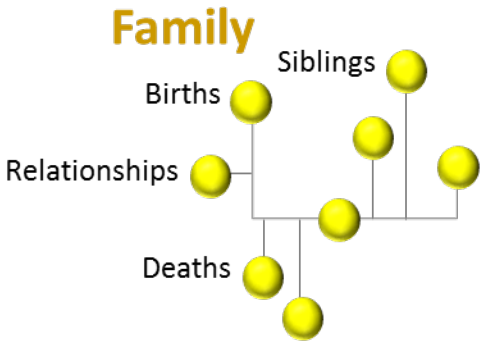


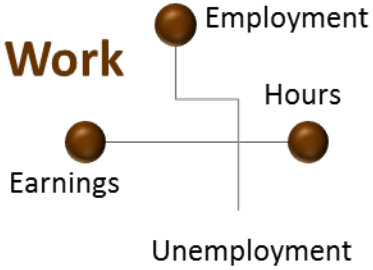


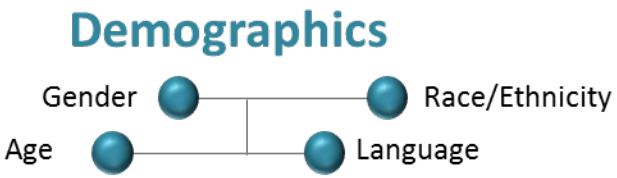


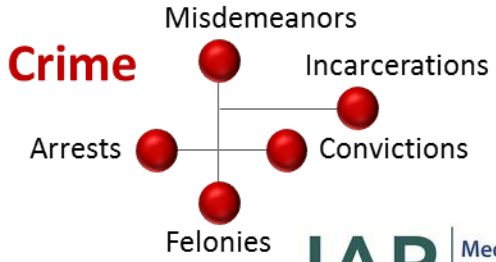












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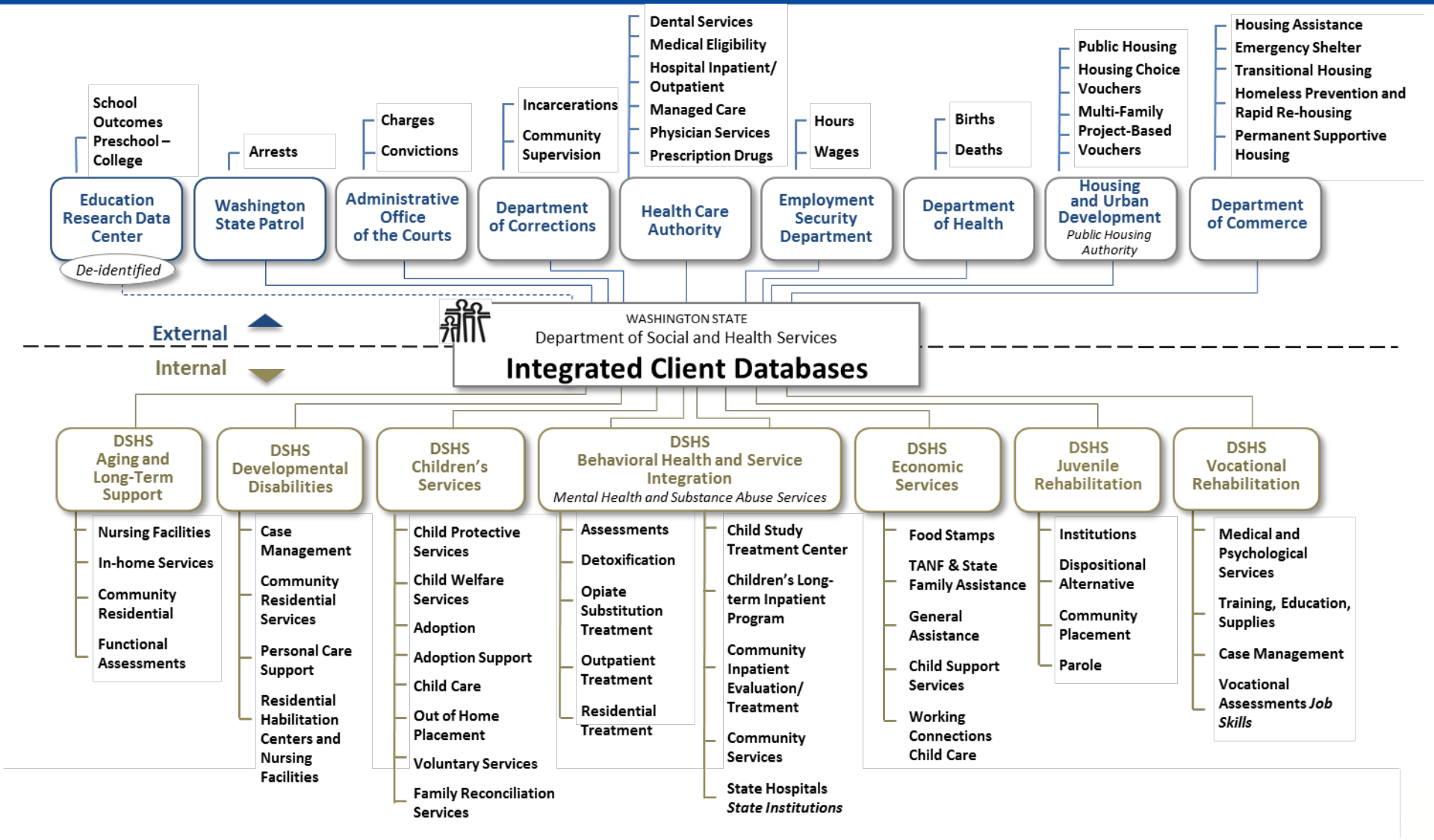
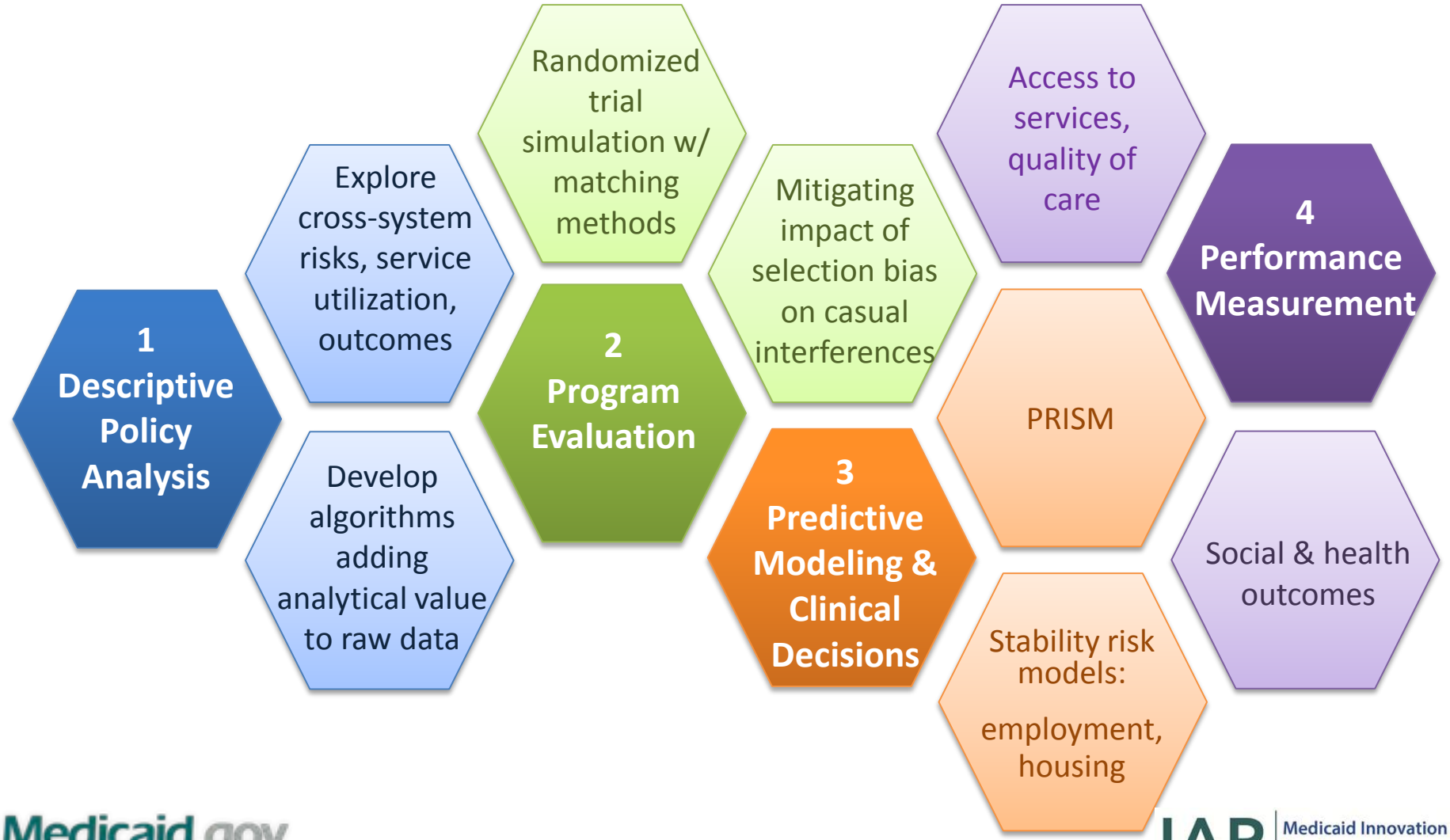
Big Picture:
Integration Across Multiple Databases



Utility of Integrated Administrative Data



Descriptive Policy Analysis

Designed to describe client experiences in a given policy environment

- As opposed to making causal inferences about program effectiveness or impact of policy changes on client outcomes

May require **development of new analytical concepts** with broader applicability as risk factors or outcome measures in future impact analyses

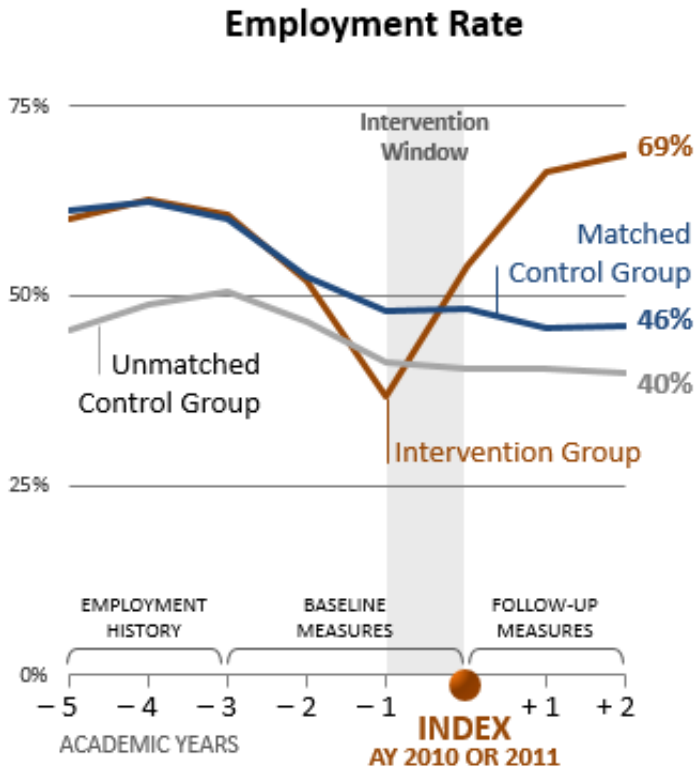
- For example, creating behavioral health risk indicators or housing stability metrics

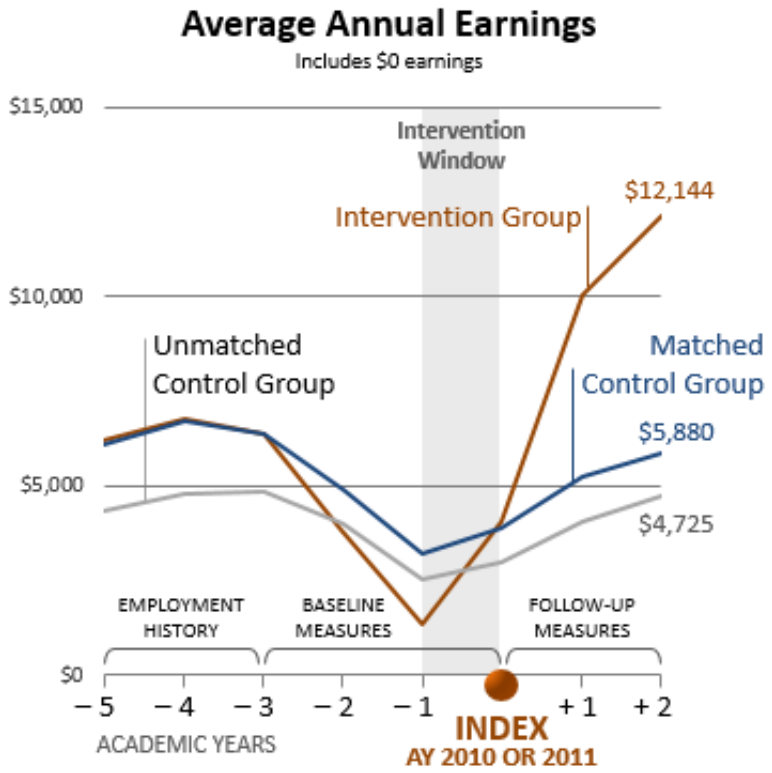
First stage of analysis when exploring newly available areas of data integration

- For example, describing education outcomes for youth receiving different types of social & health services

Program Evaluation

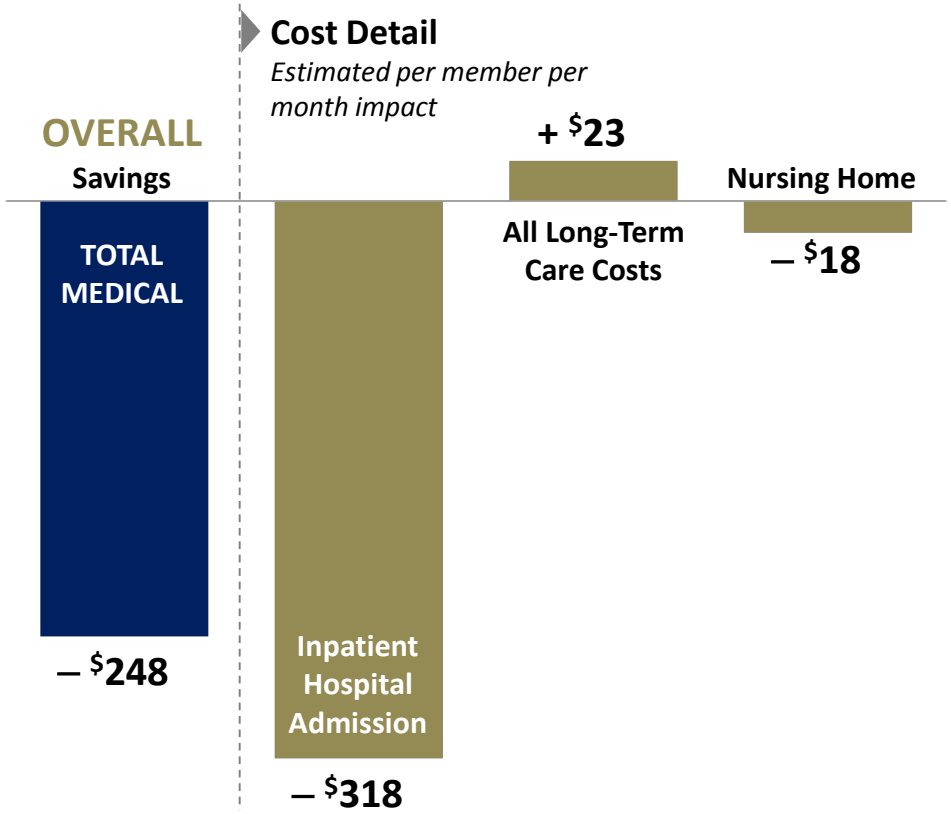
Randomized Trial Simulations Using Matching





Program Evaluation: Care Coordination

- Care Coordination Program for WA Medicaid enrollees reduced inpatient hospital costs
  - Statistically significant reduction in hospital costs
  - Promising reduction in overall Medicaid medical costs



Program Evaluation Cont'd

Considerations

- Randomized evaluation designs are rarely available, so primarily use matching-based "quasi-experimental" approaches
- A pre/post design without a comparison group is rarely adequate, especially if the intervention group is targeted based on extreme baseline behavior
- Fundamental challenge to building a credible evaluation is identifying a valid comparison group
- Matching approach is extremely intuitive, but does not fully address the fundamental issue of selection bias
- Critical to understand the process that "selects" clients into the intervention under study, & to use this knowledge to define a credible comparison group

Predictive Modeling & Clinical Decision Support: PRISM Example

- Rapid-cycle predictive modeling & data integration delivered in a clinical decision support web application
- Data sources
  - Medical, mental health, LTSS services from multiple IT systems
  - Medicare data for duals
  - Housing status
- Data are refreshed weekly for the entire Medicaid population
- Dynamic alignment of patients to health plans & care coordination organizations, with global patient look-up capability for providers

Selected PRISM Uses

- **Triaging high-risk populations through predictive modeling** to more efficiently allocate scarce care management resources
- **Informing care planning & care coordination for clinically & socially complex persons** through integrated & intuitive display of risk factors, service utilization & treating providers
- **A source of regularly updated client & provider contact information** to support outreach, engagement & coordination efforts
- **Identification of child health risk indicators** including mental health crises, substance abuse, excessive ED use, & nutrition problems
- **Medical evidence gathering for determining eligibility for disability programs**

Predictive Modeling

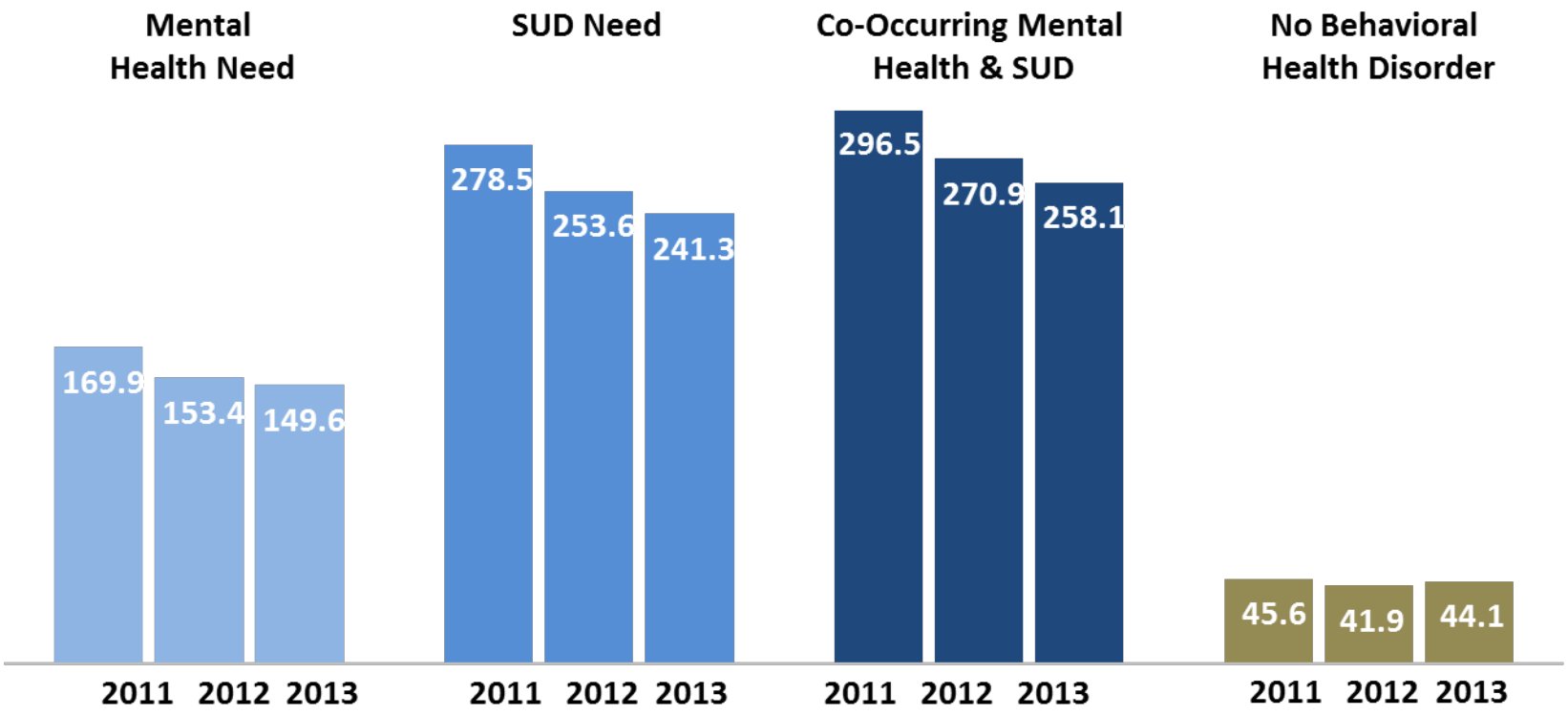
Considerations

- Is the risk model sufficiently predictive to be actionable?
- Are the identified risk factors actionable?
- Improving risk scoring transparency to the end user may be more important than maximizing predictive accuracy
- Invest in staff readiness to use data in decision-making
- Incorporate user feedback in designing information display
- Recognize potential limitations in the timeliness & completeness of available administrative data

Performance Measurement: Outpatient Emergency Department Visits

ED utilization among SSI clients is driven by behavioral health risk

AGES 18-64 • Visits per 1,000 Member Months



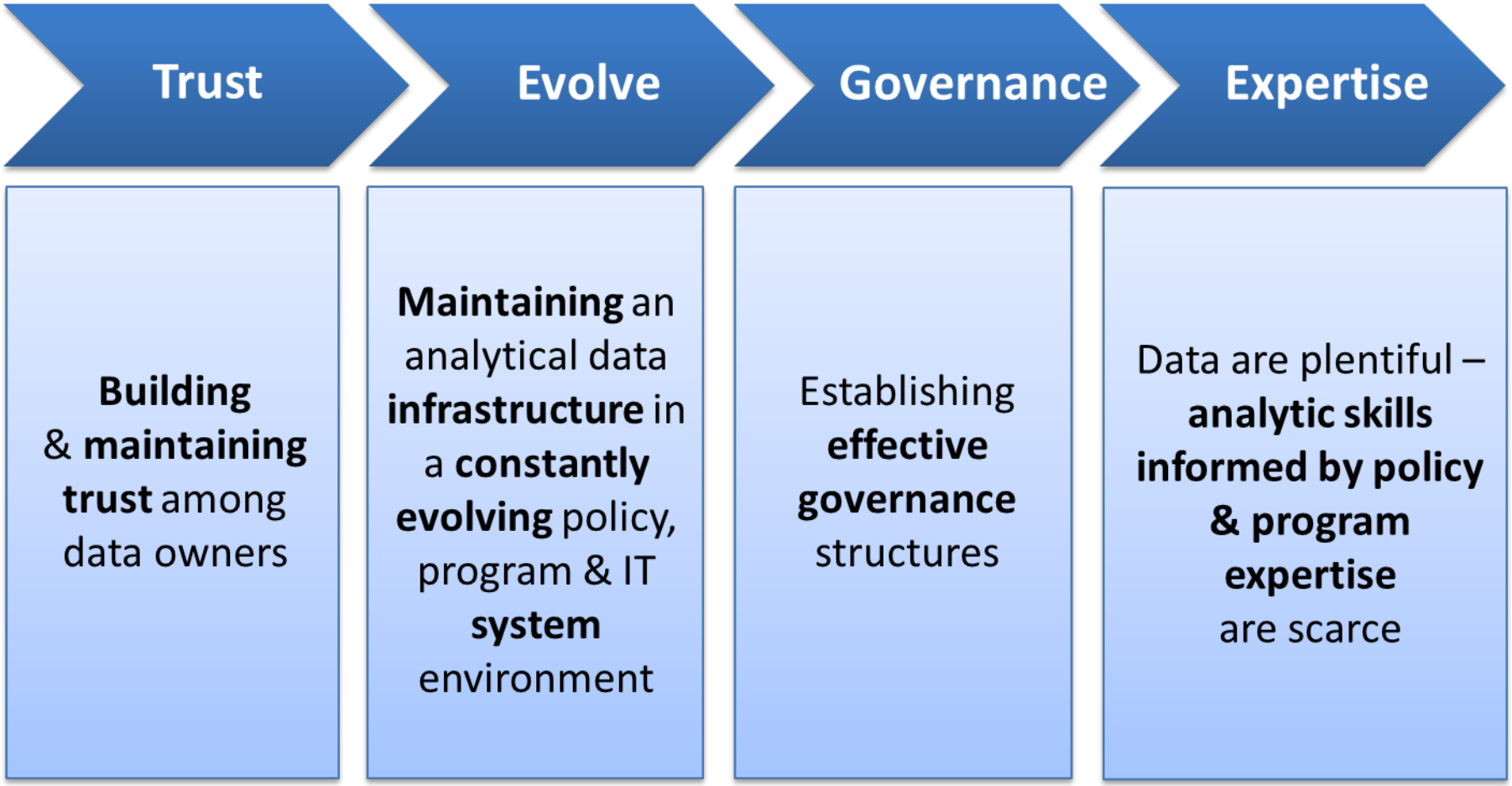
SOURCE: DSHS Research and Data Analysis Division, *Managed Medical Care for Persons with Disabilities and Behavioral Health Needs: Preliminary Findings from Washington State,* JANUARY 2015.

Performance Measurement

Considerations

- Outcome over process
- Objective over subjective
- Using administrative data may minimize cost & promote comparability across accountable entities
- Use of national standard where feasible
- Case-mix adjustment reduces incentives for accountable entities to avoid serving high-risk clients
- Performance measurement algorithms require ongoing updating & refinement

Data Integration Challenges: Keys to Success



Polling Question (3/5)

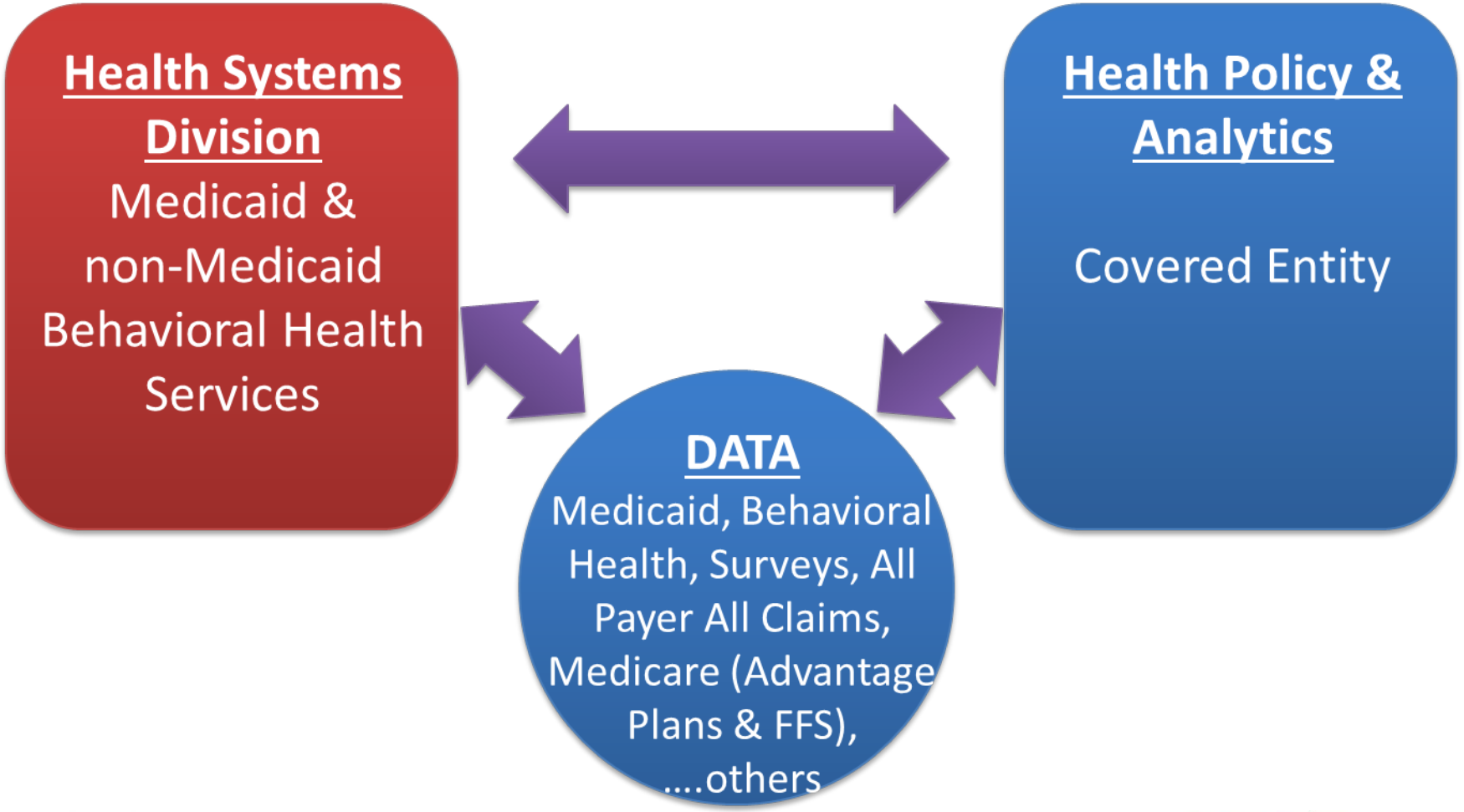
- What are the biggest challenges your state faces regarding data integration? Select all that apply.
  - Resources (money, time, staff)
  - Leadership buy-in
  - Quantitative expertise
  - Privacy concerns
  - Competing priorities
  - Other challenges

Discussion and Questions (2/3)

State Experience Linking Data: Oregon

Jon Collins, PhD,
Director, Office of Health Analytics,
Oregon Health Authority

Oregon Health Authority (simplified)



Overview: Measures & Outcomes Tracking System (MOTS)

- MOTS is a comprehensive electronic data system used by behavioral health service providers in Oregon to:
  - Improve care
  - Control costs
  - Share information
- MOTS replaced the Client Process Monitoring System (CPMS)
  - CPMS was a 30 year-old system designed & maintained on a mainframe system
  - It no longer met the business needs of the organization
  - Did a good job of reporting TEDS

The Vision (1/2)

TEDS Episode Data

Profile Data in Measures & Outcomes Tracking System (MOTS)

Medicaid Service Data

Medicaid Management Information Systems (MMIS)

Non-Medicaid Service Data

MOTS

Details of Linking Data: Client Profile Data

- Agency or facility
- Name, date of birth, Medicaid ID
- Treatment status
- Race/ethnicity
- Gender
- Marital status
- Veteran status
- Employment
- Living arrangement
- Counties of residence & responsibility

Details of Linking Data: Behavioral Health Data

- Service history
  - Admission date, state, zip code
  - Referral information
  - Diagnosis, treatment plan
  - Peer delivered service
  - Intensity of service needed
- Legal
  - Legal status
  - Driving under the influence & arrest history
  - OR Driver License & State Police ID Numbers
- Income & payment source, health insurance
- Interpreter needs
- Pregnancy status
- Number of dependents
- Tobacco & substance use history
- Academic attendance & improvement

Details of Linking Data: Substance Use Disorders Data

- Substance problems
- Age of first use, frequency of use
- Route of administration
- Positive alcohol/drug tests, self-help programs
- Driving under the influence treatment completion date
- Medication assisted treatment
- Assessed & current level of care based on ASAM
- Children living in residential treatment with parents

Details of Linking Data: Non-Medicaid Services Data

- Date of service
- Procedure code
- Place of service
- Number of units & billed charges
- Diagnosis
- Mirrors Medicaid claims

55

The Vision (2/2)

TEDS Episode Data
Profile Data in MOTS updated every 90 days of active service

Linked via dates of service & Medicaid ID

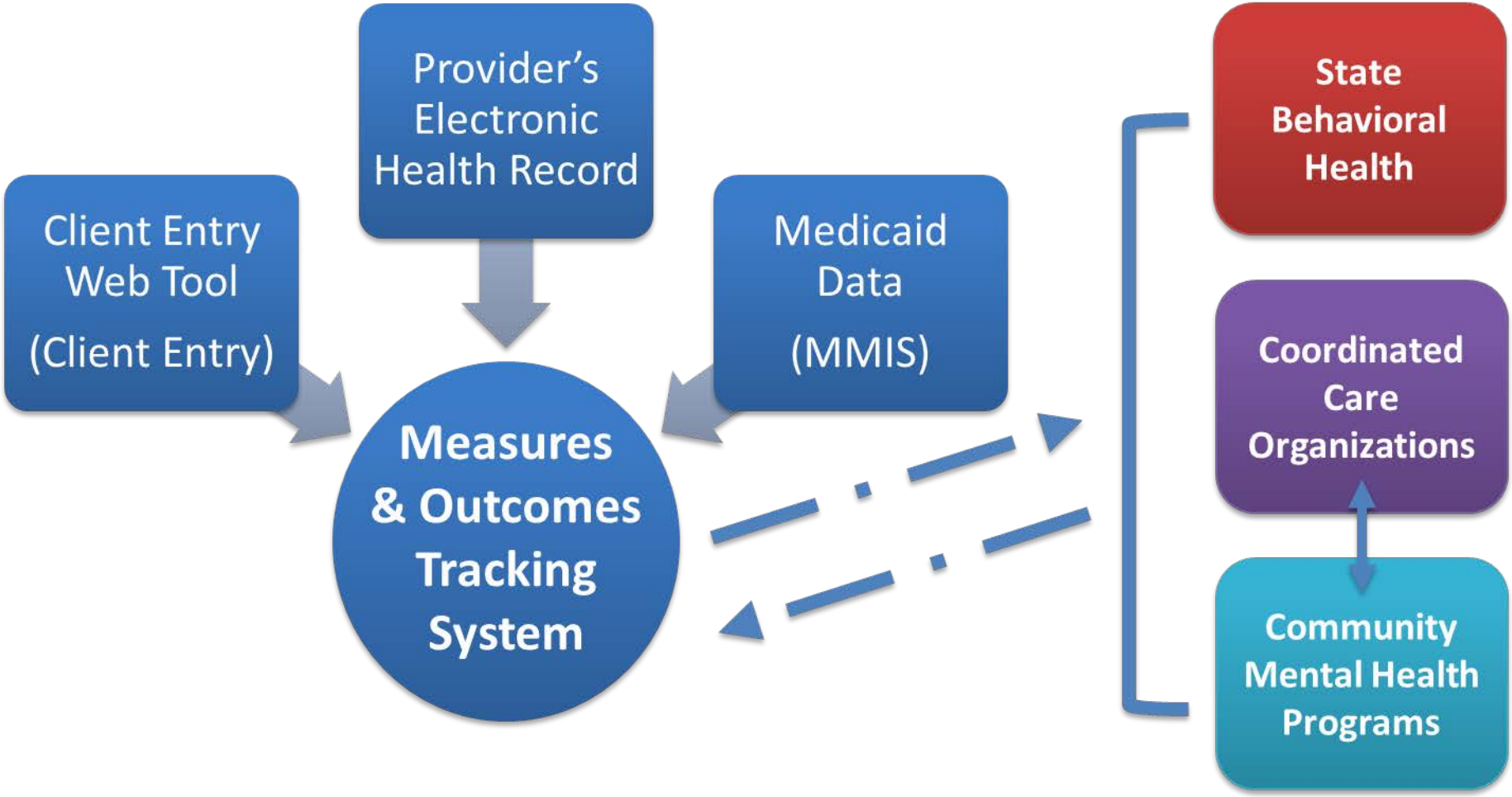
Linked via dates of service & MOTS ID

Medicaid Service Data
MMIS

Converted to episodes of active service via business rules & linked via common Medicaid ID

Non-Medicaid Service Data
MOTS

Communication Between Data & Payers



Analyzing Outcomes with MOTS

- Using data from MOTS, state behavioral health can track & analyze outcomes
  - Employment improvement
  - Education improvement
  - Stable housing
  - Criminal justice involvement
  - Access to & volume of services
- Equally important, the data can be shared back with Medicaid & non-Medicaid providers
- TEDS data or claims data could not do this alone

Challenges & Lessons Learned (1/3)

- Does it really work that easily?
  - No, not really
  - Challenges
    - Matching up episodes of active treatment & profile data
    - Quality of data input
- 42 CFR Part II
  - The Oregon Health Authority operates with a consolidated Office of Health Analytics
    - A covered entity integrating data across all funding sources & healthcare areas associated with OHA
    - Any data shared back out of the organization is protected & managed by all the regular rules associated with HIPAA & 42 CFR Part II

Challenges & Lessons Learned (2/3)

- Working with providers to switch to the new system
  - Challenges
    - Providers were not initially on-board with the change
    - Providers were not required to report non-Medicaid services under the old system
    - Providers needed to amend their data collections processes, including EHRs
  - Strategies to overcome challenges
    - Working with providers to teach them how to submit complete data
    - Reminding providers that the goal of MOTS is to generate data that is also useful to providers
    - MOTS is a work-in-progress but holds a lot of promise

Challenges & Lessons Learned (3/3)

- Speed of government vs speed of technology?
  - Original platform needs to be updated to keep up with technology standards
    - Our development didn't keep up with these changes
  - Turnover among leadership
    - Turnover in government leadership can often be faster than technology
    - Must keep current leadership informed & onboard

Polling Question (4/5)

- If your state is currently using an integrated database, which kinds of stakeholders receive data from the system? Select all that apply.
  - Providers
  - Criminal justice agencies
  - Social services agencies
  - Health services agencies
  - It does not directly provide data to stakeholders
  - We are not using integrated databases
  - Not sure

Polling Question (5/5)

- If your state is using an integrated database, do you check data for completion?
  - Yes, we have a benchmark data level
  - Yes, we use a standard form to ensure completeness
  - Yes, some other method
  - No / not sure
  - We are not integrating data at this time

Discussion and Questions (3/3)

Webinar Summary: Key Take Away Points

- States need to evolve their analytic capabilities beyond siloed warehousing in order to meet goals of Triple Aim
  - Enhanced data analytics can help resolve questions about cost, outcomes, and population health
- Develop analytic plans around your state's context
  - Variety of data sources can be used
  - Variety of ways to integrate data exist
  - Identify measurement concepts that are meaningful to your needs/questions
- Collaboration with other agencies may be helpful to accessing data, solving problems, & sustaining buy-in

Resources

- Visit the Integrating State Administrative Records to Manage Substance Abuse Treatment System Performance page by SAMHSA here: http://www.air.org/sites/default/files/downloads/report/TAP29_06-07_0.pdf
- Visit the Linking Client Data Records from Substance Abuse, Mental Health and Medicaid State Agencies, National Council for Behavioral Health CBH by SAMHSA here: http://the-link-king.com/SAMHSAtechnicalmonograph.pdf

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Thank You!

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