CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

Medicaid Innovation Accelerator Program (IAP)

Substance Use Disorders (SUD) Targeted Learning Opportunities (TLO)

TLO #8:

Merging Data Sources

IAP Medicaid Innovation Accelerator Program

Logistics

- Please mute your line and 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
- Please complete the evaluation in the pop-up box after the webinar to help us continue to improve your experience

Moderator

- Tami Mark, PhD
- Vice President & Research Director, Evaluation and Economic Research Unit, Truven Health Analytics

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Speakers

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

Speakers

- Jon Collins, PhD
- Manager, Health Programs & Measurement, Office of Health Analytics, Oregon Health Authority

Speakers

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

Agenda

- The Utility of Merging Data Sources
- State Experience: Washington
  - *Discussion Break*
- State Experience: Oregon
  - *Discussion Break*
- State Experience: Connecticut
  - *Discussion Break*
- Wrap Up & Resources

Webinar Goals

- Participants will discuss benefits of linking data sources to Medicaid SUD data
- Participants will learn about different state strategies for linking data

The Utility of Merging Data Sources

Tami Mark, PhD
Evaluation and Economic Research Unit
Truven Health Analytics

TRUVEN HEALTH ANALYTICS

IAP Medicaid Innovation Accelerator Program

Barriers to Merging Data Sources

Resources

- Staffing
- Time
- Political Support
- Funding

Technical Complexity

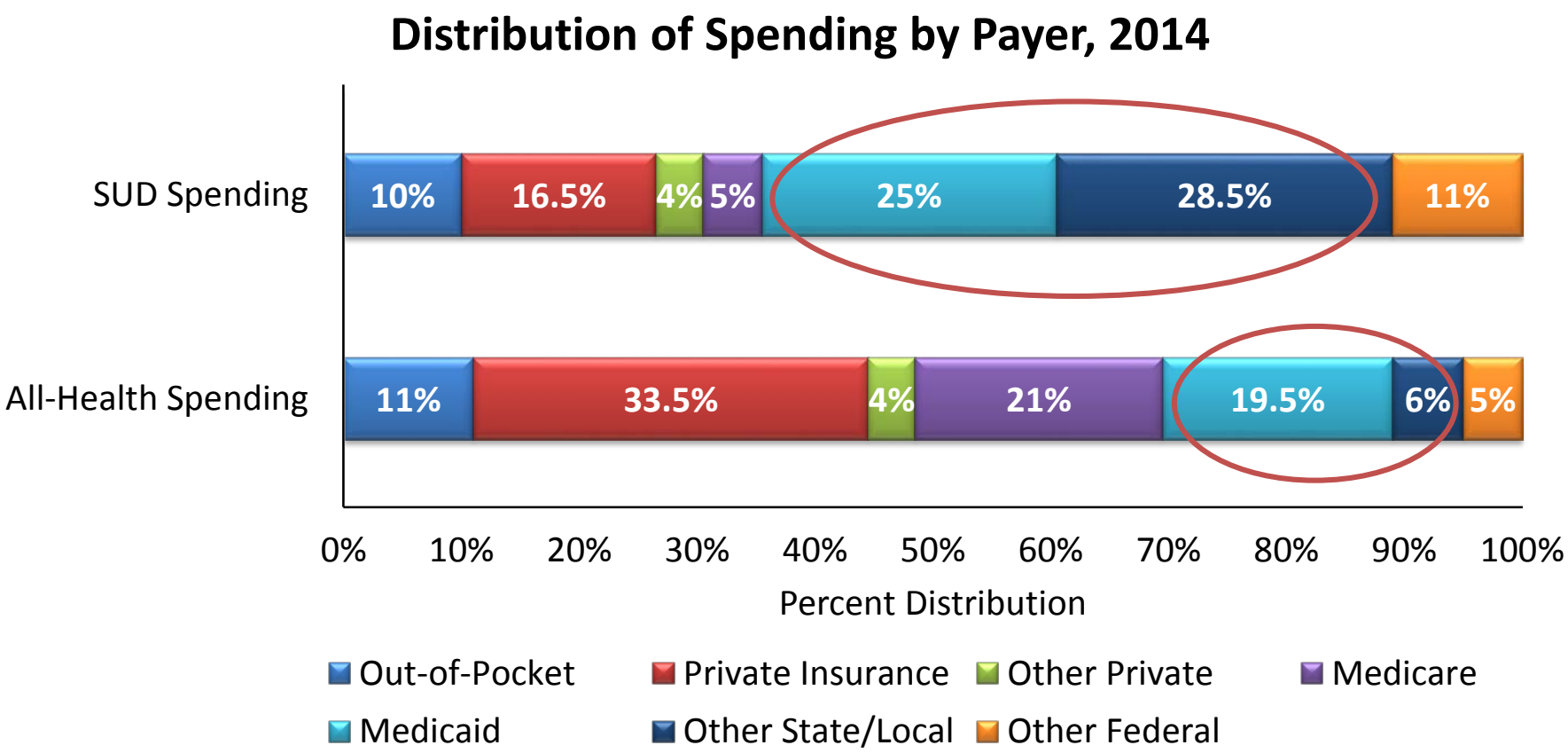
- Linking claims and encounter records
- Varying quality of data sources

Confidentiality

- Working within the confines of 42 CFR Part II

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

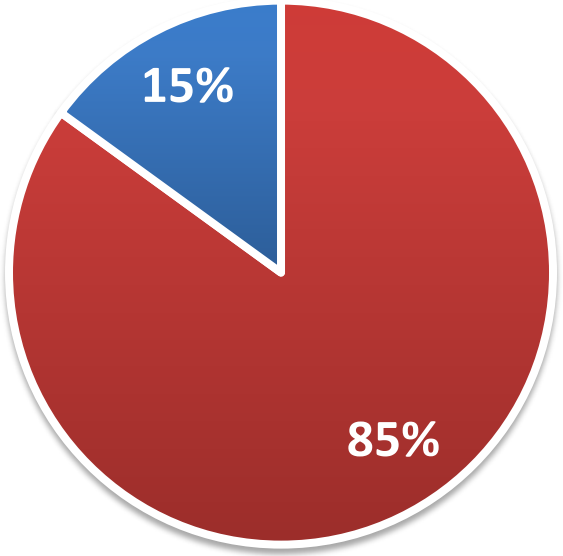
State & Local Payers Fund a Large Portion of SUD Treatment



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 and 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 and 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?

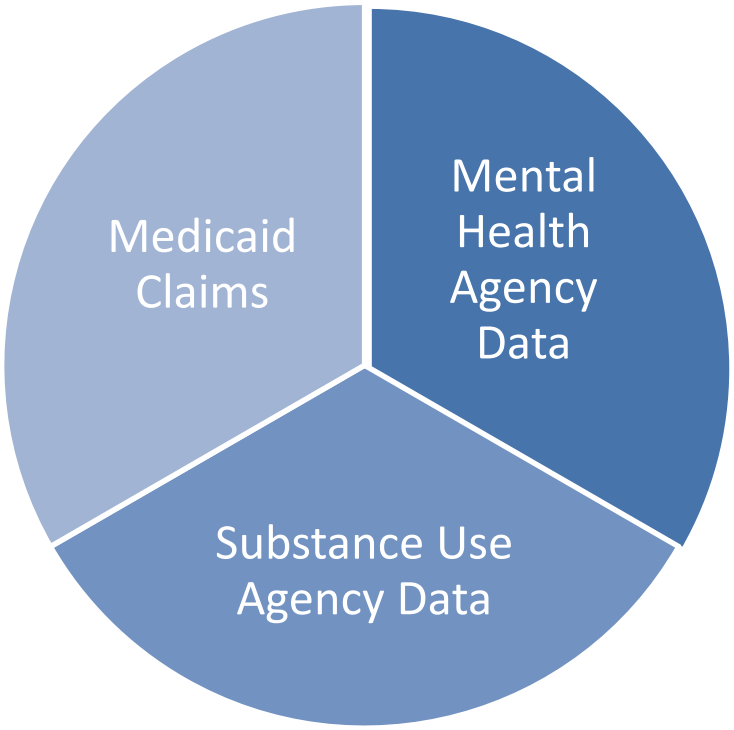
Treatment Episode Data Set (TEDS)

- 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)

- Provides outcomes measures on 10 domains for all state and federal block grant and formula grant programs
- Select Domains
  - **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 and other client-level data
- Data included for all clients receiving services from state MH/SA agencies in DE, OK and WA
- Analyzed rate of detox readmissions, factors associated with readmissions

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.

Case Study: Tracking Outcomes Post Detox

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**

Polling Question

- 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 high-priority area for us

State Experience Linking Data: Washington

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

Agenda

- Motivation to Integrate Data
- Assessing Capacity
- Designing Meaningful Measurement Concepts
- Primary Uses
  - Descriptive Policy Analysis
  - Program Evaluation
  - Predictive Modeling and Clinical Decision Support
  - Performance Management
- Challenges & Keys to Success

Motivation to Integrate Data

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

Assessing Capacity for Integrated Data Analytics

Support

- Build support among agency data owners
  - Connect analytic investments to agency business needs
  - Ensure agency subject matter experts inform analytics strategies
  - Invest in agency staff expertise and capabilities
- Leverage opportunities for external support to maintain and extend capabilities

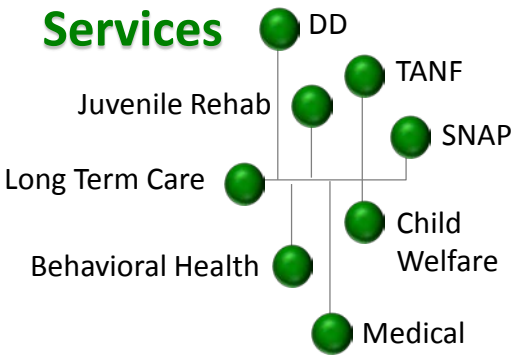
Staffing

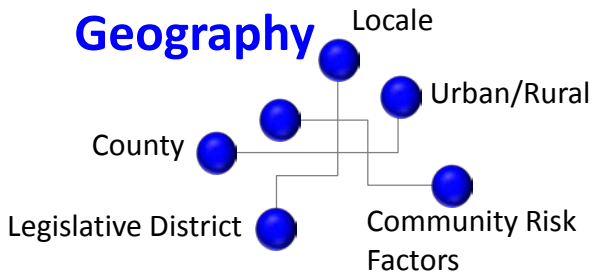
- Advanced degrees in quantitative social and health science disciplines
- Analytical programming skills focused on complex data transformation and massive-scale data processing
- Interest in public policy

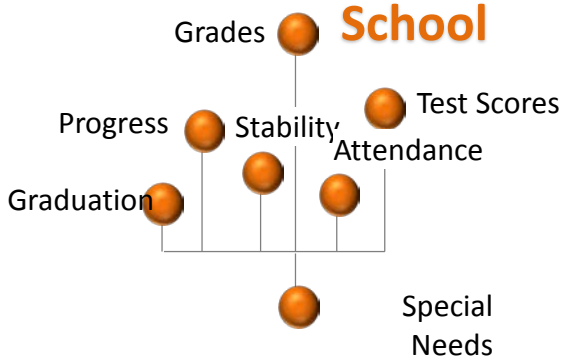
Expectations

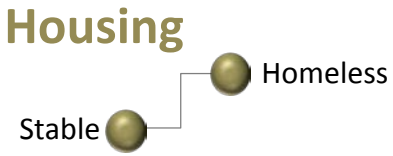
- Implementation timelines
- Scale of potential cost savings
- Resources required to maintain analytical environment in production
- Impact on state agency subject matter expert resources

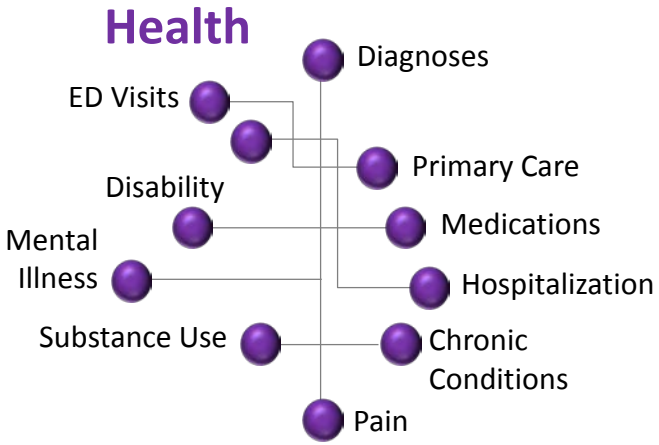
Creating Analytically Meaningful Measurement Concepts

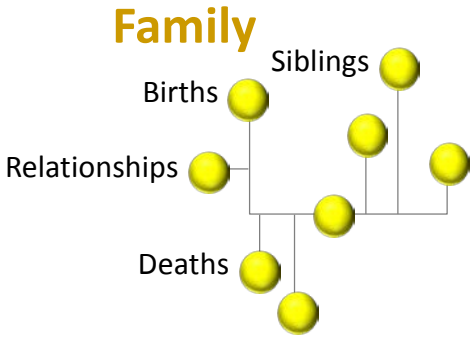


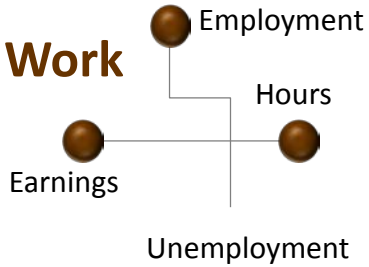


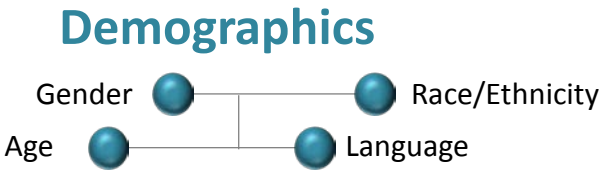


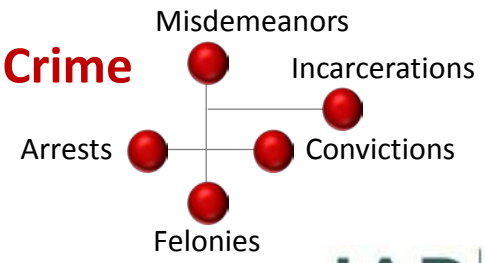




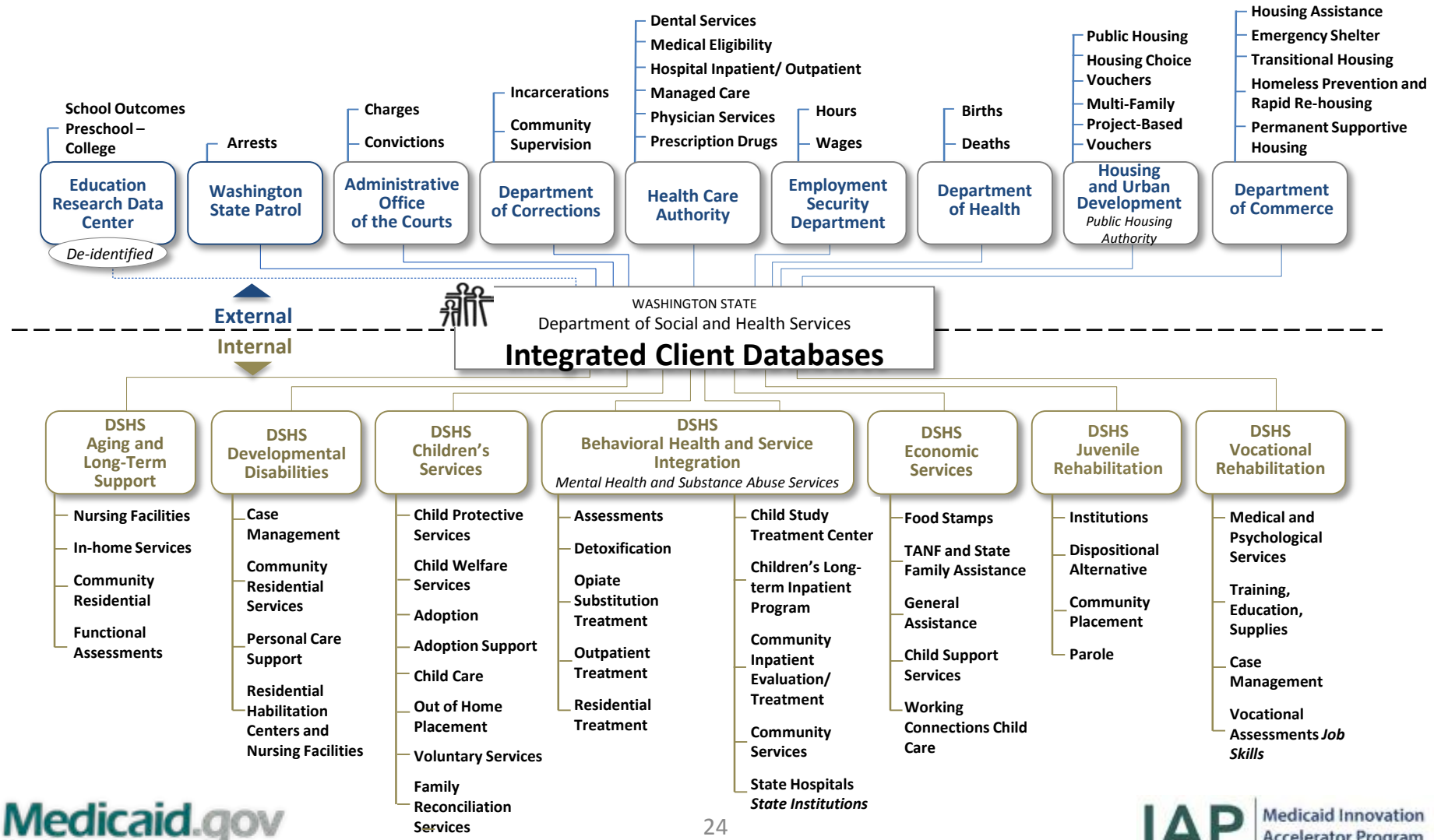




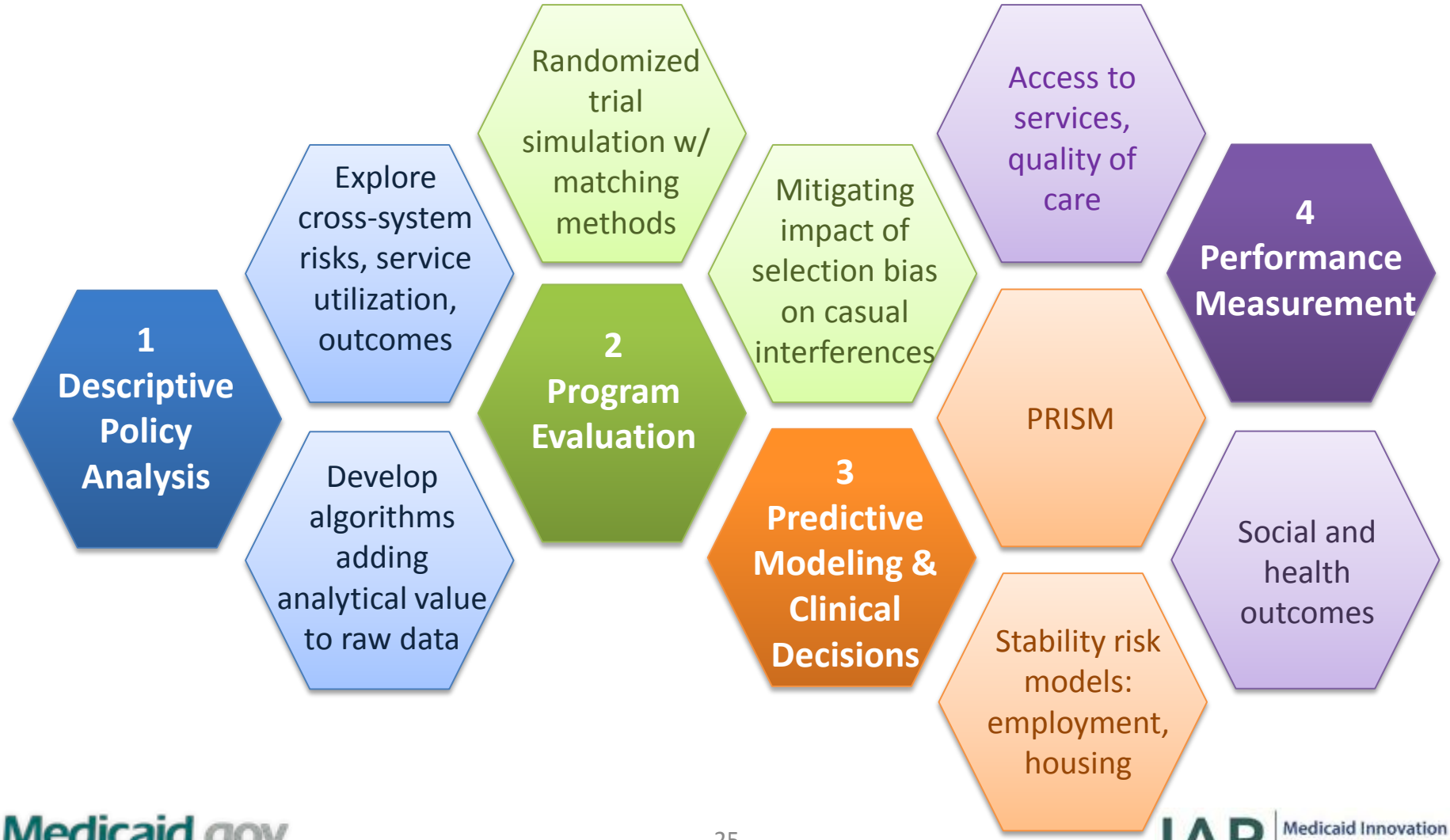




Big Picture:
Integration Across Multiple Databases



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

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

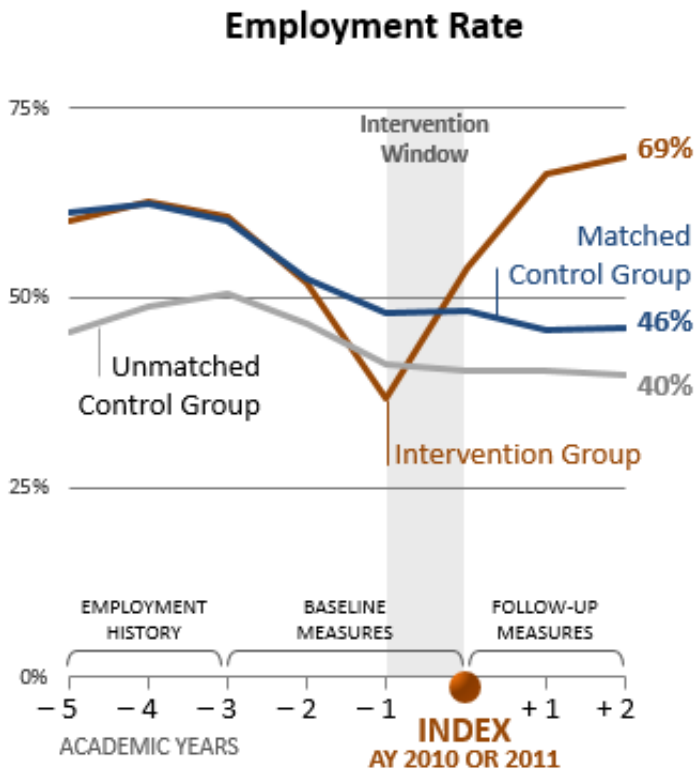
- For example, creating behavioral health risk indicators or housing stability metrics

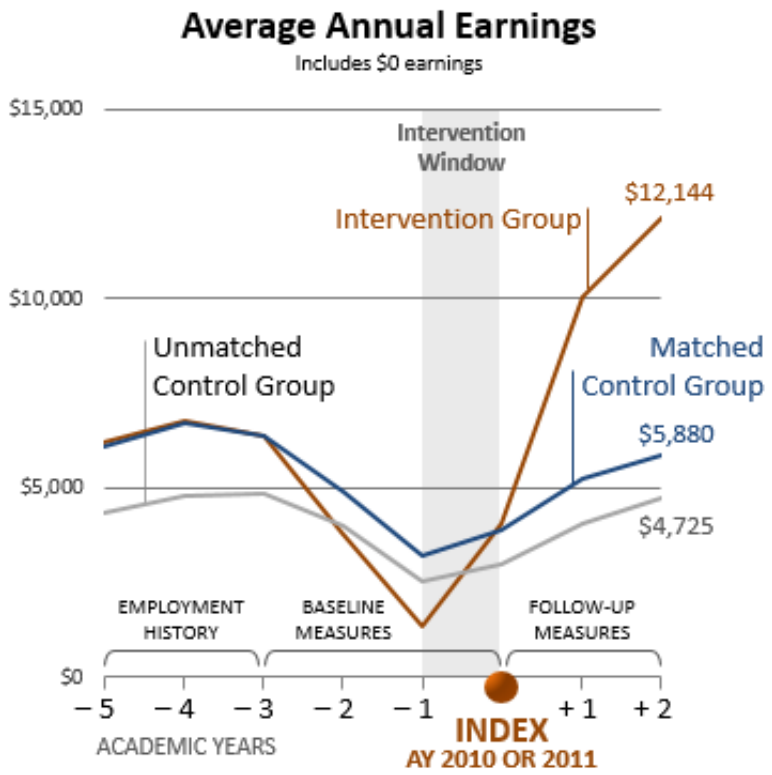
First stage of analysis when exploring newly available areas of data integration

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

Program Evaluation

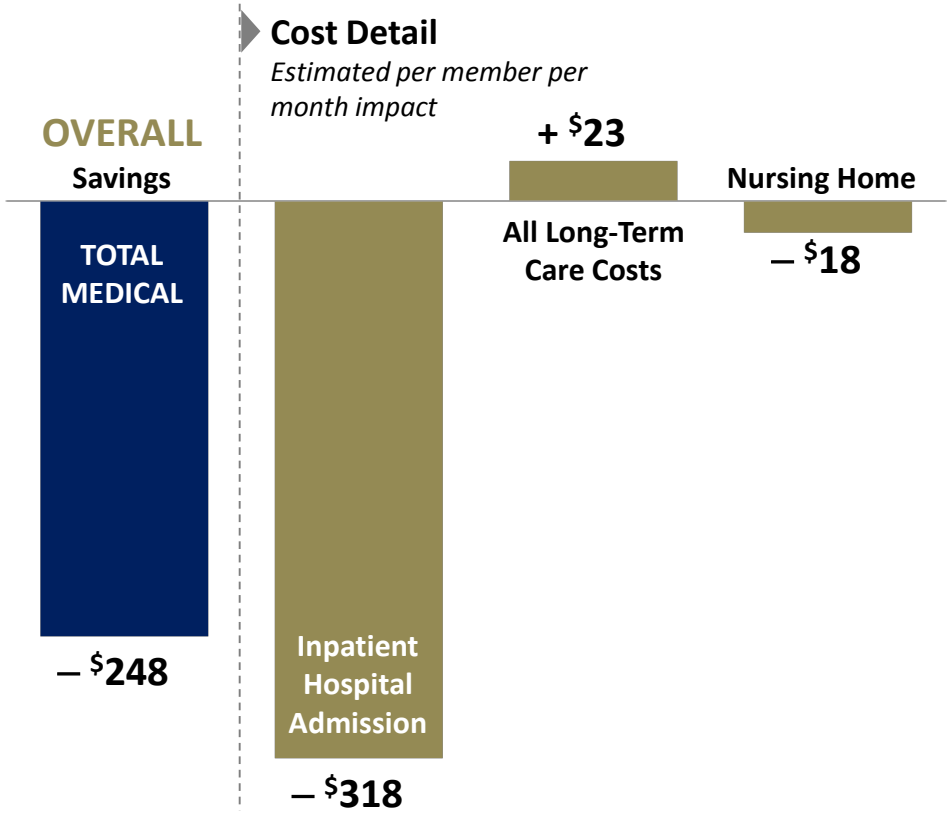
Randomized Trial Simulations Using Matching Approaches





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

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 identify 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, and to use this knowledge to define a credible comparison group

Predictive Modeling & Clinical Decision Support: PRISM Example

- Rapid-cycle predictive modeling and 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 and 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 and care coordination for clinically and socially complex persons** through integrated and intuitive display of risk factors, service utilization and treating providers
- **A source of regularly updated client and provider contact information** to support outreach, engagement and coordination efforts
- **Identification of child health risk indicators** including mental health crises, substance abuse, excessive ED use, and nutrition problems
- **Medical evidence gathering for determining eligibility for disability programs**

Predictive Modeling

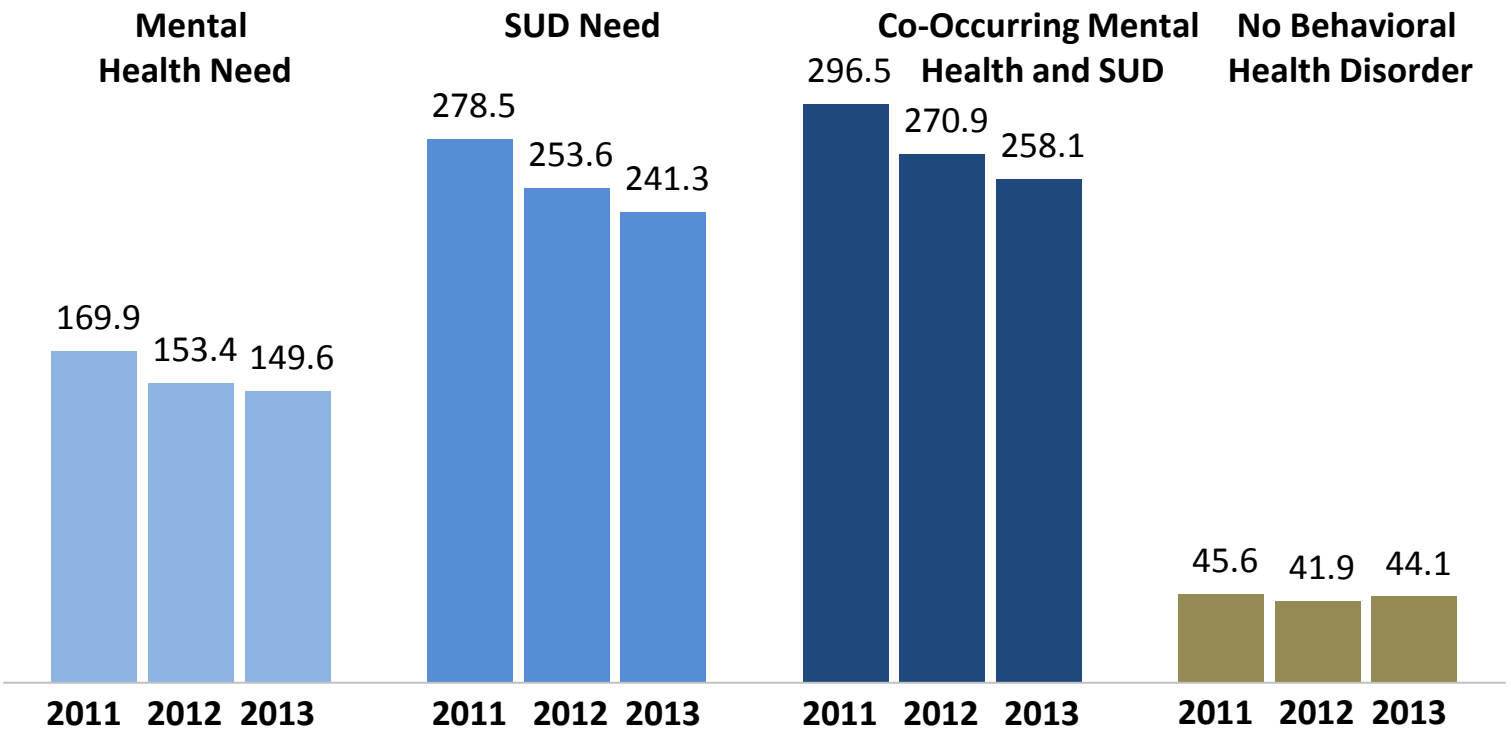
Considerations

- 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 and 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



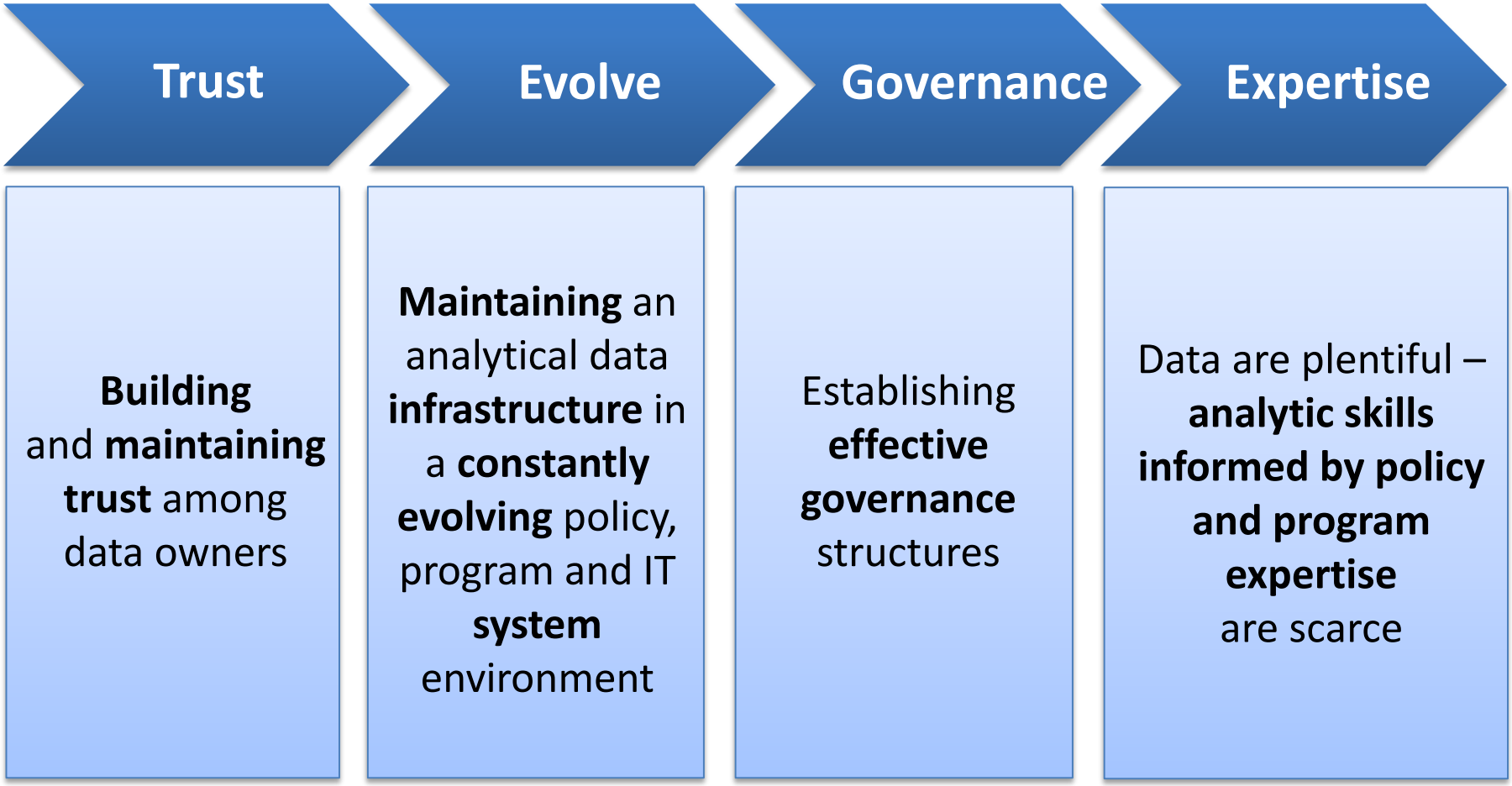
SOURCE: DSHS Research and Data Analysis Division, *Managed Medical Care for Persons with Disabilities and Behavioral Health Needs: Preliminary Findings from Washington State,* JANUARY 2015.

Performance Measurement

Considerations

- Outcome over process
- Objective over subjective
- Using administrative data may minimize cost and 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 and refinement

Data Integration Challenges: Keys to Success



Polling Question

- 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

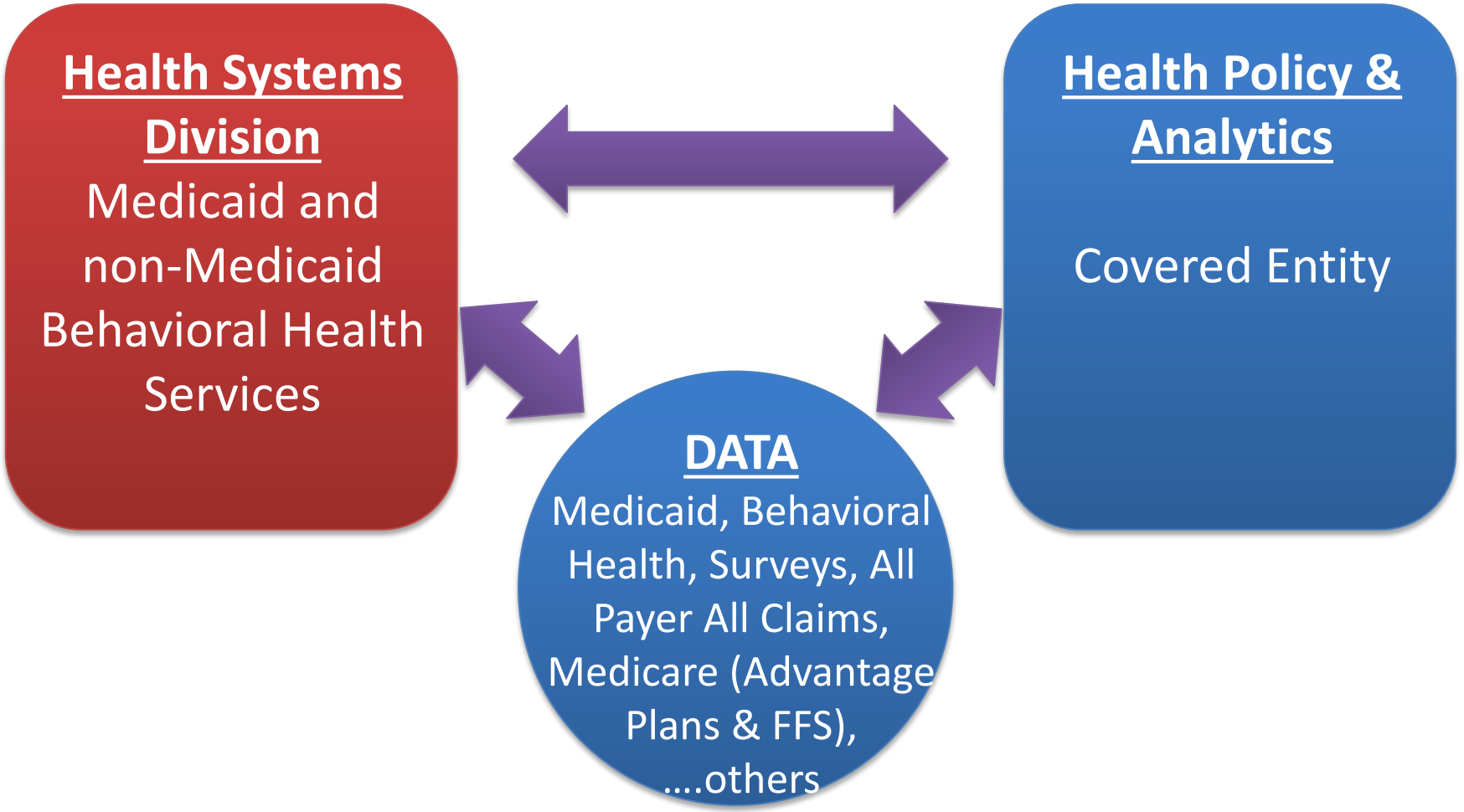
State Experience Linking Data: Oregon

Jon Collins, PhD,
Manager, Health Programs & Measurement
Christopher Coon
Data Management Lead
Office of Health Analytics, Oregon Health Authority

Agenda

- Overview of the Measures and Outcomes Tracking System (MOTS)
- Details of Linking Data
- Analyzing Outcomes with MOTS
- Challenges & Lessons Learned

Oregon Health Authority (simplified)



Overview of the Measures and Outcomes Tracking System

- 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 and maintained on a mainframe system
  - It no longer met the business needs of the organization
  - Did a good job of reporting TEDS

The Vision

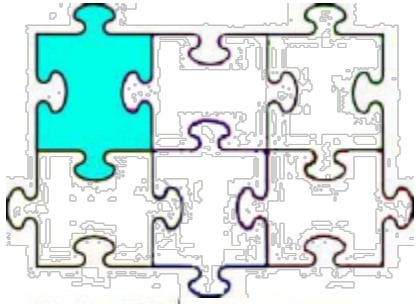
TEDS Episode Data –
Profile Data in MOTS

Medicaid Service Data
- MMIS

Non-Medicaid Service Data
- MOTS

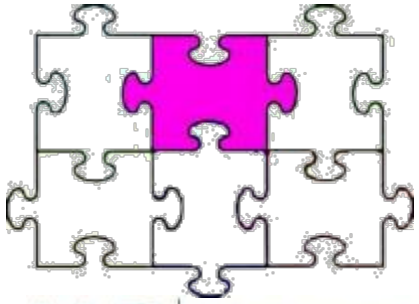
Details of Linking Data: Client Profile Data

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



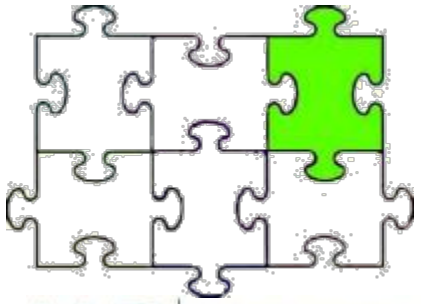
Details of Linking Data: Behavioral Health Data

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



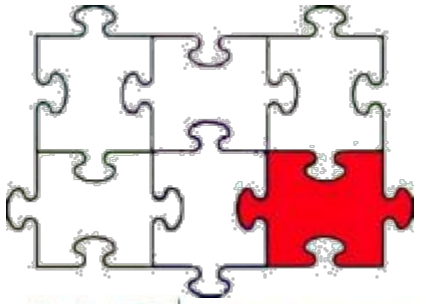
Details of Linking Data: Substance Use Disorders Data

- Substance problems
- Age of first use, frequency of use
- Route of administration
- Positive alcohol/drug tests, self-help programs
- DUI treatment completion date
- Medication assisted treatment
- Assessed and 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 and billed charges
- Diagnosis
- Mirrors Medicaid claims



The Vision

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

Linked via dates of service and Medicaid ID

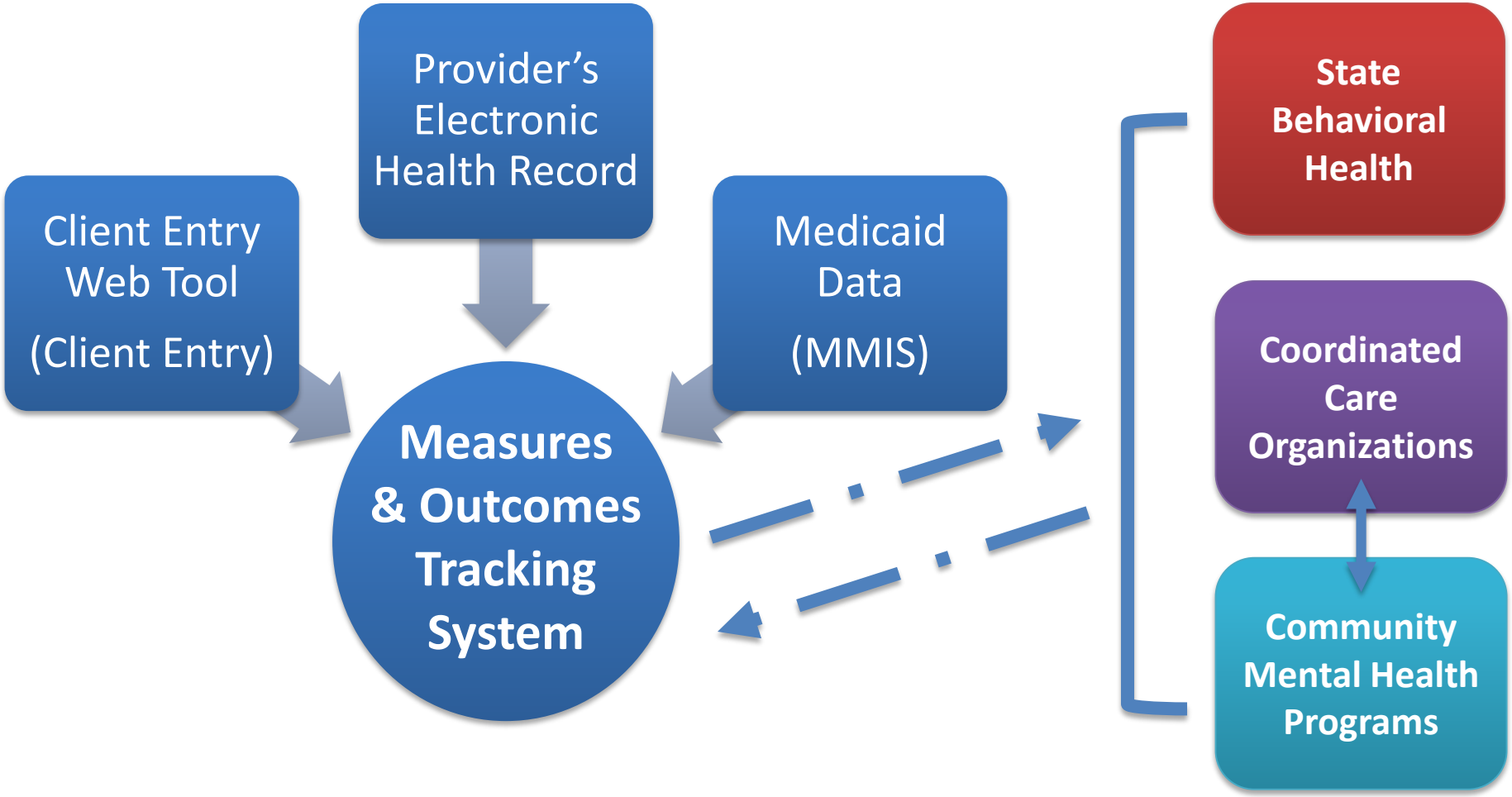
Linked via dates of service and MOTS ID

Medicaid Service Data
MMIS

Converted to episodes of active service via business rules and 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 and analyze outcomes
  - Employment improvement
  - Education improvement
  - Stable housing
  - Criminal justice involvement
  - Access to and volume of services
- Equally important, the data can be shared back with Medicaid and non-Medicaid providers
- TEDS data or claims data could not do this alone

Challenges & Lessons Learned

- Does it really work that easily?
  - No, not really
  - Challenges
    - Matching up episodes of active treatment and 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 and healthcare areas associated with OHA
    - Any data shared back out of the organization is protected and managed by all the regular rules associated with HIPAA and 42 CFR Part II

Challenges & Lessons Learned

- 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

Polling Question

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

Polling Question

- If your state is using an integrated database, do you screen 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

Polling Question

- If your state is currently linking data, which databases are you integrating?
- Please use the ReadyTalk 'Raise Your Hand' feature to respond to this question.

Discussion and Questions

State Experience: Connecticut

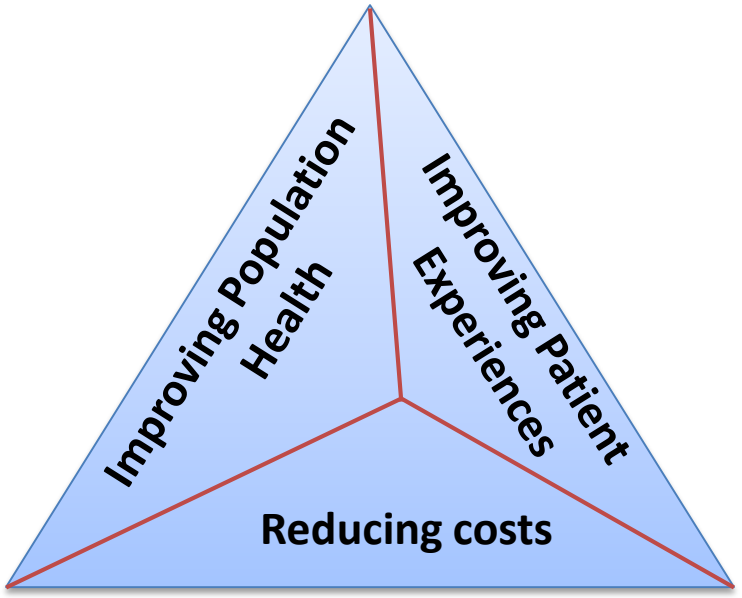
Minakshi Tikoo, PhD
Health Information Technology Coordinator
Director, Business Intelligence & Shared Analytics
Health and Human Services

Agenda

- Motivation to Link Data
  - The Magic “Mantra” – Triple Aim
  - The Challenge
- Possible Solution:
  - Overview of Distributed Data Networks
- Where is Connecticut?
- Challenges

Motivation to Link Data

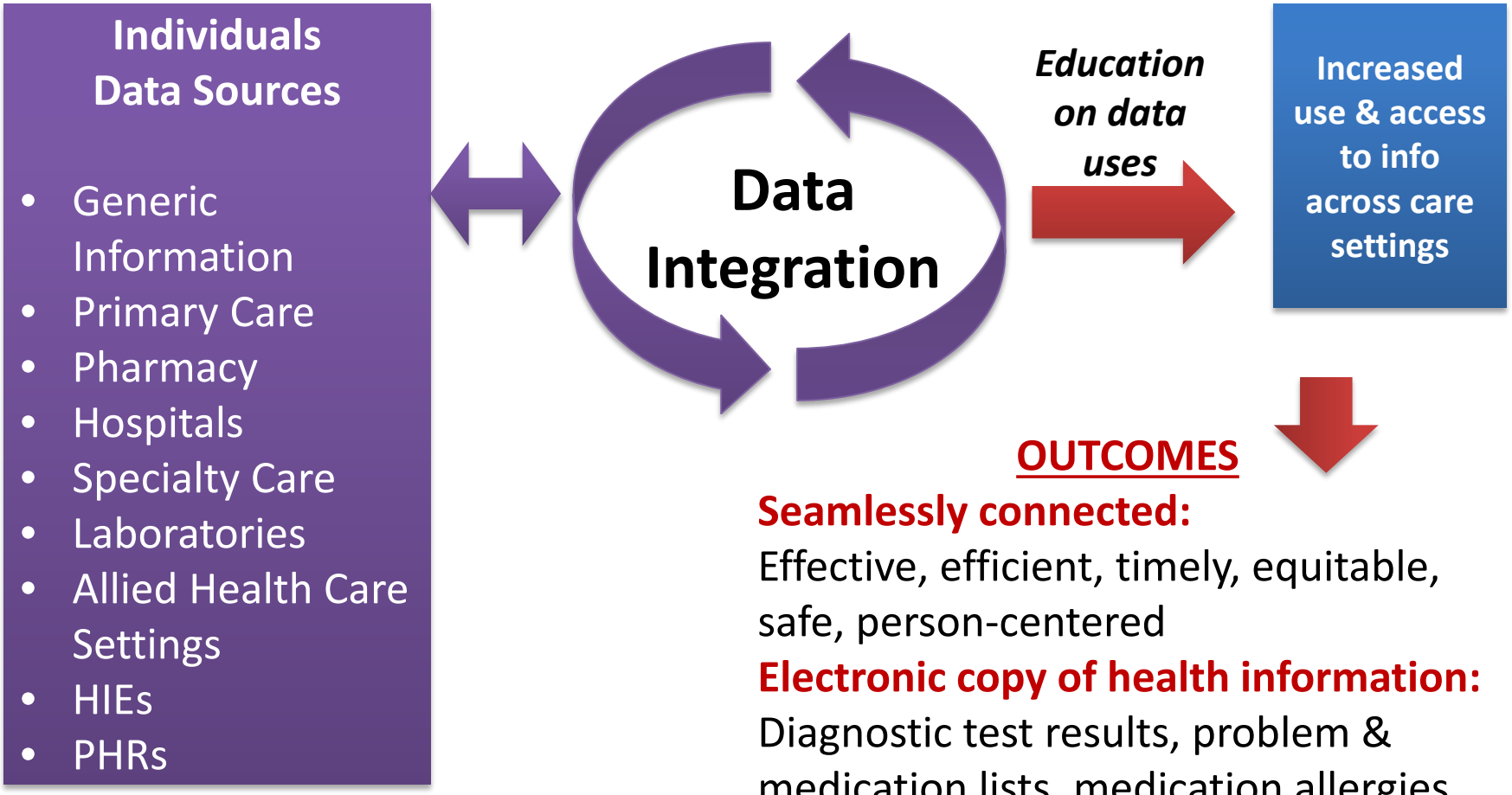
- The “Magic Mantra”– the Triple Aim
  - Requires increased sophistication in the use of data to simultaneously address the Triple Aim



Challenges to Big Data Linkage

- Expensive to build warehouses to combine data
- Data is 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 and 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 and run 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 org	Diverse applications among many orgs
Data warehouses & data lakes	Health information sharing environments
Centralized privacy protection	Decentralized privacy protection
Centralized security	De-centralized security
N/A	Indexes are reusable, performance data are verifiable
	Pricing model with multiple returns on investment
	Decentralized analysis
	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 and 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

Data Types & Sources	Data Integrator / Warehouse	Outcomes
• Claims • Patient-level clinical data • eCQMS • Patient & provider satisfaction data • Participating org-level data • Community-level pop-based data • Other secondary data	Create a continuous quality improvement cycle with iterative feedback loops	Performance Measurement domains Data use for operations & evaluation • Quality improvement • Monitoring & management • Value-based purchasing • Policy development

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

Discussion and Questions

Polling Question

- Would your state be interested in having a post-webinar discussion with the speakers to address any additional questions or reflections on today's webinar?
  - Yes
  - No

Resources

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

Resources

- *The California Treatment Outcome Project (CalTOP) Final Report, University of California*, Los Angeles Integrated Substance Abuse Programs
  - http://www.uclaisap.org/caltop/FinalReport/index.html

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