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Development of Quality Measures for Medicaid Beneficiaries using Home- and Community-Based Services (HCBS)

Webinar

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Mathematica Policy Research

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Welcome & Administrative Items

Administrative Items: Q&A

- **To pose a question to the presenters, click on the "Q&A" widget at the bottom and submit your question.**
  - *Please note, your questions can only be seen by our presentation team and are not viewable by other attendees.*

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Administrative Items: Technical Assistance

- If you are experiencing technical difficulties, please visit our Webcast Help Guide, by clicking on the “Help” widget below the presentation window.
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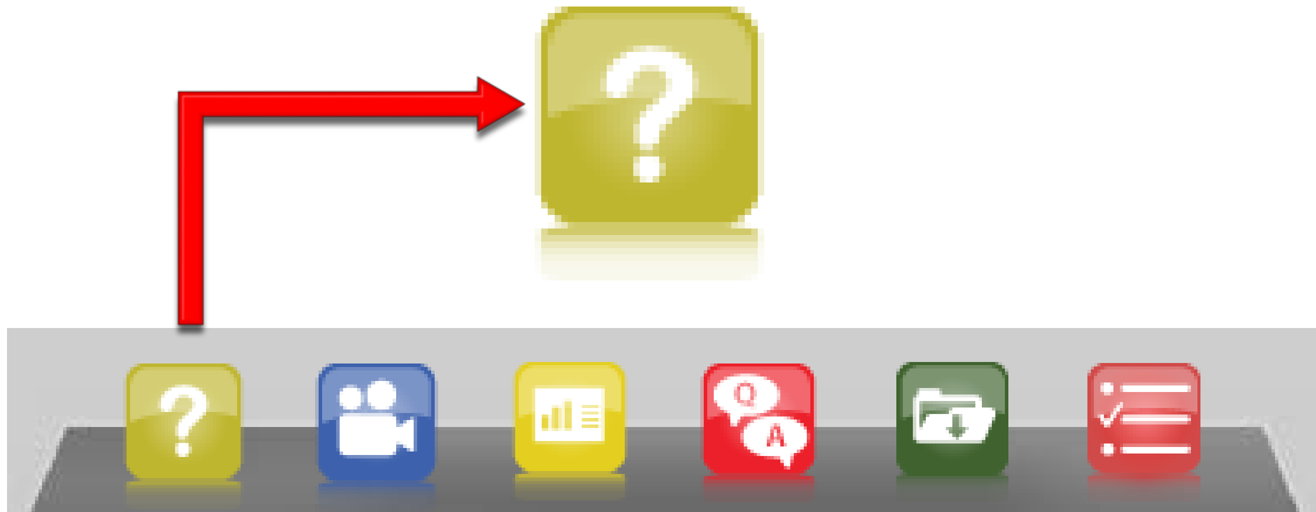


Administrative Items: Event Materials and Recording

- The event recording will be available approximately 1 day after the webcast and can be accessed using the same audience link used for the live webcast.
- The recording and related materials will also be posted on this website: http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Long-Term-Services-and-Supports/Balancing/Money-Follows-the-Person.html

Overview

I. Introductions

II. Background on HCBS Quality Measures

III. Risk-Adjusted HCBS Quality Measures

- Pressure Ulcer Measure
- Acute and Chronic Composites

IV. Conclusions and Technical Resources

V. Questions & Answers

I. Introductions

Introductions

- Centers for Medicare & Medicaid Services (CMS)
  - Effie George, CMCS, DEHPG, DCST
  - Mike Smith, CMCS, DEHPG, DCST
- Office of the Assistant Secretary for Planning and Evaluation (ASPE)
  - D.E.B. Potter, DALTCP
- Mathematica Policy Research
  - Carol Irvin
  - Alex Bohl
  - Jessica Ross

Acknowledgements

- **Work funded by CMS's Medicare-Medicaid Coordination Office**
  - Opinions expressed during today's presentation are those of the speakers, and do not necessarily reflect the views of CMS, ASPE, or HHS
- **Conducted as part of the Money Follows the Person (MFP) Demonstration, which aims to:**
  - Increase the use of HCBS and reduce the use of institutional services
  - Eliminate barriers in state law, state Medicaid plans, and state budgets that restrict the use of Medicaid funds to let people obtain long-term care in the settings of their choice
  - Strengthen the ability of Medicaid programs to provide HCBS to people who choose to transition out of institutions
  - Put procedures in place to provide quality assurance and improvement of HCBS

II. Background on HCBS Quality Measures

Background on HCBS Quality Measures

The Deficit Reduction Act of 2005 directed the Agency for Healthcare Research and Quality (AHRQ) to develop:

- **Program performance indicators,**
- **Client function indicators, and**
- **Measures of client satisfaction**

for Medicaid beneficiaries receiving HCBS.[1]

[1] 109th United States Congress. “Deficit Reduction Act of 2005.” Washington, DC: Government Printing Office, 2006. Available at http://www.gpo.gov/fdsys/pkg/BILLS-109s1932enr/pdf/BILLS-109s1932enr.pdf

Background on HCBS Quality Measures

- **AHRQ undertook an HCBS measure scan project**
- **AHRQ and its contractors analyzed promising claims-based quality measures**
  - Adaptation of Prevention Quality Indicators
  - Developmental measures in priority areas
- **AHRQ recommended two sets of outcome measures:**
  - Serious reportable events (including Pressure Ulcers)
  - Potentially avoidable hospitalizations due to ambulatory care sensitive conditions (ACSCs)

Note: Reports detailing AHRQ's work to develop HCBS measures are available at: http://www.ahrq.gov/professionals/systems/long-term-care/resources/hcbs/index.html

Background on HCBS Quality Measures

- Under the direction of CMS and ASPE, Mathematica updated three of these measures by:
  - Refining the measure definitions
  - Developing risk-adjustment models to address case-mix differences
  - Establishing approaches for addressing low reliability of estimates from small sample sizes
  - Identifying strategies for benchmarking and understanding performance

Goals of HCBS Quality Measures

- **These measures DO:**
  - **Provide information about the care experiences of Medicaid fee-for-service (FFS) beneficiaries receiving long-term care in the community, by state**
  - **Assume a shared accountability framework**
  - **Help motivate quality improvement**
- **These measures DO NOT:**
  - **Provide information on the quality of specific HCBS providers or waivers**
  - **Include information on managed care beneficiaries**
    - Medicaid and/or Medicare managed care

Goals of Today's Webinar

- **Summarize updates to three HCBS quality measures:**
  - Pressure ulcer
  - Acute ACSC composite
  - Chronic ACSC composite
- **Provide resources to stakeholders:**
  - Guidance on how to use these measures
  - Reports, technical specifications, and SAS programs available at:

  http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Long-Term-Services-and-Supports/Balancing/Money-Follows-the-Person.html

III. Risk-Adjusted HCBS Quality Measures

Pressure Ulcer Measure

Overview: Pressure Ulcer Measure

Scope

- Numerator: HCBS users with a hospital admission indicating a severe pressure ulcer
  - Stages III, IV, or unstageable
- Denominator: HCBS FFS users in a state
- Risk adjusted for age, gender, chronic conditions, physical disabilities, mental health conditions, and substance use disorders

Data sources

- Medicare and Medicaid claims and enrollment data
- Risk factors are defined using the Chronic Conditions Warehouse (CCW) algorithm (based on claims)

Populations studied

- 2009 and 2010 HCBS FFS users
- HCBS users who recently transitioned from institutional long-term care

Mathematica's Contribution

- Began with AHRQ contractor specifications[2]
- Convened a technical expert panel (TEP) to provide input on:
  - Incorporating new ICD-9 codes and present-on-admission (POA) information
  - Numerator and denominator specifications
  - Importance of risk adjustment
- Implemented TEP recommendations
  - Updated numerator definition
  - Re-specified numerator from count to binary
  - Applied hospice exclusion
  - Built risk-adjustment models

[2] Schultz et al. 2012. "Development of Quality Indicators for the Home- and Community-Based Services Population: Technical Report." Available at http://www.qualityindicators.ahrq.gov/Downloads/Resources/Publications/2012/HCBS_QI_Technical_Report.pdf.

Measure Denominator

Medicaid FFS beneficiaries using HCBS

- **Enrollment in an HCBS 1915(c) waiver:**

  Aged/disabled
  Aged only
  Disabled only
  Traumatic brain injury
  Intellectually or developmentally disabled
  Mental illness
  Technologically dependent
  Autism
  Other unspecified waiver

- **Or at least one month of services provided through 1915(c) waiver or state plan**

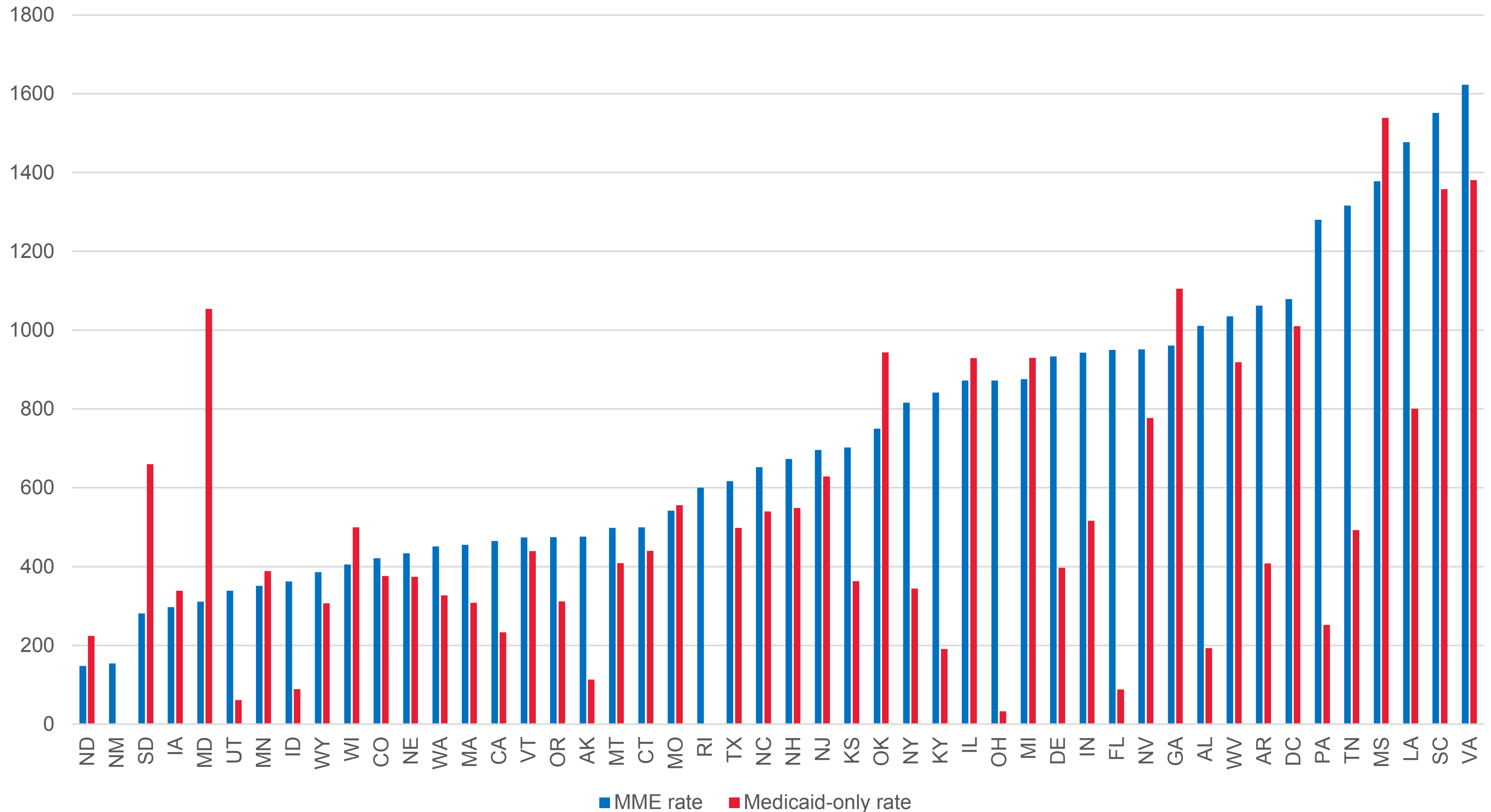
  Personal care
  At-home private duty nursing
  Adult day
  Home health of at least 90 days
  Residential care
  At-home hospice
  Rehabilitation
  Case management
  Transportation
  Durable medical equipment

Measure Numerator

- **Specifications:**
  - **Acute care hospitalizations with ICD-9 codes for stage III, IV or unstageable pressure ulcers**
  - **Primary or secondary diagnosis field**
  - **Only present-on-admission (POA) pressure ulcers are counted from Medicare claims**
    - POA information not currently included on Medicaid claims
- **Exclusions:**
  - **Hospitalizations outside of HCBS use**
  - **Hospitalizations during hospice use**

Only one pressure ulcer per HCBS user is counted

Observed (Unadjusted) Pressure Ulcer Rates, 2009 HCBS Users



Note: Rates sorted from lowest to highest MME/Dual observed rate.

Source: Mathematica analysis of 2009 Medicaid FFS HCBS users (MMEs and Medicaid only)

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Risk Adjustment

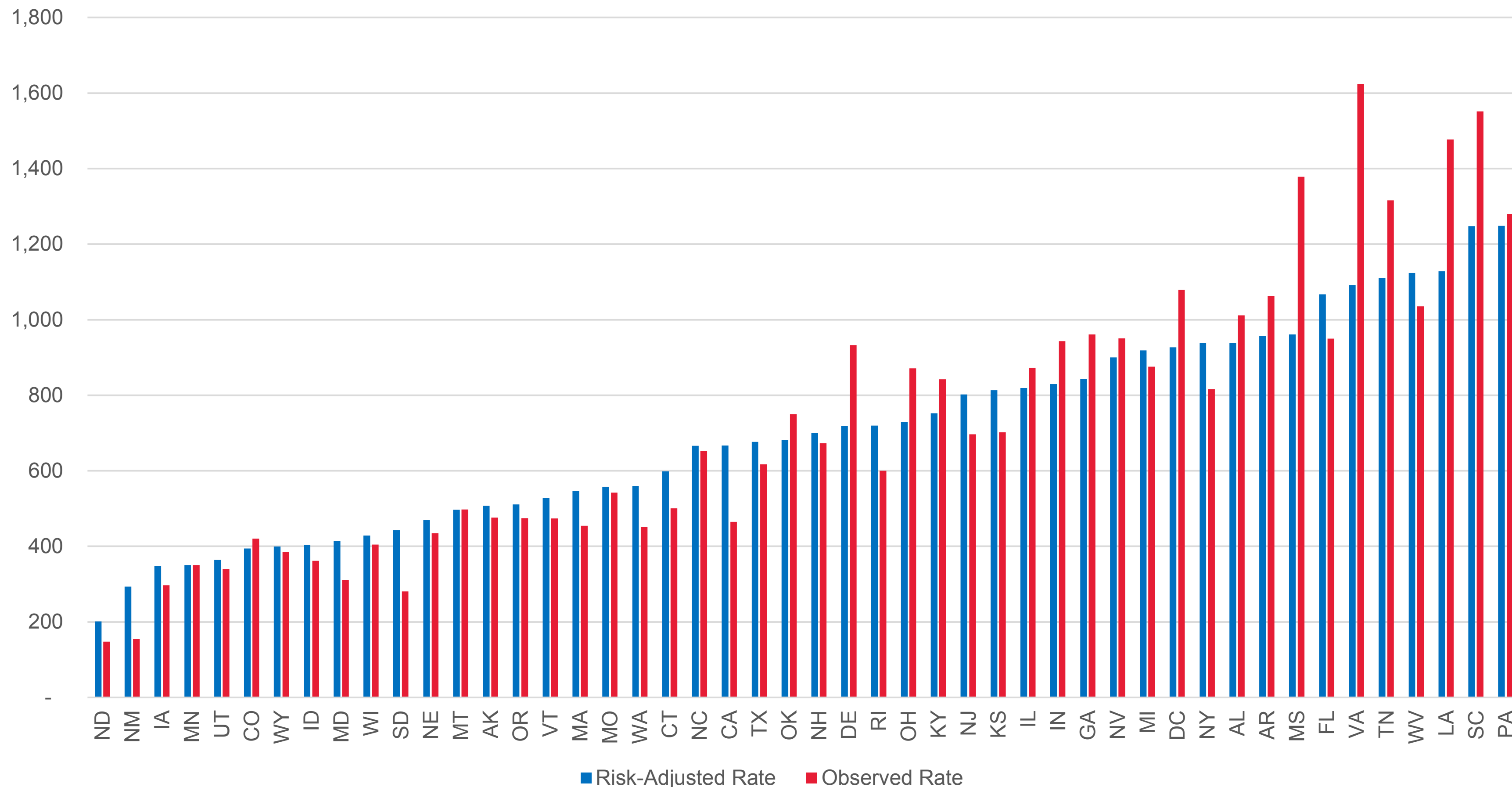
- Risk adjustment motivated by:
  - Differences in HCBS populations across states
  - Stakeholder feedback
- Potential risk factors
  - Age, gender
  - CCW comorbidity information on chronic conditions (27), disabilities (15), mental health conditions (9), and substance use disorders (2)
  - Did not include: months of HCBS use or waiver enrollment
- Final rates are indirectly standardized
  - Ratio of observed-to-expected outcomes
  - Multiplied by population rate

Final Models

- **Logistic regression (binary outcome)**
- **Separate models for MME/Dual and Medicaid-only populations**
- **Five strongest predictors**

Risk Factor	Medicaid-only OR	MME/Duals OR
Mobility Impairments	10.78	5.35
Spinal Cord Injury	6.10	8.51
Spina Bifida and Congenital Nervous System Abnormalities	3.96	5.40
Multiple Sclerosis and Transverse Myelitis	3.36	4.79
Chronic Kidney Disease	2.43	1.97

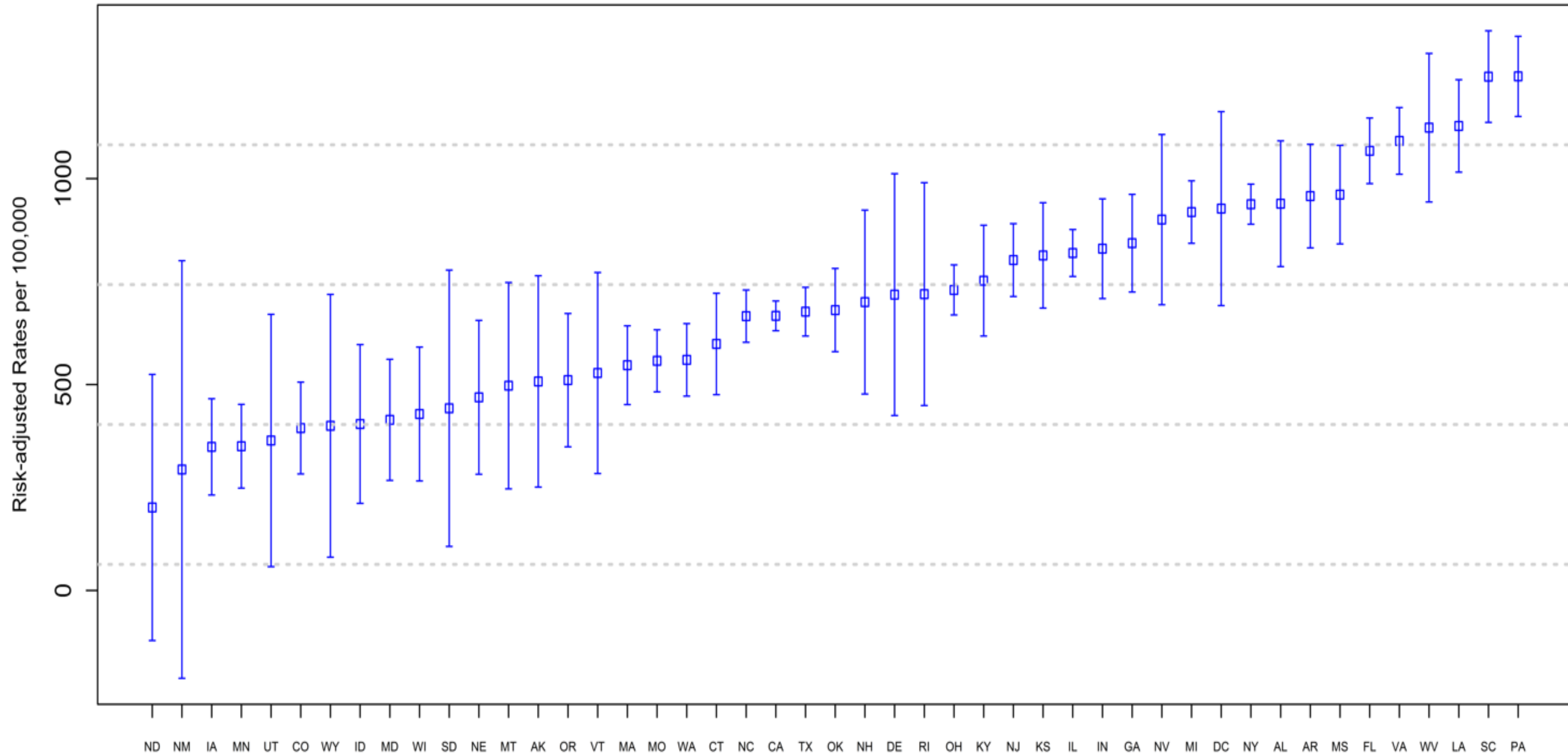
Impact of Risk-Adjustment: 2009 MME/Dual HCBS Users



Note: Rates sorted from lowest to highest MME risk-adjusted rate.

Source: Mathematica analysis of 2009 Medicaid FFS HCBS users (MMEs/Duals)

Risk-Adjusted Pressure Ulcer Rates with 95% Confidence Intervals: 2009 MME HCBS Users



Note: Tennessee is excluded due to small population size.

Source: Mathematica analysis of 2009 Medicaid FFS HCBS users (MME/Dual only)

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Additional Details in HCBS Pressure Ulcer Reports, Volumes 1 & 2

- Impact of updating numerator to identify severe ulcers
  - New coding standards
  - POA reporting requirements
- Transition from count to binary measure
  - Closer to TEP's preference: episode-based measure
- Risk-adjustment model building and selection
  - Reports risk factors and model coefficients
  - Defines all risk factors
- State-level observed and risk-adjusted rates for 2010 and recent transitioner HCBS populations

Summary

- Finalized numerator, denominator, and risk adjustment for HCBS pressure ulcer measure
  - Rates are useful for quality improvement
- Variation in pressure ulcer rates across states
  - Rates vary by MME status
  - Risk adjustment does not shift rankings much
  - 95% confidence intervals surrounding risk-adjusted rates suggest there are significant differences among states
- Future gaps to address
  - Identify pressure ulcers through other settings (e.g., wound care clinics)
  - Incorporate managed care

Acute and Chronic Composites

Overview: Acute and Chronic Composites

Scope

- Numerator: Count of ACSC hospitalizations for HCBS users
  - ACSCs grouped as acute or chronic (next slide)
- Denominator: HCBS FFS users in a state
- Risk adjusted for age, gender, chronic conditions, physical disabilities, mental health conditions, and substance use disorders

Data sources

- Medicare and Medicaid claims and enrollment data
- Risk factors are defined using the CCW algorithm (based on claims)

Populations studied

- 2009 and 2010 HCBS users
- HCBS users who recently transitioned from institutional long-term care

HCBS Acute and Chronic Composites

HCBS Composites	Component Indicators
Acute Conditions Composite (PQI 91)	1. Dehydration (PQI 10) 2. Bacterial Pneumonia (PQI 11) 3. Urinary Tract Infection (PQI 12)
Chronic Conditions Composite (PQI 92)	1. Diabetes, short-term complications (PQI 1) 2. Diabetes, long-term complications (PQI 3) 3. COPD (PQI 5) 4. Hypertension (PQI 7) 5. CHF (PQI 8) 6. Angina without procedure (PQI 13) 7. Uncontrolled diabetes (PQI 14) 8. Adult asthma (PQI 15) 9. Lower extremity amputations among people with diabetes (PQI 16)

2010 HCBS Users: HCBS Composite Events

PQI #	PQI Description	Count	Percentage of All PQI Events	Rate per 100,000 person-years
91	**Acute HCBS Composite**	**77,428**	**39.3**	**5,067**
10	Dehydration	13,109	6.7	858
11	Bacterial Pneumonia	34,355	17.4	2,248
12	Urinary Tract Infection	29,965	15.2	1,961
92	**Chronic HCBS Composite**	**119,661**	**60.7**	**7,831**
1	Diabetes Short-term Complications	3,619	1.8	237
3	Diabetes Long-term Complications	16,752	8.5	1,096
5	COPD or Asthma in Older Adults	44,324	22.5	2,901
7	Hypertension	4,615	2.3	302
8	Heart Failure	44,753	22.7	2,929
13	Angina without Procedure	1,416	0.7	93
14	Uncontrolled Diabetes	2,461	1.2	161
15	Asthma in Younger Adults	772	0.4	51
16	Lower-Extremity Amputation among Patients with Diabetes	1,948	1.0	128

Mathematica's Contribution

- Began with AHRQ contractor specifications[3]
- Convened two TEPs and one workgroup:
  - Importance of measures
  - Guidance on building risk adjustment models
  - Accounting for uncertainty from small population estimates
  - Instruction for using the measures
- Incorporated this feedback to:
  - Develop risk-adjustment models
  - Conduct reliability analyses
  - Establish framework for making statistical comparisons with the composites

[3] Schultz et al. 2012. "Development of Quality Indicators for the Home- and Community-Based Services Population: Technical Report." Available at http://www.qualityindicators.ahrq.gov/Downloads/Resources/Publications/2012/HCBS_QI_Technical_Report.pdf.

Risk Adjustment

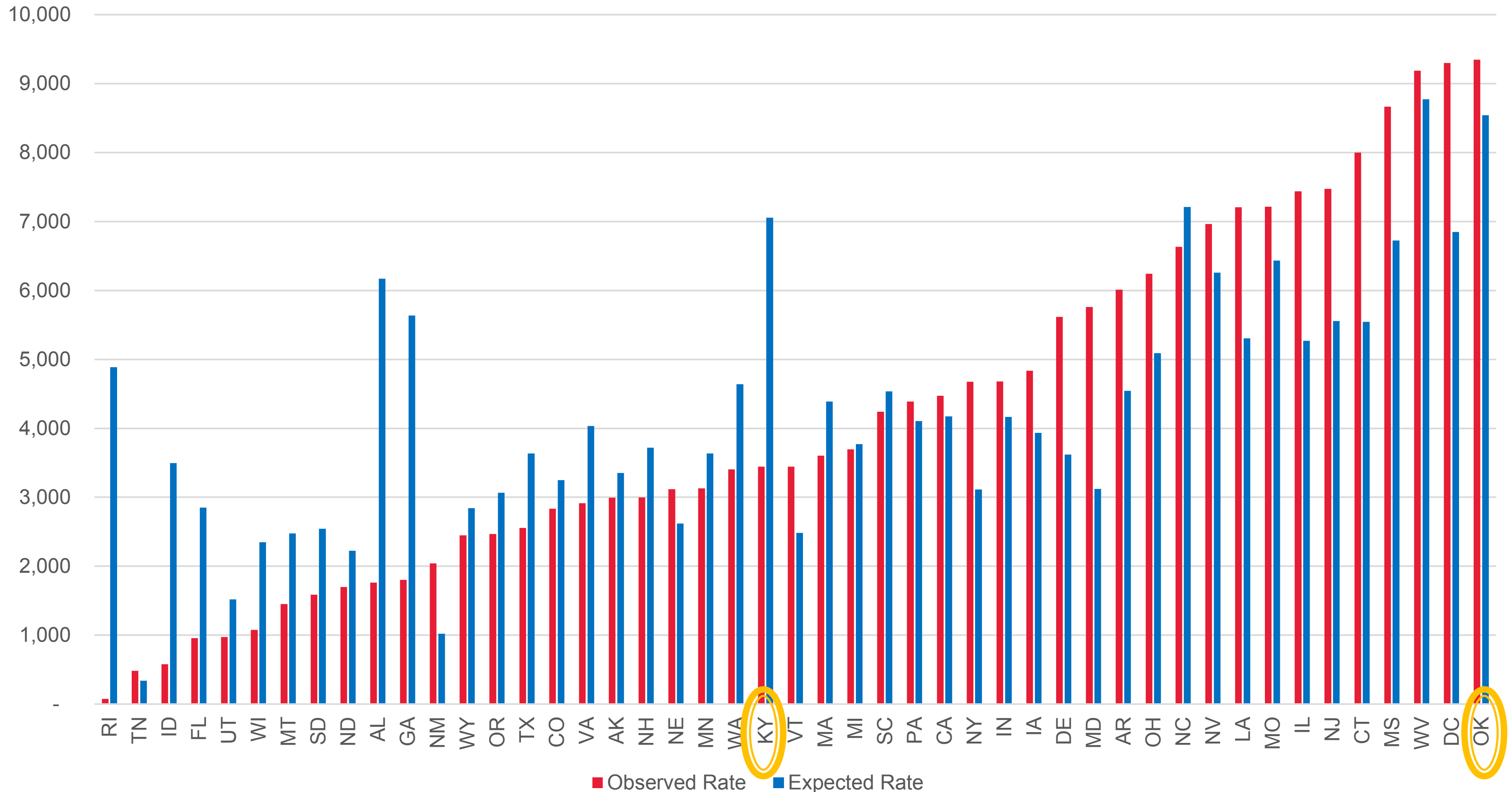
- Risk adjustment motivated by
  - Differences in HCBS populations across states
  - Stakeholder feedback
- Considered the same potential risk factors as the pressure ulcer measure
  - Prioritized those deemed important by the TEP
  - Allows risk factors to vary by MME status
- Final model structure: zero-inflated negative binomial (ZINB)
  - Appropriate for count outcome
  - Accounts for over dispersion and high proportion of zeroes
- Final rate is indirectly standardized
  - Ratio of observed-to-expected
  - Multiplied by population rate

Summary of Included Risk Factors

- **Highest relative risk factors shown below**
  - **More detail available in Volume 1 report**

Population	Acute Composite	Chronic Composite
MME	Higher Risk ○ Spinal Cord Injuries ○ MS & Transverse Myelitis ○ COPD & Bronchiecstasis ○ Age 85+, female gender	Higher Risk ○ COPD & Bronchiecstasis ○ Congestive Heart Failure ○ Chronic Kidney Disease ○ Age 85+, female gender
Medicaid-only	Higher Risk ○ Spinal Cord Injuries ○ Congestive Heart Failure ○ MS & Transverse Myelitis ○ Age 45-64, female gender	Higher Risk ○ Diabetes ○ Congestive Heart Failure ○ COPD & Bronchiecstasis ○ Age 45-64, female gender

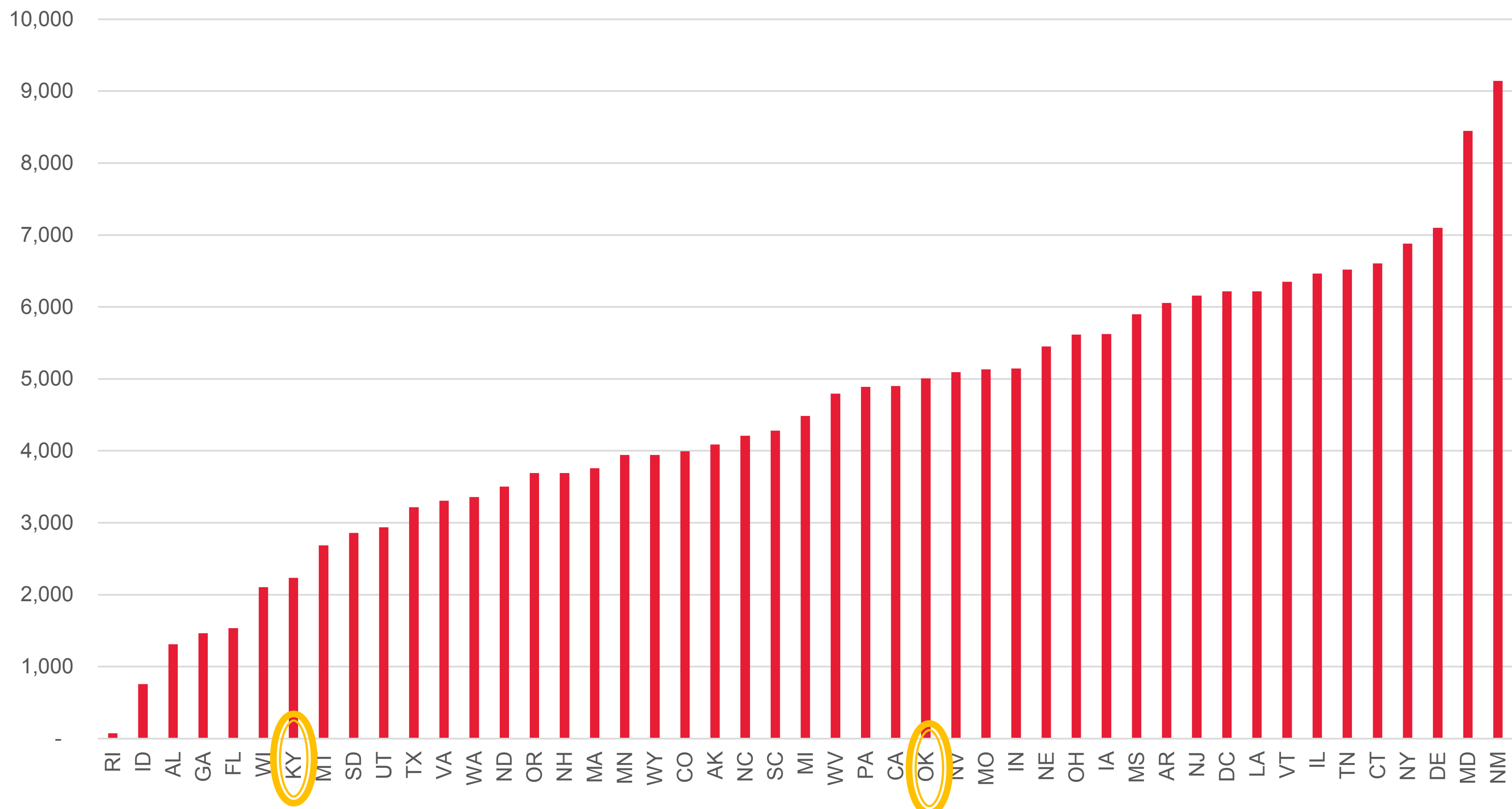
2010 Medicaid-Only HCBS Users: Observed (Unadjusted) and Expected Chronic Rates



Note: Rates sorted from lowest to highest chronic observed rate.

Source: Mathematica analysis of 2010 Medicaid FFS HCBS users (Medicaid-Only)

2010 Medicaid-Only HCBS Users: Risk-Adjusted Chronic Rates



Note: Rates sorted from lowest to highest chronic risk-adjusted rate.

Source: Mathematica analysis of 2010 Medicaid FFS HCBS users (Medicaid-Only)

Other Aspects of the Composites

Made recommendations on the following:

- **Addressing low reliability of estimates from small populations**
  - **TEP preferred minimum case size over statistical adjustment**
- **Statistical comparison framework**
- **Contextual information**

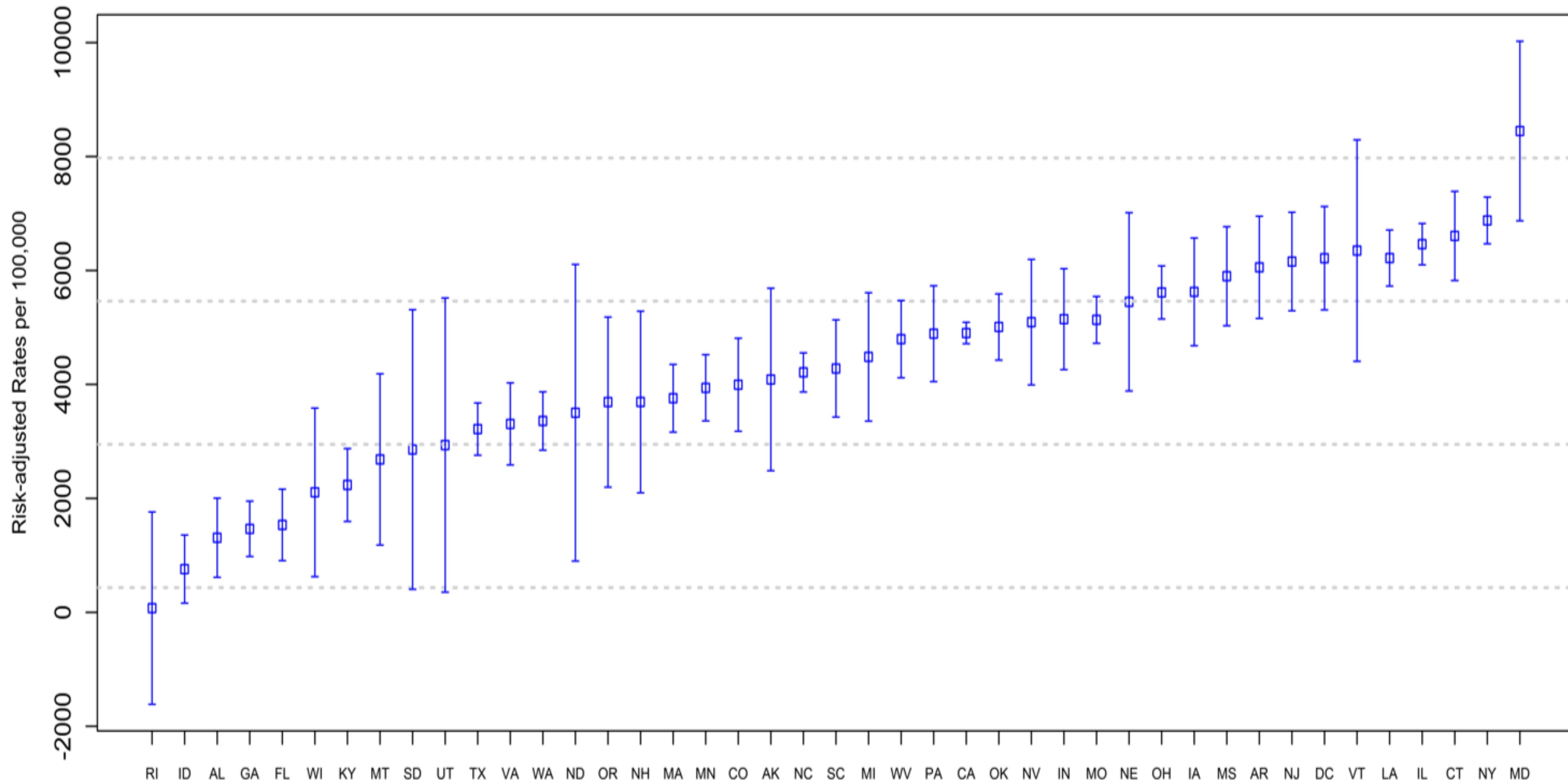
Minimum Case Sizes

- HCBS population size varies by state
  - 2,000 in New Mexico, 390,000 in California
- Minimum case size for risk-adjusted rates: 1,200
  - Determined using power calculation for 10% difference, 0.05 alpha, 0.8 beta
- A small number of states do not meet the minimum
  - MME/Duals: Tennessee
  - Medicaid-only: Delaware, New Mexico, Tennessee, and Wyoming

Statistical Comparison Framework

- Recommendations on incorporating uncertainty:
  - Test for statistical significance using 95 percent confidence intervals
- Guidance on benchmarks:
  - States prefer to determine their own benchmarks
  - Overall national rates less useful due to diversity of Medicaid programs
  - As a default, use MME or Medicaid-only national rate

2010 Medicaid-Only HCBS Users: Risk-Adjusted Chronic Rates with 95% Confidence Intervals



Note: Delaware, New Mexico, Tennessee and Wyoming excluded due to small population sizes.

Source: Mathematica analysis of 2010 Medicaid FFS HCBS users (Medicaid-Only)

Additional Contextual Information

- **The composites should be displayed with contextual information**
  - **Exclusions:**
    - Proportion of HCBS users excluded because of managed care
  - **Population trends:**
    - Hospitalization or nursing home rates in that state
  - **HCBS population:**
    - Expected rate (case mix) of HCBS population
  - **Other information on HCBS policy**
    - AARP Scorecard

Additional Details in HCBS Composite Reports, Volumes 1 & 2

- Risk-adjustment model development testing results
  - Candidate risk factors and final coefficients
- Results for 2009, 2010, and recent transitioners HCBS populations
- Testing results for:
  - Minimum case size
  - Performance categorization
  - Exceedance probability (Bayesian) approach to categorization
  - Sources for additional contextual information

Summary

- Most states have higher observed rates of chronic events vs. acute events
  - Exceptions: MT, NM, SD, TN, UT, and WY
- After risk adjustment, variation in rates remain
- Recommendations to using the composites
  - Rates are unreliable with fewer than 1,200 HCBS users
  - Statistical uncertainty must be accounted for
  - Contextual information important for interpreting results
- Future gaps to address: managed care

IV. Conclusions and Technical Resources

Goals of HCBS Quality Measures

- **These measures DO:**
  - **Provide information about the care experiences of Medicaid fee-for-service beneficiaries receiving long-term care in the community, by state**
  - **Assume a shared accountability framework**
  - **Help motivate quality improvement**

- **These measures DO NOT:**
  - **Provide information on the quality of specific HCBS providers or waivers**
  - **Include information on managed care beneficiaries**
    - Medicaid and/or Medicare managed care

Technical Resources

- Visit CMS' Money Follows the Person (MFP) website at: http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Long-Term-Services-and-Supports/Balancing/Money-Follows-the-Person.html
- To access the following resources:
  - Reports describing the measure development process in detail
  - SAS programs and documentation to assist with calculating these measures (forthcoming)
  - Recording of today's webinar (forthcoming)
- All materials will be posted by November 1, 2015

Pressure Ulcer Reports

- Volume 1
  - Iterative testing of new stage-code and binary definition
  - Detailed description of data and HCBS population
  - TEP summary
  - Final numerator and denominator specifications
- Volume 2
  - Risk-adjustment model development
  - State-level results

Composite Measure Reports

- Methods Report
  - Proposed methods for risk- and reliability-adjustment
- Volume 1
  - Numerator and denominator specifications
  - Detailed description of data and HCBS populations
  - Results of risk-adjustment model testing
  - TEP summary
- Volume 2
  - Final recommendations on risk-adjustment models
  - Testing of minimum case size, statistical comparisons
  - Benchmarks and other contextual information
  - State-level results

Measure Calculation Package

- **SAS programs to calculate the pressure ulcer measure and composites**
  - **Instructions on how to replicate our results**
    - Data sources and variables
    - Identifying HCBS users in the denominator
  - **Programs that perform the following:**
    - Identify acute inpatient hospital discharges used to calculate the measure numerator
    - Identify pressure ulcer and ACSC events
    - Produce state-level observed and risk-adjusted rates

V. Questions?

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- **HCBS Pressure Ulcer TEP members**
  - Listed in the HCBS Pressure Ulcer Reports
- **HCBS Composite Measures TEP members**
  - Listed in the HCBS Composite Measure Reports

Thank you!!