Mirror, Mirror, on the Wall, Who Needs Behavioral Health Evidence-Based Practices in California Most of All?

ESTIMATING CLINICAL NEED AMONG MEDI-CAL AND UNINSURED POPULATIONS

PRESENTED BY

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Overview

1. Background on Evidence-based practices
2. Methods to Estimate Base populations, Modeling, and Uncertainty
3. Results by County and Evidence-based Practice
4. Conclusions and Implications

Evidence-Based Practices

team-based care for people with serious mental illness (SMI) or a substance use disorder (SUD)

1

Background

FSP – Assertive Community Treatment (ACT)
Highest acuity adults with SMI & high service needs

Multi-disciplinary team delivers services – shared caseloads, 24/7 availability, client contact ratios set

FSP – Intensive Case Management (FSP ICM)
Lowest acuity adults with SMI & high service needs

Case manager coordinates across systems of care. Emphasis on linkage, advocacy, and self-sufficiency.

Coordinated Specialty Care
Individuals aged 12-65 with first episode psychosis

Team-based model as an early intervention for individuals experiencing a first episode of psychosis.

FSP – FACT (Forensic ACT)
Adults who qualify for ACT with justice involvement

ACT model adapted for adults with justice involvement. Coordinates with criminal legal system.

Sources: BHSA County Policy Manual; National Alliance on Mental Illness

Model Objectives

1

Background

Estimate Medi-Cal + uninsured populations that may have a clinical need for:

- Full-Service Partnerships (FSP)
  - Assertive Community Treatment (ACT)
    - Forensic Assertive Community Treatment (FACT)
  - FSP Intensive Case Management (ICM)
- Coordinated Specialty Care for First Episode Psychosis (CSC FEP)

Estimating clinical need ≠ who will access the service

Population Overview

2
Methods

What is our base population?

People eligible for Medi-Cal

People who are uninsured or not eligible for Medi-Cal

CA DHCS
US Census Bureau

among this base population…

Who is in our target population?

People who are living with SMI (FSPs)

DHCS
and RAND study

among this target population…

Who has clinical need?

People living with functional impairments and high clinical service needs (FSP)
People experiencing or at risk of FEP (CSC)

Simulation Model &
Meta-Analysis

Who has clinical need?

FSP EBPs Simulation Model Data Sources

2

Methods

Functional Impairment Indicators

- Unemployment rate
- Supplemental Security Income (SSI) rates
- Proportion with disability due to:
    - Challenges with daily living tasks
    - Self-care
    - Cognition

High Service Need Indicators

- SUD prevalence rates (DHCS)
- HMIS utilization rates
- PIT homelessness rates
- Psychiatric EMS visit rates
- ED discharges due to psychiatric care rates
- Inpatient psychiatric hospitalization rate
- Arrest rates
- Probation rates
- Recidivism rate among formerly incarcerated (estimated 6.7% SMI)

FSP EBPs Model Overview

2
Methods

Challenges

- Few studies in the literature that estimate SMI populations with clinical need for FSPs
- Unique county context should be reflected

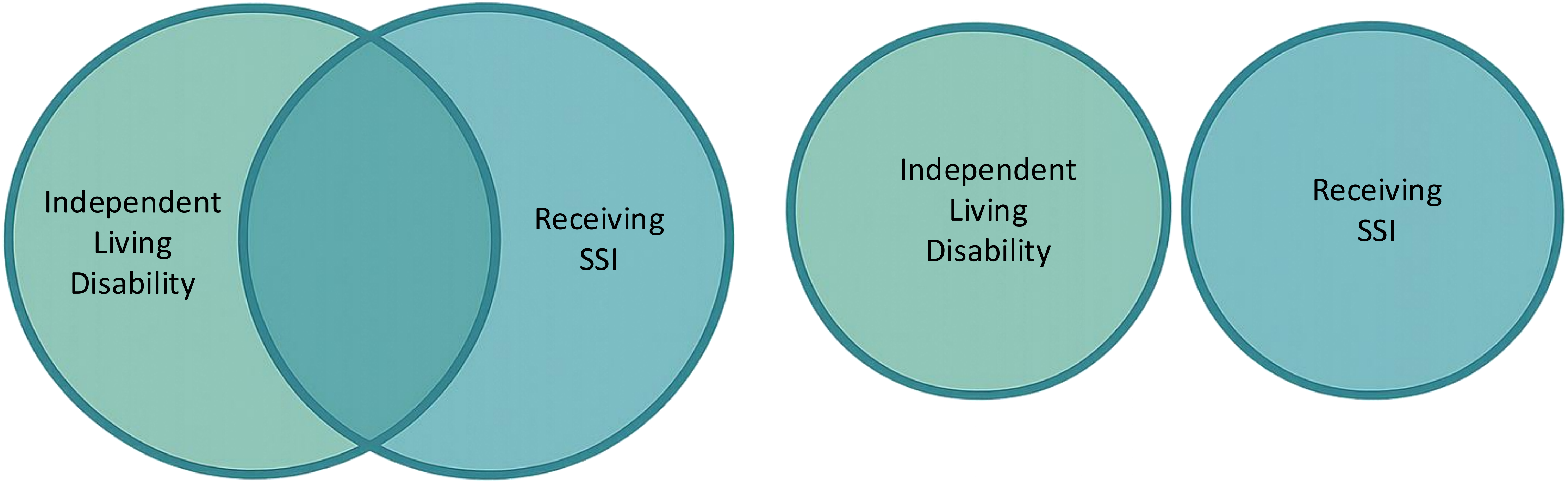
Solution
Simulation Modeling

Solution
Simulation Modeling

- Create synthetic population
- Simulate if each indicator is present for each person in the synthetic population based on population rates
- Sum total meeting FSP/IPS criteria and scale to population
- Compare simulation population rates to input rates for validity

tCopula distribution accounts for correlations between indicators

2
Methods



tCopula simulation accounts for the correlation between FSP indicators so we are not over- or undercounting populations with clinical need.

CSC for FEP Model Overview

2
Methods

Challenges

- Several studies estimating incidence of FEP by age – which to choose?
- Studies with different settings, populations, payer mix

Solution

Literature-based FEP incidence rates

+

Model to combine study estimates

Solution

Model to combine literature-based FEP incidence rates

Collect estimates of FEP incidence rates by age

Combine in a mixed effects model to generate age-specific incidence rates

Apply rates to estimated population uninsured + Medi-Cal for each age range

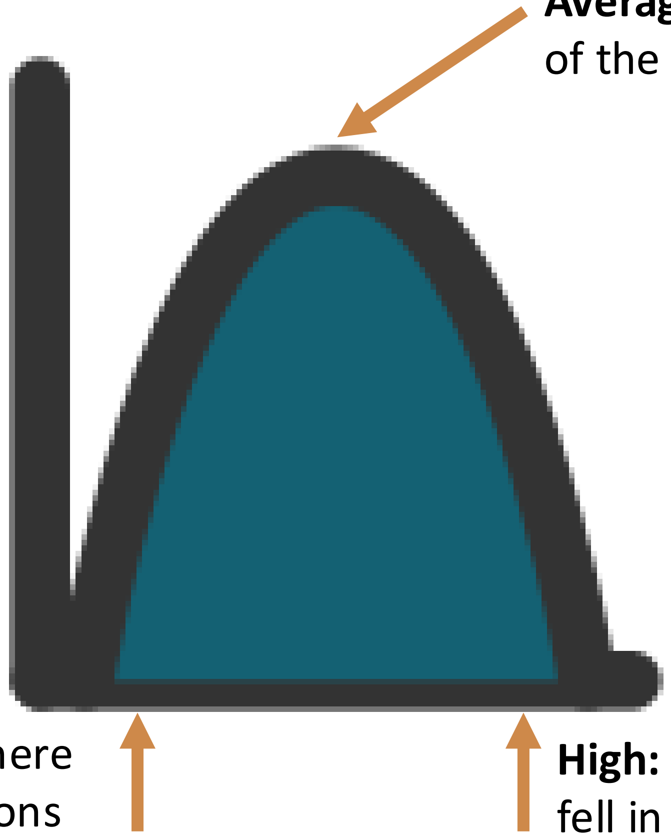
How do we handle uncertainty?

2

Methods

95% Credible Intervals: Based on the model and available data, estimates the range in which the value is expected to fall with 95% probability

Average: Where the estimate fell in most of the simulations



Low: 5th percentile of where estimates fell in simulations

High: 95th percentile of where estimates fell in simulations

Estimated 120,932 Medi-Cal + Uninsured Californians with clinical need for FSP

3

Results

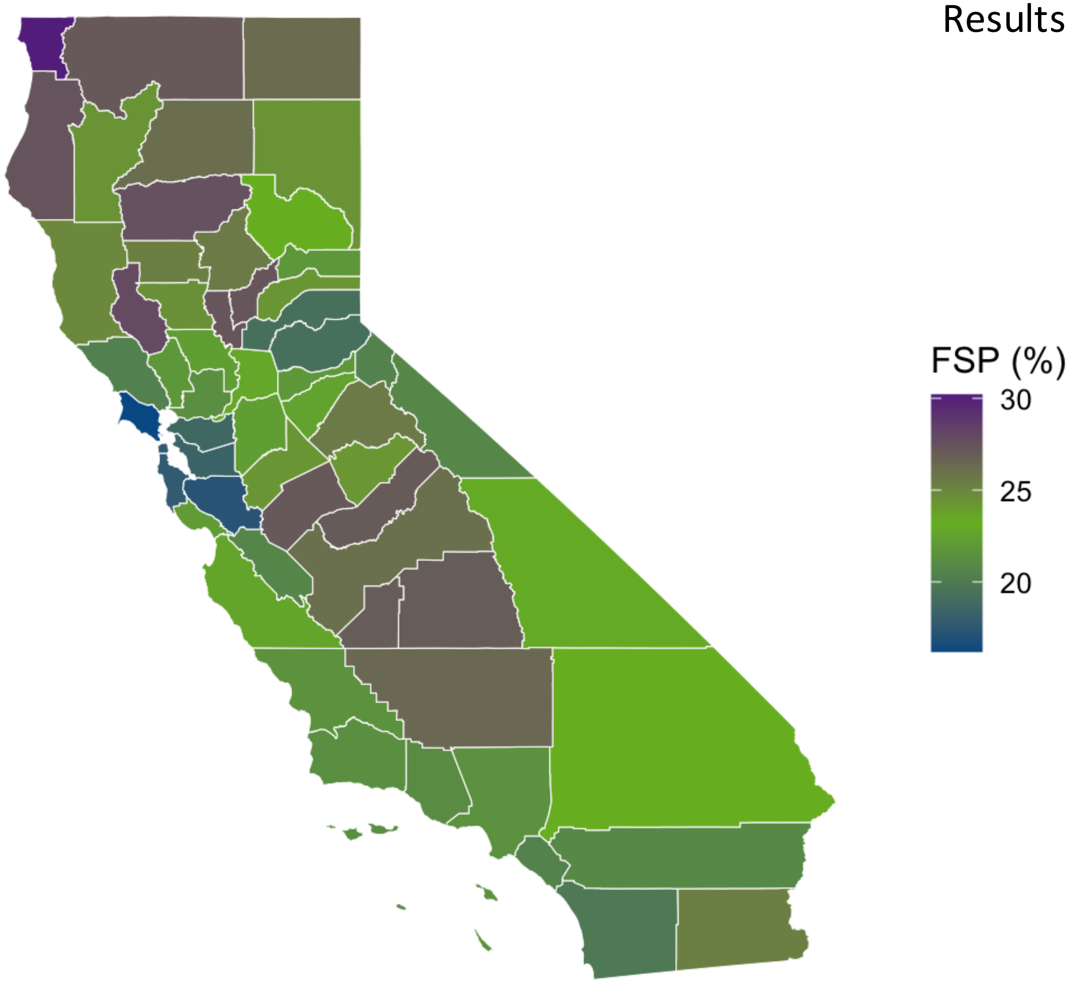
Population	# in Group (19-64)	Target Population (SMI)	Estimated FSP	Estimated % FSP Eligible
Medi-Cal	8,245,677	486,202 (464,662-507,417)	105,624 (95,559-116,183)	21.7% (20.6-22.9%)
Uninsured	1,191,137	70,234 (67,344-73,276)	15,308 (13,911-16,894)	21.7% (20.6-23.1%)

Key Takeaway

Range from **16.2% to 30.2%** of Medi-Cal/uninsured with SMI estimated to have clinical need for FSP by county

Estimated % FSP Population by County

Percentage among Medi-Cal Population with SMI

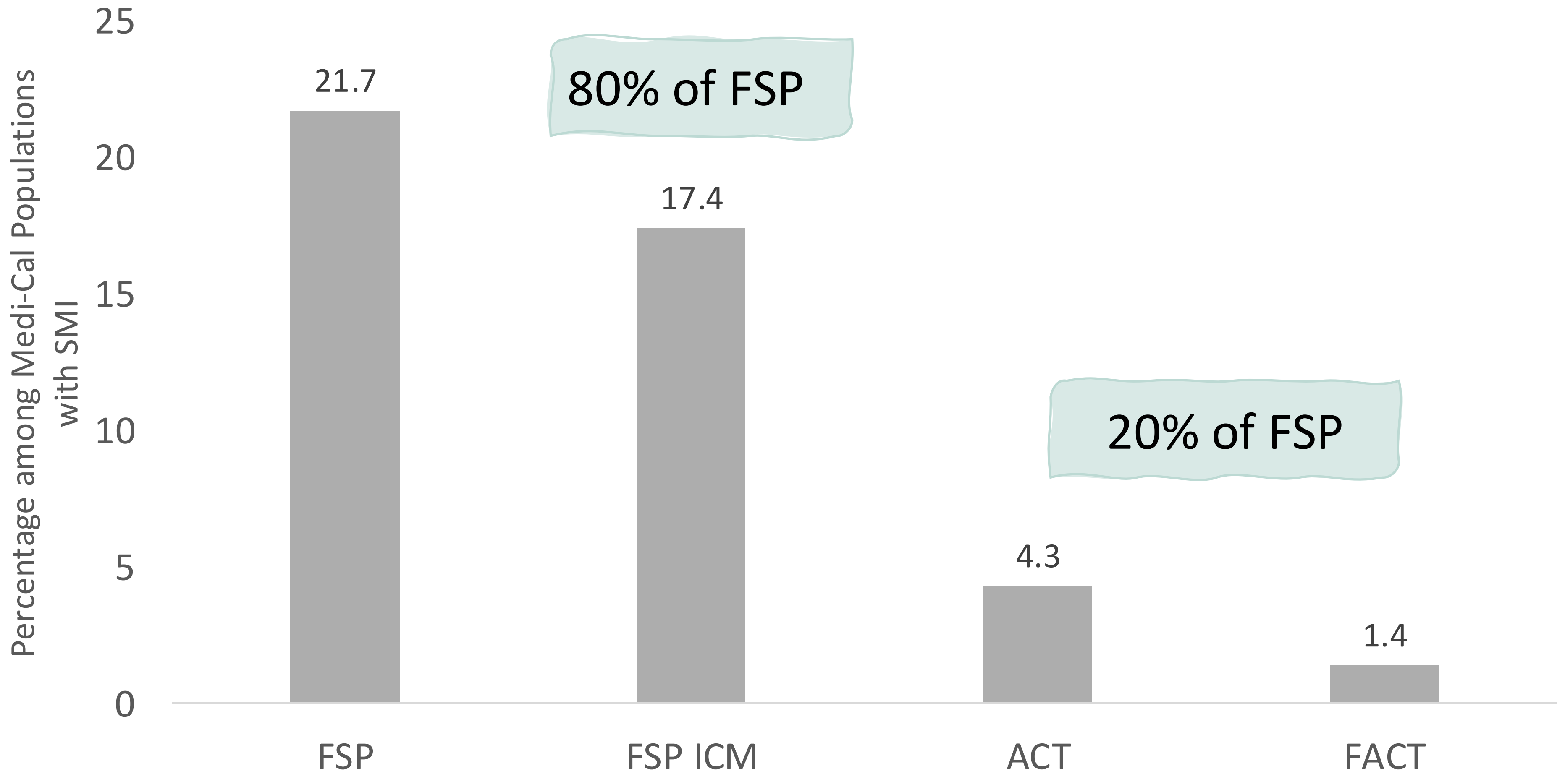


Based on diagnosis-based SMI prevalence for Medi-Cal eligible populations

Estimated % SMI population by FSP adult levels of care statewide

3

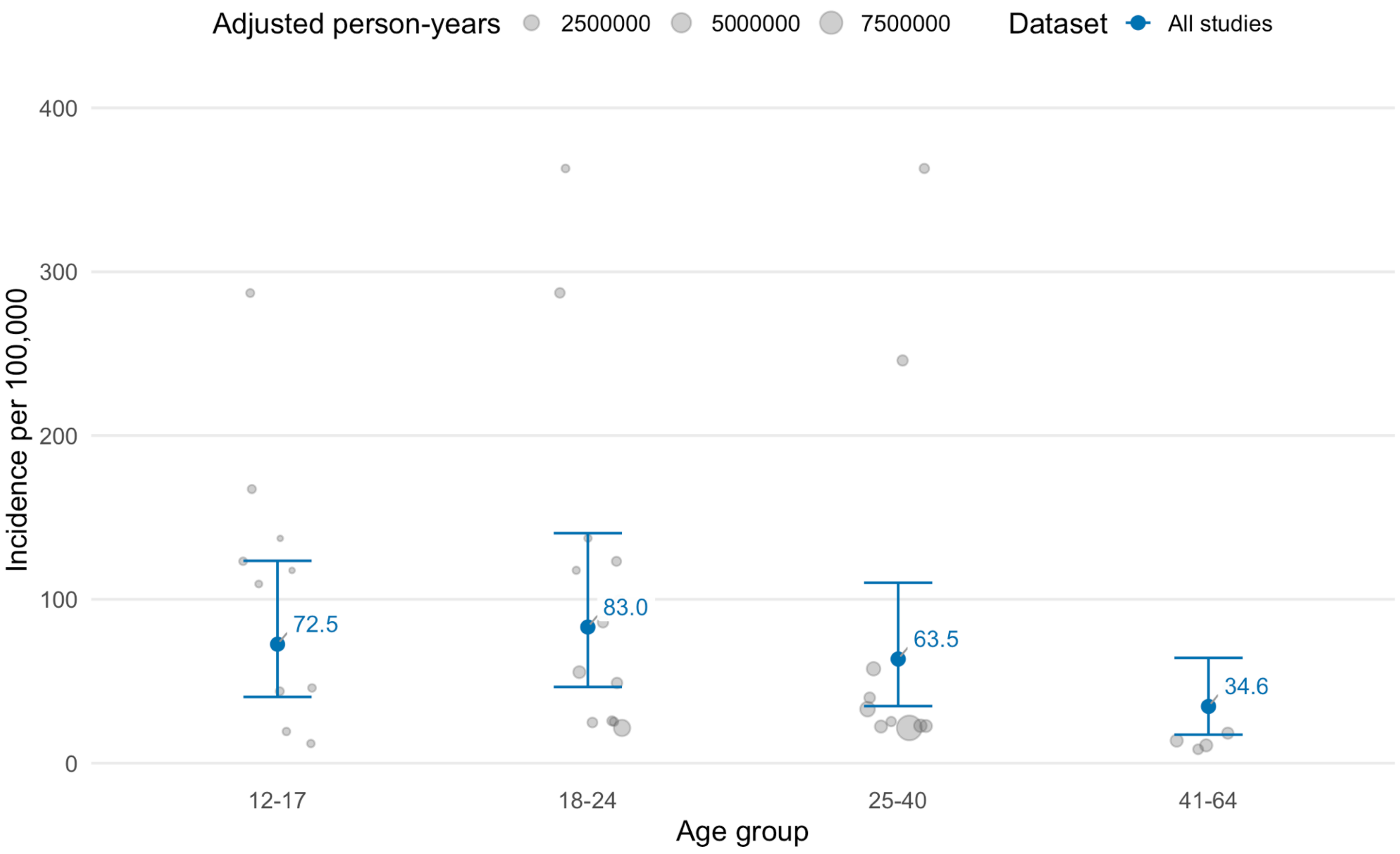
Results



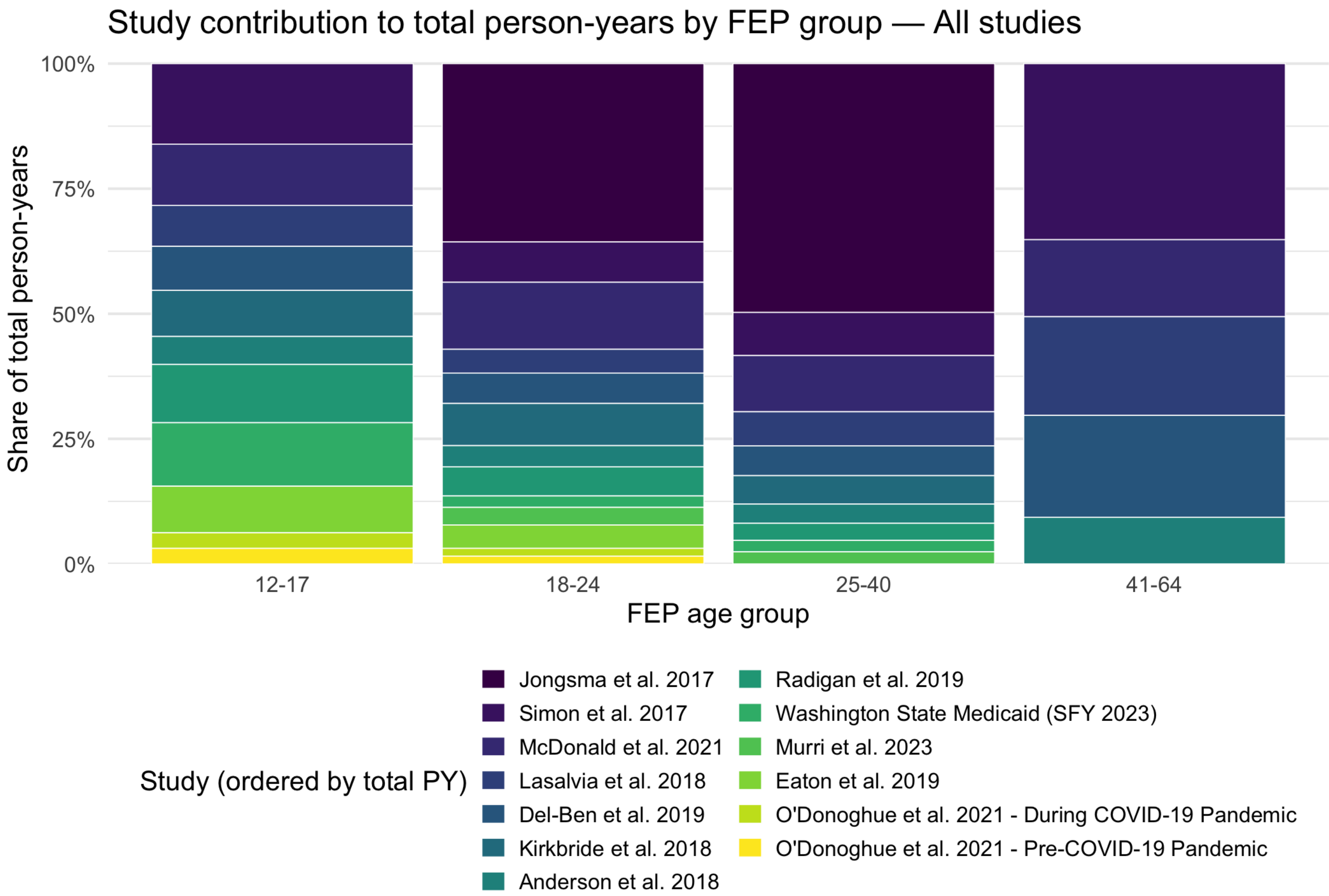
Estimated FEP Incidence per 100,000 and observed study rates weighted by person-years

3

Results



Estimated FEP Incidence highest in 18-24 age group



3

Results

Studies contributed to age groups based on:

- Sample size
- Overlap with the target age range

We have imperfect tools to measure something not currently measured

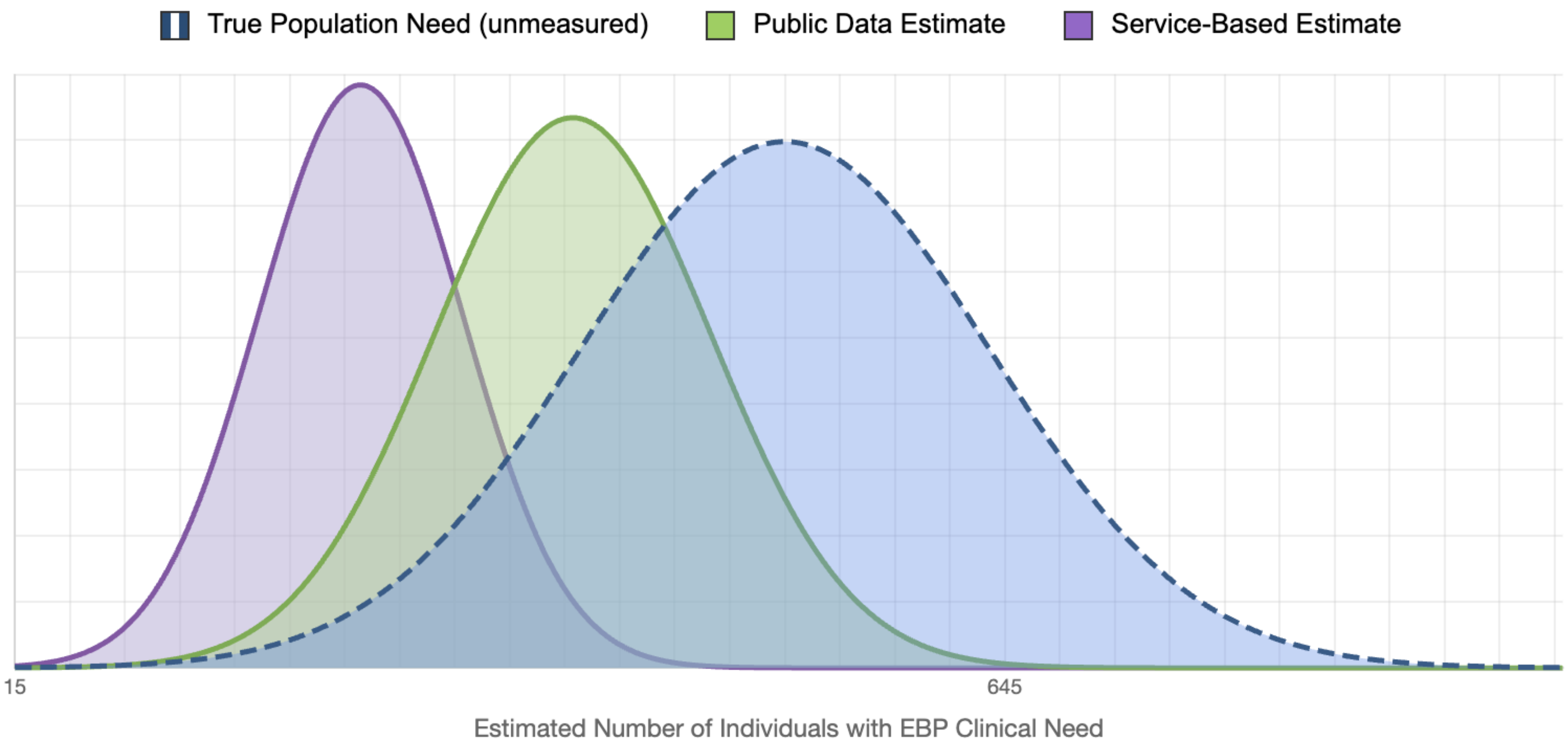
4

Conclusions

Service-Based Estimate
Estimates derived from people currently in services - typically underestimates total need because it only counts those already accessing the system

Public Data Estimate
Estimates from general population surveys and epidemiological studies, some of which are not specific to Medi-Cal and uninsured populations

True Population Need
The actual number of individuals in the community with clinical need for FSP services, including those who never access the system



*Visual and numbers for illustrative purposes and does not reflect statewide, public, or service-based estimates.

Conclusions & Implications

4

Conclusions

Model estimates can be useful for service planning

- Estimated provider teams needed based on EBP team requirements
- Plan for outreach and anticipated case loads
- For budget planning and expected costs

Important Considerations

- Contextualize estimates with local knowledge (e.g., resource capacity, existing services, local partnerships)
- Actual caseloads will depend on many factors (e.g., outreach effectiveness, acceptability)
- Uninsured estimates may be affected by shifting Medicaid policy

Thank You!

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CalMHSA

Policies have shaped EBPs in California's Behavioral Health System

1

Background

MHSA/Prop 63

Establishes "whatever it takes" community care

Counties begin using and funding FSPs

CalAIM

Enhanced Care Management for high-need adults

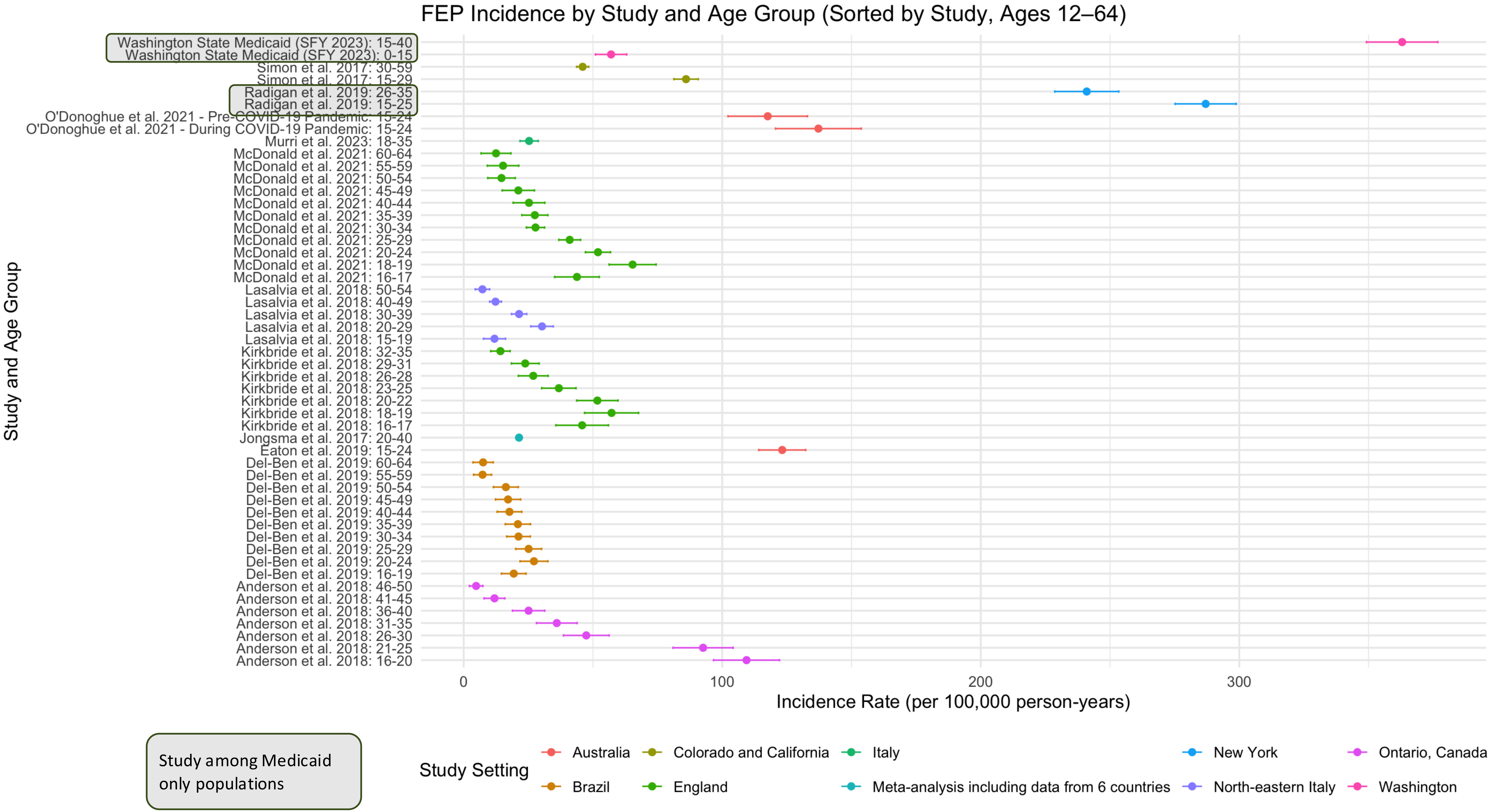
Shifts how services are funded and reported

BHSA/Prop 1

Requires counties to offer FSPs, IPS, and CSC for FEP

BH-CONNECT

Establishes opt-in bundled Medi-Cal reimbursement rates



Study among Medicaid only populations

Bayesian Hierarchical Model

1. **Standardize incidence rates for combination:** Convert all studies to annual rates per 100,000 person-years and determine percentage overlap between target age groups and study age groups
2. **Build the statistical model to summarize incidence rates:** Use Bayesian methods to estimate FEP incidence by age group while accounting for study differences
3. **Generate uncertainty estimates:** Conduct Monte Carlo simulations to capture realistic uncertainty
4. **Apply final rates to each county's age-specific estimates:** Multiply rates and 95% credible intervals from the model to each age group to generate a range of expected case counts

Bayesian Hierarchical Model

CSC Model Overview

1 **Standardize incidence rates for combination**

The Challenge with Combining Many Studies

Study	Age Range	Rate Type	Setting
Radigan et al. 2019	18-30	Person	New York Medicaid
Simon et al. 2017	15-40	Person-year	Mixed payer type
WA State Medicaid Study 2023	12-64	Person	Washington State Medicaid

Our Solution

✓**Age Groups:** Distribute each study's findings across our target age groups (12-17, 18-24, 25-40, 41-64) based on how much the result overlaps with the target range

✓**Person-Years:** Use reported rate time to calculate total observation time for proper statistical weighting

✓**Annual Rates:** Convert all rates to "per 100,000 people per year"

Bayesian Hierarchical Model

CSC Model Overview

2 Build the statistical model to summarize incidence rates

Why "Bayesian"?

Instead of a single estimate, we get a range of plausible values with associated probabilities based on:

- **Prior Knowledge** (what we expect, what is biologically plausible)
- **Data** (what we observe in input studies)

Why "Hierarchical"?

The model has **two levels:**

- **Level 1:** Overall FEP rates by age group (the "population average")
- **Level 2:** Study-specific adjustments that account for natural differences between studies

Bayesian Hierarchical Model

2 Build the statistical model to summarize incidence rates

Traditional Approach

- Relies on single point estimates
- Difficult to capture variability when combining studies
- No way to incorporate prior knowledge

Bayesian Approach

- Captures full probability distributions
- Better estimates uncertainty explicitly
- Natural framework for meta-analyses
- Can incorporate prior/expert knowledge

Bayesian Hierarchical Model

CSC Model Overview

3 **Generate uncertainty estimates**

4 **Apply final rates to each county's age-specific estimates**

Use **Monte Carlo** simulations (n=16,000) to explore all plausible scenarios given the model

- Uses the Bayesian fitted model based on input studies
- Generates new parameter values
- Creates "what if" scenarios
- Use simulation results to generate mean and 95% credible intervals

416,898 uninsured individuals who are 26-40 years old × Model rate for 26-40 years old] Run 16,000 times across possible range