Arkansas Works
(formerly Health Care Independence Program – “Private Option”)

Section 1115 Demonstration Waiver Evaluation: Data and Methodology (Past, Present, Future)

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Evaluation Questions

What were differences across access, quality, and outcomes between those enrolled in Medicaid and those enrolled in commercial QHPs? (enrollees in groups are not well balanced)

What were the differences in costs between Medicaid and premium assistance? (not all Medicaid health care costs are represented in claims)

Under what inflationary scenarios would Medicaid costs exceed differential costs of utilizing premium assistance? (scenario assessment of program costs)
# Evaluation Design - Reporting

Arkansas Health Care Independence Program Period-System Evaluation Schematic

<table>
<thead>
<tr>
<th>Program Experience</th>
<th>Start-Up</th>
<th>Steady State</th>
<th>Redetermination/Churn</th>
<th>Steady State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation Plan</td>
<td>Access</td>
<td>Quality/Utilization; Cost-Effectiveness</td>
<td>Continuity of Care</td>
<td>Access; Quality/Utilization; Cost-Effectiveness; Continuity of Care</td>
</tr>
<tr>
<td></td>
<td>May 2014</td>
<td>June 2014</td>
<td>July 2014</td>
<td>Aug 2014</td>
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January 2014 – December 2016: Final Reporting Period

Jan 2014–Dec 2014: Interim Reporting Period
Exceptional Health Care Needs Screener

- Prospectively identify “frail” individuals in the traditional Medicaid program
- Minimize complexity and improve coordination of care for the individual
- Minimize potential actuarial risk for private carriers and enhance competition
- No prior claims or diagnostic info available and no existing screening questionnaire available for this purpose
- Developed with support from health status and exceptional needs measurement experts at the University of Michigan and AHRQ
- Development and parameter analyses used National MEPS data
Enrollment Portals

SNAP Eligible

≤ 138% FPL

Arkansas Eligibility & Enrollment System

> 138% FPL

Private Plans

Federal Tax Credit

1. Premium Assistance: Not Screened
2. Premium Assistance: Screened

Auto Assigned
Plan Selected

Health Care Needs Questionnaire

Not Screened

Screened: No Exceptional Health Care Needs
Screened: Exceptional Health Care Needs (threshold)
Screened: Exceptional Health Care Needs (frail)

Medicaid

3. Exceptional Health Care Needs (threshold)
4. Exceptional Health Care Needs (frail)
5. Non-screened, Previously Eligible

Treatment | Control
---|---
Not Screened | 1 | 4
Screened | 2 | 3

5. Met automatic criteria for exceptional health care needs ("Auto-Frail"). This group includes approximately 2,000 homeless individuals.
Evaluation Design - Data Needed

Medicaid and Individual Qualified Health Plans (QHPs)

- Program enrollment and eligibility files (needed for rate denominators and addresses for access geocoding).
- Hospital, outpatient, and pharmacy claims.
- In-network plan provider listing with practice addresses.
- Supplemental payments (Medicaid only).
- Arkansas Department of Health Vital Records (Mortality and Birth – for pregnancy outcome confounders) and Inpatient Discharge data.
Evaluation Design – Other Data Available

- Exceptional Health Care Needs Screener Scores (~108K completed online screener)

| QHP 0.02 – 0.17 Composite Score | Medicaid 0.18 – 0.64 Composite Score |

Emergent ED Visits

ROC Curve for Model
Area Under the Curve = 0.5791

Non-Preventable Hospitalizations

ROC Curve for Model
Area Under the Curve = 0.6455
Legal Issues to Data Access

• Health Care Independence Program legislation included no legal clause for QHPs to submit data.
• Agreement to provide data in memoranda of understanding with qualified health plans.
• Permissive disclosure under HIPAA
  • Sought definitive guidance from Office of Civil Rights.
  • OCR refused to issue advisory opinion.
• Evaluation team received as a business associate of Medicaid.
• ARWorks legislation included mandate to supply data necessary for evaluation (APCD used).
Medicaid and Individual QHPs

• Consumer Assessment of Healthcare Providers and Systems (CAHPS) – to date fielded twice.

• All adult Medicaid and QHP beneficiary addresses, and all providers practice addresses were geocoded and distance metrics in miles and travel minutes were calculated.
Data Quality and Challenges

• 2014 data was submitted using Edge format (and messy) while 2015 and 2016 data was submitted with personal identifiers to be able to identify Private Option population
• ICD-9 to ICD-10 across time comparison
• Claims data are not plug-and-play
• Eligible individuals are enrolled in Medicaid (up to 45 days) before receiving QHP coverage
• Understanding supplemental payment disbursements and what claims, and how, to distribute is nuanced
Understanding Data
Methods – Analytic Approach

Create Comparison Groups
  - General population (individuals assigned to a QHP who did not complete screener vs traditional adult Medicaid enrollees)
  - Screened population (those who chose a QHP vs were assigned to Medicaid based on screener composite score threshold)

Statistical Techniques
  - Balanced weighting approach on General population
  - Regression Discontinuity on Screened population

Test Hypotheses of Difference Across Groups
  Access: Geographic, Realized, Perceived
  Quality of Care/Outcomes: Primary (flu prophylaxis), Secondary (Clinical Screenings) and Tertiary (Disease management)/Hospital Utilization
Analytic Data Preparation

Total 2014 newly covered 20/25/06 individuals in premium assistance
N = 224,212

Exclude those who died before time frame of analysis or with missing Gender information
N = 15

Exclude persons with less than 6 months continuous enrollment with a maximum 13 days allowable gap
N = 56,229

Exclude due to N or Medicaid Coverage or eligibility within Traditional Medicaid population
N = 304

Exclude persons with more than 1 switch between aid categories or switch from Commercial to Medicaid
N = 1,477

N = 163,867

Exclude due to Qualchoice Coverage
N = 1,191

Exclude those auto-fail (final score > 3)
N = 7,092

Exclude those with Coverage Discrepancies: i.e. Premium Assistance members who never transitioned to Commercial Coverage or were frail and placed in Commercial coverage)
N = 6,477

N = 151,429

Analyzable Study Population

General Population
Traditional Medicaid
N = 11,006
Higher Needs Medicaid
N = 10,893

Expansion Population “QHP”

Commercial Coverage
N = 124,540

Higher Needs QHP
N = 60,031
General Population QHP
N = 69,499

Not Screened
Treatment
Control

Screened

1
4
2
3

Completed Screener

Control

Did Not Complete Screener

Treatment
Methods – General Population

Stabilized Inverse Probability of Treatment Weighting

• Propensity scores are the probability of being assigned to a treatment group (i.e., a QHP) given a set of underlying characteristics

• To test for the association of plan assignment and outcome, we mitigated differences in assignment that may have been due to demographic or other factors attributing to the assignment (income was not used)
Methods – General Population

Stabilized Inverse Probability of Treatment Weighting

• Included in Propensity Score Models: Age, gender, race/ethnicity, and parent status (in addition, for indicators obtained from CAHPS, education, marital status, and obesity status were added).

• Probability of correct treatment-control assignment was good for both the overall claims and CAHPS populations (c-statistics 0.718 and 0.717, respectively).

• Weights were included using a method presented by Xu and colleagues.

Methods – Screened Population

Regression Discontinuity

• There was a sharp assignment into either the Medicaid (10,893) or a QHP plan (60,031) based on the exceptional health care needs assessment composite score cut-off of 0.18 (≥ were assigned to Medicaid)

• Discrete outcomes were modeled using generalized linear regressions:

\[
\log E(Y_i) = \beta_0 + \beta_1 Z_i + \beta_2 (X_i - X_c) + \beta_3 Z_i (X_i - X_c), \text{ is as above and incorporates an interaction between treatment assignment and difference in composite score from the cut-off.}
\]

\[
\log E(Y_i) = \beta_0 + \beta_1 Z_i + \beta_2 (X_i - X_c) + \beta_3 Z_i (X_i - X_c) + \beta_4 (X_i - X_c)^2 + \beta_5 Z_i (X_i - X_c)^2 \text{ is as above and incorporates an additional interaction between treatment assignment and the quadratic effect of the difference in composite score from the cut-off.}
\]
Methods – Screened Population

Regression Discontinuity

• No bandwidth and bandwidth models were fit separately

• Overall, those assigned to Medicaid using screener composite scores were slightly older, and disproportionately female and white than those assigned to a QHP. Locally around the cut-point, we did not see any differences across these confounders.
Methods – Screener Composite Score Distribution

Exceptional Health Care Needs Composite Score (N=70,924)

Frequency of Enrollees

QHP beneficiaries

Medicaid beneficiaries

Exceptional Health Care Needs Score
Methods - Regression Discontinuity

- Regression discontinuity
- ... in the regression lines
- ... at the cutoff

Predicted Probability of Receiving HbA1C test by Frailty Score

Frailty Score

Predicted Probability of Receiving HbA1C test

Plan: Blue, QHP: Blue, Medicaid: Red
Methods - Regression Discontinuity

A. Predicted Probability of Getting Care as Soon as Needed
B. Predicted Probability that Always Getting Care Needed Was Easy
C. Predicted Mean Count of Total Emergency Room Visits
D. Predicted Mean Count of Emergent Emergency Room Visits
E. Predicted Mean Count of Non-Emergent Emergency Room Visits
F. Predicted Mean Count of Total Hospitalization Stays
G. Predicted Probability of Having Received a Flu Shot or Spray
H. Predicted Probability of Receiving at Least One Eligible Screening
I. Predicted Probability of Diabetics Receiving an HbA1C Test
Effects of Churn Using Claims

- Beneficiaries enrolled
- Month of enrollment
- Continuous Coverage
- Redetermination
- Attrition (post-redetermination)
- Total QHP

Effects of Churn Using Claims

2014
- Jan: 54,255
- Feb: xxx
- Mar: xxx
- Apr: xxx
- May: xxx
- Jun: xxx
- Jul: xxx
- Aug: xxx
- Sep: xxx
- Oct: xxx
- Nov: xxx
- Dec: xxx

2015
- Jan: 158,348
- Feb: 181,237
- Mar: 173,142
- Apr: xxx
- May: xxx
- Jun: xxx
- Jul: xxx
- Aug: xxx
- Sep: xxx
- Oct: xxx
- Nov: xxx
- Dec: xxx

2016
- Jan: xxx
- Feb: xxx
- Mar: xxx
- Apr: xxx
- May: xxx
- Jun: xxx
- Jul: xxx
- Aug: xxx
- Sep: xxx
- Oct: xxx
- Nov: xxx
- Dec: xxx

ACHI
Effects of Churn Using Claims

- **Beneficiaries enrolled**
  - Continuous Coverage
  - Redetermination
  - Attrition (post-redetermination)
  - 20/25 MCD

- **Month of enrollment**
  - Jan
  - Feb
  - Mar
  - Apr
  - May
  - Jun
  - Jul
  - Aug
  - Sep
  - Oct
  - Nov
  - Dec

- **Data Points**
  - 2014: 55,224
  - 2015: 87,757, 84,684, 84,223
  - 2016: 78,690

- **Graph**
  - ACHI
Present/Future Challenges

Data and Methods Critique and Corrective Measure

• SIPTW may produce biased parameters.
• Too many unmeasured variables not included in propensity score model.

• Change to propensity score matching. For those with continuous enrollment we can now include 2014 clinical outcomes to better balance populations and account for key, previously unmeasured, covariates.
• Incorporate a high dimensional propensity score approach.
Present/Future Challenges

Data and Methods Critique and Corrective Measure

- Screener not validated
- Too many discrete points on screener
- Lack of sample around threshold
- Recalibration of screener and use fuzzy RD techniques

<table>
<thead>
<tr>
<th>Has a doctor ever told you that you have (or had) ...</th>
<th>Percent Not Medically Frail (n=83,632)</th>
<th>Percent Frail by Threshold (n=16,188)</th>
<th>Percent Auto-Frail (n=8,870)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
<td>7.9</td>
<td>21.2</td>
<td>21.1</td>
</tr>
<tr>
<td>High Cholesterol</td>
<td>9.1</td>
<td>23.4</td>
<td>25.9</td>
</tr>
<tr>
<td>High Blood Pressure</td>
<td>21.0</td>
<td>43.7</td>
<td>45.3</td>
</tr>
<tr>
<td>Diabetes</td>
<td>6.5</td>
<td>16.2</td>
<td>19.3</td>
</tr>
<tr>
<td>Asthma</td>
<td>8.2</td>
<td>17.8</td>
<td>18.4</td>
</tr>
<tr>
<td>Emphysema</td>
<td>0.8</td>
<td>4.1</td>
<td>4.6</td>
</tr>
<tr>
<td>a Stroke</td>
<td>0.7</td>
<td>3.0</td>
<td>6.1</td>
</tr>
<tr>
<td>Heart Disease</td>
<td>2.2</td>
<td>10.3</td>
<td>12.6</td>
</tr>
</tbody>
</table>
Present/Future Challenges

Attrition Bias

• Those that maintain continuous coverage are different than those who use Private Option/Arkansas Works for gap coverage

• Amendment to waiver will dis-enroll those earning 100-138% FPL from Arkansas Works

• Amendment to waiver will include a work requirement for many beneficiaries maintain coverage
Present/Future Challenges

Alternative Payment Methods (e.g., bundled payments)

• Difficult to obtain data measures that adhere to HEDIS measurement guidelines
Present/Future Challenges

Changes (real and potential) to Delivery System

- State shift to Medicaid block grants
- Prior to recent executive orders:
  - QHP reduced provider payments for individuals with ACS metallic plans
  - Benefit changes
- Post recent executive orders:
  - ???
New Challenges and Opportunities

• More years of data opens opportunity to strengthen design
  o Study late adopters and compare results to 2014
  o Additional years adds greater time period for survival (time-to) analyses
  o Ability to test program differences for longer term patient outcomes (e.g., mortality, stroke)

• Qualitative data collection
  o Build on Arkansas “secret shopper” studies to power rural/urban differences
  o Conduct beneficiary interviews to further study access barriers
Settled on local polynomial RD methods with optimal bandwidth
Fuzzy RD for use with recalibrated screener composite scores
Additional use of survival methods (e.g., time-to first PCP visit after inpatient discharge)
Include high dimensional covariates that are not on the causal pathway to study outcome.
Study counterfactual modeling with latent variable missing value techniques