No Legislation? No Problem! Lessons from Building a Voluntary Multi-Payer Claims Database in North Carolina

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Project overview
Data sharing strategy
Data alignment methodology
Dissemination strategy
Benefits & limitations of our approach
Project Overview

- **Background**
  - North Carolina does not have an all-payer claims database to inform stakeholders about healthcare costs/utilization

- **Objective**
  - Create a pseudo-APCD to enable stakeholders to understand key drivers of health care spending in the state

- **Collaboration between**
  - Blue Cross Blue Shield of North Carolina (BCBCNC)
  - Duke University
  - Health Care Cost Institute (HCCI)
Project Overview

- **Main tasks**
  - Harmonize methodology across institutions
  - Create aggregate data summaries at each institution (spending by county, age, sex, spending category, etc.)
  - Combine aggregate summaries across institutions
  - Disseminate results and summary data

- **Timeline**
  
<table>
<thead>
<tr>
<th>May 2019</th>
<th>Collaborative Data Work</th>
<th>June 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kick-off</td>
<td>Data Aggregation</td>
<td>Product Creation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Release</td>
</tr>
</tbody>
</table>
Data strategy

- **Data holdings**

<table>
<thead>
<tr>
<th>Insurance segment</th>
<th>Coverage</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employer-sponsored insurance</td>
<td>Selected</td>
<td>HCCI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BCBSNC</td>
</tr>
<tr>
<td>Medicare fee-for-service (FFS), 100%</td>
<td>Complete</td>
<td>HCCI</td>
</tr>
<tr>
<td>Medicaid</td>
<td>Complete</td>
<td>Duke</td>
</tr>
<tr>
<td>Medicare advantage (MA)</td>
<td>Selected</td>
<td>HCCI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BCBSNC</td>
</tr>
</tbody>
</table>

- **Requirements**
  - No patient-level data travels between institutions
  - HCCI acts as data aggregator across institutions
Many decisions to make

- Selection criteria
- Claims categorization
  - Broad categories
  - Detailed categories
- Spending & utilization measures
- Conditions of interest
- Episodes of interest
- Adjustments required prior to dissemination
Selection Criteria Considerations

- Member identification as a resident of North Carolina defined by ZIP code
  - Members were assigned a county for the duration of the study period based on their county of “residence”

- Members were not required to have prescription drug coverage to be included in the study sample
  - Potential for bias in spending from members without prescription drug coverage (e.g. Medicare FFS members with no Part D coverage)

- Each member was assigned to a primary payer group
  - Secondary payer information was not considered
Claims Categorization

- **Inpatient**
  - Valid revenue center code and at least one of the following:
  - Place of service (POS) code 21, 31, 32, 33, 34, 51, 56, or 61
  - Valid Medicare Severity Diagnosis-Related Group (MS-DRG) code (V32)
  - Room and board revenue code 100-219
  - FFS claims with a National Claims History (NCH) claim type of 20, 30, 50, or 60

- **Outpatient**
  - Valid revenue center code and not classified as inpatient
  - Includes all ambulance, dialysis, home health, and DME/prosthetics/supplies, regardless of revenue center code presence or absence
  - FFS NCH claim type 10, 40, 81, 82, and ambulance claims from the carrier file (NCH claim type 71)

- **Professional**
  - No valid revenue code
  - FFS NCH claim type of 71, 72; Method II CAH claim lines (NCH claim type 40)

- **Prescription Drug**
Claims Categorization, Detailed

- **Inpatient**
  - Acute: labor & delivery, medical, mental health & substance use, newborns, surgery & transplant,
  - Non-acute: hospice, skilled nursing facility

- **Outpatient**
  - Administered drugs & immunizations, ambulance, dialysis, durable medical equipment, emergency department, evaluation & management, home health, labs & pathology, observation, procedures, radiology services

- **Professional**
  - Administered drugs & immunizations, anesthesia, behavioral health & case management, emergency department, evaluation & management, labs & pathology, observation, procedures, radiology services
Measures

- **Spending**
  - Allowed amount: sum of the insurer payment and the copayment or cost-sharing amount from the insured
  - Out-of-pocket amount: deductible, co-payment, and cost-sharing amount paid by the insured (or a third party, e.g. Medigap or Medicaid)
  - Excludes premiums

- **Utilization wish list**
  - Acute care inpatient admissions
  - “Post-Acute Care” days
  - Outpatient
  - Number of professional services delivered (“visits”)

Chronic Condition Classification

- Chronic conditions
  - Based on International Classification of Diseases, Tenth Edition, Clinical Modification (ICD-10-CM) codes on the claim
  - How many diagnostic slots are available in each payer’s claims system?
  - Are providers/payers incentivized to include more codes than just the primary?

<table>
<thead>
<tr>
<th>Condition</th>
<th>Type</th>
<th>ICD-10-CM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>Chronic</td>
<td>F32, F33</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Chronic</td>
<td>E10, E11, E13, Z96.41, Z46.81, T85.614A, T85.624A, T85.633A, and T85.694A</td>
</tr>
<tr>
<td>Lung Cancer</td>
<td>Acute Onset</td>
<td>C34</td>
</tr>
<tr>
<td>Opioid Use Disorder</td>
<td>Chronic</td>
<td>F11</td>
</tr>
</tbody>
</table>
### Episode Classification

- Inpatient episodes defined by MS-DRG
- Utilization metric defined as episodes per 1,000
- Considerations
  - Spectrum of total FFS to capitated payments, global period rules

<table>
<thead>
<tr>
<th>Episode</th>
<th>MS-DRG or CPT</th>
<th>Days Prior</th>
<th>Days After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caesarian Section (C-Section)</td>
<td>765, 766</td>
<td>1</td>
<td>60</td>
</tr>
<tr>
<td>Vaginal Delivery</td>
<td>767, 768, 774, 775</td>
<td>1</td>
<td>60</td>
</tr>
<tr>
<td>Lower Joint Replacement</td>
<td>469, 470</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>Stroke</td>
<td>061, 062, 063, 064, 065, 066</td>
<td>1</td>
<td>90</td>
</tr>
</tbody>
</table>
Adjustments

- **Age-gender Adjustment**
  - Adjusted for age and gender to facilitate comparison across geographic areas, within payer group

- **Masking and Suppression**
  - To ensure that individuals, providers, and payers were not identifiable in the public analytic data set, we do not report data where:
    - fewer than 11 unique individuals in the age-gender-payer group in the county or state had a claim for a service in the category,
    - fewer than 5 unique providers delivered a service in the category to patients in the age-gender-payer group in the county or state, or
    - There was not a sufficient mix of payers in the county (for the employer-sponsored insurance and Medicare Advantage populations)
Dissemination strategy

- The following products were made publically available:
  - Interactive web site
  - Detailed summary data
  - Project methodology document (includes code lists & algorithms)
  - Project FAQ document
Dissemination strategy

- Interactive web site
Dissemination strategy

- Interactive web site

Explore service category variation in per-person spending across populations

Inpatient services accounted for the largest share of annual per-person spending for all populations except those with Employer-Sponsored Insurance, where the largest share of spending was on outpatient services. In contrast, outpatient spending accounted for the lowest share of annual per-person spending in Medicaid (17.8%). Prescription drug spending was a larger share of total spending for Medicare Advantage (26.6%) and Medicare Fee-For-Service (26.4%) compared to Employer-Sponsored Insurance (19.4%) and Medicaid (19.9%), which aligns with findings that prescription drug use increases with age.
Dissemination strategy

- Interactive web site

Within each population, adjusted per-person service category spending varied by county

Within a population, there was variation in adjusted service category spending across counties.

In the Medicaid population, inpatient services spending averaged $1,866 per-person in Davidson County compared to $1,350 per-person in Macon County.

Use the toggles to see how distribution across service categories varies by population. Mouseover a county to see more.

- MEDICARE FEE-FOR-SERVICE
- MEDICARE ADVANTAGE
- EMPLOYER-SPONSORED INSURANCE
- MEDICAID
Dissemination strategy

- Detailed statewide and county-level summary data (32 tables), including...

Enrollment
Total spending, overall + by age/gender
Out-of-pocket spending

Spending by category, overall + detail
- Inpatient
- Outpatient
- Professional
- Prescription

Spending, specified healthcare episodes
- Stroke
- Lower Joint Replacement
- C-Section Delivery
- Vaginal Delivery

Spending, people w/specifed conditions
- Diabetes
- Opioid Use Disorder
- Depression
- Lung Cancer

Spending for Medicare/Medicaid Dual-Eligibles
### Detailed summary data, example

Table 16. Detailed Outpatient Spending, by County

<table>
<thead>
<tr>
<th>County</th>
<th>Detail Category</th>
<th>Employer-Sponsored Insurance</th>
<th>Medicaid</th>
<th>Medicare Fee-For-Service</th>
<th>Medicare Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alamance</td>
<td>Administered Drugs &amp; Immunizations</td>
<td>$920</td>
<td>$114</td>
<td>$700</td>
<td>$504</td>
</tr>
<tr>
<td>Alamance</td>
<td>Ambulance</td>
<td>$13</td>
<td>$17</td>
<td>$127</td>
<td>$120</td>
</tr>
<tr>
<td>Alamance</td>
<td>Dialysis</td>
<td>$72</td>
<td>$5</td>
<td>$535</td>
<td>$163</td>
</tr>
<tr>
<td>Alamance</td>
<td>Durable Medical Equipment</td>
<td>$25</td>
<td>$23</td>
<td>$189</td>
<td>$120</td>
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<tr>
<td>Alamance</td>
<td>Emergency Department</td>
<td>$287</td>
<td>$360</td>
<td>$341</td>
<td>$295</td>
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<tr>
<td>Alamance</td>
<td>Evaluation &amp; Management</td>
<td>$63</td>
<td>$14</td>
<td>$149</td>
<td>$56</td>
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<tr>
<td>Alamance</td>
<td>Home Health</td>
<td>$1</td>
<td>$245</td>
<td>$434</td>
<td>$239</td>
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<tr>
<td>Alamance</td>
<td>Labs &amp; Pathology</td>
<td>$110</td>
<td>$30</td>
<td>$61</td>
<td>$57</td>
</tr>
<tr>
<td>Alamance</td>
<td>Observation</td>
<td>$37</td>
<td>$11</td>
<td>$18</td>
<td>$48</td>
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<tr>
<td>Alamance</td>
<td>Other</td>
<td>$87</td>
<td>$6</td>
<td>$148</td>
<td>$70</td>
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<tr>
<td>Alamance</td>
<td>Procedures</td>
<td>$518</td>
<td>$233</td>
<td>$901</td>
<td>$693</td>
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<tr>
<td>Alamance</td>
<td>Radiology &amp; Imaging</td>
<td>$341</td>
<td>$88</td>
<td>$307</td>
<td>$290</td>
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<tr>
<td>Alexander</td>
<td>Administered Drugs &amp; Immunizations</td>
<td>$1,147</td>
<td>$106</td>
<td>$498</td>
<td>$513</td>
</tr>
<tr>
<td>Alexander</td>
<td>Ambulance</td>
<td>$22</td>
<td>$14</td>
<td>$163</td>
<td>$98</td>
</tr>
<tr>
<td>Alexander</td>
<td>Dialysis</td>
<td>-</td>
<td>$4</td>
<td>$220</td>
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<tr>
<td>Alexander</td>
<td>Durable Medical Equipment</td>
<td>$16</td>
<td>$34</td>
<td>$229</td>
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<tr>
<td>Alexander</td>
<td>Emergency Department</td>
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<td>$222</td>
<td>$250</td>
<td>$223</td>
</tr>
<tr>
<td>Alexander</td>
<td>Evaluation &amp; Management</td>
<td>$30</td>
<td>$5</td>
<td>$124</td>
<td>$54</td>
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<tr>
<td>Alexander</td>
<td>Home Health</td>
<td>$1</td>
<td>$173</td>
<td>$381</td>
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<td>$91</td>
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<td>Alexander</td>
<td>Observation</td>
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<td>$8</td>
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<tr>
<td>Alexander</td>
<td>Other</td>
<td>$76</td>
<td>$18</td>
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<td>$109</td>
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<tr>
<td>Alexander</td>
<td>Procedures</td>
<td>$429</td>
<td>$263</td>
<td>$876</td>
<td>$714</td>
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</table>
Dissemination strategy

- Project methodology document (incl. code lists/algorithms)
- Project FAQ document
Limitations of our approach

- Person matching across data holdings is impossible
  - Potentially a limitation in a traditional APCD

- Complex risk-adjustment not possible

- Ensuring data consistency is challenging
  - Structure of each contributors’ data holdings differs with inherent differences in the claims
  - Where possible, service categories were re-arranged
  - Categories differ from the native source reporting
  - Must consider benefit design

- Multiple teams needed to execute analysis
## Limitations of our approach

- **Incomplete coverage**
  - ~60% of NC residents in analysis

<table>
<thead>
<tr>
<th>In analysis</th>
<th>Not in analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicaid (18%)</td>
<td>Military (7%)</td>
</tr>
<tr>
<td>Medicare (15%)</td>
<td>Other Group Insurance (14%)</td>
</tr>
<tr>
<td>Combined ESI Holdings (27%)</td>
<td>Individual Market (6%)</td>
</tr>
<tr>
<td></td>
<td>Uninsured</td>
</tr>
<tr>
<td></td>
<td>Uninsured (13%)</td>
</tr>
</tbody>
</table>

* Estimates based on data from the American Community Survey, Tricare, the VA, and the Center for Consumer Information and Insurance Oversight (CMS)
Benefits of our approach

- No need to set up a new data warehousing system
- Potential for faster time to development of insights
- Potentially less expensive approach to an APCD
- Does not require legislation, just eager and curious organizations
Thank you!