**BACKGROUND**

- Distributed Research Networks (DRNs) have strengths over single data sources in identifying rare exposures and outcomes by executing distributed analytic programs in a standardized data structure using common data model (CDM)

- DRN users do not have direct access to data, requiring preliminary analysis to be performed in a test dataset to specify analytic program details (such as error identification in analytic programs and final model decisions) before program package distribution to data partners (Figure 1)

- Representativeness of the test dataset to the target DRN is important in ensuring the appropriateness of analytic decisions

**OBJECTIVE**

To assess the comparability of Sentinel Distributed Database (SDD) to its test dataset

**RESULTS**

Demographic Characteristics (Figure 2)
- Majority of members were 19-64 years of age in both the SDD (66%) and test dataset (68%)
- SDD had substantially more members aged 65 and older (17% vs 6%)
- Both datasets had even sex distributions and primarily unknown race and ethnicity information

Health Plan Enrollment (Figure 3)
- Members in the test dataset had a shorter median (IQR) enrollment of 14 (27) months
  - 18 (30) – 30 (51) months for the 4 national data partners
  - 24 (36) – 58 (111) months for the 12 regional data partners
- Members in the test dataset were more likely to have both drug and medical coverage (73% vs 64%)

Health Care Utilization (Figure 4)
- Diagnoses and prescription fills in the SDD and test dataset:
  - “~90% of diagnoses came from outpatient settings for both datasets
  - Median days’ supply was 30 (2) and 30 (3) days
- Median length of stay in the SDD and test dataset:
  - Similar for inpatient hospital admissions with 4 (3) vs 3 (3) days
  - Different for non-acute institutional admissions with 13 (24) vs 6 (9) days

**ACKNOWLEDGEMENTS/DISCLOSURES**

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- The authors have no conflicts of interest to disclose

**CONCLUSIONS**

- Overall, the SDD and test dataset are comparable in most member demographics, as well as dispensing and health care encounter characteristics
- Before finalizing analytic specifications, SDD users should be aware of limitations on test results based on data with lower proportions of older adults and shorter enrollment periods, compared with SDD results
- Future upgrades of Sentinel's test datasets should address these issues to improve generalizability to SDD

**METHODS**

**Sentinel Distributed Database**
- 4 national data partners using claims data
  - ~199.1 million members total
  - 86% of SDD
- 12 regional data partners using claims and integrated delivery systems
  - ~31.2 million members total
  - 14% of SDD
- 1 data partner with electronic medical record-based data was excluded
- Data remain at each data partner site with aggregate data available to Sentinel Operations Center

**Sentinel's Test Dataset**
- 5% randomized sample of two data streams:
  - Truven Health MarketScan® Commercial Claims and Encounters Database
  - Truven Health MarketScan® Medicare Supplemental Database
- Transformed into the Sentinel CDM
  - ~6.0 million members total

**Data Analysis**
- We conducted descriptive analyses on member demographics, health plan enrollment, characteristics of diagnoses and prescription fills, and length of stay for inpatient hospital and non-acute institutional admissions

**Table 1. Composition of SDD and Sentinel's Test Dataset**

<table>
<thead>
<tr>
<th></th>
<th>Sentinel System</th>
<th>Truven Health MarketScan®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Start Date</td>
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<td>1/1/2010</td>
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<tr>
<td>Data End Date</td>
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<tr>
<td>Number of Members</td>
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