Methodology and Background for Patient Migration Interactive Report

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Tableau File

Version: Patient-Migration_2014-2019_v7

SQL code

Version: Patient_Migration_SQL_Attachment2a, Patient_Migration_ACO_Attachment2b
Each year of data is queried separately to attribute patients to a location in each year and month. Medicare ACO Fee For Service equivalent dollars are included in the Medicare totals, using the code from Attachment2b. Both sets of SQL code are needed to query all years of data.
For each year, the file was exported separately and then combined in R Studio to be cleaned and combined to make one large file representing data from years 2014 through 2019. This single flat file is used in Tableau for the interactive report.

Data dictionary

Version: PatientMigration-DataDictionary-Attachment3
Each raw data file contains 15 variables, listed on Tab 1 of the Data dictionary file. Note: In the creation of the Tableau visualization, we created additional variables, sets, and calculated fields. These are in addition to the 15 variables from the original data files. Details regarding the creation of the Tableau visualization are available upon request.
Below is a list of terms used widely throughout the report, and their definitions:

- Hospital Service Area (HSA) is the Vermont Department of Health Version 4 definition. An HSA is the geographical region corresponding to zip codes/towns where patients from the nearest hospital would discharge to.
    - Home HSA or HSA of Residence is defined by the zip code or zip codes included on the patient's eligibility record in the claims database. In this report, we allow patients to live in more than one zip code in the calendar year.
    - HSA of Care is defined by the zip code included on the provider record for the physical address associated with the provider's practice. We do not limit to hospitals in this report, rather the HSA of Care includes all providers and all types of care.
- Spend/expenditure is calculated by the total paid by insurances and the total expected* out of pocket amount. We say expected out of pocket because we do not have record of the actual amounts paid by patients to the providers.
- Medical claims are defined by claims submitted for medical procedures.
- Pharmacy claims are any purchase of a prescription from a retail pharmacy. These do not include the claims and expenditures for pharmaceuticals provided during a medical visit.
- Year is defined by the calendar year in which the patient receives the medical or pharmacy service.
- Insurance is defined as the primary insurance responsible for paying the claims.

- Medicare includes those Dual-Eligible with Medicaid and includes Medicare Advantage.
- Medicaid includes all types of Medicaid eligibility.
- Commercial includes everything non-Medicare and non-Medicaid, and by limiting to the primary insurance for the claim, consequently, also excludes behavioral health carve out plans and supplemental plans.

Data cleaning

The following data cleaning steps were applied.

Claim Selection

We selected claims which were non-orphaned, paid as primary and not duplicates with other third-party payers or managed care. We do not include claims from secondary payers to avoid duplicate services; the money spent by secondary payers on behalf of the patients is captured under the expected member share portion of the total allowed amount. We also grouped claims by medical or pharmacy. The total allowed amount for both claim types is the total paid by insurance plus the expected member share.

Patient selection

Based on the patient eligibility record, we identify those who have a home zip code for Vermont. We also store the patients' age in the month of eligibility and biological sex. Any patients who have inconsistent ages in the month or year, or inconsistent biological sex listed from their primary payer, are dropped from the analysis. We store both the minimum and maximum age in the year to create age ranges based on max age.

Patient hospital service area attribution

For each month of eligibility, the patient record has at least one associated Vermont zip code. This Vermont zip code is then mapped to the Vermont Department of Health Hospital Service Area version 4.

Provider hospital service area attribution

Provider data is mapped to via the paid claims. We use the consolidated provider record along with a curated list of zip codes representing Vermont hospital service areas and neighboring states hospital services areas (New York's Albany Medical Center area and New Hampshire's Dartmouth Hitchcock area) (Attachment 4). Any zip codes that do not fall within Vermont or those two additional health service areas are listed as Other Non-Vermont regions. Lastly, the zip codes used are based on the consolidated provider record's physical zip code. Other choices were mailing or pay to zip codes, but we felt that physical zip codes best represent the geographical distribution of providers.

Data summary

Version: Patient-Migration-Data-2014-2019-Attachment5.xlsx

This report is based on the resident perspective, i.e. where the patient is going for care. We have another, separate report covering the provider perspective, which describes where patients travel from for care. This second, separate report is the Patient Origin work and can be found here (link pending). An example of patient migration is: *for residents of the Barre hospital service area, what can conclude about*

where they go for care? Does that change over time? To report on patient migration at the population level, we use the hospital service area of residence and primary insurance type as these have the greatest impact on migration. Other variables available for analysis are: patient age range, patient gender, claim count, and average out of pocket amount. The summary file is created by aggregating total spend for every patient, month of eligibility, payer, HSA of residence, and HSA of care. Note, within this data structure, patients can live in more than one area in the year and month, and we also count visits to more than one HSA in the year and month. We allow these multiples over time because this most accurately represents the complete migration of populations. Also note, this report includes all provider types and all services within the HSA, not just those occurring at the hospitals.

The data are based on administrative claims for most of Vermont's insured population (see VHCURES Overview for more information and limitations). Additional limitations specific to this report are listed here:

Payments

- Not all medical and pharmacy expenditures are captured on insurance claims. For example, capitated arrangements between insurers and providers, some case management payments, and pharmacy rebate payments are all examples of important areas of health care spending that are not included in claims.

- Fee-for-service (FFS) equivalent expenditures for Medicare beneficiaries attributed to an Accountable Care Organization (ACO) are included because they are the source used for determining the ultimate cost of care by Medicare. Medicaid FFS equivalencies are excluded because the prospective payments are not reconciled to claims-level expenditures. As a result, this analysis underestimates the total spending associated with Medicaid beneficiaries aligned to an ACO.

Claims Run Out

- This report uses VHCURES extract 250, with paid claims through 3/31/2020 for Commercial and Medicaid, and incurred claims through 12/31/2019 for Medicare. Although claims run out will affect the total spend for all insurance types, we expect Medicare expenditures to be more impacted due to the way the extract is received.

Publication information

This Tableau interactive report was approved by the GMCB in December 2019 as part of the two-year analytic plan, designed to support their regulatory work (link here). Preliminary data tables for the 2018 calendar year and for all payers was shared with the GMCB and GMCB Finance Team as part of the non-financial reporting for the hospital budget guidance. The completed report and visualization presented to the GMCB on August 5, 2020 and is now publicly available on the GMCB Data and Analytics website.

Phase 2 Recommendations for 2021

We acknowledge that patient migration trends often lead to questions of "why" patients go where they go for care. We are interested in further exploring this question using service line information on patient diagnoses or for example, identifying tertiary care. Adding such details would be interesting and informative, but would require additional time to develop and test. Therefore, we propose this addition be incorporated into Phase 2. Also, as of June 2020, the analytics team has member-level files available

that summarize the ACG risk score per member, per year, and per insurer. We think this field could add another interested dimension for the patient demographics portion of this report. However, in the interest of completing the report we did not incorporate the ACG risk score in Phase 1. We recommend further investigation into the correct way to assign and utilize this new information. Lastly, based on some additional recommendations from the VT Office of the Health Care Advocate, we will investigate meaningful measures for describing the patient's share of total expenditures to be incorporated in Phase 2.