

Assessing the Completeness of Medicare Claims Data for Measuring COVID-19 Vaccine Administration

Throughout the COVID-19 public health emergency, the Centers for Medicare & Medicaid Services (CMS) has tracked and reported on COVID-19 cases, hospitalizations, and disparities among Medicare beneficiaries. Following the emergency use authorization (EUA) of the first COVID-19 vaccine in December 2020, CMS began assessing the feasibility of using Medicare claims data (i.e., fee-for-service claims) to similarly track the administration of the COVID-19 vaccine among the Medicare population.

This paper presents preliminary data on the count of individuals ages 65 and older with at least one COVID-19 vaccine dose, as reflected in the Medicare claims data, compared to data reported by the Centers for Disease Control and Prevention (CDC), using data available as of June 4th, 2021. The purpose of this paper is to inform researchers and the public about the limitations of using the Medicare claims data for any analysis related to COVID-19 vaccine administration.

CMS estimates that we have a claim for COVID-19 vaccine administration for roughly half of Medicare beneficiaries who have received the COVID-19 vaccine. This is because many providers are administering vaccinations free of charge. However, CMS does not have a way to determine which beneficiaries received their vaccine from non-Medicare billing sources, or how the demographic profiles of these beneficiaries may differ from those with a Medicare COVID-19 vaccine administration claim. As a result, we recommend significant caution when analyzing COVID-19 vaccine administration using administrative claims data, including for the measurement of disparities in vaccination rates among sub-populations.

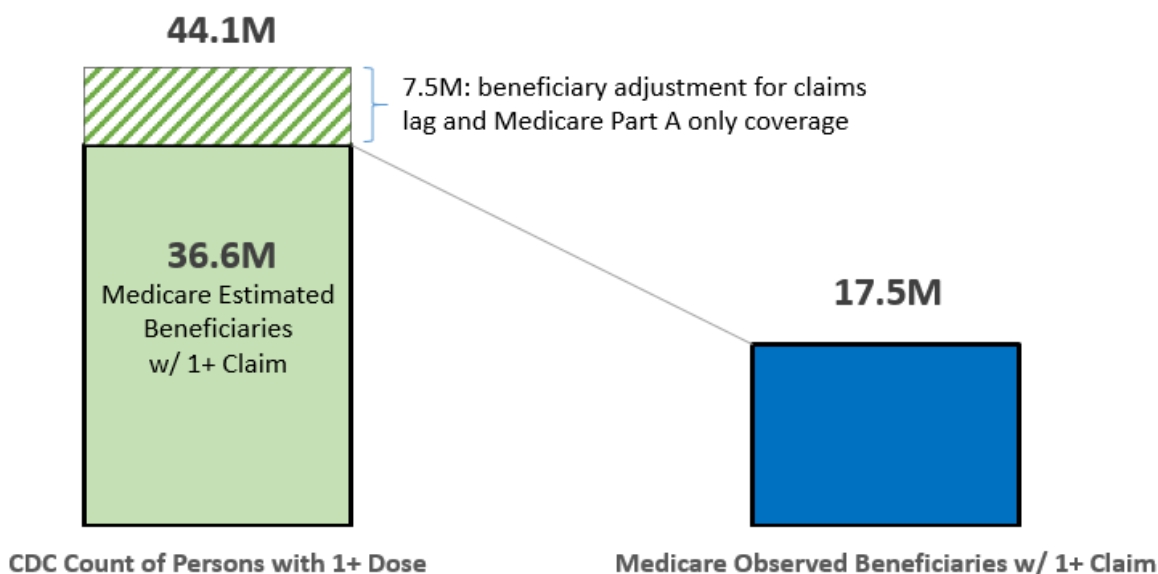
Findings: Comparison between CMS (Medicare) Data and CDC Data

Figure 1 presents three key data points (all figures exclude Texas):

- **44.1 million** = the count of individuals aged 65 and older with at least one COVID-19 vaccine, reported by the CDC as of June 4th.
 - **7.5 million** = our estimated adjustment to the CDC count of 44.1M to account for claims lag and Medicare beneficiaries only enrolled in Part A since these factors could impact the number of beneficiaries we expect to observe with a COVID-19 vaccine administration claim in the CMS data (adjustment described in Methods below).
 - **36.6 million** = our estimated count of Medicare beneficiaries aged 65 and older with at least one COVID-19 vaccine administration claim that we would expect to see in the CMS administrative data, if every vaccination reported to CDC for these individuals were also billed to Medicare, after excluding the 7.5M beneficiaries that were removed due to claims lag and beneficiaries only enrolled in Part A.
- **17.5 million** = the observed count of Medicare beneficiaries aged 65 and older with at least one COVID-19 vaccine administration claim in the CMS administrative data as of June 4th.

Even after making the adjustments as described above, CMS observes approximately 48% of beneficiaries with at least one vaccine dose in the Medicare claims data as compared to the estimated counts based on adjusted CDC figures (i.e., 17.5 million out of 36.6 million).

Figure 1: CDC and Medicare COVID-19 Vaccine Data Comparison, as of 06/04/2021 (count of persons 65+, in millions (Texas excluded))



Methods

Overview of Data Sources

CMS used the [CDC's COVID Data Tracker](#) to gather information on the count of individuals who have received at least one COVID-19 vaccine dose. The COVID Data Tracker provides near, real-time surveillance information since vaccine providers are expected to report information back to CDC within 72 hours of dose administration and submissions are reported from multiple sources (such as local and territorial Immunization Information Systems; the Vaccine Administration Management System; and direct data submissions to the COVID-19 Data Clearing House).

We also used Medicare fee-for-service claims data to count the number of beneficiaries with at least one claim for the administration of the COVID-19 vaccine¹. Please note that COVID-19 vaccine claims for all Medicare beneficiaries, including Medicare Advantage beneficiaries receiving COVID-19 vaccinations in 2020 and 2021, are processed through the fee-for-service Medicare program.

Population

Our analysis focuses on the count of individuals who were 65 and older because we could not identify Medicare beneficiaries under 65 years of age (i.e., disabled and ESRD beneficiaries) in the CDC data. We

¹ HCPCS codes utilized in this analysis include 0001A/0002A (Pfizer 1st/2nd dose), 0011A/0012A (Moderna 1st/2nd dose), and 0031A (Janssen single dose)

also excluded beneficiaries from Texas because CDC does not report age breakouts for individuals from Texas during our reporting period.

Adjustments to Medicare COVID-19 Claims Data to Compare to CDC Counts

In order to accurately compare between CMS and CDC data, we needed to make several adjustments to account for population differences and claims lag.

Population Included in Analysis

Medicare coverage for the COVID-19 vaccine is provided under Part B, but not all individuals aged 65 and older are enrolled in Part B. Since CDC does not report data by type of insurance, CMS must adjust the CDC counts to exclude individuals who do not have Part B coverage. As of May 2021, about 8% of Medicare beneficiaries that were 65 years and older did not have Part B coverage. Therefore, CDC counts are adjusted downward by 8% to achieve a reasonably comparable count.

Claims Lag and Expected Medicare Claims

As highlighted above, CDC, in general, requires entities that administer vaccines or track vaccine administration (healthcare providers, federal, state, territorial, and local agencies) to submit data within 72 hours of administration. There are no such parameters around Medicare claims submissions (providers have up to a year to submit a claim), and thus the lag between the date of the vaccine administration and the date this information is reported to CMS is much greater than in CDC reporting.

CMS can estimate the proportion of the CDC vaccination count that should be reflected in claims data at any given time by studying how quickly providers have submitted existing COVID-19 vaccine claims historically, and by factoring in past research on general claims lag that has been studied over longer time periods. Specifically, CMS measured the difference in timing between the date the COVID-19 vaccine was administered and the date we received billing information for beneficiaries who are 65 and older (excluding Texas). Then, we recorded the proportion of cumulative COVID-19 vaccine claims available at weekly intervals after administration. Since providers may take up to one year to file a claim with CMS after the service is provided, our estimates of data completeness by week were further adjusted to account for these longer-term absent claims. Finally, CMS applied these weekly 'expected claims' factors to the CDC-reported vaccinated person counts at each subsequent week for the 65 years and older, non-Texan population. Cumulatively, these counts represent the total number of Medicare beneficiaries 65 years and older for whom we expect to have a vaccine claim as of June 4th, 2021 (if all providers furnishing vaccines were to submit claims).

In short, we observed that, as of June 4, 2021, only about one-half (48%) of COVID-19 vaccines that were administered to elderly individuals (aged 65 and over) resulted in a claim submission to the Medicare program.