



This document describes how we constructed the variables included in the Wave 1 Community Clinician claims-based measures file. The file contains one observation for each clinician—identified by national provider identifier (NPI) number—sampled for the Wave 1 Community Clinician Survey. The variables in the file provide information on the characteristics of the clinicians (also referred to as NPIs) as well as service use, demographics and eligibility characteristics, health status, and Part D drug use among the clinicians' panels of patients who were Medicare fee-for-service (FFS) beneficiaries.<sup>1</sup>

Each variable falls into one of five broad categories, specifically:

1. **Clinician characteristics.** These variables describe characteristics of the clinician, such as provider type based on primary taxonomy and licensure and rurality of their practice location. These variables also include Medicare FFS claims-based measures describing the settings in which each clinician served their panel of beneficiaries with dementia in calendar year (CY) 2023.
2. **Panel demographics, Medicare enrollment, and geographic characteristics.** These variables describe the clinicians' panels of Medicare FFS beneficiaries with dementia as well as their full panels of Medicare FFS beneficiaries (with and without dementia). By panel, we mean all beneficiaries who had a visit with the clinician. We used the CY 2023 Medicare Master Beneficiary Survey File (MBSF) to construct these measures. Several measures use the beneficiary's county of residence from the MBSF to construct measures related to the mean social vulnerability and rurality of the clinicians' panels. For these measures, we used publicly available data from the Centers for Disease Control and Prevention (CDC) and the U.S. Department of Agriculture (USDA), respectively, as described in the table below.
3. **Clinical characteristics.** These measures describe the clinical characteristics of beneficiaries with dementia in the clinicians' panels. The measures include the number of beneficiaries with dementia with various chronic conditions based on the Centers for Medicare & Medicaid Services (CMS)'s chronic condition indicators, both the original algorithm and the other chronic and potentially disabling conditions algorithm. The measures also include the mean hierarchical condition category (HCC) score and mean claims-based frailty index (CFI) score of the clinicians' panels of dementia patients. For these measures, we used CY 2022 data to ensure that we had adequate claims history for the clinicians' 2023 panels, particularly for panel members who died relatively early in 2023. We also used publicly available software to construct HCC scores and CFI scores, as described in the table below.
4. **Other variables related to Medicare Parts A and B service use.** These measures include, for example, counts of the number of beneficiaries in each clinician's panel with annual wellness visits, imaging services, and home health visits, as well as the number of hospital and skilled nursing facility (SNF) days for beneficiaries with dementia in the clinician's panel.

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<sup>1</sup> For this initial data release, we used Medicare FFS data because it is more current than Medicare Advantage (MA) data. In future releases, we will incorporate MA data.

5. **Part D drug-related variables.** These measures describe Part D prescription drug claims (also called fills or events) and spending among the beneficiaries with dementia in each clinician's panel who had Part D drug coverage. Due to data lags, we used CY 2022 data for these measures. That is, for each clinician, we identified their 2022 panel of Medicare FFS beneficiaries with dementia and measured Part D drug use in 2022 among this set of beneficiaries.

Many claims-based Medicare Parts A and B service and Part D-related measures are counts—for example, the number of Medicare FFS beneficiaries with dementia with specific chronic conditions and the number with any emergency department (ED) visits or home health visits. For end users of this file who prefer to calculate percentages—for example, the percentage of each clinician's panel with an ED visit—we also provide guidance for which variable to use as the denominator of any percentage calculation.

In the following table, we provide detailed information on how we constructed each measure. For the July 1, 2025, Wave 1 release, we used Medicare FFS Research Identifiable Files claims from the Virtual Research Data Center (VRDC) to construct these measures. Because we constructed these measures on the VRDC and not on the Linkage platform, we had to suppress all measures with fewer than 11 units (or where a user could otherwise back out a cell less than 11) to comply with the CMS suppression rules. In future releases of this file, we will construct the measures on Linkage and will be able to provide non-suppressed data (though end users will need to comply with CMS suppression rules for their analyses). We also used informative missing values when a measure did not apply to a clinician—for example, we set Part D claims-based measures to an informative missing value if a clinician did not have any beneficiaries with dementia with Part D coverage during the year.

We used the following values to indicate that we suppressed values:

- .S = suppressed values for cell counts less than 11
- .A = also suppressed because otherwise an end user could back out a suppressed value (this is only relevant to categorical variables)

We used the following values to indicate informative missing values:

- .D = informative missing for Parts A and B claims- and MBSF-based measures for clinicians who did not have any carrier or outpatient claims for Medicare FFS beneficiaries in 2023.
- .N = informative missing for Parts A and B claims- and MBSF-based measures for clinicians who had any carrier or outpatient claims for Medicare FFS beneficiaries in 2023, but no claims for FFS beneficiaries with dementia.
- .R = informative missing for Part D-based measures for clinicians who had any carrier or outpatient claims for Medicare FFS beneficiaries with dementia in 2022, but none of these beneficiaries had Part D coverage in 2022 (the most recent year available for Part D claims).
- .T = informative missing for Part D-based measures for clinicians who had no carrier, outpatient, or Part D claims for Medicare FFS beneficiaries with dementia in 2022.

In future releases of this file, we also will share the SAS code for constructing these measures on Linkage.

**Table 1.** Community clinician panel characteristics, as defined from Medicare and other administrative data sources

Variable name	Variable definition	Source data (year)
<b>Clinician characteristics</b>		
NPI_ENCRYPTED	The encrypted NPI for each sampled clinician created by Acumen	Acumen (2025)
TAXONOMY_2024	<b>Primary taxonomy code for the clinician.</b> We obtained primary taxonomy information for each clinician (an NPI) from CMS's publicly available April 2024 National Plan and Provider Enumeration System (NPPES). Please see Appendix Table 1 for a list of taxonomy codes included in the Community Clinician survey.	NPPES (April 2024)
CLINICIAN_TYPE	<b>Clinician type based on licensure and primary taxonomy:</b> 1 = primary care doctor of medicine or doctor of osteopathic medicine (MD/DO) 2 = primary care nurse practitioner (NP) 3 = non-surgical physician assistant (PA) 4 = psychiatry MD 5 = psychiatric NP 6 = neurology MD These categories were defined based on the primary taxonomy of the clinician, as described above and in Appendix Table 1.	NPPES (April 2024)
IQVIA_RUCA	<b>Primary rural-urban commuting area (RUCA) code of the clinician's main practice address:</b> 1 = Metropolitan area core: primary flow within an urbanized area (UA) 2 = Metropolitan area high commuting: primary flow 30% or more to a UA 3 = Metropolitan area low commuting: primary flow 10% to 30% to a UA 4 = Micropolitan area core: primary flow within an urban cluster (UC) of 10,000 to 49,999 (large UC) 5 = Micropolitan high commuting: primary flow 30% or more to a large UC 6 = Micropolitan low commuting: primary flow 10% to 30% to a large UC 7 = Small town core: primary flow within an urban cluster of 2,500 to 9,999 (small UC) 8 = Small town high commuting: primary flow 30% or more to a small UC 9 = Small town low commuting: primary flow 10% to 30% to a small UC 10 = Rural areas: primary flow to a tract outside a UA or UC 99 = Not coded: Census tract has zero population and no rural-urban identifier information We purchased proprietary data containing clinicians' main practice addresses from IQVIA and geocoded these addresses to obtain census tract. We then assigned each census tract to a	IQVIA data for main practice address (2024); NPPES for main practice address, if IQVIA data are unavailable (April 2024); <a href="#">U.S. Department of Agriculture (USDA)</a> data for RUCA codes (2010)

Variable name	Variable definition	Source data (year)
	RUCA code based on a publicly available crosswalk. For a small percentage of clinicians not found in the IQVIA database, we geocoded their practice address from NPPES to assign RUCA codes.	
IQVIA_RURAL	<b>Indicator variable for whether the clinician practices in a rural region:</b> = 1 if the clinician's main practice address is assigned to a RUCA equal to 7–10 = 0 otherwise	IQVIA and NPPES for address; USDA for RUCA codes
PANEL_SZ_PTS_ALL	<b>Number of Medicare FFS beneficiaries who had a visit with the clinician.</b> This measure includes Medicare FFS beneficiaries with and without dementia. This is the number of unique FFS beneficiaries with claims submitted in 2023 from the clinician (NPI)—that is, where the NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from federally qualified health centers [FQHCs], rural health centers [RHCs], and type II critical access hospitals [CAHs]). The same beneficiary might have claims from multiple NPIs during the year; these beneficiaries are included in each of the NPI's panels—that is, panels reflect all beneficiaries served, regardless of whether the beneficiary received services from other clinicians. This variable may take the value of 0. Sampled NPIs with values of 0 were either those found as a prescriber on Part D claims only or those who served Medicare beneficiaries enrolled in Medicare Advantage (MA) only.	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
PANEL_SZ_PTS_ADRD_ANY	<b>Number of Medicare FFS beneficiaries with dementia (diagnosed by any clinician) who had a visit with the clinician.</b> This is the number of unique Medicare FFS beneficiaries with dementia <sup>b</sup> with claims submitted in 2023 from the NPI—that is, where the NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from FQHCs, RHCs, and type II CAHs). This variable may take the value of 0. Sampled NPIs with values of 0 are mostly either those found as a prescriber on Part D claims only or who served MA enrollees only, though NPIs with values of 0 will also include NPIs who submitted claims for Medicare FFS beneficiaries in 2023, but none of their beneficiaries had dementia. See Appendix Table 2 for a full list of dementia diagnosis codes.	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
PANEL_SZ_PTS_ADRD	<b>Number of Medicare FFS beneficiaries with dementia who had a visit with the clinician where a dementia diagnosis was recorded by the clinician.</b> This is the number of unique Medicare FFS beneficiaries with dementia with claims submitted from the NPI—that is, where the NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from FQHCs, RHCs, and type II CAHs)—and where the NPI diagnosed the beneficiary as having dementia on at least one of those claims during the year. <sup>b</sup> This variable may take the value of 0. A 0 value indicates either that the NPI did not diagnose any Medicare FFS beneficiaries with dementia or they did not submit any FFS carrier or relevant outpatient claims for beneficiaries with dementia in 2023. See Appendix Table 2 for a full list of dementia diagnosis codes.	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)

Variable name	Variable definition	Source data (year)
VISITS_ADRD_ANY	<b>Number of visits by FFS beneficiaries with dementia to this clinician.</b> This is the total number of claims submitted by the NPI in 2023 for visits with their panel of Medicare FFS beneficiaries with dementia. <sup>b</sup> Specifically, the number of visits reflects the number of claims from the clinician (NPI) for FFS beneficiaries with dementia where their NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from FQHCs, RHCs, and type II CAHs). See Appendix Table 2 for a full list of dementia diagnosis codes.	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
VISITS_ADRD	<b>Number of visits by FFS beneficiaries with dementia to this clinician where the diagnosis was recorded by the clinician.</b> This is the total number of claims submitted by the NPI in 2023 for their panel of Medicare FFS beneficiaries living with dementia on which there was a dementia diagnosis <sup>b</sup> in the year. Specifically, this measure reflects the number of claims from the clinician (NPI) for FFS beneficiaries with dementia where the clinician's NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from FQHCs, RHCs, and type II CAHs) and where the claim had a dementia diagnosis. See Appendix Table 2 for a full list of dementia diagnosis codes.	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
VISITS_ADRD_OUTPT_ANY	<b>Number of visits in an outpatient setting with Medicare FFS beneficiaries with dementia.</b> This is the total number of claims submitted in 2023 by the NPI for their panel of Medicare FFS beneficiaries with dementia <sup>b</sup> that indicated the visit occurred in an outpatient office setting. A claim from the clinician was one where their NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from FQHCs, RHCs, and type II CAHs). Claims indicating outpatient office setting included carrier claims with place of service code equal to 05, 07, 10, 11, 17, 19, 20, 22, 49, 50, 62, 71, or 72, or outpatient claims with revenue center code equal to 0520, 0521, 0523, 0526, or 0529. See Appendix Table 3 for the place of service code and revenue center code definitions.  <i>To calculate the percentage of visits in an outpatient setting with beneficiaries with dementia, please use VISITS_ADRD_ANY as the denominator</i>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
VISITS_ADRD_OUTPT	<b>Number of visits in an outpatient setting with Medicare FFS beneficiaries where a dementia diagnosis was recorded by the clinician.</b> This is the total number of claims submitted in 2023 by the NPI for their panel of Medicare FFS beneficiaries with dementia that indicated the visit occurred in an outpatient office setting and on which there was a dementia diagnosis. <sup>b</sup> A claim from the clinician was one where their NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from FQHCs, RHCs, and type II CAHs). Claims indicating outpatient office setting included carrier claims with place of service code equal to 05, 07, 10, 11, 17, 19, 20, 22, 49, 50,	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)

Variable name	Variable definition	Source data (year)
	<p>62, 71, or 72, or outpatient claims with revenue center code equal to 0520, 0521, 0523, 0526, or 0529. See Appendix Table 3 for the place of service code and revenue center code definitions.</p> <p><i>To calculate the percentage of visits in an outpatient setting with beneficiaries with dementia, among the subset of beneficiaries that the NPI diagnosed as having dementia, please use VISITS_ADRD as the denominator</i></p>	
VISITS_ADRD_INPT_ANY	<p><b>Number of visits in an inpatient setting with Medicare FFS beneficiaries with dementia.</b> This is the total number of claims submitted in 2023 by the NPI for their panel of Medicare FFS beneficiaries with dementia<sup>b</sup> that indicated the visit occurred in an inpatient setting. A claim from the clinician was one where their NPI appeared in the performing provider NPI field of carrier line-level claims and place of service code equaled to 06, 08, 21, or 61. See Appendix Table 3 for the place of service code definitions.</p> <p><i>To calculate the percentage of visits in an inpatient setting with beneficiaries with dementia, please use VISITS_ADRD_ANY as the denominator</i></p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
VISITS_ADRD_INPT	<p><b>Number of visits in an inpatient setting with Medicare FFS beneficiaries where a dementia diagnosis was recorded by the clinician.</b> This is the total number of claims submitted by the NPI in 2023 for their panel of Medicare FFS beneficiaries with dementia that indicated the visit occurred in an inpatient setting and on which there was a dementia diagnosis.<sup>b</sup> A claim from the clinician was one where their NPI appeared in the performing provider NPI field of a carrier line-level claim where place of service code equaled 06, 08, 21, or 61. See Appendix Table 3 for the place of service code definitions.</p> <p><i>To calculate the percentage of visits in an inpatient setting with beneficiaries with dementia, among the subset of beneficiaries that the NPI diagnosed as having dementia, please use VISITS_ADRD as the denominator</i></p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
VISITS_ADRD_RES_ANY	<p><b>Number of visits in a residential setting with Medicare FFS beneficiaries with dementia.</b> This is the total number of claims submitted in 2023 by the NPI for their panel of Medicare FFS beneficiaries with dementia<sup>b</sup> that indicated the visit occurred in a residential setting. A claim from the clinician was one where their NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from FQHCs and RHCs). Claims indicating residential setting included carrier claims with place of service code equal to 13, 14, 31, 32, 33, 34, or 54, or outpatient claims with revenue center code equal to 0524 or 0525. See Appendix Table 3 for place of service and revenue center code definitions.</p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)

Variable name	Variable definition	Source data (year)
	<i>To calculate the percentage of visits made in a residential setting with beneficiaries with dementia, please use VISITS_ADRD_ANY as the denominator</i>	
VISITS_ADRD_RES	<p><b>Number of visits in a residential setting with Medicare FFS beneficiaries where a dementia diagnosis was recorded by the clinician.</b> This is the total number of claims submitted in 2023 by the NPI for their panel of Medicare FFS beneficiaries with dementia that indicated the visit occurred in a residential setting and on which there was a dementia diagnosis.<sup>b</sup> A claim from the clinician was one where their NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from FQHCs and RHCs). Claims indicating residential setting included carrier claims with place of service code equal to 13, 14, 31, 32, 33, 34, or 54, or outpatient claims with revenue center code equal to 0524 or 0525. See Appendix Table 3 for the place of service and revenue center code definitions.</p> <p><i>To calculate the percentage of visits in a residential setting with beneficiaries with dementia, among the subset of beneficiaries that the NPI diagnosed as having dementia, please use VISITS_ADRD as the denominator</i></p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
VISITS_ADRD_HOME_ANY	<p><b>Number of visits in a beneficiary's home with Medicare FFS beneficiaries with dementia.</b> This is the total number of claims submitted in 2023 by the NPI for their panel of beneficiaries living with dementia<sup>b</sup> that indicated the visit occurred in the home. A claim from the clinician was one where their NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from FQHCs and RHCs). Claims indicating the home setting included carrier claims with place of service code equal to 12 or outpatient claims with revenue center code equal to 0522 or 0527. See Appendix Table 3 for the place of service and revenue center code definitions.</p> <p><i>To calculate the percentage of visits in a home setting with beneficiaries with dementia, please use VISITS_ADRD_ANY as the denominator</i></p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
VISITS_ADRD_HOME	<p><b>Number of visits in a beneficiary's home with Medicare FFS beneficiaries where a dementia diagnosis was recorded by the clinician.</b> This is the total number of claims submitted in 2023 by the NPI for their panel of Medicare FFS beneficiaries with dementia that indicated the visit occurred in the home and on which there was a dementia diagnosis.<sup>b</sup> A claim from the clinician was one where their NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from FQHCs and RHCs). Claims indicating the home setting included carrier claims with place of service code equal to 12 or outpatient claims with revenue center code equal to 0522 or 0527. See Appendix Table 3 for the place of service and revenue center code definitions.</p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)

Variable name	Variable definition	Source data (year)
	<i>To calculate the percentage of visits in a home setting with beneficiaries with dementia, among the subset of beneficiaries that the NPI diagnosed as having dementia, <u>please use VISITS_ADRD as the denominator</u></i>	
VISITS_ADRD_ELSWHR_ANY	<p><b>Number of visits with Medicare FFS beneficiaries with dementia in any other setting.</b> This is the total number of claims submitted in 2023 by the NPI for their panel of beneficiaries living with dementia<sup>b</sup> that indicated the visit occurred in any other setting—that is, not in an outpatient, inpatient, residential, or home setting. A claim from the clinician was one where their NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from FQHCs, RHCs, and type II CAHs).</p> <p><i>To calculate the percentage of visits in any other setting with beneficiaries with dementia, <u>please use VISITS_ADRD_ANY as the denominator</u></i></p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
VISITS_ADRD_ELSWHR	<p><b>Number of visits with Medicare FFS beneficiaries with dementia in any other setting where a dementia diagnosis was recorded by the clinician.</b> This is the total number of claims submitted in 2023 by the NPI for their panel of beneficiaries living with dementia<sup>b</sup> that indicated the visit occurred in any other setting—that is, not in an outpatient, inpatient, residential, or home setting—and on which there was a dementia diagnosis.<sup>b</sup>. A claim from the clinician was one where their NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from FQHCs, RHCs, and type II CAHs).</p> <p><i>To calculate the percentage of visits in any other setting with beneficiaries with dementia, among the subset of beneficiaries that the NPI diagnosed as having dementia, <u>please use VISITS_ADRD as the denominator</u></i></p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
VISITS_ADRD_TELEHLTH_ANY	<p><b>Number of telehealth visits with Medicare FFS beneficiaries with dementia.</b> This is the total number of claims submitted in 2023 by the NPI for their panel of Medicare FFS beneficiaries living with dementia<sup>b</sup> that indicated the visit occurred via telehealth. A claim from the clinician was one where their NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from FQHCs, RHCs, and type II CAHs). Claims indicating telehealth included any carrier claims with procedure codes that Medicare will pay for if provided via telehealth, available here: <a href="https://www.cms.gov/medicare/coverage/telehealth/list-services">https://www.cms.gov/medicare/coverage/telehealth/list-services</a>, with a place of service code equal to 02 or 10, or a modifier equal to 95, GO, GQ, GT, FQ or FR, which indicate that the service was delivered via telehealth. Additional carrier and outpatient claims indicating telehealth included those with a telehealth-specific procedure code: 99421–99423, 98966–98968, 99441–99443, 98969, 99444, 99453–99454, 99457, 99458, 99473, 99474, 99091, G2010, G2012, G2061, G2062, G2063, G9978–G9986, 98970–98972, G2250, G2251, G2252, 98975–98977, 98980, 98981, 0702T, 0703T99458; and specific to FQHCs and RHCs: G0071, as well as G2025 combined with revenue center code equal to any of the following codes: 0520, 0521, 0522, 0523, 0527, 0528, or 0529. See Appendix Table 4 for further information.</p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)

Variable name	Variable definition	Source data (year)
	<i>To calculate the percentage of visits made via telehealth with beneficiaries with dementia, <u>please use VISITS_ADRD_ANY as the denominator</u></i>	
VISITS_ADRD_TELEHLTH	<p><b>Number of telehealth visits with Medicare FFS beneficiaries where a dementia diagnosis was recorded by the clinician.</b> This is the total number of claims submitted in 2023 by the NPI for their panel of Medicare FFS beneficiaries with dementia that indicated the visit occurred via telehealth and on which there was a dementia diagnosis.<sup>b</sup> A claim from the clinician was one where their NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from FQHCs, RHCs, and type II CAHs). Claims indicating telehealth included any carrier claims with procedure codes that Medicare will pay for if provided via telehealth, available here: <a href="https://www.cms.gov/medicare/coverage/telehealth/list-services">https://www.cms.gov/medicare/coverage/telehealth/list-services</a>, with a place of service code equal to 02 or 10, or a modifier equal to 95, GO, GQ, GT, FQ or FR, which indicate that the service was delivered via telehealth. Additional carrier and outpatient claims indicating telehealth included those with a telehealth-specific procedure code: 99421–99423, 98966–98968, 99441–99443, 98969, 99444, 99453–99454, 99457, 99458, 99473, 99474, 99091, G2010, G2012, G2061, G2062, G2063, G9978–G9986, 98970–98972, G2250, G2251, G2252, 98975–98977, 98980, 98981, 0702T, 0703T99458; and specific to FQHCs and RHCs: G0071, as well as G2025 combined with revenue center code equal to any of the following codes: 0520, 0521, 0522, 0523, 0527, 0528, or 0529. See Appendix Table 4 for further information.</p> <p><i>To calculate the percentage of visits made via telehealth with beneficiaries with dementia, among the subset of beneficiaries that the NPI diagnosed as having dementia, <u>please use VISITS_ADRD as the denominator</u></i></p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
<b>Panel demographics, Medicare enrollment, and geographic characteristics</b>		
<b>Demographics and enrollment characteristics of Medicare FFS beneficiaries with dementia with at least one visit with the clinician in 2023</b>		
<i>To calculate the percentage of the clinician's panel of beneficiaries with dementia with any of the characteristics in the section below, <u>please use PANEL_SZ PTS_ADRD_ANY as the denominator</u></i>		
PANEL_D_AGE_MEAN	<p><b>Mean age of all Medicare FFS beneficiaries with dementia with a visit with the clinician.</b> This is the mean age among all Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023. We calculated age as of January 1, 2023.</p>	MBSF (2023)
PANEL_D_AGE_CAT_1	<p><b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were younger than 65.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were younger than 65. We calculated age as of January 1, 2023.</p>	MBSF (2023)

Variable name	Variable definition	Source data (year)
PANEL_D_AGE_CAT_2	<b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were between ages 65 and 69.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were between ages 65 and 69. We calculated age as of January 1, 2023.	MBSF (2023)
PANEL_D_AGE_CAT_3	<b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were between ages 70 and 74.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were between ages 70 and 74. We calculated age as of January 1, 2023.	MBSF (2023)
PANEL_D_AGE_CAT_4	<b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were between ages 75 and 79.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were between ages 75 and 79. We calculated age as of January 1, 2023.	MBSF (2023)
PANEL_D_AGE_CAT_5	<b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were between ages 80 and 84.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were between ages 80 and 84. We calculated age as of January 1, 2023.	MBSF (2023)
PANEL_D_AGE_CAT_6	<b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were ages 85 or older.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were ages 85 or older. We calculated age as of January 1, 2023.	MBSF (2023)
PANEL_D_NUM_FEMALE	<b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were female.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were female (SEX_IDENT_CD = 2).	MBSF (2023)
PANEL_D_NUM_WHITE	<b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were non-Hispanic White.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were non-Hispanic White (RTI_RACE_CD = 1).	MBSF (2023)
PANEL_D_NUM_BLACK	<b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were non-Hispanic Black.</b> This is the number of Medicare FFS beneficiaries with dementia with a visit with the NPI in 2023 who were non-Hispanic Black (RTI_RACE_CD = 2).	MBSF (2023)
PANEL_D_NUM_HISPANIC	<b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were Hispanic.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were Hispanic (RTI_RACE_CD = 5).	MBSF (2023)
PANEL_D_NUM_ASIANPI	<b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were Asian or Pacific Islander.</b> This is the number of Medicare FFS beneficiaries with dementia with a visit with the NPI in 2023 who were Asian or Pacific Islander (RTI_RACE_CD = 4).	MBSF (2023)

## Community Clinician Data Dictionary for LINKAGE

Variable name	Variable definition	Source data (year)
PANEL_D_NUM_AIAN	<b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were American Indian or Alaska Native.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were American Indian or Alaska Native (RTI_RACE_CD = 6).	MBSF (2023)
PANEL_D_NUM_OTH_RACE	<b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were of all other races and ethnicities or unknown race and ethnicity.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were all other races and ethnicities or of unknown race and ethnicity (RTI_RACE_CD = 0 or 3).	MBSF (2023)
PANEL_D_NUM_DUAL	<b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were dually eligible for Medicare or Medicaid (full or partial) in at least one month in the year.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were dually eligible for Medicare and Medicaid in at least one month of the year (DUAL_STUS_CD_01–DUAL_STUS_CD_12 = 01, 02, 03, 04, 05, 06, or 08).	MBSF (2023)
PANEL_D_NUM_MA_ENRLD	<b>Number of Medicare beneficiaries with dementia with a visit with the clinician who were enrolled in MA for at least one month in the year.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were enrolled in MA for at least one month of the year (BENE_HMO_CVRAGE_TOT_MONS ≥ 1).	MBSF (2023)
PANEL_D_NUM_LIS	<b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were eligible for a Part D low-income drug subsidy in at least one month in the year.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were eligible for a Part D low-income drug subsidy in at least one month of the year (CST_SHR_GRP_CD_01–CST_SHR_GRP_CD_12 = 01–08).	MBSF (2023)
PANEL_D_NUM_DUALORLIS	<b>Number of Medicare FFS beneficiaries with dementia with a visit with the clinician who were dually eligible for Medicare and Medicaid in at least one month of the year or who were eligible for a Part D low-income drug subsidy in at least one month of the year.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were dually eligible for Medicare and Medicaid in at least one month of the year or were eligible for a Part D low-income drug subsidy in at least one month of the year, as described above.	MBSF (2023)
PANEL_D_NUM_PARTD	<b>Number of beneficiaries with dementia with a visit with the clinician who were enrolled in Part D in any month of the year.</b> This is the number of Medicare FFS beneficiaries with dementia with any visit with the NPI in 2023 who were enrolled in Part D in any month of the year (PTD_PLAN_CVRG_MONS ≥ 1).	MBSF (2023)

Variable name	Variable definition	Source data (year)
<b>Geographic characteristics of Medicare FFS beneficiaries with dementia with at least one visit with the clinician in 2023</b>		
PANEL_D_NUM_RURAL	<b>Number of beneficiaries with dementia with a visit with the clinician who have a rural mailing address.</b> This is the number of beneficiaries with dementia with any visit with the NPI in 2023 whose first valid county code in the year mapped to a rural county. We defined rural counties as those with rural-urban continuum code (RUCC) equal to 7, 8, or 9. For full definition of RUCC codes, please see: <a href="https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/documentation">https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/documentation</a> (last accessed June 6, 2025).	MBSF for beneficiary county code (2023); USDA for RUCC codes
PANEL_D_DSTNC_50P	<b>Median distance from centroid of beneficiaries' zip code to centroid of clinician's practice zip code among all beneficiaries with dementia with a visit with the clinician.</b> For each beneficiary with dementia with any visit with the NPI in 2023, we calculated the distance between their zip code (based on the most common value of beneficiary zip code across all their carrier and outpatient claims with the clinician) to the practice zip code of the clinician (also based on the most common value of provider zip code across the same set of carrier and outpatient claims). This variable reports the median distance between zip codes for all beneficiaries with dementia in the clinician's panel.	Carrier and outpatient <sup>a</sup> claims for beneficiary and clinician zip codes (2023)
PANEL_D_DSTNC_25P	<b>25th percentile of distance from centroid of beneficiaries' addresses to centroid of clinician's practice zip code among all beneficiaries with dementia with a visit with the clinician.</b> This variable reports the 25th percentile of distance between the beneficiaries' and clinician's practice zip codes for all beneficiaries with dementia with any visit with the NPI in 2023, as described above in PANEL_D_DSTNC_50P.	Carrier and outpatient <sup>a</sup> claims for beneficiary and clinician zip codes (2023)
PANEL_D_DSTNC_75P	<b>75th percentile of distance from centroid of beneficiaries' addresses to centroid of clinician's practice zip code among all beneficiaries with dementia with a visit with the clinician.</b> This variable reports the 75th percentile of distance between the beneficiaries' and clinician's practice zip codes for all beneficiaries with dementia with any visit with the NPI in 2023, as described above in PANEL_D_DSTNC_50P.	Carrier and outpatient <sup>a</sup> claims for beneficiary and clinician zip codes (2023)
PANEL_D_NUM_TOP2_DCL_SVI	<b>Number of beneficiaries with dementia with a visit with the clinician who have a county code in the top two deciles of the national distribution of the summary Social Vulnerability Index (SVI) score.</b> This is the number of beneficiaries with dementia with any visit with the NPI in 2023 whose first valid county code in the year mapped to a county in the highest two deciles of the summary SVI score—meaning that they lived in counties with the highest social vulnerability. For more information on the SVI, please see: <a href="https://www.atsdr.cdc.gov/place-health/php/svi/index.html">https://www.atsdr.cdc.gov/place-health/php/svi/index.html</a> (last accessed June 6, 2025).	MBSF (2023); CDC's SVI data

Variable name	Variable definition	Source data (year)
<b>Demographics and enrollment characteristics of all Medicare FFS beneficiaries with at least one visit with the clinician—including beneficiaries with and without dementia—in 2023</b>		
<i>To calculate the percentage of the clinician's panel of beneficiaries with any of the characteristics in the section below, please use PANEL_SZ_PTS_ALL as the denominator</i>		
PANEL_ALL_AGE_MEAN	<b>Mean age of all Medicare FFS beneficiaries with a visit with the clinician.</b> This is the mean age among all Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023. We calculated age as of January 1, 2023.	MBSF (2023)
PANEL_ALL_AGE_CAT_1	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were younger than 65.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023 who were younger than 65. We calculated age as of January 1, 2023.	MBSF (2023)
PANEL_ALL_AGE_CAT_2	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were between ages 65 and 69.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023 who were between ages 65 and 69. We calculated age as of January 1, 2023.	MBSF (2023)
PANEL_ALL_AGE_CAT_3	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were between ages 70 and 74.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023 who were between ages 70 and 74. We calculated age as of January 1, 2023.	MBSF (2023)
PANEL_ALL_AGE_CAT_4	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were between ages 75 and 79.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023 who were between ages 75 and 79. We calculated age as of January 1, 2023.	MBSF (2023)
PANEL_ALL_AGE_CAT_5	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were between ages 80 and 84.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023 who were between ages 80 and 84. We calculated age as of January 1, 2023.	MBSF (2023)
PANEL_ALL_AGE_CAT_6	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were ages 85 and older.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023 who were ages 85 and older. We calculated age as of January 1, 2023.	MBSF (2023)
PANEL_ALL_NUM_FEMALE	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were female.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023 who were female (SEX_IDENT_CD = 2).	MBSF (2023)

Variable name	Variable definition	Source data (year)
PANEL_ALL_NUM_WHITE	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were non-Hispanic White.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023 who were non-Hispanic White (RTI_RACE_CD = 1).	MBSF (2023)
PANEL_ALL_NUM_BLACK	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were non-Hispanic Black.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with a visit with the NPI in 2023 who were non-Hispanic Black (RTI_RACE_CD = 2).	MBSF (2023)
PANEL_ALL_NUM_HISPANIC	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were Hispanic.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023 who were Hispanic (RTI_RACE_CD = 5).	MBSF (2023)
PANEL_ALL_NUM_ASIANPI	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were Asian or Pacific Islander.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with a visit with the NPI in 2023 who were Asian or Pacific Islander (RTI_RACE_CD = 4).	MBSF (2023)
PANEL_ALL_NUM_AIAN	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were American Indian or Alaska Native.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023 who were American Indian or Alaska Native (RTI_RACE_CD = 6).	MBSF (2023)
PANEL_ALL_NUM_OTH_RACE	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were of all other races and ethnicities or unknown race and ethnicity.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023 who were all other races and ethnicities or of unknown race and ethnicity (RTI_RACE_CD = 0 or 3).	MBSF (2023)
PANEL_ALL_NUM_DUAL	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were dually eligible for Medicare or Medicaid (full or partial) in at least one month in the year.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023 who were dually eligible for Medicare and Medicaid in at least one month of the year (DUAL_STUS_CD_01–DUAL_STUS_CD_12 = 01, 02, 03, 04, 05, 06, or 08).	MBSF (2023)
PANEL_ALL_NUM_MA_ENRLD	<b>Number of Medicare beneficiaries with a visit with the clinician who were enrolled in MA for at least one month in the year.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023 who were enrolled in MA for at least one month of the year (BENE_HMO_CVRAGE_TOT_MONS ≥ 1).	MBSF (2023)
PANEL_ALL_NUM_LIS	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were eligible for a Part D low-income drug subsidy in at least one month in the year.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the	MBSF (2023)

Variable name	Variable definition	Source data (year)
	NPI in 2023 who were eligible for a Part D low-income drug subsidy in at least one month of the year (CST_SHR_GRP_CD_01–CST_SHR_GRP_CD_12 = 01–08).	
PANEL_ALL_NUM_DUALORLIS	<b>Number of Medicare FFS beneficiaries with a visit with the clinician who were dually eligible for Medicare and Medicaid in at least one month of the year or who were eligible for a Part D low-income drug subsidy in at least one month of the year.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023 who were dually eligible for Medicare and Medicaid in at least one month of the year or were eligible for a Part D low-income drug subsidy in at least one month of the year, as described above.	MBSF (2023)
PANEL_ALL_NUM_PARTD	<b>Number of beneficiaries with a visit with the clinician who were enrolled in Part D in any month of the year.</b> This is the number of Medicare FFS beneficiaries, including those with and without dementia, with any visit with the NPI in 2023 who were enrolled in Part D in any month of the year (PTD_PLAN_CVRG_MONS ≥ 1).	MBSF (2023)
<b>Clinical characteristics of beneficiaries with dementia with at least one visit with the clinician (beneficiaries with dementia found in 2023 FFS claims data)</b>		
PANEL_D_HCC_MEAN	<b>Mean hierarchical condition category (HCC) score among all beneficiaries with dementia with a visit with the clinician.</b> For beneficiaries with dementia in each clinician's panel, we calculated their HCC score using CMS's publicly available 2024 HCC software (version 28), available at: <a href="https://www.cms.gov/medicare/payment/medicare-advantage-rates-statistics/risk-adjustment">https://www.cms.gov/medicare/payment/medicare-advantage-rates-statistics/risk-adjustment</a> (last accessed on June 5, 2025). We ran the software on CY 2022 FFS claims (12-month lookback). The HCC algorithm calculates scores for beneficiaries in institutional settings (institutional score), beneficiaries with less than 12 months of Part B coverage in the measurement year (new enrollee score), and for beneficiaries otherwise in the community (community score). (There is a separate HCC algorithm for beneficiaries with end stage renal disease [ESRD], but we did not use the ESRD model, as it requires information on kidney transplants that were unavailable to us). We assigned each beneficiary to the appropriate score, hierarchically, as follows: (1) if in a long-term nursing home stay at the end of 2022 (defined as 100 days or longer), they received the institutional score; (2) if they were not in an institution and had less than 12 months of Part B coverage in 2022, they received the new enrollee score; and (3) otherwise they received a community score. There are six possible community scores based on the combination of dual eligibility status, age, and original reason for entitlement. We assigned beneficiaries to the appropriate score based on their age on January 1, 2023, and whether they were ever partially or fully dually eligible for Medicare and Medicaid in 2023. We used dual eligibility status in 2023 to capture beneficiaries who might have spent down to Medicaid eligibility between 2022 and 2023. In a final step, we normalized the scores using normalization factors published by CMS.	Medicare FFS inpatient, outpatient, and carrier claims (2022); MBSF (2022–2023); publicly available <a href="#">HCC software</a>

Variable name	Variable definition	Source data (year)
PANEL_D_CFI_MEAN	<p><b>Mean frailty score using claims-based frailty index (CFI) among beneficiaries with dementia with a visit with the clinician.</b> The CFI is a deficit-accumulation frailty index based on diagnosis and procedure codes.<sup>c</sup> The CFI has been validated against clinical frailty (frailty phenotype and frailty index), physical performance (e.g., gait speed and grip strength), severe disability assessments, and adverse health outcomes. The CFI gives a score ranging from 0 to 1 with a higher score indicating more severe frailty. We calculated CFI scores using the publicly available software, available at: <a href="#">SAS Programs - Claims-Based Frailty Index - Claims-Based Frailty Index</a> (last accessed June 5, 2025), on CY 2022 FFS claims (12-month lookback). The most recent version of the software was published in May 2021, and does not contain dementia diagnosis codes that became active on October 1, 2022 to describe severity and behavioral disturbances among beneficiaries with vascular dementia, dementia in other diseases classified elsewhere, and unspecified dementia. For this reason, we updated the algorithm to add these new dementia diagnosis codes<sup>d</sup> to the CFI's category 13, which included diagnosis codes from before October 2022 for vascular dementia, dementia in other diseases classified elsewhere, and unspecified dementia. (Diagnosis codes for Alzheimer's disease, Pick's disease, frontotemporal dementia, dementia with Lewy bodies, senile degeneration, and degeneration or nervous system are classified in the CFI's category 16).</p>	Medicare FFS inpatient, SNF, hospice, home health, outpatient, carrier, and durable medical equipment (DME) claims (2022); publicly available <a href="#">CFI software</a>
PANEL_D_NUM_CFI_ROBUST	<p><b>Number of beneficiaries with dementia with a visit with the clinician whose CFI score indicates they are robust (CFI score &lt; 0.15).</b> Please see the definition of PANEL_D_CFI_MEAN above for details on how we calculated CFI scores.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with a CFI score indicating that they are robust, please use PANEL_SZ_PTS_ADRD_ANY as the denominator</i></p>	Medicare FFS inpatient, SNF, hospice, home health, outpatient, carrier, and DME claims (2022); publicly available <a href="#">CFI software</a>
PANEL_D_NUM_CFI_PREFRL	<p><b>Number of beneficiaries with dementia with a visit with the clinician whose CFI score indicates they are prefrail (CFI score ranges from 0.15 to &lt; 0.25).</b> Please see the definition of PANEL_D_CFI_MEAN above for details on how we calculated CFI scores.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with a CFI score indicating that they are prefrail, please use PANEL_SZ_PTS_ADRD_ANY as the denominator</i></p>	Medicare FFS inpatient, SNF, hospice, home health, outpatient, carrier, and DME claims (2022); publicly available <a href="#">CFI software</a>
PANEL_D_NUM_CFI_MILD	<p><b>Number of beneficiaries with dementia with a visit with the clinician whose CFI score indicates they are mildly frail (CFI score ranges from 0.25 to &lt; 0.35).</b> Please see the definition of PANEL_D_CFI_MEAN above for details on how we calculated CFI scores.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with a CFI score indicating that they are mildly frail, please use PANEL_SZ_PTS_ADRD_ANY as the denominator</i></p>	Medicare FFS inpatient, SNF, hospice, home health, outpatient, carrier, and DME claims (2022); publicly available <a href="#">CFI software</a>

Variable name	Variable definition	Source data (year)
PANEL_D_NUM_CFI_MODSVR	<p><b>Number of beneficiaries with dementia with a visit with the clinician whose CFI score indicates they are moderately to severely frail (CFI score <math>\geq 0.35</math>).</b> Please see the definition of PANEL_D_CFI_MEAN above for details on how we calculated CFI scores.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with a CFI score indicating that they are moderately to severely frail, please use PANEL_SZ PTS_ADRD_ANY as the denominator</i></p>	Medicare FFS inpatient, SNF, hospice, home health, outpatient, carrier, and DME claims (2022); publicly available <a href="#">CFI software</a>
Chronic Condition Warehouse (CCW) Chronic Condition Categories	<p>The variables listed below under “original condition categories” and “other chronic health, mental health, and potentially disabling conditions” count the number of beneficiaries with dementia in the clinician’s panel that met the CCW criteria for each of the original chronic condition categories and each of the other chronic or potentially disabling condition categories, respectively, as specified here: <a href="https://www2.ccwdata.org/web/guest/condition-categories">https://www2.ccwdata.org/web/guest/condition-categories</a>. We used MBSF 2022 data to construct these measures, and flagged beneficiaries as having met the criteria for the condition if the associated CCW flag had a value of 3, meaning that the beneficiary met the claims criteria for the condition and was enrolled in FFS Medicare for the full lookback period for the measure (some CCW condition categories use a one-year lookback period to identify claims with relevant diagnosis or procedure codes and others use a two-year lookback period).</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with any of these conditions, please use PANEL_SZ PTS_ADRD_ANY as the denominator</i></p>	MBSF (2022)
Original condition categories		
PANEL_D_NUM_AMI	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for acute myocardial infarction	MBSF (2022)
PANEL_D_NUM_ALZ	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for Alzheimer’s disease	MBSF (2022)
PANEL_D_NUM_ANEMIA	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for anemia	MBSF (2022)
PANEL_D_NUM_ASTHMA	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for asthma	MBSF (2022)

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Variable name	Variable definition	Source data (year)
PANEL_D_NUM_AFIB	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for atrial fibrillation and flutter	MBSF (2022)
PANEL_D_NUM_BHP	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for benign prostatic hyperplasia	MBSF (2022)
PANEL_D_NUM_BRCA	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for breast cancer	MBSF (2022)
PANEL_D_NUM_CRC	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for colorectal cancer	MBSF (2022)
PANEL_D_NUM_ENDC	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for endometrial cancer	MBSF (2022)
PANEL_D_NUM_LUNGC	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for lung cancer	MBSF (2022)
PANEL_D_NUM_PRSTC	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for prostate cancer	MBSF (2022)
PANEL_D_NUM_UROL	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for urologic cancer	MBSF (2022)
PANEL_D_NUM_CATRCT	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for cataract	MBSF (2022)
PANEL_D_NUM_CKD	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for chronic kidney disease	MBSF (2022)
PANEL_D_NUM_COPD	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for chronic obstructive pulmonary disease	MBSF (2022)
PANEL_D_NUM_DEP_ORIG	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for depression; below is the depression variable created by the other chronic health, mental health, and potentially disabling conditions algorithm, with some overlapping diagnosis codes (PANEL_D_NUM_DEP_OTH)	MBSF (2022)
PANEL_D_NUM_DIAB	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for diabetes	MBSF (2022)
PANEL_D_NUM_GLAUC	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for glaucoma	MBSF (2022)
PANEL_D_NUM_HF	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for heart failure and non-ischemic heart disease	MBSF (2022)

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Variable name	Variable definition	Source data (year)
PANEL_D_NUM_HPFRAC	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for hip/pelvic fracture	MBSF (2022)
PANEL_D_NUM_HYPERL	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for hyperlipidemia	MBSF (2022)
PANEL_D_NUM_HYPERT	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for hypertension	MBSF (2022)
PANEL_D_NUM_HYPOTH	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for hypothyroidism	MBSF (2022)
PANEL_D_NUM_IHD	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for ischemic heart disease	MBSF (2022)
PANEL_D_NUM_NONALZDE	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for non-Alzheimer's dementia	MBSF (2022)
PANEL_D_NUM_OSTEOP	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for osteoporosis with or without pathological fracture	MBSF (2022)
PANEL_D_NUM_PRKNSNS	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for Parkinson's disease and secondary Parkinsonism	MBSF (2022)
PANEL_D_NUM_PNEU	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for pneumonia, all-cause	MBSF (2022)
PANEL_D_NUM_RAOA	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for rheumatoid arthritis/osteoarthritis	MBSF (2022)
PANEL_D_NUM_STRKTIA	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for stroke/transient ischemic attack	MBSF (2022)
<i>Other chronic health, mental health, and potentially disabling conditions</i>		
PANEL_D_NUM_ADHD	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for ADHD, conduct disorders, and hyperkinetic syndrome	MBSF (2022)
PANEL_D_NUM_ALC	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for alcohol use disorders	MBSF (2022)
PANEL_D_NUM_ANX	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for anxiety disorders	MBSF (2022)
PANEL_D_NUM_AUTISM	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for autism spectrum disorders	MBSF (2022)

Variable name	Variable definition	Source data (year)
PANEL_D_NUM_BIP	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for bipolar disorder	MBSF (2022)
PANEL_D_NUM_CP	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for cerebral palsy	MBSF (2022)
PANEL_D_NUM_CYSTFIB	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for cystic fibrosis and other metabolic developmental disorders	MBSF (2022)
PANEL_D_NUM_DEP_OTH	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for depressive disorders; there is also a depression variable created by the original chronic condition algorithm, with some overlapping diagnosis codes (PANEL_D_NUM_DEP_ORIG)	MBSF (2022)
PANEL_D_NUM_DUD	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for drug use disorders	MBSF (2022)
PANEL_D_NUM_EPILEP	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for epilepsy	MBSF (2022)
PANEL_D_NUM_FIBRO	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for fibromyalgia, chronic pain, and fatigue	MBSF (2022)
PANEL_D_NUM_HIVAIDS	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for HIV/AIDS	MBSF (2022)
PANEL_D_NUM_INTDIS	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for intellectual disabilities and related conditions	MBSF (2022)
PANEL_D_NUM_LRNDIS	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for learning disabilities	MBSF (2022)
PANEL_D_NUM_LEUK	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for leukemias and lymphomas	MBSF (2022)
PANEL_D_NUM_LIVERDIS	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for liver disease, cirrhosis, and other liver conditions (except viral hepatitis)	MBSF (2022)
PANEL_D_NUM_MIGRN	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for migraine and other chronic headache	MBSF (2022)
PANEL_D_NUM_MOBIMPR	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for mobility impairments	MBSF (2022)
PANEL_D_NUM_MS	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for multiple sclerosis and transverse myelitis	MBSF (2022)

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Variable name	Variable definition	Source data (year)
PANEL_D_NUM_MUSCDYST	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for muscular dystrophy	MBSF (2022)
PANEL_D_NUM_OBESITY	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for obesity	MBSF (2022)
PANEL_D_NUM_OUD_1	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for opioid use disorder (OUD) 1: overarching opioid use disorders	MBSF (2022)
PANEL_D_NUM_OUD_2	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for opioid use disorder 2: diagnosis and procedure-code basis for OUD	MBSF (2022)
PANEL_D_NUM_OUD_3	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for opioid use disorder 3: opioid-related hospitalizations/ED visits	MBSF (2022)
PANEL_D_NUM_OUD_4	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for opioid use disorder 4: utilization of medication-assisted therapy (MAT)	MBSF (2022)
PANEL_D_NUM_OTHDD	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for other developmental delays	MBSF (2022)
PANEL_D_NUM_PVD	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for peripheral vascular disease	MBSF (2022)
PANEL_D_NUM_PERS	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for personality disorders	MBSF (2022)
PANEL_D_NUM_PTSD	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for post-traumatic stress disorder	MBSF (2022)
PANEL_D_NUM_PRSULCR	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for pressure ulcers and chronic ulcers	MBSF (2022)
PANEL_D_NUM_SCHIZ	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for schizophrenia	MBSF (2022)
PANEL_D_NUM_SCHIZPSYCH	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for schizophrenia and other psychotic disorders	MBSF (2022)
PANEL_D_NUM_BLNDVIS	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for sensory-blindness and visual impairment	MBSF (2022)
PANEL_D_NUM_DEAF	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for sensory—deafness and hearing impairment	MBSF (2022)
PANEL_D_NUM_SCD	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for sickle cell disease	MBSF (2022)

Variable name	Variable definition	Source data (year)
PANEL_D_NUM_SPBFDA	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for spina bifida and other congenital anomalies of the nervous system	MBSF (2022)
PANEL_D_NUM_SCI	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for spinal cord injury	MBSF (2022)
PANEL_D_NUM_TOBAC	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for tobacco use disorders	MBSF (2022)
PANEL_D_NUM_TBI	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for traumatic brain injury and nonpsychotic mental disorders due to brain damage	MBSF (2022)
PANEL_D_NUM_VRLHEP	Number of beneficiaries with dementia with a visit with the clinician who met the CCW chronic condition criteria for viral hepatitis	MBSF (2022)
<b>Service use among beneficiaries with dementia with at least one visit with the clinician</b>		
<b>Parts A and B-related service use (beneficiaries with dementia found in 2023 FFS claims data)</b>		
PANEL_D_NUM_ACP_VST	<p><b>Number of beneficiaries with dementia on the clinician's panel who had an advance care planning visit with <i>this</i> clinician.</b> A beneficiary had an advance care planning visit with the clinician if they had at least one FQHC, RHC, type II CAH, or carrier claim with procedure code 99497 or 99498 and where the clinician's NPI was found in the performing (carrier) or rendering (outpatient) provider field.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with an advance care planning visit with this clinician, please use PANEL_SZ PTS ADRD ANY as the denominator</i></p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
PANEL_D_NUM_ACP_VST_ANY	<p><b>Number of beneficiaries with dementia on the clinician's panel with an advance care planning visit with <i>any</i> clinician.</b> A beneficiary had an advance care planning visit with any clinician if they had at least one FQHC, RHC, type II CAH, or carrier claim with procedure code 99497 or 99498, regardless of the NPI in the performing (carrier) or rendering (outpatient) provider field.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with an advance care planning visit with any clinician, please use PANEL_SZ PTS ADRD ANY as the denominator</i></p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
PANEL_D_NUM_CCM_VST	<p><b>Number of beneficiaries with dementia on the clinician's panel with a visit with <i>this</i> clinician for chronic care management, transitional care management, or other care managed services.</b> A beneficiary had a visit for chronic care management, transitional care management or other care managed services with this clinician if they had at least one FQHC, RHC, type II CAH, or carrier claim with one of the following procedure codes: 99487, 99489,</p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)

Variable name	Variable definition	Source data (year)
	<p>99490, 99491, 99492–99493, 99494, 99495–99496, 99484, G0076–G0087, G0506, G2064, G2065, G2076, 99439, G2214, 99424, 99426, 99425, 99427, 99437, G0077–G0079, G0023–G0024, G3002–G3003, G9886–G9887, G2211, G0323, G0140, G0146, G0511, G0512, and where the clinician's NPI was found in the performing (carrier) or rendering (outpatient) provider field. See Appendix Table 5 for further information on the procedure codes.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with a visit for chronic care management, transitional care management, or other care managed services with this clinician, please use PANEL_SZ_PTS_ADRD_ANY as the denominator</i></p>	
PANEL_D_NUM_CCM_VST_ANY	<p><b>Number of beneficiaries with dementia on the clinician's panel with a visit with any clinician for chronic care management, transitional care management or other care managed services.</b> A beneficiary had a visit for chronic care management, transitional care management or other care managed services with any clinician if they had at least one FQHC, RHC, type II CAH, or carrier claim with one of the following procedure codes: 99487, 99489, 99490, 99491, 99492–99493, 99494, 99495–99496, 99484, G0076–G0087, G0506, G2064, G2065, G2076, 99439, G2214, 99424, 99426, 99425, 99427, 99437, G0077–G0079, G0023–G0024, G3002–G3003, G9886–G9887, G2211, G0323, G0140, G0146, G0511, G0512, regardless of the NPI in the performing (carrier) or rendering (outpatient) provider field. See Appendix Table 5 for further information on the procedure codes.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with a visit for chronic care management, transitional care management, or other care managed services with any clinician, please use PANEL_SZ_PTS_ADRD_ANY as the denominator</i></p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
PANEL_D_NUM_AWV	<p><b>Number of beneficiaries with dementia on the clinician's panel with a visit with this clinician for an annual wellness visit.</b> A beneficiary had an annual wellness visit with the clinician if they had at least one FQHC, RHC, type II CAH, or carrier claim with procedure code G0438, G0439, G0402, or G0468 and where the clinician's NPI was found in the performing (carrier) or rendering (outpatient) provider field.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with an annual wellness visit with this clinician, please use PANEL_SZ_PTS_ADRD_ANY as the denominator</i></p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)
PANEL_D_NUM_AWV_ANY	<p><b>Number of beneficiaries with dementia on the clinician's panel with a visit with any clinician for an annual wellness visit.</b> A beneficiary had an annual wellness visit with any clinician if they had at least one FQHC, RHC, type II CAH, or carrier claim with procedure code</p>	Medicare FFS carrier and outpatient <sup>a</sup> claims (2023)

Variable name	Variable definition	Source data (year)
	<p>G0438, G0439, G0402, or G0468, regardless of the NPI in the performing (carrier) or rendering (outpatient) provider field.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with an annual wellness visit with any clinician, please use PANEL_SZ_PTS_ADRD_ANY as the denominator</i></p>	
PANEL_D_NUM_ACUTE_IP_DAYS	<p><b>Among beneficiaries with dementia on the clinician's panel, the number who had at least one acute inpatient hospital day.</b> This is the number of beneficiaries with dementia in the clinician's panel who had at least one acute inpatient hospital claim with a discharge date (or claim thru date, if discharge date was missing) in 2023. Acute inpatient hospital claims included those from short-term acute hospitals, CAHs, children's hospitals, or hospitals designated as office of research and demonstration hospitals, identified by CMS certification number (CCN) on the inpatient claim. (They excluded claims from inpatient psychiatric units or hospitals, inpatient rehabilitation units or hospitals, and long-term hospitals.)</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with at least one acute inpatient hospital day, please use PANEL_SZ_PTS_ADRD_ANY as the denominator</i></p>	Medicare FFS inpatient claims (2023)
PANEL_D_TOT_ACUTE_IP_DAYS	<p><b>Among beneficiaries with dementia on the clinician's panel, the total number of acute inpatient days.</b> This is the total number of inpatient days in 2023 at acute inpatient hospitals, as defined above. This measure includes any day(s) in an ED or observation unit for acute inpatient admissions that began in the ED. Multiple claims representing transfers between hospitals for the same beneficiary were combined into a single record, as were multiple claims at the same hospital with overlapping dates for the same beneficiary, so these count as one admission and overlapping inpatient days are only counted once. For any inpatient stays that began before January 1, 2023, we counted days from January 1, 2023 onwards (That is, this measure counts days in 2023 only).</p>	Medicare FFS inpatient claims (2023)
PANEL_D_NUM_READMIT	<p><b>Among beneficiaries with dementia on the clinician's panel, the number who had at least one 30-day unplanned readmission.</b> This measure is based on the readmission measure developed by the Yale New Haven Health Services Corporation/Center for Outcomes Research &amp; Evaluation that is used in the Hospital Readmission Reduction Program. A 30-day unplanned readmission occurs when a discharge (called the index stay) is followed by an unplanned hospital admission within 30 days. To have a qualifying index stay, a beneficiary must (1) be enrolled in Medicare FFS Part A and not enrolled in MA in the month of admission, (2) be enrolled in Medicare FFS Part A and not enrolled in MA during the month following discharge, (3) be alive at discharge, and (4) not be discharged against medical advice. In addition, certain inpatient stays are excluded from the universe of index discharges, including discharges with lengths of stay longer than one year; stays at cancer hospitals exempt from the prospective</p>	Medicare FFS inpatient claims (2022–2023); MBSF (2022–2023)

Variable name	Variable definition	Source data (year)
	<p>payment system; and stays for psychiatric conditions, rehabilitation, cancer, or COVID-19. A 30-day unplanned readmission is any acute hospitalization within 30 days of an index discharge that does not follow an established plan of care (examples of planned admissions include those for chemotherapy and planned admission for transplant surgery). A 30-day readmission can also be an index stay. For this measure, we identified index stays that had a discharge date over the 12-month period spanning December 1, 2022 and November 30, 2023. (We did not have 2024 inpatient data to look for 30-day unplanned readmissions for index stays that ended in December 2023, which is why we used the 12-month period from December 2022 to November 2023.) We then looked for 30-day unplanned readmissions between December 1, 2022, and December 31, 2022.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with at least one 30-day unplanned readmission, please use PANEL_SZ_PTS_ADRD_ANY as the denominator</i></p>	
PANEL_D_TOT_READMIT	<p><b>Among beneficiaries with dementia on the clinician's panel, the total number of 30-day unplanned readmissions.</b> Please see above for how we measured 30-day unplanned readmissions. A beneficiary might have zero, one, or multiple 30-day unplanned readmissions in the year. This measure counts all readmissions among the NPI's panel of beneficiaries with dementia.</p>	Medicare FFS inpatient claims (2022–2023); MBSF (2022–2023)
PANEL_D_NUM_EDOBS_VISIT	<p><b>Among beneficiaries with dementia on the clinician's panel, the number who had at least one outpatient ED visit (including observation stays).</b> We flagged outpatient claims as outpatient ED visits if any revenue center line contained 045X (where "X" is a wildcard that can take any value) or 0981 (emergency room care). If there were any claims flagged as ED visits, but all revenue center lines for the claim were for imaging and tests—that is, if every revenue center line had a procedure code in the 70000–79999 or 80000–89999 range, we excluded it as an outpatient ED visit (our assumption was that it was pre-admission testing). We flagged outpatient claims as observation visits if any revenue center code contained 0762 (treatment or observation room), or 0760 (treatment or observation room—general classification) and if the number of service units was more than eight hours and the claim line had a corresponding HCPCS code of G0378 (hospital observation services per hour). A single outpatient claim might be flagged as both an ED visit and an observation stay. In this case, we only counted it as one visit. We counted only one ED visit or observation stay per beneficiary per day (with the assumption that multiple claims on the same day were part of the same episode). We then counted the number of beneficiaries with dementia on each NPI's panel who had at least one claim for an outpatient ED visit or observation stay. This measure excludes ED visits or observation stays on inpatient claims—that is, where an ED visit led to an inpatient admission at the same hospital.</p>	Medicare FFS outpatient claims (2023)

Variable name	Variable definition	Source data (year)
	<i>To calculate the percentage of the clinician's panel of dementia patients with at least one outpatient ED visit (including observation stays), please use PANEL_SZ_PTS_ADRD_ANY as the denominator</i>	
PANEL_D_TOT_EDOBS_VISIT	<b>Among beneficiaries with dementia on the clinician's panel, total number of outpatient ED visits (including observation stays).</b> This is the total number of outpatient ED visits or observation stays among all beneficiaries with dementia in the clinician's panel in 2023, as described above.	Medicare FFS outpatient claims (2023)
PANEL_D_NUM_HHA_VISIT	<b>Among beneficiaries with dementia on the clinician's panel, the number who had at least one home health visit.</b> A beneficiary had any home health visit if they had at least one home health claim with a revenue center line item containing 042X (physical therapy), 043X (occupational therapy), 044X (speech-language pathology), 055X (skilled nursing), 056X (medical social services), 057X (home health aide), or 058X (other home health visits).  <i>To calculate the percentage of the clinician's panel of dementia patients with at least one home health visit, please use PANEL_SZ_PTS_ADRD_ANY as the denominator</i>	Medicare FFS home health claims (2023)
PANEL_D_TOT_HHA_VISIT	<b>Among beneficiaries with dementia on the clinician's panel, the total number of home health visits.</b> We counted the number of home health visits for each beneficiary based on the number of home health revenue center dates on lines containing 042X (physical therapy), 043X (occupational therapy), 044X (speech-language pathology), 055X (skilled nursing), 056X (medical social services), 057X (home health aide), or 058X (other home health visits). We capped the number of home health visits to one visit per beneficiary per day per service/provider type. That is, we only allowed one visit for each provider type (e.g., physical therapy) per day for the beneficiary but otherwise allowed visits with different types of providers (e.g., physical therapy and speech-language pathology) on the same day to be counted as separate visits.	Medicare FFS home health claims (2023)
PANEL_D_NUM_SNF	<b>Among beneficiaries with dementia on the clinician's panel, the number who had at least one day in a SNF.</b> This is the number of beneficiaries with dementia in the clinician's panel who had at least one claim in the SNF file.  <i>To calculate the percentage of the clinician's panel of dementia patients with at least one day in a SNF, please use PANEL_SZ_PTS_ADRD_ANY as the denominator</i>	Medicare FFS SNF claims (2023)
PANEL_D_TOT_SNF_DAYS	<b>Among beneficiaries with dementia on the clinician's panel, the total number of days in a SNF.</b> To count days in a SNF, we first sorted SNF claims by beneficiary, claim from date, and claim through date. We then combined claims with overlapping dates of services into a single SNF stay. Then, for each stay, we calculated the length of stay as the difference between the	Medicare FFS SNF claims (2023)

Variable name	Variable definition	Source data (year)
	latest claim through date and the earliest claim from date on all claims for the same stay plus one (if the earliest claim from date of the SNF stay was before January 1, 2023, we reset it to January 1, 2023 so that only SNF days in 2023 were captured). Finally, we summed days across all SNF stays for each beneficiary. We included both paid and denied claims in the SNF stays to account for days that might not have been covered by Medicare.	
PANEL_D_NUM_HSPC	<p><b>Among beneficiaries with dementia on the clinician's panel, the number who had at least one day in hospice.</b> This is the number of beneficiaries with dementia in the clinician's panel who had at least one claim in the hospice file.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with at least one day in hospice, please use PANEL_SZ PTS_ADRD_ANY as the denominator</i></p>	Medicare FFS hospice claims (2023)
PANEL_D_TOT_HSPC_DAYS	<p><b>Among beneficiaries with dementia on the clinician's panel, the total number of days in hospice.</b> This is the total number of days in hospice among all beneficiaries with dementia in the clinician's panel. To identify days in hospice care, we first sorted hospice claims by beneficiary, claim from date, and claim through date. We then combined claims with overlapping dates of services into a single hospice stay. Then, for each stay, we calculated the length of stay in hospice as the difference between the latest claim through date and the earliest claim from date plus one. Finally, we summed all days across all hospice stays for the beneficiary.</p>	Medicare FFS hospice claims (2023)
PANEL_D_NUM_IMG	<p><b>Among beneficiaries with dementia on the clinician's panel, the total number who had at least one imaging service.</b> This is the number of beneficiaries with dementia in the clinician's panel who had at least one imaging service based on their carrier and outpatient claims. Specifically, we flagged carrier lines and outpatient revenue center records as imaging related if the procedure code on the claim mapped to an imaging service based on the publicly available 2024 Restructured BETOS Classification System (RBCS), available here: <a href="https://data.cms.gov/provider-summary-by-type-of-service/provider-service-classifications/restructured-betos-classification-system/data">https://data.cms.gov/provider-summary-by-type-of-service/provider-service-classifications/restructured-betos-classification-system/data</a> (RBCS_CAT = I for imaging).</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with at least one imaging service, please use PANEL_SZ PTS_ADRD_ANY as the denominator</i></p>	Medicare FFS carrier and outpatient claims (2023); publicly available <a href="#">RBCS crosswalk</a>
PANEL_D_TOT_IMG	<p><b>Among beneficiaries with dementia on the clinician's panel, the total number of imaging services.</b> This is the total number of imaging services, as described above, among all beneficiaries with dementia in the clinician's panel. A single claim might have more than one line (carrier file) or revenue center record (outpatient file) flagged as imaging related. We counted all imaging services in this variable.</p>	Medicare FFS carrier and outpatient claims (2023); publicly available <a href="#">RBCS crosswalk</a>

Variable name	Variable definition	Source data (year)
<b>Part D-related service use (beneficiaries with dementia in 2022 FFS claims data who were enrolled in Part D for at least one month in 2022)</b>		
PANEL_SZ_PTS_ADRD_PARTD_2022	<b>Number of Medicare FFS beneficiaries with dementia in 2022 (diagnosed by any clinician) in the clinician's panel in 2022 and who were enrolled in Part D for at least one month in 2022.</b> This is the number of unique Medicare FFS beneficiaries with dementia <sup>b</sup> with claims submitted in 2022 from the NPI—that is, where the NPI appeared in the performing provider NPI field (carrier line-level claims) or the attending NPI field (outpatient header-level claims from FQHCs, RHCs, and type II CAHs) or the prescriber NPI field (PDE claims)—and where the beneficiary was enrolled in Part D for at least one month in the year. This variable may take the value of 0. Sampled NPIs with values of 0 might have no beneficiaries with dementia enrolled in Part D in 2022, or they might have no Medicare FFS beneficiaries with dementia in 2022.	Medicare FFS carrier and outpatient <sup>a</sup> claims (2022); MSBF (2022); Part D event (PDE) claims (2022)
PANEL_D_TOT_PDE_RX_ANY	<b>Among beneficiaries with dementia on the clinician's panel, total number of Part D claims (also called fills or events) prescribed by any clinician.</b> This is the total number of PDE claims, regardless of the NPI in the prescriber field, among beneficiaries with dementia in the clinician's panel in 2022 who were enrolled in Part D for at least one month.	PDE claims (2022)
PANEL_D_TOT_PDE_RX	<b>Among beneficiaries with dementia on the clinician's panel, total number of Part D claims (also called fills or events) prescribed by this clinician.</b> This is the total number of PDE claims with the clinician's NPI in the prescriber field among beneficiaries with dementia in the clinician's panel in 2022 who were enrolled in Part D for at least one month.	PDE claims (2022)
PANEL_D_TOT_PDE_PMT_ALL_OOP	<b>Among beneficiaries with dementia on the clinician's panel, total Part D beneficiary co-payments, including third-party reimbursements (prescribed by any provider).</b> This is the total Part D out-of-pocket payments made by beneficiaries or on behalf of beneficiaries for PDE claims, regardless of the NPI in the prescriber field, for all beneficiaries with dementia in the clinician's panel in 2022 who were enrolled in Part D for at least one month.	PDE claims (2022)
PANEL_D_TOT_PDE_PMT_SELF_OOP	<b>Among beneficiaries with dementia on the clinician's panel, total Part D out-of-pocket payments made by the beneficiary, excluding third-party reimbursements (prescribed by any provider).</b> This is the total Part D out-of-pocket payments made by beneficiaries for PDE claims, regardless of the NPI in the prescriber field, for all beneficiaries with dementia in the clinician's panel in 2022 who were enrolled in Part D for at least one month.	PDE claims (2022)
PANEL_D_TOT_PDE_PMT_MCAR E	<b>Among beneficiaries with dementia on the clinician's panel, total Part D Medicare payments (prescribed by any provider).</b> This is the total Part D plan payment amount for PDE claims, regardless of the NPI in the prescriber field, for all beneficiaries with dementia in the clinician's panel in 2022 who were enrolled in Part D for at least one month.	PDE claims (2022)
PANEL_D_NUM_OPIOID_ANY	<b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for an opioid prescribed by any clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for an opioid written by	PDE claims (2022); Part D drug characteristics file (2022); Medicare

Variable name	Variable definition	Source data (year)
	<p>any clinician. To identify claims for opioids, we first compiled a list of generic opioid drug names from CMS's 2023 Medicare Part D Specific Drug Lists Report, available at: <a href="https://data.cms.gov/provider-summary-by-type-of-service/medicare-part-d-prescribers/medicare-part-d-prescribers-by-provider">https://data.cms.gov/provider-summary-by-type-of-service/medicare-part-d-prescribers/medicare-part-d-prescribers-by-provider</a> (last accessed June 6, 2025). We then searched the 2022 Part D drug characteristics file for all 11-digit National Drug Codes (NDCs) associated with those drug names, searching in both brand and generic name fields. From this initial list of NDC codes, we created a list of unique nine-digit NDCs by dropping the last two digits from each NDC code (the last two digits describe the drug packaging). We then flagged all 2022 PDE claims for beneficiaries with dementia that matched the list of NDC codes for opioids on the first nine digits, regardless of the NPI in the prescriber field. See Appendix Table 6 for a list of generic drug names for opioids.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with at least one opioid prescription written by any clinician, please use PANEL_SZ_PTS_ADRD_PARTD_2022 as the denominator</i></p>	Part D Specific Drug Lists Report (2023)
PANEL_D_NUM_OPIOID	<p><b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for an opioid prescribed by <i>this</i> clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for an opioid with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for opioids and Appendix Table 6 for a list of generic drug names for opioids.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with at least one opioid prescription written by this clinician, please use PANEL_SZ_PTS_ADRD_PARTD_2022 as the denominator</i></p>	PDE claims (2022); Part D drug characteristics file (2022); Medicare Part D Specific Drug Lists Report (2023)
PANEL_D_TOT_OPIOID	<p><b>Among beneficiaries with dementia on the clinician's panel, total number of claims for opioids prescribed by <i>this</i> clinician.</b> This is the total number of PDE claims for opioids for beneficiaries with dementia in the clinician's panel in 2022 with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for opioids and Appendix Table 6 for a list of generic drug names for opioids.</p>	PDE claims (2022); Part D drug characteristics file (2022); Medicare Part D Specific Drug Lists Report (2023)
PANEL_D_TOTDAYS_OPIOID	<p><b>Among beneficiaries with dementia on the clinician's panel, total number of days' supply for opioids prescribed by <i>this</i> clinician.</b> This is the total number of days' supply across all PDE claims for opioids for beneficiaries with dementia in the clinician's panel in 2022 with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for opioids and Appendix Table 6 for a list of generic drug names for opioids.</p>	PDE claims (2022); Part D drug characteristics file (2022); Medicare Part D Specific Drug Lists Report (2023)

Variable name	Variable definition	Source data (year)
PANEL_D_NUM_ANTIBIOTIC_ANY	<p><b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for an antibiotic prescribed by any clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for an antibiotic written by any clinician. To identify claims for antibiotics, we first compiled a list of generic antibiotic drug names from CMS's 2023 Medicare Part D Specific Drug Lists Report, available at: <a href="https://data.cms.gov/provider-summary-by-type-of-service/medicare-part-d-prescribers/medicare-part-d-prescribers-by-provider">https://data.cms.gov/provider-summary-by-type-of-service/medicare-part-d-prescribers/medicare-part-d-prescribers-by-provider</a> (last accessed June 6, 2025). We then searched the 2022 drug characteristics file for all 11-digit NDCs associated with those drug names, searching in both brand and generic name fields. From this initial list of NDC codes, we created a list of unique nine-digit NDCs by dropping the last two digits from each NDC code (the last two digits describe the drug packaging). We then flagged all 2022 PDE claims for beneficiaries with dementia that matched the list of NDC codes for antibiotics on the first nine digits, regardless of the NPI in the prescriber field. See Appendix Table 6 for a list of generic drug names for antibiotics.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with at least one antibiotic prescription written by any clinician, please use <a href="#">PANEL_SZ_PTS_ADRD_PARTD_2022</a> as the denominator</i></p>	PDE claims (2022); Part D drug characteristics file (2022); Medicare Part D Specific Drug Lists Report (2023)
PANEL_D_NUM_ANTIBIO	<p><b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for an antibiotic prescribed by this clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for an antibiotic with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for antibiotics and Appendix Table 6 for a list of generic drug names for antibiotics.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with at least one antibiotic prescription written by this clinician, please use <a href="#">PANEL_SZ_PTS_ADRD_PARTD_2022</a> as the denominator</i></p>	PDE claims (2022); Part D drug characteristics file (2022); Medicare Part D Specific Drug Lists Report (2023)
PANEL_D_TOT_ANTIBIO	<p><b>Among beneficiaries with dementia on the clinician's panel, total number of claims for antibiotics that were prescribed by this clinician.</b> This is the total number of PDE claims for antibiotics for beneficiaries with dementia in the clinician's panel in 2022 with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for antibiotics and Appendix Table 6 for a list of generic drug names for antibiotics.</p>	PDE claims (2022); Part D drug characteristics file (2022); Medicare Part D Specific Drug Lists Report (2023)
PANEL_D_TOTDAYS_ANTIBIO	<p><b>Among beneficiaries with dementia on the clinician's panel, total number of days' supply for antibiotics prescribed by this clinician.</b> This is the total number of days' supply across all PDE claims for antibiotics for beneficiaries with dementia in the clinician's panel in 2022 with the</p>	PDE claims (2022); Part D drug characteristics file (2022); Medicare Part D Specific Drug Lists Report (2023)

Variable name	Variable definition	Source data (year)
PANEL_D_NUM_ANTIPSY_ANY	<p>clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for antibiotics and Appendix Table 6 for a list of generic drug names for antibiotics.</p> <p><b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for an antipsychotic prescribed by any clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for an antipsychotic written by any clinician. To identify claims for antipsychotics, we first compiled a list of generic antipsychotic drug names from CMS's 2023 Medicare Part D Specific Drug Lists Report, available at: <a href="https://data.cms.gov/provider-summary-by-type-of-service/medicare-part-d-prescribers/medicare-part-d-prescribers-by-provider">https://data.cms.gov/provider-summary-by-type-of-service/medicare-part-d-prescribers/medicare-part-d-prescribers-by-provider</a> (last accessed June 6, 2025). We then searched the 2022 drug characteristics file for all 11-digit NDCs associated with those drug names, searching in both brand and generic name fields. From this initial list of NDC codes, we created a list of unique nine-digit NDCs by dropping the last two digits from each NDC code (the last two digits describe the drug packaging). We then flagged all 2022 PDE claims for beneficiaries with dementia that matched the list of NDC codes for antipsychotics on the first nine digits, regardless of the NPI in the prescriber field. See Appendix Table 6 for a list of generic drug names for antipsychotics.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with at least one antipsychotic prescription written by any clinician, please use <a href="#">PANEL_SZ_PTS_ADRD_PARTD_2022</a> as the denominator</i></p>	PDE claims (2022); Part D drug characteristics file (2022); Medicare Part D Specific Drug Lists Report (2023)
PANEL_D_NUM_ANTIPSY	<p><b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for an antipsychotic prescribed by this clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for an antipsychotic with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for antipsychotics and Appendix Table 6 for a list of generic drug names for antipsychotics.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with at least one antipsychotic prescription written by this clinician, please use <a href="#">PANEL_SZ_PTS_ADRD_PARTD_2022</a> as the denominator</i></p>	PDE claims (2022); Part D drug characteristics file (2022); Medicare Part D Specific Drug Lists Report (2023)
PANEL_D_TOT_ANTIPSY	<p><b>Among beneficiaries with dementia on the clinician's panel, total number of claims for antipsychotics that were prescribed by this clinician.</b> This is the total number of PDE claims for antipsychotics for beneficiaries with dementia in the clinician's panel in 2022 with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for antipsychotics and Appendix Table 6 for a list of generic drug names for antipsychotics.</p>	PDE claims (2022); Part D drug characteristics file (2022); Medicare Part D Specific Drug Lists Report (2023)

Variable name	Variable definition	Source data (year)
PANEL_D_TOTDAYS_ANTIPSY	<b>Among beneficiaries with dementia on the clinician's panel, total number of days' supply for antipsychotics prescribed by <i>this</i> clinician.</b> This is the total number of days' supply across all PDE claims for antipsychotics for beneficiaries with dementia in the clinician's panel in 2022 with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for antipsychotics and Appendix Table 6 for a list of generic drug names for antipsychotics.	PDE claims (2022); Part D drug characteristics file (2022); Medicare Part D Specific Drug Lists Report (2023)
PANEL_D_NUM_ANTIDEP_ANY	<b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for an antidepressant prescribed by <i>any</i> clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for an antidepressant written by any clinician. To identify claims for antidepressants, we first compiled a list of generic antidepressant drug names from the American Hospital Formulary System (AHFS) Pharmacologic-Therapeutic Classification. The full 2019 AHFS list is publicly available at: <a href="https://www.oregon.gov/obnm/Documents/Formulary%20Information/AHFSCClassificationwithDru gs2019.pdf">https://www.oregon.gov/obnm/Documents/Formulary%20Information/AHFSCClassificationwithDru gs2019.pdf</a> (last accessed June 6, 2025). We then searched the 2022 drug characteristics file for all 11-digit NDCs associated with those drug names, searching in both brand and generic name fields. From this initial list of NDC codes, we created a list of unique nine-digit NDCs by dropping the last two digits from each NDC code (the last two digits describe the drug packaging). We then flagged all 2022 PDE claims for beneficiaries with dementia that matched the list of NDC codes for antidepressants on the first nine digits, regardless of the NPI in the prescriber field. See Appendix Table 6 for a list of generic drug names for antidepressants.  <i>To calculate the percentage of the clinician's panel of dementia patients with at least one antidepressant prescription written by any clinician, please use <a href="#">PANEL_SZ_PTS_ADRD_PARTD_2022</a> as the denominator</i>	PDE claims (2022); Part D drug characteristics file (2022); AHFS Pharmacologic-Therapeutic Classification (2019)
PANEL_D_NUM_ANTIDEP	<b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for an antidepressant prescribed by <i>this</i> clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for an antidepressant with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for antidepressants and Appendix Table 6 for a list of generic drug names for antidepressants.  <i>To calculate the percentage of the clinician's panel of dementia patients with at least one antidepressant prescription written by this clinician, please use <a href="#">PANEL_SZ_PTS_ADRD_PARTD_2022</a> as the denominator</i>	PDE claims (2022); Part D drug characteristics file (2022); AHFS Pharmacologic-Therapeutic Classification (2019)

Variable name	Variable definition	Source data (year)
PANEL_D_TOT_ANTIDEP	<b>Among beneficiaries with dementia on the clinician's panel, total number of claims for antidepressants that were prescribed by <i>this</i> clinician.</b> This is the total number of PDE claims for antidepressants for beneficiaries with dementia in the clinician's panel in 2022 with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for antidepressants and Appendix Table 6 for a list of generic drug names for antidepressants.	PDE claims (2022); Part D drug characteristics file (2022); AHFS Pharmacologic-Therapeutic Classification (2019)
PANEL_D_TOTDAYS_ANTIDEP	<b>Among beneficiaries with dementia on the clinician's panel, total number of days' supply for antidepressants prescribed by <i>this</i> clinician.</b> This is the total number of days' supply across all PDE claims for antidepressants for beneficiaries with dementia in the clinician's panel in 2022 with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for antidepressants and Appendix Table 6 for a list of generic drug names for antidepressants.	PDE claims (2022); Part D drug characteristics file (2022); AHFS Pharmacologic-Therapeutic Classification (2019)
PANEL_D_NUM_BENZO_ANY	<b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for a benzodiazepine or Z-drug prescribed by <i>any</i> clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for a benzodiazepine or Z-drug written by any clinician. To identify claims for benzodiazepines or Z-drugs, we first compiled a list of generic benzodiazepine or Z-drug names from the AHFS Pharmacologic-Therapeutic Classification. The full 2019 AHFS list is publicly available at: <a href="https://www.oregon.gov/obnm/Documents/Formulary%20Information/AHFSClassificationwithDrugs2019.pdf">https://www.oregon.gov/obnm/Documents/Formulary%20Information/AHFSClassificationwithDrugs2019.pdf</a> (last accessed June 6, 2025). We then searched the 2022 drug characteristics file for all 11-digit NDCs associated with those drug names, searching in both brand and generic name fields. From this initial list of NDC codes, we created a list of unique nine-digit NDCs by dropping the last two digits from each NDC code (the last two digits describe the drug packaging). We then flagged all 2022 PDE claims for beneficiaries with dementia that matched the list of NDC codes for benzodiazepines or Z-drugs on the first nine digits, regardless of the NPI in the prescriber field. See Appendix Table 6 for a list of generic drug names for benzodiazepines or Z-drugs.  <i>To calculate the percentage of the clinician's panel of dementia patients with at least one benzodiazepine or Z-drug prescription written by any clinician, please use <a href="#">PANEL_SZ_PTS_ADRD_PARTD_2022</a> as the denominator</i>	PDE claims (2022); Part D drug characteristics file (2022); AHFS Pharmacologic-Therapeutic Classification (2019)
PANEL_D_NUM_BENZO	<b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for a benzodiazepine or Z-drug prescribed by <i>this</i> clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for a benzodiazepine or Z-drug with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for benzodiazepines or Z-drugs and Appendix Table 6 for a list of generic drug names for benzodiazepines or Z-drugs.	PDE claims (2022); Part D drug characteristics file (2022); AHFS Pharmacologic-Therapeutic Classification (2019)

Variable name	Variable definition	Source data (year)
	<i>To calculate the percentage of the clinician's panel of dementia patients with at least one benzodiazepine or Z-drug prescription written by this clinician, please use <a href="#">PANEL_SZ_PTS_ADRD_PARTD_2022</a> as the denominator</i>	
PANEL_D_TOT_BENZO	<b>Among beneficiaries with dementia on the clinician's panel, total number of claims for benzodiazepines or Z-drugs that were prescribed by <i>this</i> clinician.</b> This is the total number of PDE claims for benzodiazepines or Z-drugs for beneficiaries with dementia in the clinician's panel in 2022 with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for benzodiazepines or Z-drugs and Appendix Table 6 for a list of generic drug names for benzodiazepines or Z-drugs.	PDE claims (2022); Part D drug characteristics file (2022); AHFS Pharmacologic-Therapeutic Classification (2019)
PANEL_D_TOTDAYS_BENZO	<b>Among beneficiaries with dementia on the clinician's panel, total number of days' supply for benzodiazepines or Z-drugs prescribed by <i>this</i> clinician.</b> This is the total number of days' supply across all PDE claims for benzodiazepines or Z-drugs for beneficiaries with dementia in the clinician's panel in 2022 with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for benzodiazepines or Z-drugs and Appendix Table 6 for a list of generic drug names for benzodiazepines or Z-drugs.	PDE claims (2022); Part D drug characteristics file (2022); AHFS Pharmacologic-Therapeutic Classification (2019)
PANEL_D_NUM_ANTISEI_ANY	<b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for an antiseizure medication prescribed by <i>any</i> clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for an antiseizure medication written by any clinician. To identify claims for antiseizure medications, we first compiled a list of generic antiseizure drug names from the AHFS Pharmacologic-Therapeutic Classification. The full 2019 AHFS list is publicly available at: <a href="https://www.oregon.gov/obnm/Documents/Formulary%20Information/AHFSClassificationwithDrgs2019.pdf">https://www.oregon.gov/obnm/Documents/Formulary%20Information/AHFSClassificationwithDrgs2019.pdf</a> (last accessed June 6, 2025). We then searched the 2022 drug characteristics file for all 11-digit NDCs associated with those drug names, searching in both brand and generic name fields. From this initial list of NDC codes, we created a list of unique nine-digit NDCs by dropping the last two digits from each NDC code (the last two digits describe the drug packaging). We then flagged all 2022 PDE claims for beneficiaries with dementia that matched the list of NDC codes for antiseizure medications on the first nine digits, regardless of the NPI in the prescriber field. See Appendix Table 6 for a list of generic drug names for antiseizure medications.  <i>To calculate the percentage of the clinician's panel of dementia patients with at least one antiseizure prescription written by any clinician, please use <a href="#">PANEL_SZ_PTS_ADRD_PARTD_2022</a> as the denominator</i>	PDE claims (2022); Part D drug characteristics file (2022); AHFS Pharmacologic-Therapeutic Classification (2019)
PANEL_D_NUM_ANTISEI	<b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for an antiseizure medication prescribed by <i>this</i> clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for an	PDE claims (2022); Part D drug characteristics file (2022); AHFS

Variable name	Variable definition	Source data (year)
	<p>antiseizure medication with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for antiseizure medications and Appendix Table 6 for a list of generic drug names for antiseizure medications.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with at least one antiseizure prescription written by this clinician, please use <u>PANEL_SZ_PTS_ADRD_PARTD_2022 as the denominator</u></i></p>	Pharmacologic-Therapeutic Classification (2019)
PANEL_D_TOT_ANTISEI	<p><b>Among beneficiaries with dementia on the clinician's panel, total number of claims for antiseizure medications that were prescribed by <i>this</i> clinician.</b> This is the total number of PDE claims for antiseizure medications for beneficiaries with dementia in the clinician's panel in 2022 with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for antiseizure medications and Appendix Table 6 for a list of generic drug names for antiseizure medications.</p>	PDE claims (2022); Part D drug characteristics file (2022); AHFS Pharmacologic-Therapeutic Classification (2019)
PANEL_D_TOTDAYS_ANTISEI	<p><b>Among beneficiaries with dementia on the clinician's panel, total number of days' supply for antiseizure medications prescribed by <i>this</i> clinician.</b> This is the total number of days' supply across all PDE claims for antiseizure medications for beneficiaries with dementia in the clinician's panel in 2022 with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for antiseizure medications and Appendix Table 6 for a list of generic drug names for antiseizure medications.</p>	PDE claims (2022); Part D drug characteristics file (2022); AHFS Pharmacologic-Therapeutic Classification (2019)
PANEL_D_NUM_CHOLMEM_ANY	<p><b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for a cholinesterase inhibitor or memantine prescribed by <i>any</i> clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for a cholinesterase inhibitor or memantine written by any clinician. To identify claims for cholinesterase inhibitors or memantine, we first compiled a list of generic drug names for cholinesterase inhibitors or memantine. We then searched the 2022 drug characteristics file for all 11-digit NDCs associated with those drug names, searching in both brand and generic name fields. From this initial list of NDC codes, we created a list of unique nine-digit NDCs by dropping the last two digits from each NDC code (the last two digits describe the drug packaging). We then flagged all 2022 PDE claims for beneficiaries with dementia that matched the list of NDC codes for cholinesterase inhibitors or memantine on the first nine digits, regardless of the NPI in the prescriber field. See Appendix Table 6 for a list of generic drug names for cholinesterase inhibitors or memantine.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with at least one cholinesterase inhibitor or memantine prescription written by any clinician, please use <u>PANEL_SZ_PTS_ADRD_PARTD_2022 as the denominator</u></i></p>	PDE claims (2022); Part D drug characteristics file (2022)

Variable name	Variable definition	Source data (year)
PANEL_D_NUM_CHOLMEM	<p><b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for a cholinesterase inhibitor or memantine prescribed by <i>this</i> clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for a cholinesterase inhibitor or memantine with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for cholinesterase inhibitors or memantine and Appendix Table 6 for a list of generic drug names for cholinesterase inhibitors or memantine.</p> <p><i>To calculate the percentage of the clinician's panel of dementia patients with at least one cholinesterase inhibitor or memantine prescription written by this clinician, please use <a href="#">PANEL_SZ_PTS_ADRD_PARTD_2022</a> as the denominator</i></p>	PDE claims (2022); Part D drug characteristics file (2022)
PANEL_D_TOT_CHOLMEM	<p><b>Among beneficiaries with dementia on the clinician's panel, total number of claims for cholinesterase inhibitors or memantine that were prescribed by <i>this</i> clinician.</b> This is the total number of PDE claims for a cholinesterase inhibitor or memantine for beneficiaries with dementia in the clinician's panel in 2022 with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for cholinesterase inhibitors or memantine and Appendix Table 6 for a list of generic drug names for cholinesterase inhibitors or memantine.</p>	PDE claims (2022); Part D drug characteristics file (2022)
PANEL_D_TOTDAYS_CHOLMEM	<p><b>Among beneficiaries with dementia on the clinician's panel, total number of days' supply for cholinesterase inhibitors or memantine prescribed by <i>this</i> clinician.</b> This is the total number of days' supply across all PDE claims for cholinesterase inhibitors or memantine for beneficiaries with dementia in the clinician's panel in 2022 with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for cholinesterase inhibitors or memantine and Appendix Table 6 for a list of generic drug names for cholinesterase inhibitors or memantine.</p>	PDE claims (2022); Part D drug characteristics file (2022)
PANEL_D_NUM_ANTICHOL_ANY	<p><b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for a strongly anticholinergic medication prescribed by <i>any</i> clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for a strongly anticholinergic medication written by any clinician. To identify claims for strongly anticholinergic medications, we first compiled a list of generic drug names for medications with strongly anticholinergic properties from the 2023 American Geriatrics Society (AGS) Beers Criteria.<sup>e</sup> We then searched the 2022 drug characteristics file for all 11-digit NDCs associated with those drug names, searching in both brand and generic name fields. From this initial list of NDC codes, we created a list of unique nine-digit NDCs by dropping the last two digits from each NDC code (the last two digits describe the drug packaging). We then flagged all 2022 PDE claims for beneficiaries with dementia that matched the list of NDC codes for strongly anticholinergic medications on the first nine digits, regardless of the NPI in the prescriber field. See Appendix Table 6 for a list of generic drug names for strongly anticholinergic medications.</p>	PDE claims (2022); Part D drug characteristics file (2022); AGS Beers Criteria (2023)

Variable name	Variable definition	Source data (year)
	<i>To calculate the percentage of the clinician's panel of dementia patients with at least one strongly anticholinergic medication prescription written by any clinician, please use <a href="#">PANEL_SZ PTS_ADRD_PARTD_2022</a> as the denominator</i>	
PANEL_D_NUM_ANTICHOL	<b>Among beneficiaries with dementia on the clinician's panel, the number who filled a prescription for a strongly anticholinergic medication prescribed by <i>this</i> clinician.</b> This is the number of beneficiaries with dementia in the clinician's panel in 2022 who had one or more claims for a strongly anticholinergic medication with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for strongly anticholinergic medications and Appendix Table 6 for a list of generic drug names for strongly anticholinergic medications.  <i>To calculate the percentage of the clinician's panel of dementia patients with at least one strongly anticholinergic medication prescription written by this clinician, please use <a href="#">PANEL_SZ PTS_ADRD_PARTD_2022</a> as the denominator</i>	PDE claims (2022); Part D drug characteristics file (2022); AGS Beers Criteria (2023)
PANEL_D_TOT_ANTICHOL	<b>Among beneficiaries with dementia on the clinician's panel, total number of claims for strongly anticholinergic medications prescribed by <i>this</i> clinician.</b> This is the total number of PDE claims for strongly anticholinergic medications for beneficiaries with dementia in the clinician's panel in 2022 with the clinician's NPI in the prescriber field. See above for details on how we identified PDE claims for strongly anticholinergic medications and Appendix Table 6 for a list of generic drug names for strongly anticholinergic medications.	PDE claims (2022); Part D drug characteristics file (2022); AGS Beers Criteria (2023)
PANEL_D_TOTDAYS_ANTICHOL	<b>Among beneficiaries with dementia on the clinician's panel, total number of days' supply for strongly anticholinergic medications prescribed by <i>this</i> clinician.</b> This is the total number of days' supply across all PDE claims for strongly anticholinergic medications for beneficiaries with dementia in the clinician's panel in 2022 with the clinician's NPI in the prescriber field. See above for details on how we identified Part D claims for strongly anticholinergic medications and Appendix Table 6 for a list of generic drug names for strongly anticholinergic medications.	PDE claims (2022); Part D drug characteristics file (2022); AGS Beers Criteria (2023)

<sup>a</sup> Outpatient claims were limited to claims from federally qualified health centers (FQHCs), rural health centers (RHCs), and type II critical access hospitals (CAHs).

<sup>b</sup> We identified beneficiaries with dementia using the Bynum-Standard algorithm, updated to include new diagnosis code intensifiers active as of October 1, 2022. (For more information on the Bynum-Standard algorithm, see Grodstein, F., C.-H. Chang, A.W. Capuano, M.C. Power, D.X. Marquez, L.L. Barnes, D.A. Bennett, et al. "Identification of Dementia in Recent Medicare Claims Data, Compared With Rigorous Clinical Assessments." *The Journals of Gerontology, Series A*, vol. 77, no. 6, 2021, pp. 1272–1278. <https://doi.org/10.1093/gerona/glab377>.) See Appendix Table 2 for a full list of dementia diagnosis codes.

<sup>c</sup> Additional information about the claims-based frailty index (CFI) is available at: [Measuring Frailty in Medicare Data: Development and Validation of a Claims-Based Frailty Index - PubMed \(nih.gov\)](#) and [Validation of a Claims-Based Frailty Index Against Physical Performance and Adverse Health Outcomes in the Health and Retirement Study - PubMed \(nih.gov\)](#).

<sup>d</sup> The following new dementia diagnosis codes that became active on October 1, 2022 are added to the CFI's category 13: F01.511, F01.518, F01.52, F01.53, F01.54, F01.A, F01.A0, F01.A1, F01.A11, F01.A18, F01.A2, F01.A3, F01.A4, F01.B, F01.B0, F01.B1, F01.B11, F01.B18, F01.B2, F01.B3, F01.B4, F01.C, F01.C0, F01.C1, F01.C11, F01.C18, F01.C2, F01.C3, F01.C4, F02.811, F02.818, F02.82, F02.83, F02.84, F02.A, F02.A0, F02.A1, F02.A11, F02.A18, F02.A2, F02.A3, F02.A4, F02.B, F02.B0, F02.B1, F02.B11, F02.B18, F02.B2, F02.B3, F02.B4, F02.C, F02.C0, F02.C1, F02.C11, F02.C18, F02.C2, F02.C3, F02.C4, F03.911, F03.918, F03.92, F03.93, F03.94, F03.A, F03.A0, F03.A1, F03.A11, F03.A18, F03.A2, F03.A3, F03.A4, F03.B, F03.B0, F03.B1, F03.B11, F03.B18, F03.B2, F03.B3, F03.B4, F03.C, F03.C0, F03.C1, F03.C11, F03.C18, F03.C2, F03.C3, and F03.C4.

<sup>e</sup> 2023 AGS Beers Criteria® Update Expert Panel. "The American Geriatrics Society 2023 updated AGS Beers Criteria® for potentially inappropriate medication use in older adults." *Journal of American Geriatrics Society*, 2023, vol. 71, no. 7, pp. 2052–2081. <https://doi.org/10.1111/jgs.18372><https://doi.org/10.1111/jgs.18372>.

AGS = American Geriatrics Society; AHFS = American Hospital Formulary System; CAH = critical access hospital; CCN = CMS certification number; CCW = Chronic Condition Warehouse; CDC = Centers for Disease Control and Prevention; CFI = claims-based frailty index; CMS = Centers for Medicare & Medicaid Services; CY = calendar year; DME = durable medical equipment; ED = emergency department; e.g. = for example; FFS = fee-for-service; FQHC = federally qualified health center; HCC = hierarchical condition category; MA = Medicare Advantage; MD/DO = doctor of medicine or doctor of osteopathic medicine; NDC = National Drug Code; NP = nurse practitioner; NPI = National Provider Identifier; NPPES = National Plan and Provider Enumeration System; OUD = opioid use disorder; PA = physician assistant; PDE = Part D event; RBCS = Restructured BETOS Classification System; RHC = rural health center; RUCA = rural-urban commuting area; RUCC = rural-urban continuum code; SNF = skilled nursing facility; SVI = social vulnerability index; UA = urban area; UC = urban cluster; USDA = U.S. Department of Agriculture.

**Appendix Table 1.** Taxonomy codes used to identify clinicians with primary care, neurology, or psychiatry specialties

Taxonomy code	Definition	Specialty	Licensure
207LH0002X	Allopathic & Osteopathic Physicians/Anesthesiology/Hospice and Palliative Medicine	Primary care	MD/DO
207PH0002X	Allopathic & Osteopathic Physicians/Surgery/Hospice and Palliative Medicine, Emergency Medicine	Primary care	MD/DO
207Q00000X	Allopathic & Osteopathic Physicians/Family Medicine	Primary care	MD/DO
207QA0000X	Allopathic & Osteopathic Physicians/Family Medicine, Adolescent Medicine	Primary care	MD/DO
207QA0401X	Allopathic & Osteopathic Physicians/Family Medicine, Addiction Medicine	Primary care	MD/DO
207QA0505X	Allopathic & Osteopathic Physicians/Family Medicine, Adult Medicine	Primary care	MD/DO
207QG0300X	Allopathic & Osteopathic Physicians/Family Medicine, Geriatric Medicine	Primary care	MD/DO
207QH0002X	Allopathic & Osteopathic Physicians/Family Medicine, Hospice and Palliative Medicine	Primary care	MD/DO
207QS0010X	Allopathic & Osteopathic Physicians/Family Medicine, Sports Medicine	Primary care	MD/DO
207QS1201X	Allopathic & Osteopathic Physicians/Family Medicine, Sleep Medicine	Primary care	MD/DO
207R00000X	Allopathic & Osteopathic Physicians/Internal Medicine	Primary care	MD/DO
207RA0000X	Allopathic & Osteopathic Physicians/Internal Medicine, Adolescent Medicine	Primary care	MD/DO
207RA0002X	Allopathic & Osteopathic Physicians/Internal Medicine/Adult Congenital Heart Disease	Primary care	MD/DO
207RA0401X	Allopathic & Osteopathic Physicians/Internal Medicine, Addiction Medicine	Primary care	MD/DO
207RG0300X	Allopathic & Osteopathic Physicians/Internal Medicine, Geriatric Medicine	Primary care	MD/DO
207RH0002X	Allopathic & Osteopathic Physicians/Internal Medicine, Hospice and Palliative Medicine	Primary care	MD/DO
207RS0010X	Allopathic & Osteopathic Physicians/Internal Medicine, Sports Medicine	Primary care	MD/DO
207RS0012X	Allopathic & Osteopathic Physicians/Internal Medicine, Sleep Medicine	Primary care	MD/DO
207VH0002X	Allopathic & Osteopathic Physicians/Obstetrics & Gynecology, Hospice and Palliative Medicine	Primary care	MD/DO
2080H0002X	Allopathic & Osteopathic Physicians/Pediatrics, Hospice and Palliative Medicine	Primary care	MD/DO
2081H0002X	Allopathic & Osteopathic Physicians/Physical Medicine & Rehabilitation, Hospice and Palliative Medicine	Primary care	MD/DO
2083P0901X	Allopathic & Osteopathic Physicians/Preventive Medicine, Public Health & General Preventive Medicine	Primary care	MD/DO
2084H0002X	Allopathic & Osteopathic Physicians/Surgery/Hospice and Palliative Medicine, Neuropsychiatry	Primary care	MD/DO
2085H0002X	Hospice & Palliative Medicine	Primary care	MD/DO
2086H0002X	Allopathic & Osteopathic Physicians/Surgery/Hospice and Palliative Medicine	Primary care	MD/DO
208D00000X	Allopathic & Osteopathic Physicians/General Practice	Primary care	MD/DO
363A00000X	Physician Assistants & Advanced Practice Nursing Providers/Physician Assistant	Primary care	PA
363AM0700X	Physician Assistants & Advanced Practice Nursing Providers/Physician Assistant, Medical	Primary care	PA
363L00000X	Physician Assistants & Advanced Practice Nursing Providers/Nurse Practitioner	Primary care	NP
363LA2200X	Physician Assistants & Advanced Practice Nursing Providers/Nurse Practitioner, Adult Health	Primary care	NP

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363LC1500X	Physician Assistants & Advanced Practice Nursing Providers/Nurse Practitioner, Community Health	Primary care	NP
363LF0000X	Physician Assistants & Advanced Practice Nursing Providers/Nurse Practitioner, Family	Primary care	NP
363LG0600X	Physician Assistants & Advanced Practice Nursing Providers/Nurse Practitioner, Gerontology	Primary care	NP
363LP2300X	Physician Assistants & Advanced Practice Nursing Providers/Nurse Practitioner, Primary Care	Primary care	NP
2084A0401X	Allopathic & Osteopathic Physicians/Psychiatry & Neurology, Addiction Medicine	Psychiatry	MD/DO
2084B0002X	Allopathic & Osteopathic Physicians/ Psychiatry & Neurology, Bariatric Medicine	Psychiatry	MD/DO
2084B0040X	Allopathic & Osteopathic Physicians/Psychiatry & Neurology/Behavioral Neurology & Neuropsychiatry	Psychiatry	MD/DO
2084F0202X	Allopathic & Osteopathic Physicians/ Psychiatry & Neurology, Forensic Psychiatry	Psychiatry	MD/DO
2084P0015X	Allopathic & Osteopathic Physicians/ Psychiatry & Neurology, Psychosomatic Medicine	Psychiatry	MD/DO
2084P0301X	Allopathic & Osteopathic Physicians/Psychiatry & Neurology/Respiratory, Developmental, Rehabilitative and Restorative Service, Brain Injury Medicine	Psychiatry	MD/DO
2084P0800X	Allopathic & Osteopathic Physicians/Psychiatry	Psychiatry	MD/DO
2084P0802X	Allopathic & Osteopathic Physicians/ Psychiatry & Neurology, Addiction Psychiatry	Psychiatry	MD/DO
2084P0804X	Allopathic & Osteopathic Physicians/ Psychiatry & Neurology, Child & Adolescent Psychiatry	Psychiatry	MD/DO
2084P0805X	Allopathic & Osteopathic Physicians/ Psychiatry & Neurology, Geriatric Psychiatry	Psychiatry	MD/DO
2084P2900X	Allopathic & Osteopathic Physicians/ Psychiatry & Neurology, Pain Medicine	Psychiatry	MD/DO
2084S0010X	Allopathic & Osteopathic Physicians/ Psychiatry & Neurology, Sports Medicine	Psychiatry	MD/DO
2084S0012X	Allopathic & Osteopathic Physicians/ Psychiatry & Neurology, Sleep Medicine	Psychiatry	MD/DO
363LP0808X	Physician Assistants & Advanced Practice Nursing Providers/Nurse Practitioner, Psychiatric/Mental Health	Psychiatry	NP
2084A2900X	Allopathic & Osteopathic Physicians/Psychiatry & Neurology/Neurocritical Care	Neurology	MD/DO
2084D0003X	Allopathic & Osteopathic Physicians/ Psychiatry & Neurology, Diagnostic Neuroimaging	Neurology	MD/DO
2084E0001X	Allopathic & Osteopathic Physicians/Psychiatry & Neurology/Epilepsy	Neurology	MD/DO
2084N0008X	Allopathic & Osteopathic Physicians/ Psychiatry & Neurology, Neuromuscular Medicine	Neurology	MD/DO
2084N0400X	Allopathic & Osteopathic Physicians/Psychiatry and Neurology, Neurology	Neurology	MD/DO
2084N0402X	Allopathic & Osteopathic Physicians/Psychiatry and Neurology, Neurology with Special Qualifications in Child Neurology	Neurology	MD/DO
2084N0600X	Allopathic & Osteopathic Physicians/ Psychiatry & Neurology, Clinical Neurophysiology	Neurology	MD/DO
2084P0005X	Allopathic & Osteopathic Physicians/ Psychiatry & Neurology, Neurodevelopmental Disabilities	Neurology	MD/DO
2084V0102X	Allopathic & Osteopathic Physicians/ Psychiatry & Neurology, Vascular Neurology	Neurology	MD/DO

**Appendix Table 2.** ICD-10 diagnosis codes to identify patients with dementia

Dementia diagnosis codes	Description
<b><i>Bynum-standard algorithm<sup>a,b</sup></i></b>	
F01.50–F01.51	Vascular dementia
F02.80–F02.81	Dementia
F03.90–F03.91	Unspecified dementia
F04	Amnesic disorder
G30.0, G30.1, G30.8, G30.9	Alzheimer's disease
G31.01	Pick's disease
G31.09	Frontotemporal dementia
G31.83	Dementia with Lewy bodies
G31.1	Senile degeneration
G31.2	Degeneration of nervous system
R41.81	Age-related cognitive decline
<b><i>New dementia-related ICD-10 codes effective as of October 1, 2022</i></b>	
F01	Vascular dementia (non-billable code)
F015	Vascular dementia, unspecified severity (non-billable code)
F01.511	Vascular dementia, unspecified severity, with agitation
F01.518	Vascular dementia, unspecified severity, with other behavioral disturbance
F01.52	Vascular dementia, unspecified severity, with psychotic disturbance
F01.53	Vascular dementia, unspecified severity, with mood disturbance
F01.54	Vascular dementia, unspecified severity, with anxiety
F01.A	Vascular dementia, mild
F01.A0	Vascular dementia, mild, without behavioral disturbance, psychotic disturbance, mood disturbance, and anxiety
F01.A1	Vascular dementia, mild, with behavioral disturbance
F01.A11	Vascular dementia, mild, with agitation
F01.A18	Vascular dementia, mild, with other behavioral disturbance
F01.A2	Vascular dementia, mild, with psychotic disturbance
F01.A3	Vascular dementia, mild, with mood disturbance
F01.A4	Vascular dementia, mild, with anxiety
F01.B	Vascular dementia, moderate
F01.B0	Vascular dementia, moderate, without behavioral disturbance, psychotic disturbance, mood disturbance, and anxiety
F01.B1	Vascular dementia, moderate, with behavioral disturbance
F01.B11	Vascular dementia, moderate, with agitation
F01.B18	Vascular dementia, moderate, with other behavioral disturbance
F01.B2	Vascular dementia, moderate, with psychotic disturbance
F01.B3	Vascular dementia, moderate, with mood disturbance
F01.B4	Vascular dementia, moderate, with anxiety
F01.C	Vascular dementia, severe
F01.C0	Vascular dementia, severe, without behavioral disturbance, psychotic disturbance, mood disturbance, and anxiety
F01.C1	Vascular dementia, severe, with behavioral disturbance
F01.C11	Vascular dementia, severe, with agitation
F01.C18	Vascular dementia, severe, with other behavioral disturbance
F01.C2	Vascular dementia, severe, with psychotic disturbance
F01.C3	Vascular dementia, severe, with mood disturbance
F01.C4	Vascular dementia, severe, with anxiety
F02	Dementia in diseases classified elsewhere (non-billable code)
F028	Dementia in diseases classified elsewhere, unspecified severity
F02.811	Dementia in other diseases classified elsewhere, unspecified severity, with agitation
F02.818	Dementia in other diseases classified elsewhere, unspecified severity, with other behavioral disturbance

F02.82	Dementia in other diseases classified elsewhere, unspecified severity, with psychotic disturbance
F02.83	Dementia in other diseases classified elsewhere, unspecified severity, with mood disturbance
F02.84	Dementia in other diseases classified elsewhere, unspecified severity, with anxiety
F02.A	Dementia in other diseases classified elsewhere, mild
F02.A0	Dementia in other diseases classified elsewhere, mild, without behavioral disturbance, psychotic disturbance, mood disturbance, anxiety
F02.A1	Dementia in other diseases classified elsewhere, mild, with behavioral disturbance
F02.A11	Dementia in other diseases classified elsewhere, mild, with agitation
F02.A18	Dementia in other diseases classified elsewhere, mild, with other behavioral disturbance
F02.A2	Dementia in other diseases classified elsewhere, mild, with psychotic disturbance
F02.A3	Dementia in other diseases classified elsewhere, mild, with mood disturbance
F02.A4	Dementia in other diseases classified elsewhere, mild, with anxiety
F02.B	Dementia in other diseases classified elsewhere, moderate
F02B0	Dementia in other diseases classified elsewhere without behavioral disturbance, mood disturbance, and anxiety
F02.B1	Dementia in other diseases classified elsewhere, moderate, with behavioral disturbance
F02.B11	Dementia in other diseases classified elsewhere, moderate, with agitation
F02.B18	Dementia in other diseases classified elsewhere, moderate, with other behavioral disturbance
F02.B2	Dementia in other diseases classified elsewhere, moderate, with psychotic disturbance
F02.B3	Dementia in other diseases classified elsewhere, moderate, with mood disturbance
F02.B4	Dementia in other diseases classified elsewhere, moderate, with anxiety
F02.C	Dementia in other diseases classified elsewhere, severe
F02.C0	Vascular in other diseases classified elsewhere, without behavioral disturbance, psychotic disturbance, mood disturbance, and anxiety
F02.C1	Dementia in other diseases classified elsewhere, severe, with behavioral disturbance
F02.C11	Dementia in other diseases classified elsewhere, severe, with agitation
F02.C18	Dementia in other diseases classified elsewhere, severe, with other behavioral disturbance
F02.C2	Dementia in other diseases classified elsewhere, severe, with psychotic disturbance
F02.C3	Dementia in other diseases classified elsewhere, severe, with mood disturbance
F02.C4	Dementia in other diseases classified elsewhere, severe, with anxiety
F03	Unspecified dementia (non-billable code)
F039	Unspecified dementia (also non-billable)
F03.911	Unspecified dementia, unspecified severity, with agitation
F03.918	Unspecified dementia, unspecified severity, with other behavioral disturbance
F03.92	Unspecified dementia, unspecified severity, with psychotic disturbance
F0393	Unspecified dementia, unspecified severity, with mood disturbance
F03.94	Unspecified dementia, unspecified severity, with anxiety
F03.A	Unspecified dementia, mild
F03.A0	Unspecified dementia, mild, without behavioral disturbance, psychotic disturbance, mood disturbance, anxiety
F03.A1	Unspecified dementia, mild, with behavioral disturbance
F03.A11	Unspecified dementia, mild, with agitation
F03.A18	Unspecified dementia, mild, with other behavioral disturbance

F03.A2	Unspecified dementia, mild, with psychotic disturbance
F03.A3	Unspecified dementia, mild, with mood disturbance
F03.A4	Unspecified dementia, mild, with anxiety
F03.B	Unspecified dementia, moderate
F03.B0	Unspecified dementia, moderate, without behavioral disturbance, psychotic disturbance, mood disturbance, anxiety
F03.B1	Unspecified dementia, moderate, with behavioral disturbance
F03.B11	Unspecified dementia, moderate, with agitation
F03.B18	Unspecified dementia, moderate, with other behavioral disturbance
F03.B2	Unspecified dementia, moderate, with psychotic disturbance
F03.B3	Unspecified dementia, moderate, with mood disturbance
F03.B4	Unspecified dementia, moderate, with anxiety
F03.C	Unspecified dementia, severe
F03.C0	Unspecified dementia, severe, without behavioral disturbance, psychotic disturbance, mood disturbance, anxiety
F03.C1	Unspecified dementia, severe, with behavioral disturbance
F03.C11	Unspecified dementia, severe, with agitation
F03.C18	Unspecified dementia, severe, with other behavioral disturbance
F03.C2	Unspecified dementia, severe, with psychotic disturbance
F03.C3	Unspecified dementia, severe, with mood disturbance
F03.C4	Unspecified dementia, severe, with anxiety
G30	Alzheimer's disease (non-billable code)
G310	Frontotemporal dementia (non-billable code)

<sup>a</sup> Online supplementary materials from Grodstein, F., C.-H. Chang, A.W. Capuano, M.C. Power, D.X. Marquez, L.L. Barnes, D.A. Bennett, et al. "Identification of Dementia in Recent Medicare Claims Data, Compared with Rigorous Clinical Assessments." *The Journals of Gerontology, Series A*, vol. 77, no. 6, 2021, pp. 1272–1278. <https://doi.org/10.1093/gerona/glab377>.

<sup>b</sup> Per Grodstein et al. (2021): "These ICD codes are searched in the following claims files:

- 1) Any inpatient or skilled nursing facility claim
  - 2) Home Health Agency: Any claim
  - 3) Hospice: Any claim
  - 4) Hospital Outpatient File (HOF) for outpatient medical services: Only claims from Rural Health Clinics, Federally Qualified Health Centers, and Critical Access Hospitals-Payment Option II
  - 5) Carrier (Provider) File for services from physicians and other health care providers: Any claim, with the condition that there are two or more qualifying Carrier or HOF claims at least 7 days apart."
- ICD-10 = International Classification of Diseases, 10th Revision.

**Appendix Table 3.** Place of service codes (from carrier claims) and revenue center codes (from outpatient claims from FQHCs, RHCs, and Type II CAHs) used to classify service location

Service location	Place of service codes (carrier claims from clinical professionals)	Revenue center codes (outpatient claims from FQHCs, RHCs, and type II CAHs) <sup>a</sup>
Outpatient	<p>05 = Indian health service — free-standing facility. A facility or location, owned and operated by the Indian health service, which provides diagnostic, therapeutic (surgical and non-surgical), and rehabilitation services to American Indians and Alaska Natives who do not require hospitalization</p> <p>07 = Tribal 638 — free-standing facility. A facility or location owned and operated by a federally recognized American Indian or Alaska Native tribe or tribal organization under a 638 agreement, which provides diagnostic, therapeutic (surgical and non-surgical), and rehabilitation services to tribal members who do not require hospitalization</p> <p>10 = Telehealth Provided in Patient's Home</p> <p>11 = Office</p> <p>17 = Walk-in retail health clinic</p> <p>19 = Off campus — outpatient hospital</p> <p>20 = Urgent care facility — location, distinct from a hospital emergency room, an office, or a clinic, whose purpose is to diagnose and treat illness or injury for unscheduled, ambulatory patients seeking immediate medical attention</p>	<p>0520 = Free-standing clinic - general</p> <p>0521 = Free-standing clinic - clinic visit by member to RHC/FQHC</p> <p>0523 = Free-standing clinic - Family practice clinic</p> <p>0526 = Free-standing clinic - urgent care clinic</p> <p>0529 = Free-standing clinic - other</p>

Service location	Place of service codes (carrier claims from clinical professionals)	Revenue center codes (outpatient claims from FQHCs, RHCs, and type II CAHs) <sup>a</sup>
	<p>22 = Outpatient hospital — portion of a hospital which provides diagnostic, therapeutic (both surgical and nonsurgical), and rehabilitation services to sick or injured persons who do not require hospitalization or institutionalization</p> <p>49 = Independent clinic — location, not part of a hospital and not described by any other Place of Service code, that is organized and operated to provide preventive, diagnostic, therapeutic, rehabilitative, or palliative services to outpatients only</p> <p>50 = Federal Qualified Health Center — facility located in a medically underserved area that provides Medicare beneficiaries preventive primary medical care under the general direction of a physician</p> <p>62 = Comprehensive outpatient rehabilitation facility — facility that provides comprehensive rehabilitation services under the supervision of a physician to outpatients with physical disabilities. Services include physical therapy, occupational therapy, and speech pathology services</p> <p>71 = Public health clinic — facility maintained by either state or local health departments that provides ambulatory primary medical care under the general direction of a physician</p> <p>72 = Rural health clinic — certified facility which is located in a rural medically</p>	

Service location	Place of service codes (carrier claims from clinical professionals)	Revenue center codes (outpatient claims from FQHCs, RHCs, and type II CAHs) <sup>a</sup>
	underserved area that provides ambulatory primary medical care under the general direction of a physician	
Inpatient	<p>06 = Indian health service — provider-based Facility. A facility or location, owned and operated by the Indian health service, which provides diagnostic, therapeutic (surgical and non-surgical), and rehabilitation services rendered by, or under the supervision of, physicians to American Indians and Alaska Natives admitted as inpatients or outpatients</p> <p>08 = Tribal 638 provider-based facility — facility or location owned and operated by a federally recognized American Indian or Alaska Native tribe or tribal organization under a 638 agreement, which provides diagnostic, therapeutic (surgical and non-surgical), and rehabilitation services to tribal members admitted as inpatients or outpatients</p> <p>21 = Inpatient hospital — facility, other than psychiatric, which primarily provides diagnostic, therapeutic (both surgical and nonsurgical), and rehabilitation services by, or under, the supervision of physicians to patients admitted for a variety of medical conditions</p> <p>61 = Comprehensive inpatient rehabilitation facility — facility that provides comprehensive rehabilitation services under the supervision of a physician to inpatients with physical disabilities. Services include physical therapy, occupational therapy, speech pathology, social or psychological services, and orthotics and prosthetics services</p>	n.a.

Service location	Place of service codes (carrier claims from clinical professionals)	Revenue center codes (outpatient claims from FQHCs, RHCs, and type II CAHs) <sup>a</sup>
Residential	<p>13 = Assisted-living facility — congregate residential facility with self-contained living units providing assessment of each resident's needs and on-site support 24 hours a day, seven days a week, with the capacity to deliver or arrange for services including some health care and other services</p> <p>14 = Group home — residence, with shared living areas, where clients receive supervision and other services such as social and/or behavioral services, custodial service, and minimal services (e.g., medication administration)</p> <p>31 = Skilled nursing facility — facility which primarily provides inpatient skilled nursing care and related services to patients who require medical, nursing, or rehabilitative services but does not provide the level of care or treatment available in a hospital</p> <p>32 = Nursing facility — facility which primarily provides to residents skilled nursing care and related services for the rehabilitation of injured, disabled, or sick persons, or, on a regular basis, health-related care services above the level of custodial care to other than individuals with intellectual disabilities</p> <p>33 = Custodial care facility — facility which provides room, board, and other personal assistance services, generally on a long-term basis, and which does not include a medical component</p> <p>34 = Hospice. A facility, other than a patient's home, in which palliative and supportive care</p>	<p>0524 = Visit by RHC/FQHC practitioner to a member in a Part A covered stay in a SNF</p> <p>0525 = Visit by a RHC/FQHC practitioner to a member in a stay not covered by Part A in a SNF, NF, or ICF/IID or other residential facility</p>

Service location	Place of service codes (carrier claims from clinical professionals)	Revenue center codes (outpatient claims from FQHCs, RHCs, and type II CAHs) <sup>a</sup>
	<p>for terminally ill patients and their families are provided</p> <p>54 = Intermediate care facility/Individuals with Intellectual Disabilities (ICF/IID) — facility which primarily provides health-related care and services above the level of custodial care to individuals but does not provide the level of care or treatment available in a hospital or SNF</p>	
Home	12 = Home — location, other than a hospital or other facility, where the patient receives care in a private residence	<p>0522 = Free-standing clinic – home visit by RHC/FQHC practitioner</p> <p>0527 = Free-standing clinic – RHC/FQHC visiting nurse service(s) to a member's home when in a home health shortage area</p>

Source: Chronic Conditions Warehouse Medicare Fee-For-Service Claims (version L). January 2024, version 1.11. Available at: <https://www2.ccwdata.org/web/guest/data-dictionaries>

Note: Type II CAHs are those where the professionals working at the CAHs have reassigned their billing rights to the CAH, and the CAH claim reflects both the facility and professional services delivered.

<sup>a</sup> Claims from FQHCs and RHCs are those with CLM\_FAC\_TYPE\_CD = 7 and CLM\_SRVC\_CLSFCTN\_TYPE\_CD = 1, 3, or 7. Claims from type II CAHs are those with CLM\_FAC\_TYPE\_CD = 8 and CLM\_SRVC\_CLSFCTN\_TYPE\_CD = 5 and any revenue center code for professional services (that is, where the first three digits of REV\_CNTR = 096, 097, or 098).

CAH = critical access hospital; FQHC = federally qualified health center; ICF/IID = intermediate care facility/ individuals with intellectual disabilities; n.a. = not applicable; NF = nursing facility; RHC = rural health center; SNF = skilled nursing facility.

**Appendix Table 4.** List of codes to indicate telehealth

Code / specification	Definition
Any CPT or HCPCS code allowed to be provided via telehealth (per here: <a href="https://www.cms.gov/medicare/coverage/telehealth/list-services">https://www.cms.gov/medicare/coverage/telehealth/list-services</a> ) and [place of service = {02, 10} or any of the following modifiers: {95, GO, GQ, GT, FQ or FR} <sup>a</sup> ]	Services delivered via telehealth
99421–99423	Online digital E&M services
98966–98968	Telephone assessment & mgt
99441–99443	Telephone E&M
98969	Online assessment & mgt
99444	Online E&M
99453–99454	Chronic Care Remote Patient Monitoring Codes
99457	Remote physiologic monitoring treatment management services
99458	Additional time
99473	Self-measured blood pressure using a device validated for clinical accuracy; patient education/training and device calibration
99474	Separate self-measurements of two readings one minute apart, twice daily over a 30-day period (minimum of 12 readings), collection of data reported by the patient and/or caregiver to the physician or other qualified health care professional, with report of average systolic and diastolic pressures and subsequent communication of a treatment plan to the patient
99091	Remote Physiologic Patient Monitoring
G2010	Remote evaluation of recorded video and/or images submitted by an established patient (e.g. store and forward), including interpretation with follow-up with the patient within 24 business hours, not originating from a related E&M service provided within the previous seven days nor leading to an E&M service or procedure within the next 24 hours or soonest available appointment
G2012	Virtual check-in by a physician or other qualified health care professional who can report E&M services
G2061	Qualified nonphysician healthcare professional online assessment and management service, for an established patient, for up to seven days, cumulative time during the seven days; 5–10 minutes (source: <a href="https://hcpcs.codes/q-codes/G2061/">https://hcpcs.codes/q-codes/G2061/</a> )
G2062	Qualified nonphysician healthcare professional online assessment and management service, for an established patient, for up to seven days, cumulative time during the seven days; 11–20 minutes (source: <a href="https://hcpcs.codes/q-codes/G2062/">https://hcpcs.codes/q-codes/G2062/</a> )
G2063	Qualified nonphysician healthcare professional online assessment and management service, for an established patient, for up to seven days, cumulative time during the seven days; 21 or more minutes (source: <a href="https://hcpcs.codes/q-codes/G2063/">https://hcpcs.codes/q-codes/G2063/</a> )
G9978–G9986	Remote in-home visit for the E&M of a patient
98970–98972	Online digital assessment
G2250	Remote assessment of recorded video and/ or images submitted by an established patient
G2251	Brief communication technology-based service, e.g., virtual check-in, by a qualified health care professional who cannot report E&M services
G2252	Brief communication technology-based service, e.g., virtual check-in, by a physician or other qualified health care professional who can report E&M services
98975–98977	Remote therapeutic monitoring services. Code 98975 represents the initial setup and patient education for the equipment. Codes 98976 (respiratory system) and 98977 (musculoskeletal system) represent the device supply w/ scheduled recording and/or programmed alert transmission for a 30-day period.
98980	Remote therapeutic monitoring treatment management services,

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98981	Remote therapeutic monitoring treatment management services each additional 20 minutes
0702T	Remote therapeutic monitoring of a standardized online digital cognitive behavioral therapy program ; supply and technical support
0703T	Remote therapeutic monitoring of a standardized online digital cognitive behavioral therapy program; physician or other qualified health care professional
99458	E&M - Office/outpatient services, RPM – each addtl 20 minutes
<b>FQHC/RHC Telehealth codes</b>	
HCPCS_CD = G2025 and REV_CNTR = 052x (except 0524, 0525, and 0526)	Telehealth services on or after July 1, 2020 and through the end of the COVID-19 public health emergency
G0071	Non face-to-face communication between RHC/FQHC practitioner and patient in lieu of an office visit

<sup>a</sup> Source: <https://data.cms.gov/resources/medicare-telehealth-trends-methodology>

CPT = Current Procedural Terminology; e.g. = for example; E&M = evaluation and management; FQHC = federally qualified health center; HCPCS = Healthcare Common Procedure Coding System; RHC = rural health center; RPM = remote patient monitoring.

**Appendix Table 5.** List of codes to indicate chronic care management, transitional care management or other care managed services from the clinician

Code	Definition
99487	Complex Chronic Care Management Services
99489	addtl 30 min
99490	Chronic Care Mgt
99491	Chronic care management services, provided personally by a physician or other qualified health care professional
99492–99493	Psychiatric Collaborative Care Mgt
99494	addtl 30 min
99495–99496	Transitional Care Management Services
99484	General Behavioral Health Integration Care Management
G0076–G0087	Care management home visit
G0506	Comprehensive assessment and care planning for patients needing chronic care
G2064	Principal care management service at least 30 minutes
G2065	Principal care management service at least 30 minutes – clinical staff time directed by a physician or other qualified health care professional
G2076	Intake activities, including a physician assessment,
99439	Chronic Care Mgt each additional 20 minutes
G2214	Psychiatric Collaborative Care Mgt
99424, 99426	Principal care management services
99425, 99427	PCM - each additional 30 minutes
99437	Subsequent 30 minutes of care for 99491 (chronic care management)
G0077–G0079	E&M - Care management/coordination - Chronic & Transitional Care Management
G0023–G0024	Principal Illness Navigation Services
G3002–G3003	Chronic Pain Mgt
G9886–G9887	Behavioral Counseling for Diabetes Prevention, In-Person, Group or distance learning
G2211	E&M - Care management/coordination - Chronic and Transitional Care - Visit complexity - add-on code, list separately in addition to office/outpatient evaluation and management visit, new or established
G0323	Care management services for behavioral health conditions, at least 20 minutes of clinical psychologist or clinical social worker time, per calendar month
G0140, G0146	Principal Illness Services related to behavioral health
G0511	General Care Management
G0512	Psychiatric CoCM

CoCM = collaborative care management; E&amp;M = evaluation and management; PCM = principal care management.

**Appendix Table 6.** List of generic drug names for each drug class

Drug class	Generic drug names
Opioids <sup>a</sup>	Buprenorphine, Butorphanol, Codeine, Dihydrocodeine, Fentanyl, Hydrocodone, Hydromorphone, Levorphanol, Meperidine, Methadone, Morphine, Opium, Oxycodone, Oxymorphone, Pentazocine, Tapentadol, Tramadol
Antibiotics <sup>a</sup>	Amoxicillin, Ampicillin, Azithromycin, Aztreonam, Cefaclor, Cefadroxil, Cefazolin, Cefdinir, Cefditoren, Cefepime, Cefiderocol, Cefixime, Cefotaxime, Cefotetan, Cefoxitin, Cefpodoxime, Cefprozil, Ceftaroline, Ceftazidime, Ceftibuten, Ceftolozane, Ceftriaxone, Cefuroxime, Cephalexin, Ciprofloxacin, Clarithromycin, Clindamycin, Dalbavancin, Daptomycin, Delafloxacin, Demeclocycline, Dicloxacillin, Doripenem, Doxycycline, Eravacycline, Ertapenem, Erythromycin, Fidaxomicin, Fosfomycin, Gemifloxacin, Gentamicin, Imipenem, Lefamulin, Levofloxacin, Lincomycin, Linezolid, Meropenem, Metronidazole, Minocycline, Moxifloxacin, Nafcillin, Neomycin, Nitrofurantoin, Norfloxacin, Ofloxacin, Omadacycline, Oritavancin, Oxacillin, Penicillin, Piperacillin, Plazomicin, Quinupristin, Rifamycin, Rifaximin, Sarecycline, Secnidazole, Streptomycin, Sulfadiazine, Sulfamethoxazole, Tedizolid, Telavancin, Telithromycin, Tetracycline, Ticarcillin, Tigecycline, Tinidazole, Tobramycin, Trimethoprim, Vancomycin, Amikacin
Antipsychotics <sup>a</sup>	Chlorpromazine, Fluphenazine, Haloperidol, Perphenazine, Aripiprazole, Brexpiprazole, Cariprazine, Clozapine, Lurasidone, Olanzapine, Paliperidone, Pimavanserin, Quetiapine, Risperidone, Ziprasidone, Asenapine, Iloperidone, Lumateperone, Loxapine, Molindone, Pimozide, Thioridazine, Thiothixene, Trifluoperazine
Antidepressants <sup>b</sup>	Isocarboxazid, Phenelzine, Tranylcypromine, Selegiline, Rasagiline, Desvenlafaxine, Duloxetine, Levomilnacipran, Venlafaxine, Milnacipran, Citalopram, Escitalopram, Fluoxetine, Fluvoxamine, Paroxetine, Sertraline, Vilazodone, Nefazodone, Trazodone, Vortioxetine, Amitriptyline, Amoxapine, Clomipramine, Desipramine, Doxepin, Imipramine, Maprotiline, Nortriptyline, Protriptyline, Trimipramine, Bupropion, Mirtazapine
Benzodiazepines/Z-drugs <sup>b</sup>	Alprazolam, Chlordiazepoxide, Clobazam, Clonazepam, Clorazepate, Diazepam, Estazolam, Flurazepam, Lorazepam, Midazolam, Oxazepam, Quazepam, Temazepam, Triazolam, Eszopiclone, Zaleplon, Zolpidem
Antiseizure medications <sup>b</sup>	Ethotoin, Fosphenytoin, Phenytoin, Ethadione, Paramethadione, Trimethadione, Ethosuximide, Mesuximide, Methsuximide, Brivaracetam, Carbamazepine, Eslicarbazepine, Felbamate, Gabapentin, Lacosamide, Lamotrigine, Levetiracetam, Oxcarbazepine, Perampanel, Pregabalin, Rufinamide, Stiripentol, Sultiame, Tiagabine, Topiramate, Valproate, Divalproex, Valproic acid, Vigabatrin, Zonisamide, Acetazolamide, Phenobarbital, Primidone
Cholinesterase inhibitors or memantine	Galantamine, Rivastigmine, Donepezil, Memantine
Strongly anticholinergic medications <sup>c</sup>	Amitriptyline, Amoxapine, Clomipramine, Desipramine, Doxepin, Imipramine, Nortriptyline, Paroxetine, Prochlorperazine, Promethazine, Brompheniramine, Chlorpheniramine, Cyproheptadine, Dimenhydrinate, Diphenhydramine, Doxylamine, Hydroxyzine, Meclizine, Triprolidine, Darifenacin, Fesoterodine, Flavoxate, Oxybutynin, Solifenacin, Tolterodine, Trospium, Benztropine, Trihexyphenidyl, Chlorpromazine, Clozapine, Olanzapine, Perphenazine, Atropine, Clidinium-chlordiazepoxide, Dicyclomine, Homatropine, Hyoscyamine, Scopolamine, Cyclobenzaprine, Orphenadrine

Sources: CMS Medicare Part D Prescribers by Provider and Drug dataset. Available at: <https://data.cms.gov/provider-summary-by-type-of-service/medicare-part-d-prescribers/medicare-part-d-prescribers-by-provider-and-drug>.

American Hospital Formulary System (AHFS) Pharmacologic-Therapeutic Classification. The full 2019 AHFS list is publicly available at: <https://www.oregon.gov/obnm/Documents/Formulary%20Information/AHFSClassificationwithDrugs2019.pdf>. 2023 AGS Beers Criteria® Update Expert Panel. "The American Geriatrics Society 2023 updated AGS Beers Criteria® for potentially inappropriate medication use in older adults." Journal of American Geriatrics Society, 2023, vol. 71, no. 7, pp. 2052–2081. <https://doi.org/10.1111/jgs.18372>.

Note: The majority of generic drug names only belong to one drug class, except for certain antipsychotics and antidepressants which are also strongly anticholinergic.

<sup>a</sup> Lists of generic drug names for opioids, antibiotics, and antipsychotics are identified based on the CMS Medicare Part D Prescribers by Provider and Drug data.

<sup>b</sup> Lists of generic drug names for antidepressants, benzodiazepines/Z-drugs, and antiseizure medications are based on the AHFS Pharmacologic-Therapeutic Classification. Generic drug names for antidepressants are identified by AHFS drug class code 28:16.04 (Antidepressants). Generic drug names for benzodiazepines/Z-drugs are identified by AHFS drug class code 28:24.08 (Benzodiazepines) and selected drugs under drug class code 28:24.92 (Anxiolytics, Sedatives, and Hypnotics; Miscellaneous) for Z-drugs. Generic drug names for antiseizure medications are identified by AHFS drug class

code 28:12.12 (Anticonvulsants: Hydantoins), 28:12.16 (Anticonvulsants: Oxazolinediones), 28:12.20 (Anticonvulsants: Succinimides), 28:12.92 (Anticonvulsants: Miscellaneous), and 28:12.04 (Anticonvulsants: Barbiturates). Note that benzodiazepines commonly used to treat seizures listed under AHFS drug class code 28:12.08 are excluded from the list of antiseizure medications.

<sup>c</sup> The list of generic drug names for strongly anticholinergic medications is based on the American Geriatrics Society 2023 updated AGS Beers Criteria<sup>®</sup>. Per the Beers Criteria<sup>®</sup>, doxepin is only considered strongly anticholinergic when the daily dosage is above 6mg/day. We also applied this dosage criteria to identify claims/fills for doxepin as a strongly anticholinergic medication in Part D claims.

AGS = American Geriatrics Society; AHFS = American Hospital Formulary System; CMS = Centers for Medicare & Medicaid Services.