Data Highlight   June 2022

Consistency of preventive care among Medicare beneficiaries: a longitudinal analysis using data from the 2016–2019 Medicare Current Beneficiary Survey (MCBS)

Yue Gao, Carrie Goetsch, Sarah Hoyt, Praveen Karunatileka, Sai Loganathan, Nicholas Schluterman

Timely preventive care, such as vaccine receipt and cancer screenings, can help people to maintain good health. Medicare Part B and Medicare Advantage plans cover many recommended preventive services — such as an annual flu shot for all beneficiaries and a mammogram screening every year for women aged 40 and over.[i]

Older adults are at higher risk of serious illness or death from influenza. [ii] Risk for developing breast cancer also rises with age.[iii] The Centers for Disease Control and Prevention (CDC) recommends that every adult receive the seasonal flu shot every year.[iv] The US Preventive Services Task Force (USPSTF) recommends that every woman aged 50–74 receive a mammogram to screen for breast cancer every two years.[v]

Studies of Medicare beneficiaries suggest that preventive care access and use vary by beneficiary characteristics such as race/ethnicity, location, income level, and type of health insurance coverage.[vi,vii,viii]

KEY FINDINGS

Among Medicare Beneficiaries Living in the Community during 2016-2019

- Nearly three out of five beneficiaries received a flu shot all four years.
- Beneficiaries aged 75 and over and White non-Hispanic beneficiaries were most likely to receive an annual flu shot.
- Almost 60% of female beneficiaries aged 50-74 received a mammogram screening at least every other year.
- Female beneficiaries who had household incomes of $50,000 and higher and those who were not dual eligible were most likely to receive mammograms.

This report uses the Medicare Current Beneficiary Survey (MCBS) to evaluate preventive health behaviors over time. This analysis looks only at beneficiaries living in the community (i.e., not living in care facilities). By using multiple years' worth of data for each beneficiary, this analysis helps to:

- Determine the extent to which Medicare beneficiaries receive selected recommended preventive services according to public health guidelines.
- Examine preventive care use differences by beneficiary characteristics such as race/ethnicity, age, and income level.
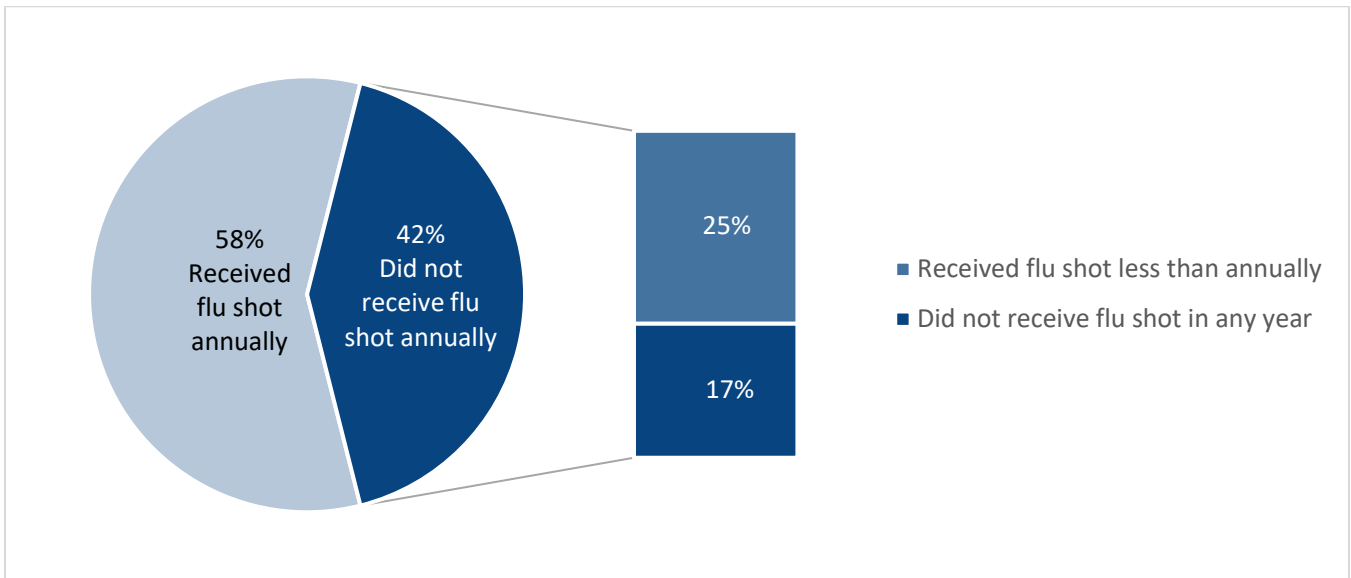
Nearly three in five Medicare beneficiaries received a flu shot annually during the 2016−2019 flu seasons.

Figure 1. Percent of Medicare beneficiaries who received a flu shot annually, 2016−2019
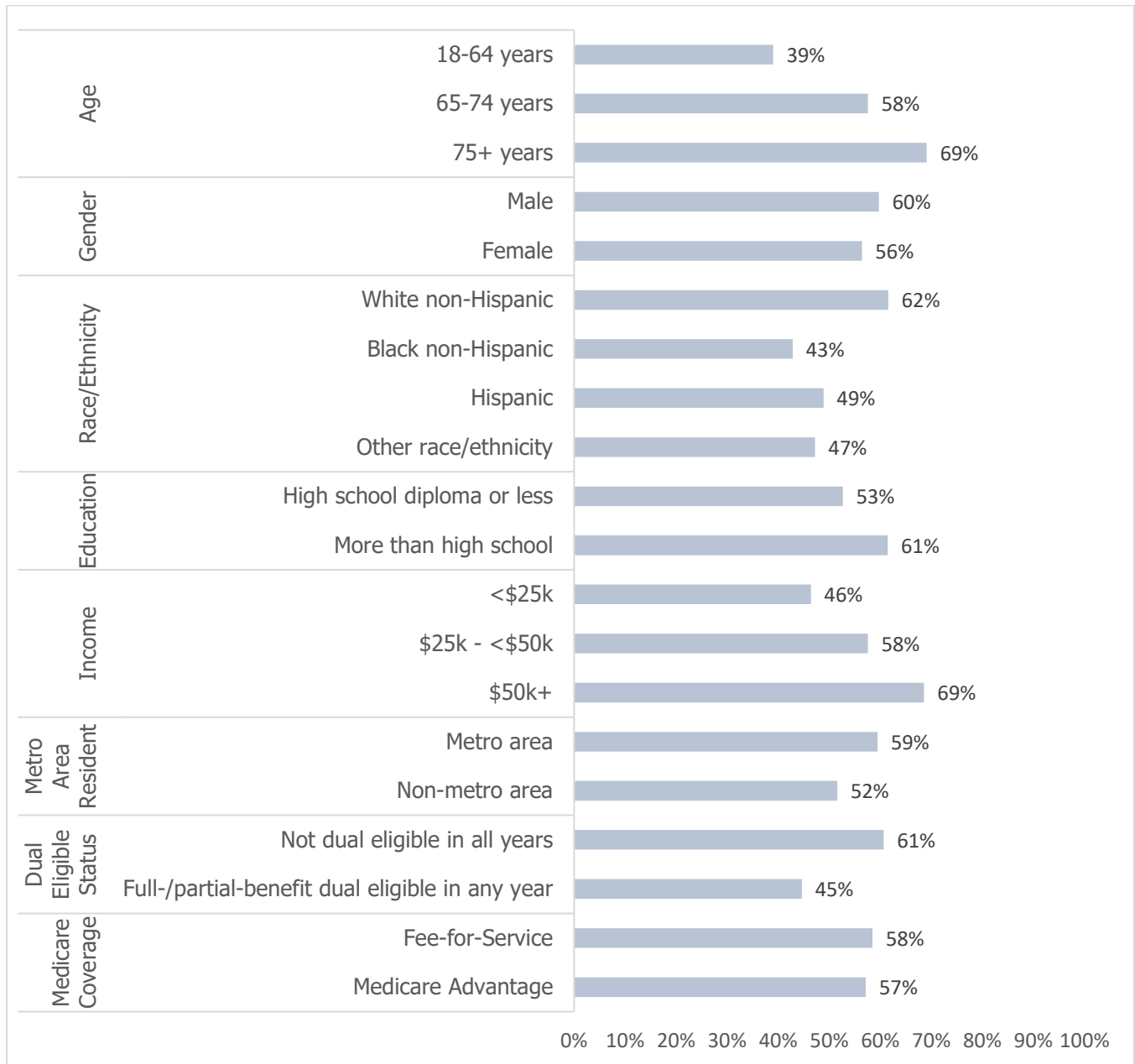

SOURCE: Medicare Current Beneficiary Survey Limited Data Set Survey File, 2016 to 2019.

NOTES: Percentages may not sum to 100 percent due to rounding. Estimates for 2016-2019 flu seasons were based on Medicare beneficiaries continuously enrolled from 1/1/2016 to fall 2019 whose four-year pattern for receipt of a flu shot could be determined (unweighted N=2,140, weighted N=45,202,568). Beneficiaries who received a Community interview answered questions themselves or by proxy. For definitions of key terms and information on the construction of measures, see the Appendices.

- 58% of beneficiaries received a flu shot all four years during the 2016−2019 flu seasons. An additional one-quarter received a flu shot less than once a year, and 17% did not receive a flu shot in any year.

Nearly 70% of beneficiaries aged 75 and over, 58% of beneficiaries aged 65 to 74, and 39% of beneficiaries under 65 received a flu shot annually.

Figure 2. Percent of Medicare beneficiaries who received a flu shot annually during the 2016–2019 flu seasons by beneficiary characteristics

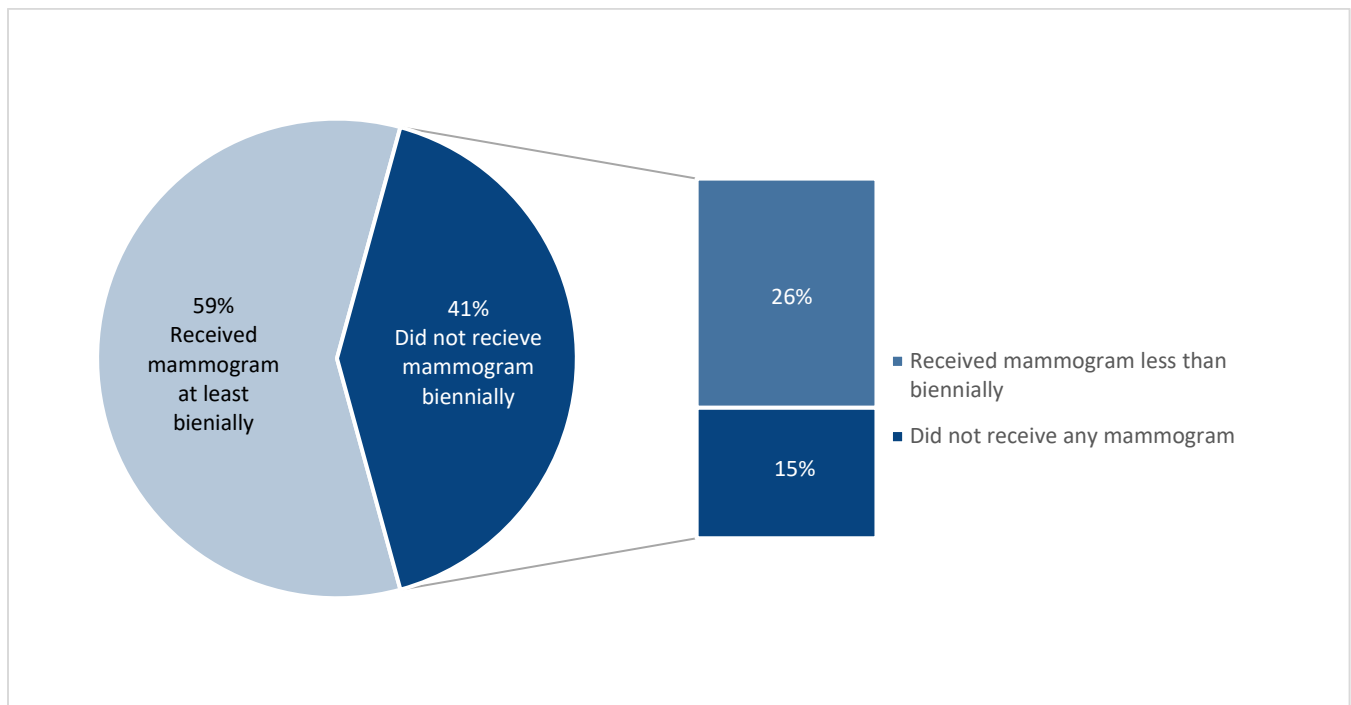| Category	Subgroup	Percent
Age	18-64 years	39%
	65-74 years	58%
	75+ years	69%
Gender	Male	60%
	Female	56%
Race/Ethnicity	White non-Hispanic	62%
	Black non-Hispanic	43%
	Hispanic	49%
	Other race/ethnicity	47%
Education	High school diploma or less	53%
	More than high school	61%
Income	<$25k	46%
	$25k - <$50k	58%
	$50k+	69%
Metro Area Resident	Metro area	59%
	Non-metro area	52%
Dual Eligible Status	Not dual eligible in all years	61%
	Full-/partial-benefit dual eligible in any year	45%
Medicare Coverage	Fee-for-Service	58%
	Medicare Advantage	57%

SOURCE: Medicare Current Beneficiary Survey Limited Data Set Survey File, 2016 to 2019.

NOTES: The population of inference included Medicare beneficiaries living in the community and continuously enrolled in Medicare from 1/1/2016 to fall 2019 whose four-year pattern for receipt of a flu shot could be determined (unweighted N=2,140, weighted N=45,202,568). Beneficiaries who received a Community interview answered questions themselves or by proxy. For definitions of key terms and information on the construction of measures, see the Appendices.

- White non-Hispanic beneficiaries were more likely than all other races/ethnicities to receive a flu shot every year.
- 60% of beneficiaries who were not dual eligible received a flu shot annually, compared to 45% of beneficiaries who were dual eligible.

Almost 60% of female beneficiaries aged 50-74 received a mammogram screening at least every other year during 2016–2019.

Figure 3. Percent of female Medicare beneficiaries aged 50-74 who received a mammogram at least every other year, 2016–2019
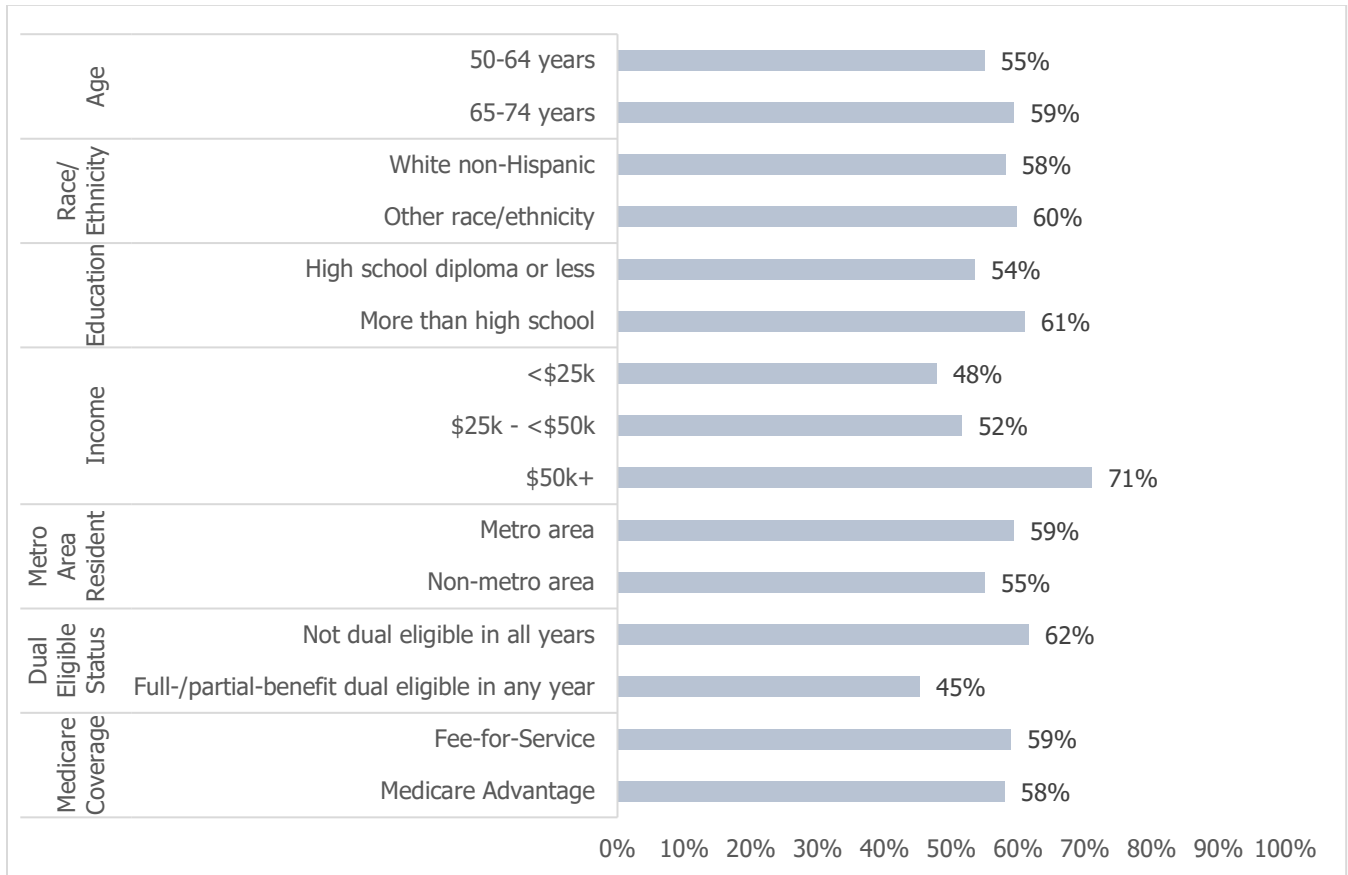

SOURCE: Medicare Current Beneficiary Survey Limited Data Set Survey File, 2016 to 2019.

NOTES: Percentages may not sum to 100 percent due to rounding. Estimates for 2016–2019 were based on female beneficiaries aged 50-74 living in the community and continuously enrolled in Medicare from 1/1/2016 to fall 2019 whose four-year pattern for receipt of mammogram screening could be determined (unweighted N=430, weighted N=13,008,142). Beneficiaries who received a Community interview answered questions themselves or by proxy. For definitions of key terms and information on the construction of measures, see the Appendices.

- 41% percent of female beneficiaries did not receive a mammogram on a biennial basis. This includes 26% who received a mammogram less than every other year, and 15% who did not receive a mammogram in any year.

71% of female beneficiaries with household incomes of $50,000 and higher received a mammogram at least every other year compared to 48% of female beneficiaries with household incomes below $25,000.

Figure 4. Percent of female Medicare beneficiaries aged 50-74 who received a mammogram at least every other year by beneficiary characteristics, 2016−2019

SOURCE: Medicare Current Beneficiary Survey Limited Data Set Survey File, 2016 to 2019.

NOTES: The population of inference included female beneficiaries living in the community and continuously enrolled in Medicare from 1/1/2016 to fall 2019 aged 50-74 in all four years whose four-year pattern for receipt of mammogram screening could be determined (unweighted N=430, weighted N=13,008,142). Beneficiaries who received a Community interview answered questions themselves or by proxy. For definitions of key terms and information on the construction of measures, see the Appendices.

- Female beneficiaries who were dual eligible in any year were less likely to have received biennial mammograms than female beneficiaries who were not dual eligible.

Table 1. Demographic and socioeconomic characteristics of eligible Medicare beneficiaries living in the community and continuously enrolled between 2016–2019

Measure	Measure Category	Estimate - % (SE)
Age	18-64 years	16.4 (0.8)
	65-74 years	53.2 (1.1)
	75+ years	30.4 (0.9)
Gender	Male	44.6 (1.0)
	Female	55.4 (1.0)
Race/Ethnicity	White non-Hispanic	76.2 (1.1)
	Black non-Hispanic	9.4 (0.8)
	Hispanic	7.3 (0.6)
	Other race/ethnicity	7.0 (0.8)
Education	High school diploma or less	40.6 (1.5)
	More than high school	59.4 (1.5)
Marital Status	Married	55.0 (1.2)
	Other	45.0 (1.2)
Income	<$25k	35.3 (1.3)
	$25k - <$50k	25.7 (1.3)
	$50k+	39.0 (1.5)
Poverty Status	<=200% FPL	37.9 (1.2)
	>200% FPL	62.1 (1.2)
Metro Area Resident	Metro area	80.4 (0.9)
	Non-metro area	19.6 (0.9)
Dual Eligible Status	Full-/partial-benefit dual eligible in any year	17.4 (1.0)
	Not dual eligible in all years	82.6 (1.0)
Medicare Coverage	Traditional Fee-for-Service Medicare	56.4 (1.2)
	Medicare Advantage	43.6 (1.2)

SOURCE: Medicare Current Beneficiary Survey Limited Data Set Survey File, 2016 to 2019.

NOTES: Percentages may not sum to 100 percent due to rounding. The population of inference included Medicare beneficiaries living in the community and continuously enrolled from 1/1/2016 to fall 2019 (unweighted N=2,265, representing weighted N=47,887,175). Beneficiaries who received a Community interview answered questions themselves or by proxy. For definitions of key terms and information on the construction of measures, see Appendix A and B. FPL stands for Federal Poverty Level.

Table 2. Percent of Medicare beneficiaries who received a flu shot annually during the 2016–2019 flu seasons by beneficiary characteristics

Measure	Measure Category	Estimate - % (SE)
Age	18-64 years	39.0 (4.0)
	65-74 years	57.6 (1.8)
	75+ years	69.1 (1.6)
Gender	Male	59.7 (1.9)
	Female	56.4 (1.8)
Race/Ethnicity	White non-Hispanic	61.5 (1.4)
	Black non-Hispanic	42.8 (4.2)
	Hispanic	48.9 (4.2)
	Other race/ethnicity	47.2 (4.8)
Education	High school diploma or less	52.6 (2.0)
	More than high school	61.4 (1.6)
Marital Status	Married	63.4 (1.9)
	Other	51.1 (1.8)
Income	<$25k	46.4 (2.3)
	$25k - <$50k	57.6 (2.5)
	$50k+	68.6 (2.0)
Poverty Status	<=200% FPL	47.5 (2.2)
	>200% FPL	64.3 (1.6)
Metro Area Resident	Metro area	59.4 (1.5)
	Non-metro area	51.5 (2.2)
Dual Eligible Status	Full-/partial-benefit dual eligible in any year	44.6 (3.0)
	Not dual eligible in all years	60.7 (1.5)
Type of Medicare Coverage	Traditional Fee-for-Service Medicare	58.4 (1.9)
	Medicare Advantage	57.2 (1.7)

SOURCE: Medicare Current Beneficiary Survey Limited Data Set Survey File, 2016 to 2019.

NOTES: The population of inference included Medicare beneficiaries living in the community and continuously enrolled in Medicare from 1/1/2016 to fall 2019 whose four-year pattern for receipt of a flu shot could be determined (unweighted N=2,140, weighted N=45,202,568). who received a Community interview answered questions themselves or by proxy. For definitions of key terms and information on the construction of measures, see Appendix A and B. FPL stands for Federal Poverty Level.

Table 3. Percent of female Medicare beneficiaries aged 50-74 who received a mammogram at least every other year by beneficiary characteristics, 2016−2019

Measure	Measure Category	Estimate - % (SE)
Age	50-64 years	55.0 (7.8)
	65-74 years	59.4 (2.8)
Race/Ethnicity	White non-Hispanic	58.1 (3.3)
	Other race/ethnicity	59.8 (5.8)
Education	High school diploma or less	53.6 (4.7)
	More than high school	61.0 (3.4)
Marital Status	Married	67.4 (3.5)
	Other	48.5 (4.5)
Income	<$25k	47.8 (5.3)
	$25k - <$50k	51.6 (4.3)
	$50k+	71.1 (4.3)
Poverty Status	<=200% FPL	46.0 (4.8)
	>200% FPL	65.3 (3.3)
Metro Area Resident	Metro area	59.4 (3.0)
	Non-metro area	55.0 (7.2)
Dual Eligible Status	Full-/partial-benefit dual eligible in any year	45.3 (5.7)
	Not dual eligible in all years	61.6 (3.1)
Type of Medicare Coverage	Traditional Fee-for-Service Medicare	59.0 (4.3)
	Medicare Advantage	58.0 (3.2)

SOURCE: Medicare Current Beneficiary Survey Limited Data Set Survey File, 2016 to 2019.

NOTES: The population of inference included female beneficiaries living in the community and continuously enrolled in Medicare from 1/1/2016 to fall 2019 aged 50-74 in all four years whose four-year pattern for receipt of mammogram screening could be determined (unweighted N=430, weighted N=13,008,142). Beneficiaries who received a Community interview answered questions themselves or by proxy. For definitions of key terms and information on the construction of measures, see Appendix A and B. FPL stands for Federal Poverty Level.

APPENDIX A: DEFINITIONS

Receipt of Flu Shot. The analysis used the **FLUSHOT** variable from the preventive care segment of the Survey File Limited Data Sets (LDS) from all four years to identify receipt of flu shots during 2016−2019. Beneficiaries were asked whether they had had a seasonal flu shot since July 1st in the prior year, with response options "yes", "no", "don't know", "refused". "Don't know" and "refused" options were treated as missing values. Four years of data were combined to determine flu shot status during 2016−2019. Because this question was asked only of Medicare beneficiaries living in the community, the analysis excluded beneficiaries living in long-term care facilities at any point between 2016 and 2019.

Receipt of Mammogram Screening. The analysis used the **MAMMOGRM** variable from the preventive care segment of the Survey File LDS from all four years to identify mammogram receipt during 2016−2019. The question asked whether the beneficiary had a mammogram or breast X-ray during the last year, with response options "yes", "no", "don't know", "refused". "Don't know" and "refused" options were treated as missing values. For most cases, the reference period is the prior 12 months. For cases that

missed their previous fall round interview, the reference period may be almost two years. Four years of data were combined to determine mammogram screening status during 2016–2019. Because this question was asked only of Medicare beneficiaries living in the community, the analysis excluded beneficiaries living in long-term care facilities at any point between 2016 and 2019.

Demographic and Socioeconomic Characteristics. The analysis examined the following demographic and socioeconomic characteristics: age, sex, race/ethnicity, marital status, education, income, poverty status and metropolitan area. All these variables were measured during beneficiaries' first MCBS interview and extracted from the 2016 demographic segment of the Survey File LDS. Demographic and socioeconomic characteristics reflect the population of Medicare beneficiaries living in the community and continuously enrolled between 2016 and 2019.

Dual Eligible Status. The analysis used the **H_OPMDCD** variable from the health insurance summary (HISUMRY) segment of the Survey File LDS to identify each beneficiary's dual eligible status during 2016–2019. Annual Medicare–Medicaid dual eligibility is based on state Medicare Modernization Act (MMA) files. Beneficiaries are considered "dual eligible" and assigned a dual eligible status for the year if they were enrolled in Medicaid for at least one month of that year. Specific Medicaid eligibility -- full, partial, or Qualified Medicare Beneficiary (QMB) -- is determined by the beneficiary's status in the last month of the year in which he or she qualified as dual eligible. This information is obtained from administrative data sources. A beneficiary may be categorized as "fully eligible for Medicaid benefits", "partially eligible for Medicaid benefits – not QMB", "partially eligible for Medicaid benefits – QMB only", or "not dual eligible for Medicaid benefits". Full and partial eligibility were grouped into "dual eligible". All four years of data were combined to categorize beneficiaries into "not dual eligible in all 4 years" and "dual eligible in any year".

Medicare Advantage (MA): Medicare Advantage Plans, sometimes called "Part C" or "MA Plans," are offered by private companies approved by Medicare. An MA provides, or arranges for the provision of, a comprehensive package of health care services to enrolled persons for a fixed capitation payment. The term "Medicare Advantage" includes all types of MAs that contract with Medicare, encompassing risk MAs, cost MAs, and health care prepayment plans (HCPPs). This information is obtained from administrative data sources. Beneficiaries were categorized as having Medicare Advantage coverage if they had coverage for one or more months out of the calendar year during the four-year period.

APPENDIX B: DATA SOURCES AND METHODS

Data Sources: Data were analyzed from the 2016–2019 MCBS Survey File LDS. The MCBS is a continuous, multi-purpose longitudinal survey sponsored by the Centers for Medicare & Medicaid Services (CMS) and directed by the Office of Enterprise and Data Analytics (OEDA). It represents the population of Medicare beneficiaries aged 65 and over and beneficiaries aged 64 and under with certain disabling conditions living in the United States. In its rotating panel design, each beneficiary is statistically sampled and is interviewed up to three times per year over a four-year period. The MCBS has conducted continuous data collection since 1991 and collects comprehensive data on beneficiary health insurance coverage, health care utilization and costs, access to care, and satisfaction with care. It is the most comprehensive and complete survey available on the Medicare population and is essential in capturing data not otherwise collected through operations and administration of the Medicare program.

Analysis Method: The analysis used 2019 four-year longitudinal weights to account for overall selection probability of each sampled person among continuously enrolled Medicare beneficiaries

living in the community. These weights also adjust for potential nonresponse bias incurred over the course of four years. Variance was estimated using the balanced repeated replication (BRR) method with a series of replicate weights. Domain analysis was performed to obtain estimates for subgroups.

Complete case analysis using appropriate sub-population or domain statements was performed to ensure no observations were excluded from the survey-weighted analyses. SAS 9.4 was used to construct analytic datasets and conduct the analyses.

Study Population: The population of inference for the flu shot analysis included all beneficiaries living in the community and continuously enrolled in the Medicare program from January 1, 2016, to fall 2019, with estimates derived among beneficiaries with a four-year flu shot status that could be determined. The final analytic sample included 2,140 beneficiaries, with weighted N=45,202,568.

The population of inference for the mammogram screening analysis included all female beneficiaries living in the community and continuously enrolled in the Medicare program from January 1, 2016, to fall 2019 aged 50–74 in all four years (i.e., aged 50 and over at year 2016 and aged 74 and under at year 2019), with estimates derived among beneficiaries with a four-year mammogram screening status that could be determined. The final analytic sample included 430 beneficiaries, with weighted N=13,008,142.

Limitations: Outcomes of interest are based on self-reported data, which could be different from the services actually received. The analysis only examined bivariate associations between receipt of a flu shot or mammogram and beneficiary characteristics. Confounding factors may exist in this analysis. Third, observations of potentially significant findings for mammogram screening outcomes were limited by the small sample size of female beneficiaries who received biennial screenings.

ABOUT THE AUTHORS

This report was written under contract number 75FCMC19D0092 by Yue Gao, Carrie Goetsch, Sarah Hoyt, Praveen Karunatileka, and Sai Loganathan of NORC at the University of Chicago, in collaboration with Nicholas Schluterman at the Centers for Medicare & Medicaid Services (CMS) Office for Enterprise Data and Analytics (OEDA).

REFERENCES

[i] The Official U.S. Government Site for Medicare. Medicare Coverage for Preventive & Screening Services. Available at: https://www.medicare.gov/coverage/preventive-screening-services. Accessed December 2021.

[ii] The Centers for Disease Control and Prevention. Flu & People 65 Years and Older. Available at: https://www.cdc.gov/flu/highrisk/65over.htm. Accessed December 2021.

[iii] National Cancer Institute. Cancer Stat Facts: Female Breast Cancer. Available at: https://seer.cancer.gov/statfacts/html/breast.html. Accessed December 2021.

[iv] The Centers for Disease Control and Prevention. How to Prevent Flu. Available at: https://www.cdc.gov/flu/prevent/prevention.htm. Accessed January 2022.

[v] US Preventive Services Task Force. Final Recommendation Statement: Breast cancer screening. January 11, 2016. Available at: https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/breast-cancer-screening. Accessed December 2021.

[vi] Shen AK, Warnock R, Selna W, MaCurdy TE, Chu S, Kelman JA. Vaccination among Medicare-fee-for service beneficiaries: Characteristics and predictors of vaccine receipt, 2014-2017. Vaccine. 2019 Feb 21;37(9):1194-1201. doi: 10.1016/j.vaccine.2019.01.010. Epub 2019 Jan 22. PMID: 30683507.

[vii] Virk-Baker MK, Martin MY, Levine RS, Wang X, Nagy TR, Pisu M. Mammography utilization among Black and White Medicare beneficiaries in high breast cancer mortality US counties. Cancer Causes Control. 2013 Dec;24(12):2187-96. doi: 10.1007/s10552-013-0295-9. PMID: 24077760; PMCID: PMC3955601.

[viii] Fahim SM, Huo N, Li C, Qian J. Screening Mammography Utilization Among Female Medicare Beneficiaries and Breast Cancer Survivors in 2002-2016. J Womens Health (Larchmt). 2021 May;30(5):739-749. doi: 10.1089/jwh.2020.8571. Epub 2020 Nov 18. PMID: 33211608.