## Title
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# Association of Medicare and Medicaid Insurance With Increasing Primary Care – treatable Emergency Department Visits in the United States

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## Abstract

**Objectives—**Policymakers have increasingly focused on emergency department (ED) utilization for primary care–treatable conditions as a potentially avoidable source of rising health care costs. The objective was to determine the association of health insurance type and arrival time, as indicators of limited availability of primary care, with primary care–treatable classification of ED visits.

**Methods—**This was a retrospective analysis of a nationally representative sample of 241,167 ED visits from the 1997 to 2009 National Hospital Ambulatory Medical Care Surveys (NHAMCS). Probabilities of ED visits being primary care–treatable were categorized based on the primary International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) code. The association of health insurance type and arrival time was determined with the average probability of the primary diagnosis being primary care–treatable using multivariable linear regression.

**Results—**Compared to privately insured visits, Medicaid visits had a 1.7% (95% confidence interval [CI] = 1.2% to 2.2%) and uninsured visits a 2.4% (95% CI = 1.9% to 3.0%) higher probability of primary care–treatable classification, while Medicare visits had a 1.4% (95% CI = 0.7% to 2.0%) lower probability during the overall study period. Compared to business hours, weekend visits had a 1.5% (95% CI = 1.0% to 2.0%) higher probability of being primary care–treatable during the overall study period. From 1997 to 2009, the overall adjusted probability of ED visits being primary care–treatable increased by 0.19% (95% CI = 0.10 to 0.28) per year. This probability increased at a rate of 0.52% per year for Medicare visits (95% CI = 0.38% to 0.65%), more than double that of Medicaid visits (0.25% per year, 95% CI = 0.13% to 0.37%). By contrast, there was no significant change from 1997 to 2009 in the average probability of ED visits being primary care–treatable by privately insured (0.05% per year, 95% CI = –0.07 to 0.16) or uninsured (0.00% per year, 95% CI = –0.12 to 0.13) individuals.

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**Conclusions—**These findings add to prior work that implicates insurance type and arrival time in the variation of primary care–treatable ED visits. Although primary care–treatable classification of ED visits was most associated with uninsured or Medicaid visits, this classification increased most rapidly among Medicare visits during the study period.

## INTRODUCTION

Changes in emergency department (ED) utilization are important indicators of health care sys- tem performance. The ED accounts for over a quarter of acute care visits and is the portal of entry for approximately half of all inpatient admissions.[1,2] Beyond these core functions, EDs provide crucial safety net services to a variety of underserved populations who lack access to other sources of health care.[3] Prior studies have demonstrated higher ED use among uninsured or underinsured populations facing financial and geo- graphic barriers to primary care services.[4–12]

In addition to growing concerns about overburdening the U.S. emergency care system,[13,14] policymakers concerned about health spending growth have intensified their focus on ED utilization. In particular, acute care visits to the ED that may be treatable with the resources typically available in a primary care setting have been targeted as a source of potentially avoidable expenditures, based on the widespread belief that ED care "is the most expensive care there is."[2] In 2012, for example, Medicaid officials in the state of Washington unsuccessfully attempted to restrict payment for "unnecessary" ED visits,[15] and other states have considered similar policies.[16,17]

While some studies have suggested that up to a quarter of primary care–treatable ED visits can be seen in alternative settings,[18] recent studies have established that retrospective assessments of discharge diagnoses are largely unable to identify nonemergency ED visits accurately, due to the limited concordance between presenting complaints and ED discharge diagnoses.[17] Further, surveys performed by the Centers for Disease Control and Prevention have found that up to 80% of adult ED visits are due to insufficient access to other providers, with up to half of patients reporting that they went to the ED because "their doctor's office was not open."[19] Thus, very real questions remain of how policymakers can begin to reduce the barriers that limit primary care availability for populations that currently rely on ED care.

The objective of this study was to determine the association of health insurance type and timing of ED visits, as indicators of limited primary care availability, with primary care–treatable ED visits in the United States. While access indicators such as primary care–treatable visits to the ED have been investigated at local and state levels,[4,5,20–22] nationally representative trends in primary care–treatable ED visits have not previously been studied. We hypothesized that ED visits by Medicaid and uninsured patients would be associated with higher primary care–treatable classification, compared to visits by privately insured patients. We further hypothesized that visits arriving outside of typical primary care business hours would also be associated with higher primary care–treatable classification.

# METHODS

## Study Design

We conducted a secondary analysis of the 1997 to 2009 National Hospital Ambulatory Medical Care Surveys (NHAMCS). This study was approved by the Colorado Multiple Institutional Review Board as an exempt protocol.

## Study Setting and Population

Methodologic details of the NHAMCS are described elsewhere.[23] Briefly, the NHAMCS is conducted annually by the National Center for Health Statistics (NCHS) in nonfederal, general, and short-stay hospitals in the United States to provide a representative probability sample of all U.S. hospitals. Trained personnel collected data during randomly assigned 4-week periods in selected EDs.

## Study Protocol

We combined the annual public-use files from the 1997 to 2009 NHAMCS data for this analysis; these years were chosen because the “expected source(s) of payment” variable was updated in 1997, and 2009 was the most recent data available at the time of analysis. The average unweighted response rate was approximately 93%. A 10% quality control sample of patient record forms demonstrated error rates between 0.3 and 0.9% for various survey items. We recognize the potential limitations of the NHAMCS data and performed the analysis using suggested methodology and a checklist to mitigate these shortcomings.[24]

Visits from 1997 to 2009 were categorized using the New York University (NYU) ED classification algorithm (also known as the Billings algorithm), based on the ED visit’s primary International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) code. The NYU ED algorithm is a population-level instrument that was developed by a panel of emergency and primary care physicians, in collaboration with the Commonwealth Fund, on the basis of actual examinations of 5,700 complete ED records from New York City hospitals.[5] Although the NYU ED algorithm is a validated approach for population-level analysis of ED visits,[25,26] visits primarily related to injuries, psychiatric conditions, alcohol, or drug use are excluded from the algorithm per the original design.

Of the visits that are classified, the NYU ED algorithm cannot assign a categorical status to an individual visit. Rather, the algorithm assigns a probabilistic, continuous estimate of a visit being emergent or nonemergent between 0 and 100%. For example, the algorithm assigns diagnosis code 599.0 (urinary tract infection, site not specified) a 46.1% probability that the visit was non- emergent primary care–treatable, a 29.7% probability that it was emergent primary care–treatable, and a 24.2% probability that it was ED-necessary. Nonemergent cases are defined as those for which the resources of an ED would not be required within 12 hours. Emergent cases are then further categorized as emergent primary care–treatable or ED-necessary. This distinction is based on the probability that the required resources would typically be available in a primary care setting. Finally, the ED-necessary classification is further categorized based on whether the visits are preventable or avoidable with timely and effective outpatient care.

We selected the average primary care–treatable probability as our primary outcome, defined as the combined nonemergent primary care–treatable and the emergent primary care–treatable subcategory probabilities across all NYU ED classified visits, according to payer type and arrival time (Data Supplement S1, available as supporting information in the online version of this paper). We did not distinguish between preventable or potentially avoidable ED necessary visits, as this pertains to prior preventive care, rather than access to care for the acute condition.

## Primary Predictors

Health insurance type was based on the "primary expected source of payment" variable collected on the NHAMCS survey instrument. Medicare, Medicaid, other insurance types such as workers' compensation and self-pay (uninsured) were compared to private insurance as the reference group. Between 2005 and 2009, NCHS changed the way primary expected source of payment was coded for individuals who were beneficiaries of both Medicare and Medicaid programs (i.e., dual eligibles). As Centers for Medicare & Medicaid Services convention has prioritized Medicare for dual eligible individuals, NHAMCS data also changed to a Medicare- dominant hierarchy in 2008. We recoded 2005 to 2007 NHAMCS data to this hierarchy for consistency across years and assumed a Medicare-dominant hierarchy prior to 2005, per NCHS guidelines.[24]

For the arrival time analysis, we defined arrival time as the first time that appeared in the medical record (typically arrival, registration, or triage, according to NHAMCS documentation). An ED arrival time between 08:00 and 15:59 on Monday through Friday was classified as arriving during business hours. Weekday evening was defined as ED arrival time between 16:00 and 23:59 on Monday through Friday, weekend as arrival between 08:00 and 23:59 through Saturday or Sunday, and night as arrival between 00:00 and 07:59 on Mon- day through Sunday.

We selected a priori variables to include as covariates in our model based on previous literature showing associations with ED utilization: age, sex, self-reported race/ethnicity, U.S. census region, urban status, and year of visit.[10,11] These variables were included in the multivariable models as potential confounders.

## Data Analysis

We first calculated the NYU ED classification values for each visit, based on a publicly available program.[27] We then used survey commands in Stata 12.1 to determine nationally representative estimates of ED visits with 95% confidence intervals (CIs) using NCHS-assigned weights, which account for the complex weighted sur- vey design. All results are presented as weighted values. Within each payer and arrival time category, we calcu- lated the average NYU ED classification values, probabi- listically based on the primary ICD-9-CM codes within each subgroup. We used multivariable linear regression to determine the association of payer type and arrival time with average primary care–treatable classification, adjusting for age, sex, race/ethnicity, U.S. Census region, urban status, and survey year. For each of these values, multicollinearity, heteroscedasticity, and outliers did not affect the analysis; however, the linearity of the primary outcome was somewhat skewed towards a 0%

residual due to a higher prevalence of 100% probabilities compared to 0% probabilities in the primary care– treatable classification. Because transformation did not improve this skew, we used the primary data as the dependent variable in the linear regression analyses. All variables were included in the final models, regardless of statistical significance in bivariate comparisons. As a secondary analysis, we evaluated the association between the primary predictors and nonemergent, primary care–treatable classification only.

## RESULTS

Overall, 241,167 visits (58% of NHAMCS observations) had valid NYU ED algorithm classifications (Data Supplement S1), representing 66.3 million visits nationally. Table 1 displays the distribution of the primary predictors and covariates in our study sample. The weighted average NYU ED classifications for these included visits were 32.3% (95% CI = 31.9% to 32.7%) nonemergent primary care–treatable, 34.6% (95% CI = 34.4% to 34.8%) emergent primary care–treatable, and 33.1% (95% CI = 32.7% to 33.5%) ED-necessary. During the study period, the average primary care–treatable probability of ED visits increased by 0.19% (95% CI = 0.10% to 0.28%) per year, after adjusting for covariates.

Medicaid and self-pay/uninsured insurance types were associated with a higher average probability of nonemergent and emergent primary care–treatable vis- its (respectively, 34.8 and 38.2% for Medicaid and 36.6 and 35.1% for self-pay/uninsured), compared with private insurance (32.6 and 34.8%), and Medicare (22.9 and 29.9%). Other average NYU ED classification values by subgroups are presented in Data Supplement S2 (avail- able as supporting information in the online version of this paper).

Weekend arrival times were associated with higher average primary care–treatable probability, compared to visits during business hours. In addition, younger age, female sex, South region, and nonurban location were each associated with higher average primary care–treatable probabilities. Notably, there was no association between racial/ethnic minorities and average primary care–treatable probability. When the nonemergent primary care–treatable probability was analyzed alone as the secondary outcome, the results were similar. These associations are presented in Table 2. When arrival times were stratified according to payer, we did not find a meaningful difference in after-hours care based on insurance type (data not shown).

After adjusting for covariates, Medicaid and self-pay/ uninsured visits were more likely to be classified as primary care–treatable compared to privately insured vis- its, while Medicare visits were less likely (Table 2). After covariates were adjusted for on an annual basis, the average primary care–treatable probability of ED visits by Medicaid beneficiaries increased at a rate of 0.25% per year (95% CI = 0.13% to 0.37%) during 1997 to 2009. While the overall average primary care–treatable probability of ED visits by Medicare beneficiaries was lower, the adjusted rate of increase was over two times higher (0.52% per year, 95% CI = 0.38% to 0.65%), com- pared to Medicaid beneficiaries. By contrast, there was no significant change in average primary care–treatable probability of ED visits by privately insured (0.05% per year, 95% CI = –0.07% to 0.16%) or uninsured (0.00% per year, 95% CI = –0.12% to 0.13%) individuals during the study period. Annual trends for other covariates are presented in Data Supplement S3 (available as supporting information in the online version of this paper).

Compared to business hours, weekend visits had a 1.5% (95% CI = 1.0% to 2.0%) higher average primary care–treatable classification. Night visits had a lower average primary care–treatable probability (–2.7%, 95% CI = –3.3% to –2.2%), however, and weekday evening visits were similar to business hours (0.1%, 95% CI = –0.4% to 0.5%). Temporal trends in primary care–treat- able classification from 1997 to 2009 were similar by arrival time group (Data Supplement S3).

## DISCUSSION

To our knowledge, this is the first national study to investigate factors associated with primary care–treat- able probability of ED visits as potential indicators of limited access to care. From 1997 to 2009, we found that visits by Medicare beneficiaries had lower overall probability of primary care–treatable ED visits compared to the privately insured, but that the average primary care–treatable probability increased at a rate that was over twice that of any other payer group. While this may indicate that Medicare beneficiaries have better access to primary care relative to other payer populations, this trend may also indicate that individuals with Medicare may be facing decreasing primary care avail- ability for acute conditions as the demand for services rises along with the Medicare population at large. Alternately, as the baby boomers enter the Medicare pool en masse, it is also possible that the lower average age, and therefore the lower average burden of disease, may be associated with rising primary care–treatable ED classification among this group.

We also found that Medicaid beneficiaries and the uninsured had a higher probability of primary care– treatable ED visits compared to the privately insured, which similarly suggests limited alternative sources of acute care. Indeed, prior work demonstrated that Medicaid insurance was associated with greater self- reported barriers to timely primary care and lower cost sharing for ED visits than private insurance,[10,28,29] which has been linked to greater ED utilization.[10,30,31] This is likely attributable to well-documented barriers to other sources of outpatient care,[28] including those reported in a recent study indicating that 31% of physicians nationally are unwilling to take new Medicaid patients[32] and the low participation in Medicaid by urgent care centers and retail clinics.[33]

Additionally, during the study period, the probability of primary care–treatable ED visits steadily increased at a rate of 0.25% annually for Medicaid beneficiaries, while the rate for privately insured individuals remained stable. These findings are consistent with prior data indicating that Medicaid beneficiaries disproportionately rely on the safety net care provided by EDs and drive the overall increase in ED utilization nationally.[29–31] Indeed, a recent study of a natural experiment of a 2008 lottery-based expansion of Medicaid in Oregon reported that short-term ED use actually increased by 40%.[4]

In addition to differences in primary care–treatable visits by payer type, we also found an association between after-hours care and average probability of it being primary care–treatable. Our results indicate a higher probability of primary care–treatable ED visits during the weekend, when most primary care offices are closed. This suggests that there is latent demand for urgent primary care services during weekends. This finding is consistent with other studies that have identified temporal barriers to care, including being unable to secure an appointment in a timely manner or during convenient hours, as reasons for potentially avoidable ED visits.[19,29,34] Still, expansion of the primary care workforce, such as incentives to attract graduating medical students to primary care and increased training of primary care physician assistants and nurse practitioners, warrants further exploration. Our finding also reinforces other recent studies demonstrating that improved after-hours availability of primary care services are associated with fewer ED visits,[12] including some research that has suggested that up to a quarter of ED visits could be treated at urgent care centers or retail clinics.[18] Unexpectedly, we did not detect a significant difference primary care–treatable ED visit during weekday evenings or nights compared to business hours.

Although prior reports have questioned the ability of the NYU ED algorithm to detect changes in access to care,[35,36] our results indicate that differences between subgroups and temporal trends may be detected. As provisions of the Affordable Care Act come into effect, such as the recent implementation of the Medicaid repayment increase for primary care providers and the expansion of the Medicaid program in some states,[37] this analytic framework may be important to detect changes in primary care–treatable ED visits as a result of practice and policy changes at the local, state, or federal level.

As insurance coverage does not necessarily equate to primary care access, monitoring metrics of access, such as primary care–treatable ED visits, will be important to evaluate the effectiveness of policy interventions. How- ever, we caution against interpreting these data or implementing the NYU ED algorithm on an individual level, as has been proposed in some states.[16,17,38] Because the algorithm assigns a probability of a final diagnosis being primary care–treatable (retrospectively, *after* ED evaluation), it was intended for population use and, importantly, "not … as a mechanism to determine whether ED use is appropriate."[6] Raven et al.[17] recently demonstrated both the challenge of reliably identifying potentially avoidable ED visits by presenting com- plaints, as well as the limited concordance between presenting complaints and final diagnosis. Blunt classification approaches are unlikely to substantially reduce costs or improve quality of care, necessitating more comprehensive, data-driven solutions.[39] However, our findings add to the body of work that suggests that improving access to primary care providers for Medic- aid, and increasingly for Medicare populations, could serve as part of the solution to treat some acutely ill patients in primary care settings outside of the ED.

## LIMITATIONS

Attempts to classify the urgency of ED visits can be problematic.[26] Although the NYU ED algorithm has been validated to evaluate the prevalence of primary care–treatable visits using administrative data,[25,26] a comparative criterion standard does not currently exist, to our knowledge. The NYU ED algorithm was developed utilizing 5,700 charts exclusively from New York City hospitals, which has raised concerns about its external validity. Additionally, because the algorithm relies on the visit's final ICD-9-CM diagnosis code with- out additional patient-level data, we could neither account for frequent users of the ED nor adjust for the severity of the episode or the comorbidities of the individual patient. In addition, the primary care–treatable classification data included some skew toward 100%, which may have influenced the validity of our regression models. Effect sizes we found were small, particularly on an annual basis, although these values are similar in magnitude to other national figures and do represent millions of visits nationally. Finally, because the NYU ED algorithm's original design excludes visits for which the primary diagnosis includes psychiatric conditions, alcohol, or drug use, important populations that are more frequently uninsured or covered by Medicaid were not included in our analysis.

Beyond the challenges presented by the NYU-ED algorithm, Lindenauer et al.[40] have noted that there may also be differential misclassification of ICD-9-CM codes within the NHAMCS database. Their research demonstrated that there may be a bias by providers toward less severe diagnosis codes in response to reimbursement policies, which would result in a larger average primary care–treatable probability. This study does not evaluate the absolute proportion of primary care–treat- able diagnosis, but rather the relative proportions across payer populations and arrival times. Thus, for this to have an effect on the results of this study, misclassification would have to vary differentially across groups. Although more severe diagnosis codes may be present among the Medicare group due to their higher average burden of disease, it appears unlikely that providers differentially assign less severe diagnosis codes based solely on age or insurance type. Unfortunately, the NHAMCS data set lacks the variables to evaluate individual comorbidities during the study period (a limited number of chronic conditions were added only in the most recent years).[17]

Finally, nonemergent or primary care–treatable visits have been defined in numerous ways within the literature. Some prior studies defined nonemergent visits as those where the total probability that a visit was either nonemergent or emergent primary care–treatable is greater than 50%;[26] others used thresholds of 75, 90, and 100%.[17,41] We used the actual assigned probabilities of "primary care–treatable" for each visit in our study as defined by Billings et al.[5] to provide more precise estimates of the probability that ED visits, in retrospect (based on final diagnosis), could have been seen in a primary care setting. By aggregating these probabilities across a large sample, we sought to capture a picture of a larger spectrum of primary care–treatable diagnoses.

## CONCLUSIONS

We found that the insurance type and arrival time were associated with primary care–treatable ED visits and that temporal trends in potentially avoidable ED visits varied according to insurance type. More research, however, is needed to determine if temporal trends in primary care–treatable ED visits are indeed related to limited primary care availability nationally, particularly among the growing population of Medicare and Medicaid beneficiaries, as well as the substantial population who will remain uninsured even after the implementation of the Affordable Care Act. The average primary care–treatable probabilities of ED visits by Medicare and Medicaid beneficiaries are rising, a trend that is likely to continue with the expansion of Medicaid.[4] At the individual patient level, focusing on denying payment or shifting costs based on final diagnosis risks deferring care for potentially emergent conditions.[42,43] As private insurance appears to be associated with fewer primary care–treatable ED visits, a more patient- centered approach would be to understand why Medicare, Medicaid, and uninsured patients seek ED care for acute conditions that might be safely seen in a primary care setting. Health care policymakers and administrators can then work to develop systems-level interventions to address these identified needs through alternate sources of acute care.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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**Table 1.**

Characteristics of ED visits with valid New York University ED classification from the 1997-2009 National Hospital Ambulatory Medical Care Survey ($N$ = 241,167 records)

| Characteristics | Observed (N) | Weighted % (95% CI) |
|---|---|---|
| Health insurance type | | |
| Private | 83,586 | 36.2 (35.3–37.2) |
| Medicare | 42,155 | 18.2 (17.6–18.7) |
| Medicaid | 57,739 | 23.1 (22.3–23.9) |
| Self-pay/uninsured | 34,345 | 15.2 (14.6–15.8) |
| Other | 18,007 | 7.3 (6.7–8.0) |
| Arrival time | | |
| Business hours (M-F, 8:00–15:59) | 72,330 | 29.7 (29.4–30.1) |
| Weekend evenings (M-F, 16:00–23:59) | 69,389 | 29.1 (28.9–29.4) |
| Nights (M-Su, 0:00–7:59) | 38,663 | 16.2 (15.9–16.5) |
| Weekends (Sa-Su, 8:00–23:59) | 58,806 | 24.9 (24.6–25.2) |
| Age, yr | | |
| 0–9 | 42,802 | 17.8 (17.0–18.6) |
| 10–19 | 22,556 | 9.5 (9.3–9.7) |
| 20–29 | 38,330 | 16.0 (15.7–16.4) |
| 30–39 | 33,554 | 13.9 (13.6–14.1) |
| 40–49 | 31,847 | 13.0 (12.8–13.3) |
| 50–59 | 23,591 | 9.7 (9.5–9.9) |
| 60–69 | 16,850 | 7.0 (6.8–7.2) |
| ≥ 70 | 31,637 | 13.2 (12.7–13.6) |
| Sex | | |
| Female | 138,175 | 57.6 (57.3–57.9) |
| Male | 102,992 | 42.4 (42.1–42.8) |
| Race/ethnicity | | |
| Non-Hispanic white | 142,138 | 62.0 (60.2–63.8) |
| Non-Hispanic black | 56,628 | 22.7 (21.0–24.5) |
| Hispanic | 32,555 | 12.2 (10.8–13.7) |
| Other | 9,846 | 3.1 (2.7–3.6) |
| Region | | |
| Northeast | 56,875 | 18.4 (16.4–20.5) |
| Midwest | 52,986 | 23.8 (20.9–27.0) |
| South | 85,561 | 40.1 (36.4–43.9) |
| West | 45,763 | 17.7 (15.2–20.5) |
| Metropolitan statistical area | | |
| Urban | 206,968 | 81.4 (75.2–86.4) |
| Nonurban | 34,199 | 18.6 (13.6–24.8) |

**Table 2.**

Multivariable Association Between ED Visit Characteristics and New York University ED Classification of Final Primary Diagnosis (N = 241,167)

| Characteristics | Primary care-treatable (Nonemergent & Emergent Primary care-treatable), b % (95% CI) | Nonemergent Primary care-treatable Only, b % (95% CI) |
|---|---|---|
| Health insurance type | | |
| Private | Reference | Reference |
| Medicare | −1.4 (−2.0 to −0.7) | −1.1 (−1.8 to −0.4) |
| Medicaid | 1.7 (1.2 to 2.2.) | 0.8 (0.2 to 1.4) |
| Self-pay/uninsured | 2.4 (1.9 to 3.0) | 2.5 (1.9 to 3.2) |
| Other | 2.5 (1.7 to 3.3) | 4.1 (3.2 to 5.0) |
| Arrival time | | |
| Business hours | Reference | Reference |
| Weekend evenings | 0.1 (−0.4 to 0.5) | −0.3 (−0.8 to 0.2) |
| Nights | −2.7 (−3.3 to −2.2) | −2.6 (−3.2 to −2.0) |
| Weekends | 1.5 (1.0 to 2.0) | 0.9 (0.4 to 1.4) |
| Age, yr | | |
| 0–9 | 4.9 (4.3 to 5.5) | −1.7 (−2.3 to −1.0) |
| 10–19 | 0.4 (−0.3 to 1.0) | −0.2 (−1.1 to 0.7) |
| 20–29 | Reference | Reference |
| 30–39 | −2.3 (−2.9 to −1.7) | −0.6 (−1.3 to 0.1) |
| 40–49 | −6.7 (−7.3 to −6.0) | −3.4 (−4.1 to −2.7) |
| 50–59 | −11.4 (−12.0- to −10.7) | −8.2 (−9.0 to −7.3) |
| 60–69 | −17.4 (−18.3 to −16.5) | −13.2 (−14.3 to −12.1) |
| ≥ 70 | −21.8 (−22.6 to −20.9) | −15.1 (−16.1 to −14.2) |
| Male sex (vs. female) | −2.6 (−3.1 to −2.2) | −2.8 (−3.1 to −2.4) |
| Race/ethnicity | | |
| Non-Hispanic white | Reference | Reference |
| Non-Hispanic black | 0.5 (0.0 to 0.9) | 0.3 (−0.2 to 0.8) |
| Hispanic | 0.1 (−0.5 to 0.7) | −1.0 (−1.7 to −0.3) |
| Other | 0.5 (−0.7 to .17) | 0.0 (−1.2 to 1.2) |
| Region | | |
| Northeast | Reference | Reference |
| Midwest | 0.4 (−0.5 to 1.3) | 0.3 (−0.6 to 1.1) |
| South | 1.6 (0.8 to 2.5) | 0.8 (−0.1 to 1.7) |
| West | 0.3 (−0.5 to 1.2) | −0.5 (−1.4 to 0.4) |
| Nonurban (vs. urban) | 2.1 (1.2 to 2.9) | 1.5 (0.6 to 2.4) |
| Year | 0.2 (0.1 to 0.3) | 0.1 (0.01 to 0.2) |