

Temporal Trends and Demographic Disparities in Constipation-Associated Mortality in the United States, 1999–2025

Running title: Constipation-Associated Mortality in the United States

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Abstract

Background

Constipation is among the most common gastrointestinal disorders and is generally managed as a benign condition in ambulatory settings. However, refractory disease in vulnerable populations can initiate a severe pathophysiologic cascade— fecal impaction, stercoral colitis, colonic perforation, and sepsis with case-fatality as high as 22% once stercoral colitis develops. Despite these risks, national epidemiologic trends in constipation-associated mortality remain largely unmapped.

Methods

We performed a serial cross-sectional analysis of the CDC WONDER Multiple Cause of Death (MCD) database for U.S. adults aged ≥ 25 years. Constipation-associated deaths were identified by ICD-10 code K59.0 listed as an underlying or contributing cause. Primary trend estimation relied on final mortality data from 1999 through 2024. We evaluated provisional 2025 data in a secondary capacity. Age-adjusted mortality rates (AAMRs) per 100,000 (2000 U.S. standard population) were analyzed by sex, age, race/ethnicity, urbanization, census region, state, and place of death. Temporal trends were quantified by Joinpoint regression (annual and average annual percentage change [APC/AAPC]). We additionally contrasted multiple-cause with underlying-cause mortality and tested whether co-coded psychoactive substance use disorders (ICD-10 F10–F19) accounted for the trend.

Results

From 1999–2024, 22,237 constipation-associated deaths were recorded (23,946 including provisional 2025). The overall AAMR rose from 0.26 (95% CI 0.23–0.28) in 1999 to 0.55 (0.53–0.58) in 2024 (AAPC 2.68; 95% CI 2.10–3.26; $P < 0.001$), remaining stable through 2012 and then increasing (2012–2024 APC 4.90; 4.14–5.66); including provisional 2025, the AAMR reached 0.64 (AAPC 2.80; 2012–2025 APC 5.02). Constipation was recorded as a contributing cause approximately 5- to 7-fold more often than as the underlying cause (underlying-cause AAMR 0.05→0.09; AAPC 1.08, $P = 0.18$). The burden was concentrated among adults ≥ 65 years (mean AAMR 1.66 vs 0.12 at 45–64 years), women (0.39 vs 0.33), non-metropolitan residents (0.43 vs 0.31), and the West (0.44). Nearly three-quarters of deaths occurred in hospitals (47.4%) or nursing/long-term-care facilities (24.7%). Co-coded psychoactive substance use disorders plateaued after 2012 and were dominated by alcohol and tobacco; opioid-specific co-coding accounted for $< 1\%$ of deaths, indicating that the post-2012 increase was not attributable to psychoactive substances.

Conclusions

While absolute rates remain low, constipation-associated mortality has increased significantly since 2012. The burden falls disproportionately on older adults, women, and those residing in non-metropolitan areas or institutional settings. The pronounced disparity between contributing-cause and underlying-cause mortality confirms that severe constipation exerts its fatal effect indirectly through downstream sequelae rather than as a primary terminal event. Early recognition and protocolized bowel care in high-risk inpatient and long-term-care settings are warranted.

Clinical Trial Registration

not applicable

Introduction

Constipation is among the most prevalent gastrointestinal complaints in the United States, affecting approximately 16% of adults overall and about one-third of adults aged ≥ 60 years [1]. It is characterized by infrequent, difficult, or incomplete defecation and is commonly accompanied by abdominal discomfort, bloating, and straining, with a measurable impact on quality of life [2]. Women, older adults, and certain racial and ethnic groups are disproportionately affected, reflecting a combination of biological, socioeconomic, comorbidity, and healthcare-access factors [1]. In routine clinical practice, constipation is approached as a symptom rather than a life-threatening illness. Nevertheless, in frail or institutionalized patients, severe dysmotility can trigger a well-documented cascade of fatal complications. Refractory constipation can progress to fecal impaction and fecaloma formation, raising intraluminal pressure and compromising colonic perfusion, which may culminate in stercoral colitis, mucosal ulceration, ischemia, colonic perforation, peritonitis, and sepsis [3, 4]. A recent systematic review of stercoral colitis reported an in-hospital/30-day mortality of 22.4%, rising to 26.9% among patients requiring surgery [37]. These data establish that severe constipation is not merely a nuisance condition but a potentially lethal one, particularly among older and institutionalized adults. When severe constipation leads to death, the terminal event is usually sepsis, peritonitis, or bowel ischemia. Consequently, certifying physicians typically record constipation in Part II of the death certificate as a contributing condition rather than the underlying cause in Part I. Relying solely on underlying-cause statistics therefore systematically underestimates the true public health burden. Examining multiple-cause-of-death (MCD) data offers a more accurate epidemiologic lens. Furthermore, contrasting MCD with underlying-cause rates allows us to quantify the degree to which constipation acts as an indirect, contributory hazard. We hypothesized that constipation-associated mortality is rising in the United States, driven by several converging demographic and clinical factors. These include population aging, the accumulation of multimorbidity, and widespread polypharmacy—particularly the use of opioids and anticholinergic medications that depress gastrointestinal motility. Reduced physical mobility and an expanding long-term-care population likely compound this risk [5–7]. Despite this, national trends in constipation-associated mortality remain poorly characterized. We used the CDC WONDER database to characterize temporal trends and demographic, geographic, and place-of-death disparities in

constipation-associated mortality among U.S. adults from 1999 to 2024 (final data; provisional 2025 reported separately). We further (i) contrasted multiple-cause with underlying-cause mortality to quantify the degree to which constipation contributes to, rather than directly causes, death, and (ii) tested whether co-coded psychoactive substance use disorders explained the observed trend.

Materials and Methods

2.1 Study Design and Data Source

We conducted a serial cross-sectional analysis of U.S. death-certificate data from the National Vital Statistics System via the CDC WONDER Multiple Cause of Death database [8]. CDC WONDER records one underlying cause and up to 20 contributing causes of death together with decedent demographic and geographic detail. The study used de-identified, publicly available aggregate data and was therefore exempt from institutional review board review. Reporting follows the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidance [10].

2.2 Case Definition

Constipation-associated deaths were identified by ICD-10 code K59.0 [9] listed anywhere on the death certificate (underlying or contributing cause). This MCD approach captures deaths in which constipation contributed to a fatal cascade (e.g., fecal impaction, bowel obstruction, stercoral colitis, perforation, or sepsis) even when another condition was certified as the underlying cause; results should therefore be interpreted as constipation-associated rather than constipation-caused mortality. In a prespecified secondary analysis, we separately examined deaths with constipation as the underlying cause of death (UCD).

2.3 Data Status:

Final Versus Provisional Final mortality data were available through 2024 and were used for all primary trend estimation. Data for 2025 were provisional at the time of analysis and are reported separately; because provisional counts are revised upward as death registration completes, 2025 estimates should be regarded as preliminary.

Deaths were stratified by sex, age group, race/ethnicity, urbanization, census region, state, and place of death. To ensure estimate stability, we restricted age-stratified analyses to adults aged 45 years and older, as the 25–44-year stratum yielded small death counts and wide confidence intervals. Similarly, non-Hispanic Asian and non-Hispanic American Indian/Alaska Native populations were excluded from race-stratified reporting due to statistically unreliable annual event counts. Urbanization followed the 2013 NCHS urban–rural classification scheme [11], and census regions followed U.S. Census Bureau definitions [12]. A methodological transition occurred in CDC WONDER surrounding the 2020 Census, altering the intercensal population denominators. To maintain denominator consistency, we anchored state- and urbanization-level rate calculations to the 2010-based period (1999–2020). For state-level

comparisons, we present supplementary estimates for the 2020-based period (2021–2025) as a distinct analytic window.

2.4 Statistical Analysis

AAMRs were calculated per 100,000 population and standardized to the 2000 U.S. standard population using CDC WONDER's direct method [13]. Temporal trends were assessed with the Joinpoint Regression Program v5.0.2 (National Cancer Institute) [14] using log-linear models; APCs, AAPCs, and 95% CIs were estimated using the grid-search method (up to five joinpoints). Trends were considered significantly increasing or decreasing when the APC differed from zero on a two-sided test ($P < 0.05$). Counts of 1–9 were suppressed per CDC policy, and rates based on fewer than 20 deaths were considered unreliable and excluded.

2.6 Underlying- Versus Multiple-Cause and Psychoactive-Substance Analyses To characterize how constipation contributes to death, we compared MCD and UCD AAMRs over time. To test whether psychoactive substances drove the trend, we identified constipation-associated deaths co-coded with mental and behavioral disorders due to psychoactive substance use (ICD-10 F10–F19). Because that block includes substances without a plausible constipating mechanism (notably alcohol [F10] and tobacco [F17]), we additionally restricted the analysis to substances with recognized effects on gut motility—opioids (F11), sedative-hypnotics (F13), and other/multiple psychoactive substances (F19)—and to opioids (F11) alone.

2.7 Exploratory Projection As an exploratory analysis, the overall AAMR was projected through 2030 from final 1999–2024 data using Holt's linear exponential smoothing, with 95% prediction intervals derived from the residual standard deviation. These projections are descriptive, assume continuation of recent trends, and should be validated using independent methods.

2.8 Sensitivity Analyses We repeated the overall analysis (i) excluding provisional 2025 data (final-data analysis), (ii) restricting to the pre-pandemic period (1999–2019), and (iii) using UCD only.

Results

3.1 Overall Trends

From 1999 through 2024, 22,237 constipation-associated deaths were recorded (23,946 including provisional 2025), with a mean AAMR of 0.37 per 100,000. The overall AAMR rose from 0.26 (95% CI 0.23–0.28) in 1999 to 0.55 (0.53–0.58) in 2024 (AAPC 2.68; 95% CI 2.10–3.26; $P < 0.001$). Rates were stable from 1999 to 2012 (APC 0.67; -0.26 to 1.62 ; $P = 0.15$) and then increased significantly from 2012 to 2024 (APC 4.90; 4.14 – 5.66 ; $P < 0.001$). Including provisional 2025 data, the AAMR reached 0.64 (0.61–0.67), and the 1999–2025 AAPC was 2.80 (2.22–3.38), with a 2012–2025 APC of 5.02 (4.28–5.77) (Table 1; Supplementary Table S1; Fig. 1).

3.2 Contributing Versus Underlying Cause Death certificates recorded

constipation as a contributing factor far more frequently than as the underlying cause. The underlying-cause AAMR rose only modestly, from 0.05 (0.04–0.06) in 1999 to 0.09 (0.07–0.10) in 2025 (AAPC 1.08; –0.49 to 2.67; $P = 0.18$), with a significant increase only after 2011 (2011–2025 APC 4.08; 2.18–6.02). Consequently, constipation was recorded as a contributing cause approximately 5-fold more often than as the underlying cause in 1999 and approximately 7-fold more often by 2025—providing empiric support for the clinical observation that constipation contributes to mortality via downstream complications (such as perforation or sepsis) rather than acting as a direct terminal event (Table 1; Supplementary Table S8; Fig. 7).

3.3 Sex Women accounted for 15,144 deaths (mean AAMR 0.39) and men for 8,802 (mean AAMR 0.33). Among women, the AAMR rose from 0.28 (0.25–0.31) in 1999 to 0.65 (0.61–0.69) in 2025 (AAPC 3.09; 1.59–4.62). Among men, it rose from 0.24 (0.20–0.29) to 0.61 (0.57–0.66) (AAPC 3.58; 2.95–4.22), increasing more steeply after 2013 (APC 6.39; 5.56–7.22). Although women maintained a higher absolute burden, the steeper rate of increase among men points toward a narrowing sex disparity over the study period (Supplementary Table S1; Fig. 1).

3.4 Age

The burden was concentrated in older adults: the mean AAMR was 1.66 among adults aged 65–85+ years versus 0.12 at 45–64 years. Among those ≥ 65 years, the AAMR rose from 1.25 (1.13–1.36) in 1999 to 2.63 (2.50–2.77) in 2025 (AAPC 2.30; 1.67–2.92), remaining stable through 2012 and then rising (2012–2025 APC 4.65; 3.86–5.45). At 45–64 years, the AAMR rose from 0.04 to 0.24 (AAPC 5.20; 3.94–6.47) (Supplementary Table S2; Fig. 2).

3.5 Race and Ethnicity Mean AAMRs were similar among non-Hispanic White (0.39) and non-Hispanic Black (0.36) adults. Among Black adults, rates were stable through 2014 and then rose steeply (2014–2025 APC 7.14; 5.39–8.91; overall AAPC 3.05; 1.98–4.14). Among White adults, the AAMR rose from 0.27 to 0.67 (AAPC 3.53; 2.26–4.82), accelerating after 2014 (2014–2025 APC 5.98; 5.34–6.62) (Supplementary Table S3; Fig. 3).

3.6 Census Region and Urbanization The West had the highest mean AAMR (0.44), followed by the Midwest (0.38), South (0.36), and Northeast (0.32). The Northeast showed the steepest overall increase (AAPC 4.96; 4.25–5.68), and the West accelerated after 2016 (2016–2025 APC 6.10; 4.02–8.22). Over 1999–2020, non-metropolitan areas had a higher mean AAMR (0.43) than metropolitan areas (0.31) (Supplementary Tables S4–S5; Figs. 4–5).

3.7 State-Level Variation Reflecting the change in census denominators, state estimates are reported for two periods. In 1999–2020, Nebraska had the highest mean AAMR (0.86) and Nevada the lowest (0.15); the highest-burden (≥ 90 th-percentile) states were Nebraska, Vermont, Arkansas, Montana, Oregon, and Maine. In 2021–2025, Wyoming had the highest mean AAMR (1.60) and Illinois the lowest (0.22); the highest-burden states were Wyoming, Oregon, Arkansas, Colorado, Idaho, and Vermont. State-level rates rest on small annual counts with correspondingly wide confidence intervals and should be interpreted cautiously (Supplementary Table S6; Fig. 6A–B).

3.8 Place of Death

Most deaths occurred in institutional settings: 47.4% in medical-facility inpatient settings and 24.7% in nursing/long-term-care facilities (together 72%), followed by decedents' homes (17.5%), outpatient/emergency settings (3.8%), other/unspecified locations (3.3%), and hospice facilities (3.0%); remaining categories each accounted for $\leq 0.2\%$ (Supplementary Table S7).

3.9 Psychoactive Substances Do Not Explain the Trend

To assess whether rising constipation-associated mortality reflected psychoactive-substance use, we examined deaths co-coded with ICD-10 F10–F19. Any such co-coding rose from approximately 2% of constipation-associated deaths in 1999 to approximately 10% by 2015 but plateaued thereafter, diverging from the continued post-2012 rise in overall mortality. Crucially, this plateauing signal was driven predominantly by alcohol and tobacco use disorders. When we narrowed the analysis to substances with established pharmacological effects on gut motility (such as opioids and sedative-hypnotics [F11, F13, F19]), co-coded deaths accounted for only 2% to 3% of cases. Opioid use disorder specifically was co-coded in less than 1% of deaths, with counts suppressed for unreliability in most years. These data strongly suggest that the post-2012 acceleration in mortality was not an artifact of rising psychoactive-substance use (Supplementary Table S9).

3.10 Exploratory Projection

Extrapolating final 1999–2024 data, the overall AAMR was projected to be 0.61 (95% prediction interval 0.57–0.66) in 2026, rising to 0.72 (0.68–0.77) by 2030; the provisional 2025 value (0.64) was consistent with this trajectory. These projections are exploratory and assume continuation of recent trends (Fig. 8).

3.11 Sensitivity Analyses

Findings were robust. Restricting to final data (1999–2024) yielded an AAPC of 2.68 (95% CI 2.10–3.26). In the pre-pandemic period (1999–2019), the AAMR rose from 0.26 to 0.41 (AAPC 1.88; 1.07–2.69; significant 2010–2019 increase, APC 3.68), indicating that the rise predated COVID-19. The UCD-only analysis showed the same direction at much lower rates (Section 3.2).

Discussion

In this national analysis spanning more than two decades, constipation-associated mortality although uncommon, rose substantially: the age-adjusted rate more than doubled, remaining stable until 2012 and increasing thereafter. The burden fell disproportionately on older adults, women, rural residents, and the institutionalized. A defining observation of this study is the magnitude of the gap between contributing and underlying cause-of-death certification. Constipation was recorded 5 to 7 times more frequently in Part II of the death certificate than in Part I. This structural disparity confirms that severe constipation acts as a catalyst for lethal sequelae rather than as a primary cause of death.

This certification pattern reconciles clinical experience with epidemiologic data. While uncomplicated constipation is rarely fatal, refractory dysmotility can precipitate fecal impaction, stercoral ulceration, colonic perforation, and overwhelming sepsis [3, 4, 34, 37]. The 22% case-fatality of stercoral colitis [37] illustrates how a condition perceived as benign becomes lethal once complications supervene. An analysis limited to the underlying cause would have captured only a fraction of the burden (AAMR 0.09 vs 0.64), underscoring the validity of the multiple-cause approach and cautioning against interpreting underlying-cause statistics as the full toll of constipation. We hypothesize that the post-2012 inflection point reflects the intersection of population aging and the rising prevalence of multimorbidity. The U.S. population aged ≥ 65 years grew by 38.6% between 2010 and 2020 [15], and older adults concentrate the established risk factors for constipation—multiple chronic conditions, polypharmacy, reduced mobility, cognitive impairment, and institutional residence [16, 17]. Functional dependence and difficulty maintaining hydration and nutrition further increase disease severity with age [18]. We specifically tested whether psychoactive substances explained the rise. Although opioid-induced constipation is a well-recognized iatrogenic entity arising from μ -opioid receptor effects on the gut [38], it was not captured at scale in mortality data: opioid-use-disorder co-coding accounted for $< 1\%$ of constipation-associated deaths and was suppressed in most years, and the broader substance-use signal plateaued after 2012 and was dominated by alcohol and tobacco, which lack a constipating mechanism. Consequently, the post-2012 acceleration appears to be rooted in broad demographic and chronic-disease shifts rather than an acute pharmacologic crisis. Older adults bore the greatest burden, consistent with constipation prevalence that reaches $\sim 26\%$ of women and 16% of men aged ≥ 65 years and up to 80% among long-term-care residents [21]. Aging is also accompanied by frailty—diminished physiologic reserve with heightened vulnerability to adverse outcomes after minor stressors [19]—often with polypharmacy and sarcopenia [20], plausibly amplifying constipation-associated mortality. Women experienced a higher overall burden, consistent with a higher prevalence of constipation (female-to-male ratio $\sim 1.5:1$ in older adults) [21], greater susceptibility to pelvic-floor dysfunction [22], longer life expectancy with greater representation in the oldest ages [23], and a higher share of residential-care residents [24]. The faster male increase, however, suggests a narrowing gap warranting further study. Race-stratified analysis showed similar burdens among White and Black adults but a steeper recent rise among Black adults. The older median age of the non-Hispanic White population [25] likely accounts for a substantial portion of their absolute burden. Conversely, the steeper recent increase observed among non-Hispanic Black adults may reflect systemic factors, including structural barriers to timely specialty care and higher burdens of compounding chronic disease [26]; prior surveys reported a higher constipation prevalence [27] and greater use of constipation medications [28] among Black adults. Geographic and urbanization patterns were notable for a higher burden in non-metropolitan areas, which have older populations [29,31], greater chronic-disease burden, and more limited healthcare access, with much of rural America medically underserved [32, 33]. Regional clustering of chronic disease may further contribute to geographic variation [30]. Nearly three-quarters of deaths occurred in inpatient and long-term-care settings. This concentration likely reflects both the hospitalization required for severe complications (fecal impaction, stercoral colitis, septic shock) [34] and the high co-occurrence of constipation with

dementia and immobility in institutionalized populations; constipation affects roughly a quarter of patients with dementia [35], and dementia care is widespread in U.S. nursing homes [36].

4.1 Clinical Implications

The concentration of deaths among older, institutionalized, and rural adults identifies actionable targets. Prophylactic bowel regimens should accompany opioid and anticholinergic prescribing, and constipating medications should be reviewed and deprescribed where feasible; peripherally acting μ -opioid receptor antagonists are available for refractory opioid-induced constipation [38]. In long-term-care and inpatient settings—where ~ 72% of deaths occurred and where dementia and immobility are common [35, 36]—standardized bowel-monitoring protocols and early recognition of fecal impaction and stercoral colitis (which may present without abdominal pain) could avert progression to perforation and sepsis [37]. Rural disparities underscore the need to address provider shortages and access barriers [32, 33]. Guideline-based evaluation and management of chronic constipation should be applied proactively in high-risk groups [39].

4.2 Strengths and Limitations

This study's primary strength is its use of a comprehensive, nationally representative database over a 25-year period. By employing multiple-cause-of-death methodology, we captured a contributory mortality burden that traditional underlying-cause analyses systematically overlook. Important limitations must be acknowledged. First, death-certificate data are inherently subject to diagnostic misclassification and variation in physician certification practices. The completeness of multiple-cause coding has generally improved over time, which may partially inflate temporal trends. Second, the ecological and observational design precludes individual-level causal inference; we could not adjust for specific comorbidities, medication regimens, or the severity of the underlying constipation. Constipation-associated mortality is rare, so state-level and subgroup estimates rest on small counts with wide confidence intervals. Co-coding indicates association rather than causation, and the increasing completeness of multiple-cause coding over time may inflate co-occurrence counts. Data for 2025 are provisional, and the projection is exploratory.

Conclusions

In conclusion, constipation-associated mortality in the United States increased significantly from 1999 to 2024. This rising burden is concentrated among older adults, women, and individuals residing in non-metropolitan areas or institutional settings. The stark contrast between contributing and underlying cause-of-death rates confirms that severe constipation acts primarily as a precursor to lethal complications—such as stercoral colitis and perforation—rather than as a direct cause of death. Although perceived as benign, constipation warrants greater clinical attention in older, frail, and institutionalized populations; early recognition, medication review, and protocolized bowel care may help curb this growing, if still uncommon mortality burden.

Declarations

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Conflicts of interest: The authors declare no conflict of interest. Ethics approval and consent to participate:

Ethical approval: Not applicable. The study used de-identified, publicly available aggregate data from CDC WONDER (<https://wonder.cdc.gov/mcd.html>) and did not require IRB approval or participant consent.

Consent for publication: Not applicable. **Availability of data and materials:** All data are publicly available from the CDC WONDER database (<https://wonder.cdc.gov/>).

Data availability: The study used de-identified, publicly available aggregate data from CDC WONDER. The dataset analyzed is available in supplemental file.

Authors contribution:

E.A.: Conceptualization, Data curation, Investigation, Methodology, Writing – original draft, Writing – review and editing.

V.D.: Data curation, Formal analysis, Software, Writing – original draft, Writing – review and editing.

A.M.A.: Data curation, Investigation, Writing – original draft, Writing – review and editing.

K.F.: Data curation, Investigation, Writing – original draft, Writing – review and editing.

S.Q.: Conceptualization, Methodology, Supervision, Project administration, Writing – review and editing.

M.M.: Data curation, Investigation, Writing – review and editing.

M.Q.: Methodology, Validation, Writing – review and editing.

Z.A.: Validation, Writing – review and editing.

M.A.M.: Supervision, Writing – review and editing.

A.O.: Supervision, Writing – review and editing.

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Table 1

Table 1 is not available with this version.

Figures

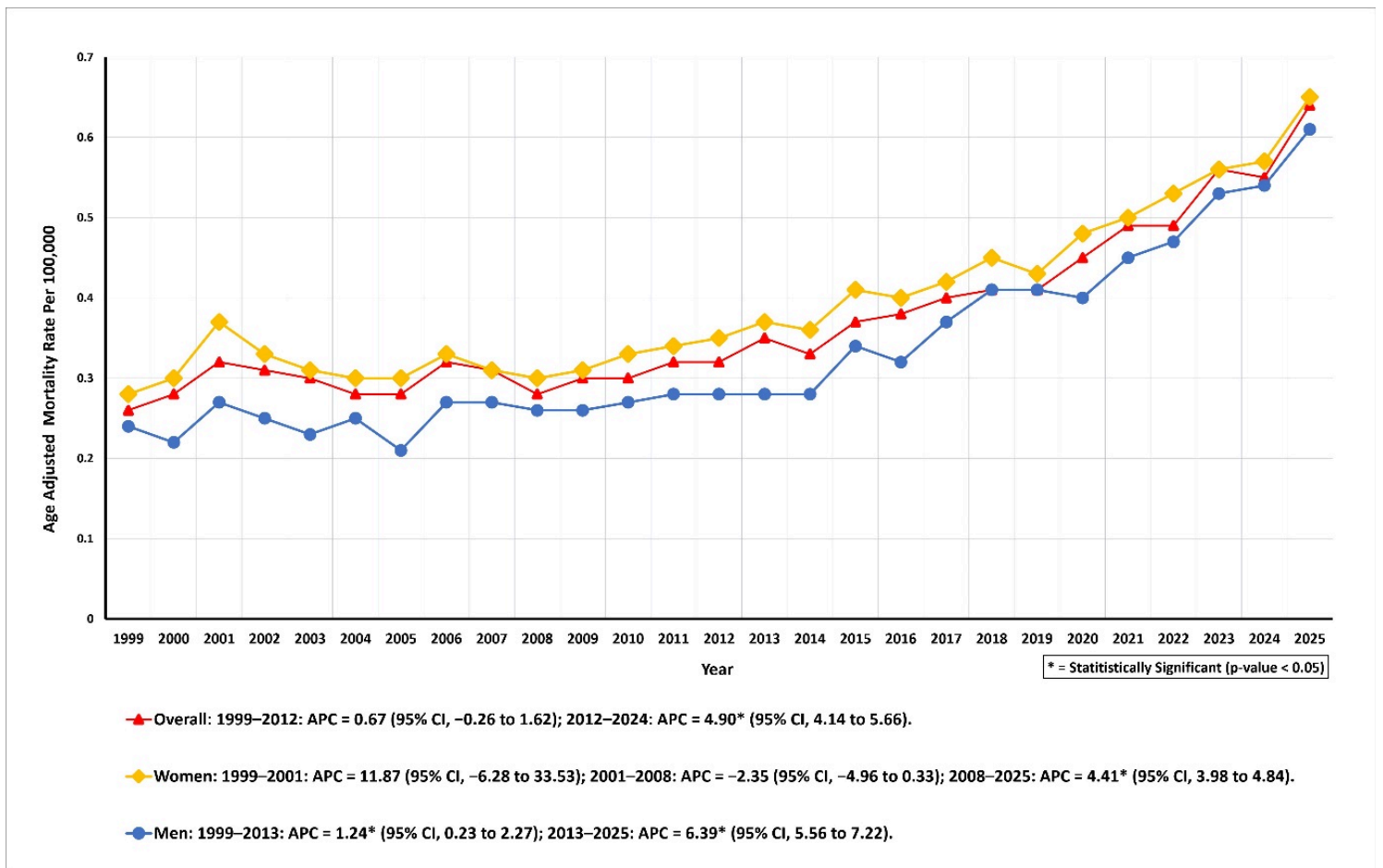


Figure 1

Overall and Sex stratified Age-adjusted mortality rates (per 100,000) for Constipation related mortality among U.S. adults aged ≥ 25 , 1999 to 2025.

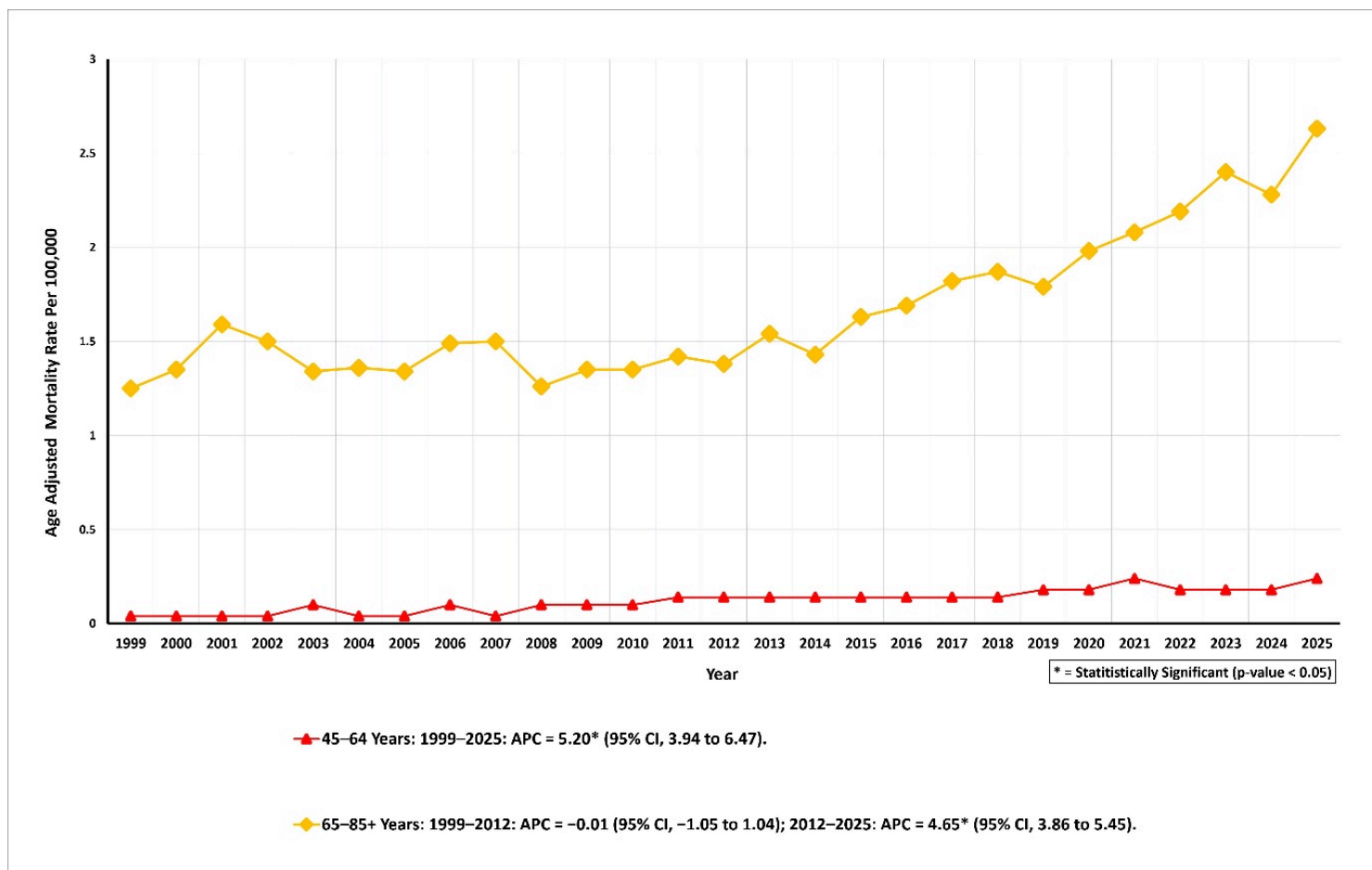


Figure 2

Age stratified Age adjusted mortality rates per 100,000 for Constipation related mortality in United States adults aged ≥ 25 years, 1999-2025.

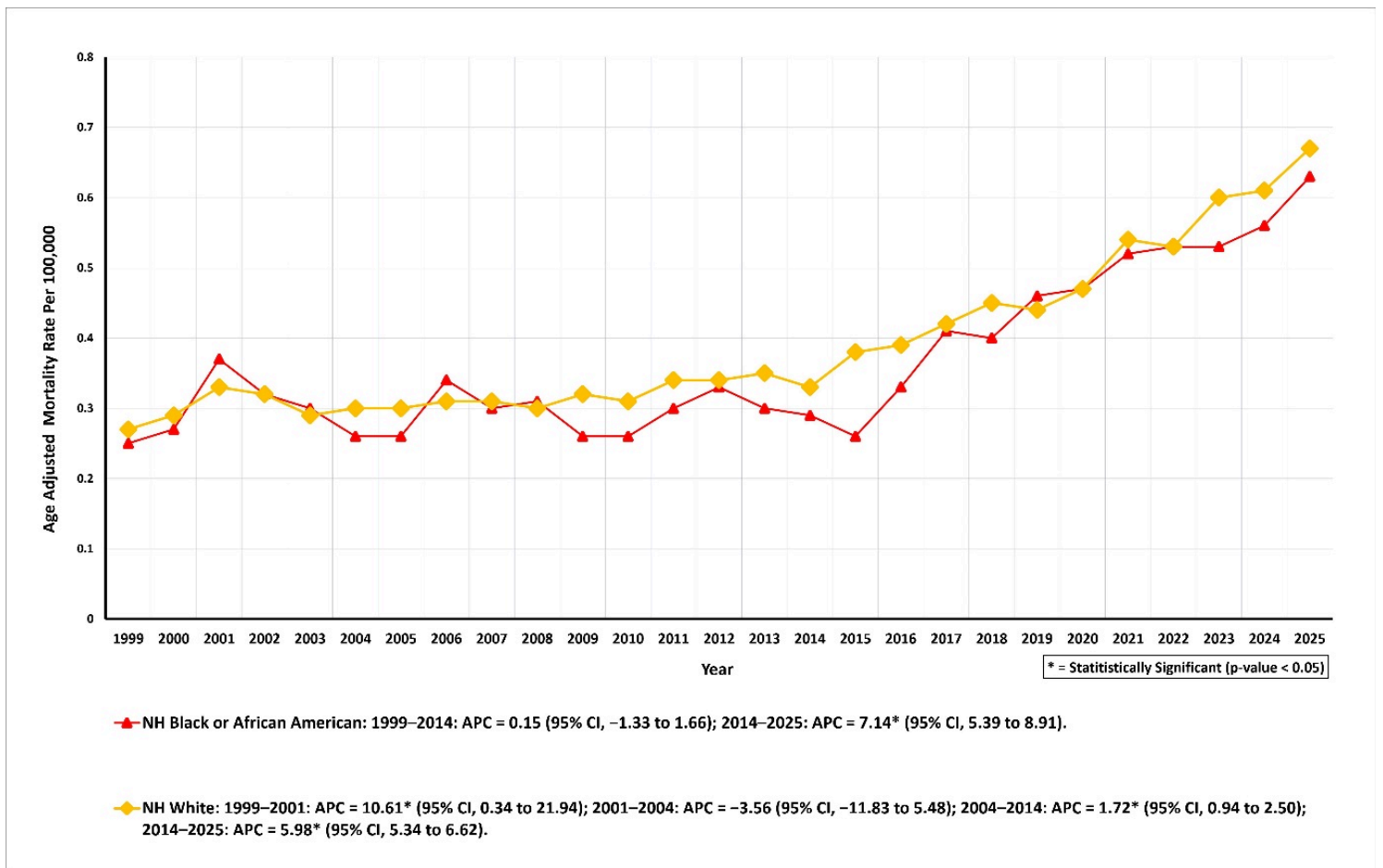


Figure 3

Race stratified Age-adjusted mortality rates (per 100,000) for Constipation related mortality among U.S. adults aged ≥ 25 , 1999 to 2025.

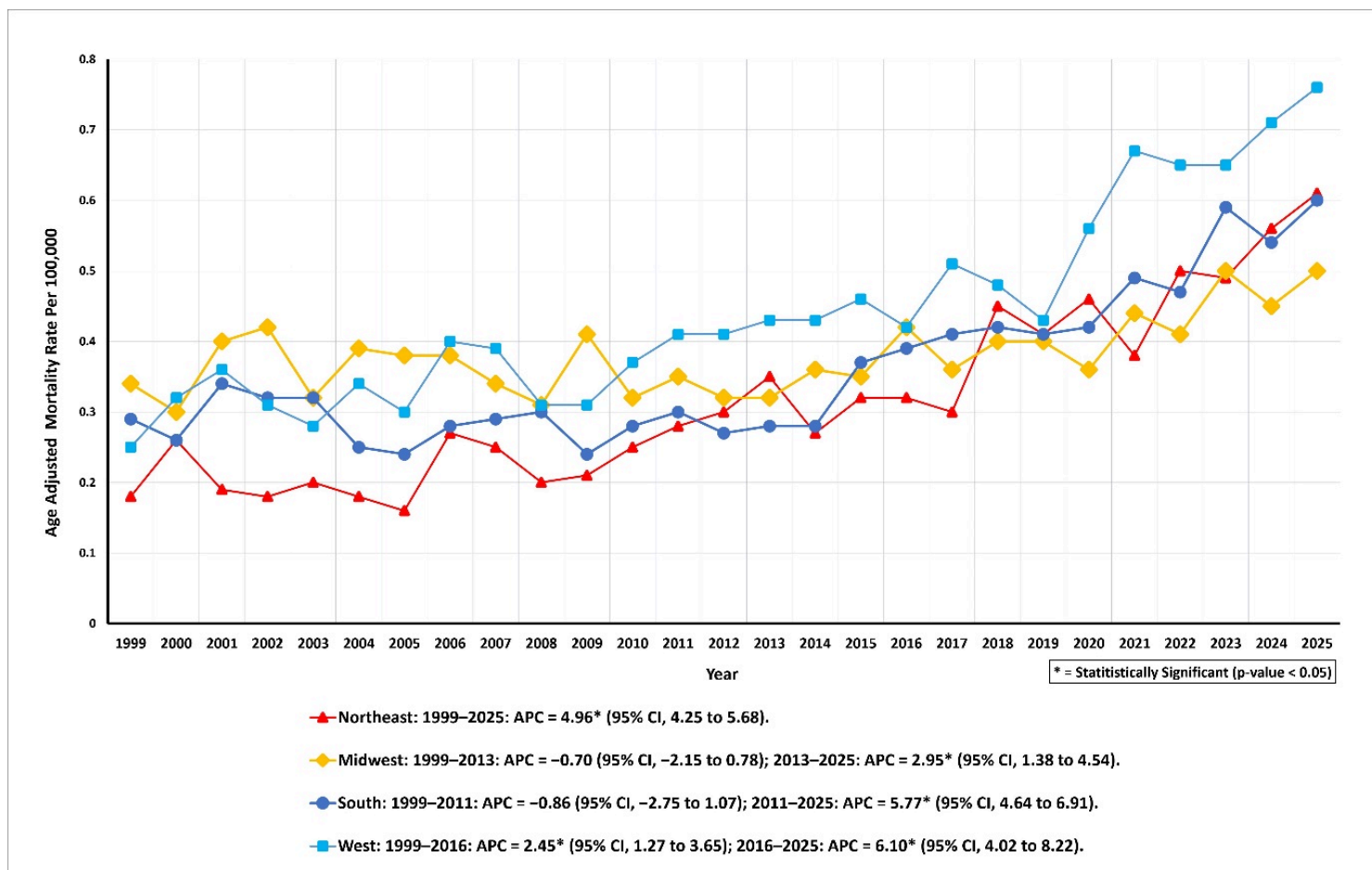


Figure 4

Census region stratified age-adjusted mortality rates per 100,000 for Constipation related mortality in United States adults aged ≥ 25 years, 1999-2025.

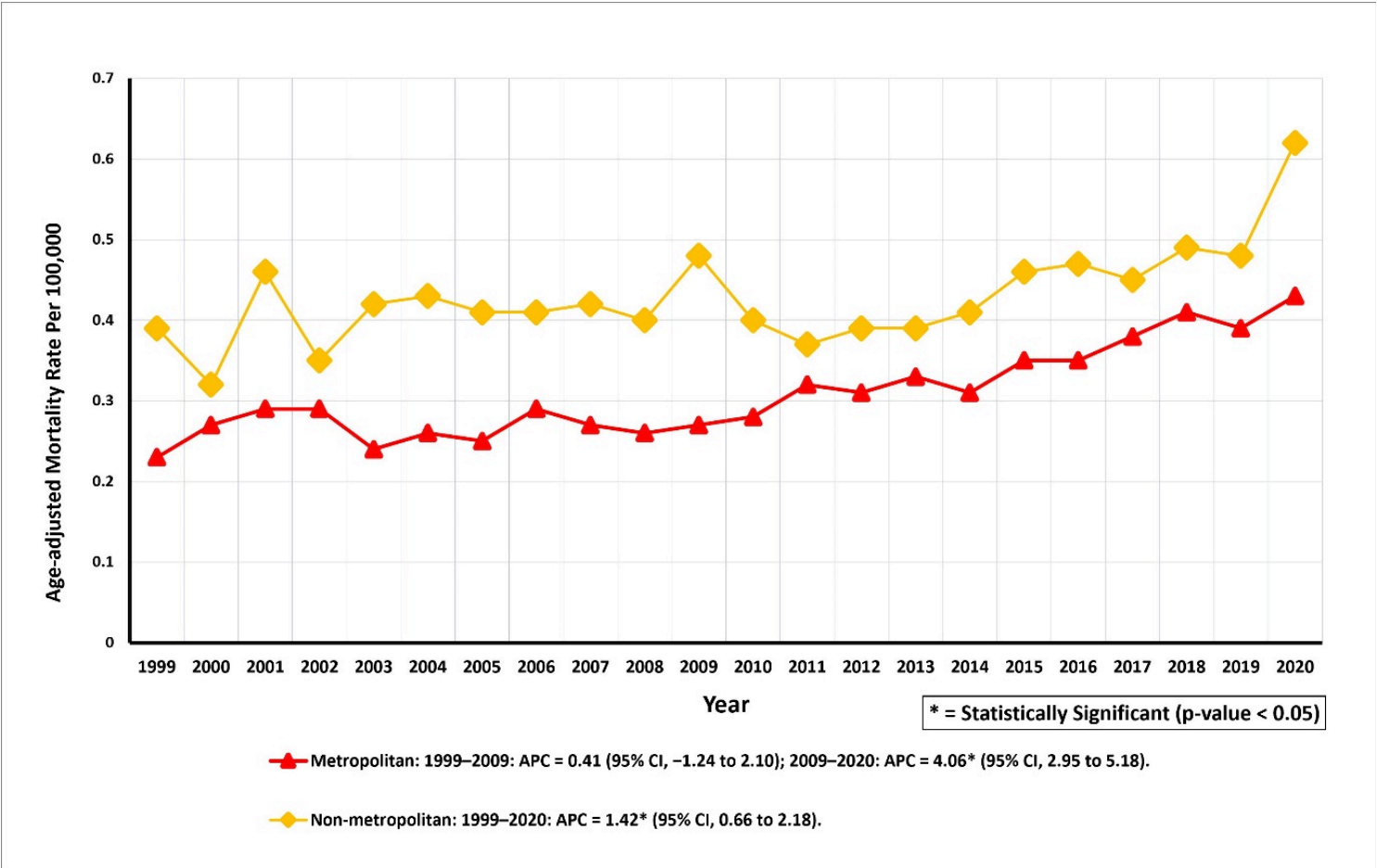


Figure 5

Urbanization stratified age-adjusted mortality rates per 100,000 for Constipation related mortality in United States adults aged ≥ 25 years, 1999–2020.

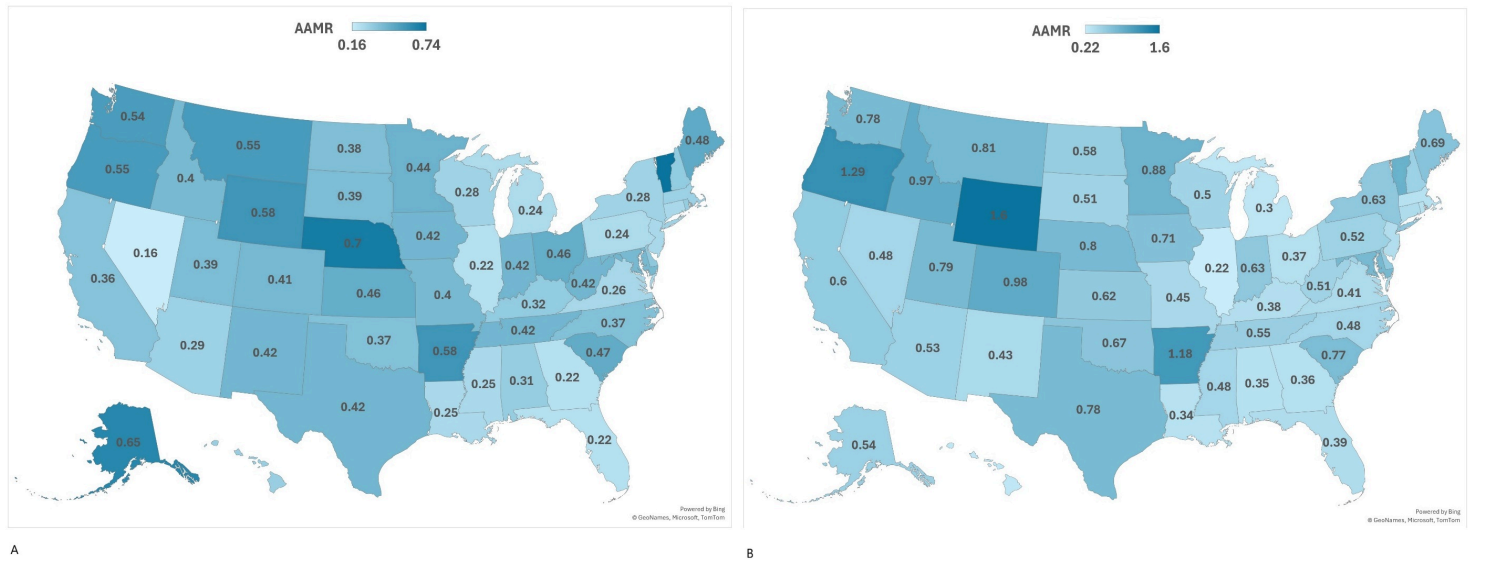


Figure 6

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A: State stratified age-adjusted mortality rates per 100,000 for Constipation related mortality in United States adults aged ≥ 25 years, 1999-2020.

B: State stratified age-adjusted mortality rates per 100,000 for Constipation related mortality in United States adults aged ≥ 25 years, 2021-2025.

Figure 8. Constipation-associated mortality: observed and projected (U.S., adults ≥ 25)

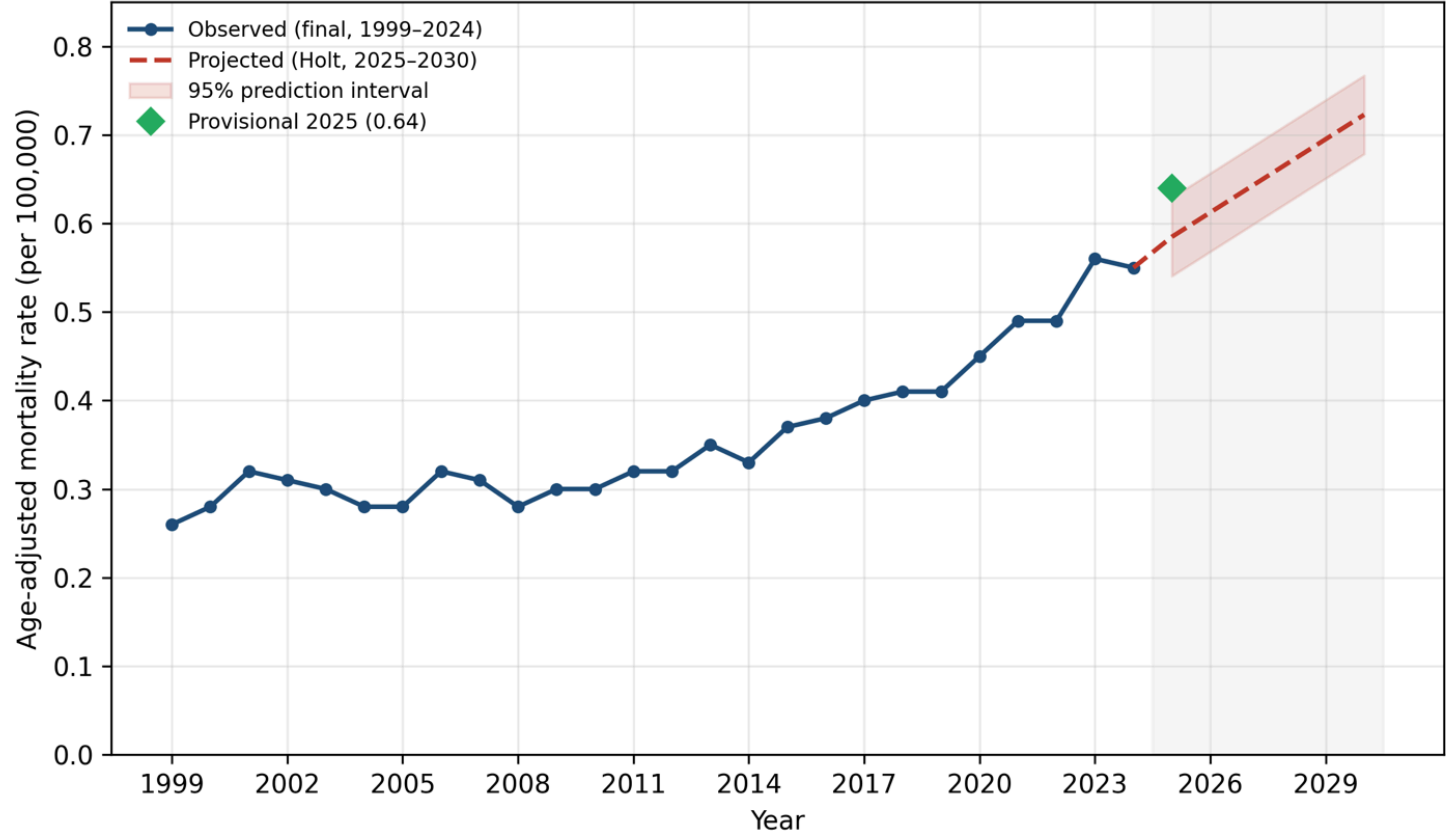
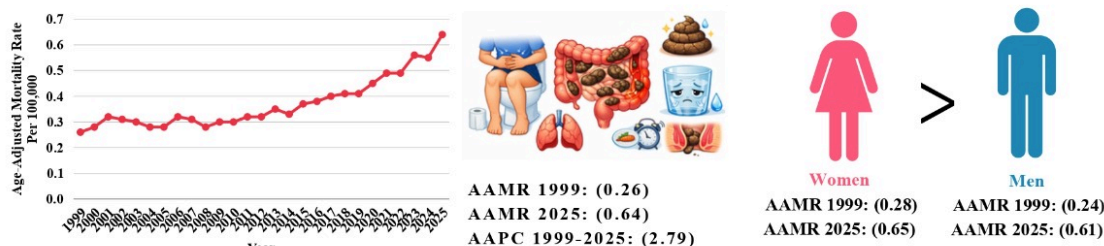


Figure 7

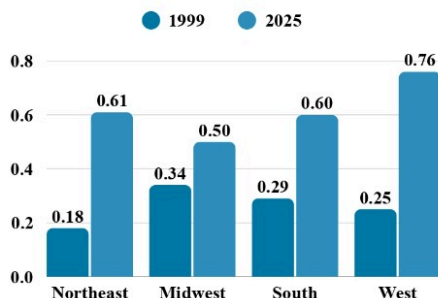
Trends in underlying-cause versus multiple-cause constipation-associated mortality, 1999–2024 (2025 provisional).

Trends and Disparities in Constipation Related Mortality in the United States, a CDC Wonder analysis from 1999-2025

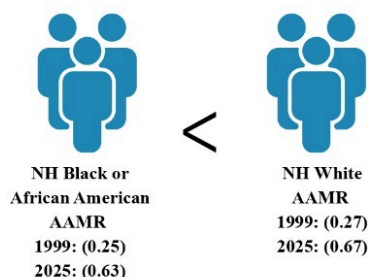
A total of 23,946 deaths were reported among patients with Constipation from 1999 to 2025.



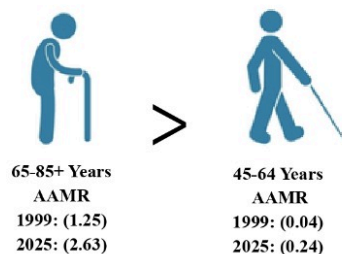
CENSUS REGION



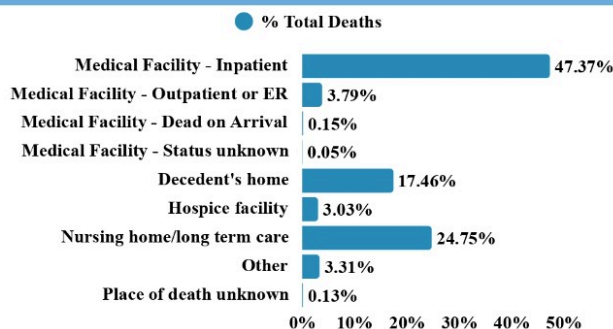
RACIAL DISPARITIES



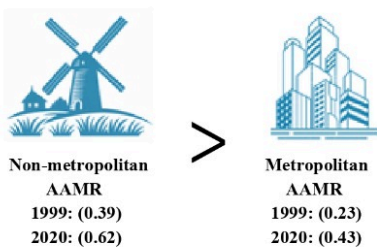
AGE DISPARITIES



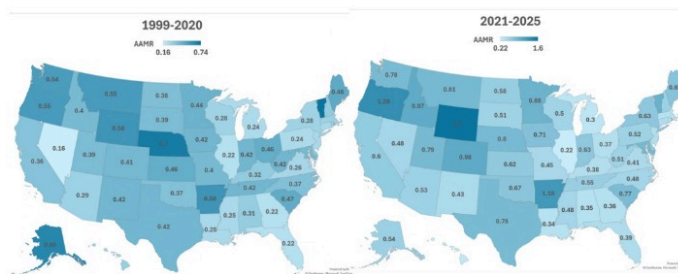
PLACE OF DEATH



URBANIZATION (1999-2020)



STATES



AAMR: Age-adjusted mortality rate, NH: Non-Hispanics.

Figure 8

Observed (1999–2024, final) and exploratory projected (2025–2030) overall age-adjusted mortality rate (per 100,000) with 95% prediction intervals; provisional 2025 shown for reference. Central Illustration. Trends and disparities in constipation-associated mortality in the United States, 1999–2024.

Supplementary Files

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- [3JulySupplementalTableconstipation.docx](#)