

Healthcare Cost and Utilization Project (HCUP) Maternal Health Chartbook 2010–2019



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Colorado Hospital Association	New Mexico Department of Health
Connecticut Hospital Association	New York State Department of Health
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Florida Agency for Health Care Administration	Ohio Hospital Association
Georgia Hospital Association	Oklahoma State Department of Health
Hawaii Lauima Data Alliance	Oregon Association of Hospitals and Health Systems
Hawaii University of Hawai'i at Hilo	Oregon Health Authority
Illinois Department of Public Health	Pennsylvania Health Care Cost Containment Council
Indiana Hospital Association	Rhode Island Department of Health
Iowa Hospital Association	South Carolina Revenue and Fiscal Affairs Office
Kansas Hospital Association	South Dakota Association of Healthcare Organizations
Kentucky Cabinet for Health and Family Services	Tennessee Hospital Association
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Maryland Health Services Cost Review Commission	Vermont Association of Hospitals and Health Systems
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Introduction

The Healthcare Cost and Utilization Project (HCUP) is a family of healthcare databases and related software tools and products developed through a Federal-State-Industry partnership and sponsored by the Agency for Healthcare Research and Quality (AHRQ). HCUP databases bring together the data collection efforts of State data organizations, hospital associations, private data organizations, and the Federal government to create a national information resource of encounter-level healthcare data. HCUP includes the largest collection of longitudinal hospital care data in the United States, with all-payer, encounter-level information beginning in 1988. These databases help to facilitate research on a broad array of health policy issues, including the cost and quality of health services, patterns in medical practice, access to healthcare programs, and treatment outcomes at the national, State, and local market levels.

This Maternal Health Chartbook is designed to help policymakers, researchers, payers, and healthcare providers understand trends in delivery-related hospital stays during the pre-COVID-19 pandemic period from 2010 to 2019. The chartbook presents trends in healthcare utilization for five conditions: diabetes, hypertension, mental health disorders, substance use disorders, and severe maternal morbidity (SMM). The chartbook includes a section for each of these coexisting conditions. Within each section, the chartbook presents the annual rates for each condition per 10,000 delivery stays. In addition, the chartbook presents overall rates for each condition by primary expected payer and by patient characteristics. This chartbook is intended to serve as a benchmark for maternal healthcare in community hospitals prior to the changes in healthcare utilization that began with the COVID-19 pandemic in 2020.

Background

The HCUP National (Nationwide) Inpatient Sample (NIS)^a is a nationwide database of hospital inpatient stays that is drawn from a sampling frame that contains community acute care hospitals (i.e., short-term, non-Federal, non-rehabilitation hospitals) and comprises more than 95 percent of all hospital discharges in the United States. The vast size of the NIS allows for the study of various topics at the national and regional levels for specific subgroups of patients. It also enables analyses that support public health professionals, administrators, policymakers, and clinicians in their decision making regarding hospital care.

The HCUP databases are an ideal source of data for monitoring maternal healthcare utilization, regardless of the expected payer. In addition, they are a valuable resource for examining the outcomes of maternal healthcare when it is complicated by coexisting conditions that may pose a risk to delivery outcomes.¹ These coexisting physical and mental health conditions may be present prior to or during pregnancy. For example, **hypertensive disorders** are a leading cause of pregnancy-related mortality in the United States. These disorders can lead to severe pregnancy complications such as preeclampsia and eclampsia. Women with chronic **diabetes** have an increased risk for developing gestational diabetes, which is associated with a higher risk of birth defects, stillbirths, and preterm births. Anxiety and depression are common **mental health disorders** that can occur throughout one's life. These conditions are associated with a higher risk of preterm births and low birthweight births.² A **substance use disorder** (SUD) during pregnancy is particularly harmful to the mother and to the newborn. For example, prenatal opioid use may lead to neonatal abstinence syndrome (NAS), which is a group of conditions that are commonly caused by the abrupt cessation of prescription or illegal opioids at birth following repeated prenatal exposure.^{3,4} Finally, **severe maternal morbidity (SMM)** which includes unexpected, life-threatening complications during hospitalization for delivery, is associated with poor health outcomes and maternal mortality.

^a For more information about the HCUP NIS, please visit: <https://hcup-us.ahrq.gov/db/nation/nis/nisdbdocumentation.jsp>.

Tracking healthcare use for maternal health conditions among pregnant women is essential for monitoring progress toward eliminating healthcare disparities, guiding policy decisions, allocating Federal resources, and ultimately improving the well-being of pregnant women and their newborns. This activity aligns with the goals outlined in the Surgeon General's Call to Action to Improve Maternal Health, which suggests the need to "support research to understand, prevent, and reduce adverse maternal health outcomes among racial and ethnic minority women, those who are socioeconomically disadvantaged, and those in rural, remote and/or underserved areas."⁵ Examining health outcomes that are stratified by the different types of expected payers of healthcare addresses a need raised in a recent congressional mandate for "research that examines the potential cost-savings to the public health system of providing a special enrollment period for pregnant individuals, as well as the impact of a special enrollment period on the private insurance market."⁶

Executive Summary

Overview

This Maternal Health Chartbook from the Healthcare Cost and Utilization Project (HCUP) presents statistics on complications among delivery-related hospital care due to five conditions: diabetes, hypertension, mental health disorders, substance use disorders, and severe maternal morbidity. These conditions were chosen because of their importance in maternal health. Condition-specific rates are stratified by expected payer to better elucidate how health insurance types are associated with maternal outcomes. Chartbook data come from discharge records for patients who were assigned female at birth and aged 12–55 years at admission and use weighted estimates from the 2010–2019 National Inpatient Sample (NIS).

Annually in the NIS, there were approximately 3.6 million delivery stays at community hospitals in the United States between 2010 and 2019. For half of these delivery stays, private insurance was the expected payer (50 percent). For the rest of these stays, the expected payer was Medicaid (44 percent), self-pay/no charge (2 percent), Medicare (1 percent), or other expected payers (3 percent).

Because of the large sample size of the national HCUP databases, small differences can be statistically significant but not clinically important. Thus, only differences greater than or equal to 10 percent are discussed in the text.

Summary of Findings

Overall

- Hypertension was the most common selected coexisting condition among delivery stays from 2010 to 2019.
- The selected maternal health conditions—diabetes, hypertension, mental health disorders, substance use disorders, and severe maternal morbidity – were most common for Black non-Hispanic women followed by women aged 35–55 years.
- From 2016 to 2019, among the five maternal health conditions selected, the rate of delivery stays involving mental health disorders increased the most, especially for women from the lowest community-level income areas (a 62 percent increase) and for women aged 20–24 years (a 57 percent increase).

Among Delivery Stays With Medicaid as the Expected Payer

- Hypertension was the most common selected coexisting condition associated with deliveries billed to Medicaid, followed by diabetes.
- Among delivery stays with Medicaid as the expected payer, the rate of delivery stays involving a selected coexisting maternal health condition was highest for White non-Hispanic women with substance use disorders, followed by Black non-Hispanic women with hypertension.
- From 2016 to 2019, the rate of delivery stays involving mental health disorders increased the most (a 44 percent increase) for stays billed to Medicaid. The rate of increase for delivery stays involving mental health disorders was highest for women from the lowest community-level income areas (a 61 percent increase), for women aged 20–24 years (a 53 percent increase), and for women from the most socially vulnerable areas (a 52 percent increase).

Among Delivery Stays With Private Insurance as the Expected Payer

- Hypertension was the most common selected coexisting condition associated with deliveries billed to private insurance, followed by diabetes and mental health disorders.

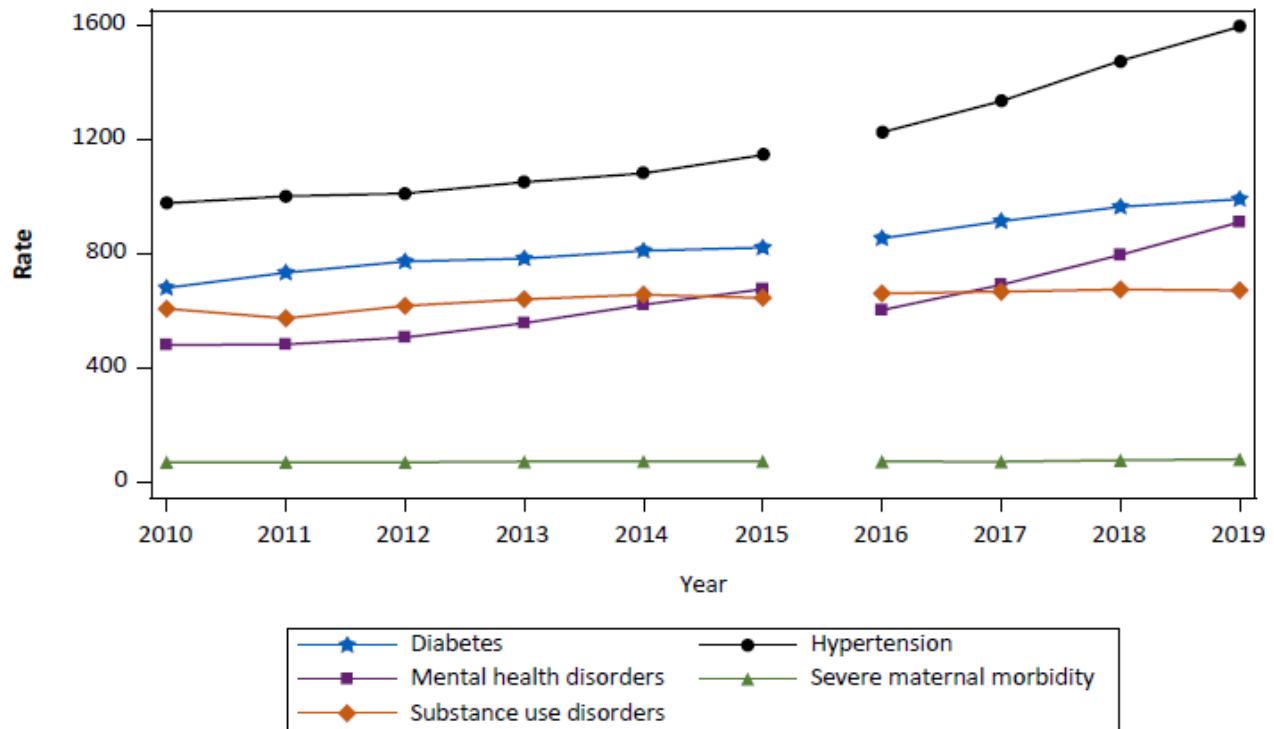
- Among stays with private insurance as the expected payer, the rate of delivery stays involving hypertension was highest for Hispanic women, followed by women from large metro areas.
- From 2016 to 2019, for delivery stays billed to private insurance, delivery stays involving mental health disorders had the largest rate increase (a 61 percent increase) across the selected coexisting conditions. The increase was greatest among deliveries for women from the lowest community-level income areas (a 73 percent increase), for women who delivered at a Midwestern hospital (a 70 percent increase), and for women aged 20–24 years (a 67 percent increase).

Among Delivery Stays With Self-Pay/No Charge as the Expected Payer

- Hypertension was the most common selected coexisting maternal condition associated with deliveries with self-pay/no charge as the expected payer, followed by diabetes and substance use disorder.
- Among stays with self-pay/no charge as the expected payer, the rate of delivery stays involving a selected coexisting maternal health condition was highest for Black non-Hispanic women with hypertension, followed by women aged 35–55 years with diabetes.
- From 2016 to 2019, the rate delivery stays involving a mental health disorder increased 55 percent. The rate increase was highest among delivery stays at Northeastern hospitals (a 138 percent increase), for women from large metro areas (an 88 percent increase), and for women aged 12–19 years (an 82 percent increase).

Exhibit E.1

Rates of selected co-existing conditions per 10,000 delivery stays, overall, 2010-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit E.1

Rates of selected co-existing conditions by 10,000 delivery stays, overall, 2010-2019, National

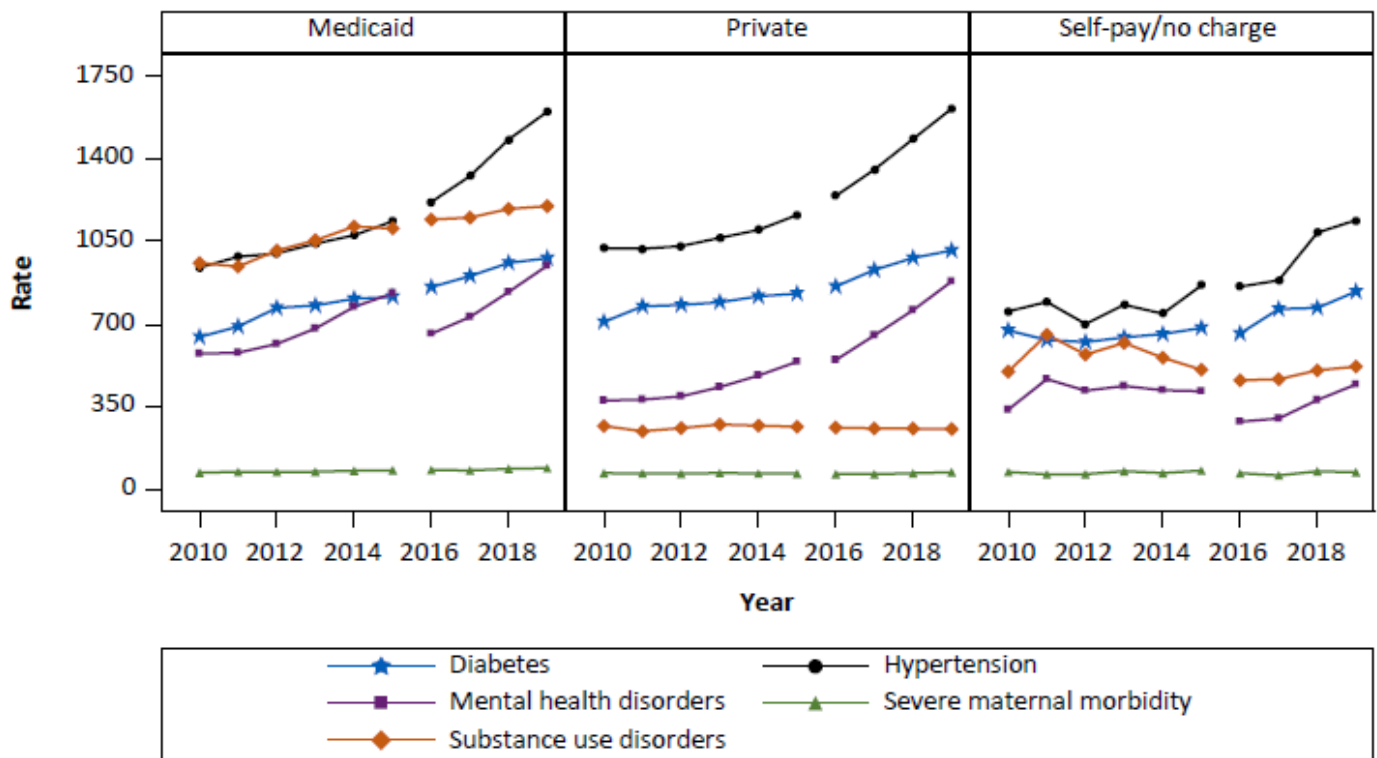
Condition	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Diabetes	679.5	732.6	771.8	782.2	809.2	820.3	852.6	912.4	962.7	989.8
Hypertension	975.5	999.9	1009.6	1049.3	1080.1	1144.1	1223.5	1332.8	1473.5	1593.0
Mental health disorders	479.7	481.7	506.2	556.1	620.6	674.8	601.7	689.9	794.6	909.5
Severe maternal morbidity	69.8	69.8	69.5	71.9	72.4	73.1	72.0	71.5	76.7	79.7
Substance use disorders	606.5	572.9	616.8	639.6	655.6	644.1	660.0	666.3	673.8	670.5

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Exhibit E.2

Rates of selected co-existing conditions per 10,000 delivery stays, by primary expected payer, 2010-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit E.2 Rates of selected co-existing conditions by 10,000 delivery stays, by primary expected payer, 2010-2019, National											
Condition	Expected Payer	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Medicaid	Diabetes	644.6	688.8	767.8	778.2	806.6	814.1	855.9	902.5	958.4	978.3
	Hypertension	938.6	984.6	998.6	1040.2	1075.5	1135.1	1216.5	1326.6	1481.5	1599.0
	Mental health disorders	573.5	577.9	615.1	680.5	772.0	829.8	658.6	729.2	835.4	947.1
	Severe maternal morbidity	69.9	73.2	72.6	73.7	77.8	79.9	80.7	79.4	86.0	89.0
	Substance use disorders	672.6	631.7	623.1	642.9	657.1	682.7	659.0	762.9	767.8	837.0
Private	Diabetes	708.3	774.4	780.4	791.5	817.0	828.2	858.4	928.6	979.2	1011.0
	Hypertension	1020.8	1018.3	1029.7	1064.4	1098.1	1161.3	1242.1	1353.7	1483.2	1612.0
	Mental health disorders	375.2	379.4	392.9	432.4	481.3	539.7	546.7	651.4	757.9	880.1
	Severe maternal morbidity	67.7	66.6	65.3	68.4	66.5	66.0	63.7	63.5	67.3	71.5
	Substance use disorders	267.8	245.0	258.9	274.0	269.0	264.2	260.7	257.3	256.4	254.4
Self-pay/no charge	Diabetes	672.6	631.7	623.1	642.9	657.1	682.7	659.0	762.9	767.8	837.0
	Hypertension	753.1	793.1	699.9	780.9	743.3	863.2	857.6	884.6	1086.4	1139.5
	Mental health disorders	336.6	466.0	417.2	436.9	419.1	414.9	285.9	299.3	377.5	443.8
	Severe maternal morbidity	72.6	62.6	63.5	76.3	68.0	78.6	67.6	57.9	75.7	71.4
	Substance use disorders	497.7	654.7	570.3	619.4	556.5	505.9	461.0	465.7	503.3	519.1
Medicare (not shown)	Diabetes	1154.8	1067.1	1140.2	1164.1	1148.8	1419.5	1203.3	1361.1	1315.7	1288.7
	Hypertension	1565.4	1487.4	1500.6	1721.6	1698.4	1851.2	1946.3	2140.0	2211.0	2421.5
	Mental health disorders	2327.2	2086.2	1989.3	2181.0	2341.5	2470.9	2124.2	2290.3	2323.6	2594.1
	Severe maternal morbidity	204.1	135.2	175.0	190.4	236.4	190.7	205.8	229.4	210.2	203.7
	Substance use disorders	2035.0	1771.2	1750.1	1774.6	1938.4	1898.8	1782.4	1819.9	1781.2	1787.6

Data for Exhibit E.2**Rates of selected co-existing conditions by 10,000 delivery stays, by primary expected payer, 2010-2019, National**

Condition	Expected Payer	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Other (not shown)	Diabetes	648.4	664.0	731.6	722.6	754.7	754.6	778.7	785.9	806.7	853.2
	Hypertension	931.1	964.7	957.8	1012.0	963.9	1042.9	1120.2	1242.0	1346.0	1421.7
	Mental health disorders	533.8	465.1	465.5	543.3	542.2	583.3	593.0	727.3	851.0	977.6
	Severe maternal morbidity	73.9	65.8	73.7	72.7	58.8	65.6	60.7	68.6	71.0	73.1
	Substance use disorders	557.5	422.5	454.9	460.8	377.6	393.6	406.3	469.7	410.6	444.6

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data Presentation

Data presented in this chartbook are limited to hospital stays for female patients aged 12–55 years. Each maternal condition-specific section includes line graphs and data tables that illustrate the unadjusted rates of each condition per 10,000 delivery stays. The chartbook includes exhibits for overall rates and rates by expected payer, and by patient characteristics (age, race, residence location type, community-level median income, community-level social vulnerability index, and region in which the patient was hospitalized). Expected payer data represent the type of payer the hospital expects to be the source of payment for the hospital bill. HCUP combines the detailed payer categories into general groups to facilitate comparisons across states. For this chartbook, the following expected payer groups are presented: Medicaid, private insurance, and self-pay/no charge (which is generally considered to indicate uninsured patients). Data for Medicare and other expected payers can be found in the appendix. Data by patient race were only available starting in 2018 due to higher percentages of missing data on race in prior years of the NIS. Tables showing all rates and associated standard errors are available in Appendix C. Data were suppressed for rates based on fewer than 11 unweighted discharges or a relative standard error (standard error/weighted estimate) greater than 0.30 or equal to 0. Suppressed rates are indicated with a dash (-) in the accompanying data tables of each exhibit.

Trends in co-existing maternal health conditions among delivery stays are presented for 2010–2019. On October 1, 2015, the United States transitioned from the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) to the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and the ICD-10 Procedure Coding System (ICD-10-PCS). The exhibits demarcate this transition with a break in the trend line between data years 2015 and 2016. Further, 2015 rates are based on the first three quarters of data with ICD-9-CM codes only (January 1, 2015, to September 30, 2015).

This chartbook is based on data from HCUP's National (Nationwide) Inpatient Sample (NIS)^b database (2010–2019), which provides a national perspective of care provided in community acute care hospitals (i.e., short-term, non-Federal, non-rehabilitation hospitals).

The HCUP NIS is a nationwide database of hospital inpatient stays. The NIS is drawn from a sampling frame that contains hospitals comprising more than 95 percent of all discharges in the United States. The vast size of the NIS allows for the study of various topics at the national and regional levels for specific subgroups of patients. In addition, NIS data are standardized across years to facilitate ease of use. Over time, the sampling frame for the NIS has changed; thus, the number of States contributing to the NIS varies from year to year. The NIS is intended for national estimates only; no State-level estimates can be produced. The unweighted sample size for the 2019 NIS is 7,083,805 (weighted, this represents 35,419,023 inpatient stays). The unweighted sample size for the 2010 NIS is 7,800,441 (weighted, this represents 37,352,013 inpatient stays).

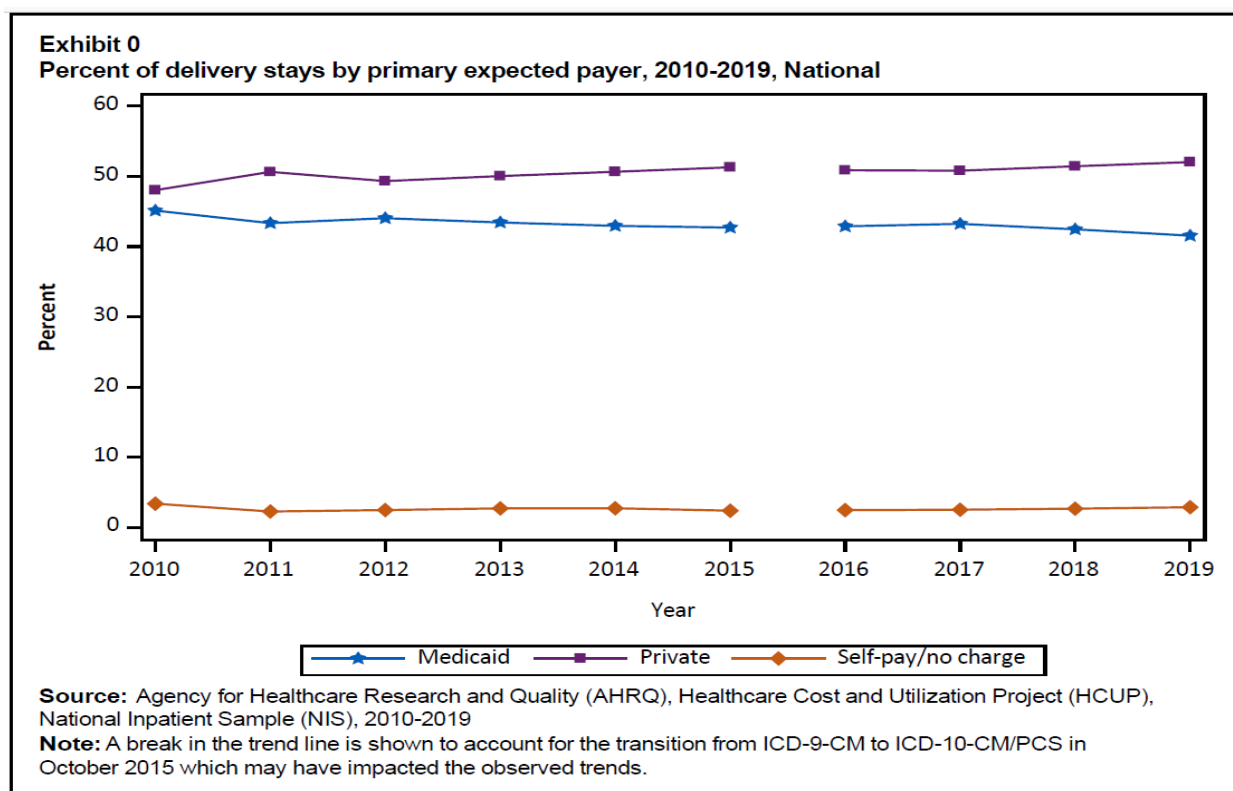
^b For more information about the HCUP NIS, visit: <https://hcup-us.ahrq.gov/db/nation/nis/nisdbdocumentation.jsp>

Section 0: Overview: Delivery Stays and Expected Payers

Background

Insurance coverage plays a pivotal role in healthcare outcomes for many conditions in the United States (U.S.) and coverage for maternal health conditions is no exception. The type of health insurance that a person has (i.e., public, private, etc.) affects maternal outcomes because insurance type influences the healthcare-seeking behavior of pregnant women and determines the consistency and quality of the prenatal care they receive.⁷ For example, the Affordable Care Act (ACA) included pregnancy, childbirth, and newborn care as essential health benefits requiring coverage by all Marketplace plans.⁸ Data from the Medical Expenditure Panel Survey (MEPS) suggest that the share of recent mothers who were uninsured at the time of birth decreased 43 percent after passage of the ACA.⁹

Still, a better understanding of the frequency and type of complications experienced during delivery stays across expected payers for these stays may help providers to better prepare for future healthcare needs. Although insurance status is not captured, data from the Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) Nationwide (National) Inpatient Sample (NIS) can provide a glimpse into maternal healthcare needs by examining hospitalization trends for delivery stays by expected payers.



Data for Exhibit 0**Percent of delivery stays by primary expected payer, 2010-2019, National**

Expected payer	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Medicaid	45.1	43.3	44.0	43.4	42.9	42.7	42.9	43.2	42.5	41.5
Private	48.0	50.6	49.3	50.0	50.6	51.3	50.9	50.8	51.4	52.0
Self-pay/no charge	3.4	2.3	2.5	2.7	2.7	2.4	2.5	2.5	2.7	2.9

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Section 1: Coexisting Condition—Diabetes

Background

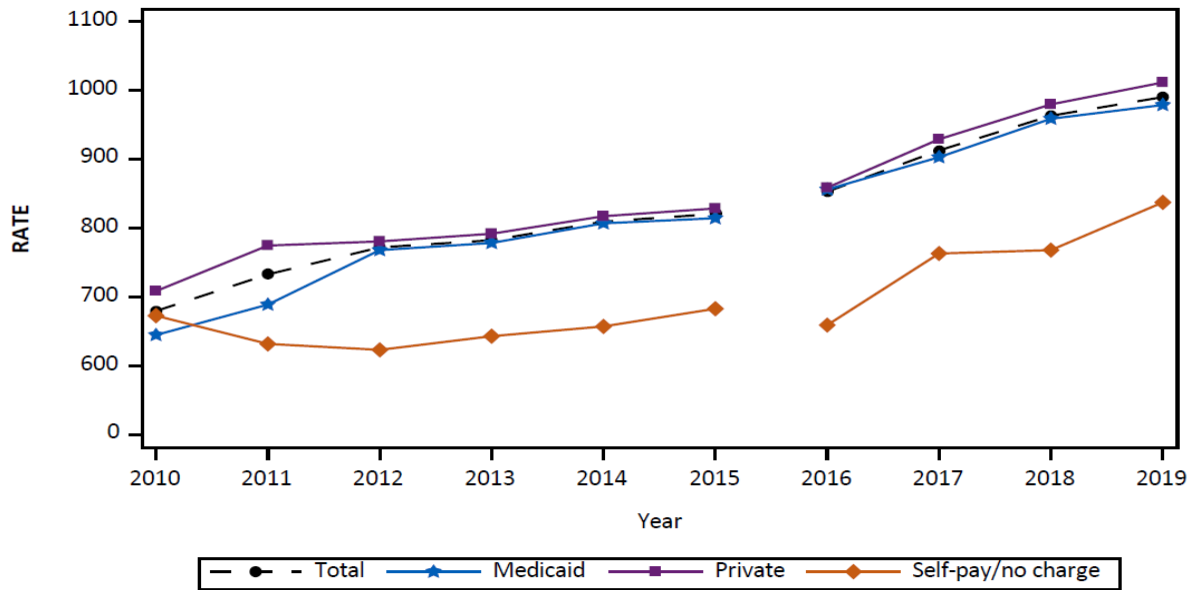
Diabetes is an important risk factor for healthy pregnancies.¹⁰ The disease affects how the body turns blood sugar into energy primarily through the production of the hormone insulin. There are three types of diabetes. Type 1 diabetes occurs when the body does not produce insulin. This is a less common form of diabetes. Type 2 diabetes occurs when the body produces insulin but does not use it well. Gestational diabetes is a form of diabetes that develops during pregnancy. Type 2 diabetes is the most common form of the condition. It is often first diagnosed in adulthood while the less common type 1 diabetes is often diagnosed in childhood. Uncontrolled diabetes of any type during pregnancy can lead to preeclampsia, which is a major complication risk to the mother. High blood sugar in the prenatal period is also associated with birth defects, stillbirths, and preterm births.¹¹ The data presented in this section include any type of diabetes diagnosis.

Highlights Among Diabetes-Related Delivery Stays

- The rate of diabetes among in-hospital delivery stays increased 19 percent from 2010 to 2014 and 16 percent from 2016 to 2019, complicating more than 300,000 delivery stays annually during 2016–2019 (exhibit 1.1).
- During 2018–2019, the racial and ethnic differences in the rate of diabetes among delivery stays with self-pay/no charge as the expected payer were smaller than the differences among delivery stays billed to Medicaid or private insurance.
 - Specifically, among delivery stays with self-pay/no charge as the expected payer, rates of diabetes for Asian/Pacific Islander (API) non-Hispanic women were 60 percent higher than those of White non-Hispanic women. Among delivery stays billed to Medicaid or private insurance, the diabetes rate for API non-Hispanic women was twice the rate for Black non-Hispanic and White non-Hispanic women, respectively (exhibit 1.3).
- Although the rate of delivery stays involving diabetes was highest for stays billed to Medicaid or private insurance, the highest rate increase from 2016 to 2019 (a 27 percent increase) was observed for stays with self-pay/no charge as the expected payer (exhibit 1.1).
- Among delivery stays with self-pay/no charge as the expected payer, diabetes rates for women from non-metro areas increased 47 percent from 2016 to 2019 – the largest increase across all patient location types and expected payers (exhibit 1.4).

Exhibit 1.1

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer, 2010-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 1.1

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer, 2010-2019, National

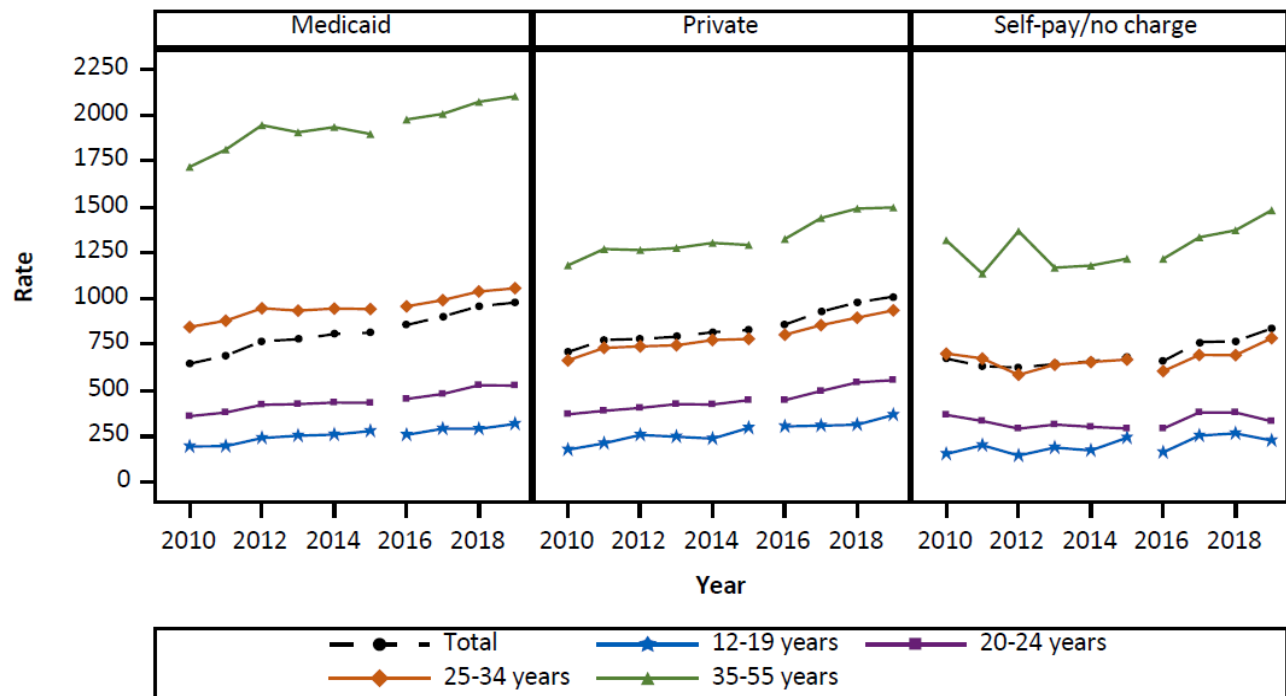
Expected payer	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	679.5	732.6	771.8	782.2	809.2	820.3	852.6	912.4	962.7	989.8
Medicaid	644.6	688.8	767.8	778.2	806.6	814.1	855.9	902.5	958.4	978.3
Private	708.3	774.4	780.4	791.5	817.0	828.2	858.4	928.6	979.2	1011.0
Self-pay/no charge	672.6	631.7	623.1	642.9	657.1	682.7	659.0	762.9	767.8	837.0

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Exhibit 1.2

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 1.2

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National

Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	679.5	732.6	771.8	782.2	809.2	820.3	852.6	912.4	962.7	989.8
	12-19	189.8	200.0	243.9	250.3	252.5	278.1	265.4	292.5	292.3	321.4
	20-24	363.7	381.9	414.4	421.4	430.1	433.6	447.6	482.2	529.4	530.3
	25-34	734.9	782.7	813.3	814.4	834.3	838.8	856.5	904.1	943.6	974.1
	35-55	1334.4	1411.1	1466.5	1454.9	1486.4	1475.2	1519.9	1608.1	1657.6	1671.8
Medicaid	Total	644.6	688.8	767.8	778.2	806.6	814.1	855.9	902.5	958.4	978.3
	12-19	193.5	194.8	239.5	252.1	258.3	277.4	256.6	290.1	289.3	316.5
	20-24	358.4	378.6	420.5	424.4	433.0	431.3	452.5	479.6	527.1	525.8
	25-34	845.3	879.3	947.3	934.6	945.9	942.7	957.9	991.8	1038.7	1056.3
	35-55	1718.4	1812.9	1946.3	1907.3	1935.7	1898.1	1977.1	2007.6	2073.5	2103.4

Data for Exhibit 1.2

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National

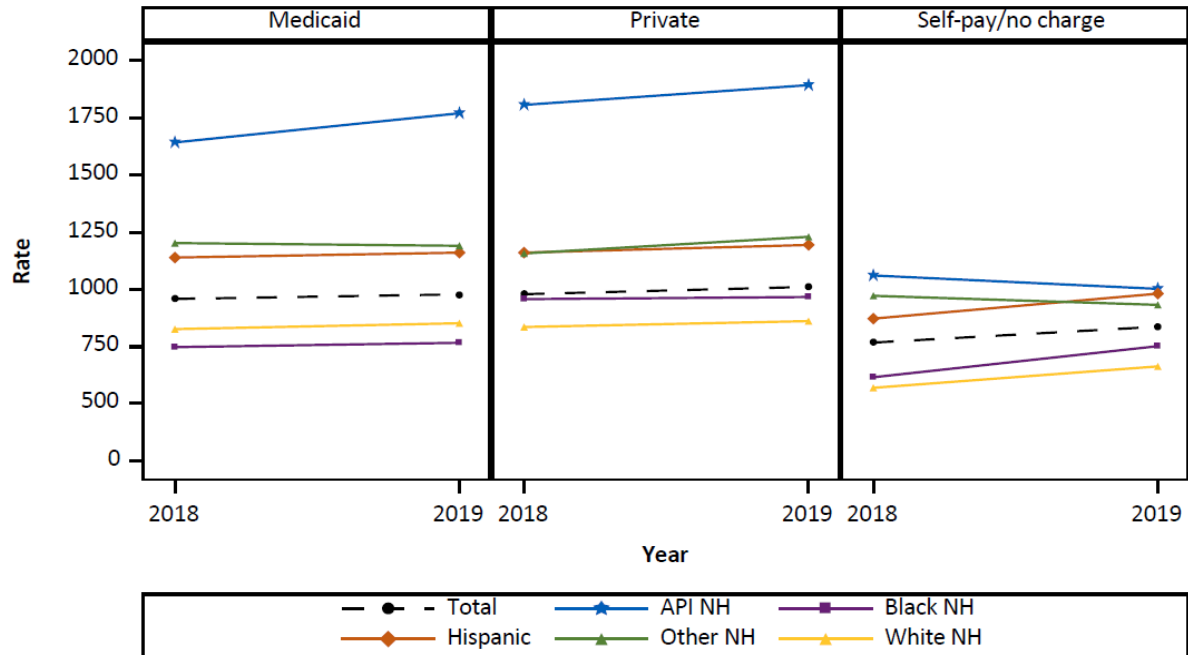
Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	708.3	774.4	780.4	791.5	817.0	828.2	858.4	928.6	979.2	1011.0
	12-19	175.8	210.5	256.1	246.7	236.0	294.7	302.6	306.9	311.8	365.3
	20-24	368.9	387.8	403.6	424.2	422.3	445.9	446.0	495.9	542.8	555.2
	25-34	663.1	731.1	739.3	745.4	773.8	780.1	803.0	855.2	896.1	935.6
	35-55	1181.4	1270.7	1264.6	1276.1	1303.8	1292.7	1325.0	1439.6	1491.0	1497.2
Self-pay/no charge	Total	672.6	631.7	623.1	642.9	657.1	682.7	659.0	762.9	767.8	837.0
	12-19	152.3	200.0	143.5	187.4	171.4	241.1	161.1	252.5	264.7	225.7
	20-24	365.5	332.3	290.4	312.8	300.4	291.0	290.6	379.0	379.1	330.8
	25-34	700.2	673.5	583.7	639.7	654.1	667.5	604.0	692.7	691.5	784.0
	35-55	1318.5	1136.0	1368.1	1168.8	1180.2	1217.6	1216.8	1334.5	1372.6	1482.1
Medicare (not shown)	Total	1154.8	1067.1	1140.2	1164.1	1148.8	1419.5	1203.3	1361.1	1315.7	1288.7
	12-19	.	.	.	.	.	.	.	.	.	.
	20-24	586.9	542.7	574.9	446.0	666.7	750.8	686.4	671.9	730.2	787.2
	25-34	1219.9	1084.8	1126.2	1158.0	1040.7	1266.0	1118.6	1205.3	1208.9	1170.4
	35-55	1759.0	1923.7	2130.5	2105.3	2032.0	2475.1	1979.9	2226.7	2087.7	1952.9
Other (not shown)	Total	648.4	664.0	731.6	722.6	754.7	754.6	778.7	785.9	806.7	853.2
	12-19	223.7	252.4	319.7	314.0	310.4	163.0	295.9	260.3	274.4	192.0
	20-24	390.0	390.8	456.4	413.2	499.6	396.1	425.5	424.9	500.4	462.9
	25-34	745.3	712.1	735.9	757.2	737.4	750.7	754.2	799.4	781.9	829.0
	35-55	1314.2	1380.3	1546.8	1417.7	1482.9	1574.8	1537.5	1345.1	1383.1	1551.5

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends. Suppressed rates are indicated with a dash (-) in applicable table cells.

Exhibit 1.3

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National



Key: API=Asian/Pacific Islander, NH=Non-Hispanic

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2018-2019

Data for Exhibit 1.3

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National

Expected payer	Race/Ethnicity	2018	2019
Total	Total	962.7	989.8
	API NH	1717.9	1806.1
	Black NH	818.1	835.6
	Hispanic	1132.8	1161.3
	White NH	828.4	853.8
	Other NH	1166.9	1197.3
Medicaid	Total	958.4	978.3
	API NH	1641.7	1769.1
	Black NH	747.8	766.8
	Hispanic	1139.1	1160.4
	White NH	826.5	852.1
	Other NH	1202.3	1190.3

Data for Exhibit 1.3

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National

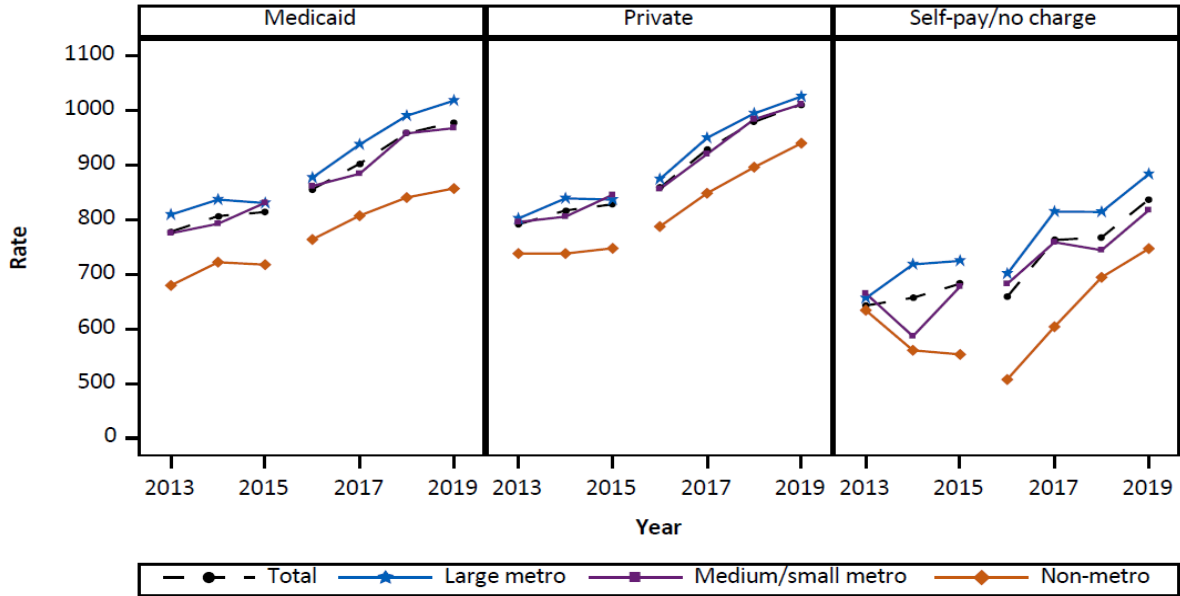
Expected payer	Race/Ethnicity	2018	2019
Private	Total	979.2	1011.0
	API NH	1805.7	1892.0
	Black NH	957.4	966.7
	Hispanic	1160.5	1194.0
	White NH	835.7	861.5
	Other NH	1157.1	1229.6
Self-pay/no charge	Total	767.8	837.0
	API NH	1060.7	1002.4
	Black NH	616.4	752.1
	Hispanic	872.4	981.3
	White NH	570.2	663.7
	Other NH	971.9	932.4
Medicare (not shown)	Total	1315.7	1288.7
	API NH	2086.3	1788.6
	Black NH	1196.8	1083.5
	Hispanic	1331.4	1637.0
	White NH	1370.8	1248.4
	Other NH	1257.3	1643.2
Other (not shown)	Total	806.7	853.2
	API NH	1702.4	1772.0
	Black NH	830.6	798.3
	Hispanic	941.3	938.1
	White NH	716.4	757.3
	Other NH	822.1	1058.4

Key: API=Asian/Pacific Islander, NH=Non-Hispanic

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2018-2019

Exhibit 1.4

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 1.4

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National

Expected payer	Patient Location	2013	2014	2015	2016	2017	2018	2019
Total	Total	782.2	809.2	820.3	852.6	912.4	962.7	989.8
	Large metro	801.1	836.3	833.0	872.1	942.8	986.6	1017.1
	Medium/small metro	784.9	796.4	835.6	853.9	896.7	964.7	982.8
	Non-metro	710.0	727.3	736.7	772.1	821.5	862.9	895.6
Medicaid	Total	778.2	806.6	814.1	855.9	902.5	958.4	978.3
	Large metro	809.2	836.9	830.5	877.0	937.7	990.4	1018.1
	Medium/small metro	775.2	792.6	831.1	861.8	884.1	958.0	967.7
	Non-metro	679.7	722.2	717.7	764.0	807.4	840.7	857.3
Private	Total	791.5	817.0	828.2	858.4	928.6	979.2	1011.0
	Large metro	802.2	839.2	836.8	874.3	949.8	994.5	1025.6
	Medium/small metro	795.9	805.7	845.6	856.1	920.1	984.0	1011.4
	Non-metro	738.3	738.1	747.8	787.5	848.4	896.2	940.0

Data for Exhibit 1.4**Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National**

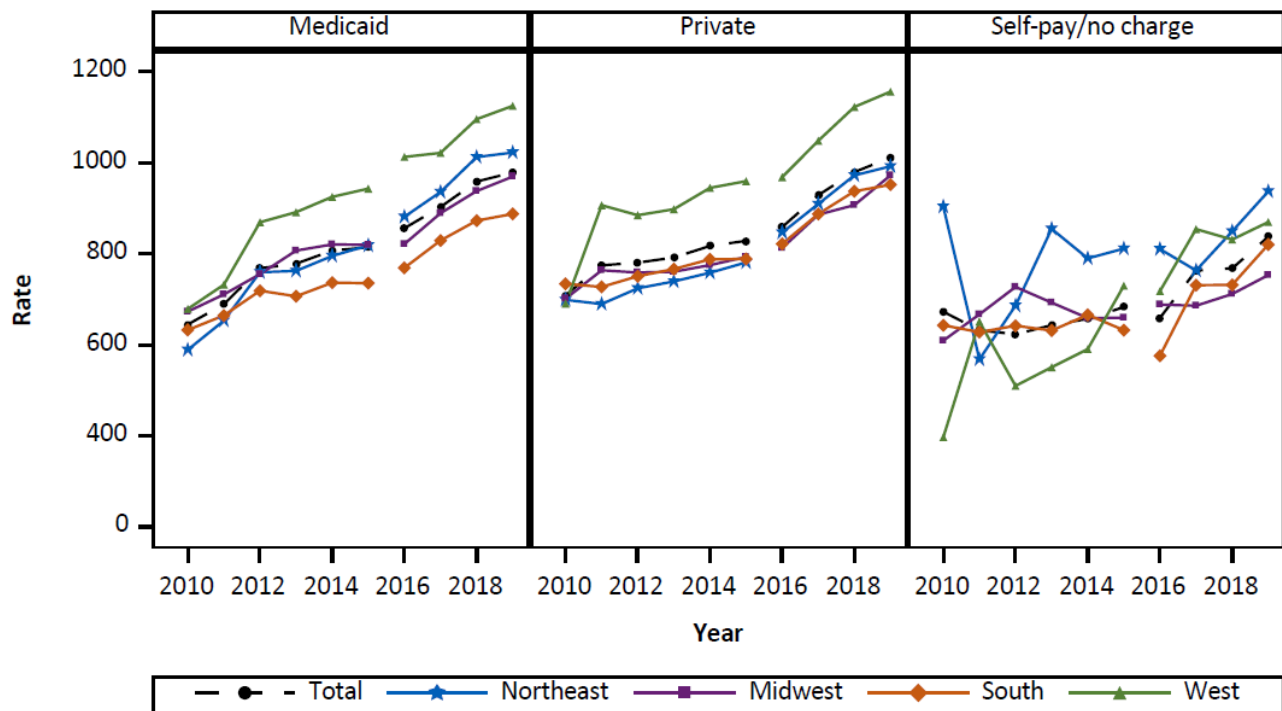
Expected payer	Patient Location	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	642.9	657.1	682.7	659.0	762.9	767.8	837.0
	Large metro	656.3	718.2	724.7	701.0	814.8	814.3	883.6
	Medium/small metro	665.2	586.7	677.7	682.5	758.8	744.3	817.4
	Non-metro	634.2	560.9	553.5	507.6	604.0	694.5	747.0
Medicare (not shown)	Total	1164.1	1148.8	1419.5	1203.3	1361.1	1315.7	1288.7
	Large metro	1099.9	1201.5	1339.1	1246.0	1373.5	1298.5	1230.7
	Medium/small metro	1319.8	1089.7	1555.6	1158.4	1362.5	1351.7	1264.7
	Non-metro	1087.4	1089.9	1398.0	1196.8	1301.1	1291.4	1529.7
Other (not shown)	Total	722.6	754.7	754.6	778.7	785.9	806.7	853.2
	Large metro	716.9	793.1	788.4	835.7	900.1	842.8	925.0
	Medium/small metro	736.7	756.8	711.7	747.0	709.2	799.1	809.2
	Non-metro	720.5	644.1	782.5	701.0	650.8	700.6	718.9

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Exhibit 1.5

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 1.5

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National

Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	679.5	732.6	771.8	782.2	809.2	820.3	852.6	912.4	962.7	989.8
	Northeast	667.0	675.7	740.0	756.2	777.7	801.0	859.8	918.9	988.6	1001.8
	Midwest	692.7	743.9	761.4	777.9	791.6	803.6	818.2	884.7	914.9	966.6
	South	678.2	694.1	732.7	733.1	762.5	761.1	789.9	855.1	898.1	914.6
	West	677.8	816.5	864.1	880.8	919.8	944.3	978.6	1025.7	1096.2	1129.0
Medicaid	Total	644.6	688.8	767.8	778.2	806.6	814.1	855.9	902.5	958.4	978.3
	Northeast	588.9	653.0	759.2	762.2	794.9	818.2	881.0	935.5	1012.1	1022.1
	Midwest	672.8	710.5	755.1	806.8	820.3	819.3	821.2	888.9	937.5	969.3
	South	632.4	664.4	718.7	706.5	736.3	735.3	768.8	829.0	872.6	887.3
	West	678.7	732.0	869.1	891.1	924.8	942.8	1012.5	1021.3	1095.4	1124.5
Private	Total	644.6	688.8	767.8	778.2	806.6	814.1	855.9	902.5	958.4	978.3
	Northeast	588.9	653.0	759.2	762.2	794.9	818.2	881.0	935.5	1012.1	1022.1
	Midwest	672.8	710.5	755.1	806.8	820.3	819.3	821.2	888.9	937.5	969.3
	South	632.4	664.4	718.7	706.5	736.3	735.3	768.8	829.0	872.6	887.3
	West	678.7	732.0	869.1	891.1	924.8	942.8	1012.5	1021.3	1095.4	1124.5
Self-pay/no charge	Total	644.6	688.8	767.8	778.2	806.6	814.1	855.9	902.5	958.4	978.3
	Northeast	588.9	653.0	759.2	762.2	794.9	818.2	881.0	935.5	1012.1	1022.1
	Midwest	672.8	710.5	755.1	806.8	820.3	819.3	821.2	888.9	937.5	969.3
	South	632.4	664.4	718.7	706.5	736.3	735.3	768.8	829.0	872.6	887.3
	West	678.7	732.0	869.1	891.1	924.8	942.8	1012.5	1021.3	1095.4	1124.5

Data for Exhibit 1.5

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National

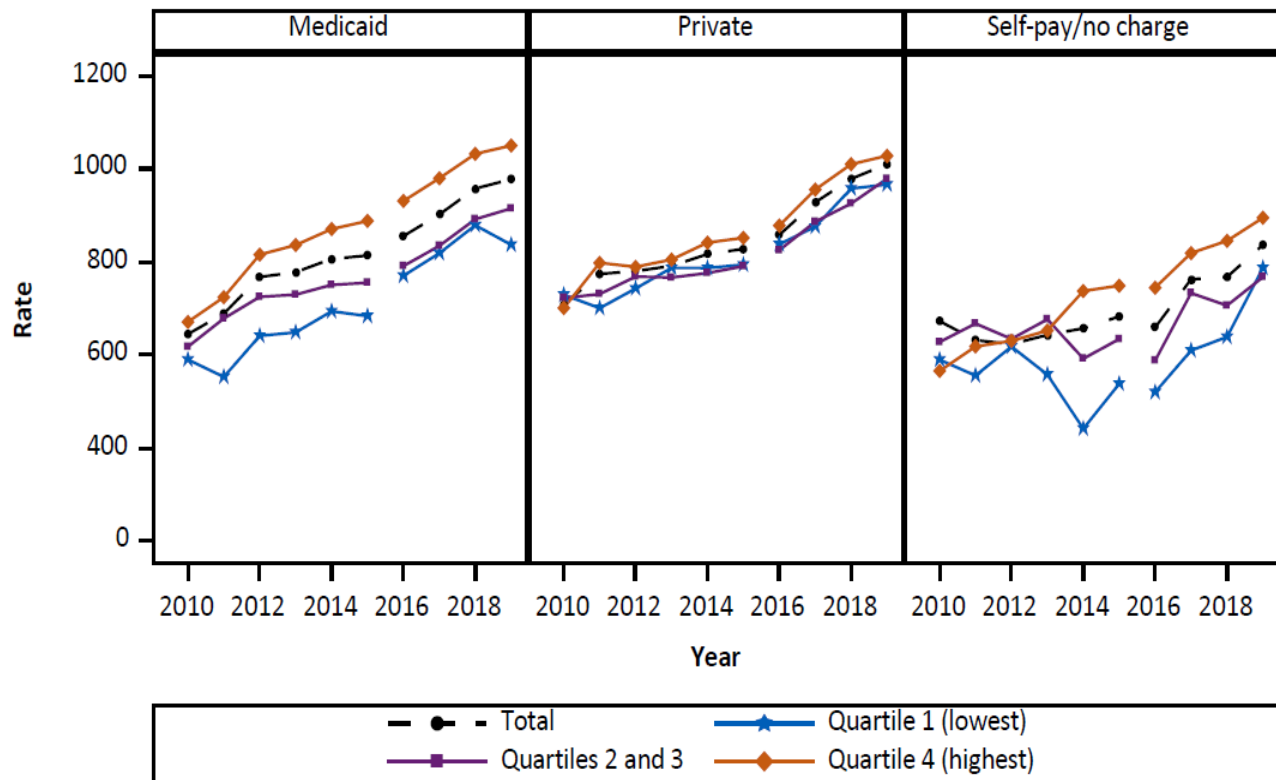
Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	708.3	774.4	780.4	791.5	817.0	828.2	858.4	928.6	979.2	1011.0
	Northeast	698.6	689.5	724.0	739.1	758.1	780.9	846.3	909.2	972.0	991.8
	Midwest	701.0	763.5	758.6	760.4	774.9	792.8	812.5	885.7	906.7	971.9
	South	733.8	727.0	750.6	766.2	787.7	788.4	821.7	887.2	937.0	951.4
	West	690.4	906.4	884.5	897.7	944.5	959.3	968.0	1048.0	1122.2	1155.7
Self-pay/no charge	Total	672.6	631.7	623.1	642.9	657.1	682.7	659.0	762.9	767.8	837.0
	Northeast	903.3	567.8	686.0	854.5	789.7	811.2	810.2	763.1	849.0	936.8
	Midwest	609.2	666.8	727.0	692.6	658.6	659.3	688.3	685.7	711.4	753.0
	South	642.8	627.7	641.9	631.2	665.8	632.0	576.0	730.9	731.5	820.0
	West	397.1	650.8	509.8	550.7	590.5	729.7	717.8	853.9	831.1	869.4
Medicare (not shown)	Total	1154.8	1067.1	1140.2	1164.1	1148.8	1419.5	1203.3	1361.1	1315.7	1288.7
	Northeast	920.4	1111.5	1115.5	1263.3	1199.6	1455.0	982.2	1290.6	1432.4	1191.1
	Midwest	1205.9	1129.1	1231.0	1060.4	1110.4	1360.4	1237.1	1448.3	1375.8	1367.3
	South	1278.6	984.2	1037.8	1135.3	1072.9	1395.7	1161.3	1354.1	1131.6	1189.6
	West	1134.9	1067.4	1276.6	1312.7	1339.7	1550.4	1608.5	1370.1	1835.7	1740.7
Other (not shown)	Total	648.4	664.0	731.6	722.6	754.7	754.6	778.7	785.9	806.7	853.2
	Northeast	657.9	617.2	721.0	824.3	753.3	728.0	814.0	800.9	886.5	933.3
	Midwest	662.0	712.6	739.7	681.9	705.8	747.0	829.6	790.5	789.5	884.5
	South	662.1	691.4	726.9	695.7	771.2	722.5	722.3	736.1	779.9	774.1
	West	618.2	584.1	737.1	757.3	759.3	835.5	826.3	861.4	824.9	917.2

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Exhibit 1.6

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 1.6

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National

Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	679.5	732.6	771.8	782.2	809.2	820.3	852.6	912.4	962.7	989.8
	Quartile 1 (lowest)	631.0	603.9	679.3	702.7	724.4	731.5	793.0	836.4	899.7	884.8
	Quartiles 2 and 3	669.4	706.8	746.5	747.8	762.7	772.9	804.5	857.1	903.5	939.9
	Quartile 4 (highest)	686.1	762.9	795.9	812.7	849.8	863.9	895.2	961.4	1012.7	1031.8
Medicaid	Total	644.6	688.8	767.8	778.2	806.6	814.1	855.9	902.5	958.4	978.3
	Quartile 1 (lowest)	589.8	552.5	641.1	648.4	693.9	683.6	770.3	819.0	879.2	837.2
	Quartiles 2 and 3	617.4	678.3	725.0	729.7	750.7	755.4	791.4	834.9	892.3	915.5
	Quartile 4 (highest)	671.0	724.3	815.9	836.5	871.0	888.4	931.5	980.5	1033.0	1051.0

Data for Exhibit 1.6

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National

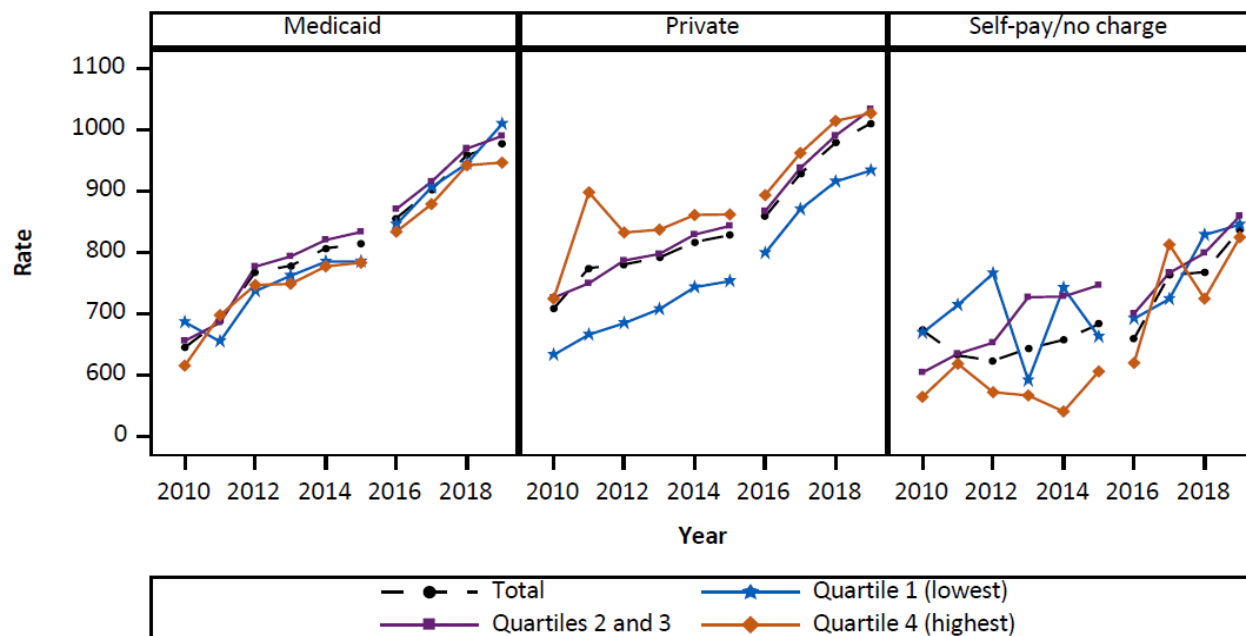
Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	708.3	774.4	780.4	791.5	817.0	828.2	858.4	928.6	979.2	1011.0
	Quartile 1 (lowest)	729.5	700.7	742.9	787.4	787.1	794.4	838.3	876.0	958.2	967.0
	Quartiles 2 and 3	722.5	730.9	768.6	766.7	776.2	790.8	825.4	886.8	926.0	979.5
	Quartile 4 (highest)	700.8	798.3	789.6	805.2	841.9	852.0	878.4	956.1	1010.7	1029.1
Self-pay/no charge	Total	672.6	631.7	623.1	642.9	657.1	682.7	659.0	762.9	767.8	837.0
	Quartile 1 (lowest)	589.6	555.2	617.8	557.4	440.9	537.6	519.5	609.5	638.5	787.2
	Quartiles 2 and 3	627.6	667.4	634.3	676.6	591.8	634.1	587.8	733.0	706.3	767.5
	Quartile 4 (highest)	565.2	618.0	630.0	652.4	737.6	749.1	744.8	819.4	845.7	895.4
Medicare (not shown)	Total	1154.8	1067.1	1140.2	1164.1	1148.8	1419.5	1203.3	1361.1	1315.7	1288.7
	Quartile 1 (lowest)	904.0	1312.5	937.5	1012.8	877.5	1528.5	1094.7	1252.2	1111.1	1360.5
	Quartiles 2 and 3	1177.8	1158.5	1169.2	1222.7	1220.8	1375.3	1151.4	1355.9	1337.4	1306.4
	Quartile 4 (highest)	1190.9	942.9	1165.9	1155.3	1133.3	1436.3	1294.7	1383.9	1356.0	1264.0
Other (not shown)	Total	648.4	664.0	731.6	722.6	754.7	754.6	778.7	785.9	806.7	853.2
	Quartile 1 (lowest)	586.6	605.3	627.5	768.2	679.6	744.4	756.8	640.2	649.0	678.6
	Quartiles 2 and 3	672.5	770.6	776.8	721.2	744.6	748.6	766.0	736.1	764.8	763.6
	Quartile 4 (highest)	647.2	581.7	705.1	722.3	775.7	765.0	796.6	842.7	852.9	933.0

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Exhibit 1.7

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National



Key: SVI=Social Vulnerability Index

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 1.7

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National

Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	679.5	732.6	771.8	782.2	809.2	820.3	852.6	912.4	962.7	989.8
	Quartile 1 (lowest)	652.2	661.3	703.0	722.5	755.1	763.7	811.7	876.0	921.1	952.9
	Quartiles 2 and 3	694.1	721.3	781.1	794.9	824.8	838.8	865.5	924.9	975.1	1008.4
	Quartile 4 (highest)	653.3	778.5	776.4	779.1	802.9	811.2	850.8	908.6	963.8	972.7
Medicaid	Total	644.6	688.8	767.8	778.2	806.6	814.1	855.9	902.5	958.4	978.3
	Quartile 1 (lowest)	686.1	654.6	736.7	761.8	784.8	785.0	845.5	906.6	944.8	1009.8
	Quartiles 2 and 3	655.4	685.3	776.7	793.3	820.3	833.3	870.7	915.5	969.5	990.1
	Quartile 4 (highest)	615.0	697.5	746.8	748.5	777.1	783.2	833.8	878.8	942.2	946.7

Data for Exhibit 1.7

Rates of diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National

Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	708.3	774.4	780.4	791.5	817.0	828.2	858.4	928.6	979.2	1011.0
	Quartile 1 (lowest)	632.6	665.7	684.4	707.3	743.1	753.0	798.9	870.4	915.7	933.8
	Quartiles 2 and 3	725.9	749.6	786.8	797.4	829.2	843.2	867.2	937.9	990.8	1033.5
	Quartile 4 (highest)	724.4	898.1	832.4	837.1	861.1	861.9	893.7	962.2	1014.6	1027.4
Self-pay/no charge	Total	672.6	631.7	623.1	642.9	657.1	682.7	659.0	762.9	767.8	837.0
	Quartile 1 (lowest)	668.7	713.9	765.6	590.9	742.0	662.3	691.7	723.8	828.6	845.3
	Quartiles 2 and 3	603.8	634.4	652.5	726.7	727.9	746.4	700.0	766.5	798.8	859.3
	Quartile 4 (highest)	564.0	618.1	571.7	566.3	540.2	605.6	619.4	812.9	724.5	824.4
Medicare (not shown)	Total	1154.8	1067.1	1140.2	1164.1	1148.8	1419.5	1203.3	1361.1	1315.7	1288.7
	Quartile 1 (lowest)	1253.4	796.7	1214.1	1114.4	1056.9	1507.8	1083.3	1227.6	1231.5	1349.4
	Quartiles 2 and 3	1259.1	1083.4	1143.6	1177.1	1167.5	1368.2	1254.8	1434.8	1430.1	1313.8
	Quartile 4 (highest)	959.9	1148.0	1103.6	1149.8	1132.6	1474.1	1156.4	1284.7	1175.1	1212.8
Other (not shown)	Total	648.4	664.0	731.6	722.6	754.7	754.6	778.7	785.9	806.7	853.2
	Quartile 1 (lowest)	653.7	592.5	661.4	689.8	712.5	714.5	797.8	746.5	792.8	874.2
	Quartiles 2 and 3	679.9	691.5	758.5	740.4	786.8	798.6	788.9	840.0	815.6	890.3
	Quartile 4 (highest)	593.6	646.3	727.9	713.0	707.1	684.4	747.1	692.2	792.7	742.3

Key: SVI=Social Vulnerability Index

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Section 2: Coexisting Condition—Hypertension

Background

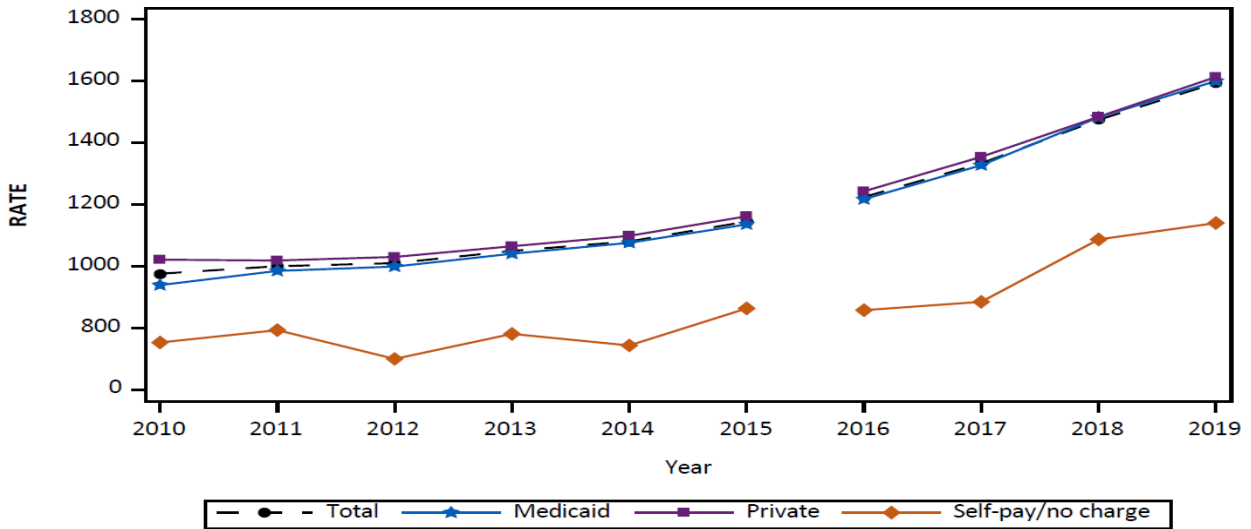
Hypertension, or high blood pressure, is a major modifiable risk factor for cardiovascular disease, which is the leading cause of death for women. In 2017, the definition of hypertension was changed when the American Heart Association and the American College of Cardiology lowered the threshold for high blood pressure from 140/90 mmHg to 130/80 mmHg.¹² This change resulted in an increase in the overall prevalence of hypertension among adults from about 30 percent to nearly 50 percent. Hypertension has no symptoms, but if left untreated, can result in major health complications including heart attack, stroke, and heart failure. Women's risk for cardiovascular disease is further complicated by nontraditional risk factors, including adverse pregnancy outcomes like hypertensive disorders during pregnancy, such as preeclampsia.¹³ These disorders are a leading cause of adverse maternal and perinatal outcomes and have been associated with increased cardiovascular risk. Understanding the burden of hypertension among women of childbearing age who utilize hospital care may provide healthcare providers and other stakeholders with an opportunity to intervene on a new or existing diagnosis and increase awareness and treatment of the chronic condition, thereby improving immediate outcomes and potentially mitigating future lifetime cardiovascular risk.

Highlights Among Hypertension-Related Delivery Stays

- From 2010 to 2014 and from 2016 to 2019, the rate of hypertension among delivery stays increased 11 and 30 percent, respectively (exhibit 2.1). Annually, more than 500,000 delivery stays involved hypertension as a complicating or coexisting condition from 2016 to 2019.
- The rate of delivery stays involving hypertension was highest for women aged 35–55 years regardless of payer type. The difference in rate of delivery stays involving hypertension across age groups was greatest among stays billed to Medicaid, where the rate for women aged 35–55 years was 38 percent higher than the rate for women aged 12–19 years (the age group with the next highest rates) (exhibit 2.2).
- Regardless of expected payer, the rate of deliveries involving hypertension was highest for Black non-Hispanic women in 2019, 70 percent higher than the rate for Asian/Pacific Islander non-Hispanic women, who had the lowest rates (exhibit 2.3).
- From 2016 to 2019, the rate of deliveries involving hypertension increased the most (a 33 percent increase) for stays with self-pay/no charge as the expected payer, despite having a substantially lower annual rate than delivery stays billed to private insurance or Medicaid (exhibit 2.1). The rate increase was highest for delivery stays at Northeastern hospitals where the rate increased 57 percent from 2016 to 2019 (exhibit 2.5).
- The greatest rate increase for delivery stays with self-pay/no charge as the expected payer occurred among stays for women from the highest community-level income areas (Q4: a 53 percent increase) and the least socially vulnerable areas (Q1: a 55 percent increase) (exhibits 2.6 and 2.7).

Exhibit 2.1

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer, 2010-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 2.1

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer, 2010-2019, National

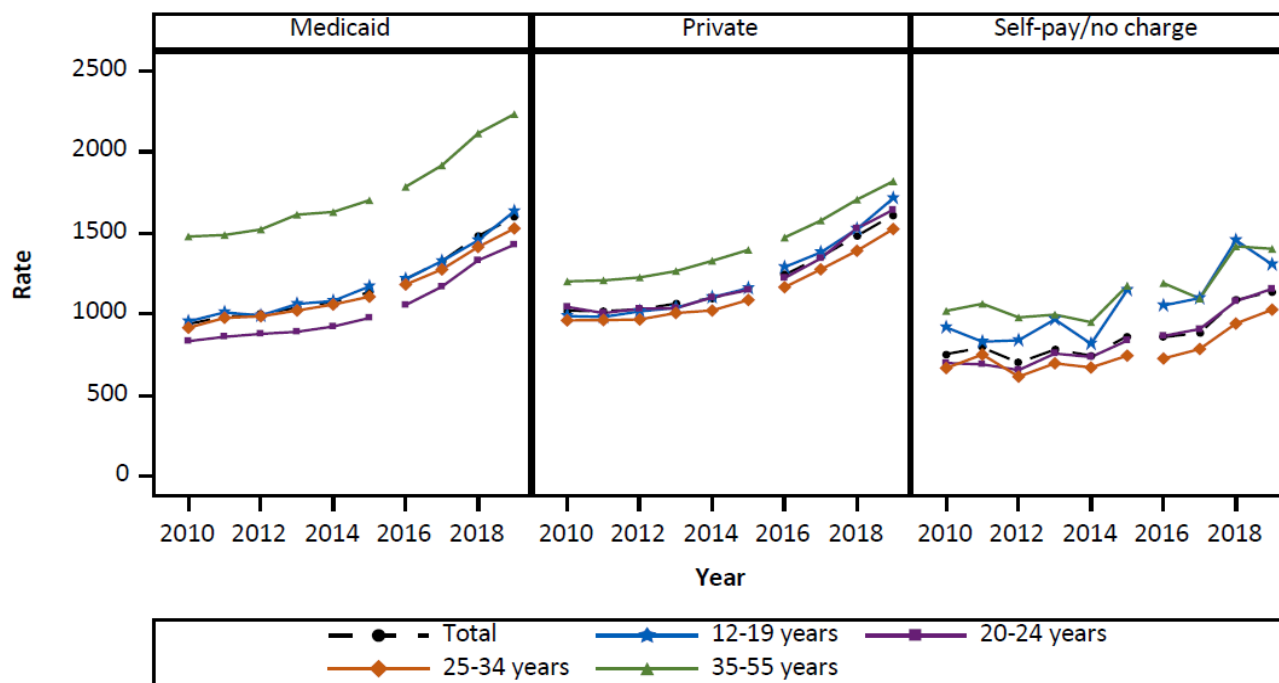
Expected payer	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	975.5	999.9	1009.6	1049.3	1080.1	1144.1	1223.5	1332.8	1473.5	1593.0
Medicaid	938.6	984.6	998.6	1040.2	1075.5	1135.1	1216.5	1326.6	1481.5	1599.0
Private	1020.8	1018.3	1029.7	1064.4	1098.1	1161.3	1242.1	1353.7	1483.2	1612.0
Self-pay/no charge	753.1	793.1	699.9	780.9	743.3	863.2	857.6	884.6	1086.4	1139.5

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Exhibit 2.2

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 2.2

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National

Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	975.5	999.9	1009.6	1049.3	1080.1	1144.1	1223.5	1332.8	1473.5	1593.0
	12-19	962.0	1000.3	991.5	1056.6	1083.0	1164.2	1224.5	1337.6	1469.3	1640.6
	20-24	886.7	901.0	921.6	934.8	978.2	1031.2	1107.9	1222.7	1392.1	1494.7
	25-34	937.3	964.1	968.5	1007.5	1027.5	1087.9	1162.7	1264.7	1388.8	1511.7
	35-55	1275.0	1286.9	1308.5	1365.9	1411.0	1486.1	1567.7	1678.4	1827.3	1932.3
Medicaid	Total	938.6	984.6	998.6	1040.2	1075.5	1135.1	1216.5	1326.6	1481.5	1599.0
	12-19	954.5	1010.8	990.7	1062.5	1081.1	1170.8	1216.2	1326.9	1455.3	1634.9
	20-24	832.8	859.5	877.7	890.6	923.1	976.3	1056.2	1169.1	1331.8	1428.6
	25-34	915.4	976.6	986.1	1022.0	1059.1	1107.7	1182.5	1276.0	1414.3	1528.5
	35-55	1479.0	1488.5	1522.6	1614.3	1630.7	1703.2	1786.1	1918.3	2116.0	2234.8

Data for Exhibit 2.2
Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National

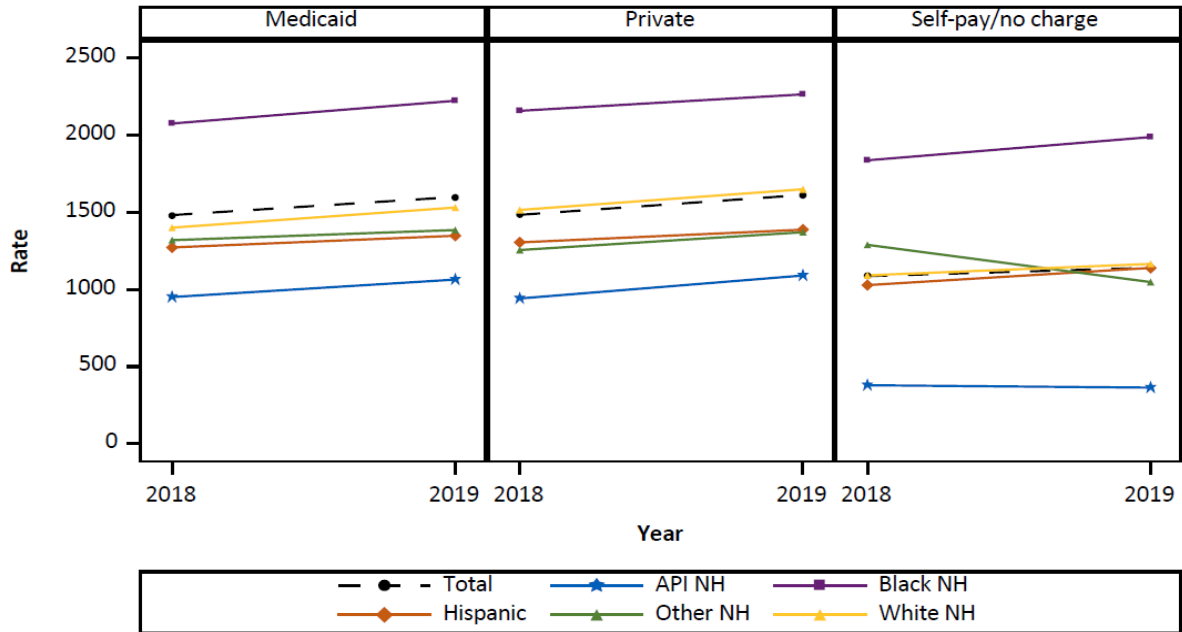
Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	1020.8	1018.3	1029.7	1064.4	1098.1	1161.3	1242.1	1353.7	1483.2	1612.0
	12-19	987.9	982.0	1016.9	1038.0	1103.8	1159.9	1290.0	1381.0	1525.9	1715.7
	20-24	1044.5	1006.2	1032.7	1036.6	1102.8	1148.6	1222.2	1344.1	1528.0	1644.4
	25-34	960.8	962.6	967.1	1006.7	1022.5	1087.3	1165.6	1276.2	1391.0	1525.3
	35-55	1202.0	1207.8	1226.4	1265.2	1328.7	1396.4	1473.1	1577.2	1707.0	1820.2
Self-pay/no charge	Total	753.1	793.1	699.9	780.9	743.3	863.2	857.6	884.6	1086.4	1139.5
	12-19	917.9	829.2	838.4	967.0	816.3	1148.9	1053.3	1098.5	1456.1	1306.4
	20-24	697.3	689.5	654.0	756.2	734.7	836.7	865.2	907.6	1079.3	1156.5
	25-34	666.3	750.0	613.8	695.6	670.2	743.1	725.8	784.1	941.7	1026.8
	35-55	1019.6	1063.7	979.5	996.6	949.8	1175.6	1190.7	1096.1	1418.6	1403.1
Medicare (not shown)	Total	1565.4	1487.4	1500.6	1721.6	1698.4	1851.2	1946.3	2140.0	2211.0	2421.5
	12-19	1511.3	812.8	969.2	884.4	1219.5	1264.4	1234.6	1855.7	1705.4	1467.9
	20-24	1185.7	1220.2	1157.3	1139.7	1094.5	1341.9	1119.3	1502.0	1547.0	1822.2
	25-34	1559.4	1412.0	1444.0	1629.9	1610.0	1722.0	1905.0	1926.6	2053.8	2340.9
	35-55	2062.4	2265.4	2273.2	2757.9	2596.4	2674.1	2818.8	3072.6	3103.2	3047.1
Other (not shown)	Total	931.1	964.7	957.8	1012.0	963.9	1042.9	1120.2	1242.0	1346.0	1421.7
	12-19	1015.9	1044.9	904.8	1159.4	1185.3	1005.4	1061.2	1485.4	1458.0	1565.7
	20-24	860.4	881.1	911.3	898.3	922.1	966.9	1108.4	1195.0	1332.6	1407.2
	25-34	898.5	909.7	932.7	980.8	893.9	1000.6	1036.3	1141.4	1257.6	1324.9
	35-55	1229.2	1399.0	1208.6	1341.7	1285.2	1372.8	1506.1	1665.5	1675.0	1774.5

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Exhibit 2.3

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National



Key: API=Asian/Pacific Islander, NH=Non-Hispanic

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2018-2019

Data for Exhibit 2.3

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National

Expected payer	Race/Ethnicity	2018	2019
Total	Total	1473.5	1593.0
	API NH	914.0	1033.6
	Black NH	2100.4	2236.9
	Hispanic	1273.0	1350.4
	White NH	1472.1	1601.6
	Other NH	1286.8	1360.2
Medicaid	Total	1481.5	1599.0
	API NH	950.2	1063.5
	Black NH	2074.9	2222.5
	Hispanic	1271.9	1347.7
	White NH	1400.0	1530.5
	Other NH	1318.8	1384.8

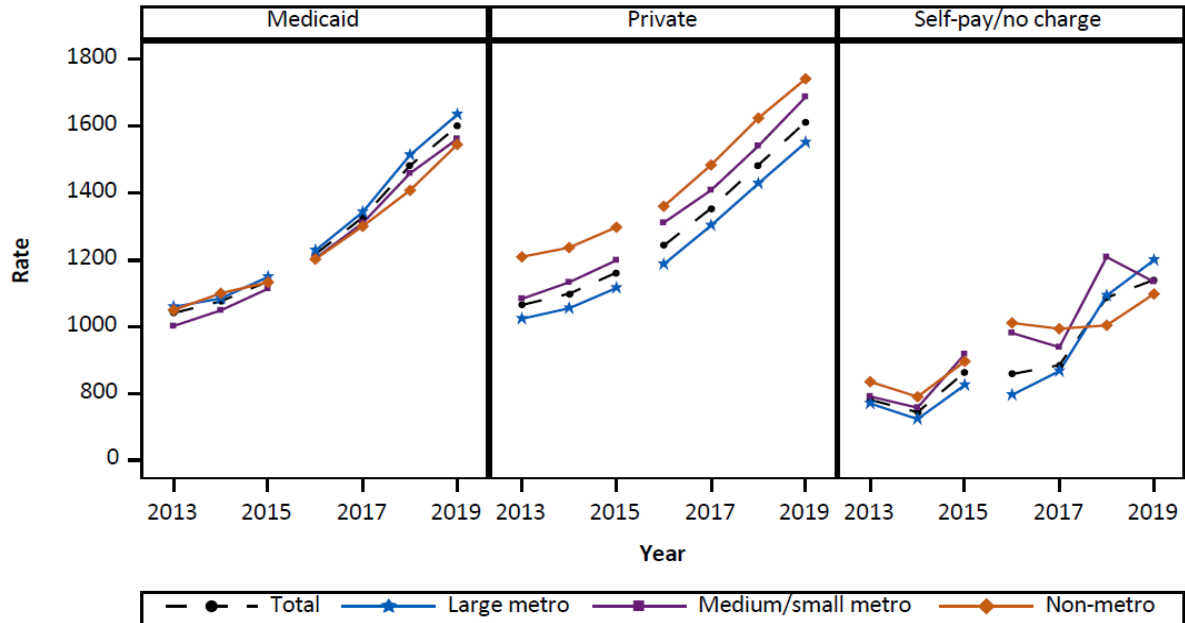
Data for Exhibit 2.3**Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National**

Expected payer	Race/Ethnicity	2018	2019
Private	Total	1483.2	1612.0
	API NH	941.0	1089.9
	Black NH	2157.3	2263.9
	Hispanic	1304.4	1387.0
	White NH	1514.7	1648.8
	Other NH	1255.0	1370.5
Self-pay/no charge	Total	1086.4	1139.5
	API NH	378.5	363.1
	Black NH	1836.5	1987.2
	Hispanic	1027.6	1139.1
	White NH	1091.1	1165.0
	Other NH	1288.7	1047.3
Medicare (not shown)	Total	2211.0	2421.5
	API NH	1295.0	1219.5
	Black NH	2839.1	3181.5
	Hispanic	2026.6	1944.9
	White NH	2062.1	2184.7
	Other NH	1403.5	1690.1
Other (not shown)	Total	1346.0	1421.7
	API NH	1048.5	804.6
	Black NH	1799.7	1931.5
	Hispanic	1081.4	1195.5
	White NH	1395.2	1455.4
	Other NH	1126.1	1124.6

Key: API=Asian/Pacific Islander, NH=Non-Hispanic**Source:** Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2018-2019

Exhibit 2.4

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 2.4

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National

Expected payer	Patient Location	2013	2014	2015	2016	2017	2018	2019
Total	Total	1049.3	1080.1	1144.1	1223.5	1332.8	1473.5	1593.0
	Large metro	1034.3	1058.5	1124.7	1195.6	1311.1	1455.3	1574.7
	Medium/small metro	1043.5	1089.7	1153.8	1256.8	1355.4	1497.0	1618.2
	Non-metro	1119.6	1156.6	1207.5	1277.2	1383.7	1507.4	1626.6
Medicaid	Total	1040.2	1075.5	1135.1	1216.5	1326.6	1481.5	1599.0
	Large metro	1058.5	1084.3	1148.3	1227.5	1342.5	1512.9	1634.4
	Medium/small metro	1001.4	1048.3	1113.2	1203.7	1309.7	1458.4	1561.2
	Non-metro	1049.4	1099.5	1132.6	1201.8	1300.0	1407.5	1544.6
Private	Total	1064.4	1098.1	1161.3	1242.1	1353.7	1483.2	1612.0
	Large metro	1023.1	1054.6	1115.2	1186.1	1302.3	1427.8	1550.5
	Medium/small metro	1082.7	1132.3	1198.2	1310.6	1407.8	1540.0	1686.7
	Non-metro	1208.5	1236.3	1297.3	1359.5	1483.4	1623.6	1741.1

Data for Exhibit 2.4

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National

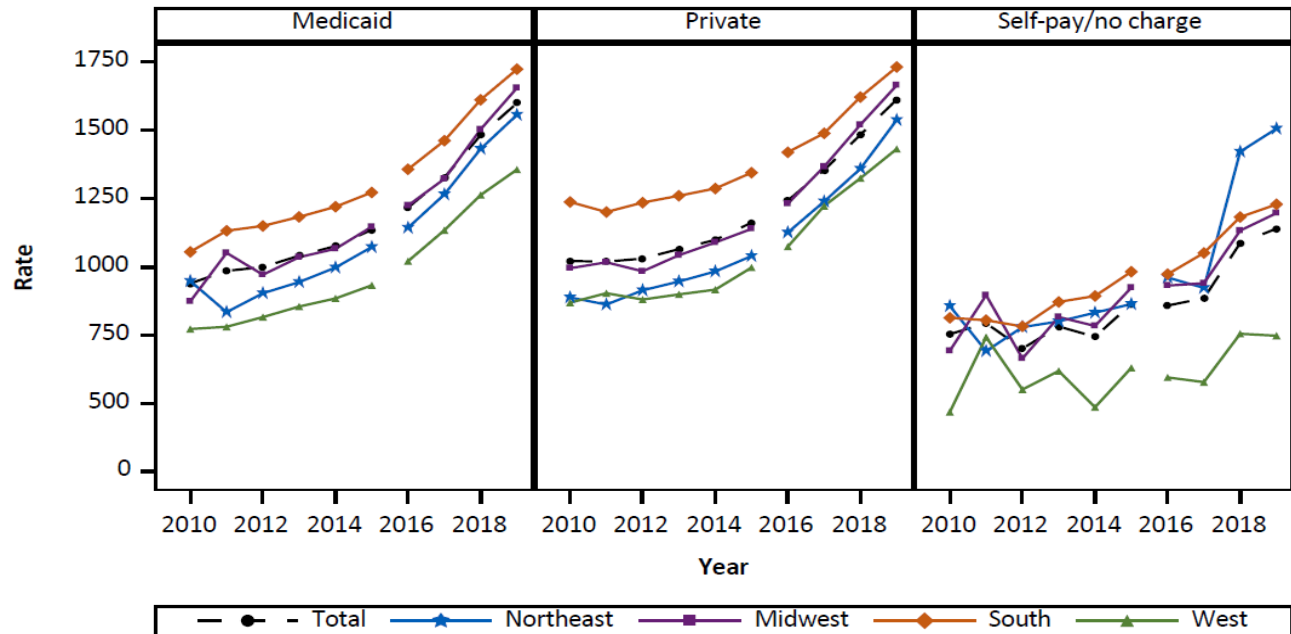
Expected payer	Patient Location	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	780.9	743.3	863.2	857.6	884.6	1086.4	1139.5
	Large metro	769.6	723.0	824.9	795.4	866.5	1092.6	1198.7
	Medium/small metro	790.7	757.1	917.0	980.5	938.1	1208.0	1133.8
	Non-metro	834.8	789.8	895.5	1010.6	993.3	1003.6	1097.4
Medicare (not shown)	Total	1721.6	1698.4	1851.2	1946.3	2140.0	2211.0	2421.5
	Large metro	1805.0	1758.3	2003.2	2084.7	2098.1	2213.0	2478.1
	Medium/small metro	1700.6	1649.2	1810.7	1773.8	2218.7	2164.9	2467.5
	Non-metro	1561.3	1595.5	1526.4	1978.2	2131.4	2251.4	2187.1
Other (not shown)	Total	1012.0	963.9	1042.9	1120.2	1242.0	1346.0	1421.7
	Large metro	955.5	886.1	1022.7	1080.4	1238.4	1295.0	1392.2
	Medium/small metro	1061.8	1051.4	1051.3	1175.6	1257.0	1390.9	1486.8
	Non-metro	1044.1	978.8	1089.4	1116.1	1216.1	1408.9	1342.3

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Exhibit 2.5

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 2.5

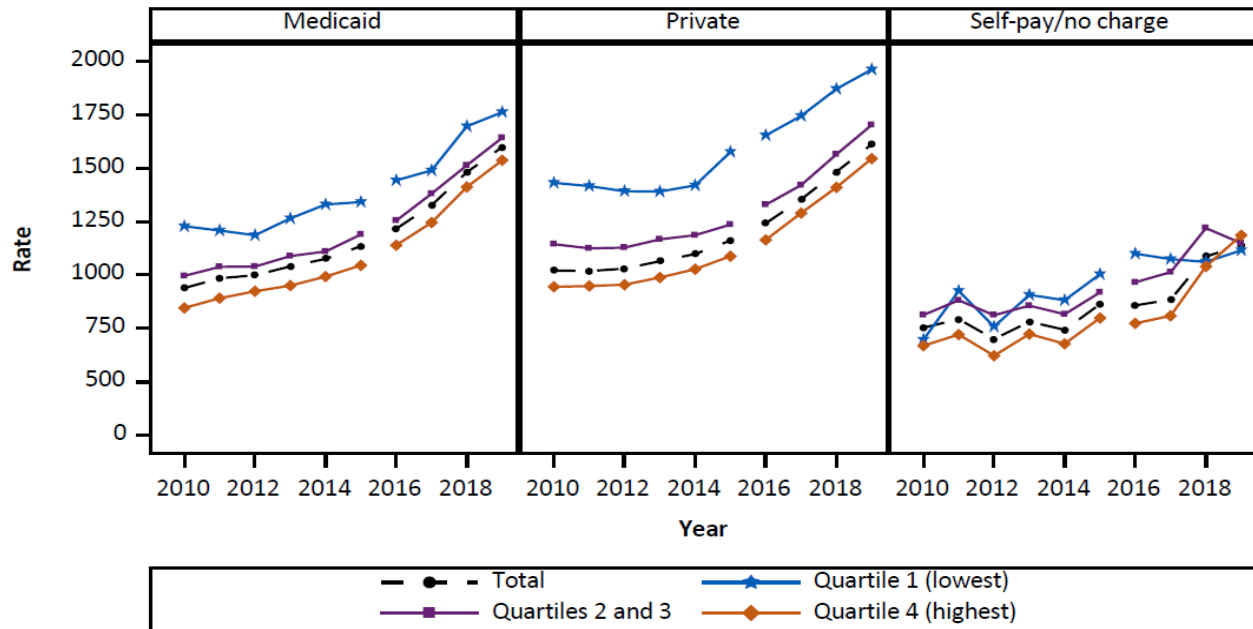
Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National

Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	975.5	999.9	1009.6	1049.3	1080.1	1144.1	1223.5	1332.8	1473.5	1593.0
	Northeast	914.0	849.7	912.5	948.9	990.2	1056.0	1133.5	1249.8	1391.9	1545.2
	Midwest	939.6	1027.9	973.3	1039.2	1077.0	1138.6	1227.2	1346.5	1505.5	1649.9
	South	1124.0	1152.5	1176.2	1208.1	1240.8	1297.0	1374.2	1463.4	1604.5	1708.4
	West	820.8	847.9	844.4	873.7	886.7	959.4	1037.6	1163.9	1280.7	1379.9
Medicaid	Total	938.6	984.6	998.6	1040.2	1075.5	1135.1	1216.5	1326.6	1481.5	1599.0
	Northeast	947.6	833.5	902.7	943.6	996.8	1071.9	1142.5	1264.7	1431.4	1556.2
	Midwest	872.9	1050.7	970.6	1034.7	1065.5	1146.1	1224.1	1321.4	1502.9	1654.5
	South	1054.3	1131.5	1149.2	1182.3	1219.4	1272.0	1356.6	1461.3	1611.2	1722.9
	West	771.7	779.9	815.4	854.1	883.6	931.8	1020.2	1133.4	1262.5	1355.6

Data for Exhibit 2.5 Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National											
Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	1020.8	1018.3	1029.7	1064.4	1098.1	1161.3	1242.1	1353.7	1483.2	1612.0
	Northeast	887.4	861.3	913.4	945.7	982.5	1038.9	1125.1	1238.7	1358.9	1537.1
	Midwest	994.3	1016.0	983.2	1042.0	1088.5	1138.5	1230.7	1366.2	1519.8	1664.4
	South	1236.9	1200.1	1234.9	1259.7	1286.4	1344.1	1419.1	1488.6	1621.4	1731.2
	West	868.2	902.8	879.7	898.5	915.9	996.8	1073.3	1222.2	1324.1	1431.2
Self-pay/no charge	Total	753.1	793.1	699.9	780.9	743.3	863.2	857.6	884.6	1086.4	1139.5
	Northeast	856.0	691.0	778.6	799.5	831.4	863.1	960.4	922.1	1421.2	1505.6
	Midwest	692.0	895.6	663.9	815.5	782.9	923.1	930.8	939.3	1132.3	1196.2
	South	812.9	804.0	781.1	871.1	892.6	981.5	972.2	1050.3	1181.9	1228.0
	West	467.6	741.8	550.2	618.1	485.1	629.6	594.4	577.3	754.3	747.1
Medicare (not shown)	Total	1565.4	1487.4	1500.6	1721.6	1698.4	1851.2	1946.3	2140.0	2211.0	2421.5
	Northeast	1266.7	1372.7	1559.7	1677.3	1535.5	1798.9	1755.5	1866.3	2042.4	2473.8
	Midwest	1335.4	1418.5	1287.2	1476.5	1554.6	1553.3	1746.1	2374.4	2125.3	2584.8
	South	2181.9	1687.9	1688.7	2053.0	1971.1	2172.5	2166.8	2187.1	2308.6	2367.3
	West	1591.1	1264.0	1347.5	1441.4	1519.1	1550.4	1836.1	2028.5	2237.8	2296.3
Other (not shown)	Total	931.1	964.7	957.8	1012.0	963.9	1042.9	1120.2	1242.0	1346.0	1421.7
	Northeast	909.7	731.8	950.4	980.4	1022.0	1042.5	1079.7	1199.1	1179.3	1334.3
	Midwest	866.4	876.3	891.6	1020.5	990.8	1042.6	1195.3	1294.5	1355.7	1429.6
	South	1010.6	1066.4	1027.3	1048.1	1021.7	1083.1	1134.0	1290.9	1460.5	1468.9
	West	881.8	923.0	893.2	954.3	815.3	964.8	1035.4	1130.3	1227.5	1383.1
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.											

Exhibit 2.6

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 2.6

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National

Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	975.5	999.9	1009.6	1049.3	1080.1	1144.1	1223.5	1332.8	1473.5	1593.0
	Quartile 1 (lowest)	1269.9	1265.4	1252.9	1300.1	1354.1	1431.9	1518.6	1575.4	1747.9	1822.0
	Quartiles 2 and 3	1057.3	1075.7	1074.1	1120.3	1139.1	1204.6	1284.9	1393.2	1533.5	1658.4
	Quartile 4 (highest)	899.0	923.1	937.3	970.7	1006.0	1066.9	1146.6	1264.0	1401.9	1532.4
Medicaid	Total	938.6	984.6	998.6	1040.2	1075.5	1135.1	1216.5	1326.6	1481.5	1599.0
	Quartile 1 (lowest)	1228.2	1208.1	1186.0	1264.9	1330.2	1341.5	1443.0	1489.8	1696.4	1762.2
	Quartiles 2 and 3	995.9	1038.0	1039.3	1088.5	1109.9	1189.8	1254.5	1380.7	1513.8	1642.4
	Quartile 4 (highest)	845.7	891.1	923.6	950.2	992.4	1045.1	1139.5	1245.5	1411.8	1537.1
Private	Total	1020.8	1018.3	1029.7	1064.4	1098.1	1161.3	1242.1	1353.7	1483.2	1612.0
	Quartile 1 (lowest)	1431.5	1416.3	1392.1	1390.6	1419.7	1576.2	1653.8	1744.7	1871.4	1962.4
	Quartiles 2 and 3	1144.1	1124.8	1127.9	1166.8	1186.5	1235.8	1328.8	1420.7	1564.6	1703.0
	Quartile 4 (highest)	944.5	948.3	954.5	988.1	1027.1	1088.1	1164.5	1289.9	1410.1	1545.1

Data for Exhibit 2.6

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National

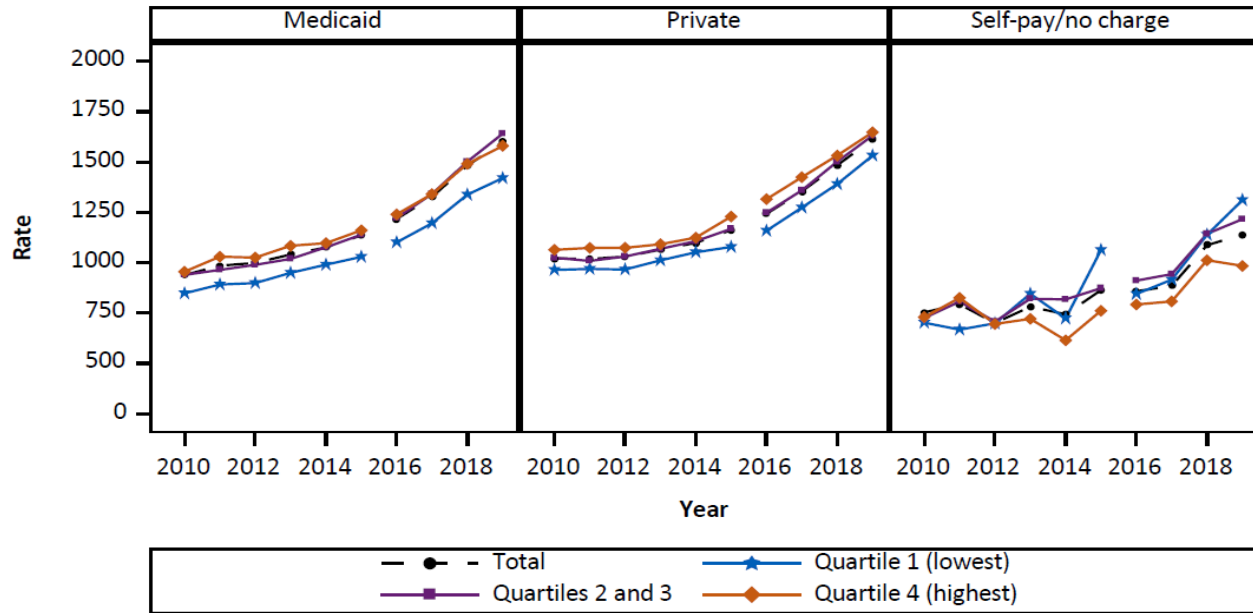
Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	753.1	793.1	699.9	780.9	743.3	863.2	857.6	884.6	1086.4	1139.5
	Quartile 1 (lowest)	696.7	925.3	757.8	906.8	881.9	1003.6	1099.6	1074.4	1061.0	1115.3
	Quartiles 2 and 3	812.5	881.7	811.5	856.2	816.1	918.4	965.8	1013.2	1219.4	1148.8
	Quartile 4 (highest)	668.7	721.0	621.9	723.3	677.9	798.7	773.5	808.7	1040.0	1186.0
Medicare (not shown)	Total	1565.4	1487.4	1500.6	1721.6	1698.4	1851.2	1946.3	2140.0	2211.0	2421.5
	Quartile 1 (lowest)	1938.0	2170.5	1785.7	1583.4	1854.3	1994.8	2352.1	2365.2	1876.9	2426.3
	Quartiles 2 and 3	1552.8	1588.0	1565.1	1843.8	1762.9	1882.3	1988.1	2178.0	2321.0	2410.7
	Quartile 4 (highest)	1514.1	1276.1	1384.5	1653.0	1598.3	1786.4	1780.2	2049.1	2178.2	2442.8
Other (not shown)	Total	931.1	964.7	957.8	1012.0	963.9	1042.9	1120.2	1242.0	1346.0	1421.7
	Quartile 1 (lowest)	1218.4	1073.1	1080.2	1159.0	1127.7	1508.3	1340.0	1319.1	1718.5	1526.9
	Quartiles 2 and 3	956.6	1059.9	973.1	1025.4	988.1	1036.5	1144.4	1243.0	1406.3	1426.9
	Quartile 4 (highest)	909.5	881.7	933.4	982.6	926.1	991.4	1069.7	1233.9	1267.1	1406.8

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Exhibit 2.7

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National



Key: SVI=Social Vulnerability Index

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 2.7

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National

Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	975.5	999.9	1009.6	1049.3	1080.1	1144.1	1223.5	1332.8	1473.5	1593.0
	Quartile 1 (lowest)	921.2	940.2	938.9	992.8	1028.9	1064.0	1135.1	1248.0	1371.9	1493.1
	Quartiles 2 and 3	982.8	987.1	1006.6	1046.0	1087.6	1149.5	1231.3	1343.6	1493.5	1623.0
	Quartile 4 (highest)	987.7	1046.4	1041.6	1077.1	1094.2	1180.9	1262.5	1363.0	1496.3	1593.8
Medicaid	Total	938.6	984.6	998.6	1040.2	1075.5	1135.1	1216.5	1326.6	1481.5	1599.0
	Quartile 1 (lowest)	847.6	891.2	898.4	949.2	989.6	1028.5	1100.5	1195.2	1337.2	1419.6
	Quartiles 2 and 3	939.1	963.7	988.9	1018.3	1075.9	1138.5	1222.9	1340.8	1501.2	1640.3
	Quartile 4 (highest)	955.0	1029.6	1024.7	1083.7	1096.6	1160.3	1239.7	1340.1	1490.2	1579.0
Private	Total	1020.8	1018.3	1029.7	1064.4	1098.1	1161.3	1242.1	1353.7	1483.2	1612.0
	Quartile 1 (lowest)	963.8	968.8	965.8	1011.1	1051.2	1077.8	1158.3	1273.0	1390.0	1531.3
	Quartiles 2 and 3	1024.1	1008.3	1030.3	1068.5	1106.4	1167.6	1247.7	1358.6	1501.0	1630.6
	Quartile 4 (highest)	1063.3	1073.2	1073.3	1091.0	1123.9	1228.6	1314.8	1424.0	1531.6	1646.8

Data for Exhibit 2.7

Rates of hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National

Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	753.1	793.1	699.9	780.9	743.3	863.2	857.6	884.6	1086.4	1139.5
	Quartile 1 (lowest)	701.5	667.3	698.5	845.0	722.6	1062.6	844.2	915.4	1138.1	1310.2
	Quartiles 2 and 3	725.4	806.8	707.2	820.3	817.3	872.8	910.3	942.7	1143.2	1215.4
	Quartile 4 (highest)	729.0	825.0	695.4	720.8	614.3	761.1	791.9	807.4	1011.9	983.8
Medicare (not shown)	Total	1565.4	1487.4	1500.6	1721.6	1698.4	1851.2	1946.3	2140.0	2211.0	2421.5
	Quartile 1 (lowest)	1216.6	1175.1	1240.2	1055.7	1463.4	1525.1	1440.5	1982.1	2075.3	2349.4
	Quartiles 2 and 3	1575.3	1395.7	1398.4	1774.7	1613.5	1804.4	1941.7	2152.1	2320.8	2421.9
	Quartile 4 (highest)	1699.3	1744.2	1799.7	1895.6	2041.7	2141.4	2233.9	2205.1	2074.3	2485.1
Other (not shown)	Total	931.1	964.7	957.8	1012.0	963.9	1042.9	1120.2	1242.0	1346.0	1421.7
	Quartile 1 (lowest)	749.0	884.9	813.5	1026.4	948.3	988.0	1052.1	1176.3	1254.4	1268.1
	Quartiles 2 and 3	1007.6	969.3	956.1	1039.8	985.4	1049.7	1111.2	1265.5	1369.4	1466.4
	Quartile 4 (highest)	921.2	1016.9	1056.7	951.7	932.2	1074.4	1200.8	1243.5	1378.0	1436.7

Key: SVI=Social Vulnerability Index

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Section 3: Coexisting Condition—Mental Health Disorders

Background

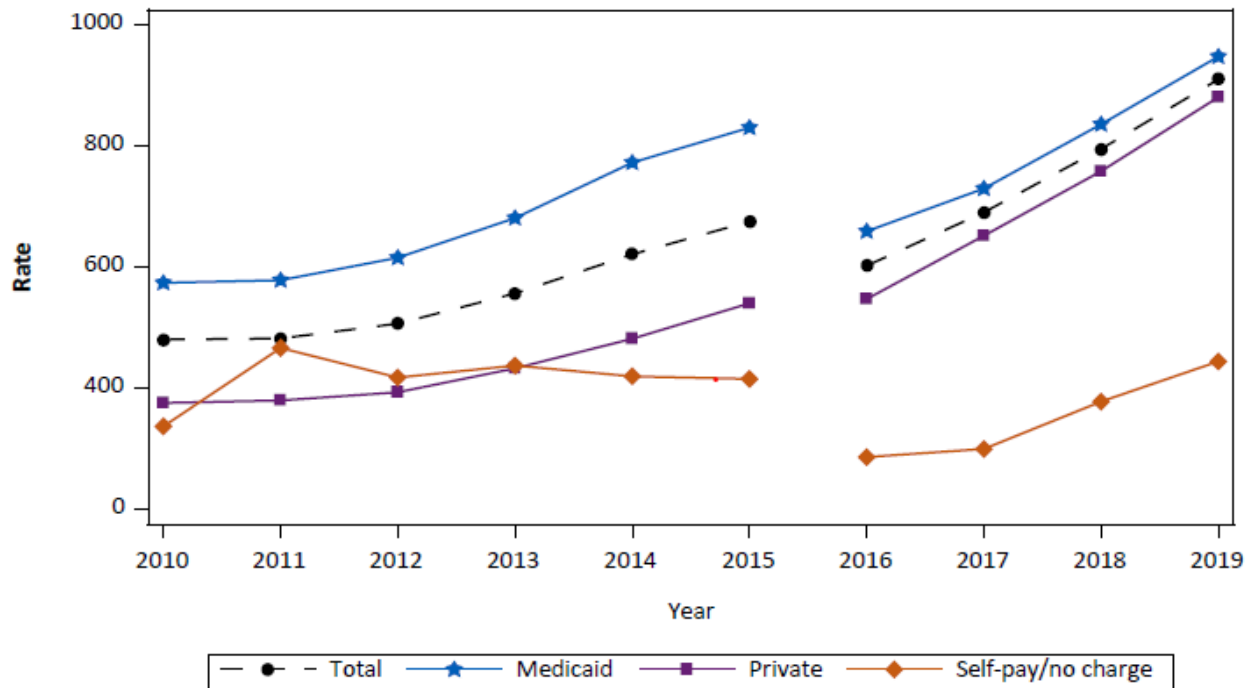
Mental health disorders encompass a wide variety of conditions that affect an individual's thinking, emotions, or behavior.¹⁴ These conditions are officially classified in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5) and include diagnoses such as major depressive disorders, anxiety disorders, and schizophrenia. There is a high prevalence of mental health disorders among women of childbearing age,² and this prevalence has been increasing over time differentially by race.¹⁵ Researchers have found that many mental health disorders (e.g., anxiety, depression, bipolar disorder, schizophrenia) are associated with adverse maternal outcomes. For example, patients diagnosed with schizophrenia have a higher rate of comorbidities, such as hypertension and diabetes, and pregnancy complications, such as gestational diabetes and preeclampsia.^{9,16} There are several potential mechanisms driving these observed relationships. First, mental health disorders have been associated with a high likelihood of comorbid substance use.^{9,17} Second, mental health disorders have been associated with poor health behaviors (e.g., lack of exercise, poor diet, risky behavior) and not seeking appropriate prenatal care,^{9,18,19} which may adversely affect maternal outcomes.

Highlights Among Mental Health Disorder-Related Delivery Stays

- From 2010 to 2014, the rate of mental health disorders among delivery stays increased 29 percent from 479.7 per 10,000 delivery stays in 2010 to 620.6 in 2014. From 2016 to 2019, the rate increased 51 percent from 601.7 per 10,000 delivery stays in 2016 to 909.5 in 2019 (exhibit 3.1). Each year during 2016–2019, mental health disorders were evident among approximately 270,000 delivery stays.
- The rate of delivery stays involving mental health disorders was lowest for stays billed as self-pay/no charge and about twice as high for stays with Medicaid as the expected payer (exhibit 3.1).
- Among delivery stays billed as self-pay/no charge, from 2016 to 2019, the rate of mental health disorders for women aged 12–19 years nearly doubled (an 82 percent increase) and more than doubled (a 138 percent increase) for delivery stays at Northeastern hospitals (exhibits 3.2 and 3.5)
- Regardless of expected payer type, the rate of delivery stays involving mental health disorders was highest for White non-Hispanic women in 2018, which was more than double the rate for Asian/Pacific Islander non-Hispanic women (exhibit 3.3).
- Although the rate of delivery stays involving mental health disorders varied by community-level income and payer type, the rate was consistently higher among patients from the least socially vulnerable areas across payer types. During 2016–2019, the rate of mental health disorders among delivery stays billed to Medicaid were 72 percent higher for women from the least socially vulnerable areas compared to those from the most vulnerable areas (exhibit 3.7).

Exhibit 3.1

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer, 2010-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 3.1

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer, 2010-2019, National

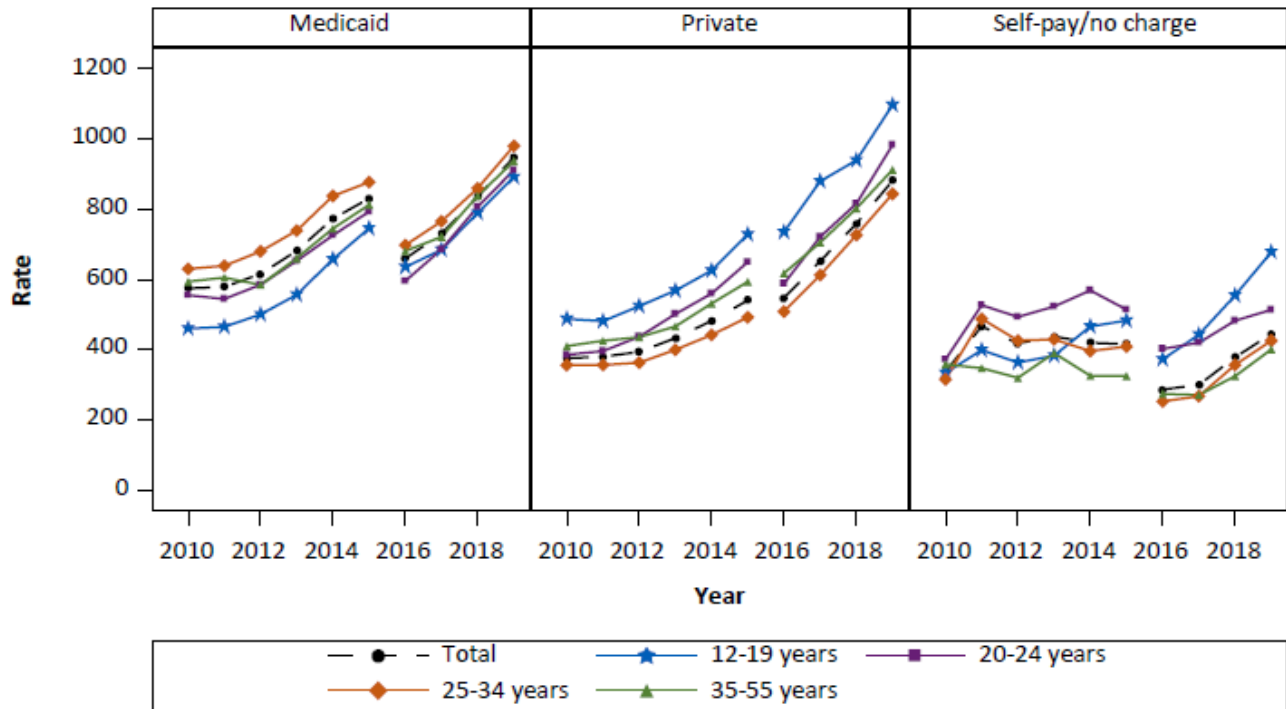
Expected payer	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	479.7	481.7	506.2	556.1	620.6	674.8	601.7	689.9	794.6	909.5
Medicaid	573.5	577.9	615.1	680.5	772.0	829.8	658.6	729.2	835.4	947.1
Private	375.2	379.4	392.9	432.4	481.3	539.7	546.7	651.4	757.9	880.1
Self-pay/no charge	336.6	466.0	417.2	436.9	419.1	414.9	285.9	299.3	377.5	443.8

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Exhibit 3.2

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 3.2

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National

Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	479.7	481.7	506.2	556.1	620.6	674.8	601.7	689.9	794.6	909.5
	12-19	463.2	465.4	501.3	556.2	646.5	732.9	645.4	720.5	815.9	930.5
	20-24	509.4	505.4	541.7	604.8	670.9	741.9	592.6	699.5	808.9	932.8
	25-34	470.1	472.4	494.9	541.4	602.2	645.7	588.4	676.0	780.7	895.7
	35-55	476.0	487.9	494.0	535.7	604.1	665.8	643.5	715.8	817.9	923.2
Medicaid	Total	573.5	577.9	615.1	680.5	772.0	829.8	658.6	729.2	835.4	947.1
	12-19	459.3	464.2	499.7	555.6	656.7	744.7	634.4	683.6	788.4	890.4
	20-24	554.3	543.6	584.2	652.1	724.7	792.3	594.5	684.8	805.8	910.2
	25-34	629.1	638.1	678.9	738.2	836.9	876.1	696.8	764.6	859.1	979.2
	35-55	593.2	604.5	583.9	659.8	744.0	811.5	680.0	720.5	837.2	935.9

Data for Exhibit 3.2
Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National

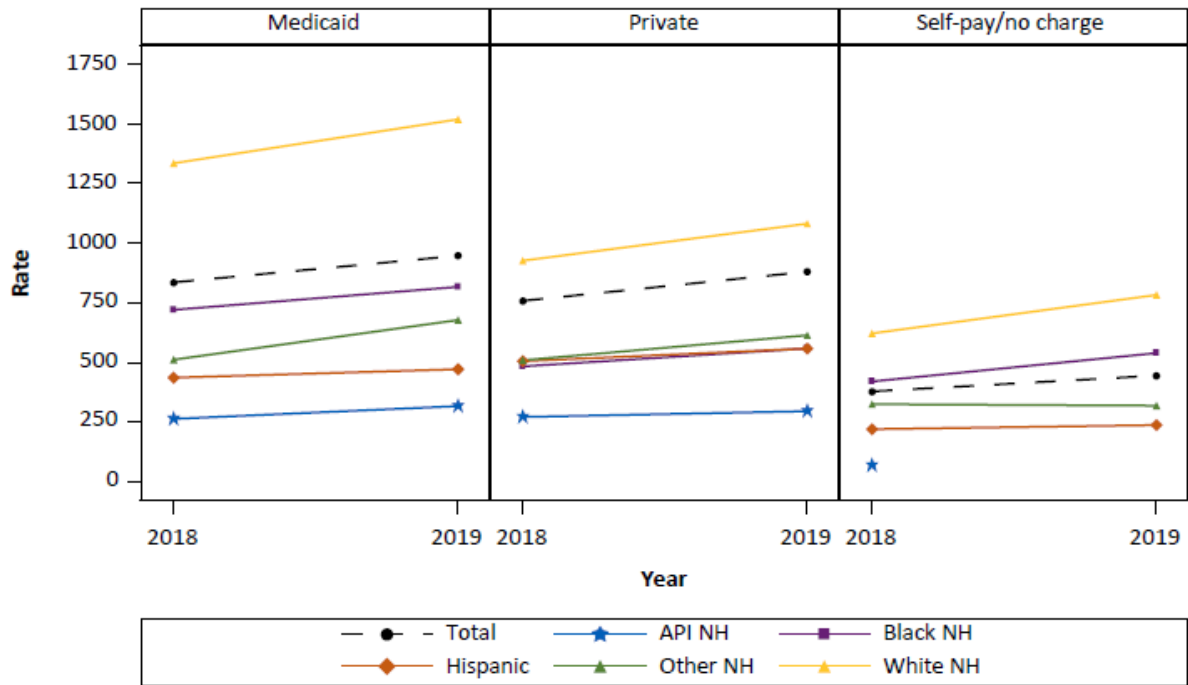
Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	375.2	379.4	392.9	432.4	481.3	539.7	546.7	651.4	757.9	880.1
	12-19	487.0	480.4	523.2	567.5	624.5	727.3	734.1	878.7	938.4	1095.8
	20-24	384.8	395.3	436.0	500.8	559.0	648.7	587.4	720.4	814.5	982.0
	25-34	355.2	355.5	362.4	399.0	441.5	491.4	507.9	611.7	725.6	842.8
	35-55	409.5	424.7	434.9	465.4	530.9	592.7	616.8	704.3	801.4	911.5
Self-pay/no charge	Total	336.6	466.0	417.2	436.9	419.1	414.9	285.9	299.3	377.5	443.8
	12-19	333.2	398.1	362.5	382.3	465.3	482.3	371.7	441.9	553.5	677.0
	20-24	371.1	526.0	492.4	522.2	568.0	513.3	401.6	418.9	481.9	512.7
	25-34	314.8	487.1	425.4	428.5	395.4	408.1	251.9	266.9	355.8	424.6
	35-55	357.2	346.7	319.1	389.6	325.1	324.4	273.6	270.3	323.8	399.9
Medicare (not shown)	Total	2327.2	2086.2	1989.3	2181.0	2341.5	2470.9	2124.2	2290.3	2323.6	2594.1
	12-19	844.3	449.8	.	.	.	.	.	.	.	.
	20-24	1782.8	1708.9	1482.6	1615.5	1920.4	2204.5	1583.9	2055.3	1658.4	2594.7
	25-34	2431.5	2186.7	2104.3	2322.6	2439.5	2479.0	2193.4	2274.2	2319.6	2475.2
	35-55	2922.1	2689.7	2660.6	2589.5	2634.1	2860.7	2550.3	2577.8	2948.8	3064.0
Other (not shown)	Total	533.8	465.1	465.5	543.3	542.2	583.3	593.0	727.3	851.0	977.6
	12-19	507.1	410.4	476.2	660.2	715.0	625.0	438.8	781.0	1012.0	1226.0
	20-24	520.8	453.5	475.7	532.3	535.0	609.1	523.7	728.8	875.0	912.7
	25-34	549.7	468.6	447.6	531.3	518.9	566.4	614.6	707.2	835.5	971.0
	35-55	517.2	511.7	521.6	570.1	597.0	601.5	649.5	795.8	849.1	1027.0

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends. Suppressed rates are indicated with a dash (-) in applicable table cells.

Exhibit 3.3

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National



Key: API=Asian/Pacific Islander, NH=Non-Hispanic

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2018-2019

Data for Exhibit 3.3

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National

Expected payer	Race/Ethnicity	2018	2019
Total	Total	794.6	909.5
	API NH	258.4	288.3
	Black NH	660.5	749.7
	Hispanic	456.6	495.1
	White NH	1060.6	1220.5
	Other NH	514.8	642.8
Medicaid	Total	835.4	947.1
	API NH	262.1	315.8
	Black NH	720.1	816.4
	Hispanic	435.2	470.5
	White NH	1335.2	1519.8
	Other NH	510.8	677.1

Data for Exhibit 3.3

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National

Expected payer	Race/Ethnicity	2018	2019
Private	Total	757.9	880.1
	API NH	270.1	294.5
	Black NH	482.7	558.2
	Hispanic	504.5	557.4
	White NH	926.3	1081.9
	Other NH	508.3	613.2
Self-pay/no charge	Total	377.5	443.8
	API NH	67.0	.
	Black NH	419.3	538.5
	Hispanic	218.9	236.1
	White NH	621.1	782.5
	Other NH	324.0	317.6
Medicare (not shown)	Total	2323.6	2594.1
	API NH	.	.
	Black NH	2147.6	2325.7
	Hispanic	1952.7	1831.4
	White NH	2757.3	3125.3
	Other NH	1052.6	1737.1
Other (not shown)	Total	851.0	977.6
	API NH	315.7	344.8
	Black NH	743.0	884.0
	Hispanic	516.6	601.9
	White NH	998.1	1159.6
	Other NH	794.6	909.5

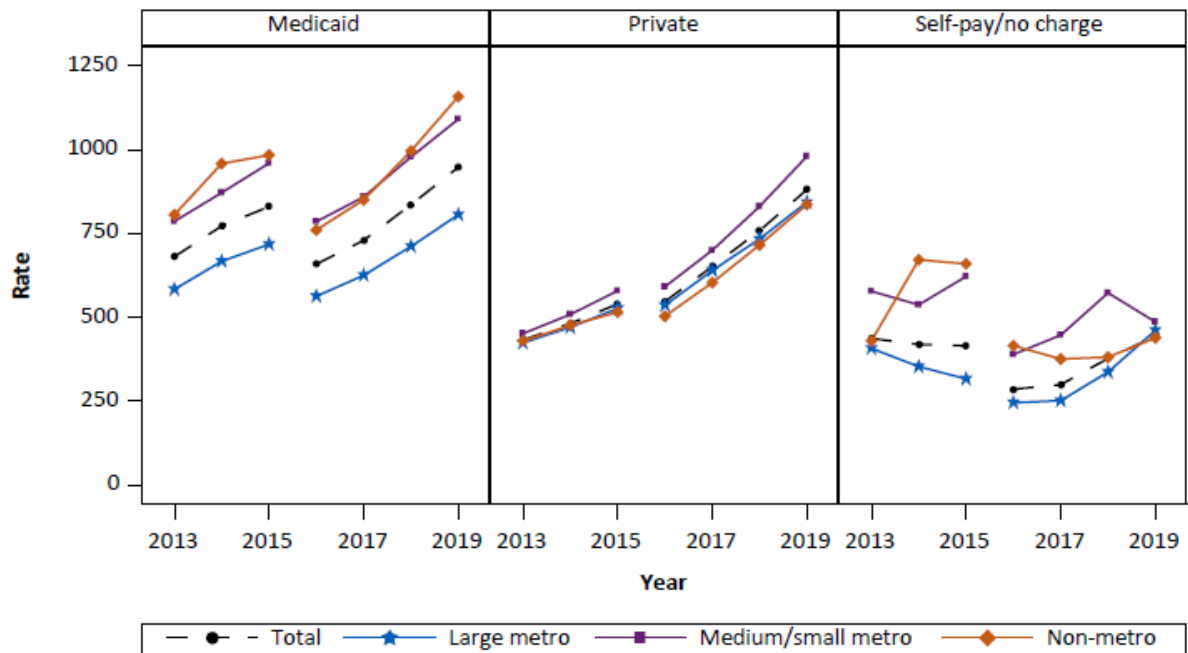
Key: API=Asian/Pacific Islander, NH=Non-Hispanic

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2018-2019.

Notes: Suppressed rates are indicated with a dash (-) in applicable table cells.

Exhibit 3.4

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 3.4

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National

Expected payer	Patient Location	2013	2014	2015	2016	2017	2018	2019
Total	Total	556.1	620.6	674.8	601.7	689.9	794.6	909.5
	Large metro	503.1	560.8	611.9	551.0	635.2	724.9	829.4
	Medium/small metro	622.0	691.0	763.7	688.8	781.7	905.1	1031.5
	Non-metro	629.6	727.8	752.9	633.8	729.2	855.5	986.2
Medicaid	Total	680.5	772.0	829.8	658.6	729.2	835.4	947.1
	Large metro	583.3	666.9	717.4	562.7	625.0	711.1	805.3
	Medium/small metro	785.6	871.3	958.9	784.9	858.6	977.4	1090.5
	Non-metro	805.4	957.8	983.2	760.2	849.9	995.4	1157.4
Private	Total	432.4	481.3	539.7	546.7	651.4	757.9	880.1
	Large metro	423.7	470.2	526.5	535.3	639.2	733.2	842.8
	Medium/small metro	451.4	508.5	578.8	591.0	699.5	830.0	979.3
	Non-metro	429.4	476.1	515.1	503.1	603.2	715.3	835.7

Data for Exhibit 3.4

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National

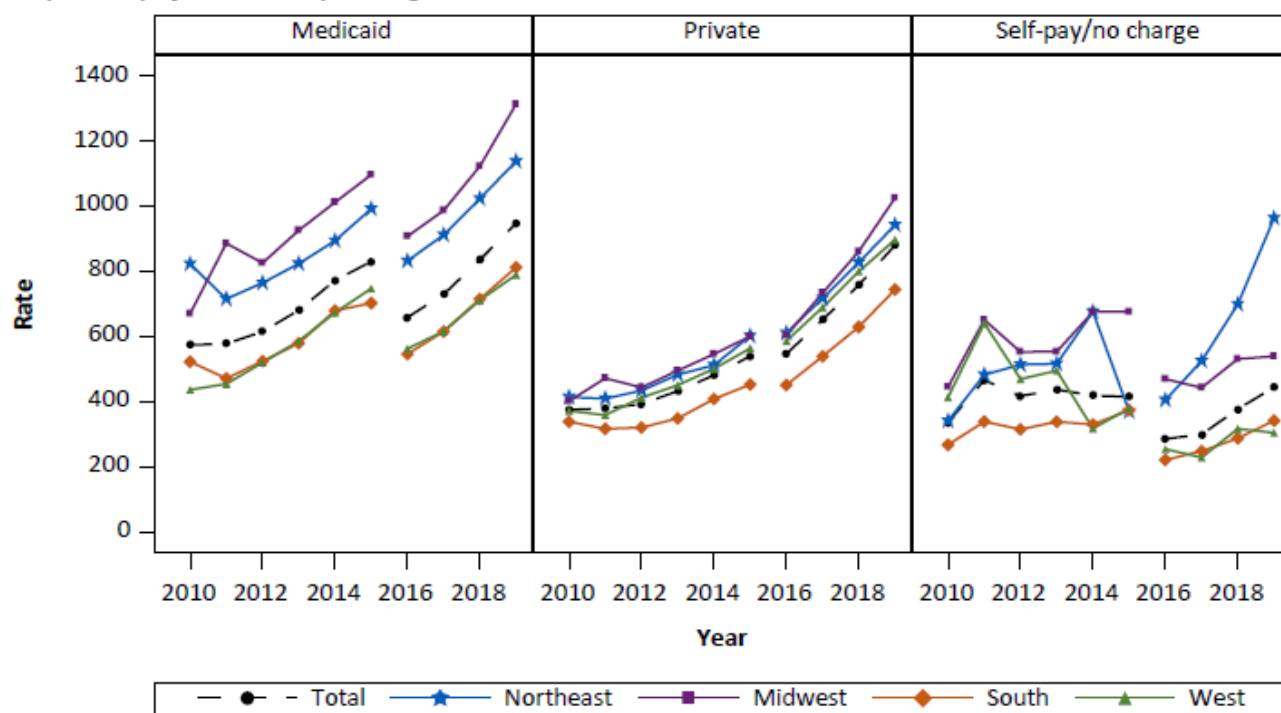
Expected payer	Patient Location	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	436.9	419.1	414.9	285.9	299.3	377.5	443.8
	Large metro	407.4	353.2	316.5	245.6	251.8	336.9	460.9
	Medium/small metro	577.6	537.1	621.7	389.3	447.0	572.7	486.2
	Non-metro	430.0	671.5	659.2	415.3	375.8	381.4	439.0
Medicare (not shown)	Total	2181.0	2341.5	2470.9	2124.2	2290.3	2323.6	2594.1
	Large metro	2203.9	2234.0	2446.0	2236.4	2199.0	2273.2	2327.9
	Medium/small metro	2429.4	2575.8	2732.5	2153.8	2431.3	2406.1	2963.4
	Non-metro	1765.8	2213.5	2054.2	1780.4	2280.1	2251.4	2591.6
Other (not shown)	Total	543.3	542.2	583.3	593.0	727.3	851.0	977.6
	Large metro	504.0	500.2	557.0	623.1	748.4	820.0	1027.2
	Medium/small metro	548.1	576.2	614.8	586.1	754.7	880.1	964.8
	Non-metro	627.4	587.3	598.4	526.5	595.0	884.4	841.3

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Exhibit 3.5

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 3.5

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National

Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	479.7	481.7	506.2	556.1	620.6	674.8	601.7	689.9	794.6	909.5
	Northeast	599.9	541.7	590.7	641.8	696.2	784.7	718.3	813.6	921.3	1032.6
	Midwest	532.3	663.0	610.1	676.5	741.2	798.8	731.0	839.9	971.3	1142.4
	South	445.1	402.8	434.0	473.4	547.3	577.7	501.2	580.0	673.2	775.7
	West	411.7	414.6	471.8	524.3	581.1	648.7	573.7	652.8	754.4	841.5
Medicaid	Total	573.5	577.9	615.1	680.5	772.0	829.8	658.6	729.2	835.4	947.1
	Northeast	822.3	715.2	764.4	823.3	893.9	991.5	832.0	911.7	1022.9	1137.7
	Midwest	670.2	885.8	825.6	925.8	1011.7	1096.2	907.3	986.8	1122.4	1312.8
	South	522.6	471.3	524.5	579.1	679.3	702.3	545.9	615.2	714.8	812.3
	West	436.6	454.3	520.0	585.8	673.3	746.9	562.4	615.8	711.9	788.9

Data for Exhibit 3.5

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National

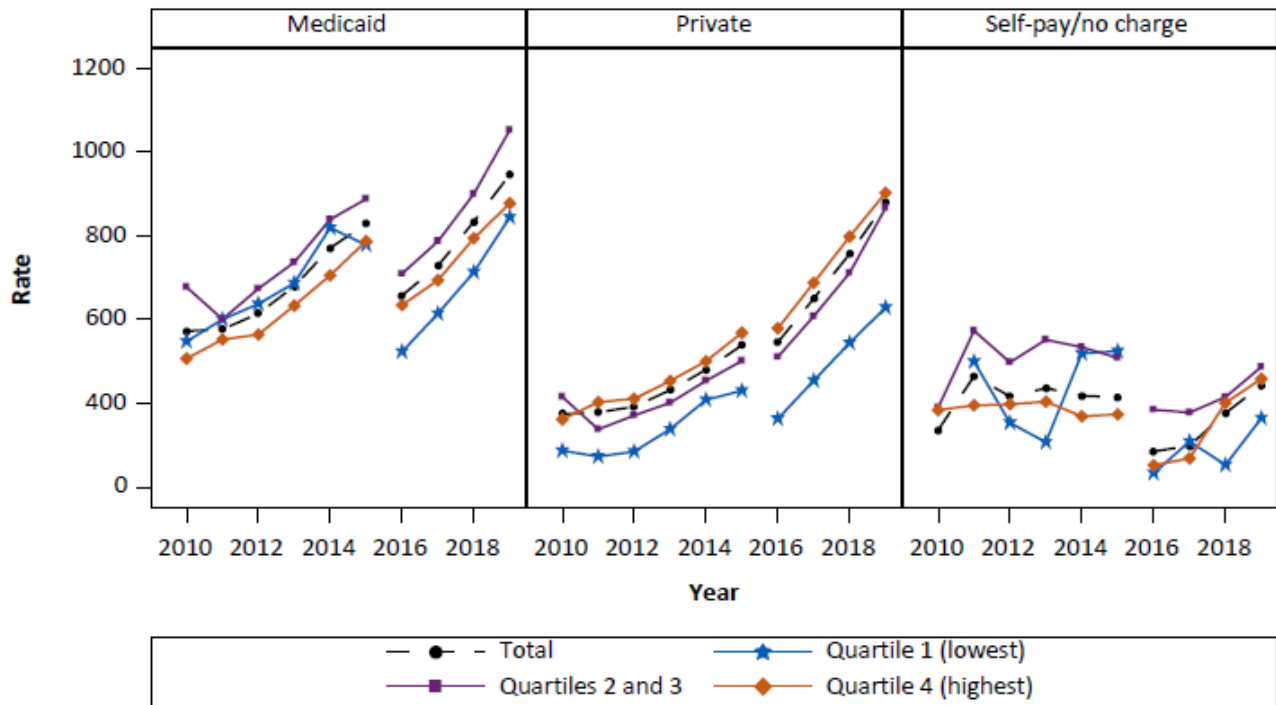
Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	375.2	379.4	392.9	432.4	481.3	539.7	546.7	651.4	757.9	880.1
	Northeast	414.1	409.3	434.1	482.9	511.7	601.5	610.5	717.3	827.2	942.0
	Midwest	401.8	471.9	443.4	495.2	545.9	600.5	603.5	733.3	861.2	1025.3
	South	338.5	316.5	320.7	348.5	408.1	452.8	451.2	539.0	629.5	744.1
	West	371.6	358.8	412.3	450.7	501.0	563.8	586.6	689.3	799.7	897.0
Self-pay/no charge	Total	336.6	466.0	417.2	436.9	419.1	414.9	285.9	299.3	377.5	443.8
	Northeast	341.1	482.5	513.5	516.1	675.8	369.9	405.1	524.6	698.9	962.8
	Midwest	444.9	651.3	552.7	553.4	675.4	675.8	469.3	442.9	531.1	539.2
	South	267.7	338.8	315.0	338.3	330.0	373.7	221.2	248.2	287.6	341.7
	West	413.3	640.5	469.4	495.1	317.7	379.3	254.2	228.7	316.7	304.7
Medicare (not shown)	Total	2327.2	2086.2	1989.3	2181.0	2341.5	2470.9	2124.2	2290.3	2323.6	2594.1
	Northeast	2742.8	2958.3	2704.8	3046.7	3090.2	3333.3	2936.3	2674.1	2767.5	3455.5
	Midwest	1737.8	1923.6	1838.1	2000.0	2290.6	2264.0	2126.3	2847.3	3049.3	3463.1
	South	2630.9	1706.0	1534.7	1846.2	1941.1	1948.7	1734.2	1681.8	1727.6	1908.2
	West	3061.5	2616.7	2808.5	2290.9	2464.1	3139.5	2458.3	3291.8	2972.0	2944.4
Other (not shown)	Total	533.8	465.1	465.5	543.3	542.2	583.3	593.0	727.3	851.0	977.6
	Northeast	523.2	496.7	544.9	660.3	651.5	774.6	679.0	758.0	748.3	862.1
	Midwest	659.1	703.9	527.3	566.7	537.5	662.9	727.4	845.5	1100.5	1285.9
	South	485.1	375.1	415.0	458.8	479.0	505.1	496.9	664.8	805.0	871.8
	West	506.1	414.3	464.5	625.3	608.2	584.6	613.0	712.7	780.9	963.0

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Exhibit 3.6

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 3.6

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National

Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	479.7	481.7	506.2	556.1	620.6	674.8	601.7	689.9	794.6	909.5
	Quartile 1 (lowest)	465.3	515.4	508.2	562.2	668.4	653.4	469.7	561.7	655.2	758.6
	Quartiles 2 and 3	565.2	494.4	543.6	593.3	667.5	707.1	622.4	709.8	816.0	965.0
	Quartile 4 (highest)	437.1	470.3	483.8	532.7	585.5	657.1	604.2	691.9	797.6	894.1
Medicaid	Total	573.5	577.9	615.1	680.5	772.0	829.8	658.6	729.2	835.4	947.1
	Quartile 1 (lowest)	548.5	601.5	638.3	688.1	820.3	779.1	524.0	615.3	714.3	845.4
	Quartiles 2 and 3	678.6	601.7	674.8	737.8	840.3	889.1	710.5	788.0	901.3	1054.0
	Quartile 4 (highest)	507.6	553.3	565.1	634.3	706.8	788.4	635.6	694.9	795.2	878.8

Data for Exhibit 3.6

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National

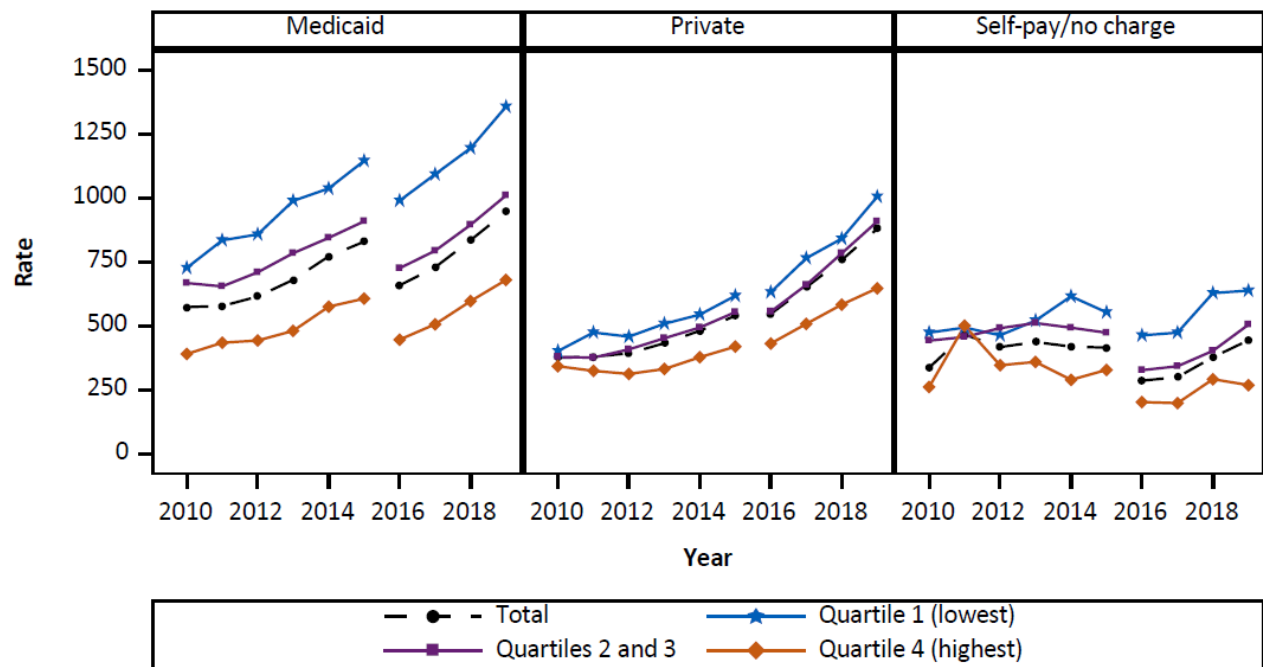
Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	375.2	379.4	392.9	432.4	481.3	539.7	546.7	651.4	757.9	880.1
	Quartile 1 (lowest)	287.6	273.7	285.4	338.9	409.0	431.0	363.8	455.3	545.2	629.7
	Quartiles 2 and 3	416.3	338.6	371.9	402.0	454.7	502.2	511.5	609.0	712.5	867.7
	Quartile 4 (highest)	362.5	403.7	411.6	454.4	501.4	569.4	579.9	688.9	799.3	904.0
Self-pay/no charge	Total	336.6	466.0	417.2	436.9	419.1	414.9	285.9	299.3	377.5	443.8
	Quartile 1 (lowest)	.	500.5	354.2	307.8	519.7	525.7	233.8	309.9	253.5	365.5
	Quartiles 2 and 3	390.7	574.2	498.8	552.7	535.1	509.3	385.7	378.6	415.8	488.0
	Quartile 4 (highest)	384.9	396.0	398.5	404.9	369.7	374.6	252.9	269.2	402.0	459.5
Medicare (not shown)	Total	2327.2	2086.2	1989.3	2181.0	2341.5	2470.9	2124.2	2290.3	2323.6	2594.1
	Quartile 1 (lowest)	1748.1	2345.8	1041.7	1369.5	1705.3	1683.9	1405.3	1530.4	1516.5	2131.5
	Quartiles 2 and 3	2068.8	1974.2	2133.8	2406.6	2556.2	2470.9	2088.1	2339.0	2480.6	2673.9
	Quartile 4 (highest)	2776.4	2114.3	2099.2	2206.8	2293.9	2637.3	2372.2	2415.2	2371.9	2590.8
Other (not shown)	Total	533.8	465.1	465.5	543.3	542.2	583.3	593.0	727.3	851.0	977.6
	Quartile 1 (lowest)	296.8	295.6	389.2	498.7	500.4	666.0	397.0	485.0	758.7	537.2
	Quartiles 2 and 3	507.0	437.8	447.2	553.4	559.8	579.7	595.2	725.9	886.6	960.5
	Quartile 4 (highest)	578.1	503.5	494.3	544.1	535.4	583.3	622.8	756.8	838.2	1033.8

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends. Suppressed rates are indicated with a dash (-) in applicable table cells.

Exhibit 3.7

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National



Key: SVI=Social Vulnerability Index

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 3.7

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National

Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	479.7	481.7	506.2	556.1	620.6	674.8	601.7	689.9	794.6	909.5
	Quartile 1 (lowest)	512.7	591.0	586.7	651.6	690.6	771.2	739.8	863.5	945.5	1112.5
	Quartiles 2 and 3	523.3	504.5	551.3	607.1	657.9	715.1	636.4	724.7	835.9	951.8
	Quartile 4 (highest)	379.3	402.0	396.6	427.3	499.3	532.9	444.8	509.6	597.3	668.8
Medicaid	Total	573.5	577.9	615.1	680.5	772.0	829.8	658.6	729.2	835.4	947.1
	Quartile 1 (lowest)	727.1	835.1	858.1	989.5	1037.9	1146.1	990.2	1093.5	1195.7	1358.3
	Quartiles 2 and 3	667.8	654.7	709.9	784.7	844.6	909.4	725.8	794.2	895.6	1010.7
	Quartile 4 (highest)	390.1	434.3	442.8	480.7	575.4	607.0	446.3	506.4	597.0	680.1

Data for Exhibit 3.7

Rates of mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National

Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	375.2	379.4	392.9	432.4	481.3	539.7	546.7	651.4	757.9	880.1
	Quartile 1 (lowest)	401.4	474.4	458.0	508.4	544.2	617.8	632.0	765.1	841.6	1005.8
	Quartiles 2 and 3	378.5	376.0	408.1	451.7	493.9	553.8	555.9	660.5	784.2	909.0
	Quartile 4 (highest)	342.1	324.1	312.1	331.3	377.6	418.8	431.2	508.0	583.6	647.5
Self-pay/no charge	Total	336.6	466.0	417.2	436.9	419.1	414.9	285.9	299.3	377.5	443.8
	Quartile 1 (lowest)	473.8	493.5	463.4	521.0	615.9	553.1	463.0	473.7	628.6	638.2
	Quartiles 2 and 3	442.3	456.7	491.5	511.2	493.0	473.4	326.8	342.0	402.5	504.8
	Quartile 4 (highest)	260.9	500.9	346.2	359.0	289.0	327.9	201.9	197.7	291.4	268.5
Medicare (not shown)	Total	2327.2	2086.2	1989.3	2181.0	2341.5	2470.9	2124.2	2290.3	2323.6	2594.1
	Quartile 1 (lowest)	2390.3	2325.9	2402.1	1832.8	2206.7	2374.3	2392.9	2212.3	2269.1	3000.0
	Quartiles 2 and 3	2680.6	2051.8	2134.9	2440.6	2421.8	2598.7	2203.4	2638.8	2606.8	2711.3
	Quartile 4 (highest)	1742.1	2013.3	1545.0	1839.7	2220.6	2221.1	1800.3	1704.8	1846.5	2083.3
Other (not shown)	Total	533.8	465.1	465.5	543.3	542.2	583.3	593.0	727.3	851.0	977.6
	Quartile 1 (lowest)	686.0	575.8	570.2	600.1	558.1	625.6	673.2	800.5	863.4	1233.9
	Quartiles 2 and 3	526.6	457.4	473.5	569.0	551.5	619.6	614.9	768.2	908.3	970.6
	Quartile 4 (highest)	460.6	398.1	389.8	462.5	513.5	477.8	488.3	565.5	695.1	778.9

Key: SVI=Social Vulnerability Index

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Section 4: Coexisting Condition—Substance Use Disorders

Background

A substance use disorder (SUD)^c is a mental disorder that affects an individual's ability to control their use of legal and illegal substances (e.g., drugs, alcohol, and medications). SUDs are associated with increased odds of impairment, disability, health problems, and a reduced ability to satisfy daily responsibilities. Approximately 1 in 12 adults in the United States has an SUD, and the prevalence of maternal hospital stays due to substance use has increased over time.^{20,21} Substance use during pregnancy is associated with an increased risk of preterm delivery, eclampsia, obstetric hemorrhage, placental abruption, venous thromboembolism, sepsis, and maternal death.^{21,22} In addition to the direct effects of substance use on maternal and neonatal health, substance use is associated with an increased likelihood of not receiving adequate prenatal and postpartum care.²³

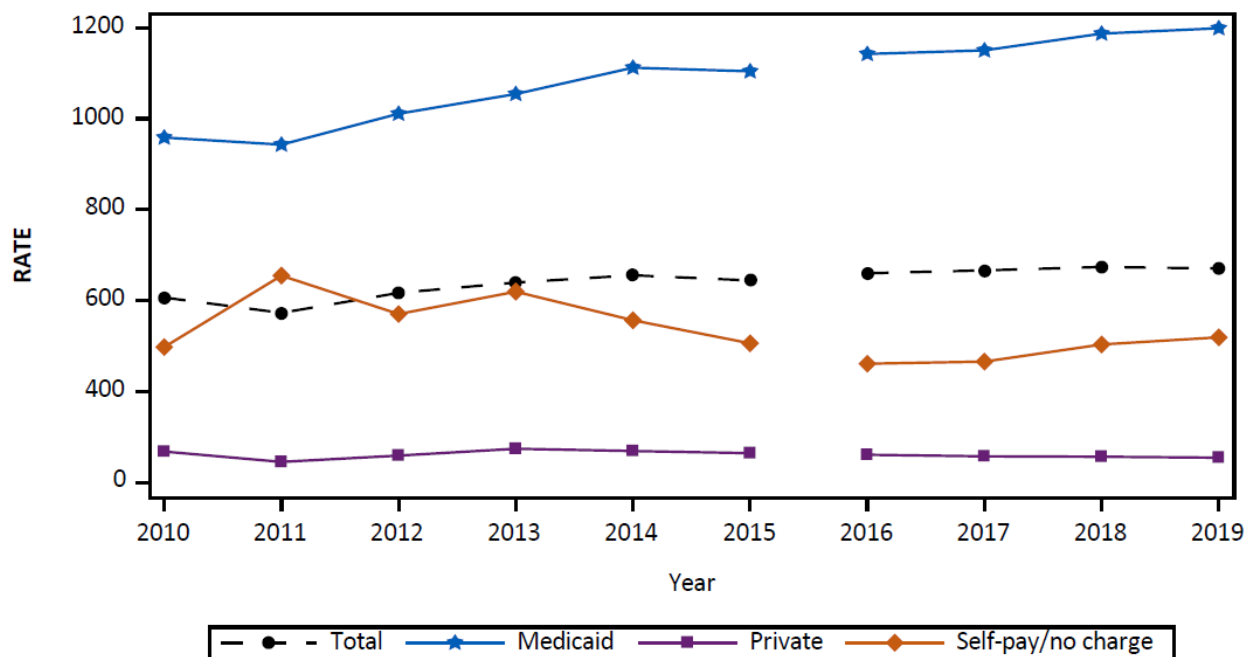
Highlights Among Substance Use Disorder-Related Delivery Stays

- Overall, the rate delivery stays involving SUD during 2010–2019 was unchanged at about 670.5 per 10,000 delivery stays or about 240,000 delivery stays annually (exhibit 4.1).
- Across expected payer types, since 2016, the rate of delivery stays involving SUDs was highest among stays billed to Medicaid, but stays billed as self-pay/no charge experienced the largest rate increase (a 13 percent increase) (exhibit 4.1).
- From 2016 to 2019, SUD rates were highest among delivery stays for women with the following characteristics: White non-Hispanic race and ethnicity and residence location in non-metro Midwest, or lowest community-level income quartile areas (exhibits 4.3, 4.5, and 4.6).
- Among delivery stays billed to Medicaid, approximately 1 in 10 women were diagnosed with an SUD (1,199.0 per 10,000 delivery stays in 2019), which was more than four times and double the rate among delivery stays billed to private insurance (254.4 per 10,000 in 2019) or self-pay/no charge (519.1 per 10,000 in 2019), respectively (exhibit 4.1).

^c Data note: The definition of SUD used in this chartbook includes all substance use disorders that were diagnosed during the delivery stay including alcohol, tobacco use, cannabis, opioids, cocaine, and other substances. This definition differs from the one used in [HCUP Statistical Brief #254](#), which included only opioids, cocaine, and other stimulants.

Exhibit 4.1

Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer, 2010-2019, National



Key: SUD=Substance Use Disorder

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 4.1

Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer, 2010-2019, National

Expected payer	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	606.5	572.9	616.8	639.6	655.6	644.1	660.0	666.3	673.8	670.5
Medicaid	958.5	942.9	1011.0	1054.3	1112.2	1104.2	1142.4	1150.3	1187.2	1199.0
Private	267.8	245.0	258.9	274.0	269.0	264.2	260.7	257.3	256.4	254.4
Self-pay/no charge	497.7	654.7	570.3	619.4	556.5	505.9	461.0	465.7	503.3	519.1

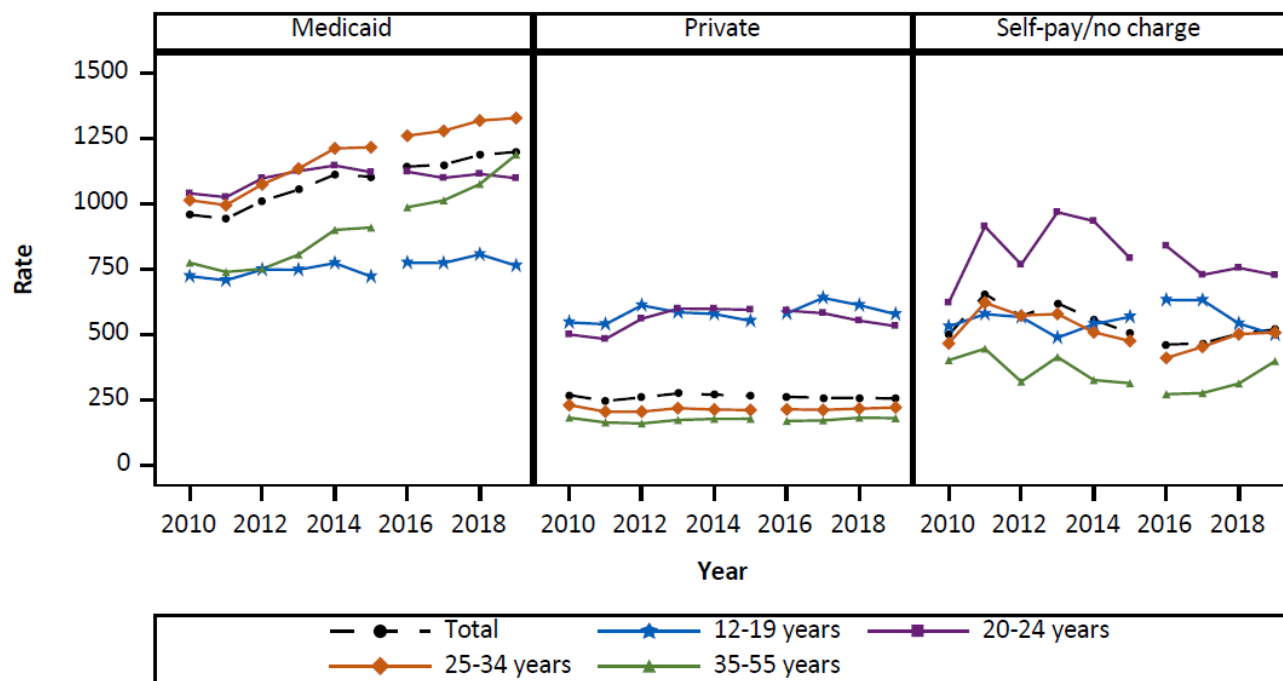
Key: SUD=Substance Use Disorder

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Exhibit 4.2

Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National



Key: SUD=Substance Use Disorder

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 4.2

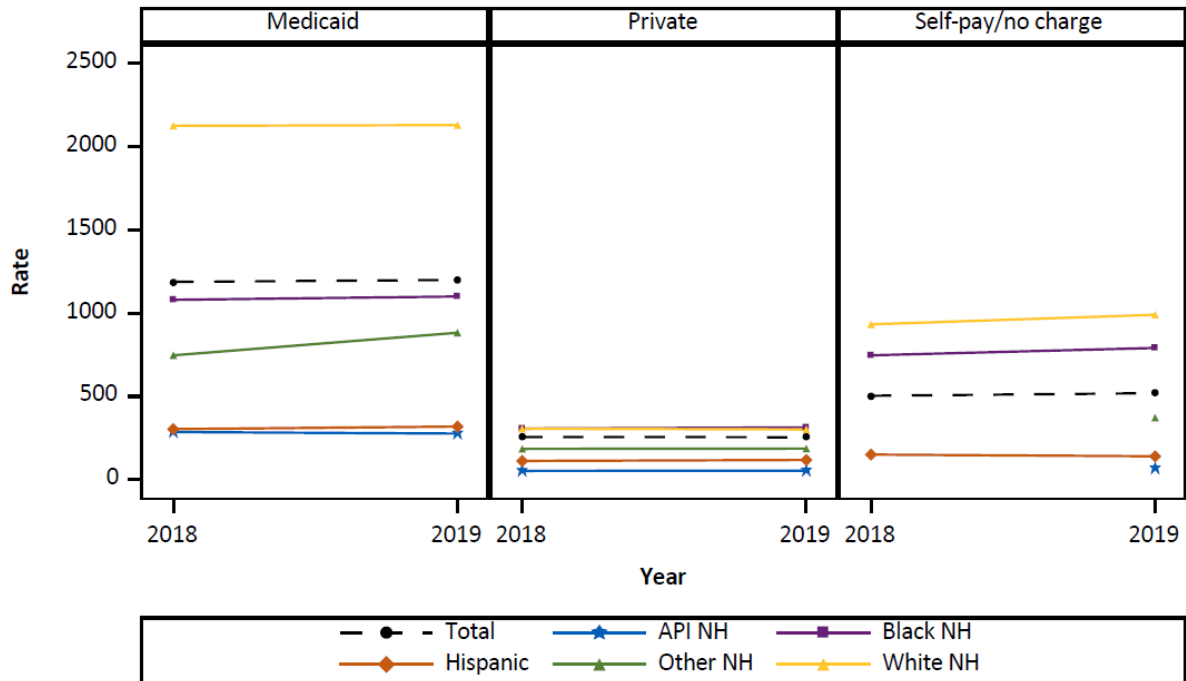
Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National

Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	606.5	572.9	616.8	639.6	655.6	644.1	660.0	666.3	673.8	670.5
	12-19	681.5	664.9	712.1	703.8	719.0	680.8	721.4	744.1	758.6	717.4
	20-24	877.2	855.0	920.5	947.8	953.5	929.8	930.1	913.5	907.9	886.1
	25-34	535.8	502.8	546.7	578.0	601.3	600.2	626.7	641.8	655.7	653.9
	35-55	360.8	330.5	343.3	369.0	401.4	402.7	426.5	445.2	461.8	492.3
Medicaid	Total	958.5	942.9	1011.0	1054.3	1112.2	1104.2	1142.4	1150.3	1187.2	1199.0
	12-19	722.8	707.1	748.2	747.9	773.2	721.7	774.5	773.2	806.6	763.2
	20-24	1040.2	1025.5	1097.8	1125.4	1146.8	1121.4	1123.1	1099.4	1114.6	1098.3
	25-34	1014.1	995.1	1074.8	1135.2	1212.3	1216.7	1260.9	1279.6	1318.8	1328.7
	35-55	774.6	739.2	751.0	805.5	900.3	909.4	987.1	1013.0	1075.6	1188.4

Data for Exhibit 4.2 Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National											
Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	267.8	245.0	258.9	274.0	269.0	264.2	260.7	257.3	256.4	254.4
	12-19	546.0	538.8	611.3	584.5	578.2	551.8	580.5	640.0	612.1	577.4
	20-24	499.7	482.2	560.0	598.5	597.6	594.3	591.2	581.3	552.6	531.6
	25-34	229.5	204.1	204.0	217.5	212.0	210.4	213.2	210.9	215.8	219.9
	35-55	180.8	162.7	158.9	172.3	176.3	176.6	168.5	170.3	180.9	179.4
Self-pay/no charge	Total	497.7	654.7	570.3	619.4	556.5	505.9	461.0	465.7	503.3	519.1
	12-19	530.1	577.7	566.5	487.3	538.8	567.4	632.0	631.3	541.5	498.8
	20-24	620.8	913.4	767.7	968.0	934.1	792.2	839.0	728.1	754.9	727.3
	25-34	465.8	621.4	572.1	578.5	508.2	474.8	409.9	452.4	501.4	507.2
	35-55	401.1	445.2	319.1	413.5	325.1	313.0	271.0	275.3	311.7	397.6
Medicare (not shown)	Total	2035.0	1771.2	1750.1	1774.6	1938.4	1898.8	1782.4	1819.9	1781.2	1787.6
	12-19	1343.5	1355.5	748.9	.	.	.	.	.	.	.
	20-24	2004.6	1840.0	1717.1	1714.6	1751.2	1901.0	1562.8	1422.9	1571.8	1574.3
	25-34	2105.8	1791.0	1774.1	1827.3	2047.7	1947.8	1855.5	1829.1	1797.5	1753.9
	35-55	1964.3	1718.2	1947.0	1778.9	1909.7	1840.8	1912.8	2106.9	1998.4	2112.8
Other (not shown)	Total	557.5	422.5	454.9	460.8	377.6	396.6	406.3	469.7	410.6	444.6
	12-19	671.1	549.6	659.9	660.2	526.8	611.4	387.8	735.1	669.0	679.5
	20-24	676.3	542.3	603.8	630.4	526.6	494.4	510.6	615.5	476.3	512.9
	25-34	506.5	369.2	395.0	397.3	319.4	349.2	385.0	424.0	397.5	422.8
	35-55	355.1	298.6	295.0	307.9	323.2	371.9	351.4	397.9	328.4	395.7
Key: SUD=Substance Use Disorder Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends. Suppressed rates are indicated with a dash (-) in applicable table cells.											

Exhibit 4.3

Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National



Key: SUD=Substance Use Disorder, API=Asian/Pacific Islander, NH=Non-Hispanic

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2018-2019

Data for Exhibit 4.3

Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National

Expected payer	Race/Ethnicity	2018	2019
Total	Total	673.8	670.5
	API NH	116.7	112.0
	Black NH	827.2	835.6
	Hispanic	235.8	247.4
	White NH	890.1	871.4
	Other NH	483.0	544.1
Medicaid	Total	1187.2	1199.0
	API NH	285.7	276.4
	Black NH	1079.7	1099.6
	Hispanic	303.2	318.8
	White NH	2124.5	2128.9
	Other NH	746.4	881.9

Data for Exhibit 4.3

Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National

Expected payer	Race/Ethnicity	2018	2019
Private	Total	256.4	254.4
	API NH	52.6	54.0
	Black NH	306.3	313.4
	Hispanic	112.3	118.0
	White NH	305.9	301.2
	Other NH	184.5	186.3
Self-pay/no charge	Total	503.3	519.1
	API NH	.	67.1
	Black NH	746.3	790.6
	Hispanic	150.3	140.2
	White NH	932.3	989.7
	Other NH	.	371.6
Medicare (not shown)	Total	1781.2	1787.6
	API NH	.	.
	Black NH	1642.3	1732.2
	Hispanic	784.0	842.8
	White NH	2293.8	2215.0
	Other NH	848.0	1079.8
Other (not shown)	Total	410.6	444.6
	API NH	.	.
	Black NH	470.7	525.7
	Hispanic	183.9	220.0
	White NH	477.6	518.9
	Other NH	225.2	396.9

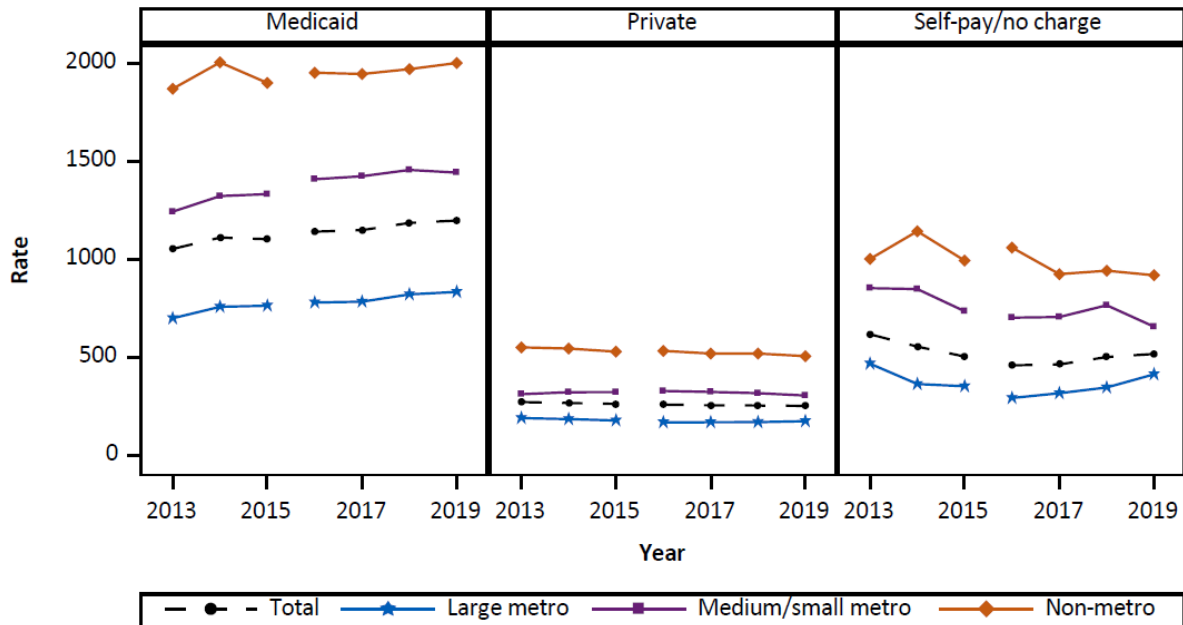
Key: SUD=Substance Use Disorder, API=Asian/Pacific Islander, NH=Non-Hispanic

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2018-2019.

Note: Suppressed rates are indicated with a dash (-) in applicable table cells.

Exhibit 4.4

Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National



Key: SUD=Substance Use Disorder

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 4.4

Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National

Expected payer	Patient Location	2013	2014	2015	2016	2017	2018	2019
Total	Total	639.6	655.6	644.1	660.0	666.3	673.8	670.5
	Large metro	425.4	441.3	435.8	439.0	443.1	453.3	456.7
	Medium/small metro	761.7	798.5	794.2	832.7	847.5	847.7	830.6
	Non-metro	1213.2	1270.1	1201.4	1226.8	1226.5	1228.1	1220.6
Medicaid	Total	1054.3	1112.2	1104.2	1142.4	1150.3	1187.2	1199.0
	Large metro	700.9	759.5	764.9	781.5	785.4	822.7	835.4
	Medium/small metro	1244.5	1323.9	1334.0	1409.7	1425.1	1457.1	1443.5
	Non-metro	1870.8	2005.4	1900.6	1952.6	1946.3	1971.2	2002.3
Private	Total	274.0	269.0	264.2	260.7	257.3	256.4	254.4
	Large metro	192.1	187.0	179.9	170.4	171.1	171.5	176.5
	Medium/small metro	313.8	324.1	324.7	330.5	325.4	319.2	307.2
	Non-metro	552.7	546.6	530.9	534.9	521.1	521.2	508.0

Data for Exhibit 4.4

Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National

Expected payer	Patient Location	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	619.4	556.5	505.9	461.0	465.7	503.3	519.1
	Large metro	469.6	365.9	354.4	294.6	319.0	348.1	415.3
	Medium/small metro	854.4	849.9	736.7	704.2	707.3	767.4	658.2
	Non-metro	1003.2	1144.6	995.0	1061.4	926.2	943.4	920.3
Medicare (not shown)	Total	1774.6	1938.4	1898.8	1782.4	1819.9	1781.2	1787.6
	Large metro	1434.3	1659.6	1430.9	1569.5	1377.1	1309.7	1347.5
	Medium/small metro	2127.4	2016.3	2205.8	1773.8	2256.3	2075.2	2207.1
	Non-metro	2063.2	2674.2	2582.0	2334.3	2465.9	2525.7	2237.7
Other (not shown)	Total	460.8	377.6	396.6	406.3	469.7	410.6	444.6
	Large metro	360.6	269.3	282.0	329.5	405.5	350.8	393.2
	Medium/small metro	449.6	405.1	425.8	383.4	441.1	374.8	421.4
	Non-metro	693.9	634.7	640.6	707.0	762.4	704.4	703.6

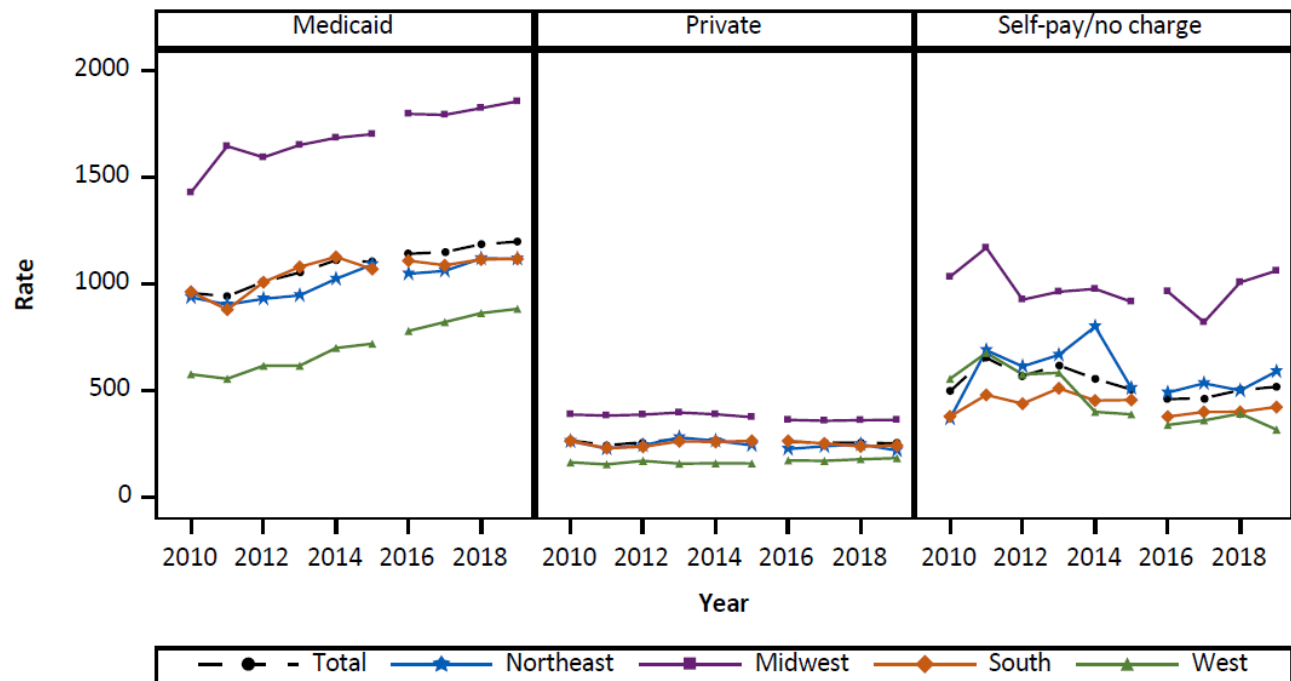
Key: SUD=Substance Use Disorder

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Exhibit 4.5

Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National



Key: SUD=Substance Use Disorder

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 4.5

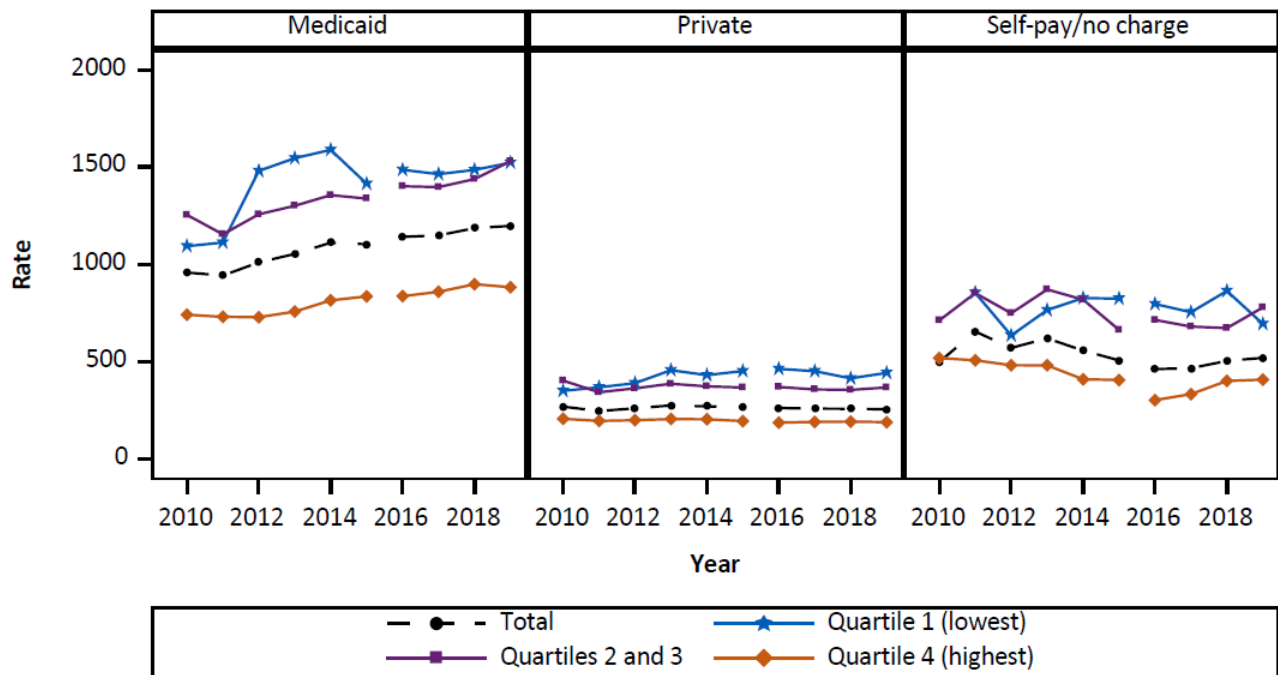
Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National

Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	606.5	572.9	616.8	639.6	655.6	644.1	660.0	666.3	673.8	670.5
	Northeast	567.1	504.1	548.9	574.4	604.6	619.1	590.1	603.5	621.1	589.6
	Midwest	854.5	925.7	889.1	907.0	910.0	891.9	927.5	933.9	938.8	950.5
	South	644.5	562.2	638.4	677.6	687.8	655.4	671.2	664.9	665.7	661.5
	West	360.3	349.4	390.0	388.2	414.6	421.7	455.1	473.5	485.2	488.9
Medicaid	Total	958.5	942.9	1011.0	1054.3	1112.2	1104.2	1142.4	1150.3	1187.2	1199.0
	Northeast	938.5	903.9	931.3	947.4	1024.9	1091.9	1048.7	1062.1	1120.2	1119.6
	Midwest	1429.6	1646.5	1594.5	1652.1	1685.7	1702.9	1797.8	1793.5	1824.9	1856.8
	South	964.5	880.6	1009.6	1080.8	1127.6	1070.4	1109.8	1088.7	1116.0	1117.9
	West	577.6	556.5	617.5	617.9	700.8	720.9	780.8	822.2	864.2	884.0

Data for Exhibit 4.5 Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National											
Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	267.8	245.0	258.9	274.0	269.0	264.2	260.7	257.3	256.4	254.4
	Northeast	263.8	229.6	244.7	281.5	266.0	244.9	227.4	240.4	249.2	220.6
	Midwest	388.9	384.0	388.6	398.3	390.3	376.7	364.1	359.5	362.5	364.3
	South	265.2	231.4	237.9	263.5	261.0	265.8	265.1	253.5	239.7	243.6
	West	164.9	155.4	171.9	159.1	160.7	159.8	173.9	172.0	179.3	184.9
Self-pay/no charge	Total	497.7	654.7	570.3	619.4	556.5	505.9	461.0	465.7	503.3	519.1
	Northeast	370.4	690.3	614.5	668.4	801.1	512.7	491.6	535.2	501.9	591.1
	Midwest	1034.9	1170.5	927.3	964.4	977.8	917.6	966.0	821.4	1008.7	1062.9
	South	379.9	481.0	440.1	511.8	454.8	457.3	379.0	401.1	401.6	424.5
	West	556.4	678.1	577.1	584.4	401.4	389.9	340.2	361.5	393.5	318.3
Medicare (not shown)	Total	2035.0	1771.2	1750.1	1774.6	1938.4	1898.8	1782.4	1819.9	1781.2	1787.6
	Northeast	1810.4	2195.7	2053.3	2388.5	2034.5	2235.5	2309.3	1922.0	1856.8	1950.3
	Midwest	2201.4	1973.8	1944.9	1852.4	2220.8	2091.4	2165.0	2482.8	2423.0	2564.9
	South	2027.5	1465.4	1460.0	1527.9	1786.4	1639.2	1371.8	1413.3	1508.9	1413.2
	West	1858.5	1556.4	1758.9	1480.0	1650.7	1802.3	1714.7	2259.8	1800.7	1851.9
Other (not shown)	Total	557.5	422.5	454.9	460.8	377.6	396.6	406.3	469.7	410.6	444.6
	Northeast	566.7	536.8	458.8	548.2	468.2	390.2	383.8	381.2	219.6	281.1
	Midwest	997.4	738.7	715.9	628.9	494.0	569.6	735.6	843.1	805.4	904.4
	South	441.1	305.4	378.4	364.3	329.8	365.9	301.5	398.6	385.5	374.8
	West	378.5	328.7	334.7	464.5	341.4	315.6	300.3	297.3	231.0	268.3
Key: SUD=Substance Use Disorder Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.											

Exhibit 4.6

Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National



Key: SUD=Substance Use Disorder

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 4.6

Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National

Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	606.5	572.9	616.8	639.6	655.6	644.1	660.0	666.3	673.8	670.5
	Quartile 1 (lowest)	848.4	888.5	1063.8	1128.0	1128.7	1033.0	1083.3	1088.0	1069.1	1091.3
	Quartiles 2 and 3	865.2	783.6	839.4	871.4	885.0	861.7	897.7	896.8	903.9	950.1
	Quartile 4 (highest)	444.3	407.1	421.8	430.0	445.6	445.4	442.0	455.3	467.4	459.4
Medicaid	Total	958.5	942.9	1011.0	1054.3	1112.2	1104.2	1142.4	1150.3	1187.2	1199.0
	Quartile 1 (lowest)	1094.4	1113.1	1482.1	1547.7	1590.6	1415.9	1487.8	1465.4	1487.2	1524.4
	Quartiles 2 and 3	1255.6	1155.4	1258.6	1302.3	1357.3	1339.5	1403.0	1398.7	1439.8	1531.9
	Quartile 4 (highest)	741.2	730.3	728.6	757.1	815.3	835.5	836.7	859.3	898.3	883.1

Data for Exhibit 4.6
Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National

Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	267.8	245.0	258.9	274.0	269.0	264.2	260.7	257.3	256.4	254.4
	Quartile 1 (lowest)	349.0	367.2	388.7	455.3	430.2	450.9	462.2	450.3	413.6	441.4
	Quartiles 2 and 3	401.9	341.8	362.1	385.5	372.0	366.3	368.9	356.3	354.1	366.6
	Quartile 4 (highest)	205.2	194.1	197.7	203.8	202.4	193.2	185.5	189.2	190.6	187.9
Self-pay/no charge	Total	497.7	654.7	570.3	619.4	556.5	505.9	461.0	465.7	503.3	519.1
	Quartile 1 (lowest)	.	854.0	634.3	765.4	826.8	824.4	796.5	754.1	863.9	693.5
	Quartiles 2 and 3	711.9	852.6	749.0	871.2	818.9	662.7	714.3	680.0	672.4	778.8
	Quartile 4 (highest)	518.2	506.2	481.0	480.4	408.6	404.8	301.3	332.2	400.1	406.7
Medicare (not shown)	Total	2035.0	1771.2	1750.1	1774.6	1938.4	1898.8	1782.4	1819.9	1781.2	1787.6
	Quartile 1 (lowest)	1463.5	1972.2	1473.2	1554.9	1639.1	1968.9	1568.0	1582.6	1771.8	2108.8
	Quartiles 2 and 3	2303.2	1900.1	2029.1	2047.6	2265.3	2144.5	2028.9	2067.8	2062.1	2086.5
	Quartile 4 (highest)	1871.9	1634.1	1589.2	1601.0	1719.4	1629.5	1563.0	1616.1	1463.6	1429.9
Other (not shown)	Total	557.5	422.5	454.9	460.8	377.6	396.6	406.3	469.7	410.6	444.6
	Quartile 1 (lowest)	508.9	582.8	810.2	707.6	597.5	577.9	490.1	708.0	676.4	867.1
	Quartiles 2 and 3	666.0	442.4	500.0	526.9	428.4	501.4	514.4	578.2	515.7	513.9
	Quartile 4 (highest)	499.8	394.4	376.2	364.0	305.8	275.0	296.7	362.6	304.3	357.6

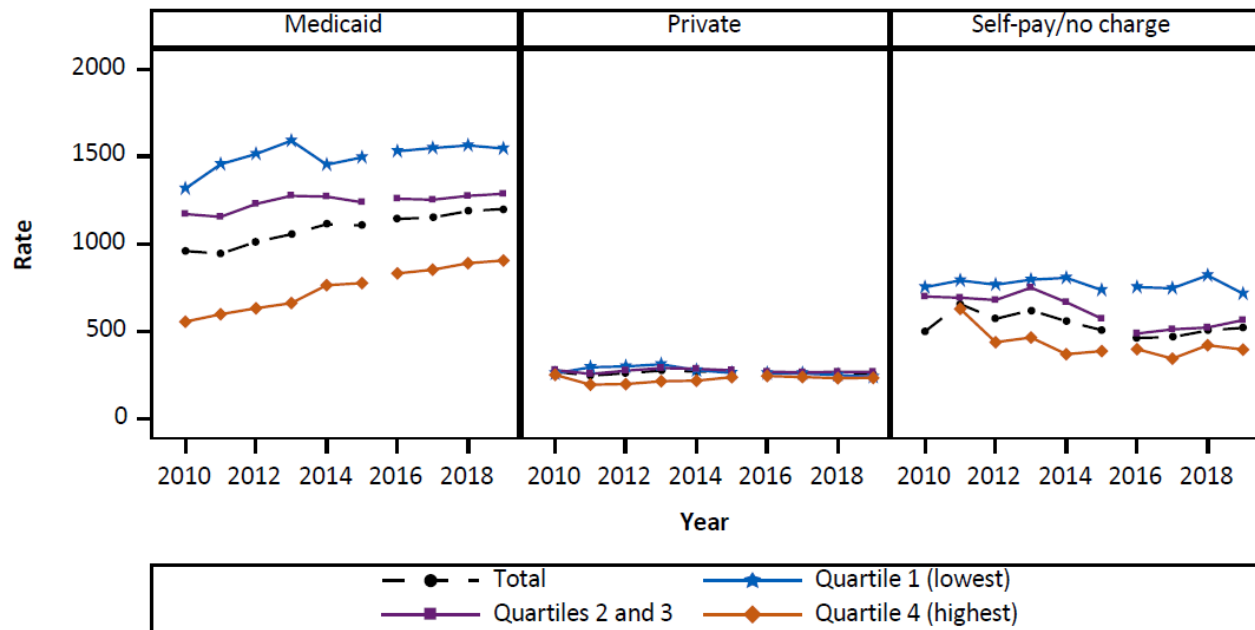
Key: SUD=Substance Use Disorder

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends. Suppressed rates are indicated with a dash (-) in applicable table cells.

Exhibit 4.7

Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National



Key: SUD=Substance Use Disorder, SVI=Social Vulnerability Index

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 4.7

Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National

Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	606.5	572.9	616.8	639.6	655.6	644.1	660.0	666.3	673.8	670.5
	Quartile 1 (lowest)	588.4	634.8	660.8	679.8	615.2	613.5	625.6	638.6	628.6	611.1
	Quartiles 2 and 3	694.0	645.4	700.3	723.4	724.3	697.1	703.0	705.2	711.8	709.7
	Quartile 4 (highest)	447.6	437.0	455.0	476.5	534.9	550.4	586.8	595.3	608.1	612.1
Medicaid	Total	958.5	942.9	1011.0	1054.3	1112.2	1104.2	1142.4	1150.3	1187.2	1199.0
	Quartile 1 (lowest)	1315.8	1455.5	1514.0	1590.0	1452.9	1494.6	1529.8	1548.0	1563.1	1545.4
	Quartiles 2 and 3	1169.9	1154.0	1228.2	1274.4	1269.8	1237.3	1257.6	1252.1	1274.1	1286.2
	Quartile 4 (highest)	553.9	596.5	630.8	660.2	762.9	774.5	830.4	851.4	888.6	904.4

Data for Exhibit 4.7

Rates of substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National

Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	267.8	245.0	258.9	274.0	269.0	264.2	260.7	257.3	256.4	254.4
	Quartile 1 (lowest)	257.7	292.9	297.8	310.0	275.9	260.4	258.6	258.4	248.6	237.5
	Quartiles 2 and 3	277.2	254.5	273.3	288.4	284.3	275.2	267.4	264.0	266.9	267.0
	Quartile 4 (highest)	249.5	193.2	197.0	212.6	216.0	236.4	242.9	236.7	230.4	232.4
Self-pay/no charge	Total	497.7	654.7	570.3	619.4	556.5	505.9	461.0	465.7	503.3	519.1
	Quartile 1 (lowest)	751.1	790.0	765.6	794.2	805.0	735.1	751.6	745.1	819.0	714.3
	Quartiles 2 and 3	697.6	691.2	677.8	748.4	665.4	571.5	485.8	509.7	520.5	562.7
	Quartile 4 (highest)	.	627.3	436.4	463.4	367.7	385.4	396.8	342.4	418.9	394.4
Medicare (not shown)	Total	2035.0	1771.2	1750.1	1774.6	1938.4	1898.8	1782.4	1819.9	1781.2	1787.6
	Quartile 1 (lowest)	2279.8	1917.7	2323.8	1627.6	1823.5	1663.8	2035.7	1700.8	1470.9	1566.3
	Quartiles 2 and 3	2095.8	1843.4	1920.4	2113.0	2074.9	2056.9	1837.7	2058.4	2045.6	1965.0
	Quartile 4 (highest)	1883.5	1618.5	1165.8	1255.4	1684.1	1693.2	1524.3	1463.9	1450.8	1562.5
Other (not shown)	Total	557.5	422.5	454.9	460.8	377.6	396.6	406.3	469.7	410.6	444.6
	Quartile 1 (lowest)	805.8	428.9	494.2	499.2	390.1	355.6	371.5	406.7	372.0	483.1
	Quartiles 2 and 3	544.3	428.1	481.9	467.7	378.6	377.1	378.4	483.6	402.3	405.0
	Quartile 4 (highest)	427.0	411.4	380.4	425.8	372.5	477.8	501.1	495.1	463.4	518.5

Key: SUD=Substance Use Disorder

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends. Suppressed rates are indicated with a dash (-) in applicable table cells.

Section 5: Coexisting Condition—Severe Maternal Morbidity

Background

Severe maternal morbidity (SMM)^d at delivery represents potentially life-threatening complications such as pulmonary embolism, sepsis, and hemorrhage. SMM occurs at a higher rate in the United States than it does in any other industrialized countries despite greater investments in and costs of healthcare in the United States. Each year, approximately 700 women die during or shortly after pregnancy, but cases of SMM occur more frequently at approximately 27,000 per year during 2010–2019.⁴ Surveillance and examination of SMM cases may provide insight into issues with healthcare access and quality that contribute to the United States' higher and racially disparate rate of maternal mortality. Factors associated with SMM include many patient-level factors like older age (35 and older), hypertension and other maternal comorbidities, and the quality of prenatal and in-hospital obstetric care.^{24, 25}

Recent studies show that SMM rates were minimally affected by the ICD transition²⁶ and that state-level SMM rates were associated with state rates of hypertension and low-risk cesarean delivery.²⁷ However, less is known about how the prevalence of some patient, hospital, and community factors among delivery stays with SMM has changed over time, particularly across different payer types. A better understanding of these trends may help hospitals to plan for patients who are more likely to be seen for SMM in the future, to minimize the occurrence of SMM, and to improve outcomes for women who experience these rare events.

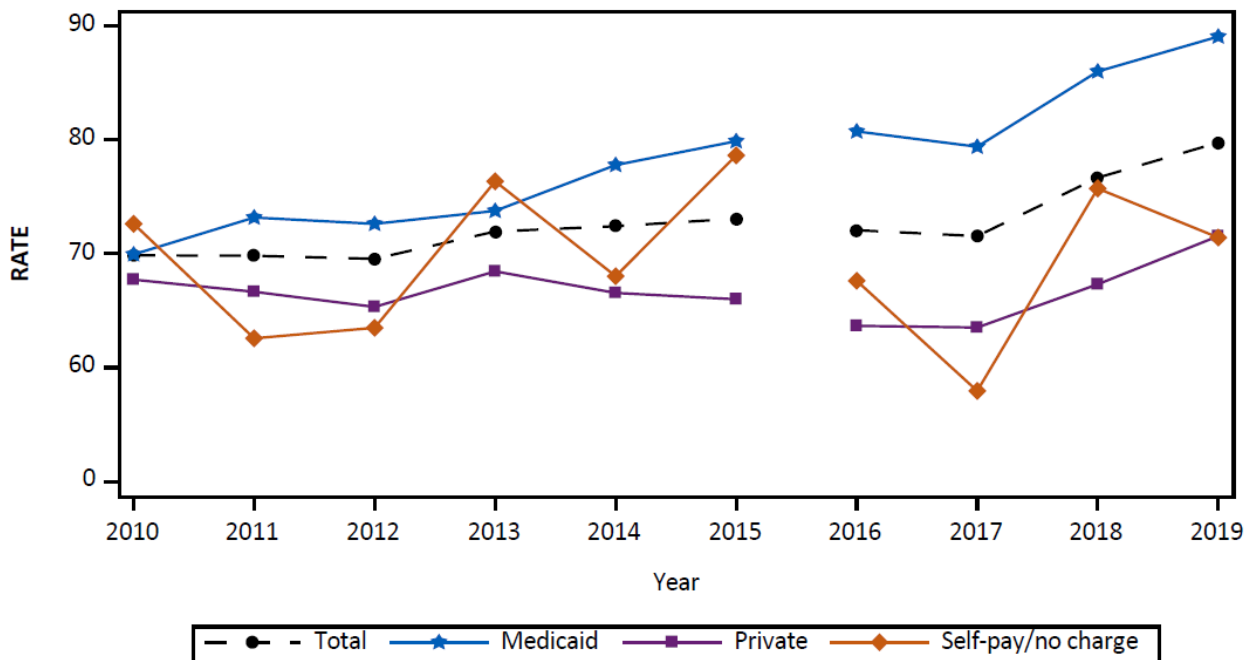
Highlights Among SMM-Related Delivery Stays

- The 2019 SMM rate (79.7 per 10,000 delivery stays) was 11 percent higher than the 2016 rate (72.0 per 10,000). On average, more than 27,000 delivery stays experienced an SMM complication each year from 2016 to 2019.
- Regardless of expected payer, SMM rates for women aged 35–55 years were nearly 50 percent higher than the rates for women of younger ages and the difference was greatest among delivery stays billed to Medicaid (exhibit 5.2). Notably, SMM rates among delivery stays billed to private insurance for women aged 12–19 years increased 68 percent from 2016 to 2019.
- The urban-rural gap in SMM rates increased 65 percent from 2016 to 2018. In 2016, the SMM rate for women who reside in large metro areas (62.9 per 10,000 delivery stays) was 13 percent higher than the rate seen among women from non-metro areas (48.1 per 10,000). By 2018, the SMM rate for delivery stays among women from large metro areas (78.6 per 10,000) was 22 percent higher than the rate for non-metro residents (45.9 per 10,000).

^d Note: the rate of SMM presented in this chartbook exclude cases where blood transfusion is the only indication of morbidity.

Exhibit 5.1

Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer, 2010-2019, National



Key: SMM=Severe Maternal Morbidity

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 5.1

Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer, 2010-2019, National

Expected payer	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	69.8	69.8	69.5	71.9	72.4	73.1	72.0	71.5	76.7	79.7
Medicaid	69.9	73.2	72.6	73.7	77.8	79.9	80.7	79.4	86.0	89.0
Private	67.7	66.6	65.3	68.4	66.5	66.0	63.7	63.5	67.3	71.5
Self-pay/no charge	72.6	62.6	63.5	76.3	68.0	78.6	67.6	57.9	75.7	71.4

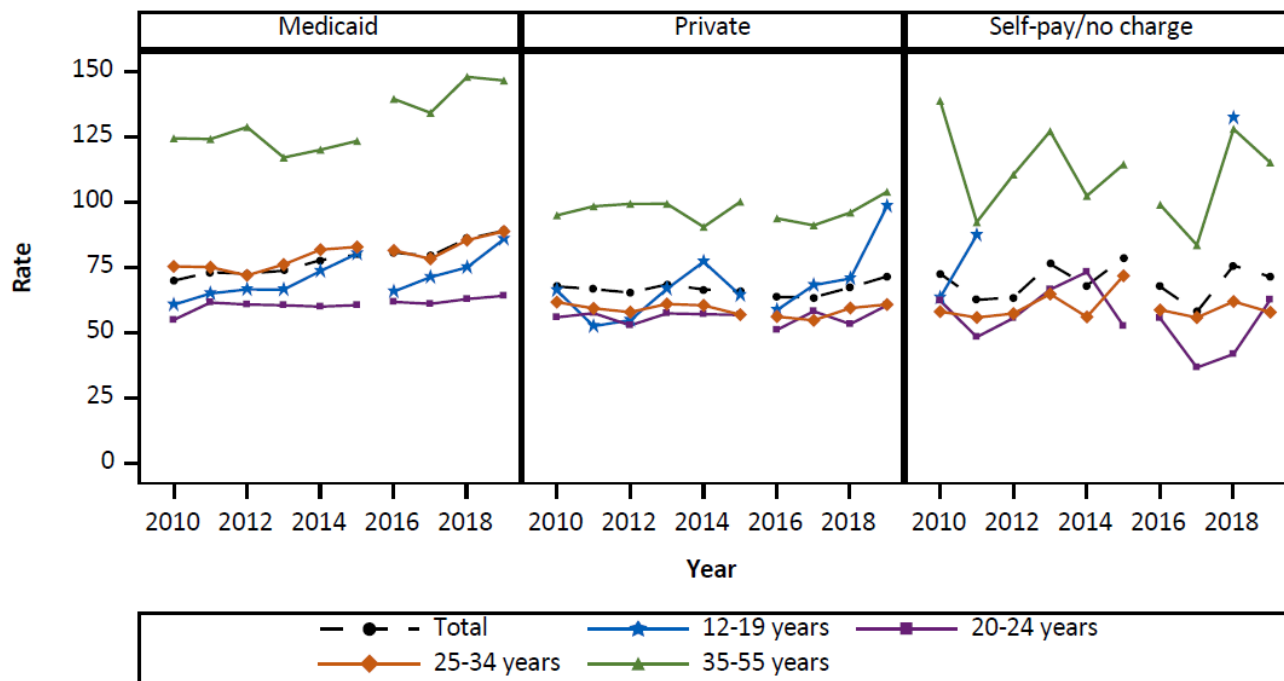
Key: SMM=Severe Maternal Morbidity

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Exhibit 5.2

Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National



Key: SMM=Severe Maternal Morbidity

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 5.2

Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National

Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	69.8	69.8	69.5	71.9	72.4	73.1	72.0	71.5	76.7	79.7
	12-19	62.3	63.0	62.1	66.4	73.5	76.0	64.5	71.0	75.0	87.1
	20-24	56.7	60.3	59.0	59.0	59.9	59.6	58.9	59.6	59.4	63.3
	25-34	67.8	65.3	64.3	68.4	69.2	67.4	66.8	65.1	70.5	72.4
	35-55	104.6	105.3	109.2	106.5	101.0	110.0	107.9	106.2	114.7	117.3
Medicaid	Total	69.9	73.2	72.6	73.7	77.8	79.9	80.7	79.4	86.0	89.0
	12-19	60.7	65.0	66.6	66.5	73.6	80.3	65.7	71.3	75.0	85.8
	20-24	54.9	61.5	60.8	60.5	60.0	60.5	61.8	61.0	62.9	64.1
	25-34	75.4	75.1	71.9	76.1	81.8	82.9	81.5	78.3	85.5	88.8
	35-55	124.5	124.2	128.8	117.1	120.1	123.5	139.6	134.3	148.1	146.7

Data for Exhibit 5.2
Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National

Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	67.7	66.6	65.3	68.4	66.5	66.0	63.7	63.5	67.3	71.5
	12-19	66.2	52.5	54.8	66.8	77.2	64.3	58.6	68.2	70.7	98.5
	20-24	55.9	57.4	52.8	57.3	57.1	56.7	51.0	58.2	53.3	60.5
	25-34	61.6	59.3	57.8	61.0	60.4	56.9	56.1	54.7	59.4	60.8
	35-55	95.0	98.4	99.4	99.4	90.5	100.2	93.8	91.1	96.0	104.0
Self-pay/no charge	Total	72.6	62.6	63.5	76.3	68.0	78.6	67.6	57.9	75.7	71.4
	12-19	63.4	87.4	.	.	.	.	.	.	132.4	.
	20-24	62.3	48.3	55.6	66.5	73.2	52.5	55.5	36.6	41.8	62.6
	25-34	58.1	55.8	57.3	64.8	56.0	71.8	58.7	55.7	61.9	57.8
	35-55	138.9	92.3	110.6	127.2	102.4	114.5	99.0	83.6	128.1	115.2
Medicare (not shown)	Total	204.1	135.2	175.0	190.4	236.4	190.7	205.8	229.4	210.2	203.7
	12-19	.	.	0.0	.	.	0.0	.	.	.	0.0
	20-24	215.8	.	151.3	.	159.2	.	126.7	.	.	.
	25-34	207.3	132.0	175.9	224.2	241.8	150.5	224.3	217.7	205.7	212.2
	35-55	203.6	211.8	244.6	221.1	310.4	348.3	234.9	319.2	316.8	244.1
Other (not shown)	Total	73.9	65.8	73.7	72.7	58.8	65.5	60.7	68.6	71.0	73.1
	12-19	73.3	.	.	.	.	.	.	.	.	.
	20-24	68.3	59.2	62.5	42.0	56.2	62.8	69.8	46.4	64.2	68.4
	25-34	77.8	64.4	73.2	79.5	54.0	57.4	52.5	62.3	60.6	69.8
	35-55	71.9	82.0	115.1	106.4	87.5	119.4	81.6	116.2	126.0	94.2

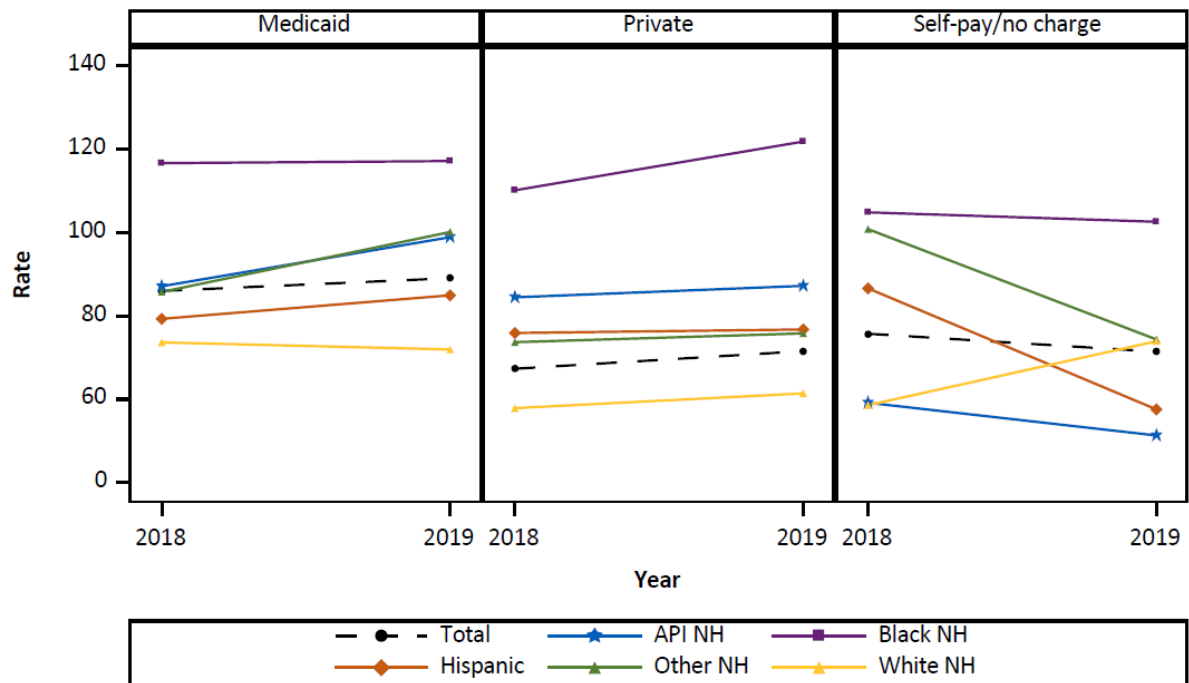
Key: SMM=Severe Maternal Morbidity

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends. Suppressed rates are indicated with a dash (-) in applicable table cells.

Exhibit 5.3

Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National



Key: SMM=Severe Maternal Morbidity, API=Asian/Pacific Islander, NH=Non-Hispanic

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2018-2019

Data for Exhibit 5.3

Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National

Expected payer	Race/Ethnicity	2018	2019
Total	Total	76.7	79.7
	API NH	85.3	88.5
	Black NH	118.8	122.3
	Hispanic	78.5	81.3
	White NH	63.2	65.0
	Other NH	81.7	88.1
Medicaid	Total	86.0	89.0
	API NH	87.1	98.9
	Black NH	116.6	117.1
	Hispanic	79.3	84.9
	White NH	73.6	71.9
	Other NH	85.7	100.1

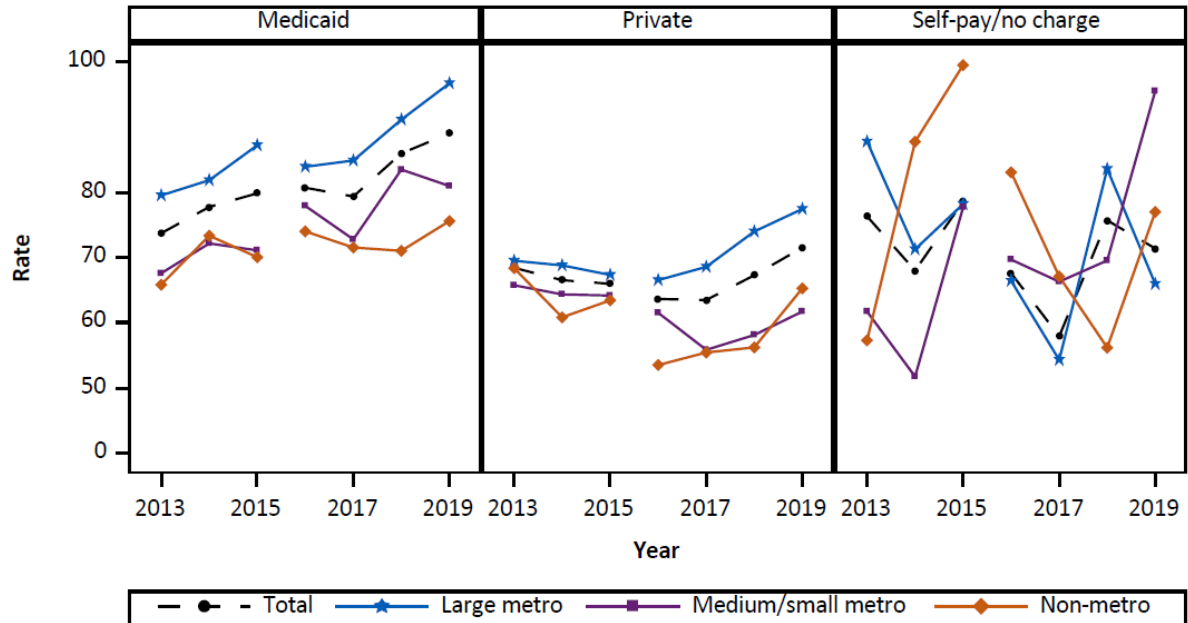
Data for Exhibit 5.3**Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National**

Expected payer	Race/Ethnicity	2018	2019
Private	Total	67.3	71.5
	API NH	84.4	87.2
	Black NH	110.1	121.8
	Hispanic	75.9	76.7
	White NH	57.9	61.4
	Other NH	73.7	75.8
Self-pay/no charge	Total	75.7	71.4
	API NH	59.1	51.3
	Black NH	104.8	102.6
	Hispanic	86.6	57.5
	White NH	58.6	73.9
	Other NH	100.8	74.3
Medicare (not shown)	Total	210.2	203.7
	API NH	.	.
	Black NH	412.2	358.9
	Hispanic	.	.
	White NH	117.8	143.0
	Other NH	.	.
Other (not shown)	Total	71.0	73.1
	API NH	135.3	114.9
	Black NH	129.2	136.3
	Hispanic	52.5	95.5
	White NH	60.4	54.9
	Other NH	.	.

Key: SMM=Severe Maternal Morbidity, API=Asian/Pacific Islander, NH=Non-Hispanic**Source:** Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), **National Inpatient Sample (NIS), 2018-2019****Note:** Suppressed rates are indicated with a dash (-) in applicable table cells.

Exhibit 5.4

Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National



Key: SMM=Severe Maternal Morbidity

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 5.4

Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National

Expected payer	Patient Location	2013	2014	2015	2016	2017	2018	2019
Total	Total	71.9	72.4	73.1	72.0	71.5	76.7	79.7
	Large metro	74.9	75.3	76.7	74.9	75.9	82.6	85.9
	Medium/small metro	68.1	68.8	68.2	69.7	65.6	70.7	72.2
	Non-metro	67.9	68.1	68.8	64.8	65.4	64.2	70.1
Medicaid	Total	73.7	77.8	79.9	80.7	79.4	86.0	89.0
	Large metro	79.5	81.9	87.2	83.9	84.9	91.2	96.7
	Medium/small metro	67.6	72.2	71.1	77.9	72.8	83.5	81.0
	Non-metro	65.9	73.4	70.1	74.0	71.5	71.0	75.6
Private	Total	68.4	66.5	66.0	63.7	63.5	67.3	71.5
	Large metro	69.5	68.8	67.3	66.6	68.6	74.0	77.5
	Medium/small metro	65.8	64.4	64.2	61.5	55.9	58.1	61.7
	Non-metro	68.4	60.9	63.5	53.5	55.5	56.2	65.3

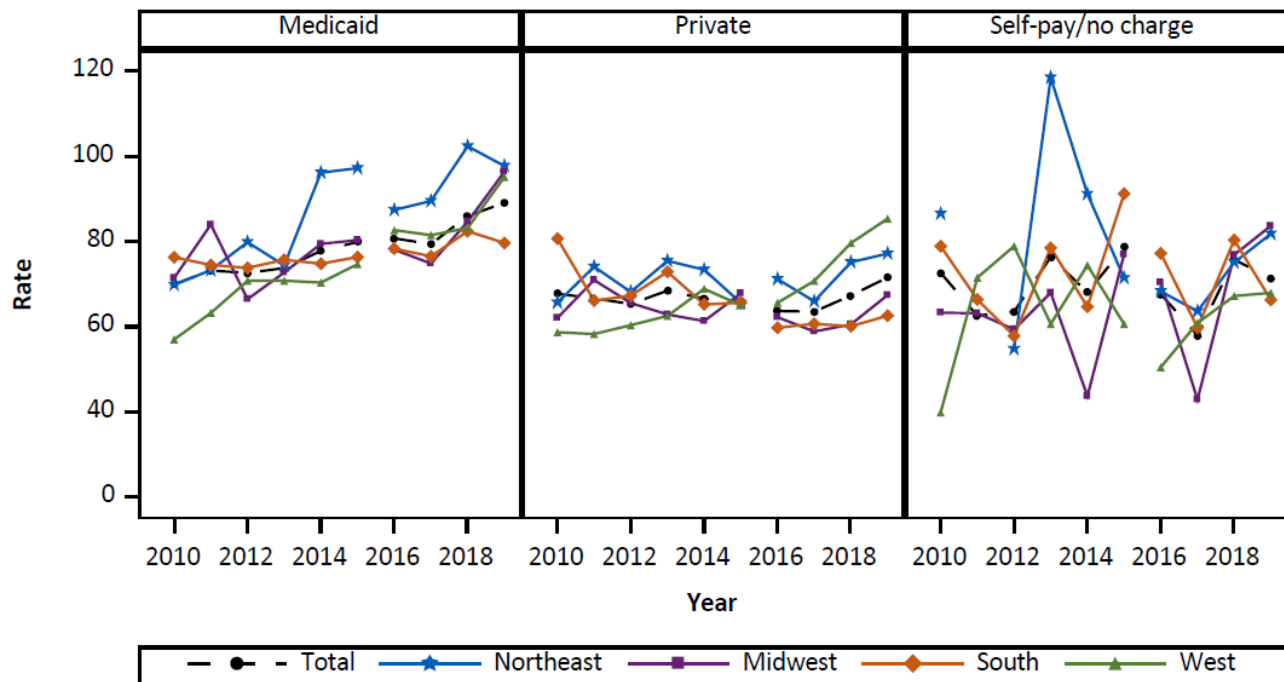
Data for Exhibit 5.4**Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National**

Expected payer	Patient Location	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	76.3	68.0	78.6	67.6	57.9	75.7	71.4
	Large metro	87.8	71.3	78.2	66.4	54.3	83.6	66.0
	Medium/small metro	61.7	51.8	77.7	69.7	66.3	69.6	95.5
	Non-metro	57.3	87.8	99.5	83.1	67.1	56.2	77.0
Medicare (not shown)	Total	190.4	236.4	190.7	205.8	229.4	210.2	203.7
	Large metro	197.4	243.1	205.2	279.6	205.5	263.5	250.3
	Medium/small metro	210.1	238.9	197.5	126.7	262.5	134.6	167.4
	Non-metro	.	202.2	.	187.9	247.8	194.3	.
Other (not shown)	Total	72.7	58.8	65.5	60.7	68.6	71.0	73.1
	Large metro	66.3	62.0	67.3	62.9	71.8	78.6	83.4
	Medium/small metro	79.5	59.4	59.9	63.7	62.5	70.0	73.8
	Non-metro	73.2	47.4	76.7	48.1	74.4	45.9	.

Key: SMM=Severe Maternal Morbidity**Source:** Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013-2019**Note:** A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends. Suppressed rates are indicated with a dash (-) in applicable table cells.

Exhibit 5.5

Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National



Key: SMM=Severe Maternal Morbidity

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 5.5

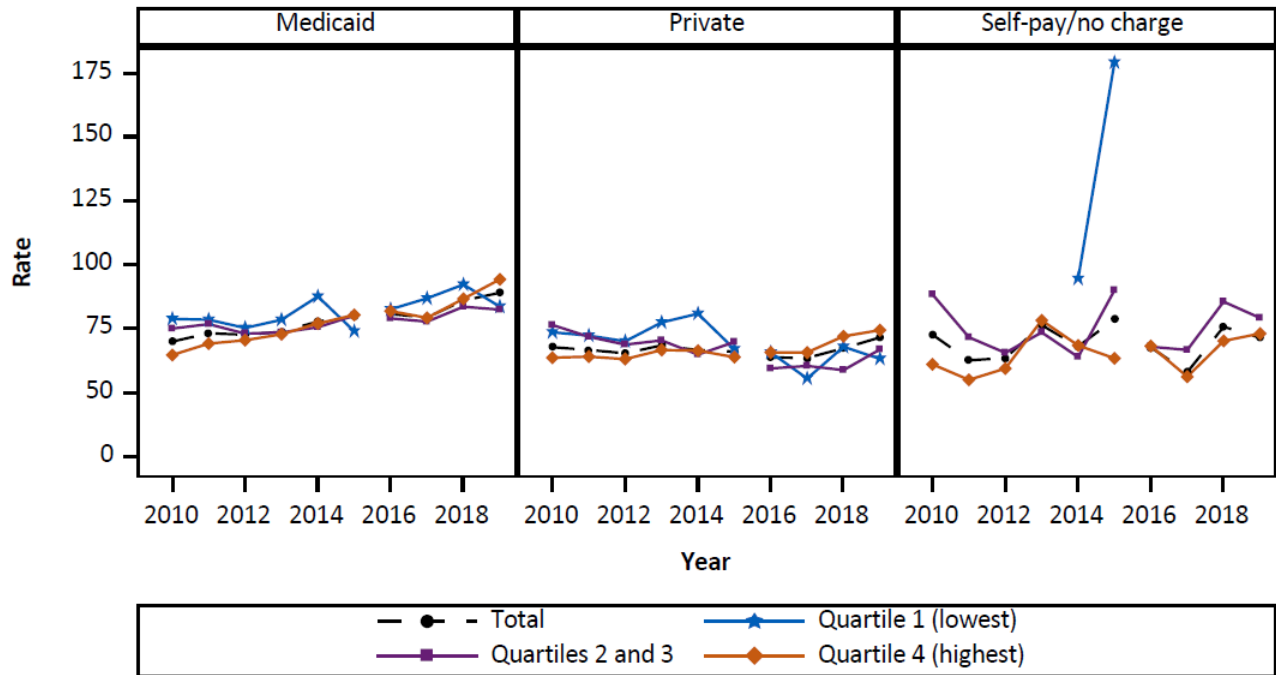
Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National

Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	69.8	69.8	69.5	71.9	72.4	73.1	72.0	71.5	76.7	79.7
	Northeast	69.5	73.3	73.5	77.0	83.4	79.4	77.9	76.7	87.6	85.5
	Midwest	66.8	76.7	66.1	67.7	68.6	74.1	69.7	66.2	71.3	79.5
	South	78.9	70.7	71.8	75.8	71.8	71.6	70.2	69.6	72.5	71.7
	West	58.9	60.8	66.3	66.2	69.5	70.3	73.2	75.9	81.0	89.5
Medicaid	Total	69.9	73.2	72.6	73.7	77.8	79.9	80.7	79.4	86.0	89.0
	Northeast	69.8	73.2	79.8	74.4	96.1	97.2	87.4	89.5	102.3	97.7
	Midwest	71.4	84.0	66.4	72.7	79.4	80.3	78.1	74.8	84.6	96.3
	South	76.3	74.5	73.8	75.7	74.8	76.3	78.3	76.5	82.4	79.6
	West	57.0	63.2	70.7	70.8	70.3	74.7	82.6	81.5	83.1	95.1

Data for Exhibit 5.5 Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National											
Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	67.7	66.6	65.3	68.4	66.5	66.0	63.7	63.5	67.3	71.5
	Northeast	65.6	74.1	68.1	75.4	73.3	65.6	71.1	65.9	75.1	77.1
	Midwest	62.0	70.9	65.5	62.9	61.3	67.8	62.2	58.8	60.5	67.4
	South	80.6	66.1	67.3	72.9	65.2	65.6	59.7	60.7	60.1	62.6
	West	58.7	58.3	60.3	62.5	68.9	65.0	65.6	70.7	79.6	85.3
Self-pay/no charge	Total	72.6	62.6	63.5	76.3	68.0	78.6	67.6	57.9	75.7	71.4
	Northeast	86.5	.	54.7	118.4	91.1	71.4	68.3	63.6	75.0	81.8
	Midwest	63.3	63.2	59.3	68.0	43.7	76.9	70.4	42.9	76.8	83.7
	South	78.9	66.3	57.8	78.5	64.6	91.2	77.2	59.8	80.3	66.3
	West	39.9	71.5	78.9	60.6	74.4	60.6	50.5	60.9	67.2	67.9
Medicare (not shown)	Total	204.1	135.2	175.0	190.4	236.4	190.7	205.8	229.4	210.2	203.7
	Northeast	158.1	155.0	197.4	180.5	182.3	211.6	188.1	176.4	203.4	.
	Midwest	154.2	.	118.0	167.8	196.7	253.8	206.2	275.9	266.9	279.4
	South	320.0	.	193.5	233.4	344.3	125.1	175.4	229.0	181.1	183.6
	West	214.4	.	226.9	.	.	.	349.0	249.1	262.2	.
Other (not shown)	Total	73.9	65.8	73.7	72.7	58.8	65.5	60.7	68.6	71.0	73.1
	Northeast	76.4	.	.	92.0	.	.	.	.	81.3	82.5
	Midwest	60.0	72.5	62.2	62.2	43.4	68.5	67.4	66.9	71.8	61.9
	South	70.3	65.0	84.7	81.6	67.8	59.7	68.1	65.0	67.8	65.9
	West	88.2	60.7	69.6	56.0	54.1	85.4	49.7	78.7	70.4	89.4
Key: SMM=Severe Maternal Morbidity Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends. Suppressed rates are indicated with a dash (-) in applicable table cells.											

Exhibit 5.6

Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National



Key: SMM=Severe Maternal Morbidity

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 5.6

Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National

Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	69.8	69.8	69.5	71.9	72.4	73.1	72.0	71.5	76.7	79.7
	Quartile 1 (lowest)	77.0	76.5	74.7	79.0	86.6	76.2	77.5	77.0	83.4	75.7
	Quartiles 2 and 3	77.2	74.3	71.9	73.2	71.4	75.4	70.5	70.8	73.0	75.5
	Quartile 4 (highest)	64.8	66.4	66.8	70.0	71.0	71.0	72.4	71.2	78.3	82.6
Medicaid	Total	69.9	73.2	72.6	73.7	77.8	79.9	80.7	79.4	86.0	89.0
	Quartile 1 (lowest)	78.8	78.5	75.3	78.4	87.6	73.9	82.6	86.8	92.2	83.6
	Quartiles 2 and 3	75.0	76.7	73.0	73.5	75.5	80.1	79.0	77.7	83.6	82.4
	Quartile 4 (highest)	64.7	69.1	70.4	72.8	77.0	80.4	81.9	79.2	86.7	94.3

Data for Exhibit 5.6
Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National

Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	67.7	66.6	65.3	68.4	66.5	66.0	63.7	63.5	67.3	71.5
	Quartile 1 (lowest)	73.5	72.3	70.0	77.4	80.8	66.9	65.6	55.4	67.9	63.1
	Quartiles 2 and 3	76.4	71.8	68.7	70.4	64.8	69.7	59.4	60.4	58.7	66.8
	Quartile 4 (highest)	63.6	64.0	63.0	66.6	66.4	63.8	65.7	65.7	72.0	74.4
Self-pay/no charge	Total	72.6	62.6	63.5	76.3	68.0	78.6	67.6	57.9	75.7	71.4
	Quartile 1 (lowest)	.	.	.	.	94.5	179.2	.	.	.	.
	Quartiles 2 and 3	88.4	71.6	65.5	73.5	63.9	90.0	67.9	66.6	85.5	79.2
	Quartile 4 (highest)	61.0	54.9	59.4	78.2	68.4	63.3	68.2	56.2	70.2	73.1
Medicare (not shown)	Total	204.1	135.2	175.0	190.4	236.4	190.7	205.8	229.4	210.2	203.7
	Quartile 1 (lowest)	.	.	178.6	.	281.5	.	.	.	.	.
	Quartiles 2 and 3	212.2	154.3	182.0	213.5	242.4	145.7	170.3	245.8	198.4	216.2
	Quartile 4 (highest)	211.4	119.2	170.0	181.7	218.8	235.4	251.3	209.8	232.5	201.7
Other (not shown)	Total	73.9	65.8	73.7	72.7	58.8	65.5	60.7	68.6	71.0	73.1
	Quartile 1 (lowest)	.	.	.	.	.	.	.	.	.	.
	Quartiles 2 and 3	73.8	53.6	75.0	74.6	63.0	58.1	71.6	68.8	73.1	58.1
	Quartile 4 (highest)	73.1	76.3	74.4	70.7	55.7	69.1	52.0	64.2	69.7	86.2

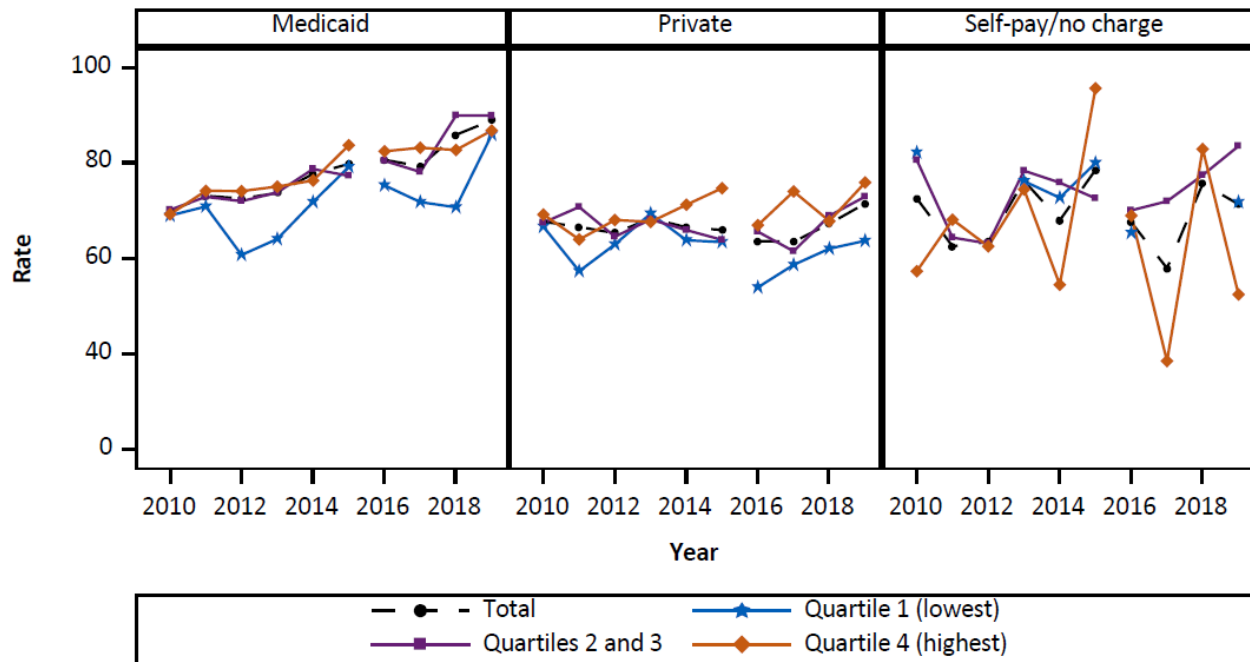
Key: SMM=Severe Maternal Morbidity

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends. Suppressed rates are indicated with a dash (-) in applicable table cells.

Exhibit 5.7

Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National



Key: SMM=Severe Maternal Morbidity, SVI=Social Vulnerability Index

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Data for Exhibit 5.7

Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National

Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	69.8	69.8	69.5	71.9	72.4	73.1	72.0	71.5	76.7	79.7
	Quartile 1 (lowest)	66.9	61.1	62.8	69.0	65.9	69.1	61.0	61.9	65.0	69.8
	Quartiles 2 and 3	70.3	72.0	69.2	71.6	72.8	70.5	72.7	70.3	79.3	81.4
	Quartile 4 (highest)	69.8	70.0	71.8	73.3	74.6	80.9	77.0	79.8	77.6	82.2
Medicaid	Total	69.9	73.2	72.6	73.7	77.8	79.9	80.7	79.4	86.0	89.0
	Quartile 1 (lowest)	69.0	70.9	60.7	64.1	71.9	79.2	75.4	71.8	70.7	86.0
	Quartiles 2 and 3	70.2	72.9	72.0	73.9	78.8	77.4	80.5	78.2	90.0	90.0
	Quartile 4 (highest)	69.3	74.2	74.1	75.1	76.4	83.8	82.5	83.3	82.8	86.9

Data for Exhibit 5.7
Rates of severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National

Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	67.7	66.6	65.3	68.4	66.5	66.0	63.7	63.5	67.3	71.5
	Quartile 1 (lowest)	66.7	57.3	63.0	69.4	63.8	63.4	53.9	58.7	62.1	63.7
	Quartiles 2 and 3	67.5	70.8	64.6	68.2	66.0	63.9	65.6	61.5	69.0	73.0
	Quartile 4 (highest)	69.2	64.0	68.1	67.7	71.3	74.8	67.0	74.1	67.9	75.9
Self-pay/no charge	Total	72.6	62.6	63.5	76.3	68.0	78.6	67.6	57.9	75.7	71.4
	Quartile 1 (lowest)	82.3	.	.	76.2	72.7	80.1	65.4	.	.	71.9
	Quartiles 2 and 3	80.7	64.4	63.1	78.4	75.9	72.6	70.1	72.0	77.5	83.6
	Quartile 4 (highest)	57.3	68.2	62.6	74.5	54.5	95.7	69.0	38.4	83.0	52.4
Medicare (not shown)	Total	204.1	135.2	175.0	190.4	236.4	190.7	205.8	229.4	210.2	203.7
	Quartile 1 (lowest)	.	.	156.7	.	.	225.3	154.8	.	193.8	.
	Quartiles 2 and 3	237.9	132.8	189.6	165.6	257.0	179.1	220.0	237.9	220.9	213.3
	Quartile 4 (highest)	207.3	.	158.5	254.8	260.8	199.2	197.1	265.6	197.8	238.1
Other (not shown)	Total	73.9	65.8	73.7	72.7	58.8	65.5	60.7	68.6	71.0	73.1
	Quartile 1 (lowest)	54.3	50.1	48.1	78.5	46.1	65.0	67.3	43.8	59.7	52.5
	Quartiles 2 and 3	81.3	73.3	83.6	71.5	62.4	67.8	50.5	72.8	75.3	82.9
	Quartile 4 (highest)	71.0	63.2	68.9	71.8	58.9	62.0	80.2	79.8	68.3	66.2

Key: SMM=Severe Maternal Morbidity, SVI=Social Vulnerability Index

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends. Suppressed rates are indicated with a dash (-) in applicable table cells.

Appendix A: Methods

Source of Data for this Chartbook

The Healthcare Cost and Utilization Project (HCUP)^e is a family of healthcare databases and related software tools and products developed through a Federal-State-Industry partnership and sponsored by the Agency for Healthcare Research and Quality (AHRQ). HCUP databases bring together the data collection efforts of State data organizations, hospital associations, and private data organizations (HCUP Partners) and the Federal government to create a national information resource of encounter-level healthcare data. HCUP includes the largest collection of longitudinal hospital care data in the United States, with all-payer, encounter-level information beginning in 1988. These databases enable research on a broad range of health policy issues, including cost and quality of health services, medical practice patterns, access to healthcare programs, and outcomes of treatments at the national, State, and local market levels.

This chartbook is based on data from HCUP's National (Nationwide) Inpatient Sample (NIS)^f database (2010–2019), which provides a national perspective of care provided in community acute care hospitals (i.e., short-term, non-Federal, non-rehabilitation hospitals).

The HCUP NIS is a nationwide database of hospital inpatient stays. The NIS is drawn from a sampling frame that contains hospitals comprising more than 95 percent of all discharges in the United States. The vast size of the NIS allows for the study of various topics at the national and regional levels for specific subgroups of patients. In addition, NIS data are standardized across years to facilitate ease of use. Over time, the sampling frame for the NIS has changed; thus, the number of states contributing to the NIS varies from year to year. The NIS is intended for national estimates only; no State-level estimates can be produced. The unweighted sample size for the 2019 NIS is 7,083,805 (weighted, this represents 35,419,023 inpatient stays). The unweighted sample size for the 2010 NIS is 7,800,441 (weighted, this represents 37,352,013 inpatient stays).

Approach

This chartbook is divided into five condition-specific sections. Coexisting maternal conditions selected for inclusion in this chartbook are based on their importance to maternal health and morbidity and on their suitability to be monitored using administrative hospital discharge data. These include any diagnosis of:

- Diabetes
- Hypertension
- Mental health disorders
- Substance use disorder (SUD)
- Severe maternal morbidity (SMM)

Clinical coding criteria for each coexisting condition can be found in Appendix B.

Within each section, inpatient utilization rates and standard errors (SE) are shown for delivery-related inpatient stays for female patients aged 12–55 years. Delivery stays are defined as follows (a detailed list of codes can be found in Appendix B):

- Delivery stays

^e More information about HCUP can be found at: <https://hcup-us.ahrq.gov/>.

^f For more information about the HCUP NIS, visit: <https://hcup-us.ahrq.gov/db/nation/nis/nisdbdocumentation.jsp>

- Inpatient stays with an indication of delivery based on diagnoses or procedures codes, excluding abortions. Encounter rates for are presented per 10,000 in-hospital delivery stays. Expected primary payer groups presented in the exhibits include Medicaid, private insurance, and self-pay/no charge. On average, Medicare represents fewer than 1 percent of in-hospital deliveries. “Other” expected payer types include other government programs, Workers’ Compensation, and missing or invalid payers. Rates for Medicare and other expected payer types are provided in Appendix C.

Data for each condition and encounter type are presented overall and by select patient-level characteristics. Patient characteristics include expected primary payer, age group, race and ethnicity, and patient residence location type (metro vs non-metro). Other patient characteristics include region of the delivery hospital, patient residence location, community-level median household income, and community-level social vulnerability index (SVI),²⁸ which was obtained from AHRQ’s Social Determinants of Health Database.²⁹ All rates shown are unadjusted.

Definitions

Diagnoses

The *principal diagnosis* is that condition established after study to be chiefly responsible for the patient’s admission to the hospital. *Secondary diagnoses* are conditions that coexist at the time of admission that require or affect patient care treatment received or management, or that develop during the inpatient stay. *Any-listed diagnoses* include the principal diagnosis plus all secondary diagnoses.

ICD-10-CM Coding System

ICD-10-CM is the International Classification of Diseases, Tenth Revision, Clinical Modification. There are more than 70,000 ICD-10-CM diagnosis codes.

Expected payer

To make coding uniform across all HCUP data sources, the primary expected payer for the hospital stay combines detailed categories into general groups:

- Medicaid: includes fee-for-service and managed care Medicaid
- Private insurance: includes commercial nongovernmental payers, regardless of the type of plan (e.g., private health maintenance organizations [HMOs], preferred provider organizations [PPOs])
- Self-pay/No charge: includes self-pay, no charge, charity, and no expected payment
- Other payers: includes Medicare (fee-for-service and managed care Medicare) and other Federal and local government programs (e.g., TRICARE, CHAMPVA, Indian Health Service, Black Lung, Title V) and Workers’ Compensation

Hospital stays that were expected to be billed to the State Children’s Health Insurance Program (SCHIP) are included under Medicaid.

For this Chartbook, when more than one payer is listed for a hospital discharge, the first-listed payer is used.

Reporting of race and ethnicity

Data on Hispanic ethnicity are collected differently among the states and can differ from the census methodology of collecting information on race (White, Black, Asian/Pacific Islander, American Indian/Alaska Native, Other [including mixed race]) separately from ethnicity (Hispanic, non-Hispanic). State data organizations often collect Hispanic ethnicity as one of several categories that include race. Therefore, for multistate analyses, HCUP creates the combined categorization of race and ethnicity for data from states that report ethnicity separately. When a state data organization collects Hispanic ethnicity separately from race, HCUP uses Hispanic ethnicity to override any other race category to create a Hispanic category for the

uniformly coded race and ethnicity data element, while also retaining the original race and ethnicity data. This Chartbook reports race and ethnicity for the following categories: Asian/Pacific Islander non-Hispanic, Black non-Hispanic, Hispanic, White non-Hispanic, and other non-Hispanic race and ethnicity (including American Indian/Alaska Native and Other).

Location of patients' residence

Place of residence is based on a simplified adaptation of the Urban Influence Codes (UIC) developed by the United States Department of Agriculture (USDA) Economic Research Service (ERS). Starting with 2014 data, the county-level designation is based on the 2013 version of the UIC. Prior to 2014, the categorization was based on the 2003 version of the UIC. The 12 categories of the UIC are combined into 3 broader categories that differentiate between large metropolitan counties (i.e., those that include one or more urbanized areas with at least 1 million residents), small metropolitan counties (i.e., those that include one or more urbanized areas with 50,000–999,999 residents), and nonmetropolitan counties (i.e., micropolitan counties [those that include at least one urbanized area with 10,000–49,999 residents] or nonurban residual counties (i.e., rural counties).

Hospital region

Hospital region is one of the four regions defined by the U.S. Census Bureau:

- Northeast: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania
- Midwest: Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas
- South: Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas
- West: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Alaska, and Hawaii

Community-level income

Community-level income is based on the median household income of the patient's ZIP Code of residence. Quartiles are defined so that the total U.S. population is evenly distributed. Rates for quartiles 2 and 3 are combined into one middle community-level income group for this chartbook.

Social vulnerability

The Centers for Disease Control and Prevention (CDC)/Agency for Toxic Substances and Disease Registry (ATSDR) Social Vulnerability Index (SVI) is a measure of a community's ability to prevent human suffering and financial loss during a disaster. The SVI uses U.S. Census data to determine the social vulnerability of every census tract. Census tracts are subdivisions of counties for which the census collects statistical data. The SVI ranks each tract on 15 social factors, including poverty, lack of vehicle access, and crowded housing, and groups them into four related themes (socioeconomic status, household composition and disability, minority status and language, and housing type and transportation). Each tract receives a separate ranking for each of the four themes, as well as an overall ranking. Detailed descriptions of the CDC/ATSDR SVI and data downloads are available at www.atsdr.cdc.gov/placeandhealth/svi/index.html.

The social vulnerability designation in this chartbook is based on the overall SVI measure in the patient county of residence. Patient residence counties with SVI values are divided into quartiles with the middle, second, and third quartiles combined to create a moderate community-level social vulnerability category for this chartbook. The lowest quartile reflects the least vulnerable areas while the highest quartile depicts the most vulnerable areas.

Calculations

Trend-related findings highlighted in this chartbook are identified from percentage change comparisons over time using the following formula:

$$\text{Percentage change} = \left(\frac{\text{Recent year rate} - \text{Older year rate}}{\text{Older year rate}} \right) \times 100$$

Within characteristic rate differences highlighted in this chartbook are identified from percent difference comparisons using the following formula:

$$\text{Percent difference} = \left(\frac{\text{Group 1 rate} - \text{Group 2 rate}}{(\text{Group 1 rate} + \text{Group 2 rate})/2} \right) \times 100$$

where the absolute difference between two rates is expressed as a proportion of the average rate between the two groups.

Limitations / Exclusions

The unique perspective of maternal healthcare data presented here does have some limitations. First, all encounter rates presented are unadjusted and differences noted in the highlights may be explained by unexplored factors. Data for patient race and ethnicity were only available for 2 years. Further, patient race and ethnicity coded as multiracial or American Indian/Alaska Native (AIAN) are grouped together in the “Other race and ethnicity” category for this chartbook due to the varied collection of multiracial categories across states and the lack of information from Indian Health Service hospitals or tribally operated facilities. For these reasons, findings related to the Other race and ethnicity category should be interpreted with caution. Finally, HCUP data do not contain information about patient’s prenatal care utilization or other office-based postpartum care, which may affect the data presented.

Appendix B: Clinical Coding Criteria

Detailed descriptions of each code can be found at the following resources:

- Medicare Severity-Diagnosis-Related Groups (MS-DRGs) Classifications and Software: <https://www.cms.gov/medicare/payment/prospective-payment-systems/acute-inpatient-pps/ms-drg-classifications-and-software>
- International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), Clinical Classifications Software (CCS): <https://hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp>
- International Classification of Diseases, Tenth Revision, Clinical Modification/Procedure Coding System (ICD-10-CM/PCS), Clinical Classifications Software Refined (CCSR): https://hcup-us.ahrq.gov/toolssoftware/ccsr/ccs_refined.jsp#overview
- Clinical Classifications Software for Services and Procedures (CCS-Services and Procedures): https://hcup-us.ahrq.gov/toolssoftware/ccs_svcsproc/ccssvcproc.jsp

Delivery stays

- DRG
 - Version 25-35: 765–775
 - Version 36 (October 2018): 768–807
- ICD-9-CM, 2010–2015, any-listed diagnosis codes beginning with:
 - V27, 650, 66970, 66971
- ICD-9-CM, 2010–2015, any listed procedure codes beginning with:
 - 720, 721, 7221, 7229, 7231, 7239, 724, 7251, 7252, 7253, 7254, 726, 7271, 7279, 728, 729, 7322, 7359, 736, 740, 741, 742, 744, 7499
- ICD-10-CM/PCS, 2016–2019, any-listed diagnosis codes beginning with:
 - Z37, O80, O82, O7582
- ICD-10-CM/PCS, 2016–2019, any-listed procedure codes beginning with:
 - 10D00Z0-10D00Z2, 10D07Z3-0D07Z8, 10E0XZZ
- Abortions excluded
 - ICD-9-CM diagnosis codes beginning with: 630–639
 - ICD-9-CM procedure codes beginning with: 6901, 6951, 7491, 750
 - ICD-10-CM/PCS diagnosis codes beginning with: O00, O01, O02, O03, O04, O07, O08
 - ICD-10-CM/PCS procedure codes beginning with: 10A0

Co-existing Conditions

Diabetes

- Any-listed diagnosis of the following:
 - ICD-9-CM diagnosis codes beginning with: 24900, 24901, 24910, 24911, 24920, 24921, 24930, 24931, 24940, 24941, 24950, 24951, 24960, 24961, 24970, 24971, 24980, 24981, 24990, 24991, 25000, 25001, 25002, 25003, 25010, 25011, 25012, 25013, 25020, 25021, 25022, 25023, 25030, 25031, 25032, 25033, 25040, 25041, 25042, 25043, 25050, 25051, 25052, 25053, 25060, 25061, 25062, 25063, 25070, 25071, 25072, 25073, 25080, 25081, 25082, 25083, 25090, 25091, 25092, 25093, 79021, 79022, 79029, 7915, 7916, V4585, V5391, V6546, 64800, 64801, 64802, 64803, 64804, 64880, 64881, 64882, 64883, 64884
 - ICD-10-CM/PCS diagnosis codes beginning with: E0800, E0801, E0810, E0811, E0821, E0822, E0829, E08311, E08319, E08321, E083211, E083212, E083213, E083219, E08329, E083291, E083292, E083293, E083299, E08331, E083311, E083312, E083313, E083319, E08339, E083391, E083392, E083393, E083399, E08341, E083411, E083412, E083413, E083419, E08349, E083491, E083492, E083493, E083499, E08351, E083511, E083512, E083513, E083519, E083521, E083522, E083523, E083529, E083531, E083532, E083533, E083539, E083541, E083542, E083543, E083549, E083551, E083552, E083553, E083559, E08359, E083591, E083592, E083593, E083599, E0836, E0837X1, E0837X2, E0837X3, E0837X9, E0839, E0840, E0841, E0842, E0843, E0844, E0849, E0851, E0852, E0859, E08610, E08618, E08620, E08621, E08622, E08628, E08630, E08638, E08641, E08649, E0865, E0869, E088, E089, E1010, E1011, E1021, E1022, E1029, E10311, E10319, E10321, E103211, E103212, E103213, E103219, E10329, E103291, E103292, E103293, E103299,

E10331, E103311, E103312, E103313, E103319, E10339, E103391, E103392, E103393, E103399, E10341, E103411, E103412, E103413, E103419, E10349, E103491, E103492, E103493, E103499, E10351, E103511, E103512, E103513, E103519, E103521, E103522, E103523, E103529, E103531, E103532, E103533, E103539, E103541, E103542, E103543, E103549, E103551, E103552, E103553, E103559, E10359, E103591, E103592, E103593, E103599, E1036, E1037X1, E1037X2, E1037X3, E1037X9, E1039, E1040, E1041, E1042, E1043, E1044, E1049, E1051, E1052, E1059, E10610, E10618, E10620, E10621, E10622, E10628, E10630, E10638, E10641, E10649, E1065, E1069, E108, E109, E1100, E1101, E1110, E1111, E1121, E1122, E1129, E11311, E11319, E11321, E113211, E113212, E113213, E113219, E11329, E113291, E113292, E113293, E113299, E11331, E113311, E113312, E113313, E113319, E11339, E113391, E113392, E113393, E113399, E11341, E113411, E113412, E113413, E113419, E11349, E113491, E113492, E113493, E113499, E11351, E113511, E113512, E113513, E113519, E113521, E113522, E113523, E113529, E113531, E113532, E113533, E113539, E113541, E113542, E113543, E113549, E113551, E113552, E113553, E113559, E11359, E113591, E113592, E113593, E113599, E1136, E1137X1, E1137X2, E1137X3, E1137X9, E1139, E1140, E1141, E1142, E1143, E1144, E1149, E1151, E1152, E1159, E11610, E11618, E11620, E11621, E11622, E11628, E11630, E11638, E11641, E11649, E1165, E1169, E118, E119, E1300, E1301, E1310, E1311, E1321, E1322, E1329, E13311, E13319, E13321, E133211, E133212, E133213, E133219, E13329, E133291, E133292, E133293, E133299, E13331, E133311, E133312, E133313, E133319, E13339, E133391, E133392, E133393, E133399, E13341, E133411, E133412, E133413, E133419, E13349, E133491, E133492, E133493, E133499, E13351, E133511, E133512, E133513, E133519, E133521, E133522, E133523, E133529, E133531, E133532, E133533, E133539, E133541, E133542, E133543, E133549, E133551, E133552, E133553, E133559, E13359, E133591, E133592, E133593, E133599, E1336, E1337X1, E1337X2, E1337X3, E1337X9, E1339, E1340, E1341, E1342, E1343, E1344, E1349, E1351, E1352, E1359, E13610, E13618, E13620, E13621, E13622, E13628, E13630, E13638, E13641, E13649, E1365, E1369, E138, E139, O24011, O24012, O24013, O24019, O2402, O2403, O24111, O24112, O24113, O24119, O2412, O2413, O24311, O24312, O24313, O24319, O2432, O2433, O24811, O24812, O24813, O24819, O2482, O2483, O24911, O24912, O24913, O24919, O2492, O2493, O99810, O99814, O99815, O24410, O24414, O24415, O24419, O24420, O24424, O24425, O24429, O24430, O24434, O24435, O24439

Hypertension

- Any-listed diagnosis of the following:
 - ICD-9-CM diagnosis codes beginning with: 4011, 4019, 40211, 40210, 40511, 40310, 40311, 40300, 40301, 40390, 40391, 4372, 40413, 40411, 40410, 40412, 40401, 40403, 40400, 40402, 40493, 40491, 40490, 40492, 4010, 40201, 40200, 40501, 40519, 40509, 40599, 40291, 40290, 40591, 4030, 4031, 4039, 4040, 4041, 4049, 64273, 64272, 64271, 64274, 64270, 64220, 64223, 64222, 64221, 64224, 64213, 64212, 64211, 64214, 64210, 64203, 64201, 64204, 64200, 64202, 64263, 64262, 64261, 64264, 64260, 64243, 64242, 64241, 64244, 64240, 64253, 64252, 64251, 64254, 64250, 64233, 64231, 64232, 64234, 64230, 64293, 64292, 64291, 64294, 64290
 - ICD-10-CM/PCS diagnosis codes beginning with: H35031, H35032, H35033, I10, I110, I119, I120, I129, I130, I1310, I1311, I132, I150, I151, I152, I158, I159, I160, I161, I169, I674, I973, O10011, O10012, O10013, O10019, O1002, O1003, O10111, O10112, O10113, O10119, O1012, O1013, O10211, O10212, O10213, O10219, O1022, O1023, O10311, O10312, O10313, O10319, O1032, O1033, O10411, O10412, O10413, O10419, O1042, O1043, O10911, O10912, O10913, O10919, O1092, O1093, O111, O112, O113, O114, O115, O119, O131, O132, O133, O134, O135, O139, O1400, O1402, O1403, O1404, O1405, O1410, O1412, O1413, O1414, O1415, O1420, O1422, O1423, O1424, O1425, O1490, O1492, O1493, O1494, O1495, O1500, O1502, O1503, O151, O152, O159, O161, O162, O163, O164, O165, O169

Mental health disorders

- Any-listed diagnosis of the following:
 - ICD-9-CM diagnosis codes beginning with: 64840, 64841, 64842, 64843, 64844, 30924, 3090, 3093, 30928, 3094, 30982, 30983, 30922, 30929, 30989, 3091, 30923, 3099, 31383, 30021, 30022, 29384, 30000, 30002, 30010, 31382, 31322, 3131, 3084, 3005, 3003, 3083, 30009, 30029, 3130, 30001, 30020, 30981, 3081, 3080, 3082, 3133, 31321, 30023, 3089, 3009, 30921, 31323, 31401, 31400, 31282, 31281, 3141, 3142, 3124, 31381, 31289, 3148, 31221, 31222, 31223, 31220, 31201, 31202, 31203, 31200, 31211, 31212, 31213, 31210, 3129, 3149, 3128, 31230, 31234, 31235, 31232, 31239, 31231, 31233, 29682, 29681, 29680, 29655, 29651, 29652, 29654, 29653, 29650, 29645, 29641, 29642, 29644, 29643, 29640, 29665, 29661, 29662, 29664, 29663, 29660, 2967, 29605, 29601, 29602, 29604, 29603, 29600, 311, 3004, 29635, 29631, 29632, 29634, 29633, 29630, 29625, 29621, 29622, 29624, 29623, 29620, 29615, 29611, 29612, 29614, 29613, 29610, 29383, 29689, 29699, 29690, 30113, 30110, 3017, 30182, 30183, 30112, 30111, 3016, 3013, 30150, 30121, 30181, 3014, 30159, 30189, 3010, 30184, 30120, 30122, 3019, 2983, 29522, 29524, 29521, 29523, 29520, 2971, 2980, 29512, 29514, 29511, 29513, 29510, 2981, 29552, 29554, 29551, 29553, 29550, 2988, 2978, 29582, 29584, 29581, 29583, 29580, 2970, 29532, 29534, 29531, 29533, 29530, 2972, 2984, 29381, 29382, 2982, 29572, 29574, 29571, 29573, 29570, 29562, 29564, 29561, 29563, 29560, 29542, 29544, 29541, 29543, 29540, 2973, 29502, 29504, 29501, 29503, 29500, 2979, 2989, 29592, 29594, 29591, 29593, 29590, E959, V6284, E9572, E9571, E9570, E9579, E9556, E9581, E9587, E9586, E9585, E956, E9584, E9555, E9583, E9559, E9550, E9530, E9552, E9580, E9553, E9554, E9538, E9588, E9557, E9582, E9551, E954, E9531, E9539, E9589, E9506, E9500, E9508, E9501, E9507, E9510, E9511, E9520, E9509, E9521, E9502, E9504, E9528, E9518, E9503, E9505, E9529, 3071, 30751, 30750, 30752, 30759, 30753, 30754, 3068, 7830, 3007, 30016, 30081, 30151, 30082, 30019, 30089, 30789, 30780, 30012, 30015, 30013, 30014, 30011, 3006, V409, 3069, 2939, V403, V402, 29389, V4039, V673, 3064, 3062, 3060, 3067, 3066, 3101, 316, 3061, 3063
 - ICD-10-CM/PCS diagnosis codes beginning with: O99340, O99341, O99342, O99343, O99344, O99345, F53, F530, F531, O906, F4320, F4321, F4322, F4323, F4324, F4325, F4329, F064, F4000, F4001, F4002, F4010, F40210, F40218, F40220, F40228, F40230, F40231, F40232, F40233, F40240, F40241, F40242, F40243, F40248, F40290, F40291, F40298, F408, F409, F410, F411, F413, F418, F419, F930, F940, F42, F422, F423, F424, F428, F429, F4522, F633, F430, F4310,

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Substance use disorders

- Any-listed diagnosis of the following:
 - ICD-9-CM diagnosis codes beginning with: 65553, 65551, 65550, 64833, 64832, 64831, 64834, 64830, 64900, 64901, 64902, 64903, 64904, 5711, 30301, 30302, 30300, 30501, 30502, 30500, 76071, 29182, 29181, 2910, 4255, 5712, 5710, 53531, 53530, 5713, 3575, 30391, 30392, 30390, 2918, 5353, 2911, 2912, 2915, 2913, 2914, 29189, 2919, 30400, 30401, 30402, 30470, 30471, 30472, 30550, 30551, 30552, 30521, 30522, 30520, 30431, 30432, 30430, 30541, 30542, 30540, 30411, 30412, 30410, 30561, 30562, 30560, 30421, 30422, 30420, 30441, 30442, 30440, 30571, 30572, 30570, 30531, 30532, 30530, 30451, 30452, 30450, 30581, 30582, 30580, 30481, 30482, 30480, 30461, 30462, 30460, 30591, 30592, 30590, 30491, 30492, 30490, 2920, 29281, 29284, 29283, 29282, 29211, 29212, 29285, 2922, 29289, 2929
 - ICD-10-CM/PCS diagnosis codes beginning with: O354XX0, O354XX1, O354XX2, O354XX3, O354XX4, O354XX5, O354XX9, O99310, O99311, O99312, O99313, O99314, O99315, O99320, O99321, O99322, O99323, O99324, O99325, O99330, O99331, O99332, O99333, O99334, O99335, F1010, F10120, F10121, F10129, F10130, F10131, F10132, F10139, F1014, F10150, F10151, F10159, F10180, F10181, F10182, F10188, F1019, F1020, F10220, F10221, F10229, F10230, F10231, F10232, F10239, F1024, F10250, F10251, F10259, F1026, F1027, F10280, F10281, F10282, F10288, F1029, F10920, F10921, F10929, F10930, F10931, F10932, F10939, F1094, F10950, F10951, F10959, F1096, F1097, F10980, F10981, F10982, F10988, F1099, G312, G621, I426, K2920, K2921, K700, K7010, K7011, K702, K7030, K7031, K7040, K7041, K709, F1110, F11120, F11121, F11122, F11129, F1114, F11150, F11151, F11159, F11181, F11182, F11188, F1119, F1120, F11220, F11221, F11222, F11229, F1123, F1124, F11250, F11251, F11259, F11281, F11282, F11288, F1129, F1190, F11920, F11921, F11922, F11929, F1193, F1194, F11950, F11951, F11959, F11981, F11982, F11988, F1199, F1210, F12120, F12121, F12122, F12129, F1213, F12150, F12151, F12159, F12180, F12188, F1219, F1220, F12220, F12221, F12222, F12229, F1223, F12250, F12251, F12259, F12280, F12288, F1229, F1290, F12920, F12921, F12922, F12929, F1293, F12950, F12951, F12959, F12980, F12988, F1299, F1310, F13120, F13121, F13129, F13130, F13131, F13132, F13139, F1314, F13150, F13151, F13159, F13180, F13181, F13182, F13188, F1319, F1320, F13220, F13221, F13229, F13230, F13231, F13232, F13239, F1324, F13250, F13251, F13259, F1326, F1327, F13280, F13281, F13282, F13288, F1329, F1390, F13920, F13921, F13929, F13930, F13931, F13932, F13939, F1394, F13950, F13951, F13959, F1396, F1397, F13980, F13981, F13982, F13988, F1399, F1410, F14120, F14121, F14122, F14129, F1413, F1414, F14150, F14151, F14159, F14180, F14181, F14182, F14188, F1419, F1420, F14220, F14221, F14222,

F14229, F1423, F1424, F14250, F14251, F14259, F14280, F14281, F14282, F14288, F1429, F1490, F14920, F14921, F14922, F14929, F1493, F1494, F14950, F14951, F14959, F14980, F14981, F14982, F14988, F1499, F1510, F15120, F15121, F15122, F15129, F1513, F1514, F15150, F15151, F15159, F15180, F15181, F15182, F15188, F1519, F1520, F15220, F15221, F15222, F15229, F1523, F1524, F15250, F15251, F15259, F15280, F15281, F15282, F15288, F1529, F1590, F15920, F15921, F15922, F15929, F1593, F1594, F15950, F15951, F15959, F15980, F15981, F15982, F15988, F1599, F1610, F16120, F16121, F16122, F16129, F1614, F16150, F16151, F16159, F16180, F16183, F16188, F1619, F1620, F16220, F16221, F16229, F1624, F16250, F16251, F16259, F16280, F16283, F16288, F1629, F1690, F16920, F16921, F16929, F1694, F16950, F16951, F16959, F16980, F16983, F16988, F1699, F1810, F18120, F18121, F18129, F1814, F18150, F18151, F18159, F1817, F18180, F18188, F1819, F1820, F18220, F18221, F18229, F1824, F18250, F18251, F18259, F1827, F18280, F18288, F1829, F1890, F18920, F18921, F18929, F1894, F18950, F18951, F18959, F1897, F18980, F18988, F1899, F1910, F19120, F19121, F19122, F19129, F19130, F19131, F19132, F19139, F1914, F19150, F19151, F19159, F1916, F1917, F19180, F19181, F19182, F19188, F1919, F1920, F19220, F19221, F19222, F19229, F19230, F19231, F19232, F19239, F1924, F19250, F19251, F19259, F1926, F1927, F19280, F19281, F19282, F19288, F1929, F1990, F19920, F19921, F19922, F19929, F19930, F19931, F19932, F19939, F1994, F19950, F19951, F19959, F1996, F1997, F19980, F19981, F19982, F19988, F1999

Severe maternal morbidity

- Any-listed diagnosis of the following:
 - ICD-9-CM diagnosis codes beginning with: 2866, 2869, 4150, 4275, 4281, 4289, 4320, 4321, 4329, 4350, 4351, 4352, 4353, 4358, 4359, 4370, 4371, 4372, 4373, 4374, 4375, 4376, 4377, 4378, 4379, 4411, 4412, 4413, 4414, 4415, 4416, 4417, 4419, 5184, 5845, 5846, 5847, 5848, 5849, 7991, 9950, 9954, 9960, 9961, 9962, 9963, 9964, 9969, 9971, 28242, 28262, 28264, 28269, 28952, 34839, 36234, 41000, 41001, 41002, 41010, 41011, 41012, 41020, 41021, 41022, 41030, 41031, 41032, 41040, 41041, 41042, 41050, 41051, 41052, 41060, 41061, 41062, 41070, 41071, 41072, 41080, 41081, 41082, 41090, 41091, 41092, 41511, 41512, 41513, 41519, 42741, 42742, 42821, 42823, 42831, 42833, 42841, 42843, 43300, 43301, 43310, 43311, 43320, 43321, 43330, 43331, 43380, 43381, 43390, 43391, 43400, 43401, 43410, 43411, 43490, 43491, 44100, 44101, 44102, 44103, 51851, 51852, 51853, 51881, 51882, 51884, 64130, 64131, 64133, 64260, 64261, 64262, 64263, 64264, 66630, 66632, 66634, 66800, 66801, 66802, 66803, 66804, 66810, 66811, 66812, 66813, 66814, 66820, 66821, 66822, 66823, 66824, 66910, 66911, 66912, 66913, 66914, 66930, 66932, 66934, 67022, 67024, 67150, 67151, 67152, 67153, 67154, 67300, 67301, 67302, 67303, 67304, 67310, 67311, 67312, 67313, 67314, 67320, 67321, 67322, 67323, 67324, 67330, 67331, 67332, 67333, 67334, 67380, 67381, 67382, 67383, 67384, 67400, 67401, 67402, 67403, 67404, 78550, 78551, 78552, 78559, 99586, 99591, 99592, 99702, 99800, 99801, 99802, 99809, 0380, 03810, 03811, 03812, 03819, 0382, 0383, 03840, 03841, 03842, 03843, 03844, 03849, 0388, 0389, 0463, 4280, 42820, 42830, 42840, 430, 431, 436, 449, 67020
 - ICD-9-CM procedure codes beginning with: 6839, 6849, 6859, 6869, 6879, 689, 311, 9670, 9671, 9672
 - ICD-10-CM/PCS diagnosis codes beginning with: I2101, 5A12012, 5A2204Z, A327, A400, A401, A403, A408, A409, A4101, A4102, A411, A412, A413, A414, A4150, A4151, A4152, A4153, A4159, A4181, A4189, A419, A812, D5700, D5701, D5702, D57211, D57212, D57219, D57411, D57412, D57419, D57811, D57812, D57819, D65, D688, D689, G450, G451, G452, G453, G454, G458, G459, G460, G461, G462, G463, G464, G465, G466, G467, G468, G9349, H3400, H3401, H3402, H3403, I2102, I2109, I2111, I2119, I2121, I2129, I213, I214, I219, I21A1, I21A9, I220, I221, I222, I228, I229, I2601, I2602, I2609, I2690, I2692, I2693, I2694, I2699, I462, I468, I469, I4901, I4902, I501, I5020, I5021, I5023, I5030, I5031, I5033, I5040, I5041, I5043, I50810, I50811, I50813, I50814, I5082, I5083, I5084, I5089, I509, I6000, I6001, I6002, I6010, I6011, I6012, I602, I6020, I6021, I6022, I6030, I6031, I6032, I604, I6050, I6051, I6052, I606, I607, I608, I609, I610, I611, I612, I613, I614, I615, I616, I618, I619, I6200, I6201, I6202, I6203, I621, I629, I6300, I63011, I63012, I63013, I63019, I6310, I63111, I63112, I63113, I63119, I6312, I63131, I63132, I63133, I63139, I6319, I6320, I63211, I63212, I63213, I63219, I6322, I63231, I63232, I63233, I63239, I6329, I6330, I63311, I63312, I63313, I63319, I63321, I63322, I63323, I63329, I63331, I63332, I63333, I63339, I63341, I63342, I63343, I63349, I6339, I6340, I63411, I63412, I63413, I63419, I63421, I63422, I63423, I63429, I63431, I63432, I63433, I63439, I63441, I63442, I63443, I63449, I6349, I6350, I63511, I63512, I63513, I63519, I63521, I63522, I63523, I63529, I63531, I63532, I63533, I63539, I63541, I63542, I63543, I63549, I6359, I636, I638, I6381, I6389, I639, I6501, I6502, I6503, I6509, I651, I6521, I6522, I6523, I6529, I658, I659, I6601, I6602, I6603, I6609, I6611, I6612, I6613, I6619, I6621, I6622, I6623, I6629, I663, I668, I669, I670, I671, I672, I673, I674, I675, I676, I677, I6781, I6782, I6783, I67841, I67848, I67850, I67858, I6789, I679, I680, I682, I688, I7100, I7101, I7102, I7103, I711, I712, I713, I714, I715, I716, I718, I719, I76, I790, I97120, I97121, I97130, I97131, I97710, I97711, I97810, I97811, I97820, I97821, J80, J810, J951, J952, J953, J95821, J95822, J9600, J9601, J9602, J9620, J9621, J9622, J9690, J9691, J9692, N170, N171, N172, N178, N179, O1500, O1502, O1503, O151, O152, O159, O2250, O2252, O2253, O29112, O29113, O29119, O29122, O29123, O29129, O29192, O29193, O29199, O29212, O29213, O29219, O29292, O29293, O29299, O45002, O45003, O45009, O45012, O45013, O45019, O45022, O45023, O45029, O45092, O45093, O45099, O46002, O46003, O46009, O46012, O46013, O46019, O46022, O46023, O46029, O46092, O46093, O46099, O670, O723, O740, O741, O742, O743, O751, O85, O8604, O873, O88012, O88013, O88019, O8802, O8803, O88112, O88113, O88119, O8812, O8813, O88212, O88213, O88219, O8822, O8823, O88312, O88313, O88319, O8832, O8833, O88812, O88813, O88819, O8882, O8883, O8901, O8909, O891, O892, O904, R0603, R092, R570, R571, R578, R579, R6520, R6521, T782XXA, T800XXA, T8110XA, T8111XA, T8112XA, T8119XA, T8144XA, T882XXA, T883XXA, T886XXA
 - ICD-10-CM/PCS procedure codes beginning with: 0UT90ZZ, 0UT97ZL, 0UT97ZZ, 0UT90ZL, 0B110F4, 0B113F4, 0B114F4, 5A1935Z, 5A1945Z, 5A1955Z

Appendix C: Standard Errors

Executive Summary

Standard Errors for Exhibit E.1 Standard errors for selected co-existing conditions per 10,000 delivery stays, overall, 2010-2019, National										
Condition	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Diabetes	13.41	16.04	7.73	7.63	8.00	7.99	7.17	7.61	8.41	8.72
Hypertension	18.36	21.09	9.83	9.54	10.05	10.90	11.47	13.03	14.08	15.42
Mental health disorders	19.60	18.50	9.26	10.22	11.06	11.82	10.82	12.40	13.88	15.19
Severe maternal morbidity	2.63	3.39	1.44	1.48	1.46	1.53	1.44	1.44	1.56	1.69
Substance use disorders	28.22	27.16	13.19	13.50	13.46	13.16	13.43	13.56	13.64	13.37
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.										

Standard Errors for Exhibit E.2 Standard errors for selected co-existing conditions per 10,000 delivery stays, by primary expected payer, 2010-2019, National											
Condition	Expected Payer	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Medicaid	Diabetes	15.90	19.32	10.51	10.21	10.51	10.23	9.68	9.78	10.30	10.61
	Hypertension	24.85	33.97	13.94	13.60	14.09	15.24	16.29	18.01	19.81	21.45
	Mental health disorders	27.31	28.27	13.44	14.61	16.55	17.26	14.52	15.57	17.56	18.93
	Severe maternal morbidity	2.74	4.24	1.93	2.16	2.11	2.36	2.11	1.98	2.12	2.32
	Substance use disorders	47.10	52.00	23.18	23.64	23.80	23.34	23.88	23.5	24.34	24.36
Private	Diabetes	16.04	21.34	9.35	9.85	9.88	10.15	8.81	9.33	10.70	11.16
	Hypertension	19.63	18.64	10.33	10.109	10.24	10.95	11.46	12.90	13.96	15.23
	Mental health disorders	17.19	15.37	8.45	9.35	9.65	10.71	10.66	12.86	14.29	15.69
	Severe maternal morbidity	3.57	3.87	1.86	1.78	1.71	1.83	1.54	1.71	1.79	1.89
	Substance use disorders	15.27	12.78	6.82	7.17	6.74	6.67	6.58	6.48	6.25	5.93

Self-pay/no charge	Diabetes	48.77	33.35	27.06	23.50	30.30	30.15	26.06	27.43	27.61	26.46
	Hypertension	49.53	48.69	30.45	30.04	35.30	45.41	39.12	40.65	42.70	49.94
	Mental health disorders	31.52	43.90	24.23	25.01	29.43	28.25	20.04	20.00	25.11	46.22
	Severe maternal morbidity	9.54	7.59	5.99	6.02	5.70	7.70	5.97	5.82	6.54	6.27
	Substance use disorders	69.44	71.41	33.19	34.32	39.26	31.80	29.31	29.01	28.56	27.95
Medicare (not shown)	Diabetes	61.63	71.72	55.71	54.08	48.72	68.09	52.47	55.52	56.84	57.74
	Hypertension	78.90	83.32	64.06	72.03	62.93	72.31	69.88	81.48	84.84	88.88
	Mental health disorders	268.12	203.29	112.27	107.53	114.55	138.83	100.88	125.19	121.35	125.50
	Severe maternal morbidity	21.48	26.49	17.66	21.08	22.09	25.10	22.34	22.97	23.39	22.14
	Substance use disorders	150.01	124.04	85.03	83.17	91.12	105.63	94.93	113.92	100.37	97.12
Other (not shown)	Diabetes	32.32	43.00	22.77	24.58	25.47	25.50	22.52	25.90	23.77	22.94
	Hypertension	36.64	35.07	24.38	24.93	24.96	30.10	29.83	30.85	32.41	30.89
	Mental health disorders	43.89	32.77	20.41	23.20	22.80	27.18	27.46	29.07	34.11	39.12
	Severe maternal morbidity	6.20	7.79	6.39	6.21	5.60	6.55	6.05	6.77	6.79	6.45
	Substance use disorders	59.00	36.24	27.75	29.09	22.96	25.14	28.17	32.44	27.60	30.63

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Section 1

Standard errors for Exhibit 1.1 Standard errors for diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer, 2010-2019, National										
Expected payer	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	13.41	16.04	7.73	7.63	8.00	7.99	7.17	7.61	8.41	8.72
Medicaid	15.90	19.32	10.51	10.21	10.51	10.23	9.69	9.78	10.30	10.61
Private	16.04	21.34	9.35	9.85	9.88	10.15	8.81	9.33	10.70	11.16
Self-pay/no charge	48.77	33.35	27.06	23.50	30.30	30.15	26.06	27.43	27.61	26.46

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Standard Errors for Exhibit 1.2 Standard errors for diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National											
Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	13.41	16.04	7.73	7.63	8.00	7.99	7.17	7.61	8.41	8.72
	12-19	7.71	8.32	7.31	7.74	8.26	9.83	8.34	9.46	10.06	10.33
	20-24	9.40	9.42	7.14	7.00	7.23	7.46	7.03	7.14	7.91	7.99
	25-34	14.84	17.53	8.71	8.58	8.60	8.75	7.76	7.89	8.88	9.43
	35-55	28.02	38.01	19.36	19.76	19.56	20.00	17.45	18.90	19.54	20.00
Medicaid	Total	15.90	19.32	10.51	10.21	10.51	10.23	9.69	9.78	10.30	10.61
	12-19	8.44	9.48	8.40	9.22	9.88	11.08	9.37	10.55	11.36	11.52
	20-24	10.85	11.33	8.71	8.55	8.84	9.03	8.79	8.88	9.61	9.41
	25-34	19.65	22.10	13.62	12.25	12.24	12.46	11.37	11.21	12.14	12.66
	35-55	45.44	47.27	30.52	30.50	30.43	32.18	27.35	26.17	26.04	27.14
Private	Total	16.04	21.34	9.35	9.85	9.88	10.15	8.81	9.33	10.70	11.16
	12-19	12.57	12.56	14.38	14.55	14.74	19.89	19.31	19.63	21.65	23.89
	20-24	12.09	13.05	10.00	10.93	10.00	11.50	10.05	10.46	11.93	12.64
	25-34	15.46	21.30	9.74	10.08	10.00	10.53	9.11	9.31	10.58	11.04
	35-55	29.60	43.76	20.63	21.95	21.41	21.97	19.32	20.99	22.19	23.36

Standard Errors for Exhibit 1.2

Standard errors for diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National

Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	48.77	33.35	27.06	23.50	30.30	30.15	26.06	27.43	27.61	26.46
	12-19	30.76	47.54	33.39	37.29	37.44	59.29	43.95	56.26	53.49	52.59
	20-24	33.87	45.43	29.42	29.22	28.01	38.35	32.82	37.18	32.66	31.84
	25-34	59.75	43.71	31.85	29.59	35.68	32.61	30.54	28.93	30.39	32.31
	35-55	102.85	75.22	85.56	60.64	64.60	71.61	59.16	67.35	64.27	62.29
Medicare (not shown)	Total	61.63	71.72	55.71	54.08	48.72	68.09	52.47	55.52	56.84	57.74
	12-19	85.80	124.68	131.48	100.50	134.29	218.16	155.89	239.87	128.01	156.35
	20-24	74.63	72.04	75.55	70.19	84.76	111.07	85.07	104.81	92.92	111.49
	25-34	77.13	78.26	65.80	60.03	54.62	74.60	58.61	61.39	66.29	66.71
	35-55	155.10	194.23	138.95	140.60	124.57	164.59	124.56	121.84	123.74	119.83
Other (not shown)	Total	32.32	43.00	22.77	24.58	25.47	25.50	22.52	25.90	23.77	22.94
	12-19	35.07	46.53	54.87	49.09	52.02	45.25	54.73	61.40	74.30	56.13
	20-24	26.03	30.95	27.61	28.12	35.89	33.15	30.96	34.20	34.68	37.65
	25-34	48.35	48.29	28.31	29.07	25.94	29.10	26.13	31.12	27.85	26.77
	35-55	82.22	113.90	78.71	79.39	86.91	86.70	74.06	72.47	65.51	68.66

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Standard Errors for Exhibit 1.3

Standard errors for diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National

Expected payer	Race/Ethnicity	2018	2019
Total	Total	8.41	8.72
	API NH	27.67	31.19
	Black NH	12.24	12.07
	Hispanic	15.59	16.30
	White NH	8.91	8.98
	Other NH	27.04	28.11

Standard Errors for Exhibit 1.3 Standard errors for diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National			
Expected payer	Race/Ethnicity	2018	2019
Medicaid	Total	10.30	10.61
	API NH	45.45	50.71
	Black NH	13.94	13.88
	Hispanic	17.83	19.76
	White NH	12.57	12.66
	Other NH	36.10	35.11
Private	Total	10.70	11.16
	API NH	32.18	35.12
	Black NH	20.14	19.19
	Hispanic	23.07	22.65
	White NH	10.16	10.21
	Other NH	33.67	35.88
Self-pay/no charge	Total	27.61	26.46
	API NH	101.60	99.98
	Black NH	52.09	71.01
	Hispanic	49.85	50.52
	White NH	30.95	33.28
	Other NH	109.07	96.59
Medicare (not shown)	Total	56.84	57.74
	API NH	370.62	402.81
	Black NH	96.63	94.21
	Hispanic	156.08	151.89
	White NH	78.33	81.06
	Other NH	177.22	268.48
Other (not shown)	Total	23.77	22.94
	API NH	135.31	114.45
	Black NH	59.73	60.49
	Hispanic	72.99	68.75
	White NH	24.85	25.19
	Other NH	98.35	101.67
Key: API=Asian/Pacific Islander, NH=Non-Hispanic Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2018-2019			

Standard Errors for Exhibit 1.4

Standard errors for diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National

Expected payer	Patient Location	2013	2014	2015	2016	2017	2018	2019
Total	Total	7.63	8.00	7.99	7.17	7.61	8.41	8.72
	Large metro	10.95	11.47	11.32	9.85	10.91	11.77	12.37
	Medium/small metro	13.07	13.49	14.26	13.12	12.75	14.39	14.36
	Non-metro	11.52	10.91	12.59	11.88	12.27	13.24	14.69
Medicaid	Total	10.21	10.51	10.23	9.69	9.78	10.30	10.61
	Large metro	15.10	15.31	14.53	13.32	14.19	14.56	15.60
	Medium/small metro	17.37	17.99	19.45	19.04	17.05	18.54	17.48
	Non-metro	15.01	14.73	16.69	15.87	16.17	16.76	18.49
Private	Total	9.85	9.88	10.15	8.81	9.33	10.70	11.16
	Large metro	14.09	14.18	14.48	12.28	13.36	14.97	15.87
	Medium/small metro	16.62	15.63	16.96	14.80	14.55	17.76	17.47
	Non-metro	14.65	14.00	16.43	15.25	15.16	16.58	18.11
Self-pay/no charge	Total	23.50	30.30	30.15	26.06	27.43	27.61	26.46
	Large metro	28.74	40.25	33.36	34.97	35.98	33.71	33.91
	Medium/small metro	45.52	44.52	74.91	51.00	48.06	48.94	52.83
	Non-metro	48.84	49.01	55.57	45.72	53.59	52.92	54.79
Medicare (not shown)	Total	54.08	48.72	68.09	52.47	55.52	56.84	57.74
	Large metro	66.41	62.51	88.18	73.35	79.59	76.22	74.76
	Medium/small metro	115.04	84.76	124.44	83.27	92.51	95.67	105.81
	Non-metro	113.21	112.09	162.32	119.67	136.32	151.53	131.16
Other (not shown)	Total	24.58	25.47	25.50	22.52	25.90	23.77	22.94
	Large metro	39.61	38.32	40.97	33.11	43.36	35.42	33.63
	Medium/small metro	41.11	39.08	38.58	34.84	32.16	37.85	35.16
	Non-metro	49.23	42.65	56.72	57.92	47.16	51.01	55.12

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Standard Errors for Exhibit 1.5
Standard errors for diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National

Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	13.41	16.04	7.73	7.63	8.00	7.99	7.17	7.61	8.41	8.72
	Northeast	28.16	23.89	15.80	15.46	16.26	16.30	17.43	18.76	22.32	22.58
	Midwest	19.44	23.24	12.82	13.10	12.85	12.44	12.66	12.58	13.92	15.70
	South	22.50	25.19	12.79	12.19	13.60	12.10	10.77	11.75	12.72	12.34
	West	33.51	44.16	19.39	19.47	19.32	21.53	17.49	18.82	20.10	21.74
Medicaid	Total	15.90	19.32	10.51	10.21	10.51	10.23	9.69	9.78	10.30	10.61
	Northeast	29.46	28.79	22.29	22.92	22.34	21.09	23.36	24.95	27.88	28.52
	Midwest	22.89	27.43	16.37	17.80	16.93	16.14	15.97	17.47	17.59	19.39
	South	27.36	33.62	17.83	16.92	18.09	15.68	14.33	15.26	15.74	15.27
	West	36.59	46.01	23.57	22.48	23.11	25.97	23.48	22.31	23.44	25.12
Private	Total	16.04	21.34	9.35	9.85	9.88	10.15	8.81	9.33	10.70	11.16
	Northeast	29.86	29.62	18.53	17.39	19.22	20.65	20.56	21.67	26.26	25.92
	Midwest	25.17	27.34	15.51	16.33	15.83	15.47	15.85	15.84	16.99	18.95
	South	23.67	25.54	12.35	13.41	13.91	14.35	12.15	12.59	14.86	14.03
	West	43.53	62.62	26.45	28.37	27.23	28.66	22.43	24.88	27.60	30.28
Self-pay/no charge	Total	48.77	33.35	27.06	23.50	30.30	30.15	26.06	27.43	27.61	26.46
	Northeast	86.29	52.29	56.99	70.97	65.75	118.62	81.90	62.25	74.34	69.32
	Midwest	65.32	62.45	102.07	56.91	54.89	61.84	63.78	62.13	69.16	56.25
	South	67.14	43.90	32.53	39.01	60.01	39.01	35.06	38.49	34.63	36.47
	West	43.61	101.65	49.54	33.06	37.39	58.35	49.40	59.42	65.54	62.70
Medicare (not shown)	Total	61.63	71.72	55.71	54.08	48.72	68.09	52.47	55.52	56.84	57.74
	Northeast	131.75	118.98	117.27	121.75	107.28	145.48	116.66	96.47	117.96	156.99
	Midwest	96.40	97.25	98.41	90.60	86.37	127.28	111.06	116.07	118.53	108.64
	South	120.66	141.29	89.98	96.23	81.70	114.17	73.17	89.36	78.06	76.51
	West	156.56	157.74	141.52	120.10	121.42	162.78	145.18	140.43	168.47	200.33

Standard Errors for Exhibit 1.5

Standard errors for diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National

Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Other (not shown)	Total	32.32	43.00	22.77	24.58	25.47	25.50	22.52	25.90	23.77	22.94
	Northeast	65.29	53.05	60.01	72.04	81.30	61.57	60.71	59.79	54.62	72.96
	Midwest	76.30	92.10	40.73	43.93	45.45	52.92	47.92	42.66	52.04	52.75
	South	57.88	77.44	37.57	40.89	39.40	35.67	33.15	41.87	35.17	30.18
	West	45.01	35.10	48.59	48.14	51.37	63.64	51.81	63.86	54.24	48.77

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Standard Errors for Exhibit 1.6

Standard errors for diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National

Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	13.41	16.04	7.73	7.63	8.00	7.99	7.17	7.61	8.41	8.72
	Quartile 1 (lowest)	40.35	26.38	20.08	20.27	18.43	20.10	25.85	28.63	33.98	31.30
	Quartiles 2 and 3	18.68	19.64	11.67	10.66	10.74	10.08	9.48	9.88	11.17	11.17
	Quartile 4 (highest)	18.00	23.72	10.58	10.69	11.52	11.83	10.10	10.78	11.73	12.08
Medicaid	Total	15.90	19.32	10.51	10.21	10.51	10.23	9.69	9.78	10.30	10.61
	Quartile 1 (lowest)	44.26	26.92	22.49	23.69	22.05	21.78	31.58	33.03	42.43	33.45
	Quartiles 2 and 3	21.76	26.79	15.03	14.53	15.04	13.52	13.19	13.08	15.14	14.26
	Quartile 4 (highest)	22.00	30.14	16.00	15.63	16.09	16.36	14.41	14.51	14.65	15.53
Private	Total	16.04	21.34	9.35	9.85	9.88	10.15	8.81	9.33	10.70	11.16
	Quartile 1 (lowest)	44.70	35.92	27.12	29.04	26.62	31.12	30.00	32.48	33.52	35.82
	Quartiles 2 and 3	19.92	19.97	12.96	12.10	10.99	12.02	10.78	11.24	12.69	13.23
	Quartile 4 (highest)	21.26	29.81	12.48	13.37	13.89	14.28	12.21	13.08	14.91	15.27
Self-pay/no charge	Total	48.77	33.35	27.06	23.50	30.30	30.15	26.06	27.43	27.61	26.46
	Quartile 1 (lowest)	38.98	97.48	70.10	70.10	67.90	74.59	71.56	74.21	75.77	85.53
	Quartiles 2 and 3	87.33	59.27	34.34	38.48	34.77	41.78	35.23	42.76	34.48	41.88
	Quartile 4 (highest)	35.53	33.20	39.76	27.93	42.85	42.82	36.63	37.62	35.79	34.00

Standard Errors for Exhibit 1.6 Standard errors for diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National											
Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Medicare (not shown)	Total	61.63	71.72	55.71	54.08	48.72	68.09	52.47	55.52	56.84	57.74
	Quartile 1 (lowest)	226.56	275.09	142.57	145.13	142.09	231.85	140.90	135.38	161.65	191.24
	Quartiles 2 and 3	88.57	78.37	87.15	83.28	74.09	95.53	72.31	83.13	84.04	83.70
	Quartile 4 (highest)	77.74	85.99	71.50	67.63	62.60	98.94	74.43	81.22	79.20	82.05
Other (not shown)	Total	32.32	43.00	22.77	24.58	25.47	25.50	22.52	25.90	23.77	22.94
	Quartile 1 (lowest)	69.09	69.15	67.59	78.05	61.52	90.25	89.97	81.67	83.45	93.32
	Quartiles 2 and 3	55.17	81.70	34.71	40.63	40.09	37.46	34.92	32.73	33.05	32.13
	Quartile 4 (highest)	37.03	23.13	27.51	28.18	34.35	37.10	32.48	39.03	33.30	32.01
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.											

Standard Errors for Exhibit 1.7 Standard errors for diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National											
Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	13.41	16.04	7.73	7.63	8.00	7.99	7.17	7.61	8.41	8.72
	Quartile 1 (lowest)	31.55	18.43	12.54	14.10	12.94	12.56	12.63	13.28	14.60	14.88
	Quartiles 2 and 3	17.51	18.46	10.74	9.97	10.96	10.63	9.46	9.97	10.57	11.38
	Quartile 4 (highest)	20.28	33.41	13.49	14.43	15.10	15.92	14.00	14.81	16.98	16.35
Medicaid	Total	15.90	19.32	10.51	10.21	10.51	10.23	9.69	9.78	10.30	10.61
	Quartile 1 (lowest)	52.31	26.27	20.75	29.00	19.29	24.40	19.70	22.12	22.07	23.07
	Quartiles 2 and 3	20.14	22.01	15.20	14.07	14.92	14.32	12.67	13.16	13.20	14.34
	Quartile 4 (highest)	24.94	35.04	16.69	16.53	17.60	17.25	18.06	16.90	20.25	18.82
Private	Total	16.04	21.34	9.35	9.85	9.88	10.15	8.81	9.33	10.70	11.16
	Quartile 1 (lowest)	27.64	22.55	13.95	13.84	14.78	13.92	13.92	14.44	16.33	16.04
	Quartiles 2 and 3	19.82	22.13	12.13	11.74	12.77	12.86	11.51	12.07	13.49	14.63
	Quartile 4 (highest)	29.42	52.43	19.86	24.66	23.59	26.31	18.62	20.71	23.37	22.56

Standard Errors for Exhibit 1.7

Standard errors for diabetes-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National

Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	48.77	33.35	27.06	23.50	30.30	30.15	26.06	27.43	27.61	26.46
	Quartile 1 (lowest)	97.49	67.22	120.70	64.72	53.84	70.12	70.38	67.78	72.10	62.91
	Quartiles 2 and 3	66.40	43.94	32.46	29.99	42.98	40.03	34.16	32.14	31.08	31.19
	Quartile 4 (highest)	38.49	53.07	39.82	33.27	40.32	48.84	42.11	55.82	48.15	54.97
Medicare (not shown)	Total	61.63	71.72	55.71	54.08	48.72	68.09	52.47	55.52	56.84	57.74
	Quartile 1 (lowest)	132.49	132.93	126.39	127.41	108.05	166.02	121.22	108.88	115.65	150.32
	Quartiles 2 and 3	72.93	93.13	72.98	66.53	65.46	88.32	71.25	76.60	76.36	70.12
	Quartile 4 (highest)	79.83	99.51	86.55	96.15	99.67	129.65	95.56	100.24	97.74	110.06
Other (not shown)	Total	32.32	43.00	22.77	24.58	25.47	25.50	22.52	25.90	23.77	22.94
	Quartile 1 (lowest)	86.52	45.18	38.93	49.31	47.35	48.27	48.32	48.15	47.13	49.80
	Quartiles 2 and 3	37.43	66.04	32.72	31.91	35.49	35.00	29.16	36.33	32.11	29.84
	Quartile 4 (highest)	50.29	36.58	38.66	44.11	40.36	49.41	47.86	41.31	46.15	47.06

Key: SVI=Social Vulnerability Index

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Section 2

Standard Errors for Exhibit 2.1 Standard errors for hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer, 2010-2019, National										
Expected payer	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	18.36	21.09	9.83	9.54	10.05	10.90	11.47	13.03	14.08	15.42
Medicaid	24.85	33.97	13.94	13.60	14.09	15.24	16.29	18.01	19.81	21.45
Private	19.63	18.64	10.33	10.10	10.24	10.95	11.46	12.90	13.96	15.23
Self-pay/no charge	49.53	48.69	30.45	30.04	35.30	45.41	39.12	40.65	42.70	49.94

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Standard Errors for Exhibit 2.2 Standard errors for hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National											
Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	18.36	21.09	9.83	9.54	10.05	10.90	11.47	13.03	14.08	15.42
	12-19	26.70	34.81	17.33	17.54	18.70	22.28	22.62	24.97	25.79	31.24
	20-24	19.23	21.43	11.71	11.64	11.91	13.60	14.10	15.26	17.22	18.19
	25-34	17.78	19.79	10.01	9.82	10.25	11.13	11.47	12.71	13.61	15.19
	35-55	34.34	31.95	17.25	16.91	17.17	18.55	18.39	20.84	21.47	22.01
Medicaid	Total	24.85	33.97	13.94	13.60	14.09	15.24	16.29	18.01	19.81	21.45
	12-19	30.06	43.15	20.41	20.48	21.86	25.27	25.66	28.82	28.72	35.18
	20-24	22.12	26.80	14.15	14.14	14.02	16.19	16.77	18.34	21.05	22.22
	25-34	25.53	33.33	15.37	14.97	15.46	16.78	17.05	18.21	19.56	21.39
	35-55	49.67	67.18	29.30	29.48	29.23	31.58	30.65	32.74	35.84	35.00
Private	Total	19.63	18.64	10.33	10.10	10.24	10.95	11.46	12.90	13.96	15.23
	12-19	36.97	30.92	27.68	30.07	31.52	36.48	38.31	42.50	48.49	50.68
	20-24	24.85	22.49	16.08	16.27	16.36	18.77	18.52	19.13	21.83	22.38
	25-34	19.19	19.05	10.75	10.78	10.79	11.48	11.72	13.17	13.99	15.61
	35-55	35.47	28.03	18.46	17.30	17.60	20.14	19.17	21.09	21.68	22.70

Standard Errors for Exhibit 2.2

Standard errors for hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National

Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	49.53	48.69	30.45	30.04	35.30	45.41	39.12	40.65	42.70	49.94
	12-19	98.25	83.05	79.63	82.65	79.93	150.68	115.53	114.74	138.62	119.87
	20-24	50.77	66.43	40.54	48.49	47.16	66.88	63.19	66.10	74.30	76.28
	25-34	45.43	49.47	34.98	31.23	37.78	46.76	38.91	40.29	43.78	51.12
	35-55	100.48	80.52	66.79	66.70	71.19	74.64	68.95	69.56	74.43	77.02
Medicare (not shown)	Total	78.90	83.32	64.06	72.03	62.93	73.21	69.88	81.48	84.84	88.88
	12-19	247.53	205.38	199.20	206.60	265.51	339.65	274.96	318.03	289.48	397.69
	20-24	92.90	132.75	92.24	106.41	103.84	136.88	123.29	143.29	150.80	158.51
	25-34	89.15	91.82	71.17	80.60	70.91	80.90	79.46	86.33	92.84	103.66
	35-55	148.85	176.96	148.52	147.60	142.63	173.12	142.45	170.49	149.30	156.39
Other (not shown)	Total	36.64	35.07	24.38	24.93	24.96	30.10	29.83	30.85	32.41	30.89
	12-19	88.93	85.33	79.89	92.17	101.88	116.34	111.01	139.05	154.01	152.28
	20-24	52.95	38.62	38.60	40.41	42.30	50.98	48.85	54.37	57.88	61.46
	25-34	37.67	38.69	29.12	28.89	28.24	36.16	35.98	34.25	37.71	34.49
	35-55	78.33	97.06	69.09	71.97	72.35	78.36	69.56	73.55	74.05	71.58

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Standard Errors for Exhibit 2.3

Standard errors for hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National

Expected payer	Race/Ethnicity	2018	2019
Total	Total	14.08	15.42
	API NH	35.36	39.19
	Black NH	30.58	34.64
	Hispanic	25.43	27.09
	White NH	13.90	15.46
	Other NH	30.98	33.00

Standard Errors for Exhibit 2.3
Standard errors for hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National

Expected payer	Race/Ethnicity	2018	2019
Medicaid	Total	19.81	21.45
	API NH	55.24	56.79
	Black NH	36.48	40.58
	Hispanic	32.10	34.39
	White NH	19.52	22.69
	Other NH	39.77	44.89
Private	Total	13.96	15.23
	API NH	34.59	41.22
	Black NH	32.91	36.24
	Hispanic	26.11	24.76
	White NH	15.00	16.19
	Other NH	37.33	40.12
Self-pay/no charge	Total	42.70	49.94
	API NH	47.26	54.25
	Black NH	102.62	109.19
	Hispanic	63.18	67.31
	White NH	50.61	60.91
	Other NH	130.08	84.26
Medicare (not shown)	Total	84.84	88.88
	API NH	342.69	259.64
	Black NH	141.19	137.14
	Hispanic	213.51	169.50
	White NH	94.27	105.66
	Other NH	197.42	282.34
Other (not shown)	Total	32.41	30.89
	API NH	103.35	87.86
	Black NH	88.24	97.98
	Hispanic	69.27	74.52
	White NH	38.60	35.46
	Other NH	115.05	106.62

Key: API=Asian/Pacific Islander, NH=Non-Hispanic **Source:** Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2018-2019

Standard Errors for Exhibit 2.4
Standard errors for hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National

Expected payer	Patient Location	2013	2014	2015	2016	2017	2018	2019
Total	Total	9.54	10.05	10.90	11.47	13.03	14.08	15.42
	Large metro	14.30	14.89	15.81	16.43	18.84	20.61	22.62
	Medium/small metro	14.91	15.49	17.68	19.05	21.19	22.25	24.01
	Non-metro	16.40	16.78	18.63	18.85	19.04	20.99	22.94
Medicaid	Total	13.60	14.09	15.24	16.29	18.01	19.81	21.45
	Large metro	22.10	22.29	23.31	24.69	28.25	31.17	34.04
	Medium/small metro	18.49	20.45	23.36	25.28	26.15	28.00	30.70
	Non-metro	19.52	21.09	24.38	24.66	23.41	26.54	28.58
Private	Total	10.10	10.24	10.95	11.46	12.90	13.96	15.23
	Large metro	13.83	14.19	14.89	14.91	16.83	18.77	20.58
	Medium/small metro	16.37	15.52	18.34	20.06	22.69	22.78	24.44
	Non-metro	21.16	20.26	23.59	22.53	23.55	24.78	26.55
Self-pay/no charge	Total	30.04	35.30	45.41	39.12	40.65	42.70	49.94
	Large metro	46.43	49.39	59.35	47.10	57.83	60.19	74.25
	Medium/small metro	41.55	42.82	56.80	53.85	64.39	67.04	53.48
	Non-metro	57.57	50.17	88.68	76.54	76.02	76.59	77.31
Medicare (not shown)	Total	72.03	62.93	73.21	69.88	81.48	84.84	88.88
	Large metro	106.14	95.19	103.04	116.32	120.03	126.21	142.00
	Medium/small metro	128.35	105.27	135.91	95.08	121.73	139.05	146.32
	Non-metro	131.13	127.12	150.69	147.54	175.03	177.98	157.57
Other (not shown)	Total	24.93	24.96	30.10	29.83	30.85	32.41	30.89
	Large metro	37.11	34.54	43.26	42.68	45.61	49.93	45.85
	Medium/small metro	40.78	41.01	47.79	41.33	50.43	46.27	47.37
	Non-metro	50.37	58.43	73.16	76.00	67.27	75.80	72.04

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Standard Errors for Exhibit 2.5**Standard errors for hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National**

Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	18.36	21.09	9.83	9.54	10.05	10.90	11.47	13.03	14.08	15.42
	Northeast	53.47	47.03	25.85	24.97	28.82	33.47	31.75	35.46	40.98	44.22
	Midwest	28.67	49.61	17.93	18.11	18.73	20.23	21.96	23.88	24.95	30.43
	South	34.72	35.06	17.37	16.42	16.89	17.80	19.31	21.75	23.64	25.14
	West	30.43	31.14	14.88	15.34	16.68	19.08	20.39	24.73	25.73	28.04
Medicaid	Total	24.85	33.97	13.94	13.60	14.09	15.24	16.29	18.01	19.81	21.45
	Northeast	78.00	79.61	35.87	36.74	43.19	48.67	46.08	48.35	57.47	62.26
	Midwest	40.97	83.97	28.17	29.82	27.58	31.78	33.98	34.12	37.74	44.93
	South	41.02	52.12	23.49	21.81	22.53	23.70	25.80	29.51	31.74	34.08
	West	38.00	39.77	19.20	19.73	21.83	23.65	26.44	31.37	32.82	33.36
Private	Total	19.63	18.64	10.33	10.10	10.24	10.95	11.46	12.90	13.96	15.23
	Northeast	52.03	40.50	25.97	24.00	26.73	30.35	29.23	34.43	39.91	44.40
	Midwest	28.59	34.76	16.44	17.00	17.72	18.72	20.40	22.74	24.08	27.81
	South	42.96	32.69	19.56	19.14	18.66	18.63	20.65	21.13	23.44	24.36
	West	34.66	37.01	17.77	17.79	18.20	21.47	22.47	27.84	28.85	32.20
Self-pay/no charge	Total	49.53	48.69	30.45	30.04	35.30	45.41	39.12	40.65	42.70	49.94
	Northeast	113.48	122.18	66.50	68.13	55.96	84.69	70.46	82.37	137.01	155.64
	Midwest	87.85	86.01	55.76	55.67	58.09	72.26	61.93	62.81	81.48	71.10
	South	64.46	74.77	43.65	43.23	49.88	72.98	55.92	63.07	60.84	63.23
	West	64.19	95.10	57.06	54.61	59.18	62.90	68.20	60.87	66.08	72.37
Medicare (not shown)	Total	78.90	83.32	64.06	72.03	62.93	73.21	69.88	81.48	84.84	88.88
	Northeast	106.97	124.68	136.34	133.60	139.14	123.19	156.97	117.45	168.02	256.55
	Midwest	105.11	141.03	116.89	136.89	129.75	148.18	127.72	167.89	155.07	160.39
	South	155.14	192.28	109.72	138.94	107.08	132.66	122.38	140.97	139.51	122.59
	West	164.45	161.53	144.10	133.53	129.01	167.07	175.93	179.87	208.77	268.53

Standard Errors for Exhibit 2.5

Standard errors for hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National

Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Other (not shown)	Total	36.64	35.07	24.38	24.93	24.96	30.10	29.83	30.85	32.41	30.89
	Northeast	73.10	73.97	90.92	66.69	80.56	60.20	74.49	75.94	64.98	67.59
	Midwest	58.41	75.48	51.22	53.29	58.29	65.65	76.06	65.81	64.10	69.08
	South	69.62	55.38	37.27	38.51	36.70	47.61	44.58	49.69	53.65	49.79
	West	70.87	52.47	47.10	54.53	47.08	62.78	50.90	61.33	69.67	61.21

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Standard Errors for Exhibit 2.6

Standard errors for hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National

Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	18.36	21.09	9.83	9.54	10.05	10.90	11.47	13.03	14.08	15.42
	Quartile 1 (lowest)	81.67	86.88	38.31	34.49	41.80	47.26	45.67	40.53	45.35	43.71
	Quartiles 2 and 3	29.96	35.17	16.28	15.69	15.54	16.85	18.11	21.00	21.98	22.69
	Quartile 4 (highest)	20.19	20.33	10.98	10.90	11.73	12.83	13.27	15.55	16.90	19.72
Medicaid	Total	24.85	33.97	13.94	13.60	14.09	15.24	16.29	18.01	19.81	21.45
	Quartile 1 (lowest)	95.76	103.13	43.97	41.77	48.37	60.12	58.74	45.63	52.84	55.73
	Quartiles 2 and 3	41.83	53.93	22.73	21.99	21.34	23.18	24.99	28.39	31.42	29.74
	Quartile 4 (highest)	26.25	32.55	16.86	16.35	18.02	18.25	19.70	23.34	24.69	31.08
Private	Total	19.63	18.64	10.33	10.10	10.24	10.95	11.46	12.90	13.96	15.23
	Quartile 1 (lowest)	73.87	78.01	50.79	44.01	50.11	50.34	46.83	48.99	56.05	47.74
	Quartiles 2 and 3	27.93	28.39	15.76	15.58	15.42	16.53	17.50	19.36	19.81	22.34
	Quartile 4 (highest)	22.62	20.93	11.83	11.84	12.07	13.50	13.57	15.75	17.12	18.67

Standard Errors for Exhibit 2.6 Standard errors for hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National											
Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	49.53	48.69	30.45	30.04	35.30	45.41	39.12	40.65	42.70	49.94
	Quartile 1 (lowest)	54.11	112.27	77.44	98.07	88.31	147.59	95.80	101.61	115.17	111.49
	Quartiles 2 and 3	73.69	81.47	54.16	47.77	42.24	50.04	51.53	69.73	70.60	52.05
	Quartile 4 (highest)	57.81	54.73	37.63	40.12	48.16	58.23	46.83	48.74	53.96	72.57
Medicare (not shown)	Total	78.90	83.32	64.06	72.03	62.93	73.21	69.88	81.48	84.84	88.88
	Quartile 1 (lowest)	257.01	432.82	191.11	195.82	206.92	260.84	291.13	313.31	224.11	216.64
	Quartiles 2 and 3	120.01	108.83	95.74	112.02	86.82	105.25	93.20	109.95	118.28	115.97
	Quartile 4 (highest)	107.09	89.26	87.61	99.92	92.50	104.56	102.75	111.49	124.84	145.25
Other (not shown)	Total	36.64	35.07	24.38	24.93	24.96	30.10	29.83	30.85	32.41	30.89
	Quartile 1 (lowest)	192.77	129.07	110.23	96.20	86.98	143.96	105.22	108.69	161.93	124.97
	Quartiles 2 and 3	54.40	56.74	35.61	36.82	37.17	42.59	42.25	47.23	47.76	48.80
	Quartile 4 (highest)	43.95	33.51	31.28	34.56	34.22	40.54	35.50	41.11	40.65	39.50
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.											

Standard Errors for Exhibit 2.7 Standard errors for hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National											
Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	18.36	21.09	9.83	9.54	10.05	10.90	11.47	13.03	14.08	15.42
	Quartile 1 (lowest)	24.95	25.47	14.91	15.44	16.56	19.02	18.17	21.40	21.84	24.49
	Quartiles 2 and 3	21.54	24.40	11.10	11.28	11.87	13.01	13.55	15.35	17.00	18.68
	Quartile 4 (highest)	40.91	40.92	20.26	19.64	23.07	24.28	25.70	28.03	28.96	31.33
Medicaid	Total	24.85	33.97	13.94	13.60	14.09	15.24	16.29	18.01	19.81	21.45
	Quartile 1 (lowest)	26.47	34.67	23.68	23.01	23.34	29.40	27.42	31.72	31.28	32.91
	Quartiles 2 and 3	27.88	35.12	15.17	15.26	16.87	17.61	18.31	21.16	24.42	26.58
	Quartile 4 (highest)	51.45	61.00	26.43	26.16	29.16	31.55	34.17	35.86	37.25	40.10

Standard Errors for Exhibit 2.7

Standard errors for hypertension-related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National

Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Private	Total	19.63	18.64	10.33	10.10	10.24	10.95	11.46	12.90	13.96	15.23
	Quartile 1 (lowest)	29.32	27.77	17.17	17.25	18.28	19.95	19.05	22.47	23.13	25.56
	Quartiles 2 and 3	24.57	24.98	12.57	12.69	12.70	13.96	14.45	15.70	17.01	18.48
	Quartile 4 (highest)	41.82	32.01	21.03	19.40	22.34	22.56	23.66	26.21	28.12	30.63
Self-pay/no charge	Total	49.53	48.69	30.45	30.04	35.30	45.41	39.12	40.65	42.70	49.94
	Quartile 1 (lowest)	66.71	64.00	64.10	75.19	58.49	82.68	63.69	73.95	68.66	94.02
	Quartiles 2 and 3	52.11	46.71	29.10	33.04	37.60	56.01	43.20	47.39	53.69	61.10
	Quartile 4 (highest)	80.28	96.08	69.70	62.43	65.76	64.67	73.95	86.03	79.83	81.30
Medicare (not shown)	Total	78.90	83.32	64.06	72.03	62.93	73.21	69.88	81.48	84.84	88.88
	Quartile 1 (lowest)	168.23	129.05	140.69	142.51	138.64	180.32	140.51	157.73	189.40	213.60
	Quartiles 2 and 3	114.13	109.84	77.75	91.35	75.29	90.99	84.00	96.38	109.29	113.33
	Quartile 4 (highest)	176.26	173.14	118.79	137.43	125.57	153.03	151.25	166.49	149.39	158.42
Other (not shown)	Total	36.64	35.07	24.38	24.93	24.96	30.10	29.83	30.85	32.41	30.89
	Quartile 1 (lowest)	53.25	58.48	44.14	61.31	54.26	58.36	57.95	58.79	56.20	59.61
	Quartiles 2 and 3	42.15	43.60	31.11	33.96	32.22	39.98	34.70	40.21	42.65	38.71
	Quartile 4 (highest)	71.06	66.60	46.62	45.59	48.76	61.06	59.51	63.64	66.68	64.96

Key: SVI=Social Vulnerability Index

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Section 3

Standard Errors for Exhibit 3.1 Standard errors for mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer, 2010-2019, National										
Expected payer	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	19.60	18.50	9.26	10.22	11.06	11.82	10.82	12.40	13.88	15.19
Medicaid	27.31	28.27	13.44	14.61	16.55	17.26	14.52	15.57	17.56	18.93
Private	17.19	15.37	8.45	9.35	9.65	10.71	10.66	12.86	14.29	15.69
Self-pay/no charge	31.52	43.90	24.23	25.01	29.43	28.25	20.04	20.00	25.11	46.22
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.										

Standard Errors for Exhibit 3.2 Standard errors for mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National											
Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	19.60	18.50	9.26	10.22	11.06	11.82	10.82	12.40	13.88	15.19
	12-19	22.61	23.11	13.33	14.83	17.73	19.56	17.06	18.57	21.38	22.64
	20-24	21.57	21.58	11.71	12.77	13.95	14.73	12.35	14.31	15.90	18.08
	25-34	19.69	18.02	9.23	10.32	10.93	11.96	11.05	12.50	14.15	15.47
	35-55	23.45	21.19	11.60	12.20	12.95	14.46	13.85	15.73	16.93	18.11
Medicaid	Total	27.31	28.27	13.44	14.61	16.55	17.26	14.52	15.57	17.56	18.93
	12-19	24.65	26.84	15.09	16.95	20.05	22.18	19.32	19.75	23.48	24.20
	20-24	26.58	27.70	14.42	15.48	17.30	18.08	14.33	16.37	18.09	20.64
	25-34	31.69	30.67	15.56	16.77	18.42	19.90	16.44	17.37	19.24	20.52
	35-55	35.14	40.74	19.04	21.24	22.79	24.32	20.46	20.58	24.46	25.16
Private	Total	17.19	15.37	8.45	9.35	9.65	10.71	10.66	12.86	14.29	15.69
	12-19	28.56	24.70	22.57	25.83	28.11	35.49	31.15	37.82	42.29	43.72
	20-24	20.59	17.40	12.96	14.91	15.02	17.28	14.74	17.46	20.02	23.14
	25-34	16.49	14.92	8.28	9.25	9.49	10.66	10.59	12.63	14.26	15.75
	35-55	23.30	20.97	12.39	12.33	13.15	14.71	15.01	17.56	18.62	19.74

Standard Errors for Exhibit 3.2 Standard errors for mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National											
Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	31.52	43.90	24.23	25.01	29.43	28.25	20.04	20.00	25.11	46.22
	12-19	48.98	68.59	51.68	55.06	65.52	82.66	67.73	78.53	80.60	92.29
	20-24	40.81	67.33	37.46	41.66	45.16	49.18	40.14	39.78	43.52	63.61
	25-34	33.51	47.50	29.37	29.30	33.84	31.61	21.00	20.80	28.27	50.93
	35-55	42.08	52.34	37.55	39.64	35.05	39.72	31.22	29.84	31.63	42.71
Medicare (not shown)	Total	268.12	203.29	112.27	107.53	114.55	138.83	100.88	125.19	121.35	125.50
	12-19	169.85	93.13	122.29	182.05	199.83	271.36	209.23	342.57	200.32	239.47
	20-24	258.37	239.60	144.51	149.43	167.18	210.19	130.19	211.65	179.36	224.57
	25-34	259.24	194.51	122.63	117.02	123.52	149.82	116.58	128.60	128.66	128.67
	35-55	258.93	308.99	181.02	160.37	163.84	195.93	161.35	168.41	169.39	173.89
Other (not shown)	Total	43.89	32.77	20.41	23.20	22.80	27.18	27.46	29.07	34.11	39.12
	12-19	64.37	60.96	56.47	76.40	91.72	96.39	69.70	111.71	136.34	132.54
	20-24	44.62	40.38	34.45	37.01	37.31	46.35	37.97	45.21	57.82	61.11
	25-34	49.58	33.46	24.07	25.50	25.21	29.82	30.09	31.63	37.34	43.26
	35-55	71.14	57.89	41.54	48.26	46.95	55.62	50.83	59.10	61.41	65.11
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.											

Standard Errors for Exhibit 3.3 Standard errors for mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National			
Expected payer	Race/Ethnicity	2018	2019
Total	Total	13.88	15.19
	API NH	13.52	13.19
	Black NH	20.94	21.19
	Hispanic	15.62	16.74
	White NH	17.30	18.58
	Other NH	20.76	24.13

Standard Errors for Exhibit 3.3 Standard errors for mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National			
Expected payer	Race/Ethnicity	2018	2019
Medicaid	Total	17.56	18.93
	API NH	18.92	22.86
	Black NH	24.42	24.38
	Hispanic	15.99	17.47
	White NH	27.05	28.73
	Other NH	24.73	32.76
Private	Total	14.29	15.69
	API NH	16.75	14.86
	Black NH	18.52	19.75
	Hispanic	23.46	25.26
	White NH	16.45	17.85
	Other NH	24.73	26.78
Self-pay/no charge	Total	25.11	46.22
	API NH	19.14	21.83
	Black NH	71.13	122.32
	Hispanic	23.96	29.64
	White NH	38.84	67.62
	Other NH	56.52	59.07
Medicare (not shown)	Total	121.35	125.50
	API NH	237.54	222.49
	Black NH	153.01	146.67
	Hispanic	271.04	244.34
	White NH	159.89	164.79
	Other NH	251.05	277.01
Other (not shown)	Total	34.11	39.12
	API NH	62.40	55.42
	Black NH	89.25	97.84
	Hispanic	51.74	59.75
	White NH	40.43	48.25
	Other NH	112.99	96.63
Key: API=Asian/Pacific Islander, NH=Non-Hispanic Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2018-2019			

Standard Errors for Exhibit 3.4
Standard errors for mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National

Expected payer	Patient Location	2013	2014	2015	2016	2017	2018	2019
Total	Total	10.22	11.06	11.82	10.82	12.40	13.88	15.19
	Large metro	13.52	14.67	15.76	14.64	16.63	18.59	19.91
	Medium/small metro	18.56	19.54	21.46	18.43	21.35	23.71	26.45
	Non-metro	19.27	20.34	18.39	16.50	19.63	20.99	23.65
Medicaid	Total	14.61	16.55	17.26	14.52	15.57	17.56	18.93
	Large metro	19.91	22.44	23.40	19.19	20.56	23.45	24.54
	Medium/small metro	26.26	28.58	30.90	25.75	27.81	29.64	33.09
	Non-metro	27.64	31.24	27.57	23.55	25.71	27.89	31.19
Private	Total	9.35	9.65	10.71	10.66	12.86	14.29	15.69
	Large metro	12.28	13.20	14.44	14.81	17.63	19.33	20.76
	Medium/small metro	16.66	16.67	19.00	16.64	20.81	24.17	26.99
	Non-metro	16.94	16.04	16.64	15.69	18.41	20.82	22.74
Self-pay/no charge	Total	25.01	29.43	28.25	20.04	20.00	25.11	46.22
	Large metro	32.47	29.88	32.02	23.84	21.49	33.40	72.67
	Medium/small metro	48.67	46.17	59.39	40.10	49.23	48.05	40.14
	Non-metro	43.81	115.77	74.04	42.08	42.96	42.12	45.20
Medicare (not shown)	Total	107.53	114.55	138.83	100.88	125.19	121.35	125.50
	Large metro	136.98	156.95	201.75	153.68	169.05	177.90	174.94
	Medium/small metro	219.88	191.78	239.71	168.42	206.58	193.45	214.26
	Non-metro	170.02	213.10	218.14	162.83	255.65	220.94	197.68
Other (not shown)	Total	23.20	22.80	27.18	27.46	29.07	34.11	39.12
	Large metro	31.41	32.35	37.84	41.54	44.85	48.93	58.62
	Medium/small metro	37.79	36.24	46.75	42.27	40.93	50.92	54.28
	Non-metro	53.15	60.36	55.14	45.82	59.89	82.52	72.26

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Standard Errors for Exhibit 3.5
Standard errors for mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National

Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	19.60	18.50	9.26	10.22	11.06	11.82	10.82	12.40	13.88	15.19
	Northeast	58.16	37.11	25.64	29.54	31.99	35.68	31.48	35.84	41.45	45.15
	Midwest	37.38	44.01	19.03	20.40	21.61	22.57	19.99	23.15	26.39	28.57
	South	33.32	28.69	14.57	16.05	17.74	18.30	15.97	18.05	20.44	22.82
	West	34.32	32.61	17.73	19.21	20.80	22.90	23.72	27.86	29.42	31.41
Medicaid	Total	27.31	28.27	13.44	14.61	16.55	17.26	14.52	15.57	17.56	18.93
	Northeast	88.96	60.96	42.51	49.94	54.08	56.27	47.56	48.56	60.54	63.79
	Midwest	52.74	63.60	28.51	29.89	33.76	34.15	28.92	30.73	33.85	38.31
	South	42.85	39.57	20.23	21.65	25.00	25.52	20.16	21.92	24.99	26.54
	West	41.55	47.92	22.31	23.87	28.10	31.04	27.86	31.64	32.43	35.49
Private	Total	17.19	15.37	8.45	9.35	9.65	10.71	10.66	12.86	14.29	15.69
	Northeast	40.80	32.57	20.03	21.59	22.53	27.39	25.88	33.64	38.70	43.44
	Midwest	30.10	34.23	15.61	17.42	17.88	19.19	17.71	22.66	26.76	27.48
	South	26.53	23.20	11.36	13.06	14.08	15.96	15.73	17.89	19.83	23.52
	West	40.57	31.91	21.82	23.77	23.92	25.69	27.44	32.34	33.71	35.84
Self-pay/no charge	Total	31.52	43.90	24.23	25.01	29.43	28.25	20.04	20.00	25.11	46.22
	Northeast	61.47	101.92	58.20	66.66	129.48	56.92	48.06	65.65	115.43	216.15
	Midwest	87.28	105.86	56.59	49.17	54.55	69.77	43.94	40.54	54.56	50.89
	South	42.13	47.43	29.06	29.45	32.41	39.54	23.51	26.39	24.38	27.82
	West	76.62	119.63	62.08	65.07	42.80	60.52	46.15	39.54	48.16	42.85
Medicare (not shown)	Total	268.12	203.29	112.27	107.53	114.55	138.83	100.88	125.19	121.35	125.50
	Northeast	449.31	259.84	272.41	266.29	279.94	391.09	323.09	258.73	311.59	350.15
	Midwest	368.28	274.55	172.19	204.94	227.68	254.83	191.58	178.30	203.54	200.25
	South	167.71	360.80	168.79	163.10	173.27	197.32	131.65	161.26	159.07	151.42
	West	287.72	309.29	234.06	202.14	188.89	235.29	181.94	239.28	237.00	308.83

Standard Errors for Exhibit 3.5 Standard errors for mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National											
Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Other (not shown)	Total	43.89	32.77	20.41	23.20	22.80	27.18	27.46	29.07	34.11	39.12
	Northeast	65.17	69.91	61.08	73.66	67.49	112.15	69.65	80.60	72.24	81.25
	Midwest	131.78	89.93	44.54	43.79	51.90	76.71	71.32	74.26	96.09	96.51
	South	52.58	37.86	31.28	30.72	31.59	32.83	35.06	40.68	43.25	53.75
	West	64.44	55.54	38.38	56.82	48.70	52.22	54.35	57.07	70.41	80.74
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.											

Standard Errors for Exhibit 3.6 Standard errors for mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National											
Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	19.60	18.50	9.26	10.22	11.06	11.82	10.82	12.40	13.88	15.19
	Quartile 1 (lowest)	67.58	57.53	33.62	38.14	46.21	37.38	25.91	28.32	35.71	40.51
	Quartiles 2 and 3	32.55	24.65	14.62	15.65	17.40	18.12	15.98	19.19	21.19	22.95
	Quartile 4 (highest)	23.24	24.21	11.29	12.69	13.22	14.96	14.26	15.95	17.64	18.97
Medicaid	Total	27.31	28.27	13.44	14.61	16.55	17.26	14.52	15.57	17.56	18.93
	Quartile 1 (lowest)	83.78	72.70	41.82	43.71	53.84	41.69	30.69	33.31	36.16	41.81
	Quartiles 2 and 3	47.20	37.89	21.03	22.68	26.20	26.73	22.15	24.04	27.78	28.64
	Quartile 4 (highest)	31.90	40.72	16.85	19.23	20.37	22.72	20.02	21.16	22.82	24.96
Private	Total	17.19	15.37	8.45	9.35	9.65	10.71	10.66	12.86	14.29	15.69
	Quartile 1 (lowest)	31.87	24.46	24.11	34.61	39.07	38.47	24.79	26.41	44.11	48.19
	Quartiles 2 and 3	24.93	16.88	11.19	12.07	12.60	14.29	13.60	17.66	19.42	22.41
	Quartile 4 (highest)	21.81	19.92	11.21	12.18	12.73	14.16	14.30	16.71	18.36	19.36

Standard Errors for Exhibit 3.6 Standard errors for mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National											
Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	31.52	43.90	24.23	25.01	29.43	28.25	20.04	20.00	25.11	46.22
	Quartile 1 (lowest)	44.56	89.18	71.89	60.00	93.09	98.14	55.18	60.24	55.47	67.53
	Quartiles 2 and 3	64.10	69.30	35.08	39.31	56.28	40.73	32.25	34.94	37.30	40.27
	Quartile 4 (highest)	41.97	47.47	32.07	33.08	32.06	37.62	25.67	23.98	37.10	66.33
Medicare (not shown)	Total	268.12	203.29	112.27	107.53	114.55	138.83	100.88	125.19	121.35	125.50
	Quartile 1 (lowest)	277.12	337.81	179.44	238.30	306.56	285.21	232.46	313.23	267.52	247.09
	Quartiles 2 and 3	386.09	245.34	146.93	144.97	144.86	182.38	134.08	170.42	153.36	172.16
	Quartile 4 (highest)	230.50	271.15	152.11	139.04	156.59	198.18	142.27	175.01	189.47	192.93
Other (not shown)	Total	43.89	32.77	20.41	23.20	22.80	27.18	27.46	29.07	34.11	39.12
	Quartile 1 (lowest)	53.75	74.39	69.40	77.26	85.86	88.22	72.62	77.62	98.18	78.09
	Quartiles 2 and 3	45.28	39.27	27.73	37.57	35.92	41.93	39.05	43.93	51.15	55.06
	Quartile 4 (highest)	64.87	46.05	28.49	28.09	28.66	35.09	34.28	38.09	43.73	51.05
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.											

Standard Errors for Exhibit 3.7 Standard errors for mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National											
Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	19.60	18.50	9.26	10.22	11.06	11.82	10.82	12.40	13.88	15.19
	Quartile 1 (lowest)	42.86	26.88	18.71	19.57	18.56	21.74	21.08	24.44	26.68	30.65
	Quartiles 2 and 3	25.51	22.84	12.14	13.74	14.34	15.17	13.35	14.87	16.72	17.85
	Quartile 4 (highest)	30.18	28.02	13.61	14.20	19.18	19.97	18.01	21.01	23.53	24.88

Standard Errors for Exhibit 3.7

Standard errors for mental health disorder related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National

Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Medicaid	Total	27.31	28.27	13.44	14.61	16.55	17.26	14.52	15.57	17.56	18.93
	Quartile 1 (lowest)	80.96	49.81	35.21	39.94	36.83	41.43	37.18	39.83	46.66	50.10
	Quartiles 2 and 3	35.68	32.37	18.51	20.22	21.99	22.59	18.39	19.62	21.92	22.98
	Quartile 4 (highest)	36.59	37.59	17.25	18.49	24.48	25.05	20.55	21.98	25.91	29.49
Private	Total	17.19	15.37	8.45	9.35	9.65	10.71	10.66	12.86	14.29	15.69
	Quartile 1 (lowest)	31.33	23.64	16.24	16.42	16.01	18.67	18.79	22.75	23.61	28.04
	Quartiles 2 and 3	20.62	19.99	10.63	12.04	11.95	13.05	12.66	14.74	16.93	17.99
	Quartile 4 (highest)	31.78	22.73	13.98	14.65	18.93	21.90	22.21	27.15	28.17	26.91
Self-pay/no charge	Total	31.52	43.90	24.23	25.01	29.43	28.25	20.04	20.00	25.11	46.22
	Quartile 1 (lowest)	71.46	58.43	62.58	55.73	53.10	64.43	58.18	55.54	78.46	72.24
	Quartiles 2 and 3	41.47	42.98	30.76	31.26	40.97	37.04	25.84	26.76	30.54	65.47
	Quartile 4 (highest)	49.18	86.03	37.72	41.16	37.03	41.72	31.28	27.83	35.49	35.16
Medicare (not shown)	Total	268.12	203.29	112.27	107.53	114.55	138.83	100.88	125.19	121.35	125.50
	Quartile 1 (lowest)	352.32	293.16	272.20	191.59	198.31	280.71	226.30	215.51	252.38	281.30
	Quartiles 2 and 3	212.50	259.64	136.80	132.53	146.29	182.29	126.64	161.91	150.97	163.31
	Quartile 4 (highest)	345.53	280.00	160.66	171.97	204.97	216.81	167.59	210.04	198.49	199.89
Other (not shown)	Total	43.89	32.77	20.41	23.20	22.80	27.18	27.46	29.07	34.11	39.12
	Quartile 1 (lowest)	131.87	55.10	46.13	44.92	45.52	56.21	55.55	62.87	61.53	73.43
	Quartiles 2 and 3	44.53	37.75	25.51	31.41	28.47	34.56	31.62	35.56	43.97	46.38
	Quartile 4 (highest)	55.09	61.09	35.92	42.23	47.54	48.33	48.98	51.89	56.56	68.64

Key: SVI=Social Vulnerability Index

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Section 4

Standard Errors for Exhibit 4.1 Standard errors for substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer, 2010-2019, National										
Expected payer	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	606.5	572.9	616.8	639.6	655.6	644.1	660.0	666.3	673.8	670.5
Medicaid	958.5	942.9	1011.0	1054.3	1112.2	1104.2	1142.4	1150.3	1187.2	1199.0
Private	267.8	245.0	258.9	274.0	269.0	264.2	260.7	257.3	256.4	254.4
Self-pay/no charge	497.7	654.7	570.3	619.4	556.5	505.9	461.0	465.7	503.3	519.1
Key: SUD=Substance Use Disorder Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.										

Standard Errors for Exhibit 4.2 Standard errors for substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National											
Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	28.22	27.16	13.19	13.50	13.46	13.16	13.43	13.56	13.64	13.37
	12-19	33.96	35.89	18.72	18.91	18.94	18.98	19.21	18.99	20.25	19.81
	20-24	38.17	39.43	19.34	19.55	18.94	18.24	17.71	18.22	17.93	17.65
	25-34	25.73	23.71	12.11	12.66	12.84	13.00	13.43	13.51	13.65	13.36
	35-55	22.56	20.02	10.44	11.04	11.62	12.06	12.09	12.66	13.06	13.53
Medicaid	Total	47.10	52.00	23.18	23.64	23.80	23.34	23.88	23.50	24.34	24.36
	12-19	39.36	44.19	21.90	22.60	22.19	22.30	22.85	22.22	23.44	23.29
	20-24	49.11	54.16	25.71	25.83	25.62	24.54	24.24	24.78	24.56	24.88
	25-34	52.40	56.33	25.79	26.32	26.77	27.25	27.48	26.58	27.71	27.33
	35-55	50.80	54.61	25.85	26.61	28.23	29.10	29.73	28.60	31.38	32.54
Private	Total	15.27	12.78	6.82	7.17	6.74	6.67	6.58	6.48	6.25	5.93
	12-19	36.13	29.65	25.04	25.12	26.26	29.76	27.34	30.39	33.17	30.59
	20-24	30.96	23.96	15.44	16.67	15.69	16.77	14.82	15.25	14.58	14.28
	25-34	12.57	10.99	5.82	6.12	5.72	5.80	5.81	5.74	5.68	5.48
	35-55	12.54	10.79	6.23	6.82	6.77	6.94	6.33	6.35	6.24	6.15

Standard Errors for Exhibit 4.2 Standard errors for substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National											
Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	69.44	71.41	33.19	34.32	39.26	31.80	29.31	29.01	28.56	27.95
	12-19	89.13	89.71	70.90	64.11	77.43	89.67	89.38	94.37	86.04	81.44
	20-24	101.22	110.29	53.41	63.04	63.75	64.89	64.24	57.50	55.72	55.85
	25-34	64.74	67.12	37.58	36.22	43.97	35.93	30.76	31.58	32.45	30.84
	35-55	59.70	60.35	37.78	42.44	34.63	38.56	32.11	30.51	31.44	34.44
Medicare (not shown)	Total	150.01	124.04	85.03	83.17	91.12	105.63	94.93	113.92	100.37	97.12
	12-19	319.74	260.47	162.12	378.92	250.82	453.45	146.75	291.92	217.01	193.57
	20-24	186.56	175.92	126.60	153.34	140.59	174.32	130.93	149.69	162.91	163.66
	25-34	165.39	137.70	99.42	94.71	108.63	125.90	110.07	123.61	114.39	105.67
	35-55	226.33	206.62	153.59	141.46	137.15	157.27	151.01	173.51	143.40	159.57
Other (not shown)	Total	59.00	36.24	27.75	29.09	22.96	25.14	28.17	32.44	27.60	30.63
	12-19	81.30	72.30	72.90	81.77	74.59	90.99	63.82	107.88	101.10	106.55
	20-24	68.41	44.90	44.57	50.84	41.35	43.52	42.70	50.44	46.46	47.46
	25-34	66.00	36.73	27.47	27.04	22.77	26.00	31.33	33.52	30.80	32.76
	35-55	52.40	45.50	35.12	37.47	34.06	46.43	40.77	43.51	37.79	37.38
Key: SUD=Substance Use Disorder Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.											

Standard Errors for Exhibit 4.3 Standard errors for substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National			
Expected payer	Race/Ethnicity	2018	2019
Total	Total	13.64	13.37
	API NH	14.28	12.63
	Black NH	24.30	24.22
	Hispanic	9.47	9.38
	White NH	17.62	16.90
	Other NH	38.88	41.40

Standard Errors for Exhibit 4.3 Standard errors for substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National			
Expected payer	Race/Ethnicity	2018	2019
Medicaid	Total	24.34	24.36
	API NH	40.18	37.95
	Black NH	29.55	29.57
	Hispanic	13.38	13.14
	White NH	35.45	35.45
	Other NH	60.33	69.61
Private	Total	6.25	5.93
	API NH	6.56	5.70
	Black NH	15.86	14.79
	Hispanic	6.36	6.16
	White NH	7.29	7.09
	Other NH	17.29	16.44
Self-pay/no charge	Total	28.56	27.95
	API NH	17.90	18.50
	Black NH	86.38	99.35
	Hispanic	18.57	18.22
	White NH	54.27	53.28
	Other NH	113.18	69.44
Medicare (not shown)	Total	100.37	97.12
	API NH	199.88	217.99
	Black NH	110.60	108.22
	Hispanic	140.83	132.85
	White NH	149.28	143.30
	Other NH	244.47	231.55
Other (not shown)	Total	27.60	30.63
	API NH	36.30	39.53
	Black NH	67.79	66.32
	Hispanic	31.13	31.89
	White NH	35.59	38.08
	Other NH	55.54	62.78
Key: SUD=Substance Use Disorder, API=Asian/Pacific Islander, NH=Non-Hispanic Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2018-2019			

Standard Errors for Exhibit 4.4

Standard errors for substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National

Expected payer	Patient Location	2013	2014	2015	2016	2017	2018	2019
Total	Total	13.50	13.46	13.16	13.43	13.56	13.64	13.37
	Large metro	16.03	15.54	15.12	15.03	15.17	15.22	14.89
	Medium/small metro	22.45	22.60	22.04	22.18	21.52	22.55	22.32
	Non-metro	28.21	27.09	26.49	25.25	25.72	24.85	24.03
Medicaid	Total	23.64	23.80	23.34	23.88	23.50	24.34	24.36
	Large metro	28.90	28.90	28.24	28.16	27.88	29.11	28.97
	Medium/small metro	40.45	40.63	40.44	40.68	39.13	40.32	40.85
	Non-metro	44.44	44.94	44.04	42.07	41.25	40.23	39.80
Private	Total	7.17	6.74	6.67	6.58	6.48	6.25	5.93
	Large metro	8.13	7.22	6.70	6.46	6.47	6.10	6.02
	Medium/small metro	11.91	11.45	11.93	11.40	10.74	10.70	9.66
	Non-metro	16.94	16.76	17.44	16.42	17.07	16.28	16.19
Self-pay/no charge	Total	34.32	39.26	31.80	29.31	29.01	28.56	27.95
	Large metro	38.65	32.10	32.69	25.52	28.13	27.81	35.09
	Medium/small metro	62.93	67.47	62.74	59.55	55.43	60.92	52.77
	Non-metro	72.40	152.28	99.52	91.05	79.35	76.07	71.10
Medicare (not shown)	Total	83.17	91.12	105.63	94.93	113.92	100.37	97.12
	Large metro	99.66	109.40	135.90	136.62	139.05	123.57	128.60
	Medium/small metro	169.57	157.18	177.09	153.59	186.68	166.51	138.47
	Non-metro	173.03	198.57	192.32	151.98	208.57	180.52	174.91
Other (not shown)	Total	29.09	22.96	25.14	28.17	32.44	27.60	30.63
	Large metro	30.95	27.02	26.41	40.54	49.63	39.06	44.13
	Medium/small metro	46.29	37.51	44.18	38.08	36.15	34.62	36.31
	Non-metro	76.79	66.77	67.88	73.38	72.28	76.16	77.86

Key: SUD=Substance Use Disorder

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Standard Errors for Exhibit 4.5
Standard errors for substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National

Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	28.22	27.16	13.19	13.50	13.46	13.16	13.43	13.56	13.64	13.37
	Northeast	64.84	66.12	31.00	34.51	34.00	35.81	34.61	36.40	37.73	35.89
	Midwest	68.26	60.94	29.34	29.42	28.96	29.83	30.39	31.67	32.29	31.96
	South	54.16	47.44	25.12	25.33	25.08	23.02	23.98	23.14	22.72	22.22
	West	35.28	33.72	16.74	16.35	17.69	18.17	18.49	19.39	19.68	19.30
Medicaid	Total	47.10	52.00	23.18	23.64	23.80	23.34	23.88	23.50	24.34	24.36
	Northeast	120.32	121.72	58.58	63.96	64.42	68.98	67.46	67.85	74.39	75.61
	Midwest	106.12	94.94	47.21	47.70	47.71	46.49	47.38	49.59	53.29	53.48
	South	79.23	88.17	39.70	39.95	40.08	37.55	38.93	36.71	37.02	36.30
	West	65.35	61.88	29.43	29.31	31.92	32.69	33.26	34.60	35.16	35.38
Private	Total	15.27	12.78	6.82	7.17	6.74	6.67	6.58	6.48	6.25	5.93
	Northeast	32.90	33.49	15.67	20.24	16.95	16.33	14.81	16.84	17.41	14.87
	Midwest	37.56	28.82	17.92	17.00	15.66	15.96	14.77	15.57	15.11	14.17
	South	30.95	21.08	11.30	12.13	12.06	12.07	12.25	11.23	10.02	9.90
	West	17.40	18.58	10.03	9.27	9.51	8.61	10.10	9.10	9.42	9.22
Self-pay/no charge	Total	69.44	71.41	33.19	34.32	39.26	31.80	29.31	29.01	28.56	27.95
	Northeast	107.71	172.82	81.39	81.17	180.17	73.07	56.14	73.02	63.30	71.11
	Midwest	234.30	244.13	75.36	65.89	73.30	93.40	83.67	70.87	80.06	77.55
	South	72.64	74.15	41.07	46.65	40.87	39.76	32.60	36.06	34.04	35.33
	West	112.66	103.50	76.52	74.50	60.24	65.30	65.05	59.17	59.77	46.20
Medicare (not shown)	Total	150.01	124.04	85.03	83.17	91.12	105.63	94.93	113.92	100.37	97.12
	Northeast	412.34	221.32	237.13	267.10	219.25	307.46	315.15	277.71	292.43	294.82
	Midwest	225.29	177.68	153.02	161.52	182.59	219.56	209.47	181.14	161.75	184.07
	South	166.46	229.30	132.41	128.49	154.99	148.90	121.50	151.66	130.69	122.73
	West	223.45	245.23	159.63	146.51	146.99	193.09	158.42	190.82	174.78	199.28

Standard Errors for Exhibit 4.5

Standard errors for substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National

Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Other (not shown)	Total	59.00	36.24	27.75	29.09	22.96	25.14	28.17	32.44	27.60	30.63
	Northeast	83.43	109.12	53.90	87.68	90.83	82.06	65.91	44.93	36.82	42.52
	Midwest	177.97	115.12	85.18	65.96	59.92	70.51	93.01	115.47	89.17	99.73
	South	48.92	30.63	40.34	37.62	30.23	36.92	30.30	33.76	33.55	34.57
	West	65.67	53.77	33.49	68.61	41.94	35.90	31.98	37.46	27.48	26.47

Key: SUD=Substance Use Disorder

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Standard Errors for Exhibit 4.6

Standard errors for substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National

Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	28.22	27.16	13.19	13.50	13.46	13.16	13.43	13.56	13.64	13.37
	Quartile 1 (lowest)	106.68	95.28	69.08	66.30	66.74	59.83	53.52	51.99	58.95	60.67
	Quartiles 2 and 3	50.38	51.71	21.98	22.79	22.77	21.83	22.30	22.22	22.82	21.74
	Quartile 4 (highest)	29.06	24.07	12.89	13.09	13.16	13.27	12.72	13.44	13.37	13.03
Medicaid	Total	47.10	52.00	23.18	23.64	23.80	23.34	23.88	23.50	24.34	24.36
	Quartile 1 (lowest)	146.64	131.25	93.27	83.27	86.03	76.52	80.63	77.51	77.65	74.27
	Quartiles 2 and 3	83.01	95.85	38.34	40.00	40.10	38.47	39.98	38.48	40.52	36.34
	Quartile 4 (highest)	53.53	54.10	25.78	26.37	26.86	27.60	26.52	27.05	27.56	28.39
Private	Total	15.27	12.78	6.82	7.17	6.74	6.67	6.58	6.48	6.25	5.93
	Quartile 1 (lowest)	44.44	38.41	32.17	38.54	38.73	41.75	30.31	27.58	33.95	39.12
	Quartiles 2 and 3	31.43	24.44	11.68	12.72	11.41	11.61	11.45	11.54	11.37	10.64
	Quartile 4 (highest)	14.25	12.72	7.27	7.25	7.04	6.58	6.27	6.47	6.14	5.91

Standard Errors for Exhibit 4.6 Standard errors for substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National											
Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	69.44	71.41	33.19	34.32	39.26	31.80	29.31	29.01	28.56	27.95
	Quartile 1 (lowest)	126.82	146.79	118.59	114.94	120.75	132.41	115.42	103.84	128.89	109.83
	Quartiles 2 and 3	146.72	126.67	52.53	51.56	79.95	51.08	53.11	51.54	48.35	46.64
	Quartile 4 (highest)	75.14	57.92	40.18	39.05	34.57	36.51	28.01	30.09	33.60	33.70
Medicare (not shown)	Total	150.01	124.04	85.03	83.17	91.12	105.63	94.93	113.92	100.37	97.12
	Quartile 1 (lowest)	358.20	217.01	226.97	251.81	322.19	292.79	284.20	289.35	268.19	237.71
	Quartiles 2 and 3	184.16	137.22	115.91	120.63	137.93	158.23	135.04	155.09	135.71	123.58
	Quartile 4 (highest)	173.34	155.18	100.62	101.80	97.61	131.02	117.66	166.31	143.62	140.53
Other (not shown)	Total	59.00	36.24	27.75	29.09	22.96	25.14	28.17	32.44	27.60	30.63
	Quartile 1 (lowest)	92.48	146.21	153.21	115.53	104.36	105.75	99.46	103.42	107.43	153.65
	Quartiles 2 and 3	73.39	60.11	38.77	48.17	35.37	43.07	49.82	61.29	48.94	45.78
	Quartile 4 (highest)	89.92	42.60	29.82	27.35	27.53	24.27	21.22	25.73	24.59	31.50
Key: SUD=Substance Use Disorder Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.											

Standard Errors for Exhibit 4.7 Standard errors for substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National											
Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	28.22	27.16	13.19	13.50	13.46	13.16	13.43	13.56	13.64	13.37
	Quartile 1 (lowest)	65.47	42.63	26.63	26.98	22.35	23.74	23.17	24.37	24.08	23.25
	Quartiles 2 and 3	37.24	36.58	17.79	18.29	18.51	17.80	18.11	17.77	17.54	17.03
	Quartile 4 (highest)	41.09	40.98	17.48	18.56	21.19	21.13	21.53	22.12	23.03	23.20

Standard Errors for Exhibit 4.7 Standard errors for substance use disorder (SUD) related hospital stays per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National											
Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Medicaid	Total	47.10	52.00	23.18	23.64	23.80	23.34	23.88	23.50	24.34	24.36
	Quartile 1 (lowest)	161.30	93.76	58.80	62.60	52.87	57.78	57.13	58.41	60.19	63.19
	Quartiles 2 and 3	61.03	64.69	32.37	32.39	32.29	31.35	31.75	30.52	31.93	31.26
	Quartile 4 (highest)	49.28	60.85	25.63	27.53	31.85	31.74	33.49	33.26	34.28	34.59
Private	Total	15.27	12.78	6.82	7.17	6.74	6.67	6.58	6.48	6.25	5.93
	Quartile 1 (lowest)	28.59	23.54	14.31	14.25	11.33	11.07	10.37	10.44	10.01	9.06
	Quartiles 2 and 3	18.61	15.94	8.30	8.94	8.91	8.61	8.46	8.29	8.04	7.75
	Quartile 4 (highest)	31.00	21.65	10.91	11.52	12.16	13.25	12.20	12.54	12.06	11.62
Self-pay/no charge	Total	69.44	71.41	33.19	34.32	39.26	31.80	29.31	29.01	28.56	27.95
	Quartile 1 (lowest)	107.20	93.72	91.49	81.90	113.35	79.83	96.47	73.70	76.38	60.86
	Quartiles 2 and 3	78.58	66.12	40.61	40.96	50.85	40.56	35.22	38.33	36.13	38.30
	Quartile 4 (highest)	125.00	140.06	46.61	49.87	45.30	46.95	44.21	38.39	43.55	43.41
Medicare (not shown)	Total	150.01	124.04	85.03	83.17	91.12	105.63	94.93	113.92	100.37	97.12
	Quartile 1 (lowest)	280.99	250.37	237.00	167.31	170.80	192.96	190.56	231.68	222.00	223.11
	Quartiles 2 and 3	168.99	161.74	111.23	107.63	117.80	136.83	115.91	145.65	122.98	134.48
	Quartile 4 (highest)	309.13	178.81	101.49	116.72	162.66	181.55	157.08	172.36	153.70	135.03
Other (not shown)	Total	59.00	36.24	27.75	29.09	22.96	25.14	28.17	32.44	27.60	30.63
	Quartile 1 (lowest)	214.88	49.41	59.68	47.28	45.37	44.34	36.97	41.97	40.94	51.65
	Quartiles 2 and 3	45.90	42.80	32.12	38.99	28.90	27.72	30.92	33.39	31.49	33.42
	Quartile 4 (highest)	65.98	79.07	56.12	55.24	46.22	57.03	65.80	81.35	66.01	64.10
Key: SUD=Substance Use Disorder, SVI=Social Vulnerability Index Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.											

Section 5

Standard Errors for Exhibit 5.1

Standard errors for severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer, 2010-2019, National

Expected payer	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	2.63	3.39	1.44	1.48	1.46	1.53	1.44	1.44	1.56	1.69
Medicaid	2.74	4.24	1.93	2.16	2.11	2.36	2.11	1.98	2.12	2.32
Private	3.57	3.87	1.86	1.78	1.71	1.83	1.54	1.71	1.79	1.89
Self-pay/no charge	9.54	7.59	5.99	6.02	5.70	7.70	5.97	5.82	6.54	6.27

Key: SMM=Severe Maternal Morbidity

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Standard Errors for Exhibit 5.2

Standard errors for severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National

Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	2.63	3.39	1.44	1.48	1.46	1.53	1.44	1.44	1.56	1.69
	12-19	3.59	4.15	3.27	3.60	3.98	4.86	4.04	4.37	4.56	5.37
	20-24	3.09	3.14	2.10	2.21	2.09	2.44	2.19	2.24	2.27	2.42
	25-34	2.69	3.51	1.65	1.67	1.68	1.75	1.61	1.66	1.72	1.89
	35-55	4.84	6.29	3.58	3.55	3.33	3.70	3.26	3.25	3.39	3.54
Medicaid	Total	2.74	4.24	1.93	2.16	2.11	2.36	2.11	1.98	2.12	2.32
	12-19	3.71	4.84	3.98	4.33	4.56	5.77	4.60	5.09	5.31	6.20
	20-24	3.13	3.67	2.67	2.81	2.61	3.16	2.80	2.83	2.85	2.96
	25-34	3.28	5.29	2.60	2.67	2.78	3.13	2.62	2.60	2.64	3.04
	35-55	7.67	8.20	6.65	6.45	6.60	7.36	6.21	6.29	6.63	6.52
Private	Total	3.57	3.87	1.86	1.78	1.71	1.83	1.54	1.71	1.79	1.89
	12-19	7.56	6.35	6.63	7.18	8.41	9.22	8.23	9.29	10.21	11.79
	20-24	4.93	3.94	3.48	3.51	3.42	3.89	3.36	3.64	3.58	3.92
	25-34	3.42	3.69	1.97	1.96	1.86	1.99	1.68	1.91	1.93	2.05
	35-55	5.78	7.32	4.26	4.31	3.82	4.33	3.63	3.67	3.74	3.93

Standard Errors for Exhibit 5.2 Standard errors for severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and age group, 2010-2019, National											
Expected payer	Age group, years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	9.54	7.59	5.99	6.02	5.70	7.70	5.97	5.82	6.54	6.27
	12-19	16.90	21.99	13.35	20.87	20.76	39.72	31.80	21.83	38.89	28.00
	20-24	14.44	11.71	12.21	12.54	14.07	15.08	13.28	10.69	11.25	13.17
	25-34	8.36	9.43	7.60	7.38	6.72	9.27	7.47	7.45	7.59	7.34
	35-55	25.67	20.18	19.73	18.21	15.80	21.37	15.81	14.37	17.02	16.06
Medicare (not shown)	Total	21.48	26.49	17.66	21.08	22.09	25.10	22.34	22.97	23.39	22.14
	12-19	28.58	39.30	0.00	57.42	81.35	0.00	55.20	169.00	78.10	0.00
	20-24	42.27	36.78	34.50	28.44	39.09	50.53	37.18	46.78	33.05	44.18
	25-34	30.47	29.02	23.43	27.92	27.99	26.64	27.11	28.29	28.34	28.69
	35-55	47.17	47.94	48.27	48.15	54.11	65.51	45.33	49.11	50.11	48.50
Other (not shown)	Total	6.20	7.79	6.39	6.21	5.60	6.55	6.05	6.77	6.79	6.45
	12-19	20.72	24.83	18.02	23.66	23.11	19.12	24.90	40.40	23.85	35.92
	20-24	10.29	11.14	9.88	8.10	11.80	13.53	14.43	11.24	13.05	13.22
	25-34	8.62	8.63	8.62	8.79	6.77	7.66	6.59	7.97	8.29	7.32
	35-55	18.84	16.60	19.43	19.54	17.56	22.74	15.89	20.82	20.84	18.66
Key: SMM=Severe Maternal Morbidity Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.											

Standard Errors for Exhibit 5.3 Standard errors for severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National			
Expected payer	Race/Ethnicity	2018	2019
Total	Total	1.56	1.69
	API NH	5.27	5.44
	Black NH	4.09	4.22
	Hispanic	2.80	3.06
	White NH	1.66	1.65
	Other NH	5.19	5.78

Standard Errors for Exhibit 5.3 Standard errors for severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and race/ethnicity, 2018-2019, National			
Expected payer	Race/Ethnicity	2018	2019
Medicaid	Total	2.12	2.32
	API NH	10.78	10.17
	Black NH	4.76	4.99
	Hispanic	3.39	3.63
	White NH	2.91	2.81
	Other NH	6.89	8.66
Private	Total	1.79	1.89
	API NH	5.85	6.53
	Black NH	6.03	6.47
	Hispanic	4.33	4.96
	White NH	1.89	1.85
	Other NH	7.09	7.48
Self-pay/no charge	Total	6.54	6.27
	API NH	17.67	15.17
	Black NH	22.99	21.21
	Hispanic	12.32	9.99
	White NH	10.40	11.00
	Other NH	26.56	22.27
Medicare (not shown)	Total	23.39	22.14
	API NH	148.48	75.87
	Black NH	58.84	48.16
	Hispanic	51.36	44.55
	White NH	21.82	25.32
	Other NH	55.57	104.53
Other (not shown)	Total	6.79	6.45
	API NH	37.73	32.43
	Black NH	26.54	23.87
	Hispanic	14.94	19.93
	White NH	7.42	6.82
	Other NH	28.32	24.24
Key: SMM=Severe Maternal Morbidity, API=Asian/Pacific Islander, NH=Non-Hispanic Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2018-2019			

Standard Errors for Exhibit 5.4
Standard errors for severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and patient location, 2013-2019, National

Expected payer	Patient Location	2013	2014	2015	2016	2017	2018	2019
Total	Total	1.48	1.46	1.53	1.44	1.44	1.56	1.69
	Large metro	2.06	2.05	2.15	1.96	2.00	2.17	2.40
	Medium/small metro	2.54	2.32	2.45	2.29	2.26	2.27	2.42
	Non-metro	3.32	3.19	3.38	2.92	2.98	3.01	3.21
Medicaid	Total	2.16	2.11	2.36	2.11	1.98	2.12	2.32
	Large metro	3.19	3.18	3.52	3.00	2.80	2.85	3.41
	Medium/small metro	3.20	3.09	3.45	3.33	3.17	3.46	3.36
	Non-metro	4.45	4.41	4.58	4.49	4.37	4.30	4.50
Private	Total	1.78	1.71	1.83	1.54	1.71	1.79	1.89
	Large metro	2.36	2.27	2.41	2.08	2.39	2.51	2.65
	Medium/small metro	3.24	3.03	3.33	2.63	2.62	2.49	2.76
	Non-metro	4.33	3.80	4.43	3.43	3.63	3.81	3.99
Self-pay/no charge	Total	6.02	5.70	7.70	5.97	5.82	6.54	6.27
	Large metro	8.03	7.11	9.92	7.67	7.17	8.97	7.44
	Medium/small metro	10.81	11.46	16.13	12.19	13.57	13.43	15.20
	Non-metro	16.51	17.98	24.40	19.52	17.47	15.21	18.22
Medicare (not shown)	Total	21.08	22.09	25.10	22.34	22.97	23.39	22.14
	Large metro	29.38	32.37	34.55	38.52	27.40	37.07	36.42
	Medium/small metro	40.50	39.36	48.07	26.66	47.84	27.02	31.02
	Non-metro	45.67	51.00	44.71	44.60	52.96	51.11	45.19
Other (not shown)	Total	6.21	5.60	6.55	6.05	6.77	6.79	6.45
	Large metro	9.54	8.10	10.37	8.87	10.63	10.50	10.08
	Medium/small metro	9.62	8.84	8.95	10.14	10.02	10.64	9.82
	Non-metro	14.47	13.49	19.14	11.19	15.57	12.70	11.29

Key: SMM=Severe Maternal Morbidity

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2013-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Standard Errors for Exhibit 5.5
Standard errors for severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National

Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	2.63	3.39	1.44	1.48	1.46	1.53	1.44	1.44	1.56	1.69
	Northeast	3.66	10.47	3.75	3.80	3.99	4.07	3.36	3.44	4.31	4.11
	Midwest	4.93	9.52	3.05	3.13	3.08	3.33	3.07	2.82	2.95	3.57
	South	5.63	4.74	2.36	2.51	2.21	2.39	2.32	2.35	2.37	2.48
	West	3.64	4.72	2.83	2.81	3.11	3.14	3.12	3.17	3.52	4.07
Medicaid	Total	2.74	4.24	1.93	2.16	2.11	2.36	2.11	1.98	2.12	2.32
	Northeast	5.93	8.40	5.18	5.09	6.18	6.96	4.76	4.91	6.02	5.52
	Midwest	5.80	10.44	4.45	4.59	4.64	4.87	4.54	3.99	5.00	5.01
	South	4.76	7.50	2.83	3.30	2.85	3.46	3.42	3.24	3.09	3.36
	West	4.52	6.13	4.13	4.88	4.88	5.11	4.45	4.07	4.31	5.74
Private	Total	3.57	3.87	1.86	1.78	1.71	1.83	1.54	1.71	1.79	1.89
	Northeast	4.42	13.08	4.84	4.74	4.55	4.42	3.91	4.21	4.88	4.62
	Midwest	5.34	10.85	3.68	3.47	3.30	4.01	3.34	3.14	3.11	3.72
	South	9.23	3.82	3.18	3.13	2.67	2.98	2.32	2.52	2.59	2.68
	West	4.25	4.39	3.61	3.21	3.71	3.64	3.29	4.27	4.41	4.63
Self-pay/no charge	Total	9.54	7.59	5.99	6.02	5.70	7.70	5.97	5.82	6.54	6.27
	Northeast	16.54	13.14	14.56	20.99	18.25	19.90	15.86	18.30	17.60	16.74
	Midwest	14.41	14.06	14.11	14.24	12.83	20.26	16.70	11.65	19.52	15.57
	South	17.97	11.90	7.95	9.55	8.33	12.18	9.01	8.75	9.04	9.29
	West	10.17	15.35	14.75	9.32	11.25	12.35	10.24	11.60	12.90	12.56
Medicare (not shown)	Total	21.48	26.49	17.66	21.08	22.09	25.10	22.34	22.97	23.39	22.14
	Northeast	30.07	38.20	39.04	39.70	36.56	52.44	46.55	35.26	44.82	40.79
	Midwest	29.20	49.97	26.96	37.38	40.17	51.45	47.97	63.80	60.30	55.59
	South	55.88	49.27	30.57	40.39	46.30	36.92	29.02	33.23	33.36	27.32
	West	62.38	37.50	54.73	46.51	39.24	75.57	80.55	64.05	64.11	87.36

Standard Errors for Exhibit 5.5

Standard errors for severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and hospital region, 2010-2019, National

Expected payer	Hospital Region	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Other (not shown)	Total	6.20	7.79	6.39	6.21	5.60	6.55	6.05	6.77	6.79	6.45
	Northeast	21.73	21.01	19.52	18.45	17.53	13.45	12.43	21.25	19.08	16.41
	Midwest	10.88	12.55	12.14	11.74	12.85	14.29	14.27	14.16	14.63	14.06
	South	9.11	13.45	10.20	10.57	8.82	8.61	9.58	10.23	10.13	9.00
	West	13.07	14.18	12.96	10.74	9.50	17.41	11.03	13.96	14.58	15.23

Key: SMM=Severe Maternal Morbidity

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019

Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.

Standard Errors for Exhibit 5.6

Standard errors for severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National

Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	2.63	3.39	1.44	1.48	1.46	1.53	1.44	1.44	1.56	1.69
	Quartile 1 (lowest)	7.86	10.49	5.56	5.10	7.36	7.01	4.92	5.47	5.57	5.65
	Quartiles 2 and 3	6.15	5.47	2.45	2.41	2.18	2.32	2.13	2.03	2.04	2.32
	Quartile 4 (highest)	2.20	3.98	1.67	1.82	1.82	1.94	1.87	1.94	2.11	2.31
Medicaid	Total	2.74	4.24	1.93	2.16	2.11	2.36	2.11	1.98	2.12	2.32
	Quartile 1 (lowest)	9.53	11.56	6.76	6.14	8.90	9.37	6.13	6.70	6.83	7.04
	Quartiles 2 and 3	4.98	7.00	2.83	3.06	2.79	3.24	3.05	2.80	2.84	3.09
	Quartile 4 (highest)	2.81	4.41	2.63	3.11	3.09	3.33	2.91	2.78	2.99	3.50
Private	Total	3.57	3.87	1.86	1.78	1.71	1.83	1.54	1.71	1.79	1.89
	Quartile 1 (lowest)	9.55	9.80	7.38	7.69	8.06	6.91	6.87	6.11	7.20	7.35
	Quartiles 2 and 3	10.00	6.42	3.54	3.07	2.83	3.04	2.24	2.41	2.36	2.85
	Quartile 4 (highest)	2.74	4.58	2.03	2.12	2.11	2.33	2.04	2.34	2.43	2.45

Standard Errors for Exhibit 5.6 Standard errors for severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and community-level income, 2010-2019, National											
Expected payer	Community-level income	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Self-pay/no charge	Total	9.54	7.59	5.99	6.02	5.70	7.70	5.97	5.82	6.54	6.27
	Quartile 1 (lowest)	24.53	33.23	32.68	32.10	26.59	42.61	26.65	20.62	26.06	24.58
	Quartiles 2 and 3	21.75	11.33	9.47	9.93	9.67	13.10	9.66	9.31	11.62	11.92
	Quartile 4 (highest)	10.26	9.13	8.21	7.80	7.52	9.23	8.51	8.38	8.69	7.94
Medicare (not shown)	Total	21.48	26.49	17.66	21.08	22.09	25.10	22.34	22.97	23.39	22.14
	Quartile 1 (lowest)	62.20	75.11	53.39	56.35	66.43	99.83	58.77	95.08	54.94	59.90
	Quartiles 2 and 3	29.07	45.25	28.24	32.80	34.98	28.65	28.50	31.57	33.61	32.27
	Quartile 4 (highest)	35.76	25.60	24.51	28.91	31.37	41.22	35.53	33.17	34.39	33.31
Other (not shown)	Total	6.20	7.79	6.39	6.21	5.60	6.55	6.05	6.77	6.79	6.45
	Quartile 1 (lowest)	35.13	17.93	23.51	28.01	24.12	32.68	16.14	33.25	22.43	21.03
	Quartiles 2 and 3	10.77	8.13	9.74	9.48	8.78	8.59	10.58	10.55	9.96	9.17
	Quartile 4 (highest)	7.66	12.35	8.66	8.34	7.38	9.95	6.99	8.86	9.32	9.33
Key: SMM=Severe Maternal Morbidity Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.											

Standard Errors for Exhibit 5.7 Standard errors for severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National											
Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	Total	2.63	3.39	1.44	1.48	1.46	1.53	1.44	1.44	1.56	1.69
	Quartile 1 (lowest)	3.78	4.66	3.13	3.18	2.76	3.06	2.65	2.73	2.98	2.99
	Quartiles 2 and 3	3.65	4.54	1.93	1.94	1.73	1.82	1.77	1.72	1.93	2.12
	Quartile 4 (highest)	4.20	5.11	2.41	2.58	3.44	3.38	2.87	3.04	2.85	3.31

Standard Errors for Exhibit 5.7 Standard errors for severe maternal morbidity (SMM) per 10,000 delivery stays, by primary expected payer and community-level social vulnerability index (SVI), 2010-2019, National											
Expected payer	Community-level SVI	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Medicaid	Total	2.74	4.24	1.93	2.16	2.11	2.36	2.11	1.98	2.12	2.32
	Quartile 1 (lowest)	6.09	7.61	4.92	6.15	5.21	6.24	5.66	4.97	5.24	5.67
	Quartiles 2 and 3	3.18	4.16	2.54	2.70	2.35	2.69	2.51	2.52	2.76	2.97
	Quartile 4 (highest)	5.26	7.56	3.15	3.65	4.58	4.82	3.93	3.53	3.45	4.24
Private	Total	3.57	3.87	1.86	1.78	1.71	1.83	1.54	1.71	1.79	1.89
	Quartile 1 (lowest)	4.99	4.74	3.94	3.57	3.25	3.65	2.86	3.10	3.19	3.29
	Quartiles 2 and 3	4.94	5.89	2.37	2.36	2.13	2.39	2.04	2.00	2.24	2.34
	Quartile 4 (highest)	4.57	3.41	3.60	3.28	4.14	3.67	3.24	4.60	3.71	4.43
Self-pay/no charge	Total	9.54	7.59	5.99	6.02	5.70	7.70	5.97	5.82	6.54	6.27
	Quartile 1 (lowest)	19.68	14.97	24.44	21.24	17.42	20.66	17.90	14.48	16.87	17.46
	Quartiles 2 and 3	17.76	8.00	8.14	8.79	8.12	10.46	8.54	8.84	8.36	8.48
	Quartile 4 (highest)	9.40	14.35	10.32	9.35	9.30	14.74	10.33	8.39	13.73	10.47
Medicare (not shown)	Total	21.48	26.49	17.66	21.08	22.09	25.10	22.34	22.97	23.39	22.14
	Quartile 1 (lowest)	28.13	46.75	43.71	46.02	35.18	58.53	42.47	38.72	50.37	40.50
	Quartiles 2 and 3	39.51	29.15	24.81	25.15	30.14	32.88	29.40	29.75	30.79	29.37
	Quartile 4 (highest)	48.47	45.55	29.65	44.86	46.02	49.45	39.08	48.34	45.83	42.06
Other (not shown)	Total	6.20	7.79	6.39	6.21	5.60	6.55	6.05	6.77	6.79	6.45
	Quartile 1 (lowest)	10.92	9.90	10.91	14.77	11.13	14.93	13.10	12.16	13.19	11.76
	Quartiles 2 and 3	8.93	12.29	8.87	8.28	7.35	8.84	6.73	8.77	9.63	8.84
	Quartile 4 (highest)	12.64	12.25	11.35	11.97	11.99	13.00	13.60	14.46	12.93	12.81
Key: SMM=Severe Maternal Morbidity, SVI=Social Vulnerability Index Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2010-2019 Note: A break in the trend line is shown to account for the transition from ICD-9-CM to ICD-10-CM/PCS in October 2015 which may have impacted the observed trends.											

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For More Information

For more information on this and other topics, please visit our HCUP Statistical Briefs topic area page located at www.hcup-us.ahrq.gov/reports/statbriefs/sbtopic.jsp.

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AHRQ welcomes questions and comments from readers of this publication who are interested in obtaining more information about access, cost, use, financing, and quality of healthcare in the United States. We also invite you to tell us how you are using this chartbook and other HCUP data and tools, and to share suggestions on how HCUP products might be enhanced to further meet your needs. Please email us at hcup@ahrq.gov or send a letter to the address below:

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