



H·CUP

HEALTHCARE COST AND UTILIZATION PROJECT

HCUP Method Series

**An Examination of Ambiguous Source Payer Codes Among
Individuals Aged 65+ Years in HCUP Data: Final Report**

Report #2020-03



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INTRODUCTION

In the United States, individual healthcare is funded by a combination of public and private payers. Based on 2018 health insurance coverage statistics from the Kaiser Family Foundation, more than half of Americans receive healthcare coverage through privately funded insurance, most commonly through their employers.¹ Another one-third of individuals receive health insurance through either the federally funded Medicare program or State Medicaid programs. Nearly 10 percent of the population has no health insurance. Research has shown wide variation in healthcare utilization and costs by payer.^{2,3} For example, in 2017, childbirth accounted for the largest share of aggregate costs for hospital stays with Medicaid as the expected payer, whereas osteoarthritis accounted for the largest share of aggregate costs for private insurance.⁴ Understanding how healthcare costs and utilization differ by payer is important for policymakers, healthcare providers, and insurers, among others.

The Healthcare Cost and Utilization Project (HCUP) provides information about the “expected payer” on inpatient, emergency department, and ambulatory surgery discharges available through the project’s national and State databases (e.g., National [Nationwide] Inpatient Sample [NIS], State Inpatient Databases [SID]). The “expected payer” data elements in the HCUP databases are based on information supplied by the data organizations of participating States. In most cases, the expected payer (e.g., Medicare, Medicaid, private insurance) can be clearly discerned from the payer information provided in the source data; however, in some cases, generic or unclear payer codes are provided in the source data that cannot be disambiguated to identify a particular expected payer category. These ambiguous payer codes, which represent an unclear mix of private insurance, Medicare, and Medicaid in the source data, are classified during HCUP processing to have an expected payer of private insurance. This approach ensures that the HCUP expected payer categories of Medicare and Medicaid unambiguously include only records for these government payers, but it leaves the possibility that the private insurance payer category in HCUP data may include some records that really have an expected payer of Medicare or Medicaid.

Although it is unknown whether the records with ambiguous source payer codes are all correctly classified into the private insurance expected payer category in HCUP data, the proportion of these records that represent patients aged 65 years and older is one indicator that some of these records could possibly be misattributed. Analysis of HCUP data reveals that individuals aged 65 years and older constitute a notable portion of records with an expected payer classification of private insurance in HCUP. Some of these records may accurately represent

¹ Kaiser Family Foundation. State Health Facts: Health Insurance Coverage of the Total Population, 2018. www.kff.org/other/state-indicator/total-population/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D. Accessed October 6, 2020.

² Moore BJ, Stocks C, Owens PL. Trends in Emergency Department Visits, 2006–2014. HCUP Statistical Brief #227. September 2017. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/reports/statbriefs/sb227-Emergency-Department-Visit-Trends.pdf. Accessed October 6, 2020.

³ Liang L, Moore B, Soni A. National Inpatient Hospital Costs: The Most Expensive Conditions by Payer, 2017. HCUP Statistical Brief #261. July 2020. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/reports/statbriefs/sb261-Most-Expensive-Hospital-Conditions-2017.pdf. Accessed October 6, 2020.

⁴ Ibid.

private insurance coverage among these older individuals, but some of the records, particularly those associated with ambiguous payer codes in the source data, could represent Medicare Advantage—a form of Medicare that is administered by private insurance companies.

The objective of this HCUP Methods Series Report is to describe the potential magnitude of HCUP records with ambiguous expected payer codes in the source data that are classified as private insurance in the HCUP databases but that could be for another type of payer, specifically Medicare Advantage. This report uses external statistics to understand the type of insurance coverage among individuals aged 65 years and older. A detailed examination is conducted of the ambiguous source payer codes and the frequency of records among individuals aged 65 years and older with these payer codes. The analysis focuses on 2018 inpatient data, which is available from virtually all U.S. States in HCUP.

HCUP DATABASES AND AMBIGUOUS SOURCE PAYER CODES

Overview of HCUP Uniform Expected Payer Codes

The HCUP databases include information on the expected payer of the inpatient or outpatient services provided. Payer is a key variable examined in a wide range of health services and health policy research that helps inform our understanding of healthcare utilization and costs in the United States.^{5,6,7,8} As such, it is important to be aware of how payer codes are assigned to HCUP discharges.

In HCUP data, one primary expected payer and up to two secondary expected payers may be indicated. The contributing State data organizations (HCUP Partners) provide expected payer codes as part of the data submitted for HCUP. The HCUP data element PAY1_X (for primary payer; PAY2_X or PAY3_X for secondary and tertiary payers) represents the primary expected payer as received from the data source (hereafter these data elements are collectively referred to as PAY#_X). In some cases, the HCUP Partner also provides expanded, more detailed versions of the payer codes (e.g., plan specific) in the data element PAYER1_X (for primary payer, PAYER2_X or PAYER3_X for secondary and tertiary payers; hereafter, these data elements are collectively referred to as PAYER#_X).

As part of the data processing undertaken to transform Partner-specific (source) data into standardized HCUP databases (e.g., SID, State Emergency Department Databases [SEDD]), the PAY#_X data values are recoded into uniform expected payer values (PAY1 for primary expected payer; PAY2 and PAY3 for expected secondary and tertiary payers; hereafter these

⁵ Nuckols TK, Fingar KR, Barrett M, Steiner CA, Stocks C, Owens PL. The shifting landscape in utilization of inpatient, observation, and emergency department services across payers. *J Hosp Med.* 2017 Jun;12(6):443–46.

⁶ Moore BJ, Liang L. Medicare Advantage Versus the Traditional Medicare Program: Costs of Inpatient Stays, 2009-2017. HCUP Statistical Brief #262. August 2020. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/reports/statbriefs/sb262-Medicare-Advantage-Costs-2009-2017.pdf. Accessed September 21, 2020.

⁷ Knowlton LM, Dehghan MS, Arnow K, Trickey AW, Tennakoon L, Morris AM, et al. The impact of Medicaid expansion on trauma-related emergency department utilization: a national evaluation of policy implications. *J Trauma Acute Care Surg.* 2020 Jan;88(1):59–69.

⁸ Singh JA, Cleveland JD. Age, race, comorbidity, and insurance payer type are associated with outcomes are total ankle arthroplasty. *Clin Rheumatol.* 2020 Mar;39(3):881–90.

data elements are collectively referred to as PAY#). The uniform payer values across all data sources are Medicare, Medicaid, private insurance, self-pay, no charge, other, missing, and invalid. The PAY#_X source data values are used as the data source for the PAY# uniform data values for all States, including those that provide more detailed payer information available in the PAYER#_X fields. Although it is expected that the PAY#_X and PAYER#_X fields will be consistent for these States, there may be inconsistencies, for example, if a Partner allows a small percentage of mismatches to pass their data cleaning processes.

As part of the mapping of PAY#_X to PAY#, the HCUP processing team carefully reviews any data source documentation that the HCUP Partner provides. Most PAY#_X source codes are clearly specified in labeling and/or the source documentation to allow for unambiguous mapping to the HCUP PAY# uniform data values (e.g., “Medicare managed care” will map to “Medicare”; “commercial” will map to “private insurance”). However, in some cases the data source values and source documentation do not allow for unambiguous mapping of payer codes (e.g., “HMO,” “PPO,” “managed care,” “Blue Cross Blue Shield”). In these cases, the Agency for Healthcare Research and Quality (AHRQ) works with the Partners to obtain clarification regarding the expected payer (i.e., Medicare, Medicaid, private insurance). Sometimes, the Partner can provide a definitive answer, but often the Partner’s data systems do not allow for these distinctions. Indeed, the Partners typically submit to HCUP the expected payer information that they were able to obtain from the hospital, but this information may not necessarily allow for unambiguous discrimination of Medicare, Medicaid, and private insurance. Because these ambiguous source payer codes cannot be unequivocally assigned to a single payer type, discharges with ambiguous source payer codes are collectively assigned to the private insurance category during HCUP processing. It is unknown what proportion of these discharges actually has an expected payer of private insurance, Medicare, or Medicaid.

HCUP State-Specific Ambiguous Source Payer Codes

Although discharges with ambiguous source payer codes cannot definitively be determined to be private insurance, Medicaid, or Medicare, one indicator of discharges that could have Medicare as the expected payer is a patient age of 65 years or older—as this age group almost universally has Medicare coverage. Table 1 presents the percentage of discharges with a primary expected payer (HCUP uniform expected payer code PAY1) of private insurance or Medicare in the 2018 HCUP SID that are for patients aged 65 years and older. (Supplement 1 provides these statistics for all data years from 2011 to 2018.)

Overall, in 2018, individuals aged 65+ years constituted 9.4 percent of discharges with a primary expected payer of private insurance and 80.7 percent of discharges with a primary expected payer of Medicare. These percentages varied by State. Individuals aged 65+ years represented between 75.1 percent (District of Columbia) and 86.4 percent (Hawaii) of discharges classified under Medicare. Those aged 65+ years represented between 3.4 percent (Utah) and 27.5 percent (North Carolina) of discharges classified under private insurance. There are multiple possible explanations for the percentage of discharges classified with an expected payer of private insurance in HCUP that are for individuals aged 65+ years.

Table 1. Individuals Aged 65 Years and Older as a Percentage of HCUP Inpatient Discharges by Primary Expected Payer (Private Insurance or Medicare), by State, 2018

State	Discharges by expected payer, % aged 65+ years		State	Discharges by expected payer, % aged 65+ years	
	Private insurance	Medicare		Private insurance	Medicare
Overall	9.4	80.8			
AK	5.9	80.7	MT	7.9	85.0
AR	11.0	77.2	NC	27.5	77.7
AZ	7.6	83.0	ND	4.4	84.8
CA	8.0	83.4	NE	5.6	83.0
CO	6.5	84.4	NJ	13.2	83.6
CT	10.4	83.4	NM	6.5	80.1
DC	8.6	75.1	NV	13.0	78.8
DE	7.4	82.4	NY	8.3	82.5
FL	7.1	81.3	OH	6.5	80.5
GA	6.6	77.5	OK	9.7	80.9
HI	11.7	86.4	OR	5.7	84.1
IA	5.1	83.9	PA	10.0	81.2
IL	8.2	81.6	RI	7.3	81.2
IN	11.7	79.8	SC	7.5	77.4
KS	7.2	82.6	SD	6.8	85.8
KY	11.9	75.6	TN	6.5	77.5
LA	11.8	77.3	TX	10.2	79.5
MA	10.8	80.6	UT	3.4	82.3
MD	8.3	81.3	VA	6.5	77.4
ME	14.2	80.1	VT	19.7	83.1
MI	7.1	79.9	WA	12.9	83.2
MN	6.9	82.6	WI	5.7	81.9
MO	6.1	77.8	WV	10.9	78.7
MS	11.7	75.9	WY	9.8	85.1

Abbreviation: HCUP, Healthcare Cost and Utilization Project

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID), 2018

First, discharges with ambiguous source payer codes could represent patients with Medicare Advantage, leading to some discharges for those aged 65 years and older being misclassified under private insurance in HCUP data. Medicare Advantage—also called Medicare managed care or Medicare Part C—is an alternative form of Medicare that is administered by private insurance plans (vs. original Medicare or traditional Medicare—Medicare Parts A and B—which is administered directly by the Centers for Medicare & Medicaid Services [CMS]). For example, the hospital could code patients with Medicare Advantage through Blue Cross Blue Shield (BCBS) as having an expected payer of “Blue Cross Blue Shield” without explicitly indicating this is Medicare Advantage. BCBS is also a large provider of commercial and employment-

based private insurance. As such, discharges with a source payer code of “Blue Cross Blue Shield” are ambiguous and could represent a mix of Medicare and private insurance.

Second, the source payer codes used by some HCUP Partners include an explicit category of “Medicare Advantage” or “Medicare Managed Care” (Table 2). In these cases, because explicit codes for Medicare Advantage exist within the HCUP Partner’s payer coding scheme, discharges with ambiguous payer codes (e.g., “HMO,” “PPO”) that are classified as private insurance in HCUP data presumably would be less likely to include patients with Medicare coverage.

Table 2. States With and Without Medicare Advantage (Managed Care) Expected Payer Codes in HCUP Source Data, 2018

States <u>with</u> Medicare managed care source payer codes		States <u>without</u> Medicare managed care source payer codes	
CA	ND	AK	NC
CT	NH	AR	NE
FL	NJ	AZ	NM
GA	NV	CO	OH
HI	NY	DC	SC
IA	OK	DE	UT
IL	OR	IN	VA
KS	PA	LA**	WA
KY	RI	MO	WI
MA	SD	MS	WY
MD	TN		
ME	TX		
MI	VT*		
MN	WV*		
MT			

Abbreviation: HCUP, Healthcare Cost and Utilization Project

* Managed care plans can be identified by using more detailed payer coding provided by the State Partner and are available in the PAYER1_X field. The specific PAYER1_X codes for these States are provided on the HCUP-US website: www.hcup-us.ahrq.gov/db/vars/siddistnote.jsp?var=payer1_x.

** Louisiana includes an HMO Medicare Risk Code in addition to a generic Medicare code.

Third, it may simply be that adults aged 65+ years are working to a later age and actually are covered by private (employment-based) insurance. In this case, these discharges are correctly classified with an expected payer of private insurance in HCUP data.

In order to better understand the potential mix of Medicare Advantage and private insurance for individuals aged 65+ years, the next section of this report provides information about insurance coverage among older adults in the United States.

INSURANCE COVERAGE AMONG INDIVIDUALS AGED 65+ YEARS

Table 3 provides statistics on employment and insurance coverage among individuals aged 65+ years in the United States in 2018, overall and by State.

Table 3. State-Level Employment and Insurance Coverage for Individuals Aged 65 Years and Older, by State, 2018

State	Population aged 65+ years that is employed, 2018, % ^a	Population aged 65+ years with specific health insurance coverage, 2018, % ^b		Medicare Advantage enrollment among Medicare beneficiaries, % ^c	
		Covered by employment-based private health insurance, %	Covered by Medicare, %	2011	2018
United States	18.5	31.9	95.9	25.6	33.8
AK	26.0	46.0	94.4	0.6	1.0
AL	16.9	32.5	97.7	20.8	37.4
AR	15.7	24.2	97.8	14.7	22.2
AZ	18.0	26.1	96.3	37.1	38.0
CA	19.7	30.7	94.3	36.3	39.6
CO	24.0	29.1	95.7	33.9	35.9
CT	23.3	37.1	95.0	19.2	34.3
DC	24.1	48.7	90.8	9.7	16.3
DE	18.4	44.1	97.1	3.6	13.1
FL	18.9	24.5	95.7	32.0	42.6
GA	18.7	32.0	96.1	21.9	35.3
HI	21.9	51.1	94.4	42.6	44.7
IA	22.7	25.3	97.3	12.9	18.6
ID	16.6	23.6	97.8	28.7	32.1
IL	19.6	32.0	95.3	9.3	21.9
IN	18.8	29.9	97.0	17.4	28.0
KS	24.0	23.8	96.4	11.5	16.1
KY	14.8	32.9	97.3	16.9	28.6
LA	17.3	31.4	95.7	24.1	34.0
MA	24.2	40.2	94.4	17.8	21.4
MD	24.2	50.1	93.7	8.0	11.4
ME	17.8	29.0	97.1	13.5	29.9
MI	16.8	46.6	97.4	23.7	37.0
MN	24.1	25.3	96.8	44.5	56.0
MO	21.6	27.0	97.2	21.7	32.2
MS	14.2	21.8	97.8	9.7	17.4
MT	20.3	22.4	97.5	14.9	18.0
NC	17.2	30.9	97.1	17.8	32.7
ND	22.4	25.1	96.9	9.5	17.7
NE	25.6	22.3	96.7	11.5	15.2
NH	24.2	33.6	95.9	6.0	11.9
NJ	20.6	39.6	94.8	12.9	22.2
NM	18.3	30.5	95.9	26.2	33.2

State	Population aged 65+ years that is employed, 2018, % ^a	Population aged 65+ years with specific health insurance coverage, 2018, % ^b		Medicare Advantage enrollment among Medicare beneficiaries, % ^c	
		Covered by employment-based private health insurance, %	Covered by Medicare, %	2011	2018
NV	20.8	27.3	95.0	30.9	35.2
NY	20.3	39.7	95.3	30.9	38.9
OH	17.0	34.7	96.5	33.9	36.9
OK	20.5	29.7	96.8	15.2	18.2
OR	17.4	27.1	96.6	41.2	43.4
PA	19.7	32.8	96.7	38.3	40.4
RI	20.7	27.5	96.9	34.9	36.7
SC	17.0	31.3	97.8	16.2	25.3
SD	N/A	19.4	96.7	9.4	19.4
TN	18.5	27.4	97.2	25.3	36.7
TX	20.9	29.5	94.1	20.1	35.7
UT	19.0	33.5	94.5	34.6	35.8
VA	20.1	37.0	95.3	14.2	18.1
VT	26.6	30.9	96.3	5.3	9.3
WA	17.3	31.6	96.0	25.5	30.7
WI	19.1	25.9	97.6	30.2	39.7
WV	15.2	39.9	97.9	22.4	26.4
WY	22.6	25.2	96.7	5.8	3.1

^a Source: Bureau of Labor Statistics. Employment status of the civilian noninstitutional population by sex, race, Hispanic or Latino ethnicity, marital status, and detailed age, 2018 annual averages. www.bls.gov/lau/ex14tables.htm. Accessed September 17, 2020.

^b Source: United States Census Bureau. American Community Survey Tables for Health Insurance Coverage, Table HI05. Health Insurance Coverage Status and Type of Coverage by State and Age for All People: 2018. www.census.gov/data/tables/time-series/demo/health-insurance/acs-hi.html. Accessed September 17, 2020.

^c Source: Kaiser Family Foundation. State Health Facts: Medicare Advantage Enrollees as a Percent of Total Medicare Population. www.kff.org/medicare/state-indicator/enrollees-as-a-of-total-medicare-population/?currentTimeframe=7&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D. Accessed September 17, 2020.

Employment and Private Insurance Coverage

Nationally, nearly one in five Americans aged 65 years and older (18.5 percent) were employed in 2018 (Table 3).⁹ This is an increase from 16.1 percent employment in 2011, indicating that more older adults are working past age 64 years.¹⁰ By State, the percentage of individuals

⁹ Bureau of Labor Statistics. Employment status of the civilian noninstitutional population by sex, race, Hispanic or Latino ethnicity, marital status, and detailed age, 2018 annual averages. www.bls.gov/lau/ex14tables.htm. Accessed September 17, 2020.

¹⁰ Number of employed individuals aged 65+ years from: Bureau of Labor Statistics. Table 11b. Employed persons by detailed occupation and age. www.bls.gov/cps/tables.htm. Accessed October 8, 2020. U.S. population aged 65+ years from: Barrett M, Coffey R, Levit K. Population Denominator Data Sources and Data for Use with the HCUP Databases (Updated with 2018 Population Data). HCUP Methods Series Report # 2019-02 ONLINE. October 24, 2019. U.S. Agency for Healthcare Research and Quality. Available: www.hcup-us.ahrq.gov/reports/methods.jsp. Accessed October 8, 2020.

aged 65 years and older who were employed in 2018 varied from a low of 14.2 percent in Mississippi to a high of 26.6 percent in Vermont (Table 3). Given the high percentage of employment among adults aged 65+ years—more than one-fourth of this age group in some States—we would expect to see a notable percentage of older individuals with private health insurance coverage in HCUP data.

In 2018, nearly one-third of Americans aged 65 years and older (31.9 percent) were covered by employment-based private health insurance (Table 3). This was either coverage from the individual's own employment or employment of a qualifying relative (e.g., spouse) offered by an employer or a union. Coverage by employment-based private health insurance among individuals aged 65+ years varied by State, from 19.4 percent in South Dakota to 51.1 percent in Hawaii (Table 3). Thus, it would not be surprising to see a substantial proportion of discharges among those aged 65+ years with a payer of private health insurance in HCUP data.

Medicare Coverage and Rules

Medicare was signed into law in the United States in 1965, with more than 19 million Americans enrolled in Medicare by July of 1966.¹¹ Medicare was initially administered by the Social Security Administration (SSA) until 1977, when responsibility was moved to the newly created Health Care Financing Administration (HCFA), renamed the Centers for Medicare & Medicaid Services (CMS) in 2001.¹² For more than 30 years, Medicare comprised two parts—Part A (hospital insurance) and Part B (medical insurance)—that are collectively referred to as original Medicare or traditional Medicare.¹³

The vast majority of adults aged 65 years and older (95.9 percent) were covered by Medicare in 2018 (Table 3). Coverage ranged from 90.8 percent in the District of Columbia to 97.9 percent in West Virginia. This suggests that most of the one-third of Americans aged 65+ years who have employment-based private health insurance (Table 3) also are covered by Medicare. In these cases, there are explicit CMS rules that determine whether private insurance or Medicare is the primary payer of health services.¹⁴ For adults aged 65 years and older, if the individual's private group health plan is through an employer with 20 or more employees, then the group health plan pays first (i.e., is the primary payer and Medicare is the secondary payer). If the individual's private group health plan is through an employer with fewer than 20 employees, then Medicare pays first (i.e., is the primary payer and the group health plan is the secondary payer). Therefore, based on the nearly one-third of adults aged 65+ years who are covered by employment-based private insurance, we would expect to see private insurance as the primary expected payer in HCUP data for many of these older adults.

¹¹ Centers for Medicare & Medicaid Services. Medicare & Medicaid Milestones: 1937–2015. July 2015. www.cms.gov/About-CMS/Agency-Information/History/Downloads/Medicare-and-Medicaid-Milestones-1937-2015.pdf. Accessed October 6, 2020.

¹² Ibid.

¹³ Centers for Medicare & Medicaid Services. History. Updated January 13, 2020. www.cms.gov/About-CMS/Agency-Information/History. Accessed October 6, 2020.

¹⁴ Centers for Medicare & Medicaid Services. How Medicare Works With Other Insurance. Updated June 19, 2020. www.medicare.gov/supplements-other-insurance/how-medicare-works-with-other-insurance. Accessed November 5, 2020.

Medicare Part C was established in 1997 and became effective in 1999.¹⁵ Originally known as the Medicare+Choice (M+C) program, renamed to the Medicare Advantage Program in 2003, Medicare Part C authorized CMS to contract with public and private insurers to offer a range of health plan options, such as health maintenance organization (HMO) plans and preferred provider organization (PPO) plans, to Medicare beneficiaries.^{16,17} Medicare Advantage plans must offer all of the Medicare Part A and Part B benefits available under the original Medicare program, but Medicare Advantage plans may offer additional benefits such as vision, hearing, or dental coverage. In 2018, one-third of Medicare beneficiaries (33.8 percent) received their Medicare benefits through the Medicare Advantage Program (Table 3). This is an increase from 25.6 percent in 2011, indicating that Medicare beneficiaries are increasingly enrolling in Medicare Advantage plans instead of original Medicare. By State, enrollment in Medicare Advantage plans varied widely among Medicare beneficiaries in 2018, from 1.0 percent in Alaska to 56.0 percent in Minnesota, with virtually all States experiencing an increase in Medicare Advantage penetration from 2011 (Table 3). It could be fairly common that discharges with ambiguous source payer codes are actually Medicare Advantage administered through private insurance plans, although this may be more likely in some States than others.

FREQUENCY AND IMPACT OF AMBIGUOUS STATE-SPECIFIC SOURCE PAYER CODES

Definition of Ambiguous State-Specific Source Payer Codes

For the purposes of this analysis, we identified three types of ambiguous State-specific source payer codes (defined below): generic (“G”), Blue Cross Blue Shield (“B”), and other (“O”). Currently, these State-specific source codes are categorized under the “private” HCUP uniform payer code category (PAY#). Supplement 2 provides the full list of payer codes in the source data for each State (PAY#_X data elements) that we considered to be ambiguous (G, B, or O) for this analysis.

“G” codes were defined as those source payer codes with descriptions that name a general type of insurance plan—such as “HMO,” “PPO,” or “HMO Managed Care”—but do not explicitly label the plan as private, Medicare, or Medicaid. Codes describing the following plans were excluded: indemnity or liability plans, dental or vision plans, auto insurance, no fault, self-insurance, and federal employee programs. Codes were also excluded if the code description was generic but the State’s payer code typology identified the code as private.

“B” codes were defined as those source payer codes with descriptions that name BCBS as the carrier but do not specify that the plan is private, Medicare, or Medicaid. Codes describing the following plans were excluded: indemnity or liability plans, self-insurance, and Medicare supplement plans. Codes were also excluded if the State’s payer code typology identified the code as private. The “B” category also excluded generic BCBS plans for States with Blue Cross

¹⁵ Centers for Medicare & Medicaid Services. Health Plans – General Information. Updated June 19, 2020. www.cms.gov/Medicare/Health-Plans/HealthPlansGenInfo. Accessed October 6, 2020.

¹⁶ Ibid.

¹⁷ Centers for Medicare & Medicaid Services. Medicare Advantage Plans. www.medicare.gov/sign-up-change-plans/types-of-medicare-health-plans/medicare-advantage-plans. Accessed October 6, 2020.

Medicare Managed Care codes available. In these cases, the generic codes were assumed to represent private BCBS plans.

“O” codes were defined as those source payer codes with descriptions that name a specific carrier or plan (other than BCBS) but do not indicate that the plan is private, Medicare, or Medicaid. These codes include labor union or other employer plans, because these plans may represent Medicare Advantage plans for retirees. In 2015, 19 percent of Medicare Advantage enrollees were enrolled in Medicare Employee Retiree Plans^{18,19} Codes were excluded from the “O” category if the State’s payer code typology identified the code as private.

We designated the separate “B” category for ambiguous BCBS source payer codes because BCBS offers Medicare Advantage plans and it is common for States to include BCBS-specific codes in addition to general “private” or “commercial” payer codes in their data submitted for HCUP. This may be due to the company’s history and pervasiveness. BCBS has existed since 1929 and today consists of 36 companies (including Anthem, CareFirst, and Highmark) that provide health insurance to more than 107 million members (1 in 3 Americans).²⁰ In 2020, BCBS plans were the third largest in Medicare Advantage enrollment behind United Healthcare and Humana.²¹

Frequency of Ambiguous State-Specific Source Payer Codes

Although this report focuses on inpatient discharges, preliminary analyses suggest that ambiguous source payer code frequencies are similar across HCUP data types (inpatient, emergency department, and ambulatory surgery data) when multiple data types are available for a State. All subsequent tables focus on HCUP inpatient data (SID) in 2018. However, data for prior years (2011–2017) of inpatient data are available in the supplemental file.

Findings reported below are limited to 34 States that had at least one ambiguous source payer code appearing on 2018 SID discharges in the PAY1_X (primary expected payer) data element.²² This does not necessarily mean that ambiguity does not exist for the additional 14 States with 2018 SID. Some of these States have very simple, high-level PAY#_X codes. For example, Alaska has only one PAY#_X code representing Medicare (“Medicare”) and one code representing private carriers (“Commercial/Private Insurance”). It is possible that more detailed ambiguous source payer codes were assigned to “Commercial/Private Insurance” prior to submission of the data to HCUP.

To quantify the magnitude of the ambiguous source payer coding issue across States, we examined the number of SID discharges with ambiguous payer codes in the source primary

¹⁸ Freed M, Damico A, Neuman T. A Dozen Facts About Medicare Advantage in 2020. April 22, 2020. www.kff.org/medicare/issue-brief/a-dozen-facts-about-medicare-advantage-in-2020/. Accessed October 9, 2020.

¹⁹ Centers for Medicare & Medicaid Services. Fact Sheet: Medicare Advantage Payments to Medicare Employer Retiree Plans. April 4, 2016. www.cms.gov/newsroom/fact-sheets/medicare-advantage-payments-medicare-employer-retiree-plans. Accessed October 9, 2020.

²⁰ Blue Cross Blue Shield. The Blue Cross Blue Shield System: About Us. www.bcbs.com/about-us/the-blue-cross-blue-shield-system. Accessed October 9, 2020.

²¹ Freed et al., 2020. Op. cit.

²² The supplemental tables also include data for Ohio. Although several ambiguous payer codes for Ohio were active in 2018, they stopped appearing on SID records after 2011.

expected payer data element (PAY1_X) relative to the total number of discharges classified as private insurance under the uniform HCUP primary expected payer data element (PAY1). Table 4 presents 2018 SID discharges with ambiguous source payer codes as a percentage of all discharges with a primary expected payer of private insurance in HCUP data, for all age groups and for patients aged 65+ years only, by State. (Supplement 3 presents this information for data years 2011–2018).

The prevalence of discharges with ambiguous source payer codes varied widely across States. In 2018, discharges with ambiguous source payer codes accounted for between 11.1 percent (South Carolina and Wyoming) and 93.3 percent (Virginia) of all inpatient discharges classified with a primary expected payer of private insurance in HCUP data. Among discharges for patients aged 65 years and older, the range was 8.6 percent (South Carolina) to 91.9 percent (North Carolina). It is important to note that these ambiguous codes in the source data denote health plan types such as HMO, PPO, point of service (POS), or unspecified managed care (Supplement 2), which are assumed to be private insurance when mapped to the HCUP uniform payer category. As previously noted, these ambiguous source payer codes are an unknown mix of private insurance, Medicare, and Medicaid.

For 20 States, discharges with an ambiguous source payer code comprised the majority of all discharges classified with a primary expected payer of private insurance in HCUP data. For 18 States, these discharges comprised the majority of discharges for patients aged 65 years and older with private insurance.

In the case of only three States—North Carolina, Washington, and Wyoming—ambiguous source payer codes accounted for a larger percentage (at least 10 percentage points higher) of discharges for older patients classified with a primary expected payer of private insurance in HCUP data than for all patients classified with private insurance. For example, in Washington, discharges with ambiguous payer codes comprised 60.3 percent of discharges for patients aged 65 years and older but accounted for only 34.9 percent of discharges for patients of all ages with private insurance as the primary expected payer in HCUP data.

Table 4. Percentage of Discharges With HCUP Uniform Primary Expected Payer of Private Insurance That Have Ambiguous Source Payer Codes, for Patients of All Ages and Patients Aged 65+ Years, by State, 2018

State	Discharges with private insurance in HCUP uniform payer category, <i>all ages</i>			Discharges with private insurance in HCUP uniform payer category, <i>aged 65+ years</i>		
	Total discharges, N	Discharges with ambiguous source payer codes, N	% of discharges with ambiguous source payer codes	Total discharges, N	Discharges with ambiguous source payer codes, N	% of discharges with ambiguous source payer codes
AR	109,684	93,698	85.4	12,022	9,423	78.4
AZ	185,030	150,576	81.4	14,093	11,324	80.4
CT*	117,056	88,975	76.0	12,155	8,052	66.2
DC	54,700	12,065	22.1	4,696	1,013	21.6
DE	31,261	24,867	79.5	2,303	1,217	52.8
GA*	284,811	159,821	56.1	18,760	9,927	52.9

State	Discharges with private insurance in HCUP uniform payer category, <i>all ages</i>			Discharges with private insurance in HCUP uniform payer category, <i>aged 65+ years</i>		
	Total discharges, N	Discharges with ambiguous source payer codes, N	% of discharges with ambiguous source payer codes	Total discharges, N	Discharges with ambiguous source payer codes, N	% of discharges with ambiguous source payer codes
HI*	37,919	7,645	20.2	4,451	589	13.2
IA*	104,218	67,262	64.5	5,293	2,775	52.4
IL*	449,155	56,766	12.6	37,000	3,294	8.9
KS*	103,135	51,645	50.1	7,441	2,280	30.6
KY*	144,868	77,837	53.7	17,278	3,857	22.3
LA	121,374	94,116	77.5	14,377	8,269	57.5
MA*	247,756	195,342	78.8	26,634	17,059	64.0
MD*	182,195	131,886	72.4	15,160	10,064	66.4
MI*	341,170	271,854	79.7	24,281	13,896	57.2
MO	232,925	75,943	32.6	14,153	3,277	23.2
MS	87,709	42,128	48.0	10,241	2,282	22.3
MT*	21,659	8,576	39.6	1,708	454	26.6
NC	412,582	324,028	78.5	113,506	104,310	91.9
NJ*	317,442	270,461	85.2	41,861	32,482	77.6
NV*	104,577	78,646	75.2	13,634	6,401	46.9
NY*	643,719	264,093	41.0	53,663	23,045	42.9
OR*	97,381	38,213	39.2	5,595	2,195	39.2
PA*	532,984	255,002	47.8	53,069	22,400	42.2
SC	127,159	14,178	11.1	9,502	816	8.6
SD*	38,039	17,617	46.3	2,580	743	28.8
TN*	212,027	173,933	82.0	13,834	9,644	69.7
TX*	1,020,986	771,500	75.6	103,794	66,198	63.8
UT	136,194	26,033	19.1	4,696	855	18.2
VA	269,239	251,330	93.3	17,589	14,025	79.7
VT*	18,418	10,802	58.6	3,628	928	25.6
WA	238,901	83,377	34.9	30,895	18,637	60.3
WV*	54,214	40,124	74.0	5,907	3,755	63.6
WY	8,653	961	11.1	847	425	50.2

Abbreviation: HCUP, Healthcare Cost and Utilization Project

Note: Only States with ambiguous payer expected payer codes appearing on 2018 SID discharges were included.

* Denotes States with separate Medicare managed care source payer codes.

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID), 2018

Opposite patterns were observed in the case of 16 States where ambiguous source payer codes accounted for a larger percentage (at least 10 percentage points higher) of discharges for all patients classified with a primary expected payer of private insurance in HCUP data than for patients aged 65 years and older classified with private insurance. For example, Delaware discharges with ambiguous payer codes comprised 79.5 percent of discharges for patients of all ages but accounted for only 52.8 percent of discharges for patients aged 65 years and older with private insurance as the primary expected payer in HCUP data.

For the other 15 States, discharges with ambiguous source payer codes made up a similar percentage (within 10 percentage points) of private insurance discharges for all ages as for

older patients. In some States, such as Utah, both percentages were relatively small (19.1 and 18.2 percent for all patients and patients aged 65+ years, respectively). In other States, such as Arizona, both percentages were relatively large (81.4 and 80.4 percent for all patients and patients aged 65+ years, respectively).

On average across States, the percentage of discharges with ambiguous source payer codes was 8.7 percentage points lower for patients aged 65+ years compared with patients of all ages. Moreover, this percentage differential was greater for discharges from States that had separate Medicare Advantage source payer codes than for States that did not (12.7 vs. 2.3 percentage points lower, respectively).

With a focus on 2018 SID discharges with an ambiguous source payer code, Table 5 presents the percentage of these discharges in each State for patients aged 65+ years. Percentages are provided for discharges with any ambiguous code (G, B, or O) as well as for discharges with the ambiguous G, B, and O codes separately. As the ambiguous code frequencies vary by data year, Supplement 4 provides these percentages for all data years from 2011 to 2018. Supplement 5 provides the total number of SID discharges with each State-specific ambiguous payer code as well as the number and percentage for patients aged 65 years and older, by year from 2011 to 2018.

Among the 2018 SID from 34 States, the percentage of discharges with any ambiguous source payer code (G, B, or O) that were for patients aged 65 years and older varied between 3.3 percent (Utah) and 44.2 percent (Wyoming). These percentages were generally around or less than 10 percent except for three States: Wyoming (44.2 percent), North Carolina (32.2 percent), and Washington (22.4 percent).

Among the 18 States with a generic “G” code listed as the primary expected payer in the source data, the percentage of these discharges that were for patients aged 65 years and older varied between 4.9 percent (Delaware) and 54.4 percent (North Carolina). Again, North Carolina (54.4 percent), Wyoming (44.2 percent), and Washington (38.3 percent) had the highest percentages. Several other States also had percentages greater than 10: Vermont (19.9 percent), Arkansas (18.4 percent), and Louisiana (14.0).

Among the 28 States with an ambiguous BCBS (“B”) code listed as the primary expected payer in the source data, less than 10 percent of these discharges (as low as 3.5 percent in Montana) were for patients aged 65 years and older.

Among the 10 States with an ambiguous source payer code for a non-BCBS plan or carrier (“O” code), less than 15 percent of these discharges were for patients aged 65 years and older. The highest percentages were observed for West Virginia (14.9 percent) New Jersey (14.1 percent) and Montana (10.0 percent).

Table 5. Individuals Aged 65 Years and Older as a Percentage of HCUP Inpatient Discharges by Ambiguous Source Payer Code, by State, 2018

State	Discharges by ambiguous source payer code, % aged 65+ years				State	Discharges by ambiguous source payer code, % aged 65+ years			
	All ambiguous codes (G, B, & O)	Generic HMO/PPO codes (G)	BCBS codes (B)	Other carrier codes (O)		All ambiguous codes (G, B, & O)	Generic HMO/PPO codes (G)	BCBS codes (B)	Other carrier codes (O)
AR	10.1	18.4	5.4	—	MT	5.3	—	3.5	10.0
AZ	7.5	7.5	—	—	NC	32.2	54.4	4.5	—
CT	9.0	9.4	8.5	—	NJ	12.0	—	9.4	14.1
DC	8.4	—	8.4	—	NV	8.1	8.1	—	—
DE	4.9	4.9	4.9	—	NY	8.7	6.3	9.4	—
GA	6.2	6.9	5.6	—	OR	5.7	5.4	5.8	6.0
HI	7.7	—	—	7.7	PA	8.8	—	8.8	—
IA	4.1	—	4.1	—	SC	5.8	5.8	—	—
IL	5.8	—	4.9	7.9	SD	4.2	—	4.2	—
KS	4.4	—	4.4	—	TN	5.5	—	5.8	5.1
KY	5.0	—	5.0	*	TX	8.6	9.5	5.4	—
LA	8.8	14.0	6.4	—	UT	3.3	—	3.3	—
MA	8.7	10.0	7.6	—	VA	5.6	—	5.4	5.6
MD	7.6	7.2	8.2	—	VT	8.6	19.9	6.5	—
MI	5.1	6.9	4.5	—	WA	22.4	38.3	—	6.2
MO	4.3	—	4.3	—	WV	9.4	—	5.6	14.9
MS	5.4	—	5.4	—	WY	44.2	44.2	—	—

Abbreviations: BCBS, Blue Cross Blue Shield; HCUP, Healthcare Cost and Utilization Project; HMO, health maintenance organization; PPO, preferred provider organization

Notes: Only States with ambiguous source payer codes for 2018 SID discharges were included. Statistics reported here are based on the primary expected payer. "G," "B," and "O" denote the three types of ambiguous State-specific source payer codes identified for the purposes of this analysis: generic ("G"), Blue Cross Blue Shield ("B"), and other ("O").

* Suppressed because of cell size <11.

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID), 2018

In general, there were higher percentages of discharges for patients aged 65 years and older under G and O codes compared with B codes. For some States, the high percentages were driven primarily by individual State-specific ambiguous payer codes. For example, in North Carolina, more than 80 percent of discharges with ambiguous source payer code 16 ("Health Maintenance Org") were for individuals aged 65+ years, representing nearly 100,000 discharges (see Supplement 5 for code-specific frequencies and percentages).

Potential Impact of Ambiguous State-Specific Source Payer Codes

To better understand the practical implications of the assignment of ambiguous source payer codes to HCUP uniform payer categories for patients aged 65 years and older, we examined the impact of switching the HCUP default assignment of these discharges from private insurance to Medicare. With a focus on private insurance and Medicare as the primary expected payer categories, Table 6 presents the distribution of 2018 SID discharges for patients aged 65+ years for two scenarios: the current scenario (all ambiguous source payer codes

assigned to private insurance) and an alternative scenario (all ambiguous source payer codes assigned to Medicare). Supplement 6 provides this comparison when the reassignment is limited to G codes only, B codes only, and O codes only. The first column in Table 6 represents the percentage of all discharges among individuals aged 65+ years that had ambiguous source payer codes. The remaining columns then shift this percentage between being assigned to private insurance (current scenario) or being assigned to Medicare (alternative scenario).

Table 6. Primary Expected Payer as a Percentage of HCUP Inpatient Discharges Among Individuals Aged 65 Years and Older, Before and After Shifting All Ambiguous Source Payer Codes From Private Insurance to Medicare, by State, 2018

State	Discharges for age 65+ with any G, B, or O code, %	Discharges for age 65+ with ambiguous codes assigned to private (current), %		Discharges for age 65+ with ambiguous codes assigned to Medicare (alternative), %		State	Discharges for age 65+ with any G, B, or O code, %	Discharges for age 65+ with ambiguous codes assigned to private (current), %		Discharges for age 65+ with ambiguous codes assigned to Medicare (alternative), %	
		Private	Medicare	Private	Medicare			Private	Medicare	Private	Medicare
		AR	6.3	8.0	85.5			1.7	91.8	MT	1.1
AZ	4.2	5.2	91.2	1.0	95.4	NC	25.5	27.8	69.7	2.3	95.2
CT	5.1	7.7	89.0	2.6	94.1	NJ	8.9	11.5	85.0	2.6	94.0
DC	3.0	14.1	82.5	11.1	85.5	NV	5.1	11.0	84.0	5.8	89.1
DE	2.8	5.3	92.8	2.5	95.6	NY	2.8	6.5	89.1	3.8	91.8
GA	2.7	5.0	90.6	2.4	93.3	OR	1.5	3.8	91.3	2.3	92.8
HI	1.4	10.3	85.1	9.0	86.5	PA	3.2	7.6	89.6	4.4	92.9
IA	2.1	4.1	94.9	1.9	97.1	SC	0.4	4.7	92.7	4.3	93.1
IL	0.6	6.8	89.2	6.2	89.8	SD	1.8	6.4	90.8	4.5	92.6
KS	1.8	5.9	91.3	4.1	93.1	TN	3.1	4.4	93.5	1.3	96.6
KY	1.8	7.9	89.4	6.1	91.2	TX	6.6	10.3	86.0	3.7	92.6
LA	4.5	7.9	88.3	3.3	92.9	UT	1.2	7.0	90.1	5.7	91.4
MA	5.2	8.1	89.0	2.9	94.2	VA	4.3	5.4	91.7	1.1	96.0
MD	4.7	7.0	90.2	2.4	94.9	VT	4.0	15.5	82.9	11.5	86.9
MI	2.9	5.0	93.0	2.1	95.8	WA	7.9	13.1	83.8	5.2	91.7
MO	1.1	4.6	91.9	3.5	93.0	WV	3.4	5.4	90.5	2.0	93.9
MS	1.6	7.2	90.6	5.6	92.2	WY	2.7	5.4	89.4	2.7	92.1

Abbreviation: Healthcare Cost and Utilization Project

Notes: Only States with ambiguous payer codes that appeared on 2018 SID discharges were included. Statistics reported here are based on the primary expected payer. "G," "B," and "O" denote the three types of ambiguous State-specific source payer codes identified for the purposes of this analysis: generic ("G"), Blue Cross Blue Shield ("B"), and other ("O").

Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID), 2018

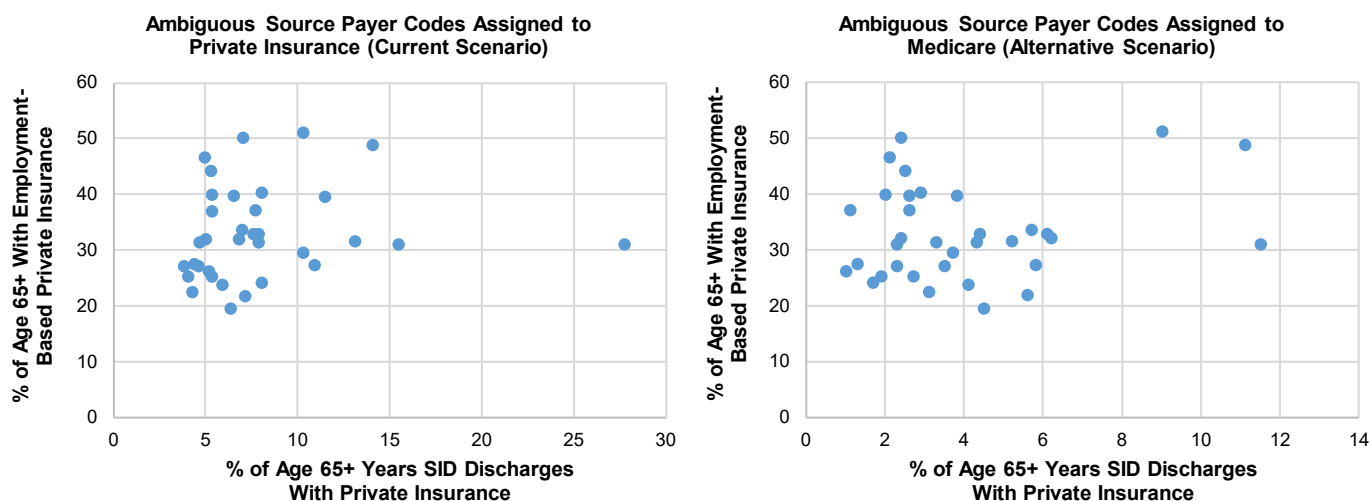
Across States, 2018 SID discharges with ambiguous source payer codes for the primary expected payer constituted less than 9 percent of discharges for patients aged 65 years and older, with the exception of North Carolina. In North Carolina, ambiguous source payer codes accounted for more than one-quarter (25.5 percent) of discharges for older patients. Under the current HCUP classification of these discharges as private insurance, 27.8 percent of discharges for patients aged 65 years and older are classified under private insurance versus

69.7 percent classified under Medicare. If the 25.5 percent of discharges with ambiguous source payer codes were all shifted to Medicare, then 2.3 percent of discharges for patients aged 65 years and older would be classified under private insurance and 95.2 percent would be classified under Medicare. For the State with the next highest percentage of discharges with ambiguous source payer codes—New Jersey with 8.9 percent of discharges—the shift of these codes from being classified under private insurance to Medicare in HCUP data would result in a shift from 11.5 to 2.6 percent of discharges being classified as private insurance and a shift from 85.0 to 94.0 percent of discharges being classified as Medicare.

With the exception of North Carolina, the current HCUP default assignment of ambiguous source payer codes (to private insurance) results in private insurance representing 4–15 percent of all discharges for patients aged 65 years and older and Medicare representing 83–95 percent of discharges for patients in this age group. The alternative assignment of ambiguous source payer codes for individuals aged 65+ years (to Medicare) shifts these ranges down to 1–12 percent private and up to 86–97 percent Medicare.

As summarized in Table 3, across States, 19–51 percent of the population aged 65 years and older are covered by employment-based private health insurance and 90–98 percent are covered by Medicare. Figure 1 illustrates the correlation between the State percentage of individuals aged 65+ years with employment-based private health insurance and the State percentage of HCUP inpatient discharges among individuals aged 65+ years that are classified as private insurance under the current (private) and alternative (Medicare) expected payer assignment scenarios for the ambiguous source payer codes.

Figure 1. Correlation Between State Percentages of Employment-Based Private Insurance and HCUP Inpatient Discharges Classified as Private Insurance Among Individuals Aged 65+ Years, Before and After Shifting All Ambiguous Source Payer Codes From Private Insurance to Medicare, 2018



Abbreviation: HCUP, Healthcare Cost and Utilization Project; SID, State Inpatient Databases

Sources: Bureau of Labor Statistics. Employment status of the civilian noninstitutional population by sex, race, Hispanic or Latino ethnicity, marital status, and detailed age, 2018 annual averages. www.bls.gov/lau/ex14tables.htm. Accessed September 17, 2020. Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID), 2018

The correlation between the percentages of employment-based insurance and HCUP private insurance assignment for individuals aged 65+ years suggests a slight positive correlation, but the correlation was not significant for either scenario: $r=+0.14$ ($p>0.05$) under the current scenario (left graph) and $r=+0.20$ ($p>0.05$) under the alternative scenario (right graph).²³ The distributions produced under the current and alternative assignments both appear plausible. The true distribution is likely to lie somewhere in between.

DISCUSSION

Patients aged 65 years and older account for a substantial share of HCUP discharges assigned to the primary expected payer category of private insurance—nearly 10 percent of 2018 SID discharges. Although in some cases, these discharges may accurately represent private insurance coverage among these older individuals, in other cases, they could represent Medicare Advantage—a form of Medicare that is administered by private insurance companies. Several State-specific payer codes, which we refer to as “ambiguous” source payer codes, have descriptions that do not explicitly indicate that the codes exclusively represent private or commercial coverage. Therefore, a hospital coder might select one of these codes (e.g., “HMO,” “PPO,” or “Blue Cross Blue Shield”) to identify that a patient is covered by Medicare Advantage.

In this report, we examined external statistics on employment and health insurance coverage among individuals aged 65+ years, and explored the magnitude and impact of ambiguous source payer codes on the distribution of HCUP inpatient discharges.

Our findings illuminate possible limitations of the expected payer codes that can be used to inform analyses and interpretation based on HCUP data.

Summary of Findings

External statistics on employment and health insurance demonstrate that nearly one in five of the population aged 65 years and older are employed, and close to one in three have employment-based health insurance coverage (either through their own or a relative’s employment). Moreover, although the majority of this older population has Medicare coverage, Medicare rules dictate that for those who also have private group health insurance, if the employer has 20 or more employees, then the private insurance is the primary payer with Medicare as the secondary payer. Considering these statistics, it is not surprising to see a substantial proportion of discharges among those aged 65+ years in HCUP data with an expected payer of private insurance.

Indeed, our analysis of SID discharges demonstrated that between 4 and 28 percent of discharges for patients aged 65 years and older were assigned to the HCUP uniform expected payer category of private insurance. For some States, such as North Carolina and Arkansas, ambiguous source payer codes (i.e., no clear indication of private, Medicare, or Medicaid in the source data) accounted for most of these discharges. In other cases, such as Illinois and the District of Columbia, other codes that were clearly labeled as “private” or “commercial” in the

²³ For the alternative scenario (right graph), the correlation becomes negative if the three outlier States on the far-right side of the scatter plot are excluded: $r=-0.21$ ($p>0.05$).

source data contributed to the majority of private insurance discharges for patients aged 65 years and older in HCUP data.

Focusing on 2018 SID discharges from 34 States with ambiguous source payer codes listed as the primary expected payer, we found that the magnitude and impact of these codes varied widely by State. Across these States, discharges with ambiguous payer codes for patients aged 65 years and older varied between 3.3 percent and 44.2 percent. These older adults represented 12 percent or less of discharges classified as private insurance in the HCUP SID from all except for three States: Wyoming (44.2 percent), North Carolina (32.2 percent), and Washington (22.4 percent).

We also investigated the impact of assigning discharges for those aged 65+ years with ambiguous source payer codes to Medicare instead of to private insurance in HCUP data. Considering external insurance enrollment statistics for this population, the distribution of patients aged 65 years and older between private insurance and Medicare was reasonable for nearly every State both before and after code reassignment.

Although we cannot determine the true distribution between private insurance and Medicare for HCUP discharges with ambiguous source payer codes among those aged 65+ years, it is most likely to lie somewhere between the distribution resulting from the current HCUP coding assignment (all ambiguous source payer code discharges are assigned to private insurance) and the distribution if all ambiguous source payer codes among those aged 65+ years were reassigned to Medicare. With either approach, some degree of error is inevitable. The extent to which Medicare Advantage plans are currently misassigned to private insurance varies by State and the way in which the codes are assigned by hospitals in the State.

Limitations

This report has several limitations. First, we focused only on inpatient data, because more States provide HCUP inpatient data than other data types; thus, the extent to which ambiguous source payer codes are prevalent in HCUP outpatient data is not detailed. However, preliminary analyses suggested that the frequency and magnitude of ambiguous payer codes are similar across all data types (inpatient, emergency department, and ambulatory surgery).

Second, we limited our analysis of HCUP data to States with at least one ambiguous source payer code in the 2018 SID. Although these codes provide a way to quantify the potential magnitude of misassignment of discharges among those aged 65 years and older, it is possible that a similar issue exists for other SID States—particularly those with only a few high-level source payer codes. For example, if the only relevant State-specific payer codes available to a hospital coder are “Private Insurance” and “Medicare,” it is not guaranteed that the coder will select “Medicare” and not “Private Insurance” for a patient with Medicare Advantage administered by BCBS.

Third, we focused our analysis on patients aged 65 years and older in order to examine the potential that discharges for patients with Medicare Advantage are erroneously being assigned in HCUP data to private insurance instead of Medicare. Importantly, the issue of ambiguous source payer codes is also relevant for Medicaid managed care plans. However, it is more

difficult to try to discern the magnitude and impact of this situation because there is no clear criterion, such as age for Medicare, that is associated with Medicaid managed care plans.

Recommendations for Using HCUP Expected Payer Codes in Research

As demonstrated by the statistics presented in this report, some source payer codes provided by the HCUP Partners do not allow for the unambiguous distinction between Medicare and private insurance for patients aged 65 years and older. Specifically, some source payer codes denote health plan types (e.g., HMO, PPO, POS, unspecified managed care) that do not explicitly identify in the description whether the payer is private insurance, Medicare Advantage, or Medicaid managed care. The current HCUP practice is to assign these ambiguous source payer codes to the HCUP uniform expected payer category of private insurance. HCUP data users should exercise caution when reporting payer information for the age 65+ years group in particular. As the magnitude and impact of ambiguous source payer codes vary significantly across States, this issue is of more potential concern for some States than others. The supplemental tables included with this report provide details about variation across States, data years, and individual State-specific payer codes. HCUP suggests that users specifically studying the older patient population consider using the patient age data element (AGE) directly instead of using the expected payer of Medicare as a proxy for age 65+ years in HCUP analyses.

Because there is no way to “fix” this potential issue in existing HCUP data without potentially overcorrecting (i.e., moving discharges that are correctly assigned to private insurance into Medicare), AHRQ could consider the possibility of convening a workgroup that would promote discussion among HCUP Partners regarding options for improving ambiguous source payer coding, for example, adding codes that specify Medicare Advantage plans explicitly and breaking out BCBS codes separately for Medicare, Medicaid, and private insurance.

APPENDIX. HCUP PARTNERS

Alaska Department of Health and Social Services

Alaska State Hospital and Nursing Home Association

Arizona Department of Health Services

Arkansas Department of Health

California Office of Statewide Health Planning and Development

Colorado Hospital Association

Connecticut Hospital Association

Delaware Division of Public Health

District of Columbia Hospital Association

Florida Agency for Health Care Administration

Georgia Hospital Association

Hawaii Lauima Data Alliance

Hawaii University of Hawai'i at Hilo

Illinois Department of Public Health

Indiana Hospital Association

Iowa Hospital Association

Kansas Hospital Association

Kentucky Cabinet for Health and Family Services

Louisiana Department of Health

Maine Health Data Organization

Maryland Health Services Cost Review Commission

Massachusetts Center for Health Information and Analysis

Michigan Health & Hospital Association

Minnesota Hospital Association

Mississippi State Department of Health

Missouri Hospital Industry Data Institute

Montana Hospital Association

Nebraska Hospital Association

Nevada Department of Health and Human Services

New Hampshire Department of Health & Human Services

New Jersey Department of Health

New Mexico Department of Health

New York State Department of Health

North Carolina Department of Health and Human Services

North Dakota (data provided by the Minnesota Hospital Association)

Ohio Hospital Association

Oklahoma State Department of Health

Oregon Association of Hospitals and Health Systems

Oregon Office of Health Analytics

Pennsylvania Health Care Cost Containment Council

Rhode Island Department of Health

South Carolina Revenue and Fiscal Affairs Office

South Dakota Association of Healthcare Organizations

Tennessee Hospital Association

Texas Department of State Health Services

Utah Department of Health

Vermont Association of Hospitals and Health Systems

Virginia Health Information

Washington State Department of Health

West Virginia Department of Health and Human Resources, West Virginia Health Care Authority

Wisconsin Department of Health Services

Wyoming Hospital Association