

► Performance on the stroke readmission measure: **Hospitals with the highest proportions of vulnerable populations based on sociodemographic characteristics.**

The Centers for Medicare & Medicaid Services (CMS) periodically investigates select hospital practices that may impact a hospital's performance on the following readmission measure: hospital-level 30-day risk-standardized readmission rate (RSRR) following acute ischemic stroke [1]. The stroke readmission measure includes Medicare fee-for-service (FFS) beneficiaries aged 65 or older [2]. The stroke readmission measure assesses the occurrence of unplanned readmission for any cause within 30 days after discharge from hospitalization for acute ischemic stroke [2]. The stroke readmission measure has been publicly reported on [Hospital Compare](#) since 2014 [3].

There has been much discussion about the potential impact of patient sociodemographic status (SDS) on hospital outcome measures, including measures of readmission [3, 4]. We examined stroke RSRRs among hospitals identified as caring for a large proportion of vulnerable patients, as characterized by seven different SDS definitions, for hospitals with at least 25 eligible discharges. The hospitals included in this analysis are the 10% of hospitals with highest proportions of vulnerable patients as characterized by the different SDS definitions (Table 1). We compared the distribution of stroke RSRRs among the hospitals identified by the various SDS definitions and also examined the number of hospitals identified as caring for high proportion of vulnerable populations by the various definitions. Variation in RSRRs reflects differences in performance among hospitals; lower RSRRs suggest better quality, and higher RSRRs suggest worse quality. To ensure accurate assessment of each hospital, the stroke readmission measure uses a statistical model to adjust for key differences in patient risk factors that are clinically relevant and that have a strong relationship with the readmission outcome [2].

Among the subgroup of hospitals identified as serving vulnerable populations as characterized by the seven SDS definitions, only 48% of hospitals were identified by more than one definition of SDS.

Out of the 1,021 hospitals that met the criteria for serving a large proportion of vulnerable patients as characterized by at least one definition of SDS, less than half (490 hospitals; 48% of hospitals) met criteria characterized by multiple definitions of SDS. There were no hospitals that met criteria characterized by all seven definitions of SDS. However, eight hospitals (< 1% of 2,762 total hospitals) met the criteria for six of the definitions, 29 hospitals (1% of total hospitals) were identified by five of the definitions, 79 hospitals (3% of total hospitals) were identified by four of the definitions, and 137 hospitals (5% of total hospitals) were identified by three of the definitions.

The median stroke RSRR for all hospitals was 12.6% and median stroke RSRRs for hospitals identified as serving high proportions of vulnerable populations were within 0.7 percentage points of the overall median. We observed overlapping ranges in performance for hospitals meeting criteria based on all seven SDS definitions (Figure 1). The interquartile range of stroke RSRRs overall was 12.1% to 13.4% and for hospitals identified as serving high proportions of vulnerable populations the interquartile range was 12.2% to 14.2% (Table 2).

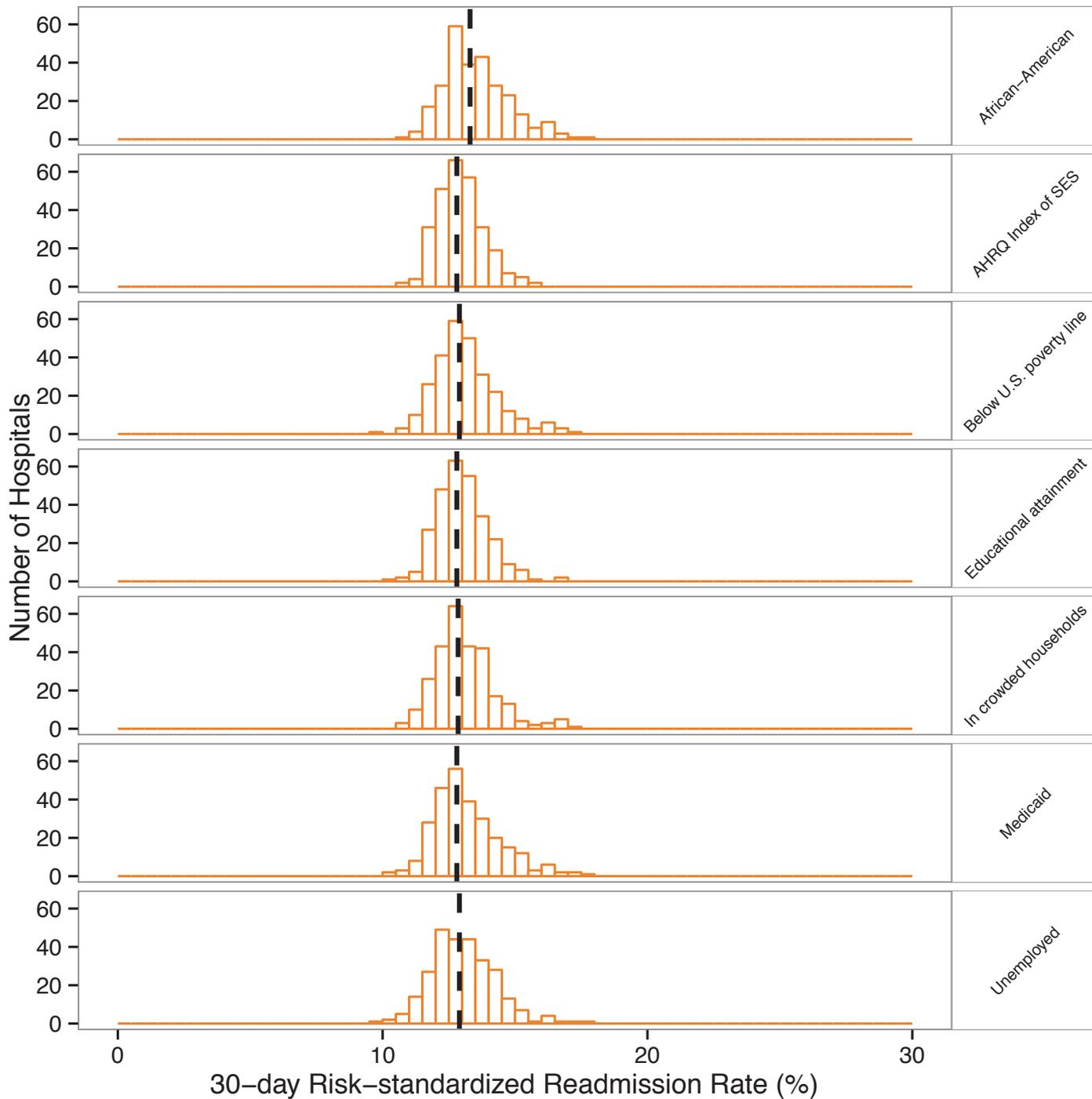
## SOCIODEMOGRAPHIC STATUS

**TABLE I** Definitions and data sources for the following sociodemographic characteristics: living below the U.S. poverty line; an educational attainment below high school; unemployed; living in crowded households; African-American; receiving Medicaid; and residing in a zip-code with a low AHRQ Index of SES score.

Sociodemographic characteristics	Definition of vulnerable patients based on sociodemographic characteristics	Identification of hospitals with the highest proportion of vulnerable patients	Source
Below U.S. poverty line	Patients from zip codes where more than 29.7% of the residents are below the United States (U.S.) poverty line	Hospitals with more than 59.1% of Medicare FFS patients that meet the vulnerable patient definition	American Community Survey (ACS) 2008 – 2012 5 year estimate Medicare Part A Inpatient Claims 2012
Educational attainment below high school	Patients from zip codes where more than 18.6% of the residents aged $\geq 25$ years have less than a 12th-grade education	Hospitals with more than 74.7% of Medicare FFS patients that meet the vulnerable patient definition	ACS 2008 – 2012 5 year estimate Medicare Part A Inpatient Claims 2012
Unemployed	Patients from zip codes where more than 11.5% of the residents aged 16 years or older in labor force who are unemployed and actively seeking work	Hospitals with more than 67.7% of Medicare FFS patients that meet the vulnerable patient definition	ACS 2008 – 2012 5 year estimate Medicare Part A Inpatient Claims 2012
Crowded households	Patients from zip codes where more than 3.2% of the residents live in households containing one or more person per room	Hospitals with more than 71.0% of Medicare FFS patients that meet the vulnerable patient definition	ACS 2008 – 2012 5 year estimate Medicare Part A Inpatient Claims 2012
African-American	African-American patients	Hospitals with more than 23.8% of Medicare FFS patients identified as African-American	Medicare Part A Inpatient Claims 2013
Medicaid	Patients that have Medicaid coverage	Hospitals with more than 30.5% of patients with Medicaid coverage	American Hospital Association (AHA) Survey 2013 [5]
AHRQ Index of SES scores	Patients from zip codes with an Agency for Healthcare Research & Quality (AHRQ) socioeconomic status (SES) index score below 31.8	Hospitals with more than 82.3% of Medicare FFS patients that meet the vulnerable patient definition	AHRQ SES index [6] ACS 2008 – 2012 5 year estimate Medicare Part A Inpatient Claims 2012

SOCIODEMOGRAPHIC STATUS

**FIGURE I** Distributions and medians of stroke RSRRs (%) for hospitals with the highest proportion of patients with one of the following sociodemographic characteristics: living below the U.S. poverty line; an educational attainment below high school; unemployed; living in crowded households; African-American; receiving Medicaid; and residing in a zip-code with a low AHRQ Index of SES score, July 2011-June 2014.



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**TABLE 2** Distributions of stroke RSRRs (%) for hospitals with the highest proportion of patients with one of the following sociodemographic characteristics: living below the U.S. poverty line; an educational attainment below high school; unemployed; living in crowded households; African-American; receiving Medicaid; and residing in a zip-code with a low AHRQ Index of SES score, July 2011-June 2014.

**Stroke RSRR (%) for hospitals with the highest proportions of patients:**

	All hospitals; n=2,762	Below U.S. poverty line; n=276	Educational attainment below high school; n=275	Unemployed; n=275	In crowded households; n=276	African- American; n=275	Medicaid; n=273	Low AHRQ Index of SES score; n=275
Maximum	17.5	17.0	16.7	17.5	17.0	17.5	17.5	15.6
75%	13.4	13.7	13.5	13.7	13.6	14.2	13.8	13.4
Median (50%)	12.6	12.9	12.8	12.9	12.9	13.3	12.8	12.8
25%	12.1	12.4	12.4	12.2	12.3	12.6	12.3	12.3
Minimum	8.7	9.8	10.2	9.8	10.6	10.8	10.0	10.8

The median stroke RSRR for all hospitals was 12.6% and median stroke RSRRs for hospitals identified as serving high proportions of vulnerable populations were within 0.7 percentage points of the overall median. Similarly, the interquartile range of stroke RSRRs overall was 12.1% to 13.4% and for hospitals identified as serving high proportions of vulnerable populations the interquartile range was 12.2% to 14.2%.

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4. National Quality Forum. Risk Adjustment for Socioeconomic Status or Other Sociodemographic Factors, Technical Report, August 15, 2014; [http://www.qualityforum.org/Publications/2014/08/Risk\\_Adjustment\\_for\\_Socioeconomic\\_Status\\_or\\_Other\\_Sociodemographic\\_Factors.aspx](http://www.qualityforum.org/Publications/2014/08/Risk_Adjustment_for_Socioeconomic_Status_or_Other_Sociodemographic_Factors.aspx). Accessed 9 July 2015.

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