

► Performance on the pneumonia 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 pneumonia [1]. The pneumonia readmission measure includes Medicare fee-for-service (FFS) and Veterans Health Administration (VA) beneficiaries aged 65 or older [2]. The pneumonia readmission measure assesses the occurrence of unplanned readmission for any cause within 30 days after discharge from hospitalization for pneumonia [2]. The pneumonia readmission measure has been publicly reported on [Hospital Compare](#) since 2009 and has been included in the Hospital Readmissions Reduction Program (HRRP) since 2012 [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 pneumonia 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 pneumonia 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 pneumonia 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]. Please note that VA hospitals are not included in this analysis.

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 1,619 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 (771 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, four hospitals (< 1% of 4,386 total hospitals) met the criteria for six of the definitions, 33 hospitals (1% of total hospitals) were identified by five of the definitions, 119 hospitals (3% of total hospitals) were identified by four of the definitions, and 221 hospitals (5% of total hospitals) were identified by three of the definitions.

The median pneumonia RSRR for all hospitals was 16.9% and median pneumonia RSRRs for hospitals identified as serving high proportions of vulnerable populations were within 0.5 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 pneumonia RSRRs overall was 16.2% to 17.6% and for hospitals identified as serving high proportions of vulnerable populations the interquartile range was 16.3% to 18.1% (Table 2).

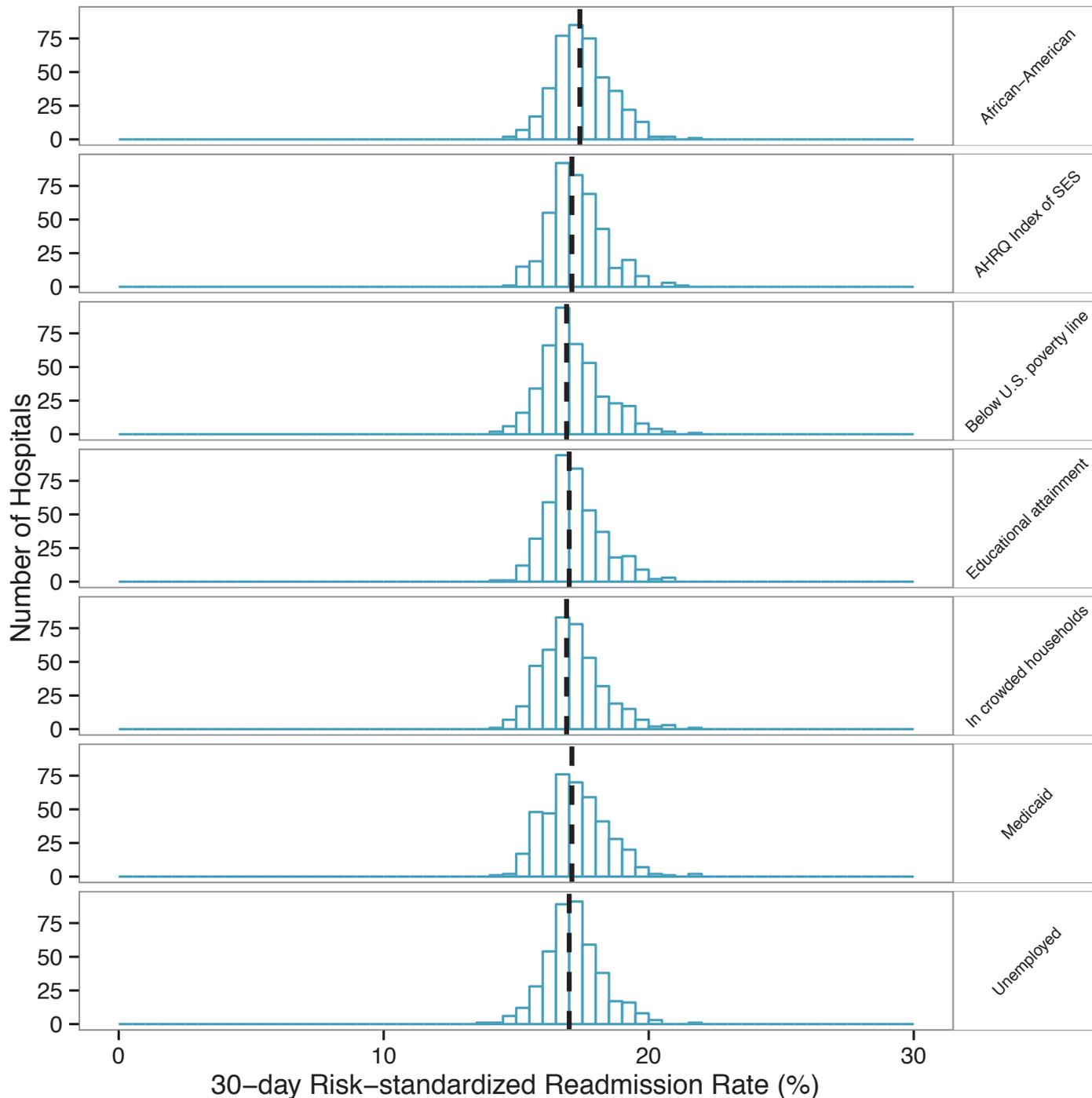
## SOCIODEMOGRAPHIC STATUS

**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 66.7% 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 86.5% 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 71.3% 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 74.2% 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 22.1% of Medicare FFS patients identified as African-American	Medicare Part A Inpatient Claims 2013
Medicaid	Patients that have Medicaid coverage	Hospitals with more than 28.8% 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 92.2% 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 pneumonia 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 pneumonia 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.

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

	All hospitals; n=4,386	Below U.S. poverty line; n=425	Educational attainment below high school; n=424	Unemployed; n=424	In crowded households; n=424	African- American; n=423	Medicaid; n=421	Low AHRQ Index of SES score; n=423
Maximum	22.9	21.6	20.8	21.5	21.8	21.5	21.8	21.0
75%	17.6	17.7	17.8	17.7	17.7	18.1	17.9	17.8
Median (50%)	16.9	16.9	17.0	17.0	16.9	17.4	17.1	17.1
25%	16.2	16.3	16.5	16.5	16.3	16.7	16.4	16.5
Minimum	13.2	14.2	14.2	13.8	14.2	14.5	14.2	14.7

The median pneumonia RSRR for all hospitals was 16.9% and median pneumonia RSRRs for hospitals identified as serving high proportions of vulnerable populations were within 0.5 percentage points of the overall median. Similarly, the interquartile range of pneumonia RSRRs overall was 16.2% to 17.6% and for hospitals identified as serving high proportions of vulnerable populations the interquartile range was 16.3% to 18.1%.

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