

Supplemental Material

Suitability of Elderly Adult Hospital Readmission Rates for Profiling Readmissions in Younger Adult and Pediatric Populations

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Table S1. Pearson correlation coefficients and weighted Cohen Kappa's statistics for correlation between age-specific RSRRs with RSRRs calculated in patients age ≥ 70 years as a reference category

	Pediatric Patients Aged 1-9 years^a	Pediatric Patients Aged 10-19 years^a	Adult Patients Aged 20-29 years	Adult Patients Aged 30-39 years	Adult Patients Aged 40-49 years	Adult Patients Aged 50-59 years	Adult Patients Aged 60-69 years
Median (IQR) RSRR ^b	5.8% (5.1, 6.9)	7.2% (6.5, 8.2)	9.3% (9.0, 9.8)	9.8% (9.4, 10.4)	10.2% (9.6, 10.8)	11.1% (10.4, 12.0)	11.7% (11.0, 12.5)
Pearson coefficient R ² (95% CI)	0.07 (-0.06, 0.20)	0.11 (-0.02, 0.24)	0.26 (0.21, 0.30)	0.36 (0.32, 0.40)	0.45 (0.42, 0.49)	0.60 (0.57, 0.63)	0.64 (0.61, 0.66)
Weighted Cohen's Kappa coefficient (95% CI)	0.04 (-0.06, 0.13)	0.09 (0.00, 0.19)	0.14 (0.11, 0.17)	0.20 (0.16, 0.23)	0.30 (0.26, 0.33)	0.40 (0.37, 0.43)	0.45 (0.42, 0.48)

Abbreviations: CI, confidence interval; IQR, interquartile range; RSRR, risk-standardized readmission rate.

^aComparisons between RSRRs for patients aged 1-9 years and 10-19 years with RSRRs for patients aged ≥ 70 years performed in subset of 287 hospitals treating adult and pediatric patients.

^bMedian (IQR) RSRR for elderly adult patients was 13.6% (12.3, 15.0) for cohort of 235 hospitals and 13.3% (12.2, 14.4) for full cohort of 1760 hospitals.

Table S2. Sensitivity analyses. Pearson correlation coefficients and weighted Cohen Kappa's statistics for correlation between pediatric, young adult, and middle-aged adult RSRRs with elderly adult RSRRs

	Pediatric (1-17 years) vs. Elderly Adults (≥65 years) RSRRs	Young Adults (18-39 years) vs. Elderly Adults (≥65 years) RSRRs	Middle-aged Adults (40-64 years) vs. Elderly Adults (≥65 years) RSRRs
Analyses repeated in pediatric-adult cohort			
Sample size	235	235	235
Median (IQR) RSRR ^a	6.2% (5.4, 7.6)	10.1% (9.1, 11.1)	11.5% (10.2, 12.9)
Pearson coefficient R ² (95% CI)	0.10 (-0.03, 0.23)	0.60 (0.51, 0.67)	0.83 (0.79, 0.87)
Weighted Cohen's Kappa coefficient (95% CI)	0.04 (-0.05, 0.13)	0.34 (0.26, 0.42)	0.62 (0.56, 0.69)
Analyses repeated with pediatric risk-adjustment algorithm only			
Sample size	235	1760	1760
Median (IQR) RSRR	6.2% (5.4, 7.6) ^b	9.5% (8.9, 10.3) ^c	11.0% (9.9, 12.2) ^c
Pearson coefficient R ² (95% CI)	0.07 (-0.06, 0.19)	0.41 (0.37, 0.45)	0.69 (0.66, 0.71)
Weighted Cohen's Kappa coefficient (95% CI)	0.01 (-0.08, 0.10)	0.25 (0.21, 0.28)	0.49 (0.47, 0.52)
Analyses repeated including specialty hospitals			
Sample size	282	1817	1817
Median (IQR) RSRR	6.1% (5.4, 7.2) ^d	9.5% (9.0, 10.1) ^e	10.9% (10.1, 11.9) ^e
Pearson coefficient R ² (95% CI)	0.15 (3.6, 26.5)	0.41 (0.37, 0.44)	0.70 (0.67, 0.72)
Weighted Cohen's Kappa coefficient (95% CI)	0.10 (0.02, 0.19)	0.23 (0.20, 0.26)	0.47 (0.44, 0.50)
Analyses repeated using 2013 Nationwide Readmissions Database			
Sample size	268	1722	1722
Median (IQR) RSRR	6.1% (5.1, 7.5) ^f	9.3% (8.8, 9.9) ^g	10.8% (10.0, 11.8) ^g
Pearson coefficient R ² (95% CI)	0.22 (0.11, 0.33)	0.36 (0.32, 0.40)	0.65 (0.62, 0.68)
Weighted Cohen's Kappa coefficient (95% CI)	0.09 (0.00, 0.18)	0.23 (0.19, 0.26)	0.47 (0.44, 0.50)
Analyses repeated limited to index admissions for primary infections^h			
Sample size	--	1225	1225
Median (IQR) RSRR	--	8.0% (7.6, 8.6) ⁱ	12.6 (11.8, 13.6) ⁱ
Pearson coefficient R ² (95% CI)	--	0.29 (0.24, 0.34)	0.47 (0.43, 0.51)
Weighted Cohen's Kappa coefficient (95% CI)	--	0.19 (0.15, 0.23)	0.30 (0.26, 0.34)

Abbreviations: CI, confidence interval; IQR, interquartile range; RSRR, risk-standardized readmission rate.

^aMedian RSRR (IQR) for elderly adult patients with adult algorithm is 13.2% (12.0, 14.7) in the *pediatric/adult* sample (n=235).

^bMedian RSRR (IQR) for elderly adult patients with the pediatric algorithm is 13.4% (11.8, 15.2) in the *pediatric/adult* sample (n=235).

^cMedian RSRR (IQR) for elderly adult patients with the pediatric algorithm is 13.0% (11.7, 14.5) in the *adult* sample (n=1760).

^dMedian RSRR (IQR) for elderly adult patients with the adult algorithm with specialty hospitals included is 13.0% (11.9, 14.5) in the *pediatric/adult* sample (n=282).

^eMedian RSRR (IQR) for elderly adults patients with the adult algorithm with specialty hospitals included is 12.9% (11.9, 14.1) in the *adult* sample (n=1817).

^fMedian RSRR (IQR) for elderly adult patients with the adult algorithm in 2013 is 13.3% (12.0, 14.8) in the *pediatric/adult* sample (n=268).

^gMedian RSRR (IQR) for elderly adult patients with the adult algorithm in 2013 is 12.9% (11.9, 14.3) in the *adult* sample (n=1722).

^hInfections include sepsis, bacteremia, viral infections, CNS infections, pericarditis/myocarditis, pneumonia, influenza, upper respiratory infections, urinary tract infections, and skin/soft tissue infections.

ⁱMedian RSRR (IQR) for elderly adult patients with infectious primary discharge diagnoses using the adult algorithm is 14.6% (13.7, 15.5) in the *adult* sample (n=1225).

Figure S1. Study approach to defining the sample and analyzing the data

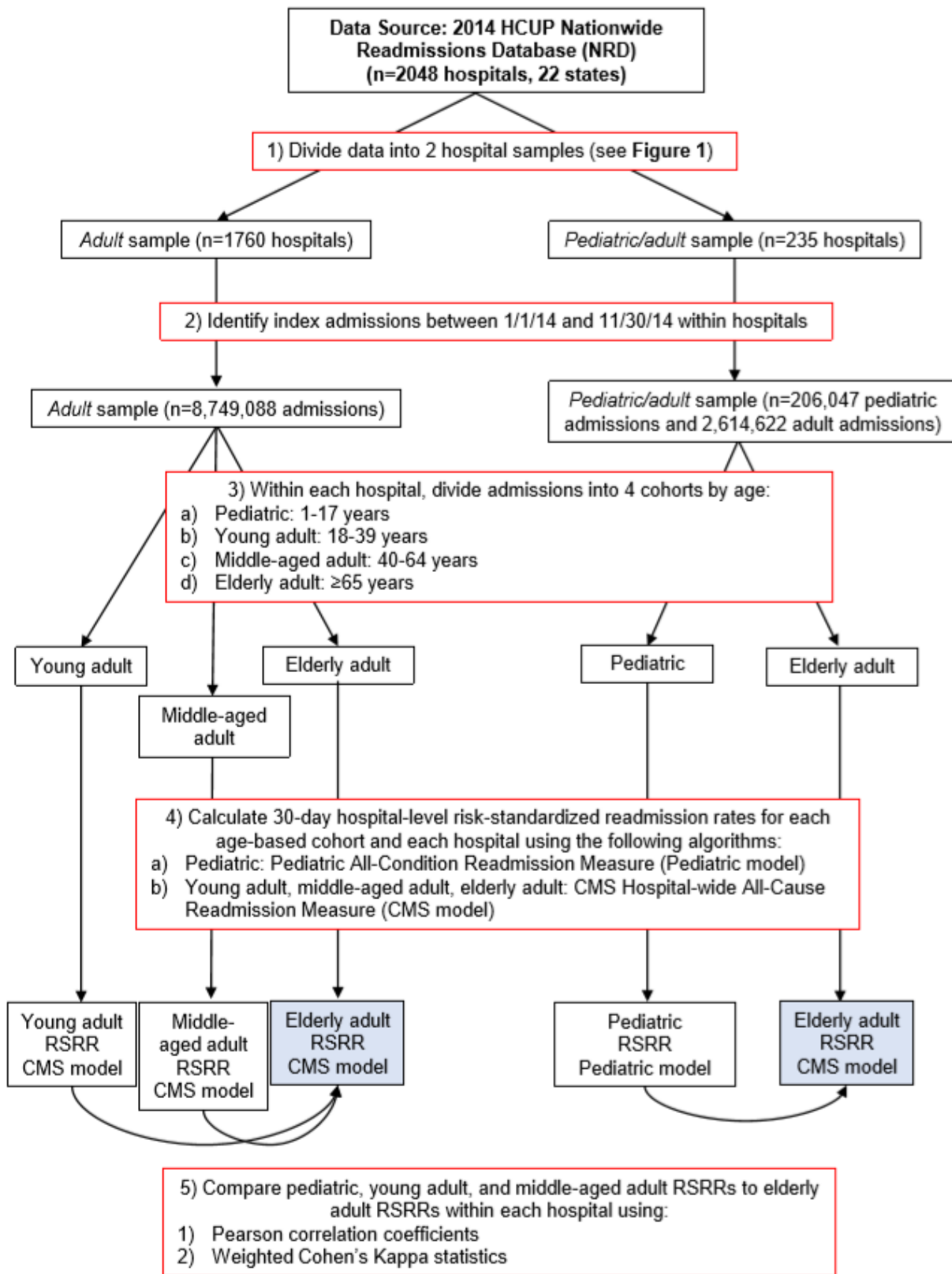


Figure S2. Hospital selection diagram for the *adult* sample (n=1760) and the *pediatric/adult* sample (n=235)

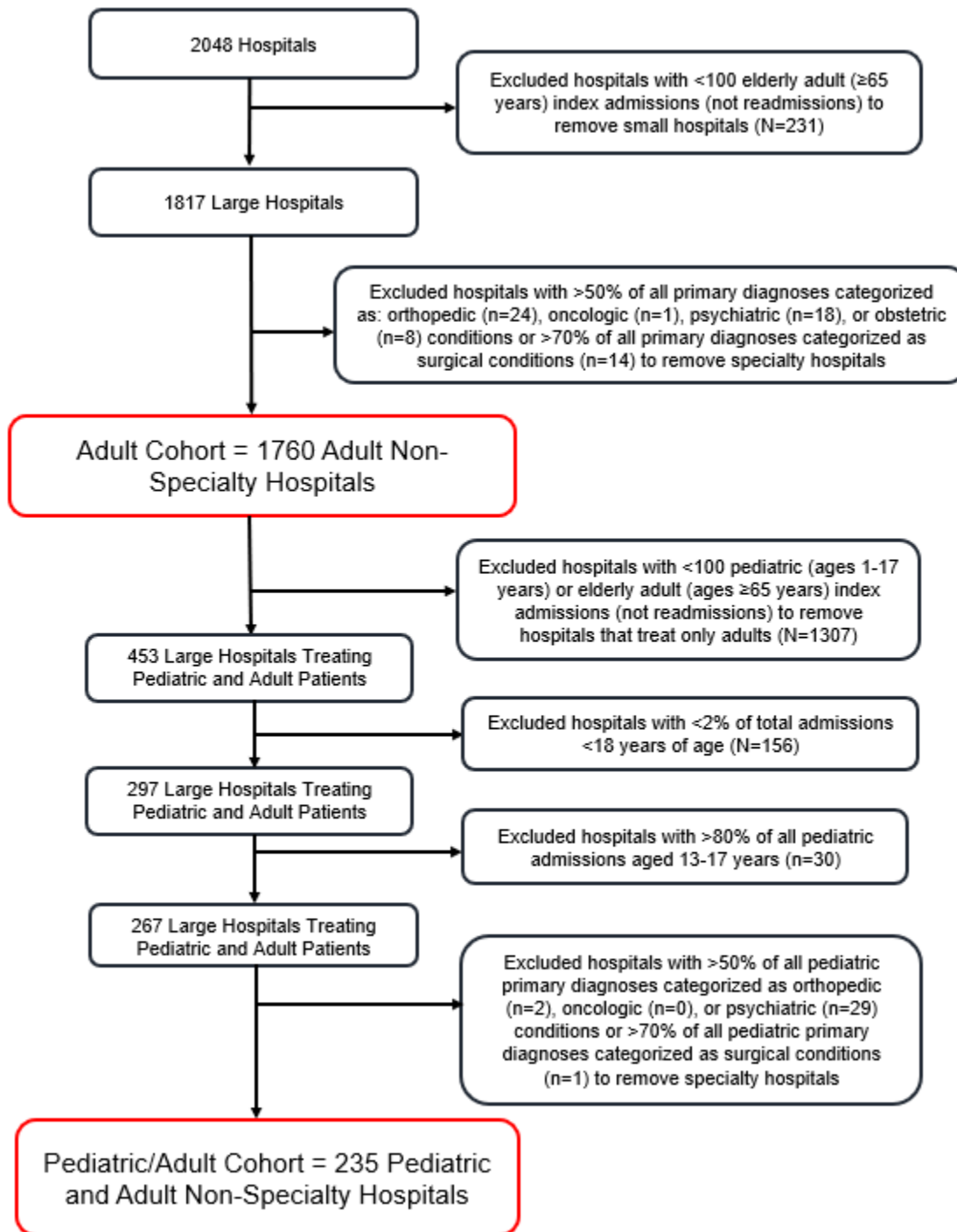


Figure S3. Distribution of hospitals by **A)** percentage of patients <65 years-old in the *adult* cohort and **B)** percentage of patients <18 years-old in the *adult/pediatric* cohort

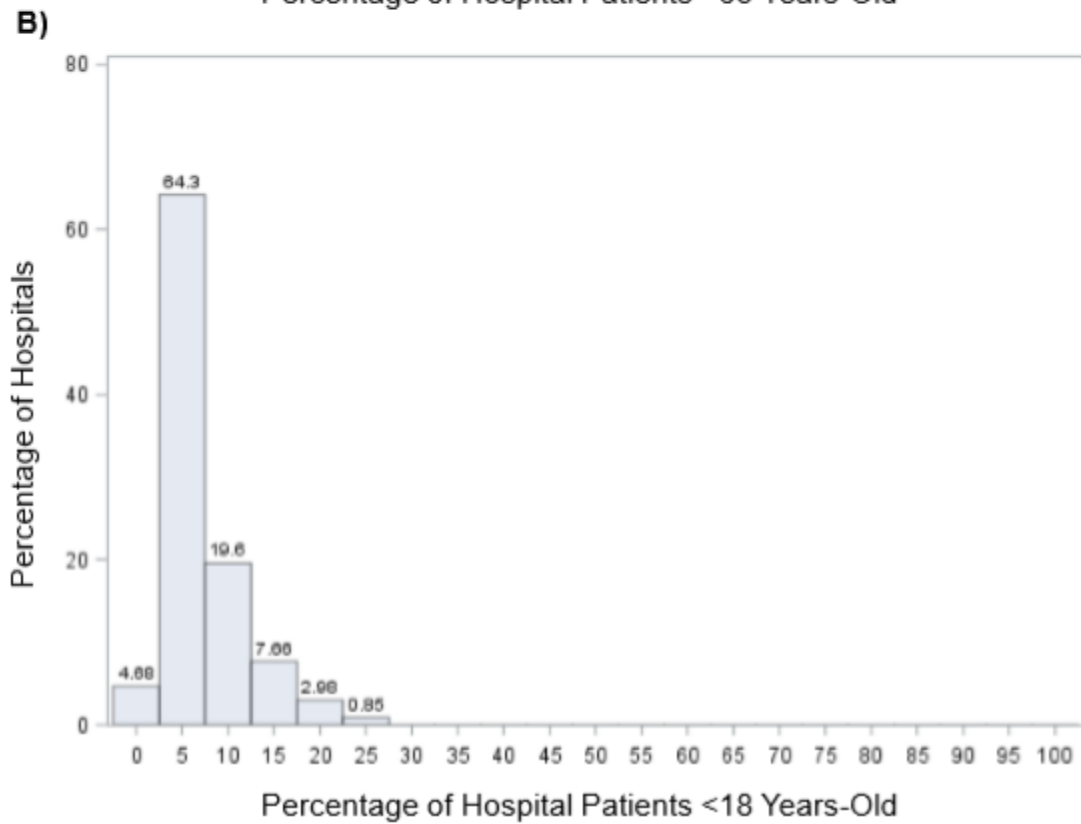
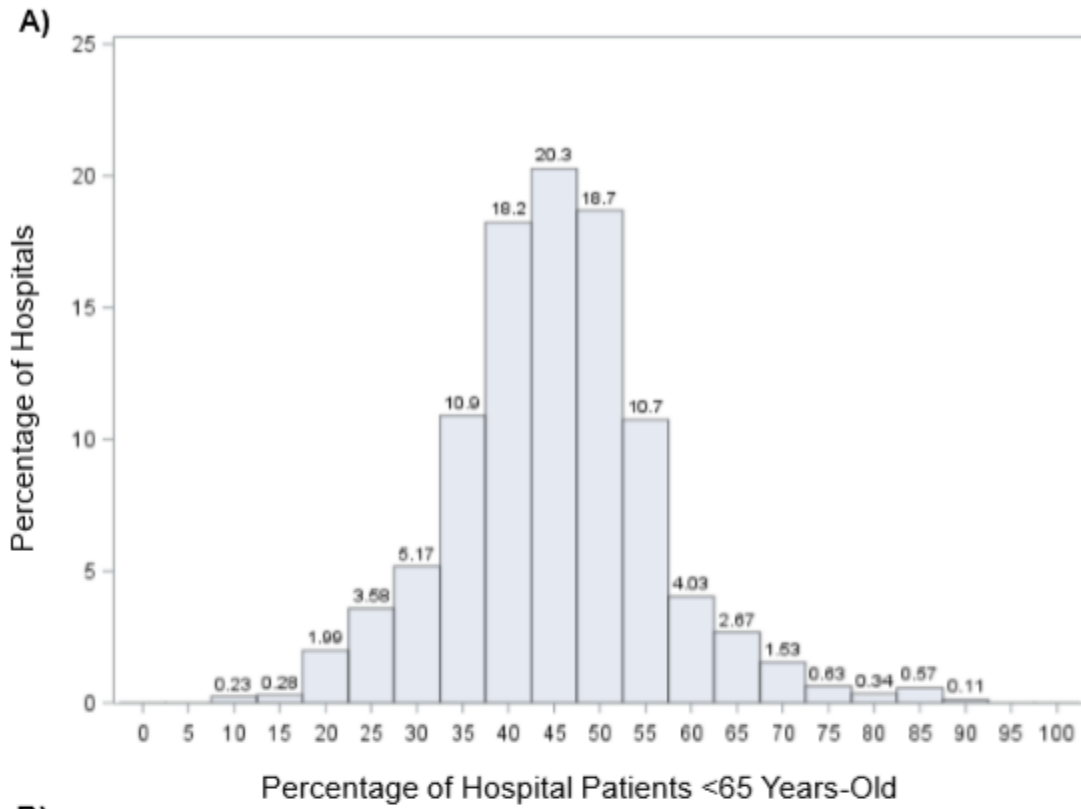


Figure S4. Association of **A)** pediatric (1-17 years), **B)** young adult (18-39 years), and **C)** middle-aged adult (40-64 years) RSRRs with elderly adult (≥ 65 years) RSRRs. Comparisons between pediatric and elderly adult RSRRs performed in pediatric/adult cohort (n=287 hospitals). All other comparisons were performed in adult cohort (n=1760 hospitals).

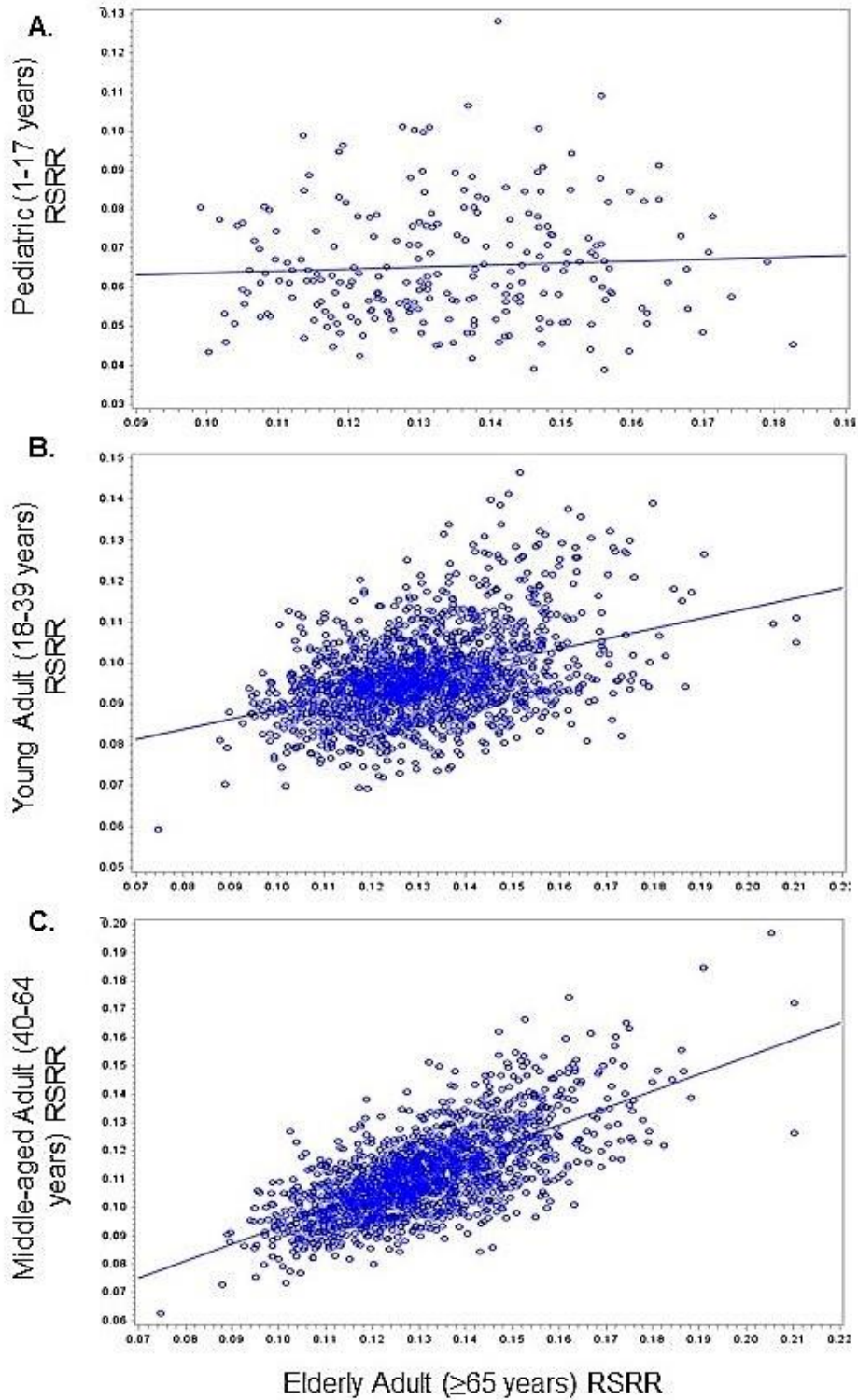


Figure S5. Association of RSRRs for age deciles compared with RSRRs for patients aged ≥ 70 years. Comparisons between RSRRs for patients aged 1-9 years and 10-19 years with RSRRs for patients aged ≥ 70 years performed in pediatric/adult cohort (n=235 hospital). All other comparisons were performed in adult cohort (n=1760 hospitals).

