

Association of Social Vulnerability and Rehospitalization in Pediatric Motor Vehicle Trauma Patients

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Introduction

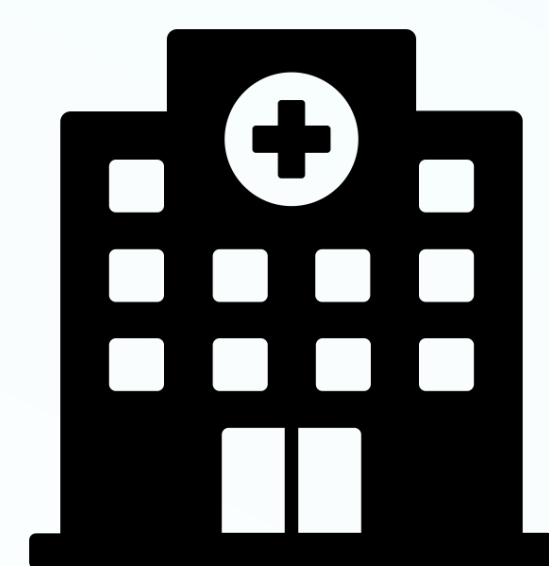


Motor vehicle collisions (MVCs) are the second most common cause of pediatric morbidity and mortality.



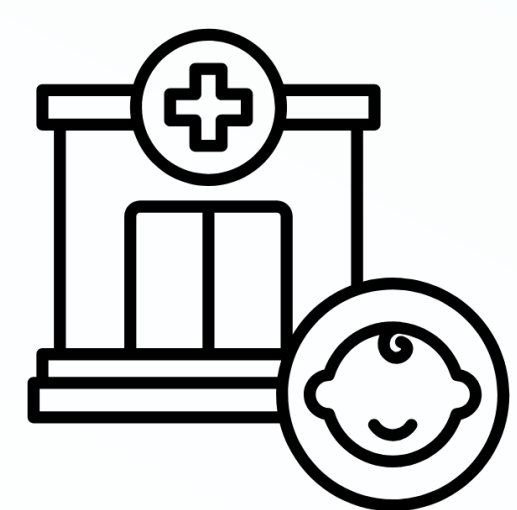
Social vulnerability, a CDC neighborhood-level disaster preparedness measure, has been correlated with worse trauma rates and outcomes in other populations but never specifically pediatric MVC outcomes. SVI components include:

- o Socioeconomic status
 - o Household composition and disability
 - o Minority status and language
 - o Housing and transportation
- High risk is defined by CDC as $\geq 90^{\text{th}}$ percentile or 0.90.



Our study focused on post-discharge metrics of return to emergency department (ED) and hospital readmission. If SVI correlates with these metrics, it could be a modifiable risk factor to decrease the trauma burden on the pediatric population.

Methodology



Hypothesis-generating retrospective cohort study at a single Level Two pediatric trauma center.

Selection criteria:

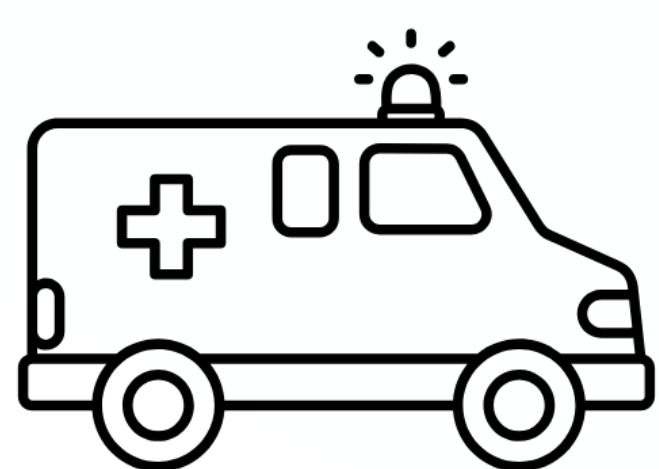
- o MVC
- o Trauma activation Jan. 1, 2012 – June 30, 2022
- o Age < 16 years
- o Survived the index admission
- o MA counties within the hospital's catchment area

Outcome measures:

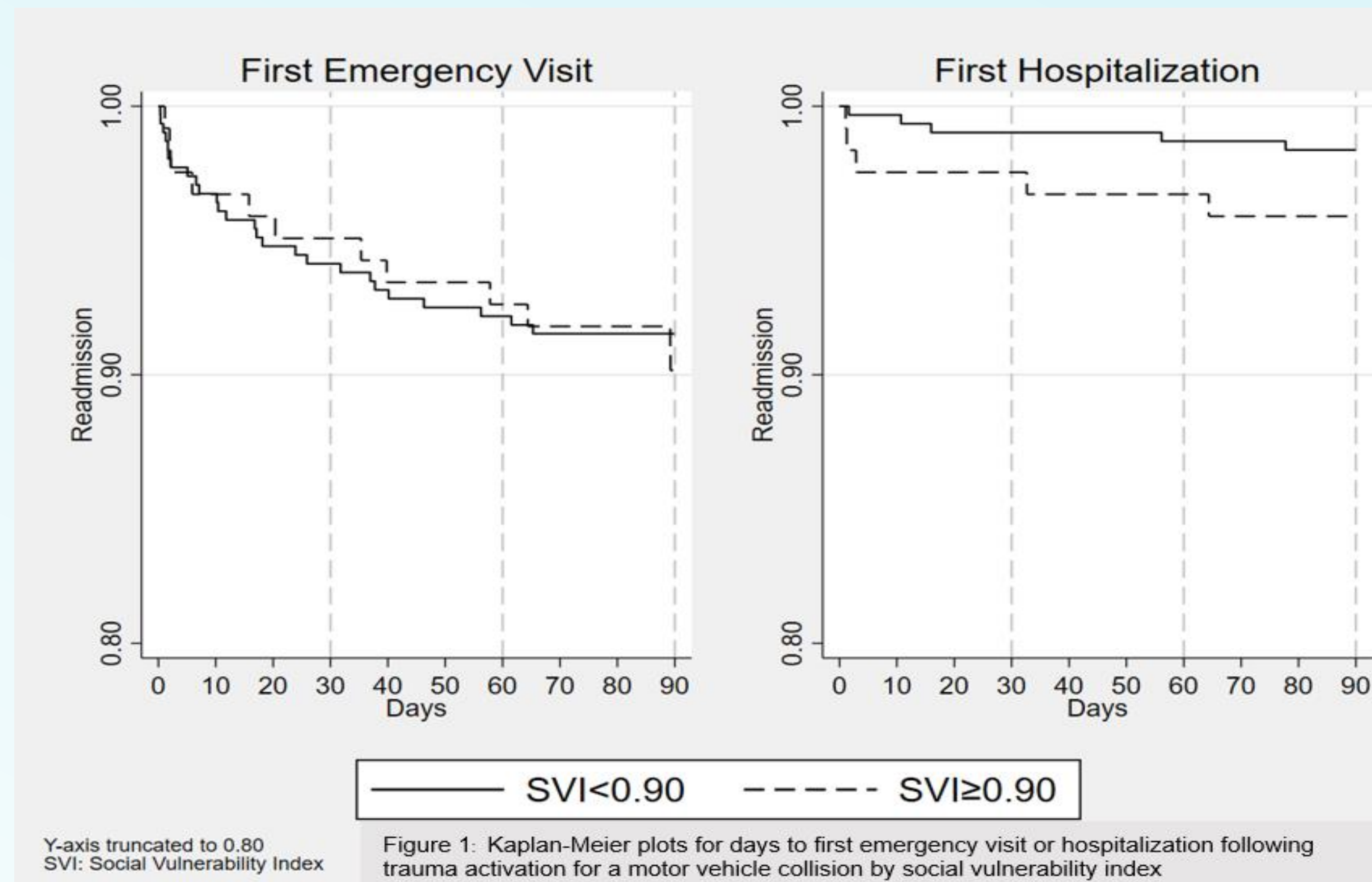
- o Return to ED or hospital readmission within 90 days

Covariates

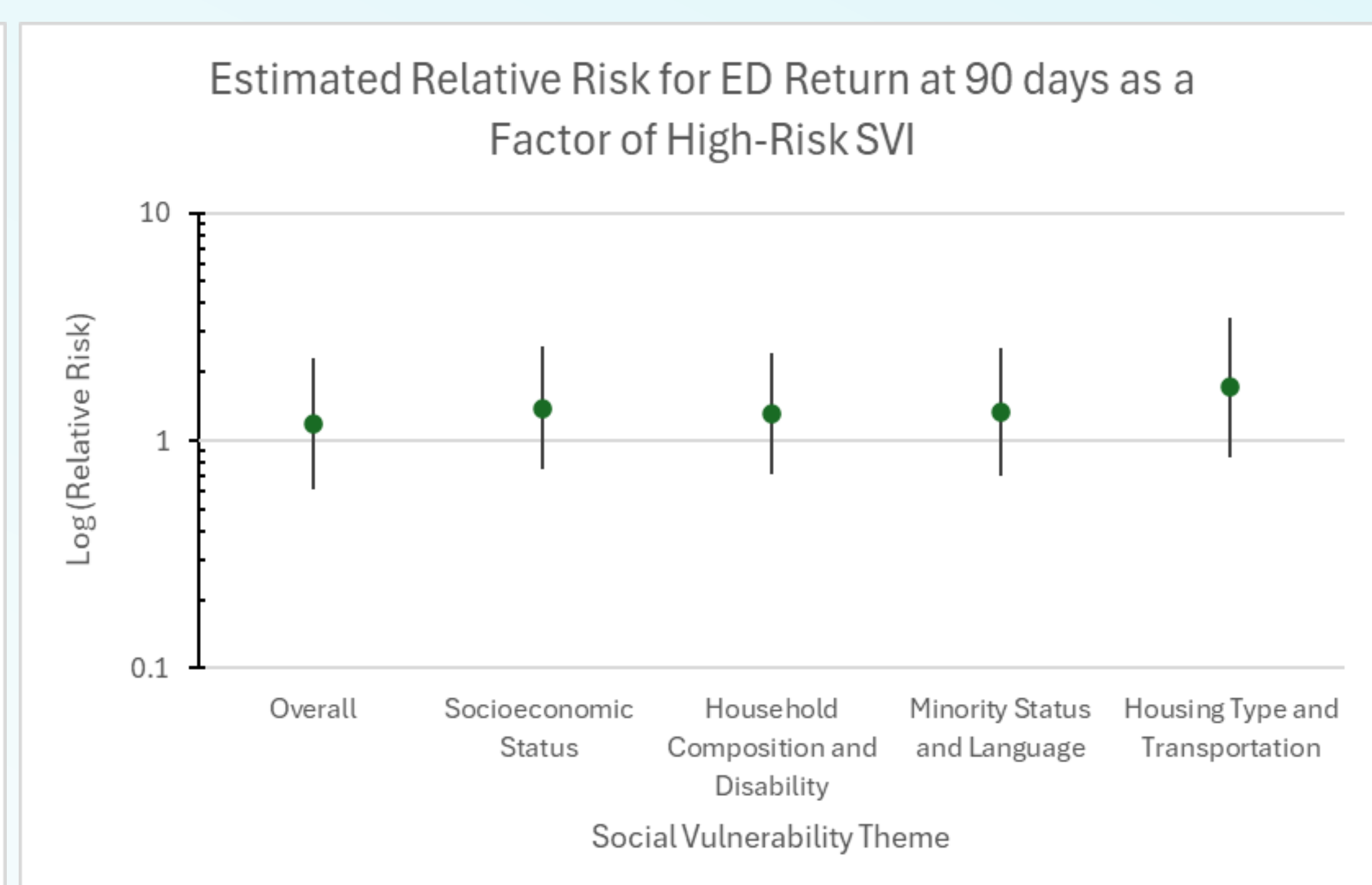
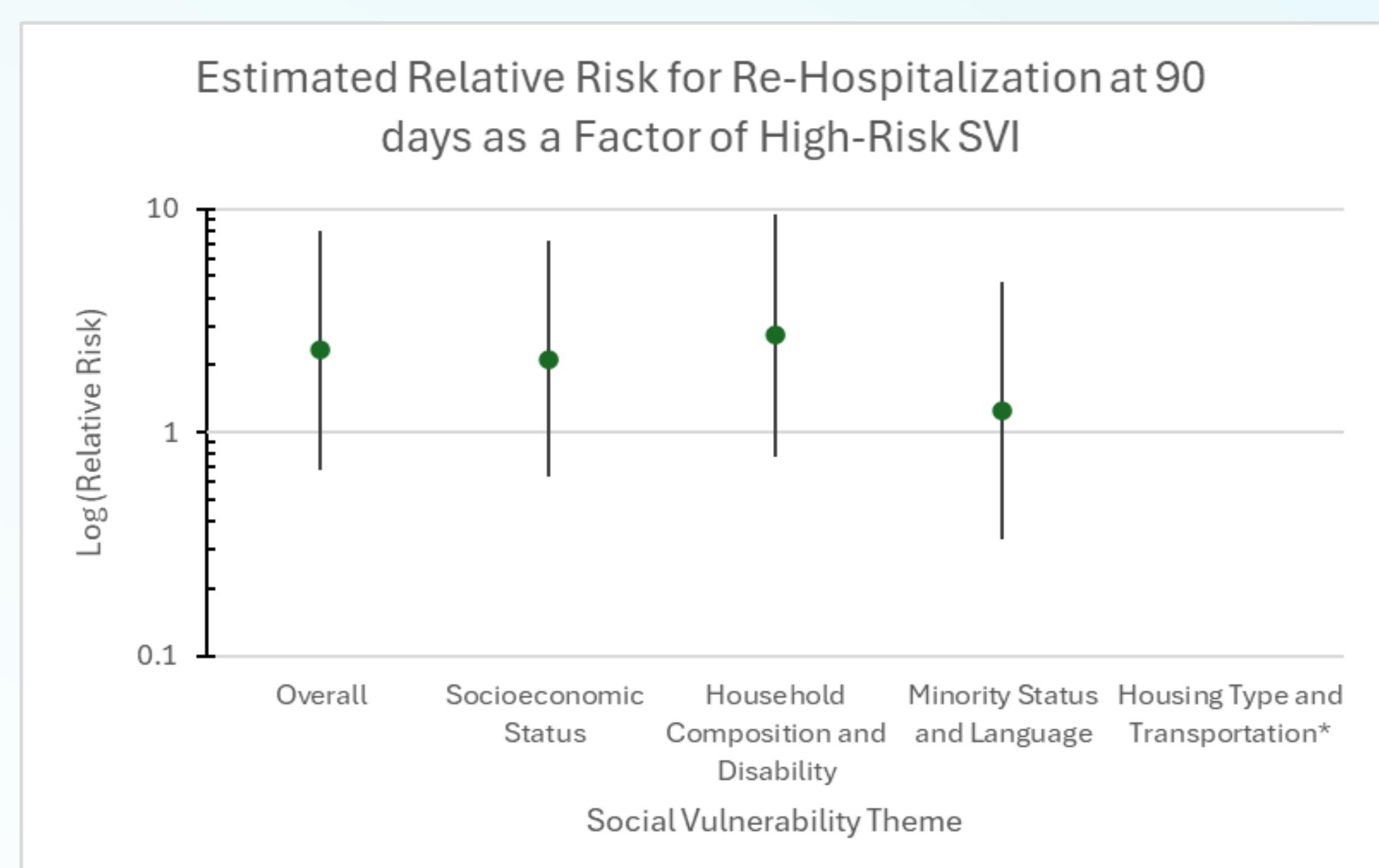
- o Demographics: age, sex, race
- o Trauma metrics: GCS, ISS
- o Admission metrics: LOS, ICU



Results



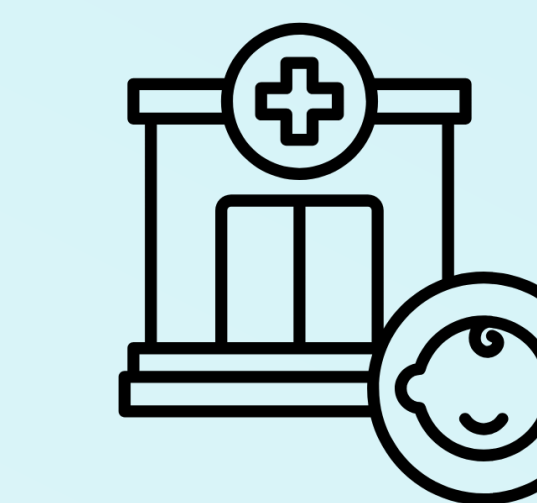
	Overall	SVI<0.90	SVI≥0.90
	N = 429	N = 307 (71.6%)	N = 122 (28.4%)
Age	Mean (SD)	10.11 (4.14)	9.67 (4.19)
Race			
	White	345 (80.4%)	260 (84.7%)
	Black	50 (11.7%)	24 (7.8%)
	Asian/Pacific Islander	8 (1.9%)	6 (2.0%)
	Missing	26 (6.1%)	17 (5.5%)
GCS	Mean (SD)	14.48 (1.89)	14.56 (1.60)
	N (% Missing)	76 (17.7%)	20 (16.4%)
ISS	Mean (SD)	7.78 (7.68)	8.59 (8.91)
	N (% Missing)	15 (3.5%)	5 (4.1%)
Hospital Admission		413 (96.3%)	116 (95.1%)
ICU Admission (n=413)		85 (20.6%)	28 (24.1%)



*Unable to calculate for Housing Type and Transportation as no re-hospitalized participants fell within the high-risk category for that SVI theme.

- o Between the groups (n=429), high-risk SVI (SVI ≥ 0.90) patients were more likely to be Black, presenting GCS was similar, but ISS was slightly higher (8.6 versus 7.5).
- o Re-hospitalization risk at 90 days was elevated in the high SVI group with an absolute relative risk (aRR) of 2.34 (95% CI 0.68-8.04).
- o ED returns showed no correlation at 90 days with aRR of 1.18, (95% CI 0.61-2.29).
- o Socioeconomic status and Household Composition and Disability association with rehospitalization with aRR 2.03 and 2.66, respectively, at 90 days.

Conclusion



High-risk SVI appears to correlate with an increased risk for hospital readmission but not ED returns.



Certain SVI themes— socioeconomic status and household composition and disability— may be more impactful in terms of hospital readmission than other components.



Limitations:

- o Limited sample size and low event rate.
- o Single institution study.
- o Potential for loss to follow-up.
- o Preliminary hypothesis-generating study. Unable to establish causation with this study.

Select References

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