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Authors

Hideshima, Kelsey S
Goupil, Julia M
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Does the Area of Deprivation Index Predict Increased Rates of Unplanned Return to the Operating Room in Orthopaedic Trauma?

Kelsey S. Hideshima, BS[1], Julia M. Goupil, BS[1], Max R. Haffner, MD[2], Augustine M. Saiz MD[2], Mark A. Lee, MD[2]

[1] UC Davis School of Medicine, Sacramento, CA , [2] University of California, Davis, Department of Orthopaedics, Sacramento, CA

INTRODUCTION

- Socioeconomic status (SES) influences surgical outcomes across many surgical specialties.[1]
- Much of the literature examining the relationship between SES and orthopaedic surgery outcomes is focused on joint arthroplasties.[2]
- The following study is a new exploratory study using the Area of Deprivation Index (ADI) as a proxy for SES in orthopaedic trauma.[3]
- The ADI includes 17 different metrics to assess disadvantages at the neighborhood level based on 9-digit zip codes.[4]
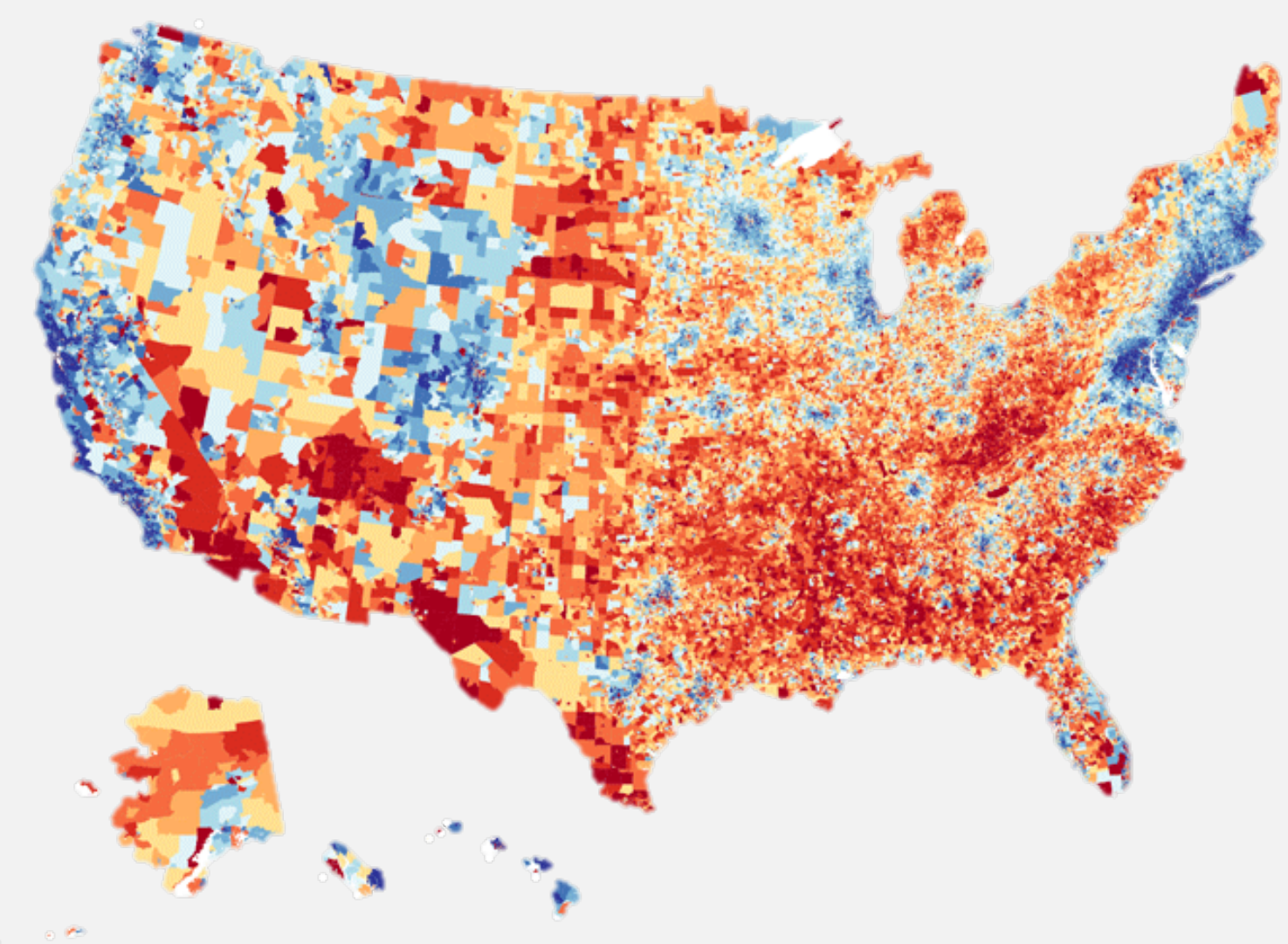
Heat map based on ADI national ranking[4]

OBJECTIVE

- To investigate the relationship between SES dictated by ADI score and unplanned return to the OR (UROR) in the orthopaedic trauma patient population.

METHODS

- Retrospective chart review at a single Level I trauma center from 2014-2019.

Database with completed charts (n=909) → Patients with addresses associated (n=892) → 9-digit zip code translated to ADI national ranking → Patients that live within CA (n=864) → ADI stratified by quartile

RESULTS

Figure 1: Percentage of patients who live within CA (856), out of state, (OOS) (27), in group quarters (GQ) (8), and outside the US (OUS) (1).

1%
3%
.1%
96%

■ CA ■ OOS ■ GQ ■ OUS
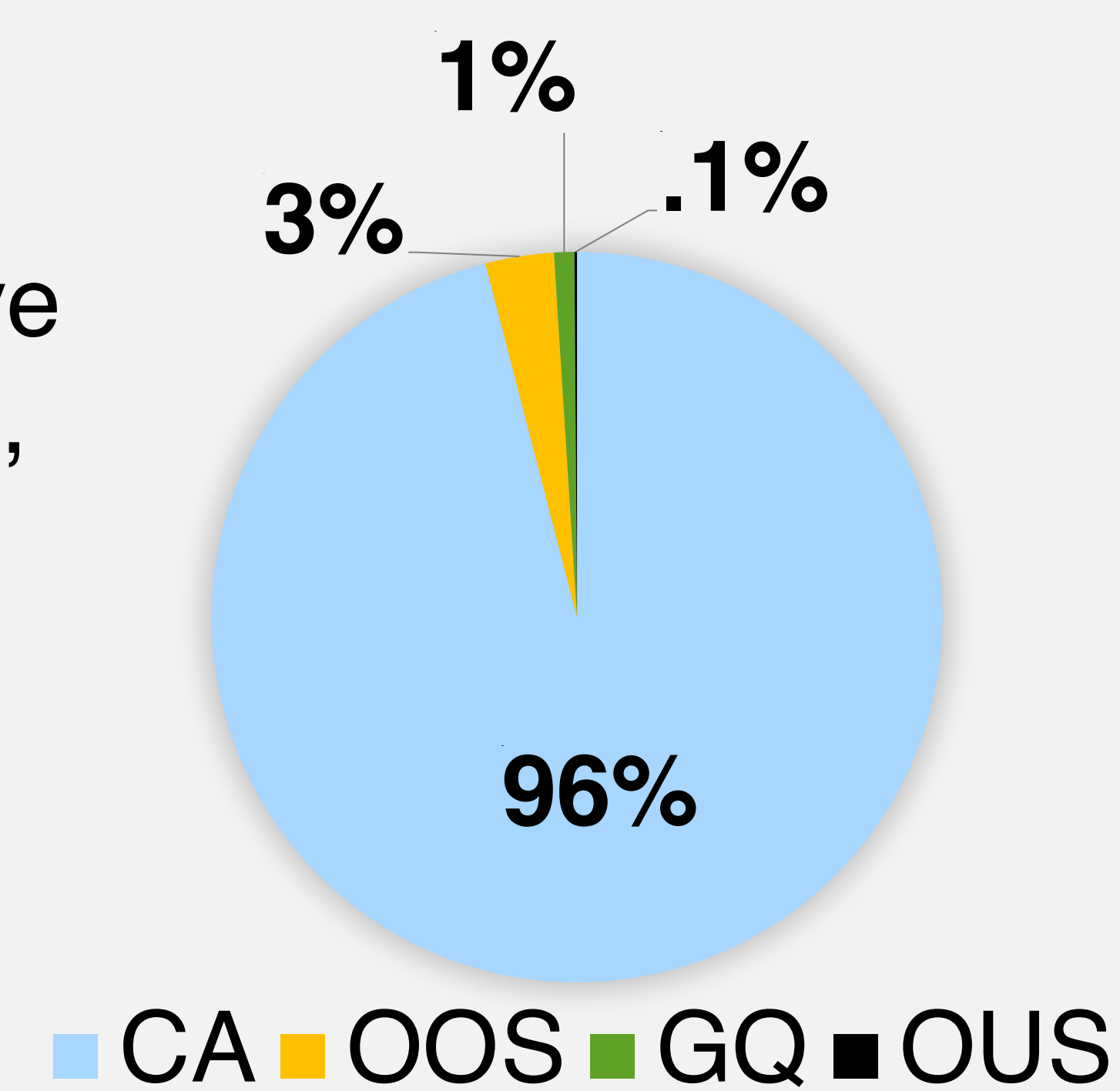
Table 1: Multivariate analysis based on significant univariate analysis variables for UROR. ADI >75 represents severely distressed communities.

VARIABLE	P VALUE	OR (95% CI)
AGE	.893	1.001 (.99-1.01)
ADI >75	.040	2.935 (1.05-8.21)
ISS	<.001	1.081 (1.05-1.12)
ASA	<.001	.529 (.389-.718)

Table 2: Statistically significant (p<.05) baseline and clinical characteristics based on ADI quartile.

	QUARTILE 1 (N=404)	QUARTILE 2 (N=317)	QUARTILE 3 (N=115)	QUARTILE 4 (N=20)
AGE, YEARS	54.77 (52.7-56.9)	50.66 (48.2-53.1)	48.91 (45.4-52.5)	40.70 (30.6-50.8)
RACE				
WHITE	255 (63.1)	181 (57.1)	55 (47.8)	8 (40.0)
BLACK	27 (6.7)	33 (10.4)	15 (13.0)	4 (20.0)
ASIAN	33 (8.2)	17 (5.4)	3 (2.6)	0 (.0)
PACIFIC ISLANDER	1 (.2)	6 (1.9)	0 (.0)	0 (.0)
AMERICAN INDIAN	2 (.5)	1 (.3)	0 (.0)	0 (.0)
OTHER	74 (18.3)	75 (23.7)	42 (36.5)	8 (20.0)
ETHNICITY				
NOT HISPANIC OR LATINO	352 (87.1)	269 (84.9)	80 (69.6)	14 (70.0)
HISPANIC OR LATINO	41 (10.1)	46 (14.5)	33 (28.7)	6 (30.0)
SMOKING STATUS				
NON	237 (58.7)	150 (47.3)	55 (47.8)	7 (35.0)
CURRENT	67 (16.6)	97 (30.6)	36 (31.3)	7 (35.0)
FORMER	93 (23.0)	58 (18.3)	21 (18.3)	4 (20.0)
UROR				
YES	59 (14.6)	27 (8.5)	15 (13.0)	6 (30.0)
NO	345 (85.4)	290 (91.5)	100 (87.0)	14 (70.0)

CONCLUSIONS

- Severely deprived communities are associated with an increased rate of UROR.
- The following characteristics are associated with an increased ADI: younger age, Black race, Hispanic ethnicity, current smoker, and UROR.
- Results demonstrate disparities seen in the orthopaedic trauma population at a level I trauma center and urge the need to increase access to care to more disadvantaged communities.

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