

# Social Determinants of Health and Discharge Characteristics in Head and Neck Free Flap Reconstruction



Alexander Karabachev MD <sup>1,2</sup>, Madelyn Bell, BSN <sup>1</sup>, Eric Wong <sup>1</sup>, Siddhant Tripathi MD <sup>1,2</sup>, Adam Beucler BS <sup>1,2</sup>,  
Jack Garcia BS <sup>1,2</sup>, Ba Christine Lee BA MPH <sup>1,2</sup>, Emma Nienaber <sup>1,2</sup>, Grace Zhang MD <sup>1,2</sup>, Yash Patil MD <sup>2,3</sup>

1. University of Cincinnati College of Medicine; 2. University of Cincinnati Department of Otolaryngology HN Surgery; 3. Northwestern University Feinberg School of Medicine



## Introduction

- Social determinants of health including household income, race, education, employment, and housing quality have been associated with health outcomes and as an independent predictor of life expectancy.<sup>1,2</sup>
- Within the head and neck cancer population, patients with lower mean household income (MHI) are at a higher risk to present with more advanced disease.<sup>2,3</sup>
- This study aims to examine the relationship between neighborhood disadvantage and mean household income on length of hospital stay, discharge location and 30-day readmission for patients undergoing free flap reconstruction of the head and neck.

## Results

Table 1. Demographic characteristics stratified by mean household income quartiles.

	Number (%) or Median (IQR)	MHI Quartiles				P-value
		1	2	3	4	
n = 1306		n = 328	n = 322	n = 339	n = 310	
Median MHI (IQR)	\$61,118 (\$51,110, \$72,440)	\$44,493 (\$36,607, \$47,720)	\$55,520 (\$54,272, \$59,664)	\$65,441 (\$62,962, \$68,654)	\$83,561 (\$77,183, \$97,629)	
Median ADI (IQR)	65 (49, 81)	83.0 (71.8, 92.0)	69.0 (59.3, 84.0)	63.0 (50.0, 74.0)	43.0 (33.0, 57.8)	<0.001
Age (IQR)	63.0 (55.1, 77.1)	61.2 (53.7, 70.3)	63.1 (55.4, 71.8)	63.0 (55.1, 70.7)	64.5 (56.6, 72.9)	0.03
Sex						0.21
Male	907 (69.4)	239 (73%)	217 (67.4)	241 (71.1)	206 (66.5)	
Female	397 (30.4)	88 (27%)	105 (32.6)	97 (28.6)	104 (33.5)	
BMI	23.9 (7.3)	23.4 (19.8, 27.4)	23.8 (20.7, 28.0)	23.9 (21.0, 28.0)	24.5 (21.5, 28.5)	0.02
Smoking						0.002
Yes	940	251 (76.5)	240 (74.5)	245 (72.3)	198 (63.9)	
No	364	77 (23.5)	80 (24.8)	94 (27.2)	112 (36.1)	
Insurance, N (%)						0.07
Medicare/Medicaid	723 (55.4)	193 (58.8)	186 (57.8)	187 (55.2)	155 (50.0)	
Private	463 (35.5)	101 (30.8)	112 (34.8)	120 (35.4)	127 (41.0)	
VA or governmental	64 (4.9)	24 (7.3)	10 (3.1)	15 (4.4)	13 (4.2)	
Uninsured	55 (4.2)	10 (3.0)	13 (4.0)	17 (5.0)	15 (4.8)	
Clinical stage, N (%)						0.39
I	72 (5.5)	14 (4.3)	15 (4.7)	17 (5.0)	24 (7.7)	
II	142 (10.9)	36 (11.0)	41 (12.7)	33 (9.7)	32 (10.3)	
III	173 (13.2)	37 (11.2)	41 (12.7)	50 (14.7)	45 (14.5)	
IV	614 (47.0)	168 (51.2)	151 (46.9)	154 (45.4)	137 (44.2)	

Table 2. Postoperative characteristics stratified by mean household income quartiles.

Demographic Characteristics	Number (%) or Median (IQR)	MHI Quartiles				P-value
		1	2	3	4	
Length of Stay (Days), Median (IQR)	7 (5, 10)	7 (6, 11)	7 (5, 9)	7 (5, 10)	7 (5, 8)	0.02
30-day Readmission, N (%)	254 (19.4)	56 (17.1)	59 (18.3)	76 (22.4)	63 (20.3)	0.29
Discharge destination, N (%)						0.21
Home	704 (55.0)	165 (50.3)	183 (56.8)	174 (51.3)	179 (57.7)	
Other (SNF, LTAC, IPR)	576 (45.0)	154 (47.0)	136 (42.2)	157 (46.3)	126 (40.6)	

- The median MHI of the cohort was \$61,118 (IQR, \$51,110-\$72,440) and the median ADI was 65 (IQR, 49-81).
- On univariate analysis, when patients were grouped by MHI quartiles, they differed regarding age, BMI, smoking history, race, area deprivation index (ADI), rate of tracheostomy performed during surgery, and length of hospital stay.
- Neither MHI quartile or ADI quartile was associated with discharge destination or 30-day readmissions on multivariate logistic regression.
- ADI quartile was independently associated with length of hospital stay ( $\beta = 0.59$ ,  $P = 0.01$ ).
- On multivariable ordinal logistic regression, neither MHI or ADI quartiles were associated with clinical staging at time of presentation.

## Conclusion

- Although MHI and ADI have been shown to be associated with various health outcomes including clinical disease staging on presentation for patients with head and neck cancer, discharge destination and 30-day readmission were not significant factors affected for patients undergoing free flap reconstruction of the head and neck.
- Patients living in neighborhoods with a higher area of deprivation index were shown to have a longer hospital admission.
- Neighborhood based ADI and MHI may be used to better understand local populations at risk for delayed discharge and prolonged hospital length of stay.

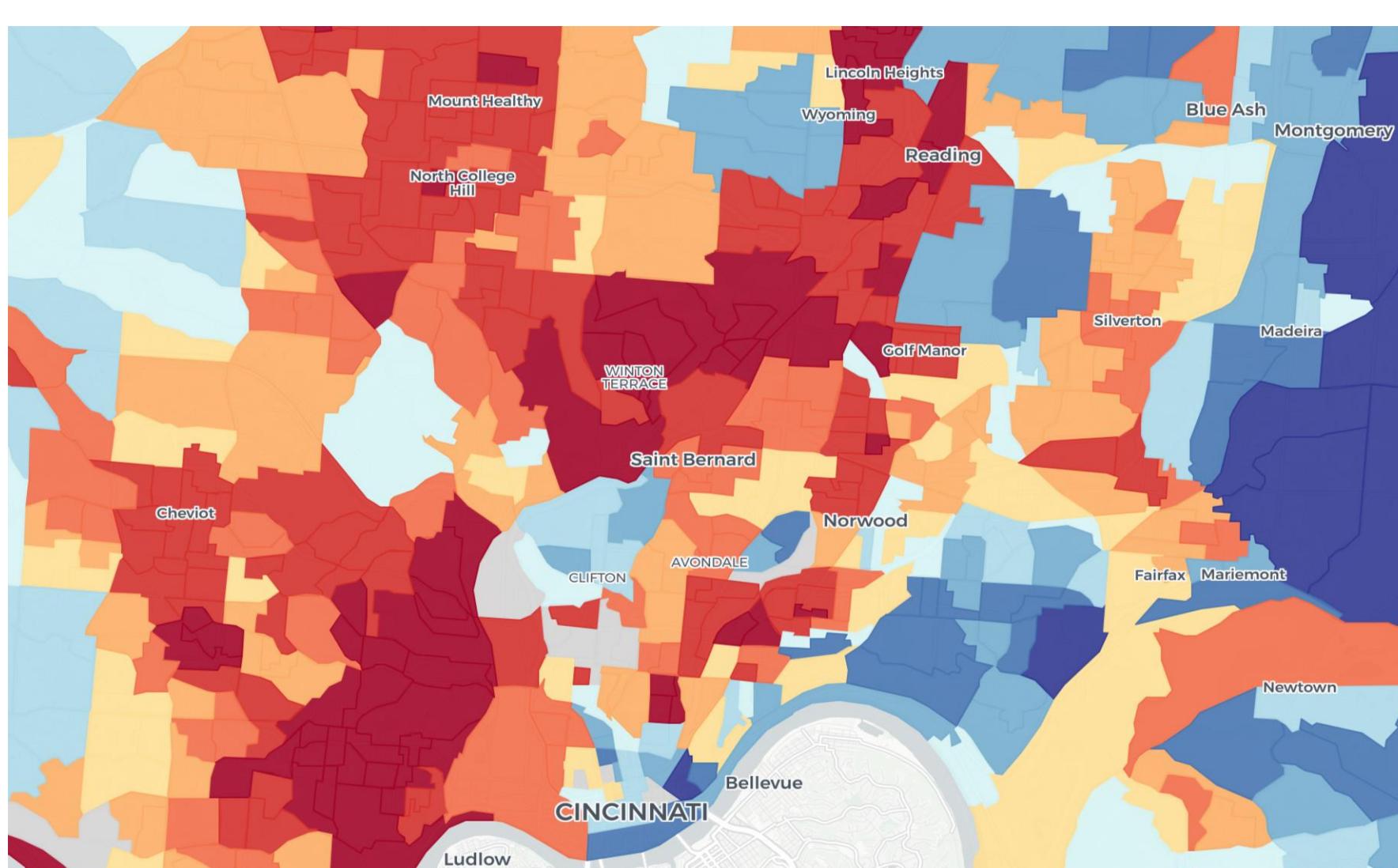


Figure 1. Area of deprivation neighborhood atlas of Cincinnati, OH obtained from University of Wisconsin School of Medicine and Public Health. 2025 Area Deprivation Index. Downloaded from <https://www.neighborhoodatlas.medicine.wisc.edu>

## References

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