

Social Determinants of Health and Non-Traumatic Lower Limb Amputations: The Role of Area Deprivation Index

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Introduction

- Non-traumatic lower limb amputations, often associated with diabetes and peripheral vascular disease, are a major source of morbidity and mortality in the United States.
- These amputations appear to unevenly affect communities with a higher level of socioeconomic disadvantage.
- The Area Deprivation Index (ADI) is a method for assessing socioeconomic disadvantage at the neighborhood level and can be used to examine how areas with high deprivation are affected by wounds that may progress to lower extremity amputation.
- This is especially applicable in Southern regions, where diabetes and related comorbidities are disproportionately high.

Objective and Significance

- This study aims to investigate whether higher ADI scores are associated with increased rates of wounds that result in non-traumatic amputation of the lower extremities. We hope to examine if patients living in disadvantaged areas are more prone lower limb amputations by using the ADI.
- Disadvantage plays a key role in health outcomes. Addressing these barriers to care prior to the indication for amputation is crucial for developing equitable healthcare interventions.

Methods

- A retrospective cohort study of adult patients who underwent lower extremity amputation was conducted.
- Patients were identified in the electronic medical record and manual chart abstraction was conducted to collect patient demographics and treatment courses.
- The patient address was used to determine ADI The Neighborhood Atlas® (<https://www.neighborhoodatlas.medicine.wisc.edu/>).
- ADI was reported as state decile and national percentile. Logistic regression tested for associations with non-traumatic indications for amputation versus traumatic etiologies.

Results

- Preliminary data were analyzed for 26 subjects where a majority were male (82%) with a mean age of 50.3±13.7 years of age.
- The mean state decile ADI was 5.9±2.4 (range 1-10)
- The mean national percentile ADI was 73.4±19.7 (range 23-98).
- In this preliminary sample, no associations were identified with ADI and underlying indication for amputation.

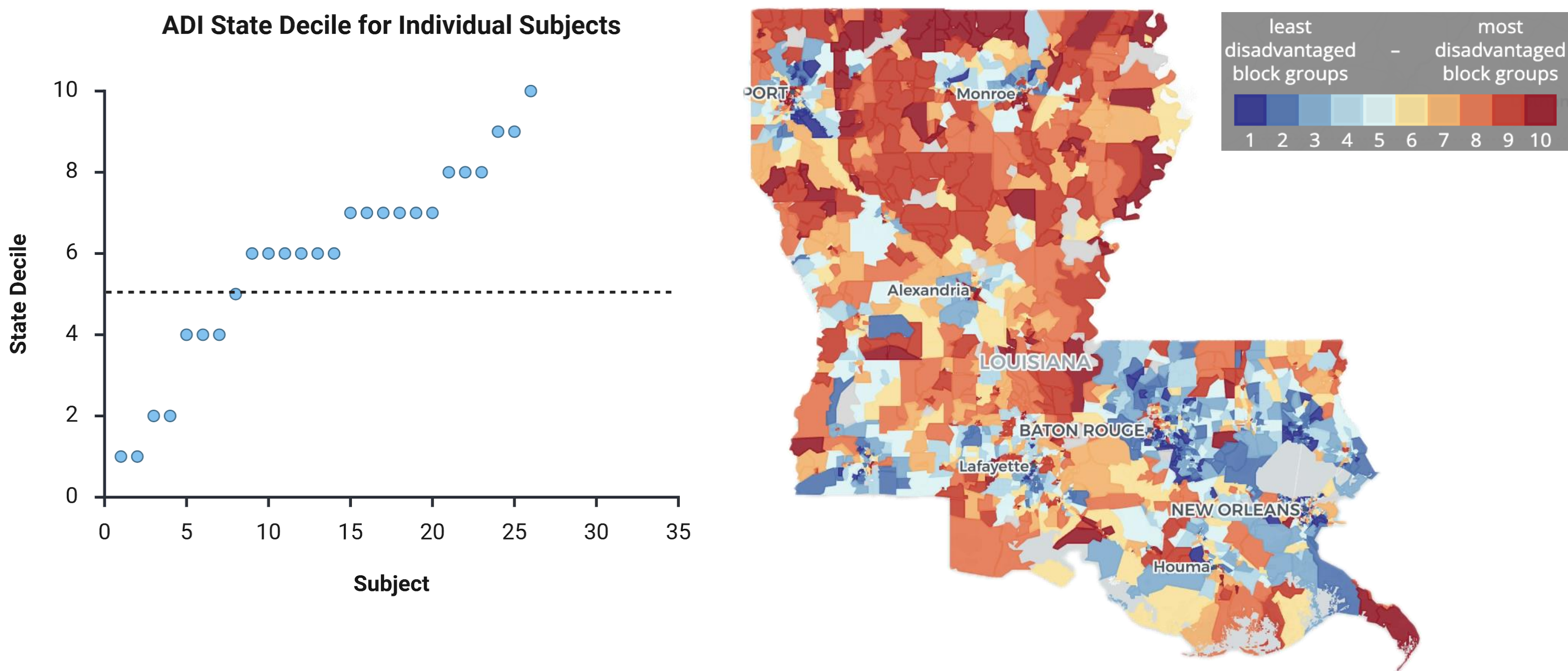


Figure 1. The ADI state decile for individuals in the sample who have received non-traumatic lower limb amputations. This figure shows that the majority of the patients included in the sample were living in areas of above average deprivation compared to the rest of the state of Louisiana.

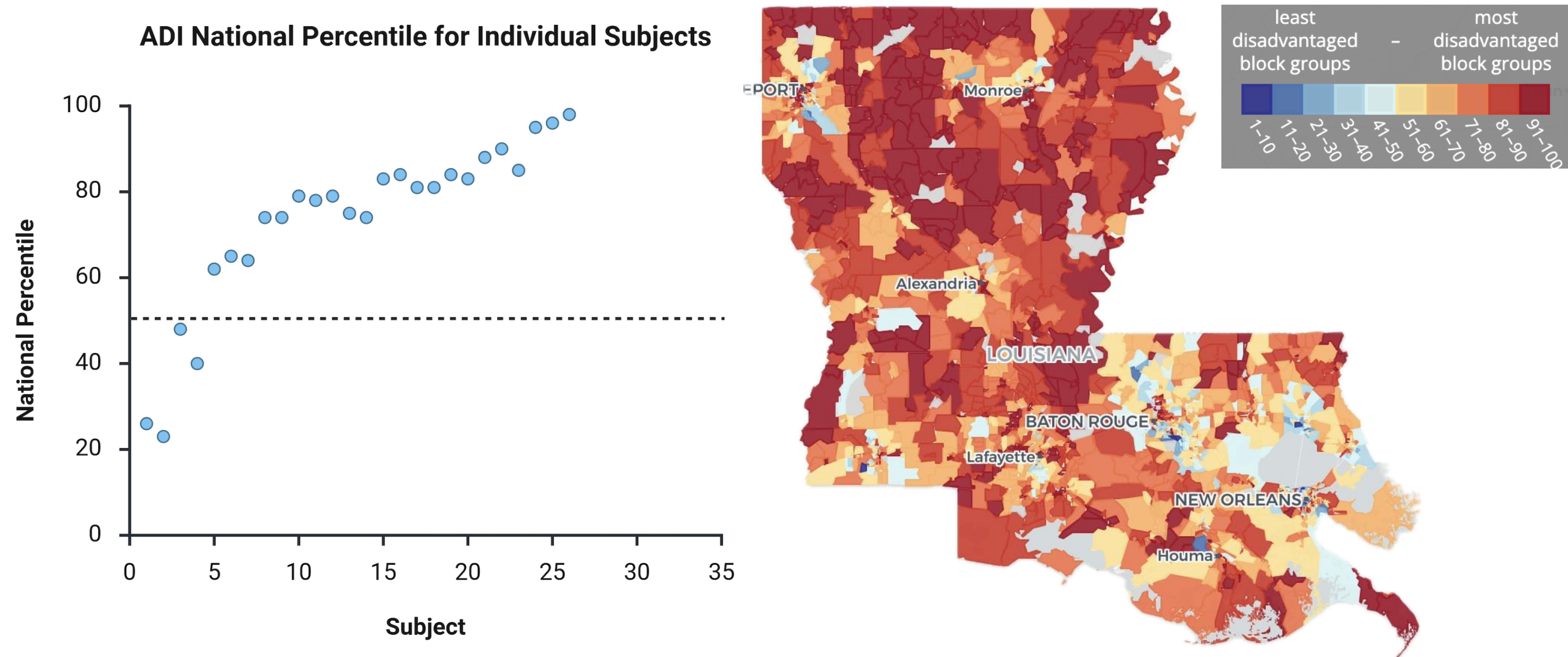


Figure 2. The ADI national percentile for individuals in the sample who have received non-traumatic lower limb amputations. This scatterplot shows that most patients who were undergoing a non-traumatic lower limb amputation were living in areas with above average deprivation at the national level.

Discussion and Limitations

- Although this study is still in preliminary data collection, the current findings reveal that the sample population had an above average state decile and national percentile for deprivation.
- This highlights the disadvantage of patients in Louisiana undergoing non-traumatic lower limb amputations.
- Several mechanisms contribute to the link between high ADI scores and amputations. Barriers to care, food insecurity, and cost of medication all may play a role in preventing timely treatment of wounds that lead to amputation.
- Understanding the link between ADI and risk of amputation is vital to finding targeted solutions for vulnerable communities and implementing strategies to decrease their risk.
- Because of the smaller sample size of this study and the single hospital design, this study may need to be expanded to increase generalizability.

Conclusion

- Data collection are ongoing to appropriately test for associations adjusting for demographics.
- It is notable in our patient sample that social deprivation is high in the mid range for the state but in 73% national percentile for composite measurement of deprivation.
- These overall high levels of deprivation underscore the importance of addressing barriers to care and reducing health disparities in these vulnerable populations.

Acknowledgements

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References

<https://www.neighborhoodatlas.medicine.wisc.edu/mapping>