

BACKGROUND

- Glucagon-Like Peptide-1 (GLP-1) agonists are increasingly being used to treat chronic conditions including type 2 diabetes mellitus and obesity.
- Social determinants of health (SDoH) factors, including economic insecurity, food insecurity, social isolation, etc., account for up to 50 percent of variation in health outcomes in the United States.¹
- The SDoH status of patients receiving GLP-1 agonist treatment is poorly understood.

OBJECTIVES

- Our objective was to determine the SDoH status of patients at the time of GLP-1 agonist prescription or administration using a previously developed N-gram model² applied onto unstructured clinical notes.

METHODS

- In this descriptive analysis, structured and unstructured clinical electronic health record (EHR) data were collected for patient encounters from integrated delivery networks (IDNs) in the OMNY Health real-world data platform (United States) over a 6-year period (2017-2022) during which a GLP-1 agonist (tirzepatide, semaglutide, or liraglutide) was prescribed or administered.
- Demographic characteristics (including mean, standard deviation, counts, and/or percentages, where appropriate) of these patients, including age, sex, race, and payer status were tabulated.
- In parallel, previously developed and fine-tuned n-gram models for the detection of SDoH risk status across 5 domains (economic insecurity, housing insecurity, undereducation, social isolation, and transportation insecurity; Figure 1) were applied to the notes of those encounters.
- Percentages of encounters scoring positively for the SDoH domains were tabulated.

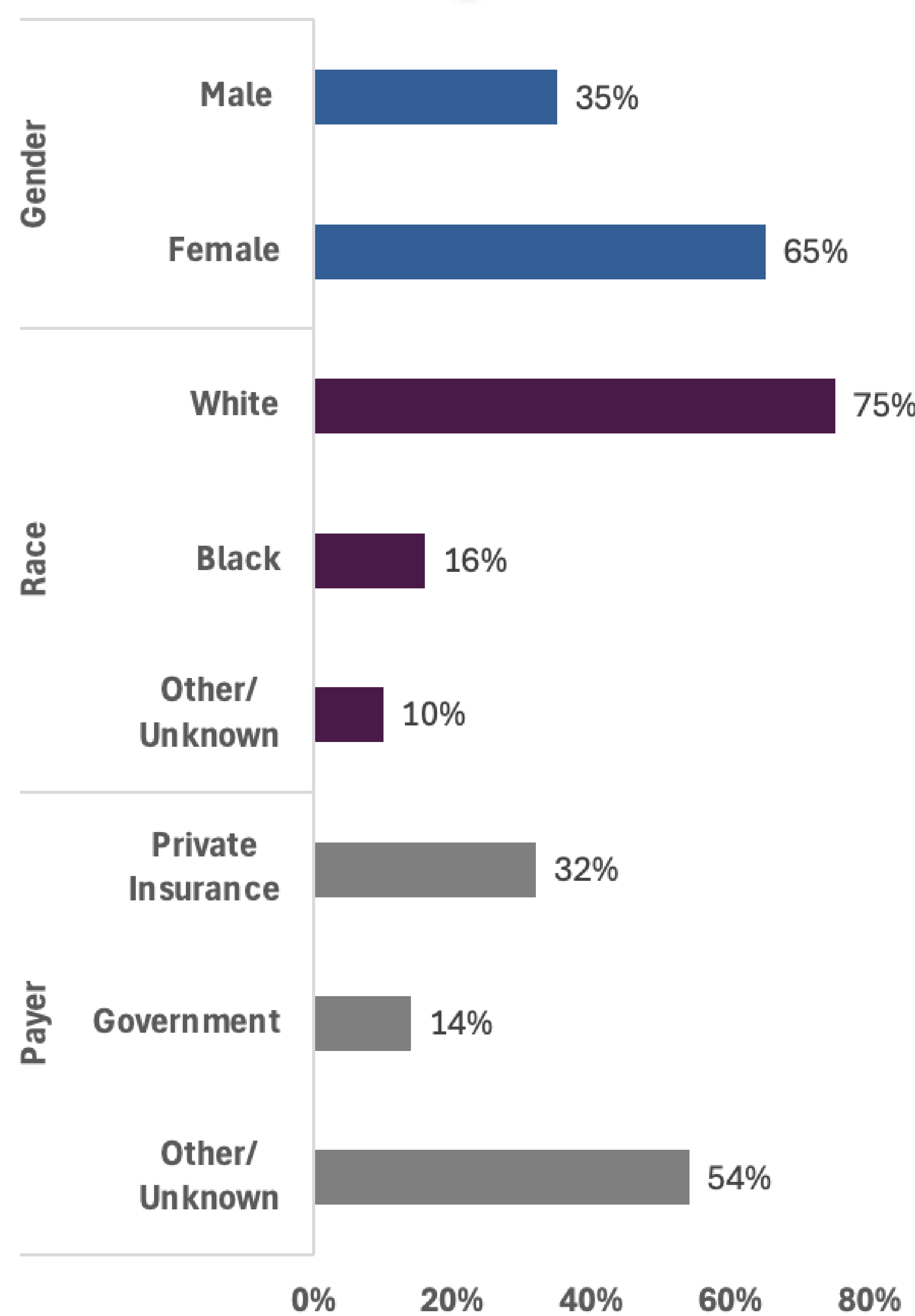
Figure 1: OMNY Health Social Determinants of Health (SDoH) Domains and Corresponding ICD-10-CM Codes Leveraged

Economic	Social Environment
<ul style="list-style-type: none"> • Economic instability indicators (i.e., low income, poverty) • ICD-10: Z59.4, Z59.5, Z59.6, Z59.7, Z59.86, Z59.87, Z59.89 	<ul style="list-style-type: none"> • Problems related to social environment (i.e., isolation, discrimination) • Z60.0 to Z60.9
Transportation	Housing
<ul style="list-style-type: none"> • Adequate transportation availability • Z59.82 	<ul style="list-style-type: none"> • Housing insecurity (i.e., homelessness, inadequate housing) • Z59.0, Z59.1, Z59.2, Z59.3, Z59.81, Z59.89
Undereducation	
<ul style="list-style-type: none"> • Problems related to education and literacy (i.e., low literacy, less than high school education) • Z55.0 to Z55.9 	

RESULTS

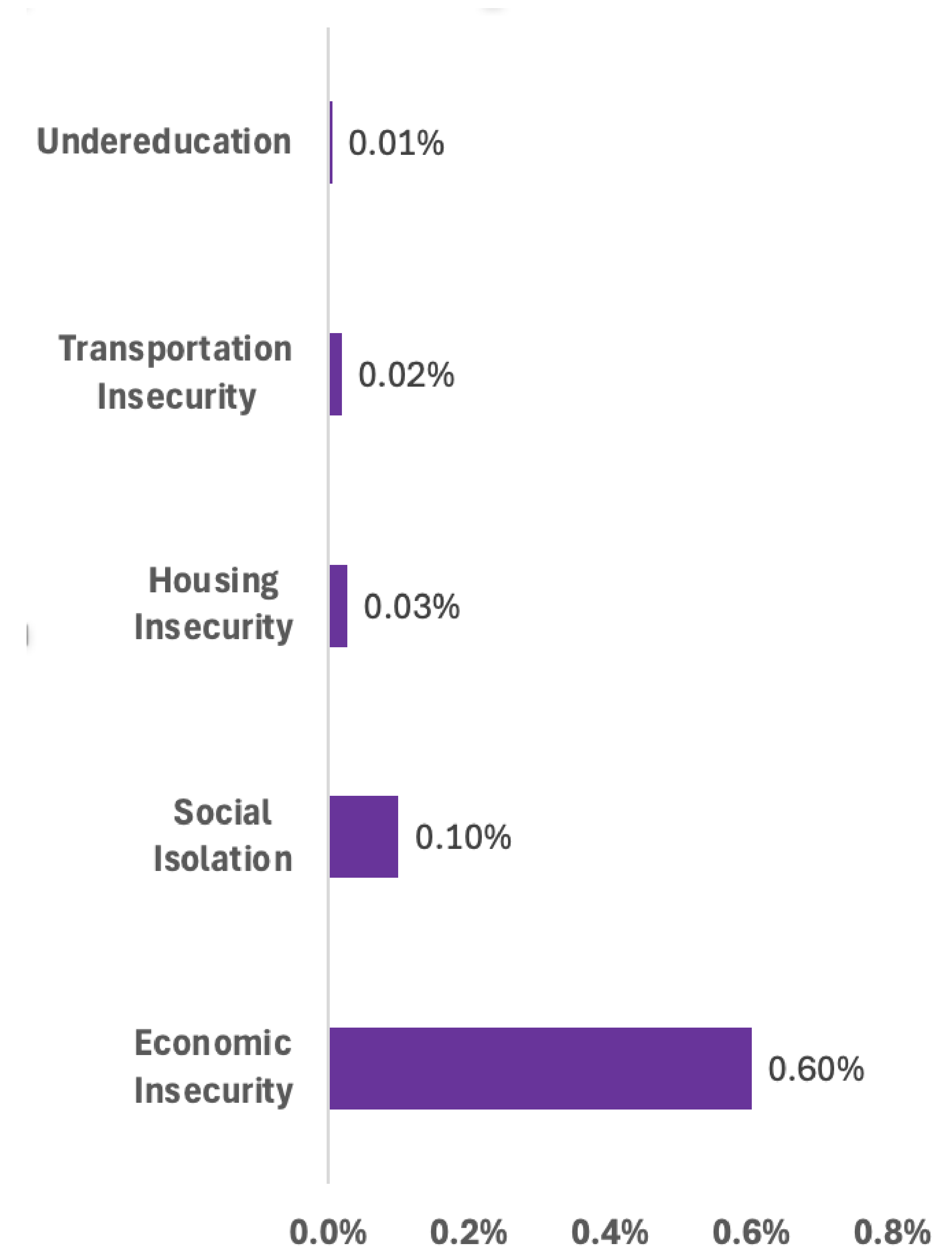
- A total of 322,840 encounters across 97,865 patients were included.
- The mean (standard deviation) of age in years of included encounters was 54.8 (12.5).
- Additional demographic characteristics of the encounter population are presented in Figure 2.
 - 209,453 (64.9%) of the encounters were for female patients.
 - 241,126 (74.7%) of the encounters were for white patients.
 - 103,658 (32.1%) of the encounters were covered by private insurance, while 12,899 (4.0%) of the encounters had Medicaid coverage.

Figure 2: Demographic Characteristics of Patient Population



- 1,996 (0.6%) of the encounters were positive for at least one SDoH risk factor (Figure 2):
 - economic insecurity: 1,832 (0.6%)
 - social isolation: 198 (0.1%)
 - housing insecurity: 89 (<0.1%)
 - transportation insecurity: 63 (<0.1%)
 - undereducation: 16 (<0.1%)
- At the patient level, 1,732 (1.8%) of included patients were positive for at least one SDoH risk factor at any time during their visit history.

Figure 3: Positive SDoH Status for Included Encounters by Domain



DISCUSSION AND CONCLUSIONS

- Compared to the overall SDoH risk factor prevalence across all encounters (1.2%), SDoH risk factors were less prevalent in encounters associated with GLP-1 agonist prescription (0.6%).
- This result may suggest that patients receiving GLP-1 agonists are either less likely to have SDoH risk factors in general or to have them documented in their EHR data.
- Further research is required to determine definitively the SDoH risk in this population.

REFERENCES

1. Whitman, A., De Lew, N., Chappel, A., Aysola, V., Zuckerman, R., Sommers, B. D. (2022) Addressing Social Determinants of Health: Examples of Successful Evidence-Based Strategies and Current Federal Efforts. Department of Health & Human Services, USA: Office of Health Policy.(HP-2022-12) <https://aspe.hhs.gov/sites/default/files/documents/e2b650cd64cf84aae8ff0fae7474af82/SDoH-Evidence-Review.pdf>
2. Kumar V, Mummert A, d'Arbeloff T, et al. Implementation and Validation of the Use of N-gram Models for Classifying Social Determinants of Health Status from Real World Unstructured Clinical Notes. Poster presentation at ISPOR 2024: May 5-8, 2024; Atlanta, GA, USA.

CONTACT INFORMATION

Vikas Kumar | Principal Data Scientist |
OMNY Health | Email:
vikas@omnyhealth.com | Website:
www.omnyhealth.com