Racial Disparities in the Burden of Illness Among Adults with Prostate Cancer in the United States

Contact Information:

Olumeko Isaiah, PharmD; Juhyeon Song, Msc; Temedie-Asogwa Tarilate PharmD Msc; Sujit S. Sansgiry, PhD
Department of Pharmaceutical Health Outcomes and Policy, College of Pharmacy, University of Houston, Houston, TX , USA
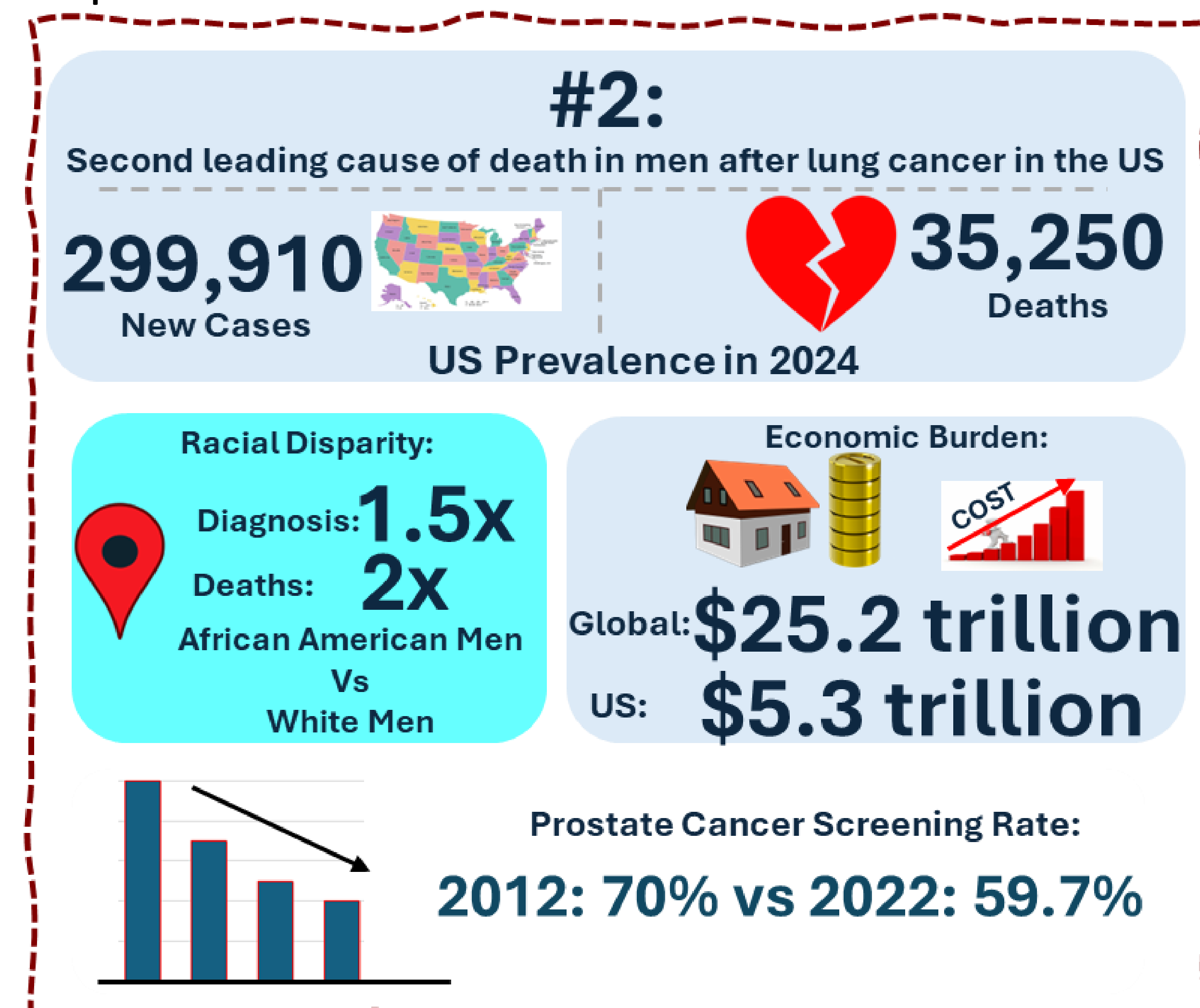
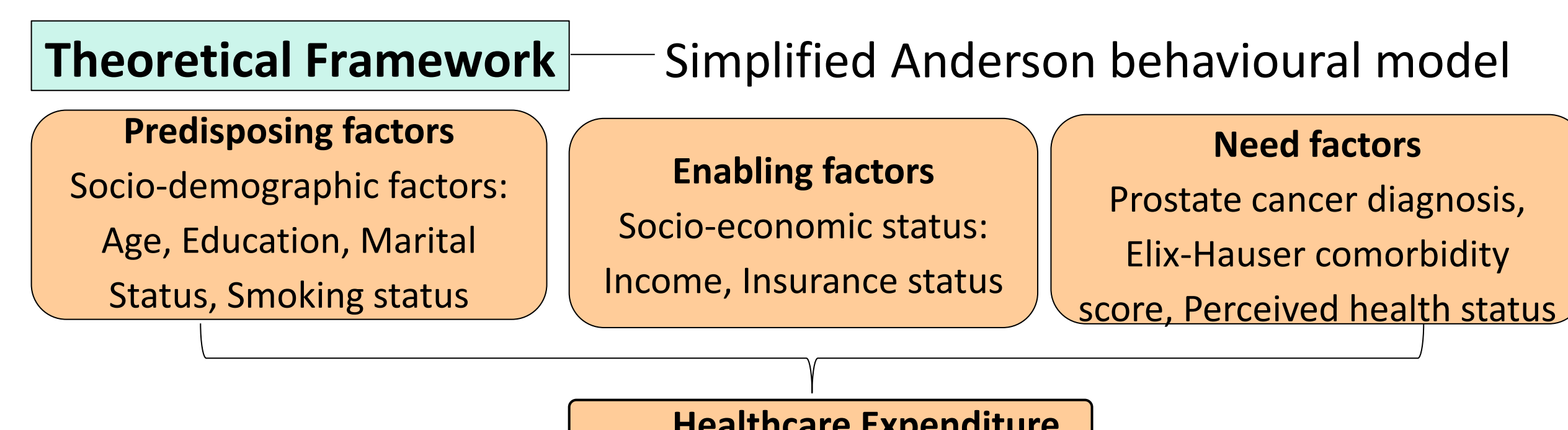College of Pharmacy — UNIVERSITY OF HOUSTON

BACKGROUND

- Prostate cancer poses a major public health challenge, requiring insight into its burden, disparities, and costs to guide early detection and equitable care.

#2:
Second leading cause of death in men after lung cancer in the US

299,910 New Cases

35,250 Deaths

US Prevalence in 2024

Racial Disparity:
Diagnosis: **1.5x**
Deaths: **2x**
African American Men Vs White Men

Economic Burden:
Global: **$25.2 trillion**
US: **$5.3 trillion**

Prostate Cancer Screening Rate:
2012: 70% vs 2022: 59.7%

OBJECTIVE

- To explore racial/ethnic disparities in disease burden and key drivers of healthcare expenditures among adults with prostate cancer in the U.S.

METHODS

Theoretical Framework — Simplified Anderson behavioural model

Predisposing factors	Enabling factors	Need factors
Socio-demographic factors: Age, Education, Marital Status, Smoking status	Socio-economic status: Income, Insurance status	Prostate cancer diagnosis, Elix-Hauser comorbidity score, Perceived health status

Healthcare Expenditure

Study Design
- Retrospective cross-sectional study using 2018–2022 MEPS data
- Retrospective cross-sectional study using 2018–2022 MEPS data

Population
- Adult males (≥18 years) diagnosed with prostate cancer.

Inclusion Criteria
- Male participants aged 18+ with prostate cancer diagnosis (identified from MEPS Household and medical condition files)
- Exclusion Criteria: Females; Individuals <18 years or with incomplete expenditure data.
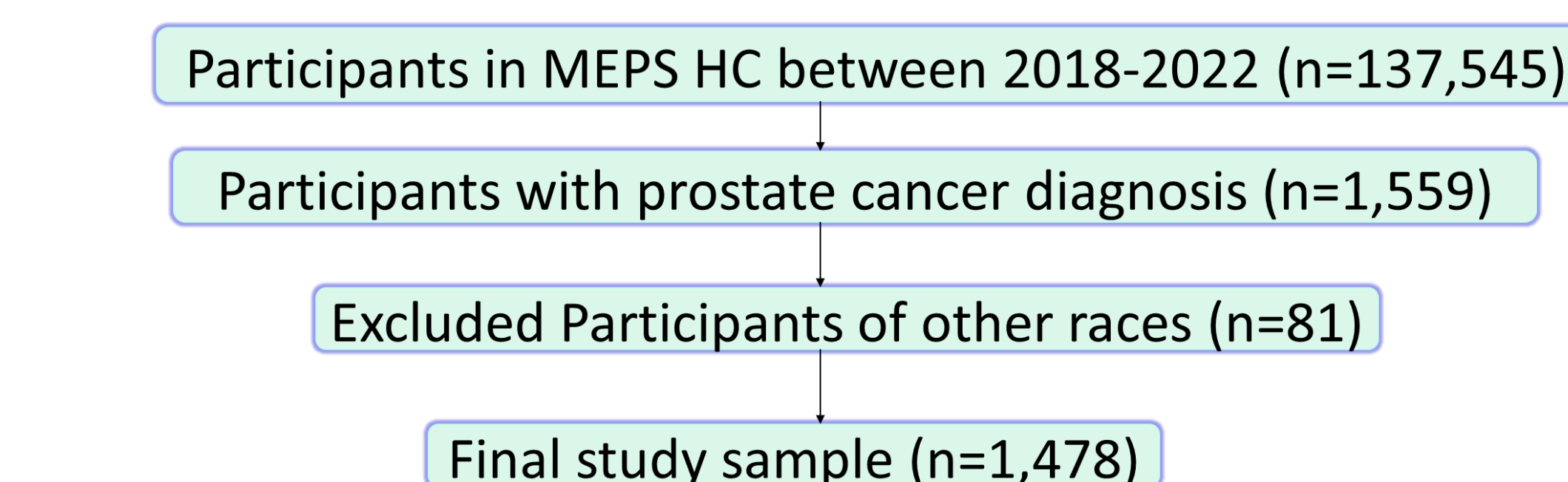
METHODS CONT'D

Variables:
- Outcome: Healthcare expenditures (total, inpatient and emergency room)
- Predictors/Covariates: Race/ethnicity (NHW, NHB, Hispanic), age, marital status, smoking status, health perception, chronic conditions, insurance status.

Statistical Analysis
- Descriptive: Means, Frequency, Chi-square
- Two-part model
  - Logistic regression to estimate the probability of incurring any expenditure
  - Gamma GLM to model the amount of expenditure among users.
- Adjusted for survey design and sample weights using SAS v9.4
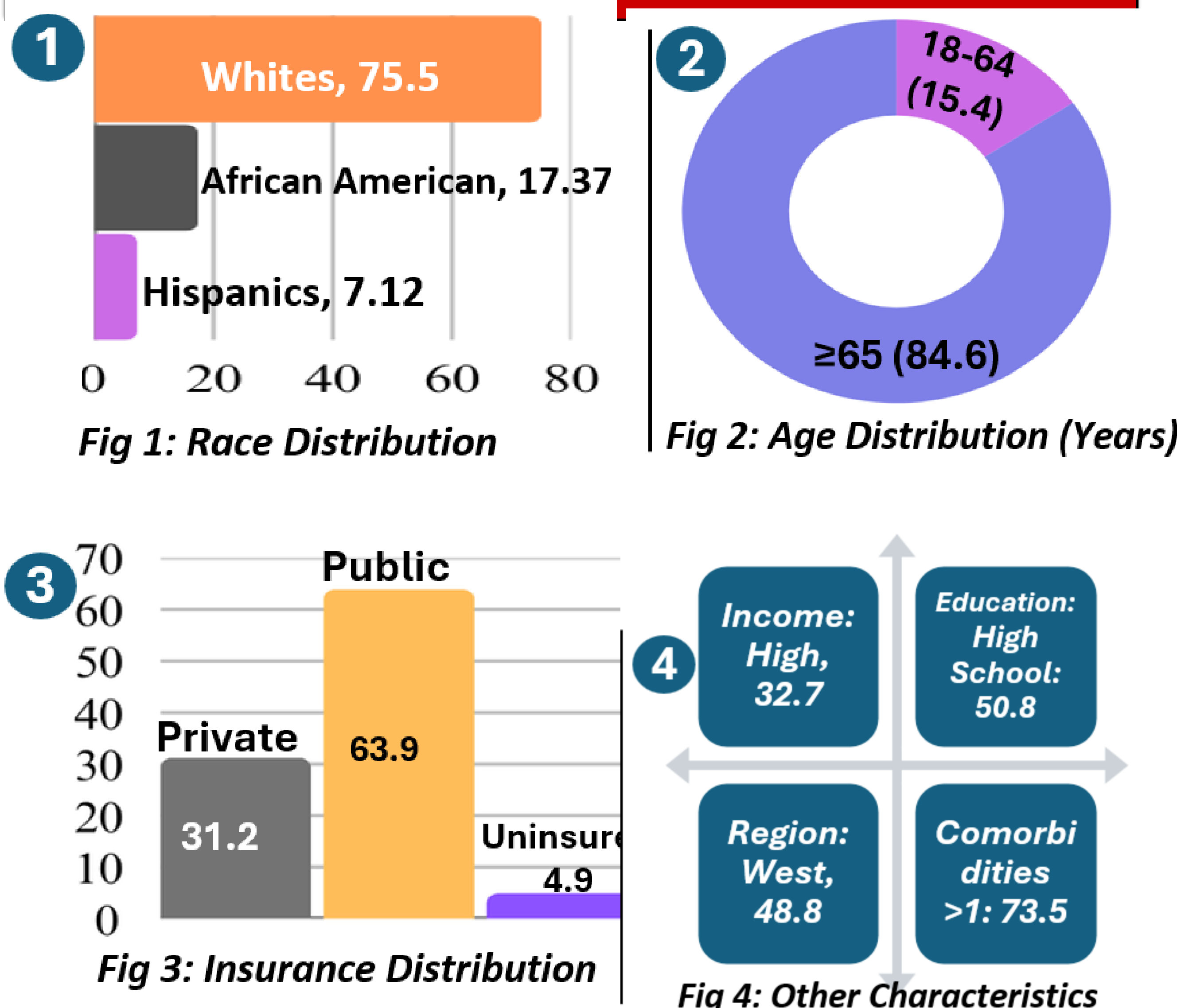
Attrition Flowchart:

Participants in MEPS HC between 2018-2022 (n=137,545)

Participants with prostate cancer diagnosis (n=1,559)

Excluded Participants of other races (n=81)

Final study sample (n=1,478)

RESULTS

① Fig 1: Race Distribution
- Whites, 75.5
- African American, 17.37
- Hispanics, 7.12

② Fig 2: Age Distribution (Years)
- 18-64 (15.4)
- ≥65 (84.6)

③ Fig 3: Insurance Distribution
- Public 63.9
- Private 31.2
- Uninsured 4.9

④ Fig 4: Other Characteristics
- Income: High, 32.7
- Education: High School: 50.8
- Region: West, 48.8
- Comorbidities >1: 73.5

Figure 1-4: Baseline Characteristics of Prostate Cancer Patients

RESULTS CONT'D

Table 1: Baseline Characteristics of Study Population by Race

Variables	White (N=11,609,593)	African American (N=2,670,099)	Hispanic (N=1,095,248)	P-value
Marital Status				0.1696
Married	8,284,676 (71.3%)	1,669,630 (62.5%)	657,823 (60.1%)	
Not Married	3,324,917 (28.6%)	1,000,470 (37.5%)	437,424 (39.9%)	
Income				<0.0001
High	6,676,703 (57.5%)	1,072,628 (40.2%)	359,111 (32.7%)	
Middle	2,785,755 (24.0%)	675,721 (25.3%)	322,972 (29.5%)	
Low	1,295,752 (11.2%)	406,572 (15.2%)	206,460 (18.8%)	
Poor/Near Poor	851,377 (7.3%)	515,179 (19.3%)	205,705 (18.9%)	
Education				0.0015
Master's/Doctorate	3,573,882 (36.9%)	707,697 (27.2%)	150,824 (13.8%)	
Bachelor's	2,918,430 (25.2%)	337,391 (12.9%)	171,954 (15.7%)	
High School/GED	4,280,239 (37.0%)	1,154,687 (44.3%)	557,135 (50.9%)	
No Degree	811,275 (7.0%)	405,118 (15.6%)	215,335 (19.7%)	
Perceived Health Status				0.4462
Excellent/Good	9,096,824 (81.3%)	1,948,977 (76.9%)	915,740 (86.6%)	
Fair/Poor	2,093,256 (18.7%)	584,106 (23.1%)	141,534 (13.4%)	
Comorbidities				0.9688
Less than or = 1	3,234,809 (27.9%)	758,164 (28.4%)	287,463 (26.2%)	
Greater than 1	8,374,724 (72.2%)	1,911,936 (71.6%)	807,783 (73.8%)	
Smoking Status				0.0002
Everyday	556,775 (5.0%)	85,222 (3.4%)	77,943 (7.5%)	
Someday	112,586 (1.0%)	186,802 (7.5%)	36,251 (3.5%)	
Not at all	10,416,676 (93.9%)	2,229,196 (89.1%)	923,846 (89.0%)	

Table 2: Unadjusted Healthcare Expenditures by Race (Mean, 95% CI)

Expenditure Category	African American, $ (95% CI)	Hispanic, $ (95% CI)	White, $ (95% CI)
Total Healthcare	16,892 (14,021–19,762)	9,893 (7,589–12,197)	18,065 (15,732–20,398)
Outpatient	3,113 (1,870–4,356)	724 (418–1,029)	2,879 (2,107–3,651)
Office-Based	3,181 (2,362–4,001)	2,548 (1,536–3,561)	4,285 (3,643–4,926)
Prescription	4,526 (2,854–6,198)	1,175 (691–1,659)	4,579 (3,365–5,794)
Emergency Room	317 (208–427)	287 (68–506)	264 (208–320)
Inpatient	4,204 (3,044–5,364)	4,062 (2,132–5,992)	3,901 (3,028–4,775)
Total excluding prescription medicines	12366 (8,964-15,768)	8719 (5,988-11,448)	13,485 (10,720-16,250)

RESULTS CONT'D

Table 2. Adjusted Healthcare Expenditure Estimates

Expenditure Category	Race/Ethnicity	%change in exponential estimate	P-value
Total Healthcare	White	Reference	
	African American	-15	0.40
	Hispanics	-34	**0.03**
Outpatient	White	Reference	
	African American	+14	0.70
	Hispanics	-69	**0.01**
Office-Based	White	Reference	
	African American	-57	**0.004**
	Hispanics	+4	0.88
Prescription	White	Reference	
	African American	-2	0.95
	Hispanics	-57	**<0.0001**
Emergency	White	Reference	
	African American	+44	0.22
	Hispanics	+12	0.81
Inpatient	White	Reference	
	African American	+65	0.18
	Hispanics	+13	0.73

DISCUSSION

- Among all the three racial groups, Hispanic significantly had the lowest total healthcare expenditures compared to White individuals
- Despite a higher incidence of prostate cancer among non-Hispanic Black individuals, their expenses regarding routine office-based services is significantly lower compared to non-Hispanic Whites.
- Although not significant, Emergency room expenses was significantly higher among Black and Hispanic men, indicating potential barriers to timely or routine care.
- Additionally, the Hispanics spend less significant for outpatient visit when compared to white.

REFERENCES

- American Cancer Society. (2022). Prostate cancer: Facts and statistics. Retrieved from https://www.cancer.org
- Siegel, R. L., Miller, K. D., & Jemal, A. (2024). Cancer statistics, 2024. CA: A Cancer Journal for Clinicians, 74(1), 10-30.
- United States Preventive Services Task Force (USPSTF). (2018). Screening for prostate cancer: US Preventive Services Task Force recommendation statement. JAMA, 319(18), 1901-1913.
- Schröder, F. H., Hugosson, J., Roobol, M. J., et al. (2009). Screening and prostate-cancer mortality in a randomized European study. New England Journal of Medicine, 360(13), 1320-1328.
- Andriole, G. L., Crawford, E. D., Grubb, R. L., et al. (2009). Mortality results from a randomized prostate-cancer screening trial. New England Journal of Medicine, 360(13), 1310-1319.
- National Cancer Institute. (2024). Prostate cancer screening: The PLCO and ERSPC trials. Retrieved from https://www.cancer.gov
- American Urological Association. (2023). Updated guidelines on prostate cancer screening and management. Journal of Urology, 210(5), 1001-1015.
- Jemal, A., Ma, J., Siegel, R., & Fedewa, S. A. (2023). Declining PSA screening rates and rising metastatic prostate cancer in the United States. JAMA Oncology, 9(2), 125-133.