

# Adoption of PSMA-PET Imaging for Prostate Cancer Within a Large Integrated Health System, 2021-2024

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## BACKGROUND

- Prostate cancer is the second leading cause of cancer death among U.S. men<sup>1</sup>
- Prostate-specific membrane antigen (PSMA) is a transmembrane glycoprotein highly expressed on prostate cancer cells and can be targeted for molecular imaging
- Accurate staging is critical as it guides treatment selection, particularly in higher-risk disease<sup>2,3</sup>
- Conventional imaging may miss small nodal or distant metastases; PSMA-PET improves disease localization by targeting PSMA expression
- NCCN incorporated PSMA-PET for initial staging and biochemical recurrence in 2021<sup>4</sup>
- Adoption patterns, access equity, and clinical factors influencing PSMA-PET use across U.S. health systems remain incompletely characterized

## OBJECTIVE

To evaluate PSMA-PET utilization, temporal adoption, and demographic, clinical, and facility-level predictors of PSMA-PET use among prostate cancer patients diagnosed within a large integrated health system from 2021–2024

## METHODS

- Study Design:** Retrospective cohort study
- Index Period (Cohort Inclusion):** 1/1/2021–12/31/2024
  - Adult males (≥ 18 years old) with a new primary diagnosis of prostate cancer (ICD-10: C61) at BSWH
- Observation Window (Follow-up):** Index date through 11/1/2025
  - Used to capture post-diagnosis outcomes, including PSMA-PET imaging
- Data Source:** Tumor registry data linked with electronic health record (EHR) from an integrated delivery network

## Statistical Analysis

- Descriptive statistics for baseline characteristics
- Cochran-Armitage test for temporal trends
- Chi-square and *t*-tests for group comparisons
- Multivariable logistic regression for predictors (age, race, PSA, stage, insurance)

## RESULTS

Table 1. Demographics & PSMA Utilization

Variable	PSMA (n=634)	No PSMA (n=2,266)	p-value
Age, mean (SD), years	68.9 (8.36)	67.4 (8.78)	<0.001
Age category, n (%)			0.014
<65	188 (29.7%)	805 (35.5%)	
65–74	291 (45.9%)	988 (43.6%)	
≥75	155 (24.4%)	473 (20.9%)	
Race/Ethnicity, n (%)			0.404
Hispanic or Latino	53 (8.4%)	216 (9.5%)	
NH White	436 (68.8%)	1,548 (68.3%)	
NH Black	124 (19.6%)	402 (17.7%)	
NH Asian	10 (1.6%)	32 (1.4%)	
NH Other	4 (0.6%)	17 (0.8%)	
Unknown	7 (1.1%)	51 (2.3%)	
PSA at Diagnosis, median (IQR)	10.0 (6.2–25.3)	6.9 (5.1–11.2)	<0.001
PSA at Diagnosis, n (%)			<0.001
<10 ng/mL	303 (47.8%)	1,346 (59.4%)	
10–20 ng/mL	128 (20.2%)	321 (14.2%)	
>20 ng/mL	183 (28.9%)	252 (11.1%)	
Unknown	20 (3.2%)	347 (15.3%)	
AJCC Stage, n (%)			<0.001
I–IIc (Localized)	225 (35.5%)	1,135 (50.1%)	
IIIA–C (Locally advanced)	140 (22.1%)	399 (17.6%)	
IVA–IVB (Advanced)	190 (30.0%)	230 (10.2%)	
Unknown	79 (12.5%)	502 (22.2%)	
Metastatic disease, n (%)	148 (23.3%)	193 (8.5%)	<0.001
Insurance, n (%)			<0.001
Commercial	185 (29.2%)	877 (38.7%)	
Medicare	344 (54.3%)	1,023 (45.1%)	
Other / non-commercial	100 (15.8%)	318 (14.0%)	
Unknown	5 (0.8%)	48 (2.1%)	
Diagnosis year, n (%)			<0.001
2021	77 (12.1%)	692 (30.5%)	
2022	111 (17.5%)	720 (31.8%)	
2023	205 (32.3%)	484 (21.4%)	
2024	241 (38.0%)	370 (16.3%)	

Figure 1. PSMA-PET Utilization by PSA at Diagnosis

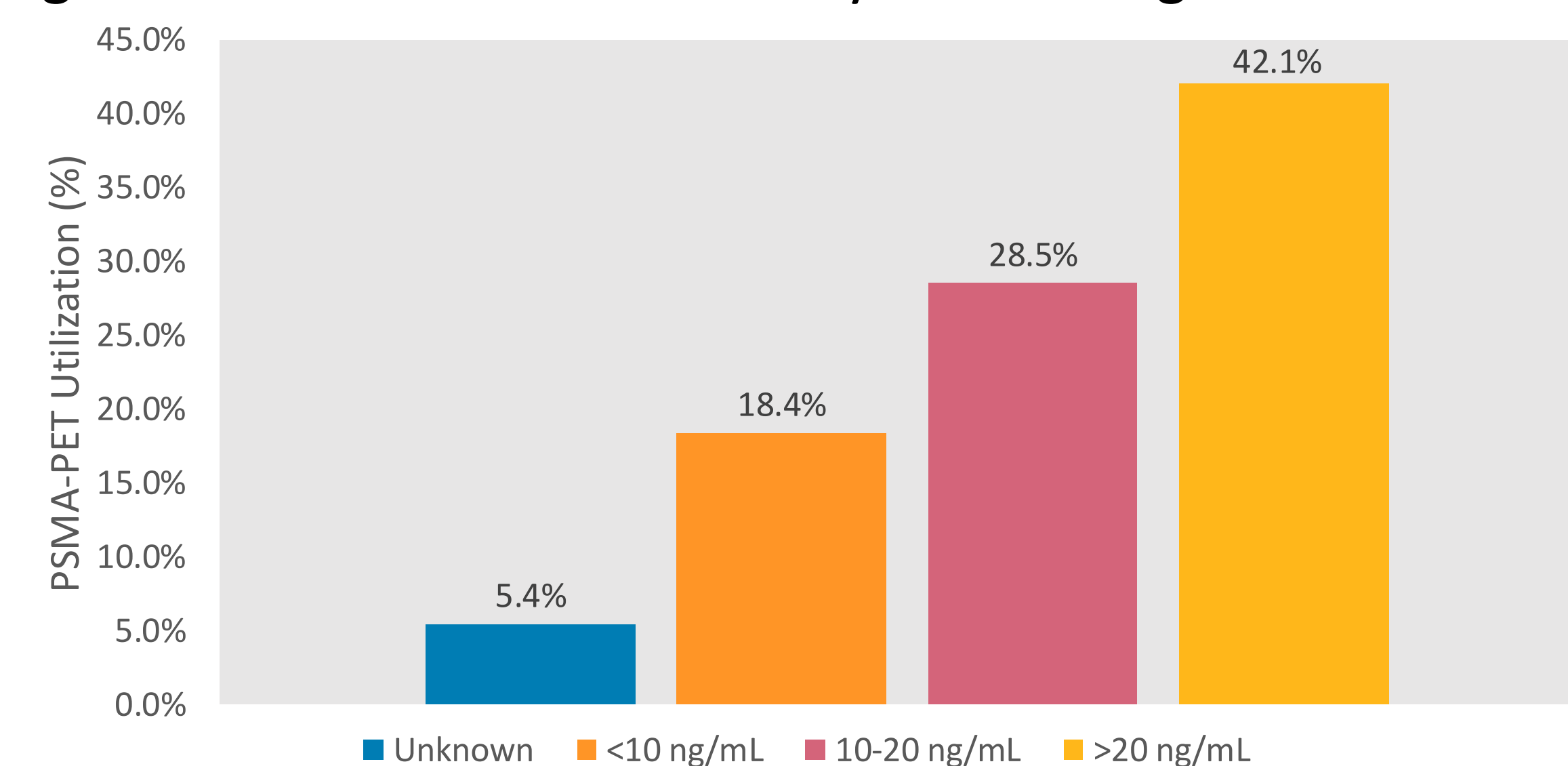


Figure 2. PSMA-PET Utilization by AJCC Stage

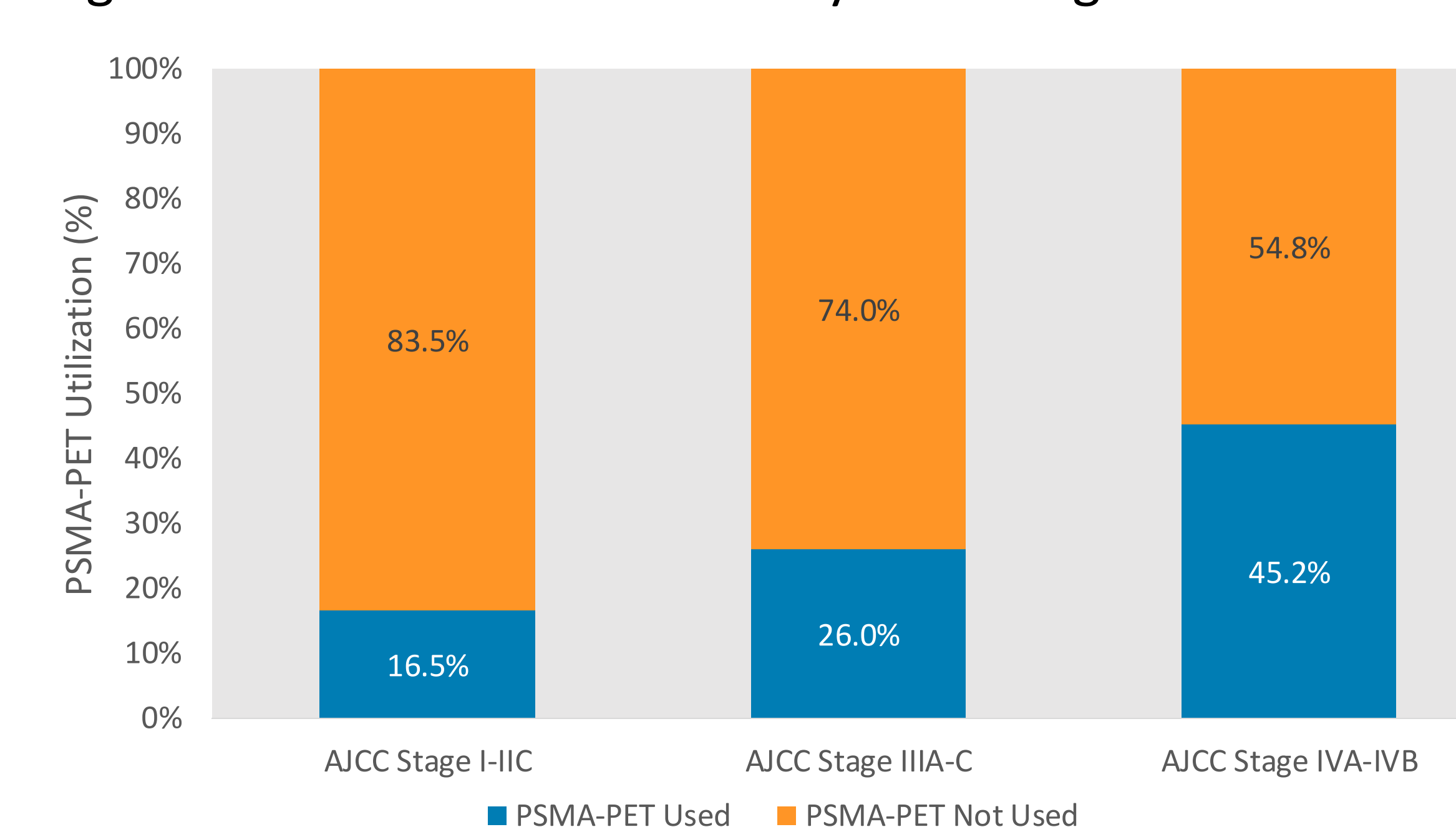
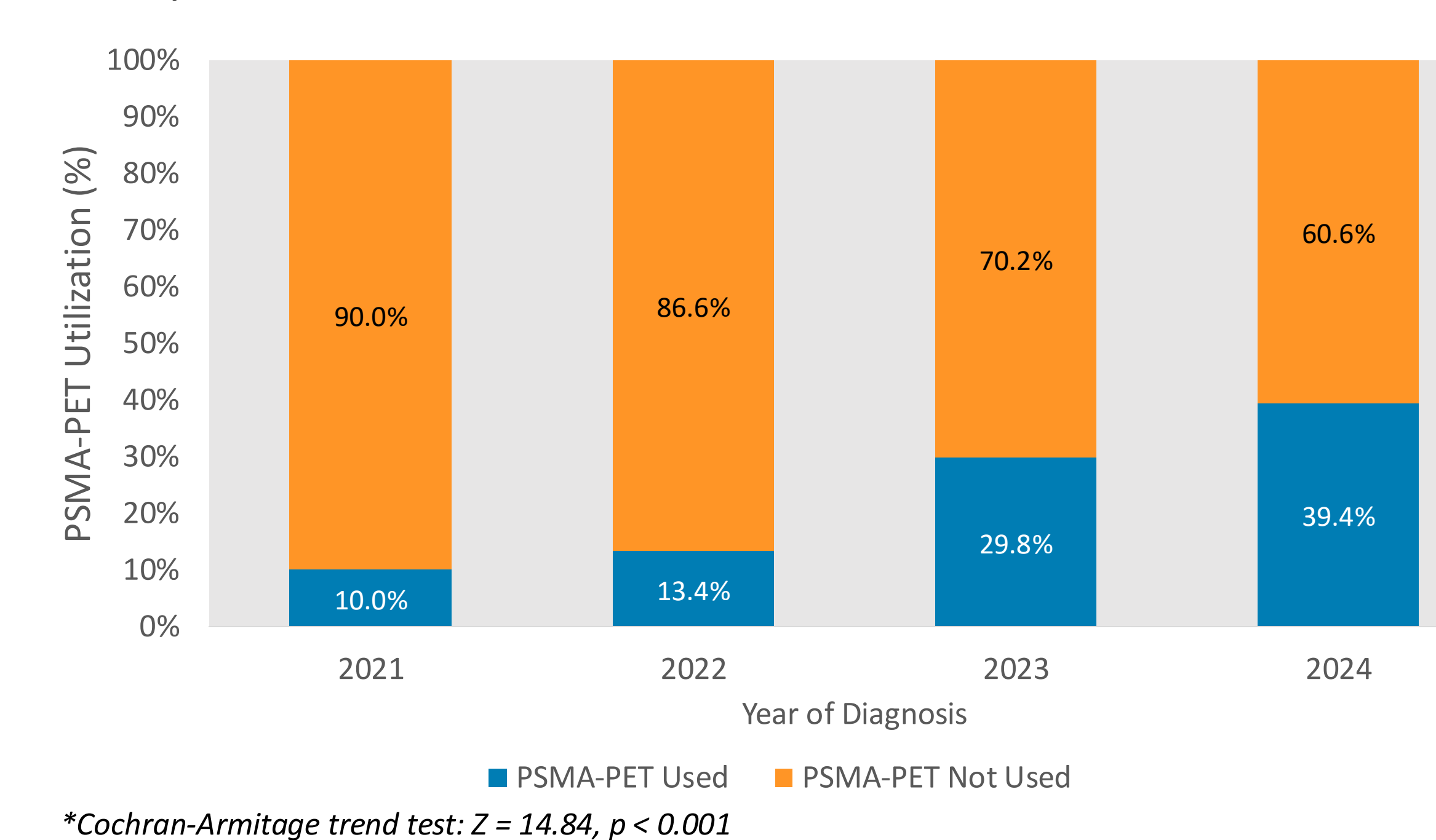
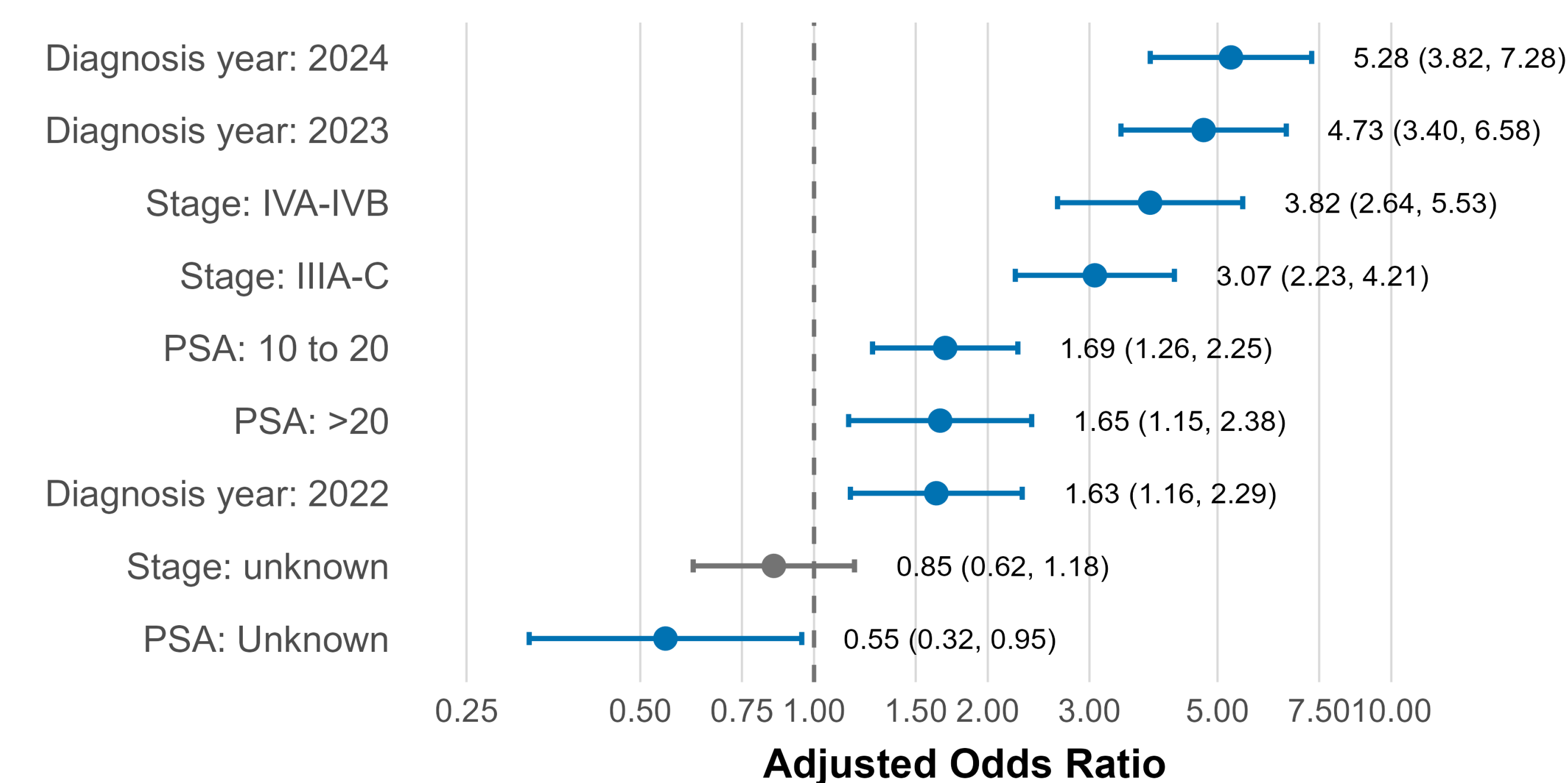


Figure 3. PSMA-PET Utilization by Diagnosis Year (2021–2024)



\*Cochran-Armitage trend test:  $Z = 14.84, p < 0.001$

Figure 4. Clinical and Temporal Factors Associated With PSMA-PET Utilization



\*Reference Values: Diagnosis Year 2021; Stage I-IIc; PSA < 10 ng/mL

## DISCUSSION

- PSMA-PET use increased substantially across diagnosis-year cohorts (2024 vs. 2021: aOR 5.28), coinciding with NCCN guideline incorporation, expanding coverage, and growing institutional capacity
- Utilization was highest among patients with advanced-stage disease (Stage IVA-IVB: aOR 3.82), supporting risk-aligned use in patients most likely to benefit from improved staging accuracy
- Race, ethnicity, and age were not independent predictors of PSMA-PET receipt, suggesting no measurable demographic access disparity
- Patients with unknown baseline PSA and AJCC stage had lower odds of PSMA-PET receipt, highlighting documentation completeness and pre-treatment workup as potential quality improvement targets
- Limitations include potential under-capture of PSMA-PET scans obtained at outside facilities not reflected in the institutional EHR

## CONCLUSIONS

- PSMA-PET utilization increased approximately fourfold (10.0% to 39.4%) from 2021 to 2024, indicating its transition from a niche downstream modality to a routine component of pretreatment evaluation
- Future work should assess whether increased PSMA-PET use translates into improved treatment selection, patient outcomes, and acceptable economic value

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## DISCLOSURES

The authors of this study have the following disclosures:  
Michael McGovern, Linda Chen, Tim Reynolds, and Paul Godley – Paid consultant (BeOne, Sanofi, Pfizer)

Presented at ISPOR, Philadelphia 2026  
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