2025 MWCCS Dossier

MACS/WIHS COMBINED COHORT STUDY

Brief History and Scientific Highlights of the MACS/WIHS Combined Cohort Study

The Longest Running Observational Study of People Living with HIV (PLWH) and Similar People Vulnerable to HIV

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History

The MACS/WIHS Combined Cohort Study (MWCCS) is an observational study that follows people with HIV and similar people without HIV. The study has been following people since 1984!

In the beginning of the AIDS epidemic, many people living with HIV were told that they may have only 6 months to live.

Through the advent of therapies, the lives of people with HIV/AIDS changed.

Background

The trajectory of HIV research is changing as the population with HIV/AIDS is aging.

In 2022, half of people living with HIV in the US are 50 years and above.

Reference: https://www.hiv.gov/hiv-basics/living-well-with-hiv/taking-care-of-yourself/aging-with-hiv

54%

of people living with HIV in the US are 50 years and above.

1 in 6

people newly diagnosed with HIV is aged 50+

Began enrolling 1984 | Began enrolling 1994 | Merged 2019

In 2019 two longstanding cohorts, the MACS and WIHS merged into the MWCCS

MACS, a cohort study of men with and without HIV, and **WIHS**, a cohort study of women with and without HIV merged to form **MWCCS,** a combined cohort study with more participants representing a *broader, more diverse population* with a *harmonized database* to study a wider range of HIV/AIDS focus areas and other co-morbidities.

MWCCS

MACS/WIHS COMBINED COHORT STUDY

As of May 2025:

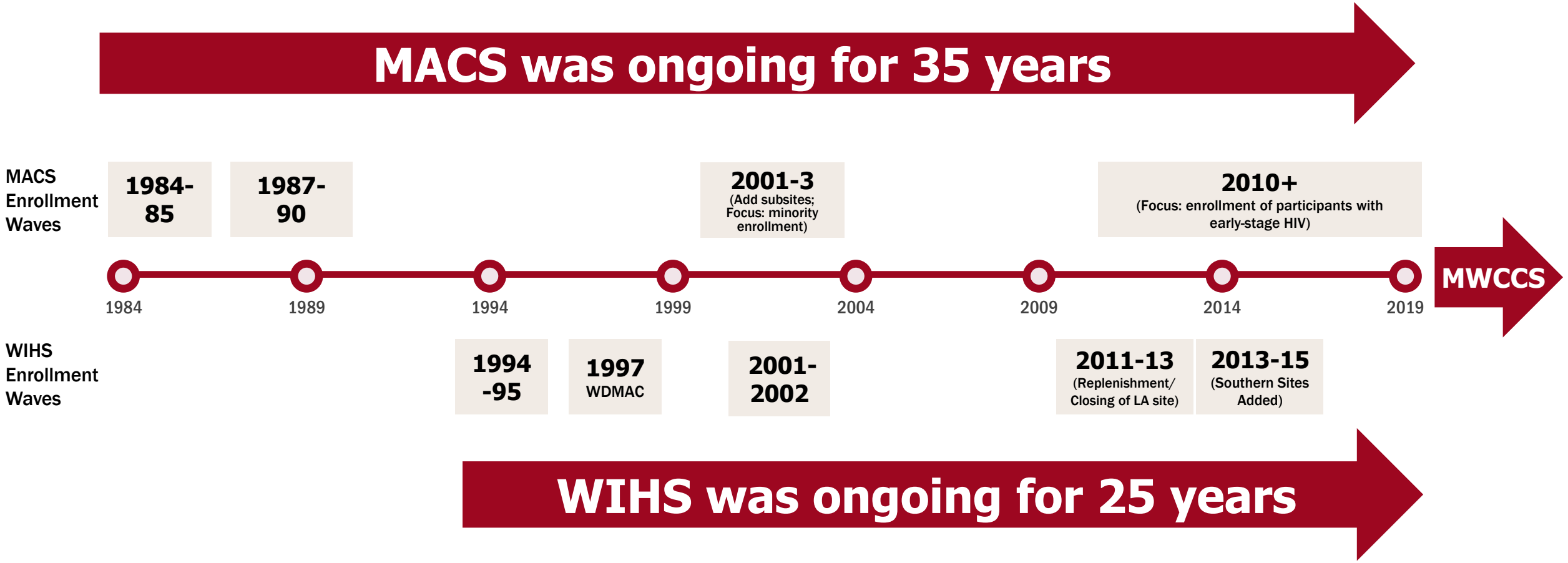
MWCCS has:

>5800 Active Participants

>3400 Publications

Increased focus on Aging and Co-morbidities

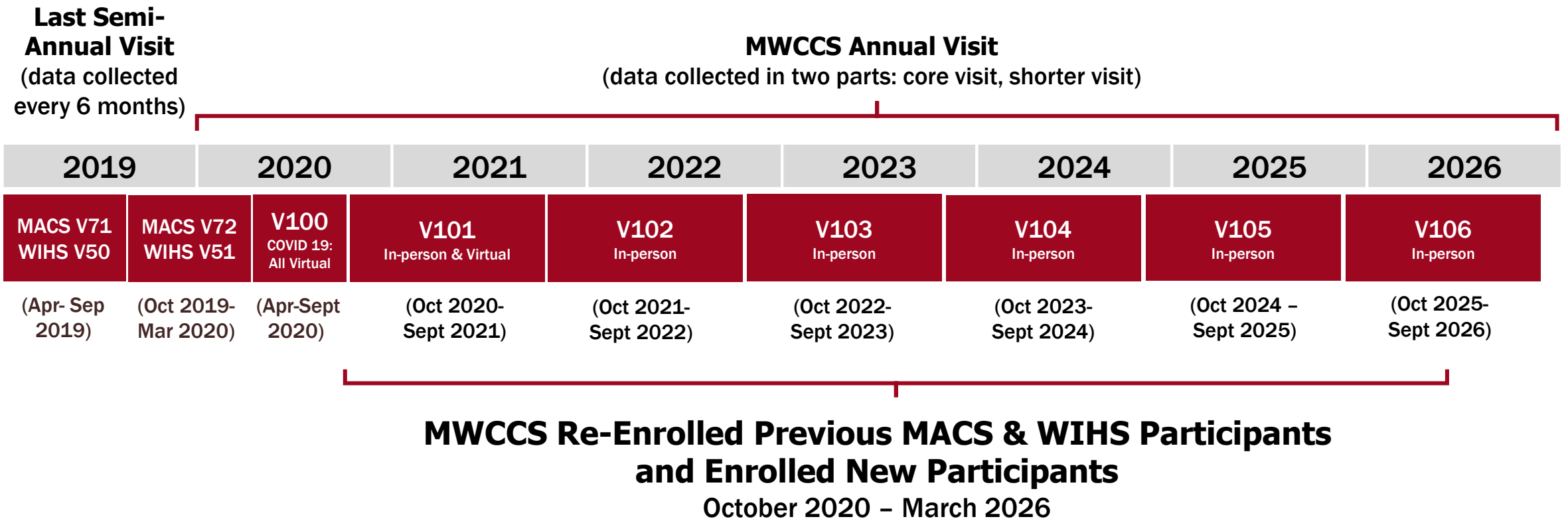
MACS and WIHS Timelines



In April 1995, 2255 men without HIV were administratively censored from further follow-up, per an NIH decision due to budget constraints.

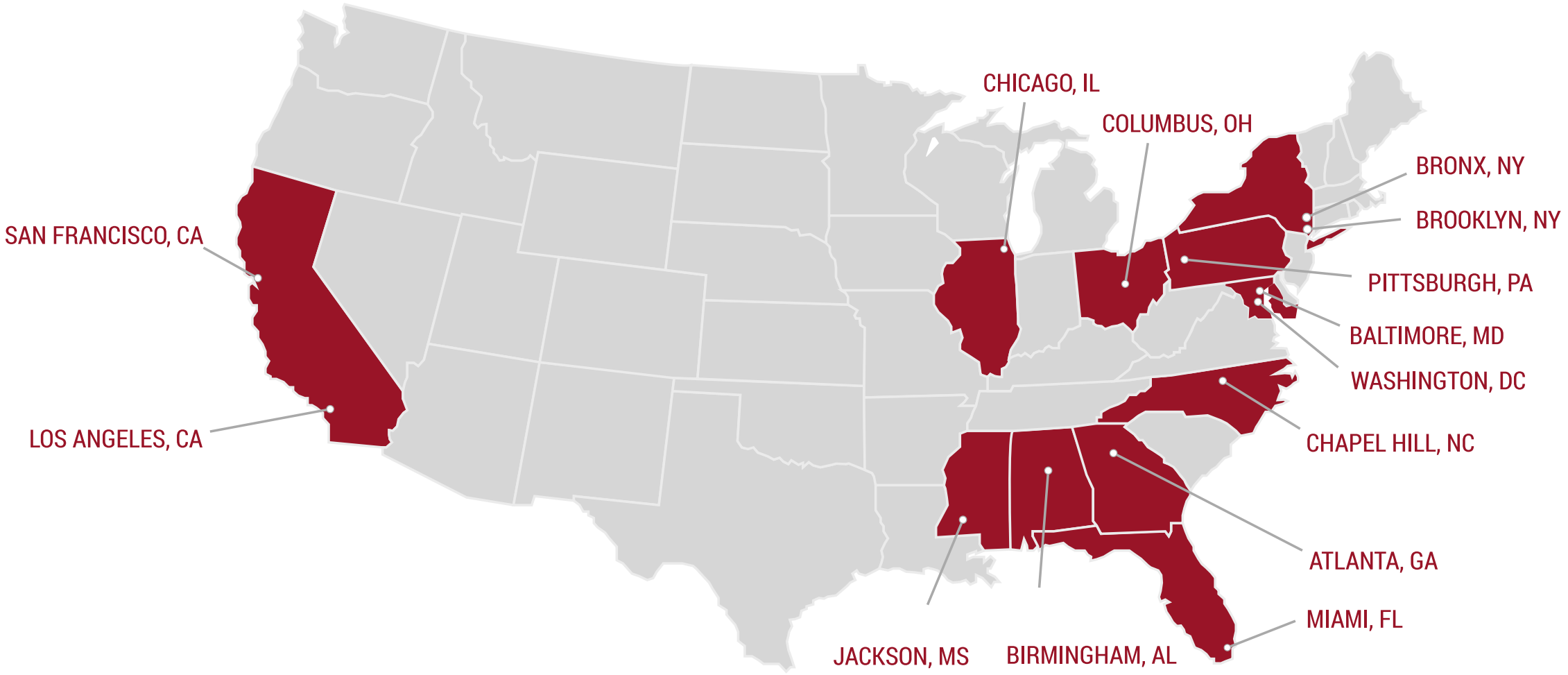
MWCCS Timeline

Historic data (1984-2020) are included in the harmonized database with the newly collected MWCCS data



MWCCS Study Sites in United States

Study sites are spread across the Northeast, South, Midwest, and West Coast. For more information regarding study sites and contact persons, please visit https://statepi.jhsph.edu/mwccs/study-locations/



MWCCS

MACS/WIHS COMBINED COHORT STUDY

Enrolled Participants

(as of May 2025)

5,844 Enrolled

3,569

"Carryover" Participants Enrolled
(who were part of MACS or WIHS)

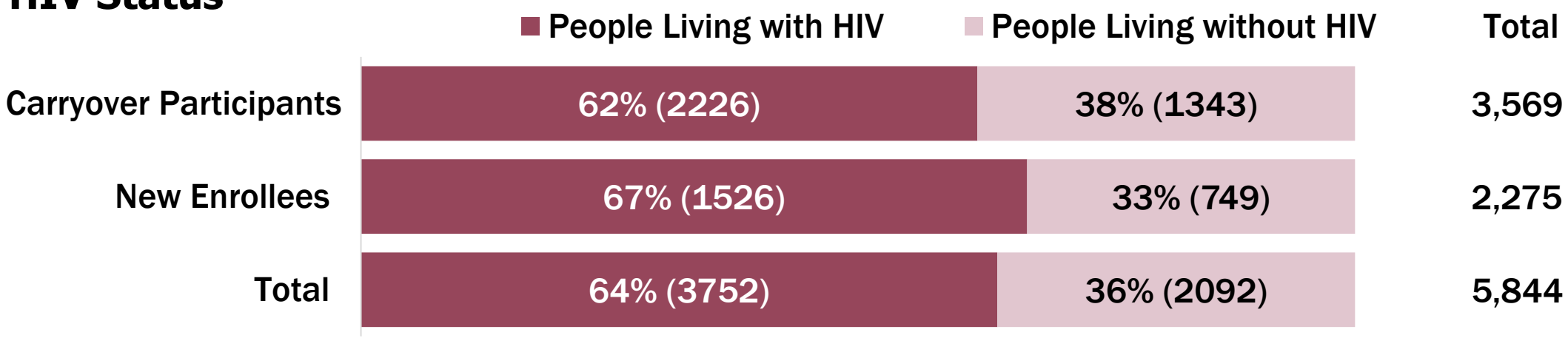
2,275

New Enrollees into MWCCS

Site	# Enrolled:
Atlanta, GA	557
Baltimore, MD	458
Birmingham, AL /Jackson, MS	476
Bronx, NY	520
Brooklyn, NY	337
Chapel Hill, NC	421
Chicago (Cook County), IL	342
Chicago (Northwestern), IL	365
Los Angeles, CA	572
Miami, FL	524
Pittsburgh, PA/Columbus, OH	447
San Francisco, CA	476
Washington DC	349
TOTAL:	5,844

Participant Characteristics by HIV Status and Age (May 2025)

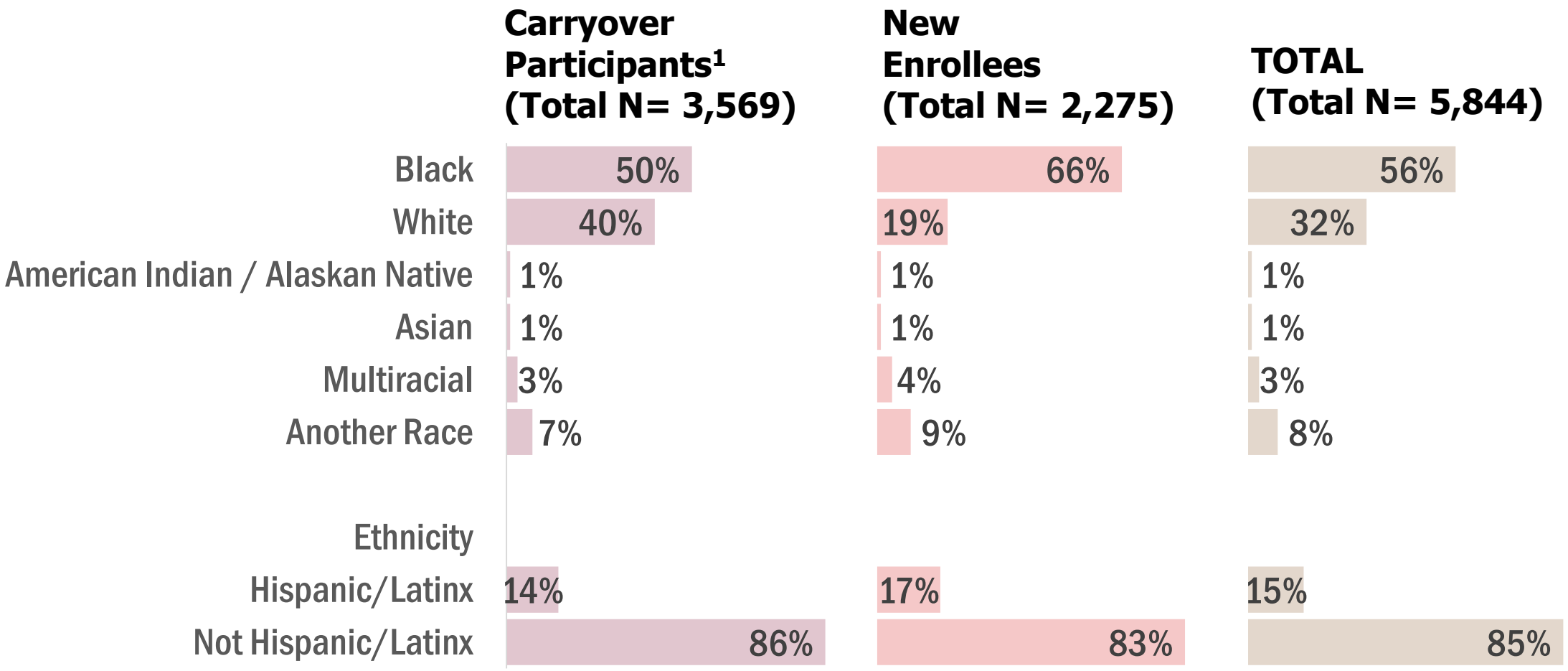
HIV Status



Age in years

	People Living with HIV		People Living without HIV	
	Median Age	IQR	Median Age	IQR
Carryover Participants	57	(50, 63)	61	(51, 68)
New Enrollees	48	(38, 57)	51	(39, 58)
Total	54	(44, 61)	57	(46, 65)

Race and Ethnicity (May 2025)

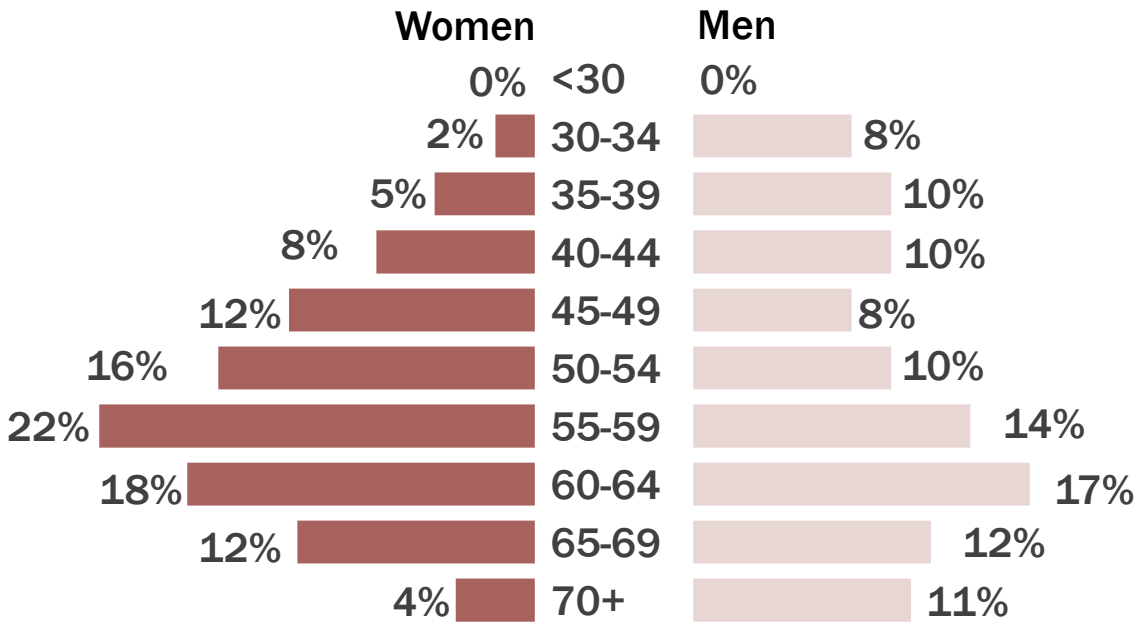


[1]Participants who were part of MACS or WIHS

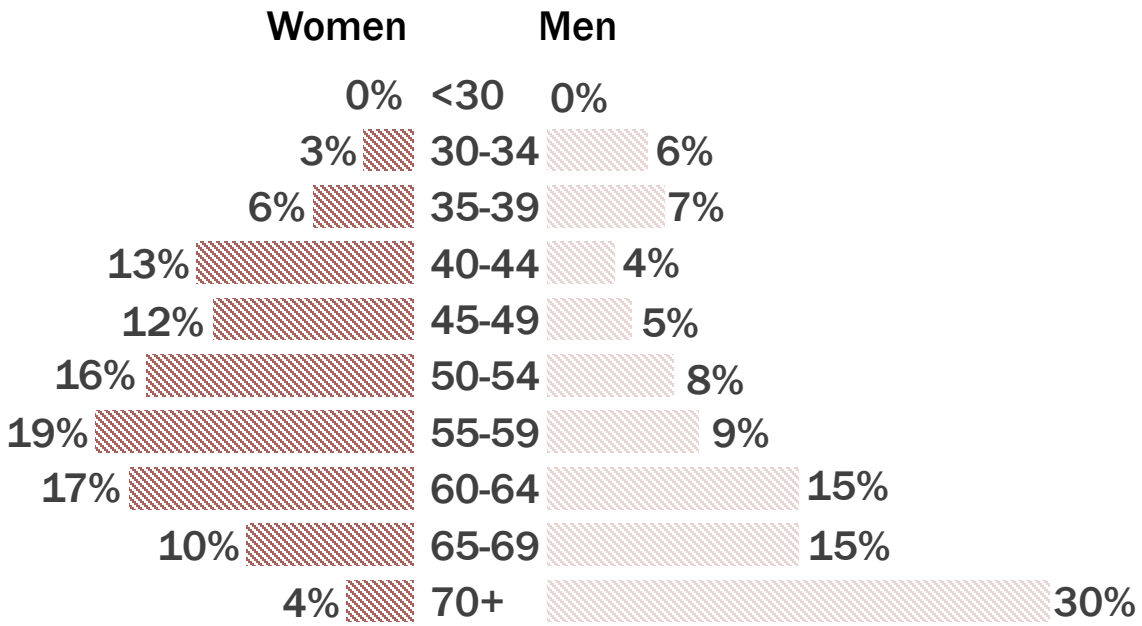
Age Distribution of Women Compared to Men (Sept 2024)

Participants of many different ages are enrolled both with and without HIV. Because of different enrollment histories in MACS and WIHS ages of men and women enrolled differ slightly.

People Living with HIV [3423]



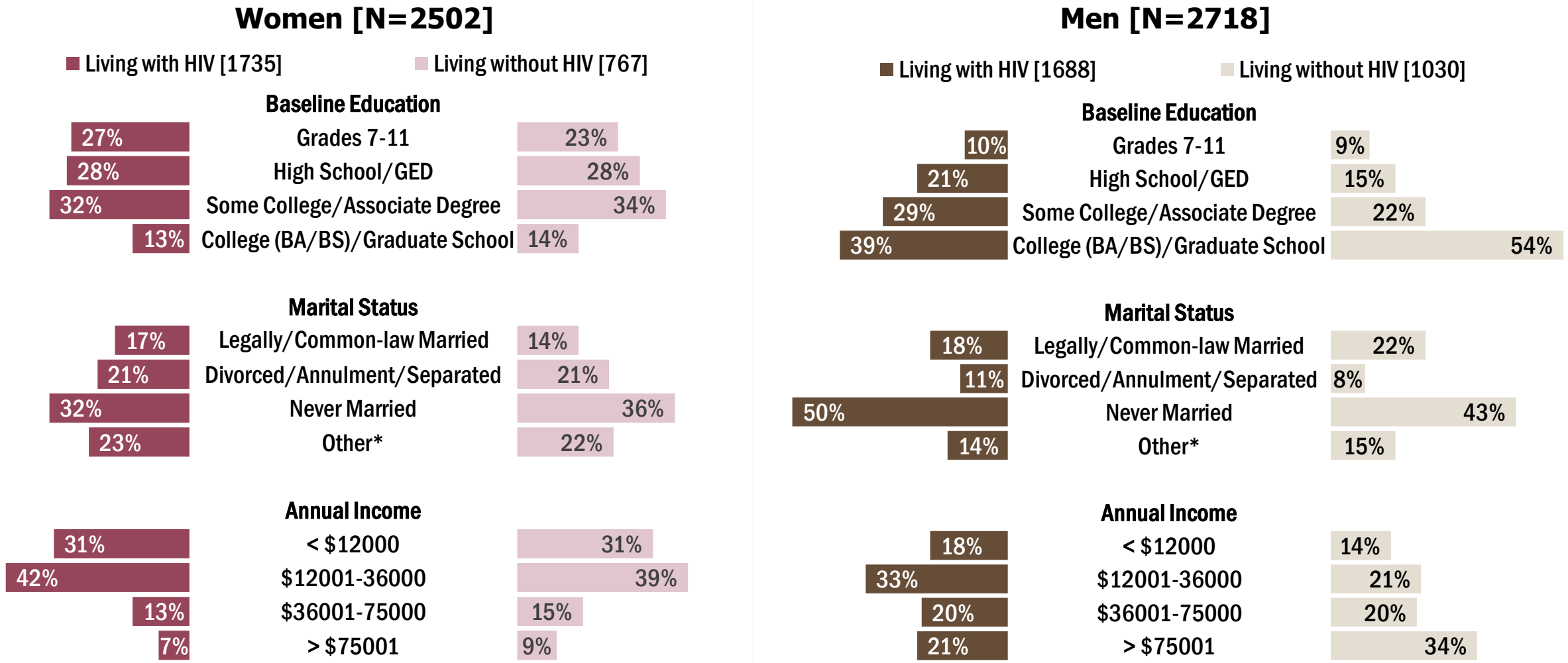
People Living without HIV [1797]



- Most of our participants with HIV are over 50 (69%), with 21% over 65.
- MWCCS is a study of aging with HIV but also includes 21% participants <45 years of age.
- Participants without HIV are similar by age to those with HIV (of the same sex), but there are age differences between men and women enrolled.

Participant Demographics (Sept 2024)

(total N=5220)



*Includes not married but living with a partner (n=396), widowed (n=277), and other (n=273)

MWCCS is studying many areas, including, but not limited to…

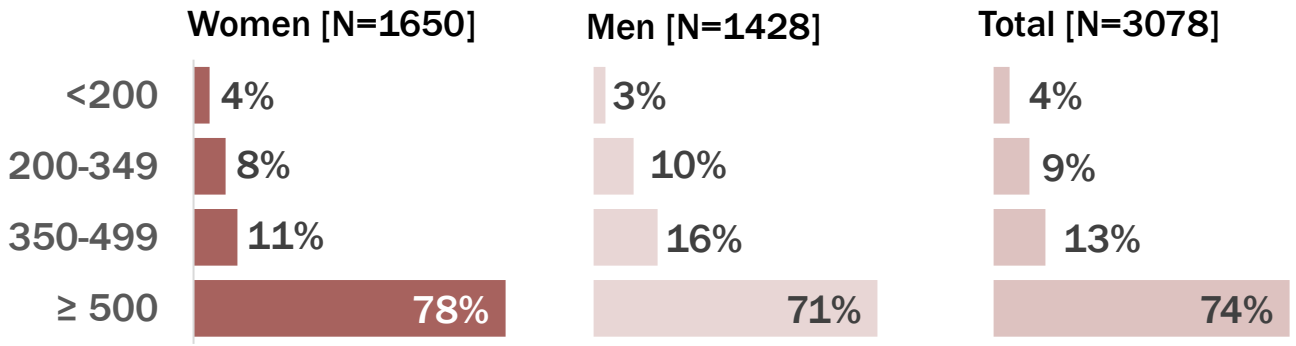
Cardiovascular and Pulmonary disease	Frailty and Physical disability	Psychosocial and Behavioral conditions
Sleep Quality	Cancer	Health disparities
Cognitive performance	HIV Pathogenesis	Metabolic, liver, and kidney dysfunction

For more information on our study aims:
https://statepi.jhsph.edu/mwccs/science/

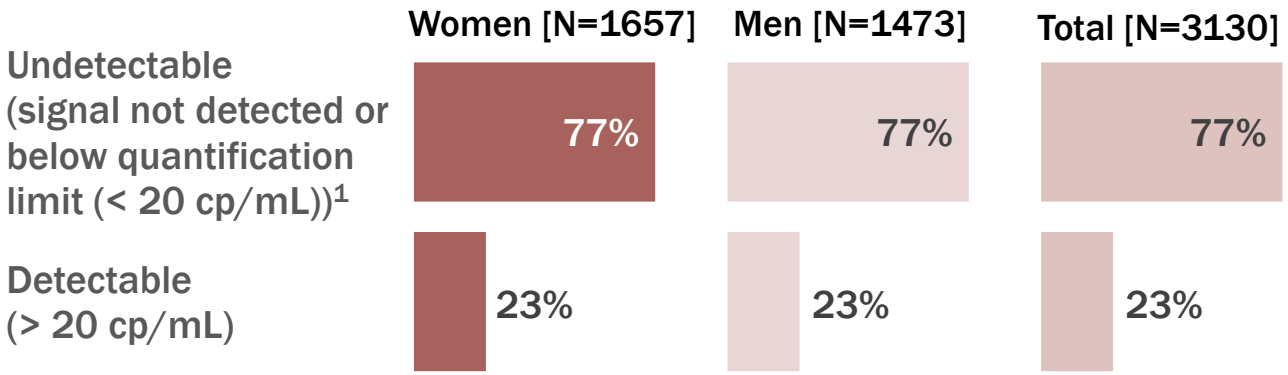
For information on our scientific working groups:
https://statepi.jhsph.edu/mwccs/working-groups/

CD4 Count and HIV RNA Viral Load among People Living with HIV in MWCCS (May 2024)

Current CD4+ T Cell Counts (cells/µl)



Prevalence of detectable HIV RNA

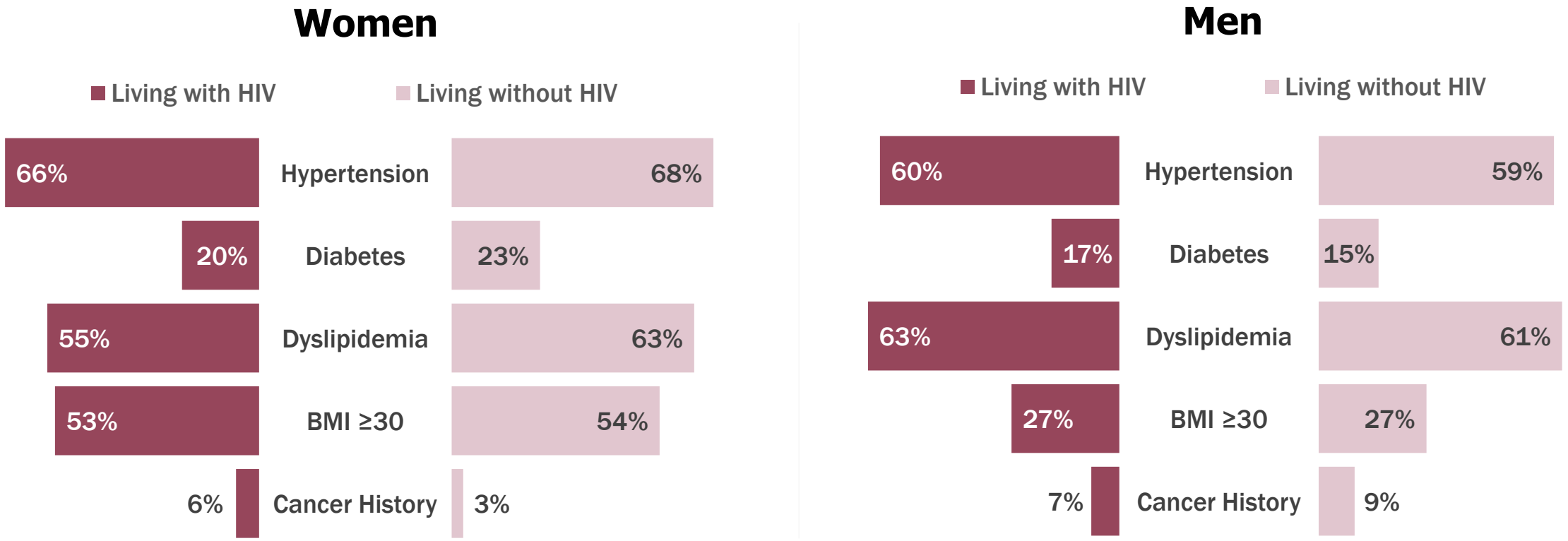


[1] 3 men had lower limit of 40 cp/mL (below limit for quantification)

Median HIV RNA (copies/mL) *among participants with detectable HIV RNA*

	N	Median HIV Viral Load	IQR
Women	384	75	34, 616
Men	340	60	37, 252
Total	724	69	35, 391

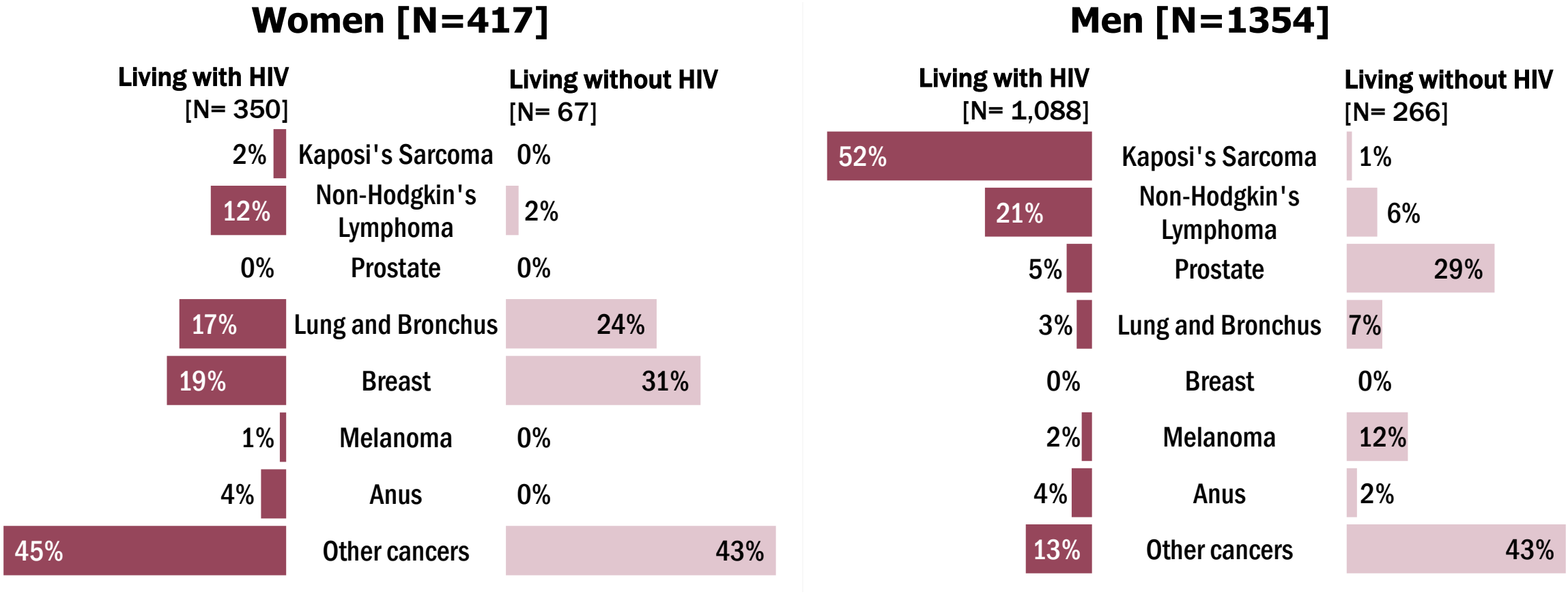
Chronic Health Indicators (Sept 2024)



Hypertension: SBP ≥ 130 or DBP ≥ 80 or use of hypertensive medications with ever self-reported diagnosis
Diabetes: At least two indications of hyperglycemia, including: fasting glucose ≥126 at 2 visits within 2.5 years (and no fasting glucose < 126 in between); fasting glucose >=126 and HbA1c >=6.5 either at the same visit or within 2.5 years; concurrent self-reported diabetes medication use and diagnosis at 2 visits within 2.5 years; concurrent self-reported diabetes medication use and diagnosis and either fasting glucose ≥126 5 or HbA1c ≥ 6.5 within 2.5 years. Revised by Metabolic WG Leaders Spring 2025.
Dyslipidemia: Total cholesterol ≥ 200 mg/dl or fasting LDL≥ 130 mg/dl or HDL < 40 mg/dl or fasting triglycerides ≥ 150 mg/dl or med use with self-reported diagnosis
Cancer History: Looking at all MACS and WIHS and MWCCS data 1984-2024 there were 1,771 incident (new) cancers diagnosed during study follow-up that can be analyzed in studies. The most common cancers diagnosed 1984-2024 include: Kaposi's sarcoma, non-Hodgkin's lymphoma, prostate, lung/bronchus, breast, melanoma of the skin, and anus. This slide summarized just the 317 cancer survivors currently active in the study.

Incident Cancers Detected 1984-2024[1]

Before effective therapies AIDS defining cancers like Kaposi's Sarcoma and Non-Hodgkin's Lymphoma were the most common cancers (and there are more of these in the men since that study started 10 years earlier). Now the most common cancers are lung, breast, and prostate.



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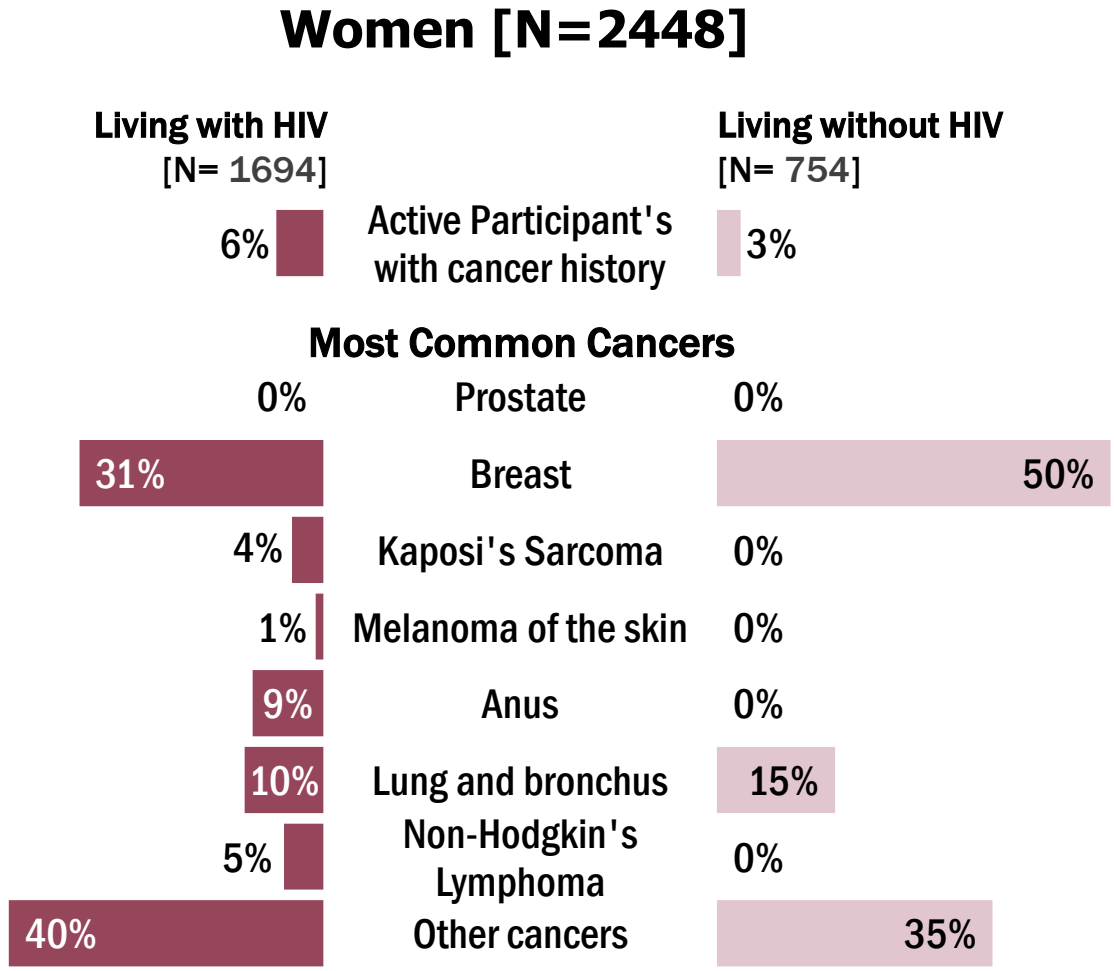
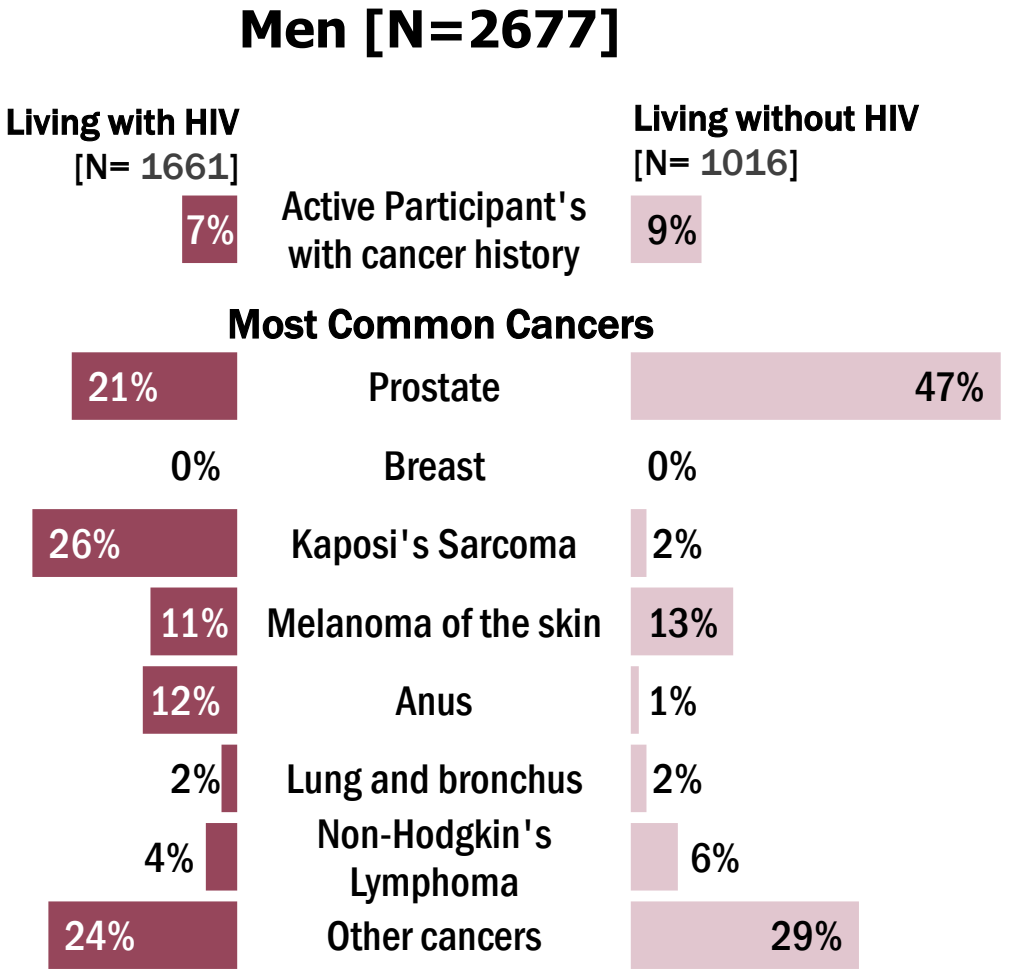
Active MWCCS Participants Living with Cancer[1]





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Psychosocial Measures[1] (Sept 2024)

	People Living with HIV [N=3176]				People Living without HIV [N=1642]					
	Women [N=1683]		Men [N=1493]		Women [N=749]		Men [N=893]		Total [N=4818]	
Scales	Median	IQR	Median	IQR	Median	IQR	Median	IQR	Median	IQR
Depressive Symptoms Score (CES-D 10)[2] (range 0-30)	6	(3, 10)	5	(2, 10)	6	(3, 11)	4	(1, 9)	5	(2, 10)
% CES-D≥10	28%		27%		34%		22%		27%	
R-UCLA Loneliness Short Form (range 3-9)[3]	4	(3, 6)	4	(3, 6)	4	(3, 6)	4	(3, 6)	4	(3, 6)
Social Support (MMOS-SS) (range 0-100)[4]										
Instrumental subscale	75	(44, 100)	63	(25, 100)	75	(25, 100)	75	(25, 100)	75	(25, 100)
Emotional subscale	75	(50, 100)	67	(42, 92)	67	(50, 100)	75	(50, 92)	75	(50, 92)

[1] Only participants who completed an ACASI in visit 104/103 are included in this table
[2] CES-D-10 is continuous, higher score indicates higher level of depressive symptoms; CESD ≥10 indicates depressive symptoms
[3] Loneliness measure is continuous; higher score indicates greater degrees of loneliness
[4] Social support scales are continuous; higher score indicates higher level of social support

Quality of Life Measures[1] (Sept 2024)

Medical Outcomes Survey (MOS) Quality of Life Measurement, Short Form-12 (SF-12)[2,3]

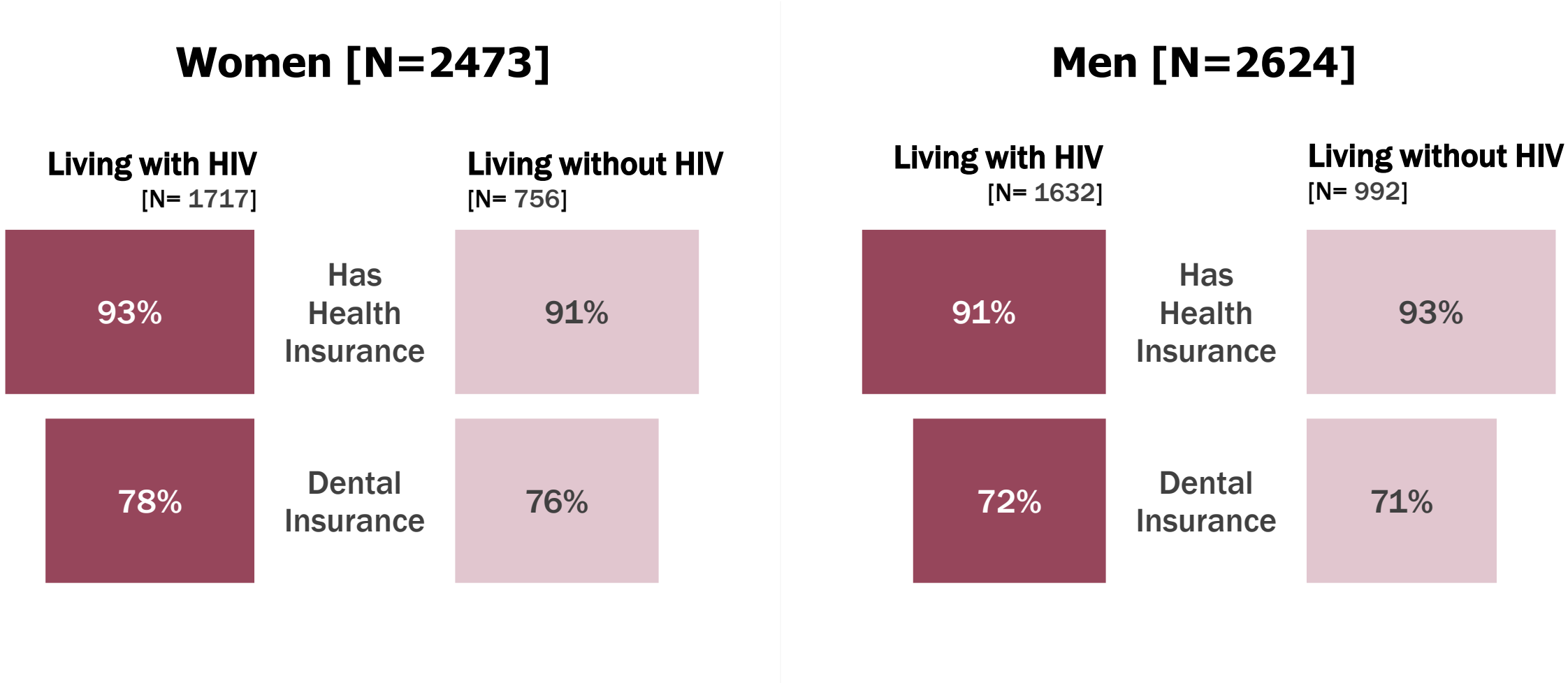
	People Living with HIV [N=3176]				People Living without HIV [N=1642]					
	Women [N=1683]		Men [N=1493]		Women [N=749]		Men [N=893]		**Total [N=4818]**	
	Median	IQR	Median	IQR	Median	IQR	Median	IQR	Median	IQR
SF-12 Summary Scores										
Physical Health Composite Score (PCS-12)[2] (range 0 - 100)	48	(38, 54)	52	(43, 56)	45	(35, 53)	53	(46, 56)	50	(41, 55)
Mental Health Composite Score (MCS-12)[2] (range 0 – 100)	52	(43, 58)	52	(43, 58)	50	(41, 58)	52	(44, 57)	51	(43, 58)
	N	%	N	%	N	%	N	%	N	%
Limitations in ANY Quality of Life domain[3]	1444	86%	1278	86%	669	89%	740	83%	4131	86%

[1] Only participants who completed an ACASI in visit 104/103 are included in this table

[2] Newly available for V104 with the introduction of the SF-12 instrument to measure quality of life. PCS and MCS scores are normed to a standard U.S. population, with scores greater than 50 indicating better than average quality of life.

[3] Any limitation is defined as a domain score <100 (maximum), for physical functioning, role functioning, pain, and social functioning, or a general health domain score <75, or an emotional wellbeing or vitality domain score <80

Healthcare Utilization (Sept 2024)



Ongoing Substudies Collecting More Intensive Measures Once or Twice (As of April 2025)

Substudy	What is this study measuring?	Enrollment Begin-End	Participants Enrolled So Far[1] (numerator)	Enrollment Goals (denominator)
CIDI	Mental Health and Substance Use Disorder	V102-V105	3144	3161[3]
CAT-MH	Mental Health	V102-V106	4711	4811[2]
BRACE	Brain Function	V102-V106	3928	4245[3]
PFT	Lung Health	V102-V105	3370	3849[3]
Fibroscan	Liver Health	V101-V106	4137	4811[2]
Stool Microbiome (SILVER)	Digestive (Gut) Health	V101-V106	3132	3962[3]
Echo	Heart Health	V103-V105	2322	2994[3]
Tooth Count	Oral Health	V103-V105	3713	4811[2]
BRACE+	Brain Function	V103-V106	3163	4245[3]

[1] Participants enrolled uses numbers from Reading Centers and NOTIs
[2] All eligible participants completing study visits in-person (estimated 85% of all study participants seen through V104)
[3] Enrollment goals specific for each substudy set by team leads: CIDI team, Microbiome team, ECHO leads, PFT, and BRACE/BRACE+ leads

Data and Specimen Collection

For more information on data collection forms or data/specimen collection procedures, please email the DACC at: mwccs@jhu.edu

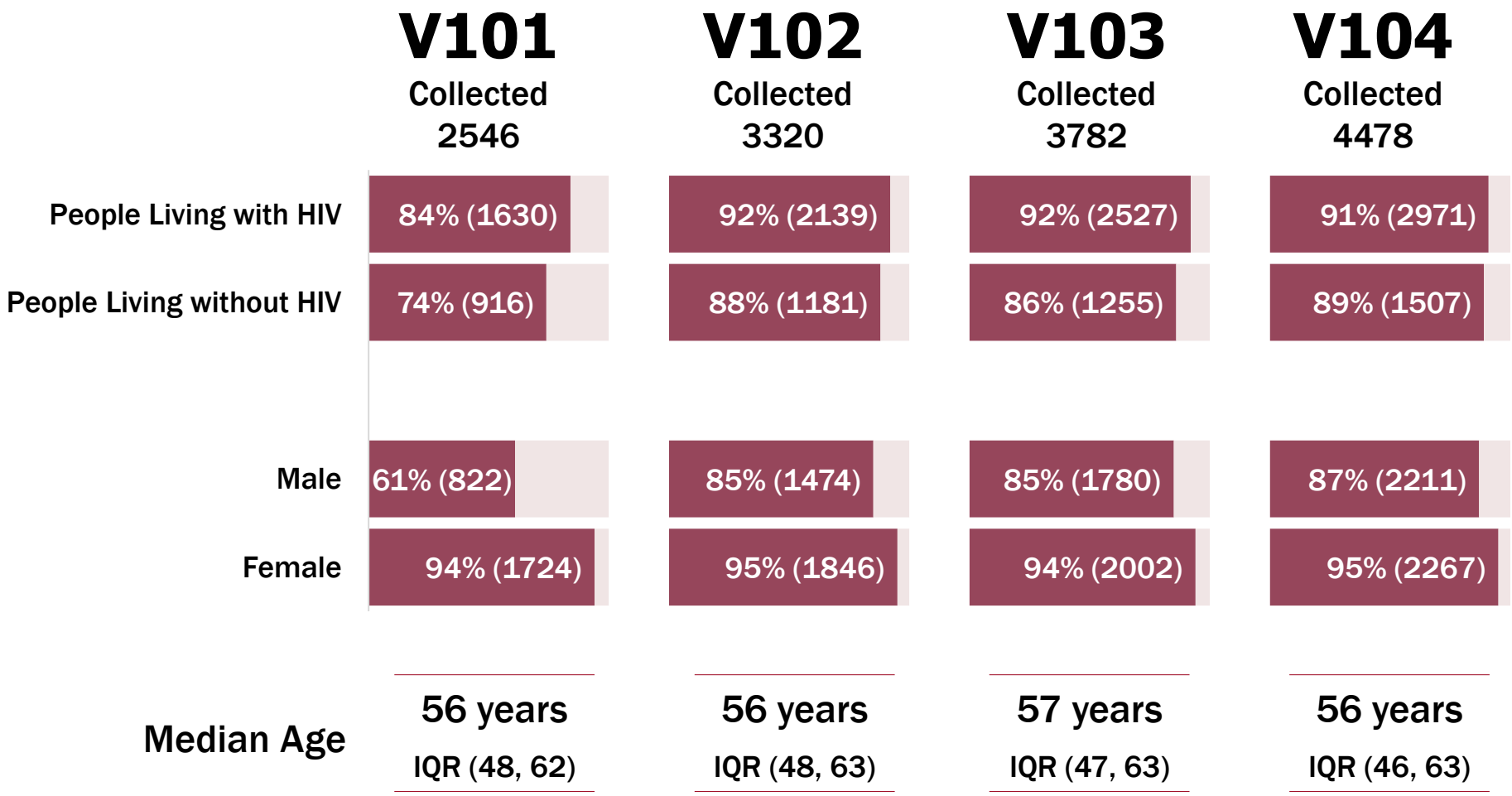
Data or Specimen available for:	
Demographics	☑
HIV medications and adherence	☑
Frailty, aging	☑
Neuropsychology	☑
Attitude and beliefs	☑
Healthcare utilization	☑
Quality of life, depression	☑
Behaviors (substance use and sexual behavior)	☑
Medical conditions and medication	☑

Data or Specimen available for:	
Chronic conditions and co-infection	☑
Lab results performed on: • Blood Chemistries • Complete Blood Count (CBC) • Hepatitis • T-Cell flow cytometry • HIV Viral Load • Lipid Panel	☑
Physical Examination performed	☑
Outcome verification and adjudication	☑
Biorepository of samples	☑
Registry matching: National Death Index, Cancer Registry, Renal Disease Registry	☑

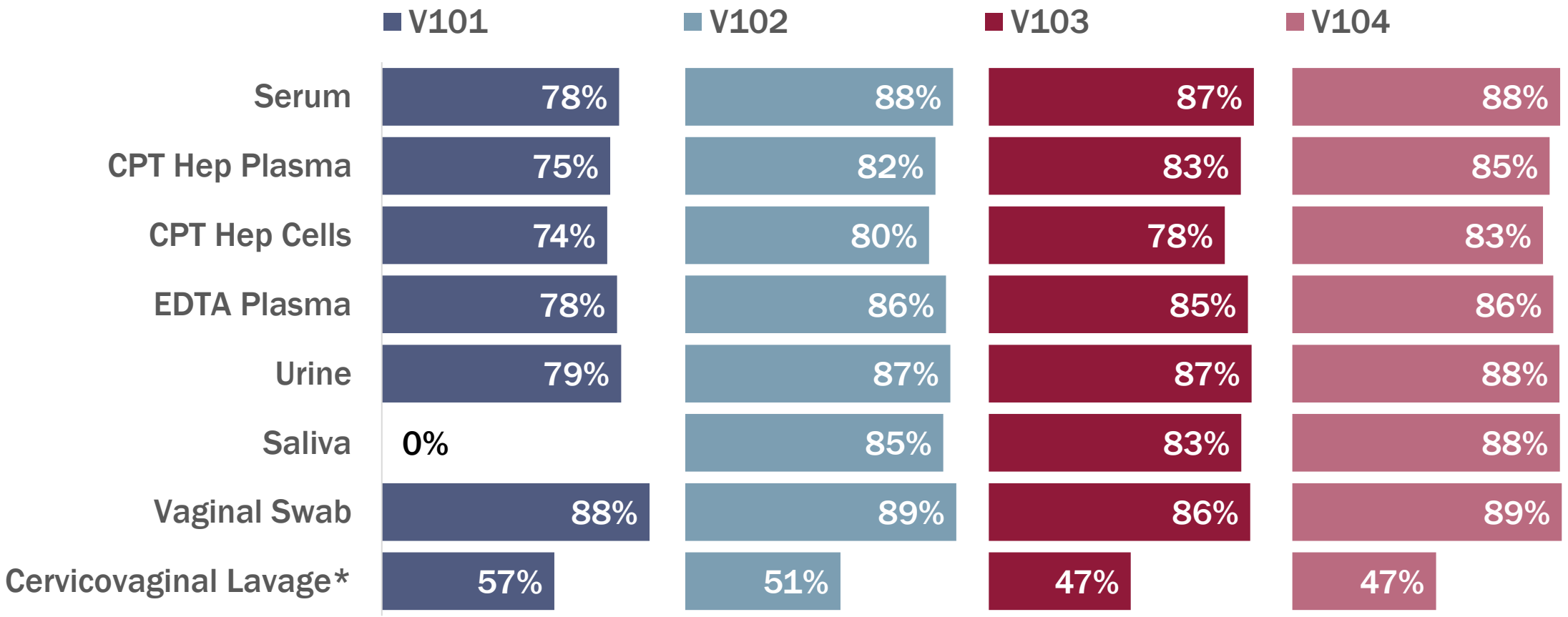
Number of Participants with Specimens Collected by Sex and HIV Status *through Sept 2024*

14126
(88% of all person-visits)
total person-visits with specimens collected

5.16 million
valid specimens available in the MWCCS repository



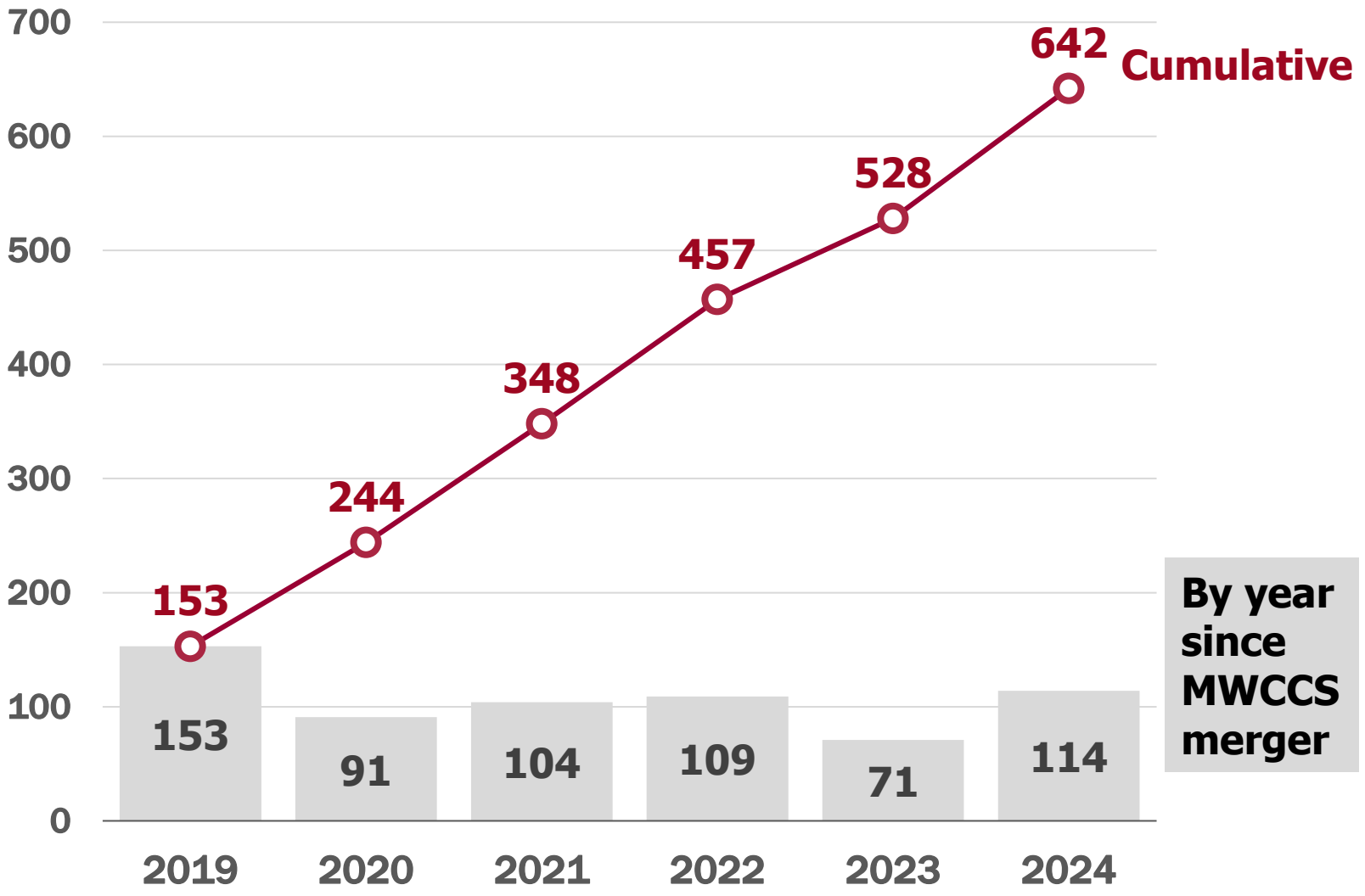
Specimens Collected Among Those with Visit Data (percent of participants) (Sept 2024)



*Cervicovaginal Lavage collected only when Pap completed (which is not every visit, depends on women's history)

MWCCS Publications

For our updated publications, please visit https://statepi.jhsph.edu/mwccs/news-publications/



3405

total publications since 1984!

MWCCS

MACS/WIHS COMBINED COHORT STUDY

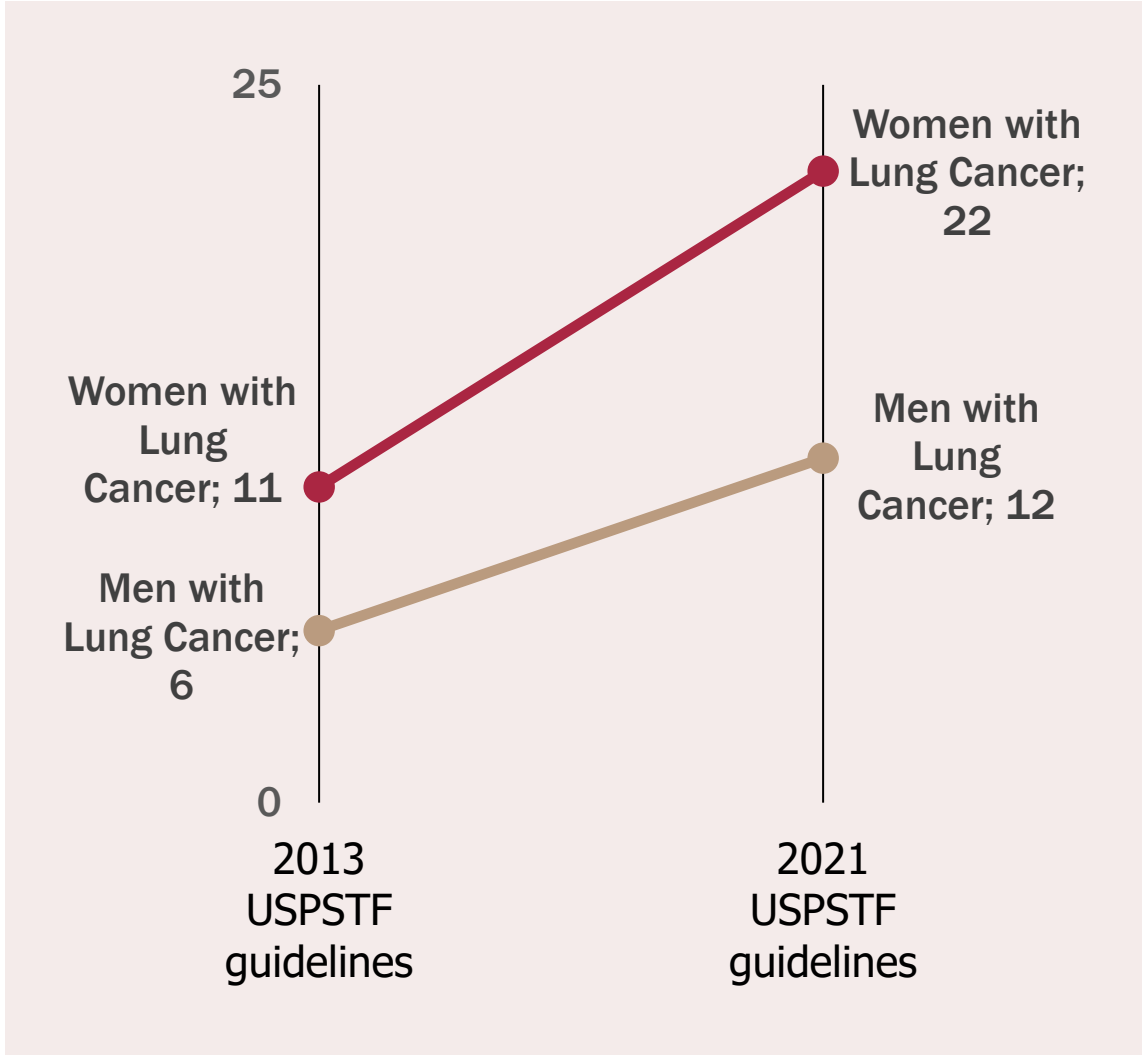
Selected Studies & Scientific Highlights

Characteristics of the MACS/WIHS Combined Cohort Study: Opportunities for Research on Aging With HIV in the Longest US Observational Study of HIV

(D'Souza, et al, 2021)

- Describes how the MACS and WIHS cohorts were merged into a unified data protocol.
- This study:
  - Harmonized definition for co-morbidities
  - Harmonized database and specimen collection of the two cohorts
  - Presented key characteristics of participants in the two cohorts
    - ❑ Demographics, race/ethnicity, gender
    - ❑ Co-morbidity profiles of participants
    - ❑ Health Behavioral and Mental Status Characteristics
- This will bring forth a new era in HIV/AIDS research as we learn more about the effect of HIV seropositivity, aging and other co-morbidities
- Please look at their findings in: https://pubmed.ncbi.nlm.nih.gov/33675224/

Optimal Lung Cancer Screening Criteria Among Persons Living with HIV (Sellers, et al, 2022)



Background:

PLWH are at a higher risk for lung cancer but were not well-represented in the National Lung Screening Trial which was the basis for 2013 USPSTF lung cancer screening guidelines

Analysis:

Retrospective analysis was done using MWCCS data

- 52 women and 19 men with lung cancer
- 1950 women and 1599 men without lung cancer

Findings:

- 11 women (22%) and 6 men (32%) met 2013 guidelines
- 22 women (44%) and 12 men (63%) met 2021 guidelines
- More PLWH with lung cancer are eligible for screening based on the 2021 USPSTF guidelines
- Increased sensitivity of 2021 guidelines attributed to decreased age and tobacco exposure thresholds in women

https://pubmed.ncbi.nlm.nih.gov/35125470/

Examples of Recent Articles (2025)

Article Title	Journal	Authors	Topic Area
Physical Activity, Cigarette Smoking, and Depression Among People with HIV DOI: 10.1007/s10461-025-04727-6	Aids and Behavior	SantaBarbara N.J. et al	Pulmonary Psychosocial and Behavioral
Mammography Screening Among Women Living With HIV in the United States: A Quantitative Analysis of the Role of Health Care Empowerment DOI: 10.1097/JNC.0000000000000563	J Assoc Nurses AIDS Care	Holman S. et al	Cancer
Coronary Artery Calcium and All-Cause Mortality in the Multicenter AIDS Cohort Study DOI: 10.1093/cid/ciaf207	Atherosclerosis	Suzuki T. et al	Cardiovascular
Healthy Aging and the Gut Microbiome in People With and Without HIV DOI: 10.1093/infdis/jiae644	J Infect Dis	Peters B.A. et al	Microbiome

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