



# NHBS Baltimore: The BESURE Study 2014 update

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# Overview

- NHBS/BESURE standard indicators project: using behavioral data for prevention planning
- HET data
  - Sample characteristics (HET1, HET2, HET3)
  - HIV status, unrecognized infection & testing (HET1, HET2, HET3)
  - Standard indicators (HET3)
  - Local questions (HET3)
- Notable analyses in progress (UAI in HET, HCV in MSM)
- Upcoming MSM4 cycle



# STANDARD INDICATORS (REVIEW)



# Goals

- Match NHBS items with local and national HIV prevention and service goals
  - NHAS
  - ECHPP
- Make it easier to use NHBS data locally



# Methods

- Review NHAS, ECHPP, local HIV-related goals in collaboration with stakeholders
- Identify priority list of goals
- Review NHBS surveys of all waves for potential related measures
- Identify consistent set of measures (46)
- Descriptive data for each measure
  - Total, by HIV status, by newly diagnosed HIV, by race/ethnicity



# Final items

- Socio-demographic characteristics (5)
- Injection and sex risk behaviors (6)
- HIV testing (5)
- HIV care (5)
- STIs (12) & Hepatitis (5)
- HIV community-based interventions (8)
- ...



# Example: HIV testing goals, HET

	HET1 (n=332)			HET2 (n=383)			HET3 (2013)		
	Total	Pos	New	Total	Pos	New	Total	Pos	New
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
HIV Test in past 2 years	196 (63.2)	6 (54.5)	5 (50.0)	245 (65.0)	11 (47.8)	3 (37.5)			
HIV Test in past year	138 (44.8)	5 (45.5)	4 (40.0)	166 (44.2)	5 (21.7)	2 (25.0)			
Obtained result of recent test	227 (87.0)	4 (57.1)	4 (66.7)	313 (92.9)	16 (76.2)	8 (61.5)			
Offered HIV test by health care provider in past year *	141 (57.8)	7 (70.0)	7 (70.0)	168 (60.2)	8 (40.0)	5 (41.7)			
Most common location last test**	CHC/PHC (37%)			CHC/PHC (35%)					
Most common reason for no HIV test in past year **	Afraid of finding out ... (28%)			Afraid of finding out ... (28%)					



# NHBS/BESURE data to date

	Wave 1	Wave 2	Wave 3
<b><i>Men who have sex with men (MSM)</i></b>	<b>June 2004- April 2005</b>	<b>July - Oct 2008</b>	<b>Sept-Dec 2011</b>
Data collection method	Venue-based	Venue-based	Venue-based
Total MSM in past year*	645	448	403
HIV prevalence	37.7%	37.5%	42.4%
Prevalence newly diagnosed HIV infection	58.4%	78.4%	69.6%
<b><i>Injection drug users (IDU)</i></b>	<b>Aug 2006 – Jan 2007</b>	<b>Sept – Dec 2009</b>	<b>Aug-Dec 2012</b>
Data collection method	Respondent Driven Sampling	Respondent Driven Sampling	Respondent Driven Sampling
Total IDU in past year recruited*	539	507	TBD
HIV prevalence	11.9%	16.2%	TBD
Prevalence newly diagnosed HIV infection	50.0%	41.2%	TBD
<b><i>Heterosexuals at high risk (HET)</i></b>	<b>July – Oct 2007</b>	<b>Sept – Dec 2010</b>	<b>2013</b>
Data collection method	Venue-based	Respondent Driven Sampling	Respondent Driven Sampling
Total recruited *	332	376	TBD
HIV prevalence	3.9%	6.1%	TBD
Prevalence newly diagnosed infection	83.3%	65.2%	TBD

\*Complete survey and HIV test

# **HETEROSEXUALS AT HIGH RISK, BALTIMORE NHBS DATA**



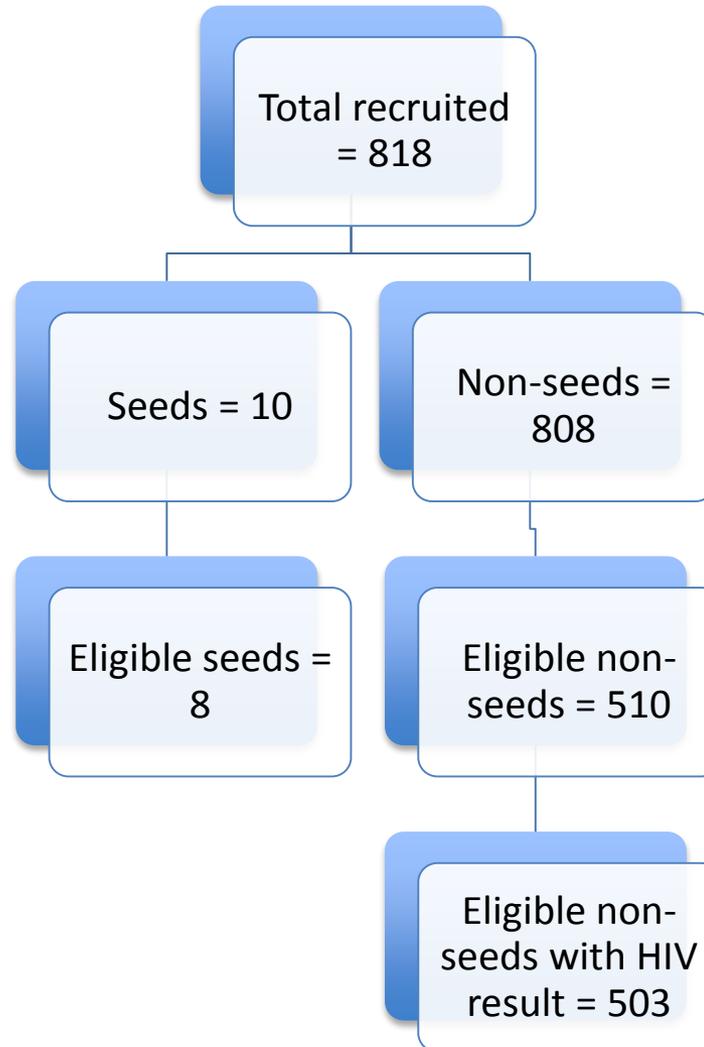
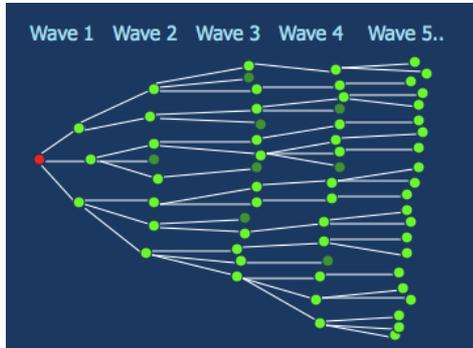
# HET overview

	Wave 1 Jul Oct 2007	Wave 2 Sept – Dec 2010	Wave 3 Sept – Dec 2013
<b>Data collection method</b>	<b>Venue-based</b>	<b>Respondent Driven</b>	<b>Respondent Driven</b>
Total HET recruited *	332	376	505
HIV prevalence	3.9%	6.1%	6.5%
Prevalence unrecognized infection	83.3%	65.2%	36.4%

\*Complete survey and HIV test



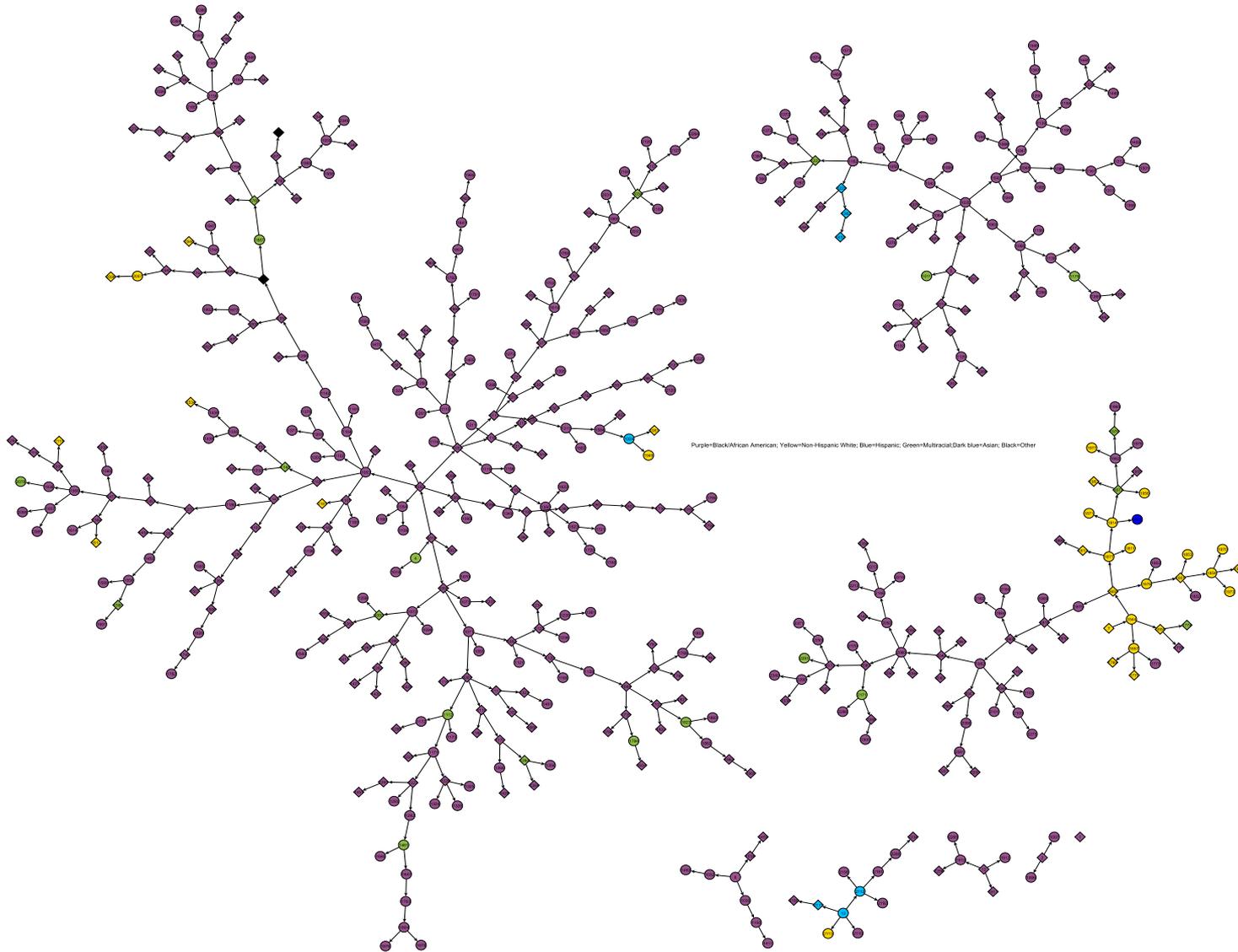
# HET recruitment 2013



Most common reason for non-eligible: duplicate/ repeat participants (n=233)



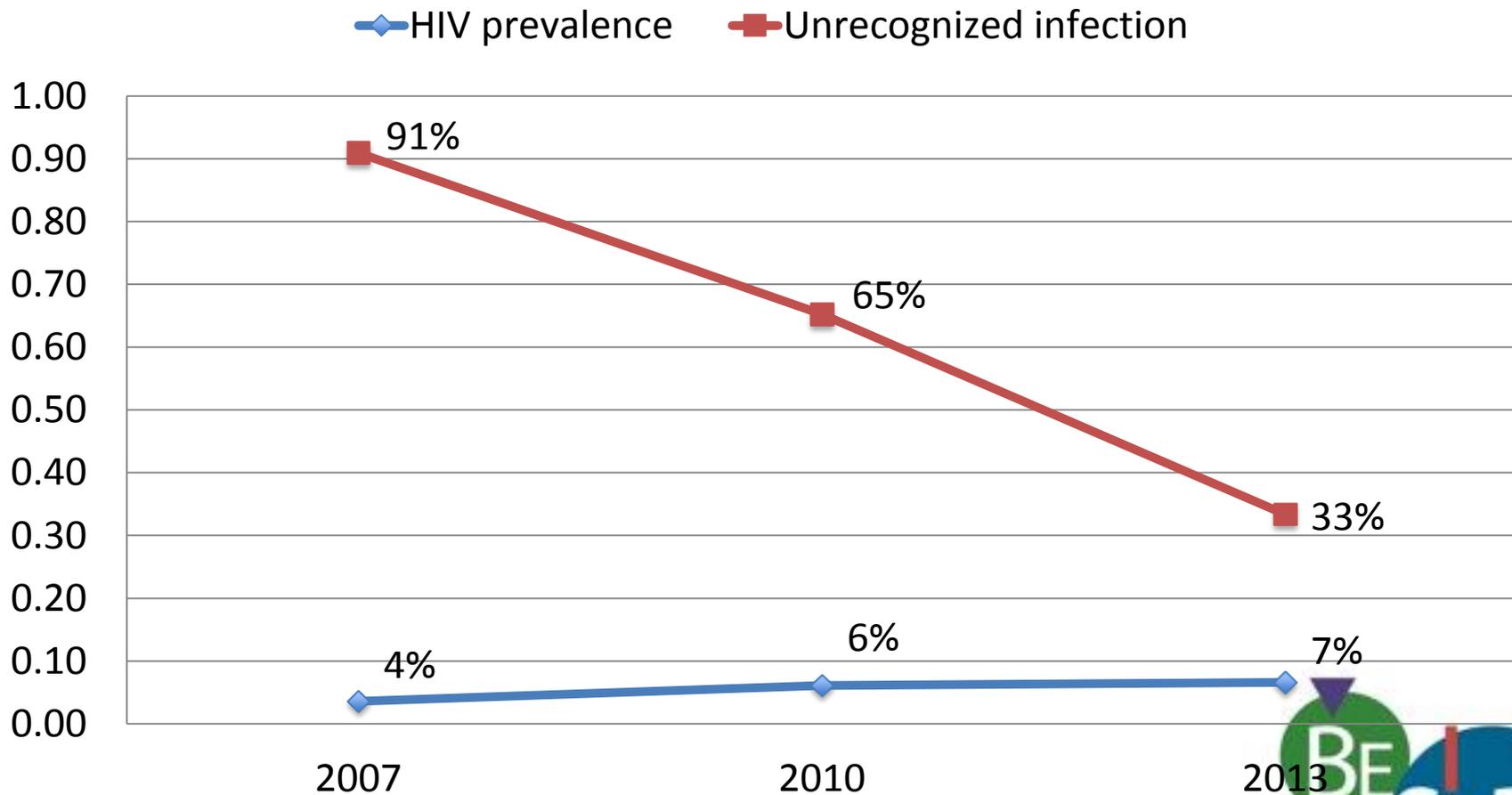
# HET recruitment 2013



# Sample characteristics: HET1, HET2, HET3

Characteristic		HET1 (n=332)	HET2 (n=376)	HET3 (n=505)
Gender	Male	55%	48%	52%
Race/Ethnicity	Black, not Hispanic	96%	80%	89%
	White, not Hispanic	4%	16%	6%
	Hispanic	0%	0%	1%
	Other	0%	2%	5%
Age	<25	26%	25%	18%
	25-34	27%	26%	29%
	35-44	32%	18%	17%
	45-60	16%	30%	37%
Education	High school or less	79%	86%	79%
	College or some	21%	14%	21%
Unemployed	Of total	35%	44%	40%
	Of workforce	43%	60%	58%
Median annual household income	(mid-point)	\$10,000-15,000	\$5000-\$10,000	\$10,000-\$12,500
Homelessness	Past year	23%	39%	17%

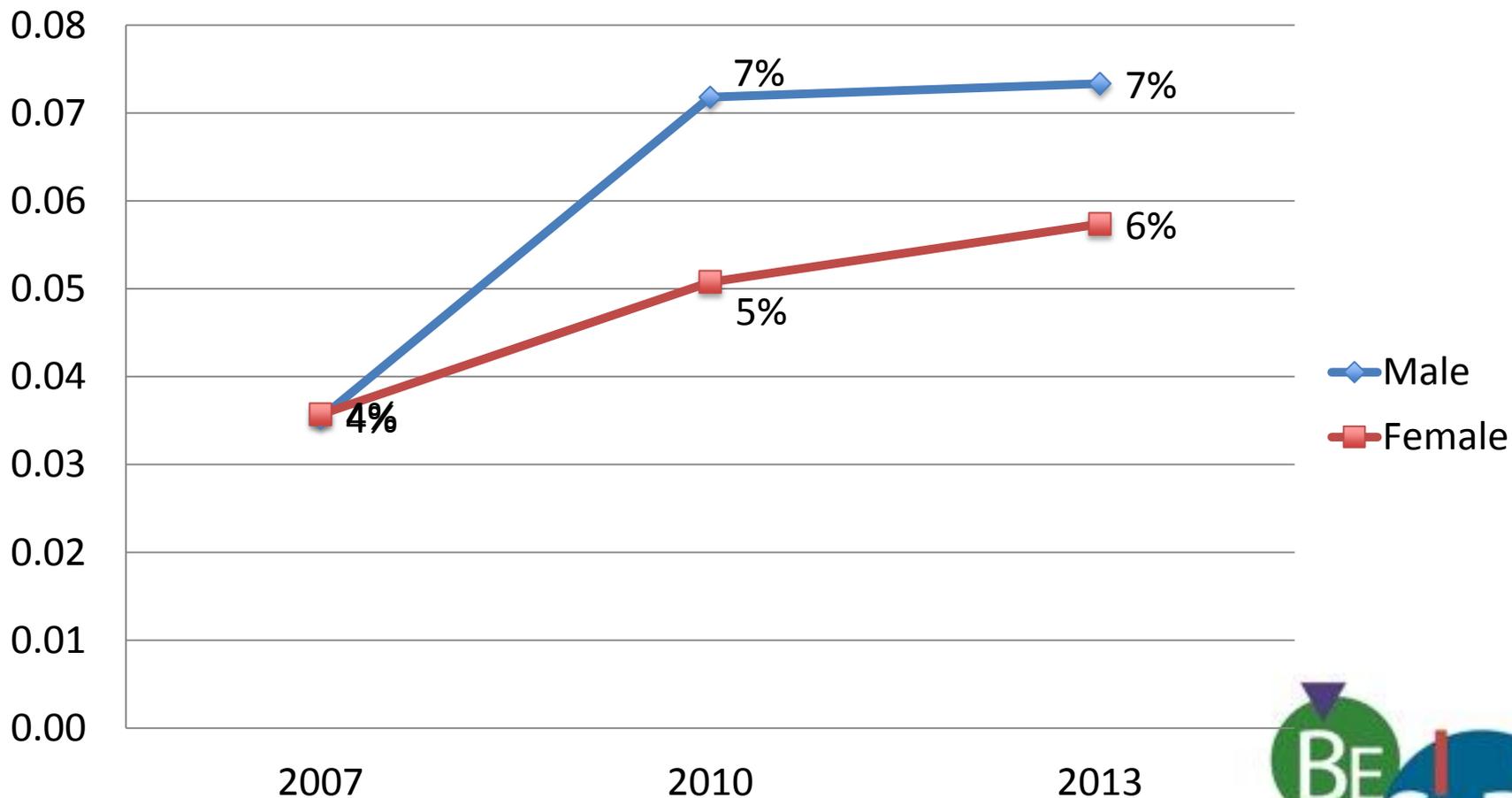
# HIV among heterosexual men and women, 2007-2013



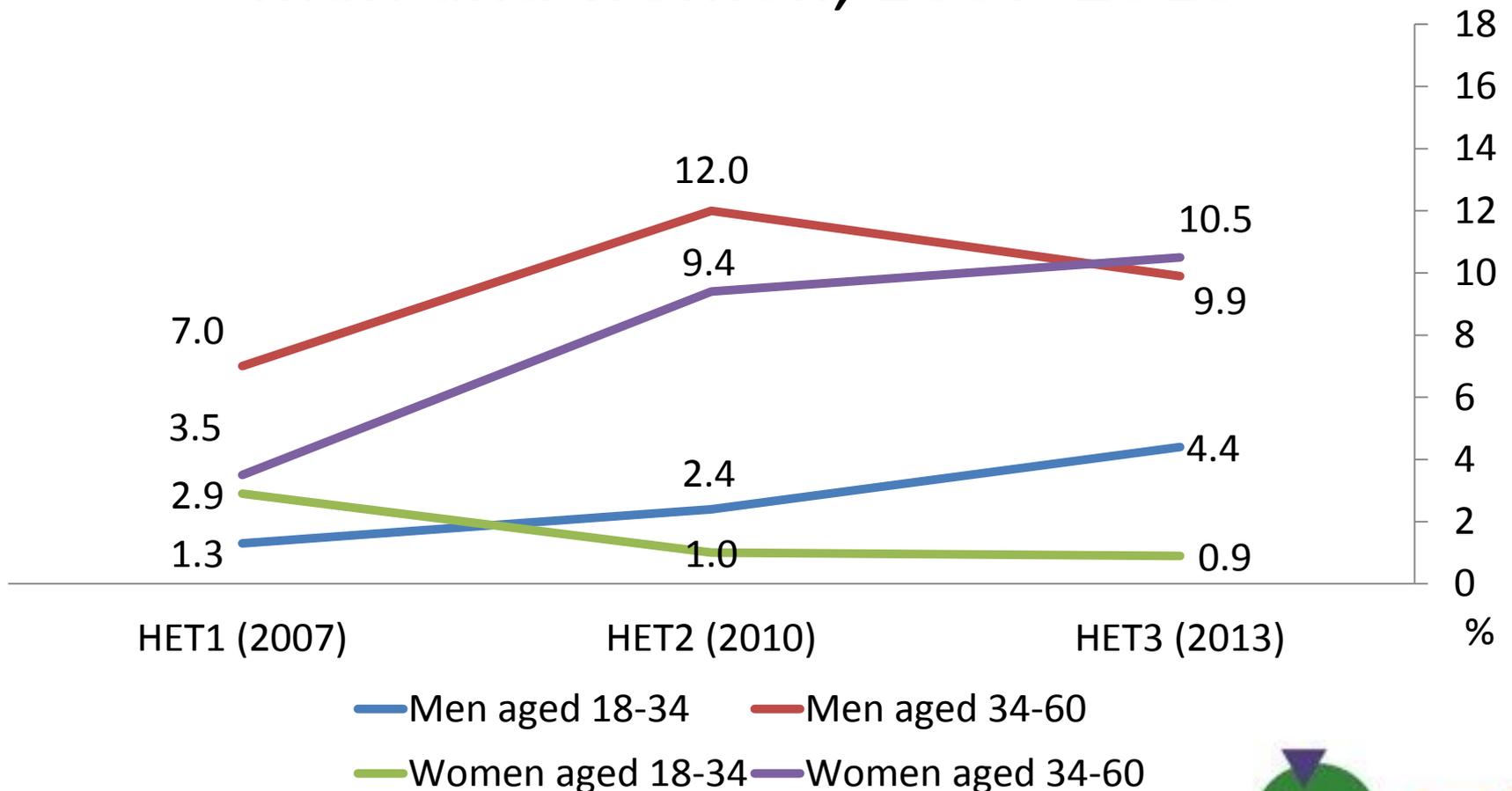
\*rapid HIV test started in 2013



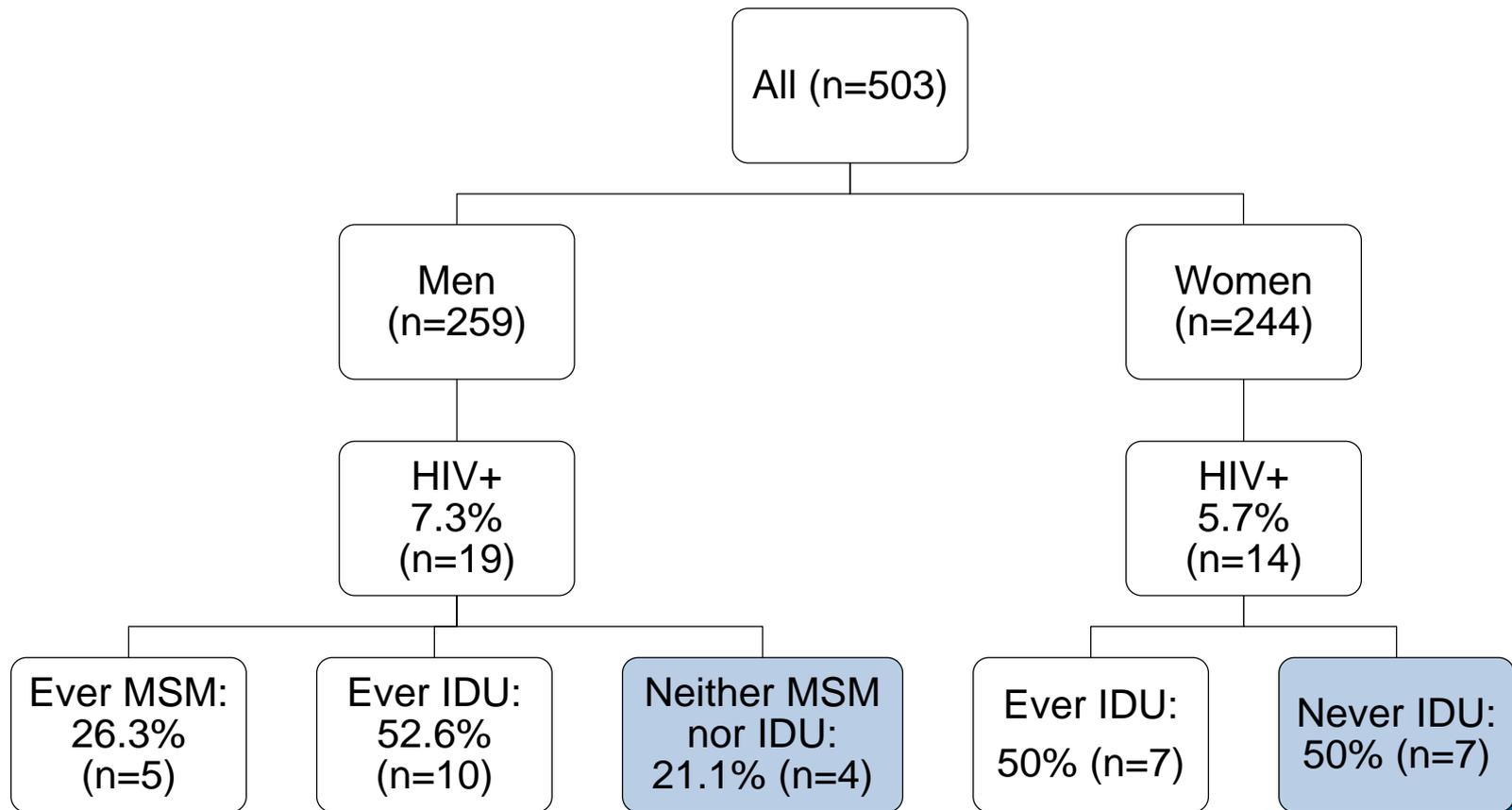
# HIV prevalence by gender among Baltimore heterosexual men and women: 2007-2013



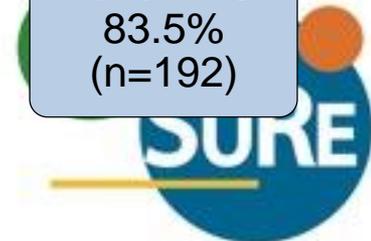
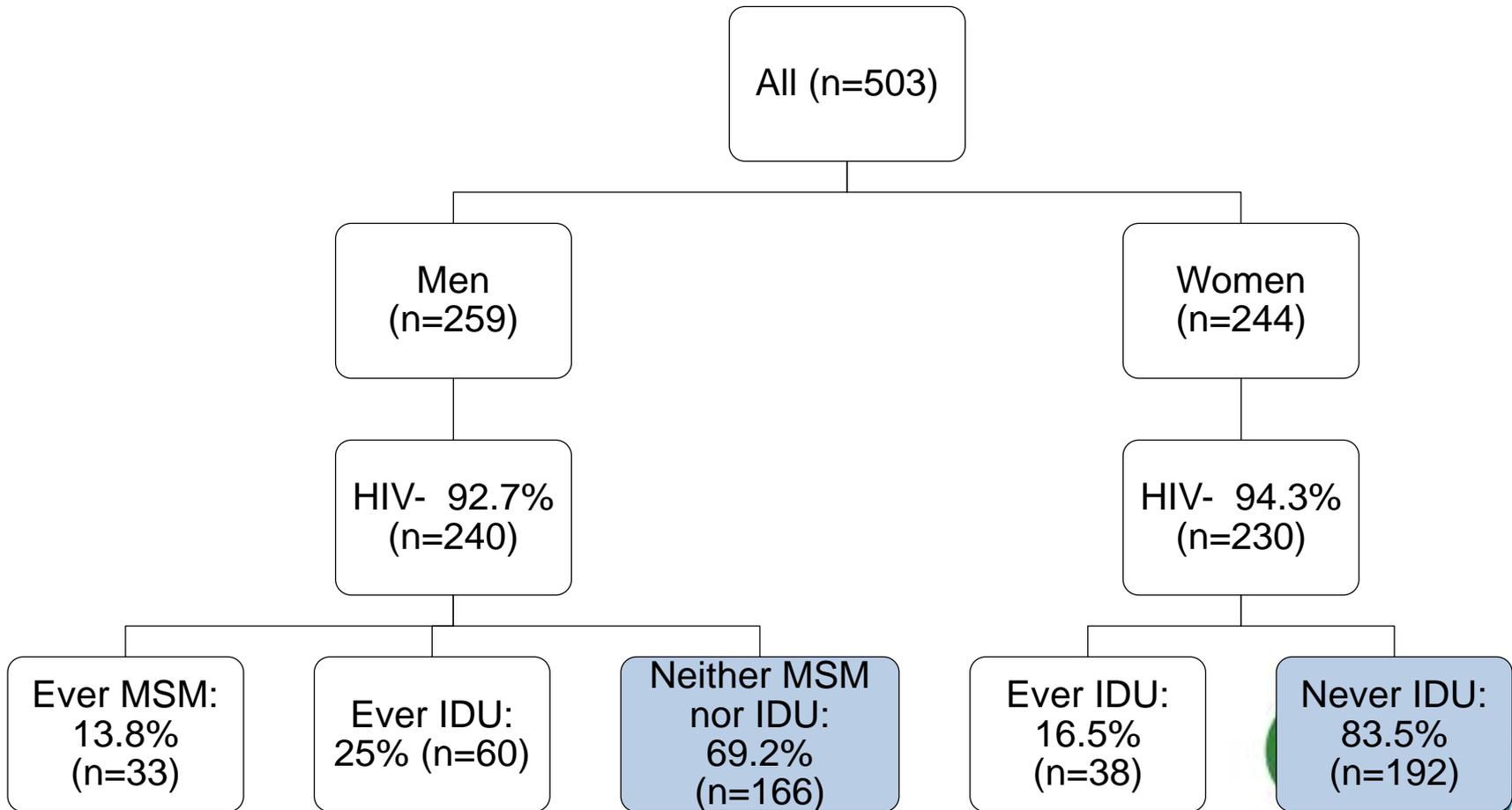
# HIV among African-American heterosexual men and women, 2007-2013



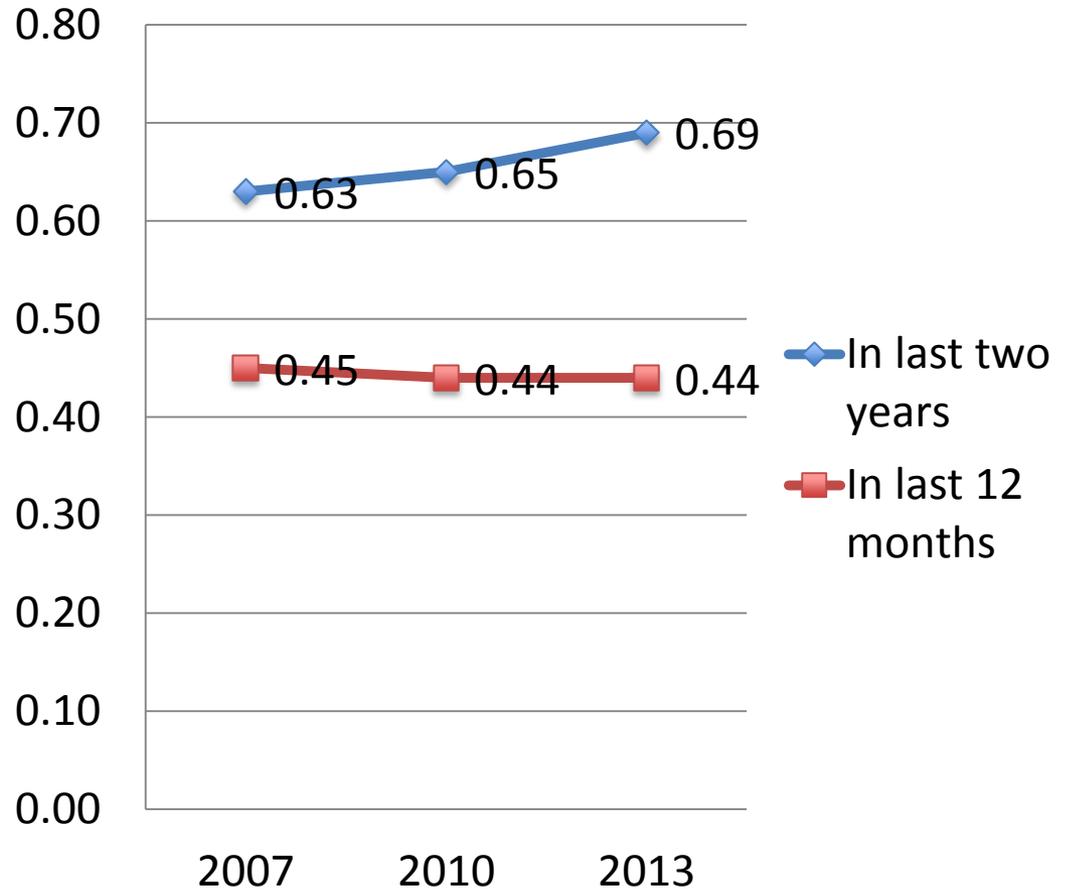
# IDU and MSM among HIV+ heterosexual men and women, 2013



# IDU and MSM among HIV-heterosexual men and women, 2013



# HIV testing among Baltimore heterosexual men and women: 2007- 2013



# STANDARD INDICATORS: HET3



# Sex and drug-related behaviors (HET3)

	% Total (n=503)	% HIV+ (n=33)	% New HIV+ (n=11)
Men who ever had sex with men ^	15%	26%	17%
In the past 12 months	6%	21%	17%
Injection drug use ever	23%	52%	46%
In the past 12 months	9%	12%	18%
Inject with used needle past yr ^^	67%	75%	100%
Any unprotected sex in past year *	90%	54%	82%
Any unprotected anal sex in past year *	88%	50%	82%

^ among males

^^ among those who injected in past year

\* note: not partner type specific



# HIV testing behavior (HET3)

	% Total (n=503)	% HIV+ (n=33)	% New HIV+ (n=11)
Ever had HIV test	91%	91%	73%
HIV Testing in Last Two Years <sup>^</sup>	69%	58%	64%
HIV Test in Past Year <sup>^</sup>	44%	39%	36%
Obtained Result of Last Test <sup>^^</sup>	93%	90%	75%
Offered HIV test by health care provider in the last 12 months <sup>^^^</sup>	57%	61%	44%
Location of last test	Public health clinic (39%), mobile (13%), emergency room (13%)		
Most important reason didn't get tested in past year	No particular reason (41%), Afraid of finding out (30%), Think at low risk (15%)		

<sup>^</sup>of total

<sup>^^</sup>among those ever tested

<sup>^^^</sup>among those who saw health provider in past year



# HIV care and partner services (HET3)

	% Total (n=503)	% HIV+ (n=33)	% New HIV+ (n=11)
Doctor's visit in the last 12 months for HIV care <sup>^^</sup>	-	89%	-
Antiretroviral use <sup>^^</sup>	-	79%	-
Asked to provide partner information for contacting after receiving first positive result <sup>^^</sup>	-	79%	-
Provided contact information of any partners when asked <sup>^^^</sup>	-	93%	-

<sup>^^</sup>among those who reported prior HIV positive test result

<sup>^^^</sup>among persons asked to provide partner information



# STD & HCV Testing/Diagnosis (HET3)

	% Total (n=503)	% HIV+ (n=33)	% New HIV+ (n=11)
Any STD test in the last 12m	41%	30%	27%
Any STD diagnosis last 12m	7%	3%	9%
Among those tested past 12m	18%	10%	33%
Ever diagnosed with Hepatitis	14%	46%	18%
Ever HCV test	71%	85%	73%
HCV test in the last 12m ^	39%	46%	38%
Ever diagnosed with HCV	17%	39%	25%
Diag. w/HCV in last 12m ^^	13%	0%	50%



^ Among those ever tested for HCV    ^^ Among those diagnosed with HCV

# HIV community-based interventions (HET3)

	% Total (n=503)	% HIV+ (n=33)	% New HIV+ (n=11)
Received free condoms in past year	53%	55%	52%
Used free condoms*	84%	86%	87%
Received sterile syringes in past year	5%	9%	18%
Used free syringes**	100%	100%	100%
One-on-one conversation with outreach worker/counselor about ways to prevent HIV (excluding HIV testing)	15%	36%	18%
Organized group session to discuss ways to prevent HIV (excluding discussions with friends)	8%	27%	0%



\*Among those who received free condoms, \*\*Among those who received free syringes, \*\*Among those who received free kits

Living situation

Economic situation

Exposure to violence

Cigarette smoking

Depression

Recent arrests

Reproductive health

HIV test location preferences

## **LOCAL QUESTIONS: HET3**



# Local questions (HET3): Living situation

Item	% Total (n=503)
Current living situation	
House I own	5.2%
House or apartment I rent	49.9%
Rent a room or space	22.1%
Stay with someone for free	13.7%
Supportive or transitional housing	4.2%
On the street, homeless, more than 2 place/week	3.6%
Other	1.4%
How long there	
Less than 1 year	32.3%
1-5 years	44.2%
More than 5 years	23.5%
Moved 2+ times in past year	18.3%
Child under 18 in household	50.3%
Concerned about needing a new place to live:	
Very, extremely, always	42.2%



# Local questions (HET3): Economic situation

Item	% Total (n=503)
Unsure where money would come from in past year: About half, most, always	50.1%
In past year, money from:	
Full time job	23.1%
Part time job	21.3%
Odd jobs	43.3%
Day labor	10.1%
Social security	26.6%
Food stamps	69.0%
Welfare/ public assistance	26.6%
Unemployment	4.6%
Selling drugs	7.8%
Family/ friends	56.1%
Sex partners (not exchange)	38.8%
Ever traded sex in exchange for money, drugs, gifts, ...	34.2%
Past year, traded sex in exchange...	23.3%



# Local questions (HET3): Smoking, violence, arrest, depression

Item	% Total (n=503)
Ever smoked cigarettes	83.1%
Currently smoke cigarettes	70.2%
Threatened with a weapon such as gun/knife/club in past year	14.1
Carried a weapon such as gun, knife, club in past month (average # of days)	2.0
Arrested in past year	23.7%
Depressive symptoms (CES-D 10)	42.0%



# Local questions (HET3): Reproductive health and HIV

Item	% Total (n=503)
Pregnant at least once in lifetime (among women)	90.5%
Birth control used during last sex (among women)	
None	51.0%
Birth control pills	5.4%
Condoms	0.2%
An IUD or implant	4.1%
A shot, patch, or birth control ring	4.5%
Withdrawal or some other method	16.1%
Most likely place to go for an HIV test	
Public health clinic	48.3%
Private doctor's office	16.7%
Emergency room	10.5%
Mobile/Outreach	9.9%
Other	14.6%



# HET3 Limitations

- Cross-sectional: not same samples, not causal
- Sample characteristics differ across waves
- HET1 procedures different from HET2, HET3
- Voluntary enrollment
- Self-report
- Not RDS adjusted



# Discussion: HET3

- High HIV prevalence relative to general population
- Overlapping epidemics between HET, IDU, and MSM
- High degree of social and economic instability
- Competing health and social needs
- Recent HIV testing may be worth attention



Unprotected anal intercourse among heterosexuals at high risk for HIV  
Hepatitis C infection among MSM

## **ONGOING ANALYSES**



Acknowledgments to Trang Nguyen, Tiffany Traylor, participants and study team

# **FACTORS ASSOCIATED WITH UNPROTECTED ANAL SEX: HET2**



# Research question

- Reported unprotected anal sex in HET3
  - Among men: 40.5%
    - RDS adjusted: 41.5% (30.9, 51.0)
  - Among women: 40.4%
    - RDS adjusted: 38.3% (29.4, 47.2%)
- What characteristics associated with unprotected anal sex among heterosexuals at high risk for HIV?



# Characteristics associated with unprotected anal sex among males

	Crude Odds Ratio (n=185)
Homeless in past year	<b>2.9</b>
Same sex partner in past year	<b>42.1</b>
Casual sex with heterosexual partners	<b>3.7</b>
Exchange sex with heterosexual partners	<b>4.0</b>
Number of sex partners	
1 partner	Ref.
2-3 partners	1.6
4-7 partners	<b>6.2</b>
8+ partners	<b>8.9</b>
Heroin use	<b>2.5</b>
Prescription drug use	<b>2.6</b>

Bold are significant at  $p < 0.05$ .

Age, education, marital status, income, arrests, and crack use did not differ between groups.



# Characteristics associated with unprotected anal sex among females

	Crude Odds Ratio
High school grad, GED or higher	<b>0.4</b>
Same sex sex	<b>4.6</b>
Casual sex with heterosexual partners	<b>2.6</b>
Exchange sex with heterosexual partners	<b>6.5</b>
Number of sex partners	
1 partner	Ref.
2-3 partners	<b>4.0</b>
4-7 partners	<b>9.3</b>
8+ partners	<b>12.5</b>
Crack or heroin use	<b>3.7</b>
Prescription drug use	<b>3.5</b>

Bold are significant at  $p < 0.05$ .

Age, marital status, income, homelessness, and arrests did not differ between groups.



# Characteristics independently associated with unprotected anal sex: HET3

- Among males:
  - Homeless in past year (A.O.R. 3.2)
  - Same sex sex (A.O.R. 16.8)
  - Increasing number of sex partners (4-7 A.O.R. 5.6; 8+ A.O.R. 7.6)
- Among females:
  - High school graduation (A.O.R. 0.3)
  - Homeless in past year (A.O.R. 0.3)
  - Increasing number of partners (2-3 A.O.R. 3.7; 4-7 A.O.R. 7.2; 8+ A.O.R. 7.8)
  - Crack or heroin use (A.O.R. 3.2)



# Prevention implications

- Confirms prior reports of high prevalence of UAI among heterosexuals at high risk for HIV
- Important to recognize efficiency of potential HIV transmission via UAI
- Need to broaden heterosexual sexual health promotion and HIV/STI prevention to ensure that risks and prevention strategies for anal intercourse are adequately and appropriately addressed.



Acknowledgements to Maria Lulis Navarro, Christine Powell, Sabriya Linton, participants and study team

# **FACTORS ASSOCIATED WITH HEPATITIS C INFECTION: MSM3**



# Research question

- Results of serological testing show HCV prevalence of 14.3 among MSM
  - Among never IDUs: 10%
  - Among current and former IDUs: 60%
  - Ever diagnosed with HCV: 5.8%
  - Unrecognized HCV infection: 60.7%
- What characteristics are associated with HCV infection among among MSM?



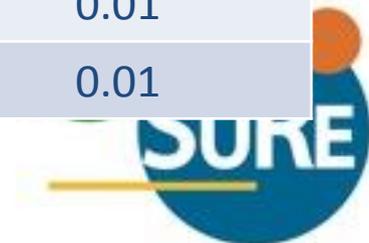
# Prevalence of HIV and HCV co-infection among MSM

	Europe (%)	San Francisco (%)	Baltimore (%)
HIV Prevalence	----	23.2	43.25
HCV Prevalence	0-23	4.5	14.3
• Among IDU	25-50	15.5	60.0
• <b>Among never-IDU</b>	----	2.3	<b>9.9</b>
• Among HIV-positive	6.6	15.7	21.9



# Characteristics associated with HCV infection among never-IDU MSM

Variable	Crude odds ratio	p-value
<i>Socio-demographics</i>		
Age		
• 45-54	<b>4.71</b>	0.002
• 55+	<b>11.13</b>	0.001
HIV positive	<b>4.26</b>	<0.001
Employment Full time	0.41	0.06
<i>Sexual behavior</i>		
Any Exchange MSM sex partners*	<b>2.64</b>	0.006
Multiple Exchange MSM sex partners*	<b>2.51</b>	0.01
Multiple Casual MSM sex partners*	<b>2.64</b>	0.01
UAI with Multiple MSM partners*	<b>2.61</b>	0.01



# Sex behaviors associated with HCV among never IDU MSM

Sexual behavior in the past 12 months	Adjusted odds ratio*	95% CI	p-value
<b>Any exchange MSM sex partners</b>	<b>2.24</b>	1.01 – 4.91	<0.05
Multiple exchange MSM partners	2.14	0.91 – 4.87	<0.1
<b>Multiple casual MSM sex partners</b>	<b>3.01</b>	1.35 – 7.19	<0.05
UAI with multiple MSM partners	1.76	0.73 – 4.06	0.19

\* Each model adjusted for age and HIV status



# Public health implications

- Risk of HCV transmission and need for testing and treatment among MSM
- Attention to those with multiple casual or exchange partners
- Growing evidence of sexual transmission of HCV; need to better identify contexts and dynamics of transmission in this population
- Potential of age cohort effect
- High HCV/HIV co-occurrence. Sample also uniquely includes a small set of MSM with HCV infection but no HIV infection.



MSM4 – Coming Summer 2014!

# **BESURE NEXT STEPS**



# BESURE next steps

- Continued analysis
- Dissemination activities
- Round 4: MSM4 2014



# MSM4: Timeline and Plan

- April 2014: Concluding formative research
- May 2014: Operational preparations, community awareness, continued community engagement, and additional venue explorations
- June 2014: Begin venue based survey and HIV testing
- December 2014 or hopefully sooner: Conclude



# MSM4: Key change under consideration

- Rapid instead of standard HIV testing for BESURE?
  - At venues?
  - Provide results on site?
  - Option to receive results later?
  - Barrier to participation?
- Pros and cons...
- What do you think?



**IN CONCLUSION...**



# How to find our data

- DHMH website

<http://phpa.dhmh.maryland.gov/OIDEOR/CHSE/SitePages/behavioral-surveillance.aspx>

- Facebook! Coming soon.

- Contact us

– Danielle German [dgerman@jhsph.edu](mailto:dgerman@jhsph.edu)

– Christine Powell [cpowell@jhsph.edu](mailto:cpowell@jhsph.edu)

– Colin Flynn [colin.flynn@maryland.gov](mailto:colin.flynn@maryland.gov)



# Coming very soon!

Baltimore National HIV Behavioral Surveillance System  
2011 MSM Cycle III Data Report



BESURE Study  
April, 2014



# With sincerest thanks to:

- Study participants
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- DHMH state lab staff
  
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- Intern: Eric Filemyer
- Field Supervisor: Louis Spencer
- Data Manager: Ju Park / Sabriya Linton
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