



# The BESURE Study 2012 update

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# Overview

- IDU, HET
  - Overview of sample characteristics and types of data
- MSM
  - Overview of sample characteristics and types of data
  - HIV prevalence and unrecognized infection
  - Racial disparities
  - Focused analyses in progress
    - Stigma and discrimination
    - Hepatitis C infection
- Next Steps



# **IDU: 2006 AND 2009**



# IDU overview

	Wave 1 Aug 2006 – Jan 2007	Wave 2 Sept – Dec 2009
Data collection method	Respondent Driven	Respondent Driven
Total IDU in past year recruited *	539	507
HIV prevalence	11.9%	16.2%
Prevalence unrecognized infection	50%	48%

\*Complete survey and HIV test



# Sample characteristics: IDU1 and IDU2

Characteristic		Wave 1 (n=539)	Wave 2 (n=507)
Gender	Male	61%	73%
	Female *	38%	27%
Race/Ethnicity	Black, not Hispanic *	54%	80%
	White, not Hispanic	41%	16%
	Other	6%	4%
Age	18-34	27%	14%
	35-44	42%	23%
	45 or older *	31%	64%
Education	Less than high school	48%	43%
	High school or more	52%	57%
Homelessness past year	Yes	58%	54%
Arrested in past year	Yes	47%	44%
Hepatitis C diagnosis	Yes *	29%	50%

\*  $p < 0.05$



# Sample characteristics: IDU1 and IDU2

Characteristic		Wave 1 (n=539)	Wave 2 (n=507)
Years since first IDU	10 or more *	61%	86%
Daily IDU	Yes *	79%	90%
Crack use past year	Yes	46%	43%
Used someone's needle past year	Yes *	53%	28%
Always used sterile needle past year	Yes	24%	25%
Used someone's cooker, cotton, water past year	Yes	64%	69%



See 2010 presentation

# **CHARACTERISTICS ASSOCIATED WITH HIV INFECTION AND UNRECOGNIZED INFECTION: IDU2**



# Summary

- Limitations:
  - Cross-sectional, not causal
  - Voluntary enrollment
  - Self-report
  - Comparison to IDU1 (Different characteristics)
- Prevention implications:
  - Low HIV risk behaviors among HIV-positive IDUs
  - Need to counter remaining barriers to HIV testing
  - Increase “always sterile needle” and attention to non-syringe equipment sharing
  - High arrest and homelessness



# HET: 2007 AND 2010



# HET overview

	Wave 1 July – Oct 2007	Wave 2 Sept – Dec 2010
Data collection method	Venue – based	Respondent Driven
Total recruited *	332	<b>383</b>
HIV prevalence	3.9%	6.3%
Prevalence unrecognized infection	83.3%	62.5%

\*Complete survey and HIV test



# Sample characteristics: HET1 and HET2

Characteristic		Wave 1 (n=332)	Wave 2 (n=383)
Gender	Male	54%	48%
	Female	46%	52%
Race/Ethnicity	Black, not Hispanic *	89%	95%
	White, not Hispanic	4%	2%
	Other	8%	3%
Age	18-24	24%	25%
	25-34	27%	26%
	35-44 *	33%	17%
	45 or older *	16%	32%
Education	Less than high school	37%	42%
	High school grad or GED	42%	44%
	More than high school *	20%	14%

$p < 0.05$



# Sample characteristics: HET1 and HET2

Characteristic		Wave 1 (n=332)	Wave 2 (n=383)
Employment	Full or part-time *	41%	25%
	Disabled for work *	11%	16%
	Unemployed *	36%	45%
Homelessness	Current *	10%	19%
	Past year *	24%	39%
Arrested in past year	Yes	29%	24%
Health insurance	Yes *	48%	63%
Healthcare provider in past year	Yes	78%	74%
Ever injection drug use	Yes	21%	22%
Drug use in past year	Injection drug use	13%	9%
	Crack use	22%	17%



Reported unprotected sex with casual or exchange partners (HET1): 38%

See 2011 presentation and 2010 publication

# UNPROTECTED SEX WITH CASUAL OR EXCHANGE PARTNERS: HET1

Towe VL, Sifakis F, Gindi RM, Sherman SG, Flynn C, Hauck H, Celentano DD. Prevalence of HIV infection and sexual risk behaviors among individuals having heterosexual sex in low income neighborhoods in Baltimore, MD: the BESURE study. J Acquir Immune Defic Syndr. 2010 Apr 1;53(4):522-8.



# Summary

- Limitations:
  - Cross-sectional, not causal
  - Voluntary enrollment
  - Self-report
- Prevention implications:
  - Unprotected sex with casual and exchange partners associated with variety of additional potential risk behaviors
  - Homelessness and older age as co-factors



**MSM: 2004/2005, 2008, 2011**





# MSM: 2004/2005, 2008, 2011



# MSM overview

	Wave 1 June 04-Apr 05	Wave 2 Jul – Oct 2008	Wave 3 Sept - Dec 2011
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 unrecognized infection	58.4%	78.4%	67.3%

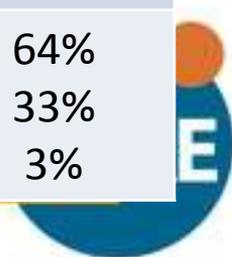
\*Complete survey and HIV test



# Sample characteristics: MSM 1-3

Characteristic		Wave 1 (n=645)	Wave 2 (n=448)	Wave 3 (n=403)
Race/Ethnicity	Black, not Hispanic *	63%	71%	76%
	White, not Hispanic	31%	23%	14%
	Other	6%	5%	9%
Age	18-24 *	24%	31%	31%
	25-34	26%	30%	27%
	35-44 *	31%	24%	17%
	45 or older *	18%	15%	25%
Education	Less than grade 12	19%	13%	13%
	Grade 12 or GED *	32%	36%	42%
	College or some college*	48%	45%	40%
	Graduate education	1%	6%	5%
Sexual identity	Homosexual/Gay	63%	68%	64%
	Bisexual	32%	30%	33%
	Heterosexual or other	5%	2%	3%

\*  $p < 0.05$  for MSM1 and MSM2 comparison only



# Sample characteristics: MSM 1-3

Characteristic		Wave 1 (n=645)	Wave 2 (n=448)	Wave 3 (n=403)
Employment status	Full-time	N/A	47%	33%
	Part-time		13%	17%
	Unemployed		23%	31%
	Not in labor force		14%	19%
Homelessness in past year	Yes	N/A	17%	17%
Current homelessness	Yes	3%	6%	7%
Ever incarcerated	Yes	N/A	N/A	46%
Incarcerated in past year	Yes	19%	19%	14%



# Sample characteristics: MSM 1-3

Characteristic		Wave 1 (n=645)	Wave 2 (n=448)	Wave 3 (n=403)
Sex partners in past year	Men only	67%	76%	76%
	Men and women	33%	24%	24%
# male partners past year	1	26%	24%	27%
	2-3 *	28%	34%	39%
	4-8	23%	26%	22%
	9 or more *	23%	16%	12%
Unprotected anal sex past yr	Yes *	53%	36%	24%
Ever IDU	Yes *	17%	6%	9%
Non-injection drugs past year	Yes	49%	59%	51% ..
Ever tested for HIV	Yes	87%	90%	90%
Test for HIV in past year	Yes		53%	50%
Health insurance	Yes	64%	63%	71%
Doctor's visit past year	Yes	77%	81%	80%
STI past year	Yes	16%	19%	14%

\*  $p < 0.05$  for MSM1 and MSM2 comparison only

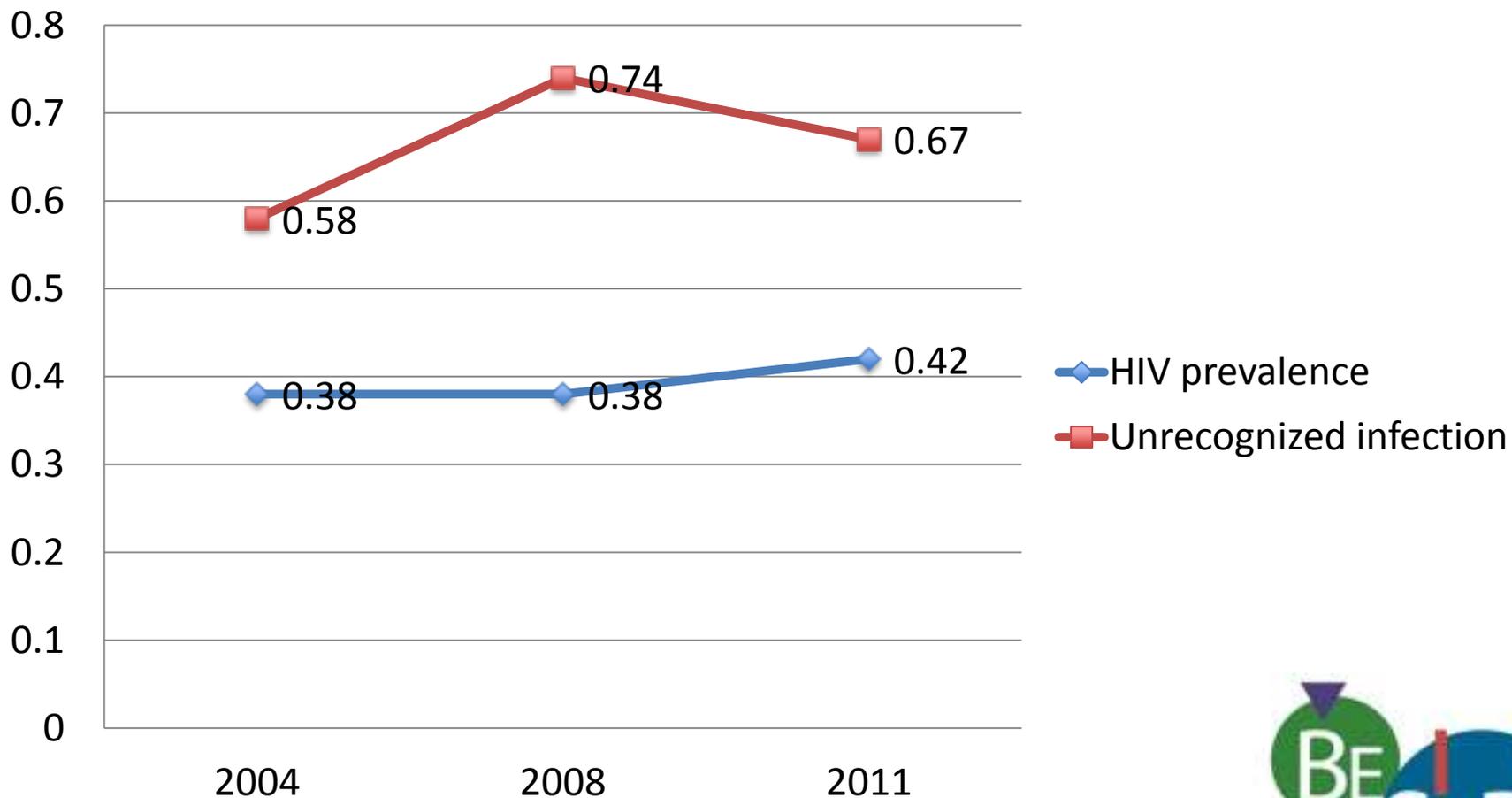


MSM1, MSM2, MSM3

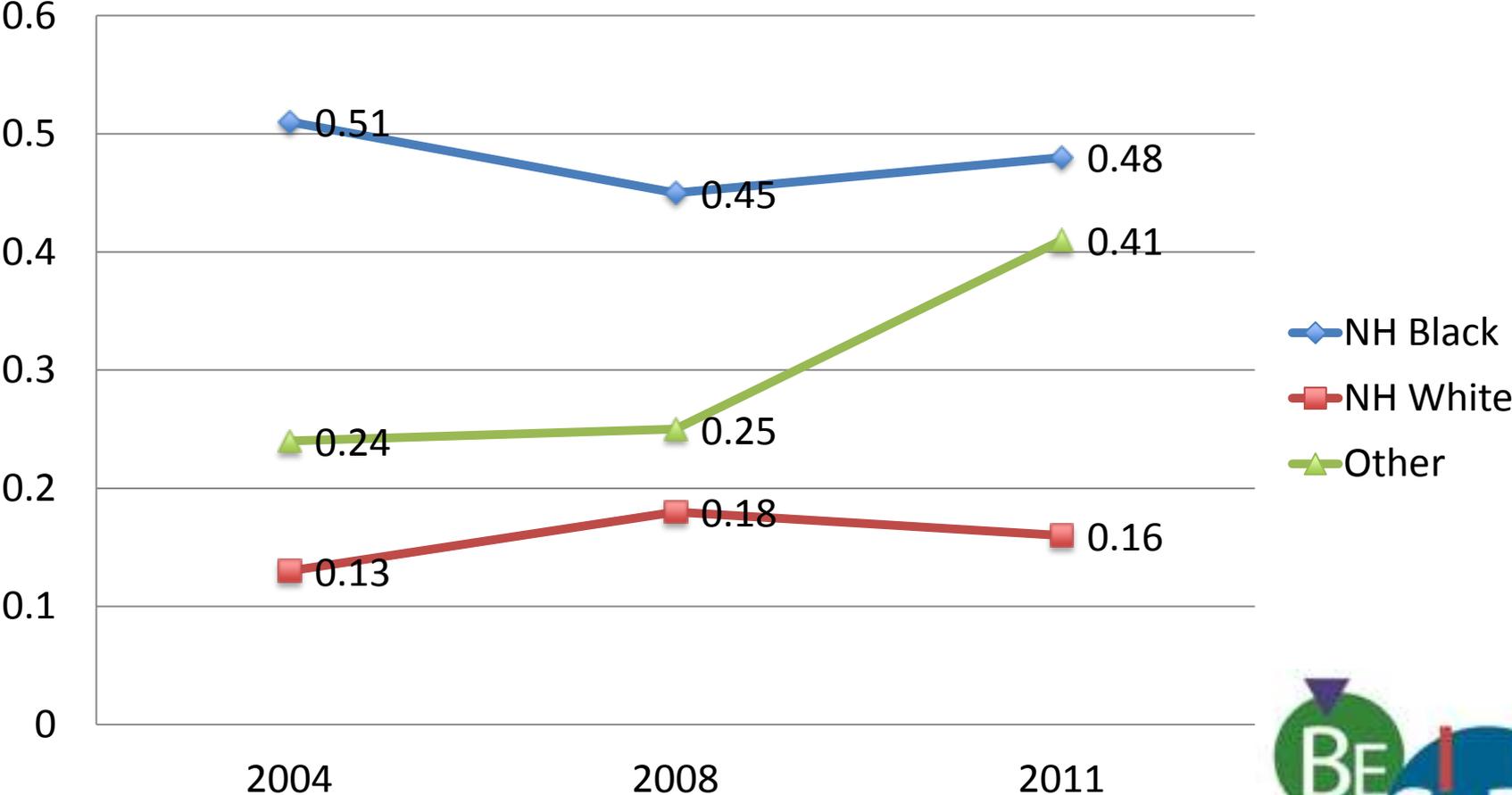
# **HIV INFECTION AND UNRECOGNIZED INFECTION ACROSS THREE WAVES: MSM**



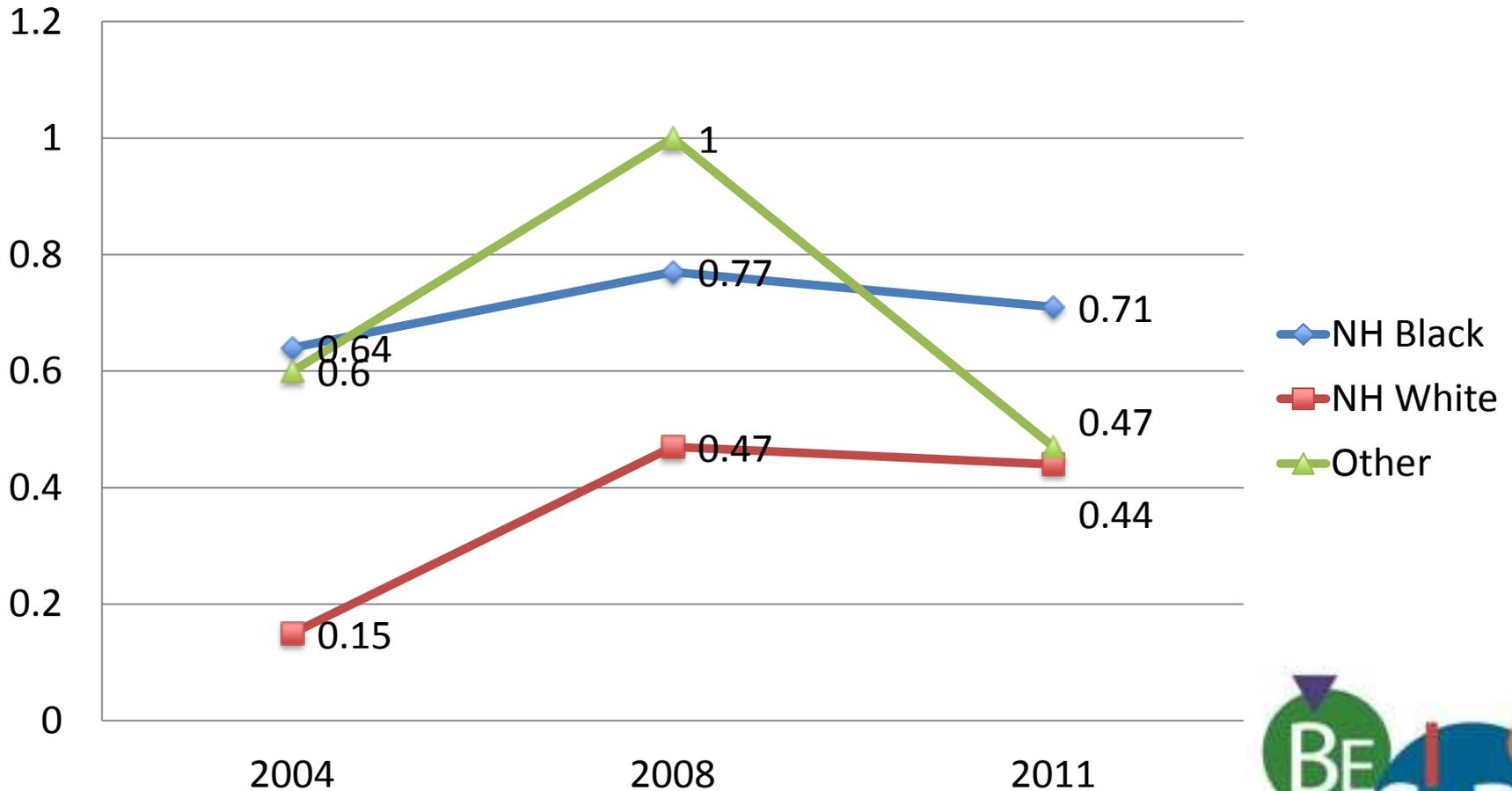
# HIV prevalence and unrecognized infection: MSM1, MSM2, MSM3



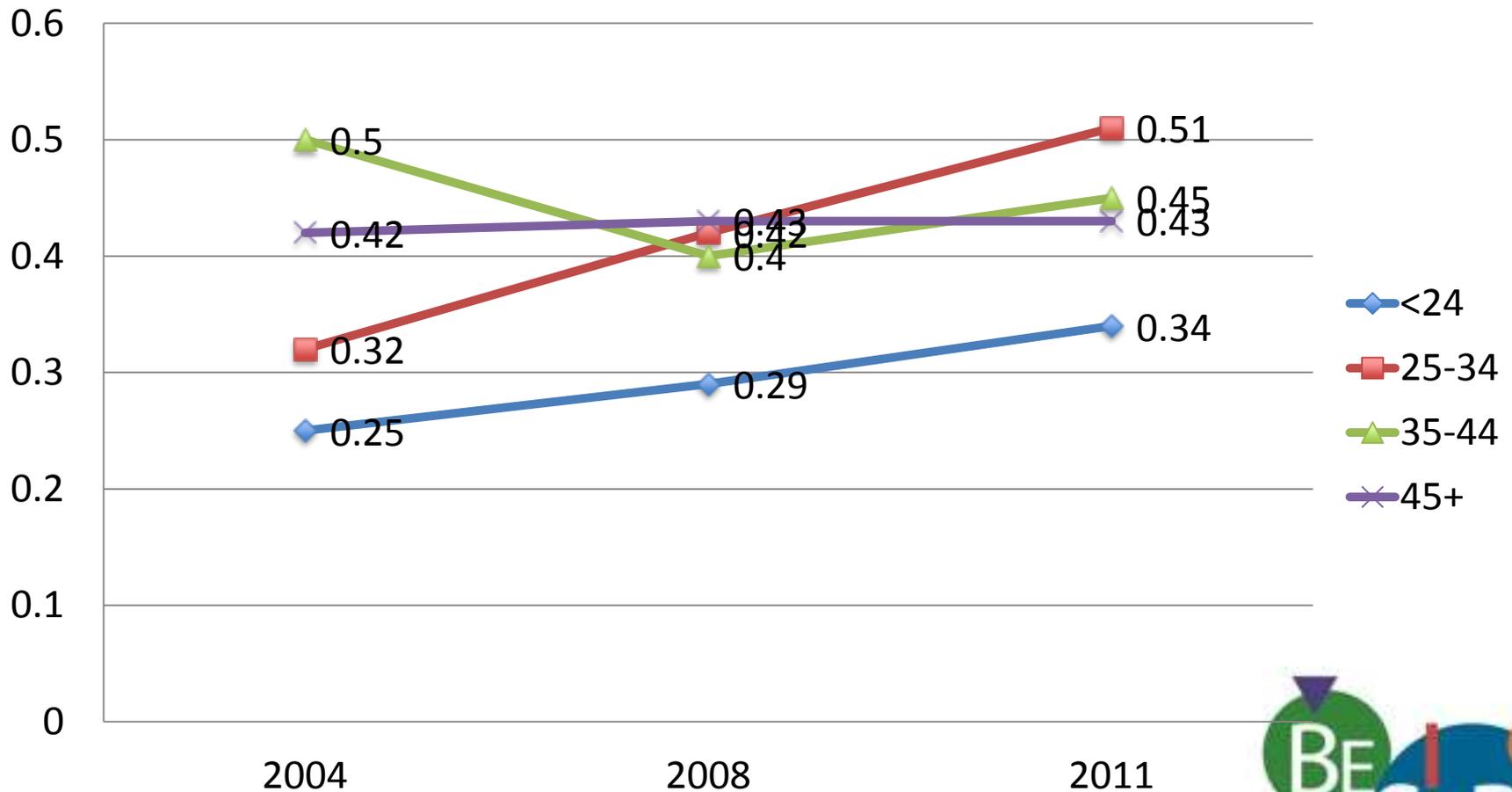
# HIV prevalence by race/ethnicity: MSM1, MSM2, MSM3



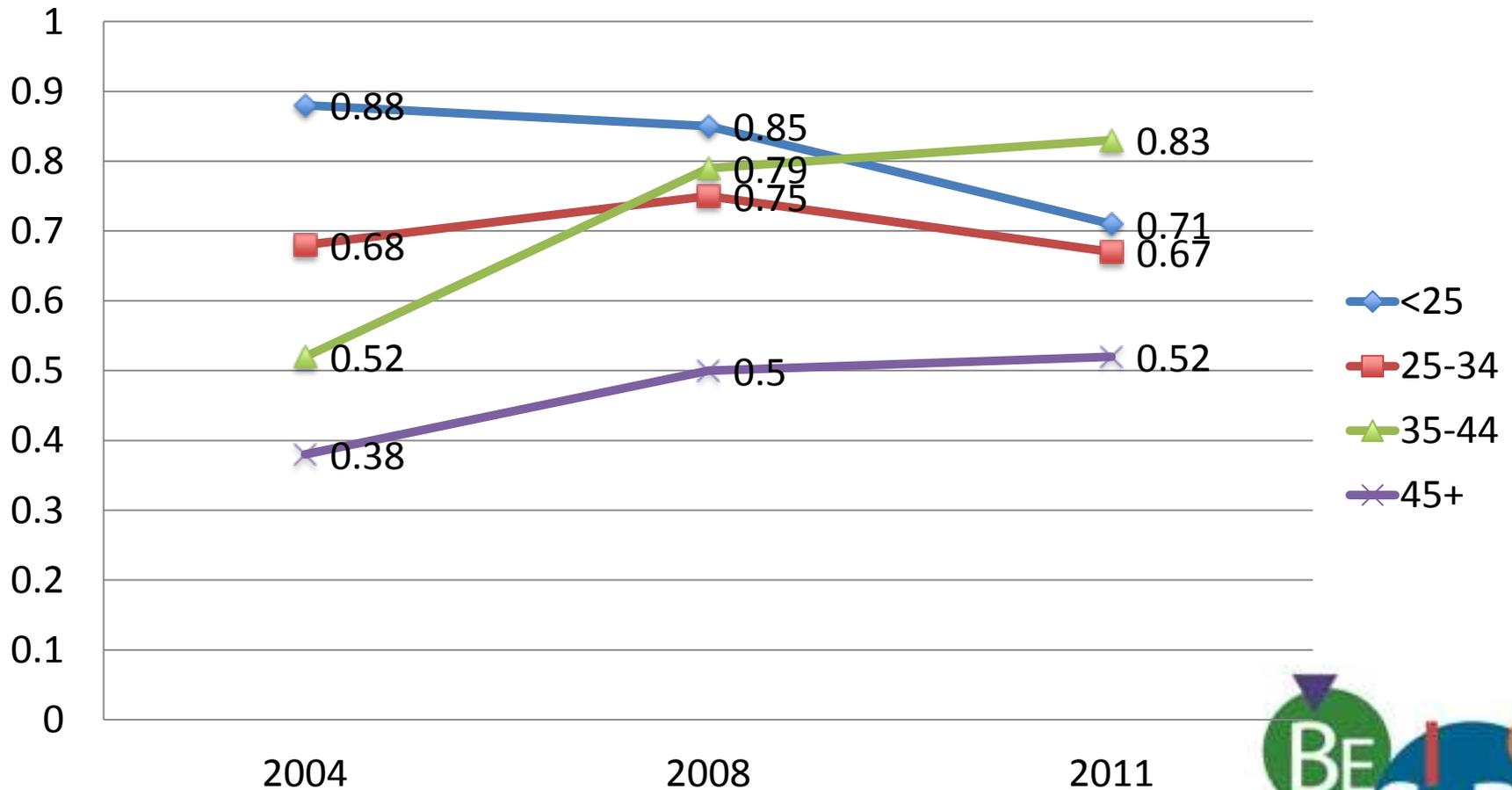
# Percent unrecognized HIV infection by race/ethnicity: MSM 1-3



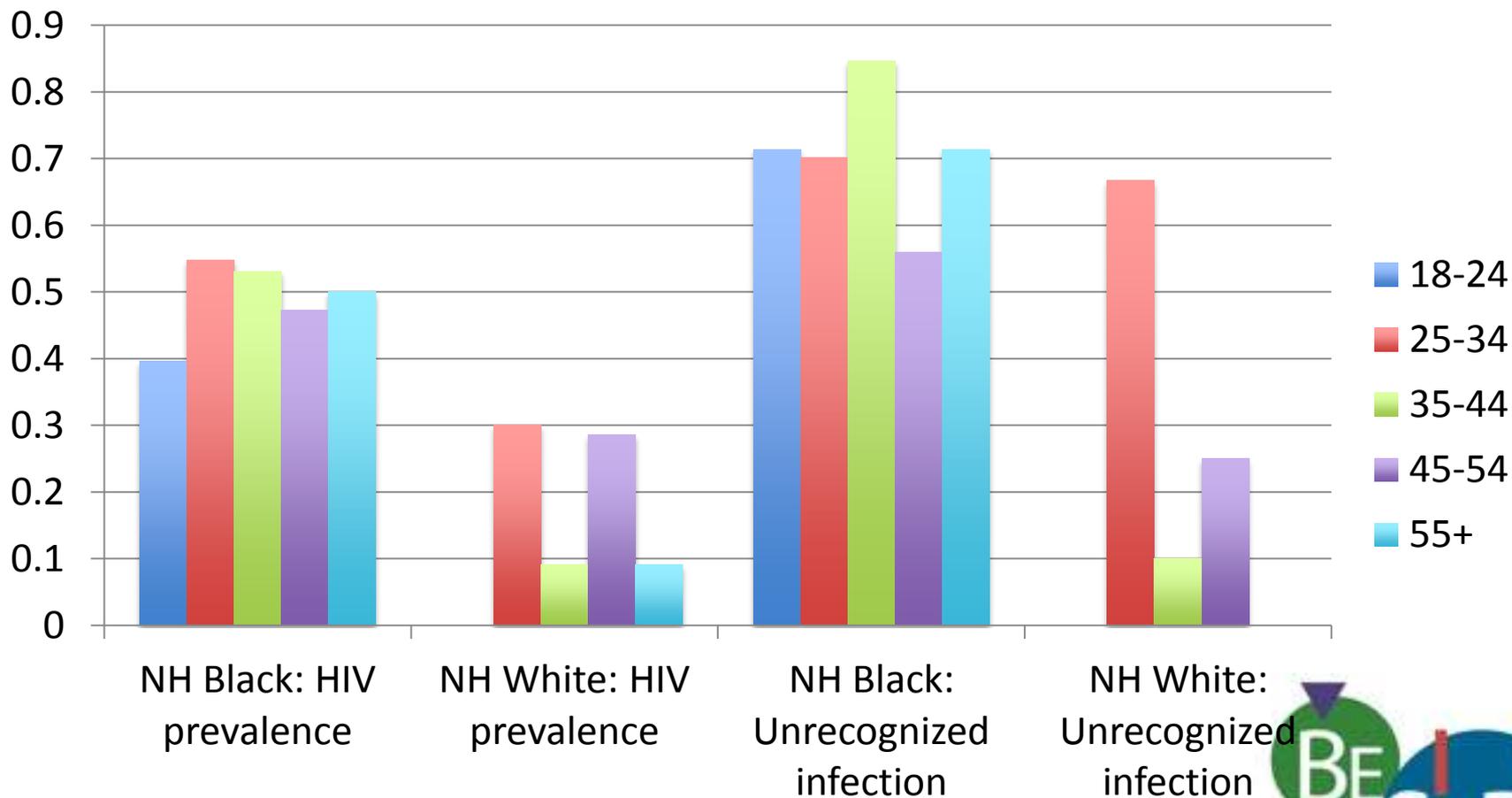
# HIV prevalence by age: MSM 1-3



# Percent unrecognized HIV infection by age: MSM 1-3



# HIV prevalence and unrecognized infection by age and race, MSM3



# Summary

- Limitations:
  - Cross-sectional, not causal
  - Voluntary enrollment
  - Venue-recruited
  - Self-report
- Very little change
  - HIV prevalence
  - Racial disparities
  - Unrecognized infection



# **RACIAL DIFFERENCES: MSM3**



# Racial differences: Socio-demographics, MSM 1-3

Characteristic		NH White (n=60)	NH Black (n=320)	Odds Ratio <sup>1</sup>
Age *	18-24	22%	35%	Ref.
	25-34	17%	27%	-
	35-44	18%	17%	-
	45-54	25%	17%	-
	55+	18%	4%	0.15 *
Education *	Less than grade 12	5%	15%	Ref.
	Grade 12 or GED	25%	50%	-
	More than grade 12	70%	35%	-
Sexual identity	Homosexual/Gay	75%	61%	Ref.
	Bisexual	22%	36%	-
	Heterosexual or other	3%	3%	-



<sup>1</sup> Accounting for venue clustering \*  $p < 0.05$

# Racial differences: Socio-demographics, MSM 1-3

Characteristic		NH White (n=60)	NH Black (n=320)	Odds Ratio <sup>1</sup>
Employment status *	Unemployed	12%	35%	Ref.
	Full-time	50%	31%	0.37 *
	Part-time	15%	17%	0.37 *
	Not in labor force	23%	17%	0.24 *
Homelessness in past year *	Yes	7%	18%	3.00
Current homelessness	Yes	2%	7%	-
Ever incarcerated *	Yes	20%	53%	4.4 *
Incarcerated in past year	Yes	7%	15%	-
Ever IDU	Yes	7%	9%	-
Cocaine, crack, heroin past yr *	Yes	37%	52%	1.84

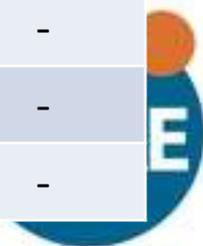
<sup>1</sup> Accounting for venue clustering \*  $p < 0.05$



# Racial differences: Sexual behavior and healthcare, MSM 1-3

Characteristic		NH White (n=60)	NH Black (n=320)	Odds Ratio <sup>1</sup>
Sex partners in past year *	Men only	87%	73%	Ref.
	Men and women	13%	27%	-
# male partners past year	1	37%	26%	Ref.
	2-3	37%	39%	0.28 *
	4-8	22%	22%	0.42
	9 or more	5%	13%	0.40
Unprotected anal sex past yr	No	85%	74%	Ref.
	With main only	5%	8%	-
	With casual	10%	19%	-
Ever tested for HIV	Yes	85%	91%	-
Test for HIV in past year	Yes	46%	51%	-
Health insurance	Yes	73%	71%	-
Doctor's visit past year	Yes	78%	79%	-
STI past year	Yes	8%	14%	-

<sup>1</sup> Accounting for venue clustering \*  $p < 0.05$



# Summary

- Limitations:
  - Cross-sectional, not causal
  - Voluntary enrollment
  - Venue-recruited
  - Self-report
- Racial differences in social stressors, but not in HIV risk behaviors



# **CHARACTERISTICS ASSOCIATED WITH HIV INFECTION: MSM3**



# Characteristics associated with HIV infection: MSM3

Characteristic		% Total (n=403)	% HIV positive (n=171)	Odds Ratio <sup>1</sup>
Race/Ethnicity	White, NH	76%	5%	Ref.
	Black, NH	14%	86%	5.0 *
	Other	9%	9%	3.7 *
Age	18-24	31%	25%	Ref.
	25-34	27%	32%	2.1 *
	35-44	17%	18%	-
	45-54	19%	21%	1.7
	55+	6%	5%	-
Ever inject	Yes			1.49



<sup>1</sup> Accounting for venue clustering \*  $p < 0.05$

# Characteristics associated with HIV infection, MSM3: Multivariate

Characteristic		% Total (n=403)	% HIV positive (n=171)	Odds Ratio <sup>1</sup>	Adjusted Odds Ratio <sup>1</sup>
Race/Ethnicity	White, NH	14%	5%	Ref.	Ref.
	Black, NH	76%	86%	5.0 *	5.2 *
	Other	9%	9%	3.7 *	3.3 *
Age	18-24	31%	25%	Ref.	Ref.
	25-34	27%	32%	2.1 *	2.1 *
	35-44	17%	18%	-	-
	45-54	19%	21%	1.7	1.9 *
	55+	6%	5%	-	-
Ever inject	Yes	9%	11%	1.49	-



<sup>1</sup> Accounting for event clustering \*  $p < 0.05$

# Characteristics associated with unrecognized HIV infection, MSM3

Characteristic		% Total (n=171)	% Unrecog (n=119)	Unrecog: O.R. <sup>1</sup>
Race/Ethnicity	White, NH	5%	4%	Ref.
	Black, NH	86%	90%	3.0
	Other	9%	6%	-
Age	18-24	25%	26%	Ref.
	25-34	32%	32%	-
	35-44	18%	22%	-
	45-54	21%	16%	0.4
	55+	5%	4%	-
Employment status *	Unemployed	32%	37%	Ref.
	Full-time	27%	30%	-
	Part-time	21%	17%	0.34 *
	Not in labor force	21%	17%	0.38 *
STI in past 12 months	Yes	15%	9%	0.26 *
<b>Ever tested for HIV</b>	<b>Yes</b>	<b>87%</b>	<b>82%</b>	
<b>Past year HIV test</b>	<b>Yes</b>	<b>36%</b>	<b>45%</b>	

<sup>1</sup>Accounting for venue clustering \*  $p < 0.05$



# Characteristics associated with unrecognized HIV infection, MSM3

Characteristic		% Total (n=171)	% Unrecog (n=119)	Unrecog: O.R. <sup>1</sup>	Adjusted Odds Ratio <sup>1</sup>
Race/Ethnicity	White, NH	5%	4%	Ref.	Ref.
	Black, NH	86%	90%	3.0	2.9
	Other	9%	6%	-	-
Age	18-24	25%	26%	Ref.	Ref.
	25-34	32%	32%	-	2.7
	35-44	18%	22%	-	-
	45-54	21%	16%	0.4	-
	55+	5%	4%	-	-
Employment status *	Unemployed	32%	37%	Ref.	Ref.
	Full-time	27%	30%	-	-
	Part-time	21%	17%	0.34 *	0.39
	Not in labor force	21%	17%	0.38 *	0.48

<sup>1</sup> Accounting for venue clustering \*  $p < 0.05$



# Summary

- Limitations:
  - Cross-sectional, not causal
  - Voluntary enrollment
  - Venue-recruited
  - Self-report
- Prevention implications
  - Racial differences in HIV infection persist when accounting for demographic or behavioral differences
  - Unrecognized infection concentrated among younger MSM (<35)
  - Persistent need for HIV testing



# **STIGMA AND DISCRIMINATION: MSM3**



# Stigma and discrimination

- **In the past year**, have you been:
  - Ignored, excluded, or avoided by people close to you
  - Rejected by a potential sexual or romantic partner
  - Denied or lose a job
  - Treated with hostility or coldness
  - Someone acted as if you could not be trusted
  - Insult or make fun of you
  - Denied or lose a place to live
  - Personal property damaged or stolen
  - Physically assaulted or beaten up
  - Treated poorly or made to feel inferior when receiving health care



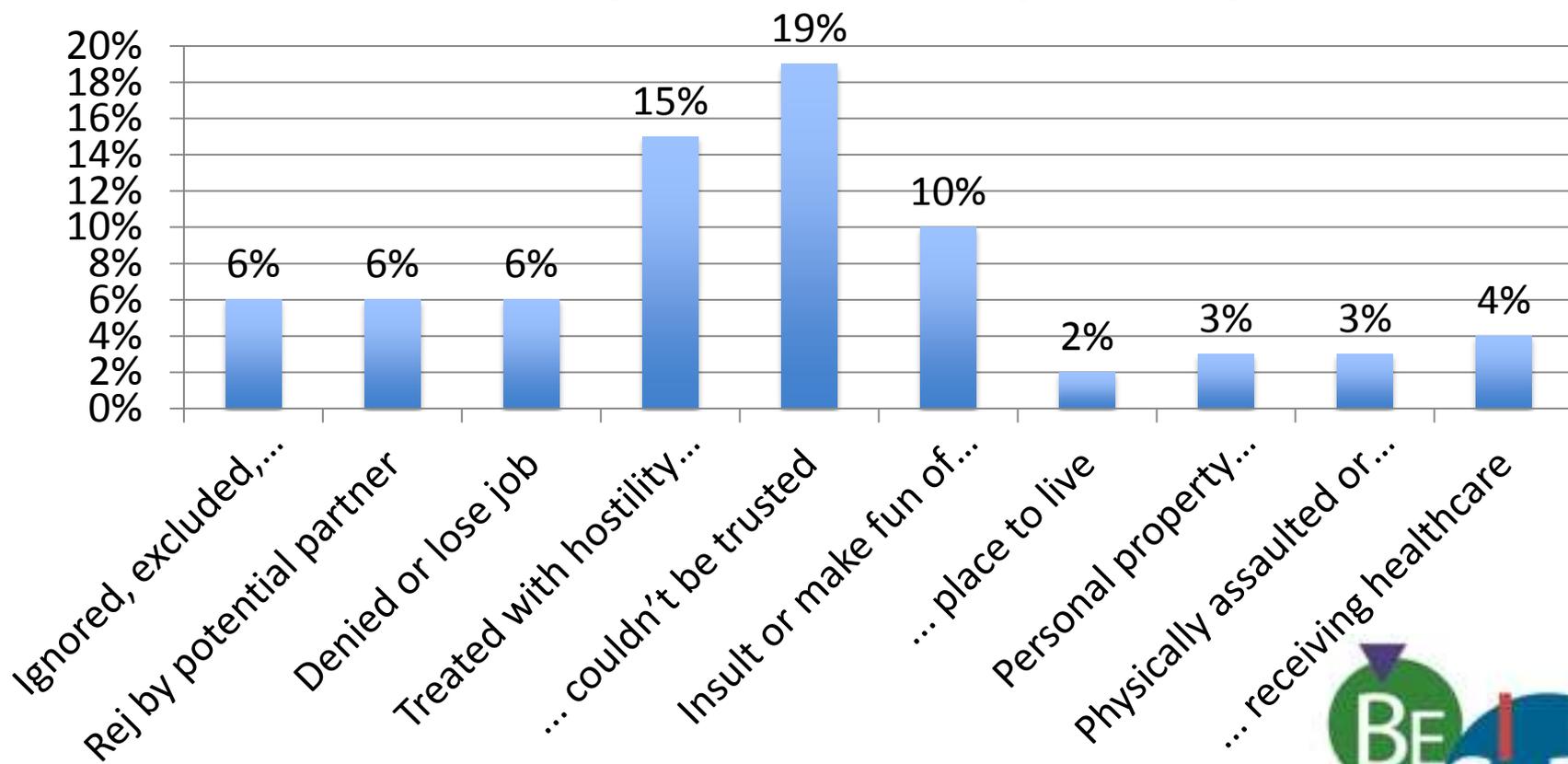
# Stigma and discrimination

- **In the past year**, have you been:
  - Ignored, excluded, or avoided by people close to you
  - Rejected by a potential sexual or romantic partner
  - Denied or lose a job
  - Treated with hostility or coldness
  - Someone acted as if you could not be trusted
  - Insult or make fun of you
  - Denied or lose a place to live
  - Personal property damaged or stolen
  - Physically assaulted or beaten up
  - Treated poorly or made to feel inferior when receiving health care
- Because of your race/ethnicity?
- Because they thought or knew you were gay?
- Because they knew or suspected you were HIV positive?



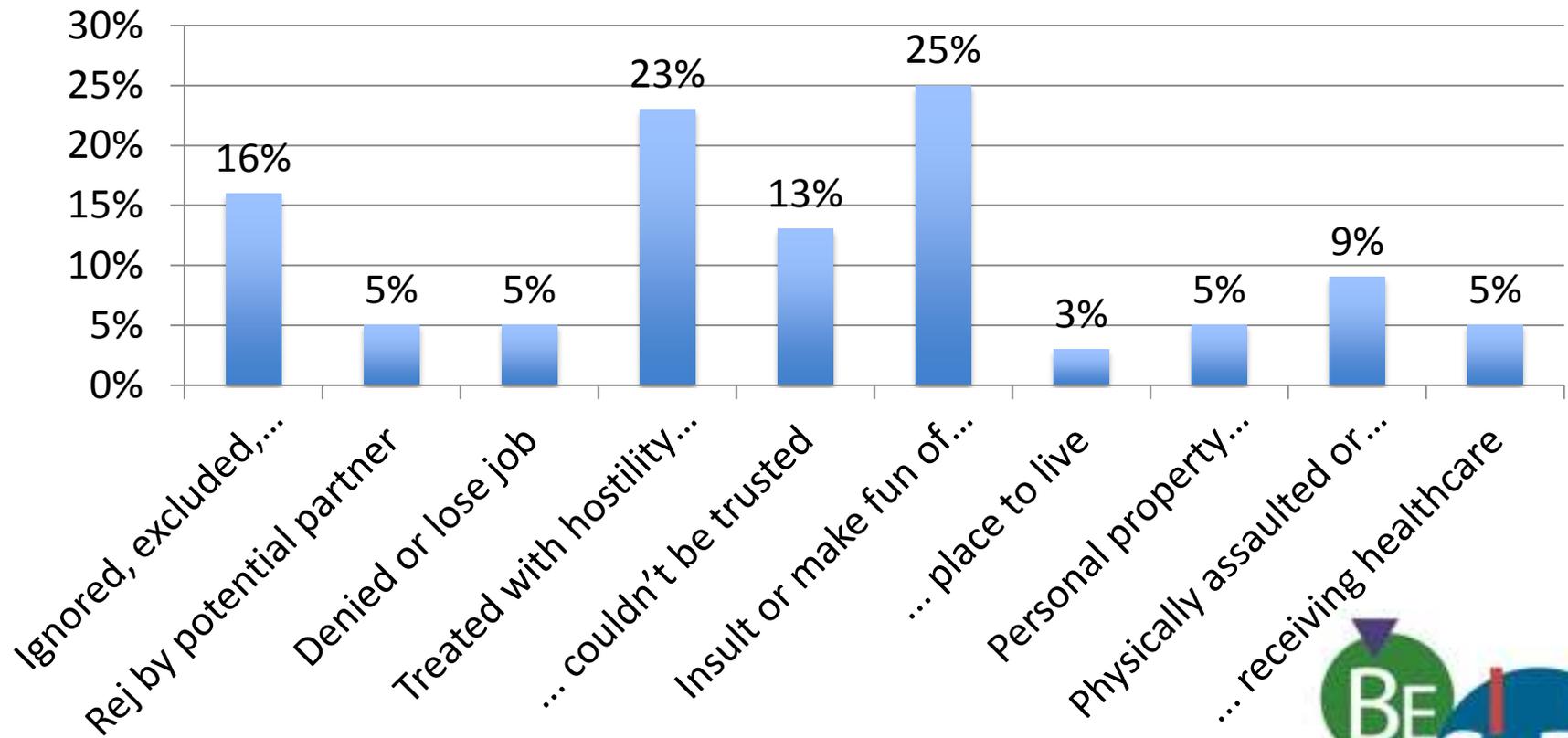
# Stigma and discrimination experiences among African-American MSM (n=313)

Because of your race/ ethnicity: 29% any



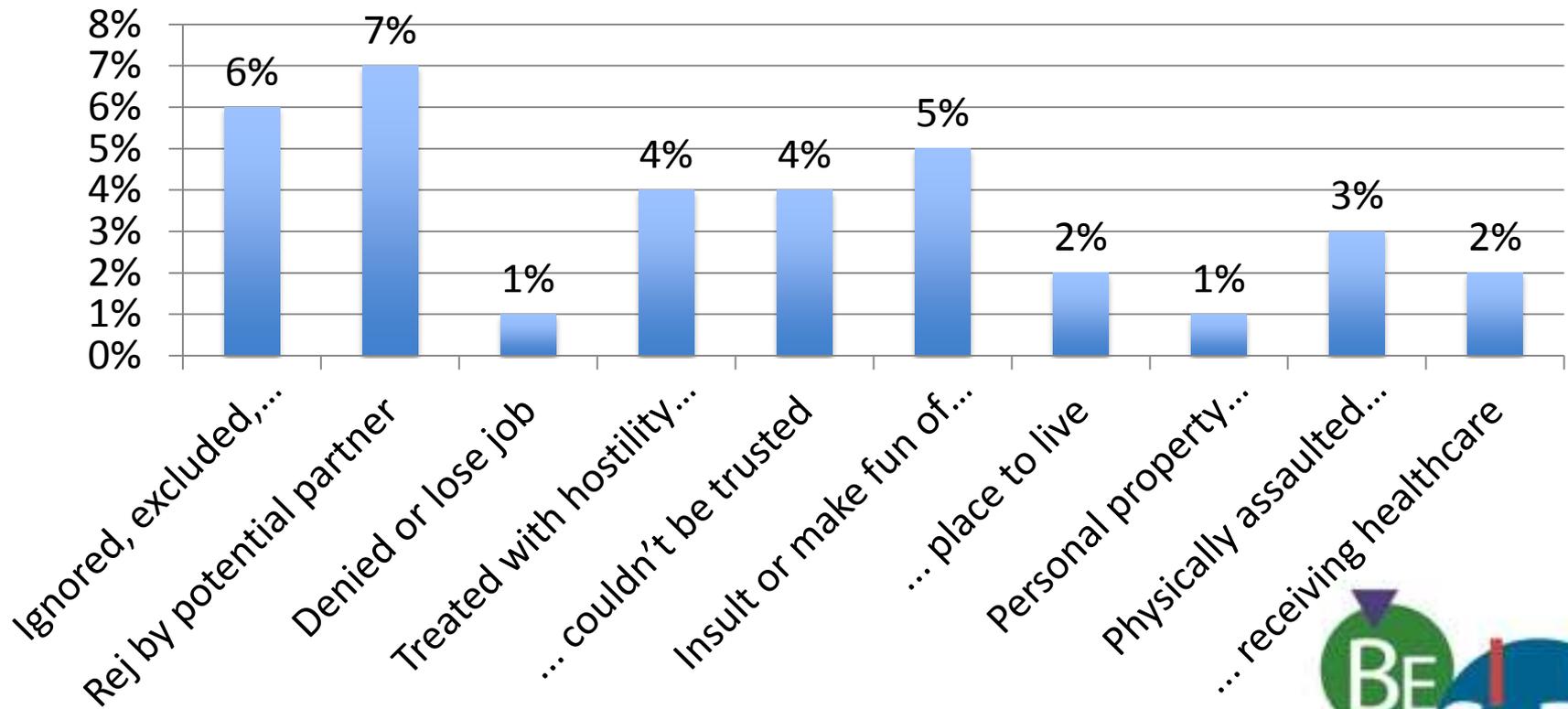
# Stigma and discrimination experiences among African-American MSM (n=313)

Because someone thought you were gay: 35% any

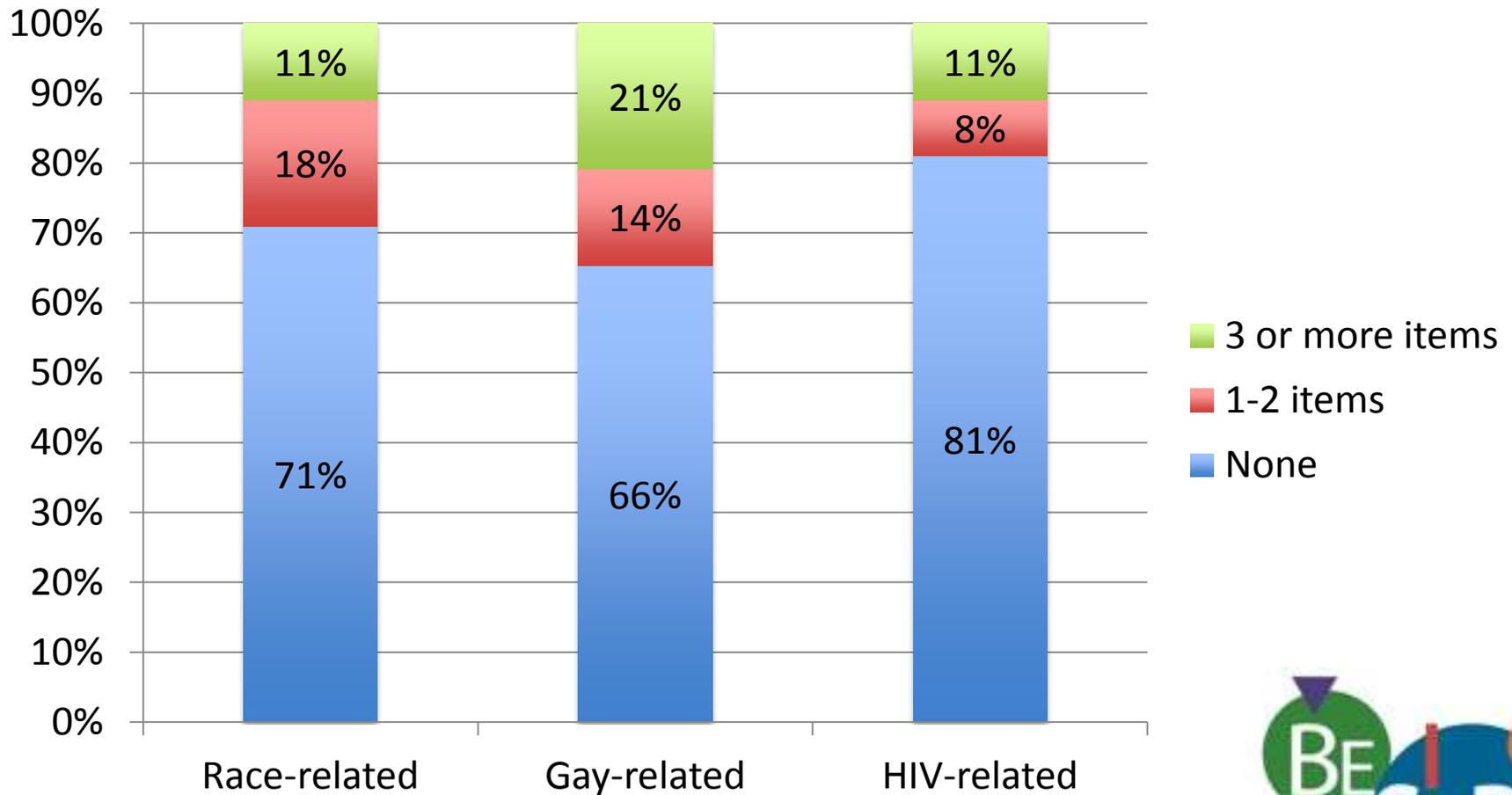


# Stigma and discrimination experiences among African-American MSM (n=313)

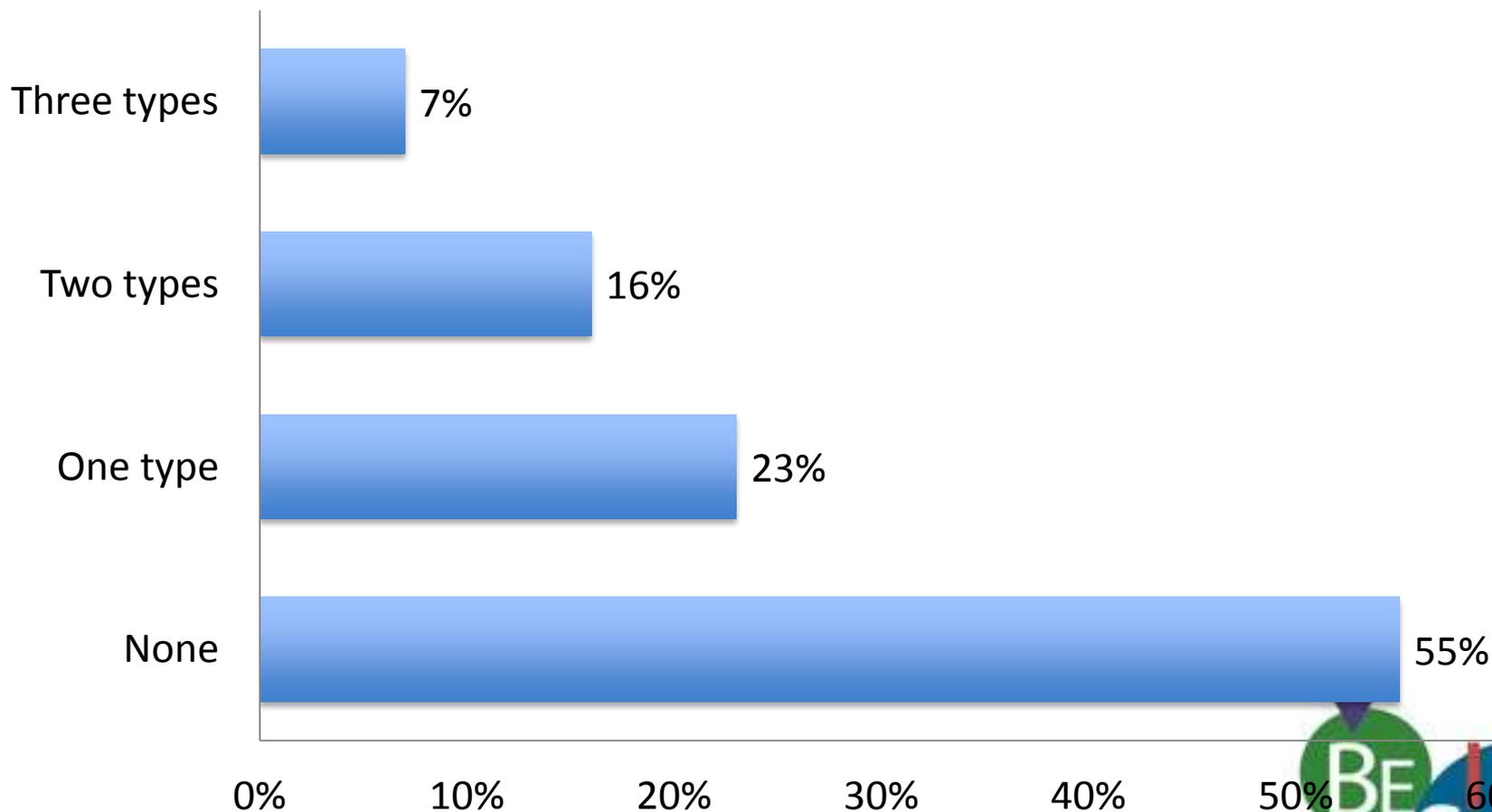
Because they knew or suspected you were HIV-positive:  
19% any



# Stigma and discrimination among African-American MSM (n=313)



# Multiple stigmas among African-American MSM (n=313)



# Multiple stigmas among HIV-positive African-American MSM: MSM3

	Among all HIV-positive (n=144)	Among known HIV-positive (n=40)	Among unknown HIV-positive (n=104)
Any race-related	28%	45% *	22%
1-2	18%	30%	13%
3+	10%	15% *	9%
Any gay-related	31%	33%	30%
1-2	10%	3%	13%
3+	20%	30% *	16%
Any HIV related	19%	38% *	12%
1-2	13%	23%	9%
3+	6%	15% *	3%
# of types			
0	58%	43%	64%
1	17%	23%	15%
2	17%	13%	18%
3	8%	23%	3%

# Multiple stigmas among HIV-positive African-American MSM: MSM3

	Among all HIV-positive (n=144)	Among known HIV-positive (n=40)	Among unknown HIV-positive (n=104)
Any race-related	28%	45% *	22%
1-2	18%	30%	13%
3+	10%	15% *	9%
Any gay-related	31%	33%	30%
1-2	10%	3%	13%
3+	20%	30% *	16%
Any HIV related	19%	38% *	12%
1-2	13%	23%	9%
3+	6%	15% *	3%
# of types			
0	58%	43%	64%
1	17%	23%	15%
2	17%	13%	18%
3	8%	23%	3%

# Characteristics associated with experiences of gay-related stigma

	Odds Ratio <sup>1</sup> African-American MSM (n=313)
Age 18-24	Ref.
25-34	-
35-44	-
45-54	0.53 *
More than grade 12 vs. <12	0.6
Unemployed	Ref.
Employed FT	0.4 *
Employed PT	0.5
IDU in past 12m	5.1 *
STD in past 12m	2.9 *
HIV test in past 12m	1.5
MSMW vs. MSM only	0.4 *
UAI with casual partner	3.6 *

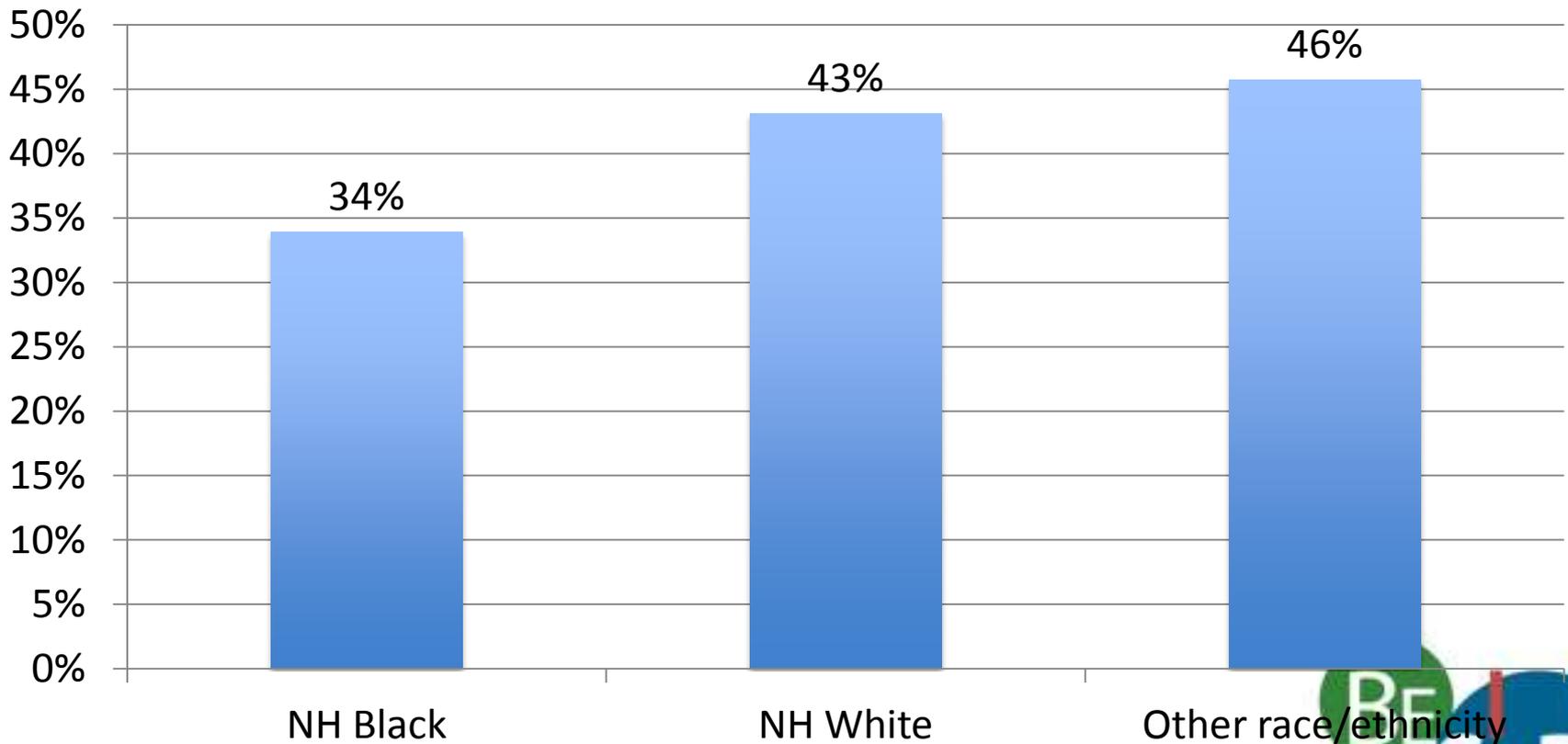
Only those variables significant at  $p < 0.10$  shown

<sup>1</sup> Accounting for venue clustering \*  $p < 0.05$



# Gay-related stigma by race/ethnicity

## Any experiences in past year



$p < 0.191$



# Characteristics associated with experiences of gay-related stigma

	Odds Ratio <sup>1</sup> African-American MSM (n=313)	Odds Ratio <sup>1</sup> Total sample(n=403)
Age 18-24	Ref.	Ref.
25-34	-	-
35-44	-	-
45-54	0.53 *	0.59
Unemployed	Ref.	Ref.
Employed FT	0.4 *	0.6
Ever IDU	2.1	1.9
IDU in past 12m	5.1	6.7 *
STD in past 12m	2.9 *	2.7 *
Ever HIV test	-	2.0
HIV test in past 12m	1.5	1.7 *
MSMW vs. MSM only	0.4 *	0.4 *
UAI with casual partner	3.7 *	2.9 *

Only those variables significant at  $p < 0.10$  shown

<sup>1</sup>Accounting for venue clustering \*  $p < 0.05$

# Summary

- Limitations:
  - Cross-sectional, not causal
  - Voluntary enrollment
  - Venue-recruited
  - Self-report
- Prevention implications
  - Substantial stigma and discrimination experiences, particularly gay-related
  - Multiple sources of stigma
  - Indication that stigma is associated with social stress and HIV risk indicators among African-American MSM
  - Need more research to understand relationships further



# HEPATITIS C INFECTION: MSM3



# Hepatitis C infection in MSM3

- Overall prevalence = 14.5%
- Prevalence among never IDU MSM: 9.9%
- HIV/HCV co-infection: 9.3%
  - HCV among HIV-positive: 21.9%
  - HIV among HCV-positive: 64.9%
- Reported HCV positive = 5.8%
  - % unrecognized HCV: 60.7%



# Characteristics associated with HCV infection among MSM

	Odds Ratio <sup>1</sup> Total (n=401)
Age 18-24	Ref.
25-34	-
35-44	2.7 *
45-54	7.5 *
55+	18.0 *
Employed full-time vs unemployed	0.4 *
Ever incarcerated	2.4 *
Ever IDU	14.3 *
IDU in past year	9.8 *
MSMW vs. MSM only	2.0
UAI with casual partner	2.2 *
HIV test in past year	0.6 *
HIV infection	3.0 *

Only those variables significant at  $p < 0.10$  shown

<sup>1</sup>Accounting for venue clustering \*  $p < 0.05$



# Characteristics associated with HCV infection among MSM never IDUs

	Odds Ratio <sup>1</sup> Total (n=401)	Odds Ratio <sup>1</sup> Never IDU (n=363)
Age 18-24	Ref.	Ref.
25-34	-	-
35-44	2.7	-
45-54	7.5 *	4.7 *
55+	18.3 *	11.2 *
Employed full-time vs unemployed	0.4 *	0.4
Homeless in past year	-	0.4 *
Ever incarcerated	2.4 *	-
MSMW vs. MSM only	1.8	-
UAI with casual partner	2.1 *	2.4 *
HIV test in past year	0.6	0.5
HIV infection	3.3 *	4.3 *



Only those variables significant at  $p < 0.10$  shown

<sup>1</sup> Accounting for venue clustering \*  $p < 0.05$

# Summary

- Limitations:
  - Cross-sectional, not causal
  - Voluntary enrollment
  - Venue-recruited
  - Self-report
- Prevention implications
  - HCV infection under-appreciated among MSM
  - HIV-HCV co-infection
  - Concentrated among older men
  - Sexual transmission?



# Conclusion: MSM

- Drastic need for innovative evidence-based prevention, especially among African-American men
- Drastic need for targeted testing and link to care
- Racial disparities not accounted for by behaviors
- Need for attention to stigma and social stressors
- HCV



# BESURE next steps

- Continued analysis
- Dissemination activities
- Round 3: IDU3 2012



# With thanks to:

- Study participants
- Community partners
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