Expanded HIV testing coverage is associated with decreases in late HIV diagnoses, New York City (NYC), 2001-2010 (Oral abstract #182)

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Background

- Concurrent HIV/AIDS diagnoses (late HIV diagnoses) accounted for 19.7% of all new diagnoses in NYC in 2012
- At the individual-level, late diagnosis is associated with
  - Increased rates of short term mortality, and intensive care unit admissions for opportunistic infections
  - Higher direct medical cost following HIV diagnosis
- At the population-level, late HIV diagnosis drives HIV incidence
  - Reducing late HIV diagnosis accompanied with timely ART initiation can reduce onward HIV transmission

NYC DOHMH, 2012; Losina et al. 2007; Chadborn et al. 2006; Shroshbree et al. 2013; Krentz et al. 2004; Cohen et al. 2012; Lahuerta et al. 2013

Background, cont'd

- Efforts to substantially expand HIV testing have recently been undertaken in NYC
  - 2007: CDC launched Expanded HIV Testing Initiative in 25 jurisdictions nationally, including NYC
  - 2008: NYC DOHMH launched 'The Bronx Knows' initiative
    - Associated with decrease in proportion concurrently diagnosed with HIV in The Bronx
  - 2010: NYC DOHMH launched the 'Brooklyn Knows' initiative

Myers et al. JAIDS 2012

Objectives

↑ HIV testing coverage → earlier diagnosis → ↓ late diagnosis

1. Describe citywide trends in recent HIV testing coverage and late HIV diagnosis rates during 2001-2010
2. Within NYC neighborhoods, were increases in recent HIV testing coverage associated with decreases in late HIV diagnosis rates during 2001-2010?

Methods – Data sources

- **HIV testing coverage (exposure)**
  - **NYC Community Health Survey (CHS)**
    - **Annual surveys from 2003-2010 (2-year intervals, 2001/2 to 2009/10)**
      - **Applied 2003 testing coverage to 2001/2**
    - **Recent HIV testing: Proportion reporting having an HIV test in the last 12 months in each of 34 United Hospital Fund (UHF) neighborhoods**
- **Late HIV diagnosis (outcome)**
  - **NYC DOHMH Population-based HIV registry**
  - **Aggregate, ZIP code level data on the number of late HIV diagnoses, 2001-2010 (2-year intervals, 2001/2 to 2009/10)**
  - **Late HIV diagnosis defined as having CD4≤200 cell/μL or an AIDS defining illness within 31 days of HIV diagnosis**
  - **Late diagnosis rates per 100,000 population**
    - **2000-2010 intercensal estimates (source: NYCDOHMH)**

Methods – Data analysis

- Descriptive analysis to assess:
  - Citywide trends in HIV testing coverage and late diagnosis rates during 2001-2010
    - Analyzed in two year intervals (2001/2-2009/10)
  - Variability of late diagnosis rates across neighborhoods in 2009/10
- ZIP-code level longitudinal analysis
  - Influence of change in HIV testing coverage on change in late HIV diagnosis rates
    - 2001/2 compared to 2009/10
  - Used GEE to account for hierarchical data
    - e.g., clustering of ZIP codes within UHF neighborhoods

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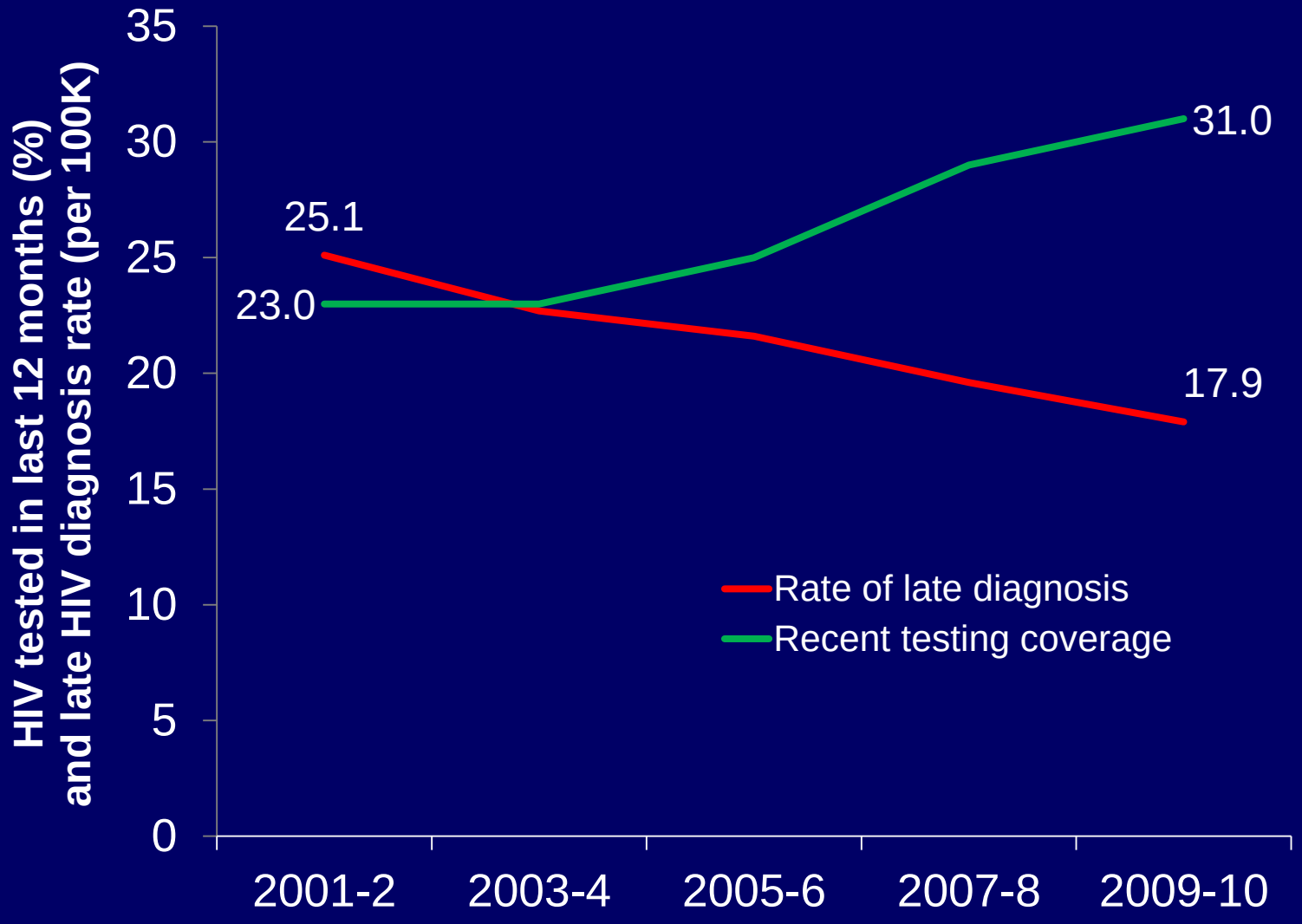
HIV diagnoses by sex in NYC, 2001-2010

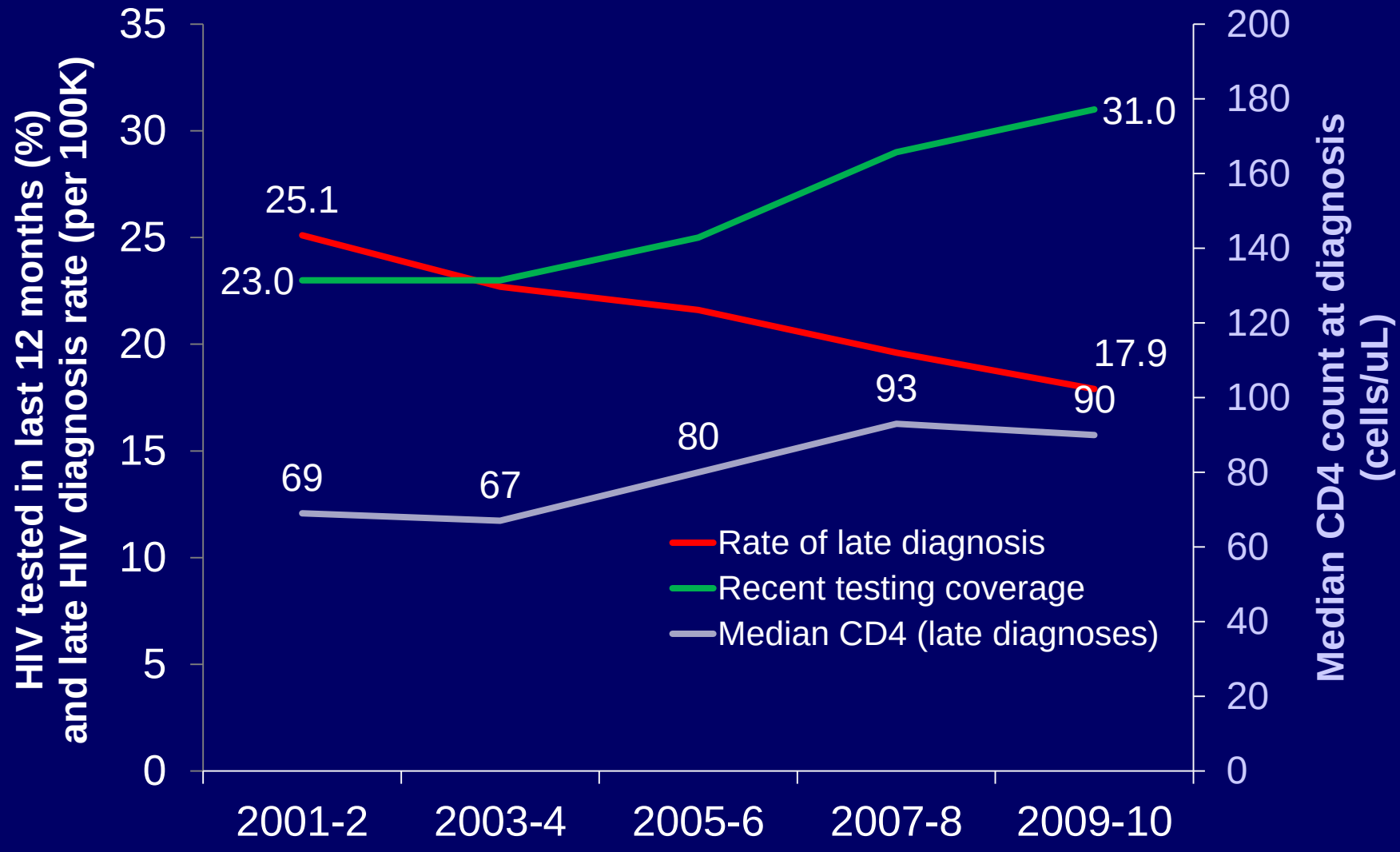
	2001/2	2003/4	2005/6	2007/8	2009/10	$RR_{09/10 \text{ vs } 01/02}$ (95% CI)
All HIV diagnoses N (Rate[1] per 100,000)	10,057 (124.6)	8,126 (100.3)	7,665 (93.3)	7,392 (84.4)	6,530 (79.9)	0.64 (0.62-0.66)
Males N (Rate per 100,000)	6,618 (174.5)	5,557 (146.0)	5,564 (144.0)	5,488 (139.6)	4,919 (128.0)	0.73 (0.71-0.76)
Females N (Rate[1] per 100,000)	3,439 (80.4)	2,569 (59.8)	2,101 (48.3)	1,904 (43.0)	1,611 (37.2)	0.46 (0.43-0.49)
Late HIV diagnoses N (Rate[1] per 100,000)	2,217 (25.1)	2,028 (22.7)	1,923 (21.6)	1,638 (19.6)	1,458 (17.9)	0.72 (0.67-0.76)
Males N (Rate per 100,000)	1,628 (37.9)	1,455 (33.2)	1,475 (34.3)	1,188 (30.2)	1,100 (28.8)	0.76 (0.70-0.82)
Females N (Rate[1] per 100,000)	589 (13.8)	573 (13.4)	448 (10.4)	450 (10.2)	358 (8.3)	0.60 (0.53-0.69)

[1]All rates are two year rates

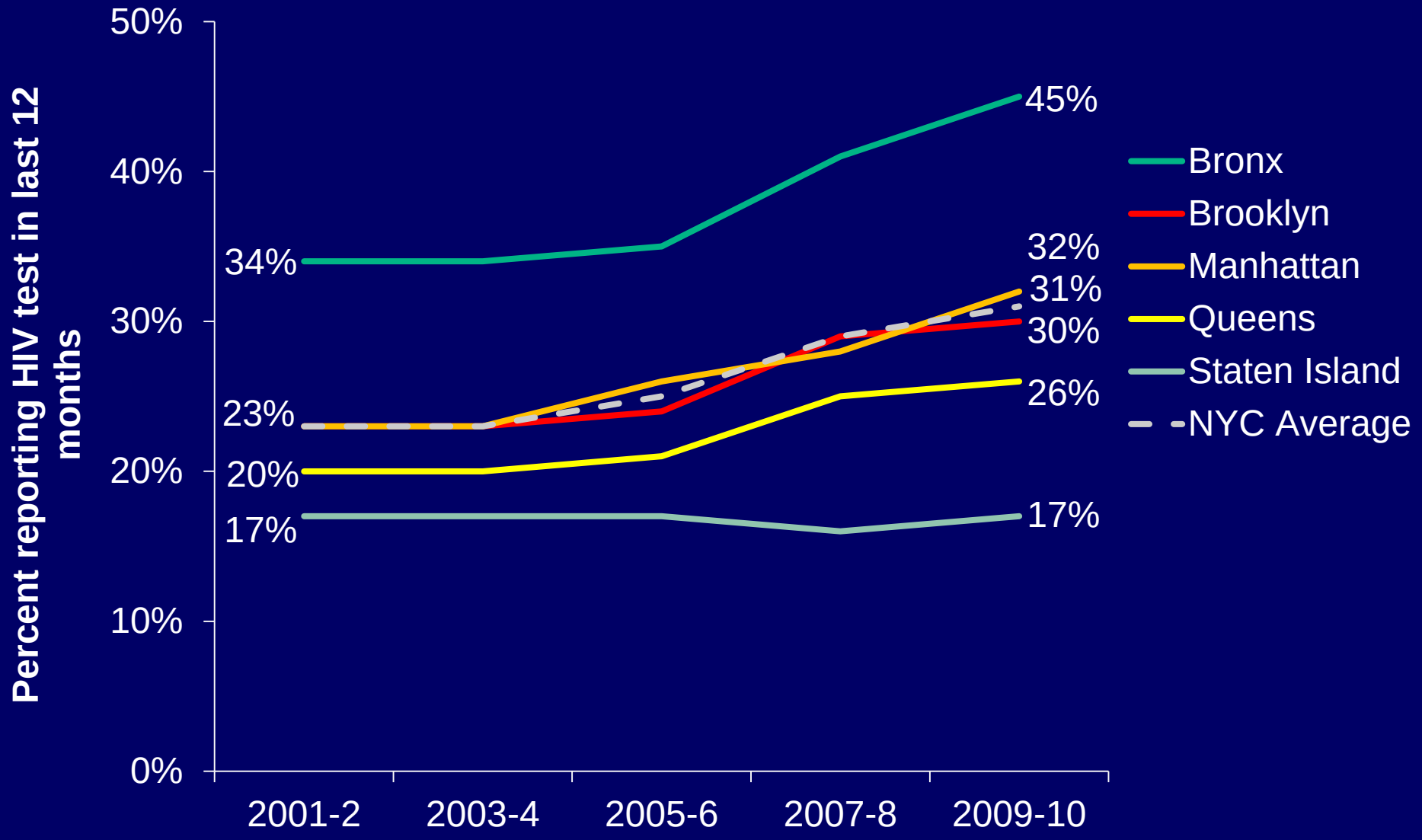
Trends in recent HIV testing coverage and late HIV diagnosis rates, NYC 2001-2010



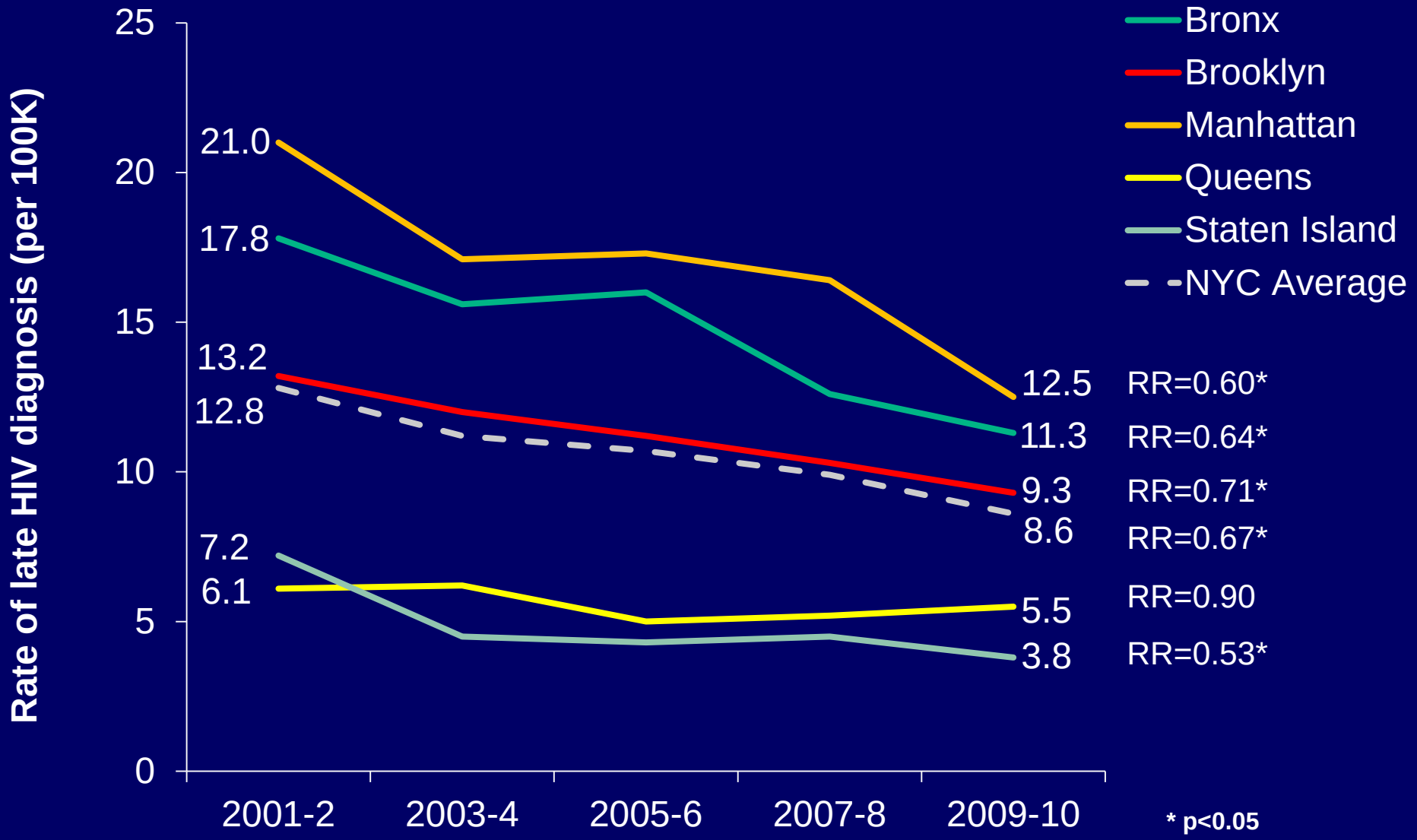
Trends in recent HIV testing coverage and late HIV diagnosis rates, NYC 2001-2010



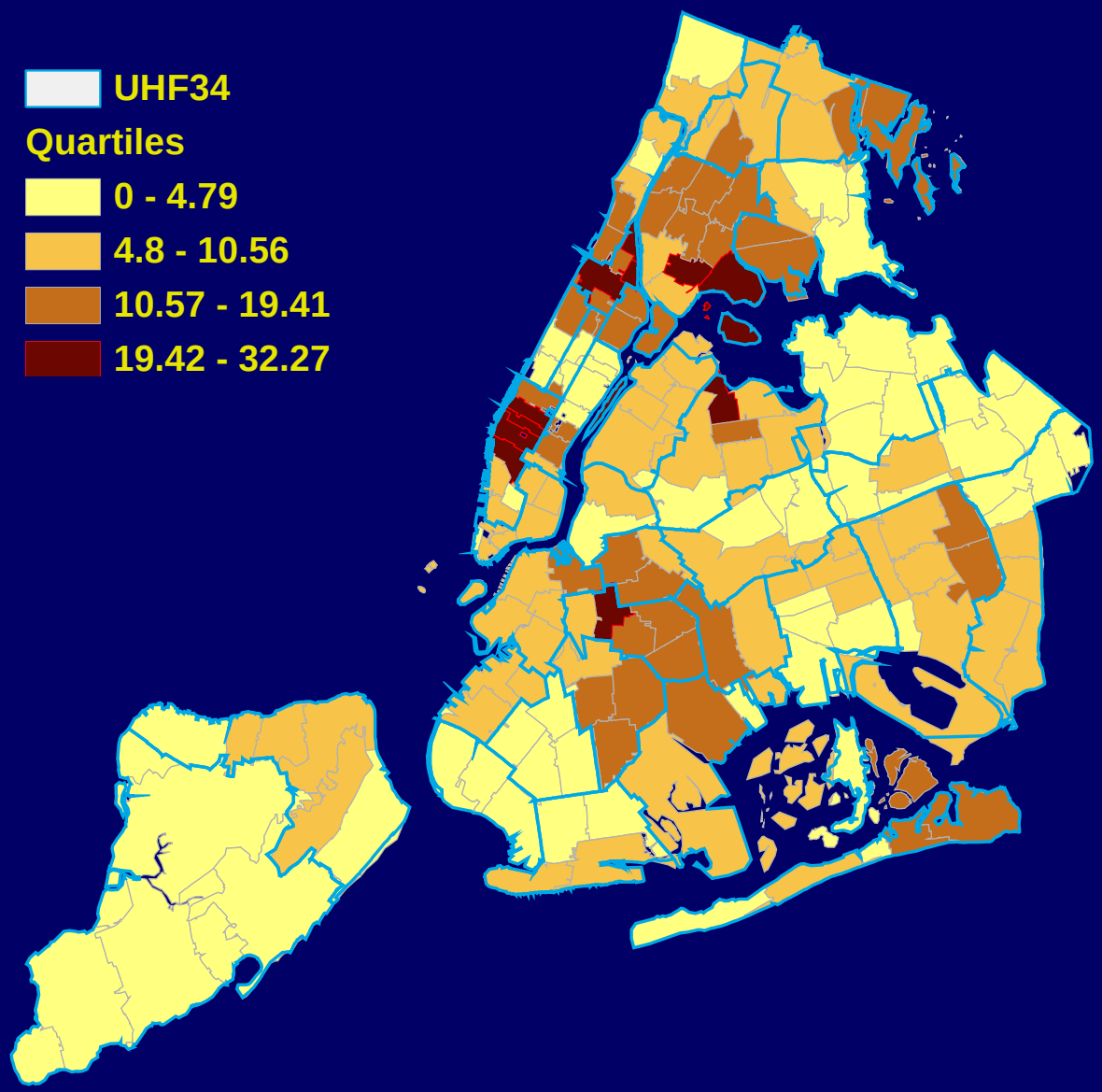
Trends in recent HIV testing coverage, NYC 2001-2010 by borough of residence



Trends in late HIV diagnosis rates, NYC 2001-2010 by borough of residence



Late diagnosis rates by ZIP code, NYC 2009-10



Citywide late diagnosis rate in 2009/10 = 8.6 per 100K (IQR 3.6 to 12.7)

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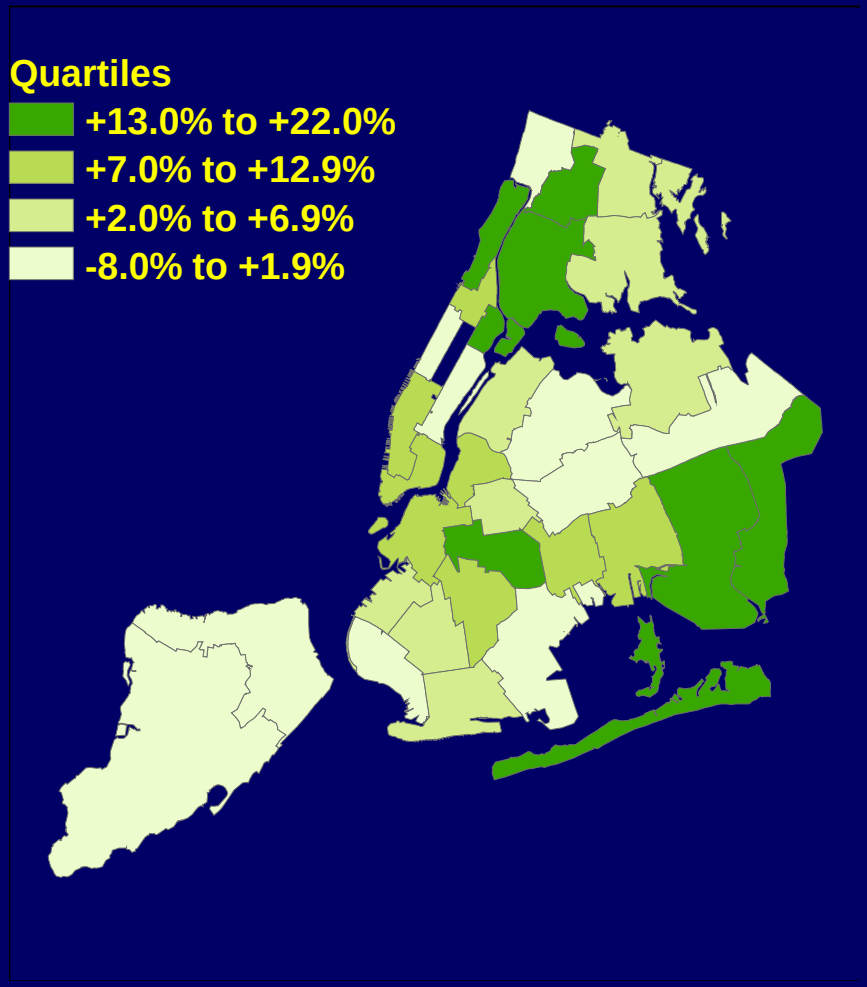
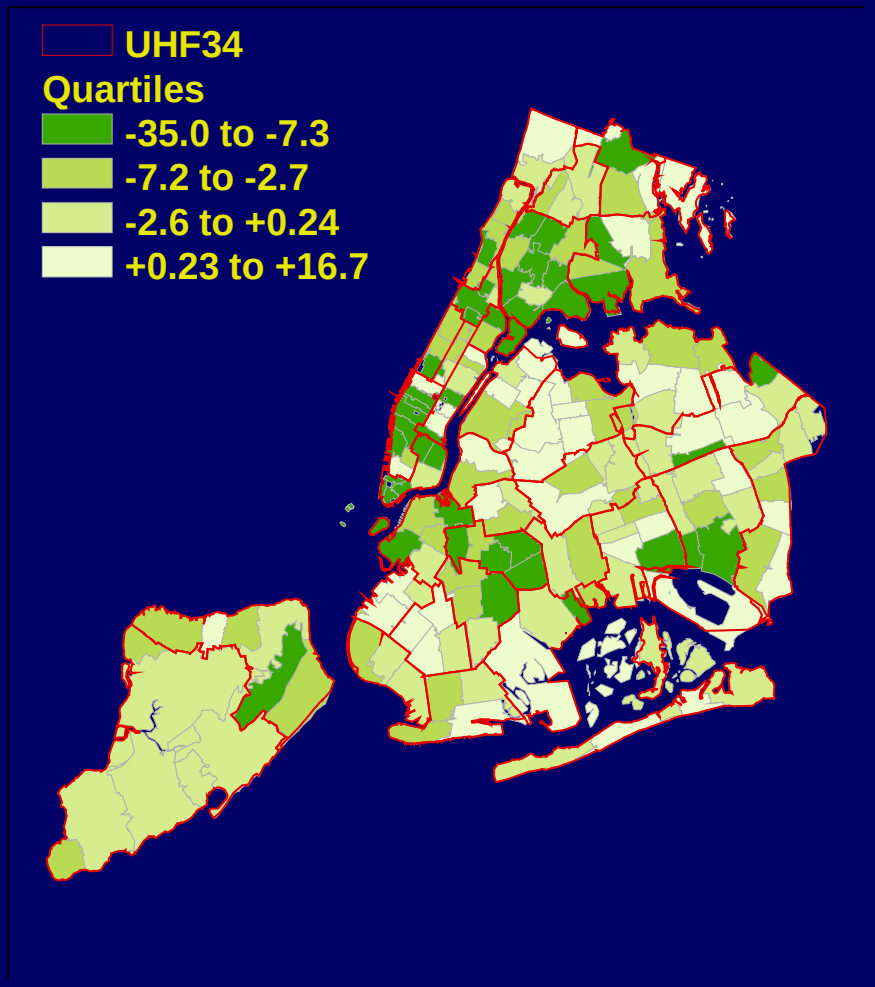
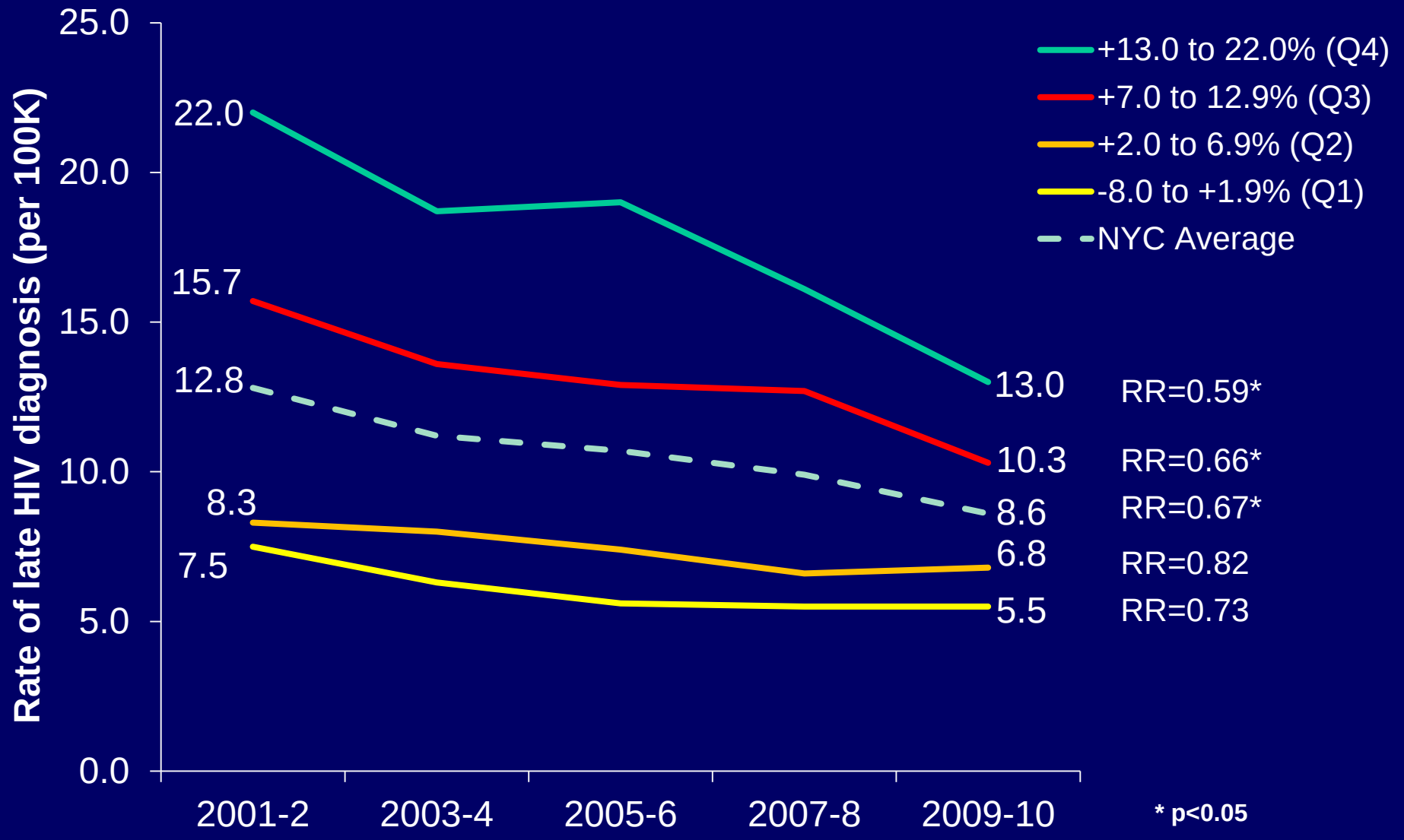
Absolute change in recent HIV testing coverage 2001/2-2009/10



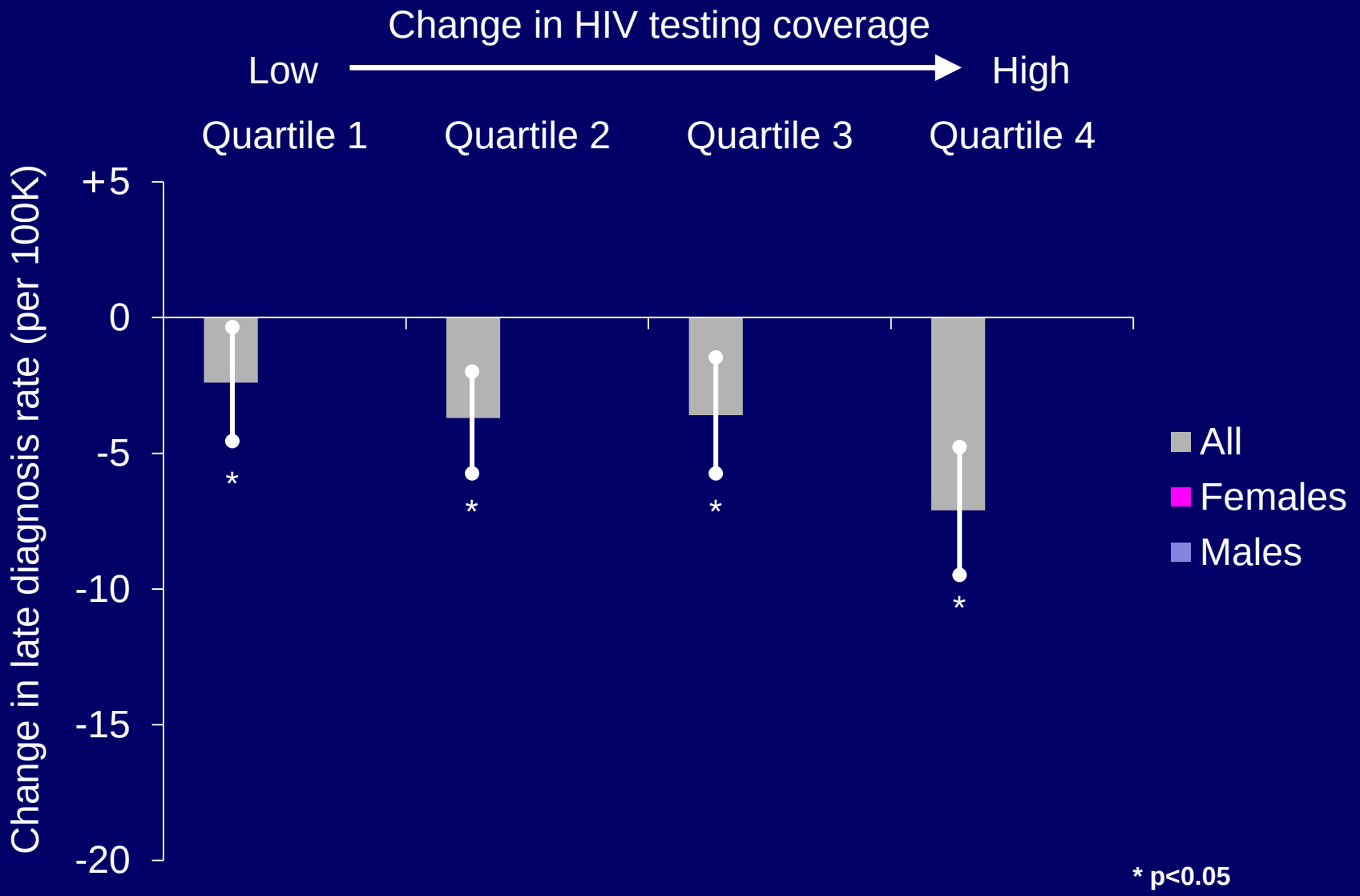
Absolute change in late HIV diagnosis rate 2001/2-2009/10



Trends rates of late HIV diagnosis, NYC 2001-2010 by quartile of neighborhood change in HIV testing coverage



Change in late diagnosis rate by change in recent HIV testing coverage, 2001/2-2009/10



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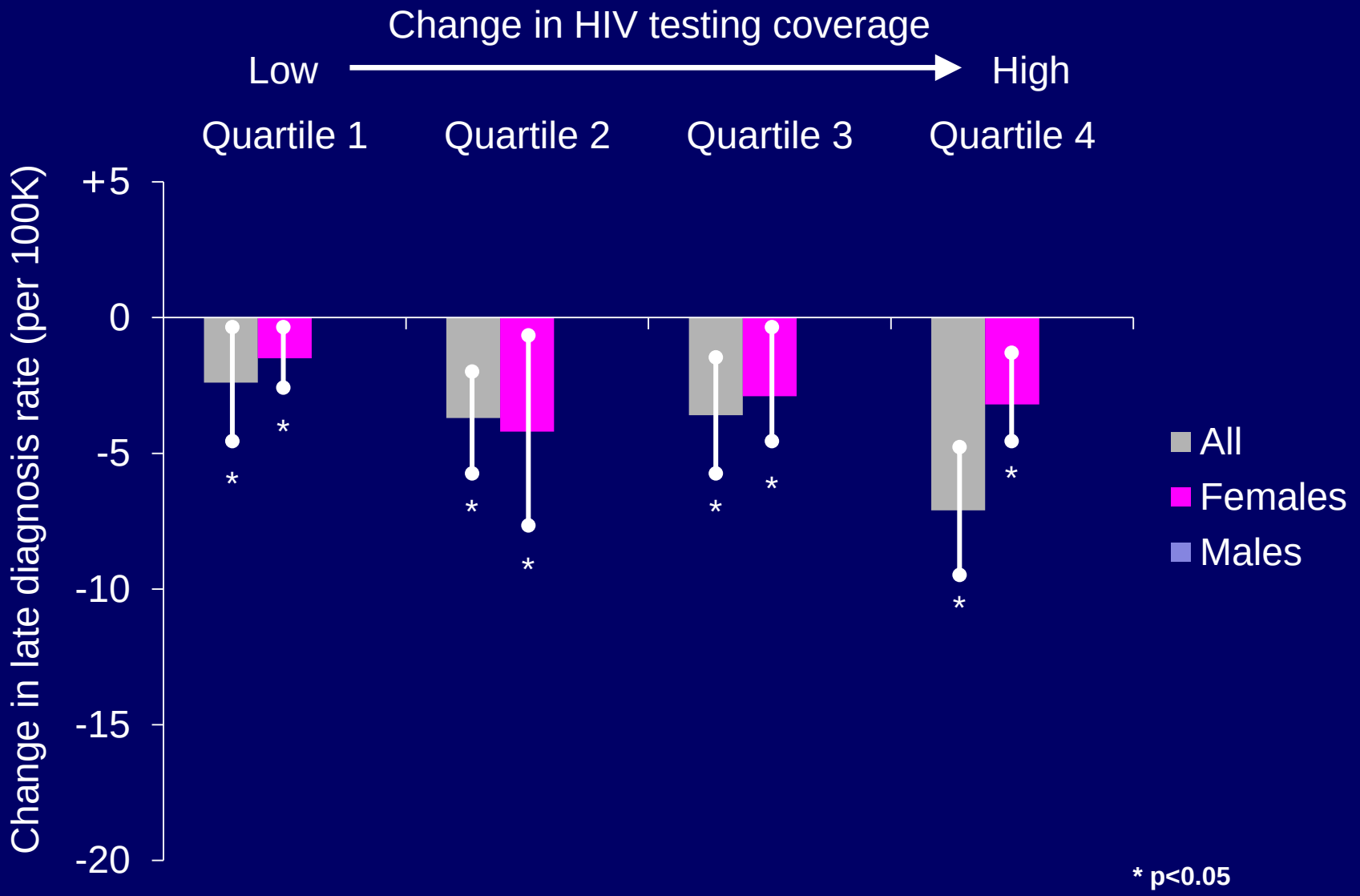

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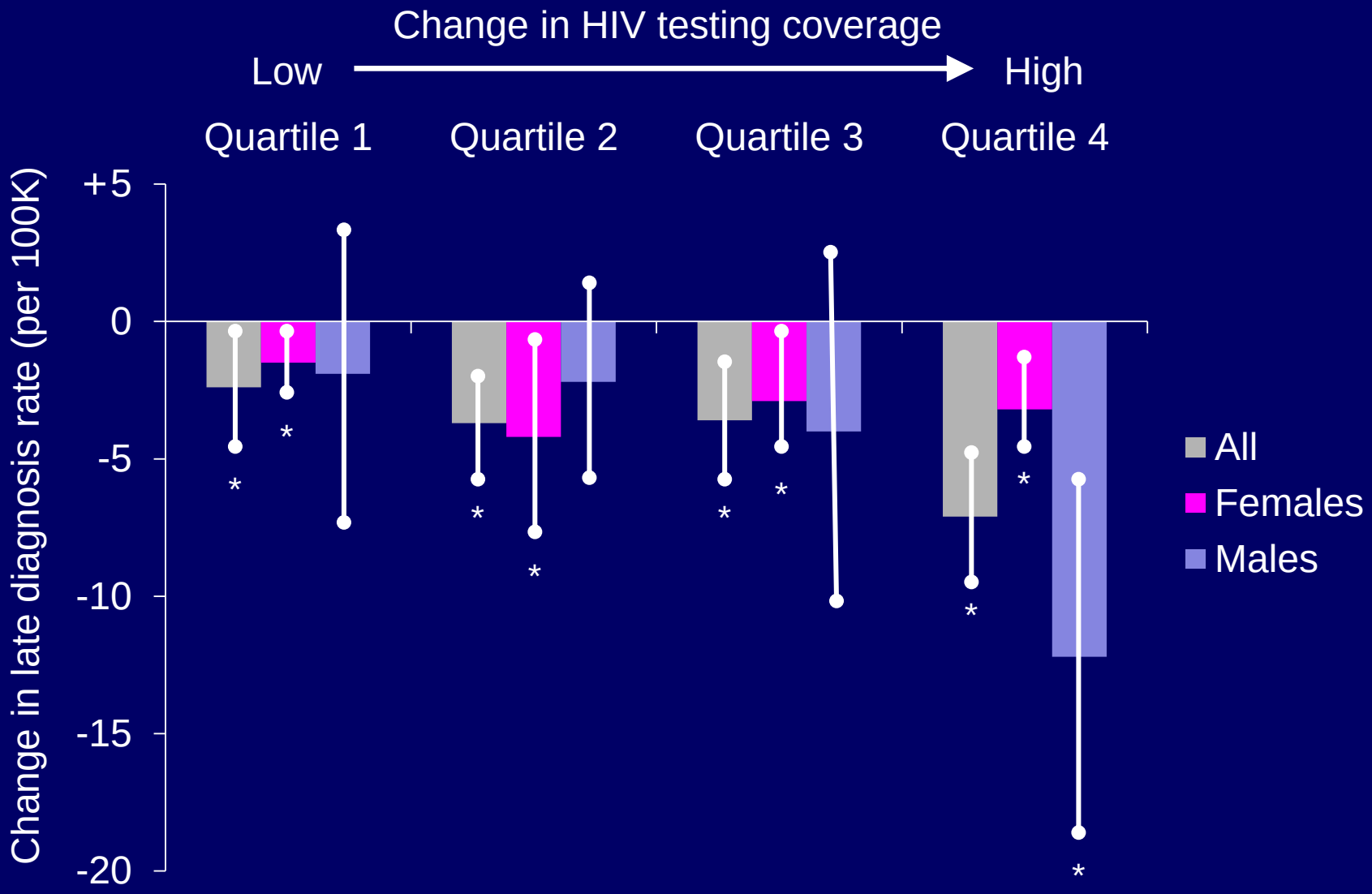


Strengths and limitations

- **Strengths**
  - **Population-based**
  - **Longitudinal analysis at neighborhood level**
- **Limitations**
  - **Other factors changing within neighborhoods could explain changes in late diagnosis rates**
    - **E.g., declining incidence: ↓ HIV incidence → ↓ late dx**
  - **Neighborhood definitions may not differentiate actual neighborhoods very well**
  - **Testing data not available at ZIP code level**
  - **No CHS data for 2001/2**

Summary and conclusions

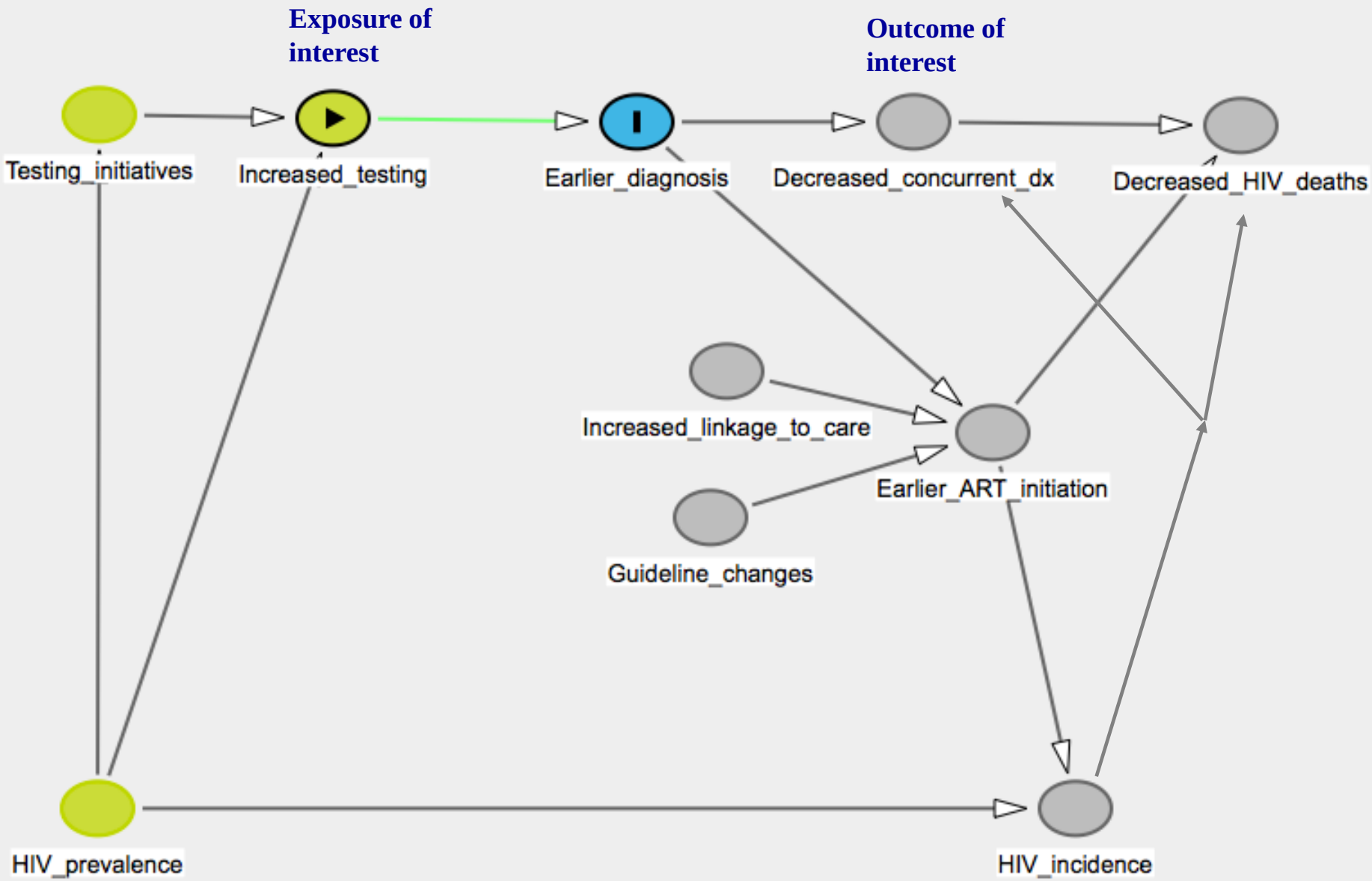
- Substantial increases in recent HIV testing coverage accompanied by:
  - Significant decreases in the rate of late HIV diagnoses
    - Median CD4 among those diagnosed late has increased
  - Late HIV diagnosis rates remained highly variable across NYC neighborhoods in 2009/10
    - Additional studies needed to identify major determinants
- Expansion of HIV testing may have played a significant role in reducing late HIV diagnoses
  - Targeted efforts to further expand HIV testing are warranted
- Studies needed to assess within neighborhood trends in linkage and VL suppression

Acknowledgements

- NYC DOHMH HIV Epidemiology and Field Services Program, Bureau of HIV Prevention & Control
  - Provision of aggregate HIV surveillance data for analysis

Extra slides

Hypothesized relationships between HIV testing coverage and late HIV diagnosis



Change in late HIV diagnosis rate vs. change in recent HIV testing, NYC 2001-2010 (n=340 ZIP-code level observations)