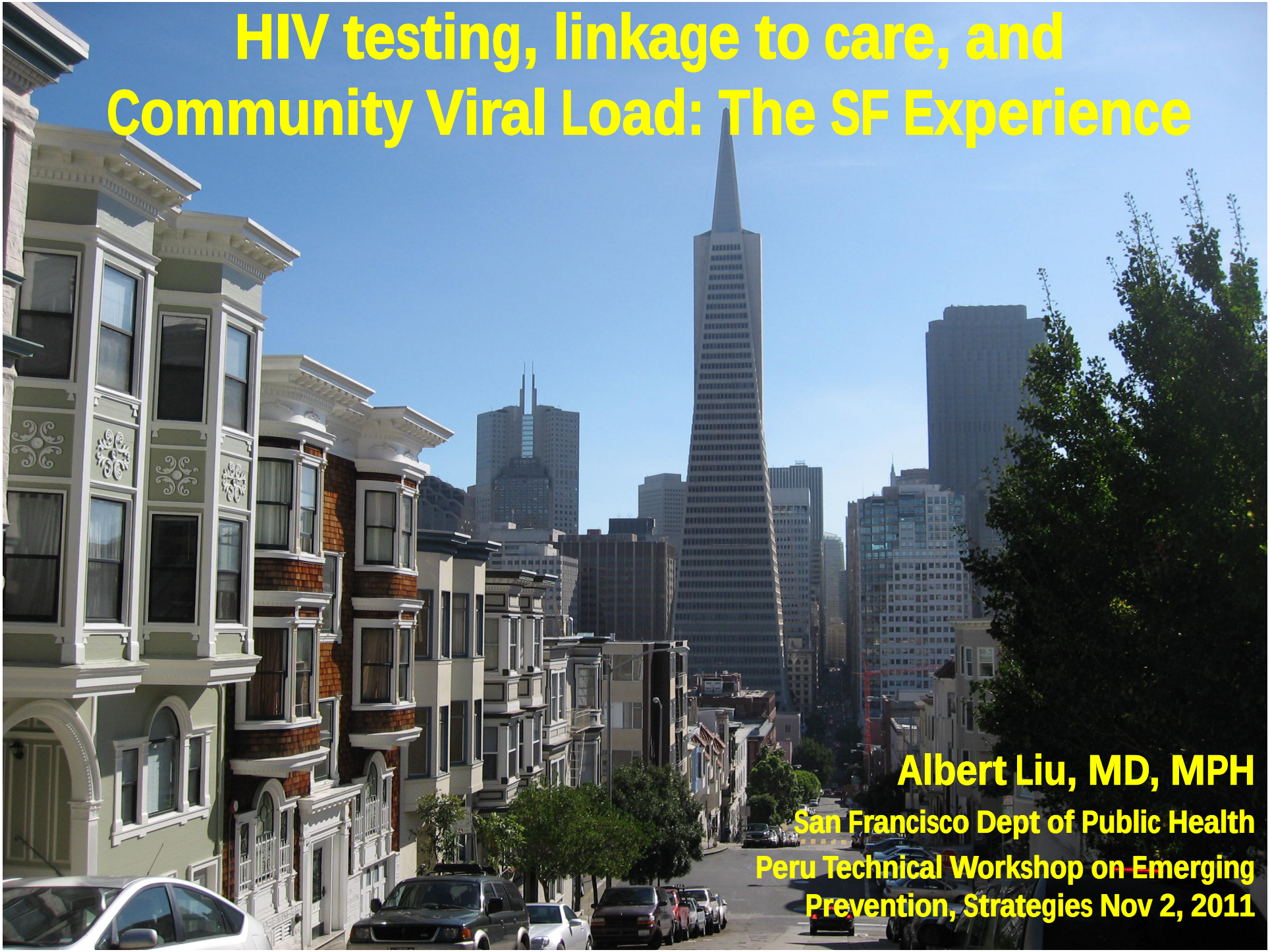
HIV testing, linkage to care, and Community Viral Load: The SF Experience

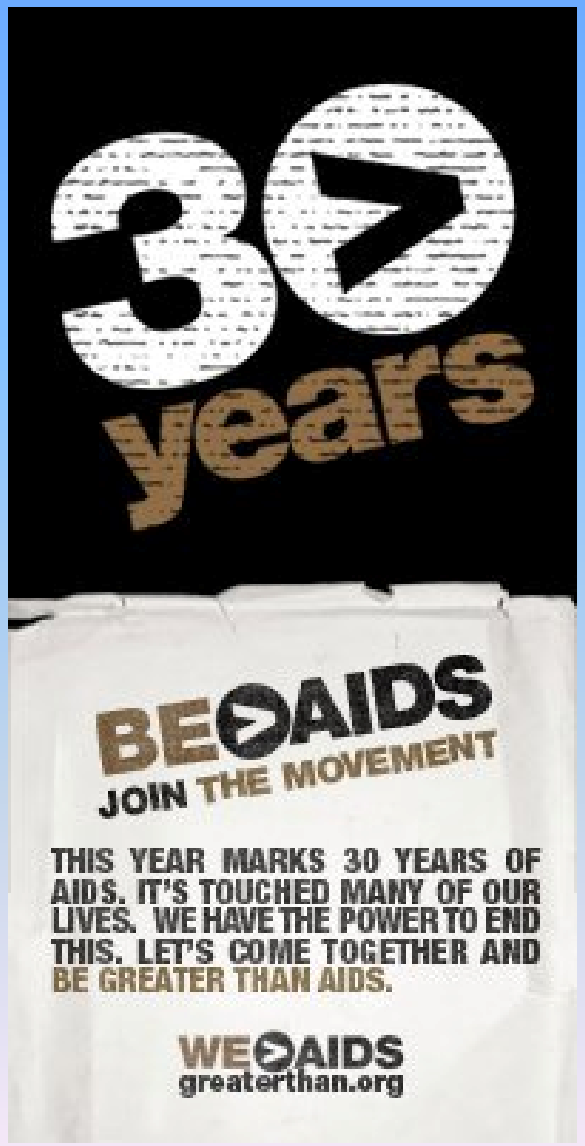


Albert Liu, MD, MPH
San Francisco Dept of Public Health

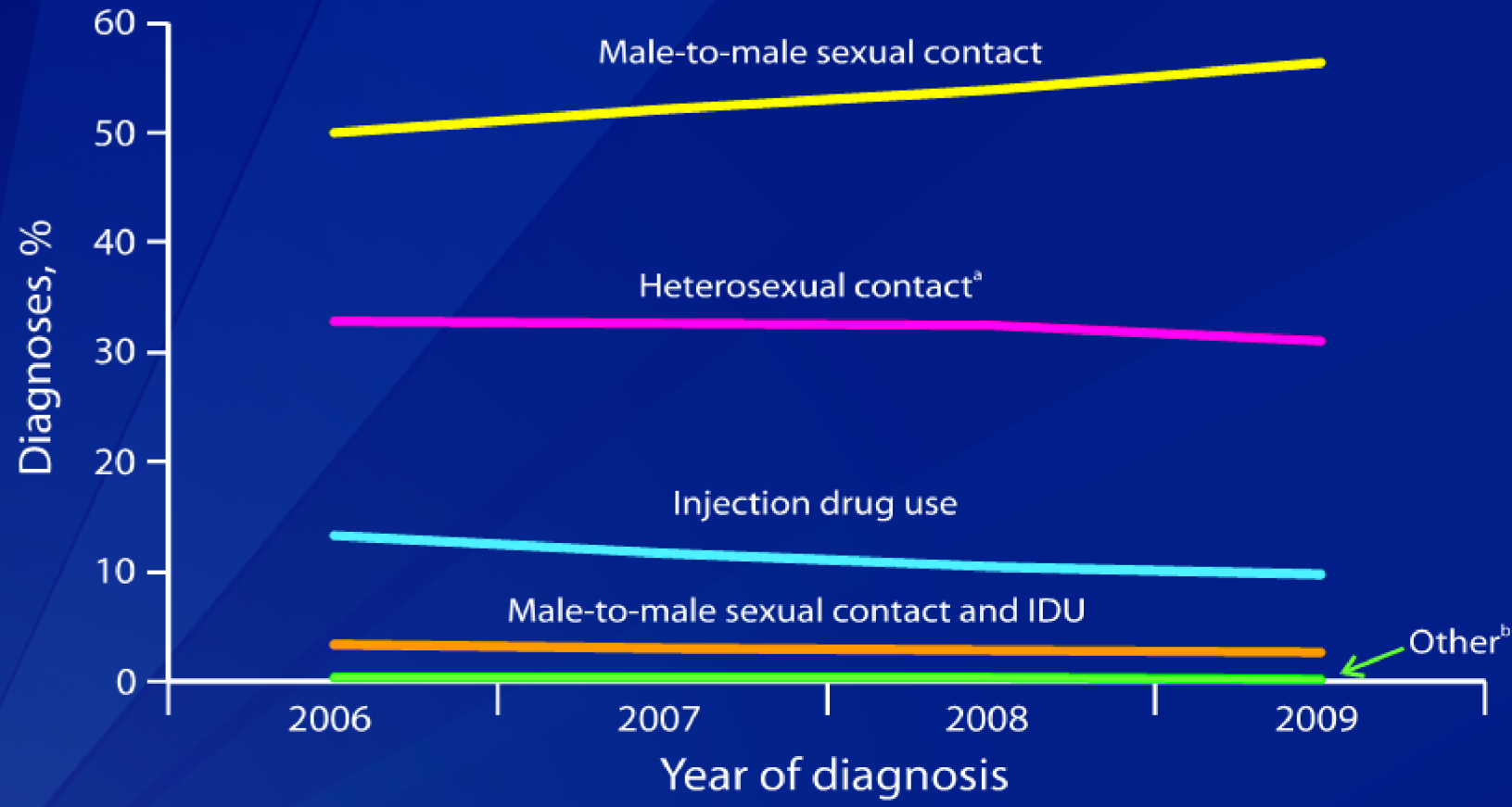
Peru Technical Workshop on Emerging Prevention, Strategies Nov 2, 2011

Outline

- Epidemiology
- National and SF HIV/AIDS Strategy
- Local initiatives
  - HIV testing
  - Linkage to care
  - PrEP
- Metrics for Measuring Success
  - Community Viral Load



Diagnoses of HIV Infection among Adults and Adolescents, by Transmission Category, 2006–2009—40 States and 5 U.S. Dependent Areas

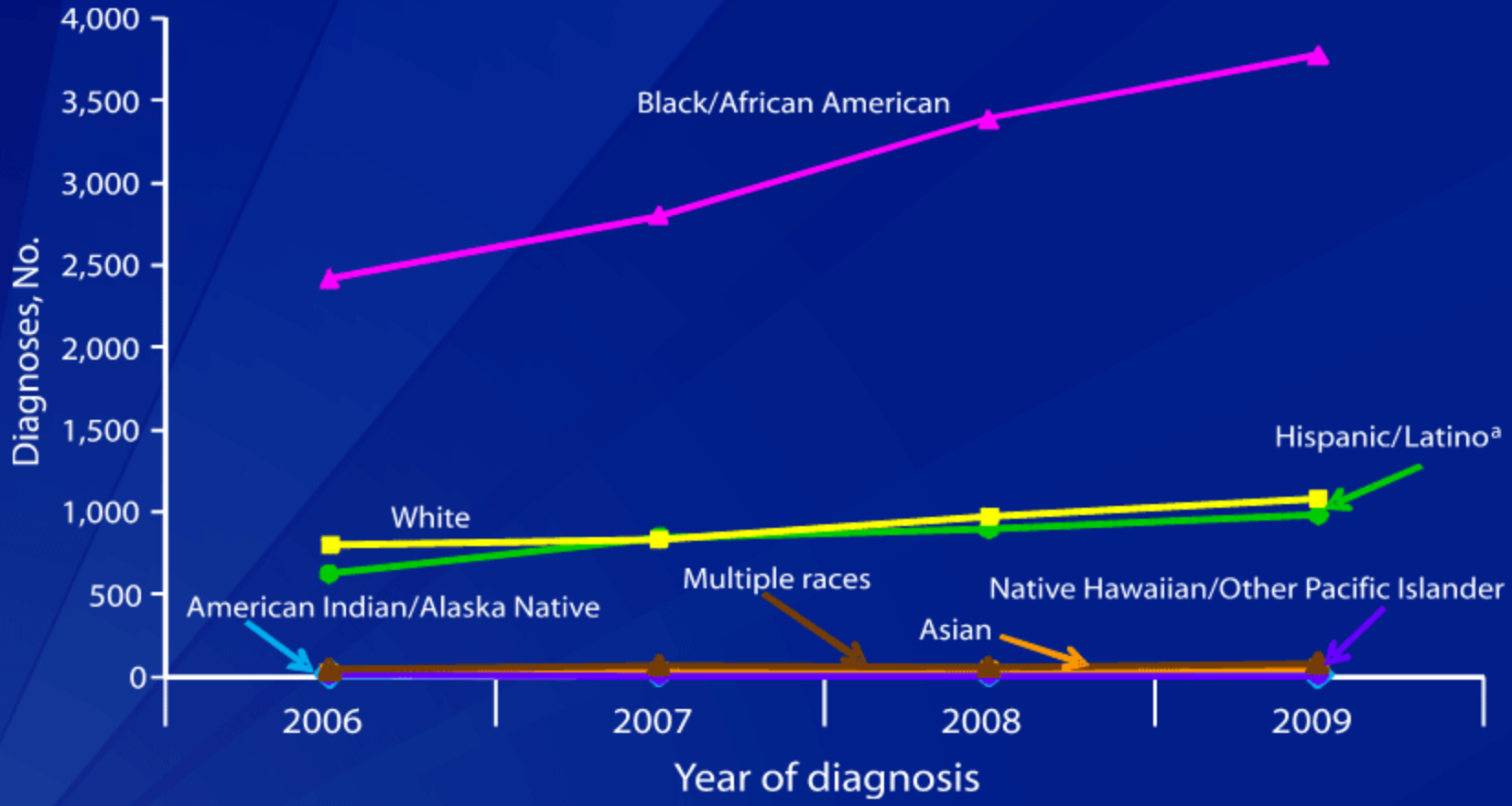


Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. All displayed data have been statistically adjusted to account for reporting delays and missing risk-factor information, but not for incomplete reporting.

[a] Heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

[b] Includes hemophilia, blood transfusion, perinatal exposure, and risk factor not reported or not identified.

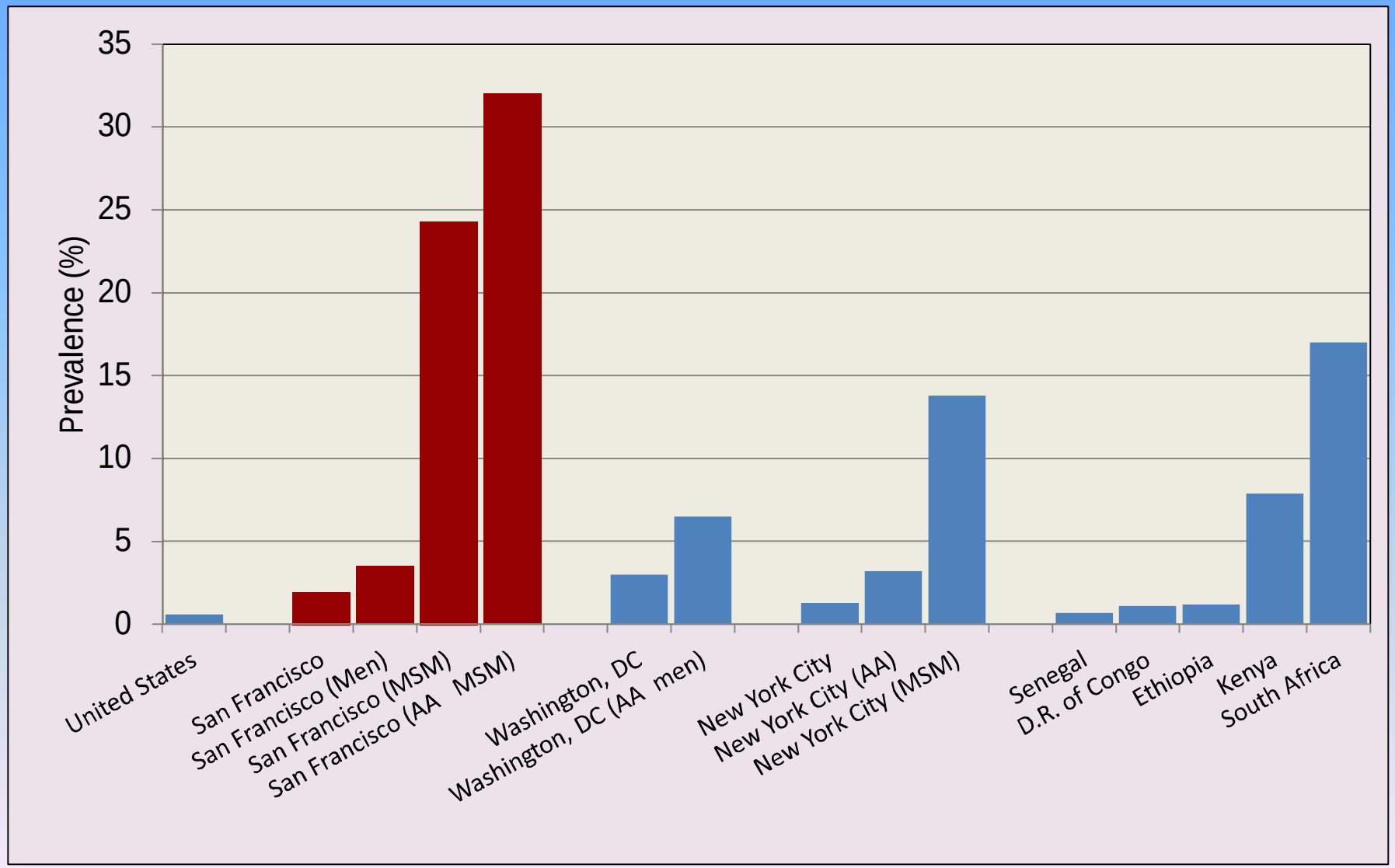
Diagnoses of HIV Infection among Men Who Have Sex with Men Aged 13–24 Years, by Race/Ethnicity, 2006–2009— 40 States and 5 U.S. Dependent Areas



Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. All displayed data have been statistically adjusted to account for reporting delays and missing risk-factor information, but not for incomplete reporting. Data exclude men who reported sexual contact with other men *and* injection drug use.

[a] Hispanics/Latinos can be of any race.

HIV Prevalence, Selected Regions and Subgroups



Adapted from: El-Sadr, et al., *NEJM*, 2010

NATIONAL HIV/AIDS STRATEGY FOR THE UNITED STATES

Strategy Goals and Targets for 2015

Reducing New HIV Infections

- Lower the annual number of new infections by 25%

Increasing Access to Care and Improving Health Outcomes for People Living with HIV

- Increase the proportion of newly diagnosed patients linked to clinical care within three months of their HIV diagnosis from 65% to 85%

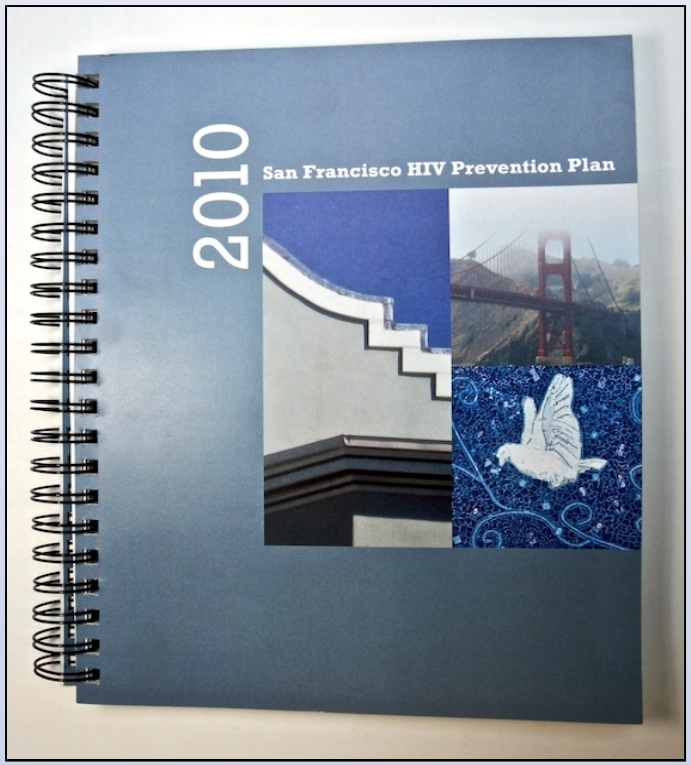
Reducing HIV-related Health Disparities

- Increase the proportion of HIV diagnosed gay and bisexual men with undetectable viral load by 20%

Strategy URL: http://www.whitehouse.gov/administration/eop/onap/nhas

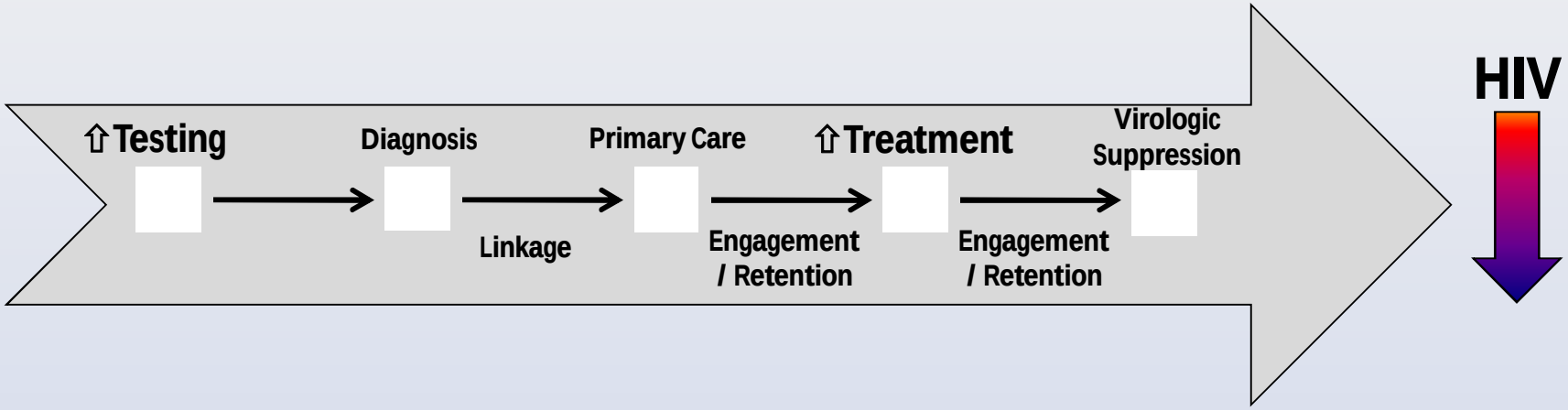
SF HIV/AIDS Strategy

- Vision: End new HIV infections in San Francisco
- Goal: Reduce new HIV infections by 50% by 2017
  - Resources to populations at greatest risk for HIV:
    - MSM (70-79%)
    - IDU (10-20%)
    - TFSM (5-8%)
- Extensive community involvement

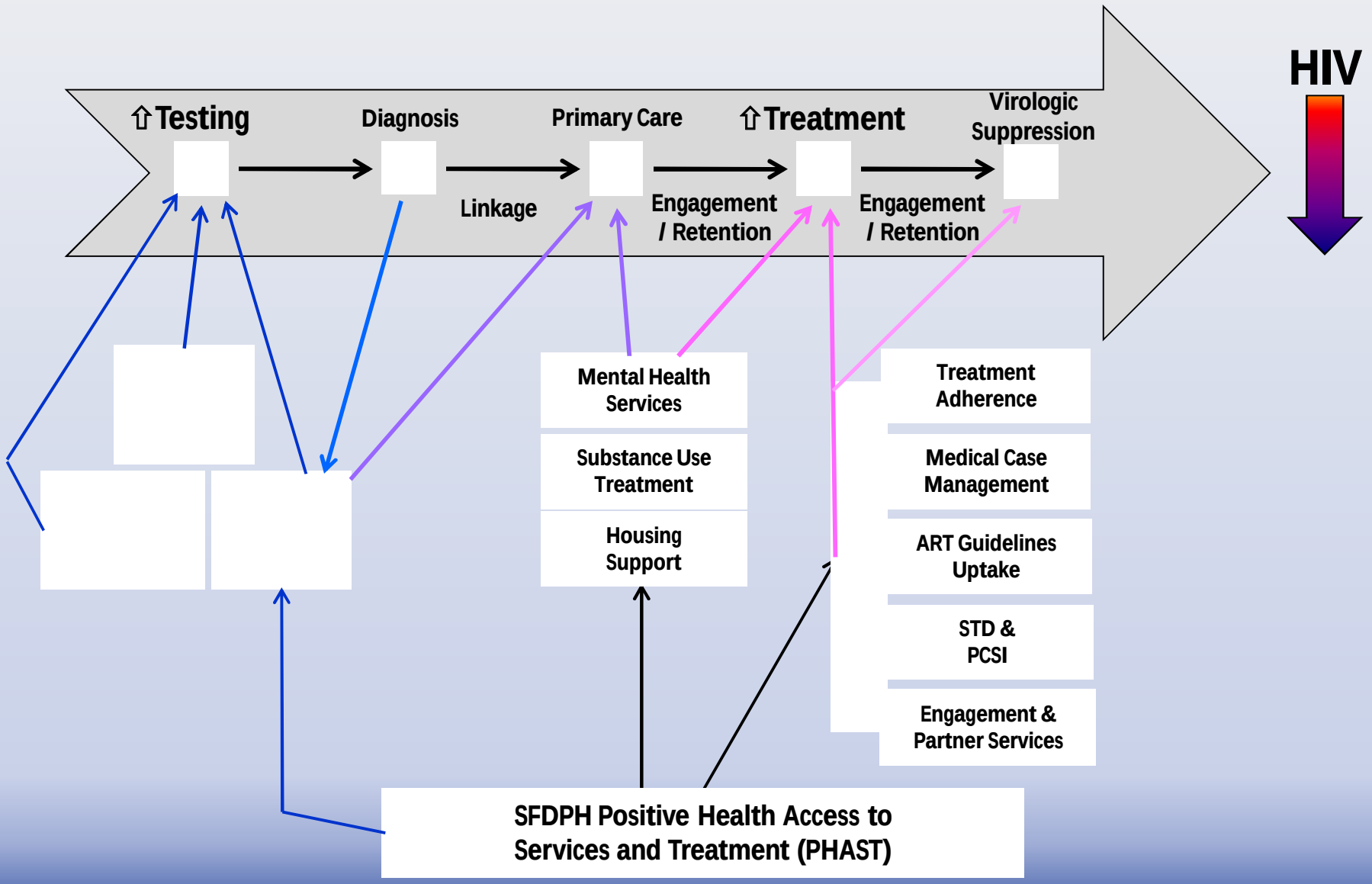


www.sfhiv.org

San Francisco's Approach to Maximizing the Cascade of Prevention, Care and Treatment



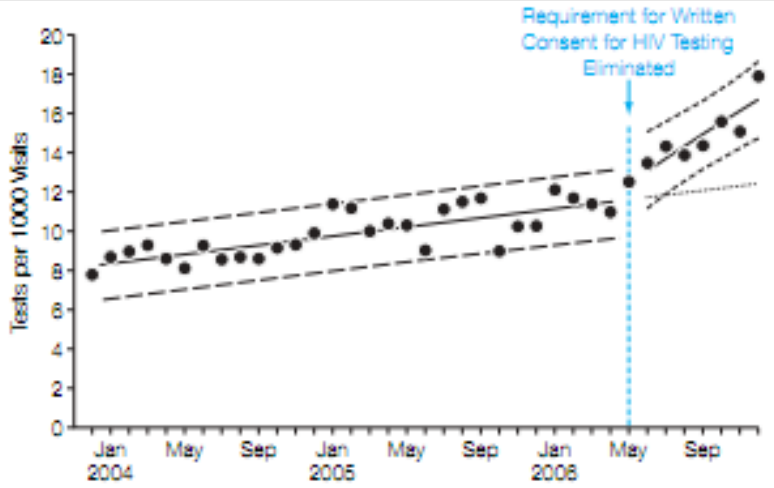
San Francisco's Approach to Maximizing the Cascade of Prevention, Care and Treatment



HIV Testing

- Objective: increase HIV routine testing in medical settings from baseline of 12,000 per year to 18,000, in year one

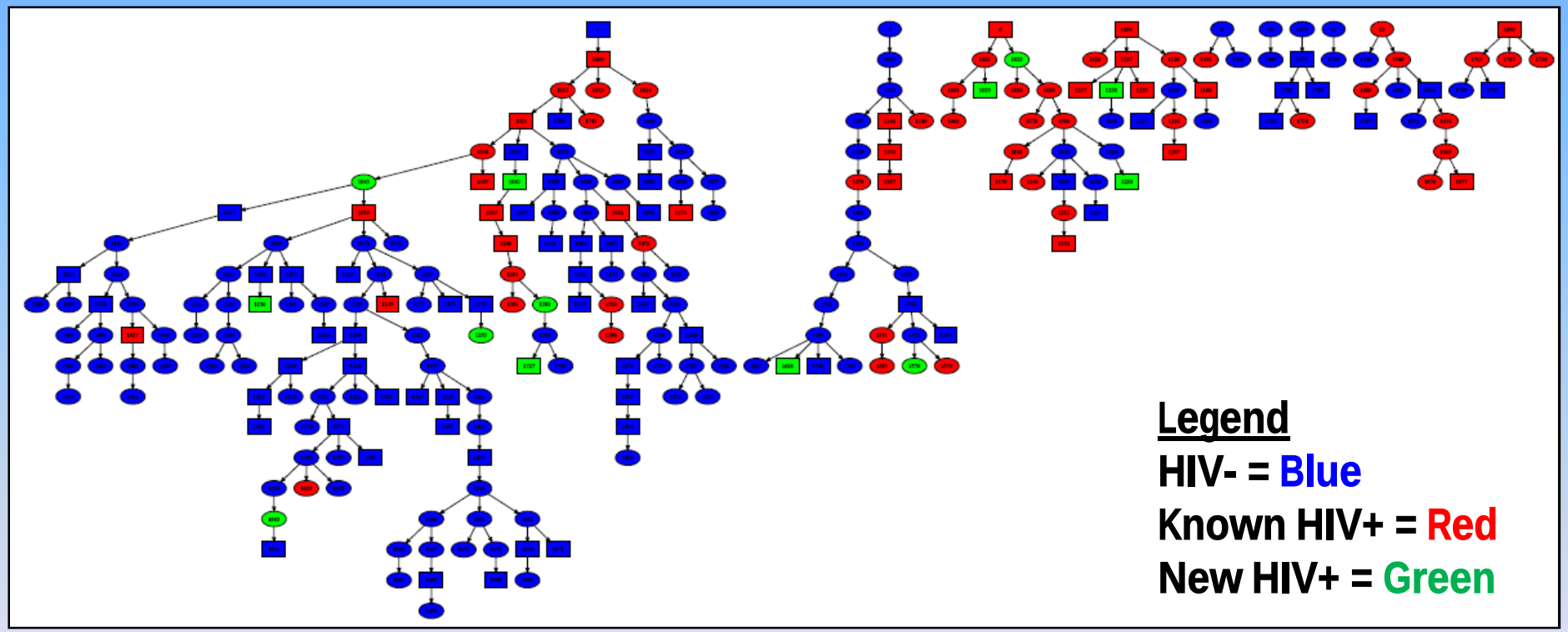
Figure. Mean Rate of HIV Tests per 1000 Patient-Visits in Persons Aged 18 Years or Older (December 2003-December 2006), San Francisco Department of Public Health Medical Care System



Requirement for written consent for human immunodeficiency virus (HIV) testing was eliminated in May 2006. The data points represent the number of HIV tests per 1000 patient-visits per month, solid lines represent the testing trend before and after the change in policy, and the dotted line represents the expected trend in HIV testing if the policy had not changed. Dashed lines indicate 95% confidence intervals for the HIV testing trend before and after the policy change. $P<.001$ for observed vs expected trend.

Zetola JAMA 2007

Testing in Social Networks: The Black Men Testing Project



38% of newly diagnosed cases referred by HIV+ MSM

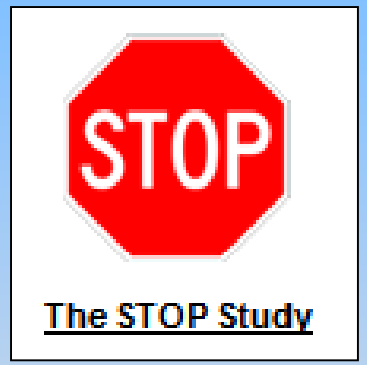
Fuqua, et al., 2010

Detection of New HIV Infections: High-risk Sites

- City Clinic, Magnet, and AHP 2007-2009:
  - 32,494 HIV tests
  - 538 (1.66%) new HIV positives
- 14,544 specimens pooled for RNA testing
  - 54 (.37%) acute cases identified
- Acutes account for 9% of all newly diagnosed

Ongoing and Upcoming Testing Research

- STOP study: compares 3rd generation tests vs. 4th generation tests vs. RNA pooling



- Project Aware (9 US sites)
  - Evaluate role of pre-test counseling on STI incidence

Linkage to care

- Objectives:

  At least 90% of newly diagnosed HIV-infected persons will be linked to HIV primary care within 3 months of diagnosis

Features of Successful Linkage to Care Interventions

- Presence at the time of disclosure of + test result
- HIV-clinic based (bridging pts in vs. referring out)
- Multidisciplinary (medical and social work skill sets)
- Appt reminders
- Thoughtful matching of pt with PCP
- Availability of and expedited access to on-site psychiatric and substance abuse services

Christopoulos CID 2011

Engagement in Care: Citiwide PHAST Program

- SFGH Campus PHAST
  - All positive
  - 98% linkage of 48 SFGH ED positives
- Citiwide PHAST
  - Linkage
  - Partner Services
  - Engagement and Retention in Care

Universal **OFFER** of ART on Ward 86 and all SFDPH Community Health Clinics

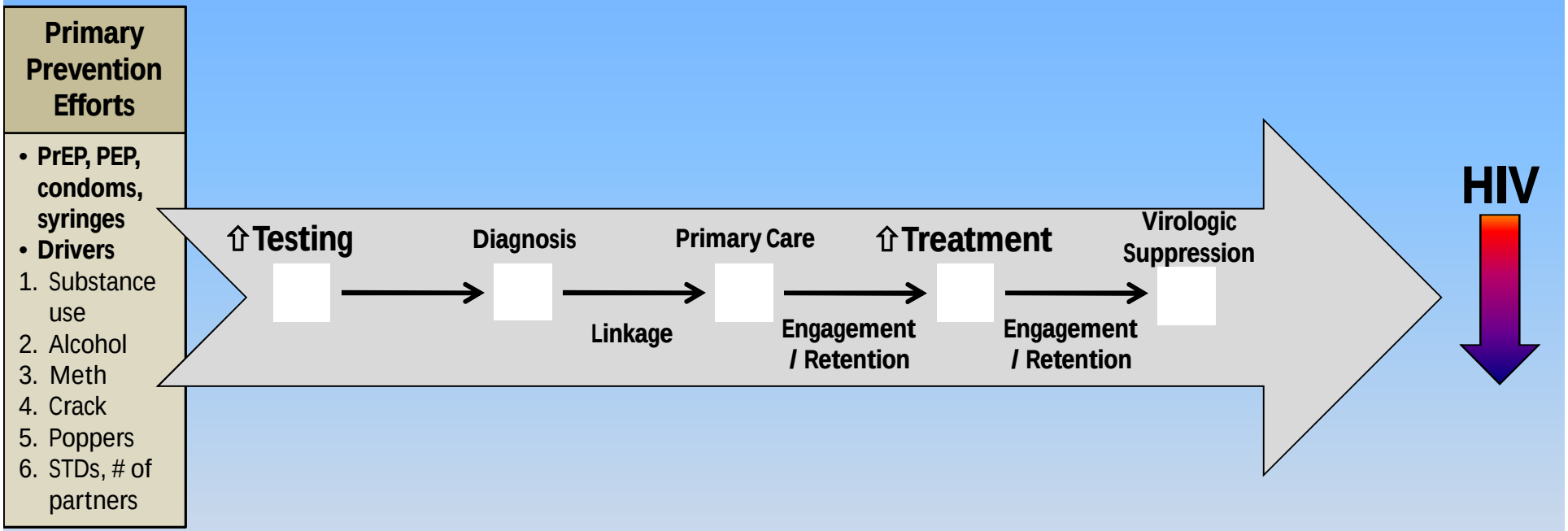
"All patients, regardless of CD4 count, will be evaluated for initiation of antiretroviral therapy (ART)"
Decision to start ART made by the individual in conjunction with the provider

lide modified from slide courtesy of Brad Hare, SFGH Community Forum

Patient Care is more than ART provision

- Primary care provider (NP, Int Med, FP, ID/HIV)
- Social workers
  - Screening and referral for substance use or mental health concerns (HIV Specialty Psychiatry/Psychology)
  - Housing, disability, benefits (including ADAP enrollment)
- **Pharmacist lead ART adherence program**
  - 1:1 Assessments of barriers, education, medicine reviews, ongoing monitoring
- Patient education program and support groups
- *Could not be done without political will →Healthy SF covers undocumented*

San Francisco's Approach to Maximizing the Continuum of Prevention, Care and Treatment



PrEP Demonstration Project

- NIH-funded Demonstration Project
- 500 at-risk HIV-negative MSM
  - 300 in SF (San Francisco City Clinic)
  - 200 in Miami (Department of Health)
- Offered up to 12 months of PrEP (FTC/TDF)
- Provided quarterly HIV testing, risk reduction/adherence counseling, and medical monitoring
- Objectives:
  - Feasibility, acceptability, uptake of PrEP in STD clinic setting
  - Safety
  - Adherence
  - Risk behaviors
- Timeline – launch early 2012

http://iprexole.com/1pages/aboutus/aboutus-whatisiprexole.php.

HOW CAN WE MEASURE THE POPULATION-LEVEL IMPACT OF SFHAS?

Prevention Indicators, San Francisco

Parameters	2004 (%)	2008 (%)
Among MSM, HIV Test in Last 12 mos.	65	71
HIV-Positive People Unaware of Status	24	15-20
Linkage to Care	88% (2006–2007)	
Engaged in Care	71	78
ART Coverage (PWA)	74 (2005)	90
Virologic Suppression	52 (2005)	72

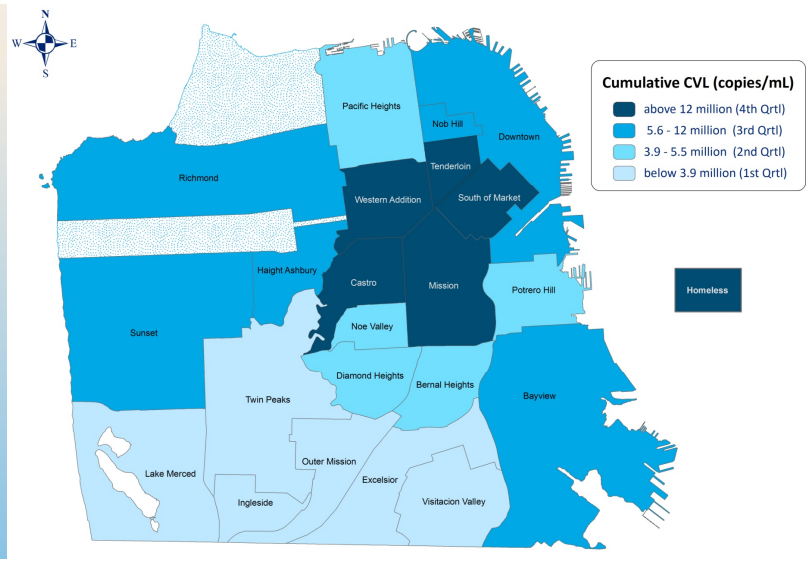
NATIONAL HIV/AIDS STRATEGY FOR THE UNITED STATES

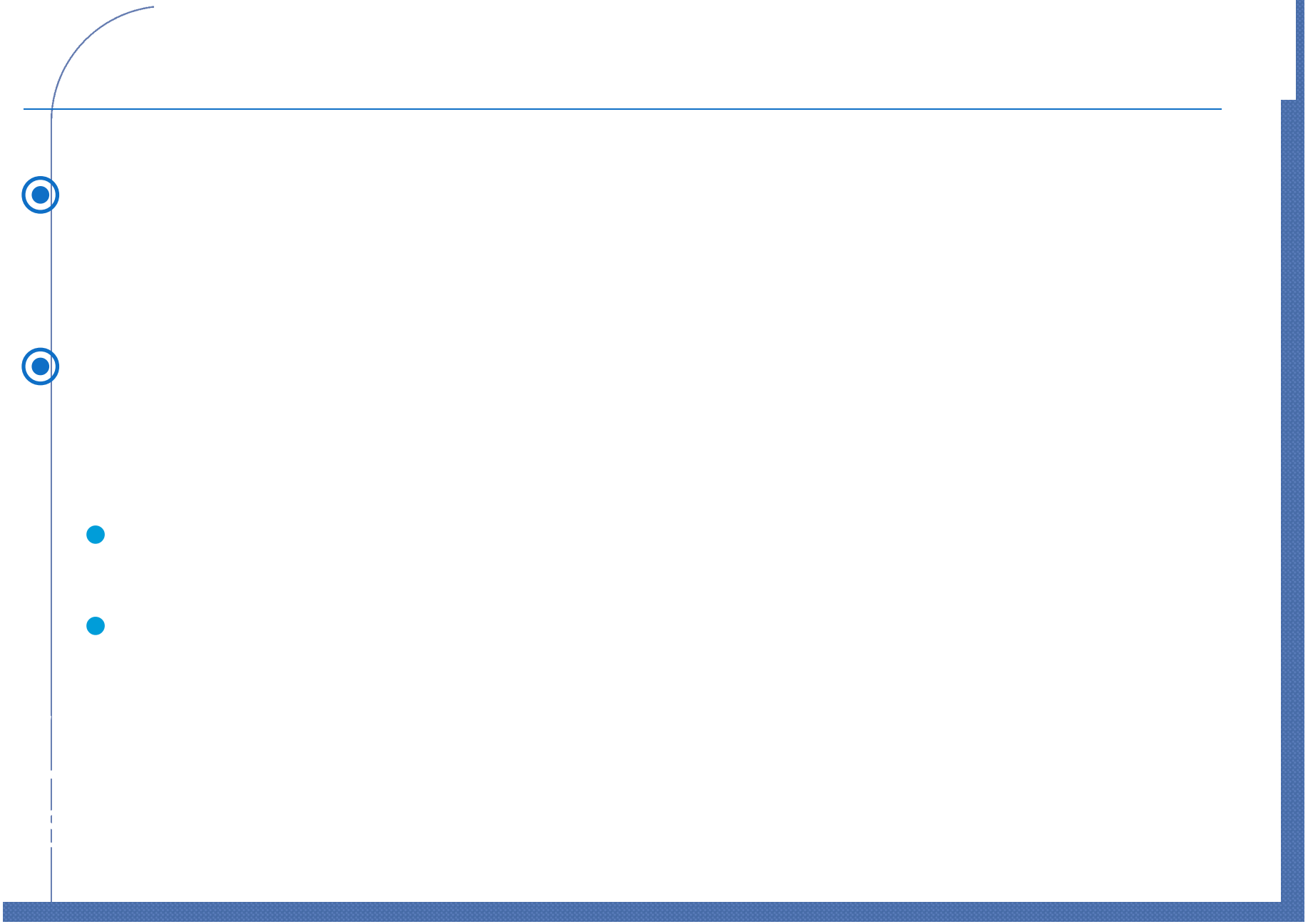
Recommended Action

Measure and utilize community viral load: Ensure that all high prevalence localities are able to collect data necessary to calculate community viral load, measure the viral load in specific communities, and reduce viral load in those communities where HIV incidence is high.

Decreases in Community Viral Load Are Accompanied by Reductions in New HIV Infections in San Francisco

Moupali Das[1,2]*, Priscilla Lee Chu[1], Glenn-Milo Santos[1], Susan Scheer[1], Eric Vittinghoff[2], Willi McFarland[1,2], Grant N. Colfax[1,2]





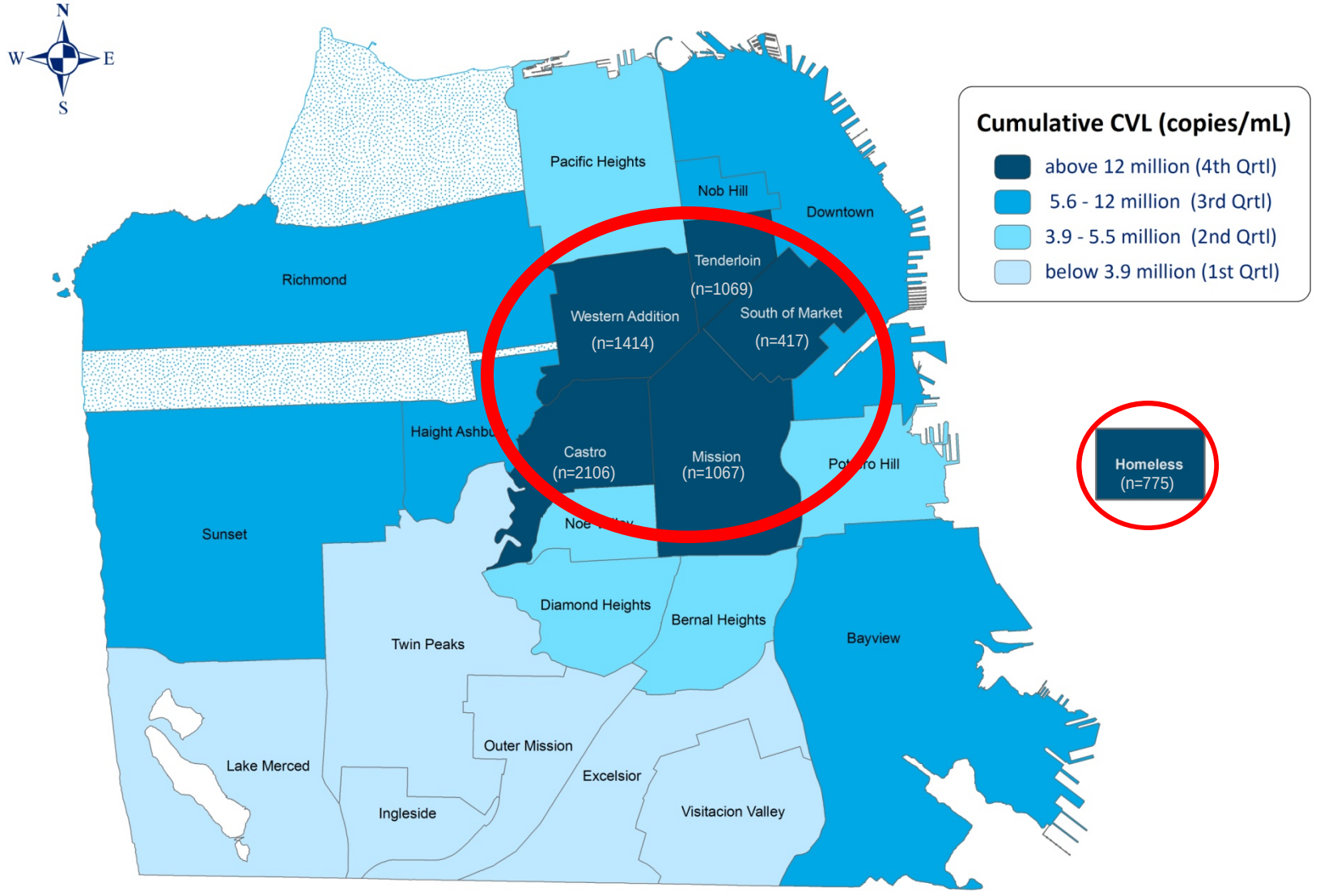
- $$tCVL = \left(\sum_{i=1}^{n} mostrecentVL \right)$$
- $$mCVL = \left(\frac{\sum_{i=1}^{n} (mostrecentVL)}{n} \right)$$

CVL Disparities, SF 2004-2008

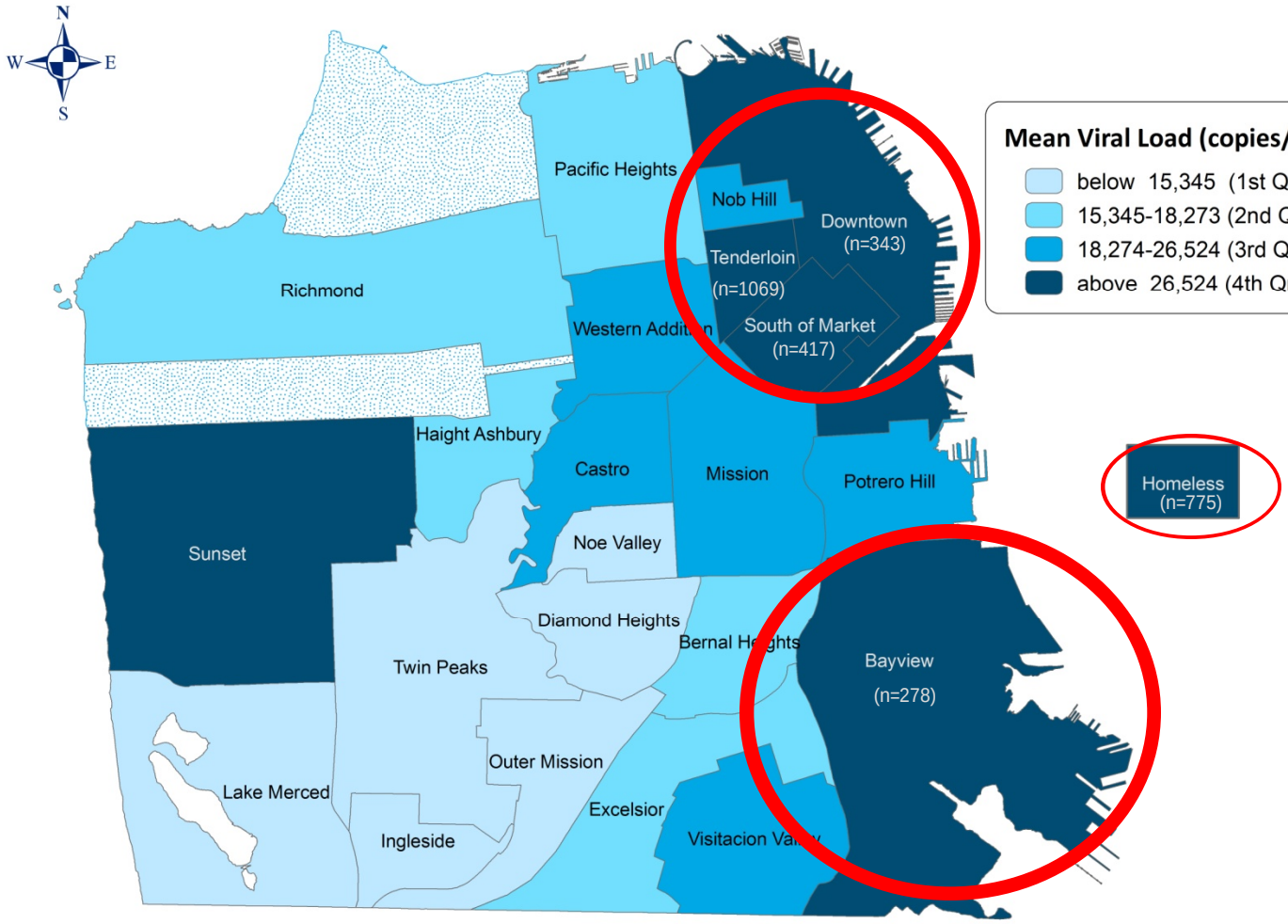
Overall	N	(%)	Mean CVL*
San Francisco	12,512	(100)	23,348
Sub-groups	**N**	**(%)**	**Mean CVL***
Latino	1822	(15)	26,744
African-American	1825	(15)	26,404
Women	786	(6)	27,614
Transgender	291	(2)	64,160
IDU	1011	(8)	33,245
MSM-IDU	1791	(14)	36,261
Not on treatment	2924	(23)	40,056
Not engaged in care	4637	(37)	36,992

***(p<0.001 by Kruskal-Wallis test) in mean CVL by treatment history, race/ethnicity, age, gender, HIV transmission risk category, insurance status, and clinical status.**

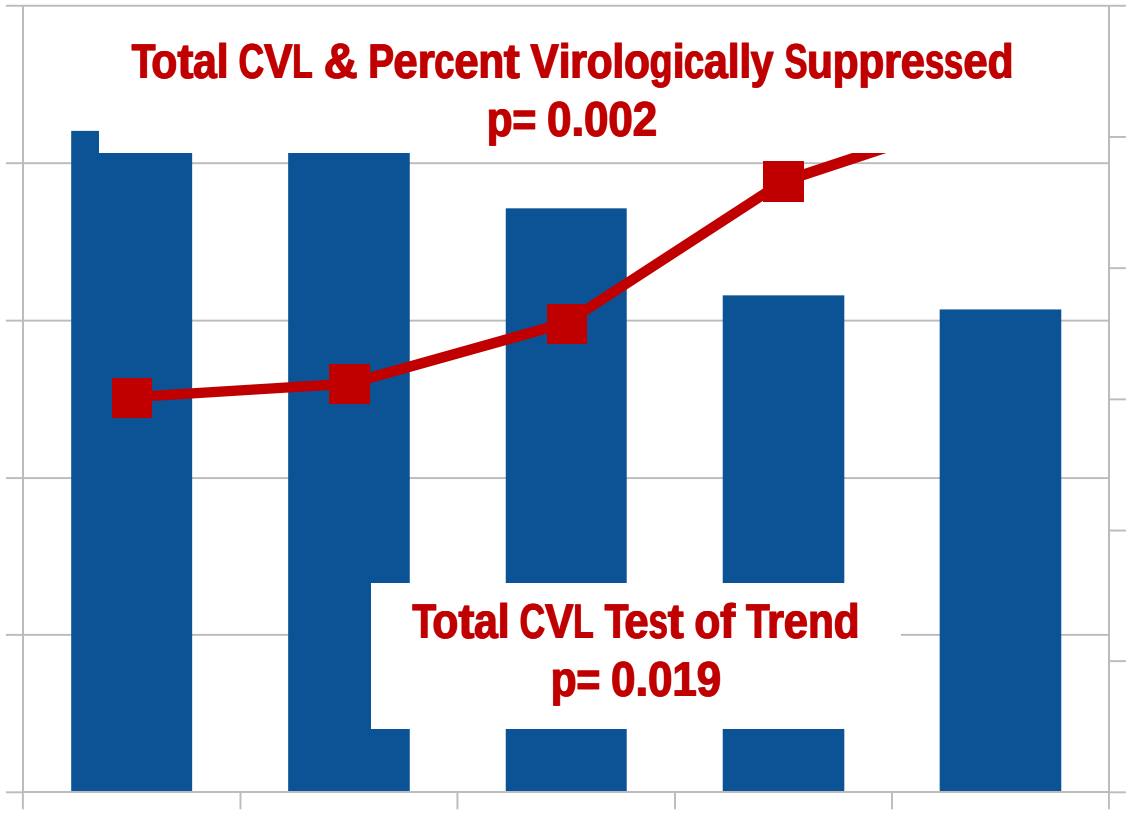
Spatial Distribution of To
Neighborhood



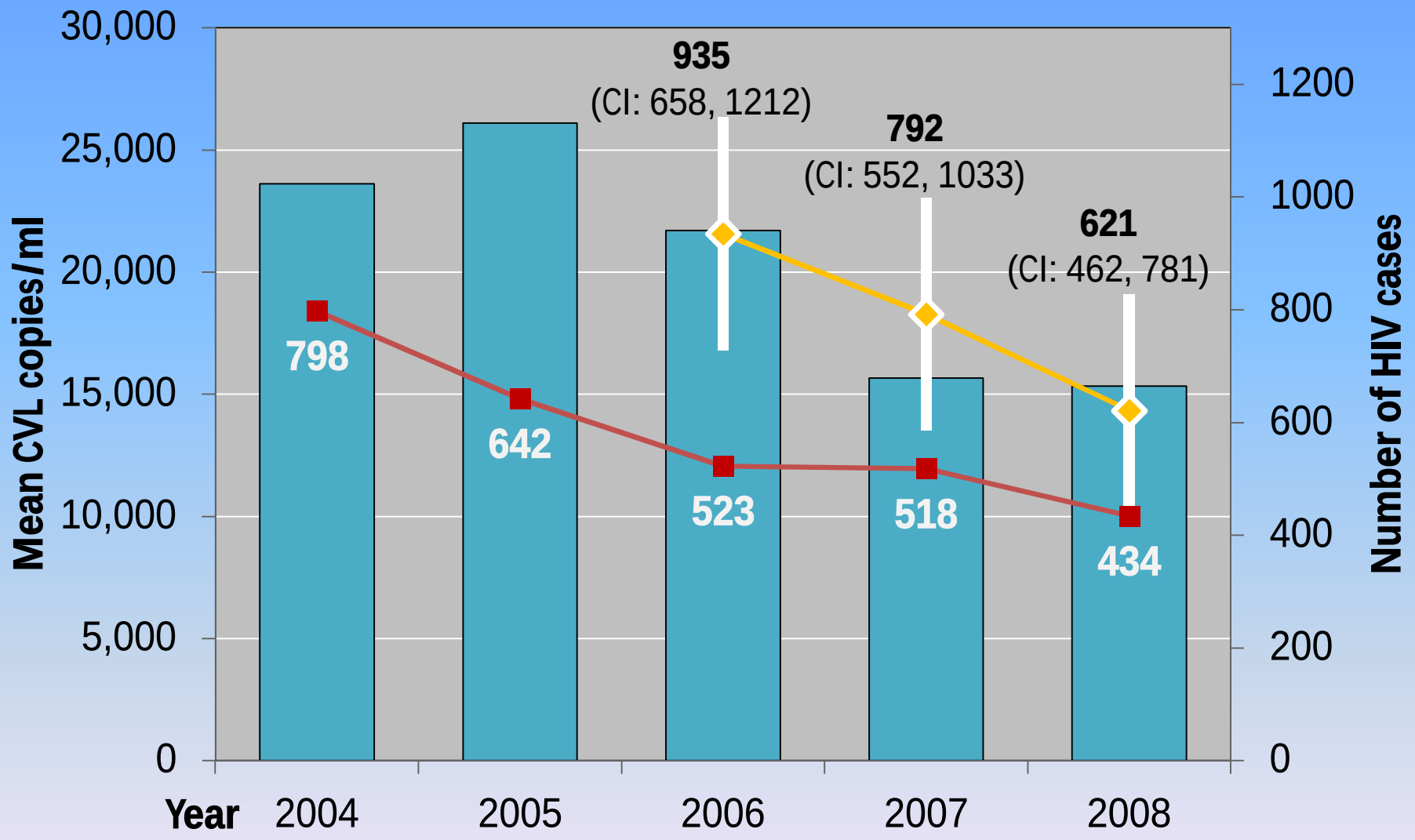
Spatial Distribution of Mean



Total CVL and Virologic Suppressio

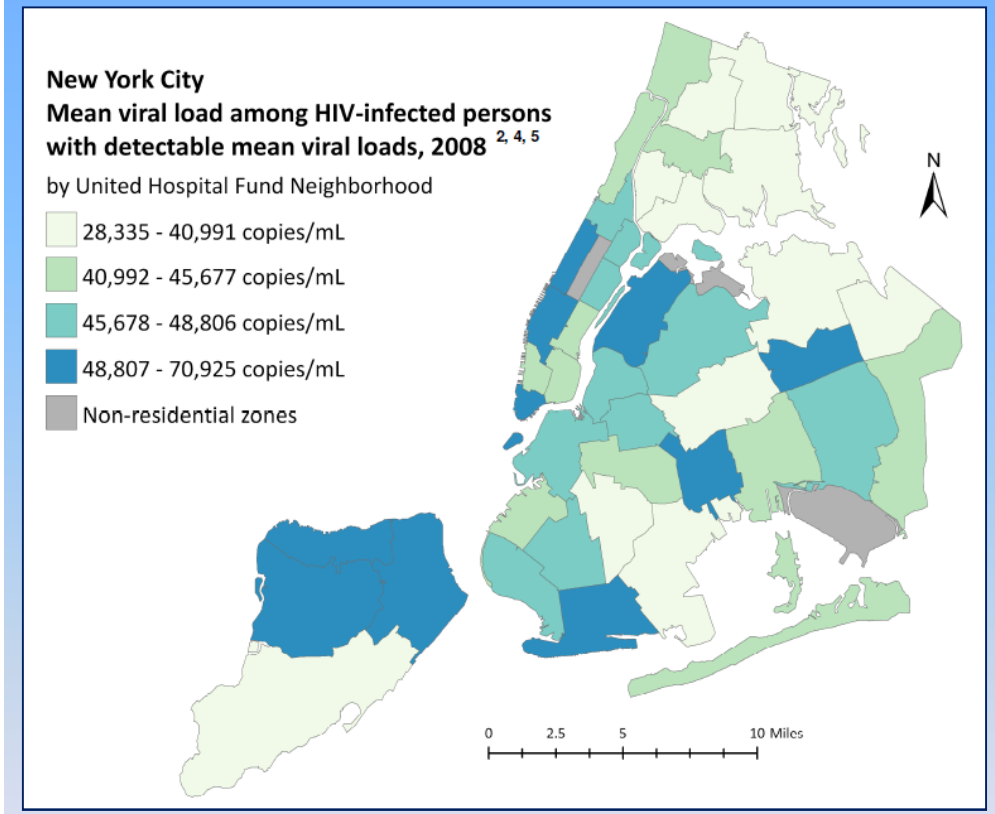


Mean CVL and New HIV Infections, 2004-2008

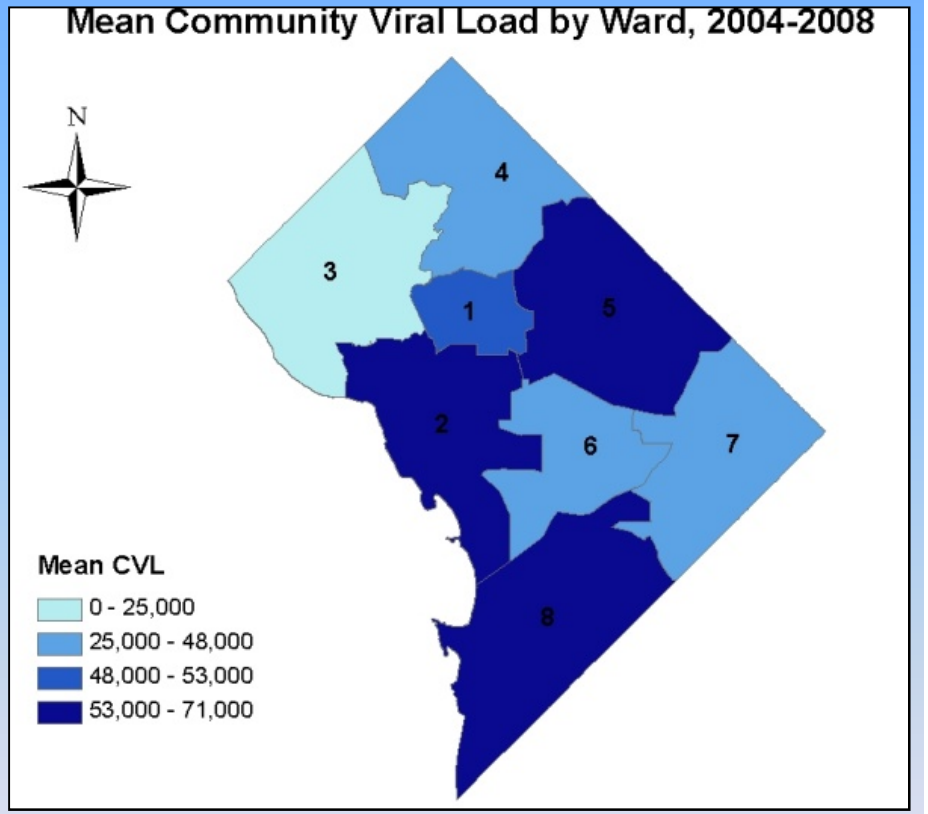


Das, et al. 2010.

CVL: New York & Washington D.C.



Laraque, et al. *CROI*, 2011. Abstract #1024.



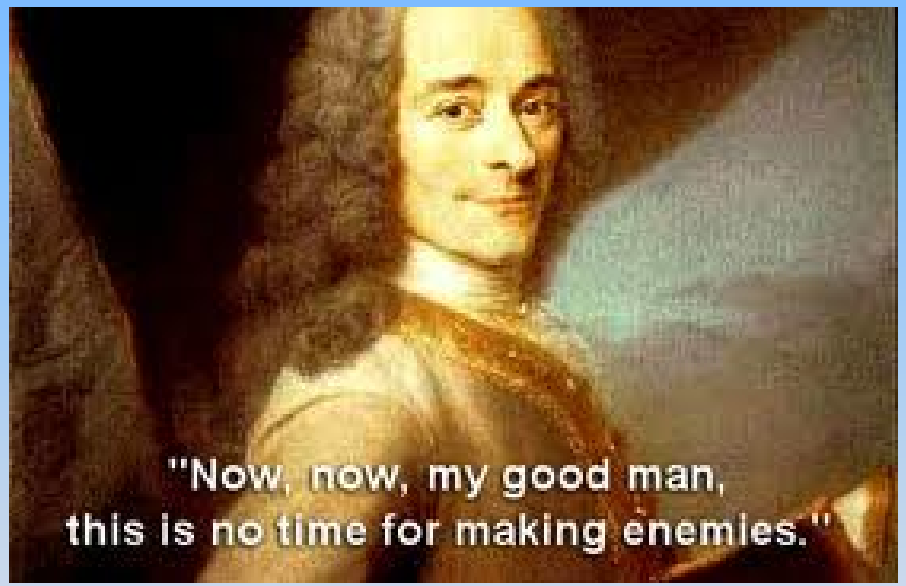
Castel, et al. *CROI*, 2011. Abstract #1023.

Limitations

- Surveillance Registry
  - Multiple imputation addressed missing 25.6%
  - Excluded undiagnosed (estimated 15.1-20.0%)
  - Excluded diagnosed but not reported (estimated 5%)
  - Excluded some acutely infected individuals
- Ecologic Fallacy
  - HIV diagnoses decreased as HIV testing rates, as well as frequency of testing increased
  - HIV diagnoses decreased during a period when there was a reduction in the number of people unaware of dx

Let Not the Perfect Be the Enemy of the Good!

- “The perfect is the enemy of the good.”



Voltaire 1772

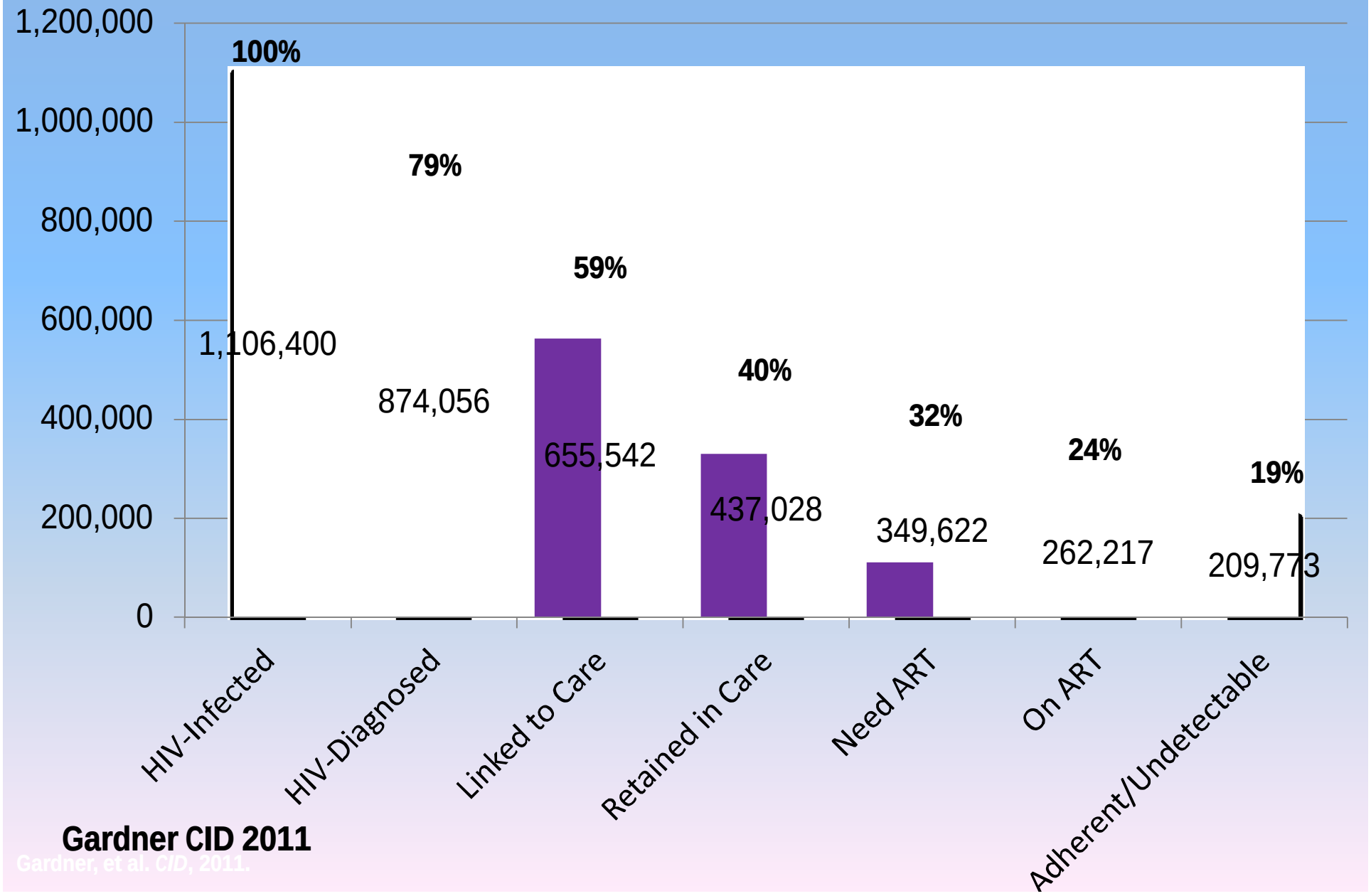
Conclusions

- MSM are a key population for HIV prevention and treatment in the US
- HIV testing and linkage to care are cornerstones of HIV prevention and treatment
- Multiple approaches to maximize the prevention/treatment cascade
- Community viral load useful marker of effectiveness of both treatment and prevention programs

Acknowledgements

- Moupali Das
- Grant Colfax
- Jonathan Fuchs
- Susan Buchbinder
- Robert Grant
- Stephanie Cohen
- Vincent Fuqua
- Willi McFarland
- Susan Philip
- Kyle Bernstein
- Tim Matheson
- Carlos Caceres
- Pedro Goicochea

Major Gaps in the Implementation Cascade



Gardner CID 2011

Gardner, et al. *CID*, 2011.

Community Viral Load Disparities

Figure 1: Spatial Distribution of Mean CVL in San Francisco, 2004-08

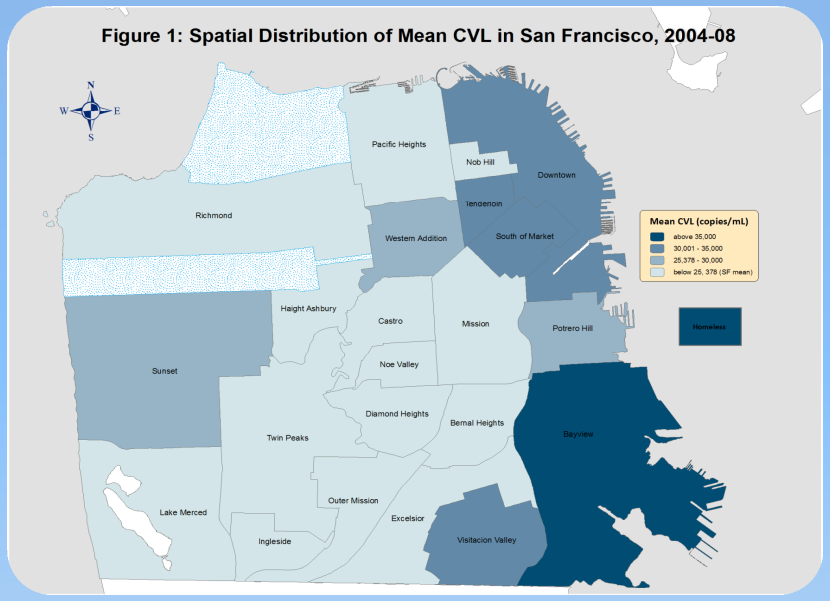


Figure 3: Spatial Distribution of Poverty in San Francisco, 2000

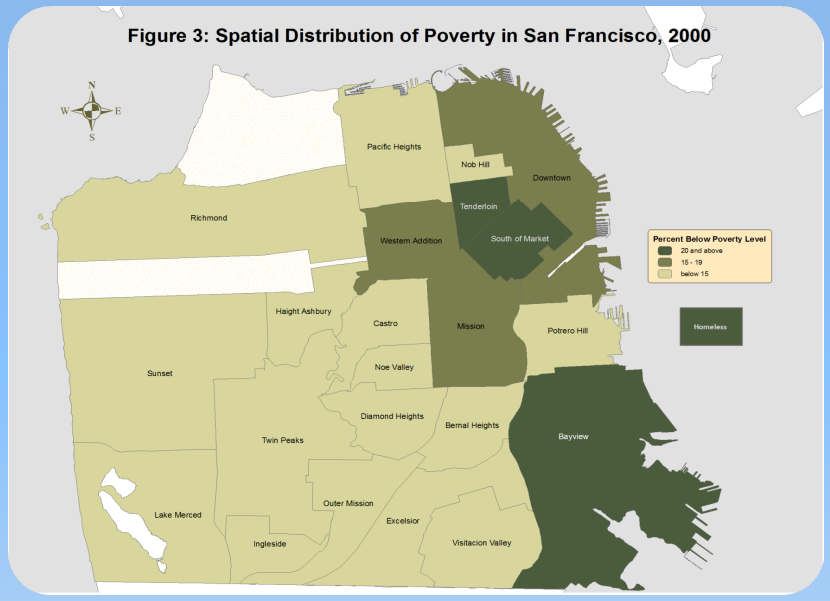
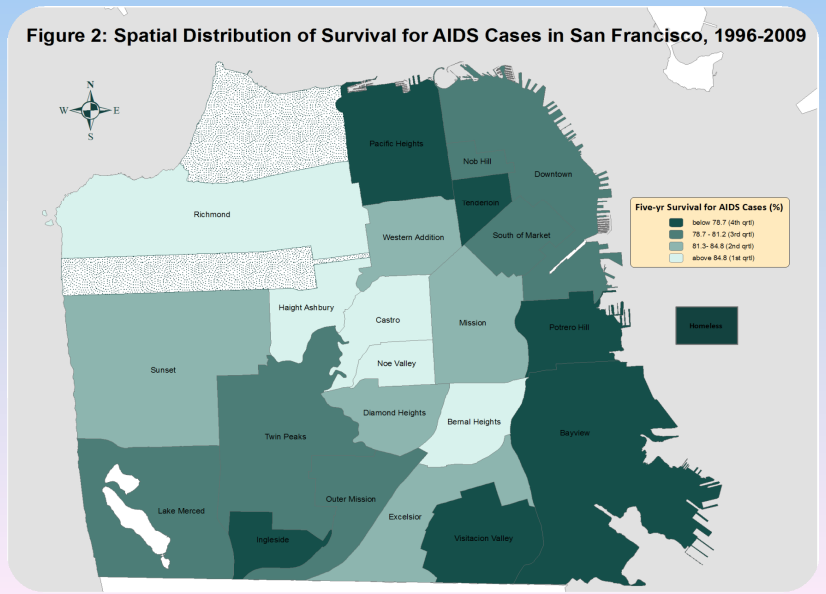


Figure 2: Spatial Distribution of Survival for AIDS Cases in San Francisco, 1996-2009

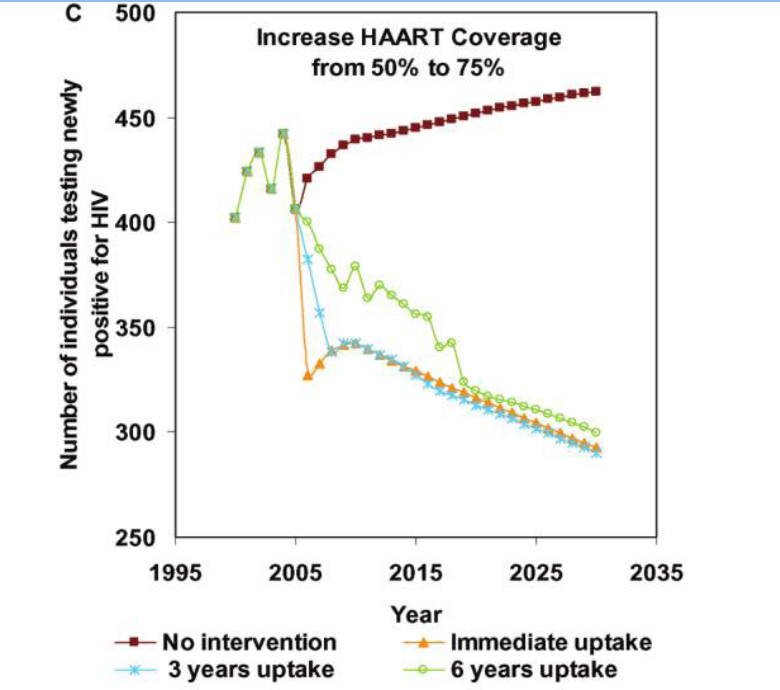


- Even in relatively richly-resourced San Francisco, disparities in CVL track with poor 5-year survival and neighborhood concentration of poverty
- CVL may be a useful marker for public health departments to target resources and address geographic disparities in HIV transmission and survival

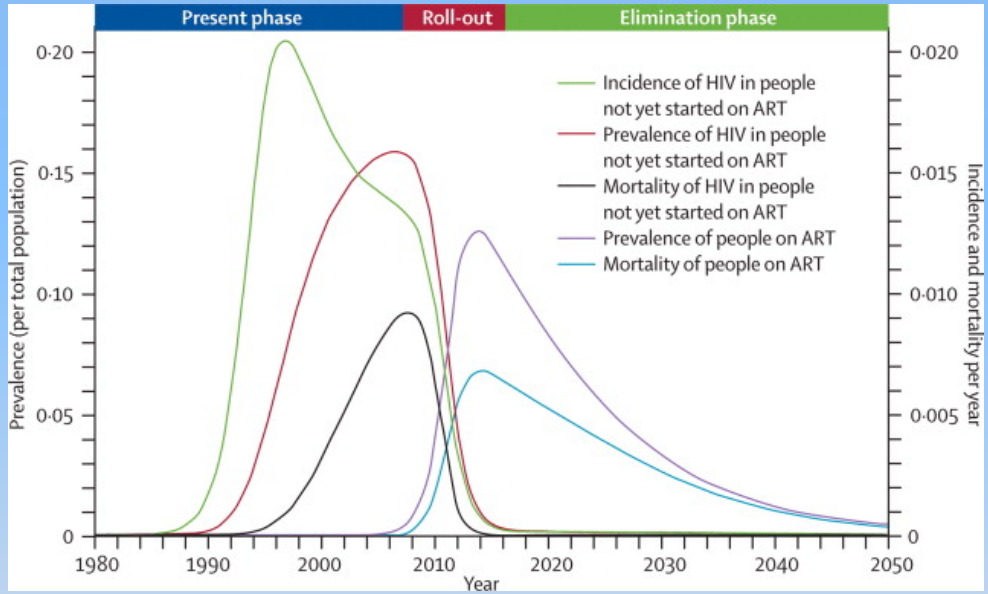
HPTN 052: ART Reduces Transmission by 96%

- 1,763 serodiscordant couples to early vs delayed ART
- HIV CD4 350-550, w/ neg ptr, atleast 3 months, willing to disclose status
  - Start ART at 250, be followed for 5 yrs
- Immediate Group 4 vs. or delayed Rx 39 inf
  - 90% reduction
- Molecular linking of infections
- Immediate Group 1 vs. delayed 27
  - 96% reduction

Does ART-mediated virologic suppression reduce HIV transmission?

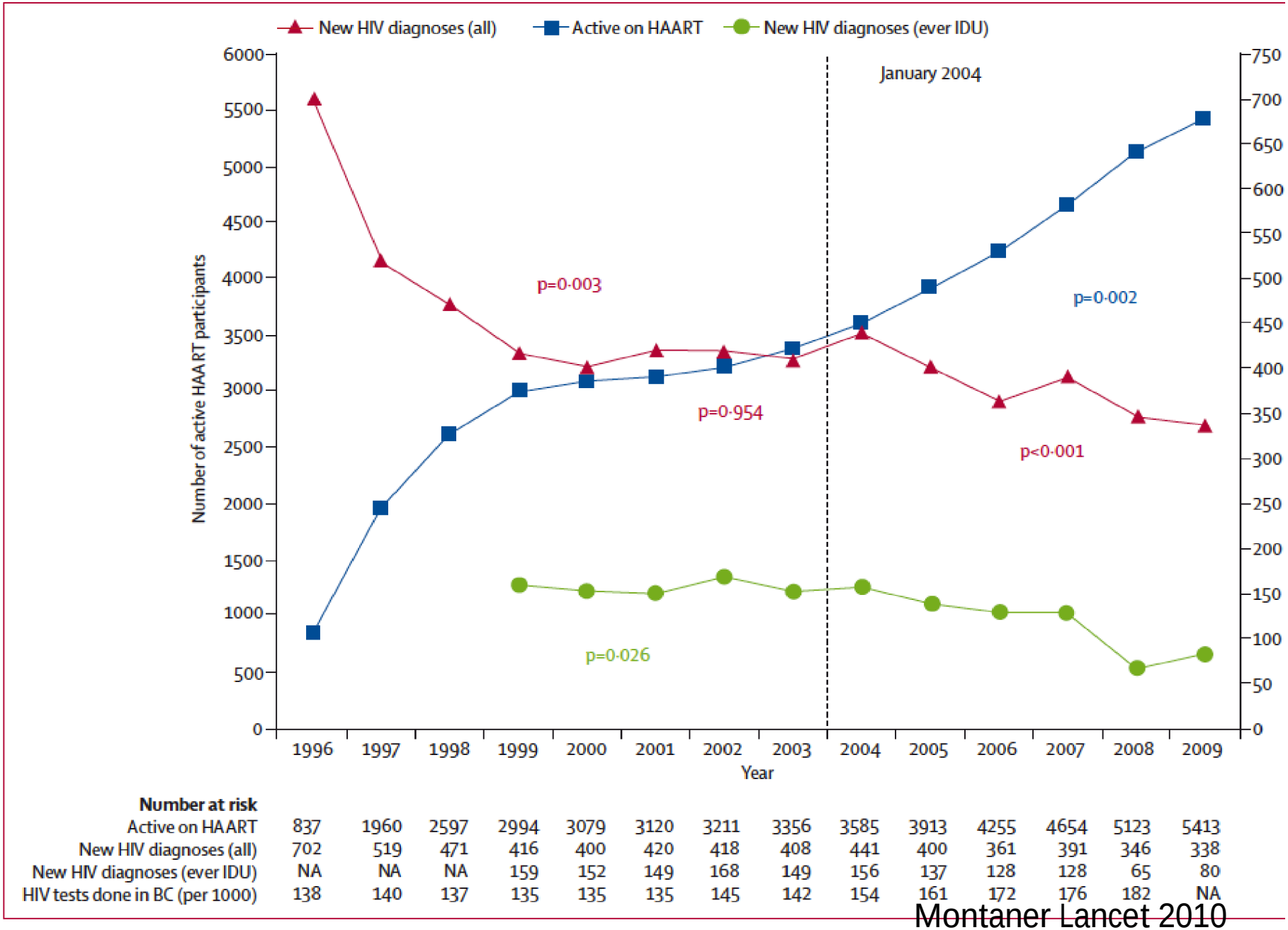


Lima JID 2008



Granich Lancet 2008

HPTN 052: ART to Prevent HIV Transmission in Discordant Couples



Number at risk

Active on HAART	837	1960	2597	2994	3079	3120	3211	3356	3585	3913	4255	4654	5123	5413
New HIV diagnoses (all)	702	519	471	416	400	420	418	408	441	400	361	391	346	338
New HIV diagnoses (ever IDU)	NA	NA	NA	159	152	149	168	149	156	137	128	128	65	80
HIV tests done in BC (per 1000)	138	140	137	135	135	135	145	142	154	161	172	176	182	NA

Montaner Lancet 2010

Figure 1: Number of active HAART participants and number of new HIV diagnoses per year in British Columbia, Canada, 1996–2009

San Francisco MSM Modeling Results

Infections Averted	Tx<500	Tx All	Test & Tx All
2014	1,554	2,169	2,810
2019	3,102	4,550	6,040
2029	4,940	8,221	12,189
Percent Reduction in New Infections	**Tx<500**	**Tx All**	**Test & Tx All**
2014	42%	59%	76%
2019	42%	61%	81%
2029	33%	55%	81%

Charlebois, CID 2011

What is the role of pre-test counseling?

Project AWARE

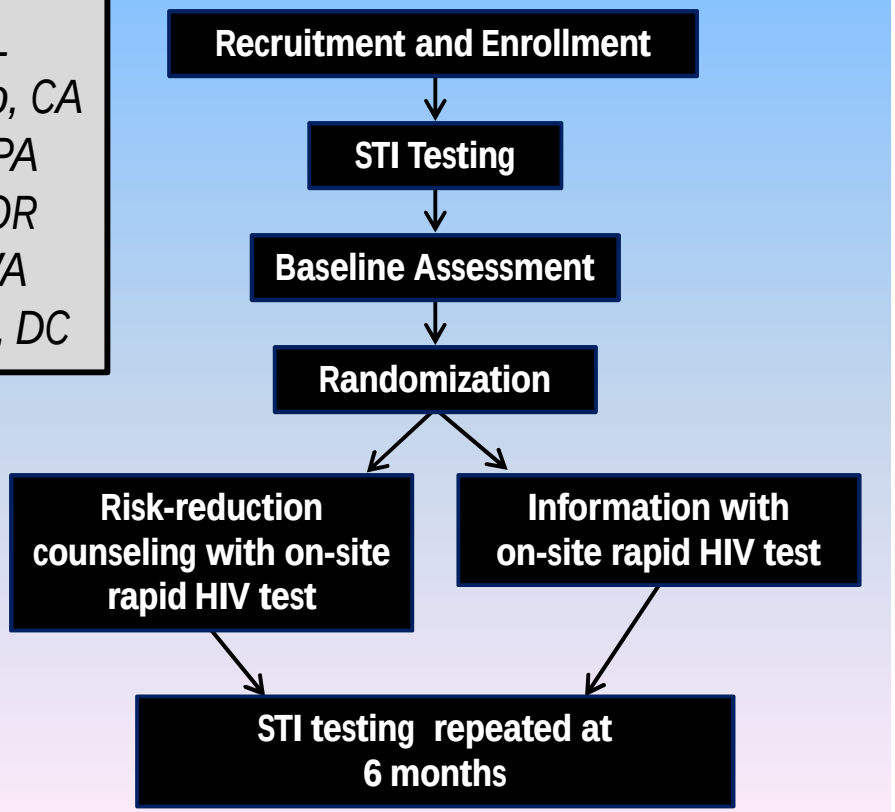
- Evaluates the effect of counseling on STI incidence
- Secondary outcomes:
  - Reduction of sexual risk behaviors
  - Cost and cost-effectiveness of counseling
- Principal Investigators: Lisa Metsch (University of Miami); Grant Colfax (San Francisco Department of Public Health)

SITES

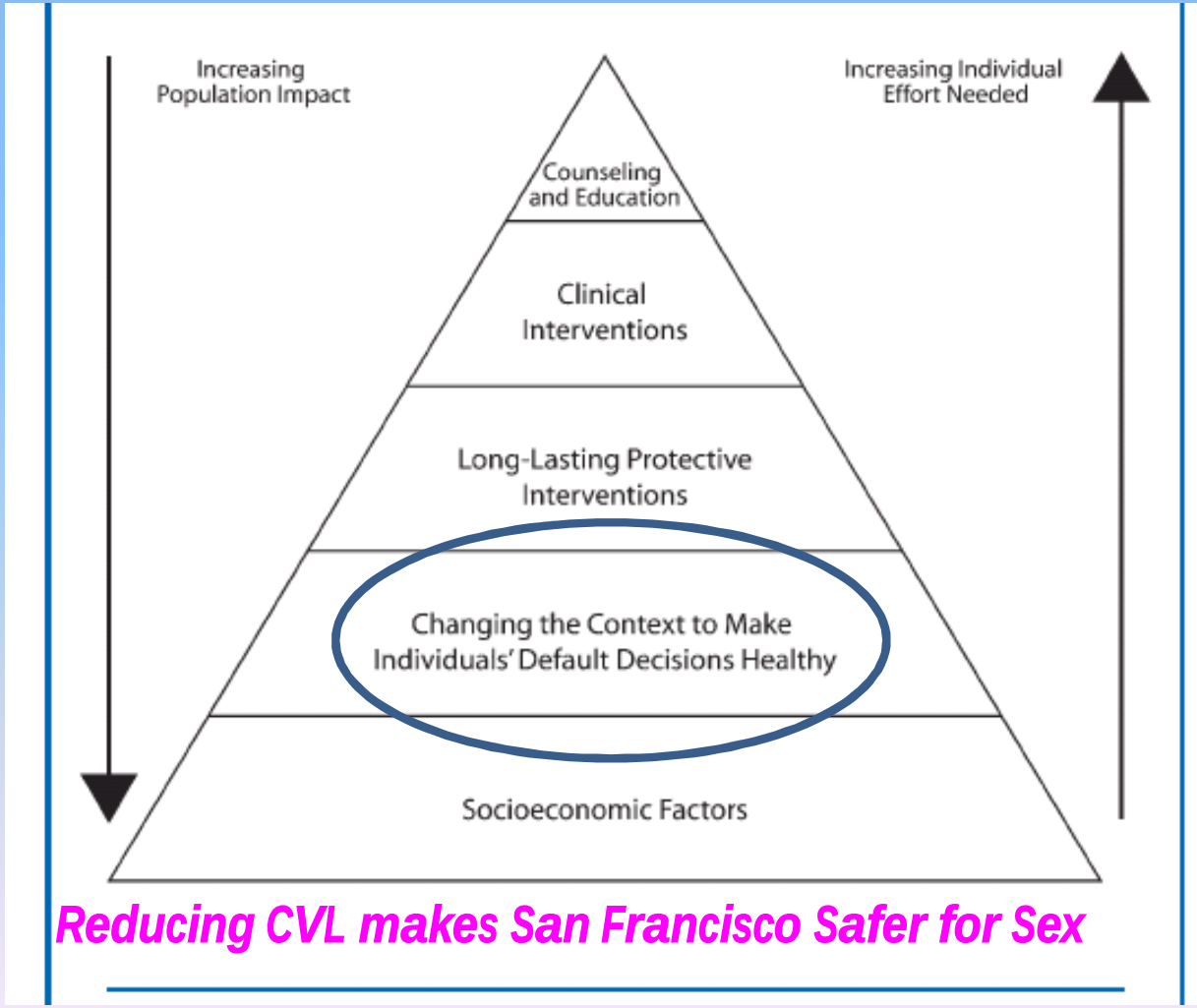
Columbia, SC
Jacksonville, FL
Los Angeles, CA
Miami, FL
San Francisco, CA
Pittsburg, PA
Portland, OR
Seattle, WA
Washington, DC

Sample: 5,000 participants

STUDY DESIGN



Reducing Community Viral Load is Community-Level Harm Reduction



Frieden AJPH April 2010