



# HIV in Alameda County

Annual Epidemiology Data Presentation to the CCPC  
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## HIV in Alameda County: An Overview

- **220** new diagnoses, on average, in 2011-2013
  - **14.3** per 100,000 population per year
  - **70.4% - 82.5%** linked to care within 90 days
- **5,649** people living with HIV disease (PLHIV) at year-end 2013
  - **363.7** per 100,000 population
  - **70.1%** received *any* HIV care in 2013
  - **55.7%** were virally suppressed at last measurement in 2013





## On the agenda...

1. Diagnosis and Prevalence...
  - A. By Demographics
  - B. By Social Determinants of Health
2. The Continuum of HIV Care



## Epi 101 Recap

1. Identify...
  - A. the population/denominator
  - B. the sub-population/numerator





**Most Measures =**

Numerator

#

Denominator

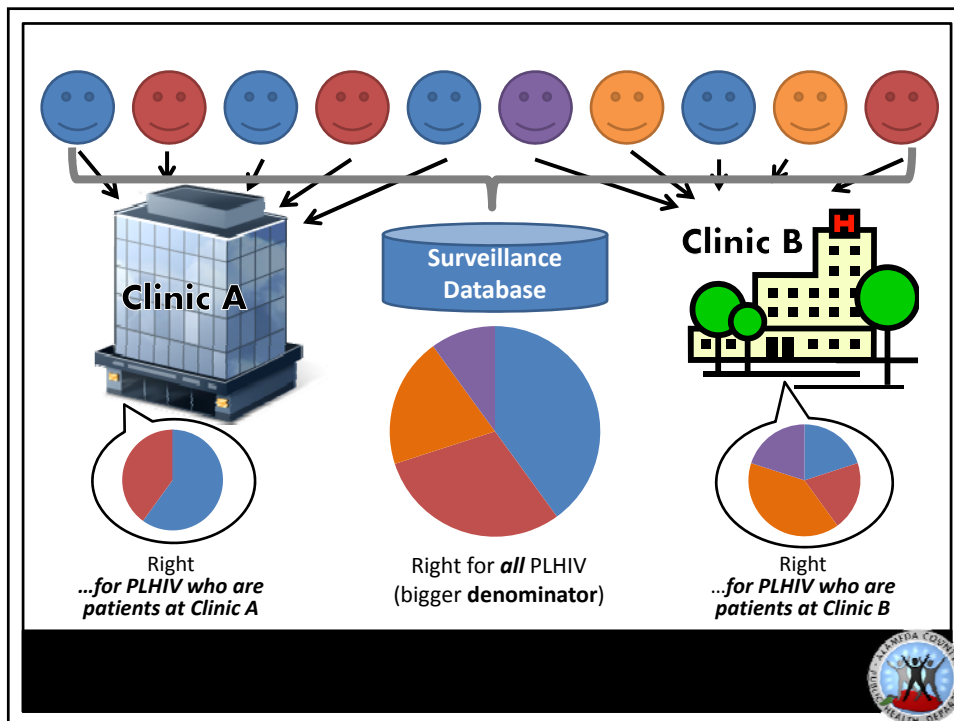
#

What defines the sub-population?

What defines the population?

- May be called different names...
  - Fraction
  - Proportion
  - Percentage
  - Rate
- May be expressed in different ways...
  - ½
  - 0.5
  - 50%
  - 5 per 100,000 (instead of 0.005%)

To understand the measure...  
...you need to understand **both!**





## Epi 101 Recap

1. Identify...
  - A. the population/denominator
  - B. the sub-population/numerator
2. Beware...
  - A. the “prosecutor’s fallacy”!



## The Prosecutor’s Fallacy Defined

The assumption that:

The chances of **A**  
among **B**

=

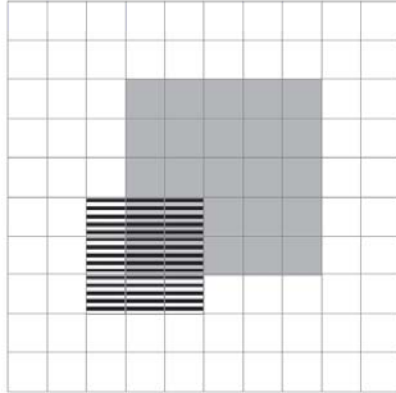
The chances of **B**  
among **A**





## The Prosecutor's Fallacy Illustrated

The fallacy: "Most **striped** squares are **grey**. → Most **grey** squares are **striped**."



Chances that a square is **grey**  
among **striped** squares:

$$4/9 = 44.4\%$$

Chances that a square is **striped**  
among **grey** squares:

$$4/25 = 16\%$$



## Epi 101 Recap

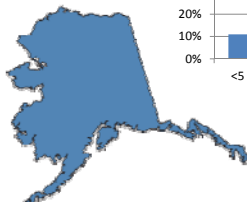
1. Identify...
  - A. the population/denominator
  - B. the sub-population/numerator
2. Beware...
  - A. the "prosecutor's fallacy"!
  - B. association vs. causation





### Confounding: An example

**Question:** Is Alaska's mortality rate different than Florida's?



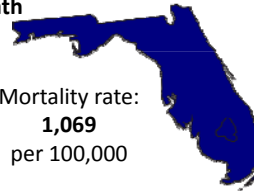
Mortality rate:  
**399**  
per 100,000

**State**

Age

?

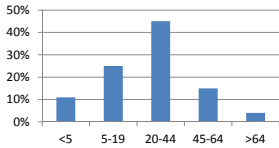
**Death**

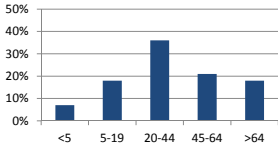


Mortality rate:  
**1,069**  
per 100,000


The observed difference in mortality rates is confounded by age!

Not fair to compare them directly!






SOURCE: [http://sphweb.bumc.bu.edu/otlt/MPH-Modules/EP/EP713\\_StandardizedRates/EP713\\_StandardizedRates3.html](http://sphweb.bumc.bu.edu/otlt/MPH-Modules/EP/EP713_StandardizedRates/EP713_StandardizedRates3.html)



## Epi 101 Recap

1. Identify...
  - A. the population/denominator
  - B. the sub-population/numerator
2. Beware...
  - A. the "prosecutor's fallacy"!
  - B. association vs. causation
  - C. small numbers





## Less Data → Less Confidence in What the Data “Says”

The screenshot shows an Amazon search for 'epidemiology' in the Books category. Two books are displayed:

- Epidemiology: Study Design and Data Analysis, Third Edition (Chapman & Hall/CRC Texts in Statistical Science)** by Mark Woodward, Dec 19, 2013. Hardcover, 4.5 stars. Price: \$24.87 - \$53.44 to rent (Prime), \$83.99 to buy (Prime). Only 6 left in stock - order soon. More Buying Choices: \$65.68 used & new (76 offers). Trade-in eligible for an Amazon gift card. FREE Shipping on orders over \$35. Books: See all 15,424 items.
- Epidemiology, 4th Edition** by Leon Gordis, May 28, 2008 | Other Calendar. Paperback, 4.5 stars. Price: \$14.24 to rent. More Buying Choices: \$2.62 used & new (142 offers). See newer edition of this book. Books: See all 15,424 items.

## A caveat:

Gender identity is not reliably captured in surveillance data because only sex assigned at birth is routinely captured in the medical record. To avoid underestimating the burden of HIV in the transgender community, breakdowns will be provided by sex assigned at birth.





**ADULT HIV/AIDS CASE REPORT FORM**  
Patient's 11 Years of Age at Time of Diagnosis

**III. Patient Demographics** (See Appendix 2.0 for Further Details)

Sex Assigned at Birth:  Male  Female  Unknown  
Country of Birth:  U.S.  Other/U.S. Depend

Alias Date of Birth: / / Vital Status:  1- Alive  2- Dead

Current Gender Identity:  Male  Female  Transgender:  
 Transgender: Female-to-Male (FTM)  Unknown  
 Other Gender Identity (specify):

## On the agenda...

### 1. Diagnosis and Prevalence...

- A. By Demographics
- B. By Social Determinants of Health

### 2. The Continuum of HIV Care



## HIV in Alameda County by the Numbers

	# new diagnoses, <i>regardless of stage</i>	#new AIDS diagnoses	# of PLHIV (at year-end)
2010	238	74	5,465
2011	206	67	5,560
2012	238	88	5,585
2013	215	64	5,649

DATA SOURCE: Alameda County eHARS, 2014 Q2



## On the agenda...

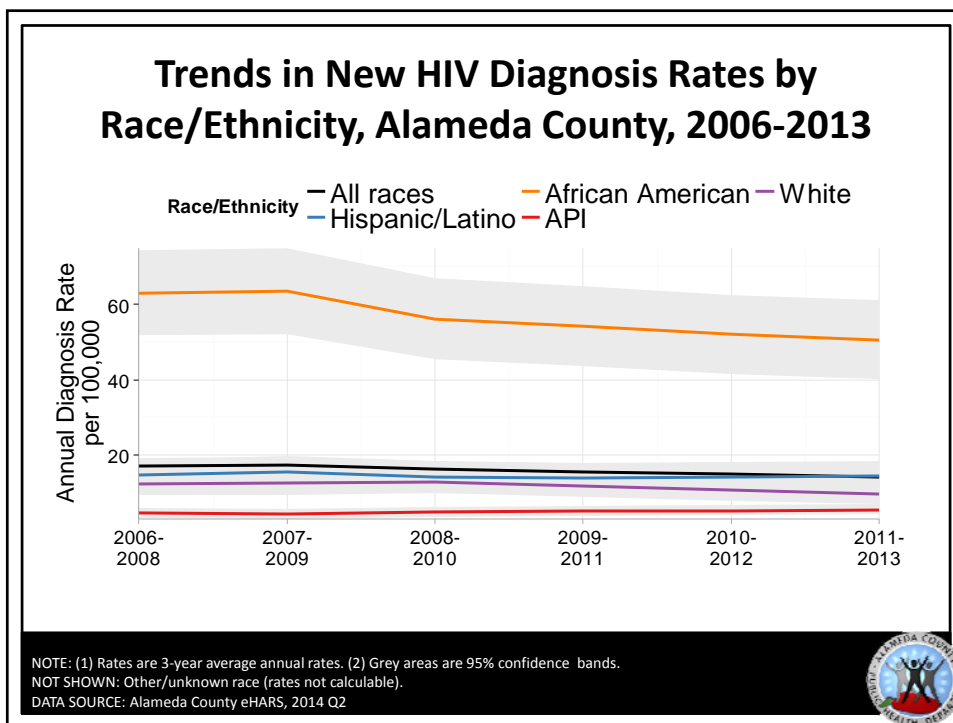
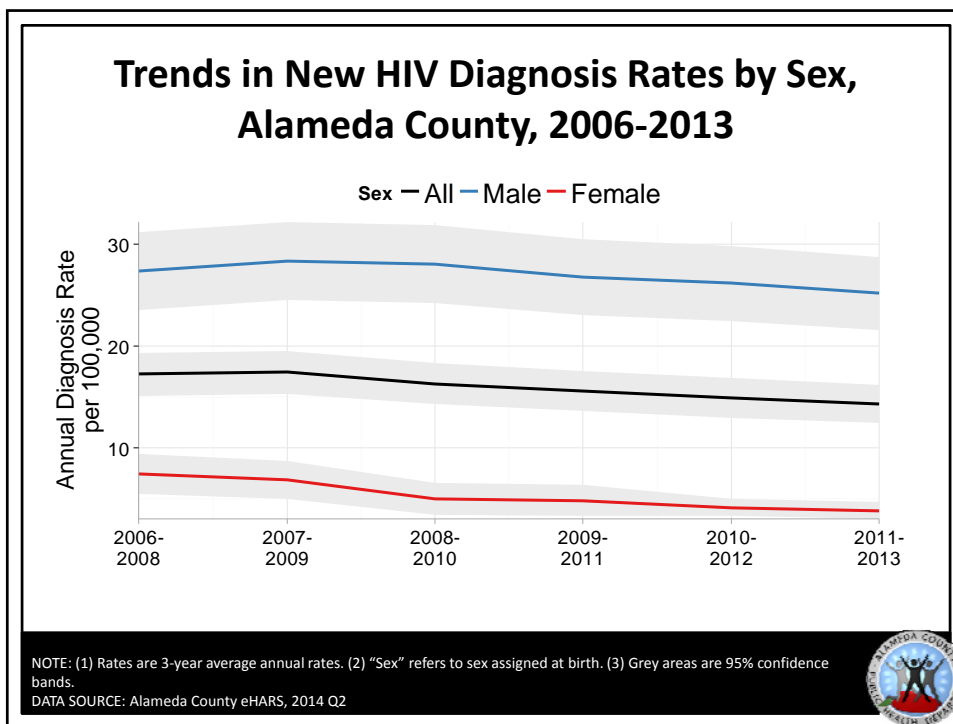
### ~~1. Diagnosis and Prevalence...~~

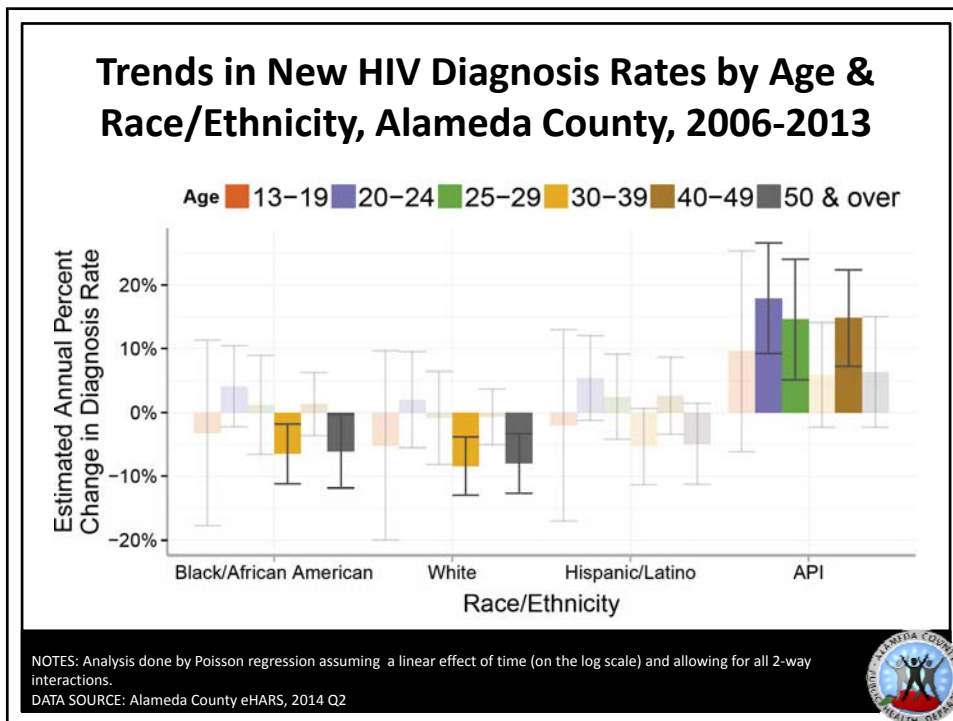
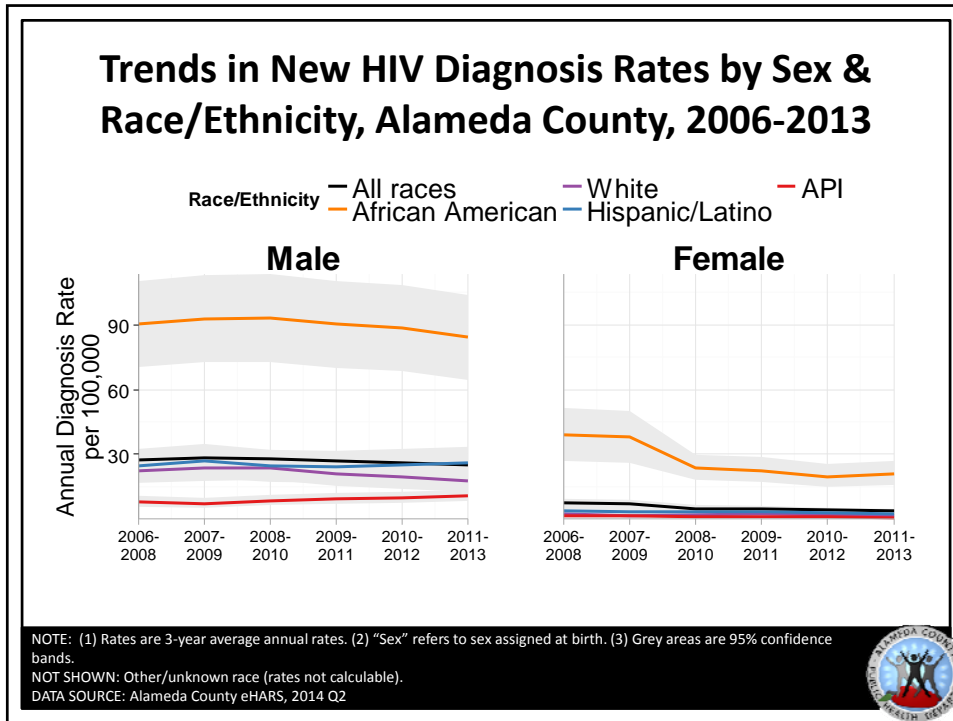
#### **A. By Demographics**

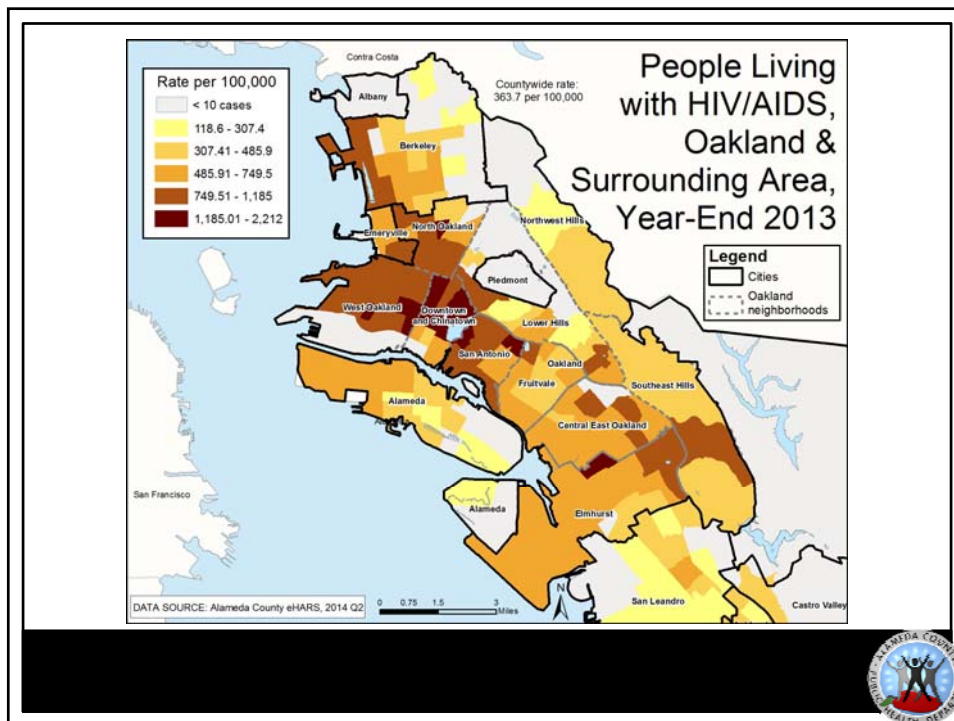
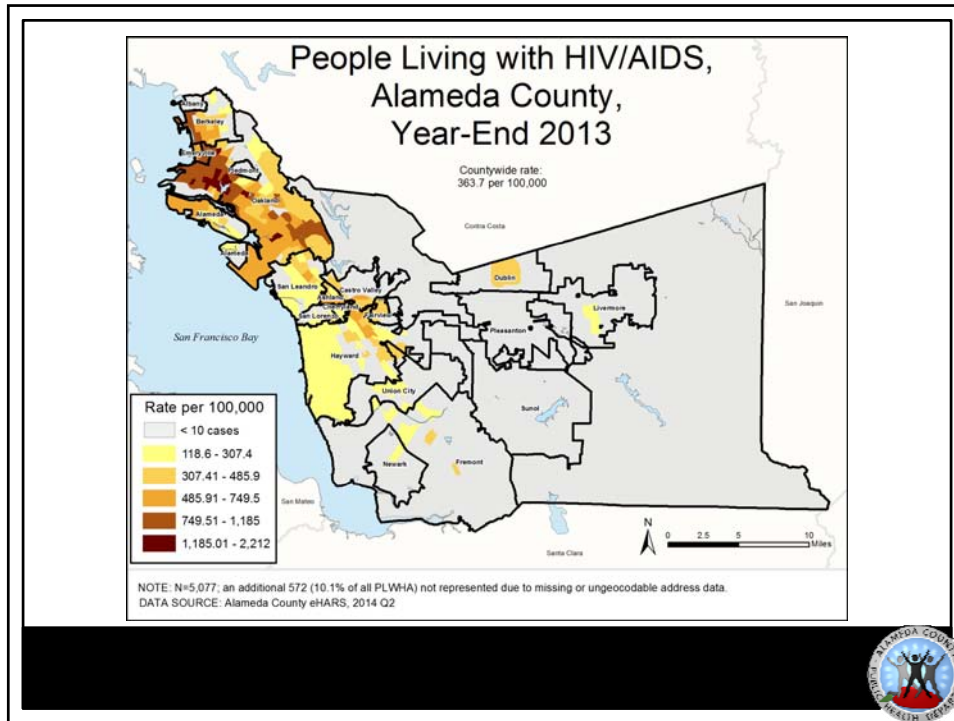
#### B. By Social Determinants of Health

### 2. The Continuum of HIV Care











## Key takeaways:

- Overall, diagnosis rates have decreased since 2006
- The most notable *declines* have occurred among...
  - African American women
  - African Americans and whites in their 30s and 50s
- Although increases have been seen in API in their 20s and 40s, rates among them remain low compared to other groups



## On the agenda...

### ~~1. Diagnosis and Prevalence...~~

#### ~~A. By Demographics~~

#### **B. By Social Determinants of Health**

### 2. The Continuum of HIV Care



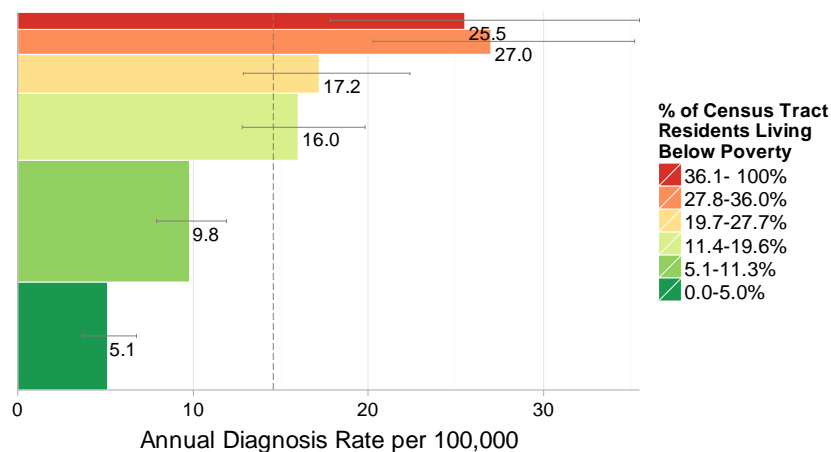


## Social Determinants of Health

- Factors such as...
  - Poverty
  - Unemployment
  - Education level
- Can have *individual* as well as *community* effects
  - E.g., an individual's health may be impacted by *their own wealth as well as that of their community*

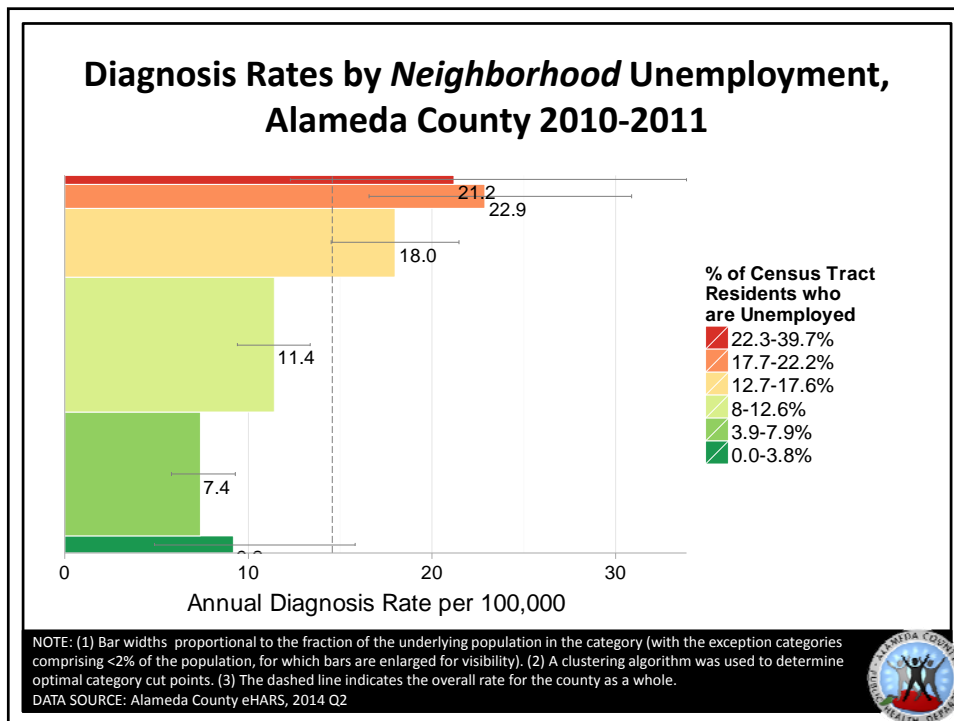
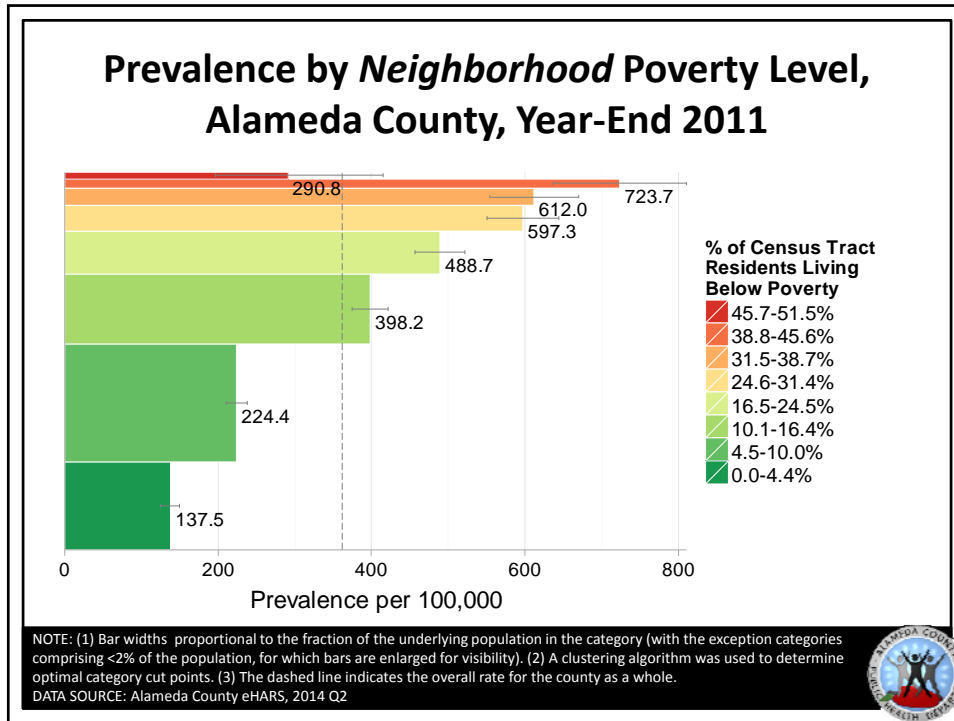


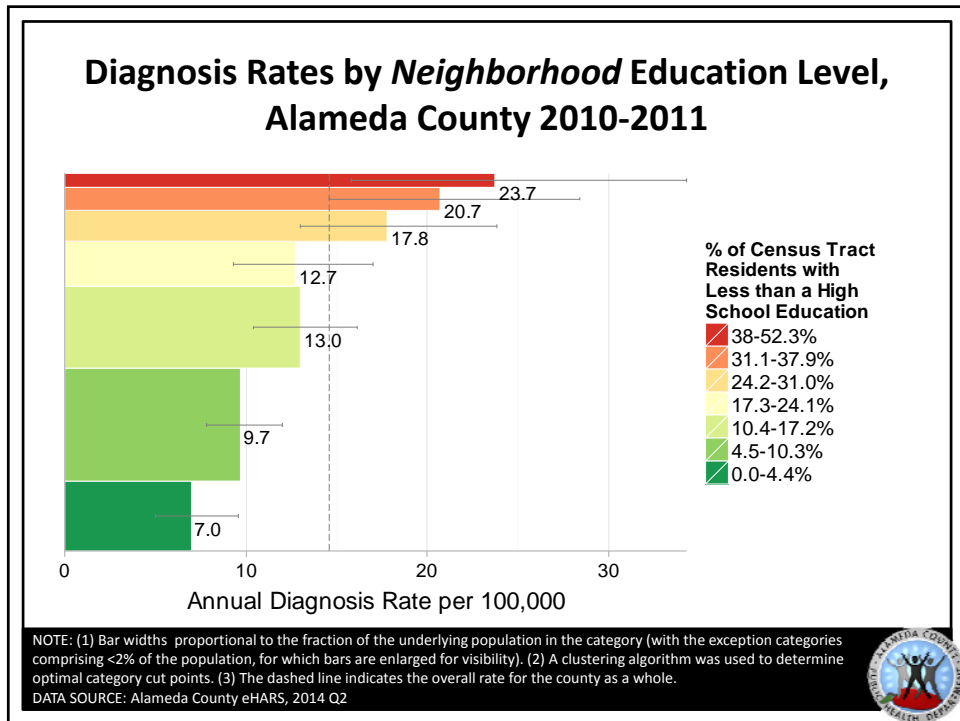
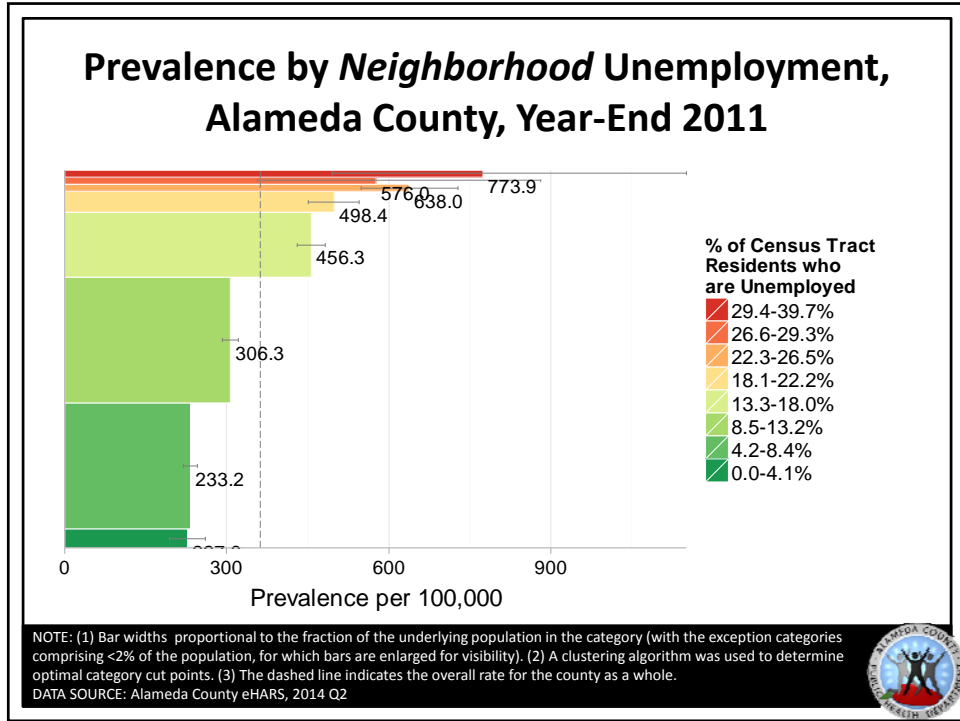
## Diagnosis Rates by *Neighborhood* Poverty Level, Alameda County 2010-2011



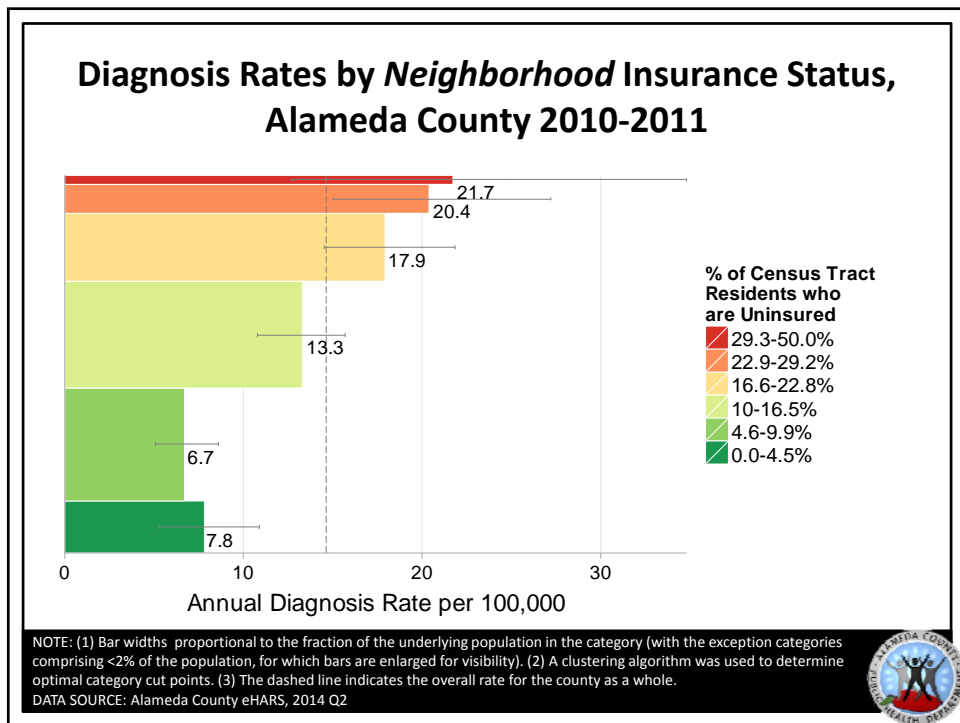
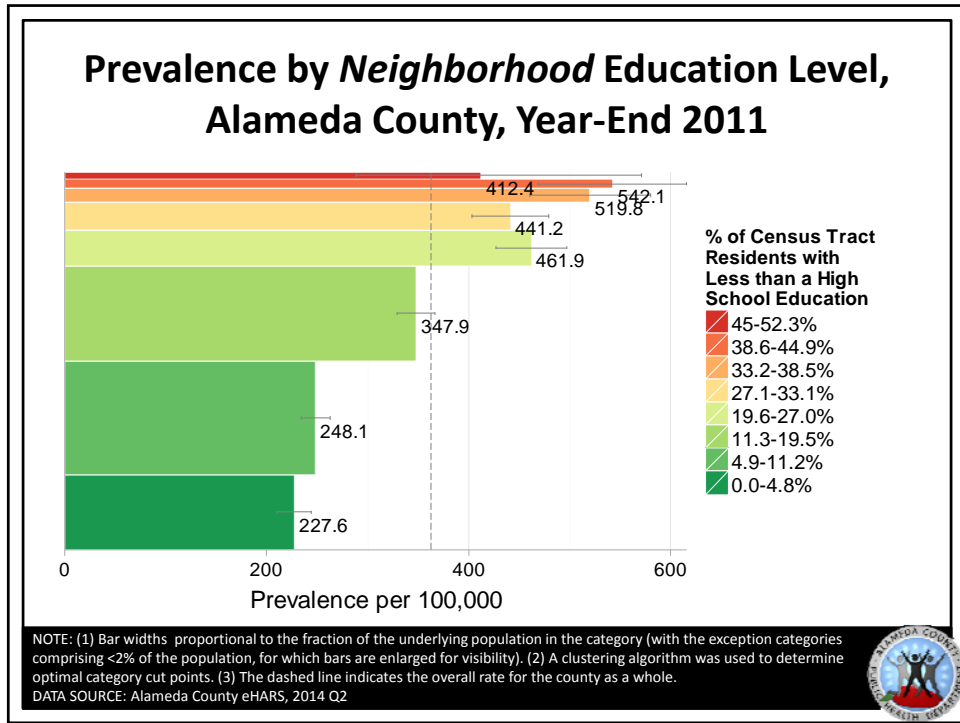
NOTE: (1) Bar widths proportional to the fraction of the underlying population in the category (with the exception categories comprising <2% of the population, for which bars are enlarged for visibility). (2) A clustering algorithm was used to determine optimal category cut points. (3) The dashed line indicates the overall rate for the county as a whole.  
DATA SOURCE: Alameda County eHARS, 2014 Q2

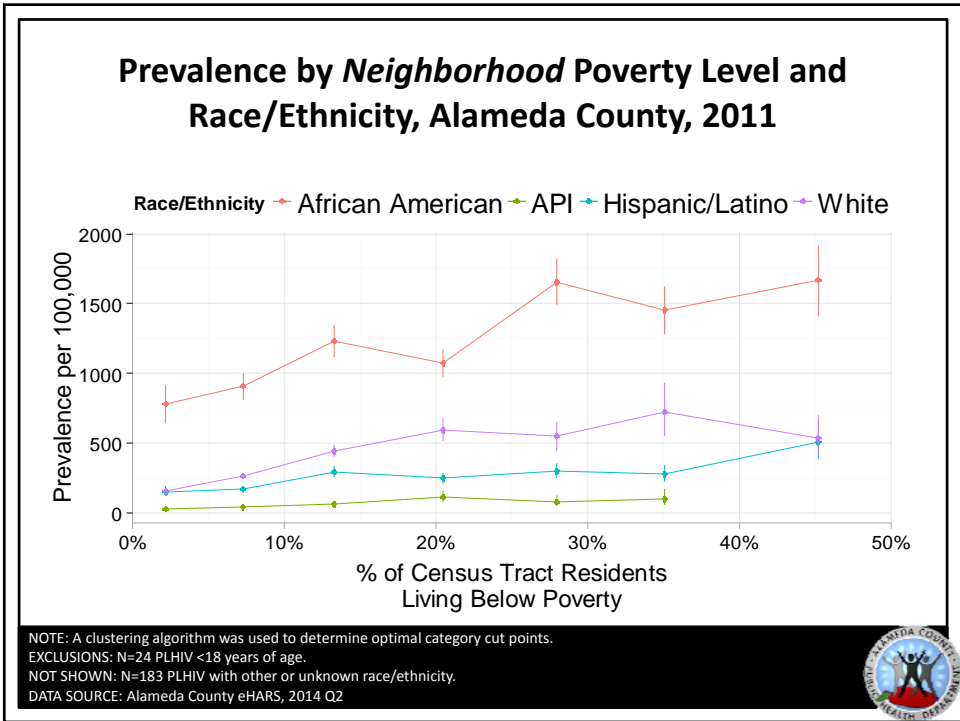
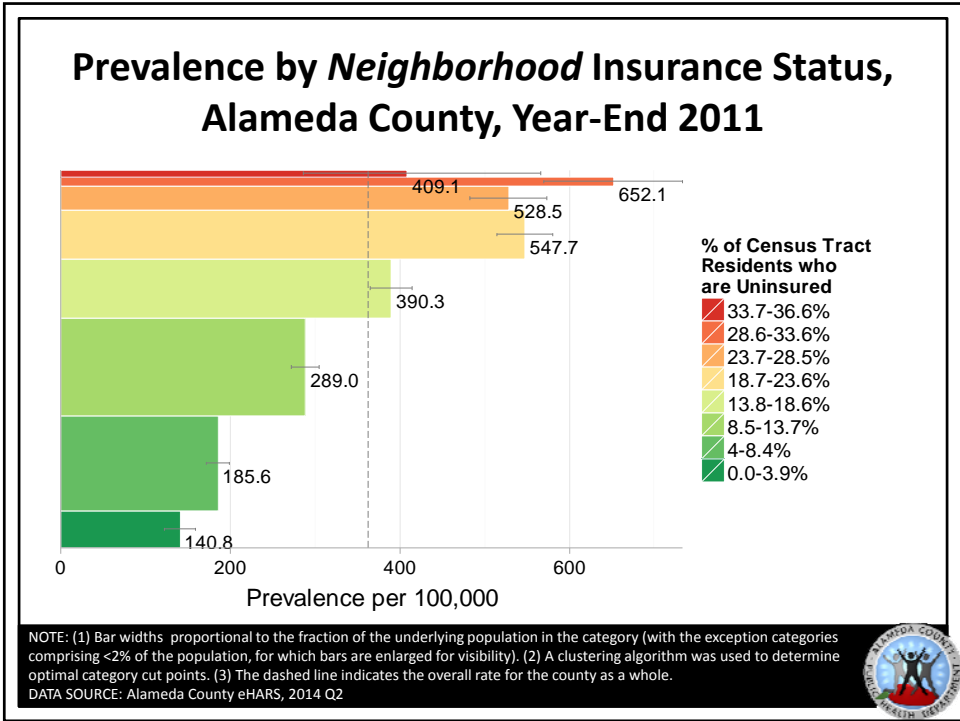






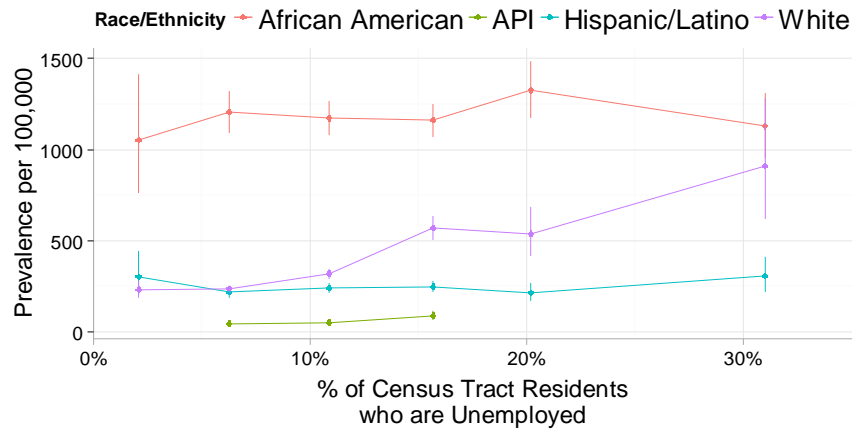








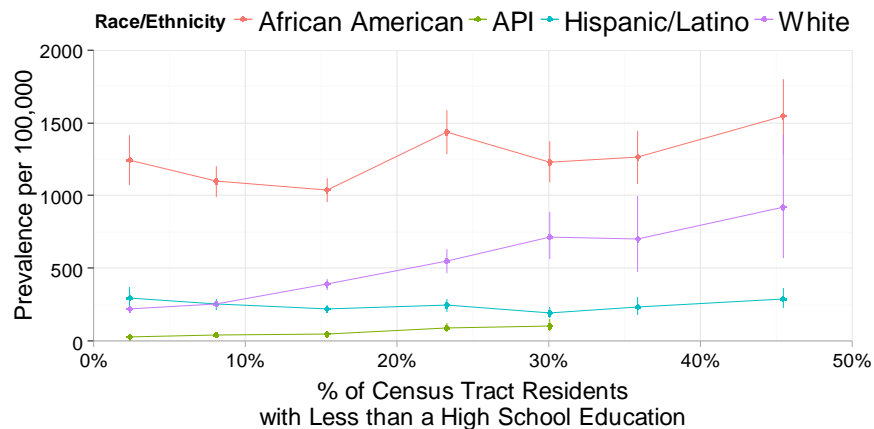
### Prevalence by *Neighborhood* Unemployment and Race/Ethnicity, Alameda County, 2011



NOTE: A clustering algorithm was used to determine optimal category cut points.  
EXCLUSIONS: N=24 PLHIV <18 years of age.  
NOT SHOWN: N=183 PLHIV with other or unknown race/ethnicity.  
DATA SOURCE: Alameda County eHARS, 2014 Q2



### Prevalence by *Neighborhood* Education Level and Race/Ethnicity, Alameda County, 2011

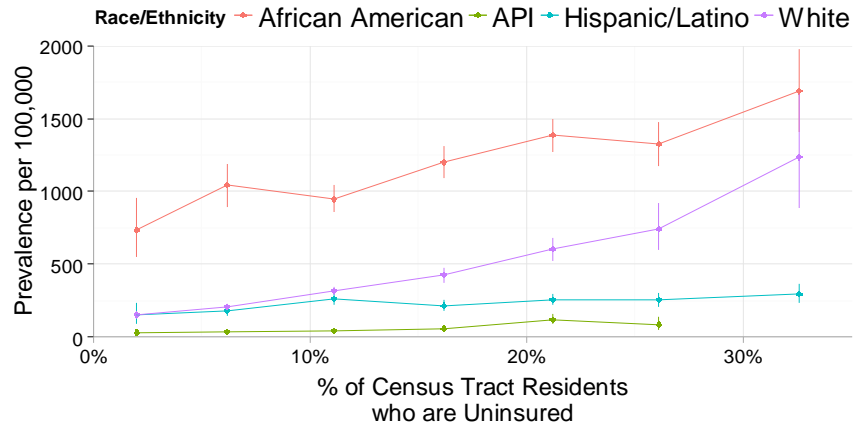


NOTE: A clustering algorithm was used to determine optimal category cut points.  
EXCLUSIONS: N=24 PLHIV <18 years of age.  
NOT SHOWN: N=183 PLHIV with other or unknown race/ethnicity.  
DATA SOURCE: Alameda County eHARS, 2014 Q2





### Prevalence by *Neighborhood* Insurance Status and Race/Ethnicity, Alameda County, 2011



NOTE: A clustering algorithm was used to determine optimal category cut points.  
EXCLUSIONS: N=24 PLHIV <18 years of age.  
NOT SHOWN: N=183 PLHIV with other or unknown race/ethnicity.  
DATA SOURCE: Alameda County eHARS, 2014 Q2



### Key takeaways:

- Diagnosis rates and prevalence generally increase with increasing neighborhood poverty and unemployment and with decreasing rates of insurance and education
- These associations appear to vary by race/ethnicity
  - Appear to be less prominent among Latinos





## On the agenda...

### ~~1. Diagnosis and Prevalence...~~

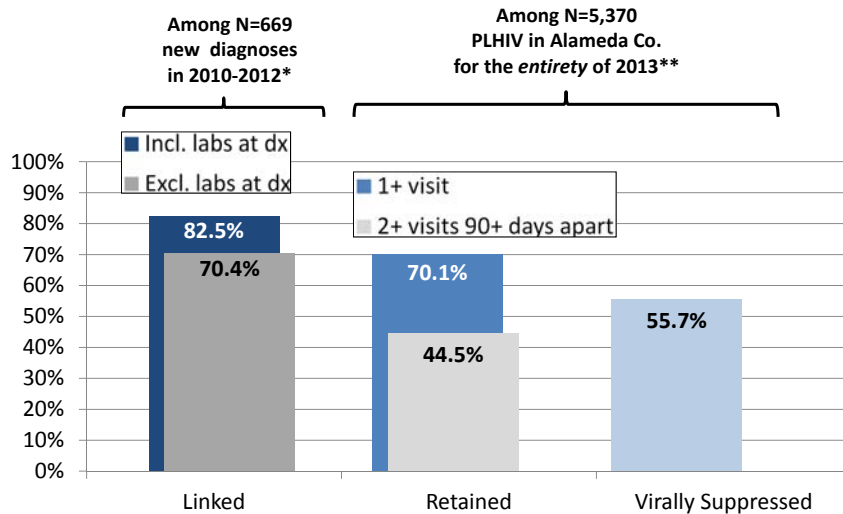
~~A. By Demographics~~

~~B. By Social Determinants of Health~~

## 2. The Continuum of HIV Care



## The Continuum of HIV Care in Alameda County

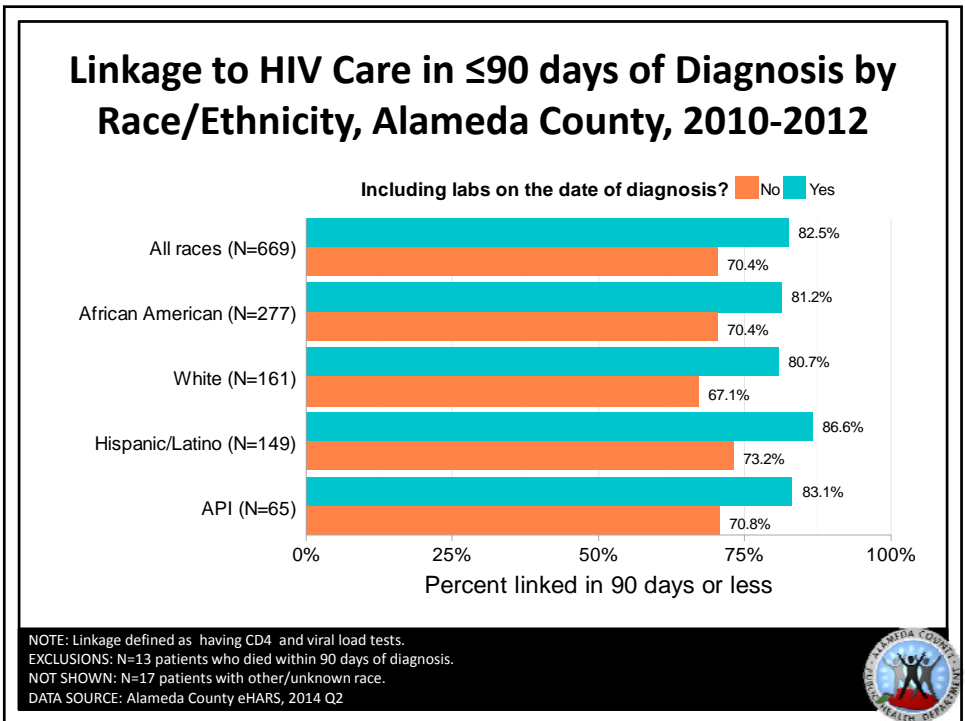
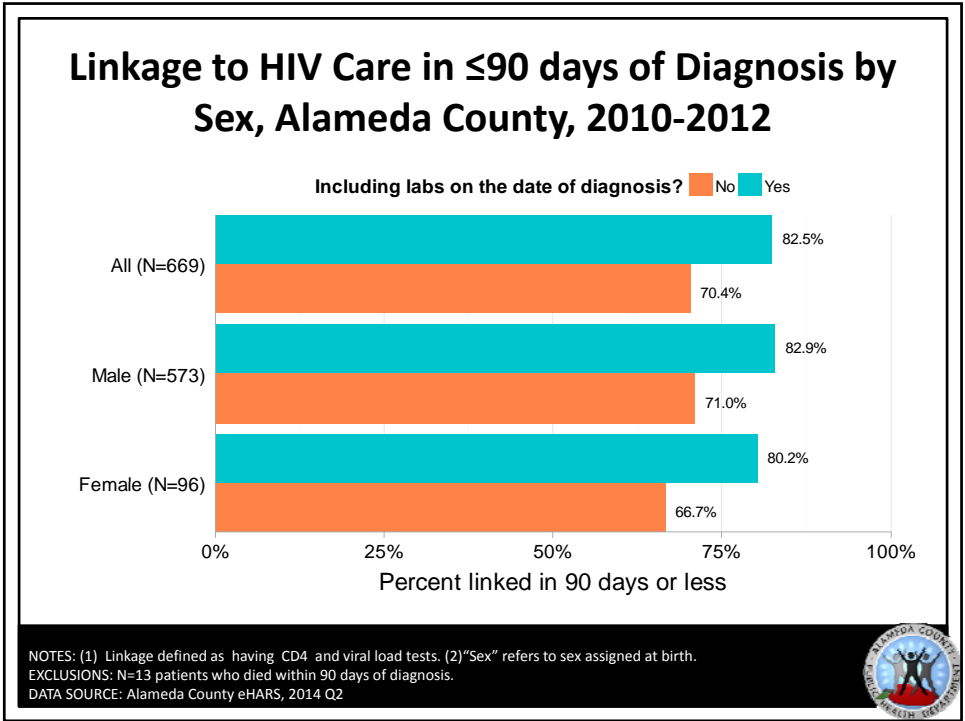


\*Of 682 total diagnoses, 13 died within 90 days and are excluded from analysis

\*\*Of 5,585 PLHIV at year-end 2012, 42 are known to have died and an additional 173 to have moved out of Alameda County in 2013

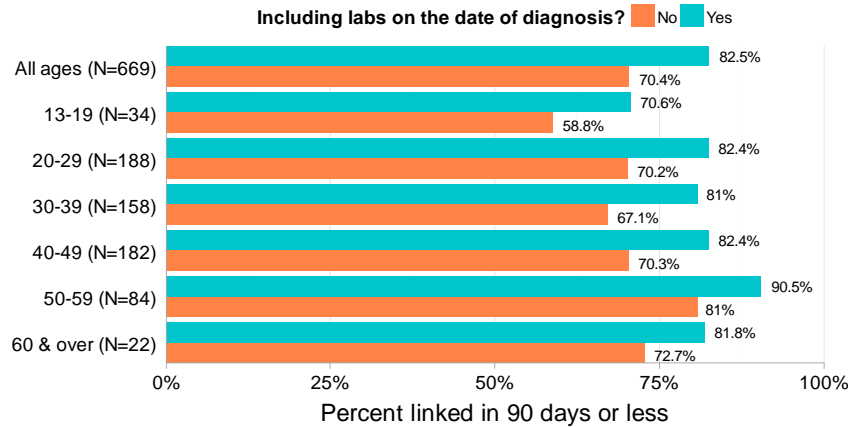
1) Linkage defined as having a reported CD4 or VL ordered within 90 days or less of diagnosis; 2) Retention calculated using labs ordered in 2013; 3) Viral suppression defined as most recent VL in 2013 < 200 copies/mL







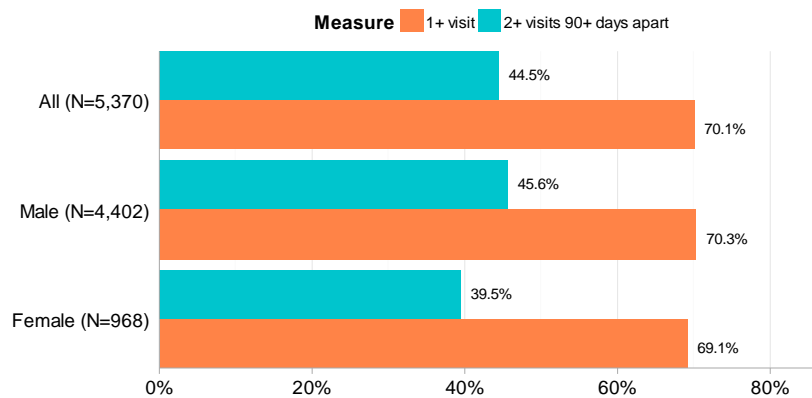
### Linkage to HIV Care in ≤90 days of Diagnosis by Age at Diagnosis, Alameda County, 2010-2012



NOTE: Linkage defined as having CD4 and viral load tests.  
EXCLUSIONS: N=13 patients who died within 90 days of diagnosis.  
NOT SHOWN: N < 5 patients aged 0-12.  
DATA SOURCE: Alameda County eHARS, 2014 Q2

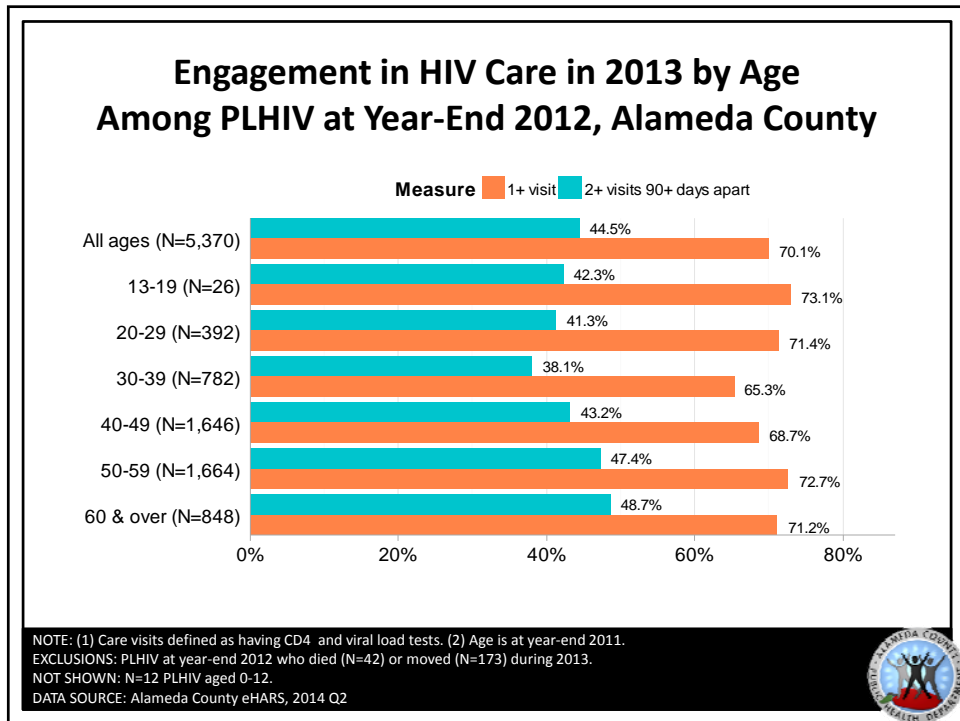
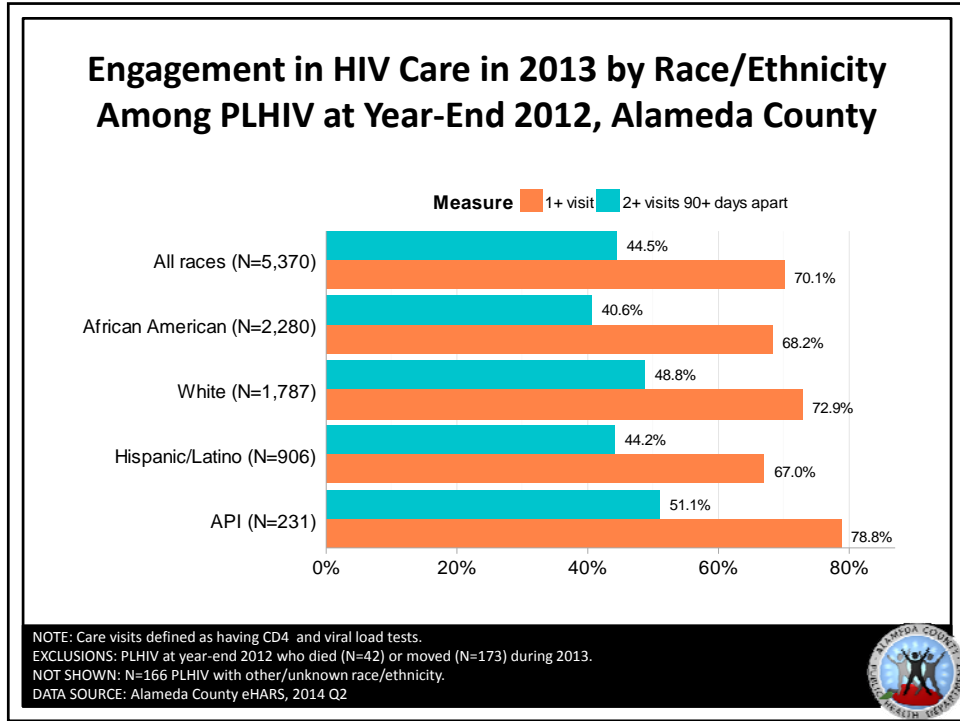


### Engagement in HIV Care in 2013 by Sex Among PLHIV at Year-End 2012, Alameda County



NOTE: (1) Care visits defined as having CD4 and viral load tests. (2) "Sex" refers to sex assigned at birth.  
EXCLUSIONS: PLHIV at year-end 2012 who died (N=42) or moved (N=173) during 2013.  
DATA SOURCE: Alameda County eHARS, 2014 Q2

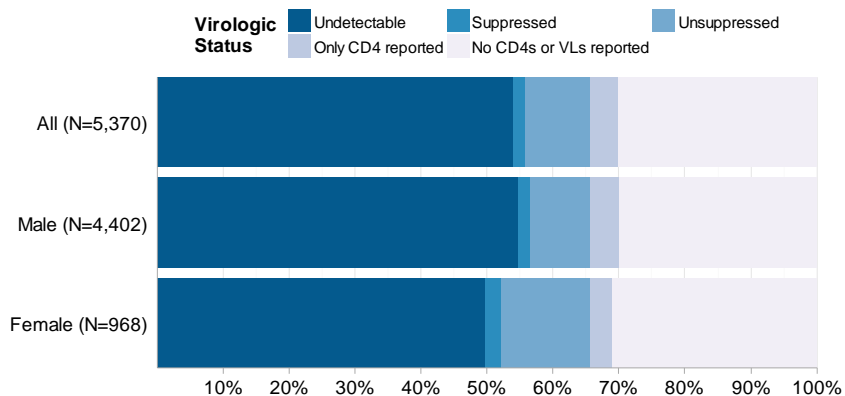








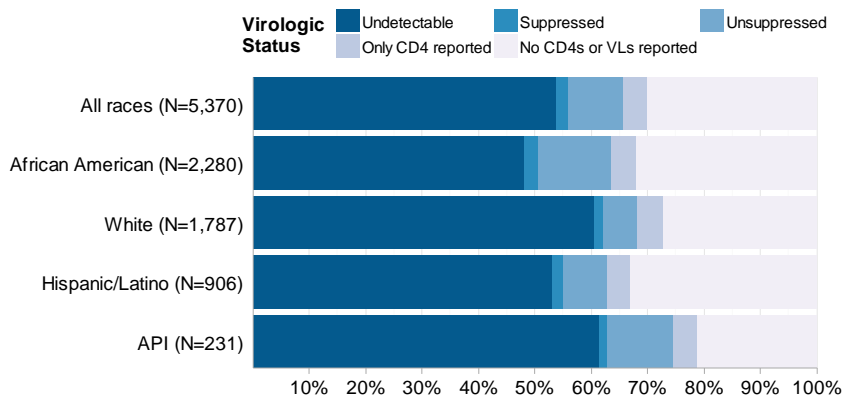
### Most Recent Viral Load in 2013 by Sex Among PLHIV at Year-End 2012, Alameda County



NOTE: VL categories are defined as follows: Undetectable = 0-75 copies/mL, Suppressed = 76-199, Unsuppressed = 200+; "Sex" refers to sex assigned at birth  
EXCLUSIONS: PLHIV at year-end 2012 who died (N=42) or moved (N=173) during 2012  
DATA SOURCE: Alameda County eHARS, 2014 Q2

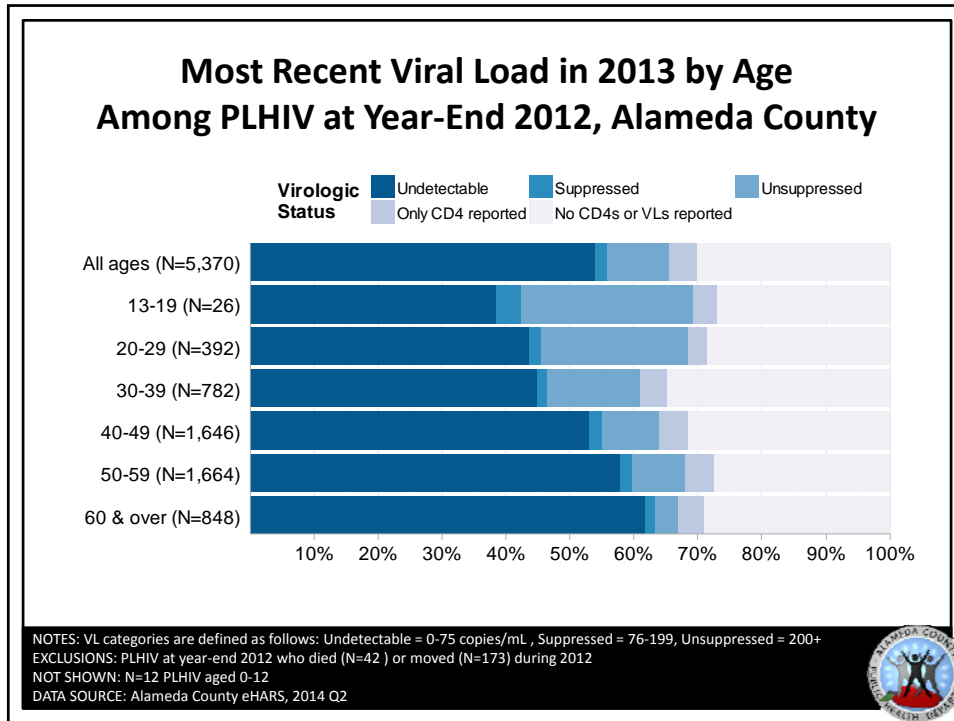


### Most Recent Viral Load in 2013 by Race/Ethnicity Among PLHIV at Year-End 2012, Alameda County



NOTE VL categories are defined as follows: Undetectable = 0-75 copies/mL, Suppressed = 76-199, Unsuppressed = 200+  
EXCLUSIONS: PLHIV at year-end 2012 who died (N=42) or moved (N=173) during 2012  
NOT SHOWN: N=166 PLHIV with other/unknown race/ethnicity  
DATA SOURCE: Alameda County eHARS, 2014 Q2





## Key takeaways:

- Linkage
  - Lowest among women and whites
  - Highest among those in their 50s
- Retention...
  - ...in (*any*) care
    - Lower among African Americans, Latinos, and those in their 30s
  - ...in *continuous* care
    - Lower among women, as well as the above groups
- Viral Suppression
  - Lower among women, African Americans, and Latinos
  - Increasingly common in older age groups



# Thank you!

Contact

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with any questions or comments

