

# Geospatial Targeting of Young HIV-infected Men who have Sex with Men (YMSM) in CNICS

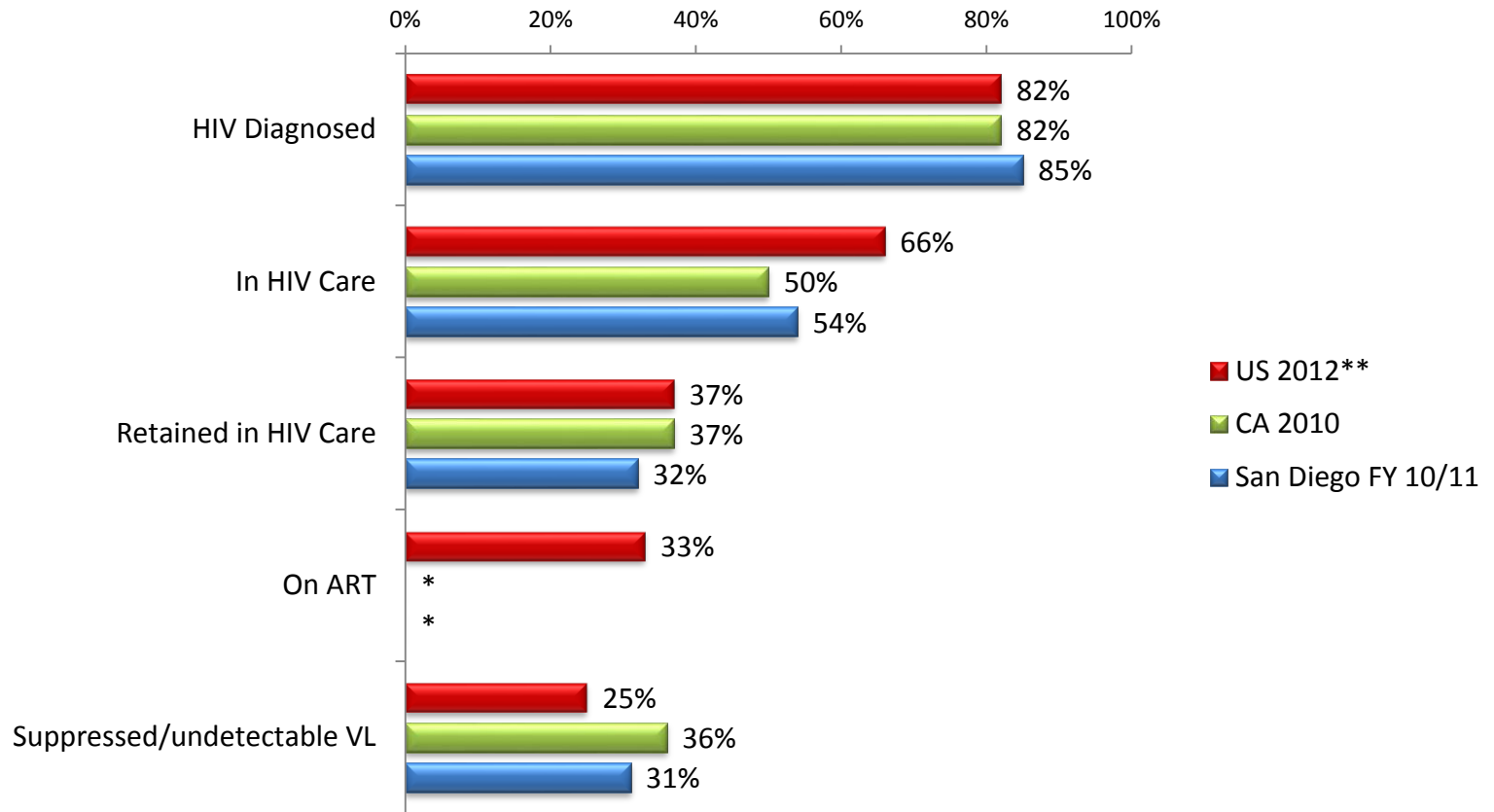
Patrick Loose, Chief,  
SDHHS HIV, STD, and Hepatitis Branch

Sheldon Morris M.D., M.P.H.  
University of California, San Diego

# Introduction

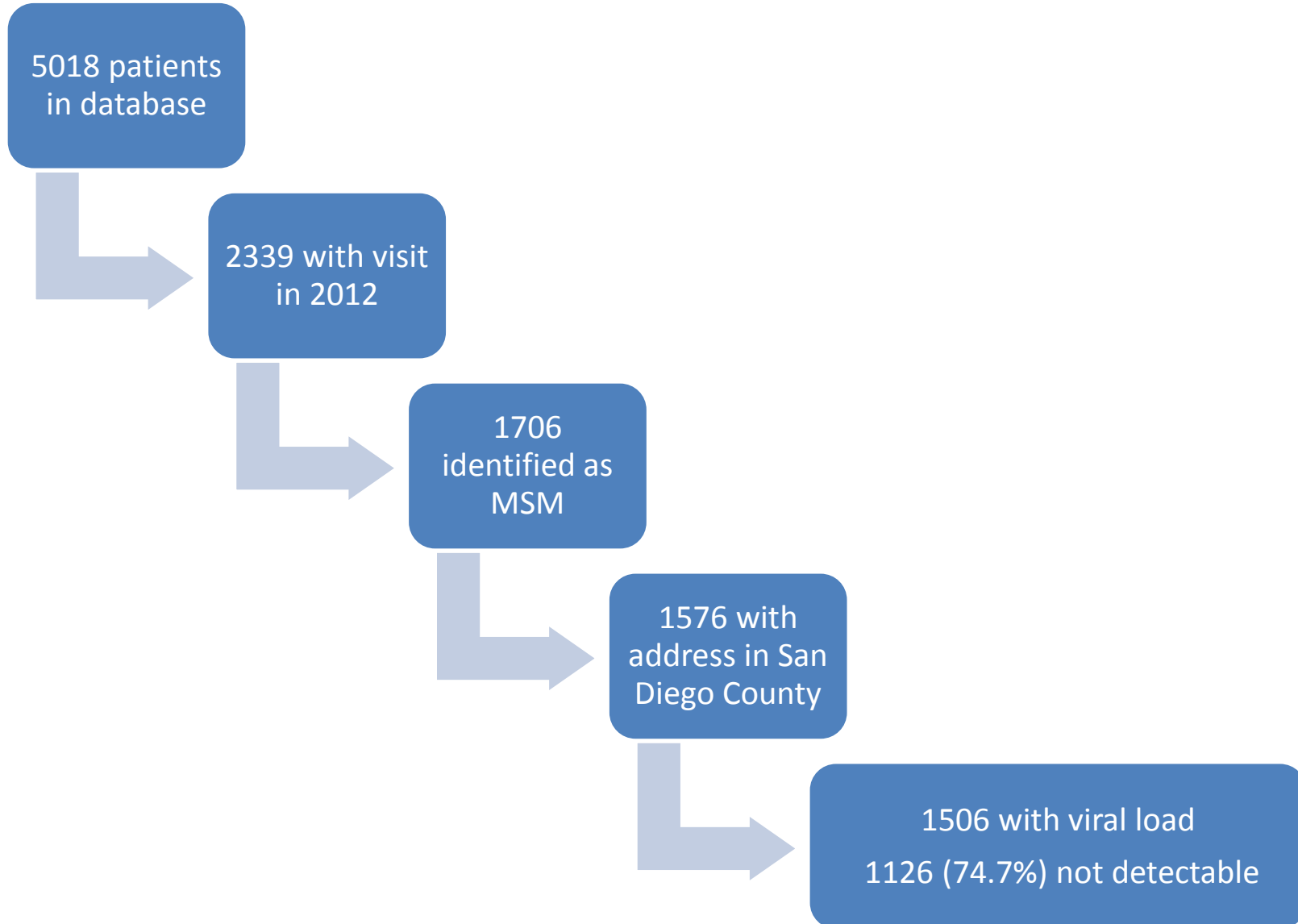
- **Aim 1:** Add census block groups (CBGs) information into the 8 sites of the CFAR Network of Integrated Clinical Systems to determine the geographical distribution of patients by age.
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- **Aim 2:** Determine which individual, geographic and contextual factors are associated with being lost to care or being detectable (also combined with risk behavior) in YMSM.
- **Exploratory Aim 3:** Use geospatial information to identify and engage HIV-infected YMSM both in care and lost to care in focus groups to explore geo-targeted interventions.

# Cascade of Care Comparison



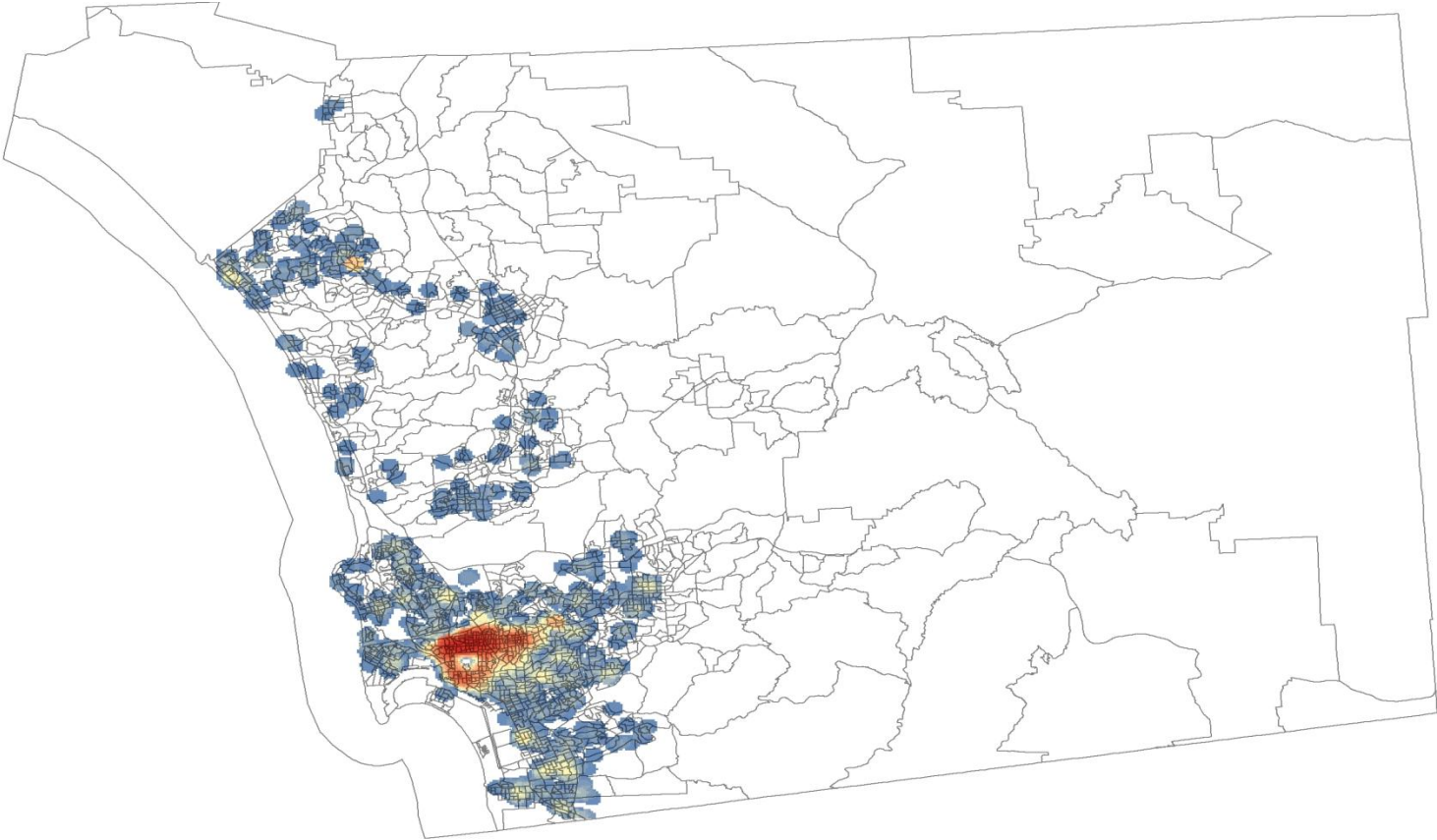
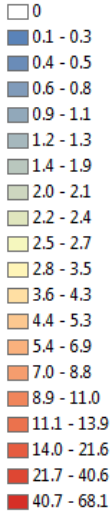
\*Data not yet available for ART In California and San Diego. \*\*Based on 2009 prevalence data; released July 2012.

# UCSD Owen Clinic CNICS

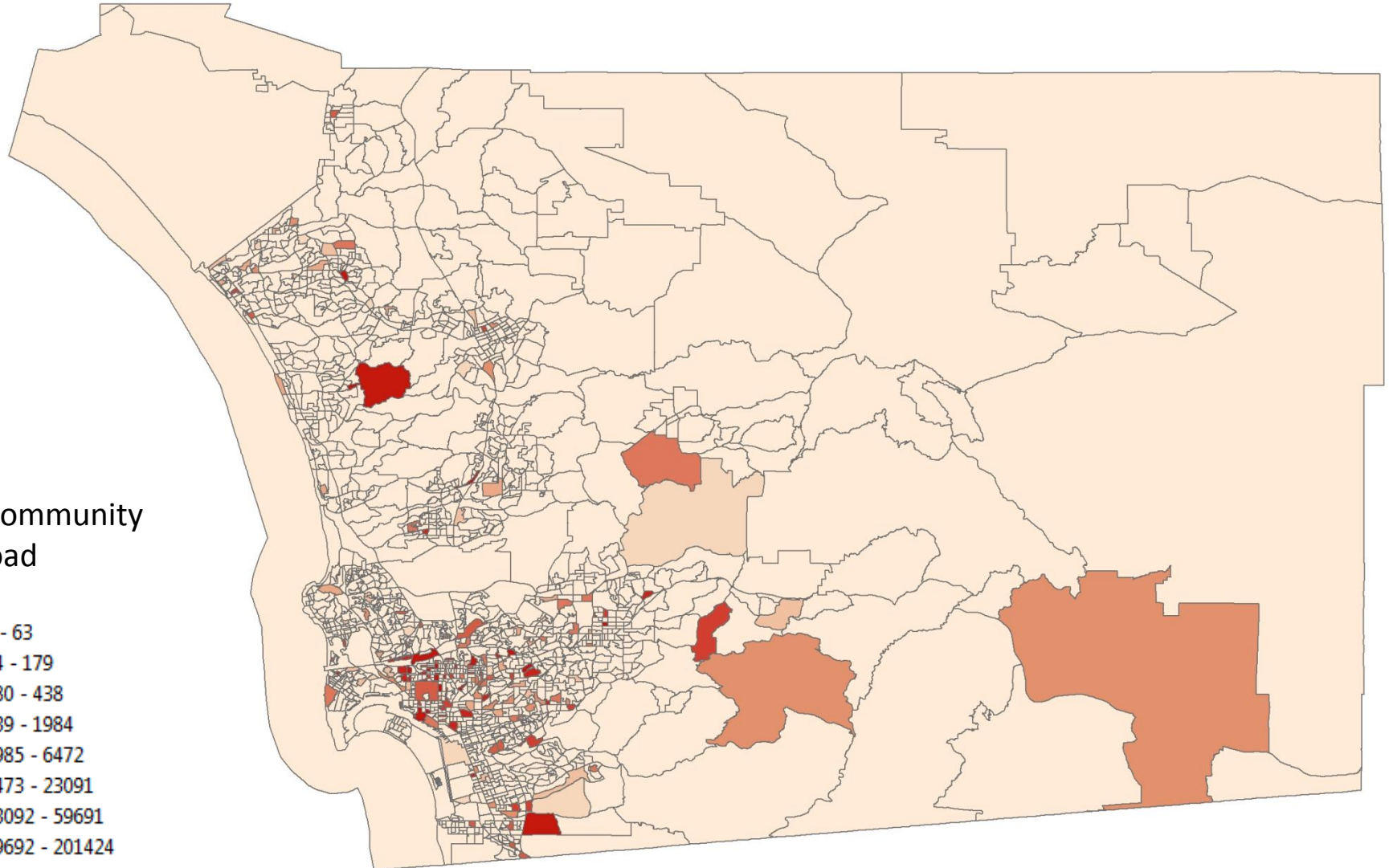


# Geospatial Distribution of CNICS MSM in San Diego County

Points per square km



# Community Viral Load by Census Tract



Total community viral load

- 0
- 1 - 63
- 64 - 179
- 180 - 438
- 439 - 1984
- 1985 - 6472
- 6473 - 23091
- 23092 - 59691
- 59692 - 201424
- 201425 - 1829860

## Individual Factors Associated with Being Detectable

	<b>Detectable Based on assay cut off N=381</b>	<b>Not Detectable N=1126</b>	<b>p</b>
<b>Age less than 30</b>	<b>48 (12.6%)</b>	<b>93 (8.3%)</b>	<b>0.01</b>
<b>African-American</b>	<b>45 (11.8%)</b>	<b>103 (9.2%)</b>	<b>0.05</b>
<b>Hispanic</b>	<b>99 (26.0%)</b>	<b>364 ()</b>	<b>0.02</b>
<b>AIDS Diagnosis</b>	<b>140 (36.7%)</b>	<b>348 (30.9%)</b>	<b>0.04</b>
<b>Mental Health Diagnosis</b>	<b>251 (65.9%)</b>	<b>767 (68.1%)</b>	<b>0.42</b>
<b>Severe Depression by CES</b>	<b>29 (10.1%)</b>	<b>31 (3.7%)</b>	<b>&lt;0.01</b>
<b>Current substance use</b>	<b>88 (30.3%)</b>	<b>99 (11.7%)</b>	<b>&lt;0.01</b>
<b>Current tobacco use</b>	<b>117 (40.3%)</b>	<b>240 (28.4%)</b>	<b>&lt;0.01</b>
<b>Mean Nadir CD4 (SD)</b>	<b>269 (207)</b>	<b>291 (219)</b>	<b>0.09</b>
<b>Mean CD4 latest (SD)</b>	<b>439 (275)</b>	<b>583 (269)</b>	<b>&lt;0.01</b>

# Structural Factors Associated with Being Detectable

	<b>Detectable</b>	<b>Not Detectable</b>	<b>p</b>
Above median Population in Block (>9600 in block)	<b>172 (45.2%)</b>	<b>580 (51.5%)</b>	<b>0.03</b>
Mean % Male in block	<b>51.4 (6.9)</b>	<b>51.7 (6.7)</b>	<b>0.76</b>
Mean Male age in block	<b>35.2 (7.5)</b>	<b>36.2 (8.1)</b>	<b>0.05</b>
Top decile of African American % (>17% by composition)	<b>59 (15.5%)</b>	<b>106 (9.4%)</b>	<b>&lt;0.01</b>
Top decile of Latino % (>67% by composition)	<b>33 (8.7%)</b>	<b>114 (10.1%)</b>	<b>0.41</b>
Median Avg. household size (IQR)	<b>2.1 (1.8-2.9)</b>	<b>2.1 (1.8-2.9)</b>	<b>0.73</b>
Median education high school or less (IQR)	<b>30.8 (17.6-48.2)</b>	<b>29.2 (17.6-47.4)</b>	<b>0.39</b>
Median % unmarried same-sex partners	<b>0.8 (0.0-2.0)</b>	<b>0.92 (0-2.39)</b>	<b>0.64</b>
Mean % unemployed (SD)	<b>5.5 (4.3-8.2)</b>	<b>5.3 (3.9-7.5)</b>	<b>0.10</b>
Distance to Care (in km)	<b>5.4 (2.5-12.8)</b>	<b>5.2 (2.4-12.8)</b>	<b>0.97</b>



# Factors Associated with Being Detectable

	<b>Adjusted OR</b>	<b>CI</b>	<b>p</b>
Age less than 30	<b>1.68</b>	<b>(1.07-2.65)</b>	<b>0.03</b>
African-American	<b>0.81</b>	<b>(0.49-1.34)</b>	<b>0.41</b>
Hispanic	<b>0.55</b>	<b>(0.39-0.77)</b>	<b>&lt;0.01</b>
AIDS Diagnosis	<b>1.00</b>	<b>(0.7-1.4)</b>	<b>0.98</b>
Severe Depression by PHQ9	<b>3.73</b>	<b>(2.04-6.85)</b>	<b>&lt;0.01</b>
Current substance use	<b>3.18</b>	<b>(2.21-4.57)</b>	<b>&lt;0.01</b>
Current tobacco use	<b>1.41</b>	<b>(1.03-1.93)</b>	<b>0.03</b>
Mean CD4 latest (SD)	<b>0.997</b>	<b>(0.997-0.998)</b>	<b>&lt;0.01</b>
Above median Population in Block (>9600)	<b>0.70</b>	<b>(0.52-0.95)</b>	<b>0.02</b>
Mean Male age in block	<b>0.98</b>	<b>(0.96-1.00)</b>	<b>0.05</b>
Top decile of African American % (>17% )	<b>1.66</b>	<b>(1.04-2.65)</b>	<b>0.03</b>

# Factors Associated with not being on ART

	<b>Adjusted OR</b>	<b>CI</b>	<b>p</b>
Age less than 30	<b>2.15</b>	<b>(1.12-4.12)</b>	<b>0.02</b>
African-American	<b>1.14</b>	<b>(0.43-3.03)</b>	<b>0.79</b>
Hispanic	<b>1.10</b>	<b>(0.58-2.09)</b>	<b>0.77</b>
AIDS Diagnosis	<b>0.40</b>	<b>(0.15-1.08)</b>	<b>0.07</b>
Severe Depression by PHQ9	<b>1.55</b>	<b>(0.54-4.42)</b>	<b>0.41</b>
Current substance use	<b>3.45</b>	<b>(1.89-6.30)</b>	<b>&lt;0.01</b>
Current tobacco use	<b>1.44</b>	<b>(1.03-2.01)</b>	<b>0.03</b>
Nadir CD4	<b>1.001</b>	<b>(1.001-1.002)</b>	<b>&lt;0.01</b>
Mean CD4 latest (SD)	<b>1.001</b>	<b>(1.000-1.002)</b>	<b>0.04</b>
Above median Population Density in Block (>9600 in block)	<b>0.85</b>	<b>(0.48-1.50)</b>	<b>0.57</b>
Mean Male age in block	<b>0.98</b>	<b>(0.95-1.02)</b>	<b>0.39</b>
Top decile of African American % (>17%)	<b>1.70</b>	<b>(0.74-3.92)</b>	<b>0.21</b>

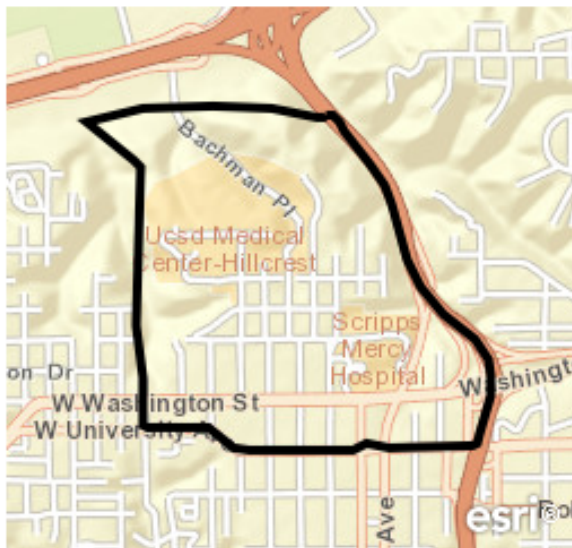
# Factors Associated with Being Detectable on ART

	<b>Adjusted OR</b>	<b>CI</b>	<b>p</b>
Age less than 30	<b>0.56</b>	<b>(0.25-1.28)</b>	<b>0.17</b>
African-American	<b>0.76</b>	<b>(0.39-1.48)</b>	<b>0.41</b>
Hispanic	<b>0.55</b>	<b>(0.34-0.88)</b>	<b>0.01</b>
AIDS Diagnosis	<b>1.98</b>	<b>(1.30-6.21)</b>	<b>&lt;0.01</b>
Severe Depression by PHQ9	<b>2.86</b>	<b>(1.30-6.21)</b>	<b>&lt;0.01</b>
Current substance use	<b>1.62</b>	<b>(0.94-2.78)</b>	<b>0.08</b>
Current tobacco use	<b>1.25</b>	<b>(0.831-1.91)</b>	<b>0.31</b>
Mean CD4 latest (SD)	<b>0.998</b>	<b>(0.997-0.999)</b>	<b>&lt;0.01</b>
Above median Population in Block	<b>0.59</b>	<b>(0.39-0.89)</b>	<b>0.01</b>
Mean Male age in block	<b>0.98</b>	<b>(0.95-1.00)</b>	<b>0.09</b>
Top decile of African American % (>17%)	<b>1.70</b>	<b>(0.92-3.48)</b>	<b>0.08</b>
Adherent to meds>80%	<b>0.17</b>	<b>(0.09-0.31)</b>	<b>&lt;0.01</b>
Time on ART> 1yr.	<b>Ref</b>	<b>Ref</b>	<b>Ref</b>
ART 6-12 months	<b>2.12</b>	<b>(1.27-3.52)</b>	<b>&lt;0.01</b>
ART<6 months	<b>1.80</b>	<b>(0.92-3.48)</b>	<b>0.08</b>

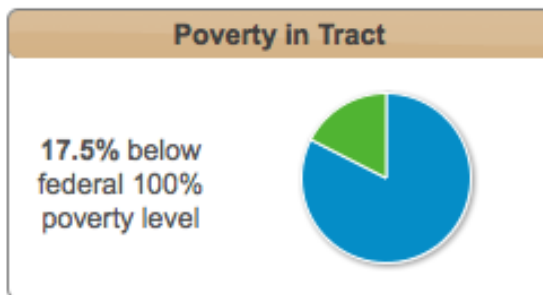
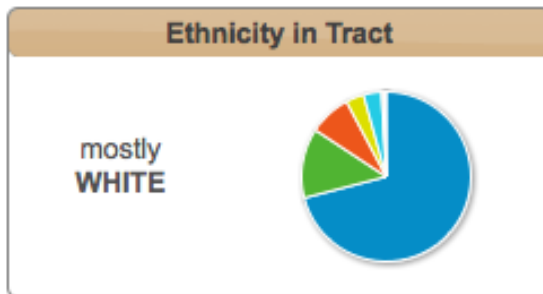
# Factors Associated with Being Detectable

	<b>Adjusted OR</b>	<b>CI</b>	<b>p</b>
Age less than 30	<b>1.34</b>	<b>(0.80-2.26)</b>	<b>0.13</b>
African-American	<b>0.80</b>	<b>(0.47-1.37)</b>	<b>0.42</b>
Hispanic	<b>0.52</b>	<b>(0.36-0.75)</b>	<b>&lt;0.01</b>
AIDS Diagnosis	<b>1.18</b>	<b>(0.83-1.66)</b>	<b>0.36</b>
Severe Depression by PHQ9	<b>4.03</b>	<b>(2.11-7.71)</b>	<b>&lt;0.01</b>
Current substance use	<b>2.69</b>	<b>(1.81-3.98)</b>	<b>&lt;0.01</b>
Current tobacco use	<b>1.44</b>	<b>(1.03-2.01)</b>	<b>0.03</b>
Mean CD4 latest (SD)	<b>0.997</b>	<b>(0.996-0.998)</b>	<b>&lt;0.01</b>
Above median Population Density in Block (>9600 in block)	<b>0.69</b>	<b>(0.50-0.95)</b>	<b>0.95</b>
Mean Male age in block	<b>0.98</b>	<b>(0.96-1.00)</b>	<b>0.09</b>
Top decile of African American % (>17%)	<b>1.68</b>	<b>(1.01-2.78)</b>	<b>0.05</b>
ART use	<b>37.3</b>	<b>(15.53-89.65)</b>	<b>&lt;0.01</b>

# Census Tract in San Diego with 2<sup>nd</sup> highest Community Viral Load in 2012



**Other Adjacent Tracts**  
 0002.00, 0093.04, 0005.00, 0007.00,  
 0006.00, 0089.02, 0003.00



**Parent Geography**  
 This tract lies within these

San Diego County  
 MSSA 161b  
 53rd Congressional District  
 78th Assembly District  
 39th Senate District

This census tract details report contains several common and basic population demographics about this single tract as well as geographical cross-references to hospital markets, adjacent tracts, and other geographic areas. The map (left) shows this single tract and all the adjacent tracts too.

Total CVL=1,164,564  
 Avg. CVL= 13,541  
 32.9% detectable

\*18% poverty rate vs. San Diego poverty rate=13%

# Census Tract in San Diego with 2<sup>nd</sup> highest Community Viral Load in 2012

Race-Ethnicity	Total Count	Civilian Count	Civilian Ethnic Ratio
White, non-hispanic	2,542	2,323	70.97%
Hispanic	476	435	13.29%
Asian, non-hispanic	286	261	7.98%
Black, non-hispanic	123	112	3.43%
Multi-ethnicity, non-hispanic	123	112	3.43%
American Indian, non-hispanic	11	10	0.31%
Islander, non-hispanic	11	10	0.31%
Other, non-hispanic	10	9	0.28%

Race	Total Count	Civilian Count	Civilian Ethnic Ratio
White	2,754	2,517	76.88%
Asian	295	270	8.24%
Other	200	183	5.58%
Multi-ethnicity	170	155	4.75%
Black	124	113	3.46%
American Indian	24	22	0.67%
Islander	15	14	0.42%

## Pop. Size

Approx 3,582 people

## Pop. Density

Approx. 7,632 people per sq. mile

## Land Area

Approx 0.5 sq. miles



## Population Counts

**3,274** civilians

**3,582** civilians + group quarters

**91.4%** civilian



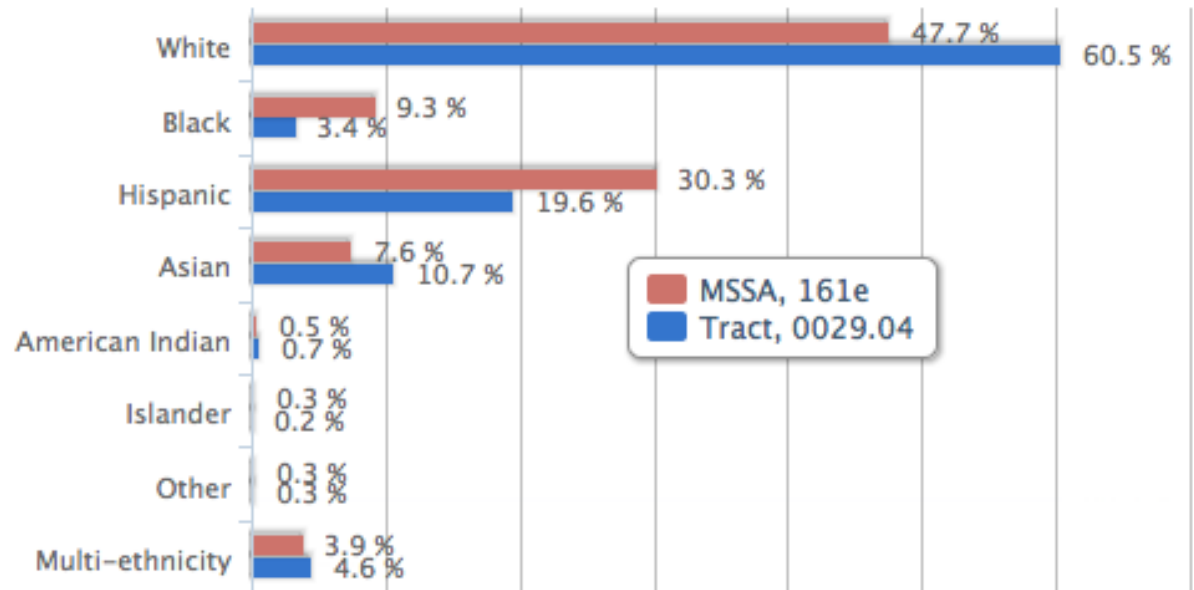
## Age Statistics

**7.0%** @ under 18 yrs old

**80.0%** @ 18 - 64 yrs old

**13.0%** @ 65 yrs or older

# Census Tract in San Diego with highest Percentage Detectable HIV in 2012



San Diego State University

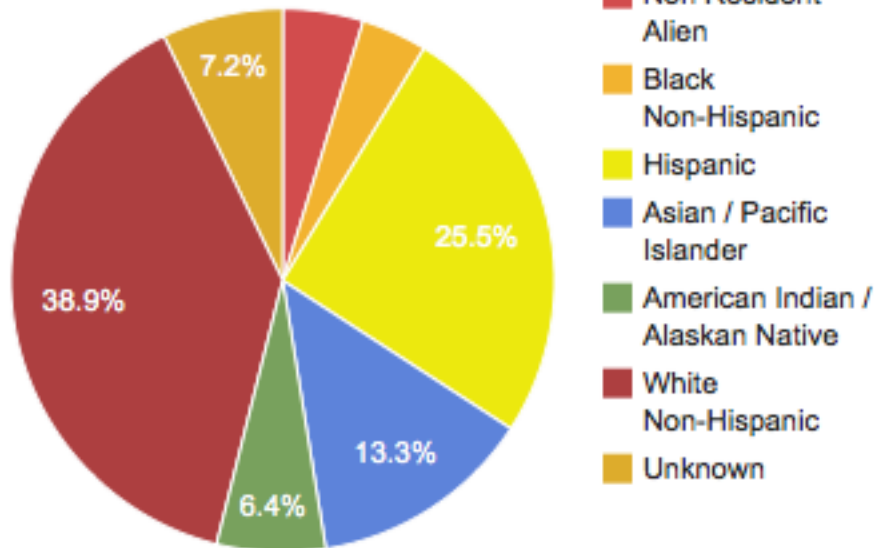
Total CVL= 828,564  
 Avg. CVL= 138,094  
 66.7% detectable

\*34% poverty rate vs. San Diego poverty rate=13%

# SDSU vs. UCSD Race/Ethnicity

## STUDENT ENROLLMENT DEMOGRAPHICS

### Race / Ethnicity of Students



**SDSU**

### Gender

Female	11,202	49.4%
Male	11,474	50.6%

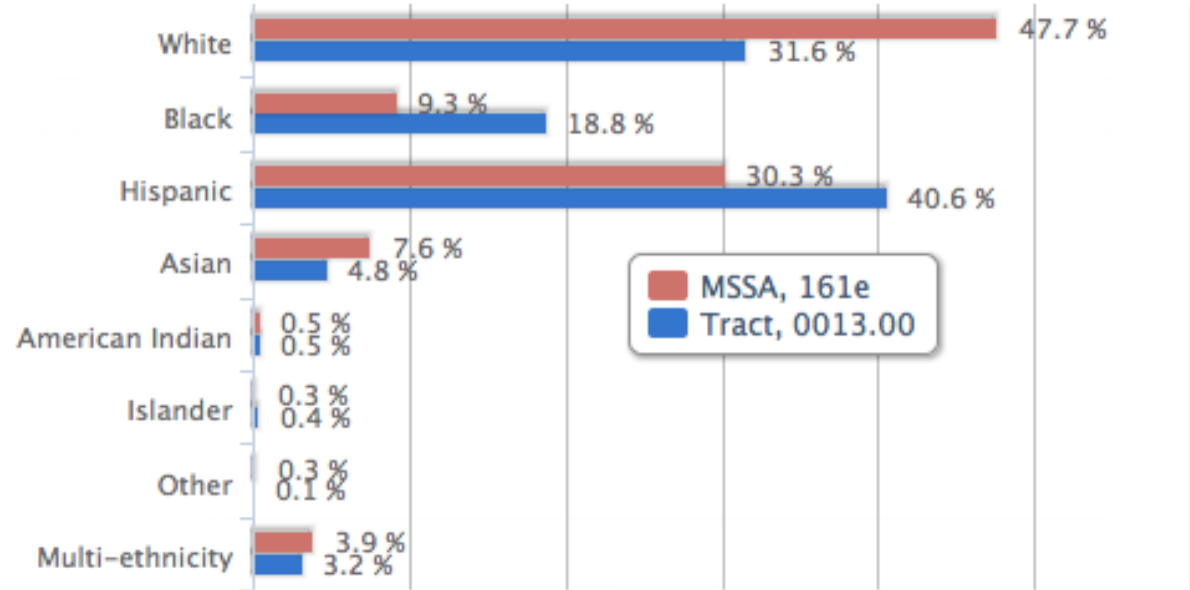
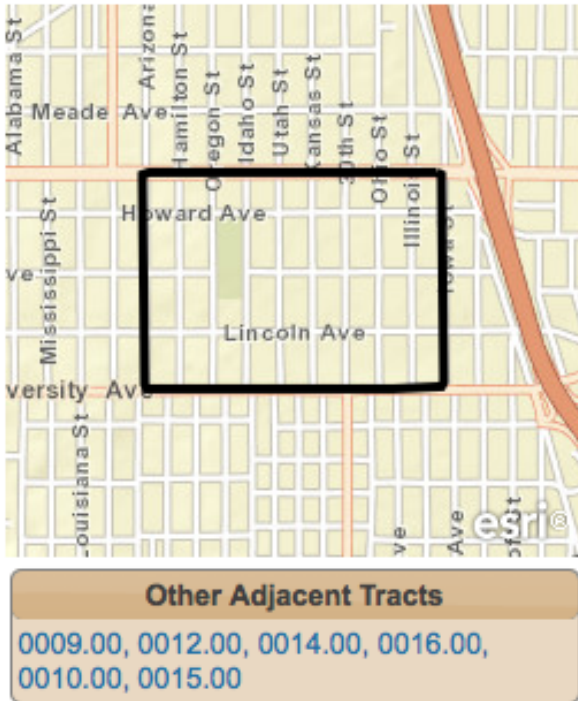
### Ethnicity

African-American	427	1.9%
Asian	10,072	44.4%
Mexican-American	2,781	12.3%
Filipino	1,095	4.8%
Latino/Other Spanish	793	3.5%
Native-American	103	0.5%
Caucasian	5,378	23.7%
Other/Undeclared	2,027	8.9%

**UCSD**



# Census Tract in San Diego with High rate of Detectable HIV infected individuals and African Americans (>5 in tract)



This census tract details report contains several common and basic population demographics about this single tract as well as geographical cross-references to hospital markets, adjacent tracts, and other geographic areas. The map (left) shows this single tract and all the adjacent tracts too.

Total CVL=190,829  
 Avg. CVL= 3,670  
 40.8% detectable

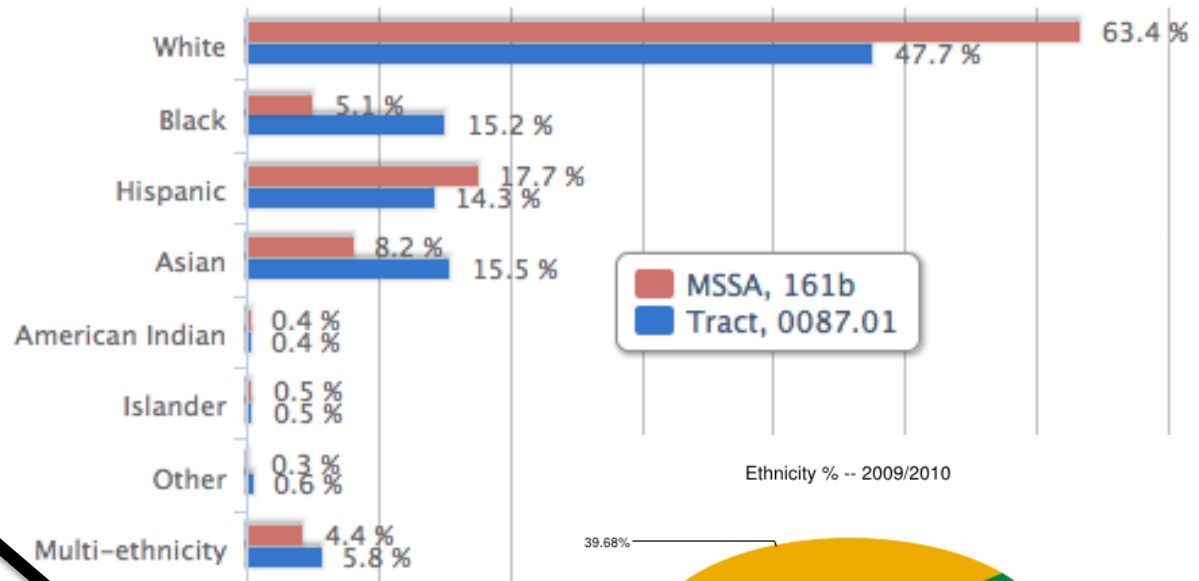
\*19% poverty rate vs. San Diego poverty rate=13%

# Census Tract in San Diego with highest AVG CVL of HIV and includes an African American Block

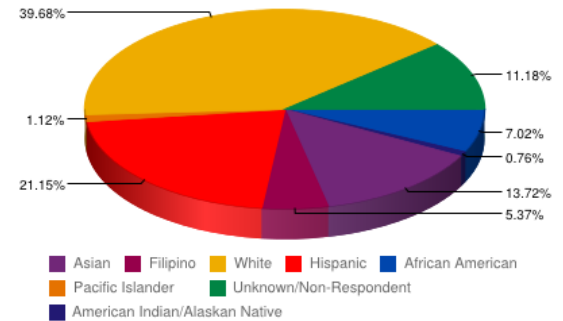


**Other Adjacent Tracts**  
 0085.11, 0085.10, 0092.01, 0088.00,  
 0087.02, 0085.13, 0086.00

Total CVL=576,356  
 Avg. CVL=26,198  
 36.4% detectable



Mesa College  
 Demographics



\*10% poverty rate vs. San Diego poverty rate=13%

# Summary

- **Patients who had any visit in 2012 were highly likely to be on cART and be not detectable**
- **Young MSM (<30) are more likely not to be on ART even considering CD4 and other factors**
- **Neighborhoods can be identified with high viral load and high number of detectable individuals**
- **African American neighborhoods not African American race was more consistently associated with being detectable. May include areas of post-secondary education.**

# Next Steps

- **Expansion to other CNICS sites.**
- **Analyze factors associated with not being retained in care**
- **Geospatial location of Young MSM (<30)**
- **Focus groups to explore structural factors that may be barriers to care access**

# Thanks!

Sheldon Morris M.D., M.P.H.

[shmorris@ucsd.edu](mailto:shmorris@ucsd.edu)