

Reservoirs/Source Populations of Potential HIV Transmission Persons Diagnosed and Living with HIV/AIDS (PDLWH/A) who can Potentially Transmit HIV to MSMs, Heterosexuals and IDUs in Pennsylvania

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cCDC+P is a 'virtual' collaboration center bringing together a multidisciplinary network of applied & translational researchers to partner with health agencies and communities & innovate on integrated disease surveillance, control & prevention of HIV, & related conditions.

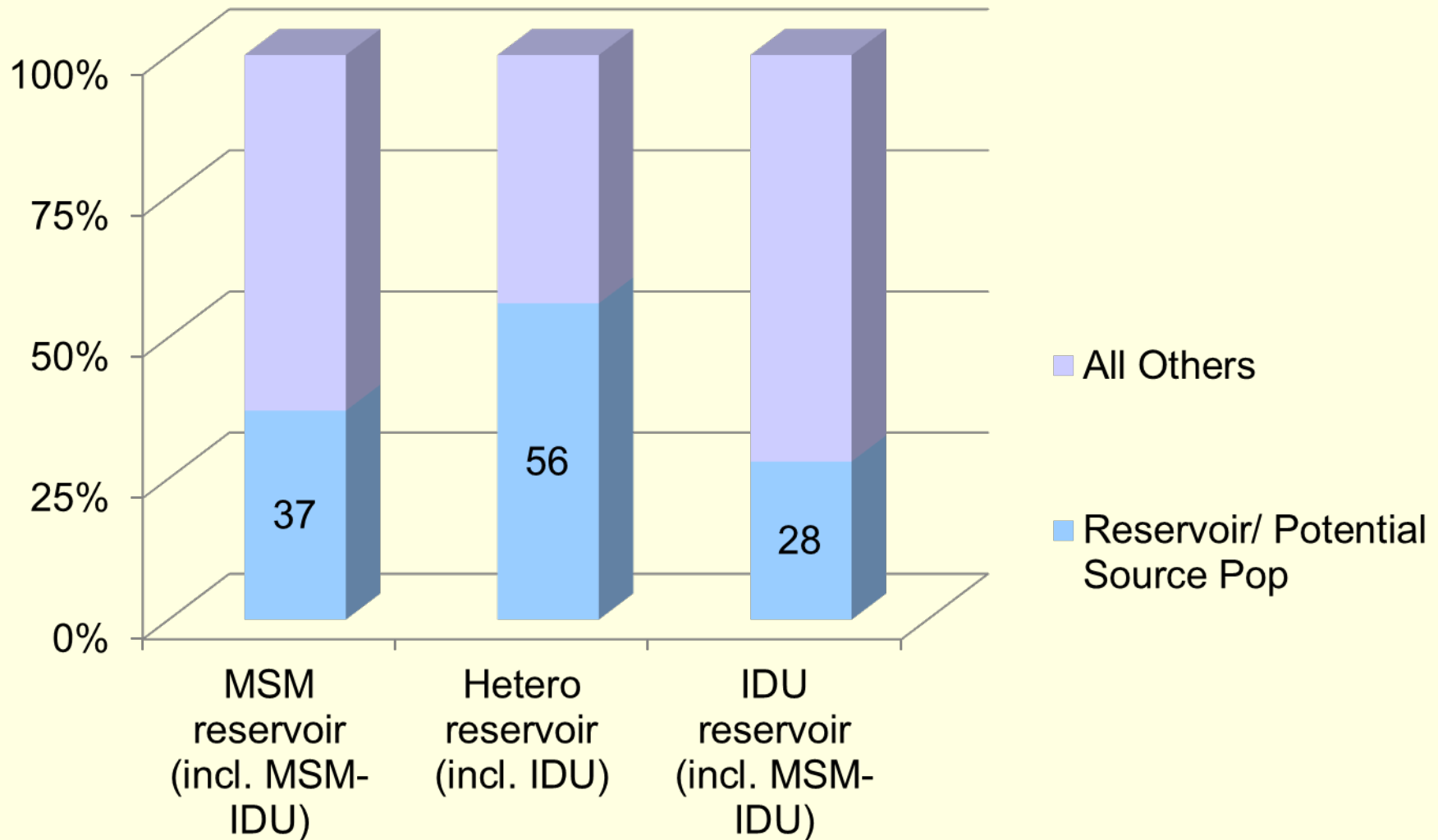
Overall Objectives

- To examine:
 - The likelihood of *reservoirs* of persons diagnosed and living with HIV/AIDS (PDLWH/A) in Pennsylvania (PA) who can potentially transmit HIV through:
 - Men who have sex with men, MSM [including MSM who are also Injection Drug Users, IDU, i.e. MSM-IDU];
 - Heterosexuals [including those who may have acquired HIV through IDU];
 - Injection drug users [including those who may also be MSM-IDU];
 - How the likelihood of these reservoirs/potential source populations of HIV infection varies according to several demographic and geospatial characteristics.

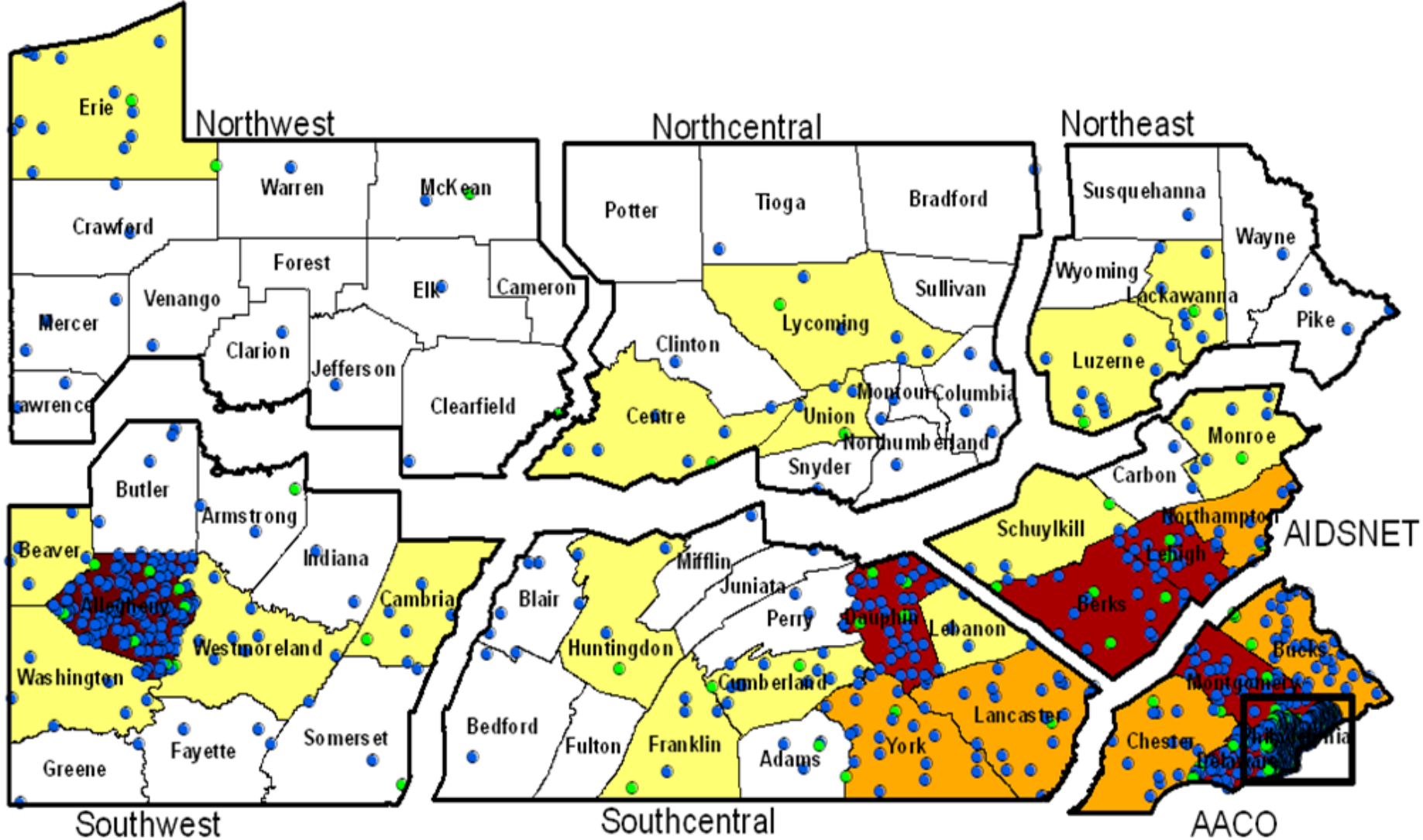
Methods – Design, Study Populations & Analyses

- The PA HIV case surveillance dynamic cohort studied (estimated to account for ~4/5 of all persons living with HIV in PA based on CDC back-calculation methods) included:
 - 34,772 adults/adolescents (>13-years old at the time of HIV diagnosis, excluding those probably infected through mother-to-child-transmission) with a definitive HIV-diagnosis over 30 years, from January 1, 1980 who were longitudinally followed-up and presumed alive after death registry linkage as of December 31, 2010.
- Simple chi-square, geospatial, and adjusted/multiple logistic regression analyses were performed to estimate likelihoods of PDLWH/A who can potentially transmit HIV through MSM, Hetero contact, & IDU and how this varies by demographic and geospatial characteristics reported in the results.

Persons Diagnosed and Living with HIV/AIDS (PDLWH/A) comparing MSM, Hetero Contact, & IDU Diagnosed *Reservoirs/Potential Source Population for HIV transmission vs. all other PDLWH/A



*Reservoirs are not mutually exclusive



Prevalent HIV Cases, 2009

Pennsylvania: 2009 Prevalent HIV Cases Attributed to the MSM Reservoir

Philadelphia: 2009 Prevalent HIV Cases Attributed to the MSM Reservoir

<100

100 - 399

400 - 799

800 - 1,599

>=1,600

1 Dot = 10

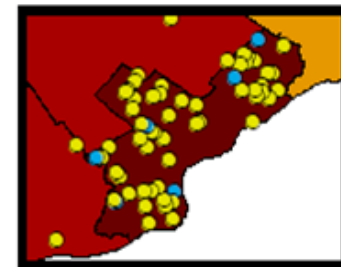
MSM

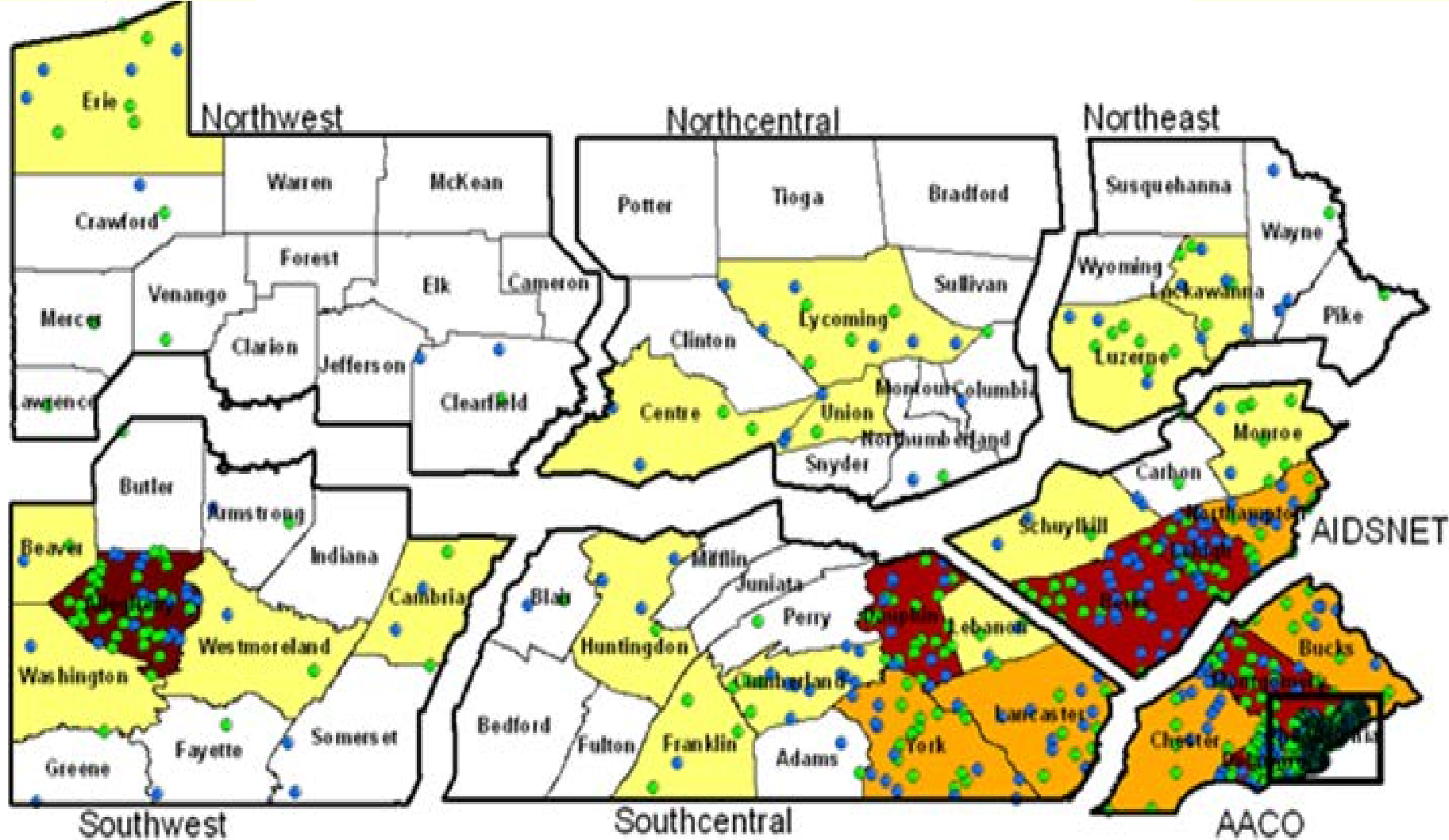
MSM-IDU

1 Dot = 100

MSM

MSM-IDU





Prevalent HIV Cases, 2009

Pennsylvania: 2009 Prevalent HIV Cases Attributed to the Heterosexual Reservoir

Philadelphia: 2009 Prevalent HIV Cases Attributed to the Heterosexual Reservoir

<100

100 - 399

400 - 799

800 - 1,599

>=1,600

1 Dot = 15

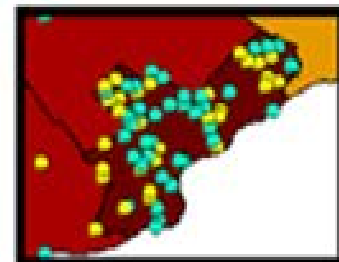
IDU

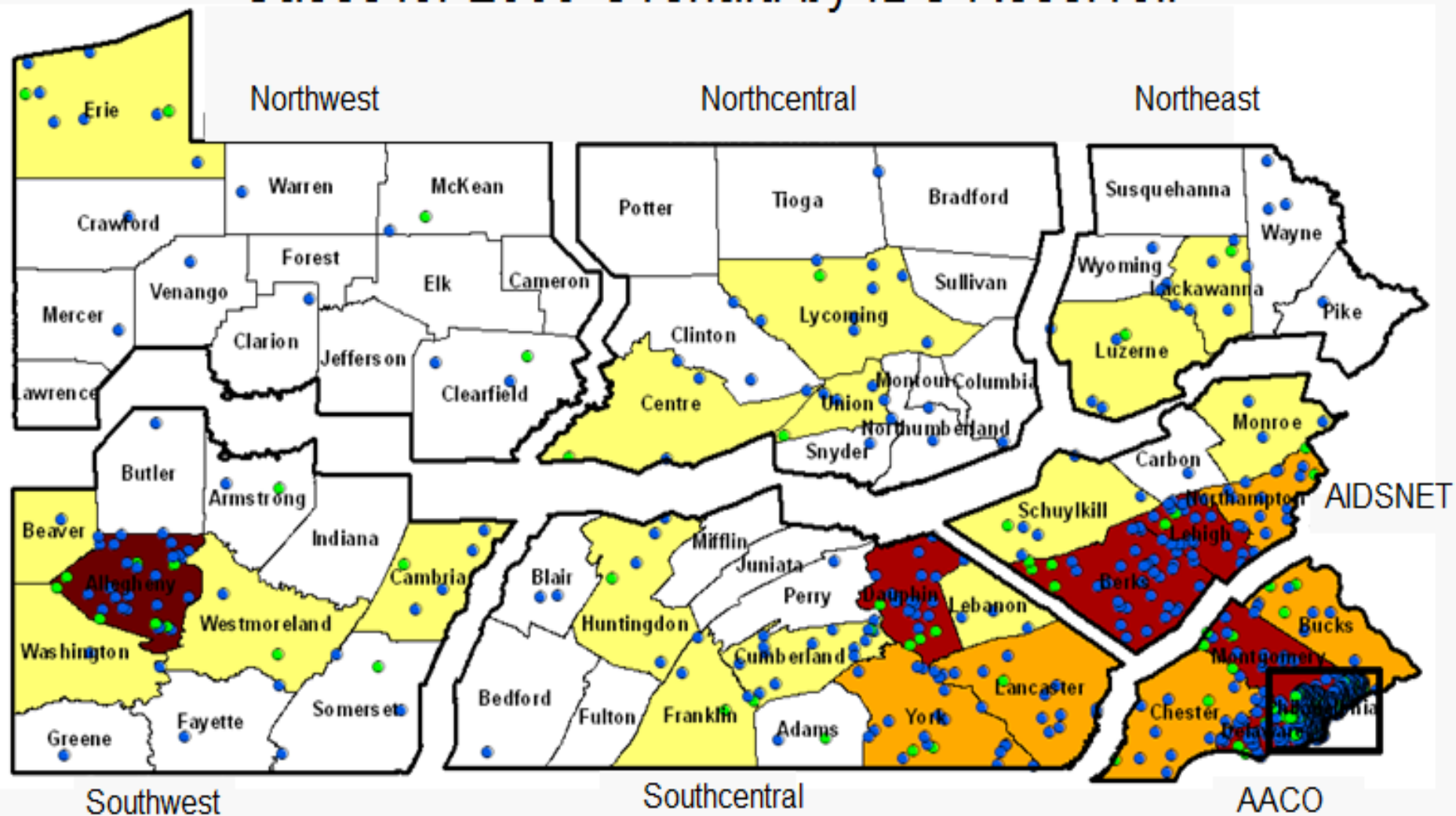
Heterosexual contact

1 Dot = 150

IDU

Heterosexual contact

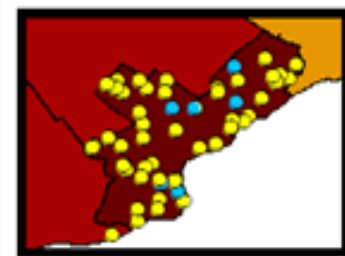




Prevalent HIV Cases, 2009

Pennsylvania: 2009 Prevalent HIV Cases Attributed to the IDU Reservoir

Philadelphia: 2009 Prevalent HIV Cases Attributed to the IDU Reservoir



Likelihood of PDLWH/A who can potentially transmit HIV through MSM, Hetero Contact, or IDU vs. all other PDLWH/A

Variable	MSM - Adjusted Odds Ratios			Hetero - Adjusted Odds Ratios			IDU - Adjusted Odds Ratios		
	OR	95%CI		OR	95%CI		OR	95% CI	
Current Age (Years) as of December 31, 2010									
13-29	1.00			1.00			1.00		
30-39	0.46	0.42	0.50	2.12	1.91	2.36	2.71	2.35	3.13
40-49	0.45	0.41	0.49	2.65	2.41	2.92	4.87	4.26	5.58
50-59	0.38	0.35	0.41	3.91	3.54	4.32	7.49	6.55	8.58
>=60	0.38	0.34	0.42	3.87	3.44	4.35	5.54	4.77	6.42
Race/Ethnicity									
White, Non-Hispanic	1.00			1.00			1.00		
Black, Non-Hispanic	0.28	0.27	0.29	3.13	2.96	3.32	1.83	1.73	1.95
Hispanic	0.22	0.20	0.23	4.55	4.19	4.93	2.95	2.73	3.18
Other race	0.37	0.30	0.46	1.09	0.86	1.38	0.49	0.35	0.68
Sex/Gender									
Male	NA		NA	1.00			1.00		
Female	NA		NA	15.11	14.00	16.32	0.89	0.85	0.94
Coalition Region									
AACO	1.00			1.00			1.00		
AIDSNET	0.53	0.48	0.58	0.72	0.66	0.80	1.02	0.93	1.11
Northcentral	0.85	0.73	1.00	0.76	0.64	0.89	1.37	1.17	1.60
Northeast	0.61	0.52	0.71	0.82	0.70	0.97	1.06	0.90	1.25
Northwest	0.97	0.83	1.14	0.66	0.55	0.78	1.08	0.91	1.28
Southcentral	0.84	0.78	0.91	0.65	0.60	0.71	0.93	0.86	1.01
Southwest	1.79	1.65	1.93	0.41	0.38	0.45	0.51	0.46	0.57

- The likelihood of PDLWH/A who can potentially transmit HIV:
 - through hetero contact or IDU was greater for those currently older than 29 and increased with each successive age group; & racial/ethnic minorities primarily blacks and Hispanics;
 - through hetero contact was greater for females; & residents of the AACO HSA;
 - through IDU was greater for males; residents of the Northcentral HAS, & lower for residents of the Southwest HSA;
 - through MSM was greater for those currently in the age group 13-29; whites; and residents of the AACO and Southwest HSAs;
- The likelihood of each reservoir of PDLWH/A who can potentially transmit HIV varied by demographic and geospatial characteristics.

In Conclusion

- Given the high proportion presumed to know their HIV-status (~4/5) based on CDC-recommended back-calculation methods,
 - the substantial proportion of PDLWH/A constituting the potential reservoirs of those who can transmit HIV through MSM (almost 2/5), Hetero Contact (~1/2) or IDU (~1/3), suggests a major opportunity for tracking referrals, and linkage and retention in care to ensure sustained prevention/care for the subgroups identified as more likely to be in this reservoir.
- Program planning and resource allocation should consider these findings to assure timely access and linkage to HIV treatment and HIV prevention services for the subgroups identified.

Funding Support Provided by

