

# Record linkage to enhance STD/HIV surveillance data for Oregon's American Indian/Alaska Native population



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## Introduction

American Indians/Alaska Natives (AI/AN) experience substantial sexual health disparities. Compared to other races/ethnicities, AI/AN:

- Have the 2<sup>nd</sup> highest rates of chlamydia and gonorrhea, after African Americans<sup>1</sup>
- Rank third in rates of primary & secondary syphilis<sup>1</sup>
- Have some of the lowest HIV/AIDS survival rates, with one in four surviving less than three years after diagnosis<sup>2</sup>

Complicating surveillance efforts is the fact that AI/AN are frequently undercounted in disease surveillance systems, resulting in under-estimated morbidity and mortality. To the extent that this population is racially misclassified in sexually transmitted disease (STD) and HIV surveillance data, public health disease control efforts can be hampered.

## Methods

### Source data

- Case reports of reportable STDs (chlamydia, gonorrhea, primary and secondary syphilis (P&S)) and HIV among Oregon residents reported to Oregon Public Health Division between 2000-2009
- Patient enrollment records from Portland Area Indian Health Service (Idaho, Oregon, and Washington), 1986-2009, restricted to AI/AN beneficiaries. Eligibility for IHS services is based on enrollment in a federally-recognized Indian tribe, and/or documented decedence from a tribal member; thus all beneficiaries are known to be of AI/AN race.

### Record linkage

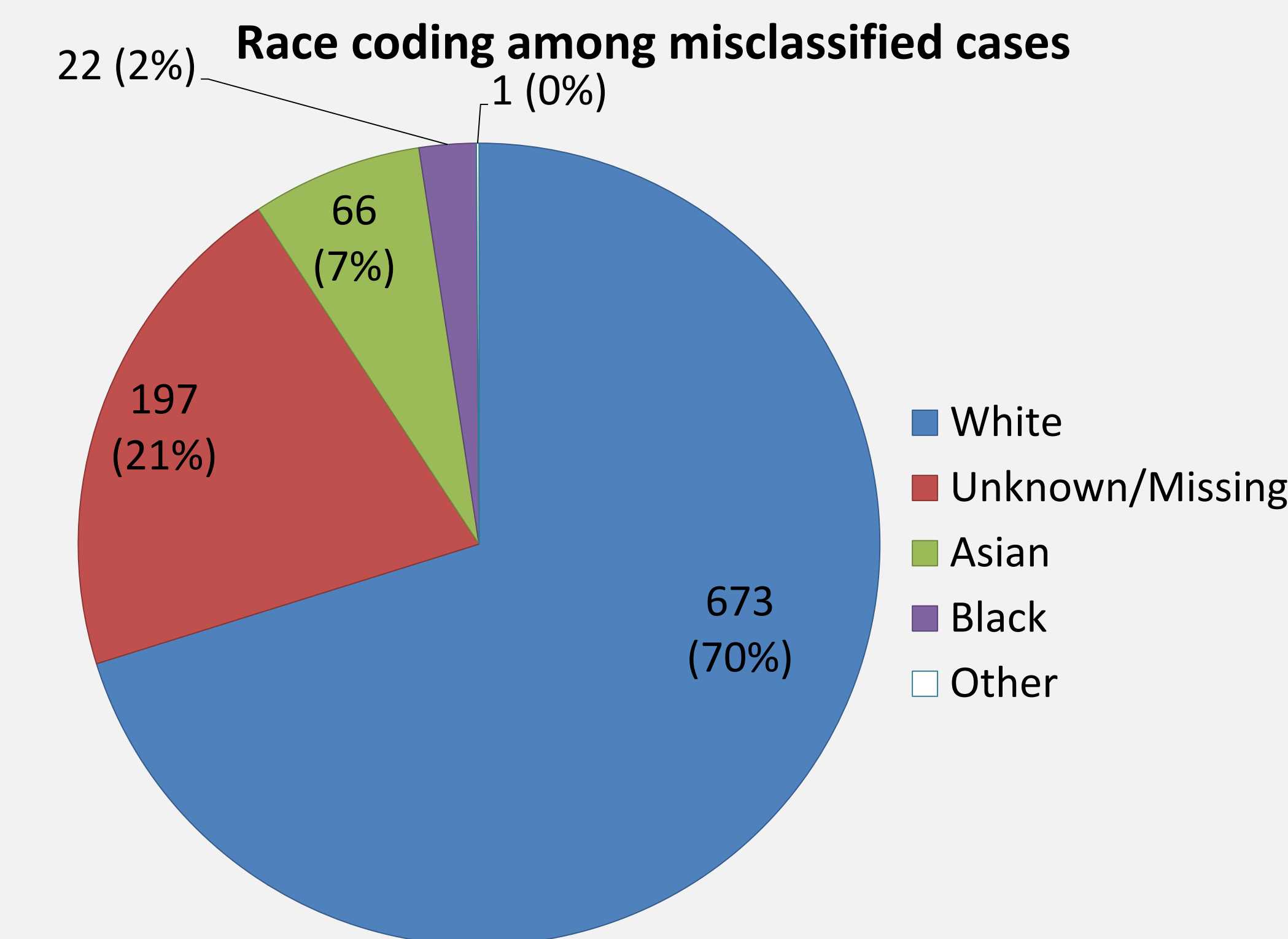
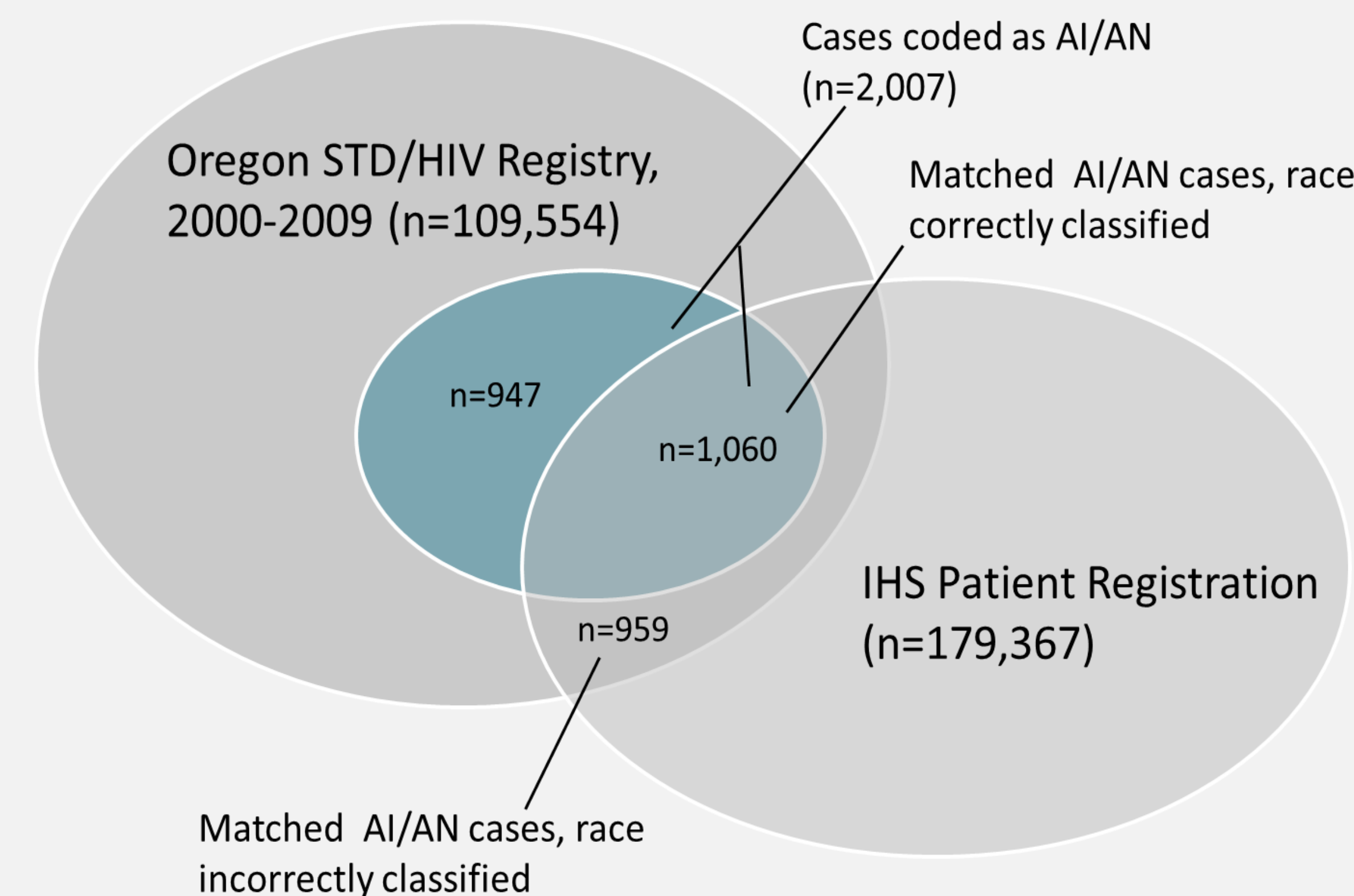
- LinkPlus software (CDC) used to conduct probabilistic linkage between two source data sets
- Comparison of agreement and disagreement on personal identifying fields

### Analysis

- Age-adjusted incidence rates (non-HIV STDs) and crude prevalence rates (HIV) were calculated by race and sex per 100,000 population, presented with 95% confidence intervals
- Numerators for AI/AN calculations include all matched cases (race correctly or incorrectly classified) plus unmatched AI/AN cases
- National Center for Health Statistics bridged-race population estimates used as population-at-risk denominators

## Results

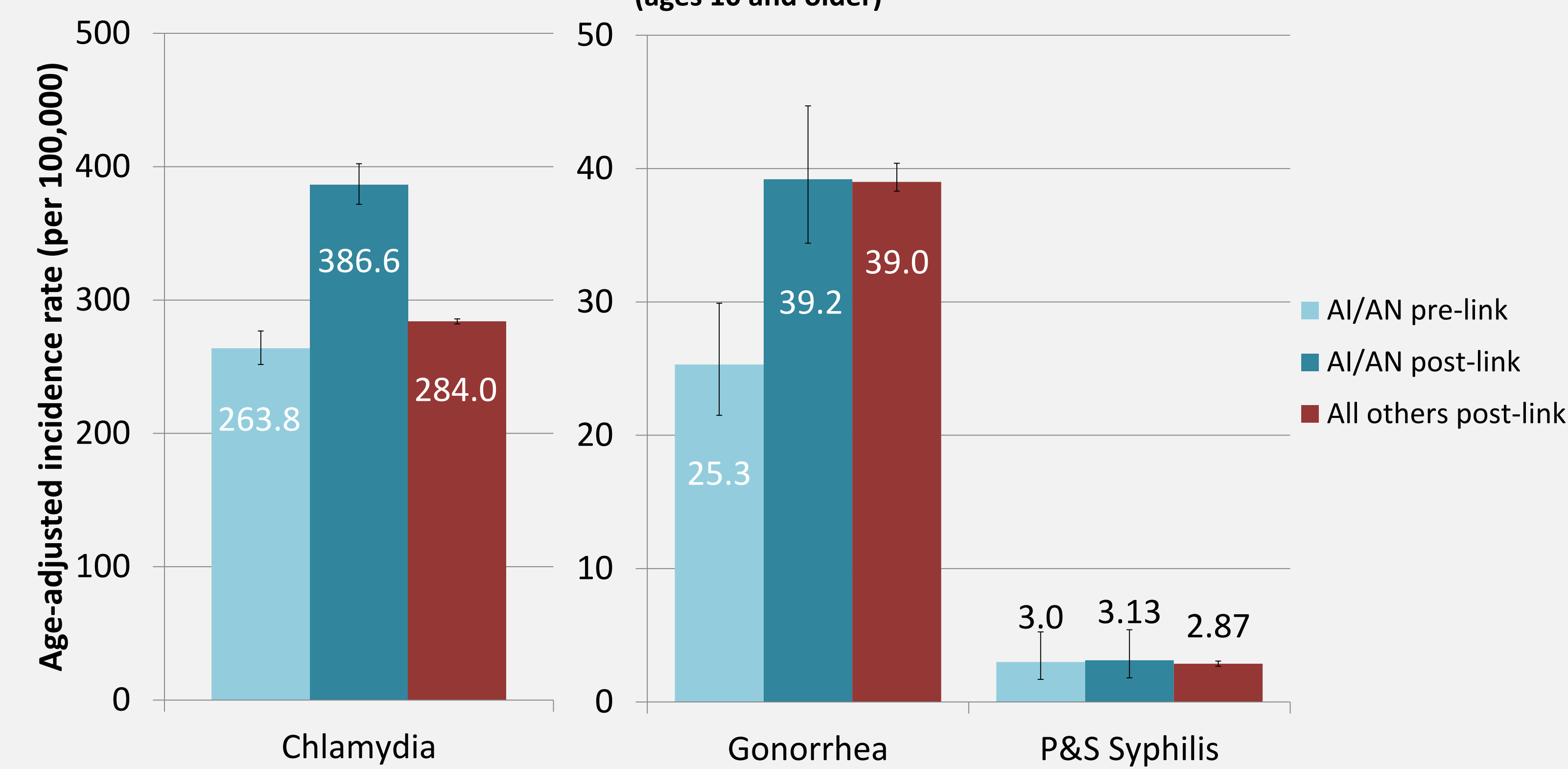
### Linkage & misclassification results



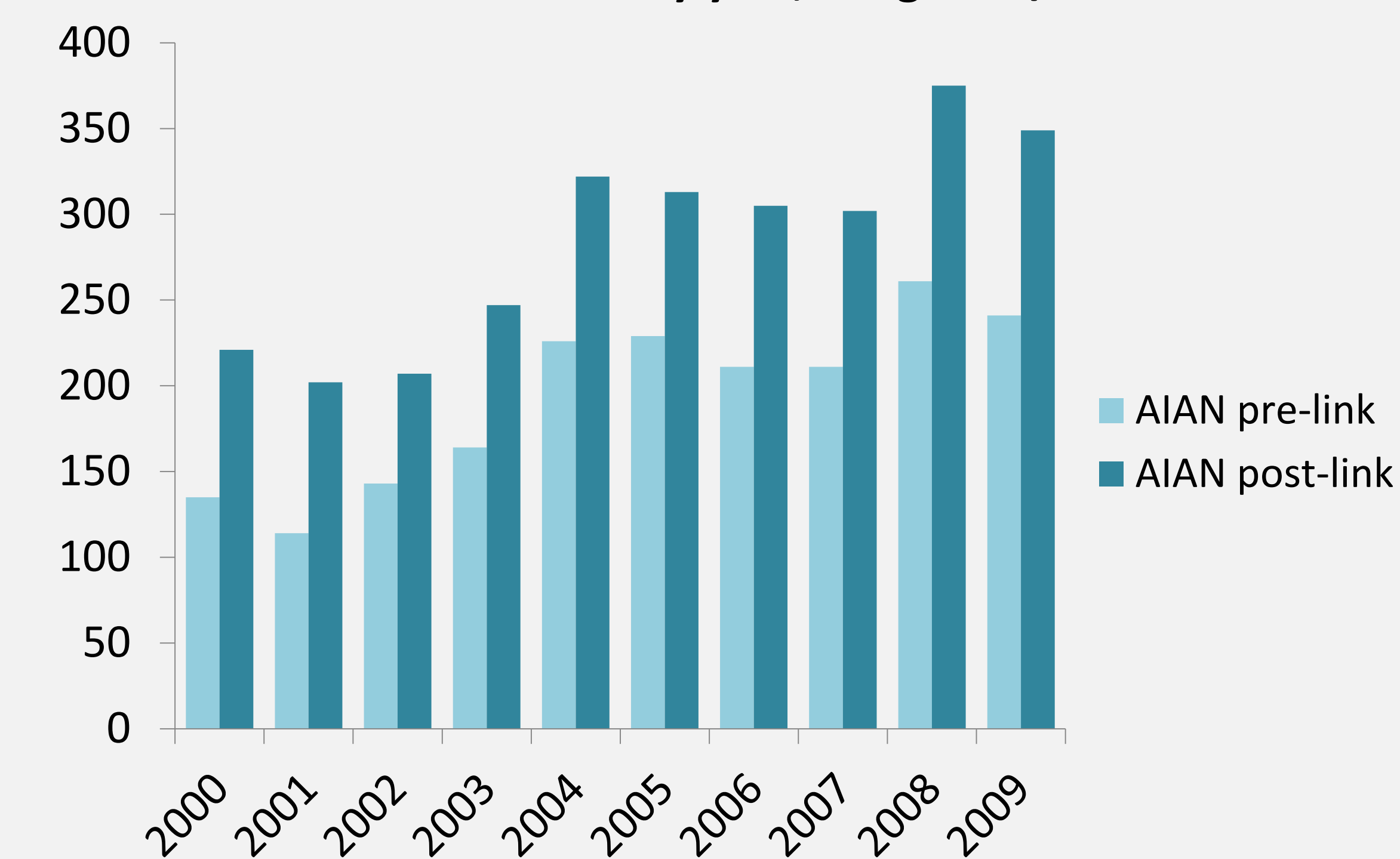
Unmatched AI/AN cases were more likely to reside in urban areas and somewhat less likely to be female; age and disease distributions were similar between matched and unmatched AI/AN cases

### STD results

#### Pre- and post-linkage STD incidence rates by race (ages 10 and older)

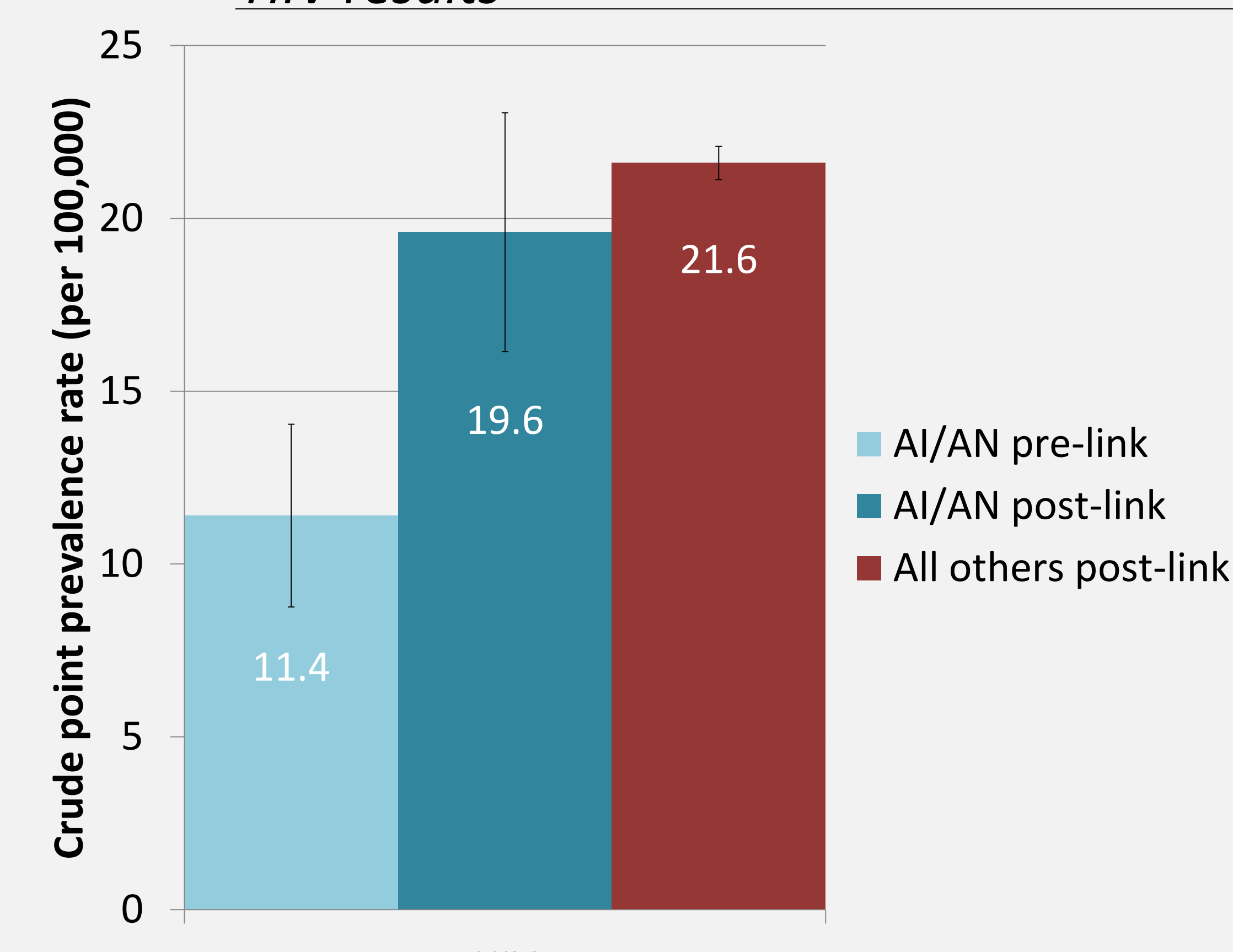


#### Number of STD cases by year, Oregon AI/AN



Chlamydia and gonorrhea rates for AI/AN females were approximately 50% higher than corresponding disease-specific rates for females of all other races; rates among AI/AN males were similar to other races.

### HIV results



#### HIV case counts (%) and point prevalence rate (per 100,000) by race and sex, Oregon, 2000-2009

	Male		Female	
	No. cases (%)	Prevalence (95% CI)	No. cases (%)	Prevalence (95% CI)
AI/AN	81 (65.9)	24.5 (19.9, 31.0)	42 (34.1)	13.5 (9.4, 17.6)
All other races	6,035 (78.6)	34.2 (33.4, 35.1)	1,461 (19.0)	8.1 (7.7, 8.6)

AI/AN had a greater proportion of female HIV cases compared to all other races, and female point prevalence was 1.7 times greater among AI/AN.

## Limitations

- Small numbers, unstable rate estimates
- Linkage data source does not represent entire AI/AN population; unable to validate race of unmatched AI/AN cases
- Specificity of AI/AN classification by surveillance cannot be assessed by this approach
- Post-linkage AI/AN rates may not be comparable to other states/areas which have not evaluated race data quality

## Conclusions and Future Work

- The correct classification of race is an important factor in disease surveillance; accurate data should inform prevention/intervention efforts
- Linkage approach can increase accessibility and quality of health data for AI/AN
- Future study will look at HIV care and performance measures in more detail
- For over 20 years, Project Red Talon has provided STD/HIV prevention planning, surveillance, and capacity-building assistance to the NW Tribes. For more information, contact Stephanie Craig Rushing at [scraig@npaihb.org](mailto:scraig@npaihb.org) or 503-416-3290.

## References

1. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for HIV, STD and TB Prevention (NCHSTP), Division of STD/HIV Prevention. Sexually Transmitted Disease Morbidity for selected STDs by age, race/ethnicity and gender 1996-2008. CDC WONDER On-line Database, November 2009. <http://wonder.cdc.gov/std-v2008-race-age.html>
2. Centers for Disease Control and Prevention, HIV/AIDS Surveillance Report, 2005. Vol. 17. Rev. ed. Atlanta: US Department of Health and Human Services; 2007. <http://www.cdc.gov/hiv/surveillance/resources/reports>

## Acknowledgements

- Stephanie Craig Rushing and Project Red Talon, NPAIHB
- Oregon Public Health Division, STD/TB/HIV Program



# Additional study details

## Definition of terms

- **Matched AI/AN case** – a reported STD/HIV case in which the individual is identified in both the IHS file and the Oregon STD/HIV Registry
  - **Race correctly classified**—a matched case for which the Oregon STD/HIV Registry identified the individual as AI/AN.
  - **Race incorrectly classified**—a matched case for which the Oregon STD/HIV Registry identified the individual as non-AI/AN or race was missing/unknown.
- **Unmatched AI/AN case**—a reported case in which the individual is identified as AI/AN in the Oregon STD/HIV Registry, but does not match with any individual in the IHS file. The IHS does not serve all AI/AN people in Oregon and is known to under-represent some subpopulations (e.g., urban Indians), thus these cases were included in analyses.

## Linkage and misclassification results

- STD/HIV cases identified as AI/AN increased by 47.8% as a result of the linkage, from 2,007 to 2,966
- HIV cases identified as AI/AN increased by over 70%, from 72 to 123 cases
- The majority of misclassified records were coded as White; the linkage also identified a high number of cases that were of unknown or missing race
- Unmatched AI/AN cases were more likely to reside in urban areas and somewhat less likely to be female; age and disease distributions were similar between matched and unmatched AI/AN cases

## STD results (chlamydia, gonorrhea, P&S)

- The correction of AI/AN race resulted in significantly higher average annual incidence rate estimates for chlamydia and gonorrhea. One additional AI/AN syphilis case was identified through the linkage.
- Chlamydia and gonorrhea rates for AI/AN females were approximately 50% higher than corresponding disease-specific rates for females of all other races; rates among AI/AN males were similar to other races.

## HIV results

- HIV prevalence rates among AI/AN increased significantly, approaching the rate for all other races combined.
- AI/AN had a greater proportion of female HIV cases compared to all other races, and female point prevalence was 1.7 times greater among AI/AN.



The Northwest Portland Area Indian Health Board (NPAIHB) is a non-profit tribal advisory organization serving the 43 federally recognized tribes of Oregon, Washington, and Idaho. NPAIHB's Northwest Tribal Epidemiology Center collaborates with Northwest Indian Tribes to provide health-related research, surveillance, and training to improve the quality of life of American Indians and Alaska Natives.