

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 2nd highest rates of chlamydia and gonorrhea, after African Americans¹
- Rank third in rates of primary & secondary syphilis¹
- Have some of the lowest HIV/AIDS survival rates, with one in four surviving less than three years after diagnosis²

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

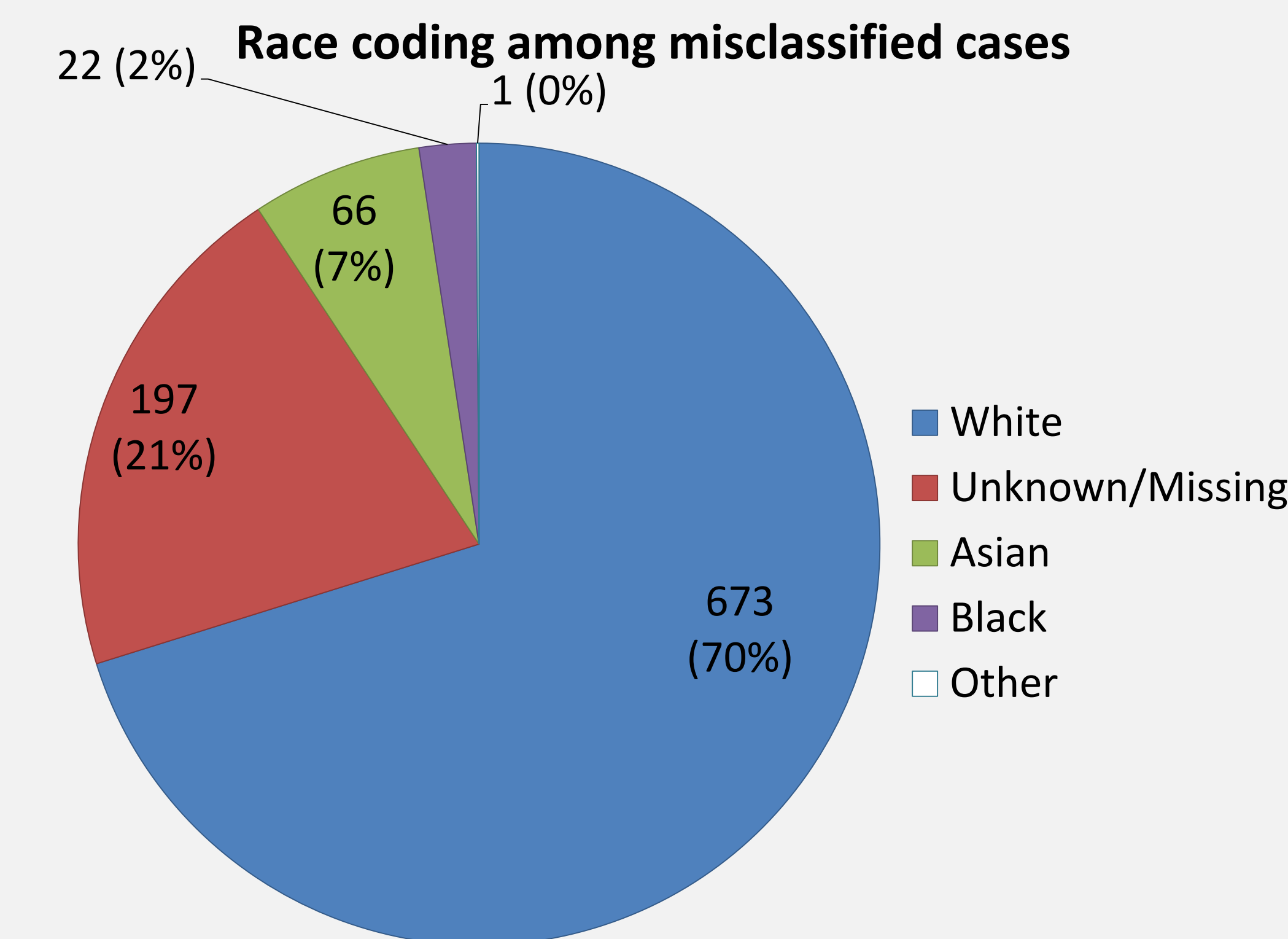
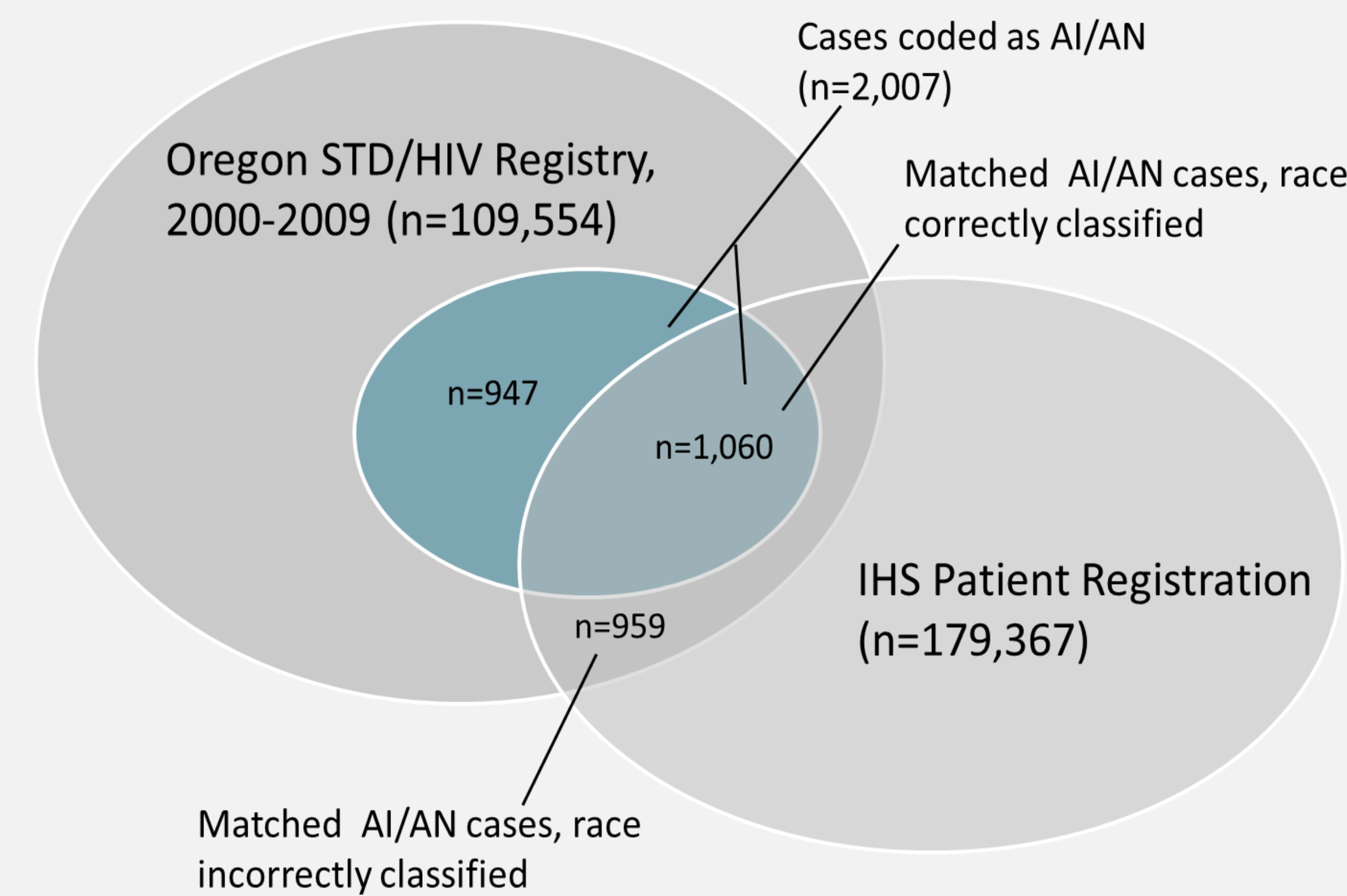
- LinkPlus software (CDC) used to conduct probabilistic linkage between two source data sets
- Comparison of agreement and disagreement on personal identifying fields

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

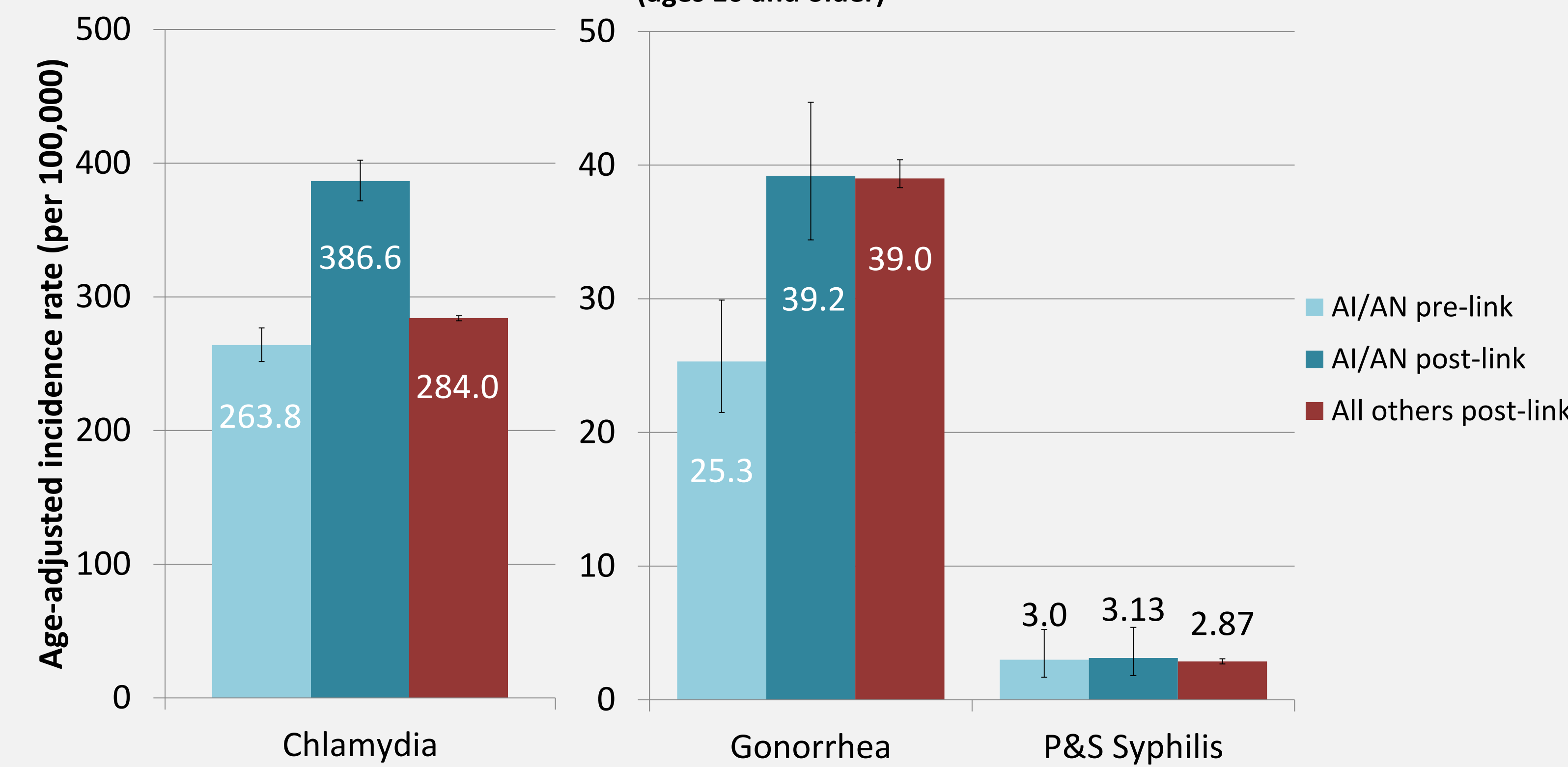
Linkage & misclassification results



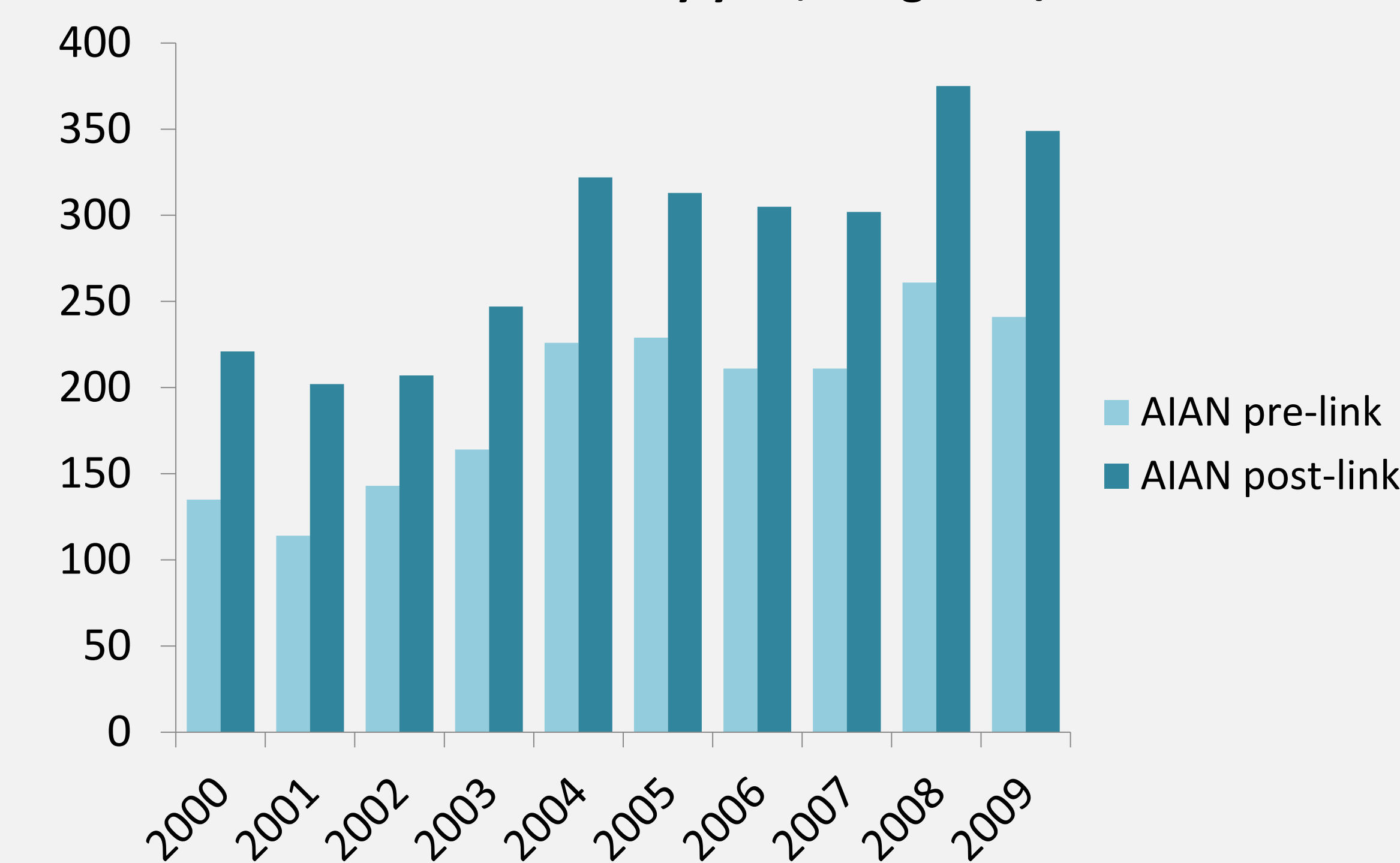
Unmatched AI/AN cases were more likely to reside in urban areas and somewhat less likely to be female; age and disease distributions were similar between matched and unmatched AI/AN cases

STD results

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

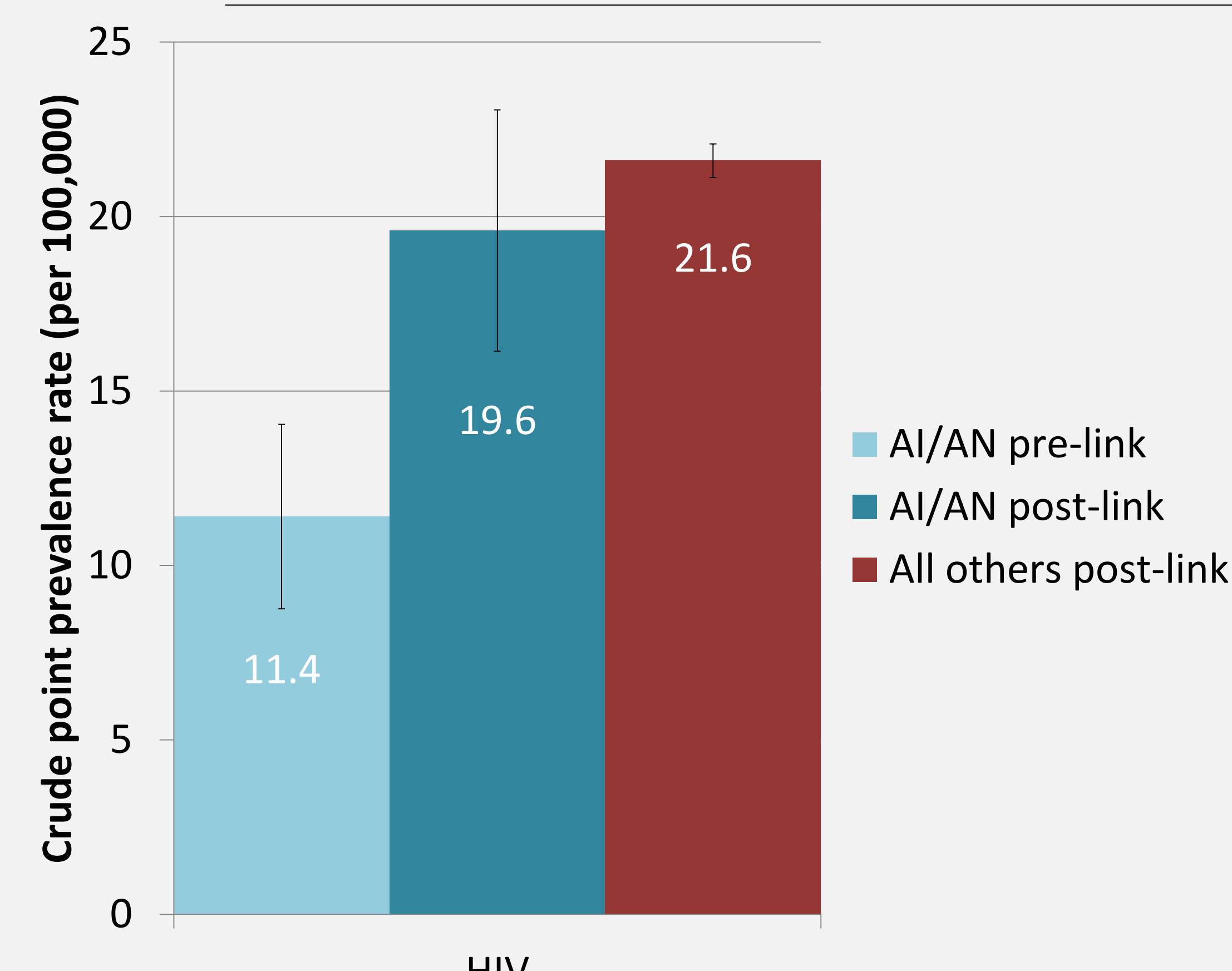


Number of STD cases by year, Oregon AI/AN



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 sraig@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>

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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.

Contact information

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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.