

ASHES, Vol. 10(12) - One size does not fit all: Geographic variability in Native American smoking and lung cancer deaths

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In their [recent editorial](#), Skinstad and Norman note that “tobacco is a substance that is well-known and well-accepted in American Indian communities” and “sacred,” but “not meant to be abused.” One health issue regularly associated with frequent tobacco use - and smoking in particular - is lung cancer. Smoking and cigarette smoke are by far the most common cause of death by lung cancer. This week, as part of our [Special Series on Addiction and Recovery among Tribal Communities](#), ASHES reviews a study exploring whether lung cancer mortality and smoking prevalence rates are relatively high among American Indian/Alaskan Native (AI/AN) communities, either throughout the United States or only in particular regions (Plescia et al., 2014).

Methods

- The researchers used population estimates developed by the U.S. Census Bureau and Centers for Disease Control and Prevention’s National Center for Health Statistics.
- Using data from the National Vital Statistics System, the Indian Health Services (IHS) patient registration database, and the National Death Index, the researchers calculated the lung cancer mortality rates for AI/AN persons within six IHS regions (Alaska, East, Northern Plains, Southern Plains, Southwest) between 2003 and 2009.
 - For comparison, the researchers calculated corresponding lung cancer mortality rates for non-Hispanic White persons and used [relative risk ratios](#) to determine if the lung cancer mortality rates were different between the groups.
 - For each region, they paired the lung cancer mortality rates with corresponding smoking prevalence rates from the Behavioral Risk Factor Surveillance System (Steele et al., 2008).

- They used [weighted least squares regression](#) to obtain the correlation between the smoking prevalence rates and the lung cancer mortality rates.

Results

- In the East and the Southwest, the lung cancer mortality rate for AI/AN persons was significantly lower than that of non-Hispanic White persons. In the other four regions, it was significantly higher than that of non-Hispanic White persons. For instance, in the Northern Plains, the relative risk was 1.86, suggesting that AI/AN persons were nearly twice as likely as Whites there to die of lung cancer.
- Smoking prevalence rates varied widely by IHS region, from 40.2% in the Northern Plains to 21.1% in the Southwest.
- The researchers found that for AI/AN persons, there was a strong correlation between smoking prevalence rate and lung cancer mortality rate ($r = 0.85$, $p < 0.05$; Figure 1). Areas with more smokers had higher lung cancer mortality.

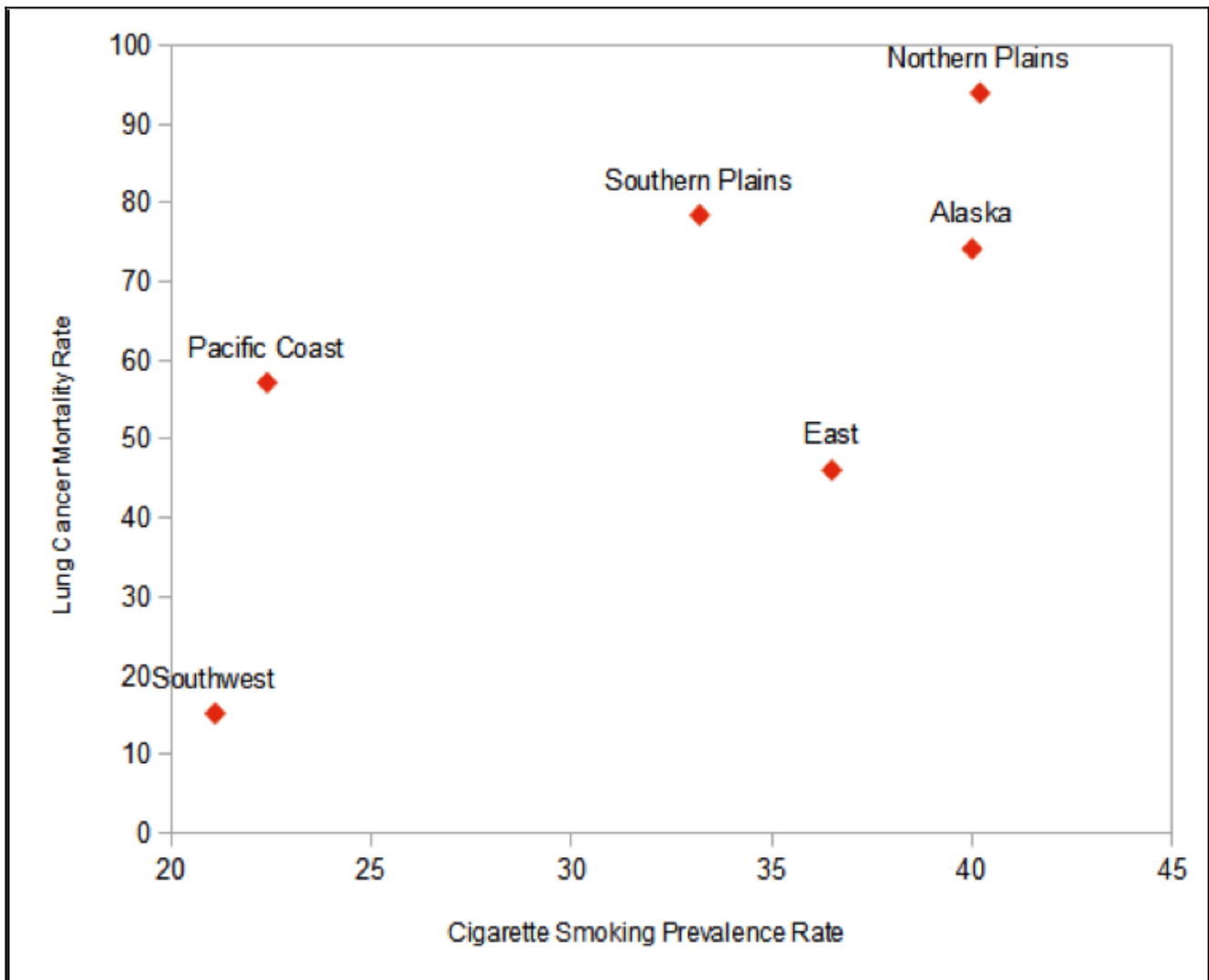


Figure. Cigarette smoking prevalence rate and lung cancer mortality rates for AI/AN persons in the six IHS regions (adapted from Plescia et al., 2014, and Steele et al., 2008). Click image to enlarge.

Limitations

- The sample may not be representative of the whole AI/AN population. The IHS registration database only contains people from federally recognized tribes. Data from AI/AN persons from non-recognized tribes were not included in the calculation of the lung cancer mortality rates.

Conclusion

This study revealed that rates of lung cancer mortality are not universally higher among AI/AN persons compared with non-Hispanic Whites; in fact, in the East and Southwest, rates were lower among AI/ANs. Not surprisingly, across all regions, lung cancer mortality was closely linked with smoking. These findings

are a reminder that the AI/AN population includes a diverse range of tribal communities across the United States, each with a particular constellation of regional culture, local idiosyncrasies, and ethnic/familial influences. If efforts towards raising awareness about the hazards of smoking are going to be effective, researchers will have to discover which factors at what level influence smoking behavior the most. That way, public health officials can tailor their educational efforts towards combatting the relevant influences in their specific local environments.

— Matthew Tom

References

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