



Calling for food equity: Exploring the association between food insecurity and Type 2 Diabetes in rural Native American communities

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Introduction

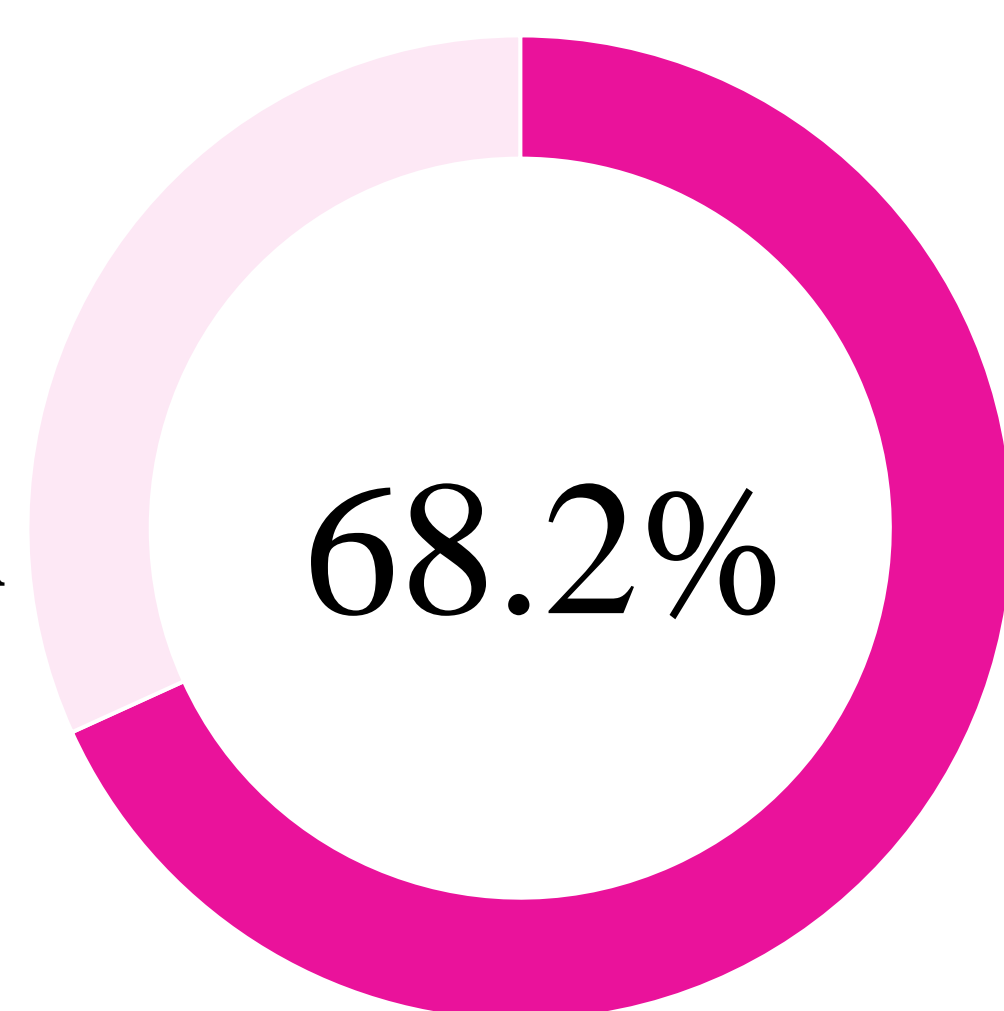
The forced removal of Native nations and federal policies promoting settler colonialism disrupted many communities' food systems, contributing to today's poor health outcomes and food insecurity.¹⁰ American Indians experience disproportionate rates of diabetes incidence nationwide. In 2020, 16.9% of the Oklahoma American Indian population was diagnosed with diabetes compared to the OK total of 13.0%.³ Several factors increase the risk of type 2 diabetes, including food insecurity. Food insecurity is defined as the lack of consistent accessibility and availability of nutritious food that aids someone in staying healthy and avoiding hunger. The food insecurity rate in the US is 11.8%, whereas Oklahoma's is 13.0%.¹⁸ Food-insecure diabetics have generally higher A1C levels and are at greater risk for poor glycemic control than food-secure ones.⁴ Furthermore, access to fruits and vegetables is more limited in rural locations. The rurality of many reservations serves as an additional social determinant affecting disease management and healthy eating. These barriers include a lack of transportation, food deserts, and a higher unemployment rate. This study will examine the association between food insecurity and type 2 diabetes, specifically in Oklahoma rural Native populations.

Methods

Conduct literature reviews including the THRIVE study done in Oklahoma Choctaw and Chickasaw Nations, mainly rural areas. These studies include both qualitative and quantitative methods. Secondary analysis from CDC data and Oklahoma Behavioral Risk Factor Surveillance Survey.

1 in 4 American Indians face food insecurity in the US compared to 1 in 9 Americans¹⁹

Low-income AI individuals in Oklahoma live more than 1 mile from a supermarket compared to 41.2% of US households.⁷



Results

The THRIVE study highlights the importance of increasing healthy food availability and consumption in tribal convenience stores. Often in rural Native American communities, convenience stores are the closest access to food, as many live far away from supermarkets. For example, 56% reported travelling over 20 miles to shop for food.⁸ Longer distance requires transportation that may be unavailable to those in rural areas. There is also a higher cost of fresh vegetables and fruits than in urban communities, and an increase in price in nontraditional retailers.¹⁰ As a result, many must choose cheaper options, often high in sodium and nutritionally less dense for people with diabetes. Many report that cost, limited cooking education, and preparation time act as challenges to eating healthy.¹⁵ There is an association between a high utilization of convenience stores and diabetes.⁸ Diabetes was 2x as prevalent among those who shopped at convenience stores and gas stations three or more times.⁸ Inadequate food quality was associated with a prevalence of diabetes, but inadequate food availability was not suggesting many couldn't afford to eat healthy.² Additionally, food environments and external factors such as taste and convenience affect diet. The food choice values, sensory, safety, and access, are strongly endorsed among AI and associated with eating behaviors.¹⁶ Those who identified as having lower socioeconomic status and had limited food resources assigned "health/weight control" as a low priority indicating that solely promoting food as "healthy" may be ineffective.

Limitations

The THRIVE study conducted convenience samples that can not be generalized and includes biases. A limited amount of literature documents the association between food insecurity and type 2 diabetes in rural Native communities. This study cannot be generalized to other tribes as each tribal community differs. Studies must account for the heterogeneity of Native American communities.

"I think the biggest problem here...is that every fish in the lake has mercury. And that was our main diet. We were a fishing society...so all of that is gone from us, so we don't really have access to really healthy traditional foods anymore."

Figure 1. Direct quote from a rural Native American who states the loss of traditional foods due to environmental harm has affected their way of eating.¹⁵

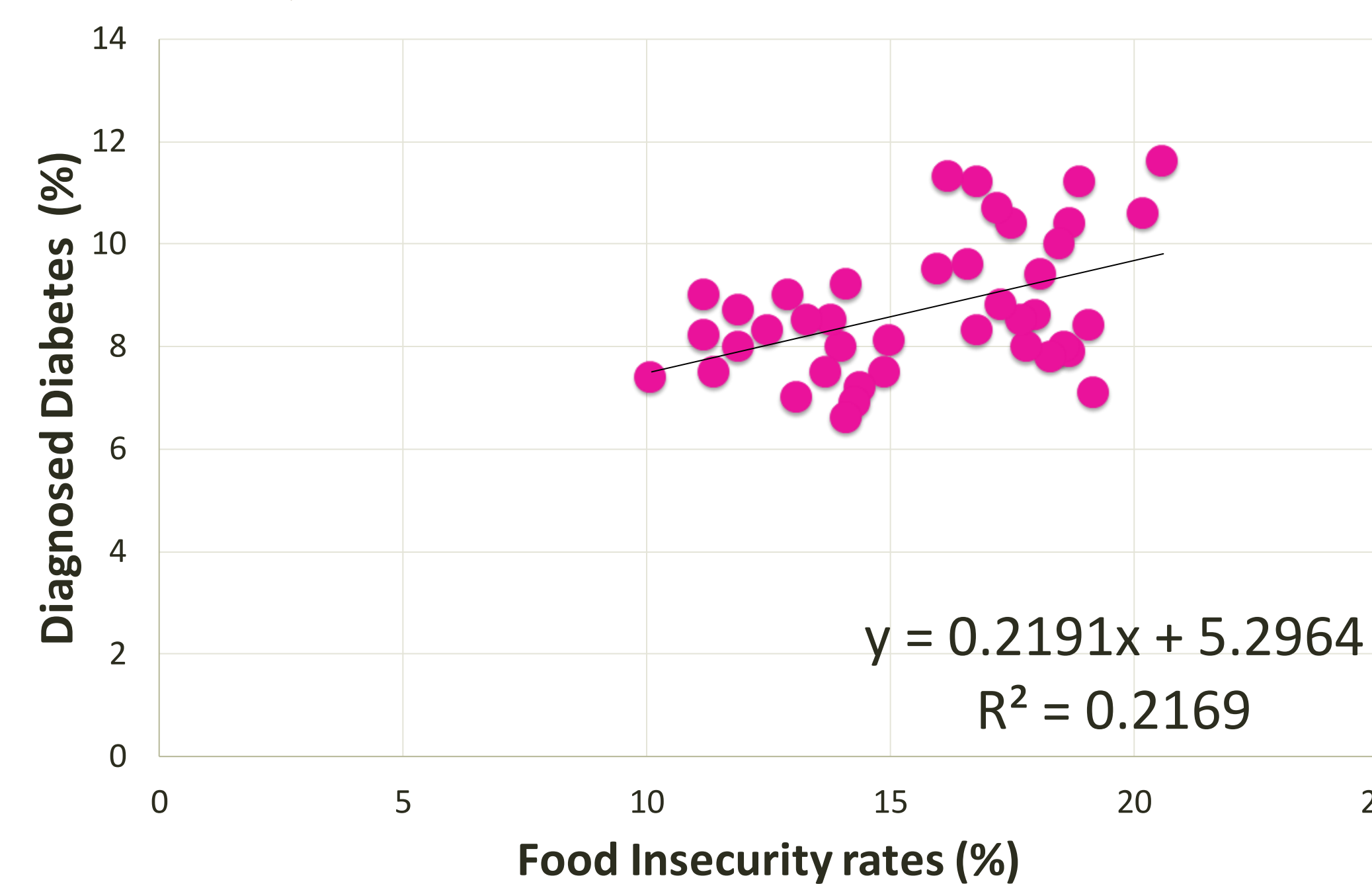


Figure 2 demonstrates food insecurity rates and diagnosed diabetes in rural OK counties in 2018.²⁰ As food insecurity rates increase, so do diabetes rates. Due to the R² value, there is a positive relationship but suggests no association.

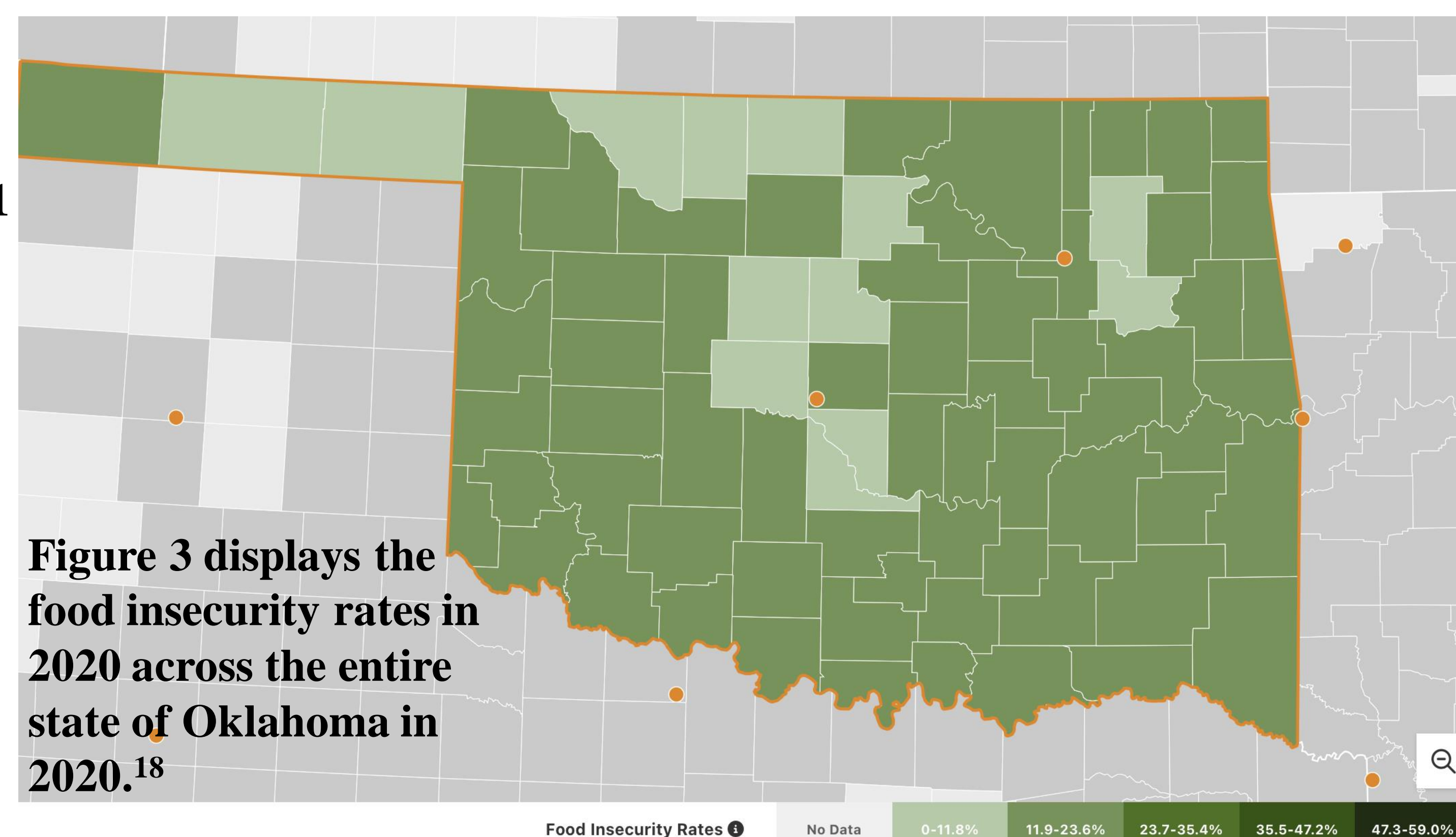


Figure 3 displays the food insecurity rates in 2020 across the entire state of Oklahoma in 2020.¹⁸

Current Health Equity Efforts

Several key policy changes have been introduced as a result of the THRIVE study. For example, in both Choctaw and Chickasaw nations, there has been a change in food distributors to increase healthier options allowing for fresher foods. It also fostered collaboration with the government to include new grocery stores and implement a phone app to promote culture and health behaviors.⁶ The Cooking for Healthy Study hopes to enroll AI populations diagnosed with type 2 diabetes to participate in an educational curriculum focusing on healthy eating, budgeting, and cooking skills.⁵ By utilizing a community-based approach, researchers hope to gain the community's understanding of how to decrease poor diet quality and the development of chronic diseases. The Food Distribution Program on Indian reservations addresses food insecurity by distributing packages and has improved over the years allowing for more traditional foods to be incorporated.¹⁰ Traditional foods and organic farming can help increase healthy dietary intake further managing diabetes.¹² Community gardens will enable the distribution of fresh produce to the community.

Conclusion

The THRIVE study, one of the first, demonstrates that healthy retail makeovers could be implemented in tribally owned stores within rural Native communities to improve health outcomes. Other variables such as physical environments, socioeconomic status, and obesity also play a major role on developing diabetes. This study highlights how underreporting AI data is a barrier to achieving health equity. The limited amount of literature focused on Native American populations and food insecurity calls for more action to be taken to explore why AI populations face disproportionate food insecurity and diabetes rates. More longitudinal studies can better implement culturally effective interventions in each community. By reframing food insecurity to tailor the unique needs of Indigenous peoples, it will increase access to culturally important foods. Overall, tribal sovereignty should be the main goal to prevent and manage diabetes in Native American communities and address food insecurity by giving communities the ability to target their specific needs and giving them control over their food and programs. Additionally, addressing the barriers rural populations face can reduce disparities and achieve food equity.

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References

