



Dental Caries in Children and Adolescents Living in Food Deserts: An Insurance Claims Analysis

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BACKGROUND

- High frequency consumption of processed sugar-and starch-containing foods is associated with greater dental caries experience^[1]
- Dental caries in youth is a great public health concern
- Food insecurity is associated with a higher risk of eating ultra-processed foods^[2,3]
- **Living in a food desert can be one cause of food insecurity- literature on the direct association of food deserts and caries is sparse**

OBJECTIVES

- I. To evaluate the association between dental caries and children and adolescents living in food deserts
- II. To evaluate other factors related to oral health outcomes in children and adolescents living in food deserts (median income level, distance to a FQHC providing dental services)

METHODS

- **Commercial insurance claims data** from >70 U.S. dental insurance plans were obtained (Fluent Dental, LLC)
 - 1) CDT codes representative of caries (including tooth #)
 - 2) Patient age and zip code
 - 3) Practice location and practitioner specialty
- **Food desert data** (USDA Food Access Research Atlas) was used to classify census tracts as food deserts
 - Crosswalk between census tracts and zip codes used to identify food desert zip codes
- **ZIP Code based median household incomes and Federally Qualified Health Center (FQHC) locations** obtained from the US Census Bureau
- Zero-inflated negative binomial regression was used to compare the number of caries relevant dental claims based on food desert status
 - Accounting for age, patient gender, median household income within ZIP-code, and distance from a FQHC

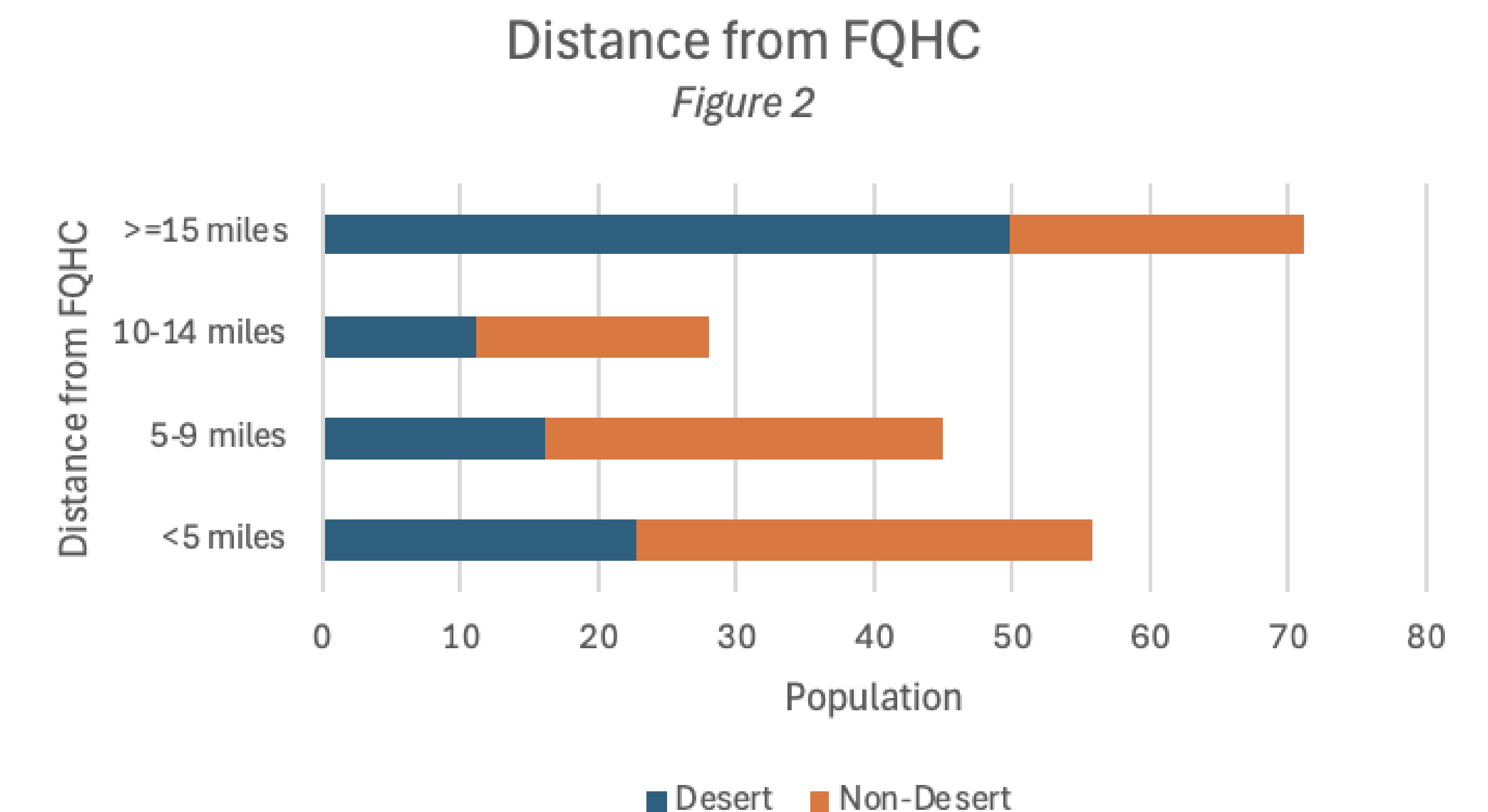
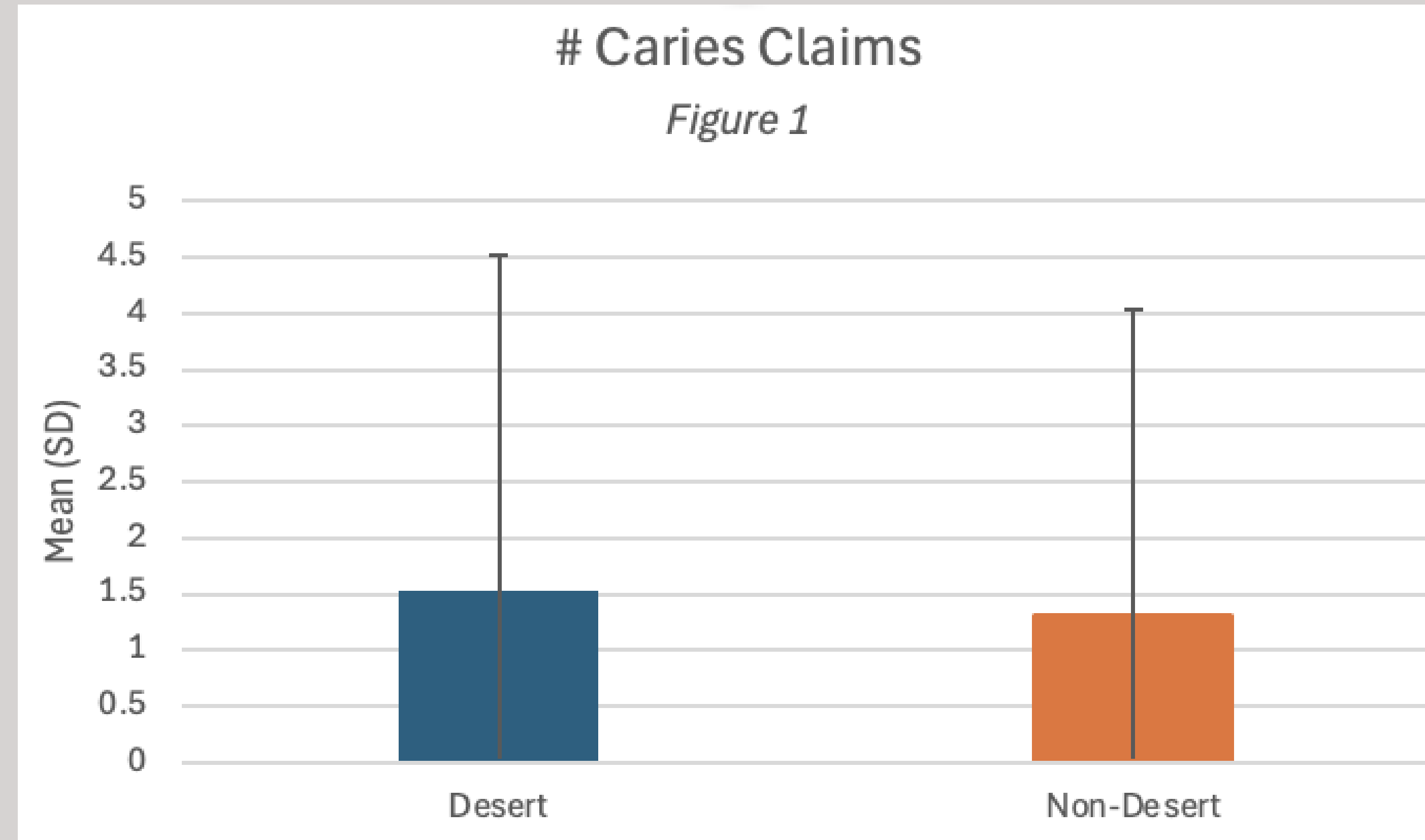


Fig. 3 An example of the USDA Food Research Atlas showing the food deserts around the Indianapolis area

RESULTS

- Absence of a food desert had a smaller number of caries related claims (OR 0.997, 95% CI 0.985-1.009) (Figure 1)
- **Patients living in a food desert had**
 - A lower median incomes for the ZIP code ($p < 0.001$)
 - A longer distance to a FQHC that provides dental services ($p < 0.001$). (Figure 2)

CONCLUSION and DISCUSSION

- Food insecurity is known to be associated with dental caries^[4]
 - Can be caused by geographic access (living in a food desert), financial constraints or supply issues^[5]
- In this private insurance population, the data helps understand the role food deserts can play on caries risk:
 1. Children and adolescents residing in food deserts had a larger number of caries related claims than those who did not reside in food deserts.
 2. Food deserts had a lower average median household income than areas not considered food deserts.
 3. A distance of less than 5 miles to a FQHC had a higher number of caries related claims
 - Being from a food desert area was associated with a longer distance to a FQHC.

