Estimation of Unmet Need for Preventive Dental Care for Children in Georgia

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BACKGROUND

- Human Resources and Services Administration predicts that every state in the US will face a dental shortage by 2025 [1].
- The implementation of the Affordable Care Act (ACA) has also led to a significant increase in the number of children receiving some form of dental benefit [2, 3], which is projected to result in further increase in utilization of dental care services for children. It is thus important to understand how well the existing supply of dental services will meet the resulting increase in need.
- Since there exist significant disparities in access to dental healthcare are, it is of particular interest to determine the need and supply for children that are at risk for caries or that have limited financial access, for example, children with public (Medicaid/CHIP) insurance.

RESEARCH OBJECTIVES

Relevant questions that we address are:

- How to estimate the preventive dental care need and supply in Georgia?
- How to estimate the children population at risk for developing caries within the state of Georgia?
- Are there systematic variations in pediatric preventive dental care access within the state of Georgia? Are there disparities in access between Publicly insured population versus other population?
- What are the geographic locations that are not covered or unserved? Are there disparities in access to preventive dental care between rural and urban areas?

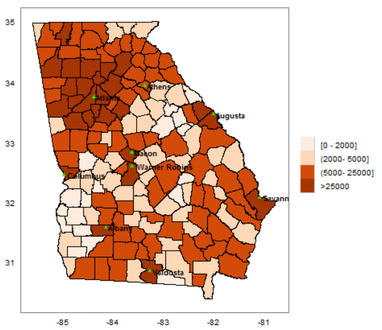
METHODS

- We estimate preventive care need for children and adolescents at the census tract level for different age classes (0-3, 4-5, 6-7, 8-18), different financial access and different risk of developing caries.
- Supply for preventive dental care services is estimated at the provider location level.
- Regression and simulation models are used to predict the percentage of children in each county and in each census tract that are high risk for developing caries.
- A system approach to measure access by taking into account system constraints such as mobility, capacity and population counts, using optimization models.
- A multi-dimensional access measure -- travel distance as a measure of accessibility, and scarcity and coverage as a measure of availability.

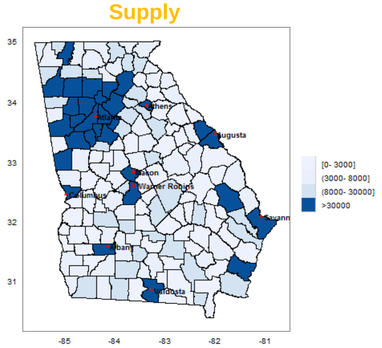
PRELIMINARY RESULTS

GEORGIA: NEED & SUPPLY

Need



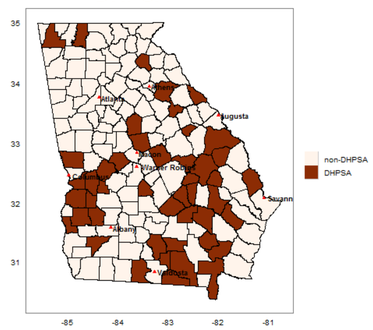
Supply



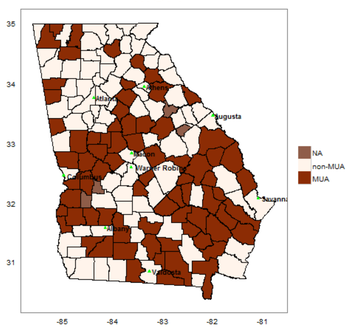
- Large discrepancies between urban and rural areas for both in need and supply estimation.
- High need and supply in broad regions surrounding the most populated cities.

GEORGIA: MUA & HPSA DESIGNATIONS

DHPSA



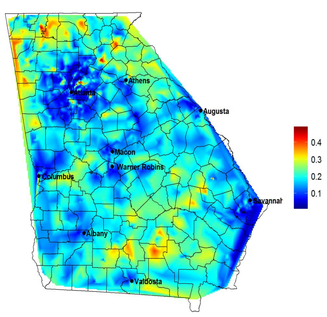
MUA



- These maps shows the designation of Dental Medically underserved areas (MUAs) and Dental Health professional shortage areas (HPSAs) at county level in Georgia. From our results, we designed 74 MUAs and 46 HPSAs.

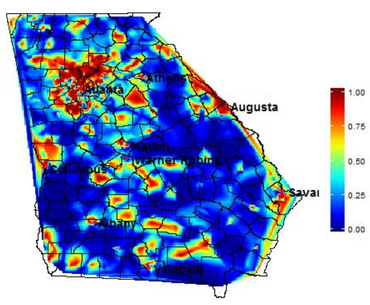
GEORGIA: RISK of developing caries, COVERAGE, DISTANCE and CONGESTION

Risk



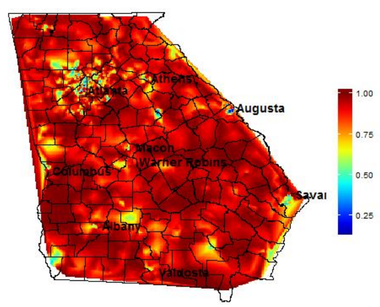
- This map shows the probability of developing high risk of caries for children in Georgia.

Coverage

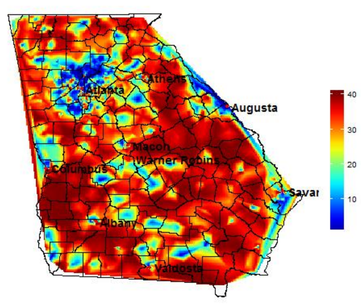


- Large discrepancies between urban and rural areas.
- High congestion across state except for some cities.
- High coverage in broad regions surrounding the most populated cities. Low coverage in many rural areas.

Congestion



Distance



- Travel distances (miles) to dental providers averaged at the census tract level for Georgia.
- Travel distances for rural areas are larger than those in urban areas.

Data Sources

- 2010 SF2 100% census data and the 2013 American Community Survey data.
- 2013 National Provider Identification (NPI) database which provides information of all providers currently being reimbursed for healthcare services.
- The Medical Expenditure Panel Survey (MEPS) database was used to determine the supply of pediatric preventative care.
- Demographic data and Oral Health Examination Data from the National Health and Nutrition Examination Survey (NHANES).

Future Research

- Analyze interventions:
  a. How access will change if mid-level providers are not supervised?
  b. How access will change if Medicaid acceptance ratio among providers change?
  c. How access will change if telehealth interventions are enacted?

REFERENCES AND SUPPORT

References

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[2] H.R. 3590. *The Patient Protection and Affordable Care Act*, 42 United States Code Sec. 1302(b)(1)(J).

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