ADDRESSING ALZHEIMER'S & RELATED DEMENTIAS (ADRD) HEALTH DISPARITIES BETWEEN URBAN & RURAL POPULATIONS IN SOUTH CAROLINA

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ADRD within United States

▶ Alzheimer's disease and related dementias (ADRD), currently affect over 5 million persons within the US *(Alzheimer's Association, 2018).*

▶ By 2050, Alzheimer's prevalence within the US will increase to 15 million *(Alzheimer's Association, 2018).*

▶ Due to disparities in access to healthcare and co-existing conditions, African-Americans may present with more severe symptoms when first diagnosed *(Chin et al., 2011).*

ADRD in South Carolina

- 8th highest Alzheimer's death rate in America

- 192% increase in Alzheimer's deaths since 2000

- 2,549 ADRD-related deaths in 2017

(Alzheimer's Association, 2018)

Sociodemographic Impacts

▶ Incidence rates of ADRD higher among women compared with men and consistent with trends of women living longer *(Beam et al., 2018)*

▶ Rural residence may lead to underdiagnosis ADRD *(Abner et al., 2016)*

▶ Lower socioeconomic status and rural residence has been associated with a higher risk of mortality among persons with dementia *(van de Vorst, et al, 2016; Chen et al., 2014)*

▶ Higher prevalence of ADRD has been reported among elderly African-Americans compared to non-Hispanic whites of the same age *(Demirovic et al., 2003; Tang, et al., 2001)*

Sociodemographic Impact *cont…*

▶ Studies have shown that beyond simply genetics, variations in lifestyle, health, and socioeconomic risk factors across racial/ethnic groups likely account for most of the differences in risk of Alzheimer's and other dementias
(Alzheimer's Association, 2018; Yaffe et al., 2013)

Purpose

▶ <u>Primary objective</u> → determine whether sociodemographic factors (e.g. race, gender, geographic location) contribute to ADRD prevalence across counties within the State of South Carolina.

▶ *H1: ADRD prevalence within South Carolina will vary by sociodemographic factors and geographic location.*

▶ <u>Secondary objective</u> → examine the variation of health utilization across racial/ethnic groups, between urban and rural counties, and by their associations with ADRD types and health-related outcomes.

▶ *H2: Health utilization and health-related outcomes will differ by ADRD types and sociodemographic factors, including rural/urban residence.*

Methods

SC Alzheimer's Disease Registry

+

SC Revenue & Fiscal Affairs

→ GIS

Geospatial Technologies

▶ Geographic mapping and medical data date back to Hippocrates 15th century BCE

▶ Offer insight into population and disease distribution, visually display health utilization to help identify specific regions that are may be underserved

(Musa et. al, 2013)

SC Alzheimer's Disease Registry

▶ Persons diagnosed with ADRD since 1988

▶ Largest & most comprehensive registry of its kind within the U.S.

▶ 251,416 ADRD cases in South Carolina since its inception

▶ Multiple sources: South Carolina emergency departments, long-term care evaluations, vital records, Programs of All Inclusive Care for the Elderly (PACE), memory clinics, Medicaid claims, in-patient hospitalizations

▶ ADRD types are classified by International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) medical codes

SC Revenue & Fiscal Affairs Office

▶ **Mission:**

"To provide independent research, analysis, and resources to facilitate informed policy decisions and administration of services"

Collect and maintain data:

-health, socio-demographic, health utilization

- examples: ER visits, hospital admissions, uniformed billing data, diagnosis and procedure codes

Preliminary Findings...

Preliminary Results

- SC Alzheimer's Registry (2010-2014)

- N=65,535

- 62% female, 38% male

- 68% White, 29% African American, 0.5% Hispanic, 1.8% Other

- Age = ~90% >age 65

- Rural counties = 29.3%

- Non-rural counties = 70.7%

Rurality

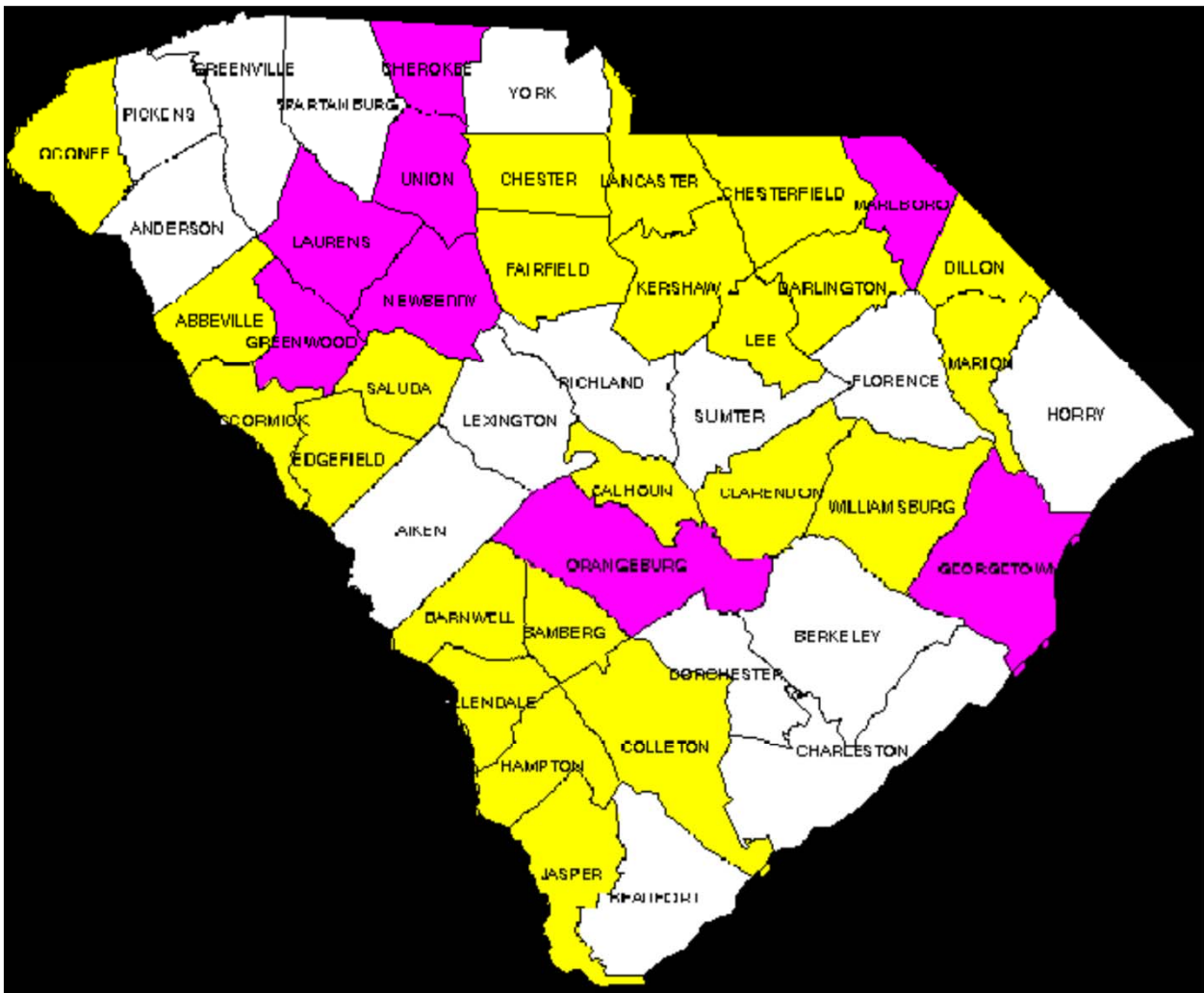Based on population size of largest town in that county

"Urban" – largest town 25,000+

"Rural" – largest town < 25,000

"Very Rural" – largest town < 10,000

(*South Carolina Rural Health Report*)

Source: SC B&C BD, Office of Research & Statistics

Distribution of Dementia Cases by County – SC Alzheimer's Disease Registry (2010-2014)

County	Frequency (N)	Percentage (%)
Abbeville	992	1.5
Aiken	3698	5.6
Allendale	329	.5
Anderson	6111	9.3
Bamberg	565	.9
Barnwell	740	1.1
Beaufort	3541	5.4
Berkeley	3232	4.9
Calhoun	427	.7
Charleston	10640	16.2
Cherokee	1503	2.3
Chester	868	1.3
Chesterfield	1361	2.1
Clarendon	1187	1.8
Colleton	1308	2.0
Darlington	1990	3.0
Dillon	986	1.5
Dorchester	2683	4.1
Edgefield	512	.8
Fairfield	892	1.4
Florence	4324	6.6
Georgetown	2236	3.4
Greenville	10626	16.2
Greenwood	2591	4.0
Hampton	714	1.1
Horry	1479	2.3
Total	65535	100.0

Distribution of Dementia Cases by Rurality
SC Alzheimer's Disease Registry
(2010-2014)

County Characteristic	Frequency (N)	Percentage (%)
Very Rural	12,871	19.6
Rural*	19,201	29.3
Urban/Non-Rural	46,334	70.7

SC Alzheimer's Disease Registry Characteristics by Rural vs. Urban Residence (2010-2014)

Case Characteristics	All Cases (N=65,535)	Rural (N=19,201)	Urban (N=46,334)
Age category ≥ 75 (%)*	45.9	66.8	70
Female (%)	61.9	62.2	61.9
White (%)	66.1	59.1	72.7
African American (%)	30.1	40.9	27.3
Alzheimer's Disease (%)	59.6	61.5	58.8
Vascular Dementia (%)	12.3	10.7	13
Mixed Dementia (%)	4.1	3.9	4.1
Other Dementia (%)	24	23.8	24.1

ADRD Prevalence in SC among Sociodemographic Factors (2010-2014)

- ADRD prevalence is highest:
  - Over age 65, with highest rates among those over the age of 85
  - Whites, females, urban (non-rural) counties
  - Alzheimer's most prevalent form of dementia

- ADRD prevalence among African Americans is higher in rural population, compared with urban population

- Prevalence of dementia type similar across rural & urban counties

Next Steps…

▶ SC Alzheimer's Registry Data → associations (White vs. Non-white; Rural vs. Non-rural; Gender; Dementia type)

▶ Poverty/low income status?

▶ Merging of SC Alzheimer's Registry Data & Revenue and Fiscal Affairs →

▶ GIS analyses

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