

healthcare
design

EXPO & CONFERENCE

The Architecture of Rural Healthcare

Supporting access to health in remote and rural areas

DISCOVER
WHAT'S
NEXT

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Session Description

Tuttle Fellowship presentation about rural healthcare including case studies, best practices, objectives and guidelines for healthcare facilities in remote areas.

DISCOVER
WHAT'S
NEXT

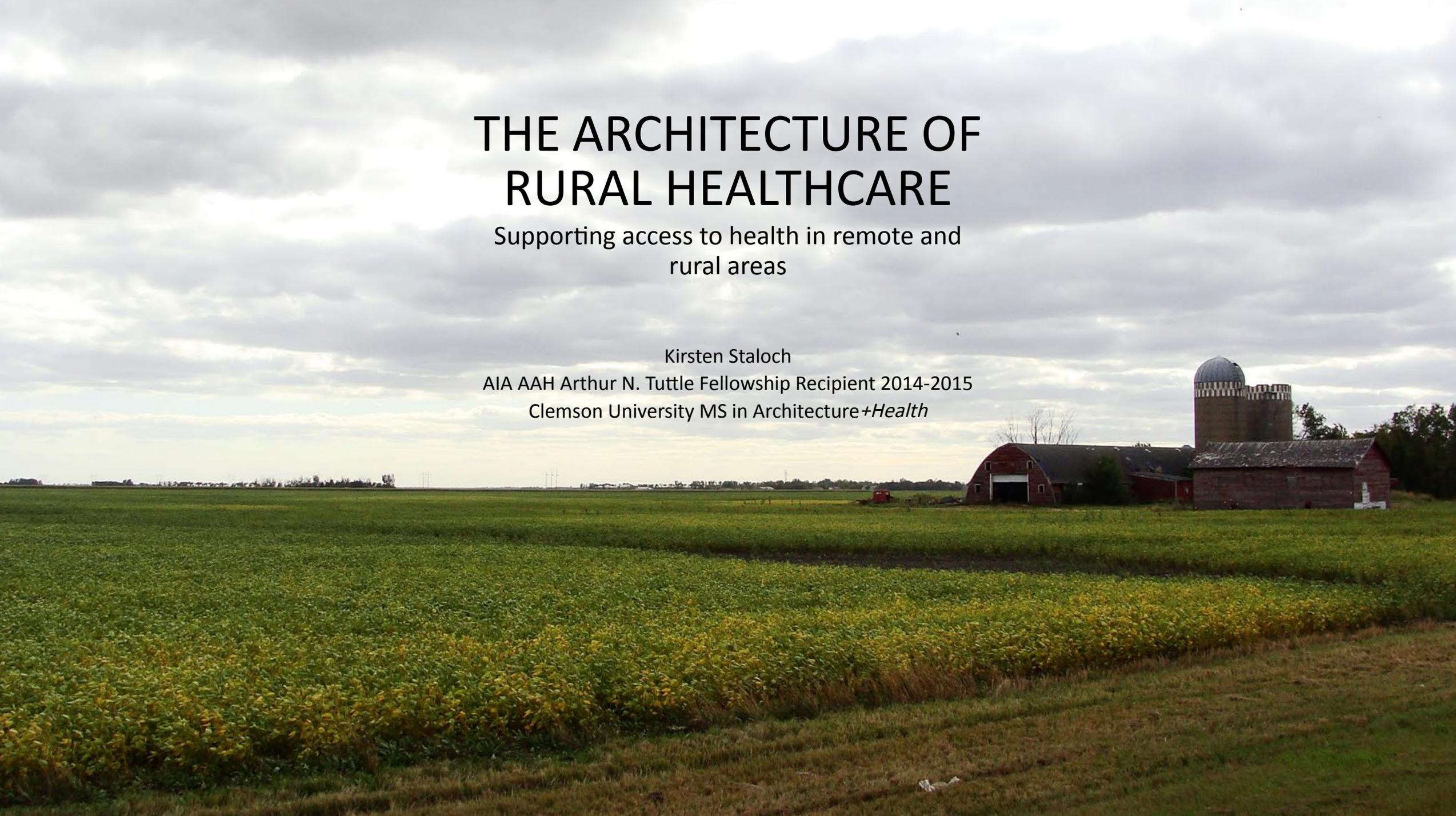
THE ARCHITECTURE OF RURAL HEALTHCARE

Supporting access to health in remote and
rural areas

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Clemson University MS in *Architecture+Health*



Many remote rural communities comprise of an aging population, a growing number of patients with chronic illnesses, and in many communities a high volume of tourists that need urgent care.





This proposal studies settings for the delivery of rural healthcare and searches best architectural practices for how the design of critical access healthcare settings can support the sustainable delivery of healthcare services in remote areas.

How can architecture adequately support access to and delivery of healthcare in rural areas?

“The isolation and distances that classify an area as frontier result in long trips to attend school, shop for groceries, get healthcare, and reach other basic services.” - Rural Assistance Center



DEFINE FRONTIER

DISTANCE

75 miles distance by road from nearest hospital or distance inaccessible by public road

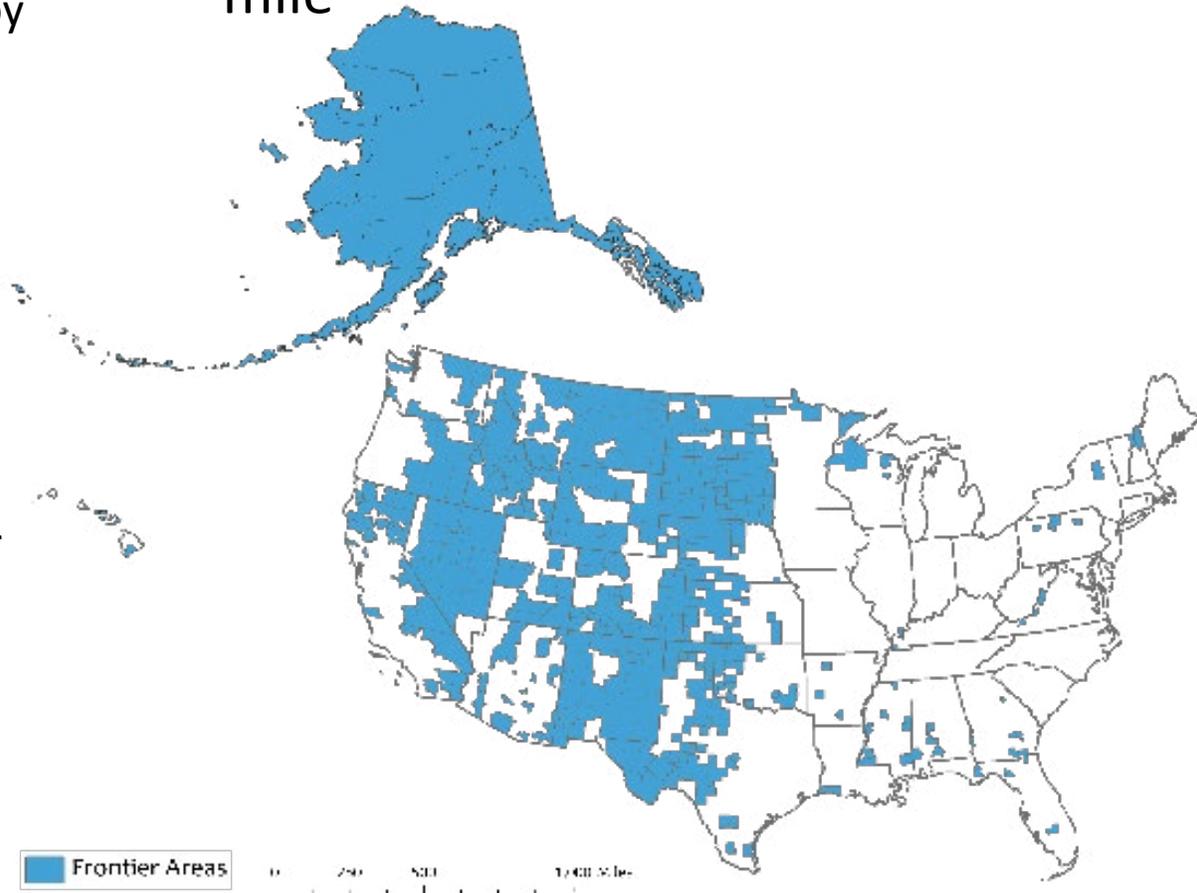
POPULATION

Low population density of <6 people per square mile

TRAVEL TIME

>60 minutes to service at a hospital

47% of the land in the United States is considered frontier



DEFINE FRONTIER HEALTH

QUALITY CARE

RURAL ASSISTANCE CENTER

“the degree to which health services for individuals and populations increase the likelihood of **desired health outcomes** and are consistent with current professional knowledge.” They aims for **safe, effective, patient-centered, timely, efficient, and equitable healthcare.** <www.raconline.org>

INSTITUTE OF MEDICINE

Promote policies and best practices that **create safe and high-quality health care environments.** It is recognized that “health care is a direct correlation between the level of **improved health services** and the desired health outcomes of individuals and populations” (Institute of Medicine, 2014). <www.iom.edu>

DEFINE FRONTIER ARCHITECTURE



CRITICAL ACCESS HOSPITAL (CAH)

- Primary healthcare needs
- Small communities
- Maximum of 25 inpatient beds
- Medicare and medicaid reimbursements



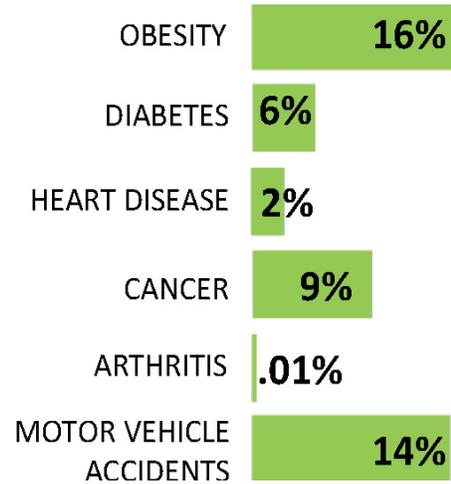
FEDERALLY QUALIFIED HEALTH CENTER (FQHC)

- Underserved area
- Underserved population
- Medicare and medicaid reimbursements
- No emergency care

FRONTIER DEMOGRAPHICS

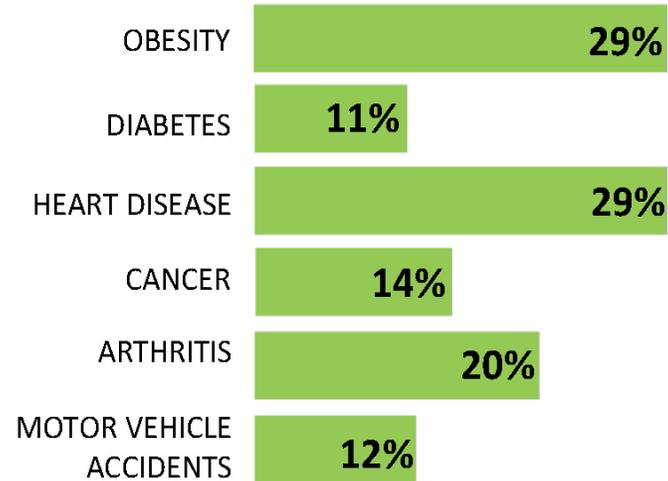
ADOLESCENTS

23% of the people living in rural areas are between the ages 0-18.



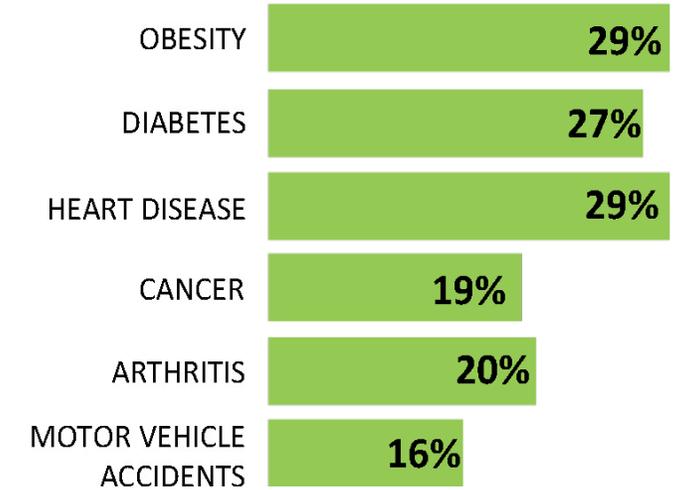
ADULTS

60% of the people living in rural areas are between the ages 18-64



ELDERLY

17% of the people in rural areas are age 65 and over



(Information from CDC, 2014)

FRONTIER DEMOGRAPHICS

RACE ORIGIN GROUPS

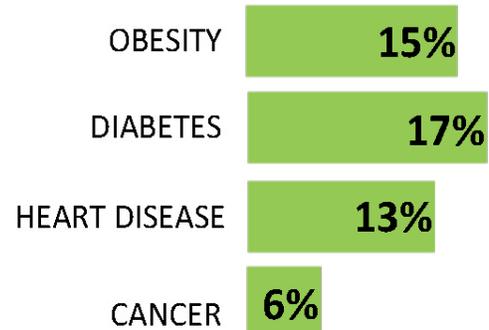
Ethnic demographics of rural regions are

- White 81.5%
- Black/African 8%
- Hispanic 6%
- Native 3%
- Multiple races 1%
- Asian .5%



IMPOVERISHED

19% of rural population lives in poverty



TOURISTS

86% of trips taken by Americans to visit rural areas are for leisure purposes.

The amount of rural tourism in a region is tied partly to the level of highway access.
(National transportation research group, 2014)





FRONTIER RESEARCH OBJECTIVES

ACCESSIBLE

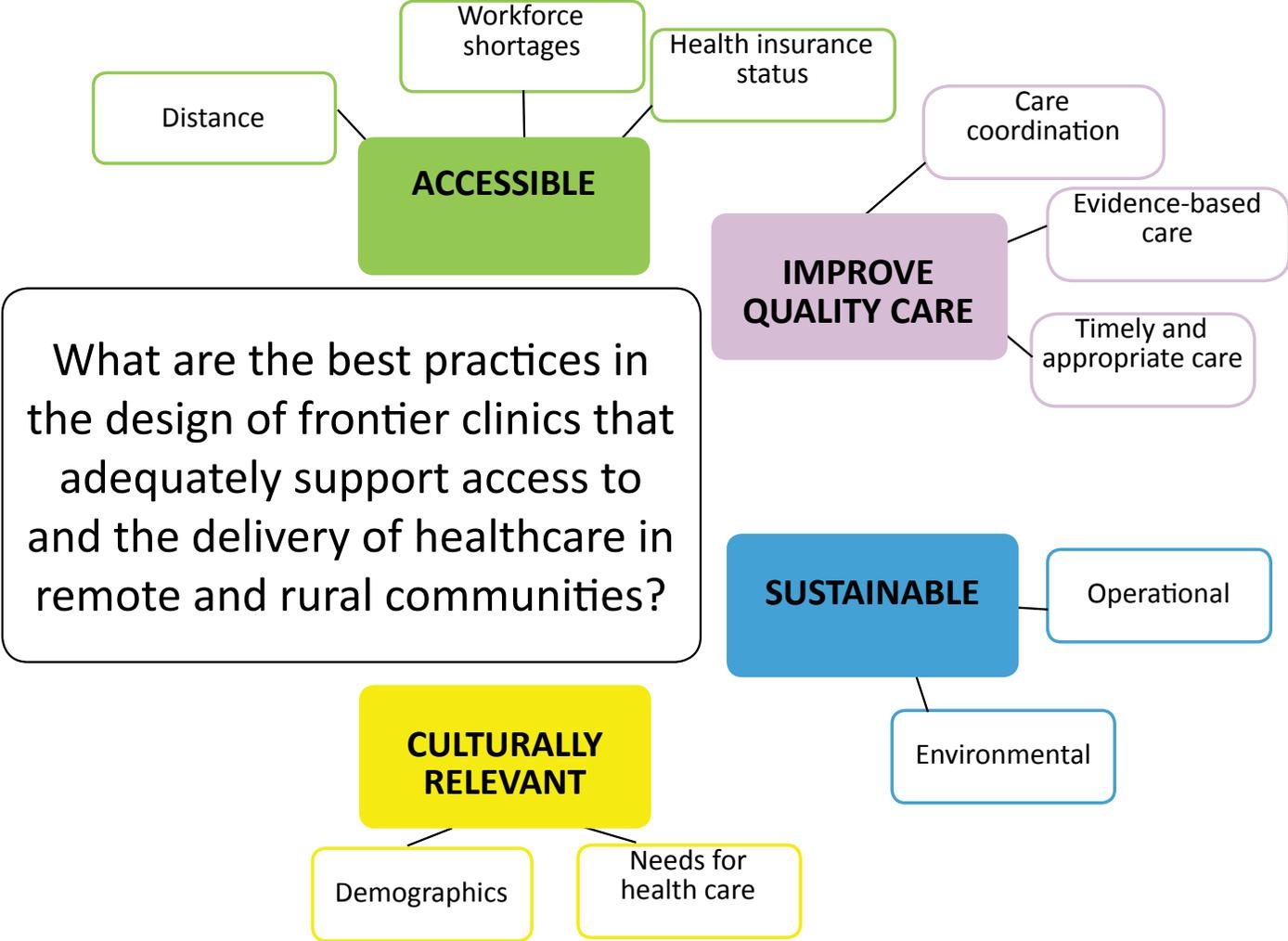
**IMPROVE
QUALITY CARE**

What are the best practices in the design of frontier clinics that adequately support access to and the delivery of healthcare in remote and rural communities?

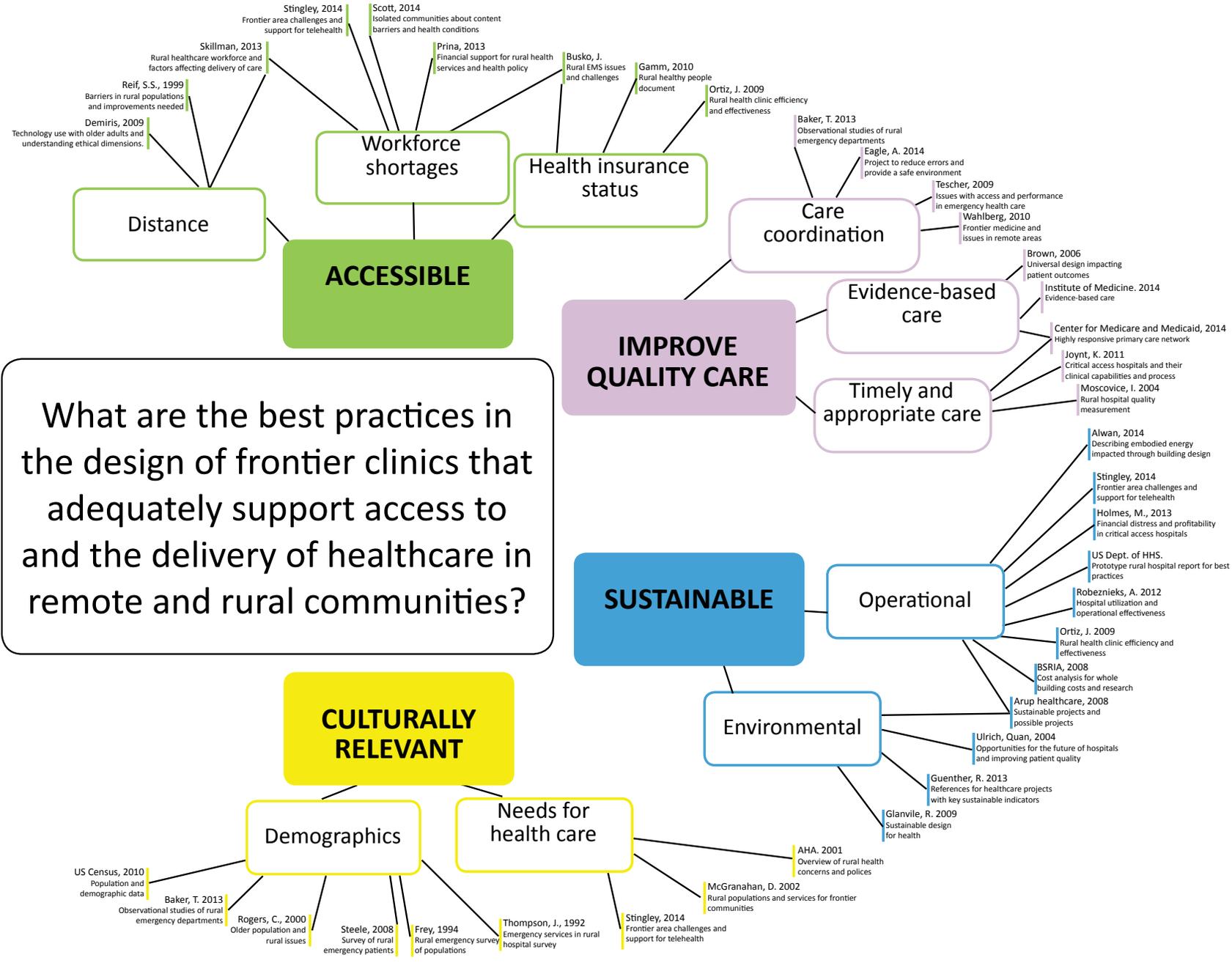
SUSTAINABLE

**CULTURALLY
RELEVANT**

FRONTIER RESEARCH OBJECTIVES



What are the best practices in the design of frontier clinics that adequately support access to and the delivery of healthcare in remote and rural communities?



OBJECTIVE: ACCESSIBLE



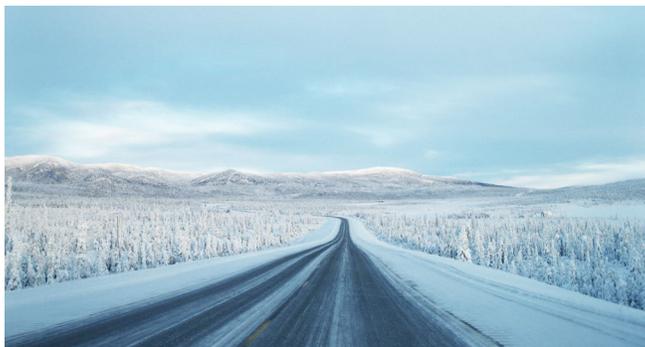
DISTANCE

Demiris, 2009
Technology use with older adults and understanding ethical dimensions.

Skillman, 2013
Rural healthcare workforce and factors affecting delivery of care

Reif, S.S., 1999
Barriers in rural populations and improvements needed

Travel difficulties include problems obtaining transportation and difficulty in enduring the hardship of travel inclement weather (Reif, 1999).



WORKFORCE SHORTAGES

Prina, 2013
Financial support for rural health services and health policy

Scott, 2014
Isolated communities about content barriers and health conditions

Stingley, 2014
Frontier area challenges and support for telehealth

Wakeman, 2012
Rural workforce providers and ways to retain staff

“Far too many people in rural areas go without care today simply because there’s no one for them to receive the care from,” Kathleen Sebelius HHS secretary (Prina, 2013).



HEALTH INSURANCE AVAILABILITY

Busko, J.
Rural EMS issues and challenges

Ortiz, J. 2009
Rural health clinic efficiency and effectiveness

Gamm, 2010
Rural healthy people document

Rural residents are more likely to be uninsured and lack of third party insurance (Gamm, 2010).





OBJECTIVE: IMPROVING QUALITY CARE

CARE COORDINATION

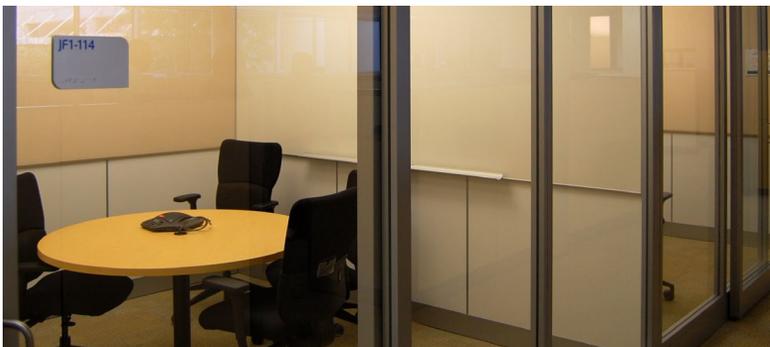
Baker, T. 2013
Observational studies of rural emergency departments

Tescher, 2009
Issues with access and performance in emergency health care

Eagle, A. 2014
Project to reduce errors and provide a safe environment

Wahlberg, 2010
Frontier medicine and issues in remote areas

Correlate quality care with improved health, desired health outcome and the primary source needed for health services



EVIDENCE-BASED CARE

Brown, 2006
Universal design impacting patient outcomes

Institute of Medicine. 2014
Evidence-based care

Center for Medicare and Medicaid, 2014
Highly responsive primary care network

Quality care must drive patient safety and reach an effective outcome (CMS, 2014).



TIMELY AND APPROPRIATE CARE

Center for Medicare and Medicaid, 2014
Highly responsive primary care network

Moscovice, I. 2004
Rural hospital quality measurement

Joynt, K. 2011
Critical access hospitals and their clinical capabilities and process

Healthcare should not be passive and quality care should actively addresses patient safety to reach effective outcomes (CMS, 2014).





OPERATIONAL

Alwan, 2014
Describing embodied energy
impacted through building design

US Dept. of HHS.
Prototype rural hospital
report for best practices

Ortiz, J. 2009
Rural health clinic
efficiency and effectiveness

BSRIA, 2008
Cost analysis for whole
building costs and research

Robeznieks, A. 2012
Hospital utilization and
operational effectiveness

Holmes, M., 2013
Financial distress and profitability in
critical access hospitals

Stingley, 2014
Frontier area challenges and
support for telehealth

Economic sustainability includes increasing productivity, providing patient transportation, maintaining a viable operation and making practical decisions (Arup, 2008).



ENVIRONMENTAL

Arup healthcare, 2008
Sustainable projects and
possible projects

Guenther, R. 2013
References for healthcare projects
with key sustainable indicators

Glanville, R. 2009
Sustainable design
for health

Ulrich, Quan, 2004
Opportunities for the future of hospitals
and improving patient quality

Designing sustainable features in healing environments can serve multiple outcomes and improve patient satisfaction and health (Ulrich, 2004).





IDENTITY AND CULTURE

Baker, T. 2013
Observational studies of rural
emergency departments

Rogers, C., 2000
Older population
and rural issues

Thompson, J., 1992
Emergency services in rural
hospital survey

Frey, 1994
Rural emergency
survey of populations

Steele, 2008
Survey of rural
emergency patients

US Census, 2010
Population and
demographic data

Rural residents are older, have lower incomes, more likely to be uninsured (AHA, 2001).



ACCESS TO PRIMARY HEALTHCARE

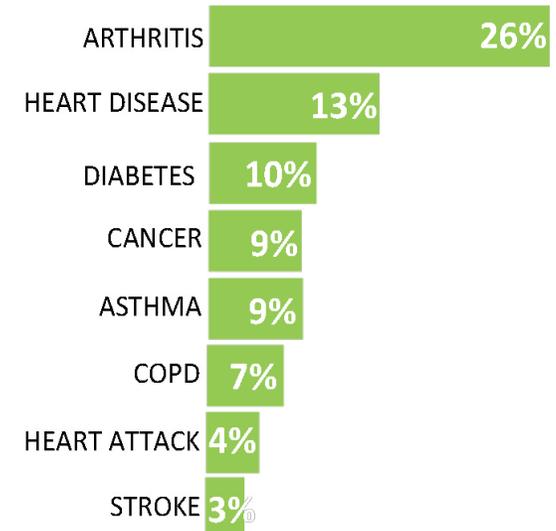
AHA, 2001
Overview of rural health
concerns and policies

McGranahan, D. 2002
Rural populations and services for
frontier communities

Stingley, 2014
Frontier area challenges
and support for telehealth

Rural residents are 1.4 times more likely to have hypertension, cancer, and chronic bronchitis (Trendwatch, 2011).

Most common health conditions (NHIS, 2012)

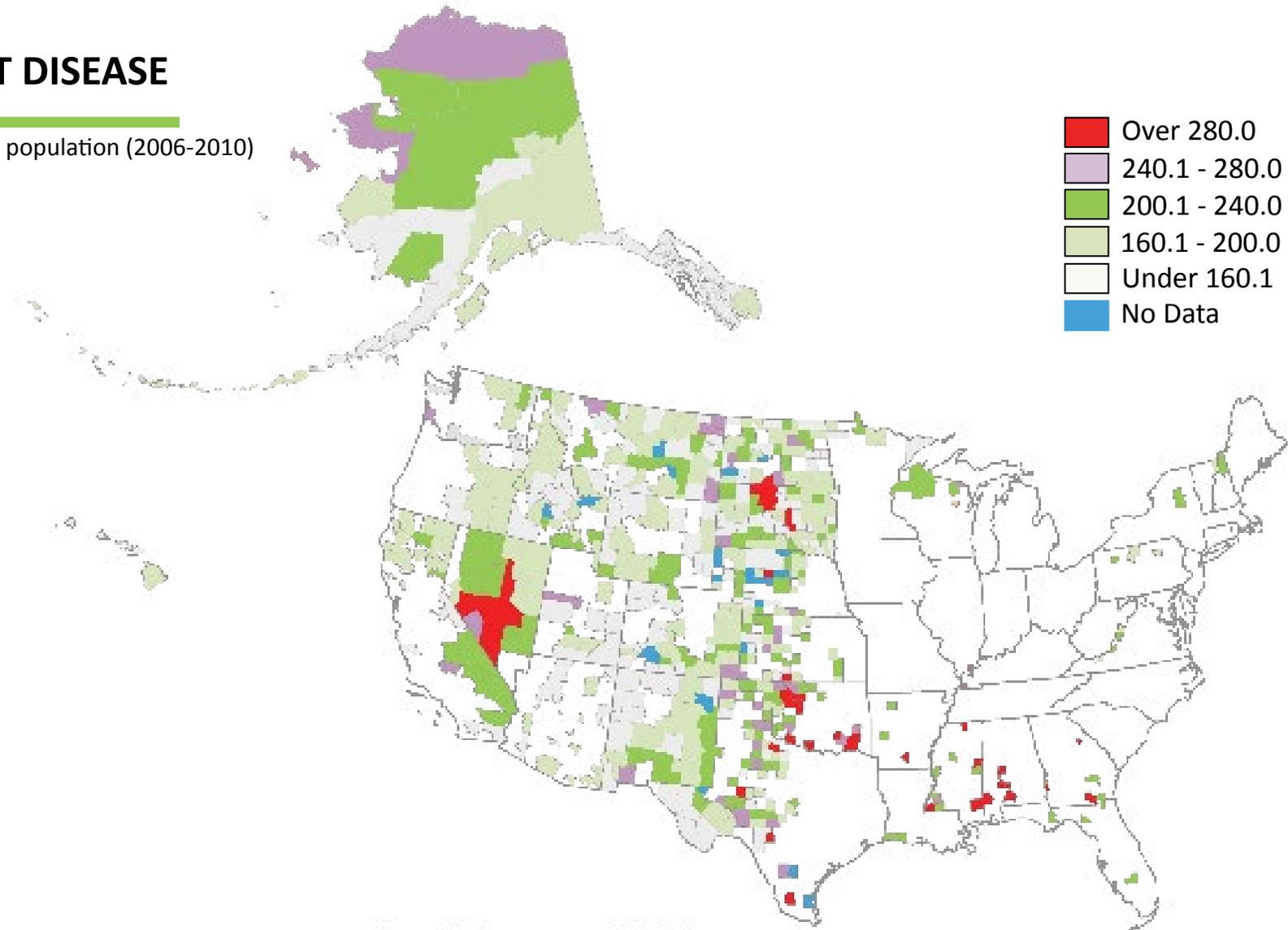


OBJECTIVE: CULTURALLY RELEVANT



HEALTH: HEART DISEASE

mortality rate per 100,000 population (2006-2010)

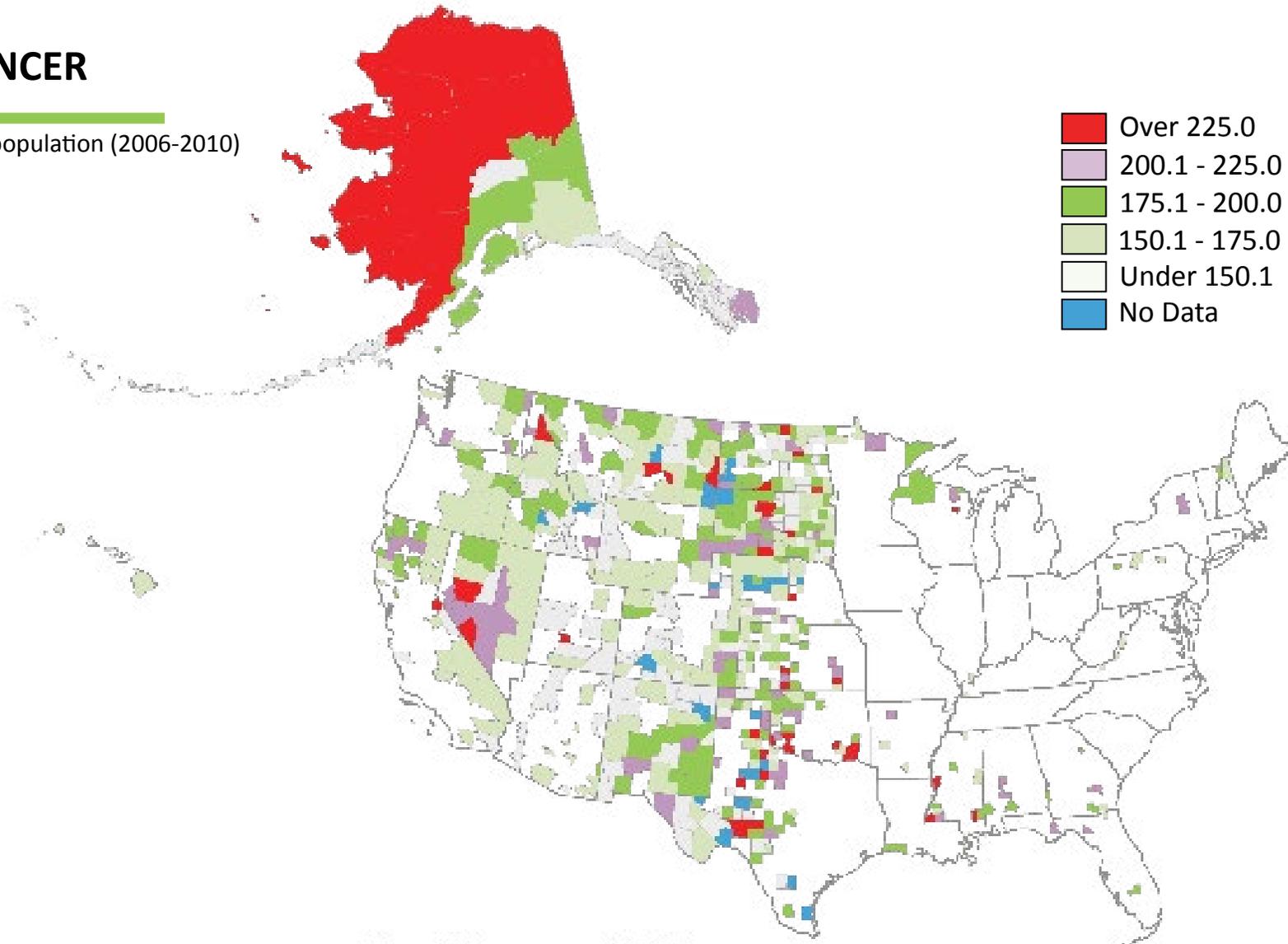


OBJECTIVE: CULTURALLY RELEVANT



HEALTH: CANCER

mortality rate per 100,000 population (2006-2010)

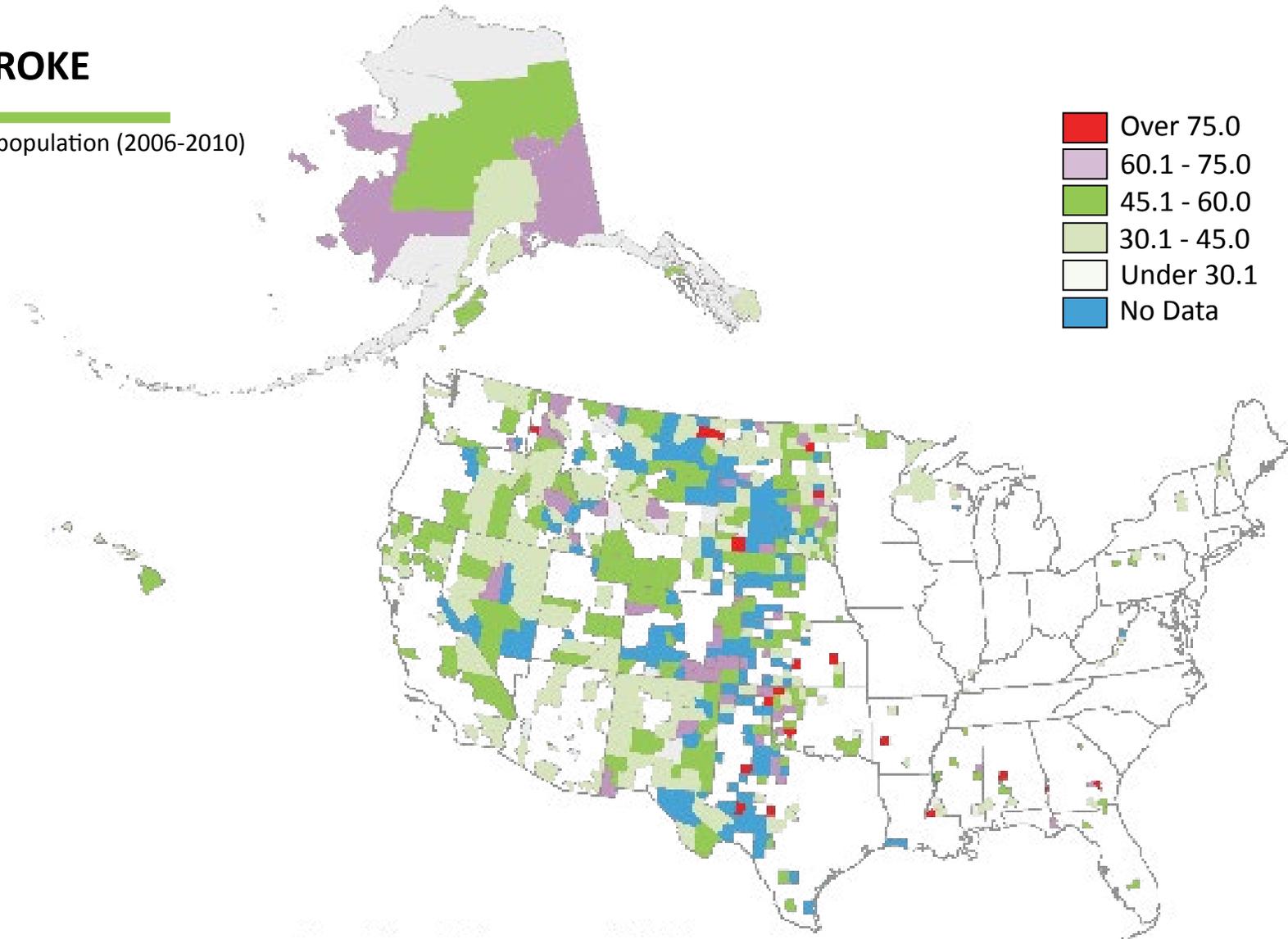


OBJECTIVE: CULTURALLY RELEVANT



HEALTH: STROKE

mortality rate per 100,000 population (2006-2010)

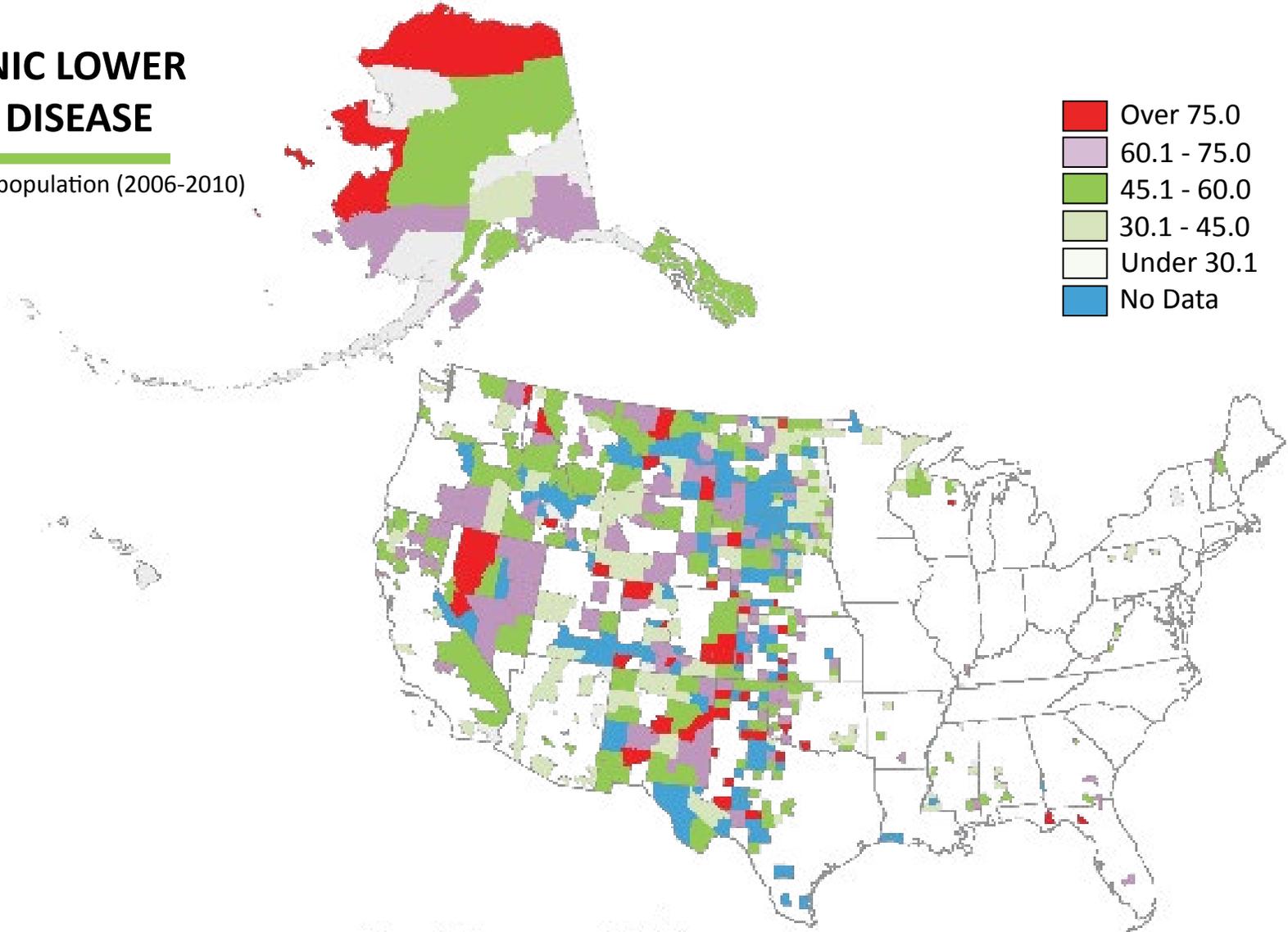


OBJECTIVE: CULTURALLY RELEVANT



HEALTH: CHRONIC LOWER RESPIRATORY DISEASE

mortality rate per 100,000 population (2006-2010)



OBJECTIVE: CULTURALLY RELEVANT

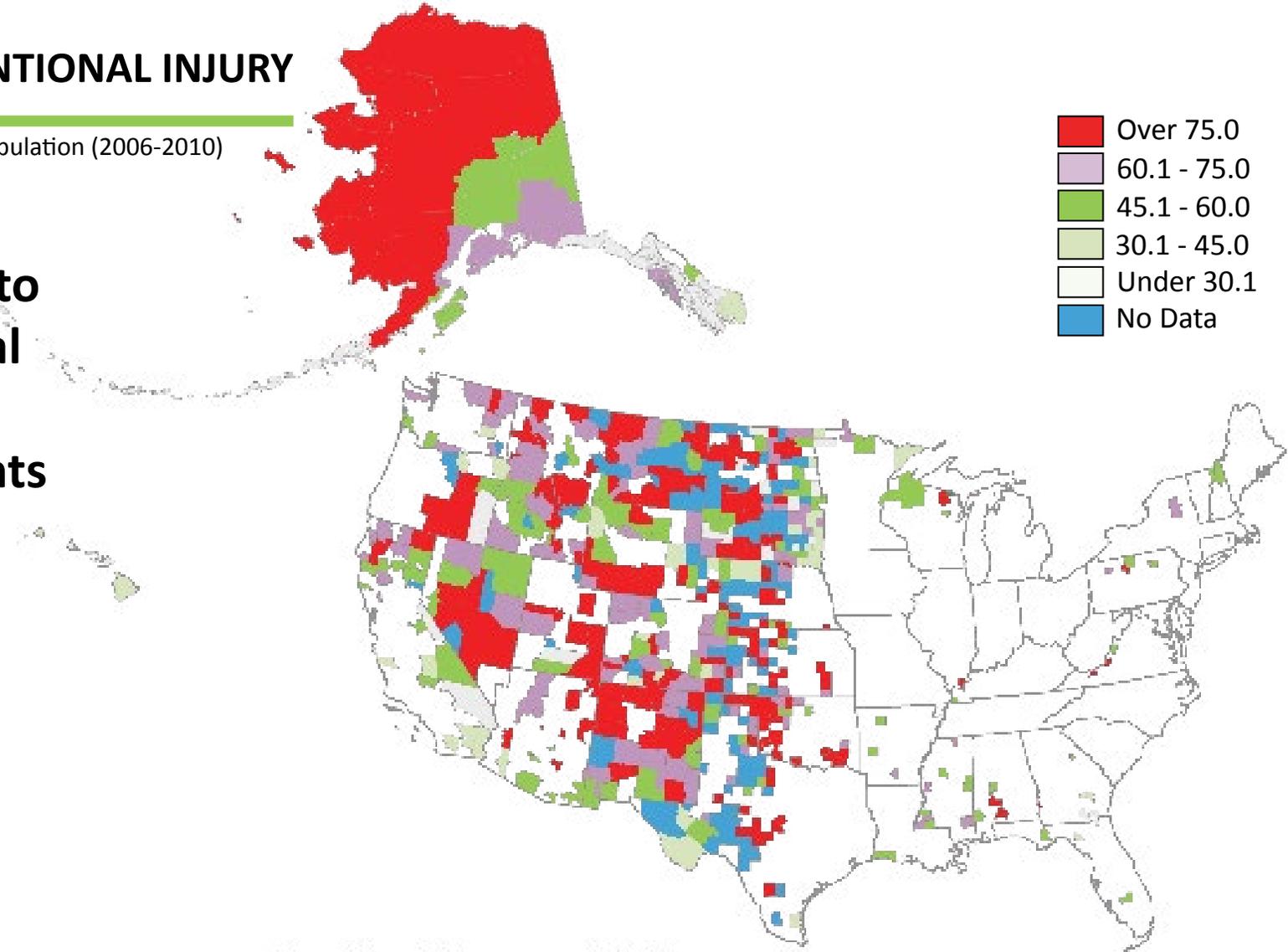


HEALTH: UNINTENTIONAL INJURY

mortality rate per 100,000 population (2006-2010)

“Rural residents are nearly twice as likely to die from unintentional injuries other than motor vehicle accidents than are urban residents.”

- National Rural Health Assoc.







ACCESSIBLE



HIGH QUALITY CARE



SUSTAINABLE



CULTURALLY RELEVANT

GUIDELINES

OBJECTIVES

1 OPTIMIZE
ACCESSIBILITY



2 OPERATE FACILITY
OFF THE GRID



3 CONSTRUCT
MODULAR UNITS



4 STANDARDIZE
CLINICAL SPACES



5 CREATE ADAPTABLE
SPACES



6 MAXIMIZE STAFF
CONNECTIVITY



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