

Assessing fitness for use of two indicators of the rural-urban environment in the NAACCR data files

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Introduction

- Understanding how cancer risks vary both socially and geographically is important in efforts to plan and improve cancer prevention.
- Some past studies have shown that residents of rural areas have lower screening rates, higher late-stage diagnosis rates, and differences in cancer treatment patterns than urban residents.
- Study findings by rural/urban residence have been inconsistent across cancer sites likely due to variations in how urban/rural was defined and the geographic unit used (e.g., county vs tract).

Introduction

- The majority of US nationwide rural/urban cancer studies have used using county-level measures of rural/urban
- Using a smaller geographic area (e.g., tract) to evaluate area-based influences on health is more precise than assigning area-based measures using county

Introduction

- In its November 2014 call for data, NAACCR began collecting
2 census tract-level urban/rural indicators in the CINA dataset (1995-2012 dx years)
 1. Census Bureau's Urban Rural Indicator Codes (URIC)
 2. US Department of Agriculture's (USDA) Rural Urban Commuting Area (RUCA) Codes
- Tract-level indicators of rural-urban residence in the CINA dataset will facilitate research in rural-urban disparities at the national level

Objective

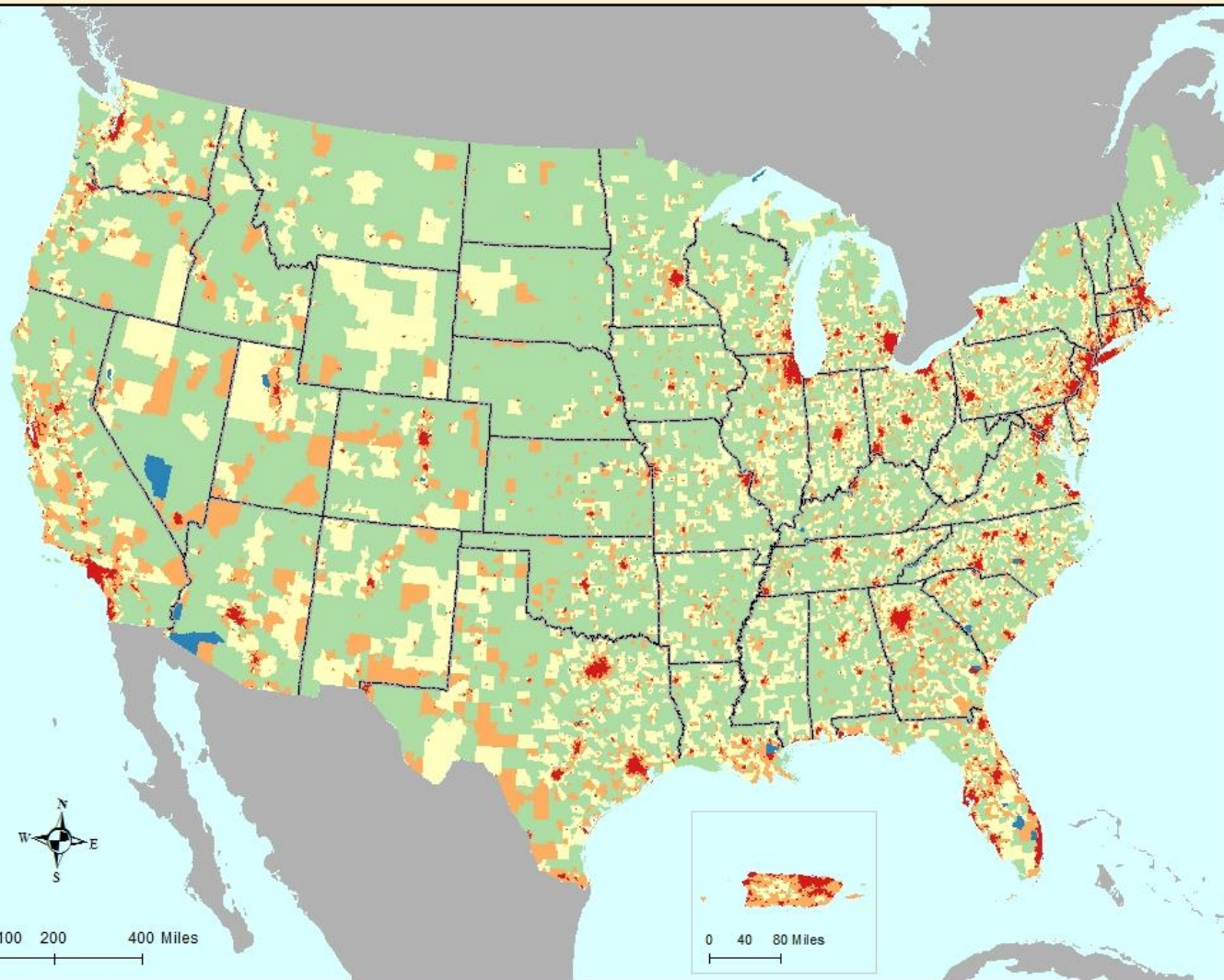
- Provide an overview of how the NAACCR rural/urban indicators are derived
- Summarize their “fitness for use”
- Provide basic descriptive statistical summaries of these new measures.

Rural/Urban Indicators

- Census Bureau's Urban Rural Indicator Codes (URIC)
 - Based is based on % of persons in tract living in urban area.
 - The URIC codes that are included in this NAACCR data item include
 - 1: all urban – the percent of the population in an urban area = 100%
 - 2: mostly urban – the percent of the population in an urban area $< 100\%$ and $\geq 50\%$
 - 3: mostly rural – the percent of the population in a rural area $< 100\%$ and $> 50\%$
 - 4: all rural – the percent of the population in an rural area = 100%
 - 9: unknown or not applicable – census tract not available or tract population was zero at the last decennial census

Urban Rural Indicator Codes (URIC)

- 1 - All Urban
- 2 - Mostly Urban
- 3 - Mostly Rural
- 4 - All Rural
- 9 - No Population



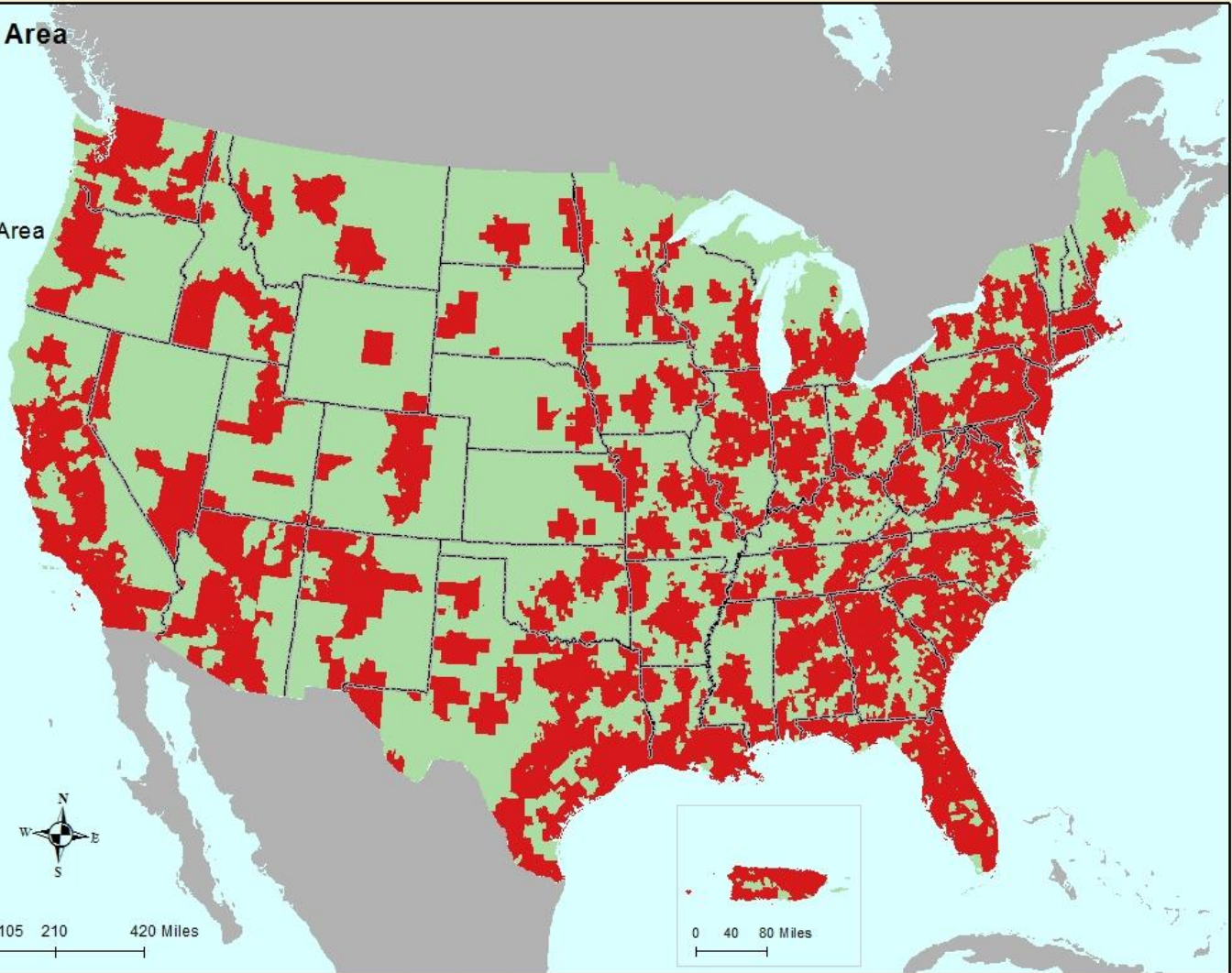
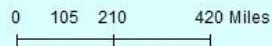
URIC Code	Description	Count	Total Population	Percent of Population
1	All Urban	45394	185840944	60.19
2	Mostly Urban	13035	68276029	22.11
3	Mostly Rural	5989	27050232	8.76
4	All Rural	8113	27578333	8.93
Total		72531	308745538	

Rural/Urban Indicators

- USDA's RUCA code
 - RUCA codes classify U.S. census tracts using measures of population density, urbanization, and daily commuting flows.
 - 2000 and 2010 RUCA codes available in CINA
 - The RUCA codes that included in this NAACCR data item include:
 - 1: urban commuting area – RUCA codes 1.0, 1.1, 2.0, 2.1, 3.0, 4.1, 5.1, 7.1, 8.1, and 10.1
 - 2: not an urban commuting area – all other RUCA codes except 99
 - 9: unknown or not applicable – census tract not available or RUCA code = 99

Rural Urban Commuting Area Codes (RUCA)

- 1 - Urban Commute Area
- 2 - Non-Urban Commute Area
- 9 - Unknown or N/A



RUCA Code	Description	Count	Total Population	Percent of Population
1	Urban Commute Area	63112	273603951	88.62
2	Not Urban Commute Area	9419	35141587	11.38
Total		72531	308745538	

NAACCR rural/urban indicators

- For cancer research involving residential context:
 - URIC measures the rural nature of the environment
 - May be most relevant for studies involving
 - Links with exercise and diet
 - Exposure to pollutants
 - Stress and crime levels
 - RUCAs measure the accessibility to large urban centers
 - May be most relevant for studies involving
 - Access to oncology specialists
 - Access to cancer treatment options
 - Knowledge of medical options, likelihood of seeking care

NAACCR rural/urban indicators

- New for fall 2014 submission (1995-2012 dx years)
- Currently not a NAACCR required field
- All cases, regardless of year of dx, derived for 2000, 2010 (2020, etc.) to support retrospective analysis & cross-sectional studies
- Rates by rural/urban codes requires tract-level denominators which are currently not part of CINA
- Rural/urban codes posted in Call for Data
- Variables/definitions should be in Vol II 2016



National Coverage:

- All but 8 registries submitted this item in 2014
 - 3 states “oversight” (2 have already resubmitted data but not included in this assessment)
 - 2 states do not yet geocode (getting trained on NAACCR Geocoder)
 - 1 state has not yet responded
 - 1 state misunderstood confidentiality issues; working to clarify
 - 1 state will not submit any geographic variables at this time (not even true county)
- *Overall 88% of population currently available 1995-2012; 86% for 2010 tracts*



National Coverage:

Table 1. Percentage of valid and unassigned URIC and RUCA codes among 2008-2012 cancer cases (86% of US Cancer Cases)

	Valid URIC/RUCA code	No URIC/RUCA code assigned
Total Cases (1998-2012)		
5,848,393	91.6 %	8.4%

Table 2. Distribution of URIC and RUCA codes by census tract certainty (2008-2012 cancer cases (86% of US Cancer Cases))

Census Tract Certainty	Valid URIC/RUCA code	No URIC/RUCA code assigned
Total	5,358,529	489,864
	%	%
Full street	90.7	2.3
ZIP Code [^]	6.1	1.8
CT Certainty not assigned	3.2	95.9



[^] includes ZIP+4, ZIP=2, ZIP only, ZIP of PO-Box, residential city/ZIP where city/ZIP has only one census tract assigned

National Coverage:

Table 3. Distribution of URIC codes based on cases geocoded to 2010 census tract URIC Codes, 2008-2012 (86% of US Cancer Cases)*

CINA URIC Codes	Total Cancer Cases (2008-2012)	Percent
1: all urban – the percent of the population in an urban area = 100%	3,227,005	60.2%
2: mostly urban – the percent of the population in an urban area < 100% and ≥ 50%	1,183,652	22.1%
3: mostly rural – the percent of the population in a rural area < 100% and > 50%	487,291	9.1%
4: all rural – the percent of the population in an rural area = 100%	460,134	8.6%
9. UNKNOWN or not applicable – census tract not available or tract population was zero at the last decadal census	447	0.0%



*non-geocoded cases and cases with unassigned URIC codes are excluded n=489,864

National Coverage:

Table 4. Distribution of cases geocoded to 2010 census tract RUCA Codes, 2008-2012 (86% of US Cancer Cases) *

CINA RUCA Codes	Total Cancer Cases (2008-2012)	Percent
1. Urban commuting area - RUCA codes 1.0,1.1,2.0,2.1,3.0,4.1,5.1,7.1,8.1,10.1	4,790,811	89.4%
2. Not an urban commuting area - all other RUCA codes except 99	567,553	10.6%
•9: unknown or not applicable – census tract not available or RUCA code = 99	165	0.003%



*non-geocoded cases and cases with unassigned URIC codes are excluded n=489,864

Recommendations

- Rural/Urban codes ‘fit for use’ but must be used in conjunction with census tract certainty variables to determine appropriateness for research question
- Registries should follow the guidelines to geocode entire database to most current census boundary (all to 2010)
- Use NAACCR Geocoder (NAACCR currently training two registries)

Thank you– Questions?



References

USDA RUCA:

<http://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes.aspx>

U. Wash. RUCA:

<http://depts.washington.edu/uwruca/>

U. Wash. RUCA categorizations:

<http://depts.washington.edu/uwruca/ruca-uses.php>

Census urban/rural:

<https://www.census.gov/geo/reference/urban-rural.html>