Use of RUCAs in Health Services Research

Gary Hart, PhD
Rural Health Research Center
Center for Health Workforce Studies
University of Washington
Seattle, Washington

Partners: Dick Morrill (UW) and John Cromartie (ERS)

Academy Health Annual Conference
Seattle, Washington
June 25, 2006
Purpose

- Introduce Rural-Urban Commuting Areas (RUCAs) (developed by our Rural Health Research Center and ERS)
- Show Selected Examples
RUCAs

RUCAs are a new Census tract-based taxonomy that utilizes the standard Census Bureau Urbanized Area and Urban Cluster definitions in combination with work commuting data to characterize the nation’s Census tracts regarding their rural and urban status and functional relationships.
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RUCAs

A new Census tract-based taxonomy uses:

- standard Bureau of Census urbanized area and place definitions
- functional relationships per work commuting flows
RUCAs

- New Version 2.0 now available
- Based on 2000 Census using 2004 ZIP code areas (and 2004 population estimates)
Why RUCAs?

- There is no “universal” rural definition
- Concept of rural is nebulous at best
- Most definitions are county-based
- Provides sub county alternative
- Takes functional relationships, population, & population density into account
- Taxonomy is adjustable to fit unique needs
- Scheme allows better targeting
- Taxonomy is ongoing, multi purpose, objective, & rigorous
But Why Care?

So we:

- do not miss research differences
- do not waste resources
- can target those in most need
- impartial empirical definition
- ultimately be more efficient and improve the health of the population
Intra Rural Important?

- Rural varies greatly from place to place

- Most rural folks receive most of care within rural areas
RUCA Codes X.X

1. Urban core Census tract
2. Census tract strongly tied to urban core
3. Census tract weakly tied to urban core
4. Large town Census tract
5. Census tract strongly tied to large town
6. Census tract weakly tied to large town
7. Small town Census tract
8. Census tract strongly tied to small town
9. Census tract weakly tied to small town
10. Isolated smaller rural Census tract
Sub codes (.x) based on second largest commuting flow.
Population by RUCA Codes
(2004 Population Estimates by ZIP Code Area)

Note: Zeros are rounded to zero but contain population.
Comparison of OMB (Metro/Non) and RUCA (Urban/Rural)

(2004 Population Estimates)

Rural can vary by 26%

RUCAs can be aggregated differently

Urban--Metro: 79.9%
Urban--Non Metro: 0.9%
Rural--Metro: 3.2%
Rural--Non Metro: 16.0%
Comparison of OMB (Metro/Non) and RUCA (Urban/Rural)
(2004 Population Estimates)

Over 56 million rural residents with this RUCA definition!
Population by UIC and RUCA Category
(2005 AMA and AOA Data)

RUCA Categories:
- Red: Urban
- Green: Large Rural
- Blue: Small Rural
- Yellow: Isolated Small Rural

Urban Influence Codes (UICs) (County-Based)
RUCA Tools

- Travel time & distance to Urbanized Areas and Large Urban Clusters
- Size of Urbanized Areas for 1s, 2s, and 3s
- Size of Large Urban Clusters for 4/5/6s & 7/8/9s
- Size of Urbanized Area or Urban Cluster associated with largest secondary commuting flow
- County identifier of largest population portion of each ZIP code
- Of course, other variables to be linked (e.g., poverty)

ALL THESE SHOULD BE ON OUR WEB SITE WITHIN TWO WEEKS
Examples of RUCA Uses

- Federal programs: ORHP, CMS, OAT
- National data sets: NSSRN, HCUP
- Demography and ERS
- Health-Related Research
Patient Care Physicians by RUCA Categories

(2005 AMA and AOA Data)

501,335 (89.0%)

Over 62,000 Rural PC Physicians!

% Physicians Rural: 11.0%

% Population Rural: 19.2%

41,125 (7.3%)
14,899 (2.6%)
6,027 (1.1%)

Urban
Large Rural
Small Rural
Isolated Small Rural
## Phy/Pop Ratio by Spec & Location

(2005 AMA and AOA Data)

<table>
<thead>
<tr>
<th>Spec &amp; Location</th>
<th>FPs</th>
<th>General Internal Medicine</th>
<th>General Pediatrics</th>
<th>General Surgery</th>
<th>OB/GYN</th>
<th>Psychiatry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>25.6</td>
<td>29.5</td>
<td>16.5</td>
<td>12.9</td>
<td>9.6</td>
<td>7.3</td>
</tr>
<tr>
<td>Large Rural</td>
<td>30.1</td>
<td>29.5</td>
<td>13.5</td>
<td>13.5</td>
<td>9.3</td>
<td>8.3</td>
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<tr>
<td>Small Rural</td>
<td>36.6</td>
<td>19.7</td>
<td>6.6</td>
<td>6.6</td>
<td>9.3</td>
<td>6.6</td>
</tr>
<tr>
<td>Isolated Small Rural</td>
<td>23.3</td>
<td>2.1</td>
<td>1.5</td>
<td>6.9</td>
<td>1.5</td>
<td>2.1</td>
</tr>
</tbody>
</table>

(Hart)
Dentist Vacancy Rates by Location Type

(Federally Funded Health Centers)

Percent Vacancies

Urban: 15.5
Large Rural: 23.8
Small Rural: 32.6
Isolated Small Rural: 27.2

Source: 2004 Center Survey
IV Nitroglycerin for AMI Medicare Patients by Hospital Location
(1994/95 Medicare Cardiovascular Project (CCP) data)

- Urban Areas: 70.4%
- Large Rural City Areas: 65.1%
- Small Rural Town Areas: 59.0%
- Remote Smaller Rural Town Areas: 51.3%

n= 102289; 28515; 11862; and 2092.
Medicare Elderly Visit Origins and Care Destinations
(1998 Medicare Elderly Ambulatory Visits: AK, ID, NC, SC, and WA)

Urban Residents
- Urban (78%)
- Same ZIP (Urban) (18%)
- Large Rural (2%)
- Small Rural (1%)
- Isolated Small Rural (0%)

Large Rural Residents
- Urban (20%)
- Same ZIP (Large Rural) (41%)
- Large Rural (35%)
- Small Rural (2%) (Isolated Small Rural (2%))

Small Rural Residents
- Urban (33%)
- Same ZIP (Small Rural) (34%)
- Large Rural (11%)
- Small Rural (20%)

Isolated Smaller Rural Residents
- Urban (30%)
- Same ZIP (Isolated Small Rural) (14%)
- Large Rural (27%)
- Small Rural (17%)
- Isolated Small Rural (12%)

Note: Volume of the pies is proportional to the number of visits:
Urban (12,389,696); Large Rural (3,499,306); Small Rural (2,696,055), and Isolated Smaller rural (1,907,208).
Figure 2-7: FM Residency Training by Location of Training and Parent Residency Location
(2000 FM Residency Director Survey, n= 435)

Large Rural Communities
- Large Rural (85%)
- Small Rural (3%)
- Urban (12%)

Small Rural Communities
- Urban (83%)
- Large Rural (4%)
- Small Rural (13%)

Isolated Small Rural Communities
- Urban (81%)
- Large Rural (19%)
- Small Rural (0%)

No core residencies were located in isolated small rural locations.
SUMMARY

- RUCA Version 2.0 is available for use (ZIPs)
- RUCAs can be tailored to research/policy analysis needs
- ZIP code-based RUCAs are more sensitive and adaptable than county-based taxonomies for analyses
- New analysis tools for use with RUCAs will be available within two weeks
- Researchers **NEED** to pay as much attention to geographic units as to other methods
Web Sites

Rural Health Research Center (RUCAs):
http://depts.washington.edu/uwruruca/

Center for Health Workforce Studies:
http://depts.washington.edu/uwhchws/

Regional Information Center:
http://depts.washington.edu/wwamiric/
Thanks

garyhart@u.washington.edu