Goals of the Presentation
- Highlight urban-rural dermatology workforce
- Describe classification schemes of urbanization

Rural Resident and Health Statistics
- Majority of U.S. counties are rural, especially in the Midwest
- 10-28% of population (~30-90 million people)
- Rural residents have poorer health outcomes
  - Lower average life expectancy: 76.7 vs. 79.1 years
  - More likely to die of preventable conditions including heart disease, stroke, lower respiratory tract disease and cancer
- Physician workforce shortages
  - Primary care and specialty
The Burden of Skin Diseases is High

Prevalence any skin disease: 26.98%
Affected population: 84,524,194
Average number of skin diseases if any: 1.6

Skin Disease Prevalence Exceeds Others Diseases

Increasing Demand Leads to Longer Wait Times

Central New Yorkers seeking appointments with dermatologists can wait up to six months
Epidemiology of Dermatology Workforce

All Dermatologists

Mohs Surgeons  Dermatopathologists  Pediatric Dermatologists

Epidemiology of Dermatology Workforce

All Dermatologists
Dermatology Workforce Distribution

Nationally:
3.4 to 3.65 dermatologists per 100,000 individuals
- AAD membership data
- Area Health Resources Files

40% work in the 100 densest population centers in the US

Dermatologist Density, 1995-2013

- Metropolitan: 18% Increase
- Overall: 21% Increase
- Non-Metropolitan: 25% Increase
- Rural: 30% Increase

Non-Urban Dermatologists Are Getting Older Faster

- Metropolitan:
  - 1995: 24%
  - 2013: 36%

- Non-Metropolitan / Rural:
  - 1995: 25%
  - 2013: 48%

< 55 years
> 55 years
Dermatologists Are At Well-Resourced Communities

Variables
- Primary Care Density
- Nurse Practitioner Density
- Median Household Income
- Population per Square Mile
- % Without Insurance
- % Older than 65
- % Unemployed
- % White

Epidemiology of Dermatology Workforce

Mohs Surgeons

Mohs Surgeon Workforce

Mohs Surgeons 2240
19.7%

Based on 2014 Medicare Provider Utilization and Payment data

Mohs Surgeon Workforce

2118 (94.6%)
111 (5.0%)
11 (0.4%)

Metropolitan  Non-Metropolitan  Rural
Mohs Surgeon Workforce Geographic Distribution

Percentage of counties lacking Mohs surgeons
- 82.3% of all counties
- 98.6% of rural counties

Mohs Surgeons Urban-Rural Distribution by Affiliation

- 51% ACMS
- 24% ASMS
- 9% Unaffiliated

Epidemiology of Dermatology Workforce

Pediatric Dermatologists

- 317 board-certified pediatric dermatologists
  - 61.2% work in academic medical center
  - 98.1% work in metropolitan county, 1.9% in non-metropolitan, 0% rural
  - Generally young: 70% graduated medical school between 1996 and 2015
- No board-certified pediatric dermatologist in
  - 18% (9/50) states: Delaware, Idaho, Maine, Mississippi, Montana, Nevada, North Dakota, South Dakota, and Wyoming
  - 95.6% (3086/3228) counties
- 0.43 pediatric dermatologist per 100,000 children vs 221.8 for pediatricians
Pediatric Dermatologist Geographic Distribution

Pediatric Dermatologist Geographic Density

Epidemiology of Dermatology Workforce

Dermatopathologists

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic</td>
<td>104/430</td>
<td>(24.2)</td>
</tr>
<tr>
<td>Private, academic affiliated</td>
<td>174/430</td>
<td>(40.5)</td>
</tr>
<tr>
<td>Private</td>
<td>152/430</td>
<td>(35.3)</td>
</tr>
<tr>
<td>Practice location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>136/430</td>
<td>(31.6)</td>
</tr>
<tr>
<td>Northeast</td>
<td>97/430</td>
<td>(22.6)</td>
</tr>
<tr>
<td>Midwest</td>
<td>95/430</td>
<td>(22.1)</td>
</tr>
<tr>
<td>West</td>
<td>101/430</td>
<td>(23.5)</td>
</tr>
<tr>
<td>Other</td>
<td>1/430</td>
<td>(0.2)</td>
</tr>
</tbody>
</table>

Given that pathology samples are sent and dermatopathologists can provide professional services anywhere in the country, the geographic distribution of dermatopathologists may not impact access to care in the same manner as general and subspecialty dermatologists.
Summary of Data and Significance

There is substantial disparity in the distribution of all dermatologists and subspecialists.

- Dermatologists located in non-urban areas are on average older than counterparts in metropolitan counties.
- Dermatologists tend to be located in well-resourced urban communities.
- Why it matters

Why It Matters

Why it matters:

Dermatologist Density Affects Clinical Outcomes


Biopsy Use in Skin Cancer Diagnosis
Comparing Dermatology Physicians and Advanced Practice Professionals

Ashley Nault, BS; Chong Zhang, MS; Kyung-Mann Kim, PhD; et al.

Non-Physician Clinicians Are Not The Easy Solution
We Need To Improve Workforce Issues

Common Urban-Rural Classification Schemes

- County Based
  - Metropolitan and Micropolitan Statistical Areas (Office of Management and Budget [OMB]),
  - Rural-Urban Continuum Codes (Economic Research Service, United States Department of Agriculture [ERS, USDA]),
  - Urban Influence Codes (ERS, USDA),

- Census Tract and Zip Code Based
  - Urban and rural classification (Department of Commerce, Bureau of the Census), and
  - Rural-Urban Commuting Area Codes (RUCA of USDA and Health Resources and Services Administration’s Federal Office of Rural Health Policy),

Urban-Rural Classification Schemes

Varying definitions and classification schemes exist
No single, universally preferred definition of urban vs rural

Various Geographic Units

Building blocks for defining rural: counties, zip codes, census tracts
Geographic Units May Change Over Time

Counties as Geographic Unit

- Most commonly used geographic component of rural definitions
- Advantages:
  - Simple to understand
  - Boundaries are very stable over time.
  - Many national health data sets use county as core geographic unit
  - County boundaries represent political jurisdictions
- Disadvantages
  - County size can vary substantially
    - Large counties can cover both very urbanized and rural areas
    - Most based on the categorization as metropolitan or nonmetropolitan.
    - Some counties are included in metropolitan areas based on commuting patterns but have many other characteristics that are typically associated with rural areas.

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County-Based Classification Schemes

<table>
<thead>
<tr>
<th>Code</th>
<th>Organization</th>
<th>Coding Termination</th>
<th>General Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolitan and Statistical Areas</td>
<td>Office of Management and Budget (OMB)</td>
<td>Metropolitan Statistical Areas</td>
<td>Urbanized areas with population of at least 50,000, plus adjacent territory with commuting bias.</td>
</tr>
<tr>
<td>Outside Core Areas</td>
<td>Metropolitan Statistical Areas</td>
<td>Outside Core Areas with population of at least 10,000, plus adjacent territory with commuting bias.</td>
<td></td>
</tr>
<tr>
<td>Rural-Urban Continuity Codes</td>
<td>Economic Research Service, U.S. Department of Agriculture (USDA)</td>
<td>Metropolitan (Maris)</td>
<td>Three metro codes: (a) 1 million or more individuals, (b) between 500,000 and 1 million persons, and (c) less than 500,000.</td>
</tr>
<tr>
<td>Nonmetropolitan (nonmetro)</td>
<td>Economic Research Service, U.S. Department of Agriculture (USDA)</td>
<td>Nonmetropolitan (nonmetro)</td>
<td>The codes included in two-step process. Countries divided into three categories based on population: Urban population of 15,000 or more persons, 2,500 to 20,000 persons, or less than 2,500 persons.</td>
</tr>
<tr>
<td>Urban Influence Codes</td>
<td>Economic Research Service, U.S. Department of Agriculture (USDA)</td>
<td>Metropolitan</td>
<td>Two codes based on population size: (a) 1 million or more (b) less than 1 million.</td>
</tr>
</tbody>
</table>

Zip Code as Geographic Unit

- Geographic areas surrounding postal delivery routes
  - Borders have no defined relationship to city and county boundaries
- Advantages
  - Allow for a finer level of geographic precision than do counties
  - ZIP code areas are easy to implement with programs that rely on provider or beneficiary address
- Disadvantages
  - Design is for postal purposes, ZIP codes change frequently
  - Unlike counties, ZIP code areas have little relationship to political boundaries

References