Visualizing the Health Workforce in The United States

Using ESRI’s ArcGIS to Compare the American Medical Association’s (AMA) Physicians Masterfile to the National Provider Identifier (NPI) from the Centers for Medicare and Medicaid

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Purpose

- To visualize the locations of physicians and other medical professionals in order to assess possible areas of shortages so that policymakers and medical schools can apply methods to encourage placement of the medical workforce to meet social aims.
Challenges

- **What Datasets Should Be Utilized**
  - American Medical Associations (AMA) Physician Masterfile
    - Extensive, but not intended for research
  - National Provider Identifier from the Centers for Medicare and Medicaid Services (CMS)
    - All medical workforce who bill Medicare or Medicaid
  - American Osteopathic Association (AOA)
    - Only doctors of Osteopathic Medicine
  - State Licensure Data
    - Not uniform from state to state
    - Completion rates vary from state to state
    - Difficult to account for duplicates
AMA Physician Masterfile

- Nearly 1.1 Million Records
  - Based on more than 2100 sources
  - Main source is the physicians’ survey administered by the AMA
    - 250,000 surveys distributed each year
- Specialty is Self-Declared
  - Many Medical Doctors and Doctors of Osteopathic Medicine practice multiple specialties and only one is declared in the Masterfile
- No Purging Process
  - Assumed deceased flag applied, but record not removed
  - Duplicate records deleted if discovered
NPI Data Set

- The Replacement for the Unique Physician Identification Number (UPIN) in 2008
- All Medical Workforce that Receives Payments from Medicare or Medicaid
  - Includes Nurse Practitioners and Physicians Assistants
  - Greater than 4 Million Records
- Used as One of the Many Sources for the AMA Physician Masterfile
  - Overlap between the two datasets exists, but not a perfect match
- Also No Purging Process in Place
  - Intended for billing and tracking purposes as opposed to workforce accounting and research
MedSchool Mapper

Medical School Footprint: Missouri

State View: Missouri

Legend:
- Counties Containing Medical School Graduates (70%)
- Medical Schools
- Graduate Practice Locations

Missouri:
- % of Grades in:
  - Rural Areas: 15%
  - Shortage Areas (HPSA): 41%
  - Primary Care: 46%
  - General Surgery: 3%

In-State Only:
- 0%
- 20%
- 40%
- 50%
- 60%
- 80%
- 100%

Actual # | Nat’l Rank
---------|------------
3,350    | 16         
9,282    | 16         
9,151    | 11         
607      | 39         

Need more analytical options? ADVANCED TOOL
The Physician Distribution Wizard (AMA Mapper)
Future Needs for the AMA and NPI Mappers

- Improved Taxonomy
  - Primary Care for the NPI
- Corrected Population to Physician Ratios
  - 1:1500 to 1:2000
- Tracking Changes in Workforce over Time
  - 10 Years of AMA data for display
- New Geographies:
  - State and Federal Legislative Boundaries
  - ZCTA
  - PCSA
- Comparison Tool to see differences in the AMA and NPI Workforce Numbers
Thank you!

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