Influencing Policy with Data and Research

Ronda Hughes

October 24, 2018
“Grabbing Your Attention”

Trident Sugarless Gum is Good for Your Teeth

It’s a fact! 4 out of 5 dentists surveyed would recommend Trident for their patients who chew gum.

“I think you’ll find that mine is bigger...”

“After careful consideration of all 437 charts, graphs, and metrics, I’ve decided to throw up my hands, hit the liquor store, and get snockered. Who’s with me?!”

Chances of Hitting a Deer in My State

July 1, 2016 to June 30, 2017

StateFarm
What is Policy?

• A definite course or method of action selected (by government, institution, group, or individual) from among alternatives and in light of given conditions to guide and, usually, to determine present and future decisions.

• A specific decision or set of decisions designed to carry out such a course of action.
Figure 1

Social Determinants of Health

<table>
<thead>
<tr>
<th>Economic Stability</th>
<th>Neighborhood and Physical Environment</th>
<th>Education</th>
<th>Food</th>
<th>Community and Social Context</th>
<th>Health Care System</th>
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</thead>
<tbody>
<tr>
<td>Employment</td>
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<td>Literacy</td>
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<td>Health coverage</td>
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<td>Language</td>
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<td>Support systems</td>
<td>Provider availability</td>
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<td>Provider linguistic and cultural competency</td>
</tr>
<tr>
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<td>Higher education</td>
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Health Outcomes
Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations

Source: KFF, 2018
Data

**Big Data**
- Electronic health records (EHR)
- Medical device data
- Insurance claims data
- Health information exchanges
- Public records
- Research data
- Population/Geographic

**Nursing**
- Licensure
- Surveys
- HR
- Employment
Using Data to Inform

- Policymakers
  - Make policy in the presence or absence of data to inform their decisions
  - Will use data to inform their decision but in the absence of data, still need to make a decision
  - Data and information doesn’t always guarantee they’ll be used to inform the decision (but lack of data guarantees that they won’t)

If I say, ‘First of all’, run away because I have prepared research, data, charts, and will destroy you.”
## Start with What You Have

<table>
<thead>
<tr>
<th>Made Data</th>
<th>Made Data</th>
<th>Found Data</th>
<th>Found Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>Observational (e.g. Social Surveys)</td>
<td>Administrative Data</td>
<td>Other Types of Big Data</td>
</tr>
<tr>
<td>• Data are collected to investigate a fixed hypothesis.</td>
<td>• Data may be used to address multiple research questions.</td>
<td>• Data are not collected for research purposes.</td>
<td>• Data are not collected for research purposes.</td>
</tr>
<tr>
<td>• Usually relatively small in size.</td>
<td>• Data may be very large and complex (but usually smaller than big data).</td>
<td>• May be large and complex.</td>
<td>• May be very large and very complex.</td>
</tr>
<tr>
<td>• Usually relatively uncomplicated.</td>
<td>• Highly systematic.</td>
<td>• Semi-systematic.</td>
<td>• Some sources will be very unsystematic (e.g. data from social media posts).</td>
</tr>
<tr>
<td>• Highly systematic.</td>
<td>• Known sample / population.</td>
<td>• May be messy (i.e. may involve extensive data management to clean and organise the data).</td>
<td>• Very messy / chaotic.</td>
</tr>
<tr>
<td>• Known sample / population.</td>
<td></td>
<td>• Multidimensional (i.e. may involve multiple fragments of data which have to be brought together through data linkage).</td>
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Source: Connelly, et al., 2016
Quality of Care
U.S. News & World Report
Best Children’s Hospitals
Rankings 2018-19
Methodology

To determine a hospital’s ranking, three main areas are assessed: structure, process and outcomes. Each component counts as 1/3 of a hospital’s score in nine out of the ten ranked specialties.*

**STRUCTURE: 1/3**
Structure refers to hospital resources directly related to patient care. Examples include the ratio of nurses to patients, specialized clinics and programs, and certification by recognized external organizations.

**PROCESS: 1/3**
Process refers to compliance with best practices, activities to prevent infections, and expert opinion of pediatric specialists—or reputation. In 2018, over 10,000 pediatric specialists were asked for their opinion on which children’s hospitals provide the best care for patients with the most challenging conditions or who require particularly difficult procedures. Most specialties were surveyed.

**OUTCOMES: 1/3**
Outcomes measures include death but can also include functional success, such as among children with cystic fibrosis, and adverse events, such as bloodstream infections and failure of transplanted organs.

*In 2017, in the Pediatric Cardiology & Heart Surgery specialty, the weight of the outcomes component increased to 2/3 because To affect this...
Geographic Distances

Collaborative Practice Agreements and Their Geographic Impact on Where Nurse Practitioners Can Practice

- Bell, N, Hughes, R, Lopez-De Fede, A.
  October 2018
Description of the methodology that was used to assess geographic availability of primary care provider (PCP) physician supervisors for the nurse practitioner (NP) workforce.

KEY
Colors in the wheel correspond to the type of PCP that would typically supervise an NP of that specialty
- Location of NPs
- Location of PCPs
- See Note

Access based on the collaborative practice agreement
Based on the wording of the practice agreement, the neonatal NP would be within 45 miles of three PCPs (internal, OB/GYN, pediatrician). The acute care NP would be within 45 miles of two PCPs (OB/GYN, pediatrician). The women's health NP would be within 45 miles of one PCP (pediatrician). The family NP would be within 45 miles of two PCPs (family, internal).

Methodological interpretation of the practice agreement based on the LLR data
The neonatal NP is within 45 miles of only one supervising physician (pediatrician) as no internal medicine or OB/GYN supervises an NP that specializes in children's health. The acute care NP is within 45 miles of one supervisor (pediatrician) as no OB/GYN supervises a nurse who specializes in acute care medicine, but there is one instance of an acute care NP being supervised by a pediatrician. The women's health NP is beyond 45 miles from a supervisor given that none of these NPs are supervised by a pediatrician. The family NP is within 45 miles of two supervisors (family, internal) as all four types of physicians are known to supervise family NPs.

* The practice agreement fails this NP. They are within 45 miles of a pediatrician, but women's health NPs are not supervised by these types of primary care providers. Without contextualizing workforce collaborations, the analysis would falsely identify this provider as being unburdened by the practice agreement.
<table>
<thead>
<tr>
<th>Rank</th>
<th>State</th>
<th>Demand (2030)</th>
<th>Supply (2030)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>California</td>
<td>387,900</td>
<td>343,400</td>
<td>-44,500</td>
</tr>
<tr>
<td>2</td>
<td>Texas</td>
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<td>253,400</td>
<td>-15,900</td>
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<td>3</td>
<td>New Jersey</td>
<td>102,200</td>
<td>90,800</td>
<td>-11,400</td>
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<td>4</td>
<td>South Carolina</td>
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<tr>
<td>5</td>
<td>Alaska</td>
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<td>18,400</td>
<td>-5,400</td>
</tr>
<tr>
<td>6</td>
<td>Georgia</td>
<td>101,000</td>
<td>98,800</td>
<td>-2,200</td>
</tr>
<tr>
<td>7</td>
<td>South Dakota</td>
<td>13,600</td>
<td>11,700</td>
<td>-1,900</td>
</tr>
<tr>
<td>8</td>
<td>Montana</td>
<td>12,100</td>
<td>12,300</td>
<td>200</td>
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<tr>
<td>9</td>
<td>North Dakota</td>
<td>9,200</td>
<td>9,900</td>
<td>700</td>
</tr>
<tr>
<td>10</td>
<td>New Hampshire</td>
<td>20,200</td>
<td>21,300</td>
<td>1,100</td>
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<tr>
<td>11</td>
<td>Delaware</td>
<td>12,800</td>
<td>14,000</td>
<td>1,200</td>
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<tr>
<td>12</td>
<td>Arizona</td>
<td>98,700</td>
<td>99,900</td>
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<tr>
<td>13</td>
<td>Massachusetts</td>
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<td>14</td>
<td>Louisiana</td>
<td>49,700</td>
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<td>15</td>
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<td>Ohio</td>
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<td>181,900</td>
<td>49,100</td>
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<tr>
<td>3</td>
<td>Virginia</td>
<td>86,500</td>
<td>109,200</td>
<td>22,700</td>
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<td>4</td>
<td>New York</td>
<td>195,200</td>
<td>213,400</td>
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<td>Missouri</td>
<td>73,200</td>
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Bureau of Health Workforce
**NURSING SHORTAGE**

Shortage of 1 Million by 2022

**CONTRIBUTING FACTORS**

- Senior Citizens: 65+ Million
- Retiring Workforce: Over 50 years old
- Limited School Capacity: 79,659 Applicants Turned Away
- 1 Million Retiring in 10-15 years

**AVERAGE AGE OF RN NURSE FORCE IS 44.4**

**150,000 NEW RNs IN 2013 COMPARED TO 68,000 IN 2001**

**130,000 NURSES WILL BE NEEDED BY 2025**

**70,000 QUALIFIED APPLICANTS TURNED AWAY FROM BACCALAUREATE AND GRAD NURSING PROGRAMS IN 2014**

**55% OF THE CURRENT RN POPULATION IS PREPARED AT THE BACCALAUREATE OR HIGHER DEGREE LEVEL**

**HEALTHCARE INITIATIVES ARE PUSHING FOR AN 80% BSN WORKFORCE BY 2020**
Geographic Information Systems and Healthcare

- Identify health trends
- Track spread of infection disease
- Personalized health
- Social media
- Unmet needs
Policy Issue

• Access to health care
• Cost of health care
• Excessive regulations

Access to Health Care

A little over 17% of Escambia and Santa Rosa adults are uninsured.

Approximately 15% of local residents could not see a doctor last year because of cost.

About 3 out of 20 adults in our area do not have a usual source of health care.
Figure 1.5. South Carolina Primary Care Health Professional Shortage Assessment by Type, as of June 2007

Data Source: http://www.scdhec.gov/health/opc/docs/HPSA_primarycare.pdf

Generated by DHEC Chronic Disease Epidemiology & Evaluation

February 2009
Concentration of Nurse Practitioners Per 10,000 Population

Counties in SC range from a low of 0.9 to a high of 8.1 Nurse Practitioners per 10,000 county residents

- 5.0 to 8.1 (4)
- 2.0 to 4.9 (30)
- 1.0 to 1.9 (11)
- 0.1 to 0.9 (1)

Note: The () shows the total number of counties with this range

This information is based on all Nurse Practitioners with an active license to practice and a practice location in South Carolina as reported during the license renewal period ending 04/30/2014. The county practice locations are those reported as the primary practice site.

2017 Nurse Practitioner (NP) Workforce
as defined from South Carolina Labor, Licensing, and Registration Address Records

Distribution of providers, by ZCTA Classification:
- Urban = 67%
- Suburban = 18%
- Rural = 15%

Primary specialty defined as:
1. Adult or Family NP, or
2. Neonatal or Pediatric NP
3. Primary Care NP

*De-identification through spatial adjustment
Licenture files are publically available, but they do not differentiate whether the address represents where a provider works or where they live. Spatial adjustment helps to mitigate the risk that a provider's place of residence could be identified from the data. In this map, latitude and longitude coordinates for each address were integrated into a single point using a 3 mile tolerance. The data were then geographically masked using a minimum grouping of 10 providers in order to mitigate potential instances where the address was an individual's place of residence.
What’s Next?

• Opportunities and significance of big data research for nursing research are in the beginning stages.

• Challenges of access to large volumes of quality data.

• Application of interdisciplinary data science techniques will advance data methodologies and outcomes for future research.
Opportunities

Value-Based Care (DHHS – Azar)
- Maximizing the promise of health
- IT
- Boosting transparency around price and quality
- Pioneering bold new models in Medicare and Medicaid
- Removing government burdens and barriers
Using Data to Inform Regulation

- “Nursing workforce population and mobility
- New health care settings, roles, and personnel
- Scope of practice issues
- New treatment methods and strategies impacting nursing education and practice
- Societal issues affecting nurses and their practice as well as the general public, including workplace violence, cannabis use, and the opioid crisis.”

Questions, Answers, and Solutions

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Associate Professor

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