An Introduction to the Health Workforce Analysis Guide, Part 1

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Background

• Updates the State Health Workforce Data Resource Guide released in 2000

• Reflects changes in the data and methods used for health workforce research

• Assists those interested in conducting health workforce research
  o Considers issues associated with primary data collection
  o Identifies key secondary data sources
  o Describes basic, intermediate and advanced health workforce research methods

• Recognizes impacts of a changing health care delivery system on demand for health workers
Health Workforce Research Questions of Interest Are Changing

• We used to conduct profession-specific research: how many? where? do we have enough?

• The changing health care delivery system has refocused our research
  o Shift in focus from acute care to primary care and prevention
  o Greater concern with cost, quality and access
  o Growing attention to population health

• Now we ask broader research questions
  o What do patients need?
  o What are the best workforce strategies to deliver needed services?
Organization of the Guide
Two-Part Webinar Series Introducing the Guide

• Today’s webinar
  o Measures, methods and models
  o Special challenges for health workforce research

• Second webinar on December 7th
  o Primary workforce data collection
  o Review of sources of secondary data that are used for workforce research
  o Strengths and weaknesses of these secondary data sources
  o Examples of health workforce research using these data sources
Measures, Methods, and Models
Chapter 3: Health Workforce Analysis

• Basic Terminology
  o Supply, demand, need
  o Shortage, surplus, maldistribution
  o Indicators of shortage
    - Direct measures
    - Indirect measures

• Framework for health workforce analysis
## A Framework for Health Workforce Analysis

<table>
<thead>
<tr>
<th>Study purpose</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal(s) for health</strong></td>
<td>Overarching goal(s)/purpose(s)</td>
</tr>
<tr>
<td><strong>Objective(s)</strong></td>
<td>Specific objective(s)</td>
</tr>
<tr>
<td><strong>Profession(s)</strong></td>
<td>Specific profession(s)/specialty(ies)/occupation(s)</td>
</tr>
</tbody>
</table>

### Study characteristics

<table>
<thead>
<tr>
<th>Theme</th>
<th>Supply, demand/need, adequacy of supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sophistication</td>
<td>Basic, intermediate, advanced</td>
</tr>
<tr>
<td>Methods</td>
<td>Counts, ratios, comparisons and benchmarks, modeling</td>
</tr>
</tbody>
</table>

### Study data

<table>
<thead>
<tr>
<th>Geography</th>
<th>Units, addresses/locations of practices, migration patterns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of data source</td>
<td>Existing datasets, administrative records, surveys, interviews, reconciling differences</td>
</tr>
</tbody>
</table>
| Data elements | **Supply characteristics:** demographics, education, credentialing, practice  
**Demand characteristics:** population demographics, health status indicators, health service utilization |
| Sampling | Universe, probability sample, nonprobability sample |
Study Purpose

• Overarching goals/study purpose
  o e.g., assessing the adequacy of the behavioral health workforce

• Specific objectives
  o e.g., determining the number of behavioral health workers required to serve a population

• Specific health professions
  o e.g., psychiatrists, psychiatric nurse practitioners, psychologists, social workers, case managers...
Study Characteristics

• Theme
  o Supply, demand and/or need, adequacy of supply

• Sophistication
  o Basic, intermediate, advanced

• Methods
  o Counts, ratios, comparisons, benchmarks, modeling, etc.
Health Workforce Analysis Hierarchy

WORKFORCE DEMAND/NEED

Advanced analyses and data
- Multivariate analyses of factors related to demand and need
- Multidimensional indicators of need for substate areas and population groups
- Projections of future demand and need

Intermediate analyses and data
- Comparisons with other states and US averages
- Estimates for population subgroups and practice settings
- Historical trends of demand and need

Basic analyses and data
- Population counts and characteristics for state and counties
- Health status of population
- Direct measures of demand (e.g., vacancies)
- Indirect measures of demand

Basic adequacy analyses

WORKFORCE SUPPLY

Intermediate analyses and data
- Licensees and employment
- Ratios and baselines
- State and substate counts
- New entrants and exits
- Tables and maps

Intermediate adequacy analyses

Advanced analyses and data
- Comparisons with other states and US averages
- Historical trends
- Distributions by practice types and settings
- Distributions by populations served

Advanced adequacy models and analyses

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Study Data

- Type of data source
  - Existing datasets, administrative records, surveys, interviews, reconciling differences
- Data elements
  - Supply characteristics: demographics, education, credentialing, practice
  - Demand characteristics: population demographics, health status indicators, health service utilization
- Sampling
  - Universe, probability sample, nonprobability sample
- Geography
Understanding Your Data

Estimated Numbers of Physicians in New York, 2010

- All NYS Licensed Physicians: 86,022
- All Active NYS Licensed Physicians: 80,782
- Active NYS Licensed Physicians in NYS w/ Residents: 70,205
- Active NYS Licensed Physicians in NYS w/o Residents: 68,749
- Active NYS Licensed Physicians in Patient Care in NYS w/o Residents: 67,710
- FTE Patient Care Physicians in NYS w/o Residents: 53,760
Study Parameters

• Geography
  o Units
    – States, counties, ZIP Codes, etc.
  o Address
    – Practice address, mailing address, billing address
  o Migration patterns
    – Provider and patient
Primary Care Health Professional Shortage Areas (HPSAs) in New York
Primary Care HPSAs in New York City

NYS PC HPSA

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## Health Workforce Analysis by Theme and Level of Sophistication

<table>
<thead>
<tr>
<th>Basic</th>
<th>Intermediate</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Practitioner Supply</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counts of Practitioners of Interest for the State, Counties, etc.</td>
<td>Comparisons of State Counts and Rations to Those for Other States and US Averages</td>
<td>Projections of Practitioner Supply</td>
</tr>
<tr>
<td>Practitioner per Capita Ratios for Counties and Other Geographies</td>
<td>Historical Trends of Practitioner Supply for the State, Counties, etc.</td>
<td>Multivariate Analyses of Aspects of Supply (eg. Specialty Choice, Job Change, Retirement)</td>
</tr>
<tr>
<td>Counts of New Entrants to or Exits from a Profession</td>
<td>Distribution of Practitioners by Practice Characteristics (eg, By Specialty or Settings)</td>
<td></td>
</tr>
</tbody>
</table>

| **Practitioner Demand or Need** | | |
| Population of the State, Counties, etc. (eg. Size, Characteristics) | Comparisons of Demand and Need w/ US Averages, Other States, and Benchmarks | Projections of Demand and Need for Practitioners |
| Health Status of the Population for the State, Counties, etc. | Historical Trends of Demand and Need for the State, Counties, etc. | Analyses of Reasons for Differences Between Need and Demand |
| Direct Measures of Demand (eg, Job Vacancies) | Practitioner Demand/Need for Different Geographies, Settings, and Populations | Multivariate Analyses of Factors Related to Demand and/or Need |
| Indirect Measures of Demand (eg, Recruiting Costs, Patient Visits, Procedure Counts) | | Multidimensional Indicator(s) of Need in Regions, Settings, and Population Groups |

| **Adequacy of Practitioner Supply Relative to Demand or Need** | | |
| Comparisons of Supply and Demand to Identify Areas and Populations with Unmet Needs | Comparisons of Practitioner Supply and Demand Projections | Analyses to Identify Contiguous Regions w/ Shortages and "Rational Service Areas" |
| Assessment of Adequacy of Supply for Settings and Regions | | |
| Indicators of Unmet Need and Problems (eg, Ambulatory Care Sensitive Conditions) | | Multivariate Analyses of Factors Related to Adequacy of Supply (eg, Insurance) |
Examples of Research Studies/Findings
Registered Nurses in South Carolina by Primary Practice Location

This information is based on all Registered Nurses, excluding Advanced Practice RNs, with an active license to practice and a practice location in South Carolina as reported during the license renewal period ending 04/30/2012. Locations plotted here are the primary practice zip code locations. Dots are randomly placed within the zip code area and may not represent the street location of the practice. This map omits 86 RNs who did not have a valid South Carolina zip code. Rural counties are those where 50% or more of the population lives outside an urbanized area, based on 2010 census counts.
Concentration of Registered Nurses
Per 10,000 Population

Counties in SC range from a low of 10.7 to a high of 173.9 Registered Nurses per 10,000 county residents

- 112.0 to 173.9  (5)
- 80.0 to 111.9  (2)
- 50.0 to 79.9  (14)
- 17.0 to 49.9  (23)
- 10.7 to 16.9  (2)

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

This information is based on all Registered Nurses, (excluding Advanced Practice Nurses) with an active license to practice and a practice location in South Carolina as reported during the license renewal period ending 04/30/2012. The county practice locations are those reported as the primary practice site.
Charleston

Health Profession Shortage Area Designations:
Primary Care: Partial  Mental Health: Partial  Dental Care: Partial

Physicians
Total Physicians Whose Primary Practice is in This Area 2,832
Family Practice 199
Internal Medicine 332
Obstetrics / Gynecology 115
Pediatrics 189
General Surgery 111
All Other Physicians (Specialists) 1,803
Physicians Per 10,000 Population 77.6
Primary Care Physicians Per 10,000 Population 22.9
Federal Physicians 83

Nurses
Registered Nurses 6,347
Certified Nurse Midwives 27
Nurse Practitioners 270
Certified Nurse Anesthetists 153
Clinical Nurse Specialists 20
Licensed Practical Nurses 827

Dentists and Hygienists
Dentists 342
Dental Hygienists 309
Dental Technicians 20

Other Health Professions
Pharmacists 716
Pharmacy Technicians 568
Physical Therapists 400
Physical Therapy Assistants 143
Occupational Therapists 221
Occupational Therapy Assistants 74
Physician Assistants 234
Respiratory Care Practitioners 300
Optometrists 81

Demographics
Estimated Population in 2012

Vital Statistics and Health Status Indicators
Resident Births / Deaths 4,885 2,880
Total Pregnancies: # / Rate 5,767 73.8
% of Births < 2500 grams 8.6
Teen Pregnancies: # / Rate 359 17.8
Infant Mortality Rate: White / Black 4.1 10.5
Cancer Deaths 663
% of Adults Diagnosed With Heart Disease 2.7
% of Adults Diagnosed With Hypertension 34.9
% of Adults Diagnosed With Diabetes 11.0
% of Adults Who Currently Smoke 21.2
% of Adults Reporting a Sedentary Lifestyle 22.1
% of Adults Overweight or Obese (BMI ≥ 25) 58.3

Age: 0 - 19 20 - 64 65 + Total % by Race

<table>
<thead>
<tr>
<th></th>
<th>White</th>
<th>20 - 64</th>
<th>65 +</th>
<th>Total</th>
<th>% by Race</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>50,284</td>
<td>158,446</td>
<td>36,348</td>
<td>245,078</td>
<td>67.1%</td>
</tr>
<tr>
<td>Black</td>
<td>30,630</td>
<td>63,922</td>
<td>12,693</td>
<td>107,245</td>
<td>29.4%</td>
</tr>
<tr>
<td>Other</td>
<td>4,256</td>
<td>7,760</td>
<td>821</td>
<td>12,839</td>
<td>3.5%</td>
</tr>
<tr>
<td>Total</td>
<td>85,172</td>
<td>230,128</td>
<td>49,862</td>
<td>365,162</td>
<td>100%</td>
</tr>
</tbody>
</table>

% by Age
23.3% 63.0% 13.7% 100%

Facility Data
General Hospital Beds 1,754
Hospital Discharges within Home County 99%
Skilled Nursing Facility Beds 1,308

Socio-Economic Data
% of Adults Without Health Insurance 23.6
% Unemployed 7.3
% of Households With Income < $25,000 28.4
% With High School Education Or Less 37.2
# Medicaid Eligible 76,802
Per Capita Income $43,642
Trends in the Licensed Practical Nurse Workforce from 2008 to 2013
Janet M. Coffman, MPP, PhD, Tim Bates, MPP, Krista Chan, BA, Joanne Spetz, PhD
University of California, San Francisco, Health Workforce Research Center on Long-Term Care

**Background**
- In 2013, more than 600,000 people were employed as licensed practical nurses (LPNs) in the United States.
- The number of LPN jobs is projected to grow by nearly 25% between 2012 and 2022.

**Objective**
To assess trends in the supply and employment patterns of LPNs in the USA from 2008 to 2013.

**Methods**
Data from the 2008 and 2013 American Community Survey (ACS) Public Use Microdata Sample were analyzed using ACS sampling weights. Chi-square tests were performed to identify statistically significant trends.

**Results**
- While the total number of employed LPNs has dropped by 5.9%, the number of LPNs working in long-term care has increased by 12.1%. \( p = 0.00 \).
- The increase in long-term care employment was largely due to a 57.7% increase of LPNs in home health \( p = 0.00 \).

**Implications**
- Shifts away from hospital employment may indicate lower demand for LPNs by hospitals, possibly because:
  1. Hospitals are striving to increase the education and skill level of their nursing workforce, and thus preferring to hire registered nurses (RNs).
  2. As the RN shortage abated, it may have become easier for hospitals to hire RNs instead of LPNs.
- Employment projections suggest an increased demand for LPNs in long-term care.
- There is a need to ensure that LPN education programs are preparing students for practice in long-term care settings.
- An increasingly diverse LPN workforce will improve the profession’s ability to meet the needs of the U.S.'s increasingly diverse population.

**Limitations**
- No information about scope of practice
- Limited industry categories

Sources of Funding: U.S. Bureau of Health Workforce
Assessment of Relative Demand by Specialty

Source: NY Center for Health Workforce Studies
Special Challenges for Health Workforce Analysis
Special Challenges for Health Workforce Analysis

- New professions and occupations
- Scope of practice variation
- Perspectives of the educational sector
- New technology
- Data limitations
- Looking beyond data
Special Challenges: New Professions and Occupations

• Created in response to
  o Substantial unmet need for health services
  o Development of more effective diagnostic and treatment protocols
  o Need for more cost-effective workforce strategies to increase access to needed services

• Examples:
  o Dental therapists and advanced practice dental hygienists
  o Interventional radiology
  o Growing use of unlicensed workers, including care coordinator, patient navigator, case manager, etc.

• Issues
  o Lack of standardization in titles, qualifications, educational requirements
  o Often challenging to assess impacts on patient outcomes
Special Challenges: Scope of Practice Variation

- States are primarily responsible for regulating health professions.
- Legal scope of practice is based on state specific practice acts that define what services a health professional can and cannot provide.
- Lack of uniformity in legal scopes of practice across states for some health professions (e.g., nurse practitioners, dental hygienists).
- Mismatches between professional competence (what services a health professional is trained and competent to perform) and legal scope of practice.
- This variation complicates efforts to assess professional productivity and to evaluate professional impacts on patient outcomes.
- Creates opportunities to systematically study the impacts of broader scopes of practice on clinical practice and outcomes.
State to State SOP Variation: Nurse Practitioners

View the interactive version online: www.bartonassociates.com/np-laws

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DISCLAIMER
This chart is for informational purposes only and is not for the purpose of providing legal advice. You should contact the applicable nursing board or your attorney for specific legal advice.

RESOURCES
AANP - www.aanp.org
The 2012 Pearson Report - www.webnponline.com
The Nurse Practitioner’s 24th Annual Legislative Update - www.tnpj.com

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Special Challenges: Perspective of the Educational Sector

• Education and training of health professionals is an important policy level for adjusting the supply of many health professions

• Efforts to increase (or decrease) production based on growing or declining demand can prove challenging
  o Depending on the length of the educational pipeline, it can take years to produce more graduates in response to immediate demand
  o Also challenging to scale back production when there is concern about surpluses

• Difficult to get educators and providers to work collaboratively to assure that graduates have the skills needed to function effectively in the evolving health care delivery system
Special Challenges: New Technologies

• Impacts of technological innovations include
  o Better diagnostic capabilities
  o New treatments for diseases that were previously considered untreatable
  o Reducing treatment costs
    - Less invasive surgery
  o Increased use of telehealth and teledentistry services to increase access to needed services

• Impacts of technological innovations on health workforce are not always well understood
Special Challenges: Data Limitations

• Relevant data are essential for health workforce analysis
• It is critical to understand the limitations of the data that are used
  ○ Inconsistent variable definitions
  ○ Small sample size
  ○ Large number of missing responses
  ○ Inaccuracies in data entry
  ○ Inconsistencies in data cleaning
• Limitations don’t always preclude using these data, but limitations must be acknowledged
Special Challenges: Looking Beyond Data

- Understanding contextual issues
  - Impact of health insurance on demand for and utilization of health services
    - Patients who are insured are more likely to have a medical home, with a regular primary care practitioner
    - Patients who are uninsured are less likely to have preventive and primary care visits and more likely to seek care in emergency departments
  - Culture competence as a critical barrier to the provision of effective health care
    - Difficult to measure
    - Recognizing the value of health workforce diversity as a strategy to promote cultural competence
Questions?

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