# 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
  - Considers issues associated with primary data collection
  - Identifies key secondary data sources
  - 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
  - Shift in focus from acute care to primary care and prevention
  - o Greater concern with cost, quality and access
  - Growing attention to population health
- Now we ask broader research questions
  - What do patients need?
  - What are the best workforce strategies to deliver needed services?



# **Organization of the Guide**





### **Two-Part Webinar Series Introducing the Guide**

- Today's webinar
  - Measures, methods and models
  - Special challenges for health workforce research
- Second webinar on December 7<sup>th</sup>
  - Primary workforce data collection
  - Review of sources of secondary data that are used for workforce research
  - Strengths and weaknesses of these secondary data sources
  - Examples of health workforce research using these data sources



# Measures, Methods, and Models



# **Chapter 3: Health Workforce Analysis**

- Basic Terminology
  - o Supply, demand, need
  - Shortage, surplus, maldistribution
  - $\circ$  Indicators of shortage
    - Direct measures
    - Indirect measures
- Framework for health workforce analysis



### A Framework for Health Workforce Analysis

Study purpose	
Goal(s) for health	Overarching goal(s)/purpose(s)
Objective(s)	Specific objective(s)
Profession(s)	Specific profession(s)/specialty(ies)/occupation(s)
Study characteristics	
Theme	Supply, demand/need, adequacy of supply
Sophistication	Basic, intermediate, advanced
Methods	Counts, ratios, comparisons and benchmarks, modeling
Study data	
Geography	Units, addresses/locations of practices, migration patterns
Type of data source	Existing datasets, administrative records, surveys, interviews, reconciling differences
Data elements	<u>Supply characteristics:</u> demographics, education, credentialing, practice <u>Demand characteristics</u> : population demographics, health status indicators, health service utilization
Sampling	Universe, probability sample, nonprobability sample



# **Study Purpose**

- Overarching goals/study purpose
  - e.g., assessing the adequacy of the behavioral health workforce
- Specific objectives
  - e.g., determining the number of behavioral health workers required to serve a population
- Specific health professions
  - e.g., psychiatrists, psychiatric nurse practitioners, psychologists, social workers, case managers...



# **Study Characteristics**

- Theme
  - Supply, demand and/or need, adequacy of supply
- Sophistication
  - o Basic, intermediate, advanced
- Methods
  - o Counts, ratios, comparisons, benchmarks, modeling, etc.



### WORKFORCE DEMAND/NEED

### WORKFORCE SUPPLY



Health Workforce Analysis Hierarchy



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- 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

o Universe, probability sample, nonprobability sample

Geography



# **Understanding Your Data**

### Estimated Numbers of Physicians in New York, 2010





### **Study Parameters**

- Geography
  - $\circ$  Units
    - States, counties, ZIP Codes, etc.
  - $\circ$  Address
    - Practice address, mailing address, billing address
  - Migration patterns
    - Provider and patient



### **Primary Care Health Professional Shortage** Areas (HPSAs) in New York



# Primary Care HPSAs in New York City





Basic	Intermediate	Advanced					
Practitioner Supply							
Counts of Practitioners of Interest for the State, Counties, etc.	Comparisons of State Counts and Rations to Those for Other States and US Averages	Projections of Practitioner Suppy					
Practitioner per Capita Ratios for Counties and Other Geographies	Historical Trends of Practitioner Supply for the State, Counties, etc.	Multivariate Analyses of Aspects of Supply (eg, Specialty Choice, Job Change, Retirement)					
Counts of New Entrants to or Exits from a Profession	Distribution of Practitioners by Practice Characteristics (eg, By Specialty or Settings)						
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 Dem	nand or Need					
	Comparisons of Supply and Demand to Identify Areas and Populations with Unment Needs	Comparisons of Practitioner Supply and Demand Projections					
	Assessment of Adequacy of Supply for Settings and Regions	Analyses to Identify Contiguous Regions w/ Shortages and "Rational Service Areas"					
	Indicators of Unment Need and Problems (eg, Ambulatory Care Sensitive Conditions)	Multivariate Analyses of Factors Related to Adequacy of Supply (eg, Insurance)					

Health Workforce Analysis by Theme and Level of Sophistication



# 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



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.

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South Carolina Health Professions Data Book

Office for Healthcare Workforce Analysis and Planning

Charleston Health Profession Shortage Area Designations: Primary Care: Partial Mental Health: Partial	Dental Care: Par	tial	MSA State AHEC Reg DHEC Reg Perinatal	us: M gion: Lo gion: Lo Region: Lo	etropolitan owcountry ow Country ow Country	
Physicians						4
Fotal Physicians Whose Primary Practice is in This	Area 2,832					
Family Practice	199		Dentist	s and Hyg	ienists	
nternal Medicine	332		Dentists			
Obstetrics / Gynecology	115		Dental H	ygienists		
Pediatrics	189		Dental Te	echnicians		
General Surgery	111					
All Other Physicians ( Specialists )	1,803		Other H	lealth Pro	fessions	
Physicians Per 10,000 Population	77.6		Pharmac	ists		
Primary Care Physicians Per 10,000 Population	22.9		Pharmac	y Techniciar	าร	
Federal Physicians	83		Physical	Therapists		
Nurses			Physical	Therapy Ass	sistants	
Registered Nurses	6 347		Occupati	onal Therap	v Accietante	
Certified Nurse Midwives	27		Physician	Accietante	y 713313141113	
Nurse Practitioners	270		Respirato	ry Care Pra	ctitioners	
Certified Nurse Anesthetists	153		Ontometr	rists	ottioners	
Clinical Nurse Specialists	20		optomoti			
Licensed Practical Nurses	827					
		Age:	0 - 19	20 - 64	65 +	Total
		White	50,284	158,446	36,348	245,078
Demographics		Black	30,630	63,922	12,693	107,245
Estimated Population in 2012		Other	4,258	7,760	821	12,839
		Total	85,172	230,128	49,862	365,162
		% by Age	23.3%	63.0%	13.7%	100%

### Vital Statistics and Health Status Indicators

	NT COMP. 2017 48-04 50-040.000	
Resident Births / Deaths	4,685	2,880
Total Pregnancies: # / Rate	5,767	73.6
% 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 $\ge$ 25)		58.3

#### 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

342 309 20

% by Race 67.1% 29.4% 3.5% 100%



### 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

Results

### 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. Chisquare tests were performed to identify statistically significant trends.





• The percentage of male LPNs increased from 7.6% to 8.6% (p=0.07).



• The increase in long-term care employment was largely due to a 57.7% increase of LPNs in home health (p=0.00).

#### Distribution of Employed LPNs by Long-Term Care Setting



• The number of Hispanic/Latino and Asian LPNs increased by 27.3% and 13.5%, respectively (p=0.00).

Distribution of Employed LPNs by Race/Ethnicity

#### 800,000 700.000 675 918 E35 074 600.000 500,000 434.350 388.387 400.000 300,000 161,506 152,210 200,000 100,000 54 04 6,540 4,867 0 White Hisp./Lat. Blk./Afr. Asian 2+ races Other Total Amr. 2008 2013

### Implications

- Shifts away from hospital employment may indicate lower demand for LPNs by hospitals, possibly because:
  - Hospitals are striving to increase the education and skill level of their nursing workforce, and thus preferring to hire registered nurses (RNs).
  - 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 longterm 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



Assessment of Relative Demand by Specialty



# 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
  - Substantial unmet need for health services
  - Development of more effective diagnostic and treatment protocols
  - Need for more cost-effective workforce strategies to increase access to needed services
- Examples:
  - Dental therapists and advanced practice dental hygienists
  - Interventional radiology
  - Growing use of unlicensed workers, including care coordinator, patient navigator, case manager, etc.
- Issues
  - Lack of standardization in titles, qualifications, educational requirements
  - $\circ\,$  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



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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
  - Depending on the length of the educational pipeline, it can takes years to produce more graduates in response to immediate demand
  - 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
  - Better diagnostic capabilities
  - New treatments for diseases that were previously considered untreatable
  - Reducing treatment costs
    - Less invasive surgery
  - 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
  - ${\scriptstyle \circ}$  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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