



Center for Interdisciplinary  
Health Workforce Studies

# Nursing Webinar Series

*Two States' Experiences Using HRSA's Web-Based  
Nursing Supply and Demand Model*



# History and Purpose of the HRSA Web-Based Nursing Model

- Over the past several decades, HRSA has made a commitment to help state workforce researchers and planners via data collection, projections/research, technical assistance
- This commitment intensified around 2003 when RWJF provided seed money for starting state nursing workforce centers (“Colleagues in Caring Program”)
  - > State workforce centers had access to nurse-related data, but limited resources to use the data to forecast future supply and demand
- HRSA has made previous version so the nursing supply and demand models available to researchers on different platforms (FORTRAN, FileMaker Pro software, now web-based)
- Goals
  - > Allow states to use their own data—which in many cases is more reliable than data available from national sources
  - > Allow state workforce researchers to update workforce projections more frequently than is possible for HRSA to do
  - > Perform sub-state level modeling to support local planning—consistent with HRSA’s mission to improve access to care for people living in disadvantaged and isolated communities
- This version of the web-based model was essentially a trial version and focused on supply

# Using HRSA's Nursing Supply Model Through the Years

Linda M. Lacey

Director, South Carolina Office for  
Healthcare Workforce

South Carolina AHEC Program Office

# First request for model: 1997

“Using the nursing supply model to estimate the future supply of Registered Nurses: A test and critique.” Presentation to the Association of Health Services Researchers conference, Los Angeles, CA. June 26, 2000.

**Validating HRSA’s Nurse Supply and Demand Models: A State-Level Perspective.** Jennifer G. Nooney and Linda M. Lacey. *Nursing Economic\$,* Vol. 25, No. 5, Sept.-Oct, 2007.

“South Carolina’s Critique of the HRSA (Nursing) Supply Model” presentation (by Nicole McCleary) at the National Forum of Nursing Workforce Centers Conference. Orlando, FL. May 2016

# Improvements over the years

- ∞ Loading data into the model
  - Fortran vs. Excel
- ∞ Making the model more easily available
- ∞ Better documentation about model assumptions and data sources/dates



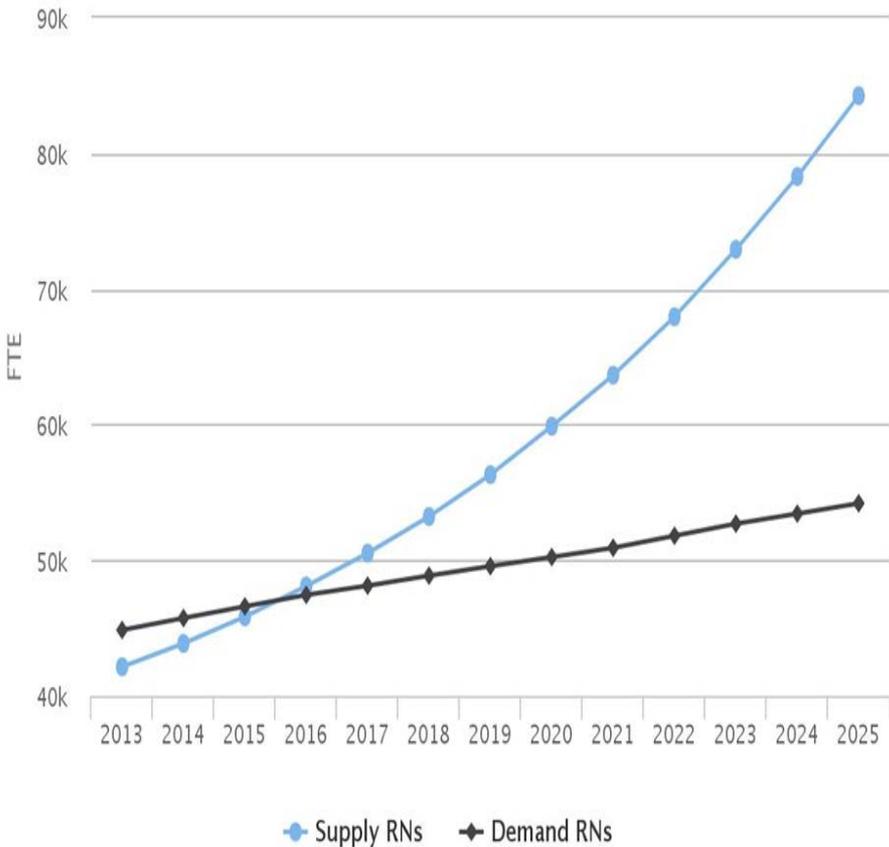
# Persistent problems through the years

- ∞ Lack of clarity about when model adjustments are applied
- ∞ ‘permanent’ adjustment factors that can not be changed to reflect state realities
  - Retirement rates by age and educational status
  - Work effort percentages by age/education/race
  - Education upgrade estimators



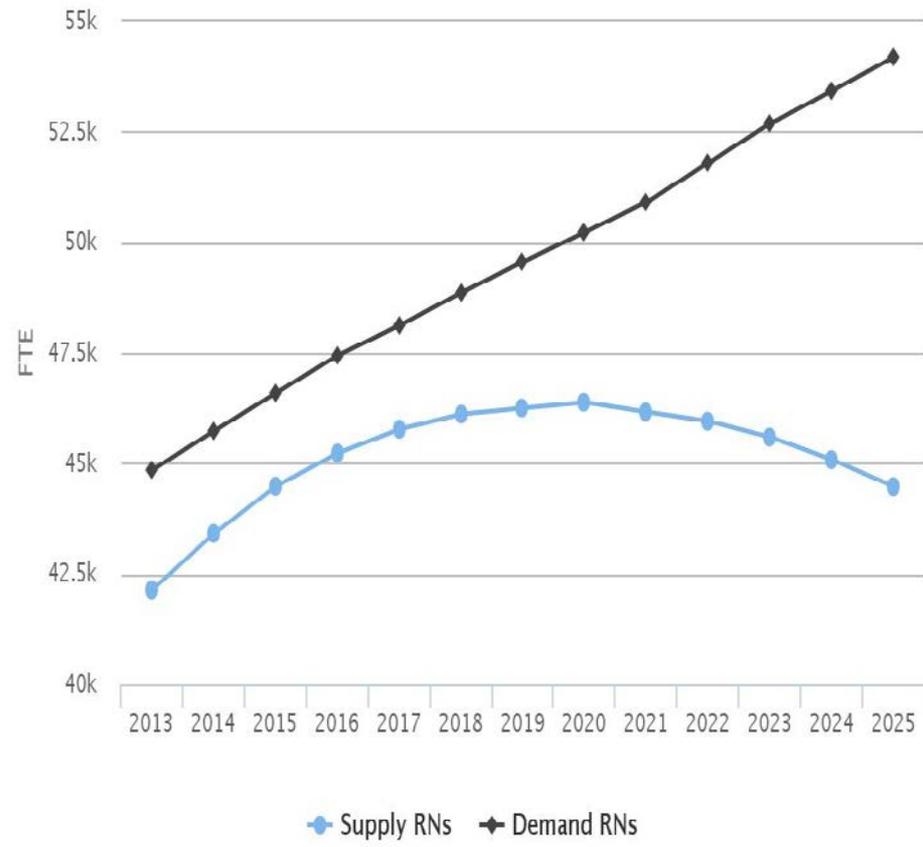
# Pet Peeve - Inconsistent Axes

Comparison of South Carolina RN Supply and Demand



High Graduates – 10% more new graduates each year

Comparison of South Carolina RN Supply and Demand



Low Graduates - 10% fewer new graduates per year

# State-Level Output Still Not Working Correctly

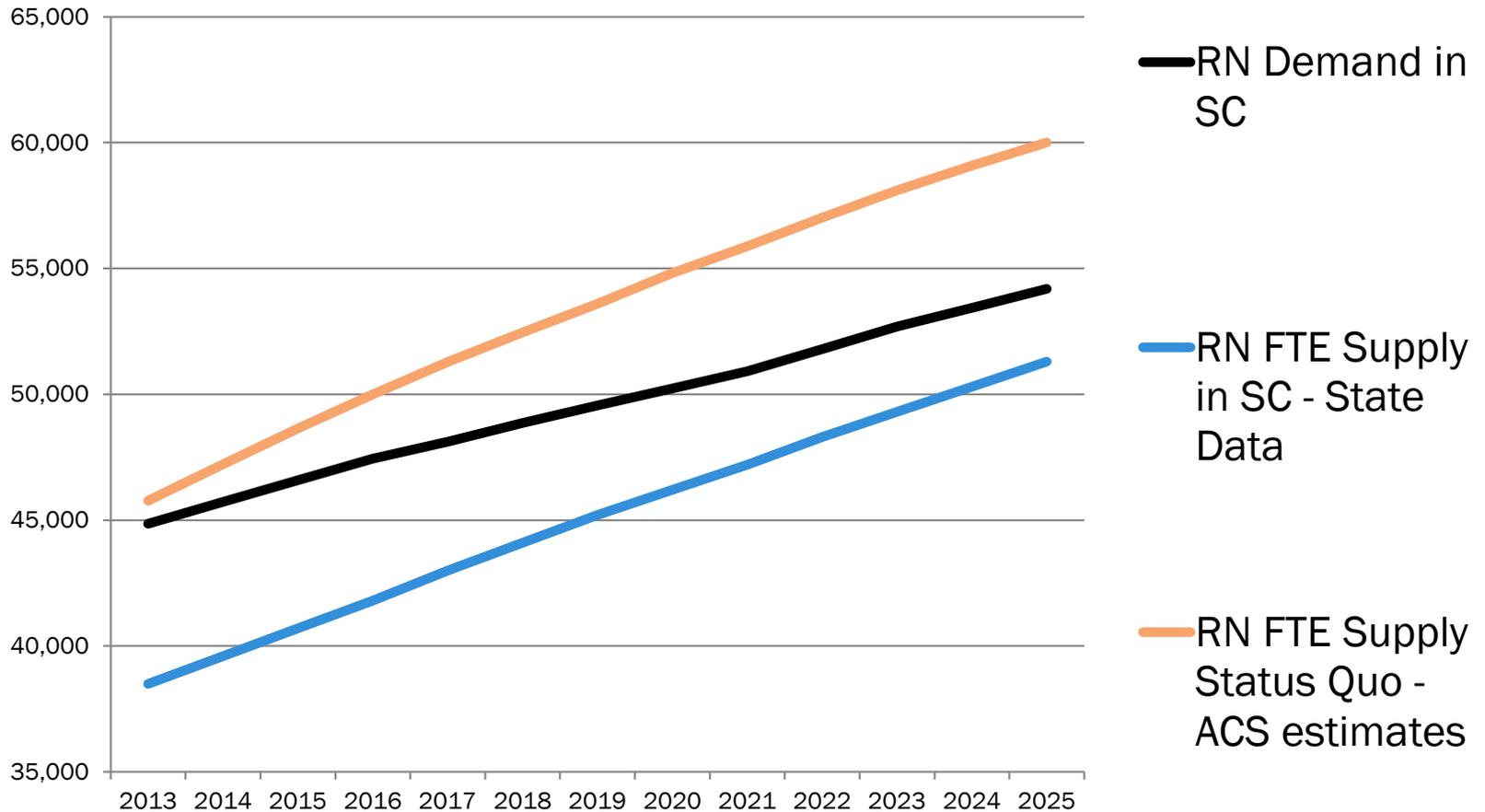
## Nursing Supply Model - Delayed Retirement Scenario

State: South Carolina

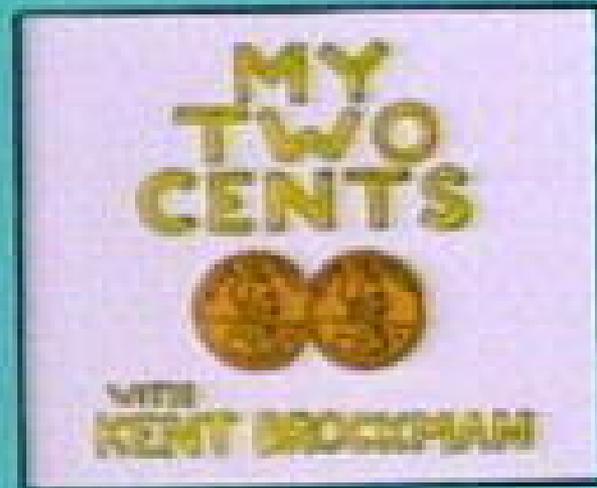
RN projected nurse supply by year						
Year	Headcount	Active	New Entrants	Separations	Hours Worked	FTE
2012	46,950	45,152	0	0	0	0
2013	48,491	46,666	2,407	867	1,671,543	46,735
2014	50,138	48,290	2,435	791	1,728,165	48,318
2015	51,725	49,822	2,431	846	1,781,832	49,818
2016	53,218	51,276	2,429	937	1,832,444	51,233
2017	54,694	52,710	2,448	973	1,881,792	52,613
2018	56,075	54,034	2,375	996	1,928,811	53,928
2019	57,363	55,266	2,391	1,107	1,971,103	55,110
2020	58,716	56,564	2,526	1,176	2,016,746	56,386
2021	59,976	57,758	2,459	1,200	2,057,403	57,523
2022	61,168	58,904	2,466	1,275	2,096,546	58,617
2023	62,261	59,976	2,449	1,359	2,135,662	59,711
2024	63,524	61,192	2,528	1,267	2,176,363	60,849
2025	64,495	62,132	2,367	1,400	2,209,646	61,779

Scenario Parameters	
Scenario	Delayed Retirement
FTE Avg. Hours Worked (RN)	35.7666671
FTE Avg. Hours Worked (LPN)	34.9995868
Base Year	2012
Retirement change (years)	2
Avg. hours modifier (factor)	1
Simulation Period	13
LPNs added in 1st year	64000
AD level RNs added in 1st year	87700
BA level RNs added in 1st year	62500
Scenario Description	like baseline but age for exiting the workforce is increased by 2 years

# Impact of having state data



ETW | one



# One State's Experience Using HRSA's Web-based Model

The Importance of State Level Data

Pamela Lauer, Texas Center for Nursing Workforce Studies

# Texas Center for Nursing Workforce Studies

- Established in 2004 by TX legislature
- Department of State Health Services
- 21 member advisory committee of nursing leaders
- 5 staff people
- Focus on data collection and reporting

# Available data

- TX Board of Nursing licensure data for RNs, VNs, APRNs
  - Demographics: sex, race, age, education
  - Geographical: residence and practice locations
  - Employment status, setting, position, specialty

# Available data

- Nurse Staffing Data
  - Hospitals (2006-2016)
  - Long Term Care (2008, 2012-2016)
  - Home Health (2011-2015)
  - Govt Public Health (2013-2015)
- Filled and vacant positions, separations, temp positions, methods of interim staffing, recruitment and retention strategies, consequences of inadequate staffing, hiring practices, transition to practice, etc.

# Available data

- Education data from professional, vocational, and graduate nursing education programs
  - Student demographics
  - Faculty numbers and demographics
  - Enrollment, graduation, and admission numbers
  - Curriculum information
    - Length, clinical hour requirements, advanced placement options, program tracks, etc.

# Projecting Supply and Demand in TX

- Last projections 2005
- Barriers to updating projections
  - Staff resources
  - Funding
  - Validated models
- In late 2015, we contracted to put TX level data into the HRSA model

# Using HRSA's Web-based Model

- Became available in February 2016
- Available to everyone
- State-level data can be input
- Forecasting models as analytical tools
  - Projections based on survey data
  - Limited inputs for state-level data
  - Dated

# Web-based v TX Model

Supply - RN FTE						
	TX Model	HRSA Web-based Model	Web-based Model with 2012 TX data	Web-based Model with 2014 TX data	Web-based Model with 2015 TX data	Actual TX licensure #
2012	-	0	0	-		173,534
2013	-	200,181	176,954	-		182,512
2014	193,568	208,788	185,456	0		191,364
2015	200,663	217,665	194,316	186,536	0	200,195
2016	208,077	226,017	202,653	194,964	193,207	210,569
2017	215,118	234,048	210,599	203,299	201,520	
2018	221,651	241,910	218,494	211,507	209,759	
2019	227,737	249,345	226,123	219,302	217,700	
2020	233,526	256,414	233,556	226,944	225,357	

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# Web-based v TX Model

## Supply - RN FTE

	TX Model		HRSA Web-based Model		HRSA Web-based Model with 2012 TX data		Actual TX licensure #
	#	% diff*	#	% diff	#	% diff	#
2012	-		-		-		173,534
2013	-		200,181	9.7	176,954	-3.0	182,512
2014	193,568	1.2	208,788	9.1	185,456	-3.1	191,364
2015	200,663	0.2	217,665	8.7	194,316	-2.9	200,195
2016	208,077	-1.2	226,017	7.3	202,653	-3.8	210,569

\* % diff = difference from actual licensure #

# Web-based v Actual

3% Difference

# Importance of State-Level Data

- More accurate data in national forecasting models
- Can develop your own model
- Ability to assess numbers from other surveys, reports, etc.
- When you don't have state-level data
  - Rely on what's available
  - Understand and educate others on how to best interpret the numbers

# Contact Information

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# HRSA's Web-Based Nursing Supply Model: Limitations and Improvements

Health Workforce Technical Assistance Center Webinar  
March 23, 2016

**Arpita Chattopadhyay**

**Chief, Workforce Analysis Branch**

**National Center for Health Workforce Analysis**

**Bureau of Health Workforce (BHW)**

**Health Resources and Services Administration (HRSA)**



# Rationale for Web-based Model for Nursing

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- **State variations in nursing regulations**
- **Availability of licensure data**
- **Workforce policies determined by states**
- **Need for well distributed workforce**



# Challenges in Projecting Future Workforce

- Projecting the future based on the past
- Uncertainty of many possible changes in delivery and financing
- Extent of supply and demand interaction
- Cost/resources needed for systematic assessment of each determinant of supply and demand
  - Inter-state migration and the role state laws
- Results and interpretation driven by assumptions
- The unit of analysis is critical; state averages can mask enormous variations within the units being studied (communities); What is the appropriate level?



# Version II underway

- **More stable application with Improved processing time**
- **Better and secured new registration/log in process**
  - Robot check
- **Emphasis on supply model**
- **Enhanced User Interface**
  - **Simpler design and organized projection model menu options**
  - **About the model screen**
  - **Announcement and updates screen**
- **User testing: Use e-mail link in the application to volunteer**



# Connect With Us

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