Maldistribution of the Population Health Nursing Workforce in North Carolina

Jacqueline Nikpour, BSN, RN

PhD Student, Duke University

Erin Fraher, PhD, MPP

Director, Program on Health Workforce Research & Policy

UNC | THE CECIL G. SHEPS CENTER FOR HEALTH SERVICES RESEARCH

Funding Disclosures

This work was funded through the North Carolina Board of Nursing. The content, conclusions and opinions expressed in this presentation are the author's and should not be construed as the official policy, position or endorsement of my funders, employers or the University of North Carolina at Chapel Hill.
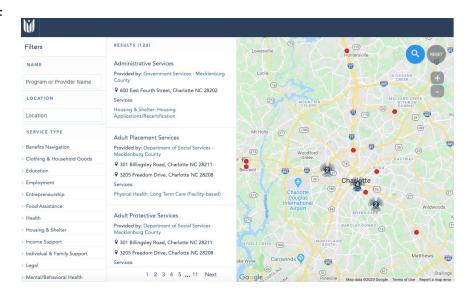
Background

Shifting care delivery & payment to address social determinants of health (SDOH)

North Carolina: 1115 waiver to address SDOH

> NC Care 360
>
> Healthy Opportunities Pilots

Nurses have unique role in this, but unclear if workforce is in place

Purpose

Describe the demographic, education, practice and geographic characteristics of the nursing workforce in population health settings

Determine how this workforce supply and distribution aligns with population-level need.

Methods

Retrospective cross-sectional analysis of nurses (RNs and LPNs) in population health settings

Merged data from 2018 NC Licensure file with County Health Rankings' outcomes
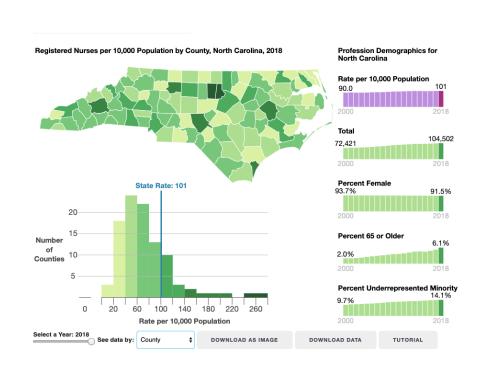
Units of analyses

Statistical procedures

Data Sources – NC Licensure Data (2018)

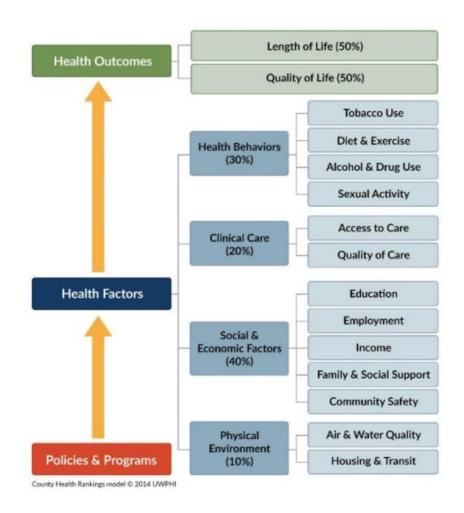**Sample**: 93,571 RNs and 15,886 LPNs in active practice in NC

Settings: hospital, <mark>ambulatory care, public health, community health, school-based health, long-term care, home health, correctional facility, occupational health</mark>, regulatory or policy agency, insurance, academic setting, or other
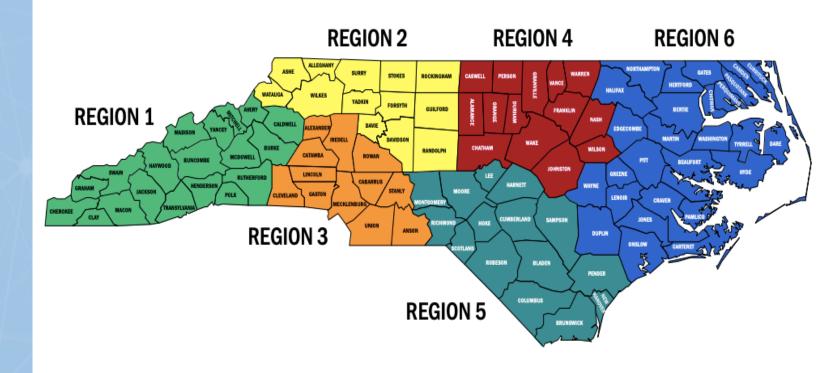
Data Sources – County Health Rankings (2018)

County Health Rankings model © 2014 UWPHI

Medicaid Regions

Findings:
RN Distribution Across Settings

Setting	n	%
Ambulatory care	10,985	11.74
Public health	2,018	2.16
Occupational health	649	0.69
Nursing home, extended care, or assisted living	4,819	5.15
Home health or hospice	6,130	6.55
Correctional facility	728	0.78
School health service	1,541	1.65
Community health	1,437	1.54
Total RNs in SDOH settings	28,307	30.25
Hospital	51,401	54.93
Other	13,863	14.82
Total	116,234	100.00

RN Demographics & Education

Characteristic	Population Health Settings (n, %)	Hospital (n, %)	x^2	p
% female	26,808 (94.7%)	46,011 (89.5%)	622.9	< 0.01
% white	27,442 (81.5%)	50,897 (81.1%)	0.28	0.59
% Bachelor's degree or higher	14,255 (50.4%)	30,458 (59.3%)	586.7	< 0.01

RN Geographic Distribution

Population Health RNs In Each Medicaid Region							
Setting	Medicaid Region						
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Total
Ambulatory care	1,262	2,000	2,879	3,321	1,177	1,143	11,782
Public health	378	308	375	430	316	360	2,167
Occupational health	88	149	142	140	70	120	709
Nursing home	1,374	919	952	836	584	698	5,363
Home health	1,341	1,157	1,360	1,068	938	836	6,700
Correctional facility	89	39	76	352	110	126	792
School health service	262	204	382	278	212	285	1,623
Community health	235	254	305	350	168	243	1,555
Total RNs in population health settings	5,029	5,030	6,471	6,775	3,575	3,811	30,691
% of RNs in population settings	16.4%	16.4%	21.1%	22.1%	11.6%	12.4%	100%
Total Medicaid beneficiaries*	139,515	278,206	371,813	211,229	272,454	218,960	1,492,177
Median Income (20th percentile)	$17,304	$17,700	$21,050	$19,935	$16,817	$17,823	

*Medicaid beneficiaries numbers from https://files.nc.gov/ncdma/Map-Graphic-3.25.19-changes--002-.pdf

RN Distribution to Meet Needs

Relationship between supply of nurses in population health settings and measures of need, using bivariate Spearman correlations		
	Nurses in Population Health Settings	
	r	p
Quality of Life		
% of people reporting poor or fair health	-0.29	<0.01*
Average # of physically unhealthy days	-0.34	<0.01*
Average # of mentally unhealthy days	-0.33	<0.01*
Health Behaviors		
Adult smokers	-0.23	0.02*
Physical inactivity	-0.31	<0.01
Access to exercise opportunities	0.3	< 0.01
% of adults reporting binge drinking	0.47	<0.01
Alcohol-impaired driving deaths	0.82	< 0.01
Sexually transmitted infections	0.28	< 0.01
Teen births	-0.20	0.05
Clinical Care		
% uninsured	-0.22	0.02
Preventable hospital stays	-0.32	< 0.01
Social and Economic Factors		
Some college	0.95	< 0.01
Unemployment	-0.39	< 0.01
Children in poverty	-0.44	< 0.01
Violent crime	0.30	< 0.01
Injury deaths	-0.27	< 0.01
Physical Environment		
Air pollution (particulate matter)	0.59	< 0.01

LPN Distribution Across Settings

Setting	n	%
Ambulatory care	2,161	10.8
Public health	347	1.7
Occupational health	143	0.7
Nursing home, extended care, or assisted living	7,911	39.4
Home health or hospice	2,976	14.8
Correctional facility	527	2.6
School health service	128	0.6
Community health	315	1.6
Total LPNs in SDOH settings	**14,508**	**72.2**
Hospital	1,453	7.2
Other	4,124	20.5
Total	20,085	100.00

THE CECIL G. SHEPS
CENTER FOR
HEALTH SERVICES
RESEARCH

LPN Demographics & Education

Characteristic	Population Health Settings (n, %)	Hospital (n, %)	x^2	p
% female	10,804 (93.8%)	936 (89.2%)	31.8	< 0.01
% white	6,897 (60.2%)	634 (61%)	0.2	0.6
% who receive a Diploma or higher in nursing	5,771 (52.3%)	485 (49.3%)	3.8	0.05

LPN Geographic Distribution

Population Health LPNs In Each Medicaid Region							
Setting	Medicaid Region						
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Total
Ambulatory care	186	398	414	421	405	200	2,024
Public health	28	35	42	66	94	62	327
Occupational health	9	21	32	14	33	21	130
Nursing home	966	1,259	1,650	1,421	1,174	980	7,390
Home health	206	512	802	514	486	308	2,828
Correctional facility	46	31	64	104	80	66	391
School health service	6	15	33	30	24	5	113
Community health	32	39	39	55	62	57	284
Total LPNs in population health settings	1,479	2,310	3,076	2,625	2,358	1,699	13,547
% of LPNs in population settings	10.9%	17.1%	22.7%	19.4%	17.4%	12.5%	100%
Total Medicaid beneficiaries	139,515	278,206	371,813	211,229	272,454	218,960	1,492,177
Median Income (20th percentile)	$17,304	$17,700	$21,050	$19,935	$16,817	$17,823	

*Medicaid beneficiaries numbers from https://files.nc.gov/ncdma/Map-Graphic-3.25.19-changes--002-.pdf

LPN Distribution to Meet Needs

Relationship between county-level supply of <u>LPNs</u> in population health settings and measures of need, using bivariate Spearman correlations

	Nurses in population health settings	
	r	p
Quality of Life		
% of people reporting poor or fair health	-0.22	0.02
Average # of physically unhealthy days	-0.31	<0.01
Average # of mentally unhealthy days	-0.29	<0.01
Health Behaviors		
Adult smokers	-0.19	0.05
Physical inactivity	-0.23	0.02
Access to exercise opportunities	0.23	0.02
% of adults reporting binge drinking	0.36	<0.01
Alcohol-impaired driving deaths	0.84	< 0.01
Sexually transmitted infections	0.33	< 0.01
Clinical Care		
% uninsured	-0.25	0.01
Preventable hospital stays	-0.26	< 0.01
Social and Economic Factors		
Some college	0.92	< 0.01
Unemployment	-0.29	< 0.01
Children in poverty	-0.38	< 0.01
Violent crime	0.35	< 0.01
Injury deaths	-0.24	0.02
Physical Environment		
Air pollution (particulate matter)	0.64	< 0.01

UNC

THE CECIL G. SHEPS
CENTER FOR
HEALTH SERVICES
RESEARCH

Major Take-Aways

- 30% of RNs were in a population health setting, compared to over 70% of LPNs

- RNs in population health settings more likely to be female & less likely to hold a BSN

- LPNs were more equitably distributed around the state than RNs

- At the county level, counties with more population health nurses performed better on a variety of health outcomes, as well as on socioeconomic, physical environment, and health behavior factors

Discussion

Workforce not well distributed across the state to meet population health need.

Implications for ability to roll out statewide programs

Implications in light of COVID-19

Implications for nursing education

Limitations

Missing settings

Not a predictive model

Primary employment

Dataset limitations

Thank You!

jacqueline.nikpour@duke.edu

UNC | **THE CECIL G. SHEPS CENTER FOR HEALTH SERVICES RESEARCH**