

**The National Health Service
Corps in Rural Counties:
A historical review and
impact assessment**

Robert L. Phillips, Jr. MD MSPH

The Robert Graham Center

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Purpose

To see if, thirty years later, there is evidence that the NHSC is fulfilling its mission

To review and evaluate the National Health Service Corps using existing public datasets--a low-cost and replicable approach to program evaluation

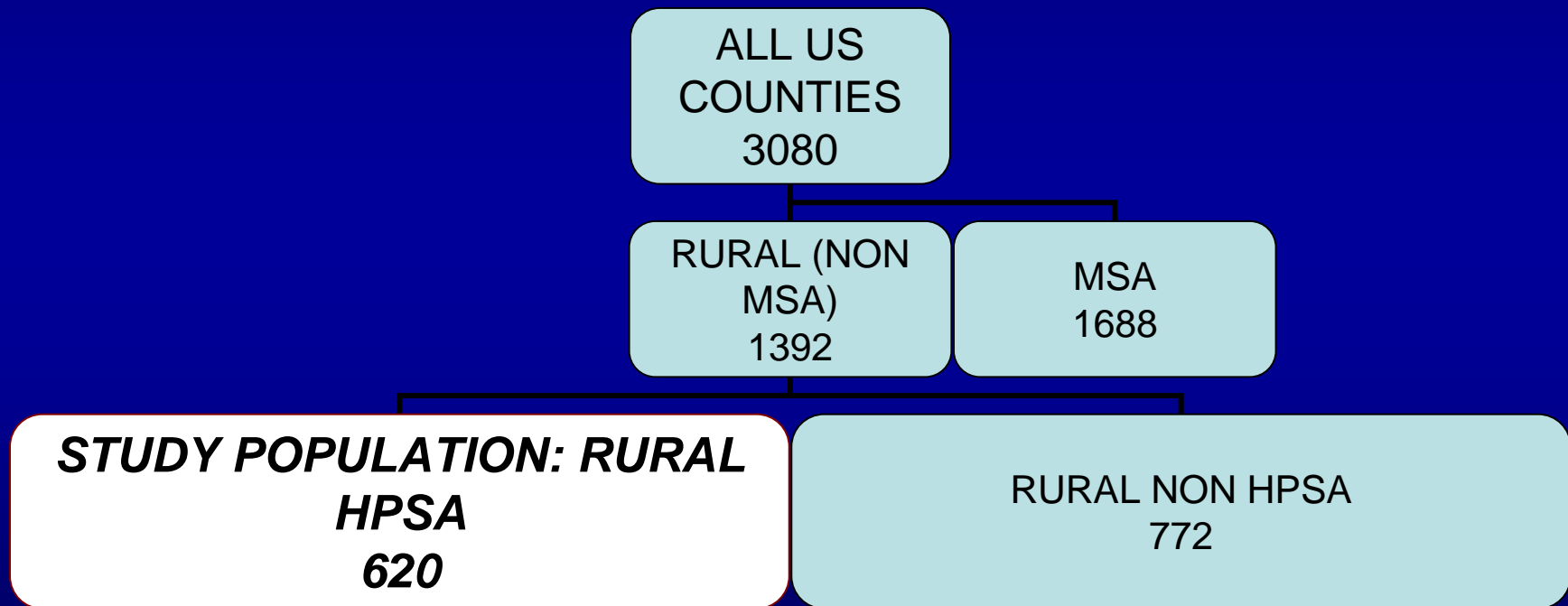
Purpose

- Products of this research were designed
 - (1) to help the NHSC learn from its past to become as effective as possible in the future,
 - (2) to understand the benefit of public investment in the NHSC, and
 - (3) to provide empirical evidence about the NHSC should anyone question its value
- The Graham Center is a private, NGO affiliated with the American Academy of Family Physicians, and undertook this research to at its own initiative

Focus

- All analyses include National Health Service Corps placements in *rural* whole-county primary care Health Professional Shortage Areas and U.S. territories, unless otherwise noted
- 63% of NHSC placements 1970-1999

Focus



Focus

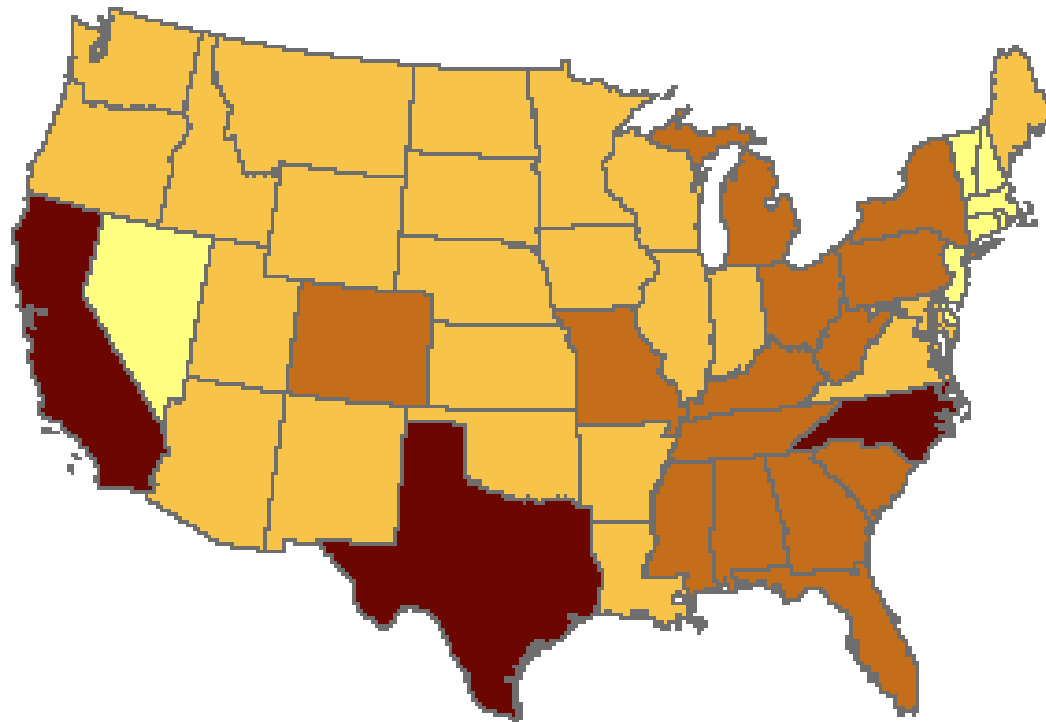
- Evaluation focused on three distinct areas:
 - (1) NHSC and other primary care workforces,
 - (2) populations served and their health, including self-reported health status and age standardized mortality ratios, and
 - (3) local economic impact

Methods

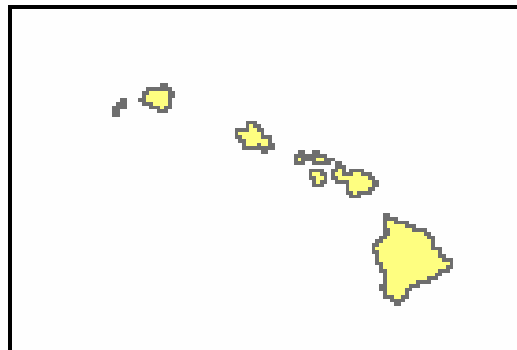
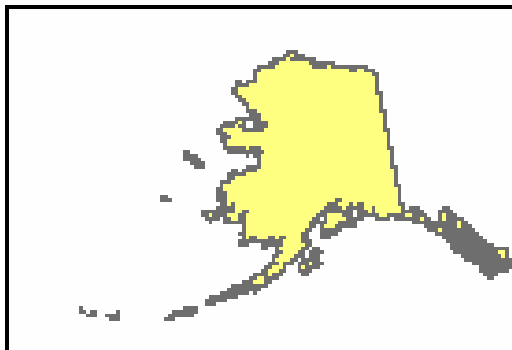
- Intersection of several national, public data:
 - NHSC data archives
 - Area Resource File
 - Census data
 - National Health Interview Survey

History

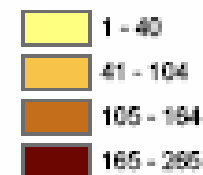
- 13,915 health professionals served the NHSC in rural areas 1970-1999
 - staffing 4504 NHSC sites in 1911 of the 2294 rural counties in the U.S
 - 30,660 person-years of service
 - peaked in 1986, 2746 personnel, 2025 person-years
 - 90% of all NHSC physicians were primary care



20% of rural NHSC sites are in 5 states: NC, CA, TX, FL, and TN



Number of Rural Active Staffed Sites Per State



Data Source: National Health Service Corps
 Prepared by the Robert Graham Center: Policy Studies in Family Medicine and Primary Care

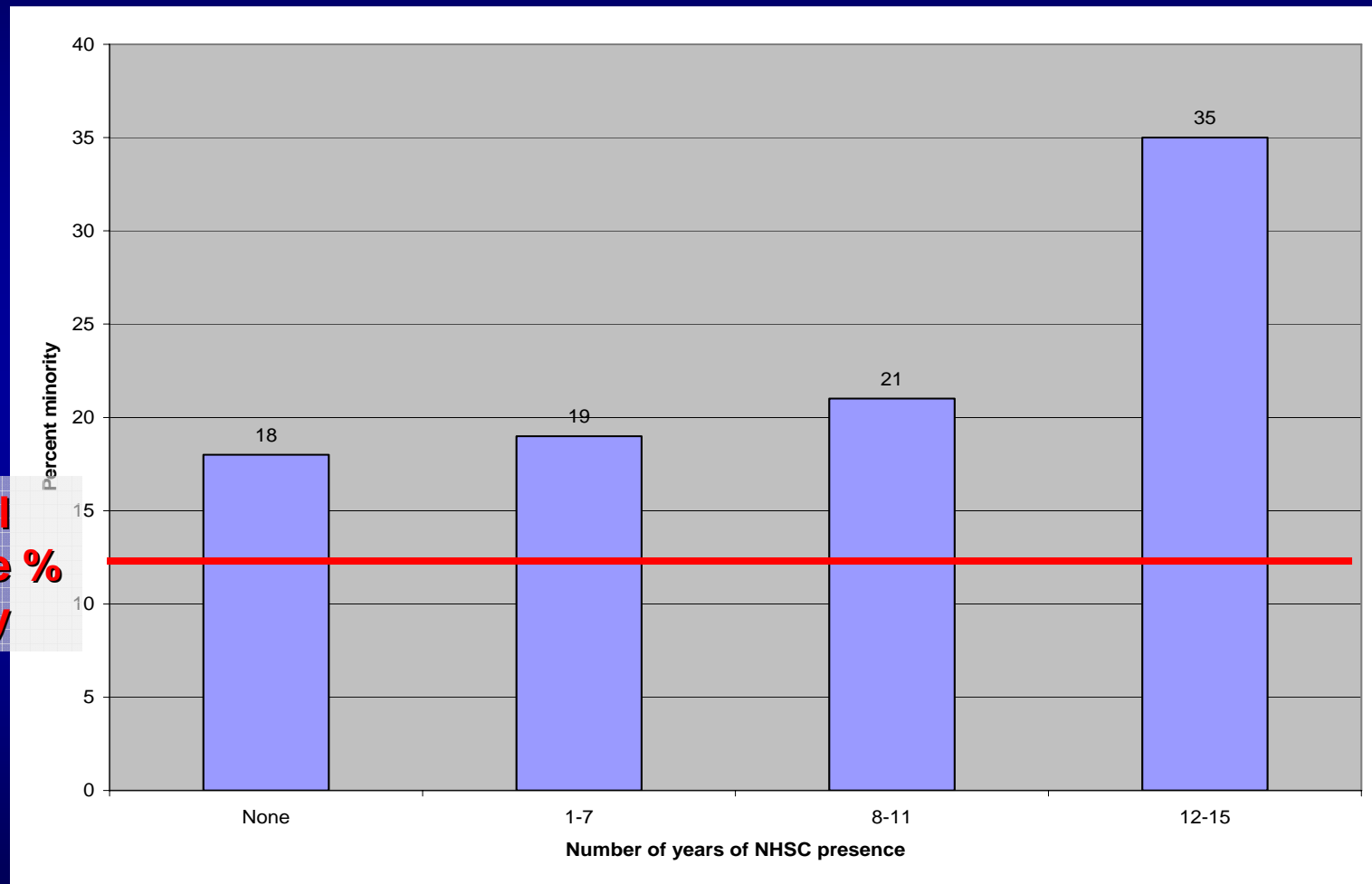
Discipline	Number of Clinicians	Percent of Primary Care Clinicians	Person Years[†]	Percent of Person Years
MD	8276	60	18,646.6	61
Dentist	1527	11	3487.3	11
DO	1446	10	3311.8	11
PAs	911	7	1597.7	5
NPs	904	7	1779.5	6
Nurse	260	2	615.3	2
Nurse Midwife	142	1	232.5	1
Social Worker	102	1	210.3	1
*Other	347	1	778.8	3
Total	13,915	100	30,659.8	101**

In the 30 years spanning 1970-1999, MDs and DOs comprised more than 70% of the NHSC workforce, with nurses, dentists, PAs and social workers representing most of the remainder

Specialty	Number of Physicians	Percent of Primary Care Physicians	Person Years[†]	Percent of Person Years
Family Medicine	4208	48	9646.3	48
General Practice	1946	22	4314.3	22
Internal Medicine	1777	20	4030.7	20
Pediatrics	846	10	1951.5	10
Total	8777*	100	19,942.8	100

In the 30 years spanning 1970-1999, family physicians and general practitioners comprised 70% of the NHSC primary care physician workforce, with internists and pediatricians representing 20 and 10 percent respectively

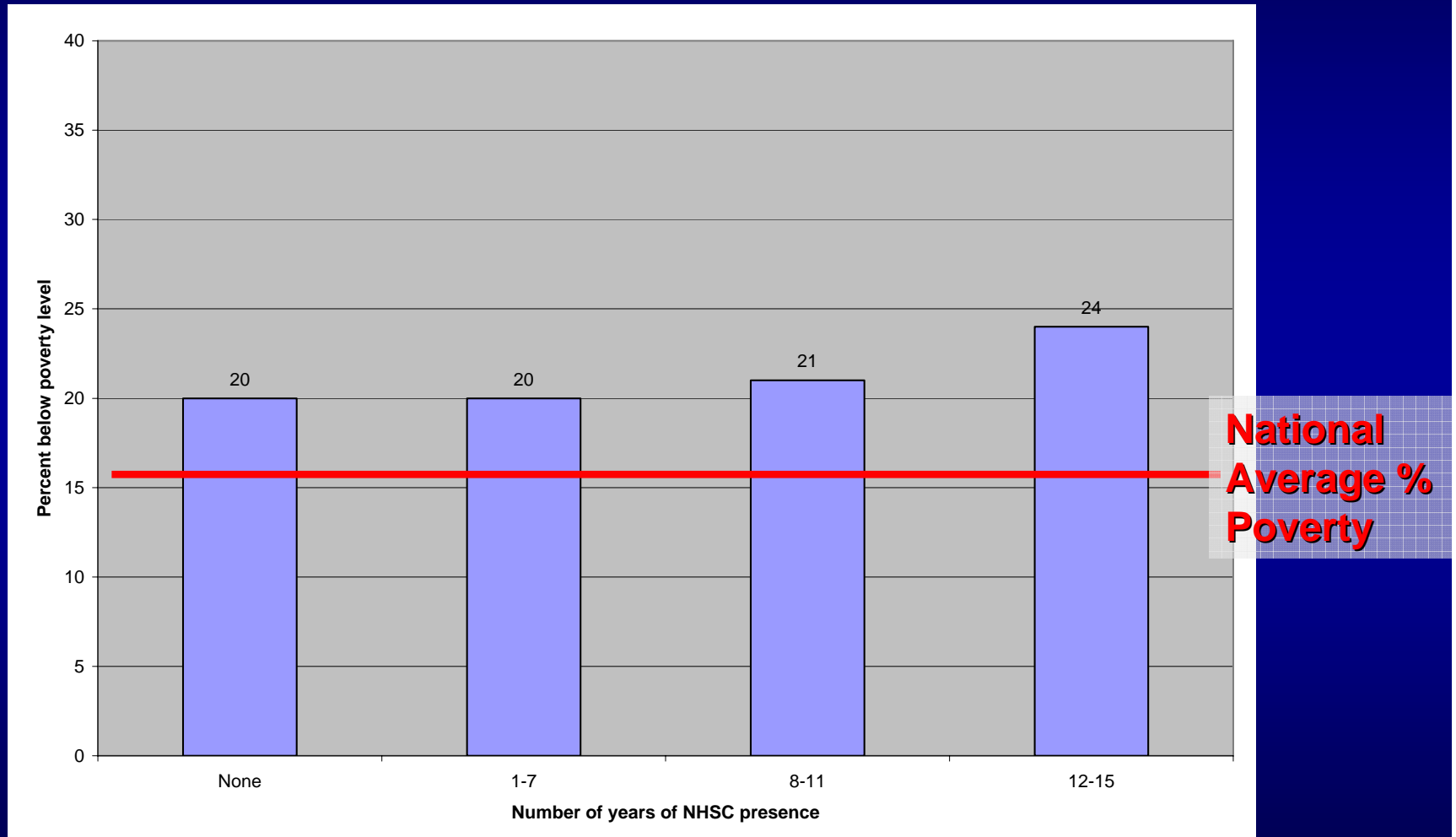
Percent of Rural HPSA County Population That Is Racial/Ethnic Minority by NHSC Presence, 1984-1998



**National
Average %
minority**

The NHSC has assigned its resources preferentially and delivered its most consistent service to counties with large minority populations.

Percent of Rural HPSA County Population Below Poverty by NHSC Presence, 1984-1998



The NHSC has assigned its resources preferentially and most consistently to counties with large populations living in poverty

Mean Rural County Primary Care Physician-to-Population Ratio

NHSC Presence, 1979-1984	Mean PCP per 10,000 1981	Mean PCP per 10,000 1986	Mean PCP per 10,000 1991	Mean PCP per 10,000 1996
Yes (n=141)	2.06	2.65	3.07	3.42
No (n=142)	1.76	2.03	2.07	2.31

How does NHSC staffing affect the physician workforce within communities?

- NHSC presence does not seem to prevent immigration of non-NHSC physicians
- May be due to some NHSC physicians remaining after their obligations or non-NHSC physicians remaining longer
- Mean physician to population ratio has increased at a greater rate in NHSC-served counties than in counties that never had a NHSC placement

How are NHSC resources associated with self-reported health status?

	Mean †Health Status	
	NHSC Presence	No NHSC Presence
1986 <i>NHIS respondents</i>	2.50* 1253	2.73* 257
1991 <i>NHIS respondents</i>	2.35 1345	2.41 2635
1996 <i>NHIS respondents</i>	2.37 1200	2.44 1646

Rural whole county HPSAs with a NHSC presence had better self-reported health than those without. All improved

How are NHSC resources associated with number of physician visits?

	Mean Number of Visits in Past 12 Months	
	NHSC Presence	No NHSC Presence
1986 <i>NHIS respondents</i>	3.95 1252	3.51 251
1991 <i>NHIS respondents</i>	4.52 1345	4.11 2638
1996 <i>NHIS respondents</i>	4.27 1202	4.36 1649

In 1986 and 1991, but not in 1996, residents of rural whole county HPSAs with a NHSC presence reported more physician visits than those in counties with no NHSC presence

How are NHSC resources associated with age standardized mortality ratios?

Years of NHSC Presence in Whole County HPSAs	SMR 1981-1983	SMR 1996-1998	% Improvement in SMR 1981-1998
No NHSC Presence (n=172)	.997	.947	5
1-7 Years NHSC Presence (n=293)	1.027	.987	4
8-11 Years NHSC Presence (n=84)	1.062	1.043	2
12-15 Years NHSC Presence (n=71)	1.086	1.036	5
Non-HPSA with No NHSC Presence (n=772)	*.993	*.942	5

How are NHSC resources associated with age standardized mortality ratios?

- All rural counties assessed, including whole county HPSAs with no NHSC presence, showed improvements in standardized mortality rates. Rural underserved counties with the most continuous NHSC presence showed gains similar to non-HPSA counties

How do NHSC resources impact local economies?

State	Primary Care Physicians	Sub-specialty physicians	Dentists	PAs/ NPs	*Total NHSC personnel
Total US Rural	541	97	204	402	1,244
11 rural states	54	19	23	48	143

11 most rural states: Alabama, Arkansas, Kentucky, Maine, Mississippi, Montana, New Hampshire, North Dakota, South Dakota, Vermont, West Virginia

How do NHSC resources impact local economies?

	Direct Impact	Indirect Impact	Induced impact	Total Economic Impact*
2 Person Staff				
Number of Jobs (FTE)	3,732	885	4,004	8,620
Economic Output	\$345,699,744	\$96,775,954	\$432,387,269	\$874,862,967
4 Person Staff				
Number of Jobs (FTE)	6,220	1,474	6,6735	14,367
Economic Output	\$576,166,272	\$161,293,265	\$720,645,487	\$1,458,105,024

In rural areas, NHSC clinicians are major contributors to local economies--up to 14,367 jobs and \$1.5 billion in economic impact

Conclusions

- For thirty years, the National Health Service Corps has been and continues to be an important contribution to the health and healthcare of underserved people in the United States
- The NHSC has devoted its resources to some of the nation's most challenging regions.

Conclusions

- The NHSC has relied on primary care clinicians, especially family physicians, to address its mission, and is positioned to make further contributions to caring for underserved people in the United States

Conclusions

- These clinicians also make substantial contributions to rural economies
- Further contributions of the National Health Service Corps can be monitored using existing public data sets

National Health Service Corps Staffing and the Growth of the Local Rural Non-NHSC Primary Care Physician Workforce

Pathman DE, Fryer GE, Phillips RL, Smucny J, Miyoshi T, Green LA (2006)

The Journal of Rural Health 22 (4), 285–293.

Changes in Age-Adjusted Mortality Rates and Disparities for Rural Physician Shortage Areas Staffed by the National Health Service Corps: 1984–1998

Pathman DE, Fryer GE, Green LA, ; Phillips RL

The Journal of Rural Health, Volume 21, Issue 3: 214-220