

The Distribution of Physicians, Advance Practice Nurses, and Physician Assistants In Iowa

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The geographical distribution of health care providers across populations is of interest to American health policy researchers. While population-to-provider ratios may indicate adequate availability of medical providers in the overall population, providers tend to be distributed in a way that results in a surplus of providers in some areas and a scarcity in others. One of the rationales for the founding of the physician assistant (PA) profession was to address a longstanding maldistribution of physicians. How this is being undertaken has not been well verified. We wondered whether one of the rationales for the development of PAs—rural deployment—was being realized. This study set out to answer the question of whether nonphysician clinicians are providing care in rural areas and at what rate.

In many instances, the geographic distribution of PAs, compared to physicians and advance practice nurses (APNs), is not well known other than in terms of the number of providers by type licensed in individual states. Further investigation of this topic has been hampered by incomplete databases of health care professionals, methodological differences in data collection, and incomplete reporting, which make these professions all but incompatible for comparison. A lack of detailed geographical practice specificity within many data sets also hampers a comparison of the results.

The geographical distribution of

PAs and physicians in Iowa was last compared by Dehn and Asprey in 1995.¹ This study illustrated that PAs were much more likely than physicians to practice in a primary care specialty, a smaller community, and in an underserved area. One of the shortcomings was that the comparison data sets were derived from survey data collected by different investigators using different methodologies at different times. In another example, Pedersen and colleagues calculated the productivity of PAs, physicians, and nurse practitioners utilizing survey data collected by a single investigator.² One of the results of their study indicated that in Utah, 26% of PAs practice in the least populous counties, containing 23% of the state's population.

In 1995 the Iowa legislature mandated that the University of Iowa Office of Statewide Clinical Education Programs build and maintain accurate and detailed databases of health care professionals practicing in Iowa in order to study and track their distribution. These databases have been constructed and carefully maintained using data from multiple sources and provide a more reliable census record of health care professionals practicing in Iowa. Because the data is collected, compiled, and updated for all professions in a systematic manner, the database allows for valid comparisons between different health care professions.

The Iowa data were obtained in November 2005 for physicians,

Feature Editor's Note:

America's use of a pluralistic health care system requires examining medical workforce issues on the national, state, and institution level. The distribution of providers in the health care workforce in different geographic regions of the country varies widely. Largely unheralded are the contributions that PAs and NPs bring to improving health access on the state level. In this issue of *Brief Reports*, Erin Fraher, a health policy analyst with the Shep Center in North Carolina, and Richard Dehn, a clinical professor at the University of Iowa Physician Assistant Program, quantify some of the remarkable changes in PA and NP delivery of care in North Carolina and Iowa.

— Roderick S. Hooker

The Abstracts and Brief Reports section publishes short, focused communications on a research endeavor relevant to PA education or behavior. Submissions should be limited to approximately 1,500 words and one or two exhibits (tables or illustrations). The intent of this feature is to promulgate new information and provide a platform for additional research. Authors desiring to contribute to Abstracts and Brief Reports should forward submissions (with a copy to journal staff at jpae@PAEAonline.org) to:

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Table 1. County Population Stratified by Highest Population to Least Population – Divided into Quartiles

Grouping	Group Population*	% of Iowa MD/DOs	% of Iowa PAs	% of Iowa APNs
Top quartile	724,970	35.6	24.2	26.3
2nd quartile	738,670	41.3	34.4	41.0
3rd quartile	725,080	14.2	18.0	18.0
Bottom quartile	737,604	8.9	23.4	14.7
Top half	1,463,640	76.9	58.6	67.3
Bottom half	1,462,684	23.1	41.4	32.7
Total	2,926,324	100.0	100.0	100.0

* Quartiles cannot be created with exactly equal populations without dividing counties
MD/DO=Population of MDs and DOs combined

APNs, and PAs.³ Updated for accuracy in 2005, the datasets listed the number of clinically practicing providers in each of the three professions located in each of Iowa’s 99 counties. Iowa counties are similar in land area size, thus making them effective units of comparison. County population figures were obtained from the 2000 United States Census,⁴ and the datasets were combined for each county, showing the 2000 county population and per-

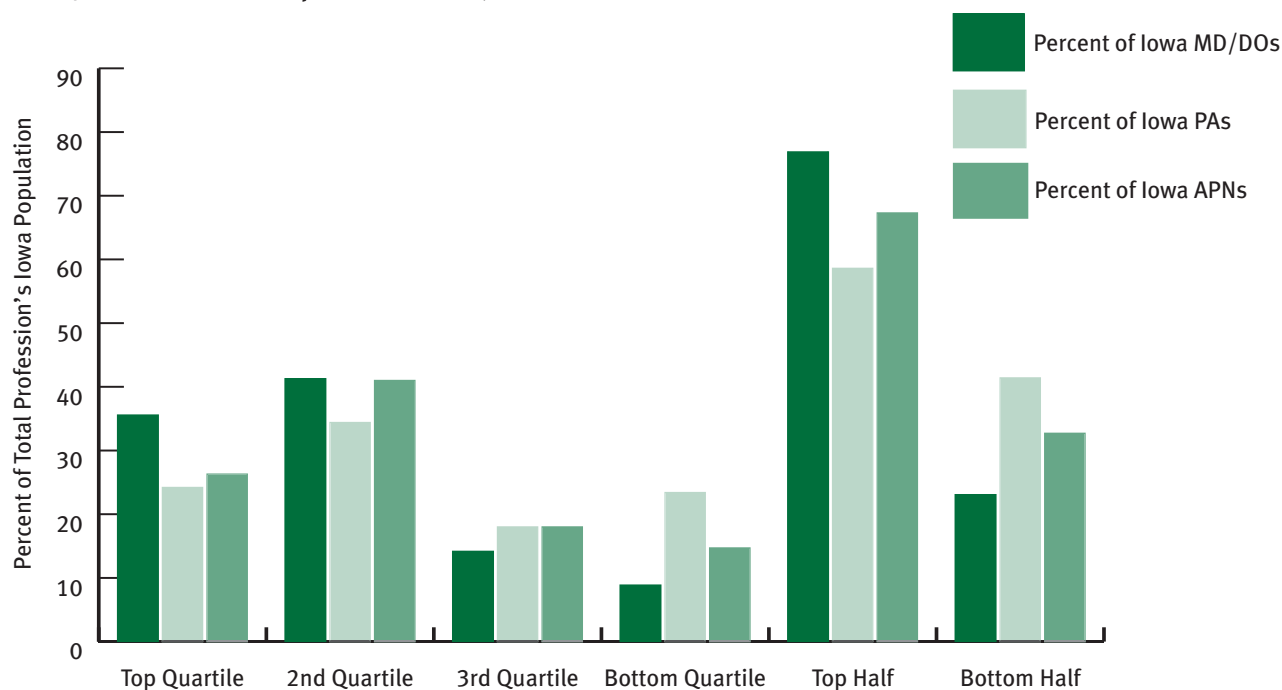
centage of the total population of physicians, APNs, and PAs practicing in each.

The county by county datasets were then stratified by population from most populous to least and then grouped into quartiles of equal population, with the most populous counties in the top quartile, and the least populous in the bottom. The 1st quartile contained the three most populous counties, the 2nd quartile contained nine counties, the 3rd

quartile contained 26 counties, and the bottom quartile contained the 61 least populous counties in Iowa. The data were also calculated for the most populous half (top half) and the least populous half (bottom half), summarized in Table 1, and graphically illustrated by Figure 1.

The data demonstrate that a greater proportion of Iowa’s physicians practice in the most populous quartiles of counties, while PAs and APNs are more prevalent in the least dense quartiles, consisting of the most medically underserved counties. The same relationship exists when the counties are divided into top and bottom halves of equal population. APNs fall somewhere between physicians and PAs, ie, practicing in the most populous counties at a lesser rate than physicians but at a greater rate than PAs, and practicing in the least populous counties at a greater rate than physicians but at a lesser rate than PAs. In Iowa, PAs practice in a greater proportion than physicians and APNs in areas of lower

Figure 1. Percentage of MD/DOs, PAs, and APNs in Iowa Counties by County Population Quartiles (Top = Most Populous Counties/Bottom = Least Populous Counties)



population density.

Iowa is an agrarian state containing both urban areas made up of small and medium-sized cities and rural agriculture-based areas made up of small towns and rural homesteads, and results from this research may be generalizable to areas of similar composition. Additional statewide population studies of practitioner distribution should be undertaken to further document the geographic distribution of physicians, APNs, and PAs in relationship to population. However, this data currently reveals that in Iowa, a greater proportion of PAs practice in more sparsely popu-

lated geographic areas when compared to physicians and APNs, thereby helping to address the geographical maldistribution of medical providers. Understanding the geographical distribution of different types of providers may help educational programs focus on how to deploy their graduates.

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