Determinants of the 5-Year Retention and Rural Location of Family Physicians: Results from the Iowa Family Medicine Training Network

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BACKGROUND AND OBJECTIVES: States are seeking ways to retain primary care physicians trained within their borders. We analyzed the 5-year retention and rural Iowa location decisions for 1,645 graduates of the Iowa Family Medicine Training Network (IFMTN)—eight residency programs (in seven different cities) that are affiliated with the Carver College of Medicine (University of Iowa).

METHODS: Data from 1977-2014 includes 98.5% of active graduates. Location in Iowa 5 years after graduation was the dependent variable in a binary logistic regression. A second model used rural location in Iowa as the dependent variable. Independent variables included graduation year cohort, IMG status, sex, undergraduate medical training in Iowa, medical degree, and residency location.

RESULTS: Undergraduate medical training in Iowa was strongly related to retention. Compared to graduates of the AMC residency, graduates of six of the seven community-based programs were significantly more likely to be practicing in Iowa. While the overall proportion of graduates practicing in rural Iowa was high (47.3%), women and IMGs were significantly less likely to practice in rural areas. Graduates of the Mason City program were significantly more likely to practice in a rural area after graduation.

CONCLUSIONS: The experience of the IFMTN suggests that educating family physicians in community-based programs contributes significantly to in-state retention even 5 years after graduation. While all programs contribute to the rural FM workforce in Iowa, the residency program located in a rural community (Mason City) has a disproportionately positive impact.

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tracked continuously using the Iowa Physician Information System (also maintained by the OSCEP). Rural location was determined using the Rural-Urban Commuting Area (RUCA) designation for zip codes. A physician’s location was considered to be urban for RUCA codes 1-3. All other codes (4-10) were considered rural.

Methods

Context and Subjects

We retrospectively model the in-state location and rural Iowa location decisions of IFMTN graduates at a point 5 years after their R3 year. The data covers the time period 1977-2014. Of the 1,676 graduates during that time period, location information for 25 physicians was not available (98.5% coverage). An additional six physicians had become inactive or died before the 5 year period. This results in a complete data set for 1,645 graduates. The IRB reviewed this study and waived approval. Analyses were conducted using SPSS v. 22.

Variables

In-state retention was coded as a one (1) for those graduates whose practice location in year 5 (after R3 year) was in Iowa and 0 otherwise. Rural location was coded as a one (1) for those graduates whose practice location in year 5 (after R3 year) was in a rural zip code for Iowa, 0 for an urban zip code in Iowa (and omitted from analysis otherwise).

Prior research guided the inclusion of the following variables.

- Graduation cohorts are based on the decade in which the R3 year was completed. The baseline cohort was the 1970s. Subsequent decades are indicated by dummy variables.
- Residency locations were coded as dummy variables. The baseline location is Iowa City, which is home to a large academic medical center. The other locations include Sioux City, Des Moines (Broadlawns, Iowa Lutheran), Mason City, Waterloo, Cedar Rapids, and Davenport (See Figure 1).

Figure 1: UI-Affiliated Residency Sites (8)

Analysis

Binary logistic regression was used to model the relationships between 5-year retention or rural Iowa location and the explanatory variables described above. Reported odds ratios were calculated using the complete multivariate model.

Results

The descriptive statistics for the 1,645 IFMTN graduates are presented in Table 1. The 5-year retention rate is 53.4% which is consistent with recent cross-sectional research. Of those IFMTN graduates choosing to practice in Iowa, 47.3% were located in rural communities. This contrasts to 2010 national figures showing that only 22.5% of family medicine physicians practice in rural areas.

The binary logistic analysis finds no significant variations in retention for any of the graduation cohorts or IMGs. As expected, the likelihood of retaining a graduate is strongly related to undergraduate medical training in Iowa (OR=6.74, P<0.001). Female graduates were marginally more likely to be retained (OR=1.28, P=0.06) as were graduates holding a DO degree (OR=1.36, P<0.08).

The location of the graduate’s residency had a significant effect on retention. Compared to graduates of the Iowa City program, graduates trained in the six of the seven community hospitals were significantly more likely to stay in Iowa (P<0.02). The sole exception were those in the Broadlawns (Des Moines) program (OR=1.44, P<0.08).

With respect to a rural location given the choice to practice in Iowa, there are significant variations between the baseline (1970s) and the other cohorts. Graduates in the 1980s (OR=0.52, P<0.02) and 2000s (OR=0.51, P<0.02) were significantly less likely to locate in rural areas than those from the 1970s. Graduates in the 1980s were marginally less likely to locate in rural areas (OR=0.57, P<0.06). These results may be due, in part, to the small size of the 1970s cohort.

International medical graduates (OR=0.40, P<0.03) and women graduates (OR=0.70, P<0.03) were significantly less likely to locate in rural communities. The graduates medical degree and prior training in Iowa had no significant effect on their likelihood to locate in a rural area.

With two exceptions, the residency program did not have a significant effect on location in a rural community. Compared to graduates of the Iowa City program, graduates trained in Davenport were marginally less likely to practice in a rural community in Iowa (OR=0.59, P<0.09). In contrast, graduates of the Mason City program were significantly more likely to practice in the rural location (OR=14.00, P<0.00). It should be noted that Mason City is considered to be a large rural city under the RUCA classification. All other residency locations are considered urban.
Discussion

For the state of Iowa, attracting and retaining FM physicians is a long-standing challenge. The distributed nature of the IFMTN is one way in which the state attempts to train and retain FM physicians. The overall success of retaining IFMTN graduates over the long run will be key to serving the primary care needs of the state’s citizens. Despite the overall success of placing IFMTN graduates in rural communities, more needs to be done to make these opportunities attractive to women and IMG graduates.

These results are limited to the experience of a single residency network. There may be selection effects wherein residents seeking to stay in Iowa after graduation are more likely
to apply to the community based programs rather than the program housed in an academic medical center (in Iowa City). The same may be true of applicants to the Mason City program which is the only network member located in a rural area.

In conclusion, this study adds to our understanding of the importance of the individual residency program on the retention of family medicine residents within the state as well as those that choose a rural community.

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References