Assessing Risk for Loss of Rural Pharmacy Services

University of Minnesota College of Pharmacy

Andrew P. Traynor and Todd D. Sorensen

University of Minnesota College of Pharmacy

Objectives

The objectives of this study were to:

1. Prospectively identify rural one-pharmacy communities most at risk for loss of medication access and pharmacist services
2. Identify and characterize the number of rural patients potentially impacted by the closure of a community's only pharmacy

Methods

Sample Selection and Size

Board of Pharmacy databases of licensed pharmacies in the states of Arizona, Arkansas, Iowa, Maine, Minnesota, Mississippi, Montana, North Carolina, West Virginia, and Wyoming were searched to identify non-urban communities with one community pharmacy.

Data Collection

Surveys assessing community dynamics, ownership characteristics, prescription revenue, workforce and rural health care delivery were sent to pharmacists-in-charge at each of the community pharmacies in the identified rural communities. A cover letter and survey was followed by a thank you/reminder postcard ten days later. A second cover letter and survey was sent to non-respondents. The survey period was January through March 2006 for the state of MN and March through April 2008 for all other states.

Data Analysis

A risk score was assigned to each community based on their responses to the survey. Responding communities were rank ordered by risk score and a quartile-analysis was completed. Descriptive statistics were also completed.

Service Area Mapping

Service area mapping of one pharmacy towns was completed based on half-way distance to the nearest pharmacy utilizing a road network developed from ESRI Streetmap (Figure 1). Service areas were overlayed with census block data points to identify population and age-related characteristics of the service area (Figure 2).

Fig. 2: Census Block Overlay

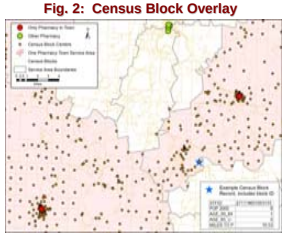


Fig. 1: Road Network Analysis

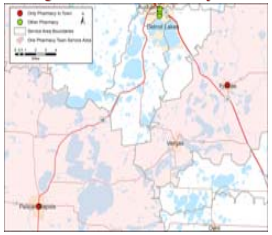
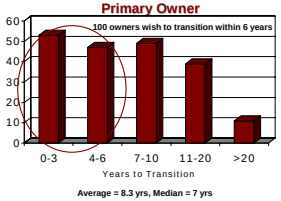


Table 2: Years to Desired Transition Age of Primary Owner



Average = 8.3 yrs, Median = 7 yrs

Results

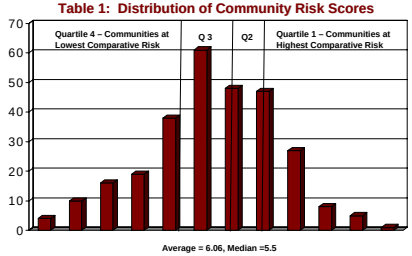
Survey Response Rate

For the survey, 695 one-pharmacy towns were identified. Six surveys were returned undeliverable. A total of 286 responses (41.2%) were received. Response rates per various state ranged from 19.3% to 66.7%. Table 1 represents the quartile distribution of comparative risk scores. A higher comparative risk score indicates a community with a greater risk for loss of local access to pharmacy services.

Characteristics of Respondents

Tables 2-4 describe some of the demographic characteristics of the respondents. In addition, nearly 90% of pharmacies responding were non-chain pharmacies. An average of 124 prescriptions are dispensed at each pharmacy daily and 82 pharmacies reported greater than 95% of their revenue generated by prescriptions. Staff pharmacist recruitment was reported as very or moderately difficult by the majority of pharmacies. Over 93% of communities have a medical clinic, 60% have a nursing home and 27% have a hospital.

Table 1: Distribution of Community Risk Scores



Average = 6.06, Median =5.5

Table 3: Distance to Nearest Community with a Pharmacy

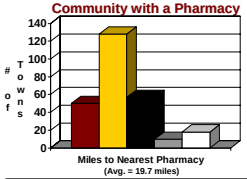
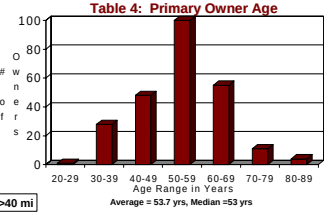


Table 4: Primary Owner Age



Average = 53.7 yrs, Median =53 yrs

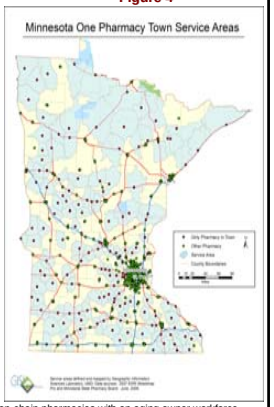
Results

Service Area Mapping Results

The combined service area population of the 695 pharmacies was nearly 4.7 million people. On average, each pharmacy serves a market area of 6,752 people. Collectively, the size of the market area the pharmacy served was 3.42 times greater than the census population of the communities where the pharmacy is located (range per state 1.63-4.94). The service areas of these pharmacies covered 36.2% of the state's square mileage (range per state of 23.3% to 73.7%). Nearly 1.4 million of the service area residents (29.8%) are over 50 years old. Nearly 650.000 people in the combined service areas are 65 years of age or older. Figures 3 and 4 display the service area maps for Iowa and Minnesota.

Figure 3

Figure 4



Conclusion/Implications

Most rural one-pharmacy communities are served by non-chain pharmacies with an aging owner workforce that desires to transition ownership in the near future. These pharmacies have a lower volume that has limited possibilities for expansion and a high percentage of revenue for the pharmacy is generated in the prescription department. The impact to rural health care may extend beyond community pharmacy access as many communities also have primary care clinics, nursing home and hospitals served by pharmacists. Estimates of the number of people impacted by pharmacy closure in rural areas, particularly one pharmacy towns, may be largely underestimated. Mapping of services areas based off a road network analysis may provide a better estimate than Euclidian buffer zones or census populations of the communities where the pharmacy is located. Greater populations, including a high percentage of older patients, may be impacted by potential closure based on market area analysis. The implications of current and future health care policies must be critically addressed through the lens of rural one pharmacy communities. Strategies to maintain local access to medications and a pharmacist is imperative as many communities and their community members are at risk for loss of services within a short time period.