RUPRI Center for Rural Health Policy Analysis
*Rural Policy Brief*

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# Rural and Urban Pharmacy Presence – Pharmacy Deserts

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## Background and Purpose

Community pharmacies play a crucial role in patient safety, particularly in optimizing safe medication use.[1,2] Pharmacists provide clinical reviews,[3,4] monitor dispensing patterns to avoid substance abuse,[5] screen for interactions between medications,[3,4] and provide patient education and counseling.[1,2] They also enhance preventive care through health screenings, immunizations, and management of noncommunicable diseases.[1] Understanding the geographic distribution and availability of community pharmacies is important in developing policies that will strengthen pharmacist-patient connections and support safe continuity of care.

This policy brief continues the RUPRI Center's ongoing examination of the availability of community pharmacies and their provided services in rural areas of the U.S. The brief also provides a deeper analysis of counties with no retail pharmacies (i.e., pharmacy deserts) based on metropolitan/nonmetropolitan locations.

## Key Findings

- In 2021, there were 138 counties with no retail pharmacy, including 101 noncore, 15 micropolitan, and 22 metropolitan counties.
- By most measures, the proportion of the population considered vulnerable, including nonwhite, uninsured, unemployed, and income below the federal poverty level (FPL), is higher in noncore counties with no retail pharmacies than in other counties with no retail pharmacies. Further, the percent of population aged 65 and older as well as the percent aged 85 and older is higher in noncore and micropolitan counties with no pharmacy than in metropolitan counties.

## Methods

Data on retail pharmacies—including independent, chain, franchise, and other types*[6]—were obtained from the National Council for Prescription Drug Programs[7] covering the six-month period between January and June 2021. Fifty U.S. counties and the District of Columbia were classified based on their pharmacy presence for the entire six-month period. For instance, a county with any retail pharmacy at any time during the entire period (even if only a single month) was included in the group of counties with a retail pharmacy. Data on county population characteristics were obtained from the 2019 American Community Survey five-year

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estimates.[8] Counties were classified using Urban Influence Codes[9] (UICs): metropolitan (UICs 1, 2; counties with one or more urban areas with 50,000 or more people, or outlying counties economically tied to those counties as measured by labor-force commuting); micropolitan (UICs 3, 5, 8; nonmetropolitan counties with an urban area with 10,000-49,999 people and those outlying, economically tied counties); and noncore (UICs 4, 6, 7, 9, 10, 11, 12; counties with no urban area of 10,000 or more people and not economically tied to metropolitan or micropolitan counties).

*** "Independent" pharmacies are those where one-to-three pharmacies are under common ownership. "Chain" pharmacies are part of a group of four or more pharmacies under common ownership (these include the large national chains such as CVS, Walgreens, Walmart, etc.). "Franchise" pharmacies are independently owned but with a franchise agreement wherein the franchisor provides services (e.g., training, marketing, etc.) in exchange for a fee from the franchisee. "Other" pharmacies include government pharmacies (e.g., IHS or military pharmacies), and alternate dispensing sites (e.g., physician offices, emergency departments, rural health facilities, etc.).**

## Results

Table 1 shows that the availability of pharmacies of any type was lower in noncore counties than in micropolitan and metropolitan counties (7.6 percent of noncore counties have no retail pharmacies of any kind as opposed to only 2.3 and 1.9 percent of micropolitan and metropolitan counties, respectively). It is important to note that 20 out of the 22 metropolitan counties with no retail pharmacies are considered "outlying" counties (i.e., they are classified as metropolitan because of their work commuting flow to a central metropolitan county rather than their population size[10]). These outlying counties thus owe their metropolitan status to the population's work commuting behavior, not the county's population, which might explain the absence of pharmacies in them. Similarly, 95.7 percent of noncore counties had no franchise pharmacies, compared to 89.4 and 79.9 percent of micropolitan and metropolitan counties, respectively. The only exception to this pattern was for chain pharmacies in metropolitan counties, which had a slightly lower availability (10 percent have no chain pharmacies) than micropolitan counties (9.7 percent). But note again that the vast majority (109 of 117) of those metropolitan counties are outlying counties.

The largest gap in the presence of pharmacies across different county classifications was for chain pharmacies. Many noncore counties (44.1 percent) had no chain pharmacies, whereas only 10 percent of metropolitan counties had no chain pharmacies.

**Table 1. County pharmacy absence by metropolitan/micropolitan/noncore status**

| | Noncore (n = 1,335) | | Micropolitan (n = 641) | | Metropolitan (n = 1,166) | |
|---|---|---|---|---|---|---|
| No retail pharmacies (any type), i.e., pharmacy deserts | 101 | 7.6% | 15 | 2.3% | 22 | 1.9% |
| No independent pharmacies | 202 | 15.1% | 53 | 8.3% | 64 | 5.5% |
| No chain pharmacies | 589 | 44.1% | 62 | 9.7% | 117 | 10.0% |
| No franchise pharmacies | 1,278 | 95.7% | 573 | 89.4% | 931 | 79.9% |
| No "other" pharmacies | 1,301 | 97.5% | 595 | 92.8% | 963 | 82.6% |

Table 2 displays select population characteristics by county metropolitan/ nonmetropolitan/noncore classification, both overall and for counties with no retail

pharmacies. Within each one of the three metropolitan/nonmetropolitan county classifications, the median population was lower in counties with no presence of retail pharmacies than in counties overall.

Among counties with no retail pharmacy, the population tended to be older in noncore and micropolitan counties than in metropolitan counties (18.1 and 21.1 percent vs. 16.8 percent, respectively, aged 65 years and older).

While the nonwhite proportion of the population was similar in noncore and micropolitan counties (15.6 and 15.9 percent, respectively) that proportion increased dramatically to 38.7 percent in noncore counties with no retail pharmacy (compared to 13.4 percent in micropolitan counties with no retail pharmacy). Whereas the nonwhite proportion of the population was smaller in micropolitan and metropolitan counties with no retail pharmacy than in counties overall, the proportion of the nonwhite population was much higher in noncore counties with no retail pharmacies than in noncore counties overall. Similarly, the Hispanic proportion of the population was higher in noncore counties with no retail pharmacy than in noncore counties overall.

Noncore counties with no retail pharmacies had the highest percentage of uninsured and unemployed people and people with incomes below the FPL. Interestingly, within micropolitan areas, counties with no retail pharmacies had lower percentages of uninsured and unemployed people and people below the FPL than those counties overall, in contrast to the pattern seen in noncore and metropolitan counties. Noncore counties without a retail pharmacy had the lowest percentage of population with broadband internet available. Though noncore and metropolitan counties without retail pharmacies similarly had more vulnerable populations based on the aforementioned characteristics than in those counties overall, the percentages of at-risk populations were higher in these noncore versus metropolitan counties. For instance, in noncore counties, 16.3 percent of the population had income below the FPL, and 15.5 percent were uninsured, versus 12.1 percent with income below the FPL and 10.7 percent being uninsured in metropolitan counties. Residents in noncore counties with no retail pharmacy were less likely to indicate some type of disability than were residents in all noncore counties.

**Table 2. Characteristics of counties with no retail pharmacy (i.e., pharmacy deserts) by metropolitan/ micropolitan/noncore status**

| | Noncore | | Micropolitan | | Metropolitan | |
|---|---|---|---|---|---|---|
| | Overall (n=1,335) | No Retail Pharmacy (pharmacy desert) (n=101) | Overall (n=641) | No Retail Pharmacy (pharmacy desert) (n=15) | Overall (n=1,166) | No Retail Pharmacy (pharmacy desert) (n=22) |
| Total population | 18,809,191 | 299,898 | 27,245,970 | 44,071 | 278,642,634 | 139,537 |
| Median population | 11,128 | 1,918 | 38,194 | 2,013 | 98,230 | 5,732 |
| Female (%) | 49.7% | 48.0% | 50.1% | 49.5% | 50.9% | 48.6% |
| Age | | | | | | |
| % 65-years-old and older | 20.4% | 18.1% | 18.0% | 21.1% | 15.1% | 16.8% |
| % 85-years-old and older | 2.4% | 1.7% | 2.1% | 2.4% | 1.9% | 1.5% |
| Nonwhite (%) | 15.6% | 38.7% | 15.9% | 13.4% | 29.4% | 23.4% |
| Hispanic (%) | 6.8% | 8.8% | 9.8% | 5.2% | 19.6% | 13.1% |
| High school graduation (%) | 85.2% | 85.1% | 87.0% | 89.4% | 88.2% | 89.0% |
| Income below FPL* (%) | 15.0% | 16.3% | 14.5% | 10.3% | 11.7% | 12.1% |
| Unemployed (%) | 5.7% | 8.2% | 5.6% | 4.0% | 5.4% | 5.4% |
| Uninsured (%) | 10.4% | 15.5% | 9.3% | 8.8% | 8.7% | 10.7% |
| Broadband internet avail. (%) | 76.7% | 73.4% | 81.0% | 81.4% | 87.3% | 80.7% |

| | | | | | | |
|---|---|---|---|---|---|---|
| People in group quarters (%) | 3.7% | 5.6% | 3.8% | 0.7% | 2.3% | 7.0% |
| Disabilities | | | | | | |
| One or more disability (%) | 17.9% | 15.0% | 15.8% | 14.4% | 12.0% | 13.5% |
| Ambulatory disability (%) | 10.3% | 9.4% | 9.0% | 10.1% | 7.2% | 8.7% |
| Self-care difficulty (%) | 10.3% | 9.4% | 9.0% | 10.8% | 7.3% | 9.0% |
| Indep. Living difficulty (%) | 12.6% | 11.5% | 11.1% | 12.9% | 8.9% | 10.6% |

* FPL: Federal Poverty Level

## Discussion

Recently published data show that 20 percent of the American population live in rural areas, a potentially underserved population,[10,11] as evidenced in our analysis by the larger proportion of noncore counties with no pharmacy presence of any type. Data from this brief indicate that micropolitan counties tend to be more similar to metropolitan counties than to noncore counties in terms of population characteristics. Micropolitan counties with no retail pharmacies, constituting only 2.3 percent of all micropolitan counties, have the lowest percentages of uninsured and unemployed people and people with incomes below the FPL across all county classifications, thus reflecting less vulnerability among their population. Although a larger proportion of Hispanics live in metropolitan counties, only 1.9 percent of these counties do not have any type of retail pharmacies. Hence, Hispanics and populations in general in metropolitan counties tend to have better access to pharmacy services than populations in rural areas, where 7.6 percent of noncore counties have no retail pharmacy. The greater population density in micropolitan and metropolitan counties may explain the attraction and retention of pharmacy services in urbanized areas, whereas noncore counties may not have enough residents to support such an enterprise. These findings provide additional evidence supporting the need for greater attention to noncore counties, where retail pharmacy deserts are more common. A large proportion of noncore counties (44.1 percent) have no chain pharmacies, likely explained by business models that rely on market potential for locating retail establishments. However, the small regional chains that are present in some communities can have advantages not always seen in the national chains. Given the smaller pharmacy size, pharmacists may spend more time with their patients and become a meaningful part of their health care team. In fact, regional chains tend to have low turnover rates, as pharmacists consider themselves to be essential parts of the business and are involved in the community where the pharmacy is located.[11]

Rural populations in the U.S. have greater proportions of elderly[12] and of populations with greater needs, including disability, unemployment,[13] low income,[14] lack of health insurance coverage,[15] and restricted access to broadband internet.[16] Focusing on counties with no retail pharmacies, these differentials become more pronounced, particularly in noncore counties. Residents of noncore counties tend to disproportionately depend on the availability and affordability of transportation to reach pharmacies in neighboring counties.[17] Alternatively, they can opt for mail-order prescription services from neighboring pharmacies or national retailers. However, given the higher uninsurance rate among rural residents, this population might not be able to benefit from this option.[18,19] Mail-order services operate efficiently for prescriptions treating chronic conditions and other illnesses that do not require timely delivery and are profitable given consistently high demand. But this is not the case when it comes to urgent medications that need to be filled and dispensed promptly and conveniently, and to medications that are not necessarily kept in stock by mail order firms. Likely more important, mail-order services fail to replace the other fundamental functions provided by pharmacists beyond filling prescriptions, such as health screenings, patient education and counseling, and vaccinations.

Pharmacy deserts lead to issues of reduced access for populations in lower socioeconomic and rural locations. Telepharmacy constitutes one possible solution to pharmacy deserts, given its

potential to improve access in these needy areas. A pharmacist can virtually oversee a pharmacy technician through real-time videoconferencing. Thus, telepharmacy provides the opportunity to supply fundamental pharmacy care to patients without requiring them to travel long distances.[20] Despite the possibility of using telepharmacy services to improve access to health services in medically underserved regions, only around half of U.S. states have passed legislation authorizing telepharmacy.[21] To scale up pharmacy services in the U.S., tackling matters of reimbursement, licensing, and data security will be crucial.[23] Twenty-three states fully permit utilization of telepharmacy services, and eleven more states have laws or regulations that allow waivers or pilot programs enabling telepharmacies.[22] Interestingly, the Centers for Medicare & Medicaid Services (CMS) allowed Medicare and Medicaid to cover COVID-19 tests when ordered by any pharmacist or other health care professional authorized to do so under state law.[23] CMS also authorized Medicare-enrolled pharmacies to register temporarily as independent clinical diagnostic laboratories, and provided specimen collection and travel allowance payment to collect samples from homebound beneficiaries for COVID-19 testing.[24]

RUPRI will continue to monitor changes in pharmacy-availability trends across rural and urban regions, and any relevant policy changes.

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