

Building an Oasis in Pharmacy Deserts

In communities across the United States, people struggle with pharmacy access. As many as [1 in 4 neighborhoods](#) are classified as [pharmacy deserts](#), areas characterized by a lack of nearby pharmacies within a reasonable distance. Pharmacy deserts are typically located in poverty-stricken areas, both urban and rural, and disproportionately impact minority and marginalized populations.

Pharmacy deserts are a source of growing concern among public health policymakers. As pharmacy closures [accelerate](#), low-income and minority communities are losing access to a critical source of healthcare services. For individuals in these communities, the closure of a local pharmacy can mean longer travel times, increased costs, and in some cases, a complete loss of access to necessary medications. Pharmacy closures, coupled with the realities of poverty in both urban and rural areas, such as unreliable transportation, are further isolating underserved populations. The result is a brewing public health crisis that will impact communities nationwide.

Despite the bleak outlook for some retail pharmacies, there is hope on the horizon. New technologies are offering potential solutions for expanding access to medication, even in communities that have been impacted by pharmacy closures. The rise of telehealth and telepharmacy options, particularly since the COVID-19 pandemic, is a promising development. The rapid evolution of automation and robotic technologies is making it easier to centralize pharmacy operations, achieve economies of scale, and provide fast and efficient access to medication in communities no longer served by traditional retail pharmacies. This is a beacon of hope in the fight against pharmacy deserts.

The Pharmacy Disappearing Act

Between 2009 and 2015, 1 in 8 pharmacies in the U.S. permanently closed. Most of them were independent pharmacies in low-income urban areas. As a result, already underserved populations lost access to yet another crucial healthcare resource.

In 2024, major national chains announced [widespread closures](#) of pharmacy locations across the United States. After declaring bankruptcy in 2023, Rite Aid has

nearly halved the number of retail locations it operates from 2,100 to 1,300. Walgreens and CVS are also facing massive cuts in their retail locations. Walgreens expects to close 1,200 locations in the [coming years](#), while CVS plans 900 closures.

Price pressures have been squeezing independent pharmacies for several years. Escalating drug costs, a chief concern for consumers, also impact smaller, independent pharmacies trying to keep pace with an increasingly crowded and competitive market. The PBM [“spread pricing”](#) model—where PBMs charge insurers a higher rate than what is reimbursed to pharmacies—further reduces pharmacies’ income, pushing many small operators toward closure. According to a [report](#) from the National Community Pharmacists Association, independent pharmacies have been closing at an astonishing rate in the past year: more than one store per day.

How Pharmacy Deserts Impact Communities

Pharmacy deserts have a tremendous impact on the well-being of local communities in both urban and rural areas and especially harm [at-risk populations](#).

[Urban pharmacy deserts](#), particularly in cities like Chicago and Baltimore, pose significant barriers to healthcare access for minority and low-income communities. In Chicago, for instance, about one-third of [minority neighborhoods](#) lack convenient access to pharmacies, while only 1% of predominantly White neighborhoods face this issue. The lack of pharmacies is especially pronounced in segregated neighborhoods, a legacy of historical policies that limited access to [essential services](#) for these communities.

Baltimore has some of the [most concentrated](#) pharmacy deserts among major U.S. cities, particularly affecting minority neighborhoods. East Baltimore, for example, has seen numerous pharmacy closures, limiting residents’ access to essential medications and services. Historical segregation policies have entrenched healthcare inequality throughout the city, resulting in fewer pharmacies in predominantly minority and low-income neighborhoods like East Baltimore.

The situation is just as difficult in [rural areas](#) of the United States. **Between 2003 and 2021, the number of independently owned pharmacies in rural, non-metropolitan areas declined significantly—by about 16%**



in the most isolated regions. The growth of chain pharmacies, which often bypass rural areas due to lower profit potential, has not filled this gap. Communities are left without local pharmacy services, intensifying the impact of healthcare inequality on vulnerable populations.

Residents in rural areas often must travel long distances—sometimes 10 miles or more—to reach the nearest pharmacy, which can be a barrier, particularly for older adults or those with limited transportation options. The lack of access to pharmacy services increases the risk of medication non-adherence and [limits access](#) to basic healthcare, which is crucial for managing chronic health issues such as diabetes and heart disease.

Industry leaders, healthcare policymakers, and legislators have [taken note](#) of the pharmacy desert crisis. As research continues into the impact and origins of pharmacy deserts, solutions are beginning to emerge.

Building the Oasis

Healthcare organizations are discovering a variety of innovative and effective approaches to mitigating the impact of pharmacy deserts. From robotic automation that simplifies and expedites prescription fulfillment to virtual care options and new approaches to mail order pharmacy, [big players](#) are getting involved in the mission to overcome pharmacy deserts.

Telepharmacy has become a crucial tool for expanding pharmacy access. It allows pharmacy technicians to manage on-site tasks—like filling prescriptions and assisting customers—under the remote supervision of a licensed pharmacist, who can be located miles away.

This setup enables continued service in areas with fewer residents, where a full-service pharmacy would be financially unsustainable. Telepharmacy also provides a viable option for [maintaining pharmacy services](#) in areas where the local pharmacy might otherwise close. Today, [more than half](#) of U.S. independent pharmacies use telepharmacy to provide services.

States like [North Dakota](#) and [Iowa](#) have pioneered telepharmacy models, showing promising results

in preserving pharmacy access. For example, rural pharmacies implementing [telepharmacy in Iowa](#) saw continued community engagement and sustained medication access and compliance. Some states have adapted regulations to support telepharmacy, providing financial incentives or allowing a single pharmacist to oversee multiple remote locations, maximizing resource efficiency without sacrificing quality.

Telepharmacy is especially impactful in underserved urban neighborhoods, where barriers like transportation and lower pharmacy density exist. By partnering with community health centers or local clinics, telepharmacies can enhance access to medication and preventive services in low-income areas. This approach aligns with the goals of healthcare equity by allowing vulnerable populations to receive necessary health services without traveling extensive distances, which can be particularly challenging for patients with limited mobility or access to transportation.

While telepharmacy offers significant advantages, it does have limitations. For instance, telepharmacy may not fully replace the in-person services provided by traditional pharmacies, such as administering immunizations or offering personal counseling on medication use. Additionally, telepharmacy requires a reliable internet infrastructure, which may not always be available in rural locations. As states consider expanding telepharmacy laws, there is a need to establish clear guidelines to ensure patient safety and maintain consistent service quality across remote locations.

Pharmacy automation is increasingly recognized as a practical solution for sustaining pharmacies in underserved regions, both urban and rural. Automated systems, such as robotic prescription dispensers, automated pill counters, and central fill models, allow pharmacies to operate more efficiently with reduced staffing needs. **By handling routine tasks, these systems free pharmacists and technicians to focus on patient care** and cut down on errors resulting from manual processes. For independent pharmacies with tight budgets, automation can help control labor costs, making it more feasible to operate in low-access areas.



In pharmacy deserts, where setting up and staffing multiple small pharmacies is financially prohibitive,

central fill operations present a viable model. With central fill automation, prescriptions are processed and prepared at a single location, which can serve as a hub for various smaller, remote facilities. These facilities act as pickup points, reducing the need for extensive on-site resources and providing quick, efficient prescription access in areas that might otherwise lack any pharmacy presence. This approach has been used in some rural areas, where central fill locations distribute medications to multiple pickup spots, reducing travel times for patients in remote regions.

Central fill operations can also be augmented with home delivery and mail-order options. The same automation systems can often be deployed to support both central hub and central fill pharmacy operations. Mail-order prescription services, home delivery, and central hub pharmacies all have applications in rural areas. They also make sense as solutions to urban pharmacy deserts.

For urban pharmacies that serve large, densely populated areas, automation can help manage high prescription volumes while maintaining accuracy and patient safety. In urban pharmacy deserts, this could allow a single, strategically located pharmacy to serve a much broader population without facing operational burnout. Chain pharmacies have adopted automated solutions to handle the repetitive tasks involved in prescription fulfillment, including sorting, counting, and packaging, allowing pharmacists more time to offer personalized consultations and services essential to preventive care.

To ensure automation's widespread adoption, policymakers and healthcare advocates are exploring subsidies or grants for independent pharmacies to implement these systems, especially in low-income or high-need areas. Programs that offer financial assistance for purchasing automated systems can help smaller local pharmacies remain competitive and operational in challenging markets. In states like [California](#) and [North Dakota](#), where automation support policies are in place, local pharmacies have managed to expand their service capabilities without proportional increases in staffing.

Cost is a chief concern for any transformation project. Initial setup costs can be high, especially for independent or smaller pharmacies. However, scalable and modular options are available that can help smaller operations responsibly invest in their future. While automated systems require technical support and maintenance, which could present additional costs, a

great automation partner will provide a robust, reliable system coupled with an ongoing maintenance plan.

Because automation might lack the personal touch that traditional pharmacies provide, pharmacies will want to pair their automation efforts with increased patient and community engagement and education efforts. This is particularly relevant in communities where pharmacists are integral to patient education and healthcare access. Telehealth and community health center partnerships will play a critical role in bridging this gap.

While pharmacy deserts pose a threat to public health, automation and telepharmacy present promising strategies to bridge healthcare access gaps in pharmacy deserts. Deploying smart technology solutions alongside public health policy supporting underserved rural and urban communities can build a healthcare system that is stronger and more equitable.

For over 60 years, Capsa Healthcare has worked with pharmacies to design, build, and deploy pharmacy automation technology. **More than 60% of American pharmacies trust our [retail pharmacy automation solutions](#)**. We also partner with [central fill and mail-order pharmacies](#) to design and build automation solutions that support a wide variety of pharmacy operations, including healthcare systems, home delivery, and high-volume central fill facilities.



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