

HPC DATAPOINTS

When the Closest Pharmacy is Too Far: Mapping Pharmacy Deserts in Massachusetts *The impact of closures on pharmacy distribution and access over time*


**OFFICE OF PHARMACEUTICAL
 POLICY AND ANALYSIS**

BACKGROUND

Pharmacies are a vital part of the health care continuum for patients, as an access point for over-the-counter medications, a setting to receive preventive services – such as vaccinations – and a place for pharmacists to dispense prescription medications and offer consultations to ensure their safe and effective use. Pharmacy closures reduce access to these services and have been found to be associated with negative health effects, such as clinically significant declines in adherence to cardiovascular medications among older adults.¹ **Pharmacy deserts** refer to communities without convenient access (defined below) to a pharmacy and the medication and services they provide.

Pharmacy closures, and the deserts they may create, occur amid complex and evolving dynamics in the pharmaceutical supply chain and in the wider retail economy. Large retail pharmacy chains such as CVS and Walgreens expanded significantly nationwide from the 1990s to the 2010s, culminating in CVS' acquisition of 1,700 Target pharmacies in 2015 and Walgreens' acquisition of 1,900 Rite Aid pharmacies in 2018.^{2,3} Grocery (e.g., Big Y, Stop & Shop) and mass-merchant-based (e.g., Walmart) pharmacies may have survived consolidation partly due to their economies of scale and their convenient locations.³ In contrast, many independent pharmacies went out of business during this wave of expansion and consolidation.⁴

A 2019 study by the Massachusetts Independent Pharmacists Association found that the number of independent pharmacy claims where total reimbursement was less than the acquisition cost of the drugs grew from 8% of total claims in 2016 to 26% of claims in 2019; accounting for the pharmacy's administrative cost to provide services, the study estimated that 86% of claims resulted in a financial loss to the pharmacy.⁵ As a result of these pressures nationwide, the number of independent pharmacies in the U.S. plummeted by 50% between the 1980s to 2021.³

Despite their earlier market dominance, large retail chain pharmacies recently began announcing store closures as well, citing both financial pressures from PBMs and lower front-end store profitability due to the growth of dollar stores and online retailers such as Amazon.^{6,7} Collectively, Rite Aid (which filed for Chapter 11 bankruptcy in 2023), CVS, and Walgreens have announced plans to close more than 1,500 locations.⁸

Consequently, communities across the country, particularly rural and lower-income communities, are increasingly left with insufficient pharmacy access. A study that examined pharmacy deserts nationwide found that 46% of U.S. counties have at least one pharmacy desert, and such deserts were significantly more common in high social vulnerability areas.⁹

Massachusetts neighborhoods are experiencing the impact of pharmacy closures.¹⁰ A recent Boston Globe analysis of Massachusetts Department of Public Health (DPH) data found that 200 pharmacies have closed in the Commonwealth since 2017.¹¹ The Globe further estimated that at least 15,000 people in Boston live in pharmacy deserts, including neighborhoods in East Boston, Dorchester, and Roxbury.

Pharmacy deserts refer to communities without convenient **access** to a **pharmacy** and the **medication** and **services** they provide.

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The HPC assessed the **number, type, and geographic distribution** of pharmacies in Massachusetts, identifying both pharmacy deserts and “near-deserts”

This issue of the HPC’s DataPoints series assesses the number, type, and geographic distribution of pharmacies in Massachusetts over time, and identifies both pharmacy deserts and “near-deserts” — communities that are vulnerable to becoming pharmacy deserts — across the state.

This is a printable version of DataPoints. The online version features interactive graphics that show additional information, and is available on the HPC’s website at masshpc.gov/publications/datapoints

PHARMACY LOCATIONS AND DISTRIBUTION

The HPC identified pharmacy name, location, license status, issue and expiration dates for all active pharmacies using retail drug store permit data from the Board of Registration in Pharmacy.¹² Compounding, specialty, and provider-based pharmacies that are not open to the general public were excluded from this analysis.

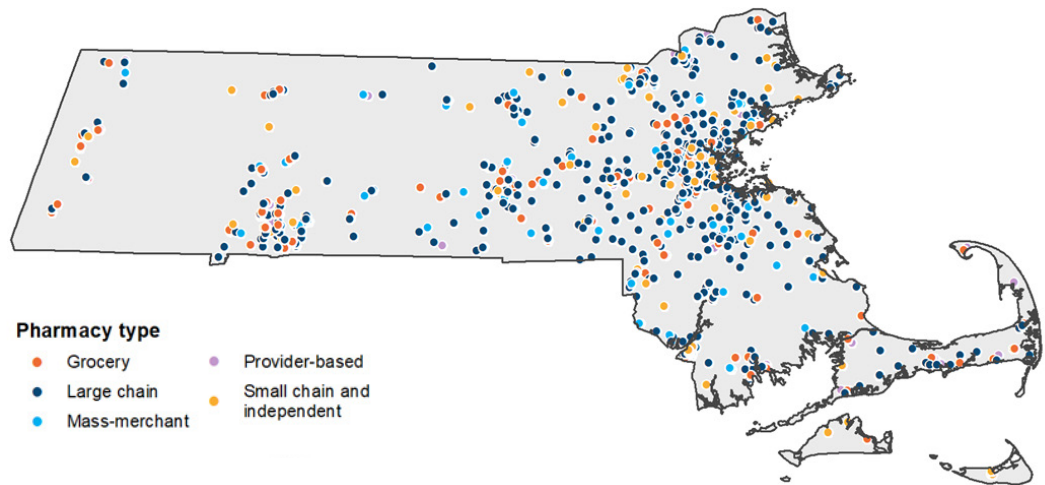
The HPC considered five types of pharmacies for this analysis:

- Large chain (e.g., CVS, Walgreens)
- Grocery-based (e.g., Stop & Shop, Big Y)
- Small chain and independent (e.g., Eaton Apothecary, Louis and Clark)
- Mass-merchant (e.g., Walmart, Costco)
- Provider-based and open to the general public (i.e., co-located and operated by hospitals and other providers)

As of June 2025, there were 940 active pharmacies in Massachusetts. **Figure 1** shows the location and type of pharmacy. Large chain pharmacies represented the largest proportion of pharmacies in 2025 at 61%, followed by small chain/independent and grocery-based pharmacies at 13% each (see **Figure 2** in the following section).ⁱ See the interactive visualization on the online version for recent trends in pharmacy location and type.

As of June 2025, there were **940 active pharmacies** in Massachusetts. Large chain pharmacies represented **61%** of pharmacies in Massachusetts.

Figure 1: Active Pharmacies by Type, 2025



NOTES: All mapping and geocoding conducted in ArcMap 10.8/ArcGIS Pro. Geocoding using the MassGIS master address database and latest address locator. Conducted using the NAD1983 geographic coordinate system.

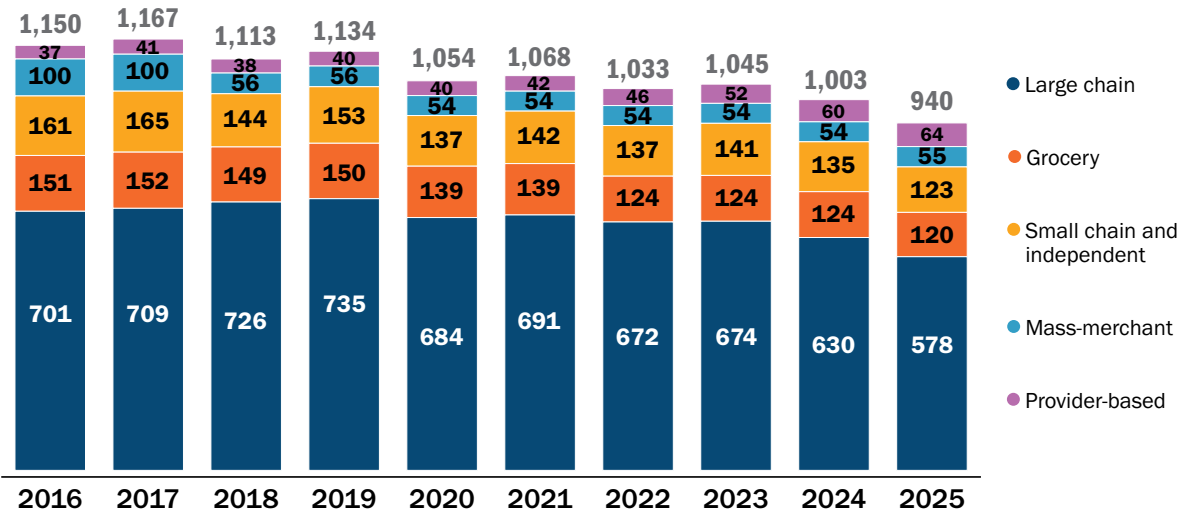
SOURCES: EOHHs Massachusetts Health Professions License Verification site. Latest update: June 16, 2025. <https://checka-healthlicense.mass.gov/>

ⁱ Percentages may not total 100% due to rounding

PHARMACY CLOSURES

Since 2019, however, there has been a **17.1% decline** in the number of pharmacies.
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Figure 2: Number of Pharmacies by Type, 2016-2025



SOURCES: EOHHS Massachusetts Health Professions License Verification site. Latest update: June 16, 2025. <https://checkahealthlicense.mass.gov/>

Figure 2 shows the number of pharmacies by type from 2016 to 2025. From 2016 to 2019, the number of pharmacies declined slightly (by 1.4%) with some pharmacies changing ownership from a mass-merchant to a large chain. Since 2019, however, there has been a 17.1% decline in the number of pharmacies (from 1,134 to 940), with the largest relative decrease for grocery-based, small chains, and independent pharmacies.

Between 2016 to 2025, large pharmacy chains have lost the greatest number of pharmacies but remained at about 60% of all active retail pharmacies; mass-merchants lost the greatest proportion (a 45% decline), small chains/independents and grocery-based lost about 20% each, and provider-based pharmacies had the greatest growth (a 73% increase).

Figure 3: Number of Pharmacy Openings and Closures, 2018-2025

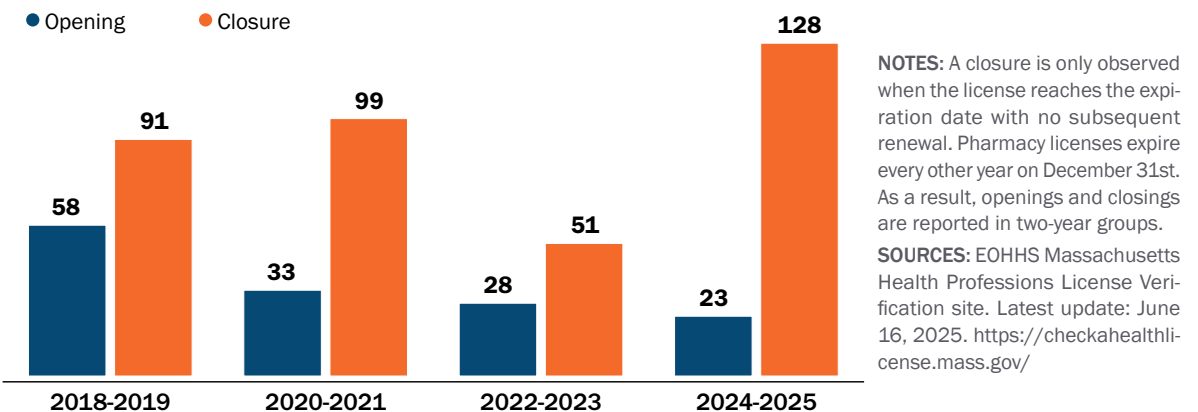
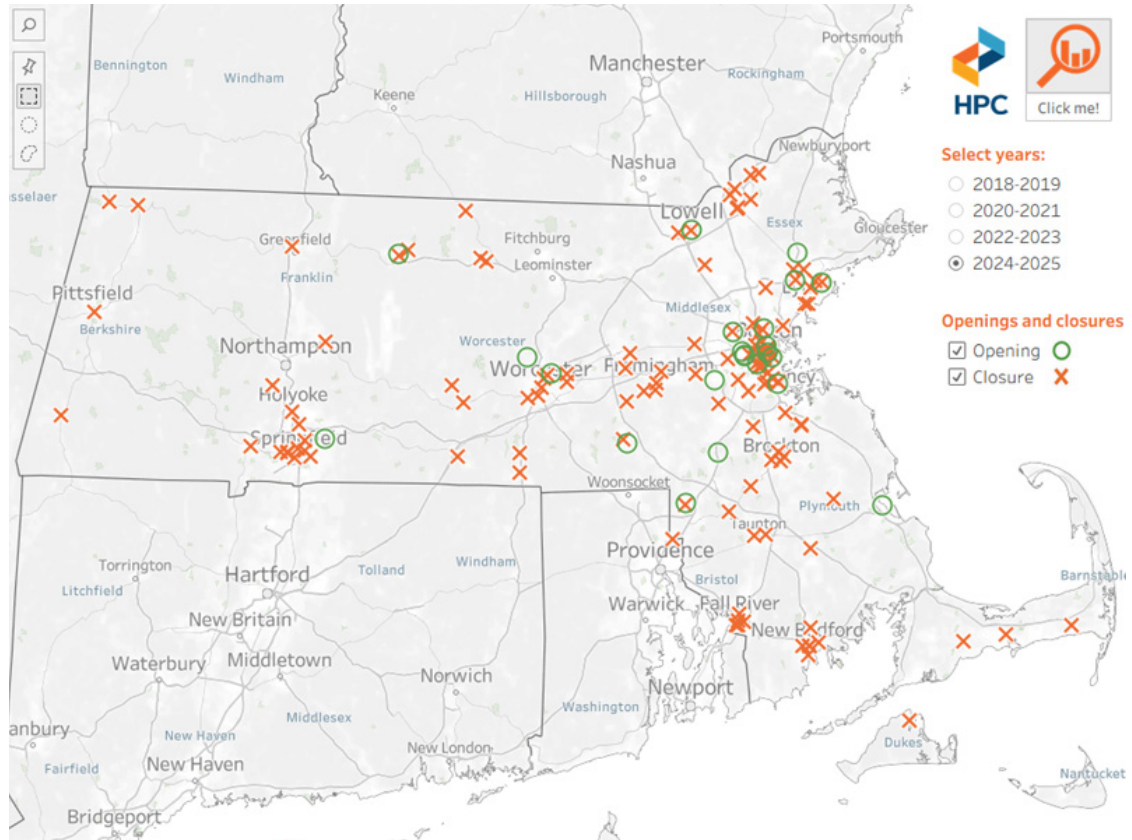


Figure 3 shows the number of pharmacy openings and closures from 2018 to 2025. In the licensure data, a closure is generally observed when the license reaches the expiration date with no subsequent renewal. Pharmacy licenses expire every other year on December 31st. As a result, openings and closings are reported in two-year groups.

Nearly 370 pharmacies have closed in Massachusetts since 2018, while another 140 have opened. Notably, 2024-2025 saw the smallest number of openings and largest number of closures during the study period. Throughout the 2018-2023 period, most closures were in suburban areas but in 2024 and 2025, in contrast, most closures occurred in urban areas (52%), particularly those with low income or low vehicle ownership. See the interactive visualization online for recent trends in pharmacy openings and closures.

Interactive 1: Tableau Dashboard—Pharmacy Openings and Closures, 2018-2025



Nearly **370** pharmacies have closed in Massachusetts since 2018, while another **140** have opened (net 227 closures).

PHARMACY DESERTS

How a pharmacy desert is defined varies in different analyses.^{11,13,14,15,16,17,18} Deserts may be defined based solely on an area's proximity to a pharmacy (e.g., 0.5 miles, 1 mile, 5 miles, etc.) or additionally account for factors such as prevalence of car ownership and community income.

For this analysis, the HPC used the following approach:

- assess **pharmacy access at a granular level** (census block groups)
- incorporate **varying distance criteria** based on population density (rural: 5 miles; suburban 2 miles; urban: 1 mile); and,
- incorporate **socio-demographic factors** associated with pharmacy access (share of households with a vehicle, share of households below the federal poverty level [FPL]).

The HPC assessed pharmacy access at the census block group level. Census block groups represent a combination of census blocks, the smallest geographic unit defined by the U.S. Census Bureau, and generally contain between 600 and 3,000 people. Criteria for proximity to a pharmacy varied based on population density, with rural¹⁹ block groups evaluated at 5 miles from a pharmacy, suburban block

Pharmacy access was assessed at the **census block group level**. Criteria for proximity to a pharmacy varied based on population density.

Block groups with **less than 15%** of their area within the specified proximity to a pharmacy were considered **pharmacy deserts**.

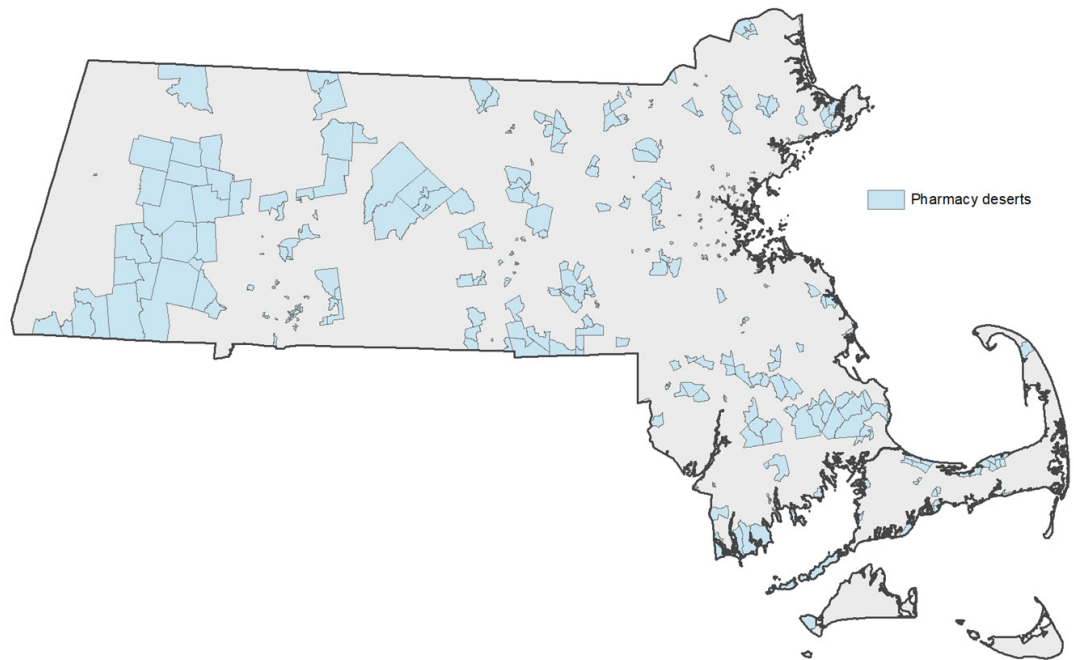
8.3% of the population in Massachusetts, about **580,000 people**, lived in a pharmacy desert in 2025.

Since 2019, there are about **90,000 additional people** living in a desert.

groups at 2 miles, and urban block groups at 1 mile.ⁱⁱ The distance criteria were halved for low-access areas, defined as block groups with below average vehicle ownership or a higher proportion of households below the federal poverty level (more than 20% of households below the FPL). For example, for a suburban block group with below average car ownership, pharmacy access was defined as having a pharmacy within 1 mile.

The HPC defined pharmacy desert status based on how much of the block group was within a given distance from a pharmacy. Block groups with less than 15% of their area within the specified proximity to a pharmacy were considered pharmacy deserts. For example, an urban block group would be considered a pharmacy desert if only 5% of its area had a pharmacy within 1 mile.

Figure 4: Pharmacy Deserts in Massachusetts, 2025



NOTES: All mapping and geocoding conducted in ArcMap 10.8/ArcGIS Pro. Conducted using the NAD1983 geographic coordinate system. Population data is based on 2020 Census block groups.

SOURCES: EOHHS Massachusetts Health Professions License Verification site. Latest update: June 16, 2025. <https://checka-healthlicense.mass.gov/>. State Office of Rural Health (2023). "Rural Definition." <https://www.mass.gov/info-details/state-office-of-rural-health-rural-definition>. American Community Survey (ACS), 2023 5-year estimates.

The HPC identified 432 of 5,109 census block groups in Massachusetts as meeting the HPC's definition of a pharmacy desert in 2025 (**Figure 4**). Translating block groups to people, **the HPC's analysis estimated that 8.3% of the population in Massachusetts, about 580,000 people, lived in a pharmacy desert in 2025.**

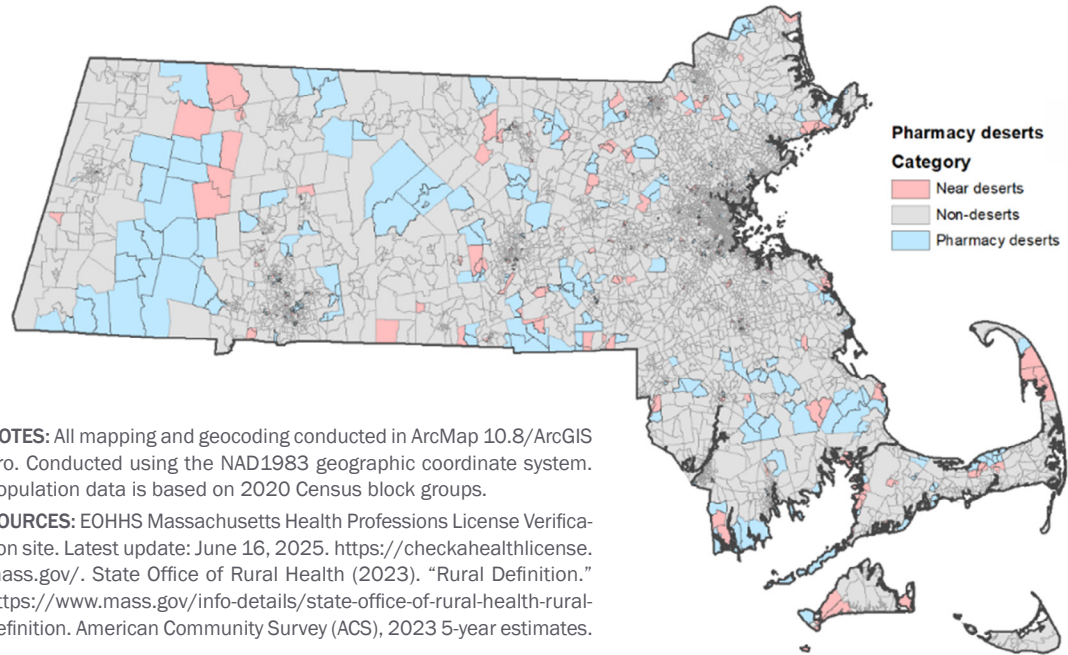
The largest proportion of pharmacy deserts were in urban areas of the state (47%), followed closely by suburban areas (43%). Since 2019, 25 previous pharmacy deserts were eliminated and 84 new deserts were created, leading to about 90,000 additional people living in a desert.

Many of the newly created pharmacy deserts were in some of the state's largest cities, such as Springfield (6), Boston (5), New Bedford (5), and Worcester (6). The top municipalities that eliminated a pharmacy desert during this time were Boston (2), Lynn (2), Malden (2), Northampton (2), Revere (2), and Worcester (2).

ii The HPC defined suburban as non-rural neighborhoods with a population density below 5,000 per square mile and urban areas as those with a population density above 5,000 per square mile. Suburban and urban areas were evaluated at the census block group level.

Figure 5: Pharmacy Desert and “Near-Desert” Neighborhoods, 2025

7.5% of the population, or about **525,000 people** live in a “near-desert.”



NOTES: All mapping and geocoding conducted in ArcMap 10.8/ArcGIS Pro. Conducted using the NAD1983 geographic coordinate system. Population data is based on 2020 Census block groups.
SOURCES: EOHHS Massachusetts Health Professions License Verification site. Latest update: June 16, 2025. <https://checkahealthlicense.mass.gov/>. State Office of Rural Health (2023). “Rural Definition.” <https://www.mass.gov/info-details/state-office-of-rural-health-rural-definition>. American Community Survey (ACS), 2023 5-year estimates.

The HPC also assessed “near-deserts,” that is, block groups vulnerable to becoming a pharmacy desert. The HPC defined a “near-desert” as a block group with access to only one pharmacy, such that the area would be a pharmacy desert if the sole pharmacy closed.

In 2025, 416 of 5,109 census block groups met the definition of “near-desert,” which constituted 7.5% of the population, or about 525,000 people. Combined, this puts more than 15% of the population in either a pharmacy desert or at risk of being in one. *See the interactive visualization online for more information on pharmacy deserts and “near-deserts”.*

Table 1: Characteristics of the Population Living in a Pharmacy Desert

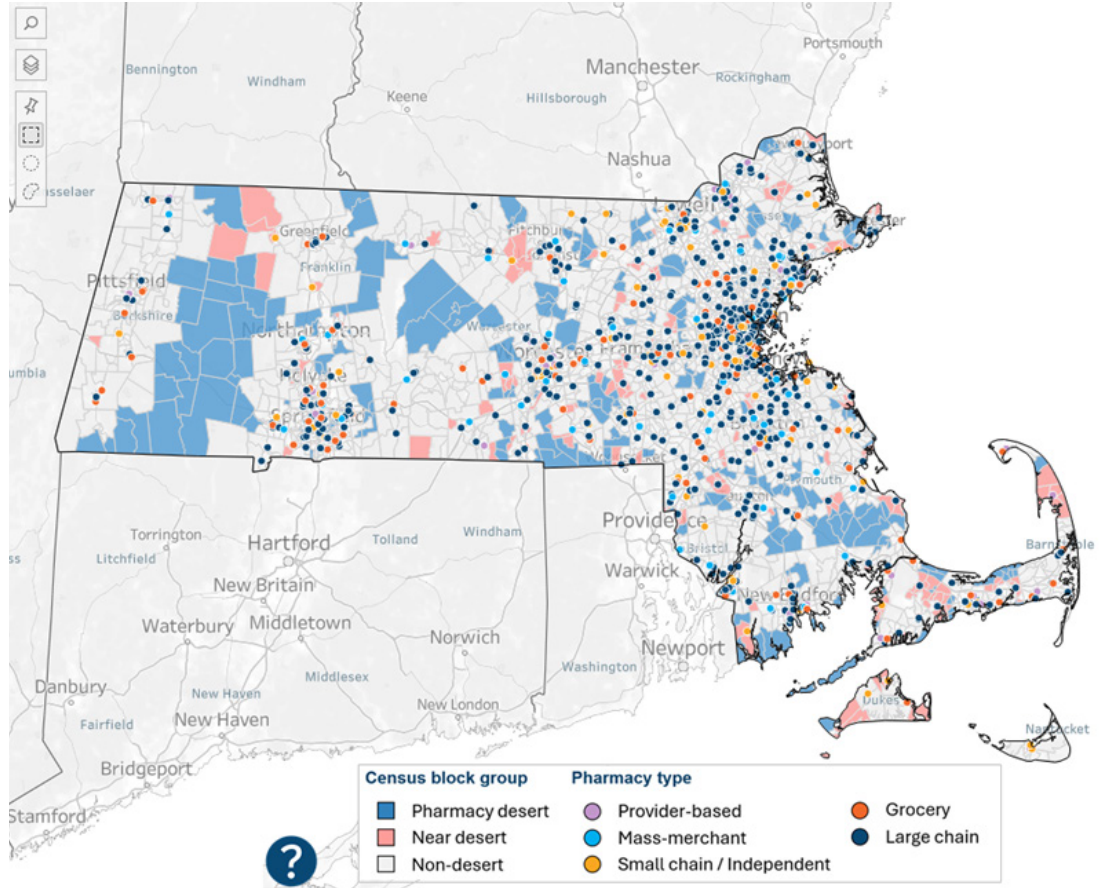
	Category	No. of block groups	Population	Area in sq. miles	Pop. per sq. mile	Share of households without a vehicle	Share of households below the FPL	Share of non-white	Share of population above 65	Median income
RURAL	Non-desert	398	523,870	7.41	784.6	5.0%	4.7%	11.3%	22.3%	\$109,241
	Near desert	26	25,166	8.47	834.0	8.3%	5.4%	10.8%	28.3%	\$82,685
	Pharmacy desert	43	46,399	25.48	119.8	3.5%	4.6%	7.5%	24.5%	\$101,789
SUBURBAN	Non-desert	2,113	3,125,274	1.72	1,989.6	5.7%	4.6%	20.9%	19.9%	\$129,115
	Near desert	162	230,350	2.29	1,222.7	4.5%	3.8%	15.2%	20.0%	\$132,250
	Pharmacy desert	187	288,798	4.48	794.7	3.6%	3.1%	12.8%	21.6%	\$142,098
URBAN	Non-desert	1,750	2,272,099	0.13	19,533.5	21.2%	10.8%	44.7%	13.8%	\$100,635
	Near desert	228	270,444	0.12	15,599.7	18.9%	11.7%	48.8%	14.7%	\$89,912
	Pharmacy desert	202	247,517	0.14	12,876.5	19.1%	12.3%	43.6%	13.8%	\$85,089

Table 1 shows characteristics for populations in each block group category in 2025. In urban areas, deserts were in neighborhoods with lower median income (\$85,000 vs. \$101,000) and a higher share of families in poverty. However, these patterns were not present in other areas.

Overall, pharmacy deserts tended to be in neighborhoods with lower population density and a somewhat higher proportion of residents over the age of 65 years old. Urban and rural areas had slightly larger shares of block groups that were pharmacy deserts: 9% of urban and of rural block groups were deserts, compared to 8% of suburban block groups. In urban areas, 20% of block groups were in deserts or “near-deserts,” compared to 15% of rural block groups and 14% of suburban areas.

Interactive 2: Tableau dashboard—Pharmacy Deserts and “Near-Deserts” in Massachusetts, 2025

Pharmacy deserts tended to be in neighborhoods with **lower population density** and a somewhat higher proportion of residents **over the age of 65 years old**.



CONCLUSION

Pharmacies provide an important health care access point. Pharmacy closures, and the deserts that can result, can threaten access and exacerbate existing disparities. While all types of pharmacies provide critical access across Massachusetts and face pressures, small chain and independent pharmacies face particular financial challenges.

Currently, 8.3% of the Massachusetts population, about 580,000 people, lives in a pharmacy desert. This represents an increase of approximately 90,000 people living in a pharmacy desert since 2019, which is a direct consequence of the closure of nearly 200 pharmacies (on net) between 2019 and 2025. Another 7.5% of the population, about 525,000 people, lives in an area that would be a desert if the sole pharmacy in the area closed.

Timely policy action is needed to increase and sustain equitable pharmacy access in the Commonwealth. Chapters 342 and 343 of the Acts of 2024 charged the Health Policy Commission with establishing two new offices: the [Office of Pharmaceutical Policy and Analysis \(OPPA\)](#) and the [Office of Health Resource Planning \(OHRP\)](#). The main function of OPPA is to serve as the hub of expertise on phar-

Combined, **more than 15%** of the population live in either a pharmacy desert or are at risk of being in one.

The Massachusetts Health Policy Commission (HPC)

is an independent state agency working to improve the affordability of health care for all residents of the Commonwealth. Through data-driven analysis, actionable policy insights, public accountability, and innovative investments, the HPC seeks to improve health care delivery, lower costs, and reduce health disparities.

HPC DataPoints is a series of online briefs that spotlight new research and data findings relevant to the HPC's mission to drive down the cost of health care. It showcases brief overviews and interactive graphics on relevant health policy topics. The analysis underlying these briefs is conducted by HPC staff. To view all HPC DataPoints, visit our [website](#).

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maceutical drug policy in Massachusetts by collecting and analyzing pharmaceutical data, conducting cutting-edge analyses related to access, affordability, and spending on pharmaceutical drugs in the Commonwealth, and developing recommendations on pivotal matters related to pharmaceutical policy. OHRP is to be charged with evaluating the supply and distribution of health care resources across the Commonwealth. OHRP leads the Commonwealth's first comprehensive state health planning initiative in over a decade. The HPC plans to leverage these two new offices to continue examining trends in pharmacy deserts in the coming months.

Endnotes

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