



Bridging the Gap: Tackling Pharmacy Deserts & Enhancing Medication Access and Adherence

Tessa Schnelle, PharmD, MPH, DPLA



Objectives

- Describe the role of the Pharmacy Benefits Manager
- Define the term pharmacy desert
- Understand the differences between medication access & adherence
- Identify risk factors that have unique impacts on patients and rural Kansas communities
- Differentiate between causal theories contribute to the increase in pharmacy deserts
- Assess solutions addressing barriers to medication access.

Background

What is the role of the Pharmacy Benefits Manager (PBM) in medication access in the United States?

Vertical Business Relationships Among Insurers, PBMs, Specialty Pharmacies, and Providers, 2023



House Insurance Committee Hears Updates on Pharmacies



(Feb. 1, 2024) – Yesterday, the House Insurance Committee, chaired by Rep. Bill Sutton (R-Gardner) saw bill introductions, including one on prior authorization reform.

Jared Holroyd, executive director of the Kansas Pharmacists Association, gave a presentation about the number of pharmacies that have closed and how actions by pharmacy benefit managers have continued to have negative consequences. Holroyd emphasized that white bagging has had serious consequences for patients.

The committee heard from pharmacists including:

- Nate Rockers, Pharmacy Owner in Paola and Louisburg – highlighted PBM Challenges
- Tessa Schnelle, Kansas Pharmacists Association, employed by The University of Kansas Health System – emphasized the white bagging impacts on patients



Feeling sick? In parts of Kansas, you'll have a hard time finding a pharmacy

KCUR | By **Bek Shackelford-Nwanganga**



Published February 6, 2024 at 3:00 AM CST

Home // Radio // Here & Now

Pharmacy deserts are increasing around the country

05:25

Independent pharmacies in Kansas are closing. Those remaining say they're fighting to stay open.

KMUW | By **Celia Hack**







Published February 2, 2024 at 12:00



FTC Releases Interim Staff Report on Prescription Drug Middlemen

Report details how prescription drug middleman profit at the expense of patients by inflating drug costs and squeezing Main Street pharmacies

July 9, 2024 |   

Parent/Owner	CVS Health Corporation	The Cigna Group	UnitedHealth Group Inc.	Humana Inc.	MedImpact Holdings Inc.	19 BlueCross BlueShield plans
Drug Private Labeler	Cordavis Limited	Quallent Pharmaceuticals	NUVAILA			
Health Care Provider	MinuteClinic, Signify Health	Evernorth Care Group	Optum Health	CenterWell		
Pharmacy Benefit Manager	 34%	 23%	 22%	 7%	 5%	 3%
"PBM GPO"/ Rebate Aggregator	Zinc Health Services	Ascent Health Services	Emisar Pharma Services	Ascent (via contract)	Prescient Holdings Group LLC	Ascent (minority owner)
Pharmacy - Retail	CVS Pharmacy					
Pharmacy - Mail Order	CVS Caremark Mail Service Pharmacy	Express Scripts Pharmacy	Optum Rx Mail Service Pharmacy	CenterWell Pharmacy	Birdi, Inc.	Express Scripts Pharmacy (via contract)
Pharmacy - Specialty	CVS Specialty Pharmacy	Accredo	Optum Specialty Pharmacy	CenterWell Specialty Pharmacy	Specialty by Birdi	Accredo (via contract)
Health Insurer	Aetna	Cigna Healthcare	UnitedHealthcare	Humana		19 BlueCross BlueShield plans

FTC Releases Interim Staff Report on Prescription Drug Middlemen. Federal Trade Commission. July 9, 2024.



Pharmacy Desert vs Network Adequacy

Pharmacy Desert:

A pharmacy shortage area where the distance to a pharmacy is greater than 10 miles in a rural area, 2 miles in a suburban area, 1 mile for urban areas and a half-mile in neighborhoods that are low income and have low vehicle ownership.

Network Adequacy:

Is a regulatory measure used to ensure that health plans network contains an adequate number of providers to provide medically necessary services and access in a timely manner.

How far is too far to travel?





Medication Access vs Medication Adherence

Medication Access:

The ability for a patient to get the correct medication for their healthcare needs, at a price that they can afford and in adequate quantities.

Common barriers to medication access include: navigating insurance, medication costs, and physical access to medications.

Medication Adherence:

The extent to which a person's behavior corresponds with taking a medicine optimally.

Common barriers to medication adherence include: fear, cost, misunderstanding, polypharmacy, lack of symptoms, mistrust, worry, depression.

Which of these methods of medication delivery is better equipped to provide medication access and adherence?



What happens in a pharmacy desert when there is a medical emergency?



What are the impacts of pharmacy deserts in Kansas?





Milken Institute School
of Public Health

THE GEORGE WASHINGTON UNIVERSITY

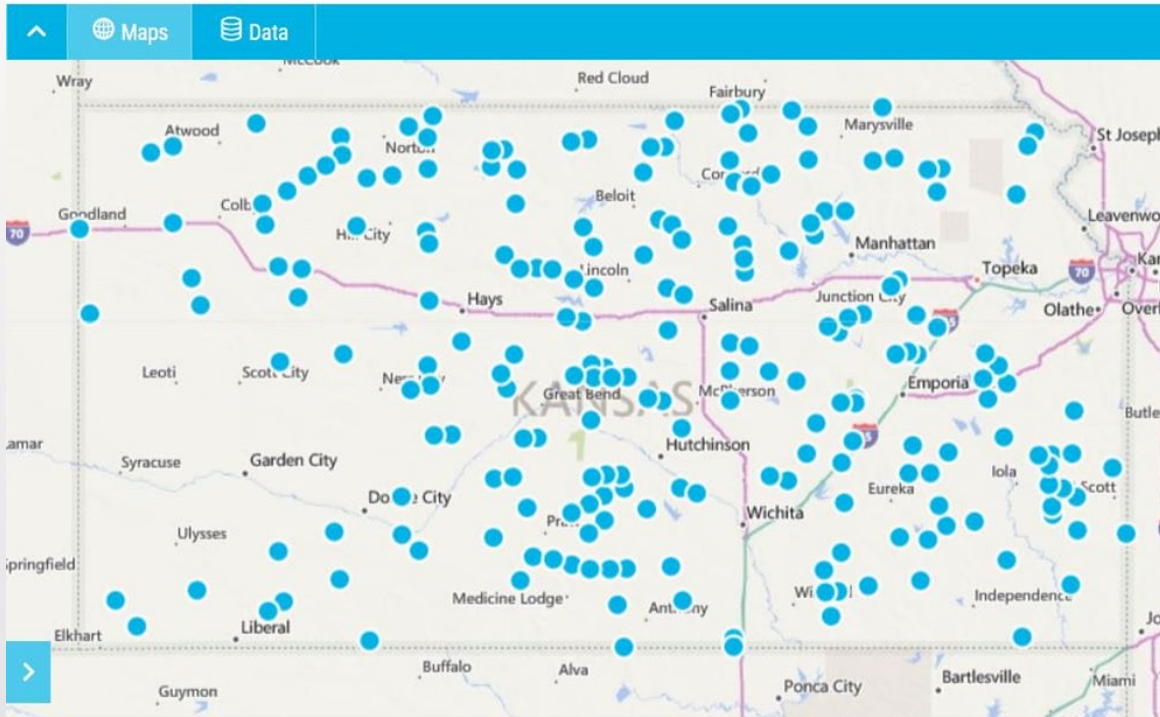
Research Questions

- What is the current state of pharmacy deserts in rural Kansas?
- What are the risk factors that have unique impacts on patients and rural communities designated as pharmacy deserts?
- What are the causal factors contributing to the development of pharmacy deserts?
- What solutions are being taken to increase medication access in rural areas?



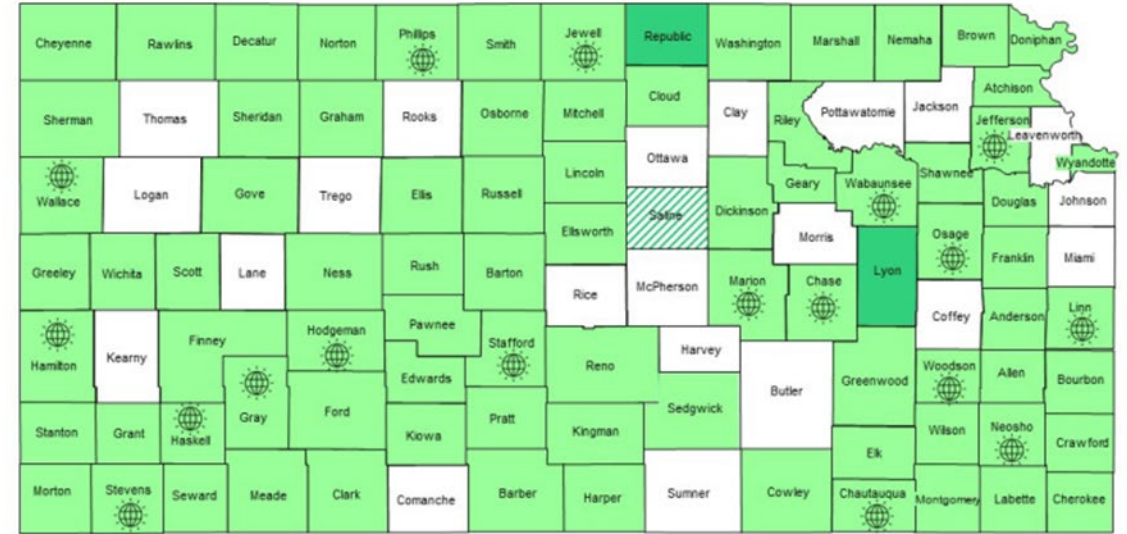
State Pharmacy Desert Map

Towns located 10+ miles from their nearest pharmacy in every U.S. state.



Tucker J. Improving Rural Health and Fighting Pharmacy Deserts via Telepharmacy. TelePharm, 2022. <https://blog.telepharm.com/improving-rural-health-and-fighting-pharmacy-deserts-via-telepharmacy>.

Primary Care Geographic and Population County-Level HPSA Designations



- County-level Primary Care HPSA Score of 18 or higher
 - County-level Primary Care HPSA Score of 17 or lower
 - Not eligible for County-level Primary Care HPSA score
 - Application for HPSA score has been submitted to HRSA
 - Counties with Geographic Primary Care HPSA Designation
- Data Source: Health Resources & Services Administration Data Warehouse, December 2020
- Data Note: HPSA scores shown are listed in Data Warehouse as of December 2020. Updates to HPSAs made after this date are not reflected.




Health Professional Underserved Areas Report Kansas Primary Care and Rural Health. Kansas Department of Health and Environment, 2020. <https://www.kdhe.ks.gov/DocumentCenter/View/1517/2020-Health-Professional-Underserved-Areas-Report-PDF?bidId=>

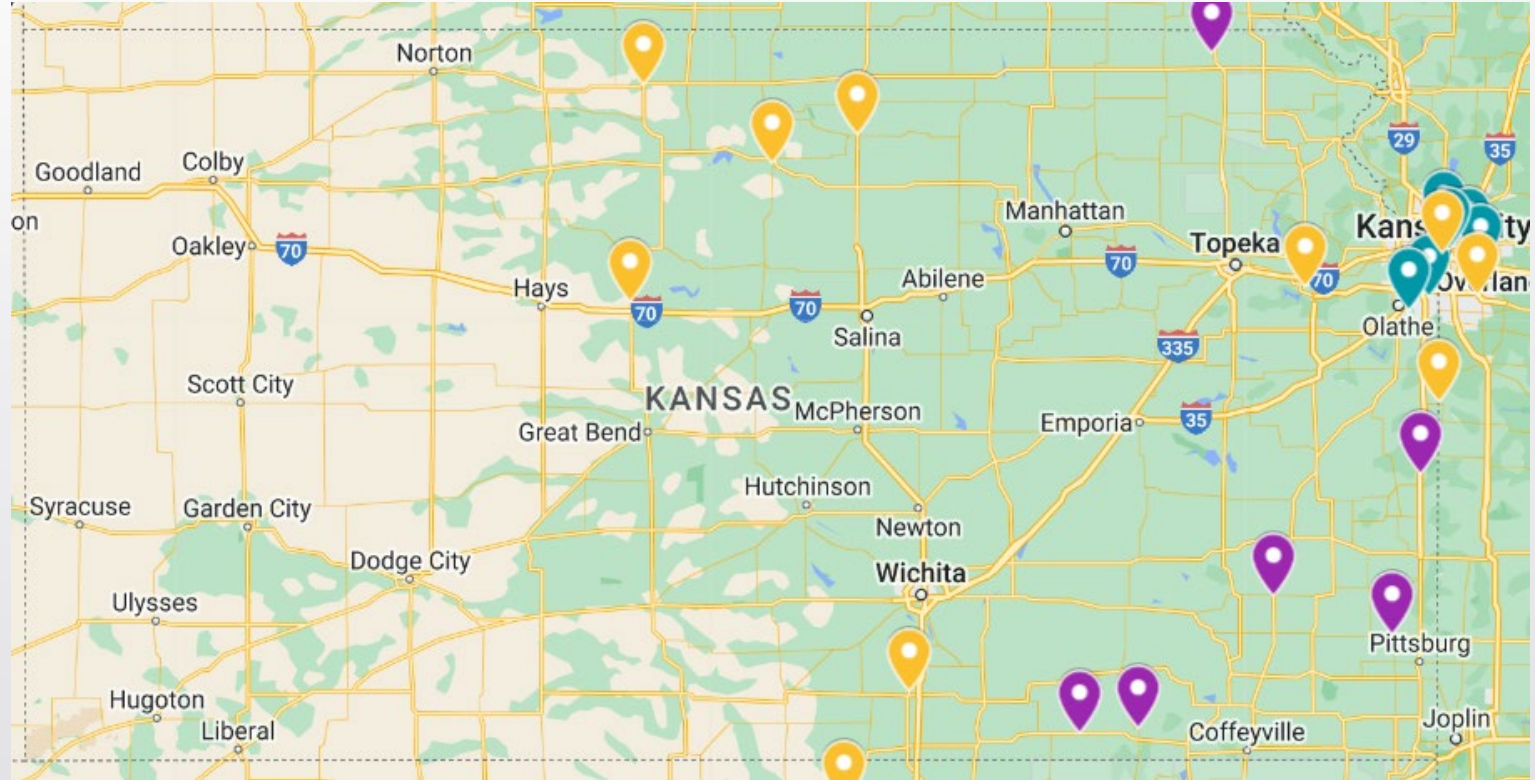


Results

- As of February 2024, **210 towns** in Kansas that **met the criteria of a rural pharmacy desert**.
- The **furthest distance** a town was from their nearest pharmacy was Matfield, Kansas, **25 miles from their local pharmacy**.
- The **average number of miles** between a town classified as a pharmacy desert and their pharmacy was **13.3 miles**.
- Of the 63 **Governor designated medically underserved areas (MUA)** in Kansas a total of **73% contained at least one pharmacy desert**.
- Approximately **58% of the pharmacy deserts** in Kansas **are located in a MUA**.
- Approximately **83% of the pharmacy deserts** in Kansas **are located in a Primary Care Health Provider Shortage Area (HPSA)**.

2024 Pharmacy Closure Trends in Kansas

-  Chain Closure
-  Closure
-  Ownership Transfer



Interactive Map of NPIs since Jan 2024 – credits to Benjamin Jolley
https://www.google.com/maps/d/viewer?mid=1pCzgfAz4XW5IN_ZlhM-RpUJfBWbbSKE&ll=37.897417951275635%2C-97.49492981018915&z=7

Causal Factors

“We often preoccupy ourselves with the symptoms, whereas if we went to the root cause of the problems, we would be able to overcome the problems once and for all.”

Wangari Maathai

BELL'S FAMILY PHARMACY CLOSES IN TATE GEORGIA JUST AS PRICING DISPARITIES IN STATE HEALTH BENEFIT PLAN DISCOVERED



- Bell's Family Pharmacy (pictured above) in Tate, Georgia closed its doors on February 17, 2024, citing low reimbursements and other PBM practices as the primary cause. It was the only stand-alone retail pharmacy in the town.
- Bell's closure is part of a disturbing pattern of independent pharmacy closures over the last several years including Arnold's Drug Co. (Cornelia), Concord Pharmacy (Dunwoody), Suwanee Pharmacy, Jones Pharmacy (Fayetteville), Randy's Pharmacy (Helen), Clarkesville Drugs, Scottie Discount Drugs (Hartwell), Scottie Discount Drugs (Royston), Prescription Shop (Statesboro), Medical Center Pharmacy (Fayetteville), Larry's Pharmacy (Waycross), and more.
- Despite offering high touch clinical and personalized service, GA independent pharmacies continue to suffer at the hands of large PBMs including low and underwater reimbursements in Georgia's State Health Benefit Plan.
- The below chart illustrates pricing disparities between independent pharmacies and chains in GA's SHBP.¹ These examples are of 15 commonly prescribed generics used to treat a wide variety of health conditions. These examples are no aberration but part of a pattern in which the SHBP's PBM pays independent pharmacies less than larger retail chain pharmacies.

15 Commonly Prescribed Generics Drug Name/Strength	Average Payment to 3 Closest Retail Chains ²	Bell's Family Pharmacy Payment	Chain Payment v. Bell's % Difference
Atorvastatin Cal 20mg 90-day	\$46.87	\$1.90	2,367% higher
Bupropion Hydro ER (Xl) 300mg 90-day	\$53.75	\$5.54	870% higher
Metformin Hydro ER 500mg 30-day	\$13.40	\$1.29	939% higher
Metoprolol Tartrate 100mg 90-day	\$23.89	\$14.44	65% higher
Amlodipine Besylate 10mg 90 day	\$23.55	\$1.51	1,460% higher
Levothyroxine 100mcg 90-day	\$4.00	\$4.39	10% (Bell's higher)
Lisinopril 20mg tablet 30-day	\$9.71	\$1.72	464% higher
Losartan Pot 50mg 90-day	\$41.44	\$4.74	774% higher
Omeprazole DR 10mg 90-day	\$102.65	\$66.59	54% higher
Esomeprazole Mag. 20mg 90-day	\$61.68	\$32.66	89% higher
Simvastatin 20mg 90-day	\$30.00	\$7.50	300% higher
Montelukast Sod 4mg 90-day	\$45.38	\$23.58	92% higher
Escitalopram Oxalate 20mg 90-day	\$55.10	\$9.01	512% higher
Topiramate 200mg 90-day	\$62.13	\$15.16	310% higher
Cephalexin 500mg 7-day	\$12.63	\$2.05	516% higher

PLEASE STAND WITH GA'S INDEPENDENT PHARMACIES³ & SUPPORT LEGISLATION TO FIX SHBP RX BENEFITS, END PBM PRICING GAMES, PAY ALL PHARMACIES FAIRLY & TRANSPARENTLY, & SAVE GA MONEY

¹ Pricing Source: <https://info.caremark.com/oc/shbp>; SHBP HMO

² Estimated average payment calculated using pricing source for Walgreens, Kroger, and CVS retail pharmacies located in Jasper, GA.

³

Proposed Solutions



- 1) Stabilize a currently unstable pharmaceutical economic market would be to implement health policy and regulatory reforms
- 2) Utilize innovative solutions in areas where pharmacy deserts already exist
- 3) Stabilize the pharmacy workforce



Questions

Tessa Schnelle, PharmD, MPH, DPLA

Director of Pharmacy – Cass Regional Medical Center

Clinical Pharmacist – The University of Kansas Health-System, Olathe Hospital

Immediate Past President – Kansas Pharmacists Association

Email: taschnelle@gmail.com

Phone: 913-449-0014



References

1. Knox RP, Gagneja D, Kraschel KL. Independent Pharmacies Gain Unanimous Victory in Recent US Supreme Court Case. JAMA Health Forum. 2021;2(2):e210171. doi:10.1001/jamahealthforum.2021.0171
2. Nguyen A, Meijgaard JV, Kim S, Marsh T. Mapping Healthcare Deserts 80% of the Country Lacks Adequate Access to Healthcare. The GoodRx Research Team. September 2021. https://assets.ctfassets.net/4f3rgqwzdnj/1XSI43140KXMQiJUtl0iIq/ad0070ad4534f9b5776bc2c41091c321/GoodRx_Healthcare_Deserts_White_Paper.pdf
3. Danziger PN. Drugstore Downsizing: CVS, Walgreens And Rite Aid To Close Nearly 1,500 Stores. News Report. Forbes. September 27, 2023. Accessed October 15, 2023. <https://www.forbes.com/sites/pamdanziger/2023/09/27/drugstore-downsizing-cvs-walgreens-and-rite-aid-to-close-nearly-1500-stores/>
4. Kansas Department of Health and Environment Primary Care and Rural Health. Shortage/Underserved Areas Designations. kdhe.ks.gov. August 21, 2023. Accessed October 15, 2023. <https://www.kdhe.ks.gov/DocumentCenter/View/1525>
5. Mattingly TJ 2nd, Hyman DA, Bai G. Pharmacy Benefit Managers: History, Business Practices, Economics, and Policy. JAMA Health Forum. 2023;4(11):e233804. Published 2023 Nov 3. doi:10.1001/jamahealthforum.2023.3804
6. Fein AJ. The 2023 Economic Report on U.S. Pharmacies and Pharmacy Benefit Managers. Drug Channels Institute. 2023. Accessed September 15, 2024. <https://www.drugchannels.net/2023/03/now-available-2023-economic-report-on.html>
7. Knox RP, Gagneja D, Kraschel KL. Independent pharmacies gain unanimous victory in recent US supreme court case. JAMA Health Forum. 2021;2(2):e210171. doi:10.1001/jamahealthforum.2021.0171
8. FTC launches inquiry into prescription drug middlemen industry. Federal Trade Commission. June 7, 2022. Accessed November 6, 2023. <https://www.ftc.gov/news-events/news/press-releases/2022/06/ftc-launches-inquiry-prescription-drug-middlemen-industry>
9. Prescription for disaster: America's broken pharmacy system in revolt over burnout and errors. USA Today. October 26, 2023. Accessed November 6, 2023. <https://www.usatoday.com/story/news/investigations/2023/10/26/pharmacy-chains-dangerous-conditions-medication-errors/71153960007/>
10. Pharmacist Prescribing: “Test and Treat.” National Alliance of State Pharmacy Associations. October 10, 2022. Accessed November 6, 2023. <https://naspa.us/blog/resource/pharmacist-prescribing-for-strep-and-flu-test-and-treat/>



References

11. Heath Professional Underserved Areas Report Kansas Primary Care and Rural Health. Kansas Department of Health and Environment. 2020. Accessed November 6, 2023. <https://www.kdhe.ks.gov/DocumentCenter/View/1517/2020-Health-Professional-Underserved-Areas-Report-PDF?bidId=>
12. Tucker J. Improving Rural Health and Fighting Pharmacy Deserts via Telepharmacy. *TelePharm*. 2022. Accessed February 24, 2024. <https://blog.telepharm.com/improving-rural-health-and-fighting-pharmacy-deserts-via-telepharmacy>.
13. Pednekar P, Peterson A. Mapping pharmacy deserts and determining accessibility to community pharmacy services for elderly enrolled in a State Pharmaceutical Assistance Program. *PLoS One*. 2018;13(6):e0198173. Published 2018 Jun 4. doi:10.1371/journal.pone.0198173
14. Guadamuz JS, Alexander GC, Zenk SN, Kanter GP, Wilder JR, Qato DM. Access to pharmacies and pharmacy services in New York City, Los Angeles, Chicago, and Houston, 2015-2020. *J Am Pharm Assoc (2003)*. 2021;61(6):e32-e41. doi:10.1016/j.japh.2021.07.009
15. Hopper L. High-tech map promotes access to medicine and pharmacy services. University of Southern California. November 2, 2022. Accessed December 3, 2023. <https://today.usc.edu/usc-map-identifies-pharmacy-deserts/>
16. Urick BY, Adams JK, Bruce MR. State Telepharmacy Policies and Pharmacy Deserts. *JAMA Netw Open*. 2023;6(8):e2328810. Published 2023 Aug 1. doi:10.1001/jamanetworkopen.2023.28810
17. Sahota H, Guzman S, Tordera L, Chan M, Cocohoba J, Saberi P. Pharmacy Deserts and Pharmacies' Roles Post-Extreme Weather and Climate Events in the United States: A Scoping Review. *J Prim Care Community Health*. 2023;14:21501319231186497. doi:10.1177/21501319231186497
18. Wittenauer R, Shah PD, Bacci JL, Stergachis A. Pharmacy deserts and COVID-19 risk at the census tract level in the State of Washington. *Vaccine X*. 2022;12:100227. Published 2022 Oct 17. doi:10.1016/j.jvacx.2022.100227
19. Pednekar P, Peterson A (2018) Mapping pharmacy deserts and determining accessibility to community pharmacy services for elderly enrolled in a State Pharmaceutical Assistance Program. *PLoS ONE*13(6): e0198173. <https://doi.org/10.1371/journal.pone.0198173>
20. AHong I, Wilson B, Gross T, Conley J, Powers T. Challenging terrains: socio-spatial analysis of Primary Health Care Access Disparities in West Virginia. *Appl Spat Anal Policy*. 2023;16(1):141-161. doi:10.1007/s12061-022-09472-0



References

21. Adepoju OE, Kiaghadi A, Shokouhi Niaki D, Karunwi A, Chen H, Woodard L. Rethinking access to care: A spatial-economic analysis of the potential impact of pharmacy closures in the United States. *PLoS One*. 2023;18(7):e0289284. Published 2023 Jul 27. doi:10.1371/journal.pone.0289284
22. Constatantin J, Ullrich F, Mueller K. Rural and Urban Pharmacy Presence – Pharmacy Deserts. RUPRI Center for Health Policy Analysis. Rural Policy Brief No. 2022-1. 2022. Accessed February 24, 2024. <https://rupri.public-health.uiowa.edu/publications/policybriefs/2022/Pharmacy%20Deserts.pdf>
23. Yost, D. Support for Reforming Pharmacy Benefit Managers. National Association of Attorneys General. Published 2024 Feb 24. Accessed February 25, 2024. https://www.ohioattorneygeneral.gov/Files/Briefing-Room/News-Releases/PBM-Letter-_NAAG-Letterhead-Final.aspx.
24. Population Over Age 65 in 2022. Kansas Health Matters. 2024. Accessed February 24, 2024. <https://www.kansashealthmatters.org/indicators/index/view?indicatorId=374&localeTypeId=2&periodId=246>
25. Hernandez I, Tang S, Morales J, et al. Role of independent versus chain pharmacies in providing pharmacy access: a nationwide, individual-level geographic information systems analysis. *Health Aff Sch*. 2023;1(1):qxad003. doi:10.1093/haschl/qxad003
26. Grabenstein JD. Essential services: Quantifying the contributions of America's pharmacists in COVID-19 clinical interventions. *J Am Pharm Assoc* (2003). 2022;62(6):1929-1945.e1. doi:10.1016/j.japh.2022.08.010
27. Laws and Regulations. Kansas Board of Pharmacy. 2023 Jun. Accessed February 24, 2024. <https://pharmacy.ks.gov/statutes-regs/statutes-regs>.
28. DiPietro Mager NA, Zollinger TW, Turman JE Jr, Zhang J, Dixon BE. Routine Healthcare Utilization Among Reproductive-Age Women Residing in a Rural Maternity Care Desert. *J Community Health*. 2021;46(1):108-116. doi:10.1007/s10900-020-00852-6
29. Azad A, Su J, Nguyen M, et al. Pharmacist furnishing of hormonal contraception in California's Central Valley. *J Am Pharm Assoc* (2003). 2024;64(1):226-234.e2. doi:10.1016/j.japh.2023.08.005
30. Romero L, Sappenfield OR, Uesugi K, et al. Review of Publicly Available State Policies for Long-Acting Reversible Contraception Device Reimbursement. *J Womens Health (Larchmt)*. 2022;31(7):1048-1056. doi:10.1089/jwh.2021.0361



References

31. Burde A, O'Connor S, Hachey D. Community Pharmacy Enhanced Dispensing Model to Improve Medication Access for Rural Patients Living with HIV. *Innov Pharm.* 2019;10(4):10.24926/iip.v10i4.2264. Published 2019 Oct 31. doi:10.24926/iip.v10i4.2264
32. Bennett AS, Elliott L. Naloxone's role in the national opioid crisis-past struggles, current efforts, and future opportunities. *Transl Res.* 2021;234:43-57. doi:10.1016/j.trsl.2021.03.001
33. Qato DM, Alexander GC, Chakraborty A, Guadamuz JS, Jackson JW. Association Between Pharmacy Closures and Adherence to Cardiovascular Medications Among Older US Adults. *JAMA Netw Open.* 2019;2(4):e192606. Published 2019 Apr 5. doi:10.1001/jamanetworkopen.2019.2606
34. Goyette D, Disco ME, Leal S, Schwed DH. The pharmacist as a primary care provider for the medically underserved. *J Am Pharm Assoc (2003).* 2003;43(5 Suppl 1):S52-S53. doi:10.1331/154434503322612483
35. Rodis JL, Capesius TR, Rainey JT, Awad MH, Fox CH. Pharmacists in Federally Qualified Health Centers: Models of Care to Improve Chronic Disease. *Prev Chronic Dis.* 2019;16:E153. Published 2019 Nov 21. doi:10.5888/pcd16.190163
36. Pathak S, Haynes M, Qato DM, Urick BY. Telepharmacy and Quality of Medication Use in Rural Areas, 2013-2019. *Prev Chronic Dis.* 2020;17:E101. Published 2020 Sep 3. doi:10.5888/pcd17.200012
37. Knox RP, Kesselheim AS, Sarpatwari A. Risks to the 340B Drug Pricing Program Related to Manufacturer Restrictions on Drug Availability [published correction appears in *JAMA.* 2022 Sep 20;328(11):1111]. *JAMA.* 2022;327(17):1647-1648. doi:10.1001/jama.2022.5959
38. Antrim A. Despite Rapid Growth of Institutions, Pharmacy School Applications Decline. *Pharmacy Times* 2023;17:1. Published 2023 Apr 5. Accessed February 24, 2024. <https://www.pharmacytimes.com/view/despite-rapid-growth-of-institutions-pharmacy-school-applications-decline>
39. Chappell B. Have a complaint about CVS? So do pharmacists: Many just walked out. *npr.org.* 2023 Sept 29. Accessed February 24, 2024. <https://www.npr.org/2023/09/29/1202365487/cvs-pharmacists-walkout-protest>
40. Carter M. Nurse-midwives in federally funded health centers: understanding federal program requirements and benefits. *J Midwifery Womens Health.* 2012;57(4):365-370. doi:10.1111/j.1542-2011.2012.00194.x



References

41. Shi L, Wharton MK, Monnette A. Ensuring access to prescription medications in the post-ACA healthcare access landscape: the essential role of FQHCs in the safety net for the underinsured. *Am J Manag Care*. 2018;24(5 Suppl):S67-S73.
42. Ackroyd SA, Shih YT, Kim B, Lee NK, Halpern MT. A look at the gynecologic oncologist workforce - Are we meeting patient demand?. *Gynecol Oncol*. 2021;163(2):229-236. doi:10.1016/j.ygyno.2021.08.013
43. Elma A, Nasser M, Yang L, Chang I, Bakker D, Grierson L. Medical education interventions influencing physician distribution into underserved communities: a scoping review. *Hum Resour Health*. 2022;20(1):31. Published 2022 Apr 7. doi:10.1186/s12960-022-00726-z
44. Wheeler DL, Hackler JB. Preparing Physicians for Rural-Based Primary Care Practice: A Preliminary Evaluation of Rural Training Initiatives at OSU-COM. *J Am Osteopath Assoc*. 2017;117(5):315-324. doi:10.7556/jaoa.2017.057
45. Scott MA, Kiser S, Park I, Grandy R, Joyner PU. Creating a new rural pharmacy workforce: Development and implementation of the Rural Pharmacy Health Initiative. *Am J Health Syst Pharm*. 2017;74(23):2005-2012. doi:10.2146/ajhp160727
46. Population Health and Practice Development Pharmacy Fellowship. Avant Institute. 2024. Accessed February 24, 2024. <https://www.avantinstitute.com/fellowship>
47. Miracle DK, Smith N, Slavova S, et al. Drug disposal deserts: An assessment of receptacle availability in Kentucky community pharmacies. *J Rural Health*. 2024;40(1):208-214. doi:10.1111/jrh.12786
48. Weigel P, Ullrich F, Mueller K; Rural Health Research & Policy Centers; RUPRI Center for Rural Health Policy Analysis, University of Iowa College of Public Health, Department of Health Management and Policy. Demographic and economic characteristics associated with sole county pharmacy closures, 2006-2010. *Rural Policy Brief*. 2013;(2013 15):1-4. Published 2013 Nov 1.
49. Lemley KB, Marks B. Patient satisfaction of young adults in rural clinics: policy implications for nurse practitioner practice. *Policy Polit Nurs Pract*. 2009;10(2):143-152. doi:10.1177/1527154409341882
50. Chadwick DG, Hupp JR. East Carolina University School of Dentistry: impact on access disparities. *J Am Coll Dent*. 2008;75(4):35-41.



References

51. Klepser DG, Xu L, Ullrich F, Mueller KJ. Trends in community pharmacy counts and closures before and after the implementation of Medicare part D. *J Rural Health*. 2011;27(2):168-175. doi:10.1111/j.1748-0361.2010.00342.x
52. Todd K, Westfall K, Doucette B, et al. Causes and consequences of rural pharmacy closures: a multi-case study. *Rural Policy Brief*. 2013;(2013 11):1-4. Published 2013 Aug 1.
53. Todd K, Ullrich F, Mueller K; RUPRI Center for Rural Health Policy Analysis, University of Iowa College of Public Health, Department of Health Management and Policy. Rural pharmacy closures: implications for rural communities. *Rural Policy Brief*. 2013;(2012 5):1-5. Published 2013 Jan 1.
54. Salako A, Ullrich F, Mueller KJ. Update: Independently Owned Pharmacy Closures in Rural America, 2003-2018. *Rural Policy Brief*. 2018;2018(2):1-6. Published 2018 Jul 1.
55. Nattinger M, Ullrich F, Mueller KJ; Rural Health Research & Policy Centers; Rural Policy Research Institute, RUPRI Center for Rural Health Policy Analysis, University of Iowa College of Public Health, Department of Health Management and Policy. Characteristics of Rural Communities with a Sole, Independently Owned Pharmacy. *Rural Policy Brief*. 2015;(2015 6):1-4. Published 2015 Apr 1.
56. Boyle K, Ullrich F, Mueller K. Independently owned pharmacy closures in rural America. *Rural Policy Brief*. 2012;(2012 4):1-4. Published 2012 Jul 1.
57. FTC Releases Interim Staff Report on Prescription Drug Middlemen. Federal Trade Commission. July 9, 2024. Accessed September 15, 2024. <https://www.ftc.gov/news-events/news/press-releases/2024/07/ftc-releases-interim-staff-report-prescription-drug-middlemen>
58. Meinzer B, Healy A, Arnold A. Navigating Barriers to Medication Access. *Cardi-OH.org*. April 2022. Accessed September 15, 2024. <https://www.cardi-oh.org/files/resources/cardi-oh-navigating-barriers-to-medication-access.pdf>
59. 8 reasons patients don't take their medications. American Medical Association. *AMA.org*. February 22, 2023. Accessed September 15, 2024. <https://www.ama-assn.org/delivering-care/physician-patient-relationship/8-reasons-patients-dont-take-their-medications>
60. a