Closing the Gap: Telehealth Partnerships to Improve Infectious Disease Care in Underserved Rural Missouri

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Introduction

- **Critical care gap:** Many rural hospitals lack infectious disease (ID) specialists.
- **Long travel times:** Patients often drive 2–3 hours, causing delays and worse outcomes.
- **Health disparities:** Higher poverty, chronic illness, and poor broadband widen inequities.
- **Theme link:** *"It Starts Here"* → solutions must invest in **local infrastructure & partnerships**.
- **Purpose:** Show how **telehealth partnerships** can bridge gaps and bring expert ID care closer to rural Missourians.

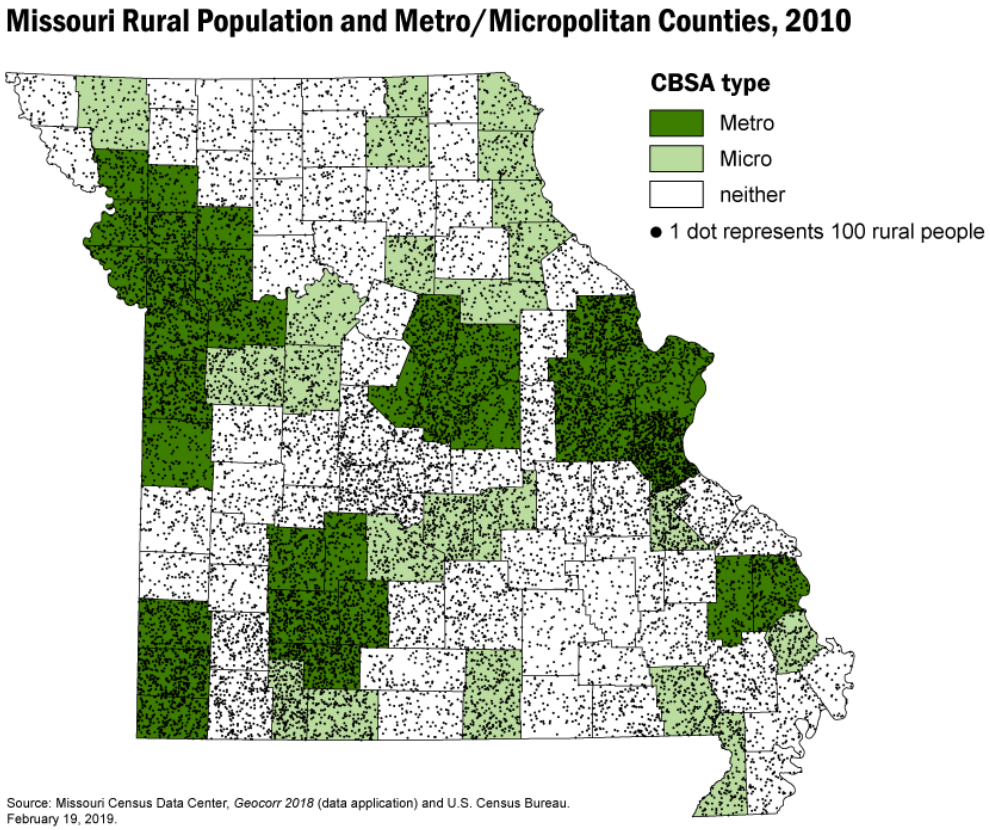
Source: https://www.enghousevideo.com/blog/healthcare/the-impact-of-telehealth-in-rural-areas

Session’s Objectives

- **Identify** key barriers to infectious disease care in rural Missouri.
- **Explore** telehealth partnership models that improve access and outcomes.
- **Discuss** policy, funding, and community strategies to sustain telehealth.
- **Apply** concepts through a case scenario relevant to rural communities.

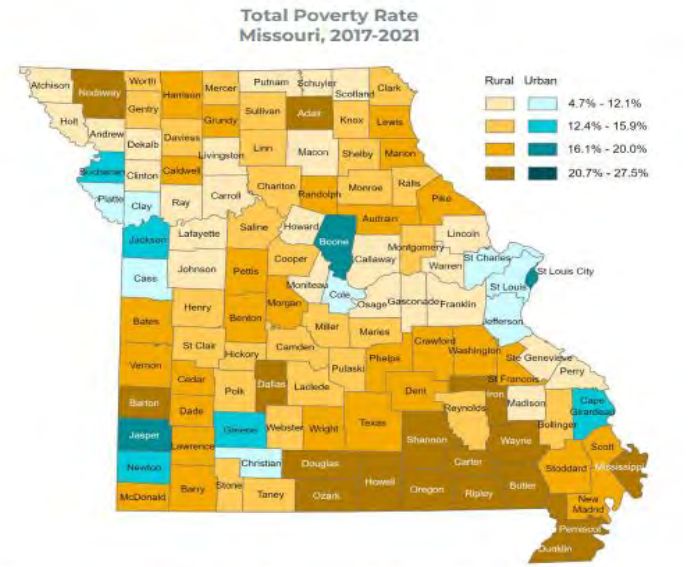
Rural Missouri Context

- **Population density: ~90 people/mi^2** (2021).
- **115 counties** (114 + City of St. Louis); **population 6,151,548** (2020).
- **Rural/Urban split:** 16 urban vs. 99 rural counties; ~34% (~2M) residents live in rural counties.
- **Metro concentration: ~55%** of Missourians live in the **St Louis (35%)** and **Kansas City (21%)** MSAs.

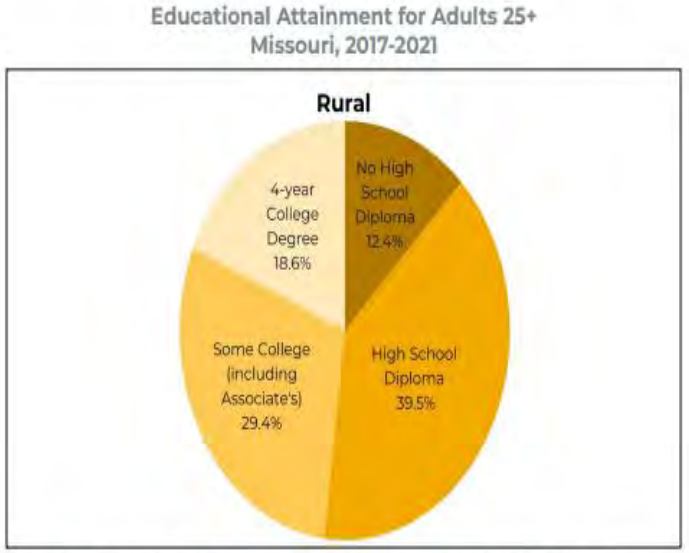


Rural/urban defined per MO Biennial Rural Health report (density threshold 150 persons/mi^2). Source: HRSA "Overview of the State – Missouri, 2023.

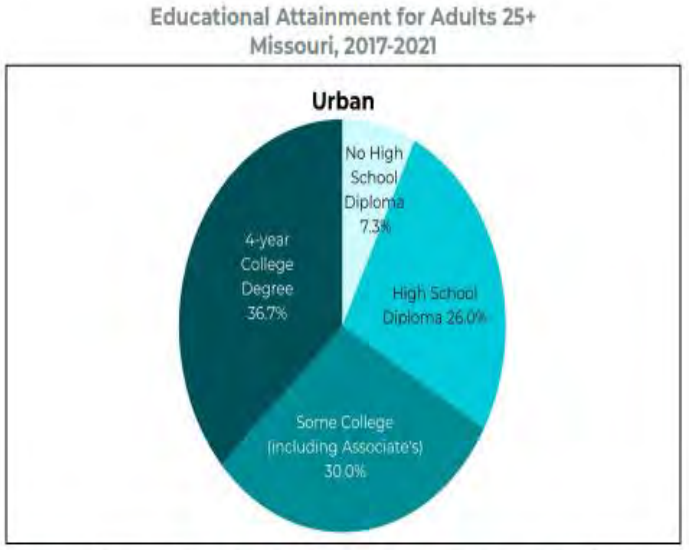
Health Disparities Snapshot



Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates, Table S1701.



Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates, Table S1501*



Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates, Table S1501*

- **Poverty is a major health risk** → 15.4% of rural Missourians live in poverty vs. 11.5% in urban areas (2017–2021).
- **Education gap:** More rural adults lack a high school diploma (12.4% vs. 7.3% urban), while fewer hold a 4-year degree or higher.

Source: U.S. Census Bureau, 2017–2021 American Community Survey 5-Year Estimates (Table S1501); Missouri DHSS, Health in Rural Missouri Biennial Report, 2022–2023.

Health Disparities Snapshot

Top 5 Counties with the Longest Average Distance (miles) to a Hospital	
Carter	51.5
Benton	51.5
Douglas	49.9
Hickory	46.1
Bollinger	41.7

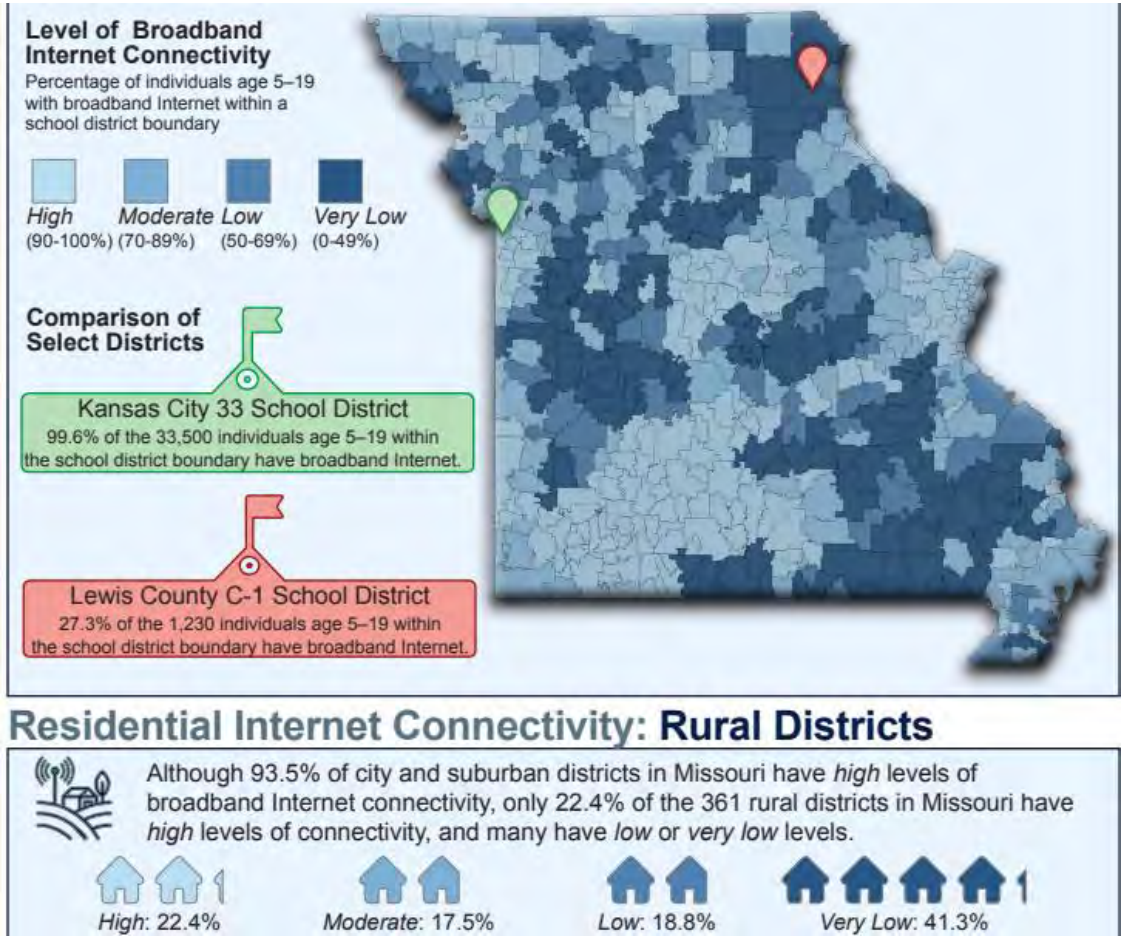
- **Hospital Commute:** 41 rural counties lack a hospital; average distance to care up to 51.5 miles (Carter & Benton).

- **Public Transportation Access:** 6.5% of Missouri households (mostly rural) have no vehicle; rural transit is limited.

Source: U.S. Census Bureau, 2017–2021 American Community Survey 5-Year Estimates (Table S1501); Missouri DHSS, Health in Rural Missouri Biennial Report, 2022–2023.

Broadband Gap

- **Urban/suburban coverage:** 93.5% of districts have high broadband access.
- **Rural coverage:** Only **22.4% of rural districts** have high access; **41.3% have very low access**.
- **Contrast:** Kansas City School District – 99.6% connected vs. Lewis County C-1 – only 27.3% connected.



Source: Institute of Education Sciences, Regional Educational Laboratory Central (2025). “Infographics: Rural Internet Connectivity Issues

Barriers to ID Care

- Limited Specialist Availability
- Delayed & Fragmented Care
- Financial & System Barriers
- Impact on Patients

Telehealth Partnerships as a Solution

01

Community Access Points

02

Direct Patient-to-Specialist Telehealth

03

Provider-to-Provider Support

04

Digital Navigators

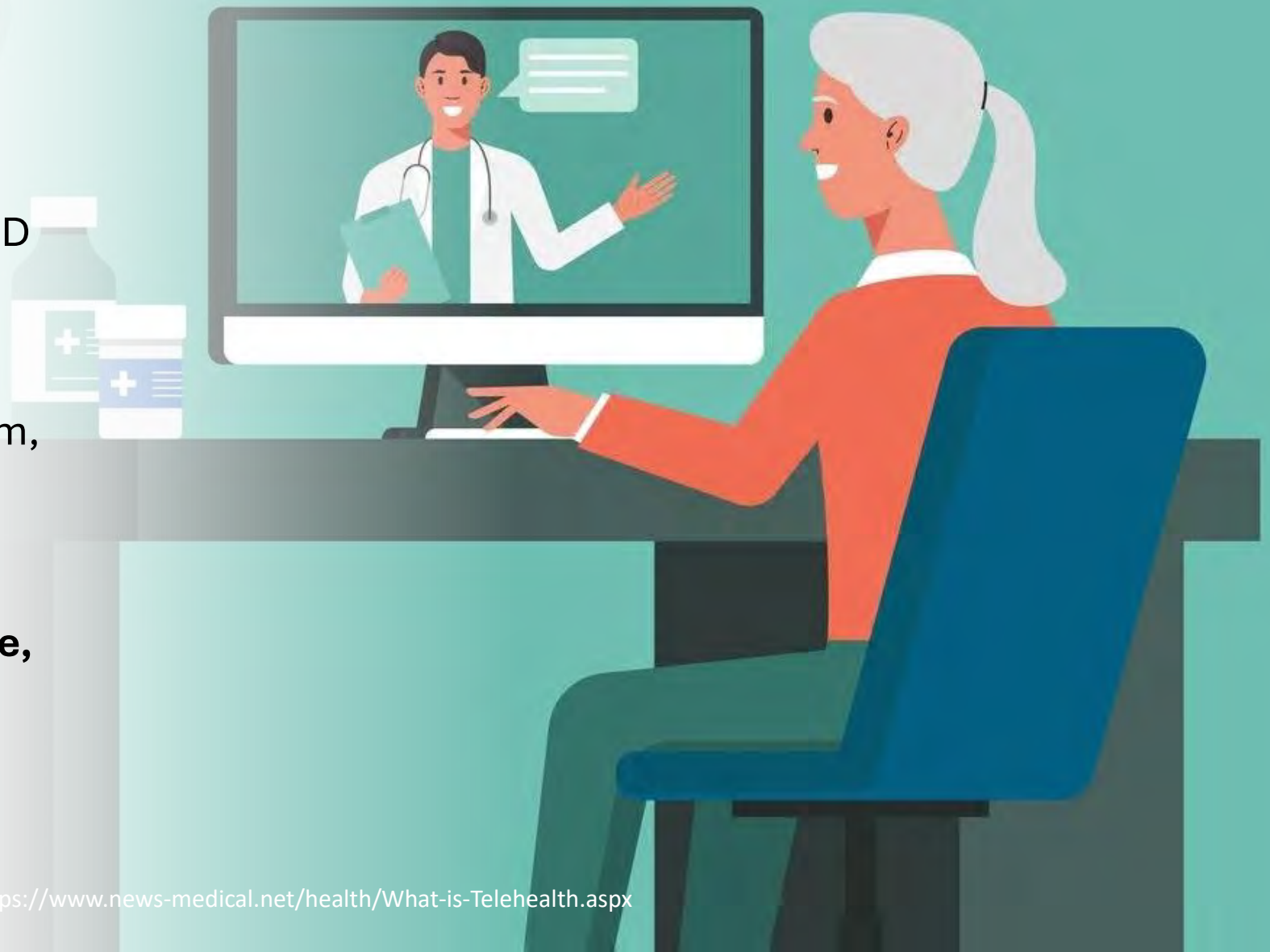
Telehealth Access Points

- Private rooms in **libraries, schools, or clinics** with computer, camera, internet.
- Help overcome **lack of home broadband or devices.**
- Staff can assist patients with setup.
- Creates a **safe, local hub** for specialty consults.

Source: https://www.goshencountylibrary.org/path/

Direct Patient-to-Specialist Telehealth

- Rural patients connect with ID specialist **via live video** at their local hubs.
- Specialists can guide local staff in real time (wound exam, vitals, treatment).
- **Avoids 200-mile trips** to tertiary centers.
- Improves **trust, convenience, and timely care.**



https://www.news-medical.net/health/What-is-Telehealth.aspx

Provider-to-Provider Model

- **Show-Me ECHO (Missouri)**: weekly v clinics with ID experts.
- **eConsults**: secure case questions, asynchronous responses.
- Builds **local provider knowledge** and reduces need for transfers.
- Expands rural care capacity for **HIV, Hepatitis C, antibiotic therapy.**

https://projectecho.unm.edu/model/

Digital Navigators & Community Support

- **Coaches help patients** use Zoom, portals, devices.
- Can be librarians, community health workers, or nurses.
- Improves **digital literacy & patient comfort.**
- Ensures **equitable access** for older adults and underserved populations.

Source: https://www.mcknights.com/news/ipad-like-technology-helping-elders-and-disabled-connect/

Evidence of Effectiveness

SATISFACTION & TRUST

- Rural patients and nurses rated tele-ID highly acceptable in Missouri pilots.

GUIDELINE ADHERENCE

- Tele-ID raised treatment adherence from 0% to 84% in a rural hospital

REDUCED TRANSFERS & BROADER BENEFITS

- Telehealth keeps patients closer to home and expands chronic & mental health care.

Telehealth & Mental Health Equity

Privacy reduces stigma

- Discreet care at home or clinic

Access in underserved

- Rural, veterans, tribal groups gain counseling options

Addressing shortages

- Tele-psychiatry & ECHO expand reach, cut wait times.

Cultural sensitivity

- Match by culture/language; translation & caption tools.

Challenges to Implementation

Broadband & Infrastructure

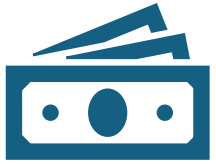
Funding & Reimbursement

Workforce Training & Turnover

Low Patient Utilization

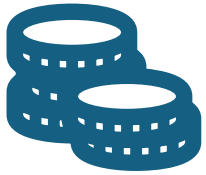
Policy & Regulatory Uncertainty

Policy and Financial Solutions



Reimbursement Reform

- Ensure **payment parity**: telehealth = in-person visit
- Cover **facility fees** for rural originating sites
- Include **audio-only visits** (phone consults)
- Make **Medicare/Medicaid flexibilities permanent**



Grants & Subsidies

- **USDA DLT Grants** – equipment & broadband
- **FCC Rural Health Care Program** – connectivity support
- **BEAD Program ($1B+ in MO)** – broadband expansion
- **Seed grants** (e.g., Frontier Integration Project) – kickstart adoption

Collaborative Partnerships

- **Hub-and-Spoke**: urban specialists support multiple rural hospitals
- Pool resources through **regional networks**
- **Non-health partners**: libraries, universities, Area Agencies on Aging
- Share costs, training, and technology

Policy and Financial Solutions

Digital Navigator Programs

- Train **community health workers / librarians** as tech coaches
- Support patients with **Zoom setup, portal access, devices**
- Funded via **FCC & state workforce grants**
- Builds **digital literacy + trust**

Advocacy & Policy Support

- Advocate for **interstate licensing compacts**
- Push for **permanent Medicaid telehealth coverage**
- Engage with **state/federal legislators**
- Partner with **MHA, NRHA** for rural health policy action

Sustainable Models and Partnerships

HUB-AND-SPOKE SPECIALIST NETWORKS

- **Central hub** (academic/large hospital) provides telehealth to rural “spokes”
- Efficient use of scarce ID specialists
- Keeps patients local, reduces unnecessary transfers
- **Missouri pilot** showed improved car

COMMUNITY TELEHEALTH CENTERS

- Permanent **telehealth rooms** in libraries, health departments, pharmacies
- Equipped with vitals devices (BP cuff, scale, tablet/iPad)
- Staff/navigators help with setup & digital literacy
- Increases convenience → reaches people who avoid clinics

MOBILE TELEHEALTH UNITS

- Clinics-on-wheels with satellite internet + exam room
- Visit remote towns on schedule (weekly/biweekly)
- Useful for wound care, HIV follow-ups, infusion services
- Funded through hospital partnerships & grants

Sustainable Models and Partnerships

PROJECT ECHO NETWORKS

- **Move knowledge, not patients”**
- Rural clinicians present cases to ID experts weekly
- Builds **local expertise**, reduces referrals over time
- Show-Me ECHO has **participants in every Missouri county**

PUBLIC-PRIVATE COLLABORATIONS

- Hospitals + telecom companies = broadband expansion
- Hospitals sponsor **telehealth booths in libraries**
- Nonprofits, churches, schools host telehealth workshops
- Regional coalitions advocate + share resources

CASE EXAMPLE: OKLAHOMA LIBRARIES

- OSU Extension set up **telehealth booths** in 4 rural libraries
- Privacy ensured (soundproof booths, UV sanitation)
- Librarians assist with scheduling & technology
- Used for **mental health, chronic care, prescription refills**

Source: OSU Extension, 2024 – Telehealth access in rural libraries

Interactive Case: John's Story

- John, 65-year-old cattle farmer, rural Missouri
- Diabetes → severe foot infection
- Nearest ID specialist = 2+ hours away
- Local resources: clinic, county health, library
- Needs ongoing follow-up to avoid amputation

In groups: Design a telehealth solution for John.

https://wholehealthag.org/farming/farmer-health-a-whole-health-perspective/

Key Takeaways

Telehealth Can Bridge Gaps

Invest in Infrastructure & Partnerships

Policy & Funding Advocacy

Empower Communities & Patients

Resources for Implementation

- Missouri Telehealth Network (MTN) – University of Missouri
- Heartland Telehealth Resource Center (HTRC)
- Show-Me ECHO (University of Missouri School of Medicine)
- Rural Health Information Hub – Telehealth Toolkit
- Missouri Department of Health & Senior Services (DHSS) – Office of Rural Health

Thank You

Contact Information

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References

Barnes, M. (2024, August 19). *Telehealth for rural communities: The mental health care gap*. Psychology Today. [Discusses how telehealth reduces stigma and improves access to mental health care in rural areas].

Burnham, J. P., Fritz, S. A., & Colditz, G. A. (2022). *Implementation of telemedicine infectious diseases consultation in a rural hospital using the Active Implementation Framework*. Open Forum Infectious Diseases, 9(11), ofac523. https://doi.org/10.1093/ofid/ofac523

Center for Advancing Health Services, Policy & Economics Research (CAHSPER). (2025, May 9). *Pronounced rural-urban gaps remain in health insurance coverage in Missouri* [Policy brief]. Washington University School of Medicine. [Reports that 9.5% of rural Missourians were uninsured in 2023 vs. 6.8% in urban areas after Medicaid expansion].

Chen, J., Amaize, A., & Barath, D. (2020). Evaluating telehealth adoption and related barriers among hospitals located in rural and urban areas. *The Journal of Rural Health, 36*(1), 120–124. https://doi.org/10.1111/jrh.12534
Ellis, G. (2024, July 25). Extension project introduces telehealth access to rural libraries. Oklahoma State University. https://extension.okstate.edu/articles/2024/telehealth-access.html

Ellis, Gail. “Extension Project Introduces Telehealth Access to Rural Libraries - Oklahoma State University.” *Project Introduces Telehealth Access to Rural Libraries | Oklahoma State University*, Oklahoma State University, 25 July 2024, extension.okstate.edu/articles/2024/telehealth-access.html.

Haque, S., DeStefano, S., Banger, A., Rutledge, R., & Romaire, M. (2023). Telehealth impact in frontier critical access hospitals: Mixed methods evaluation. *Journal of Medical Internet Research, 25*, e49591. https://doi.org/10.2196/49591
Health - in Rural Missouri Biennial Report, 2022-2023, health.mo.gov/living/families/ruralhealth/pdf/biennial2022.pdf. Accessed 4 Sept. 2025

Iqbal, A., Anil, G., Bhandari, P., Shah, A., & Lecavier, K. (2022). A digitally capable mobile health clinic to improve rural health care in America: A pilot quality improvement study. *Mayo Clinic Proceedings: Innovations, Quality & Outcomes, 6*(5), 394–403. https://doi.org/10.1016/j.mayocpiqo.2022.06.002
Kolluri, S., Stead, T. S., Mangal, R. K., Coffee, R. L., Littell, J., & Ganti, L. (2022). Telehealth in response to the rural health disparity. *Health Psychology Research, 10*(3), 37445. https://doi.org/10.52965/001c.37445

References

Missouri Department of Health and Senior Services. (2023). *Health in Rural Missouri Biennial Report, 2022–2023*. Jefferson City, MO: Office of Rural Health. [Highlights demographics, higher poverty (15.4%) and worse health outcomes in rural Missouri compared to urban].

Missouri Department of Economic Development. (2024). *Missouri Broadband Digital Opportunity Plan* (Broadband Equity Access and Deployment Program data). Jefferson City, MO: MO DED. [Used for statistic that over 409,000 Missouri households are unserved or underserved by broadband].
Missouri - 2023 - III.B. Overview of the State, mchb.tvisdata.hrsa.gov/Narratives/Overview/674fffa5-a244-48e5-8e28-6ed3098b73df. Accessed 2 Sept. 2025.

Morrison, S. (2024, May 7). *Story map explores broadband across Missouri*. University of Missouri Extension News. [News release summarizing a study on Missouri's broadband gaps; noted unreliable internet especially in rural areas and importance for health access].

National Rural Health Association (NRHA). (2025, February 6). *Telehealth's impact on rural hospitals: A literature review* (K. Russell-Wood, Author). Rural Health Voices Blog. [Adapted blog article reviewing telehealth benefits in rural hospitals, including reduced transfers and policy recommendations].

Natafgi, N., Mohr, N. M., Wittrock, A., Bell, A., & Ward, M. M. (2020). The association between telemedicine and emergency department disposition: A stepped wedge design of an ED-based telemedicine program in critical access hospitals. *The Journal of Rural Health, 36*(3), 334–345. https://doi.org/10.1111/jrh.12370
Tsou, C., Robinson, S., Boyd, J., Jamieson, A., Blakeman, R., Yeung, J., ... & Bosich, K. (2021). Effectiveness of telehealth in rural and remote emergency departments: Systematic review. *Journal of Medical Internet Research, 23*(11), e30632. https://doi.org/10.2196/30632

University of Missouri School of Medicine. (2023). *Missouri Telehealth Network – Show-Me ECHO*. Retrieved from https://medicine.missouri.edu/ (Accessed Oct 2025). [Information on the statewide Show-Me ECHO program connecting providers in every Missouri county for tele-education].
Zachrison, K. S., Richard, J. V., & Mehrotra, A. (2021). Paying for telemedicine in smaller rural hospitals. *JAMA Health Forum, 2*(9), e212362. https://doi.org/10.1001/jamahealthforum.2021.1570