



Award Winner

Climate Events and Healthcare Continuity: Medicare Plan Variations and Economic Impacts

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INTRODUCTION

Climate-related disasters increasingly threaten healthcare infrastructure, creating unique challenges for retirees who depend heavily on regular medical care. Extreme weather events have exposed critical vulnerabilities in our healthcare delivery system, particularly for older adults who face mobility limitations, chronic conditions, and complex insurance arrangements. The 2024 experiences in Asheville, North Carolina, and California's Pacific Palisades illustrate how climate disasters can instantaneously transform healthcare access from routine to crisis mode (Popkin and Gonzales 2025; Asheville Watchdog 2024).

THE HEALTHCARE DISRUPTION CASCADE

When climate events strike, healthcare disruption follows a predictable cascade that disproportionately affects retirees. The initial impact often involves physical infrastructure damage as hospitals lose power, water systems fail, and transportation networks become impassable (Dutchen 2025). The secondary effects can include healthcare workers being unable to reach facilities, pharmaceutical supply chain breakdowns, and even electronic health record (EHR) disruptions.

From an economic perspective, this creates simultaneous demand and supply shocks in healthcare markets, like what we observed during the COVID-19 pandemic. These shocks are highly localized, meaning they are typically geographically concentrated. The supply shock is immediate. Hospitals lose capacity, providers can't reach facilities, and infrastructure fails. The demand shock may be more complex. Emergency care demand may spike, while routine preventive and chronic care demand may fall as patients lose access or defer non-urgent care. Retirees, who typically consume 3-4 times more healthcare services than younger populations (Jones and Dolsten 2024), face the steepest consequences from these localized market disruptions. The Asheville example demonstrates this impact. When electricity failed for over two weeks, retirees with diabetes could not refrigerate insulin, those with COPD lost access to oxygen concentrators, and individuals requiring dialysis faced life-threatening treatment gaps (Baxley 2024). The impacts are magnified by the fact that price change in healthcare is slow since rates typically are negotiated between doctors and insurance companies through long-term contracts.

EXAMPLE IMPACTS AND THEIR EFFECTS

Three example impacts and their effects demonstrate the potential for climate risk to disrupt retiree healthcare access.

Medication Access: A Critical Vulnerability

Medication continuity represents perhaps the most immediate threat to retiree health during climate disruptions. Unlike younger adults who may take occasional medications, retirees typically manage multiple chronic conditions requiring daily pharmaceutical interventions (Watson et al. 2025). The economic impact of medication disruption extends beyond immediate health effects, since emergency interventions cost significantly more than preventive maintenance.

During disasters, pharmacies may face inventory shortages, power outages that compromise refrigerated medications, and communication breakdowns that prevent prescription verification. Most individuals with insurance have 30-day or 90-day medication supplies, leaving minimal buffer time when normal supply chains fail. This creates a particular economic challenge where deferred chronic care (due to access disruption) converts to acute care needs, fundamentally changing the demand profile: a \$50 monthly diabetes medication, when unavailable, can lead to thousands of dollars in emergency room costs within days. However, many routine chronic care visits may simply be lost rather than deferred, as patients die, permanently relocate, or develop new care patterns elsewhere. Individuals with employer-based health insurance may have additional support or resources that are unavailable to retirees trying to manage a medication-sensitive condition through a climate event.

Medicare Advantage Network Issues

Medicare Advantage plans, chosen by approximately 48% of Medicare beneficiaries, create challenges during climate events precisely because of their network-based structure. These plans typically offer more comprehensive benefits than traditional Medicare but restrict coverage to specific provider networks and geographic service areas as is typical with managed care plans used for employed individuals and those on the Affordable Care Act marketplaces.

When retirees evacuate due to climate events, they can find themselves outside their plan's service area, where routine care becomes “out-of-network” and significantly more expensive. While Medicare Advantage plans must provide emergency coverage regardless of location (Lankford 2023), the definition of “emergency” may become uncertain during extended displacement periods. A retiree evacuated from Florida during hurricane season may need ongoing care for diabetes, hypertension, or heart conditions, care that is not technically an “emergency” but remains medically necessary.

The economic implications are substantial. Out-of-network care can cost 2-3 times more than in-network services. However, it is important to note that out-of-network usage already is common in Medicare Advantage, so many beneficiaries may be accustomed to paying for out-of-network care (McCormack and Trish 2025). Special enrollment periods may allow retirees to switch plans or go back to Original Medicare (Medicare.gov 2025), although these provisions often require navigation of health policies that challenged retirees may find overwhelming or that are not timely enough to ensure continued access.

Company-Specific Impact Analysis

The potential degree of healthcare coverage disruption during climate events may vary significantly by Medicare plan structure. Traditional Medicare fee-for-service maintains full portability, allowing beneficiaries to access covered services from any Medicare-participating provider nationwide without network restrictions. This structure provides maximum flexibility during displacement, with the caveat that many displaced people being evacuated to a given area may place a strain on that area's ability to provide surge access to healthcare services.

Part D prescription drug plans operate within specific regions, creating moderate complications for evacuees crossing state lines in many areas of the country (Cubanski and Damico 2024). While emergency fills may be

covered, routine prescription refills in non-contracted pharmacies can result in higher out-of-pocket costs or require prior authorization processes that may be difficult to navigate during displacement.

Medicare Advantage plans designed for specific metropolitan areas or regions may face the most significant challenges, as their cost-effectiveness derives from narrow provider networks and geographic limitations. Beneficiaries displaced outside their plan's service area may face substantially higher costs for routine care, despite emergency care coverage remaining intact.

POTENTIAL SOLUTIONS

Several potential approaches have been proposed for addressing healthcare continuity during climate events:

Emergency Medication Stockpiling Programs: Insurance plans could offer economic incentives for retirees in high-risk areas to maintain 90-day medication supplies that go beyond the current incentive structure. While this increases short-term pharmaceutical costs, it prevents exponentially more expensive emergency interventions.

Portable Health Records: Investment in improved interoperability and portability of healthcare records would allow healthcare providers to access patient information regardless of location, reducing duplicative testing and improving care coordination efficiency. The most expansive of these policies are “patient data ownership” (PDO) policies where individuals own and manage their own health data (Mikk, Sleeper, and Topol 2017).

Flexible Network Arrangements: Medicare Advantage plans could develop reciprocal agreements allowing temporary network access during declared emergencies, spreading risk across multiple insurers while maintaining care continuity. This solution may require additional policy changes now to prepare for the possibility of future events.

Telemedicine Infrastructure: Enhanced reimbursement for remote monitoring and virtual consultations could maintain care continuity when physical access proves impossible, representing a cost-effective alternative to emergency care. This approach was successfully utilized during the COVID-19 pandemic, and could be deployed in response to climate events, or in advance. It also could assist with coordination across geographies, especially when beneficiaries are displaced to one location while their long-standing providers are displaced to another geography.

“Default” Use of Medicare Fee-for-Service: One other policy option for future consideration would be the use of Medicare Fee-for-Service payment or network for beneficiaries experiencing more acute or prolonged hardship. This would require a policy change and would be akin to the ‘hardship exemptions’ currently allowed for 401(k) participants who experience a job loss, for example (Internal Revenue Service 2025). However, as this would be a substantial change to the structure and intent of the Medicare Advantage program, it would require further study and feasibility assessment as a first step.

CONCLUSION

Climate change transforms healthcare access from a routine service into an emergency preparedness challenge, with retirees bearing disproportionate health and economic consequences due to their health needs and, in many cases, more limited resources. The intersection of aging demographics, complex insurance arrangements, and climate volatility calls for innovative solutions that address both immediate continuity needs and long-term system resilience.

The differential impact across Medicare plan types reveals important structural considerations. Traditional Medicare fee-for-service programs experience minimal disruption to coverage since benefits remain portable nationwide. Part D prescription drug plans face moderate challenges, as these operate on state-based structures that may complicate coverage during cross-state evacuations. Medicare Advantage plans may experience the most significant disruption,

particularly those designed for specific metropolitan or regional coverage areas, where network restrictions can substantially increase out-of-pocket costs for displaced beneficiaries.

Understanding these variations in plan vulnerability provides important context for both individual retirement planning and system-wide preparedness considerations in an era of increasing climate volatility.

REFERENCES

Asheville Watchdog. 2024. "Second Wave of Medical Issues May Hit WNC." NC Health News. October 12, 2024. <https://www.northcarolinahealthnews.org/2024/10/12/second-wave-medical-issues-may-slam-region-after-helene/>.

Baxley, Jayme. 2024. "Dialysis Patients Face Life-or-Death Challenges in Helene's Wake." North Carolina Health News. October 4, 2024. <https://www.northcarolinahealthnews.org/2024/10/04/dialysis-challenges-after-helene/>.

Cubanski, Juliette, and Anthony Damico. 2024. "Medicare Part D in 2025: A First Look at Prescription Drug Plan Availability, Premiums, and Cost Sharing." Kaiser Family Foundation. November 2024. <https://www.kff.org/medicare/issue-brief/medicare-part-d-in-2025-a-first-look-at-prescription-drug-plan-availability-premiums-and-cost-sharing/>.

Dutchen, Stephanie. 2025. "Creating Climate-Resilient Hospitals." *Harvard Medicine Magazine*, 2025. <https://magazine.hms.harvard.edu/articles/creating-climate-resilient-hospitals>.

Internal Revenue Service. 2025. "Hardships, Early Withdrawals and Loans." May 27, 2025. <https://www.irs.gov/retirement-plans/hardships-early-withdrawals-and-loans>.

Jones, Charles H., and Mikael Dolsten. 2024. "Healthcare on the Brink: Navigating the Challenges of an Aging Society in the United States." *NPJ Aging* 10 (1): 22. <https://doi.org/10.1038/S41514-024-00148-2>.

Lankford, Kimberly. 2023. "Does Medicare Cover Emergency Room Visits?" AARP. November 27, 2023. <https://www.aarp.org/medicare/faq/does-medicare-cover-emergency-room-visits/>.

McCormack, Grace, and Erin Trish. 2025. "Out-Of-Network Utilization and Plan Selection Among Medicare Advantage Cost Plan Enrollees." *Health Services Research* 60 (S2): e14438. <https://doi.org/10.1111/1475-6773.14438>.

Medicare.gov. 2025. "Special Enrollment Periods." 2025. <https://www.medicare.gov/basics/get-started-with-medicare/get-more-coverage/joining-a-plan/special-enrollment-periods>.

Mikk, Katherine A, Harry A Sleeper, and Eric J Topol. 2017. "The Pathway to Patient Data Ownership and Better Health." *Jama* 318 (15): 1433–34. <https://doi.org/10.1001/jama.2017.12145>

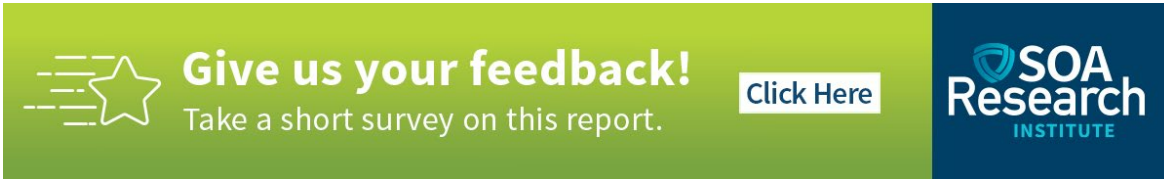
Popkin, Susan J., and Dulce Gonzales. 2025. "The Los Angeles Wildfires Pose Great Health and Housing Risks, Especially for People with Disabilities." The Urban Institute. January 23, 2025. <https://www.urban.org/urban-wire/los-angeles-wildfires-pose-great-health-and-housing-risks-especially-people-disabilities>.

Watson, Kathleen B., Jennifer L. Wiltz, Kunthea Nhim, Rachel B. Kaufmann, Craig W. Thomas, and Kurt J. Greenlund. 2025. "Trends in Multiple Chronic Conditions Among US Adults, By Life Stage, Behavioral Risk Factor Surveillance System, 2013–2023." *Preventing Chronic Disease* 22 (April):E15. <https://doi.org/10.5888/PCD22.240539>.

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