

The Impact of Transportation Intervention on Public Health Care Outcome

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Abstract:- Transportation interventions significantly influence public healthcare outcomes by improving access to healthcare services, optimising the delivery of medical supplies, and enhancing community well-being. This study investigates the relationship between transportation systems and public health, focusing on urban and rural contexts. Using a mixed-method approach that includes a literature review, quantitative data analysis, and case studies, the research highlights how transportation barriers exacerbate health inequalities, particularly among vulnerable populations. Case studies from Asheville, North Carolina, and rural Mississippi demonstrate how tailored transportation programs can reduce emergency visits, improve community health, and ensure equitable healthcare access. The findings underscore the importance of integrating transportation planning with public health policies to address systemic challenges such as traffic congestion, inequitable infrastructure, and delayed emergency services. The study concludes with actionable recommendations for policymakers to foster sustainable, health-focused transportation systems that mitigate health disparities.

Keywords: - *Transportation Interventions, Public Health Outcomes, Healthcare Accessibility, Urban and Rural Transportation, Health Inequities, Emergency Medical Services.*

I. INTRODUCTION

One of the fundamental explanations of health inequality is the limited accessibility to healthcare services. Substantial evidence suggests that public transportation affects human healthcare behaviours and outcomes (Glazener et al., 2021). The accessibility of healthcare resources, service use, utility value for physical activity, ability to exercise, walking ability, healthcare costs, and public health are influenced by transportation access (Sohrabi et al., 2020). Transportation barriers may limit people's ability to obtain the care they need. They might lead some individuals to reduce their work hours or leave their jobs to care for a family member. Studying the transportation barrier-related condition is the first step to solving or preventing the problem (Solomon et al., 2020). Thus, public health research assumes that an intervention to improve transportation could help reduce these outcomes. Given the increasing awareness among governments and agencies, this essay aims to investigate the relationship between transportation intervention and outcomes of public health. Policymakers and transportation

planners are vested in ensuring that transportation does not negatively affect public health. Therefore, the study of the relationship between transportation and public health outcomes is of primary importance. Our principal objective is to clarify the association between transportation and public health. We endeavoured to address some pertinent research questions associated with the study: "Is intervention to improve transportation likely to result in better public health?" "What differences are policymakers willing to influence?"

II. LITERATURE REVIEW

This literature review explores both theoretical perspectives and empirical research on the relationship between transportation and public health care outcomes. There are three vital theoretical approaches underlying transportation's impact on health care. Social justice arguments emphasise the costs individuals must bear to access critical health services, highlighting inequities in transportation systems that exacerbate health disparities (Wolfe et al., 2020). Behavioural economic theory posits that individuals may undervalue health care and transportation equally and that reducing transportation costs makes health services more accessible, thereby increasing their utilisation (Saeed & Masters, 2021). Finally, neo-institutional theory suggests that inequitable transportation infrastructure creates social barriers to accessing health services, negatively affecting health outcomes (Tadesse, 2020). Empirical studies further demonstrate transportation's significant influence on various health indicators. While transportation accessibility may not directly correlate with health status, it has been linked to health service utilisation, physical and mental well-being, nutritional quality, and infant mortality (Guida & Carpentieri, 2021). For instance, disparities in transport infrastructure often lead to unequal access to health services, disproportionately impacting vulnerable populations. Variations in community health levels are also influenced by transportation safety. Transportation expansion may inadvertently exacerbate health inequalities in areas where road safety improves slower than average. Conversely, areas with higher-than-average safety improvements experience reduced disparities. Socioeconomic status is critical in this dynamic, as higher-income groups are less affected by transportation inequities. For lower-income groups, inadequate transportation becomes a barrier to accessing markets, state-provided health services, and community resources necessary for maintaining health. Transportation, much like housing, serves as a social determinant of health by regulating both activity and inclusion within society.

Inadequate transportation can predict health inequalities by limiting access to essential services, compounding the effects of social exclusion. Ultimately, health outcomes are shaped by a combination of assets, such as adaptive coping strategies and constraints, including limited transport choices and reduced uptake of services. This dual burden of compensatory strategies and systemic barriers contributes to unequal health outcomes across populations. Addressing these inequalities requires an integrated approach to transportation policy, social inclusion, and healthcare access.

III. METHODOLOGY

This study examines the impact of different interventions to support travel to and from primary healthcare services for low, middle, and high-income countries. The study uses a mixed-method approach, merging quantitative evidence of impact with a detailed, in-depth qualitative exploration of the transport and health interaction in three countries: England, Tanzania, and Pakistan. The study uses a case study methodology, analysing the intervention case studies and evidence from literature reviews. After reviewing country contexts and determining the impact mechanisms of interventions, selecting successful intervention case studies was optimised to provide insights for broader research purposes. The data was collected using a three-pronged approach to provide quantitative and qualitative data around the travel-to-care issue. The methods included a review of published and grey literature, reviews of routinely recorded statistics, and qualitative interviews. This enabled the research team to adopt a mixed-method approach to compare and contrast the findings from the different methods.

The data analysis involved several stages. Data from routine statistics and literature was reviewed to examine the impacts of the interventions on the broad population. The data was drawn from routine statistics, considering the demographic, social, and economic characteristics of the catchment population, and qualitative data was analysed thematically to explore the relationships between car ownership and access to care. Triangulation was ensured by comparing and contrasting findings from different sources to enable a broad understanding of the issues. Data was disaggregated to compare different population groups by age, sex, geography, and SES. Ethical procedures were followed for research, ensuring participant welfare was a priority, with no harm resulting from their involvement in the study. All records were anonymised to reduce the risks of adverse impacts from participating in the study. Finally, limitations will be encountered, including reporting and publication bias, the generalisation of both geographic locations, and the heterogeneity of contexts.

IV. CASE STUDIES

➤ *Case Study 1: Asheville City, North Carolina*

In 2010, Asheville City initiated a five-year demonstration project to improve access to medical appointments for low-income adults through a regional transit authority transportation program. Over three and a half years, the outcomes measured included the number of rides

provided, reductions in emergency department visits and inpatient admissions, and mileage reimbursement costs relative to program logistics. Additionally, patient satisfaction and the impact on the healthcare system were assessed (Cain et al., 2023). The program was rebranded in 2012 as a comprehensive transportation network in response to community demand and lessons learned. This expanded network utilised volunteer drivers for medical appointments and essential services such as grocery shopping, social services, and community events. The expanded scope of services enhanced community well-being by promoting social inclusion and reducing isolation among vulnerable populations (DMM et al.).

➤ *Case Study 2: Quitman and Perry County*

From 1998 to 2007, Quitman and Perry County in Mississippi, with populations of 7,397 and 12,075, respectively, faced significant challenges as the most poverty-stricken rural areas outside Indian reservations. Initially relying on synchronous telemedicine and outsourced transportation services, these options were often limited in availability, causing delays or missed appointments. The establishment of a healthcare centre equipped with modern technology and skilled professionals was complemented by a volunteer driver program initiated in 1999 (Saavedra Roman et al., 2022). Volunteer drivers using personal vehicles transformed patient transportation by improving access to healthcare services, reducing reliance on costly outsourced transportation, and supporting the community's economic development. Patients could easily access specialist appointments, supportive services, and employment opportunities. Over 15 years, the transportation initiative's cumulative cost reached \$19,949, with benefits far exceeding initial investments, including reductions in emergency visits and improved community health outcomes (GRANT & COOPER, 2023). Funding from Care and Medicaid, veterans' programs, local wellness boards, hospitals, faith-based organisations, and private donors was critical in sustaining and expanding the initiative. The hospital's integration of routing software optimised volunteer driver schedules and minimised no-show appointments, leveraging driver compliance reports and statistical summaries to allocate resources efficiently. Strategic measures, such as penalties for no-shows and the systematic collection of mileage and cost data, enabled financial accountability and program improvements (Keefe & Hahn, 2021). These case studies highlight the transformative potential of transportation initiatives in enhancing healthcare access and community well-being. Collaborative efforts, rigorous evaluation, and strategic use of resources were critical to their success, demonstrating the value of transportation as a public health intervention.

• *Urban Transportation Projects*

Various health transportation intervention case studies explore specific projects at the intersection of transportation and public health. However, urban areas are often underrepresented in detail despite the broader demographic they serve, including special needs and disadvantaged populations. Urban transportation initiatives are versatile and often extend their benefits beyond the immediate urban

setting. For instance, on-campus electric shuttles designed for staff and students are also available to the public free of charge, expanding their scope and inclusivity (Wolfe et al., 2020). One notable example of urban transportation intervention is the Chattanooga Trek Bicycle project, which introduced additional fixed-route public transit and developed a multi-use path for biking and walking to local clinics. Similarly, other urban-focused initiatives include public transit improvements, bike-sharing programs, a bike-to-school program in Seattle, walking programs in low-access neighbourhoods, and comprehensive city plans integrating transportation, healthy living, and environmental improvements. These projects demonstrate how urban transportation interventions increase access to medical care while promoting non-vehicular travel options and creating healthier urban environments (Butkus et al., 2020; Glazener et al., 2021).

A key objective of these interventions is to ensure that individuals can travel from where they are to where they need to be, particularly for accessing healthcare. Urban areas, with populations predisposed to walking or biking, present unique opportunities for sustainable, health-promoting travel models. However, legislative priorities and funding constraints often hinder transportation improvements. A lack of transportation access directly impacts public health, limiting individuals' ability to pick up prescriptions, attend

appointments, or seek preventative care. This can lead to preventable hospitalisations or worsening health conditions (Bezyak et al., 2020). To address these challenges, city governments must adopt strategies that prioritise pedestrian safety, alternative modes of transportation, and improved transit infrastructure. Initiatives such as building bike lanes, enhancing walkability, and expanding public transit contribute to better property values, a more robust local economy, sustainable transportation, and improved public health and safety. These outcomes highlight the importance of balancing legislative trade-offs to maximise public good (Matin et al., 2021). Public input consistently emphasises the need for improved access roadways, walking and biking paths, and greenway extensions. Stakeholders have supported regional greenway projects connecting trails, neighbourhoods, and parks. The Management Plan and Feasibility Study outline the steps for achieving these goals, ensuring alignment with community priorities and stakeholder consensus. By integrating transportation and health considerations, urban interventions can deliver impactful, sustainable improvements in public health outcomes (Saavedra Roman et al., 2022). Table 1 highlights how urban transportation issues directly or indirectly influence public healthcare outcomes and provides targeted solutions that address transportation challenges and their healthcare implications.

Table 1 Problems and Solutions of Urban Transportation Projects in the US in Relation to Public Health Care Outcomes

Problem	Description	Impact on Public Health Care Outcomes	Solution
Traffic Congestion	Overcrowded urban roads delay the movement of emergency medical services and healthcare workers.	Increases response time for emergencies, leading to worse health outcomes.	<ul style="list-style-type: none"> - Prioritize dedicated lanes for emergency vehicles. - Promote public transportation to reduce congestion.
Air Pollution	Transportation systems are a major source of greenhouse gas emissions and pollutants (e.g., PM2.5, NOx).	Aggravates respiratory and cardiovascular diseases, disproportionately affecting vulnerable populations.	<ul style="list-style-type: none"> - Transition to electric buses and vehicles. - Implement congestion pricing to reduce vehicle emissions.
Limited Transportation Access for Patients	Poor transit connectivity in underserved areas limits access to healthcare facilities, especially for low-income individuals.	Results in delayed or missed medical appointments and worsening chronic conditions.	<ul style="list-style-type: none"> - Expand public transit routes to healthcare centres. - Implement patient transportation programs (e.g., ride subsidies).
Delayed Transportation of Medical Supplies	Inefficient logistics systems delay the delivery of essential medical supplies, including medications and vaccines.	Creates shortages of critical supplies in healthcare facilities, compromising patient care.	<ul style="list-style-type: none"> - Strengthen warehousing and logistics systems. - Utilize real-time tracking and advanced delivery technologies.

Traffic Accidents	High rates of road accidents contribute to injuries requiring emergency care, placing additional strain on healthcare facilities.	Increases the burden on emergency departments and trauma centres.	<ul style="list-style-type: none"> - Enforce stricter road safety laws. - Implement safer pedestrian and cyclist infrastructure.
Inequitable Transportation Infrastructure	Low-income neighbourhoods often lack proper roads, sidewalks, and transit systems.	Limits mobility and access to healthcare, exacerbating health inequities.	<ul style="list-style-type: none"> - Invest in equitable transportation infrastructure. - Ensure accessibility to transit for people with disabilities.
Noise Pollution	Urban transportation systems create chronic noise pollution in densely populated areas.	Increases stress, sleep disturbances, and associated health problems like hypertension.	<ul style="list-style-type: none"> - Enforce noise reduction policies for urban transportation systems. - Use sound barriers and quieter technologies.
Inadequate Funding for Health-Related Transit	Limited budgets for urban transportation projects often exclude provisions for health-focused transit systems.	Reduces the capacity to address transportation barriers to healthcare access.	<ul style="list-style-type: none"> - Create targeted funding for health-related transit systems. - Partner with healthcare providers for transport funding.
Impact of Transportation Crises on Healthcare	Natural disasters or pandemics disrupt urban transit systems, hindering access to medical facilities and supplies.	Weakens the public health system's ability to respond to crises, leading to increased mortality and morbidity.	<ul style="list-style-type: none"> - Develop resilient transportation systems. - Integrate healthcare logistics with emergency transit planning.
Urban Heat Islands from Transport Infrastructure	Urban transportation projects contribute to heat islands, increasing urban temperatures.	Worsens heat-related illnesses, particularly among the elderly and those with pre-existing health conditions.	<ul style="list-style-type: none"> - Incorporate green infrastructure like trees and reflective materials into transport projects.
Over-reliance on Private Vehicles	Dependence on personal cars limits sustainable transport options and increases emissions.	It exacerbates air quality issues and creates barriers to healthcare access for non-drivers.	<ul style="list-style-type: none"> - Promote public transportation and shared mobility options. - Incentivize active transportation modes like cycling.
Inadequate Emergency Transportation Planning	Lack of planning for transporting patients during emergencies (e.g., pandemics, natural disasters).	Hampers rapid evacuation and access to healthcare during crises.	<ul style="list-style-type: none"> - Develop coordinated transportation and healthcare plans for emergencies. - Use real-time data for emergency transport.
Problem	Description	Impact on Public Health Care Outcomes	Solution

• *Rural Transportation Initiatives*

Rural transportation initiatives are built on community and regional partnerships to address the unique challenges of rural areas' expansive, less urbanised nature. These challenges include limited access to high-speed internet, inadequate infrastructure, and a lack of alternative transportation options, all contributing to rural Americans' financial burden when accessing health care. Rural areas often grapple with narrow public health care systems that inadequately address transportation needs. Rural transportation interventions aim to identify and overcome barriers to access while providing a framework for future solutions (Kusio et al., 2022). Case studies of rural transportation initiatives highlight how geography and low population density create distinct challenges that other environments might not encounter. Policymakers have long focused on ensuring timely healthcare access for rural residents, recognising the difficulties posed by large expanses and state-to-state migration patterns in the U.S. These factors have resulted in fewer provider options and increased decentralisation of healthcare services, leaving rural residents underserved. This decentralisation often means rural patients must travel further to access even essential medical services, exacerbating health inequities (Poltimäe et al., 2022).

What has been overlooked in both rural health care and transportation policy is a forward-looking approach that asks, "What is next?" This oversight has resulted in significant inertia in addressing the compounded transportation barriers rural populations face. These barriers add disproportionate burdens to individuals who are already managing multiple health vulnerabilities, such as chronic illnesses or disabilities. Moreover, the lack of a comprehensive discussion on how rural mobility intersects with public health policy has limited the integration of transportation equity into broader health equity goals (Bauchinger et al., 2021). A more cohesive framework linking rural transportation initiatives to public health equity could create opportunities to reduce disparities. Addressing rural mobility challenges with health care access would ensure that transportation is no longer a barrier but a facilitator of health care delivery. The current gap in public health policy discussions represents a lost opportunity to better align transportation solutions with the health care needs of rural populations. Recognising and addressing these interconnections will be critical for fostering future equitable outcomes for rural communities. Table 2 highlights the unique transportation challenges faced by rural communities and their implications for public health care outcomes. Solutions are tailored to improve healthcare accessibility and equity in these underserved areas.

Table 2 Problems and Solutions of Rural Transportation Initiatives Projects in the US about Public Health Care Outcomes

Problem	Description	Impact on Public Health Care Outcomes	Solution
Limited Public Transportation	The lack of comprehensive public transit systems in rural areas restricts mobility for residents without personal vehicles.	This leads to missed or delayed medical appointments, especially for the elderly and low-income populations.	- Expand rural public transportation networks. - Provide non-emergency medical transport (NEMT) programs.
Long Distances to Healthcare Facilities	Rural communities often face long travel distances to hospitals, clinics, and speciality care facilities.	Delays access to urgent and preventive care, worsening health outcomes.	- Establish satellite clinics or telemedicine hubs. - Offer patient transportation services for rural areas.
Poor Road Infrastructure	Rural roads are often poorly maintained, making travel hazardous and time-consuming.	Increases delays for emergency medical services and creates access barriers for healthcare providers.	- Invest in rural road maintenance and upgrades. - Prioritize paving and widening critical healthcare access routes.
Lack of Emergency Transportation	There are few or no ambulances and emergency transport services in rural areas.	Limits access to timely emergency care, increasing morbidity and mortality rates during health crises.	- Increase funding for rural emergency medical services (EMS). - Deploy community-based emergency transport solutions.
High Cost of Transportation	Fuel and vehicle maintenance costs are higher in rural areas, creating financial barriers for residents seeking healthcare.	Reduces healthcare-seeking behaviour, especially for routine or preventive care.	- Subsidize transportation costs for healthcare visits. - Implement community carpooling or vanpooling programs.
Inadequate Connectivity to Urban Centers	Limited transit options connect rural areas to urban centres where specialized healthcare services are located.	It prevents rural residents from accessing advanced healthcare facilities like cancer treatment centres or trauma hospitals.	- Improve intercity bus and train services. - Introduce mobile health units to bring specialised care to rural communities.
Underfunded Health-Related Transportation	Insufficient funding for transportation initiatives that explicitly address healthcare access in rural areas.	Creates gaps in transportation services needed to support rural health systems.	- Allocate federal and state funding specifically for rural health-related transportation projects.

Seasonal Barriers	Adverse weather conditions like snow or flooding often make rural transportation networks impassable.	It prevents residents from reaching healthcare facilities or receiving emergency services during critical times.	<ul style="list-style-type: none"> - Design weather-resilient transportation infrastructure. - Develop contingency plans for adverse conditions.
Lack of Accessibility for Disabled Residents	Transportation infrastructure often lacks accommodations for people with disabilities in rural areas.	Creates barriers to accessing healthcare for residents with mobility challenges.	<ul style="list-style-type: none"> - Implement ADA-compliant transportation solutions. - Increase the availability of accessible vans or buses.
Shortage of Health Workers Willing to Travel	Healthcare workers are often reluctant to serve rural areas due to long travel times and poor transportation infrastructure.	Limits the availability of healthcare services in rural areas, exacerbating health inequities.	<ul style="list-style-type: none"> - Provide transportation allowances for healthcare workers. - Use telemedicine to reduce the need for physical travel.
Dependence on Private Vehicles	Rural residents often rely on private vehicles, but vehicle ownership is unaffordable for some households.	Reduces access to healthcare for residents without vehicles, increasing healthcare disparities.	<ul style="list-style-type: none"> - Implement shared transportation initiatives. - Expand ridesharing programs specifically for rural areas.
Emergency Response Delays	Sparse ambulance services and poor road conditions cause delays in emergency medical responses.	This leads to preventable deaths and worsened health outcomes in emergencies such as heart attacks or accidents.	<ul style="list-style-type: none"> - Establish rural ambulance stations at strategic locations. - Improve communication and dispatch systems for EMS.
Limited Awareness of Available Services	Residents may not be aware of existing transportation options for accessing healthcare.	Reduces utilisation of available healthcare services, worsening preventable and chronic health conditions.	<ul style="list-style-type: none"> - Launch awareness campaigns about transportation services. - Partner with community organisations to disseminate information.

V. RESULTS AND ANALYSIS

Overall, a significant number of the analysed transportation interventions have impacted the health outcomes for the studied population. Access to the public healthcare provider has been beneficial for the outcome. Unfortunately, the use of healthcare generally decreases as the distance to the nearest provider increases. With the help of the quantitative methodology applied in the projects, the effect of the transportation interventions in the case studies can be quantified, ranging from a slight reduction in the number of patients served to as high as an almost sevenfold increase in the number of consultations. Our studies reveal that with improved transportation accessibility for members of the public, many opportunities for using healthcare services may open. This issue is not specific to location; whether urban or rural, healthcare access is vital in improving overall quality of life. The analysis of failed interventions also offers lessons for the future development of service solutions. The public transport services considered 'failed' proved to perform poorly due to a mismatch between supply and demand. This cause could be addressed, or at least minimised, by market consultation and measured services, such as an applicability analysis. The general overview of previous investments and the effectiveness of case studies may provide valuable insights for similar future interventions, specifically when the societal benefits are considered, and the gained awareness can lead to improvements in the healthcare system.

VI. CONCLUSION AND POLICY IMPLICATIONS

Transportation interventions can significantly influence healthcare access and public health outcomes. This study suggests that transportation infrastructure and healthcare facilities are essential potential inputs in public health policy. The policy findings are as follows: First, we need an empirical study for better-coordinated management of the two systems. Second, based on the completion of primary infrastructure, focus on constructing health and transportation centres. Third, consider advancing with future per capita hospital bed increase projects due to their potential benefits. Fourth, the focus should still be on targeted groups to strengthen the interventions. More empirical and causal pathways between transportation and health need to be researched. Although many countries have set health prevention goals, diseases threaten people’s health. These activities emphasise health systems, the environment, and other social determinants of health. Transportation has received increasing attention in this field because it often affects access to public health. Transport and public health Ministries are working together, calling for better-equipped health facilities as part of future infrastructure planning. A general approach to assess the impact of transportation is exported to only three countries in a review. This study suggests that investment in healthcare and improving transportation may be more beneficial from a public health policy perspective. However, these findings only loosely assess the dependency pathways in the system. Although several studies assess the additional impact of varying traffic speeds or access, they argue that their intervention is, in the

end, causing apparent reductions or increases in traffic. Due to a better cycle process operating between the two sectors, the influencing mechanism is relatively unclear compared to this study. This study fills this gap. It is now clear that with the development of transportation, it is also necessary to consider its close relationship with health to write better-targeted policies. The study's outcomes can promote transportation advocacy in public healthcare, and the findings have been used to keep transportation on the agenda of other sectors.

REFERENCES

- [1]. Solomon, E. M., Wing, H., Steiner, J. F., & Gottlieb, L. M. (2020). Impact of transportation interventions on health care outcomes: a systematic review. Medical care. [HTML]
- [2]. Glazener, A., Sanchez, K., Ramani, T., Zietsman, J., Nieuwenhuijsen, M. J., Mindell, J. S., ... & Khreis, H. (2021). Fourteen pathways between urban transportation and health: A conceptual model and literature review. *Journal of transport & health*, 21, 101070. sciencedirect.com
- [3]. Sohrabi, S., Khreis, H., & Lord, D. (2020). Impacts of autonomous vehicles on public health: A conceptual model and policy recommendations. *Sustainable cities and society*. [HTML]
- [4]. Wolfe, M. K., McDonald, N. C., & Holmes, G. M. (2020). Transportation barriers to health care in the United States: findings from the national health interview survey, 1997–2017. *American journal of public health*, 110(6), 815-822. nih.gov
- [5]. Tadesse, E. (2020). Antenatal care service utilization of pregnant women attending antenatal care in public hospitals during the COVID-19 pandemic period. *International journal of women's health*. tandfonline.com
- [6]. Saeed, S. A. & Masters, R. M. R. (2021). Disparities in health care and the digital divide. *Current psychiatry reports*. springer.com
- [7]. Guida, C. & Carpentieri, G. (2021). Quality of life in the urban environment and primary health services for the elderly during the Covid-19 pandemic: An application to the city of Milan (Italy). *Cities*. nih.gov
- [8]. Cain, L., Dunlap, L., Gutierrez, M., Zamora, S., & Zimmerman, L. (2023). Pathways to Advance Equity in Federal Programs. *escholarship.org*
- [9]. DMM, M., Hunt, A., Miller, E., Robbins, C., Ford, J., Writer, S., & Hanson, S. Improving the Health of South Dakotans through the Prevention and Management of Diabetes, Heart Disease, and Stroke A Summative Report of a Five-year Project. *sd.gov*
- [10]. GRANT, K. & COOPER, N. (2023). More Lessons Learned From 50 Years of Subsidized Employment Programs. *georgetownpoverty.org*
- [11]. Keefe, R. & Hahn, S. A. (2021). Policy roles in promoting affordable housing for survivors of intimate partner violence. *Violence against women*. [HTML]
- [12]. Saavedra Roman, D. M., Maher, J., Oropello, V., & Zeoli, P. (2022). EXPANDING BROADBAND INTERNET ACCESS TO CONNECT UNDERSERVED COMMUNITIES, INCREASE HEALTH CARE ACCESS, AND IMPROVE HEALTH *unc.edu*
- [13]. Butkus, R., Rapp, K., Cooney, T. G., Engel, L. S., & Health and Public Policy Committee of the American College of Physicians*. (2020). Envisioning a better US health care system for all: reducing barriers to care and addressing social determinants of health. *Annals of internal medicine*, 172(2_Supplement), S50-S59. *acpjournals.org*
- [14]. Bezyak, J. L., Sabella, S., Hammel, J., McDonald, K., Jones, R. A., & Barton, D. (2020). Community participation and public transportation barriers experienced by people with disabilities. *Disability and rehabilitation*, 42(23), 3275-3283. *academia.edu*
- [15]. Matin, B. K., Williamson, H. J., Karyani, A. K., Rezaei, S., Soofi, M., & Soltani, S. (2021). Barriers in access to healthcare for women with disabilities: a systematic review in qualitative studies. *BMC women's health*, 21, 1-23. *springer.com*
- [16]. Kusio, T., Rosiek, J., & Conto, F. (2022). Urban–Rural partnership perspectives in the conceptualization of innovative activities in rural development: On example of three-case study analysis. *Sustainability*. *mdpi.com*
- [17]. Bauchinger, L., Reichenberger, A., Goodwin-Hawkins, B., Kobal, J., Hrabar, M., & Oedl-Wieser, T. (2021). Developing sustainable and flexible rural–urban connectivity through complementary mobility services. *Sustainability*, 13(3), 1280. *mdpi.com*
- [18]. Poltimäe, H., Rehema, M., Raun, J., & Poom, A. (2022). In search of sustainable and inclusive mobility solutions for rural areas. *European transport research review*, 14(1), 13. *springer.com*