



OMEGA REGION PUBLIC TRANSIT AND TRANSPORTATION:

SOCIAL RETURN ON INVESTMENT STUDY



Department of
Transportation



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PREPARED FOR: OMEGA Region Public Transit and Transportation Service Provider

PREPARED BY: **OHIO**
UNIVERSITY | Voinovich School of Leadership and Public Service

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Mandy White, MA, Impact Analyst, is responsible for the design of this study and is the lead author on the report. Kelli Coughlin Schoen, MA, Senior Research Manager, helped with fiscal proxy modeling, survey design, data analysis, and report writing. Daniel Kloefer, MPP, Senior Project Manager, conducted survey analysis. Rob Moore, MPP, Principal of Scioto Analysis, provided cost-benefit analysis consulting, fiscal proxy modeling, and technical documentation. Allison Rickett, EdD and Level 3 SROI Practitioner, consulted on this project.

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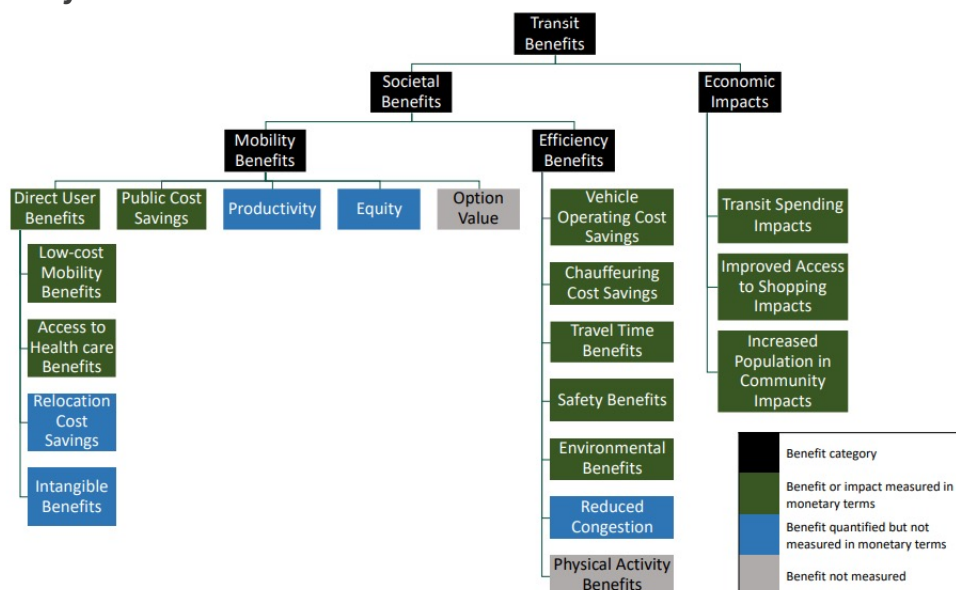
INTRODUCTION

Access to high-quality, affordable transportation is a Social Determinant of Health and is fundamental to mental, physical, and emotional well-being. In rural communities especially, transportation is vital to reducing social isolation, increasing food access, facilitating employment, and supporting sense of place (Henning-Smith et al., 2017). In nine counties in Ohio this vital resource is provided in part by a collection of transit and transportation providers organized under the Regional Coordinated Public Transit/Human Services Transportation Pilot Program (Pilot Program), which is housed in the Ohio Mid-Eastern Governments Association (OMEGA). The OMEGA Pilot Program includes Belmont, Carroll, Coshocton, Guernsey, Holmes, Harrison, Jefferson, Muskingum, and Tuscarawas counties.

In 2017, the Federal Transportation Administration's Transportation Research Board advised that small and rural transportation agencies should undertake economic impact and benefit studies with the resources they have on hand, and that these studies should inform decision making and contribute to a business case for supporting transit (Weisbrod et al., 2017). In keeping with this recommendation, the OMEGA Pilot Program hired Ohio University's Voinovich School of Leadership and Public Service (OU), with funds from the Ohio Department of Transportation, to document the impact of its services on the OMEGA region and to calculate the potential impact of increasing transportation infrastructure funding to rates comparable to the national average.

Previous studies of rural transportation agency impacts relied on traditional methods of benefit valuation that tend to emphasize three categories of impacts: transportation cost savings benefits, low-cost mobility benefits, and economic impact benefits (Mattson & Peterson, 2021). Typical outcomes for this type of analysis are depicted in the following figure.

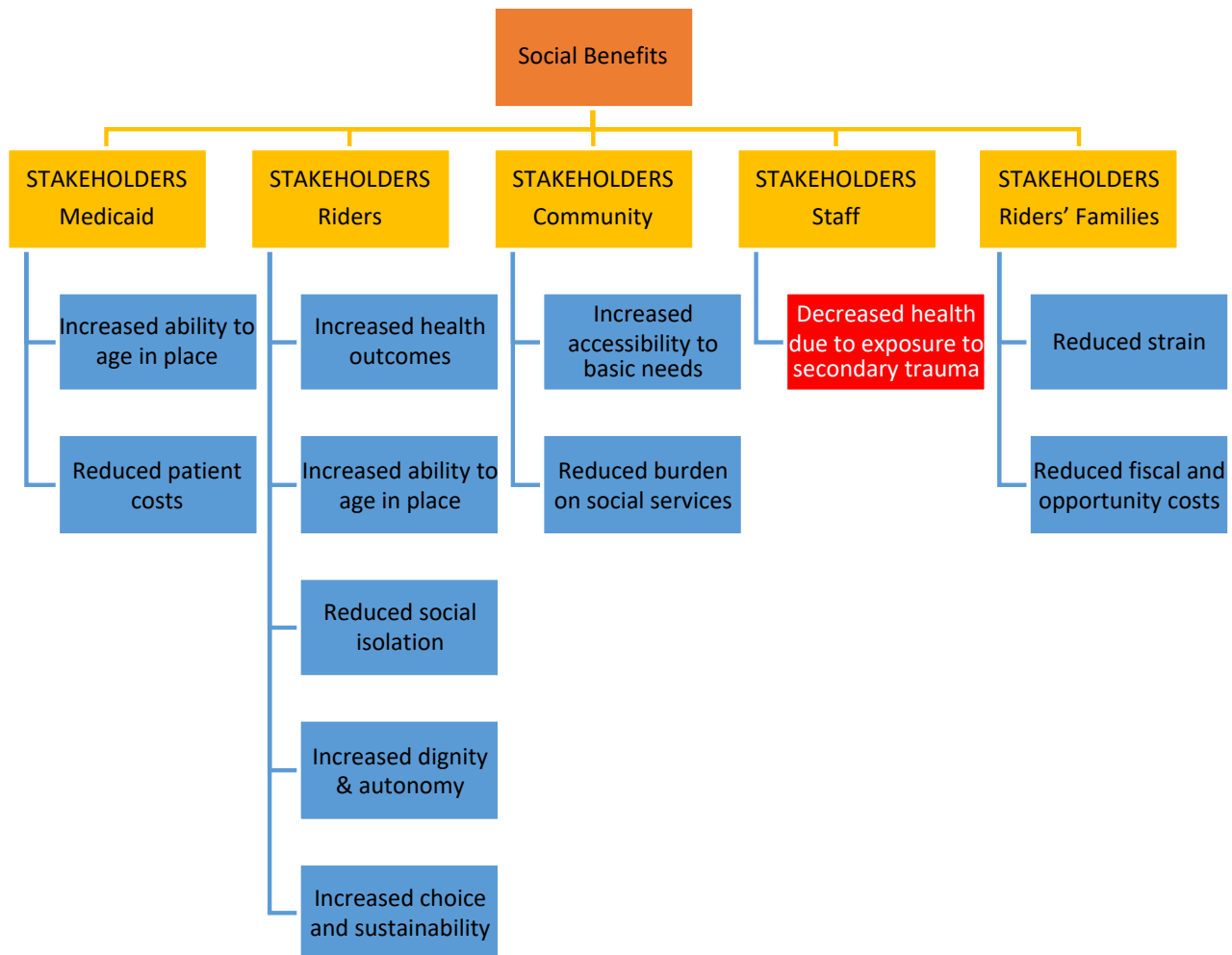
Traditional transportation and transit benefits assessment trees do not capture many meaningful outcomes, including increased social interaction, the ability to age in place, increased dignity, and impact on mobility staff.



Source: Mattson, J. W., & Peterson, D. (2021). Measuring benefits of rural and small urban transit in Greater Minnesota. Transportation Research Record, 036119812199001. <https://doi.org/10.1177/0361198121990014>

In consultation with OMEGA Pilot Program, impact measurement analysts from OU selected a Social Return on Investment (SROI) analysis for this study in order to capture a broader range of outcomes than are typically captured in studies of rural transportation. SROI captures social benefits as identified by a variety of stakeholders. For this study, relevant stakeholders included riders, staff, caseworkers, the OMEGA Transportation Steering Committee, and Regional Mobility Managers. Employing this stakeholder-informed process allows researchers to capture impacts that have great value to people but that may not be captured by traditional financial metrics. OMEGA-region transportation providers recognize it is vital to communicate the importance of public transportation accessibility in ways that include, and go beyond, traditional approaches. This is in line with OMEGA Transportation Providers' mission to promote cost-effective coordination of transportation services throughout the region and to increase mobility, accessibility, equity, and ridership especially for seniors, disabled persons, and those with low income. In doing so, the OMEGA Transportation Steering Committee chose outcomes to value from particular stakeholder perspectives, resulting in the following Transit and Transportation Benefits Assessment Tree.

The transportation and transit benefits assessment tree created by this study includes benefits found on traditional benefits trees as well as many others that riders, staff, and employers identified as meaningful.



The resulting SROI analysis found that transit provides a wide range of benefits within OMEGA communities. Stakeholders especially focused on how transit provides access to jobs and health care, supports independent living, allows seniors to age in place, and keeps people living in the community. The benefits identified as most important by stakeholders stem from the provision of transportation to people who otherwise would not be able to make trips, including older adults, people with disabilities, low-income individuals who cannot afford a vehicle, and others. Public Transit and transportation services provided in the OMEGA region also positively impact local employers, local businesses, and the community at large. The specific outcomes that were identified by stakeholders as most important are listed in the table below.

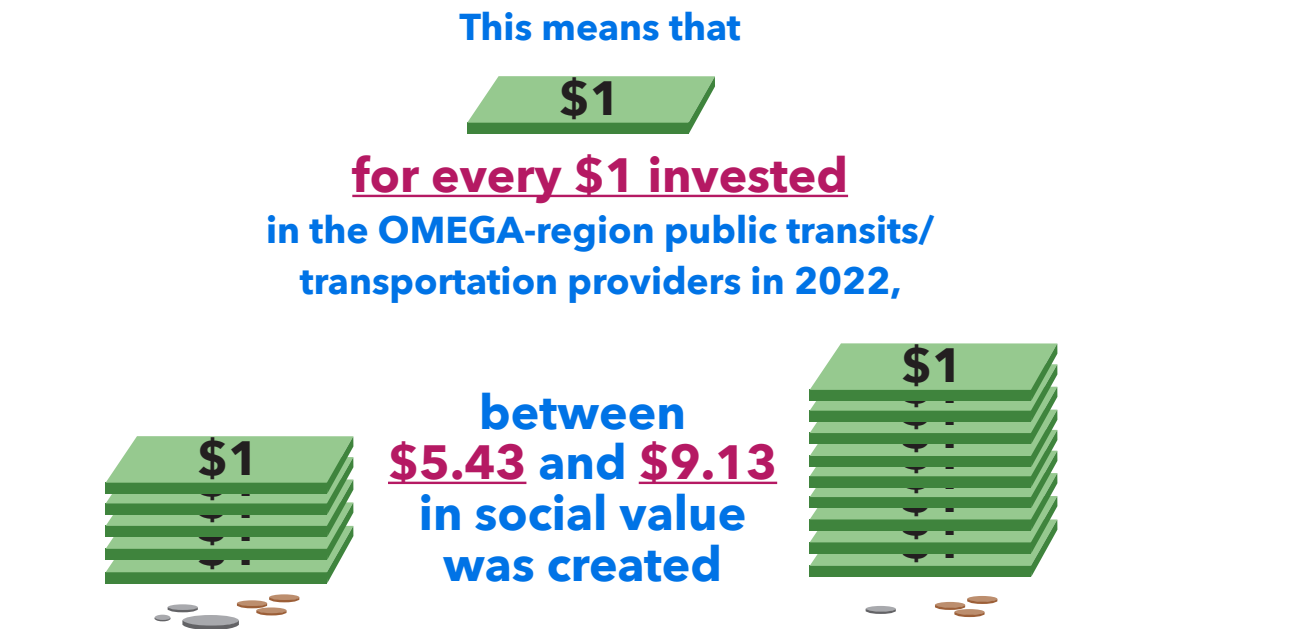
Individual Outcomes by Stakeholder

Stakeholder	Outcome	Social Value (range)*
Medicaid	Decreased patient costs	\$15.4m – \$89.0m
	Increased ability to age in place	\$2.6m – \$3.4m
Riders	Improved physical health outcomes	\$27.7m – \$37.0m
	Increased ability to age in place	\$15.5m – \$20.6m
	Decreased social isolation	\$405k – \$539k
	Increased dignity and autonomy	\$1.1m – \$1.6m
	Increased choice/ability to obtain sustainable employment	\$10.1m – \$16.0m
Families and friends	Decreased strain (labor)	\$868k – \$1.6m
	Decreased strain (travel)	\$613k
Employers	Increased retention in retail jobs (projected)	\$1.6m – \$1.9m**
	Increased retention in manufacturing jobs (projected)	\$5.9m – \$6.7m**
Government and taxpayers	Reduced burden on social services	\$7.7m – \$10.3m
Communities	Increased accessibility to basic needs (projected)	\$8,234,740**
Staff	Increased secondary trauma	-\$146k to -\$195k

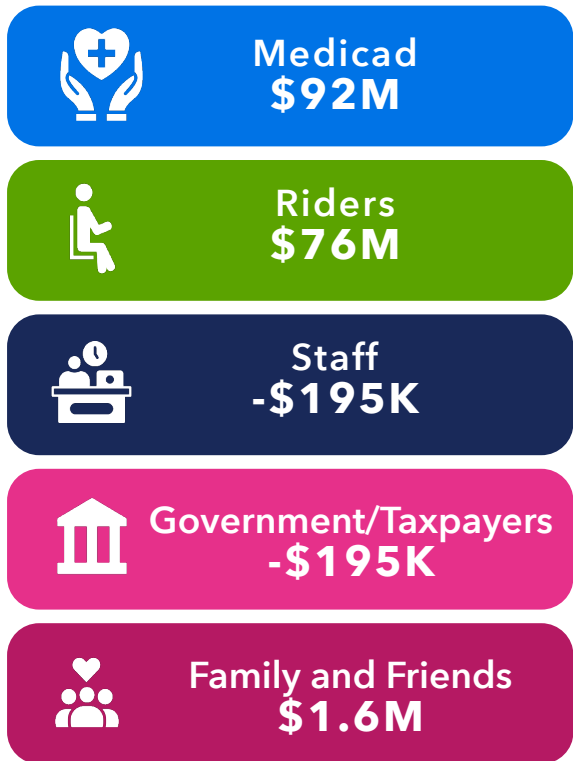
*The ranges represent the highest value and lowest value possible for this outcome. Ranges are used for outcomes in which there are multiple analytical assumptions, or for outcomes that are sourced from a literature that offers more than one reasonable proxy value. Values are presented in ranges in order to be as transparent as possible.

**Projected savings, should transportation infrastructure funding be increased to national average levels.

When the value of the total impact created through these selected outcomes is divided by the resources that are invested in the program, the resulting social return on investment ratio ranges from \$5.43 to \$9.13.



Total social value OMEGA public transit/
transportation providers currently create for
each stakeholder



Potential social value from increasing
transportation funding to national average



STRUCTURE OF THIS REPORT

This report begins with a brief discussion of the data collection and analysis methods used for this study. More details about the particular fiscal proxies used for the SROI can be found in the separate Technical Appendix that accompanies this report. The report next provides background, findings, and details about 11 areas of impact that were identified as the most material by stakeholders. Nine of these impacts are calculated as current benefits (based on 2022 data), and two are calculated as potential benefits (the benefits to be obtained if transportation infrastructure funding were to be increased to the national average level). The potential benefits section of the report also includes a brief discussion of transportation funding shortages in the OMEGA region and beyond. Each section contains a story from a rider or staff member, a description of the social value created by the impact, and a fact sheet that provides context around the problem being addressed. A brief conclusion summarizes key points of the study and discusses common strategies for increasing funding and therefore increasing the impacts of public transit systems and transportation provider services in the OMEGA region.

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WHAT IS SOCIAL RETURN ON INVESTMENT?

This study uses Social Return on Investment (SROI) to identify and communicate the impact of OMEGA-region public transit and transportation services on riders, their families and friends, transit and transportation staff, managed care providers, taxpayers, and area employers. SROI was determined to be a good fit for this study because of its ability to convey in monetized form the value of a range of different impacts, including those not traditionally captured by financial metrics. Impacts such as increased dignity, reduced family strain, and decreased social isolation are often communicated via stories only. SROI, through the use of fiscal proxies, translates these types of outcomes into the more universal language of money. In so doing, this method places these types of impacts on even footing with traditional financial metrics.

SROIs can be prospective or evaluative. Prospective SROIs calculate the amount of social value to be created by a program or activity on the basis of anticipated program outputs. Evaluative SROIs calculate the amount of social value created by program activities that have already taken place. This study includes elements of both evaluative and prospective analysis.

SROI is a rapidly growing field in the United States and is even more widespread overseas. In the United Kingdom, for example, bids for government contracts are required to include prospective SROIs for potential projects. A more detailed explanation of the SROI analysis on which this report is based is included in a separate Technical Appendix.

DATA COLLECTION AND ANALYSIS

Researchers began the SROI study with a Ripple Effect Mapping Session in which OMEGA Transportation Steering Committee members identified the most important outcomes generated by OMEGA's transportation and transit services. Researchers conducted a follow-up focus group with employment transportation providers specifically, to fill in gaps in the ripple effect map. Next, researchers conducted a review of the current literature related to rural transportation cost benefit and economic impact analysis models, transportation's role as a social determinant of health, and public transportation's impact on caregivers, employers, and communities. The information collected through the literature review and through consultation with the OMEGA Transportation Steering Committee was used to create a theory of change, which delineated the outcomes to be valued for the SROI analysis.

To quantify the outcomes, researchers drew on data provided by OMEGA-region transportation providers and transit agencies. Researchers also designed three surveys that were then distributed by OMEGA in the fall of 2023. These surveys asked stakeholders whether they experienced the outcomes in the study's theory of change and, if so, to what extent. Surveys were assessed by the OMEGA Transportation Steering Committee for face validity and tested with OMEGA mobility managers and professionals from OU's Voinovich School.

Data Collection Details

Data Collection Method	Date	Details	Number of Responses
Agency data	Sep-Oct 2023	Data requests were sent to 10 transit and transportation providers	10 out of 10 agencies
Rider survey	Sep-Oct 2023	Distribution by OMEGA to transportation riders during trips and at local senior centers	196 riders
Staff survey	Oct-Nov 2023	Distributed by OMEGA	39 staff members
Employer survey	October 2023	Distributed by OMEGA	21 employers representing retail and manufacturing sectors in the region
Interviews with riders	Sep-Nov 2023	Arranged by OMEGA and conducted by OU	9 riders
Interviews with social service workers	Sep-Nov 2023	Arranged by OMEGA and conducted by OU	4 workers
Interviews with transportation providers	Sep-Nov 2023	Arranged by OMEGA and conducted by OU	3 providers

DATA ANALYSIS

Surveys were analyzed by using standard descriptive statistics in STATA. Interview transcripts and recordings were analyzed by researchers using standard thematic analysis. Impact values and ratios were calculated using Social Return on Investment (SROI) analysis, carried out by Ohio University researchers with accreditation training from Social Value International.

DATA GAPS AND LIMITATIONS

The data collected by transit and transportation providers across the region are not standardized, which created some gaps in the existing data available for the study. Some operating budgets were close estimates but were not exact figures. To address these issues, researchers took the lowest possible estimates of all counts, in order to make sure that impacts were not being overrepresented. For example, unique rider counts are conservatively represented here, as one transportation provider did not track the number of unique riders accessing its services.

Surveys were completed voluntarily, and researchers are aware that some survey takers might want to respond in a way that was perceived as favorable to their transportation provider. It should also be noted that individuals volunteered to take the survey, which means that the resulting sample may be biased toward those characteristics that caused people to volunteer. In general, this means that individuals who took the survey might be more likely to have had positive experiences with the local transportation system. To account for these potential issues, researchers included a standard 25 percent optimism bias discount in all calculations relying on survey data.

Although the number of responses to the survey was robust, the survey population skews toward a higher age than the general population, and so the needs of seniors may be overrepresented. Researchers reviewed survey results with OMEGA and used interviews with riders, mobility managers, and caseworkers to assess the perceived accuracy of the survey findings. Researchers concluded that the needs identified in the survey were consistent with the needs identified in the collected qualitative data.



IMPROVED PHYSICAL HEALTH

CURRENT IMPACTS

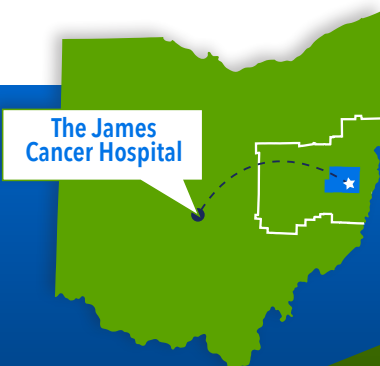


JEANNIE, 82

Cadiz, Harrison County

Jeannie has been traveling to medical appointments since 1969, when she was first treated for thyroid cancer at The James Cancer Hospital by Dr. James himself. She now travels to The James every four months to treat facial cancer, for which she has had multiple surgeries.

Without Harrison County's Rural Transit, she'd be lost.



For most of that time, it was her husband, Tom, who would drive her on the four-hour round trip. Her only child, a daughter, lived in Columbus, so though Jeannie dreaded hearing what might be wrong whenever she went to the cancer specialists, she could still look forward to visiting her daughter and having lunch or sightseeing. Her daughter died a few years ago, about the time that Tom's dementia progressed to the point where he could no longer drive. Jeannie no longer drives outside of Cadiz due to macular degeneration. Currently, she spends her days visiting him at a nearby nursing home during meal times to make sure he is eating healthy food at the right times.

"I have no family, and without this service, I don't know what I'd do," she said. "Without this option, I would not be able to go to appointments." The county's Rural Transit service picks her up and takes her to a Park N' Ride near Coshocton. From there, a shuttle bus transports her and others to Columbus for medical appointments. There are a few transfers along the way, but Jeannie says that for her, the trip flies by. "The drivers are so knowledgeable, they tell me about Coshocton, or we talk about gardening, nutrition. They distract me from thinking about what the doctor is going to tell me is wrong with me. **I have my needs met, but then everyone is also so wonderful,**" she said. When her appointment is complete, she alerts a medical receptionist, who calls the shuttle driver. She is soon picked up and headed back to Cadiz.

As Jeannie's only weekly social outing is to church, she said that the contact between her and the drivers, as well as Harrison County's mobility manager, Jill, means a lot to her. "Jill really cares about people; she is not just doing a job. She wants to make sure that things are taken care of for people and that they are relieved and feel comfortable that they are being taken care of." She said that when there aren't enough vehicles or drivers, and she begins to worry about getting to her appointment, Jill is a calming and caring presence. "She'll say, 'We have two more days, we'll figure it out, don't worry!'"

In years previous, Jeannie had been on her community's Easter Seals Board, and worked to help those in her community have access to wheelchair-accessible transport. She experienced that gap in services firsthand when her husband could not get to medical appointments regularly due to lack of wheelchair-accessible vans. She said she is so grateful for accessibility for transportation, but that she feels sad for the others who suffer because they don't have that same option.

"My husband's health is worse because I was not able to put him in my car with his wheelchair. If we needed this transportation so badly, I am sure there are many others who need it just as badly now."

IMPROVED PHYSICAL HEALTH

By making it possible for people like Jeannie to access healthcare in a consistent way, OMEGA's public transits and transportation services are creating an estimated \$37 million in social value.

Transportation is a prerequisite for all of the social determinants of health (*Social Determinants of Health Series: Transportation and the Role of Hospitals* | AHA, 2017), yet one in seven rural residents reported that transportation barriers prevented them from getting medical care in the last year (McQueenie et al., 2019). Among those who are riding the OMEGA region's public transit and transportation systems, this social determinant of health is more within reach. It should be noted, though, that those who are using public transit and transportation in the OMEGA region represent a fraction of all those in the region who need these services.

HOW DO OMEGA PUBLIC TRANSITS/TRANSPORTATION PROVIDERS HELP PEOPLE IN THE REGION TO ACCESS HEALTHCARE?

Surveyed riders reported that without the services, they would have lost access to important components of their medical and mental health care.

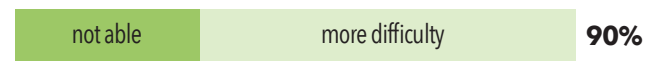
"Senior transportation has been a lifesaver for us. We wouldn't be able to go to appointments like we do without them."

Marsha, Guernsey County resident

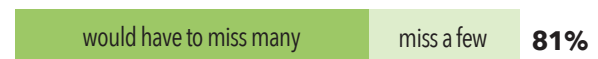
90% of surveyed riders reported that they would have more difficulty getting mental health treatment or going to group therapy, or they wouldn't be able to access these services at all without public transits and other transportation providers in the OMEGA region.

81% reported that they would have had to miss at least a few doctor's visits.

I would not be able to get to/would have more difficulty getting **mental health treatments or going to group therapy sessions**



I would have to **miss many doctor's visits/ would miss a few doctor's visits**



I would never be able to pick up my prescriptions/would sometimes **not be able to pick up my prescriptions**



I would not be able to/It would be more **difficult to fulfill substance use treatment program requirements**



IMPROVED PHYSICAL HEALTH

WHY DOES THIS MATTER?

The Appalachian region has higher rates of many chronic conditions than the national average. (Appalachian Regional Commission, 2020). Mental health care access in the region also compares less favorably to non-Appalachian areas. (Appalachian Regional Commission, 2020).

Limited transportation access reduces prescription medication access and adherence. (Hensley et al., 2018; Tierney et al., 2000).

Addressing the current substance use epidemic requires increasing access to recovery resources. Research has consistently shown that outcomes for those with substance use disorders are better for those who complete a recovery program (Brorson et al., 2013). Transportation barriers in rural areas make that more challenging, as rural individuals must ride farther than urban individuals (Joudrey et al., 2019). Considering that individuals must visit clinics six times per week to continue to qualify for medication makes treatment nearly impossible for those without vehicle access (Frank et al., 2021).

While the transportation services provided in the OMEGA region make a large impact, they are not enough to serve everyone.

Mobility manager Jill recounted an experience of a rider who needed to get to a methadone clinic outside county lines. This individual usually relied on a friend to take her every day, which is the required frequency for methadone treatment. When that friend had surgery and could not take her for a number of days, she reached out to Jill for assistance.

Jill had no funding to use to pay for the trip, so the woman was unable to complete her treatment.



IMPROVED PHYSICAL HEALTH

HOW DID WE CALCULATE THIS?

To represent the value of transportation's impact on physical health in the OMEGA region, researchers chose to measure the impact of public transportation access for those who use it to attend chronic care medical appointments. This is only one aspect of potential improved health care outcomes; the actual impact is far greater. This proxy formulation was chosen because of the prevalence of chronic conditions in the region and the clarity of the existing research in this area.

Researchers began with the number of unique riders in 2022, then reduced that number by a series of percentages to arrive at the number of riders who avoided premature death as a result of keeping chronic care appointments. Researchers first took 47.8 percent of the number of riders, to reflect the percentage of Ohio adults who have at least one chronic condition (for older adults, this percentage is even higher) (Albani et al., 2019). Researchers then multiplied that number by 57 percent, to reflect the 57% of surveyed riders who said that they cannot get to, or it is difficult to get to, doctor's appointments without public transit or transportation. This calculation resulted in 1,746 riders who needed public transit or transportation to get to chronic care doctor's appointments. Finally, researchers multiplied this product by 2%, to reflect the difference between the 1% all-cause mortality rate for the general population (CDC), and the 3% all-cause mortality rate for the population of individuals with chronic health conditions who miss more than one medical appointment in a year (McQueenie 2019). These calculations yielded an estimate of 35 individuals in the region who received the healthcare needed to avoid premature death because of OMEGA transit and transportation services.

Researchers translated the value of decreased mortality for these 35 riders into a monetary figure using the 2022 EPA Value of a Statistical Life (VSL), which is \$10,773,672.73 (Mortality Risk Valuation | US EPA, 2023). Researchers divided the VSL by 10.3, which is a very conservative estimate of the remaining years of life for the average rider. The 10.3-year estimate was derived from the difference between the average life expectancy of 75.3 years in Ohio and the conservative estimate of 65 years as the average age of riders. Multiplying the result of these calculations by the number of riders affected yielded an estimate of between \$27,742,546 and \$36,990,062. The lower end of the range represents the total social value adjusted for optimism bias among survey respondents.



IMPROVED PHYSICAL HEALTH

IMPROVED PHYSICAL HEALTH

Riders are more likely to attend more health appointments for their chronic conditions, resulting in a longer, healthier life.

\$27,742,546 - \$36,990,062
in decreased mortality rates

OUTCOME

35
premature deaths averted



IMPACT

Public transportation riders who had at least one chronic condition were able to attend 4 more chronic care appointments, on average, and prevent a 300% death rate increase.



IMPROVED PHYSICAL HEALTH FACT SHEET

BARRIERS

One in seven rural residents reported that transportation barriers prevented them from getting medical care in the last year (Barrie-Smith et al., 2023).

The supply of **mental health providers per 100,000 population in Appalachian Ohio is 41 percent lower than the average** in non-Appalachian Ohio (Appalachian Regional Commission, 2020).

MORTALITY

Appalachian Ohio's heart disease mortality rate is 15 percent higher than the rate in non-Appalachian Ohio, as is Chronic Obstructive Pulmonary Disease mortality (Appalachian Regional Commission, 2020).

Diabetes mortality is 8 percent higher for Appalachian Ohioans than non-Appalachian Ohioans (Appalachian Regional Commission, 2020).

MISSED APPOINTMENTS

Patients who have chronic conditions and miss two or more appointments annually have three times the increase in all-cause mortality of those who don't miss the appointments (McQueenie, 2019).

For those **with a chronic mental health condition, the all-cause mortality rate increases by eight times if they miss two or more appointments annually** (McQueenie, 2019).

MEDICATION

Patients who lived in zip codes with the least vehicle access had a 77 percent likelihood of not filling their prescriptions when compared with those who lived in zip codes with the highest vehicle access (Albani et al., 2019). When Medicaid began to require prior approval for transportation, medication refills in the subsequent six months decreased by 18 percent (Tierney et al., 2000).

One study of rural counties that included **the entirety of Ohio found that the mean trip time to reach a methadone clinic** (US Substance Abuse and Mental Health Services Administration (SAMHSA)-certified opioid treatment programs) **was 49.1 minutes versus 7.8 minutes in urban areas** (Joudrey et al., 2019).

DENTAL

The supply of dentists per 100,000 population in Appalachian Ohio is 33 percent lower than the average in non-Appalachian Ohio (Appalachian Regional Council, 2020).

The Ohio Department of Health found **children in Appalachian Ohio have 50 percent more untreated cavities than children in rural counties not in Appalachian Ohio**, and 69 percent more than children in urban or suburban counties. The Ohio Department of Health found in 2017 that seven of 11 counties where children have the poorest oral health are in Appalachia, including Coshocton and Carroll counties (Albani et al., 2019).

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INCREASED ABILITY TO AGE IN PLACE

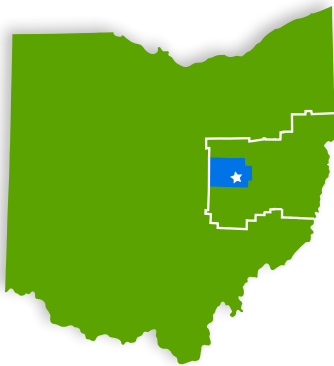
CURRENT IMPACTS



MARILYN, 83

Coshocton County

Marilyn uses public transportation to travel an hour away to Dover to get injections for her macular degeneration, and she relies on public transportation.



A Coshocton County resident since 1961, 83-year-old Marilyn worked as a clerk for the county commissioners and an administrator for the probate and common pleas courts in the county. She jokes that if someone walks down Main Street and she doesn't know them, they must be visiting. Marilyn has been retired for 22 years and she said she feels great except for her eyesight. Macular degeneration prevents her from driving, but she keeps active and listens to audiobooks and the radio, and visits with her neighbors.

Before COVID, Marilyn used public transportation that would take her to the nearby hospital, where she had volunteered for over 20 years folding hospital gowns so patients would feel more like guests. She took pride in her handiwork. "The [hospital staff] like the way I snap them and make sure there are ties and squares. They say it makes it nice for the patients to have it nicely folded on the bed."

Marilyn uses public transportation to travel an hour away to Dover to get injections for her macular degeneration, and she relies on public transportation for her other medical appointments, as well. For many years, her husband took her wherever she needed to go, but he passed away in 2019. She has two sons and a daughter-in-law who could sometimes be available, but Marilyn said she enjoys the time with the transportation drivers and appreciates their dependability. "I am in love with all those drivers. We have the best time," she said. "When they take me to Dover we joke all the way there and back."

She said she sends \$50 to the transportation office every month, by way of thank you, along with a note of appreciation.

"They put the note on the bulletin board so the drivers can see it. I am so thankful for them."

INCREASED ABILITY TO AGE IN PLACE

Many seniors like Marilyn require assistance to get to needed medical services. Without this assistance, many seniors must move to assisted living facilities to continue receiving care. By helping seniors to age in place, OMEGA public transit and transportation providers are creating over \$20 million in social value.

HOW DO OMEGA PUBLIC TRANSITS/TRANSPORTATION PROVIDERS HELP SENIORS IN THE REGION TO AGE IN PLACE?

Transportation is a key requirement for aging in place (Ohio Department of Aging, 2020), but in rural areas, accessible and affordable transportation options are often in short supply. Without transportation to medical appointments, many seniors have no choice but to move to an assisted-living facility that provides these transportation services. This national data is backed up by those surveyed in the OMEGA region. 8.7 percent of riders aged 60+ who were surveyed said that they would have to go into institutional care if they did not have access to OMEGA's public transit and transportation providers. Although this is a relatively modest percentage, there are over 3,324 seniors using transit and transportation services in the OMEGA region. Altogether, helping older riders to age in place saves about \$20.6 million in seniors' personal wealth.

WHY DOES THIS MATTER?

The region's senior population is growing, and seniors will account for over a quarter of Ohio's population by 2030. (Ohio Department of Aging, 2020). Preparing for the "grey tsunami" is particularly important for rural communities, which, on average, are older than urban populations and have a more rapidly growing proportion of older adults (Tuttle et al., 2020). Many seniors want to remain in their homes, yet many are not able to do so. 62.5 percent of rural older adults preferred to receive care in their own home from family/friends or from paid help, rather than living in an institution (Tuttle et al., 2020).

There are numerous positive impacts associated with aging in place, both for the individuals, and also for communities. These include maintaining a sense of identity, reducing health-care-associated infections, and preserving individual savings or home equity. (Ratnayake et al., 2022; National Aging in Place Council, 2021)



8.7%
of surveyed seniors
reported that without
OMEGA transit and
transportation services
they would have to leave
their homes and go into
institutional care.

INCREASED ABILITY TO AGE IN PLACE

HOW DID WE CALCULATE THIS?

Researchers took 8.7% of the number of unique senior riders to reflect the percentage of surveyed seniors who reported that the OMEGA region's public transit and transportation providers allowed them to stay in their home instead of moving to an assisted living facility. To represent the value of aging in place, researchers calculate the difference between the amount of money a senior would save by paying the out-of-pocket costs for in-home care (\$15,321 per year) and the out-of-pocket costs for assisted living facilities (\$86,559 per year) (U.S. Department of Housing and Urban Development, 2013). This per-person value was then multiplied by the 289 individuals likely to be able to age in place due to OMEGA region transit and transportation services. This value represents individual wealth that is saved from an increased ability to age in place due to public transit and transportation, and totals over \$20.6 million.

INCREASED ABILITY TO AGE IN PLACE

More riders can stay in their homes and continue to enjoy their community, family, and autonomy while saving money. In 2022, this generated

\$15,450,133 - \$20,600,177

in avoided out-of-pocket costs to riders for institutional care

OUTCOME

289

Riders 60+ who are able to age in place

IMPACT

Individuals save an average amount of \$71,237 each over one year.

The total savings for the OMEGA region = \$17,780,128.

INCREASED ABILITY TO AGE IN PLACE FACT SHEET

AGING

By 2030, older Ohioans will account for more than a quarter of Ohio's population (26.3%), up from 19.8 percent in 2010 (Ohio Department of Aging, 2020). This is far more than the anticipated national average of 20 percent (US Census Bureau, 2021).

Older adults report that **aging in place allows one to maintain a sense of identity, autonomy, familiarity, sense of place, and social connections** (Ratnayake et al., 2022).

MOBILITY

Rural older adults have higher odds of having unmet mobility needs compared to urban older adults, making access to not only public transportation, but door-to-door transportation, necessary (Henning-Smith et al., 2023).

In a 2021 survey of State Offices of Rural Health (SORH), **81 percent of all SORH directors or managers strongly agreed that transportation posed a barrier for older adults in rural communities** in terms of their ability to age in place (Lahr & Henning-Smith, 2021).

CARE

Research shows that at least **50 percent of adults 65 or older can expect to need care**, yet 22 percent of adults are or will be on their own in old age (Ratnayake et al., 2022).

Millions of health-care-associated infections occur in long-term care facilities annually. **Aging in place can protect older adults from such infections, resulting in fewer negative health outcomes and even premature deaths** (Ratnayake et al., 2022).

COSTS

The typical homeowner aged 65 and over has enough wealth to cover the cost of a nursing home for just 42 months before depleting all assets (National Aging in Place Council, 2021).

Older adults are, on average, able to preserve savings or home equity for a longer period of time when they age in place (National Aging in Place Council, 2021).

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DECREASED SOCIAL ISOLATION

CURRENT IMPACTS



BARB, 62

Coshocton County

"Going to the senior center serves a lot of social purposes for me, knowing there is transportation available so I can [be] out and about. Those buses take people to see friends, go on church functions, trips to Walmart."



Barb, 62, is a Coshocton Coordinated Transportation Agency board member, as well as a client. She was a school administrator and a schoolteacher in New York before deciding to retire in Coshocton to be near family. It was difficult to leave lifelong friends, especially as she spent almost a year in the hospital soon after moving. After her hospital stay, she required the use of a wheelchair. Currently, Barb uses transportation 3-4 times weekly for water therapy, and she also goes to the senior center weekly for exercise classes and lunch. She is enthusiastic about the many social activities the center offers.

"Going to the senior center serves a lot of social purposes for me," she said. "Knowing there is transportation available so I can [be] out and about. Those buses take people to see friends, go on church functions, trips to Walmart." At the senior center, she regularly participates in exercise classes, and she has a regular games date with other senior center guests. Barb's wheelchair is 42 pounds, and though it is possible for her to get it in her car by herself, it is not easy, and not something she could do every day. Without public transportation options, it would be difficult for her to get to the senior center often, or to be able to check up on all her friends at the center.

According to Barb, "I'm a youngster at 62. Most of the people at the center are older and it is a huge eye opener for me to see how many older people deal with depression. A lot of people who come here are still healthy, but depression is still real for them. It is in my nature to encourage others and if they are missing [activities] to let them know that we've missed them."

DECREASED SOCIAL ISOLATION

By providing isolation-reducing transit and transportation services to people like Barb, OMEGA's regional transit/transportation systems are creating over \$539,000 worth of social value each year.

Social isolation is the state of having a smaller number of social contacts, which may contribute to loneliness, which is the pain felt when social connections are not sufficient to meet needs (World Health Organization, 2023). An estimated 17 percent of older adults are socially isolated (Ortiz, 2011). It is likely that the actual number is closer to a quarter of the older adult population (World Health Organization, 2023). Notably, research indicates that nondrivers may have a two-fold increase in the likelihood of being more socially isolated than those who still drive (Qin et al., 2019).

HOW ARE OMEGA PUBLIC TRANSIT/TRANSPORTATION PROVIDERS REDUCING SOCIAL ISOLATION?

Accessibility to public transportation removes barriers to connecting with other people, especially for rural older adults and those with mobility issues (Lamanna et al., 2019). Seventy-seven percent of surveyed riders reported that they used transit or transportation services to do something social at least a few days per month. Over a third do so at least once a week. Twenty-seven percent of surveyed OMEGA regional riders reported that without the OMEGA region's public transit and transportation service providers, they would not be able to attend social events, or would attend much fewer of them.



"I am in love with all those drivers. We have the best time," she said. "When they take me to Dover we joke all the way there and back."

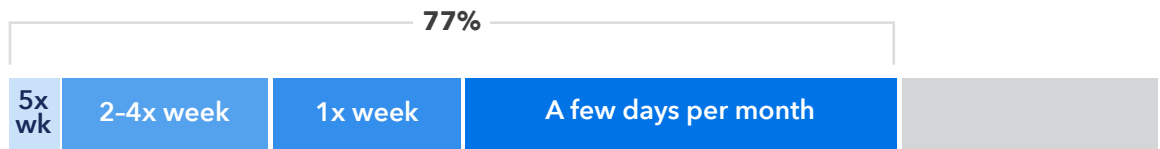
*Marilyn, Coshocton
County transport user*

"The drivers are so knowledgeable. They tell me about Coshocton, or we talk about gardening, nutrition. They distract me from thinking about what the doctor is going to tell me is wrong with me. I have my needs met, but then everyone is also so wonderful."

Jeannie, Harrison Coun

DECREASED SOCIAL ISOLATION

77% of regional riders use transportation services to do something social at least

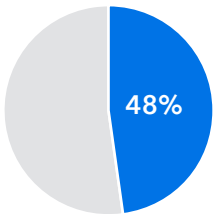


In addition to rides that were intended for social purposes, the OMEGA region’s riders report that they consider their interaction with transit providers to be a significant source of positive social interaction. OMEGA’s public transit/transportation riders consistently reported that their drivers are friendly, engage them in conversation, and often remember details about their previous rides together. Riders described drivers who connected them to resources, who talked with them about common interests, and who exercised special care in addressing riders’ individual mobility needs.

WHY DOES THIS MATTER?

Both social isolation and loneliness are serious health problems, and social isolation has been demonstrated to lead to significantly poorer health, all-cause mortality, and well-being outcomes, with important cost ramifications (Holt-Lunstad et al., 2015). Social isolation leads to poor mental health outcomes, including depression and suicidal ideation (Teo et al., 2013; De Souza Minayo & Cavalcante, 2015). Residents of the OMEGA region are at increased risk for social isolation because of the rural nature of most of the region (Bryanton et al., 2010).

48% of riders use services and engage with staff at least once a week



Because a dramatic increase in social isolation among her patients since COVID, and a significant drop in the number of people visiting seniors in her facility, “In 2024, there will be a push for hospitals to help address social isolation and part of that is the transportation barrier.”

DECREASED SOCIAL ISOLATION

HOW DID WE CALCULATE THIS?

Researchers used the difference between Medicare spending on those who are socially isolated and those who are not socially isolated (\$1,988 per year) to represent the value of decreasing social isolation (Shaw et al., 2017). To find the number of senior OMEGA-region riders experiencing this outcome, researchers multiplied the number of unique riders (6,392) by the percentage of riders aged 60 years and older (52%), and then by the 17 percent of older adults who are socially isolated (Ortiz, 2011). Researchers then took 48 percent of that total to reflect the percent of surveyed riders who use transportation at least weekly. This calculation resulted in a total of 271 seniors who use transit and transportation at least weekly and are likely to experience social isolation. Multiplying this number of individuals by the increased costs associated with social isolation yields a total of \$404,519-\$539,358 in costs avoided. The lower end of this range includes a discount for social optimism bias among survey respondents. This total is conservative, as it includes the most conservative percentage of adults who are socially isolated and also only considers Medicare spending, without addressing the other impacts to individuals' health and well-being that result from regular socialization.

DECREASED SOCIAL ISOLATION

Riders get companionship from regular contact with drivers and other passengers, as well as getting the opportunity to go to social activities. In 2022, this generated

\$404,519 - \$539,358

in avoided health costs to Medicare by avoiding social isolation

OUTCOME



riders 60+ who are not socially isolated thanks to regional transportation

IMPACT

Medicare saves an average amount of \$1,988 annually per person in health costs

DECREASED SOCIAL ISOLATION FACT SHEET

SOCIAL ISOLATION

Social isolation has been associated with a significantly increased risk of premature all-cause mortality. **The magnitude of that effect of social isolation on mortality risk may be equal to or greater than smoking, obesity, and physical inactivity** (National Academies of Sciences, Engineering, and Medicine, 2020).

Lower frequencies of in-person social contacts are associated with higher rates of depression over two years. Frequency of other types of communication (telephone, written, or email) did not remove that risk, indicating that in-person modes of contact were uniquely protective (Teo et al., 2013).

MENTAL HEALTH

A recent study suggested that **the risk of developing dementia over nine years was 27 percent higher among socially isolated older adults compared with older adults who were not socially isolated** (Huang et al., 2023).

Researchers have found **a correlation between suicidal ideation and social isolation in adults aged 60 years and older** and have also found that social isolation is a major contributing factor of suicide attempts (De Souza Minayo & Cavalcante, 2015).

RURAL AREAS

Older adults living in rural areas are at greater risk for experiencing social isolation as a result of their geographic location, especially if they do not own a car. These rural older adults who cannot or no longer drive themselves often experience social isolation if family or friends cannot drive them, but typically those family and friends usually prioritize driving older adults to appointments or to grocery stores, rather than social activities (Bryanton et al., 2010).

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INCREASED DIGNITY AND AUTONOMY BECAUSE OF EMPLOYMENT

CURRENT IMPACTS



BRITTANY, 38

Coshocton County

Brittany has cerebral palsy and has use of one hand. She works part-time, and saving the money it costs to operate a large van by utilizing the Coshocton County Transportation Agency for trips to work saves her a substantial amount of money.



Brittany, 38, is a Coshocton County resident and for the past eight years, a receptionist at RHDD in Coshocton. She answers the telephone, makes copies, and performs other office work for the nonprofit. She said she is exactly where she wants to be.

"When I was younger, Mom asked me what I wanted to be when I grew up and I said either a receptionist or a teacher. And I actually got my dream job in 2015," she said.

Brittany lives with her fiancé and her daughter, and they have a handicap-accessible van. Brittany has cerebral palsy and has use of one hand. She works part-time, and saving the money it costs to operate a large van by utilizing the Coshocton County Transportation Agency for trips to work saves her a substantial amount of money. Besides the financial savings, Brittany enjoys the company of the drivers and said she has gotten really close to some of them.

"They are really helpful. They help me take stuff off from my wheelchair when I need it and help me put stuff on my desk when I get to work," she said. CCCTA drivers have been transporting Brittany since she began working for RHDD. They also occasionally take her to medical appointments in Columbus or Zanesville to save gas money. If CCCTA isn't available, she relies on a caregiver or her fiancé.

"All I can say about transportation is that all the people that work there are loving and caring people and I wouldn't change it for anything. I just want to give a special thanks to a couple of people that have been transporting me, their names are Fred Shaw, Steve Loggins, John Clark, Warren Courtney, and Gil White for their loving, caring, and support to get me where I need to go. I also would like to give a big thanks to Tracy Haines, Jay Kittell and Valerie Shaw. I wouldn't know what I would do if it wasn't for CCCTA being there to transport me."

INCREASED DIGNITY AND AUTONOMY BECAUSE OF EMPLOYMENT

By helping people like Brittany get to work consistently and enjoy the dignity associated with meaningful employment, OMEGA's public transits are creating over \$1.5 million worth of social value each year.

HOW ARE OMEGA'S PUBLIC TRANSIT/TRANSPORTATION PROVIDERS INCREASING THE DIGNITY AND AUTONOMY ASSOCIATED WITH EMPLOYMENT?

Over 1,000 people in the OMEGA region rely on transit or transportation services to get to their place of work. While some of these riders might be able to rely on friends or family for rides if needed, 23 percent of surveyed riders said they might lose their job without these services. Transit and transportation workers interviewed for this study reported that there is currently a gap between demand and capacity to provide employment transportation. This is especially the case for riders who do not have a good deal of notice that they need a ride, as may be the case for an interview or a last-minute shift change. Interview respondents reported that access to regional transportation providers and transit is dependent on changing schedules and the number of drivers available, and rides during peak times are often unavailable.

WHY DOES THIS MATTER?

Employment generates multiple non-monetary benefits in addition to income. Some of the most quantifiable impacts relate to mental and physical health. Individuals who are unemployed report lower self-esteem, decreased confidence (Friedland & Price, 2003), increased worry, and more physical pain (Burgard & Kalousová, 2015). There is a 23.6 percent higher incidence of anxiety and depression among those who are unemployed compared to those who are employed (Norström et al., 2019). Employment also contributes to dignity, both in the context of receiving dignity at work through fair treatment and compensation, and in obtaining additional dignity through being able to access opportunities to work.

Connie, 21, lives in Jefferson County and has to rely on friends and family to get to work every day. Connie said she appreciates her workplace and the purpose her work gives her. "It gives me a life, gives me stuff to do. When I don't work, I stay home and do nothing. I stay home with my dog and clean. I get bored really fast."

23%
of surveyed riders
reported that they would
lose their job without
public transit and
transportation services.



INCREASED DIGNITY AND AUTONOMY BECAUSE OF EMPLOYMENT

HOW DID WE CALCULATE THIS?

The research that was chosen as appropriate to value this outcome treats dignity as one of multiple non-monetary job characteristics that can be valued by workers through stated-preference and discrete choice experiments. According to researchers, a 1-unit increase in workplace dignity is worth 6-8 percent of wages, on average, to workers (Dubé et al., 2022). The proxy rests on the assumption that going from not being able to have employment to gaining employment will bring at least a 1-unit increase in benefit, by virtue of going from nothing to something.

There are 1,142 people relying on OMEGA-region public transportation and transit, but in acknowledgment that not everyone derives additional feelings of dignity from being employed, researchers applied a 29 percent discount to reflect the results of a recent national survey that found that 71 percent of workers said that work was very important to their self-identity (Orrell, et al., 2022). Using the median value of an entry-level salary for someone with no formal education credential, researchers calculated that increasing dignity by reliably bringing employees to work generates between \$1,144,569 and \$1,526,092 worth of social value. The lower end of the range includes a discount for social optimism bias among survey respondents.

Maggie, a vocational rehabilitation counselor in Tuscarawas County, reports that when she is able to connect her clients with employment transportation, the result is transformational. "When people are able to get to work and it does work out, it gives them a sense of identity, independence. They have money to do things socially, to have a group of friends at work. People who have been disabled or have hard things happen to them, they feel that much more excited to have an opportunity to get back to work."

INCREASED DIGNITY AND AUTONOMY BECAUSE OF EMPLOYMENT

The dignity of being able to work due to access to public transit is important to people. This generated

\$1,144,569 - \$1,526,092

in value to riders' sense of self identity

OUTCOME



riders who are employed because they have access to regional transportation

IMPACT

\$1,882
is what workers thought extra dignity in their workplace was worth annually

INCREASED DIGNITY AND AUTONOMY BECAUSE OF EMPLOYMENT FACT SHEET

The **effect of unemployment on mental health** has been measured at half a standard deviation - the equivalent to increasing rates of **psychological problems from 16% to 34%** (Paul, 2009)

Those who are unemployed report having lower self-esteem, demoralization (Friedland, 2003) **worry, and physical pain** (Burgard, 2015)

There is 23.6% higher incidence of anxiety and depression for those who are unemployed than for those who are employed (Norström, 2019).

There is nearly 10% decreased overall health outcomes from being unemployed compared to being employed (Norström, 2019).

Executive Order 13,563 added the consideration of **“human dignity” as a value when identifying costs and benefits of proposed regulation.**

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INCREASED CHOICE AND ABILITY TO OBTAIN SUSTAINABLE EMPLOYMENT

CURRENT IMPACTS



CONNIE, 21

Toronto, Jefferson County

In the past, Connie said she has had to leave shift employment due to the difficulty of getting rides, especially at off peak hours, but those are the jobs that are available. In Jefferson County, there are no Lyfts or Ubers, and taxi service is unreliable.



Connie, 21, is a resident of the City of Toronto in Jefferson County who currently does not have a car. She works part-time as a dining room attendant four days a week at a local university. Though Steel Valley Transit Authority operates within the county, the City of Toronto doesn't allow them to operate within the city, so Connie has few transportation options. She has a caseworker, Renee, who has collaborated with her to help her maintain employment despite having no transportation. In the past, Connie said she has had to leave shift employment due to the difficulty of getting rides, especially at off peak hours, but those are the jobs that are available. In Jefferson County, there are no Lyfts or Ubers, and taxi service is unreliable, according to Connie.

Her current job is only possible because she was able to make the transportation work with friends' and family's schedules, she said. Two friends she has made in church alternate picking her up from work when she gets off at 3 p.m. For the morning transportation, an aunt drops her off at 7:30 before going to her own place of employment, which is nearby. Connie's own shift doesn't start until 8:30, so the university allows her to get breakfast while she waits for her shift to start.

Connie said she appreciates her workplace and the purpose her work gives her.

"It gives me a life, gives me stuff to do. When I don't work, I stay home and do nothing. I stay home with my dog and clean. I get bored really fast. Then I go text crazy! Plus, it gets me around people," she said.

Connie said she has about \$50 left over from her paycheck after paying bills and rent. Thanks to her job at the university, she is able to maintain her own apartment and take care of her chihuahua, but she says that buying and maintaining a car is currently impossible on her earnings. She is very involved in her church and participates in her church's singing group, for which she also gets rides from her friends. Without her social network and her aunt, employment just wouldn't be an option for her.

"It's a good thing they are there," she said.

By making it possible for people like Connie to exercise more choice and increasing their ability to obtain sustainable employment, the OMEGA region public transportation services are creating over \$15 million worth of social value per year.

HOW ARE OMEGA PUBLIC TRANSIT/TRANSPORTATION PROVIDERS INCREASING AREA RESIDENTS' CHOICE OF JOBS AND ABILITY TO SECURE SUSTAINABLE EMPLOYMENT?

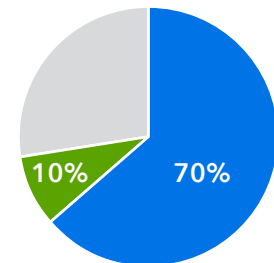
Seventy percent of surveyed riders who use transit or transportation to get to work said that these services give them a lot more choices about what job they take and where it is located. An additional 10 percent said they have a few more choices.

WHY DOES THIS MATTER?

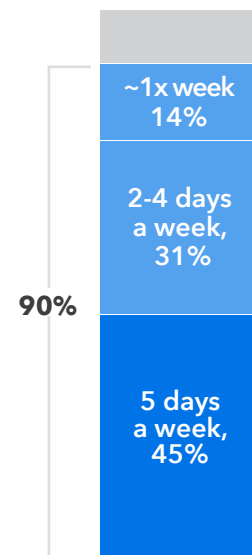
In rural Ohio, it is very difficult to get and keep employment without access to a vehicle, and it is nearly impossible to be highly selective about what job to take. Those who do not have a car are forced to accept employment that is convenient from a transportation perspective; for instance, they may need to choose a job site that is near a friend or relative's place of employment, or a site that they can reach by walking or biking. When workers cannot choose a job on the basis of pay, skills required, and benefits, they are at a profound economic disadvantage.

Similarly, having minimal choice or ability to obtain sustainable employment has profound effects on individuals and their potential. Lack of work experience, or experience in low-paying, unsatisfying positions, reduces a person's human capital, which is the knowledge, attributes, skills, experience, and health of a person (Srivastava & Das, 2015). Human capital makes up an estimated two-thirds of an individual's total wealth (Deming, 2022). It is estimated that work experience accounts for 40 percent of an individual's human capital (Madgavkar et al., 2022).

70% of riders say public transit agencies in the OMEGA region give them a lot more employment choices.



90% of riders using public transit and transportation for employment transport say they do so at least once a week.



Lack of transportation

Lack of choice in employment

Unemployment or underemployment

Reduced growth in human capital

Reduced lifetime wealth

INCREASED CHOICE AND ABILITY TO OBTAIN SUSTAINABLE EMPLOYMENT

HOW DID WE CALCULATE THIS?

To represent the value of employment and choice, researchers used the value of a year's worth of work experience to an individual's human capital. Eighteen percent of surveyed riders reported that their ability to work was a result of access to public transportation. Researchers multiplied this percentage of riders by the average lifetime value of an individual's human capital (\$890,000-\$1,060,000) (Madgavkar et al., 2022). The resulting number was multiplied by 40 percent to reduce the value to just that which can be attributed to work experience (Madgavkar et al., 2022). That number was further discounted by dividing by 30 years, to limit the impact measurement to just a year (assuming a 30-year work span when work experience is impactful). The resulting total value of human capital made possible because of public transportation access ranges between \$10,058,736 and \$15,973,423. The lower end of the range reflects a discount taken for optimism bias among survey respondents.

Even transportation services that are not employment specific can help individuals obtain and keep jobs. Tessa and Madison, two community health workers in Tuscarawas County, report that many of their clients feel they have to stay home in order to maximize their chances of getting to their appointments for social services by keeping their schedules as open as possible. If they cannot keep their appointments, they lose access to diapers, formula, and other crucial supports. If they knew they could get a ride with public transit whenever they needed it to access social services, however, it would free up enough time for them to work and to take care of their families. If their clients had access to regular public transportation, they report, "a lot of them could go back to work."

INCREASED CHOICE AND ABILITY TO OBTAIN SUSTAINABLE EMPLOYMENT

Being able to work results in gaining on-the-job experience, which is an important contributor to human capital over a lifetime. In 2022, this generated

\$10,058,736 - \$15,973,423

in increased value of human capital of riders.

OUTCOME



riders who are employed because they have access to regional transportation

IMPACT

\$11,748-\$13,992

annually is what a year of work experience is worth to each worker's human capital

INCREASED CHOICE AND ABILITY TO OBTAIN SUSTAINABLE EMPLOYMENT FACT SHEET

Rural carless households earn 64 percent less than rural households with a car and 40 percent less than urban carless households (Wang et al., 2023). This is partly because they do not have the ability to choose a longer commute, to go out of the county, or to work a higher-paying shift.

The average annual cost to own a car is \$8,449.49, an amount that represents a huge portion of low-income household budgets and is well above that income gain realized through having a car (Schweninger et al., 2020).

Often, areas with housing that is affordable do not have public transportation or nearby jobs that pay a living wage, while areas that have better access to transportation and well-paying jobs do not have housing that is affordable for those with low incomes (Ohio Association of Community Action Agencies,

Lack of access to reliable public transportation creates a feedback loop in which individuals are not able to maximize their economic potential. This increases the need for public transportation and pushes private transportation increasingly out of reach. (Rusnak, 2019).



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MEDICAID SAVINGS

CURRENT IMPACTS



TIM, 61
Coshocton County

"I don't know what I would do without them [CCCTA] taking me to dialysis and bringing me home. It would be hard to do since I live alone, I don't have anyone."



A Coshocton-born Air Force veteran, Tim was working in a furniture components company in North Carolina when he experienced a brainstem stroke. He returned to Coshocton to be closer to family, and has remained in the area for the past 14 years. Now 61, Tim is confined to an electric wheelchair, and last year, he began to require dialysis. Over time, he said, most of his local family has died or moved away.

"I don't know what I would do without them [CCCTA] taking me to dialysis and bringing me home. It would be hard to do since I live alone, I don't have anyone," he says.

Dialysis is time-consuming; Tim spends four hours a day, three days a week in treatment. It's difficult for him to leave his home without outside assistance due to his power chair, limiting his ability to socialize. A bus with a lift is required to handle his power chair, and a local agency had to build a ramp so that he could leave his house for dialysis. During these challenges, the CCCTA drivers have been invaluable both as company and as a resource and he has high regard for them, he said.

"I know all the drivers and talk to all of them. They've tried to help me make contacts. My power chair kept dying and I tried to get a battery. I tried to get the VA to come look at it and get it fixed. A driver knew someone who had something to do with it and referred me to him and got some attention going to help me out to get my chair back and running. They will help you as best they can and do what they can," he said.

Tim says that without CCCTA, he would be forced to move to another community with accessible public transit.

"It's a godsend that they have this and that they can offer this resource."

MEDICAID SAVINGS

CURRENT IMPACTS



AMY

Coshocton County

“Coshocton transit doesn’t have enough vehicles... and they are our only transportation in town that has wheelchair transport.”



Amy is a registered nurse and case manager at a local hospital who connects patients to community resources upon discharge. Her responsibilities include getting patients who need rides to and from the hospital connected with local transportation agencies.

Transportation is a major issue for her patients. She said the hospital did an unofficial study, and females over the age of 70 were the largest demographic with no transportation options, no family, and few resources. She said that getting them a ride for needed procedures and care can be difficult, especially for those patients who need wheelchair accessibility. It’s a big challenge to find rides for everyone, she said. Her first step is to connect patients to mobility managers, if patients are willing. If that is not possible, there are times when the hospital has had to pay for cab rides out of a charitable fund set aside for that purpose. That does not work when patients have more complex needs, including the need for wheelchair accessible vehicles.

“Coshocton transit doesn’t have enough vehicles...and they are our only transportation in town that has wheelchair transport,” Amy said. If transit is not available, she has to get the patient’s family involved, to see if they have a wheelchair-accessible option. If not, the hospital has had to pay an ambulance service to take people home. If scheduling doesn’t permit that, the hospital may even have to keep a patient that would otherwise be discharged.

She said that so much would be different if there was a standard transit route. “If we had a regular bus route, the hospital could be a stop, and we could improve food insecurity, and have access to so many other things besides health care.”

MEDICAID SAVINGS

By making it possible for residents of the OMEGA region to access physical and mental healthcare in a consistent way, the OMEGA region public transits/transportation services save Medicaid the increased costs associated with poorer health outcomes and assisted living services. These savings represent an estimated \$3.4 million in social value.

Access to public transportation improves health outcomes for those with chronic conditions and increases seniors' ability to age in place. Previous sections of this report have documented the social value created for riders as a result of these outcomes. This section calculates the costs avoided by Medicaid when riders experience these improved outcomes. Medicaid saves money when patients' healthcare costs are reduced through adherence to treatment plans (which leads to fewer hospital readmissions and emergency department visits, and reduced appointment no-shows), and when seniors require less costly care as they age in place.

HOW ARE OMEGA PUBLIC TRANSIT/TRANSPORTATION PROVIDERS REDUCING PATIENT CARE COSTS?

Non-emergency medical transportation (NEMT) is a covered benefit for regional Medicaid users who require transportation to care appointments such as office visits, dialysis treatments, and recovery services. NEMT makes up an estimated 1 percent or less of total Medicaid spending, yet a paucity of impact analysis of NEMT has often made it among the first benefits to be considered for cuts (Medical Transportation Access Coalition et al., 2021). The research that has been carried out suggests that NEMT trips save Medicaid funding by reducing appointment no-shows, hospital readmissions, and emergency room visits. Removing transportation barriers that lead to foregone or delayed care for Medicaid clients saves money for Medicaid.

Medicaid also benefits from both public transit agencies and other transportation providers in the region because the rate that Medicaid pays for enrollee rides are often lower than the true cost of the requested trip. It also does not pay for no-show trips or last-minute cancellations. Public transit systems and other transportation



Lack of transportation increases costs for Medicaid and other healthcare-related entities. Amy, a registered nurse and case manager at a local hospital, reports that when transportation is not available from a transport provider or family, the hospital has to pay for a cab to take a patient home. If the patient uses a wheelchair, the hospital has to pay an ambulance service to take them home. If scheduling does not permit that, the hospital has even had to keep a patient who would otherwise be discharged until transportation becomes available.

MEDICAID SAVINGS

providers absorb these costs. Each year, an estimated 5,110 Medicaid no-show trips are not reimbursed to OMEGA-region transportation providers; an additional 32,275 Medicaid trips are cancelled, frequently at the last minute. Each of these trips has an operational cost and an opportunity cost that must be subsidized by other funding sources.

Finally, Medicaid benefits from reduced costs associated with aging in place versus living in an assisted living facility. The direct relationship between transportation and increased ability to age in place has significant long-term services and supports (LTSS) cost savings for Medicaid.

WHY DOES THIS MATTER?

Medicaid NEMT has an essential role in connecting people with medical care in the OMEGA region, as it is many people's only option for affordable and dependable transportation. It is also crucial for the public and community transportation system in the OMEGA region to thrive. NEMT provides a substantial amount of the annual budget of local public transit/transportation organizations through the leveraging of NEMT revenue to acquire additional state funding and as local match to secure critical additional federal funding. As such, Medicaid NEMT is an important tool in addressing the Social Determinants of Health for all individuals in the OMEGA region, not just those in Medicaid, as public transportation services provide residents with rides to work, to buy groceries, and to connect them with their communities.

By increasing seniors' ability to age in place, NEMT also reduces the demand for a very costly Medicaid benefit. In 2021, Medicaid spent \$207 billion on long-term services and supports (LTSS) (Congressional Research Service, 2023). LTSS includes institutional care, home- and community-based services (HCBS), and a mixture of both types of services. It is estimated that 35 percent of Ohio LTSS users utilize this benefit for institutional care only, while 57 percent of enrollees use this benefit for HCBS (KFF, 2023). Ohio's LTSS institutional care usage is about 10 percent more than the national average, which is significant in terms of costs. Given that nearly 25 percent of Ohio adults will be age 65+ by 2030 (versus one in five nationally by 2030), the overall costs of LTSS are likely to continue to increase significantly.



MEDICAID SAVINGS

HOW DID WE CALCULATE THIS?

Reduction in healthcare costs

A benefit analysis of Medicaid NEMT was conducted by examining purposefully selected examples of chronic care conditions and associated costs. Researchers found that patients with diabetes who had access to NEMT incurred, on average, \$11,798 less in medical costs compared to individuals who did not have such access (Medical Transportation Access Coalition, 2018). Similarly, patients who required dialysis and had access to NEMT had lower medical costs than those without access to NEMT, though in the case of dialysis the cost difference is much larger (\$50,993) (Medical Transportation Access Coalition, 2018). These lower costs were attributed to the fact that those patients could follow their doctor's recommended treatment protocols.

To find the number of riders who are affected by Medicaid NEMT, the total number of riders was multiplied by the percentage of Ohio adults who have at least one chronic condition (48%). The resulting product was then multiplied by 57 percent, which is the percentage of surveyed riders who said that they would miss many doctors' appointments without access to regional transportation. This yielded an estimate of 1,746 individuals likely to be impacted by access to NEMT. This number was first multiplied by the cost savings associated with NEMT for patients with diabetes to obtain a low estimate of the social value created by NEMT. Researchers then multiplied the number of affected individuals by the cost savings associated with patients receiving dialysis to obtain a high estimate of social value created. The final total range is \$15,449,076-\$89,026,830. This is a wide range due to the high cost of dialysis. The high value is included because OMEGA's public transit agencies and other transportation providers mainly serving the senior populations report that they have a considerable, and consequential, number of riders who are traveling to dialysis multiple times a week.

Reduction in costs associated with aging

8.7 percent of survey respondents aged 60+ said that they would have to move into an institution if not for access to regional public transit and other transportation services. Applying this percentage to the 3,324 riders aged 60 and over in the OMEGA region yields an estimate of 289 riders who are likely to utilize HCBS services rather than institutional care. The average annual savings obtained by aging in place instead of receiving institutional care is \$11,882.52 per individual (Marek et al., 2012). Multiplying this per person annual savings by the estimated number of seniors in the OMEGA region who can age in place as a result of transportation services yields an estimated \$2,577,087-\$3,436,116 in costs averted by Medicaid. The lower end of the range reflects a discount taken in order to account for potential optimism bias among survey respondents.



MEDICAID SAVINGS

Medicaid patients who can follow their doctor's treatment recommendations have fewer health costs billed than those who cannot follow recommendations because they do not have access to Non-Emergency Medical Transport. In 2022, this generated

\$15,449,076 - \$89,026,830

in decreased patient health costs for Medicaid

OUTCOME



riders who have a chronic condition and rely on regional transportation to get to medical appointments

IMPACT

\$11,798-\$50,993

is the range of savings per patient who has access to non-emergency medical transportation

MEDICAID SAVINGS FACT SHEET

REDUCED PATIENT COSTS

Medicaid/CHIP covers an average of 47 percent of children and 18 percent of all adults in small towns and rural places, including the OMEGA region (Pudelski, 2018).

Medicaid beneficiaries were more likely to report a transportation barrier to care in 2017 compared with those who did not receive Medicaid (Wolfe et al., 2020).

An estimated 25 percent to 55 percent of Medicaid enrollees missed, arrived late to, or did not try to go to a health care appointment because of transportation issues (Eisenberg et al., 2020).

AGING IN PLACE

Nationwide, people who used Medicaid LTSS comprised 6 percent of Medicaid enrollment but 37 percent of federal and state Medicaid spending (KFF, 2023).

Ohio's long-term services and supports institutional care usage is about 10 percent more than the national average, which represents significant increased costs. (KFF, 2023)

By 2023, nearly 25 percent of Ohio adults will be aged 65 or older (compared to 20% nationwide). As a result, the overall costs of LTSS are likely to continue to increase significantly (Reem et al., 2021).



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REDUCED FAMILY STRAIN

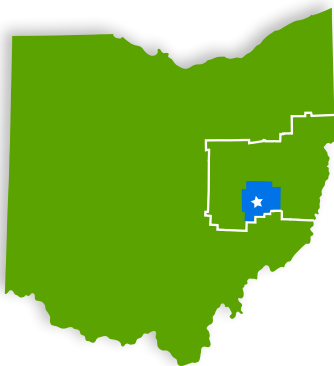
CURRENT IMPACTS



MARSHA & ROGER

Guernsey County

"Senior transportation has been a lifesaver for us. We wouldn't be able to go to appointments like we do without them."



In the space of about a year, Marsha and Roger have gotten to know the Guernsey County Senior Citizen Center transportation drivers quite well. The couple have been married for 59 years and have lived in Guernsey County since 1992, when Roger accepted a job as a school superintendent. After a stroke that left her unable to walk for the time being, Marsha began to require dialysis and physical therapy, which means utilizing transportation from the Guernsey County Senior Center five times a week. Roger has a back issue that requires physical therapy as well as a heart condition that requires regular medical appointments. Marsha has macular degeneration and can no longer drive. Roger has not driven since February, after being in a car accident.

They have two sons and a granddaughter who live nearby, all of whom work full time. Marsha says it is difficult for them to get away from their jobs to give Marsha and Roger a ride to appointments during the day, though her sons and her granddaughter provide rides for errands and grocery shopping.

"Senior transportation has been a lifesaver for us. We wouldn't be able to go to appointments like we do without them," Marsha said. "We didn't know too much about [transportation at the senior center] until we had to use it. And now we see how valuable it is."

Roger says that he is happy to praise the services that the Guernsey County Senior Center offers. His professional experiences made him aware of how much value caring people can add to others' lives by providing needed services. "The drivers are so considerate about the issues people have. They go out of their way to accommodate us. We used the service today and the driver was so helpful to my wife, very cautious about getting her on and off the ramp. They are very good at fall prevention. I am always happy to talk about them."

REDUCED FAMILY STRAIN

By making it possible for older adults like Marsha and Roger to get transportation to medical appointments, OMEGA public transit and other transportation services are creating about \$2.2 million in social value.

HOW ARE OMEGA PUBLIC TRANSIT/TRANSPORTATION PROVIDERS REDUCING STRAIN ON FAMILIES?

By providing transportation to their family members, the public transit agencies and other transportation providers in the OMEGA region reduce the amount of transportation that caregivers must provide to their family member or friend. In a National Aging and Disability Transportation Center (NADTC) poll, 83 percent of caregivers indicated that they provide/arrange for transportation on a weekly basis. In the same survey, 28 percent of caregivers indicated that they felt “overwhelmed” by the burden of providing transportation (National Aging and Disability Transportation Center, 2018). This overwhelm stems not only from the time that the caregiver invests in transportation, but also from the cost of gasoline, and the wear and tear on caregivers’ vehicles.

WHY DOES THIS MATTER?

Ohio has a dependency ratio problem. The combined number of Ohioans in dependent age groups (under 20 and over 64) as a percentage of working-aged Ohioans (age 20–64) is projected to increase from 68.5 percent in 2010 to 79.1 percent in 2050. This percentage will exceed the projected national rate of 72.7 percent (*Economic Dependency Ratio: U.S. Bureau of Labor Statistics, 2021*). The effect of an increased dependency ratio will be increased pressure on fewer working-age individuals. This increased pressure can contribute to multiple negative outcomes, including economic distress, worse health outcomes, absenteeism, and strained relationships.

Easing caregivers’ burden in the area of transportation is one way for communities and policy makers to reduce health and economic impacts on families by reducing time spent caregiving and costs associated with transporting loved ones.



REDUCED FAMILY STRAIN

HOW DID WE CALCULATE THIS?

Researchers created two proxies for this outcome. The first captures the value of caregiver time that is saved when their loved ones can use public transit or transportation services. The second reflects the costs of the trips themselves, which are avoided when their loved one can obtain publicly funded transportation.

Value of time saved/labor

To calculate the value of caregiving hours OMEGA-area transportation providers and public transit agencies are currently saving caregivers, researchers first multiplied the number of riders who are 60 years and older by 13.4 percent, which is the percentage of seniors who rely upon unpaid family care in Ohio (*The economic impact of caregiving*, 2021). This produced the likely number of OMEGA-region riders who have caregivers. Researchers used the conservative estimate that each rider has only one caregiver, which produced an estimate of 445 OMEGA-region riders with caregivers. This number was multiplied by 83 percent, which is the estimated percentage of caregivers who provide transportation. Researchers then used NADTC's estimates of the number of hours caregivers spend transporting their loved ones to generate an estimate of 55,636–100,922 hours spent transporting loved ones each year. Multiplying these hours by \$15.61 (Reinhard et al., 2019), which is the economic value of caregiving in Ohio, yields a total of \$868,485–1,575,391 in avoided costs to caregivers. This value represents the time spent on transport, not the cost of travel itself.

Cost of trips avoided

To calculate the value of travel costs averted when caregivers' loved ones are able to ride with OMEGA-regional transportation providers for their medical appointments, researchers multiplied the estimated number of trips provided for riders with caregivers (27,702) by the average cost per medical trip in rural areas (\$22.25) (Aklinotan et al. 2021). This cost is based on the average distance a rural patient has to travel to get medical care (17.8 miles each way) (Aklinotan et al. 2021). The resulting total is \$613,296.



REDUCED FAMILY STRAIN

REDUCED STRAIN ON FAMILIES (LABOR)

Caregivers whose family members utilized OMEGA transportation options rather than depending upon them for rides saved time and energy while knowing their loved ones still got the care they needed.

In 2022, this generated

\$868,485 - \$1,575,391

in value of time saved to caregivers.

OUTCOME

445

caregivers who can spend fewer caregiver hours because their loved ones used regional transportation

IMPACT

15,526 -20,702

fewer hours spend in caregiving

REDUCED STRAIN ON FAMILIES (TRAVEL COSTS)

Caregivers whose family members utilized OMEGA transportation options rather than depending upon them for rides resulted avoided significant transportation costs. In 2022, this generated

\$613,296

in decreased travel costs for caregivers.

OUTCOME

27,702

medical round trips given by regional transportation to riders with caregivers

IMPACT

\$22.25

average cost per trip

REDUCED FAMILY STRAIN FACT SHEET

Currently, 22.1 percent of adults in Ohio report being caregivers for a family member or friend (Caregiving for Family and Friends – a Public Health Issue, 2019). **In 2019, there were seven potential family caregivers per older adult; by 2030, that number will have dropped to only four per older adult** (Reinhard et al., 2019).

36.7 percent of caregivers in Ohio age 45 and up reported regularly getting insufficient sleep (less than seven hours in a 24-hour period) (Caregiving for Family and Friends – a Public Health Issue, 2019).

There is an 8 percent differential in increased health care costs between caregiving and non-caregiving employees, potentially costing U.S. employers an extra estimated \$13.4 billion per year (National Alliance for Caregiving et al., 2010).

Rates of loneliness and social isolation are higher for family caregivers than their non-caregiving counterparts (Kovaleva et al., 2018); in one study, **72 percent of rural caregivers said they were lacking in social networks, and 70 percent did not feel they had enough people to be close to** (L'Heureux et al., 2022).

Caregiving is associated with reduced labor force participation and reduced net worth of families (Schulz & Eden, 2016), yet 60 percent of family caregivers are still working themselves (Reinhard et al., 2019).

One study found that caregiving reduced work productivity by one third on average, or an estimated \$5,600 per employee (Fakeye et al., 2023).

Another study found that **family caregivers aged 50 and older who leave the workforce to care for a parent experience \$303,880, on average, in lifetime lost income and benefits** (Arno et al., 2011).

Average annual out-of-pocket costs for caregivers is \$7,242, approximately one quarter (26%) of their income (Caldwell, 2022).

The CDC recommends that public health entities **share information about services and programs that reduce stress or financial burden** (Caregiving for Family and Friends – a Public Health Issue, 2019).

To reduce the strain associated with high caregiving hours, support services including transportation are recommended, as are policies that focus on the transportation needs of caregivers as well as the care recipients (Koumoutzis et al., 2022).

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REDUCED BURDEN ON SOCIAL SERVICES

CURRENT IMPACTS



MAGGIE

Tuscarawas County

"There are 200 cases in this county and I would say that at least a quarter, if not more – 50-60 people – are not working right now purely because of transportation."



Maggie is a vocational rehabilitation counselor in Tuscarawas County. She helps clients with disabilities get the transportation and services they need, including arranging transportation to get clients to work each day. There are three door-to-door transportation services available in Tuscarawas County, for which she says she is grateful, as neighboring counties don't have any.

Scheduling is still a big problem, and there is rarely enough availability for her clients' needs. Even when there are enough resources, clients often face large wait windows, such as getting picked up between 6 a.m. and 7 a.m. and getting to work at 8 a.m. for a shift that begins at 9 a.m. Even with the wait windows, those riders are fortunate, she says.

"There are 200 cases in this county and I would say that at least a quarter, if not more – 50-60 people – are not working right now purely because of transportation. And that's just people who have disabilities. All sorts of other people are out there too, that are also struggling. Some are at the homeless shelter, and they can't transport them to work," she said.

She says that it is incredibly frustrating for her clients to work with her to get everything lined up for employment – obtaining a job, getting uniforms, and having a start date – but not be able to work because they can't get the transportation logistics to work.

It directly impacts her workplace. If she and her colleagues can't get people working, it affects her organization's funding. She says they routinely close cases because they can't figure out the transportation piece.

"It's not just work. They can't meet their basic needs, they can't get to the grocery store to pack lunch for work, they can't get to work."

On the occasions where transportation scheduling does come together, Maggie says that the result is transformational. "When people are able to get to work and it does work out, it gives them a sense of identity, independence. They have money to do things socially, to have a group of friends at work. People who have been disabled or have hard things happen to them, they feel that much more excited to have an opportunity to get back to work."

REDUCED BURDEN ON SOCIAL SERVICES

By making it possible for a portion of residents of the OMEGA region to get to work in a consistent way, OMEGA public transit agencies are creating an estimated \$10 million in social value.

HOW ARE OMEGA PUBLIC TRANSIT AND TRANSPORTATION PROVIDERS REDUCING THE BURDEN ON SOCIAL SERVICES?

Public transit and transportation providers in the OMEGA region are vital resources for people trying to escape poverty. Though most individuals aspire to personal vehicle ownership, public transit or other transportation providers can fill the gap between getting to an interview and having enough income to purchase a vehicle.

Currently, 17.9 percent of riders said they would definitely lose their job without public transportation. That relatively high percentage reflects the number of those with disabilities in the OMEGA region who depend on public transit and transportation. The additional mobility challenges of lower incomes and less access to vehicles make access to high-quality transportation even more vital to this group's ability to work.

WHY DOES THIS MATTER?

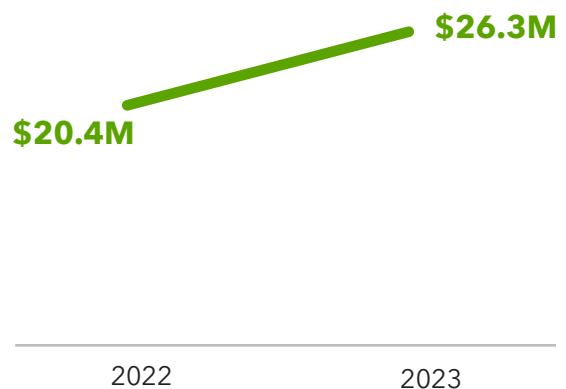
In the first eleven months of 2023, residents of the OMEGA Pilot Program counties received over \$26.3 million in unemployment benefits, a 28% increase over the amount received in the first eleven months of the preceding year (Ohio Department of Job and Family Services, 2022, 2023).

In the region and beyond, social services assist people who have relatively low incomes to obtain food, health care, housing, and other goods and services that they might not otherwise be able to afford. While a significant number of those enrolled in federal programs are already working or are between jobs, many of those enrolled in social services would not need these services if they were able to work full-time (Brown Barnes, 2021). Benefit recipients are

17.9%
of surveyed riders
reported that they
would lose their job if
not for public transit and
transportation services.



The amount of unemployment benefits distributed in the first 11 months of the year increased 28% from 2022 to 2023 in the OMEGA RTPO counties.



REDUCED BURDEN ON SOCIAL SERVICES

typically encouraged to find full-time work or higher paid work to eliminate reliance on such services. Yet a study of people receiving public benefits found that the entry-level jobs these individuals tend to work often have non-peak-hour work shifts when public transportation services may be limited or unavailable (Sanchez, 2008).

Transportation is a significant barrier for many already low-income households. Without reliable transportation, employees may be limited to working certain shifts, may not show up to work on time, or may not be able to show up at all.



REDUCED BURDEN ON SOCIAL SERVICES

HOW DID WE CALCULATE THIS?

This proxy uses unemployment benefits as the fiscal representation of the costs saved when individuals have access to consistent public transport or transportation. To measure this, the 17.86 percent of riders who depended on OMEGA-region transportation options to get to their employment was multiplied by the total number of riders, resulting in 1,142 workers experiencing the outcome. Researchers then multiplied the average number of weeks an individual stays unemployed (22) (*Average Weeks Unemployed, 2023*) by the average weekly benefit (\$408) (*Monthly Program and Financial Data, Employment & Training Administration (ETA) - U.S. Department of Labor, 2022*) to produce an estimate of \$8,976 in savings per person experiencing the outcome. Multiplying this value by the 1,142 workers estimated to be employed because of transportation services, the total amount of costs avoided is \$7,729,153-\$10,305,537 in unemployment benefits paid to those who were able to work due to having access to public transit or public transportation providers. The lower end of the range includes a discount for potential optimism bias among survey respondents.

REDUCED BURDEN ON SOCIAL SERVICES

Employees who rely upon public transportation to get to their jobs are less likely to utilize unemployment benefits.

In 2022, this generated

\$7,729,153 - \$10,305,537

in unemployment benefit costs avoided.

OUTCOME

1,142

**riders who are employed
because they have access to
regional transportation**

IMPACT

**The average
unemployment paid
per individual is
\$8,976**

REDUCED BURDEN ON SOCIAL SERVICES FACT SHEET

Seven percent of rural residents aged 18 to 64 have travel-limiting disabilities, and those individuals have significantly lower income and less access to vehicles than those without travel-limiting disabilities (Travel Patterns of American Adults With Disabilities, 2022).

In 2017, **22.2 percent of people ages 18 to 64 with travel-limiting disabilities lived in households with annual household incomes under \$10,000** versus 5.1 percent of the people without travel-limiting disabilities who lived in households with incomes under \$10,000 (Travel Patterns of American Adults With Disabilities, 2022).

51.4 percent lived in households with incomes under \$25,000 while only 15.7 percent of those without travel-limiting disabilities lived in households with incomes under \$25,000 (Travel Patterns of American Adults With Disabilities, 2022).

Rural carless households earn 40 percent less compared to their nonrural counterparts (Wang et al., 2023).

The average annual cost to own a car is \$8,449.49, an amount that represents a huge portion of low-income household budgets (Schweninger et al., 2020).

The relationship between public transit and unemployment is illustrated in the example of Clayton County. When the Georgia county lost its bus service, its only major means of public transportation, researchers were able to study the subsequent change in poverty and unemployment rates. **After a period of five years, the researchers concluded that losing all bus stops in a census tract led to a 5.1 percentage point increase in the poverty rate and a 4.5 percentage point increase in the unemployment rate in Clayton County** (Li, 2023). Their findings underscore the need for federal and local public transportation funding to help improve job access, alleviate poverty, and maintain neighborhood stability (Brey, 2023).



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SECONDARY TRAUMA AND TRANSPORTATION EMPLOYEES

CURRENT IMPACTS



TRACY, NICKI, & JILL

“There are some times when you can’t hold back the tears, because there isn’t an answer to be found for a person, and that’s really tough, and that’s when I think we beat ourselves up.”



Jill, Nicki, and Tracy are the mobility managers for the OMEGA region. Their activities sometimes veer into the area of social work as much as transportation coordination, as they work with riders one-on-one to address each individual’s mobility challenges. This can mean anything from finding volunteers to build a ramp to a rider’s front door, to speaking directly to a medical provider, or coordinating with multiple social service providers to braid funding together for an out-of-county medical appointment, the mobility manager said.

When considering an individual’s situation, there are often difficult choices to be made as to how to allocate resources for trips that are not covered by Medicaid. The mobility managers have many stories about the difficult choices they have had to make now that various pandemic transportation funding programs have ended. That funding had allowed more people without Medicaid to get to their medical appointments. When the funding ended, so did many riders’ ability to get to appointments, especially appointments that are out of county.

Tracy said, “I had to call everyone and say, ‘we’re getting low on funding, we have two months left,’ and then I called again and said, ‘We’re out of funding.’ Every single one of them said, ‘Now what do I do?’ and it was gut wrenching, to say the least.”

Jill recounted an experience of a rider who needed to get to a methadone clinic outside county lines. She usually relied on a friend to take her every day, which is the required frequency for methadone treatment. When that friend had surgery and could not take her for a number of days, she reached out to Jill for assistance. Jill had no funding to use to pay for the trip, so the woman was unable to complete her treatment.

A persistent lack of funding for trips that are life and death for riders takes a real toll on the mobility managers, whom Jill described as “having the hearts of advocates.”

“There are some times when you can’t hold back the tears, because there isn’t an answer to be found for a person, and that’s really tough, and that’s when I think we beat ourselves up,” Tracy said.

Nicki agreed. “I mean, what we do is rewarding in so many ways. But it’s also very mentally taxing. It’s a very hard job to just leave at the office. We take a lot of that home with us, and we’re constantly thinking like, what can we do? Come Monday, how are we going to be able to help them?”

Jill said, “I guess it is [frustrating], but I don’t ever want people to know that it’s frustrating. I just want them to know they’re cared for. So yeah, it can be quite a challenge. And I just rely on a lot of deep breathing.”

SECONDARY TRAUMA AND TRANSPORTATION EMPLOYEES

Because transportation staff and mobility managers are regularly unable to meet their riders' needs due to the shortage of resources, OMEGA public transit and transportation providers expend \$194,000 worth of social value. The value of the mental distress incurred by staff is negative, because it represents a cost to the organization.

HOW ARE OMEGA-AREA TRANSIT AND TRANSPORTATION EMPLOYEES INCURRING SYMPTOMS OF SECONDARY TRAUMA?

Secondary trauma, also known as secondary traumatic stress, compassion fatigue, and vicarious trauma, can occur when a person interacts with or observes another person's traumatic experience (*Understanding Secondary Trauma for Mental Health Professionals*, 2022). Common symptoms of secondary trauma include fatigue or illness, cynicism, irritability, reduced productivity, feelings of hopelessness, anger, despair, sadness, re-experiencing of traumatic events, nightmares, anxiety, avoidance of people or activities, or persistent anger and sadness (Elwood et al., 2011).

A significant number of OMEGA-region transportation providers and transit employees regularly interact with riders one-on-one. Staff report that they are frequently unable to meet their clients' needs, that they have repeated personal interactions with clients whose needs they cannot meet, and that they experience distress as a result. Mobility managers often face difficult choices when deciding how to allocate resources for trips when there are more people who need rides than there are rides. This has especially been the case since pandemic-related funding programs ended and agencies no longer had this source of funding for riders without Medicaid. As Tracy reported, "I had to call everyone and say, 'we're getting low on funding, we have two months left,' and then I called again and said, 'We're out of funding.' Every single one of them said, 'Now what do I do?' and it was gut wrenching, to say the least."

The frequent personal interaction with clients increases staff members' susceptibility to adverse mental health impacts like secondary trauma.

Mobility managers have
"the hearts of advocates."

Jill, OMEGA-region mobility manager

"There are some times when you can't
hold back the tears, because there isn't
an answer to be found for a person, and
that's really tough, and that's when I think
we beat ourselves up."

Tracy, OMEGA-region mobility manager

"What we do is rewarding in so many ways.
But it's also very mentally taxing. It's a very
hard job to just leave at the office.
We take a lot of that home with us, and
we're constantly thinking like, what can
we do? Come Monday, how are we going
to be able to help them?"

Nicki, OMEGA-region mobility manager

SECONDARY TRAUMA AND TRANSPORTATION EMPLOYEES

HOW MUCH INTERACTION DO STAFF HAVE WITH CLIENTS?

One mobility manager offered to share a step-by-step account of the coordination necessary to arrange for a single medical appointment for a rider.

"I received a call from a woman who had been bitten by a dog over the weekend and needed to get to a follow-up appointment in Zanesville (40 minutes away). Due to the nature of her injury she was non-weight bearing and not able to stand or walk without assistance. She had no idea what she needed or how she was going to get out of her home and to her appointment.

- I visited her to do a site evaluation and registered her for Title III-B services.
- She lives with her husband who does not drive due to a medical condition and has five rickety steps to navigate when entering and exiting her home. We decided she would benefit from the use of a wheelchair but (she) was unable to get one. I went to the Coshocton Handicapped Society and got her an application for a manual wheelchair.
- I took the form back to her and we completed it together.
- I then took the completed application back to CHS and got her a wheelchair which I immediately delivered to her home and showed them how to fold/unfold and lock the brakes.
- Back at the CCCTA office I put her request in for the next day and notified CCCTA staff that she would require a non-emergency lift assist with Coshocton County EMS to enter/exit her home.
- Once the scheduler had her placed on a driver's schedule, I emailed EMS to notify them I would be ordering a non-emergency lift assist prior to the time of pick-up. I then set a reminder alarm for the next day.
- The day of her appointment I called the Sherriff's office dispatch and ordered the lift assist 20 minutes prior to CCCTA's arrival. EMS transferred her into a stair chair and brought her out of the home and down the stairs then transferred her back into the manual wheelchair and the CCCTA driver took over and loaded/secured her in their shuttle for transport.
- I monitored the driver's process after her appointment and followed the same procedure for her return home.



Transport and transportation workers are closely involved in their clients' major life events.

"My favorite story: When I first started at CCCTA in 2019, we had a father call who said his son's dying wish was to eat at Steak & Shake with his family. They did not have a wheelchair accessible vehicle to take him. At the time we were not public, so when the staff was questioning what to do, how to fund the ride without asking them to pay the near \$150 it would have cost them at the time, my response was, 'Do it. If I have to pay for it, I will.' We took the family (luckily through a funding source). The family invited the driver in to eat with them and paid for his meal. The boy passed away within the week. We have a ton of stories like this one.

Transportation is often so much more than 'just a ride.'"

63% of surveyed staff report that they do not have enough staff to meet riders' needs, and that they experience this problem on a weekly basis.

Did not have enough staff to meet riders' needs (weekly problem)



"We frequently have to turn people away because we are at max capacity due to not having enough drivers and/or vehicles. . . We also have to schedule our drivers for more hours than what they should be working because we can't bring on more drivers."

Did not have enough equipment to meet riders' needs (weekly problem)



"It is sad to think that we could fill four more buses if we had four more buses. . . The \$20,000 increase just in local match to acquire those vehicles makes it almost impossible to purchase vehicles."

Were not able to offer riders needed services because of lack of funding (weekly problem)



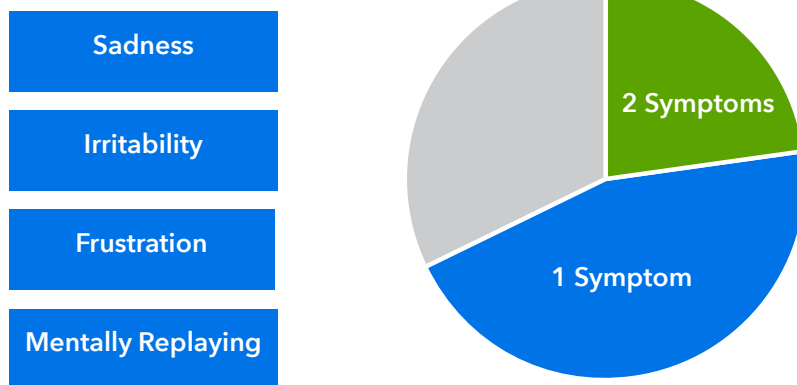
"A gentleman that is below the federal poverty guideline that is on disability needs to travel over 100 miles to get treatment on a weekly basis and there is no funding to help him get there. I am still calling and checking on him to see if any other avenues have worked out to help him."

SECONDARY TRAUMA AND TRANSPORTATION EMPLOYEES

Forty-five percent of surveyed OMEGA-region transportation employees reported that they have experienced at least one symptom of secondary trauma, and 23 percent reported at least two symptoms, as a result of their organization's inability to meet all the needs of its clients. The most frequently cited symptom was "sadness," with 29 percent reporting having experienced sadness because of not being able to meet the needs of their riders.

68% of transportation workers reported that they experience at least one symptom of secondary trauma. Sadness was the most frequently reported symptom.

Reported symptoms



WHY DOES THIS MATTER?

Secondary trauma is quite common: It is estimated that between 40 percent and 85 percent of helping professionals have developed vicarious trauma, compassion fatigue, and/or high rates of traumatic symptoms (Mathieu, 2012). As an experience, it is related to moral distress, and both terms are often used interchangeably to describe the "cost of caring" (Epstein et al., 2020). Secondary trauma is associated with increased absenteeism, decreased productivity, higher staff turnover, and poorer quality of work (U.S. Department of Health and Human Services, Administration for Children and Families, 2020).

In Ohio, there are 40 mobility managers covering 66 counties. Since August 2022, there has been turnover in 14 of these positions (Carly Coe, Statewide Mobility Coordinator, personal communication, November 8, 2023). Currently, there are three mobility managers covering seven counties in the OMEGA region, with responsibilities that extend beyond coordinating rides for clients.

SECONDARY TRAUMA AND TRANSPORTATION EMPLOYEES

HOW DID WE CALCULATE THIS?

This proxy represents the negative health impacts of secondary trauma. Secondary trauma is associated with an increase in negative coping mechanisms such as tobacco use. To translate the value of secondary trauma into a monetary value, researchers multiplied the total number of regional transit and transportation providers (151 employees) by the 23 percent of surveyed employees who reported two or more symptoms of secondary trauma as a result of not having the resources to meet riders' needs. This yielded a total of 34 employees. Researchers then used a per person valuation of \$19,679, which is the annual financial opportunity cost per smoker in Ohio (*The Real Cost of Smoking by State* Feat. Dr. Fridberg, 2020). After multiplying this amount by the number of affected employees, researchers applied a discount of 71% to account for the percent increase in tobacco use associated with a 1-unit increase in secondary trauma (Bourke and Craun, 2014). The resulting range of social value is -\$145,942 to -\$194,589. The lower end of the range includes a 25% discount to account for a potential optimism bias among survey respondents.

It should be noted that researchers do not assume that all those affected by secondary trauma take up smoking or increase the amount that they smoke. An increase in tobacco use is a fit-for-purpose proxy for the negative coping mechanisms that are associated with secondary trauma.

REDUCED SECONDARY TRAUMA FOR TRANSPORTATION EMPLOYEES

Surveyed staff reported that they regularly experienced lack of resources to meet rider need and 23% also reported experiencing two or more symptoms of secondary trauma as a result. In 2022, this generated

-\$145,942-\$194,589

in added health costs to staff due to experiencing secondary trauma.

OUTCOME

34

employees who reported two or more symptoms of secondary trauma as a results of resource constraints limiting their ability to meet rider needs



IMPACT

A 1-unit increase in secondary trauma is associated with a 29% increase in tobacco use

\$19,679

Annual financial opportunity cost per lifetime per smoker in Ohio

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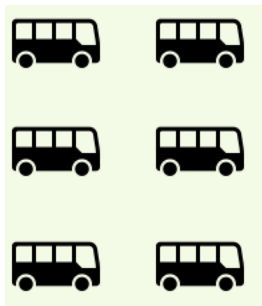
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PROJECTED IMPACTS

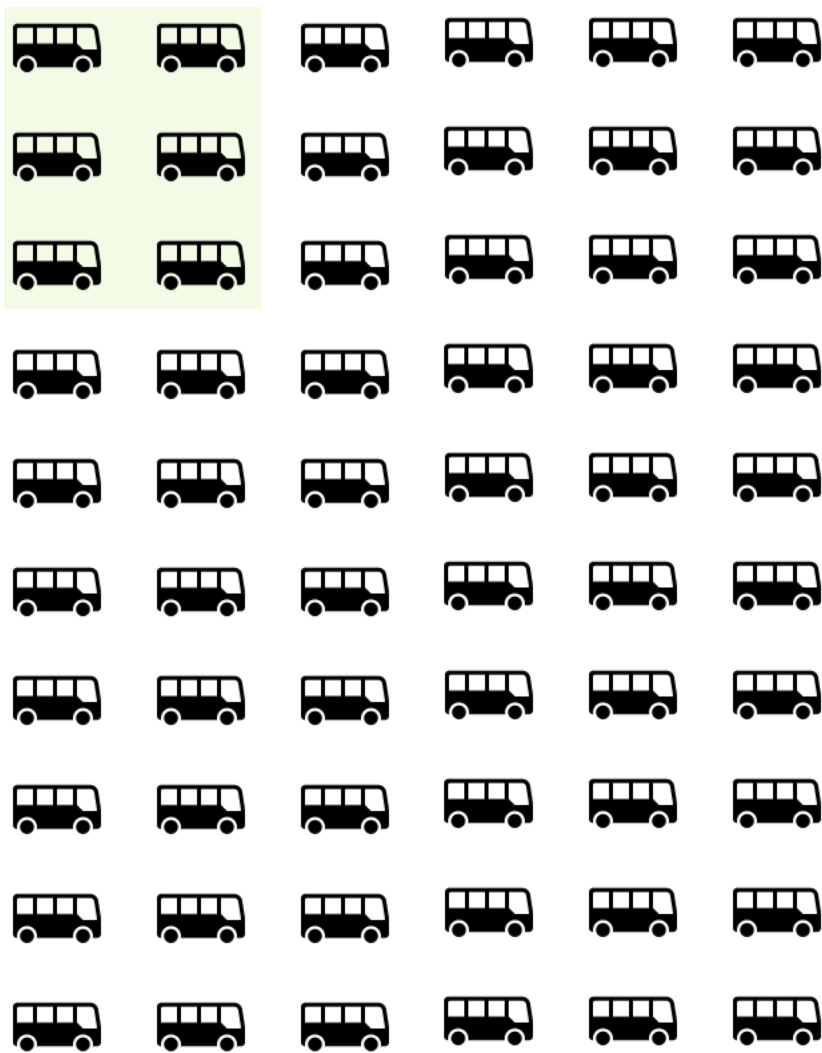
Ohio currently spends \$6 per capita on public transit, while the US as a whole spends 10 times that much, or \$60 per capita (Kasler, 2023). The Ohio Department of Transportation has estimated that there is a gap between need and capacity of 5 million rural transportation trips, which would cost an estimated \$93 million to provide (*Ohio Statewide Needs Transit Study*, 2015). Public transit and transportation capacity in the OMEGA region falls far short of the actual need of the community.

The next two proxies represent the potential social return on investment to be had if funding were to be increased in line with national funding levels.

**Ohio spends \$6
per person
on public transit**



**The US as a whole spends \$60
per person on public transit**



INCREASED ACCESS TO BASIC NEEDS

PROJECTED IMPACTS



MADISON & TESSA

Tuscarawas County

Tessa and Madison agreed that increased transportation access would be a game changer for most of their clients.



Madison and Tessa are community health workers in Tuscarawas County who primarily serve pregnant women and young mothers who fall below 200 percent of the poverty threshold. Many of their clients have no access to a vehicle, no license, or no ability to drive. Madison and Tessa coordinate with Jill, their county's mobility manager, to assist their clients with transportation.

According to Madison, when clients first come to them, they often have had no prenatal care or treatment for their chronic conditions because they had no way to get to those appointments. "You know, a lot of times when we get them, we have to set them up with a lot of things because the first problem was that they had no transportation," she said.

Tessa estimated that she helps to arrange about 50 rides a month for clients. It is a real challenge to fund the needed rides, she said. If clients are not covered by Medicaid, then the rides may cost \$20 per trip, which is a considerable amount of money for those clients. Madison said that their mobility manager has been remarkable when it comes to finding funding to help cover some of these costs, but doing so is an ongoing challenge. United Way has recently provided some funds for riders who meet the income threshold, and rides are prioritized by how clearly their purpose fits into Social Determinants of Health categories. Clients who need to take their children to doctor's appointments, go to Women, Infants, and Children (WIC) appointments for formula and milk, or visit a diaper bank for diapers, may be eligible to have their rides covered. But other important needs, like getting to visit one's family, are not prioritized, though human connection is also an important need, Tessa said.

There is far greater demand than capacity, and it is not always easy to get a ride scheduled, even for a doctor's appointment, Madison said. WIC, the diaper bank, and clothes donation locations all have set appointment times for their clients, Tessa said. If clients can't get a ride to make those appointments, they lose out on that service until they can reschedule and find another ride. In the case of doctor's appointments, some of their clients resort to calling for ambulances so their children can get medical care.

Tessa and Madison agreed that increased transportation access would be a game changer for most of their clients.

"A lot of them could go back to work," Madison said. She explained that most of her clients feel they have to stay home in order to maximize their chances of getting to their appointments for social services by keeping their schedules as open as possible. If they knew they could get a ride with public transit whenever they needed it to access social services, it would free up enough time for them to work and to take care of their families.

INCREASED ACCESS TO BASIC NEEDS

Access to opportunities and resources affects all of the domains that influence an individual's ability to move out of poverty (*Transportation Access | Boosting Upward Mobility (Urban Institute), 2021*). By increasing the ability of people like Madison and Tessa's clients to access health care, buy food, run errands, access social services, and socialize, OMEGA's public transit systems would create an estimated \$8.2 million worth of social value.

HOW COULD OMEGA's PUBLIC TRANSIT/TRANSPORTATION PROVIDERS FURTHER INCREASE ACCESS TO BASIC NEEDS?

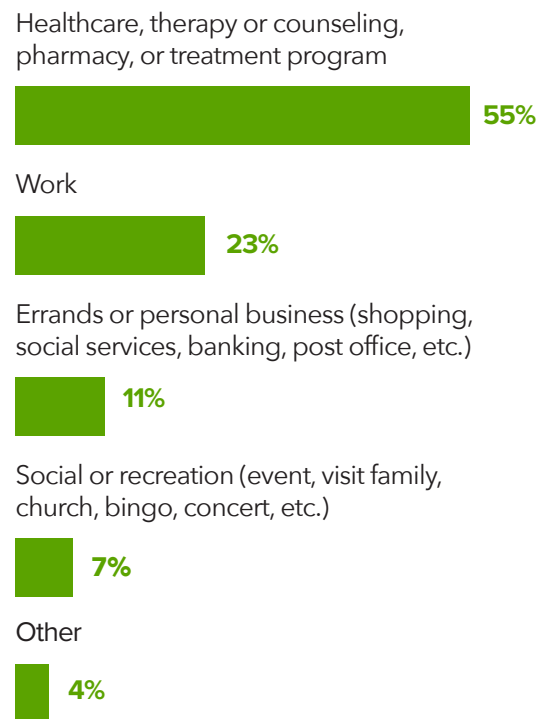
There are particular challenges in rural areas for people trying to access basic needs. These include sparse populations and fewer jobs, social services, health care facilities, educational institutions, and childcare providers. When compared to their non-rural peers with car access, rural carless travelers are 2.7 times more likely to make no trips in a given day. They are 28 times more likely to have made no trips due to lack of transportation options, rather than lack of need for a trip (Wang et al., 2023).

For OMEGA-region public transit and transportation providers, fewer opportunities spread over a wider area means that riders need longer trips over a larger service area. This makes it difficult to meet trip demand (Blair et al., 2023). For OMEGA-region leaders, increasing capacity in order to provide low-cost, on-demand options to a larger subset of residents, while also creating/increasing fixed routes with extended hours of operation, is especially necessary (Blair et al., 2023).



Over half of surveyed riders said that they used transit and transportation services to access physical or mental healthcare, including substance use treatment.

Healthcare, therapy or counseling, pharmacy, or treatment program



55%

Work

23%

Errands or personal business (shopping, social services, banking, post office, etc.)

11%

Social or recreation (event, visit family, church, bingo, concert, etc.)

7%

Other

4%

"Public transit should be broadened; it should be able to take [people] for more things, to pick up medicine, to get some things from the grocery stores that their sick baby needs,"

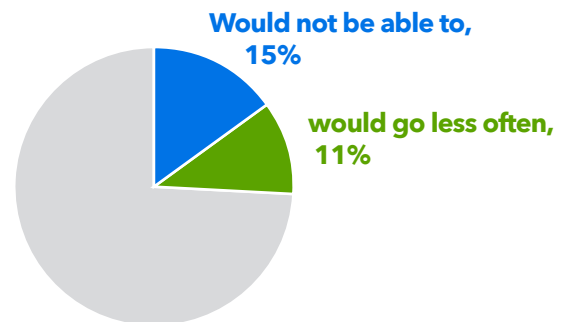
-Madison, Community Health Worker

INCREASED ACCESS TO BASIC NEEDS

WHY DOES THIS MATTER?

U.S. Hunger, reports that 42.6 percent of more than 100,000 respondents to a nationwide survey said that they do not have access to transportation to go to grocery stores that provide fresh and healthy food options (U.S. Hunger, 2023). Not only do individuals have difficulty getting transportation to the grocery store, but they are also unable to access the free food donations offered by local food pantries and other no-cost providers due to long distances and lack of transit services (Shieh et al., 2021). Food-insecure adults have higher rates of chronic diseases (Gregory & Coleman-Jensen, 2017), and may be at an increased risk of obesity. Increased risk of obesity is also true for children (Metallinos-Katsaras et al., 2012), who also suffer negative effects on their mental health and face a higher risk of developmental problems (Gundersen & Kreider, 2009).

Over a quarter of surveyed riders reported that they would not be able to go to the grocery store (15%) or would go less often (11%) without OMEGA region transit and transportation services



"We see shame when people get in the program, shame that they aren't able to do these things. [When they are connected to transportation] A lot of the time we see a lot of happiness, their whole vibe is different when they are able to take care of their baby."

-Tessa, Community Health Worker

INCREASED ACCESS TO BASIC NEEDS

HOW DID WE CALCULATE THIS?

The proxy was designed to measure the projected impact of one fixed-route bus service in each OMEGA county, each of which could be accessed by at least 10,000 people. Research suggests that food insecurity is reduced by 1.6 percentage points when there is increased ability to access a grocery store with one fixed-route bus service (Baek, 2014). A reduction of 1.6 percentage points would be equal to \$914,971.20 in avoided health costs per county. When multiplied times the number of OMEGA-region counties (9), the resulting health costs avoided for counties would be \$8,234,740.



INCREASED ACCESSIBILITY TO BASIC NEEDS LIKE FOOD, RETAIL, AND SOCIAL EXPERIENCES

If there was one bus with fixed route service per county for a community of at least 10,000, food insecurity would go down 1.6 percentage points, from 12.9%, to 11.3 %. In 2022, this would have generated

\$8,234,740

in health costs avoided by counties due to food insecurity

OUTCOME

One bus per county
with regular service was
accessible to
10,000 people

IMPACT

Food insecurity rates would
decrease by 1.6 percentage points

Each OMEGA county
would save an average of
\$914,971
in health costs due to resident
food insecurity

INCREASED ACCESS TO BASIC NEEDS FACT SHEET

U.S. Hunger, reports that **42.6 percent of more than 100,000 respondents to a nationwide survey said that they do not have access to transportation to go to grocery stores that provide fresh and healthy food options** (U.S. Hunger, 2023).

Food-insecure adults have higher rates of chronic diseases (Gregory & Coleman-Jensen, 2017), and may be at an increased risk of obesity.

Food insecure children are at an increased risk of obesity (Metallinos-Katsaras et al., 2012), suffer negative effects on their mental health, and face a higher risk of developmental problems (Gundersen & Kreider, 2009).



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INCREASED EMPLOYEE RETENTION

PROJECTED IMPACTS

Inadequate transportation access increases worker turnover, absenteeism, and tardiness. Regional employers who were surveyed for this study reported that in the last year, they lost an average of 16 employees each due to transportation issues. They also estimated that an average of 11 employees per company had been tardy in the last year because of transportation challenges. This is consistent with regional data related to the work-related impacts of poor transportation access.

If it were possible for employees just in the manufacturing and retail sectors of the OMEGA region to access regular public transportation, OMEGA's transit agencies would be able to create an estimated \$6.7 million in social value just by reducing the costs associated with worker turnover.

HOW COULD INCREASED TRANSPORTATION FUNDING REDUCE COSTS TO EMPLOYERS?

Increasing workers' ability to get to work consistently and on time reduces the costs employers incur when employees are absent, tardy, or leave their job. A study conducted in the Midwest, including sections of northeast Ohio and counties within the OMEGA region, found that increased funding per capita in public transit operating expenditures is associated with a decrease in employee turnover. The study concluded that a \$1 increase in transit funding per capita would decrease turnover by .03 to .05 percentage points (Faulk & Hicks, 2015). Evidence shows that greater public transit capacity would likely be utilized by employees: One study found that rural car-deficient residents are 2.8 times more likely to ride public transit for work trips than their rural fully equipped peers (Wang, 2023).

Jefferson County resident Connie, 21, reports that she used to have a job doing shift work but had to leave it when she could not consistently get rides to work, especially during off-peak hours. She switched to working at a local university dining hall because the hours fit better with her friends' and family's schedules.

WHY DOES THIS MATTER?

Labor force participation rates are still lower than before the pandemic. It is estimated that there are 1.47 million fewer workers in 2023 than if the labor force participation rate would have remained at the 2020 level (Ferguson, 2023). Manufacturing is in the top three sectors of OMEGA-region employers and is an industry that is having particular difficulty finding and retaining workers. If every unemployed person with experience in durable goods manufacturing were employed, the industry would only be able to fill 65 percent of its vacant jobs, according to the Ohio Manufacturers' Association (Faulk & Hicks, 2015).

Some collaborations between small community public transportation and employers have taken place in Ohio to address employee needs. Since 2017, Groveport Rickenbacker Employee Access Transit (GREAT) has provided Rickenbacker area business employees with reliable commuter transportation. This no-cost service operates shuttles in coordination with metropolitan transportation at scheduled times to area businesses. It is, by all accounts, a successful solution for businesses and employees. This solution was developed in response to one employer hiring a shuttle-bus service for his employees living in Columbus. This measure was so successful that a group of employers contacted the small city of Groveport to create a permanent solution (Haake, 2021).

INCREASED EMPLOYEE RETENTION

HOW DID WE CALCULATE THIS?

A study of counties in the Great Lakes Region found that when a county had a public transit service with a fixed bus route, there was a 2.9-3.3 percentage point decrease in an average 8.7 percent annual employee turnover rate. The turnover rate reflects hiring and training costs, which are estimated to be 16 percent of total salary (Faulk & Hicks, 2015). Modeled in the research were manufacturing and retail sectors, which are two of the three top employment sectors in the OMEGA region.

With 24,863 retail jobs in the region (OMEGA District, 2022) and an estimated cost of \$2,265.52 of turnover per worker, an 8.7 percent annual turnover rate would cost employers \$3,980,069. With a regular bus route, turnover would be reduced by 2.9 percent-3.3 percent, producing an avoided cost of \$1,633,501-\$1,858,811 for regional retail employers annually.

An identical formula applies to avoided costs for manufacturing employers. There are 34,532 manufacturing jobs in the region (OMEGA District, 2022), with an average turnover cost of \$4,800 per worker. Assuming an 8.7 percent turnover rate, the annual turnover cost to manufacturing employers is currently \$17,755,498. A 2.9-3.3 percentage point reduction in turnover results in a \$5,918,499-\$6,734,844 reduction in turnover costs for employers.

PROJECTED INCREASED EMPLOYEE RETENTION

If individuals had access to regular bus service, annual employee turnover would decrease by 2.9-3.3% in the manufacturing and retail sectors.

\$7,552,000-\$8,593,655

in PROJECTED averted costs to employers due to increased employee retention.

OUTCOME

Employees could access a regular bus service in OMEGA region counties

IMPACT

2.9-3.3 percentage point decrease in turnover
for retail and manufacturing sectors

Savings of \$5,910 per manufacturing worker
in hiring and training costs, and
\$2,265 per retail worker.

INCREASED EMPLOYEE RETENTION FACT SHEET

Labor force participation rates are still lower than before the pandemic. **It is estimated that there are 1.47 million fewer workers in 2023 than if the labor force participation rate would have remained at the 2020 level** (Ferguson, 2023).

Absenteeism and unreliable transportation are the most common problems encountered by employers of recently hired welfare recipients and contribute to high turnover among members of this group (Holzer et al., 2004).

A study conducted in the Midwest, including sections of northeast Ohio and counties within the OMEGA region, **found that increased funding per capita in public transit operating expenditures is associated with a decrease in employee turnover.** It found that a \$1 increase in transit funding per capita would decrease turnover by .03 to .05 percentage points (Faulk & Hicks, 2015).

When a county has a public transit service with a fixed bus route, researchers expect to see a 2.9-3.3 percentage point decrease in the annual employee turnover rate. (Faulk & Hicks, 2015).

Rural workers travel 38 percent more for work than urban residents, and lower-income rural workers log 59 percent more annual miles than their urban peers (Litman & Dickens, 2017).

Rural residents with limited access to vehicles are 2.8 times more likely to ride public transit for work trips than their rural fully equipped peers. This substantial difference in using public transit options plays an important role in mobility for those without available household cars (Wang et al., 2023).

Rural areas have higher barriers to employment, foremost of which is reliable transportation to jobs and to childcare. The American Public Transportation Association estimates that 20-40 percent of households are low-income and lack mobility or spend an excessive amount of money on transport. People with disabilities comprise 3-5 percent of residents and lack mobility or require more costly vehicle travel to transport a non-driver. Adolescents between 12 and 20 make up another 5-15 percent of residents who also lack mobility, totaling 28 percent-60 percent of working-aged adults who struggle with obtaining reliable transportation sufficient to obtain and keep a job (Litman & Dickens, 2017).

According to a survey of northeast Ohioans, **transportation was cited as a top barrier to work by 38.7 percent of respondents making \$25,000 or less** (Fund for Our Economic Future, 2022)

If every unemployed person with experience in durable goods manufacturing were employed, the industry would only be able to fill 65 percent of its vacant jobs, according to the Ohio Manufacturers' Association (Faulk & Hicks, 2015).

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CONCLUSION

Public transit agencies and other transportation providers in the OMEGA region created a social impact of \$5.43-\$9.13 for every \$1 invested by transportation funders. This amount of social value represents a considerable return on investment.

SELECT IMPACTS OF OMEGA-REGION PUBLIC TRANSIT AND TRANSPORTATION PROVIDERS

- Regional public transportation providers, as well as other transportation providers, made a significant impact on the quality of life for older adults in the region in the areas of improved physical health, ability to age in place, and reduced social isolation. Caregivers of older adults also benefit when they are relieved of some of the labor and travel costs of providing transportation to their loved ones.
- The relationship between riders and their drivers provides needed socialization and support for socially isolated individuals. Riders overwhelmingly reported that they appreciate their drivers' care and regard for them and feel that they had a positive relationship with them. This decreases social isolation and increases feelings of well-being.
- Medicaid, as a funder of NEMT, benefits from the social value created by regional transportation. NEMT reduces patient health costs and reduces LTSS costs which create cost savings for Medicaid.
- Workers who depend upon regional public transportation to get to work, whether temporarily or permanently, also gain considerable social benefits. This impact was evident in the areas of the added dignity that comes from being employed, as well as the ability to have more choice when selecting employment.
- Only a small fraction of regional employees has access to public transportation. If employers were to collaborate to fund public transit for their employees, the benefit in reduced turnover costs avoided alone would be substantial in the two sectors the report examined.
- Adding just one regular bus route per county would generate meaningful benefits for communities, increasing access to basic needs such as food and diapers, and for taxpayers, by reducing the need for unemployment benefits.
- Transportation employees face limited resources and as a result often struggle to meet even the most urgent needs of riders. This adversely affects the well-being of these employees, especially for mobility managers who must make hard decisions around transportation resource allocation.

CONCLUSION

FUNDING SHORTAGES

The significance of the positive impacts documented in this analysis should not mask the fact that public transit and transportation capacity in the OMEGA region falls far short of the actual need of the community. The strain on regional public transit/transportation staff due to this lack of resources is significant. The results of this study suggest that much higher social returns could be obtained if Ohio's spending on public transit was to be brought more in line with overall US spending on public transit. **Currently, Ohio spends \$6 per capita on public transit and transportation, while the US as a whole spends 10 times that much, or \$60 per capita (Kasler, 2023).** As a result of this spending gap, even riders who are covered under Medicaid or other existing transportation funding due to income levels typically have access to trips for only a few, key reasons, such as health care or to visit a diaper bank. Few individuals who need to do so can access public transit and transportation to meet all of their basic needs in the Social Determinant of Health categories. Rural residents with low incomes, who are already at a disadvantage compared to their urban counterparts in so many social determinants, are particularly challenged to find public transit options. This situation makes movement out of poverty much more difficult.

STRATEGIES FOR INCREASING SOCIAL RETURN ON INVESTMENT

By underfunding public transportation, and other transportation service providers, the state is currently only capturing a small fraction of the potential return on investment in its rural communities. There are several strategies that could be taken to address this problem.

- *For local communities and funders:* Each year, regional public transit/transportation agencies struggle to find local match funding. Local match funding is required to utilize federal funding opportunities that helps provide vehicles, transit operations, capital transit projects, mobility managers, and increased options for rides for seniors, those who live with disabilities, and individuals with low incomes. Increasing support for the local funding match for transportation would increase capacity, which would in turn increase social impact.
- *For employers:* Collaboration between employers and local transportation providers, including possible employer-funded transportation options for employees, may attract more employees and decrease employee absenteeism and turnover costs.
- *For Medicaid:* Non-emergency medical transportation provides a strong social return on investment that would be able to support reimbursement for actual trip costs, and reimbursement for trip no-shows or last-minute calculations.
- *For caregivers:* Advocating on a local level for strengthening local transportation through increased funding and awareness will help to ensure the availability of an important resource that alleviates the substantial burden on many caregivers.

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OMEGA Technical Appendix

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SROI OVERVIEW

Social Return on Investment (SROI) measures the social value created by a program or intervention by including social, economic, and environmental impacts in a total measure of social value. In this way, SROI is used to convey—in monetized form—the value of interventions whose outcomes may or may not traditionally be captured by financial metrics. SROI accomplishes this through the use of fiscal proxies, which translate the value of the outcomes under study into the more universal language of money. To develop a fiscal proxy, each outcome is given a quantifiable representation of value, typically conceived of as the dollar value of costs avoided or benefits obtained. The process of selecting outcomes to value and assigning fiscal proxies is driven by stakeholders' views of the relative importance of these outcomes. Materiality in the SROI framework is determined by stakeholder input and determination of impacts important relative to the stakeholder group. Outcomes are evidenced by stakeholder engagement. For this study, the Ohio University research team used the following fit-for-purpose measures to determine the fiscal proxies for each outcome. Each fiscal proxy is stakeholder sourced, geographically specific, aligned to industry standards in cost-benefit-analysis measures where appropriate (i.e., value of a volunteer hour as reported by the Independent Sector), and informed by relevant academic literature.

The SROI equation adapted from Gargani's (2017) representation of the SROI equation, shows the final resultant ratio SROI achieves, which is comparable to traditional Return on Investment. SROI considers the costs and benefits of a program during one year t . The total cost or input I of the program is figured as the sum of direct dollar cost C of overhead, operating costs, employee benefits, or dollars invested in purchasing necessary materials and the additional resources R invested in the form of items donated, time donated, materials matched by outside organizations, non-monetary partnerships. These nonpecuniary resources are assigned a market value or estimation of monetary value via the SROI accounting framework, then added to represent the total input needed to make a program, product, or service available to beneficiaries.

SROI Equation

$$SROI = \frac{\sum_{t=0}^T \frac{SV = EB_t + EcB_t + SB_t}{(1+d)^t}}{\sum_{t=0}^T \frac{I = C_t + R_t}{(1+d)^t}}$$

In a similar way, the total social value SV is calculated in the numerator of the equation. The total social value adds together the pecuniary and nonpecuniary direct and indirect benefits to stakeholders in the realm of environmental benefits EB , economic benefits EcB , and social benefits SB . In the SROI framework, benefits are understood as outcomes of program or business activities and are assigned a monetary value. In the event that outcomes already have a monetary value, such as tax revenue generated, or energy cost reduced, the value of direct costs are added in a straightforward way. Indirect benefits to the economy, society or the individual, or the environment, may include pecuniary values such as healthcare costs avoided when program outcomes illustrate that the health of individuals is improved or increased recidivism reduces the costs on the judicial system. For the environment, indirect benefits can be illustrated with the social cost of carbon, a monetary value recently adopted by the Biden administration which uses rigorous scientific modeling to account for the ripple effect of carbon production and resultant climate change on immediate and far-flung communities, including those most

victimized by environmental injustice. For society or individuals, nonpecuniary outcomes such as decreased stress, improved relationships, increased skills whether direct or indirect are also monetized and added into the overall social value sum.

Each sum of cost and resources or social value benefits takes into consideration counterfactuals and is discounted d appropriately. The end result of SROI for an organization is captured in the statement: “For every \$1 invested, the program creates \$XX of social impact” (Glazer et al., 2018).

An SROI analysis generally includes the following steps:

1. Stakeholders identify the important outcomes they experienced as a result of the program or intervention being studied. In the case of this evaluation, outcomes were identified and prioritized by the OMEGA Transportation Steering Committee and an additional focus group.
2. The scale of these outcomes is measured so that they can be valued. For this evaluation, the outcomes were measured using a rider survey (to determine the percentage of beneficiaries who achieved each outcome) and a combination of employer survey, staff survey, staff interviews, and rider interviews.
3. A fiscal proxy is identified to express the value of each outcome in monetary terms. The specific proxies used in this SROI are included in this appendix.
4. The fiscal proxy for each outcome is multiplied by the number of people experiencing the outcome.
5. Discounts are applied to the resulting value to account for other influences that may have contributed to the outcome (deadweight), the length of time the outcome persists (duration), the degree to which the outcome decreases over time (drop-off), and the amount of the outcome that was caused by the program (attribution).
6. To calculate the total social value created by an intervention, the social value for all outcomes is combined. To calculate the SROI ratio, the total value is divided by the number of dollars invested in the program.

There is a strong emphasis within the field of SROI on transparency, among other principles.¹ In order to be as transparent as possible, this report includes a detailed explanation of all the proxies used in this report, the research from which they are drawn, the assumptions they include, and the calculations that yielded the final values.

¹ The eight main principals of SROI are (1) involve stakeholders, (2) understand what changes, (3) value the things that matter, (4) only include what is material, (5) do not over-claim, (6) be transparent, and (7) verify the result, and (8) be responsive. For more information see Social Value International, The Principles of Social Value, <https://www.socialvalueint.org/principles>

TYPES OF FISCAL PROXIES USED IN SROI

Fiscal proxy types

	Technique	Description	Example Stakeholder & Outcome	Example proxy
Cost-based	Replacement costs	Costs required to replace the service provided	Individuals with low incomes receive cost savings benefit from free tax preparation services	Cost of tax accountant to complete same task
	Opportunity costs	Market value of contribution made or given up by those who contribute to activities	Mentors feel increased connection to community while volunteering to help students increase job skills	Average cost per hour of mentors' usual working wage
	Damage costs avoided	Costs incurred as a result of loss of services	A stream benefits from instillation of an innovative technology to remove acid mine drainage from stream water	Cost to city to repair infrastructure damaged from acid mine drainage and restore contaminated drinking water
Revealed preferences	Fair market value prices of similar goods or services	Cost of similar program or product that reflects costs involved to bring a good/service to market	Student feels increased leadership ability because of activity	Fair market value of attending a week-long sleepaway leadership camp for youth
	Effect on production	Value of cause-and-effect relationship in output of a product	Students receive additional credentials as a result of course participation	Average increase in income for persons with credentials
	Travel costs	Amount of time and money people spend for recreation or leisure activity	Elderly persons report improved physical fitness	Cost of club or gym membership for same time period
	Hedonic pricing	Difference in pricing for similar product with different qualities; willingness to pay	Environment experiences the change of cleaner air due to intervention	Difference between property values in areas with clean air and property values in areas with

known air
pollution

	Technique	Description	Example Stakeholder & Outcome	Example proxy
Wellbeing approaches	Well-being valuation	Statistical assessment of the relationships between life circumstances, measures of wellbeing, and level of income	Participants report feeling less stressed	Increased income earning potential of persons reporting they are not stressed at work
	Contingent valuation	Self-reported data for willingness to pay for wellbeing change or willingness to accept a loss that wellbeing does not change (process can be used to measure access to services and other outcomes)	Students feels increased leadership ability because of activity	Willingness to pay for increased leadership skills or willingness to accept payment for decreases in ability to lead
Stated preferences	Choice experiments	Alternative product or service options, which stakeholders choose which they prefer	Participants report feeling less stressed	Choice of cost of stress reducing massage or cost of weekend getaway (stakeholder choice indicates which proxy should be used for valuation)

Benefit transfer

Benefit transfer	Secondary source approach in which value estimates from existing studies are transferred to the current study, with adjustments made for context	Elderly persons report improved physical fitness	Academic research reporting that elderly persons who are active spend X less on doctor's visits a year
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Source: Adapted from Rickett, Allison. "Valuing Complexity in Education-Community Partnerships: SROI as Measurement Framework for Learning Ecosystems." Doctoral dissertation, Ohio University, 2022.

DISCOUNTS USED IN SROI

Discount Type	Explanation
Attribution	Accounts for how much the outcome was caused by other programs, organizations, events, or people; calculated as a percentage (the % caused by the program/organization being analyzed in the SROI)
Deadweight	Measure of the amount of outcome that would have happened even if the activity had not taken place; calculated as a percentage (percentage caused by something other than the activity under study); typically uses benchmarks or comparisons
Dropoff	Accounts for the extent to which an outcome may be increasingly influenced by other factors over time; calculated for outcomes that last more than one year; calculated as a percentage (% decrease per year)
Duration	The length of time an outcome is estimated to persist
Displacement	Assesses whether the outcomes under study displaced other outcomes; calculated as a percentage (% of outcomes that are double counted because of displacement)

Source: Adapted from discount explanations in: *A guide to social return on investment*. (2012, January). SROI Network. Retrieved from <https://socialvalueuk.org/resources/a-guide-to-social-return-on-investment-2012/>

OMEGA Transportation SROI

DATA COLLECTION

Researchers began the SROI with a Ripple Effect Mapping Session in which OMEGA Transportation Steering Committee members identified the most important outcomes generated by OMEGA's transportation and transit services. Researchers conducted a follow up focus group with employment transportation providers specifically, to fill in gaps in the ripple effect map. Next, researchers conducted a review of the current literature related to rural transportation cost benefit and economic impact analysis models, transportation's role as a social determinant of health, as well as public transportation's impact on caregivers, employers and communities. The information collected through the literature review and through consultation with the OMEGA Transportation Steering Committee was used to create a theory of change, which delineated the outcomes to be valued for the SROI analysis.

In order to quantify the outcomes, researchers drew on data provided by OMEGA-region transportation providers and transit agencies. Researchers also designed three surveys that were then distributed by OMEGA in the fall of 2023. These surveys asked stakeholders whether they experienced the outcomes in the study's theory of change and, if so, to what extent. Surveys were assessed by the OMEGA Transportation Steering Committee for face validity and tested with OMEGA mobility managers and professionals from OU's Voinovich School.

Data Collection Details

Data Collection Method	Date	Details	Number of Responses
Agency data	Sept-Oct 2023	Data requests were sent to 10 transit and transportation providers	10 out of 10 agencies
Rider survey	Sep-Oct 2023	Distribution by OMEGA to transportation riders during trips and at local senior centers	196 riders
Staff survey	Oct.-Nov. 2023	Distributed by OMEGA	39 staff members
Employer survey	October 2023	Distributed by OMEGA	21 employers representing retail and manufacturing sectors in the region
Interviews with riders	Sept. – Nov. 2023	Arranged by OMEGA and conducted by OU	9 riders
Interviews with social service workers	Sept. – Nov. 2023	Arranged by OMEGA and conducted by OU	4 workers

Interviews with transportation providers	Sept. – Nov. 2023	Arranged by OMEGA and conducted by OU	3 providers
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DATA ANALYSIS

Surveys were analyzed using standard descriptive statistics in STATA. Interview transcripts and recordings were analyzed by researchers using standard thematic analysis. Impact values and ratios were calculated by using Social Return on Investment (SROI) analysis, which was carried out by Ohio University researchers with accreditation training from Social Value International.

SROI RESULTS

2022 SROI Impact Calculator: Transportation in the OMEGA region

Every \$1.00 invested in public transportation in the OMEGA region generates \$10.00 of social value

Social return on Investment measures economic value of social impact investment for returns to **society** and **individuals**, the **environment**, and the **economy** in terms of costs avoided and benefits attained.

RIDERS		\$ 75,629,114.25
\$ 36,990,062.14	Improved physical health outcomes	
\$ 20,600,177.33	Increased ability to age in place	
\$ 539,358.72	Decreased social isolation	
\$ 1,526,092.15	Increased dignity and autonomy	
\$ 15,973,423.91	Increased choice/ability to maintain sustainable employment	
MEDICAID		\$ 92,462,947.40
\$ 89,026,830.61	Decreased costs per patient	
\$ 3,436,116.79	Increased ability to age in place	
FAMILY & FRIENDS		\$ 2,188,688.20
\$ 2,188,688.20	Reduced family strain	
EMPLOYERS		\$ 8,593,655.92
\$ 8,593,655.92	PROJECTED: Increased employee retention	
COMMUNITIES		\$ 18,540,278.58
\$ 10,305,537.78	Reduced burden on social services	
\$ 8,234,740.80	PROJECTED: Increased accessibility to basic needs like food, retail and social experiences	
STAFF		\$ (194,589.74)
-\$ 194,589.74	Increased secondary trauma due to not enough resources to meet riders' needs	

SENSITIVITY ANALYSIS

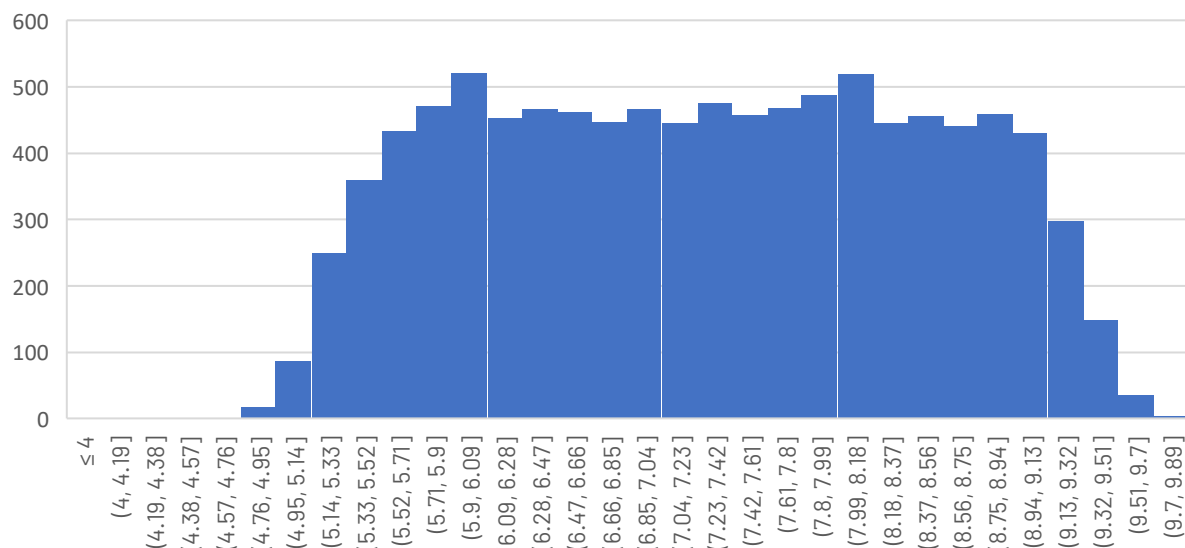
Research into the fiscal proxies used for this report generated both high and low estimates for several outcomes. In order to assess the relative impact of these different possible estimates, researchers conducted a sensitivity analysis. Using a Monte Carlo simulation, researchers produced 10,000 randomly generated configurations of values within the high and low estimates included in the SROI model, with results shown below. The total social value created ranged from \$66 million to \$158.6 million. The resulting SROI ratio ranged from \$5.42 to \$9.12 for every dollar invested.

Researchers assessed each proxy and determined that the bulk of the variation was coming from

Monte Carlo simulation results

	Total Social Value	SROI Ratio
Median	\$ 113,250,028.00	\$7.28
Mean	\$ 113,046,621.83	\$ 7.27
5 th percentile	\$ 79,729,473.00	\$ 5.42
95 th percentile	\$ 146,446,760.00	\$ 9.12

Histogram of Monte Carlo simulation results



PROXIES

INCREASED PHYSICAL HEALTH

Survey data indicated that 57.14% of riders would have missed “many doctor’s visits” without public transportation. This percentage amounts to 3,652 riders out of the total 6,392 unique riders served in the OMEGA region. Because 47.8% of Ohioans are living with at least one chronic condition (Albani et al, 2021), it is reasonable to assume that 1,746 riders with chronic health conditions in the OMEGA region were able to attend multiple medical appointments because of public transportation.

Research demonstrates that all-cause mortality increases by 300% when individuals with chronic conditions miss two or more appointments in a year. (McQueenie 2019). In Ohio, this amounts to a 2% increase, which is the difference between the 1% all cause mortality rate for the general population (CDC), and the 3% all-cause mortality rate for the population of individual with chronic health conditions who miss more than one medical appointment in a year. Using this percentage, researchers estimate that 35 individuals in the region received the healthcare needed to avoid premature death because of OMEGA transportation services. Adults in rural areas who had characteristics that are related to the need for greater health care, who could not drive themselves, and who had access to public transportation were likely to make four more chronic health care visits annually than other adults who had those same characteristics but did not have access to public transportation.(Arcury et al., 2005)

Researchers placed a value on this outcome using the Value of a Statistical Life, which is a number used by federal agencies in the US to approximate the value of preventing a single fatality, usually by increasing safety standards.ⁱ Using a very conservative estimate of the remaining years of life for the average rider (10.3 years, which was derived from the average life expectancy of 75.3 years in Ohio and the conservative estimate of 65 years as the average age of riders), researchers divided the number of riders avoiding premature death by accessing medical care with public transportation (35) by the average number of remaining years of life (10.3), then multiplied this value by the Value of a Statistical Life. The resulting social value was almost \$37 million. This is the high estimate of the social value created by this outcome.

To account for the fact that some survey takers may exhibit an optimism bias (in other words, they may be inclined to try to report what they think researchers want to hear), researchers applied a 25% optimism bias discount to the number of individuals who would have missed many doctor’s visits without transportation. This yields the low estimate of almost \$28 million.

Value of increased physical health

Number of Stakeholders		Per Unit Monetary Valuation	Discount	Final Value
35	x	\$1,056,858.92	x High: no discount	= High: \$36,990,062.14
Likely number of riders who are living with a chronic condition <i>and</i> who would have missed multiple doctor's visits without transportation services		Decreased mortality costs as approximated by the Value of a Statistical Life adjusted to account for remaining years of life of riders and for rounding in other parts of the model	Low: (1-.25)(survey optimism bias)	Low: \$27,742,546.61

INCREASED ABILITY TO AGE IN PLACE

This fiscal proxy estimates the social value of older adult riders being able to avoid moving into an institutional facility. To arrive at the number of stakeholders impacted, the number of total riders (6,392) is multiplied by the 52% of riders who indicated they were aged 60+, then multiplied by the 8.7% of those riders who also said they would have to enter an institutional facility without transit or transportation providers; the likely total number of riders impacted is 289. The average out-of-pocket costs for older adults who enter an institutional facility is \$71,237 annually, after subtracting out-of-pocket costs for at-home care (\$15,320.71) (Measuring the Costs and Savings of Aging in Place | HUD USER, 2013).

To account for the fact that some survey takers may exhibit an optimism bias (in other words, they may be inclined to try to report what they think researchers want to hear), researchers calculated high and low estimates. The low estimate was derived by applying a 25% optimism bias discount to the number of individuals who would have had to move into an institution. When these two numbers (with and without the 25% discount) are multiplied by out-of-pocket savings when aging in place, the total savings to older adult riders would be in a range of \$15,540,133.00 - \$20,600,177.33.

Value of increased ability to age in place

Number of Stakeholders		Per Unit Monetary Valuation		Discount		Final Value
289		\$71,237.98		High: none		\$15,450,133.00 - \$20,600,177.33
Number of riders 60+ who would likely have to move to assisted living if they did not have access to transit or transportation services	x	Annual out-of-pocket expenses for institutional care minus the out-of-pocket costs of in-home care.	x	Low: (1-.25) survey optimism bias	=	

DECREASED SOCIAL ISOLATION

This proxy measures the decrease in health costs to Medicare when older adults are not socially isolated. Social isolation is defined as having few or infrequent social contacts. To find the number of riders impacted, the number of unique riders is multiplied by the 52% of riders who said they were aged 60+ and then further multiplied by the 17% of older riders who are likely to be socially isolated based on prevalence rates (Ortiz et al., 2011). This number of riders was further multiplied by the 48% of older riders who reported they used OMEGA-region transportation at least once weekly in order to account for the percentage of riders whose interactions with drivers decreased their social isolation. Qualitative data collected for this study strongly suggested that riders had developed social connections to drivers and looked forward to socializing with them.

Researchers at Stanford University School of Medicine found that Medicare health costs increase by \$1,988.60 annually for those who are socially isolated, due to increased hospitalization and institutionalization costs (Shaw et al., 2017). This number was multiplied by the number of impacted riders to arrive at the high estimate of \$539,358.72 in averted health costs to Medicare.

To account for the fact that some survey takers may exhibit an optimism bias (in other words, they may be inclined to try to report what they think researchers want to hear), researchers applied a 25% optimism bias discount to the number of individuals who said they used regional transportation at least weekly. This yields a low estimate of \$404,519.04.

Value of Decreased Isolation

Number of Stakeholders		Per Unit Monetary Valuation		Discount		Final Value
271	x	\$1,988	x	High: none	=	\$404,519.04 - \$539,358.72
Number of riders over 60 who ride at least weekly and are likely to be socially isolated		Annual increased medical spending per capita by Medicare for those who are socially isolated.		Low: (1-.25) (survey optimism bias)		

INCREASED CHOICE/ABILITY TO OBTAIN SUSTAINABLE EMPLOYMENT

This proxy measures the increase in overall human capital (knowledge, attributes, skills, and experience) created by work experience that is made possible by public transit and transportation. 17.86% of surveyed riders reported that OMEGA regional transit and public transportation providers made it possible for them to keep their job. Multiplying this percentage by the total number of riders yields 1,142 riders likely to have employment as a result of transportation or transit access. This number was multiplied by 40%, which is the percentage researchers say that work history contributes to overall human capital. (Madgavkar et al., 2022). The average lifetime value of human capital per worker ranges between \$890,000,000 and \$1,060,000, according to a study valuing work experience (Madgavkar et al., 2022). This total was reduced by a third to limit duration to one year of impact, assuming a 30-year work span. The final total is \$15,973,423.91, which is the high estimate of the benefit to riders due to that added work experience.

To account for the fact that some survey takers may exhibit an optimism bias (in other words, they may be inclined to try to report what they think researchers want to hear), researchers applied a 25% optimism bias discount to the number of individuals who said they would have definitely lost their job without public transportation. This yields the low estimate of a little more than \$10 million.

Table 4. Value of Increased Choice/Sustainability of Employment

Number of Stakeholders	x Per Unit Monetary Valuation	x Discounts	= Final Value
1142	\$890,000 - \$1,060,000	40% (% of human capital attributable to work experience)	\$10,058,736 - \$15,973,423.91
Likely number of riders whose employment is dependent on transit or transportation services	lifetime value of human capital	.033 (Discount to limit impact duration to one year) (1-0.25) Survey optimism bias	

VALUE OF INCREASED DIGNITY AND AUTONOMY

This proxy measures the value of the extra dignity that comes from being able to work. 71% of workers say that work is important to their self-identity (The Social Workplace: Social Capital, Human Dignity, and Work in America - the Survey Center on American Life, 2023). Recent research from the National Bureau of Economic Research into the value of dignity to low-wage workers suggests that a 1 standard deviation increase in dignity is worth 6% of a worker's wage (Dubé et al., 2022). Six percent of the median annual entry wage for someone with no formal educational credential (\$31,380.00) is \$1,882.80.

Researchers multiplied the total number of riders by the percentage of surveyed riders who reported that they would lose their jobs without transit or transportation services. This value was then multiplied by the likely percentage of the population that considers work to be an important part of who they are. Multiplying the resulting number affected by 6% of the median annual entry wage produces the high estimate of \$1,144,569.11 worth of social value.

To account for the fact that some survey takers may exhibit an optimism bias (in other words, they may be inclined to try to report what they think researchers want to hear), researchers applied a 25% optimism bias discount to the number of individuals who said they would have definitely lost their job without public transportation. This yields the low estimate of a little more than \$1.1 million

Table 5. Value of Increased Dignity and Autonomy

Number of Stakeholders	x	Per Unit Monetary Valuation	x	Discount	=	Final Value
811		\$31,380.00		6% (amount of salary increase equal to 1 standard deviation increase in work dignity)		\$1,144,569.11 - \$1,526,092.15
Likely number of riders who would lose jobs without transportation multiplied by the percentage of people who say work is an important part of their self-identity		Median level annual fulltime entry wage, with no formal education credential		(1-.25) Survey optimism bias		

DECREASED COSTS PER PATIENT

This proxy measures the decreased costs to Medicaid from access to non-emergency medical transportation (NEMT), which allows patients to follow their recommended treatment protocols. 47.8% of Ohio adults have at least one chronic condition. Applying this percentage to the number of unique riders in the OMEGA region yields 3,055 riders likely to have a chronic medical condition. 57.14% of surveyed riders reported that they would get to many fewer doctors' appointments without regional public transportation. Taking 57.14% of 3,055 yields 1,746 individuals experiencing this impact.

Research shows that Medicaid coverage averts health costs when patients with at least one chronic condition are able to adhere to recommended treatment protocols due to having access to NEMT. The estimated savings for individuals with diabetes is \$11,798.76 in annual health costs per patient. The estimated savings for individuals receiving dialysis is \$80,933.64 in annual health costs per patient. These two costs were used as high and low estimates of the cost savings from NEMT. The resulting range of costs averted to Medicaid due to patients access to NEMT is between \$15,449,076.71 - \$89,026,830.61.

To account for the fact that some survey takers may exhibit an optimism bias (in other words, they may be inclined to try to report what they think researchers want to hear), researchers applied a 25% optimism bias discount to the number of individuals who would have missed many doctor's visits without transportation. This yields the low estimate of a little more than \$89 million.

Table 6. Value of Decreased Costs Per Patient

Number of Stakeholders	x	Per Unit Monetary Valuation	x	Discount	=	Value
1746		Low: \$11,798.76		(1-.25)		\$15,449,076.71 -
Likely number of riders with chronic conditions who miss multiple appointments without transit or transportation services		High: \$50,993.64		Survey optimism bias		\$89,026,830.61
		Patient costs averted by Medicaid due to patients being able to follow recommended patient protocols due to NEMT				

INCREASED ABILITY TO AGE IN PLACE (MEDICAID)

This proxy measures the cost savings to Medicaid when individuals receive care in their homes rather than in an institution. 8.7% of surveyed riders said that they would have to move to an independent living facility without access to OMEGA regional public transit and transportation. Research indicates that Medicaid saves \$11,882.52 annually when clients receive at-home care instead of care from an assisted living facility (Marek et al., 2012).

To account for the fact that some survey takers may exhibit an optimism bias (in other words, they may be inclined to try to report what they think researchers want to hear), researchers applied a 25% optimism bias discount to the number of individuals who would have had to enter an institution without access to regional transit or transportation providers. This yields the low estimate of almost \$2.6 million.

Table 7. Increased ability to age in place (Medicaid)

Number of Stakeholders		Per Unit Monetary Valuation		Discount		Final Value
289 (6,392 total riders x 52% aged 60 and over x 8.7% reporting that they would move to institution without transportation)	x	\$11,882.52 Annual Medicaid savings per individual who ages in place versus living in an independent living facility	x	25% Survey optimis m bias	=	\$2,577,087.59 - \$3,436,116.79

REDUCED FAMILY STRAIN (LABOR)

Researchers first calculated the likely number of riders who rely on unpaid care from family and friends by multiplying the total number of riders 60 years and older by 13.4%, which is the percentage of seniors who rely on unpaid family care (The Economic Impact of Caregiving, 2021). This yielded an estimate of 445 riders who rely on unpaid family care. This number was then multiplied by 83% to reflect the 83% of caregivers who organize or provide transportation services at least weekly (NADTC National Poll: Transportation Needs and Assessment, 2018). To calculate the impact on caregivers, researchers made the conservative estimate of one caregiver per rider, and arrived at an estimate of 370 caregivers who provide transportation at least weekly to seniors in the OMEGA region.

Of these caregivers, research indicates that 39% spend 5 or more hours a week transporting loved ones, 28% spend 3-4 hours a week transporting loved ones, and 22% spend 1-2 hours a week transporting loved ones (NADTC National Poll: Transportation Needs and Assessment, 2018). Because the research provides the number of hours in ranges, researchers generated a range of estimates for the number of hours spent transporting loved ones. The lowest estimate for the number of hours spent transporting loved ones in a year (assuming 50 out of 52 weeks of caregiving) is estimated to be 55,636, and the highest number of hours is estimated to be 100,922. When multiplied by the hourly economic value of caregiving in Ohio, \$15.61 (Reinhard et al., 2023), this produces a total value ranging between \$868,485.16 - \$1,575,391.69. This represents the total value of the hours that unpaid caregivers did not have to spend providing transportation to loved ones due to the accessibility of OMEGA-region transportation options.

Table 8. Value of reduced family strain (labor)

Number of Stakeholders	x	Number of Hours a Week to be Valued	x	Number of Weeks	x	Per Unit Fiscal Values	=	Final Value
144 (39% of 370 caregivers who spend five or more hours transporting loved ones)		5-10		50		\$15.61 Hourly economic value of caregiving in Ohio		\$868,485.16 - \$1,575,391.69
104 (28% of 370 caregivers who spend 3-4 hours transporting loved ones)		3-4						

81(22% of 370 caregivers who spend 1-2 hours transporting loved ones)	1-2
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REDUCED FAMILY STRAIN (TRAVEL COSTS)

This proxy measures the transportation costs avoided by caregivers whose loved ones are able to utilize OMEGA-region transportation. In 2022, OMEGA transportation and transit services provided over 138,512 round trip medical trips. Twenty percent of surveyed riders reported that they would have to rely on family members for transportation if not for OMEGA services. This percentage was used to reduce the total number of trips to approximate the number of trips provided for individuals who would otherwise have to rely on family members.

The average distance to a rural medical appointment is 17.8 miles one way (Akinlotan et al., 2021). By taking the number of medical trips provided for individuals who would otherwise have to rely on family and multiplying this value by the number of miles per trip, researchers arrived at an estimate of the total number of miles of transport and transportation provided for people who would otherwise have to rely on families. Multiplying this value by the federal mileage reimbursement rate produced a total value of \$613,296.51 in transportation costs that caregivers did not have to shoulder.

TABLE 9. VALUE OF REDUCED FAMILY STRAIN (TRAVEL COSTS)

Number of Medical Trips (round trip)	x Per Unit Monetary Valuation	x Discount	= Final Value
27,702 (20% of 138,512 medical trips provided by OMEGA region transit and transportation services)	\$22.25 (\$0.625 federal mileage reimbursement rate times 35.6, which is the average number of miles per round trip)	N/A	\$613,296.51

INCREASED EMPLOYEE RETENTION

This proxy is projected and measures the costs that would be averted by regional employers in the manufacturing and retail sectors if a fixed bus route were available for their employees.

Manufacturing

There are an estimated 34,532 manufacturing jobs in the region (OMEGA District, 2022). The average annual turnover rate in the manufacturing sector is 8.7%, and the estimated average cost of turnover is \$5,910.06 per manufacturing worker (Faulk et al. 2016). Multiplying the number of workers by the turnover rate and the cost per turnover yields an estimate of \$17,755,498.70 in turnover costs for the manufacturing sector per year. Researchers estimate that accessibility to public transportation would decrease that rate by between 2.9%-3.3% in the Midwest Region, which includes part of the OMEGA district. (Faulk et al. 2016). Reducing the annual turnover rate by 2.9% would result in \$5,918,499.57 and reducing it by 3.3% would result in \$6,734,844.33 in hiring and training costs to employers averted.

Retail

There are an estimated 24,683 retail jobs in the region (OMEGA District, 2022). The average annual turnover rate in the retail sector is 8.7%, and the average estimated turnover cost in this sector is \$2,265.22 (Faulk et al. 2016). Multiplying the number of workers by the turnover rate and the cost per turnover yields an estimate of \$3,980,069.04 in annual turnover costs in the retail sector. Researchers estimate that accessibility to public transportation would decrease that rate by between 2.9%-3.3% in the Midwest Region, which includes part of the OMEGA district. (Faulk et al. 2016). Reducing the annual turnover rate by 2.9% would result in \$1,633,069.04 and reducing it by 3.3% would result in \$1,858,811.58 in averted costs of hiring and training employees.

Table 10a: Increased employee retention (manufacturing)

Number of Stakeholders	Per Unit Monetary Valuation	Percent Change	Final Value
34,532	\$5,910.06	Low: 2.9% High: 3.3%	\$5,918,499.57 - \$6,734,844.33
Manufacturing jobs in OMEGA region	Average turnover cost per manufacturing worker	Anticipated decrease in turnover rate if manufacturing employees have access to public transportation	

Table 10b: Increased employee retention (retail)

Number of Stakeholders	Per Unit Monetary Valuation	Discount	Final Value
24,683	\$2,265.52	Low: 2.9% High: 3.3%	\$1,633,501.09 -\$1,858,811.58
Retail jobs in OMEGA region	Average turnover cost per retail worker	Average turnover rate decrease if retail employees have access to public transportation	

Reduced burden on social services

This proxy measures the potential costs savings associated with reducing unemployment benefits by increasing access to transportation. 17.86% of survey respondents said they would definitely lose their job without public transportation. When multiplied by 6,392, the number of OMEGA-region riders, 1141.61 survey respondents attribute their continued employment to maintaining transportation accessibility. To calculate the impact, this number was multiplied by the weekly average unemployment benefits in Ohio, \$408.47 (Monthly Program and Financial Data, Employment & Training Administration (ETA) - U.S. Department of Labor, n.d.), and was then multiplied by the average number of weeks an individual remains unemployed, which is 22.1 (Average Weeks Unemployed, 2023). The total value saved in employer taxes in this calculation is \$10,305,537.78.

To account for the fact that some survey takers may exhibit an optimism bias (in other words, they may be inclined to try to report what they think researchers want to hear), researchers applied a 25% optimism bias discount to the number of individuals who said they definitely would lose their job without public transportation. This yields the low estimate of a little more than \$7.7 million.

Table 11. Reduced burden on social services

Number of Stakeholders	Per Unit Monetary Valuation	Duration	Discount	Final Value
1141.6	\$408.47	22.1	(1-25%)	\$7,729,153.34 -
6,392 total riders x 17.86% (those who would definitely lose their jobs without public transportation)	Weekly average unemployment benefits (2022 dollars)	Average number of weeks an individual remains unemployed	Survey optimism bias	\$10,305,537.78

INCREASED ACCESS TO BASIC NEEDS LIKE FOOD, RETAIL AND FOOD EXPERIENCES

This proxy values the impact that additional bus lines would have on food security rates. Research estimates that adding one regular bus route per 10,000 people decreases the food insecurity rate by 1.6 percent by increasing access to grocery stores (Baek, 2014). The average food insecurity rate in the nine-county OMEGA transportation region is 12.9%. (Overall (All Ages) Hunger & Poverty in Ohio | Map the Meal Gap, n.d.) and the average health costs per county due to food insecurity is \$4,433,000 (Berkowitz et al., 2019). Researchers multiplied the incurred medical costs per food insecurity point (\$571,857) by 1.6 percentage points to generate the total that counties could save in food security-related health costs. The final total, \$8,234,740.80, is the total that all nine counties could save in health costs due to food insecurity if they would fund one regular bus line in their county.

Table 12. Increased access to basic needs like food, retail and food experiences

Per Unit Monetary Valuation	x Anticipated amount of change	x Resulting Value	x Scale	x Discount	= Final Value
\$571,857	1.6%	\$914,971.20	9	N/A	\$8,234,740.80
12.9% Average food insecurity rate in the OMEGA region (\$4,433,000) divided by average increased health costs per county due to food insecurity (\$4,433,000)	Decrease in food insecurity obtained by adding one regular bus route per 10,000 population	Average health costs per county that could be averted through transit access	Number of counties in OMEGA region		

INCREASED SECONDARY TRAUMA THAT COMES FROM NOT HAVING ENOUGH RESOURCES TO MEET RIDERS' NEEDS

This proxy measures the negative impacts on transportation employees when they do not have enough resources to meet their riders' needs. 22.58% of surveyed employees reported two or more symptoms of secondary trauma as a result of resource constraints limiting their ability to meet rider needs. Multiplying this percentage by the number of OMEGA transportation employees (151) yields an estimate of 34 employees affected by symptoms of secondary trauma.

Research connects secondary trauma to negative health choices among those experiencing the secondary trauma. These choices can include increased alcohol and tobacco use (Armes 2020, Rauvola et al 2019, Bourke & Craun 2014). Bourke and Craun find that in the United States, for every one unit increase in secondary traumatic stress, there is a corresponding 0.29 unit increase in tobacco use ($F(16, 593) = 37.85, p < .001$; Adjusted $R^2 = .52$). The financial value attached to increased tobacco use (-\$134,114.12 to -\$670,570.61) is drawn from a study of the costs of smoking in each state (McCann 2020).

Researchers chose a benefits transfer model to value the cost of secondary trauma as the cost of tobacco used associated with secondary trauma. This does not mean that researchers assume that people who experience secondary trauma all begin using tobacco. The cost of tobacco use is a stand-in for the negative health behaviors that are associated with secondary trauma. Note that the value for this proxy is entered into the overall SROI calculations as a *negative value*, because this proxy represents a cost to the organization that resulted from the distribution of Home Relief funds.

To account for the fact that some survey takers may exhibit an optimism bias (in other words, they may be inclined to try to report what they think researchers want to hear), researchers applied a 25% optimism bias discount to the number of individuals who reported experiencing two or more symptoms of secondary trauma. This yields the low estimate for the model.

Table 13. Increased secondary trauma that comes from not having enough resources to meet riders' needs.

Number of Stakeholders	x	Per Unit Monetary Valuation	x Discount	= Final Value
34		\$19,679	Attribution: 29% Survey optimism bias: High = none Low = (1-25%)	\$145,942 - \$194,589.74
151 transportation employees x percentage of surveyed employees reporting 2+ symptoms of secondary trauma (22.58%)		Annual financial opportunity cost per smoker in Ohio		

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