REPLICA

City of Joplin, MO
Origin & Destination Study

OFFEROR
REPLICA, INC.
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Cover Letter / Statement of Interest

Dear Rachel Holcomb,

Replica, Inc. is pleased to offer our proposal to Joplin, MO and Joplin Area Transportation Study Organization (JATSO) for an origin and destination study that provides access to current and historical travel patterns of motorists and roadway users in the Joplin metropolitan area.

Replica's products exceed the requirements in your solicitation, and to ensure we're delivering on everything you're requesting, we will partner on this project with Olsson. The capabilities that Replica and Olsson are able to deliver is described in detail in the attached proposal.

From day one of the contractual period, Replica tools will enable users to run analysis and create visualizations to aid in communication across agencies, to community stakeholders, and to executive-level decision makers. All datasets will be available for download enabling in-house analysis by the City of Joplin, Joplin MPO, and partner agencies. Our comprehensive datasets and approach to transparency are unmatched in the industry. Together with our customer success team of urban planners, traffic engineers, data scientists, and Olsson, we are uniquely qualified to support the city of Joplin and its partner agencies. In summary, we will provide you with:

- **The travel data you need.** We provide detailed origin - destination information of motorists and roadway users. Seasonal and weekly updates give you the context you need to track changes over time.
- **Flexibility.** With Replica, the City of Joplin and partner agencies can study a wide variety of metrics and geographies as you see fit. You can analyze data in our web app, download it for analysis in your preferred tools, and get direct database access for automated reporting.
- **Dedicated support.** Replica provides a robust, personalized customer success experience to ensure that the department has the knowledge and support to capture the full value from our data. Our customer success team will embed with your organization to train new users on the platform and offer unlimited support for the duration of your subscription. The Olsson team will lend professional services and ensure you get the full value of all datasets offered in this proposal.
- **Focus on privacy.** Providing meaningful data while protecting privacy is a core value at Replica. We always use de-identified data and apply additional internal de-identification measures to further protect privacy.

Please do not hesitate to follow up with additional questions or for more information.

Regards,

Nick Bowden

CEO, Replica, Inc.

Project Approach - Replica

We believe that our platform and technical approach in partnership with Olsson is the best solution to meet the City of Joplin / JATSO's needs. Replica's platform is a web-based application that provides customers with datasets in an easy-to-use interface and exceptional customer support that exceeds the requirements in this RFP.

Replica is the only company synthesizing a composite of high-quality data inputs. The composite-approach listed in Replica's methodology in this document reduces sampling bias and generates greater overall data quality, giving governments the data they need to make transportation and land use planning decisions with confidence.

The City of Joplin and JATSO will receive access to a number of easy to read output datasets, including (1) detailed, disaggregate trip tables that cover typical weekdays and weekend days in each season and include detailed information about each trip and trip-taker; (2) weekly-updated origin-destination (including mode breakdown) and VMT tables that lag the real world by only 10 days. Both of the datasets mentioned above date back to 2019 and will be continuously updated/available throughout the life of the contract.

While Replica data is well equipped to provide outputs regarding origin - destination trip information. Our outputs have been used in various other projects across the United States. Some examples below include:

- Existing Travel Demand Model Updates
- Interchange Studies
- Corridor Studies
- Incident Management
- Estimating Daytime Population
- Determining Trip Purpose
- Determining Travel Patterns
- Evaluating Route Usage and Capacity
- Estimating Life Expectancy of Corridors and Roadways
- Economic Development

The City of Joplin and JATSO will also receive robust customer support, as well as detailed documentation for each provided dataset, including a methodology, data dictionaries, and quality reports. We bring unique expertise of a team of transportation and urban planners, alongside data scientists and analysts, that can support the City of Joplin, JATSO, and partner agencies throughout the life of this contract.

Replica Data Methodology

Origin and destination data is a key output of Replica's large-scale simulations of mobility activity. The information below outlines the data sources that feed our models and the data processing methods we use to generate our output data.

Source Data

Replica generates its data by running large-scale, computationally intensive simulations. These simulations allow us to deliver granular data outputs that match origins, destinations, and other

mobility behavior in aggregate, but don't surface the actual movements (or compromise the privacy) of any one individual.

The data our customers receive is a holistic, up-to-date picture of what's happening across mobility, land use, people, and economic activity. Replica's model for Missouri covers every network link in the Joplin MPO jurisdiction. Additionally, Joplin users will have access to data for adjoining states.

Replica builds simulations using a diverse set of third-party data from public and private-sector sources. These sources include five categories of data:

- **Mobile location data,** including from mobile phones and in-vehicle GPS navigation
- **Consumer resident data** from public and private sources
- **Land use / real estate data** such as zoning regulation, building square footage and use types, and transportation network data
- **Credit transaction data** from financial companies to model consumer spending
- **Ground truth data** acquired by Replica and provided by customers to calibrate and improve the overall accuracy of our outputs

Each completed model also includes an associated quality report, which compares the outputs of the simulation to ground truth data, so you can transparently see the differences between modeled outputs and observed counts. Additionally, Replica works directly with our customers to ensure our modeled outputs achieve a level of quality that is satisfactory to the customer.

We leverage many diverse data sets to minimize the risk of sampling bias that exists in any single source on its own. For example, a product that relies more heavily on data from personal mobile devices risks failing to adequately simulate the portions of the population that do not have mobile devices or those who opt out of device tracking technologies. Our composite approach also creates resiliency against data quality issues and protects against disruptions of individual data sources.

Replica Timeline

Users will have access within one business day of contract execution with onboarding / training sessions at the customers desired times.

Project Approach Olsson - Origin - Destination Study

Project Understanding

The JATSO MPO coordinates the transportation improvement plans across 13 municipalities in both Jasper and Newton counties. The region is a major employment and metropolitan center with a population of approximately 200,000 residents and regularly serves daily commuters from four neighboring states and national travelers. Understanding how people travel throughout the

region is critical to planning for future growth. This O-D study will provide the latest data to better understand how travelers are using the existing roadway network as well as the economic activity of Jasper and Newton counties.

The most recent O-D study was last completed in 2008. Since then, not only have all the cities grown and changed, but the tools used to analyze traffic patterns have evolved dramatically. Previously, driver surveys from the field provided the basic data used to determine travel flows. **Now with the Replica platform, the origins and destinations of travelers and much more can be accounted for using a variety of "big data" inputs.** The Replica platform incorporates multimodal aspects such as cyclists, pedestrians, transit riders, and ride-share users in their simulation model, providing vital information on routing for these vulnerable roadway users.

The primary purpose and goal of this project is to gather critical information about how travelers move throughout the JATSO region. The data from an origin and destination study allows agency stakeholders, engineers, and planners to better plan for the future. The O-D study will help visualize important characteristics of the transportation infrastructure and travelers including but not limited to common route choices, corridors nearing capacity, mode/time of day and other travel patterns, active transportation regions, and areas impacted by increasing economic development. This information is a critical first step in many transportation planning applications such as evaluating future corridor studies, refining the travel demand model, and monitoring economic activity.

Project Approach

Communication

This project will involve the Joplin Area Transportation Study Organization, City of Joplin, and its partners. While major components of this project include the analysis platform and accompanying report, ongoing analysis and support for future studies will be needed to call these efforts a success. Therefore, communication will remain a critical aspect throughout the life of the project. Replica and Olsson are committed to providing regular updates of project deliverables.

Relevant Data

One of the biggest advances that this study will utilize is Replica's simulated travel demand model to provide trip data. Replica is a web-based platform that combines probe location data, consumer and resident data, a nationwide link network, and economic activity - which is all calibrated using "ground-truth" count data - to generate a simulated transportation network. For an origin-destination study, the Replica platform can provide information on when and where trips are generated and terminated as well as the trip purpose. These trips can be filtered by categories to review vehicle or mode type, demographic and socioeconomic data in addition to location and routing data.

Collaboration

Creating a culture of collaboration between all stakeholders and end users is important. Replica and Olsson have collaborated on previous projects in the calibration efforts of the early stages of model development. Olsson has been a user of Replica's platform and can attest to the helpfulness provided by Replica's support staff when requested. This reciprocated relationship, paired with the current connections with the City of Joplin and surrounding areas, provides a solid foundation for the entire team to collaborate throughout the project. We want to be your partner in serving the current and future transportation needs of your area. Listening and understanding the needs of all stakeholders is welcomed and encouraged. We understand that it will take input from all sides to make this tool useful.

O-D Report

Using the cloud-based Replica platform, Olsson will prepare an Origin-Destination report to document major findings such as the current travel patterns, heavily trafficked corridors and their potential capacity constraints, and areas with increased multi-modal influence. The report will help visualize the origin-destination data and make sense of the powerful platform.

This report will take the disaggregated data generated by Replica's simulated traffic demand model and interpret it to fit with and help contribute to JATSO's upcoming planning projects. We will reference the data to identify top internal destinations as well as high-travel routes within the region. In addition to referencing the raw origin-destination information, trip purpose, mode choice and travel patterns will also be identified. The patterns of external trips will also be reviewed to identify current preferred routes through the metropolitan area, as well as the primary locations where freight and private vehicles originate or terminate outside of the study area. The Replica platform can provide some broad metrics of economic flow within the region that will be referenced in the report. In addition to a summary of the data produced by Replica, a list of follow-up areas of interest that are recommended for further study will be provided. This may include recommendations for travel demand model updates, capacity analysis, interchange and corridor studies, and incident management.

Future Analysis

Forward thinking cities and MPOs such as yours understand that this O-D study is just the beginning. Southwestern Missouri is growing, and there is a strong need to continually assess the transportation system. This study will be used to identify areas for further investigation that perhaps will require a review from a different lens. A few potential examples include:

- Identifying an interchange nearing capacity with the need to evaluate using a more appropriate analysis tool to fully understand the pros and cons of different interchange alternatives.
- Recommendation of areas where multi-modal investment is necessary – potentially observing a high pedestrian area with limited multi-modal infrastructure in place.

The year 2020 showed us that travel patterns can change in an instant. Work habits and mode choice are changing. Future analysis of the system is imperative to maintain an understanding of the changing environment.

If desired, your users can keep this platform up-to-date with recent transportation infrastructure upgrades or development activity. Maintaining an effective and relevant analysis tool will need the help and ongoing support from your selected partners – we hope to fill that need and be an extension of your staff.

Public Engagement

One potential benefit of this tool and study is that it contains a variety of information that may help with public engagement efforts. The O-D study and analysis platform covers a wide area and can be used to provide supplemental data and graphics to help with current and future public meetings, websites, and many other applications. A picture is worth a thousand words especially as it relates to public engagement, and this tool can help tell the story in ways that were not previously available to us.

History with Joplin

At Olsson, we have a vested interest in continuing to improve the City of Joplin because we not only work here, but we also live here. Currently, we employ over 1,900 professionals across the firm, and our local office is located in the heart of the city in downtown Joplin. Our office hosts over 40 team members. Our knowledge and successful track record on your projects mean that we understand your policies and procedures, making your job easier for this project.

For example, after the city suffered infrastructure damage sustained by an EF-5 tornado, Joplin received Community Development Block Grant Disaster Relief (CDBG-DR2) funding. Using this funding, Olsson planned, designed, and oversaw rehabilitation of approximately 30 miles of neighborhood streets within the tornado disaster recovery area. These infrastructure projects enhanced overall neighborhood continuity and visual impact to achieve an inviting and sustainable environment.

What is the City of Joplin and partner agencies getting?

With the selection of Replica in response to the City of Joplin's Origin-Destination study RFP. The City of Joplin will be receiving a 1 year subscription to Replica data and all outputs associated with Replica's platform. Replica will grant 10 users access to the platform that can be changed and be associated with various organizations that were listed in the RFP. Along with access to the platform/data, Olsson's team of experts will be performing the Origin-Destination study and creating the report including visualizations of their findings with recommendations for further study and next steps.

Origin & Destination Data Requirements - Replica

Joplin Requirements	Replica
The system should measure and report origin-destination data primarily for all users, including, bicycle and motorized vehicles users.	Replica is able to provide origin-destination pairs for different modes of travel. Such as, Private Auto, Auto Passenger, Commercial Freight, Walking, Biking, and Transit.
The system should allow users to define an analysis zone or routes for reporting.	All data can be queried by standard geographies such as a block group, census tract, city or county. Custom created geographies can be uploaded by users and can be saved for repeated use. Replica utilizes Open Street Maps for its roadway network.
The system should be able to provide origin-destination data for analysis zones defined within the Jasper County and Newton County areas.	Replica provides trip characteristics (including origin and destination) at any geographical level such as a block group, census tract, city, county and custom geography.
The system should be accessible through commonly available computer software, such as a web browser.	Replica datasets are accessible via Replica's web based tool using a web browser.
The system should not require MPO to maintain servers, networking equipment, or field equipment.	Replica does not require any other entities to maintain servers, networking equipment or field equipment.
The system should allow MPO and its assigned users (which may include entities outside of MPO such as Jasper County, Newton County, cities within each county, MoDOT) access to the data portal. MPO may assign up to ten (10) users to the data portal. Users may be reassigned during the contract period.	Replica will provide access to ten (10) users. All ten users will have access to your specified region, unlimited data downloads, and unlimited support. The client will have the ability to reassign users during the contract period.
The system should be accessible by multiple users simultaneously.	Replica allows users to create their own login information. Each of the (10) users will have their own login and can access Replica's tool simultaneously.
The system should provide only non-personally identifiable data to the users	Replica provides only non-personally identifiable data to the users. Replica can present detailed, disaggregate data without compromising privacy

Team Organization

The Replica team has extensive experience providing data, customer support, and professional services to public agencies including cities and metropolitan planning organizations across the United States. Replica employees have first-hand experience working in state and local government, transportation planning, travel modeling, data engineering, data management/procurement, and machine learning.

Replica's Director of Client Services Lauren Massey will be Joplin's main point of contact and the person tasked with ensuring Joplin's success. Lauren will be supported by Replica's experts in machine learning, technical engineering, data management, and transportation modeling. The Replica team consists of:

- **Project Lead:** Lauren Massey (Director of Client Services)
  - **Senior Project Stakeholders:** Nick Bowden (CEO)
  - **Account Manager:** Logan Mormando (Growth)
  - **Technical Lead:** Alexei Pozdnukhov (Chief Scientist)
  - **Engineering Lead:** Kael Greco (Senior Engineer)
  - **Data Lead:** Brian Parr (Vice President, Data Management)
  - **Solutions Lead:** Charlie Bailey (Solutions Architect)
  - **Transportation Model Lead:** Albab Noor (Senior Data Scientist)
- **Olsson Team**
  - **Traffic Engineer / Planner:** Mike Schoelz, PE
    - Mike is a registered professional engineer but also brings a conceptual, planning mindset to the project team. With a solid foundation in macro-level planning analysis and a keen familiarity with tools like Vissum, and TransCAD. Mike brings a distinct perspective to the junction of traffic engineering and planning. His practical engineering expertise injects a real-world perspective into the platform.
  - **Traffic Engineer:** Jacob Berry, PE
    - Jacob will be overseeing not only the project's technical aspects but also the production of the Origin-Destination report. He has eight years of experience solving the traffic needs for his clients. He has a passion for traffic impact, corridor, and safety studies to identify improvements that benefit all roadway users and save lives. Jacob's projects have ranged in complexity from interchange sensitivity analysis to traffic impact studies for small scale developments and has seen those study recommendations through design and implementation. He also has experience in other aspects of corridor signal timing optimization, pedestrian and trail designs, and other traditional aspects of traffic engineering design. His applied knowledge will help the project team understand how the macro-level analysis findings have real-world impacts on the transportation system. He will help identify corridors worth further investigation and potential projects that may come out of this O-D study.

+ **QA/QC:** Tom Fulton
    - Tom is a dependable and dedicated figure in the ever-evolving landscape of traffic engineering. With a senior-level depth of knowledge in multiple areas of traffic engineering, Tom's expertise spans traffic and corridor studies, signal planning, intersection geometric enhancements, signing and marking, simulation and modeling. Additionally, Tom brings experience in O-D planning-level studies to the project, and he will take on the vital role of Quality Assurance and Quality Control (QA/QC) for the O-D report. His comprehensive skill set, along with his dedication and client-centric approach, ensures that the project benefits from a seasoned and detail-oriented professional who excels in solving complex traffic challenges
+ **Senior Traffic Engineer:** Kurt Rotering, PE, PTOE, RSP
    - Utilizing his broad breadth of experience, Kurt brings expertise to a wide variety of projects in traffic and transportation engineering including signal and roundabout design, large-scale campus planning and design, access management, traffic studies, and event traffic management. Kurt has worked on a variety of projects for various state DOT's and has extensive experience working with municipalities throughout Missouri. Kurt recently managed a project within the City of Shawnee, Kansas that utilized travel demand model findings to evaluate the changing land uses and increased demand along K-7, a regional connector and vital north/south corridor within the city.

Replica References

Reference 1: City of Overland Park; Sep 2020 - Present
Jack Messer, (913) 895-6191, jack.messer@opkansas.org

Reference 2: City of Olathe; Dec 2020 - Present
John Page,(913) 971-9039, jcpage@olatheks.org

Reference 3: Tahoe Regional Planning Agency; Jun 2023 - Present
Dan Segan, (775) 589-5233, dsegan@trpa.gov

Cost Estimate

Replica proposes an annual subscription for access to our data platform and data downloads across 10 users from the city of Joplin and partner agencies for an unlimited number of queries and data downloads at the rate of **$48,000 USD per year**. As part of Replica's teaming and staffing approach, Joplin will have access to our full team listed in this proposal. Their time and efforts to onboard, implement, and train Joplin and its regional partners are included in the cost of the annual subscription at no additional cost.

Proposed Joplin:

Date Submitted:	October 29, 2023
Contract Term:	1 Year + Options for multi-year
Annual Replica Subscription	Access to Replica's data ● 10 Users for Joplin / Partner Agencies ● Includes unlimited data downloads ● Includes unlimited data queries
Customer Support	Dedicated Customer Success Manager ● Support implementation, onboarding, and continued support throughout the lifecycle of this contract ● Technical,1:1, and in-app support as needed ● Community webinars and regional trainings
Total	**$48,000 USD** / Year

Olsson will conduct the Origin-Destination Report update for the JATSO MPO areas. This will include the aggregation, review, and summary of the data harnessed from the Replica platform as it relates to the area's transportation infrastructure and travel patterns. The O-D Report will include a summary of trip purpose, travel patterns, road usage & capacity, corridor life expectancy estimates, economic flow observations, recommended areas of future studies,and other notable findings. Updates to the model itself are not anticipated with this task (e.g. TAZ updates). Report graphics will be pulled from the Replica platform where possible. However, a review of corridor life expectancy, recommendations of future studies, and other post-processing characteristics will also be performed. A general breakdown of anticipated workflow tasks is provided below for reference. **The O-D Report task is anticipated to be approximately $87,856**.

Origin-Destination Report Cost Estimate:

Task Description	Team Leader	Technical Leader	Project Engineer	Associate Engineer/ Planner	Technician	Admin	Sub Total
A. General Project Management		6	30			4	$6,632
B. Project Meetings		8	8	8			$4,184
C. O-D Data Review	4	8	16	48			$11,804
D. O-D Data Aggregation & Report	8	16	68	216			$38,044
E. Draft Report	4	10	20	40	24	16	$15,982
F. Final Report	4	6	16	24	20	10	$11,210
TOTAL	**20**	**54**	**158**	**280**	**44**	**30**	**$87,856**

Noted Assumptions:

- Document is anticipated to be over 100+ pages in length including appendices.
- Freeport graphics will be pulled from Replica platform directly where possible. Some elements of post-processing will also be required for the report.
- Economic Flow Summary will include an evaluation of Replica platform-provided metrics.

Based on the provided scoping information and the expertise provided by this consultant team, our proposal is committed to not exceed a total of $135,856.

Schedule

Users will have access to Replica within one business day of contract execution with onboarding / training sessions at the customers desired times.

The anticipated schedule for the Origin-Destination Report, including draft/final report submittal and associated agency reviews, is included below. This assumes notice to proceed would occur in early December.

Origin-Destination Report Anticipated Schedule:

Notice to Proceed	December 1, 2023
Project Meetings, Data Review, Determination of Recommendations & Conclusions	December 2023 - March 2024
Draft Report for Agency Review	March 29, 2024
Agency Review	April 2024
Final Report for Agency Review	May 17, 2024
Agency Report Approval	June 2024

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Work Examples

Joplin Area Transit Model - Olsson

Economic development is thriving in Joplin and the growth justified an analysis of the metropolitan area's transportation needs. The Joplin Area Transportation Study Organization (JATSO) turned to Olsson to complete an update of the Metropolitan Transportation Plan (MTP). Our transportation planners dove into studying all modes of transportation – auto, truck, bicycle, pedestrian, transit, etc. - in and around the City of Joplin.

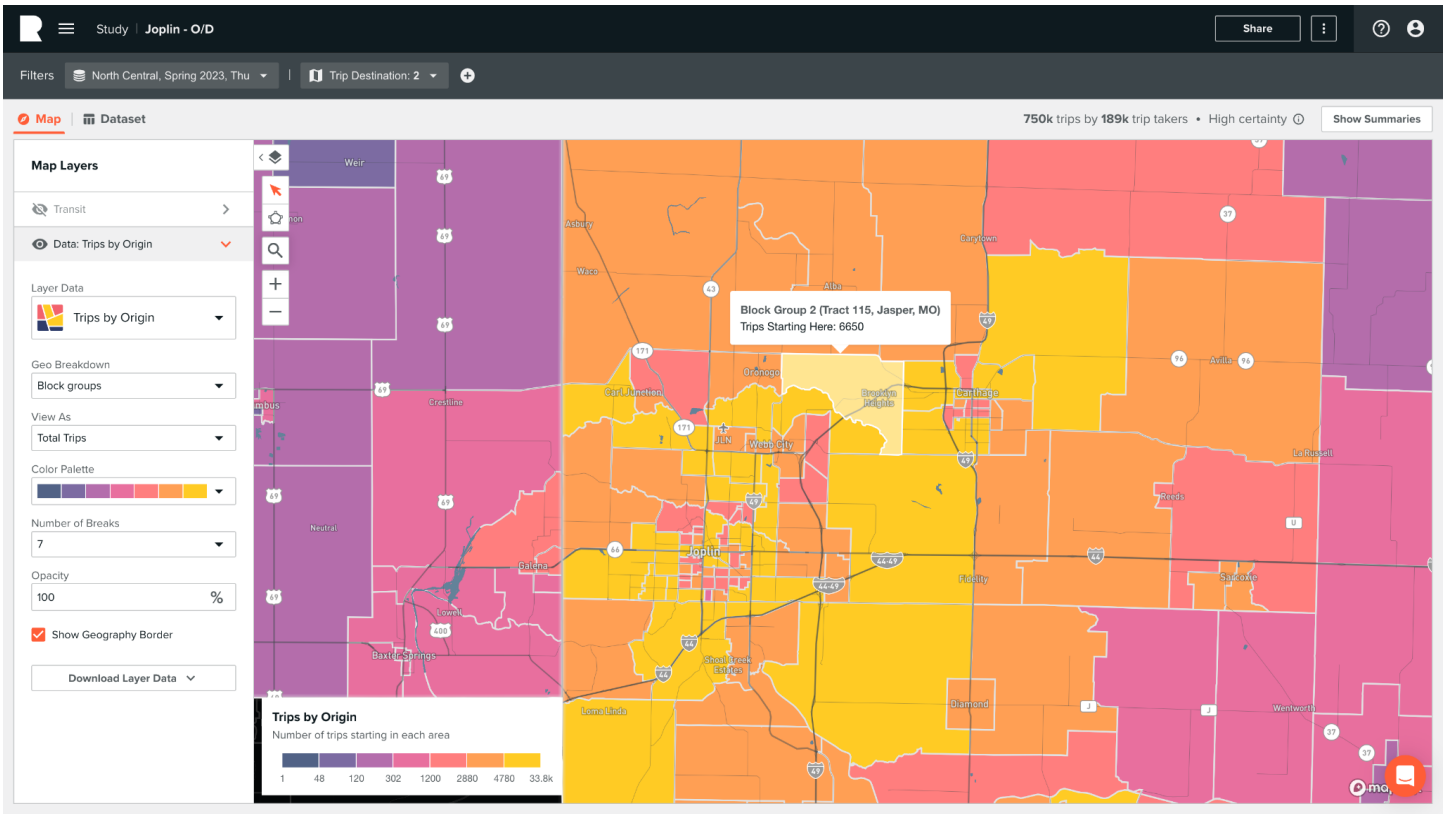
With the onset of the COVID-19 pandemic in the spring of 2020, Olsson quickly pivoted our outreach and public engagement to online and virtual meetings. The plan was built with the input of numerous stakeholder groups, and hundreds attended the virtual online "open houses" to review materials and provide input.

Through this process, and fueled in part by the pandemic, two trends became clear: the desire for increased active transportation connectivity and facilities for pedestrians and bicyclists; and the lack of widespread broadband options to facilitate work from home and remote learning. These desires surfaced not only from the general public, but also from chambers of commerce, visitor's bureaus, developers, business owners, and school districts. The stakeholders saw not only the benefit for existing residents and businesses, but the need for these expanded services to attract and retain new employees and residents.

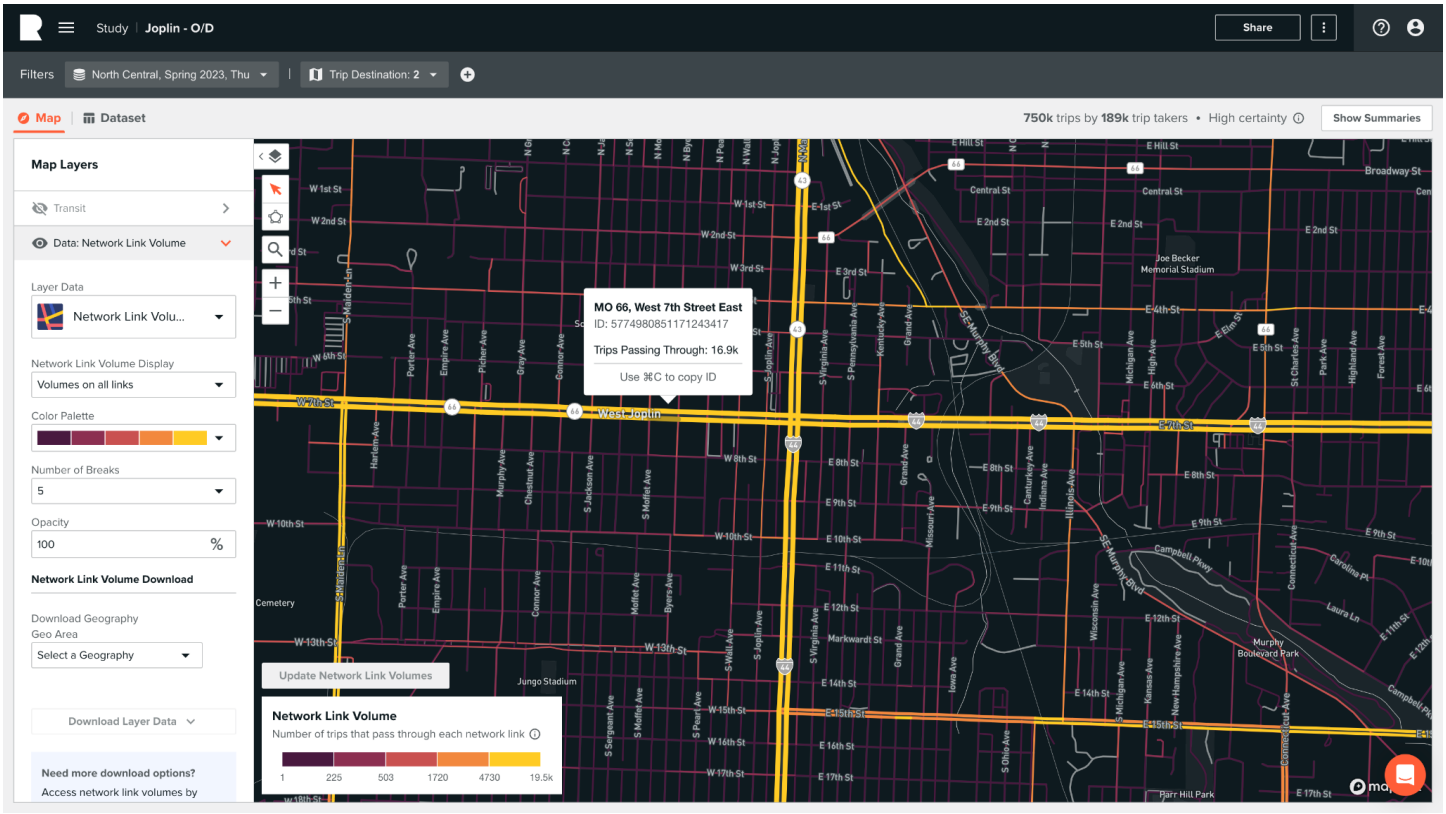
Reference: Keegan Stanton, JATSO, 417.624.0820 ext. 511

Replica Platform Example

The image below shows Replica's platform displaying **trip origins** of trips ending in Jasper or Newton Counties



The image below shows a zoomed in screenshot of **network volumes** of trips that are ending in Jasper or Newton Counties



The image below shows **home locations** of individuals who on a typical weekday in the Spring of 2023, travel to Jasper or Newton Counties

