Applying a Developmental Evaluation Framework to Clean Transportation Pilot Projects

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ABSTRACT

As part of this ongoing embedded evaluation, Opinion Dynamics has worked closely with our client and representatives of the ten pilot projects operating throughout New York State to establish an impact measurement framework. This framework encompasses measuring outputs associated with five key benefit areas — improving community members' access to goods and services, conducting community engagement to support participation in their service offerings, creating jobs and building capacity within their local workforce, reducing transportation service costs, and reducing greenhouse gas emissions. Our team is focused on developing several different strategies for tracking progress towards these key benefits to (1) provide real-time feedback to our client and the pilot teams about their progress and (2) our team aims to provide real-time feedback while minimizing disruption to service delivery. To date, Opinion Dynamics has developed several surveys focused on specific populations within each pilot project's community. Our team also worked closely with pilot teams to establish data tracking protocols to capture activity from community engagement to service utilization. This paper discusses best practices for practical data collection without overburdening project implementation teams and approaches for continuous engagement with the pilot teams to help strengthen their projects and overall effectiveness.

Introduction

Getting the most accurate picture of the impact and effectiveness of community-based clean energy initiatives requires engaging with community-based organizations and other community voices involved in the implementation process. However, these organizations and individuals typically have limited bandwidth, and researchers and evaluators risk placing undue burden and potentially hampering the initiative. An open question researchers in the industry are currently grappling with is how to engage with community-based organizations in ways that minimize undue burden and will also allow researchers to effectively learn from these initiatives to advance clean energy goals and extend the benefits to other communities.

Developmental evaluation is an approach to evaluation that supports innovation of dynamic, evolving programs or initiatives. Instead of focusing on accountability or impact measurement at fixed points, developmental evaluations provide real-time feedback to guide ongoing development and improvement. Under this approach, evaluators are directly integrated into the program or project team, providing support and feedback to help teams learn from their experiences and change course as necessary. Developmental evaluation is ideal for pilot projects, new program designs, or initiatives operating in uncertain environments where goals and strategies may shift.

One of the underlying premises of developmental evaluation involves a reconfiguration of the relationship between the evaluator and the evaluated. In development evaluation, the evaluator not only has a seat at the table but a voice in meetings to inform strategy and future direction. The term "embedded evaluator" has occasionally been employed to describe this role. In other words, the evaluation is no longer an external observation of the strategies being employed but rather becomes one of those strategies. (Patton 2011)

Central to this approach is bringing key stakeholders to the table and reaching an agreement on the highest-level outcomes that the intervention aims to produce. Even when strategies, tactics, or the external environment changes, it is important to have a north star for evaluators, implementers, and other key stakeholders to orient themselves towards. Successful developmental evaluation also requires an evaluation framework that is flexible enough to adapt to changing landscapes while providing sufficient rigor for decision-makers to assess program performance and make necessary adjustments. Lastly, success in this dynamic environment hinges on building trust with the intervention's implementers. Building trust with implementation teams is key to enabling collaboration with project teams and facilitating quality data collection.

Background

The New York Clean Transportation Prizes (CTP) Initiative, administered by NYSERDA, awarded over $85 million in 2022 to community-level projects focused on developing innovative clean transportation solutions. These projects aim to enhance mobility, create job opportunities, and produce other community benefits, particularly within historically disadvantaged communities, defined by the New York State Climate Justice Working Group as "communities that bear disproportionate burdens of negative public health effects, environmental pollution, and the impacts of climate change" (New York State, 2025). This initiative supports New York's goal of reducing greenhouse gas emissions by 85% by 2050. NYSERDA's ten Clean Transportation Prize winners exemplify New York's commitment to climate innovation (NYSERDA, n.d.).

As the measurement, evaluation, and learning (MEL) lead for the CTP, Opinion Dynamics' work spans ten pilots that include a range of clean transportation initiatives (e.g., bike share programs, freight electrification as a service, workforce development initiatives, and electric shuttle services). These pilots are focused on serving historically underserved communities throughout the state. As part of this ongoing embedded evaluation, our team has worked closely with NYSERDA and representatives of the ten pilot projects to establish an impact measurement framework.

Table 1 provides an overview of the CTP projects being implemented throughout New York State. Project teams are implementing a range of services in different types of communities (i.e., urban, suburban, rural, or some combination). Services also range from clean trucks or bus technology, electric bike-share programs, electric shuttle services, or training for workers interested in the clean transportation industry. Note that projects described in this paper reflect their design at the time this paper was written, and several elements of individual projects have changed over time, as is the nature of pilot projects.

Table 1. Community-Based Clean Transportation Project Services

New York State Region	Community Type	Bike Library/ Bikeshare (e-bikes and traditional)	Car-share	On-Demand Vehicles	Ride-hail	Shuttle Vans	Public Transport/ School bus	Electric Freight	Char-ging	Work-force
Western NY	Urban/ Suburban	X	X							
Hudson Valley	Suburban	X								
Southern Tier	Suburban/ Rural	X	X	X	X					
NYC: Five Burroughs	Urban						X			

New York State Region	Community Type	Bike Library/ Bikeshare (e-bikes and traditional)	Car-share	On-Demand Vehicles	Ride-hail	Shuttle Vans	Public Transport/ School bus	Electric Freight	Char-ging	Work-force
Long Island	Urban/ Suburban			X						
NYC: Five Burroughs	Urban						X		X	
NYC: Five Burroughs	Urban							X	X	X
NYC: Five Burroughs	Urban				X					
NYC: Five Burroughs	Urban					X				
NYC: Five Burroughs/ Hudson Valley	Urban/ Suburban							X		X

Methodology

Opinion Dynamics' evaluation approach includes key outcomes for the CTP projects and our data collection plan, including how individual outputs map to those key outcomes. Figure 1 describes the five key outcomes that the ten projects shown in Table 1 aim to produce through their interventions. Some of the outcomes—greenhouse gas benefits, community engagement, financial benefits, and hiring local staff to support project implementation—are common across all ten projects. Other outcomes—workforce training and mobility/accessibility—are only associated with specific projects based on their suite of activities and services.

Our team characterized these benefits in close collaboration with CTP stakeholders, including NYSERDA, CTP support contractors, and individual project teams. In this context, it was important for our evaluation team to work closely with all the parties involved so that Opinion Dynamics was able to establish a set of key outcomes that would both support the teams' overarching vision for their projects, while also allowing sufficient flexibility to adapt our evaluation approach as project designs, priorities, and the landscape inevitably shifted.

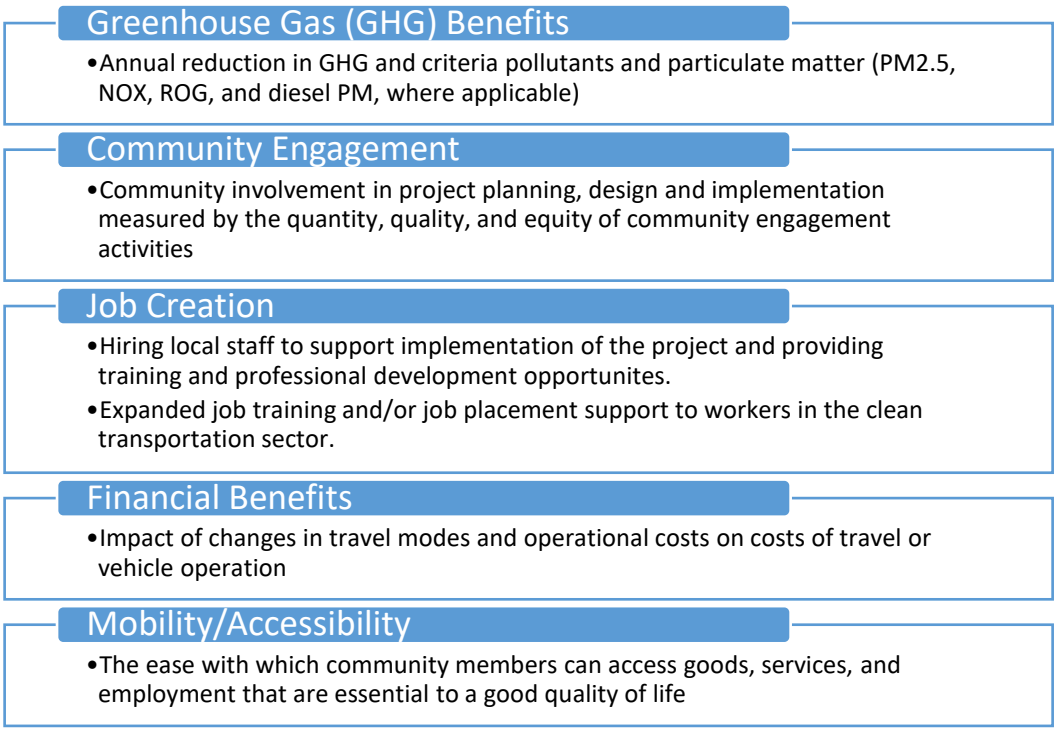

Figure 1. Key Outcomes for Clean Transportation Initiative

Data Collection Framework

Opinion Dynamics' data collection framework includes both quantitative and qualitative information (Figure 3). It is designed to provide enough rigor to help key CTP stakeholders, including project teams, continuously assess project performance. At the same time, the framework allows our team to "right-size" our data requests based on individual team capabilities and staff capacity. Figure 2 describes the quantitative and qualitative data elements and illustrates how those elements align with the key outcomes for the CTP projects.

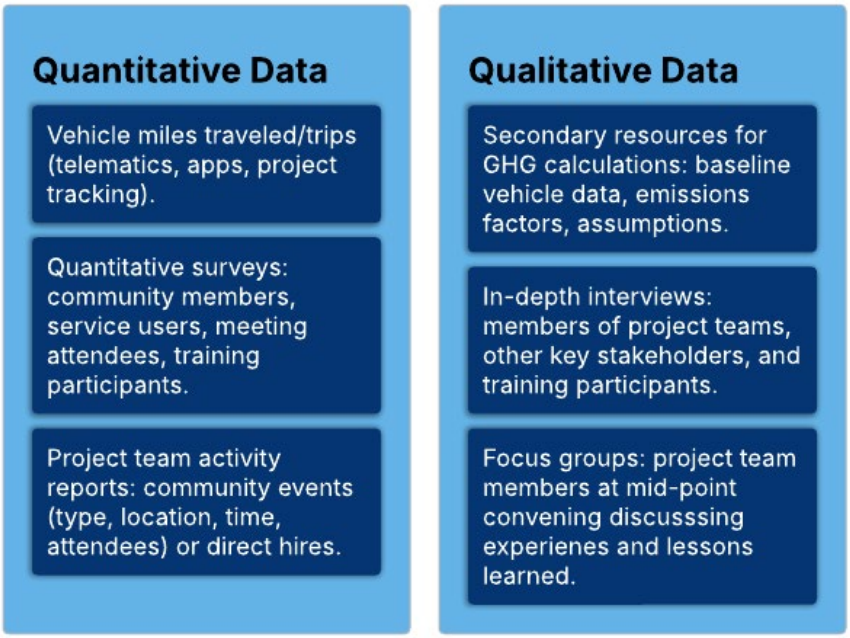

Figure 2. Quantitative and Qualitative Data Elements

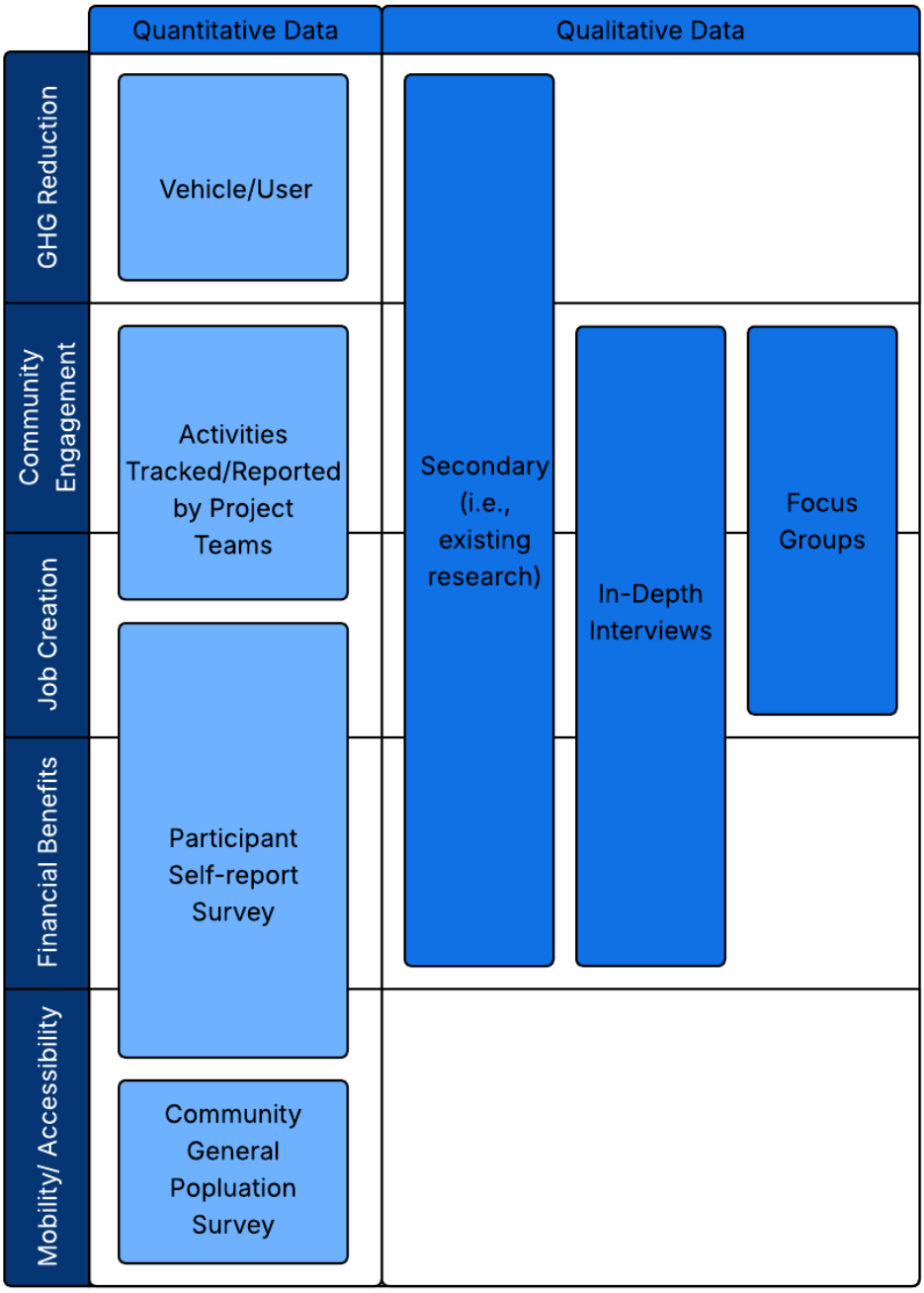

Figure 3. Data Collection Framework

Once project teams got closer to deploying their services, Opinion Dynamics was able to closely coordinate with project teams to establish data dictionaries - detailed lists of outputs, sources, and units of analysis. These dictionaries have served as living guides for both project teams and the evaluation teams to clearly outline the data fields that our team would receive at regular intervals from project teams, and how those fields would be used to illustrate progress towards key outcomes. Table 2 provides example outputs associated with each key outcome and the source for those data.

Table 2. Example Outputs and Data Sources

Key Outcomes	Example Output	Output Source
GHG Reduction	Vehicle miles traveled	Vehicle usage data
	User trips	Rideshare application
Community Engagement	Event/activity details	Activity logged by project teams
	Participant satisfaction	Facilitated group discussions
	Project team experiences	Community meeting survey
Job Creation	Direct hires	Activity logged by project teams
	Project team experiences	Facilitated group discussions
	Trainee satisfaction	Trainee reaction survey
	Trainee self-reported knowledge gain	Interviews with trainees (3 months after participation)
Financial Benefits	Avoided cost of operating ICE vehicles	Vehicle usage data
	Avoided operations and maintenance costs (commercial)	Interviews with vehicle owners/operators
Mobility/Accessibility	Ability to access goods, services, and/or employment	Participant/User survey

Results and Lessons Learned

Through our work, Opinion Dynamics has identified several lessons learned regarding the application of a developmental evaluation approach within nascent and evolving clean transportation interventions.

- **"Right-size" evaluation rigor to balance quality data collection without over-burdening project teams**. Engaging with project implementation teams is often critical when it comes to collecting quality primary data. It is essential to limit data requests to only critical data needs, particularly when these teams have limited staff capacity.
- **Continuous engagement with project teams is critical. Build trust by establishing regular touchpoints with members of the implementation teams**. This ensures that evaluators are aware of any changes in design or activities, and that evaluation priorities align with the project team's goals.
- **Evaluation should support project implementation**. Effective developmental evaluation should support the long-term goals of the project team by helping to build capacity, establish data tracking infrastructure that aids future reporting, and support project teams in making mid-course corrections.

For example, when evaluating community-based bikeshare initiatives, the evaluation team initially requested that project teams share vehicle-level data that would allow our team to report how community members used bikes and the types of goods, services, and employment opportunities they now had access to with the introduction of a new service. Upon meeting with project teams, Opinion Dynamics learned that the process of downloading vehicle data from bikes, aggregating that data, and then getting monthly data exports to our evaluation would have taken significant staff time (and likely would have required staff training). Instead, our team settled on monthly summary data that would still allow our team to report on total utilization of the bikes and estimate avoided GHG emissions. While not ideal from a research perspective, this balanced approach ensured that the evaluation still effectively

assessed program performance, but did so in a way that did not take implementation time and capacity away from their primary goal—establishing a bikeshare program to benefit their community.

The remainder of this section highlights results from two evaluation activities: a general population survey and an evaluation of workforce training initiatives. For both of these activities, the evaluation team worked closely with the associated project teams to ensure that our questions accurately portrayed their projects and services and that our data collection efforts reflected the specifics of each community (e.g., our team considered specific language needs of the different communities). This also helped ensure that results would be helpful to project teams as they prepared for launch and/or fine-tuned their service offerings.

General population survey

Opinion Dynamics conducted a survey between July 19th and August 22nd of 2023 to understand transportation practices and barriers in seven disadvantaged communities (DACs) in New York State, representing six of the ten CTP awards (New York State, 2025). NYSERDA wished to understand the transportation landscape in these communities prior to the new clean mobility solutions being implemented, thus establishing a baseline from which to gauge the benefits of the CTP projects in the future; specifically, the extent to which members of the community felt they felt secure in their transportation options (i.e., mobility/accessibility). A snapshot of key takeaways from these surveys is presented in Figure 4, including how residents felt about their transportation options, key attributes of residents who felt less secure in their transportation options, and how attitudes and barriers differed between communities.

So as not to overburden project teams, Opinion Dynamics administered the mail-pus-to-web survey with input from project teams on the details of their services, the geographic boundaries of their communities, and the most spoken languages to ensure broad participation. We then provided the survey results to project teams in an interactive dashboard format to help support their continued implementation of their clean transportation projects.

The evaluation team developed a sample of residential addresses for each project community based on data originally obtained from the U.S. Postal Service. Our team then sent mail invitations to take the survey and follow-up postcards to all addresses included in the sample for each community. Based on feedback from project teams about the most commonly spoken languages in their communities, Opinion Dynamics published all materials in English with translations in Spanish, simplified Chinese, and Haitian Creole. To encourage participation, the evaluation team provided a $10 gift card to all residents who completed the survey.

Figure 4 presents demographic information pertinent to six of the ten CTP projects studied in the general population survey, revealing key insights into transportation insecurity. Based on survey responses, Opinion Dynamics categorized individuals into three groups based on their feelings about their transportation options (see Table 3). This served as the basis for evaluating the extent to which project services would improve access to goods and services for their user populations (i.e., mobility/accessibility).

Table 3. Transportation Security Categories

Transportation Security Level	Description
No Insecurity/Transportation Secure	little to no trouble getting places in and around their community
Marginal-Low Transportation Insecurity	sometimes have problems getting places, which leads to being late or missing events

Moderate-High Transportation Insecurity	frequently have trouble getting places and miss many events due to lack of transportation options

Specifically, individuals who own cars report lower levels of transportation insecurity compared to those without car ownership. Economically, households earning $50,000 or less are more prone to experiencing transportation insecurity than those with higher incomes. Furthermore, non-White and Hispanic/Latine individuals demonstrate a higher likelihood of transportation insecurity when compared to their White and non-Hispanic counterparts.

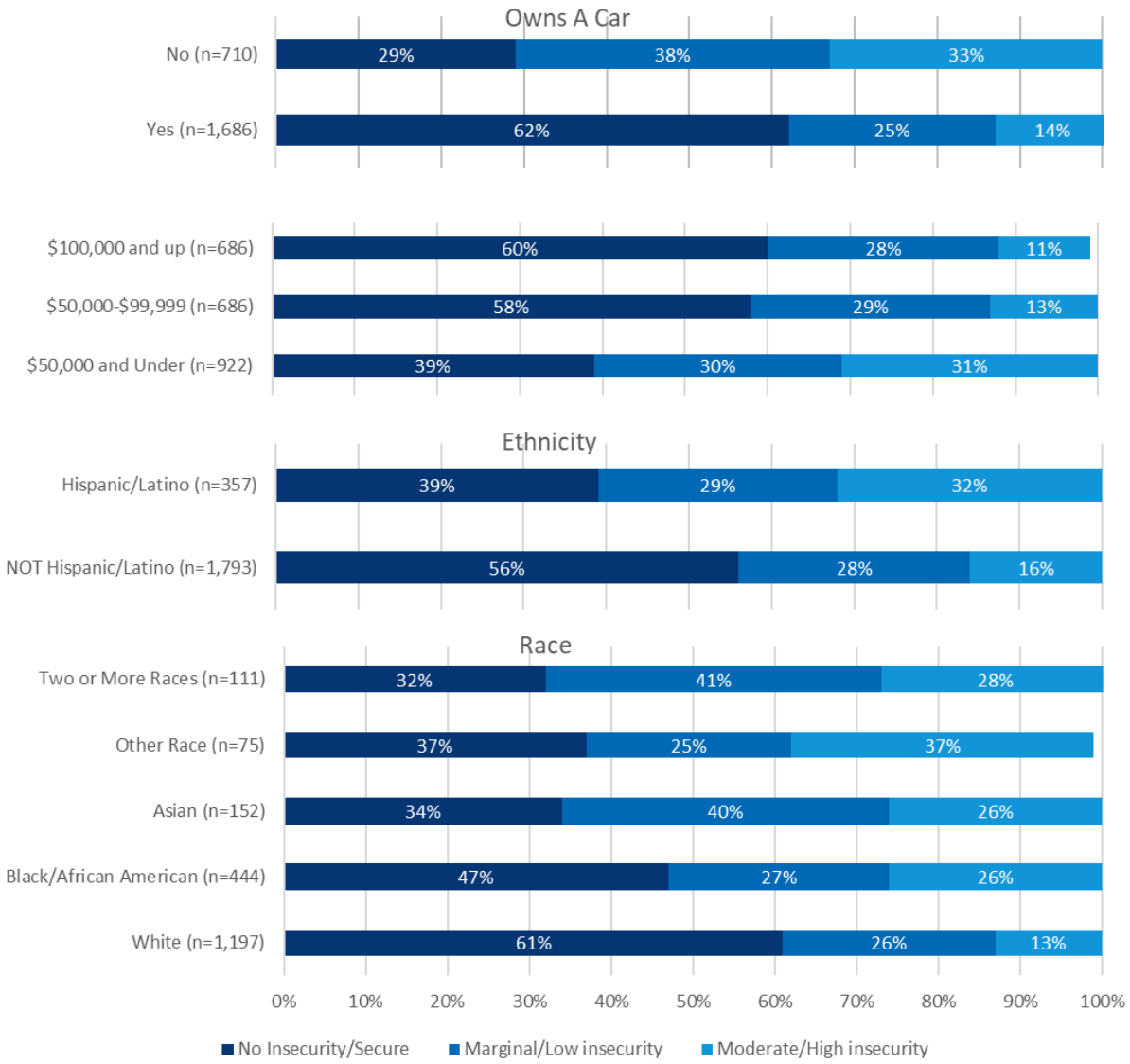

Figure 4. General Population Survey Results

Workforce Training Evaluation

Opinion Dynamics also conducted an evaluation of one project team's workforce training initiative. The initiative consisted of four sessions designed to provide a comprehensive overview of the automotive industry. These sessions covered the anatomy and operation of both internal combustion

engines (ICE) and Electric Vehicles (EVs), essential service safety protocols, and maintenance practices. This is a key component of the job creation key benefit area for several projects. In developing our approach to evaluating this project team's workforce development approach, we collaborated closely with the project team to develop registration forms to collect information on prospective training participants, along with post-training surveys to capture participants' immediate feedback. After data collection, we provide the data to the project team in an interactive dashboard format to help inform the design of future trainings.

Opinion Dynamics collaborated with the project team to develop robust data tracking systems to effectively capture essential information from individuals who registered for the trainings. Additionally, the evaluation team designed a survey to collect participants' immediate feedback upon concluding the final day of the training. To assess longer-term impact, Opinion Dynamics conducted follow-up interviews three to four months after training completion, aiming to understand participants' continued learning, the contribution of that learning to their career trajectories, and their current or planned employment within the transportation industry.

Figure 5 provides an overview of how training participants first learned of the opportunity and the factors that motivated them to participate. The project team was able to use this information, along with the registration database, to fine-tune their recruitment strategies and encourage a broader range of individuals to participate in subsequent training opportunities.

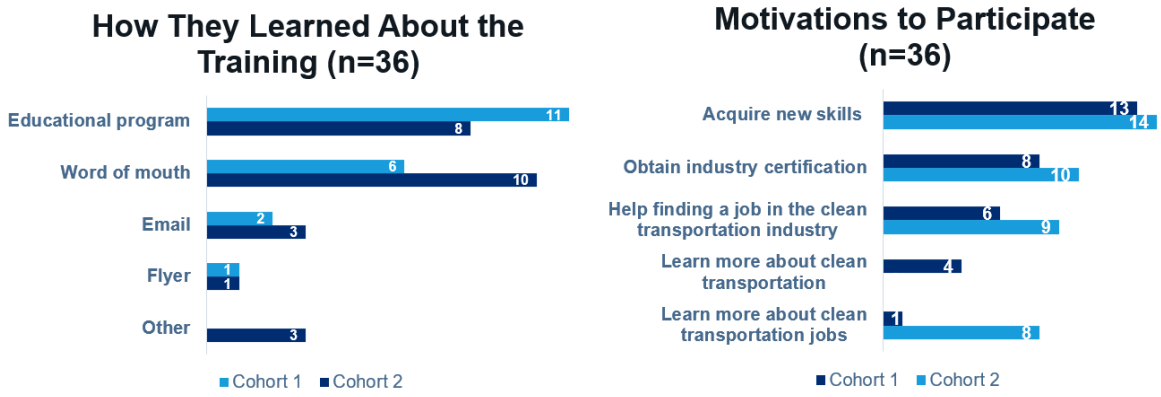

Figure 5. Recruitment and Motivations for Participation

Conclusion

This paper aims to equip the IEPEC audience with the knowledge needed to effectively scope and execute evaluation research within emerging and constantly evolving program environments. Our findings highlight strategies for minimizing undue burden on implementing organizations while also advocating for appropriate evaluation rigor.

Balance Rigor with Feasibility

The evaluation framework must be "right-sized" to balance the need for quality data with the limited capacity of implementation teams. A key lesson learned from this work is to focus data requests on only the most critical needs to avoid placing undue burden on project teams, which could hamper service delivery. Where evaluators have more resources than pilot teams, they should take on large and complicated data collection activities, such as large-scale survey efforts, so that pilot teams can focus on other necessary data collection and project implementation.

For example, upon learning that our initial data request would be onerous for the project implementation team, the evaluation team opted for monthly summary data, which still allowed them to

report on total bike utilization and estimate greenhouse gas (GHG) emissions without disrupting the project's primary goal of establishing a new community service.

Foster Ongoing Collaboration:

Successful developmental evaluation hinges on building and maintaining trust with implementation teams through continuous engagement and regular communication. This collaborative relationship ensures that evaluators remain aware of any shifts in project design or activities and that evaluation priorities are aligned with the project teams' goals. By integrating evaluation into project implementation, the evaluation moves from an external observation to a supportive strategy that informs future direction. Throughout our evaluation of the CTP to date, our team has maintained regular communications with project teams to ensure that data collection reflects the most accurate picture of the current project design. Further, our team has ensured that, when data are collected, those data are shared with project teams to support knowledge sharing and continuous project improvement (e.g., general population and workforce training survey results).

Support Implementation & Capacity

Beyond simply measuring outcomes, an effective developmental evaluation should support the long-term goals of the project. This involves helping project teams build their capacity and establish a robust data-tracking infrastructure that can be used for future reporting and to make timely, mid-course corrections. The results from evaluations, such as the general population survey and the workforce training evaluation, were designed to be useful for the project teams, helping them fine-tune their service offerings and recruitment strategies before and after launch. This approach transforms the evaluation from a reporting requirement into a valuable tool for continuous improvement and long-term success.

References

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