

SEPTEMBER 2022

Future of Mobility in Miami-Dade County: Roadmap for Deploying New Mobility Solutions



A guide to your mobility roadmap

This Mobility Roadmap is a guide for public agencies, mobility service providers, and community stakeholders to better understand the community dynamics around deploying new mobility solutions, specifically: microtransit services and personal delivery devices (PDDs).

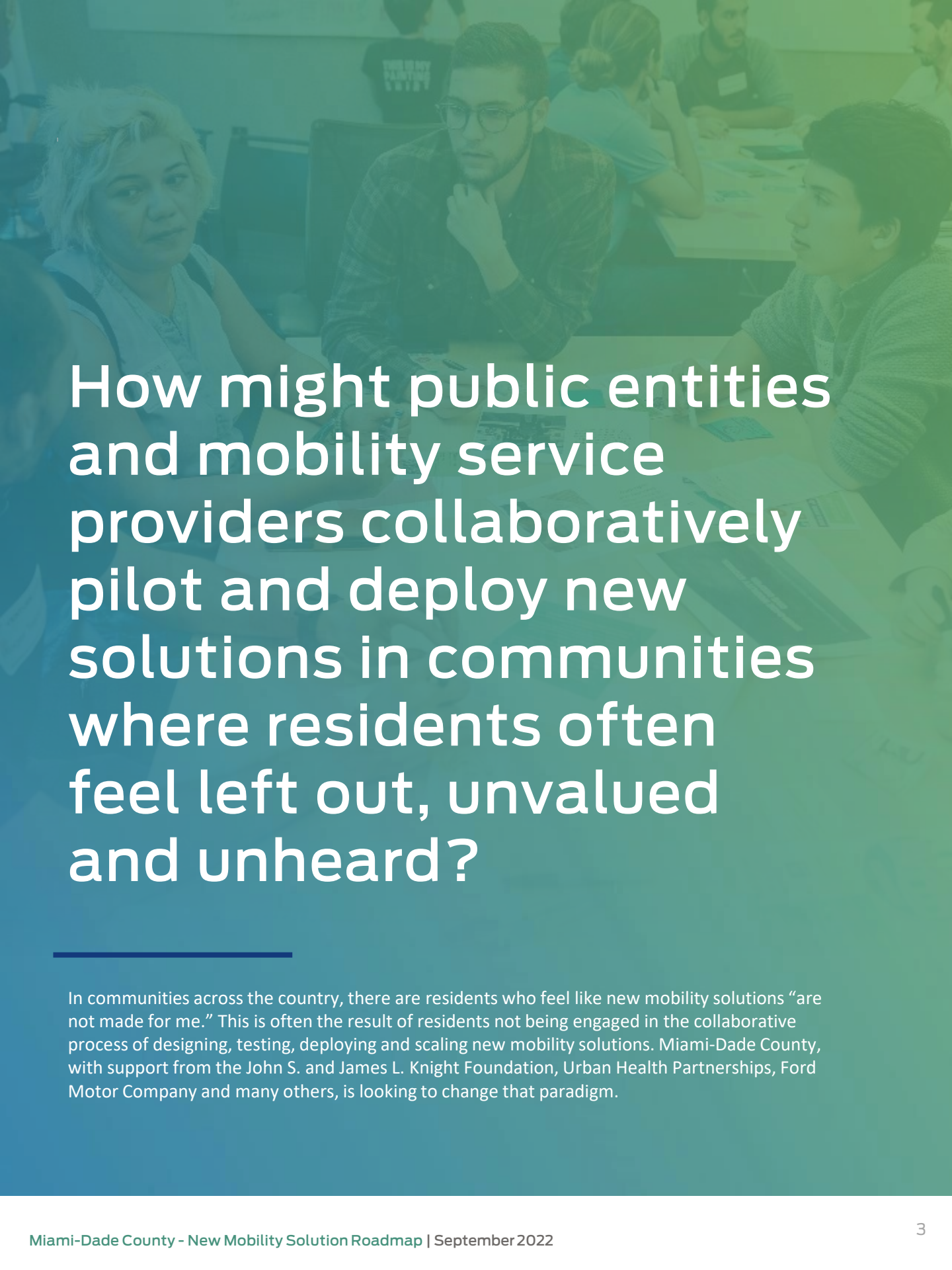
After reading this document, you should be able to:

- Design mobility pilot programs and deployment strategies that reflect the varying and unique perspectives of Miami-Dade County residents
- Accelerate community acceptance by engaging residents in meaningful dialogue and collaboration around the pros and cons of deploying new solutions in their neighborhoods
- Connect policy implications to the design and deployment of new mobility solutions
- Ask critical, operational questions of service providers

In this roadmap you will find,

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This Mobility Roadmap complements a Community Engagement Playbook, developed by Urban Health Partnerships, and is supported by the Resident Personas & Mobility Perspectives document, previously developed by Ford. All of these tools are the result of 18 months of collaboration between [Miami-Dade County Department of Transportation & Public Works \(“MDC”\)](#), [Ford Motor Company \(“Ford”\)](#), [Urban Health Partnerships \(“UHP”\)](#), the [John S. and James L. Knight Foundation](#) and other mobility experts as part of a larger effort to support sustainable, meaningful and equitable engagement with residents who would inform, advocate for, and welcome innovative mobility solutions (see page 20 for more resources).



How might public entities and mobility service providers collaboratively pilot and deploy new solutions in communities where residents often feel left out, unvalued and unheard?

In communities across the country, there are residents who feel like new mobility solutions “are not made for me.” This is often the result of residents not being engaged in the collaborative process of designing, testing, deploying and scaling new mobility solutions. Miami-Dade County, with support from the John S. and James L. Knight Foundation, Urban Health Partnerships, Ford Motor Company and many others, is looking to change that paradigm.

Project background

Building on an initial understanding of Miami-Dade County (MDC) residents and their mobility behaviors (see: “Mobility Personas & Resident Perspectives” document), the Ford team set out to build a “roadmap” for MDC and mobility service providers that would highlight various residents’ perspectives on new mobility solutions, deployment implications, and other considerations for successful community adoption.

To develop these perspectives and recommendations, the Ford team, in collaboration with MDC and UHP, surveyed 773 Miami-Dade County residents, engaged a network of UHP’ Community Liaisons and hosted multiple workshops to understand how to best work together in the future. This work took place from March 2021 – September 2022.

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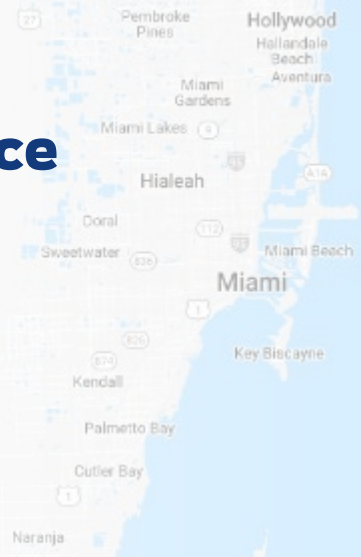
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Miami-Dade County: At-A-Glance

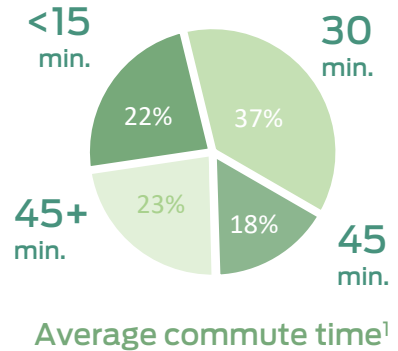
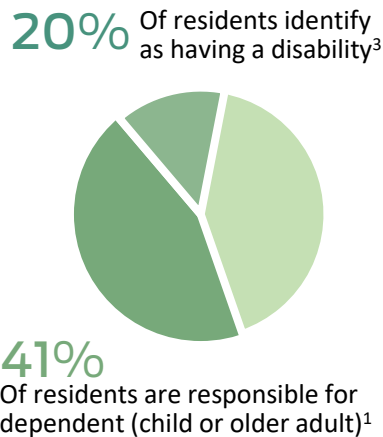
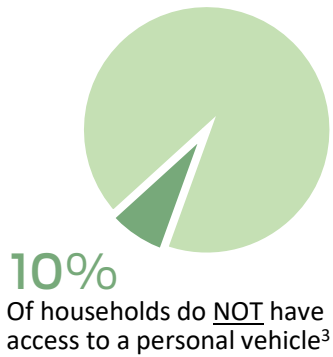
Home to over 2.7 million people, Miami-Dade County is a diverse, ever-changing mobility landscape where personal vehicles are dominant, but a robust transit system and new modes offer sustainable mobility alternatives.



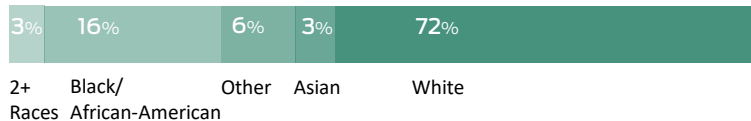
Top considerations for transportation mode choice¹:

- Convenience of pick-up/drop-off locations
- Affordability
- Schedule flexibility
- Efficiency and reliability
- Enables productivity and multi-tasking
- Feels physically safe

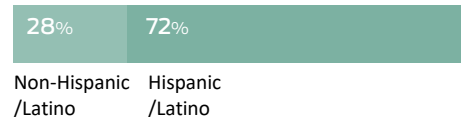
163,000
Transit Weekday Boardings⁴ in MDC



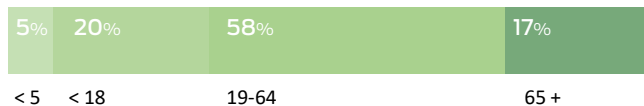
Race³



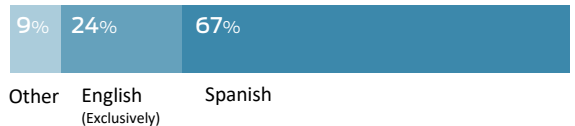
Ethnicity³



Age²



Language³



¹Information provided by a survey of 773 MDS Residents, distributed and analyzed by Ford throughout the course of this project.

²US Census Bureau

³Miami-Dade Matters

⁴Miami-Dade Transit (MDT) System

The Residents of Miami-Dade County

Opinionated and engaged, MDC residents want mobility solutions that fit their personal needs.

Nine mobility personas were previously developed as distilled representations of real people in MDC to see the scope and nature of peoples' habits, barriers, attitudes and perspectives. Notably, the personas were created from observations and research with real people – they were not invented from assumptions or preconceived notions.

View in-depth personas document [here](#).



PERSONA #8: Disconnected from Mobility
‘If I schedule [my paratransit ride] now, I’ll get there in an hour – that’s burdensome. My whole day could be gone, just because I had to go to a doctor’s appointment. [When scheduling and using paratransit] you can’t predict at what time you’re gonna be done with one thing to be able to schedule your second ride.’



PERSONA #1: Disconnected & Frustrated

“There are folks that are on the backside of the system – whether it’s immigration status, nervousness, or something else – they aren’t engaged by these [mobility] systems. So what mechanisms are implemented, what pamphlets are put out, and what services are available to educate and inform folks about the system?”





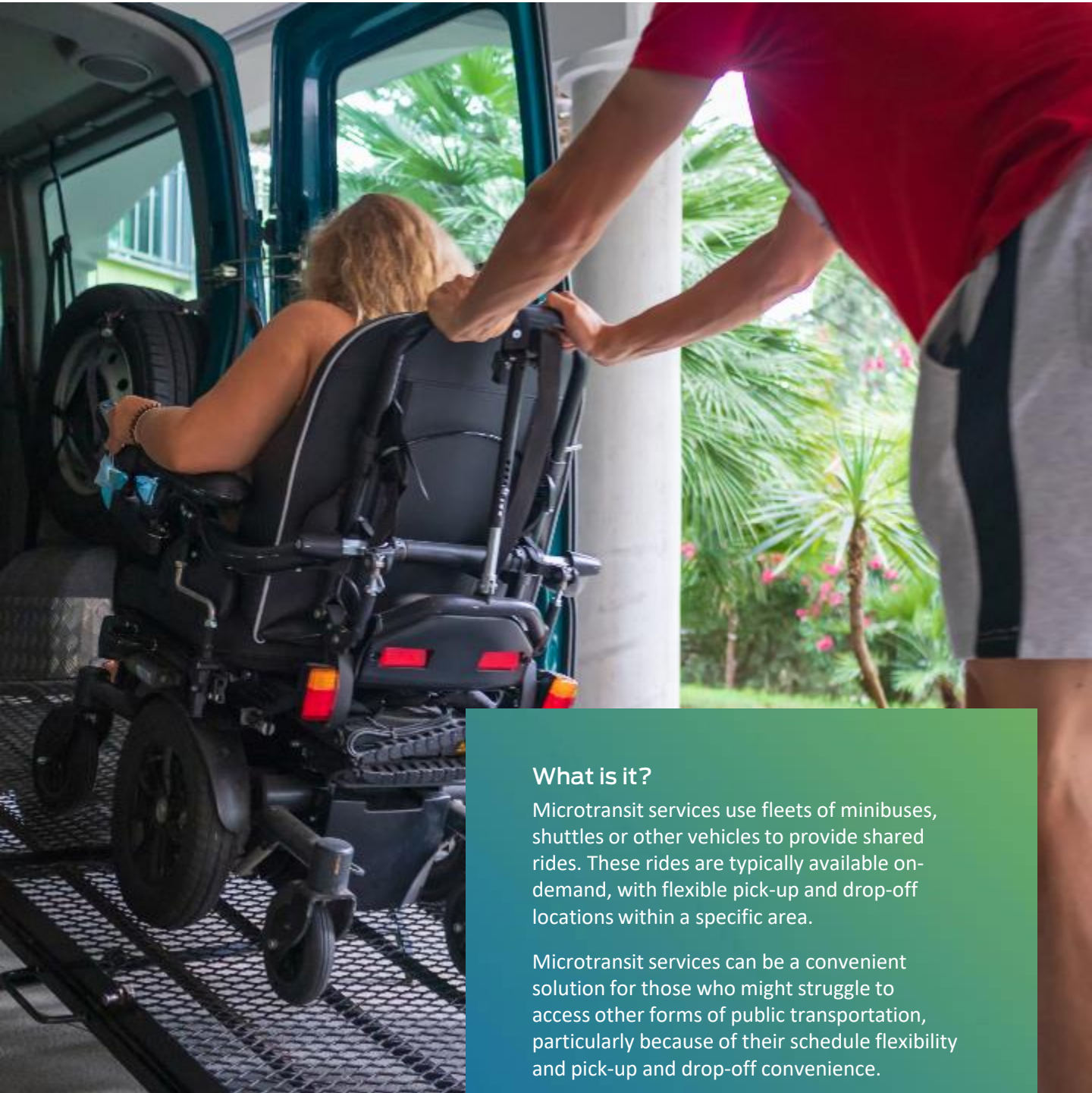
Why microtransit services and personal delivery devices?

Engaging residents in mobility pilots

Responding to the changing requirements of COVID-19, MDC Department of Transportation and Public Works, supported by the John S. and James L. Knight Foundation, deployed two mobility pilots for a collaborative project around microtransit service with GO Connect and personal delivery device service with Kiwibot. These pilots were chosen because they were identified as new mobility solutions around which MDC residents could be meaningfully engaged.

The following pages include detailed analyses of microtransit and personal delivery device solutions, the implications of piloting and deploying those solutions, and the accompanying perspectives of MDC residents around those solutions.

Microtransit Services



What is it?

Microtransit services use fleets of minibuses, shuttles or other vehicles to provide shared rides. These rides are typically available on-demand, with flexible pick-up and drop-off locations within a specific area.

Microtransit services can be a convenient solution for those who might struggle to access other forms of public transportation, particularly because of their schedule flexibility and pick-up and drop-off convenience.

Resident Perspectives

Excited & Curious

When asked about their initial reactions to using microtransit services to reach their destination, MDC residents highlighted their excitement about the prospect of having an on-demand transit service with more convenient pick-up/drop-off locations than typical mass transit buses. Residents were curious to learn more about the booking process, as that is a particularly important element of the experience, and assumed it could be easily done through an app or phone call.

Support for those with limited options

Many MDC residents saw microtransit services as a particularly important solution for older adults, particularly because of its reliability, convenience and affordability. Recognizing the difficulties associated with mass transit (e.g., fixed schedule, inconvenient pick-up/drop-off locations) and paratransit (e.g., long wait-times), residents considered microtransit services to be a useful option for aging populations with unpredictable schedules and multi-stop trips, especially if there was support for those who struggle with technology (e.g., low-tech booking options).

Residents questioning MDC's approach

When asked about new microtransit services offered by the County, some MDC residents questioned why grassroots, community-operated microtransit options (often referred to as “jitney” services by MDC residents) had been dismantled in recent years, only to have local governments suggest re-introducing microtransit into the community. There was also a concern that new microtransit services could be a signal of gentrification in neighborhoods that are seeing rapid change, like Overtown. Many residents also suggest that microtransit solutions should be designed for each community it serves, with a sensitivity to cultural nuances and customs. For example, hiring local drivers to serve their own communities would go a long way in addressing these concerns.

“If I had the opportunity to be driven in a van that picks me up within a block of where I am and takes me to my destination and I only had to pay \$3 a ride or \$10 for a weekly pass, my transportation issues would cease to exist!”

-- MDC Resident interview⁵

MDC residents surveyed¹ chose these three as their top responses to being...

...**confident** microtransit will:

- Safely get me to my destination
- Be an affordable option
- Comfortably take me to my destination

...**worried** microtransit will:

- Create traffic and make streets unsafe for pedestrians and cyclists
- Be difficult to use for some people
- Increase gentrification in my neighborhood

¹Information provided by a survey of 773 MDC Residents, distributed and analyzed by Ford throughout the course of this project.

⁵MDC Resident Interview conducted by Ford team in Fall 2021.

Implications on Policy

The largest policy implication for microtransit is related to passenger pick-up/drop-off locations, often referred to as a "PUDO." Because microtransit services typically do not pick-up or drop-off passengers at pre-designated locations, much like a mass transit bus might do, the policy implications and physical infrastructure supporting the PUDO experience can be vary. Fortunately, MDC's PUDO requirements⁶ are generally more flexible than other major cities in the United States, with a substantial list of exceptions to allow the picking-up and dropping-off passengers in public areas, including: in front of public and private driveways; within 15 feet of a fire hydrant; within 20 feet of a crosswalk; in a bicycle lane; and other no-standing zones⁶. It should be noted that many elements of County and city ordinances emphasize the "minimization of PUDO impact on the surrounding roadway network."⁷

Because microtransit services often leverage public subsidies for their riders, microtransit service providers are recommended to actively work with the County and local municipalities to further understand and navigate a changing policy landscape. To highlight the impact subsidy policy can have, in March 2021, MDC Commission voted to eliminate the requirement that on-demand trips using surtax proceeds to offset costs originate or end within a municipality or at certain transit and park-and-ride facilities; authorizing use of surtax funds for any trip within a certain distance regardless of the trip's origination or destination. This policy change fundamentally changes how providers design and deploy their geographical zone of operation.

"While gathering baseline data about the curb is an important first step, that information alone does not tell cities how the curb is actually used."

For instance, cities need to know if no-parking zones are routinely being used for passenger loading or unloading or if bus stops are being block by non-designated users. They need to know where double-parking occurs most frequently, contributing to congestion and possible safety conflicts. Some of this information can be gathered by manual counts and other forms of municipal observational data collection.

Getting a full picture of how the curb is used requires cooperation between public and private entities, however. For instance, transportation networks companies and courier service networks have important data about hotspots, occupancy, average dwell times, and other useful data points that help cities gain needed information."

Urbanism Next:
"New Mobility in the Right-of-Way"⁸

⁶MDC Code of Ordinances [Sec. 30-49](#)

⁷MDC Code of Ordinances [Section 33C-8](#)

⁸[Urbanism Next: New Mobility in the Right of Way](#)

Considerations for Deployment

Public Agencies:

Supportive infrastructure and policy are critical to the effective deployment of microtransit mobility solutions, particularly because the usage of these solutions do not typically conform to the standards of well-organized mass transit.

As described on pages 9-10, the PUDO experience requires safe, accessible, and equitably distributed infrastructure to be effective. Upgrading infrastructure to create safer pedestrian walkways and policy to support the flexibility to pick-up and drop-off passengers on-demand can have a major impact on the ability for microtransit solutions to pilot, deploy and scale their offerings. Other infrastructure elements to be considered include: incentivizing PUDO near mass transit hubs, where fast-charging electric vehicle stations could be installed and used by microtransit vehicles to further reduce emissions and increase routing efficiency.

Recognize the microtransit offerings that might exist today, formally or informally, especially within historically underserved communities.

For over 50 years, many residents in these neighborhoods have been using grassroots, community based shared mobility networks to get to and from work or school, and to run errands. By engaging with those existing informal networks and offering paths to reasonably align with policy standards, residents might be better served and more responsive to change.

“The drivers really need cultural sensitivity and language training”

MDC resident survey feedback¹

Microtransit Providers:

Consider the specific needs of residents and likely users, particularly those who have historically been underserved by existing mobility solutions (e.g., people with disabilities, aging populations, those with limited access to technology).

For these populations, it is recommended that the ability to “hail” or book a microtransit service require nothing more than access to a telephone – cell or landline – and the option to pay in cash, without a bank card/account. Although new technologies, such as electronic payment, can dramatically enhance the rider experience, many populations who are in most need of a dynamic routing, on-demand mobility services struggle to use smartphone technology. Upon deployment, microtransit service providers should provide information on how this service works, how to access service, how to book and ride to prevent confusion for users.

Hiring drivers and support staff directly from the communities in which the microtransit services are offered will likely positively impact residents’ behavior towards the service, especially if those hired can speak multiple languages.

Additionally, empower drivers to solve problems for their riders in real time, leveraging their local knowledge and cultural understanding. As drivers and support staff are those most frequently interfacing with riders, they have the opportunity to create culturally relevant experiences and develop relationships. For example, a local driver with the proper training could support a non-English speaking person with a disability who might need to change their destination mid-ride.

¹Information provided by a survey of 773 MDS Residents, distributed and analyzed by Ford throughout the course of this project.

Some important questions to consider as microtransit services are piloted and deployed across Miami-Dade County:

- What processes and procedures are in place to ensure passengers feel respected, heard and supported?
- What low-tech booking options are available for aging, un-banked or disabled passengers?
- What local infrastructure and policy barriers will make it difficult for microtransit vehicles and passengers to easily access all pick-up and drop-off locations?
- Can new services leverage the social networks and community goodwill of grassroots, community based microtransit services?

What other questions would you ask? Let us know at cityone@ford.com.

Personal Delivery Devices (PDDs)

What is it?

Personal Delivery Devices (PDDs) are often small, box-like robots on wheels that deliver food and other small packages on-demand directly to consumer's door. The robots can navigate with the support of remote drivers or with autonomous technology using sensors and lidar⁹ to navigate a trip. With the ability to navigate on sidewalks, in roads, or through busy intersections, PDDs are increasingly common in communities and neighborhoods where access to personal vehicles is low but frequency of small purchases is high such as college campuses or dense urban areas.



⁹ ["Kiwibot utilizes sensors, object detection and lidar to navigate... part of the time"](#)

Resident Perspectives

Drawing Attention

As with many new mobility solutions, there is a wide spectrum of resident perspectives related to PDDs being deployed in MDC neighborhoods. Although excitement and curiosity generally outweigh skepticism for PDDs, it’s important to note they will likely generate a “buzz” in the community, no matter how, when or where they are deployed. Their very nature, as an entirely new mode of moving goods, will mean there will likely be very few residents who do not have an opinion – good or bad - about PDDs on sidewalks in their neighborhood.

Conveniently Supporting Those at Home

Of the MDC residents surveyed, many view PDDs as a particularly useful solution for those who might struggle to leave their homes or might otherwise not have the time or ability, to run errands, especially those who might frequently need basic necessities. For these residents, the safe, accessible and equitable deployment of PDDs means more time with family, simplified home-care logistics, and reliable access to food and basic goods. Within this context, residents did stress the importance of PDDs’ ability to navigate their way directly to the resident’s door and not be impeded by stairs or other infrastructure barriers, as the limited mobility of the resident might make it difficult to meet the PDD at the sidewalk. Additionally, residents stress how it’s critical for PDDs to support those with limited access to internet or banking resources (e.g., credit card) at home.



I would trust a PDD to successfully delivery food or groceries to my doorstep...

50% - Absolutely Yes

30% - Maybe Yes

MDC resident survey feedback¹

MDC residents surveyed¹ chose these as their top responses to

...benefits of PDDs in my neighborhood:

- Easier to receive basic goods & services
- Support those who might struggle to leave their homes (e.g., aging; busy parents; people with disabilities)
- Save time and reduce number of trips for simple errands

...concerns of PDDs in my neighborhood:

- Make sidewalks and streets unsafe for pedestrians and cyclists
- Be mistreated and destroyed by my neighbors
- Add to sidewalk and street congestion
- Take jobs away from people in my neighborhood
- Increase gentrification in my neighborhood

¹Information provided by a survey of 773 MDS Residents, distributed and analyzed by Ford throughout the course of this project.

Data Privacy Concerns

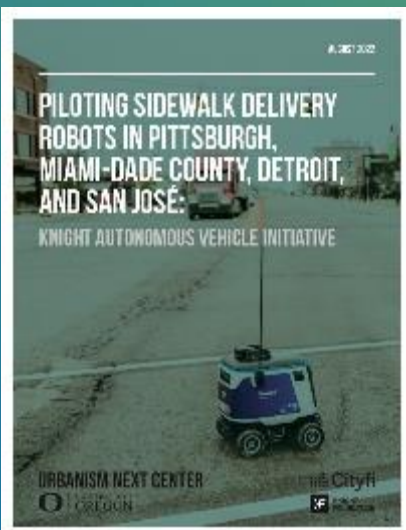
An area of resident skepticism related to PDD deployment is related to data privacy, specifically whether the PDDs are collecting personally identifiable information (PII) such as images of residents' homes, cars and faces. While PDD service providers can explain how autonomous technologies are used to help the vehicle navigate areas and not collect PII, there is a deep distrust of this technology collecting sensitive information and using it against residents in a negative way.

“Taking” Local Jobs

Although not a prevailing theme, some residents remarked upon the idea that PDDs would reduce job opportunities for local delivery drivers, many of whom are perceived to be vulnerable, such as new immigrants. Some residents were protective of these job seekers and were frustrated to see a “human-less” solution being tested and deployed, highlighting how many people struggle to find work and would happily deliver meals and small packages, if only given the chance.

“The only negative thing I can think of [PDDs] is that they will put some people out of work, which I don't like. All those delivery drivers won't have jobs. So, I think that's... definitely a negative side to this.”

MDC resident interview⁵



To learn more about other PDD deployments supported by the John S. and James L. Knight Foundation, please read “Piloting Sidewalk Delivery Robots in Pittsburgh, Miami-Dade County, Detroit and San Jose,” developed by Urbanism Next and Cityfi.¹⁰

“Events and demonstrations were the best ways to engage community members and onboard them into a new experience. Cohort staff felt that the most valuable engagement came from events and demonstrations where community members were able to directly interact with the technology. These opportunities gave residents the ability to experience the technology on their own terms.”

⁵MDC Resident Interview conducted by Ford team in Fall 2021

¹⁰[Piloting Sidewalk Delivery Robots in Pittsburgh, Miami-Dade County, Detroit and San Jose](#)

Implications on Policy

The biggest policy concern for PDDs is related to the use of public rights-of-way, specifically sidewalks. The most relevant policy update related to this right-of-way took place in June 2017, when Florida's governor signed House Bill 1027¹¹ into law, allowing "personal delivery devices" to drive on sidewalks and use crosswalks to deliver small packages. The Bill further stipulated that PDDs must be electric, not exceed the maximum weight established by Department of Transportation rule and have a maximum speed of 10 miles per hour. The Bill also noted the importance of PDDs being equipped with remote control and monitoring technology to ensure pedestrian safety.

As more PDDs are deployed across MDC, it would not be surprising to see additional policy related to data privacy and transparency, in addition to the destruction or abuse of PDDs by those who do not want to see PDDs deployed in their neighborhood.

"Depending on the community you're in, not every street or block has a sidewalk. A lot of them are retrofitting to put in the little bumps if you're blind and need to know that the street is ending or starting. They're not consistent. Also, municipalities put garbage cans in the middle of the sidewalks. Therefore, you can't get around them to continue on your path so you have to go into the street or where the bus stops are put are not accessible."

MDC resident interview⁵

⁵MDC Resident Interview conducted by Ford team in Fall 2021

¹¹[House Bill 1027](#)

Considerations for Deployment

Business Community:

The more connected PDDs can be to the local business community, particularly locally-owned shops and restaurants, the more likely they are to be well received and utilized by residents.

If the locally-owned business community can integrate PDDs into their customer delivery experience – highlighting how PDDs can be beneficial to local, small businesses by increasing access to their goods and services – it’s likely residents will then welcome PDDs as an asset, and not an unwelcome signal of gentrification.

Public Agencies:

Further encouragement and incentivization for PDDs to support “health and wellness” use cases would likely accelerate community buy-in and acceptance of PDDs.

If residents know that PDDs are being deployed in their neighborhood to increase access to critical goods such as prescriptions, foods and necessities to residents who need it most (e.g., aging populations and people with disabilities), they might be more inclined to treat the PDDs with respect.

As demonstrated in studies across the country, investment in sidewalks is investment in community.

MDC Department of Transportation and Public Works continues to re-affirm its commitment to improving sidewalk infrastructure¹², as they recognize its importance for community development, ADA accessibility, and new mobility solutions (i.e., PDDs).

Existing programs and policies that allow for, or encourage, the blocking of sidewalks with garbage or other obstacles will significantly hinder PDDs’ ability to deploy and consistently deliver goods.

Notably, reducing the amount of sidewalk obstruction will not only support PDDs, but will also positively impact people with disabilities, aging populations, caregivers with children, and others.

MDC Sidewalk stats from 2010 (most recent inventory¹²):

572 mi²
of urbanized area

1,502 mi of sidewalks

4% of sidewalks
requiring repair

18% of sidewalks
requiring curb-cuts

69% of sidewalks
requiring detectable
warning surfaces

\$33 million spent
by MDC on sidewalk
infrastructure since
the inventory in 2010

¹² [MDC Sidewalk Transition Plan](#)

PDD Providers:

Understanding that PDD deployment will draw attention – both positive and negative – from residents, PDD providers would likely benefit from robust, grassroots community engagement activities to help familiarize residents to PDDs.

A particular focus on mitigating fears around data collection would be important to integrate into those community discussions, as would providing opportunities for people of all ages, backgrounds, and abilities to personally interact with a PDD to receive a delivery. As previous PDD providers have discovered in MDC, in many cases, when a skeptical resident personally engages with a PDD, their perception of the PDD’s usefulness and imposition to their neighborhood often changes for the better.

“Off the top of my head, I can't think of who would be excluded from experiencing this, except maybe someone without a smartphone.”

MDC resident interview⁵

PDD providers should consider the specific needs of residents and likely users, particularly those who have historically been underserved by existing mobility solutions (e.g., people with disabilities, aging populations, those with limited technology access).

For these populations, it is recommended that the ability to use or book a PDD requires little-to-no smartphone or computer usage to increase ease-of-access. Even though consistent access to smartphone technology in MDC is 60-83%¹, it can be assumed that complex, digital booking processes will likely limit access for aging and disabled populations. Additionally, finding opportunities to include those residents without access to traditional banking system assets (e.g., a credit or debit card), would benefit a significant portion of the MDC community: 15% of whom are unbanked and 20% are underbanked¹³.

As PDDs are deployed across MDC, providers should also remember PDDs are unlikely to receive right-of-way courtesies from automobiles.

As MDC is known to be particularly car-centric, PDDs are likely to receive little respect from drivers when crossing busy intersections. Furthermore, as MDC aggressively works towards its Vision Zero goals, a 2021 report highlights “People disproportionately impacted by fatal crashes are: people walking, biking, using micromobility; people accessing transit; and low-income households, people with disabilities, non-English speaking people, people of color, women, older adults and youth.”¹⁴

¹Information provided by a survey of 773 MDS Residents, distributed and analyzed by Ford throughout the course of this project.

⁵MDC Resident Interview conducted by Ford team in Fall 2021

¹³[Bank of Miami](#)

¹⁴[Vision Zero Framework Plan](#)

Some important questions to consider as Personal Delivery Devices are piloted and deployed across Miami-Dade County:

- How will PDD service providers demonstrate they're not "taking" local jobs and accelerating gentrification?
- What policies can public agencies put in place to limit the negative effects of gentrification as a potential result of PDD deployments in parts of Miami-Dade County?
- How will PDD service providers work with residents in the training for new and different jobs supporting deployment of PDDs?
- What locally-owned business collaborations will demonstrate an intention to contribute to local culture?
- What "health and wellness" use cases will PDDs support?
- Does the local sidewalk infrastructure and driving conditions provide access to the intended users?
- How will PDD service providers demonstrate they're not collecting sensitive, personal information with the PDD sensors?

What other questions would you ask? Let us know at cityone@ford.com.

What's Next: Continued Community Engagement

As MDC and other public agencies, along with mobility providers and community stakeholders, consider how to deploy new mobility solutions, we recommend considering the ways in which residents can be deeply integrated into the design, piloting, deploying and scaling of solutions.

In particular, we encourage agencies, providers and stakeholders to consider breaking the “research – planning – research – planning” cycle often experienced by underserved communities. To that end, we recommend residents be considered beyond “initial community research” efforts and be engaged for their lived-experience expertise in the later stages of solution development.

Resource Links

- [“Community Engagement Playbook”](#)
- Urban Health Partnerships
- [“Miami-Dade County: Resident Personas & Mobility Perspectives”](#)
- Ford Motor Company
- [“Piloting Sidewalk Delivery Robots in Pittsburgh, Miami-Dade County, Detroit and San Jose”](#)
- Urbanism Next and Cityfi

Excerpt from Community Engagement Playbook:

“As communities plan for a more resilient and equitable future, investing in meaningful community engagement is critical. This goes beyond “checklist” requirements for public involvement to embracing models that shift power back to the community and prioritize their right to inform and drive the decisions that impact them. This government and institutional investment serves to connect and build trust with communities, especially those that have been historically excluded from public processes and projects and may have experienced harm as a result of them.

Ultimately, uplifting and prioritizing community voice allows for the collective actions that can create healthier, more vibrant communities for all.”



Ford

