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# The Future of Mobility Series

February 2019



## The Future of Mobility Series

Sarah Kaufman  
New York University

**C2SMART Center** is a USDOT Tier 1 University Transportation Center taking on some of today's most pressing urban mobility challenges. Using cities as living laboratories, the center examines transportation problems and field tests novel solutions that draw on unprecedented recent advances in communication and smart technologies. Its research activities are focused on three key areas: Urban Mobility and Connected Citizens; Urban Analytics for Smart Cities; and Resilient, Secure and Smart Transportation Infrastructure.

Some of the key areas C2SMART is focusing on include:

### **Disruptive Technologies**

We are developing innovative solutions that focus on emerging disruptive technologies and their impacts on transportation systems. Our aim is to accelerate technology transfer from the research phase to the real world.

### **Unconventional Big Data Applications**

C2SMART is working to make it possible to safely share data from field tests and non-traditional sensing technologies so that decision-makers can address a wide range of urban mobility problems with the best information available to them.

### **Impactful Engagement**

The center aims to overcome institutional barriers to innovation and hear and meet the needs of city and state stakeholders, including government agencies, policy makers, the private sector, non-profit organizations, and entrepreneurs.

### **Forward-thinking Training and Development**

As an academic institution, we are dedicated to training the workforce of tomorrow to deal with new mobility problems in ways that are not covered in existing transportation curricula.

Led by the New York University Tandon School of Engineering, C2SMART is a consortium of five leading research universities, including Rutgers University, University of Washington, the University of Texas at El Paso, and The City College of New York.

[c2smart.engineering.nyu.edu](http://c2smart.engineering.nyu.edu)

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## Executive Summary

The Future of Mobility series highlighted emerging technologies in urban mobility and priorities for transportation industry change. The transportation landscape is rapidly changing as technology companies introduce new services to address existing transportation issues and innovate new mobility options. With its unique geography, high population density and established tech hub, New York City is the ultimate laboratory for emerging mobility technologies. But much of New York's long-established transportation infrastructure, like the subway system, was not designed for 21<sup>st</sup>-century uses. The purpose of the Future of Mobility Series is to investigate where the transportation system is lacking in providing adequate service for some segments of the population. At the same time, there are considerable opportunities for technology to impact existing systems; this event series sought to uncover the future and how it might affect sidelined voices.

During the three 2018 workshops, industry professionals across public and private sectors convened to learn about and discuss transportation's future.

These three workshops were:

1. Autonomous, Shared and Electric Revolutions in New York City
2. Women's Challenges in Transportation
3. Transportation Startup Showcase

The series was well received by attendees and garnered positive press coverage. The two greatest impacts included the expansion of a professional network between transportation startups, students and professionals working to solve mobility issues, and well-covered research and advocacy about women-specific challenges on New York City transportation. The Rudin Center will continue to study equity and technology in transportation as promoted in the Future of Mobility series through future efforts.

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## The Three Mobility Revolutions Panel

### Event Summary

On May 23<sup>rd</sup>, 2018, an esteemed panel discussed the three forthcoming revolutionary changes in mobility: automated, shared and sustainable transport. These three changes are increasingly intersecting as mobility companies like Uber and Lyft explore automated technologies, and micro mobility options, like bike and scooter share, expand. For the three revolutions to reach full potential, policy leaders must coordinate with private companies and transit agencies. During the event, local transportation industry and policy leaders spoke about New York City's role in the advancement of the three revolutions and the city's unique qualities that make it distinct in these revolutions' applications.

Sarah M. Kaufman, Assistant Director of the Rudin Center for Transportation, moderated the panel.

Panelists were:

- Henry Greenidge, Government Affairs Professional and Attorney, Cruise Automation
- Mariane Jang, Associate Director - Mobility and Urban Development Sector, 100 Resilient Cities
- Ann McGrane, Policy Analyst, Office of the Deputy Commissioner for Policy, NYC Department of Transportation
- Sami Naim, Senior Public Policy Manager, Lyft



**Figure 1: Three Mobility Revolutions panel**

### Impact

The Three Mobility Revolutions panel promoted collaboration by providing an opportunity for transportation leaders in the public and private sector to connect. The discussion opened a dialogue between the shared and competing interests of shared, autonomous and electric transportation. Public sector and student attendees were made aware of ongoing innovations and were able to ask questions of the private sector. Speakers and attendees from the private sector were made aware of

environmental and accessibility questions about their developments. The event was overall a successful exploration of shared and competing interests, offering a holistic view of the topic.

## Startup Showcase

### Event Summary

The NYU Rudin Center for Transportation hosted the first-ever Transportation Startup Showcase on Wednesday, October 25th, 2018, in celebration of innovation in the New York mobility sector. The event was held in conjunction with C2SMART Center's Symposium on Connected and Autonomous Vehicles.

After opening remarks from Julie Samuels, the Executive Director of Tech:NYC, ten mobility startups pitched their ventures to an esteemed panel of industry leaders and an audience of transportation professionals. Pitches ranged from an incentive program to encourage walking, to an electric moped share, and a streamlined way to collect data pertaining to street curbs. The startups were:

- Jaywalk
- CLIP
- Revel
- CitySwifter
- ClearRoad
- CARMERA
- FairFare
- DART Technologies
- Coord
- Safer-Together

The panelists responded to pitches with inquiries about business plans, data privacy and viability in the New York City transportation landscape. The panelists were:

- Emily Gallo, Chief of Staff at NYC Department of Transportation
- Ben Greene, a Manager of Strategic Initiatives at MTA New York City Transit
- Rachel Haot, the Executive Director of Transit Innovation Partnership
- Adrienne Schmoeker, the Director of Civic Engagement & Strategy for the Mayor's Office of Data Analytics
- Andrew Shapiro, the Founder and Partner of Broadscale group

Following the event, the presenters, panelists, and attendees enjoyed a networking reception to foster connections between startups and established transportation organizations.



The Mobility Startup Showcase provided the opportunity for emerging startups to connect with each other and industry leaders through formal pitches and informal networking. Several of the companies connected with New York City Transit’s new TransitLab, which develops technologies for pilots in the subway and bus system. In addition, feedback to these startups from public sector attendees and accomplished panelists offered opportunities for the companies to hone their technologies for more public-serving features. As a result, the startups modulated their efforts for more practical purposes, and public-sector attendees gained insight into technology developments.



**Figure 2: Respondent Introductions, Emily Gallo**



**Figure 3: Mobility startup participants**

## The Pink Tax on Transportation: Women's Challenges in Mobility

### The Pink Tax Survey

To learn more about women's experiences while traveling within New York City, the NYU Rudin Center for Transportation deployed a survey. The survey was shared online via SurveyMonkey for approximately six weeks during September and early October of 2018. The survey's 33 questions asked users about travel habits, safety while using modes of transportation, costs of travel, caretaker trips, and demographic information. The survey did not request any personally identifiable information.

We received 547 responses to the survey. The survey was distributed online, via social media channels and to community groups for distribution to their members. Because the survey was online-only and English-only, a majority of responses came from white, highly-educated New Yorkers. However, the gender and geographic distributions were representative of the broader New York population.

Further research should seek to conduct a more robust survey to include a large representative sample of the general population of New York City. This should involve a greater number of distribution channels – including survey distribution through community boards and both web and paper-based surveys in multiple languages – in order to achieve this sample.

This research was designed to explore a large topic and serves as a starting point for additional work in this area. Survey results show a large number of cases of harassment and that a significant majority of individuals do not report incidents of harassment or theft to authorities. Additional research is necessary to identify the causes of this lack of reporting in order to suggest potential solutions.

### Event Summary

The NYU Rudin Center hosted “The Pink Tax on Transportation: Women's Challenges in Mobility” event on October 30th. Sarah Kaufman, Associate Director of the NYU Rudin Center, presented results from the Rudin Center mobility survey. The results showed that women pay more to ensure their safety on transportation and to fulfill trips in which they are caretakers for others.

The event continued with a panel of professionals working toward safety and accessibility on transportation. The panel discussed the importance of diversity in leadership, sensitivity of first responders, and innovations in mobility. Helen Rosenthal, New York City Councilwoman and Chair of the City Council Committee on Women moderated. The panelists were:

- Sally Librera, Senior Vice President, Subways, MTA New York City Transit
- Brittany Kendrick, Co-Founder, Safer-Together
- Christine Serdjenian Yearwood, Founder and CEO, UP-STAND
- Karla Gonzalez Carvajal, Leading Manager for Gender in Transport, World Bank

In November 2018, the Rudin Center released the Pink Tax on Transportation report (Kaufman et al., 2018). The report included survey results, recommendations for industry change and opportunities for further study. Figure 5 displays the report's poster summary.

## Impact

The Pink Tax work started a large-scale conversation about women's equity and accessibility of transportation. New York City policymakers are looking into new safety solutions, while leaders from other U.S. cities (San Francisco and Washington, D.C.) are considering their local Pink Tax issues. The World Bank plans to study the Pink Tax in several cities in developing nations, using the Rudin Center survey as a foundational document.

At least 13 media outlets covered the Pink Tax work. Sarah Kaufman presented the Pink Tax findings at two fall 2018 conferences: LA CoMotion in Los Angeles, CA, and Social Just and Equity in the Engineering of Smart and Connected Cities Workshop, University of Washington. She also presented the results at The World Bank in the Spring of 2019.

This research highlighted several topics for possible future study:

- Public transit safety improvements
  - Security cameras in train cars and buses
  - On-board safety procedures, including texting the bus control center with a specific code (currently in Mexico City)
- For-hire vehicle safety improvements
  - Subsidized work-related e-hail rides late at night, currently provided by Lyft in Michigan and Medford, NJ
  - Well-lit for-hire vehicle pickup points, provided by Uber in some locations
- Startup ecosystem
  - Building out startup services for safety assurance, including Safer-Together and e-Bodyguard, and developing collaboration between these organizations and public transportation providers
- Educational opportunities

- Training law enforcement and allies to improve response
- Developing family-friendly policies for public transportation, including clear messaging on priority seating



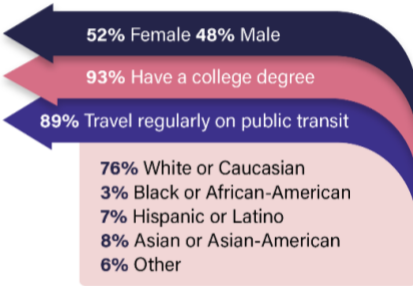
**Figure 4: The Pink Tax on Transportation panelists**

# The Pink Tax on Transportation

## NYU Rudin Center Survey Summary:

The NYU Rudin Center for Transportation sought to determine whether transportation has a "Pink Tax," a term used to describe the extra amount women are charged (typically 7%) for products and services, like deoderant and dry cleaning. To learn more about women's experiences while traveling in New York City, the NYU Rudin Center deployed an online survey. The survey's 33 questions asked users about travel habits, safety on transportation, costs of travel and caretaker trips. This infographic showcases some highlights of the results. For the detailed survey and plans for continued work, visit [www.NYURudinCenter.com](http://www.NYURudinCenter.com).

## Who Responded? 547 people



**75%** of female responses indicated experiencing harassment or theft on public transit compared to **47%** of male responses

**88%** of those who experienced harassment did not report the incident to authorities

## How often?

"Not sure - it's taken place over the course of my life"  
 "Countless"

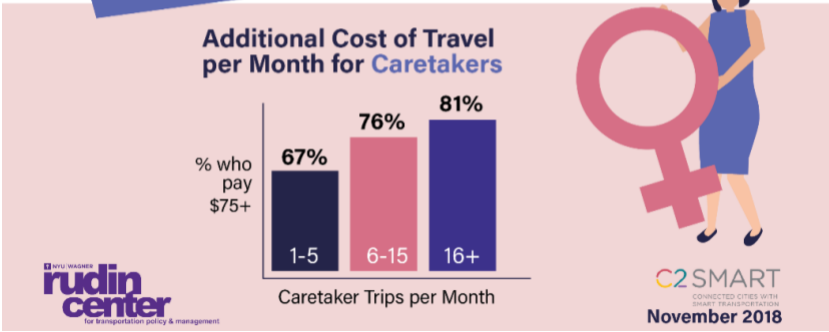


Figure 5: The Pink Tax on Transportation Poster

## Major Takeaways

The Future of Mobility Series showed the importance of considering underserved populations in New York City transportation, and how they might be impacted by innovations in this space. The travel experience must be improved for women, who are often subject to greater safety risks and feel less secure on public transportation than men. This can be accomplished through design, policy and educational improvements.

The startup showcase and Three Revolutions events focused on technological developments in transportation, increasing autonomy, electrification and sharing. Developments in this area aim to improve the environmental impacts, intelligence and economic efficiency of transportation. By merging the interests of underserved populations with technological advancements, we can better steer transportation to a more effective, inclusive future.

## References

Report Citation: Kaufman, Sarah M.; Polack, Christopher F.; and Campbell, Gloria A. “The Pink Tax on Transportation: Women’s Challenges in Mobility,” November 2018.

[https://wagner.nyu.edu/files/faculty/publications/Pink%20Tax%20Report%2011\\_13\\_18.pdf](https://wagner.nyu.edu/files/faculty/publications/Pink%20Tax%20Report%2011_13_18.pdf)