Future Local:
Ridesharing Product Design, Gamification, & the Psychogeography of NYC's Gig Workers/Creative Population

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Research Methods for Simulations & Games for Learning
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Introduction

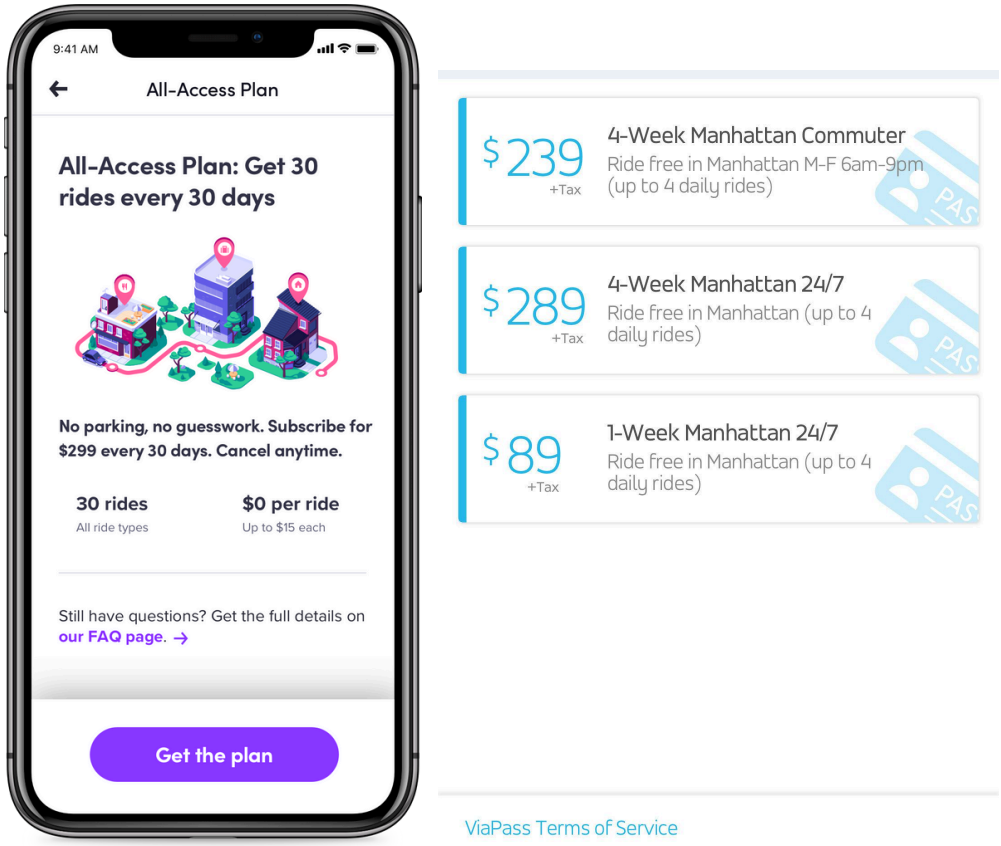
Future Local is a concept for a digital-media-based, gamified experience that integrates with existing ridesharing apps, such as Via, Juno, and Lyft. The aim of the product is to create connections between areas of New York City where public transportation-based mobility system does not meet its residents' needs. The larger social mission of Future Local is to help cultural venues, experimental learning spaces, and independently-owned businesses in the boroughs of New York increase foot traffic by reaching customers outside their immediate physical neighborhoods. In designing this product we are considering the optimal traffic patterns and price-points that can create better experiences both for the riders, as well as the drivers. Lastly, we want to test design, and social features such as membership models and gamification, that can spark new user behaviors which can be measured for their impact on generating revenue for local tourism. Our research and design process studies incentives and game-based point systems that help mission-driven individuals to make meaningful collaborations and connections across the entire city. The project is in the early stages of research and prototyping and this design-based research study is intended to provide insights on how to develop interventions such as a game, digital product, or marketing strategy that can address the issue of interborough commuting challenges and their relationship to gentrification.

Competitor Analysis

transportation solutions specific to NYC

	Future Local	Dollaride	NYC MTA	Car2Go/ Citibike
Convenience	Yes	No	Maybe	Yes
Distance/Span of coverage	Yes	Maybe	Yes	No
Affordability	Maybe	Yes	Yes	No

The concept stems from interviewing over fifty for-hire-vehicle drivers and their familiarity with Via, the NYC-based ridesharing app which focuses on optimizing carpools in New York City by using algorithms that measure traffic patterns in the boroughs to Manhattan. These informal interviews provided insights on what incentivizes or inhibits drivers from providing service between the boroughs of New York (specifically between Harlem and Greenpoint/Bushwick, and Park Slope/Sunset Park which costs between $25 and $50 per trip depending on the time of day and the ridesharing service). In 2016, Via introduced flat-rate pricing models to ride-sharing in NYC with $5 rides anywhere throughout Manhattan (below 125th street). The flat rate model did not generate revenue when Via expanded its service to Brooklyn in 2017. The company experimented with various promotions, including $9 flat rate rides from Manhattan to Long Island City and Williamsburg, and $3 flat rate rides within Brooklyn neighborhoods such as Greenpoint and Park Slope. These promotions did not significantly impact ridership, and although Via still offers generally lower fares than Uber and Lyft, flat rate rides are no longer available. Instead Via offers weekly and monthly membership passes that range between $89 and $289, and that offer up to 4 rides/day for about $10/day, only in Manhattan.



Source:
1.https://www.usatoday.com/story/tech/talkingtech/2018/10/16/lyfts-new-299-subscription-plan-offers-30-rides-but-you-might-pay-more/1603468002/
2. Actual screenshot from Via app taken on May 17, 2019

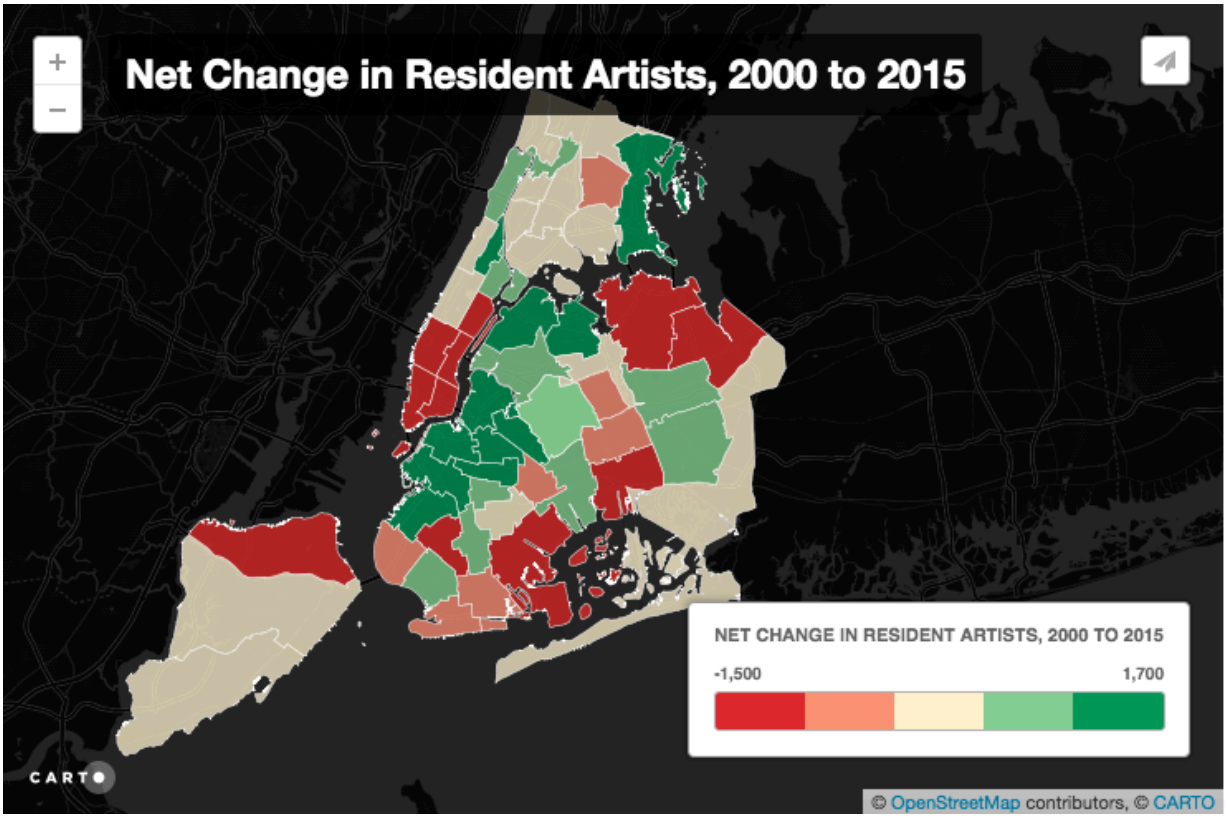
Uber and Lyft also offer membership passes to subsidize and standardize fares for their users. The Lyft Pass offers 30 rides per month for $299, but requires users to pay extra for any ride that costs more than $15. Therefore, it probably would not serve the needs of commuters traveling across boroughs of New York.

In the past year, Lyft piloted a Grocery Access Program which provides people living in food deserts with a $2.50 flat fare to get to a grocery store. Another innovative start-up that has provided insights into innovation in the ridesharing space is STEEREO, which creates additional revenue for rideshare drivers in exchange for playing music from their music discovery platform in order to enhance the experience of sharing a ride.

We must investigate who is currently being underserved by the existing multi-modal mobility system and further understand their needs. For the purpose of this study, we referring to the map below, which highlights the fastest growing neighborhoods for artists. We chose to study creative populations because their traditionally don't participate in 9 to 5 culture which is centered around Manhattan. They also often require access to studios which are becoming less

affordable in Manhattan, causing the creative population to be fragmented around the boroughs. For the purpose of this study, creative populations include:

Gig Workers/ Creative Population/Native New Yorkers	**Ten Neighborhoods with the Largest Increase in Artists, 2000 to 2015**
○ Real-estate agents ○ Students ○ Cleaners, childcare providers ○ Part-time workers/freelancers ○ Service, hospitality, retail workers ○ Artists, musicians, performers ○ Fitness/Health & Wellness Instructors ○ NYC Taxpayers ○ NYC Natives ○ NYC permanent residents ○ NYC registered voters	1. Bushwick (+1,674 / 1116%) 2. Williamsburg / Greenpoint (+1,248 / 75%) 3. Brooklyn Heights / Fort Greene (+899 / 58%) 4. Bedford Stuyvesant (+773 / 268%) 5. North Crown Heights / Prospect Heights (+680 / 114%) 6. Central Harlem (+653 / 216%) 7. Astoria (+552 / 40%) 8. Sunset Park (+550 / 124%) 9. Throgs Neck / Co-op City (+472 / 286%) 10. Park Slope / Carroll Gardens (+433 / 20%) Source: https://ny.curbed.com/2017/7/13/15964650/where-do-new-york-citys-artists-live



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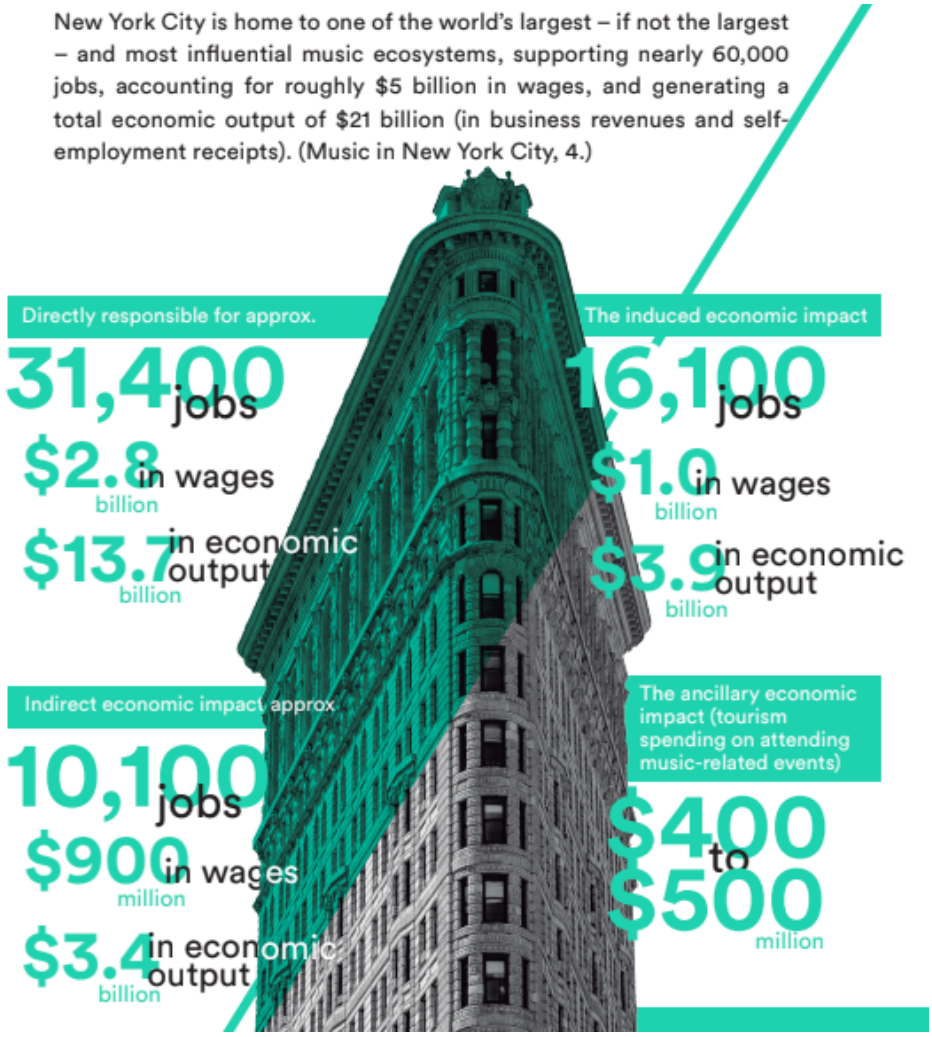
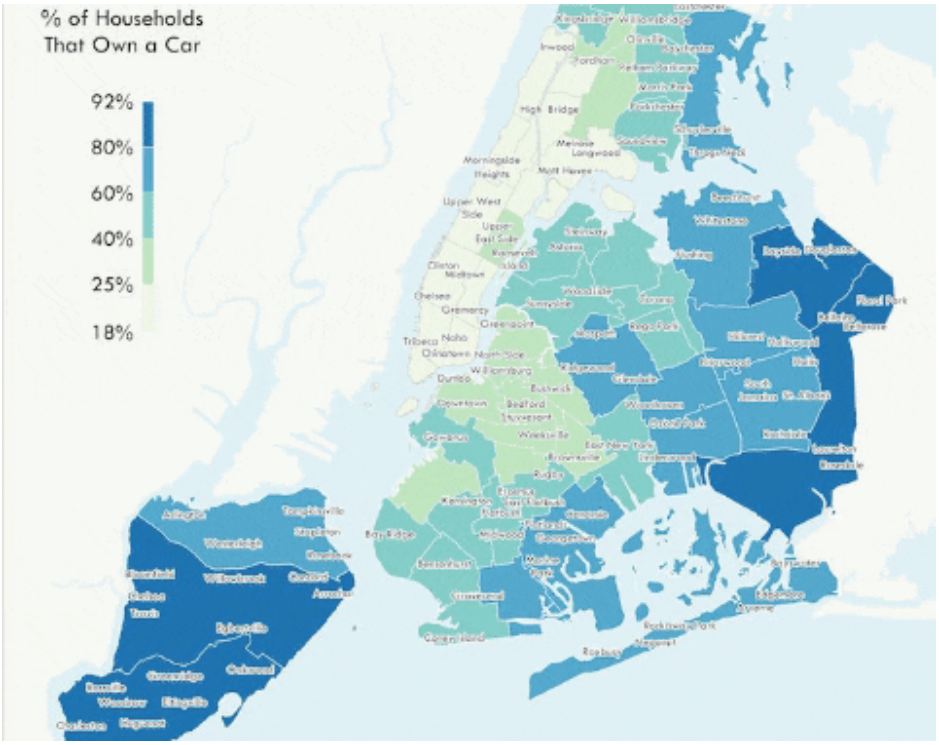

New York City is home to one of the world's largest – if not the largest – and most influential music ecosystems, supporting nearly 60,000 jobs, accounting for roughly $5 billion in wages, and generating a total economic output of $21 billion (in business revenues and self-employment receipts). (Music in New York City, 4.)
Directly responsible for approx.
31,400 jobs
$2.8 billion in wages
$13.7 billion in economic output
The induced economic impact
16,100 jobs
$1.0 billion in wages
$3.9 billion in economic output
Indirect economic impact approx
10,100 jobs
$900 million in wages
$3.4 billion in economic output
The ancillary economic impact (tourism spending on attending music-related events)
$400 to $500 million



This study is designed to explore another hypothesis around creating tools that facilitate ridesharing behavior, and that could lead to more effective and targeting marketing strategies. Because we do not have an Minimum Viable Product or working prototype to test, we are creating simulations that can capture basic insights about the user experience of hailing ridesharing apps and the incentives for users to book rideshares across the boroughs (this study specifically examines commuting patterns between Harlem/Bronx and Greenpoint/Bushwick, Brooklyn Heights/DUMBO, and Park Slope/Sunset Park).

The interactive portion of Future Local has been prototyped once with a group of four-to-thirteen year-olds at the New York Hall of Science Design Lab. The early prototype was designed to observe this audience's familiarity with Google Maps and the NYC MTA transit system. The simulation was centered around an interactive map activity for children that lent itself to user observation testing. The activity asked the children to draw their commute to the New York Hall of Science on a map, by entering the points in Google Maps and copying the route on the map. Different colors represented different modes of transportation. However, it was limited in that it didn't provide insights into the target research demographic or the usability of the aforementioned ridesharing apps. This study will replicate a similar activity to observe the psychogeography and commuting patterns of gig workers, artists, and self-identified creatives who live in rapidly gentrifying neighborhoods.

The digital media and character-driven components of this game have not yet been developed. One idea for introducing game elements into the concept would be to design scavenger hunts or interactive activities for subcommunities that make up user segments for the product (e.g. graffiti

tags by local NYC artists, concerts for music lovers of specific genres, local tourism, immersive learning experiences). Further user research into games like Carmen Sandiego and PokemonGo might inspire how to create this digital product. Market research must be conducted to determine the optimal age group for the gamification of the product, as it relates to the community-sourced spending power needed to combat the effects of gentrification on cultural spaces and local businesses, such as museums, co-working spaces, creative studios, cafes, and other brick & mortar businesses that have space that can be monetized by increasing communal use.

A combination of user observations, self reporting, think aloud protocols, and video observations will allow us determine what data to collect and its correlation to measurable social impact such as increase in sales for local restaurants, music/art venues and increased foot traffic for museums, libraries, and parks in the boroughs during off peak times.

For the focus of this phase of research is understanding user pain-points and decision-making around commuting, with the goal of developing gamification and social features that encourage people to explore and participate in their local economies.

General Research Questions

- What neighborhoods in New York City need to be connected by affordable rideshares? How many commuters travel between the boroughs per day? What are the optimal routes to create efficient mass transit between the boroughs using rideshares?
- What are the commuting patterns for students, freelancers, creative professionals, and workers in each borough? What kind of venues, institutions, and businesses serve as hubs for these communities?
- Will users be more likely to book rideshare to support social events, discounts/deals that promote local tourism and economy? Are they incentivized by the social mission of countering gentrification?
- How much are people willing to pay for getting around the city on a daily basis/monthly?

"Partnering with Lyft has expedited safe trips to and from our brewery — our employees and customers are huge fans!"

Dan Malech,

Stormbreaker Brewing

"Our student group raised over $728,000 for the Children's National Health System by improving supporter transportation."

Hannah Chi,

Terp Thon

"We love working with Lyft, and our clients love that we're able to give them free rides if they haven't used Lyft before."

Angela Shen,

Savor Seattle

"The International Beauty Show increased attendance to all of our Las Vegas events with more affordable rides."

Natasha Bhalla,

The International Beauty Show Las Vegas

"Lyft has one of the best referral programs for publishers and bloggers. Our audience really appreciates the access to special discounts."

Josh Gillmore,

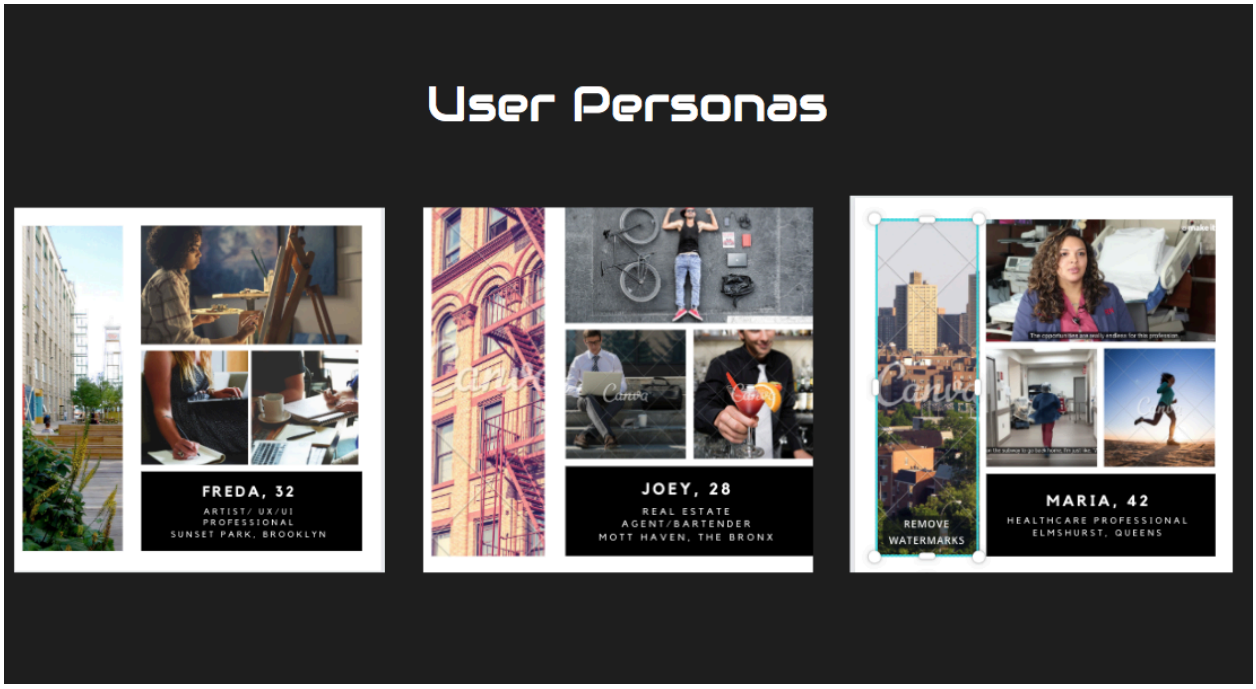
The Nashville Guru

"I feel great knowing my customers and I can get home safely after drinking. Lyft has been a huge help for my business."

Mark Devito,

Standard Deviant Brewing

Source: https://www.lyft.com/partnerships



Study Design

The overall study will include multiple experiments that will explore the needs, behaviors, and psychogeography of the individuals who make up New York City's freelance, gig, and creative economy. Since we are testing for different variables ranging from existing behaviors to hypothetical behaviors we have broken the study down into sub-studies that will utilize different instruments and measures to obtain data and insights.

Participants:

The participants of this study are residents of Harlem, South Bronx, Greenpoint, Bushwick, Park Slope, and Gowanus areas, who are self-employed, freelancers, students, gig workers, creative professionals or self-identified creative enthusiasts and hobbyists. The target participant likely doesn't have an office job in Manhattan. Participants would be pretty familiar with getting around New York neighborhoods using the subway, biking, driving (and parking) their own cars. Participants will be recruited through online marketing on platforms like Facebook and Meetup.com, outreach on local mailing lists such as universities, community organizations, and flyers around local businesses and venues. Future user observations might focus specifically on understanding the ridesharing needs of women, who are less likely to own cars, bike, or have drivers licenses. Recent studies show that women navigate mobility systems in patterns that are quite distinct from men.

User Personas:

Freda the Freelancer
Fred is a self-employed UX researcher and entrepreneur who develops apps. She lives in Harlem on 125th street. Most of her clients have offices in the Financial District or Flat-Iron. Freda is a member of Tech Hub, a co-working space located in DUMBO where she gets affordable office space. The reason why Freda is freelancing is because she is also a semi-professional Mixed-Martial Artist who is working towards becoming a certified yoga teacher. She trains everyday, and is a member of two dojos, one in Harlem and one in Bushwick. Freda travels around the city with her laptop and sparring gear trying to make most of every minute!

Musa the Musician
Musa is a professional drummer who lives in Sunset Park. She is in a band that rehearses twice week in Midtown, since the guitar player lives in Westchester and the singer lives in Jackson Heights. She also picks up gigs on-demand since everyone needs a drummer. She plays shows all around the city multiple times a week and often has to bring her own gear to the show. She tries to book most of his shows in Manhattan so that she can store his drum kit at the studio before and after the shows, but recently most of the shows are in Bushwick. She is tired of playing in Sunset Park neighborhood and needs to reach new fans and audiences in order to promote her forthcoming EP.

Nita the Nightclub Owner
Nita is a native New Yorker who has run an art gallery/music venue in Greenpoint for 12 years. Her venue is really busy on weekends, but pretty sparse during the day and on weeknights. In order to keep the lights on she runs a bar, organizes shows, and opened an art gallery/co-working space to utilize the space during the day using the platform, Spacious. This year her rent increased by 20% and she needs to attract more customers to buy tickets, buy drinks, and become members of her co-working space.

Study 1: Psychogeography of Gig Workers & Creative Residents of NYC's Gentrifying Neighborhoods
Mapping Activity
Research Method: Self-reporting via Survey

Participants will be given a link to an interactive map of New York City and the five boroughs, along with the instructions below.

1. Use the black marker tool to draw an "X" where you live
2. Use the black marker tool to draw a dot on places around the city where you work and run day-to-day errands

3. Use the red marker tool to draw a dot on places around the city where you socialize, spend leisure time, or pursue a hobby/creative practice
4. Use the blue marker tool to draw a dot on places around the city where you rarely visit but would be interested in exploring more

Following the map activity, participants will be given this survey, which assesses ridesharing practices in the boroughs. The purpose of this survey is to examine a correlation between borough-of-residence, demographics, and subject's ridesharing patterns (frequency of ridesharing, willingness to pay for ridesharing, car ownership, and biking activity). This research will help identify target users for early prototypes of Future Local.

Instruments & Methods:

We will implement User Observation methods (specifically self-reporting) to gather this data by administering the activity and survey online since it will allow for maximum outreach, few resources, and time efficiency. The online method would require an interactive map, such as Carto.com, where users can plot the points in the activity. The objective is to target residents in Harlem, South Bronx, Greenpoint/Bushwick, Park Slope/Sunset Park through mailing lists and flyers. The goal would be to collect data from 50 participants.

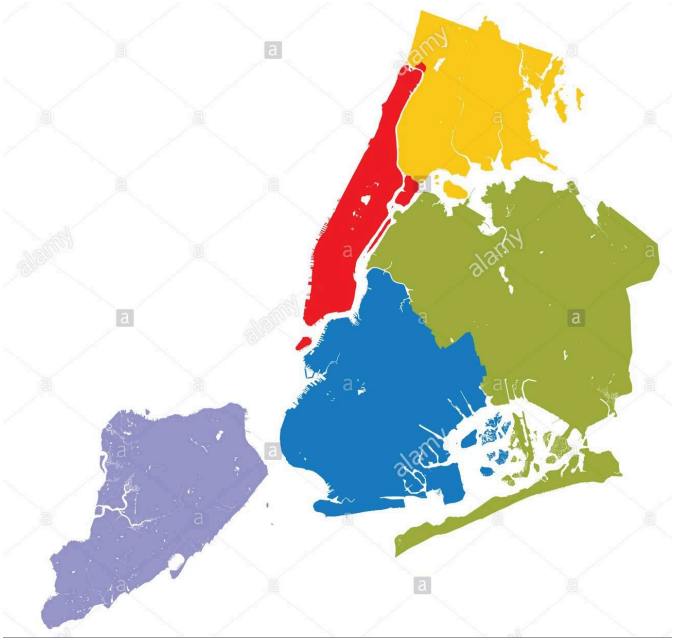
The mapping activity can also be administered using in-person User Observation methods, where an observer can take detailed notes about the user's process. This method would be conducted in a research lab or classroom where the observer can watch and listen to the participant without interfering with the activity. The observer would take notes using the observation sheet below. Although it is not critical for the observer to code for any specific behavior or variable, the observation sheet allows us to document areas in which we can improve the usability study design and the details of the map design. The purpose of the in-person method would be to collect more nuanced and objective insights about the user's psychogeography than the self-reporting method. After conducting the activity, the observer will ask the subject the survey questions, while taking notes and recording the answers using an audio device. The data will be analyzed by a team of researchers who will compile statistics and general overviews into a written report. This method is more resource and time-intensive than administering an online activity. The target number of participants would be about 8-10.

Observation Sheet

Time	**Stage of Activity (what step?)**	**User Behavior/ User verbal statements**
0:00-1:00		
1:00-4:00		
4:00-7:00		
7:00-9:00		

9:00-10:00		

Map



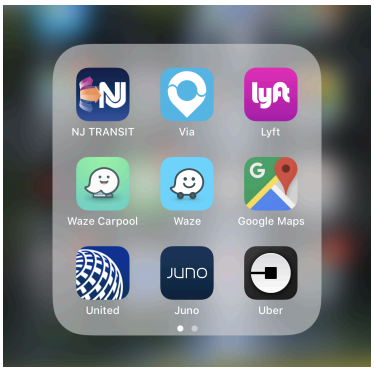
Study 2: Ridesharing Simulation
Research Method: Think-Aloud Protocol and Video Observations
Activity Document

This sub-study will explore the user experience and decision-making process behind getting around the city. We designed a basic activity with a scenario that allows the user to imagine that he or she lives in Harlem, and plans to travel around the city on his or her day off, to get a massage in Flushing and meet up with a friend to see a concert in Red Hook. We will implement a Think-Aloud Protocol to guide the user through the scenario using prompts that have been designed in a Discussion Guide. The activity is very basic, but will be developed into a more visual and interactive format in later iterations. Because we don't have a more interactive product to test, Think Aloud research methods can help explain the concept behind the and narrative behind the videos in the activity activity using verbal cues, in case the user gets confused. This allows for some flexibility to steer the activity to gather the insights we need from various users. The purpose of this method is to get a general sense of how people respond to exploring the boroughs through events and games. We chose this method in order to gain detailed insights into the users' thought process, gather data from on how much people are willing to pay to save time, observe people's reactions to the idea of traveling to three

different boroughs in one day. The Think-Aloud study would require 10-20 participants that represent various user personas.

Instruments & Methods for Think Aloud Protocol

The facilitator will read a set of instructions and guide the participant through an activity. The activity requires the participant to use a mobile phone with apps that are downloaded and ready for use (logged into an account). The mobile phone needs to have Google Maps, Via, Uber, Lyft and Juno. The second part of the activity requires the user to watch two short videos, which can be on the mobile phone to simulate a mobile app design. The facilitator will record the activity using an audio or video device. There will be a notetaker observing the activity and recording the participants' response on an observation sheet.



Activity Instructions (Read by the facilitator)

Imagine you are a NYC resident who lives in Harlem. Your address is 50 W 125th Street.
Enter your address into Google maps.

You have a day off from work and you want to relax and see your friends. You have a Groupon for a massage at Top Notch Spa (133-02 41st Ave) in Flushings, Queens so you made an appointment at 2PM.

At around 4PM, while you're enjoying Dim Sum in Chinatown, your friend texts you that she has an extra ticket for a sold-out concert at Pioneer Works in Red Hook. The show starts at 7PM!
How would you get there?

Use Google Maps, Via, Lyft, Uber, and Juno to answer the following questions. *Please describe your thought process as you navigate each section of the activity. Please share what you are thinking as you go through each step.* **(**Facilitator gives participant these questions on a piece of paper, so he or she can take notes while navigating the apps).

1. How long would it take you get to your massage appointment in Flushings by public transportation? About how long would it take if you took a rideshare?
2. How much would it cost to get to Flushings using Via, Lyft, Juno, and Uber (compare each price)
3. Which option would you choose?
4. How long would it take you to get to get to Pioneerworks in Red Hook by public transportation? About how long would it take if you booked a rideshare?
5. How much would it cost to get to Red Hook using Via, Lyft, Juno, and Uber (compare each price)
6. Which would you choose?
7. The concert ends at midnight. How would you get back home to Harlem?

After the participant has completed this section of the activity. The facilitator will show the two videos on the phone.

The facilitator will use this Discussion Guide to prompt the participant throughout the activity:

Warm-up Activity- 5 min:
Introduction: "Hello, my name is _____ and I am a researcher hired by a digital media company to collect insights to help them understand how people use rideshares around the boroughs of NYC. I did not design the experiment, so I do not have any bias in the outcome of the results, and am here to observe and document your response to the research activity. We will begin with a warm-up activity where you will share your thought process while you follow a set up instructions.

"Buy a train ticket"
This warm-up activity prompts the participant to gain comfort with sharing his or her thought process verbally while follow a set of instructions. The instructions for the activity are as follows, and would be administered by the facilitator:

- Open MetroNorth railroad website or app
- Describe the steps you would take to determine how much it would cost and how long it would take to travel from Grand Central Station to Tarrytown on MetroNorth Railroad
- What would you like to see on the screen to help you determine this information?
- What was easy to find? What was harder to find?

Usability Set-Up- 5 min:
An introduction to the actual activity:
The activity will ask you to follow a set of instructions and answer some questions using ridesharing apps and google. While you follow the steps in the activity we would like you to share your thought process verbally and narrate the steps you are taking to solve the questions.

The activity will take about 20 minutes. After the activity, I will show you two short videos and you will share your observations out loud as you watch them.

General Probes 10-15 min:

- What do you notice on the map once you entered your “home” address?
- What information do you see on the page?
- What are you paying attention to? What stands out?
- Is there any information that you’re looking for on the screen but isn’t easy to find?
- I notice that you did this, how do you feel about that?
- How do you feel about how long it took to compare ridesharing apps?

Tasks & Specific Probes 20-30 min:

- I noticed that you only looked at the subway route first. Tell me more about why you did that?
- Would you consider taking rideshare?
- How much time would you save if you could drive to the location instead of the train? What is your reaction to the time difference between ridesharing and subway?
- I noticed you looked at Uber, would you take a different service? Why Uber?
- Would you try to use another app to find another option?
- Take me on a tour of the page for the app. What is the first prompt on the page?
- What do you think about the colors on the map?
- How many apps did you check to get the best price for the trip?
- What do you think about the car icons on Lyft? Uber? Via? Juno?

Part 2 General Probes 5-8 minute:

Now I will show you two short UX videos that serve as early prototype for an app that helps people explore new places in the boroughs of NYC. Imagine that as you click through the screens you could book a discounted rideshare to your destinations of choice (in this scenario Flushings or Red Hook). You can feel free to pause or scroll back and forth through the videos as much as you wantAs you watch the video tell me what you’re thinking:

- What are you seeing on the screen? What is it?
- What is the second video?
- Do you recognize the character?
- Imagine that the game led you to different boroughs in NYC that you could actually buy a rideshare too. What do you think of that idea?
- Would you see yourself using this?
- Why would you use it? Why not?

Part 2 Specific Probes 10-12 minutes:

- What information is on the top right of the screen in the first video?
- What do you think of the colors?
- What do you think of the animations?
- How does this map experience compare to the ridesharing maps?

Wrap-Up 10 min:
Do you see yourself taking more rideshares if there was a flat-rate round trip?
Do you think you would visit new places or meet new places if enjoyed the experience of ridesharing?
What about the predictability/reliability of ridesharing?
Based on what you've seen today, would you sign up for a carpool social program?
What is missing from this activity, in your opinion?

Data Analysis for Think Aloud Protocol:
The research team will compare the notes transcribed during the activity with the recording of the activity. First a qualitative summary report will be generated to capture the various responses from users in response to the App Activity. A second report with visuals will summarize how users responded to the two prototypes for gamifying exploring the city. This report will include quotes from the users about specific design elements. These reports will inform the UX/UI team in creating a wireframe for a game that encourages people to explore the boroughs and book rideshares.

Study 2a Video Observations

The first part of the activity will be conducted again to a seperate group of participants (10-20 subjects) using Video Observation methods in order to gather deeper insights into the user experience of navigating multiple apps to decide the optimal way to navigate the city. (This part does not include the video prototypes)This part of the study is meant to observe variables such reaction to pricing, duration spent on each app, engagement of the user as he/she navigates the activity involving deciding how to travel between Harlem, Flushings, and Red Hook. The activity will be recorded using a camera that is set up to capture the user's facial expressions. The mobile phone will have a screen recording app tool, like RecordIt, to record the user flow as he/she navigates the steps.

Instruments and Measures:

1. Install "Record It!" on mobile device
    a. (The mobile device should also have Google Maps, Uber, Lyft, Via, and other navigation apps geared towards NYC)

2. Make sure phone is set to "Do not disturb mode"
3. Place phone on the table.
4. Turn on microphone in "Record It"
5. Place a separate camera next to the mobile phone, with the camera directed at participants face (i.e. use a separate mobile phone that can lay next to the phone being used for the activity. Instruct the participant not to hold the phone or change the position, but to conduct the activity while the phone is flat on the table)

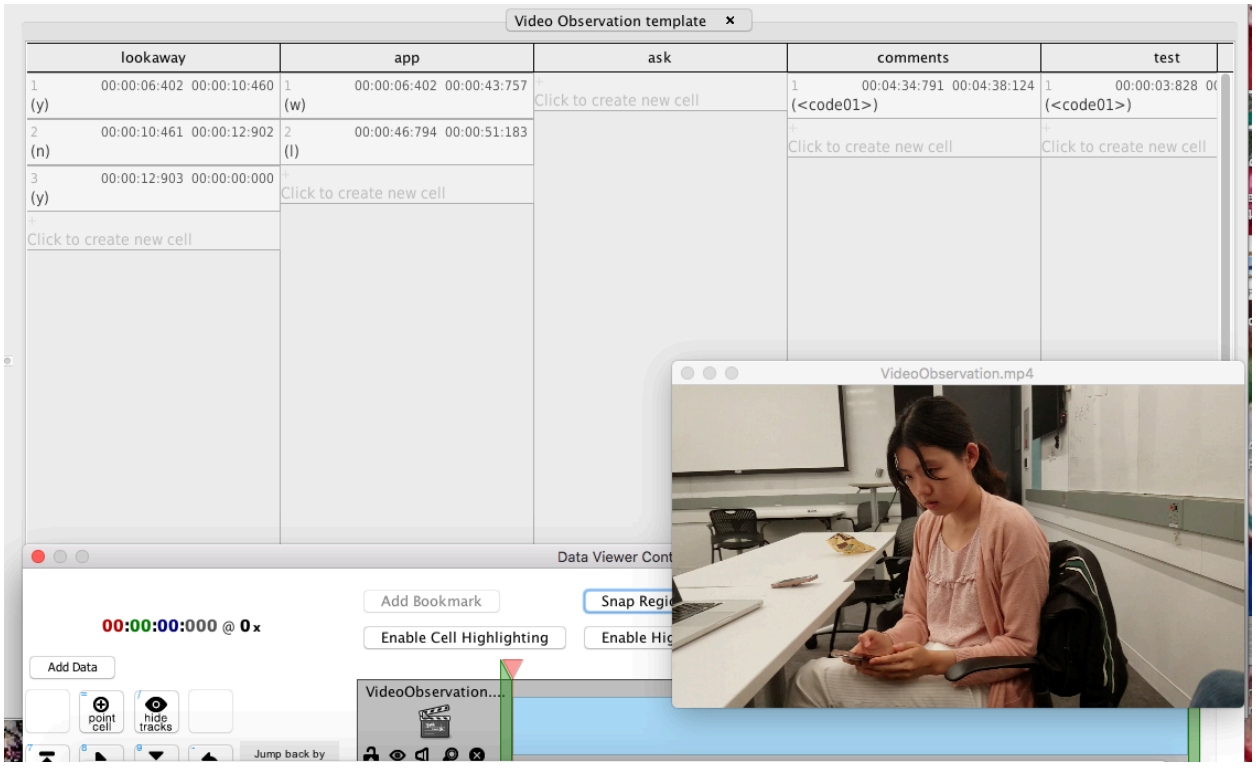
6. Record video (with audio) of participants' face and think aloud observations during the activity
4. Instruct participant click "Start Broadcast" when ready to start the activity. This will simultaneously record the screen activity of the participant during the activity
7. Instruct participant to click "Stop Broadcast" at the end of the activity.

Once the activity has been recorded, the two videos should be synced so that they can be analyzed as one video using an analysis software such as DataVyu.

The coding scheme for the variables in this study are:

Variable	**Behavior 1**	**Code**	**Behavior 2**	**Code**
Engagement	Looks away from screen	Y/N	Ask question	Transcribe question
Duration on each app		Start time/end time		
Attitude towards pricing	Makes a comment about price	Y/N	Raises eyebrows	Y/N

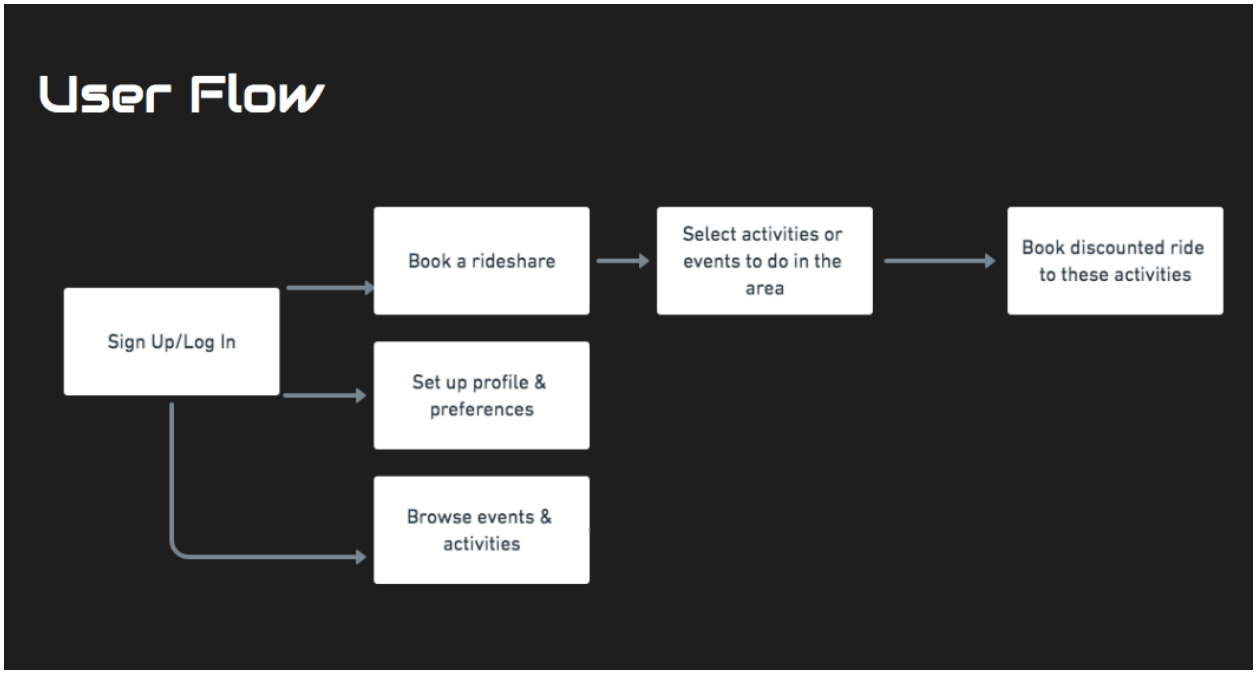
Example of how to set up Coding Scheme in DataVyu



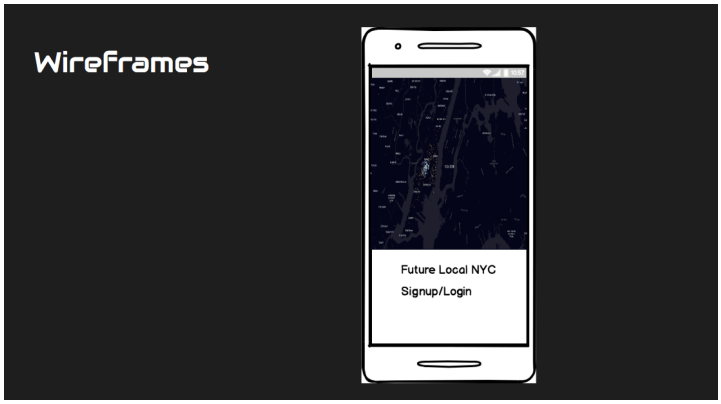
Data Analysis for Video Observation:

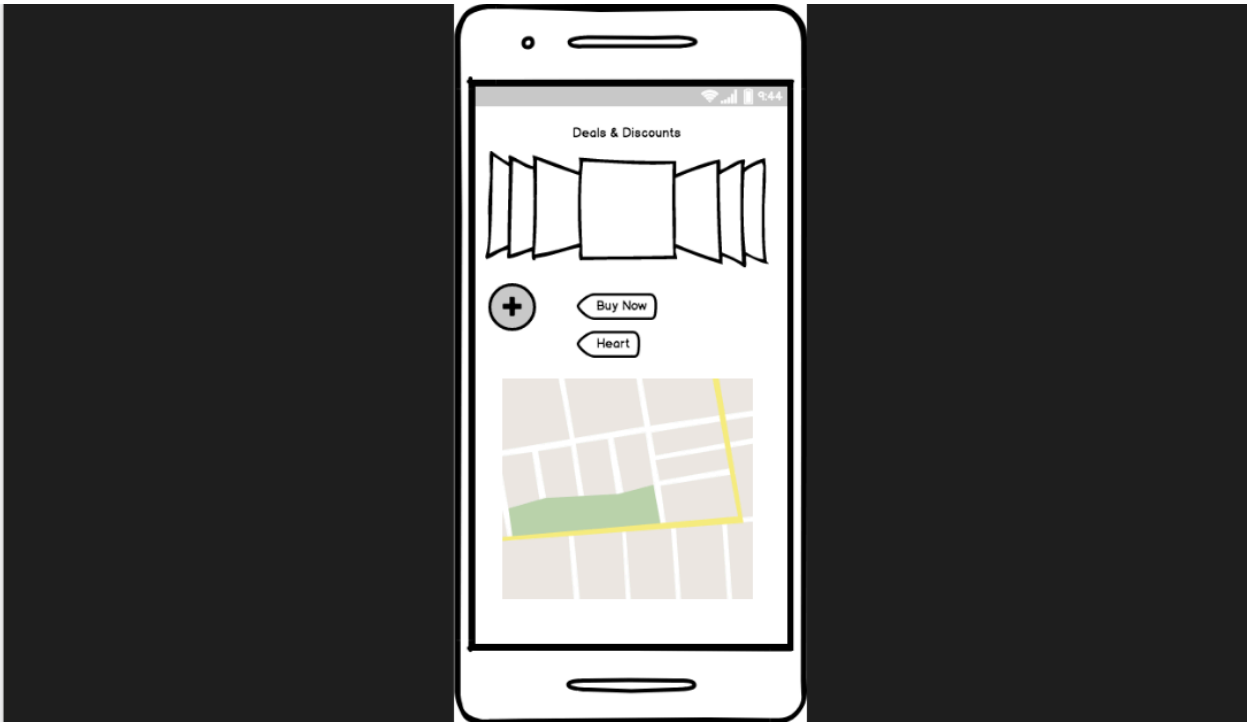
The coding scheme for the video observations provide quantifiable data that correlates user's responses to the App Activity that are far more detailed than what can be capture in the Think Aloud Protocol. The analysis requires watching each video and looking for the specific variables defined in the coding scheme and measuring the frequency in which they occur. As the video observations are being watched and coded, the research team may discover patterns in behaviors that can be revise the coding scheme and then re-analyzed. As this study captures observations of more sophisticated prototypes of Future Local, video observations and coding can provide analytical data on user personas and attitudes towards ridesharing. It would be interesting to use this method to examine how attitudes and behaviors around ridesharing differ between men and women.

User Flow Insights:



Product Design, Management, Usability Testing:





Systems Design Lab/ Participatory Research & Crowdfunding

https://withfriends.co/future_local

Prototyping, Budget, Timeline, Production!

Usabiility Testing

Annotated bibliography

Marshall, Aarian. “NYC NOW KNOWS MORE THAN EVER ABOUT YOUR UBER AND LYFT TRIPS.” *Wired.* 31 Jan. 2019, https://www.wired.com/story/nyc-uber-lyft-ride-hail-data/.

- New York has long been more successful than smaller cities at keeping track of the ride-hail cars in its territory.
- If Uber, Lyft, Via, and Juno want to keep operating in the city, they’ll have to provide the TLC with even more finely detailed data than they do now: the date, time, and location of pickups and drop-offs (at least down to the intersection), the vehicle’s license number, the trip mileage, itemized trip fare, route (including whether the vehicle entered traffic-choked Midtown), and how much the driver was paid

Sharma, Ane. “Participatory Design as a Research Method.” *Medium*. 30 Aug. 2016, https://medium.com/the-making-of-appear-in/participatory-design-as-a-research-method-bc42c01943b1

Xin Li, Sangen Hu, Wenbo Fan, Kai Deng. “Modeling an enhanced ridesharing system with meet points and time windows.” *PLOS.org*. 18 May 2018. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0195927

- This paper presents a mathematical model to design an enhanced ridesharing system with meet points and users’ preferable time windows. The introduction of meet points allows ridesharing operators to trade off the benefits of saving en-route delays and the cost of additional walking for some passengers to be collectively picked up or dropped off. This extension to the traditional door-to-door ridesharing problem brings more operation flexibility in urban areas (where potential requests may be densely distributed in neighborhood), and thus could achieve better system performance in terms of reducing the total travel time and increasing the served passengers.

R. Tachet, O. Sagarra, P. Santi, G. Resta, M. Szell, S. H. Strogatz, C. Ratti. “Scaling Law of Urban Ridesharing.” *Nature.com Scientific Reports*, 06 Mar. 2016. https://www.nature.com/articles/srep42868

- Due to fixed schedules, limited coverage, and low quality of travel experience, public transportation systems accommodate only a fraction of the urban mobility demand
- Using data on millions of taxi trips in New York City, San Francisco, Singapore, and Vienna, we compute the shareability curves for each city, and find that a natural rescaling collapses them onto a single, universal curve. We explain this scaling law theoretically with a simple model that predicts the potential for ride sharing in any city, using a few basic urban quantities and no adjustable parameters. Accurate extrapolations of this type will help planners, transportation companies, and society at large to shape a sustainable path for urban growth.

L. Leichsenring, M. Milan. “Creative Footprint New York.” *Creative Footprint/Vibe-Lab.org*. 2018. https://www.creative-footprint.org/new-york/#content

- The report asserts the importance of affordable creative space to a city centre’s social and economic health. The CFP NYC report recommends that affordable working creative spaces should be a vital component of all the boroughs, throughout the city.
- Identifying music as a primary catalyst, the report processed and evaluated an extensive, brand new dataset. This dataset is collated from nearly 500 venues and 150 stakeholders based in New York City, with 15 data researchers and designers, as well as New Yorkers active and expert in the city’s music industry. The study is compiled of more than 25,000 data points with rich spatial analysis maps developed by the University of Pennsylvania’s applied research arm PennPraxis.

De Vos, Andrea. “The Rise of Flat Rate Pricing in Ride-Sharing & Why It Matters for Parking.” *Parking/Exec.* 18 Oct. 2016. http://parkingexec.com/flat-rate-pricing-ride-sharing/

- Flat rates allow passengers to ride within a specified zone for a set price, often sharing the vehicle with other passengers. Via introduced this concept to ride-sharing in NYC with $5 rides anywhere throughout Manhattan–a shockingly cheap mode of transportation.
- If parking can’t always compete on price, where can we add value for commuters and in the transportation space generally? What is our core offering? The answer is convenience.

Blog Post. “Removing Transportation Barriers to Healthy Food.” *Lyft.com.* 25 April, 2019. https://blog.lyft.com/posts/2019/4/25/removing-transportation-barriers-to-healthy-food

- "The Lyft Grocery Access Program is an innovative partnership that aligns with our mission to support strong children, strong families, and strong communities,” said Tiffany Williams, Chief Programs Officer at Martha's Table. "By offering discounted flat-rate rides to three full-service grocery stores and to Martha’s Table Market, the program has helped to reduce the time, transportation, and financial barriers to healthy food access.”

Roetgers, Janko. “Steereo Works With 15,000 Rideshare Drivers to Promote Music in Ubers, Lyfts.” *Variety.* 1 Feb, 2019. https://variety.com/2019/digital/news/steereo-uber-lyft-music-promotion-1203125391/

- Steereo is also looking to empower artists and managers with additional data insights, and ultimately establish itself as a way to break new artists to the Uber- and Lyft-riding masses
- On average, drivers make more that $120 per month with Steereo, according to its website.

Graham, Jefferson. “Lyfts Latest Pitch: 30 Rides for $299.” *USA Today.* 16 Oct. 2018. https://www.usatoday.com/story/tech/talkingtech/2018/10/16/lyfts-new-299-subscription-plan-offers-30-rides-but-you-might-pay-more/1603468002/

- each ride is worth $15 and if you take a longer route that's worth more, you'll pay the difference. And if your ride is worth less than $15, it will still count as a $15 minimum ride.

Karlin, Rick. “Study finds New York losing the most tax payers.” *Times Union.* 14 Sept 2016. https://www.timesunion.com/local/article/Study-finds-New-York-losing-the-most-tax-payers-9223778.php

- The Empire State lost 126,000 tax filers in 2014 to other states.

Krisda H. Chaiyachati, et. all. “ Association of Rideshare-Based Transportation Services and Missed Primary Care Appointments: A Clinical Trial.” *JAMA Internal Medicine. 5 Feb 2018.* https://ldi.upenn.edu/brief/association-rideshare-based-transportation-services-and-missed-primary-care-appointments

- In a pragmatic trial, offering complimentary ridesharing services broadly to Medicaid patients did not reduce rates of missed primary care appointments. The uptake of free rides was low, and rates of missed appointments remained unchanged at 36%. Efforts to reduce missed appointments due to transportation barriers may require more targeted approaches.

Villareal, Alexandra. “Women don’t feel safe on public transit – and it’s costing them money.” *Ladders. 20 Nov 2018.*

https://www.theladders.com/career-advice/women-dont-feel-safe-on-public-transit-and-its-costing-them-money

- To feel safe, women sometimes opt for a for-hire vehicle or cab service. But those alternatives to public transit weigh heavy on their bank accounts.
- 13% said they dressed differently and 29% don't take late-night trains. That's compared to only 3% of men who said they changed their clothing and 8% who avoided public transportation after a certain hour.
- he Rudin Center estimated that the median extra transportation cost for women because of safety concerns was $26-50 per month, or up to $600 per year. That number multiplies for female caregivers, who are responsible for transporting children and elderly family members, and who face logistical challenges as well as perceived safety risks. The study estimated female caregivers can spend an extra $100 per month, or $1200 a year, on travel

Transportation Research Board. "Research on Women's Issues in Transportation" Report of a Conference VOLUME 2: TECHNICAL PAPERS November 18–20, 2004 Chicago, Illinois. http://onlinepubs.trb.org/onlinepubs/conf/cp35v2.pdf

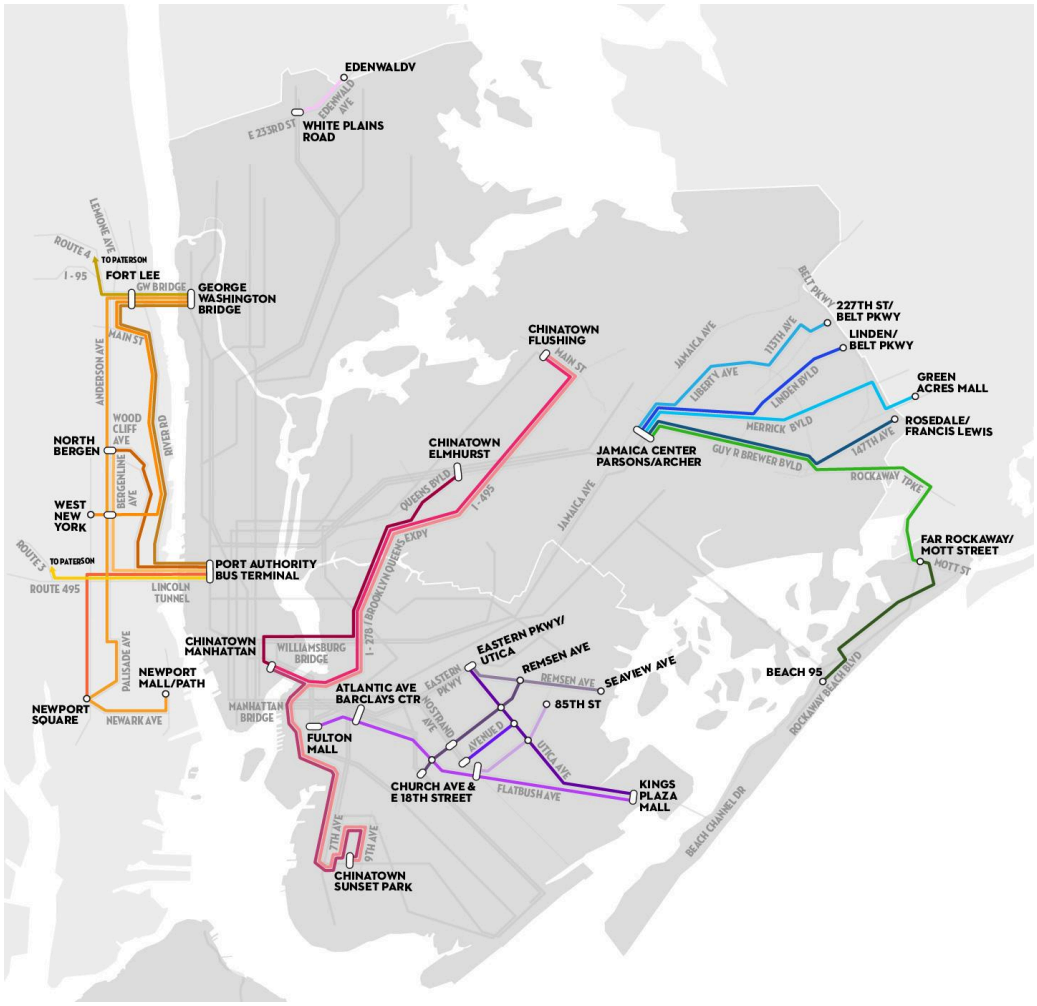
- A compilation of several research papers about gender differences in travel behavior (including driving cars, biking, public transportation in a variety of cities

Colarossi, Natalie. "Why Men and Women Navigate Differently." *The University Network.* May 2018. https://www.tun.com/blog/why-men-and-women-navigate-differently/

- Women tend to wander and take well-known routes to reach a familiar destination, while men prefer to take shortcuts and reach a destination more quickly, according to a new study.

The New Yorker https://projects.newyorker.com/story/nyc-dollar-vans/

- dollar vans and other unofficial shuttles make up a thriving shadow transportation system that operates where subways and buses don't—mostly in peripheral, low-income neighborhoods that contain large immigrant communities and lack robust public transit. The informal transportation networks fill that void with frequent departures and dependable schedules, but they lack service maps, posted timetables, and official stations or stops. There is no Web site or kiosk to help you navigate them. Instead, riders come to know these networks through conversations with friends and neighbors, or from happening upon the vans in the street.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WOOD CLIFF AVE
RIVER RD
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BERGENLINE AVE
WEST NEW YORK
ROUTE 3
TO PATERSON
ROUTE 495
LINCOLN TUNNEL
PORT AUTHORITY BUS TERMINAL
PALISADE AVE
NEWPORT MALL/PATH
NEWPORT SQUARE
NEWARK AVE
CHINATOWN MANHATTAN
WILLIAMSBURG BRIDGE
MANHATTAN BRIDGE
I - 278 / BROOKLYN QUEENS EXPY
ATLANTIC AVE BARCLAYS CTR
FULTON MALL
CHURCH AVE & E 18TH STREET
7TH AVE
9TH AVE
CHINATOWN SUNSET PARK
CHINATOWN ELMHURST
QUEENS BLVD
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CHINATOWN FLUSHING
MAIN ST
JAMAICA AVE
JAMAICA CENTER PARSONS/ARCHER
EASTERN PKWY/ UTICA
EASTERN PKWY
REMSEN AVE
SEAVIEW AVE
85TH ST
WOODHAVEN BLVD
AVENUE D
UTICA AVE
FLATBUSH AVE
KINGS PLAZA MALL
BELT PKWY
227TH ST/ BELT PKWY
LINDEN/ BELT PKWY
115TH AVE
LIBERTY AVE
LINDEN BLVD
GREEN ACRES MALL
MERRICK BLVD
ROSEDALE/ FRANCIS LEWIS
147TH AVE
GUY R BREWER BLVD
ROCKAWAY TPKE
FAR ROCKAWAY/ MOTT STREET
MOTT ST
BEACH 95
ROCKAWAY BEACH BLVD
BEACH CHANNEL DR