FINAL PRESENTATION

How Time Flies for Gig Workers

Presentors: Jessie Wang, Xin Pan, Zed Yuan

Course: Human-AI Interaction

Instructor: Min Kyung Lee

Date: 12/07/2020

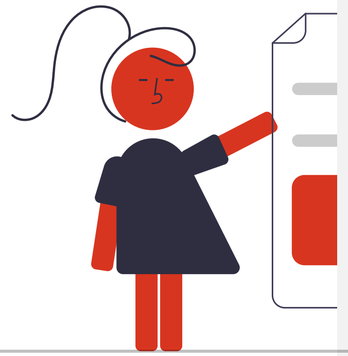
PROBLEM DEFINITION

DoorDash’s drivers (called Dasher) often find themselves spend more time waiting than delivering, which in turn decreases their ratings from customers and affects their income.

RELATED WORK

“Algorithmic Despotism” exerted by **Instacart** to regulate the time and activities of their workers more stringently than other platform delivery companies [1].

“Delivery Time Prediction Model” designed by **Uber Eats** [2], **Eleme** [3], and **DoorDash** [4].



[1] Griesbach, Kathleen, Adam Reich, Luke Elliott-Negri, and Ruth Milkman. "Algorithmic control in platform food delivery work." Socius 5 (2019): 2378023119870041.

[2] Zi Wang. 2019. Predicting Time to Cook, Arrive, and Deliver at Uber Eats. Retrieved December 4, 2020 from https://www.infoq.com/articles/uber-eats-time-predictions/

[3] Zhu, Lin, Wei Yu, Kairong Zhou, Xing Wang, Wenxing Feng, Pengyu Wang, Ning Chen, and Pei Lee. "Order Fulfillment Cycle Time Estimation for On-Demand Food Delivery." In Proceedings of the 26th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining, pp. 2571-2580. 2020.

[4] Han, Jeff Ning, William Preston Parry, Bing Wang, and Rohan Balraj Chopra. "System for dynamic estimated time of arrival predictive updates." U.S. Patent Application 15/798,207, filed May 2, 2019.

METHOD

Algorithm Auditing

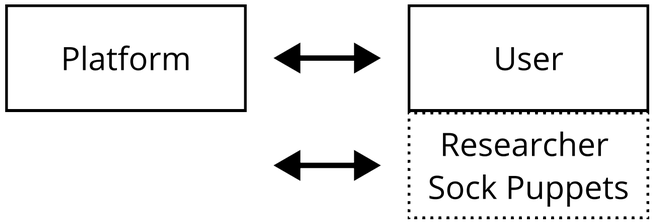
Archival Data Analysis

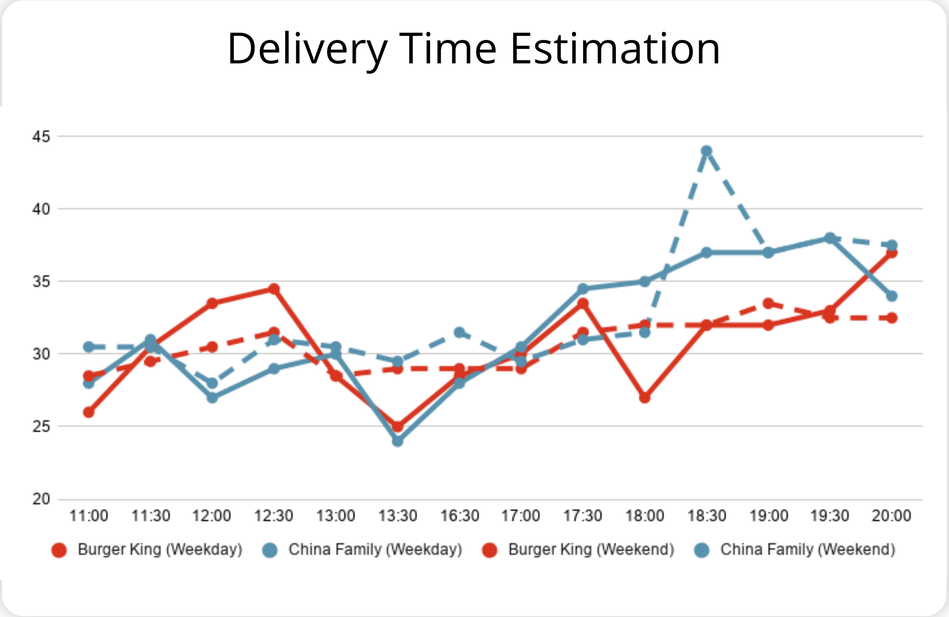
Survey

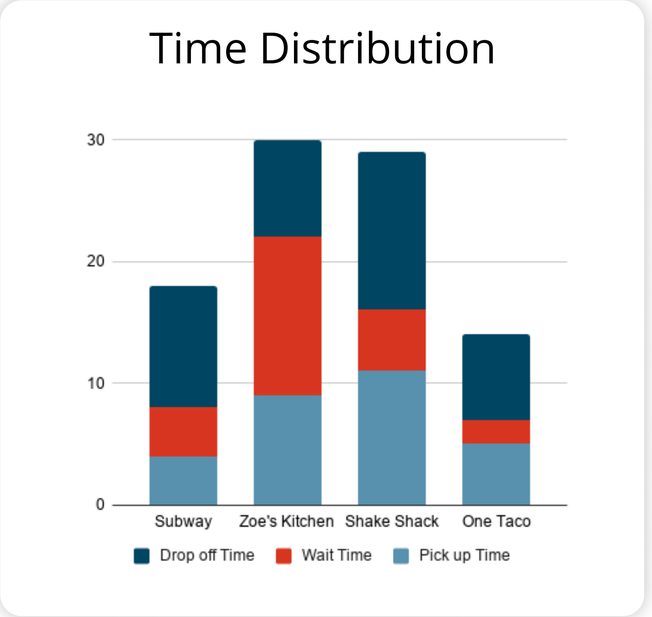
Interview

Speed Dating

We used **Code Audit** and **Sock Puppet Audit** to get necessary knowledge of the platform and the ETA system. We were inspired by the graphs from auditing and incorporated similar graphs into UI design.







METHOD

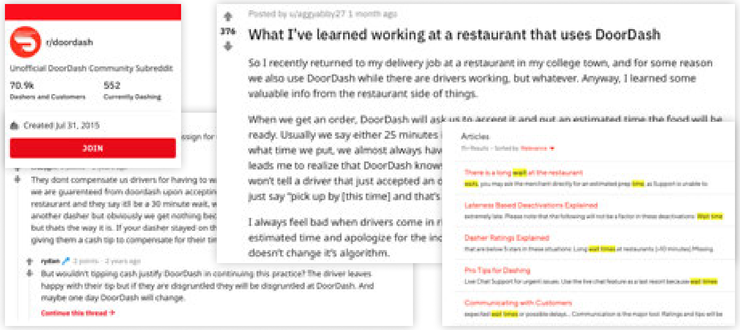
Algorithm Auditing

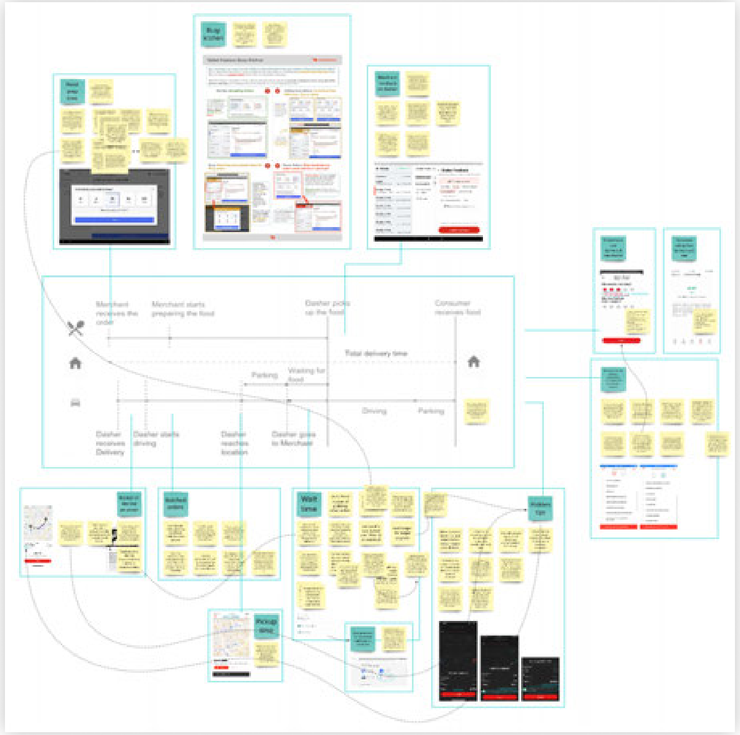
Archival Data Analysis

Survey

Interview

Speed Dating





Reddit (Where many Dashers share their working expeirence)

Official Website (Where info is publicly shared by the platform)

Explore the **causes** behind excessive wait time and its **effects** on multiple stakeholders

METHOD

Algorithm Auditing

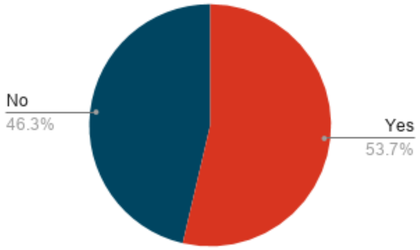
Archival Data Analysis

Survey

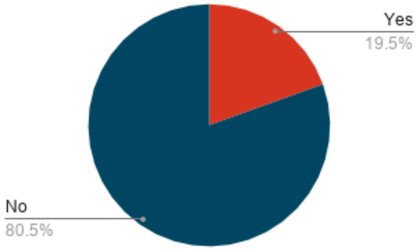
Interview

Speed Dating

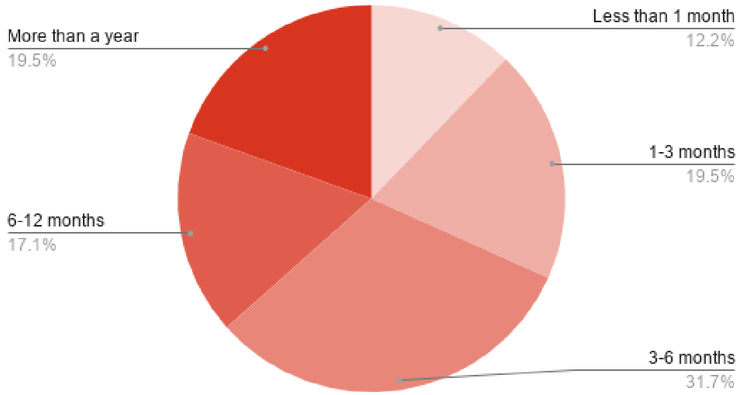
Primary Income?



Multiple Platforms?



Work Experience



Distributed on **Reddit** and received **41/49** responses

Asked questions about **batch orders, hidden tips, rating systems, etc.**

METHOD

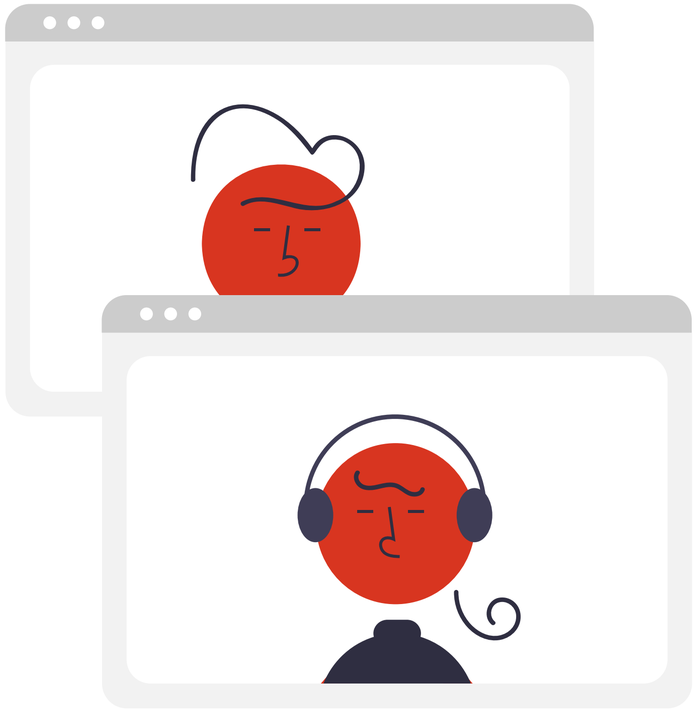
Algorithm Auditing

Archival Data Analysis

Survey

Interview

Speed Dating



Conducted one-on-one interviews with **3 customers**

Learned how the **estimated delivery time** provided by DoorDash shaped their experience

Gained an insight into their **tipping and rating behaviors**

METHOD

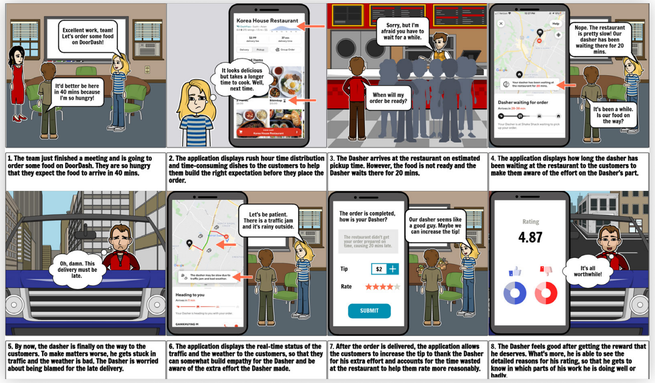
Algorithm Auditing

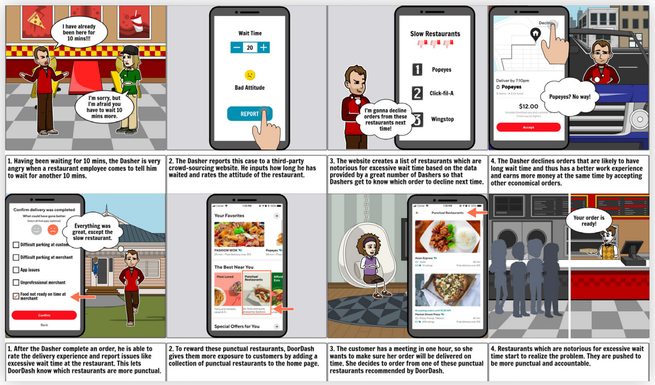
Archival Data Analysis

Survey

Interview

Speed Dating





Used **storyboards** to present our early concepts

Interviewed **2 Dashers** (1 male, 1 femal with more than 3 months of experience.) to see if these concepts would help solve their issues or improve their work experience

Research

RESEARCH INSIGHT 01

Mistrust between Dashers and merchants and mistrust towards DoorDash's time prediction model

Dashers complain about excessive wait time and are angry with restaurants' dishonesty. (Archival Data Analysis)

Restaurants think the time prediction model doesn't work; they also complain Dashers of arriving too early. (Archival Data Analysis)

Around **20%** of Dashers **don't believe** they can get food on time. (Survey)

Dashers prefer to **trust their past experience and their own observations** rather than estimates from restaurants. (Survey)

RESEARCH INSIGHT 02

Miscommunication between Dashers and customers in terms of late delivery and uncontrollable factors

Customers **cannot keep track of** Dashers' wait time at the restaurant and may blame them for running late. (Interview)

Dashers tend to be rated poorly for factors that are **not within their control**, such as missing items, late delivery, etc. (Survey)

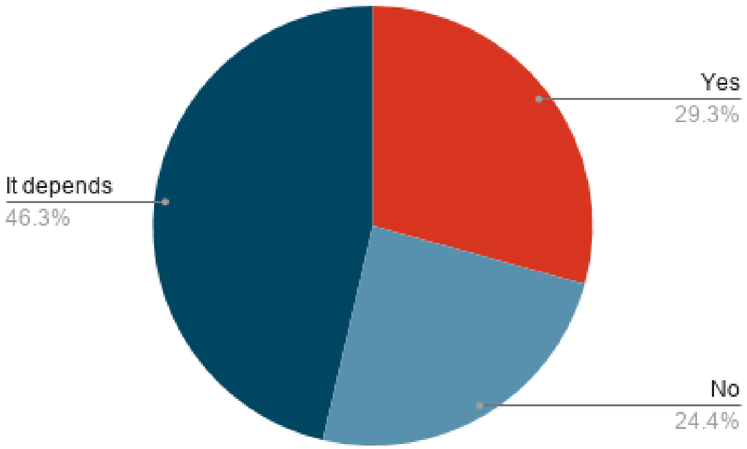
"

Sometimes we are given poor ratings based on things that are out of our control. When I am rated poorly because the restaurant forgot items or took too long, **even though I communicated with the customer throughout**, I find those ratings to be unfair. (Survey)

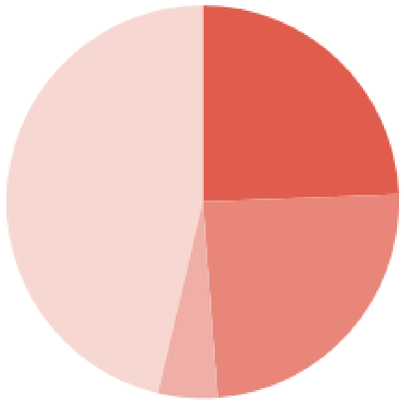
RESEARCH INSIGHT 03

DoorDash allows Dashers to rate their experience; however, Dashers don't believe it would have any effect.

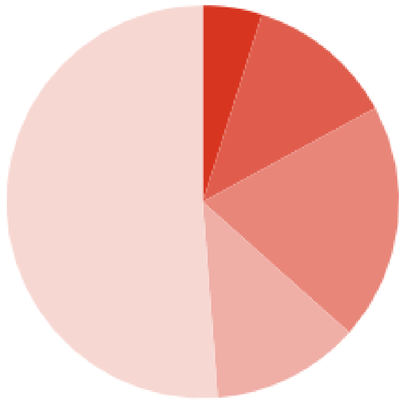
Rate Experience?

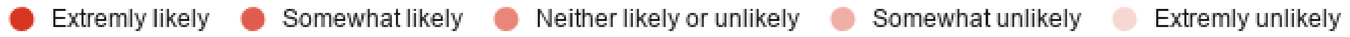


Affect Restaurant?



Affect Customer?





Solution

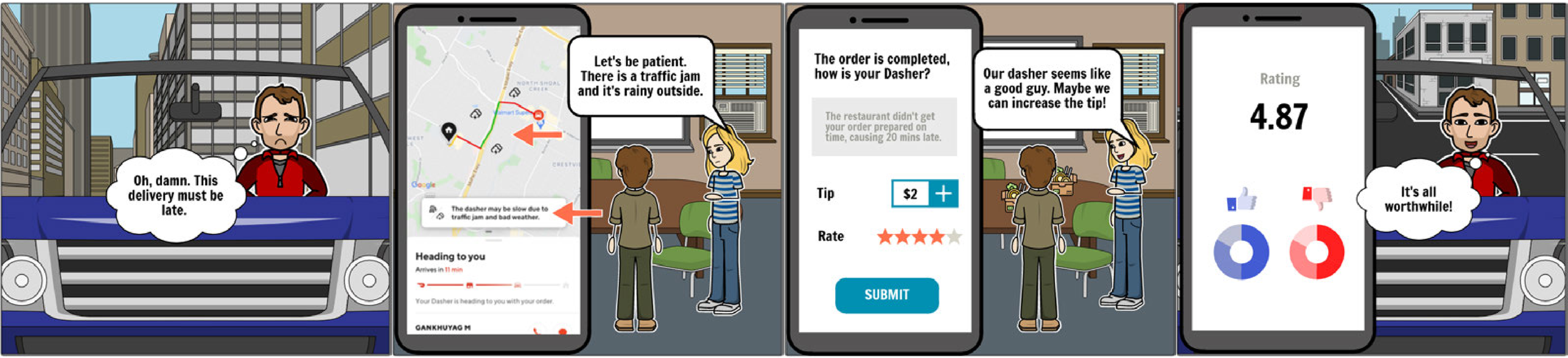
SOTRYBOARD 01

Building customers’ empathy and understanding towards late delivery

1. The team just finished a meeting and is going to order some food on DoorDash. They are so hungry that they expect the food to arrive in 40 mins.	2. The application displays rush hour time distribution and time-consuming dishes to the customers to help them build the right expectation before they place the order.	3. The Dasher arrives at the restaurant on estimated pickup time. However, the food is not ready and the Dasher waits there for 20 mins.	4. The application displays how long the dasher has been waiting at the restaurant to the customers to make them aware of the effort on the Dasher's part.

SOTRYBOARD 01

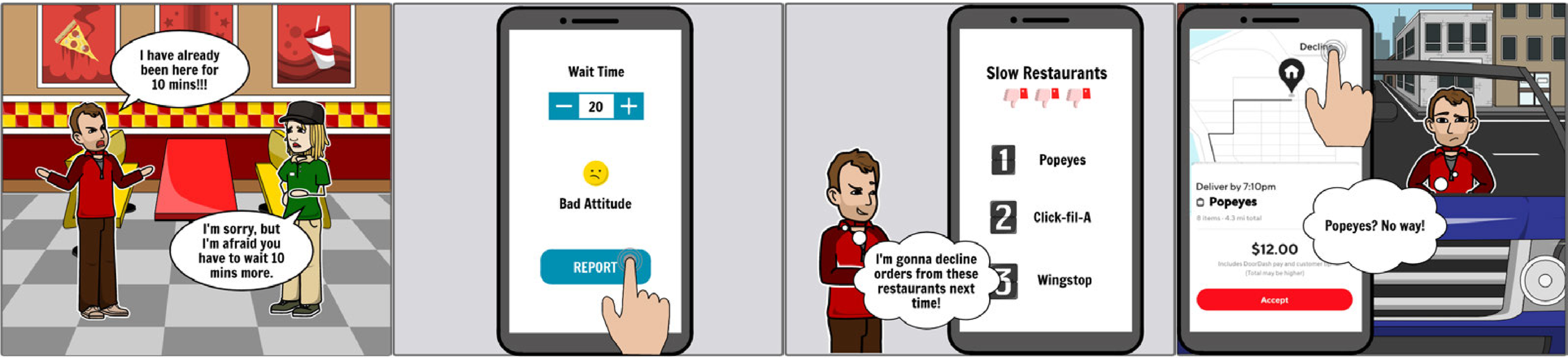
Building customers’ empathy and understanding towards late delivery



5. By now, the dasher is finally on the way to the customers. To make matters worse, he gets stuck in traffic and the weather is bad. The Dasher is worried about being blamed for the late delivery.	6. The application displays the real-time status of the traffic and the weather to the customers, so that they can somewhat build empathy for the Dasher and be aware of the extra effort the Dasher made.	7. After the order is delivered, the application allows the customers to increase the tip to thank the Dasher for his extra effort and accounts for the time wasted at the restaurant to help them rate more reasonably.	8. The Dasher feels good after getting the reward that he deserves. What's more, he is able to see the detailed reasons for his rating, so that he gets to know in which parts of his work he is doing well or badly.

SOTRYBOARD 02

Holding merchants more accountable: crowd-sourcing merchant information from Dashers



1. Having been waiting for 10 mins, the Dasher is very angry when a restaurant employee comes to tell him to wait for another 10 mins.

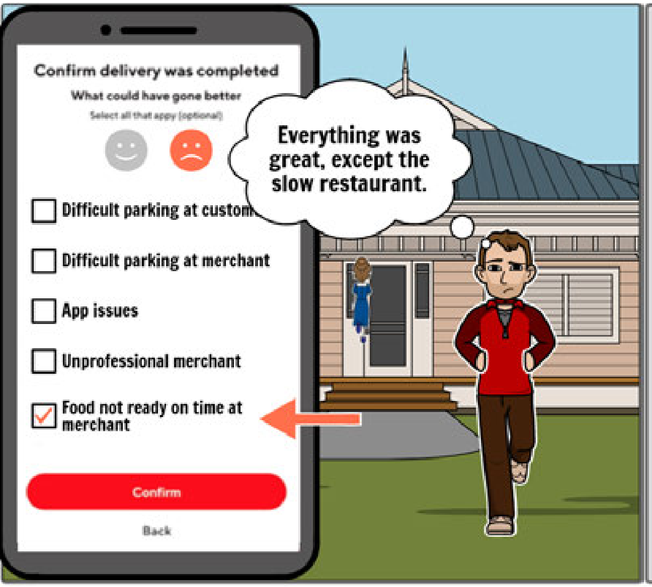
2. The Dasher reports this case to a third-party crowd-sourcing website. He inputs how long he has waited and rates the attitude of the restaurant.

3. The website creates a list of restaurants which are notorious for excessive wait time based on the data provided by a great number of Dashers so that Dashers get to know which order to decline next time.

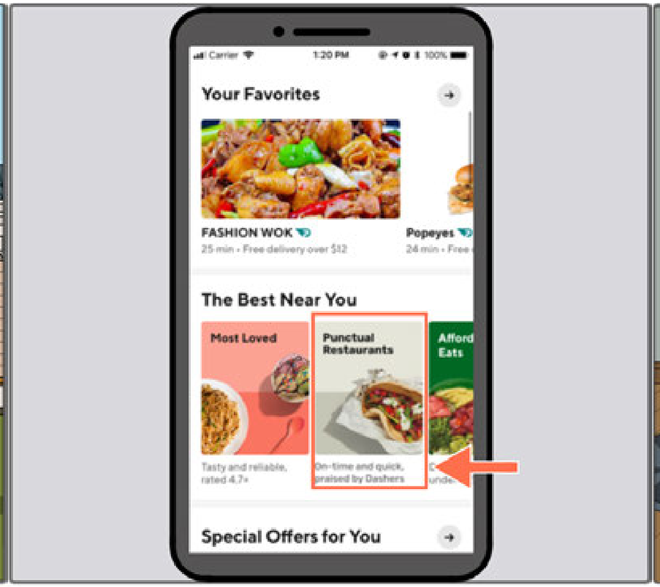
4. The Dasher declines orders that are likely to have long wait time and thus has a better work experience and earns more money at the same time by accepting other economical orders.

SOTRYBOARD 02

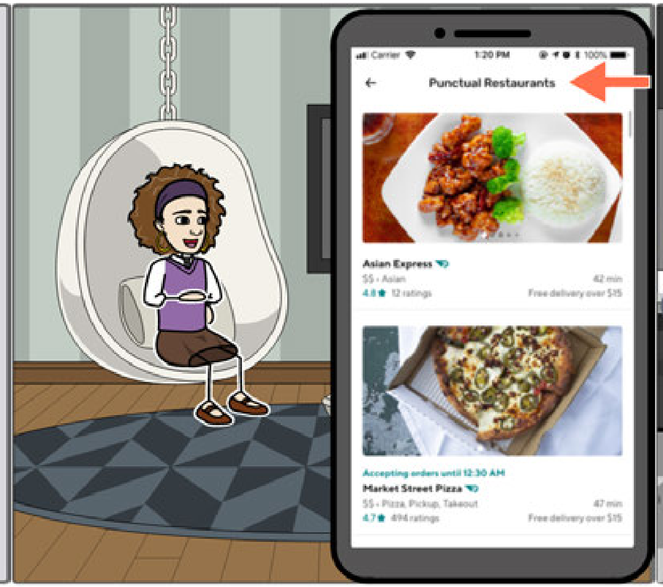
Holding merchants more accountable: encouraging punctual merchants on Doordash



1. After the Dasher complete an order, he is able to rate the delivery experience and report issues like excessive wait time at the restaurant. This lets DoorDash know which restaurants are more punctual.



2. To reward these punctual restaurants, DoorDash gives them more exposure to customers by adding a collection of punctual restaurants to the home page.



3. The customer has a meeting in one hour, so she wants to make sure her order will be delivered on time. She decides to order from one of these punctual restaurants recommended by DoorDash.

4. Restaurants which are notorious for excessive wait time start to realize the problem. They are pushed to be more punctual and accountable.

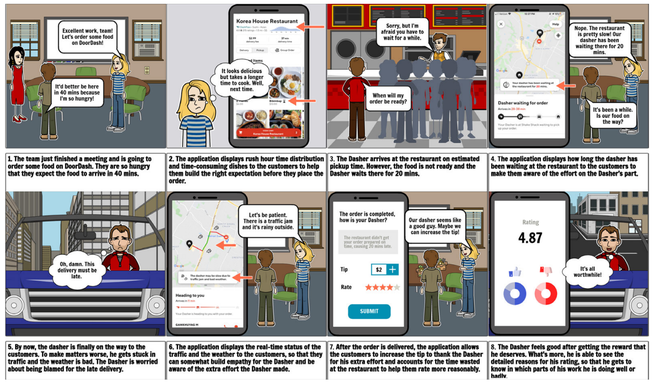
SOTRYBOARD 03

Helping Dashers optimize time management for batch orders

1. The Dasher has received a batched order. However, when he arrives at the first restaurant, the employee tells him the order needs 20 more mins to get ready. The Dasher reports the situation on the application.	2. DoorDash initiatively asks the second restaurant whether the order is ready. The second restaurant replies yes.	3. DoorDash helps re-plan the route for the Dasher, suggesting him to pick up the other order at first and then come back to pick up the first one.	4. The Dasher follows the suggestion so that he doesn't have to waste time waiting at the first restaurant and ends up with a quicker delivery.

FEEDBACK 01

Building customers’ empathy and understanding towards late delivery



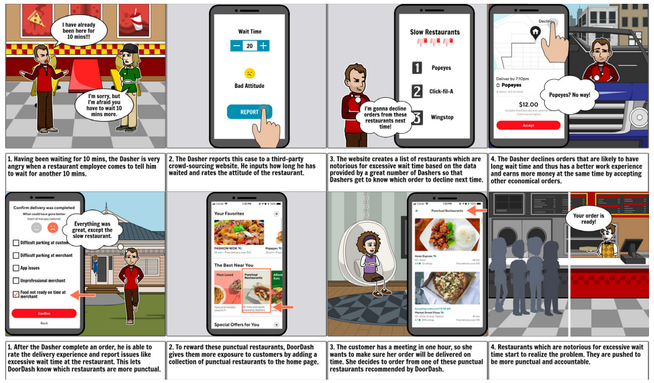
😊 **Help with current less communicated part, like delay caused by restaurants and traffic jam.**

😟 **Will customers pay attention to the small changes on the screen?**

😟 **Will labeling some food as “long time to cook” make customers not order it?**

FEEDBACK 02

Holding merchants more accountable using “carrot and stick” approach



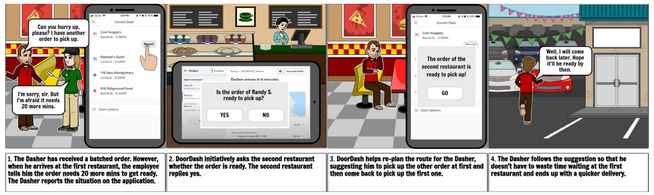
😊 **Give Dashers more control; helpful to new Dashers**

🤔 **Give tailored feedback to restaurants to help them improve their current work process**

😟 **What if because of the website, restaurants start choosing to leave DoorDash?**

FEEDBACK 03

Helping Dashers optimize time management for batch orders

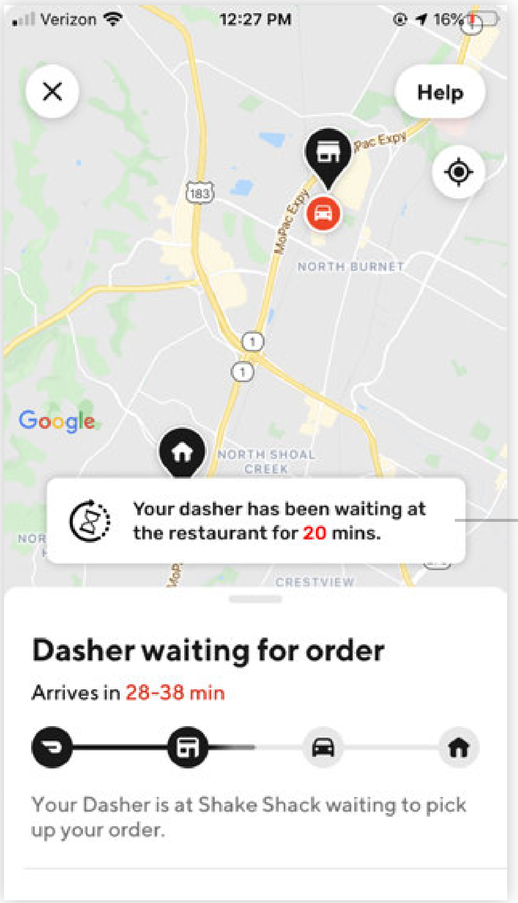


😊 **Now I can jump to another task but don’t know whether the second order is ready.**

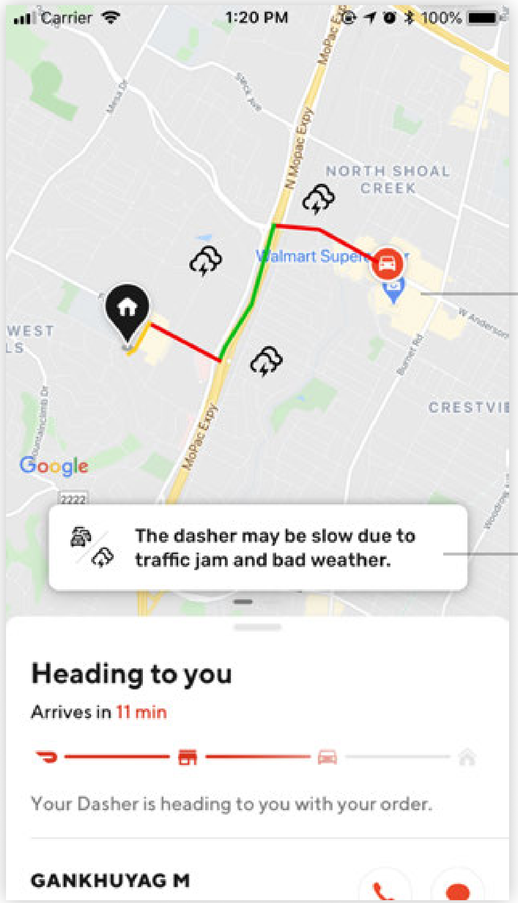
😟 **Managers of restaurants never say a specific 10 mins wait but "it's on the way"**

😟 **How to guarantee the responsiveness from the second restaurant?**

DESIGN INTERFACE 01



Use banner to indicate how long the Dasher has been waiting at the restaurants



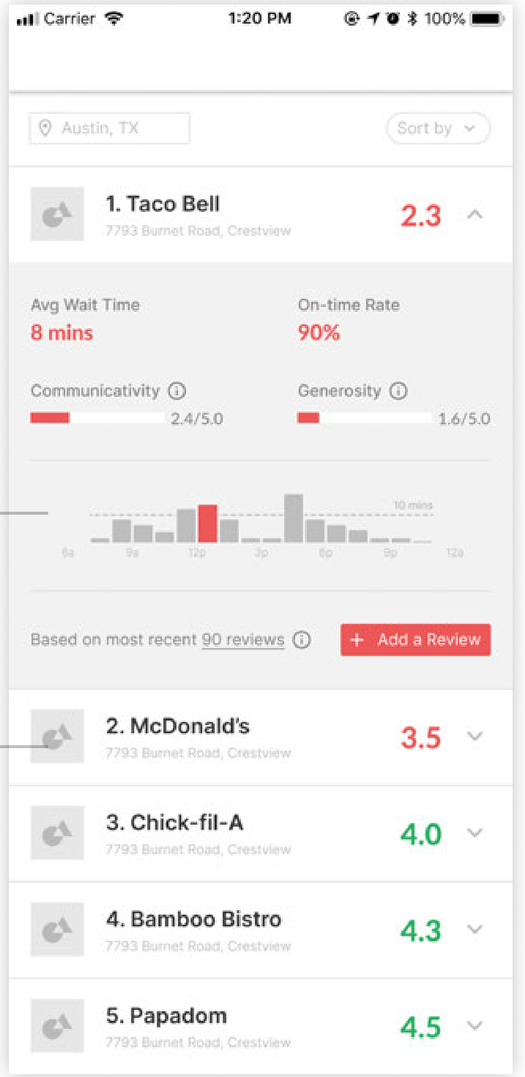
Reflect uncontrollable factors on the map

Use banner to indicate uncontrollable fators that might cause late delivery

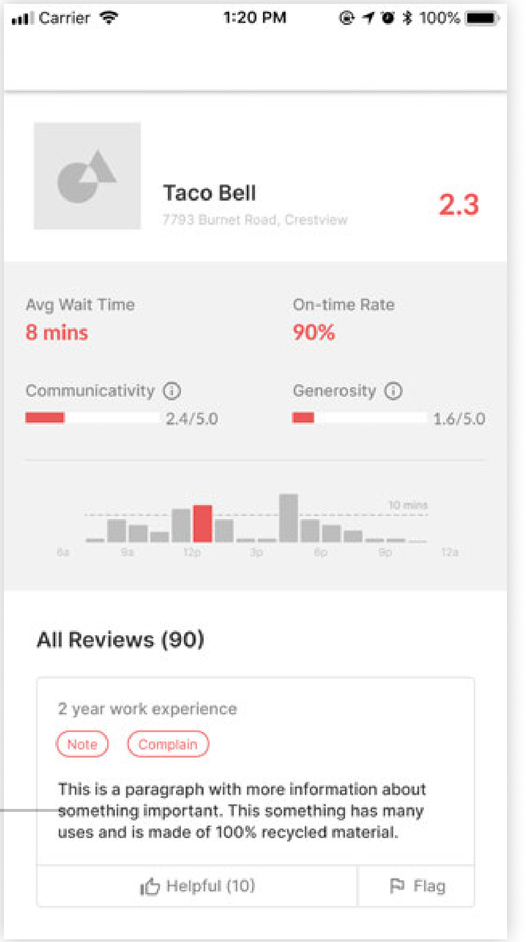
DESIGN INTERFACE 02

Average wait time during a certain time period

List of restaurants which are notourious for excessive wait time



Notes or compains a Dasher leave for others convenience



Q&A