

# Live Safe and Commute Smart: Interactive Map for House Rental

Team XYZ (#143): Yuting Lu Lei Fan Mingting Lu Dun Li Chenxi Yu

## Motivation/Introduction

The percentage of immigrants and students in New York City is much higher than any other cities. Searching for a safe area with acceptable commute time is an important issue for these people. However, existing house rental platforms don't provide safety information. It is inconvenient and time-consuming for users to check these information from somewhere else.

So we want to build an application which takes commute time and crime rate into account, to help people find houses faster and easier.

## Approaches

First, we obtained the latitude and longitude of each house record using Google API. Second, we built an interactive interface to allow the user to input frequent destination, acceptable commute time, and commute method. This was achieved primarily with HTML5, CSS3, and JavaScript. Third, we find all the houses within the current map range. The commute time was calculated for each record with the user's chosen commute method using Google API. Then, we display the house with blue dots if it is within the user's acceptable commute time, and with grey dots if it is out of the user's acceptable commute time. Libraries such as JQUERY.js and BOOTSTRAP.js were used. Last, a heat map of crime rate status is used to inform the users of the crime status in the neighbourhood.

## List of innovations

- The rental recommendation system considers the crime records of surrounding areas.
- The commute time between user-defined destination and the candidate house is used, instead of the commonly used distance.
- The commute time could be measured by walking, public transportation, and driving.

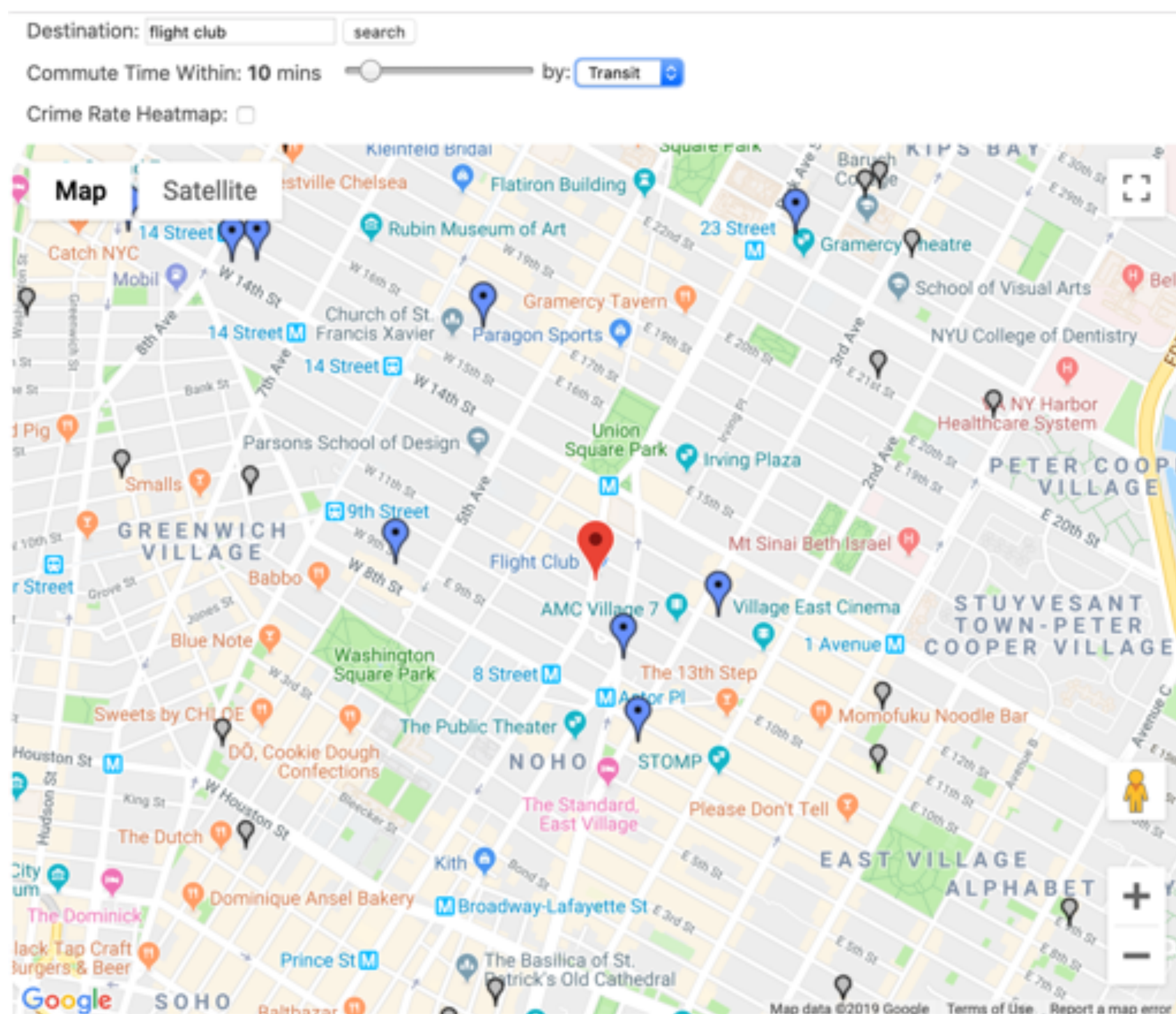


Fig. 1 House rental information is shown on the map. The red dot is the user-defined destination; the blue dots are houses within the acceptable commute time; the grey dots are houses out of the acceptable commute time.

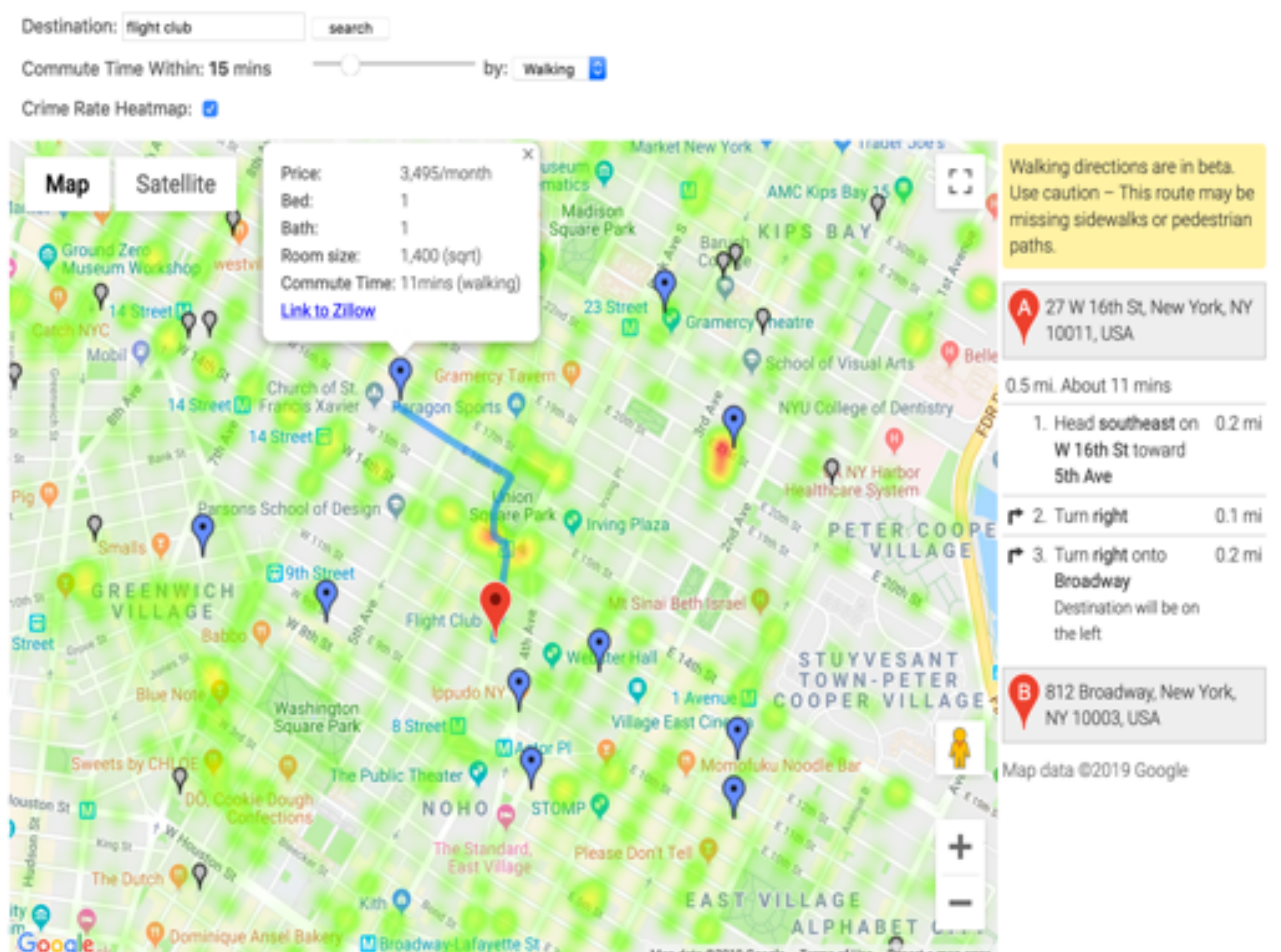


Fig. 2 The crime rate heatmap is shown with house rental information. The basic house information is shown in the tooltip, and the commute route information is displayed on the right side when a potential house is selected.

## Experiments/ Evaluation:

We carefully designed a questionnaire with Google Form and asked respondents to fill it after they explore the interface for a while. We asked the respondents to imagine that they are going to move to New York City one month later and have no idea where to live so far. A total number of 25 respondents were collected from diversified occupations and age distributions.

According to the feedbacks, it can be shown that more than half of the users claimed that they are very satisfied with the crime rate heatmap and commute time feature of this application. The majority of the invited users rated our rental recommendation system over the counterparts in the market.

## Conclusions:

An interactive application for house rental has been developed, which makes it possible for users to take commute time (from candidate house to user-defined destination) and crime rate into consideration while searching rentals on the Internet. It was deployed through Heroku and available for [preview online](#). According to our questionnaire feedbacks, more than 87% of the users claimed that they are satisfied/very satisfied with the crime rate heatmap and commute time feature of this application. In the future, we plan to add public school and shopping center information into the interactive map.

## Data

NYC OpenData Zillow Google

### 1) Crime data

The crime data for New York city was downloaded from the website of [NYC open data](#).

### Characteristics:

More than six million records, each contains 35 features, 1.9GB disk size.

### 2) House rental data

The house rental data was scraped from the [Zillow](#) website.

**Characteristics:** More than 4,000 real-time records for New York city.

### 3) Map data: Google Map JavaScript API

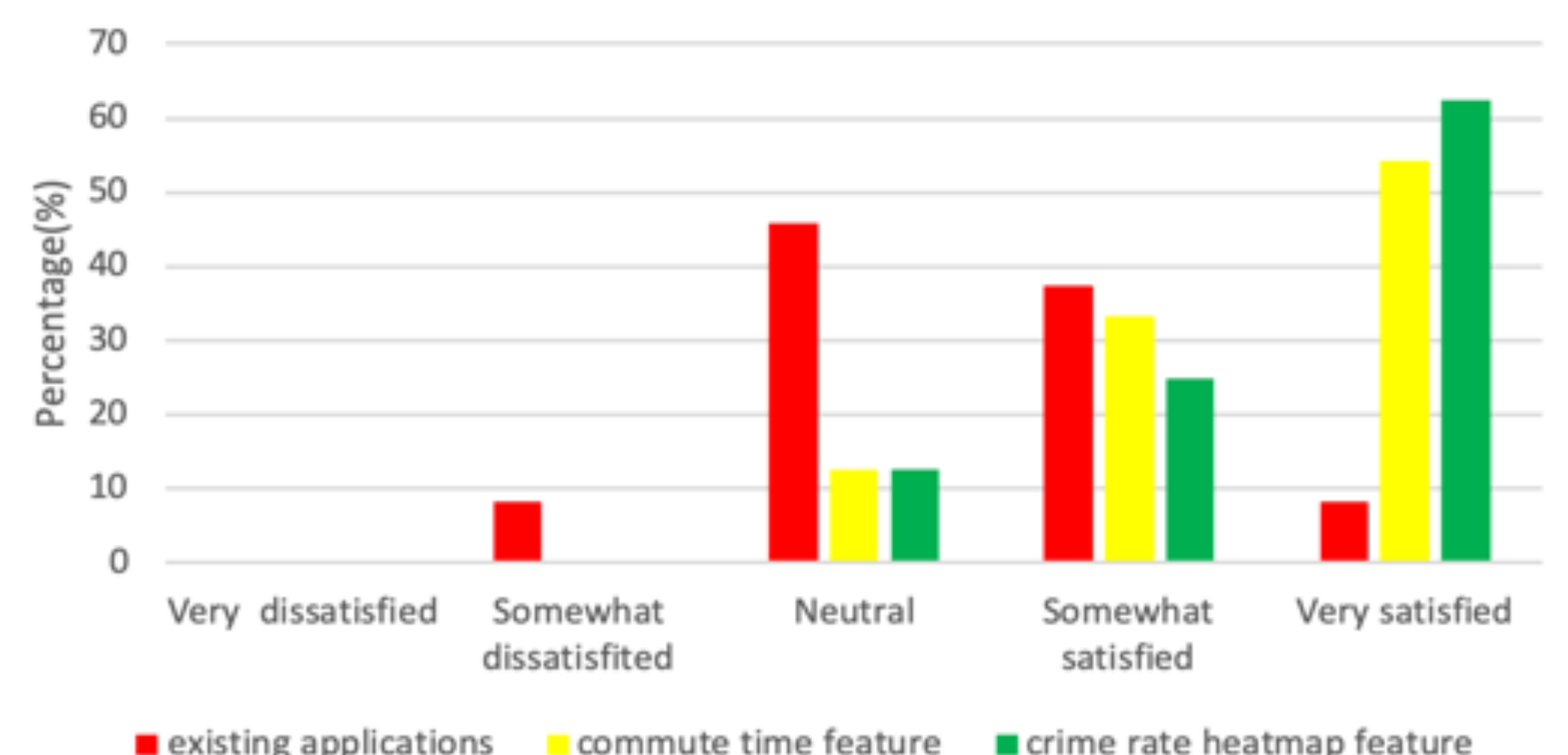


Fig. 3 User's feedbacks.