Safety-oriented Apartment Listing Site for Students

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Summary

We create a safety-oriented apartment listing site that considers each property listing as a web of routes centered at the apartmentand expanding into the wider neighborhood.

Motivation

College students living off-campus feel insecure because of relatively high crime rate in Atlanta. Unfortunately, most apartment listing sites fails to provde safety-orientated recommendations.

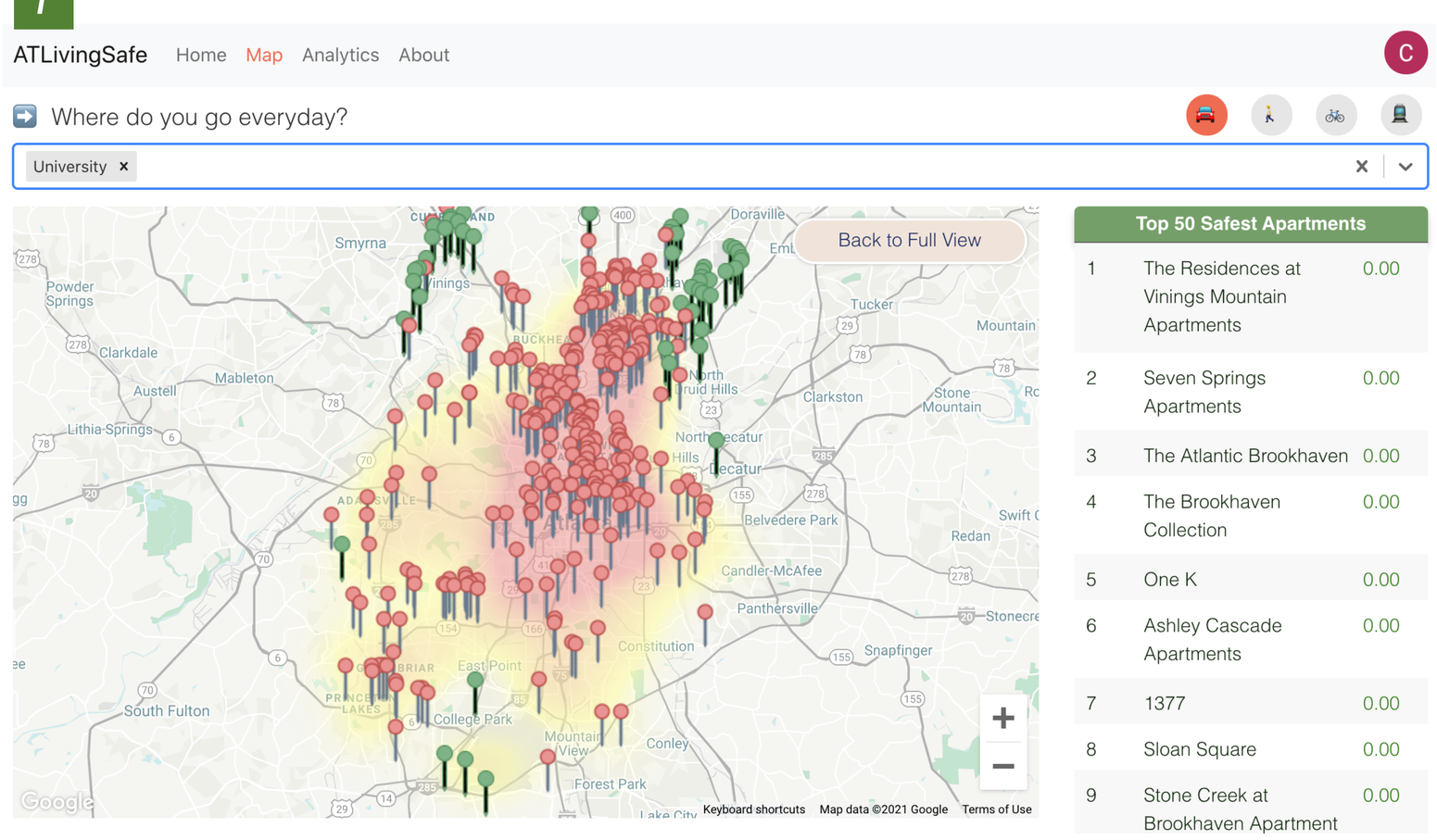
Dataset

Apartment Data. Apartment data is obtained from *Apartments.com* by scrapping.

Crime Data. We analyzed the crime data from 2009 to 2021 from the Atlanta Police Department and predicted future crime rate based on time series analysis. We also did exploration data analysis on the crime data.

Geographic Data. We collected our geographical data from OpenStreetMap, which contains information of geomorphic characteristics, public transportation, public facilities.

1



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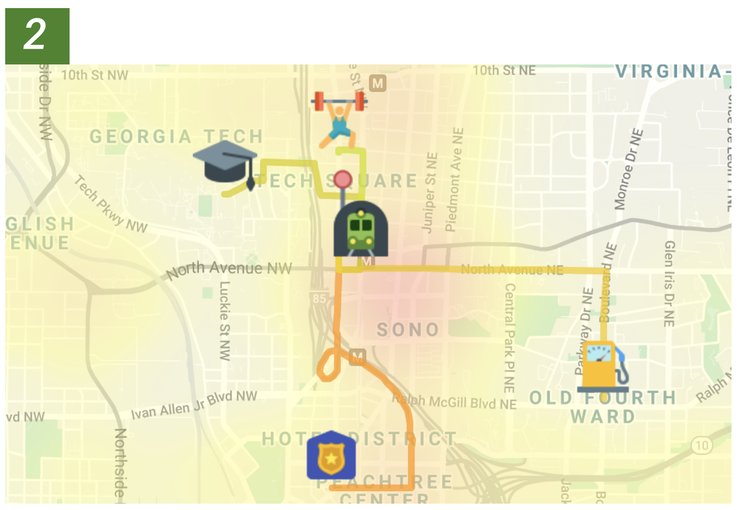

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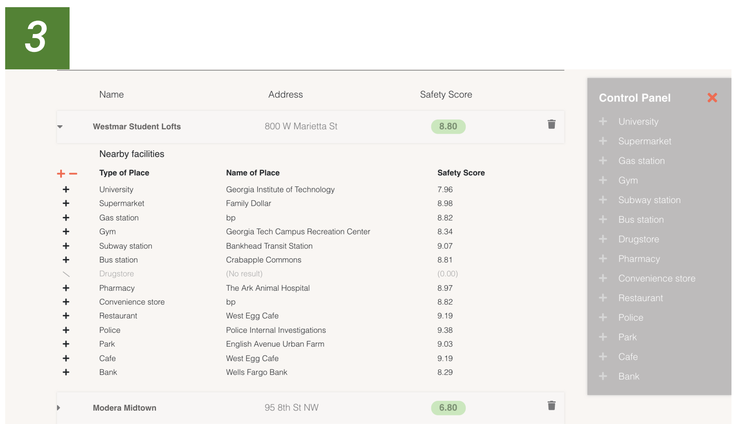


1 Location Safety Score Evaluation We split the area of Atlanta into 260*280 grids based on longitude and latitude. In order to incorporate adjacent crime incidents for each grid, we applied kernel method on the matrix

2 Route Safety Score Evaluation We compute the safety score of a route and evaluated the safety status by utilizing the waypoints data. To compute the safety score of a route, we add the safety score of all the waypoints on the route.

3 Dashboard If the user is logged into our system with a Google account, the apartments they have saved will be stored in our server database and will be displayed when the users open the dashboard under their account.

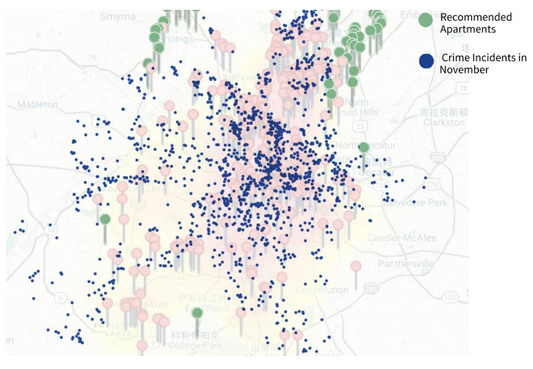
Experiment

UI experiment. To determine the best color scale for distinguishing routes of different safety scores, we did an experiment and tested different safety score domains for our color scales.

Heatmap color scale test. We also test different color scales for our heatmap to improve user experience.

Recommendation Sensitivity Analysis. As we increase the number of destinations, more apartments located in Midtown and Downtown will show up in our top 50 apartment recommendation list.

Evaluation

Apartment Recommendation. We compare our recommendation with future crime data and see that future crime incidences had little overlap with our recommended apartments.

Product Design. Our user survey yielded positive responses and our NPS is 64%