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NEAT LAB VISUALIZATION DASHBOARD

INTRODUCTION

- Connected to NEAT Lab research
- Understanding the lives of College Students with Autism Spectrum Disorder (ASD)
- Directed by Dr. Moushumi Sharmin & Dr. Shameem Ahmed



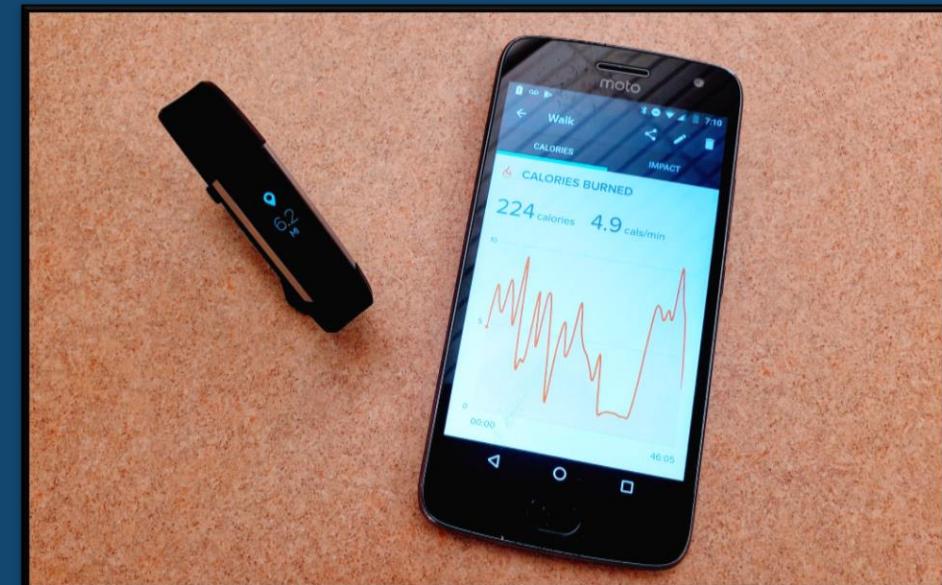
MOTIVATION

- CDC 2018: About 1 in 59 children were identified with Autism Spectrum Disorder (ASD)
- It is estimated that in the next decade, only 38.8% of post-secondary students with ASD will graduate.



FIELD STUDY

- 20 college student participants (10 Neurotypical, 10 Neurodiverse)
- Weeklong field study with Fitbit and mobile phone
 - Self-reported stress
 - Survey responses
 - Heartrate
 - Step count
 - Sleep duration and quality
 - Geographical location



THIS PROJECT:



Visualizations



Dashboard

APPROACH

- Exploratory data analysis
1. Process large dataset into visualizations
 - Iterative, with feedback
 2. Convert visualizations into templates
 3. Build web platform for larger academic community



PROJECT STAGES

Phase 1

Winter 2018 – Summer 2019

- Initial study phase
- First data visualizations
- Web platform prototyped

Phase 2

Fall 2019 – Winter 2020

- Refine/Templatize visualizations
- Unify data sources
- Build web platform

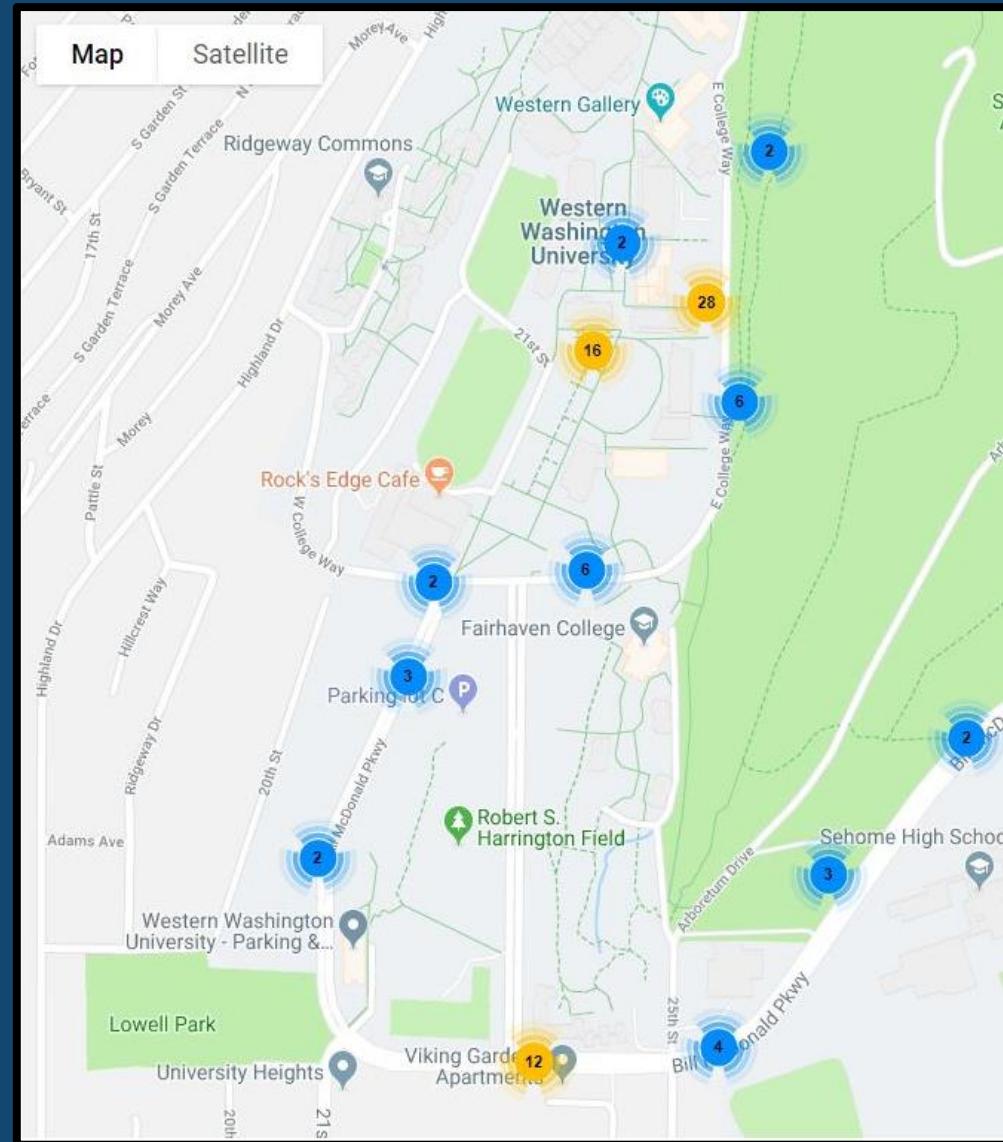
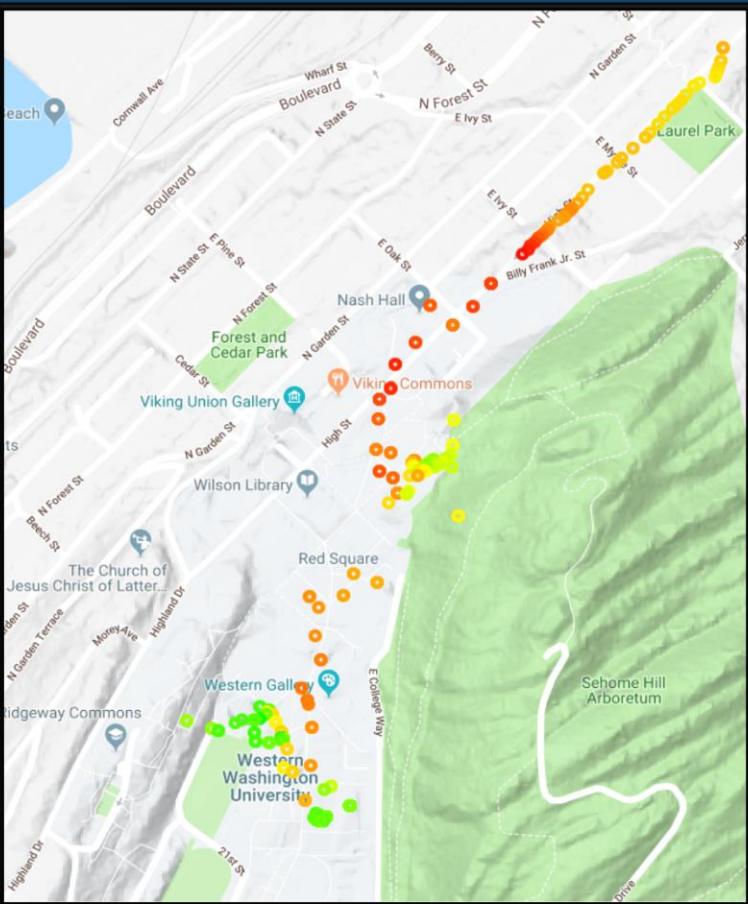
Phase 3

Winter 2020 - Onward

- User Evaluation
- Aggregate data from global research
- Increase access to research materials

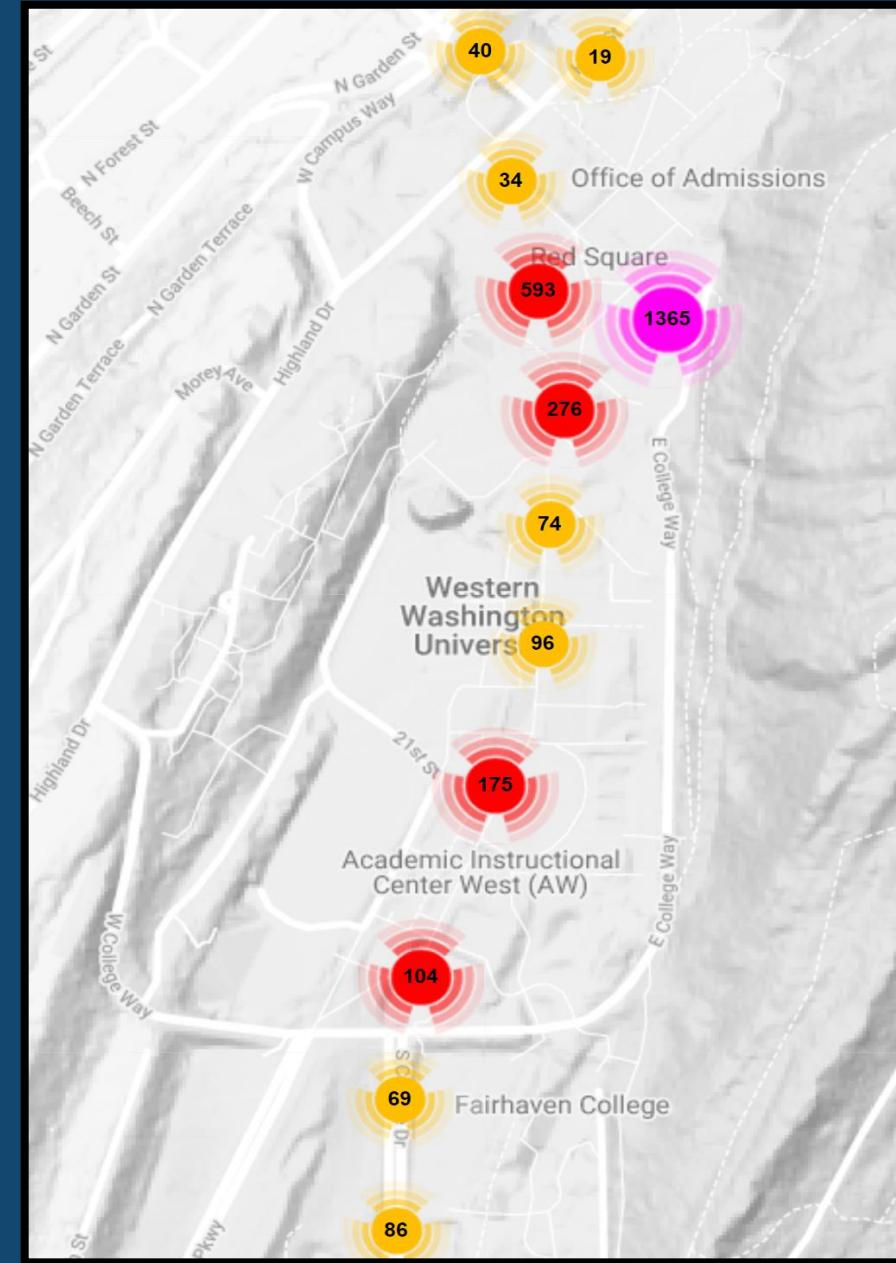
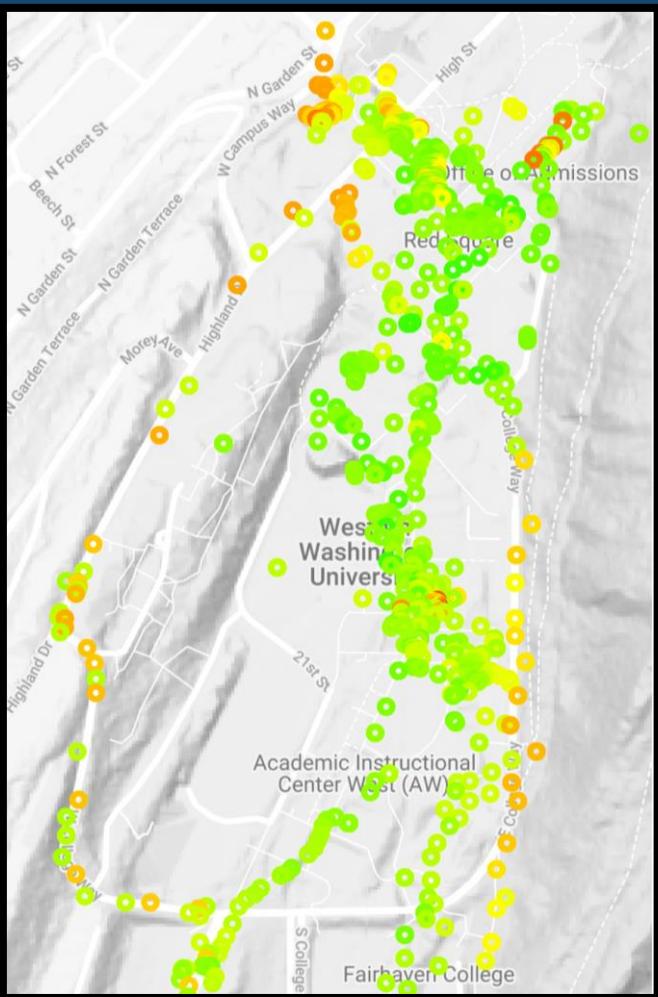
STRESS BY LOCATION

Created by Bradley Hoefel



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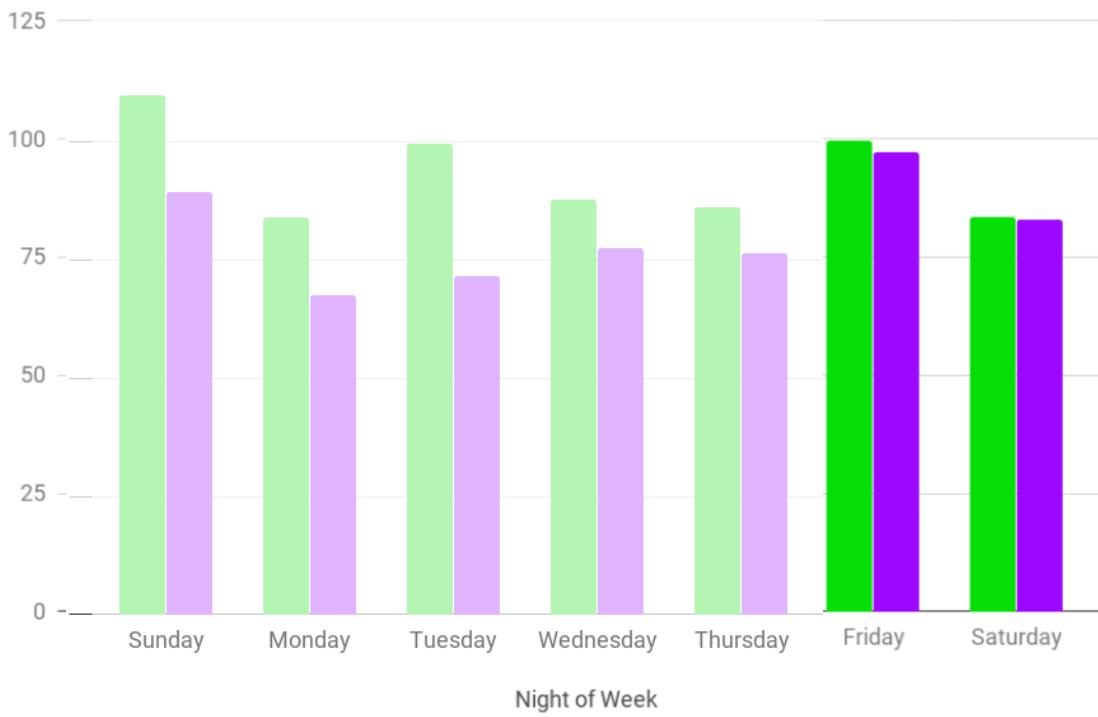


SLEEP

REM Sleep per Night

■ Neurotypical ■ Neurodiverse

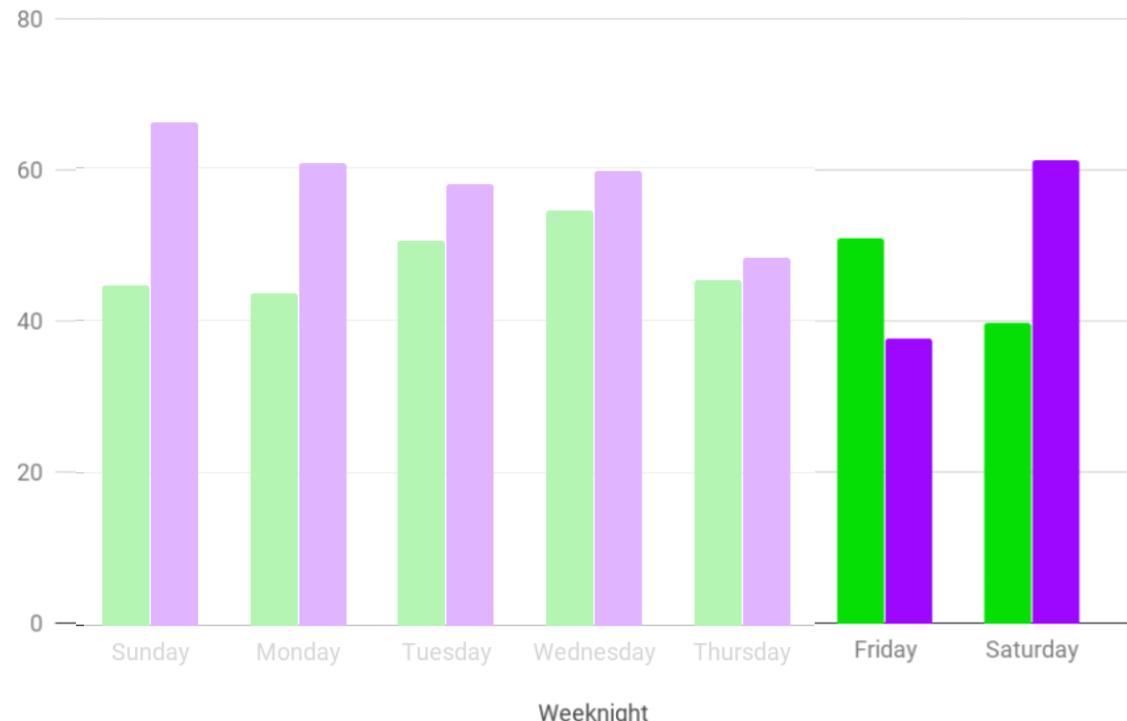
REM Sleep (min)



Awake Duration per Night

■ Neurotypical ■ Neurodiverse

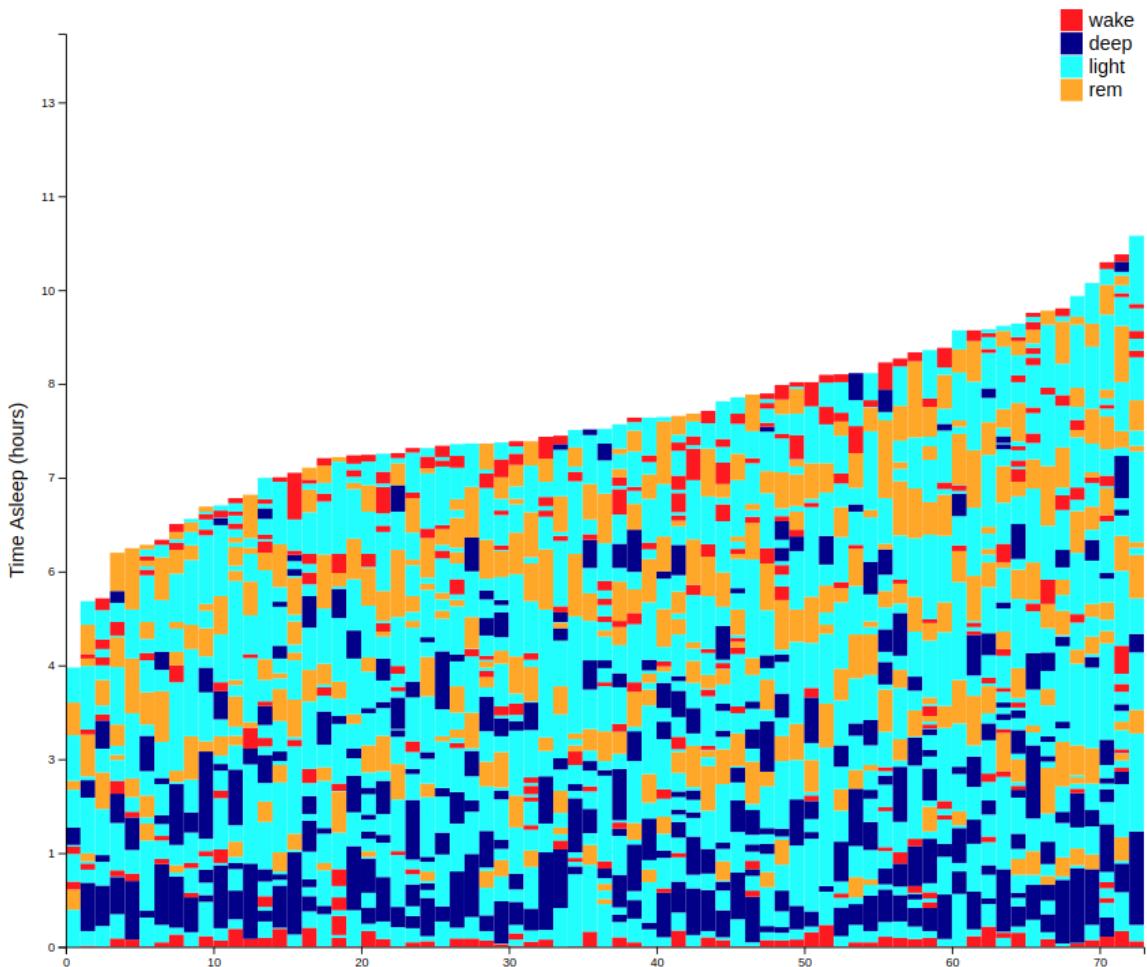
Minutes Awake at Night



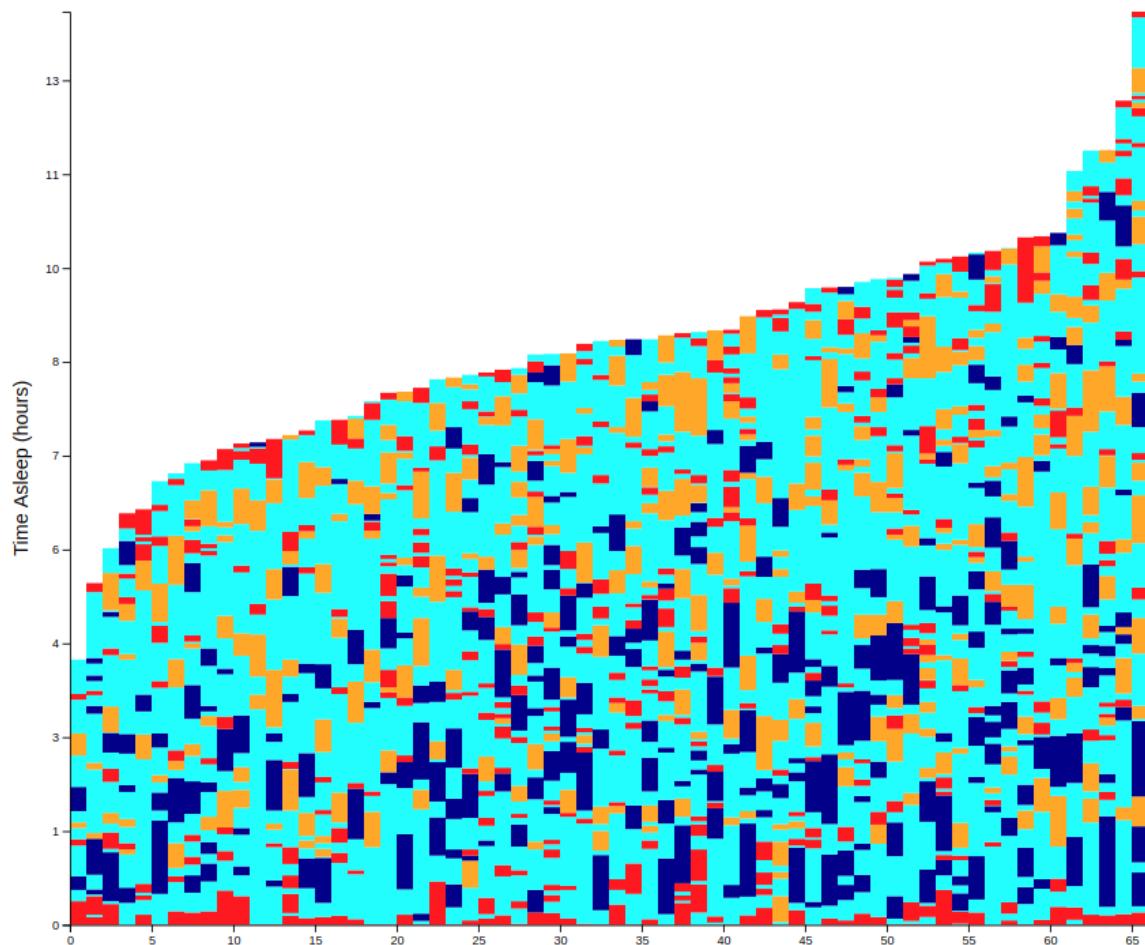
SLEEP

[Live Demo](#)

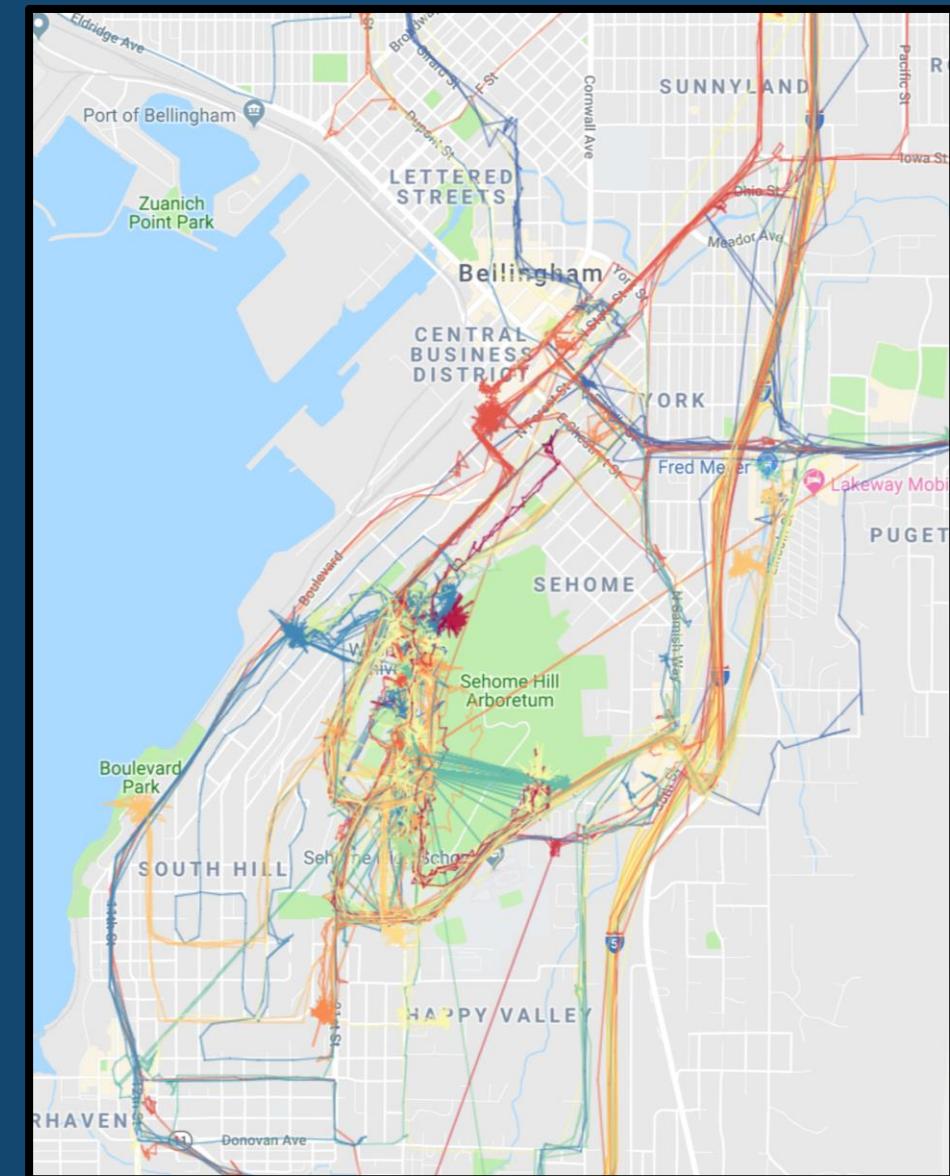
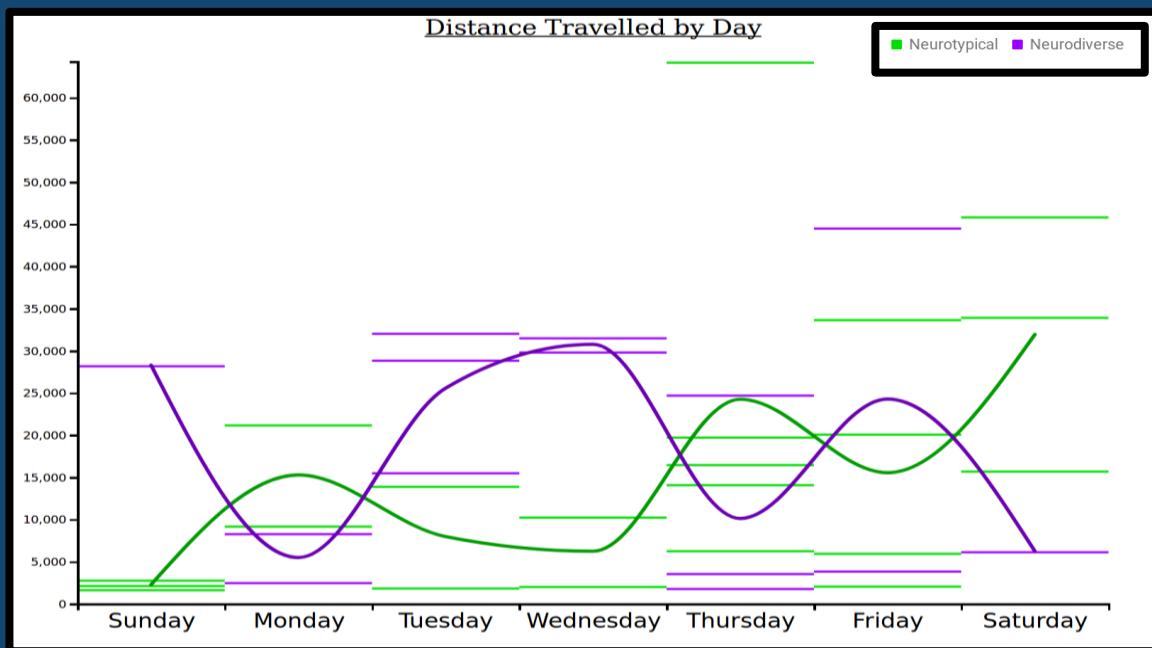
Neurotypical Sleep Habits



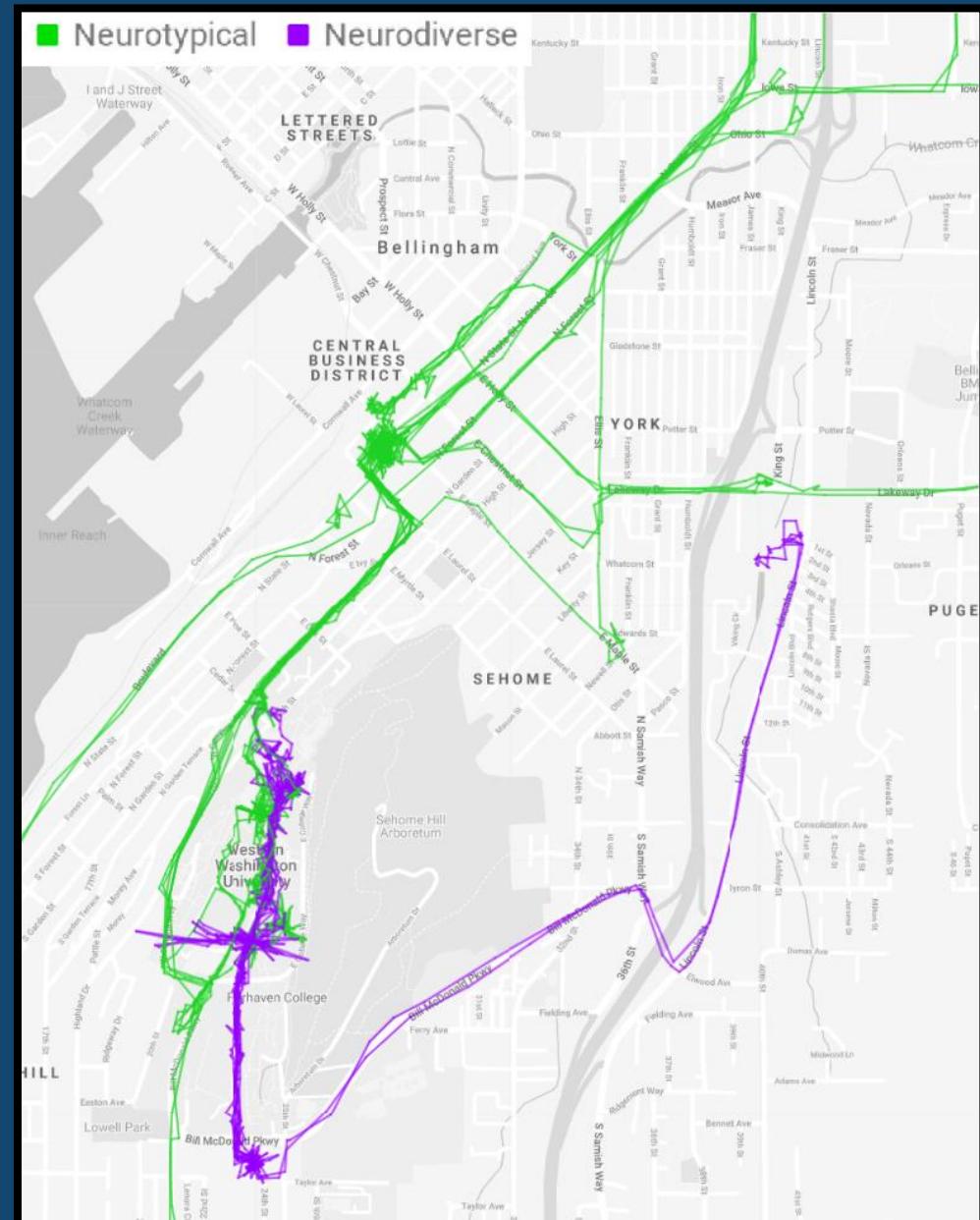
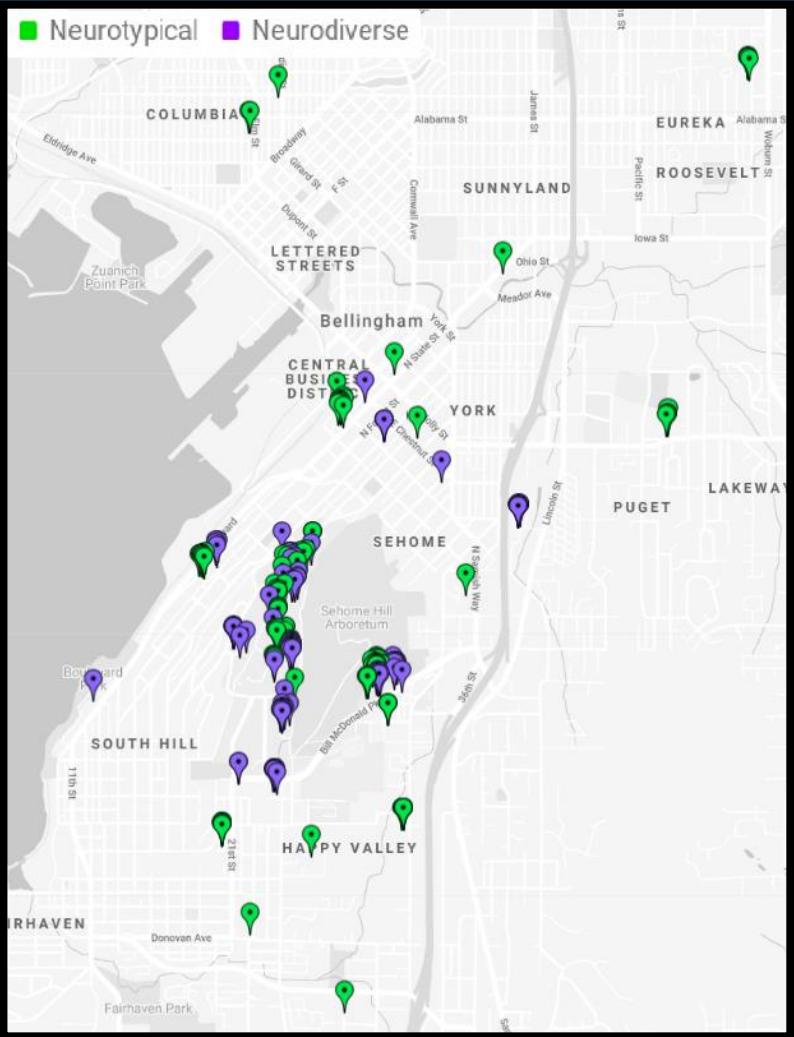
Neurodiverse Sleep Habits



NAVIGATION

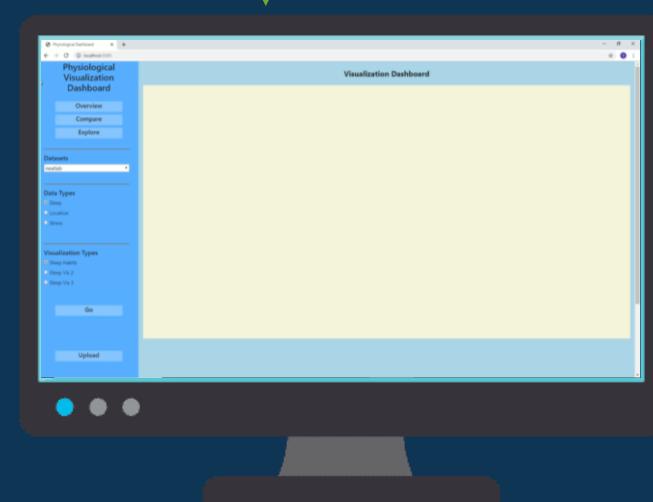
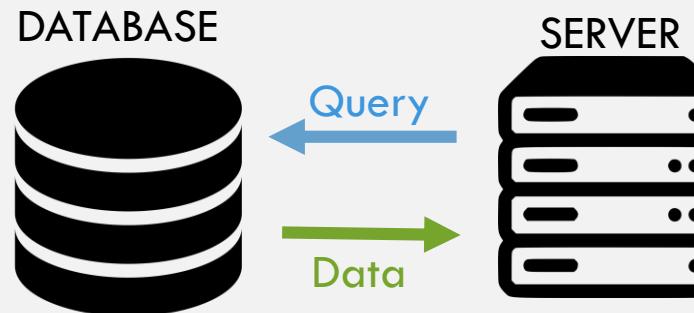


NAVIGATION



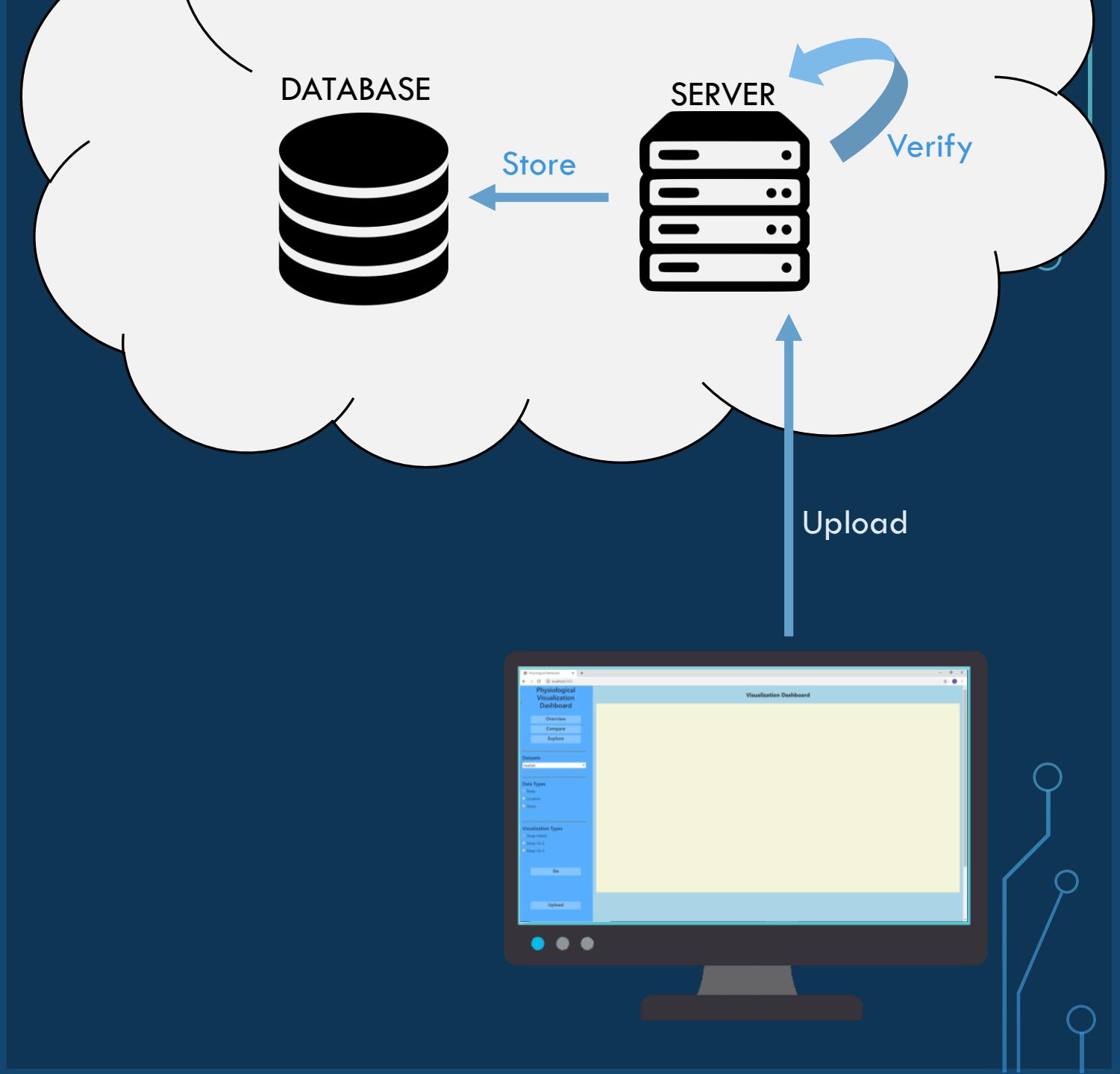
THE PLATFORM

- Standard webserver architecture
- Will be hosted within the `cs.wwu.edu` domain



THE PLATFORM

- Upload feature
 - To be used by researchers at other institutions
 - Allows for utilization of visualization templates



DEMO

TECHNOLOGY

- D3.Js: Dynamic Visualizations
- Node.Js, Express.Js: Server framework
- MongoDB: document-based database
- Docker: Containerization



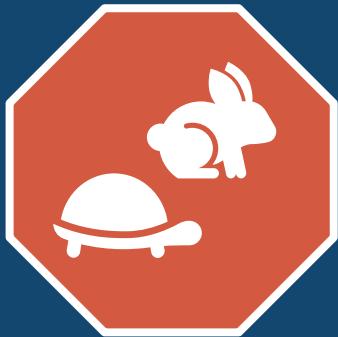
DIFFICULTIES



Fitbit API



Mongo Driver



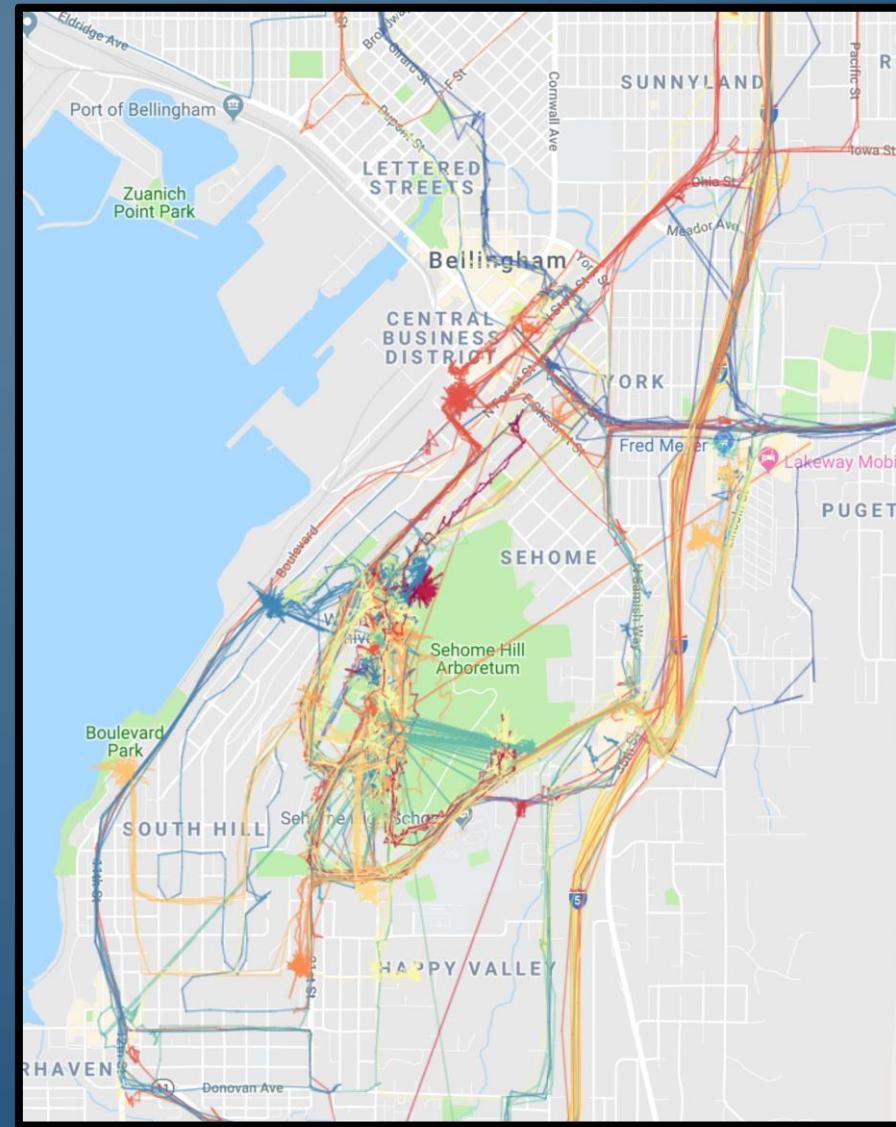
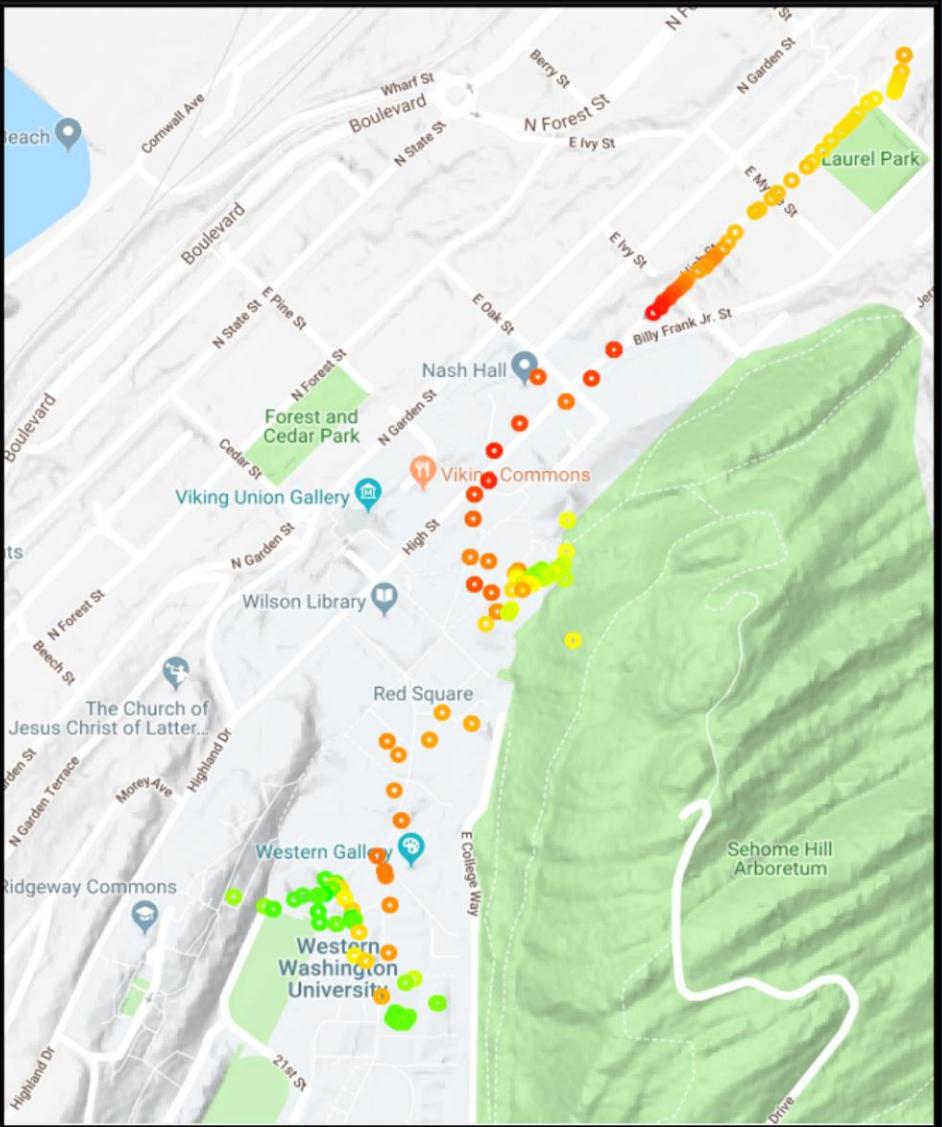
JavaScript
Synchronization



Slow Loading



Data Analysis



STATUS

Completed	Pending
<ul style="list-style-type: none">• Server and database communicating properly• First batch of visualizations integrated and templatized*	<ul style="list-style-type: none">• Data upload feature• Server deployment• Additional visualizations

QUESTIONS?

