

Spectrum Health System Patient Service Delivery Planning

Spectrum Health, located in Grand Rapids, Michigan, provides high quality, high value healthcare through its seven hospitals, more than 140 service sites, and Priority Health, a health plan with nearly 500,000 members.

Our *Patient Service Delivery Planning* system increases customer satisfaction for patients while at the same time improves efficiency for Spectrum Health. It consists of two distinct parts, a mobile app and a web app, which share a common backend.

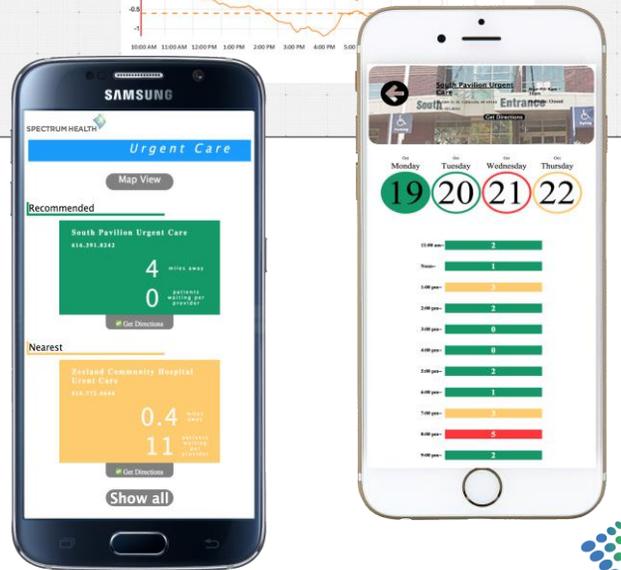
Our mobile app enhances the experience for patients by finding the nearest Spectrum Health urgent care center with the shortest wait time.

In addition, patients can see predicted future wait times so that they can plan for future visits on days and at times when wait times are normally shorter.

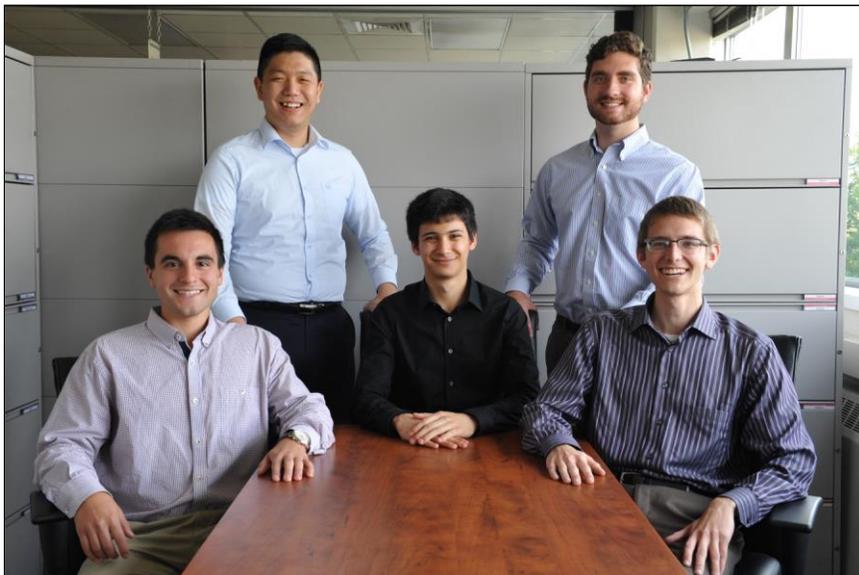
Our companion web app provides Spectrum Health with graphs and analytics of both past and predicted patient arrivals. Spectrum Health leverages this data to staff their facilities, optimize business hours, and predict average treatment time.

Both the mobile app and the web app use complex statistical software that predicts patient wait and treatment times. The design of this predictive model is completely modular so that it can be easily updated, enhanced, or even completely replaced.

Our *Patient Service Delivery Planning* system is written in C#, JavaScript, and R using AngularJS, D3.js, and MongoDB.



SPECTRUM HEALTH



Michigan State University

Team Members (left to right)

- Jim Torres
Clawson, Michigan
- Justin Oh
Seoul, South Korea
- Josh Curl
Chesterfield, Michigan
- Charles Bean
Milford, Michigan
- Luke Stanton
Livonia, Michigan

Spectrum Health

Project Sponsors

- Adam Bakker
Grand Rapids, Michigan
- Mary Delrue
Grand Rapids, Michigan
- Jane Gietzen
Grand Rapids, Michigan
- Matt Hahnfeld
Grand Rapids, Michigan
- Markus Neuhoff
Grand Rapids, Michigan
- Patrick O'Hare
Grand Rapids, Michigan
- Mike Ply
Grand Rapids, Michigan
- Mark Welscott
Grand Rapids, Michigan