Rapid Rescue

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Data Science to anticipate medical emergencies

Fundamental Questions:

- How many medical emergencies?
- Where will they occur?

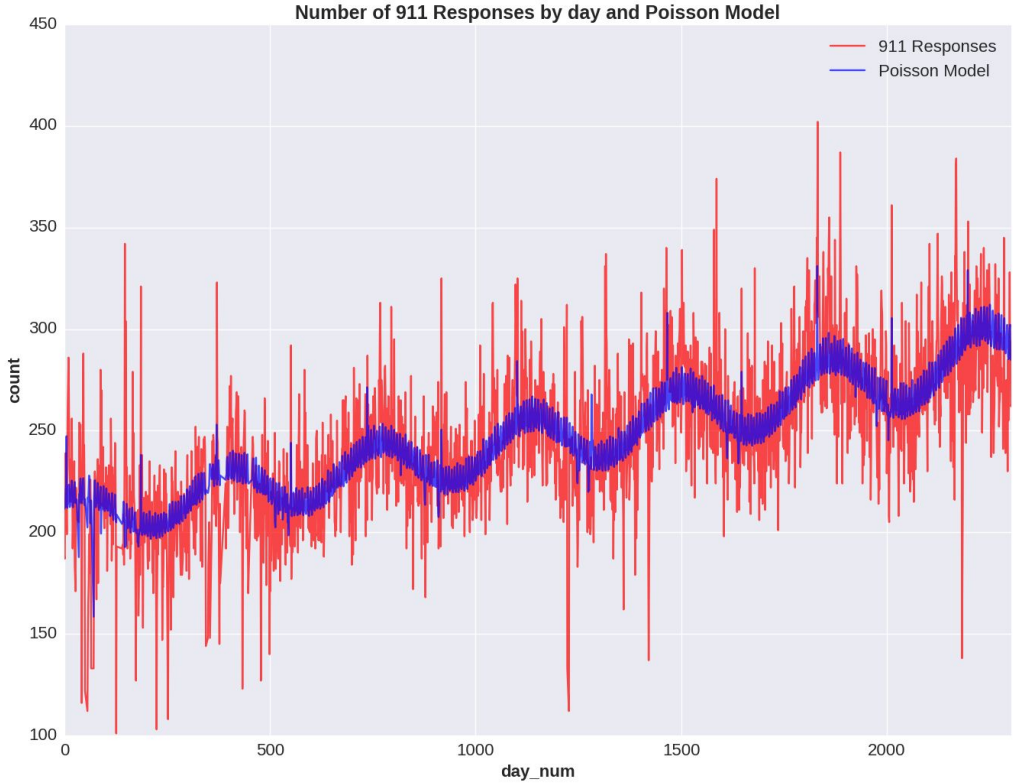
Goals:

- Improve allocation of resources
- Decrease response times
- Save lives and save money

How many medical emergencies will there be?

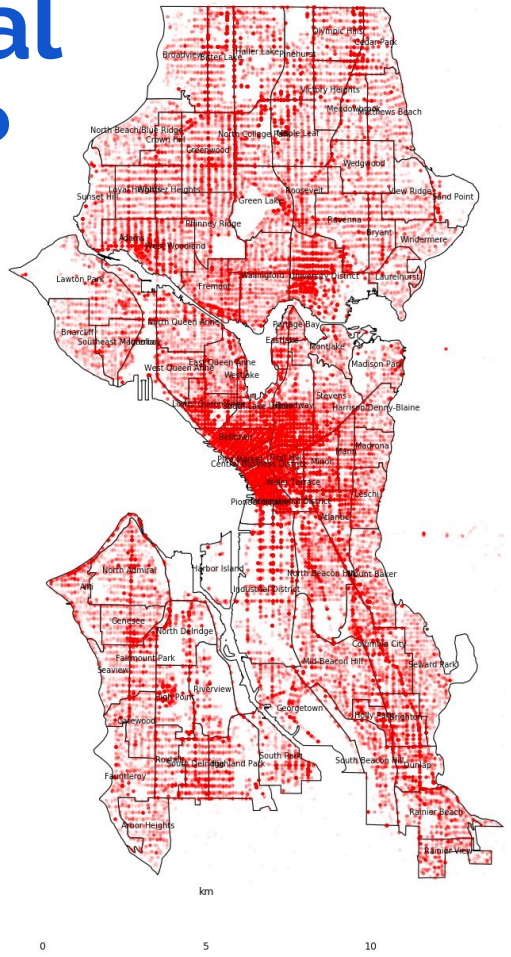
- Expected counts determined with Poisson regression
- Counts estimated from exponential of linear combination of predictors
- Used to allocate resources

$$\widehat{\mu} = e^{\theta_1 x_1 + \ldots + \theta_i x_i}$$



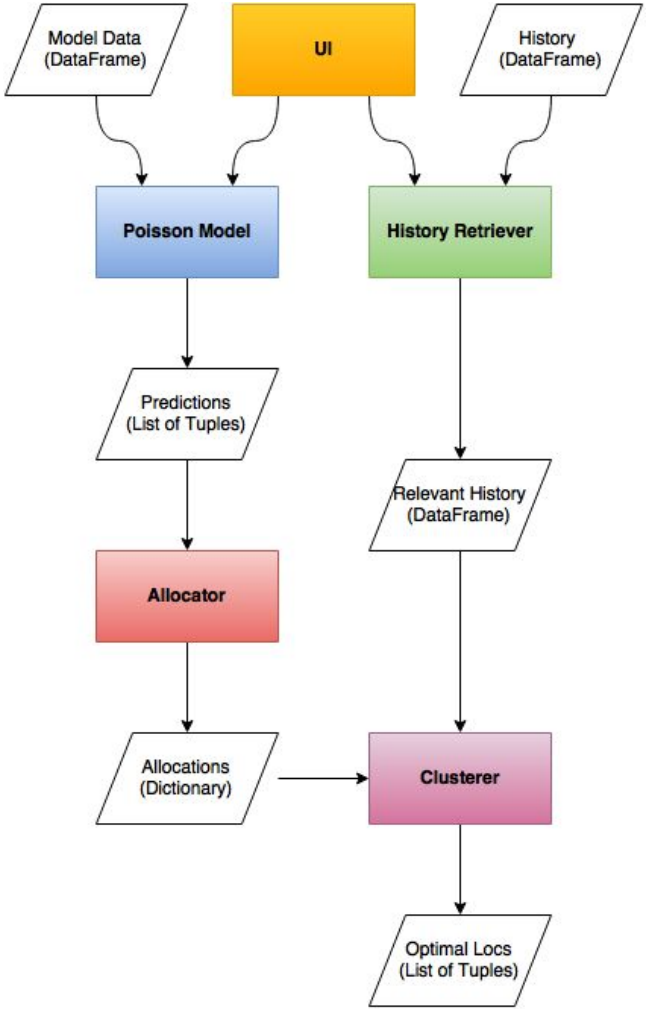
Where will the medical emergencies happen?

- Relevant historical information
- Geographic K-means clustering from Poisson model estimations and historical location data
- Centroids represent optimal locations for emergency response units



Project Design

- **User Input** fed to **Poisson Model** and **History Retriever**
- **Allocator** uses predictions from **Poisson Model** to allocate units
- **Clusterer** takes data from **History Retriever** and **Allocator** to find optimal locations for emergency response units



Thank you for your attention

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Future work and potential improvements

- Interfacing with domain experts: *predictors and needs*
- Improvements to regression model: *predictors/regularization, custom implementation*
- Travel time rather than distance-based K-means clustering: *Google Maps API*