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PROJECT PROPOSAL

HCDE 511

Crisis Clinic
Helping Lives On the Line

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Names of students involved

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Project name

Crisis Clinic: "When you need us, we're here!"

Crisis Clinic is at the heart of the Seattle-King County safety net providing a broad array of telephone-based crisis intervention and information and referral services. For many people in emotional distress or needing community services assistance, we are their "first call for help." Each year, we improve the lives of thousands of people by listening, caring and linking to services. "When you need us, we're here!" (Source: http://crisisclinic.org/about/)

Project concept and goals. What is the purpose of the visualization?

Every year, the Crisis Clinic receives a huge number of phone calls from King County residents in need of emotional support and community services. As a nonprofit organization, Crisis Clinic depends on the generosity of donors to keep its doors open and provide services. An interactive data visualization will allow them to better explore and understand patterns and trends in the calls they receive across geography and time. These insights will allow the staff to better provide resources in a targeted way, as well as communicate needs to stakeholders.

Description of the intended users and tasks - Proposed user personas and scenarios.

There are two key personas that we are targeting:

1. Pam the Staffing Manager

- As a staffing manager at Crisis Line, Pam needs to understand how to best staff the many different call lines that Crisis Clinic has to offer, including the Crisis Line, Community Information Line, and Teen Link. She is trying to decide whether or not she should add another staff member to the 211 line, and what shifts are most appropriate. By pulling up the interactive dashboard, she sees that call volumes have been increasing steadily over the past few months; she decides that it makes sense to take someone else on.

2. Tom the Fund Raiser

- Tom is responsible for talking to a local legislature in Bellevue about getting more funding for the Crisis Clinic. He goes to the interactive dashboard and can quickly zoom in on data revolving around call volumes from Bellevue residents. He captures a visualization that will help him communicate community needs to the legislature, and convince him that the Crisis Clinic is providing his town with an invaluable service.

Early sketches and storyboards of initial ideas of visualizations and interactions.

Fig. 1

Fig. 2
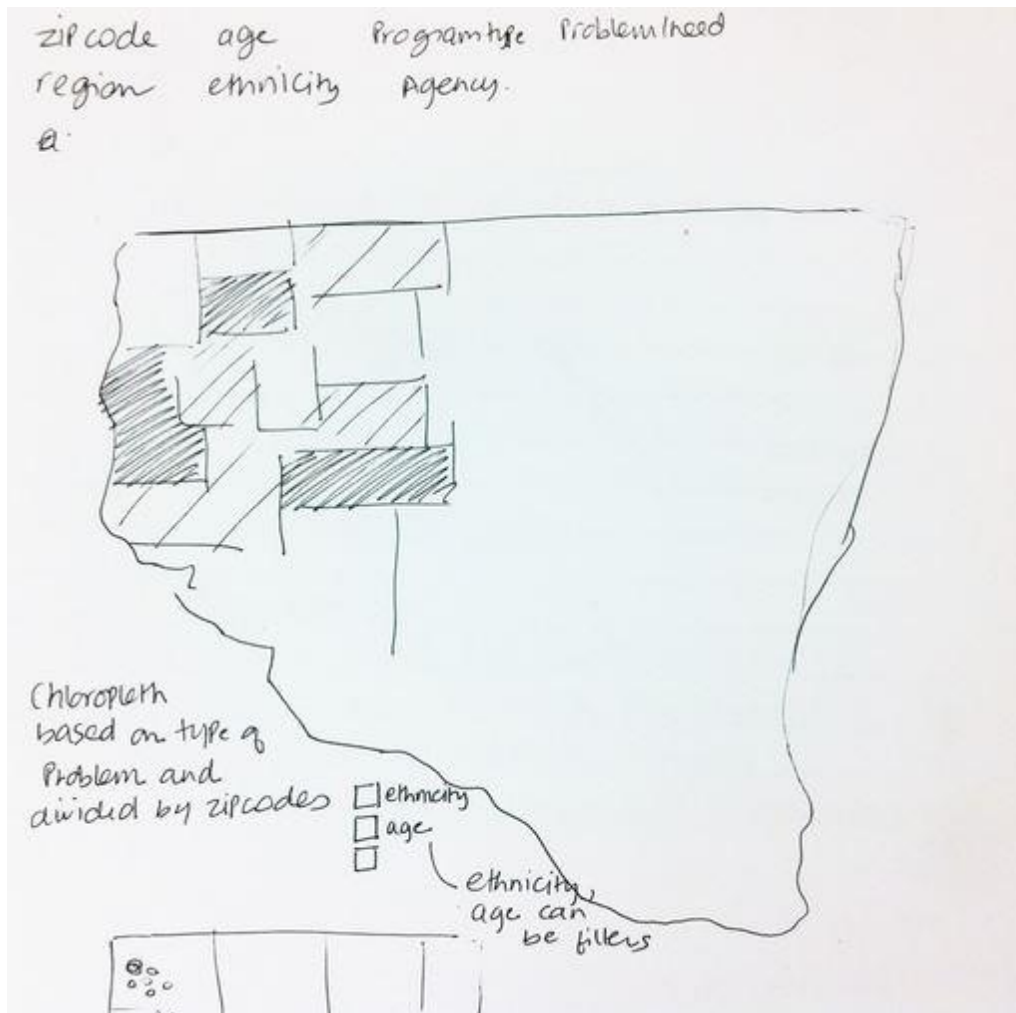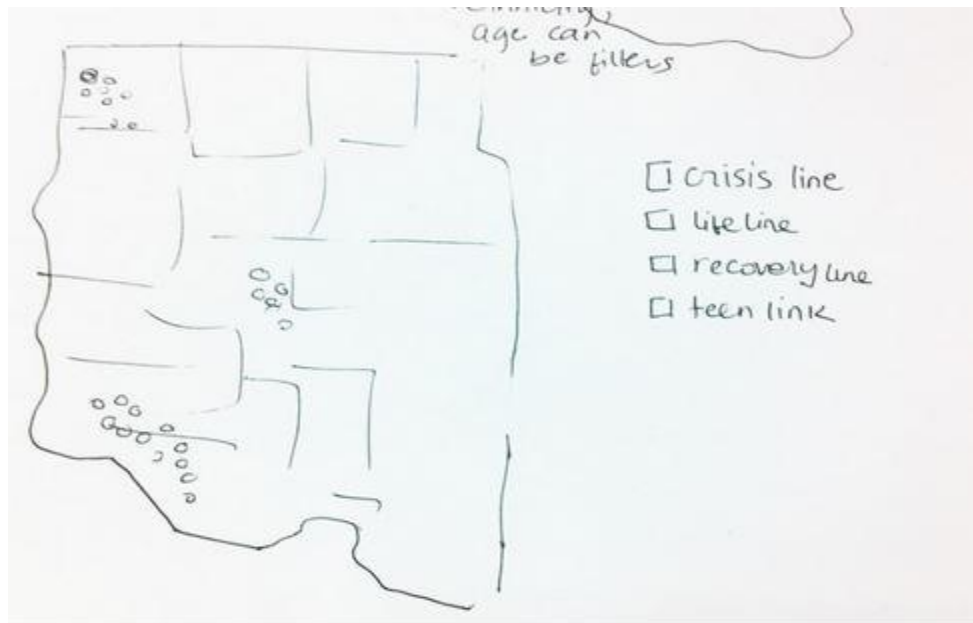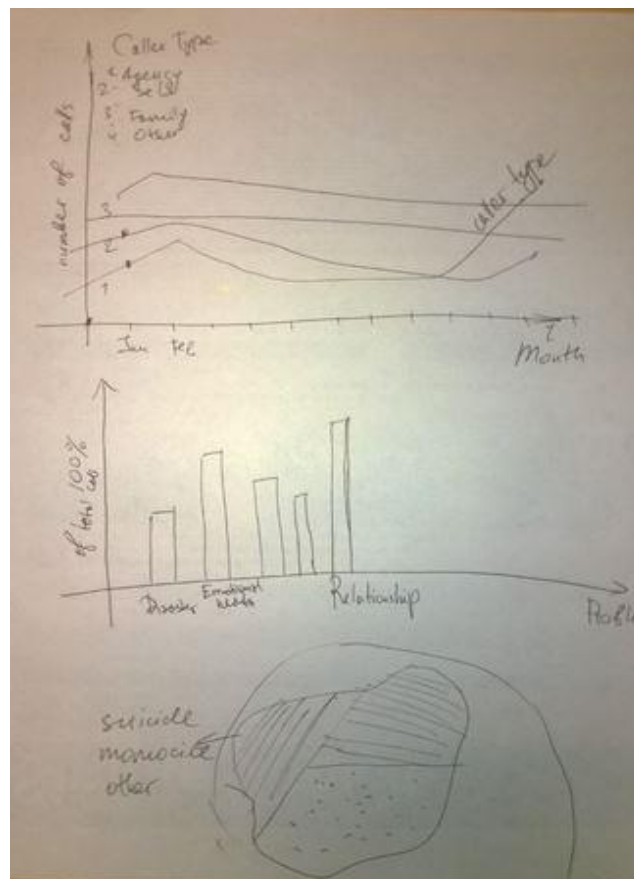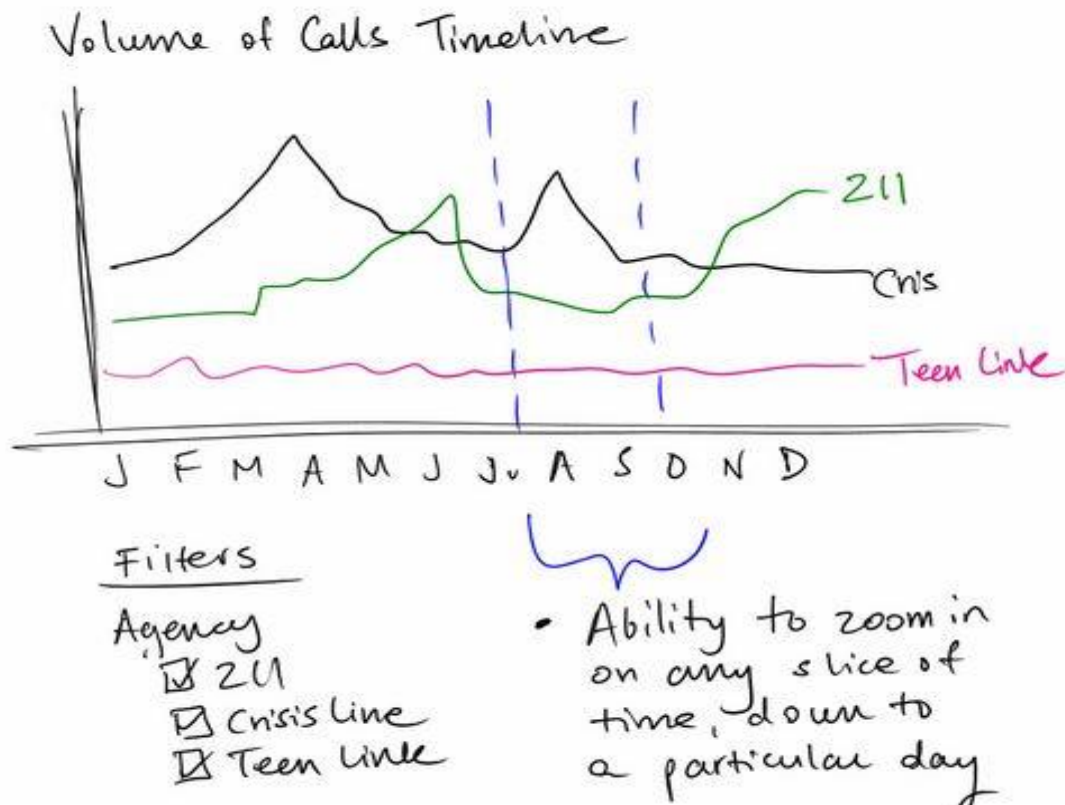

Fig. 3

Volume of Calls Timeline

211
Cri's
Teen Line

J F M A M J J₂ A S O N D

Filters
Agency
☒ 211
☒ Crisis Line
☒ Teen Line

• Ability to zoom in on any slice of time, down to a particular day
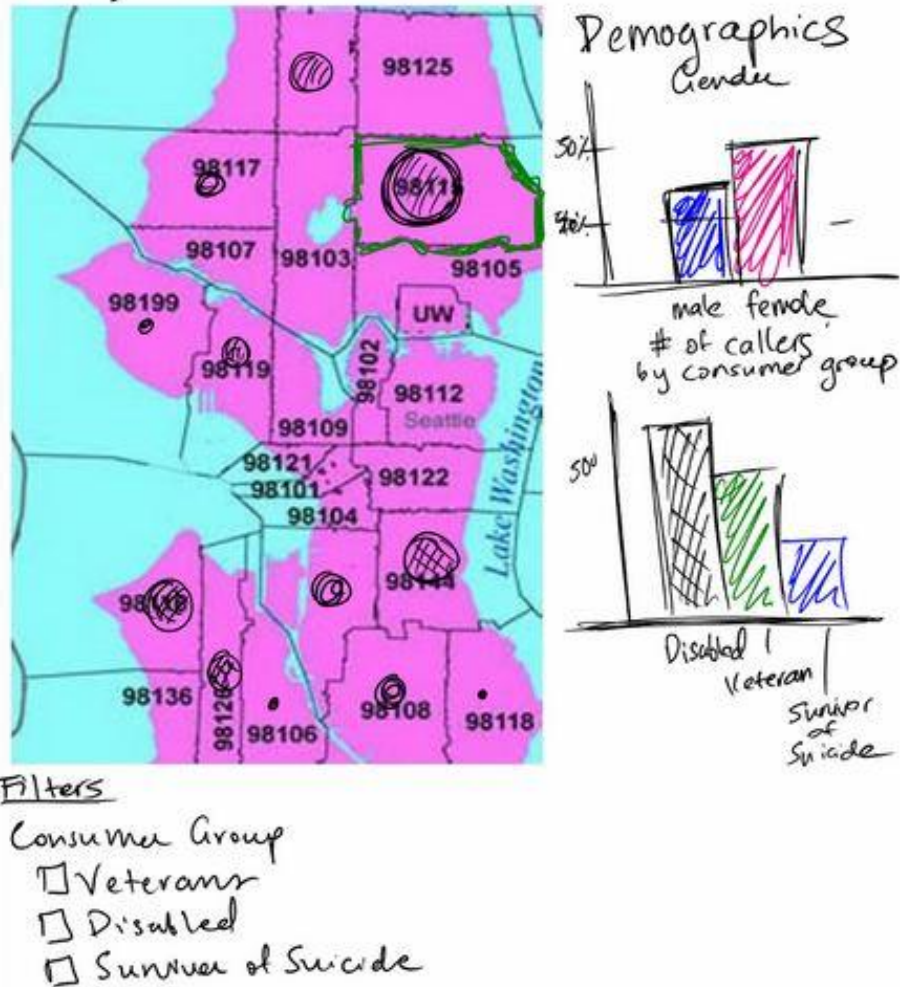
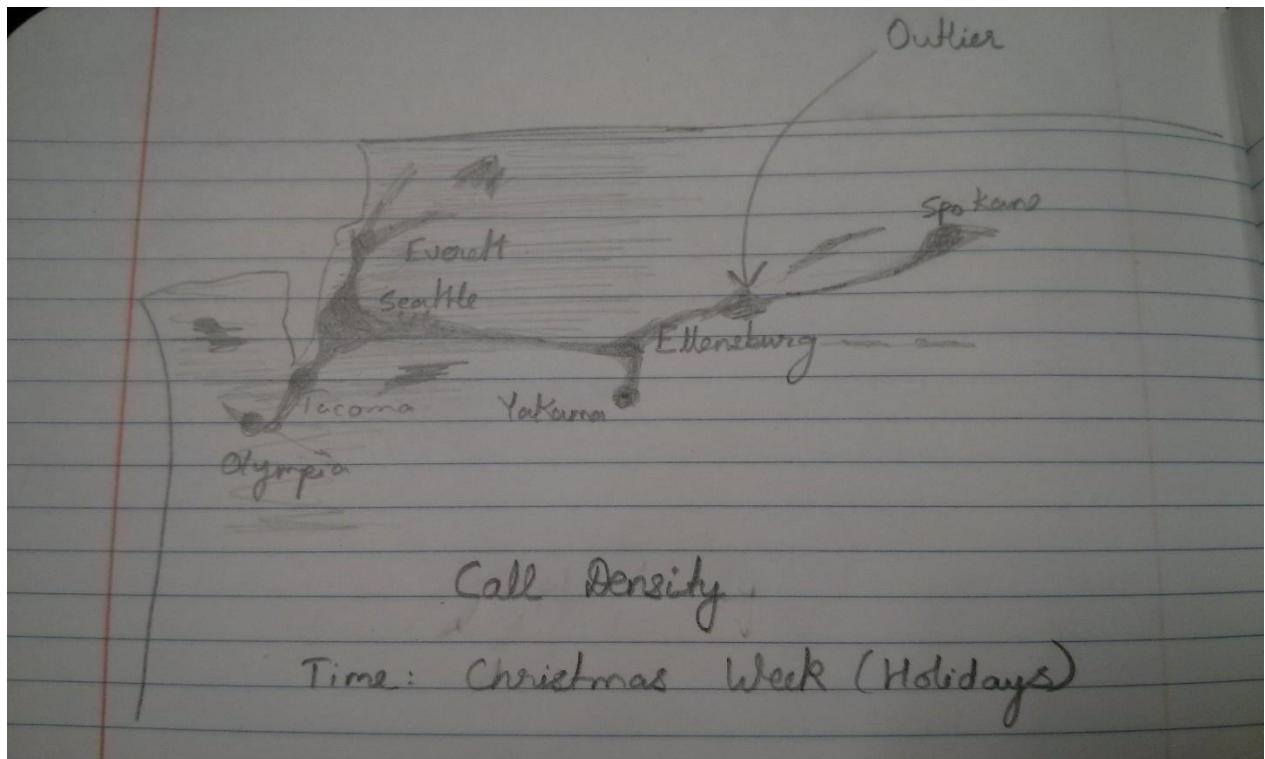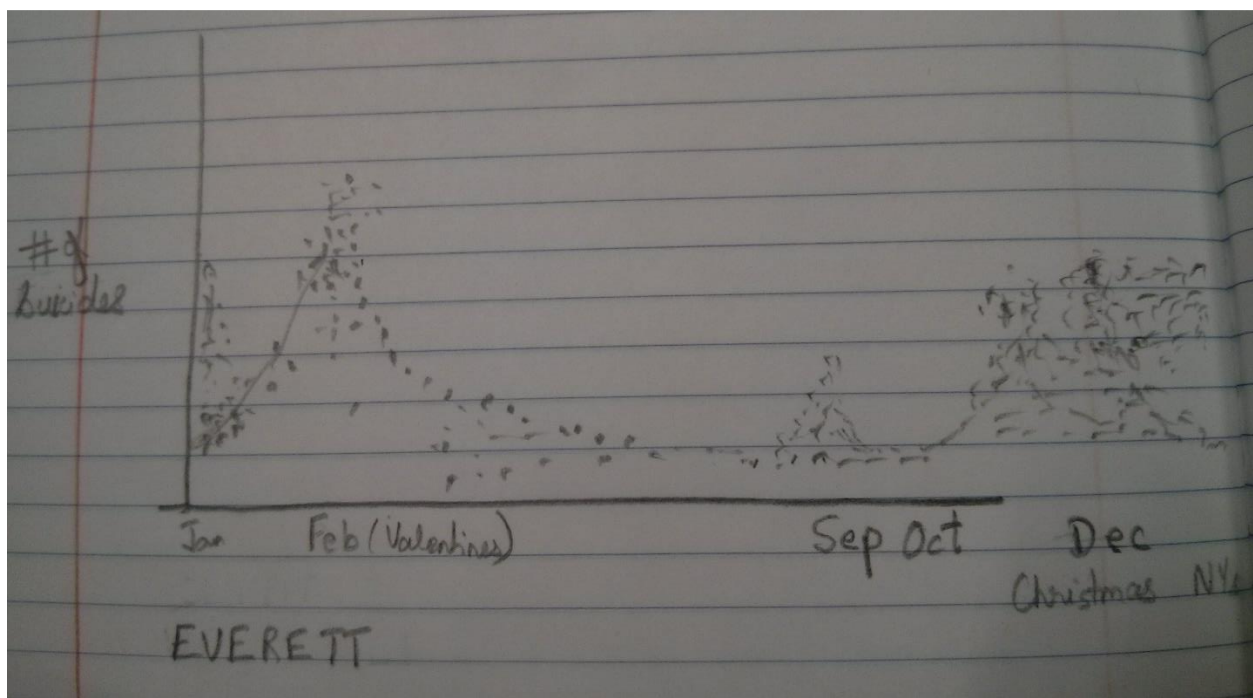*Fig. 4*

Fig. 5

Fig. 6

Fig. 7

Discussion of related work

Current status of crisis line

According to Crisis Line's IT Manger, their call data has not been visualized in many years. Last time they worked with someone to visualize the data, they gained insights about call trends over time. At that time they did not focus on geographic data, which would be valuable and interesting to explore.

Related/similar visualizations

Below are some examples of similar data visualizations we came across in the process of secondary research on our topic:

1. Interactive data visualization for global road safety data by Pulitzer Center.

This was an example of a spatial overview with additional data visualization summaries revealed on mouseover. In this example, by clicking on a country you can access an assortment of road safety data, ranging from trend lines on highway fatalities to statistics on the types of vehicles most likely to be involved in fatal crashes.
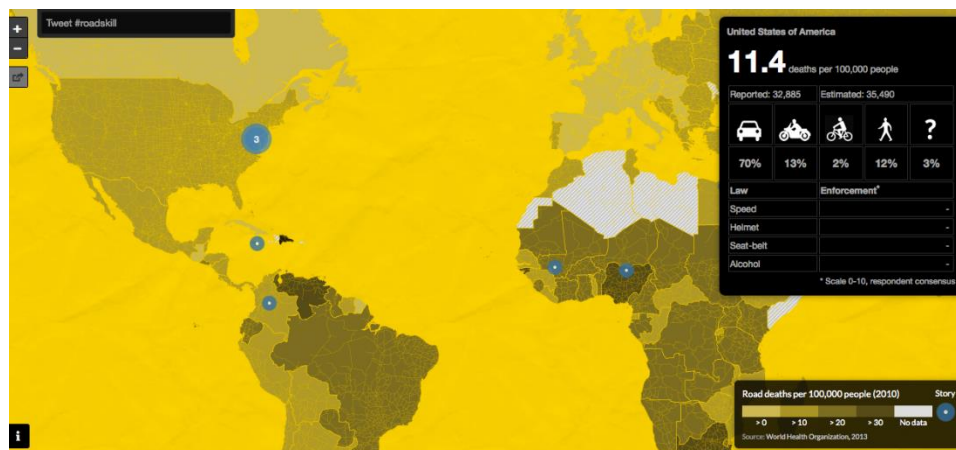

Fig.8

(Source: http://www.pbs.org/mediashift/2013/09/visualizing-the-global-road-safety-crisis/)

2. "How fast is LAFD where you live?" A map to compare the LAFD's performance across LA.

The spatial map shows a block-by-block analysis of how long it takes LAFD units to reach victims after the agency picks up a 911 call. A pop up displaying further data is revealed on mouseover with statistics on average response time, the total number of responses over five years, the breakup of medical and fire related responses, and avg. arrival and dispatch times. Filters to the side further enable scanning the information based on neighborhoods as well as type of need (e.g. cardiac). This analysis helps reveal "simultaneous incidents" as a vexing issue and difficult to manage in some parts of the city with current staffing levels. We thought this was similar to our goals for helping our client keep track of their calls.

Fig. 9

(Source: http://graphics.latimes.com/how-fast-is-lafd/#10/34.0288/-118.5109)
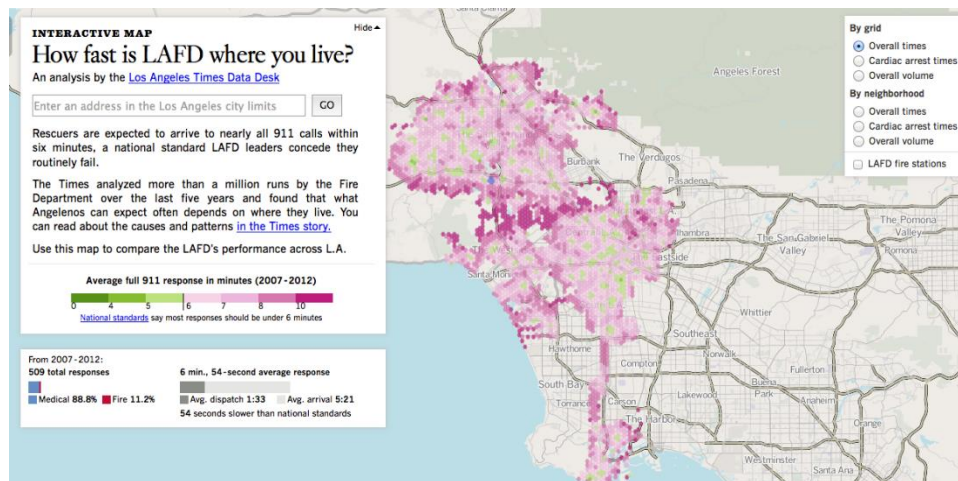
2. ***San Francisco Crimespotting*** designed by Stamen Design **i**s an interactive map of crimes in San   Francisco.
    This spatial visualization overlays crime events on a block by block basis. The users can filter by crime type, date and time of the day and find out the exact crime event by clicking on each point. In addition to information about the happenings in neighborhoods it helps answer questions about patterns like; is there more number of crimes this week than last week? More this month than last? A part of the idea here was similar to what we are aiming to accomplish for our client.

Fig. 10

(Source: http://sanfrancisco.crimespotting.org*)*
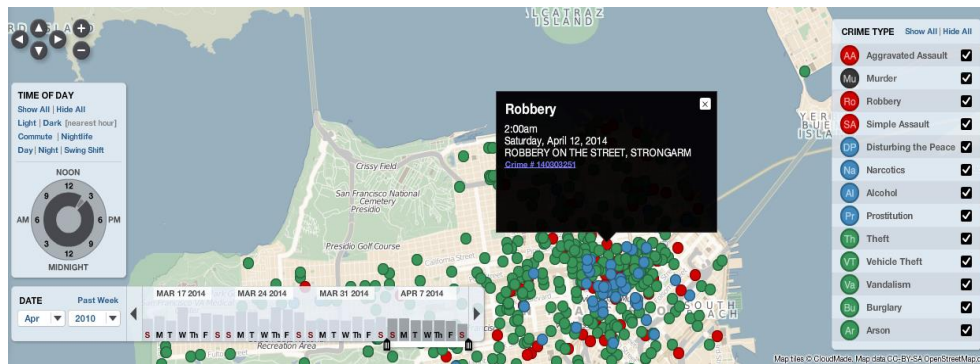
4. The INdigital Realtime Activity Display shows 911 emergency calls from cell phones in Indiana in realtime as they happen, and presents them on a map and timeline.

Entries in the timeline are visually linked with counties, and sparkline at the bottom summarizes total call volume per hour. The density of points on the timeline graph makes it easy to identify "crisis times"—or times when the system was handling a very high volume of calls.

Fig. 11

(Source: http://stamen.com/clients/indigital/*)*

Roles to be performed by team members

We are all interested in actively participating in all areas of the project, and expect that there will be a great deal of crossover between roles. With that in mind, we have assigned "area owners" that are responsible for ensuring that we are on track in each of the following key areas:

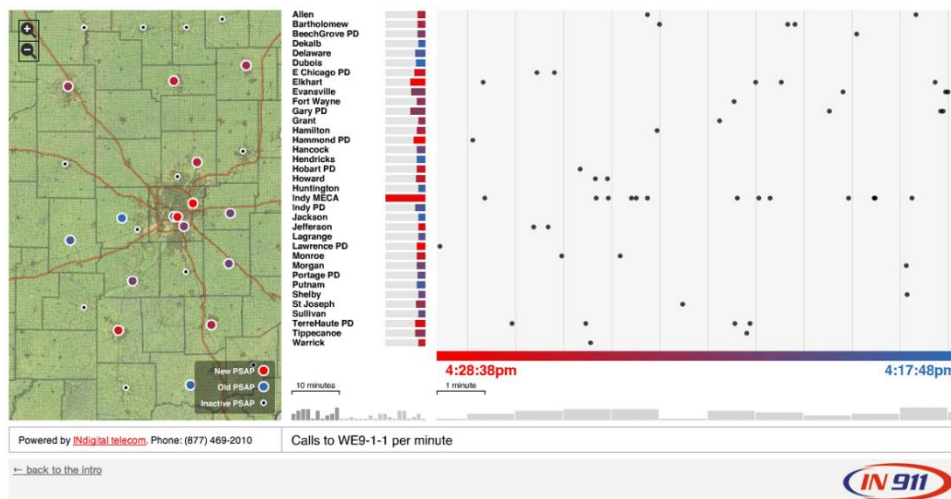| Team Member	"Title"	Responsibilities
Emily Greenberg	The "Project Manager"	Help coordinate meetings with stakeholders; ensure deliverables are on track and turned in on time; ensure schedule is on track and call out any areas of risk;
Abhigyan Kaustubh (AK)	The "Programmer"	Data wrangler, UX research, big data manipulation and analysis;
Rijuta Trivedi	The "Designer"	Help with the overall design of the visualization and provide support with any other graphic assets required as part of the project and presentation;
Lana Pledger	The "Usability Evaluator"	Conduct usability study with the stakeholder using paper prototyping, final version of the product. Collect feedback and incorporate it in the design process.

Week-by-week schedule

Week	Dates	To Do
1	1-7 April	• Filled out the Project Group Info Forms. • Got sorted into teams.
2	8-14 April	• Formally initiated as a team. Discussed ideas. • Initially decided (tentatively) to go ahead with finding correlation and possible causation between public health and various environmental factors like sanitation, garbage disposal,

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		pollution, etc., based on initial team members' interests and assumed availability of the required datasets. • Corresponded with people in the field of public health (Graham Snead, Bill Melinda Gates Foundation), and searched other government sites for the required datasets. • Found these datasets to be somewhat restricted for the public.
3	15-21 April	• Found another project (public health related), based on King County Crisis Line, and decided to go ahead with it because of the availability of, and the approved access to the required datasets, enthusiastic acceptance from the team mates for addressing the needs through visualization that were existent in this domain. • Prepared the project proposal, and all its ingredients.
4	22-28 April	• Implement the comments from the draft into the final proposal. • Acquire the required data sets. • Clean the data sets as required through Tableau and Excel. Make it consistent and analyzable. • Research **briefly** – Start with exploratory data analysis. Profile the data and pose questions through iterations. • Briefly examine data to find relationships between pairs of variables, outliers of various kinds, trends, etc. • Prepare population data and acquire the maps. • User Centered design process Begins. Begin investigating and deciding on the value that the potential user would like to derive from our project, and the means to address it. • Create use-cases.
5	29 - 6	• Clean/ augment the data sets as required through Tableau and Excel, if possible. • Research in higher **detail** - exploratory data analysis. Analyze and pose more pertinent & deeper questions through iterations. • Re-examine data to find any new relationships between pairs of variables, outliers of various kinds, trends, etc.

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		• Start building the mockups and wire frames. Prepare a Pitch for the project indicating the reasons for pursuing it (King County's need as well as our interest), and how we intend to address it.
6	7 - 13	• Create visualizations and refine the questions further.
7	14-20	• Fine tune results. Start building the web interface. • Basic incorporation of the interactive visualizations. • Do usability testing. Reiterate.
8	21-27	• Finish website along with all visualizations. • Prepare Final Presentation.
9	28-5	• Write Paper. • Complete and review project. • Submit the deliverable.

What data will be used in the visualization?

The Crisis Clinic logs all of its calls into a 2005 SQL server database. Mike Maloy, the IT Manager, believes that they will be able to assist us in stripping out any personal data that is HIPPA protected, and we are planning to meet with him next week to finalize the logistics of getting access to the database. We plan on taking a static snapshot of the database for the purpose of this project and as a proof of concept for an interactive visualization to be presented to the Crisis Clinic staff.

Key Dimensions in the data set include:
*Dimensions that we are particularly interested in exploring are indicated in **bold.**

Field	Description
Zip code	5 digit zip code, within county
Other County	Choice: <county name>, out of state

Call Start Time	Start time of the call
Call End Time	End time of the call
Length of call	Duration of the call, in minutes
Agency	Crisis Line, 211, Teen Link, Lifeline, Recovery Line
Gender	Male, female, transgender, other
Age	Age in years
Ethnicity	Self-identified ethnicity
Caller	Identify of the caller: self, agency/professional, family/friends, other
Income	Self-reported income, based on median in the state
Household Composition	Individual adult male, Individual adult female, Supervised, Parents with minors, Other related adults without minors, Unknown, etc.
Consumer Group	Homeless, Veteran, SOS, Disabled, etc.
Number in Household	Number of people that live in the household.
Number in Household under 18	Number of minors that live in the household.
Program Type	Crisis Line, Lifeline, Recovery Line, 211, Tean Link
Learned of Program	Where did the caller learn of the program? (Specific to Recovery Line)
Insurance	Type of insurance
Type of Caller?	Description of the type of caller, categorized in: CMI, AC, Other
Type of Call?	Description of the type of call, categorized into: Client Maintenance, Crisis, Info, Problem Solving

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Current Treatment	Optional choice: N/A, None, Private, Public, Refused, Unknown, VA
CCPAR/Public	Name of agency
Suicide	Yes/No
Homicide	Yes/No
Problem/Need	Lots of categories (different database); Animals, Basic Needs, Communicate, Community, Disaster, Emotional Health, Employment/Education, Financial, Legal, Physical Health, Relationships, Substance Abuse, Threat/Abuse/Violence
Number of Referrals	Number of referrals provided by the phone worked.
Name of referrals	List of referrals provided for a particular call.

Which tools are you considering using to accomplish the goals?

We are planning to use Tableau as our primary method of data visualization. We also think that Tableau is a good choice for this project, as it may be a flexible and robust platform for the Crisis Clinic staff to continue to change their dashboard over time as different needs arise.

Depending on the evolution of the design over time, we may experiment with D3 if we run into any critical limitations; however, this is a stretch goal of the project.

What kinds of results you anticipate achieving?

We plan to produce an interactive dashboard that will allow Pam, the staffing manager, and Tom, the fundraiser, answer following kinds of questions:

- What is the distribution of calls by region (zip code)? Do certain regions have more types of calls then others?
- Are there peaks in call volume during certain times of the year and day, special times of the year? Can we understand why this is?

- Distributions of callers by other demographics; i.e. age, ethnicity, gender, veteran-status,
- What else can we discover?

There are two categories of visualizations that we are focusing on to accomplish these tasks are:

1) An interactive visualization of a map that shows distribution of calls per region. Selecting a region will allow the user to view related graphs that show distributions of types of calls as per different caller demographics (i.e. ethnicity, gender, veteran-status).

2) A time series visualization that will show the number of calls reported over a period of time, starting per year and drilling down to months and days.   The visualization should show trends based on different times of the day and week. Filters will be provided for key properties, such as call volumes to different service lines (i.e. 211, Teen Link, Crisis Line, Recovery Line).

What kinds of results you would like to achieve but which you probably do not have the time or the tools for?

According to Crisis Line's IT Manager, it may be difficult for us to successfully parse the "Problem/Need" section of the database, which indicates the type of problem reported or service requested. Although we would like to use these categories as filters on the above visualizations, it may turn out to be out of scope.