

THE DATA VIZ-ARTs

VISUALIZING THE CRISIS IN SYRIA

How mapping violence and refugee flows
can inform policy-making

Process Book

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Project plan

Basic project information

Project Name: **SPREADING VIOLENCE IN SYRIA**
How mapping violence and refugee flows can inform policy-making

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Background and motivation

Since the conflict in Syria started in 2011, 5 million Syrians were left homeless and hopeless. The extreme violence that has spread over Syria has led the country devastated.

However, international awareness of the seriousness of this issue is still very poor. The world has not been able to reach a coordinated effort to bring a solution to the humanitarian crisis in Syria.

In a world in which information is power and the public can have a decisive role in policymaking, a good data visualization of this problem can trigger action towards an integrated solution at the supranational level.

Objectives

Various actors have been tracking refugee movements over time (in general, and specifically with respect to the conflict in Syria, see section on related work below). Similarly, some actors have been mapping the occurrence of violent events in Syria (e.g., SyriaTracker, MonkeyCage, SIPRI, and Jakub Langr, see below).

However, there is no common source available that provides a dynamic view on violence and how it links to refugee flows. By using an interactive visualization and displaying how the situation evolves over time, we will be able to provide an intuitive angle to the dynamics of violence and political migration in Syria.

Illustrate the dynamics of violence and political migration	<ul style="list-style-type: none">• Show development of violence over time<ul style="list-style-type: none">◦ Spread of violence within the country◦ Perpetrators and victims of political violence• Illustrate the relationship between political violence and refugee flows
Create transparency for policy-makers	<ul style="list-style-type: none">• Understand what has happened in Syria• Identify early trends in violence or refugee movement patterns that allow for earlier intervention (e.g., predict funding needs)• Distill lessons learnt, e.g., what is a threshold of violence that citizens endure before choosing to migrate
Raise awareness	<ul style="list-style-type: none">• Create awareness about political violence in Syria• Provide information to interested audience in host countries of refugees

Related Work

Syria and event studies

- [Syria Tracker](#) provides crowd-sourced information on conflict evolution in Syria
- [Jakub Langr](#): Static representation of violence caused by ISIS in Syria over time
- [Monkey cage political violence blog](#): Discusses sources of data for tracking political violence in Syria
- [Stockholm International Research Institute \(SIPRI\)](#) discusses potential biases in media coverage (that might affect as well our data)
- [GED: Global instances of political violence](#) - unfortunately database with insufficient coverage of the Syria incidents

Refugee flows and information:

- The [refugee project](#) shows flow of refugees from origin countries over time
- [NY Times](#) tracks refugee movements over time (The Flight of Refugees around the Globe)
- [UNHCR](#) visualizes the regional refugee response of neighboring countries using D3
- [BBC tracks](#) the journey of refugees from Syria to their destination countries
- Refugee flows to European countries over time: [Takepart](#)

Tasks

Data collection/ Data wrangling	<ul style="list-style-type: none">• Identify relevant data sources (events, refugee data, funding?)• Data description (see below)• Data cleaning: Determine right level for data aggregation in illustration
Background research	<ul style="list-style-type: none">• History of Syrian Civil War / history of refugee flows• Theoretical framework: Violence in civil wars and how it spreads• Theories of refugee flows• Data: Violence, victims, number of refugee flows, funding of refugee camps, crisis response
Storyline	<ul style="list-style-type: none">• Develop narrative for webpage / visualization• Identify core messages to be shared
Design	<ul style="list-style-type: none">• Core visualizations to illustrate storyline• Interaction storyboard
D3 implementation	<ul style="list-style-type: none">• Implement visualizations in D3
Webpage:	<ul style="list-style-type: none">• Webpage hosting• Storytelling components• Website design (incl. HTML/CSS)
Screencast:	<ul style="list-style-type: none">• Develop 2 min narrative for webpage, project overview, as well as policy-makers (policy-brief)

Data and data process

In this project, we use three datasets to record violent events and refugee flows.

Violent Events

- **Crisis Early Warning System (ICEWS)**

This event dataset¹ is called Integrated Crisis Early Warning System (ICEWS) for the Defense Advanced Research Projects Agency (DARPA) and Office of Naval Research (ONR).

Description: This geo-coded micro-level event data consists of coded interactions between socio-political actors (i.e., cooperative or hostile actions between individuals, groups, sectors and nation states). Events are automatically identified and extracted from news articles by the BBN ACCENT event coder. These events are essentially triples consisting of a source actor, an event type (according to the CAMEO² taxonomy of events), and a target actor. Geographical-temporal metadata are also extracted and associated with the relevant events within a news article.

Time Frame: 2011 - 2015.

Frequency: Daily

Variables of Interests: Event Date, Source Country, CAMEO Code, Intensity, Target Country, Country, Latitude, and Longitude.

Folder Name: “dataverse_files”

Main Source/Materials: ICEWS Coded Event Data Read Me

¹ <https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/28075>

² Conflict and Mediation Event Observations Codebook

Figure 1: Screenshot of ICEWS event data

Event ID	Event Date	Event Year	Source Name	Source Group	Source Sector	Sector General	Source Code	Event Text	CAMEO Code	Intensity	Target Name
100357	17263632	2/24/11	Israel	Israel		Other	Israel	Use conventional military force	130	-10	Naval (Iran) M
100358	18078932	8/29/11	Israel	Israel		Other	Israel	Employ aerial weapons	135	-10	Hamas D
100359	17111443	4/23/11	Israel	Israel		Other	Israel	Employ aerial weapons	135	-10	Syria
100360	1812159	17228886	Israel Defense Forces	Israel	Military, Government	Government, Military	Israel	fight with small arms and light weapons	138	-10	Citizen (Syria G)
100361	1812163	17228831	Israel Defense Forces	Israel	Military, Government	Government, Military	Israel	fight with small arms and light weapons	133	-10	Citizen (Palestine Sc)
100362	1812194	17228889	Israel Defense Forces	Israel	Military, Government	Government, Military	Israel	use conventional military force	130	-10	Citizen (Syria G)
100363	1812158	17227060	Israel Defense Forces	Israel	Military, Government	Government, Military	Israel	fight with small arms and light weapons	133	-10	Citizen (Palestine Sc)
100364	1812158	17228555	Israel	Israel		Other	Israel	use conventional military force	130	-10	Lebanon
100365	1808043	17228585	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	fight with small arms and light weapons	133	-10	Israel
100366	1808046	17228684	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	fight with small arms and light weapons	133	-10	Syria
100367	1808155	17228800	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	use conventional military force	130	-10	Protestor (Israel Sc)
100368	1808172	17229530	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	fight with small arms and light weapons	133	-10	Protestor (Syria D)
100369	1810006	17229679	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	use conventional military force	130	-10	Protestor (Pu Pe)
100370	1810075	17229750	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	use tactics of violent repression	175	-10	Protestor (Syria D)
100371	1810088	17229776	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	fight with small arms and light weapons	133	-10	Protestor (Pu Pe)
100372	1810131	17229932	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	fight with small arms and light weapons	133	-10	Protestor (Pu Pe)
100373	1810179	17230108	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	fight with small arms and light weapons	133	-10	Israel
100374	1810180	17230102	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	fight with small arms and light weapons	133	-10	Syria
100375	1810188	17230112	Israel	Israel		Other	Israel	use conventional military force	130	-10	Lebanon
100376	1810115	17230139	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	fight with small arms and light weapons	133	-10	Citizen (Palestine Sc)
100377	1810138	17230149	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	fight with small arms and light weapons	133	-10	Protestor (Pu Pe)
100378	1750230	17237819	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	use conventional military force	130	-10	Citizen (Palestine Sc)
100379	1750993	17261049	Israel	Israel		Other	Israel	Occupy territory	132	-8.5	Syria
100380	1861793	17299044	Israel	Israel		Other	Israel	Use conventional military force	130	-10	Syria
100381	1759964	17304700	Israel	Israel		Other	Israel	Use conventional military force	130	-10	Syria
100382	1819354	17334085	Israel	Israel		Other	Israel	Occupy territory	132	-8.5	Syria
100383	1819112	17334543	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	fight with small arms and light weapons	133	-10	Syria
100384	1819154	17334547	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	fight with small arms and light weapons	133	-10	Citizen (Palestine Sc)
100385	1819115	17334546	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	fight with small arms and light weapons	133	-10	Citizen (Syria G)
100386	1819158	17334589	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	fight with small arms and light weapons	133	-10	Protestor (Pu Pe)
100387	1819158	17334599	Israel Defense Forces	Israel		Other	Israel	use conventional military force	130	-10	Syria
100388	1819186	17334627	Israel	Israel		Other	Israel	Occupy territory	132	-8.5	Syria
100389	1817109	17334701	Israel Defense Forces	Israel	Government, Military	Government, Military	Israel	Use conventional military force	130	-10	Citizen (Syria G)
100390	1818004	17334740	Israel	Israel		Other	Israel	fight with small arms and light weapons	133	-10	Citizen (Syria G)
100391	1818005	17334739	Israel	Israel		Other	Israel	Occupy territory	132	-8.5	Syria
100392	1818034	17334771	Israel	Israel		Other	Israel	fight with small arms and light weapons	133	-10	Citizen (Syria G)

- The GDELT Project (GDELT)

Description: This is another geo-coded micro-level event dataset is from Google Ideas. The GDELT Project monitors the world's broadcast, print, and web news from nearly every corner of every country and identifies the people, locations, organizations, counts, themes, sources, emotions, counts, quotes and events driving our global society every second of every day. Its event type also follows CAMEO.

Time Frame: 2011 - 2016.

Frequency: Daily

Variables of Interests: SQLDATE, MonthYear, Year, Actor1Code, Actor1CountryCode, Actor1Type1Code, Actor2Code, Actor2CountryCode, EventCode, GoldsteinScale, ActionGeo_Lat, ActionGeo_Long

Folder Name: "GDELT events"

Main Source/Materials: <http://gdeltproject.org/data.html>

Refugee Flows

- **UNHCR: Syria Regional Refugee Response**

Description: This is a country-level refugee flow dataset. It provides the refugee camp host country names, the origin country names, and population values. It also has detailed demographic information on age, gender, and urban/rural.

Time Frame: 2012 - 2016.

Frequency: Monthly

Variables of Interests: Country/territory of asylum/residence, Origin, Month, Year, Value

Folder Name: “refugee flows”

Main Source/Materials: <http://data.unhcr.org/syrianrefugees/country.php?id=107>

The process: In order to download the data for each refugee camp, we manually clicked through every refugee camp site and downloaded the corresponding information. We then aggregated the data into single Excel files - one with refugee information by country (for the violence map visualization) and one with refugee information by camp and time.

We then used the refugee google map screenshots to manually code refugee camp locations for the “where do they go” section.

Figure 2: Manual download of refugee data for each camp

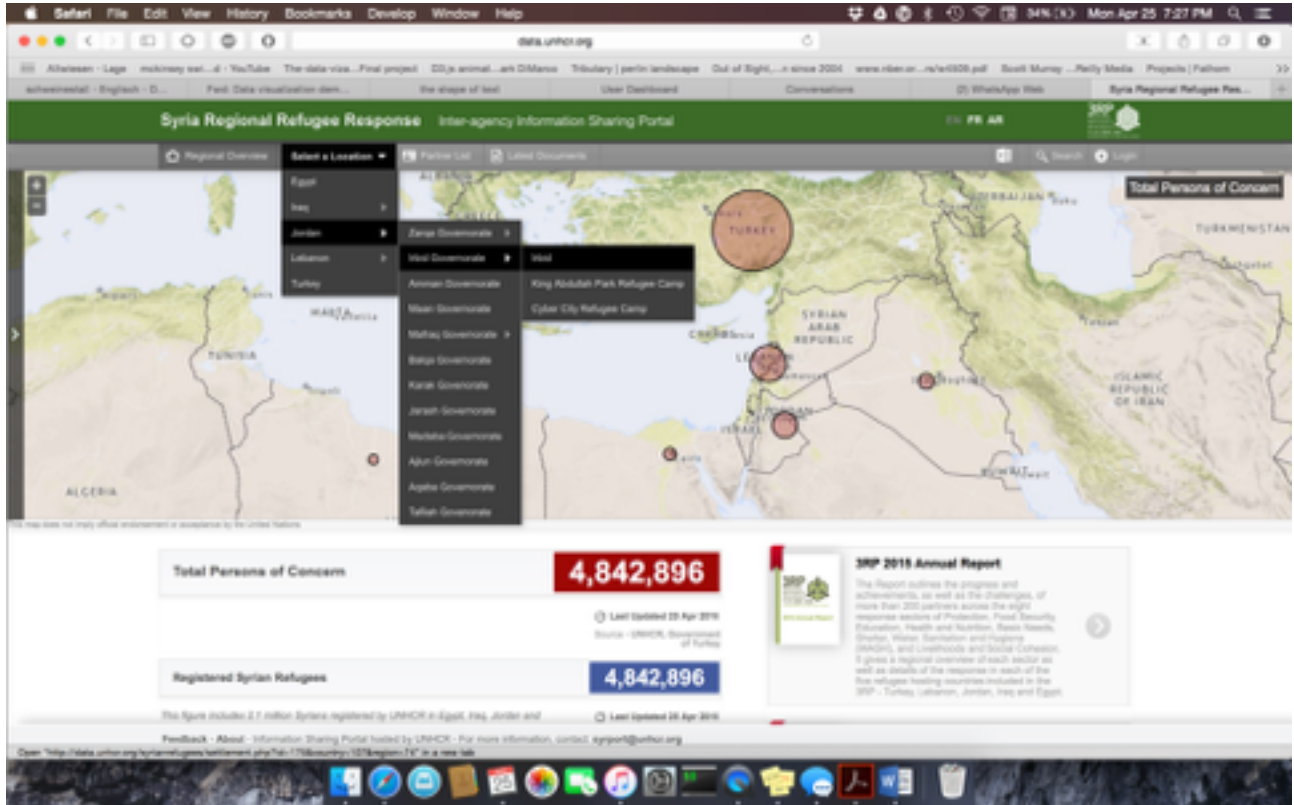
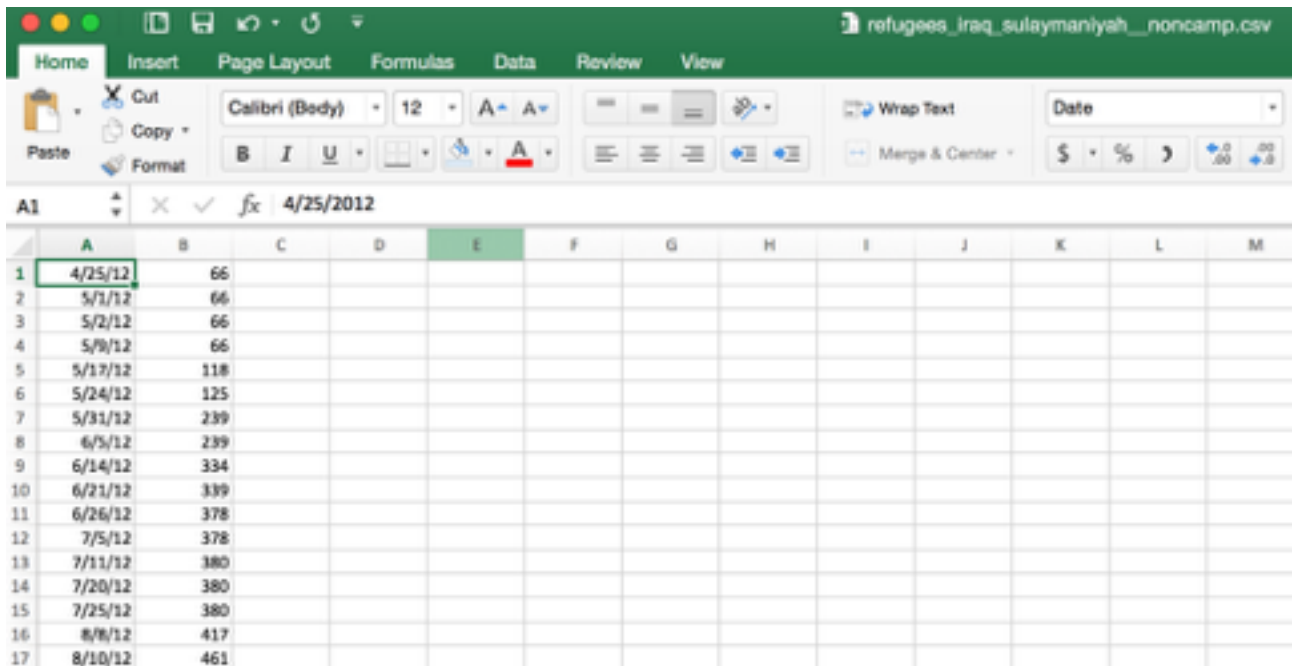


Figure 3: Screenshot of refugee data (1 camp only; data will still need to be merged)



Casualty data

- **Violence Documentation Center Syria**

Description: The Violence Documentation Center (VDC) in Syria has been collecting information on casualties during the Syrian conflict. While the data source is likely not fully complete and has some biases to overreporting casualties of rebel groups, it was a source recommended to us by Dr. Anita Gohdes - who is one of the leading experts on casualty estimates in Syria.

Time Frame: 2011- Apr 19, 2016.

Frequency: Daily

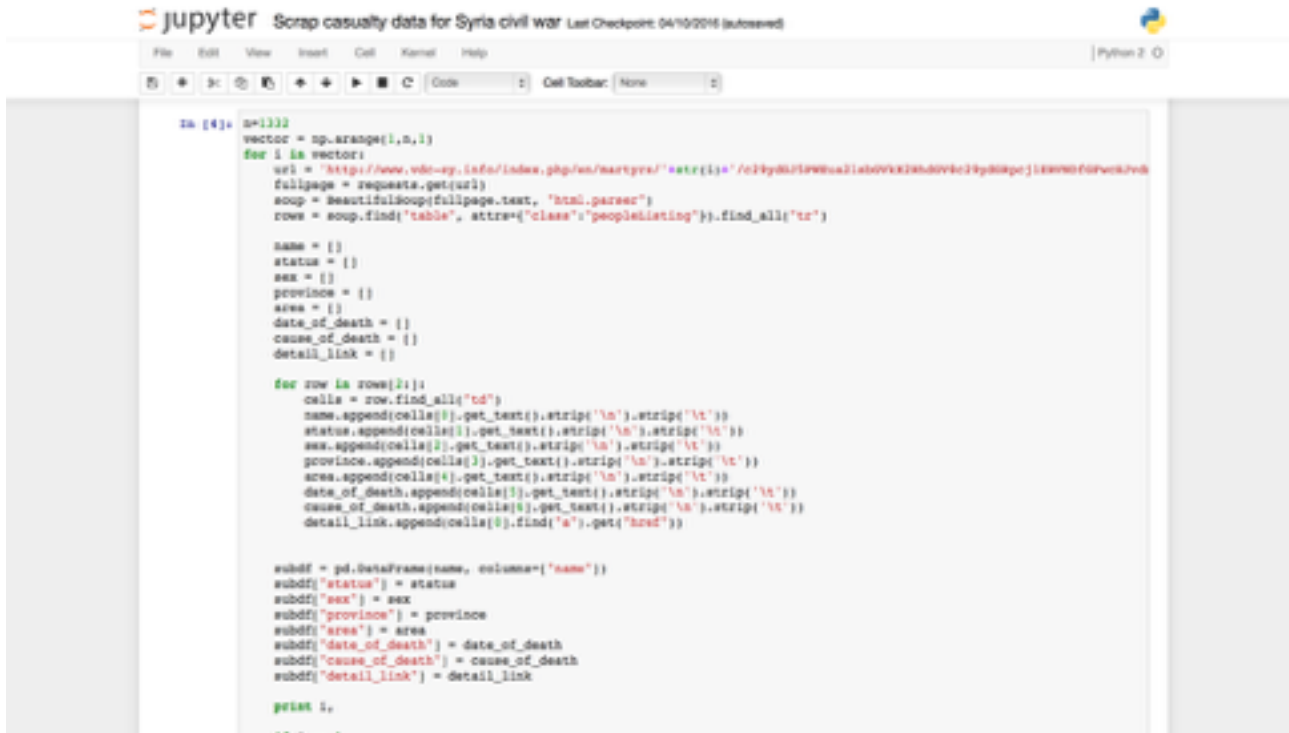
Variables of Interests: Name, Location, Date, Cause of Death, Gender, Age (Adult vs. Child)

Folder Name: “2016_casualties”

Main Source/Materials: <http://www.vdc-sy.info/index.php/en/home>

Since the refugee information is not conveniently available in a downloadable format, we needed to do some web scraping using beautiful soup in order to download and save the information in a format that we could work with. We downloaded all information from the “Martyr” and the “Regime fatalities” tabs and joined them into a single dataframe.

Figure 4: Web scraping to save casualty information in a usable format



```

In [4]: n=1332
vector = np.arange(1,n,1)
for i in vector:
url = 'http://www.vho-eg.info/index.php/en/sartyrs/' + str(i) + '/?y00f1eWbu21ab0VxK2ahd0VbcI?y00apej1E9W0f0Fwca/vrb
fullpage = requests.get(url)
soup = BeautifulSoup(fullpage.text, 'html.parser')
rows = soup.find('table', attrs={'class':'peoplekiting'}).find_all('tr')

name = []
status = []
sex = []
province = []
area = []
date_of_death = []
cause_of_death = []
detail_link = []

for row in rows[2:]:
    cells = row.find_all('td')
    name.append(cells[0].get_text().strip('\n').strip('\t'))
    status.append(cells[1].get_text().strip('\n').strip('\t'))
    sex.append(cells[2].get_text().strip('\n').strip('\t'))
    province.append(cells[3].get_text().strip('\n').strip('\t'))
    area.append(cells[4].get_text().strip('\n').strip('\t'))
    date_of_death.append(cells[5].get_text().strip('\n').strip('\t'))
    cause_of_death.append(cells[6].get_text().strip('\n').strip('\t'))
    detail_link.append(cells[8].find('a').get('href'))

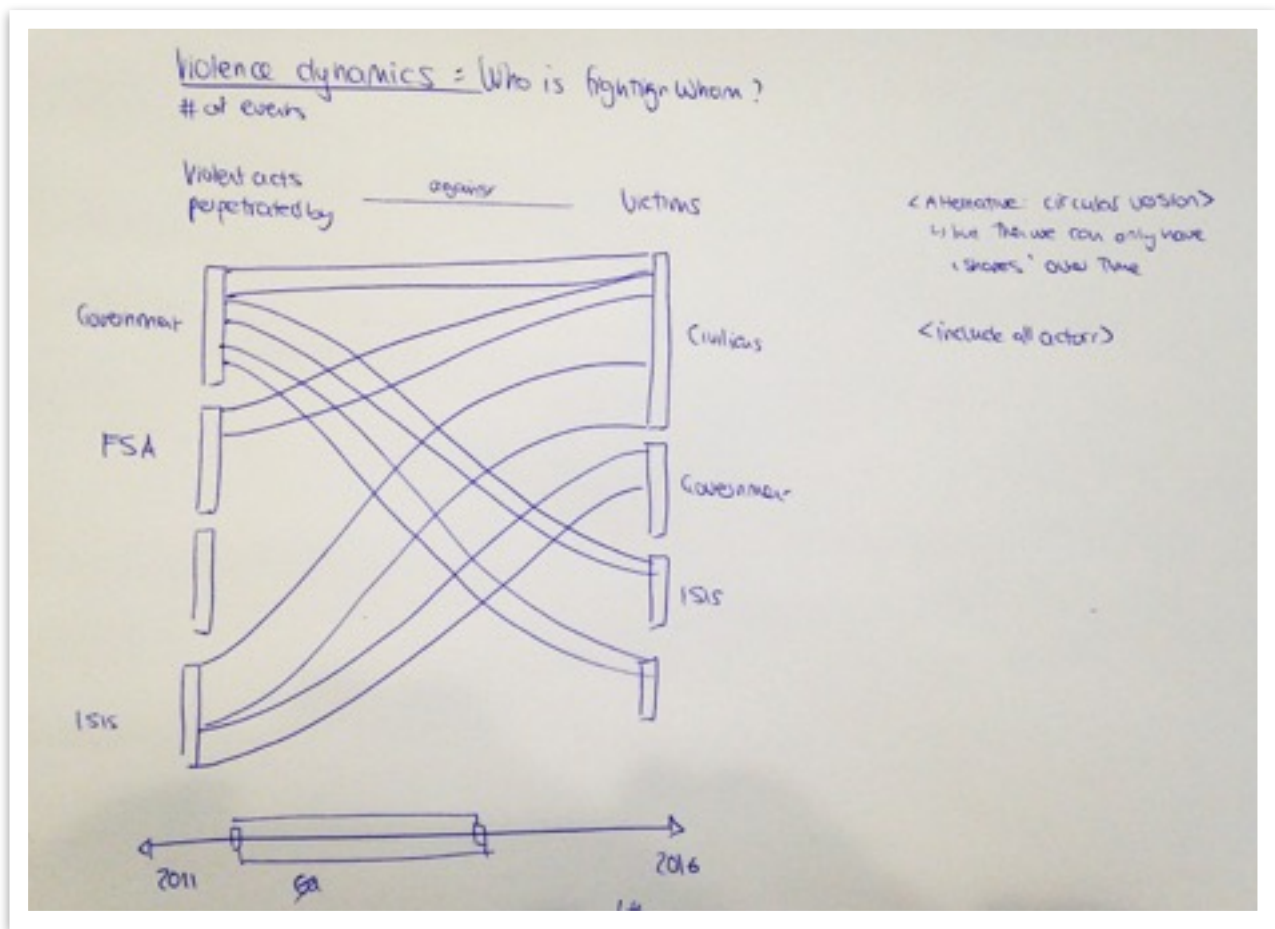
subdf = pd.DataFrame(name, columns=['name'])
subdf['status'] = status
subdf['sex'] = sex
subdf['province'] = province
subdf['area'] = area
subdf['date_of_death'] = date_of_death
subdf['cause_of_death'] = cause_of_death
subdf['detail_link'] = detail_link

print i,

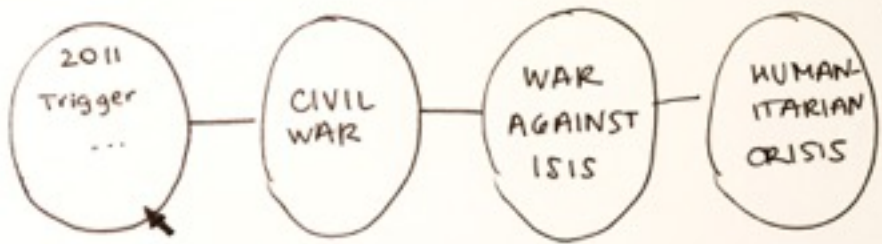
```

Visualization and design ideas

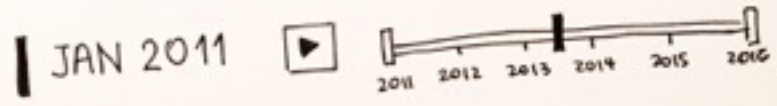
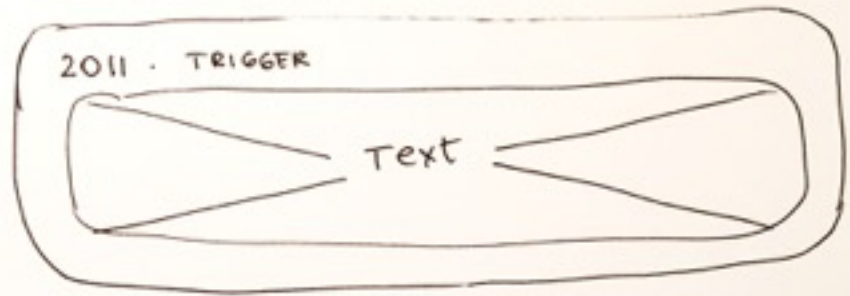
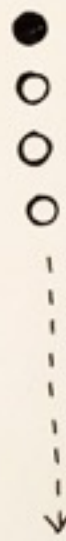
Initial sketches (Week 1)



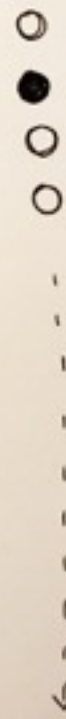
THE SYRIAN CRISIS IN DATA



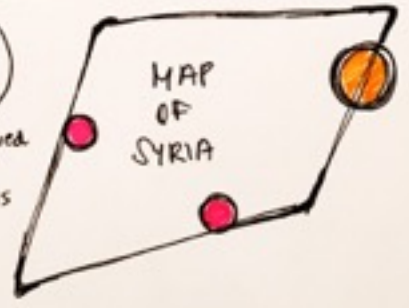
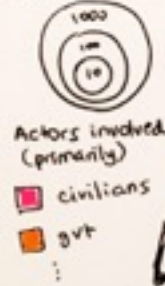
Chronology



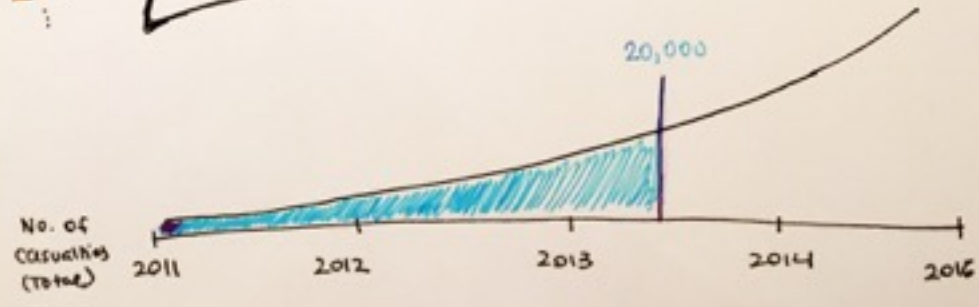
The War



No. of casualties



AUGUST 2013
 News Headline No. 1
 News Headline No. 2



< little heatmaps for encode # of refugees per country >

< ideally color scale should be 4 color family >

0 = 10-204
10-204
> 500 504

03/2011



08/2011



08/2012



03/2013



08/2013



03/2014



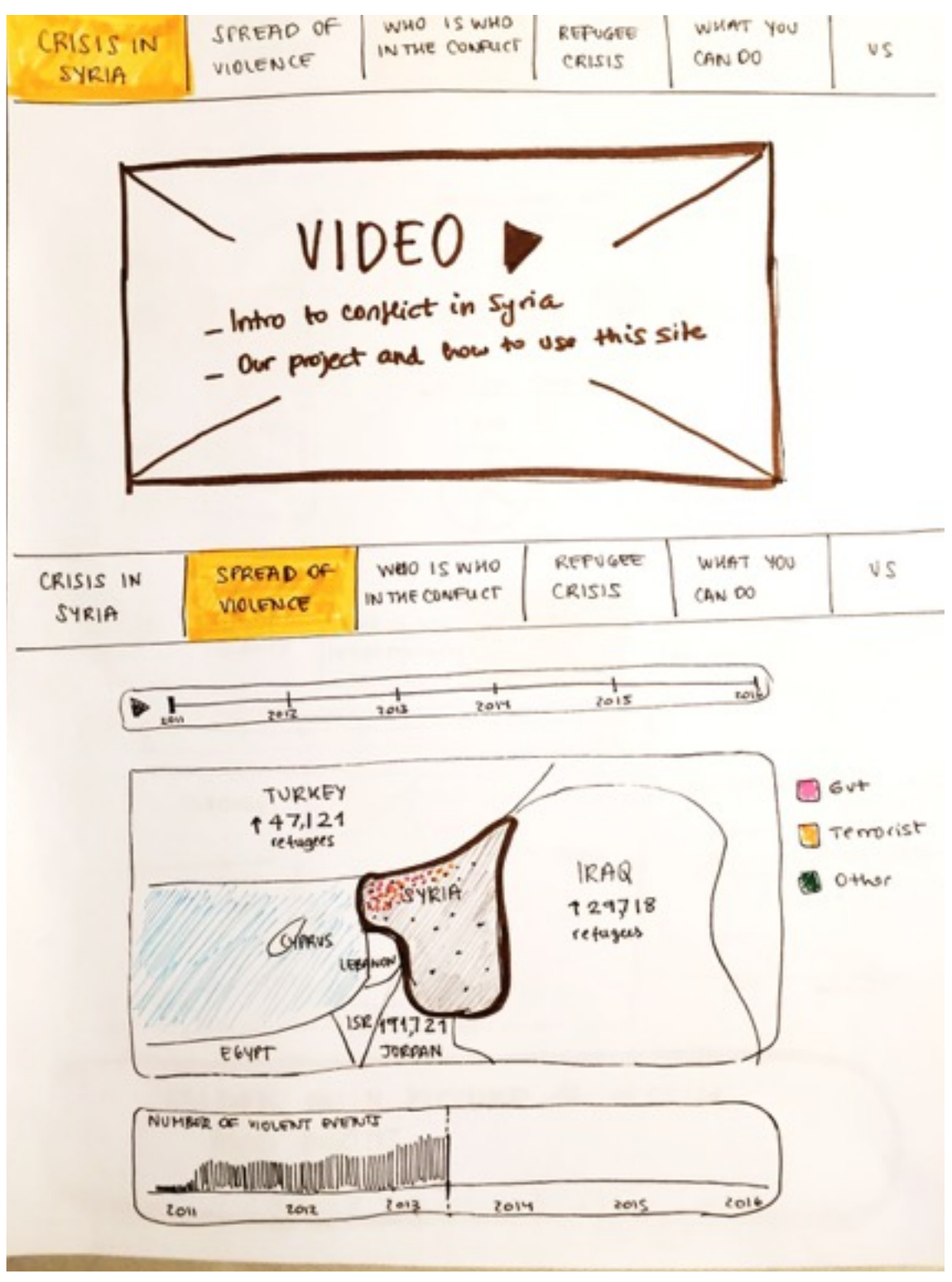
09/2014



03/2015



Design sketches + webpage layout (Week 2)



CRISIS IN SYRIA

SPREAD OF VIOLENCE

WHO IS WHO IN THE CONFLICT

REFUGEE CRISIS

WHAT YOU CAN DO

US



GOVERNMENT - CIVILIANS



VICTIMS' PROFILES



CRISIS IN SYRIA

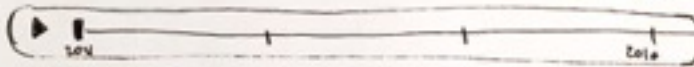
SPREAD OF VIOLENCE

WHO IS WHO IN THE CONFLICT

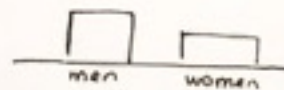
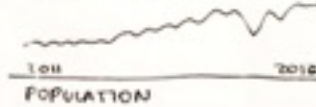
REFUGEE CRISIS

WHAT YOU CAN DO

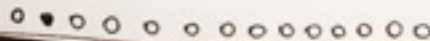
US



XX REFUGEE CAMP, IRAQ



SLIDER WITH PICTURE OF VICTIM AND QUOTE



CRISIS IN SYRIA

SPREAD OF VIOLENCE

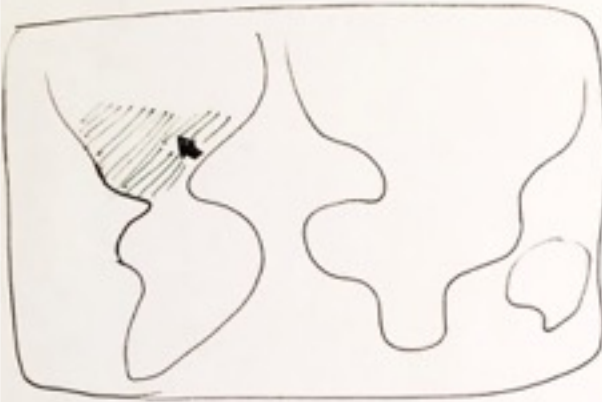
WHO IS WHO IN THE CONFLICT

REFUGEE CRISIS

WHAT YOU CAN DO

US

WHERE ARE YOU?



UNITED STATES OF AMERICA

Refugees Taken 221

Donations made \$ 233 M

DONATE \$1

CRISIS IN SYRIA

SPREAD OF VIOLENCE

WHO IS WHO IN THE CONFLICT

REFUGEE CRISIS

WHAT YOU CAN DO

US



MAR
email@hls.edu



MARIA
email@hls.edu

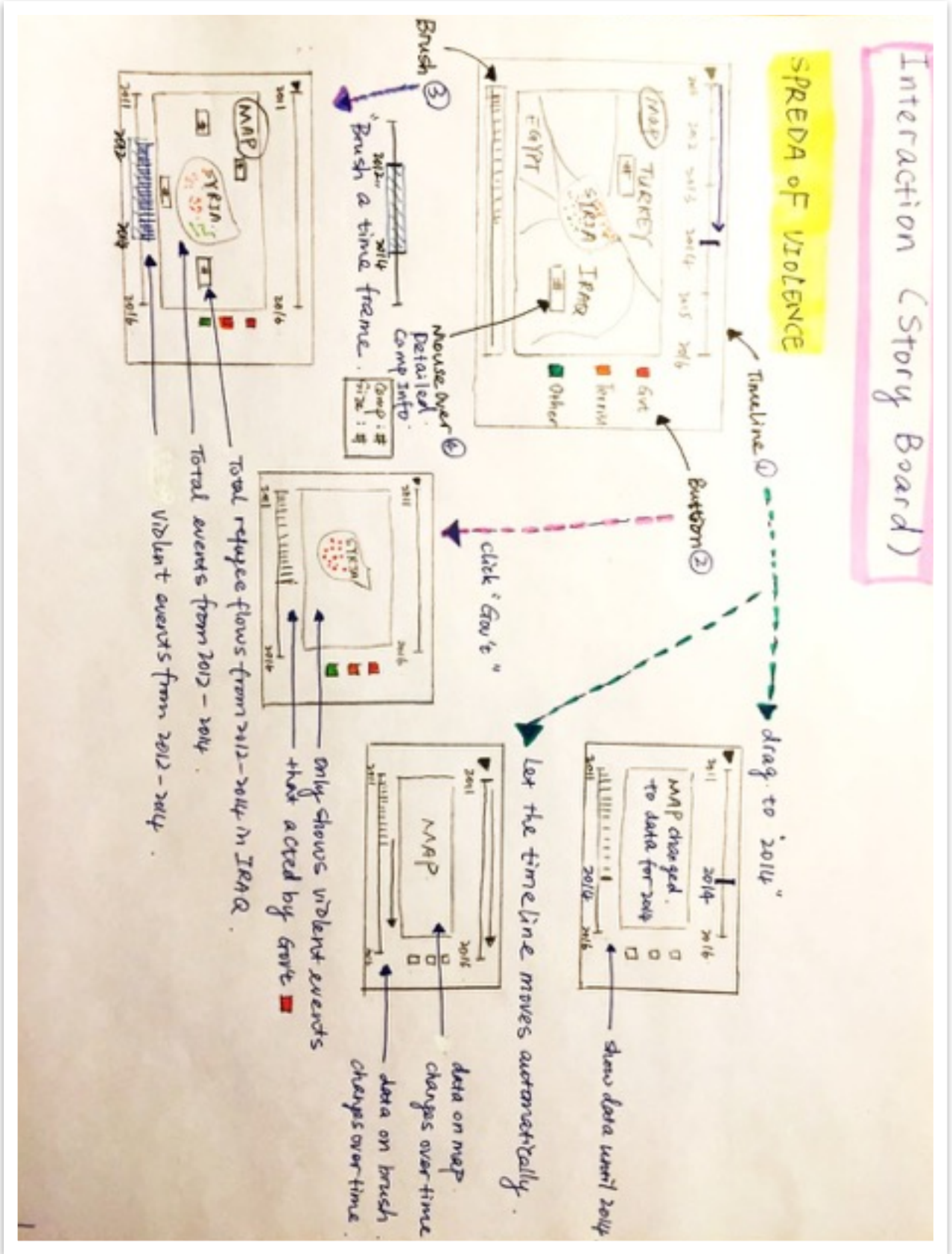


LILY
email@hls.edu

WHY WE CARE ABOUT SYRIA

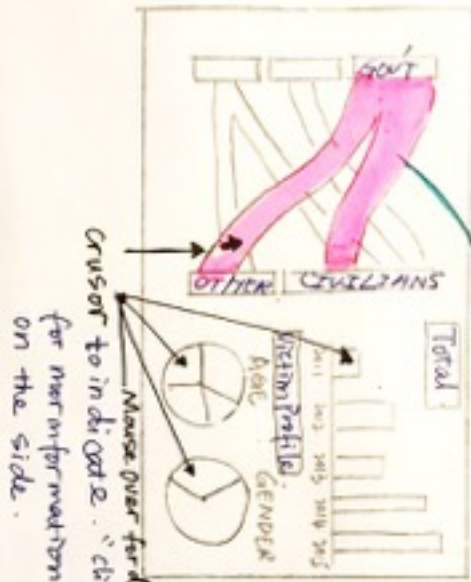
WHY WE DO THE MAP/IO AND DATA VISUALIZATION

Interaction storyboard (Week 2)

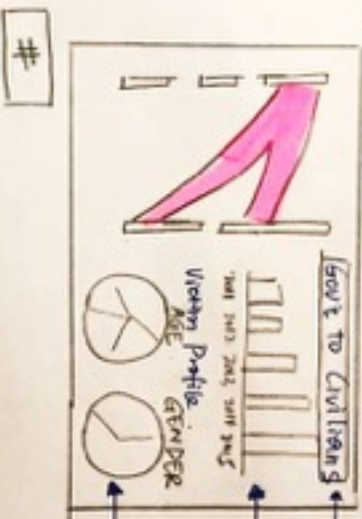


WHO IS WHO IN THE CONFLICT.

Click 'Govt' to 'Civilians' flow.



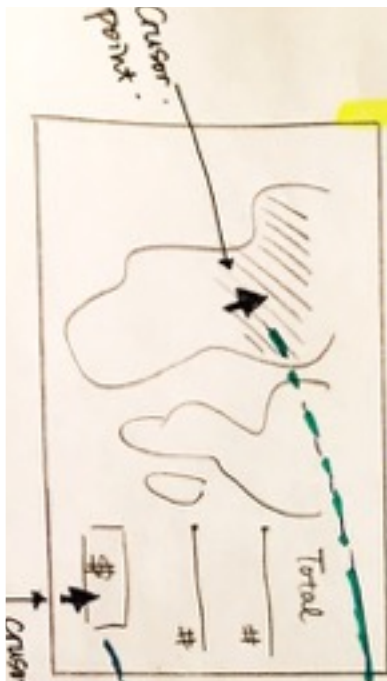
Cursor to indicate 'clickable' for more information on the side.



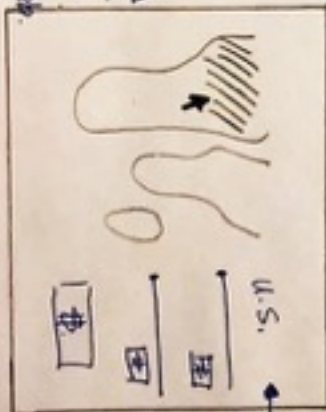
only look at 'Govt' & 'Civilians' Events.
Title changed.
violence changed.
profile updated.

WHAT YOU CAN DO.

Click 'U.S.' Region.

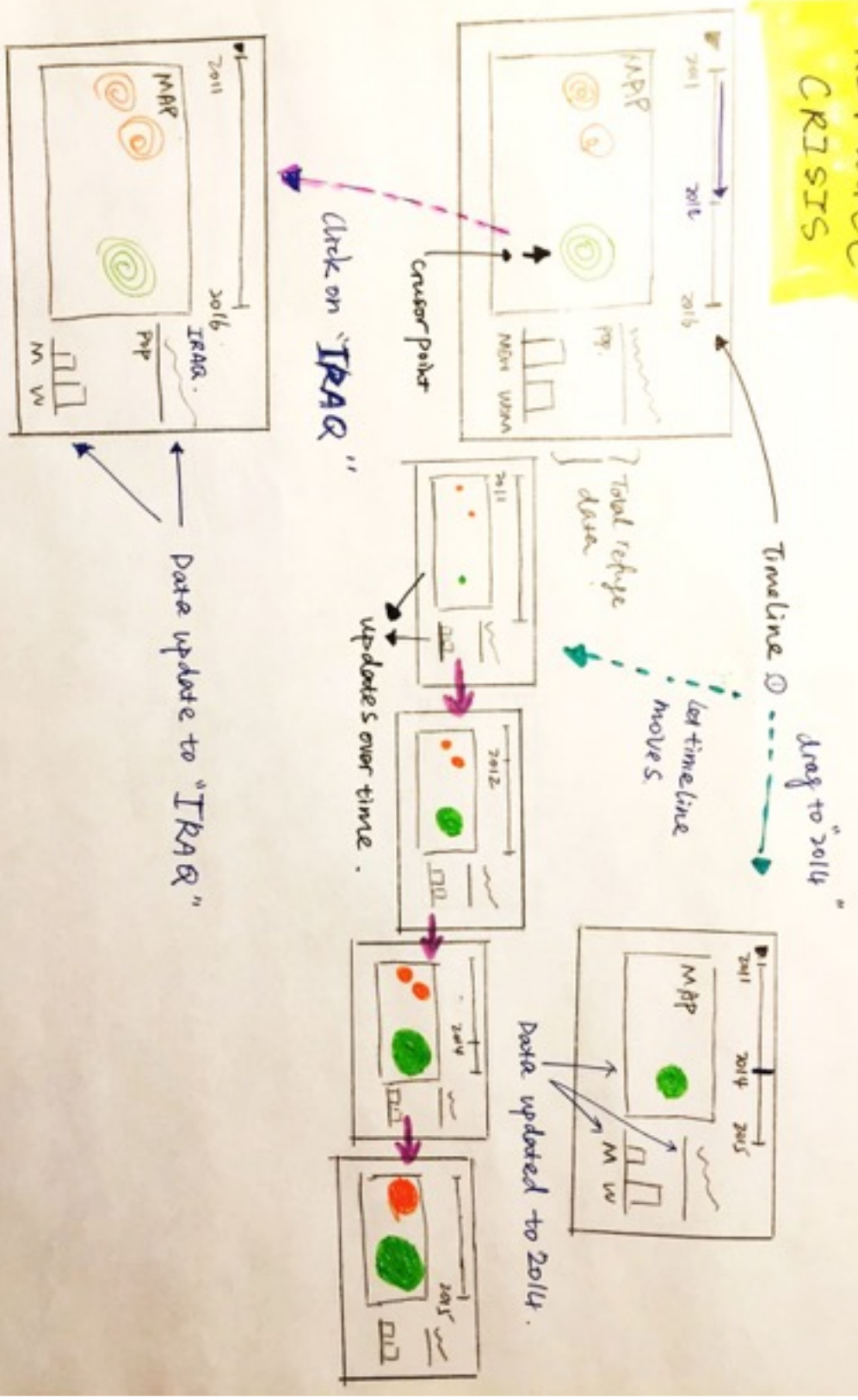


Cursor point.
Direct to UNHCR donation web.



Title updated.
Data updated.

REFUGEE CRISIS



Expert feedback (Week 3)

Note: The feedback we got was not classified according to Nielsen. We interpreted the urgency based on what our facilitator observed during the session.

Violence map

- Use brush component to show accumulated violence over time as well (not only at a specific point in time) ← disregarded, because we think it would be confusing for users to have both a vertical line that moves across time and a rectangle brush; moreover, right now accumulation over 3 months is displayed.
- Perhaps you can add a link on the current front page visualization so that when you click on a country where refugees are leaving to, it brings you to a zoomed in, clicked on, version of the refugee camp tab (← disregard; we deliberately chose to tell a story that guides the users through the narrative and does not overload them with information)
- There might be too much going on - especially when actors are encoded with colors. Maybe give people the choice to select various actor (← changed, see below)

Actor Sankey

- Wording: “Aggressors” & “Victims” might be politically confusing (← changed, see below)
- Make it a chord diagram rather than a Sankey to better see who is fighting whom (← changed, see below)

Storyline

- End with a more positive message; encourage people to help ← will include that in webpage
- Turn around storyline to have violence chart as a conclusion (← disregarded, because the storyline follows a natural narrative from violence → people dying/being afraid → refugee flows → refugee crisis)
- Change order of tabs/graphs: first show actors involved then show violence and refugees (← disregarded; we think we need the first visualization to create a sense of urgency and since it touches on both topic areas (violence & humanitarian aspects) it serves as kind of a landing page for further visualizations)

Design changes (Week 3)

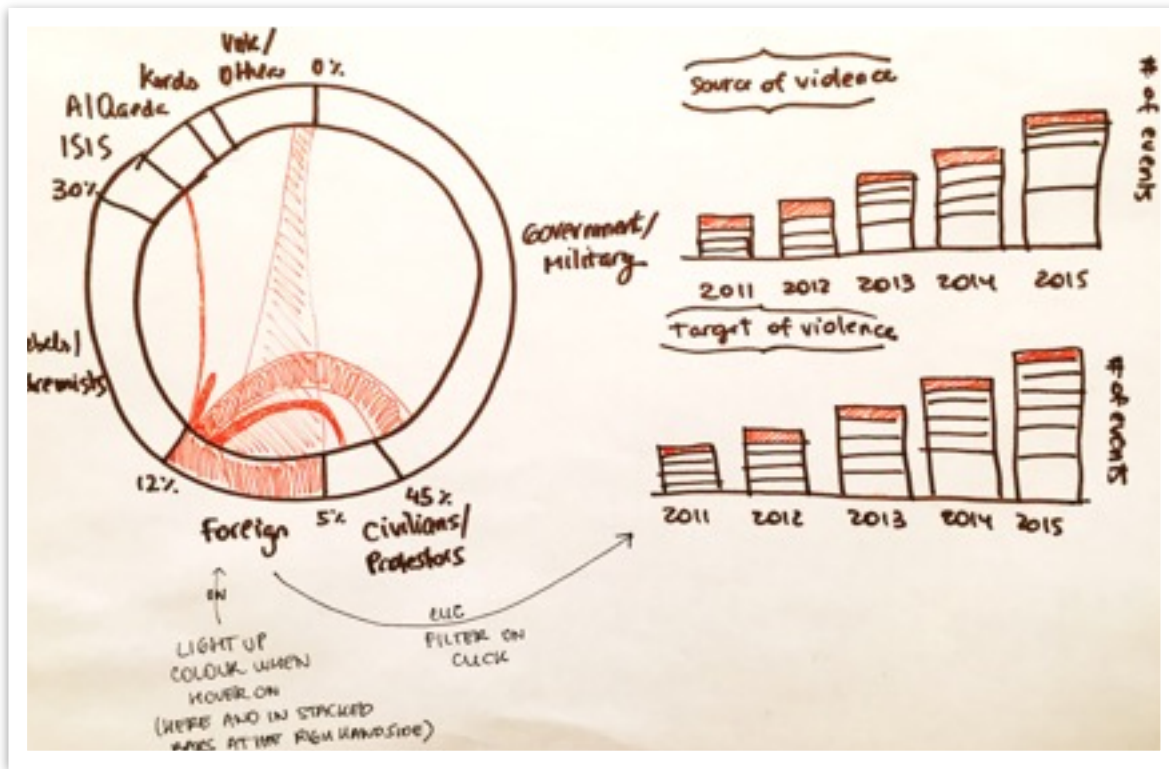
	Critique / Point	Changes in designs
Innovation → see (1) in next section	<ul style="list-style-type: none"> Refugee counters (numbers) are changing fast and thus changes over time are difficult to grasp (e.g., when is there a jump in refugee numbers in a certain country?) 	<ul style="list-style-type: none"> Traditional solution: Add line charts that show refugee development over time per country To not overload the audience with too many graphs, we decided to go for an innovative solution: In addition to the refugee counter), we will add images of “little people” that will “grow” as the number of refugees is growing. → “Little people counter”
Expert feedback I → see (1)	<ul style="list-style-type: none"> Violence map: Filtering by actors is overloading users with information; it would be great to select actors 	<ul style="list-style-type: none"> Adding an item-by-item selection for each of the actors, when in the “actor view” of the violence map (first vis)
Expert feedback II	<ul style="list-style-type: none"> Actor involvement: Make it a chord diagram rather than a Sankey to better see who is fighting whom 	<ul style="list-style-type: none"> Will change it to a chord diagram
Expert feedback III	<ul style="list-style-type: none"> Actor involvement: Use of wording that might be politically loaded 	<ul style="list-style-type: none"> Change wording from aggressors to “source of violence” and victims to “target”
Expert feedback IV	<ul style="list-style-type: none"> Webpage storytelling: End with more positive note / call to action 	<ul style="list-style-type: none"> Will implement that
Team discussion → see (3)	<ul style="list-style-type: none"> Current situation / what can you do: the map currently shows world, but the available data is mostly centered in Europe 	<ul style="list-style-type: none"> Using a different “cut” of the world map - primarily focusing on Europe

Re-designs (week 3)

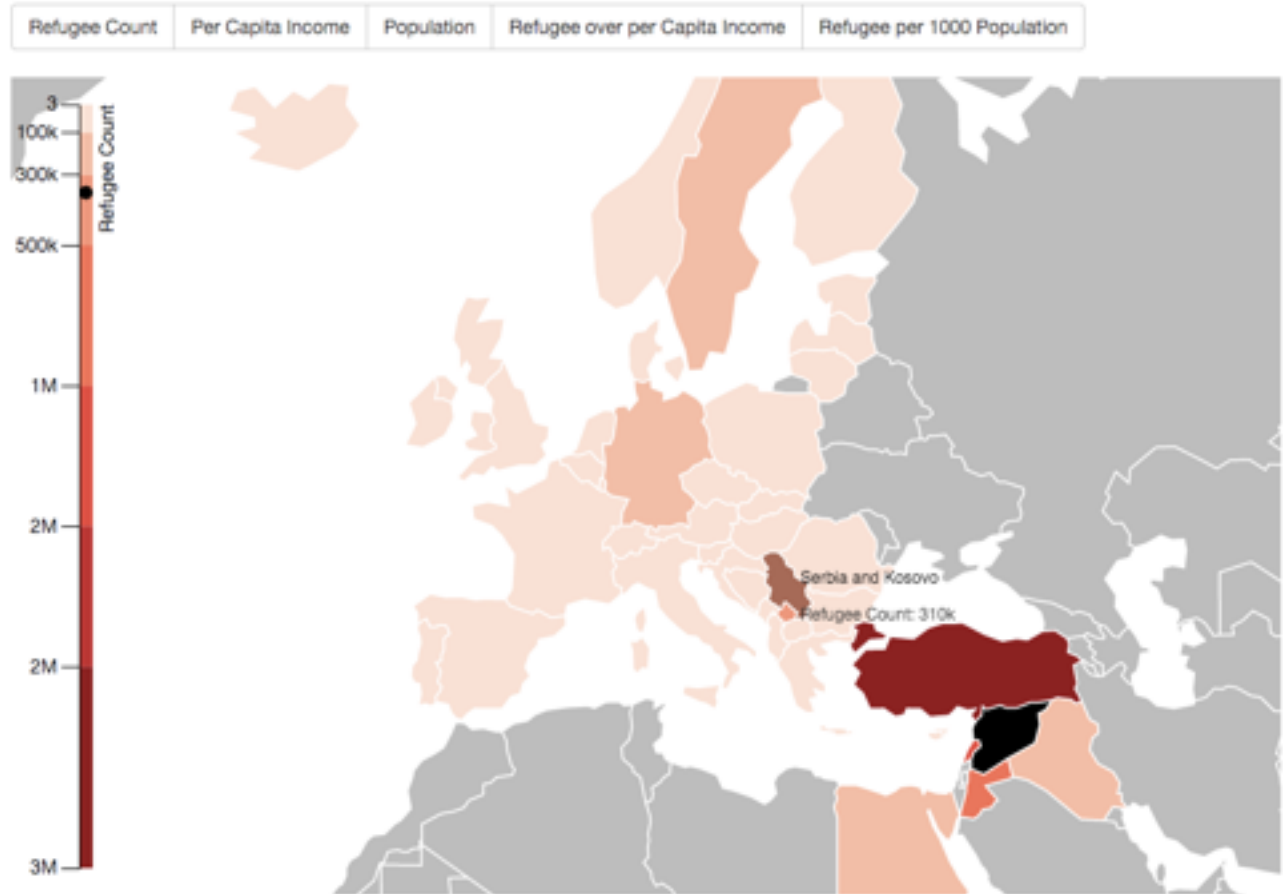
(1) Major changes: "little-people counter" // Select & de-select actors



(2) Major changes: Chord diagram instead of Sankey / Adjustment of wording



(3) Major changes: show mostly European countries rather than the entire world

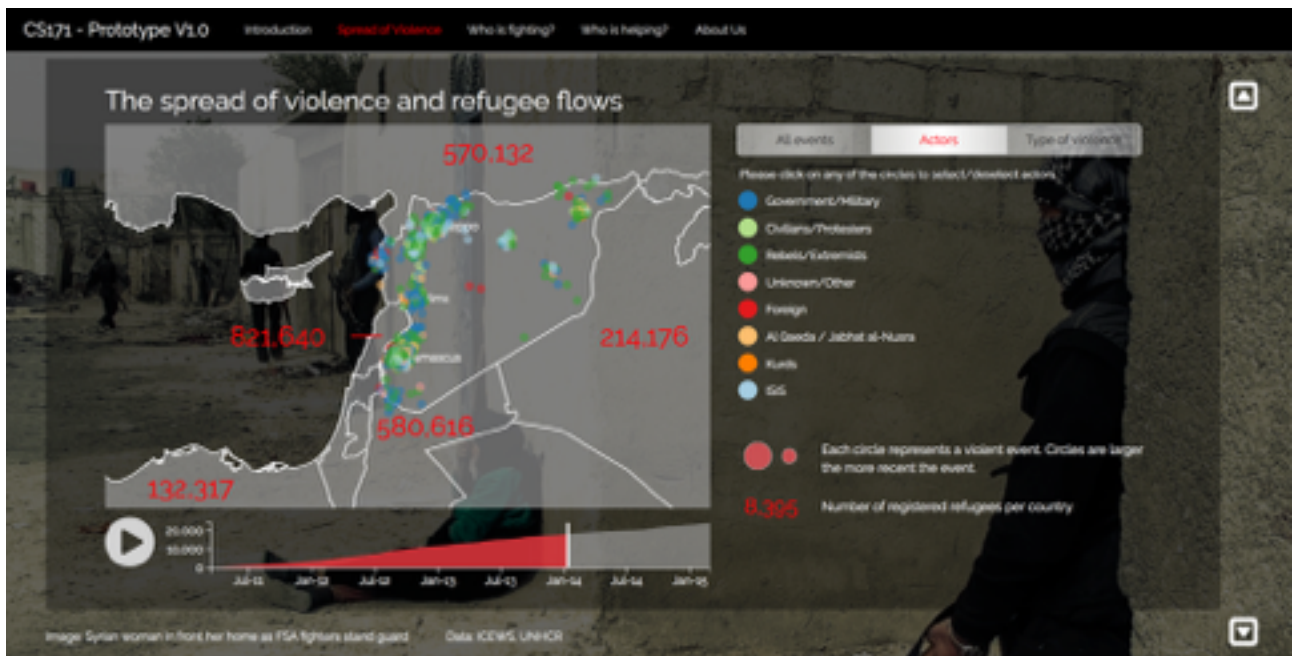


Redesigns (Week 4)

Decided to go with a mostly dark / black background



Therefore added transparency features on the violence map (little people counter is almost working; will be included in next version)



For the Actor Chord, we tested it with a sample audience and since it is hard to understand, we included an explanation to start with (before the full graph is showing up).



Only in a second step we show the full-fledged actor chord to be available for users



Lastly, we include the map that shows who is currently helping and taking refugees.



Expert feedback on prototype V1.0 (Week 5)

We collected feedback on our prototype V1.0 from various sources, which have inspired our re-design.

	Feedback	Changes in designs (green if already implemented)
Techy from Nepal	<ul style="list-style-type: none">• Site looks messy and messages are not clear• To set the context, add a general information of the Syrian Civil War at the beginning (infographic / video)• Names on people on casualty graph is too much detail for a webpage	<ul style="list-style-type: none">• Context / Messaging: Changed slide titles to guiding questions that will help orient the user• Context/Messaging: We will add some context on the conflict in the screencast• Context/Messaging: To recap, we implemented a timeline with key insights from the visualization at the end.• Ignored comment on people names on casualty graph, since we think the messaging is much more powerful like that. Plus we think of it as well as a memorandum kind of page

Argentinian
communicator
, designer,
and publicist

- Spread of violence
 - Unclear what numbers meant and realizing that movement meant a timeline
 - Map is too slow, fun comes at the end
 - People do not recognize that they can filter across types of violence
- Actor Chord
 - Shorten the explanation if possible (other feedback said we should increase the time though)
 - Interactions are unclear
- Who is helping: Key message is not clear to me
- General: need something like key milestones to explain the conflict

- Spread of violence
 - Unclear what numbers meant: there is a legend; hopefully with “little people” counter it becomes more compelling + we might use screencast to elaborate; potentially adding a calendar counter
 - Speed: introduced “play selection” that shows only the most important events
 - Filter: it already says this right above the legend; maybe include it in screencast
- Actor Chord
 - No changes planned yet
- Who is helping: Add a transitional “page” that introduces the topic
- Introduced a timeline with key milestones

German
lawyer

- “Wow - we really only have that many refugees in Germany? Why is there so much fuzz then? What is Turkey doing instead?”
 - No changes. Just being happy that the message is coming across ;)
-

Argentinian/
UK lawyer
specializing in
human rights
issues

- Love how each questions leads to the next one;
- Things who are missing: Who are the victims? Violations to human rights and what the world is doing besides taking refugees
- Would be great to have a video at the beginning that explains the basics of the conflict

- Included a visualization on victims
- Will include some information on conflict in the beginning + timeline with milestones
-

Chilean
actuary

- There is bugs with Internet Explorer (buttons cannot be clicked or wrong actors show up)
- It would be great to be able to go a step in the explanations of the actor chord

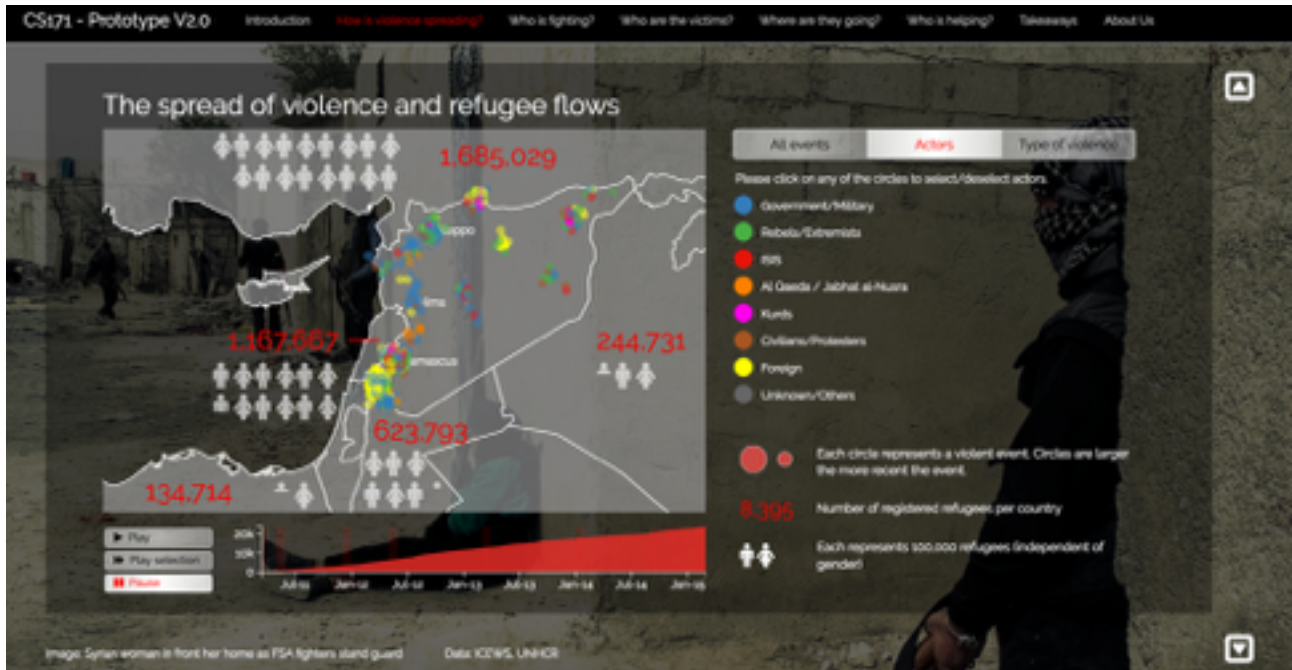
Computer
engineer and
MBA from
Argentina

- Shorten all texts on the page
- Interactions should be more homogeneous across the webpage: sometimes a hover over the legend is a highlight, sometimes a click is a filter. It is hard to predict what happens. Moreover actionable items need to be highlighted more

- Changed some of the interactions we had in the first version

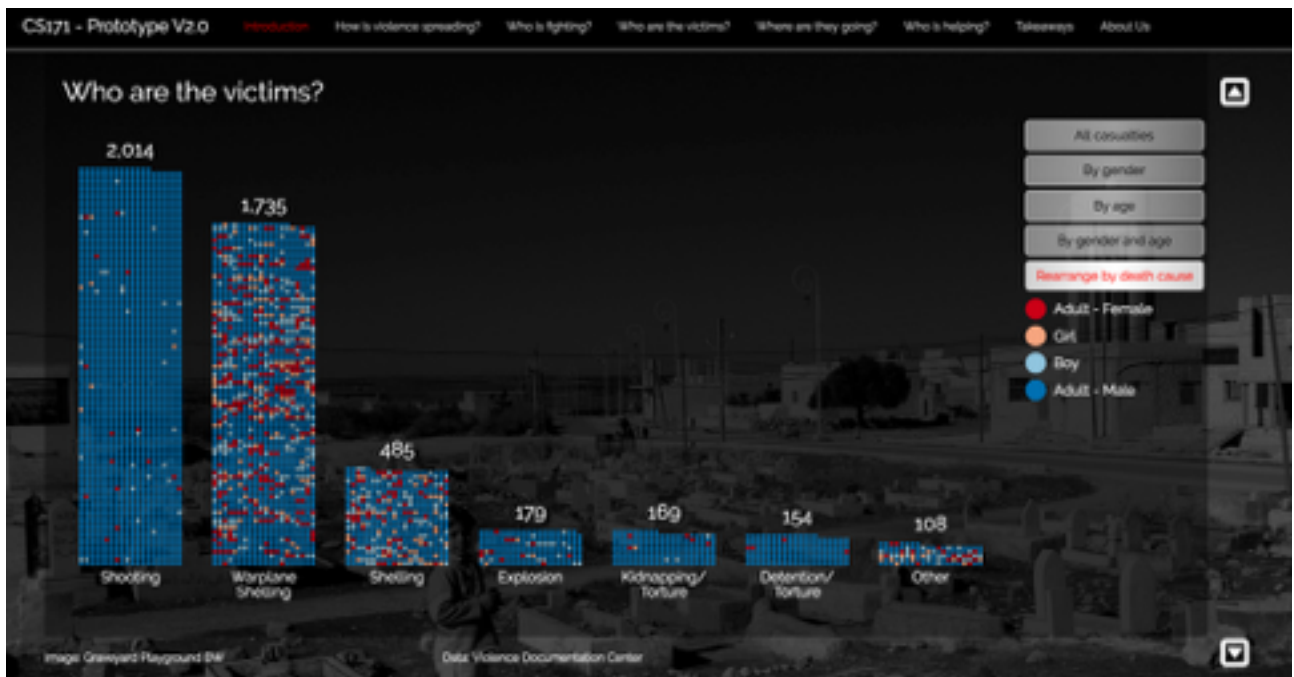
Redesigns (Week 5)

Added “little people” counter and made colors more coherent. Added as well a “play selection” section to just show the highlights and speed up the process

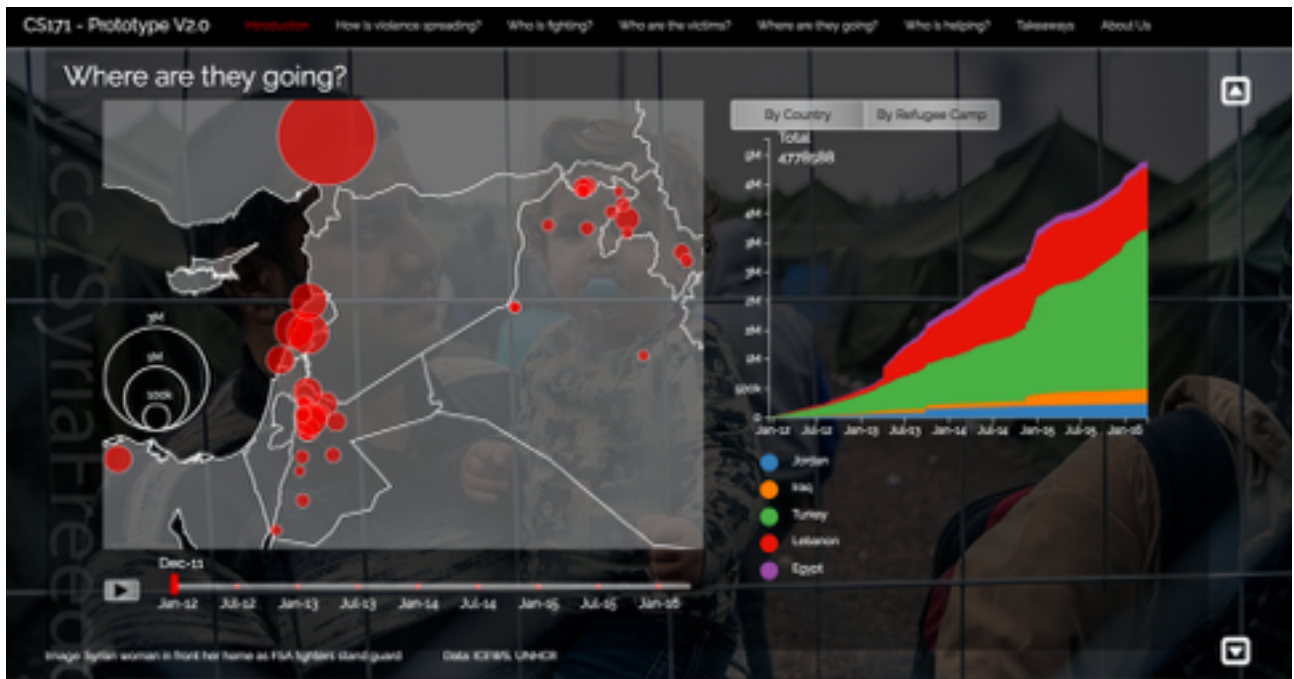


Added a visualization on “who are the victims”

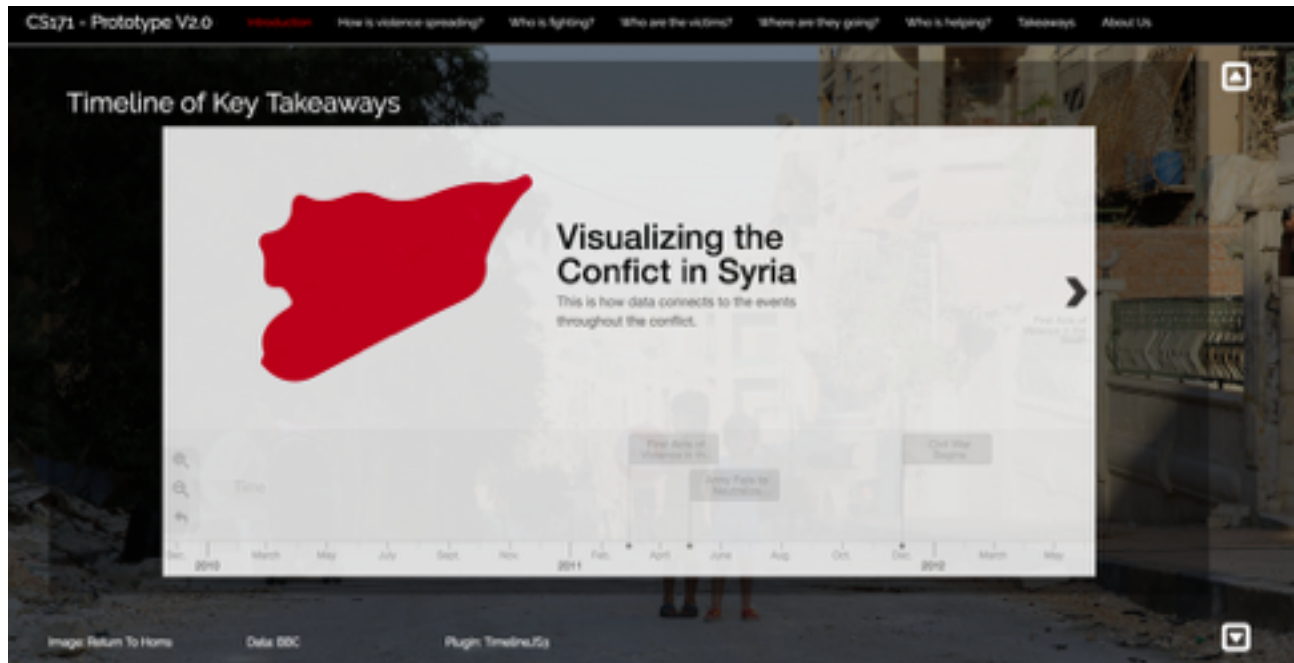




Added a new graph on refugee camps: Where are they going



And added a timeline with key highlights.

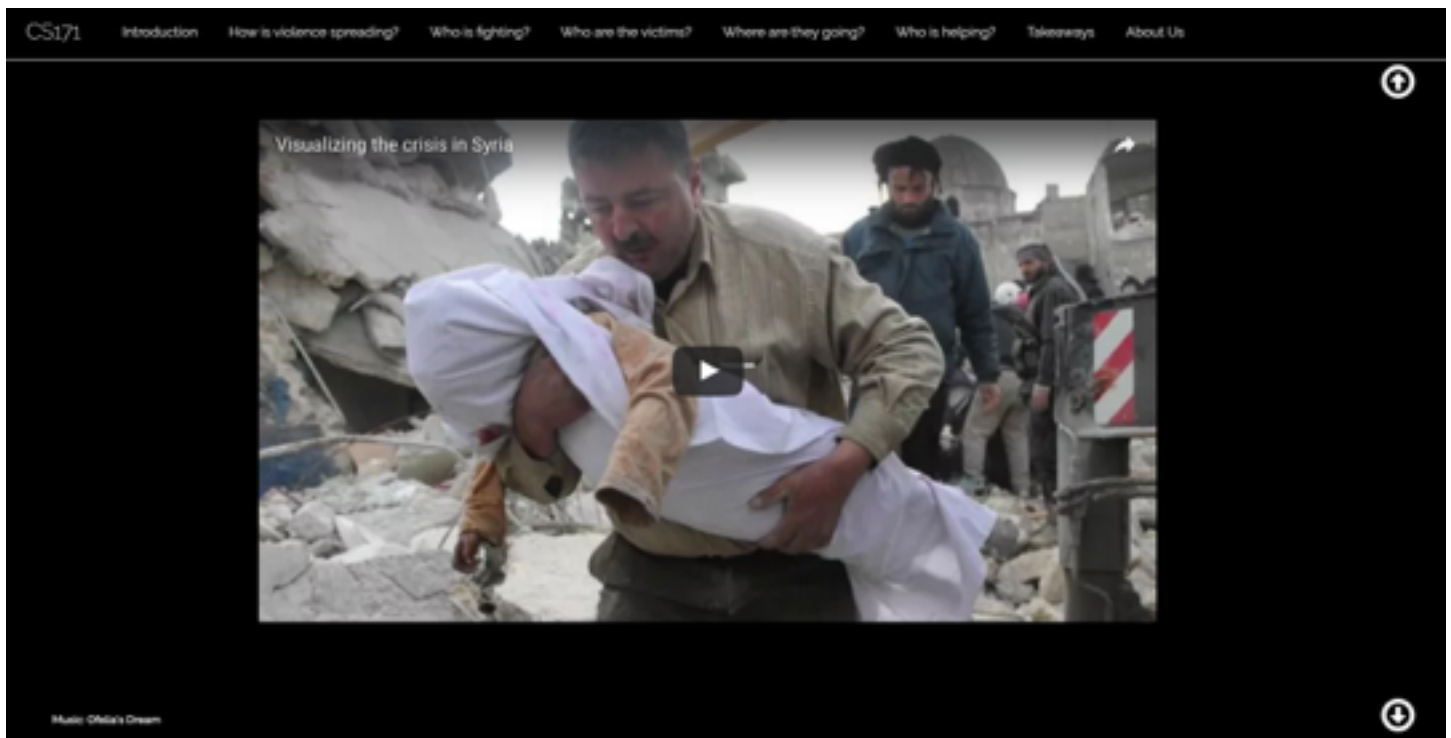


Redesigns (Week 6)

Re-designed title page: in particular reducing text and capture attention



Added screencast + changed appearance of up/down buttons to make it look a bit more modern



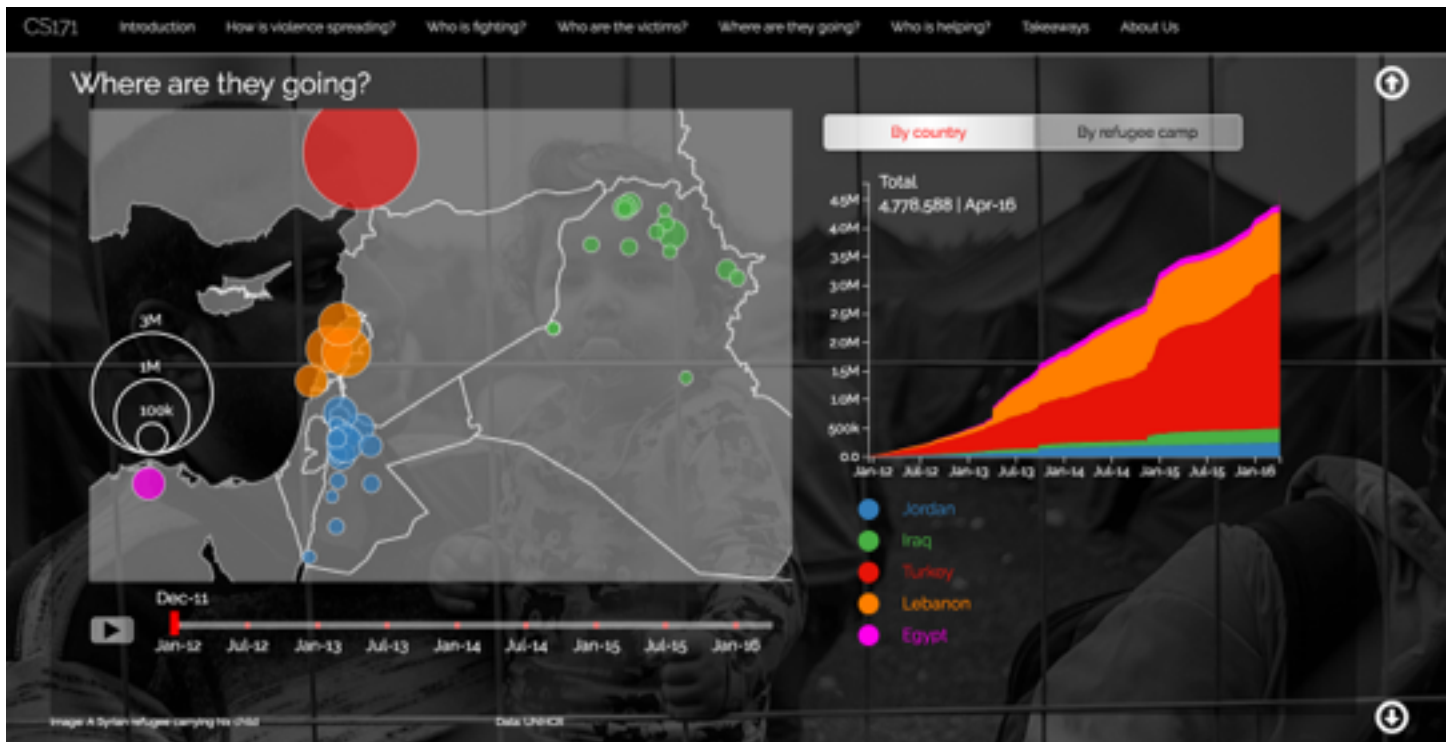
Added calendar to ensure that people realize that this is a “timeline”. Changed colors of legend text and made elements interactive.



Added storytelling slides in between visualizations to capture attention



Adjusted legend / legend interactions to harmonize them with previous visualizations



Feature list

(Green means done / blue in progress / black not started)

	Must-have features	Optional features
Introduction	<ul style="list-style-type: none">• None	<ul style="list-style-type: none">• Video introducing the context of the Syrian Civil War
Spread of violence	<ul style="list-style-type: none">• Map of Syria and surrounding countries• Violent events popping up as circle over time• Time with play / pause buttons and time-slider for specific time horizon• Refugee counter in neighboring countries	<ul style="list-style-type: none">• Brushing features that allows to aggregate violent events over time• Allow split by actor & select various actors• Extrapolation of refugee flows to neighboring countries (to account for the issue that we only have monthly or biweekly data for refugee flows, yet daily data for violent events)• Add a counter using “little people” ← innovative• Add a date counter in top right corner
Dynamics of violence	<ul style="list-style-type: none">• Actor chord of who is fighting whom• Information on click (or mouseover) violence of a given actor against another actor over time	<ul style="list-style-type: none">• Potentially: hover/click feature for timeline that filters and aggregates violence data for e.g., a given year (such that one can observe changes over time)
Casualties	<ul style="list-style-type: none">• Include innovative visualizations of casualties in 2016 (with one dot representing a casualty)	<ul style="list-style-type: none">• Cluster dots into groups for male/female, adult/child, and by cause of death

Refugee crisis

- For neighboring countries where refugee camp data is available, show growth of refugee camps over time (size of bubble at specific location)
- Additional information graph that shows (upon click) the refugee number timeline for a given refugee camp
- Add latest information on age and gender structure of camp population ← not enough variation
- Add refugee camp information (google maps, picture)
- Set of mini-chloropleths that show how refugee numbers increase over time within neighboring countries and Europe

Refugees: Personal narratives

- Include quotes and portraits of refugees telling their story → replaced with storylining quotes inbetween

What can you do?

- World map responsive to clicks
- For selected countries display current refugee information / who is taking proportionately more than others.
- Button for donations

About US

- Team pictures
- Team motivation

Web layout structure / Storytelling

Each bullet point represents a different section

- Introduction section: Video/Infographic setting the context of the refugee crisis in Syria
- Spread of violence: Spread of violence across Syria and count of refugees in neighboring countries
- Dynamics of violence: Sankey chart showing perpetrators or victims of violence with additional detail on demand
- **Casualty information: Who has died in the Syrian conflict in 2016 (new)**
- Refugee crisis: Increase of refugee numbers in various refugee camps around Syria
- Refugee story: Enrich narrative through personal stories and quotes from refugees
- Call to action: Illustrate what various countries are doing;
- Timeline with Key Takeaways (new)
- About us: Introduce our team and why we care.

Discussion on layout

- Want to have a layout: “each page at a time” with black/white pictures in the background

Project schedule

Week 1

Mar 21-27

- Finalize data collection
- Understand amount of data cleaning required
- Develop initial design ideas
- Project plan

Deliverables

- Initial project plan (due Apr 28)

Week 2

Mar 28-Apr 3

- Meet with Prof. Dara Cohen (civil wars) to better understand usefulness of visualization for policy-making (understand must-have features)
- Add data sources if required
- Discuss design ideas, narrow down designs
- Begin data cleaning efforts
- Look for sample code for basic visualizations
- Assign overall responsibilities w.r.t. to coding tasks (e.g., D3 main coder, HTML/CSS main coder, screen-cast)

Deliverables

- Final project plan (Due Apr 4)

Week 3

Apr 4 - 10

- Finalize design based on peer feedback
- Begin coding of designs to avoid any bad surprises!
- Develop concept for screen-cast

Deliverables

- Project re-design (Due Apr 11)

Features

- Spread of violence basic graph
 - Sankey chart basic graph + click for additional information
 - Refugee camps basic graph
 - Basic webpage outline
-

Week 4
Apr 11-17

- Coding dungeon

Deliverables

- Project prototype V1 (Due Apr 18)

Features

- Spread of violence: Timeline (play and pause) + chloropleth of neighboring countries
- Sankey chart brushover

Week 5
Apr 18-24

- Coding dungeon
- Develop presentation / screencast

Deliverables

- Project Prototype V2 (Due Apr 25)

Features

- Spread of violence: extrapolation of refugee counts
- Spread of violence: additional brush elements
- Refugee: additional information
- Refugee crisis: mini chloropleth
- Refugee narrative: personal stories and webpage
- Video + webpage

Week 6
Apr 25-May 1

- In-depth error checking
- Website finalization

Deliverables

- MPA/ID presentation (Apr 26)
- Final project (due May 2nd)
- SEAS design fair (May 4th)

Progress log

Design

Week 1

Mar 21-27

- Finalize data collection
- Understand amount of data cleaning required

Week 2

Mar 28-Apr 3

- Discussion of data sources with civil war expert (Prof. Dara Cohen) resulted in discarding the GDELT dataset in favor of the ICEWS dataset. Moreover, biases in media-related event data will need to be made transparent on the project page
 - Data cleaning: Filter out Syria data with intensity scales of -8.0 or smaller
 - Actor encoding: Manually recode actor classifications into major categories
- Reaching out to UNHCR expert to get consolidated view on data - however, no consolidated data source available. Thus, we began downloading individual datasets from UNHCR
 - Consolidate individual data sets into one
- Personal narratives: We would like to include personal narratives of refugees in our storytelling: Maria to reach out to friends in Germany who are working with Syrian refugees
- Further data sources (e.g., casualty data) to be discussed with researcher at the Belfer Center (Anita Godhes) / scheduled for Tuesday, March 4

Week 3

Apr 4 - Apr 11

- Finalize data aggregation / prepare data for each graph
- Added new data source on casualties of violence → scrape data from the webpage <http://vdc-sy.info>

Week 4

Apr 12 - Apr 18

- Manual encoding of refugee locations
- Data for casualty data has been scraped, cleaned and filtered

-- Data process complete

Design/Storytelling

Week 1

Mar 21-27

- Initial sketches submitted with project plan

Week 2

Mar 28-Apr 3

- Updated visualizations based on vis exploration poster session
- Team discussion on overall storyline and required visualizations to underpin storyline, agreed on overall storyline (see above)

Week 3

Apr 4 - Apr 11

- Violence map
 - Replace choropleth of neighboring countries with “little people” that build up as refugee numbers are increasing
 - Add select element for actors and types of violence (e.g., display only government violence or killings)
 - Add a date counter on top right corner (optional)
- Actor overview
 - Rename Aggressors and victims
 - Replace Sankey with chord diagram
- Storyline
 - End on a more positive note.
- Webpage
 - Decided to go for a “one page at a time” layout; ideally with black and white pictures in the background.

Week 4

Apr 12 - Apr 18

- Violence Map
 - Added transparency to make it look better with the black/white photographic backgrounds
- Actor overview
 - Completed interactive, stacked bar chart
- Action map
 - Added storytelling snippets on right hand side
- Implemented one-page flow for storytelling

Week 5

Apr 19 - Apr 24

- Violence Map: Speed-up button
 - Implemented “little people” refugee counter
 - Since interval speed already at 1 millisecond, constraint is likely computing speed, not interval speed
 - As an alternative, we included a “show highlight” section in which only a few events are being picked and displayed to the reader
 - Casualty information: Added new chart on casualties
 - Original plan of illustrating all casualties by a dot each or at least the 2015 casualties needed to be abandoned, because moving more than 10,000 dots at a time is taking a lot of computational power
 - Instead, changed view to include only the 2016 casualties
 - Where do they go:
 - Newly added visualizations with refugee camps visualized and growing over time as the number of registered refugee camps within each camp grows
 - Still need to change colors to make a more coherent picture
-

Week 6

Apr 25 - May 2

- Violence Map
 - o Added “Calendar” to show that “Play” refers to time dimension
 - o Recolored legend text + added legend text interactivity to homogenize interactivity with other visualizations
 - o Redrew country shape of Iraq which - in natural earth based files - had been displayed as two different shapes
 - Refugee camps:
 - o Added interactions in line with other visualizations
 - Web design
 - o Made background pictures all black and white to improve contrast
 - o Re-designed initial page and reduced text
 - Responsive design
 - o Screen resizing issues became apparent when displaying our project to the MPA/ID program
 - o Implemented responsive elements for Navigation bar and some of the buttons for each visualization
 - Storytelling: added storytelling pages to the website to guide the audience through the page
 - Loading time: implemented some delay in the display of the navigation bar and button to “bridge” loading time
 - Screencast: Produced screencast
-

Team roles and team consensus

Team roles (description)

Coordinator (Lily)	<ul style="list-style-type: none">• Responsible for meeting coordination and overall process mgmt• Scheduling of team meetings and external meetings (calendar invites)
Submitter (Maria)	<ul style="list-style-type: none">• Ensures timely and complete delivery of deliverables• Keeps track of deliverables and coordinates with team to ensure all deliverables are submitted in time• Keeps process book updated
Team welfare improvement (Mar)	<ul style="list-style-type: none">• Team welfare improvement for late night meetings (organizes food and drinks)• Brings cheerful mood to the team room ;)
Communicator (Mar)	<ul style="list-style-type: none">• Handles external team communication (e.g., with TA, content experts, MPA/ID program director)
Project stress testing (Lily)	<ul style="list-style-type: none">• Test visualizations and homepage for potential sources of errors (or browser compatibility issues)
Technical trouble shooting (Maria)	<ul style="list-style-type: none">• Keep oversight over coding efforts; ensures seamless integration of various visualizations into one webpage• Trouble shoot technical failures through debugging
Webpage hosting: (Maria)	<ul style="list-style-type: none">• Set-up hosting environment for webpage• Maintain webpage after project ends for at least one year• If team continues with data visualization; add future projects as reference portfolio
Webpage (Maria/Mar)	<ul style="list-style-type: none">• Develop core skills for HTML/CSS (main coder for webpage design)
Screencast (Mar/Maria)	<ul style="list-style-type: none">• Develop 2 min narrative for webpage, project overview, as well as policy-makers (policy-brief)

Team consensus document

TEAM EXPECTATION AGREEMENT

TEAM ROLES

coordinator: Lily
submitter: Maria
team welfare improvement: Mar
communicator: Mar
Maintenance (post project): Mar/Lily
technical troubleshooting: Maria

What's app group
In-person meetings

Communication

MEETINGS

ON TIME!

- 1 fixed meeting per week: Tue, 4pm
- Optional additional meeting, Thu, 4pm
- additional working days as required

Honest, respectful feedback
(as well for performing members)

NON-PERFORMING MEMBERS

Li Li

MAR
CARPANEU

MARIA
SCHWARZ