FAMINE & FOOD CRISIS FORECASTING CENTER

HACKATHON 1: YEMEN

Team Presentations, Day 3

Golden girls

Amy, Hayfa, Lilieth, Maya, Sultan, Yota

1. Situation analysis and context

Timeline Food Insecurity - Famine (year 2015-present)

2022-present — Current Situation

- Child malnutrition is one of highest in world
- Humanitarian situation worsened due to Ukraine-Russia conflict
- July - August 22 - Widespread flooding across Yemen
- Intensified Fighting in Marib & Hajjah

2020-2021 — Ongoing famine situation

- Death tolls increase as a result of acute food insecurity, lack of healthcare, locust swarms.
- Two-thirds of the population dependent on humanitarian aid
- Drastic increase in cost of food / collapse of Yemen's currency

2018-2019 — Heading into world's worst famine in 100 years

- Worsening of the conflict
- Scale up of aid operations in the country (by March 2018, 22 ml citizens require humanitarian aid)

2015- 2017 — Pre-cursors to Yemen catastrophe

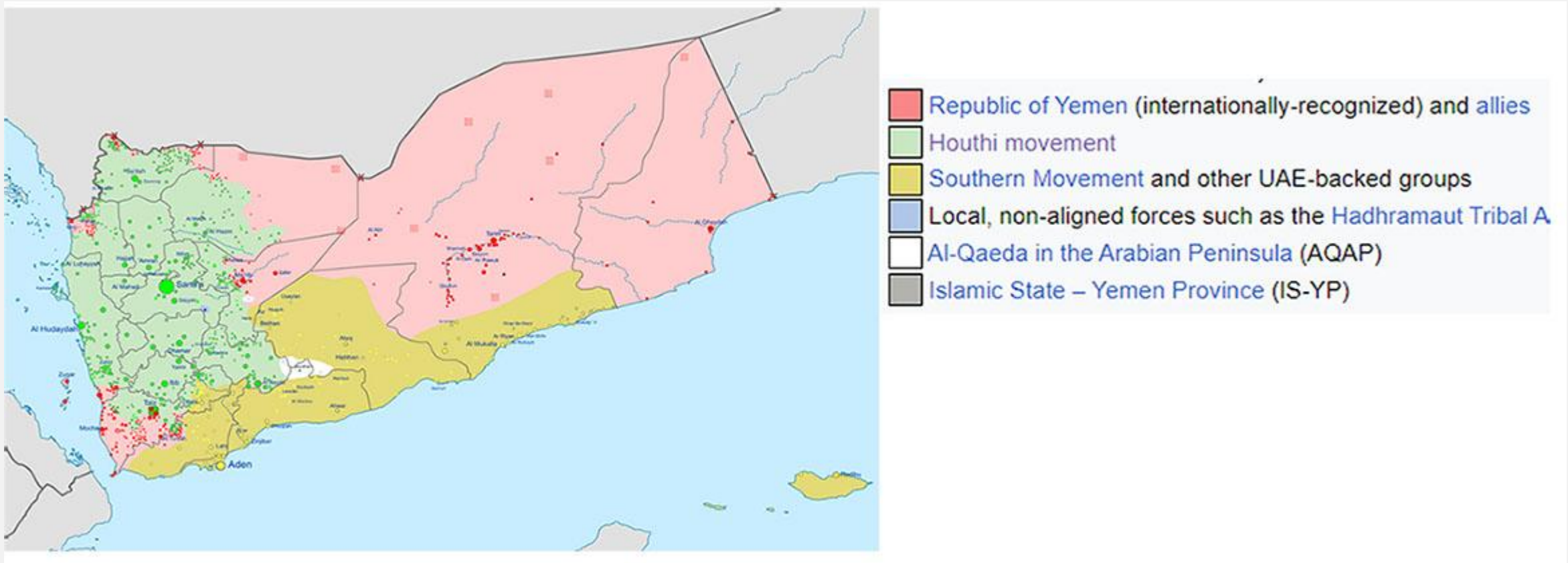
- Cholera outbreak
- Food and Supply Blockade - ports closed

Pre-2015 — Historical context

- Long term political instability / Conflict (civil war since the 90's)
- Cultivation of khat (30% of economy in 2000)
- 90% of food is imported

Golden girls 1. Situation analysis and context

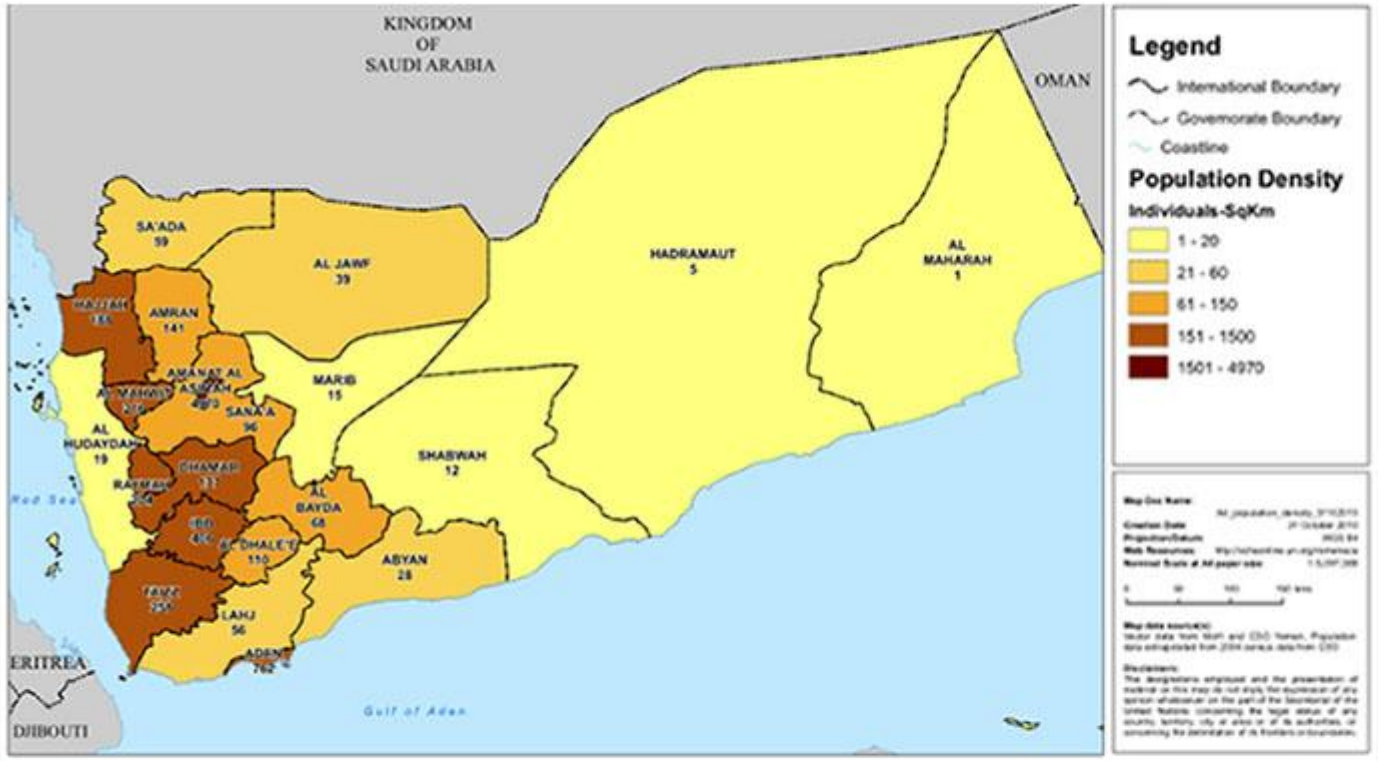
Yemeni Civil War detailed map (2014-present)



Map Source: WIKIPEDIA - image credit: Ali Zifan (https://en.wikipedia.org/wiki/Yemeni_Civil_War_(2014%E2%80%93present)

Golden girls 1. Situation analysis and context

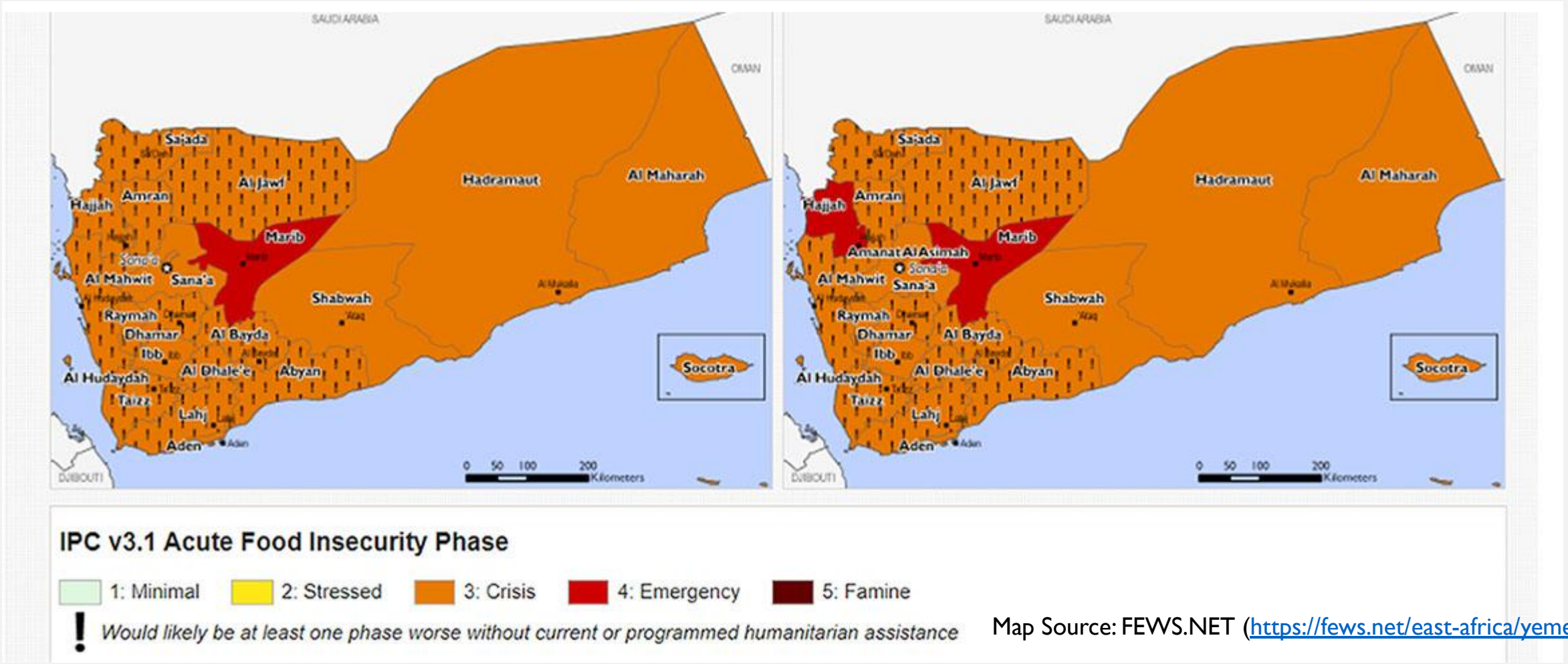
Yemen Population Density (2009)



Map Source: OCHA - RELIEFWEB 2010 (https://reliefweb.int/map/yemen/yemen-population-density-2009)

Golden girls 1. Situation analysis and context

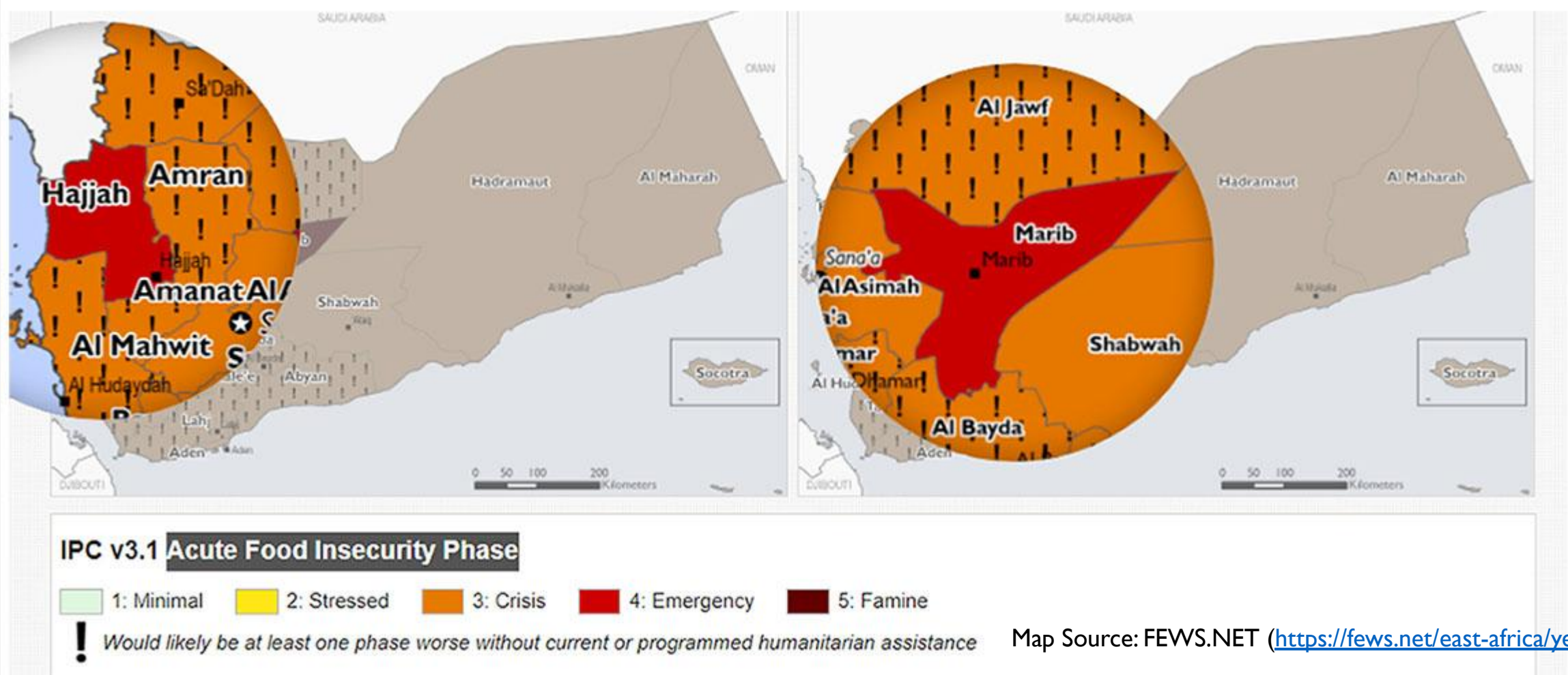
Acute Food Insecurity Phase (Dec.2022 - Jan. 2023)



Map Source: FEWS.NET (https://fews.net/east-africa/yemen)

Golden girls 1. Situation analysis and context

Acute Food Insecurity Phase (Dec.2022 - Jan. 2023)_detail (Hajjah & Marib districts)



Map Source: FEWS.NET (https://fews.net/east-africa/yemen)

Golden girls 11. Working with datasets

Research question
What are the factors that led to worsened food security situation in two governorates (Hajjah and Marib)?

Outcome (Dependent variable)
Emergency (IPC Phase 4) in Hajjah and Marib (governorates)

(Independent) Variables that could have led to the outcome
Climatic datasets - Rainfall (compared to averages)
Nutrition indicators - SAM, MAM
Intervention indicators (VITA, MNP, FEFO, etc.)
Population information: IDPs, # flood-affected, density
Food prices
Geographic location - distance from coast (access to seaports)
Conflict zones/intensity

to better understand..
floods
level of child malnutrition I
assistance provided (or not)
number of vulnerable population
Food Security (accessibility)
Food security (availability)
Conflict level

The final product of this exercise
A dashboard that displays visualization (graphs or/and maps) of the different indicators, change over time, and trends. The purpose of this tool is to assist aid practitioners to assess & monitor / evaluate current interventions and to forecast potential need for future assistance or assistance scale-up.

Famine Fighters

– Jifan, Joe, Mary Kate, Theo, Tiffany

Research Question:

- What is the relationship between a rise in pressure factors, changes in food insecurity, delivery of aid, and resulting changes in food insecurity?
- The question was borne to out of curiosity between price spikes and delivery shortfalls.

Indicators

- Nutritional Support
- Conflict
- Commodity Prices (Terms of Trade)
- Rainfall
- Food Security

Historic buildings and garden in the Old City of Sanaa.
Source: baytalfann.com

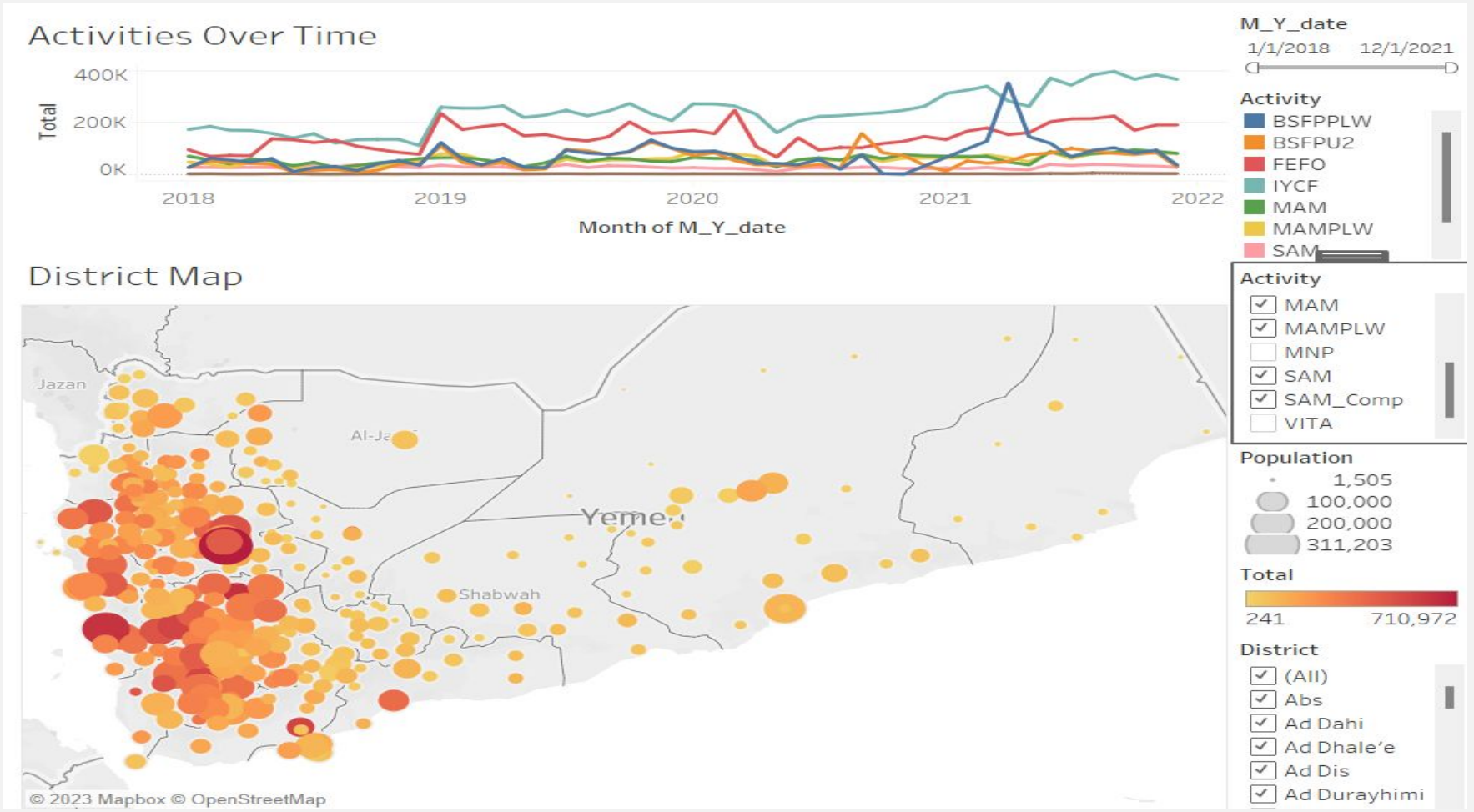
System

Pressure/Hold			Crisis	
Conflict Data	Terms of Trade	Rainfall	Food Security	Mortality
• Uppsala Conflict Data Program	• WFP	• WFP	• rCSI • FCS	• World Bank

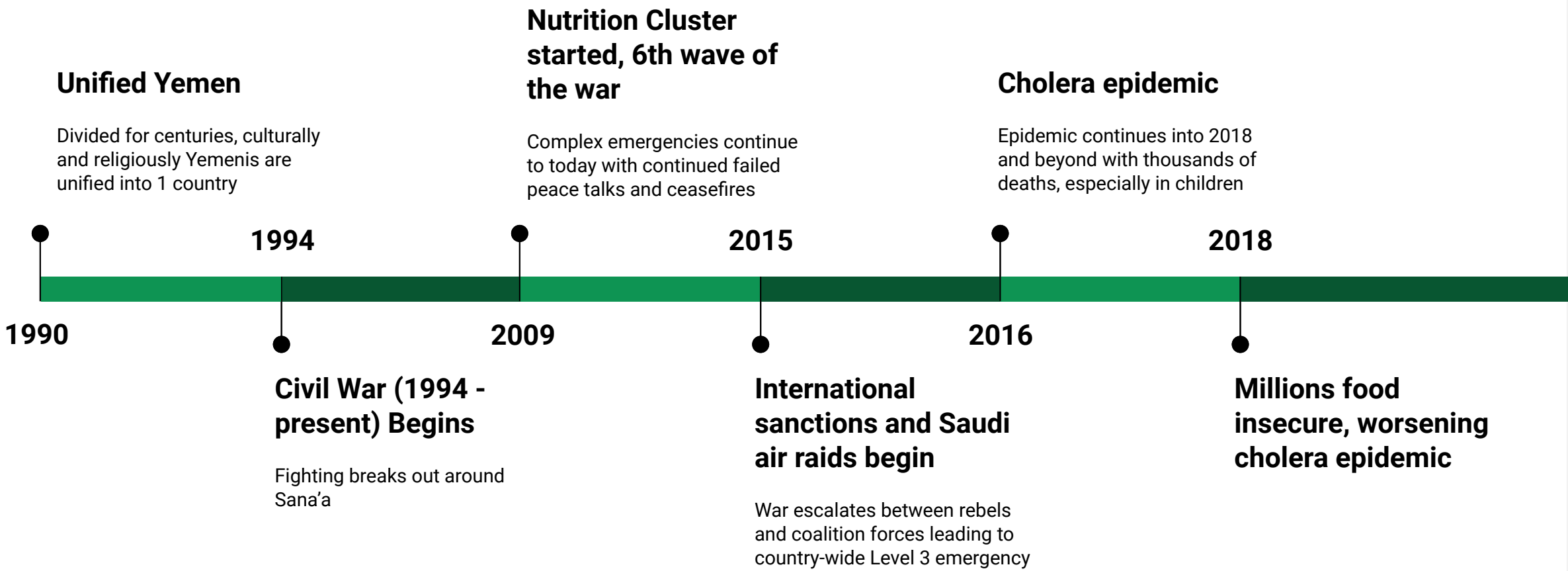
Database Schema

- **Nutrition**: year, month, governorate, district (p-code), activities, count
- **Conflict**: year, month, governorate, event, fatalities
- **Terms of Trade**: market price, year, month, commodity price, wages and terms of trade
- **Market**: market, governorate, district, distance
- **Rainfall**: year, month, governorate, total precipitation
- **Food Security**: year, month, governorate, metric (rCSI, FCS), score

Tableau Dashboard

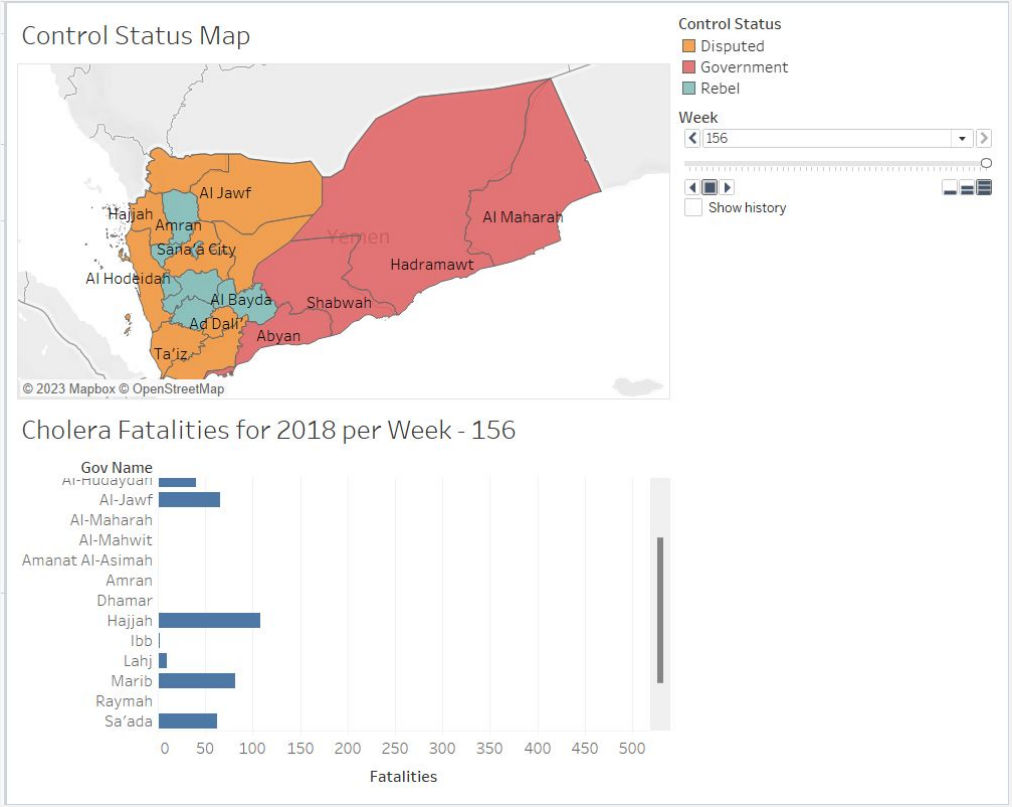


TEAM Rice


1990
1994
2009
2015
2016
2018
Unified Yemen
Divided for centuries, culturally and religiously Yemenis are unified into 1 country
Civil War (1994 - present) Begins
Fighting breaks out around Sana'a
Nutrition Cluster started, 6th wave of the war
Complex emergencies continue to today with continued failed peace talks and ceasefires
International sanctions and Saudi air raids begin
War escalates between rebels and coalition forces leading to country-wide Level 3 emergency
Cholera epidemic
Epidemic continues into 2018 and beyond with thousands of deaths, especially in children
Millions food insecure, worsening cholera epidemic

Our Visualization

How do cholera cases affect the total percent receiving nutrition intervention in rebel, disputed, and coalition-controlled governorates in Yemen in 2018?



Next Steps

- Expand years included in dashboard
- Improve UI interactivity for better understanding
- Involve other secondary data like rainfall and FCSs
  - Investigate correlations b/w cholera, rainfall, and other factors affecting food insecurity/fatalities
- Fix temporal scale between maps (weeks vs. months)
- Add slider for time with indicators

Famine & Food Crisis Forecasting Center

Team 3: Framing the Research

Initial research question:

How "contagious" is a famine?

Criteria:

- Market prices (terms of trade: ratio of wages of non-qualified labor to market price of wheat flour)
- FCR

In other words: Does change in ToT affect FCS or vice versa over time? How long is the **lag?**

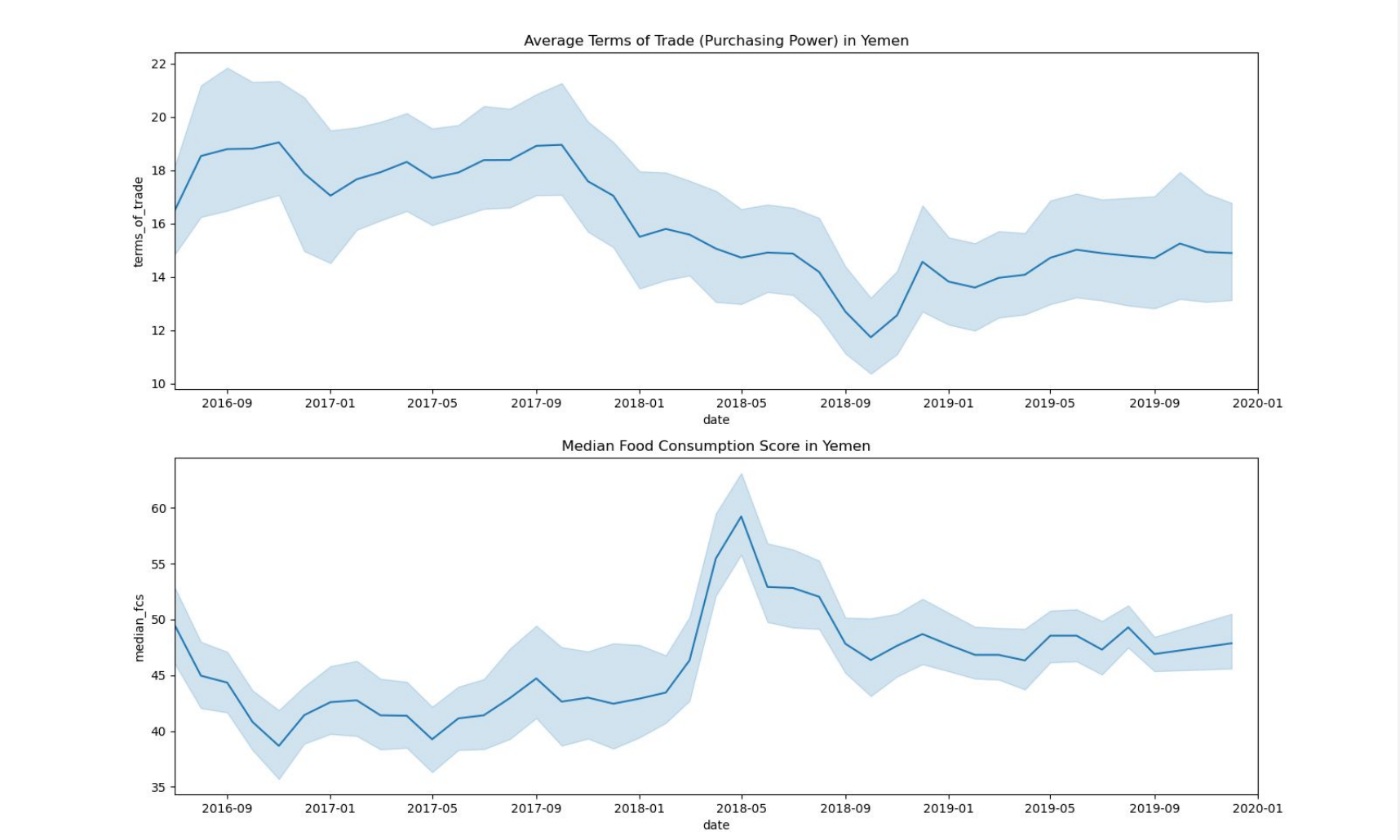
Team 3: FCR and TOT Over Time

X-axis: Time measured in monthly intervals from Sept 2016 to end of Sept 2019

Y-axis: FCS (top) or ToT (bottom) indicators

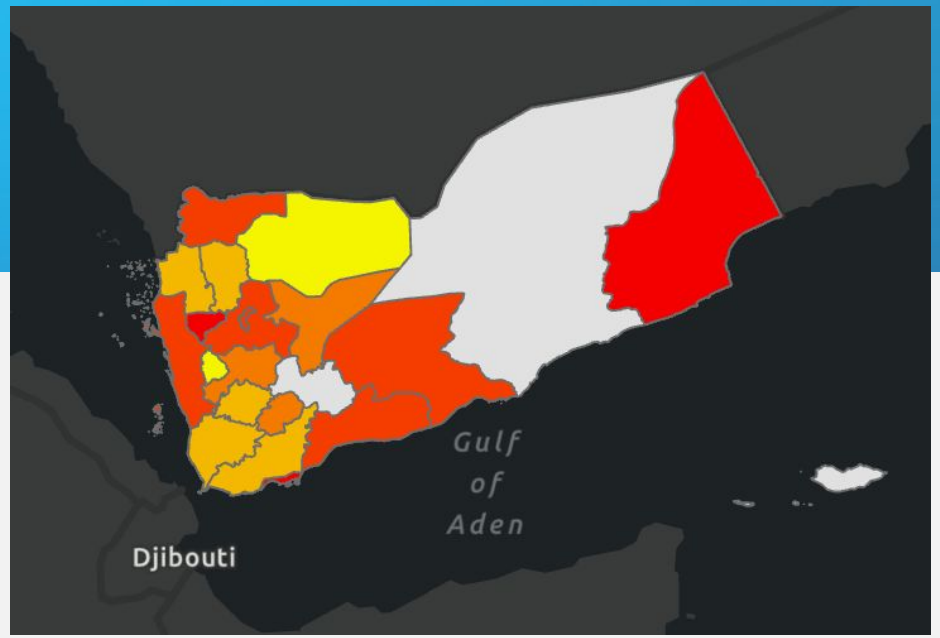
Notes–

1. Inversions vs. similar movements
2. Averages across the country (not a specific governorate)

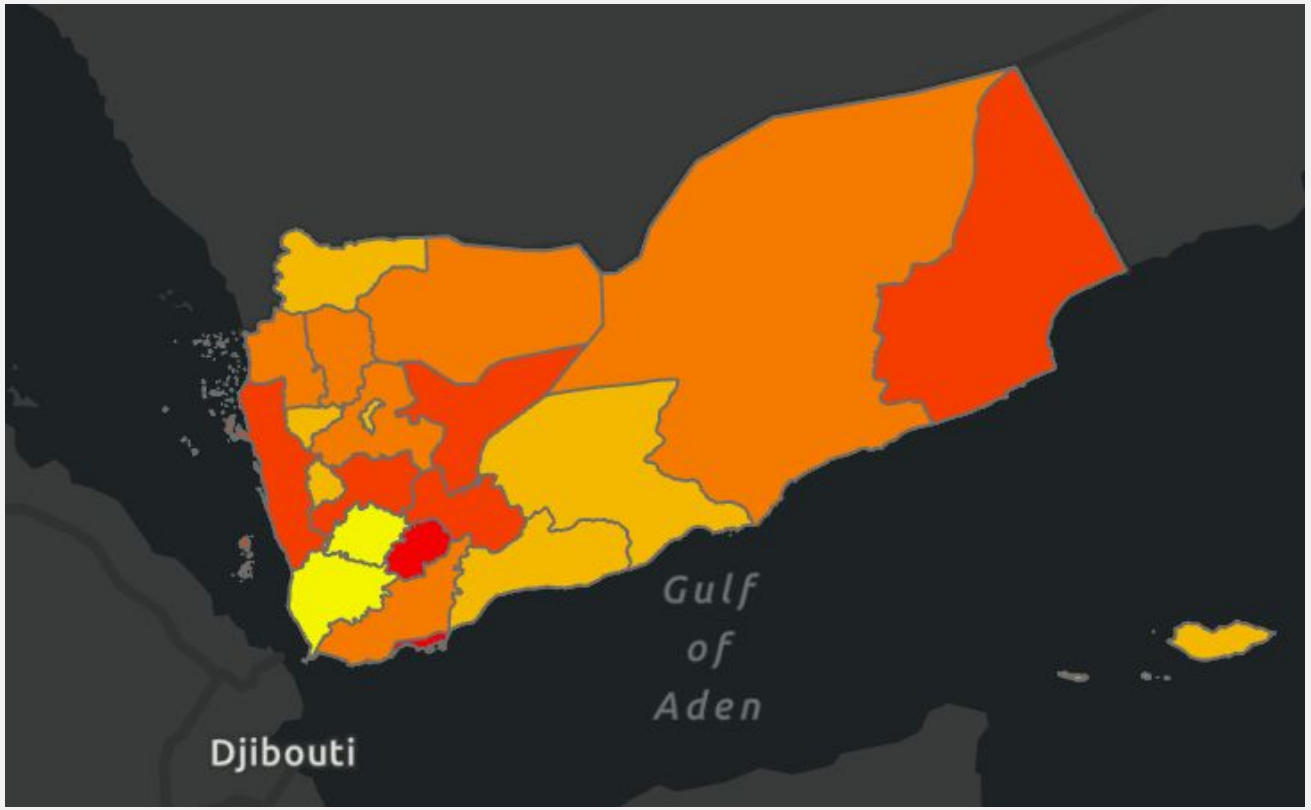


Team 3: 10 month lag

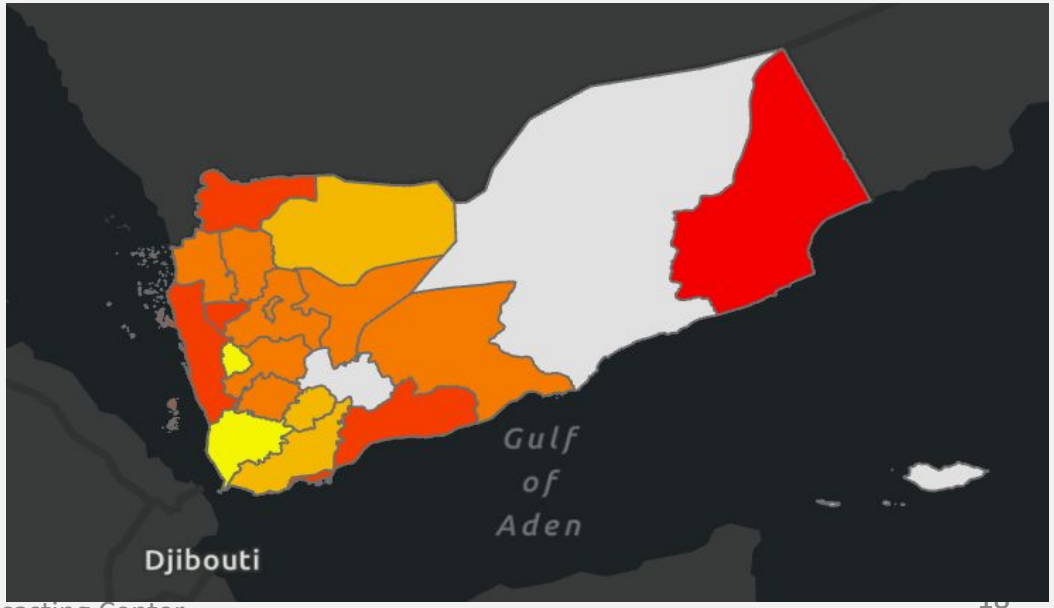
FCS June 2017



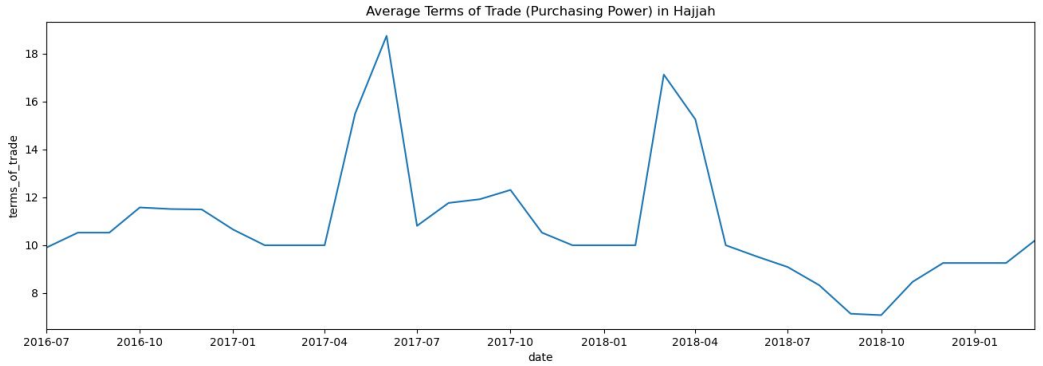
ToT June 2017



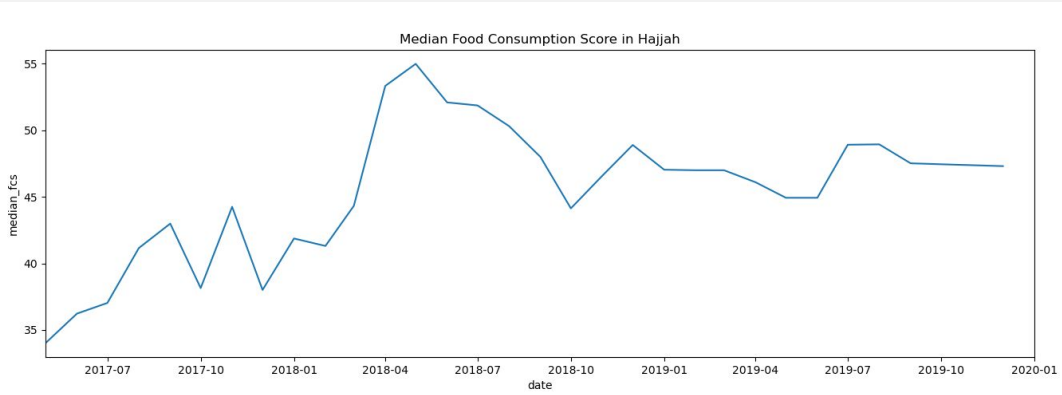
FCS Dec 2016



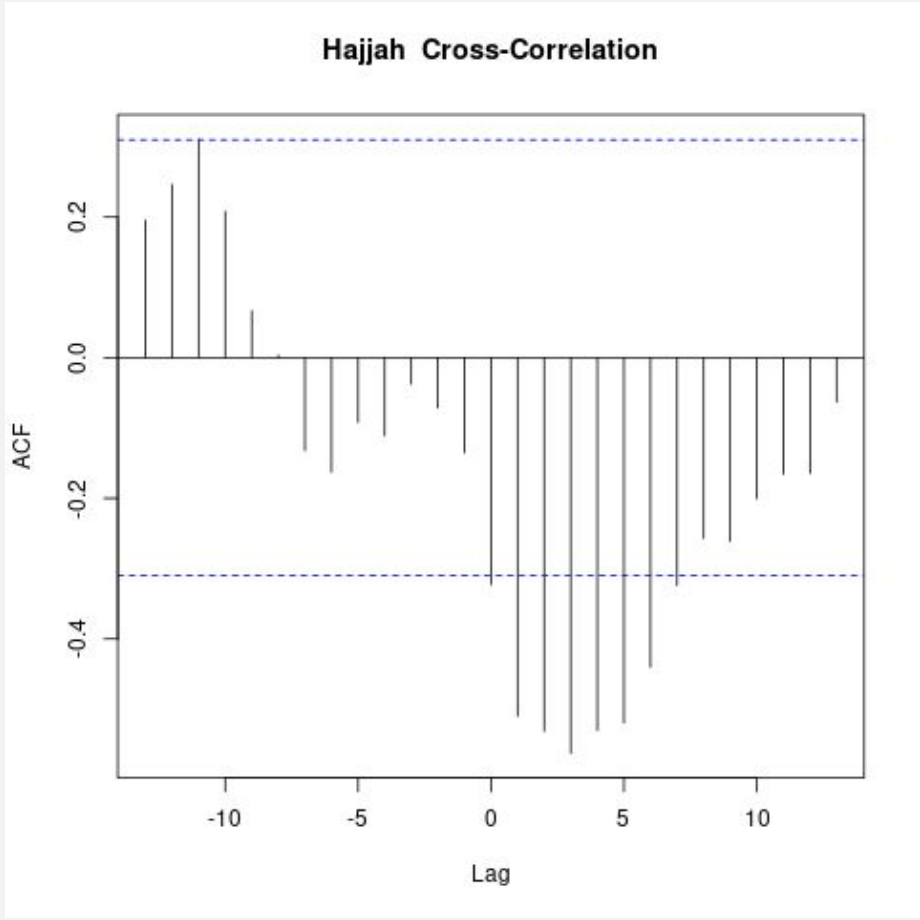
Team 3: Hajjah Governorate Example



Terms of Trade: July 2016 - March 2019



Food Consumption Score: May 2017 - Jan 2020 (10 month lag)

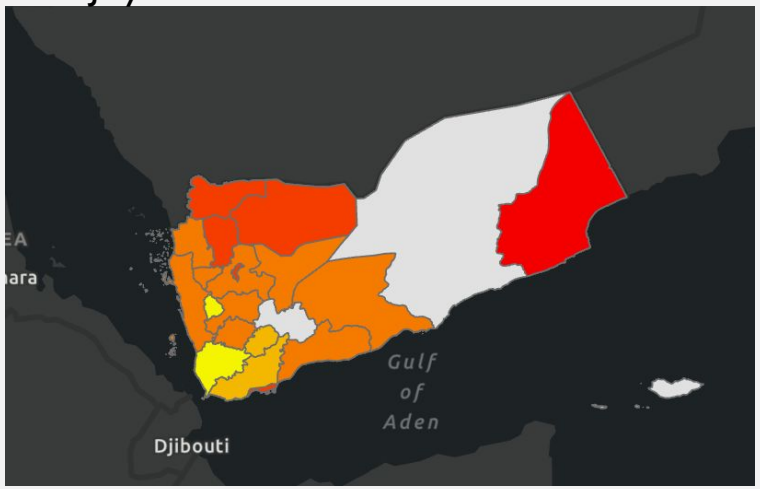


Team 3: Outstanding Questions

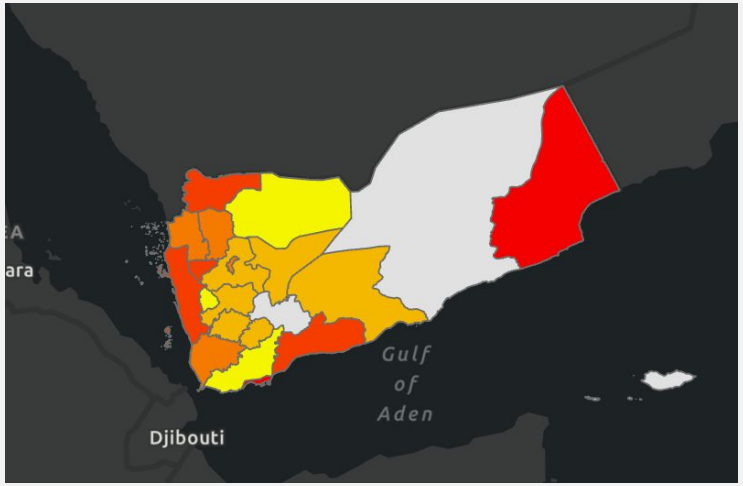
1. Does lag apply outside of the Hajjah governorate?
2. **What is the difference in lag per province & does it correlate with other factors?**
3. Does lag apply across the whole 3 year time period?
4. Is it s.s.?
5. Long run: parallels with infectious diseases, proximity analysis…

TEAM 3: Heat Maps with 3-Month Lags

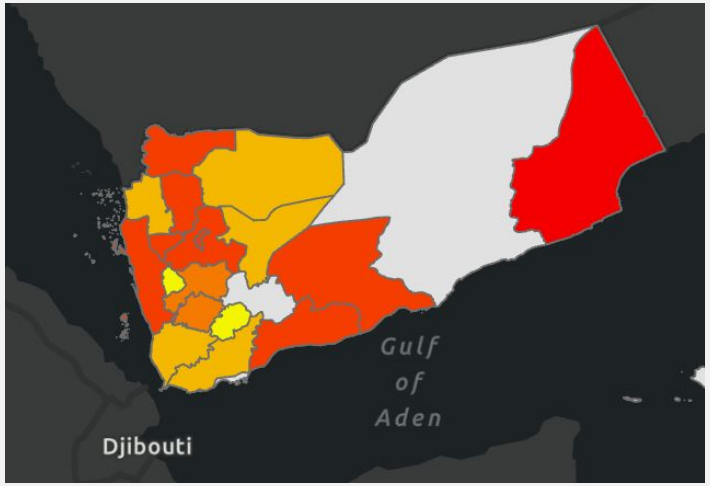
FCS July 2016



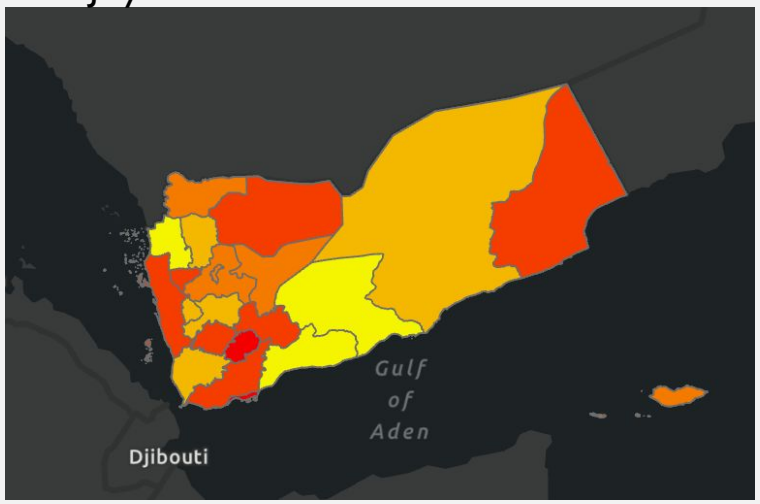
FCS October 2016



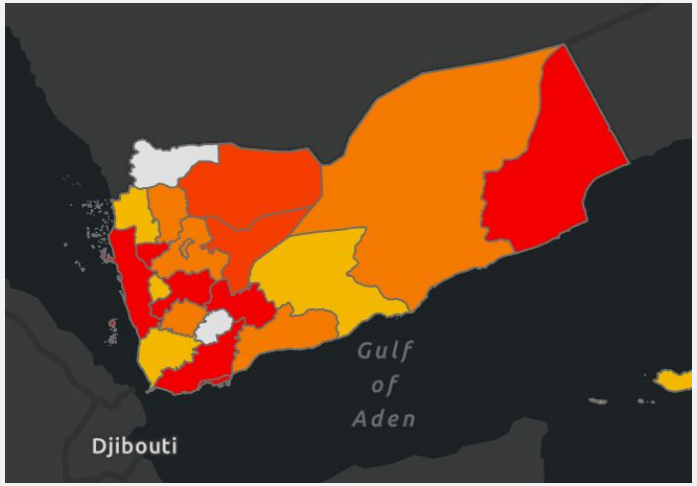
FCS December 2016



ToT July 2016



ToT October 2016



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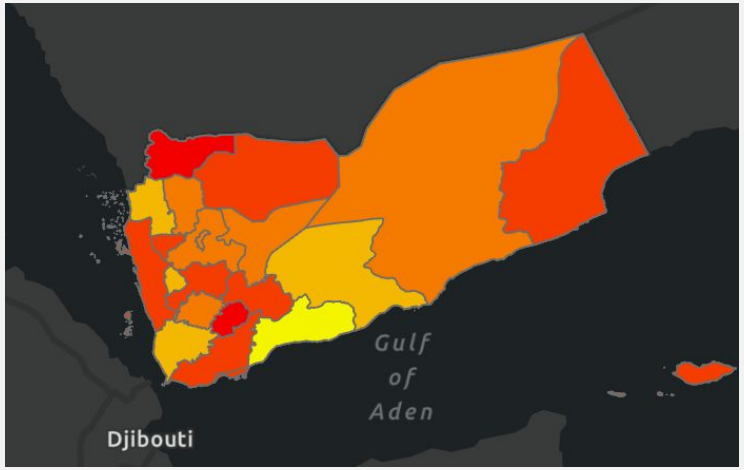

TEAM 4

TEAM 5

TEAM 6

TEAM 7

TEAM 8

TEAM 9

TEAM 10 - FAMINE HACKERS

Events and situations – The Yemen story

Hackathon data set

1990s

Yemen experienced some economic growth and improvements in social indicators, including reductions in poverty and child malnutrition

2011

As part of the Arab Spring, Yemen experiences political upheaval and conflict, which contributes to economic instability and disruptions to food systems. However, specific information on the impact on the nutrition situation is not readily available

2015

The outbreak of the civil war in Yemen leads to widespread food insecurity, reductions in agricultural production, and disruptions to food import and distribution systems. The conflict also results in damage to infrastructure, including roads and ports, which further exacerbates the food security situation. OCHA reports that the conflict has led to widespread food insecurity, with millions of people at risk of starvation

2016

OCHA reports that Yemen is experiencing its worst famine in decades, with millions of people at risk of starvation. The United Nations declares the famine to be a result of the conflict and the restrictions on food imports imposed by the coalition forces

2017 -19

The conflict continues, with limited progress in peace talks, and the humanitarian crisis in Yemen deepens. OCHA reports that over 20 million people in Yemen are estimated to be suffering from hunger, and the situation is further compounded by outbreaks of cholera and diphtheria. OCHA also highlights the significant challenges faced by humanitarian actors in reaching those in need due to the conflict and restrictions on access

2020-21

The COVID-19 pandemic adds to the already dire humanitarian situation in Yemen, with lockdowns and disruptions to food systems exacerbating food insecurity and malnutrition. OCHA reports that the pandemic has further exacerbated the already dire food security situation in the country, with millions of people in need of assistance. However, some progress is made in peace talks and the opening of ports and roads, leading to increased food imports and improvements in food availability

2022-23

Despite some improvements in the food security situation, OCHA continues to report that Yemen faces significant challenges in addressing malnutrition, particularly among children and women. The ongoing conflict, economic instability, and limited access to health and nutrition services remain major barriers to improving nutritional outcomes in the country. OCHA and other humanitarian organizations continue to provide support and assistance to address the humanitarian crisis in Yemen, including efforts to scale up aid and support to the country's food and nutrition systems

CROSS-CUTTING THEMES

- Item 1
- Item 2
-
-

- Item 1
- Item 2

CHALLENGES

- Item 1
- Item 2
-
-

- Item 1
- Item 2

We did it!

- Item 1
- Item 2

- Visual briefs
- Learning skills
  - Peter's NLP
- We will follow up with survey
  - Example feedback - One day intensive
- Certificates! 2 out of 3
-

FAMINE & FOOD CRISIS FORECASTING CENTER

HACKATHON 1: YEMEN

Team Presentations, Day 1

FAMINE & FOOD CRISIS FORECASTING CENTER

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Team Presentations, Day 1