

War of the middle east

A song of stats and data

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# Introduction

The project is about a range of different stats and data over the years about Israel and its tier-1 neighbors, Joran, Egypt, Lebanon and the Palestinian authority.

The project focuses the times of wars between the countries, several years before and after each war in hope to see how a war has influenced the countries involved in different aspects such as population stats, financial stats, education and military.

I believe that presenting the raw data collected, in an aspect of how the past wars in the middle east had affected the fighting countries and the region in a scope of before and after each war, can be an extremely useful tool for researchers from different fields, fields like economics, history, social researchers and more that wish to study the effects of wars on their fields of research.

# The data – The "What stage"

## Background

The source for all the data was the "World bank of data", <https://data.worldbank.org/>, in which I extracted a subset of data for the countries mentioned above. I Also relied on Wikipedia for a general description of each war.

The data gathered is a subset of a larger data about countries worldwide, Data that is categories over 1506 different categories about a variety of different interests and topics such a population, economics, education and much more.

The subset data collected is of the years 1960 to 2016, and for the tier-1 countries surrounding Israel.

## Format

The data itself comes in a CSV format, which is a Table dataset type with items and attributes which are categories and ordered sequentially by years. The values themselves are quantitative.

The dataset has 3 key attributes that play a role in defining the dataset

* The country
* The Type of data called Category
* The value in a given year.

The dataset comes in 3 separate files

1. The primary dataset file contains lines of the following attributes:

* Country name
* Country code
* Category indicator name
* Category Indicator code
* Values for the indicator per year, ranging from 1960 to 2016.

1. A category explanation file, which maps a category to its extended explanation / information about it.
2. A mapping file form the country indicator code to its actual country name. (Unnecessary since in the primary file there is both).

## Usage manner

For convenience, the dataset was converted from CSV files to JSON files to ease of work in JavaScript in which JSON format comes naturally in the language.

The way I treated the data is in a three-dimensional manner where the 3rd dimension is by looking at each year at several countries per category.

# The reason – "Why" the data is an interesting one

The list of questions you can ask about such data is pretty much endless, it can be interesting for different researches in a wide range of research fields to ask different questions.

I have assembled a number of user tasks, from different categories in to ask different types of questions.

## General user task: How do wars in the middle east effect economy of a country in the region?

### Specific user task: Discover how wars effects High-technology exports in the 20th century

#### User task 1

##### Action

Analyze operation pillar of defense in 2012 effect on High-Tech exports in Israel and the Palestinian Authority.

##### Target

Find Trends in the high-technology exports for Israel and Palestine Authority caused in the year following the operation.

#### User task 2

##### Action

Analyze Lebanon war in 2006 effect on High-Tech exports in Israel and Lebanon.

##### Target

Find Trends in the high-technology exports for Israel and Lebanon caused in the year following the operation.

## General user task: How do wars in the middle east effect the population of a country in the region?

#### User task 3

##### Action

Analyze 1973 Yom Kippur war effect on the annual population growth.

##### Target

Identify outliers that may result due to the war.

## General user task: How do wars in the middle east effect the military financially?

#### User task 4

##### Action

Query both intifada's and record the data on the year before during and after the intifada.

##### Target

Identify trends and similarities between the two to find if there is a similar effect on the arms import for Israel.

## General user task: How do wars in the middle east effect the education and science?

#### User task 5

##### Action

Analyze the first Lebanon war in 1982 and analyze its effect on the amount of trademark applications registered for Israel and Lebanon.

##### Target

Identify trends in the year before and after the war.

## General user task: Enjoy exploring data from different times in correlation to dates of wars.

#### User task 6

##### Action

Scroll through the different wars, reading general information about each war.

##### Target

Read general information about each war / conflict, who participated and how it concluded to enjoy a good history lesson.

#### User task 7

##### Action

Scroll through the different wars, look at random arbitrary stats from different categories.

##### Target

Get exposed to some interesting stats topics that aren’t necessarily war related, some sort of fun facts for casual people.

# A story about a server and a browser – "How" to represent our cool data

When being asked to display some data on a browser, the first thing that comes in mind is to give an end to end html / JavaScript based solution and be done with it. The right thing to do, when thinking in aspects of fast computation, user experience, scalability and on top of all that believing that what you do might just actually serve several academic "clients" in the future, you must give a high-quality solution.

## The server

I have written a node.js server from scratch, in several layers, that reads the dataset from the JSON created as described in the "What" section into its runtime memory (no consistent MongoDB and some other funky overkills at this solution) using pre-built API's to query the data with ease, while eventually serving as a webserver that allows REST API requests from html web pages on the dataset. The queries are extremely generic in nature, they allow a web browser user to query for a category, under range of years, and for a given list of countries – Maximum flexibility to ask basically whatever query you have in mind. Given a query, the server will run through the entire dataset, gather the information requested, wrap it up in a JSON formatted response and send it back to its origin querying source.

## The browser

I have created a fully functional website, under my personal belief that this website can serve as a tool for researches to investigate the effects of wars on different aspects of our day to day lives. I took the time to build a stable, scalable, dynamic and fast and user-friendly website, in hope that it might serve as a framework or a tool for future academic developments / research that will expand / utilize it to their needs.

I have given as much as though to the user interfaces as I gave the actual data representation. To wonder around different times in history, let alone in different categories in our day to day lives, has to be a simple task for the user or he might get lost in the data. After running though countless ideas and frameworks, I have concluded that a timeline, to iterate over the years is by far the most simple and intuitive user interface to wonder around through the wars. With the timeline, in order provide some basic information about each conflict, I added a brief quotation from Wikipedia, to give the user a brief background to the conflict for which its data he is about to see. Not only traveling through the wars is important, most users will be the academic types and they usually come to query something that interest their field of study. The general categories that comes with the dataset must also be easily navigable, a user the is interested in financial stats and data does not care for the growth percentage of the population and it will be inconvenient for him to scroll through such data instead of being shown the relevant data for his research. So, I added another ability to view groups of information under pre-defined categories the user can choose from. Under each category, you can find plenty of visualized stats and data for different conflicts.

## Visualization of choice

I have tested out many visualization types over the dataset. I have tried pie charts, bar charts and much more before coming to realize that a line chart is the best practice for display the dataset.

A pie chart was ruled out for several reasons, while the main reason Is the fact that it cannot show data over several years. While the all the user tasks I suggested analyze trends over time – years in our case, a pie chart cannot be used to answer such queries.

A Bar chart was also considered, and can still be a good solution when querying for a specific year rather than several years, and due to much learned in the class it will be a much better visualization solution rather than the pie chart visualization. For example, user task 3, can be best answered using a Bar chart since you are being asked not for a trend over years but rather being asked for data on a specific year.

Eventually, the line chart was selected as the visualization for the data on my website, due to its many qualities for presenting data over time in a multi-dimensional manner for several countries simultaneously. With the line chart, comes some extra bonus useful features that help support the user perform his user tasks.

The features are:

* The ability to hide countries you are not interested in while making the graph re-draw itself in order to update its scaling to the countries you are interested in and by doing so eliminated background noises disturbing you from focusing on the data you are interested in researching.
* Zoom in / out, The ability to zoom in and out on specific years that the user is interested in.

Each visualization comes with a detailed description describing the visualization, explaining the data and its source.

# Evaluation – The things that work and the things that I could have done better

# How to make it work – Set up instructions

Talk:

1. What – explain the data
2. Why - User task – Questions and what can you learn.
   1. Action
   2. Target
3. how – Why this visualization – Show visualization example screenshot for each action target.
   1. Explain the process, tried bar chart show the bar chart and show why its bad.
   2. Why line chart is better
4. Evaluation