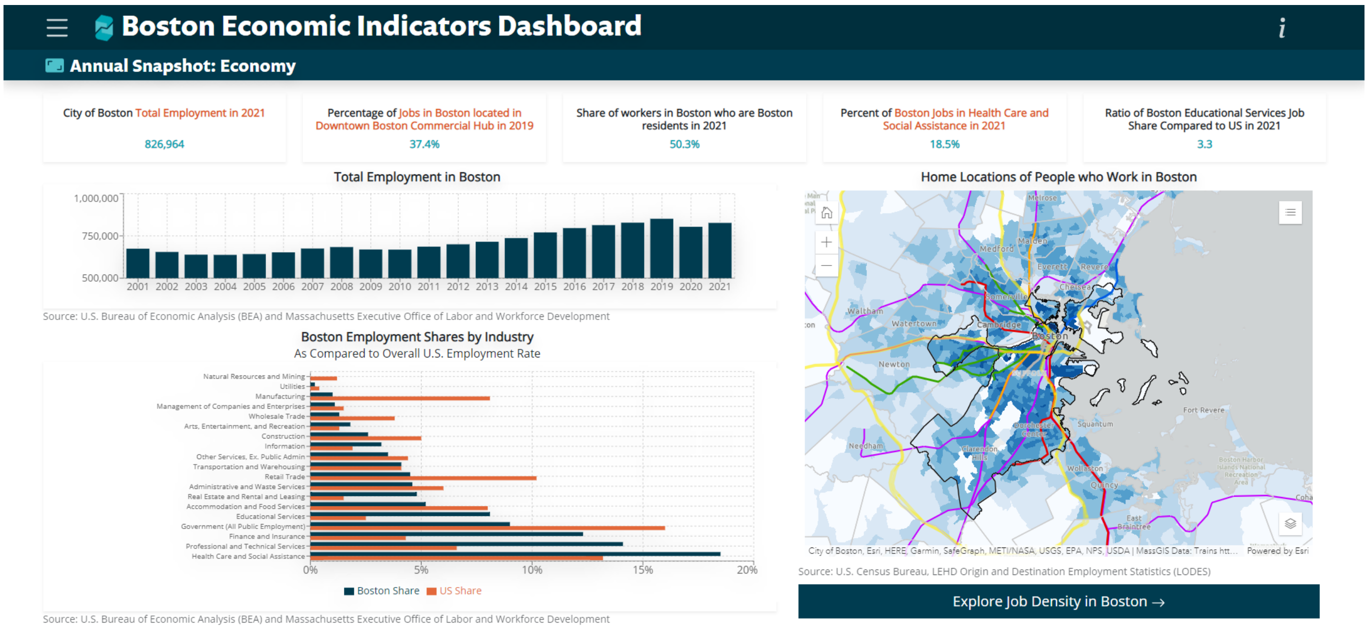
Economics Indicator Dashboard

This application is a react dashboard that displays key insights and trends to Boston's Economy. The high-frequency data that powers it is maintained by the research department in a google sheet that has been leveraged as an API.


Boston Economic Indicators Dashboard
Annual Snapshot: Economy
City of Boston Total Employment in 2021
826,964
Percentage of Jobs in Boston located in Downtown Boston Commercial Hub in 2019
37.4%
Share of workers in Boston who are Boston residents in 2021
50.3%
Percent of Boston Jobs in Health Care and Social Assistance in 2021
18.5%
Ratio of Boston Educational Services Job Share Compared to US in 2021
3.3
Total Employment in Boston
1,000,000
750,000
500,000
2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021
Source: U.S. Bureau of Economic Analysis (BEA) and Massachusetts Executive Office of Labor and Workforce Development
Boston Employment Shares by Industry
As Compared to Overall U.S. Employment Rate
Natural Resources and Mining
Utilities
Manufacturing
Management of Companies and Enterprises
Wholesale Trade
Arts, Entertainment, and Recreation
Construction
Information
Other Services, Ex. Public Admin
Transportation and Warehousing
Retail Trade
Administrative and Waste Services
Real Estate and Rental and Leasing
Accommodation and Food Services
Educational Services
Government (All Public Employment)
Finance and Insurance
Professional and Technical Services
Health Care and Social Assistance
0% 5% 10% 15% 20%
Boston Share
US Share
Source: U.S. Bureau of Economic Analysis (BEA) and Massachusetts Executive Office of Labor and Workforce Development
Home Locations of People who Work in Boston
Melrose
Medford
Malden
Everett
Revere
Chelsea
Waltham
Watertown
Cambridge
Boston
Newton
Squantum
Needham
Wollaston
Quincy
East Braintree
Fort Revere
City of Boston, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA | MassGIS Data: Trains htt... Powered by Esri
Source: U.S. Census Bureau. LEHD Origin and Destination Employment Statistics (LODES)
Explore Job Density in Boston →

Technology Used:

- React
- Bootstrap
- Recharts
- Google Sheets
- Google App Script

Back End

Prior to this application, the Research Team was maintaining a dashboard made in Tableau and they were using an spreadsheet to maintian the data. With this new application it was decided that 1. collaboration and 2. being able to copy & paste sections of data would be important to the research team. Because of this we decided to keep googlesheets as the interface where they maintain their data.

The google sheet can be found here:
https://docs.google.com/spreadsheets/d/1mVztFT0iCkFQD0FX7kx6lMC7-uVSCe1OcDVl1q9SXcY/edit#gid=2071536899

The googlesheet can become an JSON API by extending Google Sheets with a Google Apps Script. To view the script that extends the workbook: `open up the google sheets workbook > hover over 'Extensions' > click 'Apps Script'.`

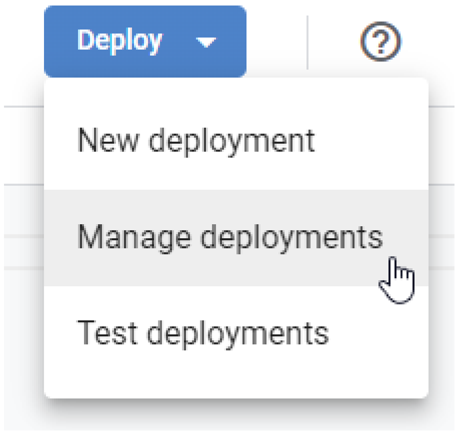
▶ In the event this piece of script is lost or corrupted, I've copied it here for safe keeping:

~~~
```
function json(sheetName) {
const spreadsheet = SpreadsheetApp.getActiveSpreadsheet()
const sheet = spreadsheet.getSheetByName(sheetName)
const data = sheet.getDataRange().getValues()
const jsonData = convertToJson(data)
return ContentService
        .createTextOutput(JSON.stringify(jsonData))
        .setMimeType(ContentService.MimeType.JSON)
}

function convertToJson(data) {
const headers = data[0]
const raw_data = data.slice(1,)
let json = []
raw_data.forEach(d => {
    let object = {}
    for (let i = 0; i < headers.length; i++) {
        object[headers[i]] = d[i]
    }
    json.push(object)
});
return json
}

function doGet(e) {
const path = e.parameter.path
return json(path)
}
```
~~~

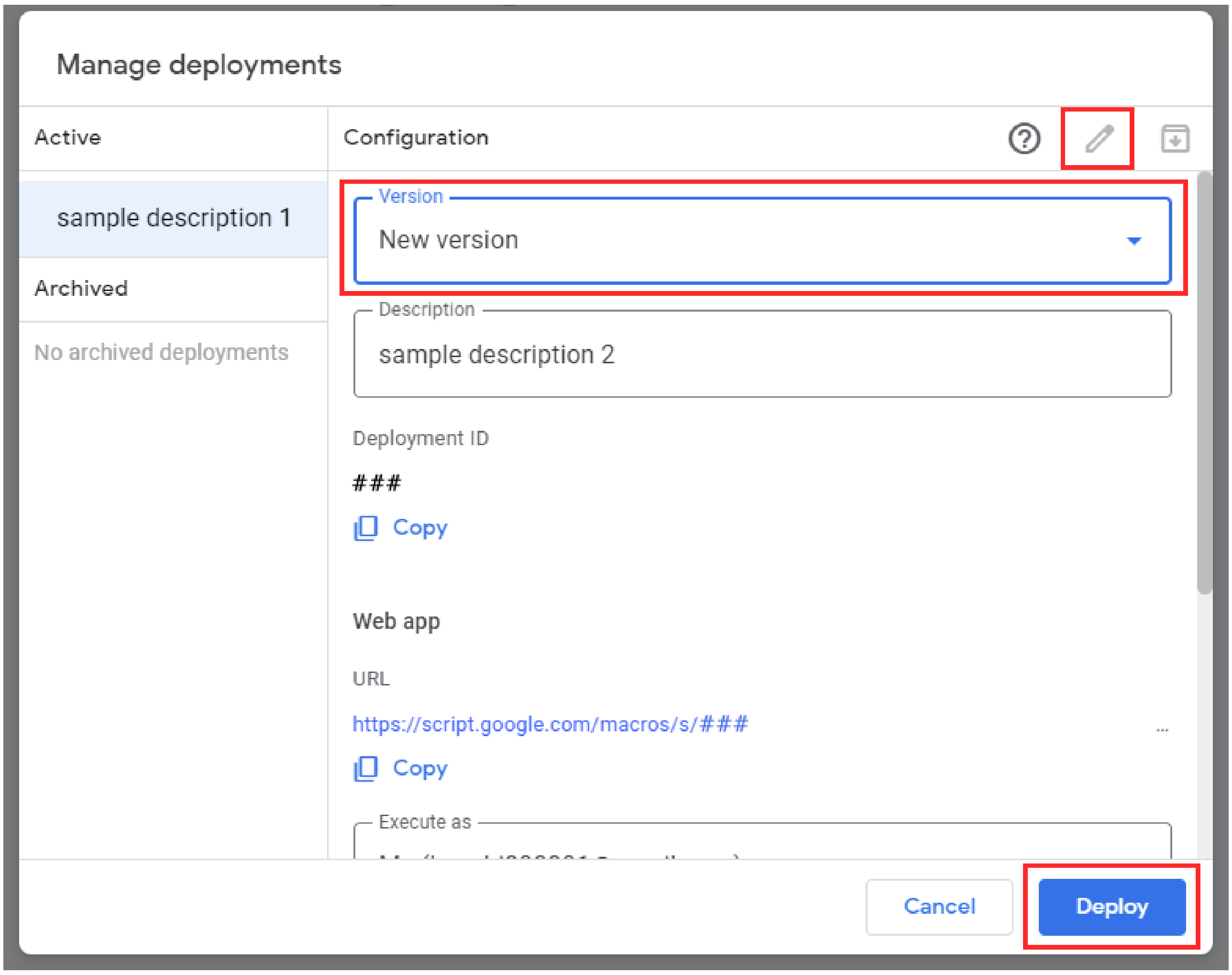
In the event you need to deploy your own script, here is how to do so:

1. Deploy the script as a web application. Execute as yourself (your work email) and set 'Who Has Access' to 'Anyone'.

2. View your deployment (hover over deploy > click 'manage deployments')



3. Copy the URL under "Web App"



Manage deployments

Active

sample description 1

Archived

No archived deployments

Configuration

Version: New version

Description: sample description 2

Deployment ID

###

Copy

Web app

URL

https://script.google.com/macros/s/###

Copy

Execute as

4. Concatenate the following to get the full API URL:

```
<Web App URL> + ?path= + <google sheet name>

<!-- full example -->
https://script.google.com/macros/s/AKfycbyy_JR7AM_AAnUB2DB_AnKXqsdqlIPJoBc-
7CKW-S2In2_OslstV1XSz0Ex2MWobh9w/exec?path=LaborMarket_PayrollEst
```

5. Test the url in the browser, you should see the JSON response

Front End

The front end leverages React Boot Strap & the Recharts library. Recharts was selected for the charts as it was most compatiable with how the G-Sheet JSON Data is formatted.
https://react-bootstrap.github.io/
https://recharts.org/en-US/

Useful functions & tools (and their descriptions) have been stored in src/utils.js and are called throughout the project. Where possible, tools & components should be made reusable/modular.

A script for responsive screen sizing is stored in src/useDeviceSize.js

Hash Routing is used instead of browser routing; browser routing is incompatible with how our server domain is set up.

Uses react's grid and breakpoints system to make a mobile & desktop friendly website

Getting Started

1. Clone the repo to your local computer
2. While working in the project folder, run `npm install` in your terminal
3. While working in the project folder, run `npm start` in your terminal to start a live preview of the application
4. Once changes are made and you are ready to push them live: While working in the project folder, run `npm run build` in the terminal
5. Copy the contents in the `build` folder and replace the contents of the economic-indicators folder on the www.maps server

Deployed Application

https://maps.bostonplans.org/economic-indicators