



DEPARTMENT OF  
COMPUTER SCIENCE  
計算機科學系



# DATA VISUALIZATIONS WITH CHARTS

ITEC2016 - DATA-DRIVEN VISUALIZATION FOR THE WEB

CHAPTER 4 - 2018 - HKBU

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# Individual Assignment

- \* **Website revamp**
- \* **Responsive Web Design** with Bootstrap v4
- \* **One Page Website** / Single Page Application (more dynamic)
- \* Simple **data visualization** with charts.js, or highchart
- \* Due: **Oct 27, 10pm.**

Staff Quarters at Fo Tan - □ X

<https://eo.hkbu.edu.hk/ssq-home/> ☆ | ☰ | 🌐 | ⋮

**HKBU Staff**

• HKBU Home • Estates Office Home • Residents Only

**The Development**

**The Development**



Built Upon the hillside of Fo Tan at Shatin and attracts the scenery of Shatin Town Centre, the development was built by the University and occupied in Autumn 1994. It composed a total of 113 units in 5 Towers with 8 storeys in each Tower.

All 5 Towers of development were used as the staff quarters of the University until end of June, 2000. In response to the introduction of new home financing scheme by the government, two towers (Tower 4 & Tower 5) were returned to the government in July, 2000. At present, Tower 1 to Tower 3 are used as the staff quarters of the University while Tower 4 & Tower 5 are used as government quarters for civil servants.

**Address**

22 Sui Wo Road, Fo Tan, Shatin, N.T., Hong Kong

<https://eo.hkbu.edu.hk/ssq-home/>

# Problems

- \* **Old-styled Flash** animation - Can't run on mobile.
- \* Not responsive, content may **look too small on mobile**.
- \* Each page with **very little content**.
- \* Content **not well organized**, lacking focus.

# One Page Website

<https://onepagelove.com/what-is-a-one-page-website>

- \* **No additional pages** like About, Team or Services
  - \* But can still develop **anchor tags** for fast navigation within page.
- \* Traditionally in a **long-scrolling layout**.
- \* Promote one thing in an **uncluttered, direct manner**.

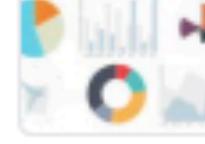
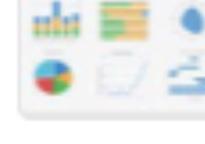
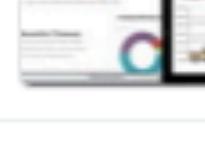
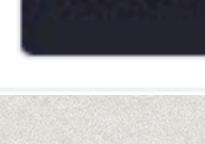
# Template

- \* You are **allowed to use template** in this assignment
  - \* <https://onepagelove.com/templates/bootstrap-framework>
  - \* <https://startbootstrap.com/template-categories/one-page/>
  - \* <https://colorlib.com/wp/one-page-website-templates/>
  - \* Many more on the web...

# DATA VISUALIZATION WITH CHARTS

# Data Visualization with JavaScript

- \* Popular options:
  - \* Chart.js
  - \* HighCharts
  - \* D3.js

|  |  | PRICE | SITE | LAST UPDATED |
|--|--|-------|------|--------------|
| BEST JAVASCRIPT LIBRARIES FOR CREATING VISUALISATIONS OF DATA AS CHARTS/GRAPHS |  |       |      |              |
| 93   |  D3.js            | -     | -    | Oct 12, 2018 |
| --   |  Chart.js         | -     | -    | Jul 26, 2018 |
| --   |  Shield UI Charts | -     | -    | Jul 26, 2018 |
| --   |  Raphael          | -     | -    | May 31, 2016 |
| --   |  CanvasJS Charts  | -     | -    | Jul 19, 2017 |
| --   |  AnyChart         | -     | -    | Feb 6, 2017  |
| --   |  Highcharts       | -     | -    | Nov 9, 2017  |

<https://www.slant.co/topics/1240/>

# Comparison

D3.js

Chart.js

HighCharts

**Open source / Free to use**

**Not for commercial use**

Allows **great control** over  
the final visual result

Offer **off-the-shelf** chart components

# Chart.js

8 chart types



## Bar charts

Vertical

Horizontal

Multi axis

Stacked

Stacked groups

## Line charts

Basic

Multi axis

Stepped

Interpolation

Line styles

Point styles

Point sizes

## Area charts

Boundaries (line)

Datasets (line)

Stacked (line)

Radar

## Other charts

Scatter

Scatter - Multi axis

Doughnut

Pie

Polar area

Radar

Combo bar/line

<http://www.chartjs.org>

# Datasets

- \* Data provided in an **array**
- \* **datasets** also expect an array
  - \* **Multiple datasets** could be provided.
  - \* This will plot **multiple bars** in the same chart.

```
datasets: [{}  
    label: '# of Votes',  
    data: [12, 19, 3, 5, 2, 3],  
    backgroundColor: [  
        'rgba(255, 99, 132, 0.2)',  
        'rgba(54, 162, 235, 0.2)',  
        'rgba(255, 206, 86, 0.2)',  
        'rgba(75, 192, 192, 0.2)',  
        'rgba(153, 102, 255, 0.2)',  
        'rgba(255, 159, 64, 0.2)'  
    ],  
    borderColor: [  
        'rgba(255,99,132,1)',  
        'rgba(54, 162, 235, 1)',  
        'rgba(255, 206, 86, 1)',  
        'rgba(75, 192, 192, 1)',  
        'rgba(153, 102, 255, 1)',  
        'rgba(255, 159, 64, 1)'  
    ],  
    borderWidth: 1  
}]
```

# Options

- \* Specify **Axis** information (scales)

<http://www.chartjs.org/docs/latest/axes/>

- \* Other **configurations**

- \* title, legend
- \* animation, tooltips

<http://www.chartjs.org/docs/latest/configuration/>

```
options: {  
    scales: {  
        yAxes: [{  
            ticks: {  
                beginAtZero: true  
            }  
        }]  
    }  
}
```

```
options: {  
    title: {  
        display: true,  
        text: "Vulnerable groups for Islands",  
        fontSize: 24  
    },  
    legend: {  
        display: false  
    }  
}
```