Basic Visualisations

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Basic Visualizations

> useful for getting to know your data

> used everywhere, so it will help your own visual literacy to know how to read these, what they are used for, and their potential pitfalls
Line Chart

> time series (x-axis = time)
> continuous values
> distributions

chart source: http://www.juiceanalytics.com/chart-chooser/
Bar Chart

chart source: http://www.juiceanalytics.com/chart-chooser/
Bar Chart

> comparisons

> discrete values

chart source: http://www.juiceanalytics.com/chart-chooser/
Ranked Bar Chart

Ranked Bar Chart

> comparisons

Histogram

Ordinary histogram

Cumulative histogram

Histogram

> distributions

> frequencies

Scatterplot

> correlation

> x- and y-axis both refer to a column

chart source: http://www.juiceanalytics.com/chart-chooser/
Bubble Chart

Chart Title

chart source: http://www.juiceanalytics.com/chart-chooser/
Bubble Chart

> like a scatterplot, but with more variables encoded

chart source: http://www.juiceanalytics.com/chart-chooser/
> part-whole relationship

> controversial! (due to misuse/overuse and general lack of awareness about how accurate they can be)

chart source: http://flowingdata.com/2008/09/19/pie-i-have-eaten-and-pie-i-have-not-eaten/
Stacked Bar Graph

chart source: http://www.juiceanalytics.com/chart-chooser/
Stacked Bar Graph

> part-whole relationship

> shows relative sizes of parts and actual values

chart source: http://www.juiceanalytics.com/chart-chooser/
Coding a Basic Time Series

Download files:
TimeSeries.pde
Table.pde
data.csv
The Coordinate System

(0, 0)  (10, 0)

(0, 10)
map() \[\text{Re-maps a number from one range to another.}\]

\text{map(value, low1, high1, low2, high2)}

- \text{value} \quad \text{float: The incoming value to be converted}
- \text{low1} \quad \text{float: Lower bound of the value's current range}
- \text{high1} \quad \text{float: Upper bound of the value's current range}
- \text{low2} \quad \text{float: Lower bound of the value's target range}
- \text{high2} \quad \text{float: Upper bound of the value's target range}
Create two square buttons to switch back and forth between columns.

Hint 1: Your button should be a separate class.

Hint 2: Add function void mousePressed() to main program; use mouseX and mouseY

Hint 3: Your button should be able to detect when it is pressed using something like:

```java
boolean contains (float x, float y) {
    if (x > x1 && x < x2 && y > y1 && y < y2)
        return true;
    else
        return false;
}
```
Exercise

Create an area plot from the time series.

Hint:
beginShape();
vertex(__, __);
...
endShape(CLOSE);
Exercise

What's missing from the time series plot so far?
Exercise

How would you....?

- Turn this into a bar graph?

- Create a scatterplot to examine correlations between population densities? (OR your own dataset)

Hint: x-axis maps to one data column (e.g. Canada), y-axis maps to another (e.g. USA).