Week 7: Comparisons, Compositions, and Time

Spring 2017
Matthew Turk

Broadcasting

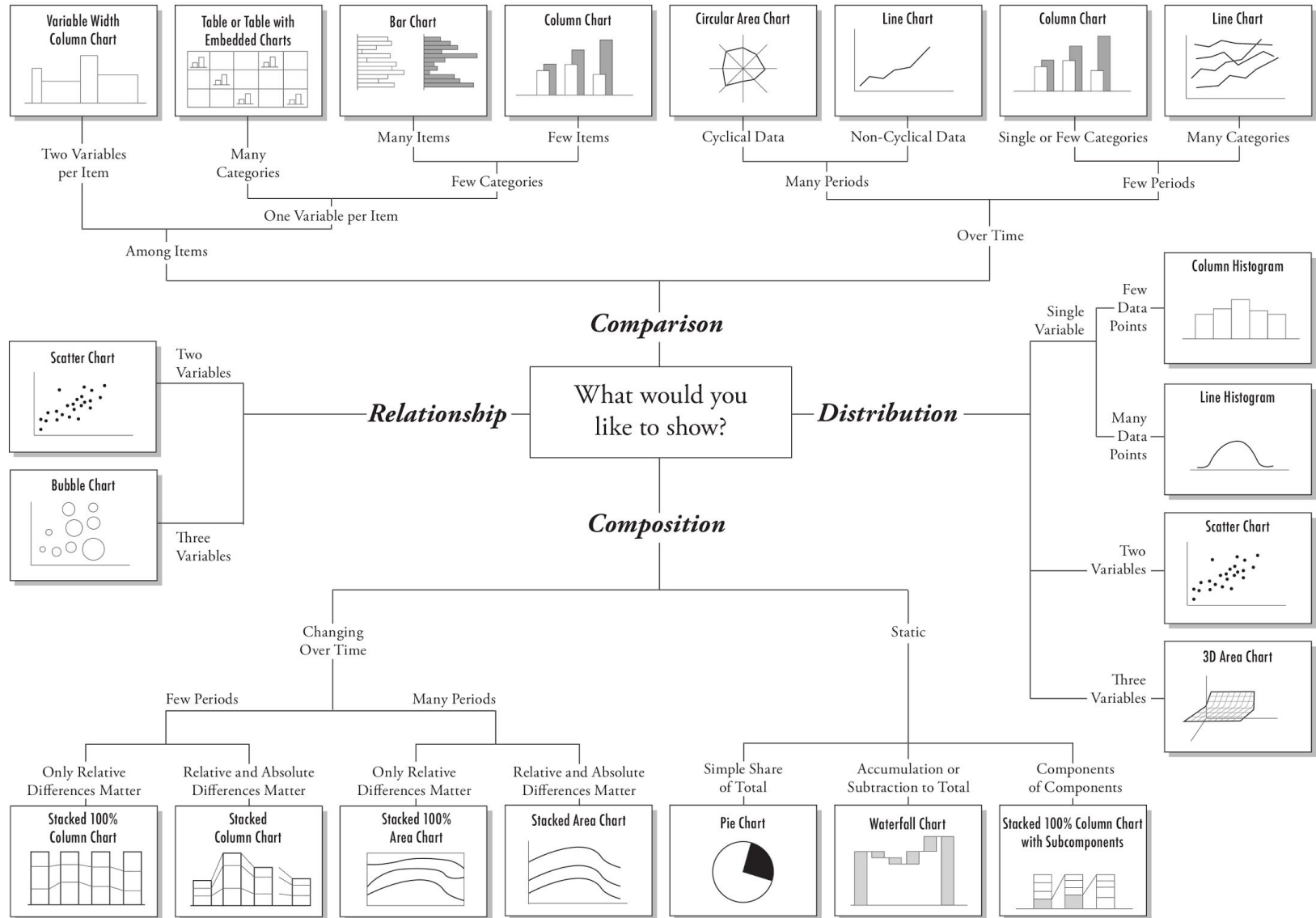go.ischool.illinois.edu/meet2

Last Week

- **How Colors Work**
  - HSV / RGB / Eyeballs
  - Rotations, perception
- **Palette types**
  - Sequential
  - Qualitative
  - Diverging
- **Python Packages**

Today

- Types of Visualizations: Part II
  - "If this, then that…"
- Composition plots
  - Examples
  - How-to
- Comparison plots
  - Examples
  - How-to
- Creating a python module
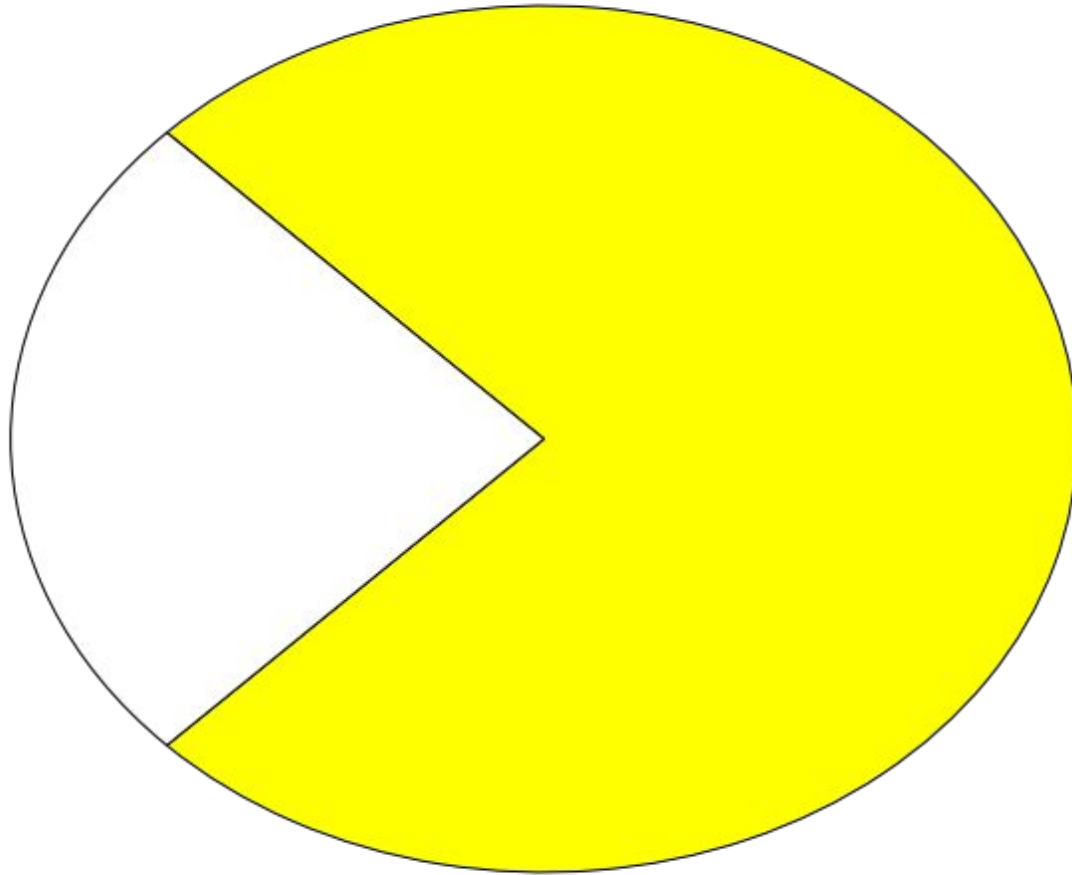
Chart Suggestions—A Thought-Starter

Variable Width Column Chart

Table or Table with Embedded Charts

Bar Chart

Column Chart

Circular Area Chart

Line Chart

Column Chart

Line Chart

Two Variables per Item

Many Categories

Many Items · Few Items

Cyclical Data · Non-Cyclical Data

Single or Few Categories

Many Categories

Few Categories

One Variable per Item

Many Periods

Few Periods

Among Items

Over Time

Comparison

Scatter Chart

Two Variables

Relationship

What would you like to show?

Distribution

Single Variable

Few Data Points

Column Histogram

Many Data Points

Line Histogram

Bubble Chart

Three Variables

Composition

Two Variables

Scatter Chart

Changing Over Time

Static

Three Variables

3D Area Chart

Few Periods

Many Periods

Only Relative Differences Matter

Relative and Absolute Differences Matter

Only Relative Differences Matter

Relative and Absolute Differences Matter

Simple Share of Total

Accumulation or Subtraction to Total

Components of Components

Stacked 100% Column Chart

Stacked Column Chart

Stacked 100% Area Chart

Stacked Area Chart

Pie Chart

Waterfall Chart

Stacked 100% Column Chart with Subcomponents
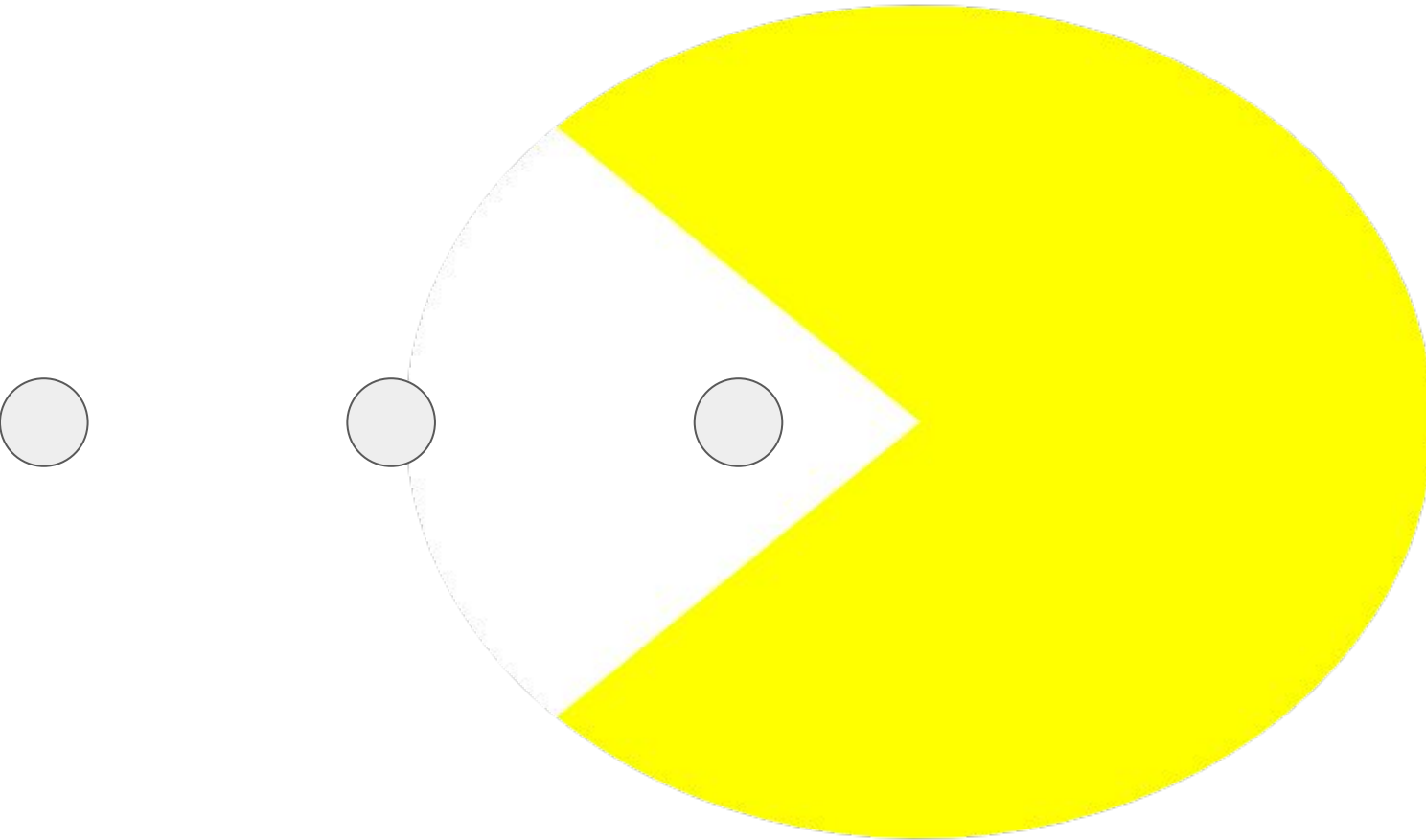
Credit: Andrew Abela

Composition Plots
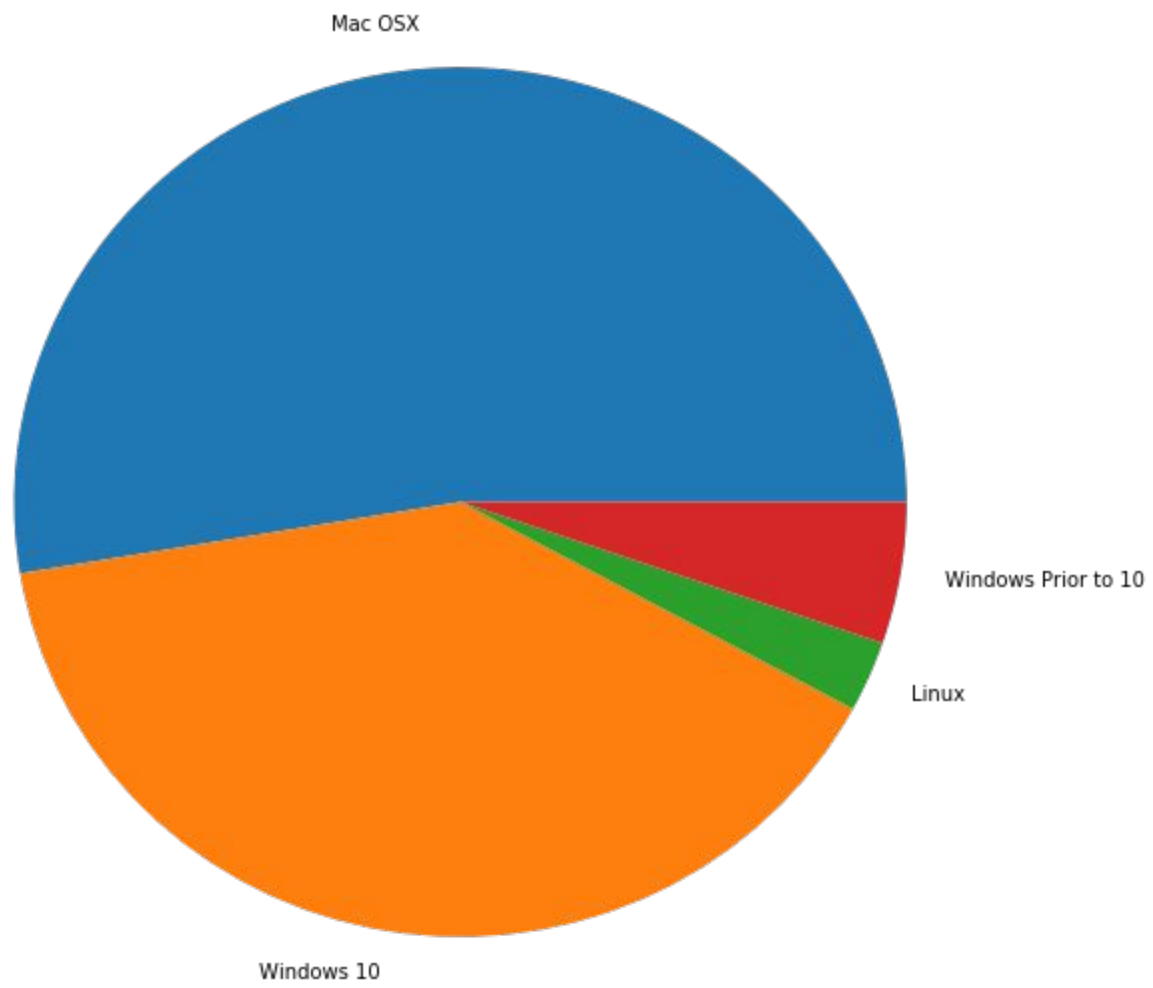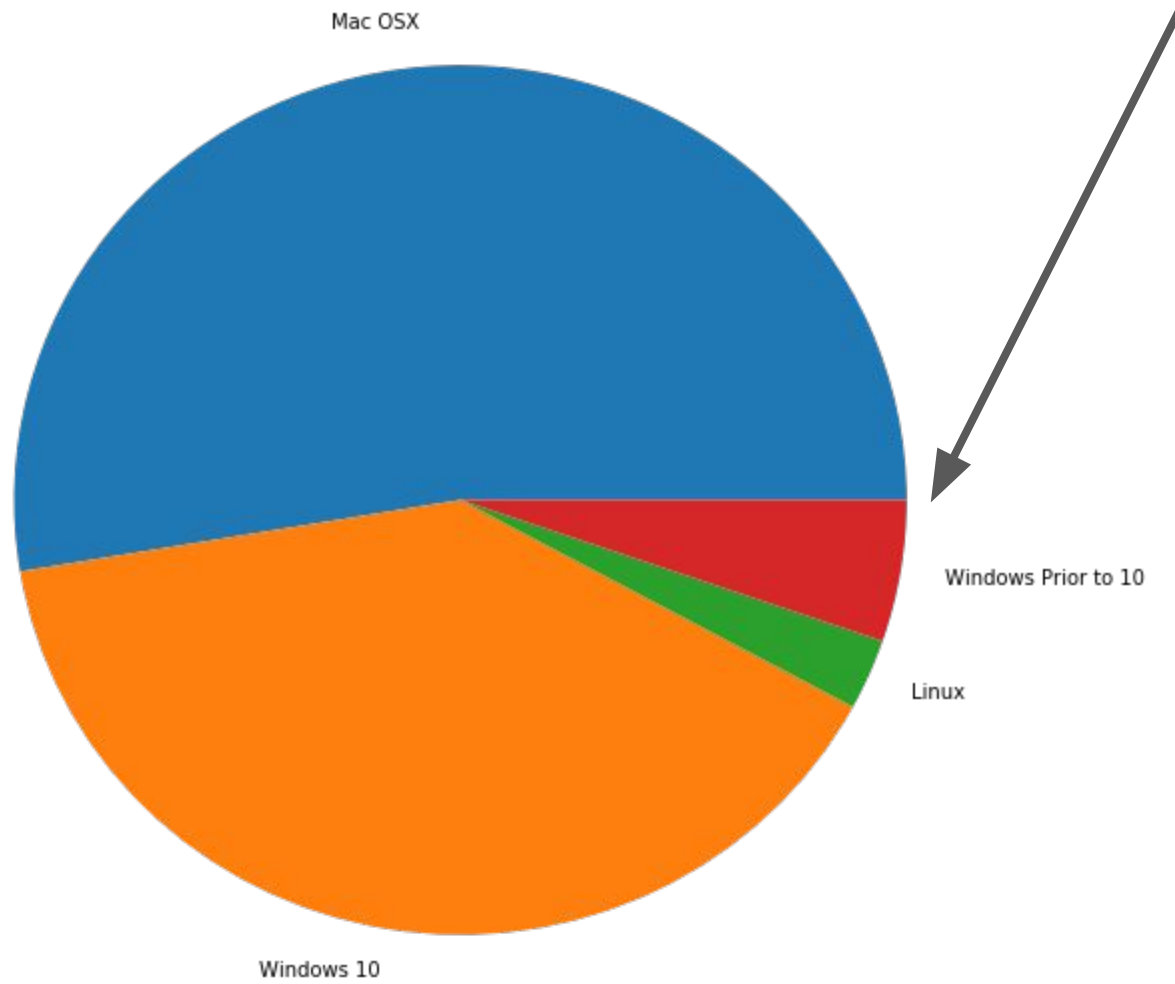
- Static
  - Pie Chart
  - Area chart
- Changing over time

Pie Chart

Pie Chart

You probably don't
want a pie chart.

Mac OSX

Windows Prior to 10

Linux

Windows 10

Essentially impossible to gauge relative size
of non-majority wedges

Mac OSX

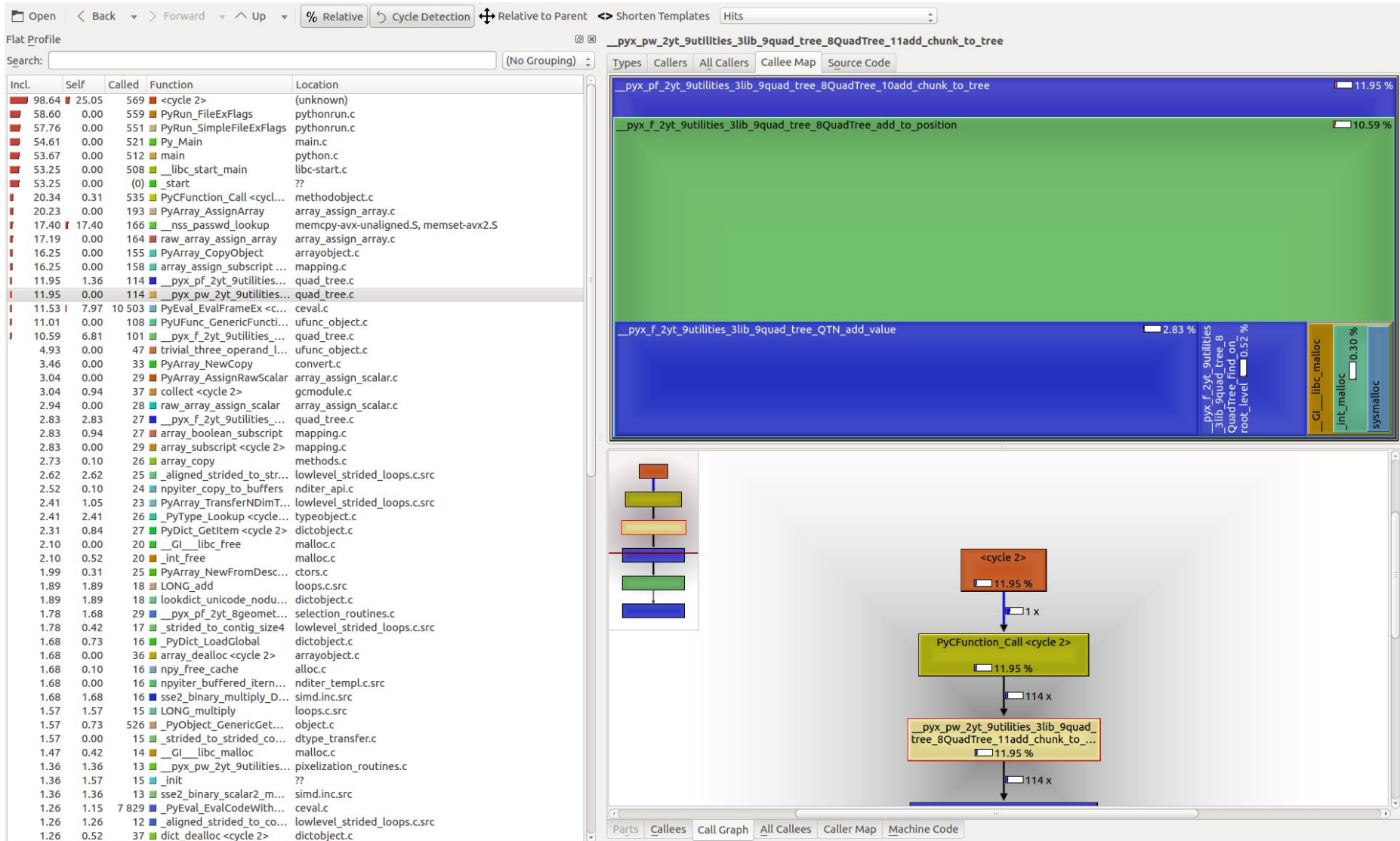Windows Prior to 10

Linux

Windows 10
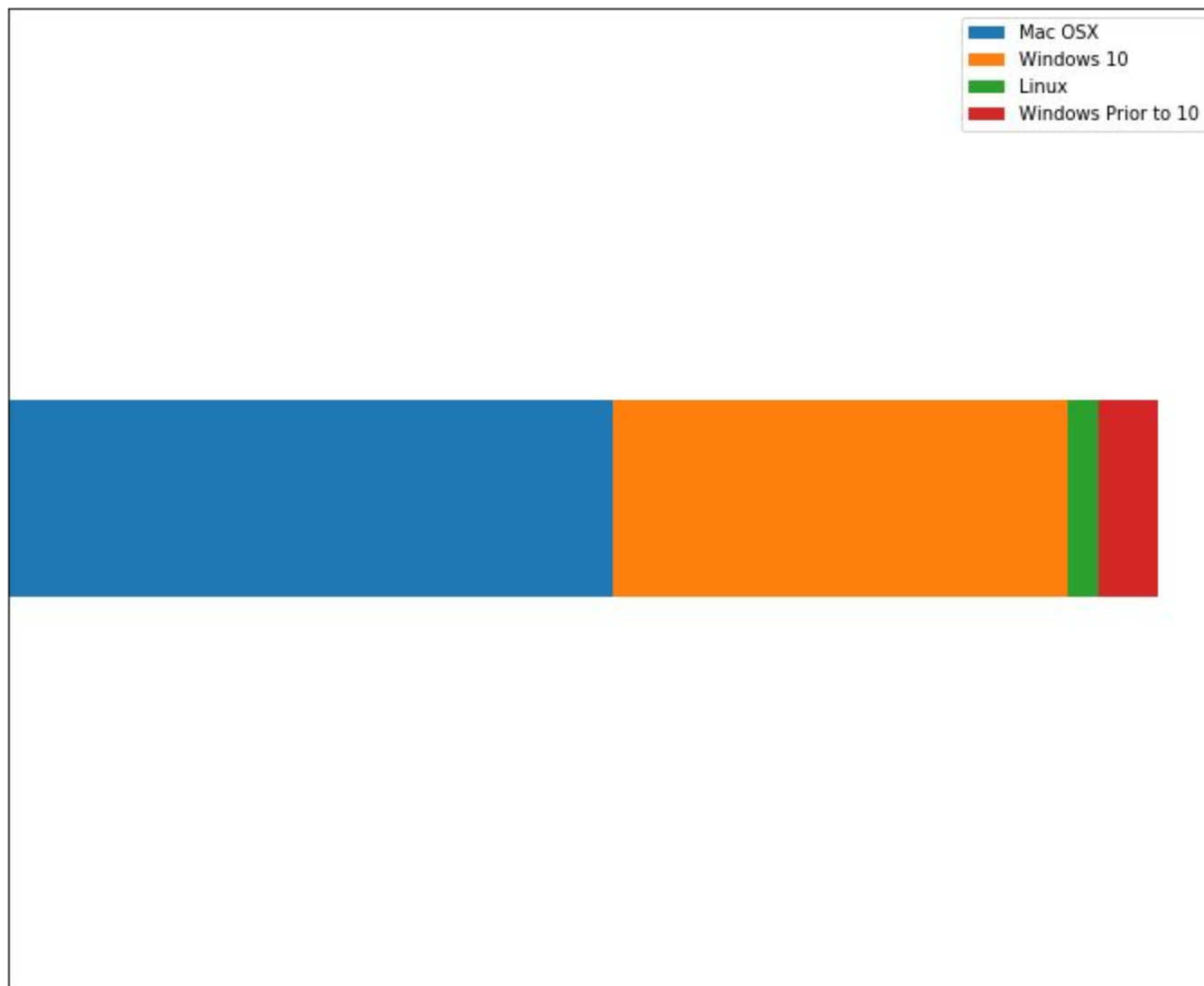
Same data, different vertical zoom.
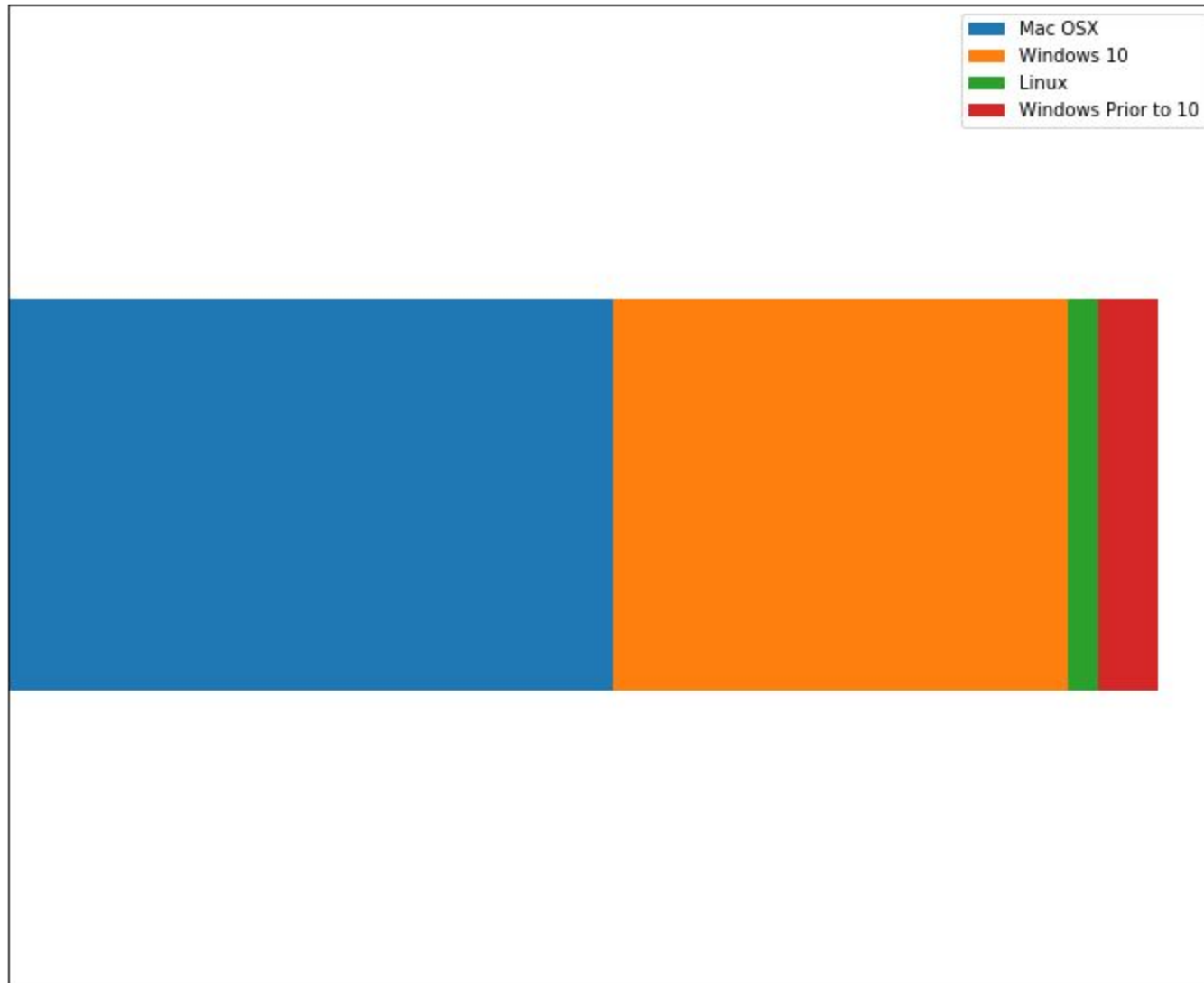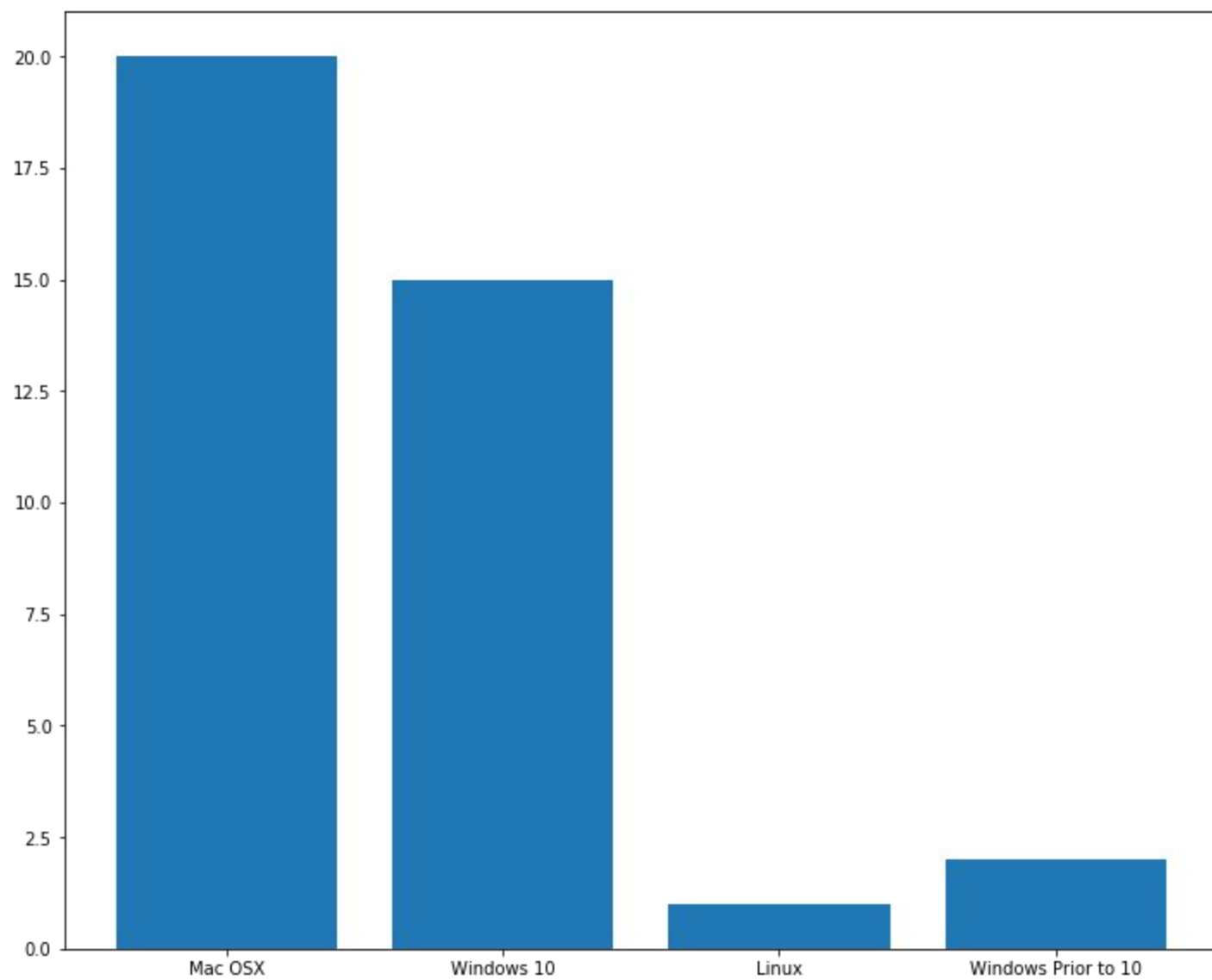
Area Chart

Comparison Plots

- Among Items
  - One Variable, Few Categories: Column, or collection of bars
  - Two Variables: Variable Width Column Chart
  - Many variables: Embedded table or charts
- Changing Over Time
  - Many Periods, non-cyclical: Line chart
  - Few Periods: Column or Line (depending on number of categories)

Case Study: World Bank Indicators

```
{'NE.GDI.FPRV.CN': 'Gross fixed capital formation, private sector (current LCU)',
 'NE.CON.PETC.CN': 'Household final consumption expenditure, etc. (current LCU)',
 'SP.POP.TOTL': 'Population, total',
 'EN.ATM.NOXE.EG.ZS': 'Nitrous oxide emissions in energy sector (% of total)',
 'NE.GDI.FTOT.KD': 'Gross fixed capital formation (constant 2010 US$)',
 'NY.GNP.MKTP.CN': 'GNI (current LCU)',
 'SH.STA.TRAF.P5': 'Mortality caused by road traffic injury (per 100,000 people)',
 ...}
```

Visualization Toolbox

- Speed
- Flexibility
- Aesthetic quality
- Querying
- Linking

Our Module

- Dataset class
- CSV reading
- Functions for common plot types