

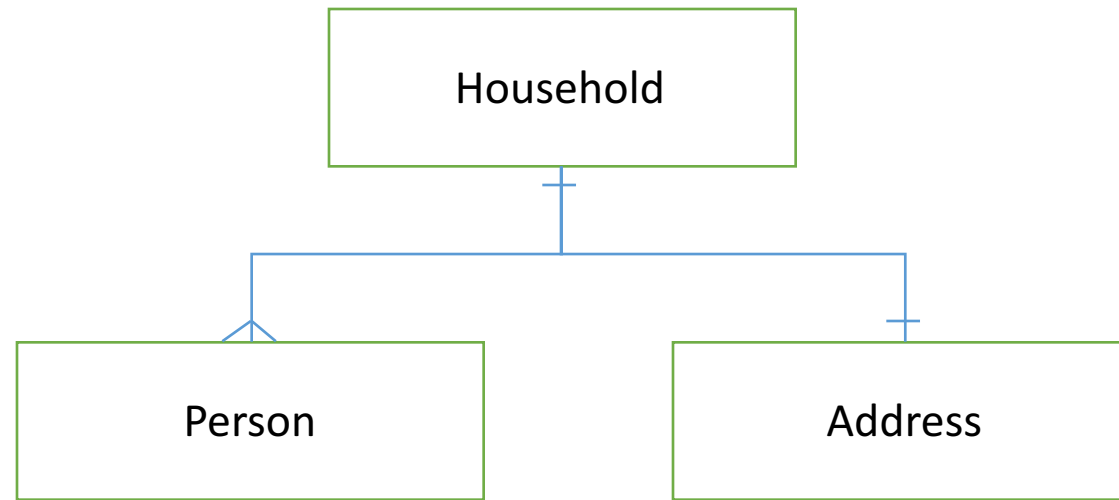
Database & Data Visualization

Agenda

- Databases
- Matplotlib
- Tableau

Databases

A Model: Entity Relations



- A “Household” has one or more “Person”
- A “Household” has exactly 1 “Address”
- An “Address” belongs to exactly 1 “Household”

Creating a database

```
import sqlite3
query = """
    CREATE TABLE test
        (a VARCHAR(20), b VARCHAR(20),
         c REAL, d INTEGER );"""
con = sqlite3.connect(':memory:')
con.execute(query)
con.commit()
```

Inserting data to a database

```
data = [('Atlanta', 'Georgia', 1.25, 6),  
        ('Tallahassee', 'Florida', 2.6, 3),  
        ('Sacramento', 'California', 1.7, 5)]  
  
stmt = "INSERT INTO test VALUES (?, ?, ?, ?)"  
con.executemany(stmt, data) con.commit()
```

Finding data in a database

```
cursor = con.execute('select * from test')  
rows = cursor.fetchall()
```

In [580]: rows

Out[580]:

```
[(u'Atlanta', u'Georgia', 1.25, 6),  
(u'Tallahassee', u'Florida', 2.6, 3), (u'Sacramento', u'California', 1.7, 5)]
```

Creating a DataFrame

```
rows = cursor.fetchall()
```

In [580]: rows

Out[580]:

```
[(u'Atlanta', u'Georgia', 1.25, 6),  
(u'Tallahassee', u'Florida', 2.6, 3), (u'Sacramento', u'California', 1.7, 5)]
```


Finding data in a database

```
DataFrame(rows, columns=zip(*cursor.description)[0])
```

```
In [582]: DataFrame(rows, columns=zip(*cursor.description)[0])
```

```
Out[582]:
```

	a	b	c	d
0	Atlanta	Georgia	1.25	6
1	Tallahassee	Florida	2.60	3
2	Sacramento	California	1.70	5

Agenda

- Databases
- **Matplotlib**
- Tableau

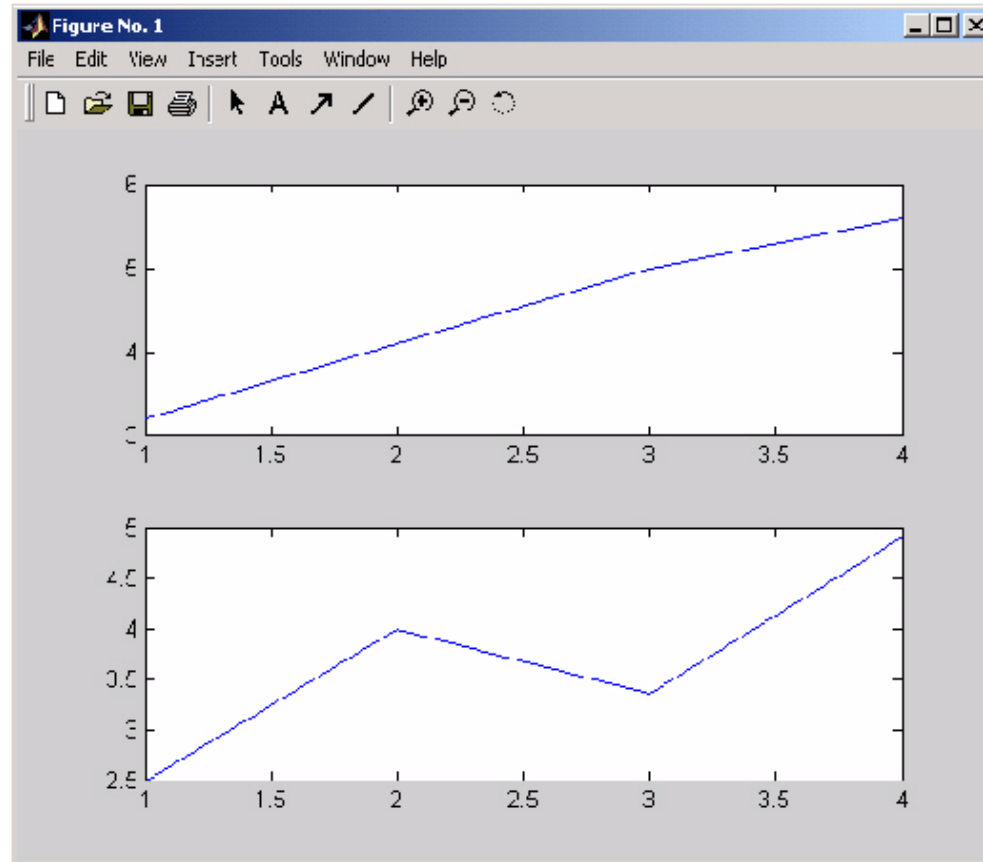
Matplotlib

- **Matplotlib** is a python 2D plotting library which produces publication quality figures in a variety of hardcopy formats and interactive environments across platforms.
- **Matplotlib** is the whole package; **pylab** is a module in matplotlib that gets installed alongside matplotlib; and **matplotlib.pyplot** is a module in matplotlib
- **Pyplot** provides the state-machine interface to the underlying plotting library in matplotlib.

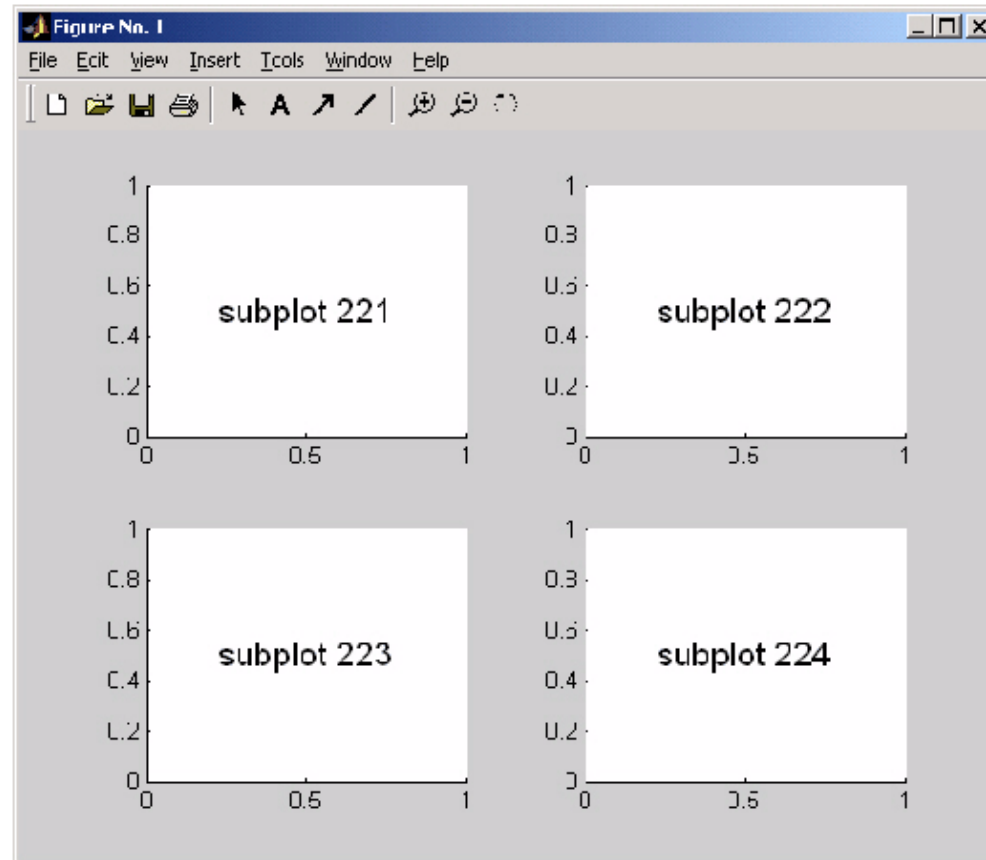
Subplot

- Subplot divides the current figure into rectangular panes that are numbered row wise.
- Each pane contains an axes object. Subsequent plots are output to the current pane.

Subplot grid 2X1



Subplot grid 2x2



Matplotlib Gallery

<http://matplotlib.org/examples/index.html>

Agenda

- Databases
- Matplotlib
- **Tableau**



Dashboard

- Performance
- Forecast
- What If Forecast
- SaleMap
- SalesbyProduct
- SalesbySegment

- Horizontal
- Vertical
- Text
- Image
- Web Page
- Blank

New objects:

Tiled

Floating

Layout

Dashboard

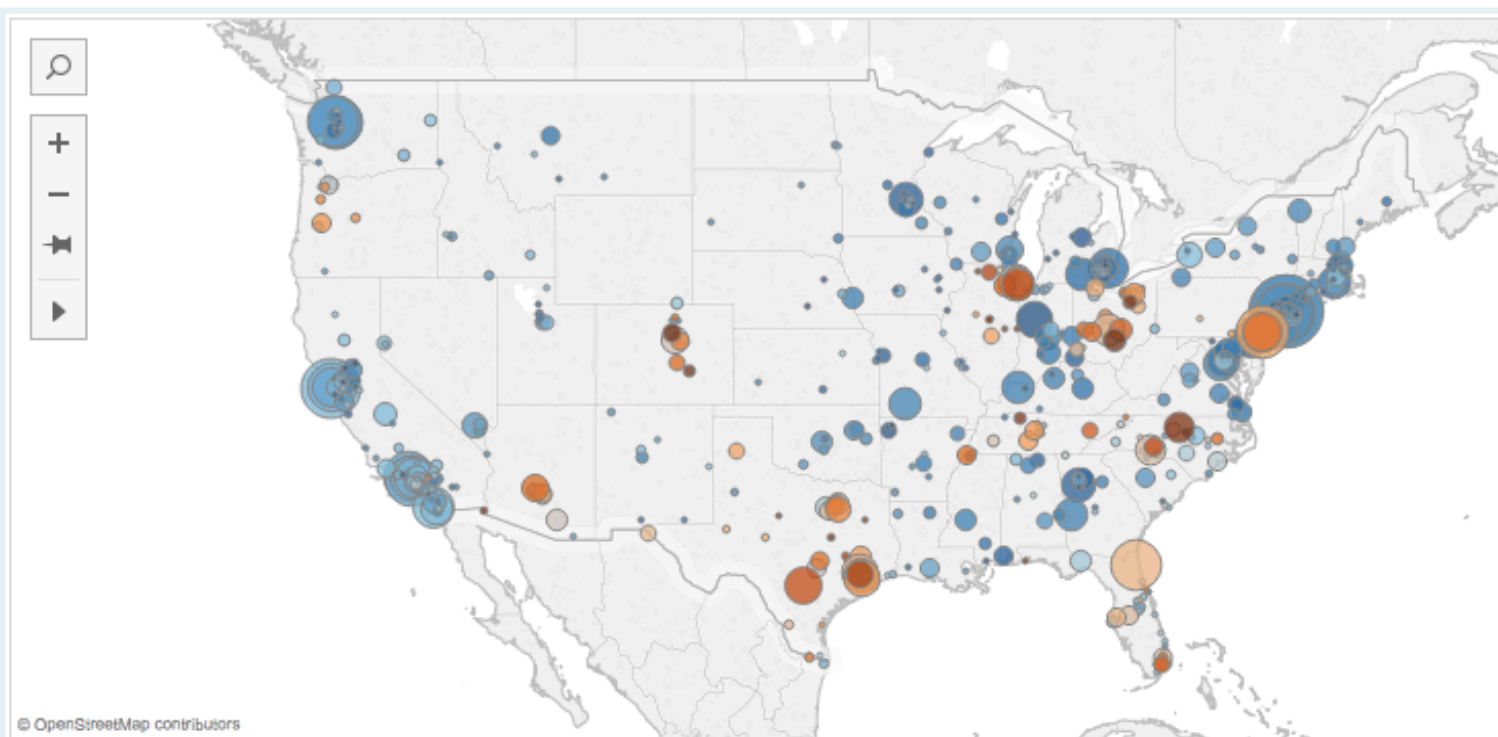
Tiled

Dashboard

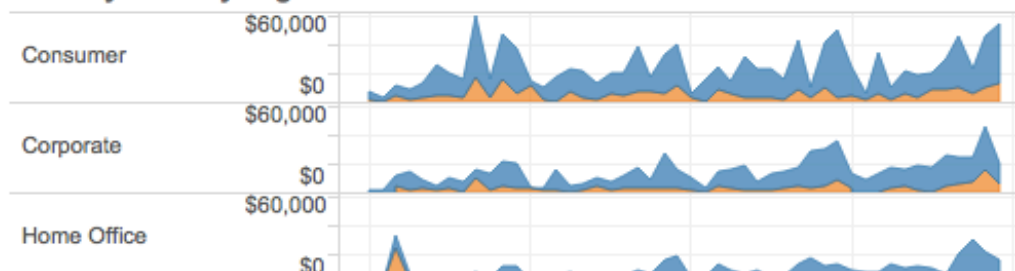
Size: Range

- ☒ Min: w 1000 h 620
- ☐ Max: w 1000 h 620
- ☒ Show Title

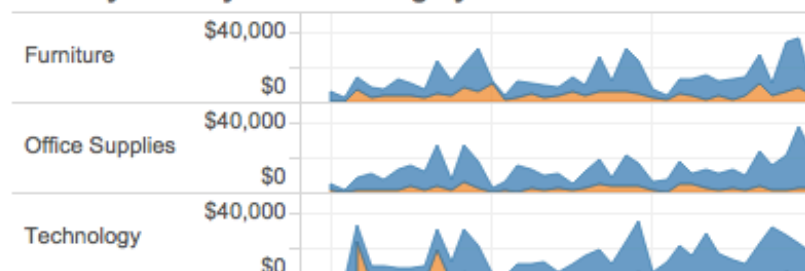
Executive Overview - Profitability



Monthly Sales by Segment - States: All



Monthly Sales by Product Category - States: All



Show Me



Select view

Data Source

Overview

Product

Customers

Shipping

Performance

Forecast

What If Forecast

Show Me

1 Year Tableau License

<http://tableau.com/students>