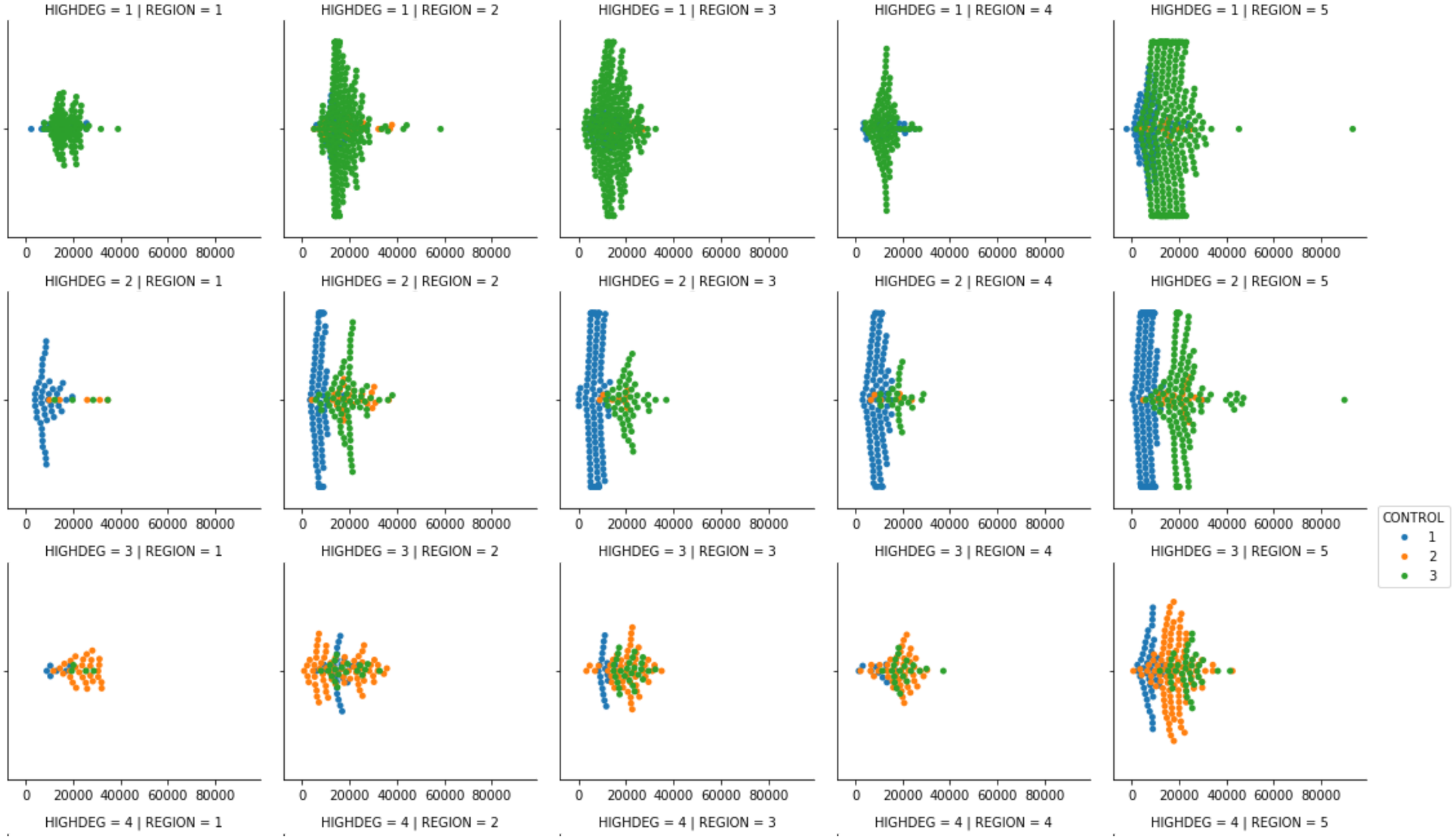
Using FacetGrid, catplot and lmplot

INTERMEDIATE DATA VISUALIZATION WITH SEABORN

Chris Moffitt
Instructor

datacamp


HIGHDEG = 1 | REGION = 1
HIGHDEG = 1 | REGION = 2
HIGHDEG = 1 | REGION = 3
HIGHDEG = 1 | REGION = 4
HIGHDEG = 1 | REGION = 5
HIGHDEG = 2 | REGION = 1
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HIGHDEG = 3 | REGION = 1
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HIGHDEG = 3 | REGION = 5
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HIGHDEG = 4 | REGION = 3
HIGHDEG = 4 | REGION = 4
HIGHDEG = 4 | REGION = 5
0 20000 40000 60000 80000
CONTROL
1
2
3

Tidy data

- Seaborn's grid plots require data in "tidy format"
- One observation per row of data

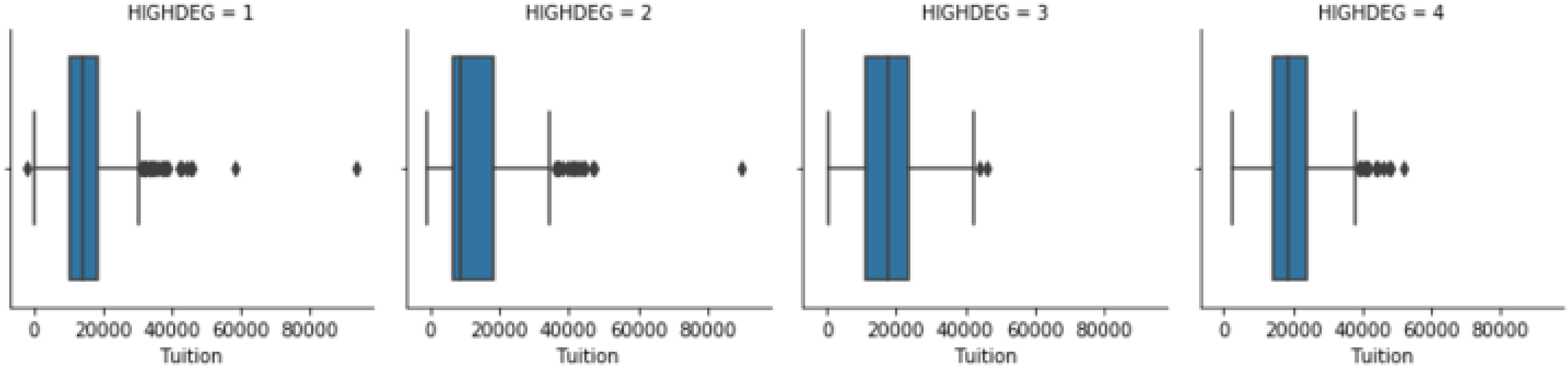
	INSTNM	OPEID	REGION	SAT_AVG_ALL	PCTPELL	PCTFLOAN	ADM_RATE_ALL	UG	AVGFACSAL	COMPL_RPY_5YR_RT	DEBT_MDN
0	Alabama A & M University	100200	5	850.0	0.7249	0.8159	0.653841	4380.0	7017.0	0.477631579	14600
1	University of Alabama at Birmingham	105200	5	1147.0	0.3505	0.5218	0.604275	10331.0	10221.0	0.673230442	14250
2	Amridge University	2503400	5	NaN	0.7455	0.8781	NaN	98.0	3217.0	0.636363636	11082
3	University of Alabama in Huntsville	105500	5	1221.0	0.3179	0.4589	0.811971	5220.0	9514.0	0.762222222	15000
4	Alabama State University	100500	5	844.0	0.7567	0.7692	0.463858	4348.0	7940.0	0.43006993	15274

FacetGrid

- The `FacetGrid` is foundational for many data aware grids
- It allows the user to control how data is distributed across columns, rows and hue
- Once a `FacetGrid` is created, the plot type must be mapped to the grid

FacetGrid Categorical Example

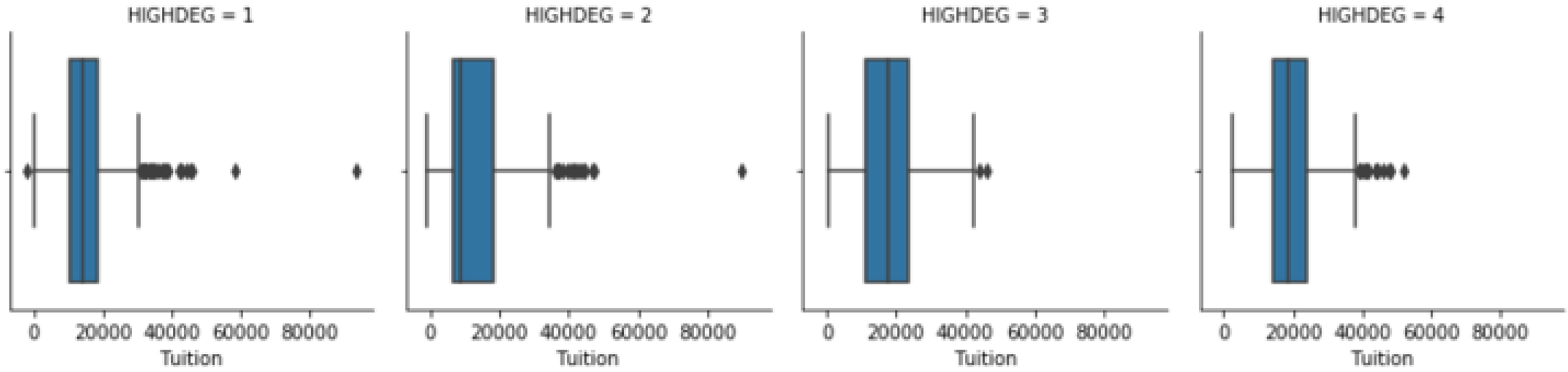
```
g = sns.FacetGrid(df, col='HIGHDEG')
g.map(sns.boxplot, 'Tuition',
      order=['1', '2', '3', '4'])
```



catplot()

- The `catplot` is a simpler way to use a `FacetGrid` for categorical data
- Combines the facetting and mapping process into 1 function

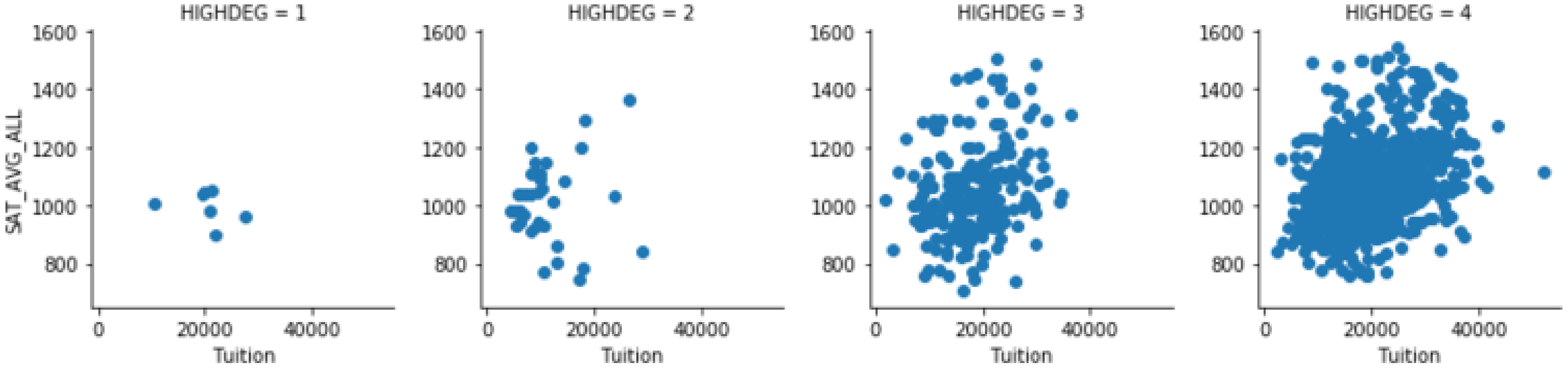
```
sns.catplot(x="Tuition", data=df,
            col="HIGHDEG", kind="box")
```



FacetGrid for regression

- `FacetGrid()` can also be used for scatter or regression plots

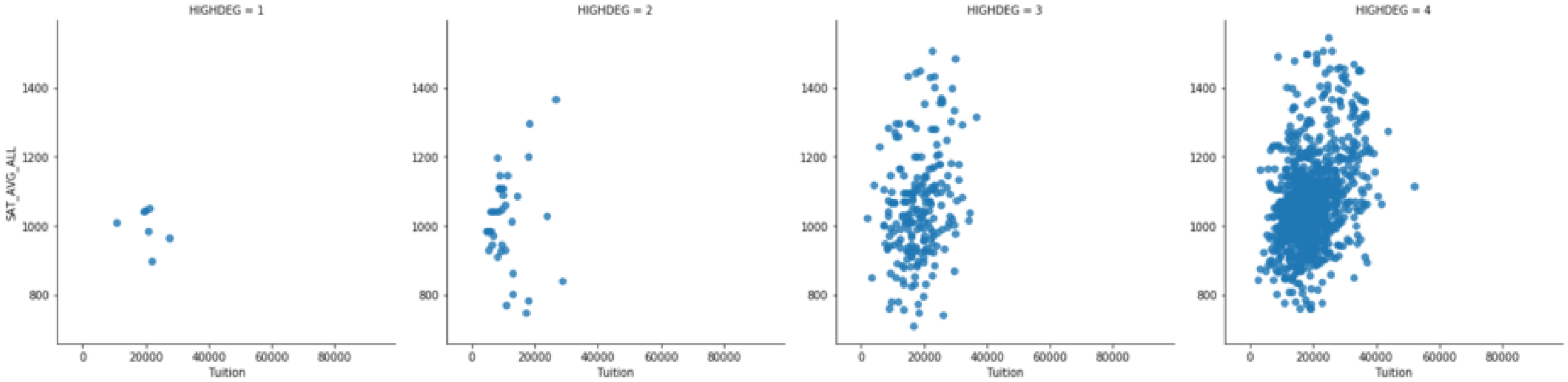
```
g = sns.FacetGrid(df, col='HIGHDEG')
g.map(plt.scatter, 'Tuition', 'SAT_AVG_ALL')
```



lmplot

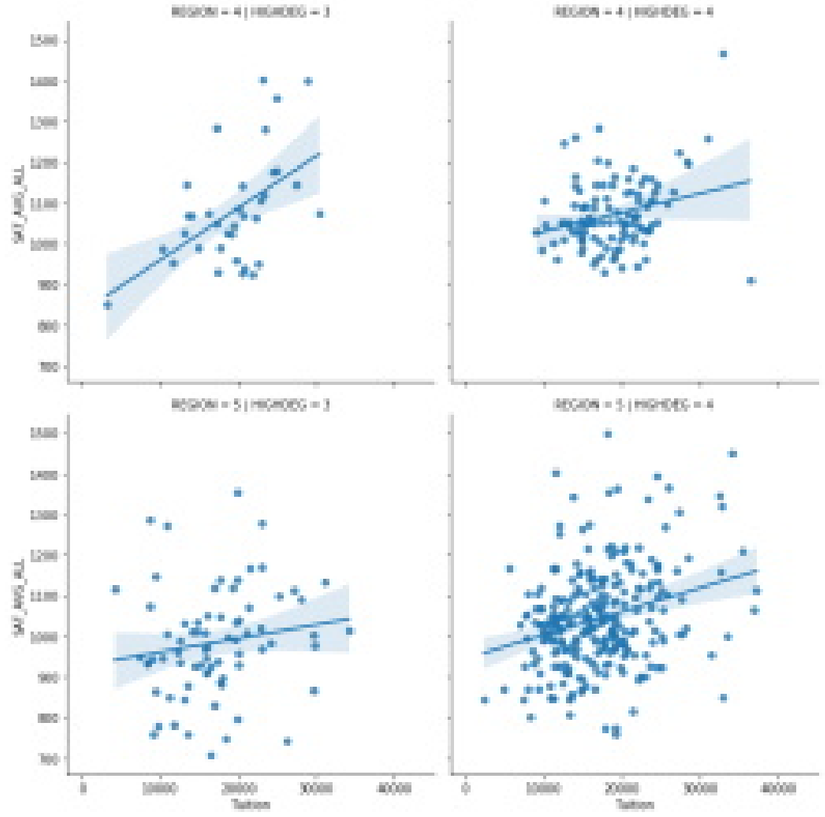
- `lmplot` plots scatter and regression plots on a `FacetGrid`

```
sns.lmplot(data=df, x="Tuition", y="SAT_AVG_ALL",
           col="HIGHDEG", fit_reg=False)
```



Implot with regression

```
sns.lmplot(data=df, x="Tuition", y="SAT_AVG_ALL",
           col="HIGHDEG", row="REGION")
```



Let's practice!

INTERMEDIATE DATA VISUALIZATION WITH SEABORN

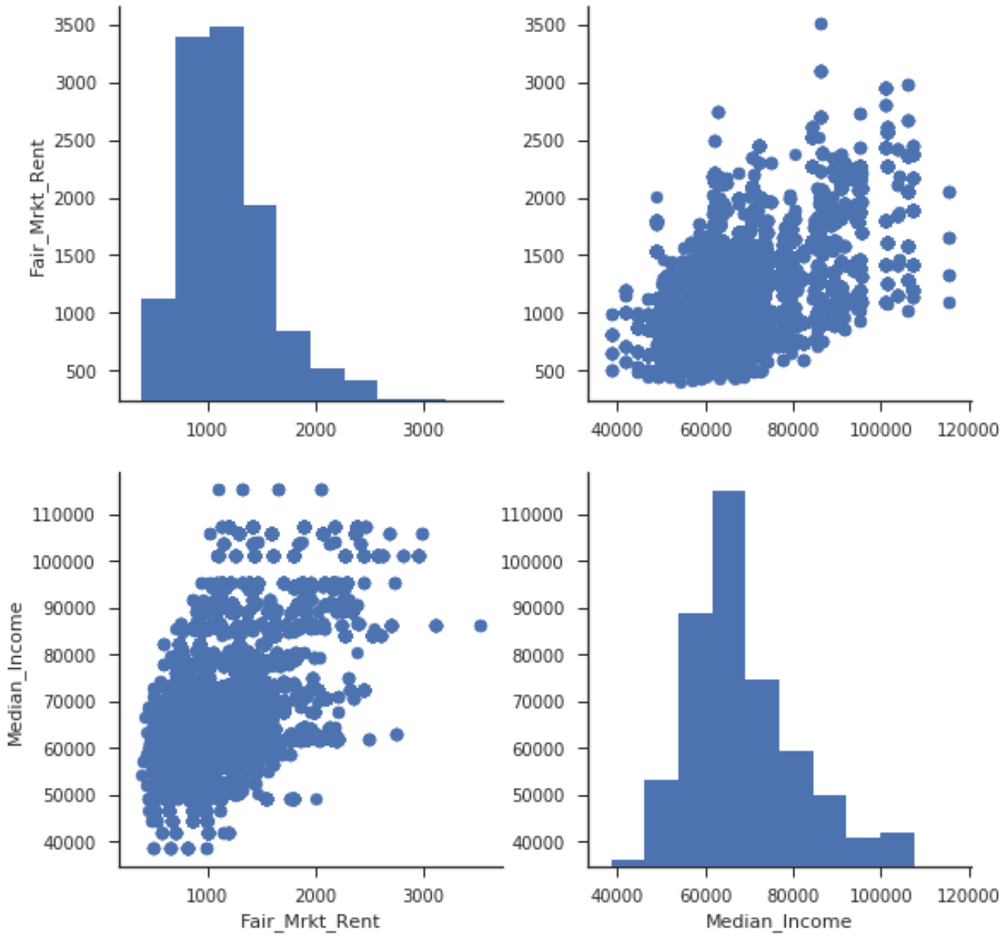
Using PairGrid and pairplot

INTERMEDIATE DATA VISUALIZATION WITH SEABORN

Chris Moffitt
Instructor

Pairwise relationships

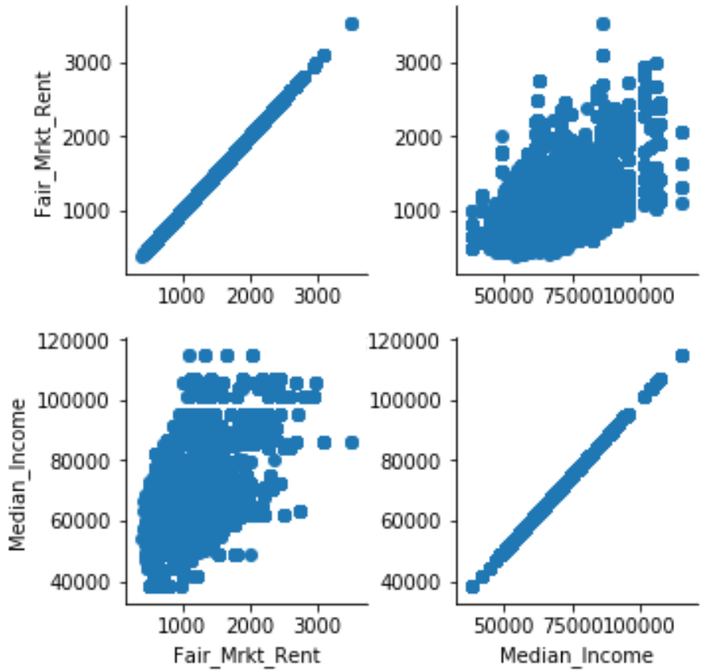
- `PairGrid` shows pairwise relationships between data elements



Creating a PairGrid

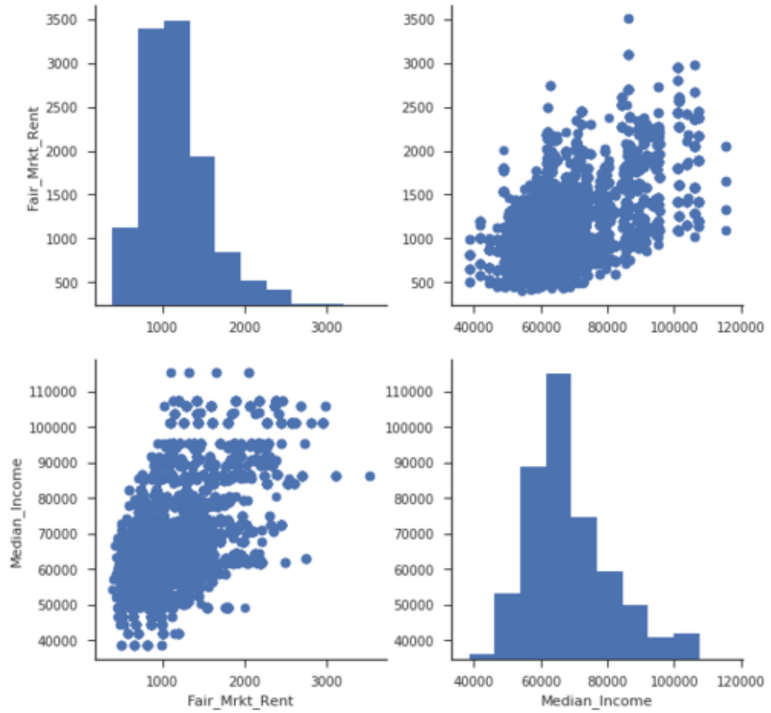
- The `PairGrid` follows similar API to FacetGrid

```
g = sns.PairGrid(df, vars=["Fair_Mrkt_Rent","Median_Income"])
g = g.map(sns.scatterplot)
```



Customizing the PairGrid diagonals

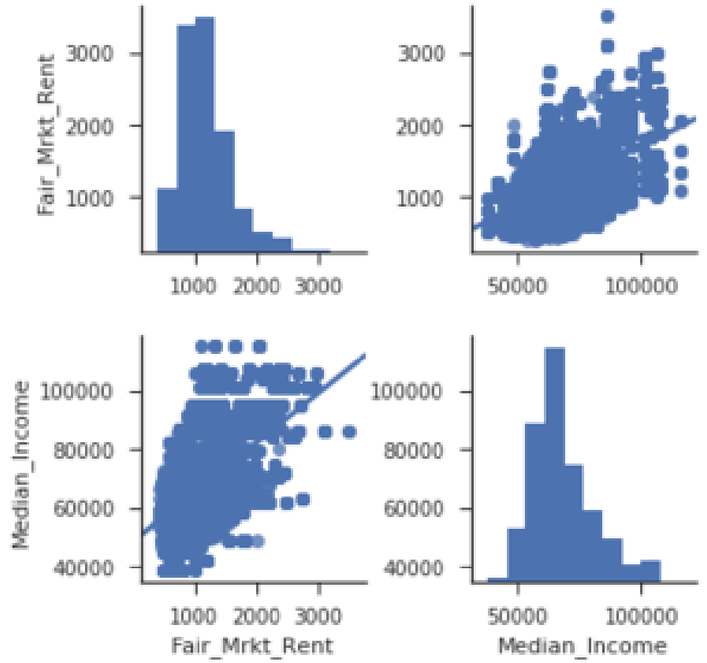
```
g = sns.PairGrid(df, vars=["Fair_Mrkt_Rent", "Median_Income"])
g = g.map_diag(sns.histplot)
g = g.map_offdiag(sns.scatterplot)
```



Pairplot

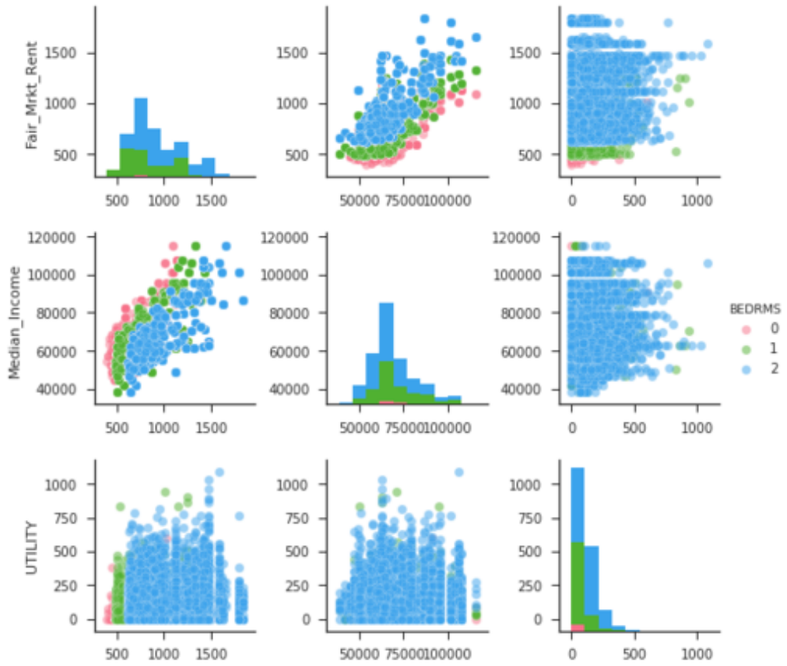
- `pairplot` is a shortcut for the `PairGrid`

```
sns.pairplot(df, vars=["Fair_Mrkt_Rent","Median_Income"], kind="reg",
             diag_kind="hist")
```



Customizing a pairplot

```
sns.pairplot(df.query("BEDRMS < 3"),
             vars=["Fair_Mrkt_Rent",
             "Median_Income", "UTILITY"],
             hue="BEDRMS", palette="husl",
             plot_kws={"alpha": 0.5})
```



Let's practice!

INTERMEDIATE DATA VISUALIZATION WITH SEABORN

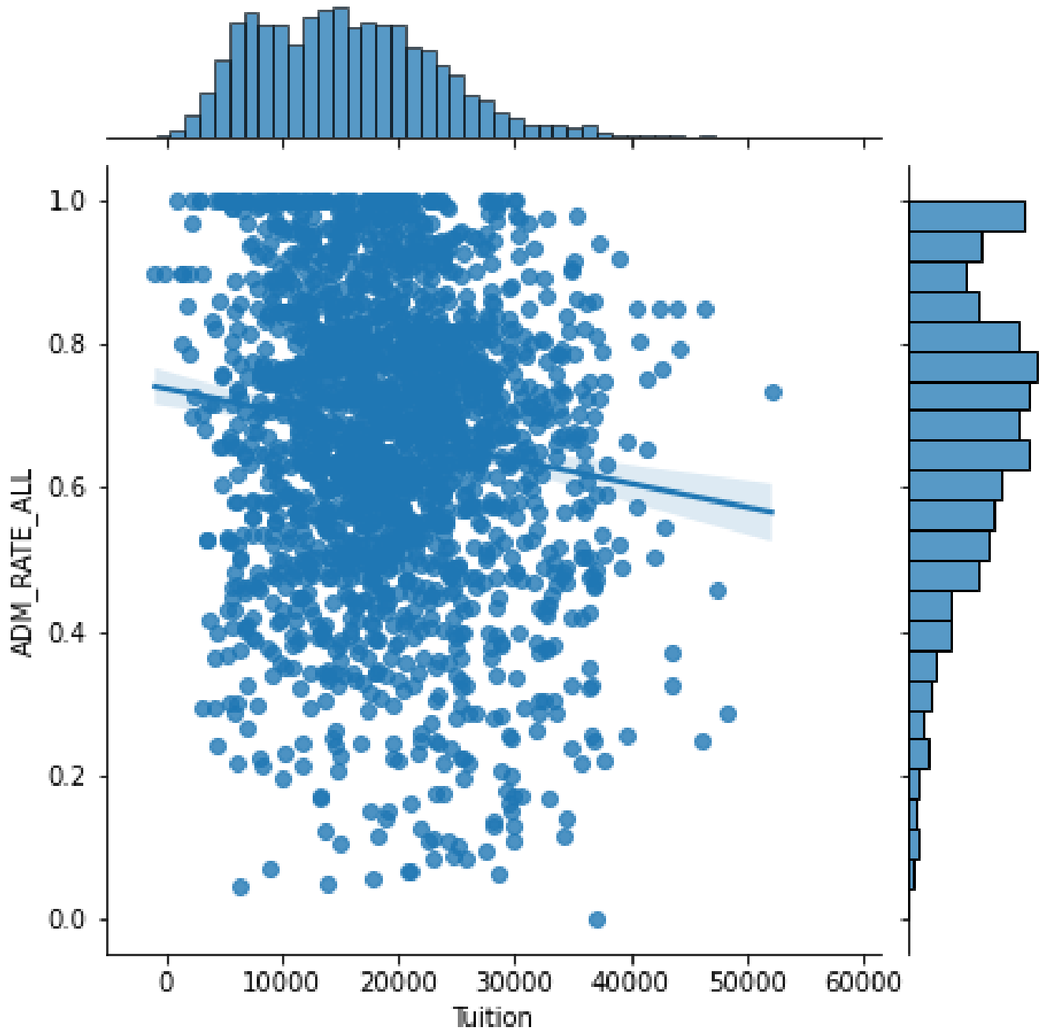
Using JointGrid and jointplot

INTERMEDIATE DATA VISUALIZATION WITH SEABORN

Chris Moffitt
Instructor

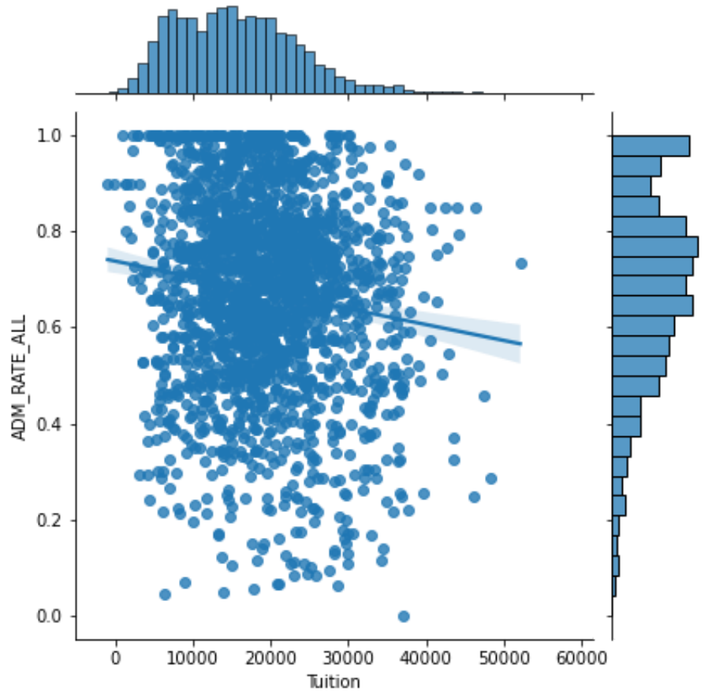
datacamp

JointGrid() Overview



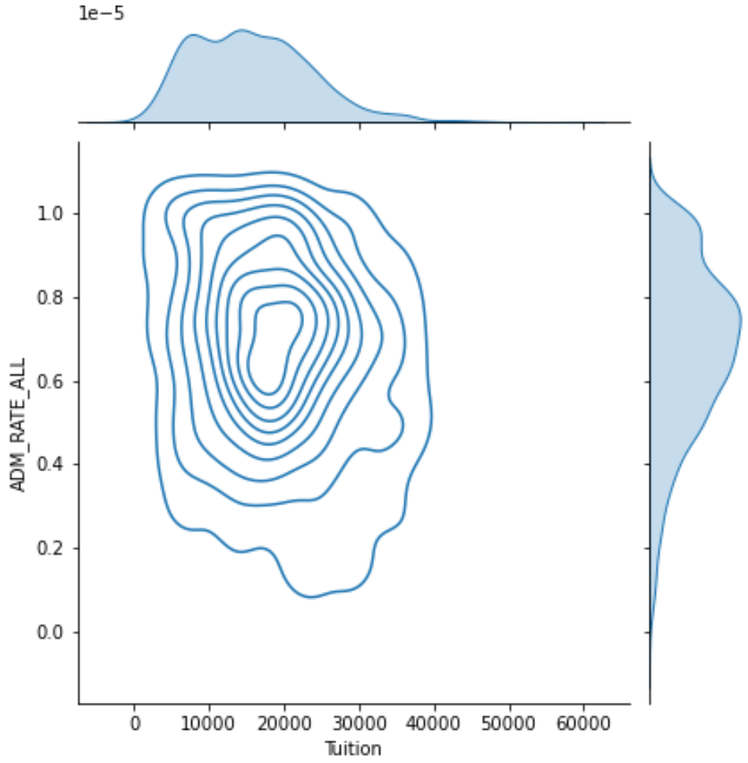
Basic JointGrid

```
g = sns.JointGrid(data=df, x="Tuition", y="ADM_RATE_ALL")
g.plot(sns.regplot, sns.histplot)
```



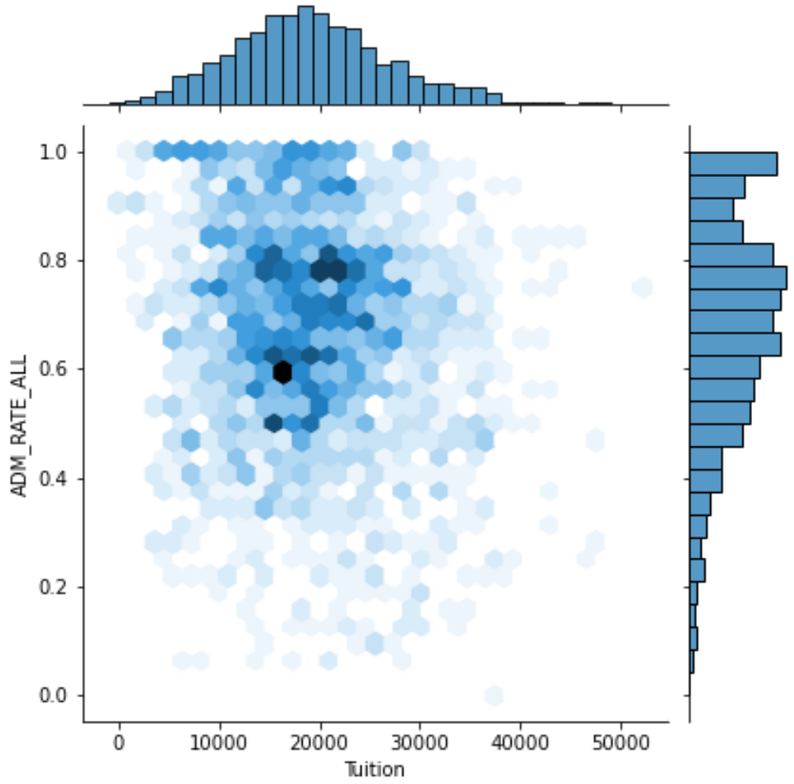
Advanced JointGrid

```
g = sns.JointGrid(data=df, x="Tuition", y="ADM_RATE_ALL")
g = g.plot_joint(sns.kdeplot)
g = g.plot_marginals(sns.kdeplot, shade=True)
```



jointplot()

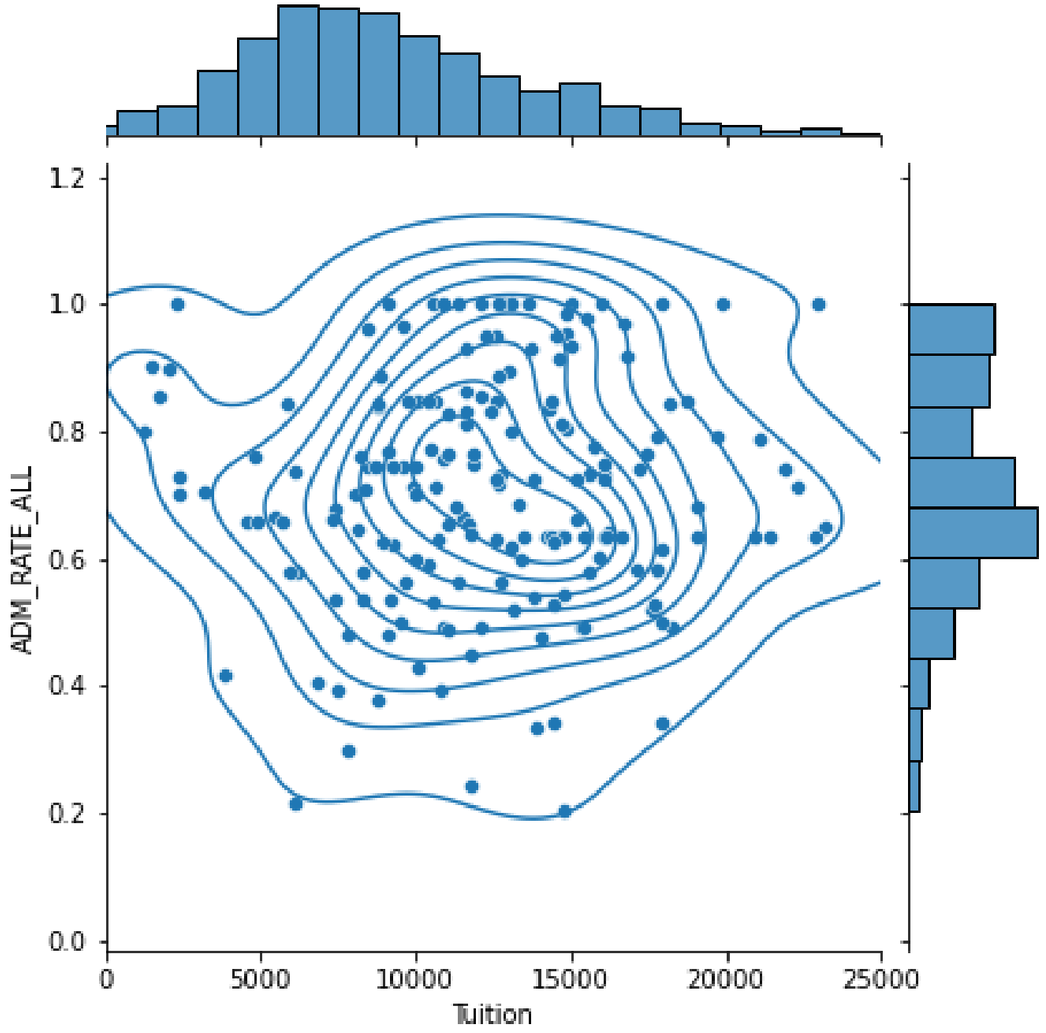
```
sns.jointplot(data=df, x="Tuition", y="ADM_RATE_ALL", kind='hex')
```



Customizing a jointplot

```
g = (sns.jointplot(x="Tuition",
                   y="ADM_RATE_ALL",
                   kind="scatter",
                   xlim=(0, 25000),
                   data=df.query('UG < 2500 &
                   Ownership == "Public"'))
    .plot_joint(sns.kdeplot))
```

Customizing a jointplot



Let's practice!

INTERMEDIATE DATA VISUALIZATION WITH SEABORN

Selecting Seaborn Plots

INTERMEDIATE DATA VISUALIZATION WITH SEABORN

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Instructor

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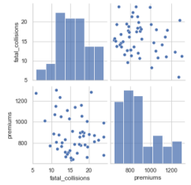
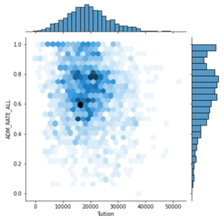
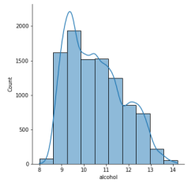


pairplot

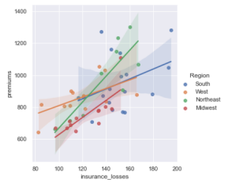


jointplot

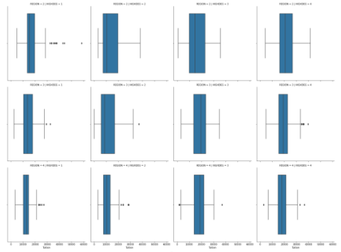
PairGrid | JointGrid



displot

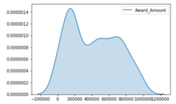


lmplot

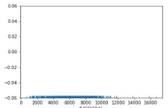


catplot

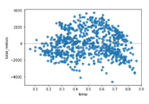
FacetGrid



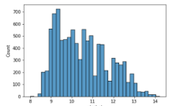
kdeplot



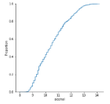
rugplot



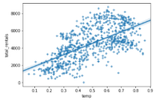
residplot



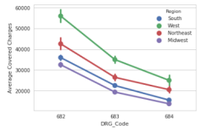
histplot



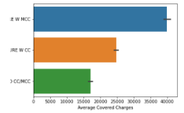
ecdfplot



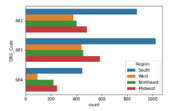
regplot



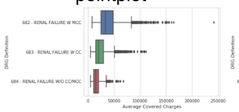
pointplot



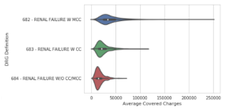
barplot



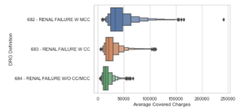
countplot



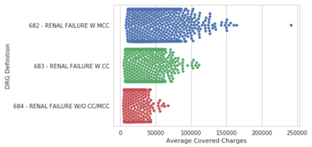
boxplot



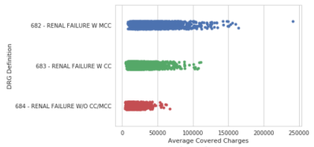
violinplot



boxenplot

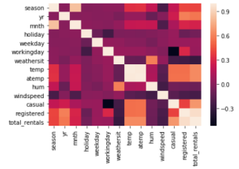


swarmplot



stripplot

matplotlib

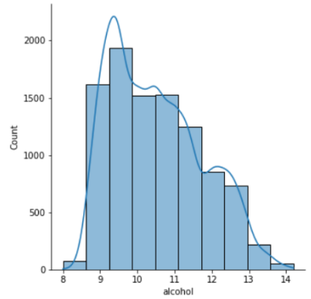


heatmap

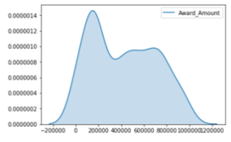
palplot

Univariate Distribution Analysis

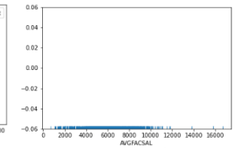
- `displot()` is the best place to start for this analysis
- `rugplot()`, `kdeplot()` and `ecdfplot()` can be useful alternatives



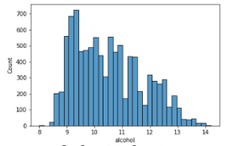
displot



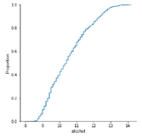
kdeplot



rugplot



histplot

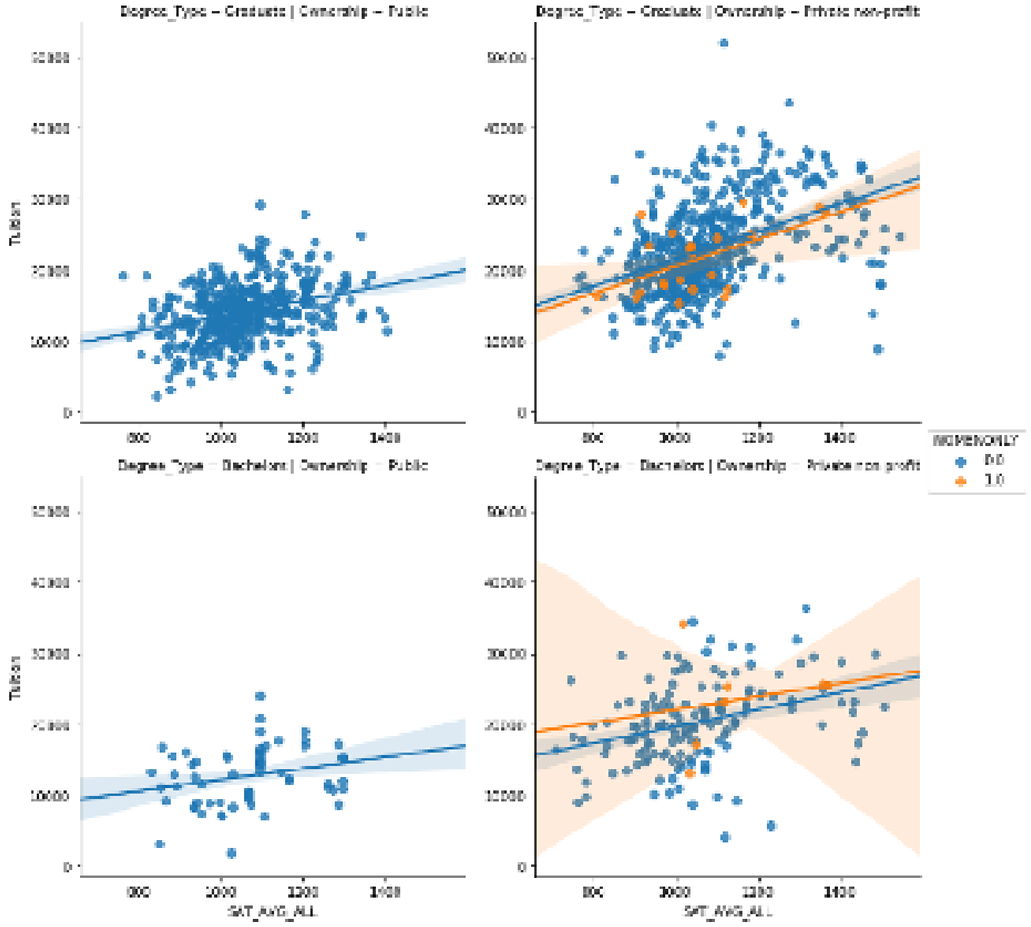


ecdfplot

matplotlib

Regression Analysis

- `lmplot()` performs regression analysis and supports facetting

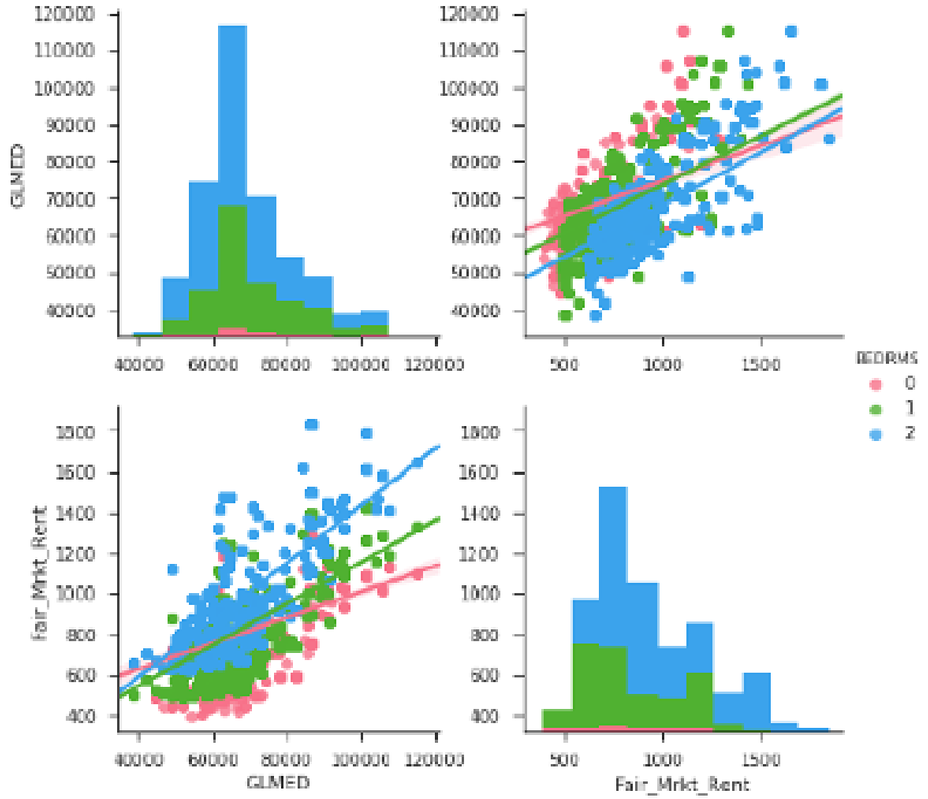


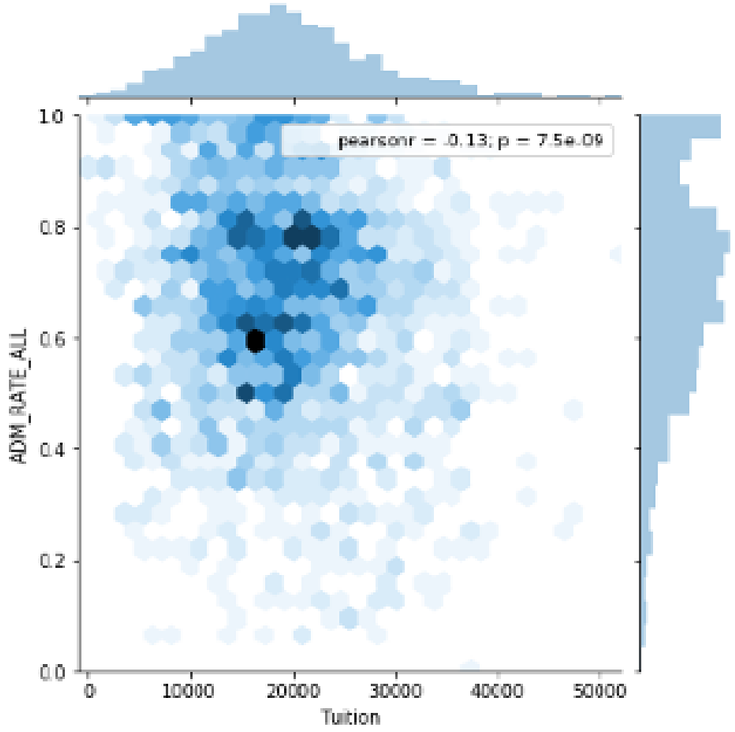
Categorical Plots

- Explore data with the categorical plots and facet with `catplot`

pairplot() and jointplot()

- Perform regression analysis with `lmplot`
- Analyze distributions with `displot`





Thank You!

INTERMEDIATE DATA VISUALIZATION WITH SEABORN