BokehJS 2.4.2 successfully loaded.

```
"\noutput_figure = widgets.Output()\n \n# Create the default figure\nfig = []  # Storing the figure in a singular list is a bit of a \n          #
hack. We need it to properly mutate the current\n          # figure in our callbacks.\n#p = create_figure(\n#    iris['feature_names'][0],\n#    ir
is['feature_names'][1],\n#    data)\n#fig.append(p)\nwith output_figure:\n    interact(derive_xnames,y=y)\n    #interact(return_model_vars,x=x_,y=
y,autoremove=autoremove)\n    #show(fig)\n    \napp_layout = widgets.Layout(display='flex',\n                flex_flow='row nowrap',\n
align_items='center',\n                border='none',\n                width='100%',\n                margin='5px 5px 5px 5px')\n \n# The final app
is just a box\napp=widgets.Box([y, output_figure], layout=app_layout)\n \n# Display the app\ndisplay(app)\n"
```

y
- Poverty
- Infant Mort
- White
- Crime
- Doctors

x
- Infant Mort
- White
- Crime
- Doctors
- Traf Deaths

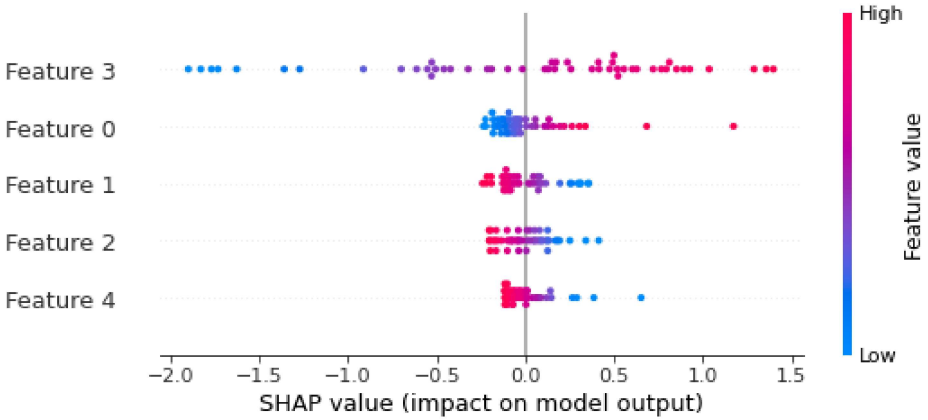
y Poverty

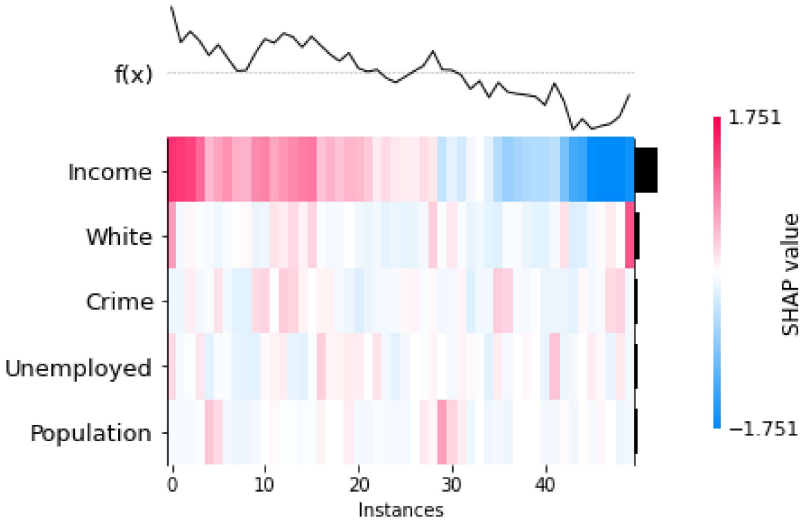
☑ autoremove

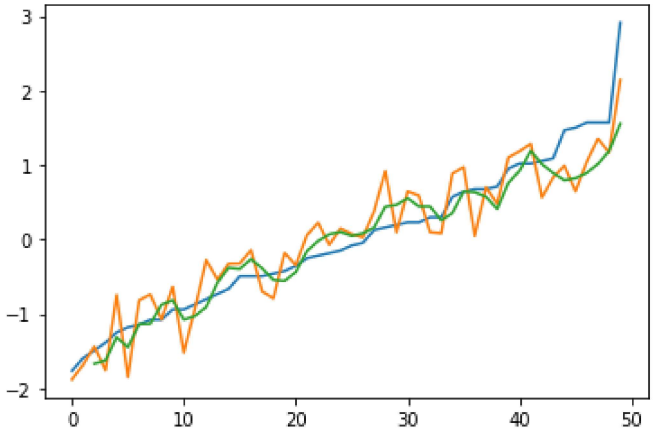
```
['Poverty', 'Infant Mort', 'White', 'Crime', 'Doctors', 'Traf Deaths', 'University', 'Unemployed', 'Income', 'Population', 'const']
```

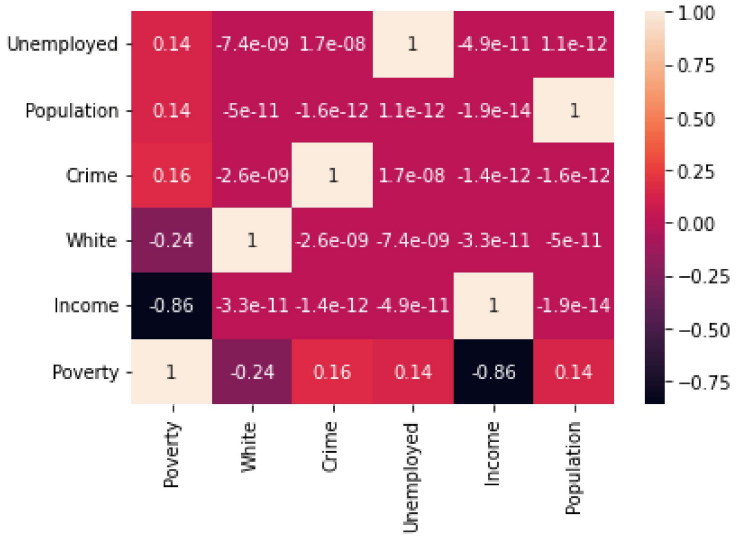
```
Index(['Infant Mort', 'White', 'Crime', 'Doctors', 'Traf Deaths', 'University',
       'Unemployed', 'Income', 'Population', 'const'],
      dtype='object')
Index(['Infant Mort', 'White', 'Crime', 'Doctors', 'Traf Deaths', 'University',
       'Unemployed', 'Income', 'Population'],
      dtype='object')
Index(['White', 'Crime', 'Doctors', 'Traf Deaths', 'University', 'Unemployed',
       'Income', 'Population'],
      dtype='object')
Index(['White', 'Crime', 'Doctors', 'Traf Deaths', 'Unemployed', 'Income',
       'Population'],
      dtype='object')
Index(['White', 'Crime', 'Traf Deaths', 'Unemployed', 'Income', 'Population'], dtype='object')
Index(['White', 'Crime', 'Unemployed', 'Income', 'Population'], dtype='object')
Index(['White', 'Crime', 'Unemployed', 'Income', 'Population'], dtype='object')
```

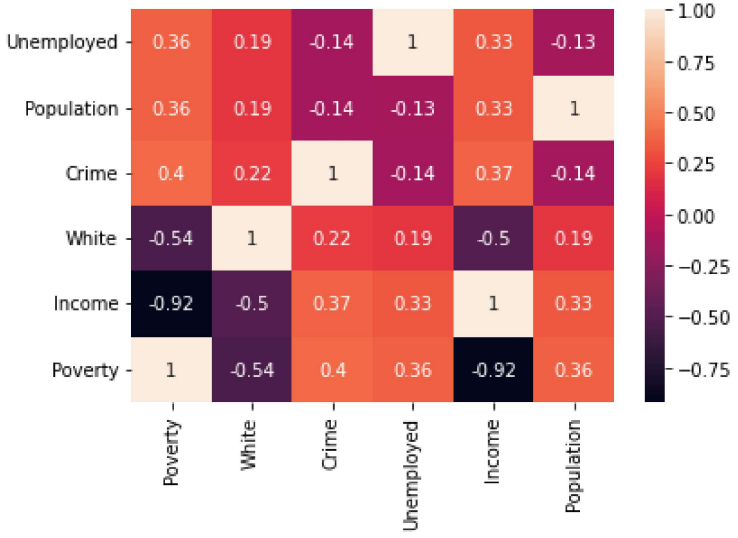
```
divide by zero encountered in true_divide
invalid value encountered in matmul
```

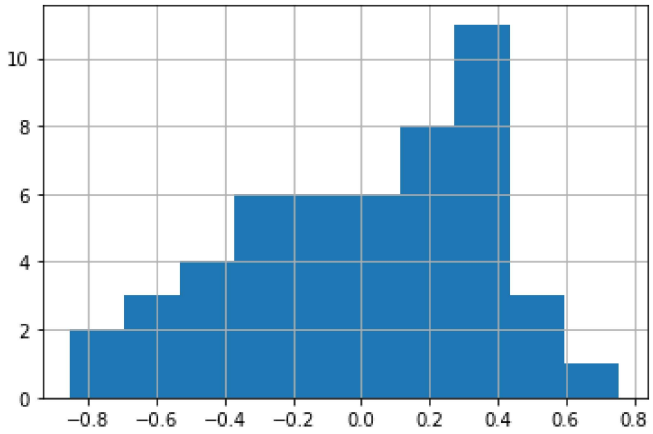

Feature 3
Feature 0
Feature 1
Feature 2
Feature 4
−2.0
−1.5
−1.0
−0.5
0.0
0.5
1.0
1.5
SHAP value (impact on model output)
High
Feature value
Low


f(x)
Income
White
Crime
Unemployed
Population
0
10
20
30
40
Instances
1.751
SHAP value
−1.751


3
2
1
0
−1
−2
0
10
20
30
40
50


Unemployed
Population
Crime
White
Income
Poverty
0.14 -7.4e-09 1.7e-08 1 -4.9e-11 1.1e-12
0.14 -5e-11 -1.6e-12 1.1e-12 -1.9e-14 1
0.16 -2.6e-09 1 1.7e-08 -1.4e-12 -1.6e-12
-0.24 1 -2.6e-09 -7.4e-09 -3.3e-11 -5e-11
-0.86 -3.3e-11 -1.4e-12 -4.9e-11 1 -1.9e-14
1 -0.24 0.16 0.14 -0.86 0.14
Poverty
White
Crime
Unemployed
Income
Population
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75

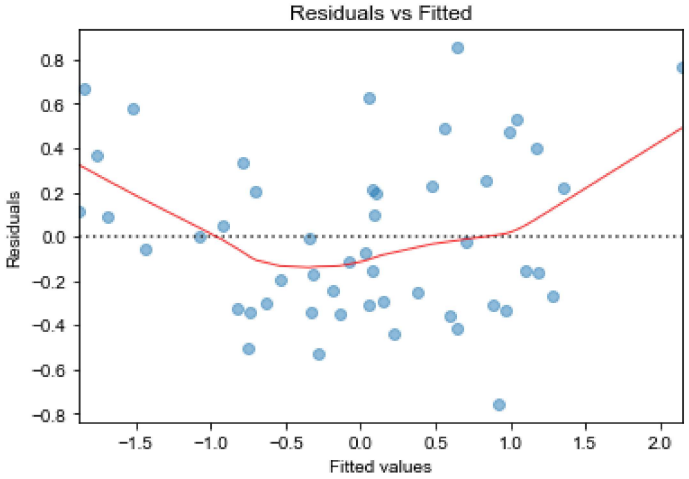

Unemployed
Population
Crime
White
Income
Poverty
0.36 0.19 -0.14 1 0.33 -0.13
0.36 0.19 -0.14 -0.13 0.33 1
0.4 0.22 1 -0.14 0.37 -0.14
-0.54 1 0.22 0.19 -0.5 0.19
-0.92 -0.5 0.37 0.33 1 0.33
1 -0.54 0.4 0.36 -0.92 0.36
Poverty
White
Crime
Unemployed
Income
Population
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75

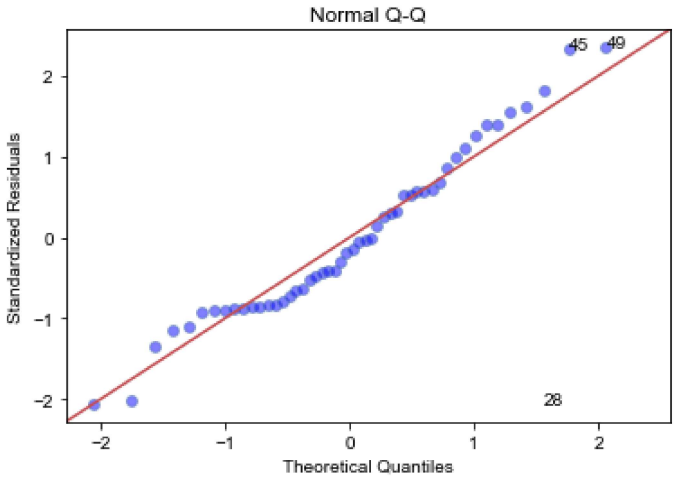


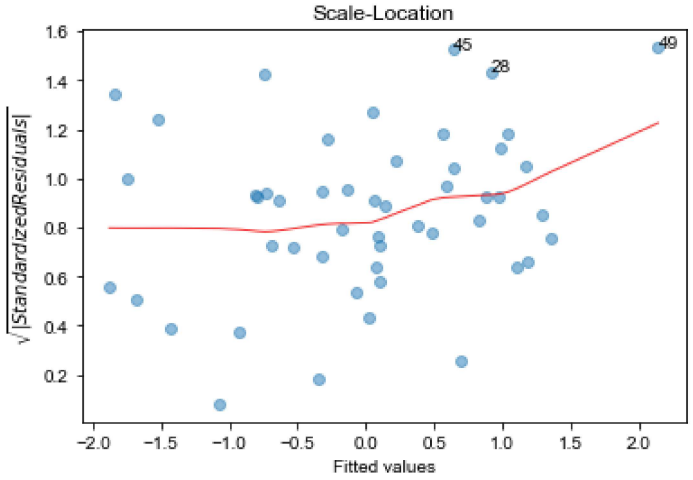

```
mape: 68.26355090031673
```

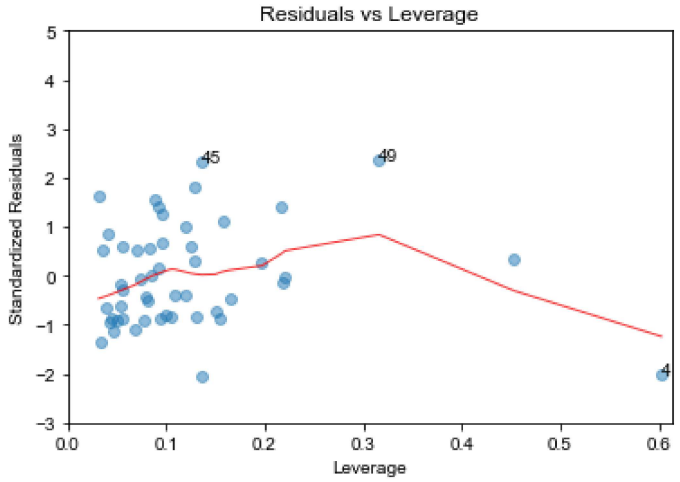
```
Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other argum
ents without an explicit keyword will result in an error or misinterpretation.
marker is redundantly defined by the 'marker' keyword argument and the fmt string "bo" (-> marker='o'). The keyword argument will take precedenc
e.
color is redundantly defined by the 'color' keyword argument and the fmt string "bo" (-> color='b'). The keyword argument will take precedence.
Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other argum
ents without an explicit keyword will result in an error or misinterpretation.
Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other argum
ents without an explicit keyword will result in an error or misinterpretation.
```

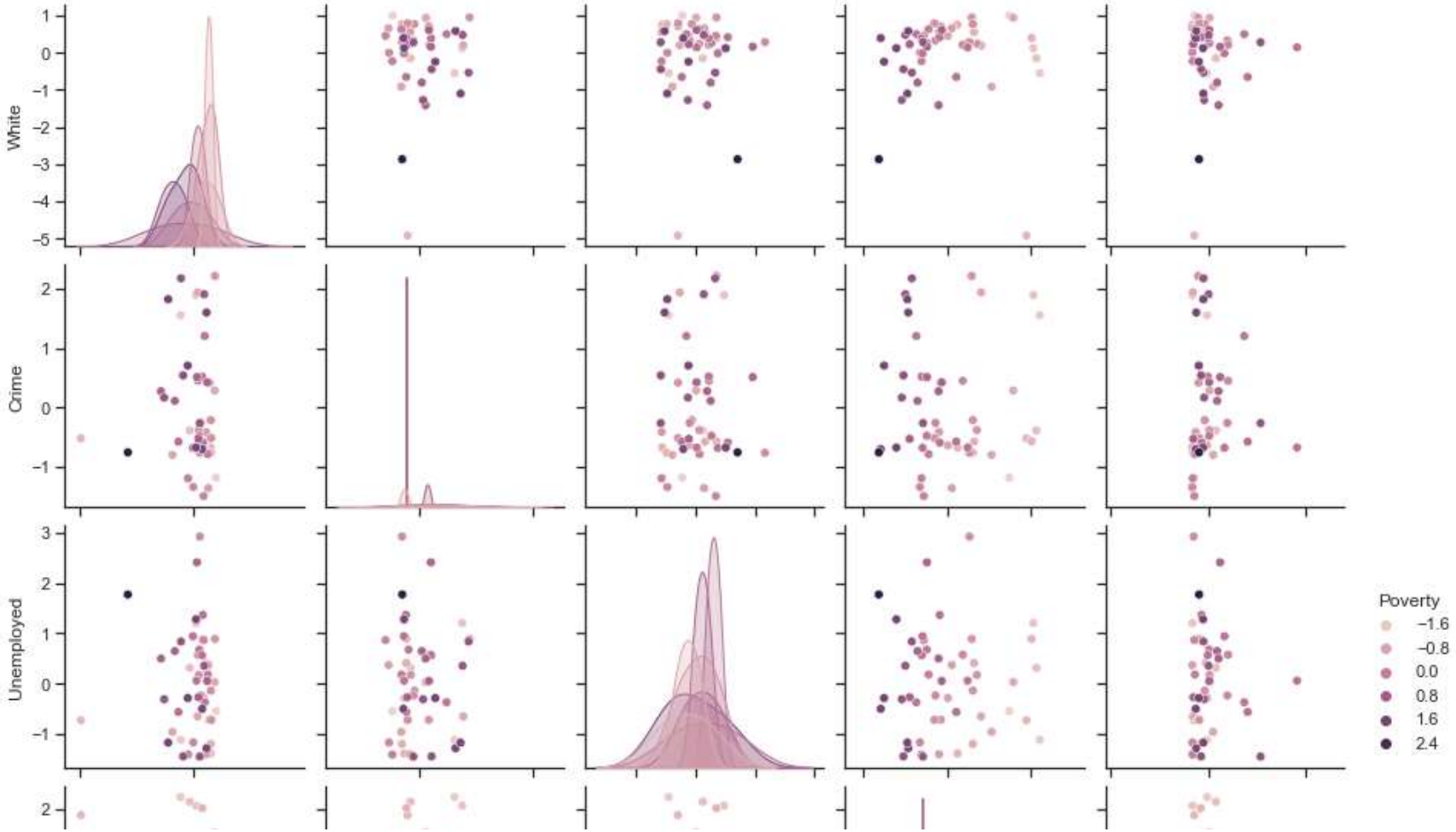
```
Diagnostic Tests of Regression
:{"Non_Linearity_Test": [["F value", NaN], ["p value", NaN]], "Hetroskedasticity_Test": [["Lagrange multiplier statistic", 2.6222863533137075],
["p-value", 0.7579762848669936], ["f-value", 0.4870669800836755], ["f p-value", 0.7840454143773542]], "Residual_Normality_Test": [["Jarque-Bera",
2.3380516101788262], ["Chi^2 two-tail prob.", 0.31066944648567857], ["Skew", 0.4390957134530111], ["Kurtosis", 2.407509839242371]], "MultiCollnea
rity_Test": [["condition no", 1.0000041860250353]], "Residual_AutoCorrelation_Test": [["p value", 1.560083885264049]]}
```

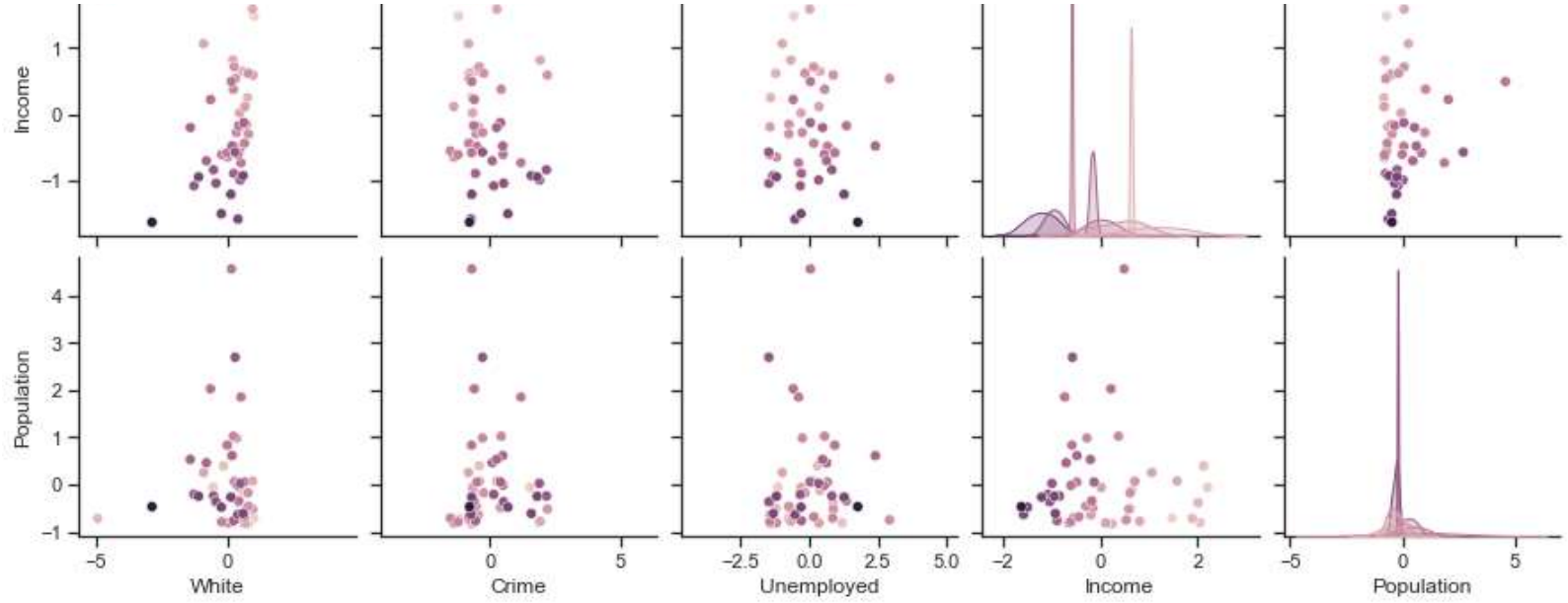



Normal Q-Q
Standardized Residuals
Theoretical Quantiles
45
49
28
2
1
0
−1
−2
−2
−1
0
1
2


Scale-Location
√|StandardizedResiduals|
Fitted values
45
28
49
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
−2.0
−1.5
−1.0
−0.5
0.0
0.5
1.0
1.5
2.0


Residuals vs Leverage
Standardized Residuals
Leverage
45
49
4


White
Crime
Unemployed
Poverty
−1.6
−0.8
0.0
0.8
1.6
2.4



[<class 'statsmodels.iolib.summary.Summary'>
"""

OLS Regression Results

Dep. Variable:	Poverty	R-squared (uncentered):	0.862
Model:	OLS	Adj. R-squared (uncentered):	0.847
Method:	Least Squares	F-statistic:	56.39
Date:	Sun, 23 Jan 2022	Prob (F-statistic):	2.94e-18
Time:	07:55:45	Log-Likelihood:	-21.368
No. Observations:	50	AIC:	52.74
Df Residuals:	45	BIC:	62.30
Df Model:	5		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
White	-0.2383	0.055	-4.308	0.000	-0.350	-0.127
Crime	0.1614	0.055	2.919	0.005	0.050	0.273
Unemployed	0.1416	0.055	2.560	0.014	0.030	0.253
Income	-0.8597	0.055	-15.545	0.000	-0.971	-0.748
Population	0.1427	0.055	2.581	0.013	0.031	0.254

Omnibus:	2.584	Durbin-Watson:	1.560
Prob(Omnibus):	0.275	Jarque-Bera (JB):	2.338
Skew:	0.439	Prob(JB):	0.311
Kurtosis:	2.408	Cond. No.	1.00

Notes:

```
    [1] R² is computed without centering (uncentered) since the model does not contain a constant.
    [2] Standard Errors assume that the covariance matrix of the errors is correctly specified.
    """]
```

```
<function __main__.return_model_subset(x, y, autoremove)>
```