

# 06\_customer\_seg\_maldata\_report

December 23, 2022

## 1 Customer Segmentation Report

```
c:\Users\Sebas\anaconda3\envs\customer_cluster_app\lib\site-  
packages\tqdm\auto.py:22: TqdmWarning: IProgress not found. Please update  
jupyter and ipywidgets. See  
https://ipywidgets.readthedocs.io/en/stable/user\_install.html  
from .autonotebook import tqdm as notebook_tqdm
```

## 2 Import Data

|            | Gender | Age | Income | Spending_Score |
|------------|--------|-----|--------|----------------|
| CustomerID |        |     |        |                |
| 1          | Male   | 19  | 15     | 39             |
| 2          | Male   | 21  | 15     | 81             |
| 3          | Female | 20  | 16     | 6              |
| 4          | Female | 23  | 16     | 77             |
| 5          | Female | 31  | 17     | 40             |

## 3 Load Model Artifacts

## 4 Transform Dataset

|            | Age  | Income | Spending_Score | Gender | cluster |
|------------|------|--------|----------------|--------|---------|
| CustomerID |      |        |                |        |         |
| 1          | 19.0 | 15.0   | 39.0           | Male   | 0       |
| 2          | 21.0 | 15.0   | 81.0           | Male   | 0       |
| 3          | 20.0 | 16.0   | 6.0            | Female | 0       |
| 4          | 23.0 | 16.0   | 77.0           | Female | 3       |
| 5          | 31.0 | 17.0   | 40.0           | Female | 3       |

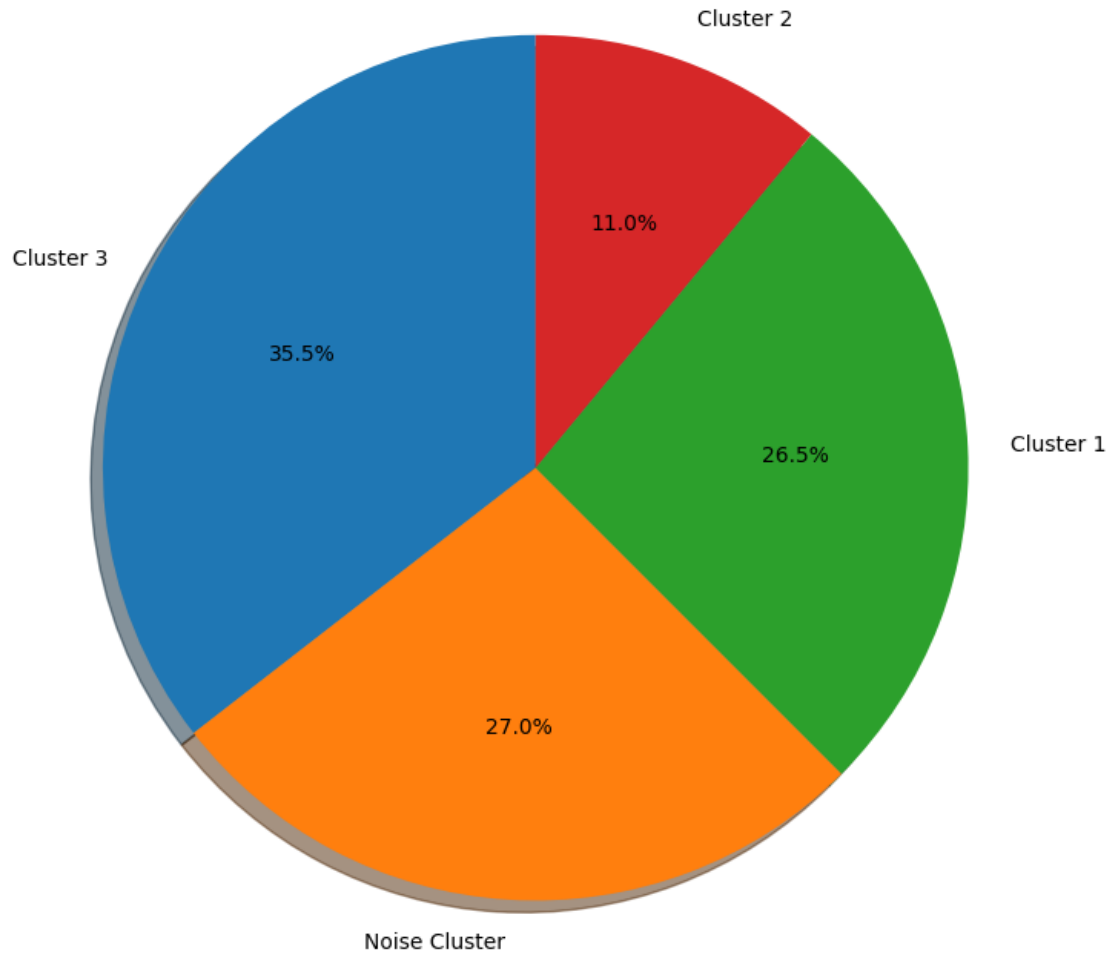
## 5 Data Visualization

|   |    |
|---|----|
| 3 | 71 |
| 0 | 54 |
| 1 | 53 |

```
2    22
Name: cluster, dtype: int64
```

## 5.1 What does the Cluster Distribution Look Like?

```
['Cluster 3', 'Noise Cluster', 'Cluster 1', 'Cluster 2']
```



## 6 Determine Cluster Centers

The default value of `numeric_only` in `DataFrameGroupBy.mean` is deprecated. In a future version, `numeric_only` will default to `False`. Either specify `numeric_only` or select only columns which should be valid for the function.

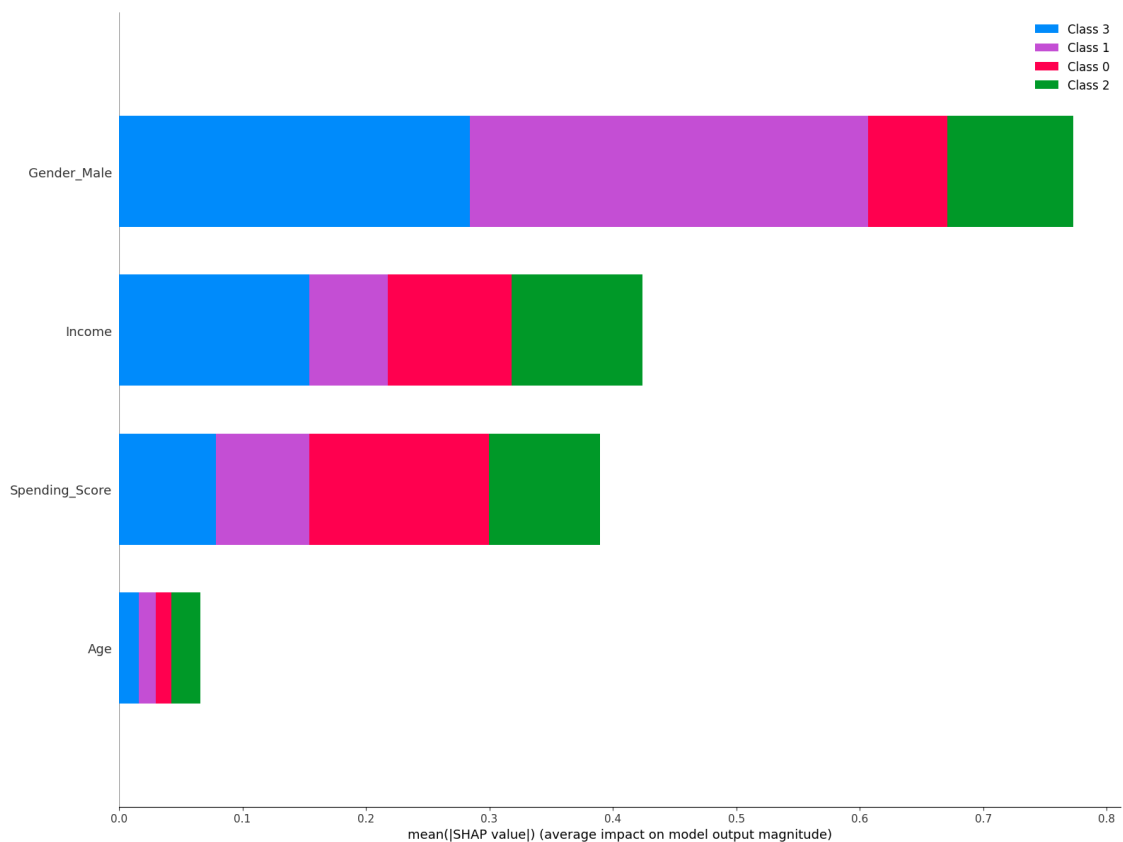
`['Age']` did not aggregate successfully. If any error is raised this will raise in a future version of pandas. Drop these columns/ops to avoid this warning.

|         | Age       | Income    | Spending_Score | Gender |
|---------|-----------|-----------|----------------|--------|
| cluster |           |           |                |        |
| 0       | 39.703704 | 68.759259 | 27.185185      | Male   |
| 1       | 41.226415 | 59.924528 | 59.169811      | Male   |
| 2       | 32.545455 | 85.272727 | 80.590909      | Female |
| 3       | 38.380282 | 47.140845 | 51.591549      | Female |

## 7 Explain Clusters

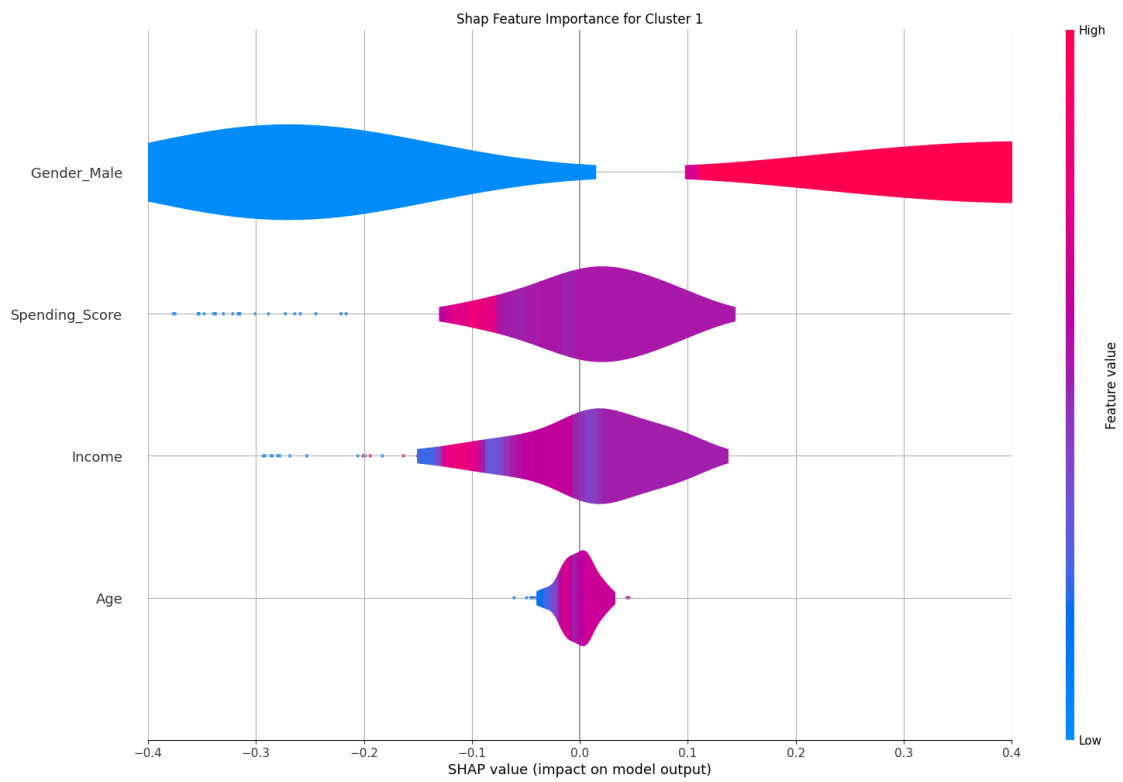
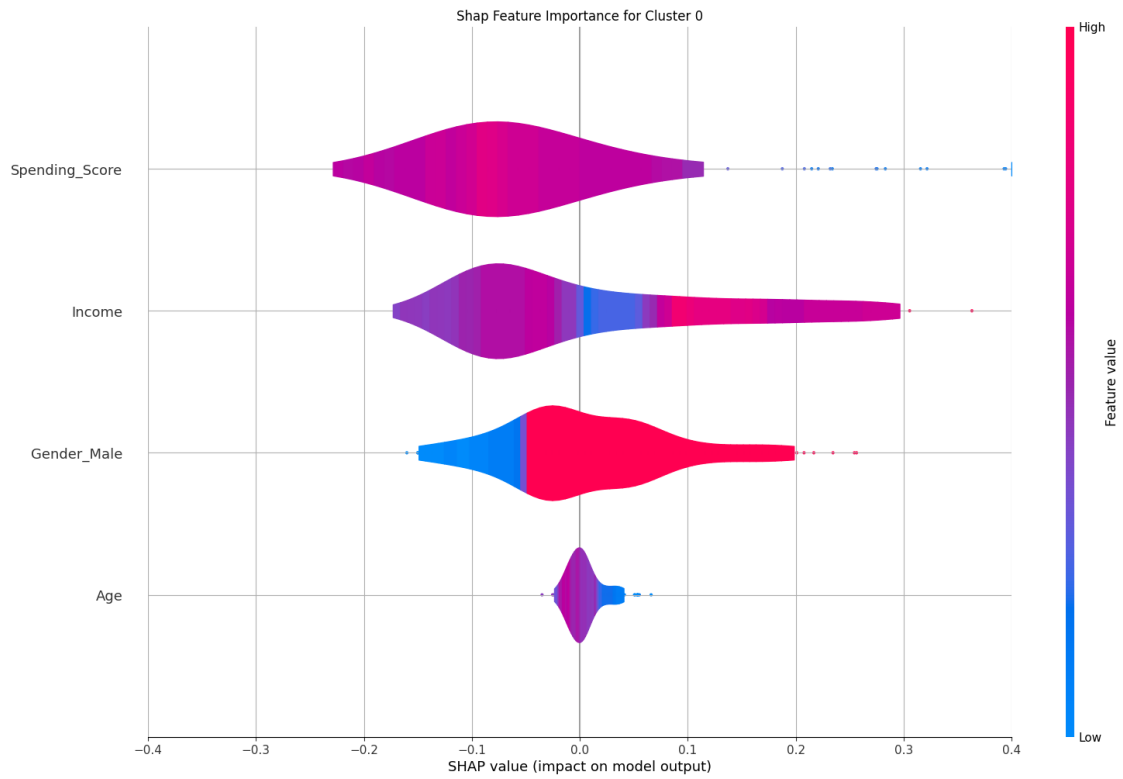
## 8 Custom Functions

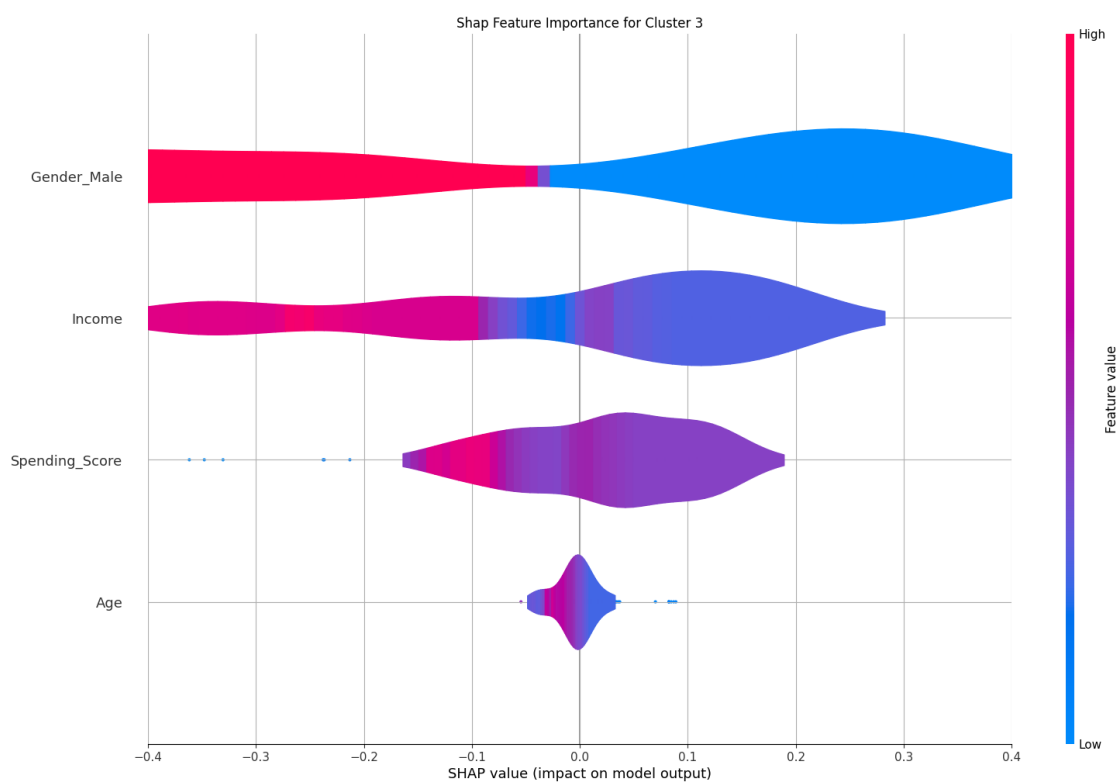
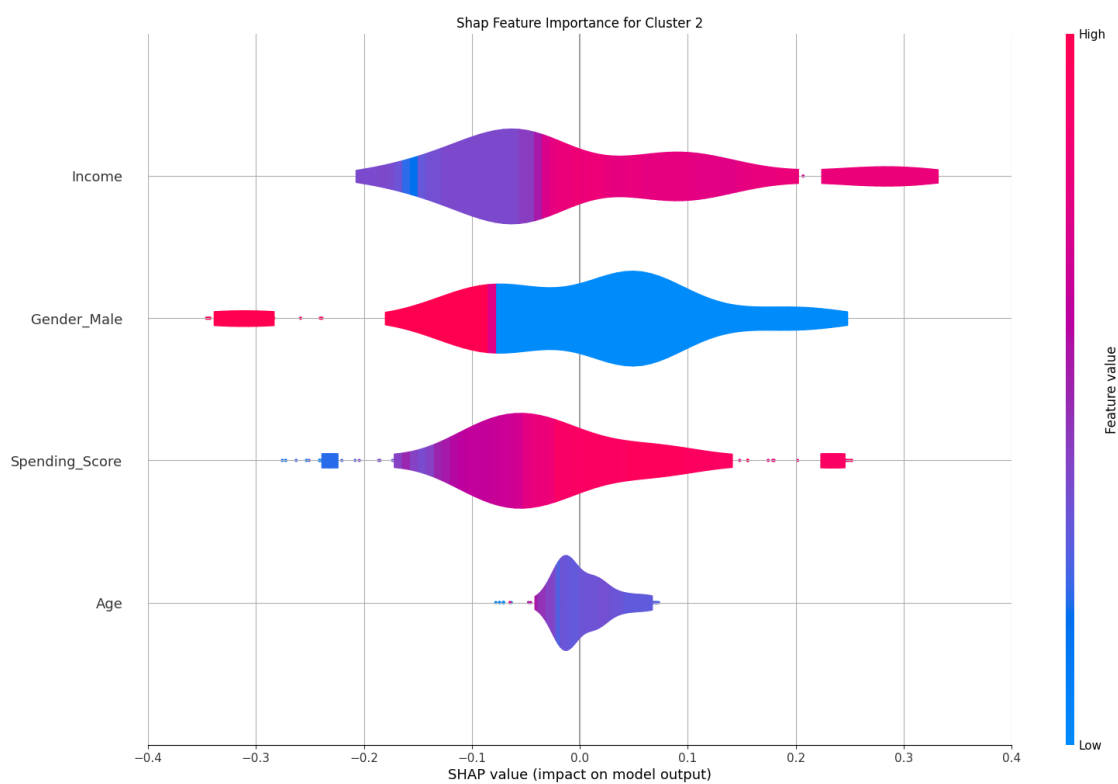
### 8.1 Average Feature Importance on Cluster Building



### 8.2 Explain Single Cluster vs Rest

No data for colormapping provided via 'c'. Parameters 'vmin', 'vmax' will be ignored



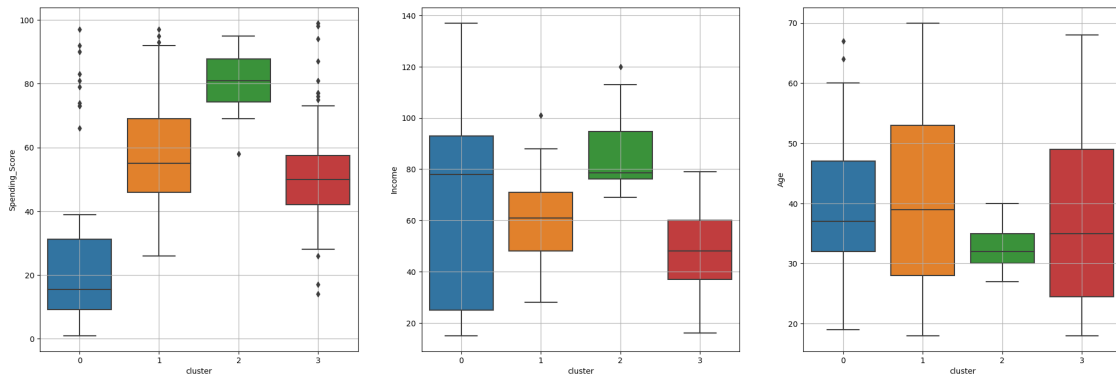


['Income', 'Gender\_Male', 'Spending\_Score', 'Age']

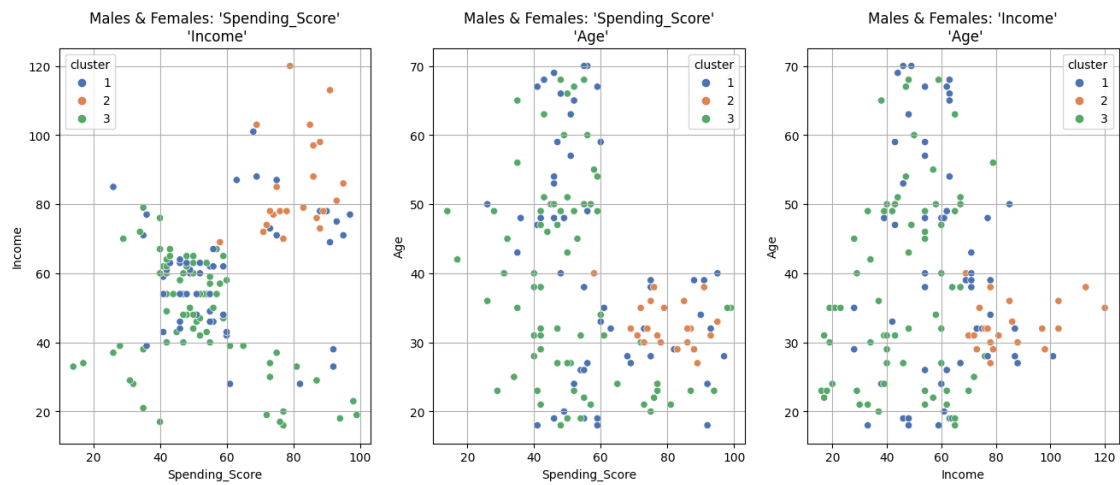
['Spending\_Score', 'Income', 'Gender\_Male', 'Age']

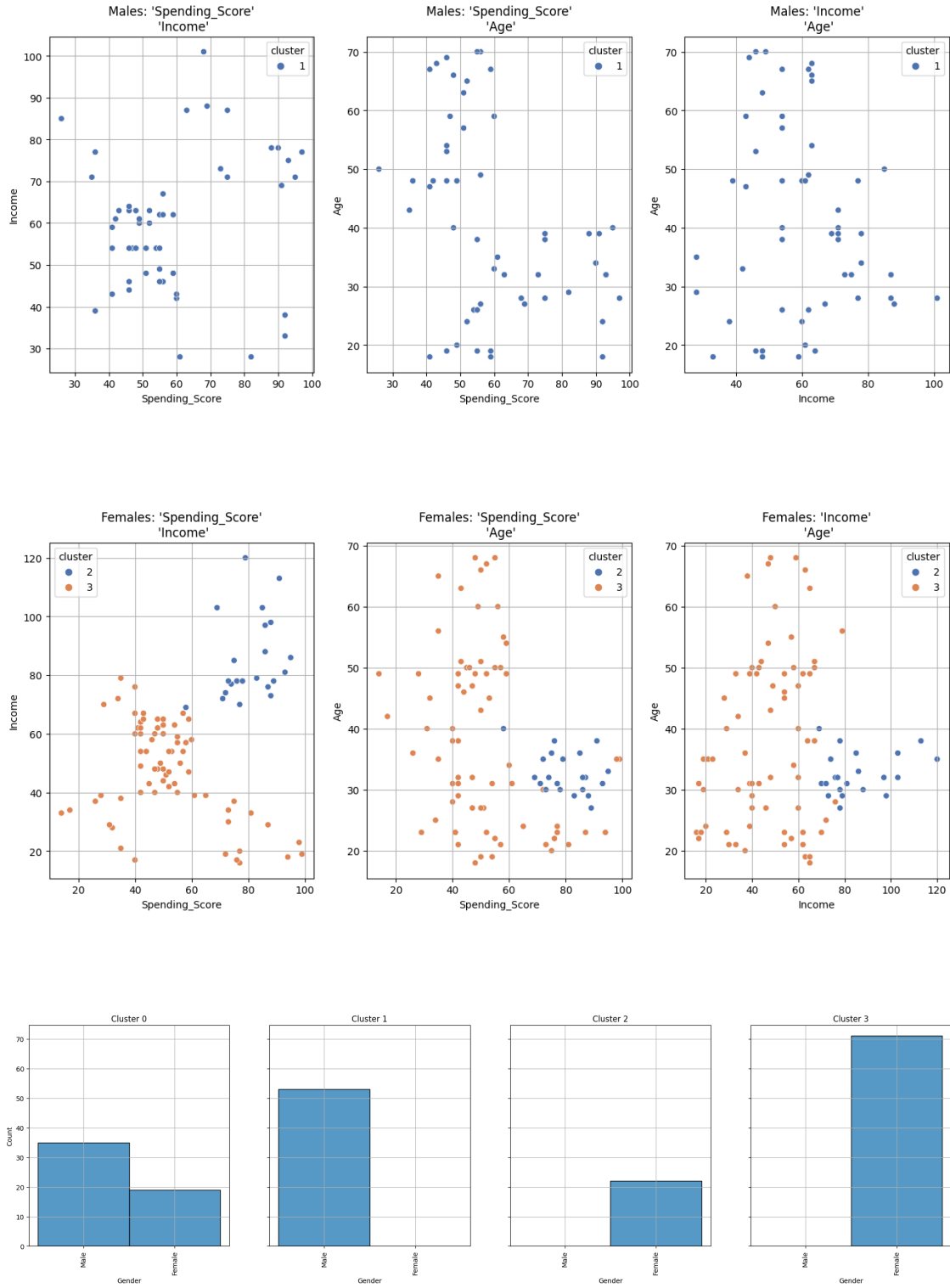
['Spending\_Score', 'Income', 'Age']

['Gender']



3





C:\Users\Sebas\anaconda3\envs\customer\_cluster\_app\lib\site-packages\traitlets\traitlets.py:2544: FutureWarning: Supporting extra quotes

around strings is deprecated in traitlets 5.0. You can use '../reports' instead of "'../reports'" if you require traitlets >=5.

```
warn(  
[NbConvertApp] Converting notebook 06_customer_seg_maldata_report.ipynb to pdf  
[NbConvertApp] Support files will be in 06_customer_seg_maldata_report_files\  
[NbConvertApp] Making directory .\06_customer_seg_maldata_report_files  
[NbConvertApp] Making directory .\06_customer_seg_maldata_report_files  
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[NbConvertApp] Making directory .\06_customer_seg_maldata_report_files  
[NbConvertApp] Making directory .\06_customer_seg_maldata_report_files  
[NbConvertApp] Writing 32147 bytes to notebook.tex  
[NbConvertApp] Building PDF  
[NbConvertApp] Running xelatex 3 times: ['xelatex', 'notebook.tex', '-quiet']  
[NbConvertApp] Running bibtex 1 time: ['bibtex', 'notebook']  
[NbConvertApp] WARNING | b had problems, most likely because there were no  
citations  
[NbConvertApp] PDF successfully created  
[NbConvertApp] Writing 420020 bytes to  
..\reports\06_customer_seg_maldata_report.pdf
```