# Income Qualification Screenshots

Here are some screenshots from my source code. Much of this can be found in the PDF file of the source code, but the outputs are still listed here.

## Columns pertaining to home ownership status

+ Code + Markdown

```
# Columns pertaining to home ownership status. Columns 2, 116-120

#trainDF.loc[:, ["v2a1", "tipovivi1", "tipovivi2", "tipovivi3", "tipovivi4", "tipovivi5", "Target"]].iloc[0: 60]
#trainDF.loc[:, ["v2a1", "tipovivi1", "tipovivi2", "tipovivi3", "tipovivi4", "tipovivi5", "Target"]].iloc[60: 120]
#trainDF.loc[:, ["v2a1", "tipovivi1", "tipovivi2", "tipovivi3", "tipovivi4", "tipovivi5", "Target"]].iloc[1050: 1100]
trainDF.loc[:, ["Id", "idhogar", "v2a1", "tipovivi1", "tipovivi2", "tipovivi3", "tipovivi4", "tipovivi5", "Target"]].iloc[1086: 1100]
```

✓ 0.0s

| | Id | idhogar | v2a1 | tipovivi1 | tipovivi2 | tipovivi3 | tipovivi4 | tipovivi5 | Target |
|---|---|---|---|---|---|---|---|---|---|
| 1086 | ID_30d6500c3 | 2e65e4af3 | 150000.0 | 0 | 0 | 1 | 0 | 0 | 4 |
| 1087 | ID_4203fd5e2 | ee3d80cb6 | NaN | 1 | 0 | 0 | 0 | 0 | 2 |
| 1088 | ID_7c33c1884 | a0695cb68 | NaN | 1 | 0 | 0 | 0 | 0 | 1 |
| 1089 | ID_77cce5b75 | 62c28e034 | NaN | 1 | 0 | 0 | 0 | 0 | 4 |
| 1090 | ID_df05b9e45 | 62c28e034 | NaN | 1 | 0 | 0 | 0 | 0 | 4 |
| 1091 | ID_3490fd704 | 8e284abd5 | NaN | 1 | 0 | 0 | 0 | 0 | 4 |
| 1092 | ID_d82b1a426 | 8e284abd5 | NaN | 1 | 0 | 0 | 0 | 0 | 4 |
| 1093 | ID_9d6957e8a | 8e284abd5 | NaN | 1 | 0 | 0 | 0 | 0 | 4 |
| 1094 | ID_5038a636a | 304731467 | 160000.0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 1095 | ID_6c29eea22 | 304731467 | 160000.0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 1096 | ID_870ae3993 | 304731467 | 160000.0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 1097 | ID_00da43675 | 304731467 | 160000.0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 1098 | ID_22d124fdf | 304731467 | 160000.0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 1099 | ID_075c52143 | 304731467 | 160000.0 | 0 | 0 | 1 | 0 | 0 | 2 |

## Columns pertaining to number of rooms and overcrowding

```python
# Columns pertaining to number of rooms and overcrowding. Columns 3-6, 114, 115

#trainDF.loc[:, ["hacdor", "rooms", "hacapo", "bedrooms", "overcrowding", "Target"]].iloc[0: 60]
#trainDF.loc[:, ["hacdor", "rooms", "hacapo", "bedrooms", "overcrowding", "Target"]].iloc[60: 120]
#trainDF.loc[:, ["hacdor", "rooms", "hacapo", "bedrooms", "overcrowding", "Target"]].iloc[1050: 1100]
trainDF.loc[:, ["Id", "idhogar", "hacdor", "rooms", "hacapo", "bedrooms", "overcrowding", "Target"]].iloc[1086: 1100]
```

✓ 0.0s

| | Id | idhogar | hacdor | rooms | hacapo | bedrooms | overcrowding | Target |
|---|---|---|---|---|---|---|---|---|
| 1086 | ID_30d6500c3 | 2e65e4af3 | 0 | 4 | 0 | 2 | 2.500000 | 4 |
| 1087 | ID_4203fd5e2 | ee3d80cb6 | 0 | 3 | 0 | 1 | 1.000000 | 2 |
| 1088 | ID_7c33c1884 | a0695cb68 | 0 | 6 | 0 | 3 | 0.333333 | 1 |
| 1089 | ID_77cce5b75 | 62c28e034 | 0 | 4 | 0 | 2 | 1.000000 | 4 |
| 1090 | ID_df05b9e45 | 62c28e034 | 0 | 4 | 0 | 2 | 1.000000 | 4 |
| 1091 | ID_3490fd704 | 8e284abd5 | 0 | 7 | 0 | 4 | 2.500000 | 4 |
| 1092 | ID_d82b1a426 | 8e284abd5 | 0 | 7 | 0 | 4 | 2.500000 | 4 |
| 1093 | ID_9d6957e8a | 8e284abd5 | 0 | 7 | 0 | 4 | 2.500000 | 4 |
| 1094 | ID_5038a636a | 304731467 | 0 | 5 | 0 | 3 | 2.000000 | 2 |
| 1095 | ID_6c29eea22 | 304731467 | 0 | 5 | 0 | 3 | 2.000000 | 2 |
| 1096 | ID_870ae3993 | 304731467 | 0 | 5 | 0 | 3 | 2.000000 | 2 |
| 1097 | ID_00da43675 | 304731467 | 0 | 5 | 0 | 3 | 2.000000 | 2 |
| 1098 | ID_22d124fdf | 304731467 | 0 | 5 | 0 | 3 | 2.000000 | 2 |
| 1099 | ID_075c52143 | 304731467 | 0 | 5 | 0 | 3 | 2.000000 | 2 |

## Columns pertaining to number and type of people in home

```python
# Columns pertaining to number and type of people in home. Columns 10-20, 23

#trainDF.loc[:, ["r4h1", "r4h2", "r4h3", "r4m1", "r4m2", "r4m3", "r4t1", "r4t2", "r4t3", "tamhog", "tamviv", "hhsize", "Target"]].iloc[0: 60]
#trainDF.loc[:, ["r4h1", "r4h2", "r4h3", "r4m1", "r4m2", "r4m3", "r4t1", "r4t2", "r4t3", "tamhog", "tamviv", "hhsize", "Target"]].iloc[60: 120]
#trainDF.loc[:, ["r4h1", "r4h2", "r4h3", "r4m1", "r4m2", "r4m3", "r4t1", "r4t2", "r4t3", "tamhog", "tamviv", "hhsize", "Target"]].iloc[1050: 1100]
trainDF.loc[:, ["Id", "idhogar", "r4h1", "r4h2", "r4h3", "r4m1", "r4m2", "r4m3", "r4t1", "r4t2", "r4t3", "tamhog", "tamviv", "hhsize", "Target"]].iloc[108
```

✓ 0.0s

| | Id | idhogar | r4h1 | r4h2 | r4h3 | r4m1 | r4m2 | r4m3 | r4t1 | r4t2 | r4t3 | tamhog | tamviv | hhsize | Target |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1086 | ID_30d6500c3 | 2e65e4af3 | 1 | 2 | 3 | 0 | 2 | 2 | 1 | 4 | 5 | 5 | 5 | 5 | 4 |
| 1087 | ID_4203fd5e2 | ee3d80cb6 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 2 |
| 1088 | ID_7c33c1884 | a0695cb68 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1089 | ID_77cce5b75 | 62c28e034 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 2 | 2 | 2 | 2 | 2 | 4 |
| 1090 | ID_df05b9e45 | 62c28e034 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 2 | 2 | 2 | 2 | 2 | 4 |
| 1091 | ID_3490fd704 | 8e284abd5 | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 3 | 3 | 3 | 10 | 3 | 4 |
| 1092 | ID_d82b1a426 | 8e284abd5 | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 3 | 3 | 3 | 10 | 3 | 4 |
| 1093 | ID_9d6957e8a | 8e284abd5 | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 3 | 3 | 3 | 10 | 3 | 4 |
| 1094 | ID_5038a636a | 304731467 | 0 | 3 | 3 | 1 | 2 | 3 | 1 | 5 | 6 | 6 | 6 | 6 | 2 |
| 1095 | ID_6c29eea22 | 304731467 | 0 | 3 | 3 | 1 | 2 | 3 | 1 | 5 | 6 | 6 | 6 | 6 | 2 |
| 1096 | ID_870ae3993 | 304731467 | 0 | 3 | 3 | 1 | 2 | 3 | 1 | 5 | 6 | 6 | 6 | 6 | 2 |
| 1097 | ID_00da43675 | 304731467 | 0 | 3 | 3 | 1 | 2 | 3 | 1 | 5 | 6 | 6 | 6 | 6 | 2 |
| 1098 | ID_22d124fdf | 304731467 | 0 | 3 | 3 | 1 | 2 | 3 | 1 | 5 | 6 | 6 | 6 | 6 | 2 |
| 1099 | ID_075c52143 | 304731467 | 0 | 3 | 3 | 1 | 2 | 3 | 1 | 5 | 6 | 6 | 6 | 6 | 2 |

## Columns pertaining to house material quality

```
. quality. Columns 24-31, 32-35, 37, 36

ızocalo", "paredpreb", "pareddes", "paredmad", "paredzinc", "paredfibras", "paredother", "pisomoscer", "pisocemento", "pisoother", "pisonatur", "pisomadera", "pisonotiene", "Target"]].iloc[0: 60]
ızocalo", "paredpreb", "pareddes", "paredmad", "paredzinc", "paredfibras", "paredother", "pisomoscer", "pisocemento", "pisoother", "pisonatur", "pisomadera", "pisonotiene", "Target"]].iloc[1050: 1100]
:dblolad", "paredzocalo", "paredpreb", "pareddes", "paredmad", "paredzinc", "paredfibras", "paredother", "pisomoscer", "pisocemento", "pisoother", "pisonatur", "pisomadera", "pisonotiene", "Target"]].iloc[1086: 1100]
```

07] ✓ 0.1s Python

| | Id | idhogar | paredblolad | paredzocalo | paredpreb | pareddes | paredmad | paredzinc | paredfibras | paredother | pisomoscer | pisocemento | pisoother | pisonatur | pisomadera | pisonotiene | Target |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1086 | ID_30d6500c3 | 2e65e4af3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 1087 | ID_4203fd5e2 | ee3d80cb6 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1088 | ID_7c33c1884 | a0695cb68 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 1089 | ID_77cce5b75 | 62c28e034 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| 1090 | ID_df05b9e45 | 62c28e034 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| 1091 | ID_3490fd704 | 8e284abd5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| 1092 | ID_d82b1a426 | 8e284abd5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| 1093 | ID_9d6957e8a | 8e284abd5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| 1094 | ID_5038a636a | 304731467 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1095 | ID_6c29eea22 | 304731467 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1096 | ID_870ae3993 | 304731467 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1097 | ID_00da43675 | 304731467 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1098 | ID_22d124fdf | 304731467 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1099 | ID_075c52143 | 304731467 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |

```
ıs pertaining to house material quality. Columns 38-41, 42, 65-67, 68-70, 71-73

:.loc[:, ["techozinc", "techoentrepiso", "techocane", "techootro", "cielorazo", "epared1", "epared2", "epared3", "etecho1", "etecho2", "etecho3", "eviv1", "eviv2", "eviv3", "Target"]].iloc[0: 60]
:.loc[:, ["techozinc", "techoentrepiso", "techocane", "techootro", "cielorazo", "epared1", "epared2", "epared3", "etecho1", "etecho2", "etecho3", "eviv1", "eviv2", "eviv3", "Target"]].iloc[1050: 1100]
loc[:, ["Id", "idhogar", "techozinc", "techoentrepiso", "techocane", "techootro", "cielorazo", "epared1", "epared2", "epared3", "etecho1", "etecho2", "etecho3", "eviv1", "eviv2", "eviv3", "Target"]].iloc[1086: 1100]
```

208] ✓ 0.1s Python

| | Id | idhogar | techozinc | techoentrepiso | techocane | techootro | cielorazo | epared1 | epared2 | epared3 | etecho1 | etecho2 | etecho3 | eviv1 | eviv2 | eviv3 | Target |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1086 | ID_30d6500c3 | 2e65e4af3 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 4 |
| 1087 | ID_4203fd5e2 | ee3d80cb6 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 2 |
| 1088 | ID_7c33c1884 | a0695cb68 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 1089 | ID_77cce5b75 | 62c28e034 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 4 |
| 1090 | ID_df05b9e45 | 62c28e034 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 4 |
| 1091 | ID_3490fd704 | 8e284abd5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 4 |
| 1092 | ID_d82b1a426 | 8e284abd5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 4 |
| 1093 | ID_9d6957e8a | 8e284abd5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 4 |
| 1094 | ID_5038a636a | 304731467 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 |
| 1095 | ID_6c29eea22 | 304731467 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 |
| 1096 | ID_870ae3993 | 304731467 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 |
| 1097 | ID_00da43675 | 304731467 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 |
| 1098 | ID_22d124fdf | 304731467 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 |
| 1099 | ID_075c52143 | 304731467 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 |

## Columns pertaining to necessary facilities and appliances for good life quality

```python
g to necessary facilities and appliances for good life quality. 7, 43-45, 46-49, 50-54
", "idhogar", "refrig", "abastaguadentro", "abastaguafuera", "abastaguano", "public", "planpri", "noelec", "coopele", "sanitario1", "sanitario2", "sanitario3", "sanitario5", "sanitario6", "Target"]].iloc[1086: 1100]
```

0.1s Python

| | Id | idhogar | refrig | abastaguadentro | abastaguafuera | abastaguano | public | planpri | noelec | coopele | sanitario1 | sanitario2 | sanitario3 | sanitario5 | sanitario6 | Target |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1086 | ID_30d6500c3 | 2e65e4af3 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |
| 1087 | ID_4203fd5e2 | ee3d80cb6 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 1088 | ID_7c33c1884 | a0695cb68 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 1089 | ID_77cce5b75 | 62c28e034 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| 1090 | ID_df05b9e45 | 62c28e034 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| 1091 | ID_3490fd704 | 8e284abd5 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| 1092 | ID_d82b1a426 | 8e284abd5 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| 1093 | ID_9d6957e8a | 8e284abd5 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| 1094 | ID_5038a636a | 304731467 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 1095 | ID_6c29eea22 | 304731467 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 1096 | ID_870ae3993 | 304731467 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 1097 | ID_00da43675 | 304731467 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 1098 | ID_22d124fdf | 304731467 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 1099 | ID_075c52143 | 304731467 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |

```python
# Columns pertaining to necessary facilities and appliances for good life quality. 55-58, 59-64
trainDF.loc[:, ["Id", "idhogar", "energcocinar1", "energcocinar2", "energcocinar3", "energcocinar4", "elimbasu1", "elimbasu2", "elimbasu3", "elimbasu4", "elimbasu5", "elimbasu6", "Target"]].iloc[1086: 1100]
```

[210] 0.1s Python

| | Id | idhogar | energcocinar1 | energcocinar2 | energcocinar3 | energcocinar4 | elimbasu1 | elimbasu2 | elimbasu3 | elimbasu4 | elimbasu5 | elimbasu6 | Target |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1086 | ID_30d6500c3 | 2e65e4af3 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 1087 | ID_4203fd5e2 | ee3d80cb6 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1088 | ID_7c33c1884 | a0695cb68 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 1089 | ID_77cce5b75 | 62c28e034 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 1090 | ID_df05b9e45 | 62c28e034 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 1091 | ID_3490fd704 | 8e284abd5 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 1092 | ID_d82b1a426 | 8e284abd5 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 1093 | ID_9d6957e8a | 8e284abd5 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 1094 | ID_5038a636a | 304731467 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1095 | ID_6c29eea22 | 304731467 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1096 | ID_870ae3993 | 304731467 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1097 | ID_00da43675 | 304731467 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1098 | ID_22d124fdf | 304731467 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1099 | ID_075c52143 | 304731467 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |

## Columns pertaining to education

```python
# Columns pertaining to education. Columns 21-22, 105-113
trainDF.loc[:, ["Id", "idhogar", "escolari", "rez_esc", "instlevel1", "instlevel2", "instlevel3", "instlevel4", "instlevel5", "instlevel6", "instlevel7", "instlevel8", "instlevel9", "Target"]].iloc[1086: 1100]
```

211] 0.1s Python

| | Id | idhogar | escolari | rez_esc | instlevel1 | instlevel2 | instlevel3 | instlevel4 | instlevel5 | instlevel6 | instlevel7 | instlevel8 | instlevel9 | Target |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1086 | ID_30d6500c3 | 2e65e4af3 | 9 | NaN | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 1087 | ID_4203fd5e2 | ee3d80cb6 | 7 | NaN | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1088 | ID_7c33c1884 | a0695cb68 | 16 | NaN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 1089 | ID_77cce5b75 | 62c28e034 | 3 | NaN | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 1090 | ID_df05b9e45 | 62c28e034 | 2 | NaN | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 1091 | ID_3490fd704 | 8e284abd5 | 11 | NaN | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |
| 1092 | ID_d82b1a426 | 8e284abd5 | 9 | NaN | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |
| 1093 | ID_9d6957e8a | 8e284abd5 | 11 | NaN | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| 1094 | ID_5038a636a | 304731467 | 7 | NaN | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1095 | ID_6c29eea22 | 304731467 | 0 | NaN | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1096 | ID_870ae3993 | 304731467 | 6 | NaN | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1097 | ID_00da43675 | 304731467 | 5 | 0.0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1098 | ID_22d124fdf | 304731467 | 8 | NaN | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1099 | ID_075c52143 | 304731467 | 8 | NaN | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |

## Columns pertaining to household heads

```python
# Columns pertaining to household heads. Columns 102-104, 77-83

trainDF.loc[:, ["Id", "idhogar", "edjefe", "edjefa", "meaneduc", "estadocivil1", "estadocivil2", "estadocivil3", "estadocivil4", "estadocivil5", "estadocivil6", "estadocivil7", "Target"]].iloc[1086: 1100]
```

[212] ✓ 0.1s Python

| | Id | idhogar | edjefe | edjefa | meaneduc | estadocivil1 | estadocivil2 | estadocivil3 | estadocivil4 | estadocivil5 | estadocivil6 | estadocivil7 | Target |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1086 | ID_30d6500c3 | 2e65e4af3 | 11 | no | 9.250000 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |
| 1087 | ID_4203fd5e2 | ee3d80cb6 | 7 | no | 7.000000 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 1088 | ID_7c33c1884 | a0695cb68 | no | 16 | 16.000000 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 1089 | ID_77cce5b75 | 62c28e034 | no | 2 | 2.500000 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| 1090 | ID_df05b9e45 | 62c28e034 | no | 2 | 2.500000 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |
| 1091 | ID_3490fd704 | 8e284abd5 | no | 9 | 10.333333 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 1092 | ID_d82b1a426 | 8e284abd5 | no | 9 | 10.333333 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |
| 1093 | ID_9d6957e8a | 8e284abd5 | no | 9 | 10.333333 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 1094 | ID_5038a636a | 304731467 | 8 | no | 14.500000 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| 1095 | ID_6c29eea22 | 304731467 | 8 | no | 14.500000 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1096 | ID_870ae3993 | 304731467 | 8 | no | 14.500000 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 1097 | ID_00da43675 | 304731467 | 8 | no | 14.500000 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| 1098 | ID_22d124fdf | 304731467 | 8 | no | 14.500000 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| 1099 | ID_075c52143 | 304731467 | 8 | no | 14.500000 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |

## Columns pertaining to home location

```python
# Columns pertaining to household heads. Columns 125-130, 131-132

trainDF.loc[:, ["Id", "idhogar", "lugar1", "lugar2", "lugar3", "lugar4", "lugar5", "lugar6", "area1", "area2", "Target"]].iloc[1086: 1100]
```

[213] ✓ 0.0s

| | Id | idhogar | lugar1 | lugar2 | lugar3 | lugar4 | lugar5 | lugar6 | area1 | area2 | Target |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1086 | ID_30d6500c3 | 2e65e4af3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 |
| 1087 | ID_4203fd5e2 | ee3d80cb6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 |
| 1088 | ID_7c33c1884 | a0695cb68 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 1089 | ID_77cce5b75 | 62c28e034 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 |
| 1090 | ID_df05b9e45 | 62c28e034 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 |
| 1091 | ID_3490fd704 | 8e284abd5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 |
| 1092 | ID_d82b1a426 | 8e284abd5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 |
| 1093 | ID_9d6957e8a | 8e284abd5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 |
| 1094 | ID_5038a636a | 304731467 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 |
| 1095 | ID_6c29eea22 | 304731467 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 |
| 1096 | ID_870ae3993 | 304731467 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 |
| 1097 | ID_00da43675 | 304731467 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 |
| 1098 | ID_22d124fdf | 304731467 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 |
| 1099 | ID_075c52143 | 304731467 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 |

## Columns pertaining to electronics

```python
# Columns pertaining to household heads. Columns 121-124, 8-9

trainDF.loc[:, ["Id", "idhogar", "computer", "television", "mobilephone", "qmobilephone", "v18q", "v18q1", "Target"]].iloc[1086: 1100]
```

[214] ✓ 0.1s

| | Id | idhogar | computer | television | mobilephone | qmobilephone | v18q | v18q1 | Target |
|---|---|---|---|---|---|---|---|---|---|
| 1086 | ID_30d6500c3 | 2e65e4af3 | 0 | 0 | 1 | 7 | 1 | 1.0 | 4 |
| 1087 | ID_4203fd5e2 | ee3d80cb6 | 0 | 1 | 1 | 1 | 0 | NaN | 2 |
| 1088 | ID_7c33c1884 | a0695cb68 | 0 | 0 | 1 | 1 | 0 | NaN | 1 |
| 1089 | ID_77cce5b75 | 62c28e034 | 0 | 0 | 0 | 0 | 0 | NaN | 4 |
| 1090 | ID_df05b9e45 | 62c28e034 | 0 | 0 | 0 | 0 | 0 | NaN | 4 |
| 1091 | ID_3490fd704 | 8e284abd5 | 0 | 1 | 1 | 6 | 0 | NaN | 4 |
| 1092 | ID_d82b1a426 | 8e284abd5 | 0 | 1 | 1 | 6 | 0 | NaN | 4 |
| 1093 | ID_9d6957e8a | 8e284abd5 | 0 | 1 | 1 | 6 | 0 | NaN | 4 |
| 1094 | ID_5038a636a | 304731467 | 0 | 0 | 1 | 4 | 1 | 1.0 | 2 |
| 1095 | ID_6c29eea22 | 304731467 | 0 | 0 | 1 | 4 | 1 | 1.0 | 2 |
| 1096 | ID_870ae3993 | 304731467 | 0 | 0 | 1 | 4 | 1 | 1.0 | 2 |
| 1097 | ID_00da43675 | 304731467 | 0 | 0 | 1 | 4 | 1 | 1.0 | 2 |
| 1098 | ID_22d124fdf | 304731467 | 0 | 0 | 1 | 4 | 1 | 1.0 | 2 |
| 1099 | ID_075c52143 | 304731467 | 0 | 0 | 1 | 4 | 1 | 1.0 | 2 |

```python
# If all familes have the same poverty level, this value should be 1.0
print(sumofNormAverages / len(homeList))
```

✓ 3.6s Python

```
1.0009487746561039
```

```python
# Output the list of homes with inconsistent poverty levels. Output its length, too
print(len(inconsistentPovertyHomes))
print(inconsistentPovertyHomes)
```

✓ 0.5s Python

```
85
['4b6077882', '6833ac5dc', '43b9c83e5', '5c3f7725d', '0f9494d3a', 'daafc1281', '73d85d05d', 'bcaa2e2f5', '44f219a16', 'efd3aec61', '3c6973219', '0511912b6', 'f006348ed', 'a20ff33ba', '5e9329fc6', 'e65d4b943', '42ec8bef5',
'6bcf799cf', '26b3a0f41', '4dc11e11f', '594d3eb27', 'd9b1558b5', '7ea6aca15', '8bb6da3c1', '3df651058', '811a35744', '2cb443214', 'bcab69521', '694a0cbf4', '3fe29a56b', '636330516', '288579c97', '15a891635', '6a389f3de',
'a3288e6fa', '4e19bd549', '80a66379b', '5c6f32bbc', '932287f5d', 'bd82509d1', '614b48fb7', '46af47063', '6c543442a', '410194c8b', '417865404', 'f7b421c2c', '67ad49822', '17fb04a62', 'c38913488', '513adb616', 'dfb966eec',
'30a70901d', '18832b840', '7c57f8237', 'c13325faf', '54118d5d9', '0f3e65c83', '03f4e5f4d', '8ae3e74ca', '309fb7246', '09e25d616', '564eab113', '8242a51ec', '0172ab1d9', 'a94a45642', 'be91da044', '50e064ee8', '4c2dba109',
'7ad269eef', '3c73c107f', '55a662731', 'e17b252ed', '078a0b6e2', '28893b5e7', 'd64524b6b', '2c9872b82', 'f94589d38', '8420bcfca', '71cd52a80', '654ef7612', 'cc971b690', '7e9d58c5c', 'e235a4eec', 'c7ce4e30c', '9bbf7c6ca']
```

```python
# Print the list of families without heads
print(len(familiesWOutHeads))
print(familiesWOutHeads)
```

[223] ✓ 0.0s Python

```
15
['09b195e7a', '896fe6d3e', '61c10e099', '374ca5a19', 'bfd5067c2', '1367ab31d', '6b1b2405f', 'f2bfa75c4', '03c6bdf85', 'ad687ad89', 'b1f4d89d7', 'c0c8a5013', 'a0812ef17', 'd363d9183', '1bc617b23']
```

```python
# We must fill all the NaN values in the dataset. First, determine which columns have NaN values.

for column in X.columns:
    if(X[column].isna().any() == True):
        print(column)
```

✓ 0.1s

```
v2a1
v18q1
rez_esc
meaneduc
SQBmeaned
```

```python
rf_class = RandomForestClassifier(n_estimators = 10)
```

[242] ✓ 0.0s

```python
# Use cross validation with 10 interations???? This is where the random forest classifier comes into play
cvResult = cross_val_score(rf_class, dataInput, dataOutput, scoring = "accuracy", cv = 10)
print(cvResult)
```

[243] ✓ 2.4s

```
[0.61192469 0.64330544 0.67154812 0.61610879 0.64330544 0.62970711
 0.56171548 0.51623037 0.49842932 0.55287958]
```

```python
# Check how accurate the cross-validation result is in terms of a percentage.
accuracy = cvResult.mean() * 100
print("Accuracy of the random forest classifier is ", accuracy)
```

[244] ✓ 0.0s

```
Accuracy of the random forest classifier is  59.45154329777213
```