

Copy of Exploratory

November 6, 2022

```
[1]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import warnings
import seaborn as sns

warnings.filterwarnings('ignore')
```

```
[2]: #df = pd.read_csv(r'/2021_OPM_FEVS_PRDF.csv')
df = pd.read_csv(r'/home/brady/dataBC/code-2022/2022Project/FEVS2021_PRDF_CSV/
↳2021_OPM_FEVS_PRDF.csv')
## Checking if there are any duplicate values
df
```

```
[2]:
```

| | RandomID | agency | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | ... | DRNO | DHISP | \ |
|--------|--------------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|-----|
| 0 | 112970976817 | XX | 5.0 | 5.0 | 5.0 | 5.0 | 5 | 4 | 4 | 4 | ... | A | B | |
| 1 | 194868625278 | XX | 3.0 | 2.0 | 4.0 | 3.0 | 4 | 2 | 4 | 2 | ... | NaN | A | |
| 2 | 152966380283 | XX | 5.0 | 5.0 | 4.0 | 4.0 | 3 | 4 | 5 | 4 | ... | B | B | |
| 3 | 193041162980 | XX | 5.0 | 5.0 | 5.0 | 5.0 | 5 | 5 | 5 | 5 | ... | B | B | |
| 4 | 146655962451 | XX | 4.0 | 5.0 | 5.0 | 4.0 | 4 | 3 | 5 | 4 | ... | B | B | |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 292515 | 154057939422 | ST | 3.0 | 4.0 | 4.0 | 3.0 | 4 | 4 | 2 | 4 | ... | B | B | |
| 292516 | 151758964104 | ST | 3.0 | 4.0 | 2.0 | 4.0 | 2 | 2 | 3 | 3 | ... | B | B | |
| 292517 | 143492802997 | ST | 3.0 | 3.0 | NaN | 4.0 | 4 | 4 | 4 | 3 | ... | NaN | NaN | |
| 292518 | 110267537558 | ST | 2.0 | 4.0 | 5.0 | 5.0 | 2 | 1 | 5 | 4 | ... | B | B | |
| 292519 | 153195177928 | ST | 4.0 | 4.0 | 5.0 | 5.0 | 4 | 3 | 5 | 4 | ... | B | B | |

| | DDIS | DAGEGRP | DSUPER | DFEDTEN | DSEX | DMIL | DLEAVING | POSTWT |
|--------|------|---------|--------|---------|------|------|----------|----------|
| 0 | B | B | B | A | A | A | A | 2.209652 |
| 1 | B | B | B | B | A | A | C | 2.209652 |
| 2 | B | B | A | B | A | B | C | 1.858874 |
| 3 | A | B | B | B | A | A | A | 1.228573 |
| 4 | B | B | B | B | A | A | A | 1.735842 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 292515 | B | A | A | A | B | B | A | 3.004992 |
| 292516 | B | A | A | A | B | B | D | 4.427855 |
| 292517 | NaN | NaN | NaN | A | A | NaN | A | 4.202227 |

| | | | | | | | | |
|--------|---|---|---|---|---|---|---|----------|
| 292518 | B | A | A | A | B | B | C | 3.523113 |
| 292519 | A | B | A | A | A | B | A | 3.400784 |

[292520 rows x 79 columns]

```
[3]: df.drop_duplicates() ##dropping all the duplicate values
      print()
      print(df.info()) ##checking the data types of every column
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 292520 entries, 0 to 292519
Data columns (total 79 columns):
 #   Column      Non-Null Count  Dtype
---  -
 0   RandomID    292520 non-null  int64
 1   agency      292520 non-null  object
 2   Q1          291074 non-null  float64
 3   Q2          288624 non-null  float64
 4   Q3          290112 non-null  float64
 5   Q4          291324 non-null  float64
 6   Q5          290770 non-null  object
 7   Q6          286449 non-null  object
 8   Q7          290240 non-null  object
 9   Q8          291451 non-null  object
10  Q9          291910 non-null  float64
11  Q10         292038 non-null  object
12  Q11         292018 non-null  object
13  Q12         291755 non-null  object
14  Q13         291920 non-null  object
15  Q14         291306 non-null  object
16  Q15         288257 non-null  object
17  Q16         290367 non-null  object
18  Q17         290268 non-null  object
19  Q18         291274 non-null  object
20  Q19         291402 non-null  object
21  Q20         289926 non-null  object
22  Q21         290110 non-null  object
23  Q22         290350 non-null  object
24  Q23         289942 non-null  float64
25  Q24         290169 non-null  object
26  Q25         289267 non-null  object
27  Q26         288926 non-null  object
28  Q27         289019 non-null  object
29  Q28         287561 non-null  float64
30  Q29         287462 non-null  float64
31  Q30         287369 non-null  float64
```

| | | | | |
|----|----------|--------|----------|---------|
| 32 | Q31 | 288152 | non-null | float64 |
| 33 | Q32 | 286521 | non-null | object |
| 34 | Q33 | 285246 | non-null | object |
| 35 | Q34 | 285497 | non-null | object |
| 36 | Q35 | 285918 | non-null | object |
| 37 | Q36 | 285299 | non-null | object |
| 38 | Q37 | 285213 | non-null | object |
| 39 | Q38 | 285251 | non-null | object |
| 40 | Q39 | 283445 | non-null | float64 |
| 41 | Q40 | 282267 | non-null | float64 |
| 42 | Q41 | 282219 | non-null | float64 |
| 43 | Q42 | 281587 | non-null | float64 |
| 44 | Q43 | 282840 | non-null | float64 |
| 45 | Q44 | 283310 | non-null | float64 |
| 46 | Q45 | 283136 | non-null | float64 |
| 47 | Q46 | 282920 | non-null | float64 |
| 48 | Q47_01 | 279206 | non-null | float64 |
| 49 | Q47_02 | 277687 | non-null | float64 |
| 50 | Q47_03 | 276577 | non-null | float64 |
| 51 | Q47_04 | 277660 | non-null | float64 |
| 52 | Q47_05 | 279221 | non-null | float64 |
| 53 | Q47_06 | 278977 | non-null | float64 |
| 54 | Q47_07 | 279162 | non-null | float64 |
| 55 | Q47_08 | 279571 | non-null | float64 |
| 56 | Q47_09 | 279786 | non-null | float64 |
| 57 | Q47_10 | 278113 | non-null | float64 |
| 58 | Q47_11 | 277685 | non-null | float64 |
| 59 | Q48 | 280356 | non-null | object |
| 60 | Q49 | 279335 | non-null | object |
| 61 | Q50 | 278898 | non-null | object |
| 62 | Q51 | 280182 | non-null | object |
| 63 | Q52 | 279772 | non-null | object |
| 64 | Q53 | 279702 | non-null | object |
| 65 | Q54 | 280570 | non-null | float64 |
| 66 | Q55 | 279820 | non-null | object |
| 67 | Q56 | 279481 | non-null | object |
| 68 | Q57 | 279607 | non-null | object |
| 69 | DRNO | 240635 | non-null | object |
| 70 | DHISP | 253732 | non-null | object |
| 71 | DDIS | 258336 | non-null | object |
| 72 | DAGEGRP | 260285 | non-null | object |
| 73 | DSUPER | 272402 | non-null | object |
| 74 | DFEDTEN | 272112 | non-null | object |
| 75 | DSEX | 260998 | non-null | object |
| 76 | DMIL | 272565 | non-null | object |
| 77 | DLEAVING | 273309 | non-null | object |
| 78 | POSTWT | 292520 | non-null | float64 |

dtypes: float64(31), int64(1), object(47)

memory usage: 176.3+ MB
None

```
[4]: ## There are certain variables which should be nature but they are not because  
    ↪some of the entries have string value.  
df_c = df.copy()  
objects= [column for column, is_type in (df_c.dtypes=="object").items() if  
    ↪is_type] ## Extracting out all the value which should be integar but is not  
## The column 'agency' holds no significance here so it is to be dropped.  
objects.remove('agency')  
for i in objects:  
    df_c[i] = df_c[i].replace(['X'], np.nan)  
    df_c[i] = df_c[i].replace(np.nan, 0)  
df_c.isnull().sum().sum()
```

[4]: 276131

```
[5]: objects[:-9]  
for i in objects[:-9]:  
    df_c[i] = df_c[i].astype(float)  
df_c.info()
```

```
<class 'pandas.core.frame.DataFrame'>  
RangeIndex: 292520 entries, 0 to 292519  
Data columns (total 79 columns):  
#   Column      Non-Null Count  Dtype  
---  -  
0   RandomID    292520 non-null  int64  
1   agency      292520 non-null  object  
2   Q1          291074 non-null  float64  
3   Q2          288624 non-null  float64  
4   Q3          290112 non-null  float64  
5   Q4          291324 non-null  float64  
6   Q5          292520 non-null  float64  
7   Q6          292520 non-null  float64  
8   Q7          292520 non-null  float64  
9   Q8          292520 non-null  float64  
10  Q9          291910 non-null  float64  
11  Q10         292520 non-null  float64  
12  Q11         292520 non-null  float64  
13  Q12         292520 non-null  float64  
14  Q13         292520 non-null  float64  
15  Q14         292520 non-null  float64  
16  Q15         292520 non-null  float64  
17  Q16         292520 non-null  float64  
18  Q17         292520 non-null  float64  
19  Q18         292520 non-null  float64  
20  Q19         292520 non-null  float64
```

| | | | | |
|----|--------|--------|----------|---------|
| 21 | Q20 | 292520 | non-null | float64 |
| 22 | Q21 | 292520 | non-null | float64 |
| 23 | Q22 | 292520 | non-null | float64 |
| 24 | Q23 | 289942 | non-null | float64 |
| 25 | Q24 | 292520 | non-null | float64 |
| 26 | Q25 | 292520 | non-null | float64 |
| 27 | Q26 | 292520 | non-null | float64 |
| 28 | Q27 | 292520 | non-null | float64 |
| 29 | Q28 | 287561 | non-null | float64 |
| 30 | Q29 | 287462 | non-null | float64 |
| 31 | Q30 | 287369 | non-null | float64 |
| 32 | Q31 | 288152 | non-null | float64 |
| 33 | Q32 | 292520 | non-null | float64 |
| 34 | Q33 | 292520 | non-null | float64 |
| 35 | Q34 | 292520 | non-null | float64 |
| 36 | Q35 | 292520 | non-null | float64 |
| 37 | Q36 | 292520 | non-null | float64 |
| 38 | Q37 | 292520 | non-null | float64 |
| 39 | Q38 | 292520 | non-null | float64 |
| 40 | Q39 | 283445 | non-null | float64 |
| 41 | Q40 | 282267 | non-null | float64 |
| 42 | Q41 | 282219 | non-null | float64 |
| 43 | Q42 | 281587 | non-null | float64 |
| 44 | Q43 | 282840 | non-null | float64 |
| 45 | Q44 | 283310 | non-null | float64 |
| 46 | Q45 | 283136 | non-null | float64 |
| 47 | Q46 | 282920 | non-null | float64 |
| 48 | Q47_01 | 279206 | non-null | float64 |
| 49 | Q47_02 | 277687 | non-null | float64 |
| 50 | Q47_03 | 276577 | non-null | float64 |
| 51 | Q47_04 | 277660 | non-null | float64 |
| 52 | Q47_05 | 279221 | non-null | float64 |
| 53 | Q47_06 | 278977 | non-null | float64 |
| 54 | Q47_07 | 279162 | non-null | float64 |
| 55 | Q47_08 | 279571 | non-null | float64 |
| 56 | Q47_09 | 279786 | non-null | float64 |
| 57 | Q47_10 | 278113 | non-null | float64 |
| 58 | Q47_11 | 277685 | non-null | float64 |
| 59 | Q48 | 292520 | non-null | float64 |
| 60 | Q49 | 292520 | non-null | float64 |
| 61 | Q50 | 292520 | non-null | float64 |
| 62 | Q51 | 292520 | non-null | float64 |
| 63 | Q52 | 292520 | non-null | float64 |
| 64 | Q53 | 292520 | non-null | float64 |
| 65 | Q54 | 280570 | non-null | float64 |
| 66 | Q55 | 292520 | non-null | float64 |
| 67 | Q56 | 292520 | non-null | float64 |
| 68 | Q57 | 292520 | non-null | float64 |

```

69 DRNO      292520 non-null object
70 DHISP     292520 non-null object
71 DDIS      292520 non-null object
72 DAGEGRP   292520 non-null object
73 DSUPER    292520 non-null object
74 DFEDTEN   292520 non-null object
75 DSEX      292520 non-null object
76 DMIL      292520 non-null object
77 DLEAVING  292520 non-null object
78 POSTWT    292520 non-null float64
dtypes: float64(68), int64(1), object(10)
memory usage: 176.3+ MB

```

```

[6]: df_c = df_c.dropna()
df_c.isnull().sum().sum() ##-> No missing values found in the dataset

```

```
[6]: 0
```

```

[7]: print('The number of survey entries altered:',df.shape[0]-df_c.shape[0])
print('The percentage of alterations from the original dataset is: ',round(((df.
↪shape[0]-df_c.shape[0])/(df.shape[0])),2)*100,'%')

```

The number of survey entries altered: 54401

The percentage of alterations from the original dataset is: 19.0 %

```

[8]: #check
df_ca = df_c.copy()
for i in df_ca.columns.values:
    df_ca[i] = df_ca[i].replace(0,df_ca[i].value_counts().idxmax())

df_ca.head(20)

```

```

[8]:      RandomID agency  Q1  Q2  Q3  Q4  Q5  Q6  Q7  Q8  ... DRNO  \
0   112970976817    XX  5.0  5.0  5.0  5.0  5.0  4.0  4.0  4.0  ...    A
2   152966380283    XX  5.0  5.0  4.0  4.0  3.0  4.0  5.0  4.0  ...    B
3   193041162980    XX  5.0  5.0  5.0  5.0  5.0  5.0  5.0  5.0  ...    B
4   146655962451    XX  4.0  5.0  5.0  4.0  4.0  3.0  5.0  4.0  ...    B
5   195312241136    XX  4.0  3.0  4.0  4.0  4.0  4.0  4.0  3.0  ...    A
6   187815423862    XX  5.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0  ...    B
7   174698178690    XX  1.0  1.0  2.0  1.0  3.0  1.0  2.0  2.0  ...    B
9   138139604049    XX  4.0  4.0  5.0  4.0  4.0  4.0  4.0  4.0  ...    B
10  172119452278    XX  4.0  4.0  4.0  4.0  5.0  4.0  4.0  4.0  ...    B
11  102302785265    XX  4.0  3.0  4.0  4.0  3.0  4.0  4.0  3.0  ...    B
12  135019931353    XX  4.0  4.0  5.0  5.0  2.0  2.0  4.0  4.0  ...    B
13  105078979724    XX  2.0  3.0  3.0  4.0  1.0  2.0  4.0  3.0  ...    B
14  139579921467    XX  4.0  5.0  5.0  5.0  5.0  5.0  5.0  5.0  ...    B
15  146904434378    XX  1.0  1.0  5.0  1.0  4.0  2.0  5.0  5.0  ...    B

```

| | | | | | | | | | | | | |
|----|--------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| 16 | 161966059804 | XX | 4.0 | 5.0 | 3.0 | 4.0 | 4.0 | 4.0 | 4.0 | 5.0 | ... | B |
| 17 | 143546472323 | XX | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | ... | B |
| 18 | 186289810894 | XX | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | ... | B |
| 20 | 104701506907 | XX | 5.0 | 5.0 | 5.0 | 5.0 | 2.0 | 5.0 | 5.0 | 4.0 | ... | B |
| 21 | 191607232108 | XX | 2.0 | 3.0 | 5.0 | 5.0 | 2.0 | 4.0 | 3.0 | 2.0 | ... | B |
| 23 | 102384121624 | XX | 3.0 | 4.0 | 4.0 | 4.0 | 5.0 | 4.0 | 4.0 | 2.0 | ... | B |

| | DHISP | DDIS | DAGEGRP | DSUPER | DFEDTEN | DSEX | DMIL | DLEAVING | POSTWT |
|----|-------|------|---------|--------|---------|------|------|----------|----------|
| 0 | B | B | B | B | A | A | A | A | 2.209652 |
| 2 | B | B | B | A | B | A | B | C | 1.858874 |
| 3 | B | A | B | B | B | A | A | A | 1.228573 |
| 4 | B | B | B | B | B | A | A | A | 1.735842 |
| 5 | B | B | B | A | B | B | A | A | 2.076046 |
| 6 | B | B | B | B | B | A | A | A | 1.858874 |
| 7 | B | B | B | A | B | B | B | C | 1.089288 |
| 9 | B | A | B | B | A | A | A | A | 1.228573 |
| 10 | B | B | B | B | C | A | A | A | 1.735842 |
| 11 | B | B | B | B | B | A | A | A | 1.228573 |
| 12 | B | B | B | B | B | B | B | A | 1.089288 |
| 13 | B | B | B | B | A | A | B | C | 2.209652 |
| 14 | B | B | B | A | A | A | B | A | 1.735842 |
| 15 | B | B | B | A | B | A | A | C | 2.209652 |
| 16 | B | A | A | A | A | A | A | A | 2.010048 |
| 17 | B | B | B | B | A | B | A | A | 1.184402 |
| 18 | B | B | B | B | A | B | A | A | 1.255264 |
| 20 | B | B | B | A | B | B | B | A | 1.184402 |
| 21 | B | B | B | B | B | A | A | C | 1.735842 |
| 23 | A | B | B | A | A | B | B | A | 1.020346 |

[20 rows x 79 columns]

```
[9]: df_ca['DLEAVING'].value_counts()
```

```
[9]: A    160269
      C     36912
      B     29899
      D     11039
      Name: DLEAVING, dtype: int64
```

```
[10]: df_ca.loc[df_ca.DLEAVING=='C']
```

```
[10]:      RandomID agency  Q1  Q2  Q3  Q4  Q5  Q6  Q7  Q8  ...  \
2      152966380283   XX  5.0  5.0  4.0  4.0  3.0  4.0  5.0  4.0  ...
7      174698178690   XX  1.0  1.0  2.0  1.0  3.0  1.0  2.0  2.0  ...
13     105078979724   XX  2.0  3.0  3.0  4.0  1.0  2.0  4.0  3.0  ...
15     146904434378   XX  1.0  1.0  5.0  1.0  4.0  2.0  5.0  5.0  ...
21     191607232108   XX  2.0  3.0  5.0  5.0  2.0  4.0  3.0  2.0  ...
```

```

...
292401 149388396809 ST 4.0 4.0 4.0 4.0 2.0 2.0 2.0 4.0 ...
292435 183028010363 ST 2.0 2.0 2.0 2.0 2.0 2.0 4.0 3.0 ...
292440 148021669661 ST 4.0 4.0 3.0 4.0 1.0 4.0 4.0 5.0 ...
292486 185461910015 ST 1.0 2.0 1.0 3.0 4.0 1.0 5.0 1.0 ...
292518 110267537558 ST 2.0 4.0 5.0 5.0 2.0 1.0 5.0 4.0 ...

DRNO DHISP DDIS DAGEGRP DSUPER DFEDTEN DSEX DMIL DLEAVING \
2 B B B B A B A B C
7 B B B B A B B B C
13 B B B B B A A B C
15 B B B B A B A A C
21 B B B B B B A A C
...
292401 B B B A B A A B C
292435 B B B A B B B B C
292440 B A B A A A B B C
292486 A B B A B A B B C
292518 B B B A A A B B C

POSTWT
2 1.858874
7 1.089288
13 2.209652
15 2.209652
21 1.735842
...
292401 3.957027
292435 2.705716
292440 1.955644
292486 4.662723
292518 3.523113

```

[36912 rows x 79 columns]

```

[12]: df_ca_c = df_ca.loc[df_ca.DLEAVING=='C']

cols = df_ca_c.columns[2:45]
objects = [column for column, is_type in (df_ca_c.dtypes=="float").items() if
    is_type]

for i in objects:
    plt.figure(figsize=(20,40))
    sns.countplot(data=df_ca_c[cols],y=df_ca_c['agency'],hue=i)
    plt.plot()

plt.savefig("dLeavingB.png")

```



```

-----
ValueError                                Traceback (most recent call last)
Input In [12], in <cell line: 6>()
      6 for i in objects:
      7     plt.figure(figsize=(20,40))
----> 8     sns.countplot(data=df_ca_c[cols],y=df_ca_c['agency'],hue=i)
      9     plt.plot()
     11 plt.savefig("dLeavingB.png")

File ~/anaconda3/envs/my-conda-env/lib/python3.10/site-packages/seaborn/
  _decorators.py:46, in _deprecate_positional_args.<locals>.inner_f(*args,
  **kwargs)
      36     warnings.warn(
      37         "Pass the following variable{} as {}keyword arg{}: {}". "
      38         "From version 0.12, the only valid positional argument "
      (...)
      43     FutureWarning
      44 )
      45 kwargs.update({k: arg for k, arg in zip(sig.parameters, args)})
--> 46 return f(**kwargs)

File ~/anaconda3/envs/my-conda-env/lib/python3.10/site-packages/seaborn/
  categorical.py:3598, in countplot(x, y, hue, data, order, hue_order, orient,
  color, palette, saturation, dodge, ax, **kwargs)
     3595 elif x is not None and y is not None:
     3596     raise ValueError("Cannot pass values for both `x` and `y`")
-> 3598 plotter = _CountPlotter(
     3599     x, y, hue, data, order, hue_order,
     3600     estimator, ci, n_boot, units, seed,
     3601     orient, color, palette, saturation,
     3602     errcolor, errwidth, capsize, dodge
     3603 )
     3605 plotter.value_label = "count"
     3607 if ax is None:

File ~/anaconda3/envs/my-conda-env/lib/python3.10/site-packages/seaborn/
  categorical.py:1584, in _BarPlotter.__init__(self, x, y, hue, data, order,
  hue_order, estimator, ci, n_boot, units, seed, orient, color, palette,
  saturation, errcolor, errwidth, capsize, dodge)
     1579 def __init__(self, x, y, hue, data, order, hue_order,
     1580                 estimator, ci, n_boot, units, seed,
     1581                 orient, color, palette, saturation, errcolor,
     1582                 errwidth, capsize, dodge):
     1583     """Initialize the plotter."""
-> 1584     self.establish_variables(x, y, hue, data, orient,
     1585                             order, hue_order, units)
     1586     self.establish_colors(color, palette, saturation)
     1587     self.estimate_statistic(estimator, ci, n_boot, seed)

```

```

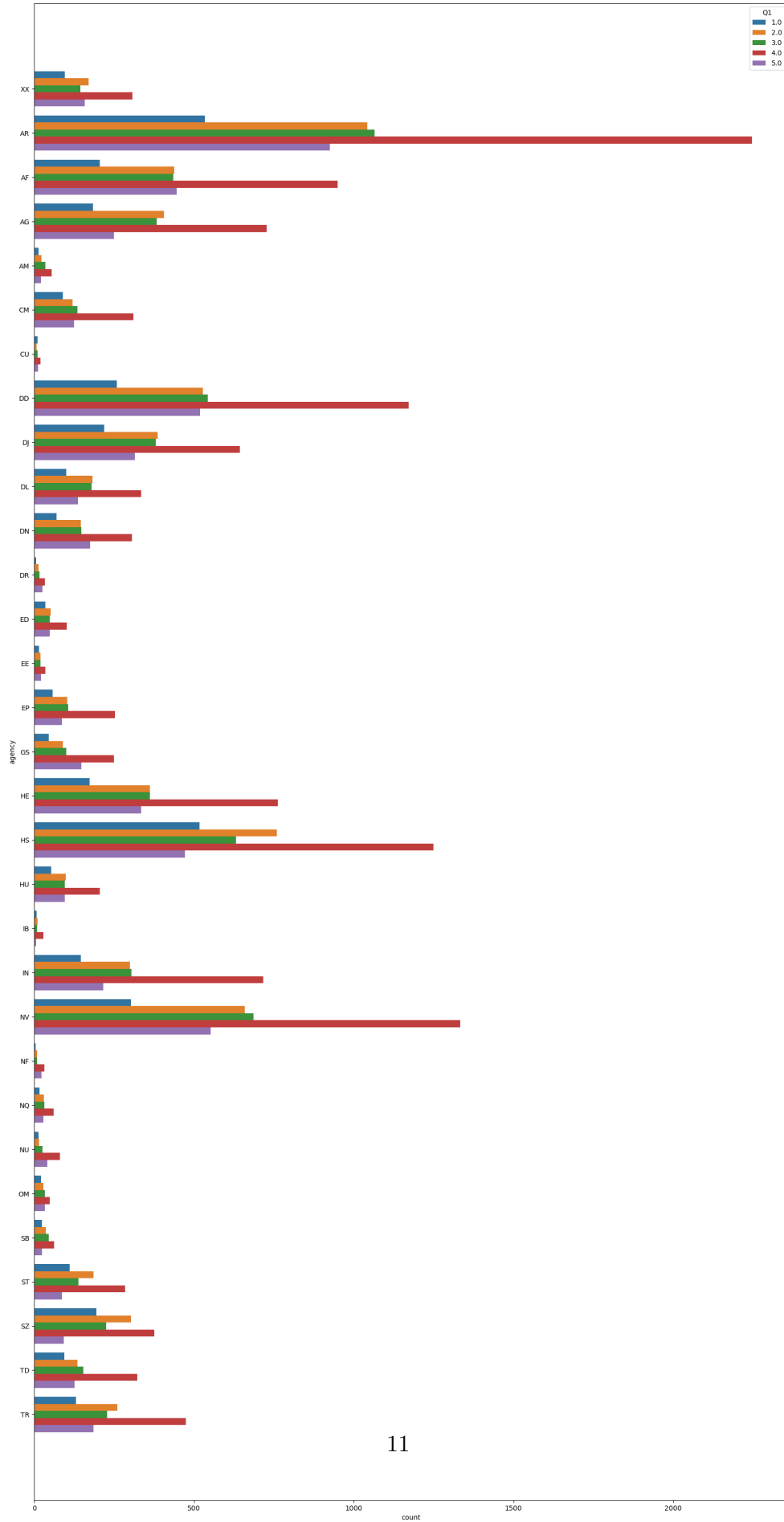
File ~/anaconda3/envs/my-conda-env/lib/python3.10/site-packages/seaborn/
↪categorical.py:153, in _CategoricalPlotter.establish_variables(self, x, y,
↪hue, data, orient, order, hue_order, units)
    151     if isinstance(var, str):
    152         err = "Could not interpret input '{}'.format(var)
--> 153         raise ValueError(err)
    155 # Figure out the plotting orientation
    156 orient = infer_orient(
    157     x, y, orient, require_numeric=self.require_numeric
    158 )

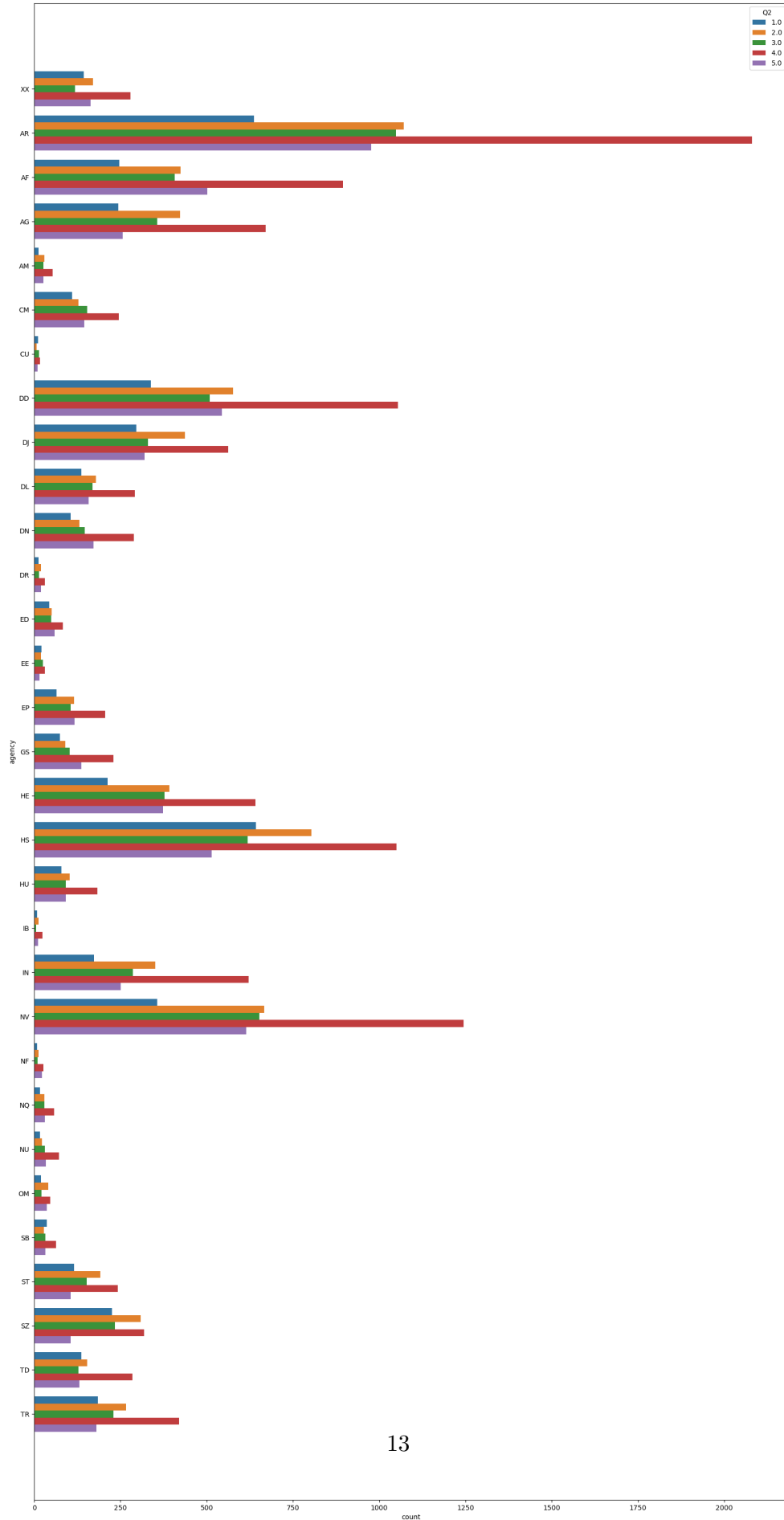
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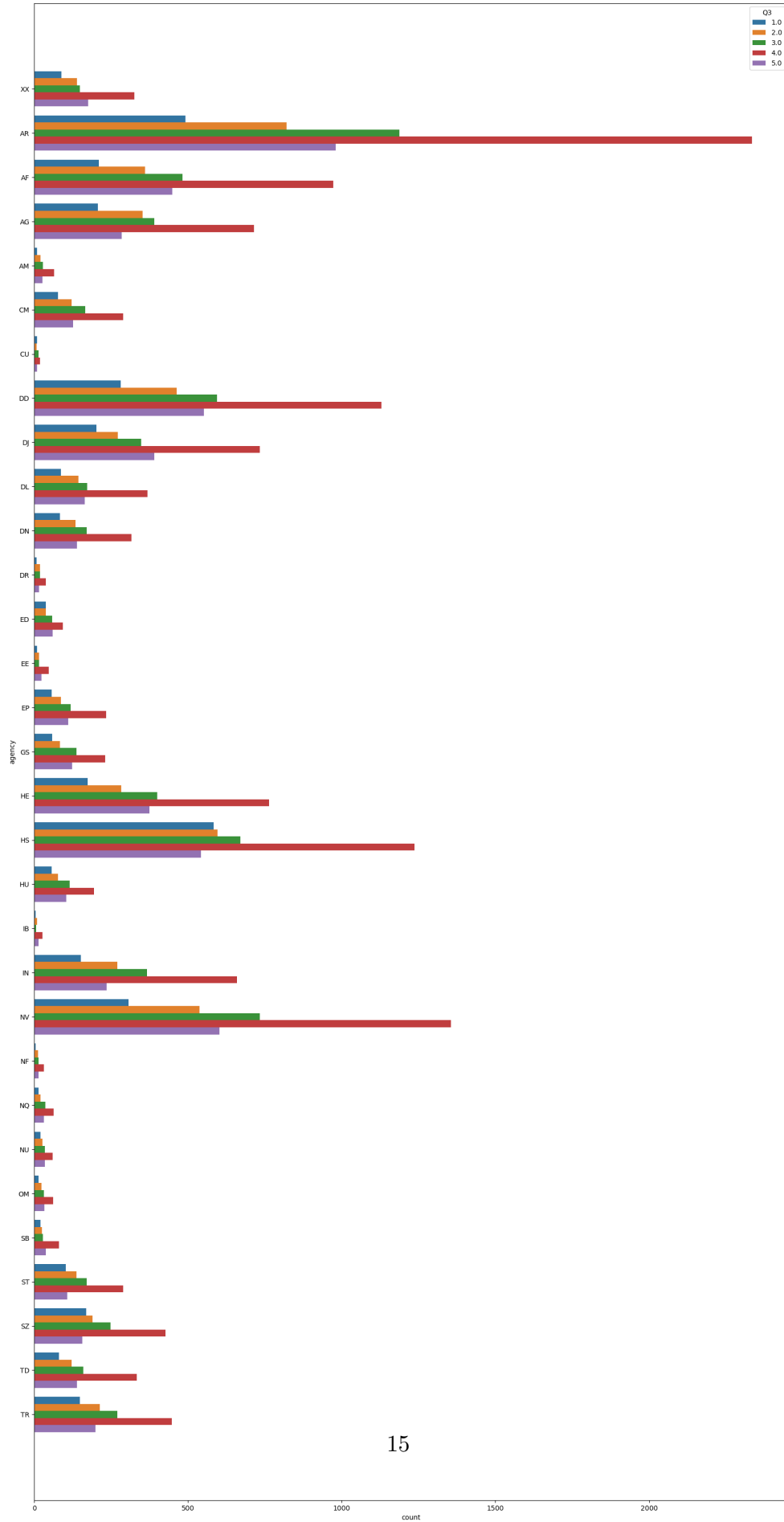
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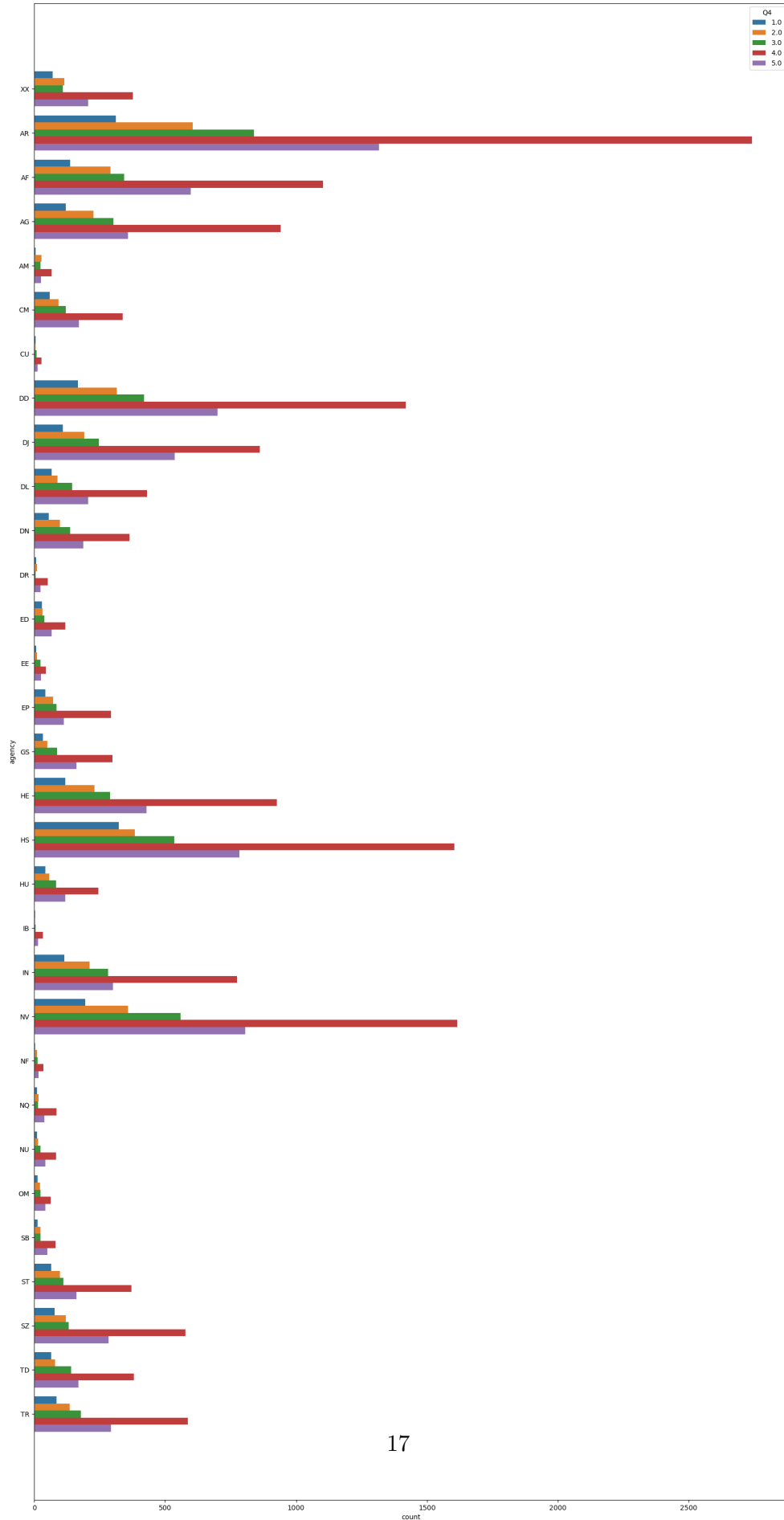
ValueError: Could not interpret input 'Q44'

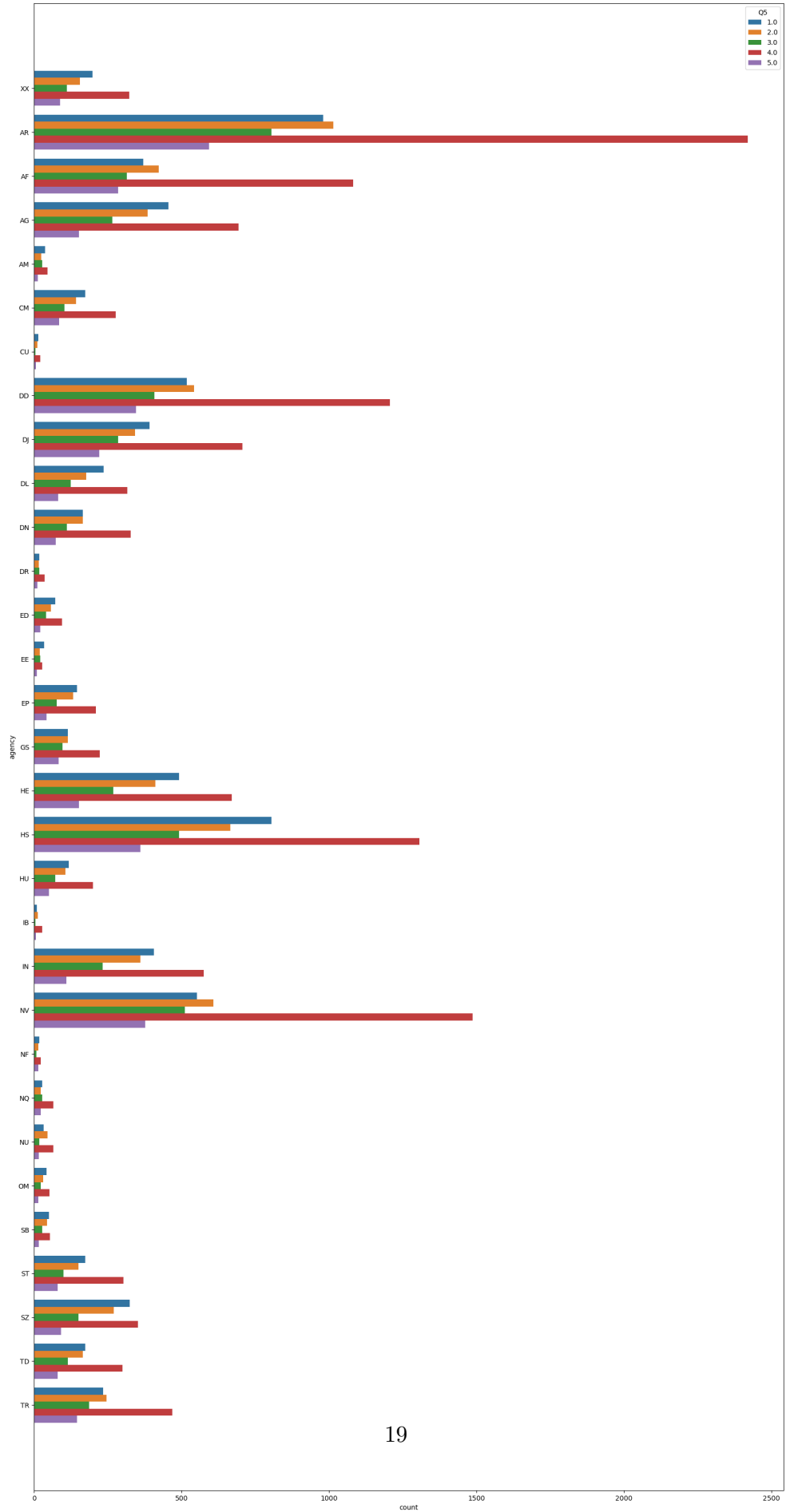
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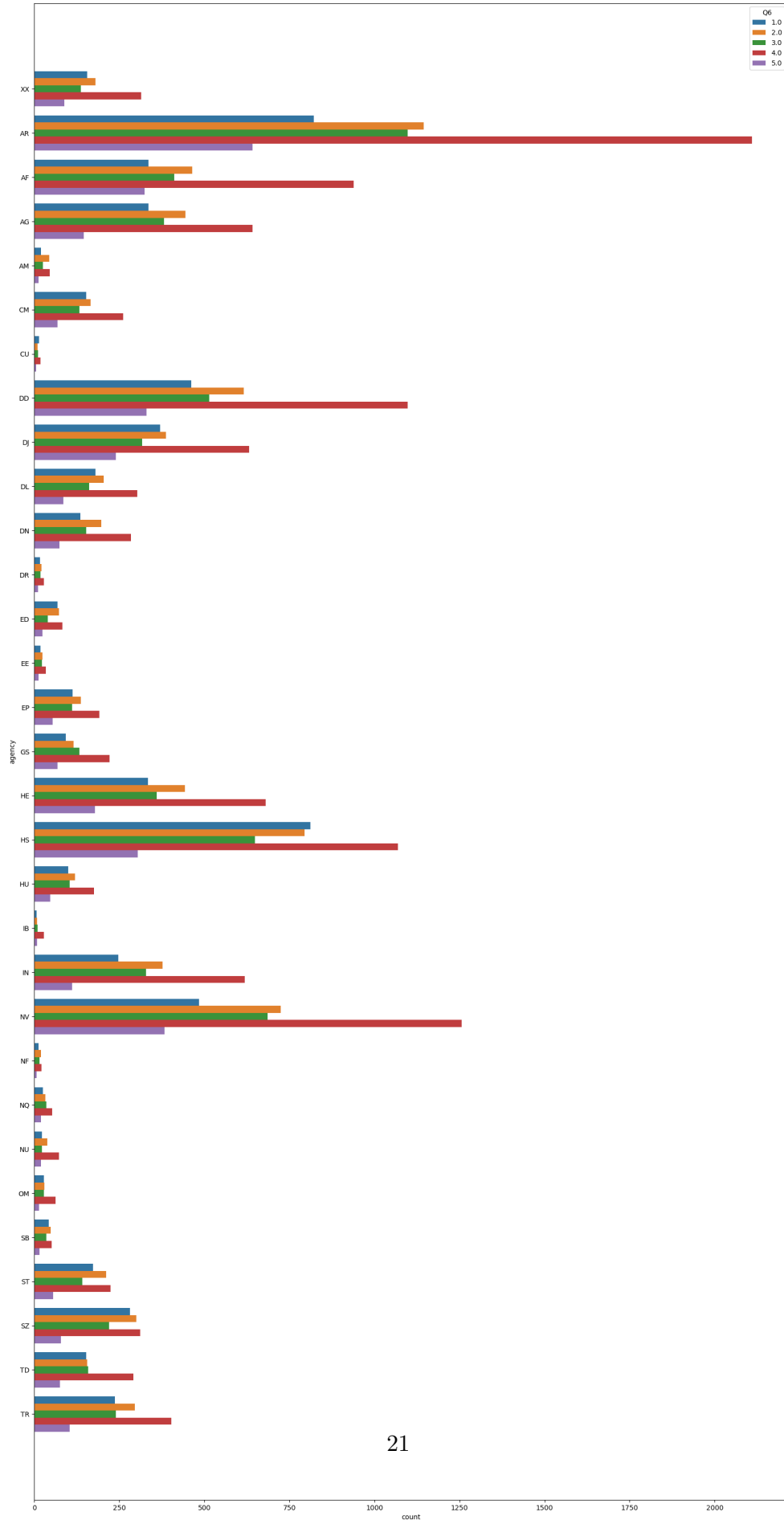


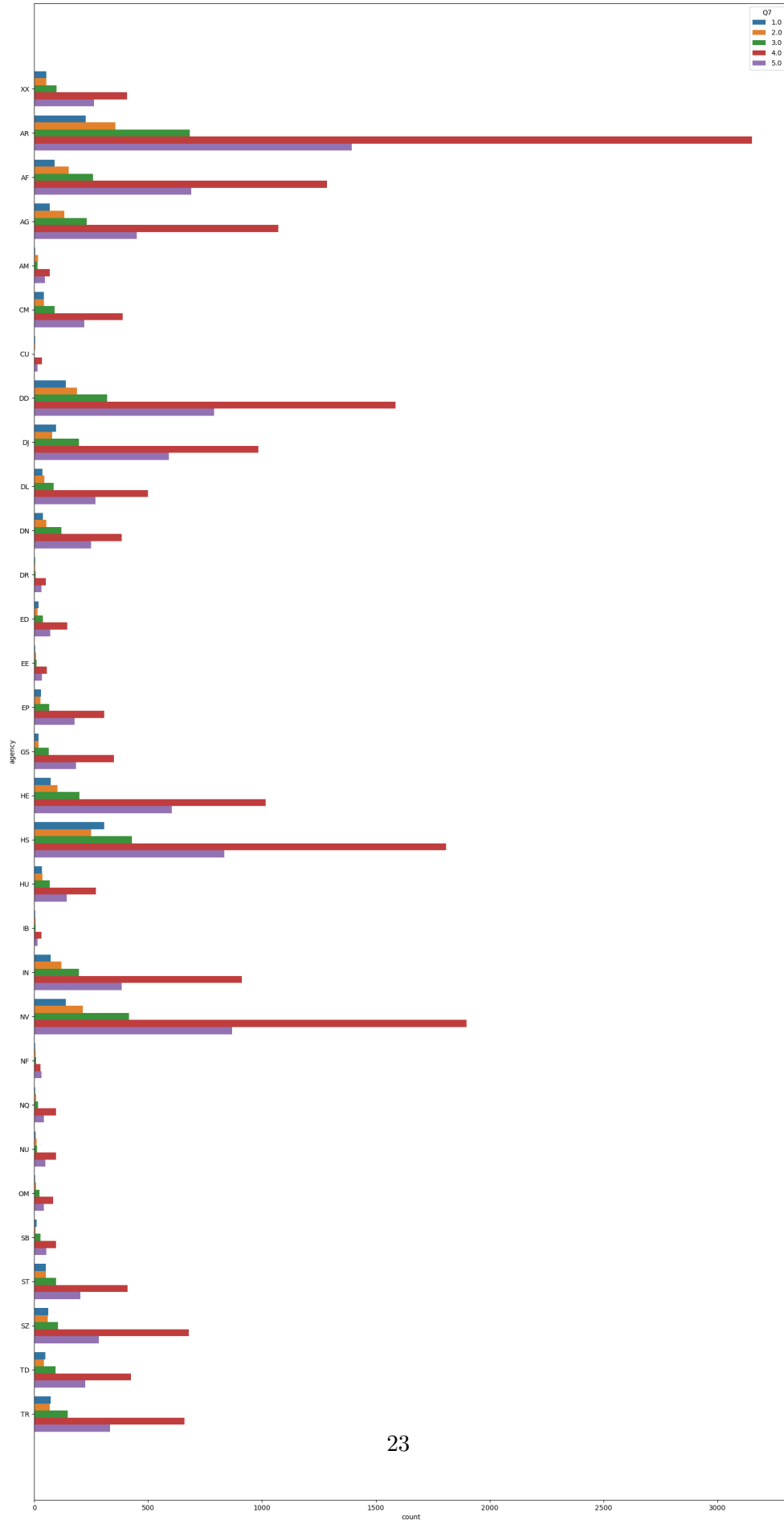


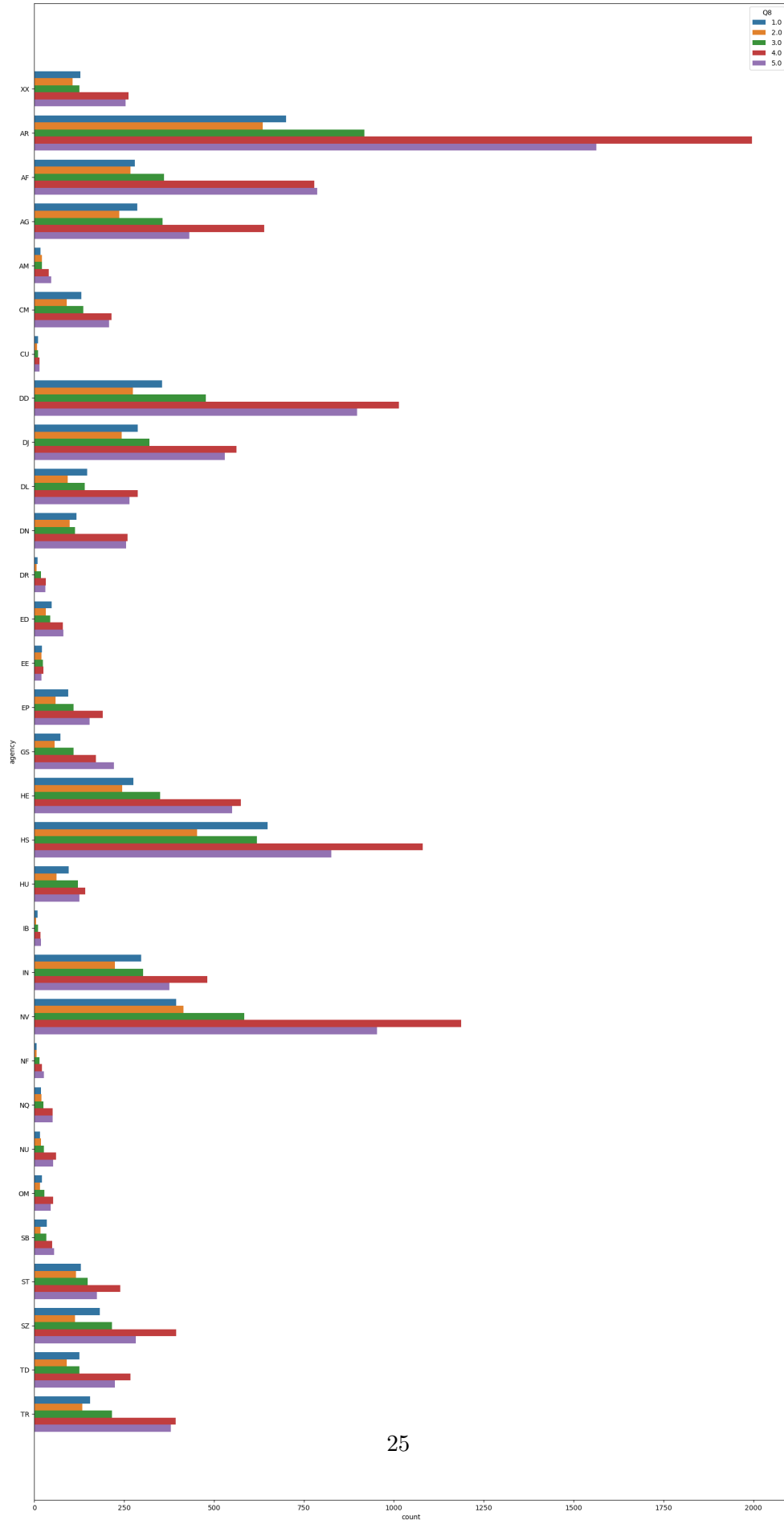


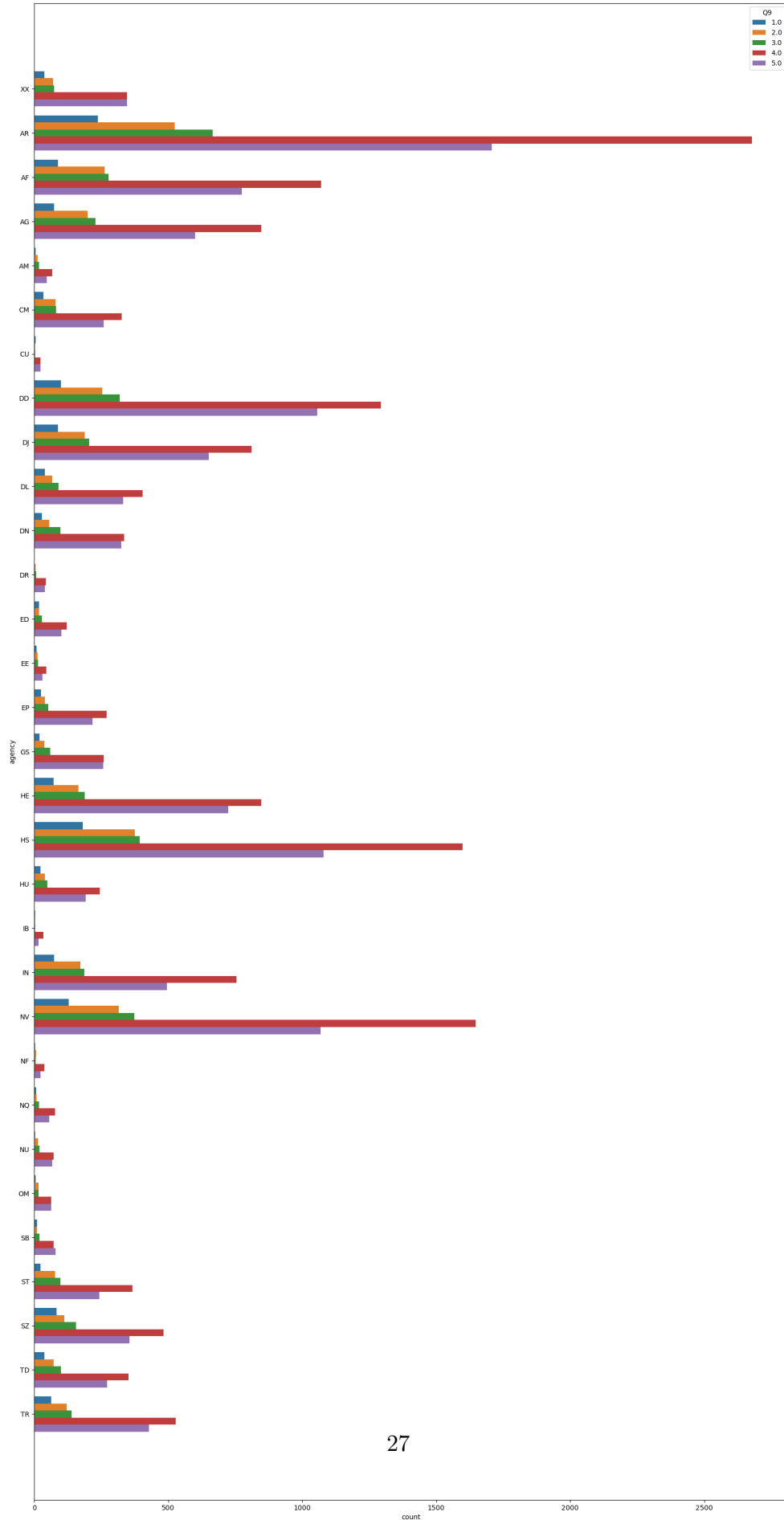


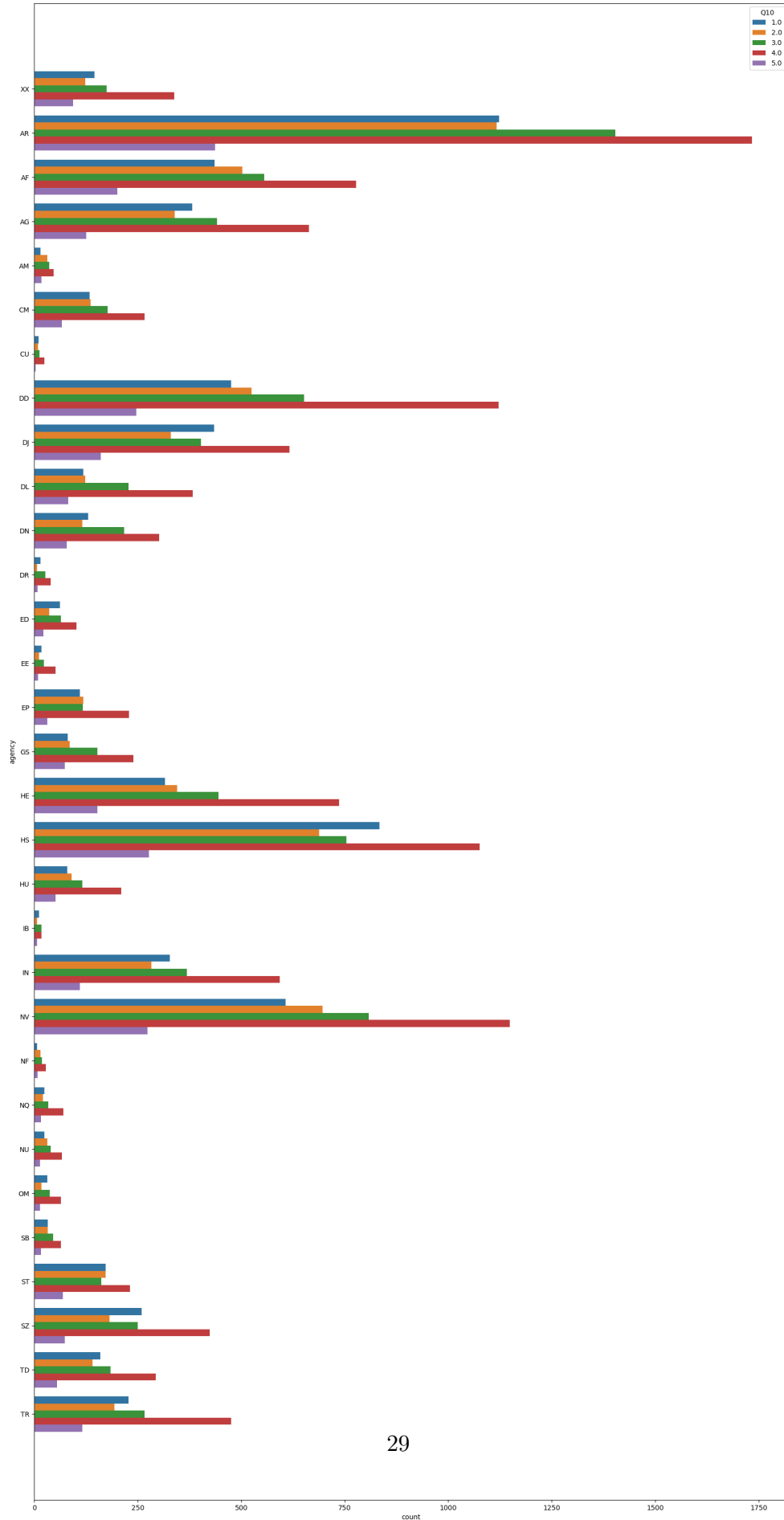


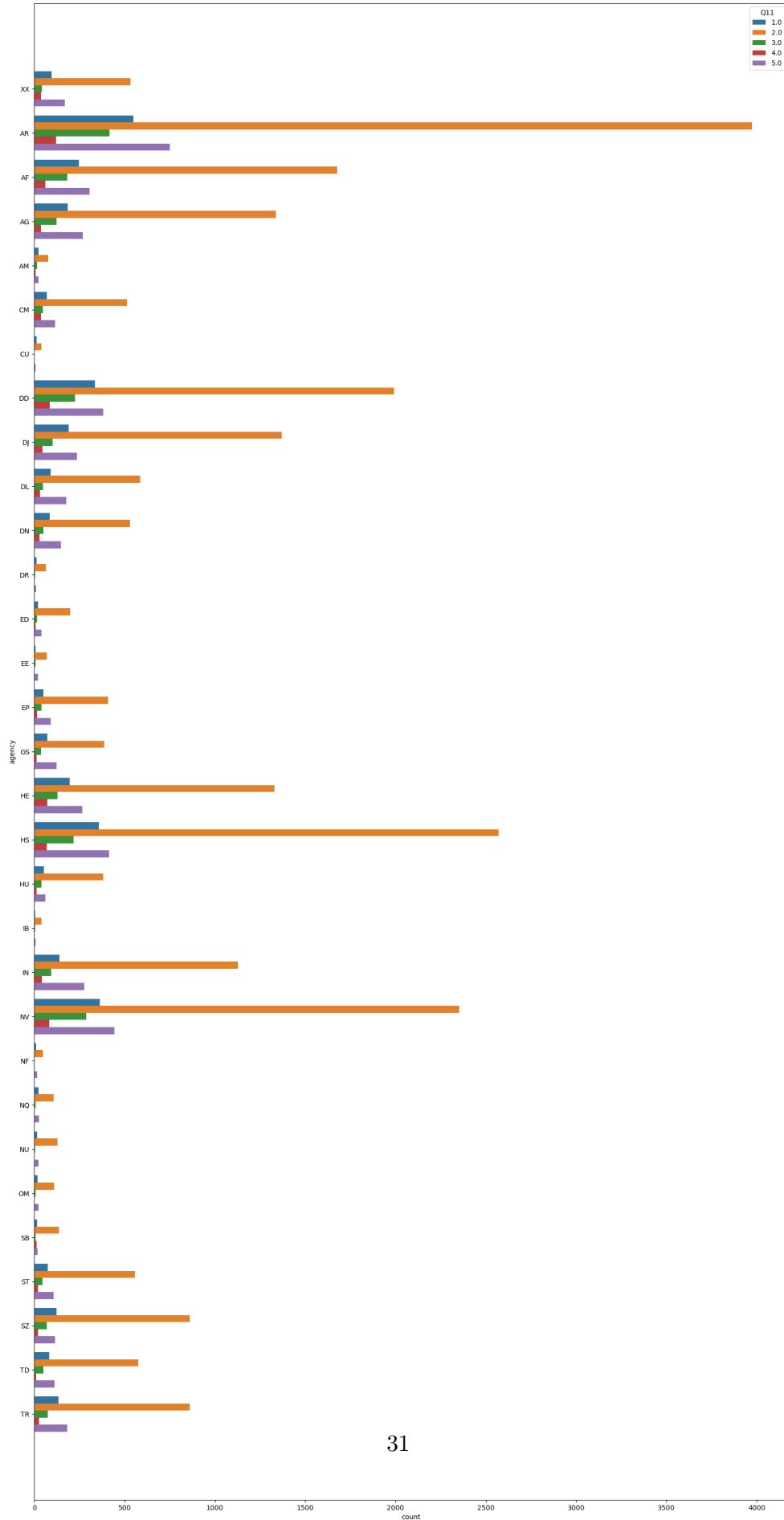


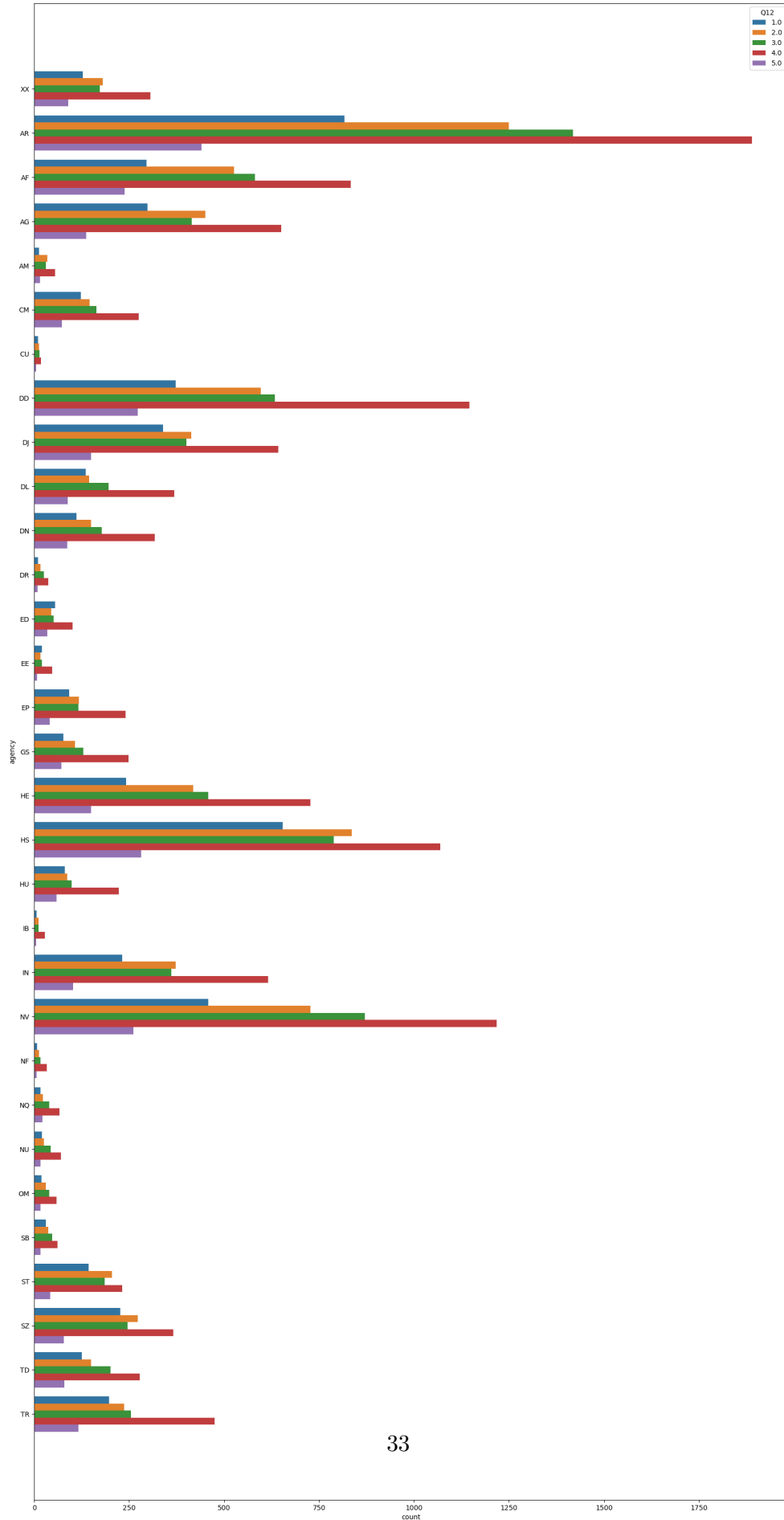


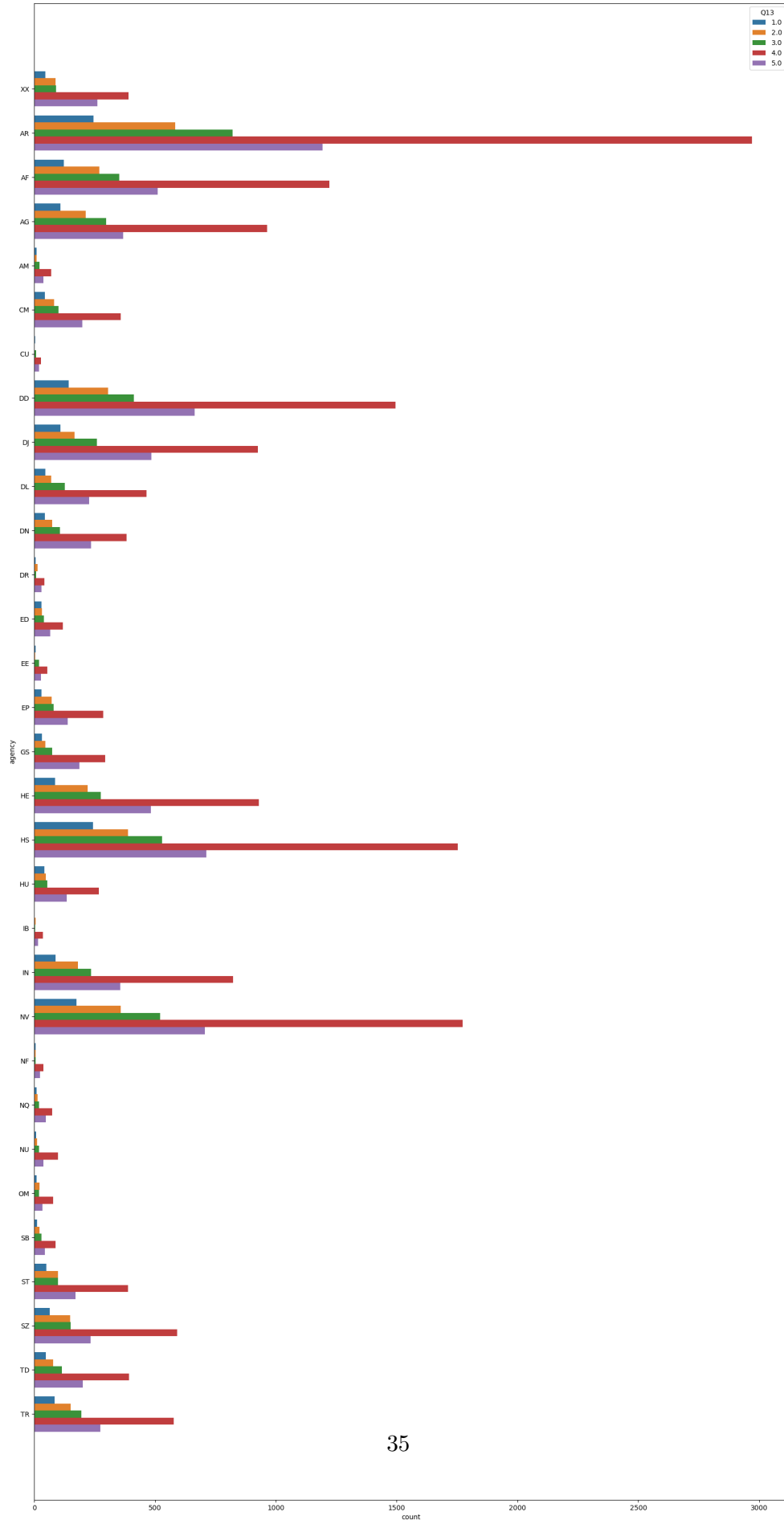


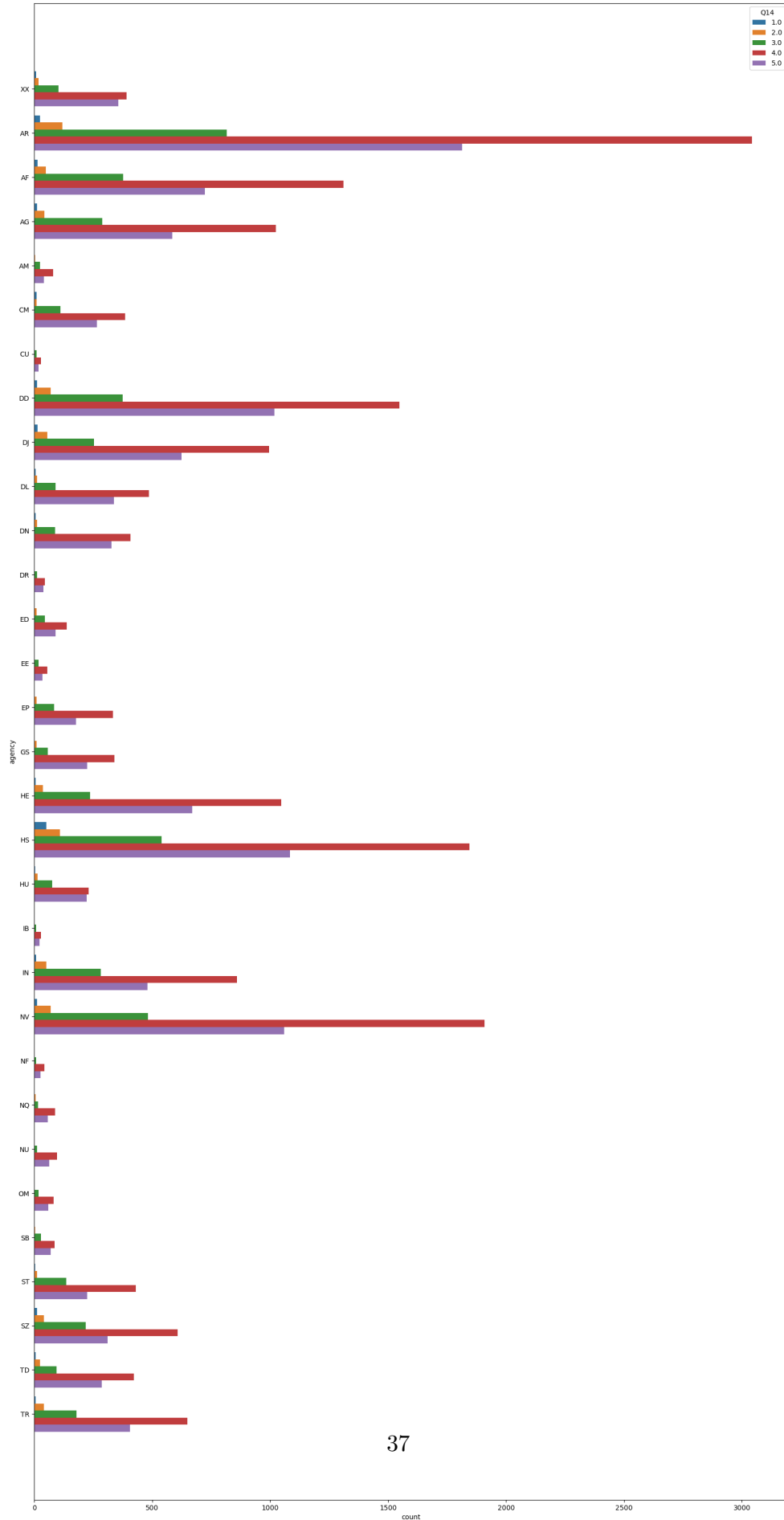


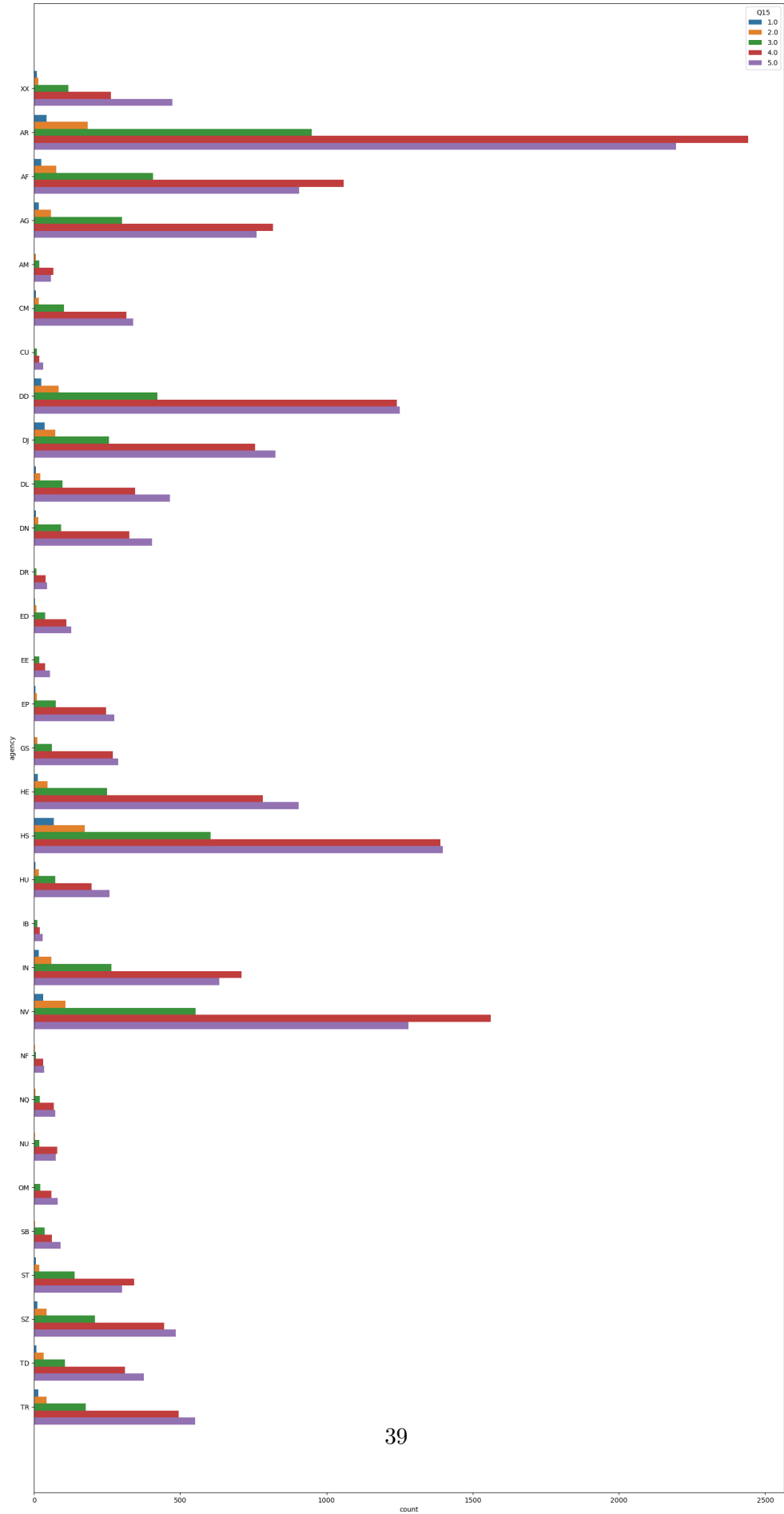


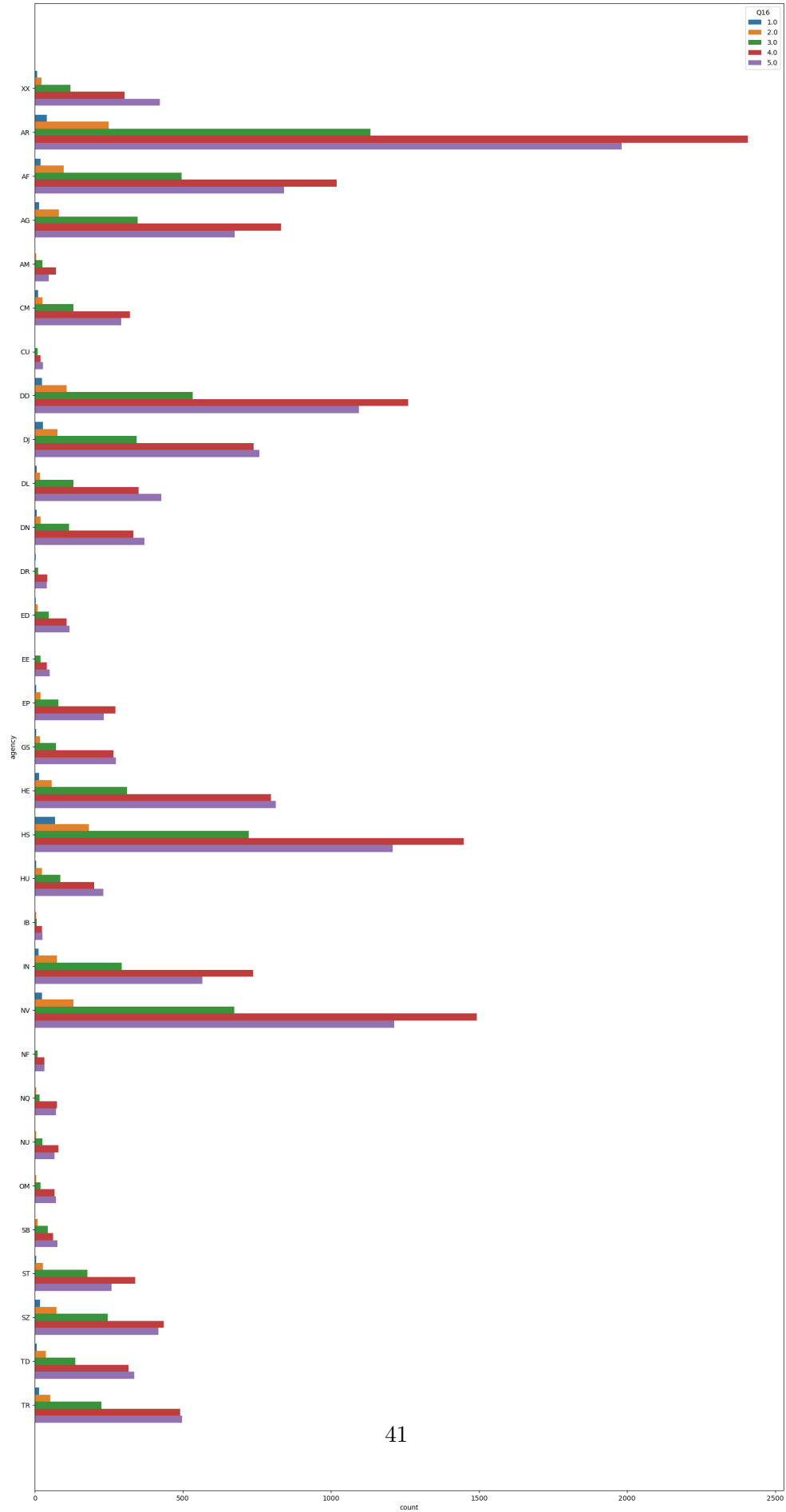


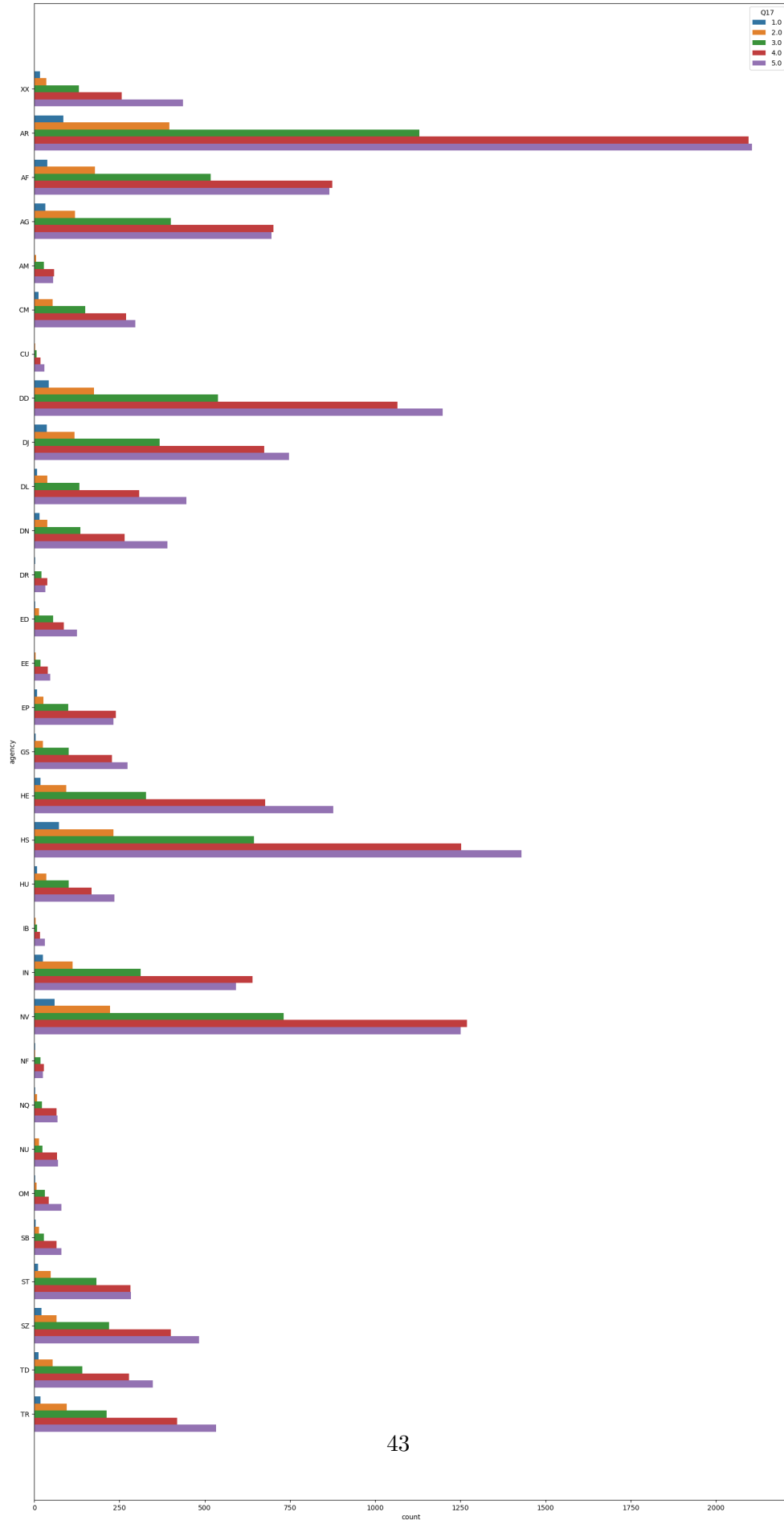


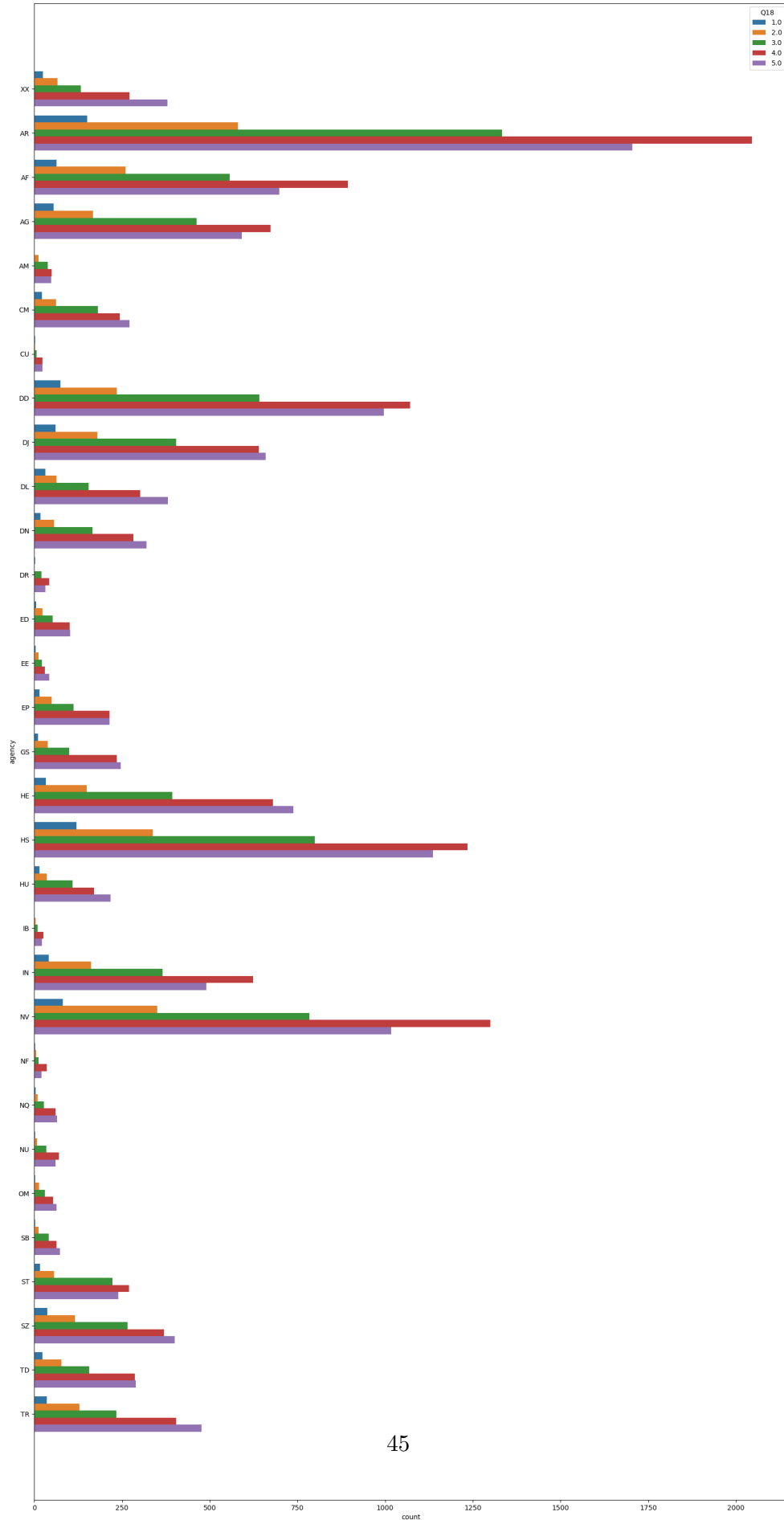


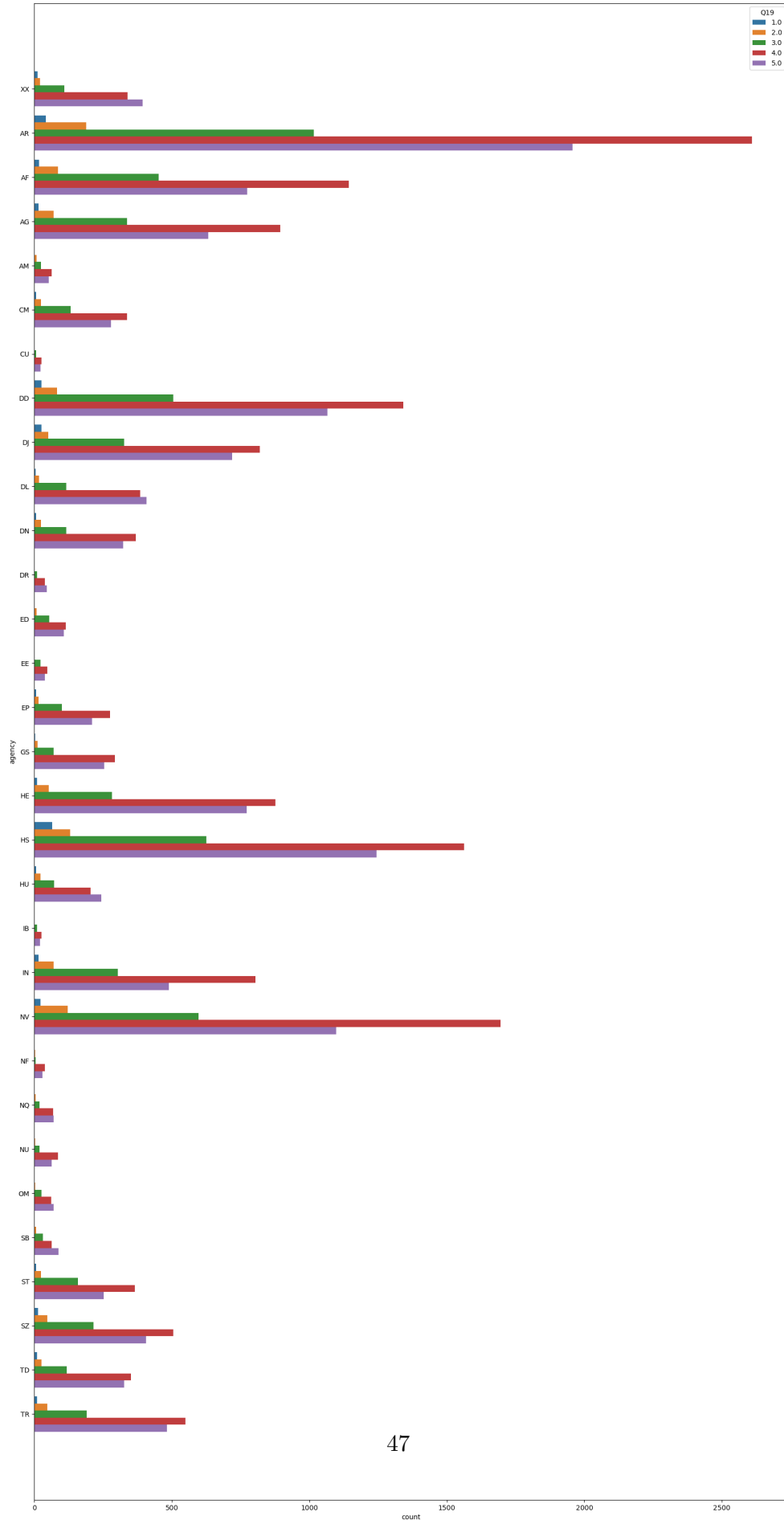


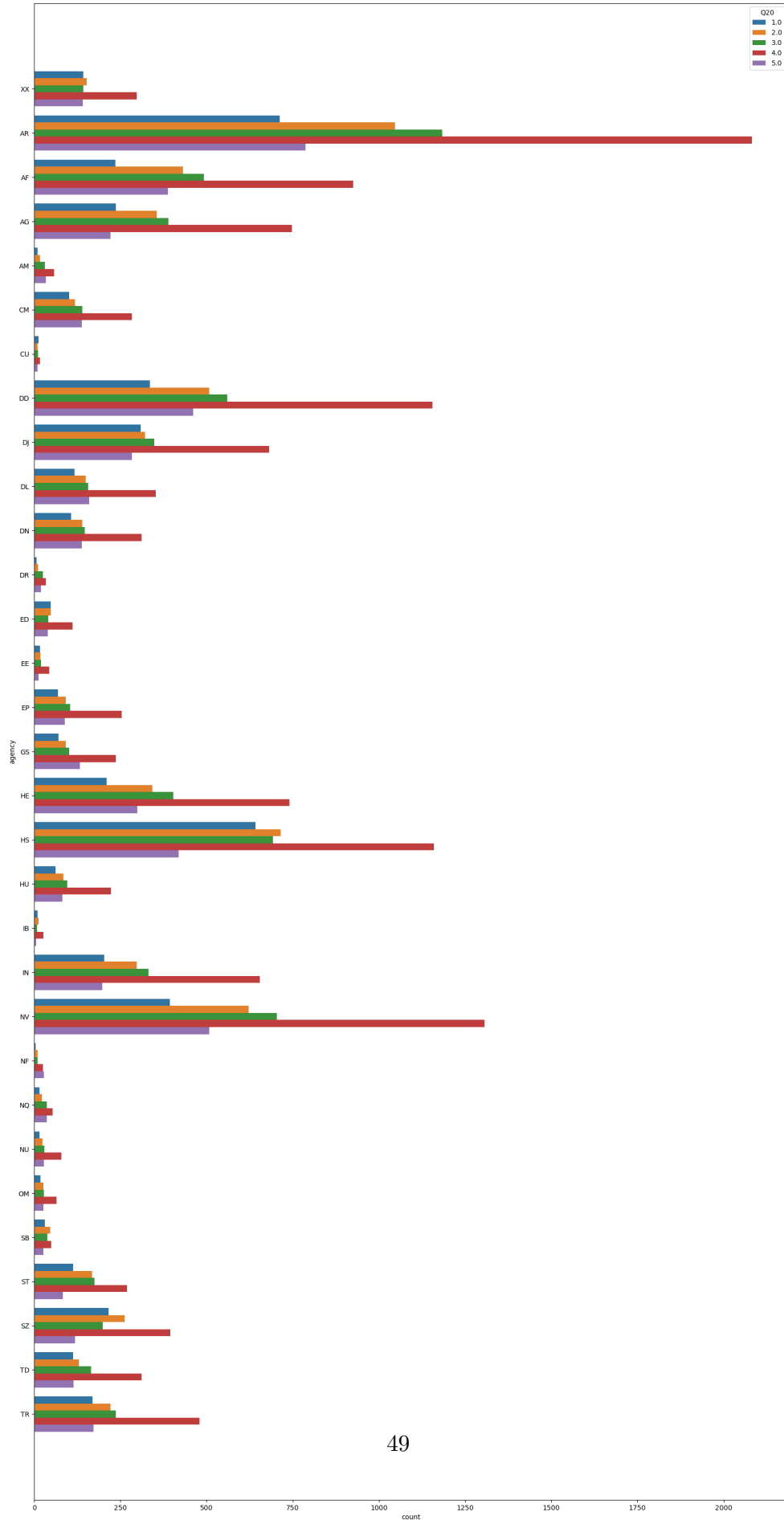


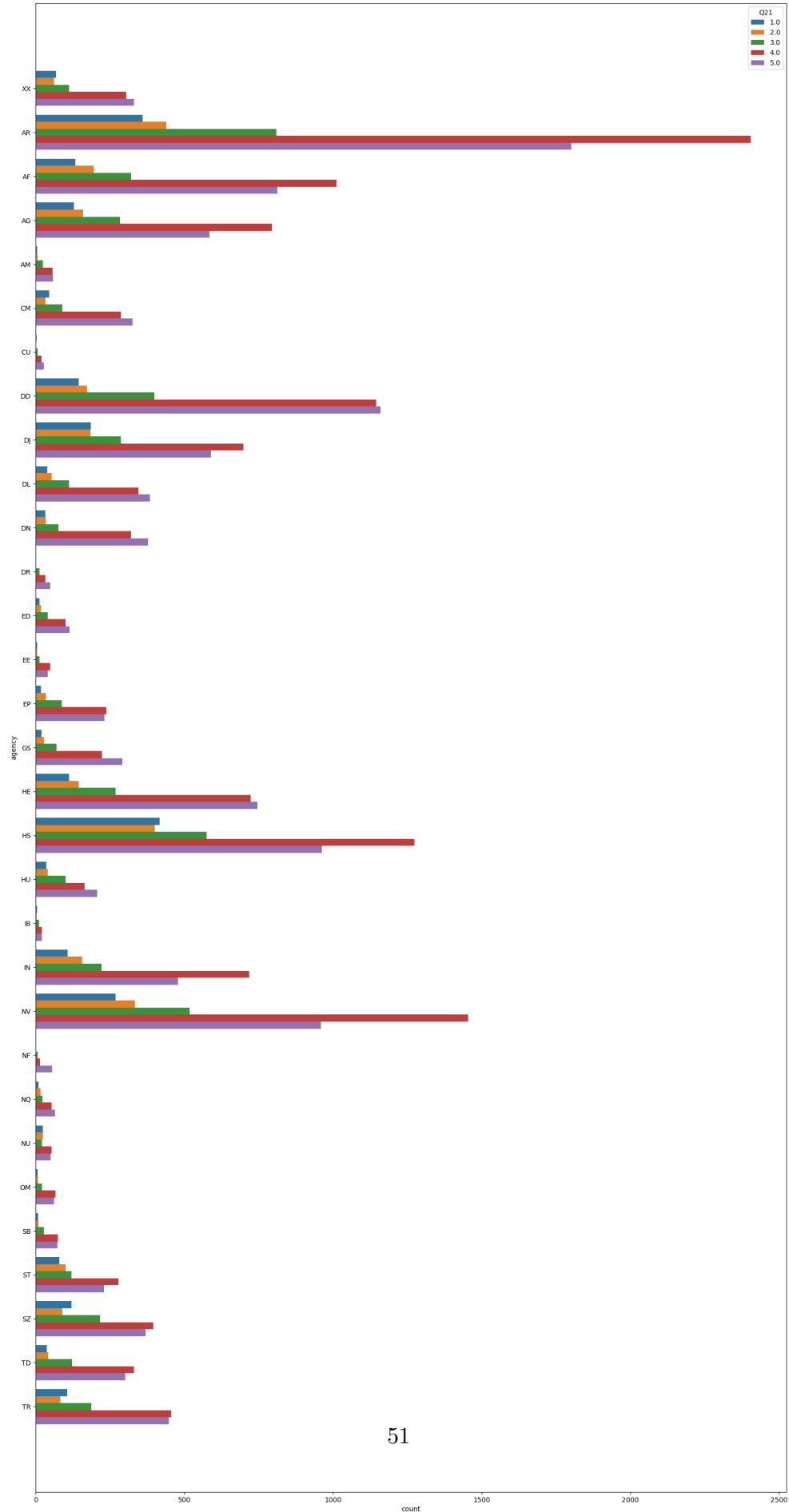


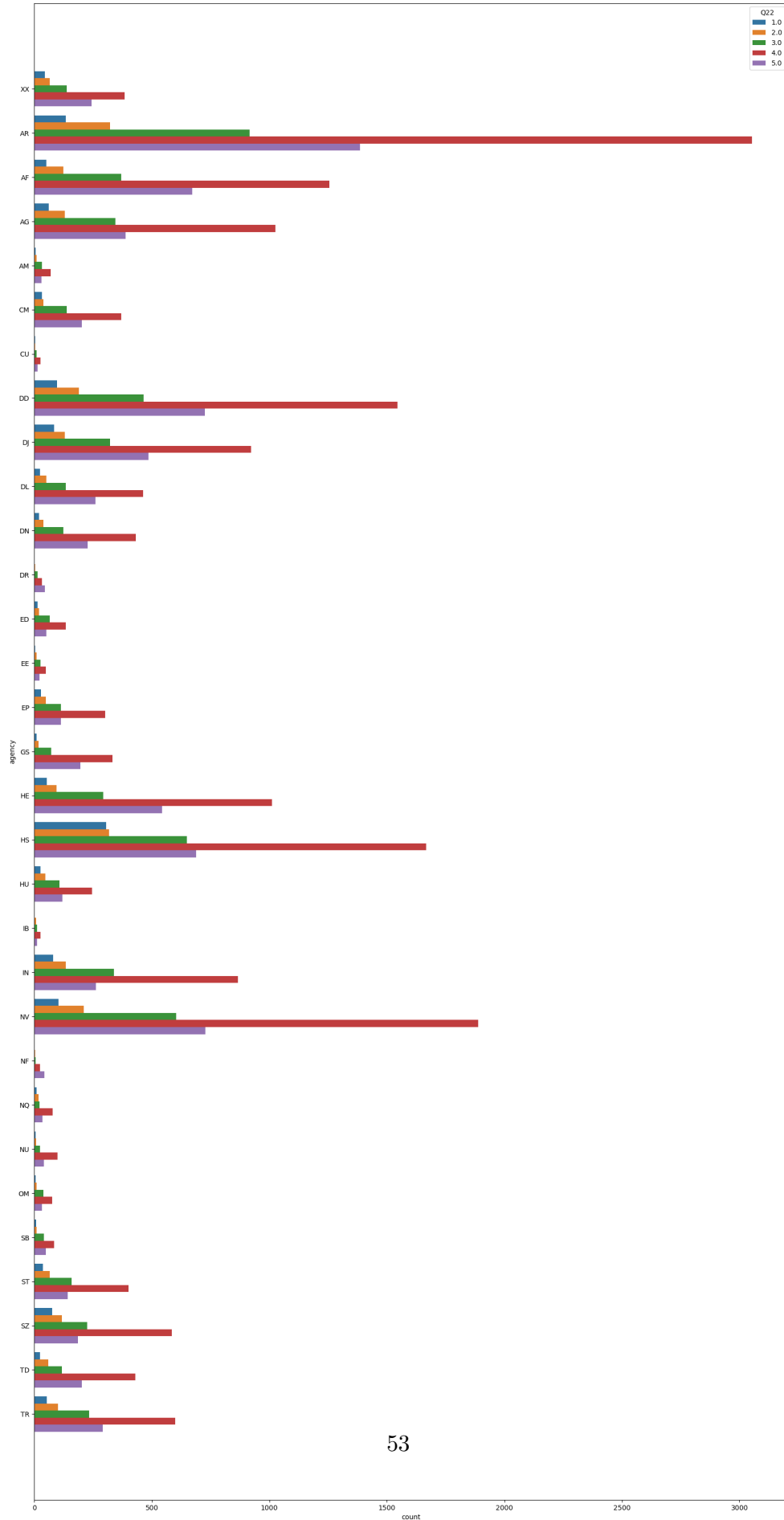


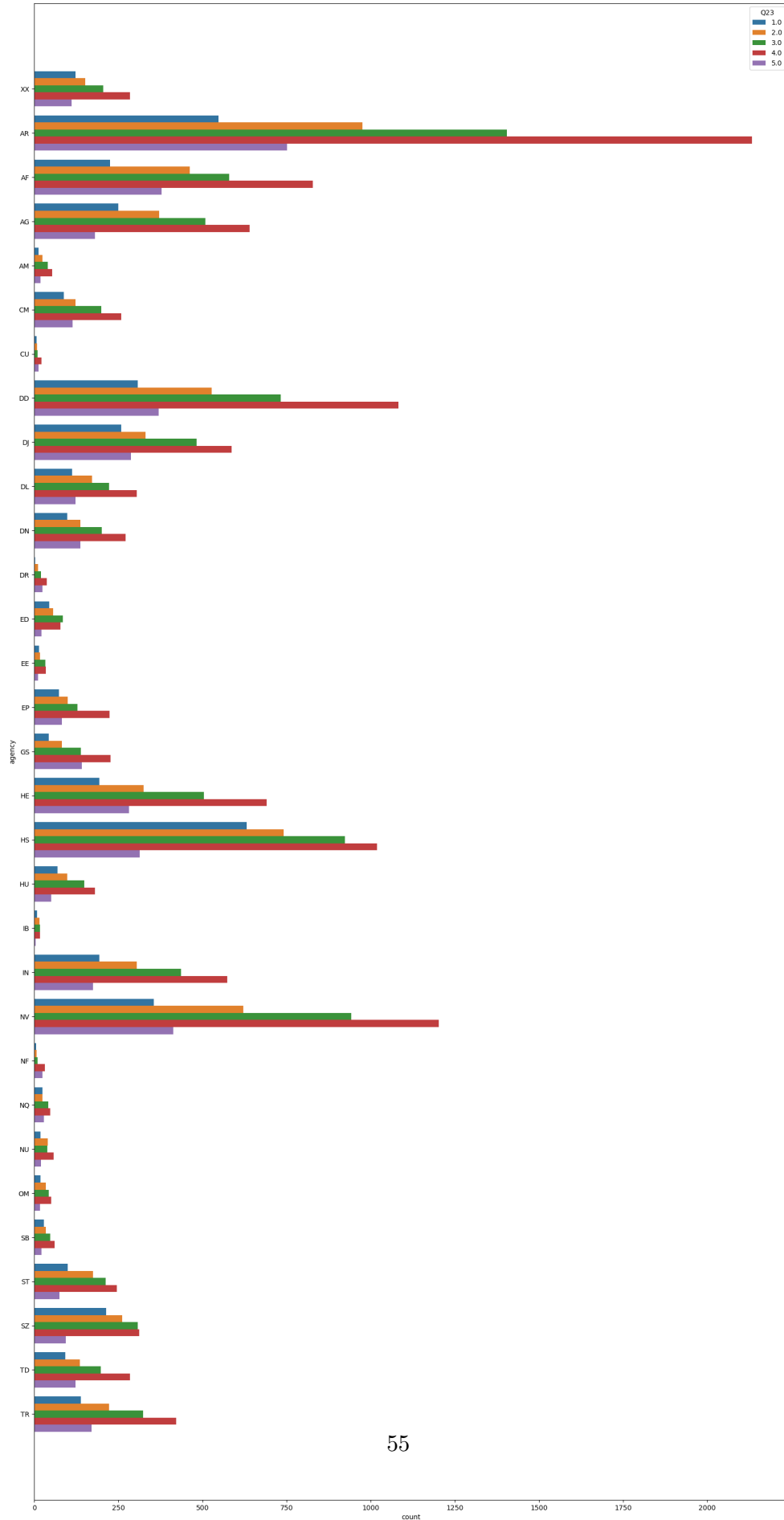


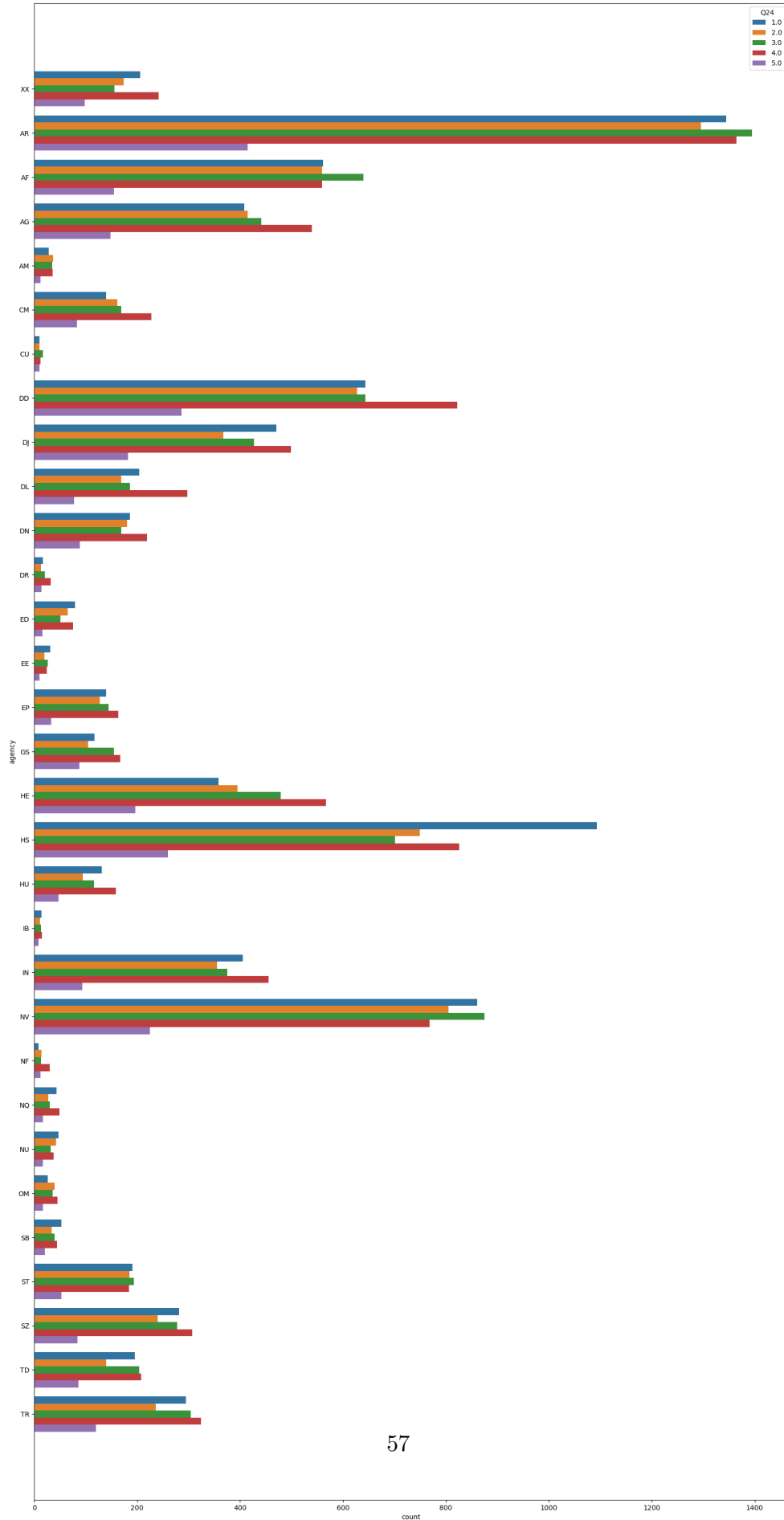


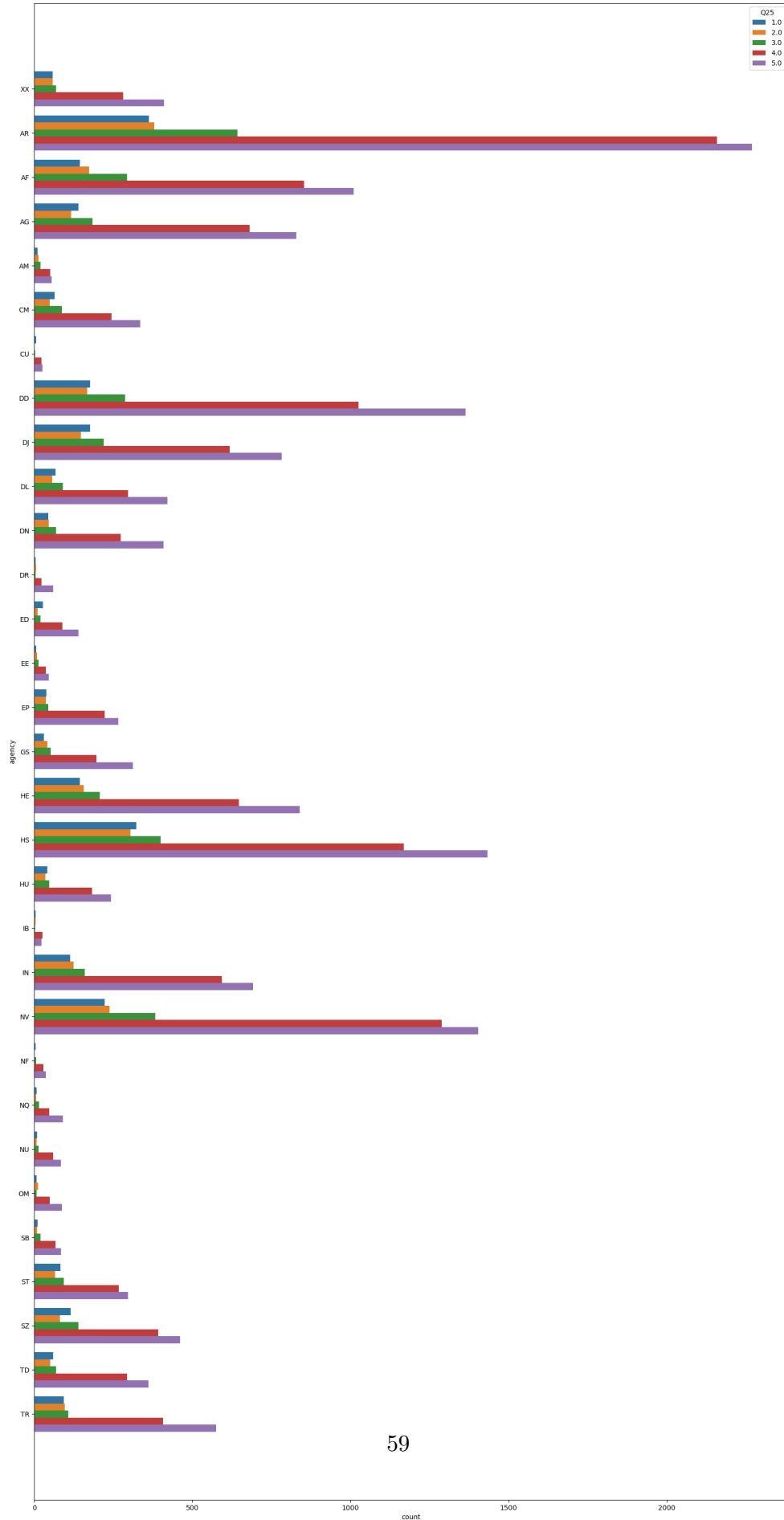


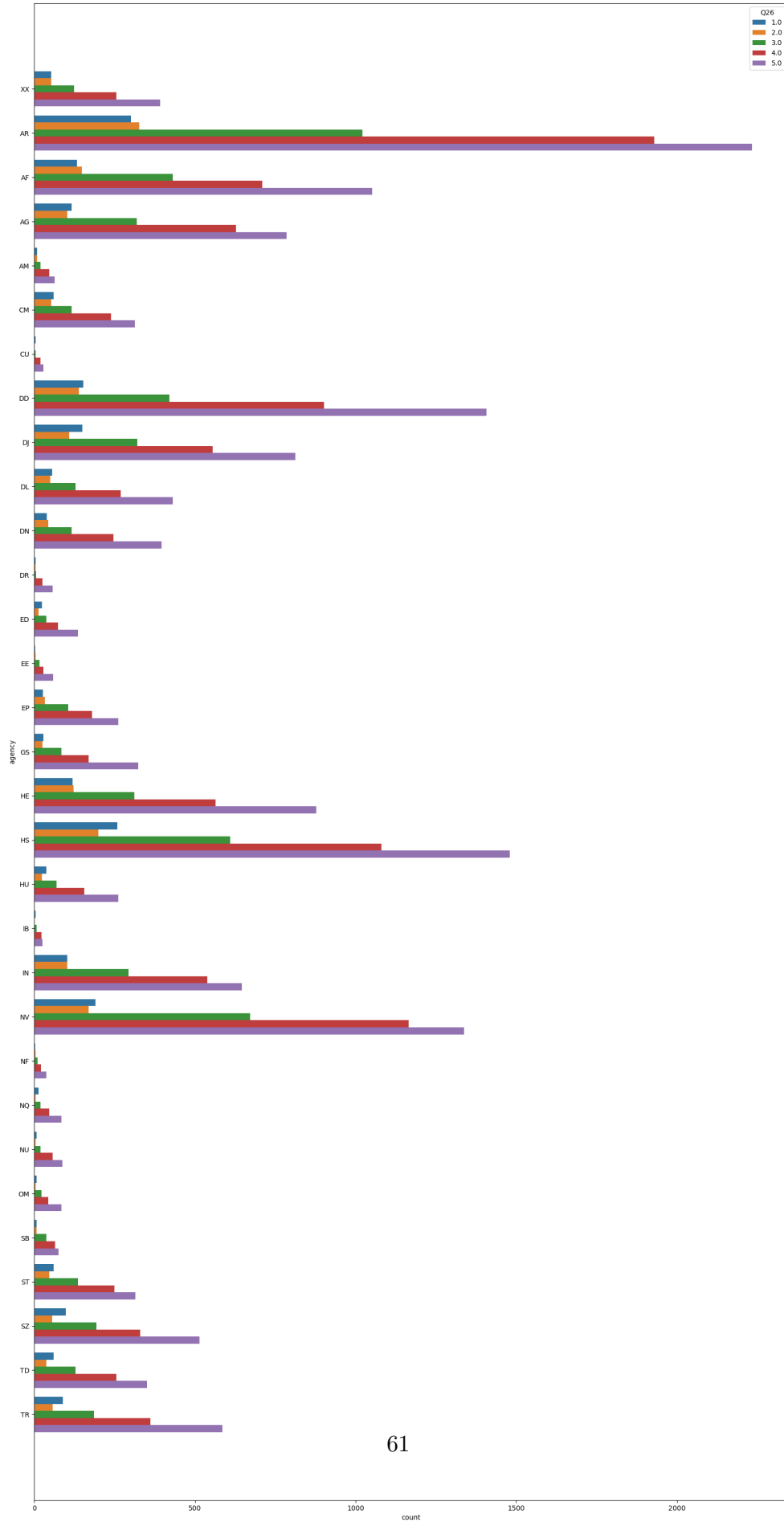


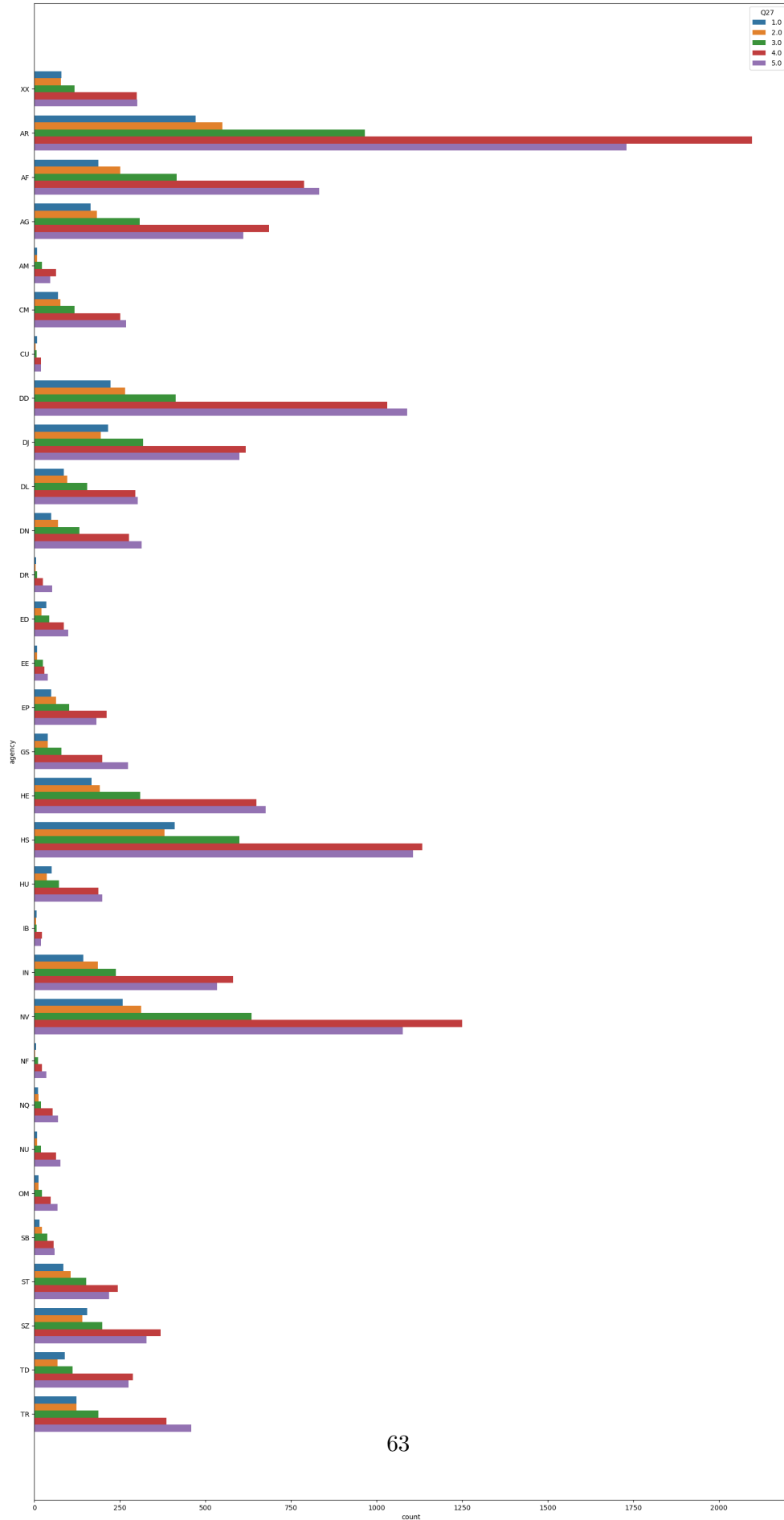


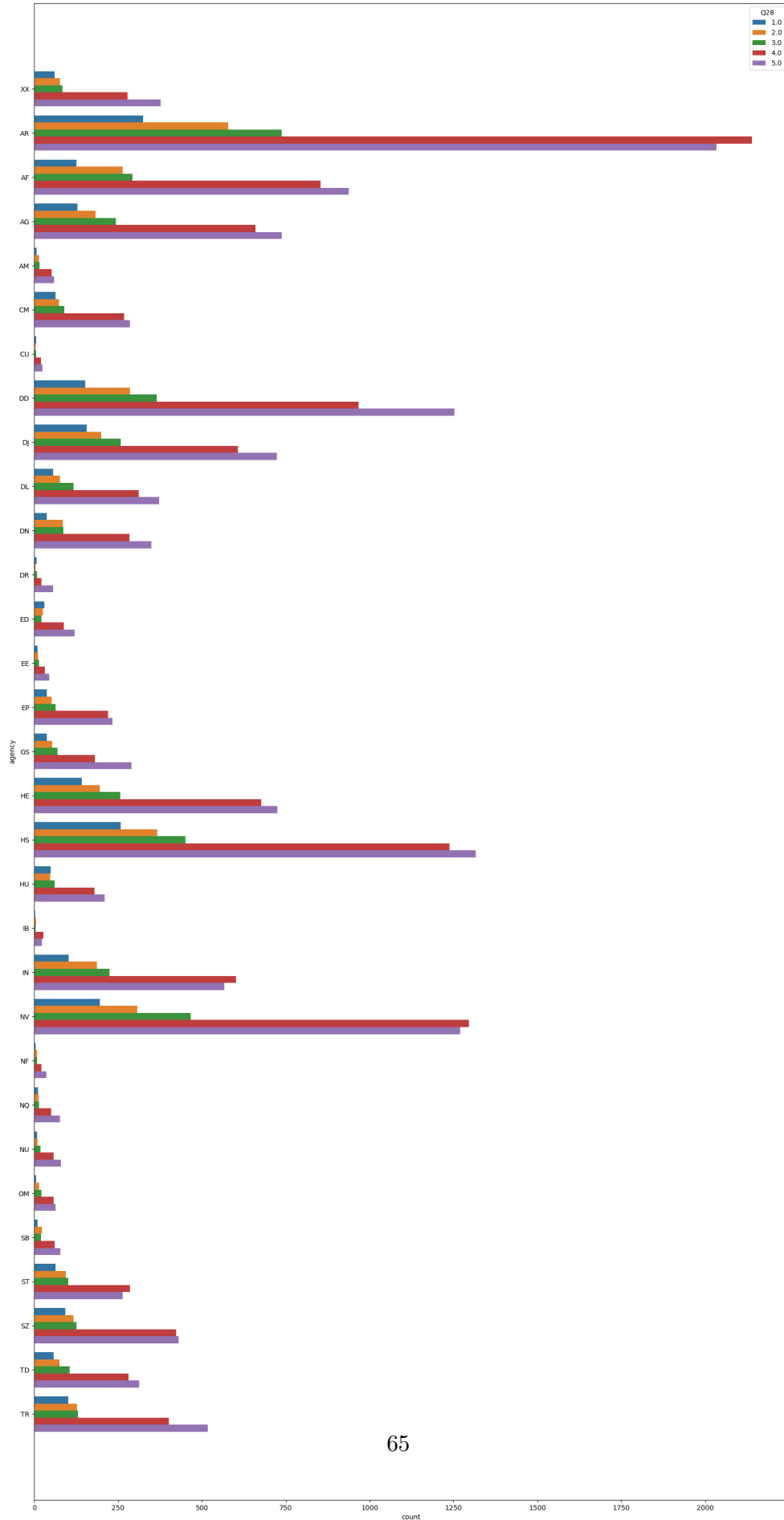


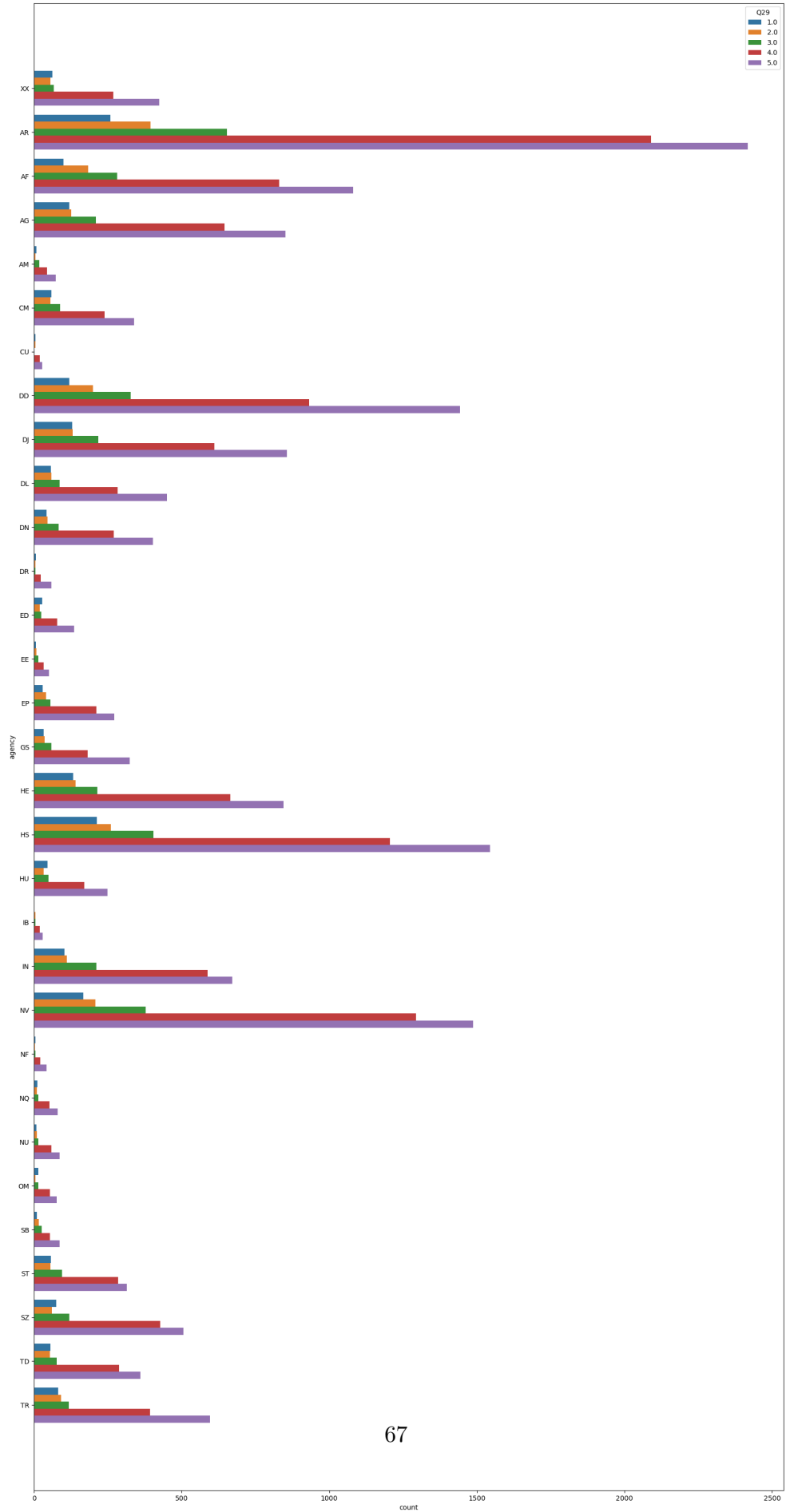


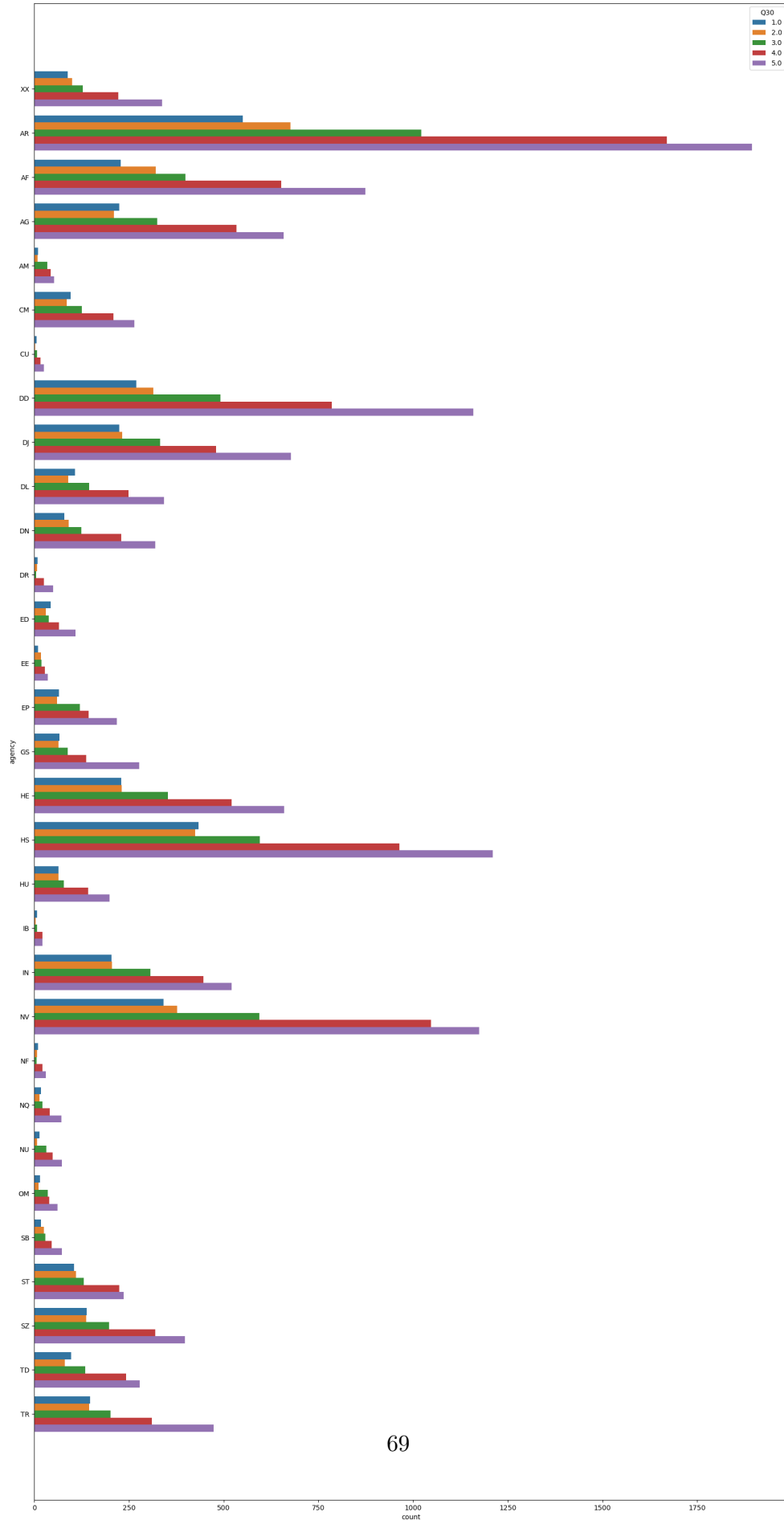


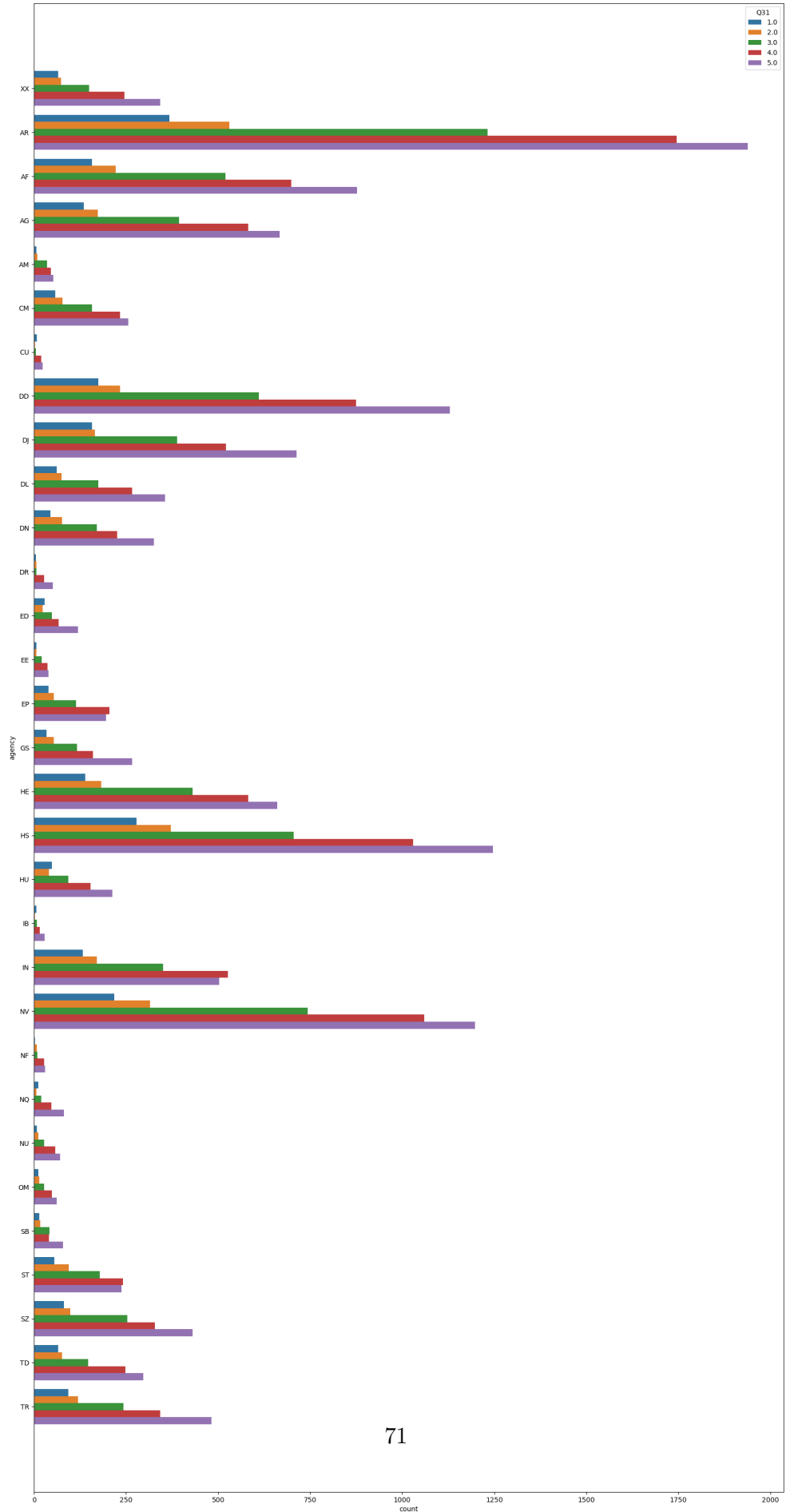


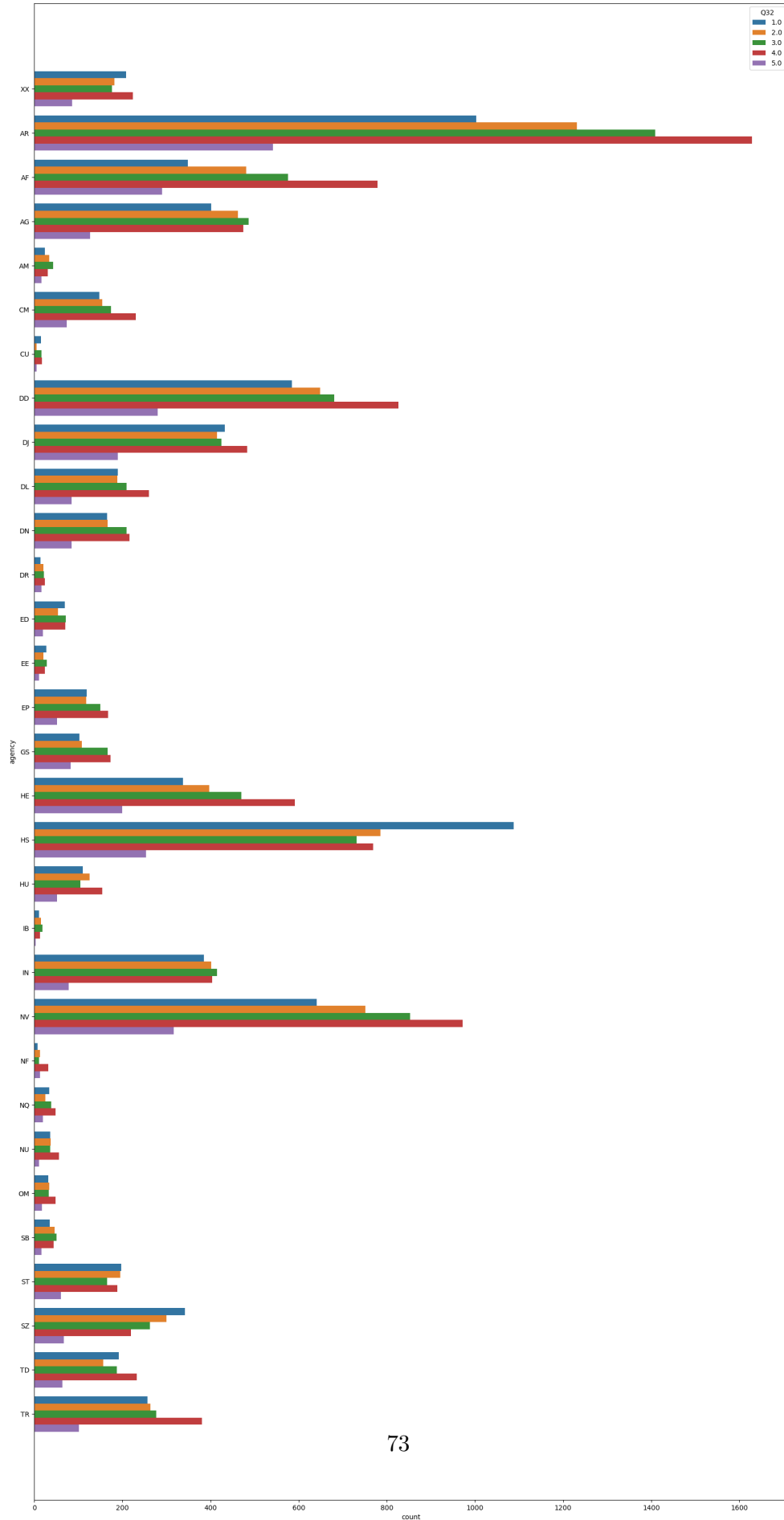


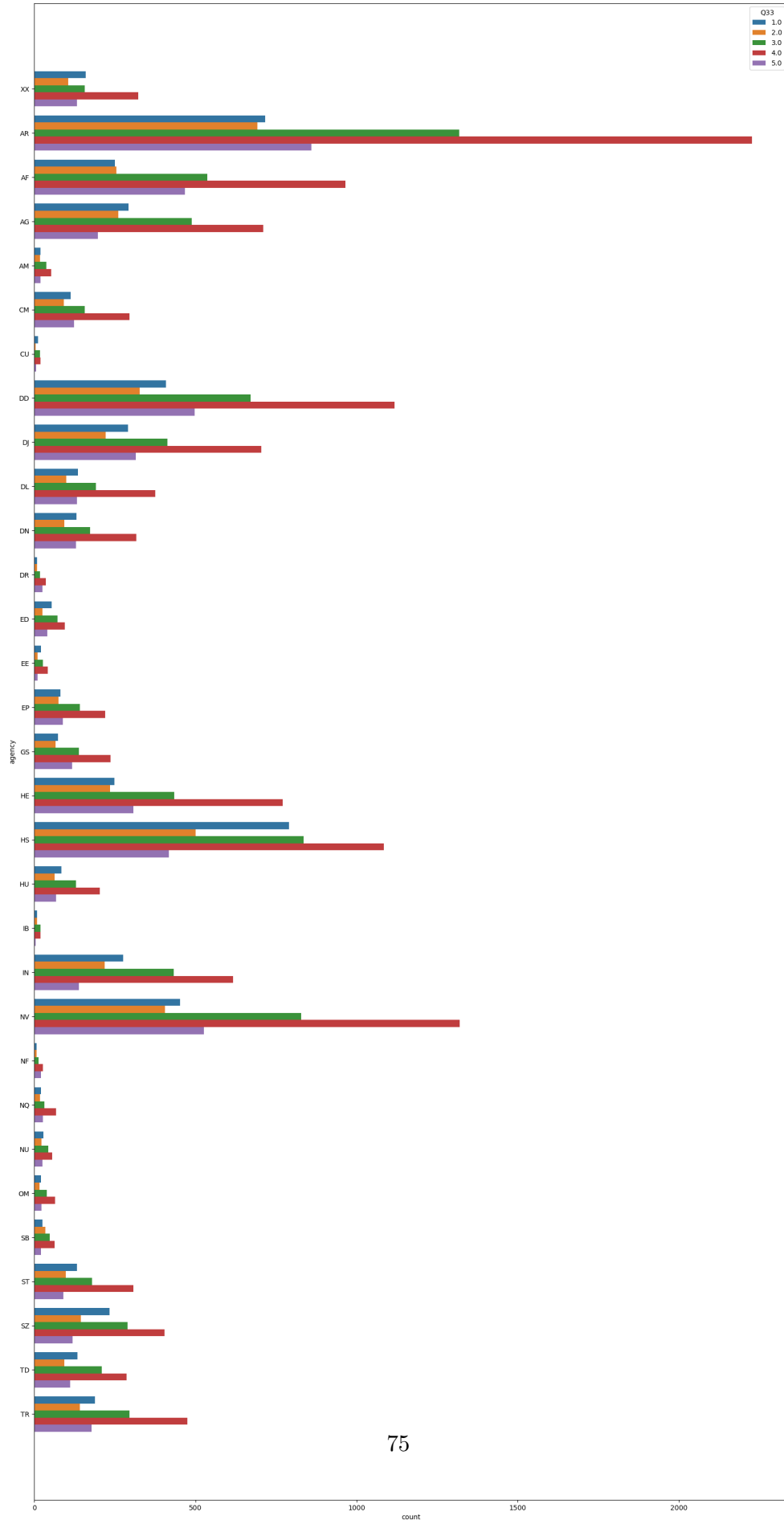


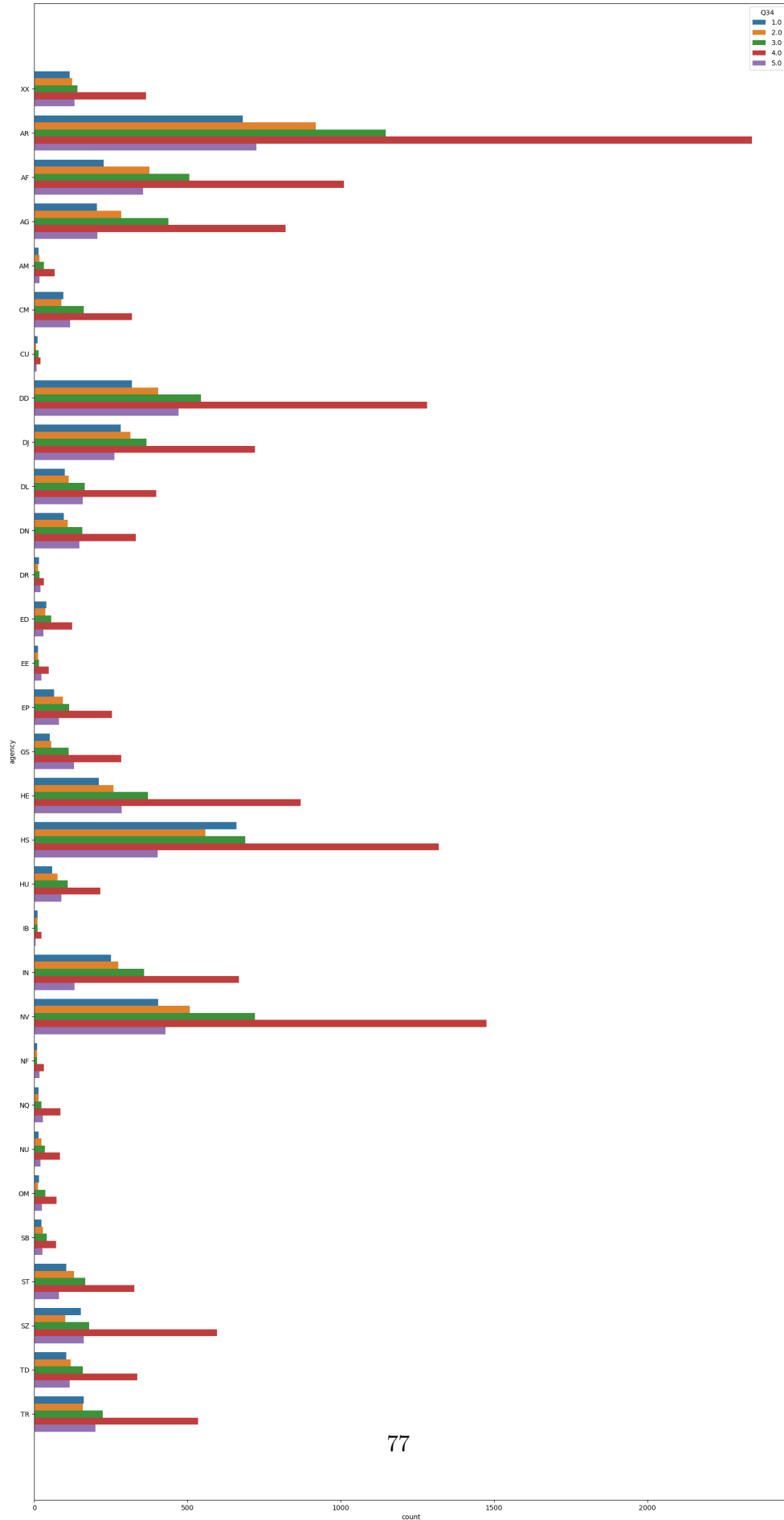


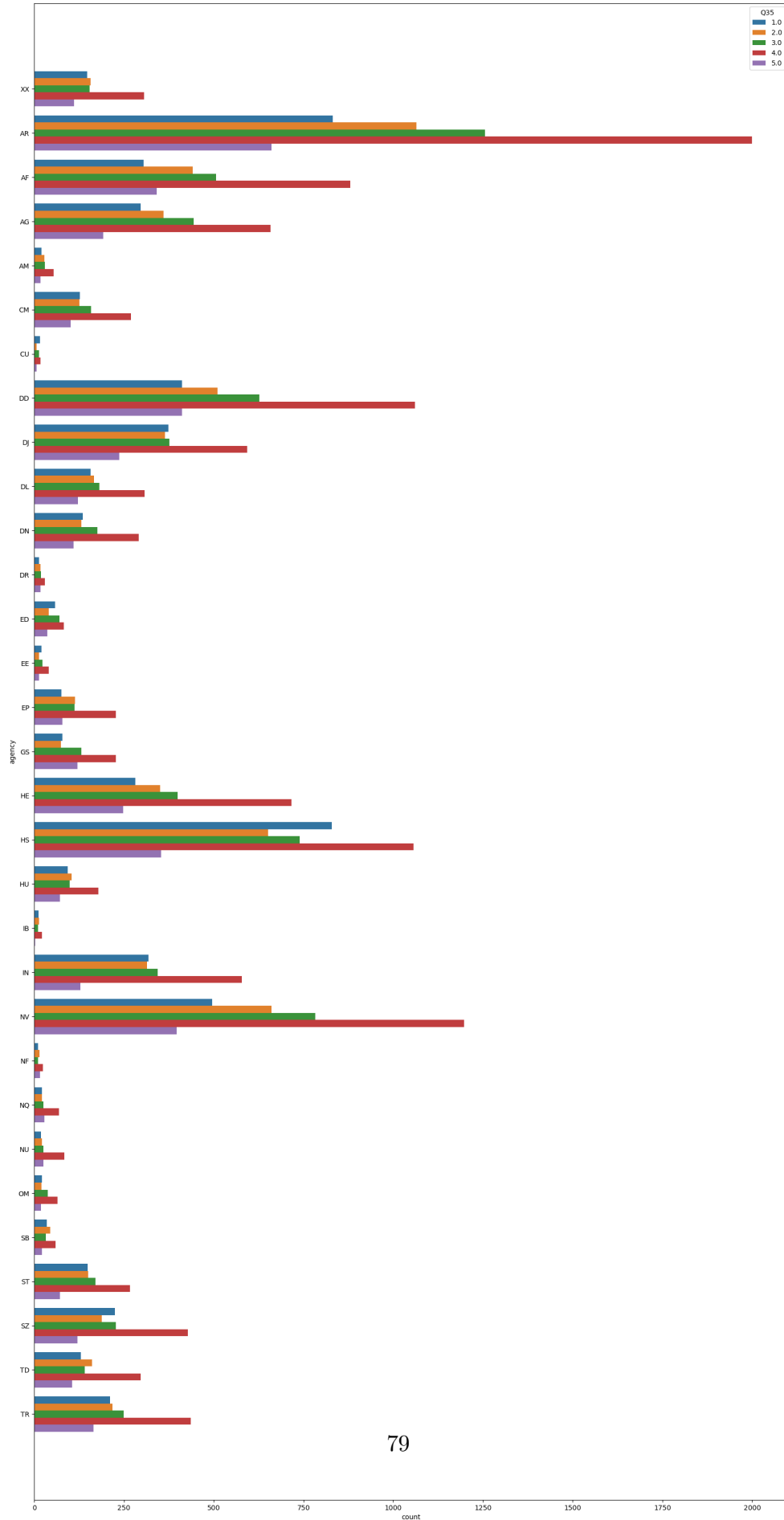


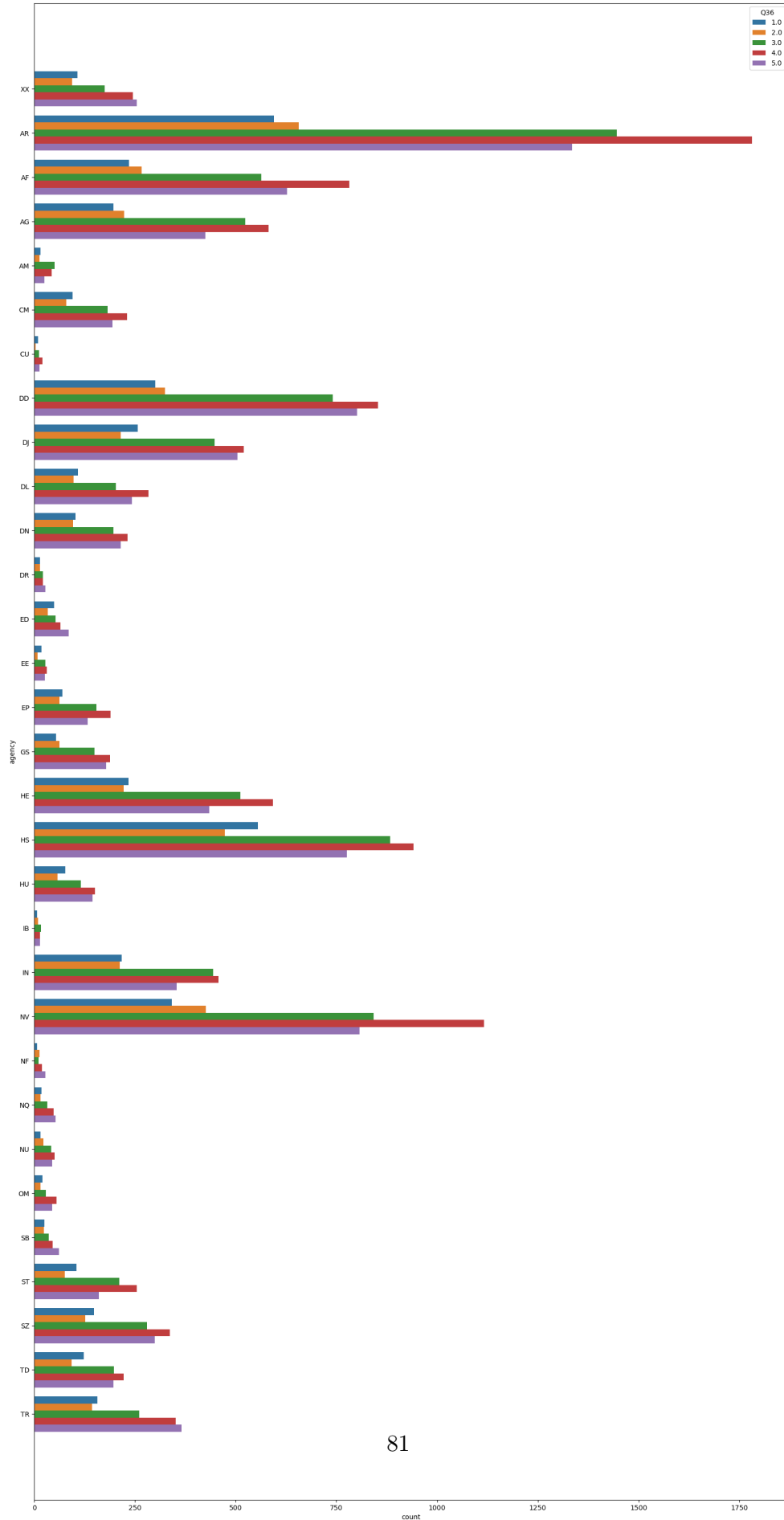


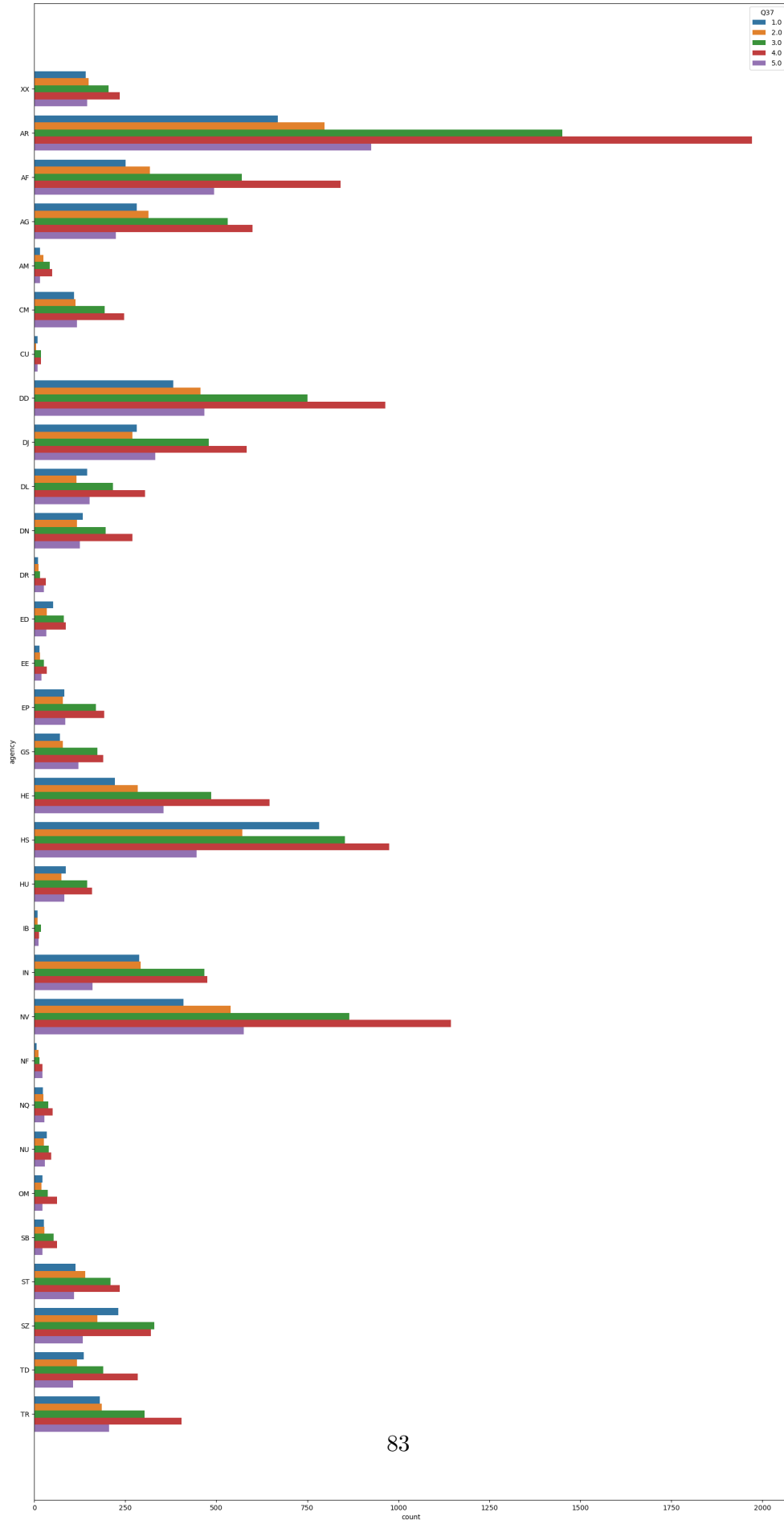


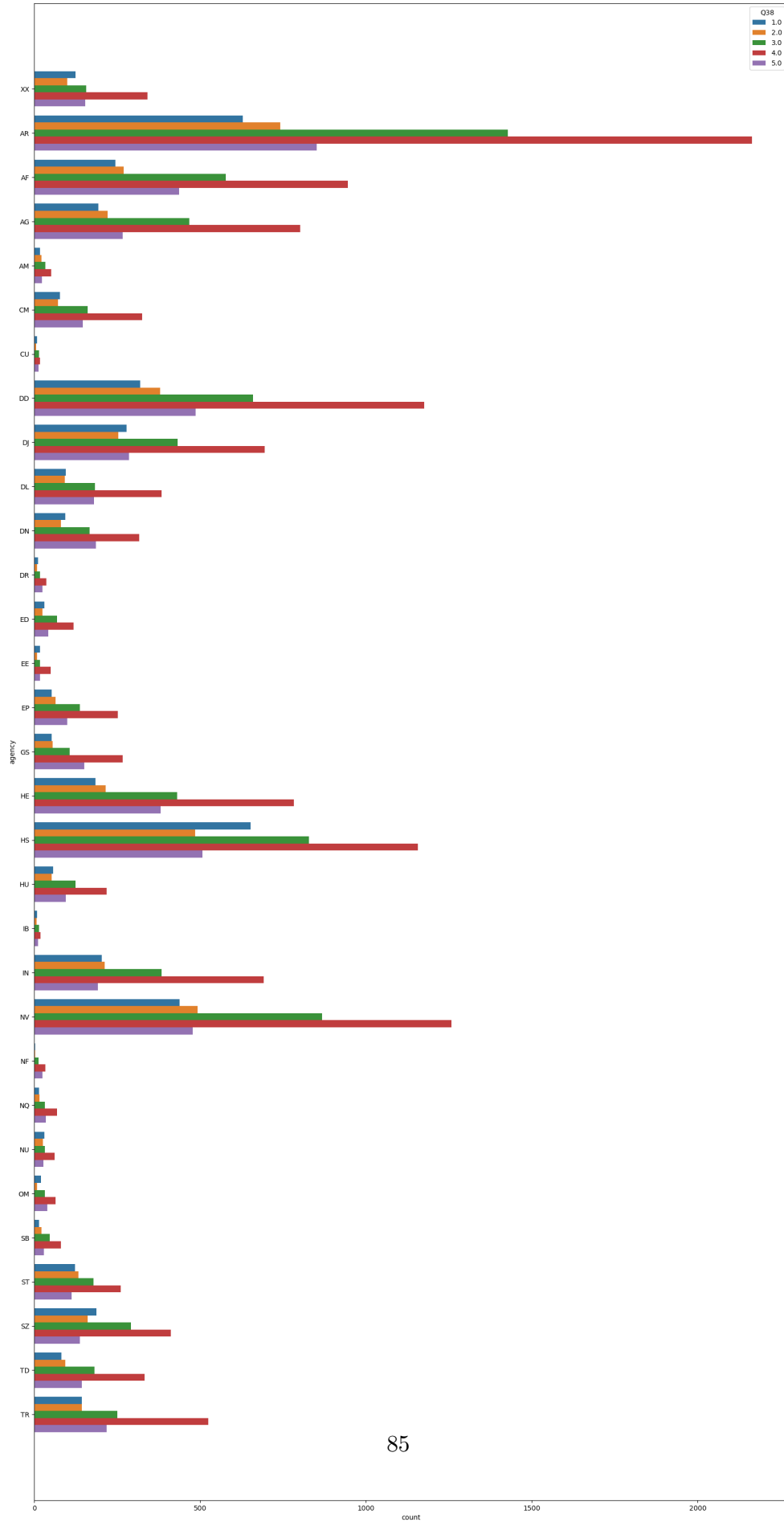


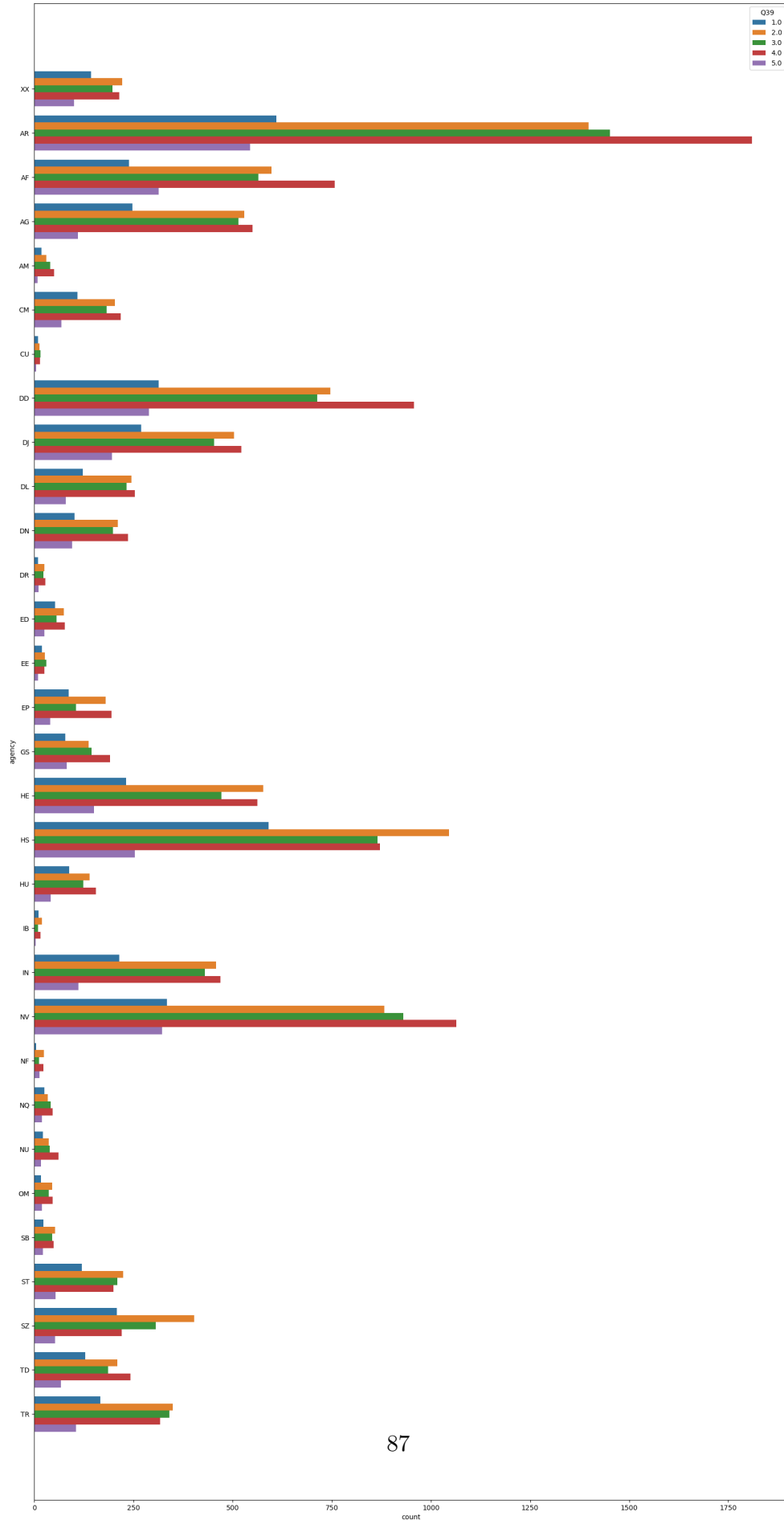


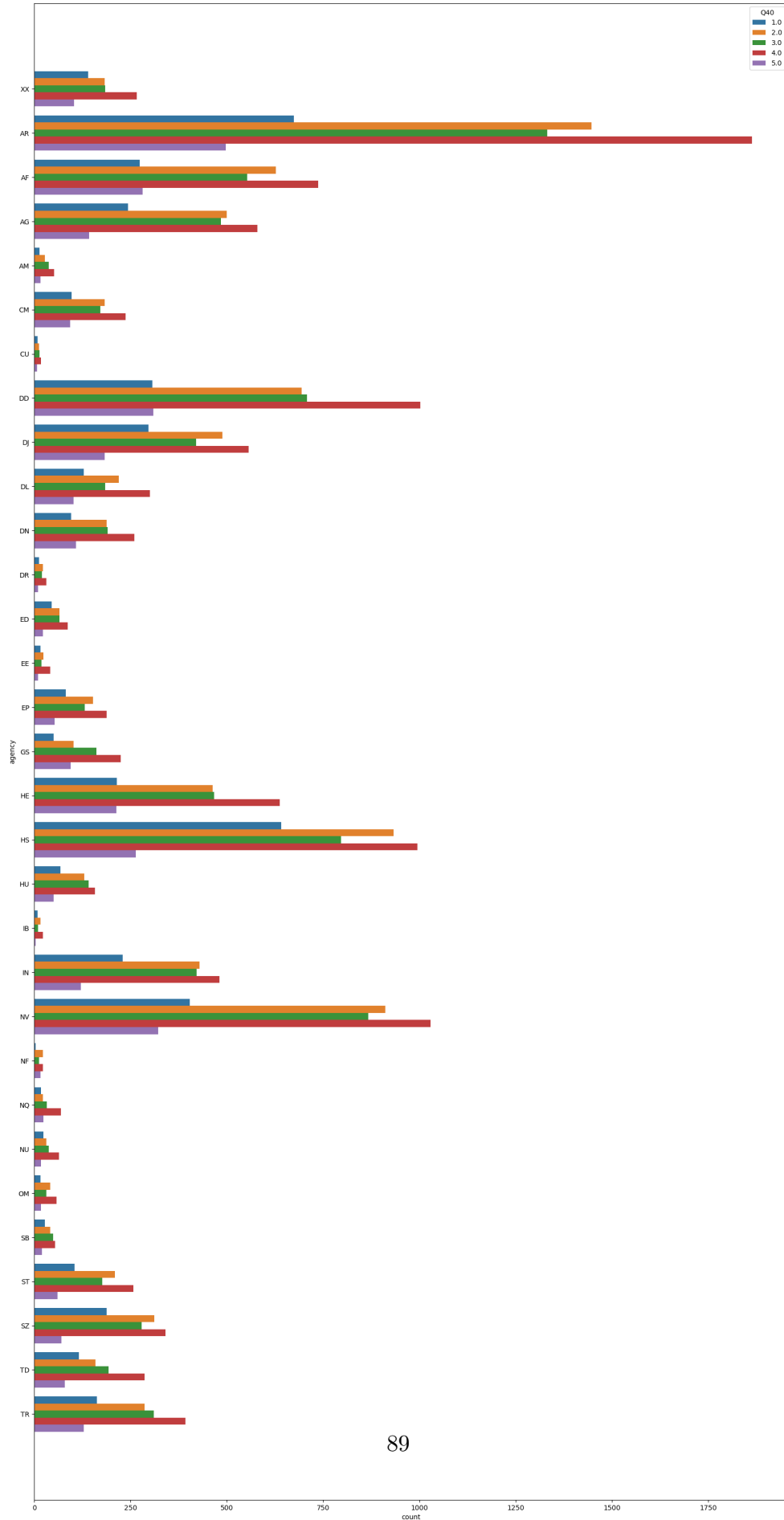


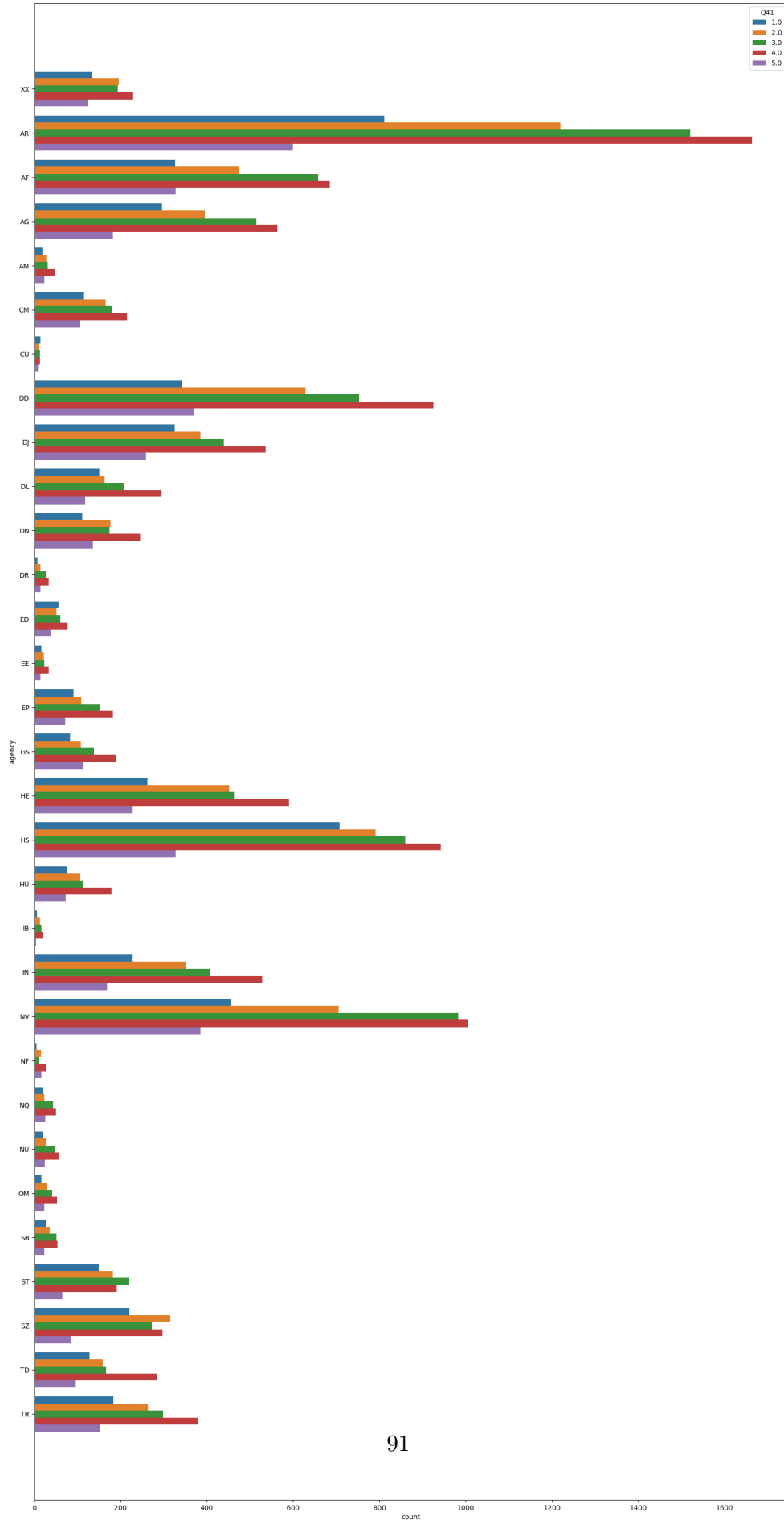


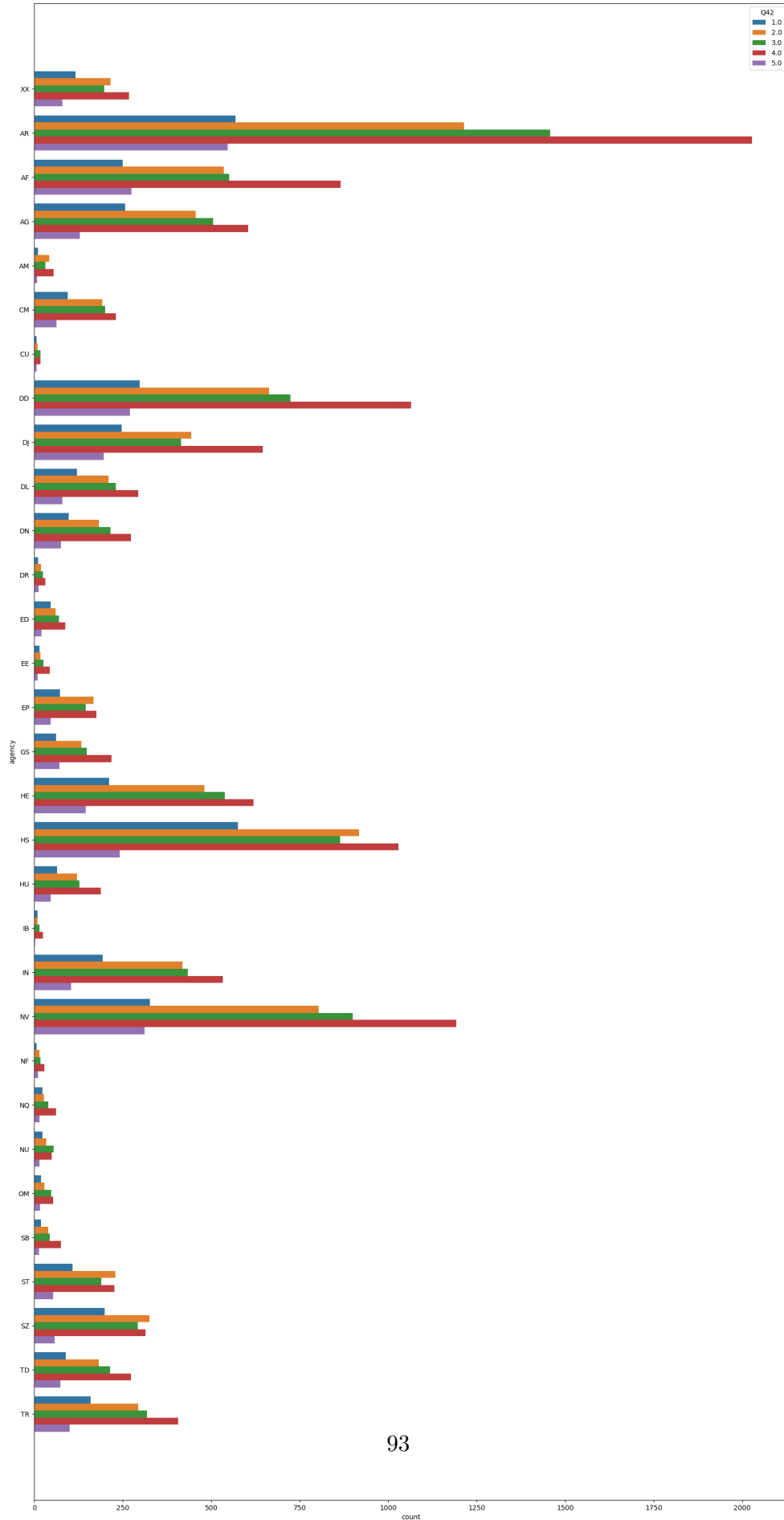


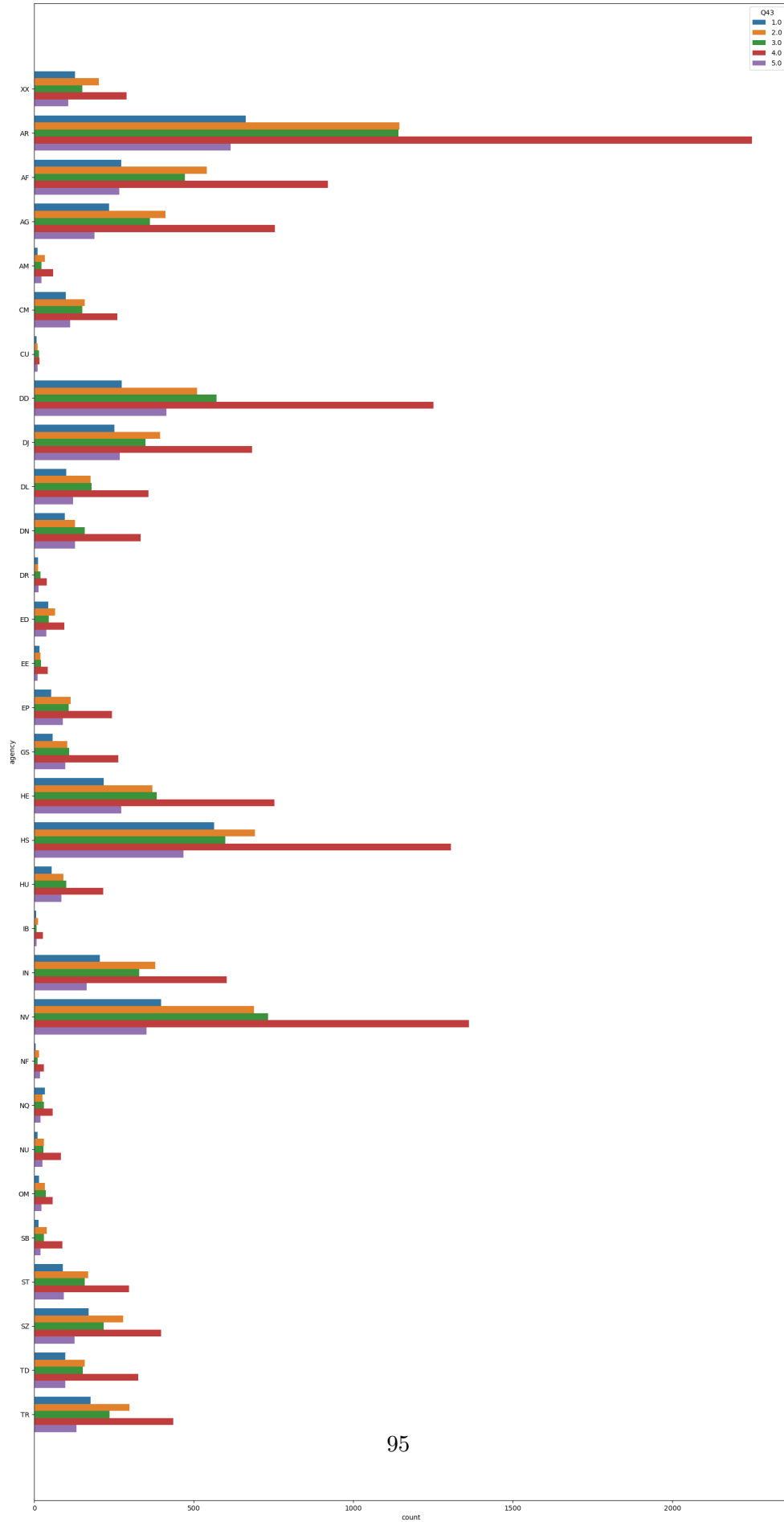






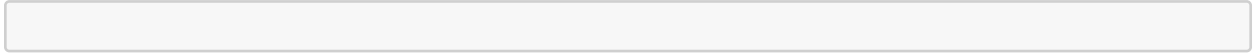






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