

```
In [3]: import pandas as pd
import seaborn as sns
import os
import matplotlib.pyplot as plt
```

```
In [9]: crimes = pd.read_excel("theft.xlsx.")
traffic = pd.read_csv("chickens.csv")
```

```
In [11]: crimes.columns
```

```
Out[11]: Index(['Region', 'Sub Region', 'Country', 'Count', 'Rate', 'Year'], dtype='object')
```

```
In [13]: traffic.columns
```

```
Out[13]: Index(['Unnamed: 0', 'Domain Code', 'Domain', 'Area Code (M49)', 'Area',
               'Element Code', 'Element', 'Item Code (CPC)', 'Item', 'Year Code',
               'Year', 'Unit', 'Value', 'Flag', 'Flag Description', 'Note',
               'Value Extended'],
               dtype='object')
```

```
In [15]: traffic.rename(columns={"Area": "Country"}, inplace=True)
```

```
In [17]: traffic
```

Out[17]:

	Unnamed: 0	Domain Code	Domain	Area Code (M49)	Country	Element Code	Element	Item Code (CPC)	Item	Year Code	Year	Unit	Value	Flag	Flag Description
0	26	TCL	Crops and livestock products	4	Afghanistan	5609	Import quantity	2151.0	Chickens	2010	2010	1000 An	3892	A	Official figure
1	27	TCL	Crops and livestock products	4	Afghanistan	5622	Import value	2151.0	Chickens	2010	2010	1000 USD	3350	A	Official figure
2	28	TCL	Crops and livestock products	4	Afghanistan	5909	Export quantity	2151.0	Chickens	2010	2010	1000 An	0	E	Estimated value
3	29	TCL	Crops and livestock products	4	Afghanistan	5922	Export value	2151.0	Chickens	2010	2010	1000 USD	0	E	Estimated value
4	30	TCL	Crops and livestock products	4	Afghanistan	5609	Import quantity	2151.0	Chickens	2011	2011	1000 An	4720	A	Official figure
...
4877	42775	TCL	Crops and livestock products	716	Zimbabwe	5922	Export value	2151.0	Chickens	2016	2016	1000 USD	1924	A	Official figure
4878	42776	TCL	Crops and livestock products	716	Zimbabwe	5609	Import quantity	2151.0	Chickens	2017	2017	1000 An	403	A	Official figure

	Unnamed: 0	Domain Code	Domain	Area Code (M49)	Country	Element Code	Element	Item Code (CPC)	Item	Year Code	Year	Unit	Value	Flag	Flag Description
4879	42777	TCL	Crops and livestock products	716	Zimbabwe	5622	Import value	2151.0	Chickens	2017	2017	1000 USD	2064	A	Official figure
4880	42778	TCL	Crops and livestock products	716	Zimbabwe	5909	Export quantity	2151.0	Chickens	2017	2017	1000 An	211	A	Official figure
4881	42779	TCL	Crops and livestock products	716	Zimbabwe	5922	Export value	2151.0	Chickens	2017	2017	1000 USD	653	A	Official figure

4882 rows × 17 columns

```
In [19]: traffic.columns
```

```
Out[19]: Index(['Unnamed: 0', 'Domain Code', 'Domain', 'Area Code (M49)', 'Country',
               'Element Code', 'Element', 'Item Code (CPC)', 'Item', 'Year Code',
               'Year', 'Unit', 'Value', 'Flag', 'Flag Description', 'Note',
               'Value Extended'],
              dtype='object')
```

```
In [23]: criminal_traffic = traffic.merge(crimes, on=["Country", "Year"])
```

```
In [96]: criminal_traffic.head(3)
```

Out[96]:

	Unnamed: 0	Domain Code	Domain	Area Code (M49)	Country	Element Code	Element	Item Code (CPC)	Item	Year Code	...	Value	Flag	Flag Description	Note	Value Extended
0	130	TCL	Crops and livestock products	8	Albania	5609	Import quantity	2151.0	Chickens	2010	...	7738	A	Official figure	NaN	773800
1	131	TCL	Crops and livestock products	8	Albania	5622	Import value	2151.0	Chickens	2010	...	5288	A	Official figure	NaN	528800
2	132	TCL	Crops and livestock products	8	Albania	5909	Export quantity	2151.0	Chickens	2010	...	0	E	Estimated value	NaN	

3 rows × 22 columns



```
In [37]: criminal_traffic["CCM"] = criminal_traffic["Value Extended"] * criminal_traffic["Count"] / 1000000
criminal_traffic[["Country", "Year", "Value Extended", "Count", "CCM"]]
```

Out[37]:

	Country	Year	Value Extended	Count	CCM
0	Albania	2010	7738000	3978	30781.764
1	Albania	2010	5288000	3978	21035.664
2	Albania	2010	0	3978	0.000
3	Albania	2010	0	3978	0.000
4	Albania	2011	6901000	4621	31889.521
...
2119	Uruguay	2014	1976000	101683	200925.608
2120	Uruguay	2015	454000	104443	47417.122
2121	Uruguay	2015	2435000	104443	254318.705
2122	Uruguay	2016	414000	110401	45706.014
2123	Uruguay	2016	2373000	110401	261981.573

2124 rows × 5 columns

```

In [49]: recent_filter = criminal_traffic["Year"] > 2013
export_filter = criminal_traffic["Element"] == "Export quantity"
recent_traffic = criminal_traffic[recent_filter & export_filter]
recent_traffic

```

Out[49]:

	Unnamed: 0	Domain Code	Domain	Area Code (M49)	Country	Element Code	Element	Item Code (CPC)	Item	Year Code	...	Value	Flag	Flag Description	Note	Ext
22	152	TCL	Crops and livestock products	8	Albania	5909	Export quantity	2151.0	Chickens	2016	...	115	A	Official figure	NaN	
46	931	TCL	Crops and livestock products	32	Argentina	5909	Export quantity	2151.0	Chickens	2014	...	196	A	Official figure	NaN	
50	935	TCL	Crops and livestock products	32	Argentina	5909	Export quantity	2151.0	Chickens	2015	...	181	A	Official figure	NaN	
54	939	TCL	Crops and livestock products	32	Argentina	5909	Export quantity	2151.0	Chickens	2016	...	127	A	Official figure	NaN	
86	1426	TCL	Crops and livestock products	36	Australia	5909	Export quantity	2151.0	Chickens	2014	...	106	A	Official figure	NaN	
...
2068	40744	TCL	Crops and livestock products	834	United Republic of Tanzania	5909	Export quantity	2151.0	Chickens	2014	...	5	A	Official figure	NaN	
2072	40748	TCL	Crops and livestock products	834	United Republic of Tanzania	5909	Export quantity	2151.0	Chickens	2015	...	19	A	Official figure	NaN	

	Unnamed: 0	Domain Code	Domain	Area Code (M49)	Country	Element Code	Element	Item Code (CPC)	Item	Year Code	...	Value	Flag	Flag Description	Note	Ext
2092	41044	TCL	Crops and livestock products	840	United States of America	5909	Export quantity	2151.0	Chickens	2014	...	90341	A	Official figure	NaN	90
2096	41048	TCL	Crops and livestock products	840	United States of America	5909	Export quantity	2151.0	Chickens	2015	...	61736	A	Official figure	NaN	61
2100	41052	TCL	Crops and livestock products	840	United States of America	5909	Export quantity	2151.0	Chickens	2016	...	68995	A	Official figure	NaN	68

168 rows × 22 columns

```
In [56]: recent_traffic["Year"].unique()
```

```
Out[56]: array([2016, 2014, 2015], dtype=int64)
```

```
In [58]: recent_traffic["Element"].unique()
```

```
Out[58]: array(['Export quantity'], dtype=object)
```

```
In [62]: recent_traffic.sort_values(by="CCM", ascending=False)
```

Out[62]:

	Unnamed: 0	Domain Code	Domain	Area Code (M49)	Country	Element Code	Element	Item Code (CPC)	Item	Year Code	...	Value	Flag	Flag Description	Note
2092	41044	TCL	Crops and livestock products	840	United States of America	5909	Export quantity	2151.0	Chickens	2014	...	90341	A	Official figure	NaN
750	15036	TCL	Crops and livestock products	276	Germany	5909	Export quantity	2151.0	Chickens	2016	...	333700	A	Official figure	NaN 3
746	15032	TCL	Crops and livestock products	276	Germany	5909	Export quantity	2151.0	Chickens	2015	...	292094	A	Official figure	NaN 2
2100	41052	TCL	Crops and livestock products	840	United States of America	5909	Export quantity	2151.0	Chickens	2016	...	68995	A	Official figure	NaN
2096	41048	TCL	Crops and livestock products	840	United States of America	5909	Export quantity	2151.0	Chickens	2015	...	61736	A	Official figure	NaN
...
1386	26548	TCL	Crops and livestock products	524	Nepal	5909	Export quantity	2151.0	Chickens	2016	...	0	A	Official figure	NaN
1382	26039	TCL	Crops and livestock products	104	Myanmar	5909	Export quantity	2151.0	Chickens	2016	...	0	A	Official figure	NaN

	Unnamed: 0	Domain Code	Domain	Area Code (M49)	Country	Element Code	Element	Item Code (CPC)	Item	Year Code	...	Value	Flag	Flag Description	Note
1788	34464	TCL	Crops and livestock products	702	Singapore	5909	Export quantity	2151.0	Chickens	2015	...	0	E	Estimated value	NaN
1792	34468	TCL	Crops and livestock products	702	Singapore	5909	Export quantity	2151.0	Chickens	2016	...	0	E	Estimated value	NaN
1784	34460	TCL	Crops and livestock products	702	Singapore	5909	Export quantity	2151.0	Chickens	2014	...	0	E	Estimated value	NaN

168 rows × 22 columns

```
In [70]: pivot_RecentTraffic = recent_traffic.pivot_table(index=["Region", "Country"], columns="Year", values="CCM")
pivot_RecentTraffic
```

Out[70]:

	Year	2014	2015	2016
Region	Country			
Africa	Burundi	0.807	NaN	NaN
	Kenya	2546.145	3221.900	104.335
	Madagascar	3.315	4.440	NaN
	Morocco	NaN	1214.925	NaN
	Senegal	NaN	70.084	28.182
...
Europe	Slovenia	24473.739	24416.658	37291.485
	Spain	2987067.720	4564380.184	4330835.889
	Sweden	1798242.150	1547029.666	2208454.668
	Switzerland	234777.152	212972.748	238350.189
Oceania	Australia	56768.936	93716.058	128167.704

68 rows × 3 columns

```
In [ ]: pivot_RecentTraffic.to_excel("report_pollo_traffico_manigoldi.xlsx")
```

```
In [72]: agents = recent_traffic.groupby("Region")
agents
```

```
Out[72]: <pandas.core.groupby.generic.DataFrameGroupBy object at 0x000001CCFB734E60>
```

```
In [76]: for name, group in agents:
          print(name)
```

Africa
Americas
Asia
Europe
Oceania

```
In [78]: for name, group in agents:  
         print(group)
```

	Unnamed: 0	Domain	Code	Domain	Area	Code (M49)	\
352	6014	TCL	Crops and livestock products			108	
1106	20739	TCL	Crops and livestock products			404	
1110	20743	TCL	Crops and livestock products			404	
1114	20747	TCL	Crops and livestock products			404	
1252	23362	TCL	Crops and livestock products			450	
1256	23366	TCL	Crops and livestock products			450	
1366	25632	TCL	Crops and livestock products			504	
1732	33690	TCL	Crops and livestock products			686	
1736	33694	TCL	Crops and livestock products			686	
2032	39444	TCL	Crops and livestock products			800	
2068	40744	TCL	Crops and livestock products			834	
2072	40748	TCL	Crops and livestock products			834	

		Country	Element	Code	Element	\
352		Burundi		5909	Export quantity	
1106		Kenya		5909	Export quantity	
1110		Kenya		5909	Export quantity	
1114		Kenya		5909	Export quantity	
1252		Madagascar		5909	Export quantity	
1256		Madagascar		5909	Export quantity	
1366		Morocco		5909	Export quantity	
1732		Senegal		5909	Export quantity	
1736		Senegal		5909	Export quantity	
2032		Uganda		5909	Export quantity	
2068	United Republic of Tanzania			5909	Export quantity	
2072	United Republic of Tanzania			5909	Export quantity	

	Item	Code (CPC)	Item	Year	Code	...	Value	Flag	\
352	2151.0	Chickens		2014	...	1	A		
1106	2151.0	Chickens		2014	...	2055	X		
1110	2151.0	Chickens		2015	...	2900	X		
1114	2151.0	Chickens		2016	...	77	A		
1252	2151.0	Chickens		2014	...	17	A		
1256	2151.0	Chickens		2015	...	20	A		
1366	2151.0	Chickens		2015	...	25	A		
1732	2151.0	Chickens		2015	...	28	A		
1736	2151.0	Chickens		2016	...	183	A		
2032	2151.0	Chickens		2014	...	214	A		
2068	2151.0	Chickens		2014	...	5	A		
2072	2151.0	Chickens		2015	...	19	A		

	Flag Description \
352	Official figure
1106	Figure from international organizations
1110	Figure from international organizations
1114	Official figure
1252	Official figure
1256	Official figure
1366	Official figure
1732	Official figure
1736	Official figure
2032	Official figure
2068	Official figure
2072	Official figure

	Note	Value	Extended	Region \
352	NaN	1000		Africa
1106	Estimated data using trading partners database	2055000		Africa
1110	Estimated data using trading partners database	2900000		Africa
1114	NaN	77000		Africa
1252	NaN	17000		Africa
1256	NaN	20000		Africa
1366	NaN	25000		Africa
1732	NaN	28000		Africa
1736	NaN	183000		Africa
2032	NaN	214000		Africa
2068	NaN	5000		Africa
2072	NaN	19000		Africa

	Sub Region	Count	Rate	CCM
352	Eastern Africa	807	8.158281	0.807
1106	Eastern Africa	1239	2.692059	2546.145
1110	Eastern Africa	1111	2.352007	3221.900
1114	Eastern Africa	1355	2.794543	104.335
1252	Eastern Africa	195	0.826628	3.315
1256	Eastern Africa	222	0.916065	4.440
1366	Northern Africa	48597	139.633222	1214.925
1732	Western Africa	2503	16.712299	70.084
1736	Western Africa	154	0.998598	28.182
2032	Eastern Africa	17059	43.928750	3650.626
2068	Eastern Africa	1043	1.996750	5.215

2072 Eastern Africa 179 0.332220 3.401

[12 rows x 22 columns]

	Unnamed: 0	Domain	Code	Domain	Area	Code (M49)	\
46	931	TCL	Crops and livestock products			32	
50	935	TCL	Crops and livestock products			32	
54	939	TCL	Crops and livestock products			32	
166	2851	TCL	Crops and livestock products			52	
168	2853	TCL	Crops and livestock products			52	
170	2855	TCL	Crops and livestock products			52	
404	6641	TCL	Crops and livestock products			124	
408	6645	TCL	Crops and livestock products			124	
412	6649	TCL	Crops and livestock products			124	
454	8866	TCL	Crops and livestock products			170	
458	8870	TCL	Crops and livestock products			170	
462	8874	TCL	Crops and livestock products			170	
568	11710	TCL	Crops and livestock products			214	
572	11714	TCL	Crops and livestock products			214	
576	11718	TCL	Crops and livestock products			214	
598	11909	TCL	Crops and livestock products			218	
602	11913	TCL	Crops and livestock products			218	
630	12494	TCL	Crops and livestock products			222	
634	12498	TCL	Crops and livestock products			222	
812	16162	TCL	Crops and livestock products			320	
816	16166	TCL	Crops and livestock products			320	
820	16170	TCL	Crops and livestock products			320	
860	16950	TCL	Crops and livestock products			340	
864	16954	TCL	Crops and livestock products			340	
868	16958	TCL	Crops and livestock products			340	
1020	19678	TCL	Crops and livestock products			388	
1024	19682	TCL	Crops and livestock products			388	
1492	29502	TCL	Crops and livestock products			591	
1496	29506	TCL	Crops and livestock products			591	
1500	29510	TCL	Crops and livestock products			591	
1534	29945	TCL	Crops and livestock products			604	
1538	29949	TCL	Crops and livestock products			604	
1542	29953	TCL	Crops and livestock products			604	
2092	41044	TCL	Crops and livestock products			840	
2096	41048	TCL	Crops and livestock products			840	
2100	41052	TCL	Crops and livestock products			840	

	Country	Element	Code	Element	\
46	Argentina		5909	Export quantity	
50	Argentina		5909	Export quantity	
54	Argentina		5909	Export quantity	
166	Barbados		5909	Export quantity	
168	Barbados		5909	Export quantity	
170	Barbados		5909	Export quantity	
404	Canada		5909	Export quantity	
408	Canada		5909	Export quantity	
412	Canada		5909	Export quantity	
454	Colombia		5909	Export quantity	
458	Colombia		5909	Export quantity	
462	Colombia		5909	Export quantity	
568	Dominican Republic		5909	Export quantity	
572	Dominican Republic		5909	Export quantity	
576	Dominican Republic		5909	Export quantity	
598	Ecuador		5909	Export quantity	
602	Ecuador		5909	Export quantity	
630	El Salvador		5909	Export quantity	
634	El Salvador		5909	Export quantity	
812	Guatemala		5909	Export quantity	
816	Guatemala		5909	Export quantity	
820	Guatemala		5909	Export quantity	
860	Honduras		5909	Export quantity	
864	Honduras		5909	Export quantity	
868	Honduras		5909	Export quantity	
1020	Jamaica		5909	Export quantity	
1024	Jamaica		5909	Export quantity	
1492	Panama		5909	Export quantity	
1496	Panama		5909	Export quantity	
1500	Panama		5909	Export quantity	
1534	Peru		5909	Export quantity	
1538	Peru		5909	Export quantity	
1542	Peru		5909	Export quantity	
2092	United States of America		5909	Export quantity	
2096	United States of America		5909	Export quantity	
2100	United States of America		5909	Export quantity	

	Item Code (CPC)	Item	Year	Code	...	Value	Flag	\
46	2151.0	Chickens	2014	...	196	A		
50	2151.0	Chickens	2015	...	181	A		

54	2151.0	Chickens	2016	...	127	A
166	2151.0	Chickens	2014	...	47	A
168	2151.0	Chickens	2015	...	47	A
170	2151.0	Chickens	2016	...	43	A
404	2151.0	Chickens	2014	...	6843	A
408	2151.0	Chickens	2015	...	5923	A
412	2151.0	Chickens	2016	...	5511	A
454	2151.0	Chickens	2014	...	1461	A
458	2151.0	Chickens	2015	...	1246	A
462	2151.0	Chickens	2016	...	372	A
568	2151.0	Chickens	2014	...	3707	I
572	2151.0	Chickens	2015	...	2099	A
576	2151.0	Chickens	2016	...	941	A
598	2151.0	Chickens	2015	...	375	A
602	2151.0	Chickens	2016	...	90	A
630	2151.0	Chickens	2014	...	16654	A
634	2151.0	Chickens	2015	...	13938	A
812	2151.0	Chickens	2014	...	3134	A
816	2151.0	Chickens	2015	...	2637	A
820	2151.0	Chickens	2016	...	2615	A
860	2151.0	Chickens	2014	...	804	A
864	2151.0	Chickens	2015	...	1227	A
868	2151.0	Chickens	2016	...	1052	A
1020	2151.0	Chickens	2014	...	1	A
1024	2151.0	Chickens	2015	...	21	A
1492	2151.0	Chickens	2014	...	195	X
1496	2151.0	Chickens	2015	...	412	X
1500	2151.0	Chickens	2016	...	117	X
1534	2151.0	Chickens	2014	...	929	A
1538	2151.0	Chickens	2015	...	857	A
1542	2151.0	Chickens	2016	...	431	A
2092	2151.0	Chickens	2014	...	90341	A
2096	2151.0	Chickens	2015	...	61736	A
2100	2151.0	Chickens	2016	...	68995	A

	Flag Description \
46	Official figure
50	Official figure
54	Official figure
166	Official figure
168	Official figure

170	Official figure
404	Official figure
408	Official figure
412	Official figure
454	Official figure
458	Official figure
462	Official figure
568	Imputed value
572	Official figure
576	Official figure
598	Official figure
602	Official figure
630	Official figure
634	Official figure
812	Official figure
816	Official figure
820	Official figure
860	Official figure
864	Official figure
868	Official figure
1020	Official figure
1024	Official figure
1492	Figure from international organizations
1496	Figure from international organizations
1500	Figure from international organizations
1534	Official figure
1538	Official figure
1542	Official figure
2092	Official figure
2096	Official figure
2100	Official figure

	Note	Value	Extended	Region	\
46	NaN		196000	Americas	
50	NaN		181000	Americas	
54	NaN		127000	Americas	
166	NaN		47000	Americas	
168	NaN		47000	Americas	
170	NaN		43000	Americas	
404	NaN		6843000	Americas	
408	NaN		5923000	Americas	

412		NaN	5511000	Americas
454		NaN	1461000	Americas
458		NaN	1246000	Americas
462		NaN	372000	Americas
568		NaN	3707000	Americas
572		NaN	2099000	Americas
576		NaN	941000	Americas
598		NaN	375000	Americas
602		NaN	90000	Americas
630		NaN	16654000	Americas
634		NaN	13938000	Americas
812		NaN	3134000	Americas
816		NaN	2637000	Americas
820		NaN	2615000	Americas
860		NaN	804000	Americas
864		NaN	1227000	Americas
868		NaN	1052000	Americas
1020		NaN	1000	Americas
1024		NaN	21000	Americas
1492	Estimated data using trading partners database		195000	Americas
1496	Estimated data using trading partners database		412000	Americas
1500	Estimated data using trading partners database		117000	Americas
1534		NaN	929000	Americas
1538		NaN	857000	Americas
1542		NaN	431000	Americas
2092		NaN	90341000	Americas
2096		NaN	61736000	Americas
2100		NaN	68995000	Americas

	Sub Region	Count	Rate	CCM
46	South America	287063	667.875481	5.626435e+04
50	South America	271921	626.289723	4.921770e+04
54	South America	270125	616.213137	3.430588e+04
166	Caribbean	1958	690.932830	9.202600e+01
168	Caribbean	1694	596.023461	7.961800e+01
170	Caribbean	1701	597.095609	7.314300e+01
404	Northern America	487161	1368.248060	3.333643e+06
408	Northern America	502620	1398.119801	2.977018e+06
412	Northern America	511054	1408.622527	2.816419e+06
454	South America	74111	155.070175	1.082762e+05
458	South America	78595	162.963142	9.792937e+04

462	South America	86564	178.016166	3.220181e+04
568	Caribbean	801	7.697598	2.969307e+03
572	Caribbean	1117	10.609405	2.344583e+03
576	Caribbean	874	8.210897	8.224340e+02
598	South America	33572	207.948679	1.258950e+04
602	South America	31782	193.998345	2.860380e+03
630	Central America	7533	119.929523	1.254546e+05
634	Central America	8539	135.271759	1.190166e+05
812	Central America	45476	285.589421	1.425218e+05
816	Central America	47148	290.098175	1.243293e+05
820	Central America	49114	296.151108	1.284331e+05
860	Central America	3001	34.066596	2.412804e+03
864	Central America	2911	32.485834	3.571797e+03
868	Central America	3088	33.887474	3.248576e+03
1020	Caribbean	447	15.617974	4.470000e-01
1024	Caribbean	335	11.664613	7.035000e+00
1492	Central America	21252	544.366706	4.144140e+03
1496	Central America	18877	475.581149	7.777324e+03
1500	Central America	15983	396.279657	1.870011e+03
1534	South America	89599	289.277680	8.323747e+04
1538	South America	94480	301.115437	8.096936e+04
1542	South America	94907	298.790019	4.090492e+04
2092	Northern America	5809100	1828.377919	5.247999e+08
2096	Northern America	5723500	1788.989776	3.533460e+08
2100	Northern America	5638500	1749.839046	3.890283e+08

[36 rows x 22 columns]

	Unnamed: 0	Domain	Code	Domain	Area	Code (M49)	\
138	2028	TCL	Crops and livestock products			31	
142	2036	TCL	Crops and livestock products			31	
722	14734	TCL	Crops and livestock products			268	
940	17948	TCL	Crops and livestock products			360	
944	17952	TCL	Crops and livestock products			360	
948	17956	TCL	Crops and livestock products			360	
1050	19931	TCL	Crops and livestock products			392	
1082	20451	TCL	Crops and livestock products			398	
1086	20455	TCL	Crops and livestock products			398	
1180	21993	TCL	Crops and livestock products			422	
1184	21997	TCL	Crops and livestock products			422	
1382	26039	TCL	Crops and livestock products			104	
1386	26548	TCL	Crops and livestock products			524	

1464	29179	TCL	Crops and livestock products	586
1468	29183	TCL	Crops and livestock products	586
1472	29187	TCL	Crops and livestock products	586
1560	30179	TCL	Crops and livestock products	608
1562	30181	TCL	Crops and livestock products	608
1564	30183	TCL	Crops and livestock products	608
1642	31384	TCL	Crops and livestock products	410
1646	31388	TCL	Crops and livestock products	410
1784	34460	TCL	Crops and livestock products	702
1788	34464	TCL	Crops and livestock products	702
1792	34468	TCL	Crops and livestock products	702
1896	36324	TCL	Crops and livestock products	144
1900	36328	TCL	Crops and livestock products	144
1904	36332	TCL	Crops and livestock products	144
1984	37981	TCL	Crops and livestock products	764
1988	37985	TCL	Crops and livestock products	764
1992	37989	TCL	Crops and livestock products	764
2048	40064	TCL	Crops and livestock products	784
2052	40068	TCL	Crops and livestock products	784
2056	40072	TCL	Crops and livestock products	784

	Country	Element	Code	Element	Item Code (CPC)	\
138	Azerbaijan		5909	Export quantity	2151.0	
142	Azerbaijan		5909	Export quantity	2151.0	
722	Georgia		5909	Export quantity	2151.0	
940	Indonesia		5909	Export quantity	2151.0	
944	Indonesia		5909	Export quantity	2151.0	
948	Indonesia		5909	Export quantity	2151.0	
1050	Japan		5909	Export quantity	2151.0	
1082	Kazakhstan		5909	Export quantity	2151.0	
1086	Kazakhstan		5909	Export quantity	2151.0	
1180	Lebanon		5909	Export quantity	2151.0	
1184	Lebanon		5909	Export quantity	2151.0	
1382	Myanmar		5909	Export quantity	2151.0	
1386	Nepal		5909	Export quantity	2151.0	
1464	Pakistan		5909	Export quantity	2151.0	
1468	Pakistan		5909	Export quantity	2151.0	
1472	Pakistan		5909	Export quantity	2151.0	
1560	Philippines		5909	Export quantity	2151.0	
1562	Philippines		5909	Export quantity	2151.0	
1564	Philippines		5909	Export quantity	2151.0	

1642	Republic of Korea	5909	Export quantity	2151.0
1646	Republic of Korea	5909	Export quantity	2151.0
1784	Singapore	5909	Export quantity	2151.0
1788	Singapore	5909	Export quantity	2151.0
1792	Singapore	5909	Export quantity	2151.0
1896	Sri Lanka	5909	Export quantity	2151.0
1900	Sri Lanka	5909	Export quantity	2151.0
1904	Sri Lanka	5909	Export quantity	2151.0
1984	Thailand	5909	Export quantity	2151.0
1988	Thailand	5909	Export quantity	2151.0
1992	Thailand	5909	Export quantity	2151.0
2048	United Arab Emirates	5909	Export quantity	2151.0
2052	United Arab Emirates	5909	Export quantity	2151.0
2056	United Arab Emirates	5909	Export quantity	2151.0

	Item	Year	Code	...	Value	Flag	\
138	Chickens	2014	...	18	A		
142	Chickens	2016	...	2	X		
722	Chickens	2014	...	204	A		
940	Chickens	2014	...	2	A		
944	Chickens	2015	...	11	A		
948	Chickens	2016	...	6	A		
1050	Chickens	2016	...	34	A		
1082	Chickens	2014	...	48	E		
1086	Chickens	2015	...	103	A		
1180	Chickens	2014	...	1935	A		
1184	Chickens	2015	...	19	A		
1382	Chickens	2016	...	0	A		
1386	Chickens	2016	...	0	A		
1464	Chickens	2014	...	2469	A		
1468	Chickens	2015	...	2147	A		
1472	Chickens	2016	...	4747	A		
1560	Chickens	2014	...	170	A		
1562	Chickens	2015	...	159	A		
1564	Chickens	2016	...	161	A		
1642	Chickens	2015	...	6	A		
1646	Chickens	2016	...	8	A		
1784	Chickens	2014	...	0	E		
1788	Chickens	2015	...	0	E		
1792	Chickens	2016	...	0	E		
1896	Chickens	2014	...	131	A		

1900	Chickens	2015	...	292	A
1904	Chickens	2016	...	213	A
1984	Chickens	2014	...	3873	A
1988	Chickens	2015	...	4941	A
1992	Chickens	2016	...	8544	A
2048	Chickens	2014	...	3175	A
2052	Chickens	2015	...	1800	A
2056	Chickens	2016	...	958	A

	Flag Description \
138	Official figure
142	Figure from international organizations
722	Official figure
940	Official figure
944	Official figure
948	Official figure
1050	Official figure
1082	Estimated value
1086	Official figure
1180	Official figure
1184	Official figure
1382	Official figure
1386	Official figure
1464	Official figure
1468	Official figure
1472	Official figure
1560	Official figure
1562	Official figure
1564	Official figure
1642	Official figure
1646	Official figure
1784	Estimated value
1788	Estimated value
1792	Estimated value
1896	Official figure
1900	Official figure
1904	Official figure
1984	Official figure
1988	Official figure
1992	Official figure
2048	Official figure

2052 Official figure
2056 Official figure

	Note	Value	Extended	Region	\
138		NaN	18000	Asia	
142	Estimated data using trading partners database		2000	Asia	
722		NaN	204000	Asia	
940		NaN	2000	Asia	
944		NaN	11000	Asia	
948		NaN	6000	Asia	
1050		NaN	34000	Asia	
1082		NaN	48000	Asia	
1086		NaN	103000	Asia	
1180		NaN	1935000	Asia	
1184		NaN	19000	Asia	
1382		NaN	0	Asia	
1386		NaN	0	Asia	
1464		NaN	2469000	Asia	
1468		NaN	2147000	Asia	
1472		NaN	4747000	Asia	
1560		NaN	170000	Asia	
1562		NaN	159000	Asia	
1564		NaN	161000	Asia	
1642		NaN	6000	Asia	
1646		NaN	8000	Asia	
1784		NaN	0	Asia	
1788		NaN	0	Asia	
1792		NaN	0	Asia	
1896		NaN	131000	Asia	
1900		NaN	292000	Asia	
1904		NaN	213000	Asia	
1984		NaN	3873000	Asia	
1988		NaN	4941000	Asia	
1992		NaN	8544000	Asia	
2048		NaN	3175000	Asia	
2052		NaN	1800000	Asia	
2056		NaN	958000	Asia	

	Sub Region	Count	Rate	CCM
138	Western Asia	5861	61.670257	105.498
142	Western Asia	2407	24.778812	4.814

722	Western Asia	9558	239.408107	1949.832
940	South-Eastern Asia	24538	9.617800	49.076
944	South-Eastern Asia	26298	10.186623	289.278
948	South-Eastern Asia	26636	10.206369	159.816
1050	Eastern Asia	374497	293.311131	12732.898
1082	Central Asia	207002	1183.695197	9936.096
1086	Central Asia	208907	1176.964185	21517.421
1180	Western Asia	28411	507.042394	54975.285
1184	Western Asia	25030	427.755103	475.570
1382	South-Eastern Asia	3125	5.909093	0.000
1386	Southern Asia	1274	4.396578	0.000
1464	Southern Asia	42747	23.038460	105542.343
1468	Southern Asia	38902	20.541712	83522.594
1472	Southern Asia	40388	20.907265	191721.836
1560	South-Eastern Asia	112857	112.741723	19185.690
1562	South-Eastern Asia	82751	81.354662	13157.409
1564	South-Eastern Asia	49634	48.041999	7991.074
1642	Eastern Asia	245853	485.936361	1475.118
1646	Eastern Asia	203037	399.865507	1624.296
1784	South-Eastern Asia	16182	297.007787	0.000
1788	South-Eastern Asia	15207	274.729543	0.000
1792	South-Eastern Asia	13665	243.356900	0.000
1896	Southern Asia	10980	53.240070	1438.380
1900	Southern Asia	6425	31.017609	1876.100
1904	Southern Asia	6163	29.646855	1312.719
1984	South-Eastern Asia	39898	58.316110	154524.954
1988	South-Eastern Asia	39371	57.343979	194532.111
1992	South-Eastern Asia	33042	48.020406	282310.848
2048	Western Asia	6541	72.109976	20767.675
2052	Western Asia	6211	67.847882	11179.800
2056	Western Asia	4803	51.722587	4601.274

[33 rows x 22 columns]

	Unnamed: 0	Domain Code	Domain	Area Code (M49)	\
22	152	TCL	Crops and livestock products	8	
110	1687	TCL	Crops and livestock products	40	
114	1691	TCL	Crops and livestock products	40	
118	1695	TCL	Crops and livestock products	40	
190	3099	TCL	Crops and livestock products	112	
...	
1928	36963	TCL	Crops and livestock products	752	

1932	36967	TCL	Crops and livestock products	752
1952	37275	TCL	Crops and livestock products	756
1956	37279	TCL	Crops and livestock products	756
1960	37283	TCL	Crops and livestock products	756

	Country	Element	Code	Element	Item Code (CPC)	Item	\
22	Albania		5909	Export quantity	2151.0	Chickens	
110	Austria		5909	Export quantity	2151.0	Chickens	
114	Austria		5909	Export quantity	2151.0	Chickens	
118	Austria		5909	Export quantity	2151.0	Chickens	
190	Belarus		5909	Export quantity	2151.0	Chickens	
...	
1928	Sweden		5909	Export quantity	2151.0	Chickens	
1932	Sweden		5909	Export quantity	2151.0	Chickens	
1952	Switzerland		5909	Export quantity	2151.0	Chickens	
1956	Switzerland		5909	Export quantity	2151.0	Chickens	
1960	Switzerland		5909	Export quantity	2151.0	Chickens	

	Year	Code	...	Value	Flag	Flag Description	Note	Value	Extended	\
22	2016	...	...	115	A	Official figure	NaN	115000		
110	2014	...	...	12669	A	Official figure	NaN	12669000		
114	2015	...	...	14574	A	Official figure	NaN	14574000		
118	2016	...	...	16633	A	Official figure	NaN	16633000		
190	2014	...	...	139	A	Official figure	NaN	139000		
...		
1928	2015	...	...	3871	A	Official figure	NaN	3871000		
1932	2016	...	...	5883	A	Official figure	NaN	5883000		
1952	2014	...	...	1366	A	Official figure	NaN	1366000		
1956	2015	...	...	1374	A	Official figure	NaN	1374000		
1960	2016	...	...	1659	A	Official figure	NaN	1659000		

	Region	Sub Region	Count	Rate	CCM
22	Europe	Southern Europe	5633	192.443703	647.795
110	Europe	Western Europe	148263	1717.354591	1878343.947
114	Europe	Western Europe	140254	1616.079539	2044061.796
118	Europe	Western Europe	143531	1649.900554	2387351.123
190	Europe	Eastern Europe	40528	427.291899	5633.392
...
1928	Europe	Northern Europe	399646	4093.238484	1547029.666
1932	Europe	Northern Europe	375396	3816.866696	2208454.668
1952	Europe	Western Europe	171872	2088.453805	234777.152

1956	Europe	Western Europe	155002	1863.056534	212972.748
1960	Europe	Western Europe	143671	1712.422446	238350.189

[84 rows x 22 columns]

	Unnamed: 0	Domain	Code	Domain	Area Code (M49)	\
86	1426	TCL	Crops and livestock products		36	
88	1428	TCL	Crops and livestock products		36	
90	1430	TCL	Crops and livestock products		36	

	Country	Element	Code	Element	Item Code (CPC)	Item	\
86	Australia		5909	Export quantity	2151.0	Chickens	
88	Australia		5909	Export quantity	2151.0	Chickens	
90	Australia		5909	Export quantity	2151.0	Chickens	

	Year	Code	...	Value	Flag	Flag	Description	Note	Value	Extended	Region	\
86	2014	...	106	A	Official figure	NaN			106000	Oceania		
88	2015	...	167	A	Official figure	NaN			167000	Oceania		
90	2016	...	216	A	Official figure	NaN			216000	Oceania		

		Sub Region	Count	Rate	CCM
86	Australia and New Zealand	535556	2281.420977	56768.936	
88	Australia and New Zealand	561174	2357.917938	93716.058	
90	Australia and New Zealand	593369	2460.144673	128167.704	

[3 rows x 22 columns]

```
In [80]: for name, group in agents: #qui creo cartelle con le singole regioni utilizzando la libreria os
        os.mkdir(name)
```

```
In [82]: #qualora volessi rimandare la precedente formula, mi restituirebbe errore inquanto già esistenti;
        #pertanto creo la seguente formula per sovrascrivere semplicemnte le cartelle
        for name, group in agents:
            try:
                os.mkdir(name)
            except:
                print(f"Folder {name} already exist. Overwriting files")
```

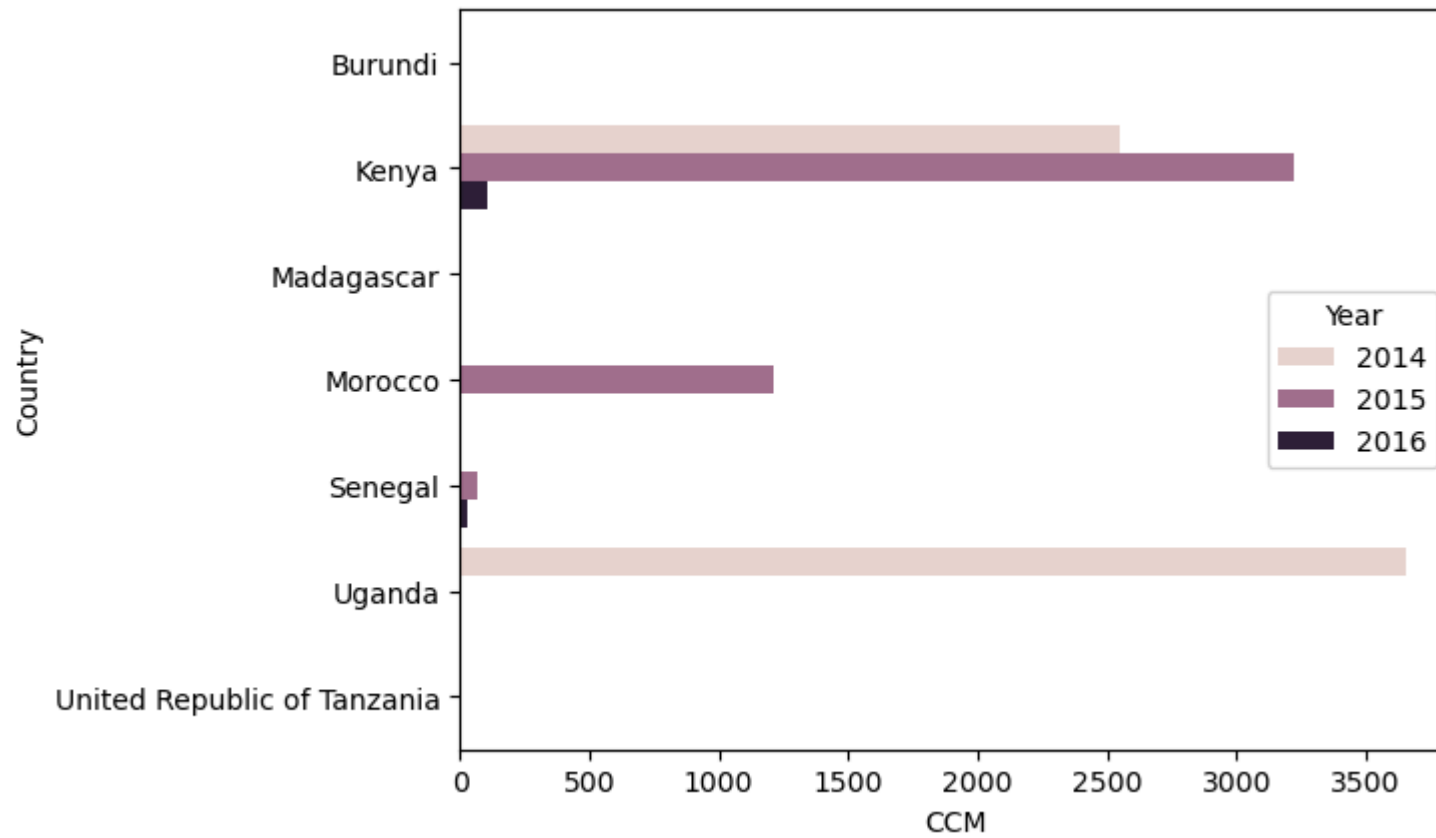
Folder Africa already exist. Overwriting files
Folder Americas already exist. Overwriting files
Folder Asia already exist. Overwriting files
Folder Europe already exist. Overwriting files
Folder Oceania already exist. Overwriting files

```
In [92]: for name, group in agents:
        try:
            os.mkdir(name)
        except:
            print(f"Folder {name} already exist. Overwriting files")

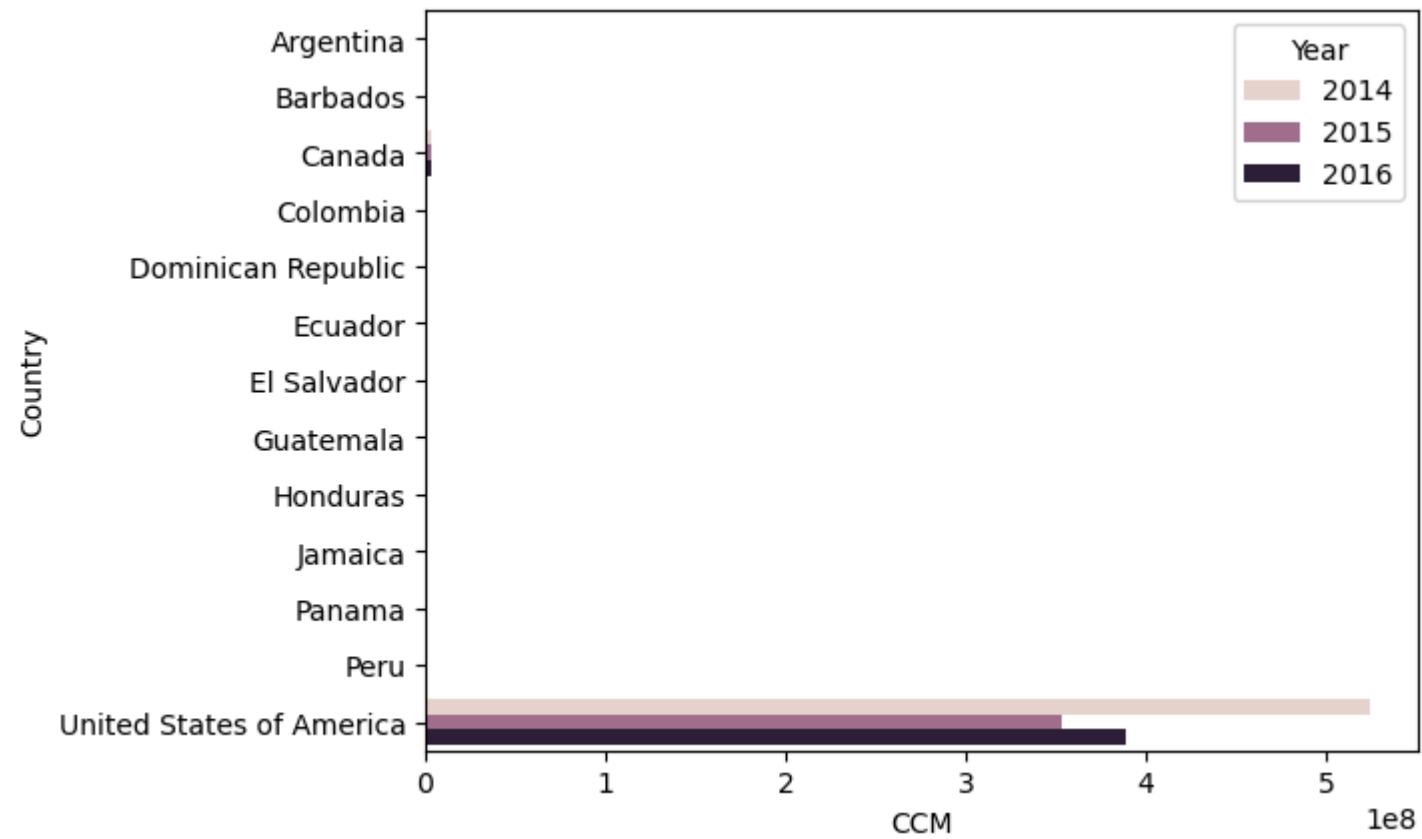
        group.to_csv(name + "/raw.csv")
        g_pivot = group.pivot_table(index=["Sub Region", "Country"], columns= "Year", values=["CCM", "Count", "Value Extended"], m
        g_pivot.to_excel(name + "/pivot.xlsx")

        sns.barplot(data=group, y="Country", x="CCM", hue="Year")
        plt.savefig(name + "/plot.png")
        plt.show()
```

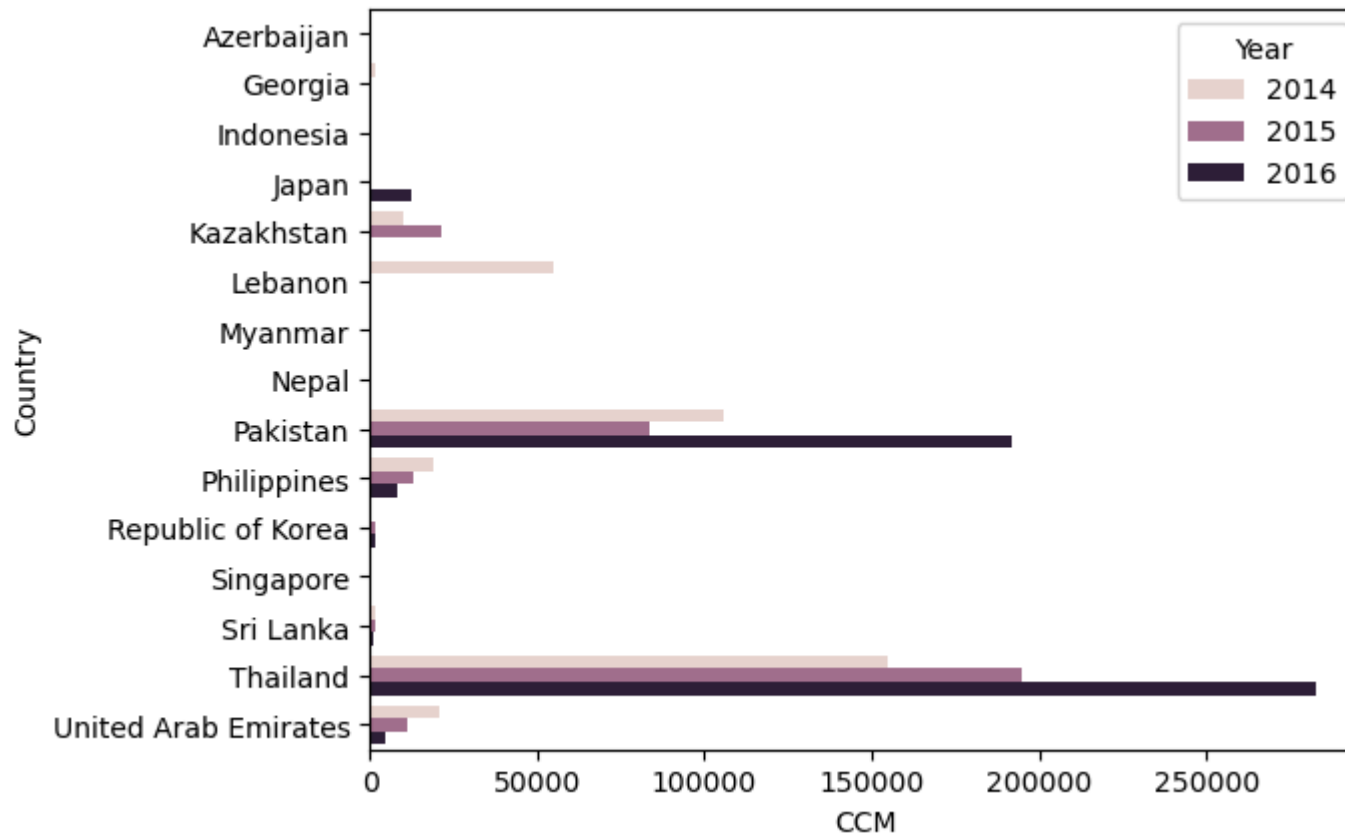
Folder Africa already exist. Overwriting files



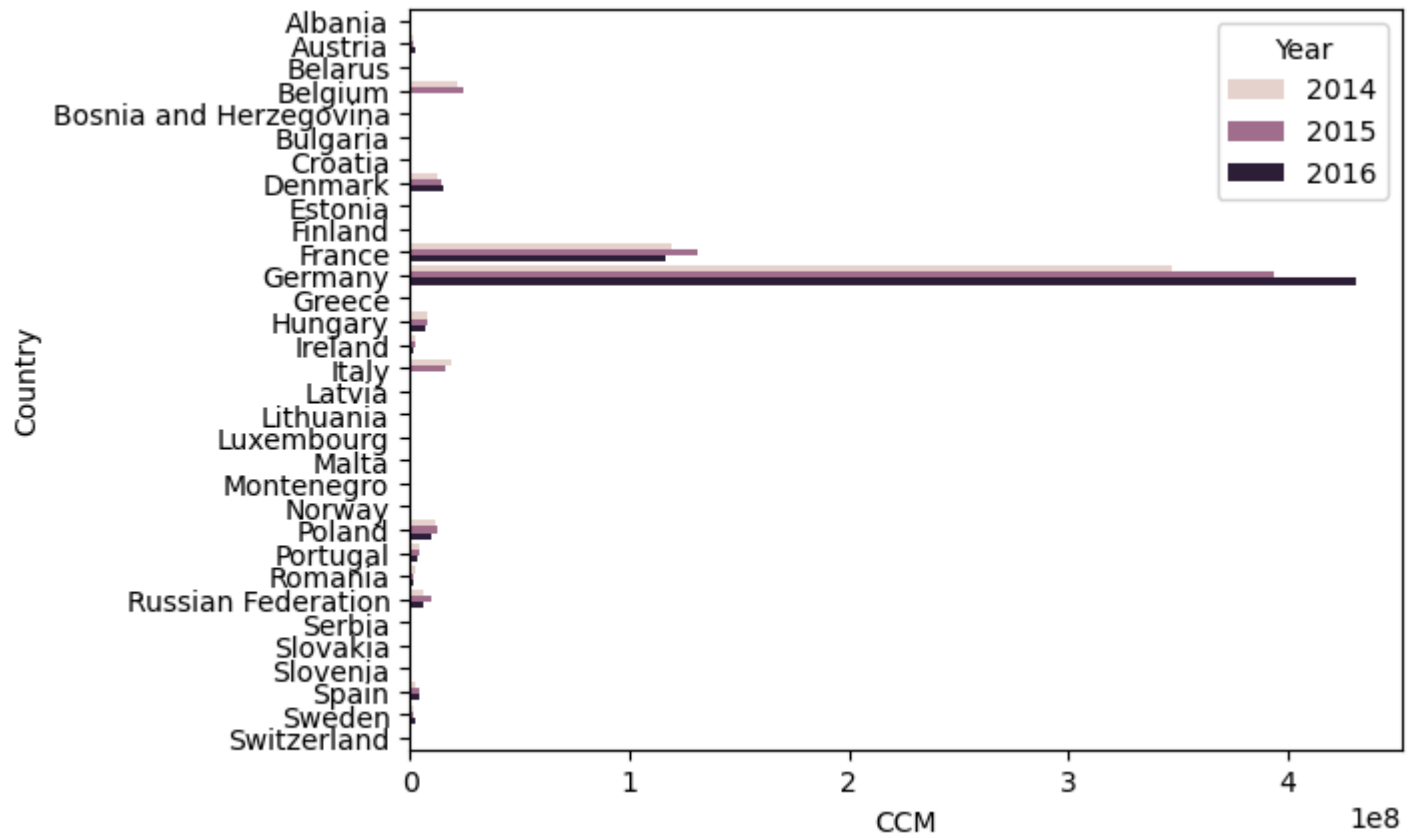
Folder Americas already exist. Overwriting files



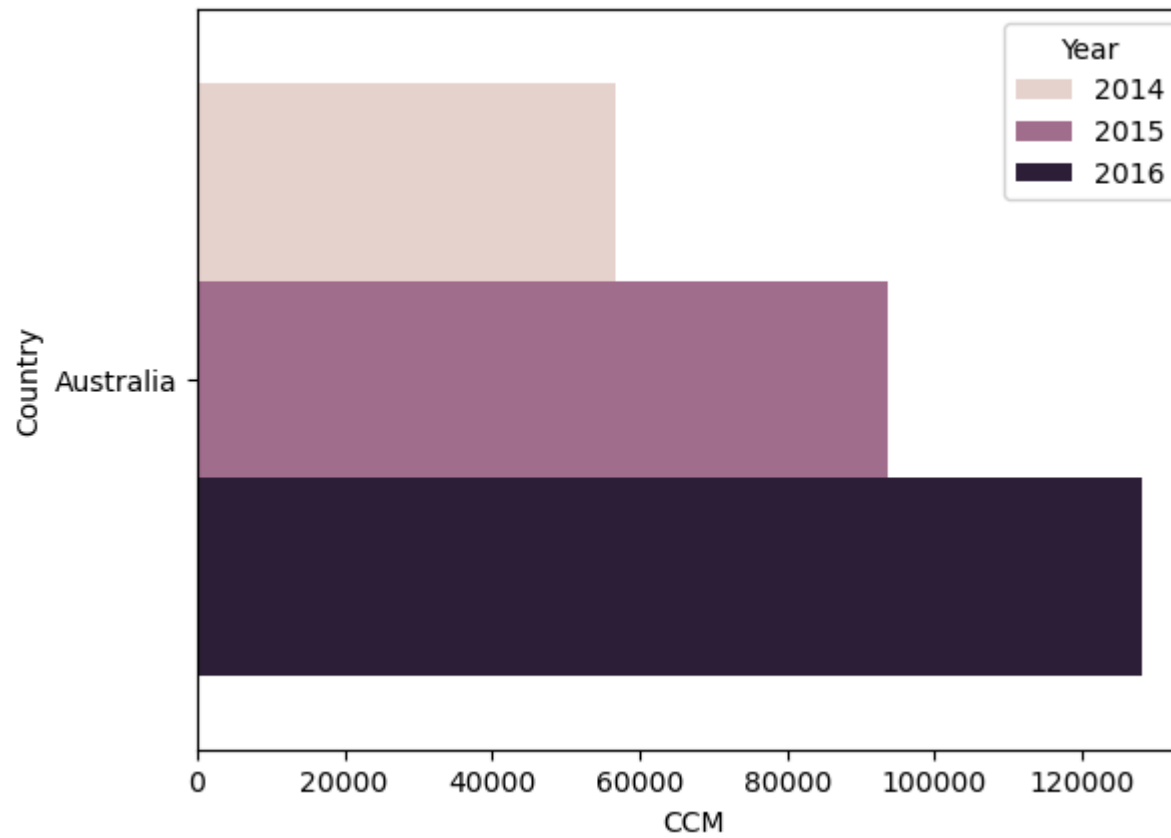
Folder Asia already exist. Overwriting files



Folder Europe already exist. Overwriting files



Folder Oceania already exist. Overwriting files



In []: