FBI Hate Crime 2013

Objectives:

1. find out which among the us states has the most occurence in hate crime

2. find out which state records most in the hate crimes categories

3. find out which hate crime category was alarming in the US

Codes

Showing my data set

In [72]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

# loading the dataset chosen by me
hatecrime_data = pd.read_csv('fbi-hate-crime-statistics-2013.csv')
hatecrime_data.index += 1 # making the index start in 1
hatecrime_data = hatecrime_data.dropna() # perform data imputation
hatecrime_data
```

Out[72]:

	State	Agency type	Agency name	Race	Religion	Sexual orientation	Ethnicity	Disability	Gender	Gender Identity	1st quarter	2nd quarter	3rd quarter	4th quarter	Populati
1	Alabama	Cities	Florence	2	0	0	0	0	0	0.0	0.0	1.0	0.0	1.0	39,4
2	Alabama	Cities	Hoover	0	0	1	0	0	0	0.0	0.0	1.0	0.0	0.0	84,1
3	Alabama	Cities	Prattville	2	0	0	0	0	0	0.0	1.0	0.0	1.0	0.0	35,1
4	Alabama	Cities	Tuscaloosa	1	0	0	0	0	0	0.0	0.0	0.0	1.0	0.0	94,1
5	Alaska	Cities	Anchorage	8	0	0	0	0	0	0.0	2.0	3.0	3.0	0.0	299,4
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
1816	Wisconsin	Cities	River Falls	2	0	0	0	0	0	0.0	2.0	0.0	0.0	0.0	15,2
1817	Wisconsin	Cities	Sparta	1	0	0	0	0	0	0.0	0.0	1.0	0.0	0.0	9,6
1818	Wisconsin	Cities	Wausau	1	0	0	0	0	0	0.0	1.0	0.0	0.0	0.0	39,1
1819	Wisconsin	Universities and Colleges	University of Wisconsin, Platteville	0	1	2	0	0	0	0.0	3.0	0.0	0.0	0.0	8,6
1826	Wyoming	Cities	Gillette	0	0	0	1	0	0	0.0	0.0	0.0	1.0	0.0	31,8

1372 rows × 15 columns

Descriptive analysis of my dataset

In [131…

```
#getting the total recorded hate crimes per state with their category


states = list(set(hatecrime_data['State'])) # getting the list of states from the original data set
hatecrime_state_list = {} # setup for the gathering of data fremae


for states in states: # loop for iterating over the states in the us
    a = pd.DataFrame(hatecrime_data[hatecrime_data['State'] == states])
    hatecrime_state_list[states] = []
    for category in ['Race','Religion','Sexual orientation','Ethnicity','Disability','Gender Identity']: # loop for getting the r
```

```
        hatecrime_state_list[states].append(np.sum(a[category]))
    hatecrime_state_list[states].append(np.sum(hatecrime_state_list[states])) # adding the sum of hate crimes per state

hatecrime_perstate_df = pd.DataFrame(hatecrime_state_list) # putting the dictionary result as data frame

hatecrime_perstate_df = hatecrime_perstate_df.rename(index = {0:'Race',1:'Religion',2:'Sexual orientation',
                                                              3:'Ethnicity',4:'Disability',5:'Gender Identity',6:'Total'})

hatecrime_perstate_flipped_df = hatecrime_perstate_df.transpose() # flips my dataframe
hatecrime_perstate_flipped_df
```

Out[131]:

	Race	Religion	Sexual orientation	Ethnicity	Disability	Gender Identity	Total
Illinois	52.0	7.0	27.0	6.0	0.0	0.0	92.0
North_Carolina	56.0	10.0	20.0	8.0	0.0	0.0	94.0
Alaska	8.0	0.0	0.0	0.0	0.0	0.0	8.0
Texas	49.0	6.0	40.0	21.0	2.0	0.0	118.0
Delaware	6.0	0.0	2.0	0.0	0.0	0.0	8.0
DC	18.0	6.0	31.0	3.0	0.0	12.0	70.0
Maine	10.0	3.0	9.0	0.0	0.0	0.0	22.0
Kentucky	88.0	4.0	27.0	12.0	4.0	0.0	135.0
Nebraska	12.0	5.0	7.0	4.0	0.0	0.0	28.0
Georgia	9.0	2.0	15.0	2.0	1.0	0.0	29.0
New_York	102.0	190.0	109.0	27.0	2.0	4.0	434.0
Washington	133.0	34.0	37.0	22.0	5.0	1.0	232.0
Vermont	8.0	1.0	2.0	0.0	0.0	0.0	11.0
Kansas	36.0	5.0	9.0	3.0	1.0	0.0	54.0
New_Jersey	180.0	121.0	60.0	38.0	4.0	0.0	403.0
Oregon	18.0	7.0	9.0	7.0	1.0	0.0	42.0
Minnesota	79.0	19.0	24.0	11.0	1.0	0.0	134.0
Missouri	45.0	10.0	23.0	6.0	1.0	2.0	87.0
California	304.0	121.0	176.0	91.0	1.0	6.0	699.0
South_Carolina	20.0	7.0	5.0	2.0	0.0	0.0	34.0
Arkansas	10.0	0.0	4.0	0.0	0.0	0.0	14.0
Wisconsin	18.0	5.0	13.0	8.0	0.0	0.0	44.0
Louisiana	1.0	1.0	5.0	1.0	0.0	0.0	8.0
West_Virginia	31.0	5.0	5.0	2.0	0.0	0.0	43.0

	Race	Religion	Sexual orientation	Ethnicity	Disability	Gender Identity	Total
Colorado	39.0	14.0	34.0	12.0	1.0	0.0	100.0
Wyoming	0.0	0.0	0.0	1.0	0.0	0.0	1.0
Iowa	2.0	1.0	3.0	1.0	0.0	0.0	7.0
Idaho	18.0	4.0	4.0	2.0	0.0	0.0	28.0
Alabama	5.0	0.0	1.0	0.0	0.0	0.0	6.0
Utah	30.0	7.0	5.0	5.0	1.0	0.0	48.0
Montana	22.0	2.0	2.0	0.0	0.0	0.0	26.0
Florida	24.0	7.0	14.0	4.0	0.0	0.0	49.0
Maryland	5.0	3.0	2.0	1.0	0.0	0.0	11.0
New_Hampshire	10.0	5.0	3.0	1.0	0.0	0.0	19.0
Virginia	33.0	13.0	9.0	4.0	0.0	0.0	59.0
South_Dakota	6.0	1.0	1.0	0.0	0.0	0.0	8.0
Arizona	29.0	15.0	10.0	9.0	0.0	0.0	63.0
Rhode_Island	4.0	2.0	0.0	1.0	0.0	0.0	7.0
Michigan	164.0	33.0	35.0	13.0	3.0	0.0	248.0
Ohio	200.0	11.0	52.0	31.0	20.0	0.0	314.0
Massachusetts	146.0	64.0	91.0	42.0	3.0	3.0	349.0
Tennessee	47.0	5.0	33.0	38.0	8.0	1.0	132.0
Oklahoma	20.0	5.0	7.0	3.0	1.0	0.0	36.0
Indiana	39.0	1.0	8.0	8.0	0.0	0.0	56.0
Nevada	27.0	9.0	23.0	6.0	0.0	0.0	65.0
Mississippi	2.0	0.0	0.0	2.0	0.0	0.0	4.0
North_Dakota	20.0	4.0	4.0	8.0	1.0	0.0	37.0
Pennsylvania	35.0	8.0	7.0	1.0	0.0	0.0	51.0

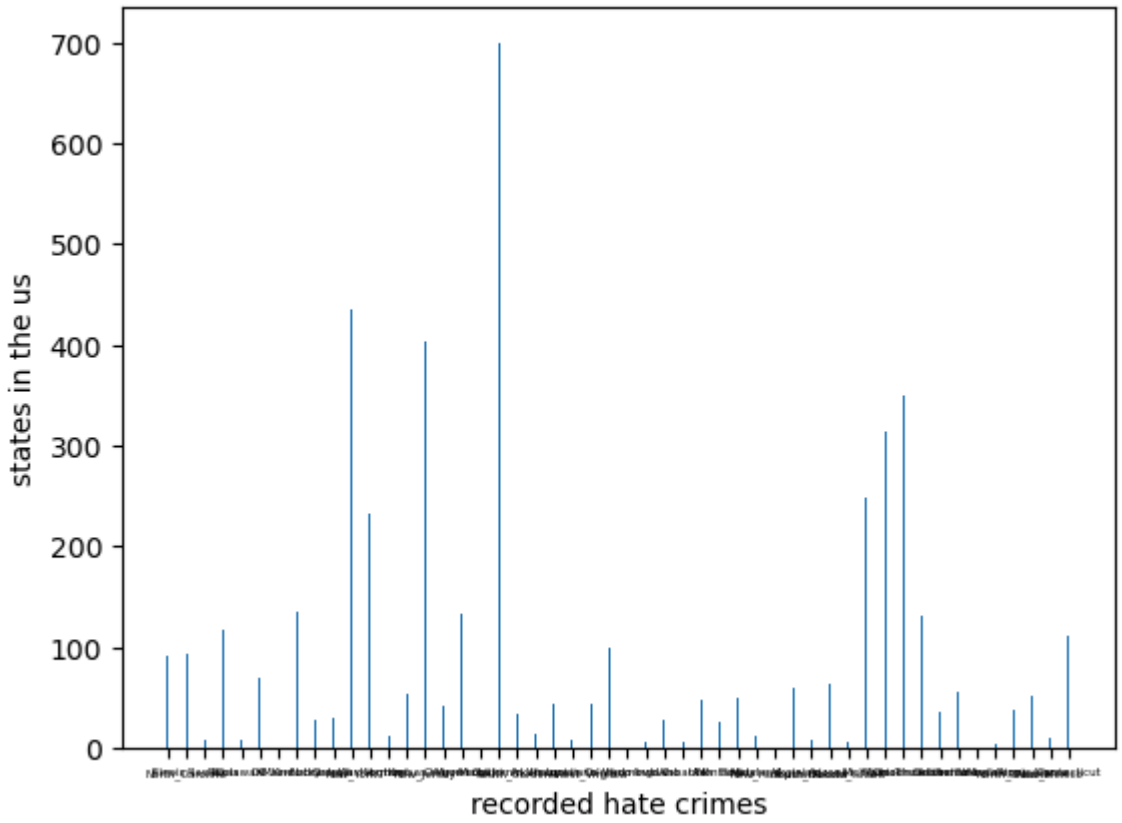
	Race	Religion	Sexual orientation	Ethnicity	Disability	Gender Identity	Total
New_Mexico	5.0	1.0	4.0	0.0	0.0	0.0	10.0
Connecticut	58.0	12.0	18.0	20.0	3.0	0.0	111.0

In [120…

```
#visual representation of the total recorded hate crimes per state
total_hatecrimes_perstate_bg = []
states = list(set(hatecrime_data['State']))

for state in states: # getting the total hatecrimes perstate and put it in the bar graph
    total_hatecrimes_perstate_bg.append(np.sum(hatecrime_state_list[state]))
plt.bar(states,total_hatecrimes_perstate_bg ,width = 0.1)

plt.xlabel("recorded hate crimes")
plt.ylabel("states in the us")
plt.xticks(fontsize=4)
plt.show()
```



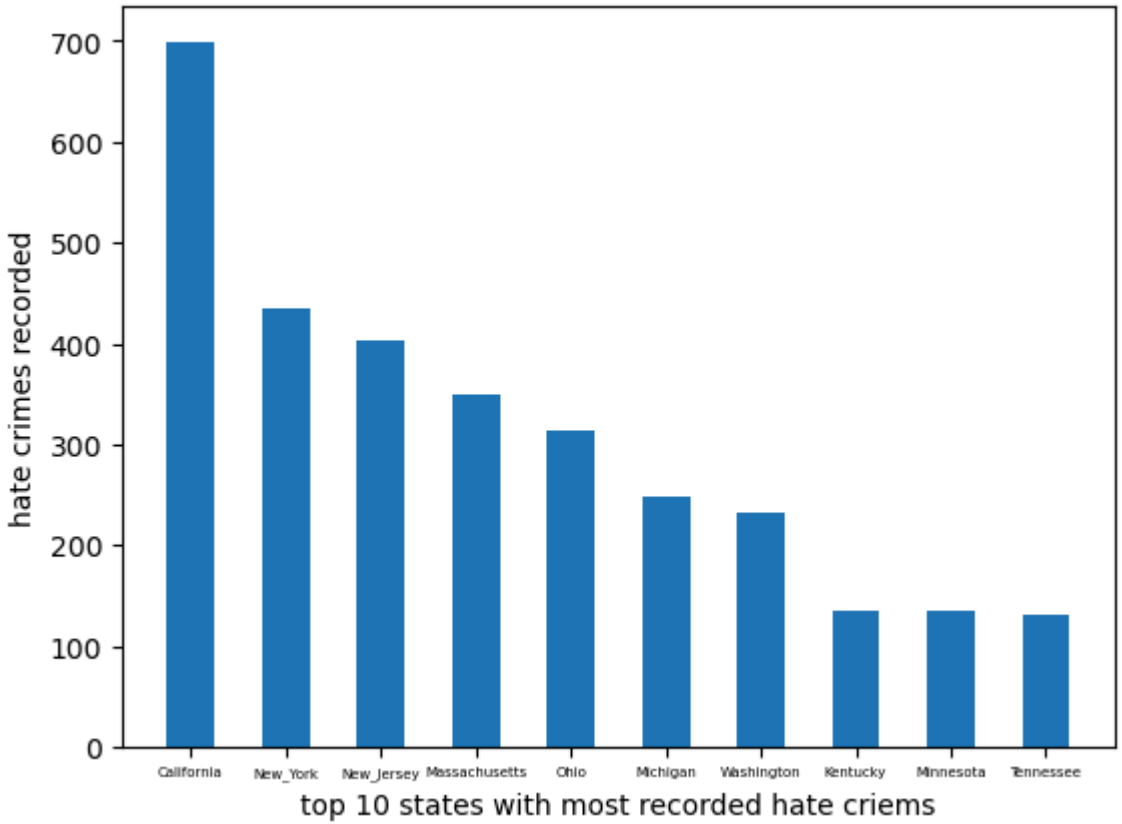
US State with the most hate crimes recorded in 2013

In [154…
```
state_withmost_recordedHatecrime = hatecrime_perstate_flipped_df.sort_values(by='Total',ascending=False) # sorting the data frame
state_withmost_recordedHatecrime['Total'].head(10)
```

Out[154]:
```
California       699.0
New_York         434.0
New_Jersey       403.0
Massachusetts    349.0
Ohio             314.0
Michigan         248.0
Washington       232.0
Kentucky         135.0
Minnesota        134.0
Tennessee        132.0
Name: Total, dtype: float64
```

In [159…
```
plt.bar(state_withmost_recordedHatecrime.index[:10],state_withmost_recordedHatecrime['Total'].head(10) ,width = 0.5)

plt.xlabel("top 10 states with most recorded hate criems")
plt.ylabel("hate crimes recorded")
plt.xticks(fontsize=5)
plt.show()
```



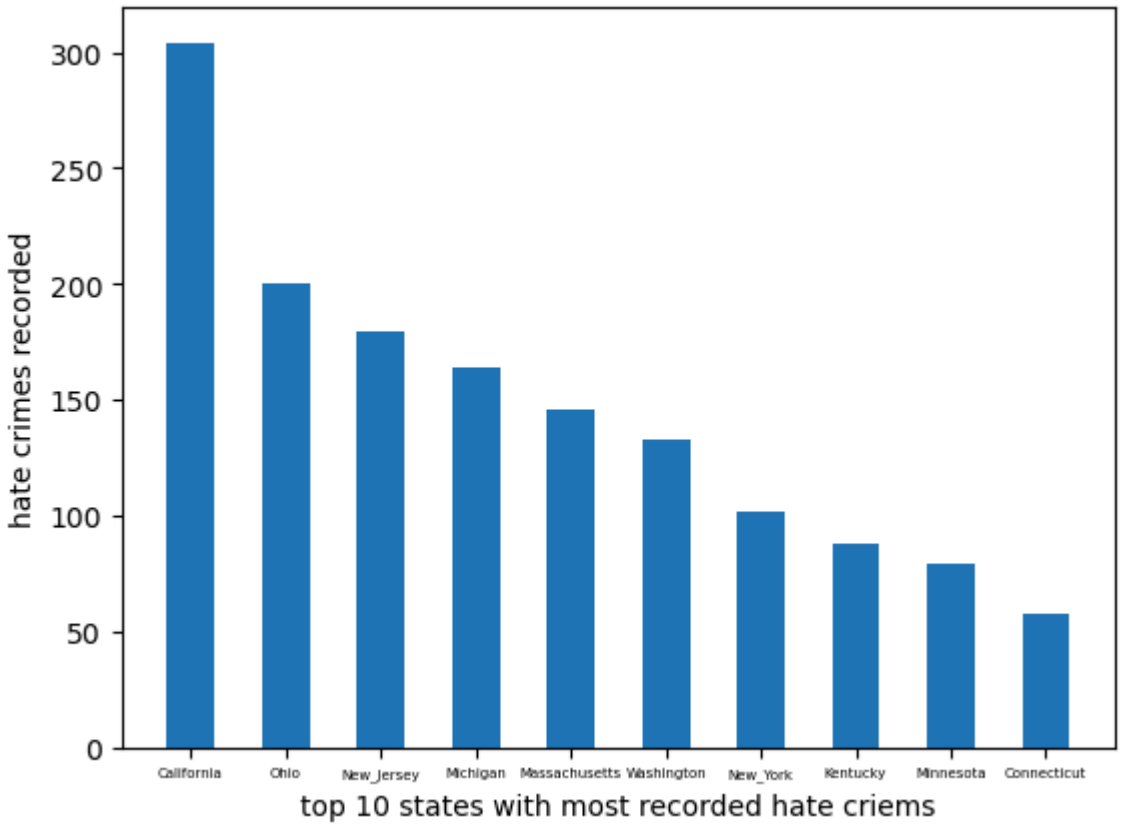
US State with the most hate crime on race

In [162…
```
state_withmost_recordedHatecrimeonRace = hatecrime_perstate_flipped_df.sort_values(by='Race',ascending=False) # sorting the data
state_withmost_recordedHatecrimeonRace['Race'].head(10)
```

Out[162]:
```
California       304.0
Ohio             200.0
New_Jersey       180.0
Michigan         164.0
Massachusetts    146.0
Washington       133.0
New_York         102.0
Kentucky          88.0
Minnesota         79.0
Connecticut       58.0
Name: Race, dtype: float64
```

In [167…
```
plt.bar(state_withmost_recordedHatecrimeonRace.index[:10],state_withmost_recordedHatecrimeonRace['Race'][:10] ,width = 0.5)

plt.xlabel("top 10 states with most recorded hate crimes on race")
plt.ylabel("hate crimes recorded")
plt.xticks(fontsize=5)
plt.show()
```



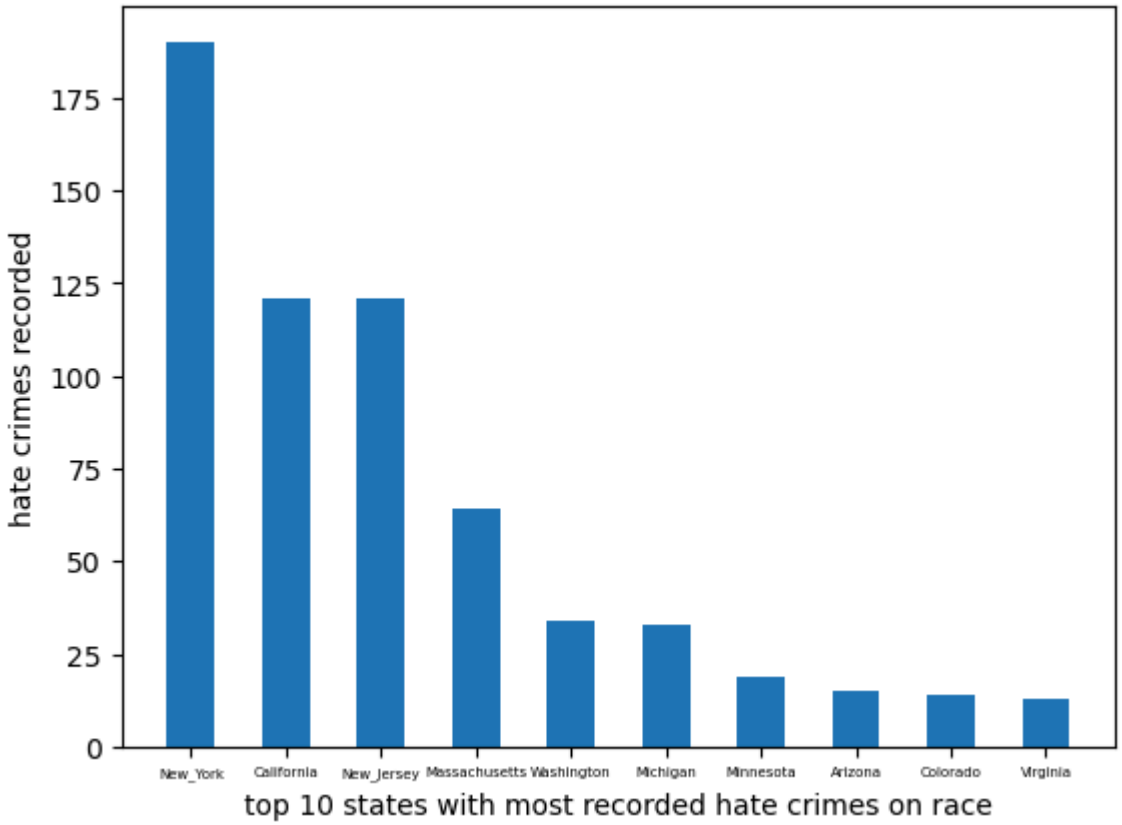
US State with most hate crime on religion

In [169…
```
state_withmost_recordedHatecrimeonReli = hatecrime_perstate_flipped_df.sort_values(by='Religion',ascending=False) # sorting the d
state_withmost_recordedHatecrimeonReli['Religion'].head(10)
```

Out[169]:
```
New_York         190.0
California       121.0
New_Jersey       121.0
Massachusetts     64.0
Washington        34.0
Michigan          33.0
Minnesota         19.0
Arizona           15.0
Colorado          14.0
Virginia          13.0
Name: Religion, dtype: float64
```

In [171…
```
plt.bar(state_withmost_recordedHatecrimeonReli.index[:10],state_withmost_recordedHatecrimeonReli['Religion'][:10] ,width = 0.5)

plt.xlabel("top 10 states with most recorded hate crimes on race")
plt.ylabel("hate crimes recorded")
plt.xticks(fontsize=5)
plt.show()
```



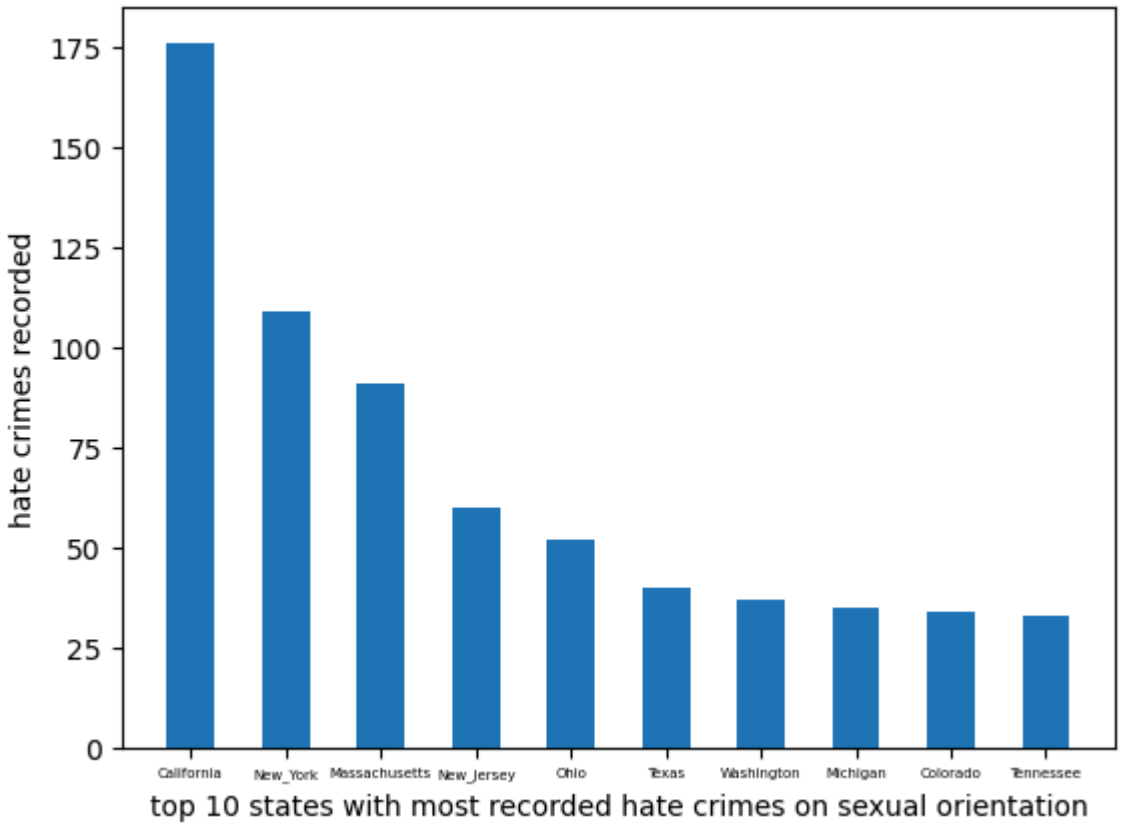
US State with most hate crime on Sexual orientation

In [172…
```
state_withmost_recordedHatecrimeonSexor = hatecrime_perstate_flipped_df.sort_values(by='Sexual orientation',ascending=False) # sc
state_withmost_recordedHatecrimeonSexor['Sexual orientation'].head(10)
```

Out[172]:
```
California       176.0
New_York         109.0
Massachusetts     91.0
New_Jersey        60.0
Ohio              52.0
Texas             40.0
Washington        37.0
Michigan          35.0
Colorado          34.0
Tennessee         33.0
Name: Sexual orientation, dtype: float64
```

In [173…
```
plt.bar(state_withmost_recordedHatecrimeonSexor.index[:10],state_withmost_recordedHatecrimeonSexor['Sexual orientation'][:10] ,wi

plt.xlabel("top 10 states with most recorded hate crimes on sexual orientation")
plt.ylabel("hate crimes recorded")
plt.xticks(fontsize=5)
plt.show()
```



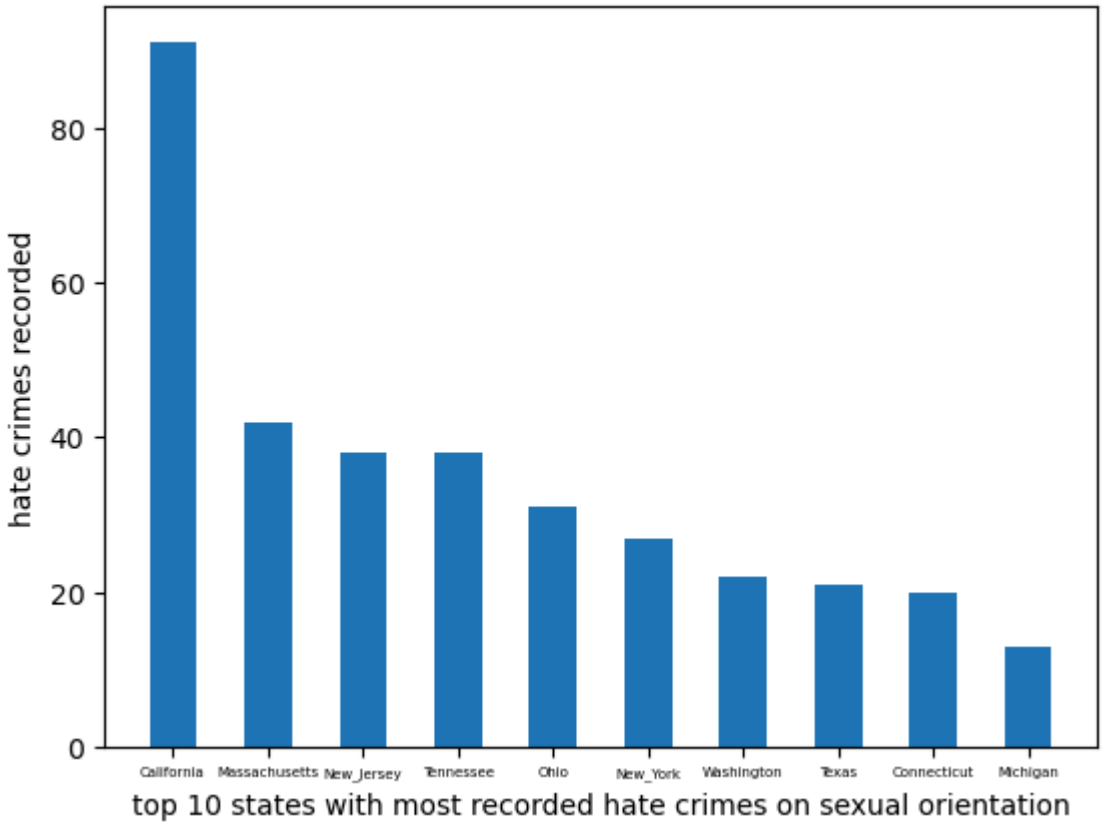
US State with most hate crime on Ethnicity

In [174…
```
state_withmost_recordedHatecrimeonEthnicity = hatecrime_perstate_flipped_df.sort_values(by='Ethnicity',ascending=False) # sorting
state_withmost_recordedHatecrimeonEthnicity['Ethnicity'].head(10)
```

Out[174]:
```
California       91.0
Massachusetts    42.0
New_Jersey       38.0
Tennessee        38.0
Ohio             31.0
New_York         27.0
Washington       22.0
Texas            21.0
Connecticut      20.0
Michigan         13.0
Name: Ethnicity, dtype: float64
```

In [176…
```
plt.bar(state_withmost_recordedHatecrimeonEthnicity.index[:10],state_withmost_recordedHatecrimeonEthnicity['Ethnicity'][:10] ,wid

plt.xlabel("top 10 states with most recorded hate crimes on Ethnicity")
plt.ylabel("hate crimes recorded")
plt.xticks(fontsize=5)
plt.show()
```



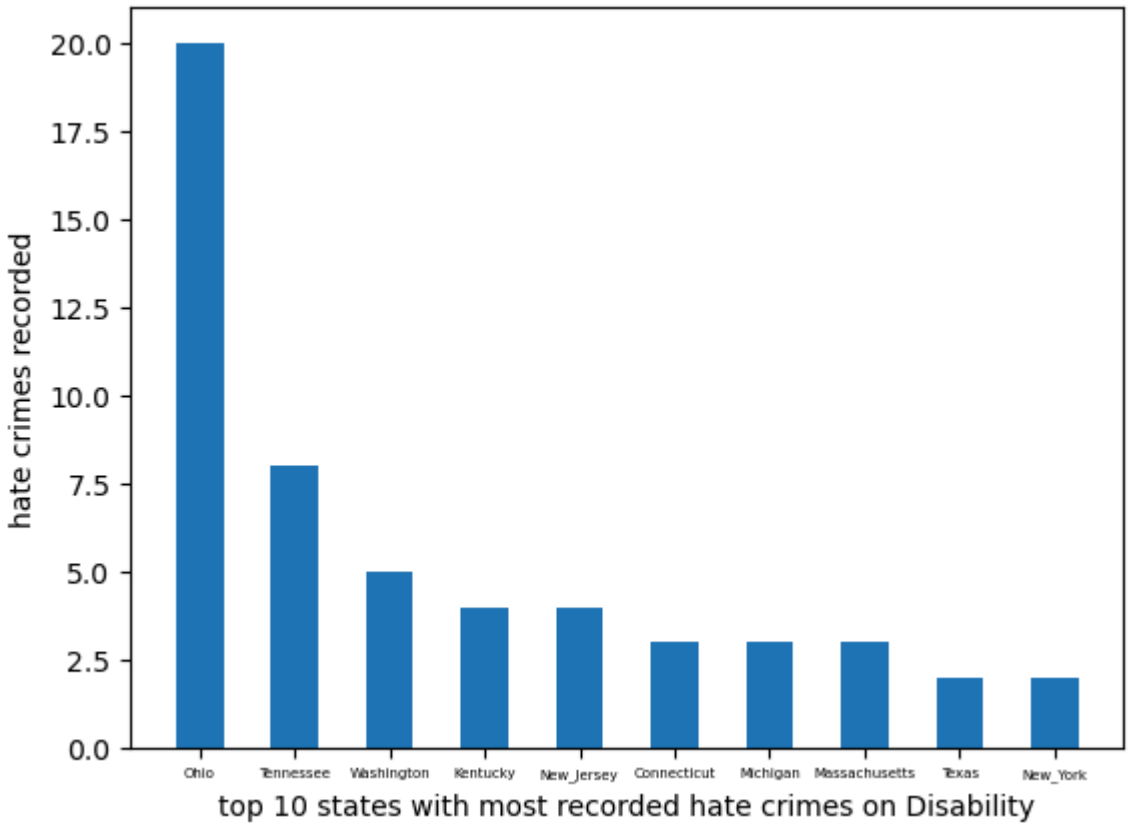
US States with most hate crimes on Disability

In [177…
```
state_withmost_recordedHatecrimeonDisability = hatecrime_perstate_flipped_df.sort_values(by='Disability',ascending=False) # sorti
state_withmost_recordedHatecrimeonDisability['Disability'].head(10)
```

Out[177]:
```
Ohio             20.0
Tennessee         8.0
Washington        5.0
Kentucky          4.0
New_Jersey        4.0
Connecticut       3.0
Michigan          3.0
Massachusetts     3.0
Texas             2.0
New_York          2.0
Name: Disability, dtype: float64
```

In [179…
```
plt.bar(state_withmost_recordedHatecrimeonDisability.index[:10],state_withmost_recordedHatecrimeonDisability['Disability'][:10] ,

plt.xlabel("top 10 states with most recorded hate crimes on Disability")
plt.ylabel("hate crimes recorded")
plt.xticks(fontsize=5)
plt.show()
```



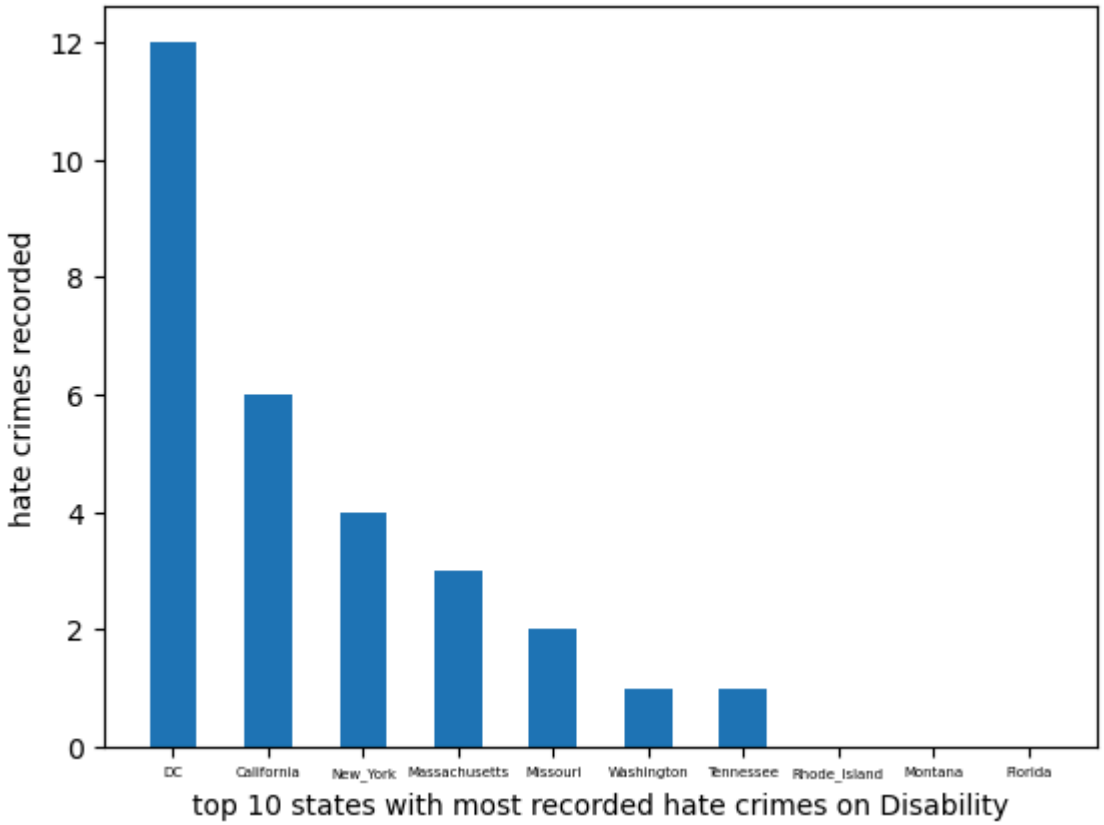
US States with most hate crime on Gender Identity

In [180…
```
state_withmost_recordedHatecrimeonGenderIdentity = hatecrime_perstate_flipped_df.sort_values(by='Gender Identity',ascending=False
state_withmost_recordedHatecrimeonGenderIdentity['Gender Identity'].head(10)
```

Out[180]:
```
DC              12.0
California       6.0
New_York         4.0
Massachusetts    3.0
Missouri         2.0
Washington       1.0
Tennessee        1.0
Rhode_Island     0.0
Montana          0.0
Florida          0.0
Name: Gender Identity, dtype: float64
```

In [182…
```
plt.bar(state_withmost_recordedHatecrimeonGenderIdentity.index[:10],state_withmost_recordedHatecrimeonGenderIdentity['Gender Ider

plt.xlabel("top 10 states with most recorded hate crimes on Disability")
plt.ylabel("hate crimes recorded")
plt.xticks(fontsize=5)
plt.show()
```



getting the data analysis from my data set

In [86]:
```
hatecrime_sum_data = []

for column_name in hatecrime_data.keys(): # loop for getting the sum of any occurences of hate crime
    if column_name == 'State' or column_name == 'Agency type' or column_name == 'Agency name' or column_name == 'Gender' or colum
```

```
        continue
    hatecrime_sum_data.append(np.sum(hatecrime_data[column_name]))
```

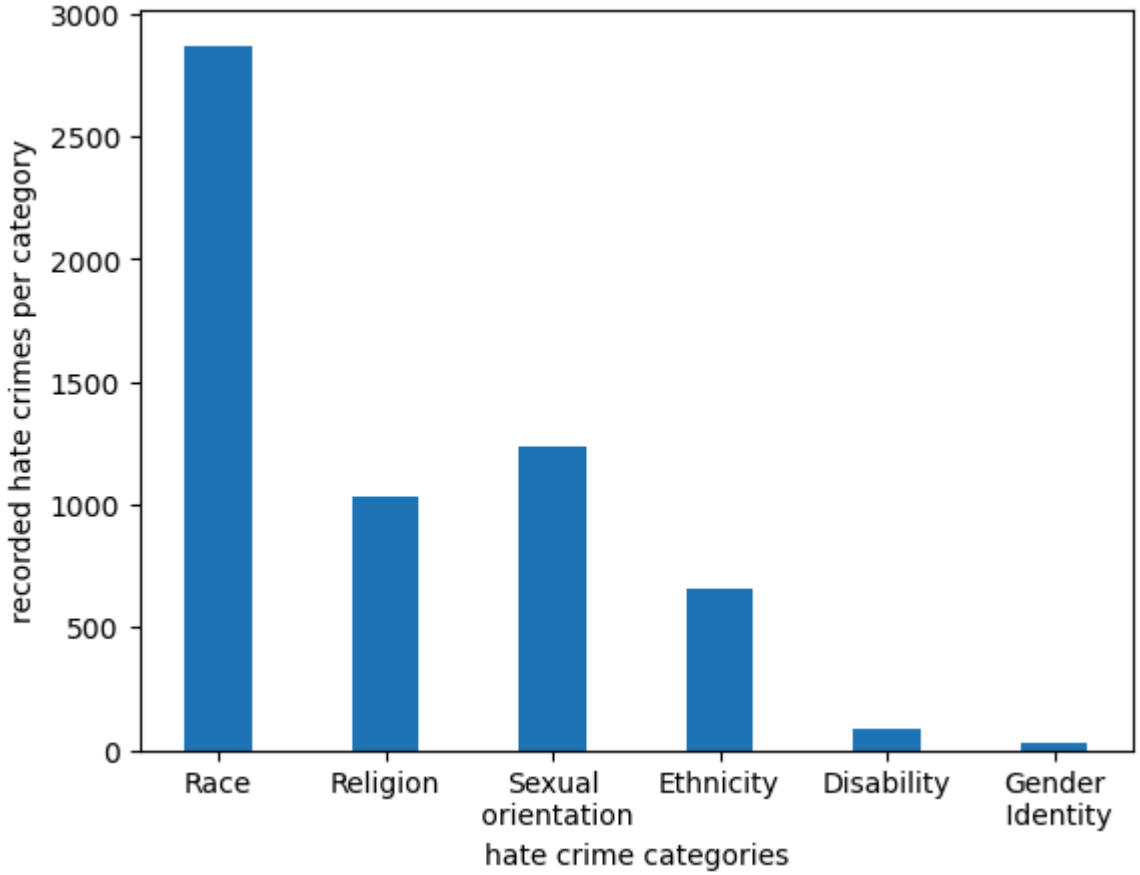
In [74]:

```
# putting the sum of the hate crimes in a bar graph
types = ['Race', 'Religion','Sexual\n orientation','Ethnicity','Disability','Gender\n Identity']


# putting the the data gathered in the bargraph
plt.bar(types, hatecrime_sum_data, width = 0.4)

#labeling the the x and the y axis in the bar graph
plt.xlabel("hate crime categories")
plt.ylabel("recorded hate crimes per category")

plt.show()
```



getting the standard deviation of the data set

In [75]:
```
hatecrime_std_data = []

for column_name in hatecrime_data.keys(): # loop for getting the sum of any occurences of hate crime
    if column_name == 'State' or column_name == 'Agency type' or column_name == 'Agency name' or column_name == 'Gender' or colum
        continue
    hatecrime_std_data.append(np.std(hatecrime_data[column_name]))
```

putting all the data analysis that I used in a table

In [76]:
```
hatecrime_dataanalysis = [] # initialization of datas in the data analysis
```

```
# putting a specific data analysis in the data analysis type
hatecrime_dataanalysis.append(hatecrime_sum_data)
hatecrime_dataanalysis.append(hatecrime_std_data)

# making the table for the data analysis
hatecrime_dataanalysis_table = pd.DataFrame(hatecrime_dataanalysis,columns=['Race', 'Religion','Sexual orientation','Ethnicity','
hatecrime_dataanalysis_table = hatecrime_dataanalysis_table.rename(index = {0 : '# of hate crimes per type',1: 'Standard Deviatic

# calling the data analysis
hatecrime_dataanalysis_table
```

Out[76]:

	Race	Religion	Sexual orientation	Ethnicity	Disability	Gender Identity
# of hate crimes per type	2872.000000	1032.000000	1237.000000	655.00000	83.000000	31.000000
Standard Deviation	4.412091	4.333423	3.610526	1.13458	0.397711	0.352404

Correlation of the data sets

In [77]:
```
hatecrime_data.corr(numeric_only=True)
```

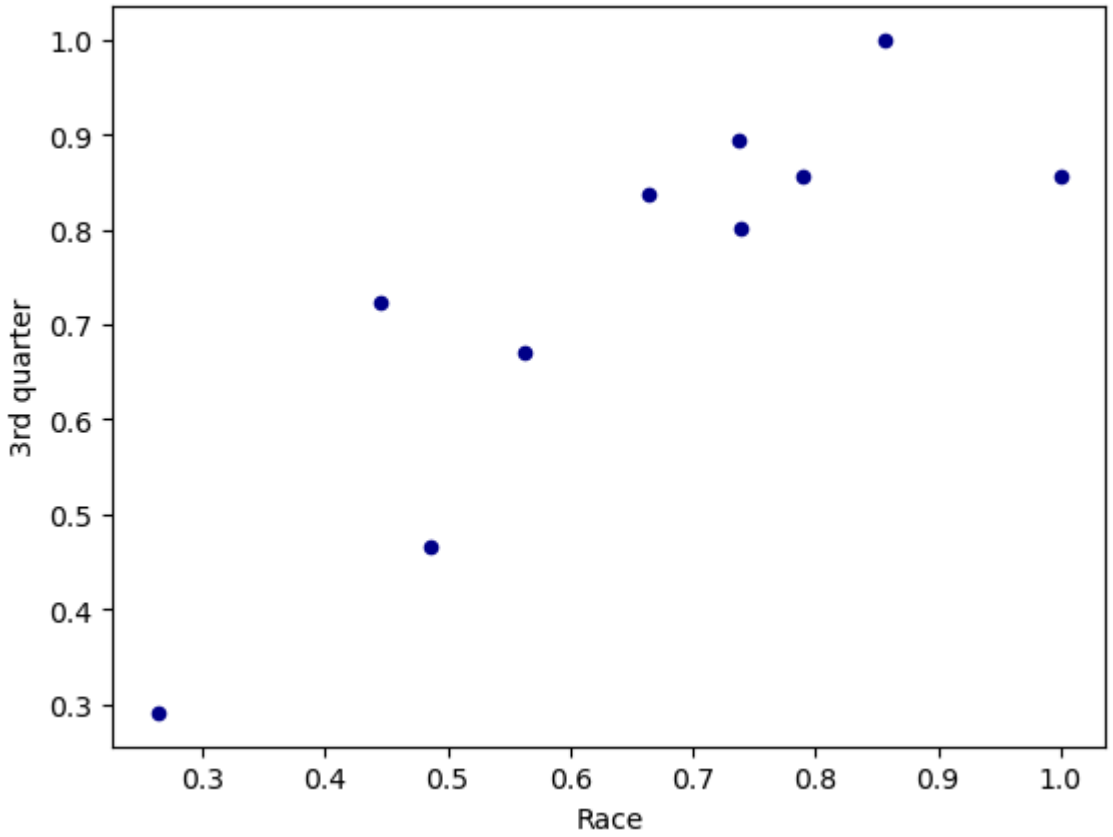
Out[77]:

	Race	Religion	Sexual orientation	Ethnicity	Disability	Gender Identity	1st quarter	2nd quarter	3rd quarter	4th quarter
Race	1.000000	0.427855	0.668137	0.689371	0.532713	0.282549	0.726662	0.782943	0.858150	0.735989
Religion	0.427855	1.000000	0.842160	0.511809	0.099751	0.166654	0.761649	0.800378	0.742955	0.858389
Sexual orientation	0.668137	0.842160	1.000000	0.660240	0.194405	0.412016	0.904471	0.921210	0.863618	0.879999
Ethnicity	0.689371	0.511809	0.660240	1.000000	0.459192	0.229154	0.702325	0.707004	0.746026	0.724044
Disability	0.532713	0.099751	0.194405	0.459192	1.000000	0.018967	0.189342	0.251577	0.503283	0.417070
Gender Identity	0.282549	0.166654	0.412016	0.229154	0.018967	1.000000	0.405627	0.365202	0.312762	0.241269
1st quarter	0.726662	0.761649	0.904471	0.702325	0.189342	0.405627	1.000000	0.871127	0.807235	0.805685
2nd quarter	0.782943	0.800378	0.921210	0.707004	0.251577	0.365202	0.871127	1.000000	0.865989	0.851797
3rd quarter	0.858150	0.742955	0.863618	0.746026	0.503283	0.312762	0.807235	0.865989	1.000000	0.899315
4th quarter	0.735989	0.858389	0.879999	0.724044	0.417070	0.241269	0.805685	0.851797	0.899315	1.000000

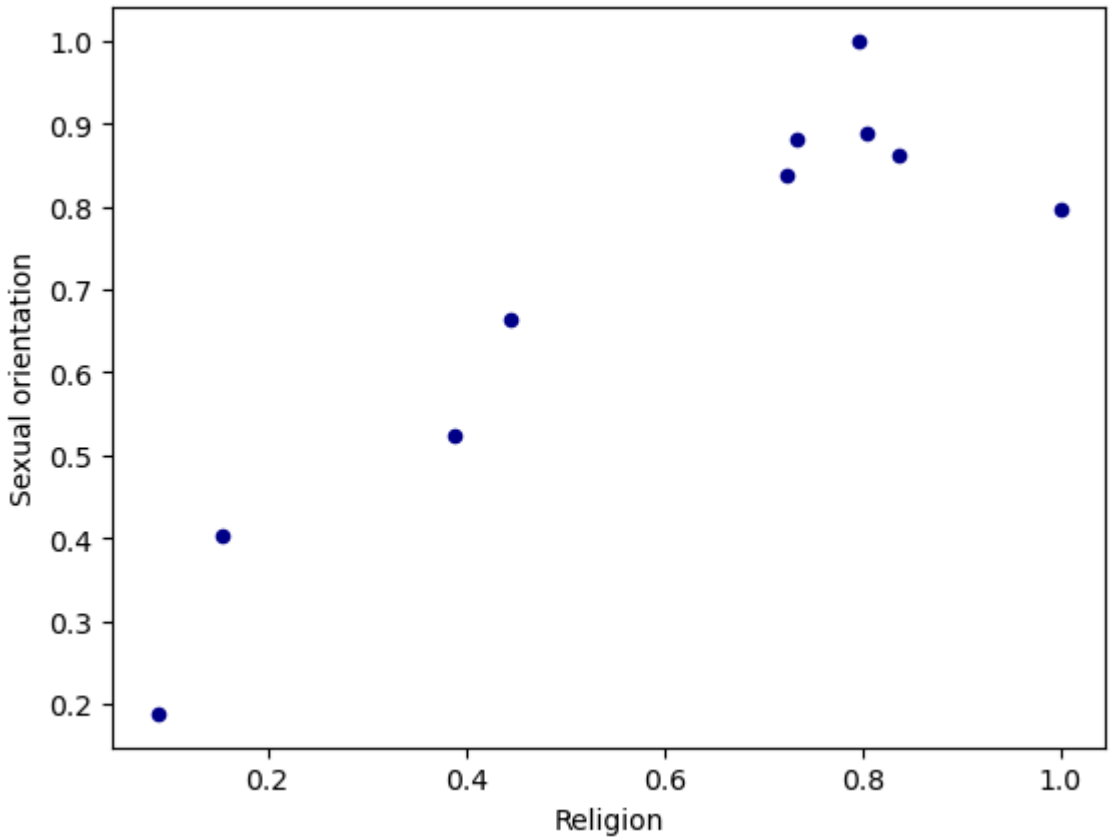
Data sets with correlations (graphical representaiton

In [78]:
```
# making a dataframe of the correlation data above
corr_df = pd.DataFrame(hatecrime_correlation)

# making the scatter plot for the race
ax1 = corr_df.plot.scatter(x='Race',
                      y='3rd quarter',
                      c='DarkBlue')
```



In [79]:
```
ax2 = corr_df.plot.scatter(x='Religion',
                      y='Sexual orientation',
                      c='DarkBlue')
```



Conclusions

1. we've concluded that calofornia are the not so friendliest state in the us
2. we've concluded that california are some of the most racist, homophobic state in the us
3. we've concluded that washing dc are not so welcoming on gender identity
4. we've concluded that ohio is not very understanding in terms of people with disability
5. we've concluded that new york often discriminates on religion
6. we've concluded that US hates people by their races