```
In [1]: import geopandas as gpd
```

```
In [ ]: #This notebook documents median household income in Tulare County in 2021 by
        #helps us understand the demographic profile of the county where oil drillin
```

```
In [2]: import pandas as pd
```

```
In [17]: #difficulty reading file because .geojson was not saved as part of file name
         tcincome = gpd.read_file('tulareincome.geojson')
```

```
In [18]: tcincome.dtypes
```

```
Out[18]: geoid                 object
         name                  object
         B19013001            float64
         B19013001, Error     float64
         geometry            geometry
         dtype: object
```

```
In [19]: tcincome.head(5)
```

Out[19]:

	geoid	name	B19013001	B19013001, Error	geometry
0	05000US06107	Tulare County, CA	57394.0	1402.0	MULTIPOLYGON (((-118.80244 35.79017, -118.8027...
1	14000US06107000101	Census Tract 1.01, Tulare, CA	73582.0	4699.0	MULTIPOLYGON (((-119.07932 36.32554, -119.0787...
2	14000US06107000102	Census Tract 1.02, Tulare, CA	63796.0	28561.0	MULTIPOLYGON (((-119.24651 36.51340, -119.2462...
3	14000US06107000202	Census Tract 2.02, Tulare, CA	31445.0	5786.0	MULTIPOLYGON (((-119.32270 36.54527, -119.3218...
4	14000US06107000203	Census Tract 2.03, Tulare, CA	61154.0	18328.0	MULTIPOLYGON (((-119.30507 36.54962, -119.3050...

```
In [20]: tcincome.shape
```

```
Out[20]: (104, 5)
```

```
In [22]: #need to rename SE column
         tcincome1 = tcincome.rename(columns={'B19013001': 'Median Household Income',
         tcincome1
```

Out[22]:

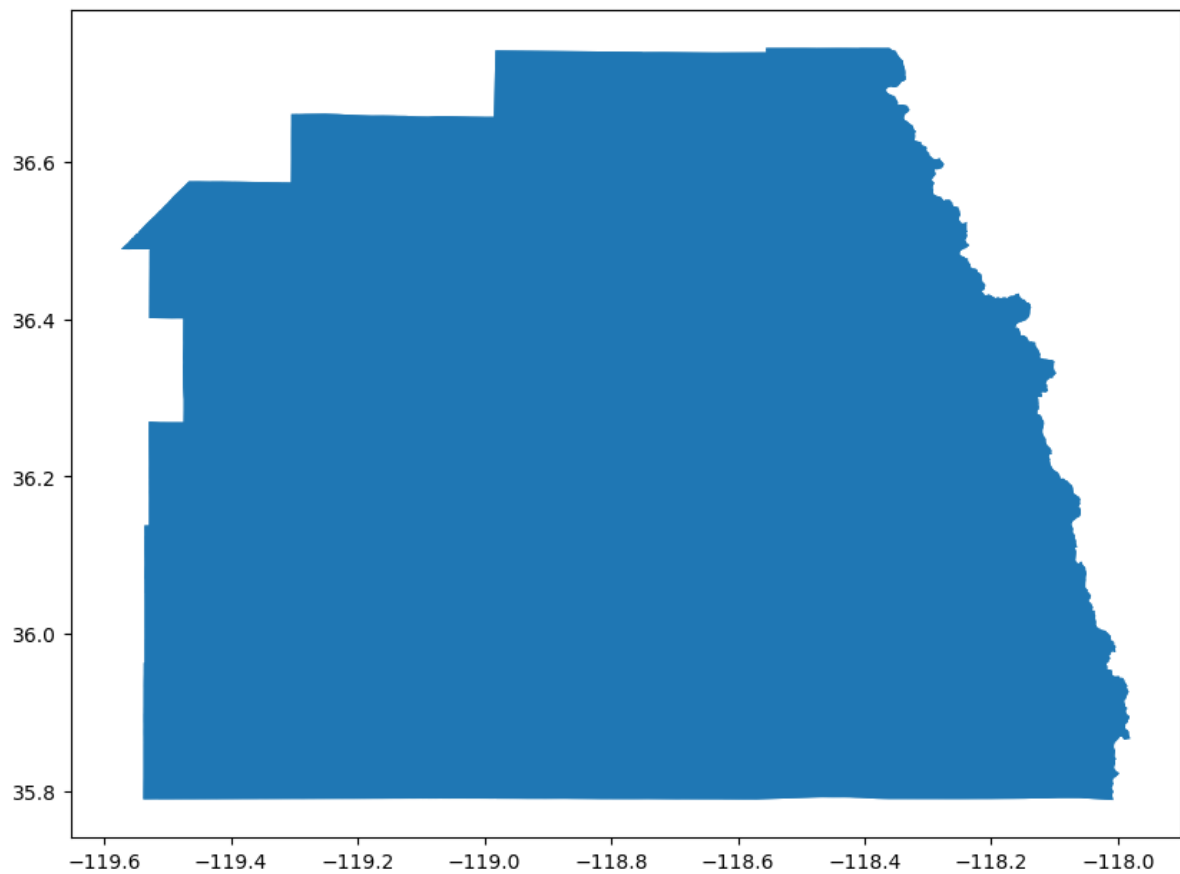|	Census Tract	name	Median Household Income	B19013001, Error	geometry
0	05000US06107	Tulare County, CA	57394.0	1402.0	MULTIPOLYGON (((-118.80244 35.79017, -118.8027...
1	14000US06107000101	Census Tract 1.01, Tulare, CA	73582.0	4699.0	MULTIPOLYGON (((-119.07932 36.32554, -119.0787...
2	14000US06107000102	Census Tract 1.02, Tulare, CA	63796.0	28561.0	MULTIPOLYGON (((-119.24651 36.51340, -119.2462...
3	14000US06107000202	Census Tract 2.02, Tulare, CA	31445.0	5786.0	MULTIPOLYGON (((-119.32270 36.54527, -119.3218...
4	14000US06107000203	Census Tract 2.03, Tulare, CA	61154.0	18328.0	MULTIPOLYGON (((-119.30507 36.54962, -119.3050...
...	...	...	...	...	...
99	14000US06107004301	Census Tract 43.01, Tulare, CA	32500.0	16924.0	MULTIPOLYGON (((-119.25041 35.89190, -119.2486...
100	14000US06107004302	Census Tract 43.02, Tulare, CA	43938.0	6195.0	MULTIPOLYGON (((-119.53806 35.79706, -119.5380...
101	14000US06107004401	Census Tract 44.01, Tulare, CA	56741.0	11940.0	MULTIPOLYGON (((-119.28591 35.88358, -119.2859...
102	14000US06107004402	Census Tract 44.02, Tulare, CA	37886.0	7927.0	MULTIPOLYGON (((-119.28593 35.87828, -119.2859...
103	14000US06107004500	Census Tract 45, Tulare, CA	42819.0	10448.0	MULTIPOLYGON (((-119.10783 35.89467, -119.1078...

104 rows × 5 columns

In [25]:
```python
#getting ride of margin of error column
tcincome2 = tcincome1[['Census Tract', 'name', 'Median Household Income', 'g
tcincome2
```

Out[25]:

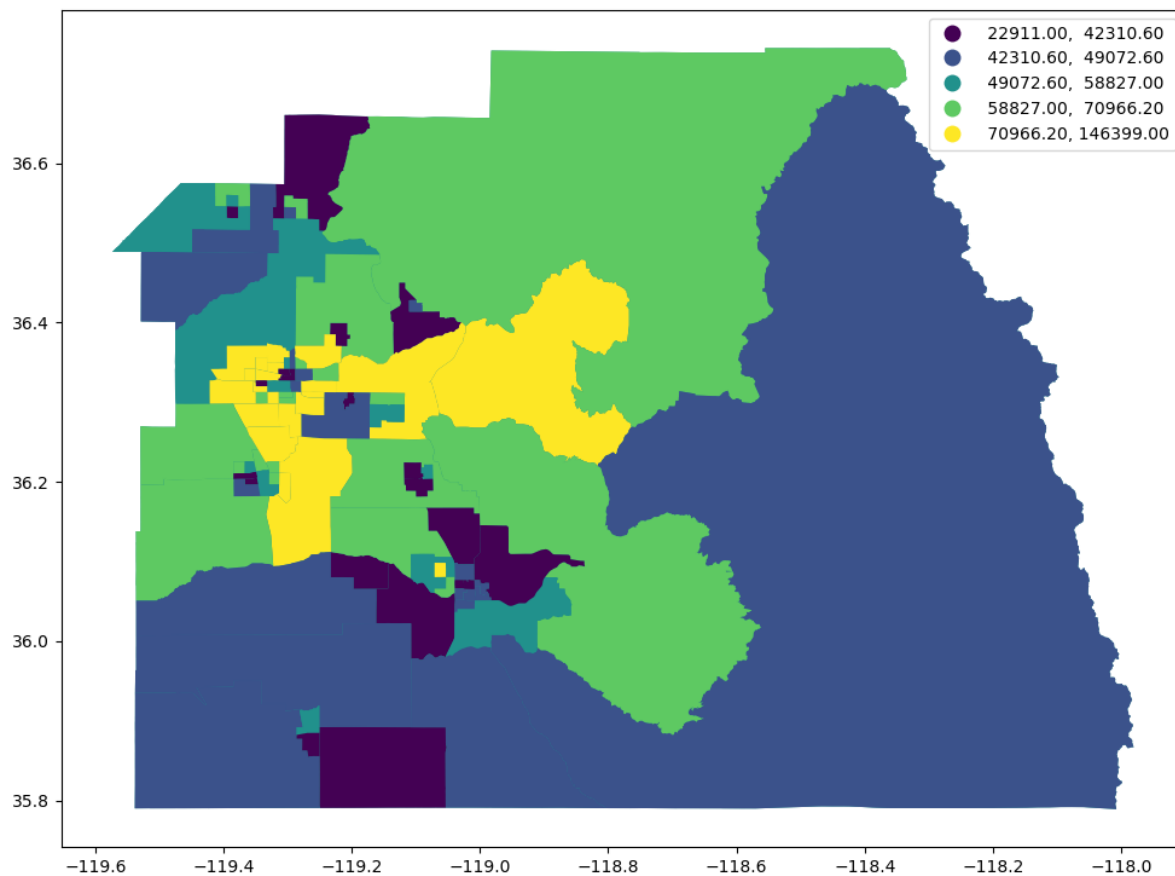|	Census Tract	name	Median Household Income	geometry
0	05000US06107	Tulare County, CA	57394.0	MULTIPOLYGON (((-118.80244 35.79017, -118.8027...
1	14000US06107000101	Census Tract 1.01, Tulare, CA	73582.0	MULTIPOLYGON (((-119.07932 36.32554, -119.0787...
2	14000US06107000102	Census Tract 1.02, Tulare, CA	63796.0	MULTIPOLYGON (((-119.24651 36.51340, -119.2462...
3	14000US06107000202	Census Tract 2.02, Tulare, CA	31445.0	MULTIPOLYGON (((-119.32270 36.54527, -119.3218...
4	14000US06107000203	Census Tract 2.03, Tulare, CA	61154.0	MULTIPOLYGON (((-119.30507 36.54962, -119.3050...
...	...	...	...	...
99	14000US06107004301	Census Tract 43.01, Tulare, CA	32500.0	MULTIPOLYGON (((-119.25041 35.89190, -119.2486...
100	14000US06107004302	Census Tract 43.02, Tulare, CA	43938.0	MULTIPOLYGON (((-119.53806 35.79706, -119.5380...
101	14000US06107004401	Census Tract 44.01, Tulare, CA	56741.0	MULTIPOLYGON (((-119.28591 35.88358, -119.2859...
102	14000US06107004402	Census Tract 44.02, Tulare, CA	37886.0	MULTIPOLYGON (((-119.28593 35.87828, -119.2859...
103	14000US06107004500	Census Tract 45, Tulare, CA	42819.0	MULTIPOLYGON (((-119.10783 35.89467, -119.1078...

104 rows × 4 columns

In [27]:
```python
tcincome2.plot(figsize = (10,10))
```

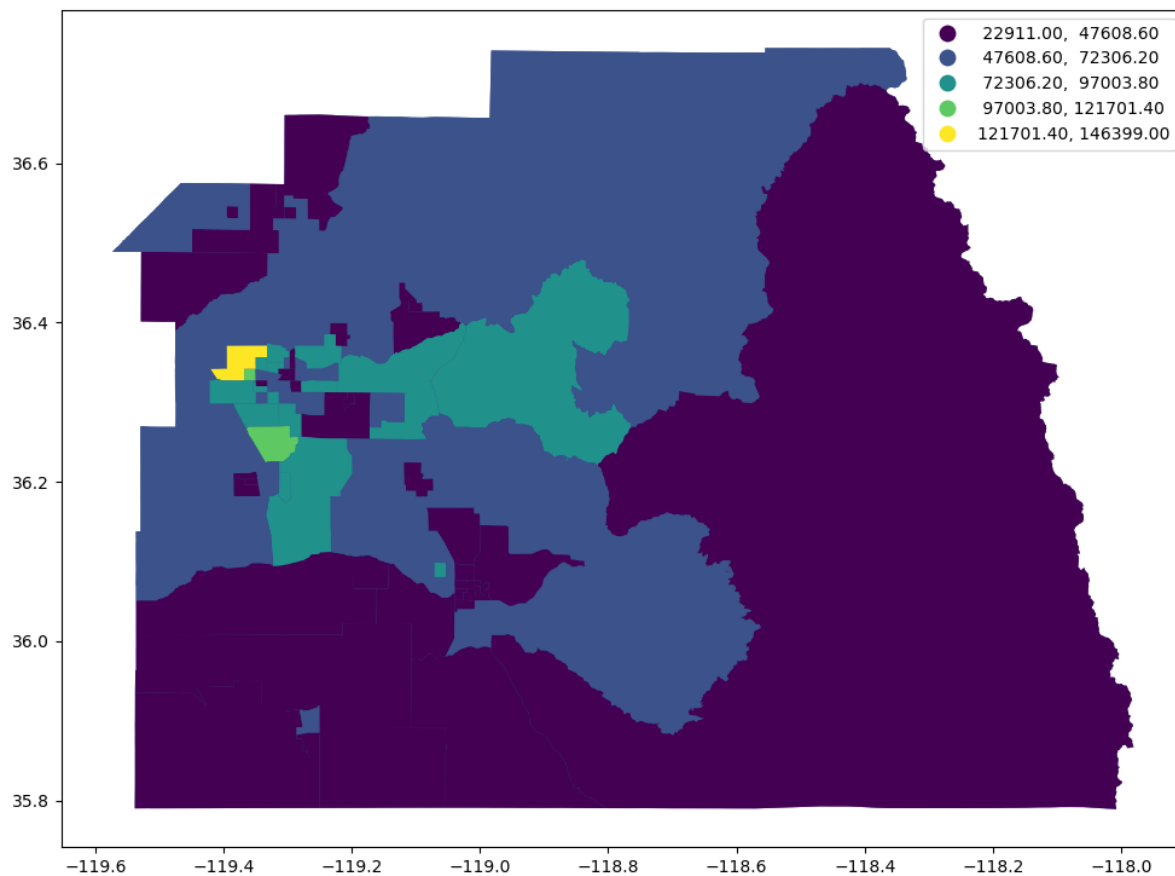Out[27]: <AxesSubplot: >

```
In [28]:  #This provides an even categorization of the data but does not actually prov
          tcincome2.plot(figsize=(12,10),
                          column='Median Household Income',
                          legend=True,
                          scheme='quantiles')
```

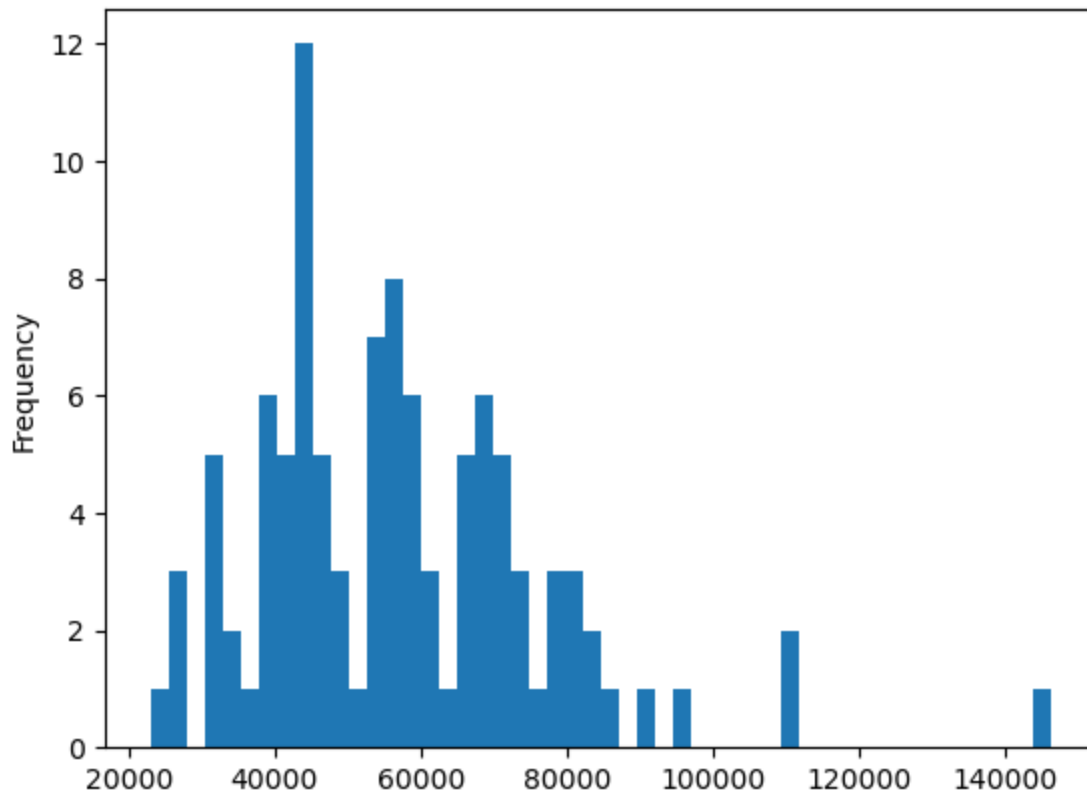Out[28]: <AxesSubplot: >

```
In [30]:    #plotting by natural breaks shows that the periphery of the county is much l
            tcincome2.plot(figsize=(12,10),
                          column='Median Household Income',
                          legend=True,
                          scheme='equal_interval')
```
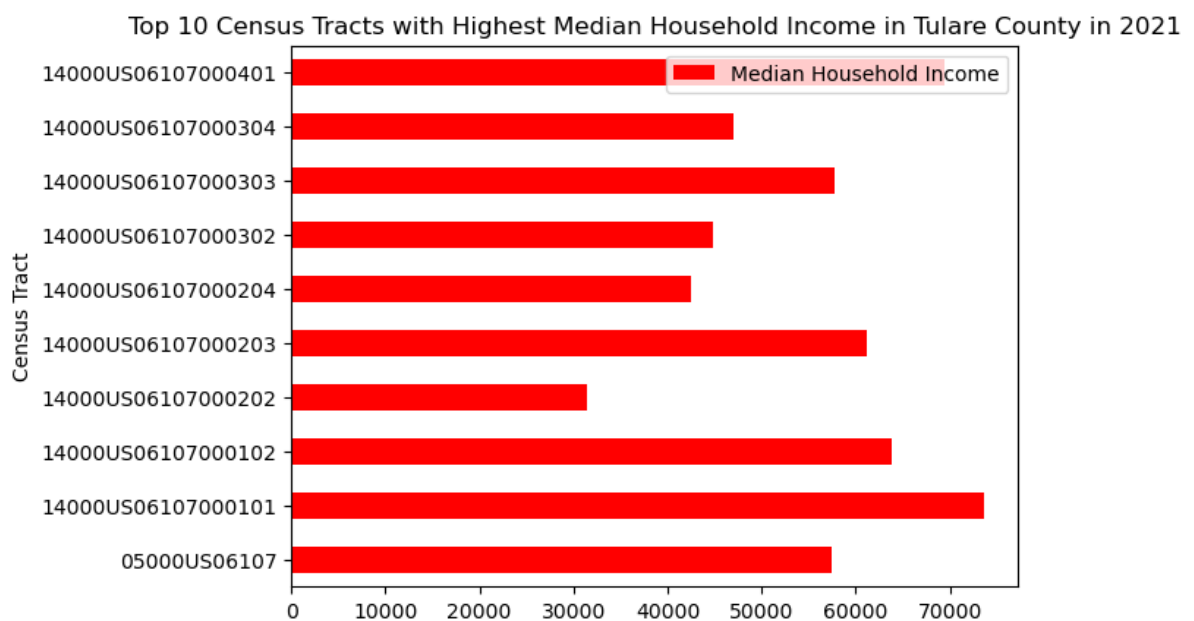
Out[30]:   <AxesSubplot: >

```
In [31]: #this histogram shows the distribution of census tract median household inco
         #but the greatest number of census tracts have incomes between 40,000 and 60
         tcincome2['Median Household Income'].plot.hist(bins=50)
```

Out[31]: <AxesSubplot: ylabel='Frequency'>

```
In [48]:  tcincome2.head(10).plot.barh(x='Census Tract',
                                       y='Median Household Income',
                                       title='Top 10 Census Tracts with Highest Median
                                       color='red')
```
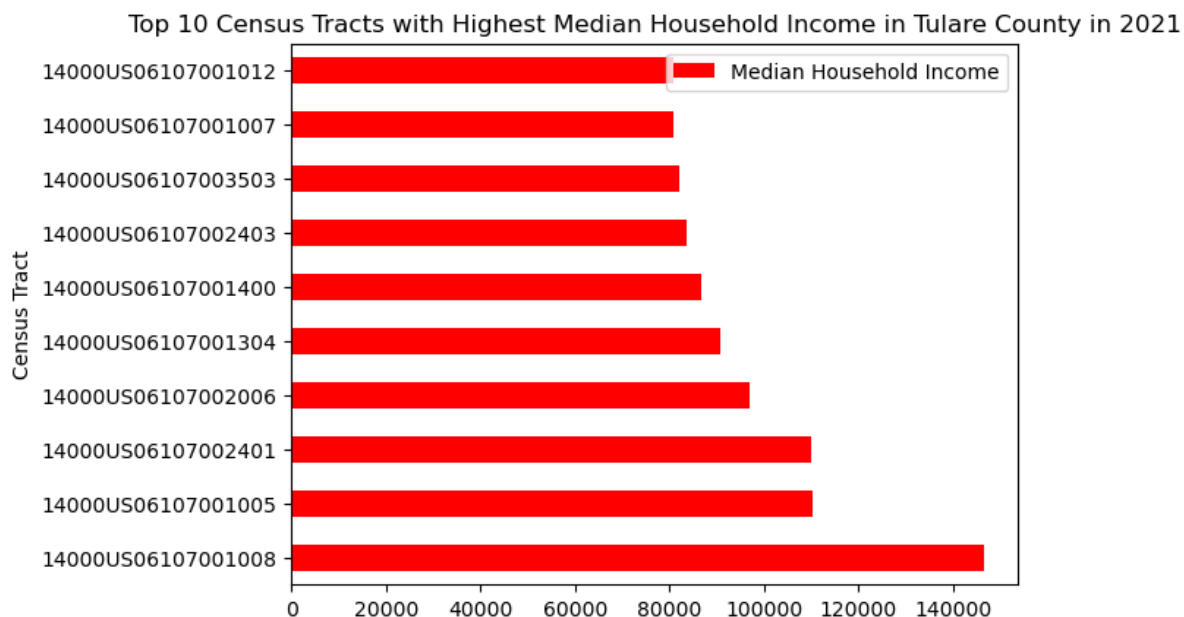
```
Out[48]:  <AxesSubplot: title={'center': 'Top 10 Census Tracts with Highest Median Ho
          usehold Income in Tulare County in 2021'}, ylabel='Census Tract'>
```


Top 10 Census Tracts with Highest Median Household Income in Tulare County in 2021

```
In [35]:  #sort data so it can be plotted more cleanly on the bar graph
          tcincome3 = tcincome2.sort_values(by='Median Household Income',ascending = F
```
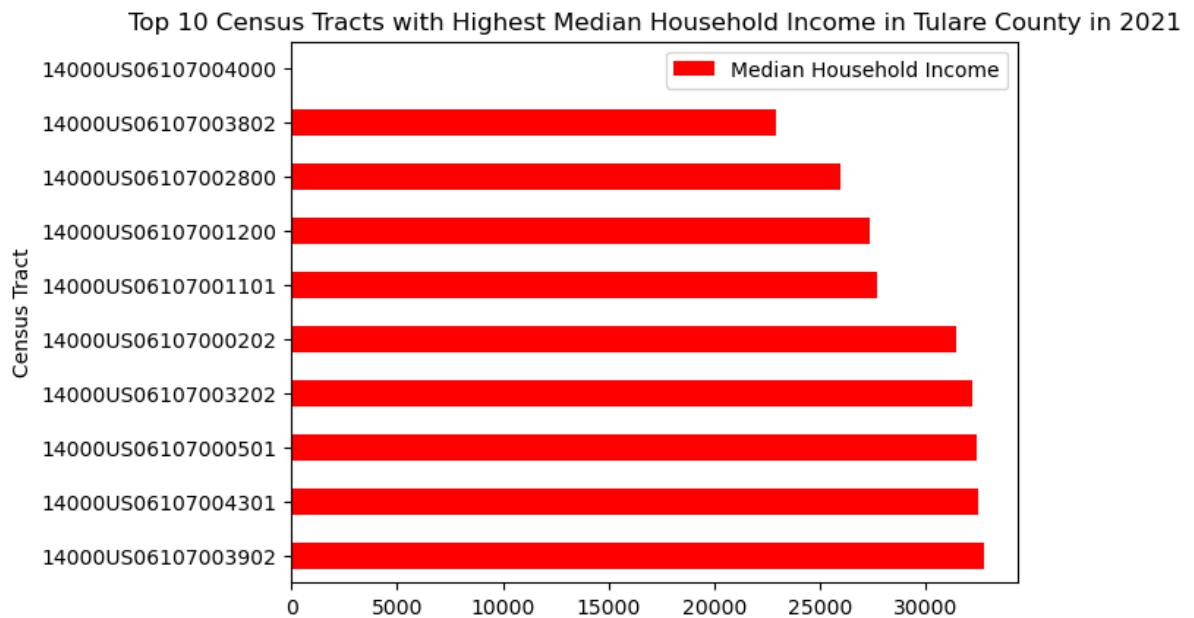
In [36]:
```python
#this graph shows the highest median household income tracts, a few reaching
#which was $81,575 in 2021 (Statista)
tcincome3.head(10).plot.barh(x='Census Tract',
                             y='Median Household Income',
                             title='Top 10 Census Tracts with Highest Median
                             color='red')
```

Out[36]: <AxesSubplot: title={'center': 'Top 10 Census Tracts with Highest Median Ho
usehold Income in Tulare County in 2021'}, ylabel='Census Tract'>

Top 10 Census Tracts with Highest Median Household Income in Tulare County in 2021

In [37]:
```python
#using tail to get lower income level of the county. The state poverty line
# (Public Policy Institute of California, Poverty Fact Sheet). All of these
#The one tract without data suggests either an issue with data collection or
#which is heavily agricultural or used for oil production, that this tract h
tcincome3.tail(10).plot.barh(x='Census Tract',
                             y='Median Household Income',
                             title='Top 10 Census Tracts with Highest Median
                             color='red')
```

Out[37]: <AxesSubplot: title={'center': 'Top 10 Census Tracts with Highest Median Ho
usehold Income in Tulare County in 2021'}, ylabel='Census Tract'>

Top 10 Census Tracts with Highest Median Household Income in Tulare County in 2021

In [49]: `tcincome3.tail()`

Out[49]:

	Census Tract	name	Median Household Income	geometry
28	14000US06107001101	Census Tract 11.01, Tulare, CA	27731.0	MULTIPOLYGON (((-119.29668 36.34182, -119.2965...
30	14000US06107001200	Census Tract 12, Tulare, CA	27375.0	MULTIPOLYGON (((-119.31403 36.32924, -119.3140...
70	14000US06107002800	Census Tract 28, Tulare, CA	25956.0	MULTIPOLYGON (((-119.11793 36.20350, -119.1174...
90	14000US06107003802	Census Tract 38.02, Tulare, CA	22911.0	MULTIPOLYGON (((-119.02535 36.07336, -119.0253...
94	14000US06107004000	Census Tract 40, Tulare, CA	NaN	MULTIPOLYGON (((-118.99095 36.04037, -118.9906...

In [ ]: