In [4]:
```
from pymongo import MongoClient
import matplotlib.pyplot as plt
import pandas as pd
client = MongoClient('localhost', 27017)
db = client.hotels
reviews_collection= db.yelp_reviews
users_collection= db.yelp_users
```

In [5]:
```
def origin_of_users():
    origin = reviews_collection.aggregate(
    [
        {
            "$lookup" : {
                "from" : "yelp_users",
                "localField" : "_user_id",
                "foreignField" : "_id",
                "as" : "user"
            }
        },
        {
            "$project" : {
                "_id" : "$Hotel_name",
                "usr_location" : "$user.user_loc"
            }
        }
    ],
    );
    return origin
```

In [70]:
```
ori = pd.DataFrame(list(origin_of_users()))
for index, row in ori.iterrows():
   k = str(row['usr_location']).strip('['']')
   j = k.strip('\'\'')
   if (len(j.split(',')) > 1 ):
       j = j.split(',')[1]
   else:
       j = j.split(',')[0]
   row['usr_location'] = j
```

In [84]:
```
#print(ori)
df_countries = ori.groupby(['usr_location']).count()
print(df_hotels)
#ori['country'] = pd.Series(ori['usr_location']).str.split(',').str[1]
#print(ori.head())
```

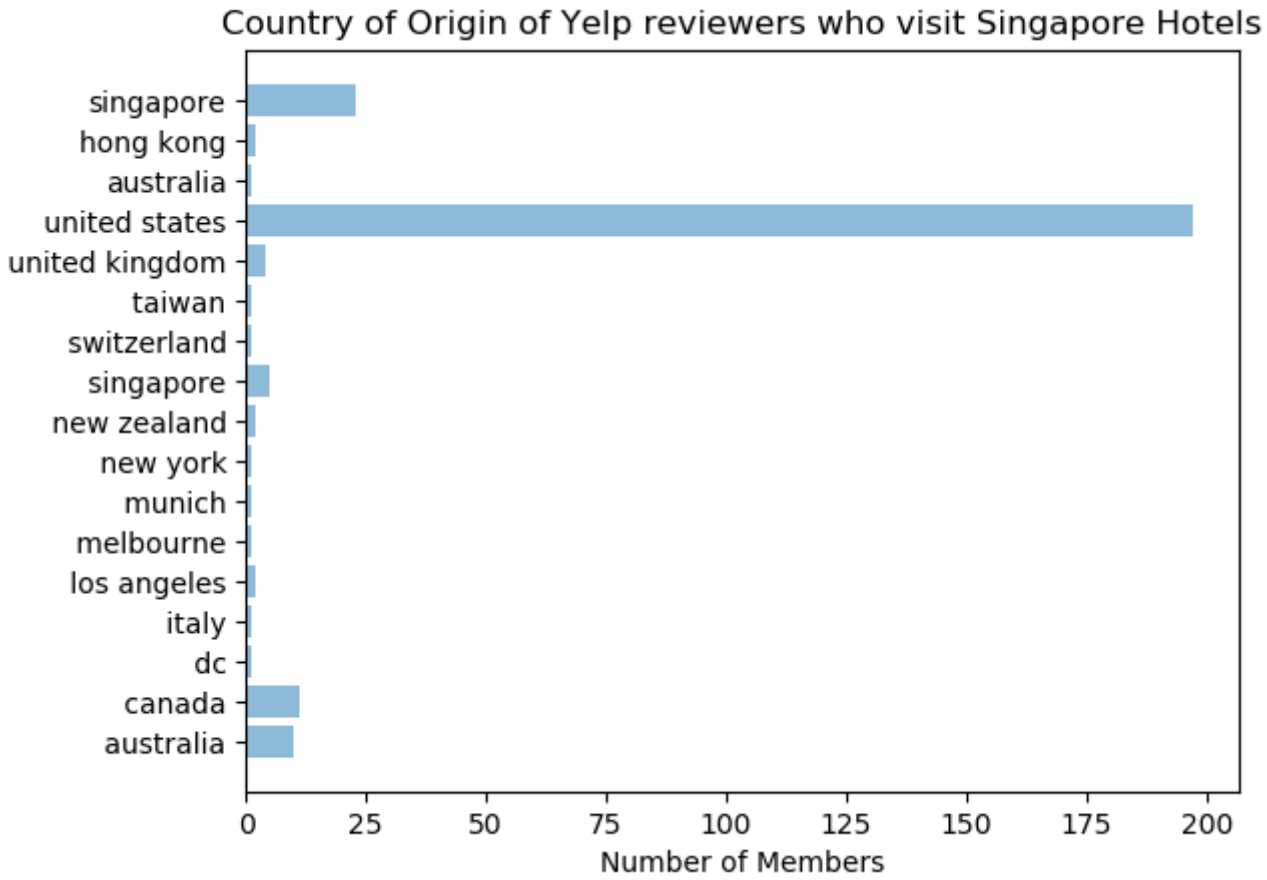
```
                 _id
usr_location
 australia        10
 canada           11
 dc                1
 italy             1
 los angeles       2
 melbourne         1
 munich            1
 new york          1
 new zealand       2
 singapore         5
 switzerland       1
 taiwan            1
 united kingdom    4
 united states   197
australia          1
hong kong          2
singapore         23
```

In [87]:
```
import matplotlib.pyplot as plt; plt.rcdefaults()
import numpy as np
import matplotlib.pyplot as plt

members = df_countries.index
y_pos = np.arange(len(members))
counts = df_countries['_id']

plt.barh(y_pos, counts, align='center', alpha=0.5)
plt.yticks(y_pos, members)
plt.xlabel('Number of Members')
plt.title('Country of Origin of Yelp reviewers who visit Singapore Hotels')

plt.show()
```



In [100]:
```
#print(ori)
ori.to_csv('country_hotels.csv')
```

In [107]:
```
def reviewReliability():
    origin = reviews_collection.aggregate(
    [
        {
            "$lookup" : {
                "from" : "yelp_users",
                "localField" : "_user_id",
                "foreignField" : "_id",
                "as" : "user"
            }
        },
        {
            "$project" : {
                "_id" : "$Hotel_name",
                "total_useful_upvote": "$total_useful_upvote",
                "membstat" : "$user.is_elite",
                "total_reviews":"$user.total_user_reviews"
            }
        }
    ],
    );
    return origin
```

In [125]:
```
df_reliability = pd.DataFrame(list(reviewReliability()))
for index, row in df_reliability.iterrows():
   k = str(row['membstat']).strip('['']')
   j = str(row['total_reviews']).strip('['']')

   #print(k)

   k = k.strip('\'\'')
   j = j.strip('\'\'')

   #print(k)
   k = k.split(' ')[0]
   j = j.split(' ')[0]

   row['membstat'] = k
   row['total_reviews'] = j
```

In [126]:
```
df_reliability.to_csv('reviewers_per_hotel.csv')
```