In [18]:
```
import numpy as no
import pandas as pd
import seaborn as sns
import scipy
from statsmodels.stats.multicomp import pairwise_tukeyhsd
from statsmodels.stats.multicomp import MultiComparison
from statsmodels.stats.proportion import proportions_ztest
from statsmodels.stats.proportion import proportions_chisquare
```

Scenario 1

(One proportion z_test)

In [3]:
```
count = 28
nobs = 94
value = .16
stat, pval = proportions_ztest(count, nobs, value)
print(stat, pval)
```

```
2.9229268377264077 0.0034675798365736213
```

In [ ]:
```

```

Scenario 2 (Independent Chi_Square)

In [22]:
```
import numpy as np
import pandas as pd
import seaborn as sns
from scipy import stats
```

In [6]:
```
df2 = pd.read_csv("C:/Users/15756/Downloads/antiseptics/antiseptics.csv")
df2.rename(columns={'Antiseptic Type ': "AS", "Number of applications": "Count"}, inplace=True)
```

In [7]:
```
df2_pivot = pd.pivot_table(df2,index='AS',columns='Clinic',values="Count")
df2_pivot
```

Out[7]:

Clinic	1	2	3
AS			
A	22	38	84
B	71	112	298
C	8	14	37
D	49	69	182

In [8]:
```
stats.chi2_contingency(df2_pivot)
```

Out[8]:
```
(1.225920250023835,
 0.9755850789571424,
 6,
 array([[ 21.95121951,  34.09756098,  87.95121951],
        [ 73.32317073, 113.8953252 , 293.78150407],
        [  8.99390244,  13.97052846,  36.03556911],
        [ 45.73170732,  71.03658537, 183.23170732]]))
```

In [ ]:
```

```

Scenario 3 (one way anova)

In [27]:
```
df3 = pd.read_csv("C:/Users/15756/Downloads/savings/savings.csv")
df3.head()
```

Out[27]:

	Group A	Group B	Group C	Group D
0	21383.06	17077.54	13636.38	14582.73
1	19729.92	17258.06	5156.36	12880.28
2	24071.53	20652.91	4446.92	16412.72
3	19056.28	20845.06	4892.59	14020.00
4	19147.18	22296.64	14099.38	16467.70

In [33]:
```
df3_expanded=pd.melt(df3,var_name='Group', value_name='Value')
```

In [34]:
```
df3_expanded
```

Out[34]:

	Group	Value
0	Group A	21383.06
1	Group A	19729.92
2	Group A	24071.53
3	Group A	19056.28
4	Group A	19147.18
...	...	...
227	Group D	12180.86
228	Group D	12972.11
229	Group D	12068.83
230	Group D	16064.42
231	Group D	10884.26

232 rows × 2 columns

In [35]:
```
df3_expanded = df3_expanded.replace(df3.columns, [0,1,2,3])
df3_expanded.head()
```

Out[35]:

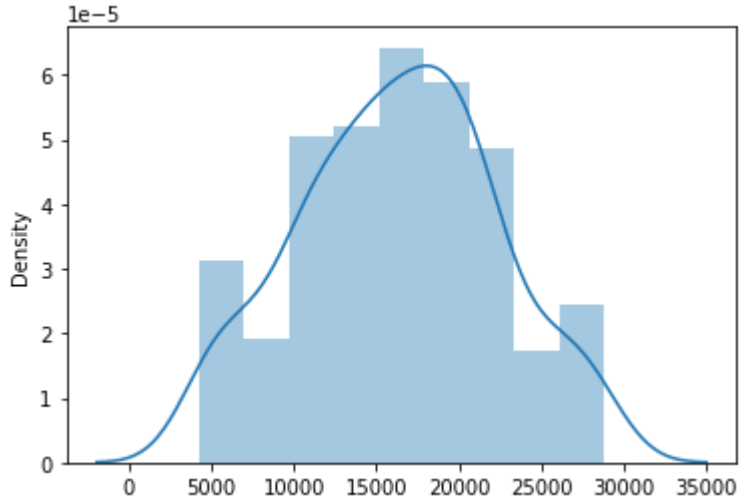
	Group	Value
0	0	21383.06
1	0	19729.92
2	0	24071.53
3	0	19056.28
4	0	19147.18

Plot dependent variable

In [36]:
```
sns.distplot(df3.values[~np.isnan(df3.values)])
```

```
C:\Python3\lib\site-packages\seaborn\distributions.py:2619: FutureWarning: `distplot` is a deprecated function and will be removed in a future version. Please adapt your code to use either `displot` (a figure-level function with similar flexibility) or `histplot` (an axes-level function for histograms).
  warnings.warn(msg, FutureWarning)
```

Out[36]:
```
<AxesSubplot:ylabel='Density'>
```



In [38]:
```
scipy.stats.bartlett(df3_expanded['Group'], df3_expanded['Value'])
```

Out[38]:
```
BartlettResult(statistic=3639.1753663764925, pvalue=0.0)
```

In [39]:
```
df3_expanded.dropna(inplace=True)
```

In [40]:
```
stats.f_oneway(df3_expanded['Value'][df3_expanded['Group']==0],
               df3_expanded['Value'][df3_expanded['Group']==1],
               df3_expanded['Value'][df3_expanded['Group']==2],
               df3_expanded['Value'][df3_expanded['Group']==3])
```

Out[40]:
```
F_onewayResult(statistic=203.25514198903812, pvalue=1.9933595578005075e-61)
```

In [ ]:
```

```

Sceanario 4 (two proportion z-test)

In [45]:
```
df = proportions_ztest([374,171], [374 + 129, 171 + 74])
df
```

Out[45]:
```
(1.3156546893290748, 0.18828996870412507)
```

In [ ]:
```

```