MidicalCaseStudy

September 7, 2019

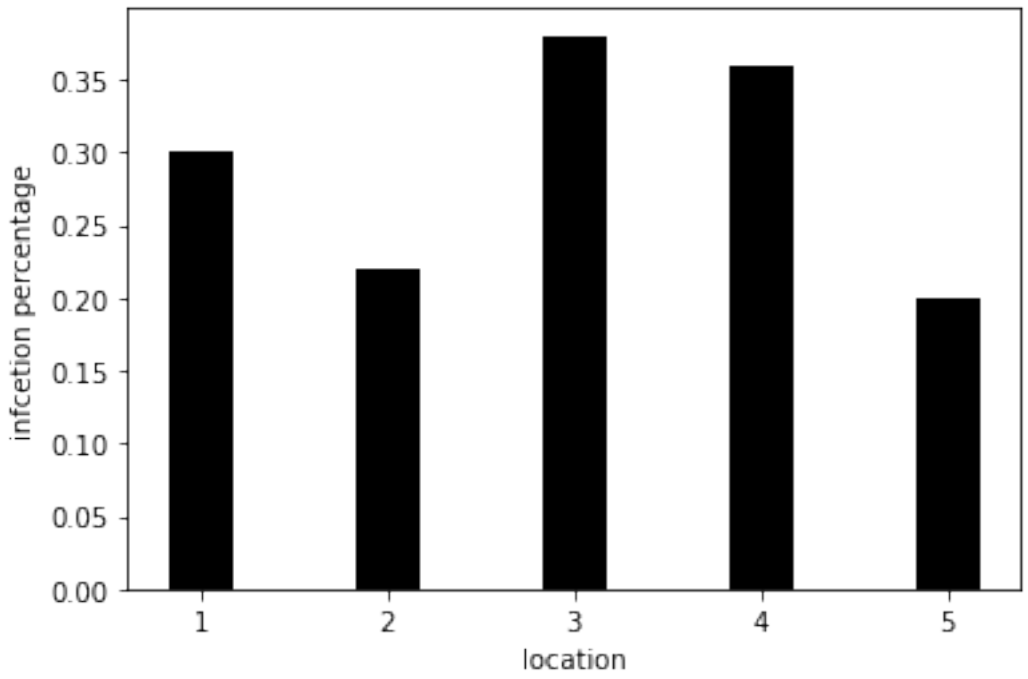
[1]:
```
import numpy as np
from numpy.random import seed
from scipy.stats import friedmanchisquare
import matplotlib.pyplot as plt
# seed the random number generator
```

[2]:
```
def CreateData(n,p):
    arr = np.zeros(n)
    for i in range(n):
        if(np.random.rand()<p):
            arr[i] = 1
    return arr
```

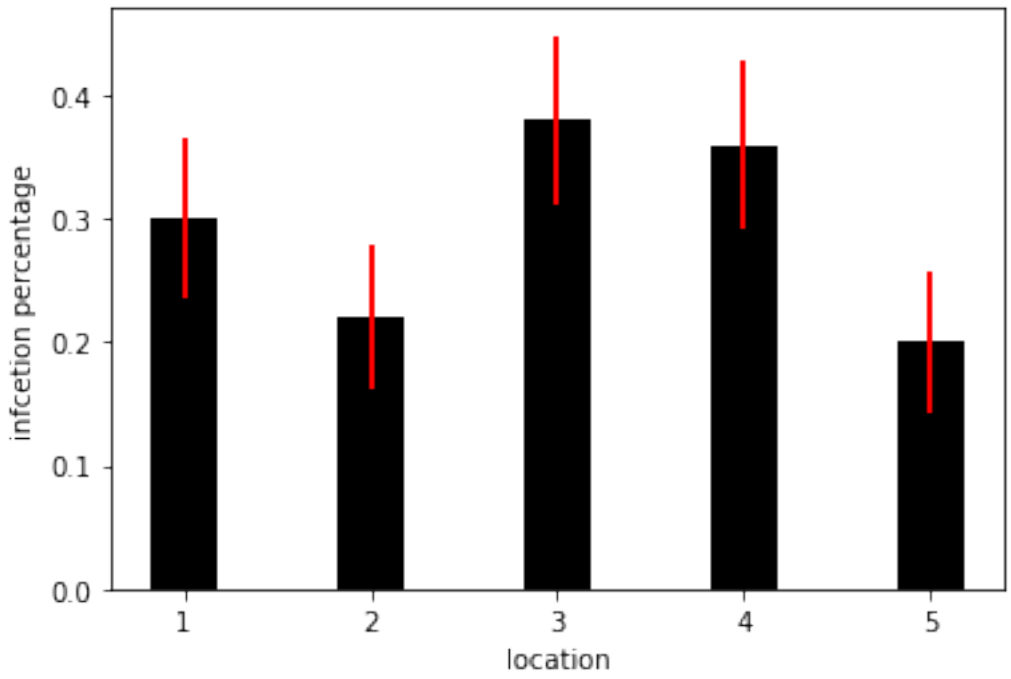
[3]:
```
# sample size
seed(1)
n = 50

means = [0.25, 0.23, 0.27, 0.31, 0.28]


data1 = CreateData(n,means[0])
data2 = CreateData(n,means[1])
data3 = CreateData(n,means[2])
data4 = CreateData(n,means[3])
data5 = CreateData(n,means[4])
```

[4]:
```
# plot
summaryMean = [np.mean(data1), np.mean(data2),np.mean(data3), \
           np.mean(data4),np.mean(data5)]

summaryStd = [np.std(data1), np.std(data2),np.std(data3), \
           np.std(data4),np.std(data5)]

summaryStd = summaryStd/np.sqrt(n)

fig = plt.figure()
ax = fig.add_subplot(111)
```

```
ax.bar(np.arange(5)+1, summaryMean, 0.35,
                color='black')

plt.xlabel("location")
plt.ylabel("infcetion percentage")

plt.xlabel("location")
plt.show()
```



[5]:
```
fig = plt.figure()
ax = fig.add_subplot(111)


ax.bar(np.arange(5)+1, summaryMean, 0.35,
                color='black',
                yerr=summaryStd,
                error_kw=dict(elinewidth=2,ecolor='red'))

plt.xlabel("location")
plt.ylabel("infcetion percentage")
plt.show()
```



[6]:
```
stat, p = friedmanchisquare(data1, data2,data3,data4,data5)
print('Statistics=%.3f, p=%.3f' % (stat, p))
# interpret
alpha = 0.05
if p > alpha:
        print('Same distributions (fail to reject H0)')
else:
        print('Different distributions (reject H0)')
```

```
Statistics=6.392, p=0.172
Same distributions (fail to reject H0)
```