```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
np.set_printoptions(formatter={'float': lambda x: "{0:0.2f}".format(x)})
%matplotlib inline

import tensorflow as tf
print(tf.__version__)
```

```
    2.12.0
```

```
# read in excel spreadsheet
data = pd.read_excel("NoShowData.xlsx")
```

```
data.head(30)
```

	PATIENT_ID	AGE	RACE	SEX	HIV+	JOB	HIST_PT_NO_SHOW	MARITAL_STATU
0	311	28	BLK	M	Y	Unemployed	Y	SINGL
1	601	23	BLK	M	Y	employed	Y	SINGL
2	762	32	BLK	M	Y	Unemployed	Y	SINGL
3	991	32	BLK	M	Y	employed	Y	SINGL
4	869	29	BLK	M	Y	employed	Y	SINGL
5	669	29	BLK	M	Y	employed	Y	SINGL
6	455	25	BLK	M	Y	Unemployed	Y	SINGL
7	761	25	BLK	M	Y	Unemployed	Y	SINGL
8	655	24	BLK	M	Y	employed	Y	SINGL
9	285	32	BLK	M	Y	employed	Y	SINGL
10	534	22	BLK	M	Y	Unemployed	Y	SINGL
11	409	25	BLK	M	Y	employed	Y	SINGL
12	997	28	BLK	M	Y	employed	Y	SINGL
13	392	26	BLK	M	Y	employed	Y	SINGL
14	108	26	BLK	M	Y	Unemployed	Y	SINGL
15	662	29	BLK	M	Y	employed	Y	SINGL
16	106	23	BLK	M	Y	Unemployed	Y	SINGL

17	45	26	BLK	M	Y	employed	Y	SINGL
18	579	26	BLK	M	Y	Unemployed	Y	SINGL
19	20	30	BLK	M	Y	employed	Y	SINGL
20	557	33	BLK	M	Y	employed	Y	SINGL
21	441	29	BLK	M	Y	employed	Y	SINGL
22	119	32	BLK	M	Y	employed	Y	SINGL
23	290	26	BLK	M	Y	employed	Y	SINGL
24	136	33	BLK	M	Y	employed	Y	SINGL
25	161	32	BLK	M	Y	employed	Y	SINGL
26	917	32	BLK	M	Y	employed	Y	SINGL
27	296	26	BLK	M	Y	employed	Y	SINGL
28	912	32	BLK	M	Y	employed	Y	SINGL
29	713	29	BLK	M	Y	employed	Y	SINGL

```
# Replace NULL values in Y/O_DIAGNOSIS with mean of the column
meanVal = data["YEAR_DIAGNOSIS"].mean()
data["YEAR_DIAGNOSIS"].fillna(value=meanVal, inplace=True)
data.head(30)
```

	PATIENT_ID	AGE	RACE	SEX	HIV+	JOB	HIST_PT_NO_SHOW	MARITAL_STATU
0	311	28	BLK	M	Y	Unemployed	Y	SINGL
1	601	23	BLK	M	Y	employed	Y	SINGL
2	762	32	BLK	M	Y	Unemployed	Y	SINGL
3	991	32	BLK	M	Y	employed	Y	SINGL
4	869	29	BLK	M	Y	employed	Y	SINGL
5	669	29	BLK	M	Y	employed	Y	SINGL
6	455	25	BLK	M	Y	Unemployed	Y	SINGL
7	761	25	BLK	M	Y	Unemployed	Y	SINGL
8	655	24	BLK	M	Y	employed	Y	SINGL
9	285	32	BLK	M	Y	employed	Y	SINGL
10	534	22	BLK	M	Y	Unemployed	Y	SINGL
11	409	25	BLK	M	Y	employed	Y	SINGL

12	997	28	BLK	M	Y	employed	Y	SINGL
13	392	26	BLK	M	Y	employed	Y	SINGL
14	108	26	BLK	M	Y	Unemployed	Y	SINGL
15	662	29	BLK	M	Y	employed	Y	SINGL
16	106	23	BLK	M	Y	Unemployed	Y	SINGL
17	45	26	BLK	M	Y	employed	Y	SINGL
18	579	26	BLK	M	Y	Unemployed	Y	SINGL
19	20	30	BLK	M	Y	employed	Y	SINGL
20	557	33	BLK	M	Y	employed	Y	SINGL
21	441	29	BLK	M	Y	employed	Y	SINGL
22	119	32	BLK	M	Y	employed	Y	SINGL
23	290	26	BLK	M	Y	employed	Y	SINGL
24	136	33	BLK	M	Y	employed	Y	SINGL
25	161	32	BLK	M	Y	employed	Y	SINGL
26	917	32	BLK	M	Y	employed	Y	SINGL
27	296	26	BLK	M	Y	employed	Y	SINGL
28	912	32	BLK	M	Y	employed	Y	SINGL
29	713	29	BLK	M	Y	employed	Y	SINGL

```
data["YEAR_DIAGNOSIS"].describe()
```

```
count      30.000000
mean     2018.285714
std         2.082060
min      2013.000000
25%      2018.000000
50%      2018.000000
75%      2020.000000
max      2021.000000
Name: YEAR_DIAGNOSIS, dtype: float64
```

```
# Change column values to binary values where possible
# 1 is yes, 0 is no in all cases
job = {'employed' : 1, 'Unemployed' : 0}
data.JOB = [job[item] for item in data.JOB]
reminder = {'Y' : 1, 'N' : 0}
data.REMINDER1 = [reminder[item] for item in data.REMINDER1]
data.REMINDER2 = [reminder[item] for item in data.REMINDER2]
data.REMINDER3 = [reminder[item] for item in data.REMINDER3]
binary = {'Y' : 1, 'N' : 0}
data.NEWAPPT = [binary[item] for item in data.NEWAPPT]
data.HIST_PT_NO_SHOW = [binary[item] for item in data.HIST_PT_NO_SHOW]
data['HIV+'] = [binary[item] for item in data['HIV+']]
marital = {'MARRIED' : 1, 'SINGLE' : 0}
data.MARITAL_STATUS = [marital[item] for item in data.MARITAL_STATUS]
```

```
data.head(30)
```

	PATIENT_ID	AGE	RACE	SEX	HIV+	JOB	HIST_PT_NO_SHOW	MARITAL_STATUS	YEAR
0	311	28	BLK	M	1	0	1	0	
1	601	23	BLK	M	1	1	1	0	
2	762	32	BLK	M	1	0	1	0	
3	991	32	BLK	M	1	1	1	0	
4	869	29	BLK	M	1	1	1	0	
5	669	29	BLK	M	1	1	1	0	
6	455	25	BLK	M	1	0	1	0	
7	761	25	BLK	M	1	0	1	0	
8	655	24	BLK	M	1	1	1	0	
9	285	32	BLK	M	1	1	1	0	
10	534	22	BLK	M	1	0	1	0	
11	409	25	BLK	M	1	1	1	0	
12	997	28	BLK	M	1	1	1	0	
13	392	26	BLK	M	1	1	1	0	
14	108	26	BLK	M	1	0	1	0	
15	662	29	BLK	M	1	1	1	0	
16	106	23	BLK	M	1	0	1	0	
17	[illegible]	[illegible]	BLK	M	1	1	1	0	

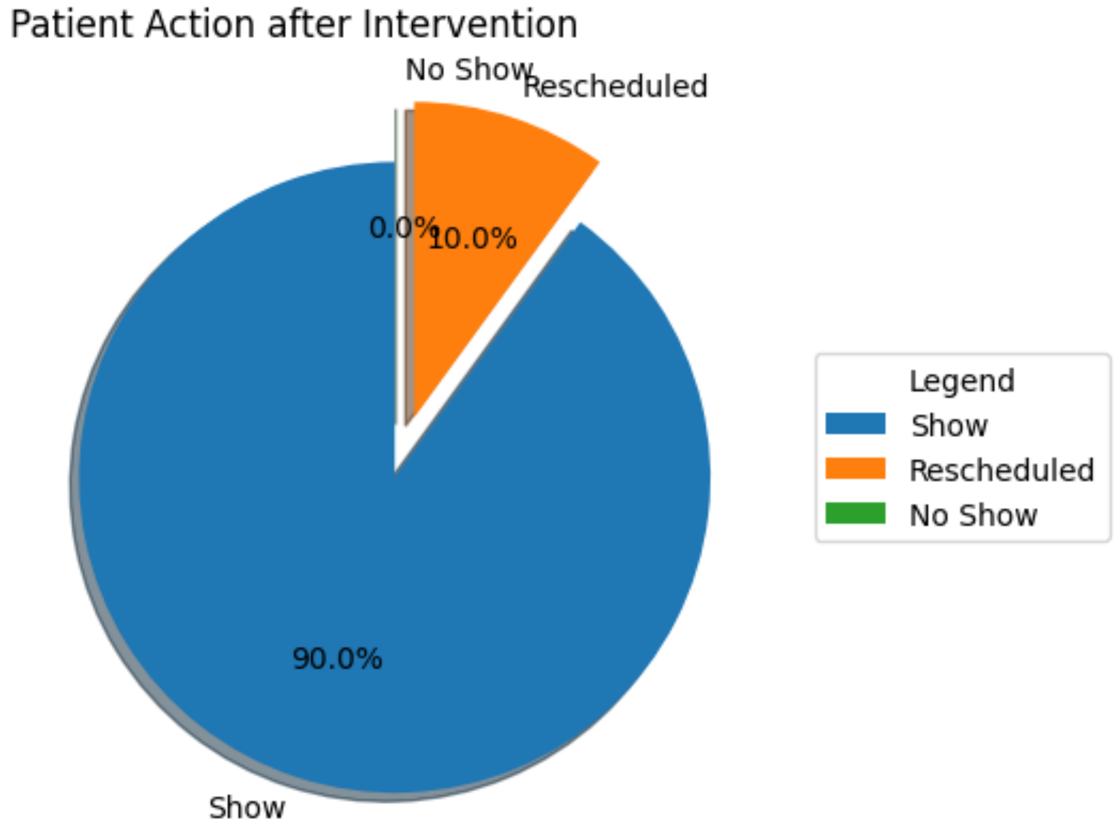
17	45	26	BLK	M	1	1	1	0
18	579	26	BLK	M	1	0	1	0
19	20	30	BLK	M	1	1	1	0
20	557	33	BLK	M	1	1	1	0
21	441	29	BLK	M	1	1	1	0
22	119	32	BLK	M	1	1	1	0
23	290	26	BLK	M	1	1	1	0
24	136	33	BLK	M	1	1	1	0
25	161	32	BLK	M	1	1	1	0
26	917	32	BLK	M	1	1	1	0
27	296	26	BLK	M	1	1	1	0
28	912	32	BLK	M	1	1	1	0
29	713	29	BLK	M	1	1	1	0

```
# Create dummy values for the 'ATTEND_NEW_APPOINTMENT' column because its not
# yes or no, its yes or rescheduled or no (even if there were no 'no shows')
data1 = pd.get_dummies(data, columns= ['PT_ATTEND_NEW_APT'])
data1.head(30)
```

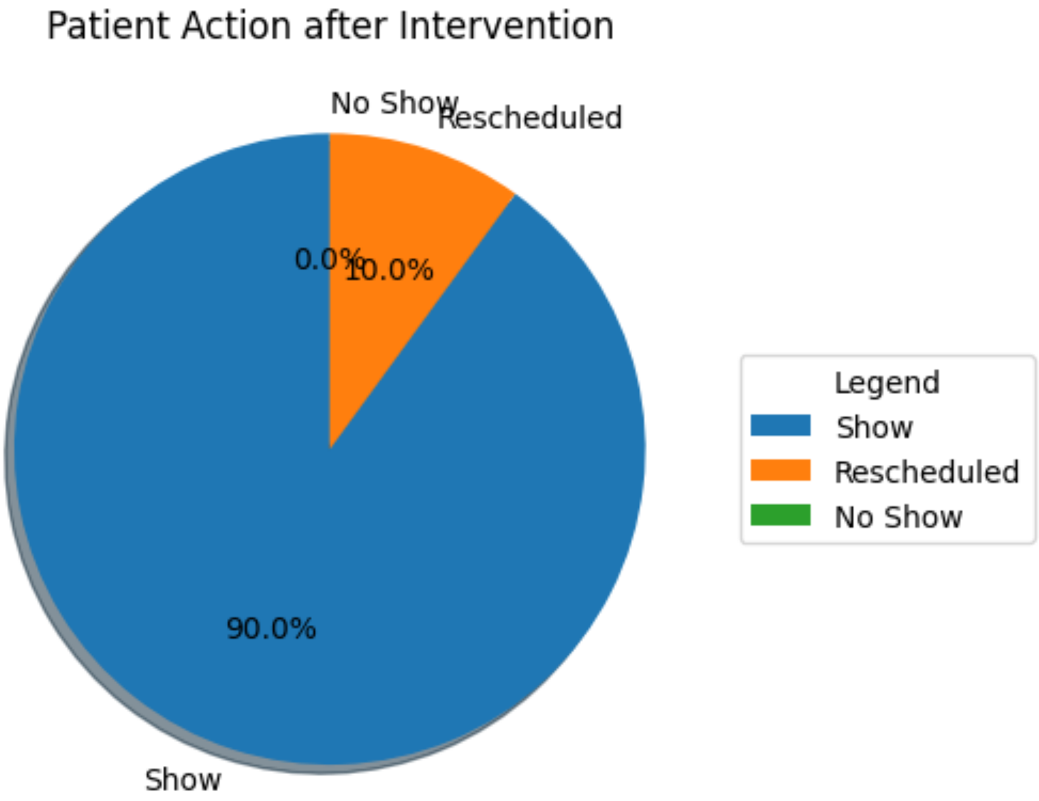
	PATIENT_ID	AGE	RACE	SEX	HIV+	JOB	HIST_PT_NO_SHOW	MARITAL_STATUS	YEAR
0	311	28	BLK	M	1	0	1	0	
1	601	23	BLK	M	1	1	1	0	
2	762	32	BLK	M	1	0	1	0	
3	991	32	BLK	M	1	1	1	0	
4	869	29	BLK	M	1	1	1	0	
5	669	29	BLK	M	1	1	1	0	
6	455	25	BLK	M	1	0	1	0	
7	761	25	BLK	M	1	0	1	0	
8	655	24	BLK	M	1	1	1	0	
9	285	32	BLK	M	1	1	1	0	
10	534	22	BLK	M	1	0	1	0	
11	409	25	BLK	M	1	1	1	0	
12	907	28	BLK	M	1	1	1	0	

12	997	28	BLK	M	1	1	1	0
13	392	26	BLK	M	1	1	1	0
14	108	26	BLK	M	1	0	1	0
15	662	29	BLK	M	1	1	1	0
16	106	23	BLK	M	1	0	1	0
17	45	26	BLK	M	1	1	1	0
18	579	26	BLK	M	1	0	1	0
19	20	30	BLK	M	1	1	1	0
20	557	33	BLK	M	1	1	1	0
21	441	29	BLK	M	1	1	1	0
22	119	32	BLK	M	1	1	1	0
23	290	26	BLK	M	1	1	1	0
24	136	33	BLK	M	1	1	1	0
25	161	32	BLK	M	1	1	1	0
26	917	32	BLK	M	1	1	1	0
27	296	26	BLK	M	1	1	1	0
28	912	32	BLK	M	1	1	1	0
29	713	29	BLK	M	1	1	1	0

```
explode = (0.1, 0.1, 0.1)
labels = ['Show', 'Rescheduled', 'No Show']
title = 'Patient Action after Intervention'
sizes = [data1.PT_ATTEND_NEW_APT_Y.sum() / data1.shape[0],
         data1.PT_ATTEND_NEW_APT_R.sum() / data1.shape[0],
         0]

fig, ax = plt.subplots()
ax.pie(sizes, explode=explode, labels=labels, autopct='%1.1f%%',
        shadow=True, startangle=90)
ax.legend(labels,
          title ="Legend",
          loc ="center left",
          bbox_to_anchor =(1, 0, 0.5, 1))
ax.set_title(title, loc='left')

plt.savefig("PieExplode.png")

plt.show()
```



```
fig, ax = plt.subplots()
ax.pie(sizes, labels=labels, autopct='%1.1f%%',
        shadow=True, startangle=90)
ax.legend(labels,
          title ="Legend",
          loc ="center left",
          bbox_to_anchor =(1, 0, 0.5, 1))
ax.set_title(title)

plt.savefig("PieRegular.png")

plt.show()
```



PIE CHART ANALYSIS

The pie chart shows that after the intevention was taken, all of the patients that had a history of not showing up for their appointments took action to either show up for their next appointment, or reschedule it with the clinic. According to the analysis, 90% of the patients that recieved intervention showed up to the appointment and the other 10% called to reschedule. Not a single patient in the study missed, or failed to reschedule their appointment.

```
data1.corr()
```

	PATIENT_ID	AGE	HIV+	JOB	HIST_PT_NO_SHOW	MA
PATIENT_ID	1.000000	0.132446	NaN	0.081777	NaN	
AGE	0.132446	1.000000	NaN	0.414732	NaN	
HIV+	NaN	NaN	NaN	NaN	NaN	
JOB	0.081777	0.414732	NaN	1.000000	NaN	
HIST_PT_NO_SHOW	NaN	NaN	NaN	NaN	NaN	
MARITAL_STATUS	NaN	NaN	NaN	NaN	NaN	
YEAR_DIAGNOSIS	0.048652	-0.220321	NaN	0.194633	NaN	
NEWAPPT	NaN	NaN	NaN	NaN	NaN	
REMINDER1	NaN	NaN	NaN	NaN	NaN	
REMINDER2	NaN	NaN	NaN	NaN	NaN	
REMINDER3	NaN	NaN	NaN	NaN	NaN	
PT_ATTEND_NEW_APT_R	-0.103177	0.054141	NaN	0.201008	NaN	
PT_ATTEND_NEW_APT_Y	0.103177	-0.054141	NaN	-0.201008	NaN	

CORRELATION TABLE ANALYSIS

The coefficient correlation chart above reveals a few things. According to the slight positive correlation between JOB and PT_ATTEND_NEW_APT_R, we can surmise that a patient was more likely to call to reschedule the second appointment after intervention if they were employed. Due to the slight negative correlation between JOB and PT_ATTEND_NEW_APT_Y, we can also tell that patients were more likely to show up to the second appointment after intervention if they were unemployed. Also patients who had been diagnosed longer ago were slightly more likely to show up after intervention while newer diagnosed patients are more likely to call to reschedule after intervention according to the slight positive correlation between YEAR_DIAGNOSED and PT_ATTEND_NEW_APT_R, and the slight negative correlation between YEAR_DIAGNOSED and PT_ATTEND_NEW_APT_Y.

```
def age_group (age): # 21 - 25, 26 - 30, 30 - 33.
  if age >= 21 and age <= 25: return "21 - 25"
  elif age <= 30: return "26 - 30"
  elif age <= 33: return "30 - 33"
  else:
    raise Exception("This is an age beyond the 21 - 33 range, please check the da


data1['AgeGroup'] = data1 ['AGE'].apply(age_group)
data1.head(30)
```

	PATIENT_ID	AGE	RACE	SEX	HIV+	JOB	HIST_PT_NO_SHOW	MARITAL_STATUS	YEAR
0	311	28	BLK	M	1	0	1	0	
1	601	23	BLK	M	1	1	1	0	
2	762	32	BLK	M	1	0	1	0	
3	991	32	BLK	M	1	1	1	0	
4	869	29	BLK	M	1	1	1	0	
5	669	29	BLK	M	1	1	1	0	
6	455	25	BLK	M	1	0	1	0	
7	761	25	BLK	M	1	0	1	0	
8	655	24	BLK	M	1	1	1	0	
9	285	32	BLK	M	1	1	1	0	
10	534	22	BLK	M	1	0	1	0	
11	409	25	BLK	M	1	1	1	0	
12	997	28	BLK	M	1	1	1	0	
13	392	26	BLK	M	1	1	1	0	
14	108	26	BLK	M	1	0	1	0	
15	662	29	BLK	M	1	1	1	0	
16	106	23	BLK	M	1	0	1	0	
17	45	26	BLK	M	1	1	1	0	
18	579	26	BLK	M	1	0	1	0	
19	20	30	BLK	M	1	1	1	0	
20	557	33	BLK	M	1	1	1	0	
21	441	29	BLK	M	1	1	1	0	

22	119	32	BLK	M	1	1	1	0
23	290	26	BLK	M	1	1	1	0
24	136	33	BLK	M	1	1	1	0
25	161	32	BLK	M	1	1	1	0
26	917	32	BLK	M	1	1	1	0
27	296	26	BLK	M	1	1	1	0
28	912	32	BLK	M	1	1	1	0
29	713	29	BLK	M	1	1	1	0

```
def year_diagnosed (year):
  if year >= 2013 and year <= 2016: return "2013 - 2016"
  elif year <= 2018: return "2017 - 2018"
  elif year <= 2021: return "2019 - 2021"
  else:
    raise Exception("This is a year beyond the 2013 - 2021 range, please check the

def employment (job):
  if job == 1: return "employed"
  elif job == 0: return "unemployed"
  else:
    raise Exception("This range is only 1 or 0, please check the dataset")


data1['Year'] = data1['YEAR_DIAGNOSIS'].apply(year_diagnosed)
data1.head(30)
```

	PATIENT_ID	AGE	RACE	SEX	HIV+	JOB	HIST_PT_NO_SHOW	MARITAL_STATUS	YEAR
0	311	28	BLK	M	1	0	1	0	
1	601	23	BLK	M	1	1	1	0	
2	762	32	BLK	M	1	0	1	0	
3	991	32	BLK	M	1	1	1	0	

4	869	29	BLK	M	1	1	1	0
5	669	29	BLK	M	1	1	1	0
6	455	25	BLK	M	1	0	1	0
7	761	25	BLK	M	1	0	1	0
8	655	24	BLK	M	1	1	1	0
9	285	32	BLK	M	1	1	1	0
10	534	22	BLK	M	1	0	1	0
11	409	25	BLK	M	1	1	1	0
12	997	28	BLK	M	1	1	1	0
13	392	26	BLK	M	1	1	1	0
14	108	26	BLK	M	1	0	1	0
15	662	29	BLK	M	1	1	1	0
16	106	23	BLK	M	1	0	1	0
17	45	26	BLK	M	1	1	1	0

18	579	26	BLK	M	1	0	1	0
19	20	30	BLK	M	1	1	1	0
20	557	33	BLK	M	1	1	1	0
21	441	29	BLK	M	1	1	1	0
22	119	32	BLK	M	1	1	1	0
23	290	26	BLK	M	1	1	1	0
24	136	33	BLK	M	1	1	1	0
25	161	32	BLK	M	1	1	1	0
26	917	32	BLK	M	1	1	1	0
27	296	26	BLK	M	1	1	1	0
28	912	32	BLK	M	1	1	1	0
29	713	29	BLK	M	1	1	1	0

```
data1['Employment'] = data1['JOB'].apply(employment)
data1.head(30)
```

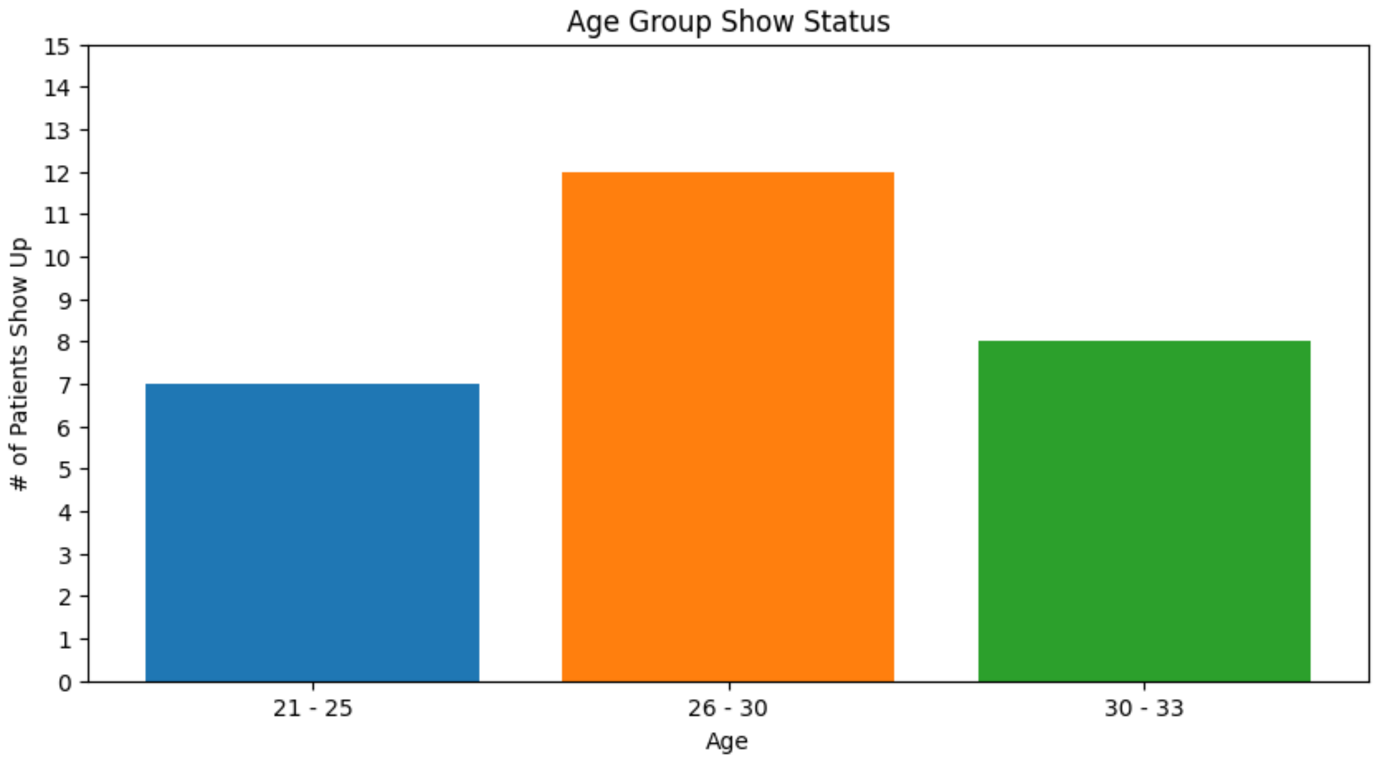
	PATIENT_ID	AGE	RACE	SEX	HIV+	JOB	HIST_PT_NO_SHOW	MARITAL_STATUS	YEAR
0	311	28	BLK	M	1	0	1	0	

1	601	23	BLK	M	1	1	1	0
2	762	32	BLK	M	1	0	1	0
3	991	32	BLK	M	1	1	1	0
4	869	29	BLK	M	1	1	1	0
5	669	29	BLK	M	1	1	1	0
6	455	25	BLK	M	1	0	1	0
7	761	25	BLK	M	1	0	1	0
8	655	24	BLK	M	1	1	1	0
9	285	32	BLK	M	1	1	1	0
10	534	22	BLK	M	1	0	1	0
11	409	25	BLK	M	1	1	1	0
12	997	28	BLK	M	1	1	1	0
13	392	26	BLK	M	1	1	1	0
14	108	26	BLK	M	1	0	1	0

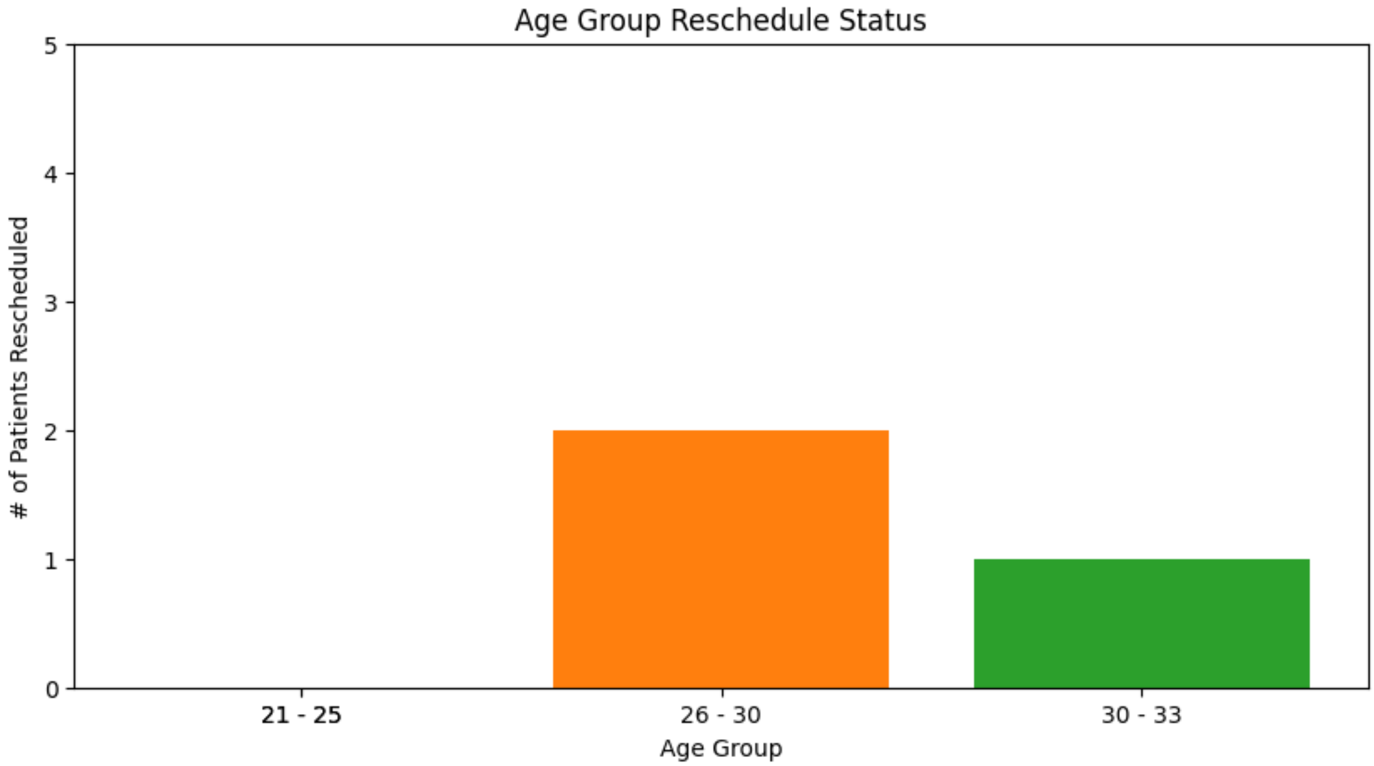
15	662	29	BLK	M	1	1	1	0
16	106	23	BLK	M	1	0	1	0
17	45	26	BLK	M	1	1	1	0
18	579	26	BLK	M	1	0	1	0
19	20	30	BLK	M	1	1	1	0
20	557	33	BLK	M	1	1	1	0
21	441	29	BLK	M	1	1	1	0
22	119	32	BLK	M	1	1	1	0
23	290	26	BLK	M	1	1	1	0
24	136	33	BLK	M	1	1	1	0
25	161	32	BLK	M	1	1	1	0
26	917	32	BLK	M	1	1	1	0
27	296	26	BLK	M	1	1	1	0
28	912	32	BLK	M	1	1	1	0

29	713	29	BLK	M	1	1	1	0

```
fig = plt.figure(figsize = (10, 5))
data2 = data1.loc[data1['AgeGroup'] == '21 - 25']
data3 = data1.loc[data1['AgeGroup'] == '26 - 30']
data4 = data1.loc[data1['AgeGroup'] == '30 - 33']
plt.bar(data2['AgeGroup'], data2['PT_ATTEND_NEW_APT_Y'].sum())
plt.bar(data3['AgeGroup'], data3['PT_ATTEND_NEW_APT_Y'].sum())
plt.bar(data4['AgeGroup'], data4['PT_ATTEND_NEW_APT_Y'].sum())
plt.title('Age Group Show Status')
plt.xlabel('Age')
plt.ylabel('# of Patients Show Up')
plt.xticks(ticks = ['21 - 25', '26 - 30', '30 - 33'])
plt.yticks(ticks = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15])
plt.savefig("AgeGroupShow.png")
plt.show()
```



```
fig = plt.figure(figsize = (10, 5))
plt.bar(data2['AgeGroup'], data2['PT_ATTEND_NEW_APT_R'].sum())
plt.bar(data3['AgeGroup'], data3['PT_ATTEND_NEW_APT_R'].sum())
plt.bar(data4['AgeGroup'], data4['PT_ATTEND_NEW_APT_R'].sum())
plt.title('Age Group Reschedule Status')
plt.xlabel('Age Group')
plt.ylabel('# of Patients Rescheduled')
plt.xticks(ticks = ['21 - 25', '26 - 30', '30 - 33', '21 - 25'])
plt.yticks(ticks = [0, 1, 2, 3, 4, 5])
plt.savefig("AgeGroupReschedule.png")
plt.show()
```

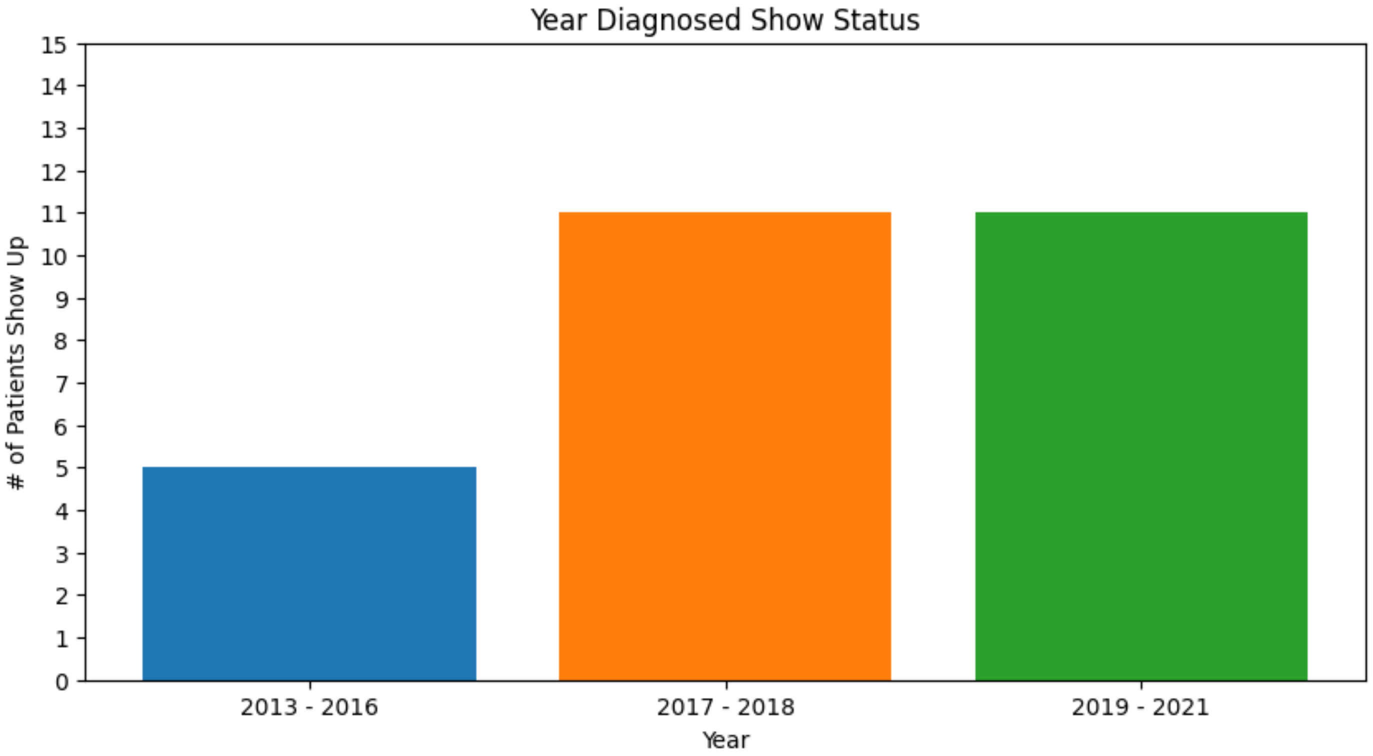


AGE GROUP ANALYSIS

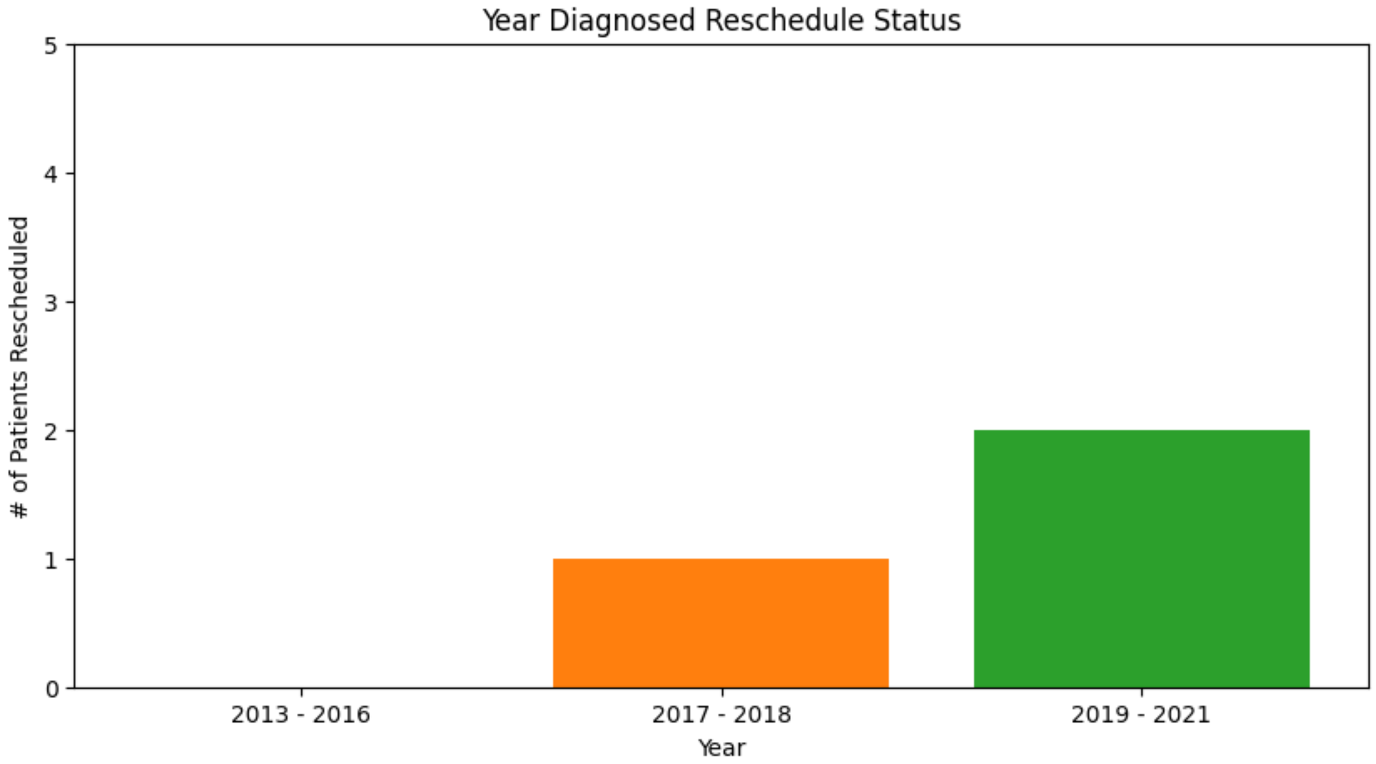
Based on the bar graphs above that analyze the 'show status' and the 'reschedule status' of patients in the test group, based on age group, we can determine that younger patients benefited from the intervention because all of the patients from the 21 - 25 age group showed up for their appointments after intervention. We can also see that 2 patients from the 26 - 30 year old age group and 1 patient from the 30 - 33 year old age group called to reschedule their appointments. None of the other patients from those age groups missed appointments so we can conclude that intervention has a positive effect on all black males with HIV from ages 21 - 33.

```
data5 = data1.loc[data1['Year'] == '2013 - 2016']
data6 = data1.loc[data1['Year'] == '2017 - 2018']
data7 = data1.loc[data1['Year'] == '2019 - 2021']
```

```
fig = plt.figure(figsize = (10, 5))
plt.bar(data5['Year'], data5['PT_ATTEND_NEW_APT_Y'].sum())
plt.bar(data6['Year'], data6['PT_ATTEND_NEW_APT_Y'].sum())
plt.bar(data7['Year'], data7['PT_ATTEND_NEW_APT_Y'].sum())
plt.title('Year Diagnosed Show Status')
plt.xlabel('Year')
plt.ylabel('# of Patients Show Up')
plt.xticks(ticks = ['2013 - 2016', '2017 - 2018', '2019 - 2021'])
plt.yticks(ticks = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9 , 10, 11, 12, 13, 14, 15])
plt.savefig("YearDiagnosedShow.png")
plt.show()
```



```
fig = plt.figure(figsize = (10, 5))
plt.bar(data5['Year'], data5['PT_ATTEND_NEW_APT_R'].sum())
plt.bar(data6['Year'], data6['PT_ATTEND_NEW_APT_R'].sum())
plt.bar(data7['Year'], data7['PT_ATTEND_NEW_APT_R'].sum())
plt.title('Year Diagnosed Reschedule Status')
plt.xlabel('Year')
plt.ylabel('# of Patients Rescheduled')
plt.xticks(ticks = ['2013 - 2016', '2017 - 2018', '2019 - 2021'])
plt.yticks(ticks = [0, 1, 2, 3, 4, 5])
plt.savefig("YearDiagnosedRescheduled.png")
plt.show()
```

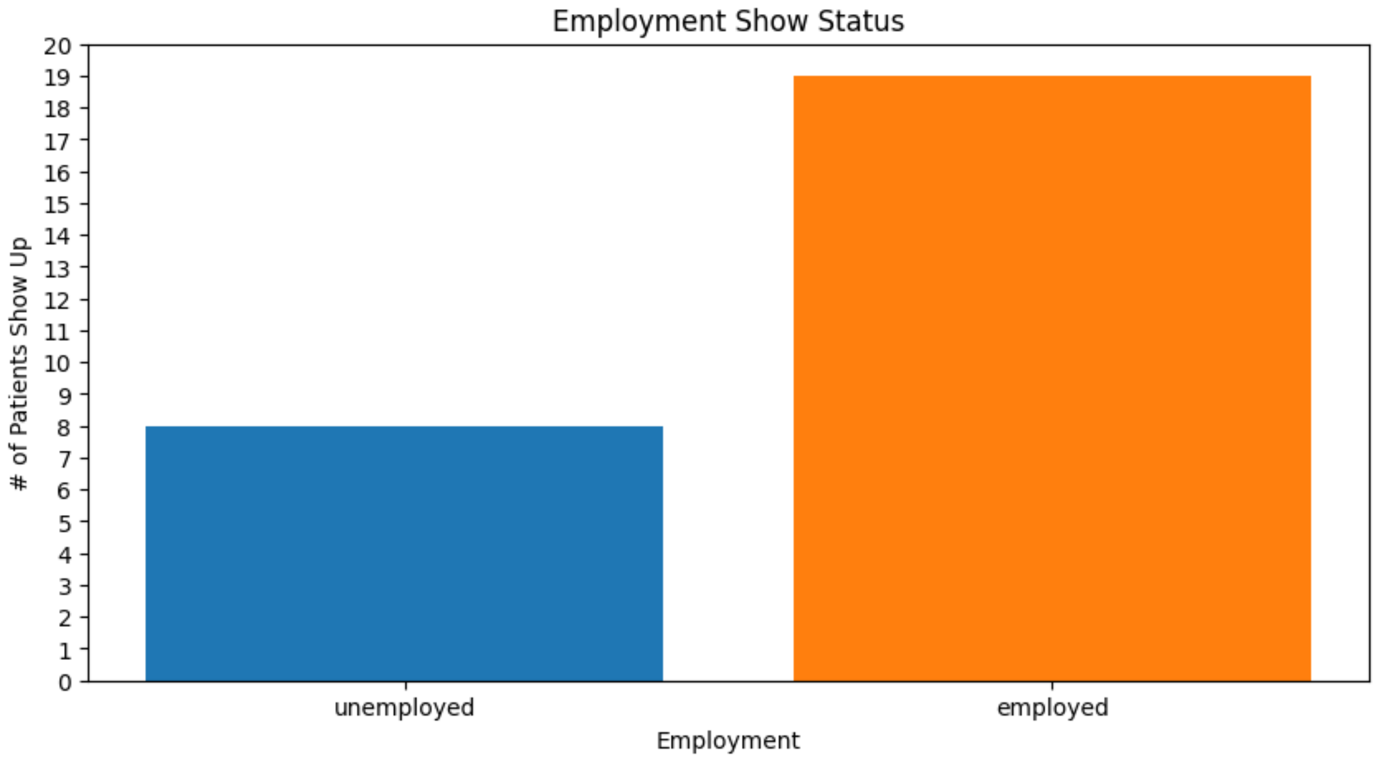


YEAR OF DIAGNOSIS ANALYSIS

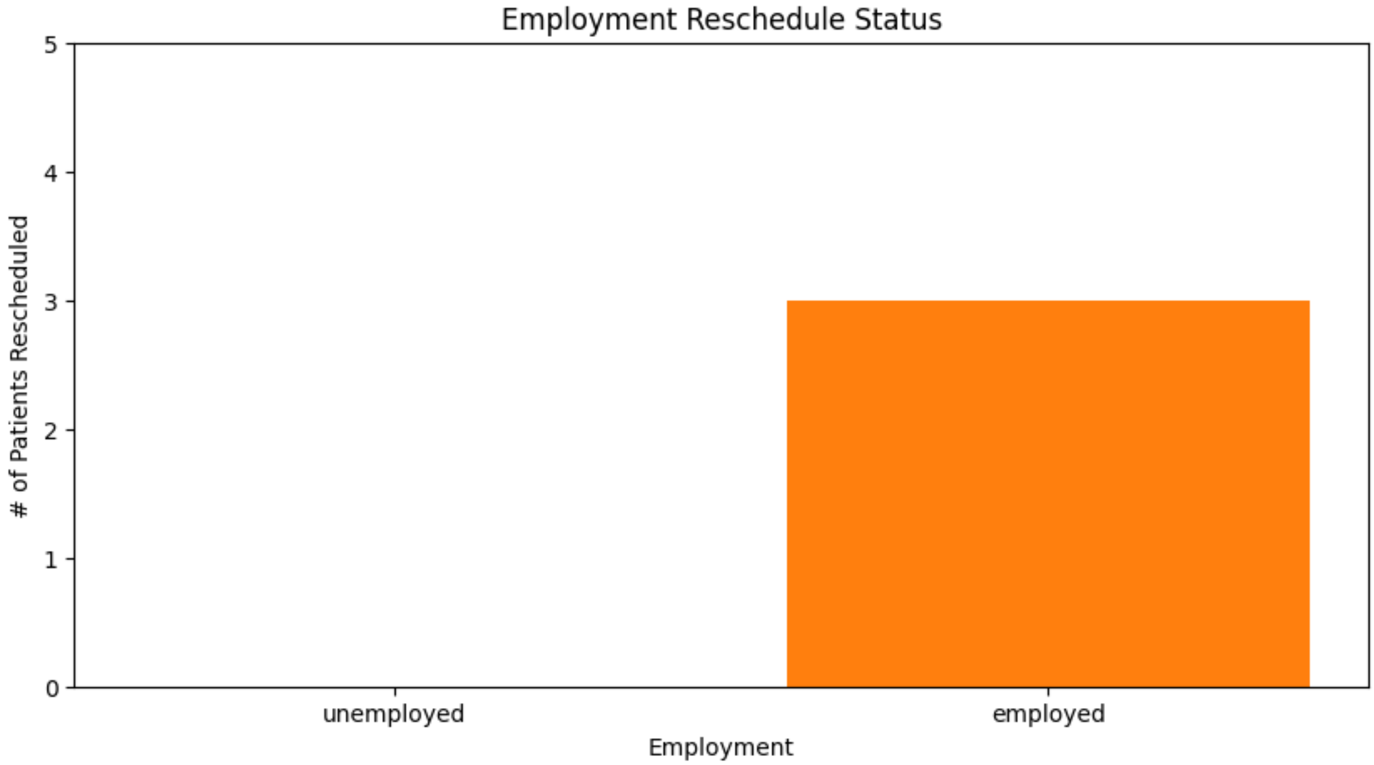
Based on the bar graphs above, which illustrate the 'show status' and 'reschedule status' of patients in the test group, based on the year of their diagnosis, we can see the long term patients were better at keeping their appointments after intervention. There was 1 patient who rescheduled in the diagnosis group 2017 - 2018 and 2 patients who rescheduled in the diagnosis group 2019 - 2021, this shows a slight correlation between the shorter the patient has the illness, the less likely they are to keep the appointment after intervention.

```
data8 = data1.loc[data1['Employment'] == 'unemployed']
data9 = data1.loc[data1['Employment'] == 'employed']
```

```
fig = plt.figure(figsize = (10, 5))
plt.bar(data8['Employment'], data8['PT_ATTEND_NEW_APT_Y'].sum())
plt.bar(data9['Employment'], data9['PT_ATTEND_NEW_APT_Y'].sum())
plt.title('Employment Show Status')
plt.xlabel('Employment')
plt.ylabel('# of Patients Show Up')
plt.yticks(ticks = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9 , 10, 11, 12, 13, 14, 15, 16, 17,
plt.savefig("EmploymentShow.png")
plt.show()
```



```
fig = plt.figure(figsize = (10, 5))
plt.bar(data8['Employment'], data8['PT_ATTEND_NEW_APT_R'].sum())
plt.bar(data9['Employment'], data9['PT_ATTEND_NEW_APT_R'].sum())
plt.title('Employment Reschedule Status')
plt.xlabel('Employment')
plt.ylabel('# of Patients Rescheduled')
plt.yticks(ticks = [0, 1, 2, 3, 4, 5])
plt.savefig("EmploymentReschedule.png")
plt.show()
```



EMPLOYMENT ANALYSIS

Based on the bar graphs above, which illustrate the 'show status' and 'reschedule status' of patients in the test group, based on their employment status, we can see the unemployed patients were better at keeping their appointments after intervention. Out of all patients in the test group, only the employed patients called to reschedule while all of the unemployed patients kept their appointments. We can see only 3 patients from the employed group called to reschedule so overall it can be concluded that intervention was very effective at helping patients keep their appointments.