In [1]:

```
import pandas as pd
```

In [2]:

```
df = pd.read_csv('iran protests.csv')
```

In [3]:

```
df.head()
```

Out[3]:

	Date	Death Toll of Protestors	Number of Children Killed	Number of Military-Security Personnel Killed	Number of Individuals Arrested	Number of Detainees Identified	Number of Students Arrested	Number of Protests	Number of Cities Involved
0	9/17/2022	0	0	0	78	13	0	2	2
1	9/18/2022	0	0	0	255	29	1	7	4
2	9/19/2022	8	0	0	527	58	5	32	14
3	9/20/2022	28	1	1	1040	101	7	76	26
4	9/21/2022	74	8	9	1285	145	12	129	43

In [4]:

```
df.tail()
```

Out[4]:

	Date	Death Toll of Protestors	Number of Children Killed	Number of Military-Security Personnel Killed	Number of Individuals Arrested	Number of Detainees Identified	Number of Students Arrested	Number of Protests	Num of Ci Invol
105	12/31/2022	511	69	66	19202	4392	683	1234	
106	01-01-2023	512	69	67	19204	4465	683	1234	
107	01-02-2023	516	70	67	19204	4566	687	1236	
108	01-03-2023	516	70	68	19250	4586	687	1236	
109	01-04-2023	516	70	68	19262	4628	689	1236	

In [5]:

```
df.shape
```

Out[5]:

```
(110, 10)
```

In [6]:

```
df.columns
```

Out[6]:

```
Index(['Date', 'Death Toll of Protestors', 'Number of Children Killed',
       'Number of Military-Security Personnel Killed',
       'Number of Individuals Arrested', 'Number of Detainees Identified',
       'Number of Students Arrested', 'Number of Protests',
       'Number of Cities Involved', 'Number of Universities Involved'],
      dtype='object')
```

In [7]:

```
df.duplicated().sum()
```

Out[7]:

```
0
```

In [8]:

```
df.isnull().sum()
```

Out[8]:

```
Date                                          0
Death Toll of Protestors                      0
Number of Children Killed                     0
Number of Military-Security Personnel Killed  0
Number of Individuals Arrested                0
Number of Detainees Identified                0
Number of Students Arrested                   0
Number of Protests                            0
Number of Cities Involved                     0
Number of Universities Involved               0
dtype: int64
```

In [9]:

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 110 entries, 0 to 109
Data columns (total 10 columns):
 #   Column                                        Non-Null Count  Dtype 
---  ------                                        --------------  ----- 
 0   Date                                          110 non-null    object
 1   Death Toll of Protestors                      110 non-null    int64 
 2   Number of Children Killed                     110 non-null    int64 
 3   Number of Military-Security Personnel Killed  110 non-null    int64 
 4   Number of Individuals Arrested                110 non-null    int64 
 5   Number of Detainees Identified                110 non-null    int64 
 6   Number of Students Arrested                   110 non-null    int64 
 7   Number of Protests                            110 non-null    int64 
 8   Number of Cities Involved                     110 non-null    int64 
 9   Number of Universities Involved               110 non-null    int64 
dtypes: int64(9), object(1)
memory usage: 8.7+ KB
```

In [10]:

```
df.describe()
```

Out[10]:

	Death Toll of Protestors	Number of Children Killed	Number of Military-Security Personnel Killed	Number of Individuals Arrested	Number of Detainees Identified	Number of Students Arrested	Number of Protests
count	110.000000	110.000000	110.000000	110.000000	110.000000	110.000000	110.000000
mean	339.990909	48.090909	41.490909	13139.381818	2191.845455	392.054545	797.227273
std	143.274452	19.836740	20.444934	6171.921285	1488.237065	230.235573	387.954874
min	0.000000	0.000000	0.000000	78.000000	13.000000	0.000000	2.000000
25%	243.000000	36.000000	26.000000	7726.000000	706.500000	171.250000	434.250000
50%	333.000000	51.000000	39.000000	15093.000000	1963.000000	440.500000	901.000000
75%	477.250000	66.500000	61.000000	18246.500000	3632.000000	601.000000	1162.750000
max	516.000000	70.000000	68.000000	19262.000000	4628.000000	689.000000	1236.000000

In [11]:

```
df.nunique()
```

Out[11]:

```
Date                                          110
Death Toll of Protestors                       81
Number of Children Killed                      38
Number of Military-Security Personnel Killed   35
Number of Individuals Arrested                 90
Number of Detainees Identified                109
Number of Students Arrested                    99
Number of Protests                             94
Number of Cities Involved                      43
Number of Universities Involved                44
dtype: int64
```

In [12]:

```
df['Date'] = pd.to_datetime(df['Date'])
df = df.set_index(['Date'])
```

In [13]:

```
df
```

Out[13]:

Date	Death Toll of Protestors	Number of Children Killed	Number of Military-Security Personnel Killed	Number of Individuals Arrested	Number of Detainees Identified	Number of Students Arrested	Number of Protests	Number of Cities Involved	Nur Univ In
2022-09-17	0	0	0	78	13	0	2	2	
2022-09-18	0	0	0	255	29	1	7	4	
2022-09-19	8	0	0	527	58	5	32	14	
2022-09-20	28	1	1	1040	101	7	76	26	
2022-09-21	74	8	9	1285	145	12	129	43	
...	...	...	...	...	...	...	...	...	
2022-12-31	511	69	66	19202	4392	683	1234	161	
2023-01-01	512	69	67	19204	4465	683	1234	161	
2023-01-02	516	70	67	19204	4566	687	1236	161	
2023-01-03	516	70	68	19250	4586	687	1236	161	
2023-01-04	516	70	68	19262	4628	689	1236	161	

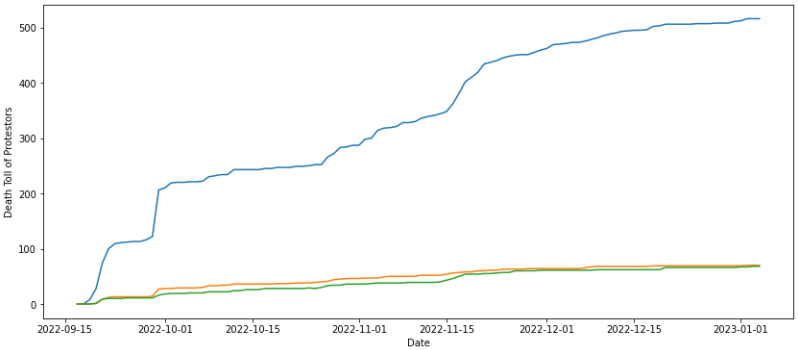
110 rows × 9 columns

In [14]:

```
import matplotlib.pyplot as plt
import seaborn as sns
```

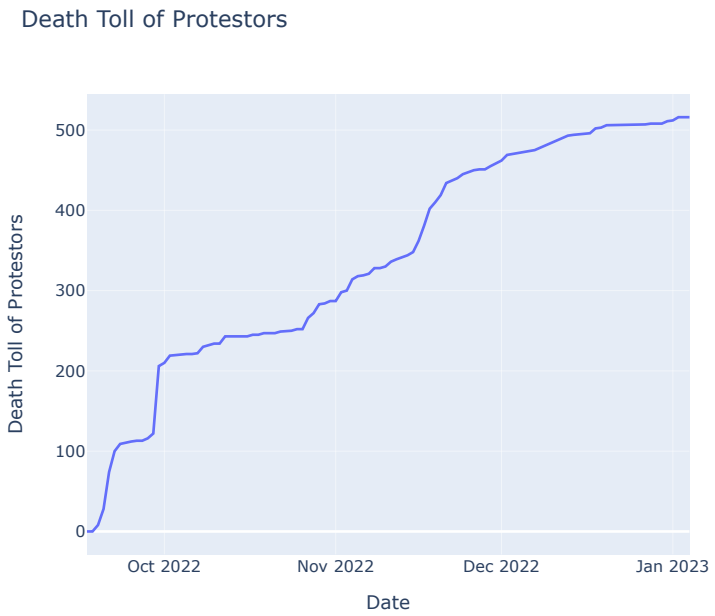
In [15]:

```
plt.figure(figsize = (14,6))
sns.lineplot(data=df['Death Toll of Protestors'])
sns.lineplot(data=df['Number of Children Killed'])
sns.lineplot(data=df['Number of Military-Security Personnel Killed'])
plt.show()
```

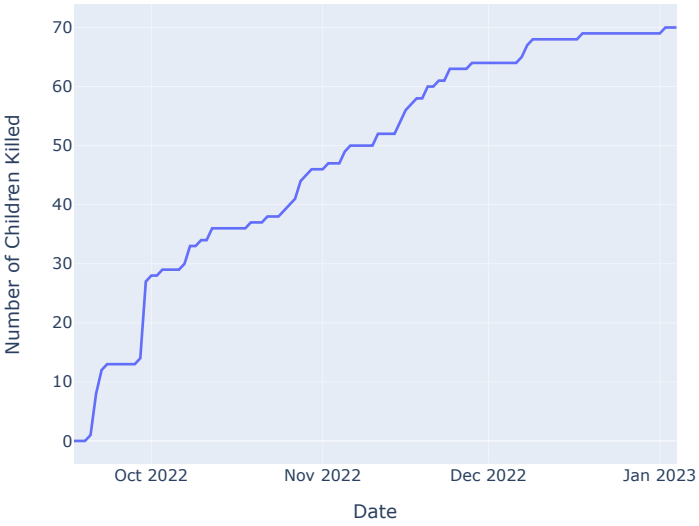


In [16]:

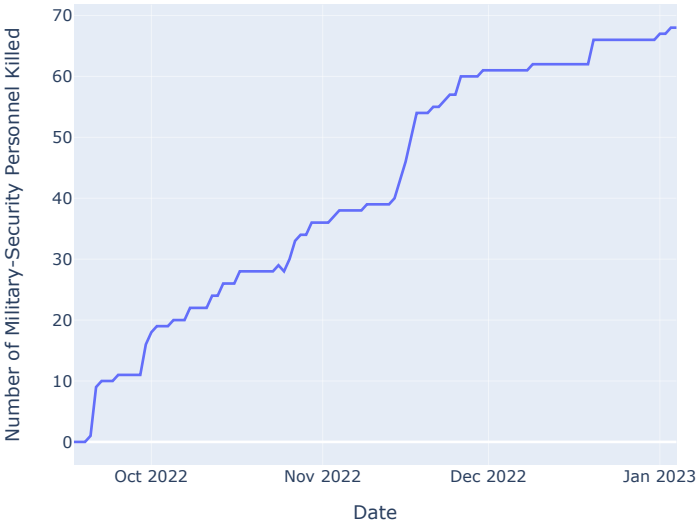
```
import plotly.express as px
fig = px.line(df, x = df.index, y="Death Toll of Protestors", title='Death Toll of Protestor
fig1 = px.line(df, x = df.index, y="Number of Children Killed", title='Number of Children Ki
fig2 = px.line(df, x = df.index, y="Number of Military-Security Personnel Killed", title = '
fig.show()
fig1.show()
fig2.show()
```



Number of Children Killed

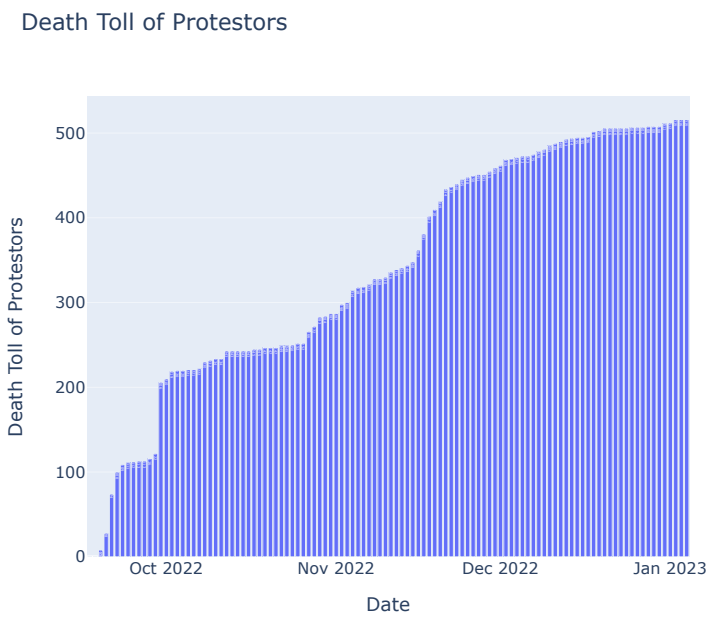


Number of Military-Security Personnel Killed



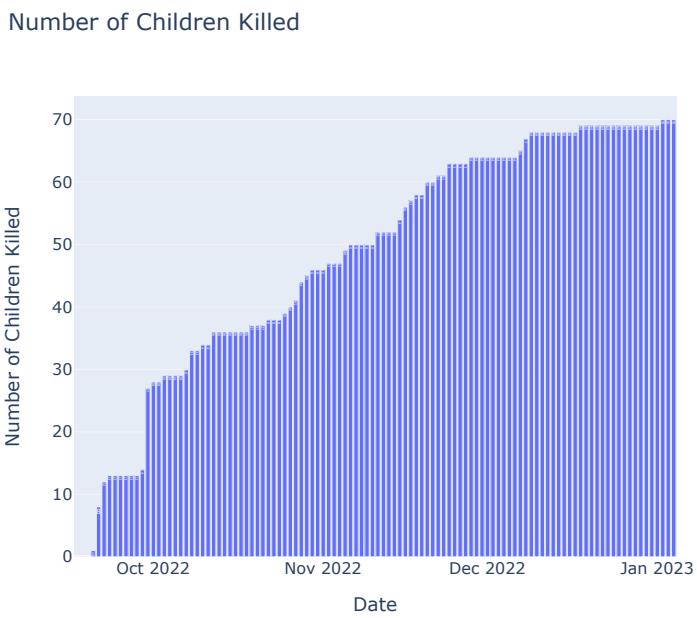
In [17]:

```
fig = px.bar(df, x= df.index, y = "Death Toll of Protestors", text_auto=True,
             title='Death Toll of Protestors')
fig.show()
```



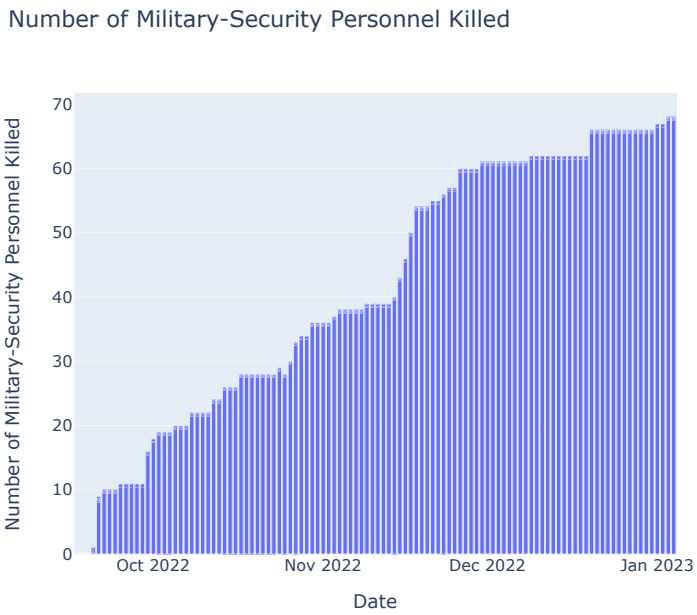
In [18]:

```
fig = px.bar(df, x= df.index, y = "Number of Children Killed", text_auto=True,
             title='Number of Children Killed')
fig.show()
```



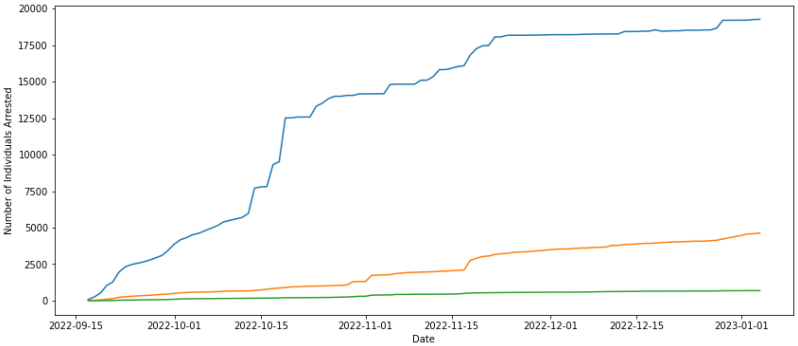
In [19]:

```
fig = px.bar(df, x= df.index, y = "Number of Military-Security Personnel Killed", text_auto=
             title='Number of Military-Security Personnel Killed')
fig.show()
```



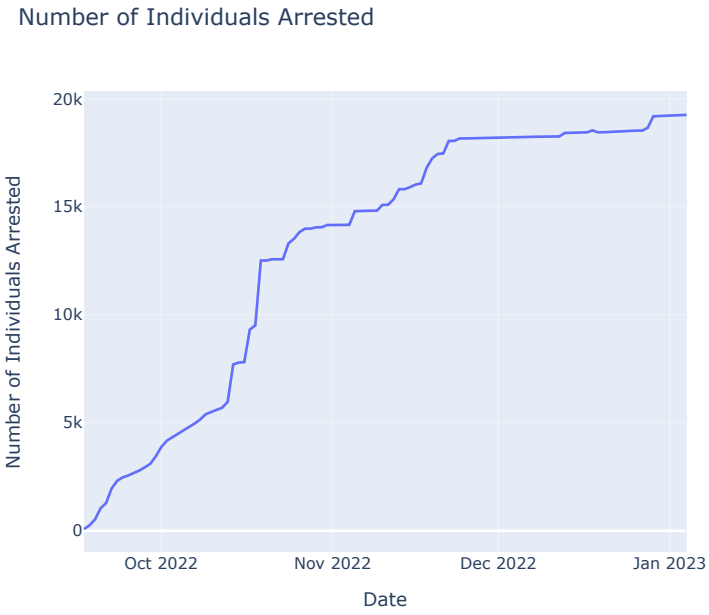
In [20]:

```
plt.figure(figsize = (14,6))
sns.lineplot(data=df['Number of Individuals Arrested'])
sns.lineplot(data=df['Number of Detainees Identified'])
sns.lineplot(data=df['Number of Students Arrested'])
plt.show()
```



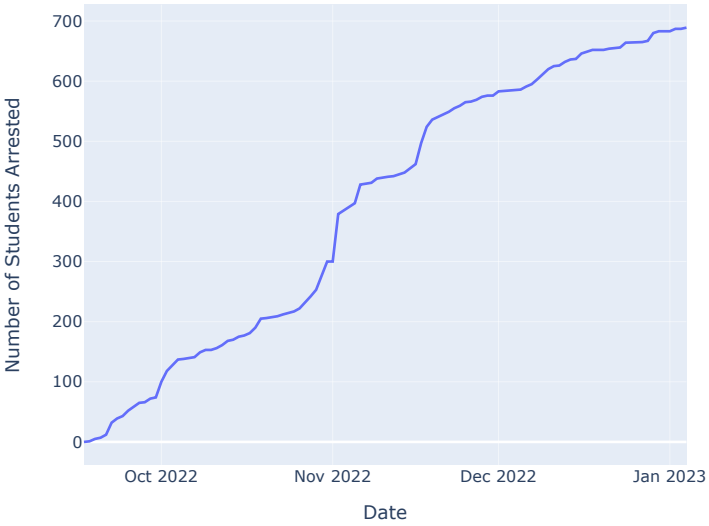
In [21]:

```
fig = px.line(df, x = df.index, y="Number of Individuals Arrested", title='Number of Individ
fig1 = px.line(df, x = df.index, y="Number of Detainees Identified", title = "Number of Deta
fig2 = px.line(df, x = df.index, y="Number of Students Arrested", title = "Number of Student
fig.show()
fig1.show()
fig2.show()
```



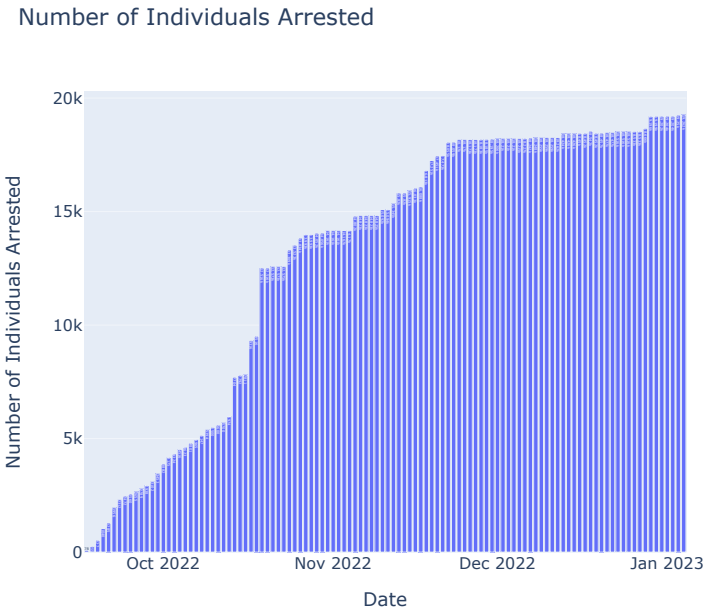
Number of Detainees Identified

Number of Students Arrested



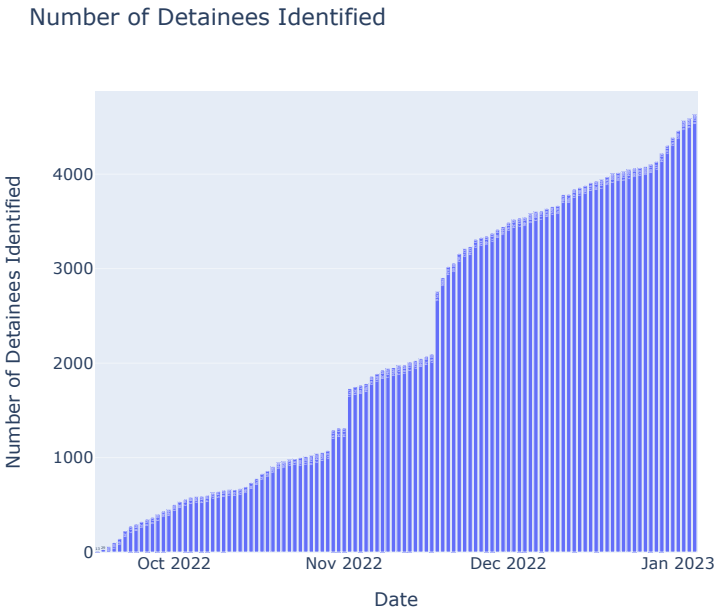
In [22]:

```
fig = px.bar(df, x= df.index, y = "Number of Individuals Arrested", text_auto=True,
             title='Number of Individuals Arrested')
fig.show()
```



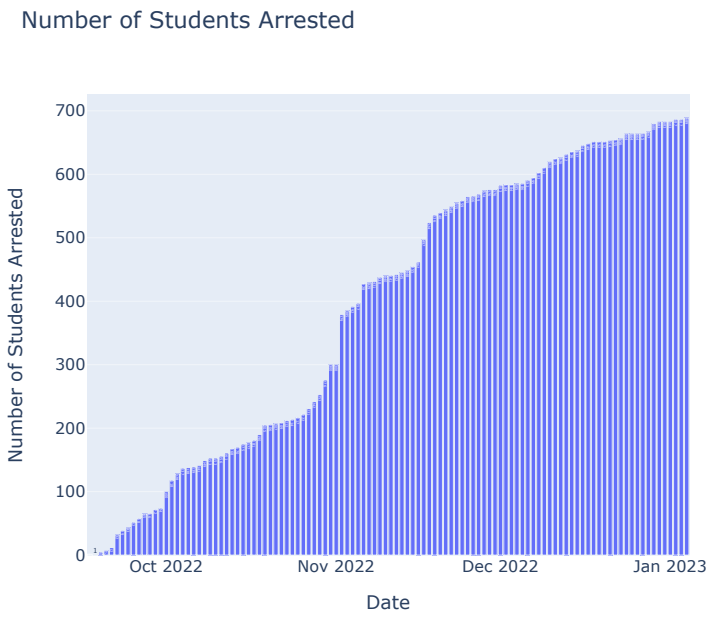
In [23]:

```
fig = px.bar(df, x= df.index, y = "Number of Detainees Identified", text_auto=True,
             title='Number of Detainees Identified')
fig.show()
```



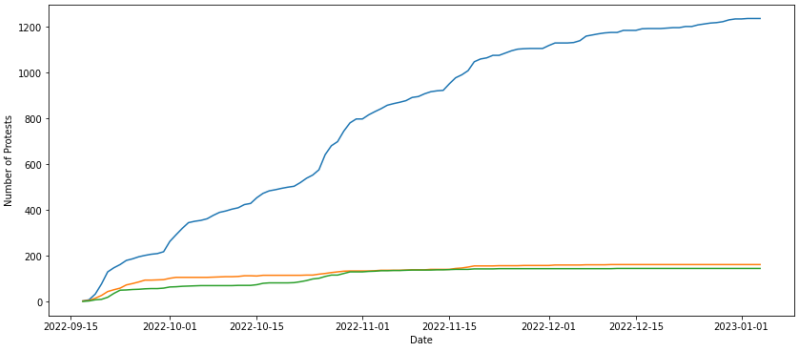
In [24]:

```
fig = px.bar(df, x= df.index, y = "Number of Students Arrested", text_auto=True,
             title='Number of Students Arrested')
fig.show()
```



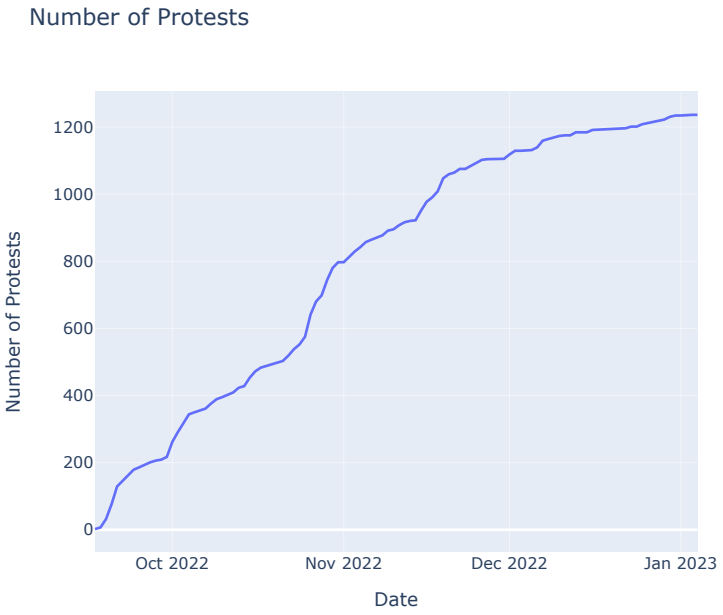
In [25]:

```
plt.figure(figsize = (14,6))
sns.lineplot(data=df['Number of Protests'])
sns.lineplot(data=df['Number of Cities Involved'])
sns.lineplot(data=df['Number of Universities Involved'])
plt.show()
```

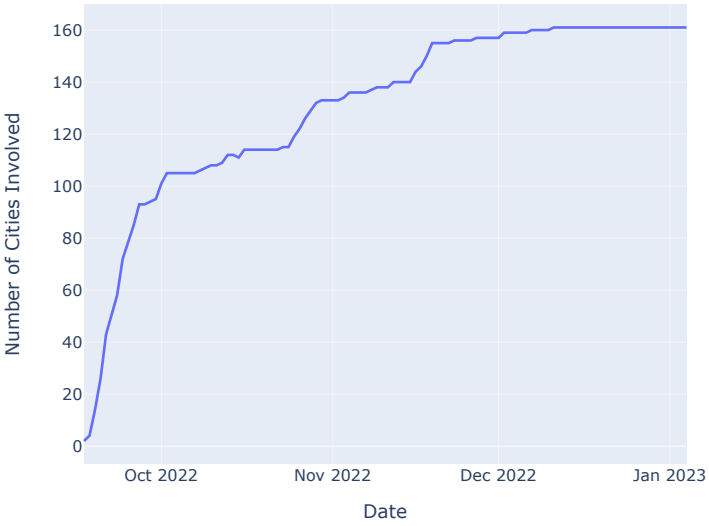


In [26]:

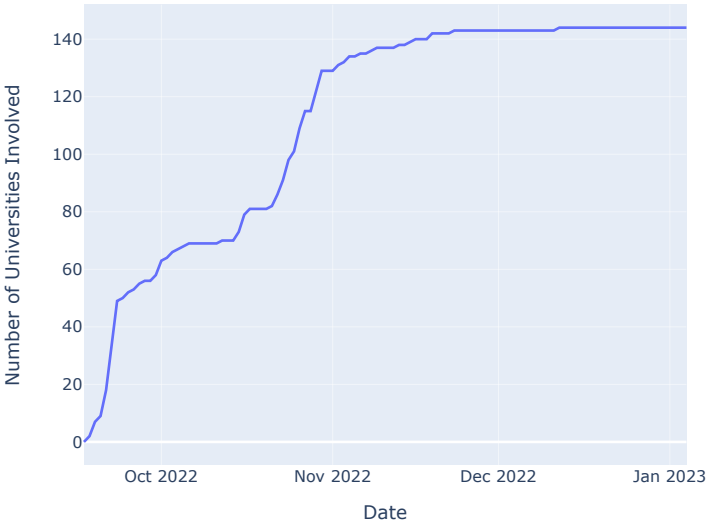
```
fig = px.line(df, x = df.index, y="Number of Protests", title='Number of Protests')
fig1 = px.line(df, x = df.index, y="Number of Cities Involved", title = "Number of Cities In
fig2 = px.line(df, x = df.index, y="Number of Universities Involved", title = "Number of Uni
fig.show()
fig1.show()
fig2.show()
```



Number of Cities Involved

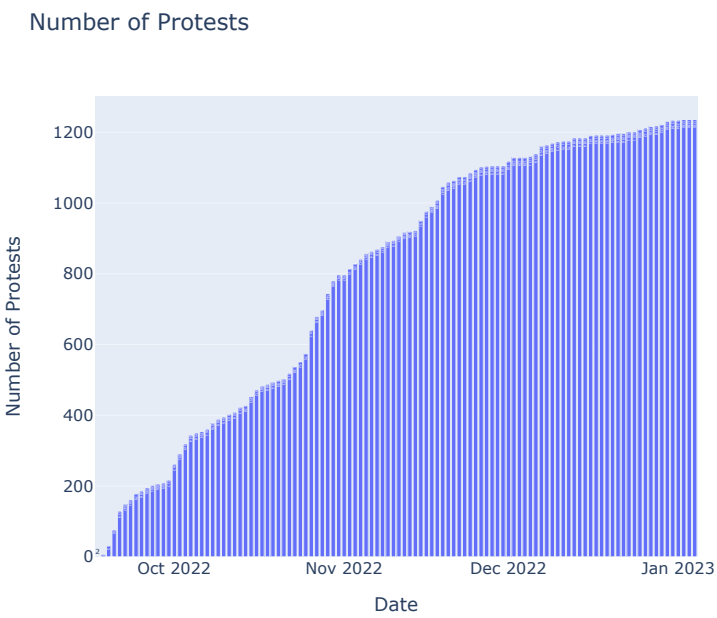


Number of Universities Involved



In [27]:

```
fig = px.bar(df, x= df.index, y = "Number of Protests", text_auto=True,
             title='Number of Protests')
fig.show()
```

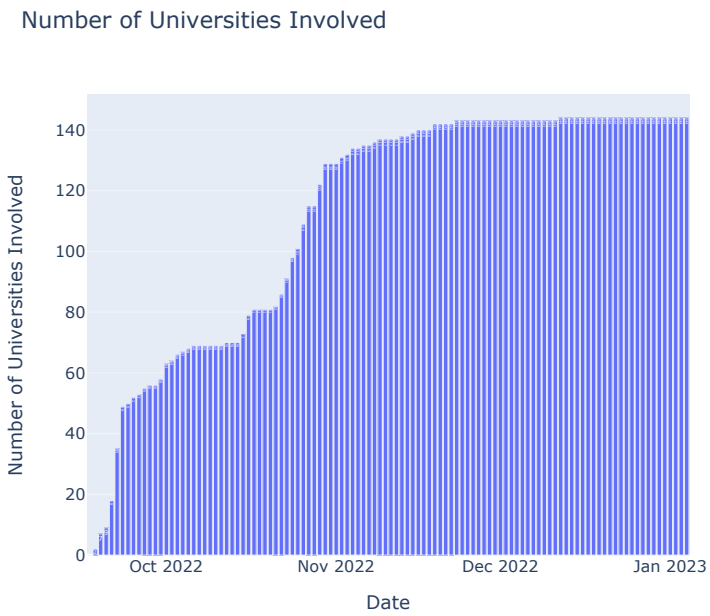


In [28]:

```
fig = px.bar(df, x= df.index, y = "Number of Cities Involved", text_auto=True,
             title='Number of Cities Involved')
fig.show()
```

In [29]:

```
fig = px.bar(df, x= df.index, y = "Number of Universities Involved", text_auto=True,
             title='Number of Universities Involved')
fig.show()
```



In [30]:

```
cor = df.corr()
cor
```

Out[30]:

	Death Toll of Protestors	Number of Children Killed	Number of Military-Security Personnel Killed	Number of Individuals Arrested	Number of Detainees Identified	Number of Students Arrested	Number of Protests	Number of Cities Involved
Death Toll of Protestors	1.000000	0.990650	0.992470	0.937188	0.965407	0.978294	0.977017	0.946996
Number of Children Killed	0.990650	1.000000	0.982852	0.963656	0.936202	0.970501	0.984607	0.963739
Number of Military-Security Personnel Killed	0.992470	0.982852	1.000000	0.949787	0.978738	0.987451	0.985448	0.924916
Number of Individuals Arrested	0.937188	0.963656	0.949787	1.000000	0.897647	0.945870	0.975612	0.925160
Number of Detainees Identified	0.965407	0.936202	0.978738	0.897647	1.000000	0.983143	0.956749	0.851002
Number of Students Arrested	0.978294	0.970501	0.987451	0.945870	0.983143	1.000000	0.989628	0.900701
Number of Protests	0.977017	0.984607	0.985448	0.975612	0.956749	0.989628	1.000000	0.933249
Number of Cities Involved	0.946996	0.963739	0.924916	0.925160	0.851002	0.900701	0.933249	1.000000
Number of Universities Involved	0.923991	0.957016	0.922947	0.968478	0.857767	0.926240	0.964877	0.958817

In [31]:

```
plt.figure(figsize = (14,6))
sns.heatmap(cor, annot = True)
plt.show()
```