In [1]:
```
#Importing libraries and covid19 patient data.
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
covid = pd.read_csv("C:\\Users\\pawan\\Desktop\\covid19-corona-virus-india-datase
covid.dtypes
```

Out[1]:
```
patient_number                 int64
p_id                          object
state_patient_number          object
date_announced                object
age_bracket                   object
gender                        object
detected_city                 object
detected_district             object
detected_state                object
current_status                object
notes                         object
suspected_contacted_patient   object
nationality                   object
status_change_date            object
source_1                      object
source_2                      object
source_3                      object
backup_notes                  object
dtype: object
```

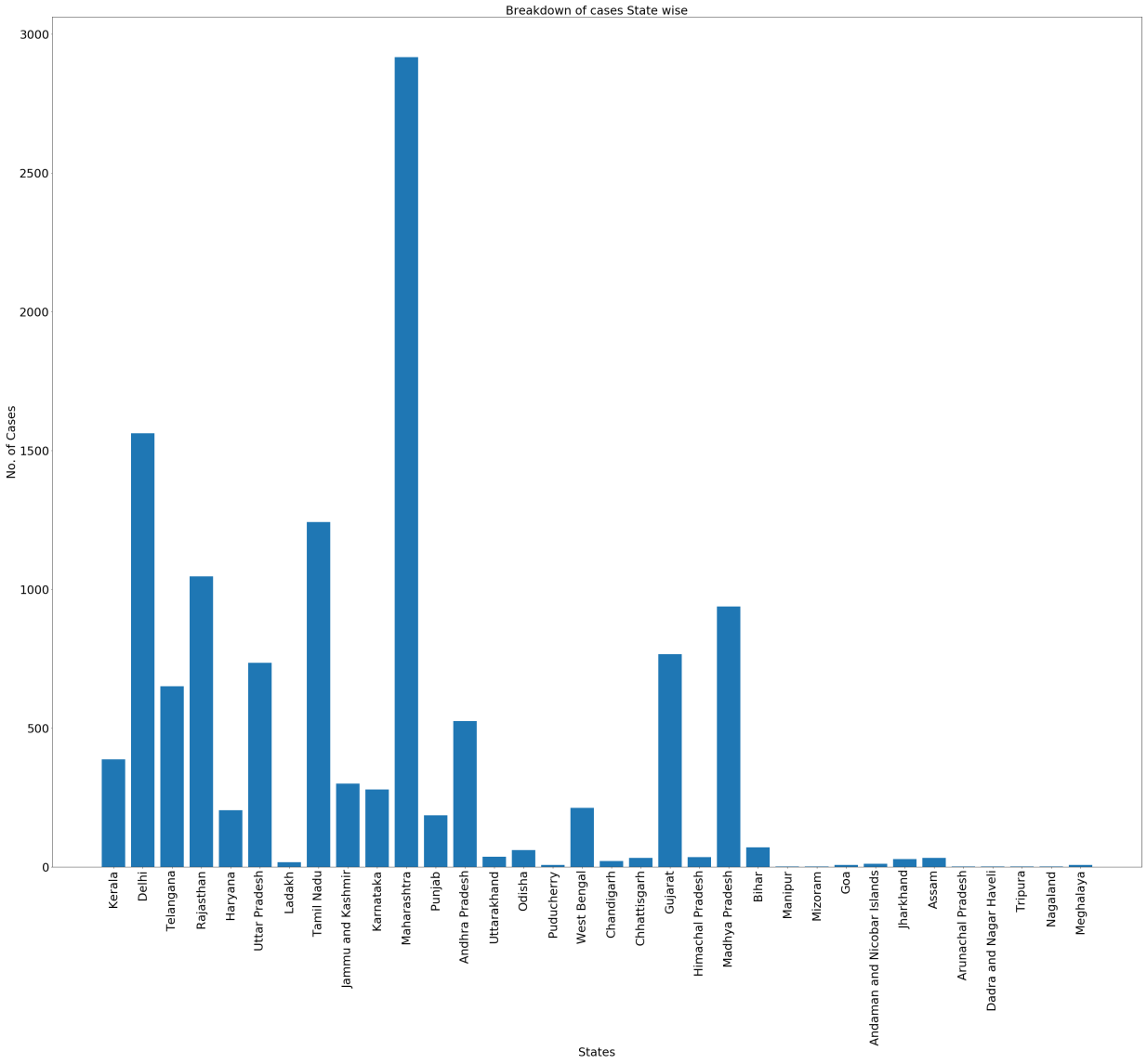
In [2]:
```
#printed patient data
print(covid)
```

```
       patient_number    p_id state_patient_number date_announced age_bracket
\
0                   1      P1             KL-TS-P1     30/01/2020          20
1                   2      P2             KL-AL-P1     02/02/2020         NaN
2                   3      P3             KL-KS-P1     03/02/2020         NaN
3                   4      P4                DL-P1     02/03/2020          45
4                   5      P5                TS-P1     02/03/2020          24
...               ...     ...                  ...            ...         ...
12316           12318  P12318                  NaN     15/04/2020         NaN
12317           12319  P12319                  NaN     15/04/2020         NaN
12318           12320  P12320                  NaN     15/04/2020         NaN
12319           12321  P12321                  NaN     15/04/2020         NaN
12320           12322  P12322                  NaN     15/04/2020         NaN

      gender             detected_city detected_district    detected_state  \
0          F                  Thrissur          Thrissur            Kerala
1        NaN                 Alappuzha         Alappuzha            Kerala
2        NaN                 Kasaragod         Kasaragod            Kerala
3          M  East Delhi (Mayur Vihar)        East Delhi             Delhi
4          M                 Hyderabad         Hyderabad         Telangana
...      ...                       ...               ...               ...
12316    NaN                       NaN               NaN         Telangana
12317    NaN                       NaN               NaN         Telangana
12318    NaN                       NaN               NaN  Himachal Pradesh
12319    NaN                       NaN               NaN  Himachal Pradesh
12320    NaN                       NaN               NaN         Jharkhand

      current_status                                              notes  \
0          Recovered                              Travelled from Wuhan
1          Recovered                              Travelled from Wuhan
2          Recovered                              Travelled from Wuhan
3          Recovered                  Travelled from Austria, Italy
4          Recovered  Travelled from Dubai to Bangalore on 20th Feb,...
...              ...                                                ...
12316   Hospitalized                                   Details awaited
12317   Hospitalized                                   Details awaited
12318   Hospitalized                                   Details awaited
12319   Hospitalized                                   Details awaited
12320            NaN                                              NaN

      suspected_contacted_patient nationality status_change_date  \
0                             NaN       India         14/02/2020
1                             NaN       India         14/02/2020
2                             NaN       India         14/02/2020
3                             NaN       India         15/03/2020
4                             NaN       India         02/03/2020
...                           ...         ...                ...
12316                         NaN         NaN         15/04/2020
12317                         NaN         NaN         15/04/2020
12318                         NaN         NaN         15/04/2020
12319                         NaN         NaN         15/04/2020
12320                         NaN         NaN                NaN

                                                source_1  \
```

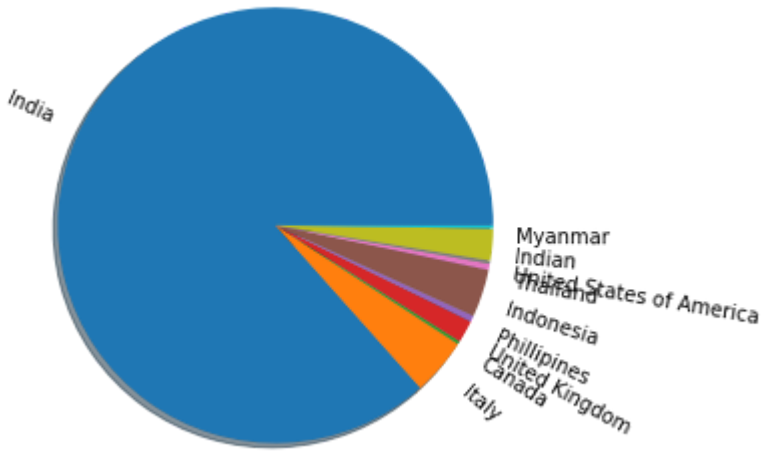
```
0      https://twitter.com/vijayanpinarayi/status/122... (https://twitter.com/v
ijayanpinarayi/status/122...)
1      https://www.indiatoday.in/india/story/kerala-r... (https://www.indiatoda
y.in/india/story/kerala-r...)
2      https://www.indiatoday.in/india/story/kerala-n... (https://www.indiatoda
y.in/india/story/kerala-n...)
3      https://www.indiatoday.in/india/story/not-a-ja... (https://www.indiatoda
y.in/india/story/not-a-ja...)
4      https://www.deccanherald.com/national/south/qu... (https://www.deccanher
ald.com/national/south/qu...)
...                                                  ...
12316  https://twitter.com/ANI/status/125044600753347... (https://twitter.com/A
NI/status/125044600753347...)
12317  https://twitter.com/ANI/status/125044600753347... (https://twitter.com/A
NI/status/125044600753347...)
12318  https://twitter.com/ANI/status/125044588906532... (https://twitter.com/A
NI/status/125044588906532...)
12319  https://twitter.com/ANI/status/125044588906532... (https://twitter.com/A
NI/status/125044588906532...)
12320  https://twitter.com/ANI/status/125044834808094... (https://twitter.com/A
NI/status/125044834808094...)

                                                 source_2  \
0      https://weather.com/en-IN/india/news/news/2020... (https://weather.com/e
n-IN/india/news/news/2020...)
1      https://weather.com/en-IN/india/news/news/2020... (https://weather.com/e
n-IN/india/news/news/2020...)
2      https://twitter.com/ANI/status/122422148580539... (https://twitter.com/A
NI/status/122422148580539...)
3      https://economictimes.indiatimes.com/news/poli... (https://economictime
s.indiatimes.com/news/poli...)
4      https://www.indiatoday.in/india/story/coronavi... (https://www.indiatoda
y.in/india/story/coronavi...)
...                                                  ...
12316                                                NaN
12317                                                NaN
12318                                                NaN
12319                                                NaN
12320                                                NaN

                                                 source_3  \
0                                    Student from Wuhan
1                                                    NaN
2      https://weather.com/en-IN/india/news/news/2020... (https://weather.com/e
n-IN/india/news/news/2020...)
3                                                    NaN
4      https://www.thehindu.com/news/national/coronav... (https://www.thehindu.
com/news/national/coronav...)
...                                                  ...
12316                                                NaN
12317                                                NaN
12318                                                NaN
12319                                                NaN
12320                                                NaN

                                    backup_notes
0                                            NaN
```

```
1                              Student from Wuhan
2                              Student from Wuhan
3             Travel history to Italy and Austria
4      Travel history to Dubai, Singapore contact
...                                           ...
12316                                         NaN
12317                                         NaN
12318                                         NaN
12319                                         NaN
12320                                         NaN

[12321 rows x 18 columns]
```

In [9]:
```
#Filtturing data from the data set to plot a bar graph
from collections import Counter
h = covid.detected_state
c = Counter(h)
d=dict(c)
key=list(d.keys())
value=list(d.values())
#print(key)
#print(value)


#Ploting a bar graph for the breakdown of state wise patients.
plt.figure(figsize=(50,40))
y_pos = np.arange(len(key))
plt.bar(y_pos, value)
plt.xticks(y_pos, key, fontsize=30,rotation=90)
plt.yticks(fontsize=30)
plt.ylabel('No. of Cases',fontsize=30)
plt.xlabel('States',fontsize=30)
plt.title('Breakdown of cases State wise',fontsize=30)
plt.show()
```

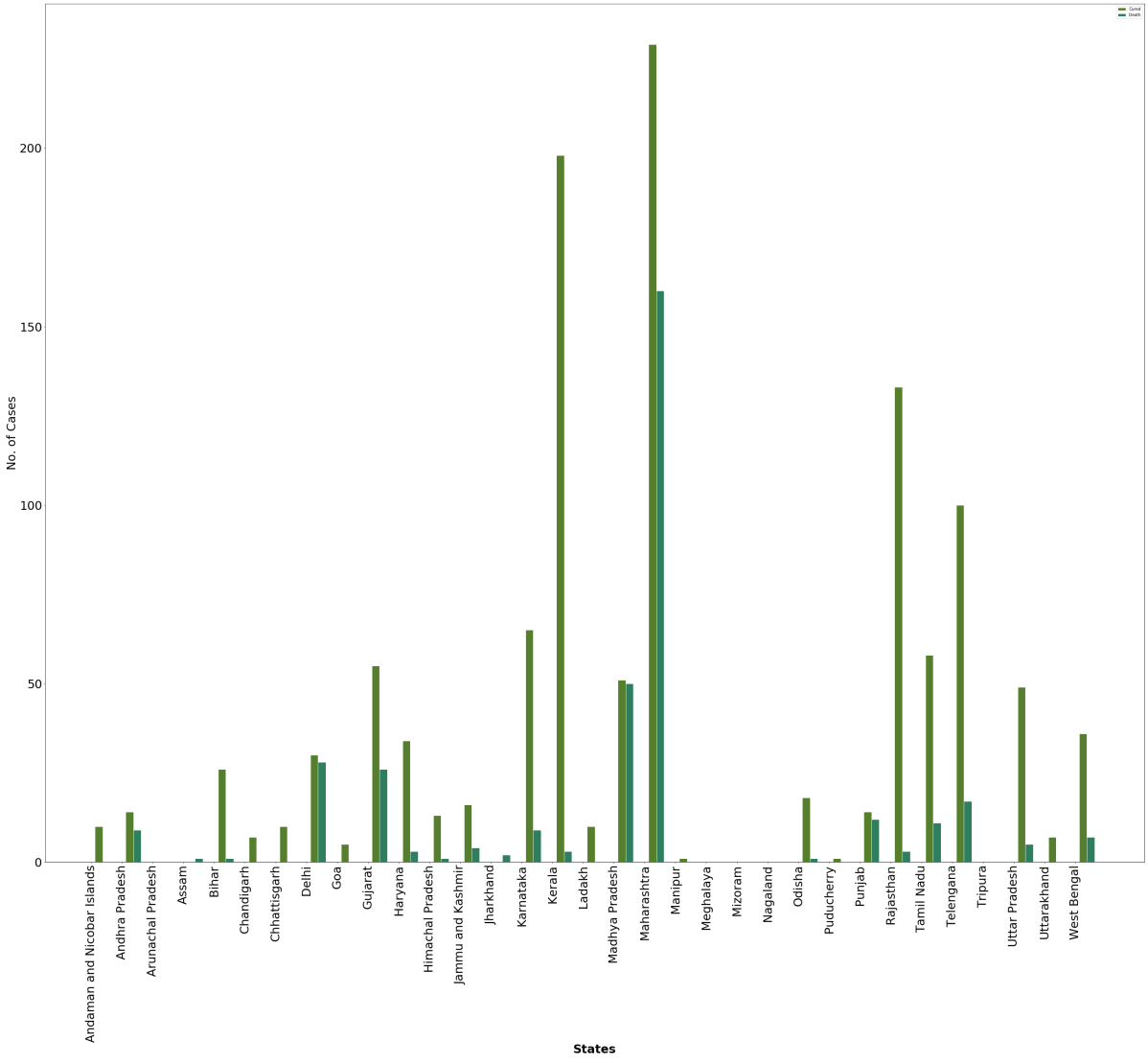


In [25]:
```
#Filtturing data from the data set to plot a pie chart
from collections import Counter
h = covid.nationality
c = Counter(h)
d=dict(c)
key=list(d.keys())
value=list(d.values())
a = 0
for i in key:
    if str(i) == 'nan':
        a = key.index(i)
        del value[a]
        del key[a]


#Ploting a pie chart of nationality of patients in India

plt.figure(figsize=(5,5))
plt.pie(value, labels=key,shadow=True,rotatelabels = 90)
plt.show()
```



In [2]:
```
#Importing second data file
complete = pd.read_csv("C:\\Users\\pawan\\Desktop\\covid19-corona-virus-india-dat
```

In [26]:
```
#Filturing data from second file
#extracting data of cured patients
#extracting data of deceased patients

b = complete.Cured
c = complete.Death

xl = complete.NameofState

plt.figure(figsize=(50,40))
barWidth = 0.25

#r1 = np.arange(len(a))
r2 = [x + barWidth for x in r1]
r3 = [x + barWidth for x in r2]

#Plotting a bar graph to show the total patients cured vs patients deceased state

#plt.bar(r1, a, color='#7f6d5f', width=barWidth, edgecolor='white', label='Total
plt.bar(r2, b, color='#557f2d', width=barWidth, edgecolor='white', label='Cured'
plt.bar(r3, c, color='#2d7f5e', width=barWidth, edgecolor='white', label='Death'

y_pos = np.arange(len(xl))

plt.xlabel('States', fontweight='bold',fontsize=30)
plt.ylabel('No. of Cases',fontsize=30)
plt.xticks(y_pos,xl,fontsize=30,rotation=90)
plt.yticks(fontsize=30)

# Create legend & Show graphic
plt.legend()
plt.show()
```


Covid
Death
No. of Cases
0
50
100
150
200
Andaman and Nicobar Islands
Andhra Pradesh
Arunachal Pradesh
Assam
Bihar
Chandigarh
Chhattisgarh
Delhi
Goa
Gujarat
Haryana
Himachal Pradesh
Jammu and Kashmir
Jharkhand
Karnataka
Kerala
Ladakh
Madhya Pradesh
Maharashtra
Manipur
Meghalaya
Mizoram
Nagaland
Odisha
Puducherry
Punjab
Rajasthan
Tamil Nadu
Telengana
Tripura
Uttar Pradesh
Uttarakhand
West Bengal
States

In [5]:
```
#Extracting data from patient data file

from collections import Counter
h = covid.age_bracket

c = Counter(h)
d=dict(c)

key=list(d.keys())
value=list(d.values())
# print(key,len(key))
# print(value,len(value))

#Filturing the unwanted data from the key and value list
for i in key:
    if(str(i) == 'nan'):
        n = key.index(i)
        #print('nan is in position: ', n)
        del key[n]
        del value[n]
    if(i == '28-35'):
        n = key.index(i)
        key.pop(n)
        value.pop(n)

for i in range(len(key)):
    key[i] = int(key[i])

print('Position 1s element: ', key[1])

#Arranging data in assending order of key and value according to the key.
for i in range (len(key)):
    for j in range(i + 1, len(key)):
        if(key[i] > key[j]):
            temp = key[i]
            key[i] = key[j]
            key[j] = temp
            temp1 = value[i]
            value[i] = value[j]
            value[j] = temp1

print(c)
print("\nElement After Sorting List in Ascending Order is : ", key, len(key))
print("Element After Sorting List in Ascending Order is : ", value, len(value))
```

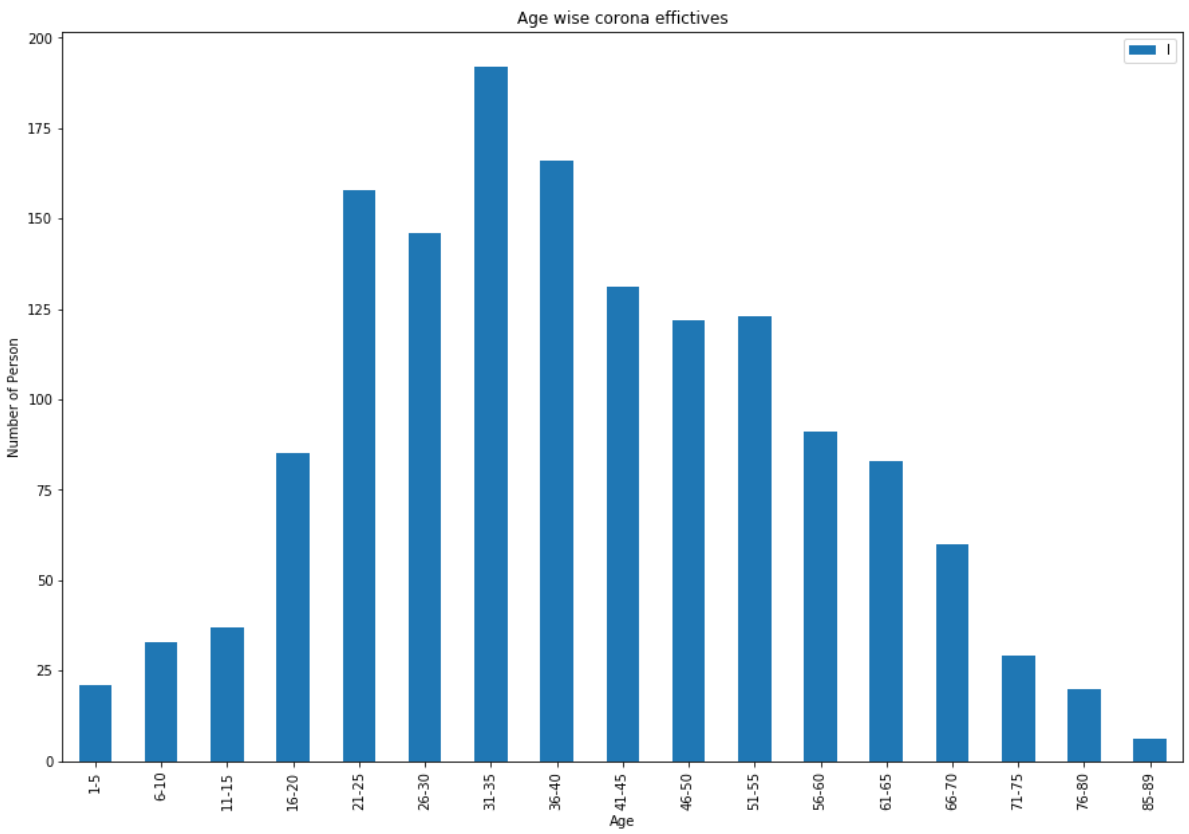
```
Position 1s element:  45
Counter({nan: 10814, '35': 62, '40': 47, '32': 47, '45': 41, '55': 39, '27':
38, '21': 37, '50': 36, '65': 34, '26': 34, '24': 33, '25': 33, '38': 33, '3
6': 33, '33': 32, '52': 32, '60': 31, '22': 29, '41': 29, '20': 28, '47': 28,
'34': 28, '30': 28, '39': 28, '48': 26, '28': 26, '23': 26, '37': 25, '43': 2
5, '31': 23, '63': 22, '42': 22, '54': 20, '29': 20, '53': 17, '46': 17, '1
8': 17, '19': 17, '57': 16, '70': 15, '59': 15, '51': 15, '49': 15, '56': 15,
'44': 14, '58': 14, '69': 13, '68': 12, '17': 12, '16': 11, '67': 11, '10': 1
1, '75': 10, '13': 10, '61': 9, '64': 9, '62': 9, '66': 9, '11': 9, '72': 8,
'3': 7, '7': 7, '1': 7, '80': 7, '8': 7, '74': 6, '12': 6, '14': 6, '15': 6,
'76': 5, '9': 4, '6': 4, '28-35': 4, '2': 3, '81': 3, '73': 3, '77': 3, '5':
```

```
3, '85': 2, '71': 2, '78': 2, '96': 1, '89': 1, '92': 1, '90': 1, '4': 1})

Element After Sorting List in Ascending Order is :  [1, 2, 3, 4, 5, 6, 7, 8,
9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 2
8, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 4
7, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 6
6, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 80, 81, 85, 89, 90, 92, 9
6] 85
Element After Sorting List in Ascending Order is :  [7, 3, 7, 1, 3, 4, 7, 7,
4, 11, 9, 6, 10, 6, 6, 11, 12, 17, 17, 28, 37, 29, 26, 33, 33, 34, 38, 26, 2
0, 28, 23, 47, 32, 28, 62, 33, 25, 33, 28, 47, 29, 22, 25, 14, 41, 17, 28, 2
6, 15, 36, 15, 32, 17, 20, 39, 15, 16, 14, 15, 31, 9, 9, 22, 9, 34, 9, 11, 1
2, 13, 15, 2, 8, 3, 6, 10, 5, 3, 2, 7, 3, 2, 1, 1, 1, 1] 85
```

In [7]:
```
#Evaluating the sum of patients after every 5 year age
c = x = 0
list1 = []
list2 = []
print(len(key))
#del key[2]
#del key[11]
#del value[2]
#del value[11]
for i in range(0 , len(key), 5):
    for j in range(i, i + 5):
        c = c + value[j]
#         x = x + key[j]
    list1.append(c)
#     list2.append(x)
    c = x = 0

print(list1, len(list1))
# print(list2, len(list2))

#creating xlabel for the graph
a = b = 0
x = ''
list3 = []
for i in range(min(key) - 1 , len(key), 5):
    a = key[i]
    b = a + 4
    x = str(a) + '-' + str(b)
    list3.append(x)
    a = b = 0
    x = ''

print(list3, len(list3))

#Ploting a bar graph of total number of patients for every 5 year gap.

df = pd.DataFrame({'l' : list1, 'lab' : list3})
df.plot.bar(y = "l", x = 'lab', figsize = (15, 10))
plt.title('Age wise corona effictives')
plt.ylabel('Number of Person')
plt.xlabel('Age')
```

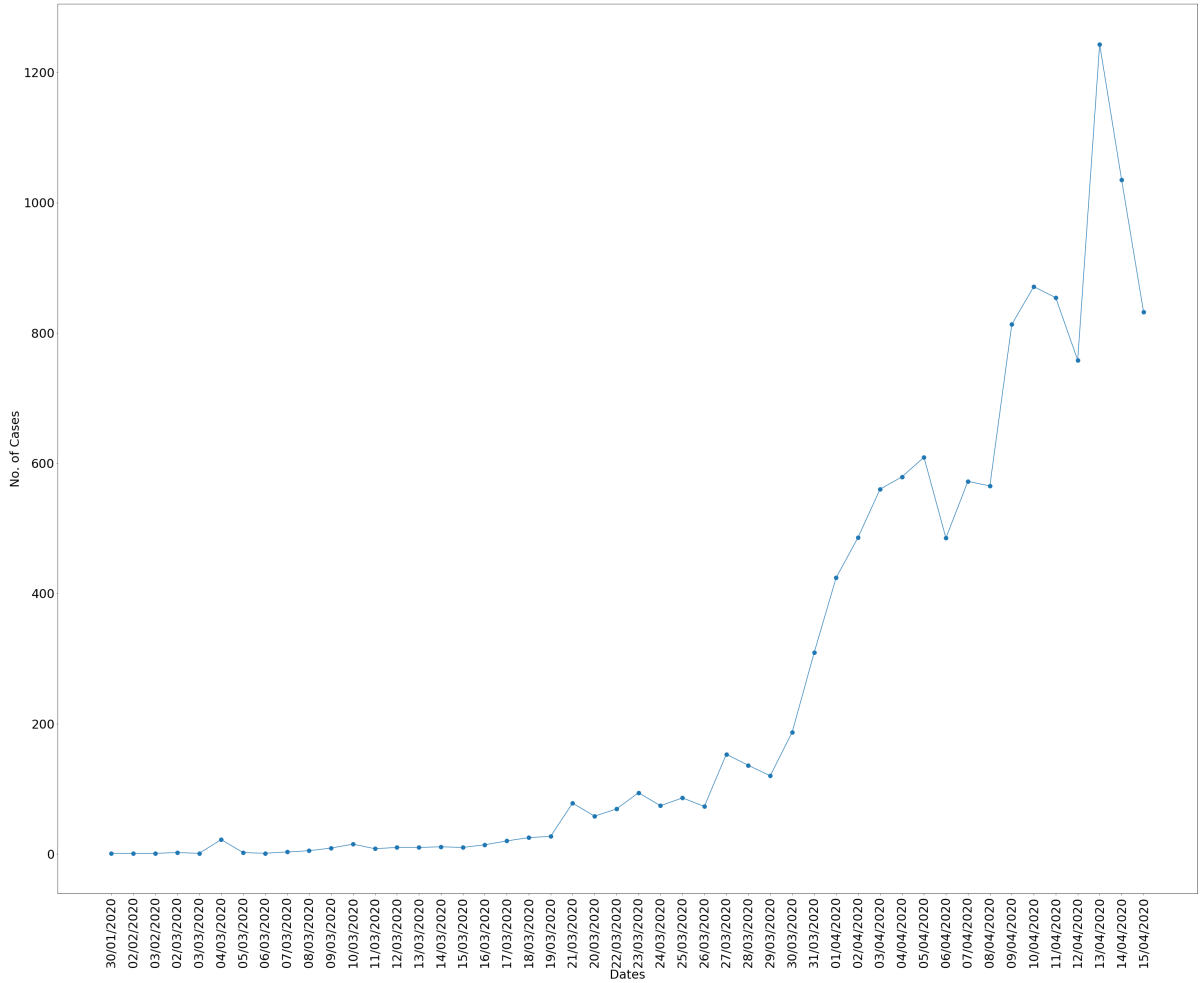
```
85
[21, 33, 37, 85, 158, 146, 192, 166, 131, 122, 123, 91, 83, 60, 29, 20, 6] 17
['1-5', '6-10', '11-15', '16-20', '21-25', '26-30', '31-35', '36-40', '41-45',
'46-50', '51-55', '56-60', '61-65', '66-70', '71-75', '76-80', '85-89'] 17
```

Out[7]: Text(0.5, 0, 'Age')


Age wise corona effictives
Number of Person
Age
I
0
25
50
75
100
125
150
175
200
1-5
6-10
11-15
16-20
21-25
26-30
31-35
36-40
41-45
46-50
51-55
56-60
61-65
66-70
71-75
76-80
85-89

In [25]:
```
#extracting data from file

from collections import Counter
h = covid.date_announced
#print(h)
c = Counter(h)
d=dict(c)
#print(d)

key=list(d.keys())
value=list(d.values())
print(key)
print(value)

#ploting the number of patients for each day and up's and down's in the number of
plt.figure(figsize=(50,40))
y_pos = np.arange(len(key))
plt.xticks(y_pos, key, fontsize=30,rotation=90)
plt.yticks(fontsize=30)
plt.scatter(key, value, s=100)
plt.plot(key,value)
plt.ylabel('No. of Cases',fontsize=30)
plt.xlabel('Dates',fontsize=30)
plt.show()
```

```
['30/01/2020', '02/02/2020', '03/02/2020', '02/03/2020', '03/03/2020', '04/03/2
020', '05/03/2020', '06/03/2020', '07/03/2020', '08/03/2020', '09/03/2020', '1
0/03/2020', '11/03/2020', '12/03/2020', '13/03/2020', '14/03/2020', '15/03/202
0', '16/03/2020', '17/03/2020', '18/03/2020', '19/03/2020', '21/03/2020', '20/0
3/2020', '22/03/2020', '23/03/2020', '24/03/2020', '25/03/2020', '26/03/2020',
'27/03/2020', '28/03/2020', '29/03/2020', '30/03/2020', '31/03/2020', '01/04/20
20', '02/04/2020', '03/04/2020', '04/04/2020', '05/04/2020', '06/04/2020', '07/
04/2020', '08/04/2020', '09/04/2020', '10/04/2020', '11/04/2020', '12/04/2020',
'13/04/2020', '14/04/2020', '15/04/2020']
[1, 1, 1, 2, 1, 22, 2, 1, 3, 5, 9, 15, 8, 10, 10, 11, 10, 14, 20, 25, 27, 78, 5
8, 69, 94, 74, 86, 73, 153, 136, 120, 187, 309, 424, 486, 560, 579, 609, 485, 5
72, 565, 813, 871, 854, 758, 1243, 1035, 832]
```


No. of Cases
0
200
400
600
800
1000
1200
Dates
30/01/2020
02/02/2020
03/02/2020
02/03/2020
03/03/2020
04/03/2020
05/03/2020
06/03/2020
07/03/2020
08/03/2020
09/03/2020
10/03/2020
11/03/2020
12/03/2020
13/03/2020
14/03/2020
15/03/2020
16/03/2020
17/03/2020
18/03/2020
19/03/2020
21/03/2020
20/03/2020
22/03/2020
23/03/2020
24/03/2020
25/03/2020
26/03/2020
27/03/2020
28/03/2020
29/03/2020
30/03/2020
31/03/2020
01/04/2020
02/04/2020
03/04/2020
04/04/2020
05/04/2020
06/04/2020
07/04/2020
08/04/2020
09/04/2020
10/04/2020
11/04/2020
12/04/2020
13/04/2020
14/04/2020
15/04/2020

In [ ]: