Covid_19 And the Outperformance Of "Southern Zone"

In [1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import warnings
warnings.filterwarnings("ignore")
```

In [2]:
```
covid_df=pd.read_csv("covid.csv")
covid_df.head()
```

Out[2]:

	state	confirmed	active	passive	deaths	dose1	dose2	dose3	precaution_dose	total_doses	population
0	Andaman and Nicobar	10742	1	10612	129	313284	320383	236936	53427	991263	426251
1	Andhra Pradesh	2339067	3	2324331	14733	40643161	43549055	11703273	6579565	110556756	52883163
2	Arunachal Pradesh	66890	0	66594	296	860442	747177	72403	58618	1911760	1528296
3	Assam	746100	0	738065	8035	22549957	20561790	2082670	1259853	50284713	34586234
4	Bihar	851379	15	839062	12302	62944633	59144387	11983504	3868082	157197041	119461013

In [3]:
```
covid_df.drop(["passive","dose1","dose2","dose3","precaution_dose"],axis=1,inplace=True)
```

In [4]:
```
#mr calculation
covid_df["MR"]=round((covid_df["deaths"]/covid_df["confirmed"])*100,3)
```

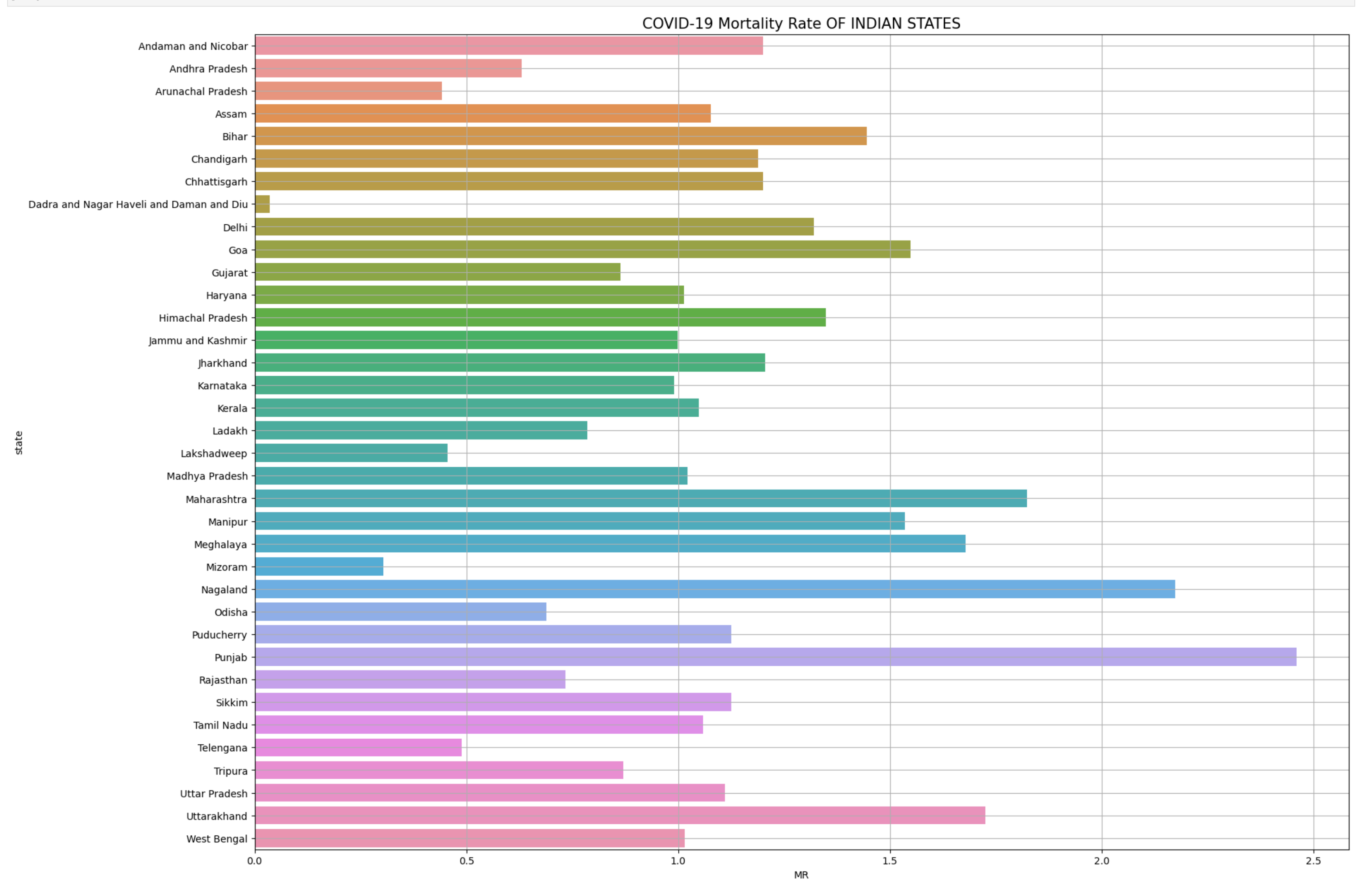
In [5]:
```
covid_df.head()
```

Out[5]:

	state	confirmed	active	deaths	total_doses	population	MR
0	Andaman and Nicobar	10742	1	129	991263	426251	1.201
1	Andhra Pradesh	2339067	3	14733	110556756	52883163	0.630
2	Arunachal Pradesh	66890	0	296	1911760	1528296	0.443
3	Assam	746100	0	8035	50284713	34586234	1.077
4	Bihar	851379	15	12302	157197041	119461013	1.445

MR VS STATES

In [6]:
```
plt.figure(figsize=(20,15))
plt.title("COVID-19 Mortality Rate OF INDIAN STATES",fontsize=15)
sns.barplot(y=covid_df["state"],x=covid_df["MR"]);
plt.grid()
```



In [7]:
```
covid_df.sort_values(["MR"])
```

Out[7]:

	state	confirmed	active	deaths	total_doses	population	MR
7	Dadra and Nagar Haveli and Daman and Diu	11591	0	4	1578492	657391	0.035
23	Mizoram	238964	0	726	1790818	1205974	0.304
2	Arunachal Pradesh	66890	0	296	1911760	1528296	0.443
18	Lakshadweep	11415	0	52	145008	72210	0.456
31	Telengana	841324	71	4111	77201709	38472769	0.489
1	Andhra Pradesh	2339067	3	14733	110556756	52883163	0.630
25	Odisha	1336552	91	9205	81445474	45429399	0.689
28	Rajasthan	1315455	88	9653	115325059	78230816	0.734
17	Ladakh	29412	3	231	564943	307204	0.785
10	Gujarat	1277557	41	11043	127793995	63907200	0.864
32	Tripura	108034	0	940	5916312	4057847	0.870
15	Karnataka	4071893	1275	40307	120928298	66165886	0.990
13	Jammu and Kashmir	479410	17	4785	24738045	14046258	0.998
11	Haryana	1056602	43	10714	45457359	27388008	1.014
35	West Bengal	2118606	58	21532	155962840	97694960	1.016
19	Madhya Pradesh	1054918	4	10776	133590886	82342793	1.022
16	Kerala	6828245	1389	71552	57477992	35330888	1.048
30	Tamil Nadu	3594388	60	38049	127442647	76481545	1.059
3	Assam	746100	0	8035	50284713	34586234	1.077
33	Uttar Pradesh	2128103	46	23633	390639497	228959599	1.111
26	Puducherry	175508	5	1975	2272617	1397707	1.125
29	Sikkim	44319	1	499	1360444	671720	1.126
5	Chandigarh	99348	6	1181	2282281	1182104	1.189
6	Chhattisgarh	1177749	6	14146	49148991	28566990	1.201
0	Andaman and Nicobar	10742	1	129	991263	426251	1.201
14	Jharkhand	442570	3	5331	43689818	37329128	1.205
8	Delhi	2007188	35	26521	37366540	18802494	1.321
12	Himachal Pradesh	312644	23	4213	15278680	7316708	1.348
4	Bihar	851379	15	12302	157197041	119461013	1.445
21	Manipur	139922	0	2149	3265933	3008546	1.536
9	Goa	259079	26	4013	2872582	1542750	1.549
22	Meghalaya	96783	1	1624	2621058	3276323	1.678
34	Uttarakhand	449379	28	7751	20051714	11090425	1.725
20	Maharashtra	8136588	164	148416	177678317	120837347	1.824
24	Nagaland	35986	0	782	1737554	2189297	2.173
27	Punjab	784205	49	19289	46970300	29611935	2.460

In [8]:
```
#national mean mr
round(covid_df["MR"].mean(),3)
```

Out[8]: 1.104

North_zone

In [9]:
```
north_zone=covid_df[covid_df["state"].isin(["Himachal Pradesh","Punjab","Uttarakhand","Uttar Pradesh",
                                              "Haryana","Jammu and Kashmir","Chandigarh","Delhi","Ladakh"])].reset_index()
```

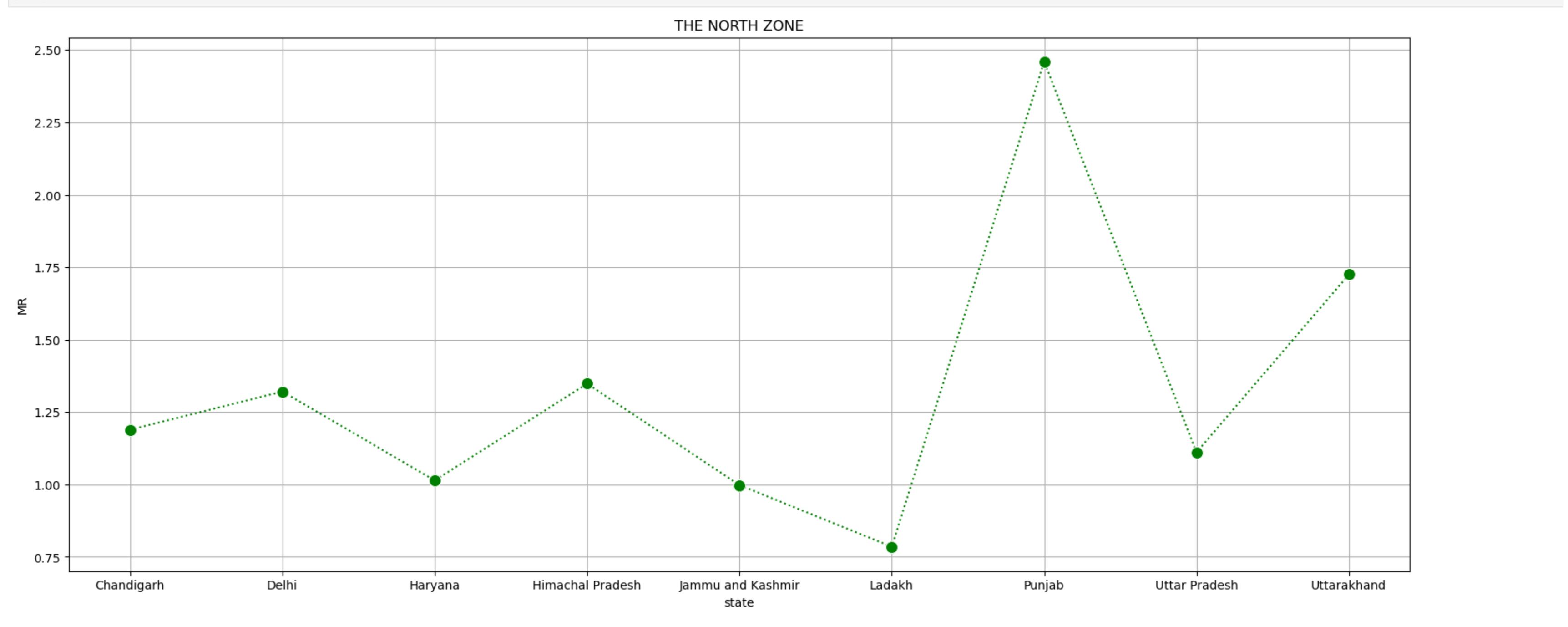
In [10]:
```
north_zone.drop("index",axis=1,inplace=True)
```

In [11]:
```
north_zone.style.background_gradient("cool")
```

Out[11]:

	state	confirmed	active	deaths	total_doses	population	MR
0	Chandigarh	99348	6	1181	2282281	1182104	1.189000
1	Delhi	2007188	35	26521	37366540	18802494	1.321000
2	Haryana	1056602	43	10714	45457359	27388008	1.014000
3	Himachal Pradesh	312644	23	4213	15278680	7316708	1.348000
4	Jammu and Kashmir	479410	17	4785	24738045	14046258	0.998000
5	Ladakh	29412	3	231	564943	307204	0.785000
6	Punjab	784205	49	19289	46970300	29611935	2.460000
7	Uttar Pradesh	2128103	46	23633	390639497	228959599	1.111000
8	Uttarakhand	449379	28	7751	20051714	11090425	1.725000

In [12]:
```
plt.figure(figsize=(20,8))
plt.title("THE NORTH ZONE")
sns.lineplot(data=north_zone,x="state",y="MR",marker="o",color="g",markersize=10,linestyle=":")
plt.grid()
```



south_zone

In [13]:
```
south_zone=covid_df[covid_df["state"].isin(["Tamil Nadu","Karnataka","Kerala","Andhra Pradesh",
                                              "Telengana","Lakshadweep","Puducherry","Andaman and Nicobar"])].reset_index()
```

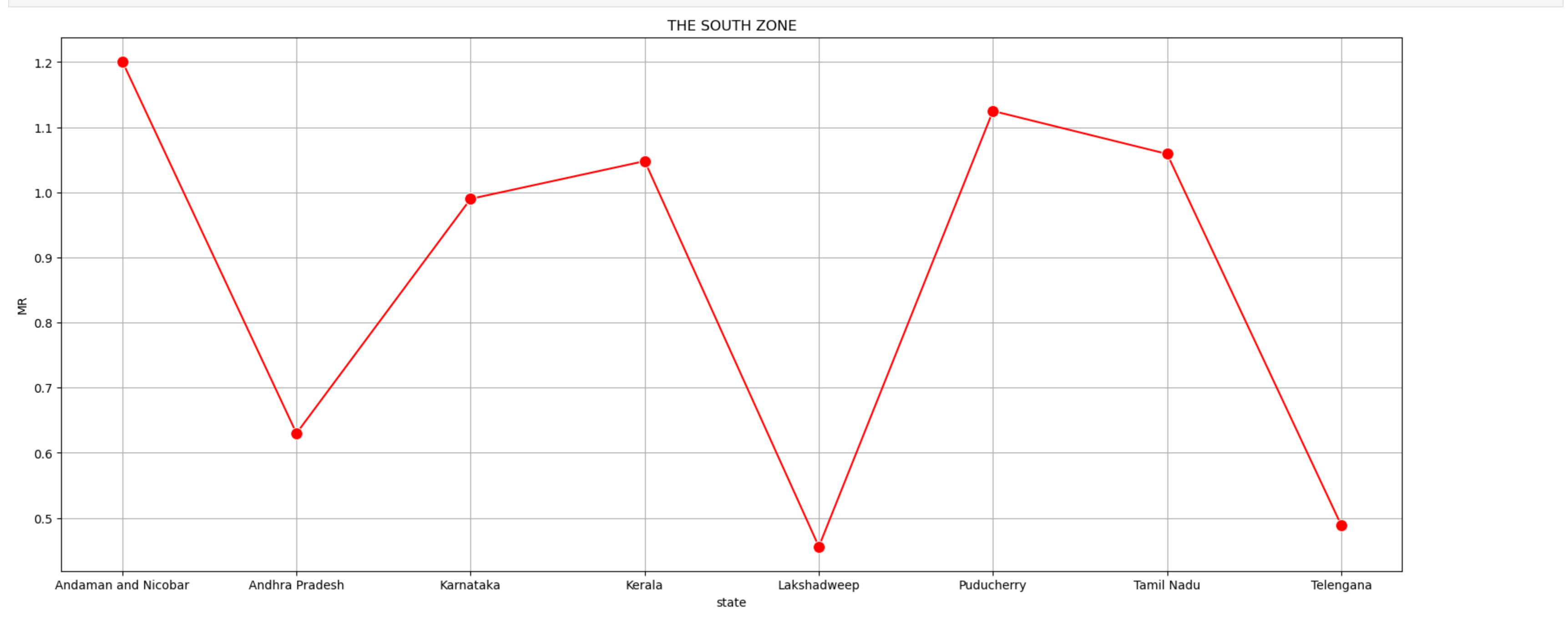
In [14]:
```
south_zone.drop("index",axis=1,inplace=True)
```

In [15]:
```
south_zone.style.background_gradient("cool")
```

Out[15]:

	state	confirmed	active	deaths	total_doses	population	MR
0	Andaman and Nicobar	10742	1	129	991263	426251	1.201000
1	Andhra Pradesh	2339067	3	14733	110556756	52883163	0.630000
2	Karnataka	4071893	1275	40307	120928298	66165886	0.990000
3	Kerala	6828245	1389	71552	57477992	35330888	1.048000
4	Lakshadweep	11415	0	52	145008	72210	0.456000
5	Puducherry	175508	5	1975	2272617	1397707	1.125000
6	Tamil Nadu	3594388	60	38049	127442647	76481545	1.059000
7	Telengana	841324	71	4111	77201709	38472769	0.489000

In [16]:
```
plt.figure(figsize=(20,8))
plt.title("THE SOUTH ZONE")
sns.lineplot(data=south_zone,x="state",y="MR",marker="o",color="r",markersize=10)
plt.grid()
```



west_zone

In [17]:
```
west_zone=covid_df[covid_df["state"].isin(["Maharashtra","Goa","Rajasthan","Gujarat"
                                             ,"Dadra and Nagar Haveli and Daman and Diu"])].reset_index()
```

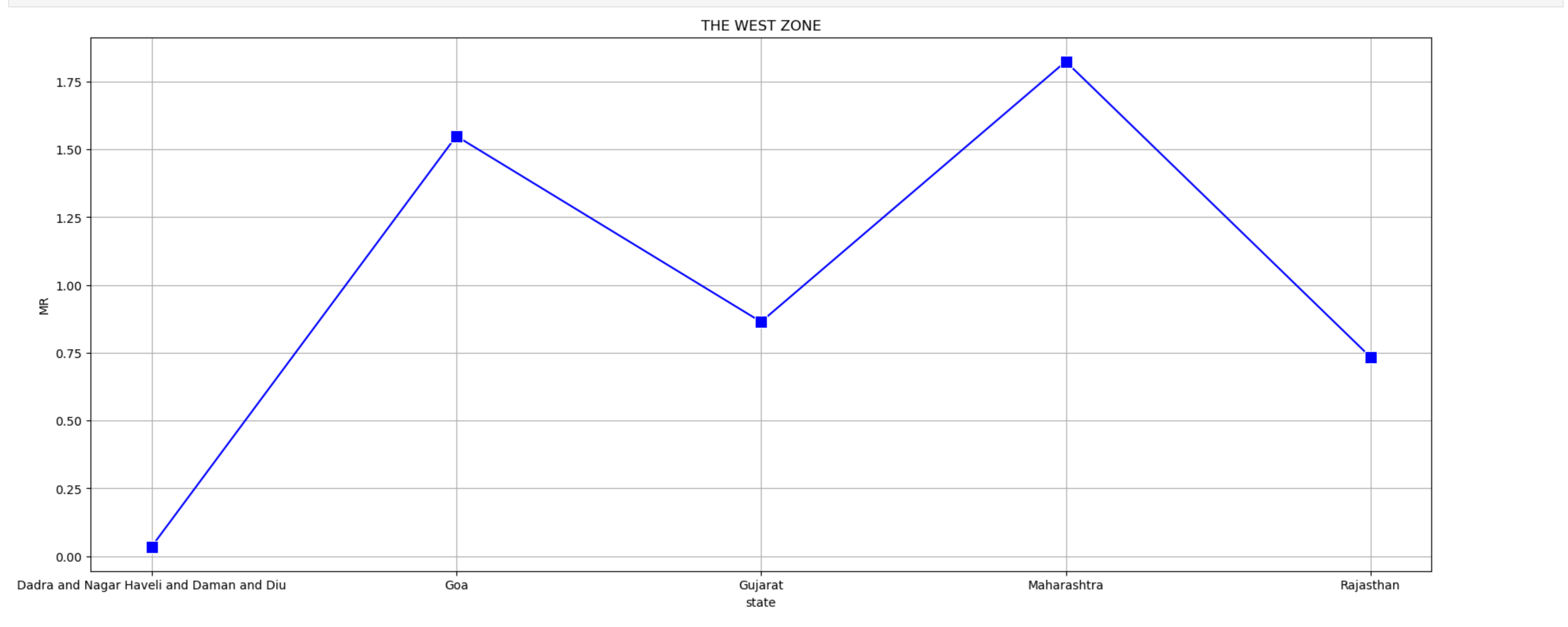
In [18]:
```
west_zone.drop("index",axis=1,inplace=True)
```

In [19]:
```
west_zone.style.background_gradient("cool")
```

Out[19]:

	state	confirmed	active	deaths	total_doses	population	MR
0	Dadra and Nagar Haveli and Daman and Diu	11591	0	4	1578492	657391	0.035000
1	Goa	259079	26	4013	2872582	1542750	1.549000
2	Gujarat	1277557	41	11043	127793995	63907200	0.864000
3	Maharashtra	8136588	164	148416	177678317	120837347	1.824000
4	Rajasthan	1315455	88	9653	115325059	78230816	0.734000

In [20]:
```
plt.figure(figsize=(20,8))
plt.title("THE WEST ZONE")
sns.lineplot(data=west_zone,x="state",y="MR",marker="s",color="b",markersize=10)
plt.grid()
```



east_zone

In [21]:
```
east_zone=covid_df[covid_df["state"].isin(["Bihar","Jharkhand","Odisha","West Bengal"])].reset_index()
```

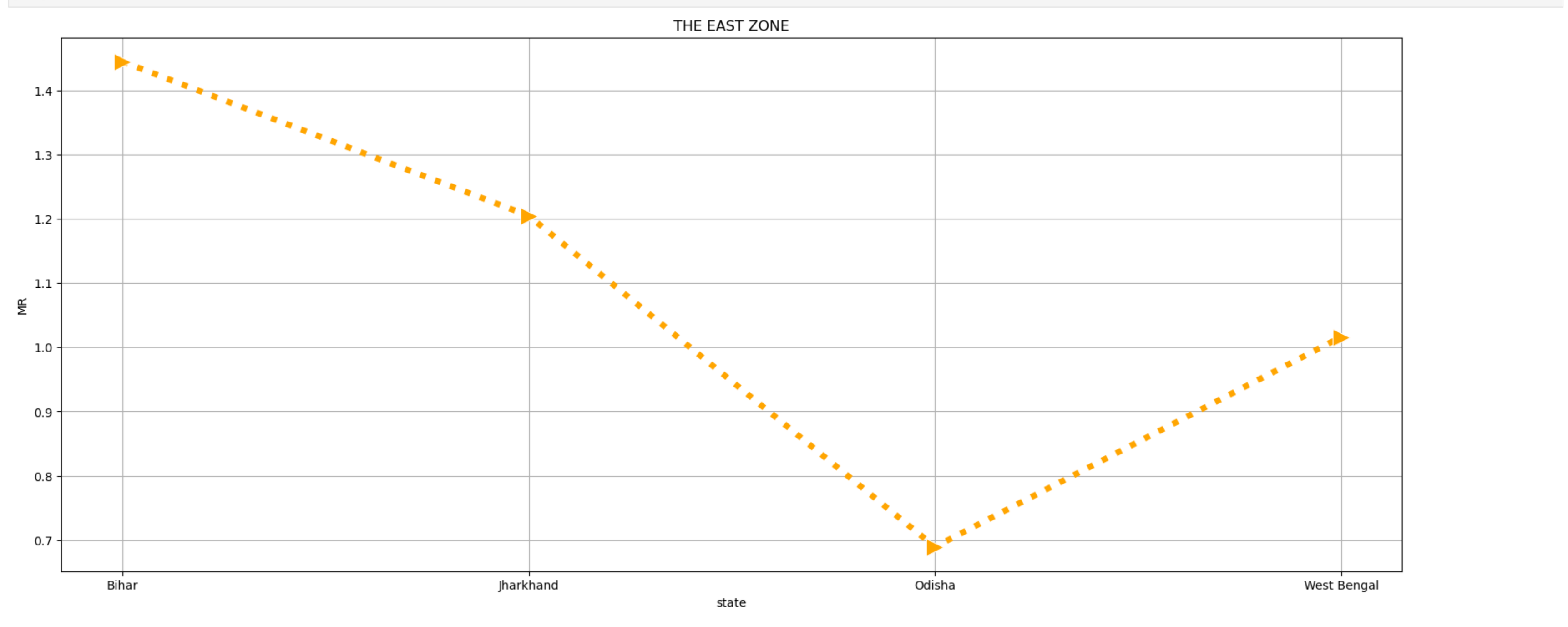
In [22]:
```
east_zone.drop("index",axis=1,inplace=True)
```

In [23]:
```
east_zone.style.background_gradient("cool")
```

Out[23]:

	state	confirmed	active	deaths	total_doses	population	MR
0	Bihar	851379	15	12302	157197041	119461013	1.445000
1	Jharkhand	442570	3	5331	43689818	37329128	1.205000
2	Odisha	1336552	91	9205	81445474	45429399	0.689000
3	West Bengal	2118606	58	21532	155962840	97694960	1.016000

In [24]:
```
plt.figure(figsize=(20,8))
plt.title("THE EAST ZONE")
sns.lineplot(data=east_zone,x="state",y="MR",marker=">",color="orange",markersize=15,linestyle=":",linewidth=5)
plt.grid()
```



central_zone

In [25]:
```
central_zone=covid_df[covid_df["state"].isin(["Madhya Pradesh","Chhattisgarh"])].reset_index()
```

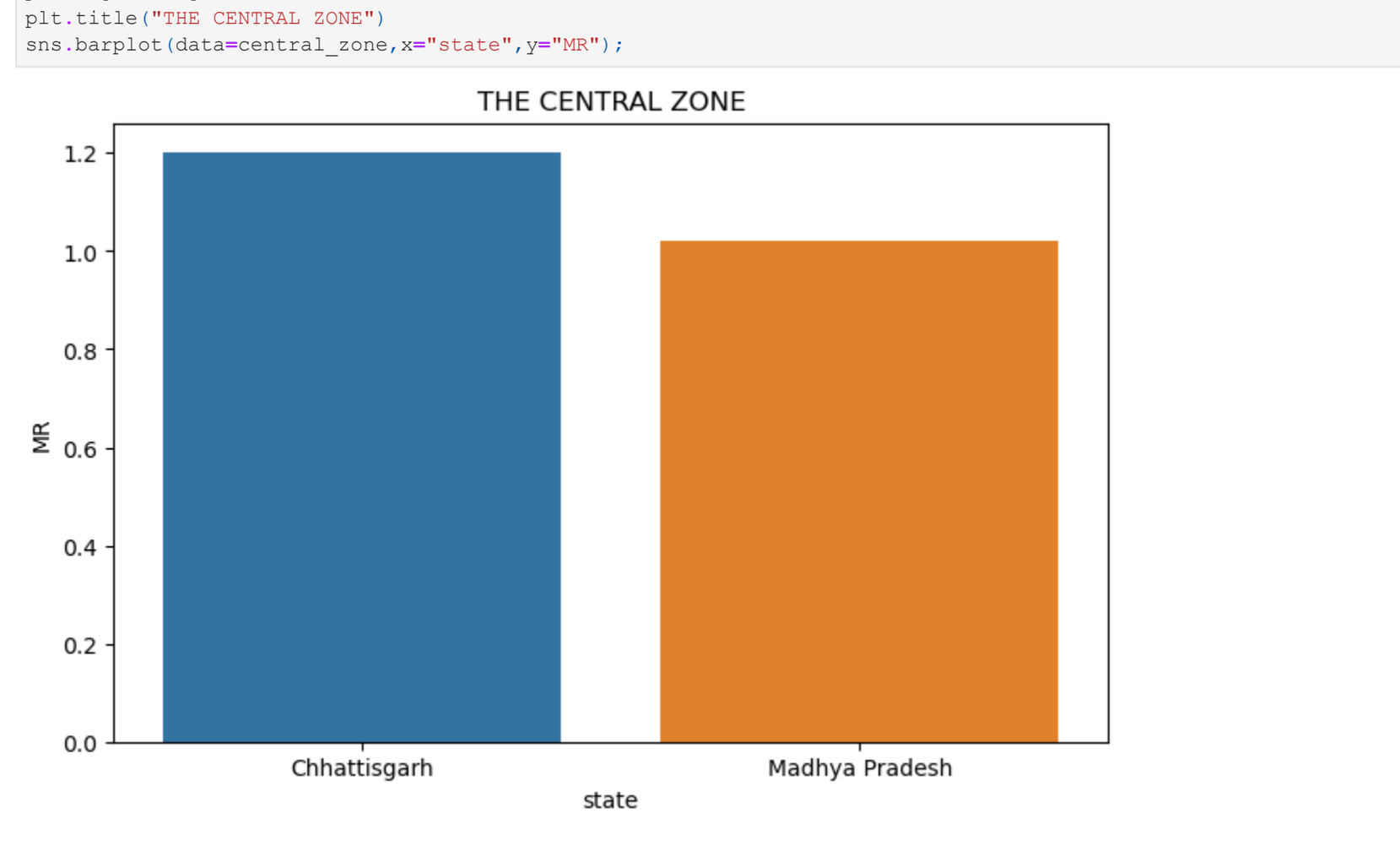
In [26]:
```
central_zone.drop("index",axis=1,inplace=True)
```

In [27]:
```
central_zone.style.background_gradient("cool")
```

Out[27]:

	state	confirmed	active	deaths	total_doses	population	MR
0	Chhattisgarh	1177749	6	14146	49148991	28566990	1.201000
1	Madhya Pradesh	1054918	4	10776	133590886	82342793	1.022000

In [28]:
```
plt.figure(figsize=(8,5))
plt.title("THE CENTRAL ZONE")
sns.barplot(data=central_zone,x="state",y="MR");
```



north_east_zone

In [29]:
```
north_east_zone=covid_df[covid_df["state"].isin(["Nagaland","Arunachal Pradesh","Assam","Meghalaya","Sikkim","Tripura","Mizoram","Manipur"])].reset_index()
```

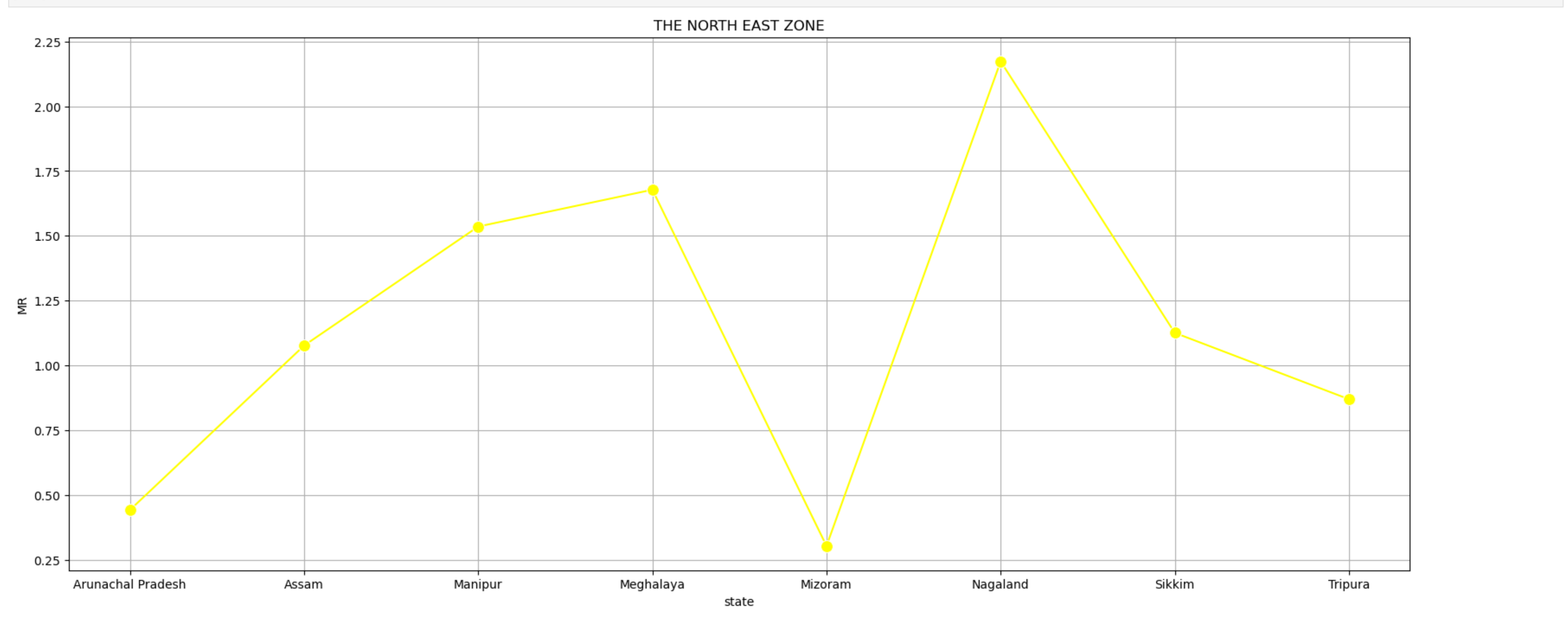
In [30]:
```
north_east_zone.drop("index",axis=1,inplace=True)
```

In [31]:
```
north_east_zone.style.background_gradient("cool")
```

Out[31]:

	state	confirmed	active	deaths	total_doses	population	MR
0	Arunachal Pradesh	66890	0	296	1911760	1528296	0.443000
1	Assam	746100	0	8035	50284713	34586234	1.077000
2	Manipur	139922	0	2149	3265933	3008546	1.536000
3	Meghalaya	96783	1	1624	2621058	3276323	1.678000
4	Mizoram	238964	0	726	1790818	1205974	0.304000
5	Nagaland	35986	0	782	1737554	2189297	2.173000
6	Sikkim	44319	1	499	1360444	671720	1.126000
7	Tripura	108034	0	940	5916312	4057847	0.870000

In [32]:
```
plt.figure(figsize=(20,8))
plt.title("THE NORTH EAST ZONE")
sns.lineplot(data=north_east_zone,x="state",y="MR",marker="o",color="yellow",markersize=10)
plt.grid()
```



mean mr of each zones

In [33]:
```
MMR_NORTH_ZONE= north_zone["MR"].mean()
```

In [34]:
```
MMR_SOUTH_ZONE=south_zone["MR"].mean()
```

In [35]:
```
MMR_EAST_ZONE=east_zone["MR"].mean()
```

In [36]:
```
MMR_WEST_ZONE=west_zone["MR"].mean()
```

In [37]:
```
MMR_CENTRAL_ZONE=central_zone["MR"].mean()
```

In [38]:
```
MMR_NORTH_EAST_ZONE=north_east_zone["MR"].mean()
```

In [39]:
```
print("THE MEAN MR OF NORTH ZONE IS:",MMR_NORTH_ZONE)
```

THE MEAN MR OF NORTH ZONE IS: 1.3278888888888889

In [40]:
```
print("THE MEAN MR OF SOUTH ZONE IS:",MMR_SOUTH_ZONE)
```

THE MEAN MR OF SOUTH ZONE IS: 0.87475

In [41]:
```
print("THE MEAN MR OF EAST ZONE IS:",MMR_EAST_ZONE)
```

THE MEAN MR OF EAST ZONE IS: 1.08875

In [42]:
```
print("THE MEAN MR OF WEST ZONE IS:",MMR_WEST_ZONE)
```

THE MEAN MR OF WEST ZONE IS: 1.0012

In [43]:
```
print("THE MEAN MR OF CENTRAL ZONE IS:",MMR_CENTRAL_ZONE)
```

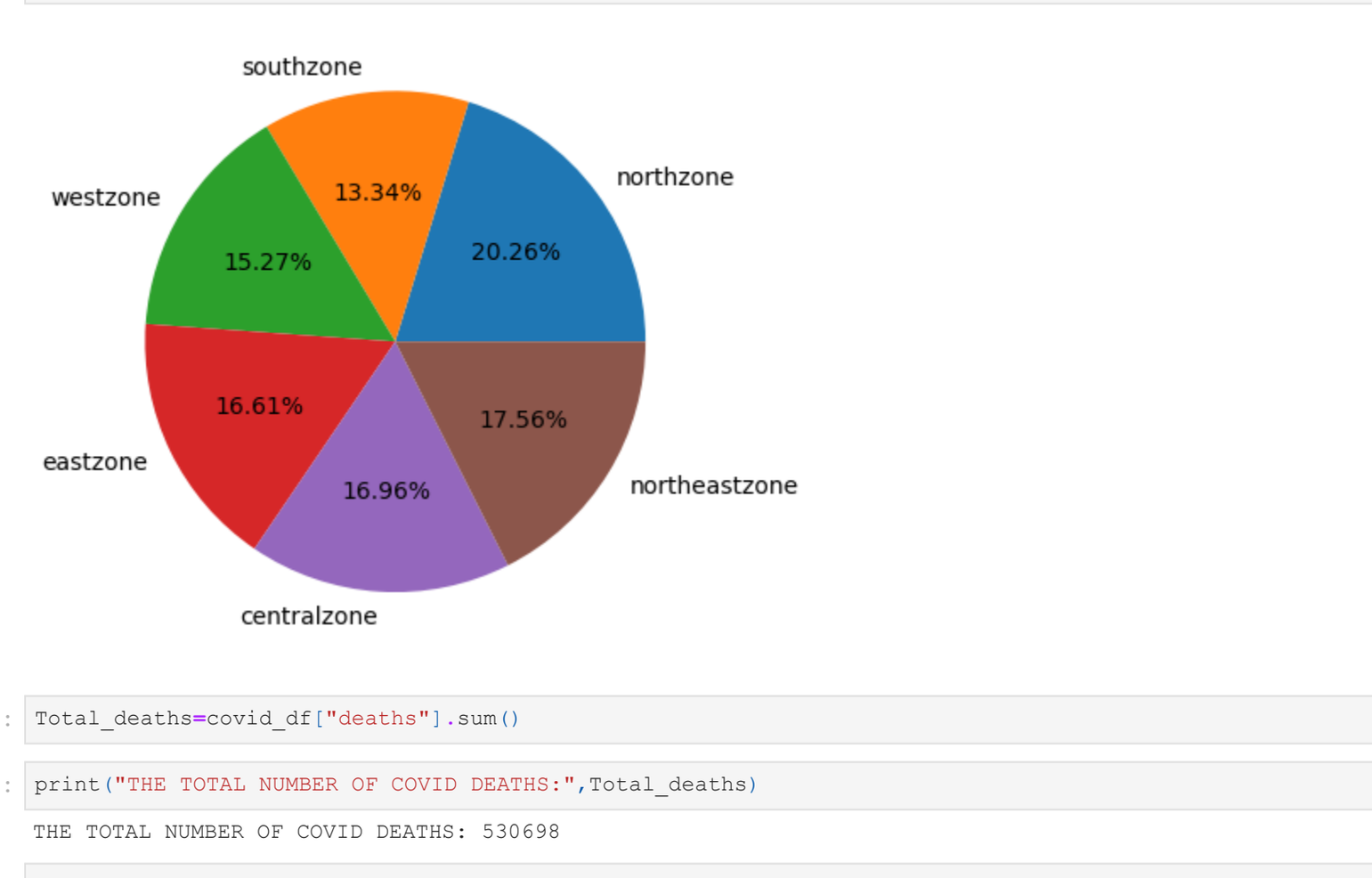
THE MEAN MR OF CENTRAL ZONE IS: 1.1115

In [44]:
```
print("THE MEAN MR OF NORTH_EAST_ZONE IS:",MMR_NORTH_EAST_ZONE)
```

THE MEAN MR OF NORTH_EAST_ZONE IS: 1.1508749999999999

In [45]:
```
zones=["northzone","southzone","westzone","eastzone","centralzone","northeastzone"]
mortalityrate=[1.3278888888888889,0.87475,1.0012,1.08875,1.1115,1.1508749999999999]
```

In [46]:
```
plt.pie(mortalityrate,labels=zones,autopct="%0.2f%%");
```



In [47]:
```
Total_deaths=covid_df["deaths"].sum()
```

In [48]:
```
print("THE TOTAL NUMBER OF COVID DEATHS:",Total_deaths)
```

THE TOTAL NUMBER OF COVID DEATHS: 530698

In [ ]: