GIS Approach for Novel Corona Virus in Northern State of India Jammu and Kashmir

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Research Article

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Abstract

Novel Corona Virus “COVID 19” has affected worldwide. At initial stage the way out to curb the deadly virus was lockdown, isolating the symptomatic people, quarantining travellers and educate the people about the Corona virus so that precautionary measures are followed by people. local admistration has played vital role for highlighting the red zone areas and restricted the entry for people from outside to red zone areas in order to stop the infection from human to human transmission. The present research focus on application of Geographic Information System on mapping the Corona Virus cases in Jammu and Kashmir .The research attributes the role of dense Population and Urbanization are responsible for increasing the corona virus cases in the area. The districts like Srinagar and Jammu with high population and urbanization (census 2011) attributes high number of Corona cases in year 2020.The research experience that the Srinagar and Jammu attributes high population of 1236830 and 1529958 respectively than other districts of Jammu and Kashmir. This high population experiences highest number of Corona cases(Jammu 23339,Srinagar 24996), Deaths(Jammu 350,Srinagar 444) and COVID-19 recoveries(Jammu 22141,Srinagar 23957). The highly urbanised and populated area exposes the area towards infection. The high number of Corona Case experience heart related issues. The number of heart attacks in the state Jammu and Kashmir is rising which is alarming issue. This study will serve as replica study for managing COVID-19 in Jammu and Kashmir. The remote sensing and GIS was used to map the infected area and will be used for the future study in order to mitigate the impact of COVID-19 on life.

Introduction

At the end of year 2019 the word experiences ,COVID-19 infection. The infection believed to have originated in the city of Wuhan Chennai in December 2019(Wu et al. 2020; Shereen et al. 2020).After doing research on the infection later pathogen was identified as Noval coronavirus (2019-nCoV).Which later name as SARS-CoV-2(severe acute respiratory syndrome coronavirus). The ability of high human to human transmission the virus effected the thousands of people in China. These infected people travel other parts of the word like United states, Japan, India, Germany, Singapore, Iran etc. After that the infection travelled every corner of the word. Millions of people got infected and died. The whole world was under lockdown. The word was new to this infection by COVID-19. So it was very different to combat this infection. The Corona virus world meter (https ://www.world omete rs.info/coronaviru s/), as of January 10, 2021, 11:45 IST, reported that confirmed cases stood at 90,086,549 with total global deaths 1,934,939 and recoveries standing at 64,482,717 current active cases 23,668,893.The rate of infection in India was so fast and unparallel. At the peak one lakh people experience the effect in 24 years.

Application Of Gis And Remote Sensing In Fighting Covid-19

Geographic Information system has significant application in tracking and combating the viral infection since 1964. In old time using conventional method in GIS was used to combat ,track and understand the spread of many infectious diseases including cholera, fever, and even the 1981influenza pandemic. Using Computerization of systems for geographic information in the 1960s contributed to the possibilities to

analyze, visualize and detect patterns of diseases. Its usage focused on mapping infectious diseases in a review conducted in 2014 (Lyseen et al. 2014).With the passage of time using web based GIS bring advancement in health sector. (Boulos et al. 2010; Gong et al. 2015; Tanser 2000).During this pandemics web GIS play significant role for investigating data from sources and displaying of results in interactive and real or near real-time dashboards, which have become very useful means by which many governments display spatial specific information on the COVID-19. There are many good outcomes by using the geospatial technology. More analyses can be put in place to present the COVID-19 pandemic spatially and picturing its distribution in the determination of future outcomes. This is the focus of the research.

Study Area

The Jammu and Kashmir is located on the northern area of India attributing area 101387 km^2.It lies between Latitude 32°17' and 37°05' North and longitude 72°31' and 80°20' East. The region is dominated with different Himalayan mountain series which adds the beauty of the region. The climate of the Jammu and Kashmir change with space and time. The Jammu region has sub tropical climate hot during summer. In this area temperature starts soaring in the month of March and experiences its peak in the month of April. The temperature during summer can go higher than 45 degree Celsius. Where Kashmir has pleasant weather during summer but in winter due to snowfall the temperature goes to minus 10 degree Celsius.

Materials And Methodology

District wise COVID-19 data of year 2020 for Jammu and Kashmir was downloaded from (https://covidindia.org/jammu-and-kashmir) after statistical analysis the data was imported to GIS environment were different categories of COVID-19 related cases were classified. District wise population data for year 2011 was download from (www.jkcensus.com). After statistical analysis the data was exported in GIS environment where this data was linked with COVID-19 data of the Jammu and Kashmir.

Results And Discussion

The novel corona virus was originated from Wuhan China in December 2019. During month of March India start receiving cases in the state of Kerala. The students from the Wuhan travelled their homes to Kerala. The infected students interact with other people by which infection of COVID-19 transmitted in India. In northern state of India Jammu and Kashmir the first COVID-19 case was identified 63 years old women which travelled from Iran. After gradually the cases of COVID-19 were increased. The present research focus on different categories of COVID-19

cases in the year 2020 of Jammu and Kashmir. After statistical analysis the COVID-19 data was exported in GIS environment different classes are generated. The thematic maps were generated in the form of total number of COVID-19 cases, Number of Recoveries from COVID-19,Total number of deaths by COVID-

19 and total number of COVID-19 cases in year 2020 of Jammu and Kashmir. The result attributes that districts like Jammu and Srinagar received highest number of COVID-19 cases in year 2020 in all the areas like

Total number of COVID-19 cases (Jammu 23339,Srinagar 24996), Number of deaths by COVID-19(Jammu 350,Srinagar 444), Number of Recoveries from COVID-19(Jammu 22141,Sringar 23957), Active cases of COVID-19(Jammu 848,Srinagar 595) in year 2020 shown in Fig. 1, Fig. 2, Fig. 3, Fig. 4. Baramulla and Budgam Receives 7896 ,7525 total number of COVID-19 cases respectively.

As District Srinagar and Jammu attributes highest number of cases and recoveries from COVID-19. Same time we have experienced highest number of deaths in these two districts (Fig. 3). The Srinagar and Jammu is densely populated and Urbanized district of Jammu and Kashmir (Fig. 4).People of the area are more exposed to other states of the country. These are the reasons the districts experience high COVID-19 related cases.

Conclusion

The present research pictures that the high population and urbanisation areas are prone to COVID-19 infection like we analysed in our research cities like Srinagar and Jammu in the state are heavy highest cases in the COVID-19 in different format .The highest of COVID-19 experiences highest number of deaths and recoveries. The heart related diseases were increased in the study area due to increasing number of COVID-19 patients. The research will be useful far planners and policy makers to mitigate the impact of COVID-19 on population and will highlight the forces that ease the infection to transmit. The research has also highlight the role of Remote sensing and GIS for mapping, planning and analysing the COVID-19 viral infection.

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Figures

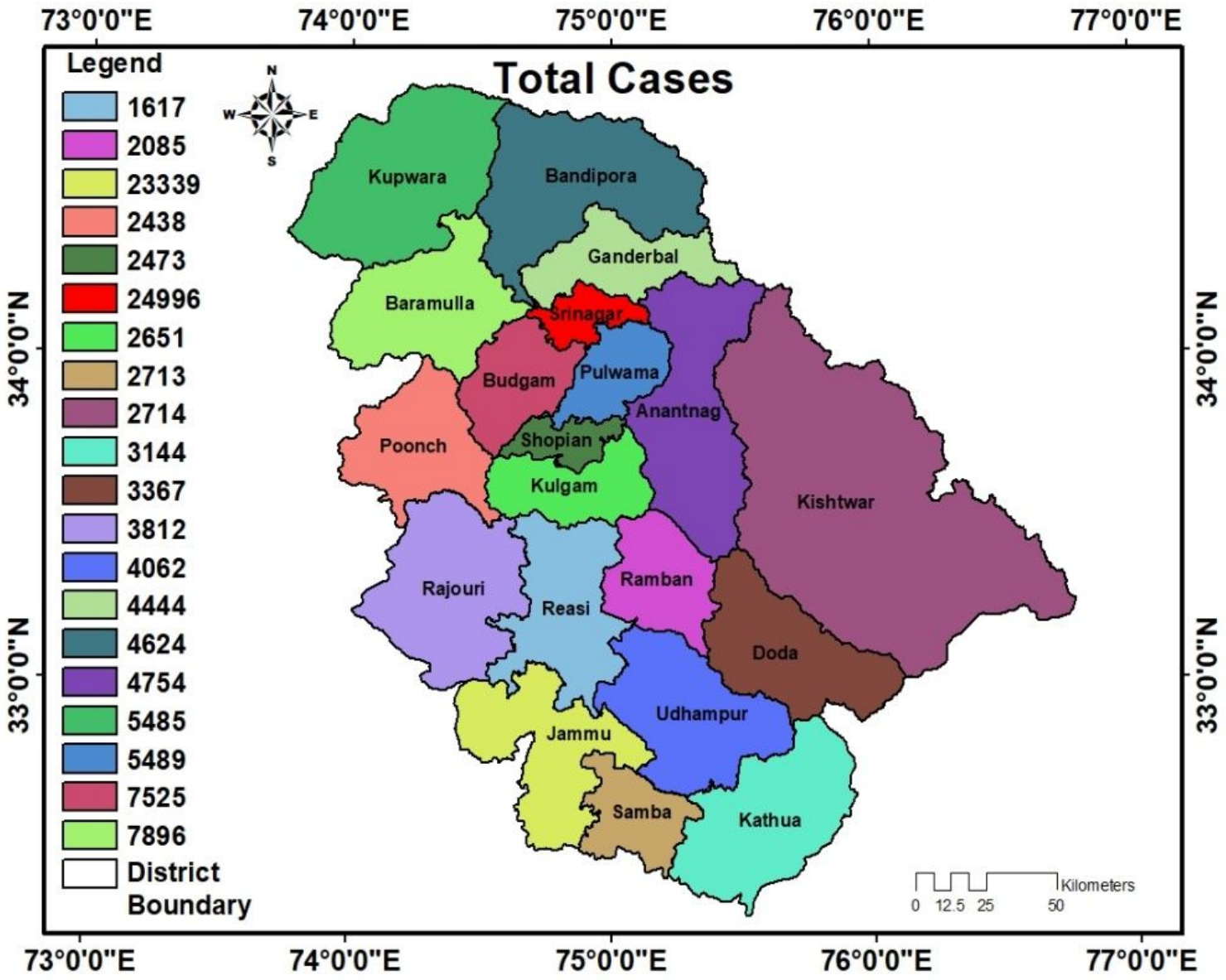

Figure 1

Showing Total Number of COVID-19 Cases in Jammu and Kashmir Note: The designations employed and the presentation of the material on this map do not imply the expression of any opinion whatsoever on the part of Research Square concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. This map has been provided by the authors.

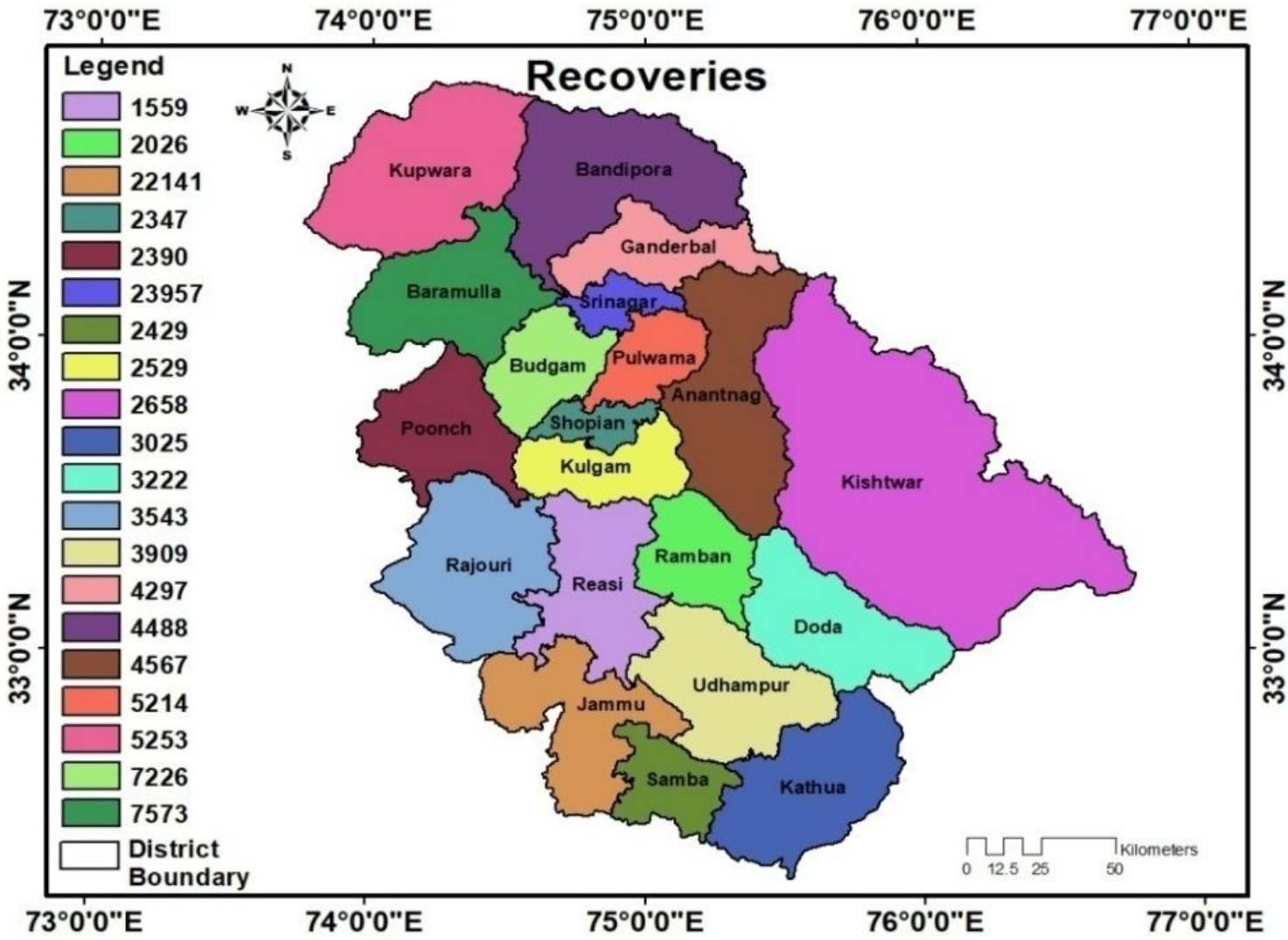

Figure 2

Shows Number of Recoveries form COVID-19 in Jammu and Kashmir Note: The designations employed and the presentation of the material on this map do not imply the expression of any opinion whatsoever on the part of Research Square concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. This map has been provided by the authors.

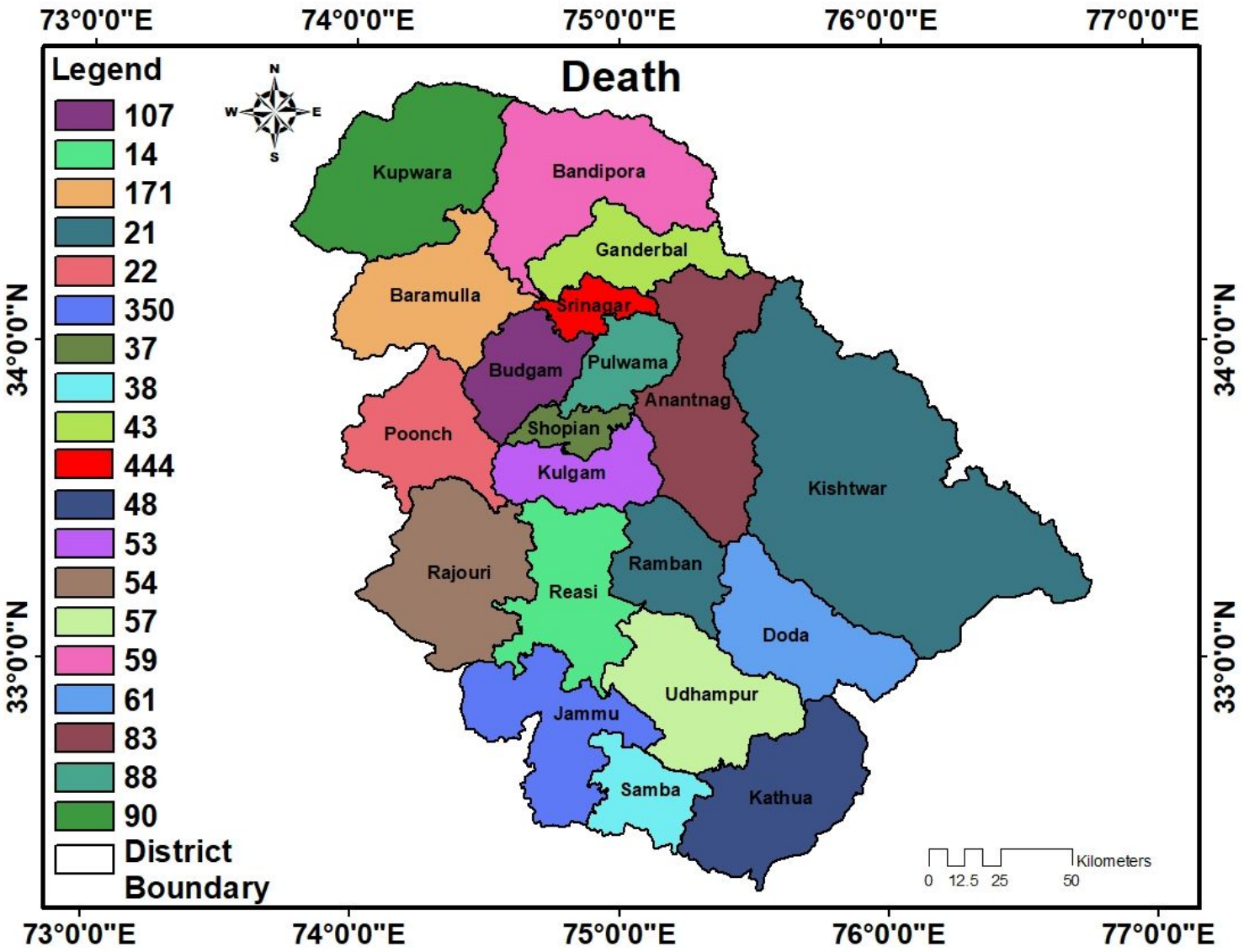

Figure 3

Total number of COVID-19 deaths in Jammu and Kashmir Note: The designations employed and the presentation of the material on this map do not imply the expression of any opinion whatsoever on the part of Research Square concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. This map has been provided by the authors.

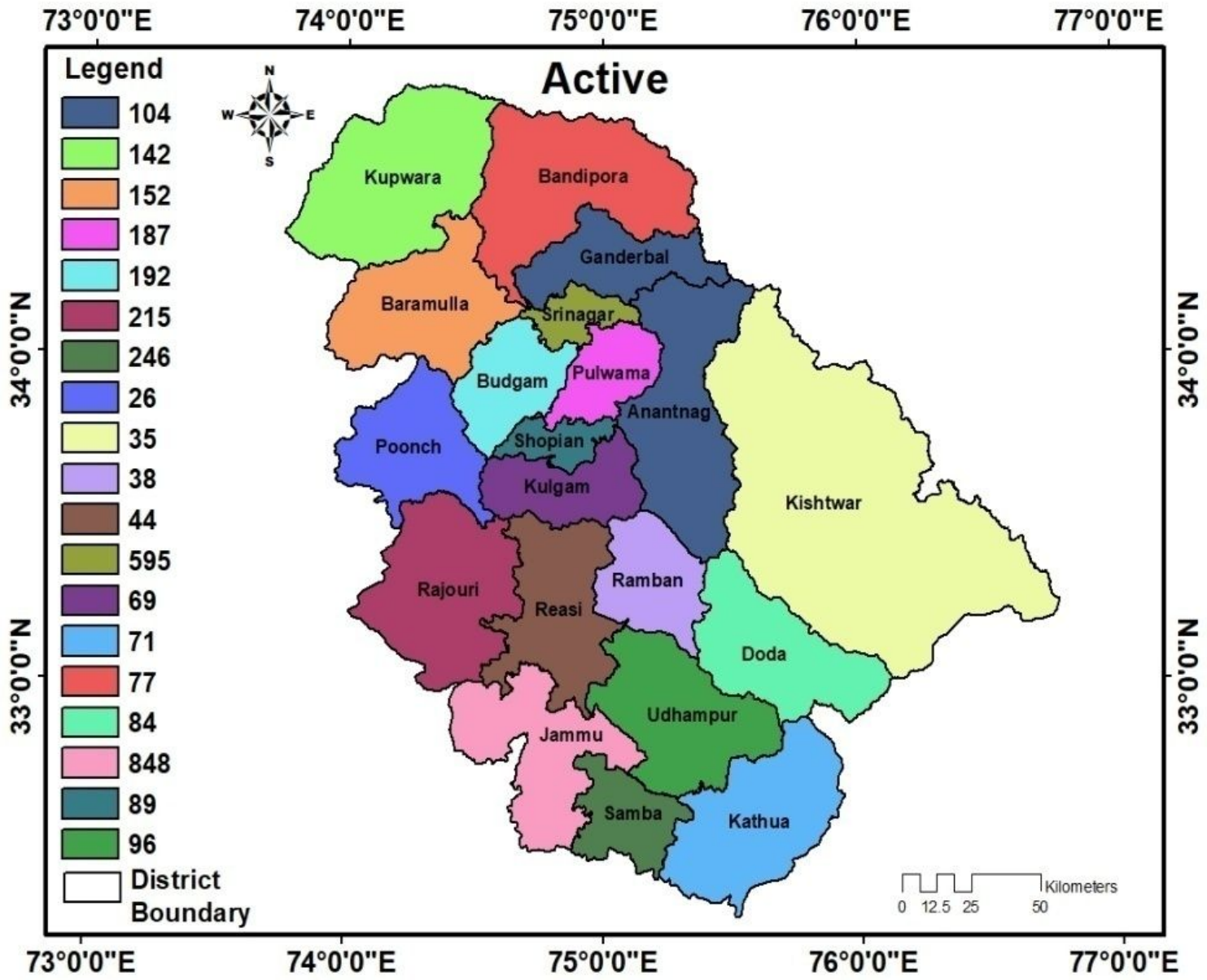

Figure 4

Showing total number of cases during year 2020 in Jammu and Kashmir Note: The designations employed and the presentation of the material on this map do not imply the expression of any opinion whatsoever on the part of Research Square concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. This map has been provided by the authors.

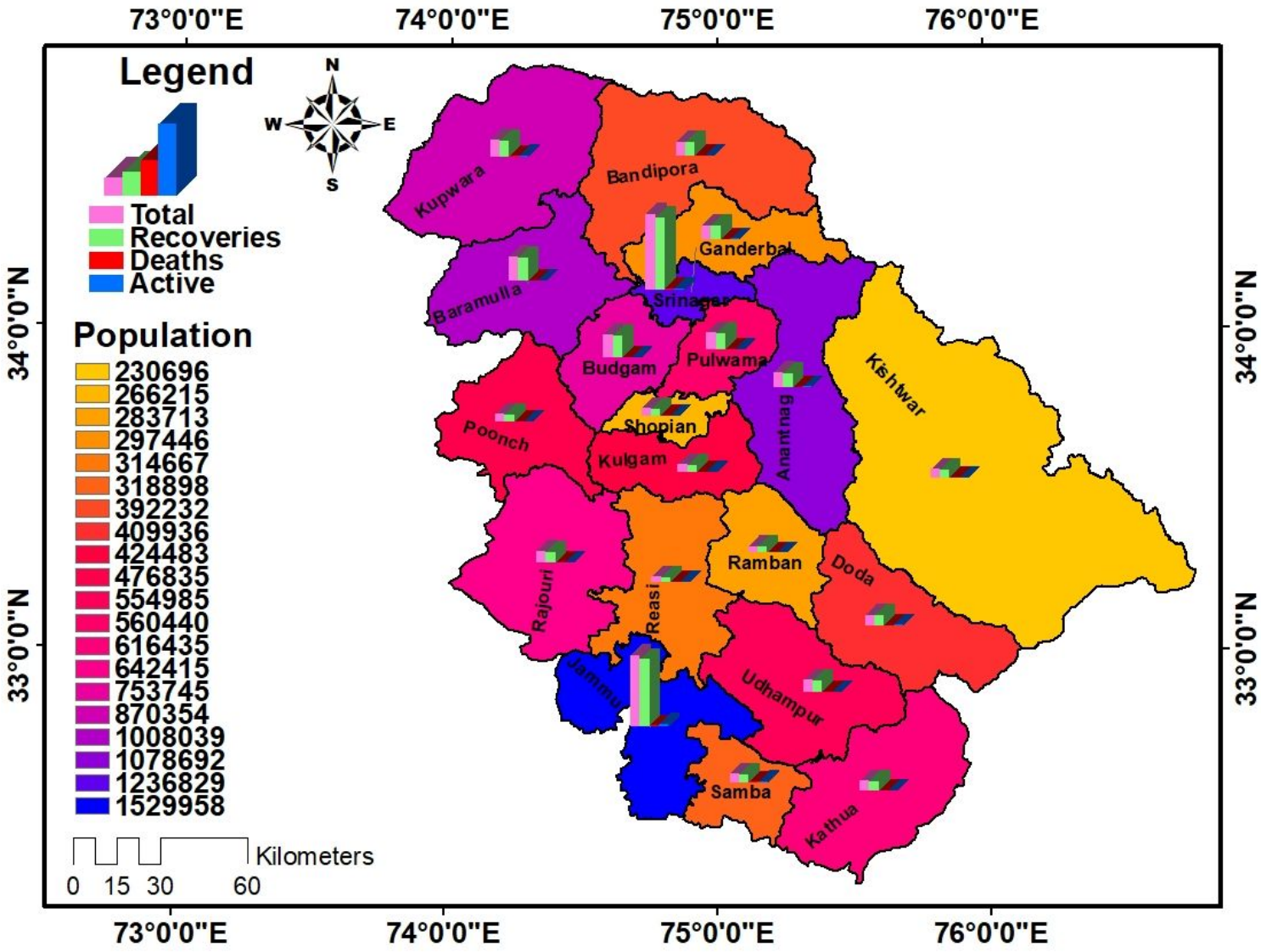

Figure 5

Shows COVID-19 Cases and Total Population of Jammu and Kashmir Note: The designations employed and the presentation of the material on this map do not imply the expression of any opinion whatsoever on the part of Research Square concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. This map has been provided by the authors.