

Plotting Data On A Map And Information Analysis

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Create a symbols map using Microsoft Excel and the data provided in the High-Risk Areas spreadsheet to determine the areas of the country with the most risk.

Knowing the disease is important, but understanding its progression is more significant (*Preventing Epidemics and Pandemics*, n.d.). Now that the organization has the information on the areas and locations where the disease outbreaks hit the most and also the age groups that were highly affected by the deadly disease, the areas most vulnerable to outbreaks must be located. The information presented in this report can be utilized to create plans for preventing and treating the disease in the current outbreak. Mapping information gathered and analyzed through several components provides an organization and care providers with the necessary tools to prevent disease spread and create plans for possible treatment of the outbreak.

Plotting Data on a Map

The recorded dataset of several cities in the United States is used to create a map regarding the disease occurrences in the months of February, March, and April of the suggested year, which is presented below in Figure 1.



Figure 1

Cities with High and Low Outbreaks Risk

As the map illustrates, this dangerous disease has spread in the majority of the cities and states of the United States. At the baseline, the map documents the high risk of the disease in various cities with the highest exposure risk and offers a snapshot of how hard the deadly disease hit these cities in the United States. However, cities with the highest and lowest disease risk in the given months of the year are recorded here. The major cities exposed to this deadly disease include Jacksonville, Miami, Phoenix, Austin, and Houston, with cases reported in the three months. Cases reported in Jacksonville

were 429, in Miami 392, in Phoenix 390, in Austin 368, and in Houston, 310 people were infected with the disease. Jacksonville began reporting probable cases of the disease, resulting in an increase of about 80 cases in March and 215 cases in April. The number of disease outbreak cases in all the cities and states had exponentially increased by the month of April, such that cities with the highest risk were Jacksonville with 322 cases, Miami with 299, Phoenix with 289, Austin with 281, and Houston with 272 cases. Notably, the dataset and symbols map show that New York had significantly dropped from the top five cities at risk list as it reported only 189 outbreak cases for April. The outbreak rate was lower than in San Diego, with 258; New Orleans, with 248; Mesa, with 231; Atlanta, with 220; Long Beach, with 215; and Los Angeles, with 201 cases in April.

Areas at High and Low Outbreaks Risk

After creating the symbol map, the organization was able to determine which cities in the three given months were most vulnerable to disease and which cities were at low risk. Cities with the highest risk of the disease in the given dataset were Jacksonville, Miami, Phoenix, Houston, and Austin, with more than 300 cases in the months of February, March, and April. Whereas cities at lowest risk of the disease were Omaha with 3, Virginia Beach with 4, Colorado Springs with 5, Philadelphia with 6, Indianapolis with 9, Raleigh with 10, Minneapolis with 13, Oklahoma City with 13, too, Arlington with 14 cases, and Chicago with 17 active cases in the respective months. It can also be deduced that Boston, Washington, Seattle, and Baltimore were the cities with minimal risk.

Evaluation of the Chart

It can be seen on the map that Midwestern states have not been impacted at all by the deadly disease because of the limited travel and favourable weather conditions (Gubler et al., 2001). However, states and cities with higher populations were most vulnerable to the disease outbreak because, in most of the cities listed in the dataset, people tend to live more closely together in these regions, as data shows. After a continued review of the symbols map, it is inferred that larger cities of the United States had significantly higher numbers of disease outbreaks among the population of those cities compared to the smaller cities of the country because humans are mostly the agents of disease spread (Dobson & Carper, 1996). According to “Medical News Today” (2022), it is true that respiratory viruses are typically seasonal, maybe because viruses that spread by water droplets do so less effectively if the droplet dries up more quickly. The current dip in transmission may also be attributed to changes in temperature, humidity, and UV exposure. Unfortunately, the opposite will hold true throughout the autumn and beyond. In a nutshell, it is evaluated from the symbols map that the cities at the highest risk were Jacksonville, Miami, and Phoenix. In contrast, cities with low disease outbreak risk were Virginia Beach, Omaha, and Colorado Springs due to the fact people went inside and outside of these regions less during the selected months. Studies suggest that human travellers are one of the sources of transmitting the disease to many parts of the globe. Thus, it should be noted that travel, along with other precautions, to cities with the highest risk in the United States should be

limited to prevent the disease from spreading (Dobson & Carper, 1996). According to recent research, the virus mainly spreads between persons who are in close proximity to one another, as when they are conversing. When an infected person coughs, sneezes, speaks, sings, or breathes, the virus can spread from their mouth or nose in minute liquid particles. The virus can then be spread to another person through short-range aerosol transmission (also known as short-range airborne transmission) or by direct contact with infectious particles in the eyes, nose, or mouth (droplet transmission). Additionally, the virus can spread in congested, poorly ventilated interior areas where people frequently spend longer periods of time. This is due to the fact that aerosols can linger in the air or travel farther than a conversational distance (this is often called long-range aerosol or long-range airborne transmission).

Part-II

Information Analysis

Having measures in place in order to minimize outbreaks in the areas highly affected by the disease and also to move resources needed by the affected people is critical to limit the spread of the deadly disease (*Preventing Epidemics and Pandemics*, n.d.).

Benefits of Mapped Information in an Organ Transplantation Center Facility

To date, in the United States, the major concern in the healthcare system is how to effectively plan for the treatment and prevention of dangerous outbreaks. The motivation why the information should be analyzed, evaluated, and mapped is that other healthcare facilities can use this information for future planning. In an organ transplantation centre, medical care providers should note that there is a great risk of transmitting person-to-person infection because of inadequate primary defences, such as a break in skin integrity due to tissue damage in the patients. Furthermore, equipment-to-person infections in the cities are also a major reason for the high risk of an outbreak at a transplantation centre. Healthcare facilities in all those regions affected heavily by the disease, such as Miami, Phoenix, Houston, and Jacksonville, can use the gathered information to arrange for the resources needed in an organ transplantation facility to prevent further disease outbreaks. The major role of the facility in this regard is to determine the information gathered in the reports in the manner in which the information needs to be tracked. This gathered information would help the transplantation facility, not just for the sake of getting many patients to be treated in the care environment. However, the data can also be used as evidence in making effective decisions about the care of every individual patient (Allam & Jones, 2020). The information in the report would also ensure that the knowledge of disease outbreaks is gathered for the diagnosis and easy treatment, which will be of immense benefit to the populations of the impacted cities.

Conflicts of Interest

The major outbreaks of the illness have been found to be significantly prevalent in famous vacation spots such as Miami and Houston, as tourists spread the disease in a faster manner than any other agent through the introduction of microorganisms into a new geographic area (Wilson, n.d.). It is implied that these locations serve as a destination for Americans who desire to travel abroad, as well as an entry point for tourists and visitors from other nations, possibly serving as a conduit for the illness. Thus, this conflict should be mitigated by limiting travel to the regions highly affected by the disease, or the travel should be only out of necessity so travellers cannot carry person-to-person transmitted infections by the time there is disease spread risk (Gubler et al., 2001).

In order to protect the patients from viral diseases, the healthcare providers of the centre should be provided with relevant knowledge and transplantation-specific guidelines for transplanting organs. The team of care providers should evaluate the potential risks and benefits of organ transplants. For the transplant, the centre should take important precautionary measures for travellers or visitors from areas highly affected by the disease, so doctors need to balance the risks and benefits of the transplantation procedure for both the recipient and the donor. Careful screening of patients, appropriate service provision, restructuring outpatient care, donor selection, and performing transplantations with resources available at the centre should be redesigned in the post-disease area. The care providers' team also needs to implement changes to the transplantation centre's practices, ranging from how the transplantation facility retrieves an organ to post-operative measures with the recipient.

After effective prevention of the disease in the areas at high risk of outbreaks, there will be an urgency to identify and implement the safest practices as areas re-open (Gubler et al., 2001). This will be the most challenging task in the areas at higher risk of the disease. Therefore, to resume transplantation activities, the centre should consider performing transplantation under strict disease precautions. Moreover, the centre should rely upon the decision to conduct careful risk assessments post-disease regarding the availability of resources for transplanting organs.

Conclusion

The organization evaluated the dataset, created a symbols map to indicate important information on the geography of the United States, and identified the cities and states with the highest, as well as lowest, risks of disease outbreaks. Data has been collected on 50 cities that had an outbreak of a dangerous disease as the organization wanted to ensure that the necessary precautions were being taken to improve the health outcomes from this deadly disease. The location varied, and many cities and states had more outbreak incidents than others, especially the Midwestern states of the United States. The dataset revealed that the cities further from the equator, such as Omaha, Virginia, Colorado, and Pennsylvania, were the regions with the lowest exposure rate. However, Jacksonville, Miami, Austin, Houston, Phoenix, and all the cities from the southern locations were the regions hardly

hit by the viral disease.

Moreover, the map illustrated that Midwestern cities of the United States had low exposure rates because of limited travel and also due to less encroachment of virus-affected people in the transplantation centre. Therefore, it is suggested that travel to such cities where outbreak rates are high should be limited to prevent disease spread, and organ transplantation centres should take precautionary measures such as sterilization of the instrument to avoid equipment-to-person disease spread in the transplantation facility. For the transplant, the centre should have personal protective equipment to avoid equipment-to-person-related infection problems. Personal protective measures such as distancing should also be adopted for the proper management of virus outbreaks in an organ transplantation centre. An adequate supply of personal protective pieces of equipment, personnel screening measures, disease control policies, distancing measures where cities are at higher risk of outbreaks due to travel, and appropriate administrative modifications should be considered to control disease spread.

References

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