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<div align="center">Creative Title</div>

Big data has revolutionized the way we interpret information, with the substantial

development of technology. Gary King, the Albert J. Weatherhead III University Professor and

Director for the Institute for Quantitative Social Science at Harvard University, speaks about the

growth of Big Data, reminding us, "Big data is not about the data." Even though the data we

collect is important and has become easier to gather, the importance and value is placed heavily

on the analytics. Through data analytics, we are capable of taking accurate and effective

measures to better improve society through several aspects. Although seemingly invasive to our

privacy, the development of big data has served as a big advantage for the maintenance and

spread of our health. An example of this is the impact big data has on Epidemiology.

Big data grants epidemiologists insight on the distribution of current diseases and allows

them to take measures with hopes of preventing future outbreaks, positively advancing our

health. From the drastic destruction the Bubonic Plague posed on Europe to the first official

eradication of a disease, Smallpox, epidemics have been arising throughout several aspects of the

world. With Big Data, however, we are capable of taking necessary precautions. Adam Frank,

journalist and author of article "The Big Idea Behind Big Data", argues how big data and

network science has positively affected the health of individuals, allowing researchers to

accurately predict the outbreak of different diseases (Frank). He states, "Such month-by-month flu predictions, impossible in the past, can allow the CDC to better time the production and distribution of vaccines" (Frank). Essentially, Frank is arguing these new technological advances permit epidemiologists to accurately conclude facts about the flu and thus allow the Center for Disease Control to produce and distribute vaccines to the public before the disease begins to impact large portions of the population. These methods were not available in the past and, as a result, individuals were much more reluctant to contracting diseases as there was no legitimate information on where a potential disease hotspot could be. Yet due to the constant collection of data from several diverse areas, scientists are able to draw accurate conclusions on important issues such as disease outbreaks. However, big data is not seen by all as a true benefit for epidemiological studies.

Although it may be argued that the incorporation of big data into medicine yields an unclear effect, it is still seen as others as a positive attribute. In their article "Epidemiology in the Era of Big Data", Stephen J Mooney et al. argue that there are several implications on Big Data and how it affects population health. Contrary to what some may believe, they contend that "as more sources of diverse data become publicly available, the ability to combine and refine these data to yield valid answers to epidemiological questions will be invaluable" (Mooney et al.). Fundamentally, what is being argued is that as more data becomes available for researchers to use in developing predictions, the ability to actually use this data to answer any questions we may have about epidemics will have little to no value. This, however, has been proven false by several studies done with regards to the flu. Alessandro Vespignani is an Italian-American physicist best known for his work on complex networks. His study on the effects of networks on

diseases concluded that in an area with a large network size, the transmission or infectivity probability for the disease propagated, in order to sustain an outbreak, would be near zero. This proves that with a more complex network, consisting of an abundance of data, there is little chance a disease will persist to affect a particular population. Through these networks, epidemiologists are also capable of distributing proper vaccinations to individuals to further prevent the growth of any disease. In addition to allowing us to predict these outbreaks, big data is also useful for responding to implications posed by handling the health of the elderly.

Big data allows physicians and other medical personnel to examine and customize proper care for elderly patients, thus positively affecting their health as well. Senior citizens have setbacks that may inhibit them from receiving the proper healthcare they require. Yet, through the incorporation of big data analytics, the medical field has slowly begun to address this issue. Mike Montgomery is a journalist who emphasizes the important benefit big data has posed on the health of our elderly citizens; he summarizes, "The telehealth system uses smartphones, Fitbits, Bluetooth, and sensors to collect information about things like blood pressure, physical activity, glucose levels, medication intake and weight" (Montgomery). With this information, doctors, as well as anyone close to the patients, are able to provide them with proper "proactive care". In addition, this can be done despite any geographical barriers (Montgomery). Because providing the elderly with the best healthcare has always been as issue as there have been several constraints posed, this new method has been on the uprising for some time now. These technological devices collect all of our information and deliver them to the professionals who, in return, develop different treatments that are used to better our health, particularly that of the senior citizens.

However, a constant controversial topic brought up is the privacy aspect in terms of big data analytics. Where is the fine line in which these researchers are invading our privacy? Well, it's safe to say there really is none, at least in terms of medicine. Our data has always been recorded in terms of our health, whether it may be through our visits to the doctor's office or with each time we visit a pharmacy, picking up prescribed medication. The data used in these analytics is not assessed with malicious intents; these epidemiologists, researchers, and physicians are evaluating the information we give them willingly with aspirations of improving the health of both their individual patients as well as the more broad, general population.

The new uprising with big data analytics is affecting several aspects of our lives; with it's development, big data is positively advancing our healthcare system, focusing on the maintenance and spread. This can be observed through Epidemiology and how it has helped researchers predict disease outbreaks and thus take proper measures to help control and prevent major epidemics from sweeping nations. In addition, big data has also proven useful for increasing the health of our senior citizens. As there are several drawbacks which may prevent the elderly from receiving the appropriate attention they deserve towards their health, big data, mainly the analysis of it, has helped diminish any setbacks and ensure they are receiving any attention, medication, and treatment they deserve.

Works Cited

Frank, Adam. "The Big Idea Behind Big Data." *National Public Radio*. Cosmos and Culture.

    Nov. 17, 2017. Accessed Nov. 2, 2018.

Montgomery, Mike. "The Future of Health Care Is In Data Analytics." *Forbes.* Forbes

Magazine.

    Oct. 26, 2016. Accessed Nov. 12, 2018.

Mooney, Stephen J, et al. "Commentary: Epidemiology in the Era of Big Data" Epidemiology

    (Cambridge, Mass.) vol. 26,3 (2015): 390-4. Medline. Accessed 7 Nov. 2018.