



How can Pareto's Principle 80/20 Alleviate the Impact of COVID-19?

Feras Khalil Ibrahim Shakhtrah*; **Abdeleah Kamel Abureden**

Department of Aviation Sciences, Royal Air Force University College of Aviation Sciences, Hashemite Kingdom of Jordan.

***Corresponding Author(s): Feras Khalil Ibrahim Shakhtrah**

Department of Aviation Sciences, Royal Air Force University College of Aviation Sciences, Hashemite Kingdom of Jordan.

Tel: +962799785641; Email: fffferas@gmail.com

Abstract

We always have the problem and the data which belong to it, and if we do not put this data in a simple, effective and proven template for analysis and to come up with appropriate recommendations to solve this problem, the situation may worsen in a very painful way, and our present problem is the Covid-19 pandemic with its many data and statistics, and we suggest to use the famous Pareto principle (One of the tools of quality and management) to combat this controversial epidemic According to an ethical law frame and safety culture and here present the integration among health, safety, quality environment.

Received: Nov 13, 2020

Accepted: Dec 10, 2020

Published Online: Dec 15, 2020

Journal: Annals of Epidemiology and Public health

Publisher: MedDocs Publishers LLC

Online edition: <http://meddocsonline.org/>

Copyright: © Feras Khalil IS (2020). *This Article is distributed under the terms of Creative Commons Attribution 4.0 International License*

Introduction

Since Covid-19 declared war on mankind at the end of 2019, the health, economic, political, social, educational, military and security sectors have played an important role in the work of plans to combat this corona virus, and complete or partial closures have always been the basis of these plans, and then the reopening of businesses and public places in stages and this has brutal consequences for health, the social fabric, the economy and education all over the globe, and this epidemic has threatened the lives of millions of people and millions of jobs, as the world is floundering due to this strange-behaving disease, but these plans are not effective enough and the evidence is the increasing number of cases and deaths due to Covid-19, The whole world is in need of a comprehensive plan without conflicting interests in the economic, health, social and educational sectors.

The health staff is concerned about the continuous spread of the disease, and therefore insists on the continuation of restrictive steps, and the exhausted economic sector constantly calls for the revitalization of the economy, as well as we do not forget the warnings of the social and psychological staff about the disadvantages of the application of social restrictions, and on the other hand the clash of opinions of the educational staff to open or close schools and the consequences on School students who make up approximately 20% of the world's population, and the availability and effectiveness of distance education. Consequently, all of these cadres are right, and each has its justified practical and logical reasons, but the worrying thing is that the focus is in a certain sector that may harm other sectors, for example, the restoration of economic activity and the total opening will lead to a greater spread of infection, on the



Cite this article: Feras Khalil IS, Kamel Abureden A. How can Pareto's Principle 80/20 Alleviate the Impact of COVID-19?. *A Epidemiol Public Health*. 2020; 3(1): 1043.

other hand the closure and increased restrictions may lead to economic, psychological, social, educational and educational bad consequences. And the goal for everyone is to protect the human soul an effective and comprehensive strategic solution must be adopted by economy, health, safety and education sectors which eliminate or significantly reduce infection, outbreak and deaths due to Covid-19 [1].

Global statistics indicate; That there is an unprecedented development in the Covid-19 pandemic and its negative impact on all areas of life; We lack comprehensive integrated solutions to combat this global epidemic, and the author believes that comprehensive solutions to combat this disease will be done in achieving the following:

- Make the most of what we have learned so far about Covid-19.
- Using the famous Pareto 20/80 principle, which is one of the well-known effective quality and management tools, along with health, safety, and education and the different other sectors, to combat the Corona virus, to reduce the deaths resulting from it, and to reduce its negative impact in life.

Therefore, the study problem can be crystallized in the following main question: "How can we use the Pareto Principle in limiting Covid-19 and its effects on humanity"?

Study objective: The study aims to suggest an effective, practical, simple and comprehensive model to combat Covid-19 and its bad consequences, using the Pareto 20/80 principle.

Commentary on previous studies: It is evident from previous studies the importance of paying attention to COVID-19 due to its negative impact on all walks of life, and it is necessary to use the Pareto Principle 20-80, one of the famous quality tools to alleviate the burden of this strange-behaving viral disease [2-4].

The current study has the advantage that it will provide a good presentation on COVID-19 and the use of the Pareto Principle 80-20 to combat it and enhance the integration among health, safety, management and quality; Which works to benefit from students, researchers and various cadres to deter the Corona virus, and the research study will also contribute to providing a set of future studies that can cover the deficit in this aspect in the world.

Study concepts and terminology: The study has concepts and terminology that have been simplified to a very understandable extent for all readers.

Vital Few: The influencing few or the causes that belong to most of the problems that must be addressed, studied and treated, which represents 20% in the Pareto principle.

Trivial Many: A low-impact abundance, which can be called passive abundance and represents 80% in the Pareto principle, and focusing on vital few, is more feasible and beneficial than focusing on Trivial Many.

Absolute Risk: The risk of developing a disease over a period of time. The same absolute risk can be expressed in different ways. For example, say you have a risk of developing a certain disease in your life in 10 people. This can also be said to be a 10% risk, or a 0.1% risk-depending on whether you use percentages or decimals.

A quick overview of Pareto's 80/20 principle [5,6]

What is a Pareto chart?

It is a simple analysis tool with two-axis graphical representation which aims to identify important problems that have a great impact and it consists of columns (bars) and a line graph that creates ideas and organizes them, it becomes useless if the dilemmas and problems that may be very important and may seem simple at the beginning are excluded but they become the most important over time, the individual information and values are in the form of columns arranged in descending order and their cumulative total is represented by the end of the line, then the order of dilemmas and problems is from most occurring (most important and most frequent) to the least and in descending order, Pareto's 80/20 principle is considered a tool to improve quality and this is crystallized by the large majority of problems 80% are caused by a few main causes and must be identified and work on the vital few (affecting and important to the process) 20% of all causes, and thus we get rid of the 80% of the problems and dilemmas. One of the international telecommunications companies used Pareto analysis when they put all the problems of the company that lead to the loss in the Pareto scheme, where it appeared that the biggest reason for the communication interruption is wire damage and it also showed that 40% of the wire damage (which ranks first in problems) is due to construction works, on this golden information, the company developed a plan to prevent and reduce wire cuts. Actually, these wire cuts were reduced to 25% per year, and this was reflected in financial savings of seven million US dollars.

What are the benefits of the Pareto chart/principle of 80-20?

This principle has many benefits and advantages as it identifies priorities, sources and types of problems and dilemmas, is usually used to analyze the data resulting from the checklists, and considered an effective tool to diagnose the vital and influential few (Vital Few) and the low impact (Trivial Many), Pareto principle and its scheme facilitate the cooperation among all stakeholders, so just looking at the chart clarifies the most important problem and its impact compared to other problems and intensifies efforts to solve this problem.

What are the steps of the Pareto Chart/Principle 80-20 and where does it manifest?

- List all possible causes of problems and difficulties.
- Monitor operations according to a specified time in order to determine the occurrence of each cause.
- We rank the causes from important to least important.
- Draw a bar (rectangle) over each cause, and its height represents the cost or the number of occurrences.
- Divide the causes of the problem into specific groups.
- Calculate the frequency of each cause and distribute them in order from top to bottom.
- Determine the middle of each rectangle/bar (column) of the causes and connect these halves with their percentage accumulation.
- Draw the x-axis (horizontal X), which represents the causes of the problem, and the Y-axis (vertical Y).

Consequently, we have used the Pareto Chart/Principle 80-20 in solving problems and in improving processes. We focused on critical and influencing cases by arranging them according to their importance and frequency, then we arranged according to priority the influencing problems and this is with the intention to focus on them in the improvement program, and in the end, we analyzed the problems and their causes by collecting data on the process and its arrangement.

The Pareto Principle 80/20 has appeared since the nineteenth century when the Italian sociologist scientist Vilfredo Federico Damaso Pareto (1848-1923) observed that 20% of Italians possess 80% of the country's wealth. Expanding on the law of vital few, Pareto saw that many different events and social structures follow the same principle. Now known as the 80/20 rule or the Pareto principle, the theory has proven to be incredibly accurate and insightful in nearly all aspects of human existence, helping countries, organizations and institutions to set strategies for success in all walks of life. The quality and management scientists classified the Pareto Principle as an effective quality tool.

One of the uses of this principle is the old saying in the well-known business that 20% of customers consume 80% of sales, and we may use 20% of the clothes 80% of the times we go out, and thus this principle reinforces the idea that many outputs depend on few data and many results on few of the reasons. Pareto acknowledged that the ratio of vital few to non-influential abundance may be 15% to 85% or 30% to 70%, for example, and considered this change in ratios proves the correctness, simplicity and flexibility of the principle and thus it is an effective tool for innovation, problem solving, decision-making, savings, improvement, quality and combating dilemmas Even epidemics, but verified information and data must be used [7-9].

About COVID-19 disease [10]: (quoted from the World Health Organization website)

Corona Viruses (CoV) are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV). A Novel Corona Virus (nCoV) is a new strain that has not been previously identified in humans.

Corona viruses are zoonotic, meaning they are transmitted between animals and people. Detailed investigations found that SARS-CoV was transmitted from civet cats to humans and MERS-CoV from dromedary camels to humans. Several known corona viruses are circulating in animals that have not yet infected humans.

Common signs of infection include respiratory symptoms, fever and cough, shortness of breath and breathing difficulties. In more severe cases, infection can cause pneumonia, severe acute respiratory syndrome, kidney failure and even death.

Standard recommendations to prevent infection spread include regular hand washing, covering mouth and nose when coughing and sneezing, thoroughly cooking meat and eggs. Avoid close contact with anyone showing symptoms of respiratory illness such as coughing and sneezing.

Important facts and statistics

Following are facts and statistics from famous and reputable research centers, organizations and websites:

- In the United States of America, 80% of the total deaths due to COVID-19 are concentrated at the age of 65 and over, as the age increases the rate is increased [11].
- People under the age of 65 have a (lower risk of COVID-19) about 16-100 times compared to the elderly [12].
- The absolute risk of COVID-19 in the population is low for people under the age of 65 [13].
- COVID-19 deaths are low among people under the age of 65 but without underlying cases [14].
- Do not panic, the percentage of cases recovered from COVID-19 disease reached 96%, while the death cases due to this disease about 4% [15].
- School students make up nearly 20% of the world's population [16,17].
- There is no need to panic, as the number of Corona virus infections to the world population accounted for 0.514%, and the number of deaths due to the Corona virus to the number of deaths this year in the world accounted for 2,371% [16,17].

Use Pareto 80/20 rule to save lives from the Corona virus:

By dealing with all groups of society in the same way and with the same measure, the preventive policies will be excessively restrictive for people, costly, and very difficult to provide adequate protection for everyone. Implementing a single framework of the same size for everyone will not only lead to failure to control the virus, but will also cause personal and economic pain in a large way for everyone, and what is the most need for the use of the Pareto Principle 80/20 it is the division of society into two categories, namely vital few and ineffective abundance.

The application of the Pareto principle in combating the Corona virus in the world will provide a set of wonderful, effective, simple and implementable solutions, which increases the number of lives saved, almost 80% of deaths due to the Corona virus occurred among approximately 20% of the population (vital Few) who are 65 years of age and more in addition to Corona virus patients who suffer from chronic diseases (especially pulmonary diseases) regardless of age and their cases require hospitalization in particular, so this vital minority is greatly affected by the Corona virus, and based on the aforementioned it is more appropriate to apply the restrictive procedures and social distancing on the vital few who are most vulnerable to death but they should be treated with humanity, and opening the doors of companies, institutions and governmental and non-governmental bodies to employees and customers who make up 80% of people (relatively safe) and who are the least likely to die, as well as the humanitarian and medical aspects of everyone should not be neglected.

By applying the Pareto 80/20 rule to combat the Corona pandemic, we can reshape the policies that govern health, education, economy and society in ways that protect us effectively from the virus and by focusing on the following:

Helping the exhausted health Sector

All global and local statistics indicate that the death rates caused by COVID-19 vary greatly according to age groups; the death rate among children is very low due to this disease, while

the chances of death among the elderly are relatively high. Therefore, reducing deaths requires dividing society into two categories:

- **The Vital Few:** Those who are most at risk of death due to COVID-19 and make up approximately 20% of society. They are the elderly and people who suffer from chronic diseases, especially those suffer from the respiratory system, and they must avoid contact with infected people at whatever cost.

- **The Trivial Many:** Those are least at risk of dying from COVID-19 who make up 80% of society (the rest of the people).

To realize the need for such a policy, let us look at the deaths statistics in hospitals due to COVID-19, we will find that they are very high for the elderly group, as well as for those suffering from chronic diseases, especially pulmonary, regardless of age, and therefore this group, which represents the 20% (vital Few) must be separated wherever they are, whether in hospitals or in their homes but with solutions help the elderly and people with chronic diseases to avoid the psychological, social and health consequences of severe isolation, and frequently those who interact with them from medical staff and families must be examined and strictly limit the visit.

Strengthening the economy

The truth is that this disease will not disappear until an effective vaccine is available, which will be after the beginning of 2021 and until that moment the economic collapse or placing people at risk (vital Few) cannot be tolerated.

In order to help the economy, it is time to open restaurants, stores, services, and schools to the 80 percent (Trivial Many), but the following measures are required which are much less restrictive than the current procedures, but are generally better:

- We must take care of the health and safety of workers and clients.
- All persons must wear facemasks.
- Adhere to the rule of physical spacing (social distance) of three feet or more.
- Wash hands frequently with soap and water.
- If there is any sign of COVID-19 symptoms, an examination must be done which detects virus infection.
- Alerting and isolating people who interacted with infected people quickly and safely, through available assets, technology and applications [18].

Attention to education, but with controls

The age group of school students bears the disease if they become ill, and this large population sector must be monitored and controlled from inside schools not from outside in order to prevent the spread of disease, so conditional opening schools and strict controls is necessary, and moreover, opening schools reduces the negative socio-psychological, educational, and economic impact of closure [19,20].

The Trivial Many are not immune to disease

It must be remembered that 80 percent (Trivial Many) are not immune to disease and can transmit the infection even if it is without symptoms, and therefore some situations, behav-

iors and places are still very dangerous for anyone, regardless of age or health status. Large festivals, face conferences and major sporting event should be banned.

The 80/20 approach does not guarantee 100% protection, 100% economic revitalization or 100% return to normal. But it gives us the best chance to achieve maximum success in all areas of health, economic, educational and social, and of course the continuation of work from home policies for those who wish to do so provides relatively greater security as well as tele-medicine is an effective alternative but must remain in earnest.

Use the 80/20 rule to reduce the chances of community infection and spread

The application of the Pareto principle on responding to the Corona virus in the world will provide a set of safer and more effective solutions, which reduces the chances of infection and community outbreaks but with correct, studied and serious controls are used by focusing on 20% of the population who are similar in conditions, there age groups are close and can bear the disease - As global statistics indicate - it leads to limit the societal outbreak for 80% of the population, they are school students who represent the Vital Few of the population who have almost similar conditions and can be controlled and monitored by school staff and this disease is relatively non-fatal for them taking into account social distancing, therefore returning to schools and focusing on the student sector will lead to alleviating the burden of this societal outbreak, but on condition that sick students and those suffering from chronic diseases especially the respiratory system should be excluded.

It may come to mind that returning students to schools is a big risk adventure in the lives of our children, and some studies may indicate that the second wave of the Corona pandemic coincided with the return of students to schools and the researcher believes that the statistics confirmed that this disease is not fatal to students because of their young ages and even educational staff do not fall into the 65 category, the researcher believes that the coincidence of the return of schools with the second wave of the disease may be the largest evidence that the category of school students is a Vital Few and must be focused on and monitored through the educational staff in schools in order to limit the outbreak with the help of the health, social, psychological and community sectors, and by following a strict, simple and applicable health protocol, in addition, the negative health, economic, psychological, social and educational effects of COVID-19 will diminish, and we may need another study to examine this topic [21].

Findings and recommendations

After we have finished studying the topic, "How can Pareto's 80/20 principle alleviate the impact of COVID-19?" Through my research, I reached some results and recommendations, perhaps the most important of them the following:

- The magic formula for curbing COVID-19 is the existence of a clear, comprehensive, joint and integrated strategy between all sectors and by using the quality tool the famous Pareto 80/20 principle that is properly communicated to everyone. This wonderful recipe will allow these individuals to make an informed decision aware of its consequences.
- Combating Corona deaths by dividing society into two categories, namely the vital few which must be focused

on for ages over 65 years and patients who suffer chest and chronic diseases, and the other group is for ages under 65, without major restrictions, while maintaining social distancing, wearing a mask, and opening the economy based on this.

- The return of school students (the vital few) who make up 20% of the community is guaranteed to control the societal outbreak of COVID-19, but in accordance with serious controls.
- The use of technology is very important to combat Corona disease.
- Not to panic is very necessary.

Future studies

- The impact of COVID-19 on education.
- What has mankind benefited from COVID-19 in the field of safety?
- What has humanity benefited from COVID-19 in quality?
- The environmental impact of chemicals consumed during the Corona virus pandemic.

References

1. Worldometer, accessible at: <https://www.worldometers.info/ar/>
2. Muhammad Adnan Shereen, Suliman Khan, Abeer Kazmi, Nadia Bashir, Rabeea Siddique. COVID-19 infection: Origin, transmission and characteristics of human coronaviruses, *Journal of Advanced Research*. 2020.
3. Davit Gondauri, Ekaterine Mikautadze, Mikheil Batiashvili. Research on COVID-19 Virus Spreading Statistics based on the Examples of the Cases from Different Countries, *Electronic Journal of General Medicine*. 2020.
4. Laura Cooper, Su Yun Kang, Donal Bisanozo, Kilama Maxwell, Isabel Rodrigues-Barraquer, et al. Pareto rules for malaria super-spreaders and super-spreading, *Nature Communications Journal*. 2019.
5. Michael Brassard, Diane Ritter. *The Memory Jogger™ II A Pocket Guide of Tools for Continuous Improvement & Effective Planning*, GOAL/QPC, USA. 1994.
6. Robert Pearl. How the 80/20 Rule Can Save Your Life During The Coronavirus Reopening. *Forbes*. 2020.
7. Barry C. Arnold, *Pareto Distributions*, CRC Press Taylor & Francis Group. 2015.
8. Tedros Adhanom, COVID-19: fighting panic with information, *The Lancet*. 2020.
9. Debora MacKenzie, *COVID-19: The Pandemic that Never Should Have Happened and How to Stop the Next One*, Hachette Books. 2020.
10. About COVID-19. 2020.
11. *Coronavirus Disease 2019 (COVID-19) Older Adults*, 2020, CDC Centers for Disease Control and Prevention. 2020.
12. John PA Ioannidis, CathrineAxfors, Despina G. Contopoulos-Ioannidis, Population-level COVID-19 mortality risk for non-elderly individuals overall and for non-elderly individuals without underlying diseases in pandemic epicenters, *Environmental Research*. 2020.
13. John PA Ioannidis, CathrineAxfors, Despina G. Contopoulos-Ioannidis cit.
14. John P.A.Ioannidis, CathrineAxfors, Despina. Contopoulos-Ioannidis. cit.
15. Worldometer. cit.
16. Worldometer. cit.
17. 1.5 billion children around globe affected by school closure. What countries are doing to keep kids learning during pandemic. *The Washington Post*. 2020.
18. A Realistic Expectation for a Covid-19 Vaccine Debut & Distribution. *The Health Nexus*. 2020.
19. Children are not COVID-19 super spreaders: time to go back to school. *BMJ Journal Achieves of diseases on Childhood*. 2020.
20. COVID-19 in children and the role of school settings in COVID-19 transmission. *European Centre for Disease Prevention and Contro*. 2020.
21. Safely Returning to In-Person Instruction. *Arizona Department of Health Services*. 2020.