



**Risk management: Evaluating the role of a
National Risk Avoidance Policy in limiting the
spread of Coronavirus
(Perspective from Saudi Arabia)**

By

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Abstract:

This research aims to present a "National Risk Management Policy" NRMP as a proposed scheme to help the country curb the spread of Covid-19. This scheme helps determine the classification for each country according to the severity and the evolutionary stage of the virus in that country. Also, analyze the risks of spreading the Corona virus in the Kingdom of Saudi Arabia by evaluating the role of a National Risk Avoidance Policy (NRAP) and a (NRMP) in limiting the spread and reduce the risk of the virus. Moreover, it assesses the Saudi state's performance regarding Covid-19 by analyzing the indicators of the virus and its evolution. Where the study found that the logistic growth model is the most appropriate to study confirmed cases. A prediction performed using this model found that the pandemic is supposed to fade "theoretically" during September 2020. According to proposed scheme and based on an analysis of Covid-19's indicators in Saudi Arabia until the date of July 23, 2020 a classification OC can be established for Saudi Arabia, which means that the evolutionary stage of the virus in Saudi Arabia is C and color O (Orang) reflect its severity which is decreasing.

Keywords: Covid-19's Country Classification, Covid-19's evolution scheme, National Risk Management, Risk Avoidance Policy, COVID-19 in Saudi Arabia.

1. Introduction:

On February 11, 2020, the World Health Organization named “COVID-19” on a fatal pneumonia disease, whose cause could not be identified, discovered in Wuhan, China during December 2019 (Kuniya T. 2020). Saudi Arabia Ministry Of Health (MOH) announced on March 2, 2020 the first case of COVID-19 in the country where a citizen returned from Iran via the Kingdom of Bahrain [moh.gov.sa, 2020]. World Health Organization (WHO) declares COVID-19 as a pandemic on March 11, 2020 [Cucinotta & Vanelli. 2020]. Therefore, countries around the world have been increased their measures trying to decrease the spread rate of the COVID-19. On March 23, 2020 curfew and social distancing were recommended by Saudi Center for Disease Prevention and Control (CDC) [spa.gov.sa, 2020].

Understanding the general way things are going of COVID-19 is extremely important to beginning and building on the appropriate measures to lessen the widespread disease spread. The fast (related to doing things to prevent trouble or injury) and (serving to stop something bad before it happens) measures and rules that were put into use by the Saudi authority has helped/decreased the death rate and critical cases of COVID-19.

1.1 Risk parameters of COVID19: Risk parameters of COVID19 can be expressed as follows [Almetwally et al. 2020]:

-“Virus transmission rate (R_0)”; The mean number of infected people as a result of contacting with one case. That is, the average number of people to which a single infected person will transmit the virus. Approximate estimations of R_0 are between 1.5 and 3.5. If R_0 tends to be less than 1, this means that virus will gradually disappear.

-“Fatality rate”; Death rate among people infected with coronavirus. Fatality rate may change if the virus can be mutating.

-“Incubation Period”; The extent to which the infection can be transmitted from an infected person without symptoms of corona virus infection. That is, how long “symptoms of Coronavirus” takes to appear. Estimated ranges start from 2 days up to 14, during which the virus is contagious although the patient not display any symptom.

1.2 Coronavirus Nature: Right now, nucleocapsid protein (N), Small Membrane protein (SM), spike protein (S) and membrane glycoprotein (M) are the known four main structural genes of corona viruses. Mutations in these proteins should be considered in measuring human to human transfer of COVID-19 [Zhao X, 2020]. Increase of virus pathogenicity and adaptation of to the new host affected by evolution of different accessory proteins. It is important that prevention and control strategies for future outbreaks of corona viruses takes into consideration its ability for host jumps and adaption [Su S, 2016]. Corona viruses evolutionary history indicate a high plasticity in recombination of their genome contents [Ji W, 2020].

1.3 Purpose of Study: The main purpose of our research is to propose a National Risk Management Policy (NRMP) to limit the spread of Covid-19 by setting a country classification in terms of severity and evolution of Covid-19. Managing risk of Corona-Virus spreading in Saudi Arabia by analyzing the role of implementing a National Risk Avoidance Policy (NRAP) as one of the risk management methods and a (NRMP) in limiting the spread of Corona virus in Saudi Arabia. Where the research deals with the mechanisms to limit the risk of Covid-19 infection at the Saudi national level. Furthermore, deduce positive and negative characteristics of applying Risk Management Policies in dealing with the Covid-19 pandemic.

1.4 Selected Related Researches: [Alboaneen et al, 2020] used a real-time data from March 2, 2020 to May 15, 2020 collected from Saudi Ministry of Health aimed to give a local prediction of the epidemic in

Saudi Arabia. Study used two models: Logistic Growth and the Susceptible-Infected-Recovered for real-time forecasting the confirmed cases of Covid-19 across Saudi Arabia. Study predicted that the epidemics of Covid-19 will have total cases of 69,000 to 79,000 cases, and the outbreak will be entering the final-phase by the end of June 2020. [Tang et al,2020] proposed a model based on clinical information of the disease and confirmed cases of individuals to estimate the risk of Coronavirus transmission. The reproduction number was estimated to be higher than 6.47. [Batista, 2020a, 2020b] used the Logistic Growth model and classic Susceptible-Infected-Recovered (SIR) dynamic model were used with data from World meters' website aims to predict the final infection numbers of Covid-19 in China. That study predicted that the final estimation of coronavirus epidemic will be approximately 83,700 cases. [Roosa et al, 2020] used three phenomenological models; Generalized Logistic Growth model, Richards model, and sub-epidemic wave model. That study concluded that by the end of February 24, 2020 the predicted cases would be from 37,415 to 38,028 in Hubei and 11,588 to 13,499 in China.

1.5 Importance of this Research: The importance of this paper is represented in the necessity to combine actuarial analysis and risk management through the quantitative analysis of Covid-19 indicators globally as well as locally in Saudi Arabia, and research on appropriate modeling methods to help build a future expectation of the presence of Covid-19 in Saudi Arabia. Regarding risk management, this study presents a proposed scheme through which it is possible to determine the classification of each country according to the severity of Covid-19 spread and the evolutionary stages of the virus in that country. This reflects the importance of starting with Covid-19's avoidance policy, as well as the importance of relying on risk management methods during the evolutionary stages of the virus in the Country.

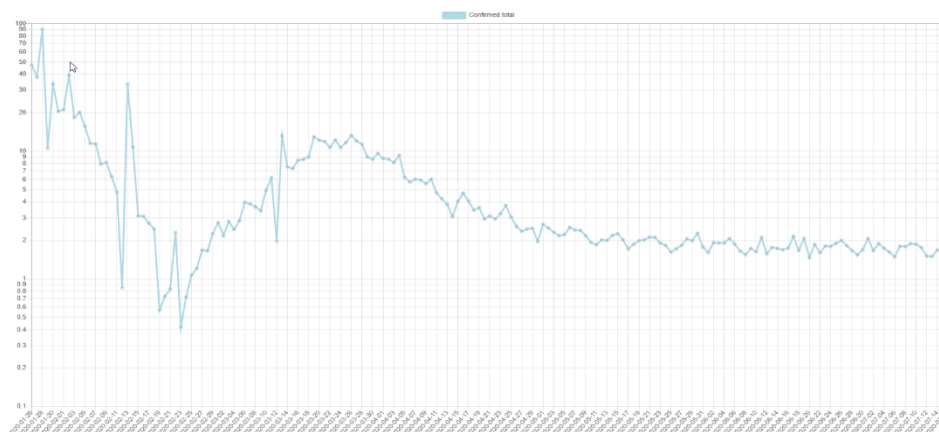
1.6 Research Structure: In Section#2 we will present Covid-19 in Saudi Arabia; Evaluation of the current situation and Actuarial aspects for future presence of the virus. Section #3 will introduce a proposed National Risk Management Policy (NRMP) to limit the spread of Covid-19 and setting a country calcification in terms of severity and evolution of Covid-19. Section #4 will discuss Covid-19 in Saudi Arabia; National Risk Analysis. Followed by conclusions in Section #5. Finally, discussions are provided in Section #6 and references in Section #7.

2 Covid-19 in Saudi Arabia; Evaluation of the current situation and future expectations

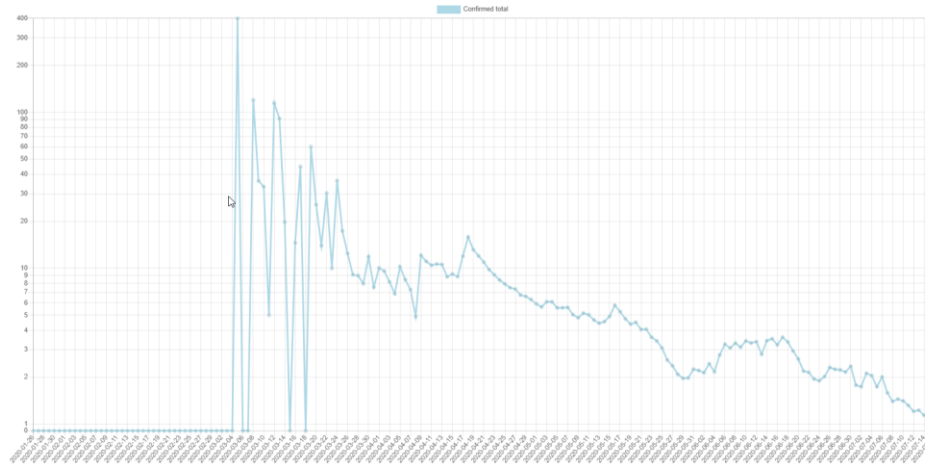
2.1 Current situation of Covid-19 in Saudi Arabia:

Fig.1: Daily Speed: The following graph shows the speed of growth (in %) over time depending on the number of confirmed cases. **Positive speed** means the number of cases grows daily. **Decreased speed** means that the disease spread is slowing down and then the line going down. **Below zero speed**, means that registered cases today fewer than yesterday.

Globally:



Saudi Arabia:



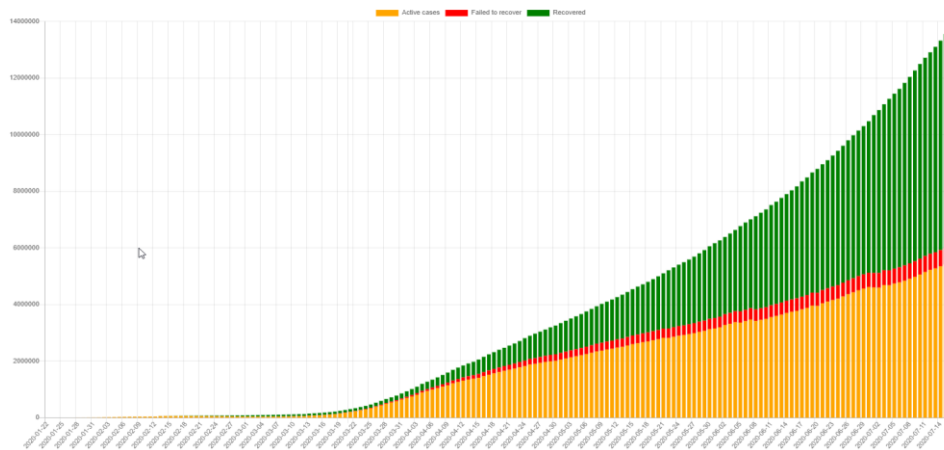
Source: <https://covid.observer/>

The daily speed curve of the spread of the Corona virus in Saudi Arabia reflects the following:

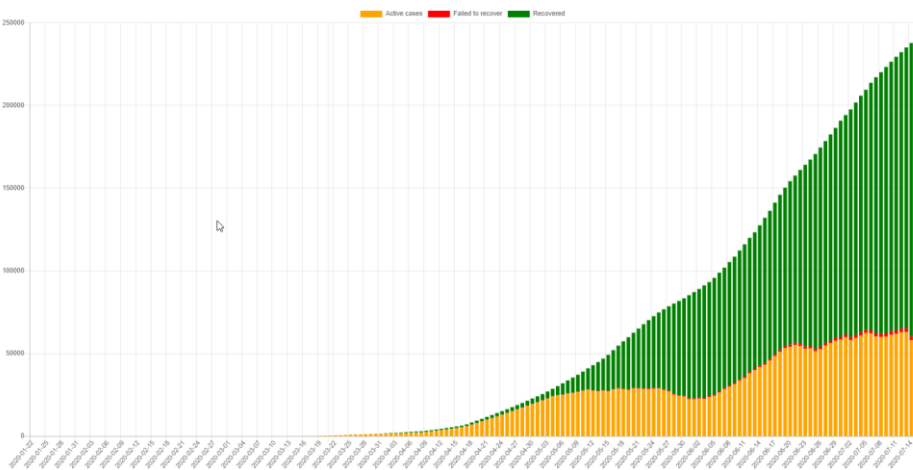
- The daily speed curve of Covid-19 spread has fluctuated during the beginning of the virus in Saudi Arabia until the beginning of April
- Graduated data of daily speed show that the daily speed curve of Covid-19 is generally increasing since the pandemic started and peaked on April 18
- From May 30, 2020 the rate increased again to reach a new peak on June 17, 2020
- From the date of June 17, 2020, the rate began to decline to date

Fig.2: Daily Flow: Each single bar reflects the total number of people confirmed to be infected by Covid-19. It includes three components: Recovered cases, Active cases and Fatal cases.

Globally:



Saudi Arabia:



Source: <https://covid.observer/>

The following notes may be taken into consideration:

- In general, it is clear that the average number of cases of recovery as a ratio to the number of active cases is higher in Saudi Arabia compared to the global rate.
- In contrast to the evolution in the curve globally, some details of the Saudi curve can be observed as reflecting the case of a single country, as the number of critical cases increased from the start of the pandemic until the beginning of May, during May, there was almost a stabilization in the numbers of active cases, starting from the last week of May and for a period of two weeks a significant decrease in numbers of active cases, then tend to increase after that.

Saudi Arabia and World; The main indicators: The following were the main raw numbers indicators of the spread of Covid-19 on July 16, 2020:

Table (1- a): Raw Numbers Indicators

Indicator	Confirmed Cases	Deaths	Recovered	Active Cases
Globally	13,805,025	589,863	7,711,236	5,503,926
Saudi Arabia	243,238	2,370	187,622	53,246

Table (1- b): Relative Indicators

Indicator	Globally	Saudi Arabia
Daily growth, %	1.9 %	1.1 %
Recovery rate, %	55.9 %	77.1 %
Mortality rate, %	4.3 %	1.0 %
Affected population, %	0.18 %	0.71 %
Confirmed per 1000	1.77	7.10
Died per 1000	0.076	0.069

Source: Researcher with dependent on <https://covid.observer/>

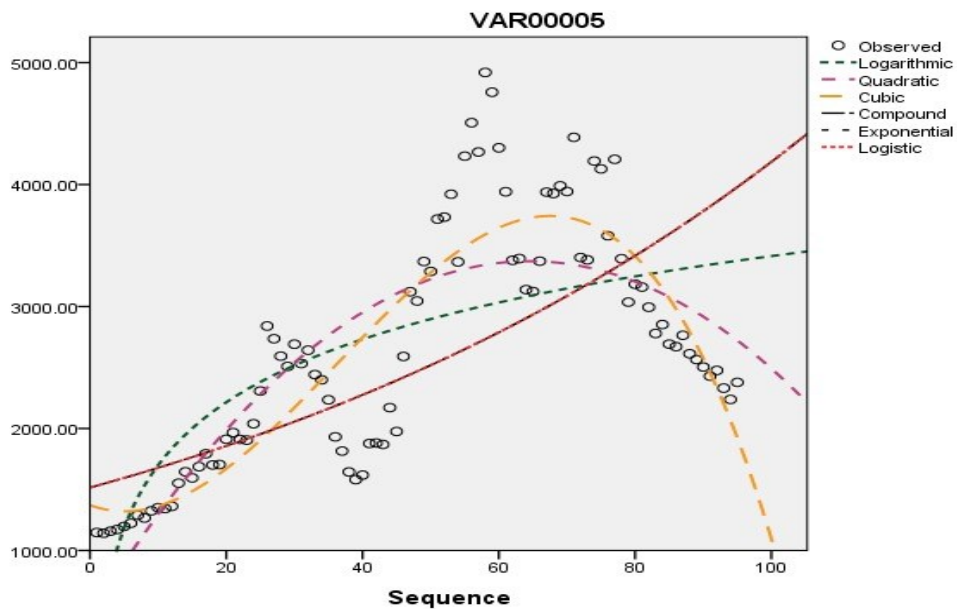
Data in Table (1- a) express numerical values and are not for comparison, but only to reflect the scale of the pandemic at the global level and at the Saudi local level.

Data in Table (1- b) express relative coefficients and aim to compare pandemic indicators locally with the same globally. This comparison is not for all the length of the pandemic, but is just a snapshot on a specific day. Quick notes are represented in locally rise of; Recovery Rate, Affected Population and Confirmed per 1000.

2.2 Covid-19 in Saudi Arabia: Actuarial Aspects; “Confirmed Cases” Model Fitting

Why logistic analysis?

Fig.3 illustrate daily number of confirmed cases (Observed) starting from April 20,2020 (0 on the graph) up to July 23, 2020. By looking to that Fig. it is appear that the most appropriate fitting that reflect the actual data of confirmed coronavirus cases is the logistic curve.



Logistic model is one of the most important tools that uses in the analysis and modeling nature growth in many cases like population growth or epidemic outbreak. Logistic model for representing growth is given as:

$$\frac{dp}{dt} = r p(t) \left(1 - \frac{p(t)}{L}\right) \quad (1)$$

And its regression form is:
$$p(t) = \frac{L p_0 e^{rt}}{L + p_0 (e^{rt} - 1)} \quad (2)$$

Where; $p(t)$: cumulative confirmed cases, L : carrying capacity, p_0 : initial value at time 0, t : time, r : growth rate.

We will present that this model may appropriate to analysis the growth (spread) of covid-19 in Saudi Arabia. We then look how this model can be developed to include practical determinants of Covid-19 growth.

Substituting (2) in (1) gives the logistic growth differential equation:

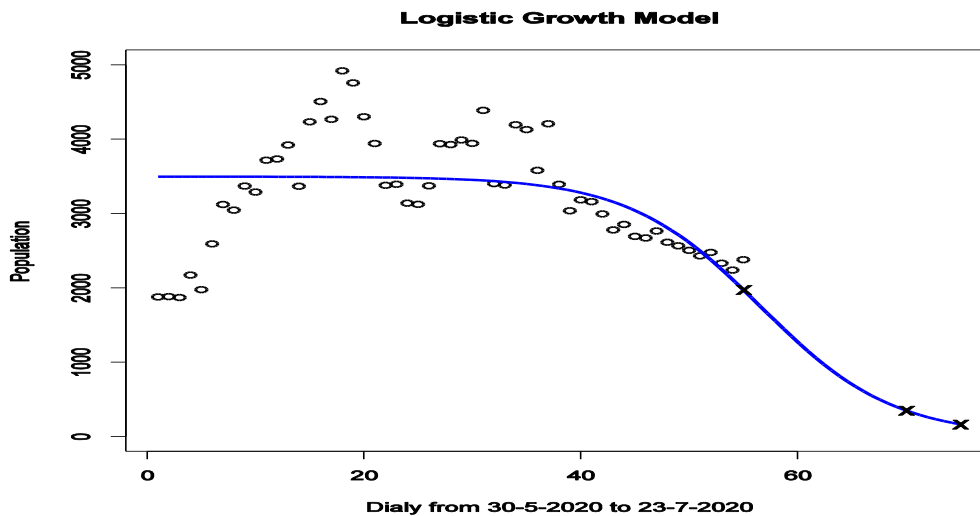
$$\frac{dp}{dt} = \frac{r L p_0 e^{rt} (L-p_0)}{(L+p_0 e^{rt}-p_0)^2} \quad (3)$$

Where the parameters r , L and p_0 can be estimated to predict the number of new Coronavirus infected cases ($\frac{dp}{dt}$).

Given ($A = \frac{L-p_0}{p_0}$), and according to [Batista, M. (2020a)] the following equations were estimated: $Peak\ Time = \frac{\ln A}{r}$ and $End\ Time = 2 \left(\frac{\ln A}{r} \right)$

2.3 Covid-19 in Saudi Arabia: Actuarial Aspects; “Confirmed Cases” Forecasting:

Fig.4: Daily number of Covid-19 cases (Observed and Expected) starting from May 30, 2020 (0 on the graph).



By analyzing the evolution of spreading the Covid-19 in Saudi Arabia and its indicators, this study has found that the logistic growth model is the most appropriate to analyze confirmed infected cases and the prediction has been performed using this model found that the pandemic is supposed to fade "theoretically" during September 2020.

3- A Proposed National Risk Management Policy to limit the spread of Covid-19 ("Six-stage scheme" for controlling Covid-19 at the national level):

A National Risk Management Policy (NRMP) that proposed to limit the spread of Covid-19 leads to an international classification according to the severity and the evolutionary stage of the Covid-19 pandemic in each country. Where this scheme helps determine a classification for each country in terms of the severity and the evolutionary stage of the virus in that country, it is proposed to assign **four Colors** to reflect the virus severity and **six Stages** to reflect the virus evolution.

3.1 Covid-19 evolution stages for a country:

The proposed scheme suggests six stages that each country is supposed to rank according to the evolutionary of Covid-19 virus in that country. A description of each for these six evolutionary stages are as follow:

Initial Stage (Risk Avoidance Stage) (Green):

At this stage, the country tends to isolate itself from the outside world in an attempt to prevent Covid-19 from reaching it. The state here is distinguished by a green color, which means that it is completely free of the virus, while the outside world is distinguished by a red color, which does not necessarily mean that the entire world is infected with the virus, but the color red here expresses the possibility of unsafe movements between the country and the outside world. In short, the outside world should be assumed unsafe regarding Covid-19. The state may succeed entirely in implementing the risk avoidance policy by preventing the arrival of Covid-19 completely to the state, and the state may partially succeed in implementing this policy by relatively delaying the entry of the virus to the state in order to provide the capabilities of dealing with and managing it.

Stage A: (Comprehensive Ban Stage) (Red):

With the first entry of the virus into the country, the state is supposed to strive with all its organs in an attempt to track and monitor infected cases and then isolate them. In order for the state to perform this role, it needs to impose its full control on society and then take many decisions that may extend to restricting a number of personal freedoms such as preventing movement or preventing gatherings and contact with others, whether at the level of the affected geographical locations or at a national level.

The state may be able to monitor all cases and deal with them successfully, and then the country will be reclassified within the first stage. This is rare with new epidemics.

Or, the number of cases infected with the virus may increase, in which case the state tries to remain in this stage as long as possible as long as the state's economy is steadfast on the one hand, and as long as members of society accept coexistence under the comprehensive prohibition and restricting freedoms on the other hand. After that, the country classification moves to the third stage.

Stage B: (Partial Blocking Phase/Virus Spreading Stage) (Red):

Entering the country classification for this stage may be inevitable due to the geographical spread of the virus within the community and the inability to continue the comprehensive ban and close the local economy for a relatively long period of time according to the second stage. Therefore, the health system must be able to play its role, especially in confronting critical infected cases, otherwise the result will be tragic in some cases. The state may have to re-establish full control and a comprehensive ban again, and then be reclassified under the second stage. On the other hand, indicators of the virus in the country may tend to improve, and then shift to the fourth stage.

Stage C: (Conditional Local Coexistence) (Orange/Yellow)

This stage is supposed to reflect the improvement of virus indicators inside the country in general. It is marked in yellow. Therefore, the state tends to reduce the restrictions imposed, whether socially or economically. Usually, the state tends to adopt precautionary protocols for most dealings and activities in society.

On the other hand, laxity in commitment to precautions, or haste to raise more restrictions in an untimely way, or other emerging factors may exacerbate the indicators of the virus and re-increase its risk, and then reclassify the country in red, whether under the third or second stage.

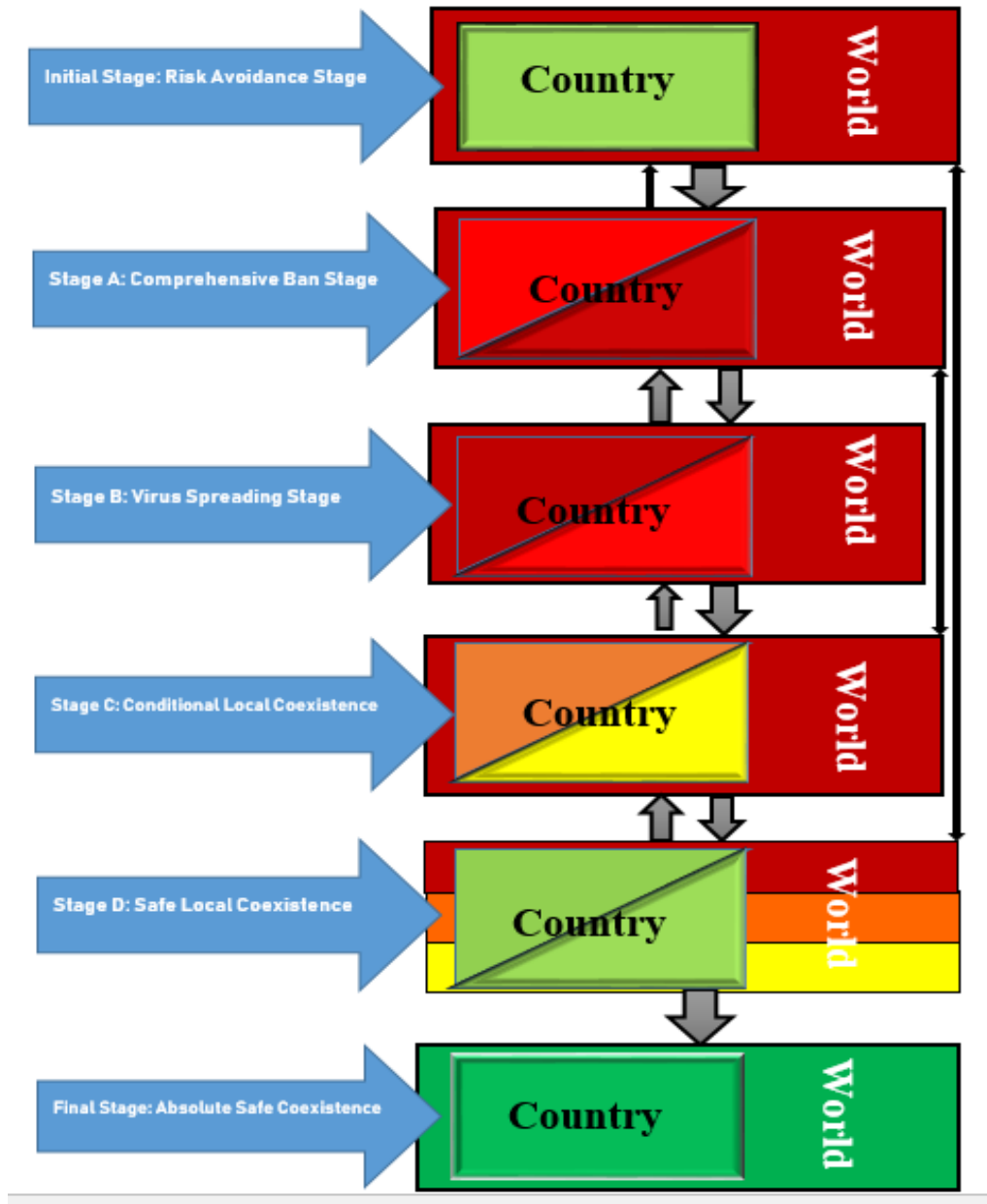
Stage D (Safe Local Coexistence) (Green)

Here, the local community of the country is marked green, which reflects the absolute control of the pandemic locally and the announcement of its end. Since the end of the pandemic has not been announced globally, the outside world can be classified into three levels. Red (prohibited), orange (conditional), yellow (precautions). It is worth noting that it is not recommended to include green internationally until the announcement of the end of the global pandemic.

Final stage (Absolute Safe Coexistence) (Green)

This stage fully reflects the end of the Corona pandemic, globally and locally.

Fig.5: Author' Proposed Scheme to manage "Covid-19 evolution stages" in a Country



3.2 A country' Covid-19 Severity:

According to the proposed NRMP, we may establish a Covid-19 country classification in terms of the evolutionary stage of the virus as well as the severity of the Pandemic in the country. To determine the pandemic severity in a country, it is proposed to assign four Colors (red, orange, yellow, green) that reflect the severity of the spread of Covid-19 from the most severe to the lightest respectively with dependent on the virus evolutionary stage in that country.

3.3 Countries Classification in terms of Covid-19:

As shown in 3.1 and 3.2 each country's Covid-19 classification depends on two factors; the first is the evolutionary stage of the virus in the country (A, B, C, D) (virus free for the initial and the final stages), and the second is the severity level of the virus in that country (R, O, Y, G):

Table (2): Researcher proposed for Countries Classification in terms of Covid-19

	Covid-19 Severity	Covid-19 Evolution Stage
Country	<div style="background-color: red; color: black; padding: 2px; display: inline-block;">R(Red),</div> <div style="background-color: orange; color: black; padding: 2px; display: inline-block;">O(Orang),</div> <div style="background-color: yellow; color: black; padding: 2px; display: inline-block;">Y(Yellow),</div> <div style="background-color: green; color: black; padding: 2px; display: inline-block;">G(Green)</div>	Initial
		A
		B
		C
		D
		Final

Accordingly, all classifications available for each country in terms of Covid-19 epidemic are:



**4- Covid-19 in Saudi Arabia; A National Risk Analysis Approach
(How the national policy for managing the pandemic in Saudi Arabia followed the proposed scheme):**

The following were the most prominent measures taken by Saudi Arabia to combat the Corona virus were as follow: The main actions taken by Saudi Arabia government to avoid or control Covid-19 risk:

Table (3): The main actions taken by Saudi Arabia to combat Covid-19

27 / February / 2020	Suspending entry to Saudi Arabia for Tourism or to perform Umrah and visiting the Prophet's Mosque.
2 / March / 2020	Record the first infection with the Corona virus in Saudi Arabia.
4 / March / 2020	Suspending the performance of Umrah for citizens and residents on the territory of the Kingdom.
8 / March / 2020	Stopping studies in all public, private, university and technical education schools and institutions. Closing the Qatif Governorate to entry and exit traffic and stopping work in government and private institutions. Suspending travel to and from some countries.
14 / March / 2020	Two-week international flights suspended from March 15. Suspending sports activities in all games and tournaments and closing private sports centers.
15 / March / 2020	Suspending attendance at workplace in government agencies for 16 days, except for vital sectors, including health, security, and military. Prevent gatherings in public places designated for hiking, such as parks, beaches, resorts, and camps.
17 / March / 2020	Prohibition of congregational prayer in mosques, with the exception of the Two Holy Places. Suspending employees from the main offices of the private sector for a period of 15 days.
March 26/2020	Prevent entry and exit from Medina, starting at three in the afternoon on Thursday, 26 March 2020.

March 28/2020	Extending the work by suspending the attendance of the workplace in all government agencies except the excepted parties, until further notice. Extending the work by suspending the attendance of work places in all agencies in the private sector, until further notice. Extending the suspension of international flights to the Kingdom for passengers, except in exceptional cases, until further notice. Extending the work by suspending the internal flights of passengers, bus and taxi and train activities, until further notice.
April 2/2020	A curfew is prohibited throughout the cities of Makkah Al-Mukarramah and Al-Madinah Al-Munawwarah all 24 hours a day, with the continued ban on entering or leaving it, until further notice.
April 7/2020	Curfew, for your safety and security 24 hours a day for major cities until further notice.
April 10/2020	Prohibition of movement and total movement and not leaving the homes in some districts of Medina.
May 29, 2020	Return to regular life. Ministry of Hajj and Umrah confirms the continuation of suspension for Umrah.

By reviewing these national decisions aimed at managing the risks of the Corona pandemic at the Saudi local level, they can be classified into two periods. The first extended from the start of the pandemic until the end of May. The second from the beginning of June to the date. Let us now review those two periods with a link to the evolution of the spread of the virus, which was previously presented in Part 2.

The first period: the national method for avoiding the danger of Covid-19

From the start of the pandemic globally to the end of May 2020, Saudi Arabia has taken the approach of "avoiding danger" or total control of the risk in dealing with the Corona pandemic as an attempt to prevent the virus from reaching the Kingdom or completely controlling it in its cradle. Therefore, the decisions and actions taken by the state during that period were characterized by being strict and binding.

Also, the period of the "national approach to avoid the danger of Covid-19" was characterized by a high level of accuracy in monitoring and following up the numbers of confirmed cases, as it depended on the individual tracking method for each infected case and the attempts to reach the individuals involved with each affected case separately.

Despite the severe measures of the comprehensive prohibition, it did not prevent Covid-19 from reaching the kingdom. But at the same time, it helped reduce the rate of acceleration of the spread of Covid-19 in the country. Despite the geographical expansion of the country (13 regions), and despite the fact that the virus has reached many cities in the Kingdom with a population density, these national decisions and measures have significantly helped to control the rate of acceleration of the spread of Covid-19 (see the curve of the acceleration of the rates of virus spread in the Kingdom, Figure No. 1). This has helped slow the acceleration and thus increase the flatness of the curve of confirmed cases, in a manner that allowed the Kingdom's health capabilities to deal with the numbers of critical cases at a successful level.

The second period: From the end of May 2020 to date (July 24, 2020)

At the end of May, when the state took into consideration many societal, psychological and economic dimensions that most members of society suffered due to the total ban for more than two months, in addition to the Kingdom's health capabilities, it proved its ability to deal with all critical cases successfully. The state's tendency was to ease the levels of the embargo, and then to switch to a new approach to managing the risks related to the Covid-19 pandemic, which can be called "the entrance of precautions to deal with Covid-19," as the state launched protocols that clarify the precautions that must be followed in most dealings in different sectors of the country.

Once again, with reference to the virus prevalence curve in the Kingdom, Figure 1, it was normal for the number of confirmed cases to rise again from the beginning of June as a direct result of abolishing the blanket ban and allowing conditional natural coexistence.

Despite the increasing number of confirmed cases, the number of critical cases remained within the health capabilities of the state and continues to be successfully handled to date. It was also noticeable that the recovery rate was improving.

Level of accuracy in monitoring and recording confirmed cases during the precautionary period (after June 1) may be lower than during the period of total risk control (before June 1), This may explain the inability to individually track the affected cases due to the high number of casualties and its geographical spread in most regions of the country.

Through the above, it is possible to devise and understand the national approach that the Saudi government has taken to manage risks of Covid-19, starting with attempts to prevent corona from entering the state, then total control by making sovereign decisions aimed at managing the pandemic, then conditional coexistence with the pandemic, and then searching for safe coexistence in the future.

5. Concluding Remarks

- According to proposed scheme and based on an analysis of Covid-19's indicators in Saudi Arabia until the date of July 23, 2020 a classification OC can be established for Saudi Arabia, which means that the evolutionary stage of the virus in Saudi Arabia is C and color O (Orang) reflect its severity which is decreasing.
- With the aim at managing the risk of spreading COVID-19 in Saudi Arabia, a Logistic Growth Model were introduced to analyze the number of confirmed cases during a period stated from March 2, 2020 till July 23, 2020 and used to predict the number of cases after that date. Dependent on this period of analysis, the researcher linked between the evolution of the number of infected cases and the national decisions that were taken as an attempt to control the spread of the virus to reduce its effects.

- The most influential decisions on the spread of the virus were those related to preventing geographical movement between regions of the country. This reflects the fact that geographical mobility is one of the most important determinants of building a national risk management policy to control the Corona virus.
- It is necessary to take into consideration the importance of a country geographical expanding when applying a determinant related to limiting geographical mobility among its regions, especially between densely populated cities, in order to control this epidemic.
- Finally, this analysis will help health care authorities and policy-makers in charge to figure out the worth or quality of the effect of the determinants applied to construct a national risk management policy and to size the valuable supplies needed to manage different phases and successfully deal with the final expected size of the epidemic not only in Saudi Arabia, but also in other countries exposed to Covid-19.

6. Issues for Discussion:

- Predicting the evolution of an epidemic is not easy task. Each new epidemic has new features and characteristics that distinguish it, hence the lack of historical experience for a new epidemic that makes the tasks of analysis and forecasting more complex.
- The importance of mass testing leads to report all infected cases in the society, accordingly, without mass testing, a specific confirmed case might be a subset of the total infected cases in the society. Is mass testing still vital in limiting the spread of Covid-19 in your country?!
- Under-reporting and Non count asymptomatic infected individuals who are not tested and then recovered may lead to under-estimation of the accumulated reporting of cases.
- Many studies had expected that warmer weather may help in reducing the outbreak of Covid-19, this may explain the low prevalence of the virus in the Gulf region and many countries now. But that can be confirmed after the end of the summer and the beginning of the winter.

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إدارة مخاطر: تقييم دور انتهاج سياسة تجنب مخاطر قومية في الحد من انتشار فيروس كورونا: منظور من السعودية

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الملخص:

يهدف هذا البحث إلى تقديم "سياسة إدارة مخاطر قومية" NRMP كمخطط مقترح لمساعدة أي دولة على الحد من انتشار Covid-19 ، كما يساعد هذا المخطط في بناء تصنيف لكل دولة اعتماداً على حدة الفيروس من جهة ومرحلة تطوره في تلك الدولة من جهة أخرى، أيضاً، تحليل مخاطر انتشار فيروس كورونا في السعودية من خلال تقييم دور انتهاج السعودية لسياسة وطنية لتجنب المخاطر NRAP للحد من انتشار الفيروس وتقليل مخاطره. وتتلخص منهجية الدراسة في تحليل وتوقع مؤشرات الجائحة بحسب البيانات المتاحة عن الجائحة في السعودية حتى تاريخ ٢٣ يوليو ٢٠٢٠ اعتماداً على النموذج اللوجستي والذي استنتج توقع انحسار الجائحة بالسعودية في سبتمبر من ذات العام، ثم اقتراح مخطط لإدارة مخاطر الجائحة بأي دولة على مستوى قومي لتعيين المرحلة التطورية للفيروس بتلك الدولة والذي يساهم في إمكانية وضع تصنيف لكل دولة بحسب حدة الجائحة ومرحلة تطور الفيروس بتلك الدولة، ثم تقييم السعودية كحالة في ضوء المخطط المقترح والذي توصل إلى أن المرحلة التطورية للفيروس في السعودية هي المرحلة C وأن حدة الجائحة تتمثل باللون O (Orang) ودمجها تصنف السعودية OC وبحسب المخطط المقترح تتجه حدة الجائحة إلى التناقص في السعودية

الكلمات المفتاحية: تصنيف الدول بحسب Covid-19 ، مخطط تطور Covid-19 ، إدارة المخاطر القومية، سياسة تجنب المخاطر، COVID-19 في المملكة العربية السعودية.