




A model of reopening businesses to decrease the health and economic impacts of the COVID-19 pandemic: Lessons from Iran

Hesam Seyedin¹, Ali-Mohamad Zanganeh*², Mohammadbagher Mojtabaei³, Rafat Bagherzadeh⁴, Hushyar Faghihi⁵

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Abstract

Background: COVID-19 is a major cause of morbidity and mortality worldwide. The closure of governmental and nongovernmental centers as well as social, cultural, and economic activities are other major negative impacts of the virus. The present paper aimed to develop a model of economic and health-related factors which affect the reopening of businesses and the proper management of the effect of virus on different aspects, particularly on people's health and economy.

Methods: In order to facilitate decision-making and model risk analysis of guilds and occupations, an expert panel, including eight experts, was convened by the Ministry of Health in Iran to prepare a strategic framework for the national taskforce of COVID-19 management. The panel spent many hours to prepare a simple model of reopening businesses and prioritize them from low to high risks.

Results: The experts identified and weighed seven health and three economic-related factors. The businesses and jobs were classified into 69 categories based on their similarities; they were also graded according to a predefined five-point Likert scale and categorized into three levels of low, medium, and high risk. The policymakers recommended to reopen businesses stratified by risk levels at least two weeks' intervals.

Conclusion: The relaunch strategy in Iran put health and safety first while gradually reopening businesses, resuming activities, and getting people back to work. At the same time, attempts were made to slow the spread of the virus through following public health measures, social distancing, good hygiene, and continued acting responsibly. As many countries may have to deal with the same issue, this model can help them adopt appropriate policies and strategies for disease containment.

Keywords: COVID-19, Health policy, Public health, Disaster management, Risk analysis, Business, Job, Relaunching business, Pandemic, Model

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Introduction

Coronavirus Disease 2019 (COVID-19) has spread from China to many other countries around the world, including Iran. With regards to the global spread of the disease and

its impact on all segments of societies, it seems that this issue would have a wide range of unimaginable dimensions (1-3). Based on the severity of its international impacts, the

Corresponding author: Dr Ali-Mohamad Zanganeh, am.zanganeh@iums.ac.ir

1. Health Management and Economics Research Center, Department of Health in Emergency and Disasters, School of Health Management and Information Science, Iran University of Medical Sciences, Tehran, Iran
2. Department of Health Services Management, School of Health Management and Information Sciences, Iran University of Medical Sciences, Tehran, Iran
3. Economy & Planning Senior Advisor at Iran Chamber of Guilds (Small & Medium Enterprises), Tehran, Iran
4. English Department, School of Health Management & Information Sciences, Iran University of Medical Sciences, Tehran, Iran
5. Economy Deputy at Iran Chamber of Guilds (Small & Medium Enterprises), Tehran, Iran

↑What is "already known" in this topic:

The worldwide spread of the Coronavirus disease 2019 (COVID-19) first detected in Wuhan, China, has increased mortality and economic loss, and negatively affected the social determinants of health in all communities. The World Health Organization (WHO) and various countries tried to lessen the impacts of the virus by adopting different policies.

→What this article adds:

In this study, appropriate strategies were used to decrease the spread of the disease and lower its impact on the community, reduce transmission among employees, and maintain healthy business operations. Findings of this study could help policymakers and WHO conduct further studies and find global policies and strategies for disease containment.

outbreak conditions have greatly affected all aspects of daily life, such as travel, trade, tourism, food supplies, and financial markets, especially during the pandemic. The global spread of the coronavirus disease has triggered an array of public health responses (4). Illness and death are the only visible effects of the COVID-19 in societies. The closure of governmental and nongovernmental centers as well as social, cultural, and economic activities are other major negative impacts of the virus.

The long-term effects of the virus on social determinants of health (SDH), the burden of the disease, and the financial burden in the society will certainly have an upward trend (5, 6); therefore, it is essential to manage the reopening of centers and jobs and take necessary precautions to minimize the consequences of the spread of the disease and its indirect effects on the health of the society (7).

COVID-19 came with a heavy socioeconomic price too, particularly in low and middle-income countries with limited capacities. Bankruptcy and unemployment will have devastating consequences on the lives of vulnerable populations (8). Therefore, it is crucial to properly manage its influences on different aspects, particularly on people's health. Moreover, there should be a plan for reactivating the society, restarting work and production, and resuming travels and education (8).

To date, there is no effective vaccine to control the COVID-19 pandemic, and the only solution is to prevent or slow person-to-person transmission (9). Some countries followed certain guidelines to reopen their businesses. Iran also adopted some principled policies and took measures prior to reopening businesses, such as implementing social distancing regulations, communicating appropriate protocols, rules and regulations, and monitoring their proper implementation to minimize the risks caused by the disease.

As a result, it is necessary to consider the best strategies to decrease the spread of the disease and lower its impact on the community, reduce transmission among employees, and maintain healthy business operations and work environment in accordance with local needs, health care capacities, and resiliency (10).

Due to limited available information on coronavirus, we are still learning about it; therefore, the current study was conducted to develop a model of re-opening businesses in Iran.

Methods

In order to facilitate decision-making and modeling risk analysis of guilds and occupations, an expert panel (N=8) was convened by the Ministry of Health in Iran to prepare a strategic framework for the national taskforce of COVID-19 management. The panel focused on the following thematic blocks: the risk of disease transmission, population density, contacts facilitating disease transmission, risk reduction and control strategies, and future of work, unemployment, economic dilemmas, and the disease burden.

Moreover, the following questions were addressed by the panel:

1. What are the effects of reopening businesses and jobs on the risk of COVID-19 disease transmission, containment, and mitigation strategies in disease management?

2. What are the challenges of re-opening businesses and jobs and how can we cope with or respond to these challenges?

3. What elements should be considered during the early phase of reopening jobs to ensure safer conditions and slow down the spread of the virus?

The panel spent many hours to prepare a simple model of re-opening businesses and prioritize them from low to high risk.

Results

In order to avoid a one-sided view of health issues in re-opening businesses, the experts agreed to include two major economic and health variables. They identified and weighed seven health and three economic-related factors. Health-related factors, in the total burden of disease, are more important than economic factors; therefore, the ratio of 70% and 30% was considered in weighing these two variables, respectively.

Although there are many variables to assess the economic and health impacts of the coronavirus, only a limited number of essential factors, due to time constraints, were selected and included in the model. The economic indicators used in this study included the impact of businesses on satisfying the essential needs of the society, the number of direct jobs created by businesses, and the role and importance of businesses in the supply chain and distribution channels. The production and distribution chain refers to the flow of goods after the selected business.

Furthermore, seven indicators of disease prevalence were considered, i.e., the communication time and the time a customer spends at the business area, population density, and the average number of customers in the business area, ventilation and airflow in the relevant space, the frequency of contacts among employees, the frequency of contacts among the employees and customers, the frequency of new people visiting the place, and the probability of product contamination during the production or distribution process. Bulk products are more likely to be contaminated than packaged products.

The indicators and their weighted coefficient are demonstrated in [Table 1](#).

The businesses and jobs were classified into 69 categories based on their similarities ([Table 2](#)).

However, religious institutions, leisure and tourism centers, sports centers, cultural and artistic centers, administrative and social service centers, residential service centers, educational centers and transportation centers were excluded from the list. Bakeries, gas stations, food chain stores, supermarkets, pharmacies, health centers, centers providing medical supplies and equipment, fruit and vegetable shops, fruit and vegetable markets, centers selling protein and dairy products, catering and outdoor food, services such as car and house repair and installations, veterinarians, drug and food distribution centers, and ambulance services were also omitted from the aforementioned list since they provided the essential needs of the people and were not closed during the outbreak.

Using an Excel worksheet, the researchers graded the grouped businesses according to a predefined five-point

Table 1. Indicators and their weighted coefficient

Category	Economic Factors (30)				Disease Prevalence Rate Affecting Factors (70)						
Weighted Coefficient	5	10	15	17.5	15	5	5	12.5	5	10	
Indicators	Impact of businesses on satisfying the essential needs of the society				Role of businesses in the supply chain and distribution channels		Communication time		Population density		Ventilation
	Direct jobs				Frequency of contact between employees		Frequency of contact between the employees and customers		New people visiting the place		Contamination of the products

Table 2. Business categories

Business Categories	Business Categories
1 Warehouse and cold storage	36 Electronic devices
2 Tools and fittings, bolts, locks and hinges and keys	37 Real estate agency
3 Fully prepared meals (delivery)	38 Trucks and car repair shop and car wash
4 Wood, boards and chipboard	39 Paint shop
5 HVAC (Heating, ventilation, and air conditioning)	40 Confectionary Sweets, chocolate, ice cream, juice and nuts
6 Pipes and profiles	41 Elevator
7 Office supplies and stationery, engineering equipment	42 Medical and dental equipment
8 Computer	43 Herbal medicine and spicery
9 Motorcycle and bicycle	44 Hygienic and detergent
10 Carpets, rugs and flooring & Moquette	45 Gold, jewelry, silver and rhinestones and watches
11 Agricultural machinery and water pumps	46 Malls and commercial complex for cellphone & spare part and computer
12 Cabinets and kitchen equipment and appliances	47 CCTV equipment
13 Building materials, iron, steel, aluminum and PVC	48 Crystal and porcelain
14 Home, electric & electronic appliances and chandeliers	49 Cellphone, camera, digital accessories
15 Parking	50 Plastic containers and supplies
16 Chemical materials	51 Aluminum utensils
17 Building cleaning	52 Glass and mirrors
18 Carpet cleaning	53 Truck and car seller
19 Clothing repair and shoe repair	54 Flowers and Plants
20 Valves, sanitary ware, ceramic tiles and building decorations	55 Large stores and chain stores (non-FMCG)
21 Leather	56 Sport equipment and necessities and toys
22 Spare parts	57 Cellphone and computer accessories
23 Paper and cardboard	58 Second hand appliances
24 Curtains and decorations	59 Public bathhouse
25 Cultural affairs equipment	60 Malls and commercial complex for shoes & cloth and apparel
26 Tobacco	61 Barberry & Hairdressers and beauty salons
27 Fabrics, clothing, bags, shoes, shoes and leather, embroidered shirts (garment)	62 Driving training agency
28 The necessities of clothing, equipment for making bags and suitcase, and confectionery supplies & accessories	63 Restaurant, and fast food
29 Hunting and entertainment equipment	64 Sauna and massage
30 Dry cleaning and Laundry	65 Flea market
31 studio & photography and Printing, services	66 Game and entertainment centers and game net
32 Home and office furniture and bedding	67 Sports and bodybuilding clubs and gyms
33 Safety and firefighting	68 Reception Hall and Ceremony Hall
34 Booths and buffets	69 Café and Tea House
35 Glasses	

Likert scale for each indicator. The mean scores of all 10 indicators for each group ranged from one to five. According to the findings, the businesses were categorized into three levels of low (green color), medium (yellow color),

and high risk (red color). Finally, the policymakers were recommended to reopen businesses stratified by risk levels at least in two weeks' intervals to have sufficient time to study the behavior of the virus after each reopening step.

Discussion

COVID-19 affected public health along with the economy. The closure of governmental and nongovernmental centers as well as social, cultural, and economic activities are other major negative impacts of the virus. In reopening business and jobs, it is necessary to adopt proper strategies to decrease the spread of the virus in community, reduce transmission among employees, and maintain healthy business operations. In this paper a model of reopening businesses was developed to decrease the health and economic impacts of the COVID-19 pandemic and to properly manage the effect of the virus on different aspects, particularly on people's health and economy in Iran.

Bartik et al. conducted a survey on more than 5,800 small businesses in the United States. They found that 43 percent of businesses had temporarily closed, and nearly all of these closures were due to COVID. The results also demonstrated the financial vulnerability of many businesses to the crisis (11). The ultimate financial loss caused by COVID-19 cannot be predicted. Results of a study showed that on average, each additional month of crisis costs 2.5-3% of global GDP (12).

In this study, the following economic indicators were used: (1) The impact of businesses on satisfying the essential needs of the society, (2) The number of direct jobs created by businesses, and (3) The role and importance of businesses in the supply chain and distribution channels. Moreover, seven indicators of disease prevalence were considered, such as the contamination of products, population density, ventilation, frequency of contact between the employees and customers, frequency of contact between employees, and new people visiting the place.

A study conducted on New Orleans businesses to understand factors influencing decisions to re-open them. Some businesses, such as professional, scientific, and technical services reopened soon, while others were classified and are supposed to reopen later. These findings accentuate the need for public policy and emergency plans and their on-time implementation prior to making any decision on closing or reopening businesses (13).

In their study, Zimmermann et al. considered the following factors in assessing the transmission risk: (1) workplace size, (2) human interactions, (3) inability to work from home, and (4) industry size. According to the findings, states should reopen gradually and should not be motivated by political agenda (14).

Andersen et al. designed some reopening strategies in Denmark. They believed that in case of restrictions, all aspects should be taken into consideration to assess their cost-benefit ratios. Moreover, they asserted that reopening can be facilitated if behavioral responses, such as physical distancing and hygiene are observed by the people even at the time of less formal lockdown restrictions (15).

In another study, the researchers considered the possibility of gradual reopening of the U.S industry. They classified industries based on their degree of contact intensity, that is, the required degree of physical proximity as well as their reliance on intermediate inputs from contact-intensive industries. According to the findings, universities and religious organizations were ranked as requiring low physical

contact exposure. The aforementioned index of physical contact exposure, according to this study can facilitate the identification of the most/least contact-intensive industries or the ones which are the most / least reliant on inputs from contact-intensive industries. They came to the conclusion that prior to making any decisions about reopening the industries, one should consider the fact that if these industries can work remotely (16).

Overall, peoples' health should be a major priority and reopening, businesses stratified by risk levels at least in two weeks' intervals, provides sufficient time to study the behavior of the virus after each reopening step.

Conclusion

As many countries might encounter the same problems in re-opening businesses, this model can help them adopt appropriate policies and strategies for disease containment. Moreover, the model can be used as a guide for reopening businesses in other countries whose policymakers are advised to review all relevant criteria in accordance with their local needs, health care capacities, and resiliency in response to the pandemic and their purposes of reopening. COVID-19 is a novel infectious disease and we are not appropriately prepared to respond to it; therefore, we need to learn from other countries to determine the optimal approach suitable for our specific settings.

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Conflict of Interests

The authors declare that they have no competing interests.

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