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### **THE IMPACT OF CORONAVIRUS DISEASE (COVID-19) PANDEMIC ON CRUISE INDUSTRY: CASE OF DIAMOND PRINCESS CRUISE SHIP**

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#### **ABSTRACT**

World economic system is global and also cruise industry is rapidly growth in recent years. Global virus pandemics such as Spanish, Asian and Hong Kong Flus in 20<sup>th</sup> century, H1N1 and SARS viruses in 21<sup>th</sup> century are occurred and infected millions of people in the world. Coronavirus disease (COVID-19) pandemic started in Wuhan City, China on 31 December 2019. This study's aim is to determine the impact of this pandemic on cruise industry and examine a case of Diamond Princess Cruise ship. The methodology of this study is qualitative case study methodology. According to the findings of this study, pandemics are quickly spread in ships. And because of this, pandemics are important for cruise industry and cruise industry must be taking preventive and proactive precautions.

**Keywords:** *Coronavirus Pandemic, Covid-19, Tourism, Cruise Industry, Diamond Princess*

## 1. INTRODUCTION

Definition of globalization is “the development of an increasingly integrated global economy marked especially by free trade, free flow of capital, and the tapping of cheaper foreign labor markets.” (Merriam-Webster.com Dictionary, Merriam-Webster).

In the global world, the spread of international trade, the increase of labor and capital movements, the end of ideological polarizations between countries, the countries’ convergence in terms of economic, political and socio-cultural aspects are a result of rapid change in technology (Bayrakdaroglu and Ege, 2007, 57).

In recent years, two important trend occur in the world economy. First one is technological innovations and developments, other one is openness and interdependently in the society. In an open world economy these incentives invariably reflect aspects of the international trade environment (Grossman and Helpman, 2001, xi-xii).

Neoliberalism has spread across the world as a result of the globalization and these trends. Entrepreneurialization, privatization and commodification is important concepts in this period (Rossi and Vanolo, 2015, 846).

States and markets have been continuously shaped by the developments such as globalization, technological advancement and increasing competition since 1990s. In this period, global markets have been faced with both new opportunities and dangers (Ege, 2007, 79). Global virus pandemics are example of these dangers. Three influenza pandemics such as Spanish, Asian and Hong Kong Flu in 20<sup>th</sup> century, H1N1 and SARS viruses in 21<sup>th</sup> century were occurred.

Coronavirus disease (COVID-19) pandemic started in Wuhan City, China on 31 December 2019. World Health Organization (WHO) was informed of cases of pneumonia of unknown cause in this date. Chinese authorities was identified of this new type of coronavirus and named “2019-nCoV” on 7 January 2020. This new virus is imported in other countries, including in the European Region, USA, Turkey and totally 210 countries. On 21 April 2020, world has confirmed over 2 million 400 thousand cases of COVID-19, and 174 thousand fatalities in total according to the WHO (World Health Organization, 2019).

COVID-19 pandemic is rattling the stock market, economy and business such as health sector, tourism, supply chain, marketing companies, entertainment sector, food and beverage sector, capital and money markets, international trade and the shipping industry.

Global travel and transport play a critical role in the spread of infections. Results of infected passengers, the travel restrictions, quarantines, and heightened vigilance had an impact on maritime industry (Lim, 2011, 170). This study’s aim is to determine the impact of new Coronavirus disease (COVID-19) pandemic on cruise industry and examine a case of Diamond Princess Cruise ship.

## 2. A BRIEF REVIEW OF WORLD CRUISE INDUSTRY

The global maritime shipping industry is liberal market and free from the constraints of government and

trade union regulation. Effectively freed from national hiring restrictions, most ship owners no longer crew their vessels with the highly unionized seafarers of the traditional maritime countries, such as Greece, Japan, Norway, or the United Kingdom, instead preferring to hire from lower wage maritime labor exporting countries, such as India, the Philippines and Russia (Lillie, 2006, 1).

In this period, liberal economy and open labour market period, seafaring populations of all the traditional maritime countries such as Great Britain, are declined. Today ships crews are multi-national and culturally diverse. These crews are generally Philippines, Russia, Ukraine, Indonesia, India, China and Turkey nationality (Couper, 2000, 4).

In recent years, cruise industry is rapidly development and growth. As a result it has become one of the fastest growing and most dynamic segments of the tourism industry (Dwyer and Forsyth, 1998, Couper, 2000, 4, Wie, 2004, Marti, 2004).

Tony Peisley is cruise industry analyst and author of *Cruising at the Crossroads: A Worldwide Analysis to 2025* and his nationality is UK. He emphasizes importance and development of cruise industry and says “Still, this is the golden age of cruising in terms of quality of the product. You will still get people saying, ‘Well, there is too much capacity and that’s why the yield is not as good as it has been,’ and I always say to that, ‘How many hotels were built this year? Hotels don’t run 100 percent-full, and ships do.’” (Smith, 2020).

## 3. COVID-19 AND CRUISE INDUSTRY

Social distancing and isolation is important for preventing a Covid-19 pandemic. But travelers must spend time close together in cruise ships. Travelers and crew members are from many countries. Because of these, Covid-19 disease is rapidly spread in cruise ships.

Some of crew members are transferred other ships. Because of this, pandemics can spread and transfer other ships. Cruise ships are visited global ports in different countries and infected people may also travel between countries and it is caused that infections rapidly spread between country to country (Centers for Disease Control and Prevention, 2019).

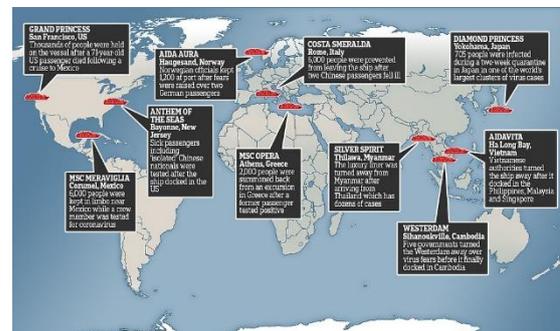


Fig. 1. Map of Coronavirus Cases in Cruise Ships (Dailymail, 2020)

Many coronavirus cases are occurred in different cruise ships. These cases are shown in the Fig. 1. Some of them are Diamond Princess, Ruby Princess, Grand Princess, Zaandam, Coral Princess, Costa Fascinosa, Celebrity Apex, Greg Mortimer, Costa Atlantica, Aida

Aura, Costa Smeralda, Anthem of the Seas, MSC Opera, Silver Spirit, MSC Meraviglia, Aidavita, Westerdam. First coronavirus case is Diamond Princess and it is important case for pandemics in cruise ships. These pandemic ships are visited different ports and countries. For example, Ruby Princess is docked on Sydney port in Australia and first Covid-19 case is reported in 19 March, 2020. In this cruise ship eleven passengers died and at least 662 passengers and crew infected. Grand Princess is docked on San Francisco port and Zaandam is docked on Florida in USA. In Costa Fascinosa, ship's doctor and two crew died in Brazil. More than 200 crew infected in Celebrity Apex and 148 crew infected in Costa Atlantica. Short information of other cases are shown in Fig 1 and Table 1.

Table 1: Coronavirus on Cruise Ships

Ship	Location	Covid-19 reported	Scale of outbreak	Current status
Diamond Princess	Japan	4 February	700+ passengers and crew infected, nine died	Cleared
Ruby Princess	Australia	19 March	11 passengers died, at least 662 passengers and crew infected. Ship blamed for 10% of Australia's cases	Required to leave Australia. Some crew onboard - health status unknown
Grand Princess	San Francisco	9 March	Two passengers, one crew member died. 100+ tested positive during Hawaii cruise	Some crew still onboard off Mexico - health status unknown
Zaandam	South America/Florida	27 March	Four passengers, one crew member died. 100+ became ill. Ports refused to allow the ship to dock	Exposed crew still onboard in Florida - health status unknown
Coral Princess	South America/Florida	1 April	Three passengers died. Ship not allowed to dock in South America	Exposed crew still onboard in Florida - health status unknown
Costa Fascinosa	South America/Brazil	March	Ship's doctor and two crew members died in Brazil; other crew hospitalized	Crew are quarantining aboard the ship; a Brazilian court has prohibited crew from getting off the ship
Celebrity Apex	France	March	More than 200 crew infected as ship prepared to launch in Saint-Nazaire, France	Some crew still onboard; some still hospitalised; others sent home
Greg Mortimer	Uruguay	27 March	One crew member died, at least 128 passengers and crew infected	Crew, including many confirmed cases, still aboard off Uruguay; company having trouble repatriating crew
Costa Atlantica	Japan	23 April	148 crew members tested positive, as the ship remained at dock for repairs	Crew quarantined onboard

(The Guardian, 2020)

Jean-Paul Rodrigue is a professor of transport geography at Hofstra University in New York. He said that "Air circulation there is worse than on an aeroplane." Because air circulation in cruise ships is not from outdoor and clean air. Corridors are not open and some cabins are without window, as a result these ships has ideal environment for spreading of viruses. William Schaffner, is an infectious disease specialist at Vanderbilt University. He pointed this important point and said that "A cruise ship is an almost ideal environment to enhance the transmission of a virus, whether norovirus, coronavirus, or flu, from person to person." Crew are sleep in dormitories, sharing toilets and dining rooms. They work with face to face contact.

#### 4. CASE OF DIAMOND PRINCESS CRUISE SHIP

The Diamond Princess is famous cruise ship and one of about 300 cruise ships that circle the globe each year. The brochures called the Diamond Princess, "a precious

gemstone on the seas of the world", where, "day or night, it's always an adventure." It is owned and operated by Princess Cruises. Princess Cruises is the second largest cruise line in 2018 and the first largest cruise line in 2019 by net revenue. It has \$21bn revenues in 2019. Cruise ships carried 30m passengers in 2019 and Princess Cruises carries half the world's cruise passengers each year (The Economist 1843, 2020).

The Diamond Princess is "Best International Ship In Japan" by Cruise Magazine Reader's Poll. Its inaugural date is March 13, 2004. Its length is 952 feet (290 m), height is 205 feet (62 m) and tonnage is 115.875. Medical center and elevators are in the middle of the ship (Fig 2).

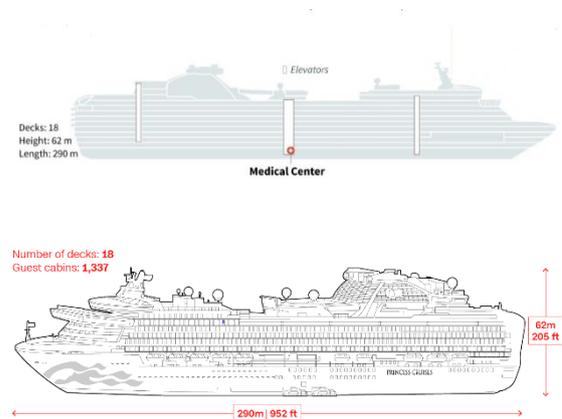


Fig. 2. General Plan of Diamond Princess (Hussein, 2020)

The Diamond Princess has 18 decks. Deck plan of Diamond Princess is shown in Fig. 3 and 4. Decks 1 through 3 are available to crew only. There is no Deck 13. Its decks name between 4<sup>th</sup> and 18<sup>th</sup> decks are Gala Deck, Plaza Deck, Fiesta Deck, Promenade Deck, Emerald Deck, Dolphin Deck, Caribe Deck, Baja Deck, Aloha Deck, Lido Deck, Sun Deck, Sports Deck and Sky Decks, respectively.



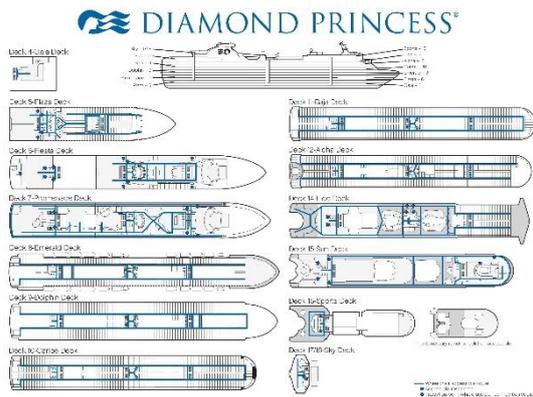


Fig. 3. Deck Plan of Diamond Princess (The Princess, 2020)

The Diamond Princess has 1337 guest cabins. Types of cabins are premium suite with balcony, penthouse suite with balcony, cabins with balcony and cabins without windows. Types and plan of cabins in this cruise ship are shown in Fig. 4.

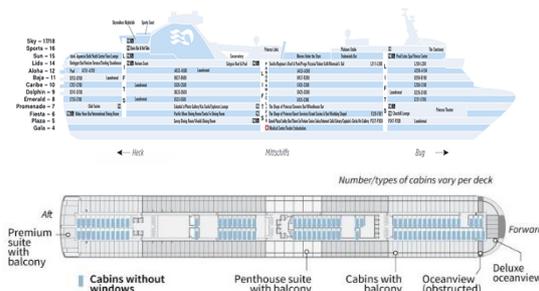


Fig. 4. Types and Plan of Guest Cabins in Diamond Princess (Hussein, 2020, <https://www.seascanner.com/>,2018)

The Diamond Princess has more than 3.700 passenger and crew 56 countries on board in the last voyage. Number of guests are 2.670 and crew are 1.100. It departed from Yokohama port, Japan, on Jan. 20, 2020, and returned on Feb. 3 after making six stops in three countries. Because on Feb. 2, an 80-year-old passenger, who had departed Jan. 25 in Hong Kong, was confirmed to have the coronavirus. Since then, the Diamond Princess has been quarantined off Yokohama with about 3,700 people on board. Of the 381 people from the ship who were symptomatic and tested positive, 37 (9.7%) needed intensive care and 9 (1.3%) died. There were 428 Americans on the ship, of whom 107 (25.0%) tested positive and 11 remained hospitalized in Japan as of March 13, they said. Infected people are from Argentina, Australia, Canada, Hong Kong, Japan, the Philippines, the UK and the United States (Fig. 5).



Fig. 5. Route of Diamond Princess (The Straits Times, 2020)

Guests are quarantined to their staterooms. Food and beverages are being distributed three times a day to guest rooms via a daily menu. In addition, the Princess company is providing many in-room activities and entertainment options. The current guidance from the Japanese Ministry of Health is that the ship will be alongside for 14 days (until February 19). Crew members who have been cleared after an initial health screening by the Japanese Ministry of Health are fulfilling their duties as required. Additional crew testing by health officials is ongoing. When not working, crew members are requested to be in their staterooms (The Princess, 2020).

During the quarantine, same crew gave service for infected guests. They worked in difficult conditions and long hours. The crew delivered meal and medicine to infected passengers. They are not isolated from infected people (The Diplomat, 2020).

Table 2: Coronavirus Cases on Diamond Princess

Age group	Symptomatic confirmed cases (%)	Asymptomatic confirmed cases (%)	Total confirmed cases (%)
00-09	0(0)	1(6)	1(6)
10-19	1(4)	1(4)	2(9)
20-29	18(5)	2(1)	20(6)
30-39	18(4)	5(1)	23(5)
40-49	18(5)	7(2)	25(8)
50-59	27(7)	22(6)	49(12)
60-69	73(8)	56(6)	129(14)
70-79	92(9)	136(13)	228(22)
80-89	27(13)	25(12)	52(24)
90-99	2(18)	0(0)	2(18)
<b>Total</b>	<b>276(7)</b>	<b>255(7)</b>	<b>531(14)</b>

Source: National Institute of Infectious Diseases, 2020.

Percent of persons aboard who were confirmed with COVID-19 by age group and symptom status are given in Table 2. Percent of infected people are generally elder people. Pandemic is rapidly spread in Diamond Princess.

Diamond Princess is important case for Covid-19 pandemic. It is like laboratory for researchers, World provide important information about this pandemic.

## 5. CONCLUSION

In the future, studies on the use of autonomous ships in international trade are being carried out rapidly. The Advanced Autonomous Waterborne Applications Initiative and AAWA project was realized by Rolls Royce. Norway is also working on autonomous ships. Work on the legal infrastructure of IMO about autonomous ships has begun (Ece, 2018, 282, Yılmaz and Onacan, 2019). Although it is not possible to use autonomous ships in the cruise sector, which is the service sector, autonomous systems with fewer personnel can be developed. Thus, the effect of similar pandemics like coronavirus disease (Covid-19) may be reduced in cruise ships.

Case of Diamond Princess Cruise Ship is important for researchers. John Ioannidis says "Cruise ships are like an ideal experiment of a closed population. You know exactly who is there and at risk and you can measure everyone," He is an epidemiologist at Stanford University in California. But every results are not similar to countries. Because "A whole country is not a ship.", Ioannidis says (The Guardian, 2020).

While pandemic is expected to negatively affect cruise tourism, it is seen that the number of reservations will not decrease next year. Perhaps cruise tourism may even be advantageous from this crisis. According to Wen et al, 2020, luxury trips will grow. And cruise tourism is luxury tourism.

Due to the corona virus (Covid-19), it is seen that some ship companies are heading to the Eastern Mediterranean ports, including Kuşadası. Because of this, Turkey can be hosted on the number of ships and passengers expected.

Minister of culture and tourism Mehmet Nuri Ersoy says that "I think cruise tourism will shift to mid-summer or a little later in the season. There were no protocols there yet. Galataport was ready on April 5, now it is ready. It is able to pick it up as soon as the ship is berthing in a port."

Covid-19-like pandemics will continue in the future. May be the ships will change physically, the dock plans will change. The number of cabins may decrease. Some cabins will not be used. Working conditions on ships will change.

Internationally accepted guidelines are needed for reporting, investigating, and controlling norovirus illness on cruise ships in Europe (Verhoef, et al, 2008). Strong need for the monitoring and implementation of preventive measures in semi-closed communities, such as cruise ships (Bert, 2014).

Customers of cruise industry have top level income and cruise tourism is expensive service. Because of this, profitable is high in this sector. In the post pandemic period, new preventions are been in cruise ships.

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