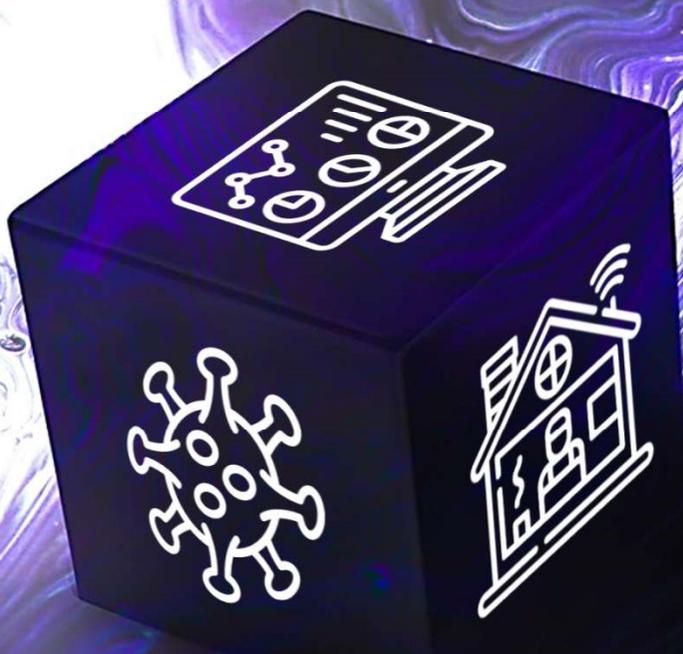


# Covid 19 – GCC Preparedness

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May 5<sup>th</sup>, 2020



## Rationale

This document provides an assessment of the current risk exposure of the healthcare system in the GCC countries, facing the Covid-19 crisis, under 3 profiles:



Healthcare system capacity in terms of expenditure, staff, beds, ICU, and testing levels;



Level of reliance on trade and specific trading partners for critical items and equipment identified by the WHO as essential to cope with the crisis;



Demand on healthcare system posed by increase of cases historically and at peak.

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# Agenda



Bahrain



Qatar



Kuwait



Saudi Arabia



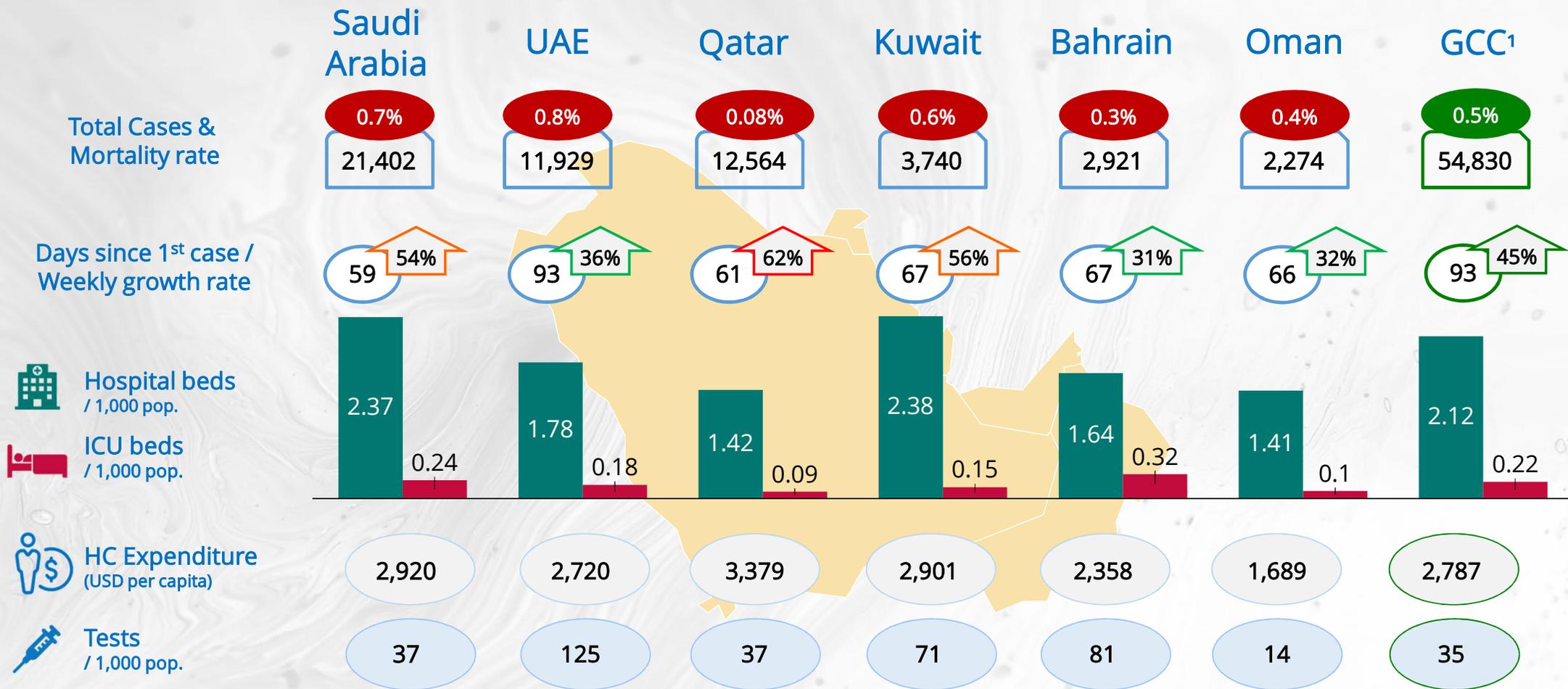
Oman



United Arab Emirates



# GCC Countries are facing rapid growth but low mortality



Note1: All GCC values calculated as weighted averages except for Number of cases where total sum is reported and Days since 1<sup>st</sup> case where days from first regional case is reported.

Note 2: data referred as of April 30th

Sources: Infomineo Analysis

The background of the slide is a dark, monochromatic marbled paper pattern. The marbling consists of intricate, swirling, and cell-like shapes in various shades of dark grey and black, creating a complex, organic texture. The word "Bahrain" is centered in the middle of the image in a bright blue, bold, sans-serif font. A thin white horizontal line is positioned directly below the text.

**Bahrain**

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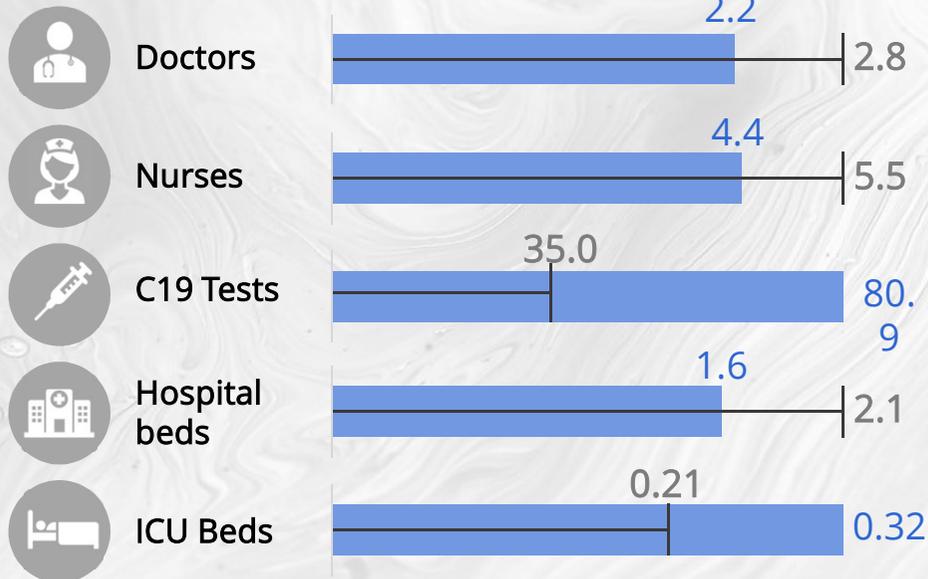
# The HC system can support up to ~7,600 cases

## Main health indicators



## Health system capacity<sup>1</sup> per 1,000 population

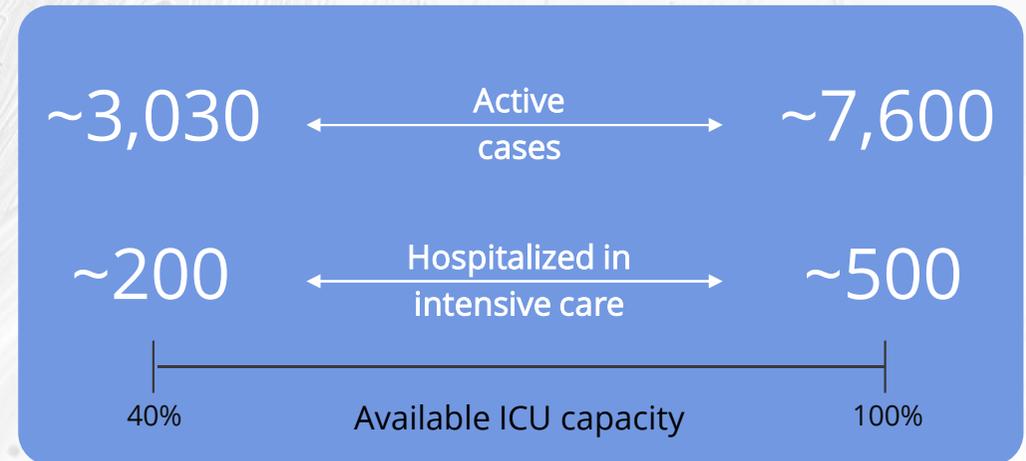
Bahrain  
GCC Average



## Interventions for capacity expansion

April 10: The Bahrain Defense Force Hospital's parking lot was converted into an intensive care unit adding 130 ICU beds to the national capacity

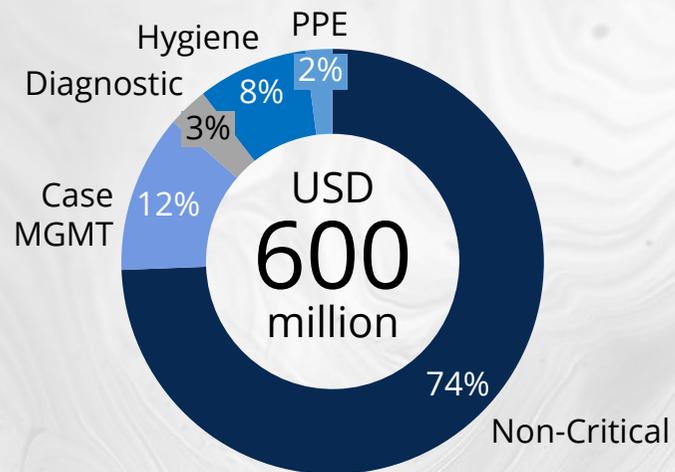
## Total sustainable C19 cases



Note1: most recent available data  
Sources: Bahrain MOH, Press search, Infomineo Analysis

# C19 health crisis management equipment - trade data

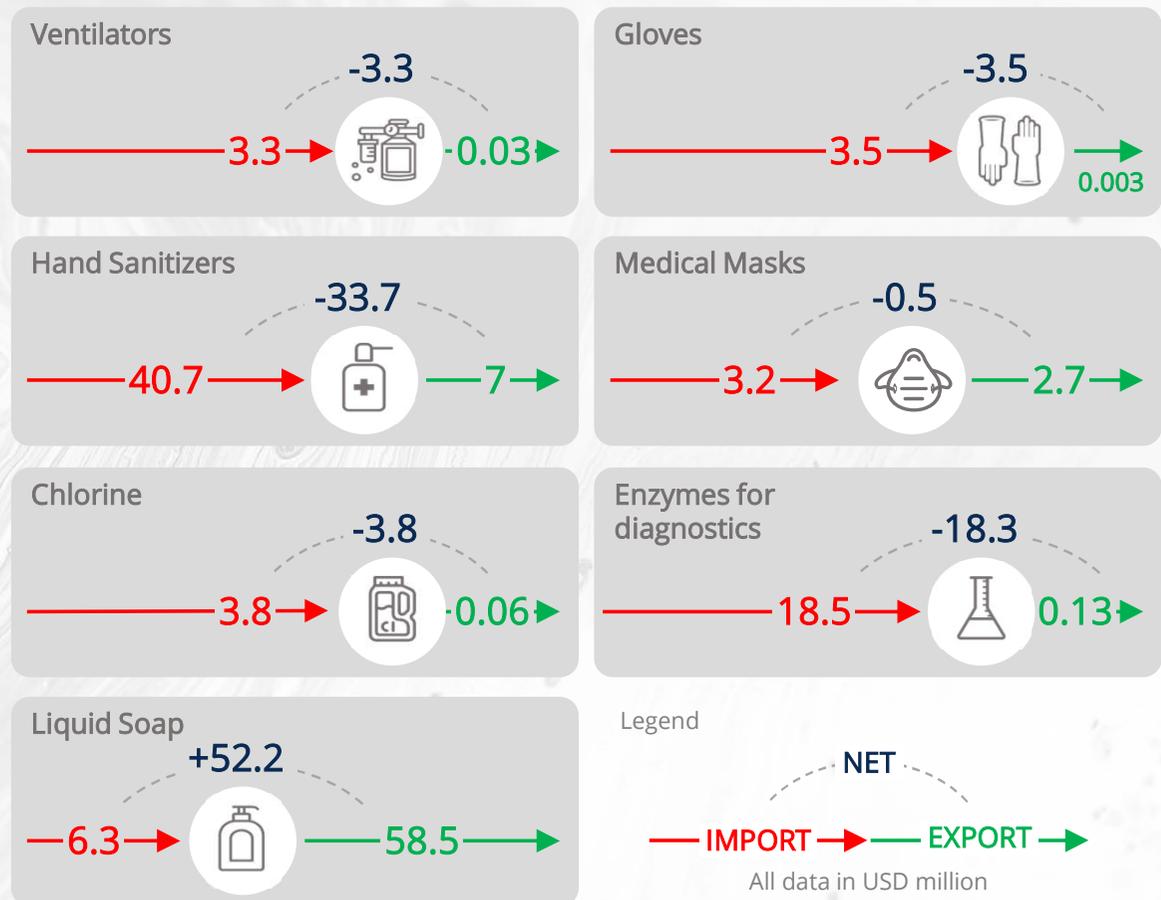
## Total importation of relevant equipment by category



### Product categories

- Case Management: Ventilators, patient monitors, flow-splitters, etc.
- Hygiene: Hand Sanitizers, Liquid Soap, Chlorine
- PPE: Medical Masks, Gloves, headwear, aprons, protective clothing, etc.
- Diagnostic: Enzymes
- Non-critical: bio-hazard bags, bandages, thermometers, x-ray equipment, etc.

## Critical item trade net position



Sources: Database on COVID-19 trade flows and policies - World Bank  
 Notes: PPE: Personal Protective Equipment; MGMT: Management. All figures calculated as 3 yr avg between 2017, 2018, and 2019. For countries without direct trade data mirror data is used

# Trade dynamics effect on the price of essential equipment



Ventilators



Hand Sanitizers



Chlorine



Liquid Soap



Gloves



Medical Masks



Enzymes

Top 3 suppliers	UAE: 36%	KSA: 78%	China: 75%	Bahrain: 22%	Oman: 41%	China: 34%	USA: 35%
Countries and shares	China: 14%	Egypt: 8%	KSA: 8%	UAE: 14%	Malaysia: 38%	USA: 14%	Germany: 20%
	USA: 10%	UAE: 3%	Vietnam: 4%	USA: 12%	KSA: 15%	KSA: 11%	UK: 17%
Concentration (%)	60	89	87	48	94	59	72
Direct Price Impact <sup>2</sup> (%)	7.5	6.4	5.8	3.7	22.2	23.7	14.2
Max Price Impact <sup>2</sup> (%)	12.3	7.4	6.6	7.4	23.7	38.5	19.3
Exposure index <sup>1</sup>	61	86	88	49	94	63	74

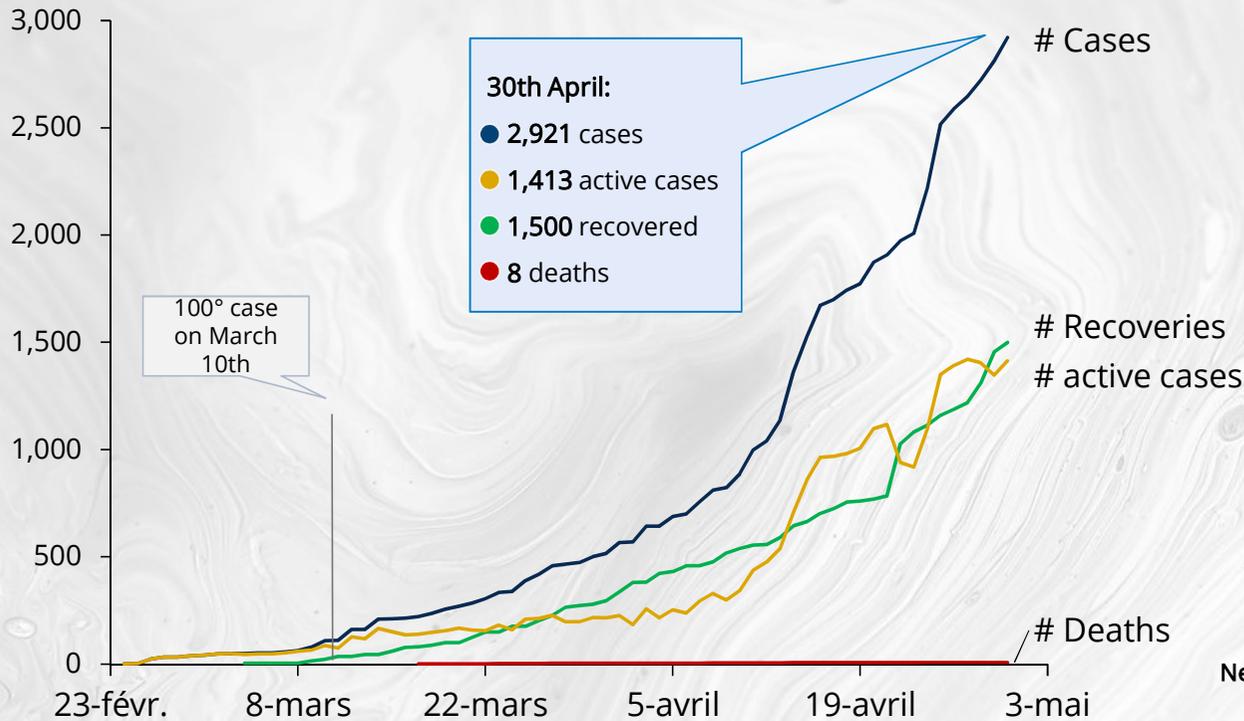
Note1: The index shows, on a scale from 0 to 100, the level of risk (very high, high or moderate) of a max price increase to which the country is exposed to, due to new trade dynamics and supplier concentration for each product.

Note2: Direct / Max Price Impacts are reported by the WB database on COVID 19 trade flows, and represent the local price increase assuming a total reduction on export quantities for each trading partner. The increase is estimated using trade elasticities: Direct price effect<sub>ij</sub>=Var Q<sub>ij</sub>/import price elasticity<sub>ij</sub>. Where I is the importer and j is the exporter (Fontagne, Gambard, Orefice 2019). Countries in blue already have an export ban in place on the related product. Sources: World Bank, Infomineo Analysis

# Bahrain enjoys a higher recovery rate than other countries



## Epidemiologic evolution



Population med. age

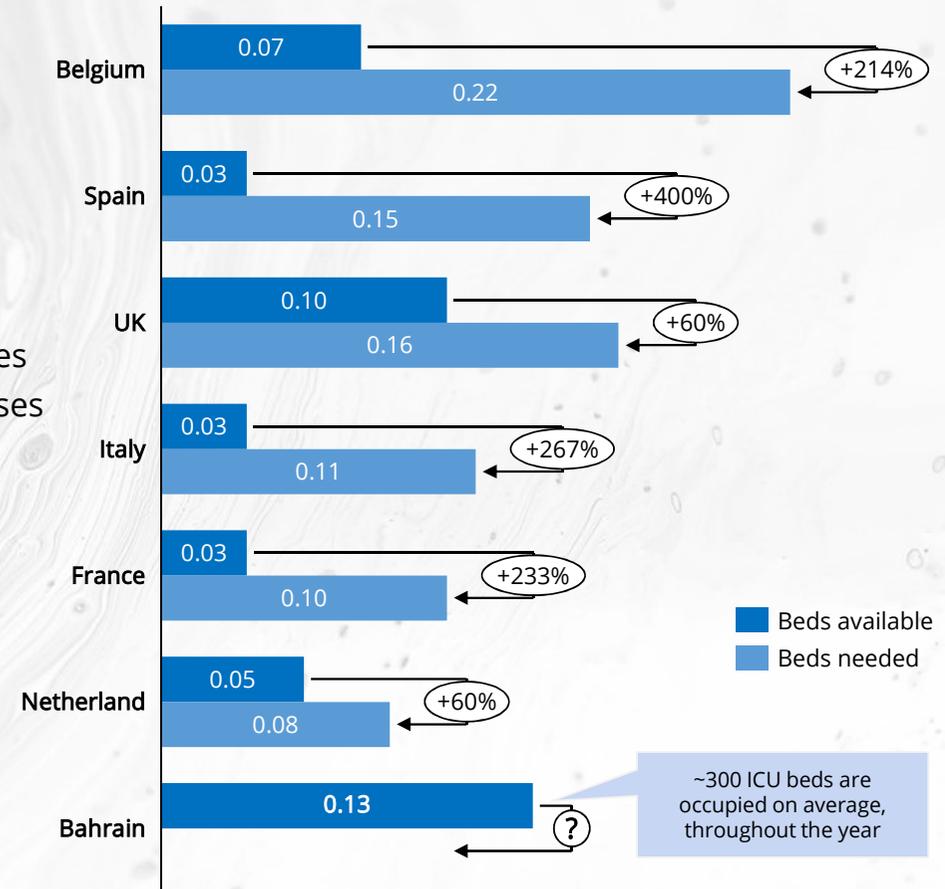
32.5 years, as of 2020

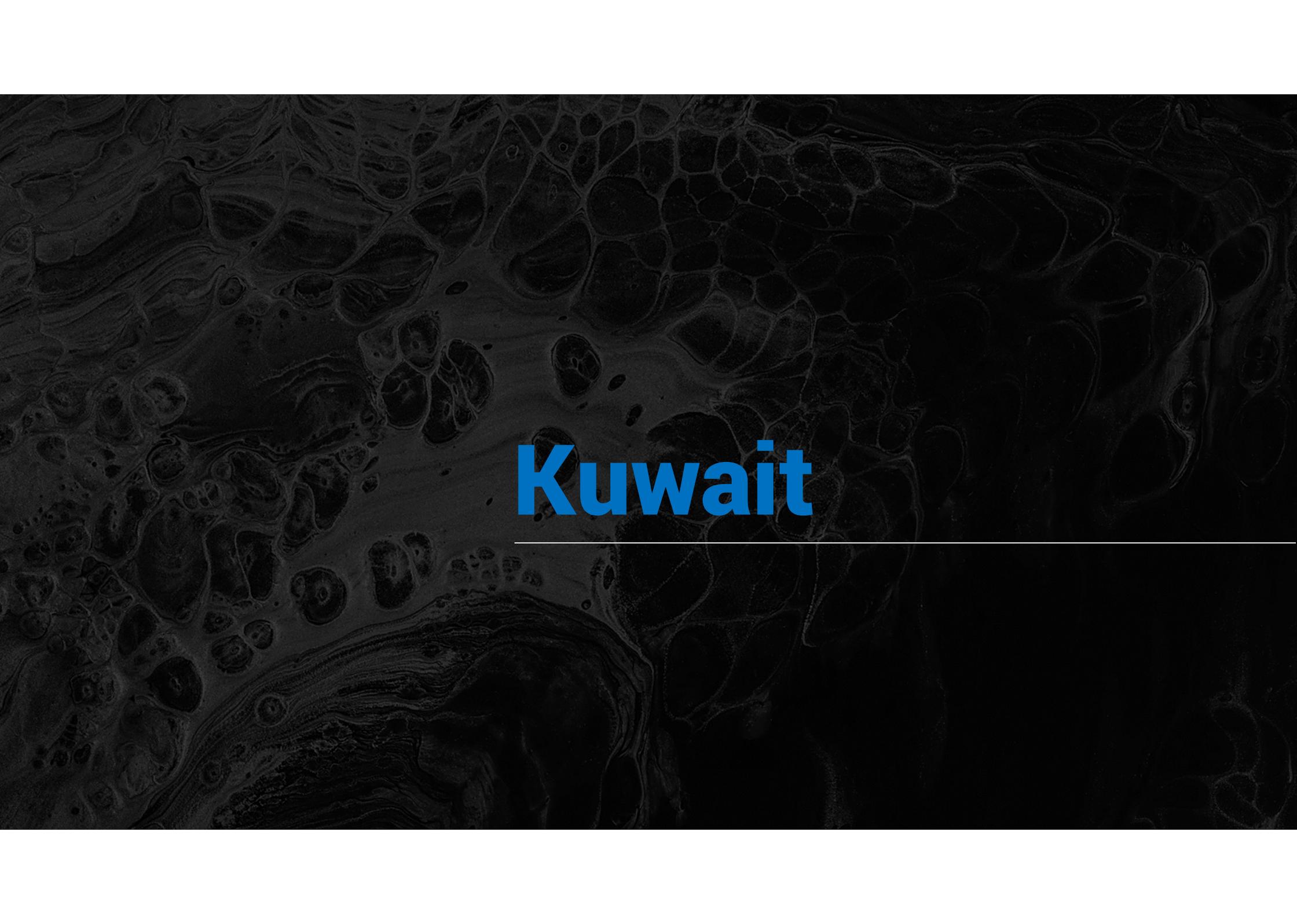
Mortality rate

0.3%

Note: Data extracted on April 28th  
Sources: Bahrain Ministry of Health, IHME, Infomineo Analysis

## ICU beds utilization at peak-day<sup>1</sup>, per 1,000 population



The background of the slide is a dark, monochromatic marbled paper pattern. The marbling consists of intricate, swirling, and cell-like shapes in various shades of dark grey and black, creating a complex, organic texture. The word "Kuwait" is centered in the middle of the slide in a bold, bright blue, sans-serif font. A thin white horizontal line is positioned directly below the text.

**Kuwait**



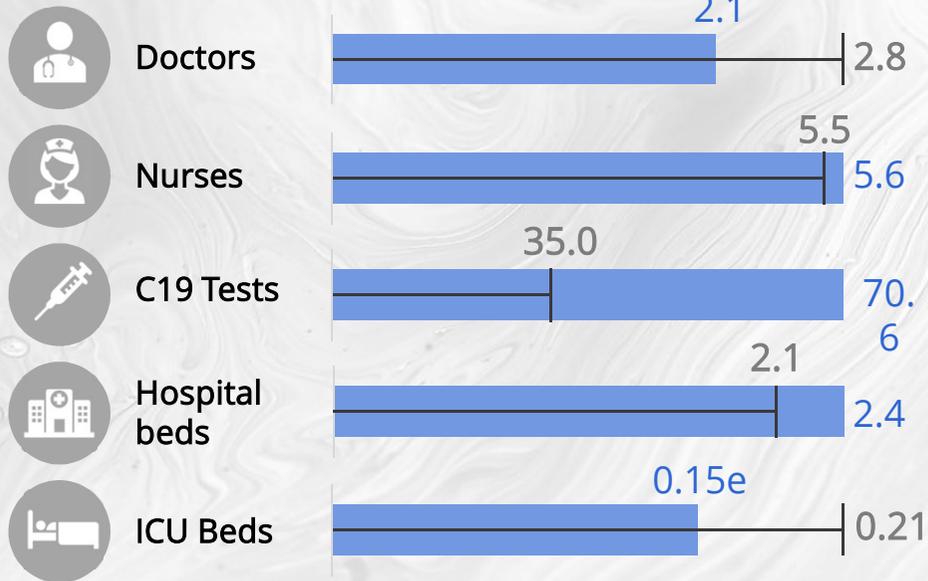
# The HC system in Kuwait can support up to 9,600 cases

## Main health indicators



## Health system capacity<sup>1</sup> per 1,000 population

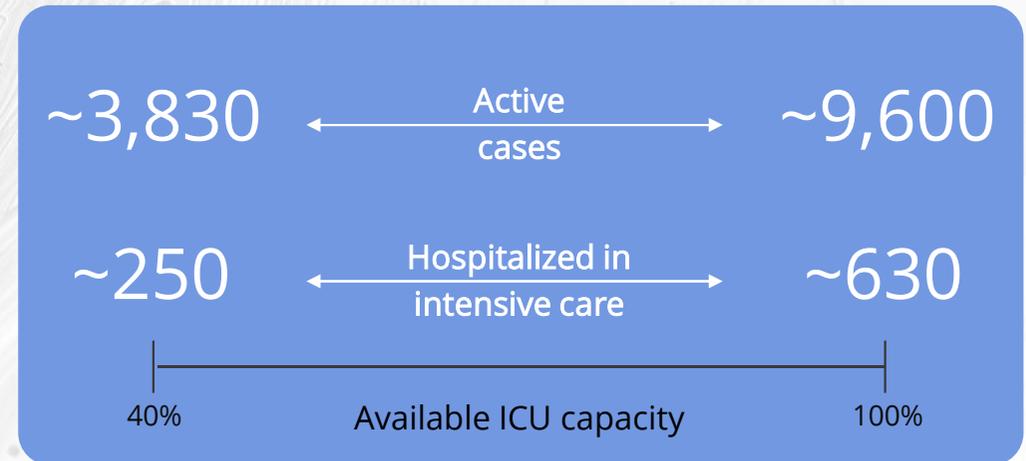
Kuwait  
GCC Average



## Interventions for capacity expansion

April 16: The Environment Public Authority set up a field hospital with a 1700 bed capacity in Mahboula. 3 a locations are being prepared to be used as field a field hospital and quarantine site

## Total sustainable C19 cases

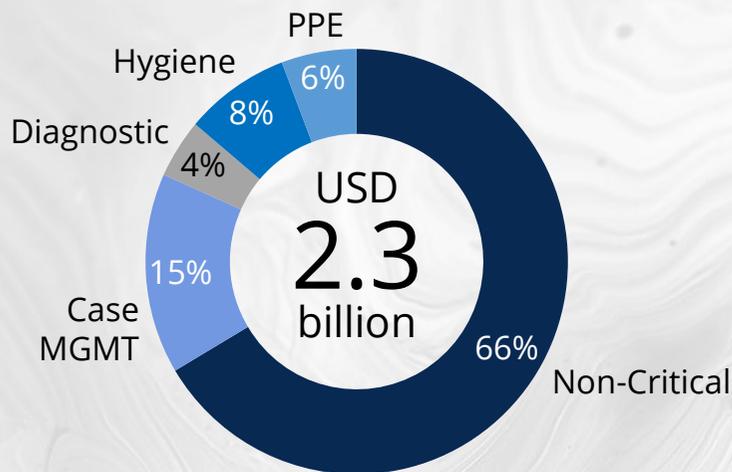


Note1: most recent available data  
Sources: Kuwait MOH, Press search, Infomineo Analysis

# C19 health crisis management equipment - trade data



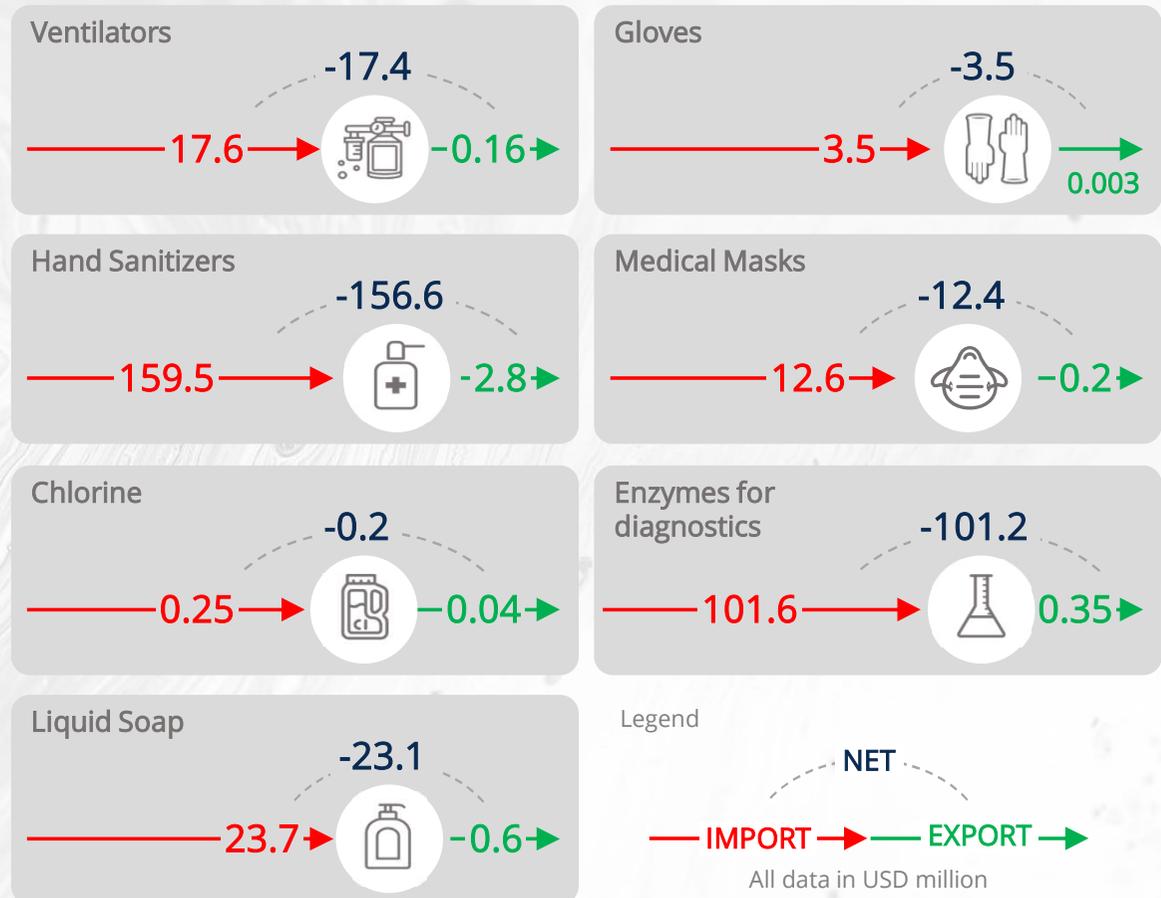
## Total importation of relevant equipment by category



### Product categories

- Case Management: Ventilators, patient monitors, flow-splitters, etc.
- Hygiene: Hand Sanitizers, Liquid Soap, Chlorine
- PPE: Medical Masks, Gloves, headwear, aprons, protective clothing, etc.
- Diagnostic: Enzymes
- Non-critical: bio-hazard bags, bandages, thermometers, x-ray equipment, etc.

## Critical item trade net position



Sources: Database on COVID-19 trade flows and policies - World Bank  
 Notes: PPE: Personal Protective Equipment; MGMT: Management. All figures calculated as 3 yr avg between 2017, 2018, and 2019. For countries without direct trade data mirror data is used

# Trade dynamics effect on the price of essential equipment



Ventilators



Hand Sanitizers



Chlorine



Liquid Soap



Gloves



Medical Masks



Enzymes

	Ventilators	Hand Sanitizers	Chlorine	Liquid Soap	Gloves	Medical Masks	Enzymes
Top 3 suppliers							
Countries and shares	UAE: 33% China: 13% Germany: 11%	KSA: 78% Egypt: 8% UAE: 3%	KSA: 60% Qatar: 26% India: 12%	Bahrain: 22% UAE: 14% USA: 12%	Oman: 41% Malaysia: 38% KSA: 15%	China: 41% Vietnam: 11% USA: 11%	USA: 31% Switzerland: 23% Germany: 15%
Concentration (%)	56	89	98	48	94	63	69
Direct Price Impact <sup>2</sup> (%)	7.1	6.4	6.4	3.7	22.2	25.5	13.5
Max Price Impact <sup>2</sup> (%)	12.3	7.4	6.6	7.4	23.7	38.5	19.3
Exposure index <sup>1</sup>	58	86	97	49	94	67	70

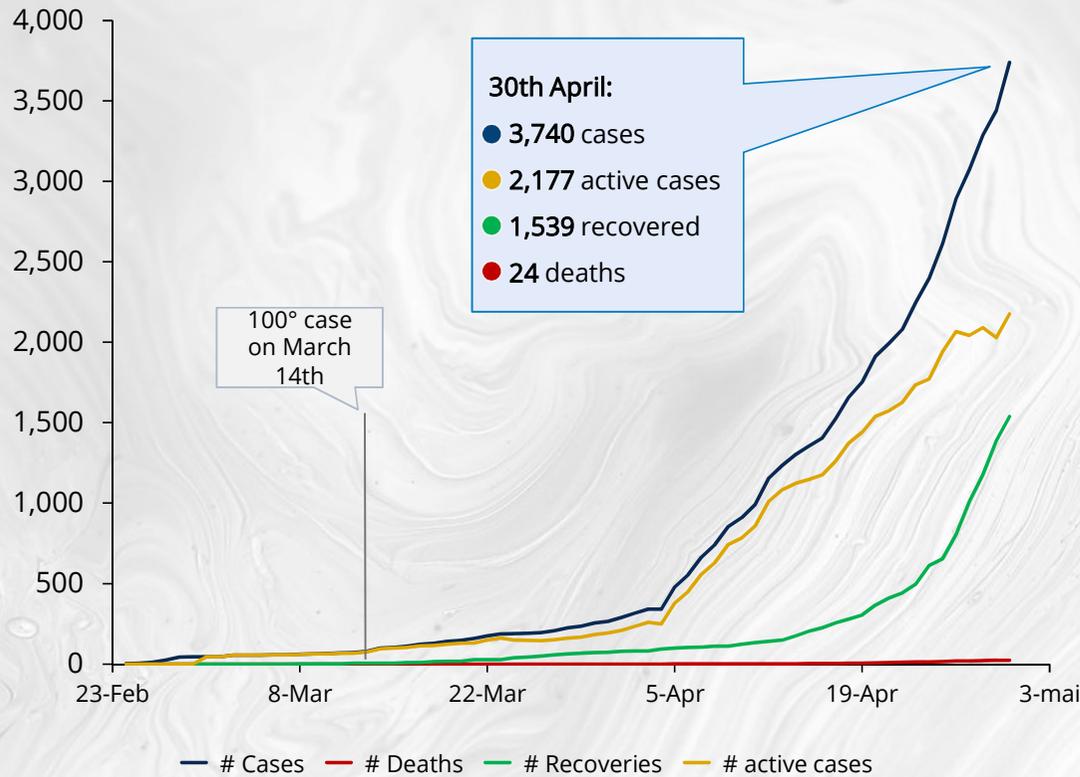
Note1: The index shows, on a scale from 0 to 100, the level of risk (very high, high or moderate) of a max price increase to which the country is exposed to, due to new trade dynamics and supplier concentration for each product.

Note2: Direct / Max Price Impacts are reported by the WB database on COVID 19 trade flows, and represent the local price increase assuming a total reduction on export quantities for each trading partner. The increase is estimated using trade elasticities: Direct price effect<sub>ij</sub>=Var Q<sub>ij</sub>/import price elasticity<sub>ij</sub>. Where I is the importer and j is the exporter (Fontagne, Gambard, Orefice 2019). Countries in blue already have an export ban in place on the 13 related product. Sources: World Bank, Infomineo Analysis



# Kuwait is the 4<sup>th</sup> GCC country for number of cases

## Epidemiologic evolution



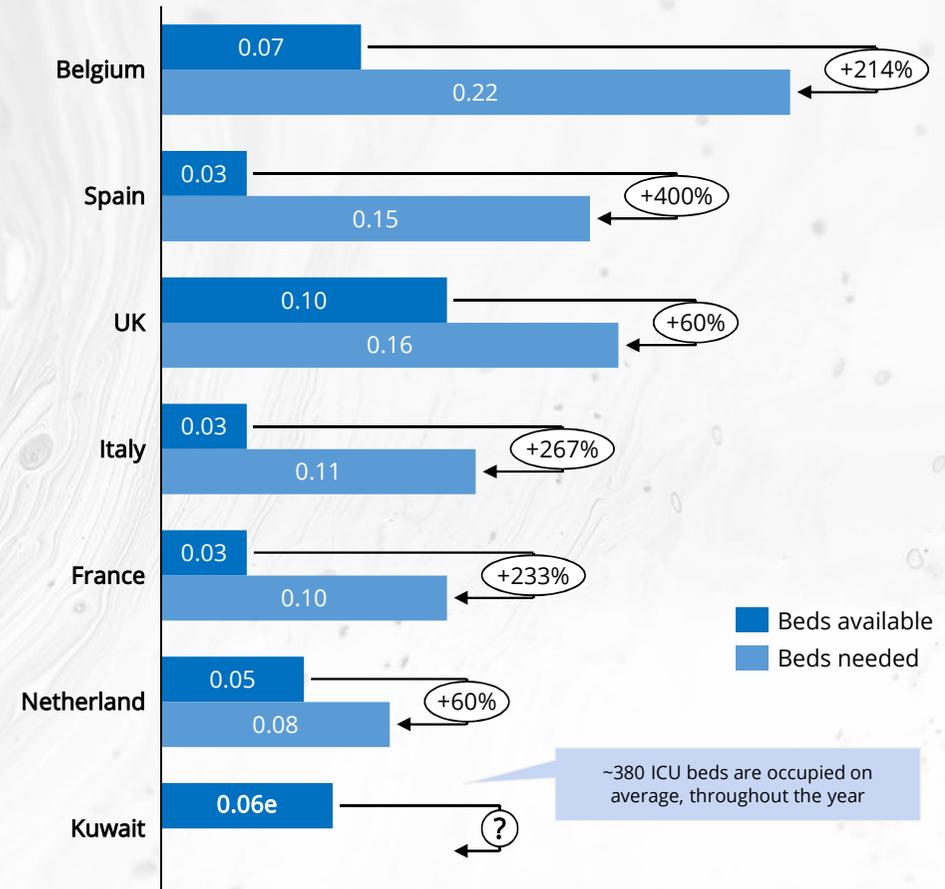
Population med. age

32.6 years, as of 2020

Mortality rate 0.6%

Note: Data extracted on April 28th  
Sources: Kuwait Ministry of Health, IHME, Infomineo Analysis

## ICU beds utilization at peak-day<sup>1</sup>, per 1,000 population



The background of the slide is a dark, monochromatic marbled paper pattern. The marbling consists of intricate, swirling, and cell-like shapes in various shades of dark grey and black, creating a complex, organic texture. The word "Oman" is centered in the middle of the page in a bold, blue, sans-serif font. A thin white horizontal line is positioned directly below the text.

**Oman**

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# The HC system can support up to ~7,560 active cases

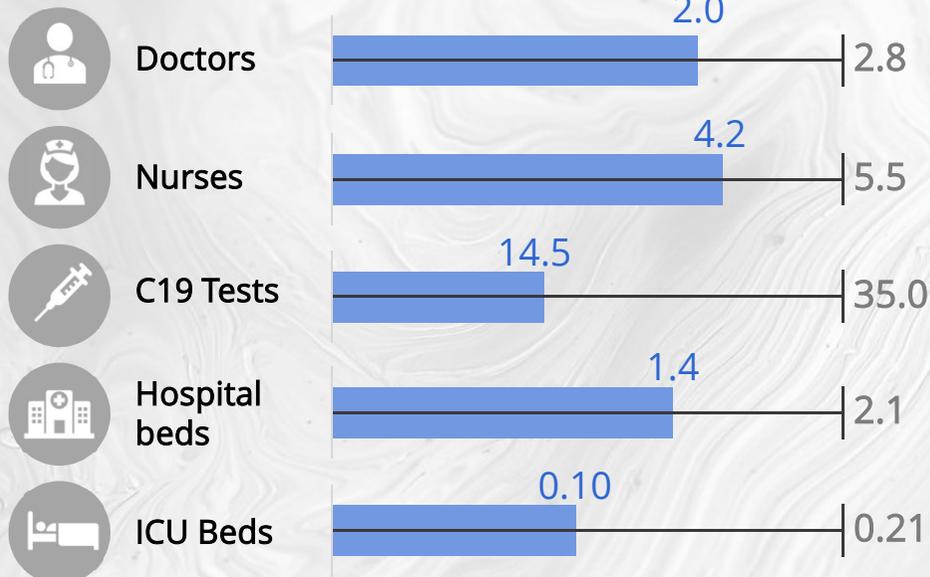
## Main health indicators



## Health system capacity<sup>1</sup>

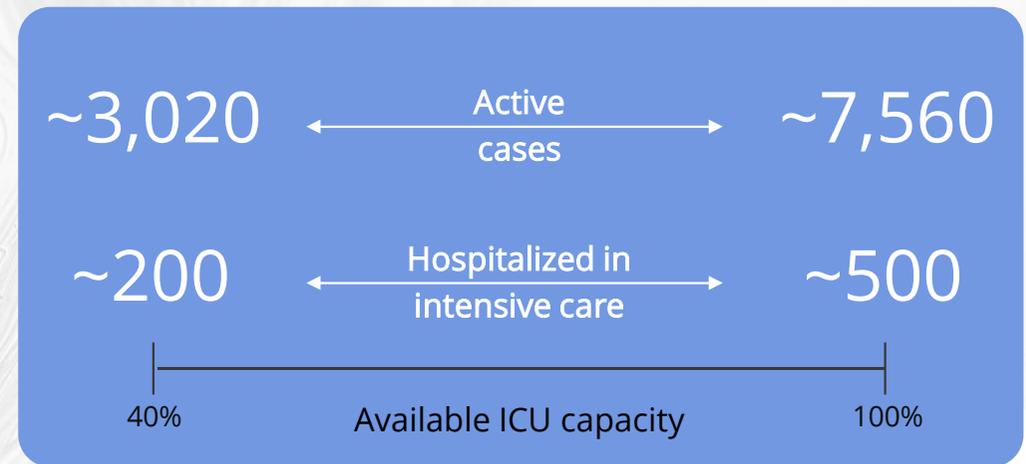
per 1,000 population

Oman  
GCC Average



Hospital bed utilization rate, pre-C19: **60.6%**

## Total sustainable C19 cases

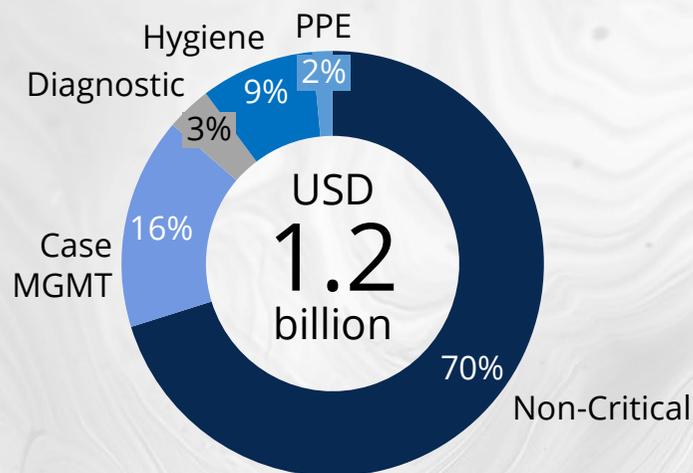


Note1: most recent available data  
Sources: Oman MOH, Infomineo Analysis

# C19 health crisis management equipment - trade data



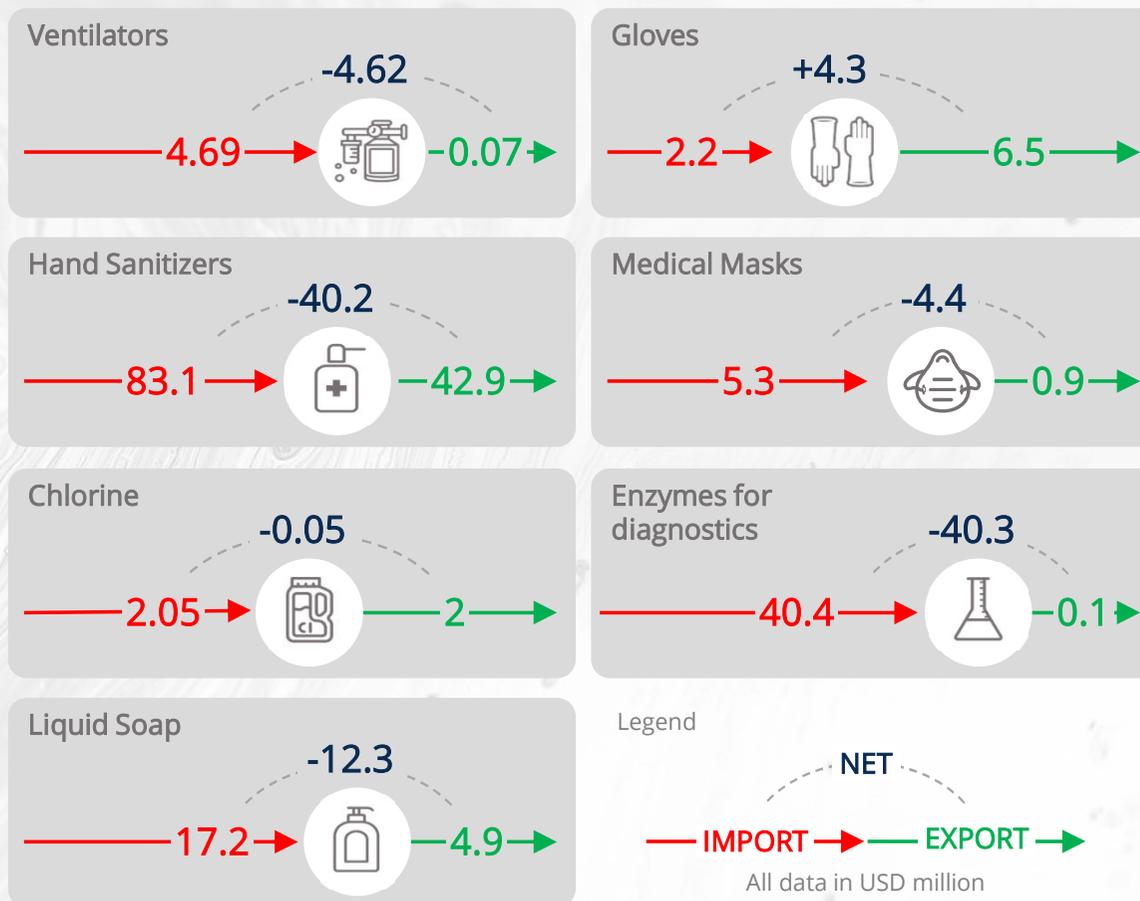
## Total importation of relevant equipment by category



## Product categories

- Case Management: Ventilators, patient monitors, flow-splitters, etc.
- Hygiene: Hand Sanitizers, Liquid Soap, Chlorine
- PPE: Medical Masks, Gloves, headwear, aprons, protective clothing, etc.
- Diagnostic: Enzymes
- Non-critical: bio-hazard bags, bandages, thermometers, x-ray equipment, etc.

## Critical item trade net position



Sources: Database on COVID-19 trade flows and policies - World Bank  
 Notes: PPE: Personal Protective Equipment; MGMT: Management. All figures calculated as 3 yr avg between 2017, 2018, and 2019. For countries without direct trade data mirror data is used

# Trade dynamics effect on the price of essential equipment



Ventilators



Hand Sanitizers



Chlorine



Liquid Soap



Gloves



Medical Masks



Enzymes

	Ventilators	Hand Sanitizers	Chlorine	Liquid Soap	Gloves	Medical Masks	Enzymes
Top 3 suppliers							
Countries and shares	UAE: 20% Germany: 15% China: 10%	KSA: 73% UAE: 21% Bahrain: 1%	Singapore: 65% UAE: 18% China: 11%	UAE: 59% Bahrain: 28% France: 3%	UAE: 37% Malaysia: 34% Singapore: 17%	UAE: 60% China: 10% USA: 9%	Spain: 29% UAE: 19% USA: 12%
Concentration (%)	45	95	94	90	88	79	60
Direct Price Impact <sup>2</sup> (%)	5.6	7.2	6.2	6.8	21	32	11.7
Max Price Impact <sup>2</sup> (%)	12.3	7.4	6.6	7.4	23.7	38.5	19.3
Exposure index <sup>1</sup>	47	97	94	89	89	81	60

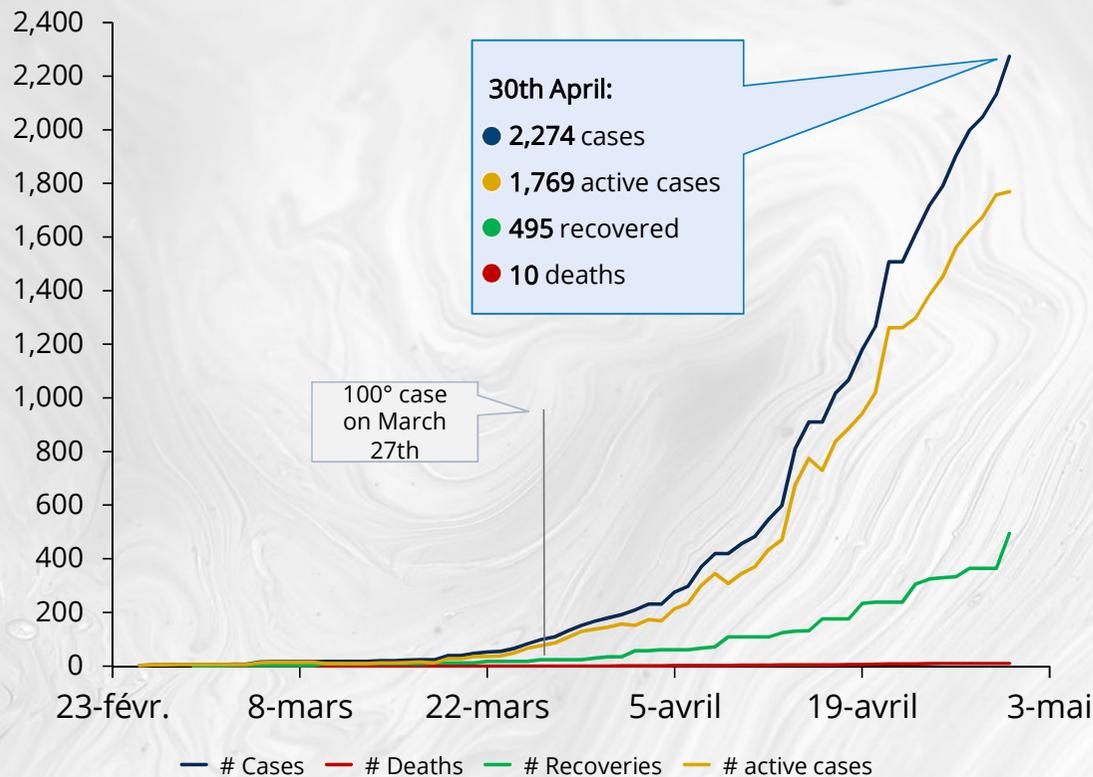
Note1: The index shows, on a scale from 0 to 100, the level of risk (**very high**, **high** or **moderate**) of a *max price increase* to which the country is exposed to, due to new trade dynamics and supplier concentration for each product.

Note2: Direct / Max Price Impacts are reported by the WB database on COVID 19 trade flows, and represent the local price increase assuming a total reduction on export quantities for each trading partner. The increase is estimated using trade elasticities:  $\text{Direct price effect}_{ij} = \text{Var } Q_{ij} / \text{import price elasticity}_{ij}$ . Where *i* is the importer and *j* is the exporter (Fontagne, Gambard, Orefice 2019). Countries in **blue** already have an export ban in place on the 18 related product. Sources: World Bank, Infomineo Analysis

# Oman is experiencing rapid growth but a low death rate



## Epidemiologic evolution



Population med. age

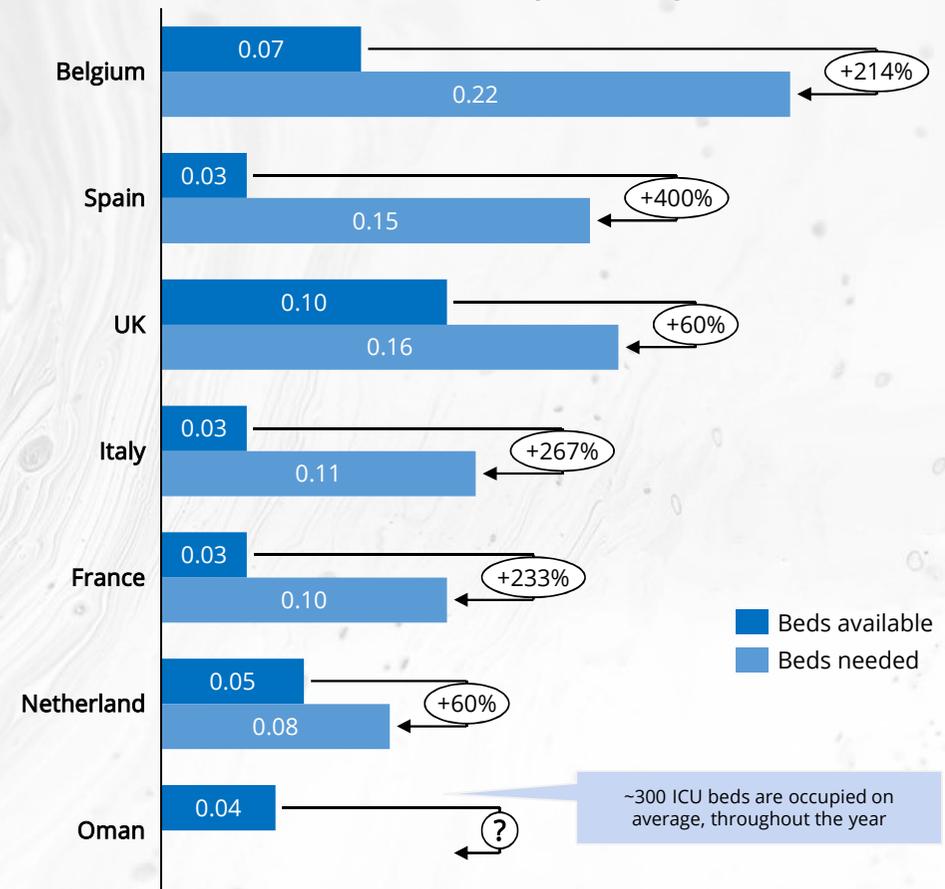
30.6 years, as of 2020

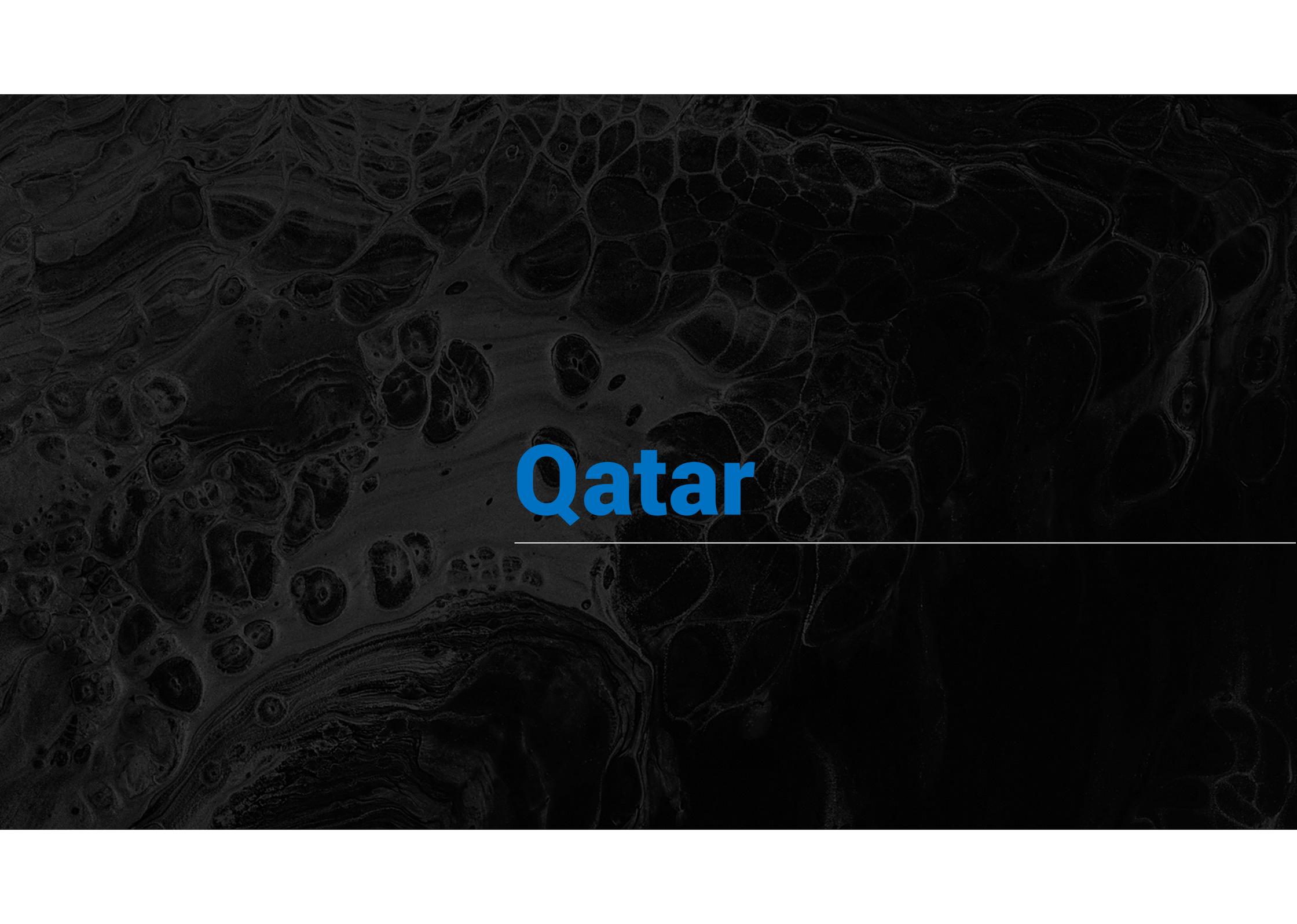
Mortality rate

0.4%

Note: Data extracted on April 28th  
Sources: Oman MOH, IHME, Infomineo Analysis

## ICU beds utilization at peak-day<sup>1</sup>, per 1,000 population



The background of the slide is a dark, monochromatic marbled paper pattern. The marbling consists of intricate, swirling, and cell-like shapes in various shades of dark grey and black, creating a complex, organic texture. The overall effect is reminiscent of traditional stone or shell marbling techniques.

**Qatar**

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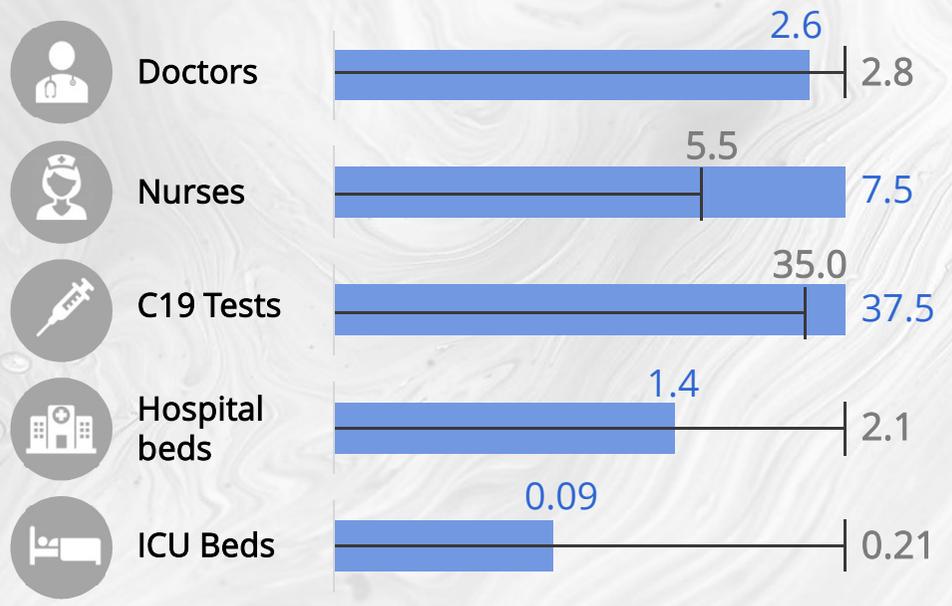
# The HC system can support up to ~3,800 active cases

## Main health indicators



## Health system capacity<sup>1</sup> per 1,000 population

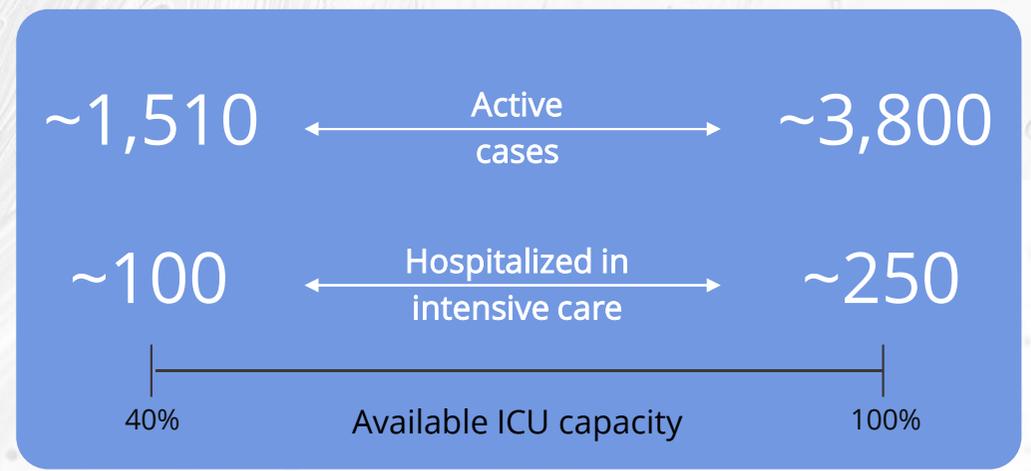
Qatar GCC Average



## Interventions for capacity expansion

April 10<sup>th</sup>: Hamad Medical Corporation (HMC) increased the capacity of Hazm Mebaireek General Hospital by **149 beds**. **34 ICU beds** were also added. HMC can increase the number of beds in the hospital up to 560. A field Hospital is also being constructed with **274 bed capacity**.

## Total sustainable C19 cases

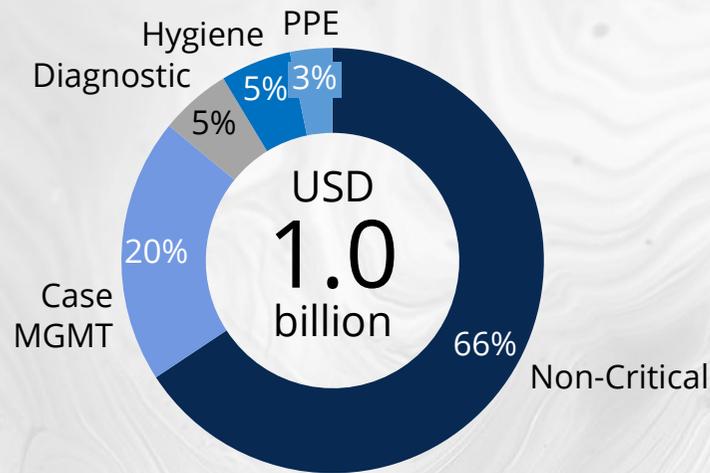


Note1: most recent available data  
Sources: Press Search, MOH, IHME, Infomineo Analysis



# C19 health crisis management equipment - trade data

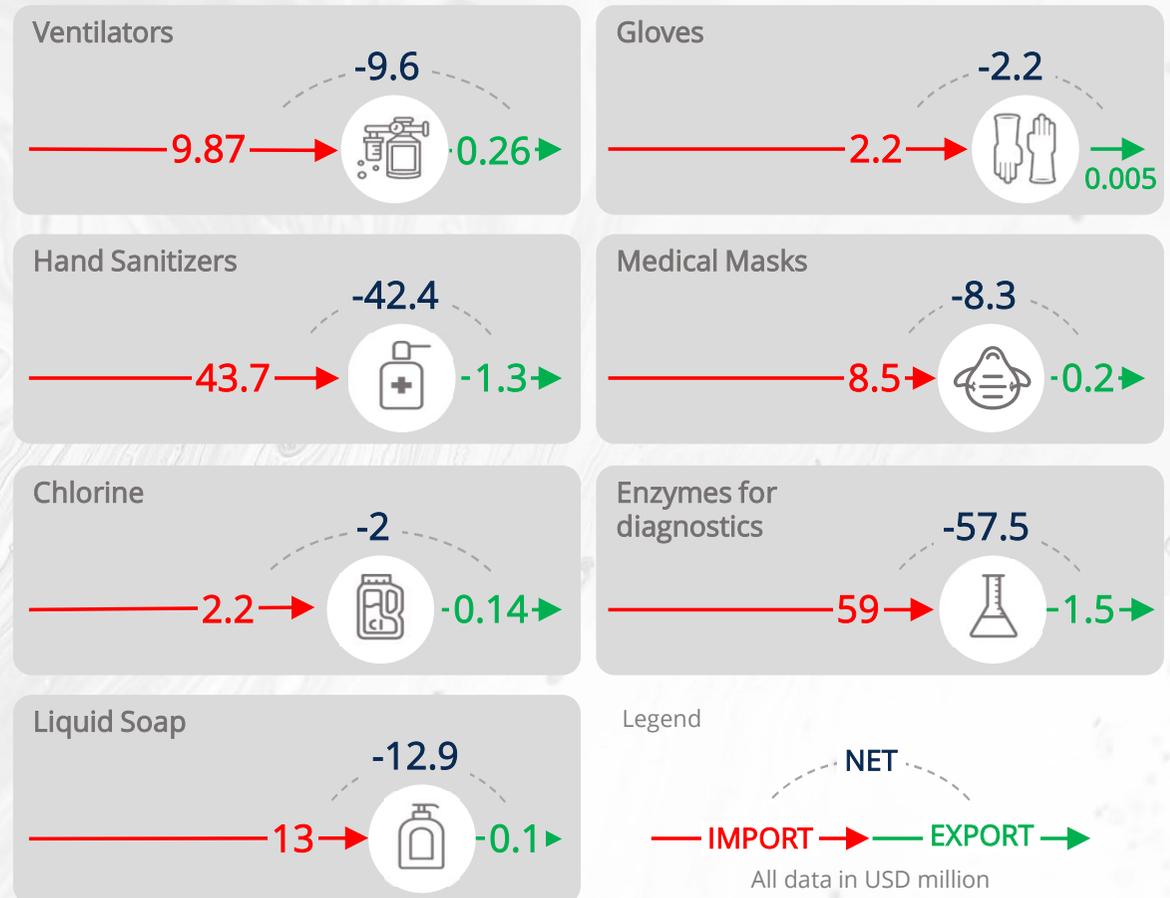
## Total importation of relevant equipment by category



### Product categories

- Case Management: Ventilators, patient monitors, flow-splitters, etc.
- Hygiene: Hand Sanitizers, Liquid Soap, Chlorine
- PPE: Medical Masks, Gloves, headwear, aprons, protective clothing, etc.
- Diagnostic: Enzymes
- Non-critical: bio-hazard bags, bandages, thermometers, x-ray equipment, etc.

## Critical item trade net position



Sources: Database on COVID-19 trade flows and policies - World Bank  
 Notes: PPE: Personal Protective Equipment; MGMT: Management. All figures calculated as 3 yr avg between 2017, 2018, and 2019. For countries without direct trade data mirror data is used

# Trade dynamics effect on the price of essential equipment



Ventilators



Hand Sanitizers



Chlorine



Liquid Soap



Gloves



Medical Masks



Enzymes

	Ventilators	Hand Sanitizers	Chlorine	Liquid Soap	Gloves	Medical Masks	Enzymes
Top 3 suppliers							
Countries and shares	USA: 31% Switzerland: 18% Germany: 16%	Oman: 40% Turkey: 12% Lebanon: 6%	Oman: 85% India: 5% Colombia: 4%	Oman: 35% Bahrain: 28% UK: 6%	Oman: 56% Germany: 14% Malaysia: 10%	China: 37% USA: 13% India: 9%	USA: 39% Germany: 19% Belgium: 11%
Concentration (%)	65	58	94	69	80	59	69
Direct Price Impact <sup>2</sup> (%)	8.1	4.3	6.2	5.2	19	23.7	13.6
Max Price Impact <sup>2</sup> (%)	12.3	7.4	6.6	7.4	23.7	38.5	19.3
Exposure index <sup>1</sup>	65	58	94	69	80	61	70

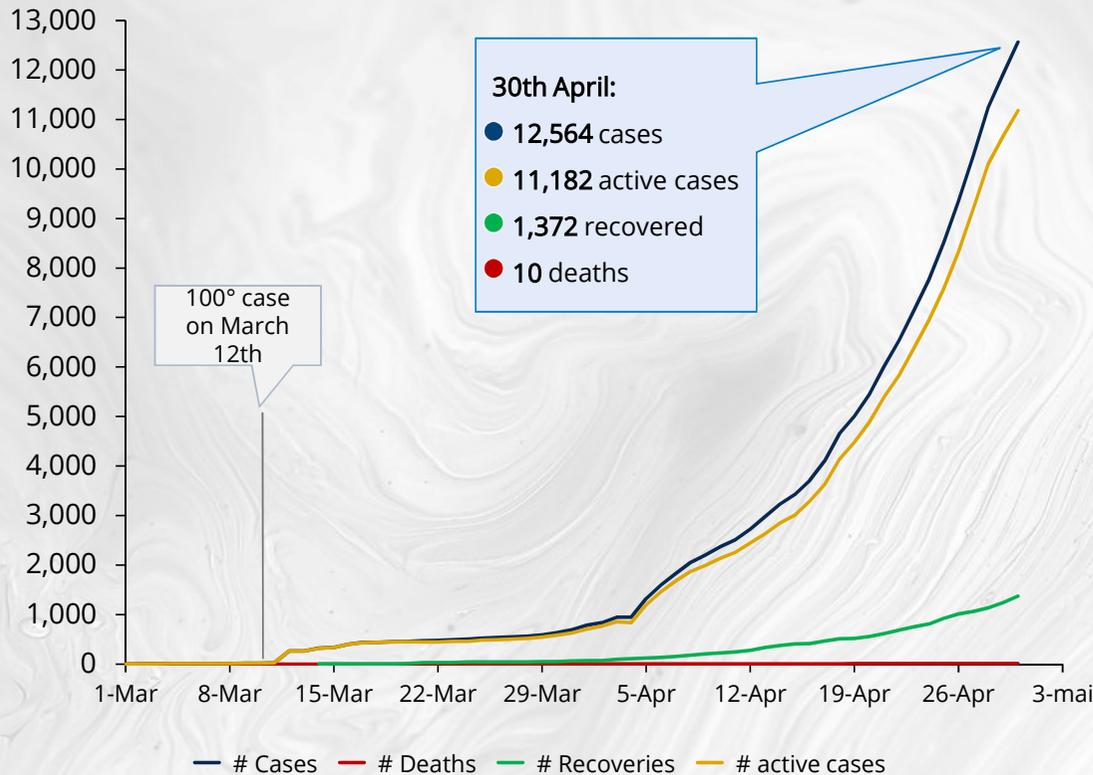
Note1: The index shows, on a scale from 0 to 100, the level of risk (very high, high or moderate) of a max price increase to which the country is exposed to, due to new trade dynamics and supplier concentration for each product.

Note2: Direct / Max Price Impacts are reported by the WB database on COVID 19 trade flows, and represent the local price increase assuming a total reduction on export quantities for each trading partner. The increase is estimated using trade elasticities: Direct price effect<sub>ij</sub>=Var Q<sub>ij</sub>/import price elasticity<sub>ij</sub>. Where I is the importer and j is the exporter (Fontagne, Gambard, Orefice 2019). Countries in blue already have an export ban in place on the 23 related product. Sources: World Bank, Infomineo Analysis

# The Qatari HC system may be operating at 100%+ capacity



## Epidemiologic evolution



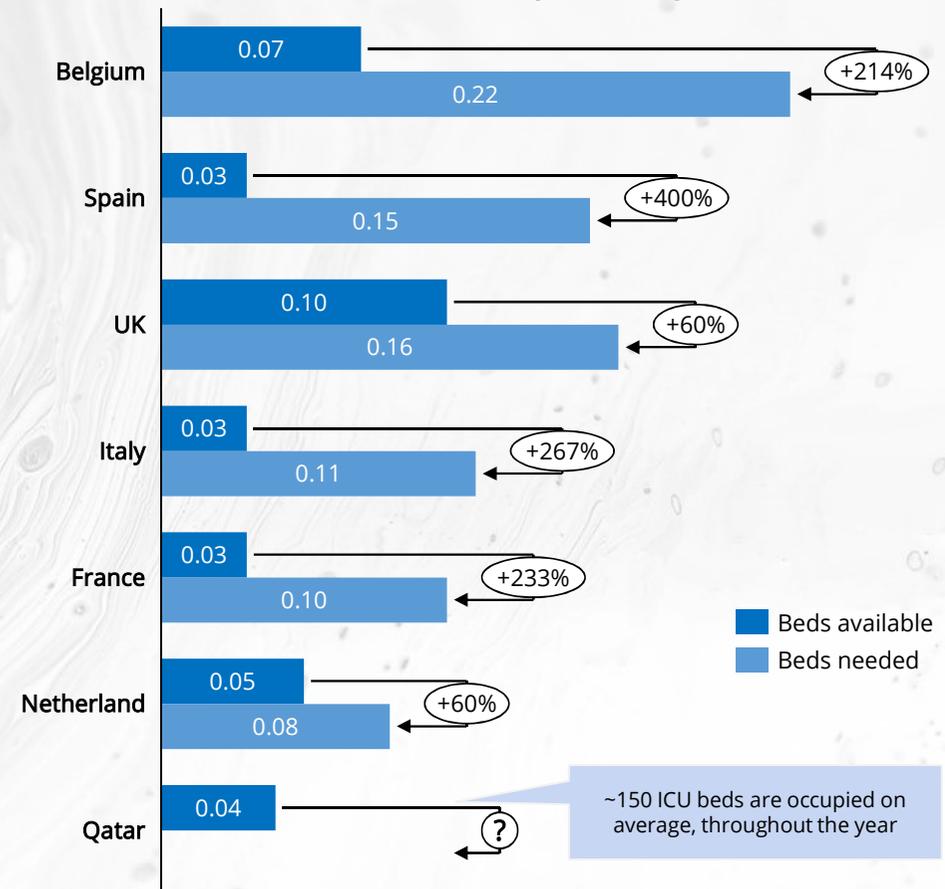
Population med. age

32.3 years, as of 2020

Mortality rate 0.07%

Note: Data extracted on April 28th  
Sources: Qatar Ministry of Health, IHME, Infomineo Analysis

## ICU beds utilization at peak-day<sup>1</sup>, per 1,000 population



The background of the slide is a dark, monochromatic marbled paper pattern. The marbling consists of intricate, swirling, and cell-like shapes in various shades of dark grey and black, creating a complex, organic texture. The overall effect is reminiscent of traditional stone or shell marbling techniques.

# Saudi Arabia

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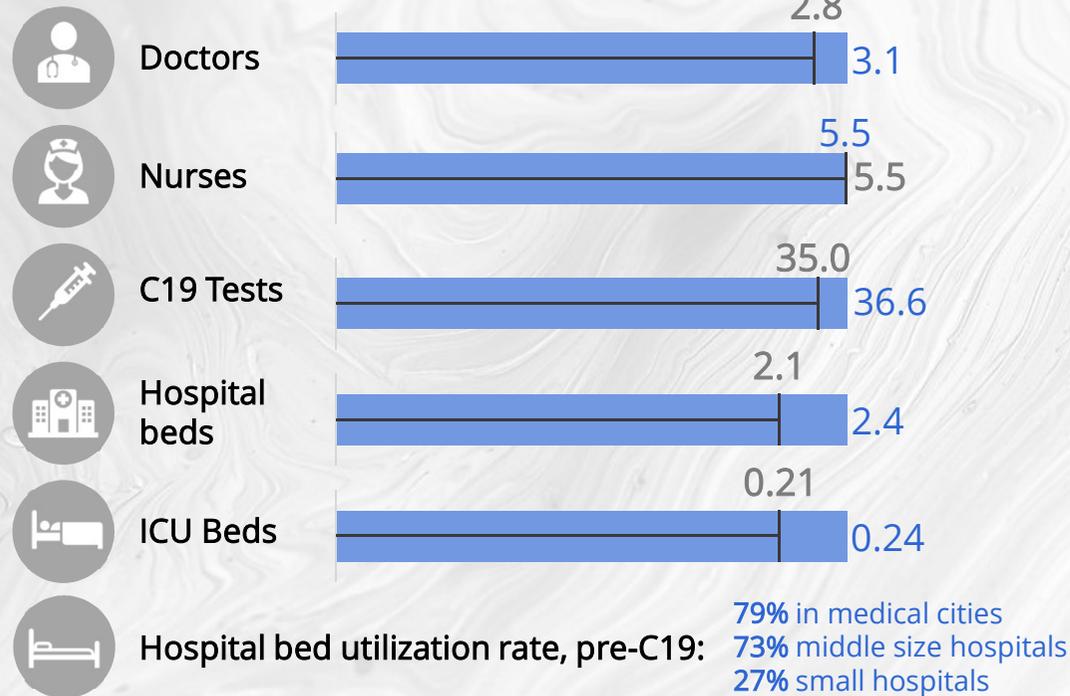
# The Saudi HC system can support over 121k active cases

## Main health indicators

Healthcare Spending, 2019 > **\$98.4** billion **\$2,920** per capita

## Health system capacity<sup>1</sup>

per 1,000 population

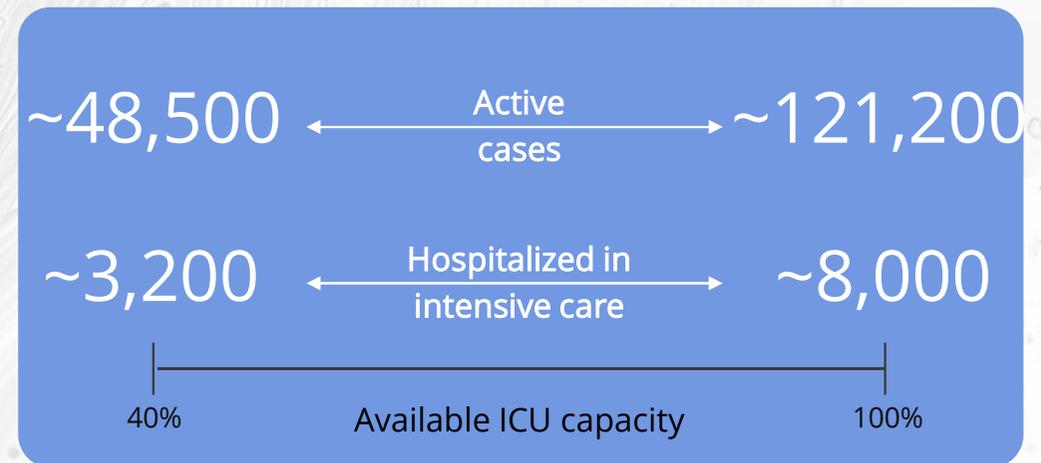


## Interventions for capacity expansion

1 Mar – Ministry of Health Designates 25 hospitals to treat Covid-19 patients adding:

- + 4,775 beds
- + 2,709 ICU beds
- + 2,200 beds designated for isolation of suspect cases

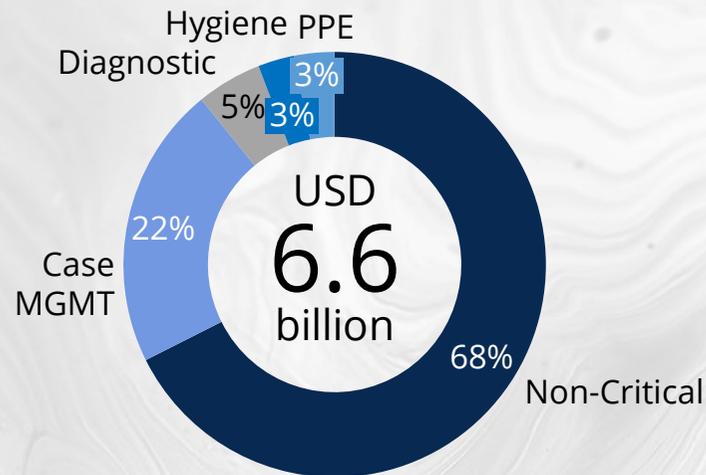
## Total sustainable C19 cases



Note1: most recent available data  
Sources: Press Search, MOH, IHME, Infomineo Analysis

# C19 health crisis management equipment - trade data

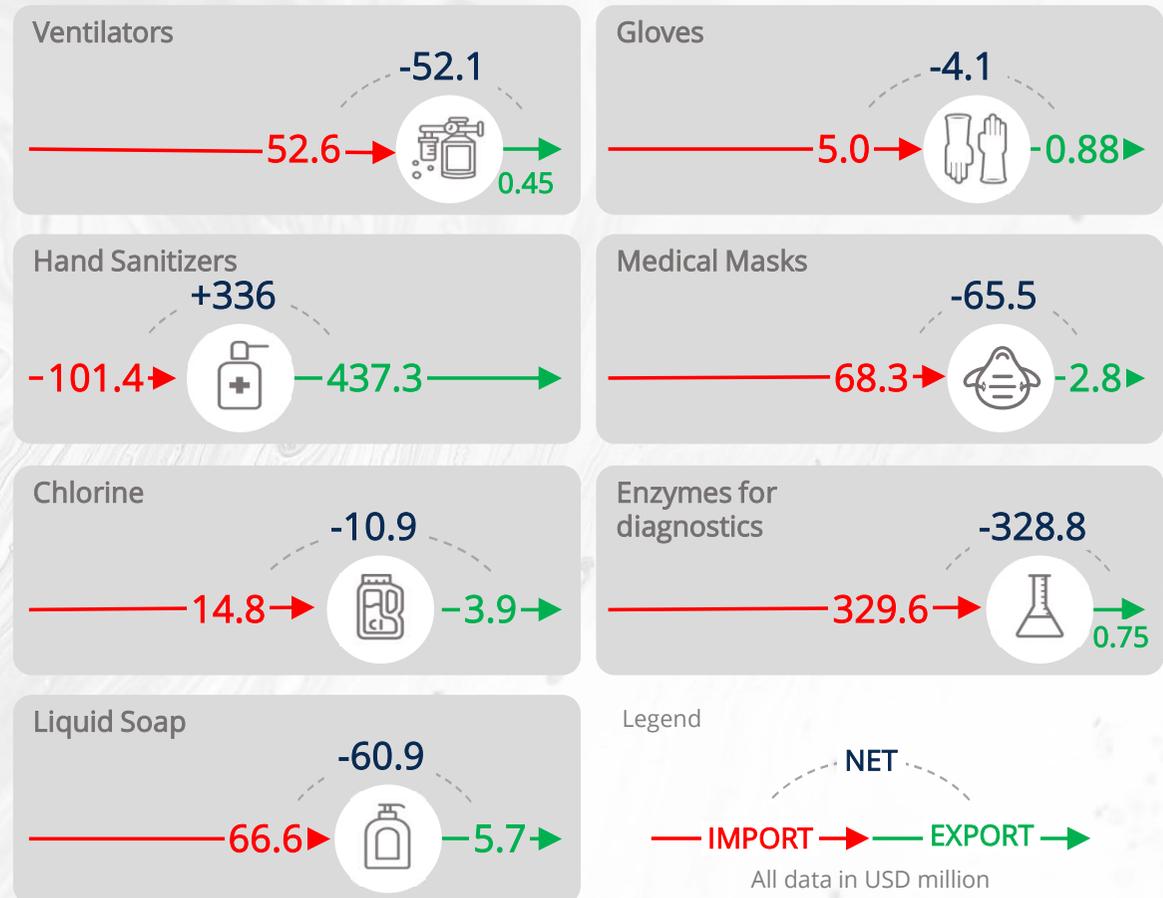
Total importation of relevant equipment by category



## Product categories

- Case Management: Ventilators, patient monitors, flow-splitters, etc.
- Hygiene: Hand Sanitizers, Liquid Soap, Chlorine
- PPE: Medical Masks, Gloves, headwear, aprons, protective clothing, etc.
- Diagnostic: Enzymes
- Non-critical: bio-hazard bags, bandages, thermometers, x-ray equipment, etc.

Critical item trade net position



Sources: Database on COVID-19 trade flows and policies - World Bank  
 Notes: PPE: Personal Protective Equipment; MGMT: Management. All figures calculated as 3 yr avg between 2017, 2018, and 2019. For countries without direct trade data mirror data is used

# Trade dynamics effect on the price of essential equipment



Ventilators



Hand Sanitizers



Chlorine



Liquid Soap



Gloves



Medical Masks



Enzymes

	Ventilators	Hand Sanitizers	Chlorine	Liquid Soap	Gloves	Medical Masks	Enzymes
Top 3 suppliers							
Countries and shares	Germany: 19% USA: 18% China: 12%	UAE: 32% Italy: 12% Oman: 10%	UAE: 67% China: 22% Italy: 5%	Bahrain: 37% UAE: 37% France: 6%	Malaysia: 65% Belgium: 8% Oman: 6%	China: 45% UAE: 14% France: 10%	Germany: 30% UAE: 21% France: 10%
Concentration (%)	49	54	94	80	79	69	61
Direct Price Impact <sup>2</sup> (%)	6.2	4.1	6.2	6.2	18.9	27.7	11.8
Max Price Impact <sup>2</sup> (%)	12.3	7.4	6.6	7.4	23.7	38.5	19.3
Exposure index <sup>1</sup>	50	55	94	82	80	70	61

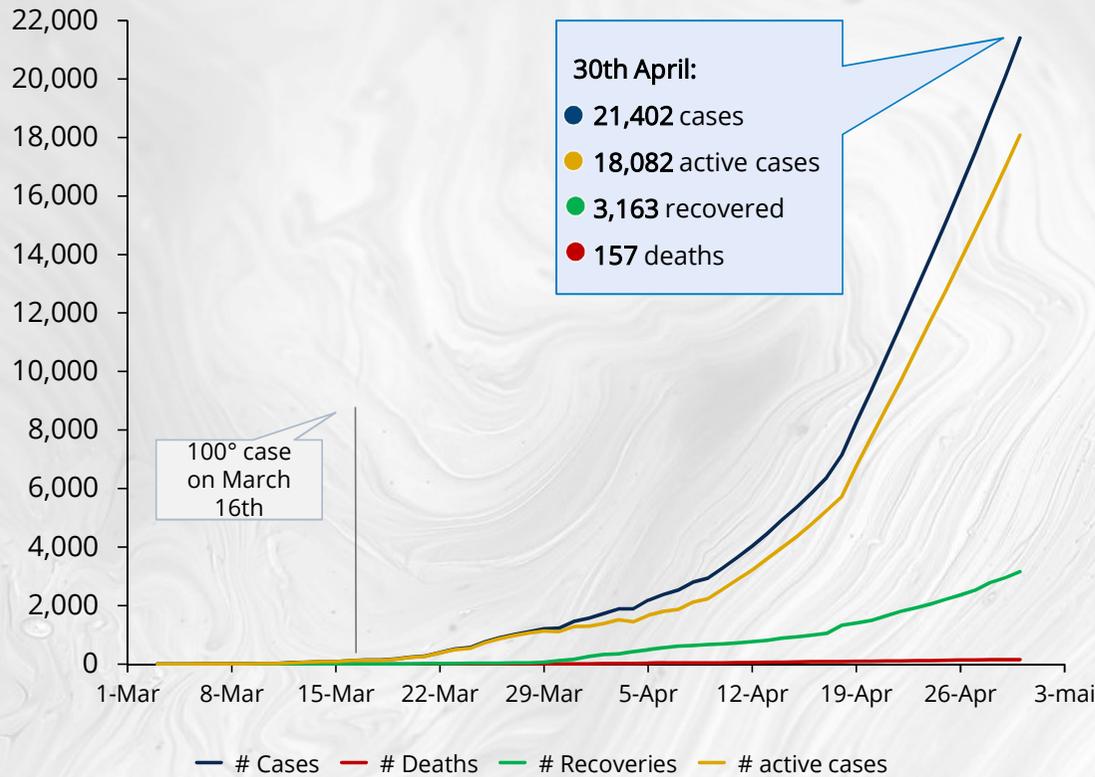
Note1: The index shows, on a scale from 0 to 100, the level of risk (very high, high or moderate) of a max price increase to which the country is exposed to, due to new trade dynamics and supplier concentration for each product.

Note2: Direct / Max Price Impacts are reported by the WB database on COVID 19 trade flows, and represent the local price increase assuming a total reduction on export quantities for each trading partner. The increase is estimated using trade elasticities: Direct price effect<sub>ij</sub>=Var Q<sub>ij</sub>/import price elasticity<sub>ij</sub>. Where I is the importer and j is the exporter (Fontagne, Gambard, Orefice 2019). Countries in blue already have an export ban in place on the 28 related product. Sources: World Bank, Infomineo Analysis



# The Saudi HC system is coping well with the crisis

## Epidemiologic evolution



Population med. age

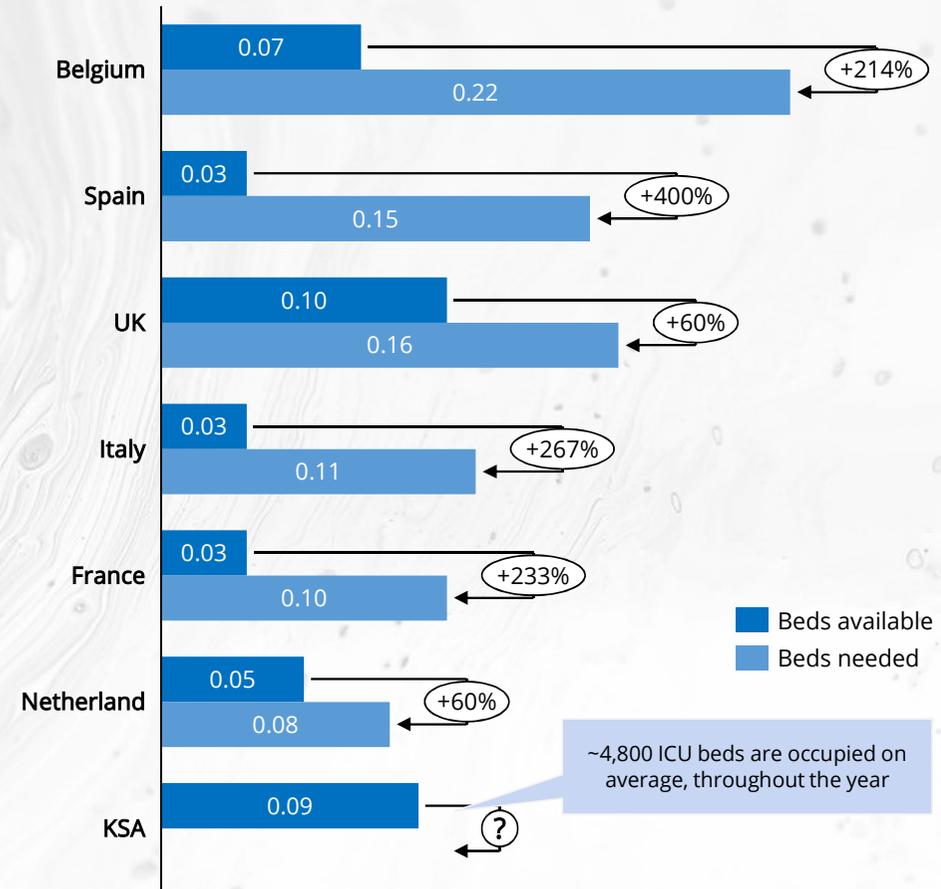
**31.8 years**, as of 2020

Mortality rate

**0.7%**

Note: Data extracted on April 28th  
Sources: KSA Ministry of Health, IHME, Infomineo Analysis

## ICU beds utilization at peak-day<sup>1</sup>, per 1,000 population



The background of the slide is a dark, textured marbled paper pattern. The colors are primarily black and dark grey, with intricate, swirling, and cell-like patterns in shades of charcoal and deep blue. The overall effect is a sophisticated and organic texture.

# United Arab Emirates

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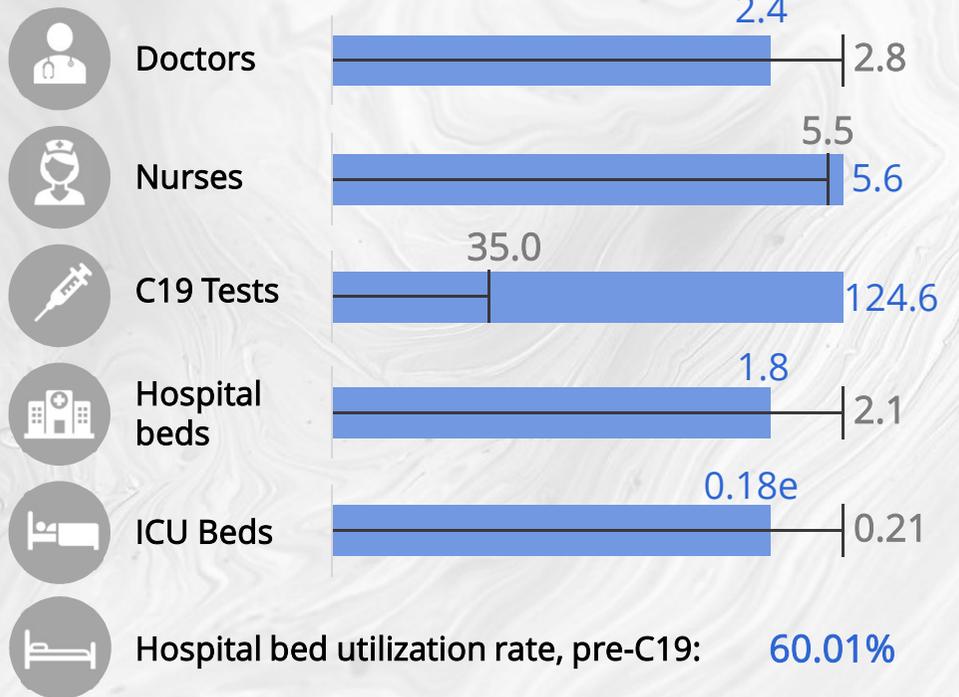
# The HC system can support up to 26,400 active cases

## Main health indicators

Healthcare Spending, 2019 > **\$26.2** billion **\$2,720** per capita

## Health system capacity<sup>1</sup>

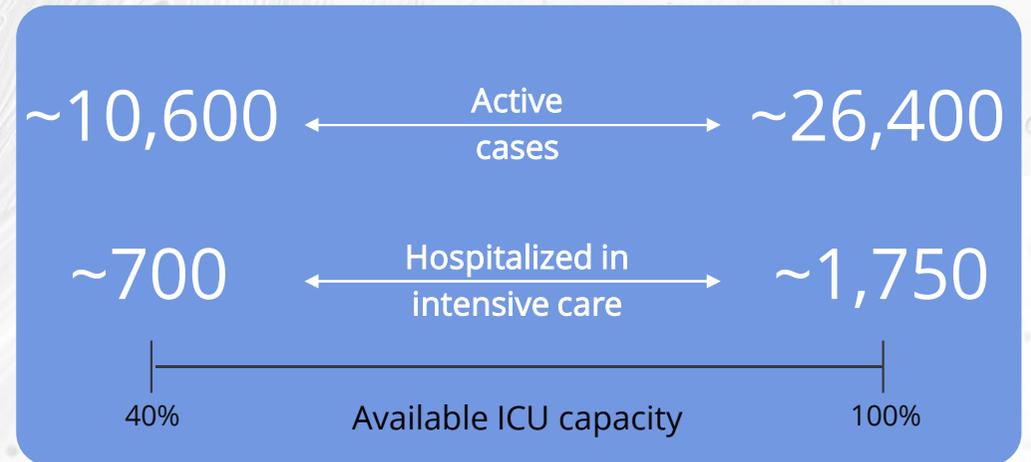
per 1,000 population



## Interventions for capacity expansion

- 31 Mar - Dubai's American Hospital sets up 1,200 beds
- 10 Apr - Dubai Introduces e-licenses to reduce administrative costs and waitimes to facilitate hiring of healthcare professionals
- 15 Apr - Dubai World Trade Center is transformed into a 3,000 bed field hospital

## Total sustainable C19 cases

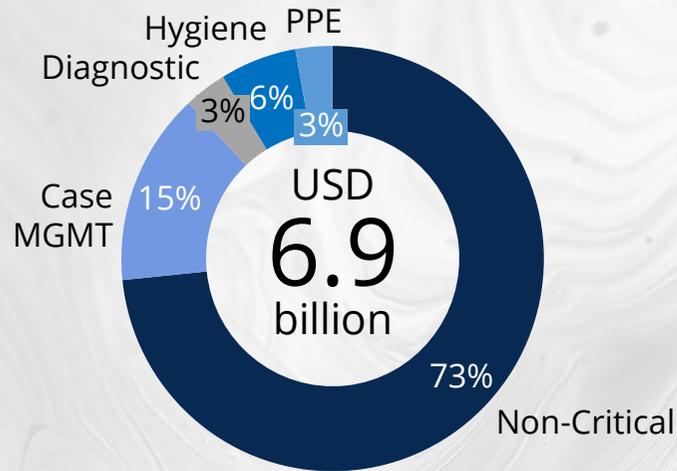


Note1: most recent available data  
Sources: Press Search, MOH, IHME, Abu Dhabi and Dubai Health Authorities, Infomineo Analysis



# C19 health crisis management equipment - trade data

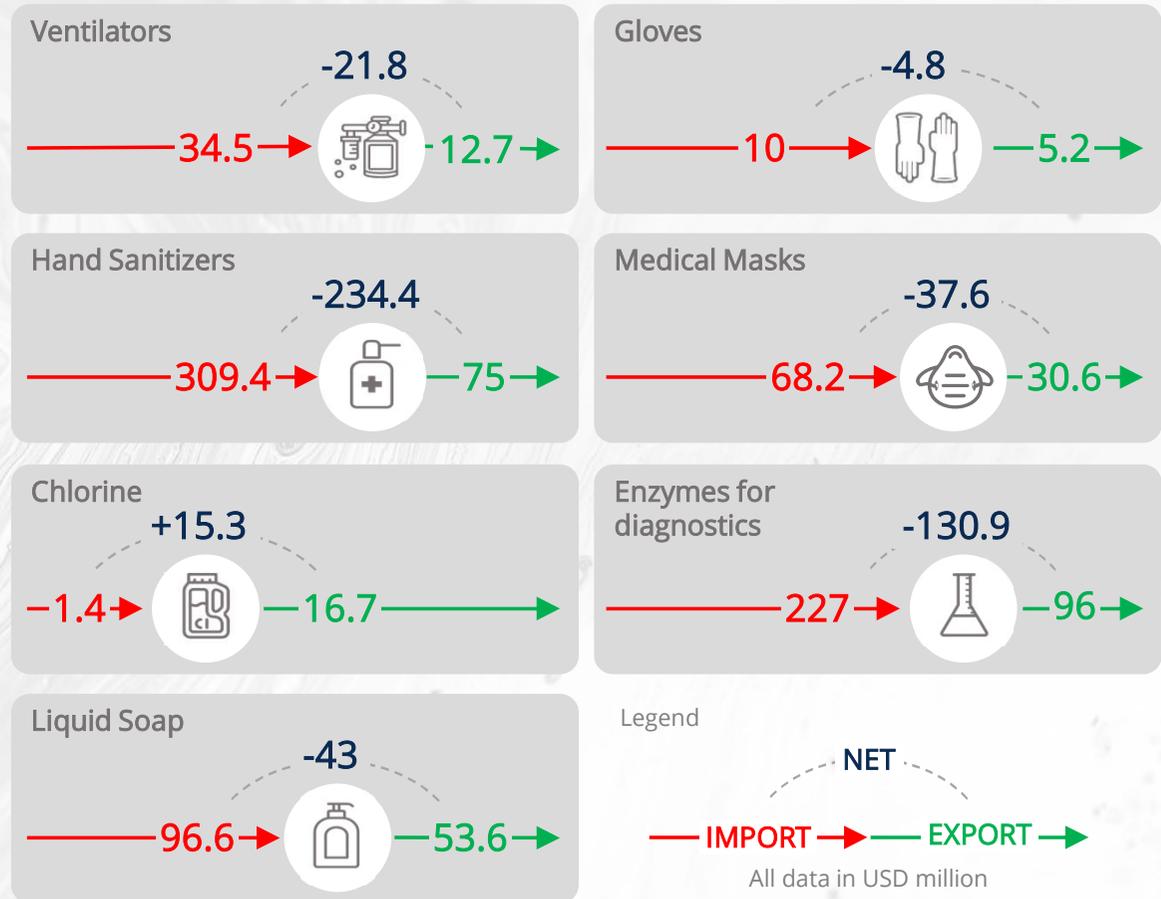
## Total importation of relevant equipment by category



## Product categories

- Case Management: Ventilators, patient monitors, flow-splitters, etc.
- Hygiene: Hand Sanitizers, Liquid Soap, Chlorine
- PPE: Medical Masks, Gloves, headwear, aprons, protective clothing, etc.
- Diagnostic: Enzymes
- Non-critical: bio-hazard bags, bandages, thermometers, x-ray equipment, etc.

## Critical item trade net position



Sources: Database on COVID-19 trade flows and policies - World Bank  
 Notes: PPE: Personal Protective Equipment; MGMT: Management. All figures calculated as 3 yr avg between 2017, 2018, and 2019. For countries without direct trade data mirror data is used



# Trade dynamics effect on the price of essential equipment



Ventilators



Hand Sanitizers



Chlorine



Liquid Soap



Gloves



Medical Masks



Enzymes

	Ventilators	Hand Sanitizers	Chlorine	Liquid Soap	Gloves	Medical Masks	Enzymes
Top 3 suppliers							
Countries and shares	USA: 30% China: 23% Japan: 7%	KSA: 64% Egypt: 8% Poland: 5%	Switzerland: 41% Singapore: 19% China: 10%	USA: 22% Bahrain: 14% Germany: 11%	Malaysia: 63% Thailand: 11% Oman: 5%	China: 37% USA: 14% Vietnam: 12%	Germany: 36% USA: 32% Switzerland: 7%
Concentration (%)	60	77	70	47	79	64	75
Direct Price Impact <sup>2</sup> (%)	7.5	5.8	4.6	3.6	18.6	25.7	14.7
Max Price Impact <sup>2</sup> (%)	12.3	7.4	6.6	7.4	23.7	38.5	19.3
Exposure index <sup>1</sup>	61	78	70	49	78	67	76

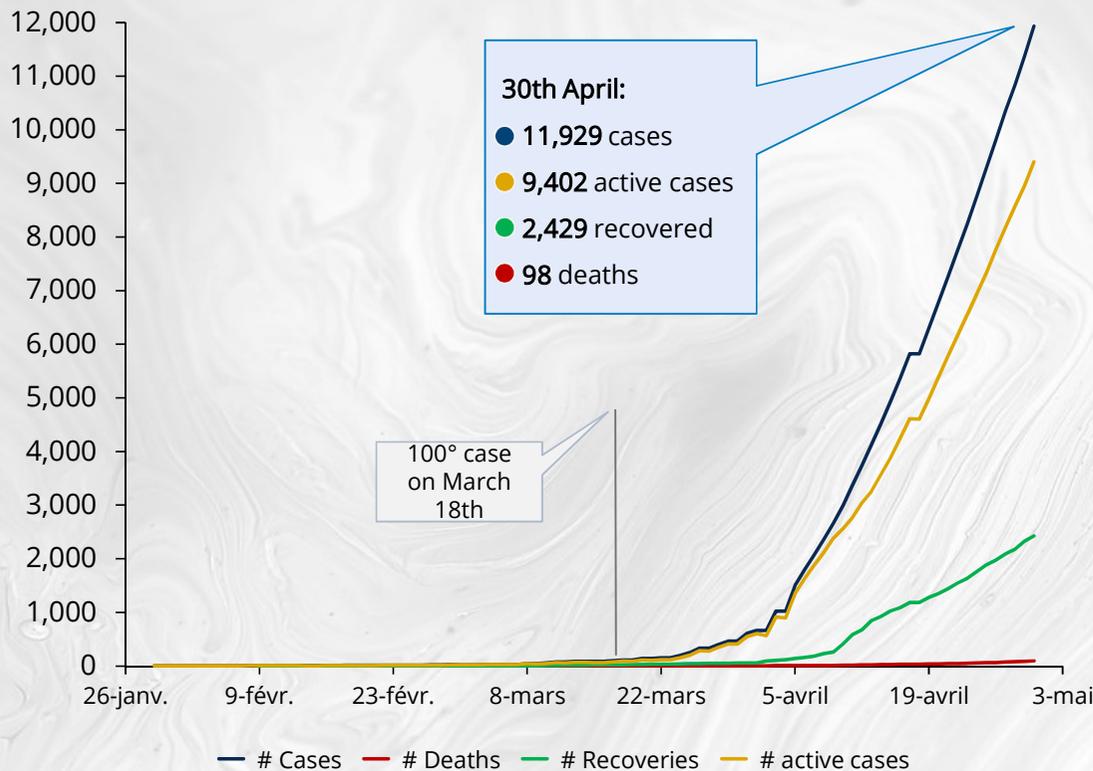
Note1: The index shows, on a scale from 0 to 100, the level of risk (very high, high or moderate) of a max price increase to which the country is exposed to, due to new trade dynamics and supplier concentration for each product.

Note2: Direct / Max Price Impacts are reported by the WB database on COVID 19 trade flows, and represent the local price increase assuming a total reduction on export quantities for each trading partner. The increase is estimated using trade elasticities: Direct price effect<sub>ij</sub>=Var Q<sub>ij</sub>/import price elasticity<sub>ij</sub>. Where I is the importer and j is the exporter (Fontagne, Gambard, Orefice 2019). Countries in blue already have an export ban in place on the 33 related product. Sources: World Bank, Infomineo Analysis



# UAE seems well equipped to cope with the crisis

## Epidemiologic evolution



Population med. age

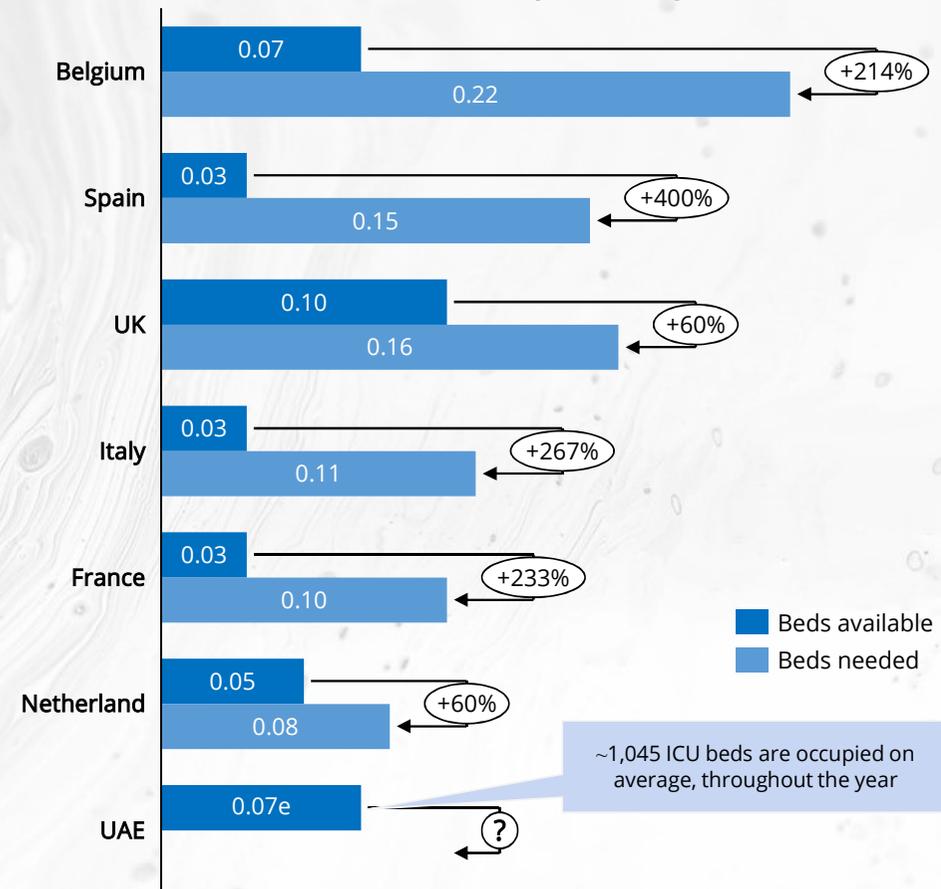
**32.6 years**, as of 2020

Mortality rate

**0.8%**

Note: Data extracted on April 28th  
Sources: UAE Ministry of Health, IHME, Infomineo Analysis

## ICU beds utilization at peak-day<sup>1</sup>, per 1,000 population



The background of the page is a dark, monochromatic marbled paper pattern. It features intricate, swirling, and cellular-like textures in shades of charcoal, black, and dark grey, creating a complex, organic visual field.

# Appendix

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# Methodology

## Total sustainable C19 case

The sustainability of the C19 epidemic crisis is represented by the key **capacity of the HC system to provide critical care hospitalization** to the patients in need.

### Sustainability of critical care cases

- With the due differences, in countries such as UAE, Oman, KSA or Italy **the average utilization rate of ICU beds is ~60%** in pre-covid emergency times.
- This number has been used to estimate how many ICU beds are available in GCC countries to hospitalize Covid-19 infected patients:

$$\#ICU\ beds * (1 - 60\%) = \text{available ICU beds} = \text{sustainable critical cases}$$

### Total sustainable active cases

- In countries such as Italy, France, Spain and the United Kingdom, the **ICU hospitalization rate averaged at 6.6%** of the total active cases at their peak date, ranging from 1.6% to 15.3%.
- This weighted average has been used for estimating the total sustainable number of active cases in each country

$$\text{Available ICU beds} * (1 / 6.6\%) = \text{sustainable active cases}$$

## Exposure index (EI)

The World Bank has published a database on trade flows for relevant categories of healthcare equipment and goods, necessary for facing the COVID-19 emergency.

Because of the crisis, the trade dynamics are expected to change: countries will reduce the export of such relevant products, aiming at supporting their internal health emergency first. Some countries already put in place export bans for some categories of products.

As a consequence, the availability of such products worldwide will decrease and their prices will rise, by an estimated value named «**Max Price Impact**» in this presentation.

However, the impact on each market price will depend on who are its top suppliers, what are their current trade politics applying to these products, and what is their share of supply (concentration).

**The exposure index shows**, on a scale from 0 to 100, for each product in each country the **level of risk of reaching the max price increase**, due to new trade dynamics and the supplier concentration.

$$\text{Exposure Index} = ((\text{direct price impact of top 3 suppliers}) / (\text{Max Price Impact})) * 100$$

Where **0 < EI < 51** means **moderate risk**, **51 < EI < 75** means **high risk** and **76 < EI < 100** means **very high risk**.

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