

Covid-19 Transmission Dynamics Survey

In light of the current COVID-19 pandemic and its impact on the wellbeing of the Kingdom's nationals and residents, a well-structured and efficient vaccination strategy is vital to eradicate the current pandemic, reduce fatalities, maintain the health system, boost the economy, and regain normalcy in our lives.

The objective of the following survey is to collect data on an individual level and on the type and frequency of contact individuals experience throughout the previous day. Collected data from this survey will be used to better understand the social contact patterns of the Kingdom's population. Understanding the latter patterns is crucial for building our mathematical model that simulates the transmission dynamics of COVID-19 throughout Saudi Arabia. Our effort will assist decision makers in prioritizing individuals most susceptible to COVID-19 severe symptom to be vaccinated. Eventually, maintaining the wellbeing of the population with minimal economic impact ensuring a quick return to life as we know it.

This survey is targeting a representative sample of the entire population of Saudi Arabia from different geographical regions. This includes individuals (males and females) from diverse backgrounds, education levels, occupation, health conditions and different age groups of the population of Saudi Arabia. Please note that participants in this survey can either be previously infected individuals with COVID-19 or not as the intent of the survey is to collect data on the contact patterns of the Kingdom's population. The survey questions are to be completed on an online platform *e.g.* Sehaty application or through personal interviews where participants can be assisted in filling in the questionnaire list. To answer the questions, we anticipate that around 5-10 minutes shall be sufficient.

Survey Description and Consent (To be Included in The Survey for the Public):

This survey is targeting the general population of Saudi Arabia. All the information you provide will be treated in strict confidence and will be used for research purposes only by the Ministry of Health (MOH). Please indicate if you consent to supply the below information to the MOH.

☐ **Yes, I consent to allow the MOH to make use of the information I supply.**

Instructions

We would like to thank you for participating in the survey. Please read the following instructions carefully. You are encouraged to provide answers to the below questions about yourself as accurate as possible and to add in the table every person that you had contact with during the previous day:

- A contact is defined as a two-way conversation with three or more words in the physical presence of another person, regardless if this person had previously contracted COVID-19 or not. Physical contact includes skin-to-skin contact (for example a handshake, hug, kiss, or contact sports), whereas non-physical contact does not involve skin-to-skin contact.
- Write down every person that you contacted during the previous day, regardless of whether the contact was long or short, and whether you know the person or not.
- Contacts made exclusively by telephone or mobile phone should not be recorded.
- If you contact the same person several times in the course of the day, only record him/her once, and record the total time you spent with that person over the entire day. Therefore, each person

you meet during the day and have contact with should only be added in the table once (one person, one line).

- Risk factors include: obesity, body mass index (BMI) of over 40, immune deficiency, such as those who underwent organ transplantation or taking immunosuppressive drugs; and those who have chronic diseases including asthma, diabetes, chronic kidney disease, chronic heart disease including coronary artery disease, and chronic obstructive pulmonary disease, and those with a history of a previous stroke.

Please provide the following information about your contacts including:

- Age, if you don't know the exact age, give an estimate of the age range (*e.g.* 40-43) and try to make it as narrow as possible.
- Gender
- Type of contact: physical (skin-to-skin contact) or non-physical. An example of a physical contact is to kiss your child or carry them to bed. A non-physical contact includes conversations you may have with grocery store assistant.
- How long the contact with the person was over the entire day. Estimate the total time duration spent in presence of the contact person that day. For example, 5-15 minutes for a contact in a shop or >1 hour for longer contact caring for a child at home.
- How often you contact this person in general.
- Whether they suffer medical conditions to be classed of the high-risk factor category (to the best of your knowledge).
- Their monthly income (to the best of your knowledge).
- Whether you were taking preventive measures during your meeting with the contact, *e.g.* wearing masks and regularly washing your hands. For each of your contacts, average out your behavior for the duration of your contact, *e.g.* if you kept wearing your mask but occasionally took it off for any reason then you should select 'Often' as your answer of choice.
- Whether social distancing practices were maintained by indicating the distance maintained during your contact, *e.g.* <1, 1–2, or >2 meters.

After you have finished adding the entries in the table, please double check your entries by trying to remember all of your activities to make sure you haven't missed any contact persons. The order in which you write down your contact persons is not important. The easiest is to use a chronological order according to when you met the person for the first time during the previous day and then add anyone else that you might remember as you go through your daily activities.

For the purposes of this study, the day starts when waking up in the morning and ends when you go to bed at night.

The survey questions are as follows:

For online surveys, the date can be generated from the system. If this survey is an interview based, please specify the date:

- Drop down menu

1. What is your gender?

- Male
- Female

2. What is your age?
 -
3. What is your Nationality?
 - Saudi
 - Non-Saudi, (followed by a drop-down menu of countries)
4. Where do you live in Saudi Arabia?
 - Drop down menu to show city level, (do you live in the main city or adjacent towns or suburbs?) *e.g.* in Riyadh or out of Riyadh
5. What is your highest level of education attained?
 - Non-educated
 - Primary and/or intermediated school
 - High school, university degree or higher
6. Do you have any of these COVID-19 risk factors such as: obesity, body mass index (BMI) of over 40, immune deficiency, such as those who underwent organ transplantation or taking immunosuppressive drugs; and those who have a chronic disease including asthma, diabetes, chronic kidney disease, chronic heart disease including coronary artery disease, and chronic obstructive pulmonary disease, and those with a history of a previous stroke?
 - 0
 - 1 chronic disease or risk factor
 - 2 or more chronic diseases or risk factors
7. Are you a healthcare worker? *
 - Yes
 - No

*This question will be adapted from a similar question already utilized in Sehaty application.

8. Specify your occupation or daily activity if you are not a healthcare worker (drop down menu):
 - Housewife, or retired, or not working
 - Student or in the education sector
 - Flight attendant
 - Housekeeping and maintenance worker (*e.g.* housemaid, janitor, plumber, etc.)
 - Transport sector including couriers, bus driver, food delivery driver, taxi and ride driver (*e.g.* Kareem, Uber, etc.)
 - Personal care (*e.g.* barber, hair dresser, etc.)
 - Athletic trainer
 - Social care worker
 - Military/security forces/civil defense
 - Management/administrative
 - Scientist/engineer/technician
 - Other _____

9. What is your average monthly income in Saudi Riyals:
1. <10,000
 2. 10,000–20,000
 3. >20,000

11. Fill in the below table indicating how many people you contacted with yesterday **EXCLUDING** contacts with your household members. A contact is a two-way conversation with three or more words in the physical presence of another person or physical skin-to-skin contact. If you met with the same person more than once yesterday, estimate the total time spent and add this contact as one entry. If not certain about your contact age, add the age range and try to make it as narrow as possible (e.g. 40-43). Highlight whether or not the contacts are considered of the high risk category to COVID-19; risk factors include: obesity, body mass index (BMI) of over 40, immune deficiency, such as those who underwent organ transplantation or taking immunosuppressive drugs; and those who have a chronic disease including asthma, diabetes, chronic kidney disease, chronic heart disease including coronary artery disease, and chronic obstructive pulmonary disease, and those with a history of a previous stroke. Indicate the distance that was maintained between yourself and your contact. Preventive measures include wearing masks and regularly washing your hands. An example on how the survey should be filled is available in the next page.

- Make sure to exclude your contact with household members.
- Please specify the date below: Date drop down menu (Day/Month/Year).
- Multiple choices are allowed for the location of your contact, e.g. work and transport.

Contact initials	Age or age range (years)	Sex (M/F)		Type of contact*		Where did you have contact?				Occupation		Risk Factor				Monthly income (Saudi Riyals)				How often do you have contact with this person in general?					Average time spent with the person				Average distance maintained during contact (meter)			Preventive measures taken?*		
		M=1	F=2	Physical	Non-physical	Work/school/college	Transport	Leisure	Other	Healthcare worker	Other	None	1 chronic disease or risk factor	2 or more chronic diseases or risk factors	Not sure	<10,000	10,000 – 20,000	>20,000	Not sure	Almost daily	2-3 times per week	At least once a week	At least once a month	Never met before yesterday	<5 min	5-15 min	15 – 1h	>1h	<1	1-2	>2	Always	Often	Rarely or No
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3

[illegible]

* Refer to the definition of physical vs non-physical contacts in the Instructions section. A contact is defined as a two-way conversation with three or more words in the physical presence of another person, regardless if this person had previously contracted COVID-19 or not. Physical contact includes skin-to-skin contact (for example a handshake, hug, kiss, or contact sports), whereas non-physical contact does not involve skin-to-skin contact. For each of your contacts, average out your behavior for the duration of your contact, *e.g.* if you kept wearing your mask but occasionally took it off for any reason then you should select 'Often' as your answer of choice.

** Preventive measures include wearing a mask to cover your nose and mouth and regularly washing your hands.

- Make sure you have not left any contacts out: for example, family members, a salesperson at the supermarket, a waiter in a restaurant, your neighbors, your friends whom you went out with, etc.
- If you were unable to include every single contact you had, for instance, because you work in as a cashier in a shop and have a large number of contacts in a day, please could you indicate this?
 - ☐ Yes, I included every person I had contact with.
 - ☐ No, I did not include every person I had contact with.
- If you did not include every person you had contact with, approximately how many people you left out?
 - Number of people you left out and had physical contact with:
 - Number of people you left out and had non-physical contact with:

An example of how to fill the survey:

- Please specify the date below: **14 January 2021**

Contact initials	Age or age range (years)	Sex (M/F)		Type of contact*		Where did you have contact?				Occupation		Risk Factor				Monthly income (Saudi Riyals)				How often do you have contact with this person in general?					Average time spent with the person				Average distance maintained during contact (meter)			Preventive measures taken?		
		M=1 F=2	Physical Non-physical	Work/school/college Transport Leisure Other	Healthcare worker Other	None 1 chronic disease or risk factor 2 or more chronic diseases or risk factors Not sure	<10,000 10,000 – 20,000 >20,000 Not sure	Almost daily 2-3 times per week At least once a week At least once a month Never met before yesterday	<5 min 5-15 min >15 – 1h >1h	<1 1-2 >2	Always Often Rarely or No																							
S. H.	7	①	2	①	2	1	2	③	4	1	②	①	2	3	4	①	2	3	4	1	②	3	4	5	1	2	3	④	①	2	3	1	2	③
M. A.	35	①	2	①	2	①	②	3	4	①	2	1	②	3	4	1	2	③	4	1	②	3	4	5	1	2	③	4	①	2	3	1	②	3
W.	40-43	1	②	1	②	1	2	③	4	1	②	1	2	3	④	1	2	3	④	1	2	3	④	5	①	2	3	4	1	2	③	①	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
		1	2	1	2	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3

- 1st entry: you carried and played with your 7-year old nephew at the park during the day for a number of hours >2, where no social distance was maintained and no preventive measures have been taken.
- 2nd entry: in the morning you shared a car-ride to work and had breakfast with your 35-year old colleague who is a medical doctor, happens to be diabetic, and earns >20,000 SAR per month. Both of you occasionally wore a mask during your contact.
- 3rd entry: you shopped at your local grocery store in the evening and had a short conversation <5 min with the cashier where preventive measures of wearing a mask have been taken, and a distance of >2 meters was maintained.