

Drivers of MERS-CoV emergence in Qatar

Annex 1: Categories, subcategories, and data sources used for information gathering in this review.

Methodology: This review aims to summarize quantitative dataset containing human, animal, and environmental factors to investigate the possible drivers that contributed to the MERS-CoV emergence in Qatar. The review mainly refers to changes in the last 30 years.

Categories	Sub-categories	Description of sub-categories	Reference
Human demography and behavior	Population	Total population	1, 2
		Gender wise population	1
		Age wise population	1, 3
		Municipality wise population distribution	32
		Population by nationality and origin	4, 5, 6
		Economically active peoples	4, 32
	Comorbidities and death	Smoking	7, 35
		Obesity	8
		Cardiovascular	7, 9, 30
		Diabetes	7, 9, 10
		Asthma	11
		Chronic Lung Disease	9
		High Blood Pressure	7, 9, 36
		Kidney Failure	9
		Chronic Liver Disease	9
		Chronic Anemia	9
		Cancer	9
		Immune Deficiency	12
	Total death and death rate	9	
	Sanitation	Number of buildings connected to public sewage	26
		Number of buildings connected to water	27
		Access to drinking water	37
		Population with access to improved water source	13
		Population using improved sanitation facilities	13
	Cultural practices around camels	People living in rural and urban area	18
		Employment in agriculture	18
Knowledge level	Educational status of population	14	
	Health education	30	
Economic development	Oil and GDP		16, 17, 18
International travel, commerce, sports and leisure	Tourists	Total arrival and number of tourists	15, 18
		Doha airport arriving passengers	16
		Origin of visitors	15
	Camel related travel	Cross border movement and travel of workers and owners	4
		Camel import and export	19, 23, 24
		Camel type (Race, show, and others) and origin in import	19
		Show camel events (number of shows per year)	39
Agricultural and food industry change	Camel demography	Total number and density per area	19, 29, 21
	Farming demography	Total number of farms and density per farms	19
	Camel types	Race, show, and others	22, 38
	Camel products	Production: milk and meat	22, 40
	Camels slaughtering	Total slaughterhouse and number of slaughtered animals	19, 22
	Feed import	Camel and other livestock	24
	Other livestock	Sheep, goat, cattle, and horse	40
	Climate and weather	Temperature, humidity and rainfall	25, 26
Land use change	surface protected area and cultivable land	27, 28, 40	

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110 **Annex 2: Questionnaires used for qualitative information gathering in this review**

111 **Methodology:** Interviews with a group of 15 experts and stakeholders from Qatar aimed to summarize
112 quantitative information and remaining data gaps in the quantitative dataset containing human, animal and
113 environmental factors to investigate the possible drivers that contributed to the MERS-CoV emergence in Qatar.
114 The question mainly refer to changes in the last 30 years.

115 List of the questions:

- 116 1. What are the changes with regard to camel ownership?
- 117 2. What are the changes over time with regards to behavior and living conditions of people around
118 camels? Examples are: frequency/intensity of –camel contact, visiting camel's barns, proportion of
119 people living with camels permanently.
- 120 3. What are the changes with regard to cultural habits involving camels, such as kissing camels and uses
121 of camel products (meat, milk, and urine)?
- 122 4. What are the changes of the level of educational status of the camel' workers and owners?
- 123 5. What are the changes in the health education activities targeting camel workers and camel owners?
- 124 6. What has changed in the cross border movements of camels and people around camels?
- 125 7. What are the changes in movements within Qatar of camels and people around camels?
- 126 8. What has changed with regard to the demography of camels and camel farms?
- 127 9. What are the changes in camel farming practices?
- 128 10. What are the changes in the feeding of camels?
- 129 11. What are the changes in camel slaughtering practices?
- 130 12. What are the environmental changes that took place in Qatar, for example with regard to protected
131 areas (nature conservation) and their effects on camel farming?