Research Methodology Note

COVID-19 At-Risk Population Analysis

LBY2004

Libya

Version 1, June 2020

REACH Informing more effective humanitarian action

1. Executive Summary

Country of intervention	Libya					
Type of Emergency	□	Natural disaster	X	Conflict		
Type of Crisis	□	Sudden onset	□	Slow onset	X	Protracted
Mandating Body/ Agency	Health Sector Libya					
Project Code	14iAJO 3O1 and 14iAGL					
Research Timeframe *Add planned deadlines (for first cycle if more than 1)*	1. Start collect data: N/A		5. Preliminary presentation: N/A			
	2. Data collected: N/A		6. Outputs sent for validation: 02/06/2020			
	3. Data analysed: 29/05/2020		7. Outputs published: 03/06/2020			
	4. Data sent for validation: 29/5/2020		8. Final presentation: N/A			
Humanitarian milestones *Specify **what** will the assessment inform and **when** e.g. The shelter cluster will use this data to draft its Revised Flash Appeal;*	**Milestone**		**Deadline**			
	□	Donor plan/strategy	_ _/_ _/_ _ _ _			
	X	Inter-cluster plan/strategy	03/06/2020			
	X	Cluster plan/strategy	03/06/2020			
	□	NGO platform plan/strategy	_ _/_ _/_ _ _ _			
	□	Other (Specify):	_ _/_ _/_ _ _ _			
Audience Type & Dissemination *Specify **who** will the assessment inform and **how** you will disseminate to inform the audience*	**Audience type**		**Dissemination**			
	X Strategic □ Programmatic □ Operational □ [Other, Specify]		**X** General Product Mailing (e.g. mail to NGO consortium; HCT participants; Donors) X Cluster Mailing (Health) □ Presentation of findings (e.g. at HCT meeting; Cluster meeting) X Website Dissemination (Relief Web & REACH Resource Centre) □ [Other, Specify]			
Detailed dissemination plan required	□	Yes	X	No		
General Objective	The purpose of this assessment is to help organizations working on COVID-19 responses in Libya to prioritize the areas that may need support.					
Specific Objective(s)	The objective of this assessment is to determine which mantikas have populations that are at greater risk to COVID-19. This risk will be determined by assessing two					

	components: i) mantikas with populations at greater risk for mortality from COVID-19 and ii) mantiakas that have a greater potential for the spread of COVID-19.					
Research Questions	1. Which mantikas have a greater prevalence of populations that are at risk of mortality from COVID-19 due to factors like pre-existing health conditions and access to health facilities with sufficient capacity? 2. Which mantikas have a greater potential for the spread of COVID-19 due to factors like population density, population movements, substandard shelters, and people's access to clean water and disinfectant products?					
Geographic Coverage	The assessment will cover 17 out of 22 mantikas (administrative level 2)					
Secondary data sources	• REACH, 2019 Mulit Sector Needs Assessment Libya: Libyan Population • IOM, Displacement Tracking Matrix Libya: Migrants, Round 29, (April 2020) • IOM, Displacement Tracking Matrix Libya: IDPs and Returnees, Round 29, (April 2020) • WorldPop, Libya 100m Population Data Set, May 2018 • Global Detention Project, Libya Detention Centres List: Libya, 2020 • WHO, Service Availability and Readiness Assessment: Libya, 2017 • REACH, Joint Market Monitoring Initiative Libya Data Sets: March, April, May 2020 • Libyan Ministry of Health, List of COVID-19 Designated Health Facilities, March 2020 [unpublished]					
Population(s) *Select all that apply*	□	IDPs in camp		□	IDPs in informal sites	
	□	IDPs in host communities		X	IDPs	
	□	Refugees in camp		□	Refugees in informal sites	
	□	Refugees in host communities		X	Refugees [Other, Specify]	
	X	Host communities		□	[Other, Specify]	
Stratification *Select type(s) and enter number of strata*	X	Geographical #: 17 Mantikas Population size per strata is known? X Yes □ No	□	Group #: _ _ _ Population size per strata is known? □ Yes □ No	□	*[Other Specify]* #: _ _ Population size per strata is known? □ Yes □ No
Data collection tool(s)	N/A	Structured (Quantitative)		N/A	Semi-structured (Qualitative)	
	Sampling method			**Data collection method**		
Expected ouput type(s)	□	Situation overview #: _ _	□	Report #: _ _	□	Profile #: _ _
	□	Presentation (Preliminary findings) #: _ _	□	Presentation (Final) #: _ _	□	Factsheet #: _ _
	□	Interactive dashboard #:_	□	Webmap #: _ _	X	Map #: 1
	□	[Other, Specify] #: _ _				
Access	X	Public (available on REACH resource center and other humanitarian platforms)				
	□	Restricted (bilateral dissemination only upon agreed dissemination list, no publication on REACH or other platforms)				
Visibility *Specify which* ***logos*** *should be on outputs*	***REACH***					
	Donor: *OFDA, ECHO*					
	Coordination Framework: *N/A*					
	Partners: *Intersector Coordination Group, Health Sector Libya*					

2. Rationale

2.1. Rationale

On March 11th, 2020, WHO Director General Tedros Adhanom officially characterized the spread of coronavirus disease 2019 (COVID-19) as a pandemic[1]. COVID-19 is a respiratory illness/infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Since the initial outbreak of the virus in Wuhan, China at the end of 2019, over 6.2 million cases have been confirmed in 188 countries, and more than 375,000 people have died as a result of a COVID-19 infection as of the 2nd of June[2]. Governments worldwide have imposed severe measures to contain the basic reproduction number, as the exponential spread has already overwhelmed health services in heavily impacted countries. While there are only 168 officially confirmed cases in Libya[3] at the time of writing, testing for cases has been limited[4] and the number has the potential to increase in the coming months.

In order to assist in "*containing the spread of COVID-19 pandemic, and decrease morbidity and mortality*"[5], there is a need for prioritization of vulnerable areas where COVID-19 may spread rapidly, and of areas which have populations at greater risk of increased mortality rates from COVID-19. Factors such as migration and displacement, population density, access to WASH services, co-morbidities, and demographics should be considered in assessing population vulnerability for the pandemic in Libya. How these factors will be analysed is discussed in the following section, with the selected key indicators displayed in Table 1 (in section 3.5).

The purpose of this assessment is to help organizations working on COVID-19 responses in Libya to prioritize areas that may need support. The output will be a map which shows the prevalence of vulnerable populations at mantika-level.

3. Methodology

3.1 Methodology overview

This assessment will rely entirely on secondary data sources and will not include a primary data collection component. Thirteen (13) indicators have been selected from 8 different data sets, which will be analysed during the final week of May. For information on when the secondary data sources collected their data, please refer to section 3.2 below.

The analysis of each of the 13 selected indicators will produce a score pertaining to each mantika. The scores from the individual indicators will then be combined to represent an overall score for each mantika, with higher scores representing greater vulnerability. The indicators are weighted differently so as to reflect their relative importance in determining a mantika's vulnerability. The weights determine the maximum score that an indicator can add to a mantika's overall score.

Table 1 (displayed in Section 3.5) shows the indicators that will be used to determine the two vulnerable populations categories: those with an 'intersectoral vulnerability putting them at higher risk of mortality from COVID-19', and those 'at risk of higher infection rates of COVID-19'. The selected indicators are selected in line with WHO's definition of vulnerable population groups, and further informed by WHO's COVID-19 guidelines[6]. These indicators will be aggregated at the mantika-level. The final output will be a map that illustrates the different mantika scores.

[1] WHO, WHO Director-General's opening remarks at the media briefing on COVID-19, 11 March 2020
[2] John Hopkins University & Medicine, Coronavirus Resource Center: COVID-19 Map, 2020
[3] Ibidem.
[4] OCHA, Libya: COVID-19 Situation Report No. 4, 12 May 2020
[5] Global Humanitarian Response Plan COVID-19. United Nations Coordinated Appeal. April – December 2020.
[6] WHO, Water, sanitation, hygiene and waste management for COVID-19, 19 March 2020

3.2 Population of interest

This assessment will cover 17 of the 22 mantikas in Libya[7]. This selection is based upon the maximum coverage available from the secondary data sources. Only mantikas where data from each of the selected indicators is available will be included in the analysis. The targeted population groups include all those residing in the selected mantikas, specifically the Libyan population (including IDPs and returnees), migrants, and refugees.

3.3 Secondary data review

This assessment will be based on secondary data from the following sources.

- REACH, 2019 Mulit Sector Needs Assessment Libya: Libyan Population, (April 2020)
  The Multi-Sector Needs Assessment collects data at the household level on a wide range of vulnerability indicators. The data collection for the 2019 Libya MSNA took place from 2 July to 10 September 2019, and was conducted with IDPs, returnees, and non-displaced households. The analysed data is representative on a mantika level, covering 17 mantikas.

- IOM, Displacement Tracking Matrix Libya: Migrants, Round 29, (April 2020)
  Migrant and Refugee data gathered through key informant interviews at mahallah-level. Data was collected between January and February 2020.

- IOM, Displacement Tracking Matrix Libya: IDPs and Returnees, Round 29, (April 2020)
  IDP and returnee data gathered through key informant interviews at the mahllah level. Data was collected between January and February 2020.

- WorldPop, Libya 100m Population Data Set, May 2018
  The WorldPop Project gathers population data from around the world. Widely available global remotely-sensed and geospatial data is used to generate a gridded prediction of population density at ~100 m spatial resolution (at equator). A dasymetric Random Forest modelling approach is used to redistribute UN-corrected census counts (UNITAR-UNOSAT, Libyan Bureau of Statistics and Census). The result is the total estimated number of people in an area.

- Global Detention Project, Libya Detention Centres List: Libya, 2020
  An independent non-profit association maintaining a regularly updated global database on the status and location of detention centres. This list was updated in 2020.

- WHO, Service Availability and Readiness Assessment: Libya, 2017
  The Service Availability and Readiness Assessment (SARA) aims to provide information on availability and readiness of health services delivery (public Hospitals and Primary Health Care Centres) in Libya. Data collection occurred between August 2016 and February 2017.

- REACH, Joint Market Monitoring Initiative Libya Data Sets: March, April, May 2020
  The Joint Market Monitoring Initiative, a collaboration between REACH and the Cash and Markets Working Group, collects pricing information on a range of key products across 34 cities in Libya on a monthly basis.

- Libyan Ministry of Health, List of COVID-19 Designated Health Facilities, March 2020 [unpublished]
  This list from the Libyan Ministry of Health enumerates the 66 facilities currently designated for the national COVID-19 response, as well as the number of beds per facility.

[7] The mantikas that will be covered are Al Jabal Al Gharbi, Al Jfara, Al Jufra, Al Kufra, Azzawya, Benghazi, Derna, Ejdabia, Ghat, Misrata, Murzuq, Sebha, Sirt, Tripoli, Ubari, Wadi Ashshati and Zwara

3.4 Primary Data Collection

No primary data collection will take place for this assessment. The output will be produced using secondary data exclusively. Section 2.2 above contains links to most of the secondary data sources that will be used, please refer to those links for more information on those studies' respective methodologies.

3.5 Data Processing & Analysis

Table 1 on the following page shows the 13 indicators that will be used to determine the two vulnerable populations categories: those with an 'intersectoral vulnerability putting them at higher risk of mortality from COVID-19', and those 'at risk of higher infection rates of COVID-19'. These indicators come from 8 data sets – 7 of which are publicly available – and no additional data cleaning will take place. The indicators were chosen through consultations with the Inter-sector Working Group and the Health Sector.

For the analysis, the weights for each indicator were derived through consultations with the Health Sector. The Sector provided a ranking (scale of 1-5) of the indicators in Table 1 to illustrate their relative importance. REACH then distributed the weights according to those rankings. The thresholds for the weights were dynamically calculated using quantiles, meaning that each class contains an equal number of observations. The indicators will be analysed independently in Excel, using the weights to produce a single score for each indicator in each mantika. The scores from all the indicators will then be combined to produce an overall vulnerability score for each mantika.

The overall mantika vulnerability scores will then be grouped into 5 categories (on a scale of 1 to 5), with the higher value categories representing mantikas with higher vulnerability to Covid-19. Those categories will then be imposed on a choropleth map with darker shades of red representing the higher vulnerability categories. The thresholds for these 5 categories will be calculated at equal intervals between the lowest and highest mantika scores.

The resulting map will be publicly disseminated, with the aim of assisting the Health Sector, the Intersector Coordination Group, and other international actors working in Libya to geographically prioritise their response to COVID-19.

Table 1: The indicators that will determine the mantika-level analysis of intersectoral vulnerability and the risk of spread of COVID-19

Type of Vulnerability	Category	Indicator	Rational/Comments	Weights	Threshold	Data sources
Intersectoral Vulnerability (Factors which could increase the mortality from COVID-19)	Accessing health care	% of households (HH) facing challenges[8] accessing health care	Individuals may be asked to stay at home with suspected symptoms of COVID-19, but if case is critical, access to functional facility may impact mortality rate	0	< 10%	MSNA 2019
				1	>= 10% and < 15%	
				2	> = 15% and < 20%	
				3	> = 20% and < 40%	
				4	> = 40% and < 60%	
				5	> = 60%	
	Accessing health care	% of population driving more than 1 hour to nearest COVID-19 designated health facility	Individuals may be asked to stay at home with suspected symptoms of COVID-19, but if case is critical, access to COVID-19 designated facility may impact mortality rate	0	< 5%	WorldPop + SARA + MoH list of COVID-19 Designated Facilities
				1	> = 5% and < 20%	
				2	> = 20% and < 40%	
				3	> = 40% and < 60%	
				4	> = 60% and < 80%	
				5	> = 80%	
	Demographic	% of population older than or equal to 65 years old[9]	Elderly people are at higher risk to mortality from COVID-19	0	< 1%	MSNA 2019
				2	> = 1% and < 3%	
				4	> = 3%	

[8] Limited to HHs reporting that they faced challenges due to: lack of medicines at facility, lack of transport to facility, facility damaged/destroyed, not enough money to pay for services at facility, lack of medical staff at facility, lack of supplies at facility

[9] Consultations with the Health Sector identified that this indicator should have a maximum weight of 4. However, the overall proportion of HHs reporting that they had an elderly member was low, meaning that a quantile distribution would result in each class containing a small number of observations. To mitigate this, the thresholds have been split into just 3 classes, but still given a maximum weight of 4.

	Chronic diseases	% of HHs with at least 1 member having diabetes OR blood pressure issues OR heart conditions OR asthma	People with this pre-existing these health conditions may be at higher risk to mortality from COVID-19	0	< 25%	MSNA 2019
				1	> = 25% and < 35%	
				2	> = 35% and < 50%	
				3	> = 50%	
	Population density	Population of an area / Number of beds in COVID-19 designated facilities (ICU and isolation beds both counted)	Increased ratios of people / beds may decrease people's access to healthcare and therefore increase mortality if an outbreak occurs	0	< 500 / 1 Bed	WorldPop + SARA + MoH COVID-19 Designated Facilities
				1	> = 500 and < 1000	
				2	> = 1000 and < 1500	
				3	> = 1500 and < 3000	
				4	> = 3000 and < 5000	
				5	> = 5000	
Risk of higher infection rates of COVID-19	Population density	Avg. # people / km² in urban areas	Increased urban population density may lead to increased transmission	0	< 50	WorldPop
				1	> = 50 and < 500	
				2	> = 500 and < 5000	
				3	> = 5000	
	Population density	# of IDPs and returnees living in sub-standard shelter types[10]	People living in these settings are considered more vulnerable due to the poor and concentrated living conditions, which may increase the rate of COVID-19 transmission	0	0	IOM DTM
				1	> = 0 and < 500	
				2	> = 500 and < 5000	
				3	> 5000	

[10] Limited to include the following shelter types: abandoned buildings, squatting on other people's properties, schools and public buildings, no accommodation, or informal camp settings

	Population density	# of migrants and refugees living in sub-standard shelter types[11]	People living in these settings are considered more vulnerable due to the poor and concentrated living conditions, which may increase the rate of COVID-19 transmission	0	< 4000	IOM DTM
				1	> = 4000 and < 8000	
				2	> = 8000 and < 15000	
				3	> 15000	
	Population density	Presence of detention centres in an area	People living in detention centres are considered more vulnerable due to the poor and concentrated living conditions, which may increase the rate of COVID-19 transmission	0	0	Global Detention Project (Triangulated with data from IOM and UNHCR)
				1	1	
				2	> = 1 and < 3	
				3	> = 3	
	Population movement	# of individuals (migrants, refugees) arriving from other mantikas in Libya, or from neighbouring countries with confirmed COVID cases	Movement between mantikas, or from neighbouring countries with confirmed COVID-19 cases, may increase the risk for transmission	0	< 500	IOM DTM
				1	> = 500 and < 1500	
				2	> = 1500 and < 3000	
				3	> = 3000	
	Population movement	# of individuals (IDPs, returnees) arriving in the mantika	Movement between manikas may increase risk of transmission	0	< 100	IOM DTM
				1	> =100 and < 700	
				2	> = 700 and <1000	
				3	> = 1000	
	WASH	% of HHs travelling 500 meters or more to a water source OR % of HHs that do not have access to soap for handwashing	Access to clean water and soap are requisite for hand-washing practices, which is an essential preventive behaviour to decrease spread of COVID-19	0	< 10%	MSNA 2019
				1	> = 10% and < 20%	
				2	> = 20% and < 40%	
				3	> = 40%	

[11] Limited to include the following shelter types: abandoned buildings, squatting on other people's properties, schools and public buildings, sheltered in a workplace, no accommodation, or informal camp settings

	WASH	Mantikas where the price of soap, sanitiser, and bleach has increased >20% AND where the cost of the MEB[12] has remained the same or increased since March.	Price increases of soap, sanitiser, bleach may prevent lower-income HHs from procuring these items, which may increase the spread of the disease	0	FALSE	JMMI
				1	TRUE	

[12] The Minimum Expenditure Basket (MEB) represents the minimum culturally adjusted group of items required to support a five-person Libyan household (HH) for one month. The cost of the MEB can be used as a proxy for the financial burdens facing households

4. Roles and responsibilities

Table 2: Description of roles and responsibilities

Task Description	*Responsible*	*Accountable*	*Consulted*	*Informed*
Research design	Assessment Officer	Assessment Officer	GIS Officer, Health Cluster Coordinator	Country Coordinator
Supervising data collection	N/A	N/A	N/A	N/A
Data processing (checking, cleaning)	GIS Officer	Assessment Officer	HQ Research Design and Data Unit (RDD)	Country Coordinator
Data analysis	GIS Officer	Assessment Officer	HQ RDD	Country Coordinator
Output production	GIS Officer	Assessment Officer	HQ Research Reporting Unit	Country Coordinator
Dissemination	Assessment Officer	Assessment Officer	Country Coordinator	Health Cluster Coordinator
Monitoring & Evaluation	Assesesment Officer	Assessment Officer	Country Coordinator	HQ RDD
Lessons learned	Assessment Officer	Assessment Officer	Country Coordinator	HQ RDD

Responsible: *the person(s) who executes the task*

Accountable: *the person who validates the completion of the task and is accountable of the final output or milestone*

Consulted: *the person(s) who must be consulted when the task is implemented*

Informed: *the person(s) who need to be informed when the task is completed*

6. Data Management Plan

Administrative Data				
Research Cycle name	LBY2004			
Project Code	14iAJO 3O1 and 14iAGL			
Donor	OFDA, ECHO			
Project partners	Health Sector Libya, Intersector Working Group Libya			
Research Contacts	William Culhane, Assessment Officer William.culhane@reach-initiative.org Anouk Theunissen, Assessment Officer, Anouk.theunissen@reach-initiative.org Joost Neujens, Senior GIS Officer, joost.neujens@reach-initiative.org			
Data Management Plan Version	*Date:* 01/06/2020		*Version:* 1	
Related Policies	N/A			
Documentation and Metadata				
What documentation and metadata will accompany the data? *Select all that apply*	□	Data analysis plan	□	Data Cleaning Log, including: □ Deletion Log □ Value Change Log
	□	Code book	□	Data Dictionary

	□	Metadata based on HDX Standards	X	No data collection will take place, no data cleaning will take place, no additional data will be released
Ethics and Legal Compliance				
Which ethical and legal measures will be taken?	X	Consent of participants to participate	X	Consent of participants to share personal information with other agencies
	X	No collection of personally identifiable data will take place	X	Gender, child protection and other protection issues are taken into account
	X	All participants reached age of majority	X	No additional data collection has taken place. This assessment relies on secondary research that included the above marked ethical and legal compliance when initially produced.
Who will own the copyright and Intellectual Property Rights for the data that is collected?	This assessment relies on secondary data and will not conduct additional data collection.			
Storage and Backup				
Where will data be stored and backed up during the research?	□	IMPACT/REACH Kobo Server	□	Other Kobo Server: *[specify]*
	□	IMPACT Global Physical / Cloud Server	X	Country/Internal Server
	□	On devices held by REACH staff	□	Physical location *[specify]*
	□	[Other, Specify]		
Which data access and security measures have been taken?	X	Password protection on devices/servers	□	Data access is limited to *[specify, e.g. REACH staff]*
	□	Form and data encryption on data collection server	□	Partners signed an MoU if accessing raw data
	□	[Other, Specify]		

Kobo Access Rights

Kobo Access	Person	Account Name
View Form	**N/A**	**N/A**
View and Edit Form	**N/A**	**N/A**
View Form and Submit Data	**N/A**	**N/A**
Download Data	**N/A**	**N/A**

Raw Data Access Rights

Raw Data Access	Reason	Person
Accountable	Accountable	**N/A**
Access	**N/A**	**N/A**

Preservation				
Where will data be stored for long-term preservation?	□	IMPACT / REACH Global Cloud / Physical Server	□	OCHA HDX
	X	REACH Country Server	□	[Other, Specify]

Data Sharing				
Will the data be shared publicly?	X	Yes [7 of the 8 proposed secondary data sources are already publicly available]	□	No, only with mandating agency / body
Will all data be shared?	□	Yes	X	No, the MoH Covid Designated Facilities List will not be shared
	□	No, [Other, Specify]		
Where will you share the data?	X	REACH Resource Centre	□	OCHA HDX
	X	HumanitarianResponse	□	[Other, Specify]

Data protection risk assessment				
Have you completed the Indicators Risk Assessment table below?	□	Yes	X	No, no information that potentially allows identification of individuals is to be included.
	[Please complete the first 4 columns in the Indicators Risk Assessment table below]			

Risk indicator	Type of identification risk	Disclosure implications	Benefits	**Class**	**Required mitigation**
N/A	N/A	N/A	N/A	N/A	N/A

Responsibilities	
Data collection	N/A
Data cleaning	Joost Neujens, Senior GIS Officer, joost.neujens@reach-initiative.org
Data analysis	Joost Neujens, Senior GIS Officer, joost.neujens@reach-initiative.org
Data sharing/uploading	William Culhane, Assessment Officer William.culhane@reach-initiative.org