



Status of Transport Statistics in the Arab Region

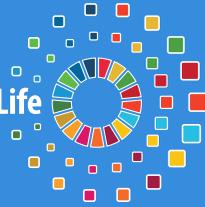


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Status of Transport Statistics in the Arab Region



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The present technical paper is based on a recent Economic and Social Commission for Western Asia (ESCWA) Transport Data Questionnaire that was circulated among national statistical offices of the Arab countries. ESCWA received responses from 14 Arab countries.

Development of the paper was carried out by Hani Alahmed, consultant, under the joint direction, guidance and supervision of Wafa Aboul Hosn, Chief, Economic Statistics Section, and Naela Haddad, Statistician, Economic Statistics Section, with substantive contribution and review from the latter. The team is also grateful to Mohamad Hossary, consultant in the Statistics Division, for his valued contributions to the revision, entry of data to ESCWA's data portal and validation of the questionnaire data received from respondent countries.

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Executive Summary

The 2030 Agenda for Sustainable Development that was adopted by all United Nations Member States in 2015 emphasized the role of sustainable transport in realizing the Sustainable Development Goals (SDGs). While sustainable transport is not addressed in the SDGs as a stand-alone goal, it is nevertheless reflected in the targets of 8 out of the 17 goals. The transport-related indicators for eight SDGs are linked directly or indirectly to transport systems. The issues relate mainly to accessibility; affordability; environment and climate change; production and employment; connectivity (including rural-urban); safety; tourism; and sustainability and energy.

In 2014, the Secretary-General appointed the United Nations Independent High-level Advisory Group on Sustainable Transport (HLAGST) to provide a focused set of recommendations on how the transport sector can advance sustainable development with poverty eradication at its core, promote economic growth and bolster the fight against climate change. Sustainable transport was defined as the “provision of services and infrastructure for the mobility of people and goods—advancing economic and social development to benefit today’s and future generations—in a manner that is safe, affordable, accessible, efficient, and resilient, while minimizing carbon and other emissions and environmental impacts”.¹ Transport is considered a main driver of development and sustainability. The definition of transport was refocused from the provision of mobility based on individual motorized transport and improved traffic speed to the idea of improving individual or people’s access through transport. Putting people first was a paradigm shift in the approach.

Providing adequate sustainable transport information systems and data in a timely manner will equip the planners and policymakers with the necessary means to plan in a more holistic way, forge policies and implement them in a systemic, evidence-based and efficient manner. Comprehensive data availability, comparability and timeliness continues to be one of the main challenges facing many countries, especially developing ones, including ESCWA member States. The advent of new technologies and advances can better equip member countries in the collection and dissemination of such data and indicators.

Against this backdrop, in 2019 the Statistics Division of Economic and Social Commission for Western Asia (ESCWA) reiterated its interest in compiling transport statistics in the Arab countries to respond to the 2030 Agenda for Sustainable Development and to follow up on the recommendations made by the ESCWA Statistical Committee in its thirteenth session held in Beirut, on 29-30 January 2019. The Committee approved the concept presented for the addition of transport statistics to ESCWA’s programme,² and requested ESCWA’s Statistics Division to provide the necessary support to its member countries in the collection and dissemination of transport data and indicators.³

In its efforts to respond to data gaps and challenges, ESCWA prepared a questionnaire on transport statistics and SDGs related to transport indicators in April 2019, with the objective to identify the data gaps and the needs to help Arab national statistical offices in member States. The main long-

¹ Mobilizing Sustainable Transport for Development: Analysis and Policy Recommendations from the United Nations Secretary-General's High-Level Advisory Group on Sustainable Transport.

² E/ESCWA/C.1/2019/3 (Part IV).

³ E/ESCWA/C.1/2019/8/Report.

term objectives of the questionnaire are within the context of ESCWA's strategy to streamline the collection, dissemination and coherence of transport statistics in the Arab countries and to further cooperation, collaboration and exchange of knowledge in the collection and dissemination of transport data and related SDGs indicators among them.

Beyond the data collection exercise, the authors aimed to achieve the following long-term objectives:

- Harmonization of the standards of transport statistics in the Arab region with international ones;
- Ensuring availability, comprehensiveness and reliability of transport statistics in member countries;
- Improving regional and international comparisons of transport statistics by developing appropriate methodologies and terminologies to harmonize statistics on internal transport in the Arab region;
- Development of an interactive regional webpage with the Arab States for the electronic compilation and updating of by-country transport statistics in the future;

The questionnaire was designed to determine the status of the collection of transport data in the Arab countries in terms of quality, completeness, sources, periodic issuance, timeliness and coherence of methods of aggregation with international and regional references.

The questionnaire comprised three main sections and a glossary of terms. The first section dealt with the mechanisms of production, availability, continuity and completeness of transport data. The second section dealt with transport-related Sustainable Development Goals and the third section dealt with transport data availability and completeness according to transport modalities (road, road safety, railway transport, maritime transport, air transport and multimodal transport) for the years 2005-2018.

Responding entities were also requested to verify the terms used in their respective countries according to the glossary of terms that was provided in the questionnaire's document.⁴ The questionnaire was sent to all Arab countries' national statistical offices in April 2019.

Before the regional workshop on transport statistics which was held in September 2019,⁵ ESCWA received 13 responses from the Arab countries, as well as an additional one after the workshop. The workshop discussed the preliminary results of the questionnaire and requested member countries to cooperate with the ESCWA secretariat to complete, verify and validate the data received. ESCWA was requested to follow up with the Arab countries to fill, complete and update the Transport Questionnaire, to validate the data provided and to publish the resulting regional transport database on the ESCWA Data Portal at <http://data.unescwa.org>. Following up on the workshop's recommendations,

⁴ For the original unfilled questionnaire template and the glossary of terms in Arabic see: https://www.unescwa.org/sites/www.unescwa.org/files/u593/locked_transport_questionnaire.xlsx.

⁵ See <https://www.unescwa.org/events/regional-workshop-development-transport-statistics-and-transport-related-sustainable>.

ESCWA reviewed the responses received and sent the comments to the respective national statistics offices (NSOs) for their review and feedback. The reviewed questionnaire responses were subjected to additional analysis. Consequently, the consolidated Transport Database was published on the portal and dashboard⁶ under the economic statistics domain in February 2020. In the future, ESCWA will work with the NSOs in the Arab countries to ensure that the transport database is complete and includes all Arab countries and to update and validate the data on an annual basis.

The database covers the following modes and issues of transport: road transport, road safety, railway transport, marine transport and airway transport, with related disaggregation, mainly by infrastructure, equipment, traffic and economic indicator measure.⁷ The measure was also included by mode of transport, including employment. Some indicators are also disaggregated by gender and age, such as road safety. The numbers displayed are as received for the years 2005-2018 when available and were later verified by the NSOs in collaboration with ESCWA. By working in close collaboration with member countries and providing technical assistance, ESCWA endeavours to make the by-country transport data more harmonized, comparable and aligned with international and regional established and acknowledged standards. The data in the portal can be either retrieved by end users either in excel format or in a pdf document. Additionally, visualizations can also be downloaded, and users may draw their own visualization based on their needs. Several data visualizations by topic and by mode of transport are included in annex 2, based on the data displayed in ESCWA's data portal as of 11 March 2020.

The main purpose of this technical paper is to provide an analysis of the responses received in the questionnaire and to document the results, highlighting the strengths and weaknesses of member countries' selected transport data and providing the means and necessary tools to ensure that the data meets regional and international standards, building on the results of the analysis of the data provided by the countries and disaggregated by country-specific modes of transport (road, road safety, railways, air, maritime, multimodal and SDG transport-related indicators).

The analysis addresses an analysis by country with the following criteria:

- Mechanisms of production and dissemination of transport data;
- Sources and entities involved in the production of transport data;
- Availability, continuity and completeness of transport data;
- Conformity of the terms used with United Nations Economic Commission of Europe (UNECE) and ESCWA glossaries on transport data;
- Provision of sources of data and metadata;
- Recommendations to national statistical offices and the ESCWA secretariat on the way forward.

⁶ See <https://data.unescwa.org/portal/79a73daa-8d9e-47dd-b1ee-bfed2b22124e>.

⁷ The term "measure(s)" used throughout this document refers to "economic indicator measure(s)".

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Introduction

In 2019 the Statistics Division of Economic and Social Commission for Western Asia (ESCWA) reaffirmed its interest in compiling transport statistics in the Arab countries to respond to the 2030 Agenda for Sustainable Development and to follow up on the recommendations made by the ESCWA Statistical Committee in its thirteenth session held in Beirut, on 29-30 January 2019. The Committee approved the concept presented for the addition of transport statistics to ESCWA's programme,⁸ and requested ESCWA's Statistics Division to provide the necessary support to its member countries in the collection and dissemination of transport data and indicators.⁹

Providing adequate sustainable transport information systems and data in a timely manner will equip the planners and policymakers with the necessary means to plan in a more holistic way, forge policies and implement them in a systemic, evidence-based and efficient manner. Comprehensive data availability, comparability and timeliness continues to be one of the main challenges facing many countries, especially developing ones, including ESCWA member States. The advent of new technologies and advances can better equip member countries in the collection and dissemination of such data and indicators.

To respond to data gaps and challenges in the Arab region's transport-related Sustainable Development Goals, ESCWA prepared a questionnaire on transport statistics and SDG-related transport indicators to identify the data gaps and the needs to help Arab national statistical offices in member States. The main long-term objectives of the questionnaire are linked to ESCWA's strategy to streamline the collection, dissemination and coherence of transport statistics in the Arab countries and to further the cooperation, collaboration and exchange of knowledge in the collection and dissemination of transport data and related Sustainable Development Goals (SDGs) indicators among them. The questionnaire was designed to determine the status of the collection of transport data in the Arab countries in terms of quality, completeness, sources, periodic issuance, timeliness and coherence of methods of aggregation with international and regional references. The complete or partial responses that were received on the questionnaire which are the subject of this analysis were from the following countries: Egypt, Iraq, Jordan, Kuwait, Lebanon, Mauritania, Morocco, Oman, State of Palestine, Qatar, the Sudan, Syrian Arab Republic, Tunisia and Yemen. A summary of completeness of responses can be drawn, as displayed below:

- For road transport infrastructure and road transport equipment, all countries responded;
- For road transport measure for passenger/freight, only Syrian Arab Republic, the Sudan, Kuwait, Iraq, Egypt and Yemen responded;
- For road safety/accidents, all countries responded;
- For rail transport infrastructure, rail transport equipment and rail transport measure, all countries responded;

⁸ E/ESCWA/C.1/2019/3 (Part IV).

⁹ E/ESCWA/C.1/2019/8/Report.

- For maritime transport infrastructure, only Tunisia, Syrian Arab Republic, the Sudan, Morocco, Lebanon and Yemen responded;
- For maritime transport measure, all countries responded;
- For air transport infrastructure, all countries responded except Qatar, Oman and Yemen;
- For air transport equipment, only Tunisia, the Sudan, State of Palestine and Jordan responded;
- For air transport measure, all countries responded;
- For multimodal transport there were no responses. Consequently, it will be dropped from the analysis.

There are no indications from respective respondents in regard to each indicator as to whether the missing data is available but not reflected in the filled questionnaires or if it is not available altogether.

Below is a summary of the results on data examined for completeness and availability; comparability; coherence; and the availability of data and measure conducive to the production of SDG indicators

Completeness and availability

Road transport statistics

- For road transport infrastructure indicators, most of responding Arab countries provided data for road length networks, but the details are incomplete;
- For road transport equipment indicators, most of the responding Arab countries have the total number of road motor vehicles (for freight and passengers), but many of the details are missing for some countries (the Sudan, Mauritania and Yemen);
- The majority of responding Arab countries did not provide data on road transport measure for passengers and freight except for some countries (the Sudan, Kuwait, Iraq, Egypt and Yemen) but with insufficient details;
- The results for the data on road safety/accidents show that all countries responded for the number of road accidents; however, 50 per cent of countries have incomplete details of the results on accidents (killed or injured) or the disaggregation of the numbers of killed or injured persons by sex or age.

Rail transport statistics

- For rail transport infrastructure, equipment and measure, all responding countries provided almost complete time series.

Maritime transport statistics

- Only half of the responding countries provided data on maritime transport infrastructure;

- For maritime transport measure, the responses show a good response rate for the time series and completeness of disaggregation details for some countries.

Air transport statistics

- For air transport infrastructure, two thirds of the countries provided data on the number of main airports, while less than one third provided data on the total length of coated runways;
- For air transport equipment indicators, only Tunisia provided complete time series and complete disaggregated details, while two other countries have a partial response;
- For air transport measure, the results show that there was a good response rate for the time series and completeness of disaggregated details for almost all countries except for State of Palestine and Mauritania.

Comparability of transport statistics

Road transport statistics

- For the availability of indicators on road transport infrastructure: some data from some countries are outdated and most of the available data have breaks in their time series;
- Two countries show outdated data in road transport equipment indicators;
- For road transport measure for passengers: two countries' data seem to be outdated for the number of road transport passengers, buses and coaches;
- For road safety/accidents indicators: three countries have outdated data.

Rail transport statistics

- For rail transport infrastructure, equipment and measure: all the countries show up-to-date data.

Maritime transport statistics

- For maritime transport infrastructure and equipment: all the countries show up-to-date data;
- For maritime transport infrastructure measure: data show that two countries have time series breaks in the number of arriving and departing vessels and the number of arriving and departing passengers.

Air transport statistics

- For the air transport infrastructure, equipment and measure: all the countries show up-to-date data;
- On the other hand, several breaks in the available time series of air transport infrastructure, equipment and measure were noticed in five countries.

The coherence of transport statistics

Road transport statistics

- For available road transport infrastructure, equipment and economic indicator measure: some indicators show incoherence and unexplained variations in the time series (sharp rise or decline).

Rail transport statistics

- Some inconsistent data points for some countries were noticed in rail transport measure indicators.

Maritime transport statistics

- Some inconsistent data points for some countries were noticed in maritime transport measure indicators.

Air transport statistics

- All the indicators for air transport infrastructure and equipment show consistencies in their time series, whereby inconsistencies were noticed for some countries' data in air transport measure.

SDGs for transport statistics

- Most of the countries have data on transport equipment which is part of the SDGs indicators for the various modes of transport;
- Most of the countries have transport statistics measure for all transport modes except for road transport mode;
- The results for road safety/accident indicators show that all countries responded on the number of road accidents; however, 50 per cent of countries have incomplete details on numbers of killed or injured disaggregated by sex or age.

I. Availability and completeness of transport statistics in Arab countries: infrastructure/equipment/flow

The availability and completeness of a statistic rest on the extent to which the agreements made between producer and user on the specifications of the statistic are adhered to.¹⁰

Completeness refers to:

- The supplied data items;
- The classifications used;
- The extent of detail.

The importance of completeness of a statistic depends on the interest that users have in the statistic.¹¹

The ESS Handbook for Quality Reports defines the indicator as being the ratio between the number of data items supplied according to the agreement between producer and user, and the number of data items mentioned in the agreement. In the handbook, this indicator is stated under relevance, as completeness is seen as part of relevance.¹²

Possible issues which might lead to problems in the completeness of a statistic are:

- The population is not fully known;
- Data items may not be available, possibly as a result of:
 - A high number of observations requested might lead to a high administrative burden for the responding entity;
 - Data items are not included in the questionnaire;
 - Data items are not included in a register;
- The classification has not been used;
- Inadequate specification: few observations available to calculate reliable figures at the desired extent of detail.

There is a strong relationship between completeness and coherence. Incompleteness may result in statistics not being able to be combined meaningfully.

¹⁰ See Checklist Quality of Statistical Output, 2009 Edition, by Peter W. M. van Nederpelt at <https://unstats.un.org/unsd/dnss/docs-nqaf/Netherlands-2009ChecklistQualityofStatisticalOutput.pdf>.

¹¹ Ibid.

¹² See ESS Handbook for Quality Reports, 2009 Edition, available at <https://unstats.un.org/unsd/EconStatKB/KnowledgebaseArticle10243.aspx>.

A. Road transport availability and completeness

ESCWA's questionnaire for road transport infrastructure data results show that all the responding countries provided the related data for road network lengths with 8-14 points for the years 2005-2018, except for Qatar which provided only two points within the time series. With regards to the completeness of the details, the availability for the countries' responses on the details of the road network length was as follows: four responses for highway, one for other routes, six response for asphalt, eight responses for paved and seven responses for unpaved roads, as table 1 shows.

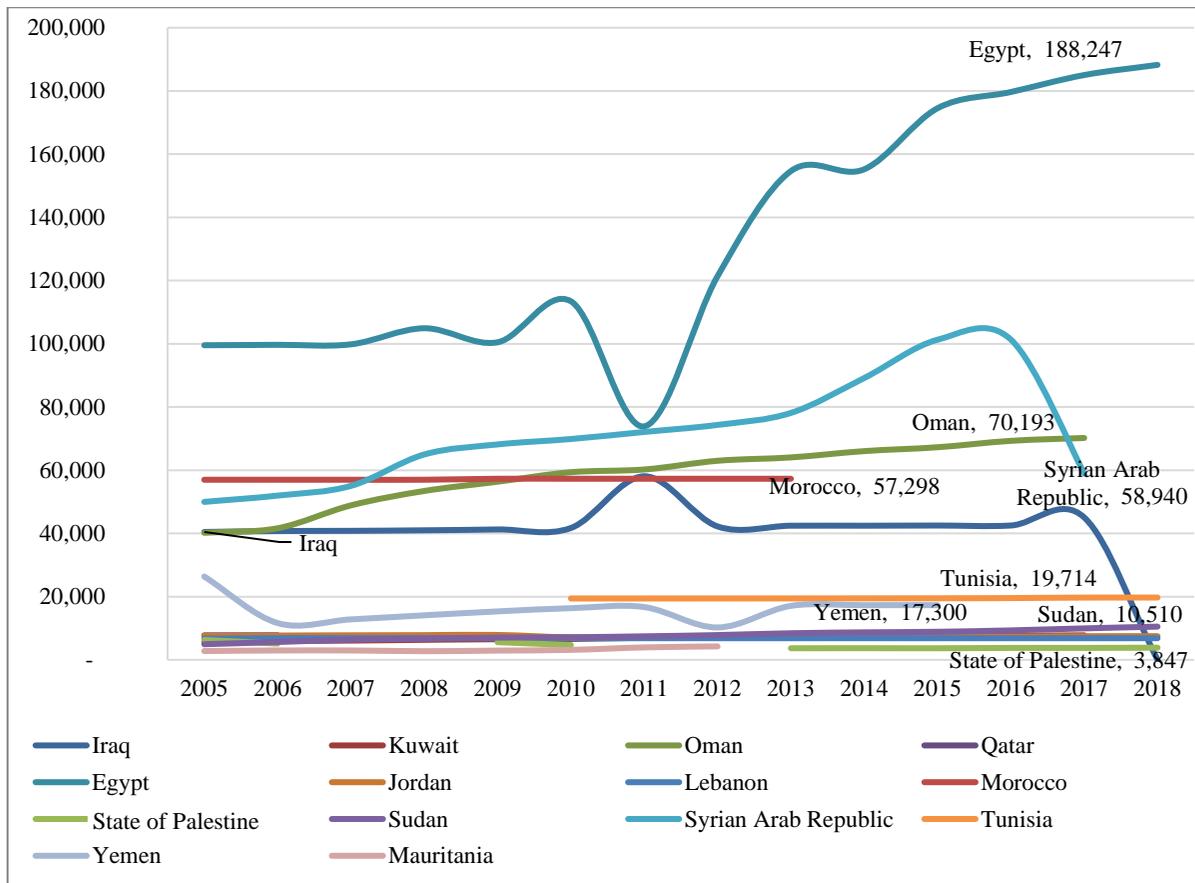
Table 1. Availability, completeness and number of points for road transport infrastructure between 2005-2018

Country	Road network length	Highway	Other routes	Asphalt	Paved	Not paved
Egypt	14				12	14
Iraq	13					
Jordan	14			14	14	14
Kuwait	13	13				
Lebanon	14	14				
Mauritania	8			8		8
Morocco	9	7			11	
Oman	13			4	13	13
State of Palestine	9				9	8
Qatar	2				11	
Sudan	14					
Syrian Arab Republic	14			14	14	14
Tunisia	10	10	10	10	10	10
Yemen	11			11		

Note: Missing cells indicate non-response or not available.

The ESCWA questionnaire for road transport equipment data results show that all responding countries provided data for the total number of road motor vehicles (for freight and passengers) with 5-14 points for the years 2005-2018, except for Iraq.

Figure 1. Road network lengths in Arab countries



The percent of availability deviates for the response of the details of road transport equipment: 86 per cent for the passenger cars, 21 per cent for publicly owned passenger cars, 79 per cent for lorries and pickups, 64 per cent for buses, coaches, and trolleybuses, 14 per cent for publicly-owned buses, coaches, and trolleybuses and 43 per cent for others (table 2).

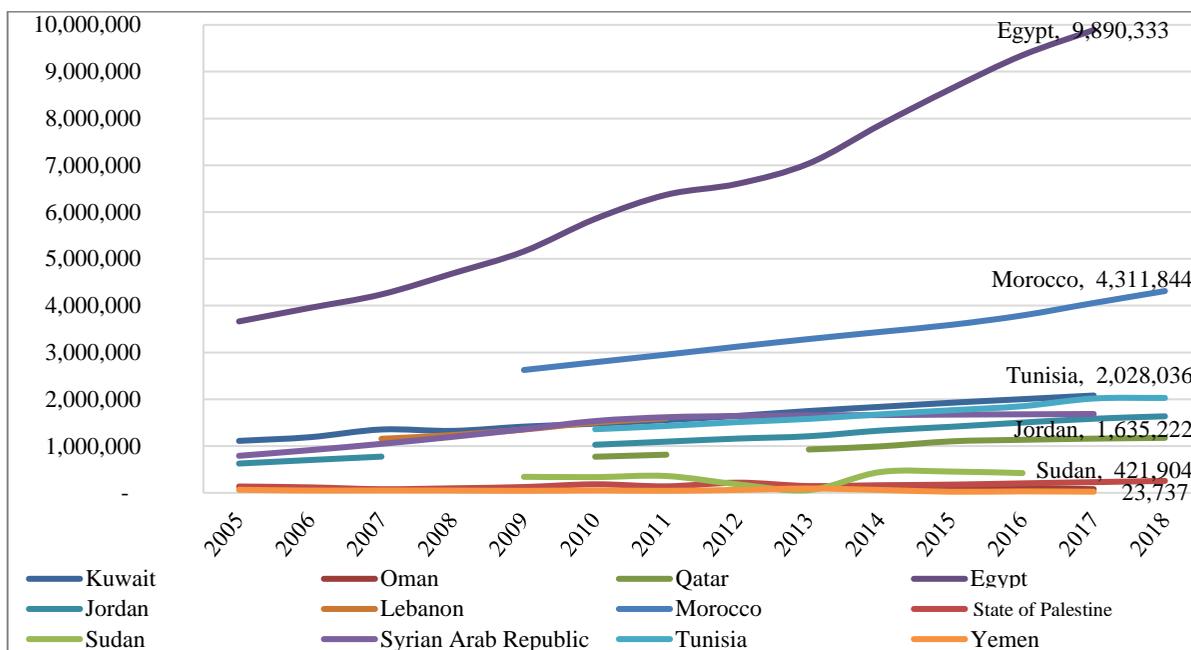
ESCWA’s questionnaire for road transport results show that only three countries provided data for the number of road passengers (the Sudan, Iraq and Egypt), two countries responded for the number of buses (Kuwait and Egypt) and two for the number of coaches (Iraq and Yemen).

Table 2. Availability, completeness, and number of points of road transport equipment between 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Total number of road motor vehicles (for freight and passengers)	11		12	13	5	7	10	6	13	8	8	13	9	13
Passenger cars	11	13	12	13	5		9	6	13	8		13	9	13
Publicly owned passenger cars		10			5							13		
Lorries and pickups	11		12	13	5			6	13	8	10	13	9	13
Buses, coaches, and trolleybuses	11	13	12	13	5				13	8		13	9	
Publicly owned buses, coaches, and trolleybuses					5							13		
Other	8		9	13				6	13	8				

Note: Missing cells indicate non-response or not available.

Figure 2. Number of road motor vehicles in use in Arab countries



While three countries (Syrian Arab Republic, the Sudan and Iraq) provided data for the quantity of road freight transport (in tons) and one country only provided data for road freight transport in ton-kilometres, the data for road transport measure show incomplete time series and incomplete details (table 3).

Table 3. Availability, completeness and number of points of road transport measure for passenger/freight between 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Number of road transport passengers (number) (including cars, motorbikes, coaches, buses and trolleybuses)	5	6									8			
Buses	5			5										
Coaches		13												8
Trolleybuses														
Number of road passengers (in passenger-kilometres) (including cars, motorbikes, coaches, buses and trolleybuses)														
Buses (in passenger-kilometres)														
Coaches (in passenger-kilometres)														
Trolleybuses (in passenger-kilometres)														
Road freight transport in quantity (in tons)		13									11	11		
Road freight transport in quantity (in ton-kilometres)											6			

Note: Missing cells indicate non-response or not available.

The results for road safety/accidents show that all the countries responded to the number of road accidents. All countries responded to people killed and injured except Egypt. Six countries show good

completeness of the details for the number of people killed and injured, namely Tunisia, Syrian Arab Republic, the Sudan, Qatar, Iraq and Yemen (table 4).

Table 4. Availability, completeness and number of points for road safety/accidents between 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Number of road accidents	5	13	12	13	12	9	13	12	13	12	9	13	14	11
Number of people killed and injured		13	12	13	12	9	13	11	13	14	11	13	14	11
Number of people killed	5	13		4	12		13		13	14	14	13	14	11
Number of people killed by sex: males	3									8	8	13	14	11
Number of people killed by sex: females	3									8	8	13	14	11
Number of people killed by age cohort: less than 15 years of age		12									8	13	14	
Number of people killed by age cohort: more than 65 years of age		12								8	8	13	14	
Number of people wounded	5	13		4	12				13	8	14	13	14	11
Number of people wounded by sex: males		8								8	7	13	14	11
Number of people wounded by sex: females		8								8	7	13	14	11
Number of people wounded by age cohort: less than 15 years of age											8	13	14	
Number of people wounded by age cohort: more than 65 years of age										8	8	13	14	

Note: Missing cells indicate non-response or not available.

B. Rail transport availability and completeness

For rail transport infrastructure data, more than half of responding countries provided almost complete time series for 2005-2018 as a response to the question on the length of the railway network (lines in use) (table 5).

Table 5. Availability, completeness and number of points of rail transport infrastructure between 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic,	Tunisia	Yemen
Length of railway network (lines in use)	13	13	3	na	na	3	13	na	na	na	14	13	14	na

Note: na indicates to the value is always zero during the period of observation.

For availability and completeness of rail transport equipment, all responding countries provided almost complete time series for the years 2005-2018 and complete details (total number of locomotives (figure 3), the total number of passenger transport vehicles, the total number of freight wagons) except for Jordan which provided complete details but incomplete time series (3 out of 14) (table 6).

Figure 3. Number of locomotives in Arab countries

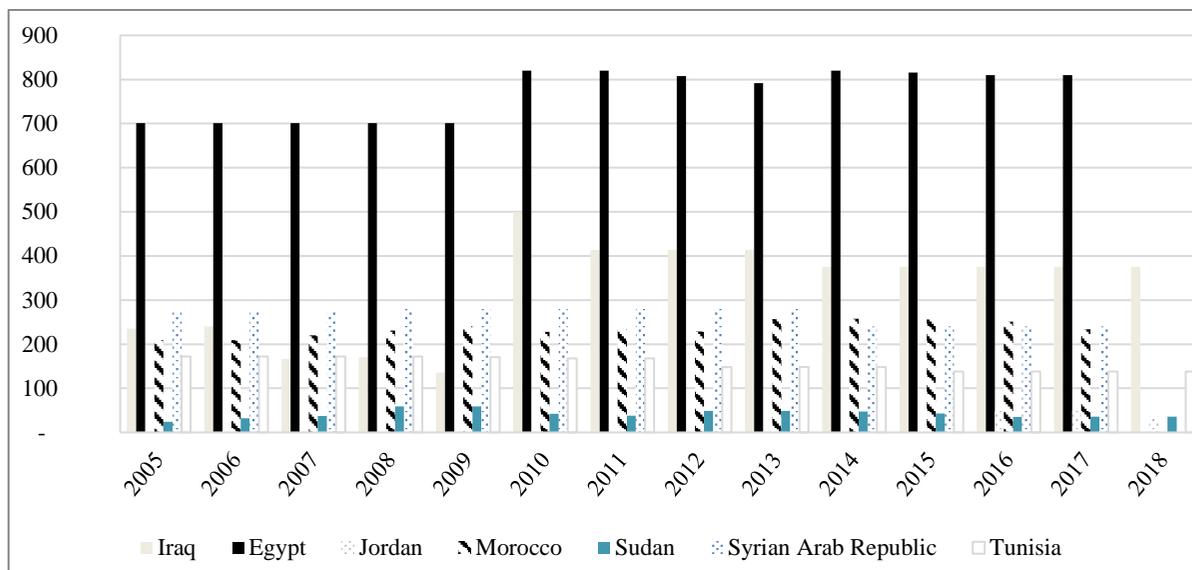


Table 6. Availability, completeness and number of points of rail transport equipment between 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Total number of locomotives	13	13	3	na	na	na	13	na	na	na	14	13	14	na
Total number of passenger transport vehicles	9	13	3	na	na	na	13	na	na	na	13	13	14	na
Total number of freight wagons	13	13	3	na	na	na	13	na	na	na	12	13	14	na

Note: na indicates that the value is always zero during the period of observation.

For the availability and completeness of rail transport measure, all the responding countries provided almost complete time series for the years 2005-2018 and complete details for the four indicators (passenger rail traffic in the national territory (figure 4), passenger rail traffic in the national territory (in passenger-kilometres), rail freight traffic in the national territory (in tons), rail freight traffic in the national territory (in tons-kilometres)), except for Jordan which provided complete details but incomplete time series (2-5 out of 14) (table 7).

Figure 4. Number of rail passengers in national territories of Arab countries

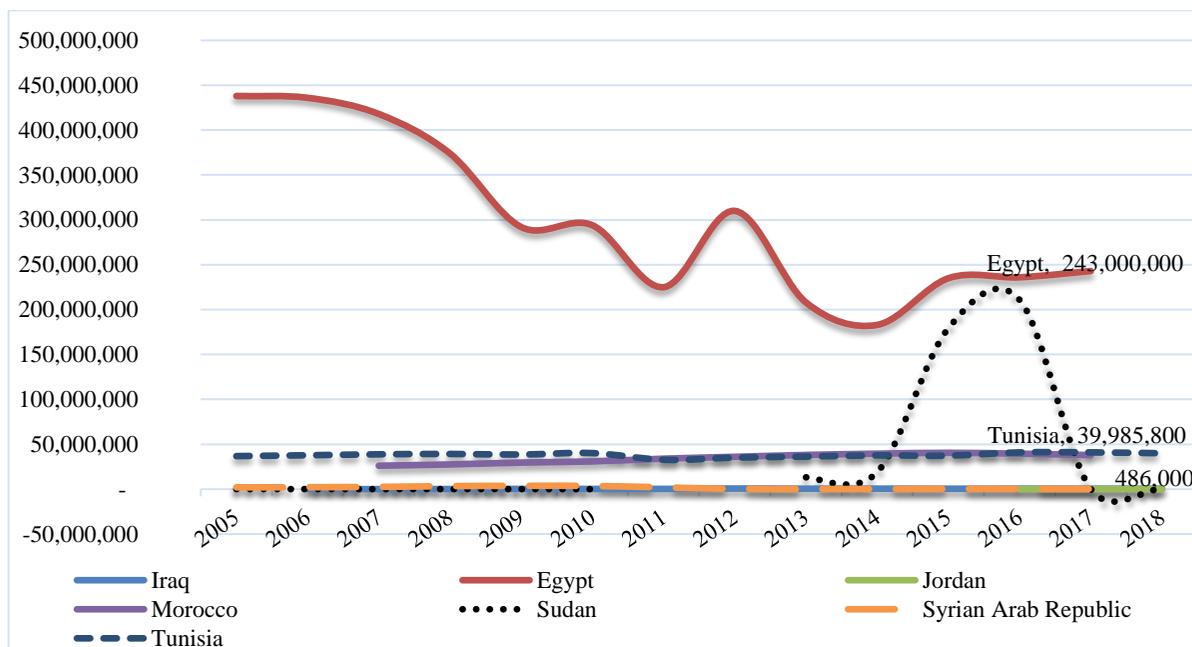


Table 7. Availability, completeness and number of points of rail transport measure: passenger/freight between 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Passenger rail traffic in the national territory (number of passengers)	13	12	3	na	na	na	12	na	na	na	12	13	14	na
Passenger rail traffic in the national territory (in passenger-kilometres)	13	13	5	na	na	na	13	na	na	na	12	13	14	na
Rail freight traffic in the national territory (in tons)	13	13	2	na	na	na	13	na	na	na		13	14	na
Rail freight traffic in the national territory (in tons-kilometres)	13	13	3	na	na	na	13	na	na	na	14	13	14	na

Note: Missing cells indicate non-response or not available; na indicates that the value is always zero during the period of observation.

C. Maritime transport availability and completeness

For maritime transport infrastructure, only six out of thirteen countries responded to the question on the number of main ports with almost complete time series (table 8).

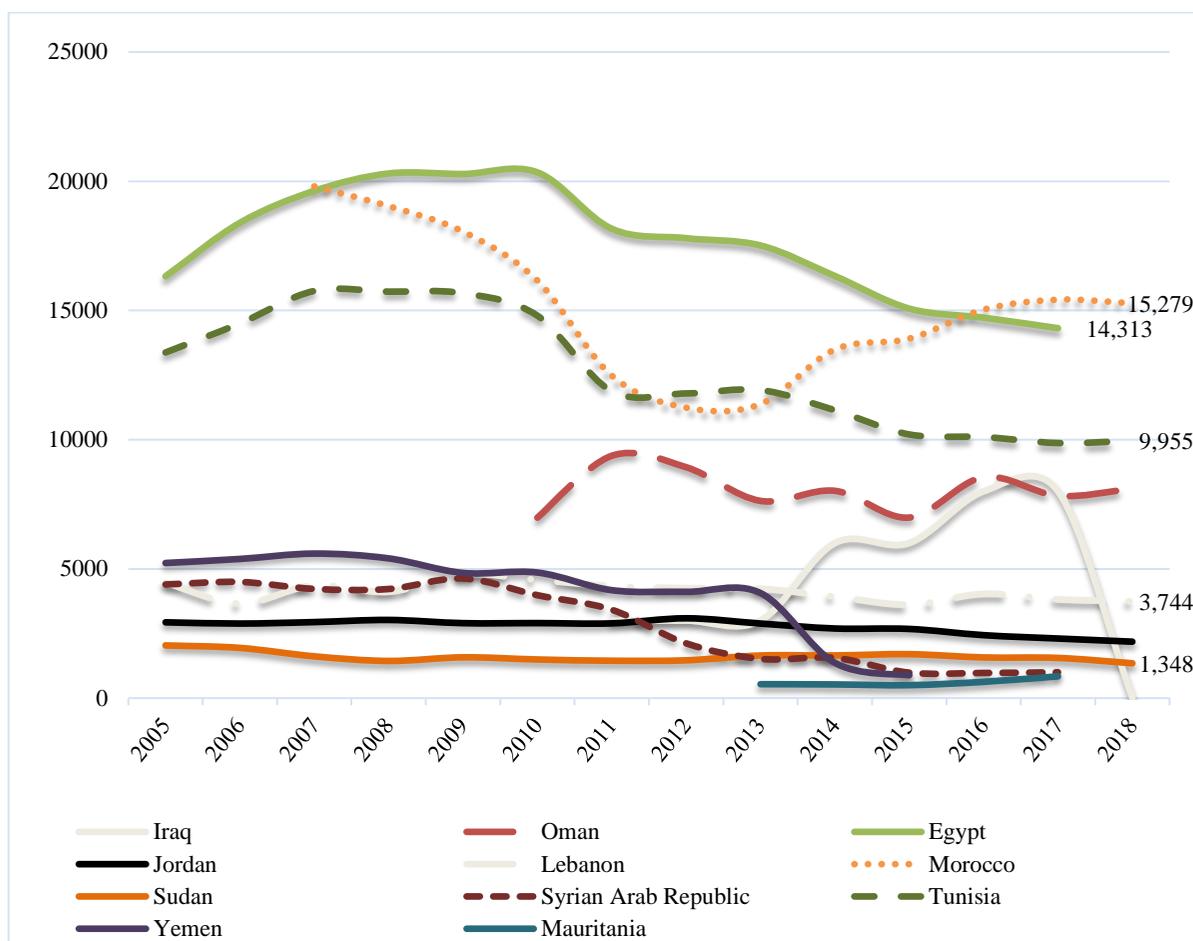
Table 8. Availability, completeness and number of points of maritime transport infrastructure between 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Number of main ports					14		10		na		14	13	14	14

Note: Missing cells indicate non-response or not available; na indicates that the value is always zero during the period of observation.

The results of the ESCWA questionnaire for the maritime transport measure show that there was a good response rate for the time series and the completeness of details for some countries, where 85 per cent of the countries responded on the total number of arriving and departing vessels except for (Qatar and Kuwait) and 54 per cent responded on the number of vessels, arrivals and departures of vessels, and the number of sea passengers on arrival and departure and the sum of arrivals and departures of sea passengers (excluding cruises). See figure 5 on the number of sea vessels on arrival and departure for Arab countries: 2005-2018.

Figure 5. Number of sea vessels on arrival and departure in Arab countries



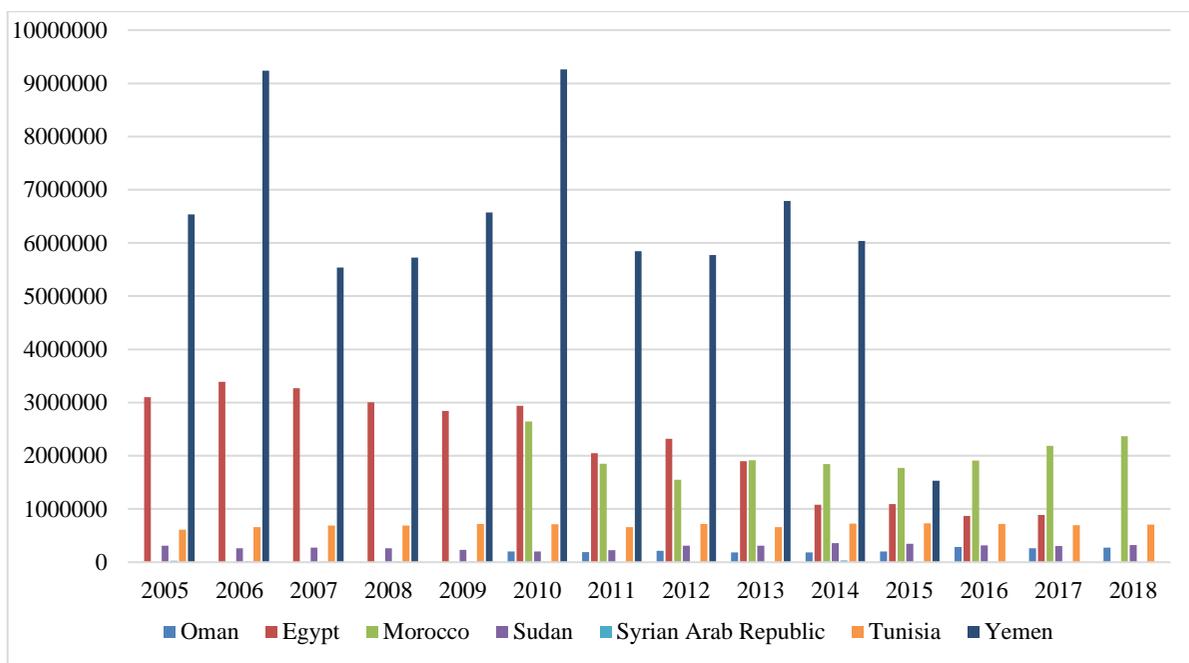
On the other hand, 77 per cent and 69 per cent of the countries responded to the number of passengers on arrival and the number of passengers at departure respectively. Sixty-two per cent of the countries responded on the quantity of sea freight on arrival and departure (the sum of arrivals and departures), while 85 per cent responded on unloaded on arrival (except for Qatar and Iraq), and 92 per cent responded on the freight loaded initially except for Iraq (table 9 and figure 6).

Table 9. Availability, completeness and number of points of maritime transport measure: vessels/passenger/freight between 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Total number of arriving and departing vessels	13	7	14		14	5	12	9	na		14	14	14	11
Vessels, arrivals				12	14			9	na	12		14	14	11
Vessels, departures				13	14			9	na	12		14	14	11
Number of sea passengers on arrival and departure - the sum of arrivals and departures (excluding cruises)	13						9	9	na		14	14	14	11
Passengers on arrival (except for cruises)	13		14	13	14		7		nq	5	14	14	14	11
Passengers at departure (except for cruises)	13		14	13			7		na	5	14	14	14	11
Quantity of sea freight on arrival and departure - the sum of arrivals and departures	13	7			10		12		na		14	14	14	11
Unloaded on arrival	13		14	13	10	5	12	9	na		14	14	14	11
Loaded initially	13		14	13	10	5	12	9	na	12	14	14	14	11

Note: Missing cells indicates non-response or not available.

Figure 6. Number of sea passengers on arrival and departure, excluding cruises



D. Air transport data availability and completeness

Two questions on air transport infrastructure were posed in the questionnaire: number of main airports and total lengths of coated runways of more than 2,438 metres. All the countries responded to the number of airports (except Qatar, Oman, Mauritania and Yemen), while only 4 countries out of 14 responded on total lengths of coated runways of more than 2,438 metres (table 10).

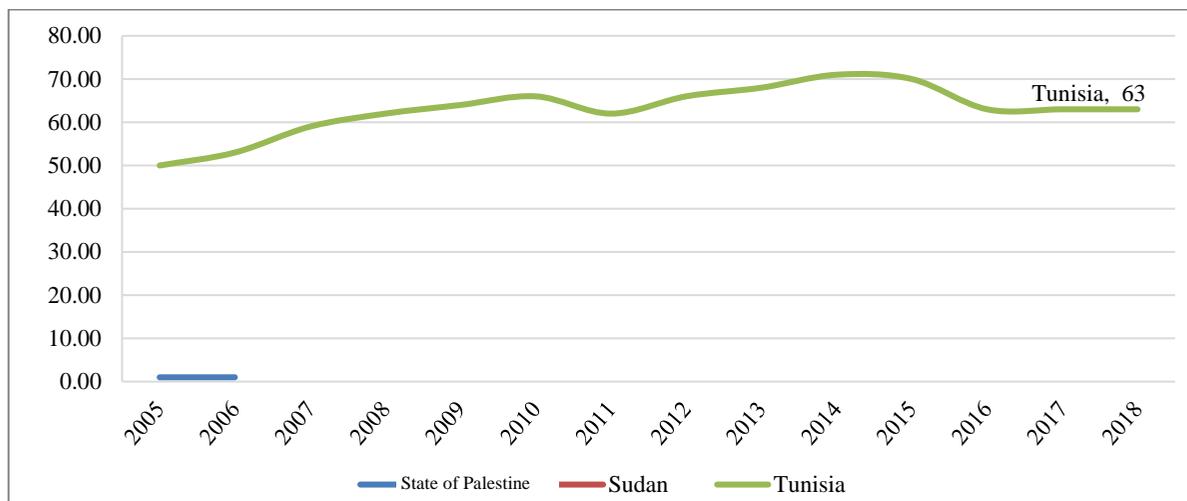
Table 10. Availability, completeness and number of points of air transport infrastructure between 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Number of main airports	13	13	14	13	14		12		2		14	13	14	
The total length of coated runways of more than 2,438 m			14		14		9						14	

Note: Missing cells indicate non-response or not available.

For the availability and completeness of air transport equipment, only Tunisia provided complete time series and complete details (figure 7). Data points for the Sudan - like all the other countries - are missing and the State of Palestine provided only two data points for the years 2005 and 2006.

Figure 7. Number of civil passenger aircraft in use in Arab countries



Jordan provided three data points on the number of civil aircraft for special transport and ambulances, and the number of private business aircraft (table 11).

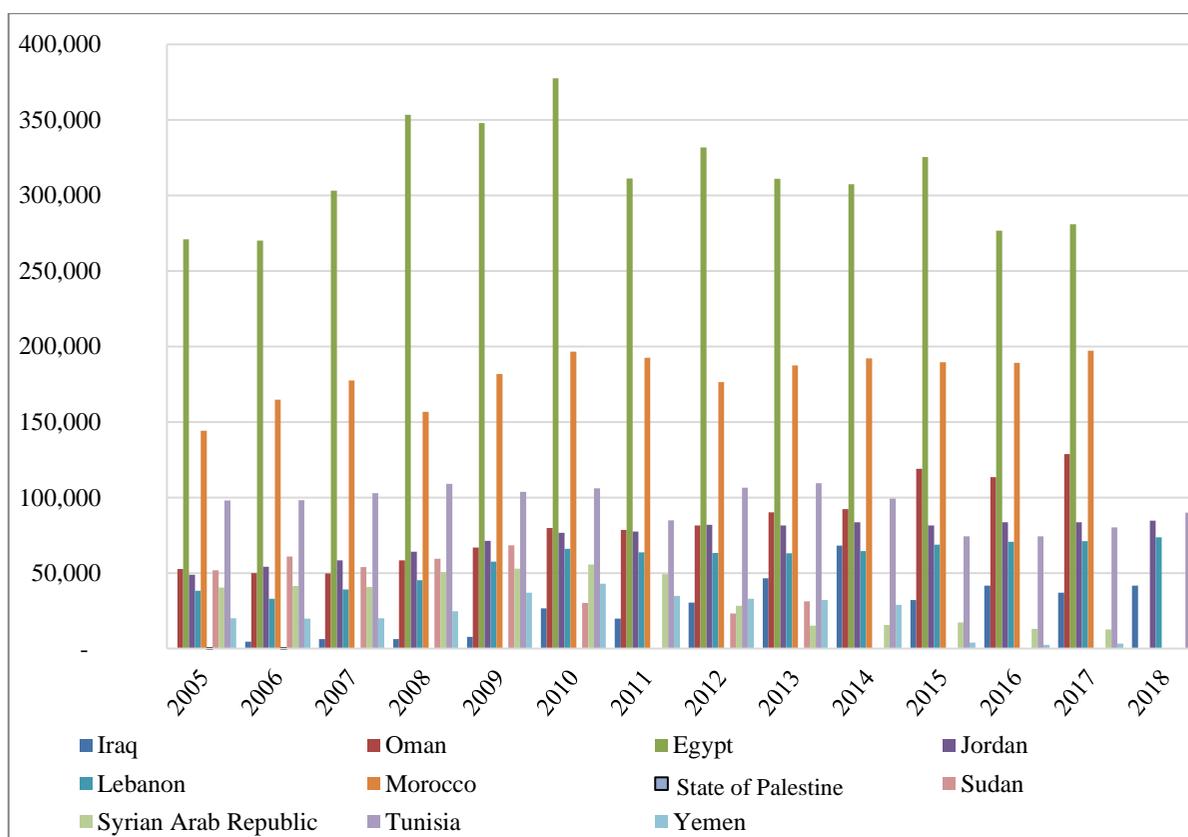
Table 11. Availability, completeness and number of points of air transport equipment between 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Number of civil passenger aircraft in use									2				14	
Number of civil cargo aircraft in use													14	
Number of civil aircraft for special transport and ambulance			3										14	
Number of aircraft for private business			3										14	

Note: Missing cells indicate non-response or not available.

The results of the questionnaire for the air transport measure show that there was a high response rate for the time series and completeness of details for most of the countries where 79 per cent of the countries responded on the total number of aircraft arrivals and departures (except Qatar and Mauritania) (figure 8); 79 per cent of the countries responded on the number of aircrafts arrivals and departures (except Mauritania, Yemen and Morocco); 86 per cent of the countries responded on the number of passenger air transport, the number of passengers carried (except Qatar and Kuwait); 86 per cent of the countries responded on the number of passengers on-arrival, on-departure, initial and non-transit, except State of Palestine and Mauritania.

Figure 8. Number of aircraft on arrival and departure in Arab countries



Fifty percent of the countries responded on the number of passengers in direct transit, except Qatar, Kuwait and State of Palestine; 79 per cent of the countries responded on the quantity of air cargo and mail transported - the sum of the quantity on arrival and departure; 79 per cent of the countries responded on the quantity of air cargo and mail transported on arrival: unloaded and initially loaded (including national transport), except for the State of Palestine and Mauritania (table 12).

Table 12. Availability, completeness and number of points of air transport: aircraft, passengers and freight, 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Total number of aircraft-arrivals and departures	13	12	14		14		13	13	2		8	13	14	13
Number of aircraft-arrivals	13	12	14	13	14			13	2	13	8	13	14	
Number of aircraft-departures	13	12	14	13	14			13	2	13	8	13	14	
Passenger air transport - the number of passengers carried	13	12	14		11	10	14	13	2		9	13	14	13
On arrival	13	12	14	13	14		13	13		12	7	13	14	13
On departure (initial: non- transit)	13	12	14	13	14		13	13		12	7	13	14	13
Number of passengers in direct transit	2				11		13	13			7	7	14	
Quantity of air cargo and mail transported - the sum of the quantity on arrival and departure	13	12	14		14	8	14	13			9	13	14	13
On arrival (including national transport): unloaded	13	12	14	13	14			13		13	8	13	14	13
Initially (including national transport): loaded	13	12	14	13	14			13		13	8	13	14	13

Note: Missing cells indicate non-response or not available.

II. Comparability of transport statistics in Arab countries (infrastructure/equipment/flow)

Comparability is the measurement of the impact of differences in applied statistical concepts, measurement tools and procedures where statistics are compared between geographical areas or over time. The description of comparability over time is the extent to which statistics are comparable or reconcilable over time.¹³

According to the European Statistical System Handbook for Quality reports¹⁴ which provides information on possible limitations in the use of data for comparisons over time, it is noted that when assessing the comparability of data over time, the first step should be to determine (from the metadata) the extent of the changes in the underlying statistical process that have occurred from one period to the next. It identifies three broad possibilities: “1. *There have been no changes, in which case this should be reported*; 2. *There have been some changes, but not enough to warrant the designation of a break in series*; 3. *There have been sufficient changes to warrant the designation of a break in series. In the second and third cases, the changes and their probable impacts should be reported. Particularly in the third case, one should provide information on the length of comparable time series, reference periods at which series breaks occur, the reasons for the breaks, and treatments of them*”.¹⁵

Two indicators were chosen to describe to what extent the transport data are comparable:

- Outdating of the time series (outdating means the data is not helpful and not up to date);¹⁶
- The number of breaks occurring within the time series.

A relationship exists between coherence and comparability. The general definition of coherence and comparability claims that statistics should be consistent internally, over time and comparable between regions and countries. Coherence and comparability aspects are important for the data validation process. “Validation rules and the process of confronting the data set with validation rules, the process of detecting errors and flagging them should be coherent and consistent internally and between countries, based on common standards with respect to the scope and national deviations.”¹⁷ When, there is no coherence in the data sets it impacts comparability.

A. Comparability for road transport data

As shown in the response of the countries on availability of road transport infrastructure for the year 2017-2018, which is an indicator of data outdating, Kuwait and the Syrian Arab Republic do not show data points for 2017-2018 (figure 9) and four countries show outdated data for road network

¹³ See ESS Handbook for Quality Reports, 2014 Edition, available at <https://ec.europa.eu/eurostat/documents/3859598/6651706/KS-GQ-15-003-EN-N.pdf>.

¹⁴ Ibid.

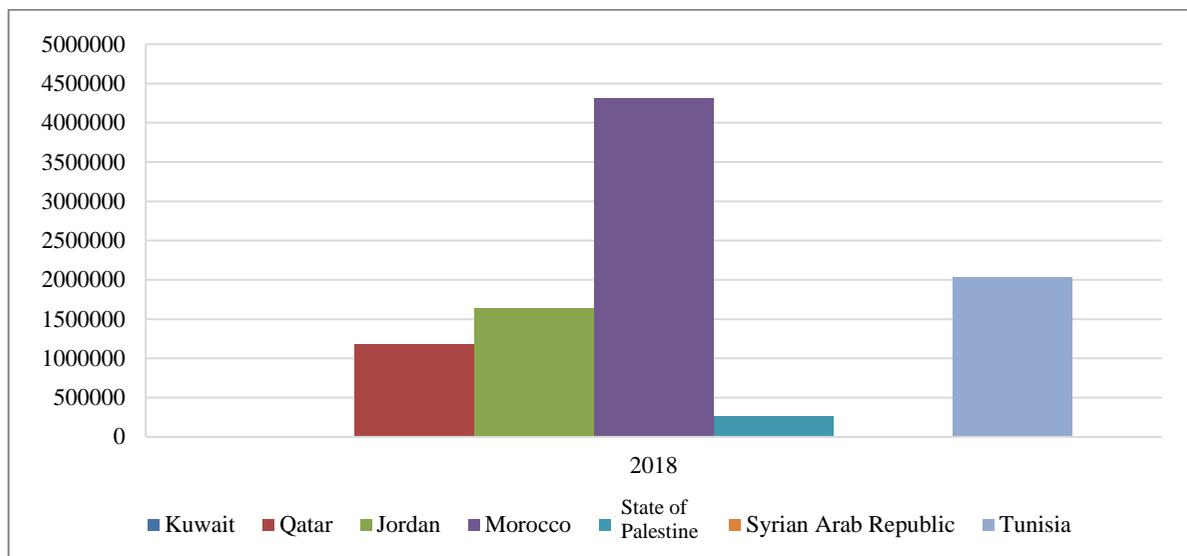
¹⁵ Ibid.

¹⁶ See Checklist Quality of Statistical Output, 2009 Edition.

¹⁷ Methodology for data validation 1.0, Revised edition June 2018, available at https://ec.europa.eu/eurostat/cros/system/files/ess_handbook_-_methodology_for_data_validation_v1.1_-_rev2018_0.pdf.

length, namely: Mauritania, Morocco, Qatar and Yemen, while 50 per cent of the countries have outdated data for the paved and unpaved road network indicators (table 13).

Figure 9. Number of road motor vehicles in use in Arab countries (2018)



On the other hand, considering the number of breaks witnessed in available road network length time series, few breaks were noticed in some countries' data. For instance, two breaks were noticed for State of Palestine one break was noticed for Iraq, Tunisia, Yemen, Morocco and Qatar's time series, respectively (table 14).

Table 13. Availability of road transport infrastructure for the year 2017-2018 (outdating - comparability)

Country	Road network length	Highway	Other routes	Asphalt	Paved	Not paved
Egypt	X				X	X
Iraq	X					
Jordan	X		X	X	X	X
Kuwait	X	X				
Lebanon	X	X				
Mauritania						
Morocco						
Oman	X			X	X	X
State of Palestine	X				X	X
Qatar						
Sudan	X					
Syrian Arab Republic	X			X	X	X
Tunisia	X	X	X	X	X	X
Yemen						

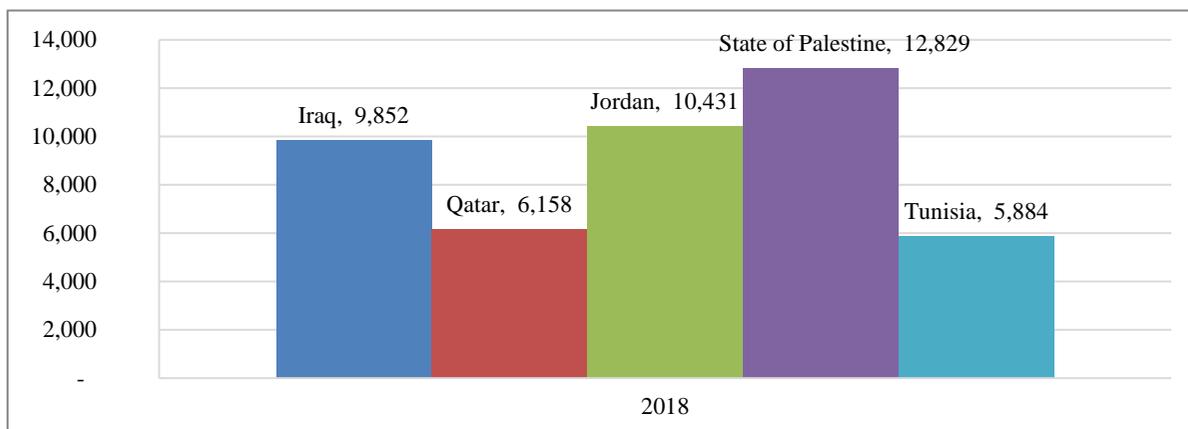
As shown in the responses of the countries on available road transport equipment indicators, for the years 2017-2018 two countries show outdated, namely Mauritania and Lebanon. While as for indicators for the countries which provide road transport measures for passengers, two countries' measures seem to be outdated for the number of road transport passengers for buses (Egypt) and coaches (Yemen) (table 15).

Table 14. Number of breaks of time series for road transport infrastructure continuity (comparability) between 2005-2018

Country	Road network length	Highway	Other routes	Asphalt	Paved	Not paved
Egypt						
Iraq	1					
Jordan						
Kuwait						
Lebanon						
Mauritania	1			1		1
Morocco	1	2			1	
Oman				2		
State of Palestine	2				2	2
Qatar	1				1	
Sudan						
Syrian Arab Republic						
Tunisia	1	1	1	1	1	1
Yemen	1			1		

As the results show for the road transport measure, freight only, three countries provide data (Syrian Arab Republic, the Sudan and Iraq) and their data was up to date.

Figure 10. Number of road accidents in 2018



For road safety/accident indicators only three countries seem to have outdated data which are Oman, Mauritania, and Yemen (table 15).

Table 15. Availability of road transport equipment, measures and road safety for the year 2017-2018 (outdating - comparability)

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Total number of road motor vehicles (for freight and passengers)	X		X	X			X	X	X	X		X	X	
Passenger cars	X	X	X	X			X	X	X	X		X	X	X
Publicly owned passenger cars												X		X
Lorries and pickups	X		X	X				X	X	X	X	X	X	
Buses, coaches and trolleybuses	X		X	X					X	X		X	X	X
Publicly owned buses, coaches and trolleybuses		X										X		
Other	X		X	X				X	X	X				
Road transport measure - passengers														
Number of road		X		X							X			

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
transport passengers (number) (including cars, motorbikes, coaches, buses and trolleybuses)														
Buses														
Coaches		X												
Trolleybuses														
Number of road passenger passengers (in passenger-kilometres) (including cars, motorbikes, coaches, buses and trolleybuses)														
Buses (in passenger-kilometres)														
Coaches (in passenger-kilometres)														
Trolleybuses (in passenger-kilometres)														

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Road transport measure/freight														
Road freight transport in quantity (tons)		X									X	X		
Road freight transport in quantity (tons-kilometres)											X			
Road safety-accidents														
Number of road accidents	X	X	X	X	X		X		X	X		X	X	
Number of people killed and injured		X	X	X	X		X		X	X	X	X	X	
Number of people killed	X	X		X	X		X		X	X	X	X	X	
Number of people killed by sex - males	X									X	X	X	X	
Number of people killed by sex - females	X									X	X	X	X	
Number of people killed by age cohort less		X									X	X	X	

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
than 15 years of age														
Number of people killed by age cohort more than 65 years of age		X								X	X	X	X	
Number of people wounded	X	X		X	X				X	X	X	X	X	
Number of people wounded by sex - males		X								X		X	X	
Number of people wounded by sex - females		X								X		X	X	
Number of people wounded by age cohort less than 15 years of age											X	X	X	
Number of people wounded by age cohort more than 65 years of age										X	X	X	X	

B. Comparability for rail transport data

For rail transport infrastructure, equipment and measure for the year 2017-2018 (outdating - comparability) all the countries show up-to-date data (table 16).

Table 16. Availability of rail transport infrastructure, equipment and measures for the year 2017-2018 (outdating - comparability)

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Rail transport infrastructure														
Length of railway network (lines in use)	X	X	X	na	na		X	na	na	na	X	X	X	na
Rail transport equipment														
Total number of locomotives	X	X	X	na	na		X	na	na	na	X	X	X	na
Total number of passenger transport vehicles	X		X	na	na		X	na	na	na	X	X	X	na
Total number of freight wagons	X		X	na	na		X	na	na	na		X	X	na
Rail transport measure														
Passenger rail traffic in the national territory (number of passengers)	X	X	X	na	na		X	na	na	na	X	X	X	na
Passenger rail traffic in the national territory (passenger-kilometres)	X	X	X	na	na		X	na	na	na	X	X	X	na
Rail freight traffic in the national territory (tons)	X	X	X	na	na		X	na	na	na		X	X	na
Rail freight traffic in the national territory (tons-kilometres)	X	X	X	na	na		X	na	na	na	X	X	X	na

C. Comparability for maritime transport data

The results show for maritime transport infrastructure, equipment and measure for the year 2017-2018 that all the countries have up-to-date data (table 17).

Table 17. Availability of maritime transport infrastructure and measures for the year 2017-2018 (outdating - comparability)

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Number of main ports					X		X		na		X	X	X	X
Total number of arriving and departing vessels	X	X	X		X	X	X	X	na			X	X	
Vessels, arrivals					X				na	X		X	X	
Vessels, departures				X	X			X	na	X	X	X	X	
Number of sea passengers on arrival and departure - the sum of arrivals and departures (excluding cruises)	X						X		na		X	X	X	
Passengers on arrival (except for cruises)	X		X	X	X		X			X	X	X	X	
Passengers at departure (except for cruises)	X		X	X			X		na	X	X	X	X	
Quantity of sea freight on arrival and departure - the sum of arrivals and departures	X	X			X				na		X	X	X	
Unloaded on arrival	X		X	X	X	X			na		X	X	X	
Loaded initially	X		X	X	X	X			na	X	X	X	X	

Note: na indicates the value is always zero during the period of observation.

On the other hand, the number of breaks in available time series for maritime transport infrastructure and measure shows that Qatar has time series breaks in numbers of arriving and departing vessels and numbers of arriving and departing passengers and Kuwait has one discontinuity in numbers of arriving vessels (table 18).

Table 18. Number of breaks of time series for maritime transport infrastructure, measure (comparability) between 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Marine infrastructure														
Number of main ports									na					
The measure of maritime transport														
Total number of arriving and departing vessels									na					
Vessels, arrivals				1					na	1				
Vessels, departures									na	1				
Number of sea passengers on arrival and departure - the sum of arrivals and departures (excluding cruises)									na					
Passengers on arrival (except for cruises)										1				
Passengers at departure (except for cruises)									na	1				
Quantity of sea freight on arrival and departure - the sum of arrivals and departures									na					
Unloaded on arrival									na					
Loaded initially									na	1				

D. Comparability for air transport data

The results for air transport infrastructure, equipment, and measure for the year 2017-2018- for the countries which provided data- show that their data are up to date except for State of Palestine for its non-applicability (table 19).

Table 19. Availability of air transport infrastructure, equipment, measure for the year 2017-2018 (outdating - comparability)

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Air transport infrastructure														
Number of main airports	X	X	X	X	X						X	X	X	
The total length of coated runways of more than 2,438 m			X		X								X	
Air transport equipment														
Number of civil passenger aircraft in use											X		X	
Number of civil cargo aircraft in use											X		X	
Number of civil aircraft special transport and ambulance			X										X	
Number aircraft, private business			X										X	
Air transport measure														
Total number of aircraft -arrivals and departures	X	X	X		X		X	X				X	X	X

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Number of aircraft – arrivals	X	X	X	X	X			X		X		X	X	
Number of aircraft - departures	X	X	X	X	X			X		X		X	X	
Passenger air transport - the number of passengers carried	X	X	X		X		X	X				X	X	X
On arrival	X	X	X	X	X		X	X		X		X	X	X
On departure (initial: non-transit)	X	X	X	X	X		X	X		X		X	X	X
Number of passengers in direct transit		X			X		X	X				X	X	
Quantity of air cargo and mail transported - the sum of the quantity on arrival and departure	X	X	X		X		X	X				X	X	X
On arrival (including national transport): unloaded	X	X	X	X	X			X		X		X	X	X
Initially (including national transport): loaded	X	X	X	X	X			X		X		X	X	X

On the other hand, several breaks in the time series for air transport infrastructure, equipment, and measure is noticed for Syrian Arab Republic, the Sudan, Qatar and Egypt (table 20).

Table 20. Number of breaks of time series for air transport infrastructure continuity (comparability) between 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Number of main airports														
The total length of coated runways of more than 2,438 m														
Number of civil passenger aircraft in use														
Number of civil cargo aircraft in use														
Number of civil aircraft for special transport and ambulance														
Number of aircraft, private business														
Total number of aircraft - arrivals and departures											1			
Number of aircraft - arrivals											1			
Number of aircrafts -departures											1			
Passenger air transport - the number of passengers carried										1				
On arrival										1	1			
On departure (initial: non-transit)											1			

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Number of passengers in direct transit	1										1	2		
Quantity of air cargo and mail transported - the sum of the quantity on arrival and departure														
On arrival (including national transport): unloaded											1			
Initially (including national transport): loaded											1			

III. Coherence of transport statistics in Arab countries (infrastructure/equipment/flow)

The coherence of a statistical output reflects the degree to which it is logically connected and mutually consistent with other statistical outputs. Coherence over time implies that the data is based on common concepts, definitions and methods over time, or that any differences are explained and can be allowed for.¹⁸ Incoherence in time series might arise from many reasons, such as:

- Change in the unit of measurement (hundreds or thousands);
- Change in the geographical coverage due to political situation (wars, changes in the control over the administrative territories, etc.);
- Statistical errors;
- Delays or lack of registration of the data in the line ministries/authorities who are responsible for monitoring, registering, publishing and providing the data to the national statistical office;
- Replacing the mode of transport with another mode of transport;
- Changes in methodologies or definitions;
- Change in regulations.

This chapter is an attempt to showcase incoherence through identifying abrupt changes in the values of observations in the times series. A sharp decrease or sharp increase in the time series data is explained as a sign of incoherence for the different modes of transport indicators.

A. Road transport data coherence

Analysis of the coherence of the ESCWA questionnaire's time series for road transport infrastructure indicators shows various sharp rises or declines in the time series of some countries, like the sharp decline for the road network length, witnessed for Egypt in 2011, a sharp increase for Iraq in 2011, the State of Palestine in 2010, and the Syrian Arab Republic in 2017 for the same indicator (table 21). Explanations were not provided to justify these sharp rises or declines. Though the corresponding countries were approached for clarifications or review, explanations were not obtained until the date of drafting this paper.

As shown in table 22 of the coherence in the time series for road transport equipment on measure indicators, some indicators show inconsistencies in their time series (sharp rise or decline) like the sharp decline for the total number of road motor vehicles for Mauritania in 2014 and Iraq in 2013.

Also, the number of passenger cars show a sharp increase for Iraq in 2010 and a sharp decline in Yemen in 2013 and 2015.

¹⁸ UN Statistics Quality Assurance Framework, Preliminary Version, 20 September 2015.

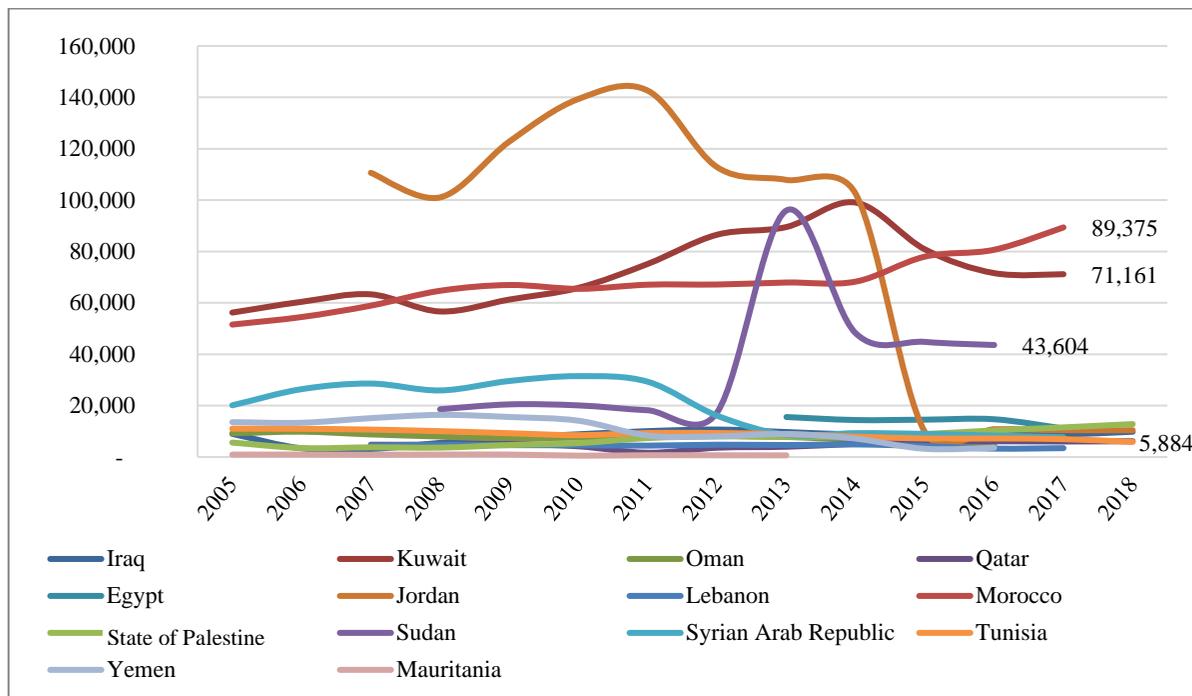
For road transport measure-passengers a sharp decrease was noticed in the number of road transport passengers for the Sudan in 2012 and sharp decreases in coaches for passengers in Iraq (2011) and Yemen (2014).

Table 21. Coherence of time series for road transport infrastructure in 2005-2018

Country	Road network length	Highway	Other routes	Asphalt	Paved	Not paved
Egypt	2011				2011	2011
Iraq	2011					
Jordan						
Kuwait						
Lebanon						
Mauritania						
Morocco						
Oman						
State of Palestine	2009-2010				2005-2006	2013
Qatar					2014-2015	
Sudan						
Syrian Arab Republic	2016-2017				2016-2017	2016-2017
Tunisia						
Yemen						

Note: Missing value means coherence in time series or unavailable (check availability tables).

Figure 11. Changes in the number of road accidents in Arab countries



For the road transport safety and accident indicators, most of the Arab countries witnessed inconsistencies in their time series as shown in table 22 and figure 11 above.

Table 22. Coherence of time series for road transport equipment, measure, safety and accidents for the years 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Road transport equipment - vehicle inventory														
Total number of road motor vehicles (for freight and passengers)						2014								2013-2015
Passenger cars		2010-2014												2013-2015
Publicly owned passenger cars														
Lorries and pickups														2013-2015
Buses, coaches and trolleybuses			2014											
Publicly owned buses, coaches and trolleybuses														
Other									2012					
Road transport measure - passengers														
Number of road transport passengers (including cars, motorbikes, coaches, buses and trolleybuses)											2012			
Buses														
Coaches		2011												2014-2015

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Road transport equipment - vehicle inventory														
Trolleybuses														
Number of road passenger passengers (in passenger-kilometres) (including cars, motorbikes, coaches, buses and trolleybuses)														
Buses (in passenger-kilometres)														
Coaches (in passenger-kilometres)														
Trolleybuses (in passenger-kilometres)														
Road transport measure - freight														
Road freight transport in quantity (in tons)										2011				
Road freight transport in quantity (in tons-kilometres)														
Road safety – accidents														
Number of road accidents			2015											2014-2015
Number of people killed and injured				2011										2014-2015
Number of people killed														2014-2015
Number of people killed by sex - males														2014-2015

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Road transport equipment - vehicle inventory														
Number of people killed by sex - females														2014-2015
Number of people killed by age cohort less than 15 years of age														
Number of people killed by age cohort more than 65 years of age														
Number of people wounded										2012				2014-2015
Number of people wounded by sex - males														2014-2015
Number of people wounded by sex - females														2014-2015
Number of people wounded by age cohort less than 15 years of age														
Number of people wounded by age cohort more than 65 years of age														

Note: Missing values mean coherence in time series or unavailable (check availability tables).

B. Rail transport data coherence

As shown in [table 23](#) on the coherence of the time series for rail transport, equipment and measure indicators, several show inconsistencies in their time series (sharp rise or decline) such as in rail freight traffic in the national territory (in tons) in the Syrian Arab Republic in 2012 and in rail freight traffic in tons-kilometres for 2012 in the Sudan (2011), in Jordan (2010 and 2016) and Tunisia (2011).

Table 23. Coherence of time series for rail transport infrastructure, equipment and measure for the years 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Rail transport infrastructure														
Length of railway network (lines in use)				na	na			na	na	na				na
Rail transport equipment														
Total number of locomotives				na	na			na	na	na				na
Total number of passenger transport vehicles				na	na			na	na	na				na
Total number of freight wagons				na	na			na	na	na	2010			na
Rail transport measure														
Passenger rail traffic in the national territory (number of passengers)				na	na			na	na	na				entry of
Passenger rail traffic in the national territory (in passenger-kilometres)			2010, 2016	na	na			na	na	na				na
Rail freight traffic in the national territory (in tons)				na	na			na	na	na		2012		na
Rail freight traffic in the national territory (in tons-kilometres)			2010, 2016	na	na			na	na	na	2011	2012	2011	na

Note: Missing values mean coherence in the time series or unavailable (check availability tables).

C. Maritime transport data coherence

As shown in table 24 on the coherence of the time series for maritime transport infrastructure, equipment and measure indicators, the number of passengers on arrival (except for cruises) shows incoherence in their time series (sharp rise or decline) in both Syrian Arab Republic and Egypt in 2014 and incoherence in the quantity of sea freight on arrival and departure (arrivals and departures) in Yemen in 2014.

Table 24. Coherence of time series for maritime transport infrastructure, equipment and measure for the years 2005-2018

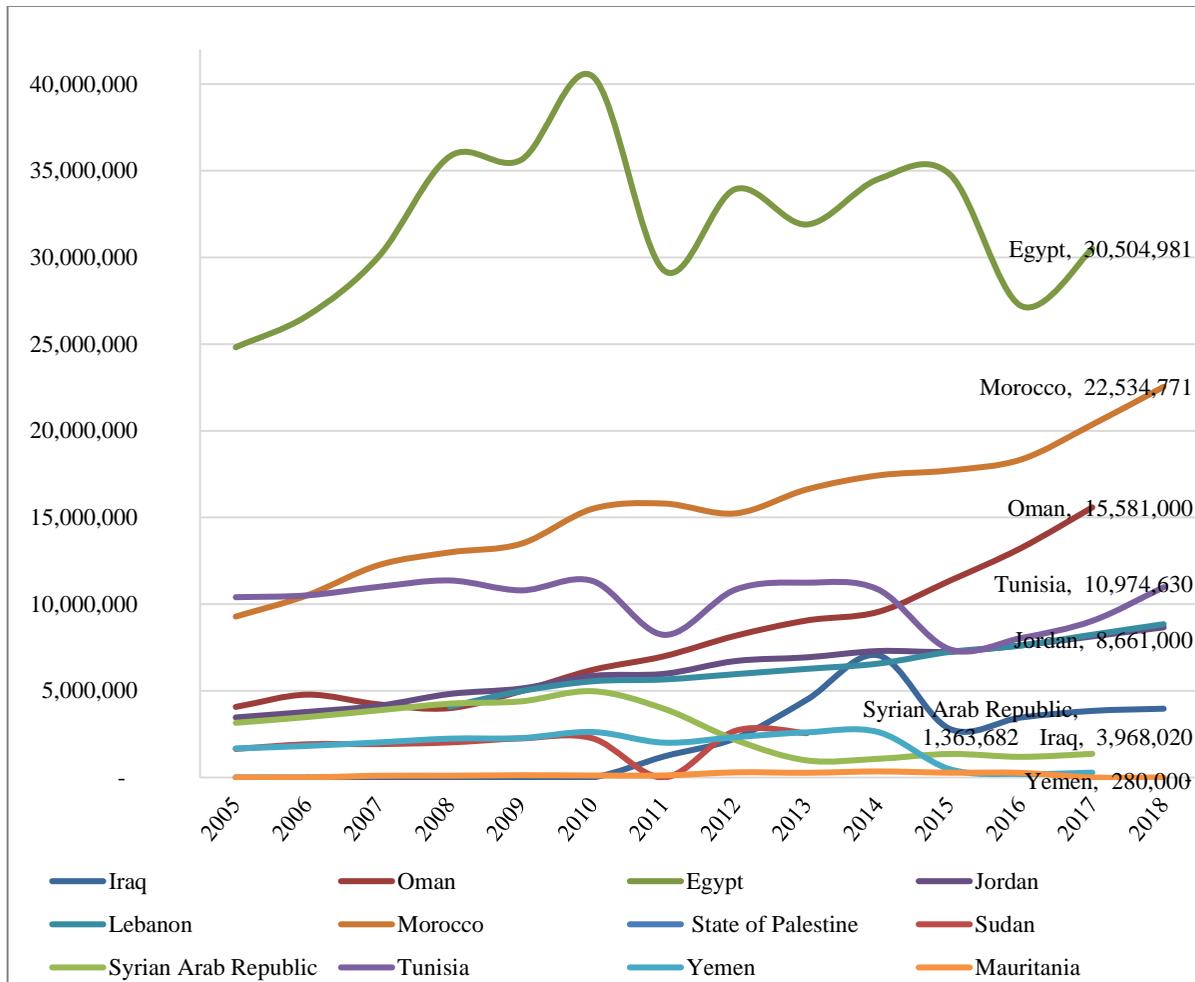
	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Republic	Tunisia	Yemen
Marine infrastructure														
Number of main ports									na					
The measure of maritime transport														
Total number of arriving and departing vessels									na					
Vessels, arrivals									na					
Vessels, departures									na					
Number of sea passengers on arrival and departure - the sum of arrivals and departures (excluding cruises)									na					2015
Passengers on arrival (except for cruises)	2014											2012, 2014		
Passengers at departure (except for cruises)									na					
Quantity of sea freight on arrival and departure - the sum of arrivals and departures		2014							na					2014
Unloaded on arrival									na					2014
Loaded initially									na					2014

Note: Missing values mean coherence in time series or unavailable (check availability tables).

D. Air transport data coherence

As shown in table 25 on the coherence of the time series for air transport infrastructure and measure indicators, all the indicators for air transport infrastructure and equipment show coherence in the time series, whereby incoherence was noticed in the Syrian Arab Republic (2013), the Sudan (2010) and Oman (2009).

Figure 12. Number of passengers on arrival and departure in Arab countries



For the passenger air transport - the number of passengers' arrival or departure - and the quantity of cargo loaded and unloaded, the results show incoherence in the time series for Iraq (2011) and Yemen (2014) for most of the air transport measures as shown in table 25.

Table 25. Coherence of time series for air transport infrastructure, equipment and measure for the years 2005-2018

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Rep.	Tunisia	Yemen
Air transport infrastructure														
Number of main airports														
The total length of coated runways of more than 2,438 m														
Air transport equipment														
Number of civil passenger aircraft in use														
Number of civil cargo aircraft in use														
Number of civil aircraft, special transport and ambulance														
Number aircraft private business														
Air transport measure														
Total number of aircraft, arrivals and departures		2011												2015
Number of aircraft, arrivals		2011												
Number of aircraft, departures		2011												
Passenger air transport, number of		2011												2014

	Egypt	Iraq	Jordan	Kuwait	Lebanon	Mauritania	Morocco	Oman	State of Palestine	Qatar	Sudan	Syrian Arab Rep.	Tunisia	Yemen
passengers carried														
On arrival		2011											2013	2014d
On departure (initial: non-transit)		2011											2013	
Number of passengers in direct transit											2010			
Quantity of air cargo and mail transported - the sum of the quantity on arrival and departure		2010									2010		2013	2014
On arrival (including national transport): unloaded								2009			2010		2013	2014
Initially (including national transport): loaded		2011						2009					2013	2014

Note: Missing values mean coherence in time series or unavailable (check availability tables).

IV. Mechanisms of producing and disseminating transport statistics: data sources

Based on the responses received from 14 Arab countries on the mechanisms of producing and disseminating transport statistics, it can be noted that most of the responding countries answered this part of the questionnaire except Oman and Jordan.

All the responding countries indicated that the responsibility for collecting, producing and disseminating transport statistics is held by the NSOs in cooperation with other line ministries and authorities which also produce and disseminate transport statistics (table 26), except for Egypt which indicated that the NSO is the only institution to collect and produce and disseminate transport statistics.

Table 26. Data sources for transport statistics

Mode of transport	Data source responsibility
Road transport	
Road transport infrastructure	National statistical office (Syrian Arab Republic, Egypt, Mauritania) Ministry of Public Works
Road transport equipment-vehicle inventory	National statistical office (Syrian Arab Republic, Egypt, Mauritania) Ministry of transport Ministry of Interior Affairs (Kuwait)
Road transport measure /passengers	National statistical office (Syrian Arab Republic, Egypt, Mauritania)
Road transport measure/ freight	National statistical office (Syrian Arab Republic, Egypt, Mauritania)
Road safety/accidents	National statistical office (Syrian Arab Republic, Egypt, Mauritania) Ministry of Interior Affairs (Kuwait)
Rail transport	
Rail transport infrastructure	Rail Public Authorities
Rail transport equipment	Ministry of Transport (Tunis)
Rail transport measure	National statistical office (Syrian Arab Republic, Egypt)
Maritime Transport	
Maritime transport infrastructure	Ports Public Authorities Ministry of Transport (Tunis)
Maritime transport measure	National statistical office (Syrian Arab Republic, Egypt, Mauritania) Ministry of Interior Affairs (Kuwait)
Air transport	
Air transport infrastructure	National aviation authorities National statistical office (Syrian Arab Republic)
Air transport equipment	
Air transport measure	

All the responding countries indicated that there is a collaboration between their national statistical offices and ministries and authorities which are the major data source for transport statistics.

Frequently such collaboration suffers from delays in sending the requested transport data on time, which sometimes leads to the problem of outdated in the dissemination of the data.

None of the countries indicated that they use the GIS systems or spatial data when collecting transport statistics except for Iraq.

According to the obstacles faced when collecting transport statistics, some countries indicated outdated in receiving transport statistics as the main obstacle. Other countries indicated that lack of financial resources poses an additional obstacle. One country indicated that it never received technical support in collecting and producing transport statistics, others indicated that informal transport poses an additional challenge to the collection and dissemination of transport data and indicators.

Concerning the dissemination of transport statistics, all the responding countries indicated that they disseminate transport data and indicators annually, either via their publications or their websites.

V. Recommendations

The results of the ESCWA questionnaire for transport statistics show that most countries do not have complete data sets for road transport statistics, for example, transport statistics measures for passenger and freight, due to lack of the required methodology to do so. Some countries don't provide data or the details of their disaggregation, such as on road transport statistics infrastructure, equipment or road safety, due to weak collaboration with their data sources.

The analysis of the responses also shows that some countries have incomparable data due to breaks in their time series, for example in transport statistics infrastructure and equipment; or due to data outdated such as in road accidents/safety statistics and road transport equipment time series, which need more serious efforts from the countries to provide the data or to estimate the values of the missing data points.

On the other hand, some countries' data show incoherence in some of their time series, such as the data on road transport infrastructure, equipment, measure and few incoherencies in rail/maritime/air transport indicators.

The below table shows recommendations by mode of transport, based on the analysis conducted above on completeness, comparability and coherence of the data series provided by responding countries.

Mode of transport	Completeness - Availability	Comparability - Continuity	Coherence – Validity
Road transport			
Road transport infrastructure	Statistical offices need to have memorandums of understanding with line ministries/authorities who are responsible for monitoring, registering and publishing/providing the data to ensure good collaboration without delay in delivering the data. Meeting with producers of data to obtain timely data.	Prevent outdated of time series. Provide explanations of breaks in time series. Estimation of breaks through time series methods. Correction of earlier figures.	Explanation of incoherence of time series.
Road transport equipment		Prevent outdated of series. Explain breaks in time series. Estimation of breaks through time series methods. Correct earlier figures	Explanation of inconsistencies in the time series.

Mode of transport	Completeness - Availability	Comparability - Continuity	Coherence – Validity
Road transport measure/ passengers	<p>A standard methodology needs to be defined by an international or a regional institution on collecting and estimating the road transport measure for the number of passengers and volume of freight by mode of transport.</p> <p>Countries are encouraged to use the international manuals published on road freight transport statistics and especially the manual on road freight transport statistics for the Mediterranean countries produced by the European Union (EU) in the framework of the MEDSTAT Programme.</p>		
Road transport measure/freight			
Road safety/accidents	<p>Statistical offices need to have memorandums of understanding with line ministries/authorities who are responsible for monitoring, registering and publishing/providing the data to ensure timeliness, completeness, and coherence of the data provided.</p> <p>More details should be provided on the breakdown of the figures by sex and age whenever and where possible.</p>	Prevent outdated of series.	Explanation of incoherence of time series.
Rail transport			
Rail transport infrastructure	<p>Statistical offices need to have memorandums of understanding with line ministries/authorities who are responsible for monitoring, registering and publishing/providing the data to ensure timeliness, completeness, and coherence of the data provided, especially on infrastructure.</p>		
Rail transport Equipment			
Rail transport measure			
Maritime Transport			
Maritime transport infrastructure	<p>Statistical offices need to have memorandums of understanding with line ministries/authorities who are responsible for monitoring, registering and publishing/providing the data to ensure</p>		
Maritime transport measure			
		<p>Explanation of breaks.</p> <p>Estimation of breaks.</p>	Explanation of incoherence of time series.

Mode of transport	Completeness - Availability	Comparability - Continuity	Coherence – Validity
	timeliness, completeness, and coherence of the data provided.		
Air transport			
Air transport infrastructure	Statistical offices need to have memorandums of understanding with line ministries/authorities who are responsible for monitoring, registering and publishing/providing the data to ensure timeliness, completeness, and coherence of the data provided.	Explanation of breaks. Estimation of breaks through time-series methods.	Explanation of incoherence of time series.
Air transport equipment			
Air transport measure			

Annexes

Annex 1. ESCWA Questionnaire for Transport Statistics¹⁹

The name of the entity/agency responsible for collecting transportation data:

Are there other producers in your country of official statistics associated with transport indicators, including spatial data? Yes/No

If yes, please name them:

Does the National Statistical Office use any data from these sources? Yes/No

If yes, please specify the sources and data used from each source:

Is there coordination/cooperation between the Statistical Office and the producers of those statistics at the national level? Yes/No

If yes, please list the institutional/legal/procedural arrangements put in place to regulate and regularly provide data:

If yes, please list examples of coordination/cooperation:

Does the National Statistical Office use geographic information systems when collecting data related to transport indicators, including spatial data? Yes/No

If yes, please specify those indicators and the corresponding means

Does the National Statistical Office collect data on average urban air pollution from particulate matter from the transport sector? Yes/No

If not, then who is responsible for producing such data in your country?

Does the National Statistical Office collect data related to the effects of natural disasters or wars on infrastructure and basic services? Yes/No

If not, then who is responsible for producing such data in your country?

Does the National Statistical Office collect data on the energy consumption of the transportation sector and the environmental impact in terms of carbon dioxide production and other pollutants? Yes/No

¹⁹ For the original unfilled questionnaire template and the glossary of terms see: https://www.unescwa.org/sites/www.unescwa.org/files/u593/locked_transport_questionnaire.xlsx on the regional Workshop's web page at <https://www.unescwa.org/events/regional-workshop-development-transport-statistics-and-transport-related-sustainable>.

If not, then who is responsible for producing such data in your country?

Does the National Statistical Office collect and analyse data related to the contribution of the transport sector to GDP? Yes/No

If not, then who is responsible for producing such data in your country?

Does the National Statistical Office regularly seek to improve the quality of transport data? Yes/No

If yes, please list some examples:

Is the National Statistical Office facing difficulties in improving the quality of transport data? Yes/No

If yes, please list some examples of the main reasons preventing periodicity, regularity and completeness of data availability. Transport:

Are data available to the general public? Yes/No

If yes, please specify below how the data and information produced by the office are provided with the name of the prospectus, the site or the medium? E-newsletters, website, printed brochures, regular mail, on request, other.

Have you received technical support in the collection, preparation and availability of transport data and indicators, including in the area of spatial and geographical data? Yes/No

If yes, please list examples of technical support and its sources:

Please specify the technical support required in terms of the quality of the capabilities / statistical areas to be developed to produce data related to transport indicators and improve their quality according to the options available below:

Methodologies and systems for collecting, compiling, disseminating and analysing data

Metadata

Geospatial and geographic data

Information technology systems

Training of Trainers

Technical and technical developments

International recommendations

Databases

Data quality management mechanisms

Other

Please enumerate national laws and international and regional agreements governing the collection of transportation data in all its media, including maintaining the confidentiality of the information.

Road transport infrastructure

	Unit	Measure	Responsibility	Availability	Completeness from 2005
Road network length					
Highway					
Other routes					
Asphalt					
Paved					
Not paved					

Road transport equipment

	Unit	Measure	Responsibility	Availability	Completeness from 2005
Total number of road motor vehicles (for freight and passengers)					
Passenger cars					
Publicly owned passenger cars					
Lorries and pick-ups					
Buses, coaches and trolleybuses					
Publicly owned buses, coaches and trolleybuses					
Other					

Road transport measure

	Unit	Measure	Responsibility	Availability	Completeness from 2005
Number of road transport passengers (number) (including cars, motorbikes, coaches, buses and trolleybuses)					
Buses					
Coaches					
Trolleybuses					
Number of road passengers (in passenger-kilometres) (including cars, motorbikes, coaches, buses, and trolleybuses)					
Buses (in passenger-kilometres)					
Coaches (in passenger-kilometres)					
Trolleybuses (in passenger-kilometres)					
Road freight transport in quantity (in tons)					
Road freight transport in quantity (in ton-kilometres)					

Road safety/accidents

	Unit	Measure	Responsibility	Availability	Completeness from 2005
Number of road accidents					
Number of people killed and injured					
Number of people killed					
Number of people killed by sex - males					
Number of people killed by sex - females					
Number of people killed by age cohort: less than 15 years of age					
Number of people killed by age cohort: more than 65 years of age					
Number of people wounded					
Number of people wounded by sex - males					
Number of people wounded by sex - females					
Number of people wounded by age cohort: less than 15 years of age					
Number of people wounded by age cohort: more than 65 years of age					

Rail transport infrastructure

Length of railway network (lines in use)

Rail transport equipment

	Unit	Measure	Responsibility	Availability	Completeness from 2005
Passenger rail traffic in the national territory (number of passengers)					
Total number of passenger transport vehicles					
Total number of freight wagons					

Rail transport, measure: passenger/ freight

	Unit	Measure	Responsibility	Availability	Completeness from 2005
Passenger rail traffic in the national territory (number of passengers)					
Passenger rail traffic in the national territory (in passenger-kilometres)					
Rail freight traffic in the national territory (in tons)					
Rail freight traffic in the national territory (in tons-kilometres)					

Maritime transport infrastructure

	Unit	Measure	Responsibility	Availability	Completeness from 2005
Number of main ports					

Maritime transport measure: vessels/passenger/freight

	Unit	Measure	Responsibility	Availability	Completeness from 2005
Total number of arriving and departing vessels					
Vessels, arrivals					
Vessels, departures					
Number of sea passengers on arrival and departure - the sum of arrivals and departures (excluding cruises)					
Passengers on arrival (except for cruises)					
Passengers at departure (except for cruises)					
Quantity of sea freight on arrival and departure - the sum of arrivals and departures					
Unloaded on arrival					
Loaded initially					

Air transport infrastructure

	Unit	Measure	Responsibility	Availability	Completeness from 2005
Number of main airports					
The total length of coated runways of more than 2,438 m					

Air transport equipment

	Unit	Measure	Responsibility	Availability	Completeness from 2005
Number of civil passenger aircraft in use					
Number of civil cargo aircraft in use					
Number of civil aircraft for special transport and ambulance					
Number of aircraft for private business					

Air transport: aircraft, passengers and freight

	Unit	Measure	Responsibility	Availability	Completeness from 2005
Total number of aircraft-arrivals and departures					
Number of aircraft-arrivals					
Number of aircraft-departures					
Passenger air transport - the number of passengers carried					
On arrival					
On departure (initial: non-transit)					
Number of passengers in direct transit					
Quantity of air cargo and mail transported - the sum of the quantity on arrival and departure					
On arrival (including national transport): unloaded					
Initially (including national transport): loaded					

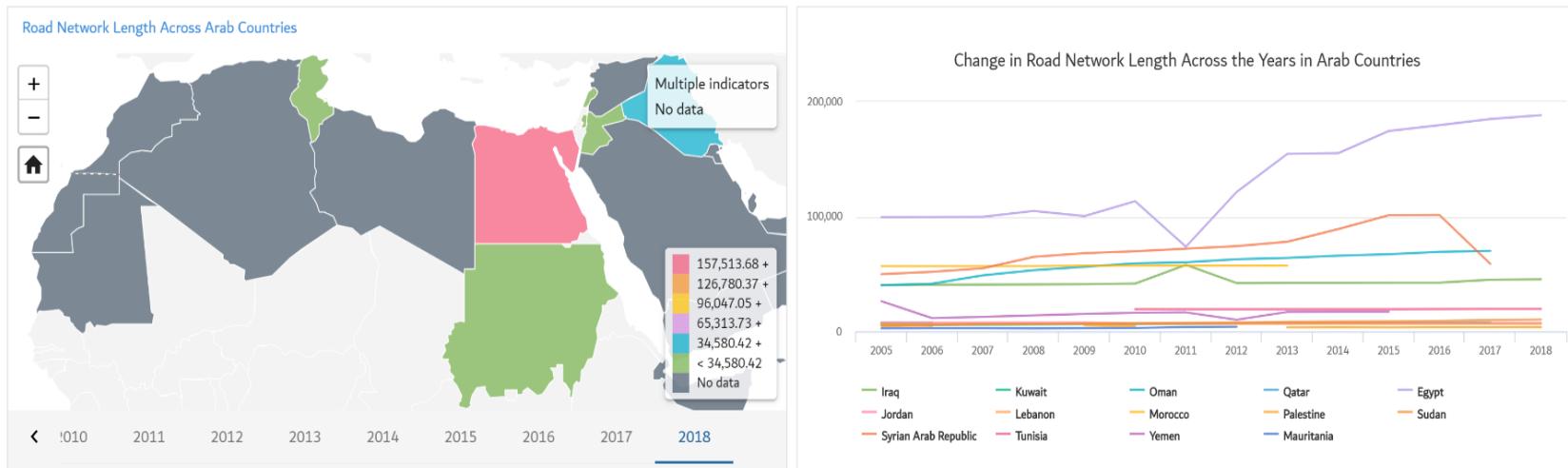
Annex 2. Transport data visualization based on official data collected by the ESCWA questionnaire

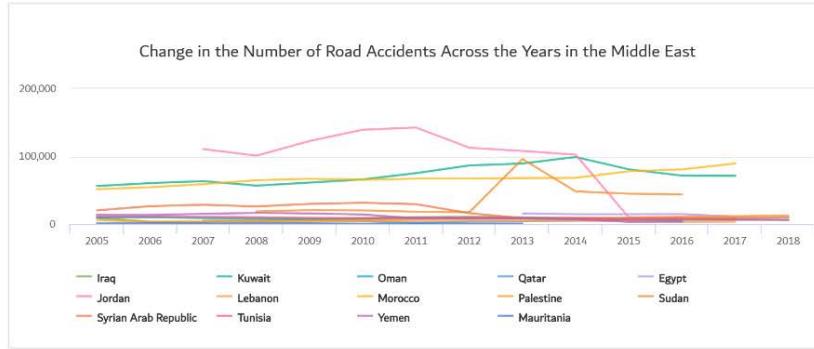
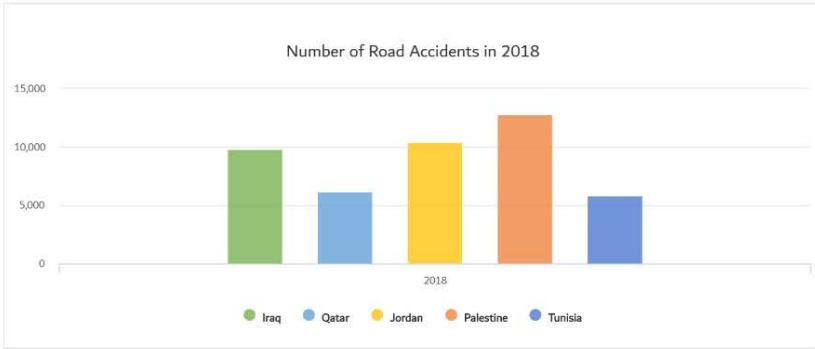
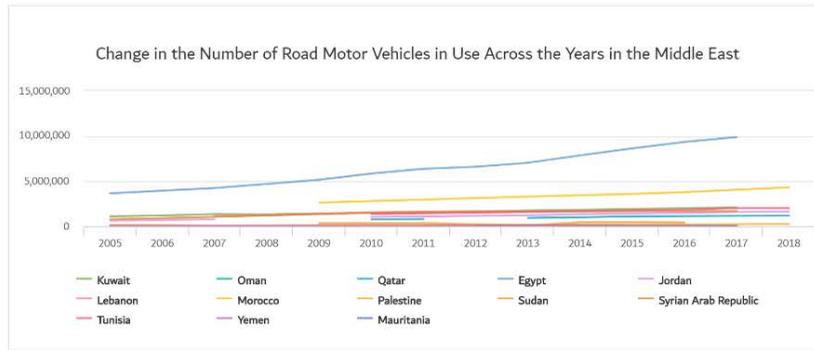
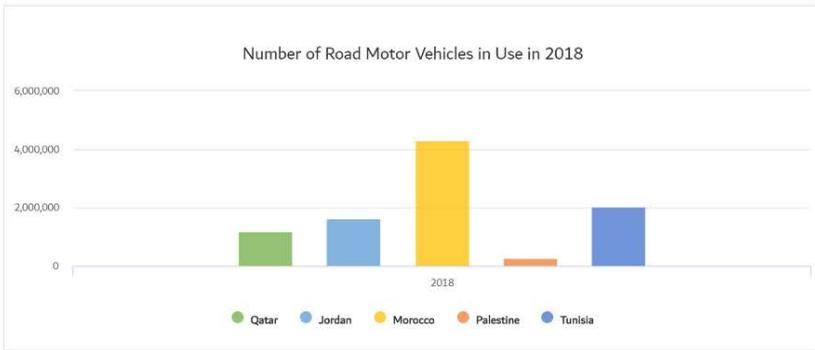
Key Transportation indicators in the Arab Region

Export to XLSX

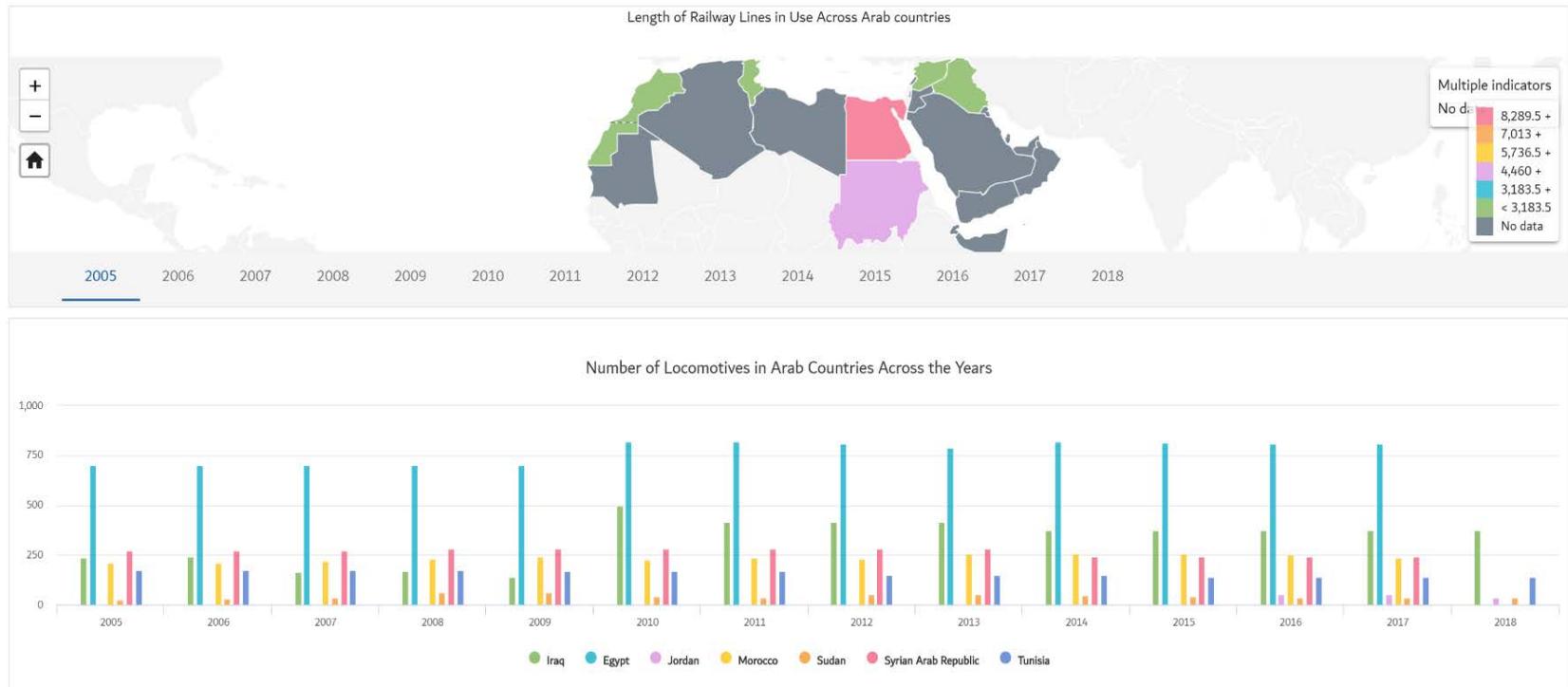
- The following data was obtained by a survey sent out to the national statistical offices of Arab countries in April 2019. Each country that responded was asked to verify the integrity and validity of the data they provided.
- The UN recognizes the Western Sahara as a disputed region, while the data from Morocco includes Western Sahara

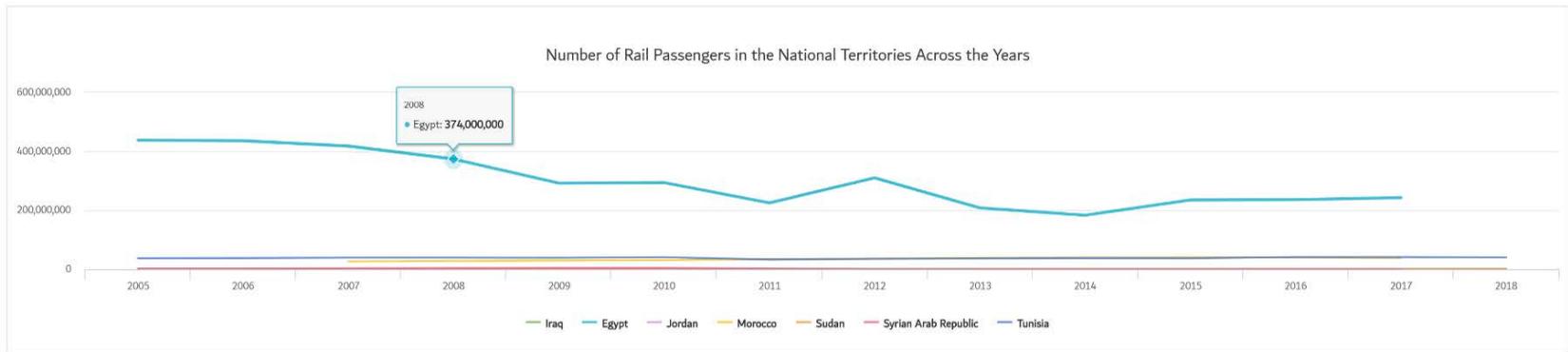
Road Transport



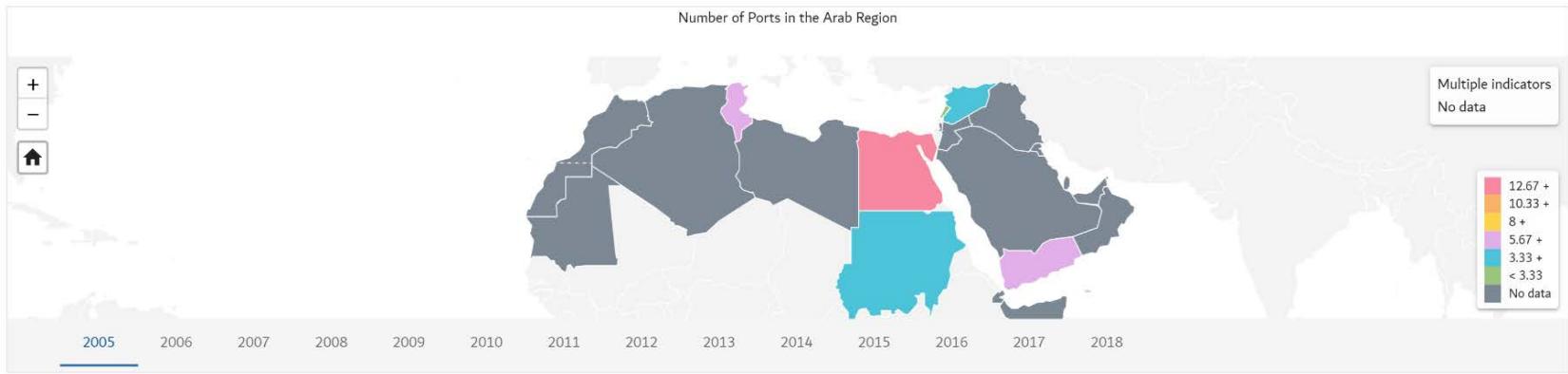


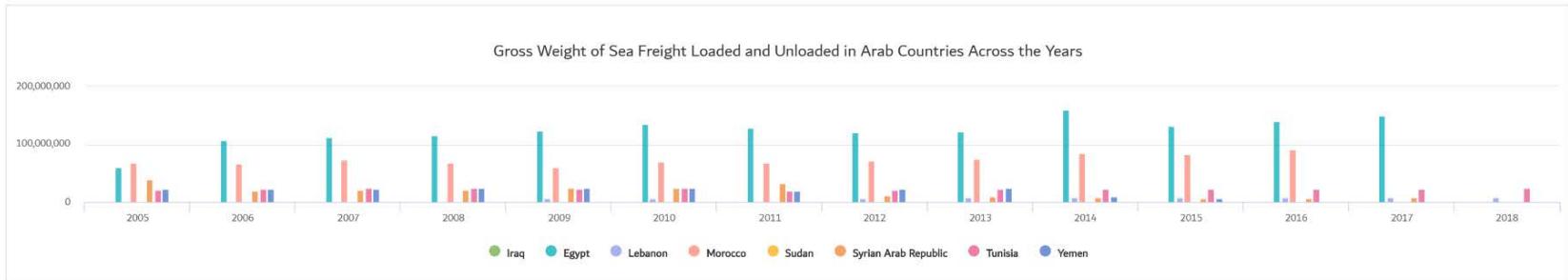
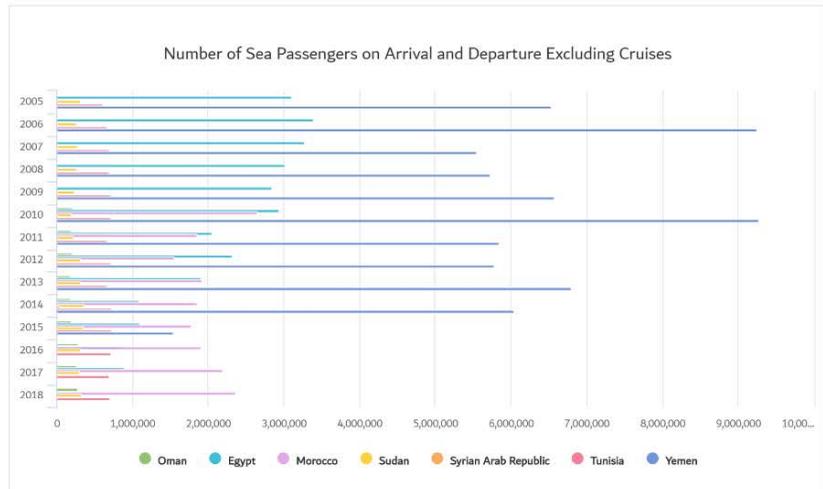
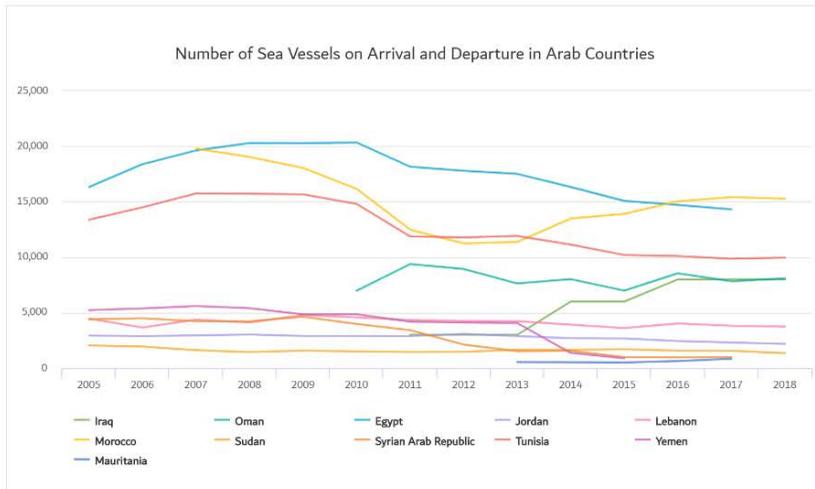
Rail Transportation





Marine Transportation





Air Transport

