



مركز الإحصاء  
STATISTICS CENTRE

# **Building a Dedicated Team for Innovation in Data Visualisation - SCAD's Experience**

**Presenter: Badria Abdulla Obaid**

# Introduction

---

- SCAD is **motivated** by **innovation** - in particular – innovation in dissemination.
- In 2013, SCAD established a dedicated **Data Visualisation (DV) team**. This team has since developed many innovative and forward-looking data visualisation tools and outputs.
- This presentation aims to highlight the **benefits** of establishing a DV team; the **skill** sets required; and some unique DV **outputs**.

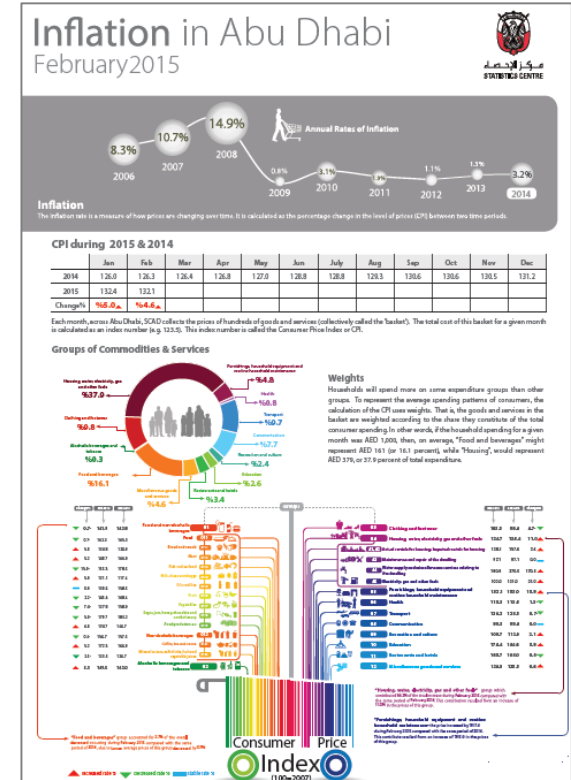
# Overview

---

- The meaning of data visualisation
- Benefits of data visualisation
- Creating a data visualisation team
- SCAD's data visualisation outputs
- Conclusion

# The Meaning of data visualisation

- Data visualization is the effort of **assisting** people to **understand** data by placing it in a **visual context**.
- Patterns, trends and correlations that might go undetected in text-based data - can be exposed and recognized easier with data visualization



# Benefits of data visualisation

---

Why undertake data visualization? There must be some benefit for the effort:

1. Quicker **understanding** of data
2. Discover **relationships, patterns, and trends** within the data.
3. User **interaction**

# Benefits of data visualisation

---

## 1. Quicker understanding of data

- Humans can distinguish differences in line length, shape, and colour willingly without a lot of processing effort - '*pre-attentive attributes*'.
- For example, in the below image, it requires significant **effort** to identify the number of times the digit '5' appears.


987349790275647902894728624092406037070570279072  
803208029007302501270237008374082078720272007083  
247802602703793775709707377970667462097094702780  
927979709723097230979592750927279798734972608027

# Benefits of data visualisation

---

## 1. Quicker understanding of data

- Humans can distinguish differences in line length, shape, and colour willingly without a lot of processing effort - ‘pre-attentive attributes’.
- For example, in the below image, it requires significant effort to identify the number of times the digit ‘5’ appears. But.... if that digit is different in size, orientation, or in this case **colour** - the digit can be **found quickly** through pre-attentive processing.



98734979027**5**647902894728624092406037070**5**70279072  
803208029007302**5**01270237008374082078720272007083  
24780260270379377**5**709707377970667462097094702780  
927979709723097230979**5**927**5**0927279798734972608027

# Benefits of data visualisation

---

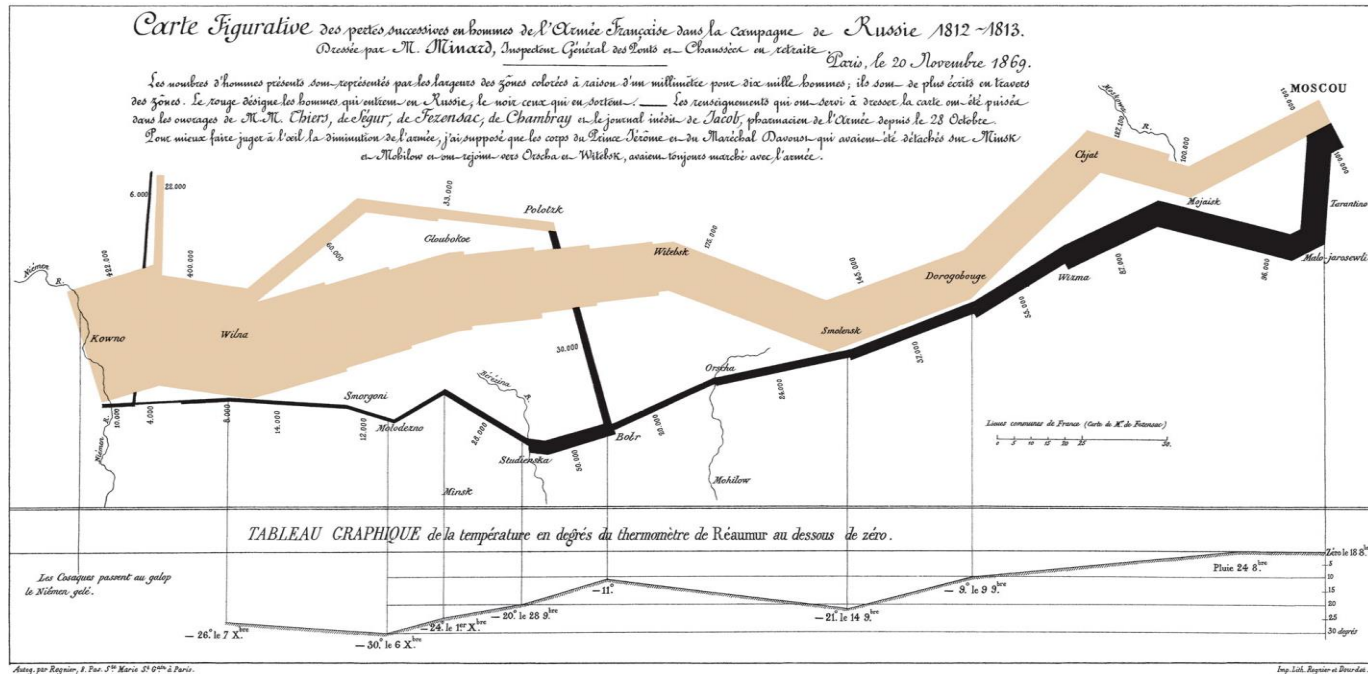
## 2. Discover relationships, patterns, and trends within the data

- Compared with textual data, data visualisations make it easier to discover:
  - Trends
  - Rankings
  - Deviations
  - Frequency distributions (e.g. bar chart)
  - Correlations
  - Geospatial differences



# Benefits of data visualisation

- Let's take a famous example – Charles Minard's infographic of Napoleon's attack of Russia.



This amazing visualisation uses six dimensions:

- army size
- army location (x and y)
- time
- direction of movement
- temperature

But the story is still clear.

# Benefits of data visualisation

---

## 3. User interaction

- Unlike static data tables - data visualization tools enable **users** to **interact** with data in an **engaging** and customisable way.
- Common data visualization **features** include: drill-downs, sliders, data selectors, variable drag and drop, filtering, colour and range selectors, etc.
- With data visualisation tools **users** are free to explore the data in ways that correspond to **their needs**.
- Similarly, the statistician (creator) is not obliged to have to predict what the user requires. The statistician can simply provide the data and a data visualisation tool - then the user has the flexibility and freedom to design their own outputs.

# Benefits of data visualisation

## Static Publication Table

**Table 4: Imports through the ports of the Emirate of Abu Dhabi by Broad Economic Category (BEC), (Jan-Aug) and August, 2015-2016**

Value in million AED

Broad Economic Categories (BEC)	August			Year -to- date (Jan-Aug)		
	2015	2016	Change (%)	2015	2016	Change (%)
Food and beverages	560.9	498.8	-11.1	4,372.3	4,149.9	-5.1
Industrial supplies n.e.s.	4,069.9	4,172.6	2.5	29,091.3	26,420.9	-9.2
Fuels and lubricants	40.6	39.6	-2.4	369.2	297.4	-19.5
Capital goods (except transport equipment)	1,834.0	2,700.8	47.3	21,882.1	20,360.1	-7.0
Transport equipment, and parts	2,733.7	3,138.2	14.8	17,704.6	22,029.1	24.4
Consumer goods n.e.s.	593.3	661.6	11.5	4,277.0	5,083.0	18.8
Goods n.e.s.	4.6	6.0	31.2	53.8	61.6	14.4
<b>Total</b>	<b>9,837</b>	<b>11,218</b>	<b>14.0</b>	<b>77,750</b>	<b>78,402</b>	<b>0.8</b>

Source: Statistic Centre – Abu Dhabi

The data for 2016 are preliminary, and may be revised

# Benefits of data visualisation

## Interactive Table Builder

Select measure **Value by million AED**

Home Reset Collapse All Learn More

Foreign trade type\*  
Time period\*  
Transportation type  
Geographical area  
Economic region  
SITC (Standard International Trade Classification)

Layout View Data View-English Data View-Arabic

Export table Calculate Percentage Show Total

Value by million AED For SITC (Standard International Trade Classification) and Geographical area by Foreign trade type and Time period

Foreign trade type		Imports				
Time period		2016-Jan	2016-Feb	2016-Mar	2016-Apr	2016-May
SITC (Standard International Trade Classification)	Geographical area					
0 - Food and live animals	Africa	37	28	31	36	24
	South America	18	12	10	11	201
	Northern America	37	36	25	42	51
	Australia and Oceania	18	16	16	16	47
	Asia	311	324	354	371	404
	Europe	132	171	106	79	94
1 - Beverages and tobacco	Africa	0	-	-	-	0
	South America	0	0	0	0	0
	Northern America	3	0	2	2	1
	Australia and Oceania	1	1	0	0	0
	Asia	7	7	5	7	10
	Europe	10	4	6	6	5
2 - Crude materials, inedible, except fuels	Africa	4	4	0	1	2
	South America	293	61	64	46	9
	Northern America	8	32	9	8	31
	Australia and Oceania	124	130	157	55	177
	Asia	51	125	153	192	172
	Europe	148	16	10	72	16
	Africa	0	2	4	1	2

# Creating a data visualisation team

---

- A **data visualisation team** requires a mixture of skills and expertise :
  - Graphic designer
  - IT developers
  - Statisticians
  - DV Manager

# Creating a data visualisation team

---

- **Graphic designer**

- **consult** with statisticians to understand the **stories** in the data
- **coordinate design work** for tool interfaces, colours, icons, logos, etc.
- professional understanding of visual perception and layout.

# Creating a data visualisation team

---

- **IT developers**
  - **produce** the interactive **tools**, including access to datasets, coding, testing, etc.
  - **skills** in SQL databases, SAS, JavaScript, D3JS (data driven documents), etc.
  - conduct **research** on new technologies / software

# Creating a data visualisation team

---

- **Statisticians**

- subject matter **experts** who are often the ‘client’ during the development process
- **advice** on the theme/story in the original data
- **quality review** of both the accuracy of data and the functionality of the tool
- **approve** release



# Creating a data visualisation team

---

- **DV Manager**

- **coordinates** multiple data visualisation projects.
- **focal point** between executive management, statisticians, and clients
- **encourages** research and development within the team

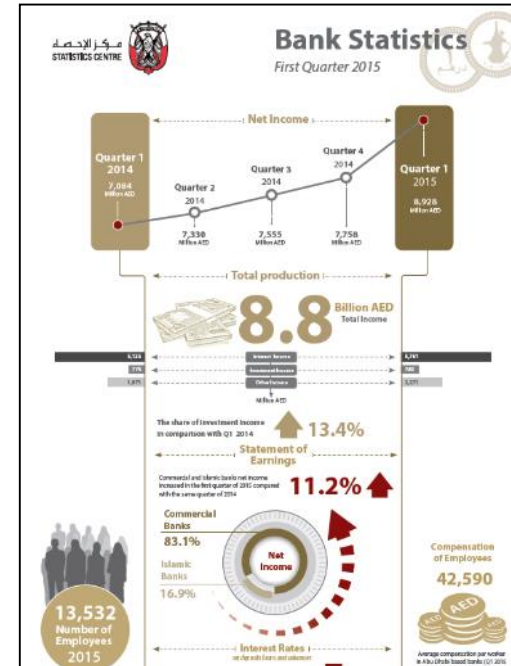
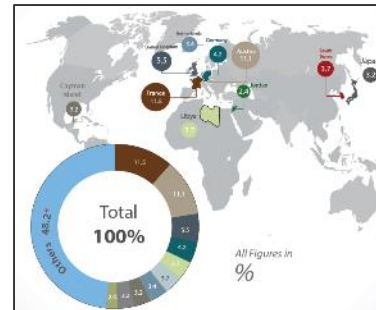
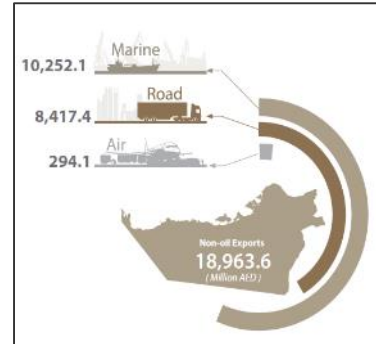
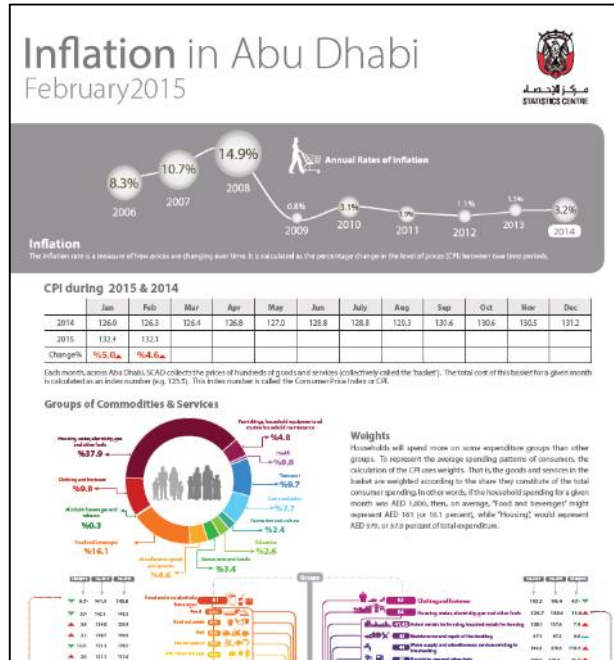
# SCAD's Data Visualisation Outputs

---

- The following slides will show **examples** of SCAD's data visualization tools. They represent just some of the outputs available to clients.
- SCAD has also completed some '**experimental**' developments, such as augmented reality app, which are not covered in presentation.
- It is our wish that by sharing these visualisations, other statistical offices will be **encouraged** to progress **data visualization** within their dissemination suite.

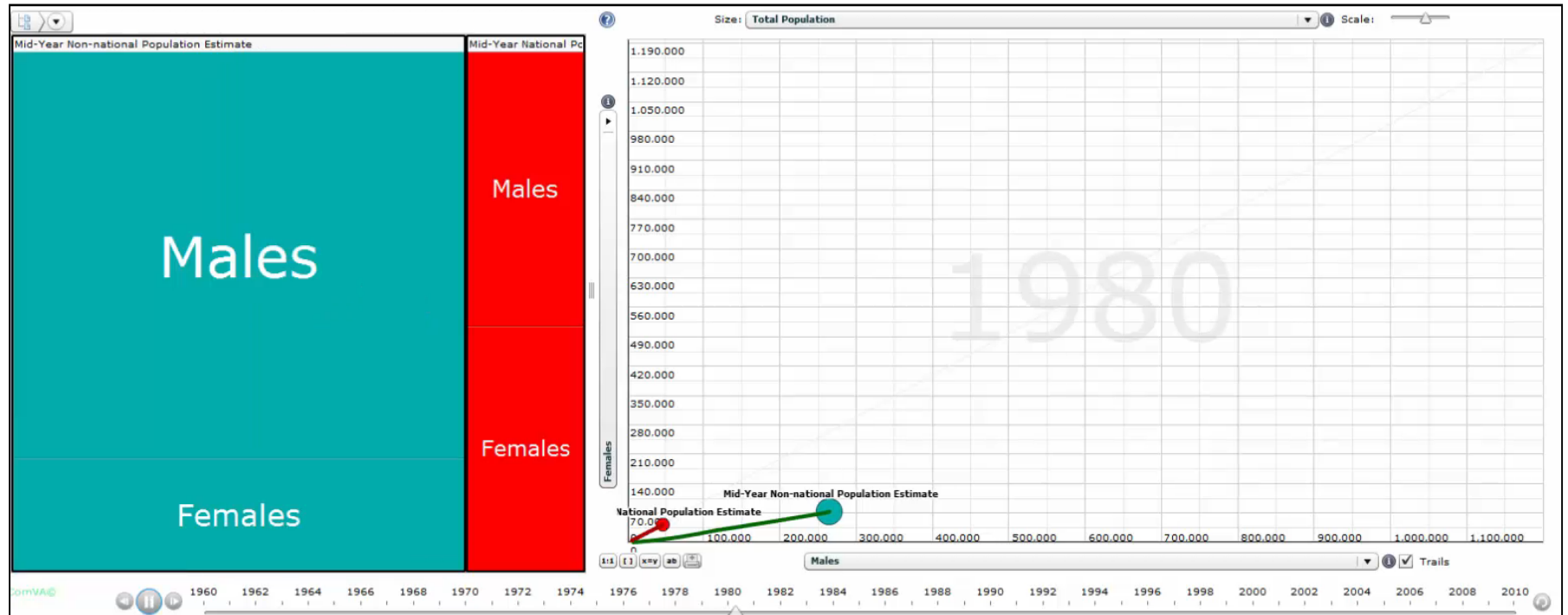
# SCAD's Data Visualisation Outputs

- **Infographics** – statistics explained visually



# SCAD's Data Visualisation Outputs

Animated Visualisations – great way of viewing time-series data



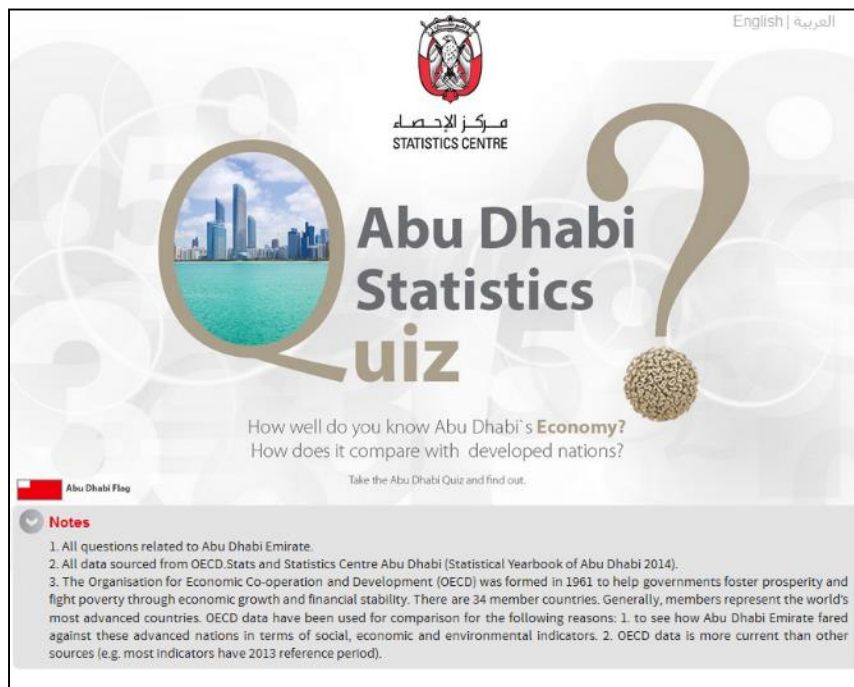
# SCAD's Data Visualisation Outputs

Mobile Applications: designed for various user types



# SCAD's Data Visualisation Outputs

**Statistics Quiz** – fun way to learn about Abu Dhabi and compare it with OECD countries.




English | العربية

مركز الإحصاء  
STATISTICS CENTRE

## Abu Dhabi Statistics Quiz

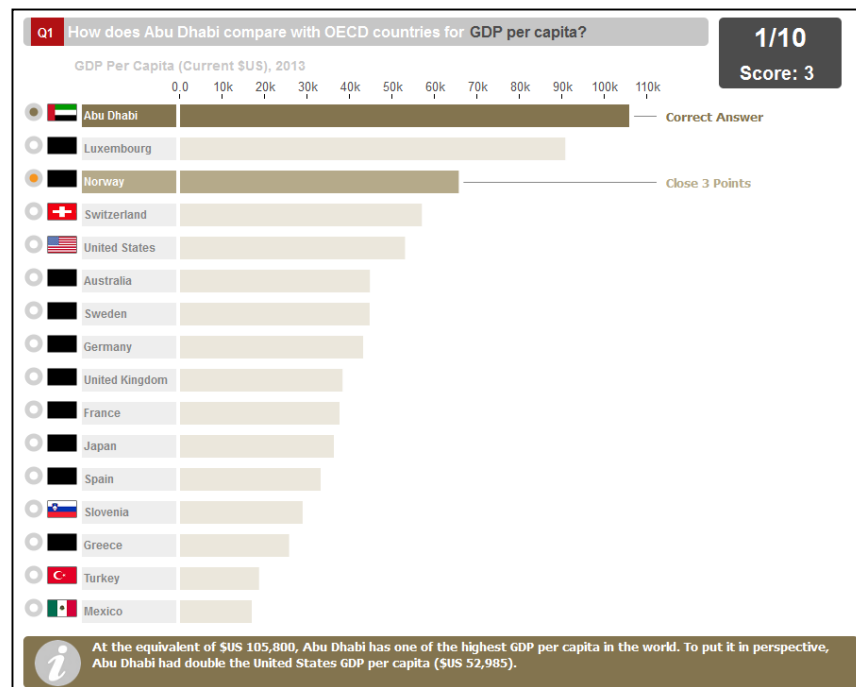
How well do you know Abu Dhabi's **Economy**?  
How does it compare with developed nations?

Take the Abu Dhabi Quiz and find out.

 Abu Dhabi Flag

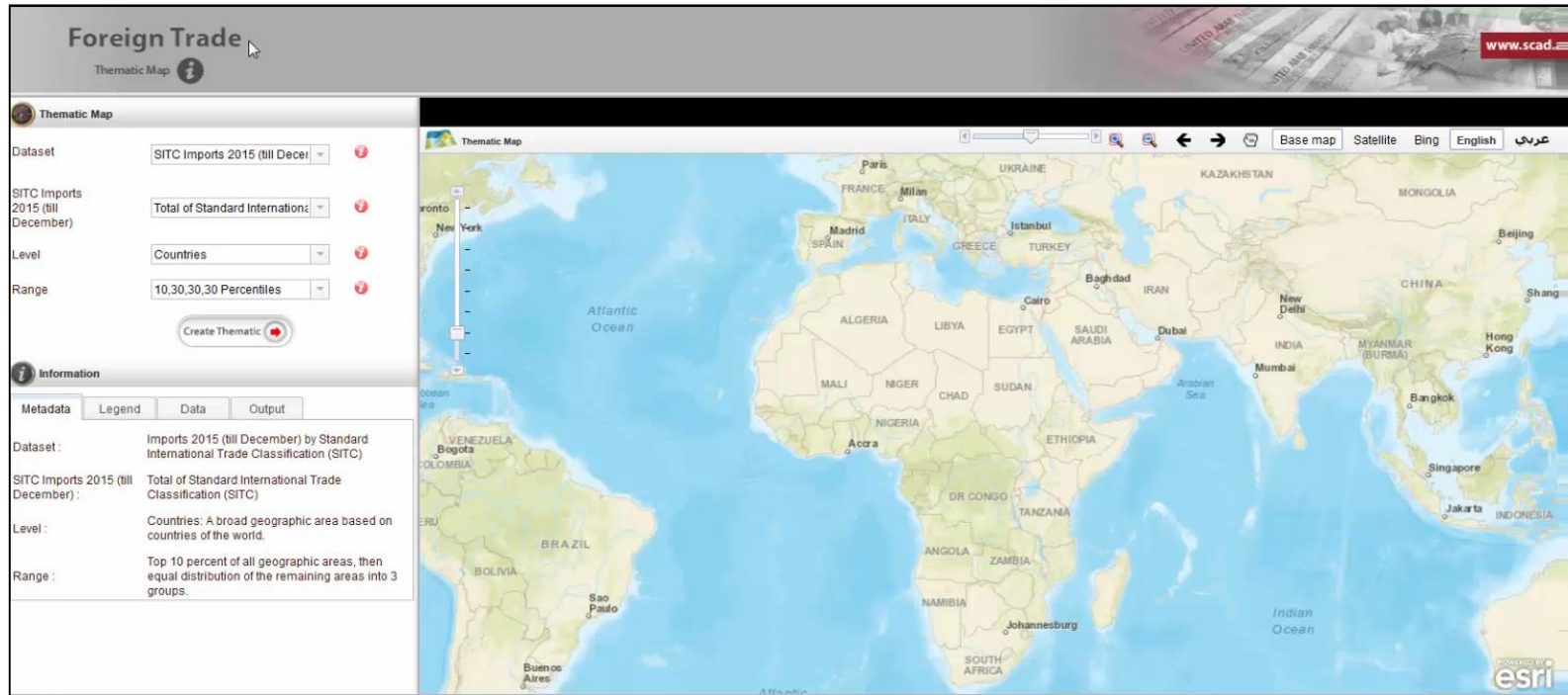
**Notes**

1. All questions related to Abu Dhabi Emirate.
2. All data sourced from OECD Stats and Statistics Centre Abu Dhabi (Statistical Yearbook of Abu Dhabi 2014).
3. The Organisation for Economic Co-operation and Development (OECD) was formed in 1961 to help governments foster prosperity and fight poverty through economic growth and financial stability. There are 34 member countries. Generally, members represent the world's most advanced countries. OECD data have been used for comparison for the following reasons: 1. to see how Abu Dhabi Emirate fared against these advanced nations in terms of social, economic and environmental indicators. 2. OECD data is more current than other sources (e.g. most indicators have 2013 reference period).



# SCAD's Data Visualisation Outputs

**Thematic Maps** – uses maps to show geographic distribution of statistics.



# SCAD's Data Visualisation Outputs

---

**Animated Videos** – educational videos that explain statistics and provide data.





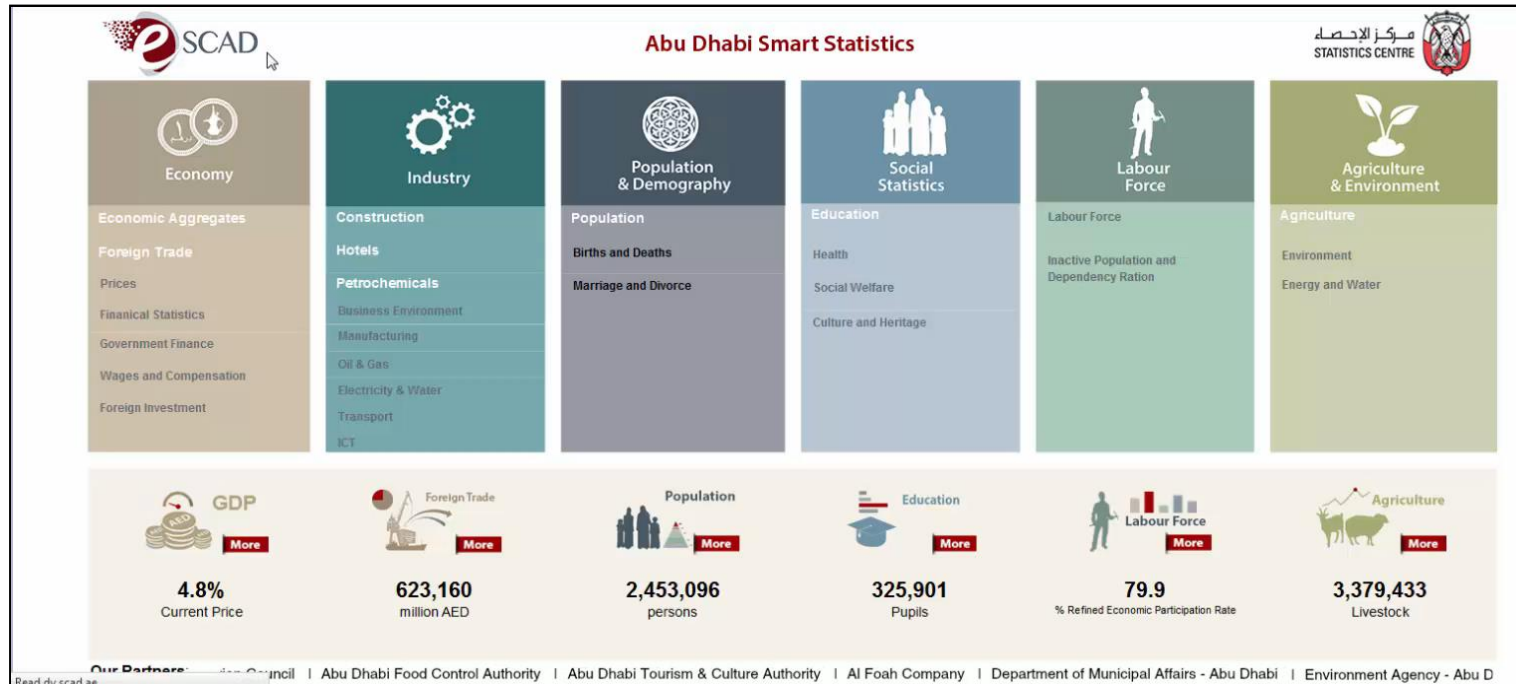
# SCAD's Data Visualisation Outputs

Automated Country Reports – generate a comprehensive country trade report in seconds.

The screenshot displays the SCAD web interface for generating trade reports. The main heading is "Abu Dhabi non-oil merchandise trade" with a sub-heading "Country Reports" and a help icon. The interface includes a navigation menu with tabs for "1:Regions(Map)", "1:Regions(Text)", "2:Tables", "3:Create Report", and "Help". Below the menu, there are controls for "Continents", "Regions", and "Countries" (with a checkmark), and map settings for "Bing", "Imagery" (checked), "Satellite", "Draw Polygon", and "Reset". The map shows a world map with country boundaries. To the right of the map is a panel titled "Selected Regions" which is currently empty. The SCAD logo and website URL "www.scad.ae" are visible in the top right corner.

# SCAD's Data Visualisation Outputs

**Dashboards (eSCAD)** – popular tool that displays data simply, but has drill-downs for analysis.



# SCAD's Data Visualisation Outputs

**Table Builders** – powerful analysis tool using variable selection to create customized tables.

The screenshot shows the SCAD Table Builder interface for 'Foreign Trade'. The main header includes the title 'Foreign Trade Table Builder' and the website 'www.scad.ae'. Below the header, there are navigation tabs: 'Layout View', 'Data View-English', and 'Data View-Arabic'. The 'Select measure' dropdown is set to 'Value by million AED'. The left sidebar contains a list of variables for selection:

- Foreign trade type\*
  - Select All
  - Imports
  - Non-oil exports
  - Re-exports
- Time period\*
- Transportation type
- Geographical area
- Economic region
- SITC (Standard International Trade Classification)

The right pane shows the current table configuration. It displays 'Warnings : 0' and 'View Details'. The table statistics are:

Number of Rows : 1
Number of Columns : 1
Total Cells : 1

The table structure is shown as a single row with two columns: 'Foreign trade type' and 'Imports'.

# Conclusion

---

- SCAD has recognized its **responsibility** in expanding and **improving** the quality, timeliness, and accessibility of **statistics** produced in the Emirate of Abu Dhabi.
- The collection of new and innovative dissemination **outputs** outlined in this presentation is evidence of SCAD's **commitment** to this cause.
- This project has raised expectations of the types of output SCAD can produce and has set a positive **benchmark** for other **future** statistical outputs.
- SCAD hopes that this presentation will provide **other NSOs** with valuable information when considering developing **similar** innovative **outputs**.

إحصاءاتنا تمزج حلولاً وتقدمًا  
*Our Statistics Provide Solutions & Development*

[www.scad.ae](http://www.scad.ae)

[info@scad.ae](mailto:info@scad.ae)

P.O. Box: 6036

Abu Dhabi, U.A.E.



adstatistics