

Apply Regional Economic Accounts using Data Visualization program in Egypt

Mahmoud Mohamed Elsarawy

Central Agency for Public Mobilization and Statistics (CAPMAS), Cairo, Egypt

E-mail: mahmoud_sa@capmas.gov.eg

Abstract:

Using of data visualization can promote the use of evidence in decision making, transparency of data and information and making people comprehend data better through pictures than by reading numbers in columns and rows. The main goal of data visualization tools is to present information clearly and effectively through graphical means. All the users have to do is to click a button to create infographic or data visualization and shared it with their friends online in social media. The use of data visualization can be useful in regional accounts field, as it create different views of your data and change them according to the needs.

A regional Economic account is a useful tool in the economic and social analysis. These accounts such as production, consumption and GDP are good examples to be presented by data visualization software.

This paper will shows the importance of using data visualization program namely Tableau Public program in representing regional economic accounts data on regional level.

Key words: Decision making, Infographic, Tableau Public.

1. Introduction:

Using modern methods to display large amounts of data is very important, because it is the key success in the use of data visualization to ensure better use of appropriate types of perceptions. The data is placed always in views with contextual information to allow the information to be understood globally. With a good set of images that keep these key success factors in mind, Decision maker can tack their decisions quickly and with more confidence and trust.

A regional Economic account is a useful tool in the economic and social analysis such as production; consumption and GDP are good examples to display with data visualization program.

2. Data visualization:

Data is the basic raw material needed to create information. However, it cannot be used to make decisions because it has no meaning. It lacks meaning because it has no inherent structure; lack of relationships between entities. We can convert data into information when we add meaning by providing a context for the data; identifies the purpose, and the circumstances surrounding the collection of data. It removes ambiguity, while information is necessary for good decision-making, it is insufficient alone. The reason is that information is simply a message as it has a sender and a receiver. Since information is considered to change the way the receiver perceives something (to have an impact on his/her judgment and behavior).

The features of good information are:

1. Accurate – it conveys the true situation.
2. Timely – it is available in time to make decisions.
3. Useable - it is portrayed in common, easily understood formats and displays.
4. Complete – it provides all necessary data.
5. Precise – it has the required level of detail.

2.1 Advantages of data visualization:

First data visualization makes it easier to understand graph and photo than numbers. The users understand what you are trying to say at a first view. Second it saves time since a “picture is worth many words”; data visualization helps the users quickly absorb and interpret the presented data. As a result, data visualization enables to present a considerably larger amount of data in comparison to the textual format which often requires repetition in order to help the users understand the information. Using of visual presentation of numbers can reduce confusion because the user does not need to process the numbers to be able to see where you are going. Visualizations look better

and attract more attention than the textual format. They are also more likely to keep the users interested in reviewing the presentation.

Tableau Public is a free data storytelling application. Create and share interactive charts and graphs, stunning maps, live dashboards and fun applications in minutes, then publish anywhere on the web. Anyone can do it, it's that easy—and it's free.

Although data visualization is easier to understand and look more attractive to the users, it is definite to achieve a perfect balance between visual appeal and functionality. Data visualization is used to improve efficiency of the communicated information. A good presentation which, however, fails to affirm relevant data or is not clear enough is of little value.

2.2 How and when can we use data visualization :

INFOGRAPHIC become a new way to provide information for people to understand it easily. It is a visual representation of information, data or knowledge that are dedicated to providing complex information quickly and clearly. When someone creates an INFOGRAPHIC, it is often referred to as data visualization, information design or information architecture, so that it can convert the data into knowledge. Data visualization software can be used to present data in many areas such as demography and economics.

3. The importance of regional economic account:

Regional economic account is very important as it describes the highlights of relations and links between economic activities, both within the region or between different regions within the state. It is the basis to improve the comprehensive development plan for the region. On the other hand it is a tool that works to estimate the extent of the region's contribution to the economic development at the national level. Constructing the regional economic accounts may help in achieving a lot of goals such as:

- Optimize the resources which available within the region.
- Integration between the different regions in the country.
- The balance between revenue and expenditure for the region and the size of the surplus or deficit achieved by each region.
- Measuring the volume of production , consumption , output and supplies at the level of each activity in each region.
- Provide data base of resources and possibilities of each region.

- Identify the linkages and relationships between the regions in the country within the framework of the spatial region.
- Highlighting the problems faced by the region and makes it easier for the decision-maker to develop appropriate solutions and respond more efficiently and effectively.
- The use of regional accounts as a measure of well-being and growth between regions of the country.

4. Data visualization usage in regional economic account:

4.1 Greater Cairo Region:

Egypt consists of 27 Governorates and gathering 7 regions, Greater Cairo region contains the governorates (Cairo, Giza and Qaliopia). This region is considered the most important regions in Egypt, as it contains multiple economic activities and the most attractive region for residents from all over the country. It has a quarter of Egypt's population and accounts for 8.7% of the Total area of Egypt.

Table No. (1)
About Greater Cairo region

Governorate	Cairo	Giza	Qaliopia	Greater Cairo Region	All Egypt Regions	Greater Cairo Region ÷ All Egypt Regions
Population	8,922,949	7,205,122	4,874,203	21002274	83,667,047	25
Area(km ²)	1,983	85,153	1,001	88137	1.002.000	8.7
Population density (people per km ²)	4500	84.6	4870	238	83.5	-

Source: <http://www.sis.gov.eg> - <http://www.capmas.gov.eg>

Figure No. (1)
Egypt Map



4.2 Visualization of regional economic data:

In this part we will use Tableau public program to visualize regional economic data such as the relative distribution of total production, wages and governorates production structure of economic activities in the Greater Cairo region.

Table No. (2)

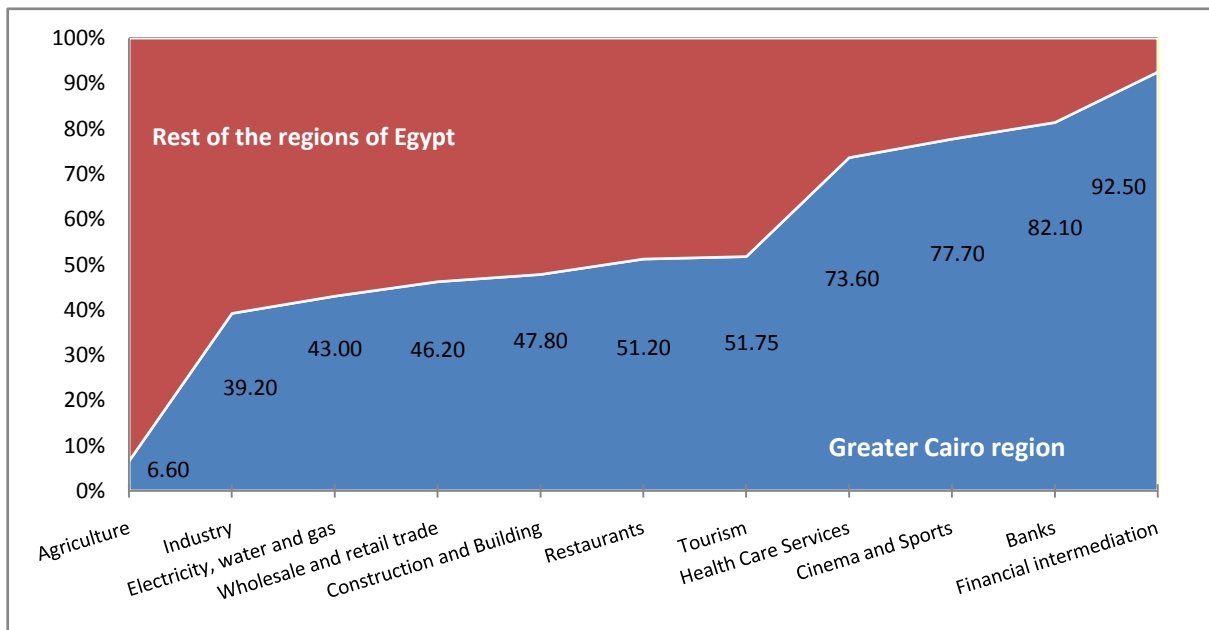
The relative distribution of production structure of economic activities in the Greater Cairo region

Economic Activities	Cairo	Qaliopiya	Giza	Greater Cairo Region	The rest of Egypt region's	Total Egypt
Agriculture	0.20	2.80	3.60	6.60	93.40	100
Industry	21.60	7.30	10.30	39.20	60.80	100
Electricity ,water and gas	33.10	4.00	5.90	43.00	57.00	100
Wholesale and retail trade	33.30	4.40	8.50	46.20	53.80	100
Construction and Building	29.60	3.20	15.00	47.80	52.20	100
Restaurants	31.80	5.40	14.00	51.20	48.80	100
Tourism	35.10	0.05	16.60	51.75	48.25	100
Health Care Services	25.80	0.40	47.40	73.60	26.40	100
Cinema and Sports	67.60	1.30	8.80	77.70	22.30	100
Banks	75.50	1.00	5.60	82.10	18.80	100
Financial intermediation	72.50	0.70	19.30	92.50	7.50	100

Source ¹ : Dr. Iman Mohammed Ahmed - National Planning Institute.

Figure No. (2)

The relative distribution of production structure of economic activities



¹ The source of all regional numbers: Apply the methodology for the preparation and installation of regional accounts in the System of National Accounts 1993 - Greater Cairo - Dr. Iman Mohammed Ahmed - National Planning Institute.

- Figures (2) shows that agriculture activity representing 6.6% of the total production for the region, restaurants and tourism activities represent nearly 50% and the financial intermediation activity consider the most economic activities production at Greater Cairo region, it presents about 92.5% of the total production of the region and the rest of Egypt regions presenting only 7.5% of the production of financial intermediation activity all over the rest of the six regions of the state.

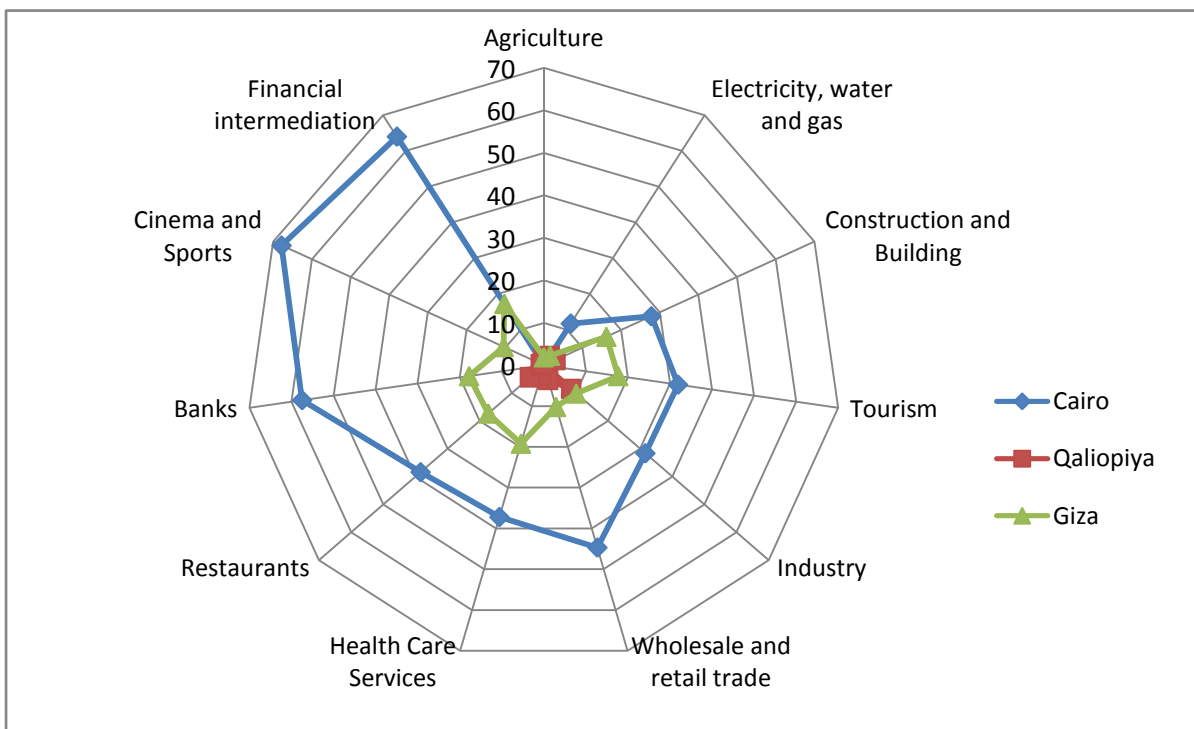
Table No. (3)

The relative distribution of the wages structure of economic activities in the Greater Cairo region

Economic Activities	Cairo	Qaliopiya	Giza	Total Region	The rest of the regions	Total Egypt
Agriculture	0.03	1.40	1.90	3.33	96.67	100
Electricity ,water and gas	11.70	2.60	2.70	17.00	83.00	100
Construction and Building	27.80	3.00	16.20	47.00	53.00	100
Tourism	31.90	0.09	17.70	49.69	50.31	100
Industry	31.60	8.50	10.10	50.20	49.80	100
Wholesale and retail trade	44.70	3.60	10.20	58.50	41.50	100
Health Care Services	37.20	2.40	19.20	58.80	41.20	100
Restaurants	38.40	4.30	17.30	60.00	40.00	100
Banks	57.50	0.40	17.80	75.70	24.30	100
Cinema and Sports	67.90	0.80	10.40	79.10	20.90	100
Financial intermediation	64.00	0.40	17.20	81.60	18.40	100

The relative distribution of the wages structure of economic activities inside Greater Cairo region

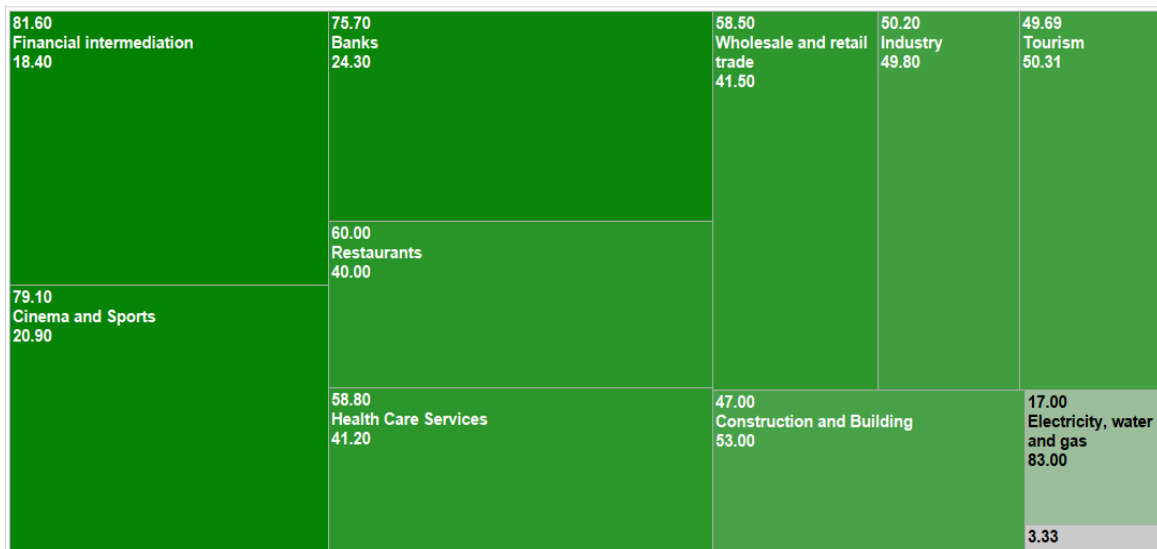
Figure No. (3)



- In table (3) there is a lot of data and percentages but we cannot find the objects of this table nor we can take a right decision throw it. But if we convert this table to a simple graph like Figure No. (3) It's obvious that Cairo governorate is considered the most provinces in Egypt that consists of high wages and also within the region where we find that the activities of cinema and sports is the highest activity in terms of wages, followed by Financial intermediation activity followed by banks activity and finally the least in the relative distribution of the wage structure activity is agriculture. For the provinces of Giza and Qaliopia, we find that relative distribution of the wage structure activity it is too limited and the ratio is between 0.09% and 20%.

Figure No. (4)

Tree map for the relative distribution of the wages structure of economic activities



- figure (4) is a new method to represent data ,it is called TREE MAP- By using Tableau Public program –that the financial intermediation activity is considered the most activity in the relative distribution of the wages structure of economic activities in the Greater Cairo region, it is about 81.6 % from all wages. And the same activity is about 18.4 from all the rest of regions inside Egypt. Also the Agricultural activity is the least relative percentage of the wages structure of economic activities in the Greater Cairo region, it is about 3.3 % and through all the rest of regions it is about 96.76%.

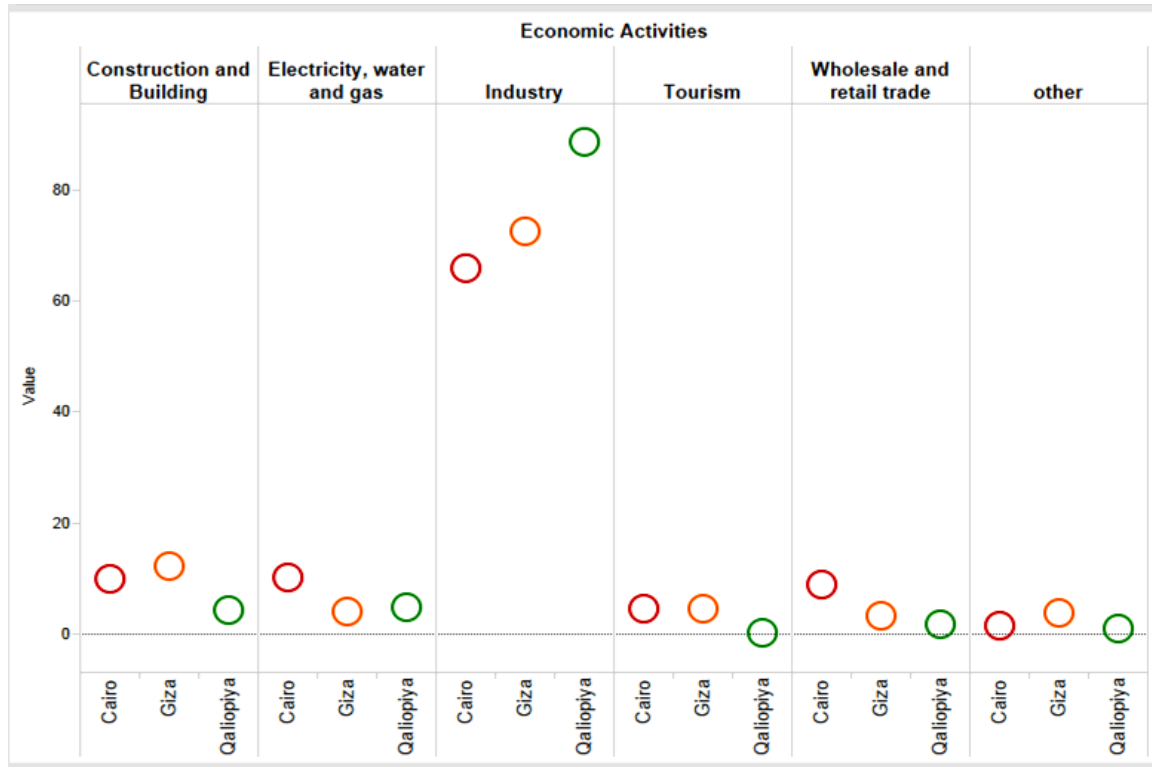
Table No. (3)

The relative distribution of the production structure at the economic activities level in the Greater Cairo region

Economic Activities	Cairo	Qaliopiya	Giza
Construction and Building	9.80	4.14	12.20
Industry	65.90	88.65	72.40
Wholesale and retail trade	8.70	1.70	3.20
Electricity, water and gas	10.00	4.64	4.00
Tourism	4.30	0.02	4.50
other	1.30	0.85	3.70
Total	100.00	100.00	100.00

Figure No. (5)

Packed bubbles shape for the relative distribution of the production structure at the economic activities level



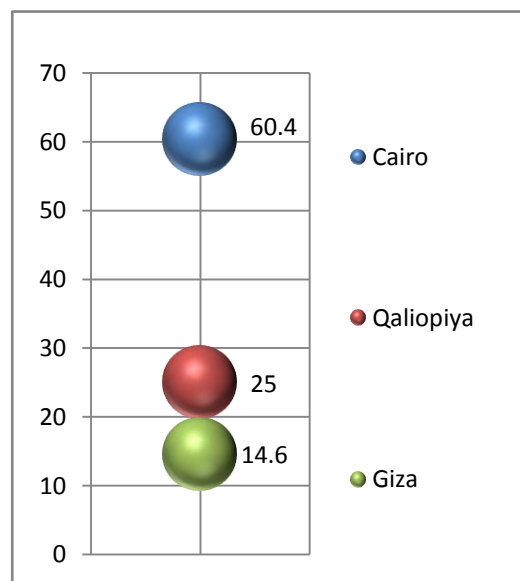
- Figure (5) shows a packed bubbles shape illustrates that industry activity has a large contribution in the Greater Cairo region productivity and its governorates (Cairo 66 % - Giza 72.4% – Qalioiya 88.6 %).

Table No. (4)

The relative distribution of the governorates production structure in Greater Cairo region

Governorate	Production percentage
Cairo	60.4
Qalioiya	25
Giza	14.6
Total	100

Figure No. (6)



- We can see in the figure (6) That Cairo governorate has 60 % of total region production then Qalioiya has 25 % and finally Giza participates with 15% of total Greater Cairo region production.

5. Conclusion:

The necessity of compiling economic accounts at the regional level is clear because of its importance in the development of regions and access to the comprehensive development at the national level.

The need for statistics and data at the regional level to help in the creation of regional accounts.

The need to use modern software to display data such as Tableau public to increase the understanding of statistical data for all users and increase the statistical awareness and assist decision makers to use data easily and simply with regard to planning and development.

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