

Report Data Analytics using Microsoft Power BI

Title: List of Registered and Licensed Fluoroscopic Radiation Apparatus (Government and Private) under the Atomic Energy Licensing Act 1984 (Act 304) in Selangor .

Group Members	Details
1. FARAH NABILAH BINTI NAJMUDIN (A21EC0023)	Data Analytics interpretation
2. MAATHUREE A/P VEERABALAN (A21EC0051)	Introduction to Data Analytics
3. MUHAMMAD SAIFUDDIN BIN ISMAIL (A21EC0093)	Visualization in Microsoft
4. NUR SYAFIKA BINTI MOHD SALMIZI (A21EC0115)	Introduction to Microsoft Power BI, Website
5. YUSRA NADATUL ALYEAA BINTI YUSRAMIZAL (A21EC0151)	Data Analytics interpretation, Website

Part 2 :

Questions :

- 1) Why did the hospital in the Selangor area only register certain models to be approved under Atomic Energy Licensing Act 1984?
- 2) Why do the hospitals need to register under Registered and Licensed Fluoroscopic Radiation Apparatus (Government and Private) under the Atomic Energy Licensing Act 1984 (Act 304)?

Data analytics is defined as a series of techniques aimed at extracting relevant and valuable information from extensive and diverse sets of data gathered from different sources and varying in size. It is also a broad term that encompasses many diverse types of data analysis. The process of analyzing raw datasets to extract a conclusion based on the information they collect is known as data

analytics. Applications operating will be used on machine learning algorithms, simulation, and automated systems by data analytics processes and techniques. It helps the organizations to understand their clients better and analyzes their promotional campaigns, personalized content, creates content strategies, and upgrades their products.

Use of Big Data in Data Analytics :

- Volume (Size of data)
- Velocity (The Speed at which Data is generated)
- Variety(Different type of Data)
- Veracity (Data accuracy)
- Value (Useful Data)
- Validity (Data quality Governance)
- Variability (Dynamics , Evolving Behavior in Data Source)
- Venue (Distributed Data from Multiple Platform)
- Vocabulary (Data Models,Semantics that describe data Structure)
- Vagueness (Confusion over Meaning of BigData and Tools used)

There is a difference between data analytics, data analysis, and data science. Data analytics deals with a piece of information, dashboards, and reporting. Data analysis focuses on processes and functions. Data science includes data analysis and also the elements of data cleaning and preparation for further investigations.

Big data analytics is the process of uncovering trends, patterns, and correlations in large amounts of raw data that helps to make data-informed decisions. There are 4 types of data analytics. Descriptive analytics shows the happenings over time. For example, it shows whether the current monthly sales are better than the last one. The second will be predictive analytics which focuses on the events that are expected to occur in the immediate future. It also seeks answers to questions like, what happened to last month's sales during the winter season? . Prescriptive analytics specifies a plan of action. If the chance of hot summer is higher after calculating the average of 5 weather models, raincoats must be considered to increase the production compared to the umbrella. Diagnostic analytics clearly shows the reason for the event to occur. This requires hypothesizing. It also involves a much diverse dataset. Questions for example, "Did the increment in selling price affect sales?" will be used to examine the data by answering the questions.

The first step of process data analytics will be determining the criteria for grouping the data by dividing by a range of different criteria such as age, population, or sex. The second step will be collecting the data through multiple sources such as computers, and sources from the community. The third step will be organizing the data to examine. Spreadsheets or other types of software that enable statistical data can be used for data organization. The last step will be cleaning the data to make sure there is no mistake and help to fix mistakes before sending it to the data analyst for analysis purposes. It also will be reviewed to make sure it is complete.

In the business sector, data analysts study the information and clean it from noise. They also assess the quality of data and its sources before developing the scenarios for automation and machine learning. Their last role will be overseeing the proceedings. Data analytics is important in the business sector because it helps to optimize the company's performance. By implementing it, companies can reduce costs in storing a large amount of data.

There are a few differences between the data scientist and data analyst. Data scientist deals with various data operations while data analyst deals with data cleaning, transforming and generating inferences based on the data. Data scientists are involved in multiple underlying structured and unstructured data procedures while data analysts are involved in limited small structured data and static inferences. The data scientist knows mathematics, statistics & machine learning algorithms while the data analyst has problem-solving skills and basic knowledge of statistics. Data scientists know use SAS, Python, R, TensorFlow, Hadoop and Spark while data analysts are proficient in Excel, SQL, R in some cases and Tableau.

Microsoft Power BI is not coding but just a device for connecting. Microsoft Power BI also :

- Connect to all the data you care about through 1000 pre-built APIs for information sources like Excel workbook, SQL server and Dataverse.
- Predict future performance machine learning capabilities.
- Analyze, combine, and model advanced datasets.
- Easily and firmly distribute information and insights outside your organization with embedded and extended analytics.
- Build apps to customize information exploration for your groups or your customers.
- Set alerts to simply track performance goals and determine anomalies.
- With Microsoft Power BI all of your information is automatically offered within the app with no extra development prices or maintenance needed.

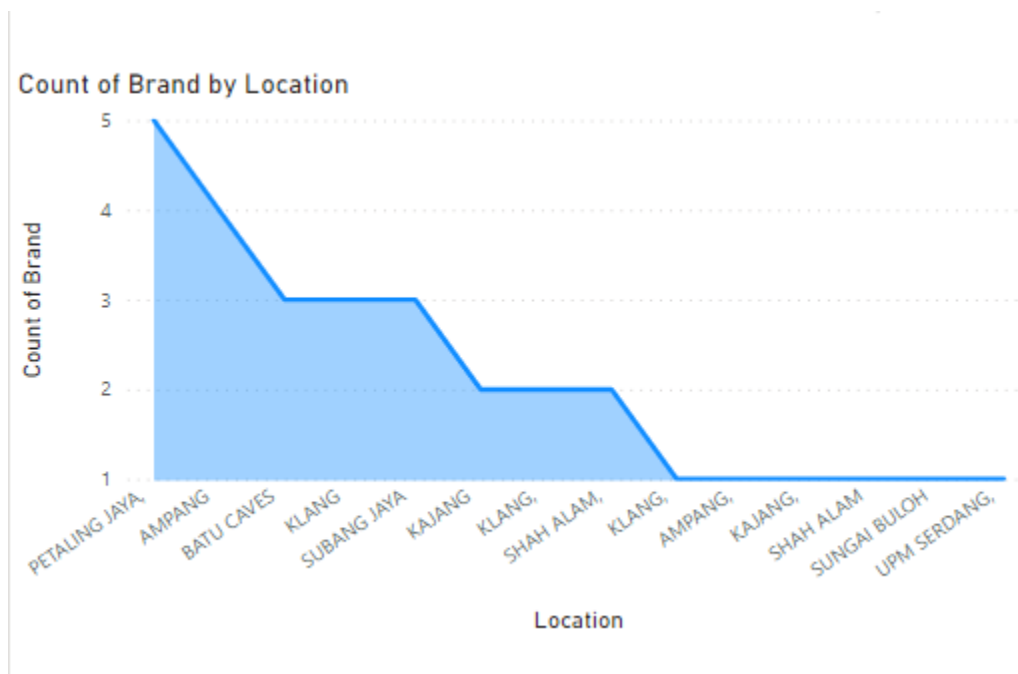
Lastly , Microsoft Power BI is user-friendly and it is different from Microsoft Excel because the usage of Microsoft Power BI is more to do with automated tools. Plus, you don't need to do another Excel to add any current data that you want to add to your previous project. It is an automatic ad with just one click. Microsoft Power BI is also a good platform to transform the data into a computer form and also has its program language named-data analysis expression that will calculate all the data to visualize.

From four types of data analytics which are descriptive, diagnostic, predictive and prescriptive, we choose diagnostic as the best data analytics to support our data visualization. Diagnostic data analytics is about the ability to drill down to the root-cause and it is used to isolate all confounding information.

Count of Sector by Hospital Name

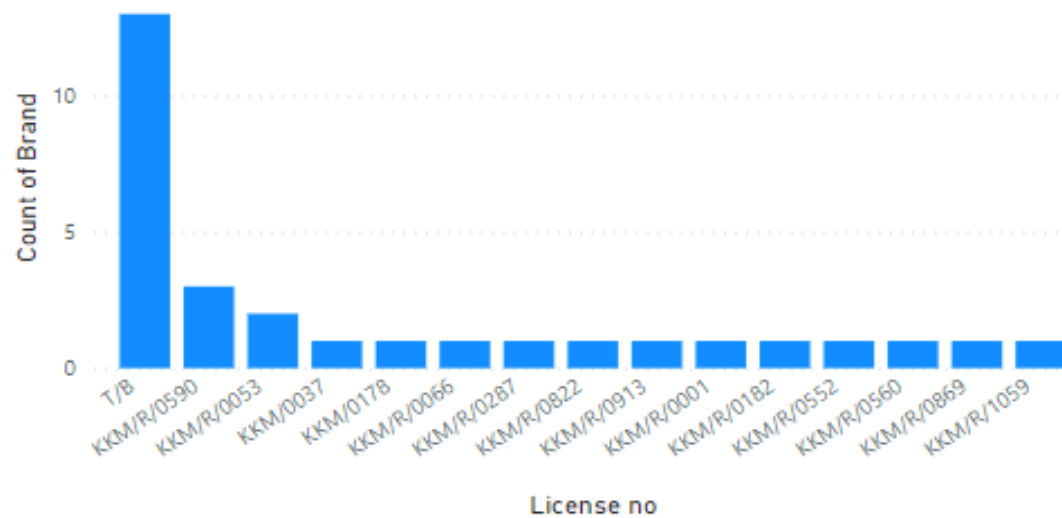
Hospital Name	Count	Percentage
HOSPITAL AMPANG	4	13.79%
HOSPITAL SELAYANG	3	10.34%
RAMSEY SIME DARBY HO...	3	10.34%
HOSPITAL SERDANG (RA...	2	6.9%
ASSUNTA HOSPITAL	2	6.9%
BANDAR BARU KLANG S...	1	3.45%
HOSPITAL PAKAR KPJ DA...	1	3.45%
HOSPITAL PENGAJAR UNI...	1	3.45%
HOSPITAL AMPANG	1	3.45%
HOSPITAL SELAYANG	1	3.45%
RAMSEY SIME DARBY HO...	1	3.45%
HOSPITAL SERDANG (RA...	1	3.45%
ALPHA CLINIC SDN. BHD.	1	3.45%
ASSUNTA HOSPITAL	1	3.45%
BANDAR BARU KLANG S...	1	3.45%
HOSPITAL PAKAR KPJ DA...	1	3.45%
HOSPITAL PENGAJAR UNI...	1	3.45%

Based on the results for data visualization, firstly the pie chart shows the relationship between the number of hospitals that register their fluoroscopic radiation apparatus under Atomic Energy Licensing Act 1984 in different areas in Selangor, this included government and private health institutes. In this pie chart, it shows that Hospital Ampang had the most registered fluoroscopic radiation apparatus which is 4 followed by Hospital Selayang and Ramsey Sime Darby Hospitals Sdn. Bhd. which both registered 3. Hospital Serdang register 2 of their fluoroscopic radiation while the other hospitals register only 1.



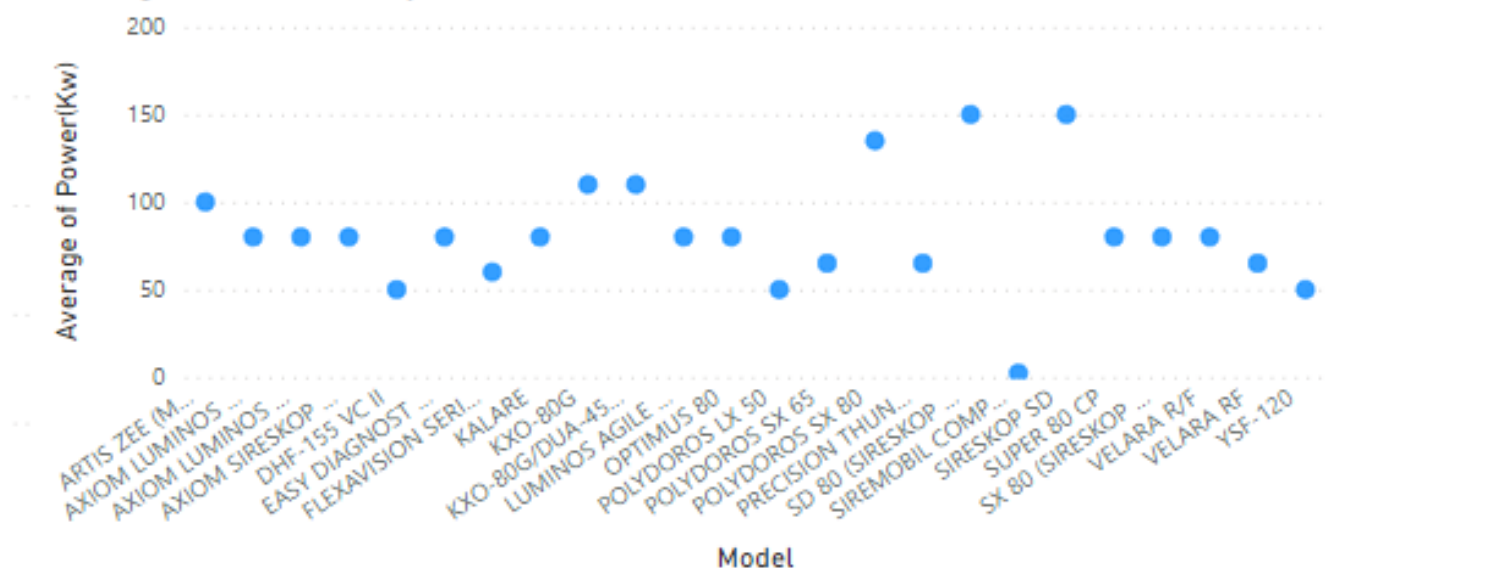
Secondly, the line chart shows a trend of downwards between the data count of brands towards location of hospitals. The highest count of single brands is 5 from Petaling Jaya. While the least number of counts of a single brand are Ampang, Kajang, Shah Alam, Sungai Buloh, UPM serdang that is 1. Klang has the most number of multiple brands out of other locations with a total of 7. While Sungai Buloh and UPM Serdang compete as the least count of multiple brands compared to other location with the count of 1.

Count of Brand by License no

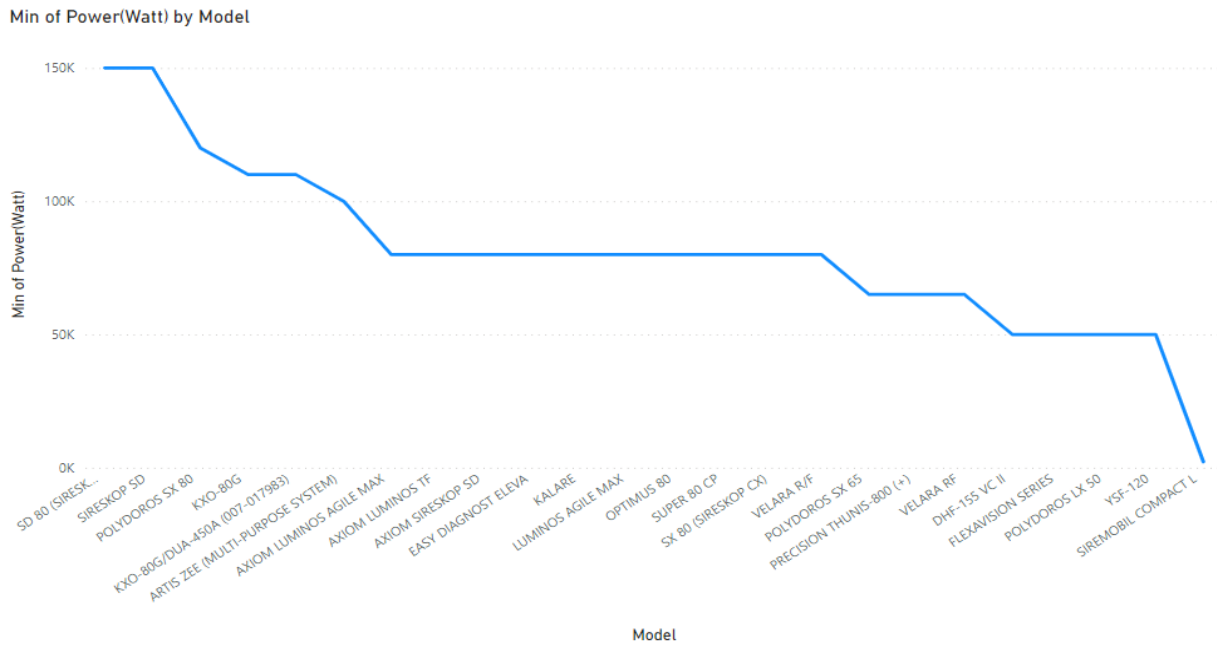


Next, the bar chart shows the count of brands by the license number. It shows that 13 of the brands do not have the exact license number which is denoted by T/B which means not registered under Atomic Energy Licensing. Most of the data that is not registered is from the government institute whereas most of the private institutes are registered under Atomic Energy Licensing act 1984. The license number of KKM/R/0590 had the second highest registered brands which is 3 while the license number of KKM/R/0053 has the third highest registered brands which is 2. The other license numbers each hold one count of brand.

.. Average of Power(Kw) by Model



Lastly, the scatter plot graph shows the average of power by model name. The highest power hold is 150 kW by model that is from SD 80 (SIRESKOP SD) and SIRESKOP SD while the lowest power of model 2.2 kW from model type SIREMOBIL COMPACT L. The most average power hold is 80kW from different model types. This clearly shows that the average power needed for most models of that fluoroscopic radiation apparatus is 80kW as registered and approved by Atomic Energy Licensing act 1984.



First of all, variable transformations are a way to make the data work better in interpretability of graphs and it is for a better understanding of data. We exchange the unit of kilowatt (kW) to watt (W) to show the AC power source for each model type used. Based on the line chart above, the trend shown is descending by minimum of model power through model type. The highest power is 150K (W) held by model SD 80 (SIRESKOP COM) meanwhile the lowest power of model is 2200 (W) by SIREMOBIL COMPACT L. There are 13 different models of Fluoroscopic Radiation Apparatus that use the same value of minimum Power which is 80K (W) .

- Conclusion

For a good-looking design of visualization of data, Microsoft Power BI will be the perfect combination. With the data that we have and the basic knowledge of Microsoft Office, we can start creating interactive graphs to attach to the reports. For example, if we are thinking about collecting business intelligence, then Power BI is the tool we are looking for. Power BI is very scalable because it has no limitation to a certain size of companies. Small departments can use Power BI by using one connector, for big enterprises data will be processed through multiple connectors and external data.