**Tableau vs Power BI vs Python**

### **Data Sources**

* **Tableau** has an edge over Power BI for slightly divergent integration. It connects well with wide-ranging databases and even to Hadoop databases. Tableau also identifies the resource automatically.
* **Power BI** cannot connect with Hadoop Databases. It connects well with [Google Analytics](https://intellipaat.com/blog/what-is-google-analytics/), Azure, and Salesforce.
* **Python**: can access any data

### **Query Editor**

* **Tableau**: Tableau does not support this feature.
* **Power BI:** Offers a query editor (used to edit data files before loading it to Power BI) that helps to do a lot of things easier.
* **Python:** Best when it comes to handling streaming data and editing data

### **Visualizations**

* **Power BI:** Can create visualization by asking questions in plain language. (Best use case: Dashboards)
* **Tableau:** Allows the user to ask ‘what-if’ questions of the data. (Best use case: Ad hoc analysis)
* **Python** can be integrated in both tools

**Customization:**

* **Tableau:** Offers 21 types of visualizations with in depth customization options that suits the user's needs
* **Power BI**: offers a wide variety of options with easier interface and simple to configure tools.
* **Python**: low customization as compared to other two

**Graphics Richness:** Tableau has better visualizations compared to others.

**Interface Easiness:** Power Bi easier than Tableau than python.

### **Programming Tools Support**

Both Power BI and Tableau can blend smoothly with all major programming languages.

* R integrates much better with **Tableau**.
* **Power BI** doesn’t have the best integration with R. It requires an external tool, called Microsoft Revolution Analytics, to connect to R;

**Data Volume:**

* **Tableau** as a BI tool can handle a huge volume of data without compromising on its performance
* **Power BI:** To use a huge volume of data in Power BI, the user needs to upgrade to Power BI Premium
* **Python:** Can handle large data volumes

**Affordability:**

* Tableau is more expensive than Power BI, while Python is open source

**Embedding option**

* With the Embed option in **Power BI** for its reports, you can easily and securely embed reports in internal web portals.
* Embedding reports to a different environment is a tedious task in **Tableau**.
* **Python**: graphs and reports are portable and the code can be embedded with other languages (HTML, C++).

**Deployment:**

* **Tableau** comes first when considering deployment flexibility as it has more cloud-based and on-premises options.
* **Power BI** has both on-premises and cloud versions, it is limited to [Azure](https://intellipaat.com/blog/what-is-microsoft-azure/) in the cloud.
* Easier with Python

**Version Control:**

* Not available in Tableau
* Available in Power BI

**Dashboards:**

* **Tableau:** [Dashboards in Tableau](https://intellipaat.com/blog/tutorial/tableau-tutorial/creating-dashboards/) have a [variety of filters](https://intellipaat.com/blog/types-of-filters-in-tableau/), layouts, and formats, and they **can present the data in the form of stories**. They enable users to apply a custom filter and copy them or their elements from one report to another.
* **Power BI:** Consists of multiple tiles and visualizations. A tile is a single chart or visual created by analyzing data. A [Power BI report](https://intellipaat.com/blog/power-bi-report/) is generated by combining one or more of these Power BI dashboards.

(Power BI: <https://appsource.microsoft.com/en-us/marketplace/apps?page=1>

<https://appsource.microsoft.com/en-us/marketplace/apps?product=power-bi-visuals> )

**Advanced Features: POWER BI**

* Power BI: Power Q&A allows users to search for data, transform it, and create visuals by asking questions in natural language.
* [Data Analysis Expressions](https://intellipaat.com/blog/dax-power-bi/) in Power BI are a set of predefined codes used to perform operations on data.

**Other Discussions:**

* **Hard to integrate with Microsoft BI solutions:** When **Power BI can easily integrate with them** and provide better efficiency with features such as Power Q&A and Power BI Service, on **Tableau**, integration with products such as Dynamics 365, Microsoft Flow, and Office 365 **is a bit exhausting.**
* **Compatibility with iOS**: Power BI does not have a compatible option for desktop Mac users. **Power BI cannot be directly installed in iOS;** a virtual machine needs to be installed to run Power BI Desktop.

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| --- | --- | --- | --- | --- |
|  | **Google Chart** | **Power BI** | **Tableau** | **Python** |
| Functions | Supports data blending and drill-down analyses | Offers pre-built dashboards and reports for SaaS Solutions | Have to start from scratch (includes coding and calculations) | Have to code and required more time for customization |
| Customization support | It offers only limited customization options and only has about 50 components per page. | Rich colors and simple to use plots available | Rich colors and high-end customization available | Limited customization and color palettes. |
| Rendering | Good finish available | High rendering and finishing available | High rendering and finishing available | Limited rendering available |
| Related Tasks | To create visualizations and dashboards | Dashboard creation main task | Data Interpreter Story-telling ability, preferred for Ad hoc analysis | Can be used for both |
| Data update | Requires scheduled queries to run every time to update data in the charts. | Post publishing the data into Power BI web service can schedule refresh without manual intervention. | Requires manual intervention | Does not require manual intervention (once a CI/CD pipeline is built) |
| License | Open source | Affordable | License is expensive | Open source |
| Suitable dataset size | Suitable for medium sized datasets | Suitable for medium sized datasets | Suitable for large sized datasets | Can handle datasets of any size |
| Ease of use | Its less steep learning curve means rapid setup and deployment. | Power BI offers quick deployment, hybrid configuration, and a secure environment. | Deployment be a bit challenging | Deployment takes time and effort |
| Power query | It provides password-enabled shared access to secure data reports. | Power Query provides many options related to wrangling and clean the data. | No power query option | No power query option |
| Support | Community support available | Response for support is more for premium users. | Good community support available | Good community support available |
| Information storage | To visualize data on your website | Power BI concentrates more on reporting and analytical modeling but not for storing the data. | Information can be stored in tableau server | Information can be stored in physical machines or cloud |
| Connectors | It lacks native connector support for cloud-based data sources like HubSpot | Power BI connects limited data sources while increasing its data source connectors in monthly updates. | Connects to numerous data sources | Connects to numerous data sources |
| ML and AI support | Not available | Backed by advanced ML and AI that have access to old data and graphs | Is not backed by AI and ML | No such features. |

**References:**

<https://www.guru99.com/tableau-vs-power-bi-difference.html>

<https://intellipaat.com/blog/power-bi-vs-tableau-difference/#no6>

<https://www.google.com/search?q=grahpics+in+power+bi+vs+tableau&oq=grahpics+in+power+bi+vs+tableau&aqs=chrome..69i57j33l7.15294j0j9&sourceid=chrome&ie=UTF-8>

<https://www.softwareadvice.com/bi/google-charts-profile/vs/tableau/>

<https://www.simplilearn.com/tableau-vs-google-data-studio-article>

<https://www.google.com/search?q=customisation+in+tableau+graphs&oq=customisation+in+tableau+graphs&aqs=chrome..69i57j33.11736j0j4&sourceid=chrome&ie=UTF-8>

<https://towardsdatascience.com/refresh-tableau-server-data-source-and-workbooks-using-python-4baa99cc3b93>