



**Data Analysis
&
Visualization**

Data Analysis and Visualization (DA&V)

Assoc. Prof. Leon A. Abdillah, S.Kom., M.M., MTA, CDM

Assoc. Prof. Computer Science & Information Systems



Universitas **Bina
Darma** 

Palembang
2025

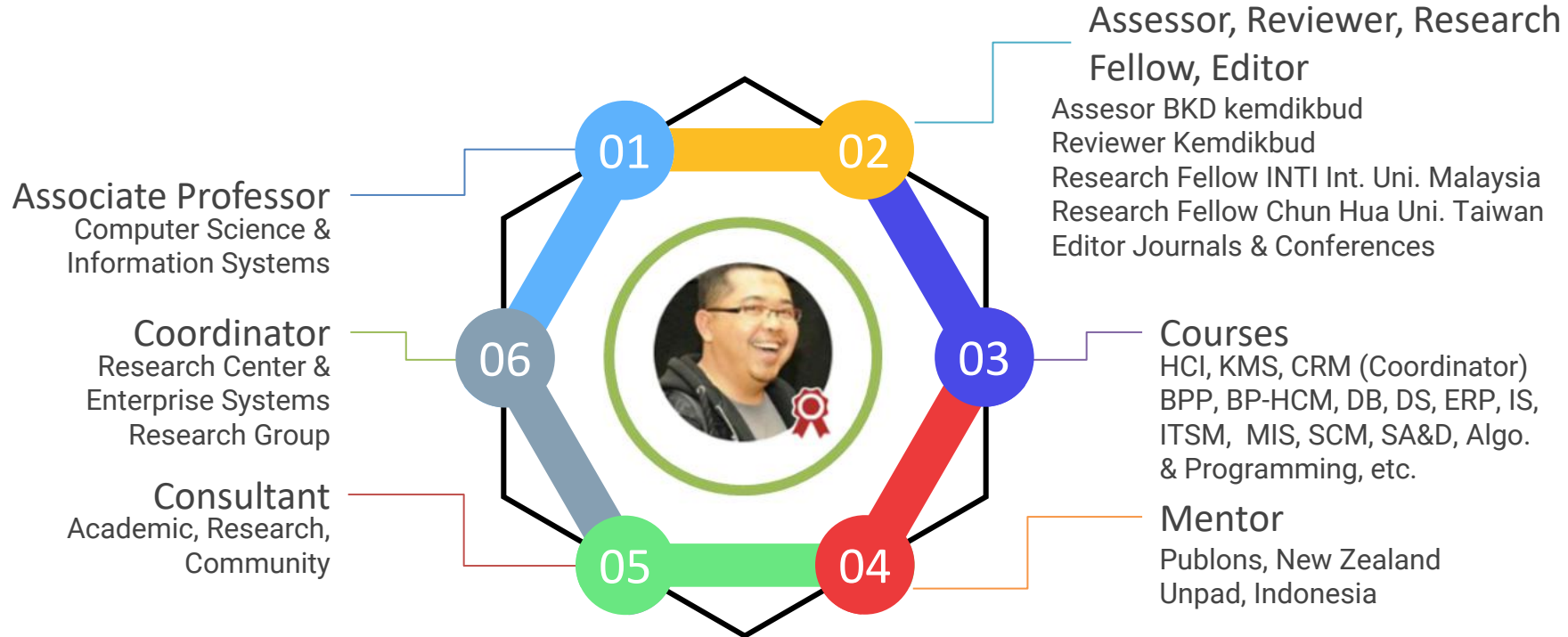
**YOUTUBE CHANNEL
@LEONABDILLAH**



- *Assalamualaikum Warahmatullahi Wabarakatuh*
- Selamat Siang.. Salam sehat dan sejahtera buat kita semua
- Selamat datang rekan-rekan mahasiswa yang saya cintai dan banggakan dimanapun Anda berada.. semoga selalu dalam keadaan sehat wal'afiat dan dalam lindungan ALLAH SWT.. Aamiin ya rabbal'amin



Lecturer



Assoc. Prof. Leon A. Abdillah, S.Kom., M.M., MTA, CDM





List of Courses Taught

01

Systems Analysis
& Design;
Business Process

02

Enterprise
Systems

03

Research
Methods;
Scientific
Writing

04

Human-
Computer
Interaction;
UI/UX

05

Knowledge
Management
Systems

06

Human Capital
Management

07

Algorithms;
Programming;
Data Structures;
OOP

08

Supply Chain
Management;
Customer
Relationship
Management

09

Database; Data
Analysis &
Visualization
(DA&V)





Course Description



- This course provides hands-on training in data analysis & visualization using Excel & Tableau. Students will learn to analyze, visualize, & present data insights effectively for great decision-making.
- In Excel, students will explore key tools such as pivot tables, advanced formulas, & charting techniques to clean, analyze, & visualize data. They'll develop the skills to create impactful reports.
- In Tableau, students will learn to build interactive, visually compelling dashboards & charts. They'll gain expertise in connecting to data sources & creating insightful storytelling visualizations.



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Course Objectives

- Students should be able to do the following by the end of the course:
 1. **Master Data Analysis Techniques:** With Excel and Tableau, students will learn fundamental data analysis concepts like data cleaning, transformation, and statistical analysis.
 2. **Excel Data Management:** Learn how to manipulate and analyze data effectively using Excel features such as formulae, pivot tables, Power Query, and Power Pivot.
 3. **Effective Data Visualization:** Learn best practices for producing meaningful representations in Excel and Tableau that effectively communicate findings.
 4. **Build Interactive Dashboards:** Learn how to create dynamic and interactive dashboards and reports in Excel and Tableau, with a focus on interactivity and data storytelling.
 5. **Apply Data Analysis to Decision Making:** Learn how to use data insights to enhance decision-making processes, as well as industry-specific data visualization use cases.





Course Expectations [1/2]



1. **Attendance and Involvement** are expected on a regular basis, and active engagement in class discussions and group activities is encouraged.
2. **Tasks & Assessments:** Throughout the course, there will be a range of tasks, quizzes, and tests to assess your grasp of the content.
3. **Group Projects:** Students will work in collaborative groups to apply knowledge management principles to real-world scenarios.
4. **Readings and Resources:** A list of recommended readings and resources will be sent to you. It is expected that you will go over these materials to improve your understanding of the subject.





Course Expectations [2/2]



5. **Regular office hours** will be held by the teacher to provide additional support and clarification on course topics.
6. **Professionalism:** At all times, respectful and professional behavior is expected.
7. **Communication is critical.** It must be clear and timely. If you have any questions or concerns, please contact the instructor through email or during office hours.
8. **Ethical Conduct:** It is critical to maintain academic and ethical integrity. Plagiarism and cheating are not permitted.
9. **Feedback:** You will receive constructive feedback on your assignments and projects to help you improve your understanding and performance.





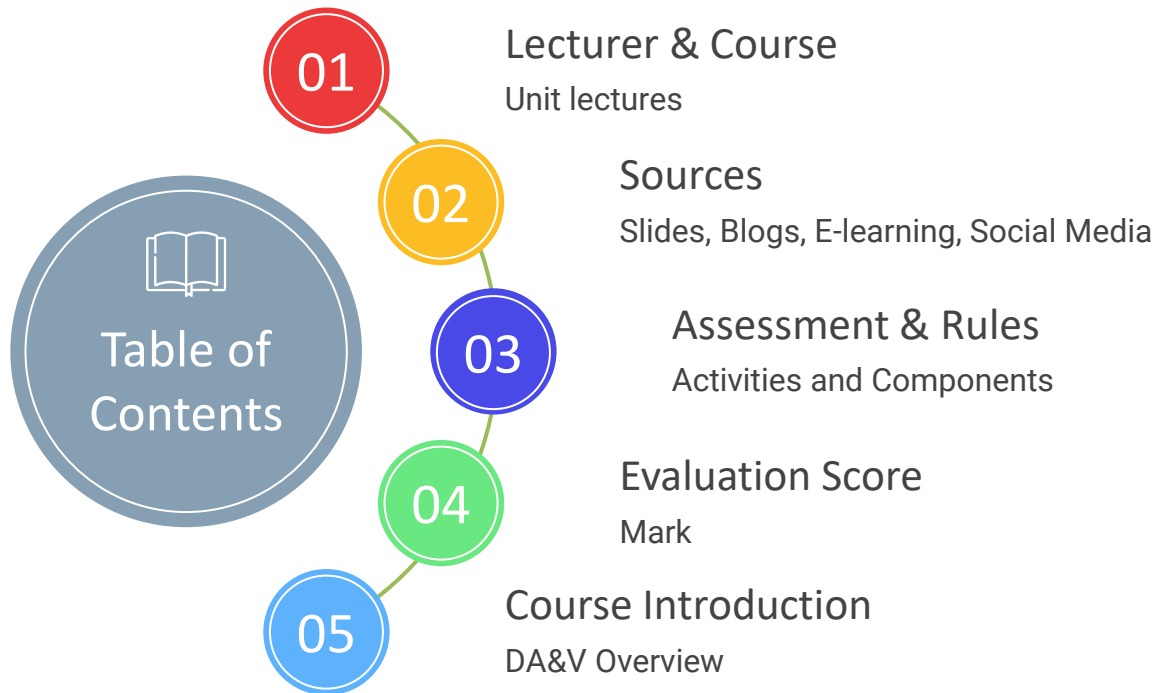
Meeting Purposes

- Mengetahui lingkup mata kuliah DA&V
- Memperkenalkan sistem pembelajaran DA&V
 - Mode Pembelajaran
 - Komponen Penilaian
 - Score Penilaian
 - Sumber Materi Ajar
 - Dll.
- Overview DA&V





Agenda





Unit Lectures

No	Content	No	Content
1	Introduction Data Analysis & Visualization: using Excel & Tableau	9	Introduction to Tableau
2	Basic Excel: Formulas and Functions	10	Basic Visualizations in Tableau
3	Basic Statistical and Visualization Functions	11	Advanced Visualization Techniques
4	Excel Conditional Formatting for Visual Data Analysis; Daily Exams	12	Data Analysis and Calculation in Tableau
5	Excel Logic & VLOOKUP Functions	13	Creating Dashboard in Tableau
6	Using Pivot Tables & Power Query in Excel	14	Case Studies of Data Analysis & Visualization
7	Creating a Simple Dashboard in Excel	15	Presentations of Data Analysis & Visualization
8	Mid Exams	16	Final Exam

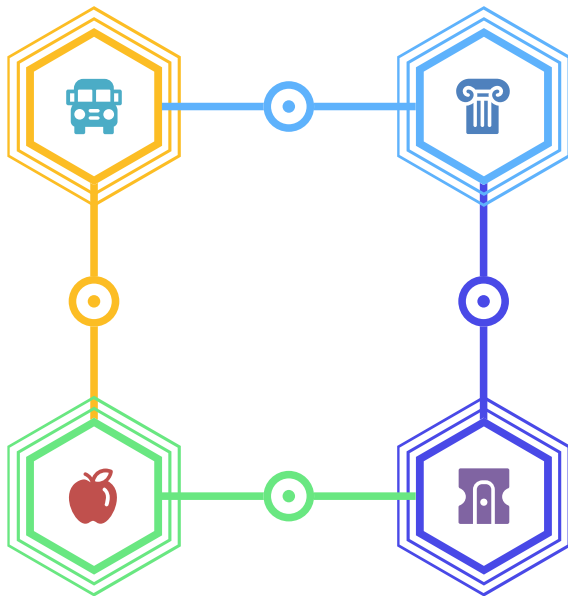




Learning Media & Sources

Moodle
Moodle →
elearning.binadarma.ac.id

Facebook
DA&V 2024-2025 Genap



Blogs

- blog.binadarma.ac.id/mleonaa
→ Teaching | Data Analysis & Visualization
- leonabdillah.wordpress.com |
Teaching | Data Analysis & Visualization

WhatsApp

WhatsApp Group of DA&V



Assessment Component





Course Rules

01

Register in KRS



04

Honest



02

Attendance $\geq$ 80%



05

Academic Rules



03

Discipline $<$ 15 min late



06

Schedule





Evaluation Score

No	Final Score	Conversion		Category
		Mark	Weight	
1	85 – 100	A	4,00	Very good
2	80 – 84	A-	3,67	
3	75 – 89	B+	3,33	Good
4	70 – 74	B	3,00	
5	65 – 69	B-	2,67	
6	60 – 64	C+	2,33	Enough
7	55 – 59	C	2,00	
8	41 – 54	D	1,00	Failed
9	0 - 40	E	0,00	

5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
																A	A	A	A
															A-				
														B+					
													B						
											C+	C+							
										C									
							D	D	D										
E	E	E	E	E	E	E													





DA&V Overview



- Overview Data & Information
- Definition?
- What does the discipline of DA&V cover?
- Why study DA&V?





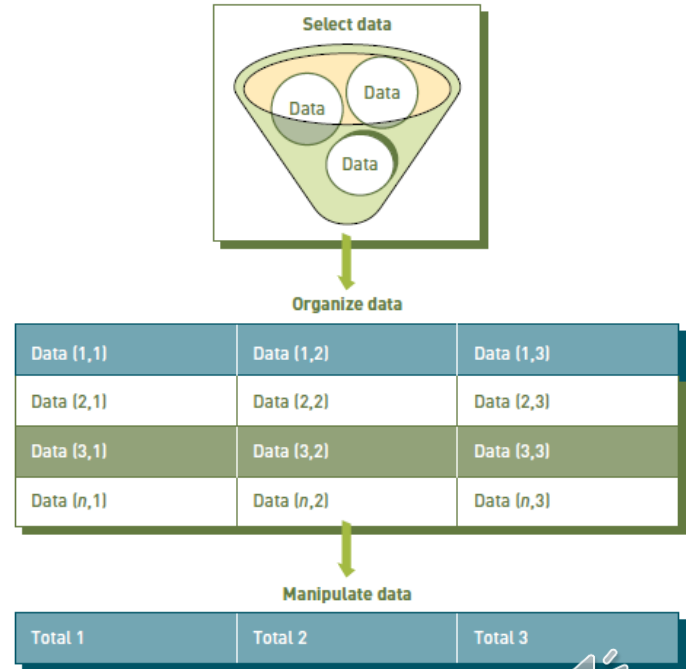
Data & Information Overview

- Data**

- Data consists of raw facts, such as an employee number, total hours worked in a week, an inventory part number, or the number of units produced on a production line.

- Information**

- Information is a collection of data organized and processed so that it has additional value beyond the value of the individual facts.

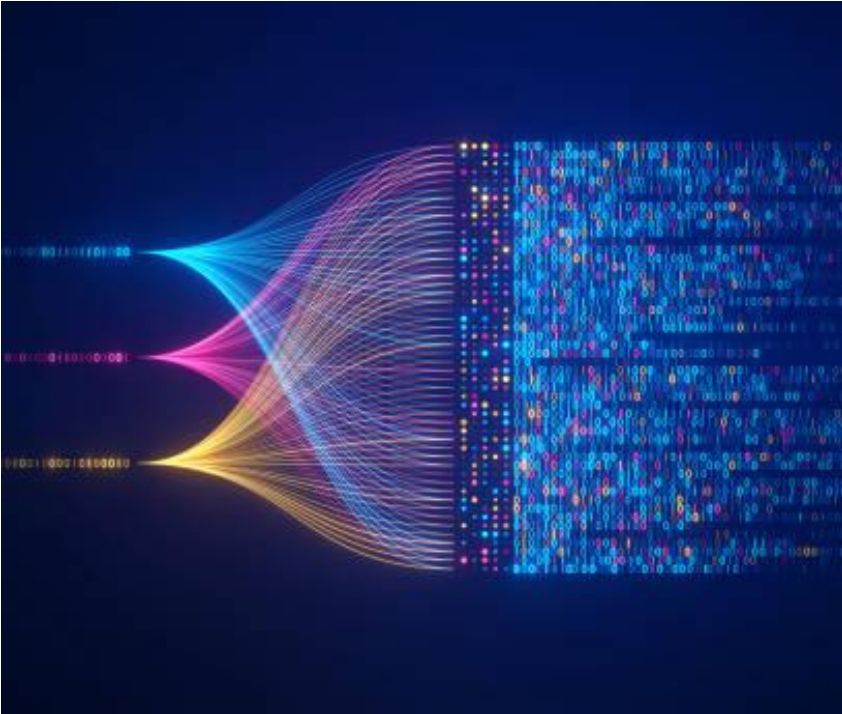


(Stair & Reynolds, 2018)





Data Analysis



- Data analysis, the process of systematically collecting, cleaning, transforming, describing, modeling, and interpreting data, generally employing statistical techniques.
- Data analysis is an important part of both scientific research and business, where demand has grown in recent years for data-driven decision making.

(Eldridge, 2025).





Visualization

- By displaying complicated datasets in graphical formats like maps, graphs, or charts, visualization makes them easier to understand (Wilke, 2019).





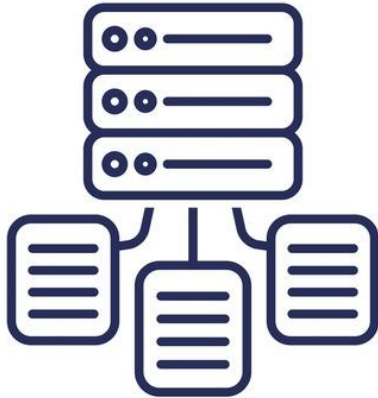
Visualization



- Provide an accessible way to see and understand trends, outliers, and patterns in data.
 - Explore visually for trends in data useful for making decision
 - Exploring data includes:
 - Identify key attributes and their distribution
 - Identify outliers
 - Extract interesting grouping of data subsets
 - Identify initial hypothesis
- (Abdillah, 2014)



Data Types



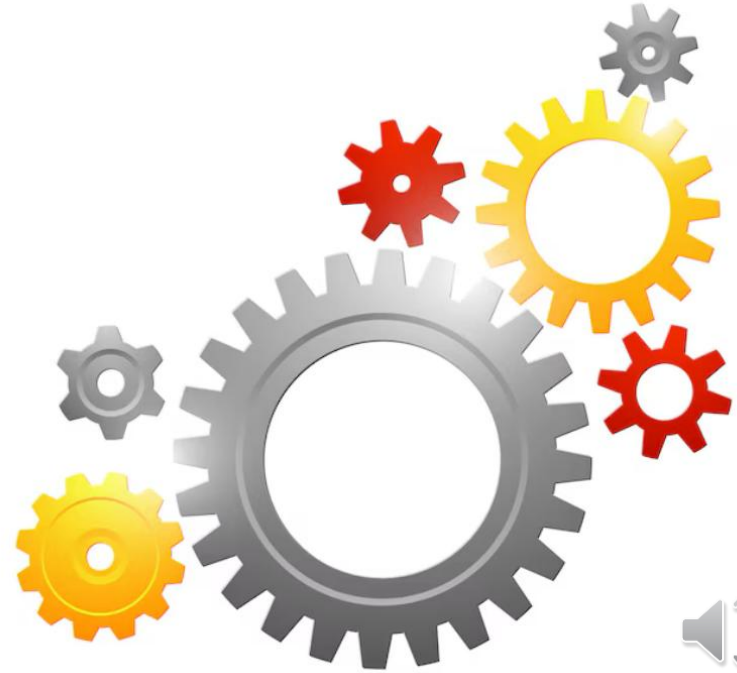
- Type of Data:
 1. Qualitative Data. Descriptive information (e.g., text, images).
 2. Quantitative Data. Numerical information (e.g., sales figures, temperatures).
 3. Structured vs. Unstructured Data. Structured data is organized (e.g., databases), while unstructured data lacks a predefined format (e.g., social media posts)





Tools [1/3]

- There are a lot of data analysis and visualization tools you can use to work with and display your data.
 1. Excel
 2. Tableau





Tools [2/3]

- Analyze Data in Excel empowers you to understand your data through natural language queries that allow you to ask questions about your data without having to write complicated formulas. In addition, Analyze Data provides high-level visual summaries, trends, and patterns.
- Source:
<https://support.microsoft.com/en-us/office/analyze-data-in-excel-3223aab8-f543-4fda-85ed-76bb0295ffc4>





Tools [3/3]

- In 2003, the dashboarding tool Tableau launched, allowing users to create interactive dashboards quickly and without computer code (Schwabish, 2023).





Why Study DA&V

- In today's data-driven environment, understanding data analysis and visualization is essential for a number of reasons:
 1. Simplification of Complex Information
 2. Enhanced Decision-Making
 3. Improved Communication
 4. Exploratory Data Analysis
 5. Identification of Insights





What is Tableau Public?

- Tableau Public is a free platform that allows you to explore, create, and share interactive visualizations using publicly available data online.
- That last part is important. Make sure the data you share on Public is, well, available for *public* consumption.
- Playing with data in Tableau Public will help you develop data skills and learn from a community of like-minded data enthusiasts—or as we like to call them—the DataFam.



Tableau Public URL

- URL → <https://public.tableau.com/app/discover>

→ ↺ <https://public.tableau.com/app/discover> ☆

Welcome to Tableau Public

A free platform to explore, create, and publicly share data visualizations online.

[Sign Up for Tableau Public](#) [Learn More](#)





Create Tableau Account

- Create Tableau Account



Create your Tableau Account

First Name

This field is required.

Last Name

Email

Password

Confirm Password

Passwords are case sensitive, 8-100 characters long. Requires at least one number (0-9), one uppercase letter, one lowercase letter, and one of the following characters: ! " \ # \$ % & ' () * + , - . / : ; < = > ? @ [] ^ _ ` { | } ~ .



Registration Confirmation

- Confirmation for the registration



[Sign In](#) [Reset Password](#)

Thank you for registering. You will receive an email containing a link to confirm this registration. You must follow the instructions in the email in order to activate your Tableau account.

Quick Links

- [Tableau Home Page](#)
- [Tableau Community](#)
- [Blueprint Assessment](#)
- [Tableau Public](#)



Confirm Email

- Open email and click the confirmation link



Thank you for registering with Tableau. We're delighted to have you as part of the Tableau community and hope you'll come back often to benefit from our Forums, Training Videos, User Groups and other resources.

To activate your account, please click on the following url:



Login

- Login



Sign In

Email

Password

☐ Remember me

[SIGN IN](#)

[FORGOT PASSWORD](#) | [CREATE AN ACCOUNT](#)



Select Country & Agreement

- Country = Indonesia



[Sign In](#) [Register](#) [Reset Password](#)

Tableau Public needs more information

Select your country or region.

Land/Region
Indonesia

- ☒ I agree to the [Terms](#), [Data Policy](#), and [Community Code](#).
By registering you confirm that you agree to the processing of
your personal data as described in the [Salesforce Privacy
Statement](#).

COMPLETE SIGN-IN

** These preferences will be stored with your account and you won't be prompted again on subsequent log-ins.*



Isi Questionnaire

- Pilih “Learn data skills”

What brings you to Tableau Public?

Help us improve Tableau Public and focus on improvements that matter to you by sharing how you plan to spend your time on our platform.

Select all that apply.

Learn data skills Work on a visualization, complete coursework, or boost Tableau skills.	Career growth Find a job or qualified candidates.	Find inspiration Browse what others have created or find data to use for exploration.
Join the community Participate in community projects, community forums, or connect with the #DataFam.	Showcase my work Display your portfolio of work, or share your work with others.	Just curious I'm just here to look around.

Submit
Dismiss



Download Tableau Public

- Pilih Create > Download Tableau Public Edition

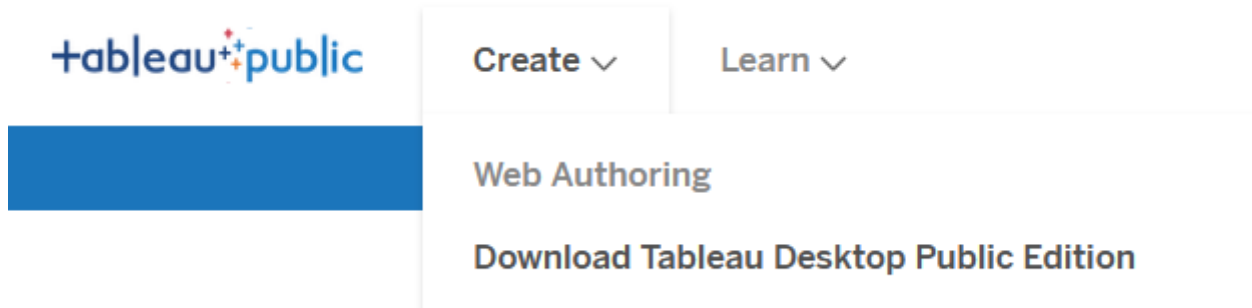




Table URL

- URL → <https://www.tableau.com/products/public/download>



- Klik sign in

You'll be exploring in minutes

Connect to the data that matters most to you with Tableau's intuitive drag-and-drop interface to effortlessly create interactive graphs, stunning maps, and live dashboards in minutes. Save your work to your local desktop or publish your viz to your Tableau Public profile. Anyone can do it, it's that easy—and it's free.

Almost there!

It only takes 15 seconds to fill out. If you're already registered, [sign in](#).

First Name
Last Name
E-mail
- Role -
Country/Region Indonesia

☐ Yes, I would like to receive marketing communications regarding Salesforce products, services, and events. I can unsubscribe at any time.

By registering, you confirm that you agree to the processing of your personal data by Salesforce as described in the [Privacy Statement](#).

DOWNLOAD THE APP

[WE RESPECT YOUR PRIVACY](#) | [HAVING TROUBLE?](#)



- Isi Role

The screenshot shows the Tableau website's registration process. At the top, the Tableau logo is displayed with the text 'from Salesforce'. Navigation links include 'Why Tableau', 'Products', 'Solutions', 'Resources', and 'Partners'. A 'CONTACT US' link with the phone number '1-800-270-6977' and the name 'Leon Abdillah' is present, along with a 'TRY NOW' button. The main heading reads 'You'll be exploring in minutes', followed by a paragraph explaining the ease of use. Below this, a section titled 'Almost there!' contains a dropdown menu for 'Role' with 'Teacher / Educator' selected. A checkbox for marketing communications is unchecked. A paragraph of terms and conditions is followed by a 'DOWNLOAD THE APP' button. At the bottom, links for 'WE RESPECT YOUR PRIVACY' and 'HAVING TROUBLE?' are provided.

tableau
from Salesforce

CONTACT US 1-800-270-6977 Leon Abdillah

TRY NOW

Why Tableau Products Solutions Resources Partners

You'll be exploring in minutes

Connect to the data that matters most to you with Tableau's intuitive drag-and-drop interface to effortlessly create interactive graphs, stunning maps, and live dashboards in minutes. Save your work to your local desktop or publish your viz to your Tableau Public profile. Anyone can do it, it's that easy—and it's free.

Almost there!

Role
Teacher / Educator

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DOWNLOAD THE APP

[WE RESPECT YOUR PRIVACY](#) | [HAVING TROUBLE?](#)

- Klik Download



- Pilih Operating Systems = Windows

You'll be exploring in minutes

Connect to the data that matters most to you with Tableau's intuitive drag-and-drop interface to effortlessly create interactive graphs, stunning maps, and live dashboards in minutes. Save your work to your local desktop or publish your viz to your Tableau Public profile. Anyone can do it, it's that easy—and it's free.

We can't identify the correct download for you.

Choose from the following versions to begin the download.

Windows | [Mac \(Intel\)](#) | [Mac \(Apple Silicon\)](#)

Which Mac version should I install?

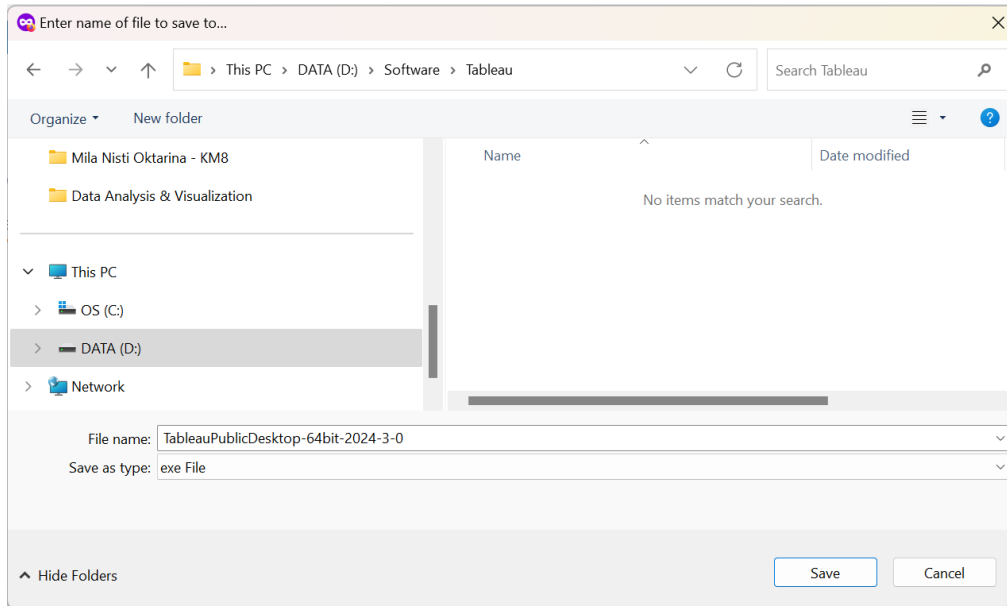
[Platform Identification Guide](#)

2024.3.3 AVAILABLE FOR WINDOWS AND MAC | [SYSTEM REQUIREMENTS](#)

- **Operating Systems = Windows**
- Microsoft Windows 8/8.1, Windows 10 (x64), Windows 11
- 2 GB memory
- 1.5 GB minimum free disk space
- CPUs must support SSE4.2 and POPCNT instruction sets



- Pilih Lokasi penyimpanan Tableau installer





Download Finished

- Kalau selesai di download

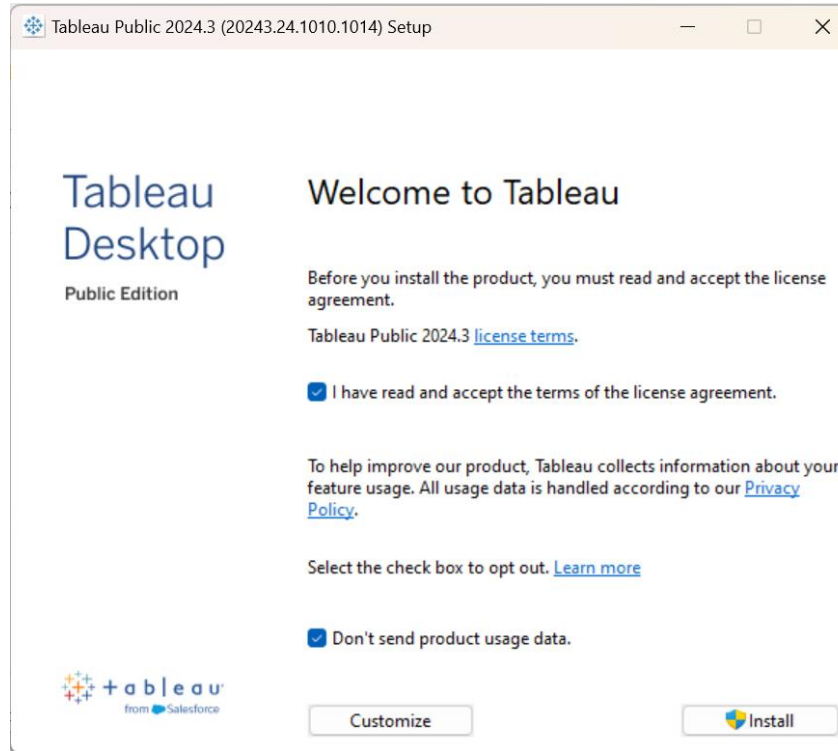


File description: Tableau Public 2024.3 (20243.24.1010.1014)
Company: Salesforce, Inc
File version: 24.3.425.0
Date created: 25/01/2025 14:12
Size: 511 MB



Welcome to Tableau Desktop Public

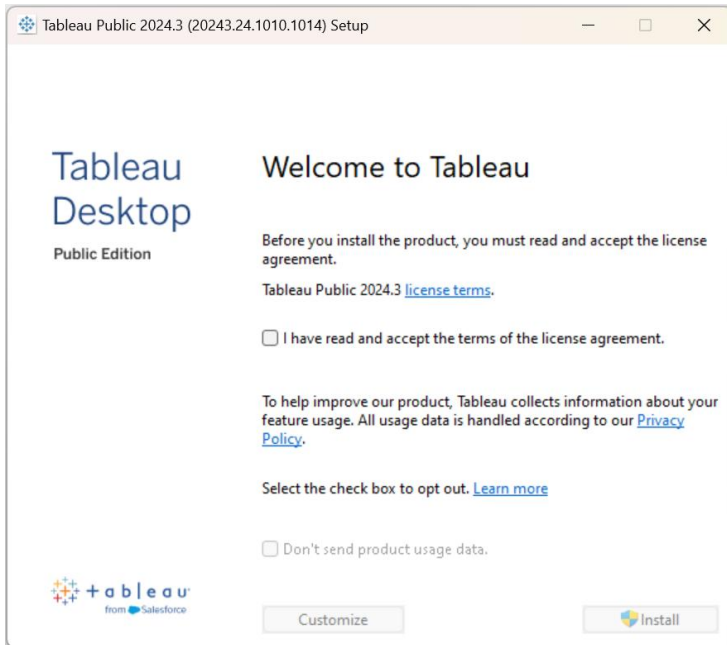
- Welcome



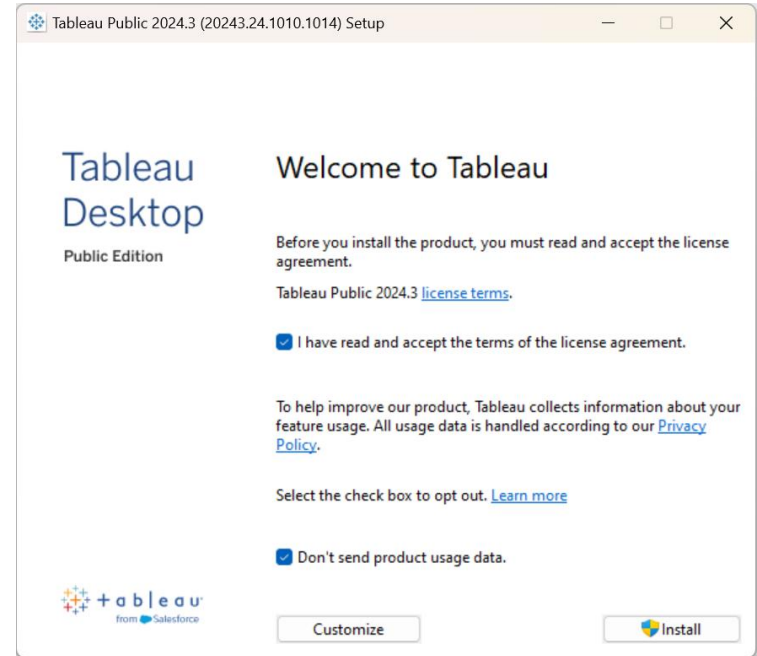


Accept License Agreement

- Welcome

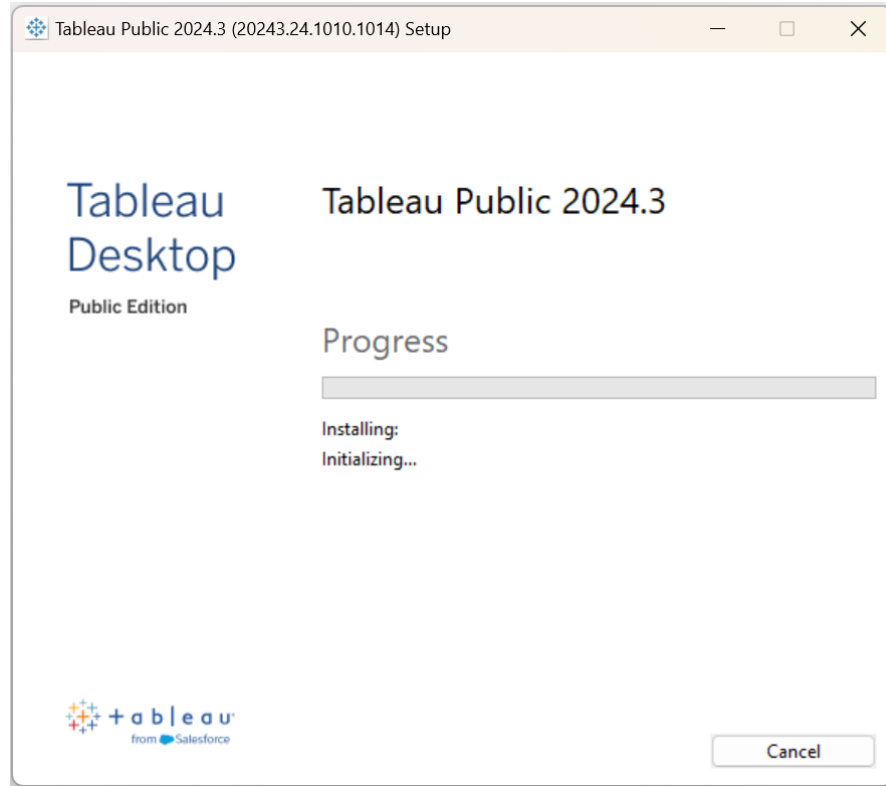


- Click “I have read and accept...”





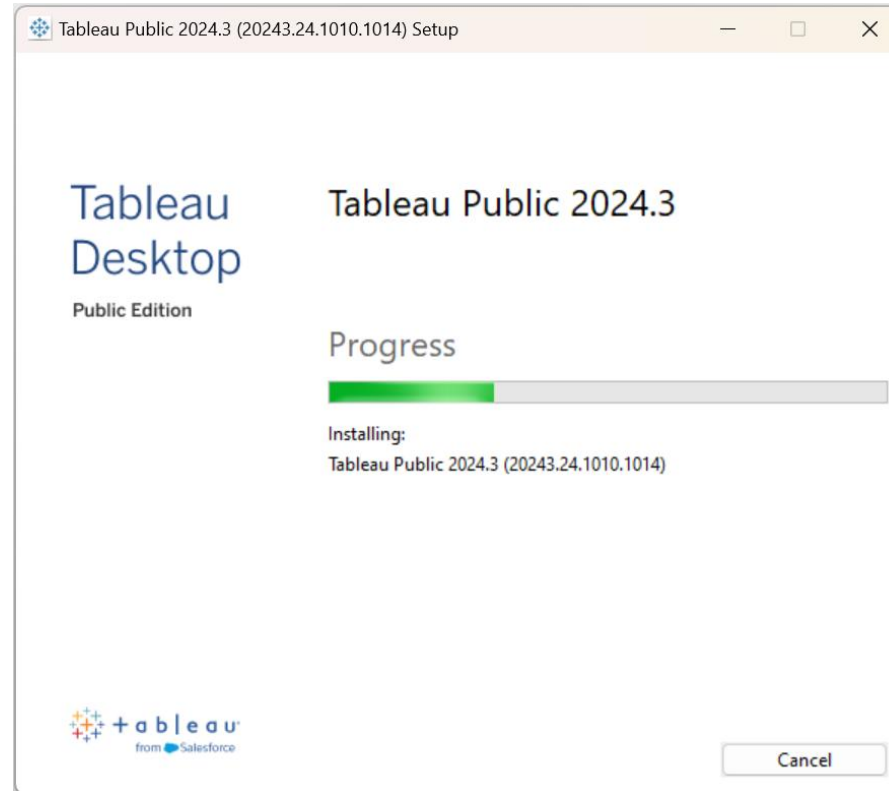
Start Installing





Installation Progress

- Progress





Almost Done

- A

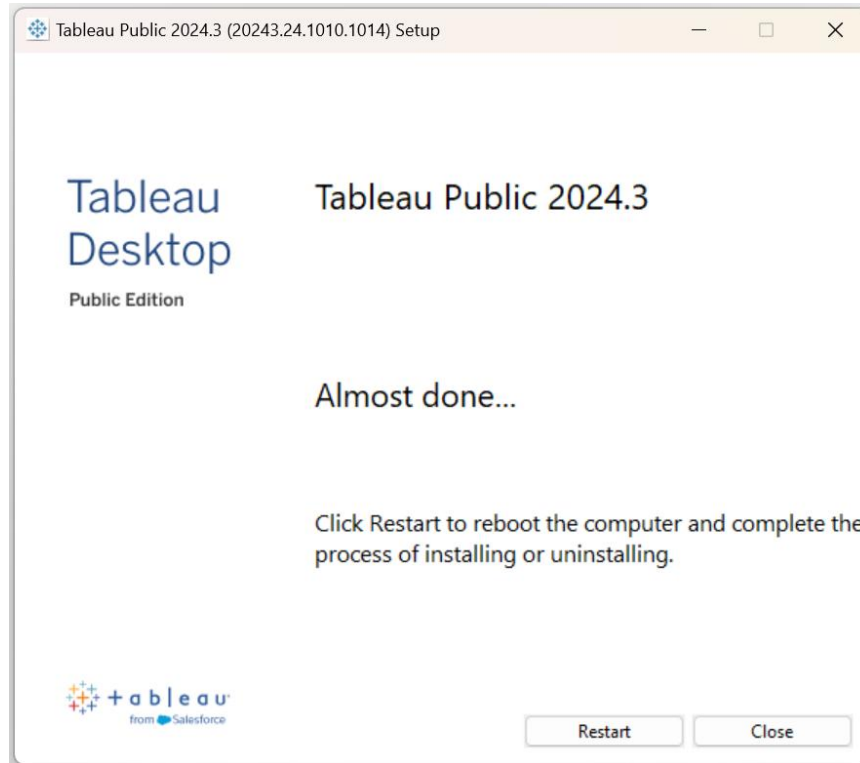




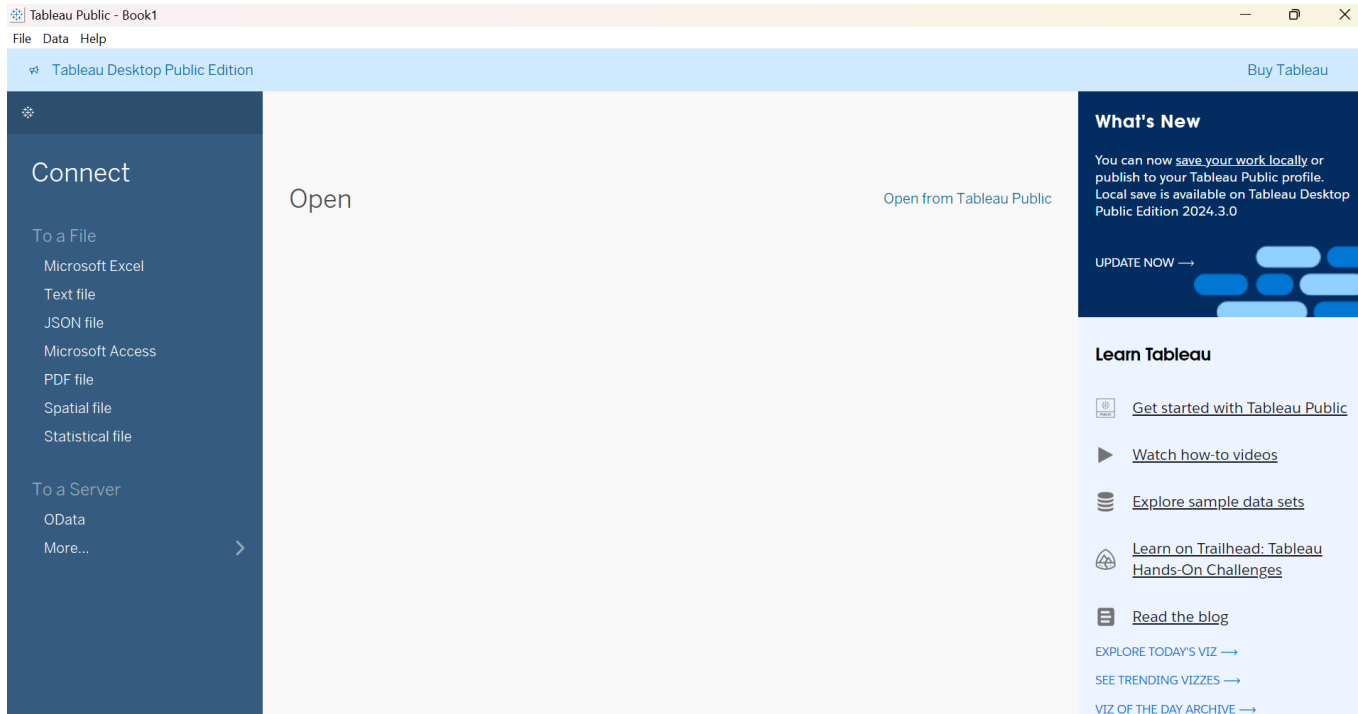
Tableau Icon

- The icon of Tableau





Tampilan Tableau Desktop Public





Sample Dataset

- URL →

https://public.tableau.com/app/learn/sample-data?_gl=1*4560cz*_ga*MTcwMjE1ODEyOS4xNzM3NzkwMDkw*_ga_8YLN0SNXVS*MTczNzc5MDA5MC4xLjAuMTczNzc5MDA5MC4wLjAuMA..



Conclusions

- Data analysis helps in transforming raw data into actionable insights.
- Visualization tools like Excel and Tableau simplify data interpretation, making complex trends and patterns easy to understand.
- Excel: Ideal for basic analysis and small datasets with powerful functions, pivot tables, and charts.
- Tableau: Advanced tool for interactive, dynamic visualizations and handling large datasets efficiently.





Homework

- Homework
 - Prepare your SocialMedia ID (**FaceBook**)
 - Set a **group discussion** consist of 2-4 students for small class (≤ 20), 5-6 students for medium class (21-35), or 7-8 students for large class (> 36)
 - Prepare your blog using **WordPress**, create a page/laman “DA&V” or “Data Analysis & Visualization”
 - Create an account in Cloud repository (**DropBox**)
 - Develop your **team project theme** based on the information given from several sources (journals, conference proceedings, books, or master theses). You may use one of these sources: a) GOOGLE SCHOLAR (<http://scholar.google.com/>) or b) MICROSOFT ACADEMIC SEARCH (<http://academic.research.microsoft.com/>)





Assignment



- Assignment 01
 - Browse at least 5 (five) definitions of Data Analysis & Visualization (from Books, Journal Articles, etc.).
 - Save your assignment in Word or PowerPoint as “DA&V-(year)-Class-01(Definition)-Group/Theme”
 - Store it in Dropbox and paste the URL from Dropbox into the submitted URL!





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