* Relationships

→ logical layer only - tables remain separate
→ no fixed join type; Tableau picks join type at query time based on context
→ preserves each table's level of detail; avoids duplication/aggregation issues
→ only pulls tables actually used in the view
→ supports many-to-many relations, outer joins, and granular flexibility

* Joins

→ physical layer - tables are merged into one
→ you must define join type before analysis (inner/left/right/outer)
→ merged table has fixed row/column structure
→ can cause data loss (e.g. with inner joins) or duplication (especially with different

granularity)

→ good when you explicitly need a flat table for calculations, extracts, or specific join control

* unions

→ vertical merge — stacks tables into one

→ used when tables have matching columns / structure

→ add more rows, not columns

→ requires same column layout and compatible data types across inputs

* when to use each

use case	Relationship	Join	Union
need dynamic, context-aware combination	✓	✗	✗

keep tables separate with different granularities	✓	✗	✗
require a single flat table pre-analysis	✗	✓	✓ if same structure
add new rows (e.g. monthly data files)	✗	✗	✓
avoid aggregation issues	✓	! o	! o if mismatched
want tableau to optimize queries automatically	✓	✗	✗

https://youtu.be/4N4Ft7MEW3Y?si=uymczzaHGNnx2WGQ

https://youtu.be/Aa3qVaw7u_o?si=R6nS1sQXG-MiVP3z

https://youtu.be/FACIU67GE3I?si=O7ArP79fLH_Q1QtZ

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* data blending

→ data blending in tableau is a method of combining data from multiple sources that are not directly related or do not share a physical relationship like database joins.

→ Instead of merging the data at the row level (like joins or unions), data blending aggregates the data separately from each source and then combines those aggregated results

example :-

scenario → you have Sales Data in SQL and

Customer Targets in excel.

→ no direct join possible

→ you can use 'Customer ID' as the linking field (blending key)

How tableau works :-

→ It queries SQL to get SUM(Sales) per customer

→ Separetely queries excel to get Target per customer.

→ Combines these at visualization level.

Customer	Total Sales	Sales Target
A	$ 10,700	$ 12,000
B	$ 7,500	$ 7,000

→ Tableau use primary & secondary data sources in blending.

→ You can recognize the blended fields by

link icons:

* Data blending vs other combination techniques

feature	Data blending	Joins	Unions
Data relationship	loose relationship (diff. sources)	strong, direct relationship	same fields, structure
level of combination	aggregated level	row level	row level
source requirements	can be from diff. databases/ files	must be from the same data source	must be from the same data source
key requirement	common field for linking (blending key)	common field for joining	same schema

Flexibility	Can mix SQL, json, excel, etc.	requires same source connection	requires same structure
execution order	after individual query aggregation	before aggregation	before aggregation

* Cardinality

→ while creating relationships, you can also mention cardinality such as one to one, one-to-many, many-to-one, etc.

* Referential Intengrity

→ In tableau, when you define a relationship betn tables, you can specify the referential integrity setting in the performance options:

a) All records match

you are certain that every value in the related field of the fact table exist in the dimension table.

b) some records match

you are unsure, or know that some values in the fact table may not have a corresponding value in the dimension table.