

Excel, SQL, Python, or Tableau: What to Master First

techfitflow.com | Roadmap, decision tree, tool selection worksheet, 90-day plan

1. What each tool does best

Tool	Best at	Weak at
Excel	Ad hoc analysis, small data, models	Large data, repeatability, audit trail
SQL	Retrieve and shape data at the source, validation	Visuals, files and APIs
Python	Automation, files, APIs, statistics	Setup effort, handoff to non-coders
Tableau	Interactive dashboards, executive views	Heavy data prep, cost control

2. Default order by role

Role	Order	First project
Business analyst	SQL basics, Excel, Tableau, Python	Profile five fields behind a requirement
QA analyst	SQL, Python, Excel, Tableau	Source-to-target count and hash check
Data / reporting analyst	SQL, Tableau, Python, Excel	Dashboard from your query, reconciled
Epic application analyst	Excel, SQL, Tableau, Python	Verify a build change with Clarity SQL
Finance / revenue cycle	Excel, SQL, Python, Tableau	Replace one manual tie-out with a query
Program manager	Excel, Tableau, SQL basics	Status dashboard with documented refresh

3. Which tool for this task?

- [] Data lives in a database: SQL. Save the query.
- [] Small file or one-off model: Excel. Add a tie-out cell.
- [] Repeated file, API, or test task: Python. Keep the script in version control.
- [] Others must explore the result: Tableau, built on a SQL source.
- [] Every branch: reconcile the output to a known figure before sharing.

4. Tool selection worksheet

Question	Answer	Points toward
Where does the data live?		Database: SQL. Files/API: Python
How many rows?		Hundreds of thousands+: SQL or Python
How often does it repeat?		Repeats: SQL, Python, Tableau
Who consumes it?		Executives: Tableau
Does it contain PHI?		Limits where it can live
Who maintains it after you?		Pick a tool they can support

5. Same question, four tools (average LOS by department)

SQL: `SELECT d.DEPARTMENT_NAME, ROUND(1.0*SUM(DATEDIFF(day,h.HOSP_ADMN_TIME,h.HOSP_DISCH_TIME))/COUNT(*),1)
FROM PAT_ENC_HSP h JOIN CLARITY_DEP d ON d.DEPARTMENT_ID=h.DEPARTMENT_ID
WHERE h.HOSP_DISCH_TIME >= '2026-07-01' AND h.HOSP_DISCH_TIME < '2026-10-01' GROUP BY d.DEPARTMENT_NAME;`

Excel: `helper =INT(C2)-INT(B2); pivot: Rows=Department, Values=Average of helper`

Python: `q3.groupby("department")["los_days"].agg(["count","mean"]).round(1)`

Tableau: `AVG(DATEDIFF('day',[Admit],[Discharge])) by Department, filter Q3`

6. Minimum useful skills

Tool	Minimum useful set
Excel	Exact-match lookups, tables, pivots, Power Query, protected inputs, tie-out cell
SQL	SELECT/WHERE/JOIN, GROUP BY/CASE, CTEs, date logic, window functions, check queries
Python	pandas read/filter/group/merge, virtual environment, Git, one test
Tableau	Dimensions vs measures, connect to a query, calculated fields, extracts vs live, approved publishing

7. 90-day plan

Month	Focus	Proof of skill
1	SQL: week 1 filter, 2 join, 3 group/CASE, 4 CTE validation	Five saved queries on real questions
2	Second tool (Tableau or Excel depth)	One dashboard or model reconciled to source
3	Third tool (Python or window functions)	A script or query that replaces a manual task

8. Before you share any output

- ☐ Total ties to a known source figure
- ☐ Metric definition written and visible
- ☐ No patient-level data in public or personal locations
- ☐ Query or script saved in version control
- ☐ A named person can maintain it

Learning timelines are estimates and vary by person. Sources: Microsoft Excel specifications and limits; pandas documentation; Tableau Help; HHS minimum necessary guidance.