

Power BI for Non-Coders — Workbook

This workbook turns the course into a build you can ship: a connection and data-source planner, a Power Query cleaning log, a star-schema model map, a visual and KPI planner, and a publish-and-refresh runbook. Work one section per module against your own data (or a sample retail sales CSV plus a Products and Regions table), completing the worksheets and checklists inside Power BI as you go. By the end you will have a clean, modeled .pbix with an interactive multi-page report published to the Power BI Service on scheduled refresh, plus reusable planners you can run on any future dataset, all without writing DAX or SQL.

Getting Started and Connecting Your Data

Install Power BI Desktop, connect to real sources with Get Data, and get oriented in the editor.

Checklist: Setup and Orientation Checklist

- Power BI Desktop installed (Microsoft Store version for auto-updates) and opened
- Regional Settings confirmed under File, Options and settings, Options so dates and numbers parse correctly
- Found and clicked each of the three view icons: Report, Table, and Model view
- Located the Fields pane and Visualizations pane on the right
- Opened the Power Query Editor once via Transform data and seen the Applied Steps list
- Understood the flow: clean in Power Query, relate in Model view, build in Report view, share in the Service

Worksheet: Data Source Planner

Before connecting, inventory every source your report needs. For each one, note the connector, the import mode, and whether it is a fact or lookup table. This becomes the spec for your Get Data steps and your model.

Source name (e.g. Sales)

File or location (path, SharePoint URL, folder)

Connector to use (Excel workbook / Text-CSV / Folder / Web)

Import or DirectQuery (default: Import)

Role in model (fact / dimension-lookup)

Key column that will link it to other tables (e.g. Product ID)

Refresh source: cloud (no gateway) or local/on-prem (needs gateway)?

Exercise: Connect to Your Data with Get Data

Open Power BI Desktop and use Home, Get Data to connect to a real sales export (Excel or CSV) plus at least one lookup table (Products or Regions). Choose Transform Data rather than Load so the Power Query Editor opens. Rename each query to a clear name (Sales, Products, Regions) in the Queries pane.

- Which connector did you use for each source, and did you choose Import or DirectQuery, and why?
- How many rows and columns does your main Sales table have (check the status bar in the editor)?
- If you have monthly files, describe how the Folder connector's Combine and Transform would replace manual copy-paste.

Exercise: Read the Applied Steps List

In the Power Query Editor, click any query and look at the Applied Steps list on the right. Click the first step (Source), then later steps, to time-travel through the data. Rename one step to something descriptive by right-clicking, Rename.

- List the steps Power BI created automatically when you connected (e.g. Source, Navigation, Changed Type).
- What changed in the data preview when you clicked an earlier step versus the last step?
- Why does an editable, ordered step list make refreshing next month's file effortless?

Cleaning and Shaping Data in Power Query

Do the real cleaning with point-and-click tools and record it as a repeatable recipe.

Worksheet: Power Query Cleaning Log

As you clean, log each transformation so your recipe is documented and you can rebuild it on any similar file. Fill one row per applied step.

Column(s) affected

Transformation (set data type / promote headers / filter rows / remove columns / split / unpivot / Group By / merge / append)

Exact setting used (delimiter, filter value, group aggregation, locale)

Why it was needed (the problem it fixed)

Renamed step name in Applied Steps

Exercise: Fix Types and Strip the Junk

On your Sales table, set every column's data type via the header icon: real dates as Date, money as Decimal, quantities as Whole Number, and ID or postal codes as Text. Turn on View, Column quality and Column distribution. Remove unneeded columns with Remove Other Columns, filter out Cancelled rows via a column dropdown, and remove blank rows.

- Which columns had the wrong type on import, and what did you change them to?
- From Column quality, which column had the highest percentage of errors or empties, and how did you handle it?

- Why set ID and postal-code columns to Text rather than a number type?

Exercise: Reshape with Split and Unpivot

Find one column that holds two facts (a Region-Store code, a Full Name, or a DateTime) and use Transform, Split Column by Delimiter, then rename the parts. If any table is laid out wide with months or categories across columns, select the columns to keep, right-click, and choose Unpivot Other Columns; rename the resulting Attribute and Value columns to Month and Sales.

- Which column did you split, on what delimiter, and what did the new columns become?
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- Did any table need Unpivot? If so, which columns collapsed, and why is tall data better for charting?
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- How would Add Column, Column From Examples handle a split you could not describe as a simple rule?

Checklist: Clean Data Checklist

- Every column has the correct data type (dates, decimals, whole numbers, text IDs)
- Headers promoted and renamed to clear, consistent names
- Unneeded columns removed (preferably via Remove Other Columns)
- Unwanted and blank rows filtered out; duplicates removed where needed
- Errors handled deliberately with Remove Errors or Replace Errors
- Any multi-value columns split, and any wide layout fixed with Unpivot
- Close and Apply run successfully with no load errors

Modeling and Measures Without DAX

Build a star-schema model, add a date table, and create metrics with quick measures and built-in aggregations.

Worksheet: Star-Schema Model Map

Plan the model before drawing lines. Identify your one fact table and your dimension tables, and the key that links each dimension to the fact. A clean star here makes every later visual behave.

Fact table name (the transactions, e.g. Sales)

Numeric measure columns in the fact table (e.g. Quantity, Revenue, Cost)

Dimension table 1 and its unique key (e.g. Products / Product ID)

Dimension table 2 and its unique key (e.g. Regions / Region ID)

Dimension table 3 and its unique key (e.g. Customers / Customer ID)

Date table and the date column it links to in the fact table

Relationship cardinality and direction (default: Many-to-one, Single)

Exercise: Build Relationships in Model View

Open Model view. Drag the key field from your Sales table onto the matching key in each lookup table (Product ID to Products, Region ID to Regions) to create relationship lines. Double-click a line to confirm cardinality (Many-to-one) and cross-filter direction (Single). Then add a slicer on a lookup field and confirm it filters a Sales visual.

- List each relationship you created and which side carries the 1 versus the asterisk (many).
- Did a slicer from a lookup table correctly filter your Sales numbers? If not, what relationship was missing?
- Why is a star schema (separate linked tables) better than merging everything into one wide table?

Exercise: Add a Date Table and Quick Measures

Add a Date table (import a Calendar file, or build one with date columns in Power Query) and relate it to the order date. In Table view, Sort the Month Name column by Month Number, and right-click the table, Mark as date table. Then create at least two Quick measures via right-click, New quick measure: a Year-to-date total and a Year-over-year change.

- After Sort by Column, do months now appear in calendar order on a visual instead of alphabetically?
- Which two Quick measures did you create, and which fields did you drag into each dialog?
- Drag a numeric field into a card and switch its aggregation: what is the difference between Count and Count (Distinct) on your customer field?

Checklist: Model and Measures Checklist

- Fact table connected to each dimension by a single relationship (star schema)
- All lookup-table keys are unique on the one side of each relationship
- A dedicated Date table exists, is related to the fact date, and is Marked as date table
- Month Name sorted by Month Number so time axes order correctly
- Basic metrics handled by implicit aggregations (Sum, Average, Count, Count Distinct)
- At least two Quick measures created (e.g. YTD, year-over-year) with no DAX typed

Designing Reports and Publishing to Share

Build interactive visuals, then publish, schedule refresh, and share the report with the right people.

Worksheet: Report Page and KPI Planner

Sketch each report page in words before building so the design is intentional. Plan the headline KPIs and the supporting visuals, top to bottom, and note the fields each uses.

Page name and the single question it answers

KPI card 1 (metric, aggregation, format)

KPI card 2 (metric, aggregation, format)

KPI card 3 (metric, aggregation, format)

Main visual (chart type, axis field, values field)

Supporting visual A (chart type and fields)

Supporting visual B (chart type and fields)

Slicers on this page (fields and slicer style)

Exercise: Build a Page of Visuals

On a report page, add a row of Card visuals for your headline numbers, a Line chart of revenue over time (date table on the axis), a Clustered bar chart of revenue by region, and a Matrix of region-by-product. Format each: add a plain-language title, set number formats, and apply conditional formatting (a color scale or data bars) to the matrix values.

- Which three to five KPIs did you place across the top, and how are they formatted?

- For the trend, why does a line chart suit time better than a column chart here?

- Where did conditional formatting most help a viewer spot the important numbers?

Exercise: Add Slicers, Cross-Filtering, and Drill-Down

Add slicers for Region and a date range, and confirm they filter every visual. Click a bar in one chart and watch the others cross-filter. Put Year, Quarter, Month on a chart's axis and use the drill-down arrow to expand a year into quarters and months. Optionally set up one Drillthrough detail page or a Bookmark.

- After clicking one region's bar, did all other visuals filter? Note any visual you set to ignore the interaction via Edit interactions.

- Drill from Year to Quarter to Month on your trend chart: which month was the peak inside your top quarter?

- If you built a bookmark or drillthrough, describe the view it captures or the detail it reveals.

Checklist: Publish and Refresh Runbook

- Report published to a Power BI Service workspace via Home, Publish
- Key tiles pinned into a dashboard in the Service for the headline view
- Scheduled refresh configured on the dataset (semantic model) settings
- On-premises data gateway installed if any source is a local or on-prem file
- Refresh history checked and showing successful runs
- Shared with the right people via workspace roles or a published app
- Row-level security applied if viewers should see only their own data slice
- Mobile layout designed (View, Mobile layout) for phone viewers

Your Action Plan

1. Install Power BI Desktop, confirm Regional Settings, and connect to one real sales export plus a Products and Regions lookup table with Get Data, choosing Transform Data.
2. Clean each table in Power Query: set correct data types, promote and rename headers, remove junk columns and rows, and handle errors, logging each applied step.
3. Reshape where needed: split any multi-value columns and Unpivot any wide, month-in-columns layout into tall analysis-ready data.
4. Open Model view and build a star schema, linking the Sales fact table to each dimension by its unique key and confirming Many-to-one, Single relationships.
5. Add a Date table, relate it to the order date, Mark as date table, and Sort Month Name by Month Number.
6. Create the metrics you report: use implicit aggregations for totals, averages, and distinct counts, and New quick measure for year-to-date and year-over-year.
7. Design a report page with KPI cards, a trend line, a region bar chart, and a region-by-product matrix, formatted with titles, number formats, and conditional formatting.
8. Add interactivity: slicers for Region and date, cross-filtering, and a drill-down hierarchy on the trend chart, plus an optional drillthrough or bookmark.
9. Publish to the Power BI Service, pin the headline tiles into a dashboard, and set up scheduled refresh (installing the data gateway if a source is local).
10. Share with the right people via workspace roles or an app, apply row-level security if needed, design a mobile layout, and verify the refresh history shows success.

