

Youth Scouting – Critical Reflection Report

Manchester City FC | Season 2025

CA 2 : Data Visualisation : Power Bi, Tableau

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1 Executive Summary

This report reflects critically on building two **functionally-equivalent** dashboards ,one in **Tableau Desktop** and one in **Power BI**. We are using the **FIFA-23 “complete player”** dataset (57 010 players, 1144 clubs).

The dashboards answer three stakeholder questions:

Stakeholder	Key questions answered by the dashboards
CEO / Owner	“What is the current and potential financial value of our worldwide talent pipeline ?”
Head of Youth Recruitment	“Which clubs, countries and age-bands are producing prospects we should scout next?”
First-Team Coach	“Who are the Top-5 high-potential players in each position for succession planning and adding for more depth in squad ?”

Key findings

- Power BI’s Power Query is outstanding for heavy data cleaning; Tableau’s Extract engine and formatting tools give superior visual polish.
- Tableau’s context-filter model demands explicit reasoning about order-of-operations; BI’s Edit Interactions UI is more intuitive but less granular.
- After rigorous data-quality checks both tools satisfied all stakeholder needs; selection of tool should match audience and iterative requirements.

2 Stakeholders & Visual Mapping

Stakeholder role	Principle question	Tableau / Power BI visual(s) that answer it	Notes & customisations
CEO / Owner	Financial value of pipeline	Value-for-Money scatter (Potential \times Market Value) + Global Value Academies bar (Avg. Potential Gap)	Scatter bubble size = value-per-potential; blue-white gradient communicates potential intensities.
Head of Youth Recruitment	Best clubs, countries, age-bands	Bubble Map (player-count + avg. Potential), Age-Growth dual-axis curve , Slicers for Gender, Age Band & Position	Map click filters other charts via action (Tableau) or interaction (BI).
First-Team Coach	Top-5 prospects per position	Top-Ranked Players bar filtered by Top-N parameter (1-5), Gender, Age- Band and Position selector	Dense-rank in both tools ensures ties are shown ; Custom tooltips

3 Data Journey & Pre-Processing

1. Initial import – four CSVs [male/female players & teams, \approx 6 GB] .
2. Problems discovered – duplicate IDs, NULL ages, negative value_eur.
3. Power Query fix (Power BI)
 - Sort PlayerID \uparrow Age \downarrow \rightarrow Removed Duplicates
 - Conditional column \rightarrow zero negative values
 - Output: Players_all.csv (57 010 rows), Teams_all.csv [1144 rows]
4. Tableau swap – Data \rightarrow Replace Data Source \rightarrow point sheets at clean CSVs.
5. Lesson learned –Data Quality first, visualisation second; would have saved \sim 4 h re-work.

4 Dashboards & Applied Visual-Design Principles

Objectives	Design principle applied
1. Develop complex data visualisations	Dual-axis line (Age-Growth), bubble map with dual encoding, dense-rank Top-N bar
2. Innovative methods	VfM scatter with size = efficiency; “vanishing gradient” colour fades low-value bubbles.
3. Programming constructs	Tableau LOD: Avg. Potential Gap = { FIXED [team_id]: AVG([Potential]-[Overall]) }; Power BI DAX: RankX, What-If param
4. Design & interactivity	Action filters (Tableau) vs Edit Interactions (BI); Dynamic titles with labels & parameters

5 Tool-by-Tool Reflection

5.1 Data preparation

Criterion	Tableau	Power BI	Review
Duplicate removal	Requires Prep or LOD + filter	Power Query button	BI faster (<1 min)
Conditional cleaning	IFNULL, calc fields	Conditional Column GUI	BI GUI wins
Export clean tables	.hyper extract	DAX Studio	BI

5.2 Visual creation & formatting

- **Tableau** shelves feel “drag-n-drop” intuitive; dual-axis sync needs one click.
- **Power BI** puts multiple fields on a well, but fine-grained formatting (gradients) is easier.

5.3 Interactivity

- **Tableau** Actions (hover, menu, select) very flexible but hidden in menu.
- **Power BI** Edit Interactions visual icons extremely discoverable; less control (no menu actions).

5.4 Dynamic logic

- **Top N**
 - **Tableau:** Top Ranked Players [1-5] + Rank by potential + Top N parameter + context filters [Need of Context filters gave us huge trouble]
 - **BI:** Top N filter + Rank by Potential + Show TopN. [Used **Show TopN** in filters and shows N ranked players according to TOP N value by cutting of players under that rank.]
- **Dynamic titles**
 - **Tableau:** Title editor Insert ▶ Field/Parameter and the content. [**Tableau** is better in dynamic titling]
 - **BI:** DAX measure + **fx** binding – powerful for multi-line.

6. Map Geocoding : Behaviour & Workflow Differences

When we plotted nationality bubbles, the two tools diverged sharply in how they handle location strings. Tableau validates every label against its built-in geocoder and, if it cannot match a name such as “Korea Republic” or “Chinese Taipei”, it halts the user with an “Unknown Locations” dialog. One click on **Map -> Edit Locations** lets you remap that label to South Korea, Taiwan, or any ISO code and correction is done, bubble instantly snaps to the right country. By contrast, Power BI silently forwards the text to Bing Maps; if Bing cannot resolve it, the bubble is dumped at (0°, 0°) or mid-Atlantic with no warning. There is no canvas-side override: the only remedy is to **fix the text in the data layer** - typically a Replace Values step in Power Query. In practice this meant a two-step workflow in BI: (1) build an “audit map” to spot stray bubbles, (2) bulk-replace problematic labels inside the query. Tableau’s **interrupt-and-repair loop** costs a click up front but guarantees accuracy; Power BI **demands additional data-cleaning discipline** to reach the same geocoding fidelity.

6 Design Diary

Day	Milestone	Hurdle	Outcome
1	Data Modelling in BI	6 GB data. Very slow to process each calculations.	Clean and reduced data
2	Clean & export CSVs	Using Power Bi Transform. Cleaned the dataset into 2 smaller size files of 57 010 unique players and 1 144 unique clubs.	57 010 players, 1144 clubs
3	BI dashboard	Map drill didn't interact	Fixed with Edit Interactions
4	Tableau prototype	Top-20 bug (Gender)	Learned Context filters
5	Dynamic titles	Country label missing	Created Country Label calculation in BI.
6	Filtering	Null option in Gender filter	Choose "Non-null values" filter

7 Critical Insights

- Data quality first – [duplicate](#) IDs and [null](#) ages caused value disparity between the dashboards, Which we fixed through data remodelling using [Power bi](#).
- **Tool selection** – Power BI for [iterative modelling](#); Tableau for [executive storytelling](#).
- **Context vs Interaction** – Tableau's [order-of-operations](#) sharpened our mental model of [filter precedence](#).

8. Conclusion - Choosing Between Tableau and Power BI for Youth-Scouting Analytics

Power BI ultimately felt like an **engineer's workbench**. Its Power Query UI let me eliminate 6 GB of duplicates, null ages and negative values in minutes; the What-If wizard turned a Top-N concept into a live slicer with a single click; and the Edit Interactions icons made cross-filter logic instantly visible. During the messy, iterative phase of the project these features were decisive – once the data was clean, the measures recalculated on the fly, and I could publish a refreshable model to the Service without touching the visuals. If I were building a continuously updated scouting pipeline or an internal tool for analysts, Power BI would be my first choice.

Tableau, by contrast, became the **storyteller's studio**. Its shelves, transparent layers and one-click dynamic titles let me wrap the cleansed data in a brand-aligned, Manchester-City-blue narrative far faster than I could in BI. The built-in geocoder flagged every ambiguous country up-front and the Edit Locations dialog fixed them with a single remap, guaranteeing accuracy before any stakeholder saw a bubble. Although context filters and table-calculation addressing required extra thought, that discipline clarified the logic of the dashboard and yielded a more polished user experience. For board-level presentations or public-facing dashboards where visual persuasion matters as much as numbers, Tableau remains the stronger choice.

9 . Appendix: https://github.com/bimalbiju0413/Data-Analytics_/blob/main/Appendix_ca2.pdf

