DATA VISUALIZATION

GESTALT PRINCIPLES

GESTALT PRINCIPLES

The **Gestalt principles** are the "laws" of human perception.

They describe how humans group similar elements, recognize patterns and simplify complex images when they perceive objects.

Designers use them to organize content on charts, dashboards, websites, and other interfaces so that they be **aesthetically pleasing**/**easy to understand**.

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GESTALT PRINCIPLES

"Gestalt" is German for "unified whole".

The first principles were devised in the 1920s by German psychologists Wertheimer, Koffka ("the whole is greater than the sum of the parts"), Kohler.

Aim: understand how we gain meaning from the chaotic stimuli around us.

The Gestalt principles are a set of "laws" which address the natural compulsion to find order in disorder. According to this, the mind "informs" what the eye sees by **perceiving a series of individual elements as a whole**.

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GESTALT PRINCIPLES

- **simplicity**

- continuation

- **proximity**

- **similarity (invariance)**

- **focal point**

- isomorphic correspondence

- **figure / ground duality**

- common fate

- closure

- uniform connectedness

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GESTALT PRINCIPLES – SIMPLICITY

The brain has a preference for **simplicity** – it tends to process simple patterns faster than patterns that are more complex.

Lesson: arrange data simply and logically wherever possible.
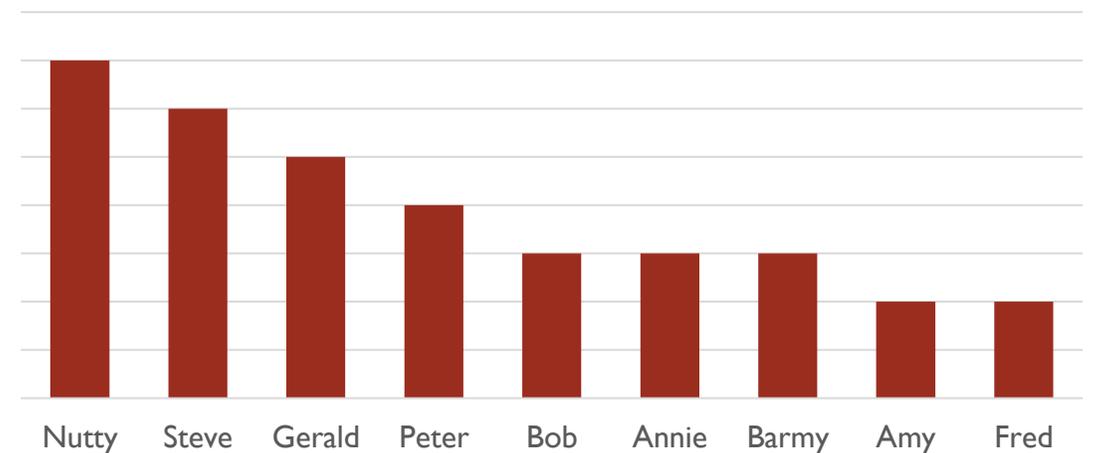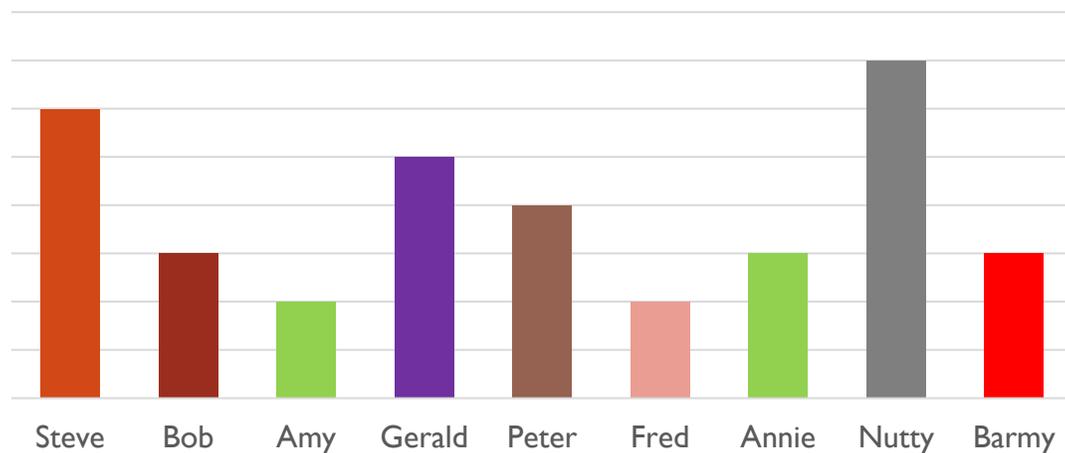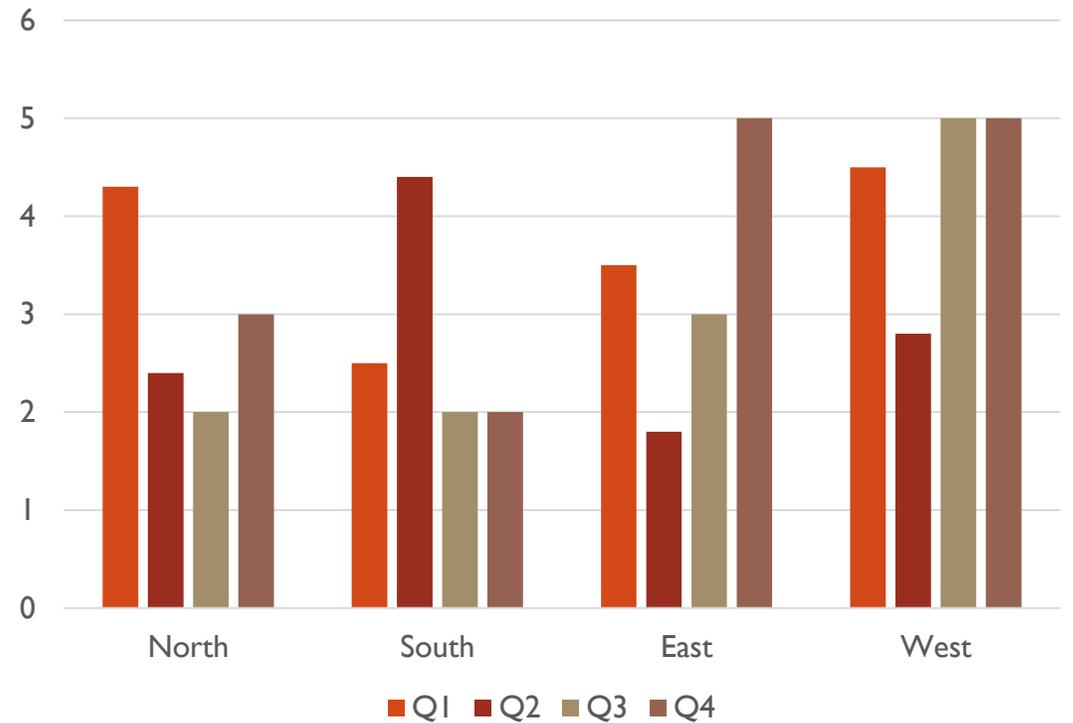
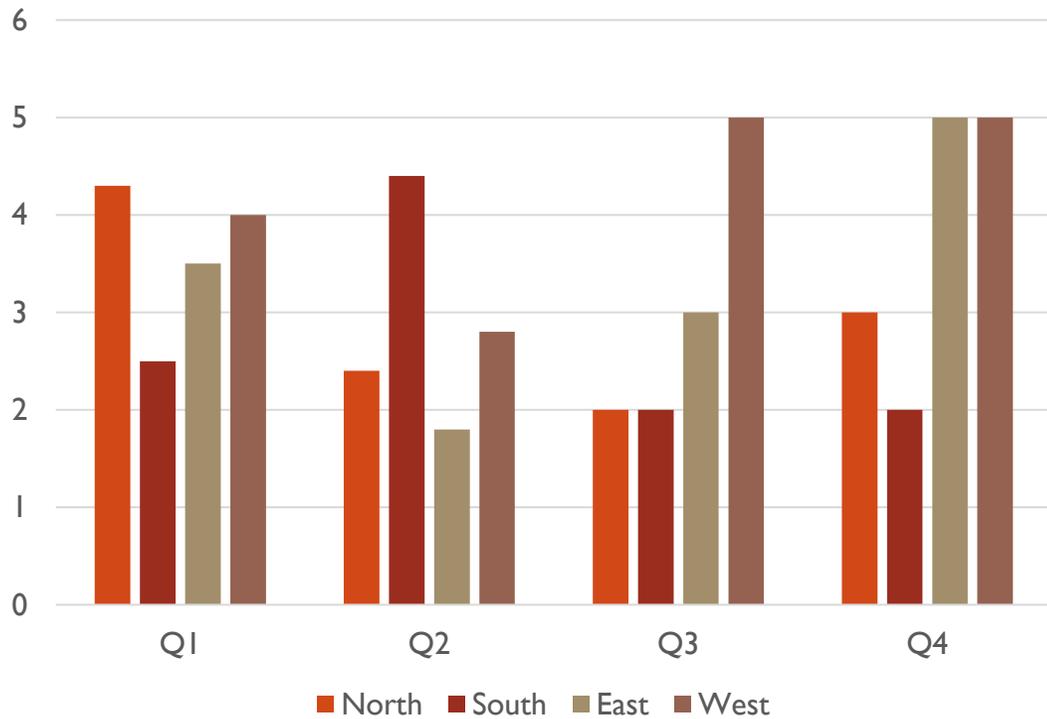# GESTALT PRINCIPLES – PROXIMITY

Objects/shapes that are in **proximity** (close) appear to form **groups**.

The effect generated by the collected group is more "powerful" than that generated by separate elements.

Elements which are grouped together create the **illusion** of shapes/planes in space, even if the elements are not touching.

Lesson: understand the chart's priorities and create groupings through proximity that support those priorities.
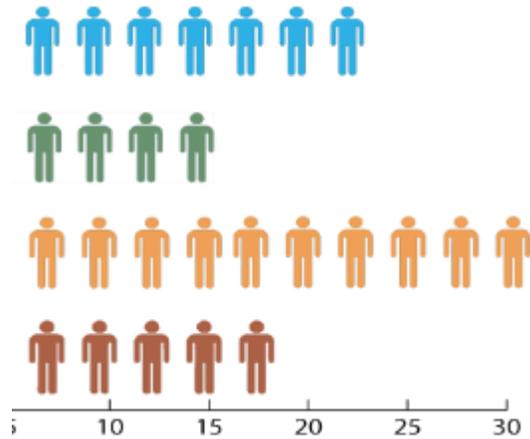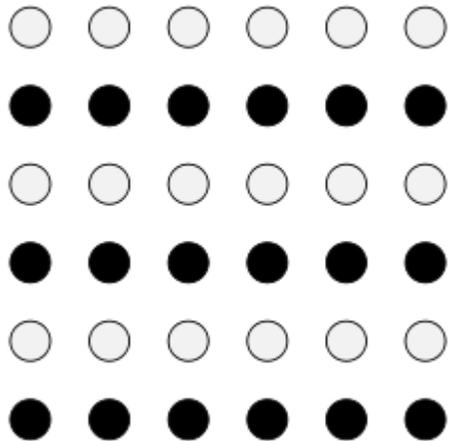
GESTALT PRINCIPLES – PROXIMITY

GESTALT PRINCIPLES – SIMILARITY

Stimuli that physically resemble each other are viewed as **part of the same object**; stimuli that don't are viewed as part of a different object.

Similarity and proximity often come together to form a **visual hierarchy**. Either principle can dominate the other, depending on their application and combination.

Lesson: use similar characteristics to establish relationships and to encourage groupings of objects.

GESTALT PRINCIPLES – SIMILARITY

In these examples, similarity dominates over proximity: we see rows before we see columns.

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GESTALT PRINCIPLES – FOCAL POINT

In opposition to similarity, the **focal point** principle states that distinctive-looking objects can create a focal point.

To highlight one salesperson's performance, make their bar graph color different.

Lesson: use different characteristics to highlight and create focal points.
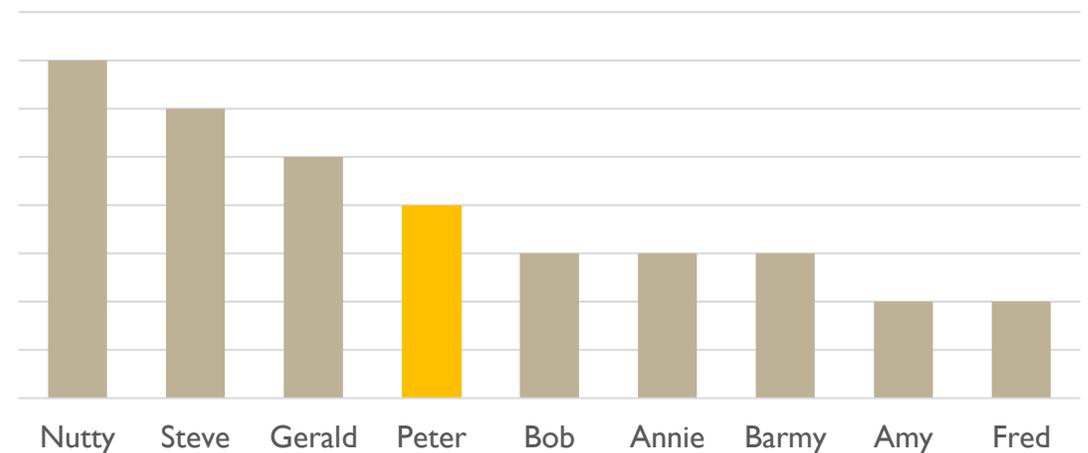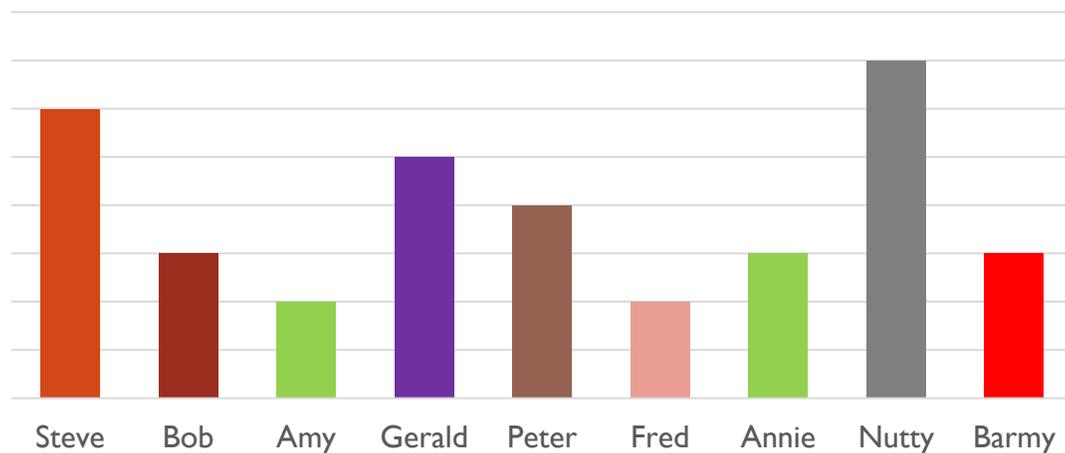
GESTALT PRINCIPLES – DUALITY

Chart elements are either perceived as **figures** (focus) or as (back)**ground**.

Foreground objects are **promoted** by the brain, background objects are **demoted**.
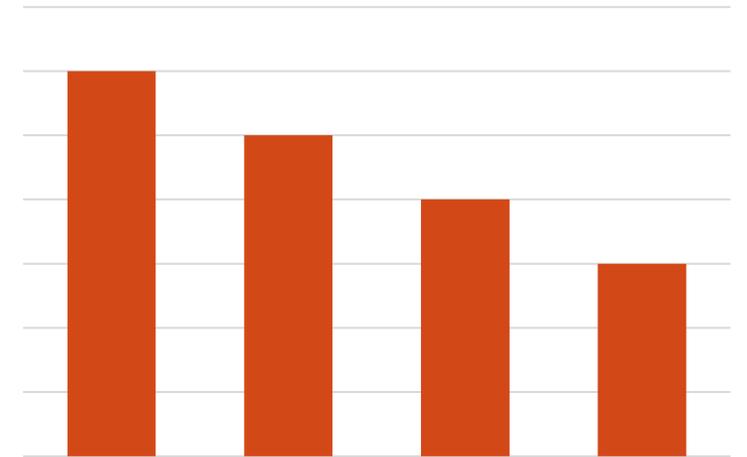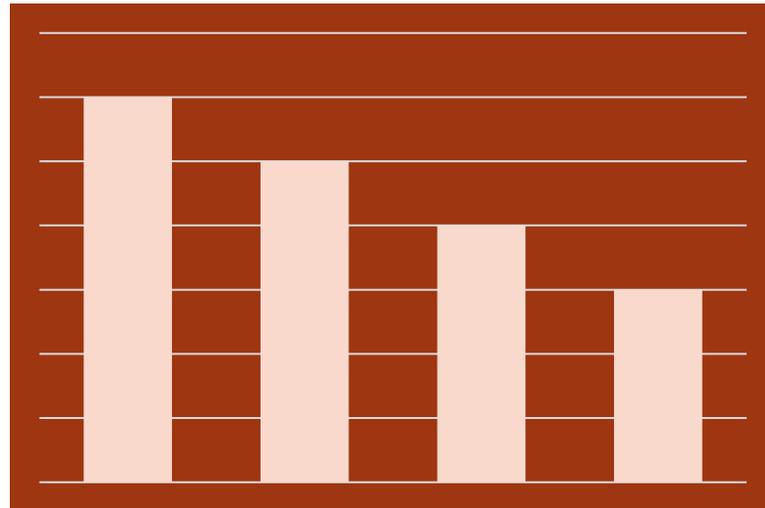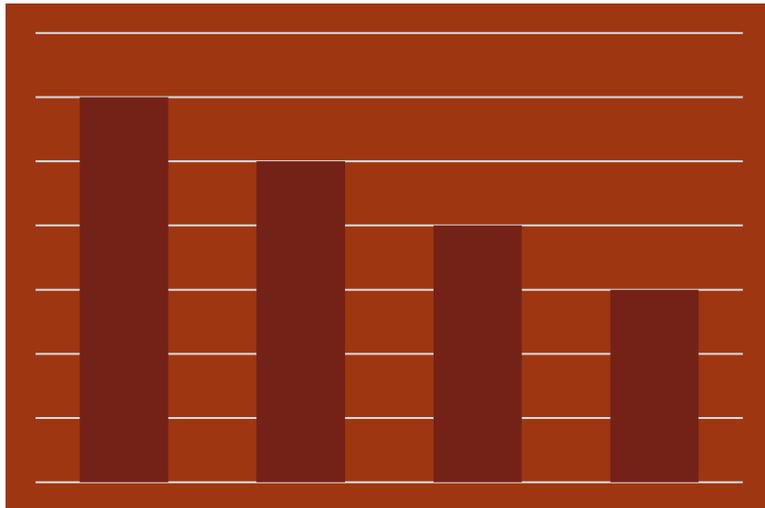
Strong contrast makes it easier to distinguish between the two types of objects.

Lesson: ensure there is enough contrast between the chart foreground (figures) and their background.

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GESTALT PRINCIPLES – DUALITY

Because of the **low contrast** between the figure and background in the chart on the left, there is an **additional cognitive load**.

Increasing the contrast on the right improves readability.

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