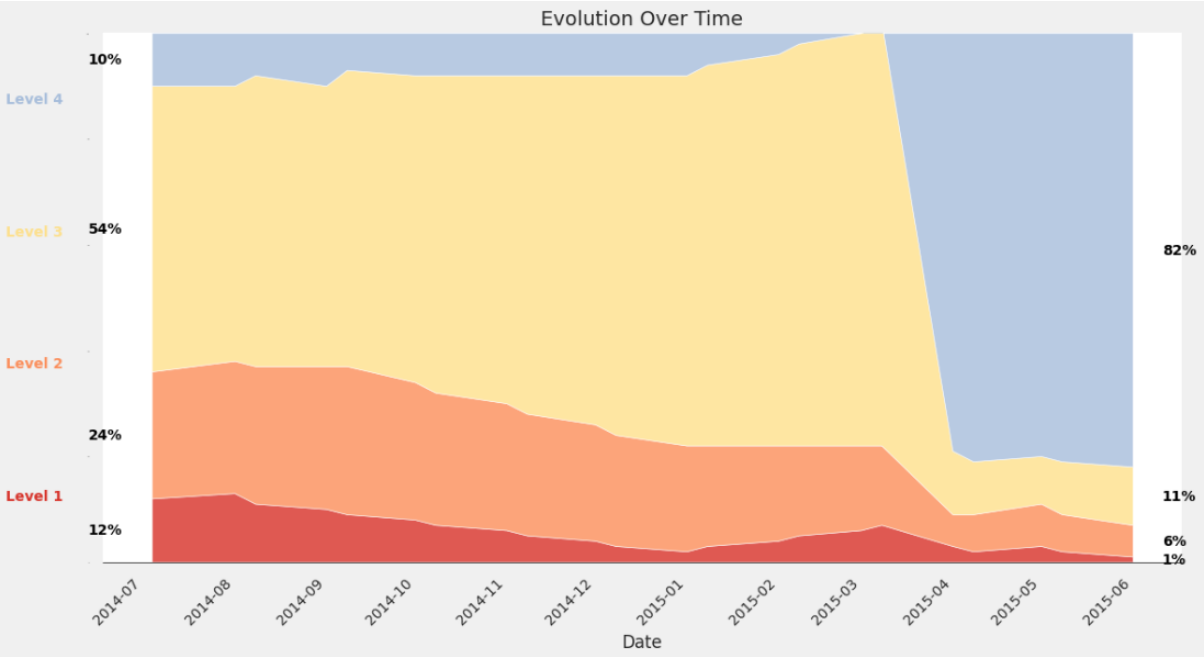
How to interpret stacked area chart over time for composition analysis



A. Understanding the Components of a Stacked Area Chart Over Time:

- **Horizontal Axis (X-axis):** Represents "Date," showing the progression of time from July 2014 to June 2015.
- **Vertical Axis (Y-axis):** Represents the magnitude or proportion of each "Level," although the scale isn't explicitly labeled with units, the varying widths of the stacked areas indicate changes in their contribution to the total over time. The percentages on the left and right likely represent the approximate proportion of each level at the beginning and end of the period, respectively.
- **Stacked Areas:** The chart is divided into colored areas stacked on top of each other. Each area represents a different "Level":
    - Level 1 (Red)
    - Level 2 (Orange)
    - Level 3 (Yellow)
    - Level 4 (Blue)

- **Order of Stacking:** The levels are stacked consistently over time, allowing us to see the contribution of each level to the total at any given point. The bottom-most area represents the first level, and subsequent levels are stacked on top.

B. Interpreting the Evolution of Levels Over Time:

By examining the changing widths of the stacked areas, we can understand how the composition of the total has evolved:

- **Level 1 (Red):** Starts with a significant proportion (around 12%) in July 2014, gradually decreases over time, and ends with a very small proportion (around 1%) in June 2015.
- **Level 2 (Orange):** Begins with a substantial proportion (around 24%), initially decreases slightly, then remains relatively stable for a period before decreasing again in the later months, ending with a small proportion (around 11%).
- **Level 3 (Yellow):** Starts as the dominant component (around 54%), shows some fluctuations but generally remains the largest contributor throughout the period, ending with a still significant but reduced proportion (around 82%).
- **Level 4 (Blue):** Begins with a relatively small proportion (around 10%), remains low for most of the period, but then experiences a dramatic increase in early 2015, becoming a significant component by the end (around 6%).

C. Overall Interpretation:

The stacked area chart reveals a dynamic shift in the composition of the total over time. Initially, Level 3 was the dominant component, followed by Level 2. However, over the course of the year, the proportions changed significantly. Levels 1 and 2 saw a considerable decrease in their contribution, while Level 4 experienced a substantial increase, particularly in the latter part of the period. Level 3 remained the largest component overall, despite a decrease in its relative share. This visualization effectively highlights the changing importance of each level to the total "Evolution Over Time."

Stacked area charts over time are particularly useful when you want to:

- Visualize how the composition of a whole is divided among different categories and how these proportions change over time.
- Show the trend of each category while also illustrating the cumulative total. The top line of the topmost area represents the total.
- Compare the relative contribution of different categories to the total over time. It's easy to see which categories are growing or shrinking in proportion.
- Highlight major shifts in the composition of the total. The dramatic increase in Level 4's proportion is clearly visible.
- Emphasize the part-to-whole relationship over time.

Considerations:

- Comparing the exact size of individual categories can be difficult if they are not adjacent to the baseline (x-axis), as you have to mentally subtract the areas below them.
- If there are too many categories, the chart can become cluttered and hard to read.

In summary, stacked area charts over time are a powerful tool for visualizing the evolving composition of a whole by showing the trend of each component's contribution over a continuous time period. They are effective for highlighting shifts in relative importance and understanding part-to-whole dynamics.