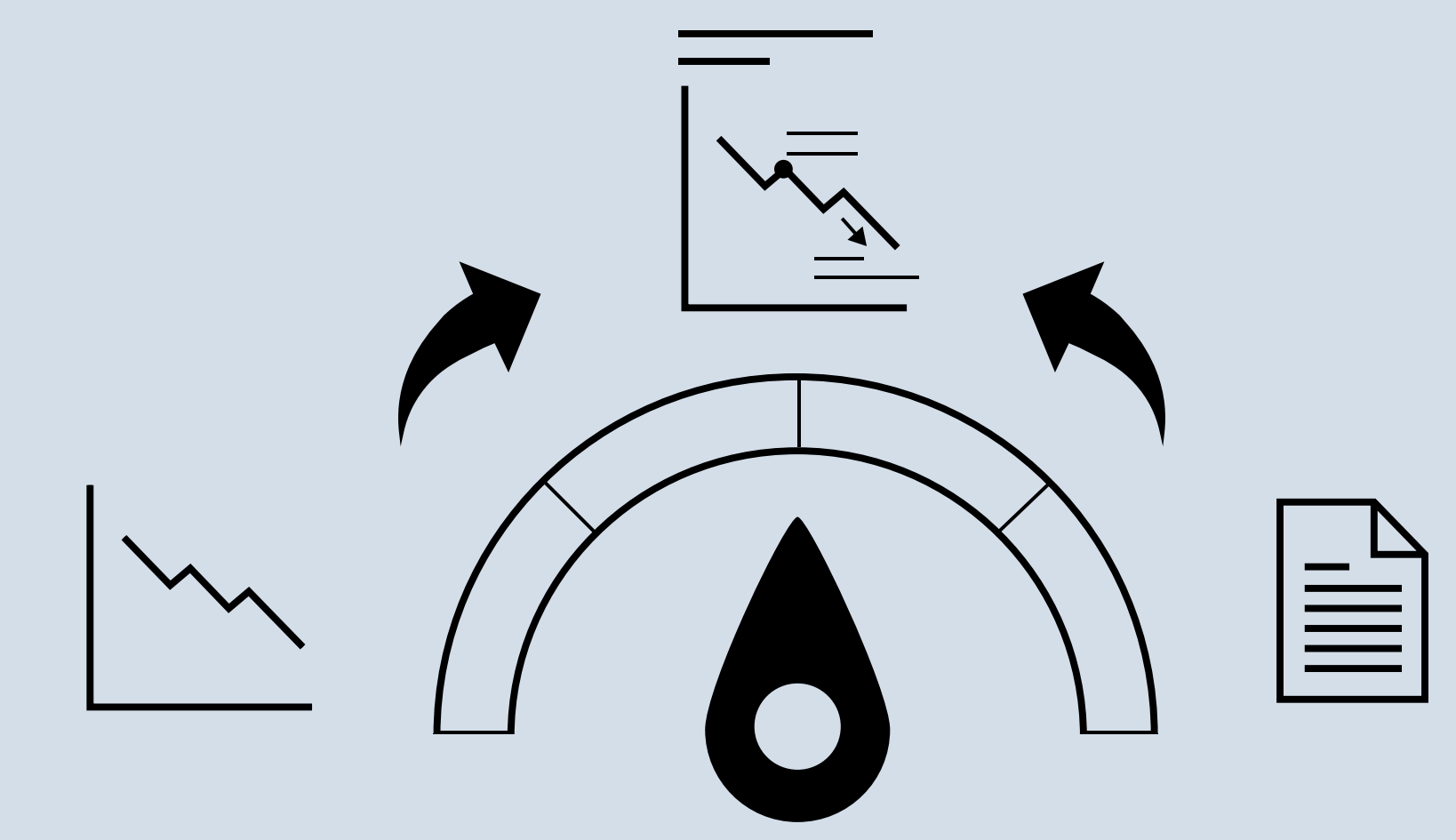


# Striking a Balance: Reader Takeaways and Preferences when Integrating Text and Charts

Chase Stokes, Vidya Setlur, Bridget Cogley, Arvind Satyanarayan, & Marti Hearst



## Background

We know that text in visualizations is memorable, eye-catching, and affects reader takeaways (Borkin et al., Kim, Setlur, & Agrawala). We also know that some people prefer one side of the dial over the other (Hearst & Tory). In this study, we examine **how much text readers prefer? What should it say? Where should it go?**

## Method

302 participants completed a survey with to assess reader preferences and takeaways from charts with different amounts of text, different text content, and different text positioning.

Text was classified according to four semantic levels (Lundgard & Satyanarayan):

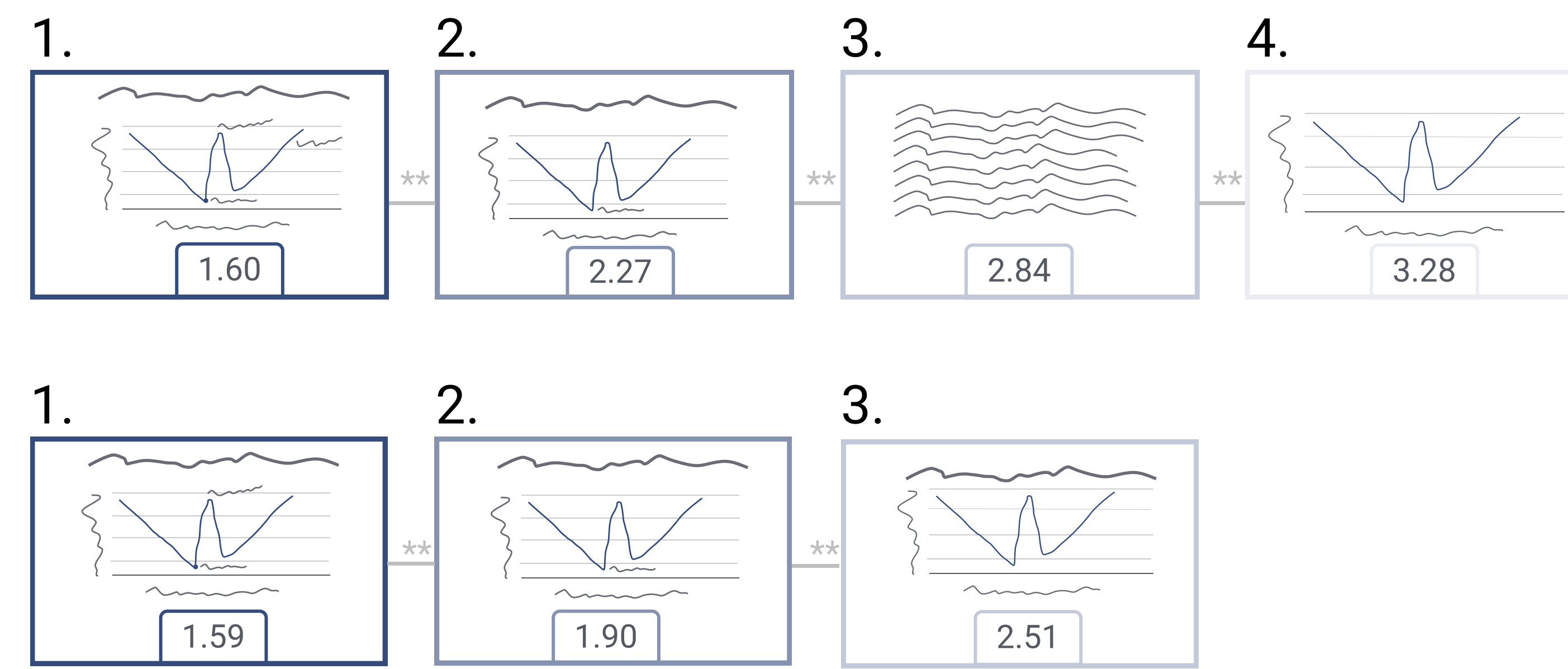
**Level 1 (L1): Encoded & Elemental** (e.g., "President approval rating over 5 years")

**Level 2 (L2): Statistical & Relational** (e.g., "Value at 2010 greater than at 2009")

**Level 3 (L3): Perceptual & Cognitive** (e.g., "Steep fall slows to a steady decrease")

**Level 4 (L4): Contextual & Domain-Specific** (e.g., "More job opportunities and government policy encouraged immigration")

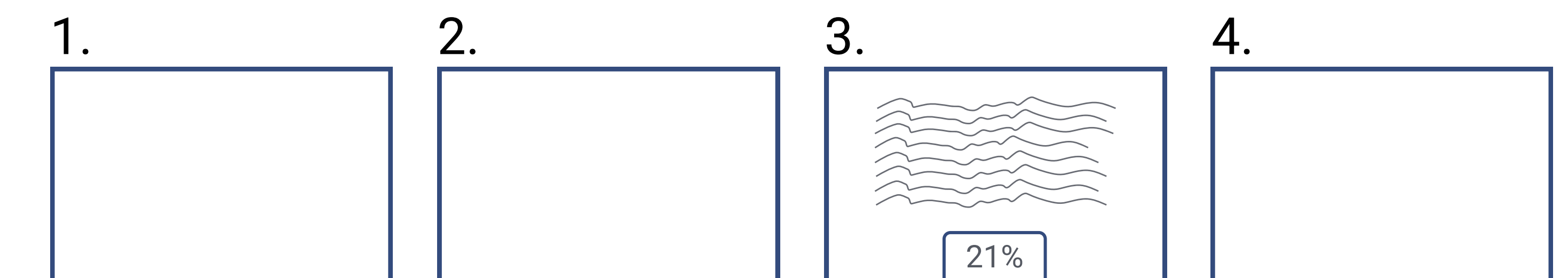
## Annotate charts with relevant text, rather than minimalist design.



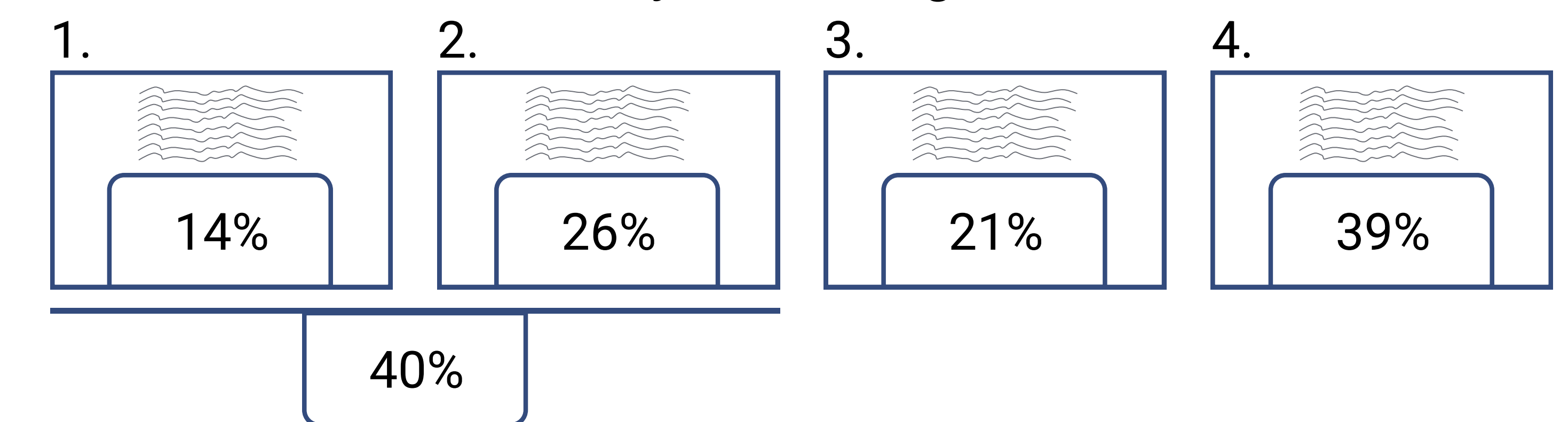
In both sets, the variants with the most text were rated highest, and those with the least were rated lowest.

## Consider a text-only variant that can stand alone.

21% of participants rated the text-only variant third.



But, a substantial minority rated it higher than visual variants.



## The best semantic level of the text depends on the intended takeaway.

Participants rarely made L1 takeaways (7%)

L2 text made participants **2x** as likely to make L2 takeaways

Participants most made L3 takeaways (61%)

L4 text made participants **5x** as likely to make L4 takeaways

## The best position of the text depends on the semantic level of the text.

L1 most likely to be matched by the axis.

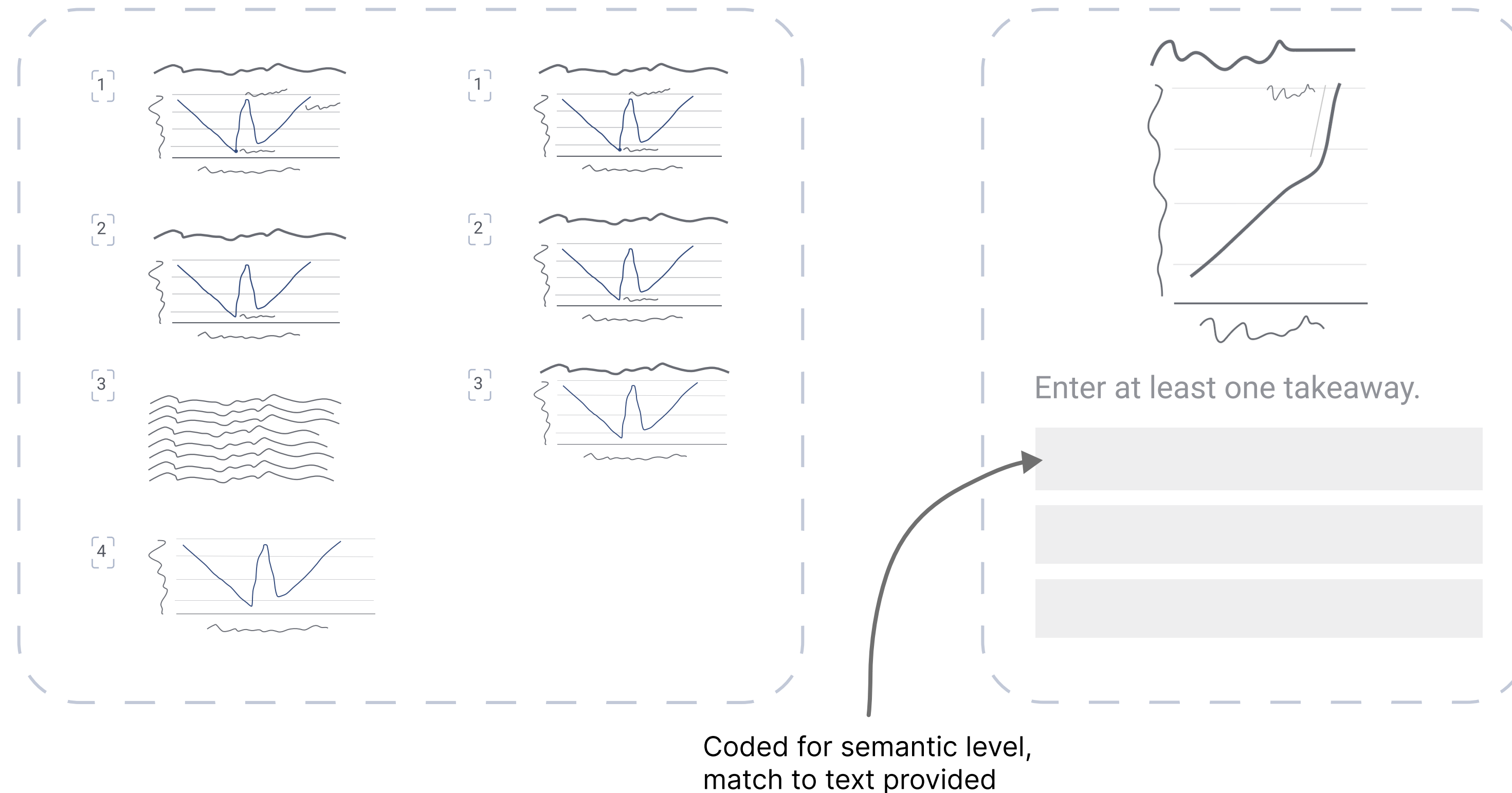
L2 most likely to be matched near the data.

L3 most likely to be matched as the title.

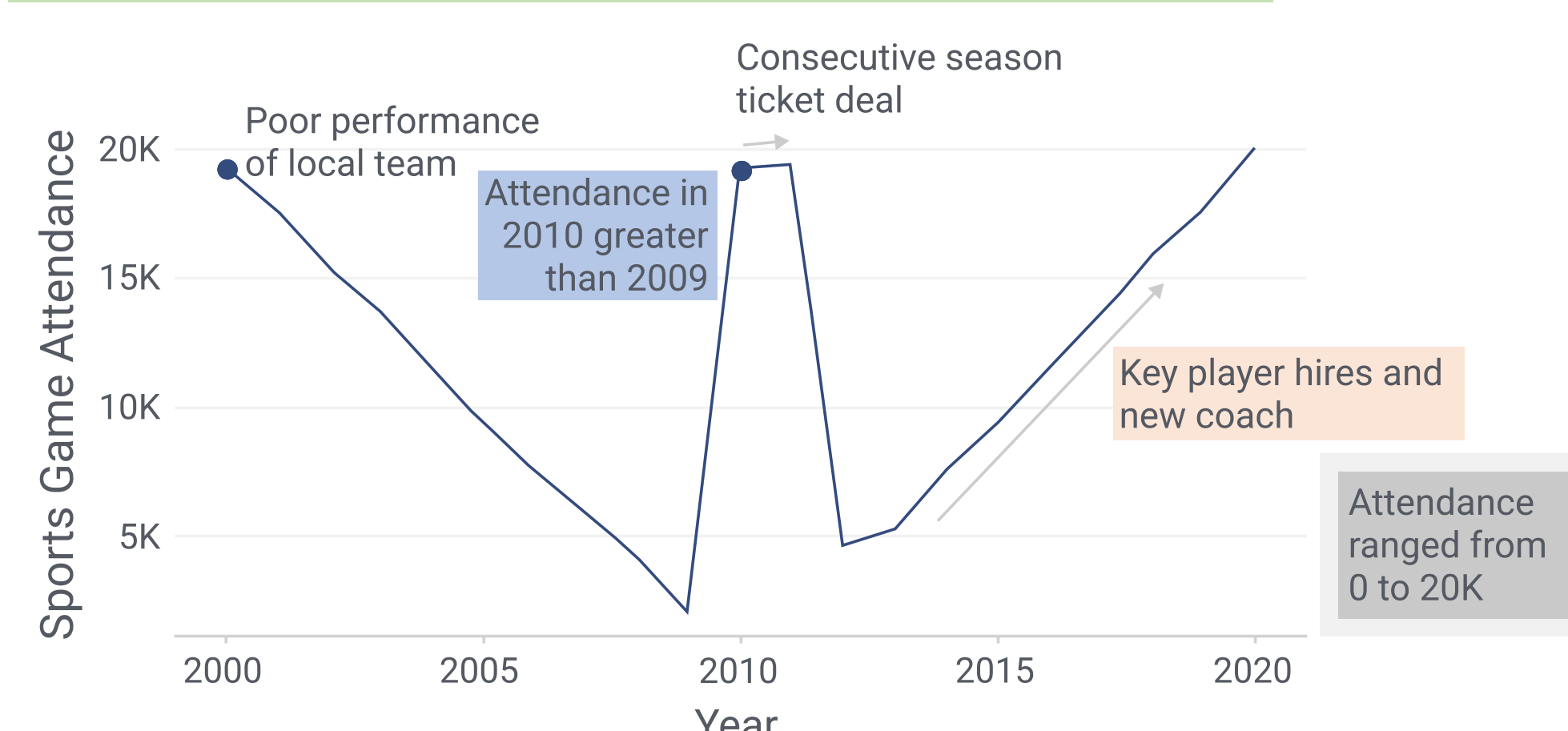
L4 most likely to be matched near the data.

### Ranking Preferences

### Enter Takeaways



### Example: Attendance plummets over the span of a year



		Semantic Level of Participant Takeaway			
		1	2	3	4
Semantic Level of On Chart Annotation	1	23	47	191	23
	2	18	73	189	24
	3	23	44	204	45
	4	14	43	130	100

		Semantic Level Matched by Participant Takeaway			
		1	2	3	4
Position of Annotation	axis	7			
	point		23	16	36
	title		9	33	11
	trend		17	23	38

## References

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