



- Do not use bar graphs (Fig. 2d, Extended Data Fig. 2, 5, 10)
- Choose box and violin plots that show data distribution
- Use bar graphs correctly (Fig. 2e-g, Extended Data Fig. 1, 3, 4)
- Show raw data
- Build warnings in software to prevent incorrect axes
- Provide data science warning and guidance in documentations
- Improve data science training in publication cycle at all levels
- Establish journal data visualization checklist
- Improve data science education and literacy for audience at all levels

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Graph type	Sample size per group	Axis scale		Change		
		Linear	Log	Absolute change	Fold change	Relative change
Point plot	$n = 1$	✓	✓	✓		
Lollipop plot	$n = 1$	✓			✓	✓
Bar plot	$1 \leq n \leq 5$	✓			✓	✓
Mean-and-error plot	$1 < n \leq 5$	✓	✓	✓		
Box plot	$5 \leq n \leq 30$	✓	✓	✓		
Violin plot	$n \geq 30$	✓	✓	✓		
Histogram	$n \geq 30$	✓		✓		

