



Multimodal DeepResearcher: Generating Text-Chart Interleaved Reports From Scratch with Agentic Framework

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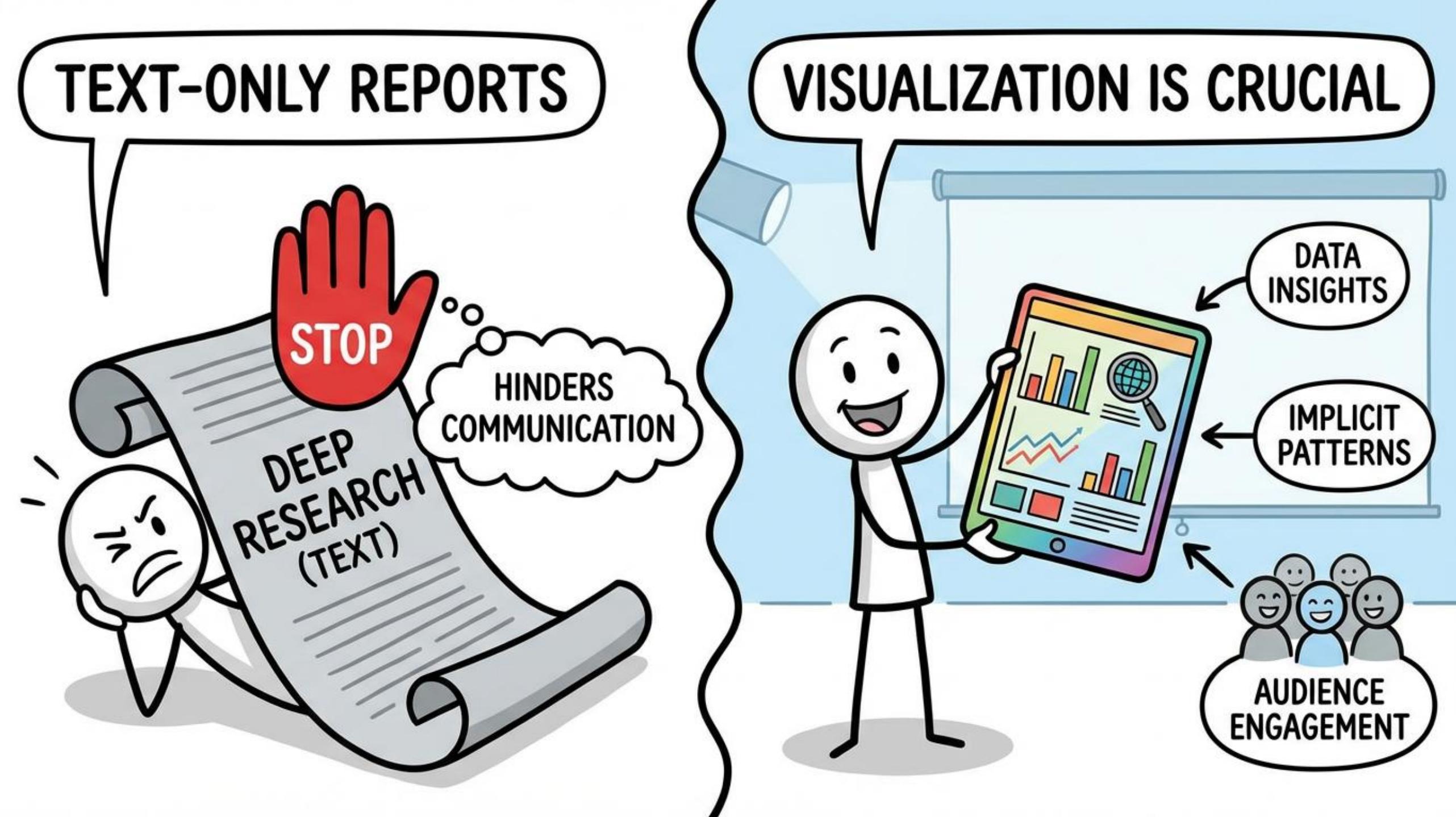
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Oral Presentation

Background: Current Deep Research works are text-only

Existing works focus on **text-only** content, which

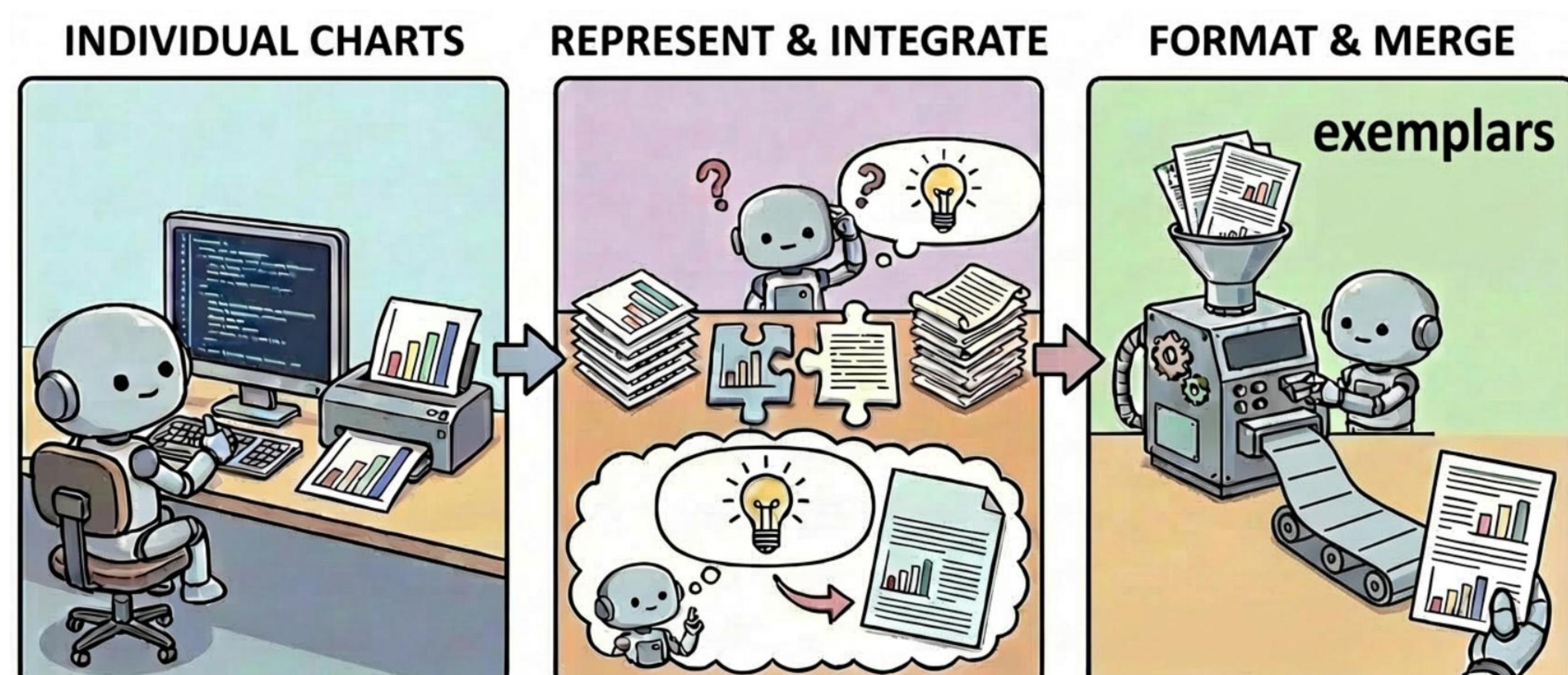
hinders effective communication. Needs **Visualizations**



Human create coherent reports with **interleaved texts and visualizations**. They integrate charts within appropriate textual context and maintain consistency.

Can **agents** generate such multimodal reports?

Challenges of Generating Interleaved Reports



individual charts can be generated through **coding**, but

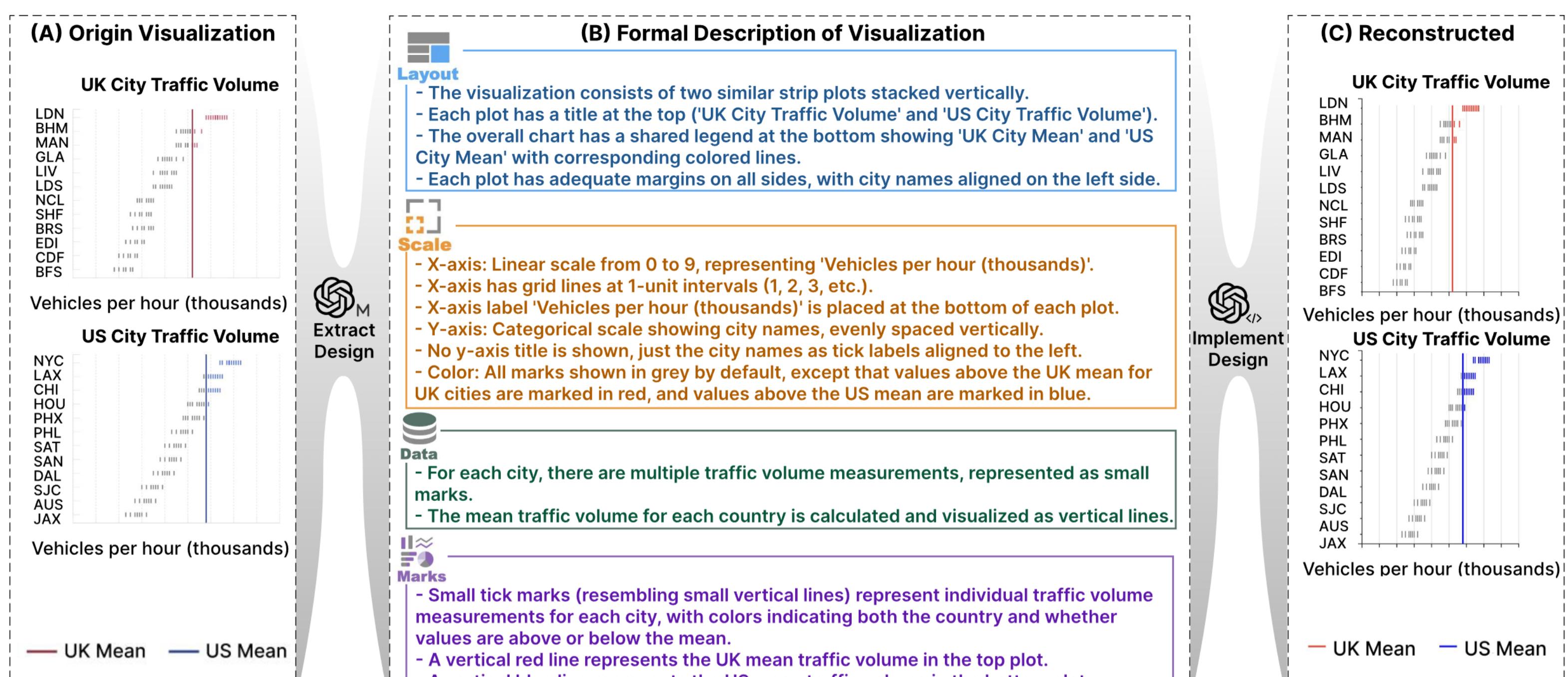
- How to **represent and integrate** them with texts?
- How to maintain **consistency**? (chart x texts / charts)

In-context learning seems promising:

Both exemplars & outputs should be **multimodal**.

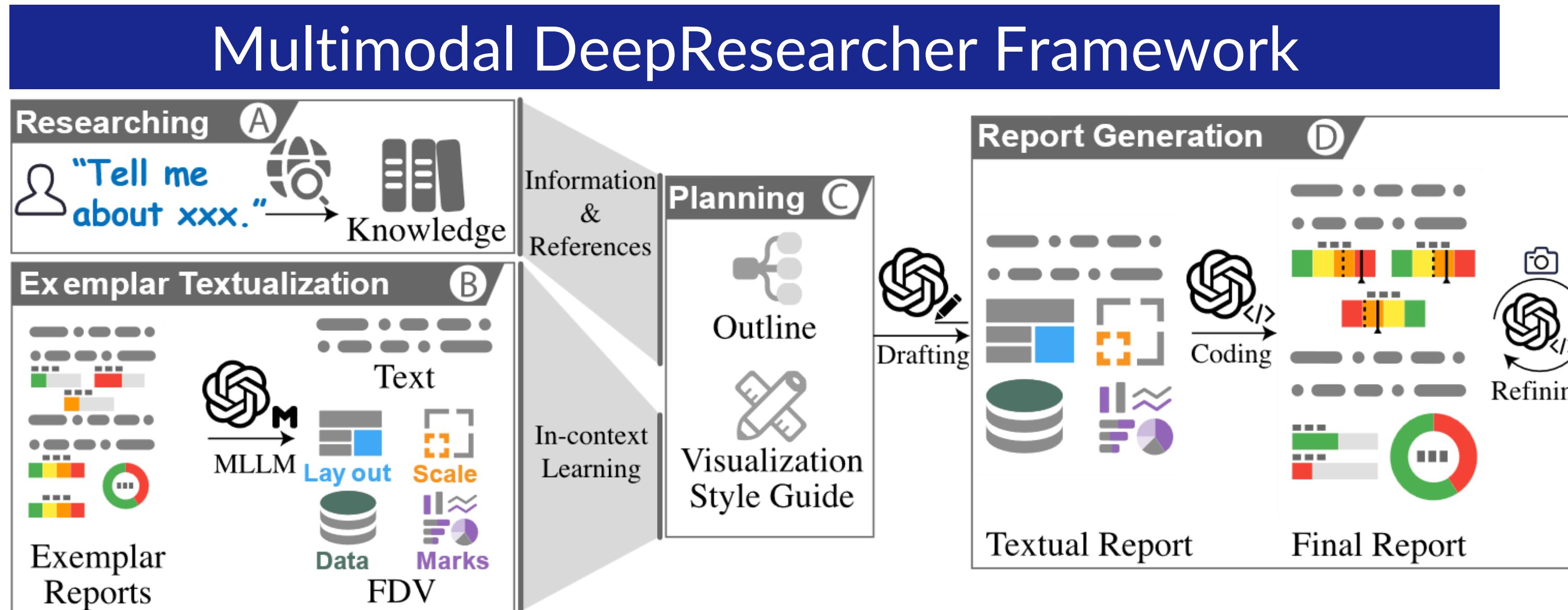
- Need a unified **representation** for exemplars & outputs

Representation: Formal Description of Visualization (FDV)



Characterizes Chart → (1) Layout (2) Scale (3) Data (4) Marks

Extended Version: <https://arxiv.org/pdf/2506.02454>



Experimental Settings

Input: 100 real-world topics; **Baseline:** DataNarrative

Criteria: Score & Compare; **Eval:** MLLM judge & Human

Experiment Results: Report-Level & Chart-Level

Multimodal DeepResearcher consistently **outperforms**
Ours vs DataNarrative

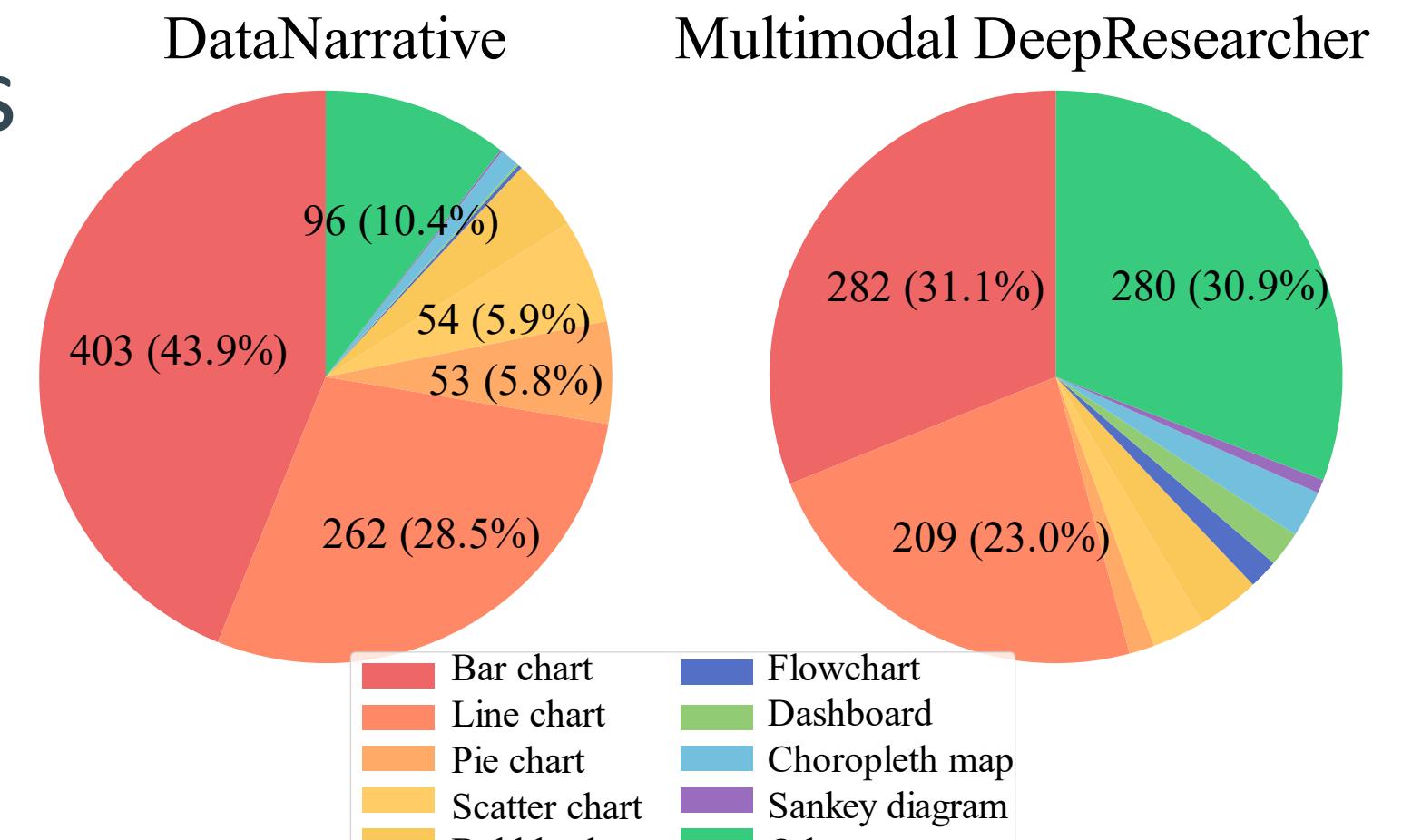
Evaluation Metrics	Ours Win	Ours Lose	Tie
w. Claude 3.7 Sonnet			
Informativeness and Depth	75%	25%	0%
Coherence and Organization	76%	21%	3%
Verifiability	86%	5%	9%
Visualization Quality	80%	16%	4%
Visualization Consistency	78%	17%	5%
Overall	82%	16%	2%

Evaluation Metrics	Ours	DataNarrative
w. Claude 3.7 Sonnet		
Readability	8.97	8.52
Layout	9.23	8.48
Aesthetics	9.12	8.38
Data Faithfulness	9.83	9.59
Goal Compliance	9.75	9.24

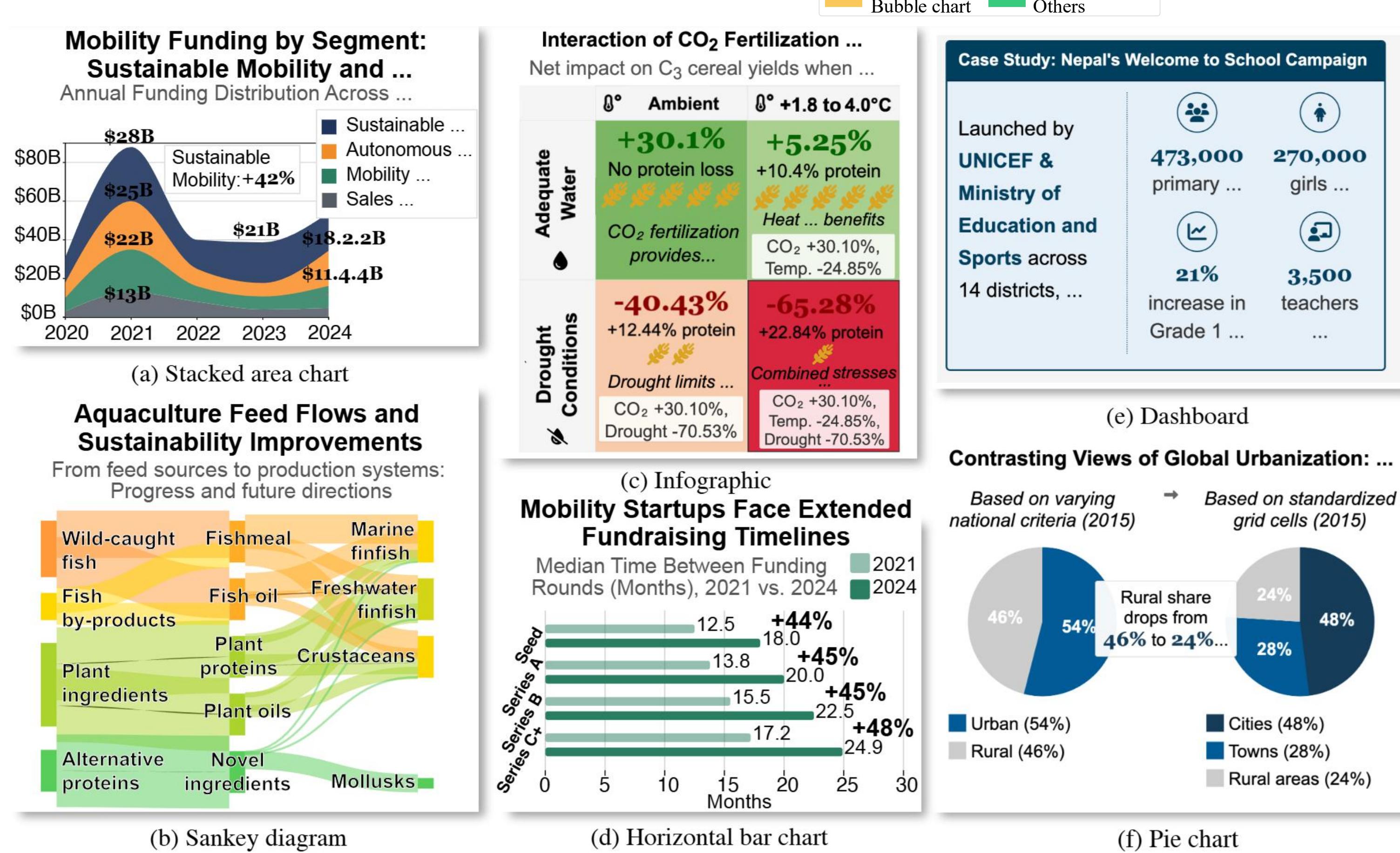
More Results
in the paper

Feature: Diverse and High-Quality Charts

Distribution of chart types



- Warm colors: basic
- More diverse charts



Conclusion of Contributions

Novel task: Text-Chart Interleaved report generation

Representation for visualizations: Formal Description of Visualization (FDV)

Framework: end-to end agentic framework for interleaved generation (Multimodal DeepResearcher)

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