

CITIES, CARDS, AND CONVERSATIONS: THE UDV CARD DECK IN ACTION

How can we design urban data visualizations that tackle complex issues like mobility, housing, or energy while addressing challenges related to data, users and infrastructures?

We developed the UDV Card Deck to help teams design more inclusive and critical urban visualizations. By surfacing trade-offs and guiding decisions on literacy, ethics, and infrastructure, the deck turns design considerations [1] into a practical tool for collaboration [2].

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Card Deck

Consideration Cards (10 Cards) – Each captures a challenge or value, with guiding questions for reflection.

Dimension Cards (5 Cards) – A conceptual design space for comparing and refining visualizations.

Axis Cards (19 Cards) – Pair with each dimension to provide gradations along the axis.

Dimensions

- Information Literacy
- Task Complexity
- Generalization
- Transparency
- Context of Use

Considerations

- Data Quality and Quantity
- Physical Context and Infrastructure
- Complexity and Interconnections
- Availability and Accessibility
- Standards for Tools and Tech
- Appropriate Visualization and Data Choice
- Outreach and Engagement
- Inclusivity and Diversity
- Data and Visual Literacy
- Citizen Trust

Method

We designed two core activities for using the deck:

- Ideation Workshop** – Co-design a new visualization
- Reflection Workshop** – Critique an existing visualization

Case Studies



Modes of Use

Based on workshop learnings, we defined four flexible modes of use:

- Create**
Develop data-driven concepts for urban visualizations inspired by a specific urban challenge.
- Curate**
Organize and curate a selection from a collection of urban visualizations, such as for an exhibition or publication.
- Critique**
Analyze the strengths and weaknesses of urban data visualizations, by identifying and reflecting on them.
- Calibrate**
Improve an existing urban data visualization collaboratively, focusing on specific selected dimensions.

Takeaways

Encourages diverse perspectives
Workshops showed the deck helped participants from different backgrounds share ideas and consider social and contextual factors they might have missed.

Supports focused design improvements
The deck guided participants to spot specific strengths and gaps, leading to clearer narratives and more relevant design changes.

Limitations

UDV deck has so far only been used with facilitated groups, so future work will explore use by a wider range of users, and adapt formats for both guided and self-directed activities.

References

- [1] Goodwin, S., Meier, S., Bartram, L., Godwin, A., Nagel, T., & Dörk, M. (2021, April). Unravelling the human perspective and considerations for urban data visualization. In 2021 IEEE 14th Pacific Visualization Symposium (PacificVis) (pp. 126-130). IEEE.
- [2] Çay, D., Nagel, T., & Meier, S. (2025). The UDV Card Deck: A Collaborative Design Framework to Facilitate Urban Visualization Conversations. IEEE Computer Graphics and Applications.



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