

Redesigning Climate Risk Visualization: From Facility-Level Heatmaps to Global Insights

Zixuan Li Infosci301

A.

Motivation

The original visualization (by Four Twenty Seven using Mapbox) mapped heat stress scores for corporate facilities using a dense dot heatmap.

- Limited scope (only heat stress)
- Lack of transparency in scoring
- Poor readability in high-density areas
- Low emotional or policy relevance

B.

Theory

- Affective Visualization Design** (Lan, Wu, Cao, 2024): Emotion increases engagement, memory, and comprehension
- FAIR Data Principles** (GO FAIR, 2019): Data should be Findable, Accessible, Interoperable, Reusable.

C.

Strategy

- Used the **Global Climate Risk Index dataset** (Kaggle, sourced from Germanwatch)
→ Transparent, peer-reviewed, globally cited
- Built visualizations in **Amazon QuickSight**
→ Easy geospatial visualization
→ Supports FAIR and affective design principles

E.

Redesign Flow

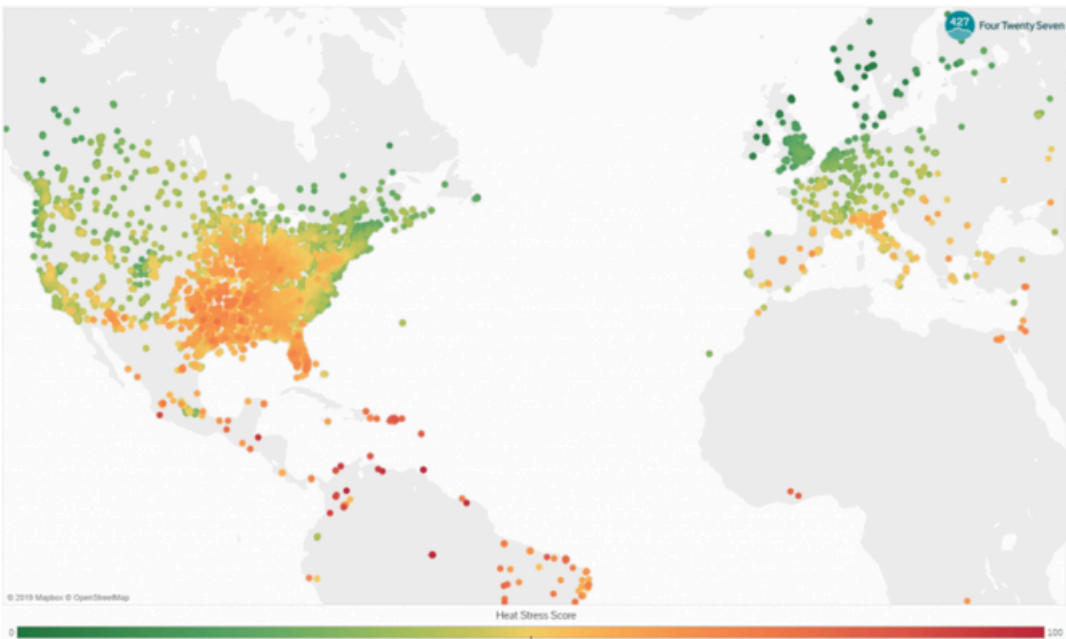
- Original Map Review
- Theory Integration
- Dataset Upgrade
- Tool-Based Redesign
- Impact: Emotion + Fairness + Clarity

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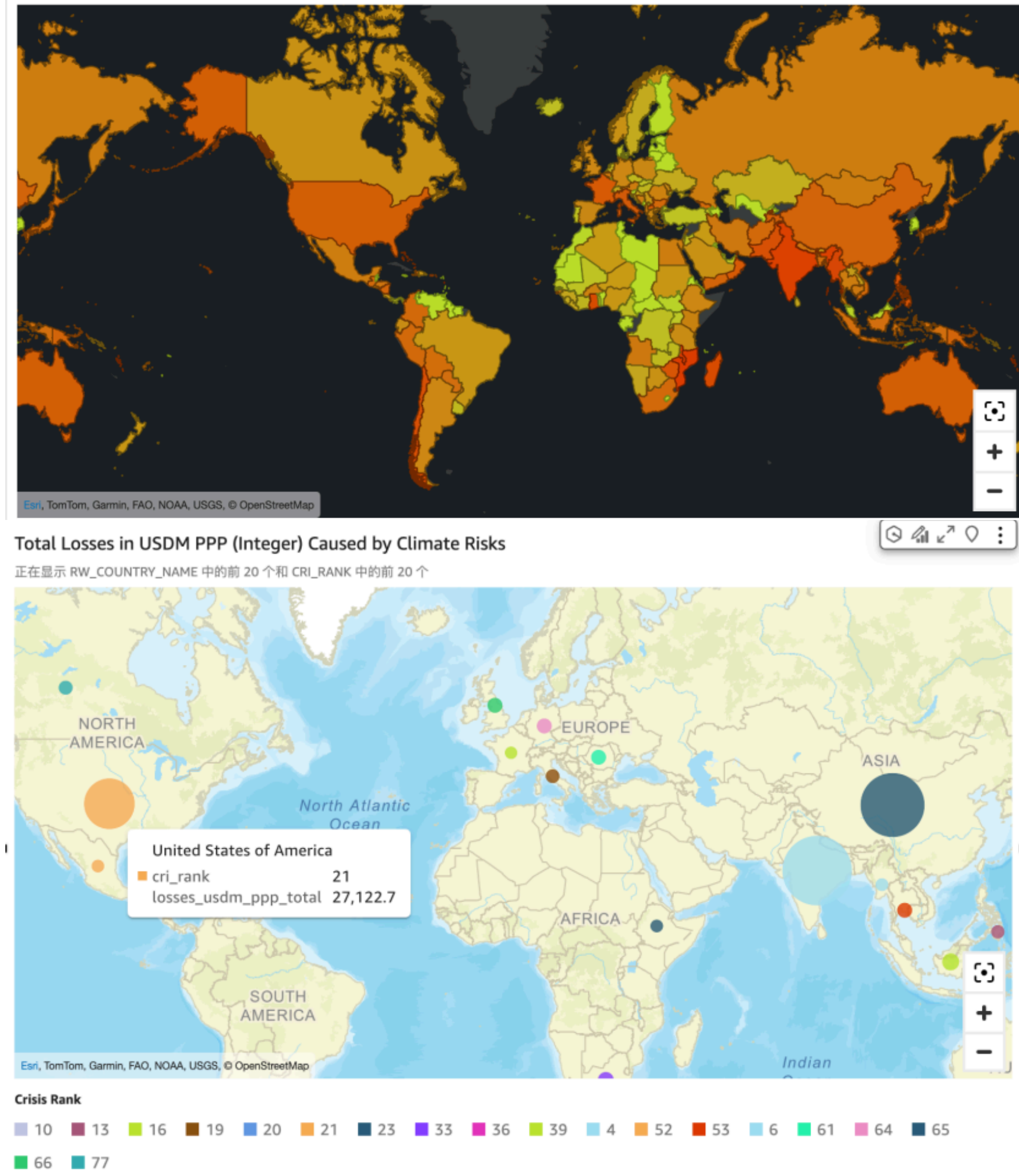
D.

Results

- Original design



- Redesign



F.

Conclusion & Impact

- Broadened climate impact scope
- Strengthened emotional engagement
- Improved accessibility for non-technical audiences
- Enabled informed decision-making across global contexts

References

AWS. 2023. "Best Practices for Amazon QuickSight." AWS Community. <https://community.aws/content/2qtjtkhao6ldTyHrmDEVQublzcq/best-practices-for-amazon-quicksight>.

Lan, Xingyu, Yanqiu Wu, and Nan Cao. 2024. Affective Visualization Design: Leveraging the Emotional Impact of Data. arXiv preprint. <https://arxiv.org/abs/2308.02831>.