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

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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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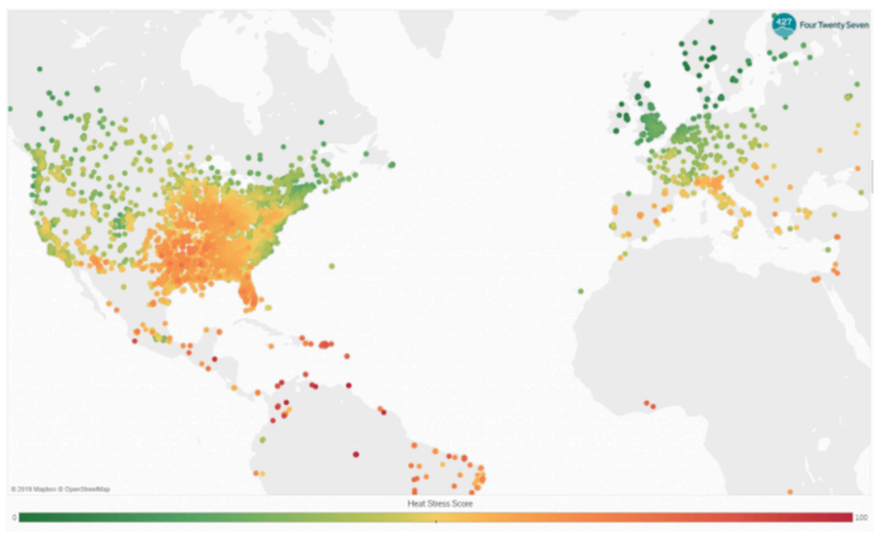
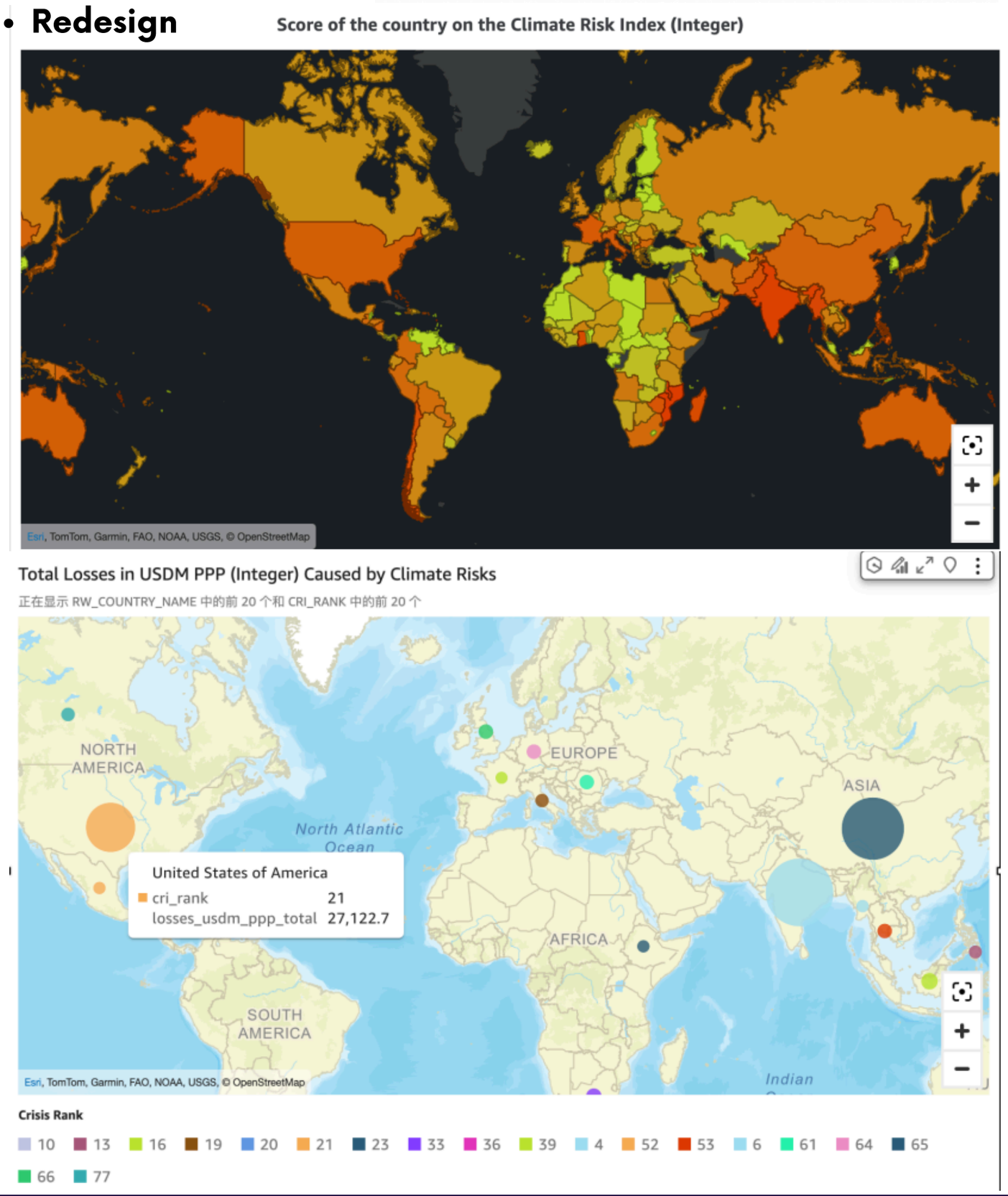
D. Results

- **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/2qtjtkhao6IdTyHrmDEVQublzcq/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.