Evolution of Water Narratives in Local US Newspapers: A Case Study of Utah and Georgia

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Abstract

Narratives about water resources have evolved, transitioning from a sole focus on physical and biological dimensions to incorporate social dynamics. Recently, the importance of understanding the visibility of water resources through media coverage has gained attention. This study leverages recent advancements in natural language processing (NLP) methods to characterize and understand patterns in water narratives, specifically in 4 local newspapers in Utah and Georgia. Analysis of the corpus identified coherent topics on a variety of water resources issues, including weather and pollution (Figure 1). Closer inspection of the topics revealed temporal and spatial variations in coverage, with a topic on hurricanes exhibiting cyclical patterns whereas a topic on tribal issues showed coverage predominantly in the western newspapers. We also analyzed the dataset for sentiments, identifying similar categories of words on trust and fear emerging in the narratives across newspaper sources. An analysis of novelty, transience, and resonance using Kullback-Leibler Divergence techniques revealed that topics with high novelty generally contained high transience and marginally high resonance over time. Although additional analysis needs to be conducted, the methods explored in this analysis demonstrate the potential of NLP methods to characterize water narratives in media coverage.
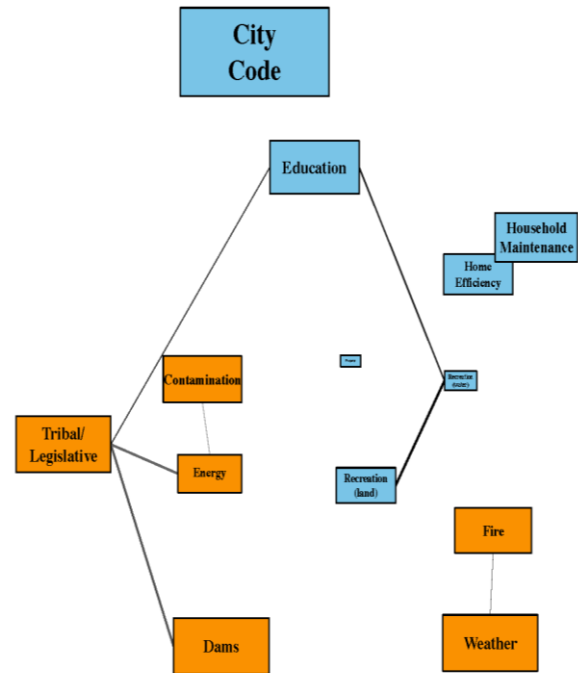
Figure 1: Network graph of final 13 topic correlations. Topics of interest within the final structural topic model are colored in orange. Line thickness indicates the strength of correlations.