

# Global convergences and divergences in ethnotheories of climate change and disease

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## Research Questions

- Can we identify shared cultural beliefs about the etiology of climate change-related disease *within* local communities?
- Are there any fundamental ideas about climate change-disease connections that are shared across cultural and ecological settings?
- How do these shared ideas compare to the public health model of climate change-related disease causation, prevention, course, and treatment?

## Introduction

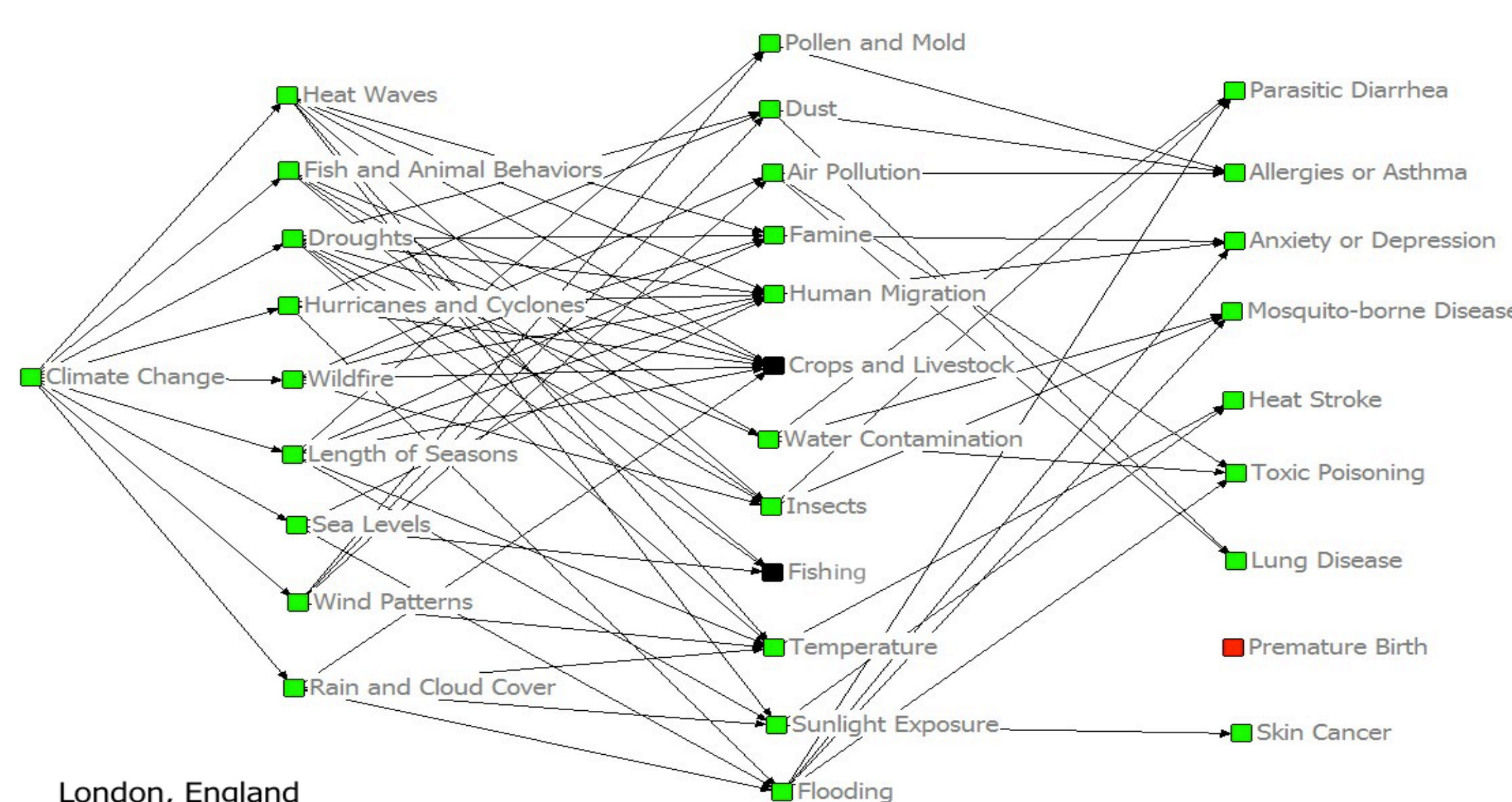
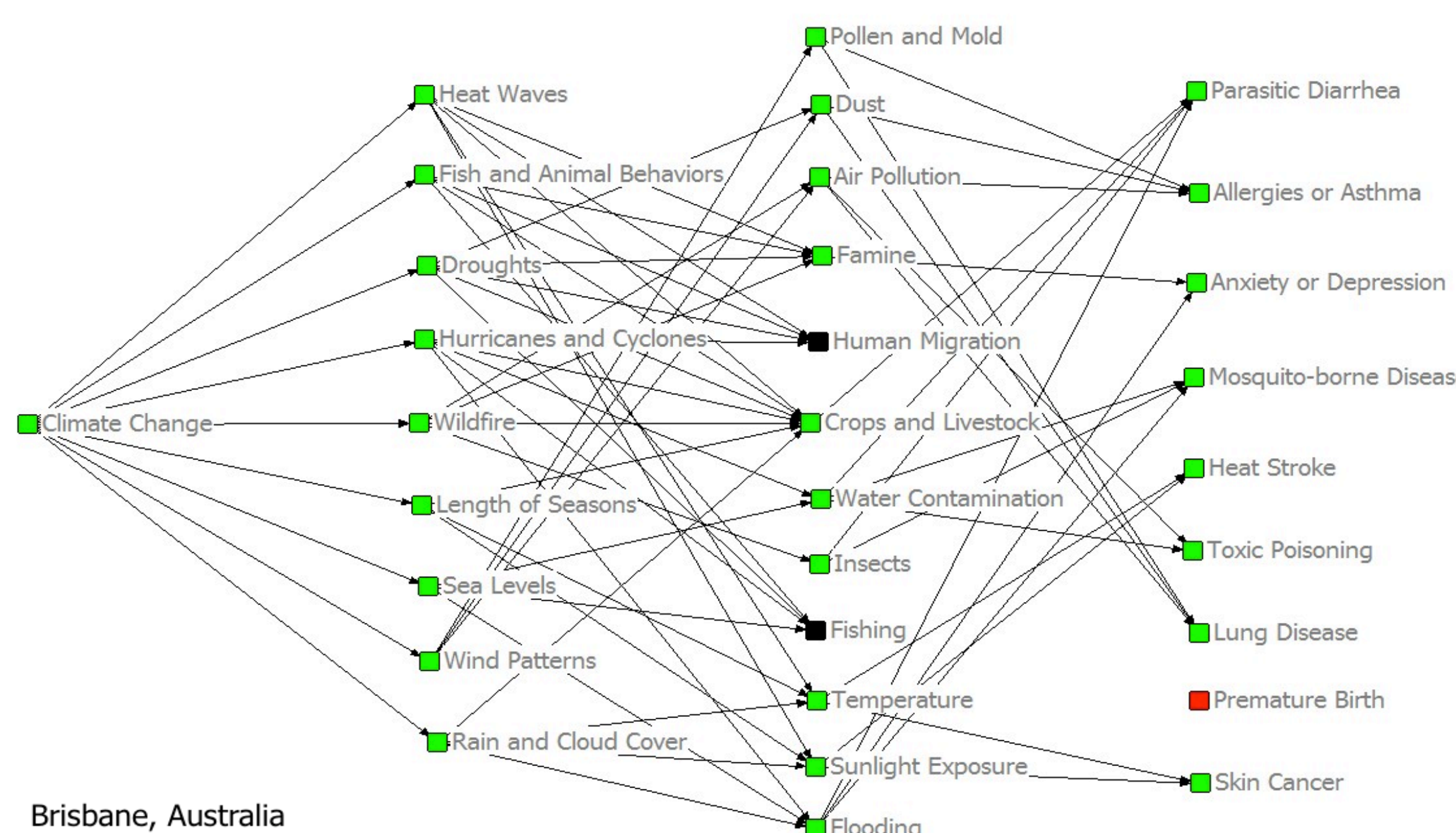
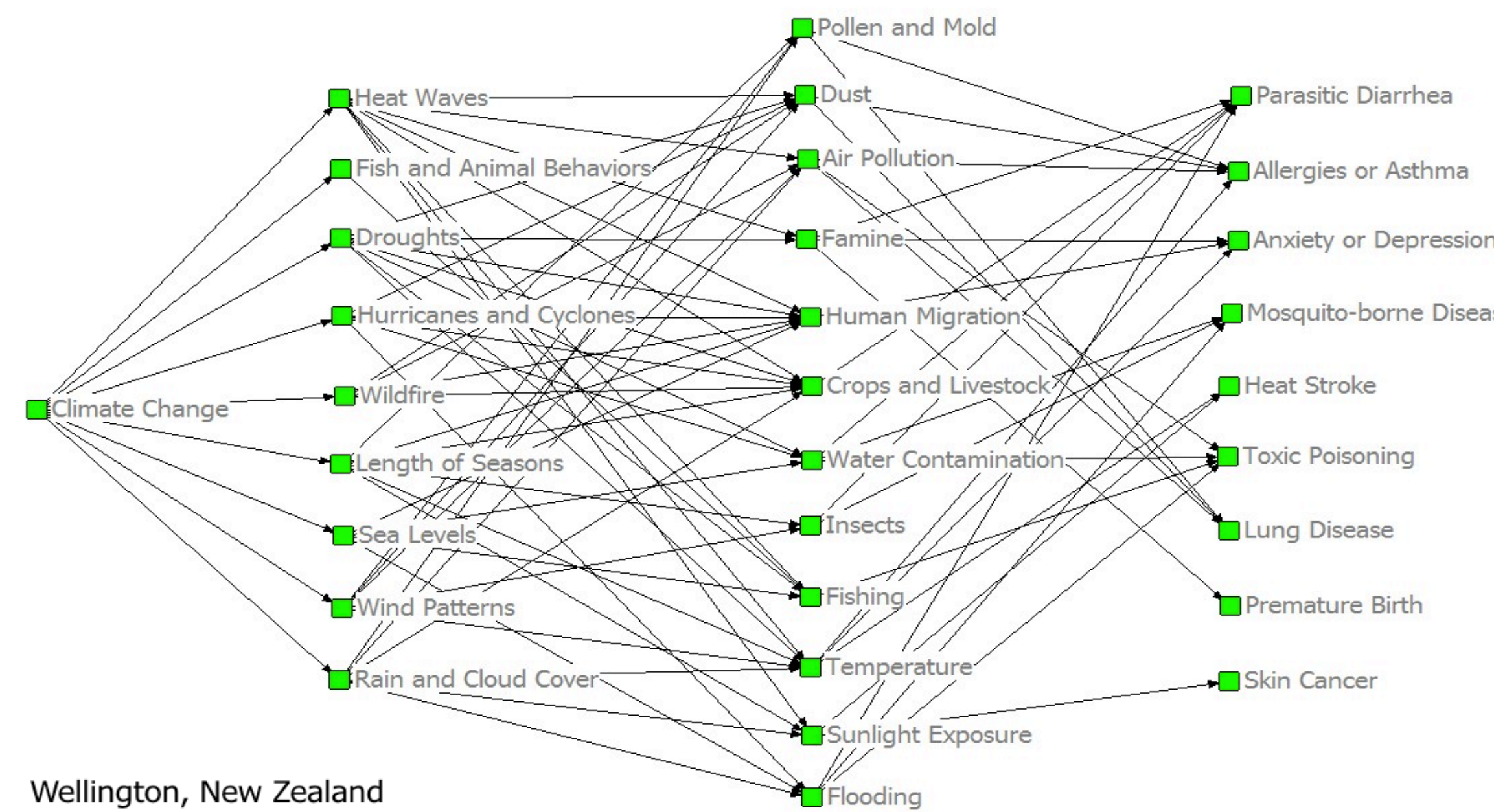
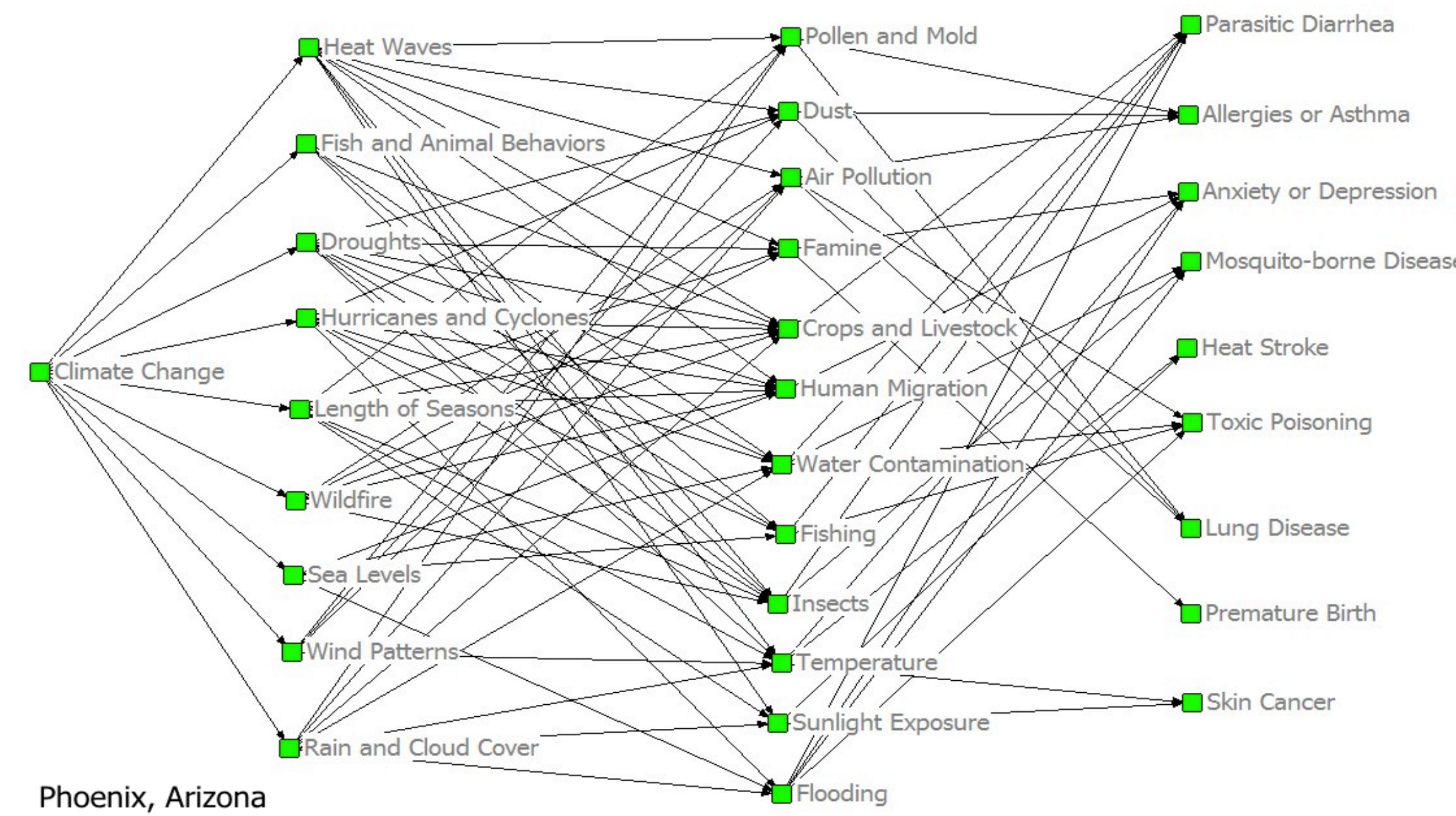
- This study examines local beliefs about causative pathways between climate change and disease across eight cultures.
- We assume that standardized public health prevention models differ slightly from *ethnotheories* (i.e. "lay cultural models"). Thus, we expect to see discrepancies between the climate change-disease connections made by the standardized model and cultural models.
- Examining the divergence and convergence of climate change-disease ethnotheories and how these models relate to public health/biomedical models, we can gain a better understanding of which disease prevention strategies are likely to succeed in cross-cultural settings.

## Methods

- Interviews conducted with 713 adults in eight locations (Australia, Bolivia, China, Fiji, London, New Zealand, Paraguay, and Phoenix.).

## Analysis

- A cultural consensus analysis was run using UCINET to identify the most culturally "correct" answers for each question and to assess whether individual knowledge is shared within only one country or across countries.
- Culturally shared answers are determined by creating a person-person similarity matrix of survey responses and subjecting it to a factor analysis. Site-specific cultural models were defined based on the following criteria:
  - An eigenratio of at least 3:1 between the first two factors.
  - An absence of negative loadings on the first factor.
  - An average loading of .5 or higher on the first factor.
- Culturally-shared responses are those most commonly provided, with the answers of respondents who loaded high on the first factor weighted most heavily. The resulting causal connections are visualized as network diagrams in Figures 1-8.



Figures 1-4: Cultural models for (1) Phoenix, Arizona; (2) Wellington, New Zealand; (3) Brisbane, Australia; and (4) London, England.

## Cultural Models

- Cultural models for the eight study locations (see Figures 1-8) illustrate how each culture understands connections between climate change and medical outcomes.
  - Green nodes* signify causal relationships fully connecting climate change to specific outcomes.
  - Black nodes* signify connections between variables that do not form full causal pathways between climate change and a specific outcome.
  - Red nodes* signify isolates (i.e. variables that were not identified as causally related to any of the other variables).
- Preliminary analysis of the models suggests that cultural perceptions of causal pathways between climate change and medical conditions differ notably between two groupings of the surveyed countries.
  - Group 1: Phoenix, New Zealand, Australia and London
  - Group 2: Bolivia, Fiji, China and Paraguay

## Phoenix, New Zealand, Australia, and London

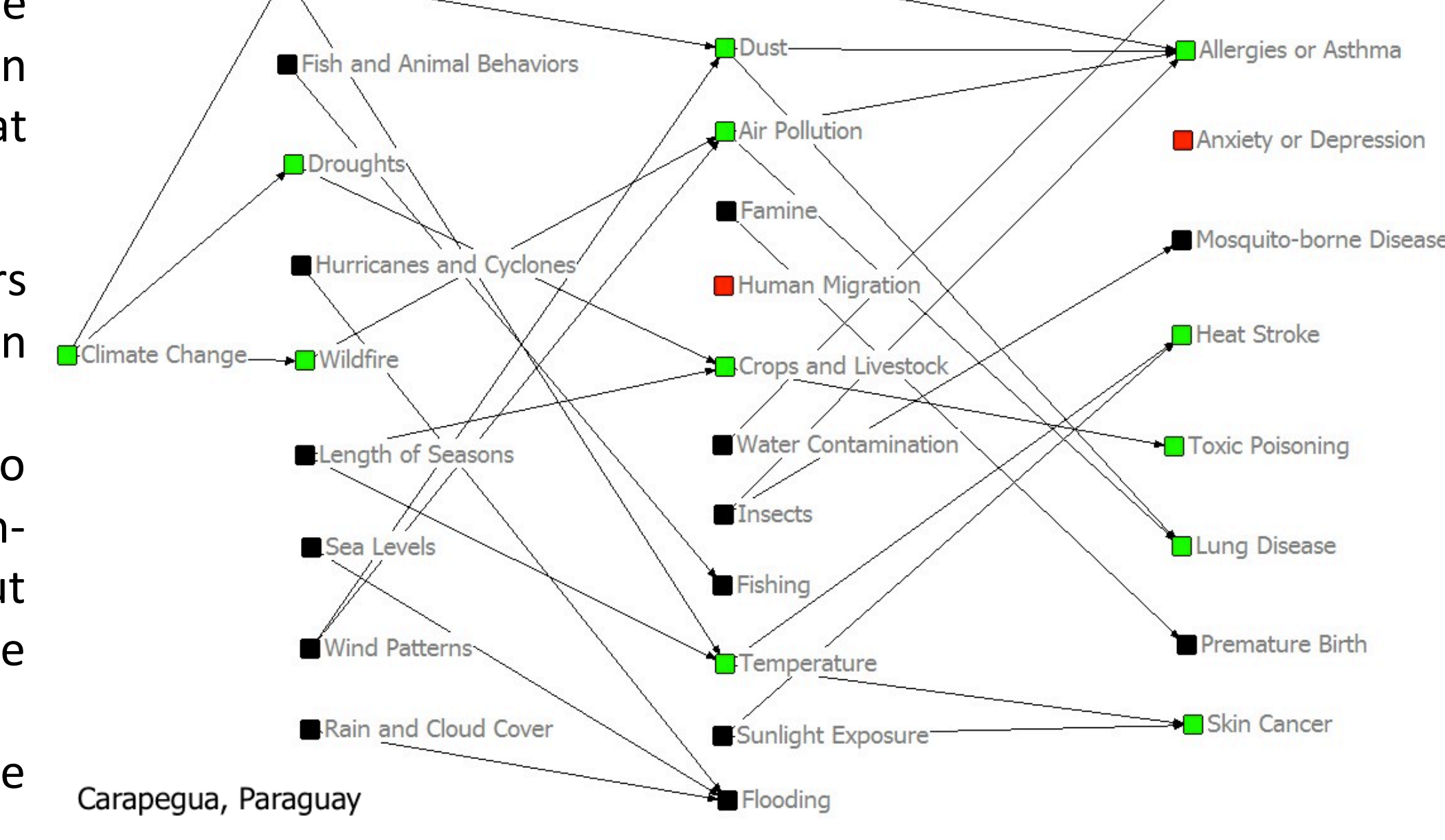
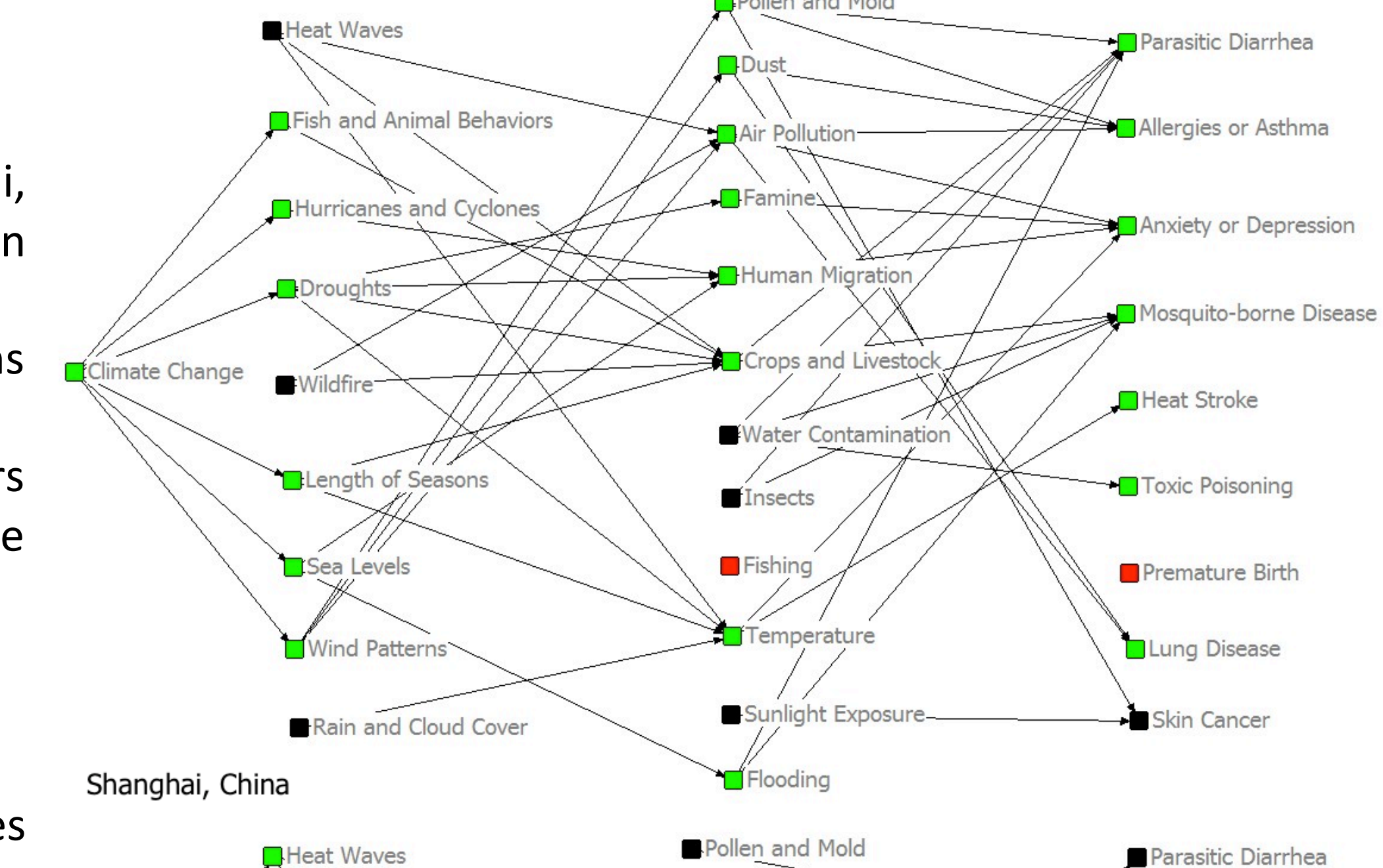
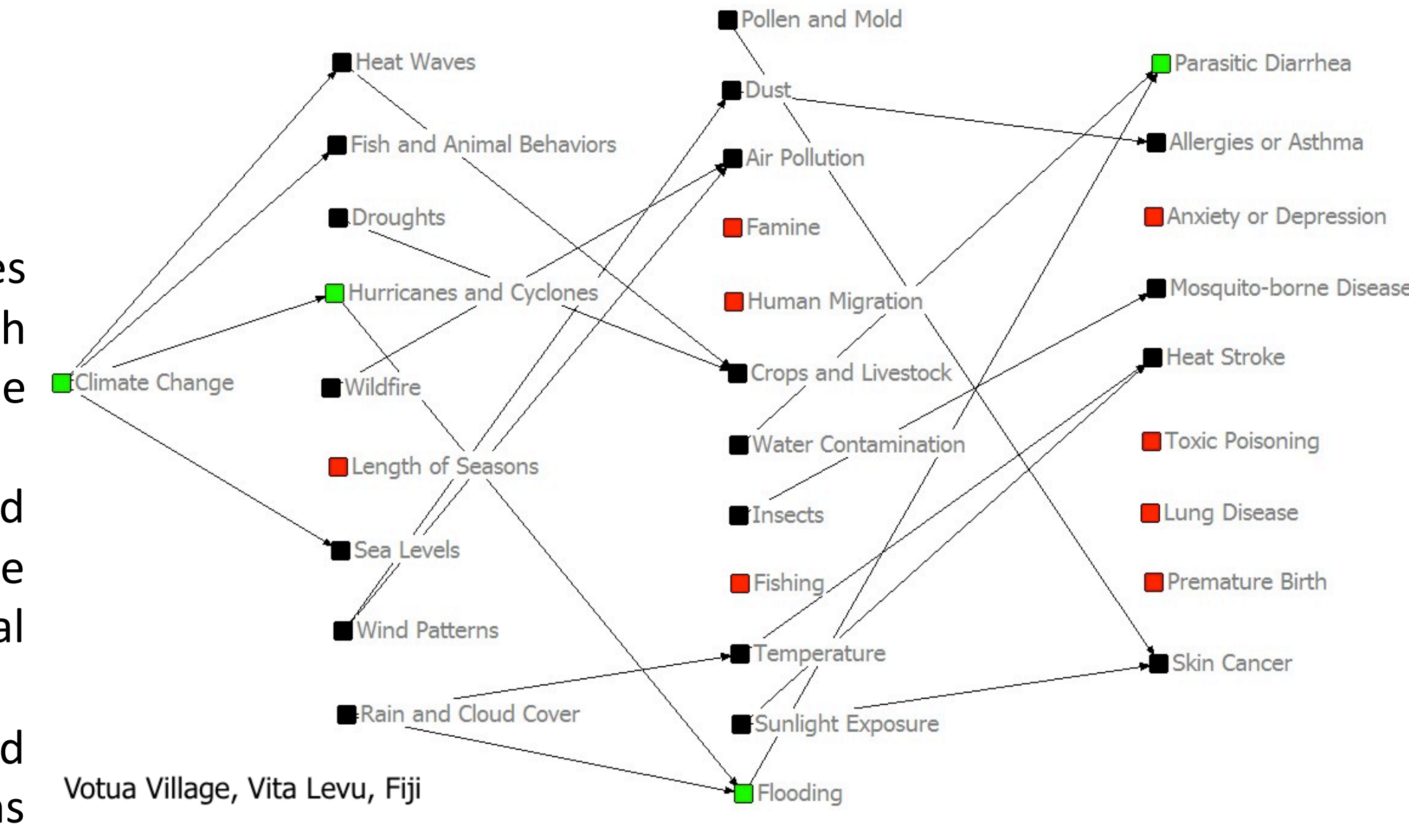
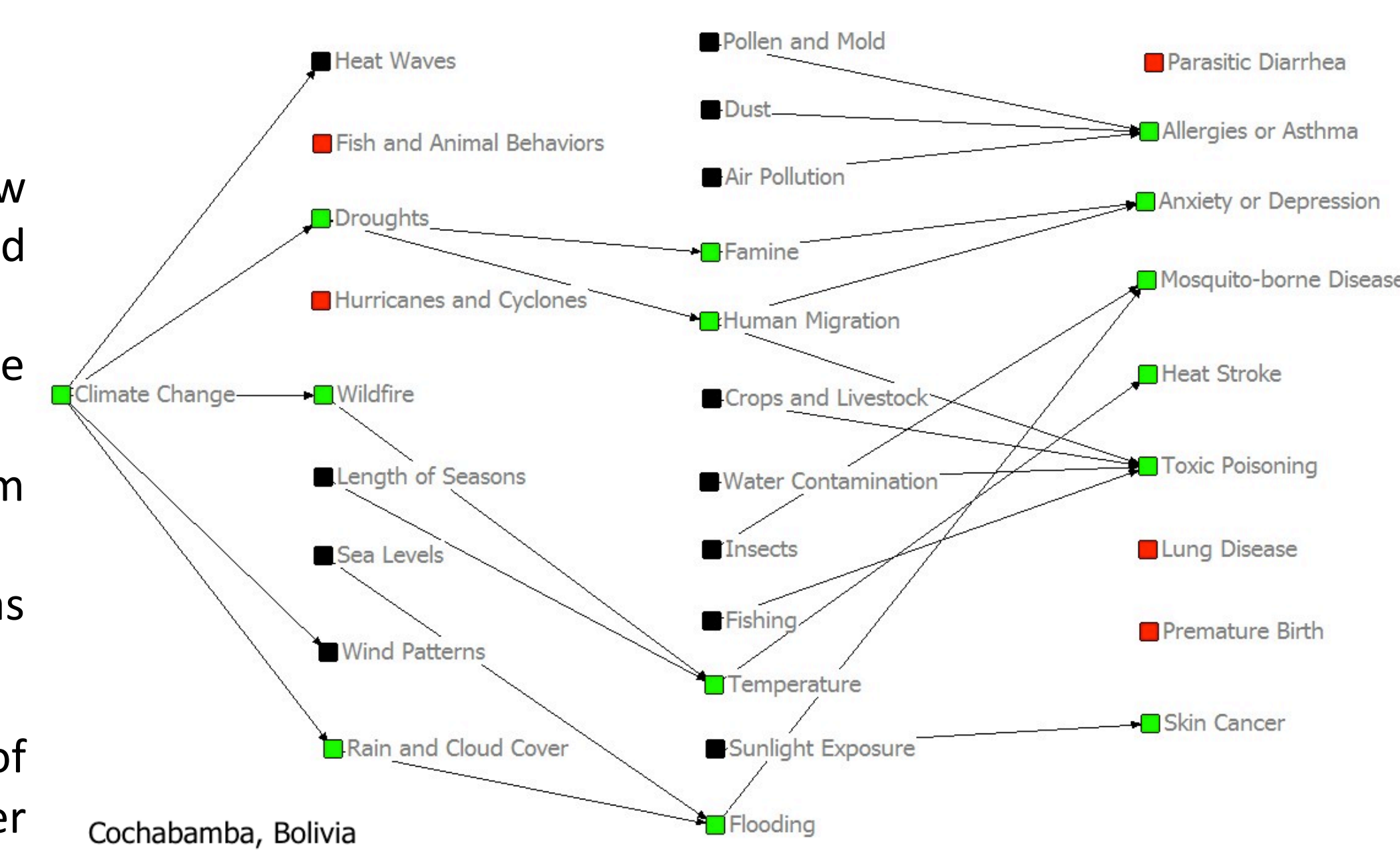
- Cultural perceptions of climate change and potential health outcomes within these four countries were relatively similar to one another in both the culturally shared connections that were made and the density of these connections (see Figures 1-4).
  - Interestingly, climate change was found to be fully causally connected to nearly all potential outcomes (with the exception of premature birth, which was an isolate in both the London and Australia cultural model).
  - There is a higher density of connections between climate change and variables within the first three levels compared to connections between third level variables and potential outcomes.

## Bolivia, Fiji, China, and Paraguay

- In contrast to the first four cultural models, the models for Bolivia, Fiji, China and Paraguay had significantly fewer causal connections between climate change and specific outcomes (see Figures 5-8).
  - There are some interesting isolate factors, including several conditions (ex. parasitic diarrhea, lung disease, premature birth).
  - There is a higher density of causal relations between third level factors and potential outcomes compared to relations between climate change and the first three levels.

## Conclusion & Future Research

- Differences are apparent between the culturally shared models in Figures 1-4 and those in Figures 5-8. There are many potential explanations for the differences between perceptions in each site, but the overall pattern suggests a need to think about culturally-specific prevention strategies that discuss the connections between potential causes and effects at each site.
- Additional research is needed to investigate potential cultural factors contributing to the divergence of climate change-disease connections in these models.
  - Educational differences* between these countries might contribute to differences in the density of causal connections. Western, English-speaking countries could have greater exposure to information about climate change, therefore causing these cultures to recognize more causal connections.
  - Media influences* could also be contributing to how people perceive climate-change disease connections.
  - The *physical environment* of the sites might alter views of the causal pathways based on local disease risk factors or observations of climate change.



Figures 5-8: Cultural models for (5) Cochabamba, Bolivia; (6) Vita Levu, Fiji; (7) Shanghai, China; and (8) Carapegua, Paraguay.