

Identifying and Communicating the Source of the Zombie Outbreak

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You are a bioinformatician who specializes in data visualization at the Centre for Disease Control. You are contacted by Dr. Henry, BC's Provincial Health Officer, with an urgent request to help her and her team understand the source and spread of a deadly Zombie virus. Although expediently contained, the Zombie virus appeared out of nowhere, leaving health care workers with little time to consider what happened. To understand what happened and to prevent future outbreaks, Dr. Henry has convened a team of experts, including yourself.

The team members have [gathered as much data](#) as they could about the Zombie outbreak, including a spreadsheet of disease transmission information and genomic data of the zombie virus (which they've summarized into a phylogenetic tree). They also have schematic information about the treating hospital, where they believe there may also have been some transmission and spread. The team is working hard to put all of this data together, but are also feeling the pressure from politicians who want a quick response to the outbreak. They need help getting a clearer picture of all the data in this outbreak and to communicate these data to relevant parties.

You are tasked to support the team in developing a data visualization that helps them identify the source of the zombie outbreak and communicate the results to BC's team health officers across its six health authorities (Vancouver Coastal, Fraser, Island, Interior, Northern, and First Nations), as well as Canada's Chief Public Health Officer. You also need to consider how this information would be interpreted by nervous politicians, specifically BC's premier and minister of health, who are trying to reassure their national counterparts that everything is under control.

Goal:

Using the available data, make your best assessment as to the source of the outbreak and its mechanism of spread. Don't blindly guess, but also don't spend all of your time on this task. Make an assessment and justify it.

Using the five design sheet methodology, sketch out the information content and data visualization design for a report that communicates the source of the outbreak and how it was spread.

Resources:

- Five Design Sheets Methodology ([Research Paper](#))
- Five Design Sheets Methodology, abbreviated ([Power Point](#))
- Example : [Evidence-based design and evaluation of a whole genome sequencing clinical report for the reference microbiology laboratory](#)

Guiding Discussion Questions:

Think who, why, and what: *who needs the information, why do they need, what data they are using (or do they think they need)?*

- Who are the stakeholders that need this information?
- What information do each of the stakeholders need to know?
- What different things could these stakeholders do with this information?
- What are effective visual encodings for the different data types?
- How would you verify that your visualization effectively communicates the information?

Learning Objectives:

- Understand stakeholders, tasks, data and their relationship to data visualization.
- Understand the process of encoding and decoding data that is visualized
- Understand how to progressively develop and justify a data visualization design
- Understand how to think systematically about data visualizations