FOREST FIRES VS. CLIMATE CHANGE

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GitHub Link: https://github.com/shahryarahmed3/Forest-Fires-vs-Climate-Change.git

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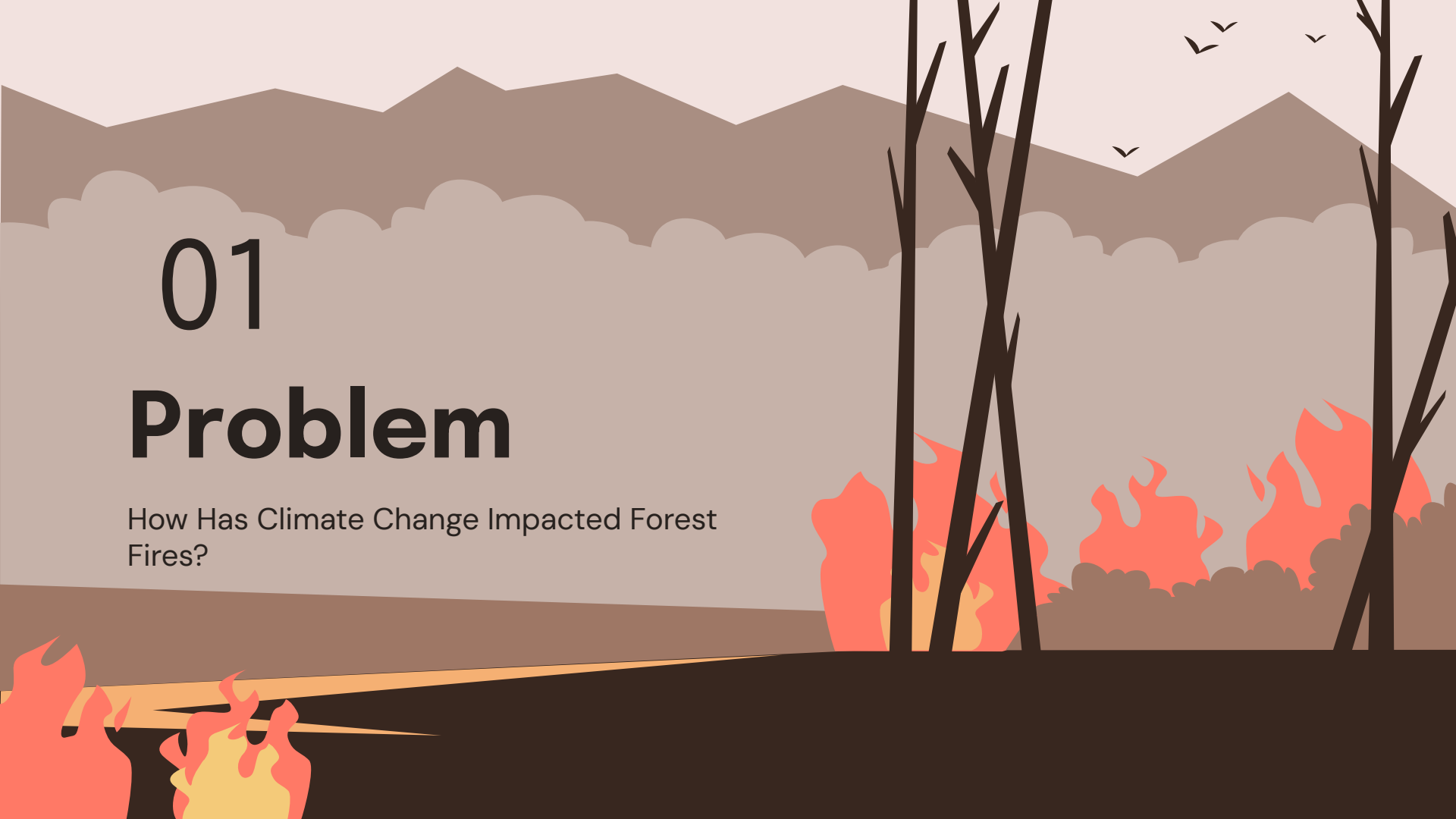
02 **Data**
Datasets we plan to use for our analysis

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Analyze correlation, expand variables and model trends

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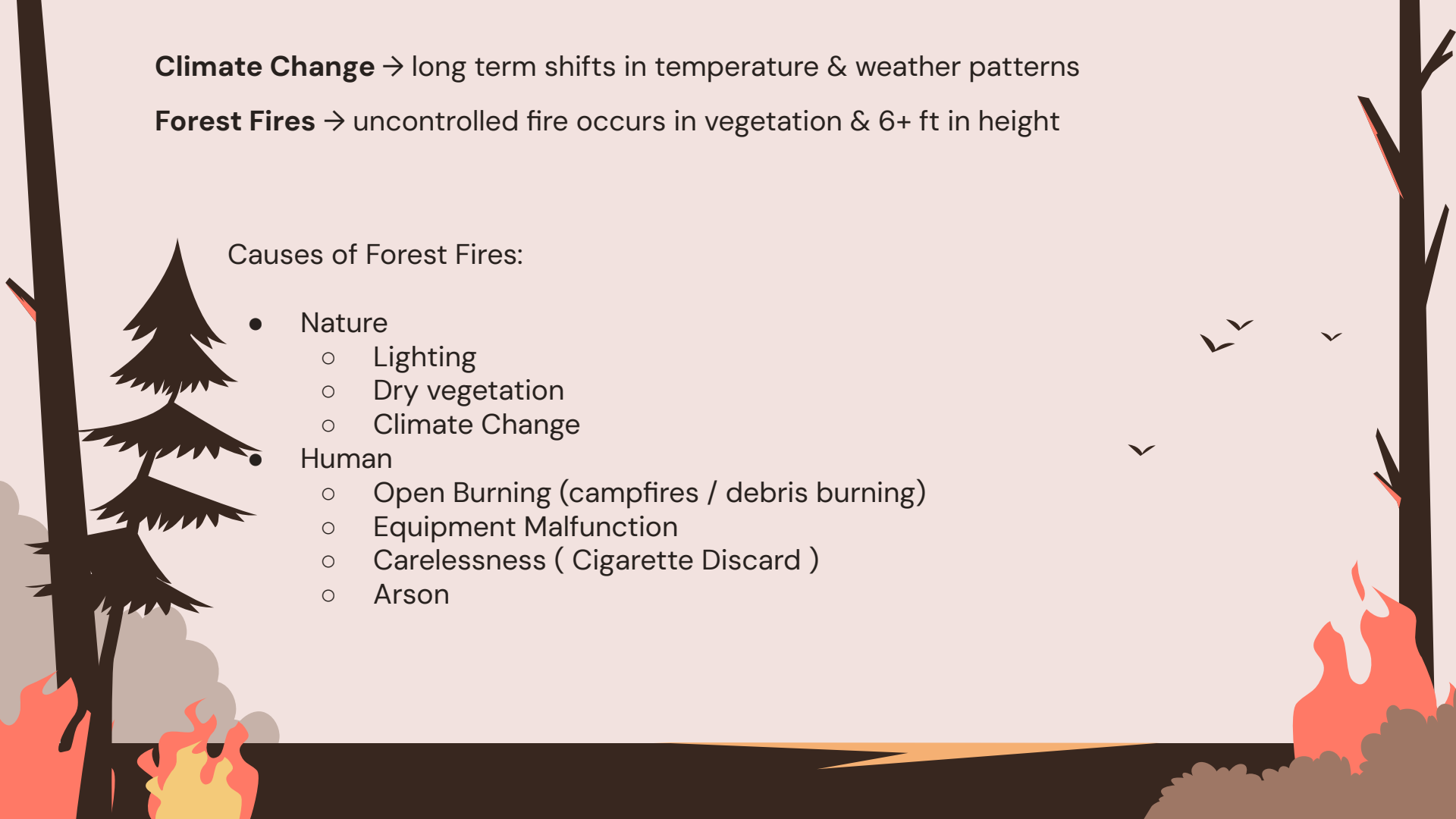Solution and expected deliverables

01

Problem

How Has Climate Change Impacted Forest Fires?

Climate Change → long term shifts in temperature & weather patterns

Forest Fires → uncontrolled fire occurs in vegetation & 6+ ft in height

Causes of Forest Fires:

- Nature
    - Lighting
    - Dry vegetation
    - Climate Change
- Human
    - Open Burning (campfires / debris burning)
    - Equipment Malfunction
    - Carelessness (Cigarette Discard)
    - Arson

Why Should You Care About This?

Health

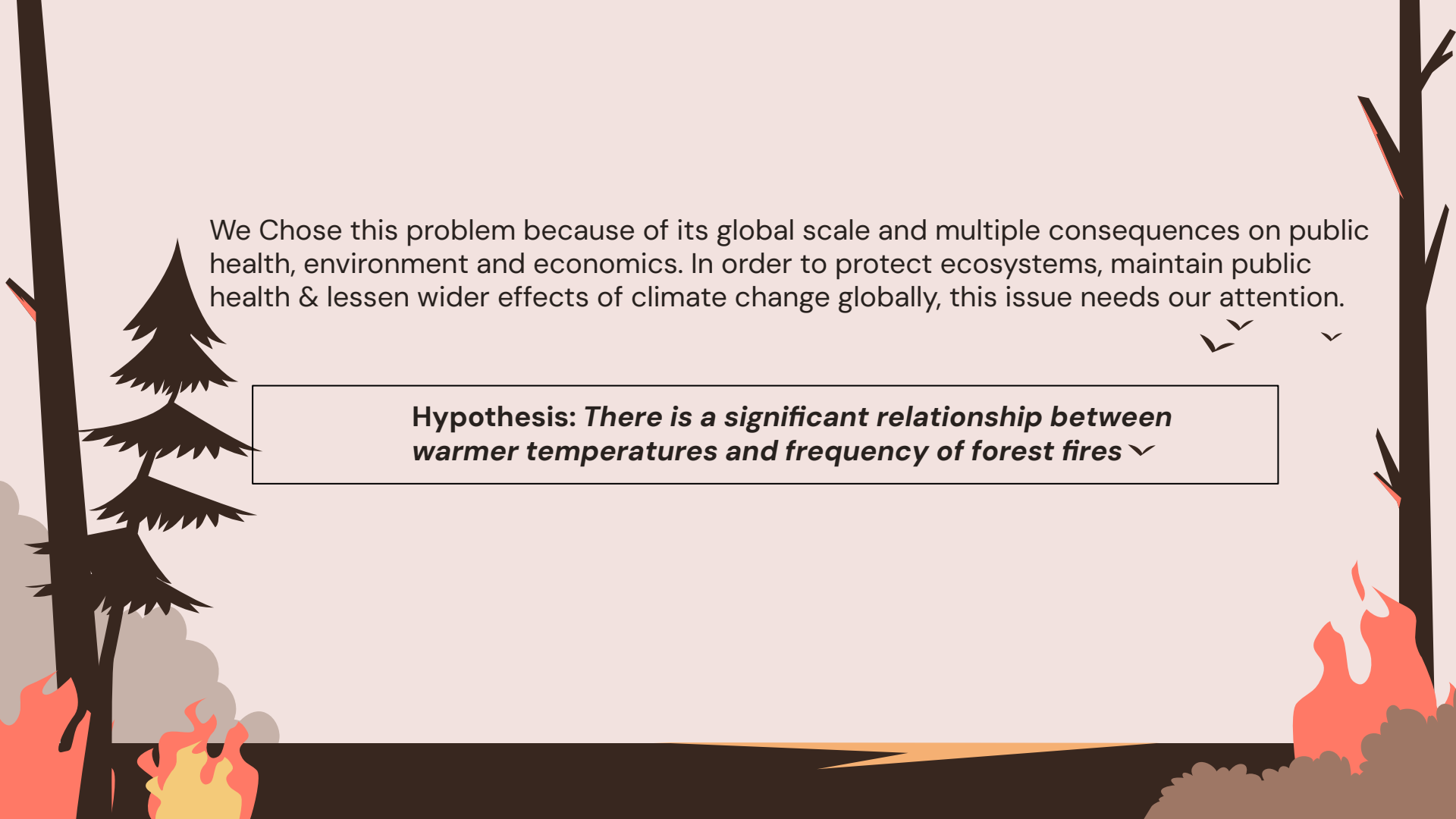Respiratory & cardiovascular, reduce lung longevity, contaminated water etc

Economic

Destroys everything. Loss for individual, businesses, government etc

Environment

Destroys trees, wildlife habitation, release harmful gasses, pollute air etc
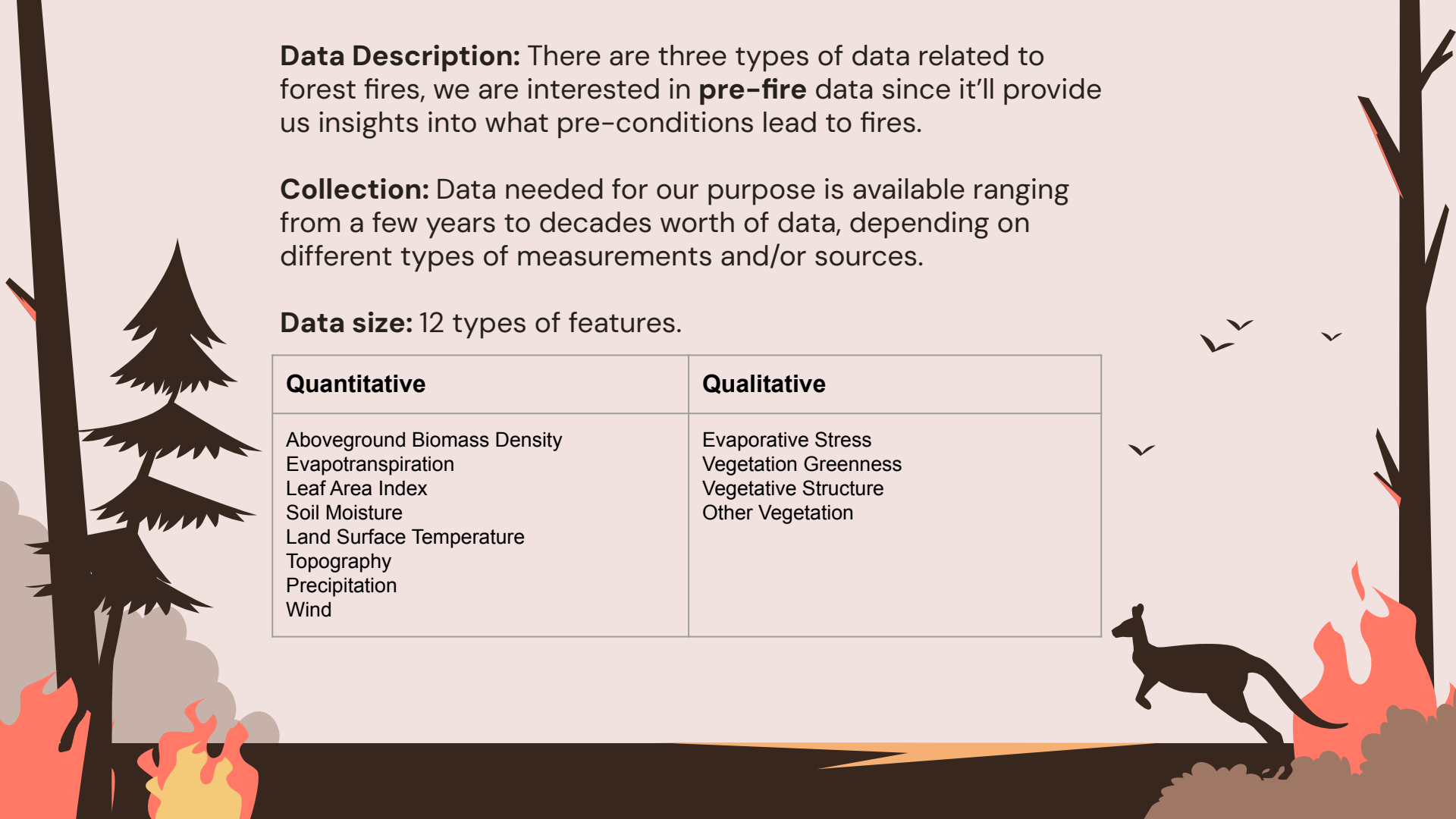
We Chose this problem because of its global scale and multiple consequences on public health, environment and economics. In order to protect ecosystems, maintain public health & lessen wider effects of climate change globally, this issue needs our attention.

Hypothesis: *There is a significant relationship between warmer temperatures and frequency of forest fires* ⌄

02

Data

Data Description: There are three types of data related to forest fires, we are interested in **pre-fire** data since it'll provide us insights into what pre-conditions lead to fires.

Collection: Data needed for our purpose is available ranging from a few years to decades worth of data, depending on different types of measurements and/or sources.

Data size: 12 types of features.

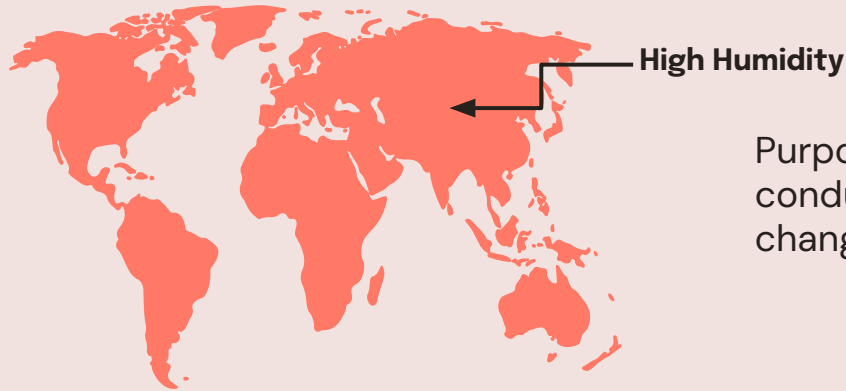| Quantitative	Qualitative
Aboveground Biomass Density Evapotranspiration Leaf Area Index Soil Moisture Land Surface Temperature Topography Precipitation Wind	Evaporative Stress Vegetation Greenness Vegetative Structure Other Vegetation

Climate Change Data

Data format: GeoTiff files that can be opened using python libraries(GDAL). Maps, Graphs, Tables from website.

This dataset provides global climate data across the years:
- Temperature
- Precipitation
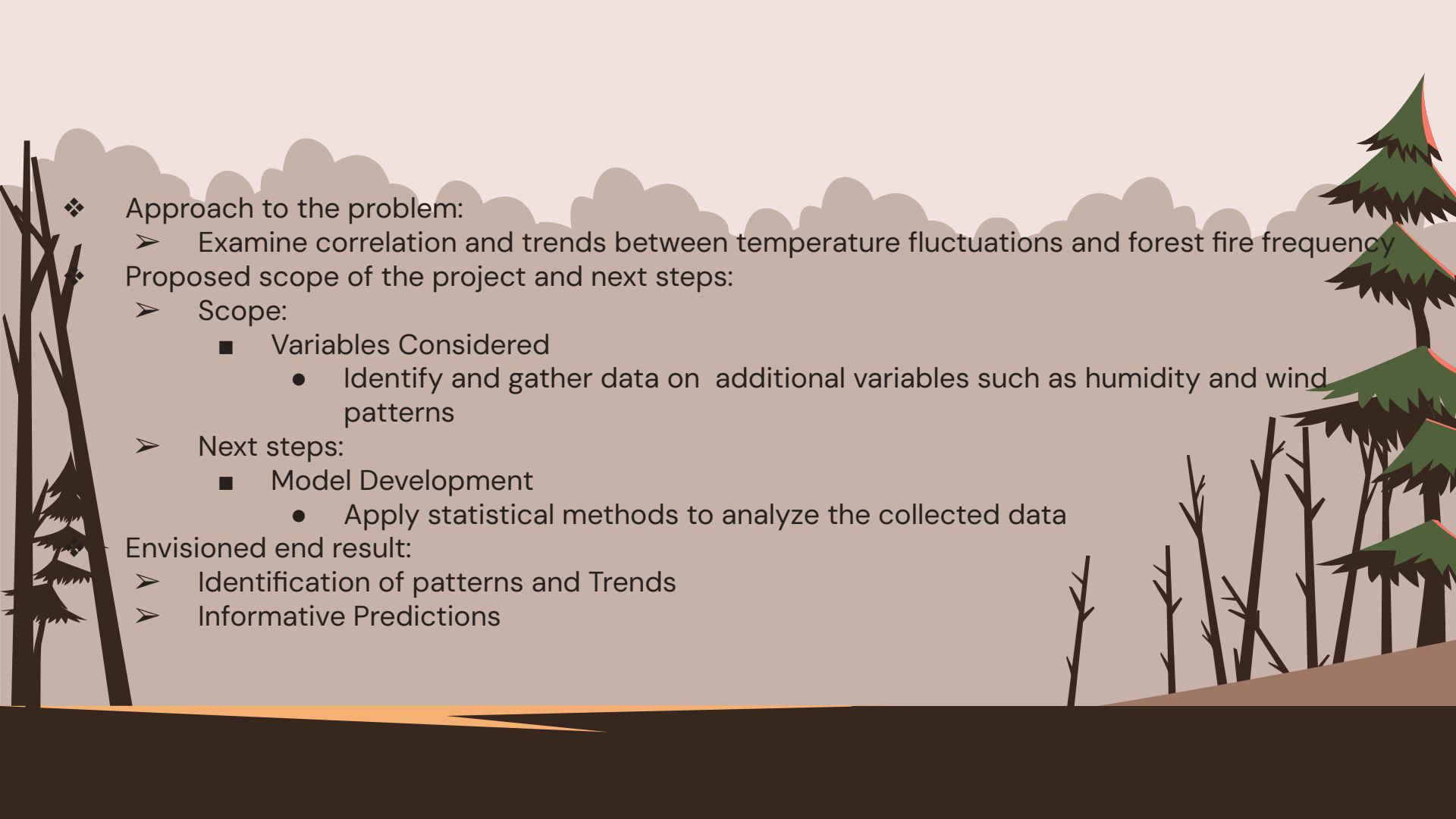- Humidity
- Seasonality
- Future Climate Data

High Humidity

Purpose: We will utilize numerical data to conduct an analysis relating to climate change and its impact on forest fire regions.

03
Solutions

- ❖ Approach to the problem:
  - ➢ Examine correlation and trends between temperature fluctuations and forest fire frequency
- ❖ Proposed scope of the project and next steps:
  - ➢ Scope:
    - ■ Variables Considered
      - ● Identify and gather data on additional variables such as humidity and wind patterns
  - ➢ Next steps:
    - ■ Model Development
      - ● Apply statistical methods to analyze the collected data
- ❖ Envisioned end result:
  - ➢ Identification of patterns and Trends
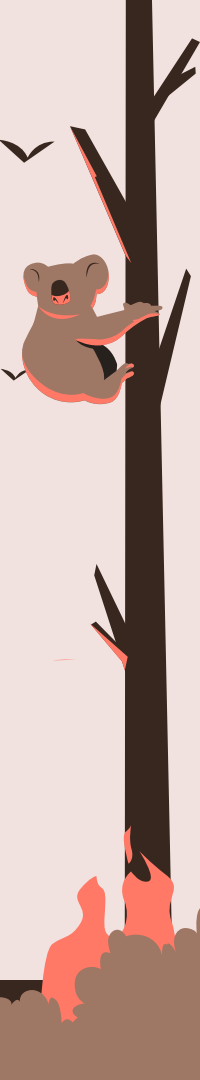 - ➢ Informative Predictions

04

Findings

Expected Deliverables/Findings

End Result: We aim to unveil critical insights into how environmental and human factors contribute to forest fires, supported by a robust analytical model that predicts risk zones with high precision.

Analytical Techniques: Our analysis will rely on advanced statistical methods and machine learning algorithms, including regression analysis and neural networks, to dissect complex relationships within the data.

System Interactivity: We aim to design our system to be interactive, allowing users to input variables and receive instant risk predictions, making it a practical tool for decision-makers.

Progress Report Goals: For the progress report, we expect to have a preliminary model and analysis ready, showcasing our approach to identifying and analyzing key risk factors for forest fires, setting the groundwork for further development and refinement.

Thank You!