Assignment Overview

ABC Insurance, a client of Weather Data Incorporated (WDI), recently used a proprietary Winter Storm model WDI developed to determine the expected yearly losses for 2 of their portfolios. Each portfolio contains one or more insurance policies that cover the company's insured properties. The analysis ran smoothly, but the client is having issues deciphering the results and what they mean for their business. The client expressed to WDI that it would be helpful to see calculations of the different risk metrics their output contains. WDI knows that client data can often contain errors or abnormalities and has asked you to clean the data, prepare a set of exhibits, and answer a set of questions. The loss output provided by the client can be found in WDI_Analytical_Assessment_Data.csv.

Any assumptions or changes to the data you make during this analysis should be clearly stated in the deliverables outlined below. The definitions section will help to guide your analysis and the data cleaning process. Although Power BI is preferred, this assignment can be completed in the software/coding language of your choice. Upon receiving this assignment, you will have 48 hours to complete it. You may ask questions about the assignment at any time in the 48 hour window.

Deliverables

This assignment has 2 deliverables:

1. A document with:
   a. An explanation of any data cleaning you completed and how you performed it
   b. Your answers to the Tasks and Questions
      i. Each task may be presented as a table. Your answer to each question should be 1-2 paragraphs in length
2. File(s) containing the code written to conduct the analysis. If you did the assignment in Excel, you should provide a workbook that contains the work you did to complete each task/question. Each task and question should be on its own sheet.

Tasks

1. For each state in the output file, find the total insured value (TIV) and number of risks.
2. Which 5 counties contain the largest total insured value (TIV) for construction code WD10?
3. For each portfolio, find the 10 postal codes that are the most susceptible to damage from winter storms.
4. For each Pennsylvania postal code, find the breakdown of total insured value (TIV), risk count, and average annual loss (AAL) by building height band.

Questions

Please include a section dedicated to these questions in the final document:

1. Does one of the portfolios appear to be more vulnerable to damage from winter storm? If so, which one? Explain your reasoning and any analysis you conducted to support your conclusion.
2. Which factors appear to have the greatest influence on AAL? Explain your reasoning and any analysis you conducted to support your conclusion.

Definitions

LocationID: A unique identifier for each location in the loss output file. Portfolio: A numeric indicator for which portfolio a given location belongs to. State: The state the location is in.

County: The county the location is in.

Postal Code: The postal code the location is in.

Building Value: The insured value of the building at the location.

Other Value: The insured value of other structures at the location, not including the main building.

Contents Value: The insured value of the contents of the building at the location.

Time Element Value: The insured value for cost endured by being displaced from the location.

Total Insured Value (TIV): The sum of the building value, other value, contents value, and time element value at each location.

Risk Count: The number of insured risks at a given location. Each location in the loss output file is assumed to have a risk count of 1.

Occupancy Code: The type of building structure, such as a house or office building, at the location. The table in Appendix A outlines the meanings of occupancy codes found in the provided data.

Construction Code: The materials used to build the structure at the location. The table in Appendix B outlines the meanings of construction codes found in the provided data.

Stories: The number of stories the building at the location has. WDI uses the following building height bands:

- Small: Buildings with 1 to 3 stories
- Medium: Buildings with 4 to 7 stories
- Large: Buildings with 8 or more stories

Year Built: The year the building at the location was built. WDI uses the following year built bands:

- Old: Built before 1980
- Average: Built between 1980 and 2000
- New: Built after 2000

Average Annual Loss (AAL): The average total claims amount ABC Insurance pays to a location each year as a result of winter storm damage.

Appendix A:

Occupancy Code	Description
ATC-00	Unknown
ATC-01	Single Family Housing
ATC-02	Multi-Family Housing
ATC-37	General Commercial
ATC-38	General Industrial

Appendix B:

Occupancy Code	Description
WD00	Wood
WD10	Wood – Wood Frame
MS00	Masonry
MS10	Masonry – Unreinforced
CN00	Concrete
CN10	Concrete – Reinforced
MH00	Mobile Home
MH10	Mobile Home – No Tie-Down