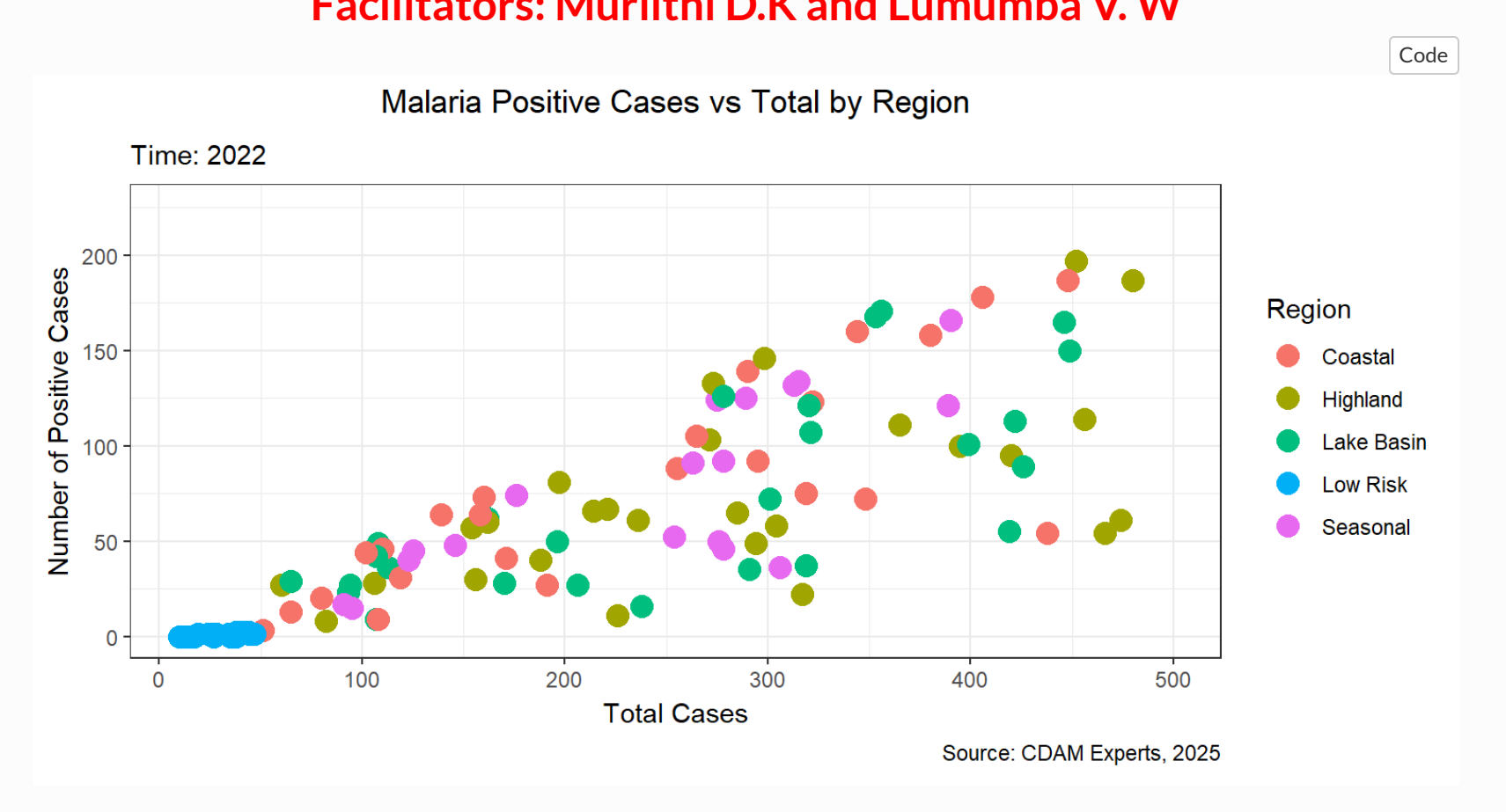
2025 CHUKA UNIVERSITY-AMMNET WORKSHOP ON MALARIA MODELING

CHUKA UNIVERSITY
Center for Data Analytics & Modeling
Session One: Data Visualization in R with no Coding
Facilitators: Muriithi D.K and Lumumba V. W



1 Introduction

Data visualization in R with no coding refers to the use of graphical user interfaces (GUIs) or point-and-click tools built on R that allow users to create charts, graphs, and explore data visually without writing R code manually.

2 Esquisse R package

The Esquisse R package is an interactive graphical user interface (GUI) that allows you to build and customize ggplot2 visualizations without writing any code. It's especially helpful for:

1. Beginners with no programming experience
2. Educators and students in statistics
3. Quick exploratory data analysis

2.1 What Esquisse Does?

2.2 Esquisse helps you:

1. Drag and drop variables to define axes, colors, groups, or facets.
2. Choose plot types like scatter plots, bar charts, boxplots, histograms, etc.
3. Modify themes, labels, and axis settings interactively.
4. Automatically generate the corresponding ggplot2 code — so you can copy, tweak, and use it in scripts later.

2.3 How to Launch Esquisse in RStudio

1. Install and load the package: (esquisse)
2. Launch by the function esquisser()
3. Load a dataset: You can choose from built-in datasets or upload your own.

2.4 Benefits of Esquisse

1. No coding needed to create powerful plots.
2. Encourages learning ggplot2 by showing live-generated code.
3. Fast prototyping for data exploration.

2.5 Package Information

Name: esquisse

Author: Julien Barnier

GitHub: https://github.com/dreamRs/esquisse

Official website: https://dreamrs.github.io/esquisse/

2.6 Getting Started

3 Set a working directory

This is a default location where R looks for files and saves outputs

4 Install and Load necessary packages

This package provides a set of useful functions for data manipulation and visualization.

5 Load the dataset

6 Exploratory data analysis (EDA)

Before we start visualizing our data, we need to understand the characteristics of our data.

EDA is a critical step before building models, as it helps in:

✅ Understanding the data structure and identifying inconsistencies.

✅ Detecting missing values, outliers, and unusual patterns.

✅ Selecting appropriate features for predictive modeling.

✅ Improving data preprocessing and transformation steps.

✅ Summarize key characteristics of a dataset.

6.1 Explore the dataset

7 Data Visualization

Data visualization helps in understanding patterns, trends, and relationships in data.

It is a crucial element in scientific research, enabling researchers to interpret and communicate their results effectively

8 Best Practices

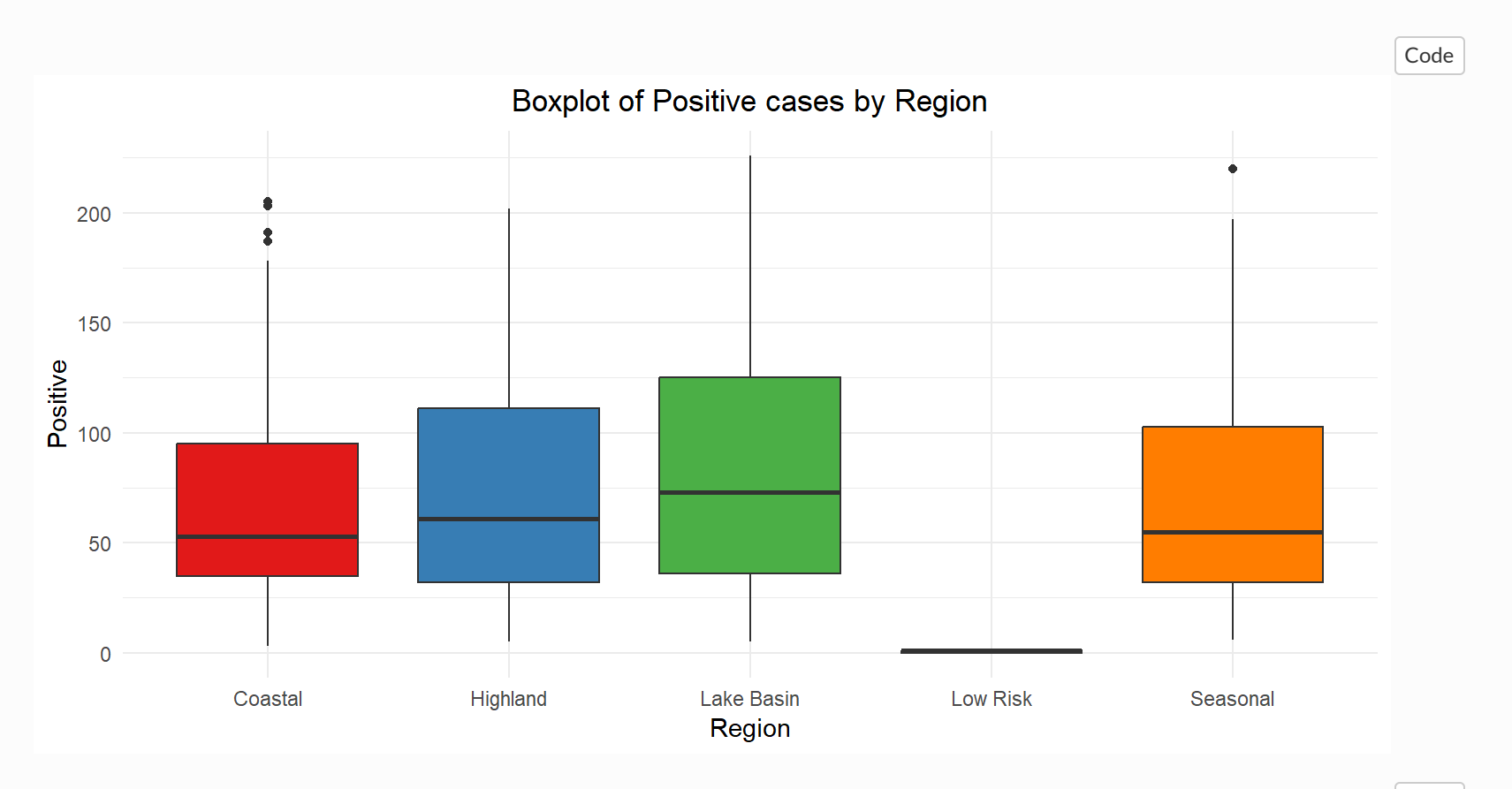
✅ Choose the Right Chart Type (e.g., bar charts for categories, line charts for trends).

✅ Follow Design Principles (simplicity, consistency, accessibility).

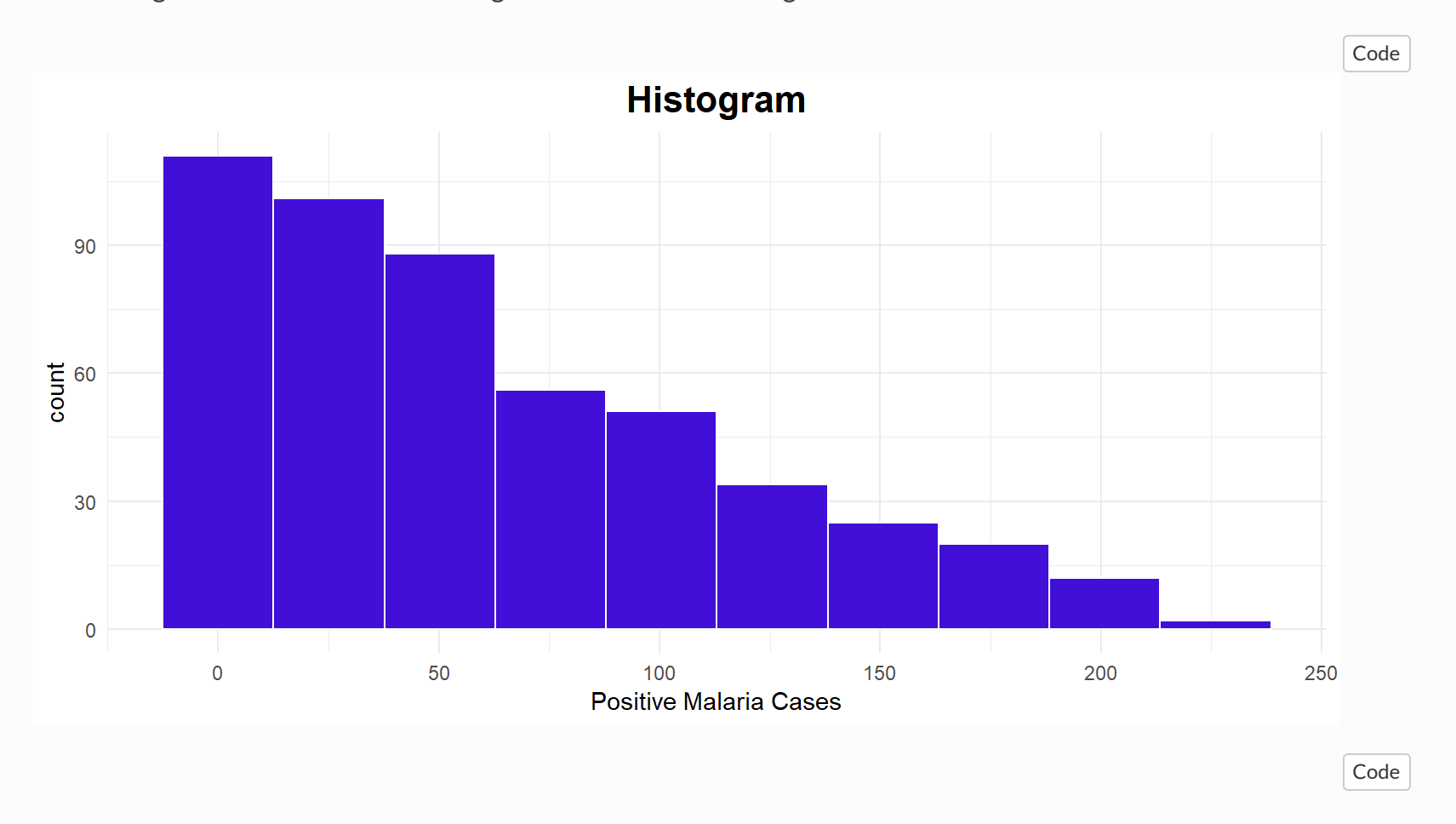
✅ Use Storytelling to highlight key insights and structure visuals logically.

✅ Avoid Common Pitfalls (misleading scales, cluttered visuals, unnecessary 3D charts).

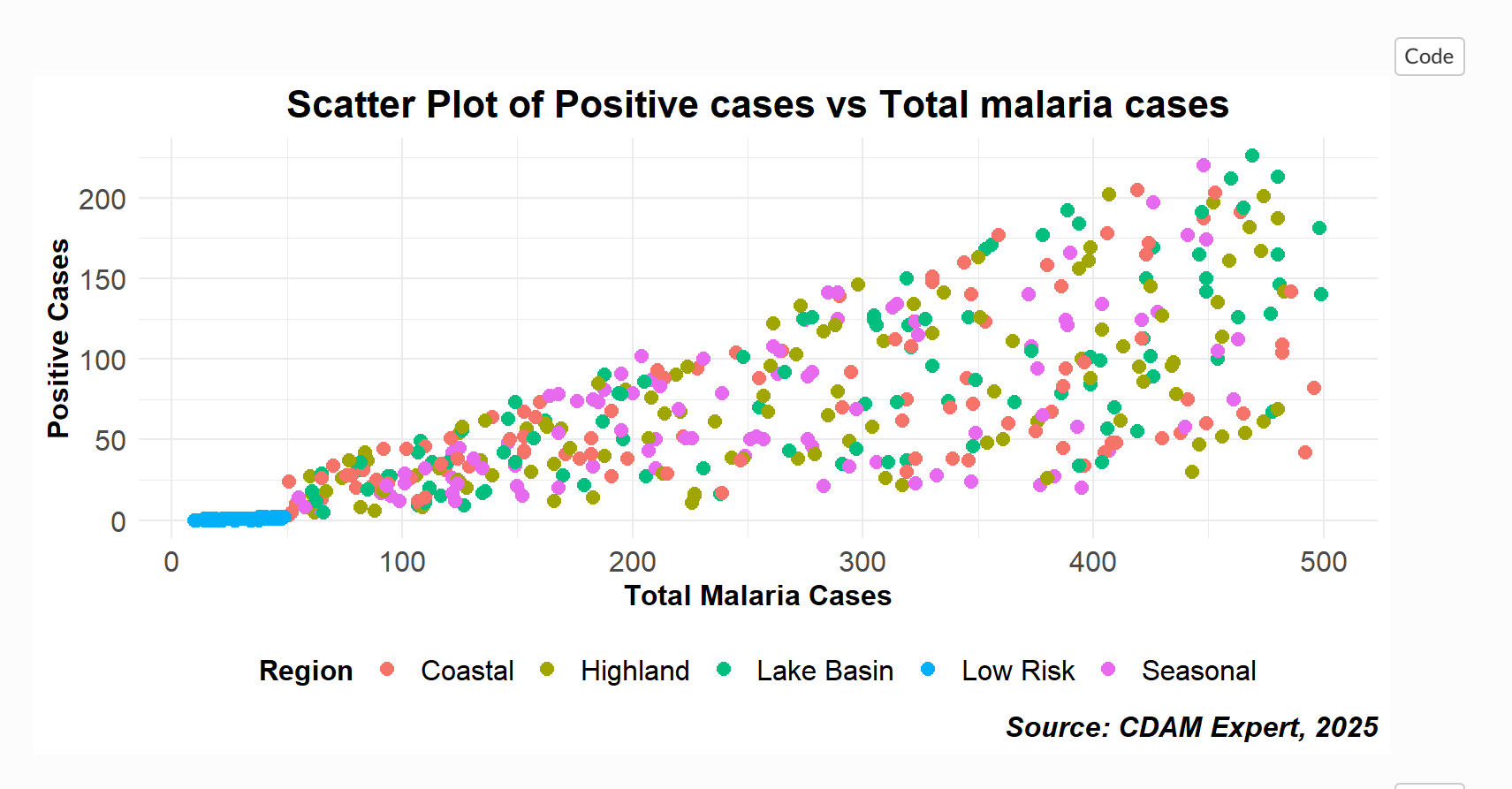
8.1 Box Plot: Used for Detecting outliers and understanding the spread of data.



Histogram: Used for understanding the distribution of a single variable.



8.2 Scatter Plot: Used for understanding relationships between two numerical variables.



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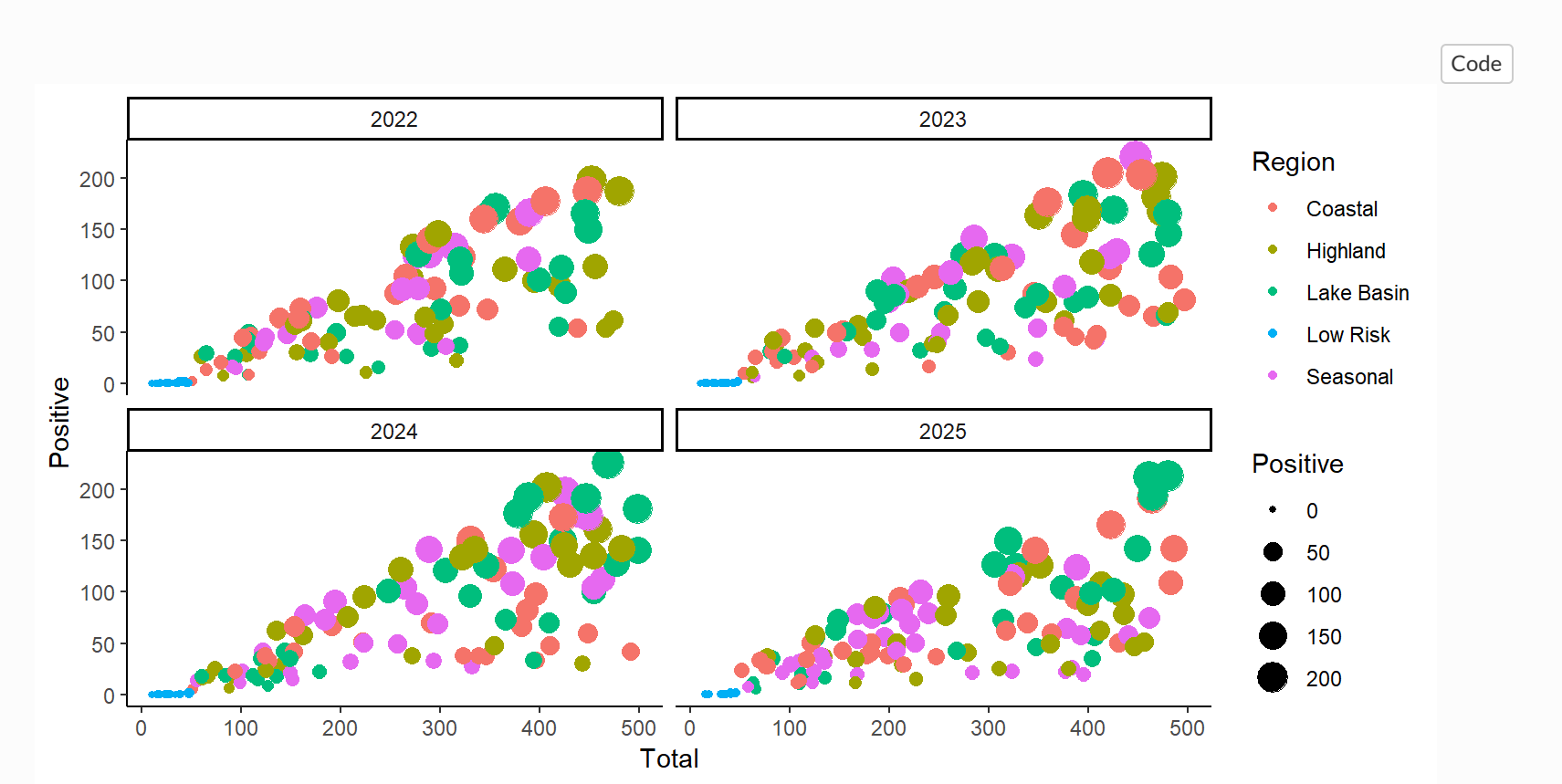

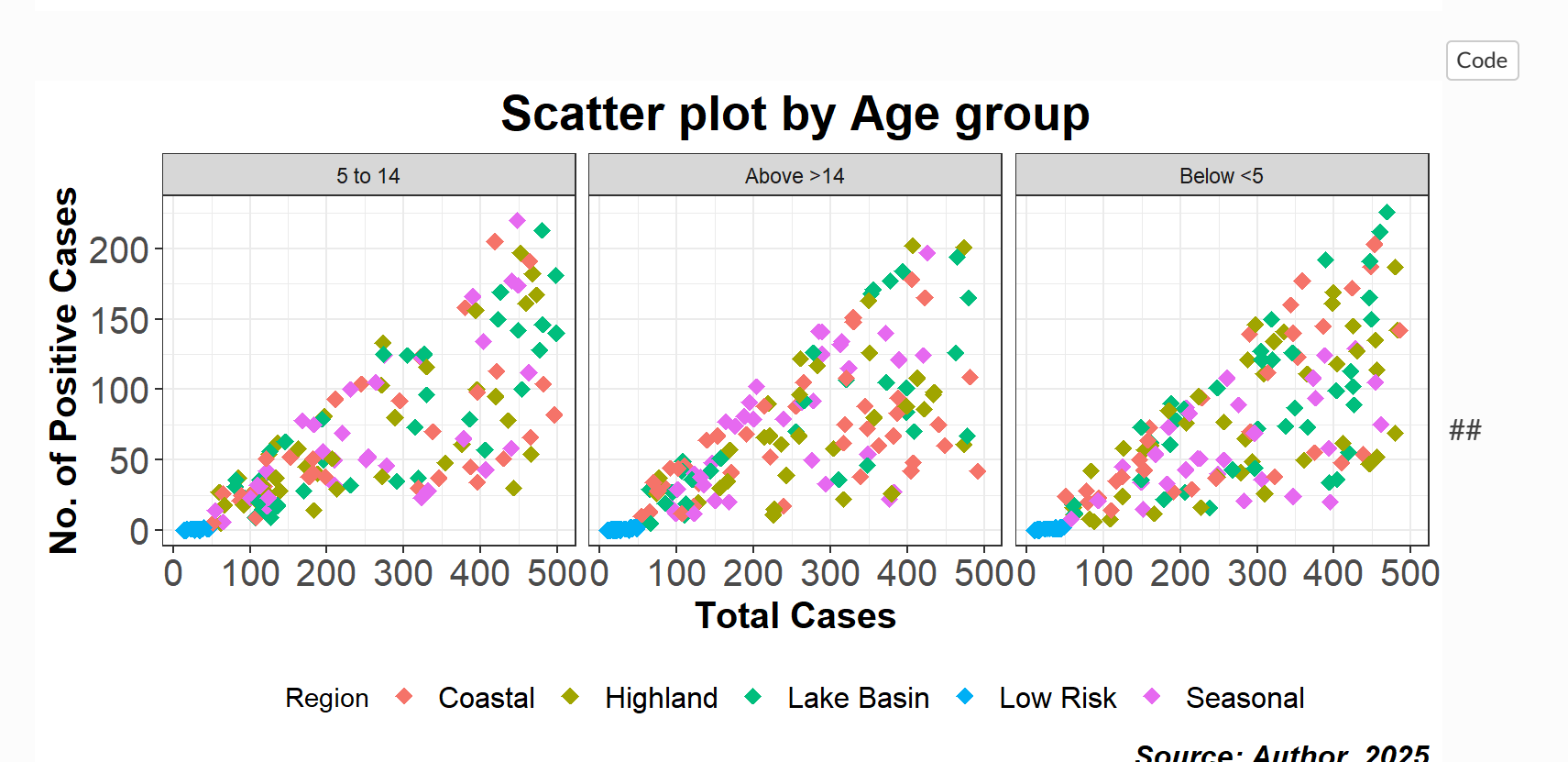

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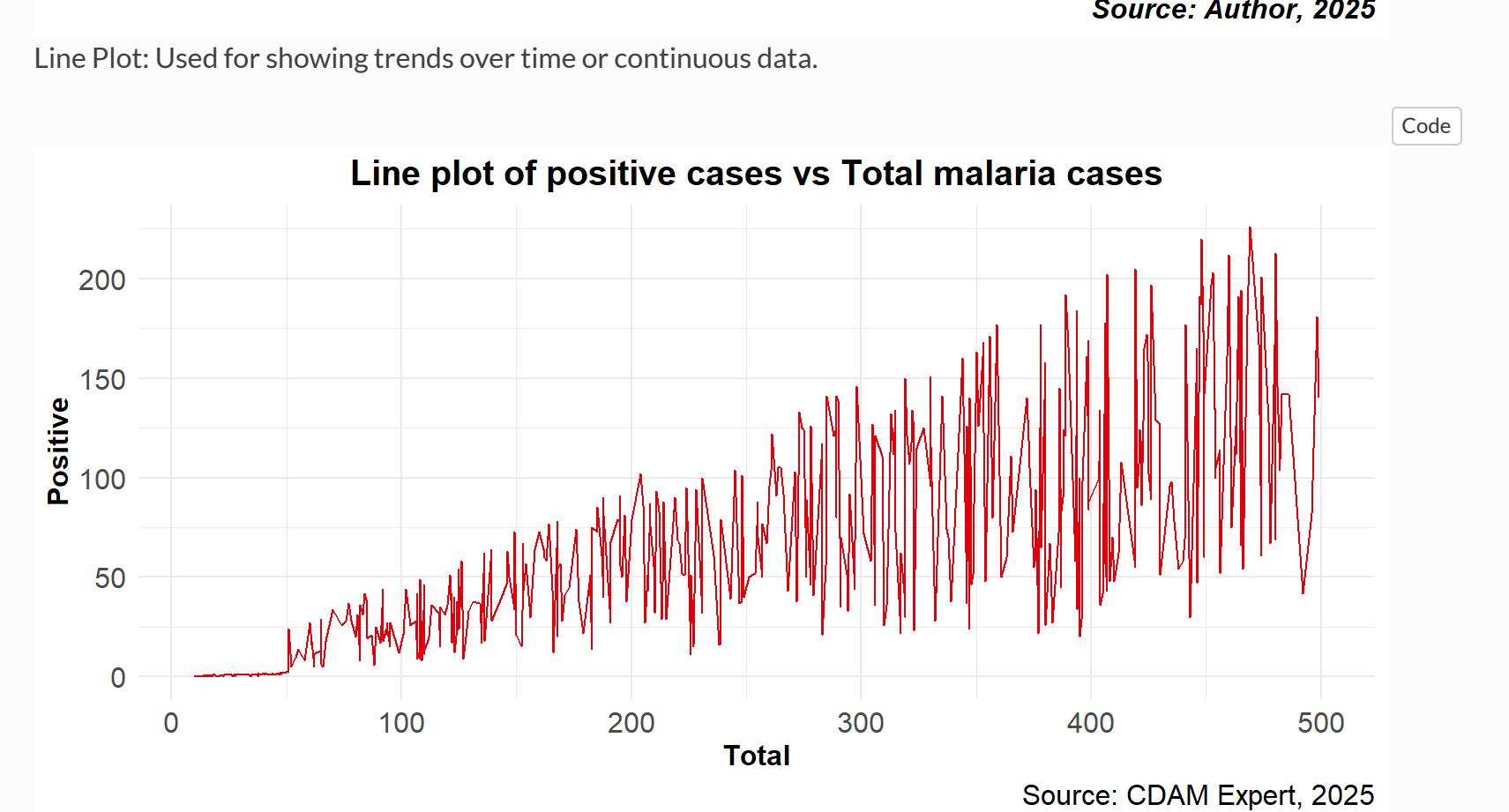
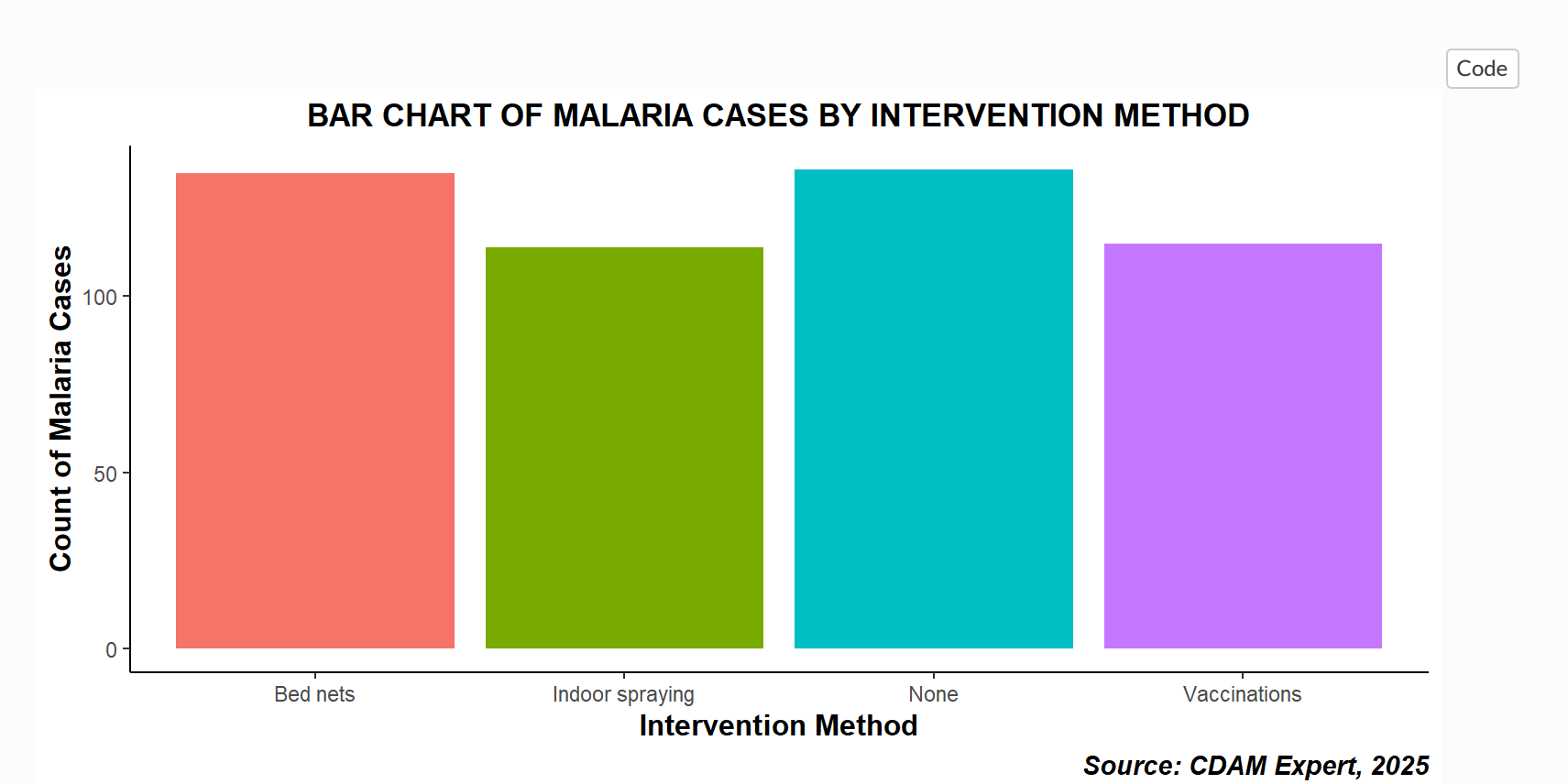
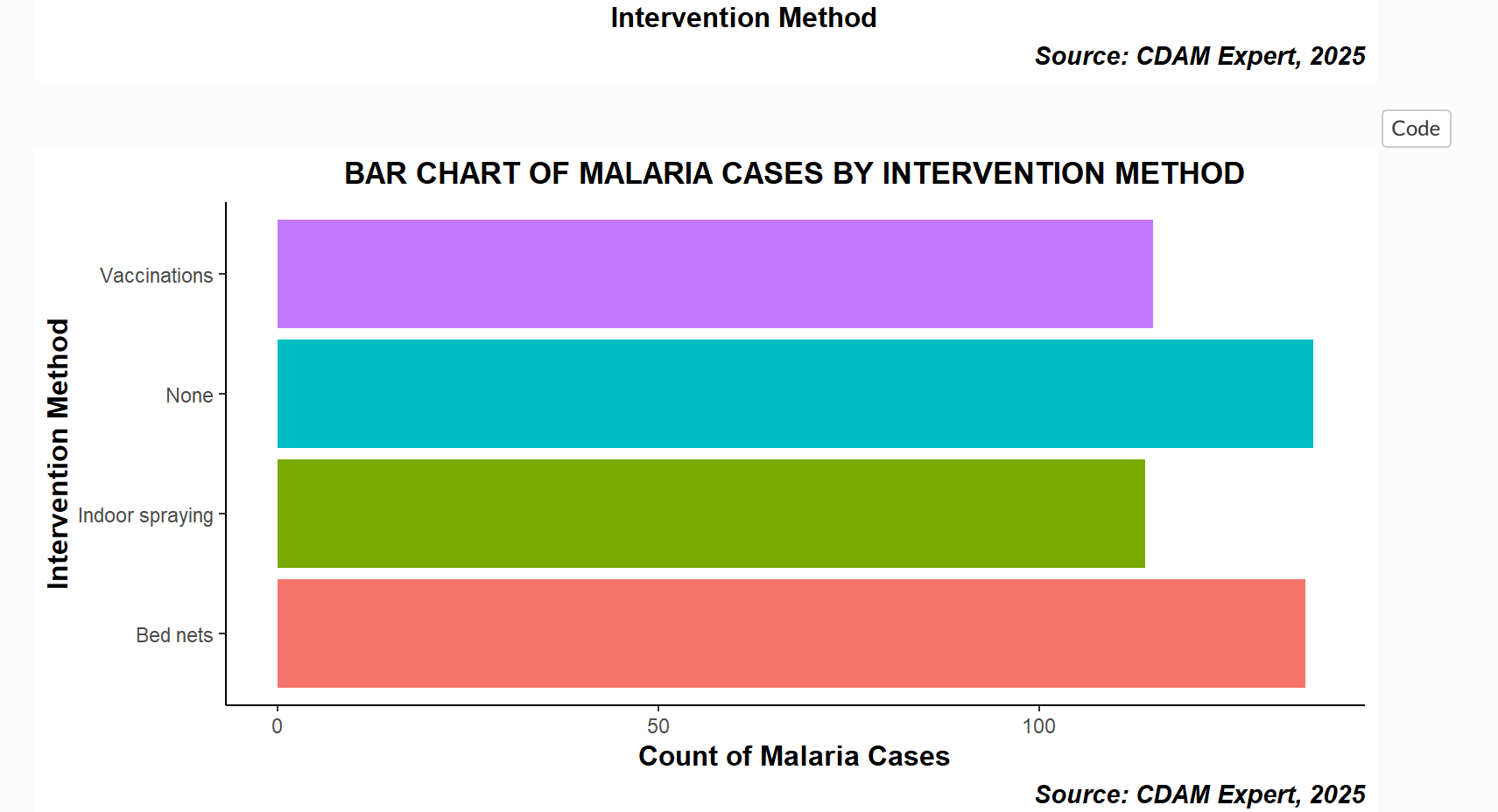
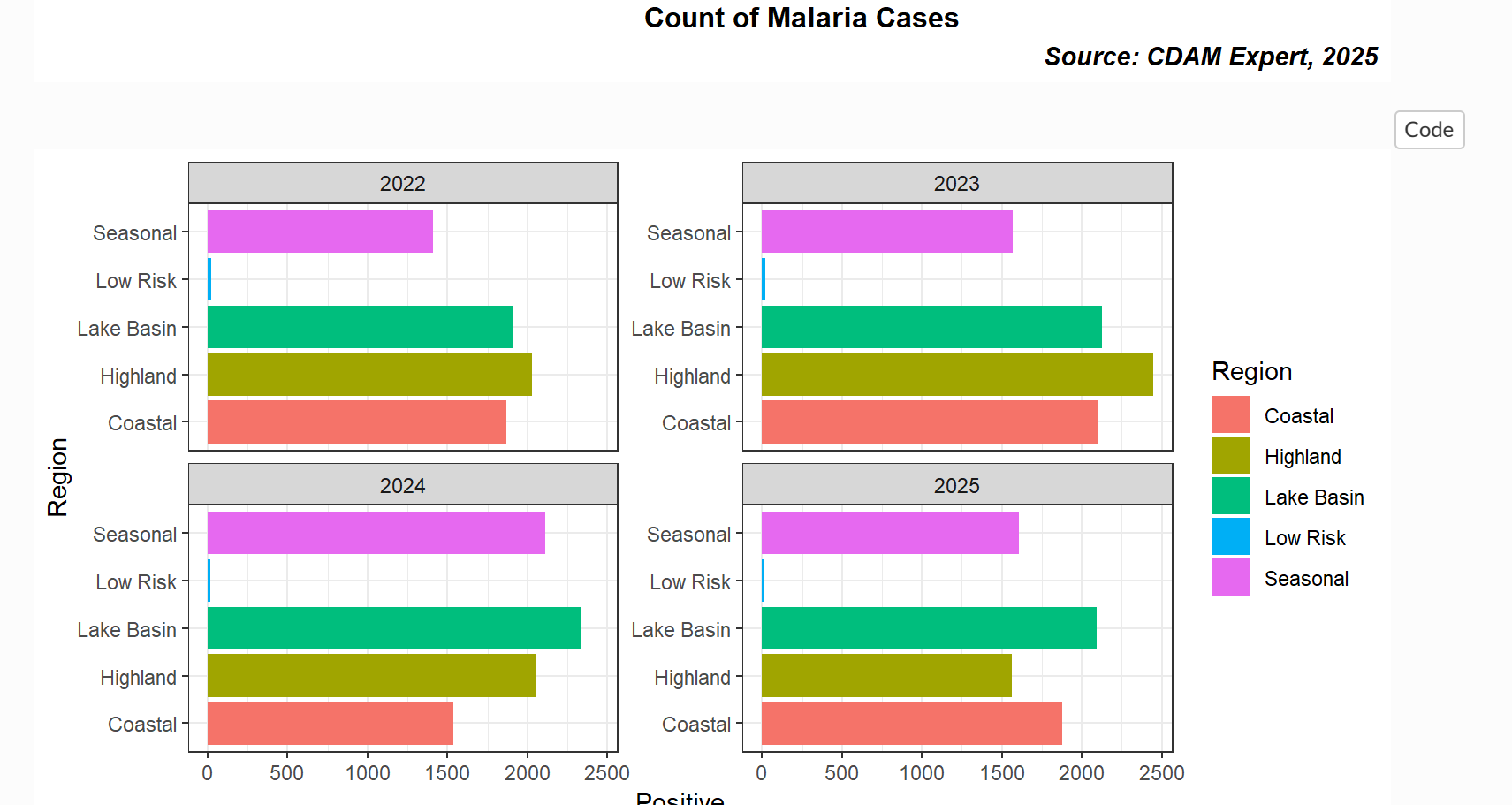
Line Plot: Used for showing trends over time or continuous data.



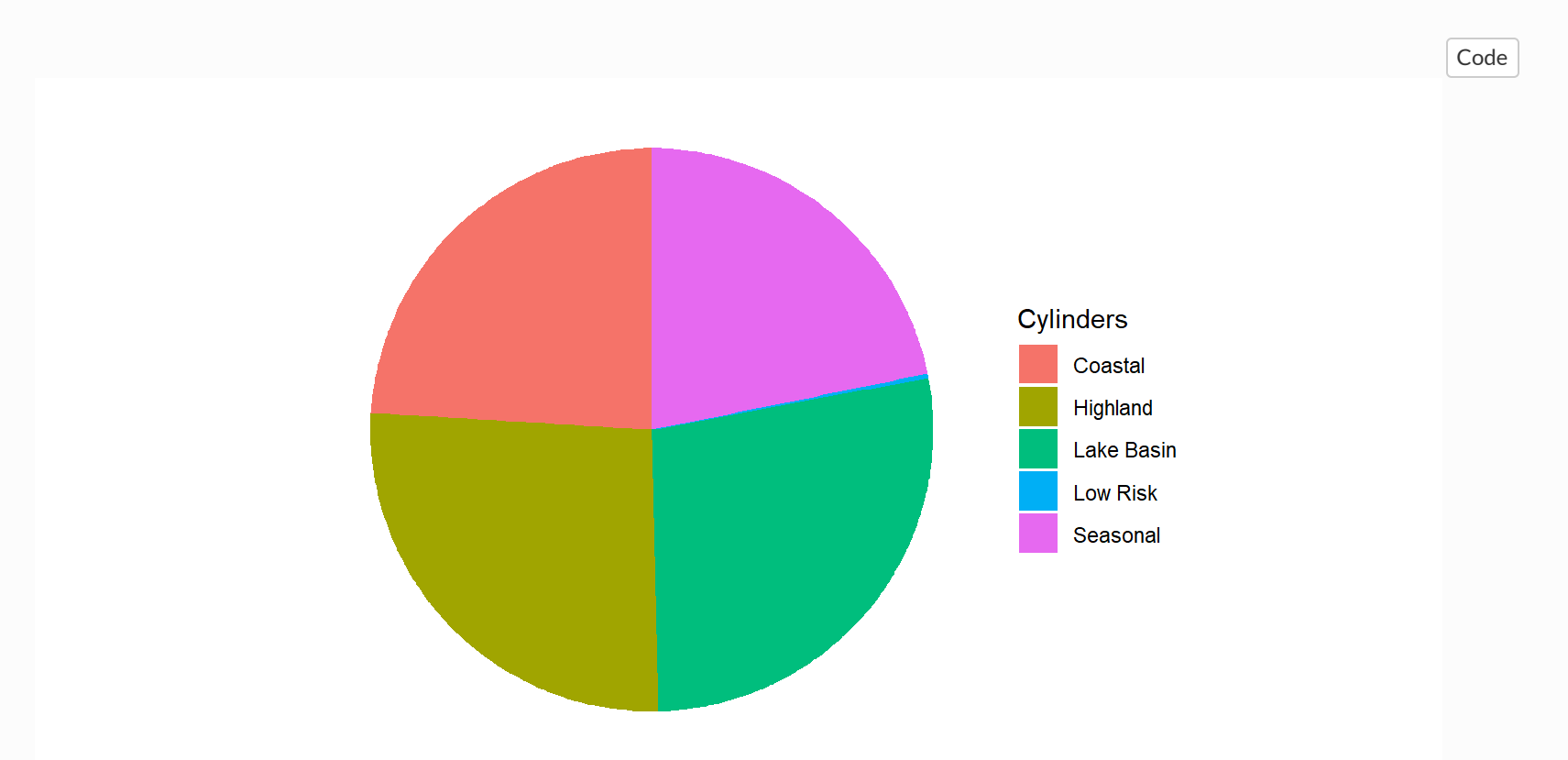
8.4 Bar Chart: Used for comparing categorical data.



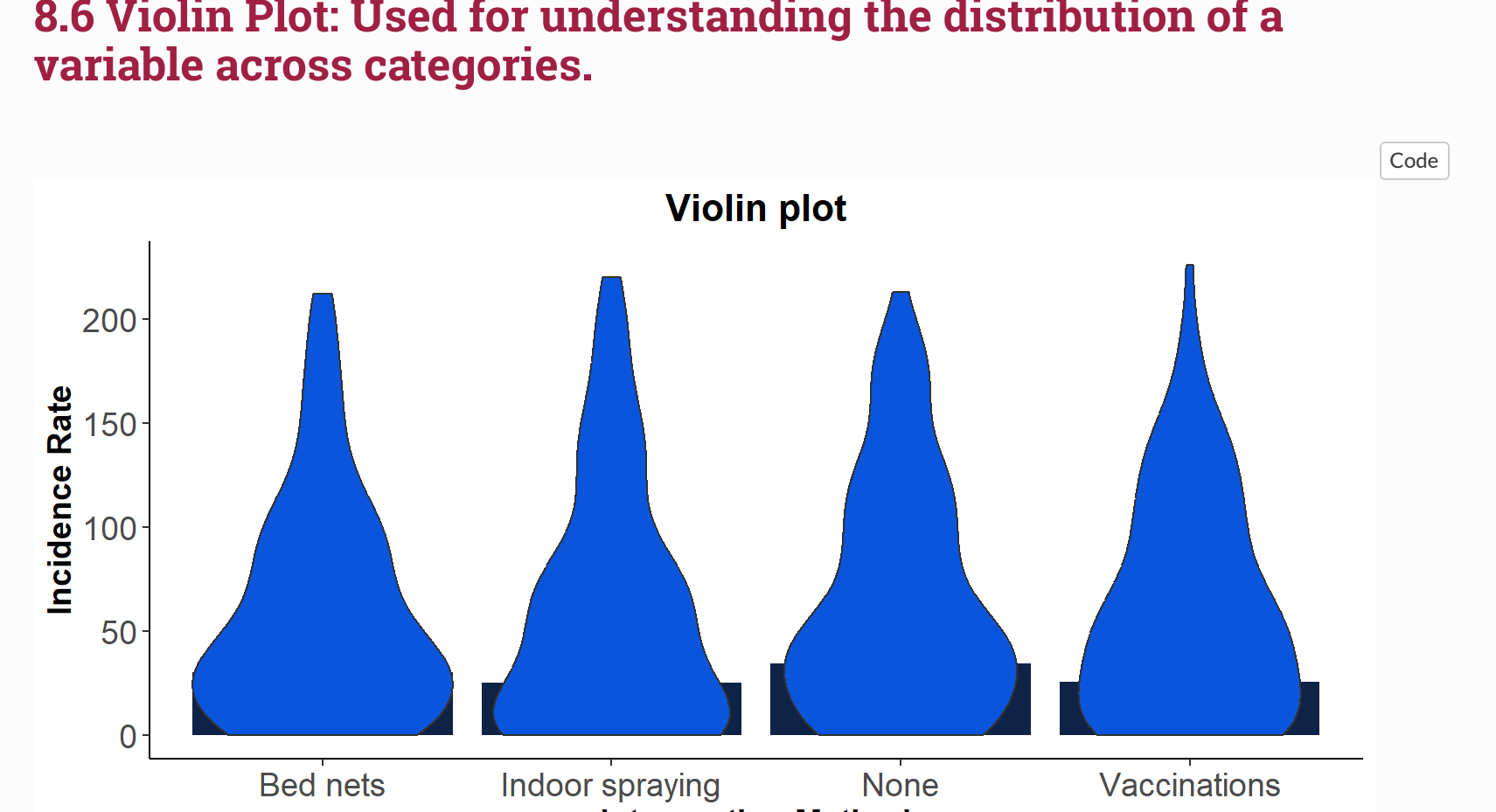




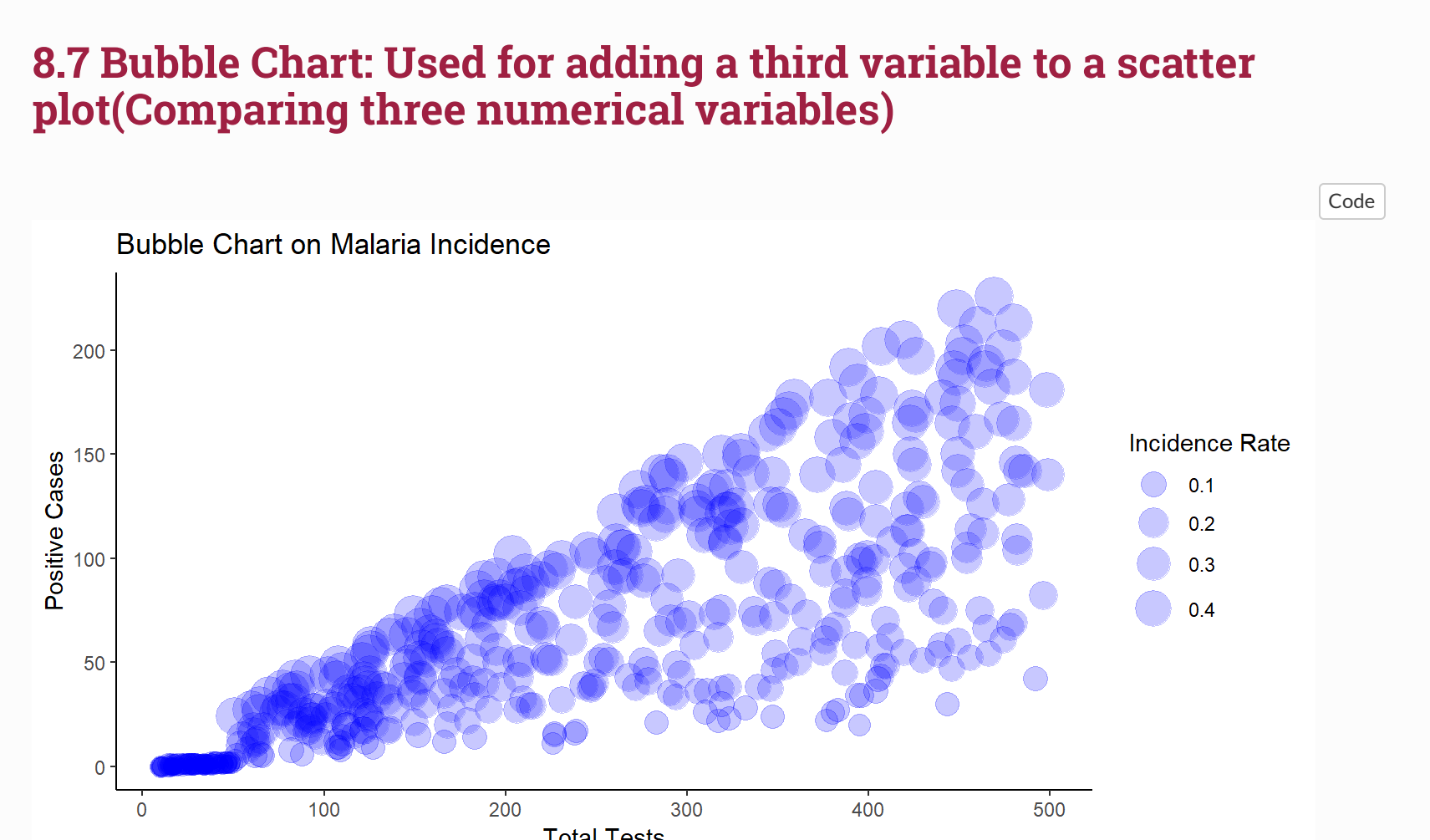
8.5 Pie charts make it easy to see what portion of the total each category represents.



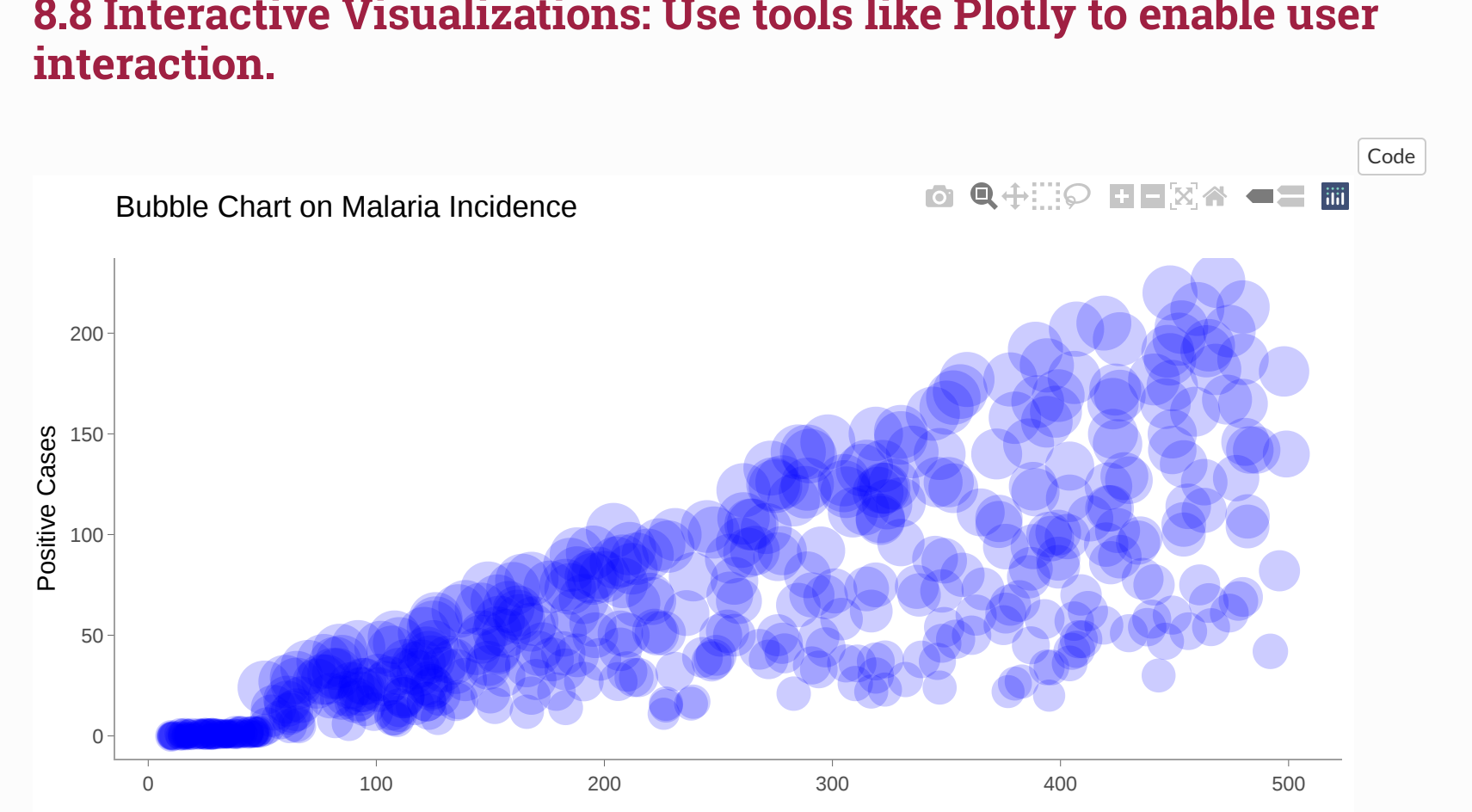
8.6 Violin Plot: Used for understanding the distribution of a variable across categories.



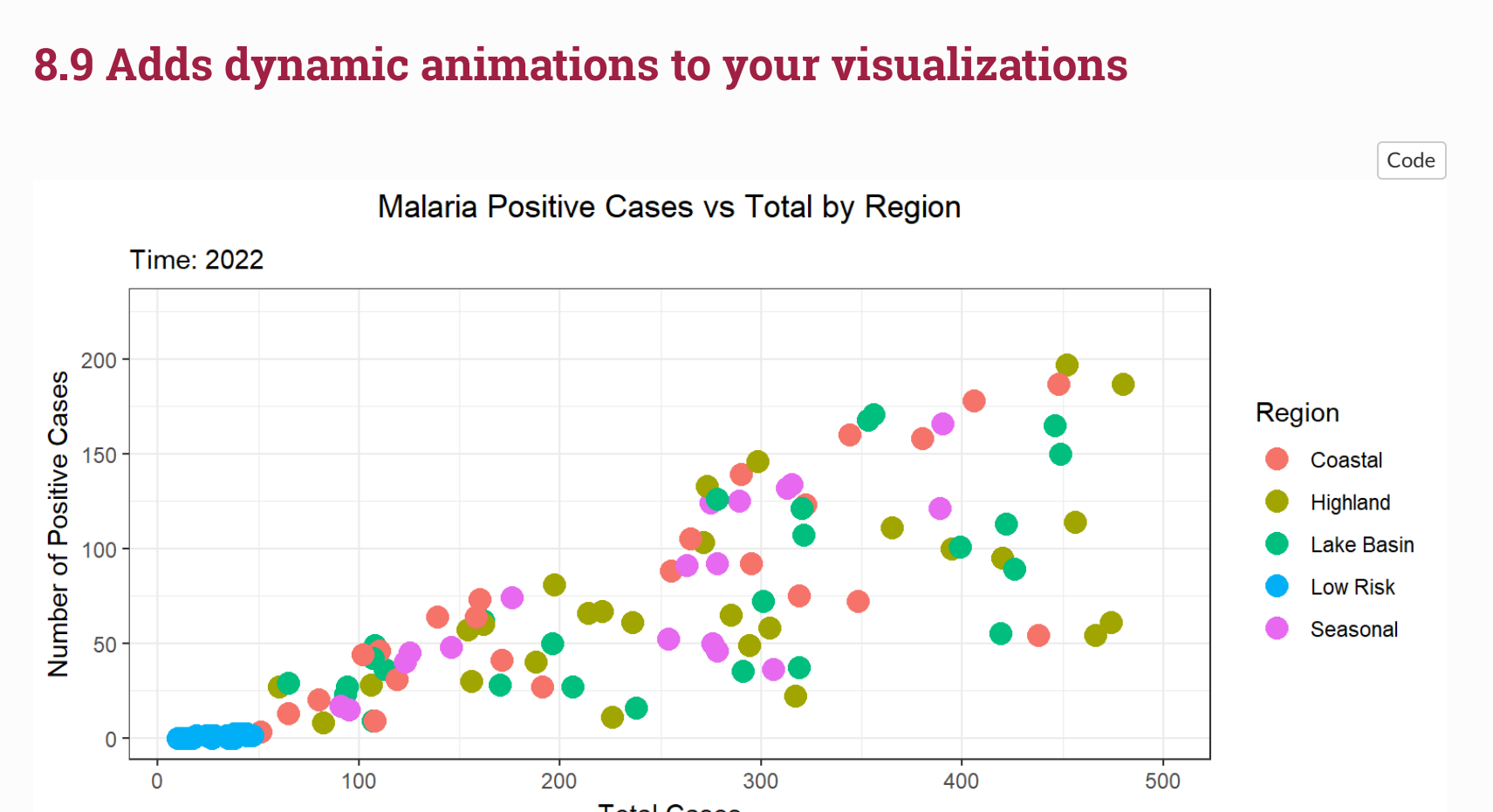
8.7 Bubble Chart: Used for adding a third variable to a scatter plot(Comparing three numerical variables)

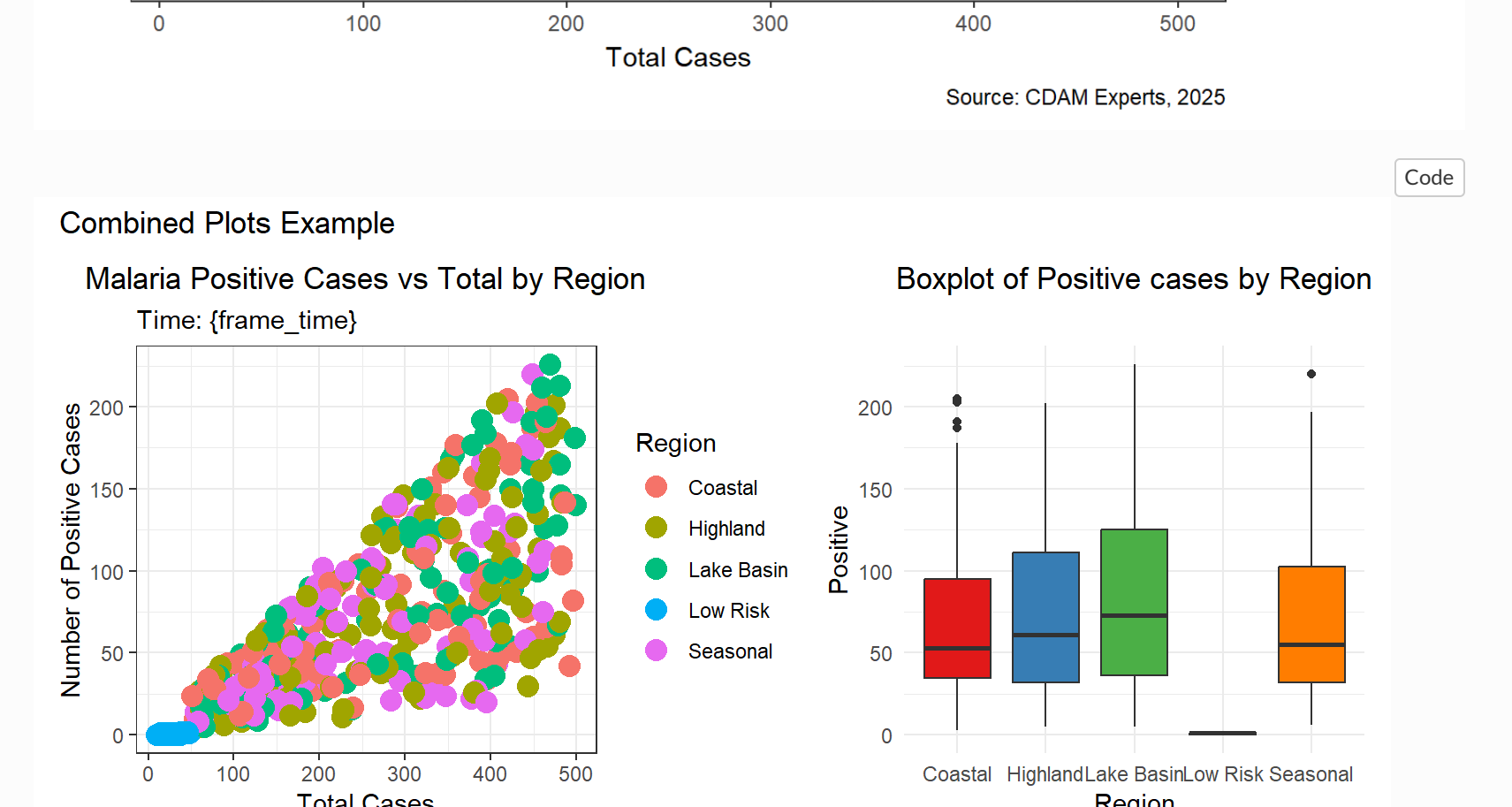


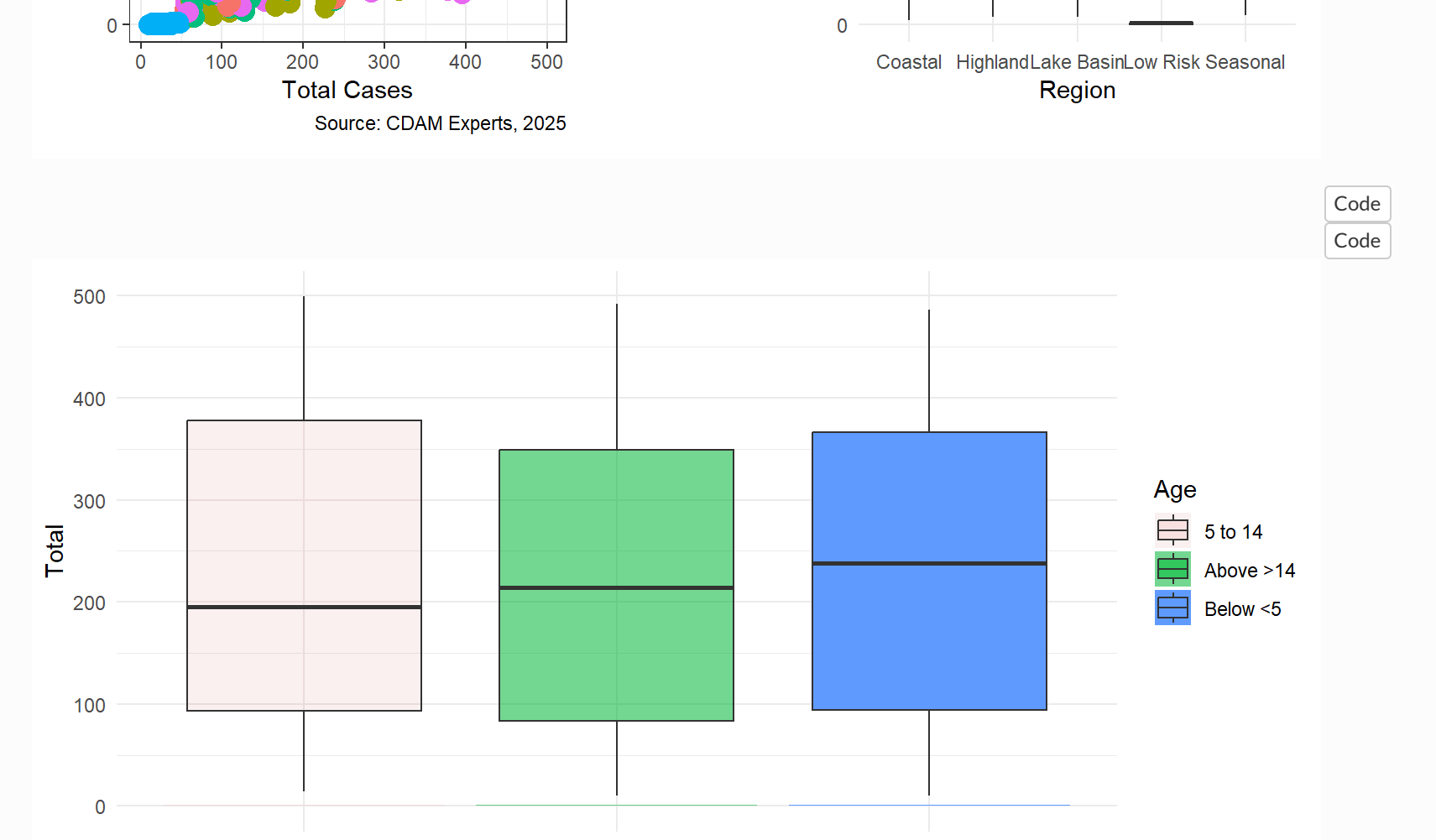
8.8 Interactive Visualizations: Use tools like Plotly to enable user interaction.

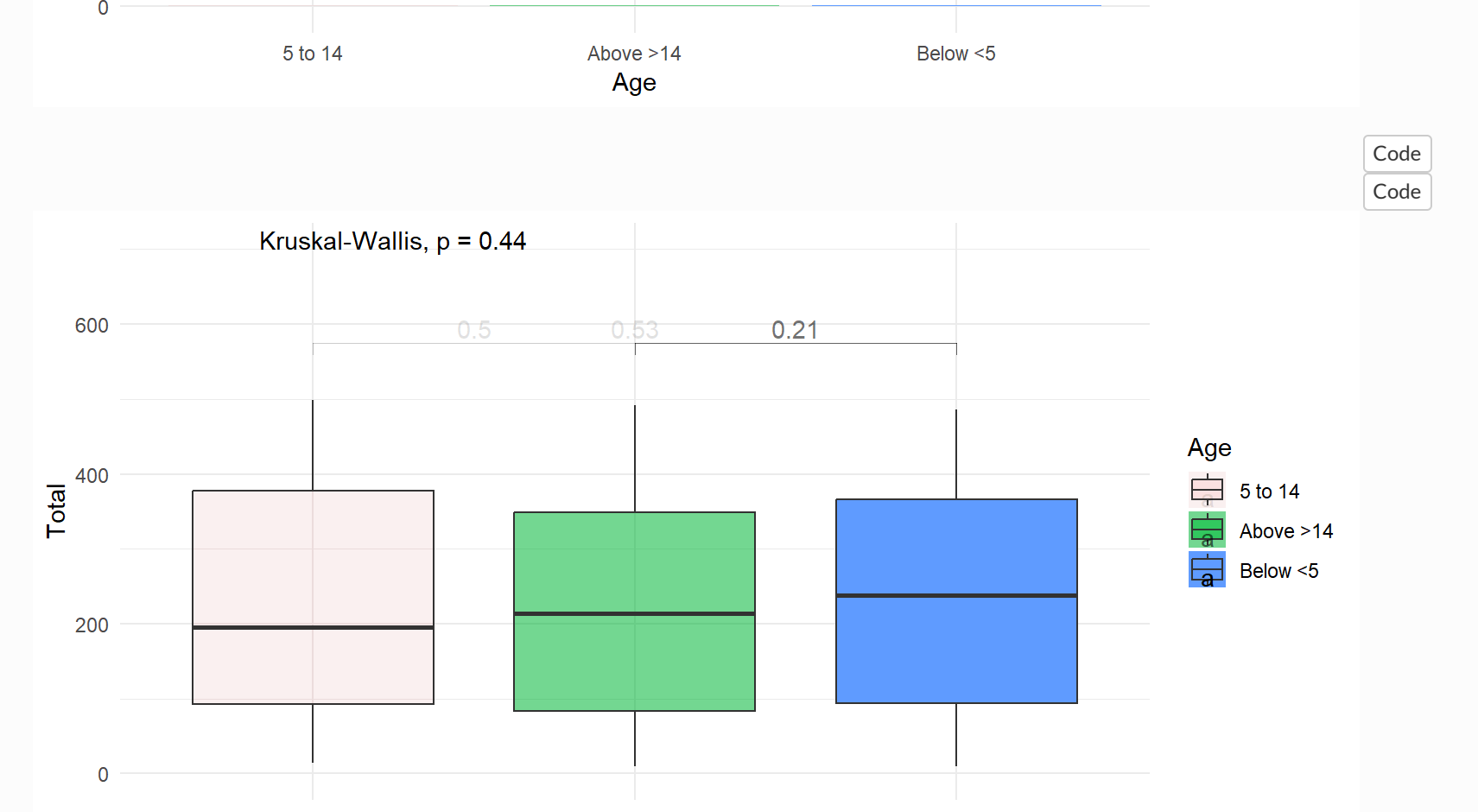


8.9 Adds dynamic animations to your visualizations









9 GwalkR package

The GWalkR package in R is a powerful tool for data visualization and exploration. Designed to simplify complex data analysis, GWalkR transforms raw data into interactive visualizations, making it easier to understand and interpret your data sets.

9.1 Key features of GWalkR

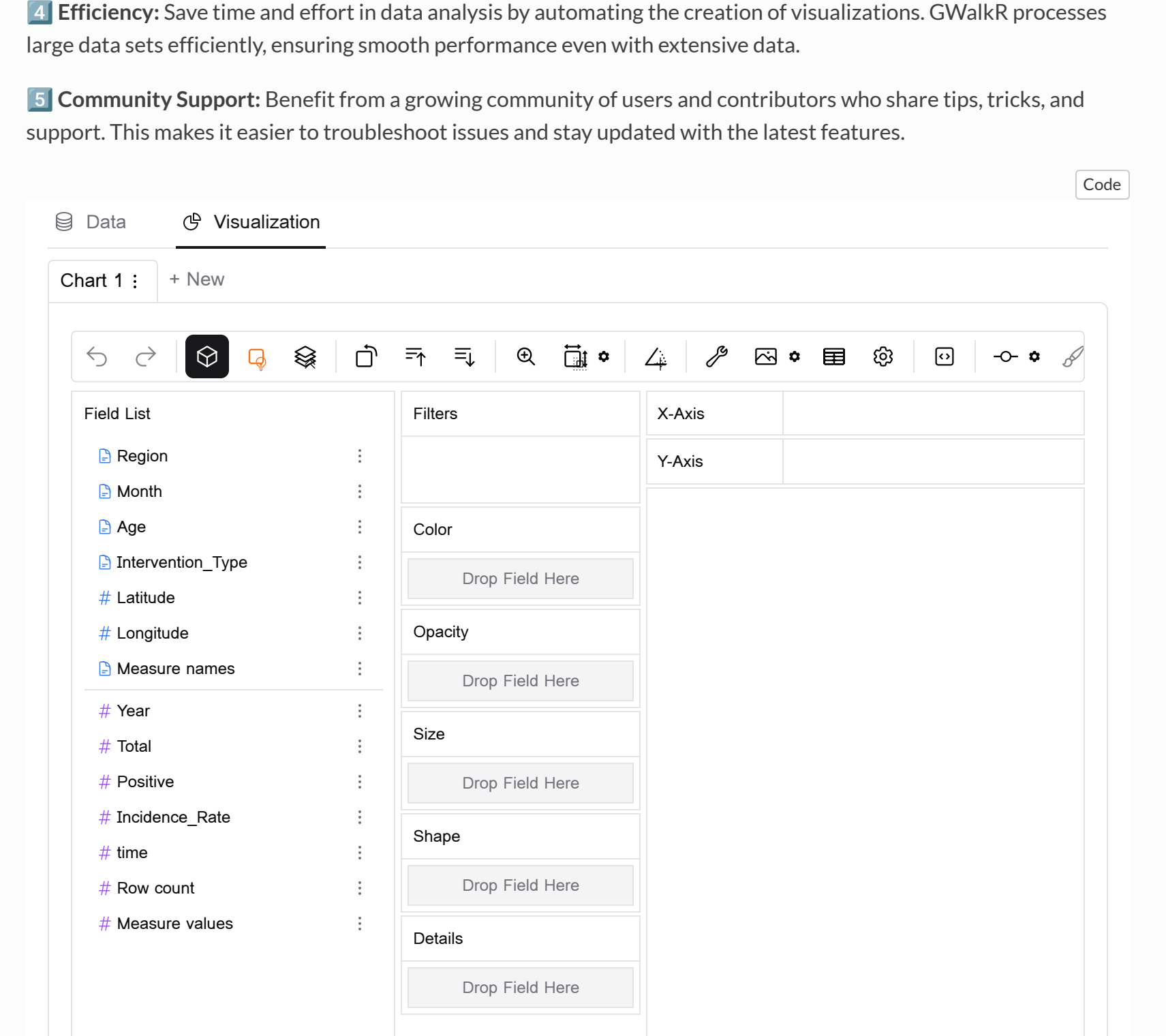
1️⃣ **Interactive Plots:** Generate dynamic and interactive plots with minimal code. This helps in identifying trends and patterns in your data quickly.

2️⃣ **Ease of Use:** With a user-friendly interface, GWalkR is accessible even for those who are new to R. The package integrates seamlessly with other R libraries, enhancing your data analysis workflow.

3️⃣ **Customization:** GWalkR offers a variety of customization options, allowing you to tailor visualizations to meet your specific needs. From color schemes to plot types, you have complete control over the appearance of your data.

4️⃣ **Efficiency:** Save time and effort in data analysis by automating the creation of visualizations. GWalkR processes large data sets efficiently, ensuring smooth performance even with extensive data.

5️⃣ **Community Support:** Benefit from a growing community of users and contributors who share tips, tricks, and support. This makes it easier to troubleshoot issues and stay updated with the latest features.



10 References

Website https://github.com/Kanaries/gwalkR

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