Agricultural Market Analysis 2023

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“`{r setup, include=FALSE}` knitr::opts_chunk$set(echo = TRUE, message = FALSE, warning = FALSE) library(dplyr) library(ggplot2) # Load the CSV file data <- read.csv(“C:/Users/SERHernandez/Documents/PsycologicWellBeing/FinalProjectStatisticMasterDegree/agric = TRUE,sep = “;”)

data <- data %>% drop_na(Market_Volume_2022, Market_Volume_2023, Market_Value_USD_2022, Market_Value_USD_2023) summary_stats <- data %>% summarise(across(c(Market_Volume_2022, Market_Volume_2023, Market_Value_USD_2022, Market_Value_USD_2023), list(mean = mean, median = median, sd = sd), na.rm = TRUE)) summary_stats

cat(” **Conclusions:**

- The mean and median values show the central tendency of market volumes and values for 2022 and 2023.
- Standard deviation indicates the spread or variability in the data. “) ggplot(data, aes(x = Market_Volume_2022)) + geom_histogram(binwidth = 10, fill =”blue”, alpha = 0.7) + ggtitle(“Distribution of Market Volume 2022”) + xlab(“Market Volume 2022”) + ylab(“Frequency”)

ggplot(data, aes(x = Market_Value_USD_2022)) + geom_histogram(binwidth = 500, fill = “green”, alpha = 0.7) + ggtitle(“Distribution of Market Value (USD) 2022”) + xlab(“Market Value (USD) 2022”) + ylab(“Frequency”)

cat(” **Conclusions:**

- The histograms show the distribution patterns of market volume and value for 2022.
- Most market volumes are concentrated around lower values, while market values show a wider spread. “) data <- data %>% mutate(Volume_Change = Market_Volume_2023 - Market_Volume_2022, Value_Change = Market_Value_USD_2023 - Market_Value_USD_2022)

year_over_year_summary <- data %>% summarise(across(c(Volume_Change, Value_Change), list(mean = mean, median = median, sd = sd), na.rm = TRUE)) year_over_year_summary

cat(" **Conclusions:**

- The mean and median changes show the average increase or decrease in market volumes and values from 2022 to 2023.
- Standard deviation indicates the variability in these changes. ") top_crops <- data %>% group_by(Crop) %>% summarise(Total_Value_2023 = sum(Market_Value_USD_2023, na.rm = TRUE)) %>% arrange(desc(Total_Value_2023)) %>% head(10) top_crops

cat(" **Conclusions:**

- Corn is the top-performing crop in 2023, followed by Bananas, Rice, and others.
- The market value data helps prioritize crops for strategic focus. ") regional_insights <- data %>% group_by(CountryGroup) %>% summarise(Total_Value_2023 = sum(Market_Value_USD_2023, na.rm = TRUE), Total_Volume_2023 = sum(Market_Volume_2023, na.rm = TRUE)) regional_insights

cat(" **Conclusions:**

- Mexico has the highest total market value in 2023, followed by the Andean region and Central America & Caribbean.
- Regional insights guide market strategies and resource allocation. ") product_line_trends <- data %>% group_by(ProductLine) %>% summarise(Total_Value_2023 = sum(Market_Value_USD_2023, na.rm = TRUE), Total_Volume_2023 = sum(Market_Volume_2023, na.rm = TRUE)) product_line_trends

cat(" **Conclusions:**

- Herbicides and Insecticides are the leading product lines by market value.
- Understanding product line trends helps optimize product portfolios. ") strategic_crop_analysis <- data %>% group_by(StrategicCrop) %>% summarise(Total_Value_2023 = sum(Market_Value_USD_2023, na.rm = TRUE), Total_Volume_2023 = sum(Market_Volume_2023, na.rm = TRUE)) strategic_crop_analysis

cat(" **Conclusions:**

- Specialty crops and vegetables have high market values, indicating their strategic importance.
- This analysis helps focus on key strategic crops for better market performance. ") ggplot(top_crops, aes(x = reorder(Crop, Total_Value_2023), y = Total_Value_2023)) + geom_bar(stat ="identity", fill = "purple", alpha = 0.7) + coord_flip() + ggtitle("Top Performing Crops in 2023") + xlab("Crop") + ylab("Total Market Value (USD) 2023")

cat(" **Conclusions:**

- The bar plot visually emphasizes the leading crops in terms of market value.
- Corn is the most valuable crop, followed by Bananas and Rice. “)“““