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Bridging History with Innovation

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Data Viz Tasting

An Exploration of Tableau, Power BI, and More

June 4, 2025

Presenter

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Introduction

Learning Objectives

- Identify key features, advantages, and limitations of various data visualization tools.
- Understand practical use cases for Tableau, Power BI, and other comparable platforms.
- Make more informed decisions on selecting the right tool for specific data storytelling needs.

Figure 1: Magic Quadrant for Analytics and Business Intelligence Platforms

Gartner (June 2024)

Gartner

Manis, Kim. "Microsoft Named a Leader in the 2024 Gartner® Magic QuadrantTM for Analytics and Bi Platforms." *Microsoft Power BI Blog | Microsoft Power BI*, Power BI, 24 June 2024, powerbi.microsoft.com/en-us/blog/microsoft-named-a-leader-in-the-2024-gartner-magic-quadrant-for-analytics-and-bi-platforms/.

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Why Data Viz?

- Quickly understand data, identifying relationships and trends
- Pre-attentive attributes:
  - Color, form, position, movement
- Communicate insights and tell stories

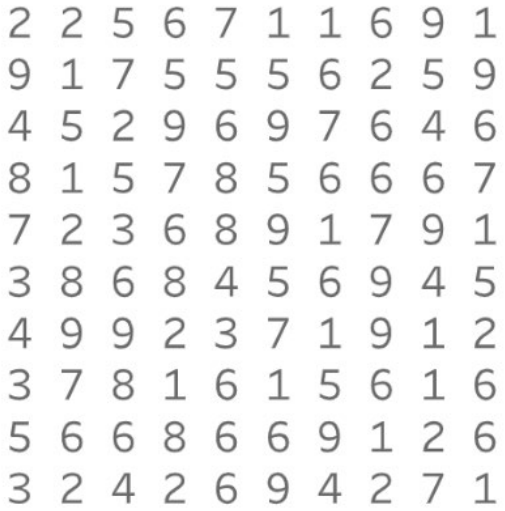

FIGURE 1.3 How many 9s are there?

FIGURE 1.4 Now it's easy to count the 9s.

Wexler, Steve, et al. *The Big Book of Dashboards: Visualizing Your Data Using Real-World Business Scenarios*. John Wiley & Sons, Inc., 2017. pp. 6.

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Why Penguins?

- They are one of the most threatened groups of seabirds.
- Half of the 18 species of penguins are vulnerable or endangered.
- Penguins are cool!
  - They can live 15-20 years.
  - They can swim 15 miles an hour.
- Demo Data Sets:
  - Penguin counts from MAPPPD (Mapping Application for Penguin Populations and Projected Dynamics), curated by Oceanites
  - Penguin info from Wikipedia
  - Penguin shapes from Adobe Stock.

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"Penguins." *BirdLife International*. https://www.birdlife.org/birds/penguins/

Tasting

Tableau

Licensing

Tableau Public – Free

Tableau Cloud, Server, and Desktop – Paid, cost based on number of users and billed annually

Environment

Tableau Cloud (online)
Tableau Server (on prem)
Tableau Prep (data prep/shaping)
Tableau Desktop (visualization)
Tableau Next (API-first/AI focus)

AI

Tableau Agent for creating calculations, descriptions, visualizations with conversational prompts

Tableau Pulse for analytics in plain language

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Images from Adobe Stock.

Tableau Demo

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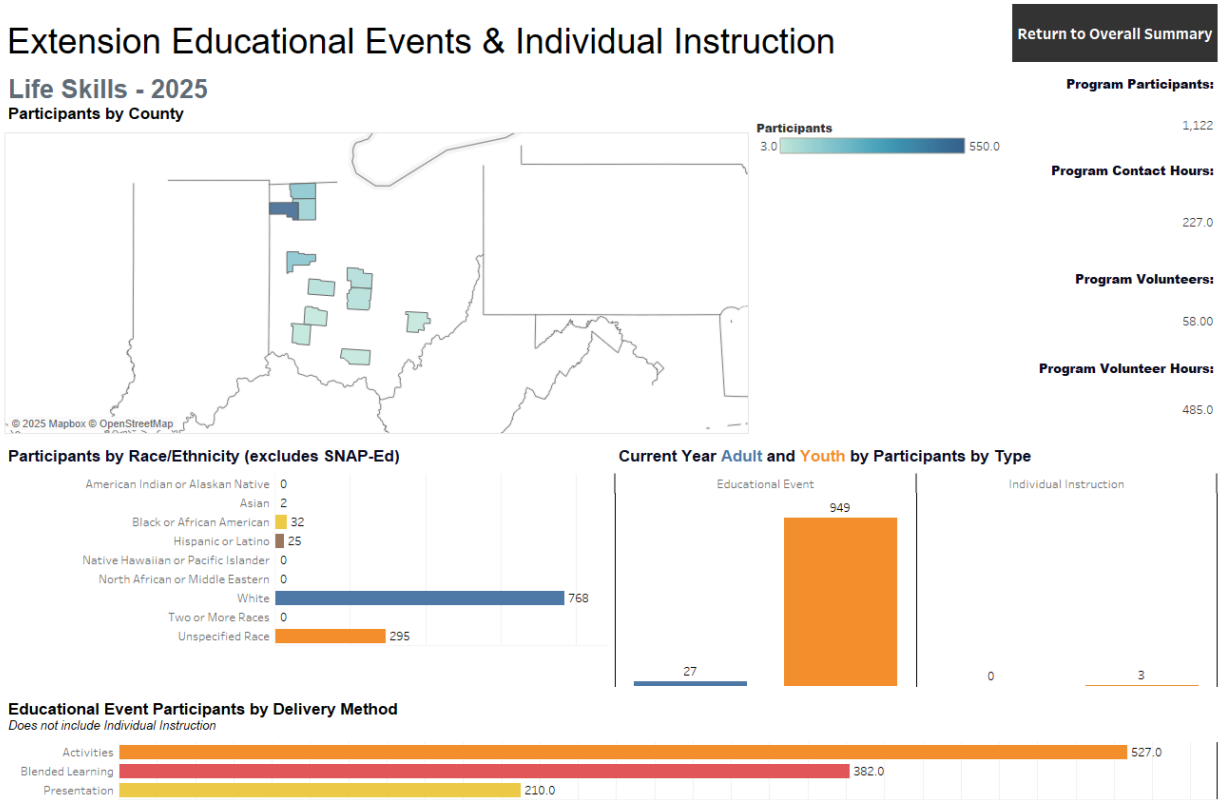
Extension & Tableau



- Educational activity reporting
- Overall summaries for the state by year
- Filters to allow diving into specific years and program areas
- Drill down to generate a dashboard for any of our 200+ programs or our 88 counties

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Microsoft – Power Platform

Licensing

Power BI Desktop – Free

Power BI Pro*, Premium – User based, paid annually

Power BI Embedded – price varies

*Included in Microsoft 365 E5 and Office 365 E5 license

Environment

Power BI Desktop (data prep and visualization)

Power BI Pro/Premium (cloud)

Power BI Report Server (on prem)

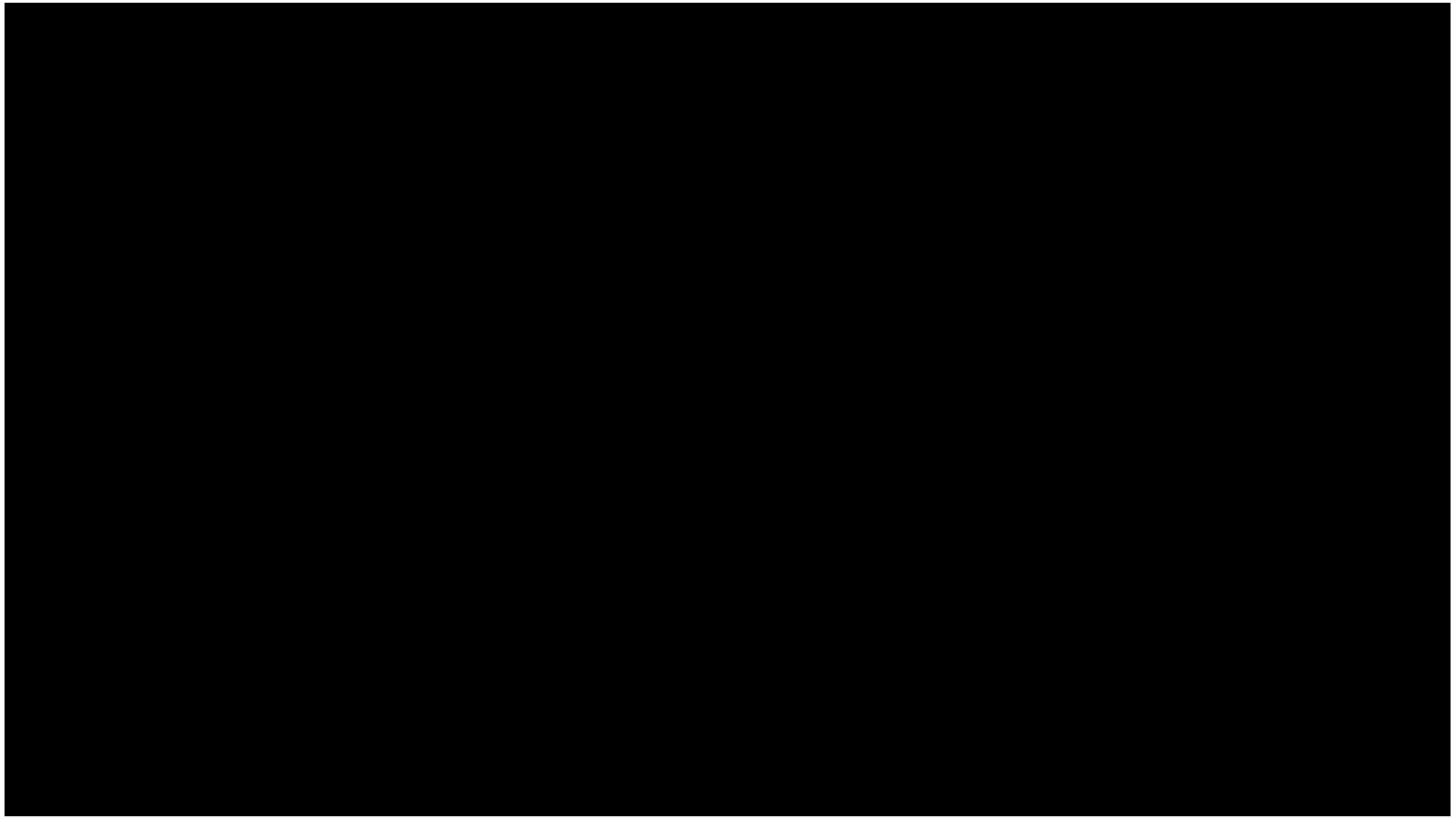
AI

AI Insights for data prep assistance

Copilot to write DAX queries

Copilot chat for analysis, creating visuals, and generating summaries

Power BI Demo



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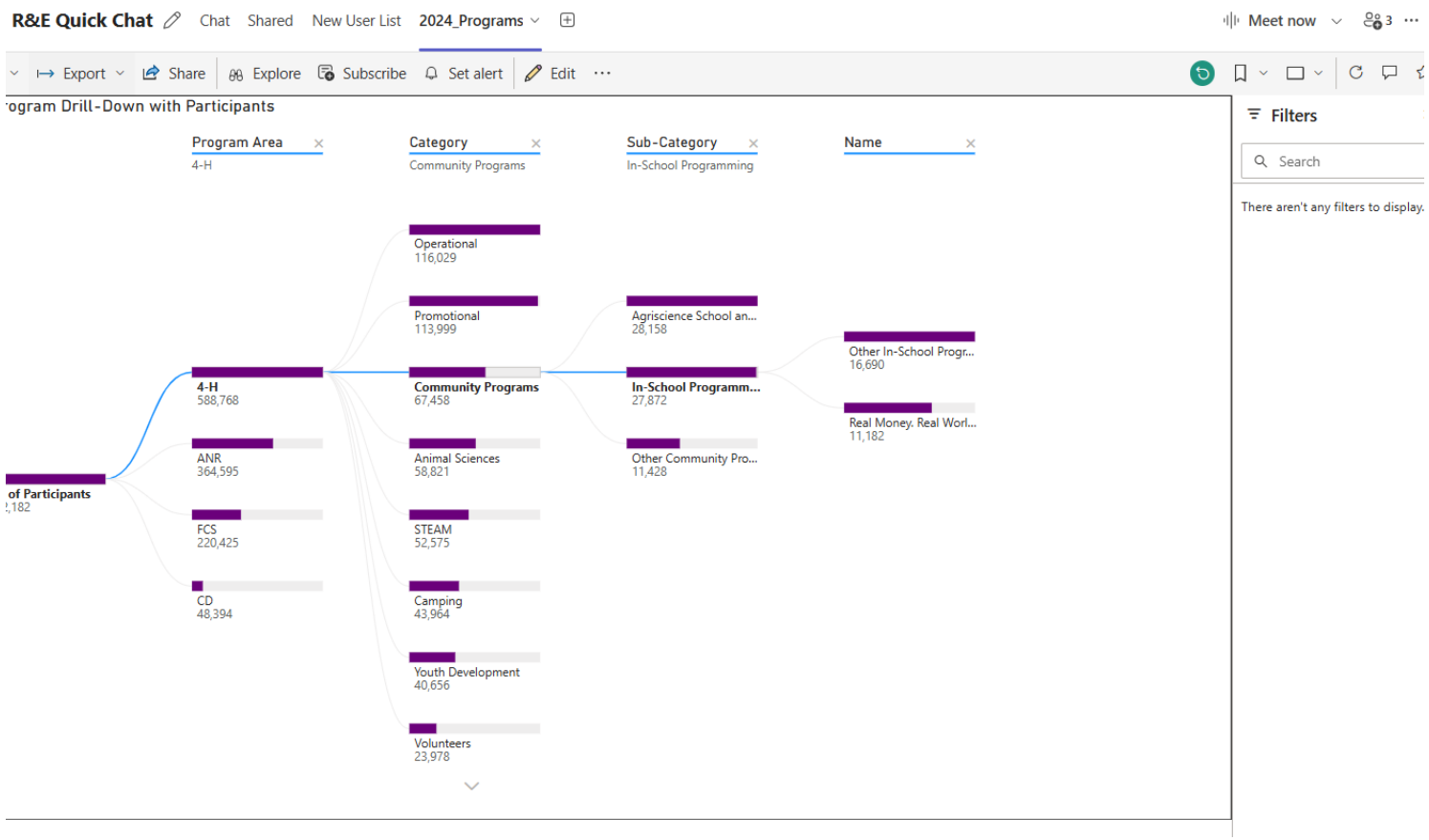
Extension & Power BI



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Palate Cleanser

A Note About Accessibility

- Follow best practices for color contrast and font sizes
- Design for black and white
- Label directly, not relying on legends
- Use static visualizations with takeaways in titles and summaries in alt text or captions
- Offer the data and analysis in another format

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Microsoft – Excel

Licensing

Excel - $179.99

Included in Microsoft 365

Environment

Excel (data prep and visualization, desktop or browser versions)

AI

Copilot to clean data, identify trends, build formulas, and generate charts

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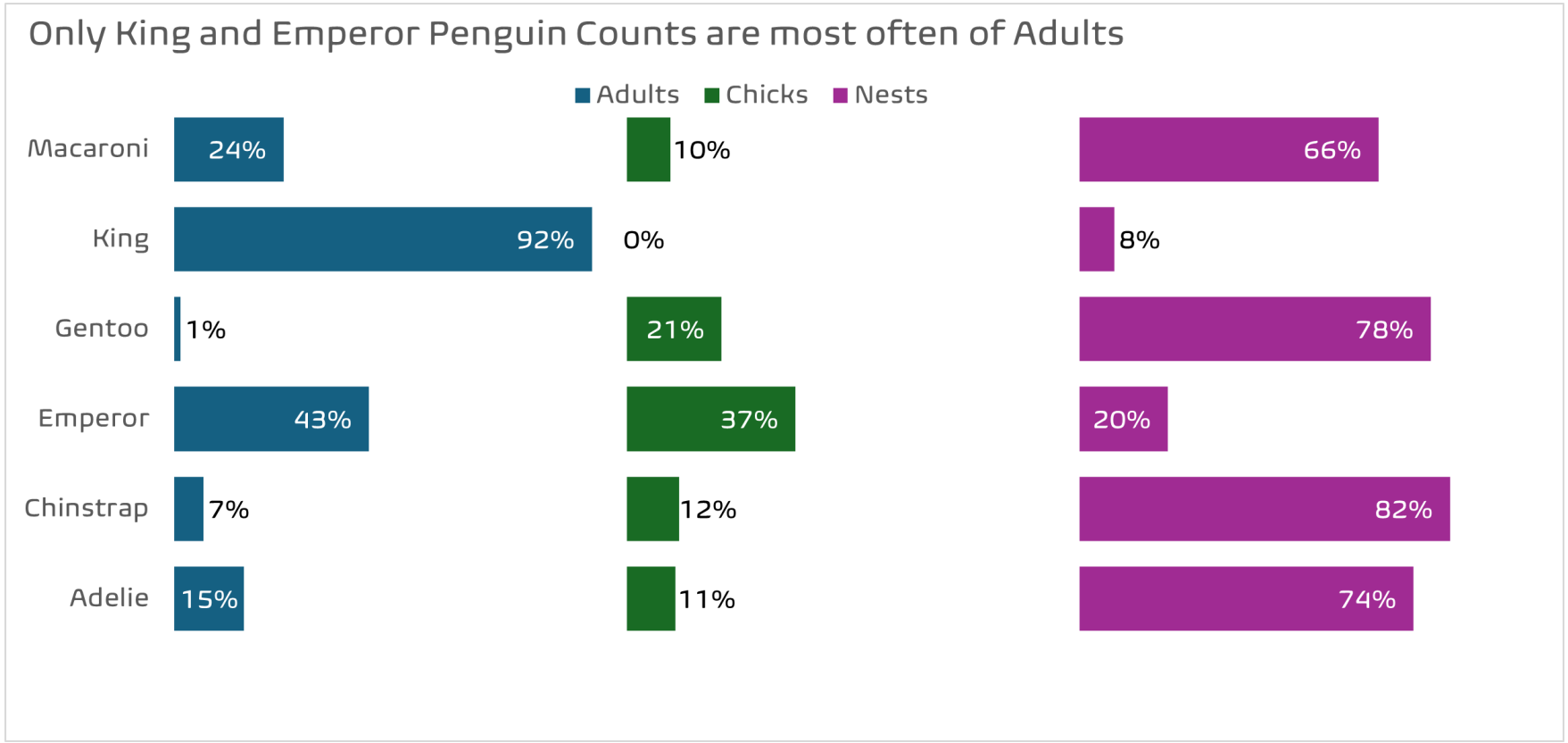
Penguin Example – Small Multiples



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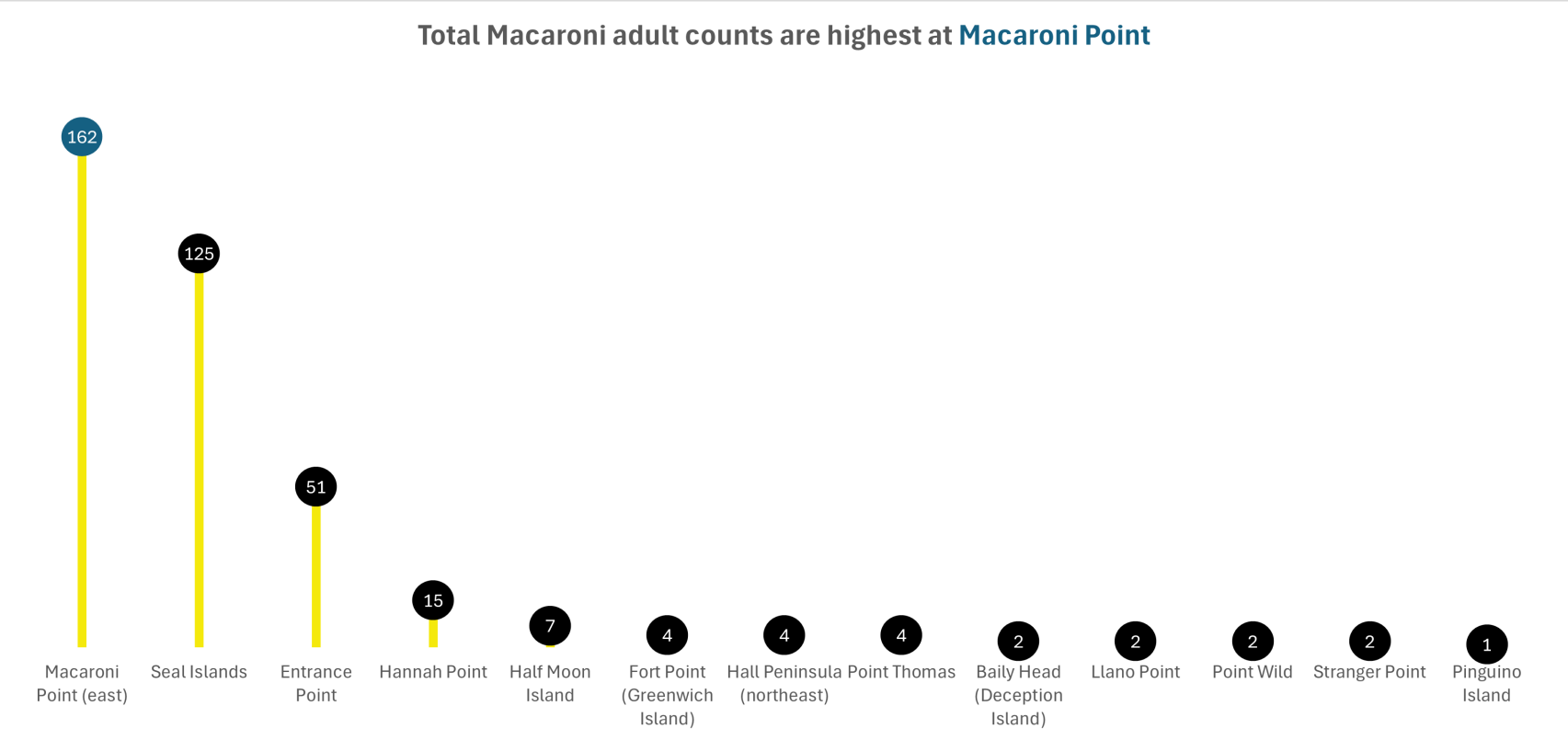
Penguin Example – Lollipop Chart



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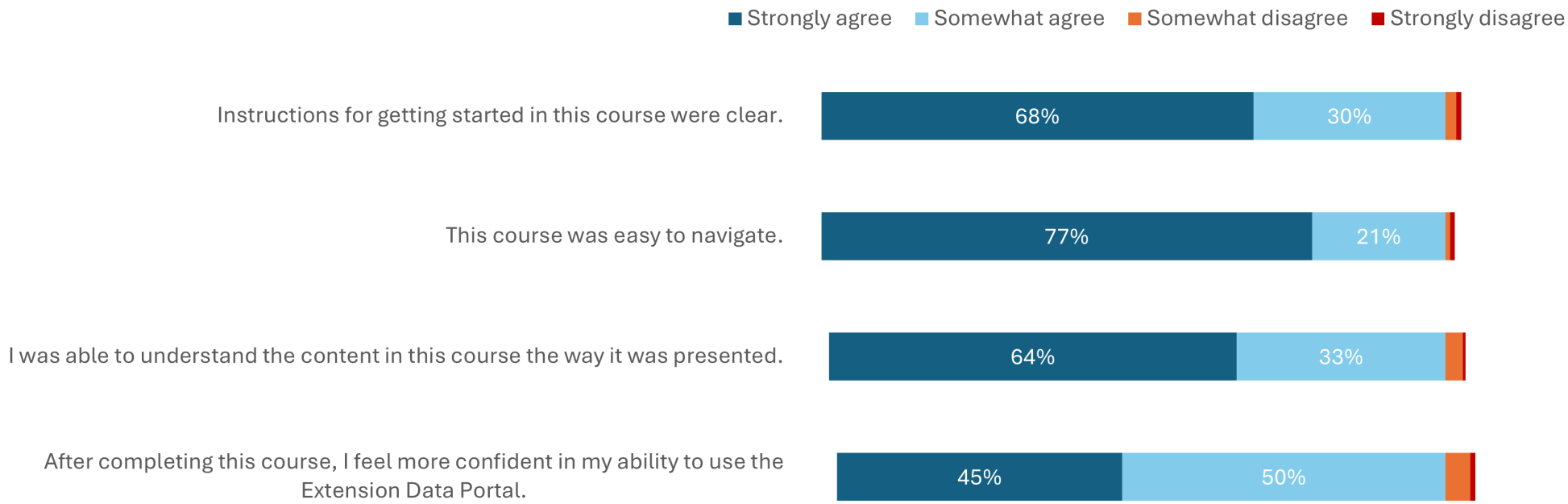
Extension & Excel

Participants agree the EDP Training has clear instructions and is both easy to navigate and understand. However, half still only somewhat agreed that they were more confident in their ability to use EDP after the training.



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RStudio

Licensing

Rstudio is an open-source IDE for R and Python

RStudio Desktop Pro – paid version, includes support and professional drivers - $1,097/year

Environment

RStudio (development)

Rstudio Server (browser-based, computation done on server)

AI

GitHub Copilot – integration available for Rstudio that offers predicted code suggestions and answers simple questions (paid)

Copilot – Generate R code

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RStudio Demo

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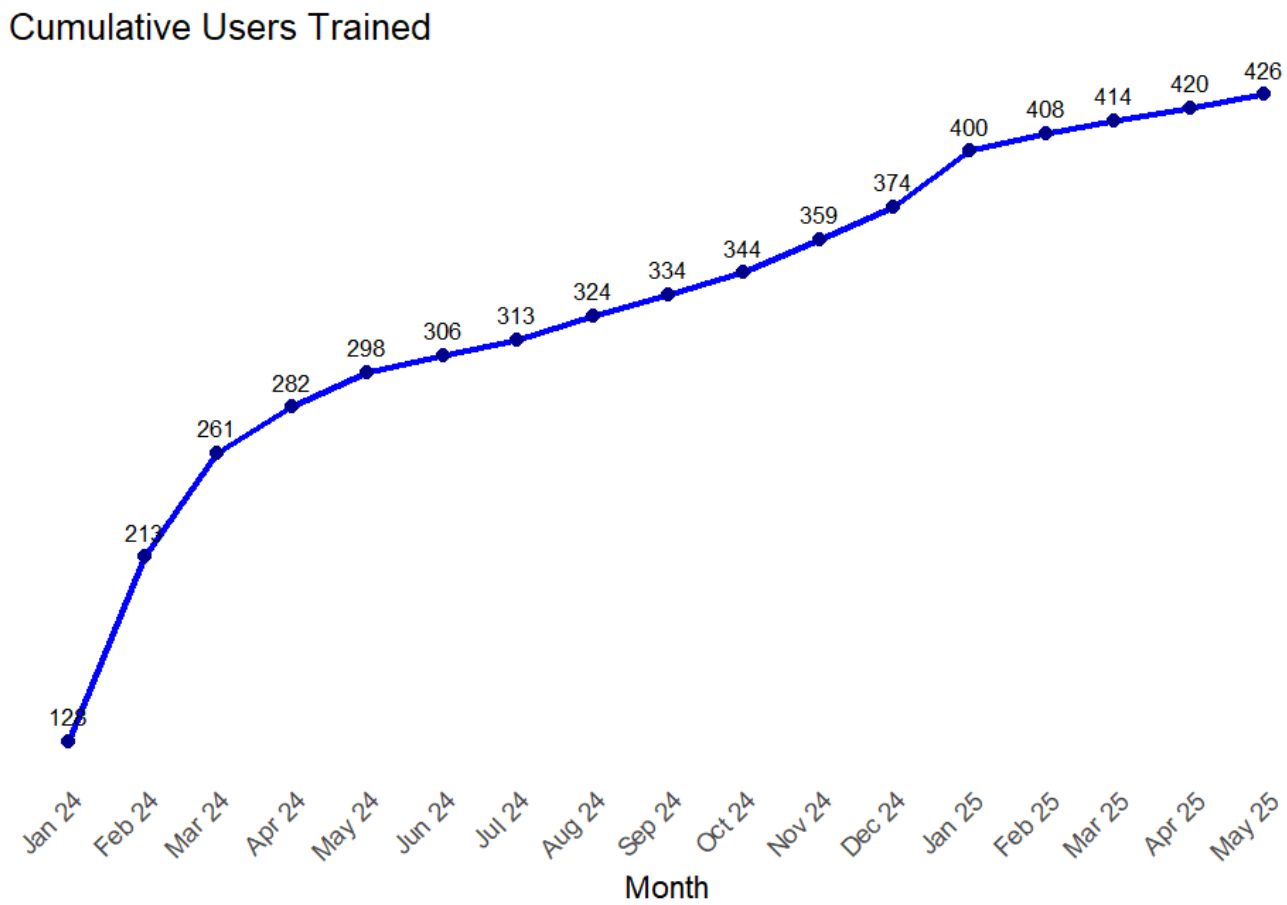
Extension & RStudio

```r
#load package
library(ggplot2)

#Import our csv file
edptrain <- read.csv(file = "userstrained.csv", header
 = TRUE, sep = ",")

#set month as a date field
edptrain$Month <- as.Date(edptrain$Month)

#plot graph
ggplot(edptrain, aes(x = Month, y = Users.Trained)) +
  geom_line(color = "blue", size = 1) +
  geom_point(color = "darkblue", size = 2) +
  geom_text(aes(label = Users.Trained), vjust = -0.9,
  size = 3) + # Add labels
  scale_x_date(date_labels = "%b %y", date_breaks =
  "1 month") +
  labs(title = "Cumulative Users Trained",
       x = "Month") +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust =
   1),
        panel.grid.major = element_blank(),
        panel.grid.minor = element_blank(),
        axis.title.y = element_blank(),
        axis.text.y = element_blank(),
        axis.ticks.y = element_blank(),
        axis.line.y = element_blank()
  )
```



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Conclusion

That was too fast! Where can I learn more?

Data Viz Basics

The Big Book of Dashboards by Steve Wexler, Jeffrey Shaffer, and Andy Cotgreave

R for Data Science (2e)

https://r4ds.hadley.nz/

Tableau

Trailhead – free training: http://trailhead.salesforce.com/

Penguin Data - MAPPPD

https://www.penguinmap.com/

Tableau Public

https://public.tableau.com/app/discover

AI help for Code/Formulas

https://copilot.microsoft.com/

Power BI

Microsoft - free training: https://learn.microsoft.com/en-us/training/paths/data-analytics-microsoft/

Tutorials for Everything

Evergreen Data Visualization Academy: https://stephanieevergreen.com/academy/

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THANK YOU!

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