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D601 - VKN2 Task 1: Building an Interactive Dashboard

Part 1: Interactive Data Dashboard

A. Using **one** of the attached datasets, create an interactive Tableau dashboard for the executive leaders of your organization to guide their decision-making with the following parameters:
   1. *The dashboard is submitted in a .twbx format and opens correctly.*
   2. *The dashboard includes different **four** data representations to summarize the data or display trends that align with the needs outlined in the scenario associated with your chosen dataset.*
   3. *The dashboard includes **two** filters that allow the user to modify how the data is represented.*
   4. *The dashboard includes **two** metrics or key performance indicators.*
   5. *The dashboard is accessible to users with colorblindness.*

B. Demonstrate your understanding of data representation and reporting by writing a paper in which you do the following:
   1. Create step-by-step instructions to send to a nontechnical executive leader to provide guidance for opening the dashboard and navigating the dashboard using *both* filters.

      Hello Executive Team,

      My name is Nicole and I am a Data Analyst on this project. I have complied step-by-step instructions to help you open and explore the interactive Medical Readmission Dashboard. This guide will walk you through launching the dashboard file and using the filters to explore key insights by patient risk level, charges by readmission status, and readmission rate by age and state.

      Opening the Dashboard File
      1. Locate the Dashboard File
      The file is named: **Medical_Readmission_Dashboard.twbx**

      2. Open Tableau Public Desktop
      If you do not have Tableau installed, you can download the free version here:
      https://public.tableau.com/en-us/s/download

      Optional:
      Alternative Access (Web-Based)
      As the data analyst on this project, I have also published this dashboard to Tableau Public. It is accessible by link (Medical_Readmission_Dashboard) and can be viewed directly from a web browser. Note: Tableau Public is 'public' (anyone can see this dashboard if link is shared); however, with Tableau Server or Tableau Cloud, dashboards can be securely shared internally through those platforms as well.

3. Open the Dashboard File
   - Launch Tableau Public Desktop
   - Click File → Open
   - Select the **Medical_Readmission_Dashboard.twbx** file from your computer

Navigating the Dashboard
Once the dashboard is open, you will see four charts and two summary metrics (KPI cards). You can interact with the data using filters located on the right side of the screen.

Filter 1: Complication Risk
- This filter allows you to view readmission trends for patients at High, Medium, or Low complication risk.
- To use:
  - Check or uncheck boxes to include or exclude specific risk levels
  - Ex: Unchecking "Low" will show the data in the dashboard for higher-risk patients only.

Filter 2: State
- This filter lets you focus on patients from specific US states.
- To use:
  - Scroll the list for a state (e.g., "CA" for California")
  - Check the box next to a state to include it in your view
  - You can select (All) to see all states and uncheck (All) to remove all data from the map to then select one or multiple states at a time.

Insights Update Automatically
As you adjust the filters, all charts and KPIs will update automatically to reflect your sections. This allows you to explore trends and metrics based on specific patient segments or regions.

If you have any questions or would like a guided walkthrough, please don't hesitate to reach out!

Thanks,
Nicole Gallo
Data Analyst

2. Explain how the purpose of your dashboard aligns with the needs outlined in the scenario associated with your chosen dataset.

The purpose of the. Medical Readmission Dashboard is to help executive leaders at a large hospital chain explore trends in readmission data and identify key areas for intervention. This aligns directly with the scenario, where the Centers for Medicare and Medicaid Services (CMS) penalize hospitals for excessive readmissions – a growing concern for healthcare providers.

This dashboard is designed to support data-driven decision-making by providing clear, visual insights into patient demographics, hospitalization factors, geographic patterns, and medical risk levels that contribute to readmission. Each element of the dashboard is intentionally aligned to the needs of the executive team:

- **Senior Vice President of Hospital Operations (SVP):**
  - The readmission rate by state and demographic breakdown by age group allow the SVP to assess regional and population-level trends, ensuring that hospital operations are meeting quality care standards across all locations.
- **Executive Vice President of Research (EVP):**
  - This dashboard includes breakdowns by complication risk and admission type, helping the EVP analyze patterns in patient care, service types, and risk factors. This supports their goal of identifying evidence-based strategies to reduce readmissions.
- **Chief Medical Officer (CMO):**
  - The dashboard highlights correlations between patient condition, treatment, and outcomes. The box plot comparing total charges by readmission status and the stacked bar of risk vs. admission type provide the CMO with a deeper understanding of how clinical pathways impact readmissions, allowing for improvements in care quality and discharge planning.

Overall, the dashboard transforms a complex dataset into an accessible decision-support tool that helps leaders compare key metrics (KPIs), identify at-risk populations, and target interventions. This directly fulfills the scenario's call for a dashboard that informs hospital strategies to minimize penalties and improve patient outcomes.

3. Explain **three** different ways you would change your data storytelling approach when presenting to a technical versus nontechnical audience.

When presenting the same data to different audiences, it is essential to tailor the storytelling approach based on their background, goals, and familiarity with data analysis.
Below are three ways I would change my presentation style depending on whether I am speaking to a technical or nontechnical audience:

1. **Depth of Technical Details**
   a. **Nontechnical Audience:**
      I would focus on high-level insights and plain-language explanations. For example, rather than discussing statistical calculations or Tableau functions, I would summarize findings in terms of trends and business implications – e.g., "Patients admitted through emergency services have higher readmission rates."
   b. **Technical Audience:**

I would include details such as data preparation steps, calculated fields (e.g., Readmission Flag), and filtering logic. This audience would appreciate transparency about methods and techniques and may ask about data accuracy, field types, or assumptions.

2. **Visualization Emphasis**
    a. **Nontechnical Audience:**
    I would limit the number of visualizations shows at once and highlight a few key takeaways using simplified charts. I'd use dashboard titles, labels, and tooltips to guide interpretation. I'd also emphasize KPIs and practical decision points.
    b. **Technical Audience:**
    I would include more detailed or layered visualizations, such as comparing distributions with box plots, or overlaying multiple dimensions for deeper exploration. I might also include exploratory data visuals or additional filters for their own use.

3. **Narrative Framing and Language**
    a. **Nontechnical Audience:**
    I would use storytelling techniques to create a narrative, such as "Here's the problem → Here's what the data shows → Here's what we recommend." I'd avoid technical talk and interpret terms like "outliers" or "average" in everyday language.
    b. Technical Audience:
    I would speak in a more structured analytical format, focusing on methodology, accuracy, and assumptions. I would use terms like "bins", "calculation fields", and "quartiles," knowing the audience understands them.

4. Identify **two** elements of effective storytelling you could use to present this dashboard, and explain how *each* element would engage the audience.

    1. **Narrative Flow**
    Rather than presenting charts in isolation, the dashboard follows a clear narrative structure that moves from high-level indications to deeper, more detailed breakdowns. The layout begins with key performance indicators (KPIs) – average charges ($7,728.62) and overall readmission rate (36.7%) – followed by supporting visualizations (box plot, filled map, stacked bar chart, bar chart) that explain who is being readmitted, where, and why.

    This flow engages the audience by giving them a "big picture" overview first, and then allowing them to dig into specific patterns and contributing factors. This mirrors how executives typically approach strategy: starting with outcomes, then drilling into root causes.

2. **Audience-Relevant Visual Framing**
   Each visual is intentionally chosen and formatted to match the specific goals of the executive roles identified in the scenario:
   - The map by state supports operational insights for the SVP
   - The stacked bar chart of admission type by complication risk supports clinical insights for the CMO
   - The box plot of total charges by readmission status engages the EVP in evaluating the financial impact

   By aligning visual content with the audiences' interests, the dashboard keeps each executive focused and engaged, and ensures that the story being told is personally relevant to their decision-making role.

C. Sources
   a. No other external sources were used outside of WGU coursework sources.