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Portfolio Project: Power BI Data Visualization for U.S. Health and Human Services

The U.S. Health and Human Services (HHS) Department encountered a series of cybersecurity attacks from 2009 to 2015, resulting in a significant need for better data analysis and visualization to enhance their cybersecurity efforts. Trion Solutions Inc. stepped in to address this challenge by developing a comprehensive dashboard solution using Microsoft Power BI.

Project Overview:

As an employee of Trion Solutions Inc., I collaborated with HHS to transform their raw incident data, previously stored in Excel, into actionable insights through dynamic visualizations. The goal was to empower the HHS Board with the necessary tools to make informed decisions, balancing cybersecurity measures with operational efficiency.

Project Phases:

The project unfolded in three key phases:

Research: Trion Solutions Inc. meticulously analyzed HHS's data needs and existing infrastructure to devise a tailored solution strategy.
Implementation: Leveraging the capabilities of Power BI, the team translated insights gained from the research phase into a user-friendly dashboard interface.
Testing: Rigorous testing ensured the reliability and effectiveness of the dashboard before its deployment, guaranteeing seamless functionality and accurate data representation.

Key Performance Indicators (KPIs):

Throughout each phase, Trion Solutions Inc. adhered to predefined KPIs to track progress and ensure project alignment with HHS's objectives. Milestones were met with precision, and additional features were incorporated to enhance the dashboard's utility.

Challenges and Solutions:

The project encountered various challenges, from data integration complexities to interface design considerations. However, through collaborative problem-solving and innovative solutions, our team navigated these obstacles effectively, ensuring project success and client satisfaction.

Budget Compliance:

Despite the intricacies involved, Trion Solutions Inc. delivered the dashboard solution within the allocated budget of approximately $, demonstrating fiscal responsibility and efficient resource management.

Conclusion:

The Power BI dashboard developed by Trion Solutions Inc. stands as a testament to the transformative potential of data visualization in cybersecurity management. By equipping HHS with a powerful analytical tool, the project not only addressed immediate challenges but also laid the groundwork for proactive decision-making in the realm of cybersecurity.

This portfolio project showcases Trion Solutions Inc.'s expertise in harnessing technology to drive impactful solutions and underscores its commitment to delivering value to clients in the ever-evolving landscape of data management and cybersecurity. As an employee of Trion Solutions Inc., I am proud to have contributed to this project's success and its positive impact on our client's cybersecurity efforts.

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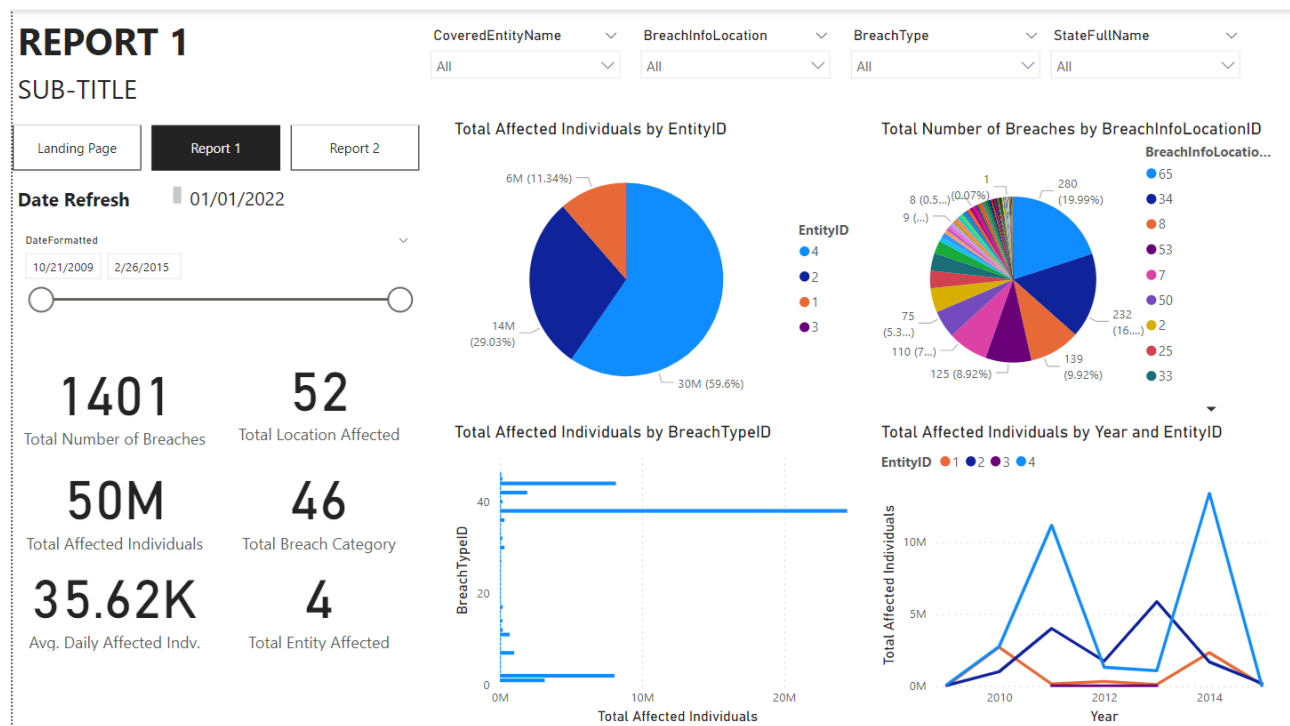
Power BI Dashboard :

Figure 1: Report Page 1

Left Panel:

On the left side of the dashboard, I incorporated various dynamic visual cards displaying essential metrics such as the total number of breaches, affected locations, count of affected individuals, breach categories, daily affected individuals, and total affected entities. To achieve this, I first cleansed the dataset and utilized Dex formulas to enhance data presentation. These visual cards offer dynamic subtitles, enabling users to compare trends and select specific dates for data analysis and security breach comparisons.

Middle Section:

In the middle section of the dashboard, I designed a pie chart illustrating the distribution of total affected individuals by entity ID, providing a clear overview of the impact across different entities. Additionally, a line graph was implemented to visualize the total affected individuals categorized by breach type, offering deeper insights into the nature of cybersecurity breaches.

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Right Panel:

The right panel of the dashboard features a pie chart showcasing the total number of breaches categorized by location, offering a geographical perspective on cybersecurity incidents. Below this, another line graph presents the total affected individuals over the years from 2010 to 2014, categorized by entity IDs, providing temporal insights into cybersecurity trends.
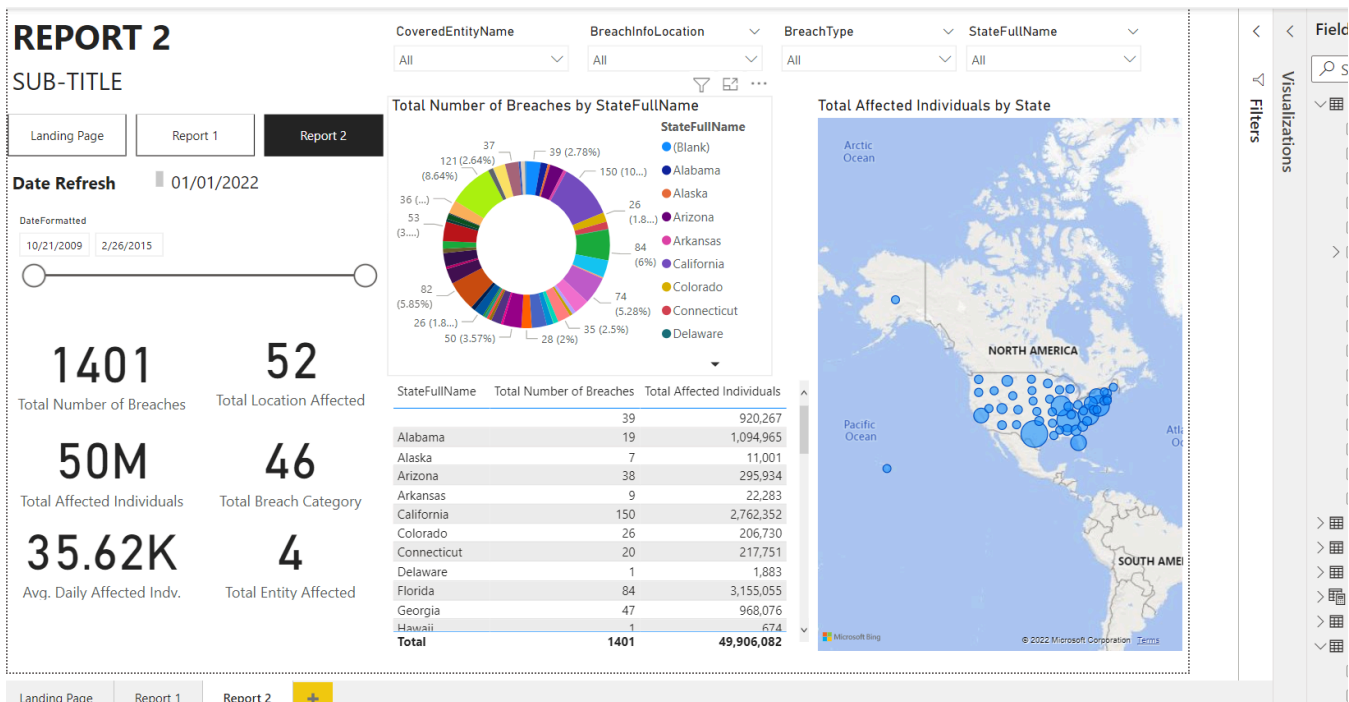

Figure 2: Report Page 2

Left Panel:

The left panel of the dashboard presents essential numeric data including the total number of breaches, total affected locations, total affected individuals, total breach categories, average daily affected individuals, and total affected entities. These metrics offer a comprehensive snapshot of the cybersecurity landscape under consideration.

Middle Section:

In the middle section of the dashboard, I integrated a pie chart showcasing the distribution of total breaches by state. This visual provides insight into the geographic

distribution of cybersecurity incidents across different states. Below the pie chart, a table displays detailed data including the state's full name, total number of breaches, and total affected individuals, allowing for deeper analysis and comparison.

Right Panel:

The right panel features a dynamic visual map representing the locations where breach attempts were registered. Leveraging geolocation functionality, the map automatically selects and displays locations without manual intervention, denoted by blue dots. This map offers a visual representation of the total affected individuals by state, providing geographical insights into cybersecurity incidents.

Dynamic Functionality:
All visual data and details within the dashboard are dynamic, allowing users to interactively explore and analyze the dataset. Users can modify the output by selecting various parameters such as entity name, breach location, breach type, and state full name, enabling tailored insights based on specific criteria.
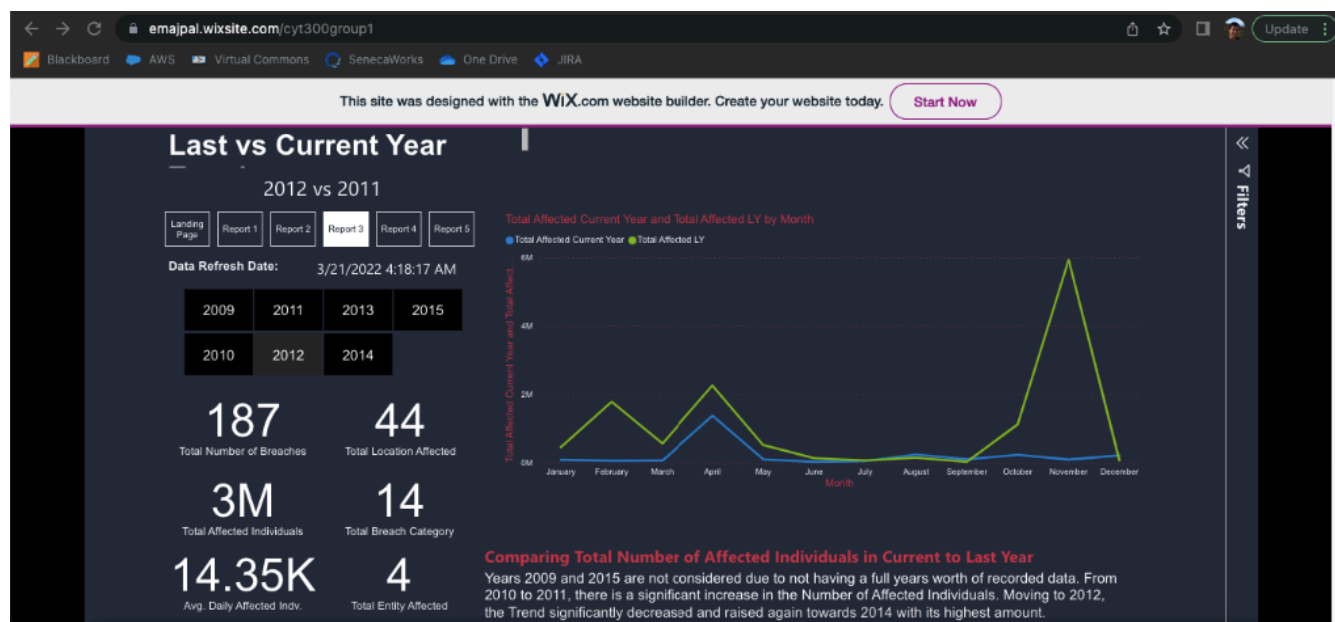
Deployment of PowerBI into Public domain with Wix :

Figure 3: Public Dashboard 1

Integration with WIX:

I seamlessly integrated the Power BI report into a webpage on the WIX platform, optimizing the layout to utilize the full width of the page. By leveraging the flexibility of WIX, I ensured that the embedded report is prominently displayed, allowing viewers to access and interact with the data visualization effortlessly.

Enhanced Visibility:

The integration with WIX enables the Power BI report to occupy a significant portion of the webpage, maximizing visibility and ensuring that users can easily explore the insights presented. By utilizing the full width of the page, the report becomes more engaging and impactful, facilitating a better understanding of the cybersecurity incident analysis.

User-Friendly Interface:

The WIX platform provides a user-friendly interface for both creators and viewers, enhancing the overall experience of interacting with the embedded Power BI report. Users can navigate the webpage seamlessly, accessing the embedded report and interacting with its dynamic visualizations without any hassle.

Accessible Data Analysis:

By embedding the Power BI report within the WIX webpage, I have made cybersecurity incident analysis more accessible to stakeholders. Users can conveniently access the

report from any device with internet connectivity, enabling them to stay informed and

make data-driven decisions regardless of their location.