Florida Atlantic University
COLLEGE OF BUSINESS

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Executive Certificate in Business Analytics
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Project 35 points

i. Comprehensive Analysis of California Hospitals Cancer Care Outcomes

ii. Introduction

This project involves conducting a detailed data analytics assessment using Power BI to extract meaningful insights from a large healthcare dataset. The primary objective is to transform raw data into visually compelling dashboards that support data-driven decision-making. The final deliverables include three interactive analytical dashboards and a professionally formatted written report summarizing key findings and conclusions. The analysis focuses on cancer-related outcomes within the California Office of Statewide Health Planning and Development (OSHPD) database, with emphasis on geographic distribution, hospital performance, and case volume trends.

a. The purpose of this project is to examine cancer case patterns across the state of California, with a particular focus on geographic location and hospital-reported incidence. The analysis identifies Los Angeles County as the region with the highest concentration of cancer cases, supported by spatial mapping that pinpoints case locations using latitude and longitude data. Additionally, the project evaluates the volume of cancer cases reported by individual hospitals to better understand regional healthcare demands and capacity. Overall, this analysis aims to provide insight into

cancer prevalence trends that may support future public health planning, resource allocation, and policy development.

b. The selected dataset contains healthcare-related data from California hospitals**,** specifically focusing on cancer care outcomes**.** The dataset consists of 23,179 records and multiple data fields relevant to patient outcomes and hospital performance. The dataset was obtained from an external public data source, and a link to the original dataset is provided in this report.

- The dataset contains relevant data for the State of California cancer cases.
- Link for your dataset:

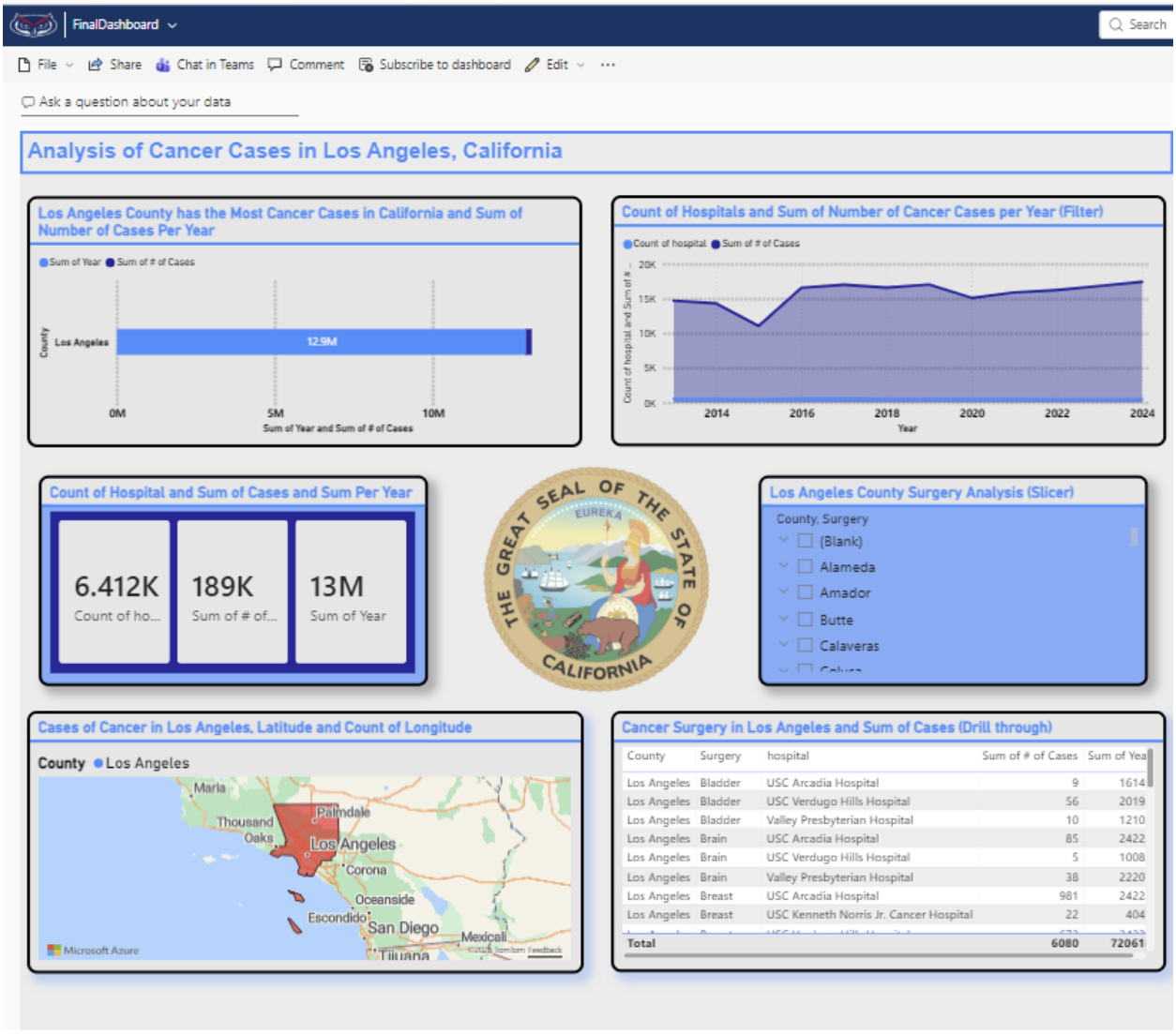
  https://catalog.data.gov/dataset/number-of-cancer-surgeries-volume-performed-in-california-hospitals-a3f18
- Website: https://Data.gov
- Column Headings: Year, County, Hospital, OSHPDID, Surgery, Number of Cases, Longitude and Latitude and 23,179 data rows.

iii. Analysis Methodology Followed

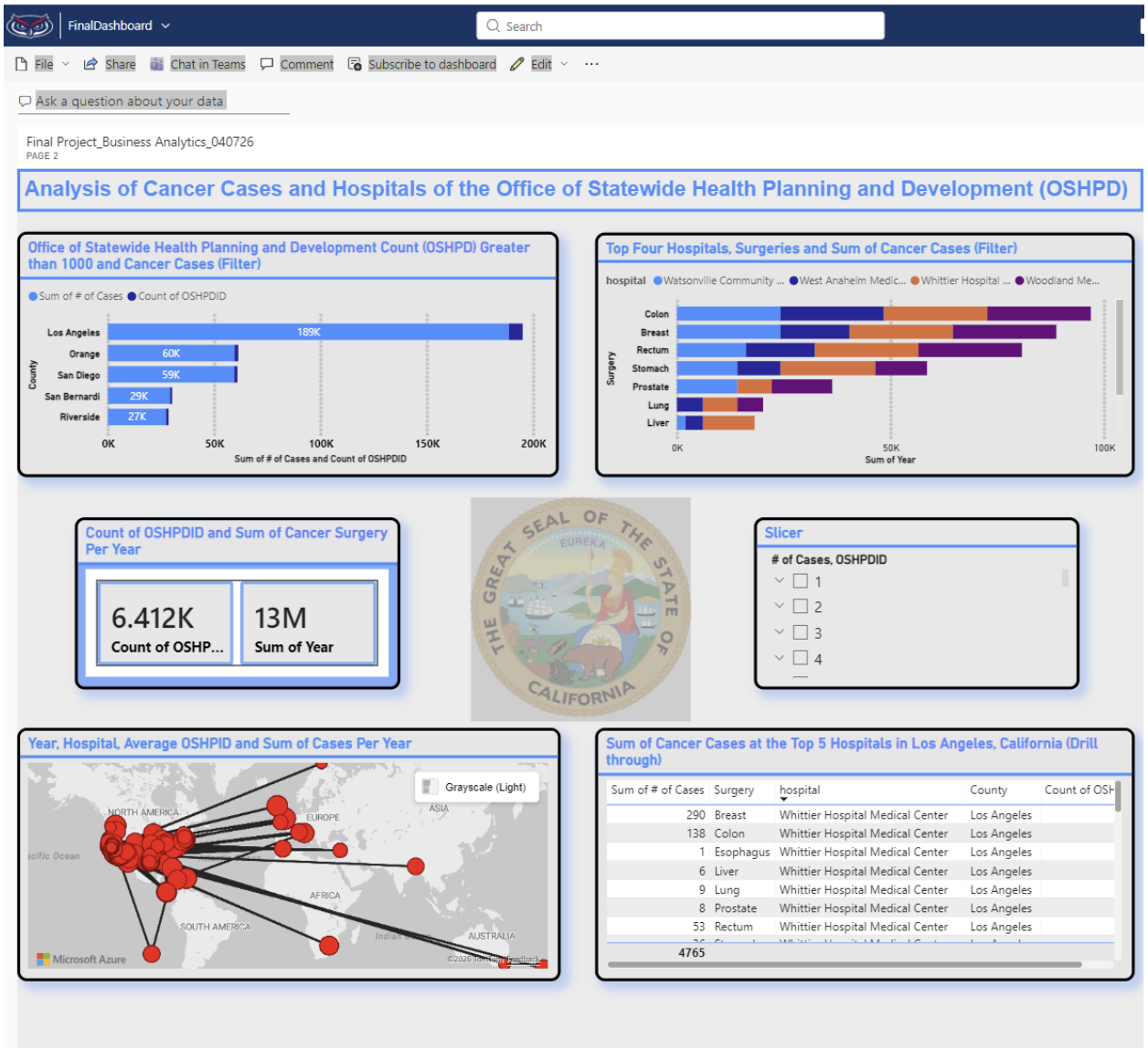
a. Power BI was selected as the primary analytical tool due to its strong capabilities in data modeling, visualization, and interactive reporting. The dataset was analyzed through the development of three dashboards, each designed to address a distinct analytical theme such as performance trends, geographic distribution, and hospital-level comparisons. The methodology included data preprocessing, cleaning, and transformation. Followed by selecting appropriate visualization types, applying filters, slicers, and drill through to dashboards for optimizing clarity, usability, and insight generation.

b. The visualization process began with selecting a clean, professional color scheme consisting of blue and gray to ensure clarity and maintain a formal aesthetic for applicable government-sourced data. Tooltips featured black backgrounds and white text. The State of California logo was incorporated across all three dashboard sheets to reinforce dataset credibility and visual consistency. Additionally, data from the California Office of Statewide Health Planning and Development was integrated with statewide cancer case records to produce a comprehensive and visually consistent analytical dashboard.

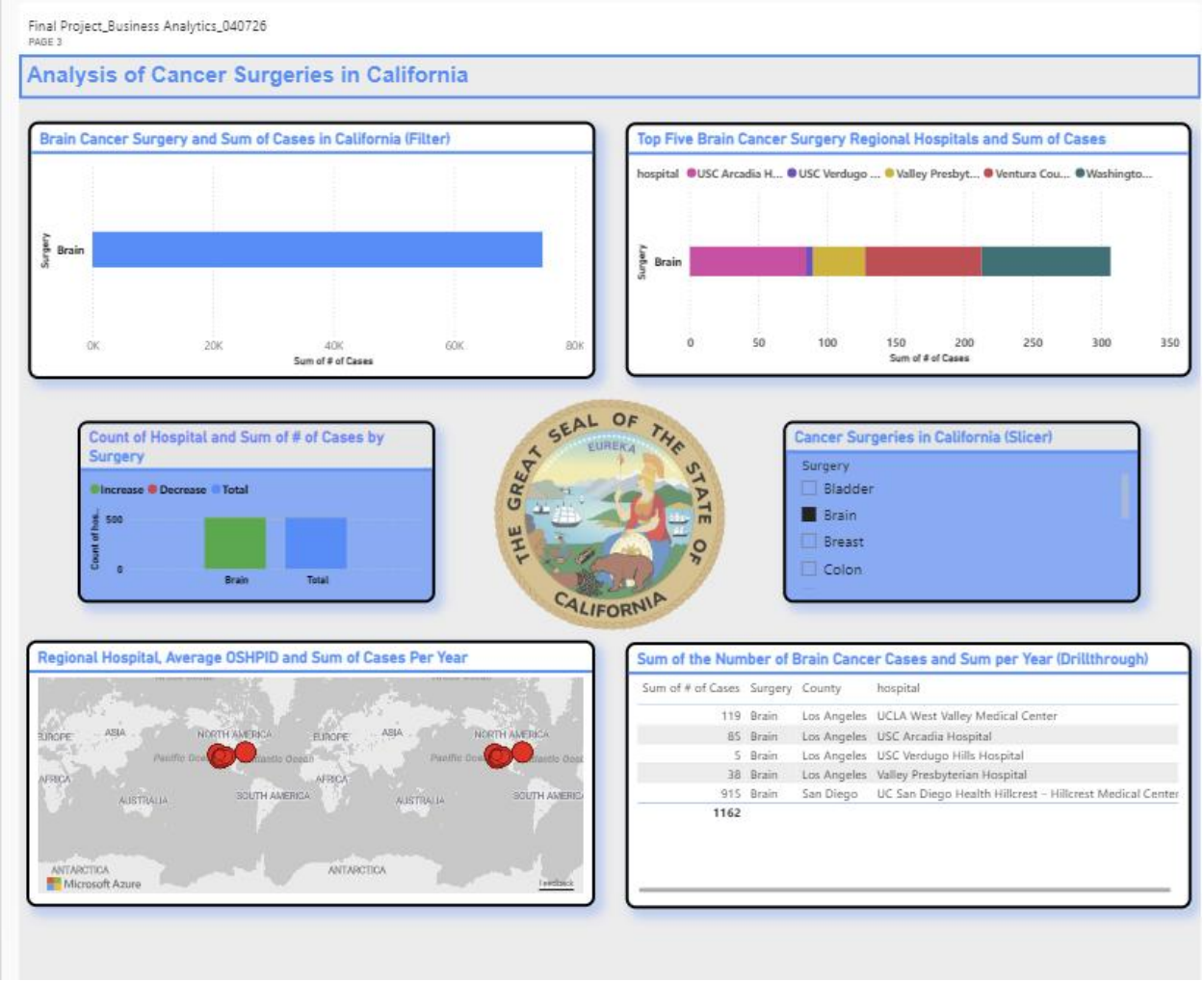
c. Dashboard 1



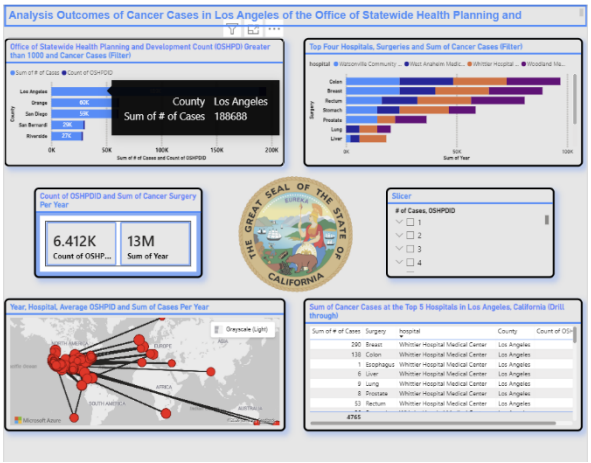
c. Dashboard 2



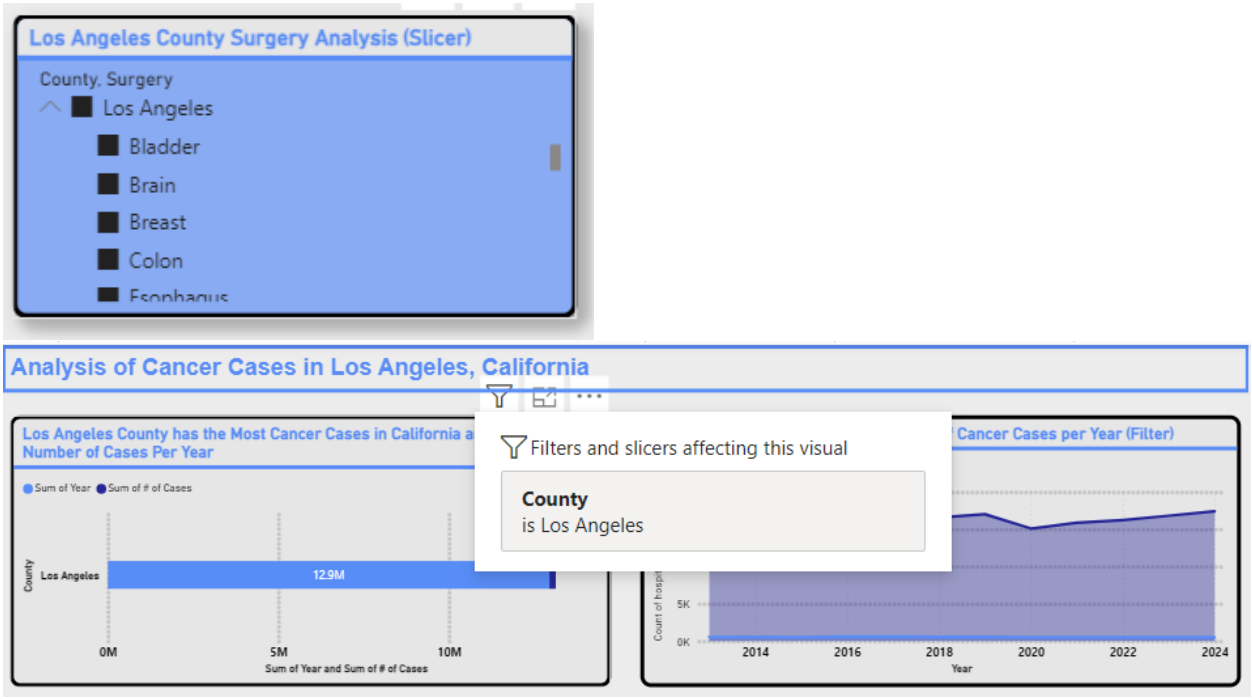
c. Dashboard 3



Custom Tooltip – Black background and white font



Slicer and filter



iv. Analysis Results – Dashboard 1

Dashboard 1 – Analysis of Cancer Cases in Los Angeles, California		
Positive Insights	**Negative Insights**	**Any other analysis comments**
Visualization #1, Los Angeles County has noticeably more cancer cases per year in the state of California. Los Angeles county has a larger and diverse population and the most cancer cases per year in this data analysis. There is also a correlation between year and number of cases for the county San Luis Obi. **Visualization #2**, Los Angeles cancer counts of hospitals, and the number of cases is the most in year 2024. There are hospitals and surgery which form clusters when grouped by number of cases except for 1, 2, and 3. Memorial Medical Center Modesto and Doctors Medical Center have noticeably more longitude for the Stanislaus County. Los Angeles has noticeably more hospitals for cancer cases. **Visualization #3**, The count of cases of cancer in the county of Los Angeles has the most cases per longitude and latitude. There is a correlation between number of cases and longitude for county Stanislaus. Los Angeles has noticeably more colon surgeries in the longitude map.	**Visualization #1**- Issues/Concerns There are significantly more cancer cases each year in Los Angeles County. The increase in cancer cases in Los Angeles can be because the state has a large and diverse population which contributes to the overall incidence of cancer cases in the state of California. In addition, environmental exposures such as air pollution can increase risk. Factors such as smoking, diet, and physical activity, in addition to genetics, also influence outcomes within a population.	***Future concerns*** Yifang Zhu, a professor of environmental health sciences at the UCLA Fielding School of Public Health, has made this new research study. The impact of the 2025 Los Angeles County wildfires has found that even after fires are extinguished, residents who return to their homes may remain at risk of exposure to known carcinogens because of smoke damage. Continued exposure to environmental hazards can play a role in increased cancer risk within the community.

Positive Insights (Cont'd.) **Visualization #4,** Cancer surgery in Los Angeles and sum of cases for the Los Angeles area is 6,080. Breast cancer has noticeably a greater number of cancer cases for Los Angeles. Kaiser Foundation Hospital, Oakland Medical Center, and Alta Bates Summit Medical Center have noticeably a greater number of breast cancer cases for Alameda County.		

Dashboard 2 – Analysis Outcomes of Cancer Cases of the Office of Statewide Health Planning and Development (OSHPD)		
Positive Insights	**Negative Insights**	**Any other analysis comments**
Visualization #1, The Office of Statewide Health Planning and Development (OSHPDID) greater than one thousand had 188,688 cancer cases in Los Angeles County. Los Angeles has a steady percent of total number of brain cancer cases from 2013 through 2024. The average hospital cases are 321 per year. In 2016 there were noticeably more hospital surgeries for brain cancer. There is also a correlation between number of cases and hospitals for breast surgery. **Visualization #2**, The most cases of cancer surgeries from the top four hospitals are colon cancer cases. There is a correlation between the OSHPDID number of Cases and breast surgery. University of California San Francisco Medical Center accounts for the most hospital cancer cases for San Francisco County. There is also a correlation between the number of cancer cases and county for liver surgery. **Visualization #3**, Cancer cases per year and the average of OSHPDID form clusters when grouped by latitude except for 32.74986, 33.0978509,	**Visualization #1**- Issues/Concerns. The most cases of cancer surgeries in California hospitals are colon cancer cases. The Office of Statewide Health Planning and Development (OSHPDID) greater than one thousand had 188,688 cancer cases in Los Angeles County.	***Future concerns*** The role of hospital locations and colon screening awareness regarding hospital locations and cancer cases across various regions of California can serve as a valuable resource for public education about colon screening. By analyzing this information, healthcare professionals and policymakers can identify areas where colon screening initiatives could be especially beneficial for cancer patients.

Positive Insights (Cont'd.) and 33.12158. There is a longitude correlation for this data between year and the average number of 1300 cancer cases for the county of Santa Barbara. There is also a longitude correlation between year and the average number of 636 cancer cases per year for the county of Monterey. **Visualization #4,** The sum of cancer cases at the top five hospitals in Los Angeles, California. Kaiser Foundation Hospital, Fontana, and Loma Linda University Medical Center have a greater number of cancer cases for San Bernadino County. Kaiser Foundation Hospital, Oakland Medical Center, and Alta Bates Summit Medical Center have a greater number of cancer cases for the county of Alameda. University of California San Francisco Medical Center accounts for 54.74% of cancer cases for the county of San Francisco.		

Dashboard 3 – Analysis of Cancer Surgeries in California		
Positive Insights	Negative Insights	Any other analysis comments
Visualization #1, The sum of brain cancer surgery cases in California are 74,680. Breast cancer surgeries account for 65,656 cases in 2023. Breast cancer surgeries have noticeably a higher number 50,580 cases for the year 2014. Tracking the sum of brain cancer surgeries from 2013 through 2024, 2015 recorded the lowest number of surgery cases, totaling 4,222. **Visualization #2**, The top five Brain cancer surgery hospitals are USC Arcadia, USC Verdugo, Valley Presbyterian, Ventura County. Washington Community Regional Medical Center, Fresno California has the most brain cancer surgery cases per year, number of cases is 785. There is a correlation between number of cases and county for liver surgery. In the years 2013 through 2017 there were 3174 liver surgery cases and 36 count per county. UC San Francisco Medical Center accounts for most of the number of cancer surgery cases for the county of San Francisco. **Visualization #3**, In 2013 the sum of Brain cancer surgery	Breast cancer surgeries account for 65,656 cases per year for 2023. UC San Francisco Medical Center accounts for the greatest number of cancer surgery cases in San Francisco County.	According to California Department of Health Care Access and Information, clinical evidence shows a clear link between number of surgeries performed at a hospital and patient outcomes. Hospitals with fewer surgeries tend to have higher rates of complications or mortality.

Positive Insights (Cont'd.) cases were 37 at Community Regional Medical Center – Fresno with an average OSHPDID. There is a correlation between year and number of surgery cases for Monterey County per longitude -121.6481. The cancer surgery cases and OSHPDID form clusters when grouped by latitude except for 32.74986, 33.0978509, and 33.12158. **Visualization #4,** The sum of brain cancer surgery cases per year in Los Angeles is 1162. Esophagus cancer has the lowest sum of surgery cancer cases, 10,134, .78%. Breast cancer surgery cases are the most 682,768, 52.23% of the eleven cancer surgery cases in the state of California.		

iv. Conclusion

Los Angeles County reports the most cancer cases in California are due to its diverse population. Colon cancer surgeries are the most common, with 188,688 cases recorded. According to OSHPD, breast cancer accounts for 52.23% of all tracked cancer surgeries in the state, reflecting increased screening and awareness. San Francisco Medical Center leads in local cancer surgeries. Annually, there are 104,955 brain cancer surgeries (5.71%), while esophagus cancer is the least common at 10,134 cases (0.78%). This data summarizes eleven distinct cancer types tracked across the state of California.