ACCOUNTING ANALYTICS CAPSTONE

BENJAMIN & Joseph

ABOUT
Benjamin & Joseph (B&J) is a Singapore-based medical bills audit company, dedicated to ensuring integrity of medical bills to save time, money and stress for its healthcare stakeholders.

ROLE OF ACCOUNTING ANALYTICS
By using accounting analytics, B&J can gain valuable insights into its clientele's medical bills data. These insights will empower informed provision of consultancy services to its healthcare stakeholders.

PROBLEM STATEMENT
How can Benjamin & Joseph Medical Bill Auditors utilize the data to generate insights that are helpful to all relevant stakeholders through dashboards?

OUR APPROACH

Data Cleansing → Data Engineering → Text Analytics → Data Visualisation

TEXT ANALYTICS (NLTK)
Normalize the text data using tokenization, stemming, and lemmatization.

With this model, the team has:
• Identify the word before "Cancer" – **Breast** Cancer
• Locate terms that ends with "OMA"
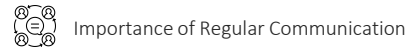• Match drug names according to MOH drug lists

TOOLS

python · +ableau

OUR LEARNING

Importance of Client-Centric Mindset

Importance of Regular Communication

OUR TEAM & APPRECIATION
We sincerely thank our client B&J, project advisors Prof. Benjamin Lee and Prof. Chua Wan Rong, and project manager Chen Shan Shan for the support in our learning journey.
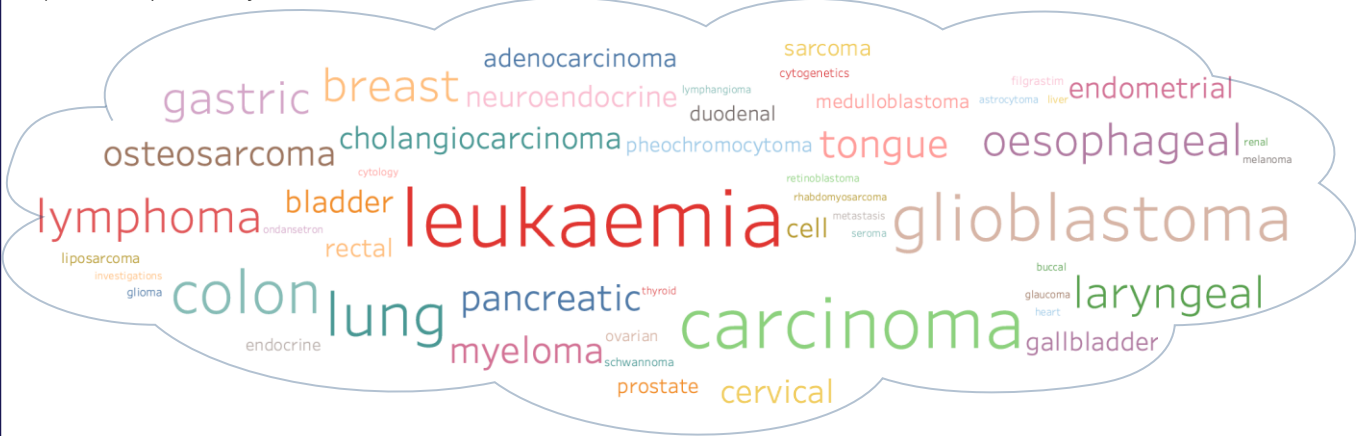
TEAM MEMBERS

Xiuqi · Rui Mei · Wei En · Felicia · Li Ying · Hao Wei

ILLUSTRATIVE VISUALISATIONS ON B&J'S CANCER-RELATED DATA
All visuals and charts displayed are extracted from our dashboards and based on B&J's historical data on cancer-related medical bills between 2016 to 2020.
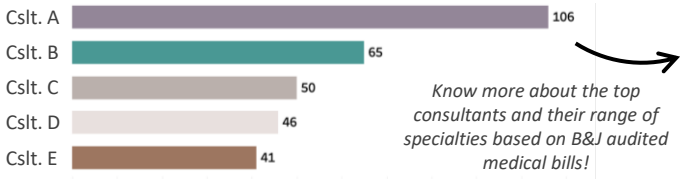
TEXT ANALYTICS ON CANCER-RELATED TERMS
These cancer-related terms were identified through text analytics and are __ranked by the total amount of the bills in descending order__ as represented by the size of the words in the word cloud below:

adenocarcinoma · sarcoma · gastric · breast · neuroendocrine · lymphangioma · cytogenetics · filgrastim · endometrial · duodenal · medulloblastoma · astrocytoma · liver · osteosarcoma · cholangiocarcinoma · pheochromocytoma · tongue · oesophageal · renal · cytology · retinoblastoma · melanoma · lymphoma · bladder · leukaemia · rhabdomyosarcoma · glioblastoma · cell · metastasis · seroma · ondansetron · rectal · liposarcoma · investigations · glioma · colon · lung · pancreatic · thyroid · carcinoma · buccal · glaucoma · laryngeal · heart · endocrine · myeloma · ovarian · schwannoma · gallbladder · prostate · cervical

For the past 5 years, patient diagnosed with __Leukaemia__ incurred the highest bills based on B&J's audits!

TOP 5 CONSULTANTS (CSLT)

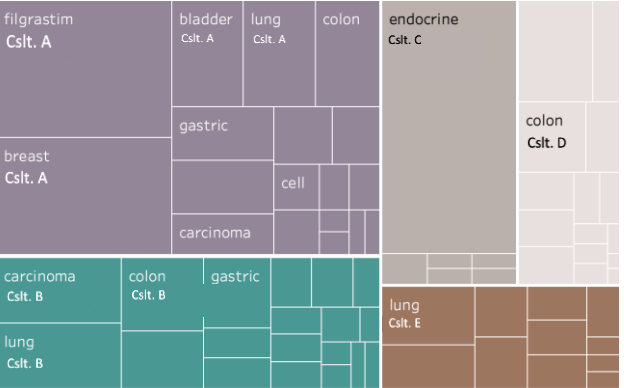| Consultant	Count
Cslt. A	106
Cslt. B	65
Cslt. C	50
Cslt. D	46
Cslt. E	41

Know more about the top consultants and their range of specialties based on B&J audited medical bills!

Based on B&J's audited medical bills, __Cslt. A__ was ranked as the top consultant in terms of the total number of patients consulted in Parkway.

From records, her expertise mainly includes breast, bladder, lung, and colon cancer.

TOP CONSULTANTS & CANCER-RELATED TERMS

filgrastim Cslt. A · bladder Cslt. A · lung Cslt. A · colon · endocrine Cslt. C · gastric · cell · breast Cslt. A · carcinoma · colon Cslt. D · carcinoma Cslt. B · colon Cslt. B · gastric · lung Cslt. E · lung Cslt. B

B&J CANCER-FOCUSED INSIGHTS
• Gender does not play a strong role in cancer susceptibility
• The prime working age group (25 to 54 years old) is the 2nd group most susceptible to cancer
• Each hospital may specialize in dealing with certain cancer-related cases more often than the others
• The popularity of a consultant does not always imply higher fees as it may be influenced by the amount of bills charged
• In some cases, indirect expenses could overwhelm direct expenses

RECOMMENDATIONS

Master files of cancer-related terms

Standardize data entities

Maintain long-term client relationships

Develop data dictionary and documentation

LIMITATIONS

Personal Data Protection Act (PDPA)

Lack of medical domain knowledge

Potential inaccurate classification of direct and indirect expenses