

**MARKET RESEARCH STUDY OF MONOCLONAL ANTIBODIES (MABS) IN CANCER THERAPY
RECOGNIZING THE POTENTIAL OF DIFFERENT MOLECULES IN URBAN CITY IN INDIA.**

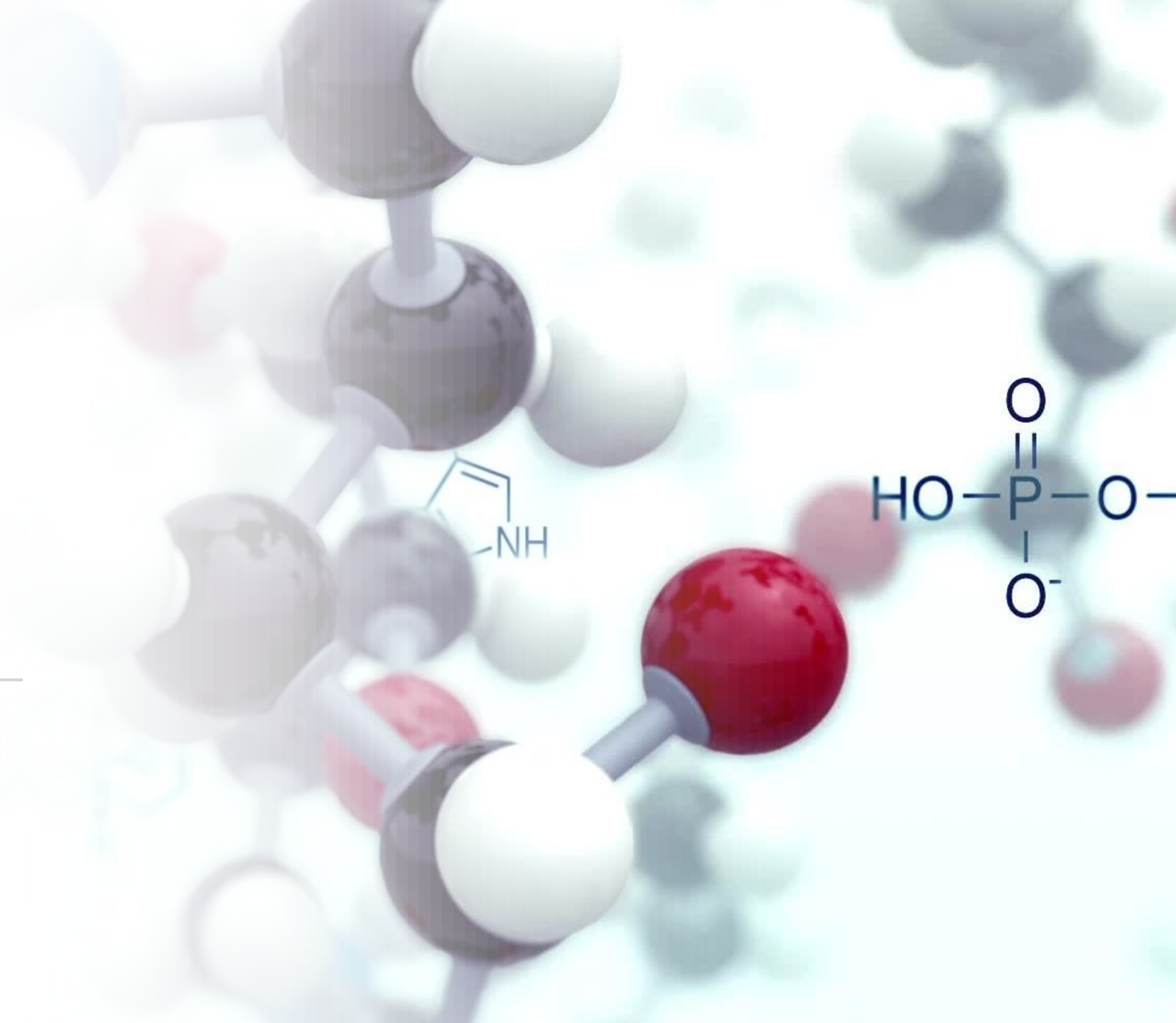
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Pharmaceutical Management**

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**Under the Supervision and Guidance of
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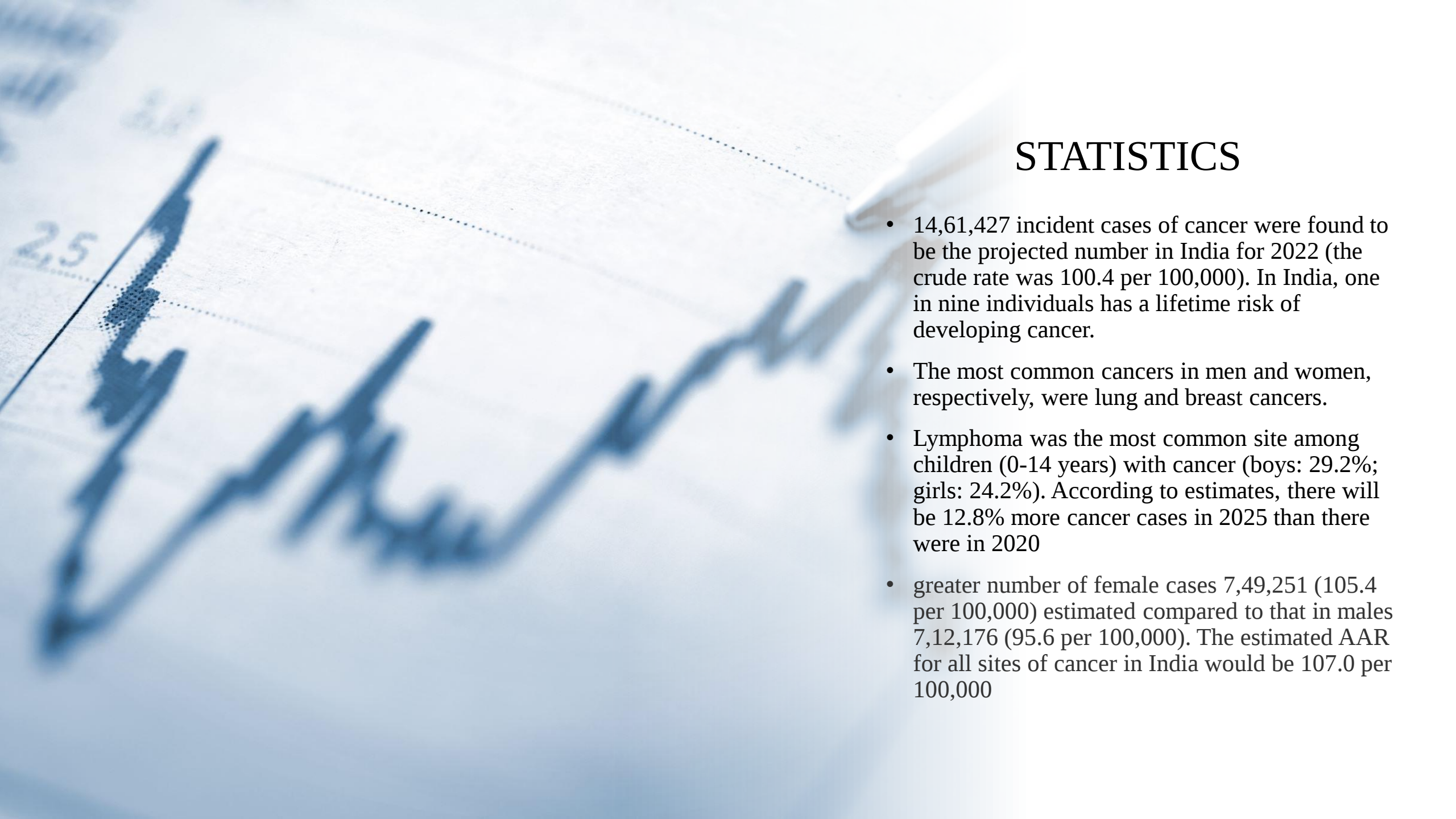
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1.INTRODUCTION

- One in six fatalities will be caused by cancer in 2020, making it the top cause of mortality globally
- Disease burden has increased because of socioeconomic status, behaviour, food, and public health issues.
- Market based on therapeutic approaches
Chemotherapy, Targeted Therapy, Hormonal Therapy, Monoclonal and Polyclonal Antibodies, Stem Cell Transplantation, and Surgery
- Alkylating agents, Antimetabolites, Anthracyclines, Topoisomerase Inhibitors, Mitotic Inhibitors, Hormonal Agents, Immunomodulatory Drugs, and Monoclonal Antibodies (MABs)



STATISTICS

- 14,61,427 incident cases of cancer were found to be the projected number in India for 2022 (the crude rate was 100.4 per 100,000). In India, one in nine individuals has a lifetime risk of developing cancer.
- The most common cancers in men and women, respectively, were lung and breast cancers.
- Lymphoma was the most common site among children (0-14 years) with cancer (boys: 29.2%; girls: 24.2%). According to estimates, there will be 12.8% more cancer cases in 2025 than there were in 2020
- greater number of female cases 7,49,251 (105.4 per 100,000) estimated compared to that in males 7,12,176 (95.6 per 100,000). The estimated AAR for all sites of cancer in India would be 107.0 per 100,000



STATISTICS

- The leading five sites with the highest cancer burden in both sexes were organs of the digestive system (2,88,054), breast (2,21,757), genital system (2,18,319), oral cavity and pharynx (1,98,438) and respiratory system (1,43,062).



1.2 BACKGROUND AND RATIONALE

- Investigations are urgently needed to have a better knowledge and estimate of the market for mAbs in the cancer industry because to the intense competition and market fragmentation that this segment faces. The way that cancer is treated is continually changing in reaction to newly published research, and an excessive number of new medications are being added at a quick rate. Newer, more effective medicines with fewer adverse effects are replacing older ones. As a result, this report concentrates on the market's assessment and growth of ACE Inhibitors as well as an analysis of recent market entrants in the same industry.



LITERATURE REVIEW

- The market for monoclonal antibodies was estimated to be USD 210.06 billion in 2022, and from 2023 to 2030, it is anticipated to increase at a compound annual growth rate (CAGR) of 11.04%.
- Numerous studies have looked at how monoclonal antibodies are used in Indian cities, revealing information about the sorts of tumours that are targeted, prescribing habits, and patient demographics
- Despite the great potential of mAbs in the treatment of cancer, there are several obstacles and difficulties in product positioning as well as occupying highest share of the category. This study focusses on majorly estimation of the of mAbs market and potential of individual molecule in category for better forecasting



3 METHODOLOGY

- **3.1 Research Design**
- Descriptive research design
- Primary and secondary sources of data
- Technique for gathering data: survey, interviews.
- Semi-structured questionnaire, records, and documents are the data collecting tools.



- **Sample Design**
- Target audience: Pharmacy in hospitals
- Non-probability convenience sampling is the sampling technique.
- Sample size: 151 Hospital Pharmacy prescription (with an 8% margin of error and a 95% confidence interval)
- Study Location: Urban city of India
- The sample size was determined to be 151 with an 8% margin of error and a 95% confidence interval.

3.4 RESEARCH PROBLEM

- Over the course of the projected period, the Asia-Pacific cancer therapy market is anticipated to grow at a CAGR of 10.2%. The market for monoclonal antibodies worldwide, which was estimated to be worth USD 187.0 billion in 2022, is projected to expand at a CAGR of 12.0% from 2022 to 2030. By 2030, it is anticipated that the market for monoclonal antibodies would be worth USD 463.0 billion.
- To calculate the monoclonal antibody market's volume and value.
- Identification of the monoclonal antibody industry's driving forces and market obstacles.
- To research monoclonal antibodies' market competition.
- What is the Major Drug Use in Oncology Market.

CHAPTER 4:- RESULTS, ANALYSIS, AND DISCUSSION

- **Market size of Monoclonal Antibodies MABs for cancer treatment by market volume and market value**
- The market size and value were determined through secondary research, utilizing models based on epidemiology and hospital pharmacies.
- **Method I: Epidemiology model: -**
- Literature research was conducted to investigate the city's population. According to a meta-analysis, India's urban cities have a crude cancer prevalence incidence of 100.4 per 100,000 people. Using primary research, the market share of monoclonal antibodies (MABs) was discovered and added to the model.

Population		1,70,75,000
Prevalence cases		17143.3
Average dose per month		1
crude rate		100.4
current cases in state		73,382
Total Market Value		1,40,42,772
Pembrolizumab		
Market Volume	5.40%	14
ASP(INR)		2,12,900
Market Value(INR)		29,80,600
Rituximab		
Market Volume	28.40%	74
ASP(INR)		34,500
Market Value(INR)		25,53,000
Trastuzumab		
Market Volume	16.90%	44
ASP(INR)		20,651

Market Value(INR)		9,08,644
Adalimumab		
Market Volume	8%	21
ASP(INR)		25,000
Market Value(INR)		5,25,000
Cetuximab		
Market Volume	7.70%	20
ASP(INR)		86,981
Market Value(INR)		17,39,620
Bevacizumab		
Market Volume	13.00%	40
ASP(INR)		35,275
Market Value(INR)		14,11,000
Nivolumab		
Market Volume	13.00%	34
ASP(INR)		36616
Market Value(INR)		12,44,944

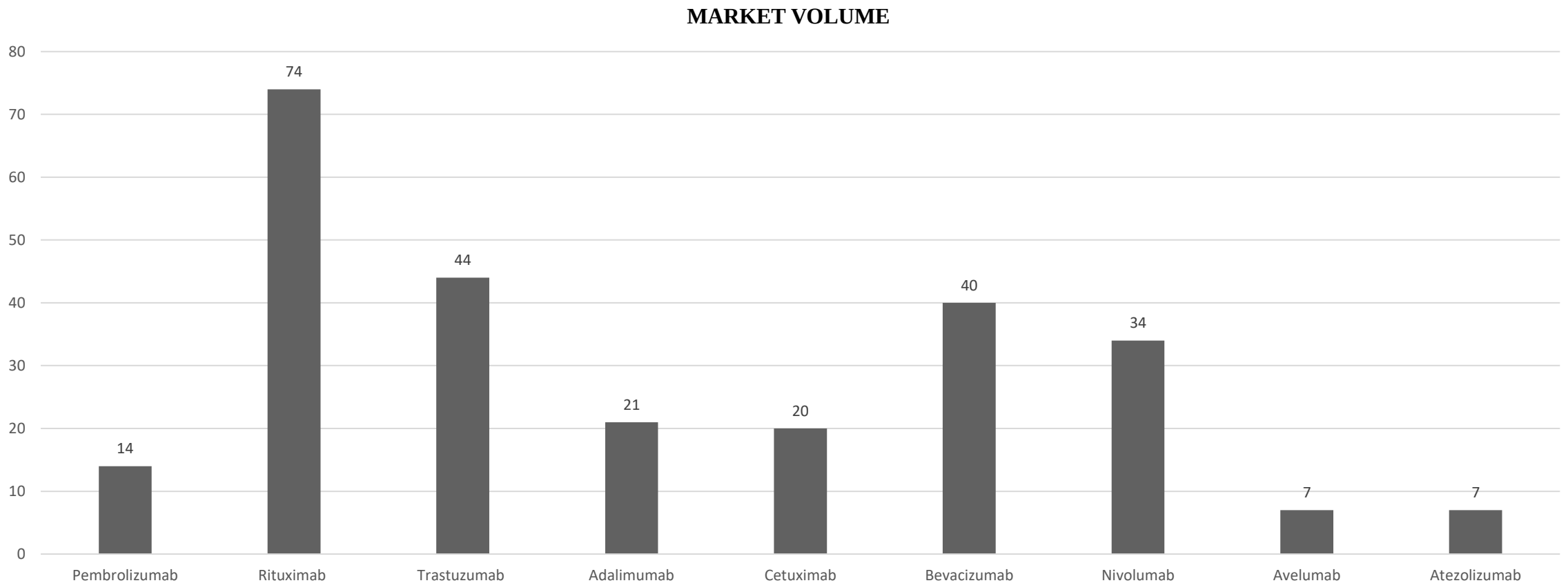
Avelumab		
Market Volume	2.70%	7
ASP(INR)		1,46,800
Market Value(INR)		10,27,600
Atezolizumab		
Market Volume	2.70%	7
ASP(INR)		2,36,052
Market Value(INR)		1652364
Total MABs Market		1,40,42,772

-
- Figure 1. shows the % market share of each monoclonal antibody molecule as determined from primary research and the corresponding market.

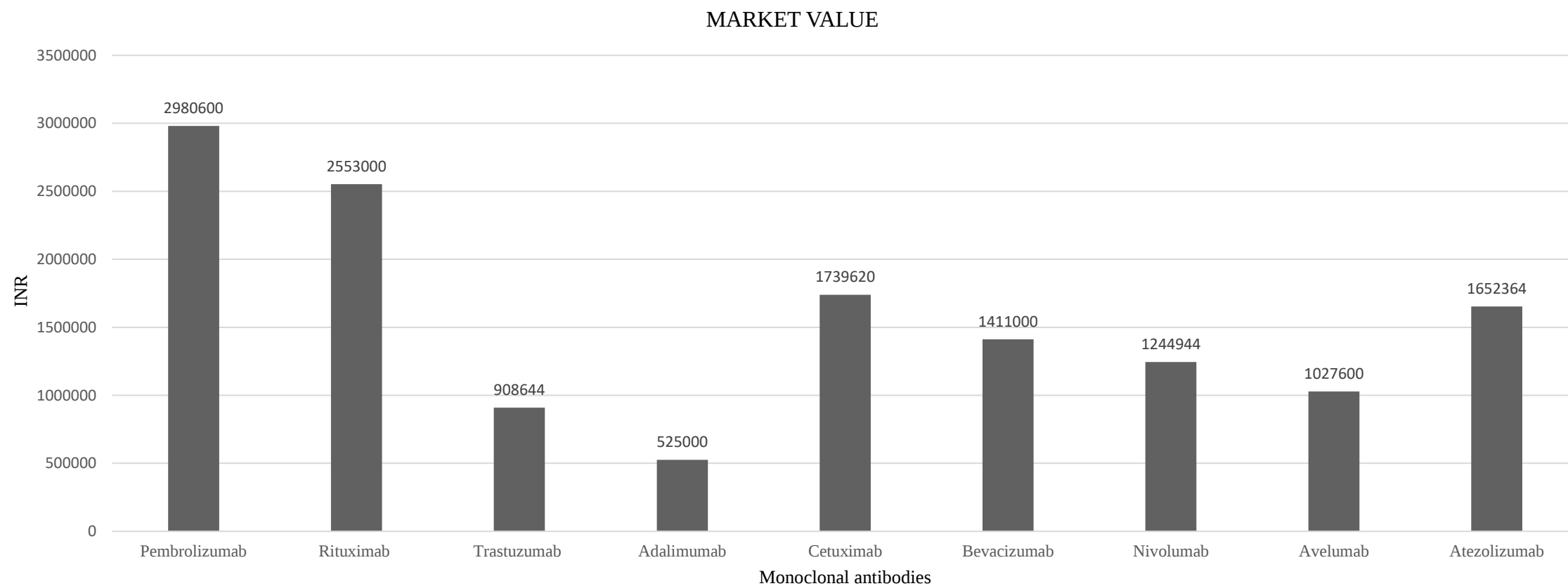
Molecule	No. of hospitals	Dose/month (Vials)	Average Patient counts	ASP(INR)	market volume	market value	%share	Market volume
Pembrolizumab	30	1	14	2,12,900	14	2980600	21%	5.4%
Rituximab	30	2	37	34,500	74	2553000	18%	28.4%
Trastuzumab	30	2	22	20,651	44	908644	6%	16.9%
Adalimumab	30	3	7	25,000	21	525000	4%	8.0%
Cetuximab	30	1	20	86,981	20	1739620	12%	7.7%
Bevacizumab	30	2	20	35,275	40	1411000	10%	13.0%
Nivolumab	30	2	17	36616	34	1244944	9%	13.0%
Avelumab	30	1	7	1,46,800	7	1027600	7%	2.7%
Atezolizumab	30	1	7	2,36,052	7	1652364	12%	2.7%
Total			151		261	14042772	100%	97.7%

Method II: Hospital Pharmacy Model

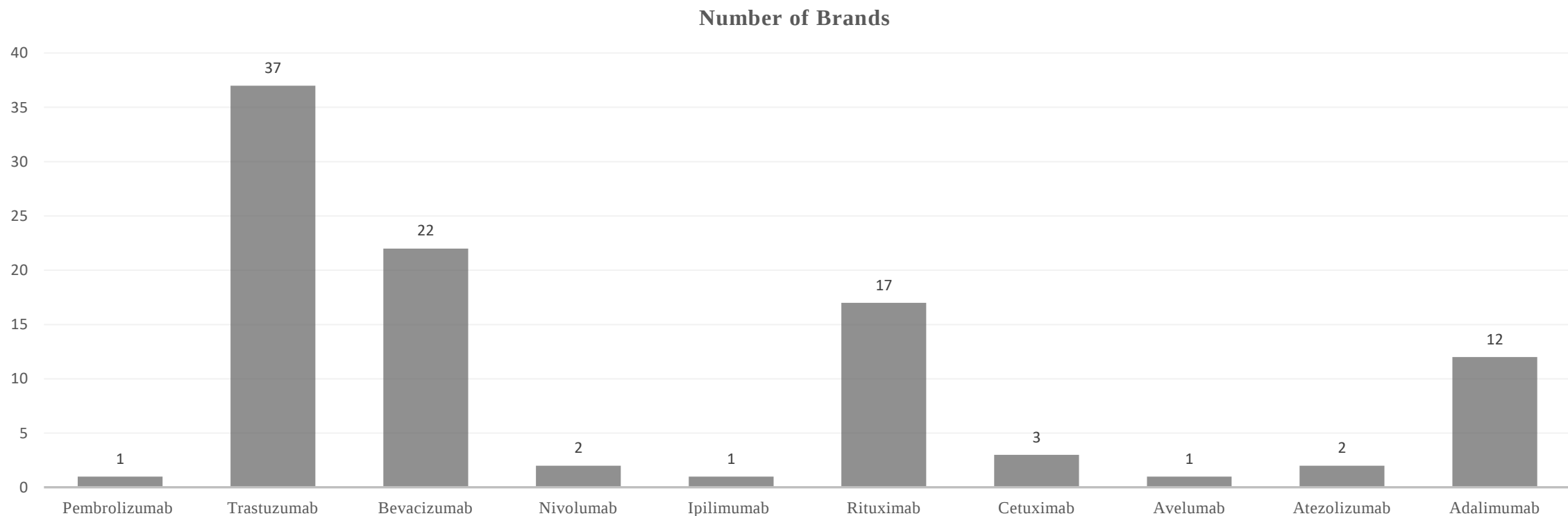
Comparison of Market Volume of different Molecules



Comparison of Market Value of different Molecules



Comparison of number of brands of different Molecules

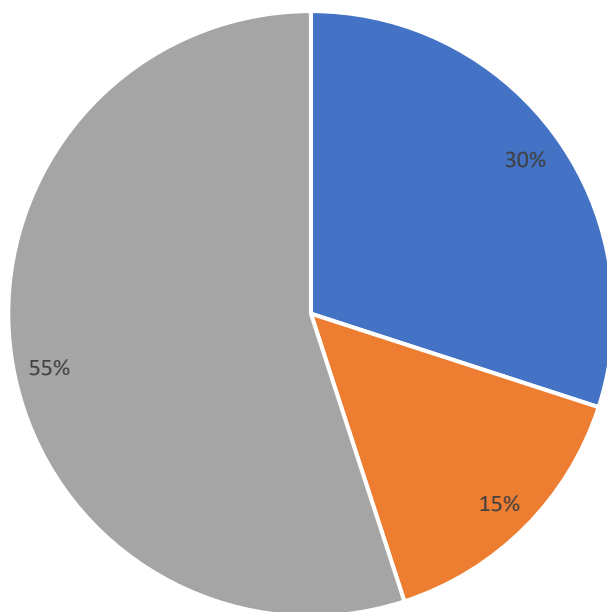


Factors for availability of Brands present in the Market



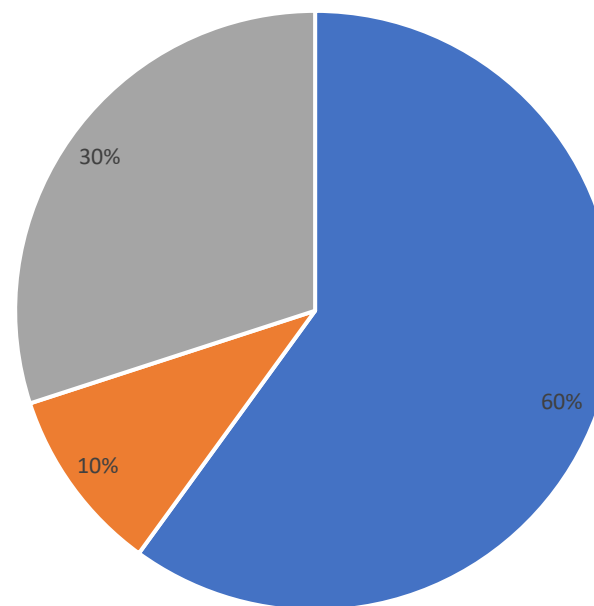
Trends observed in the prescription frequency and Selling Prices

Prescription frequency



■ Increased ■ Decreased ■ Remained same

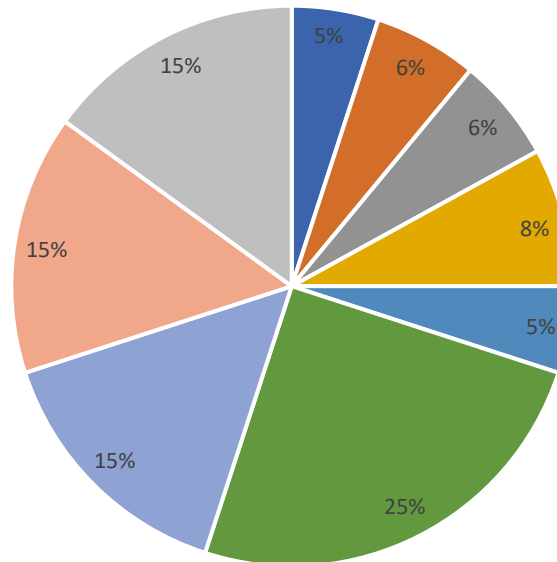
Average selling Price



■ Increased ■ Decreased ■ Remained Same

Anti-Cancer Market uses as per indication wise segmentation.

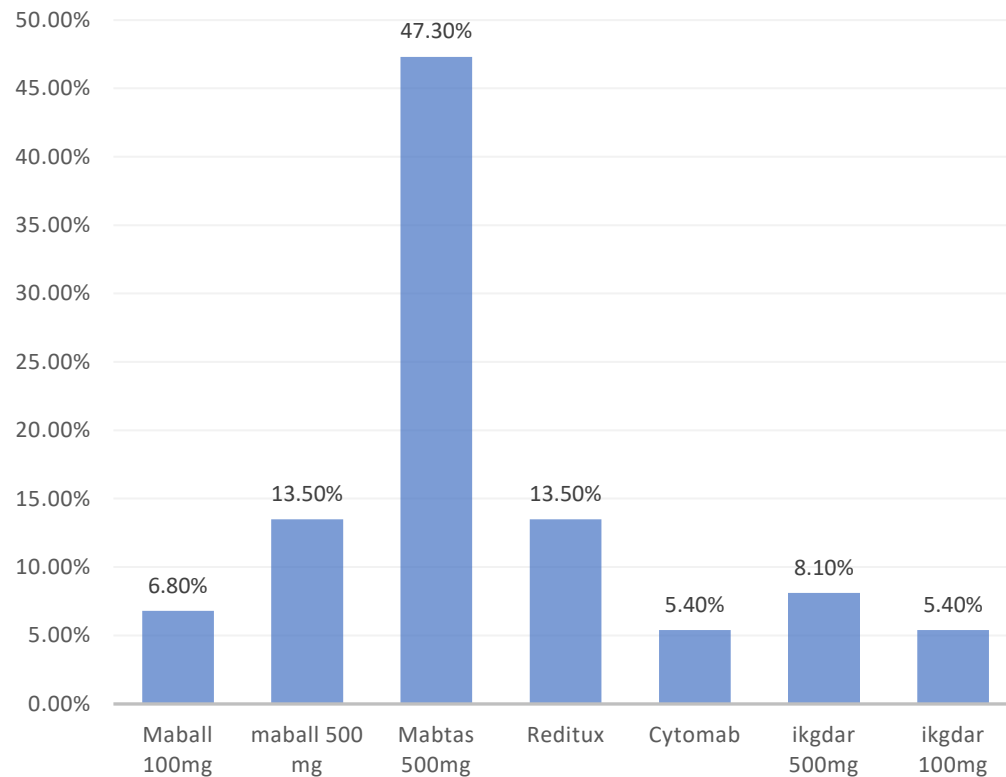
Cancer Type-Use of medicines



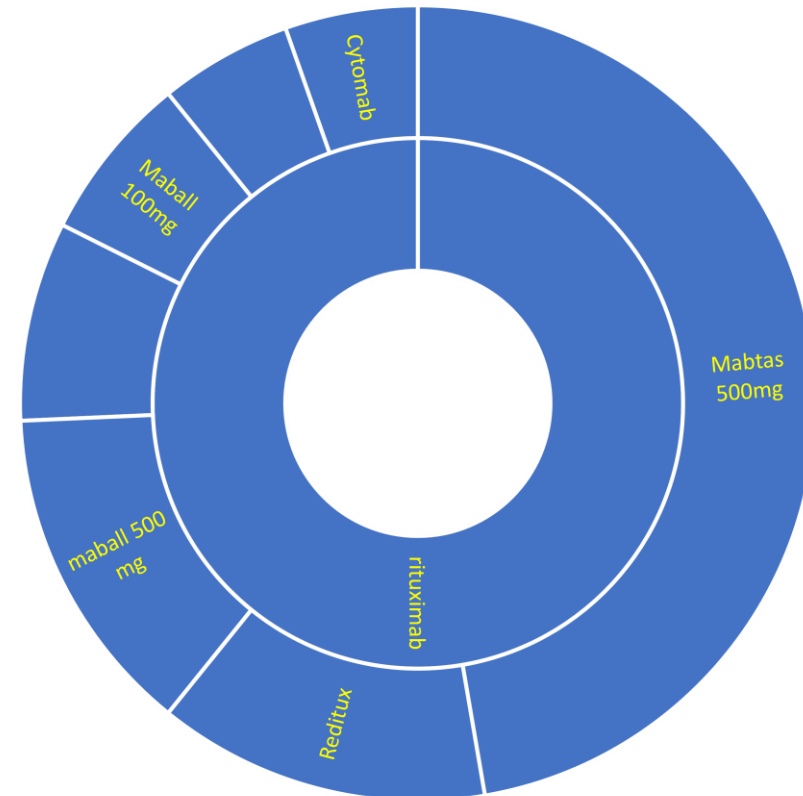
■ Anti-gastrointestinal ■ anti-melanoma ■ Antilymphoma ■ Anti-myeloma ■ Anti-ovarian ■ other Anti-tumor ■ Anti-leukemia ■ Anti-Breast cancer ■ Anti-lungs cancer

MABs Market Landscape Brand-wise

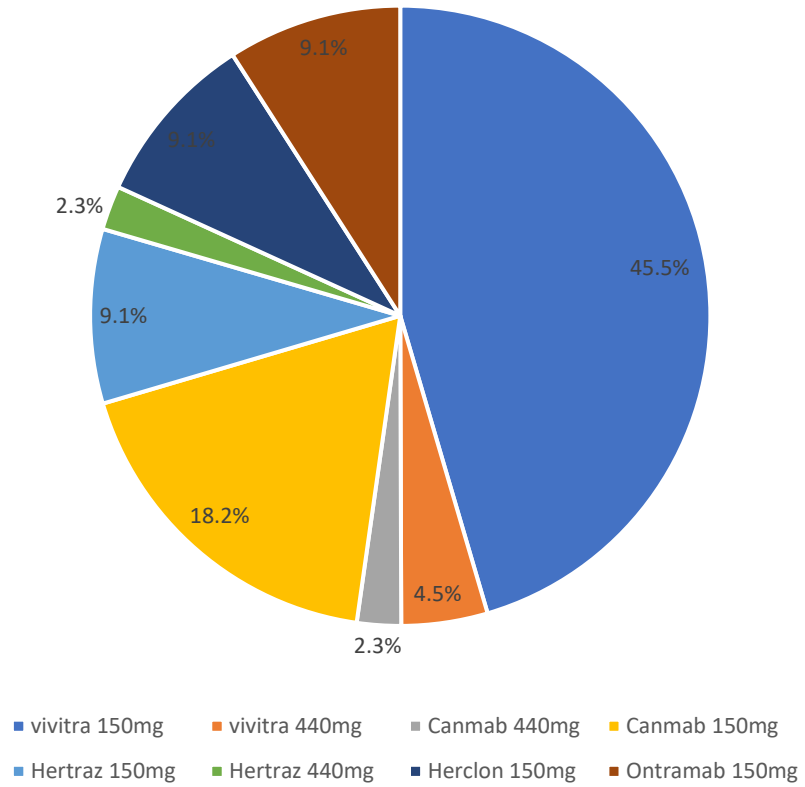
% share of rituximab brands



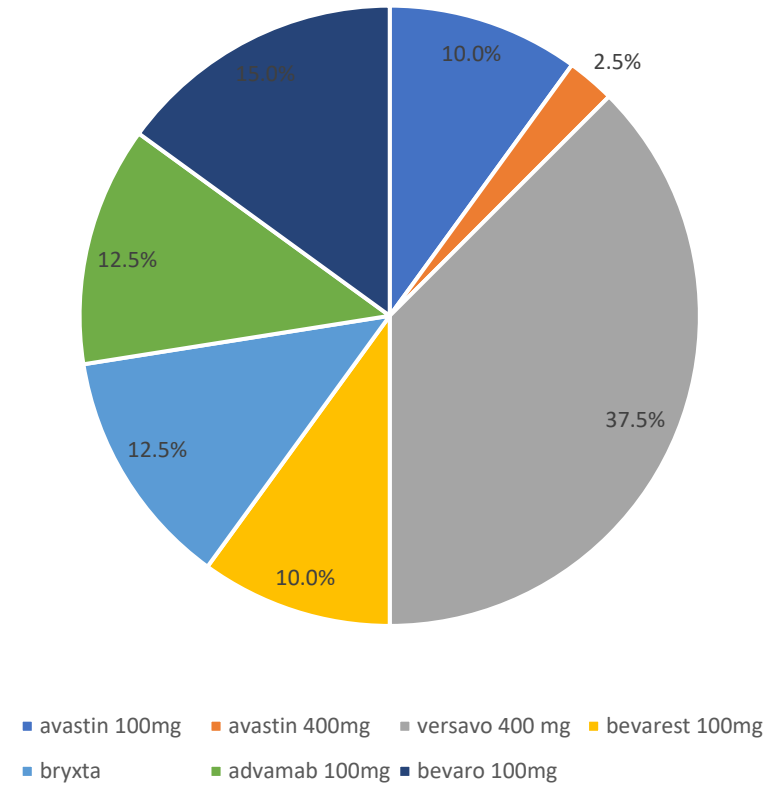
Brandwise %share of rituximab



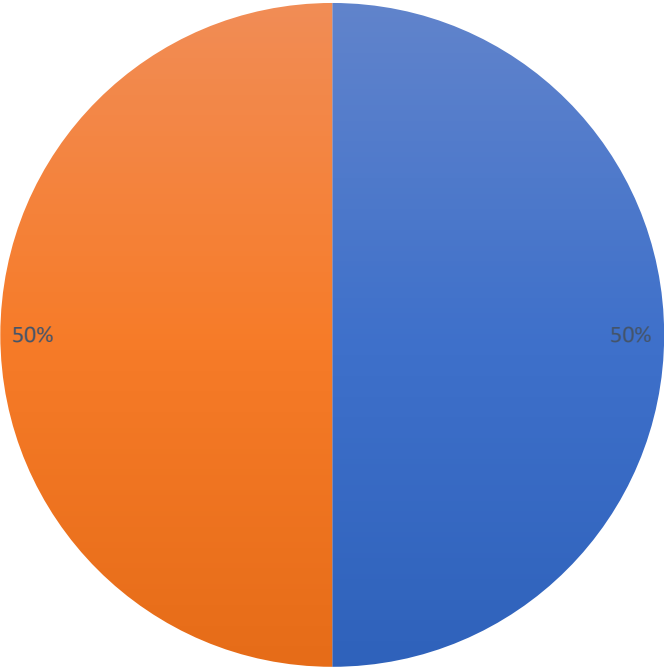
Trastuzumab Brands %



Bevacizumab brand %

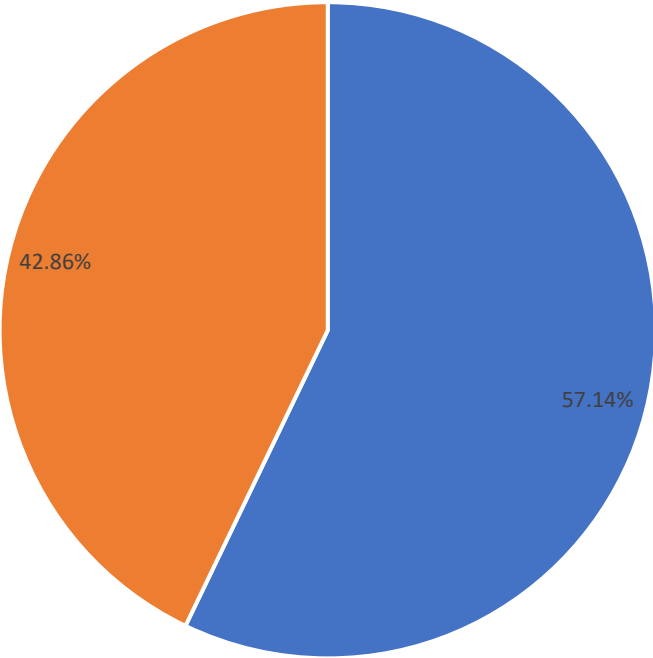


Cetuximab Brand Trends



■ cetuximab erbitux 100mg ■ cetuximab erbitux 500 mg

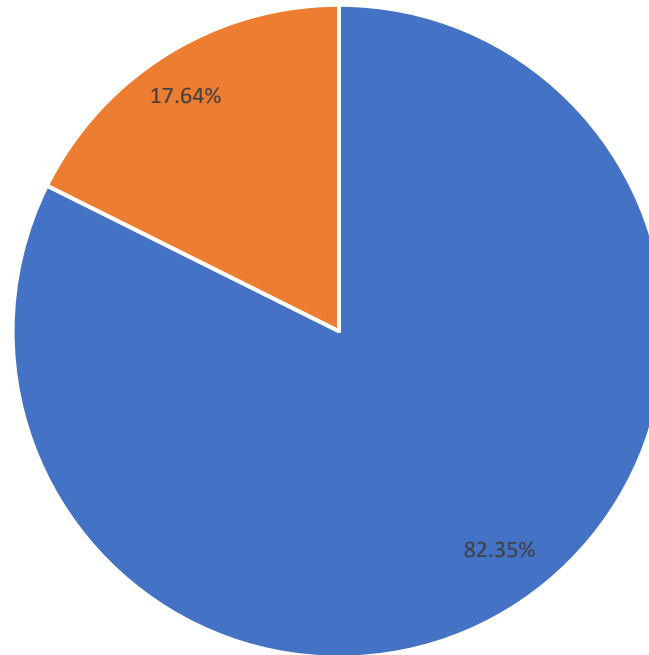
Adalimumab brand%



■ adalimumab xemptia 40 mg ■ adalimumab xemptia 20 mg

Nivolumab Brand Trends

Nivolumab brand trends



■ nivolumab opdyta 40 mg ■ nivolumab opdyta 100 mg

5- DISCUSSION

- The city's monoclonal antibody market was projected to be around Rs.1,40,42,772 at market volume of 261. The anti-cancer market was found to comprise of Alkylating agents, Antimetabolites, Anthracyclines, Topoisomerase Inhibitors, Immunomodulatory Drugs, Mitotic Inhibitors, Hormonal Agents, and Monoclonal Antibodies (MABs). Market share % are comprising of pembrolizumab 21%, rituximab 18%, Trastuzumab 6%, Adalimumab 4%, Cetuximab 12%, Bevacizumab 10%, Nivolumab 9%, Avelumab 7%, Atezolizumab 12%. Market volumes are as following it suggest the unit's vials percentages Pembrolizumab 5.4%, Rituximab 28.45, Trastuzumab 16.9%, Adalimumab 8.0%, Cetuximab 7.7%, Bevacizumab 13.0%, Nivolumab 13.0%, Avelumab 2.7%, Atezolizumab 2.7%.



6:- CONCLUSION

- About 40% of the city's anti-cancer market is made up of monoclonal antibodies, however this industry has been significantly impacted by the constantly growing market for targeted medications like tyrosine kinase inhibitors. Although rituximab is often prescribed, its market is severely fragmented because of the numerous rivals. Due of established client devotion by Older businesses, the industry seems to be extremely difficult for New entrants. To increase market share, the market penetration tactics might be used. In such cutthroat sectors, the sales force is crucial to generating prescriptions.



LIMITATIONS

- The sample size was limited. Study location is only in one city. The study only shows current data; forecasting is not provided, which is a constraint for inventory planning and market share growth.



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