

Anti-Cancer Drug Testing (Analysis of Animal Results)

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Presentation Overview

- › Background
- › Data Analysis
- › Results
- › Observations



Background

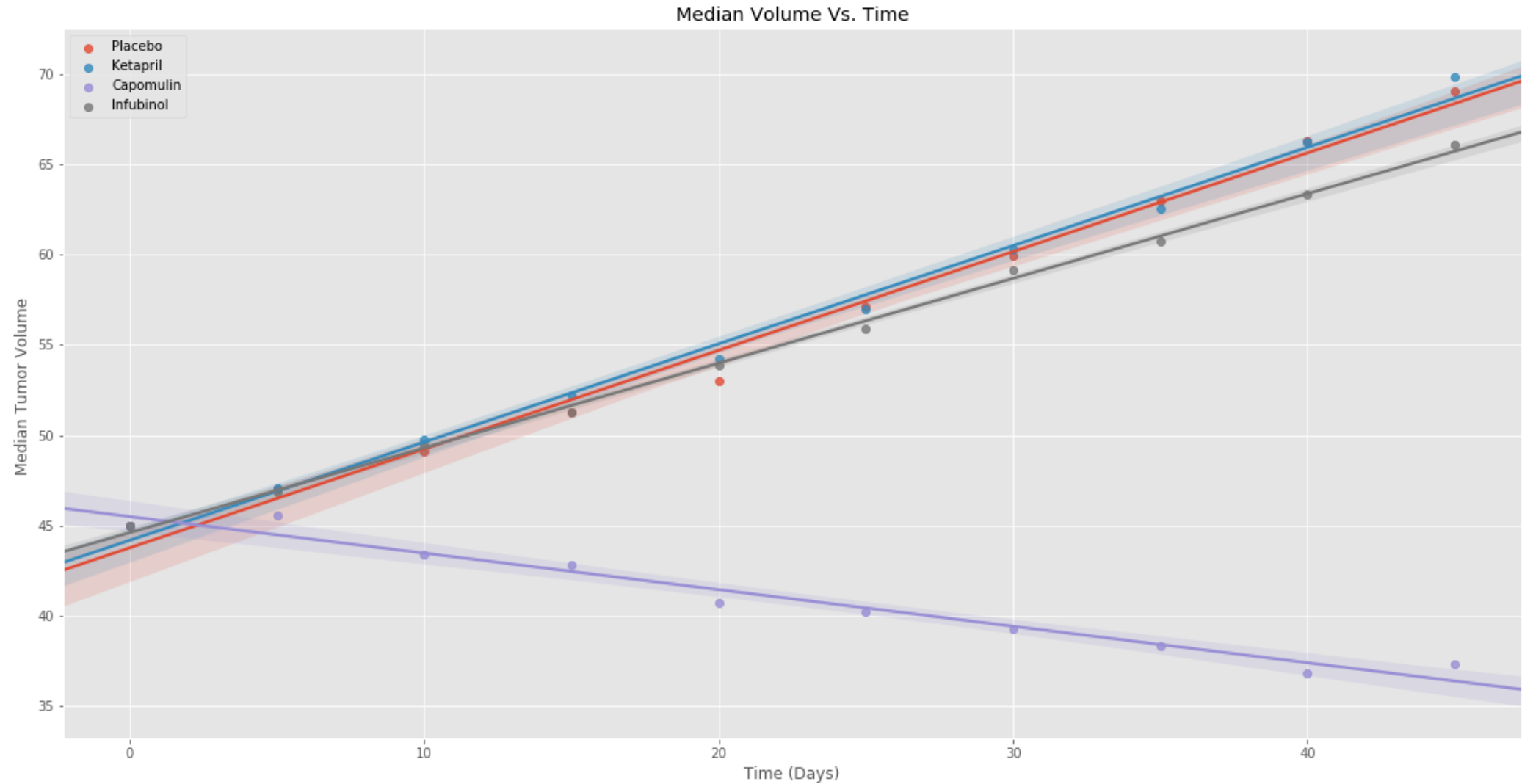
- › The purpose of this analysis is to inform decision makers on the effectiveness of four drug treatments
- › Drug testing was performed on animals over a period of 45 days
- › The analysis uses results from tumor volume and metastatic measurements collected at 5 day intervals
- › Ten Drugs were tested and this study focuses on four specific treatments- Capomulin, Infubinol, Ketapril, and Placebo



Data Analysis Overview

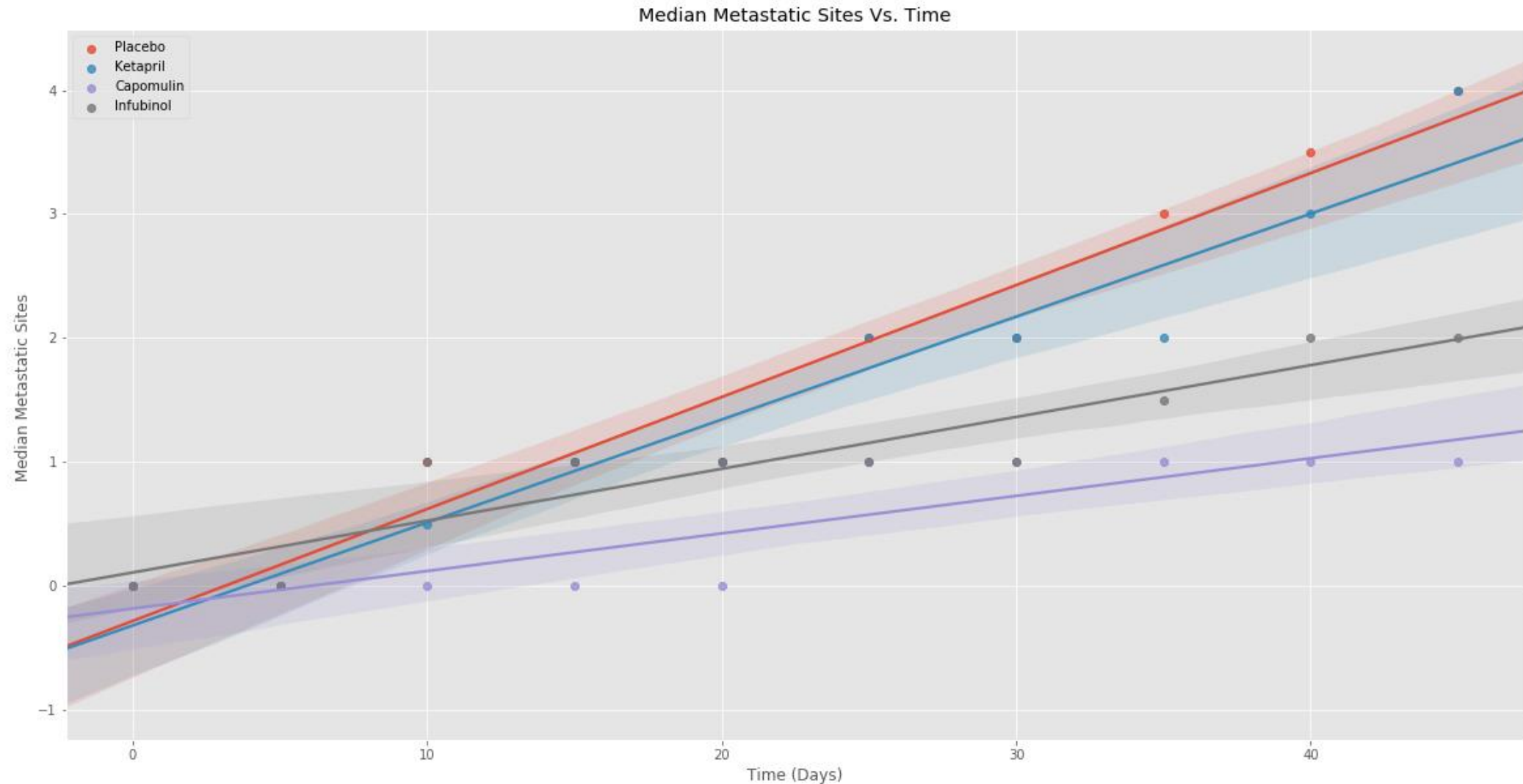
- › Methodology:
 - Identify the data file locations and names
 - Read in the Data Sets
 - Examine metadata and clean data removing any duplicates
 - Organize/Process/Structure data into Panda DataFrames
 - Generate statistical results from the test data
 - Create visualizations of the statistical results
- › Approach:
 - Create a scatterplot showing tumor volume changes over time for each treatment
 - Create a scatterplot showing tumor metastatic site changes over time for each treatment
 - Create a scatterplot showing the number of mice still alive through the course of the treatment- Survival Rate
 - Create a bar graph that compares the total % tumor volume change for each drug across the 45 days
- › Data Analysis Software Tools/Resources:
 - Python 3.6
 - Panda scientific computing library
 - Jupyter for visualization and code creation
 - Matplotlib and Seaborn visualization libraries

Tumor Median Volume Changes over time (Scatterplot)



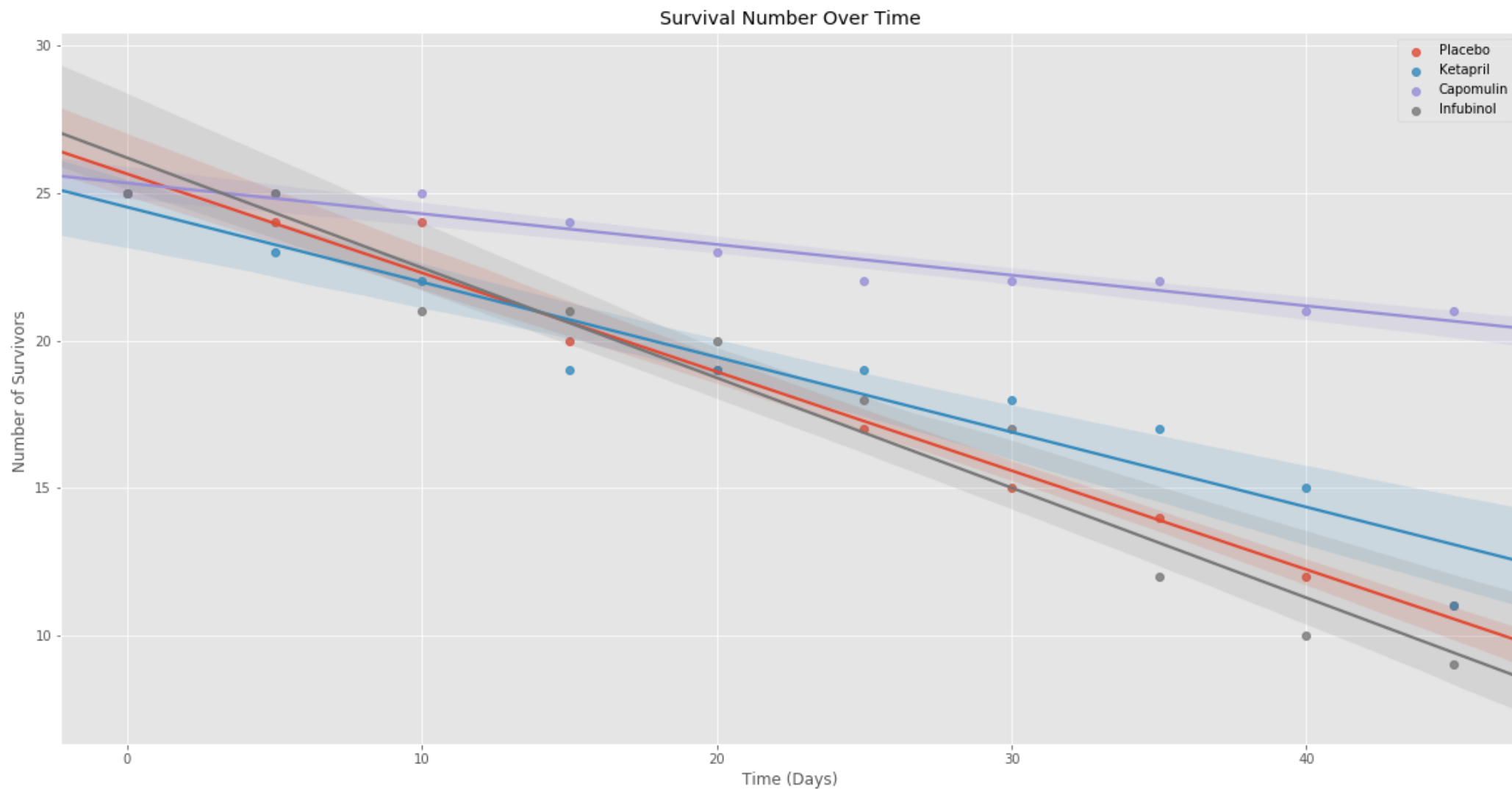


Tumor Median Metastatic Changes over time (Scatterplot)



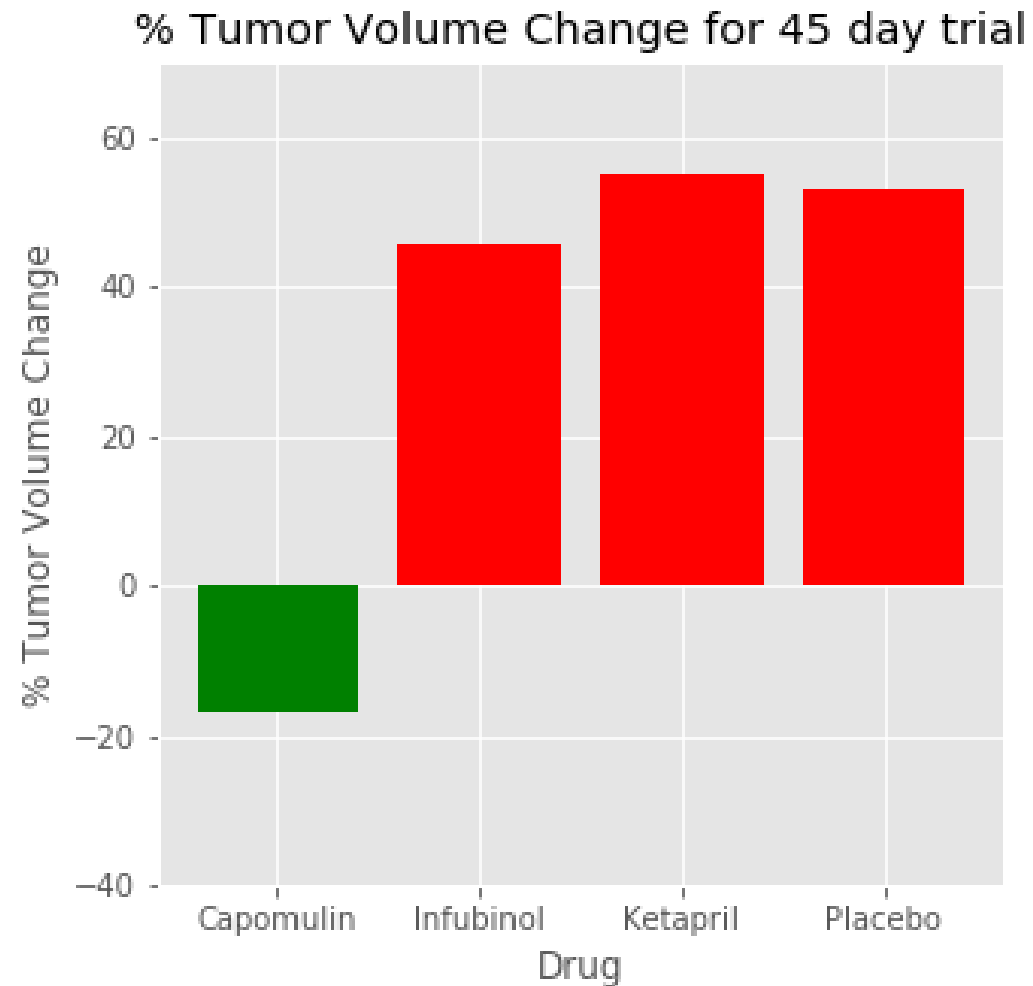


Survival Rate: Number of mice alive through the course of treatment





% Tumor Volume Change Over the Testing Time Period





Observations

- › Trend 1: Capomulin reduces tumor volume over time. None of the other drugs reduced tumor volume
- › Trend 2: Capomulin retards the growth of metastatic sites over time. Virtually no growth.
- › Trend 3: Capomulin has the highest survival rate overtime, while the other three drugs has rates similar to the placebo