**User Manual of Website “Liver Transplant Analysis”**

Updated 5/2/2018

## **About**

## This site is a product of a data analysis project completed by Team HACK, consisted of Ang Mai, Hyun Jun Choi, and Yujia Deng, students at University of Southern California for course INF 560 in Spring 2018. It provides descriptive exploration and visualization, and univariate analysis and multivariate analysis of a dataset of orthotopic liver transplant in the U.S.

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## **Accessibility**

## Because of the restriction of Health Insurance Portability and Accountability Act (HIPAA), this site is only accessible by authorized users. Contents on the site are built using Tableau, Shiny and R, and for security reason, separate sign-in will be required in certain pages. Please refer to the "Instruction" section for more information.

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## **Instruction**

## Users can navigate the site using the menu path on the sidebar. To fully access the site, there are 3 authorizations needed to be granted.

1. Access to the site
2. Access to the Tableau contents in the site
3. Access to certain Shiny contents in the site

If you are able to view this site now, that means you are currently authorized, so no actions need to be taken.

In order to view the content under "Descriptive Analysis" built with Tableau, a Tableau online account is required and users need to provide the team with the email in order to gain authorization to the contents. Please see the "Contact" section for contact information.

In order to view the content under "Univariate Analysis" built with Shiny and R, separate log-in is required. Username and password will be provided during product demonstration, or please contact the team for the information.

**Usage**

Descriptive Analysis

There are three tools for data exploration under “Descriptive Analysis”.

Users can choose “Graft Survival Time Distribution” and change the parameter on the right to make change to the range of days after surgery to display the distribution of graft survival time.

Under “Blood Type, Gender, and Age Group”, users can highlight on the graph or on the side using the parameters the group that they are interested in. This section provides visualizations to both average graft survival time and graft survival rate in 1 month, 2 months, 3 months, 6 months and 1 year after the surgery by blood type, gender and age group.

Under “Geographical Exploration”, users can select the parameter on the right to display number of records, average graft survival time, average waiting time, graft survival rate in 1 month, 2 months, 3 months, 6 months, 9 months and 1 year based on the states of residency and visualize the difference on a map. Zooming in or zooming out the map can be achieved by clicking on the ➕ or ➖ signs on the left of the map, as well as using the difference selection choices after expanding the ▶.

Univariate Analysis

Users will be able to choose two variables and compare their relationship. After choosing the "X Feature" and the "Y Feature", the app will produce three plots:

1. Scatterplot of the X feature and the Y feature
2. Kaplan-Meier plots of graft survival based on the X feature (nonparametric estimate of the survival function)
3. Cox regression plot of graft survival based on the X feature (semi-parametric estimate of the survival function)

If you are interested in the relationship between a feature and graft survival time, select GTIME as the Y Feature and change the X Feature accordingly.

Please be patient while the app is loading.

Prediction Tool

In the prediction tool, users can enter values of the features of a new patient and the corresponding donor listed on the left, and after a few seconds, a survival curve of the patient’s graft will be plotted on the right and underneath the probability of graft survival in 30 days, 60 days, 90 days, 180 days, 270 days, and 365 days. The dotted black lines bounding the the survival curve are the 95% confidence interval of the curve, i.e., there is 0.95 probability that the graft survival probability is between the interval.

**Contact**

Email: [**morningdyj@gmail.com**](mailto:morningdyj@gmail.com)

If you are currently an authorized user and desire to add another authorized user, please email us with the email of the new user with subject "**OLT Analysis-Add New User**".

To gain access to the Tableau content, please email the team with subject "**OLT Analysis-Tableau Access**" and provide your Tableau online account.

To gain access to the Shiny apps, please attend the product demonstration or email us with subject "**OLT Analysis-Shiny Access**".

If you experience any technical issue or any of the content on the website is not working properly, please email us with subject “**OLT Analysis-Issue**”.