

Psycho-social effects on transplant treatment outcomes.

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Well-defined problem

Do psychiatric disturbance (psychipr) and relapse conditions relapse history (rel) and death due to treatment (trm) affect the interval between transplant and survival date (intsxurv) ?

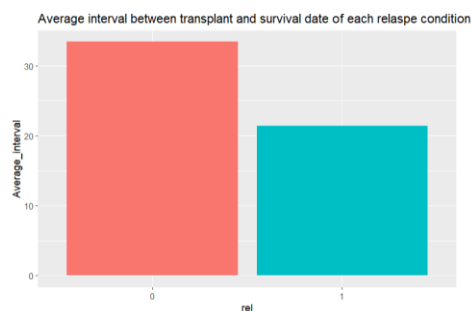
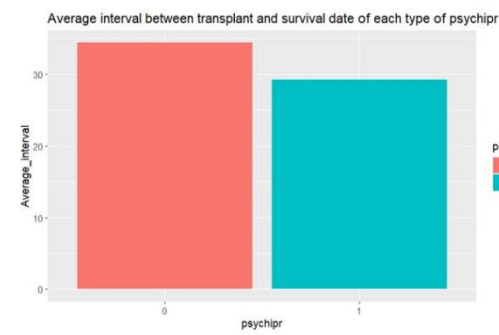
Introduction:

- Negative affective disorders, such as depression and anxiety, linked to social factors, increase the risk of poor health outcomes, prolonged hospital stays, and higher mortality.
- Research indicates an explicit connection between an eight percent longer post-transplantation stay and the presence of mood, anxiety, or adjustment disorders. Poor transplant functioning predicts a subsequent need for increased counseling (Cooke et. al).

EDA Results

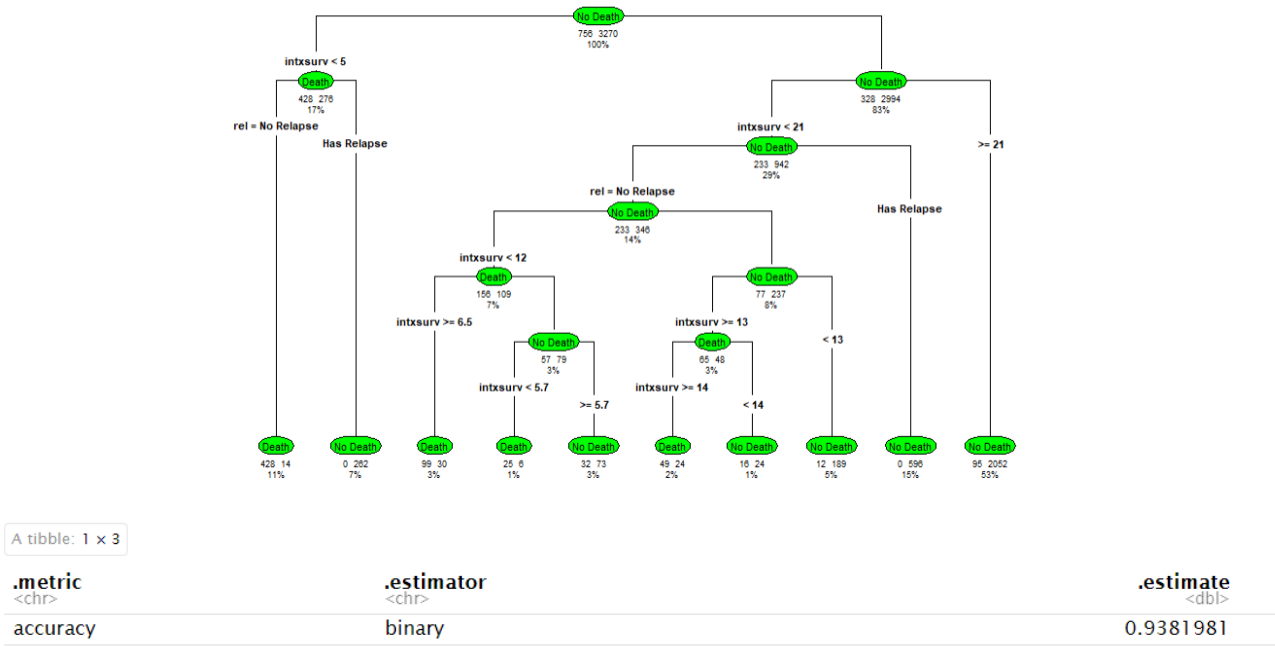
rel	psychipr	Maximum_interval	Minimum_interval	Mean_interval	Median_interval
0	0	NA	NA	39.81197	34.1285
0	1	122.171	0.033	33.45847	24.1120
1	0	122.237	0.822	23.71121	5.2960
1	1	117.730	0.954	21.44746	5.6745

- Relapse type 1 and psychipr type 0 have significantly shorter median and mean intervals compared to relapse type 0 and psychipr type 1.
- Median and mean intervals are the lowest for relapse type 1 and psychipr type 0 among all types



- Relapse type 0 has an average interval approximately 10 units higher than type 1 (33 vs. 21).
- Those without psychiatric disturbance have an average survival interval approximately 10 units higher than type 1 (41 vs. 29) in psychipr types.

Decision Tree



- Tree model exhibits 93% accuracy, indicating high predictive performance (93 correct predictions out of 100).
- The most crucial variable is the interval between transplant and survival date (intxsurv), according to the variable importance plot.
- The tree comprises 10 subsets, with the largest percentage (53%) predicting No Death.
- When intxsurv is below 21, regardless of relapse status, the majority outcome is No Death.
- If intxsurv is less than 5 and there is no relapse, Death occurs in 11% of cases, while with relapse, the Death percentage is 7%.

Conclusion

- Higher income (> \$40,000) correlates with a greater likelihood of survival, irrespective of education level.
- Individuals without psychiatric disturbance typically experience a longer interval between transplant and survival.
- Lower values of intxsurv are generally associated with a higher chance of survival; very low intxsurv (below 5) increases the risk of death, especially without relapse.
- Overall, psycho-social factors, including income and psychiatric disturbance, play a role in treatment outcomes, influencing both relapse and survival rates.