SCIENTIFIC REGISTRY OF TRANSPLANT RECIPIENTS

Candidate mortality after listing: Association with pretransplant and posttransplant 5-tier ratings

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Disclosures

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Background

SRTR publicly released 5-tier ratings for posttransplant outcomes in December 2016. Due to critical feedback, the ratings were moved to a “beta” site in February 2017 for further testing.

One primary point of feedback was that the focus on posttransplant outcomes ignored the importance of undergoing transplant.

Mortality after listing is relevant to patients, and a reasonable framework for evaluating the relative importance of different metrics.

Cohort

Evaluations for deceased donor transplant rates, waitlist mortality rates, and 1-year graft survival were retrieved from archived PSRs.

The 5-tier rating for each evaluation was calculated from the archived PSRs.

The association of these risk-adjusted evaluations at listing with patient mortality after listing was estimated for adult candidates listed between July 12, 2011, and June 16, 2014.

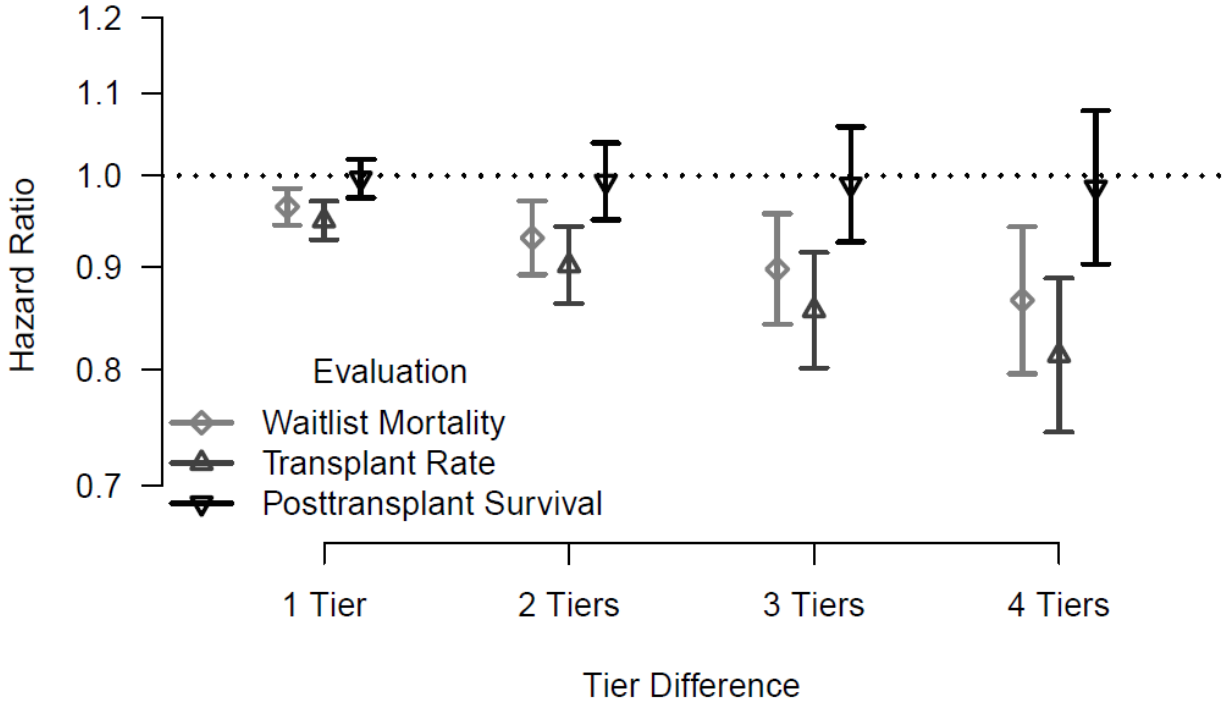
Analysis

Cox proportional hazards models estimated the association of deceased donor transplant rate, waitlist mortality rate, and 1-year posttransplant graft survival evaluations with candidate mortality after listing while adjusting for other candidate risk factors at listing. Candidates were censored, if still alive, on December 31, 2016.

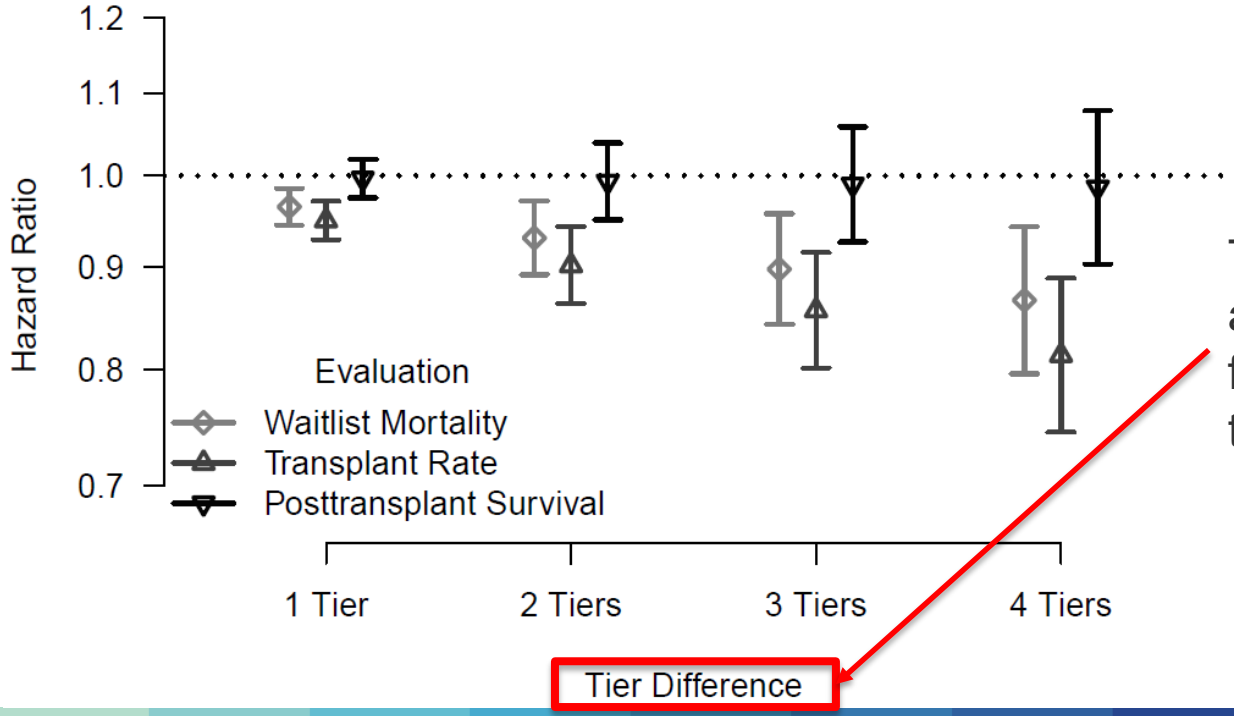
The models did not censor for transplant or removal from the waiting list, and did not include *any* time-varying covariates.

Multiple imputation accounted for missing data. Rubin's rules combined the estimated effects across the 10 iterations of multiple imputation.

Kidney: Linear associations

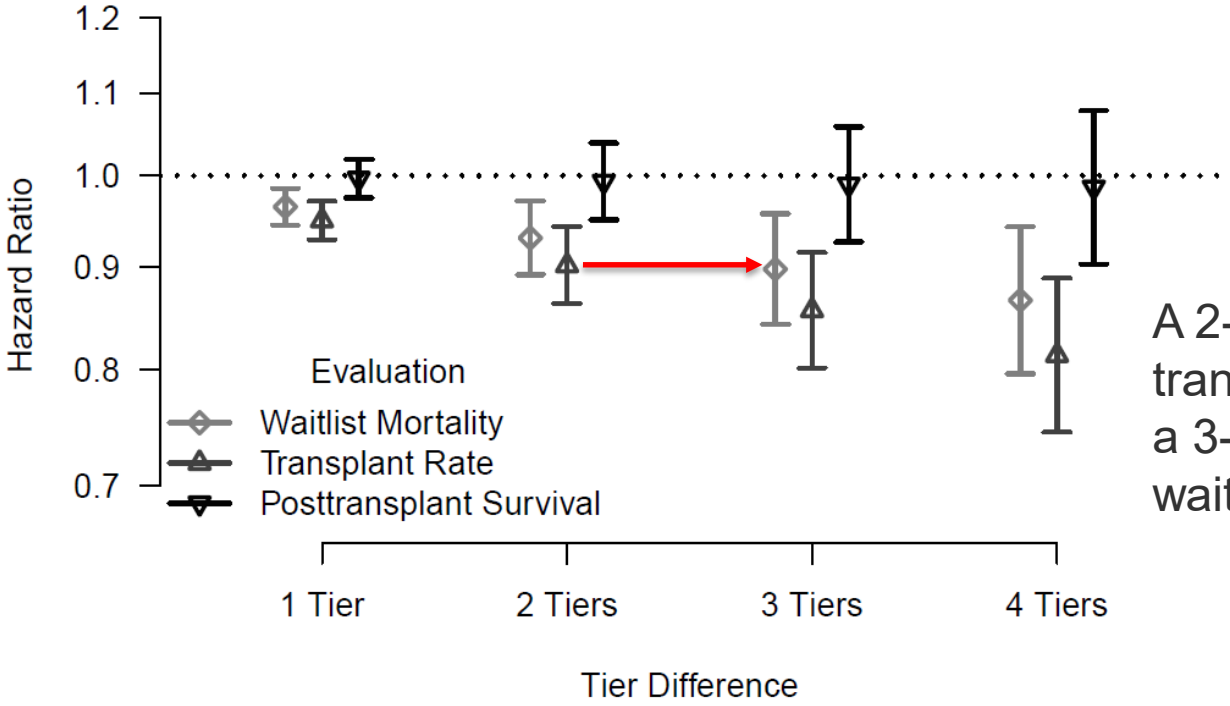


Kidney: Linear associations



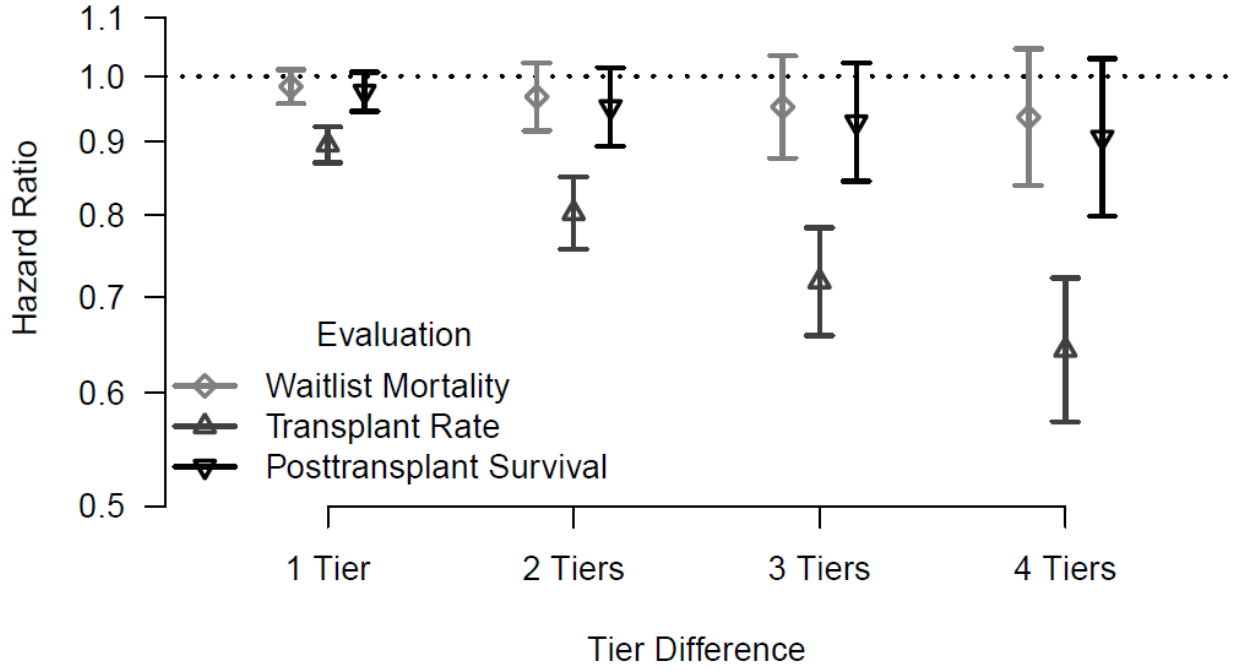
The difference in assigned tiers at listing for a metric, e.g., the transplant rate tier.

Kidney: Linear associations

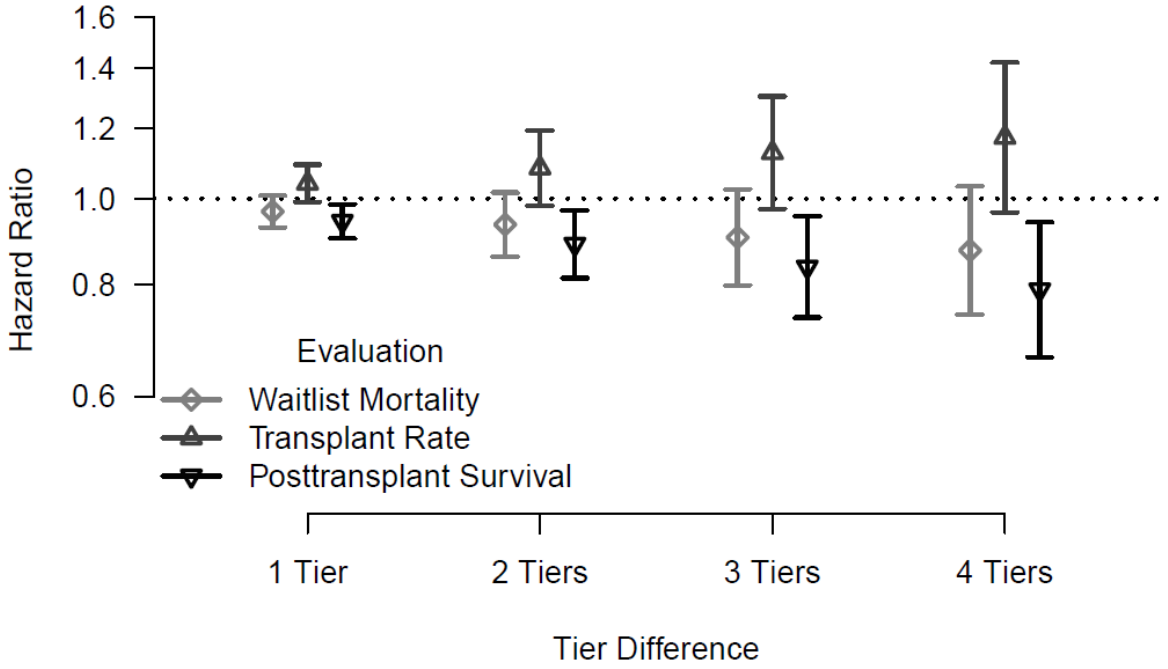


A 2-tier difference in the transplant rate is similar to a 3-tier difference in the waitlist mortality evaluation

Liver: Linear associations



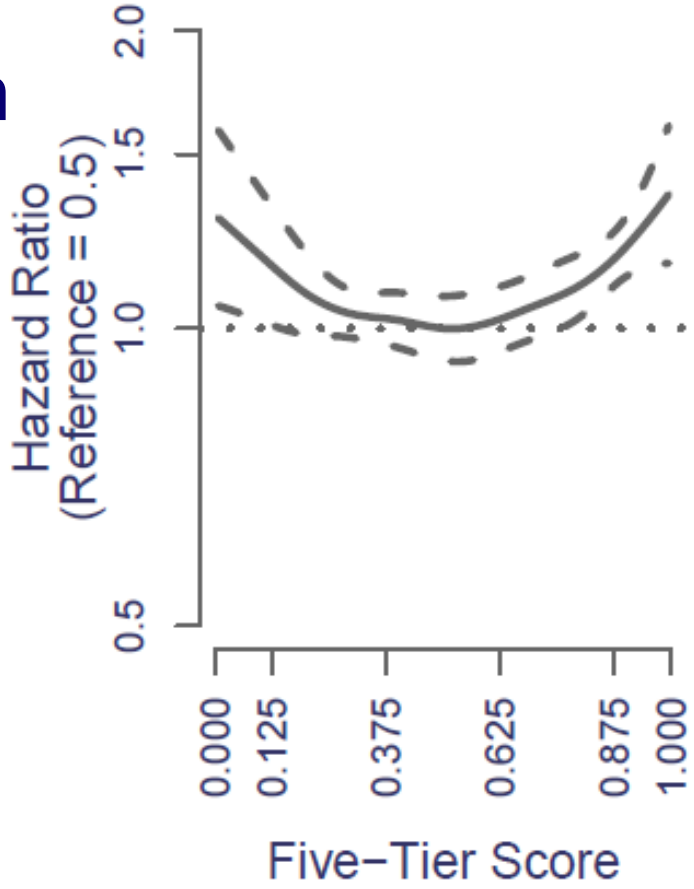
Lung: Linear associations



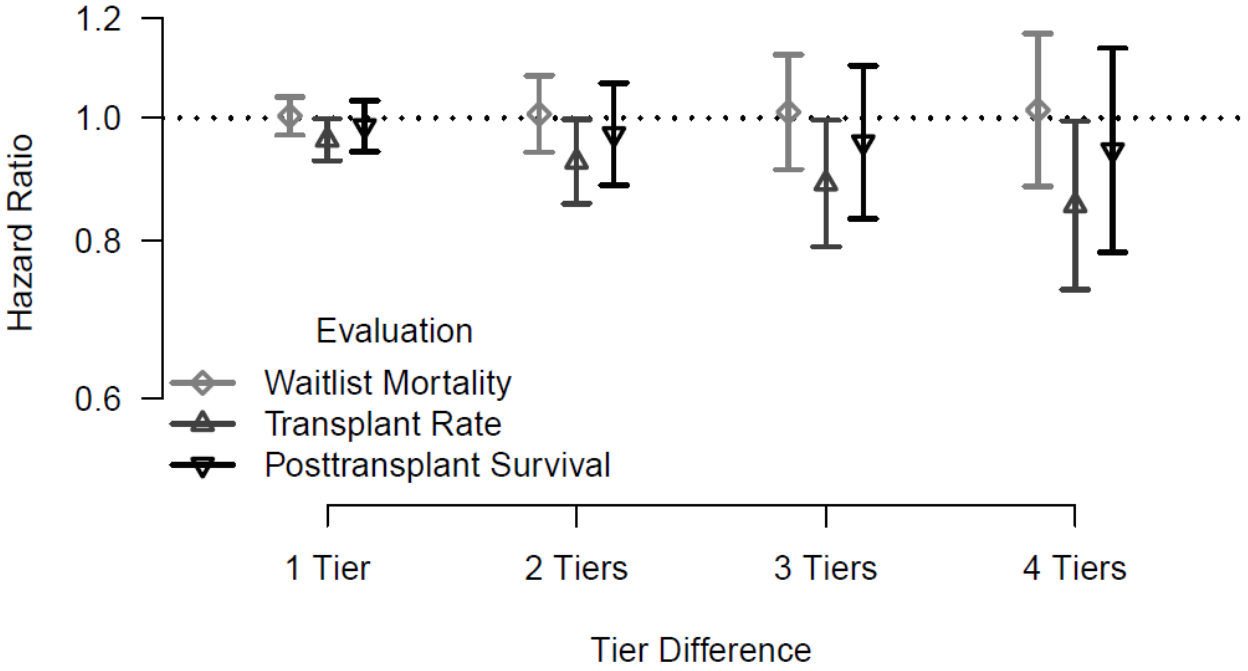
Lung: U-shaped association with transplant rate

Programs with the highest and lowest adjusted transplant rate ratios had the worst patient mortality after listing.

Conversely, programs with average adjusted transplant rate ratios had the best patient mortality after listing.



Heart: Linear associations



Conclusion

As hypothesized, the transplant rate evaluation had the strongest association with patient mortality after listing in kidney, liver, and heart transplant. However, the transplant rate evaluation had an unexpected U-shaped association in lung transplant, and the posttransplant graft survival evaluation had the strongest association.

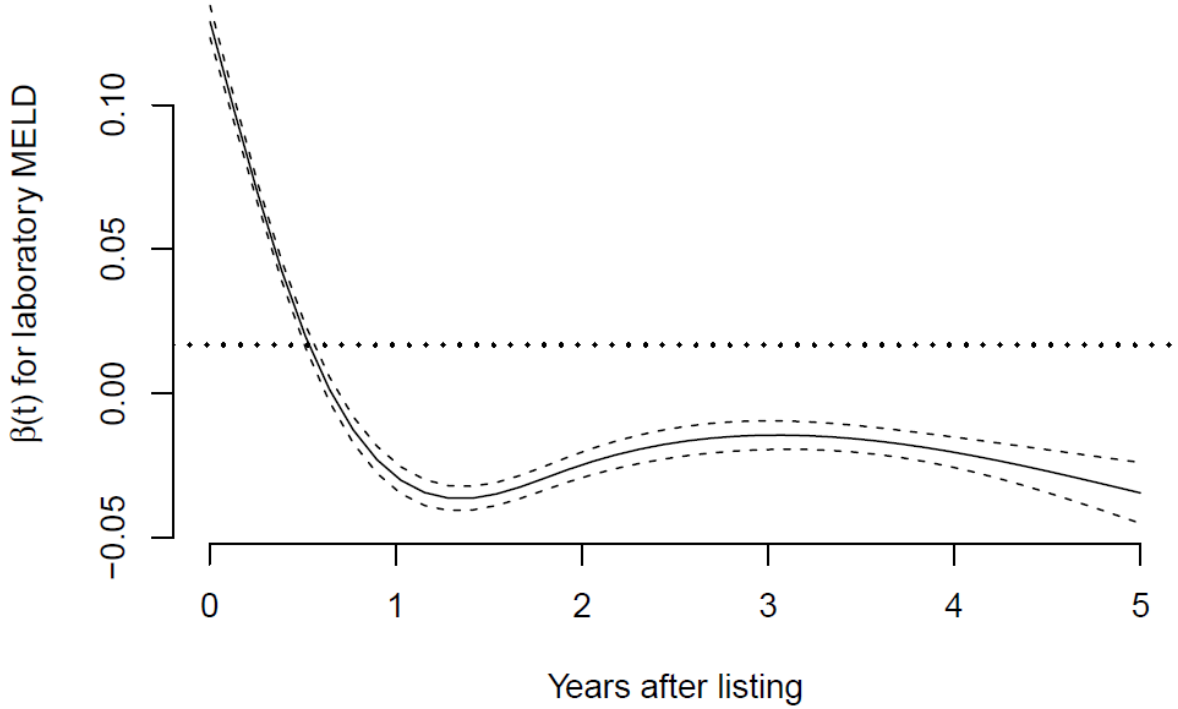
The metrics with the strongest associations were organ-dependent. Thus, a single approach to public reporting for every organ is not appropriate. For example, public reporting could emphasize the transplant rate in kidney, liver, and heart transplant but posttransplant outcomes in lung transplant.

Limitations

In addition to the typical limitations of unmeasured confounders…

Analyses of patient mortality after listing involves extreme non-proportional hazards, e.g., MELD is strongly associated with mortality on the waiting list but not posttransplant.

Limitations



Limitations

We did not account for any non-proportional hazards, although censored quantile regressions indicated qualitatively similar results.

References

More detailed information is available in

Wey et al. Association of pretransplant and posttransplant program ratings with candidate mortality after listing. *Am J Transplant.* 2019;19(2):399-406.