



Impact of Citizenship Status on Access to Heart Transplantation in the United States

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Background

While other disparities in access to cardiothoracic transplantation are well-documented, there has been little analysis of the role that citizenship status plays in influencing access to transplantation. This is undoubtedly linked to wider transplant disparities concerning race and socioeconomic status; however, there is still a need to identify the direct effect of citizenship status alone on access to cardiothoracic transplantation.

Objectives/Aims



- To determine the association between citizenship status and indicators of access to heart transplantation in the United States.
- Use a novel metric of assessing disparities—missing data—as a means of comparing how interactions with the healthcare system vary between the citizenship groups, as another measure of disparity.

Methodology


- To elucidate access to the transplantation waitlist we utilized multivariable ordinal regression
 - higher acuity group status at the time of listing was our proxy measure of worse access to the waitlist.
 - We developed and utilized a directed acyclic graph to elucidate causal relationships and as the basis of confounder adjustments—a novel approach within cardiothoracic disparity work, that seeks to more accurately address health disparities affecting protected classes.
- Missingness of data—We utilized an unexplored potential measure of access to gauge if interactions with the healthcare system differs between citizens and non-citizens: missing data. Out logic is as follows: missing data variables within the UNOS database for key covariates signifies a lack of interaction between the patient and healthcare system for that metric. Thus significant differences in missing data indicates significantly fewer healthcare interactions.

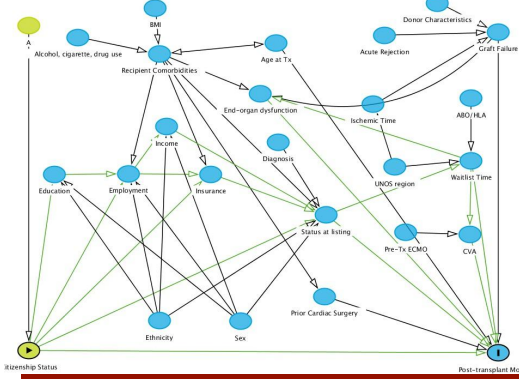
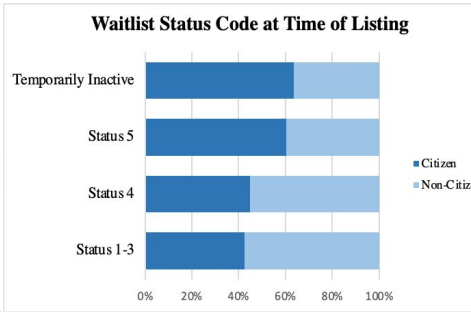
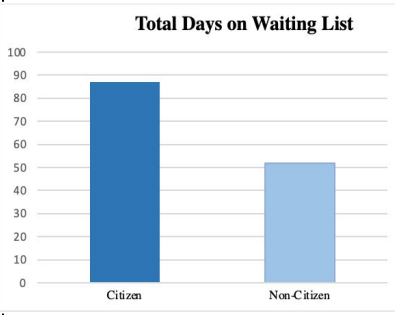
Results

1. Citizens compared to non-citizens:

 Non-citizens are listed on the waiting list at **higher priority status codes**
 Average **fewer number of days on the waitlist** than citizens

Both inferring higher disease acuity or more severe clinical presentation at time of listing.
 We adjusted for employment, education, and insurance status in the association between group status at listing → non-citizens were still listed at higher priority status codes at time of listing, compared to citizens

2. More missing data for follow-up time for non-citizens compared to citizens 



Conclusions

To our knowledge, this research is the first body of work to investigate the association between these variables. While prior studies have characterized insurance-based disparities in transplantation and other contexts, it is apparent that non-citizens face a much broader set of potential disadvantages which may amplify any insurance-based effect.

These results potentially have important implications for policy advocacy for insurance coverage and transplantation access for the non-Citizen demographic.

Recommendations and Next Steps

- Further research should aim to more closely assess timepoints at which these disparities are emerging to support efforts that mitigate this disparity.
- Disparities in missing data at the very least represents a call to action for better record-keeping to support accurate disparities research. Further research should also be conducted to better understand the causes for missing data in this population.
- This research encourages policy that expands coverage for transplantation to non-citizens