



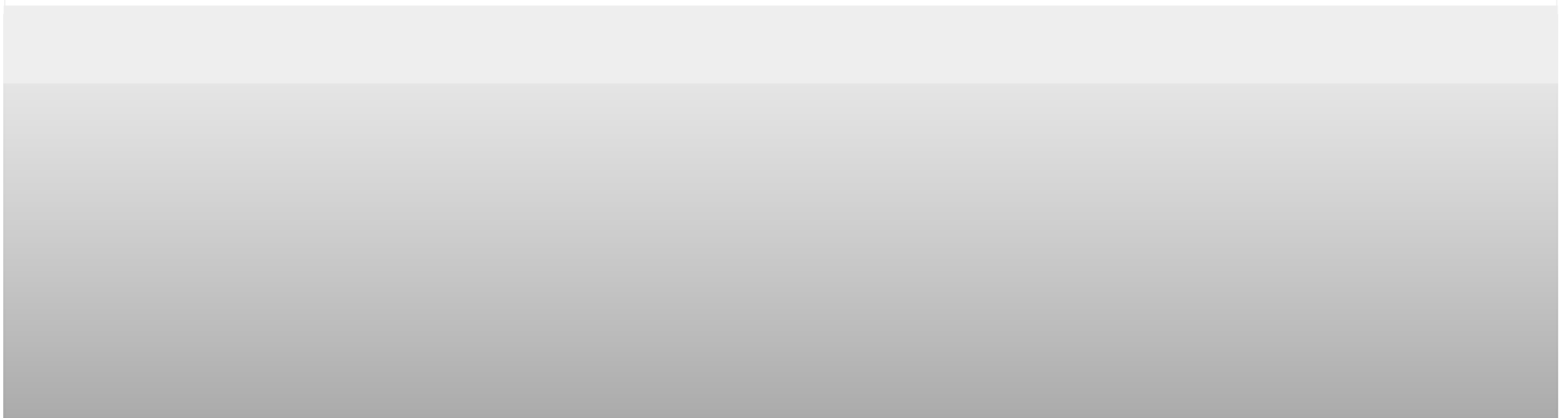
# **Working Toward a More Equitable Patient Referral and Waitlist System for Liver Transplantation**

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# Disclosures

- I have no relevant financial disclosures





## Problems

- Access to primary care physicians in rural and underserved communities
- Access to specialized care in rural and underserved communities
- Access to the transplant center (outpatient and inpatient settings)



# Problems

- Misconceptions regarding who is an appropriate transplant candidate
- Insurance coverage for healthcare and transplant benefits
- Social support systems and transportation
- Waitlist mortality and transplantation



# Access to Healthcare in Rural Areas

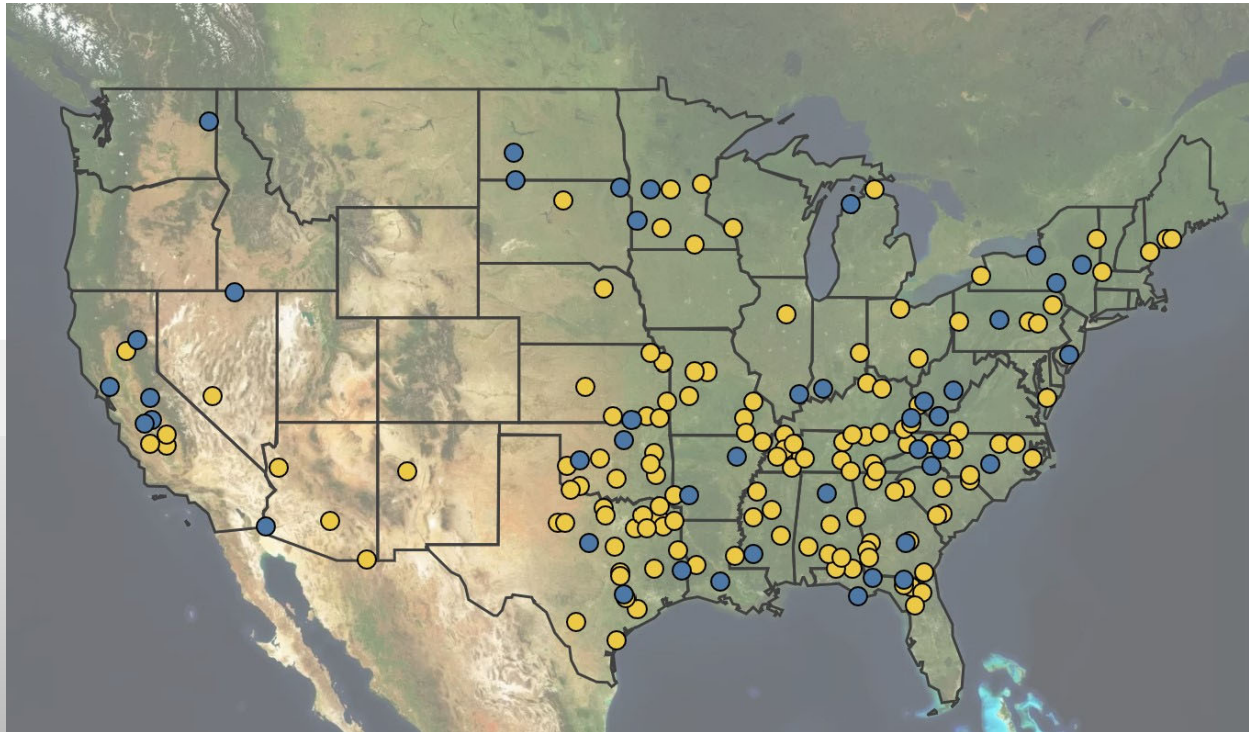
- 450 rural hospitals are at risk for closure, with 200 being high risk for closure (Chartis Center for Rural Health)
- 179 rural hospitals have closed since 2005, with most being in the south
- In Kentucky, 16-28 rural hospitals were at risk for closure before the pandemic
- Limitations on hospital capacity and decreased volume have further exacerbated hospital financial hardships, thus resulting in an even higher risk of rural hospital closure

Carey L. *Rural Hospitals Risk Closure Due to COVID-19-Related Drop in Revenue in 2021.*

<https://dailyyonder.com/rural-hospitals-risk-closure-due-to-covid-19-related-drop-in-revenue-in-2021/2021/03/01/>



# Rural Hospital Closures



UNC Cecil G. Sheps Center for Health Services Research. *Rural Hospital Closures*.  
<https://www.shepscenter.unc.edu/programs-projects/rural-health/rural-hospital-closures/>



# Rural Disparities

- Patients who live in rural regions/towns encounter barriers for access to healthcare, have to travel further for those benefits, and lack local specialty services.
- Results:
  - Rates of listing for heart, liver and kidney transplant were significantly lower in patients who resided in rural regions.
  - Despite listing, rates of transplantation were lower for rural patients for heart, liver and kidney

Axelrod D, et al. *Rates of Solid-Organ Wait-Listing, Transplantation, and Survival Among Residents of Rural and Urban Areas*. JAMA 2008;299:2:202-207.



# Rural Disparities

- Patients in rural areas were 8-15% less likely to be waitlisted and 10-20% less likely to be transplanted despite being waitlisted.
- Barriers include:
  - Patients deemed medical unsuitable by local physician
  - Delayed referral
  - Patients reliant on obtaining referral from local physician
  - Completion of pretransplant evaluation
  - Has been observed that there are lower rates of referral of black patients for liver transplantation

Axelrod D, et al. *Rates of Solid-Organ Wait-Listing, Transplantation, and Survival Among Residents of Rural and Urban Areas*. JAMA 2008;299:2:202-207.



# Socioeconomic Determinants

- Community Health Score
  - Composite indicator of variables for community health, environmental and behavioral risks, social conditions and access to care.
  - Reflects years of potential life lost, proportional low birth rates, poor or fair reported health, poor reported physical health days, poor reported mental health days, tobacco use, obesity, physical inactivity, preventable hospital stays and median household income.
  - Highest CHS scores reflect highest risk groups and can be associated with poorer outcomes with regard to access to care and survival outcomes.

Ross K, et al. *Socioeconomic Determinants of Waitlist and Posttransplant Survival Among End-Stage Liver Disease Patients*. Am J Transplant 2017;17:2879-2889.



# Socioeconomic Determinants

- Community Health Score
  - Black race showed stepwise increase with increasing CHS quartiles
  - Level of education decreased with increasing CHS
  - Patients in higher CHS score counties more likely lived further away from listing center
  - Increased dependency on public insurance plans with increasing CHS

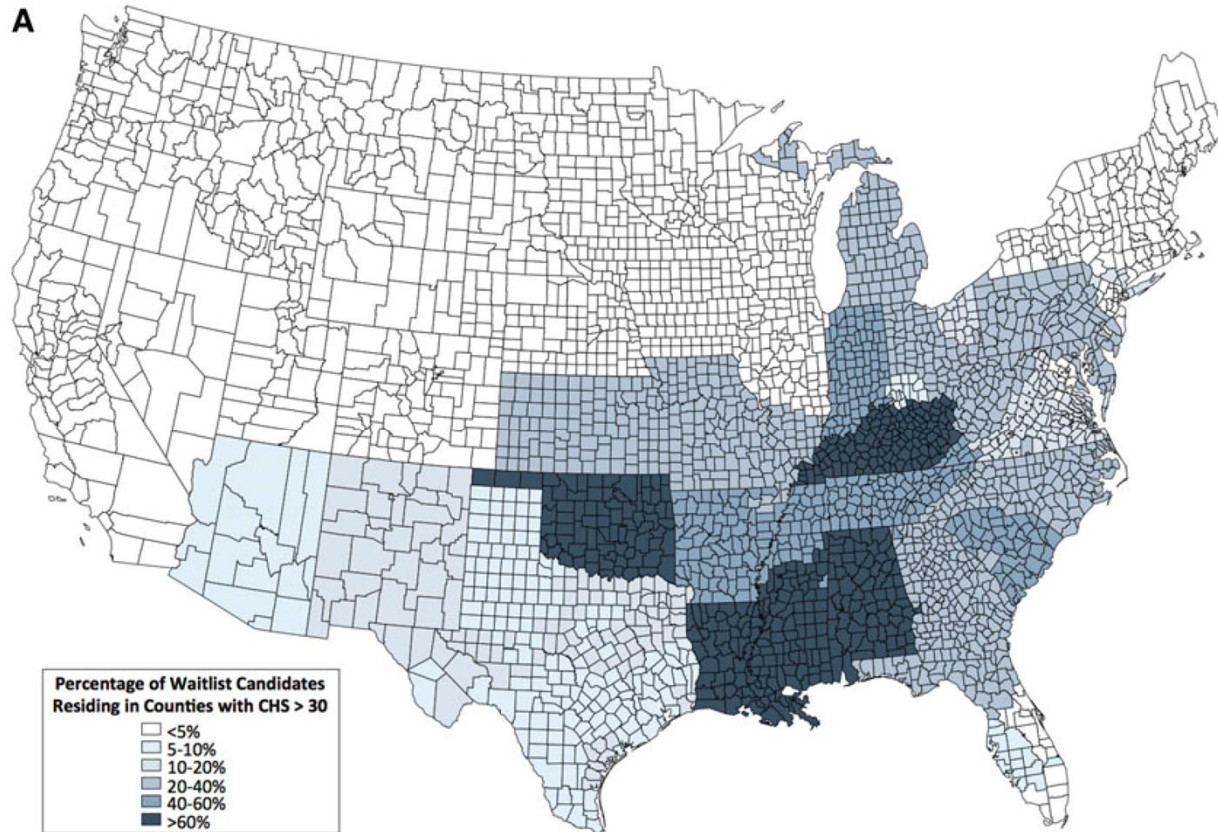
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# Socioeconomic Determinants

- Community Health Score
  - Higher CHS counties had more patients living in rural settings
  - Number of PCP's decreased in higher CHS counties
  - Number of waitlisted liver txp candidates per population deaths from ESLD dropped as CHS scores increased
  - Higher CHS associated with increase in waitlist mortality

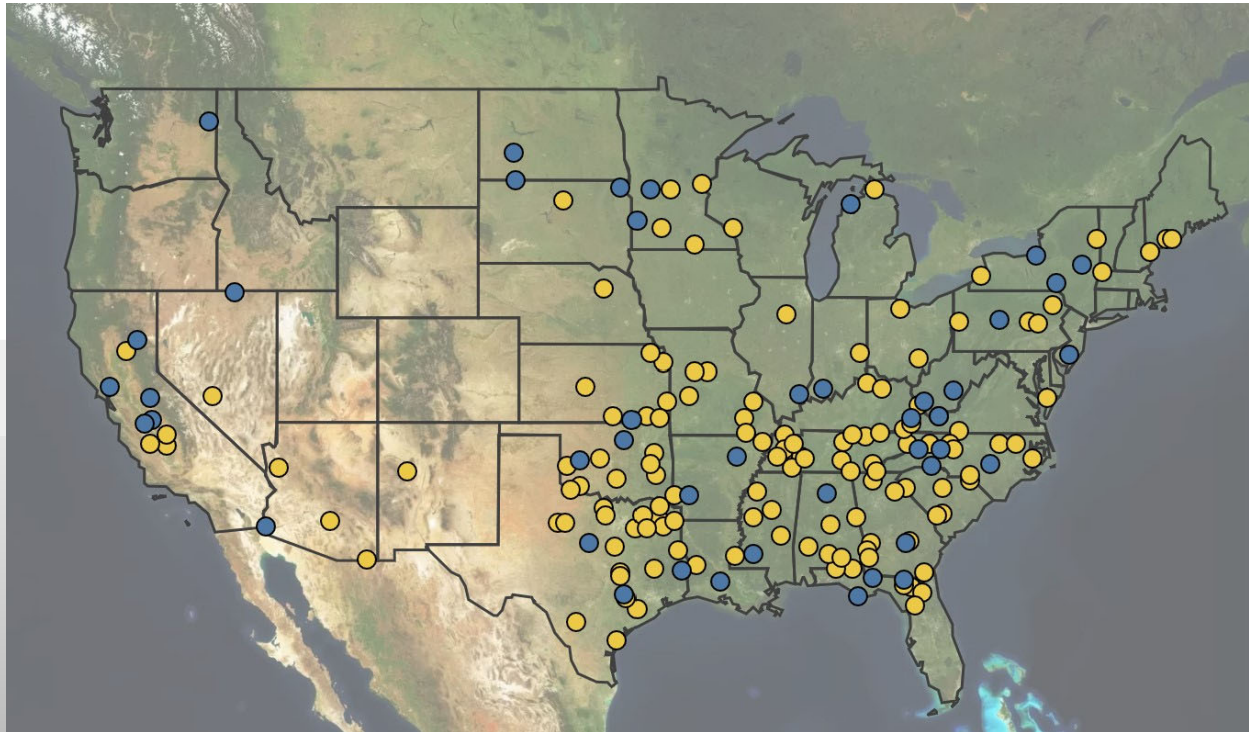
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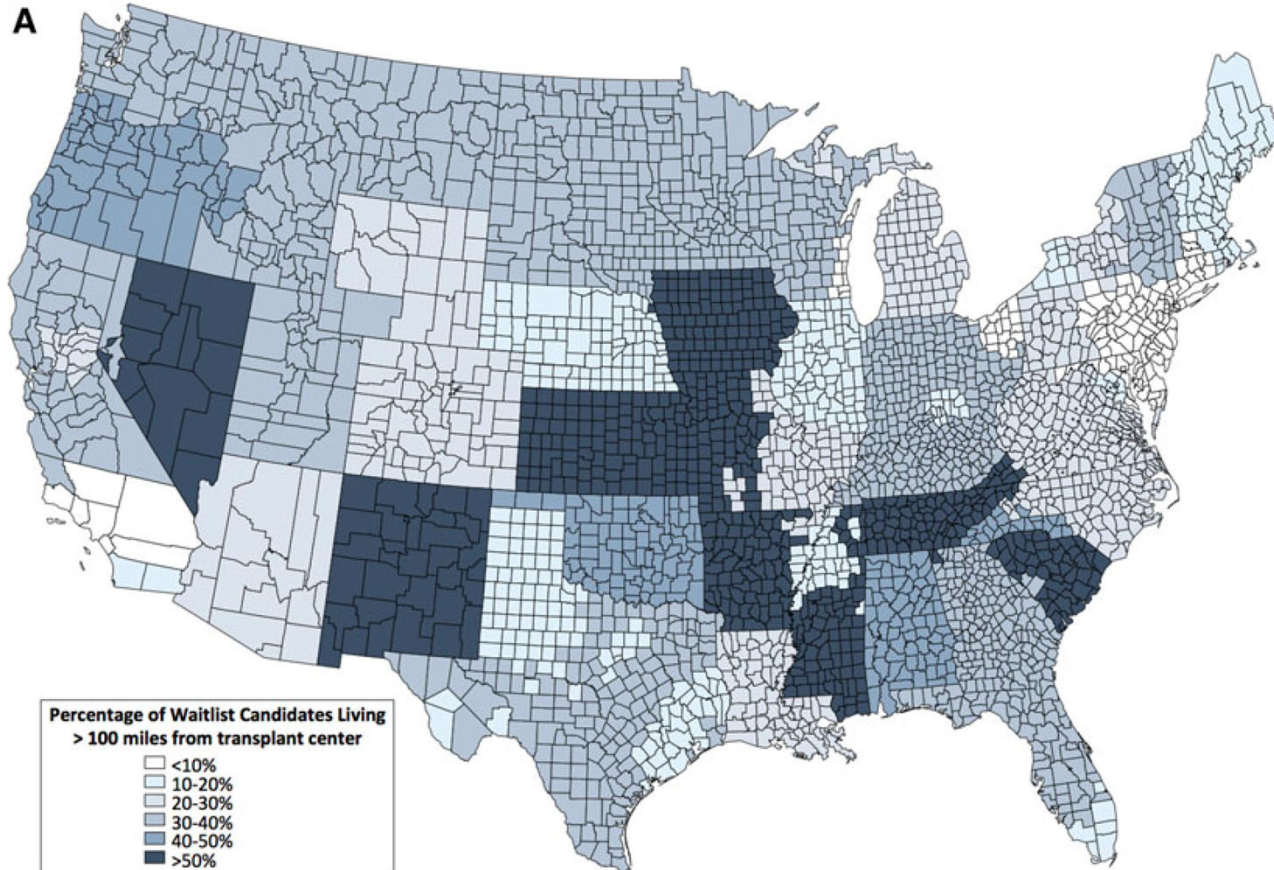
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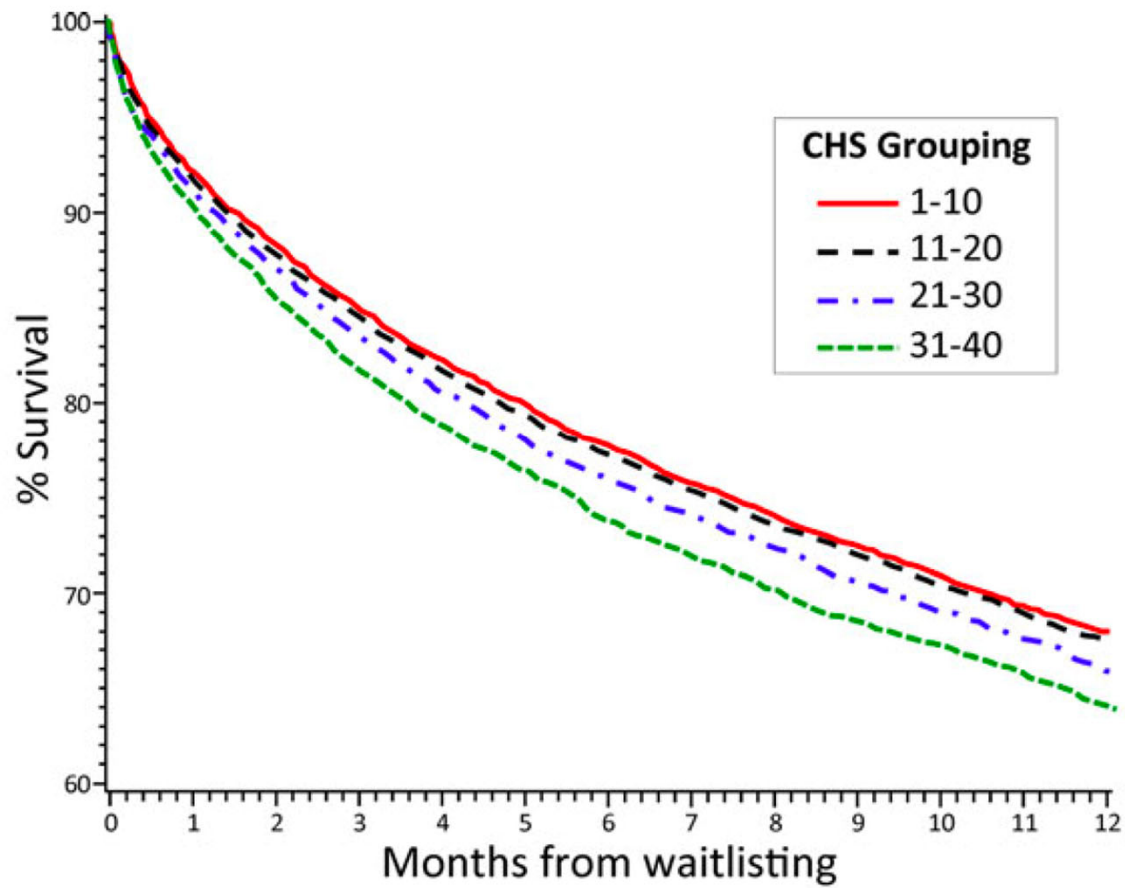
# Rural Hospital Closures



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# Socioeconomic Determinants

- Conclusions
    - Counties with higher CHS scores had higher proportion of rural, poor and black people
    - In waitlisted patients from high CHS counties: more likely to be black, have public insurance, and live further away from listing txp center
    - Fewer patients with MELD  $\geq 30$  in high CHS counties: suggests increased lethality of “lower” MELD scores, lower referral rates, less successful completion of waitlisting requirements for more ill patients
- Ross K, et al. *Socioeconomic Determinants of Waitlist and Posttransplant Survival Among End-Stage Liver Disease Patients*. Am J Transplant 2017;17:2879-2889.



# Socioeconomic Determinants

- Conclusions

- Death rate from ESLD is nearly twice that of lowest risk counties in general population
- Patients with the highest sociodemographic risk fare significantly worse in terms of waitlist mortality.

Ross K, et al. *Socioeconomic Determinants of Waitlist and Posttransplant Survival Among End-Stage Liver Disease Patients*. Am J Transplant 2017;17:2879-2889.



# Socioeconomic Determinants

- Policies that shift livers away from areas with high proportions of patients in increased CHS communities further exacerbates access to transplantation and increases waitlist mortality.
- Current allocation policies do not consider the interplay of many important sociodemographic and economic factors.