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Geographic Variations in Access to Kidney Transplant

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Disclosures

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I have no financial relationships to disclose within the past 12 months relevant to my presentation. The ACCME defines 'relevant' financial relationships as financial relationships in any amount occurring within the past 12 months that create a conflict of interest.

AND

My presentation does not include discussion of off-label or investigational use

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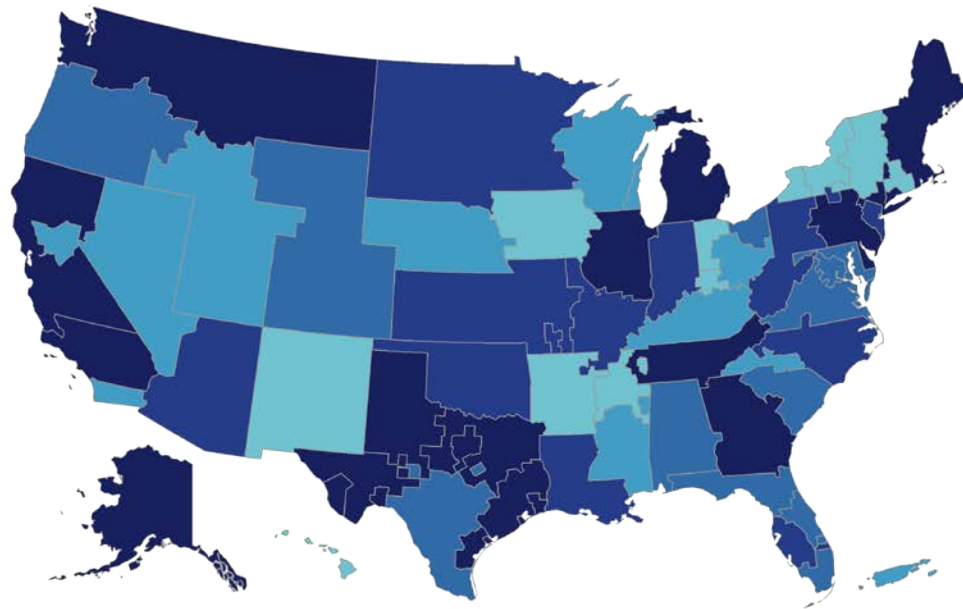
Background and Intent

- The Final Rule states that “neither place of residence nor place of listing shall be a major determinant of access to a transplant.”
- November 2012: The OPTN/UNOS Board of Directors agreed that geographic disparities in candidate access to transplant are unacceptably high.
 - Various efforts to describe geographic disparity were undertaken by the OPTN Kidney Committee.
 - Efforts stopped after development of the current OPTN strategic goals.
- Late 2015: HRSA requested that SRTR examine whether the DSA in which a candidate lists is associated with candidate access to kidney-alone transplant.
 - The report was shared with the OPTN Kidney Committee in summer 2016.
 - Post-KAS data (March 1, 2015 – March 1, 2016) will be presented.

Unadjusted supply metrics

- Kidneys recovered, kidneys transplanted, and number of eligible/imminent/neither donors were highly related to the population of a DSA.
- Not surprisingly, each metric indicated a wide range in supply by DSA.
- However, the kidney recovery rate per 1000 referred in-hospital deaths was somewhat negatively related to population; more populous areas tend to have *lower* rates of kidney recovery.

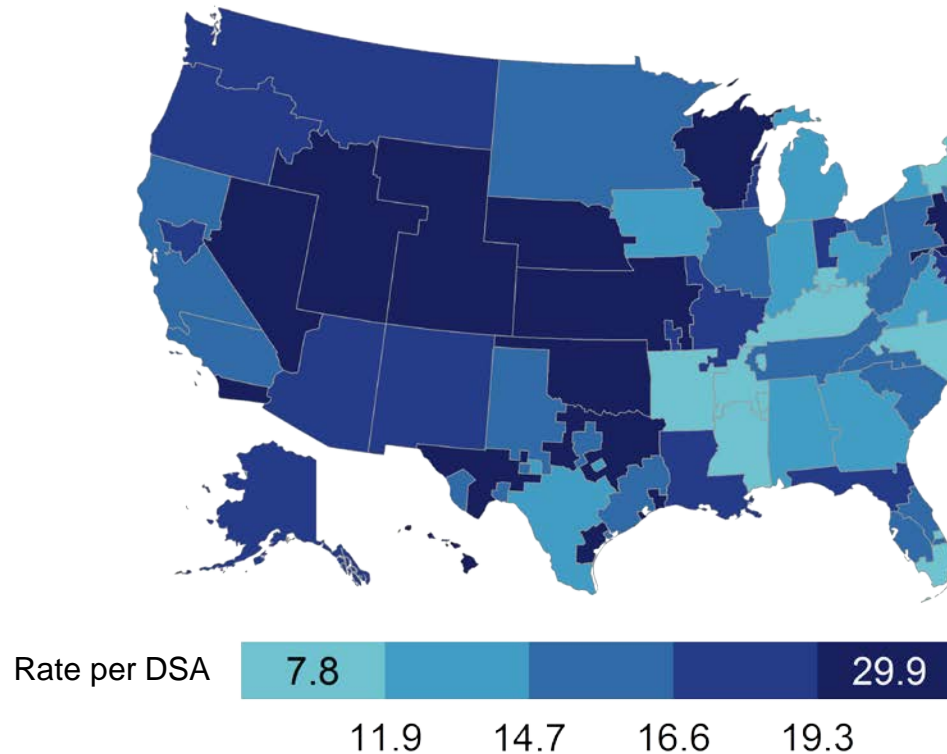
Kidneys recovered for transplant, by DSA



Kidneys recovered per DSA



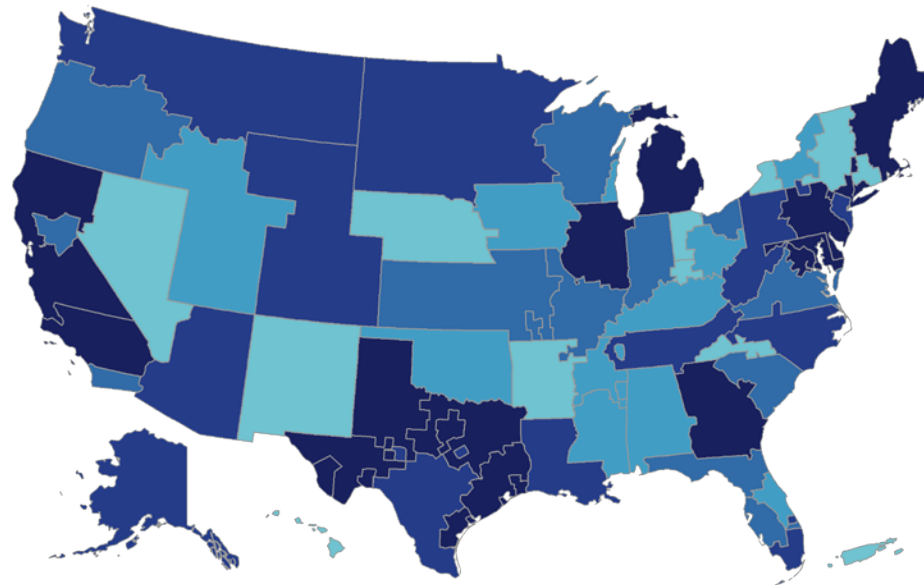
Rate of kidney recovery per 1000 referred in-hospital deaths, by DSA



Unadjusted demand

- Waitlist growth (one measure of demand) was somewhat attenuated by KAS, although growth in the ESRD population was not.
- Both new and prevalent waitlist volume was highly related to population, as was ESRD patient volume.
 - The percentage of ESRD patients on the kidney waiting list was also correlated with underlying population, but less so.

New kidney waitlist candidates, by DSA



New listings per DSA

85.0

2077.0

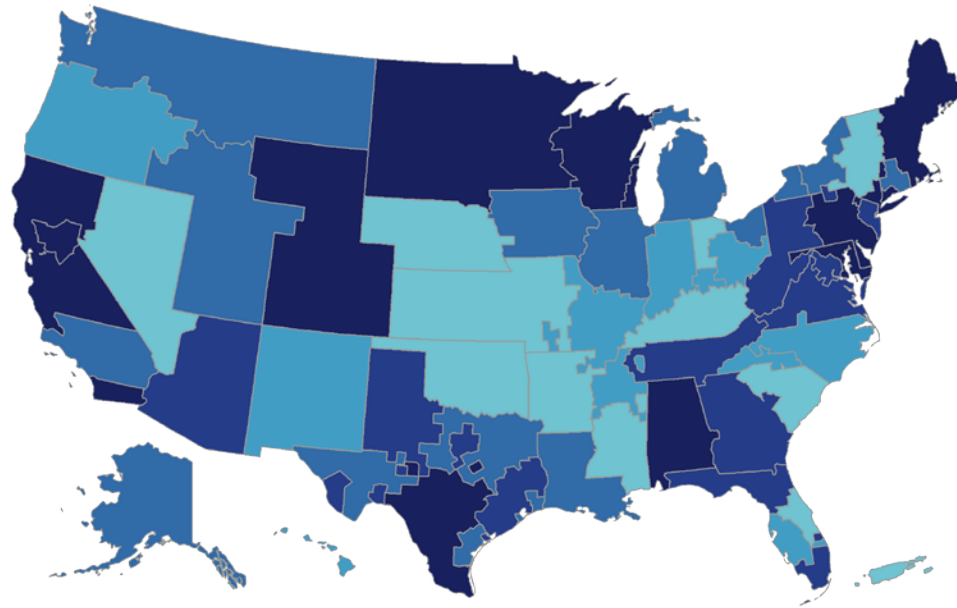
211.2

334.0

527.0

1022.6

Percentage of ESRD population on the kidney waiting list, by DSA



Percentage by DSA

5.8

13.3

18.6

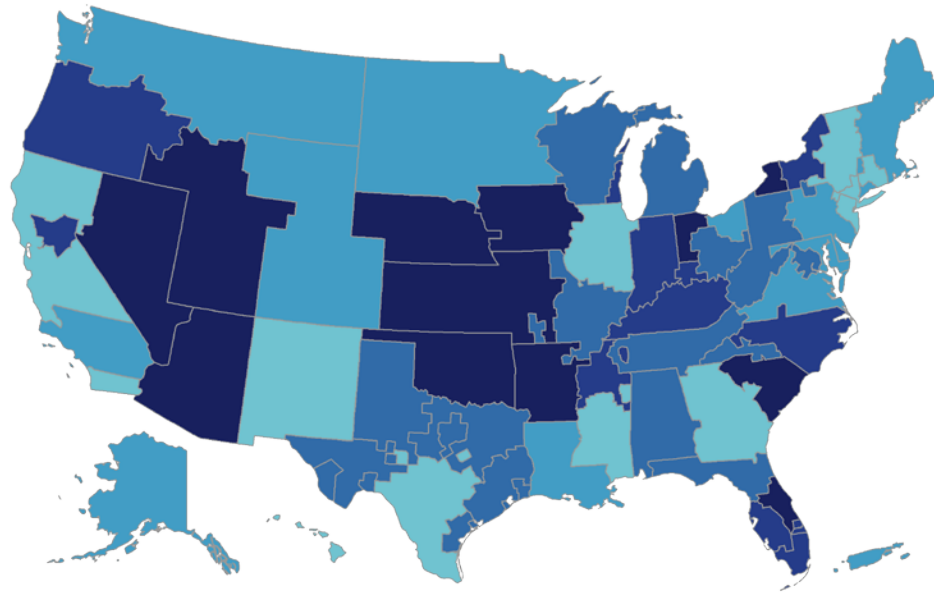
21.2

28.5

42.3

Unadjusted transplant metrics

- There is a wide range across DSAs, particularly in offer rate and transplant rate.
 - This range is the first evidence of disparity in access to transplant; mediating factors could be varying candidate case-mix or variability in OPO procurement and placement of organs.



Transplants per 100 active wait
years per DSA

4.6

13.9

17.8

21.6

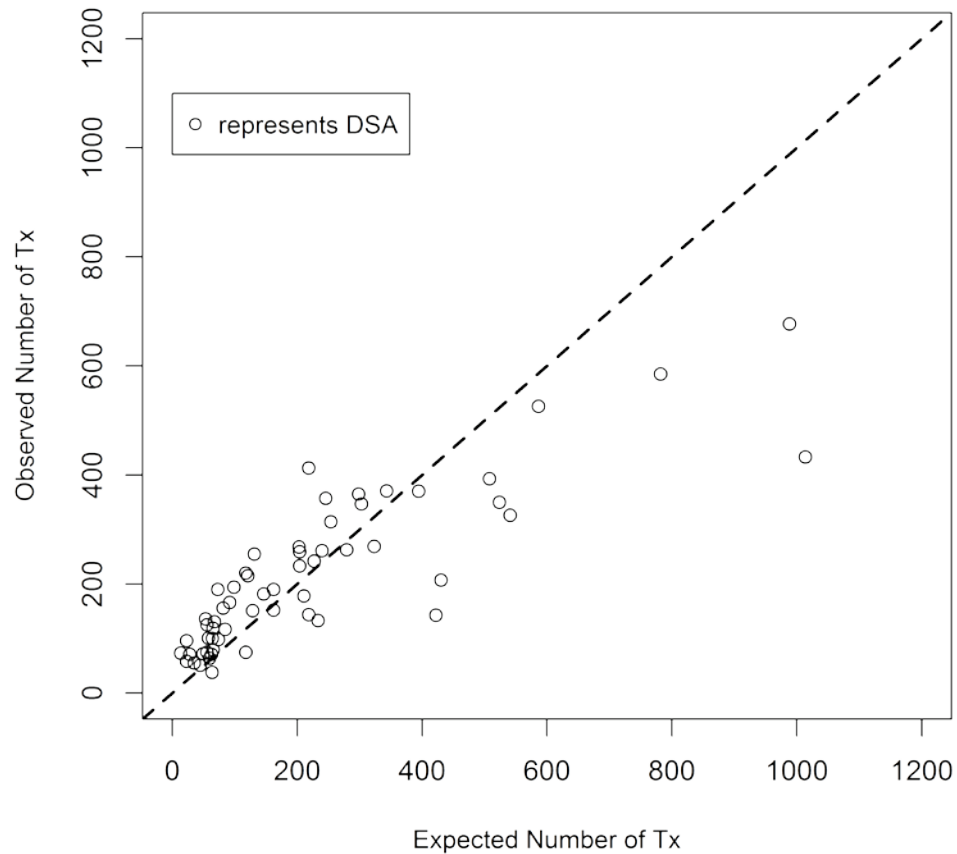
34.3

87.7

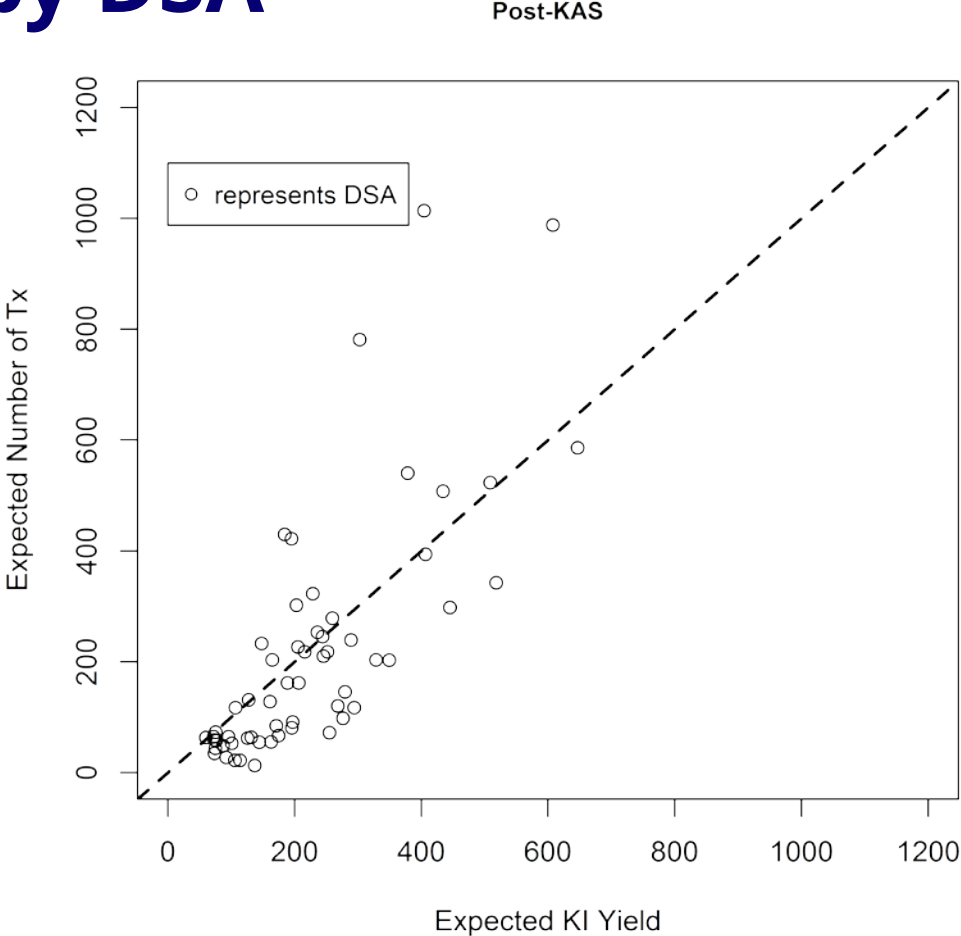
Adjusted Measures of Access

- Examine relationships between:
 - Actual number of deceased donor transplants per DSA.
 - Expected number of deceased donor transplants per DSA, given candidate case-mix and national transplant practices. “Demand,” after controlling for case-mix.
 - Expected number of transplanted kidneys recovered per DSA. Local “supply,” after controlling for OPO variability in kidney placement.

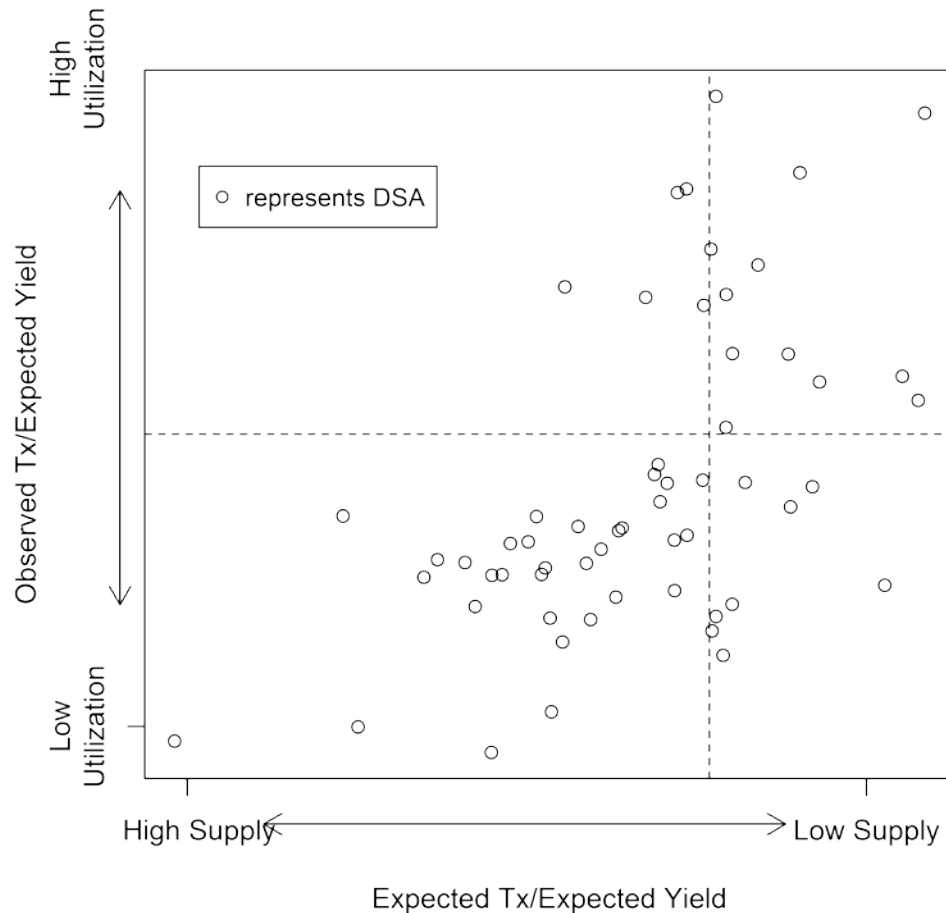
Actual and expected transplants by DSA



Expected transplants and expected supply by DSA



Expected supply and utilization by DSA



Summary

- There are substantial disparities in measures of kidney supply and demand and access to kidney transplant.
 - Organ supply was somewhat stimulated post-KAS (global increase), but differences between DSAs remained or grew.
 - Growth in new and existing demand slowed under KAS, which meant that differences between DSAs were slightly reduced. However, the growth of the ESRD population was unaffected by KAS.
 - Although overall transplants were stimulated, most measures of spread between DSAs grew post-KAS. That is, most DSAs had increased access post- versus pre-KAS, but the gaps between DSAs remained or grew.
 - Referral rate to the waitlist is not constant across DSAs.
- Plots of adjusted measures revealed dynamics of supply and demand between DSAs:
 - High-demand (larger) DSAs are less likely to meet actual demand, either with local organs only, or with local and imported organs.
 - DSAs with relatively low supply are more likely to have high utilization (perform more transplants than expected based on local supply); that is, they are driven to use imported kidneys.