

# Estimating latent demand for organ transplantation

Presentation before the Maryland Health Care Commission working group

May 27, 2015

How can we quantify latent demand for organ transplantation?

# The current formula

The current formula is complicated, but ultimately carries several flawed assumptions:

- The rate of ESLD/ESRD in a DSA is fully captured by the current number of transplants to residents
- If the current number of transplants to residents of a DSA is declining, then need is declining
- A new center won't change the proportion of patients in a DSA who go elsewhere for a transplant (ex-migrants)
- A new center won't change the proportion of patients who come from outside a DSA for a transplant (in-migrants)

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**These assumptions are probably more reasonable for (say) stroke, where supply isn't constrained**

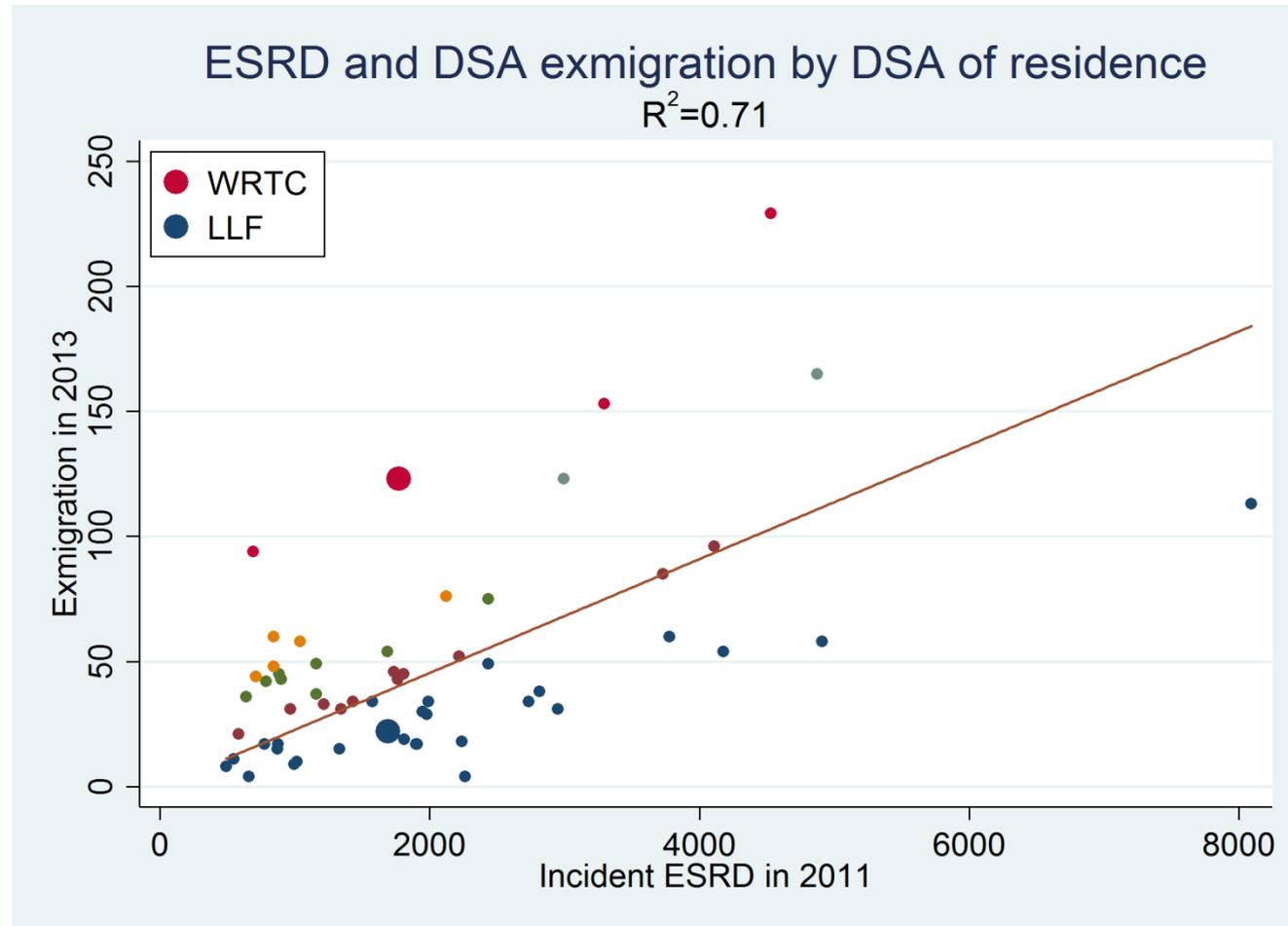
# Proposed framework: estimating demand

- Base demand on number of cases of ESRD/ESLD
- Ex-migrants (in excess of some baseline) represent unmet local demand
- Formula must be easy to calculate
- Estimate demand independent of case mixture (currently, white/high-SES patients have better access to transplant, but we don't wish to perpetuate this disparity)

# Estimating latent demand: methods

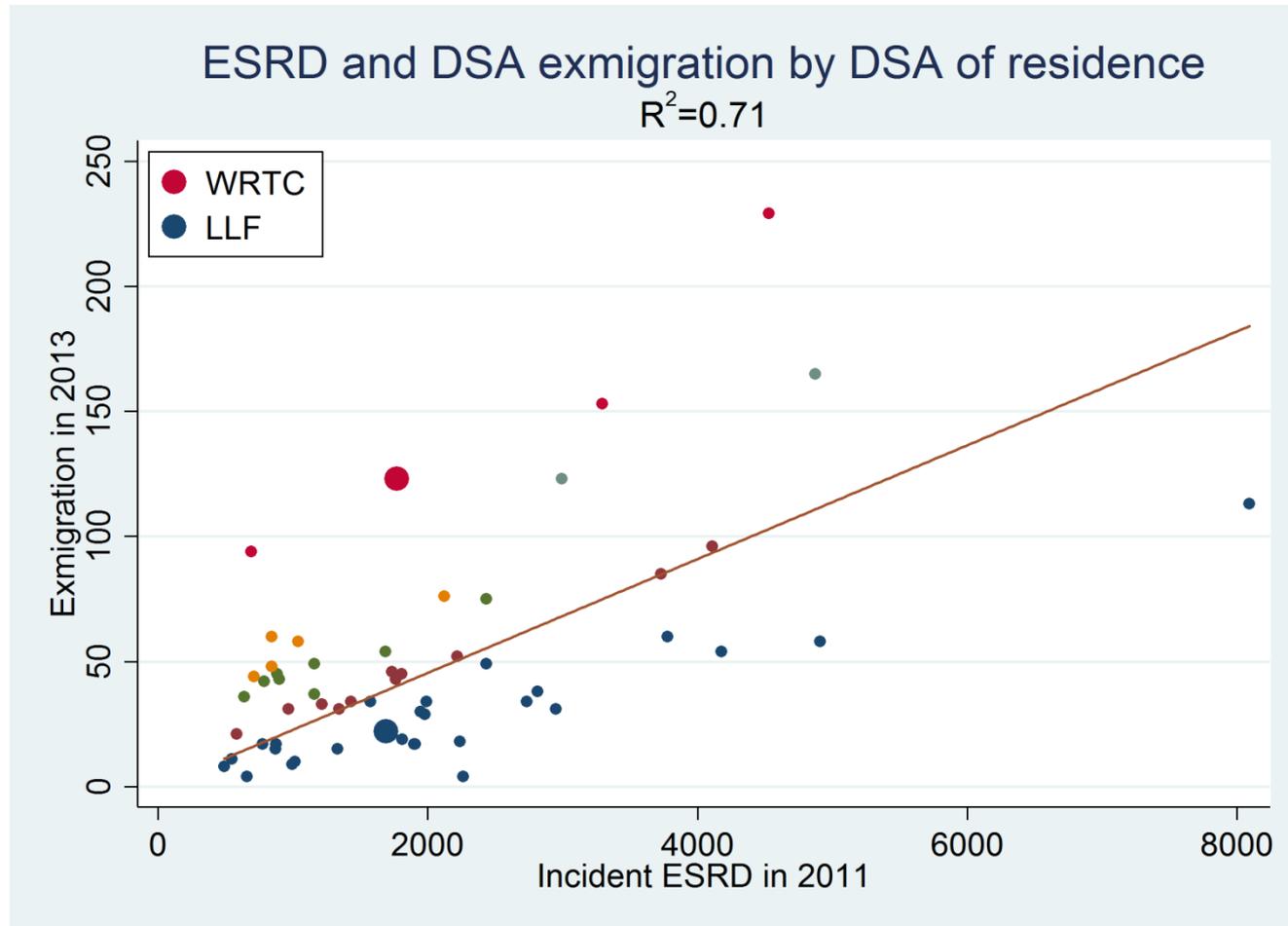
- Data: KT in 2013; incident ESRD in 2011 (most recent years available)
- Define "exmigrant" KT as KT outside of DSA of residence
- Regress # exmigrant KT as a function of # incident ESRD cases with no constant term (i.e. model ratio of KT to ESRD cases)
- If observed exmigrant KT is dramatically larger than predicted exmigrant KT, this indicates latent demand for a new transplant center

# Estimating latent kidney demand



Wide variation among DSAs

# Estimating latent kidney demand



WRTC rate of travel is 3x national average (40.3 expected, 123 observed)

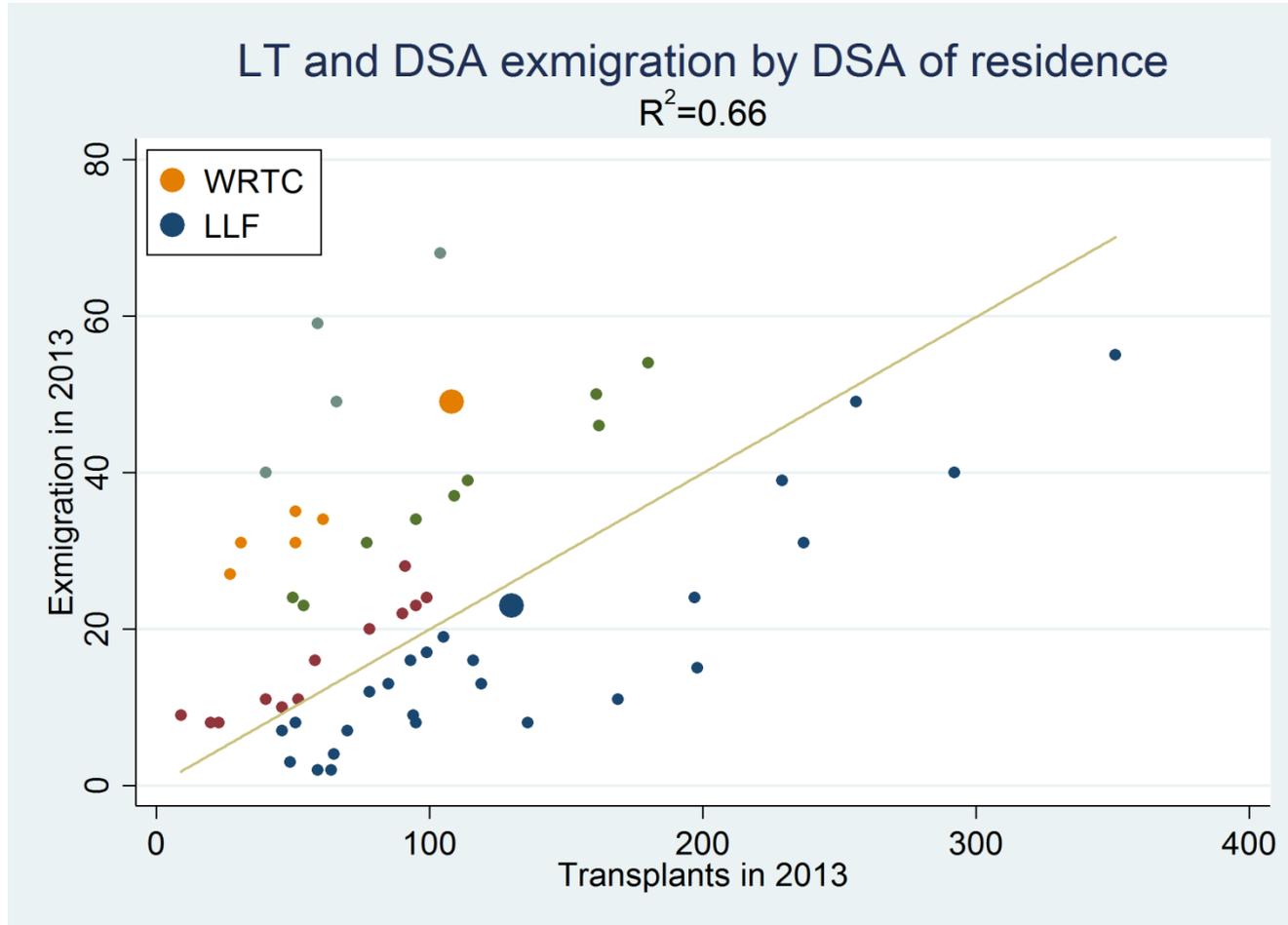
# Liver transplantation

- We have no registry of ESLD
- Model exmigrations as a proportion of all transplants, by DSA of **residence**

# Estimating latent demand: liver

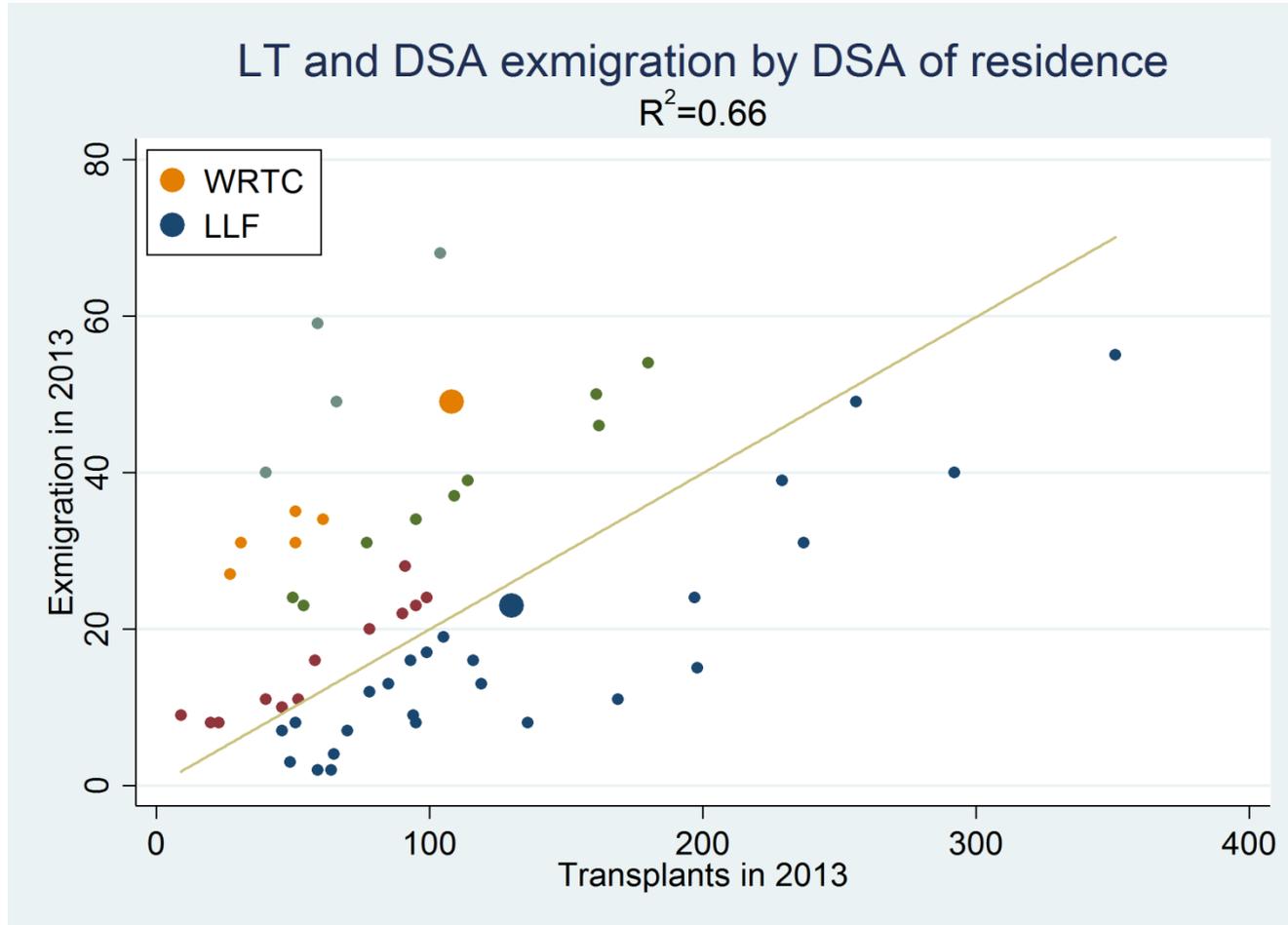
- We have no registry of ESLD; use transplants by DSA of **residence** for denominator
- Regress # exmigrant LT as a function of transplants to residents, with no constant term
- If observed exmigrant LT is dramatically larger than predicted exmigrant LT, this indicates latent demand for a new transplant center

# Estimating latent liver demand



Even more variation among DSAs

# Estimating latent liver demand



WRTC rate of exmigration is 2.3x average (21.6 expected, 49 observed)

# Conclusion

Based on national averages, WRTC has latent demand for an estimated 83 additional KT and 27 additional LT per year

# Estimates are conservative

- Does not account for population growth
- Does not account for potential immigration
- A center that was more aggressive than the national average with regards to outreach or live donation might capture additional demand