The Effects of High-Risk Donors and Recipients on Scientific Registry of Transplant Recipients Program-Specific Outcomes

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:SRR
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TRANSPLANT RECIPIENTS

Disclosures

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I have no financial relationships to disclose within the past 12 months relevant to my presentation.

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

Background

- Public reporting of transplant program-specific outcomes may dissuade programs from accepting high-risk donors and recipients, and thereby restrict access to transplant.
- It has been proposed that recipients of high-risk donors or high-risk transplants, as identified by the combination of donor and recipient risk, be excluded from program-specific evaluation cohorts.
- We examined the association between measured donor and recipient risk and 1-year outcomes evaluations by the Scientific Registry of Transplant Recipients (SRTR) for adult deceased donor kidney graft survival.

Methods

- We used adult deceased donor kidney transplants 1/1/11-6/30/13.
- The newly-developed kidney risk-adjustment models to be used starting in 2015 were used to assess predicted risk of each transplant.
- We defined low- and high-risk donors by kidney donor profile index ≤85% and >85%, respectively, and the combined donor/recipient risk as low (≤85th percentile) and high (>85th percentile) based on modeled risk.
- The new Bayesian methodology for identifying low-performing programs was used to identify programs that would be screened by the Membership and Professional Standards Committee.

New Kidney Graft Failure Model Contains:

Donor

- Local vs. Shipped
- **Age***
- ABO Group
- **BMI***
- BUN
- Clinical Infection of the Lung
- **DCD***
- **Terminal eGFR***
- **Ethnicity***
- Anti-HBc
- Hx of Cancer
- **Drug-Treated Systemic HTN***
- Arginine Vasopressin
- Diuretics
- T4
- **KDRI (KDPI)***
- **Terminal Serum Creatinine***
- Cigarette Use
- HLA A Mismatches
- HLA DR Mismatches
- Cold Ischemia Time

**Components of the KDRI definition.
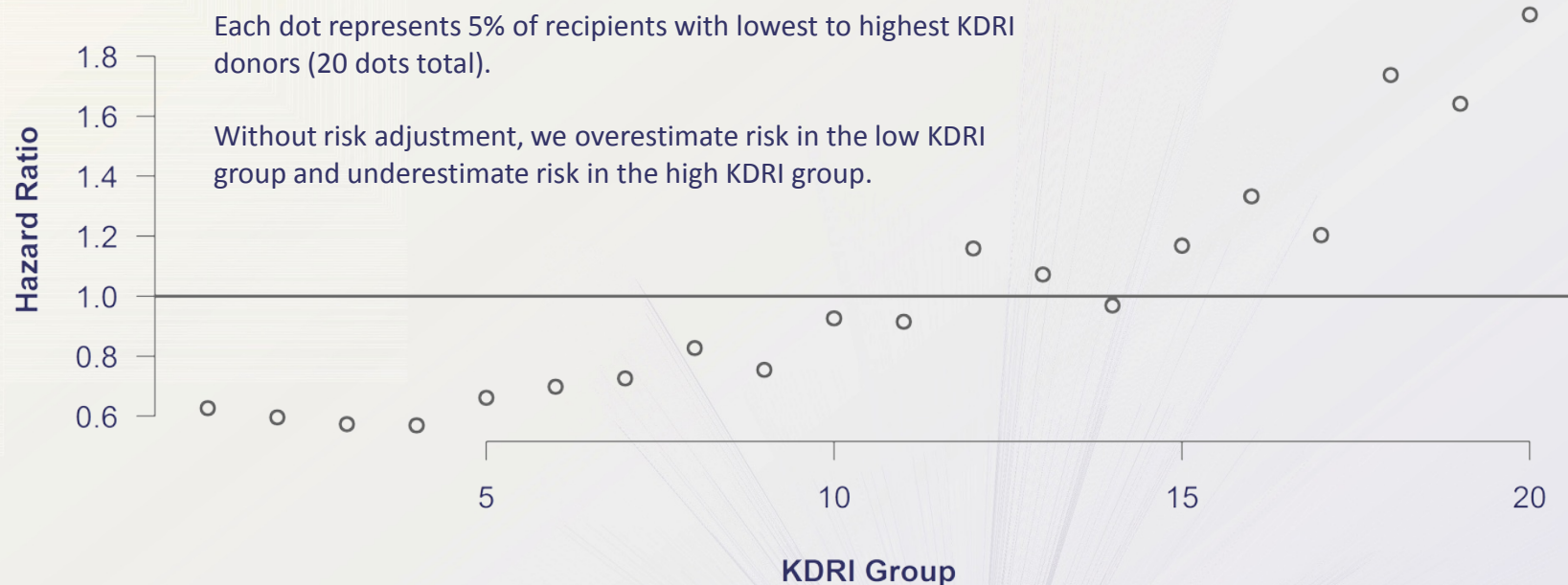Components new to the models are underlined.

Recipient

- Hx of Drug-treated COPD
- Ethnicity
- Hx of Malignancy
- Hx of Sympomatic PVD
- Total Serum Albumin at Listing
- Age
- BMI
- HIV Serostatus
- CPRA
- Pretransplant transfusions
- Primary Diagnosis
- Insurance
- Total ESRD Time
- Procedure Type

How good is the model at adjusting for donor risk?

No Risk Adjustment: Deceased Donor Adult Graft Survival

Each dot represents 5% of recipients with lowest to highest KDRI donors (20 dots total).

Without risk adjustment, we overestimate risk in the low KDRI group and underestimate risk in the high KDRI group.

How good is the model at adjusting for donor risk?

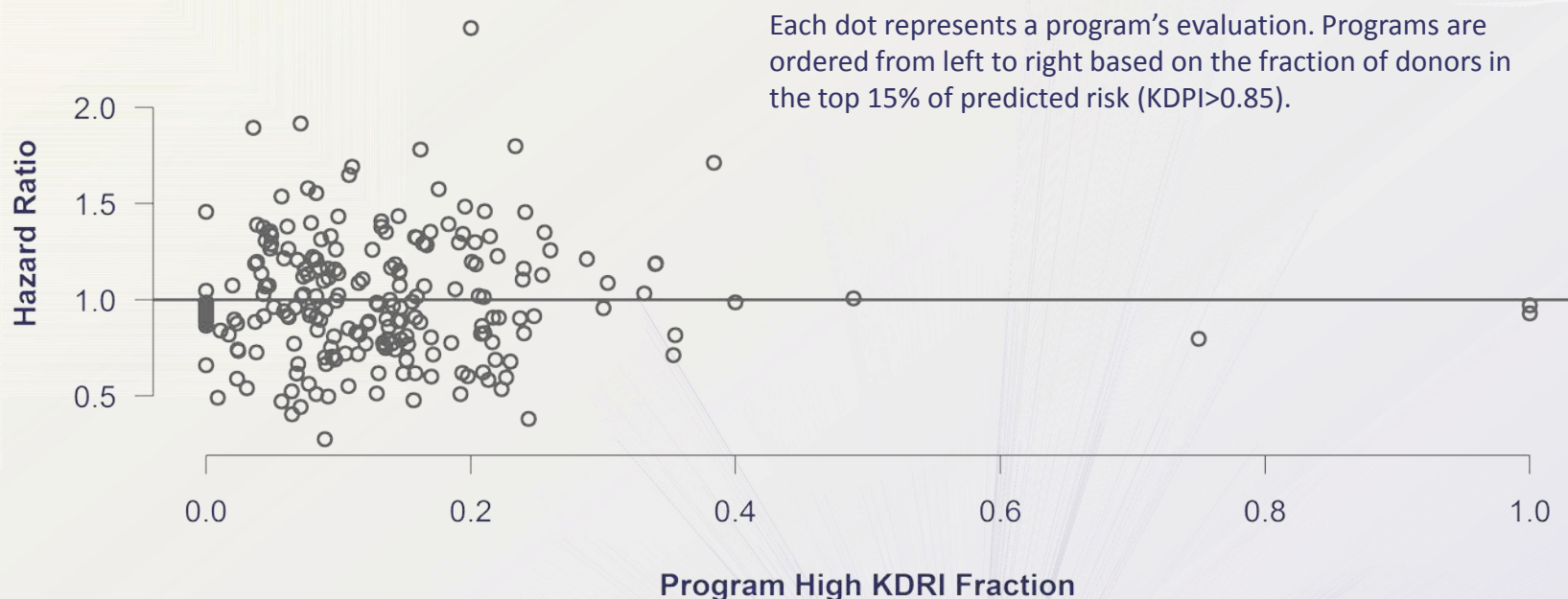**New KI Model: Deceased Donor Adult Graft Survival**

Each dot represents 5% of recipients with lowest to highest KDRI donors (20 dots total).

With risk adjustment, we no longer see the pattern shown on the previous slide.
Therefore, the model expects worse outcomes in the recipients of high-risk donors.
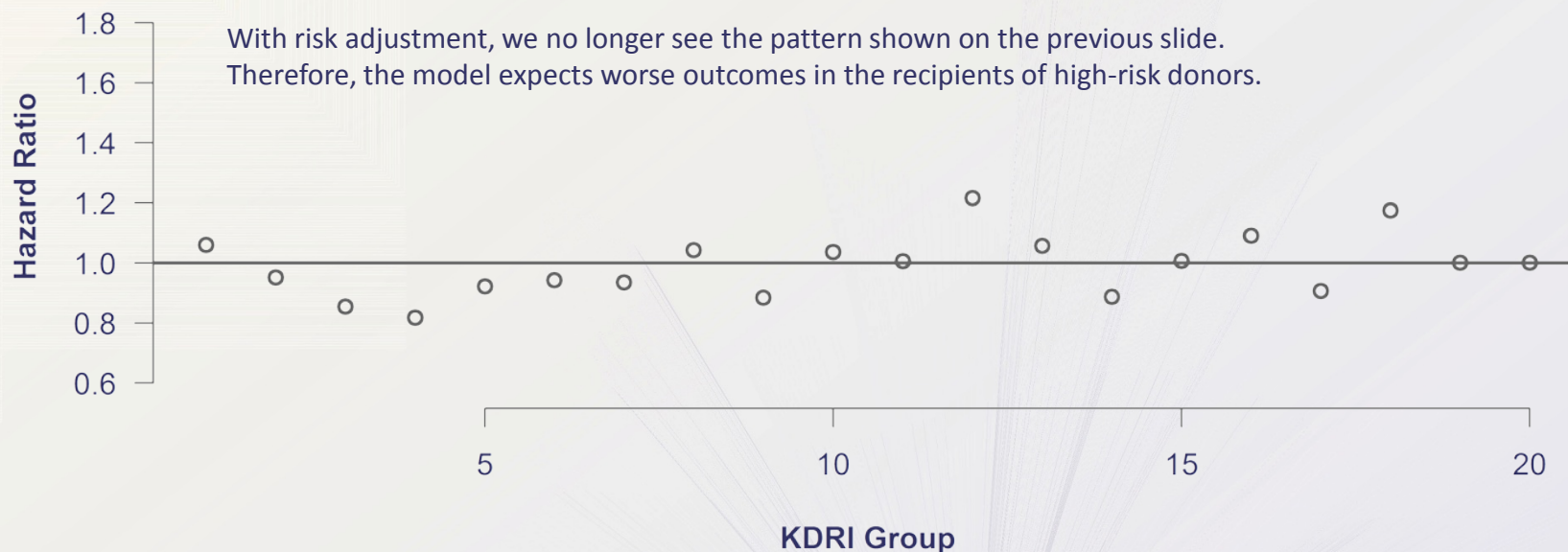
Do programs with high percentages of high-risk donors have worse outcomes evaluations? No.

New KI Model: Deceased Donor Adult Graft Survival
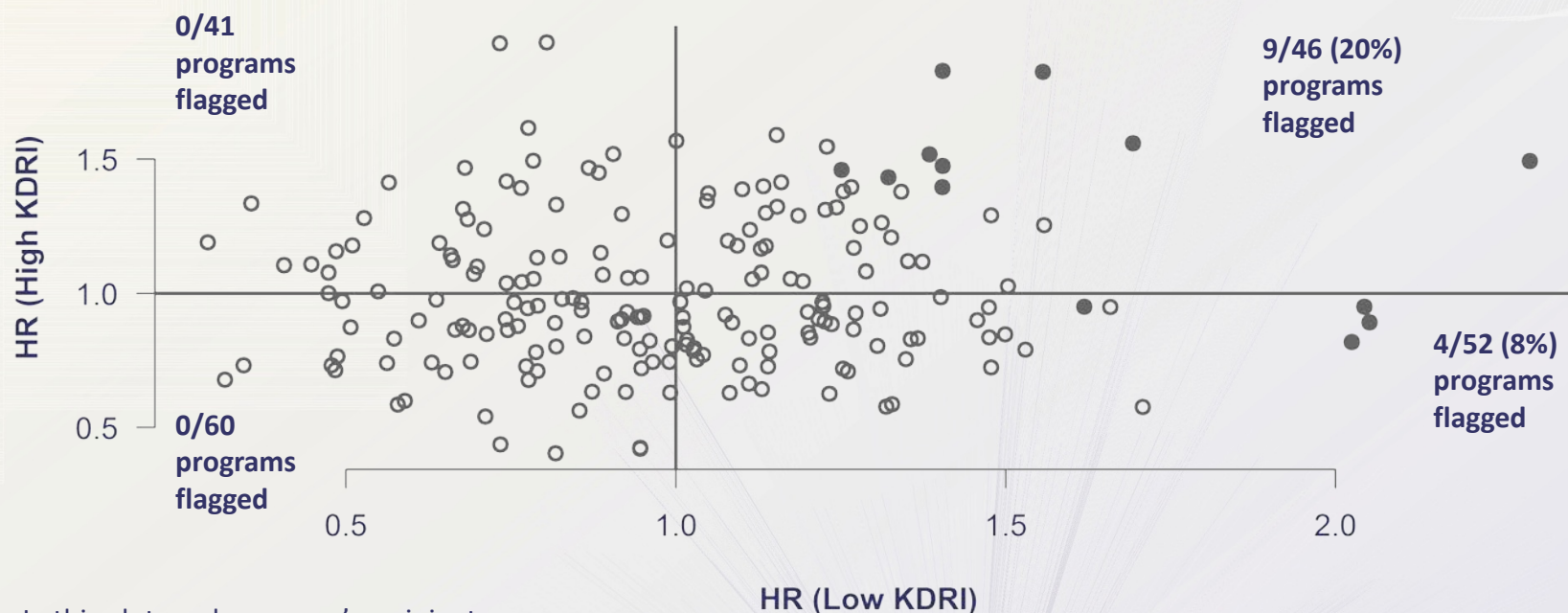
Each dot represents a program's evaluation. Programs are ordered from left to right based on the fraction of donors in the top 15% of predicted risk (KDPI>0.85).

Are any programs flagged only because they have bad outcomes on high risk donors? No.

New KI Model: Deceased Donor Adult Graft Survival

0/41 programs flagged

9/46 (20%) programs flagged

0/60 programs flagged

4/52 (8%) programs flagged

HR (High KDRI)

1.5

1.0

0.5

0.5   1.0   1.5   2.0

HR (Low KDRI)
Filled point for Bayesian flag (All KDRI)

In this plot, each program's recipients are divided into 2 groups: low KDPI (<85%) and high KDPI (85%+).

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How good is the model at adjusting for combined recipient-donor (i.e., transplant) risk?

No Risk Adjustment: Deceased Donor Adult Graft Survival

Each dot represents 5% of recipients with lowest to highest estimated risk (including donor and recipient factors; 20 dots total).

Without risk adjustment, we overestimate risk in the low risk group and underestimate risk in the high risk group.

Y-axis: Hazard Ratio (0.5, 1.0, 1.5, 2.0, 2.5)

X-axis: Modeled Risk Group (5, 10, 15, 20)

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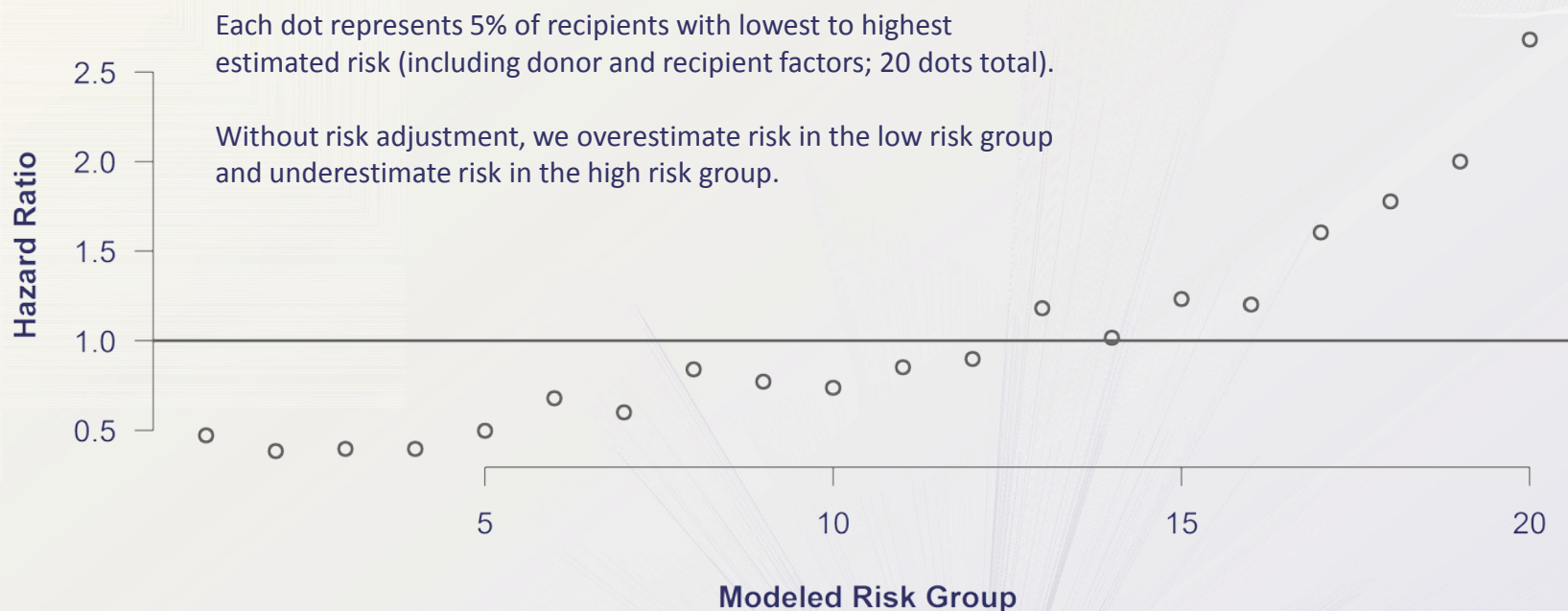
How good is the model at adjusting for combined recipient-donor (i.e., transplant) risk?

New KI Model: Deceased Donor Adult Graft Survival

Each dot represents 5% of recipients with lowest to highest transplant risk (20 dots total).
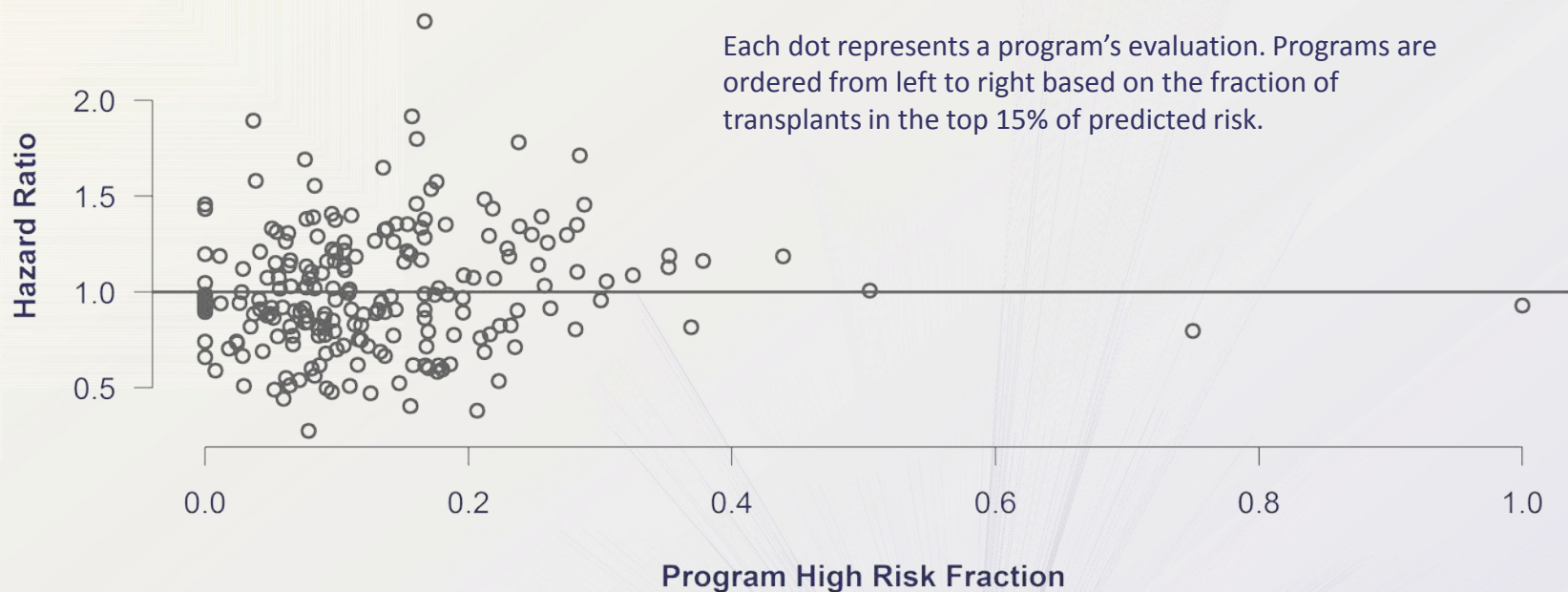
With risk adjustment, we no longer see the pattern shown on the previous slide. Therefore, the model expects worse outcomes in the high-risk transplants.

Do programs with high percentages of high-risk transplants have worse outcomes evaluations? No.

New KI Model: Deceased Donor Adult Graft Survival

Each dot represents a program's evaluation. Programs are ordered from left to right based on the fraction of transplants in the top 15% of predicted risk.

Are any programs flagged only because they have bad outcomes on high risk transplants? No.

New KI Model: Deceased Donor Adult Graft Survival

0/54 programs flagged

11/47 (23%) programs flagged

0/63 programs flagged

2/33 (6%) programs flagged

HR (High Risk)

HR (Low Risk)

Filled point for Bayesian flag (All Risk)

In this plot, each program's recipients are divided into 2 groups: low risk (<85th %tile) and high risk (85%tile+).

Conclusions & Limitations

- After risk adjustment for available risk factors, there was no relationship between donor risk and outcomes evaluations.
- There was also no relationship between the proportion of high-risk donors that programs accepted and their program evaluations.
- There were currently no programs identified solely because of poor outcomes with high-risk donors.
- Results were similar when considering the combination of donor-recipient risk.
- As defined by current risk parameters, high-risk donors and recipients do not adversely affect SRTR evaluations.
- Limitations:
  - Additional risk predictors may exist and should be collected and incorporated into the adjustment process.
  - Donor kidneys that are not transplanted due to perceived/real risk that is outside of, and independent of, the current risk adjustment parameters may continue to dissuade use of these marginal organs.

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