

# Continuous distribution simulations for lung transplant: Round 2

## **Data request: Continuous distribution simulations for lung transplant**

This report was provided to HRSA by SRTR in support of ongoing policy consideration by the OPTN Lung Committee. The analysis described herein was conducted at the specific request of the OPTN Committee and does not represent a full or final analysis related to the policy issue under consideration.

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### **Data Request ID#: LU2021\_01 (addendum)**

#### **Original Timeline:**

Request made April 15, 2021

Analysis plan submitted April 23, 2021

Analysis submitted May 28, 2021

Next Committee meeting June 10, 2021

## **Request**

In discussion of TSAM results during the 6/17/2021 lung committee meeting, one or more members was interested in TSAM results by insurance status, as a proxy for results by socioeconomic position.

Goals and methods are the same as in the main report for data request LU2021\_01. We defined insurance status as "Non-Public", "Public: Medicaid", and "Public: Non-Medicaid". Non-Public is largely private insurance, but also includes smaller categories such as self-pay, donation, free care and unknown. Public: Non-Medicaid is primarily Medicare, but also includes small numbers of candidates with coverage through the Veterans Administration, undefined "public insurance", and "US/state government agency."

## Results summary

Compared with current rules, transplant rates increased modestly for candidates with non-public coverage, increased considerably for candidates with Medicaid coverage, and declined for candidates with public non-Medicaid coverage at listing (Table 18, Figure 70). This resulted in an increase in the proportion of recipients with non-public and Medicaid coverage, compared with current rules (Table 18, Figure 71). The number of waitlist deaths declined in all groups, but declined the most (nearly 50%) in the Medicaid group (Table 18, Figure 72). Two-year posttransplant outcomes were similar across scenarios, though the point estimate in the Medicaid group increases lightly, likely due to the overrepresentation of pediatric recipients in this group (Figure 73, Table 19).

We examined distributions of age group, LAS, WLAUC, PTAUC, and diagnosis group, to help explain differences in transplant rates by insurance status (Tables 19-22). Children were overrepresented among those with Medicaid coverage. Those with Medicaid coverage had higher LAS (31.3% with LAS of 50 or more), compared with 24.2% among those with public non-Medicaid coverage. Among those covered by Medicaid, 28.7% were in the 4th PTAUC quartile (those with the best predicted 5-year outcomes), while only 14.2% of public non-Medicaid patients were in the 4<sup>th</sup> PTAUC quartile.

In short, those with Medicaid insurance, who one might presume are of lower socioeconomic position, had better access to transplant and larger waitlist death reductions under continuous allocation compared with current rules.

### Outcomes by Candidate Insurance Type

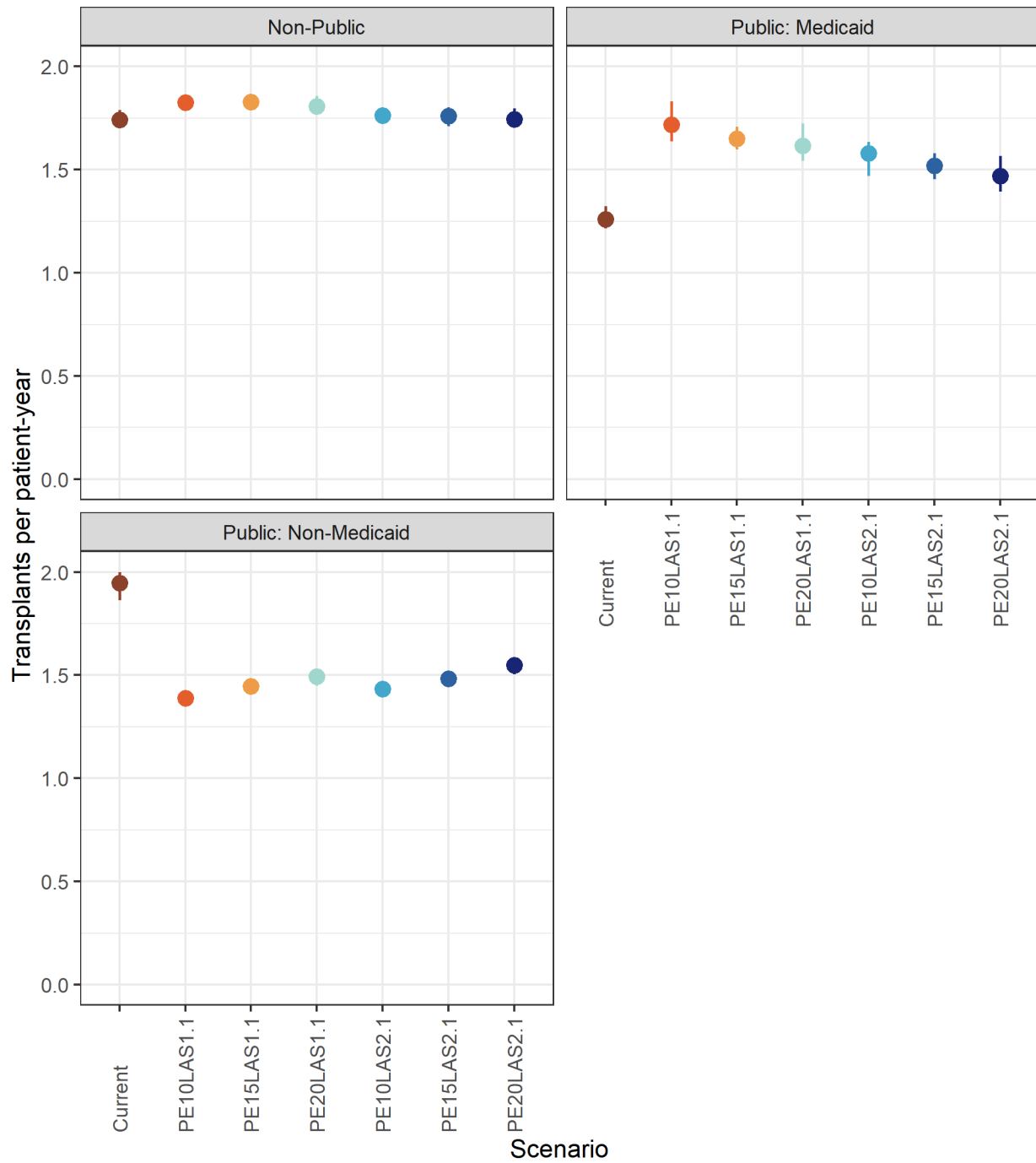


Figure 70: Transplant Rates - By Insurance Type

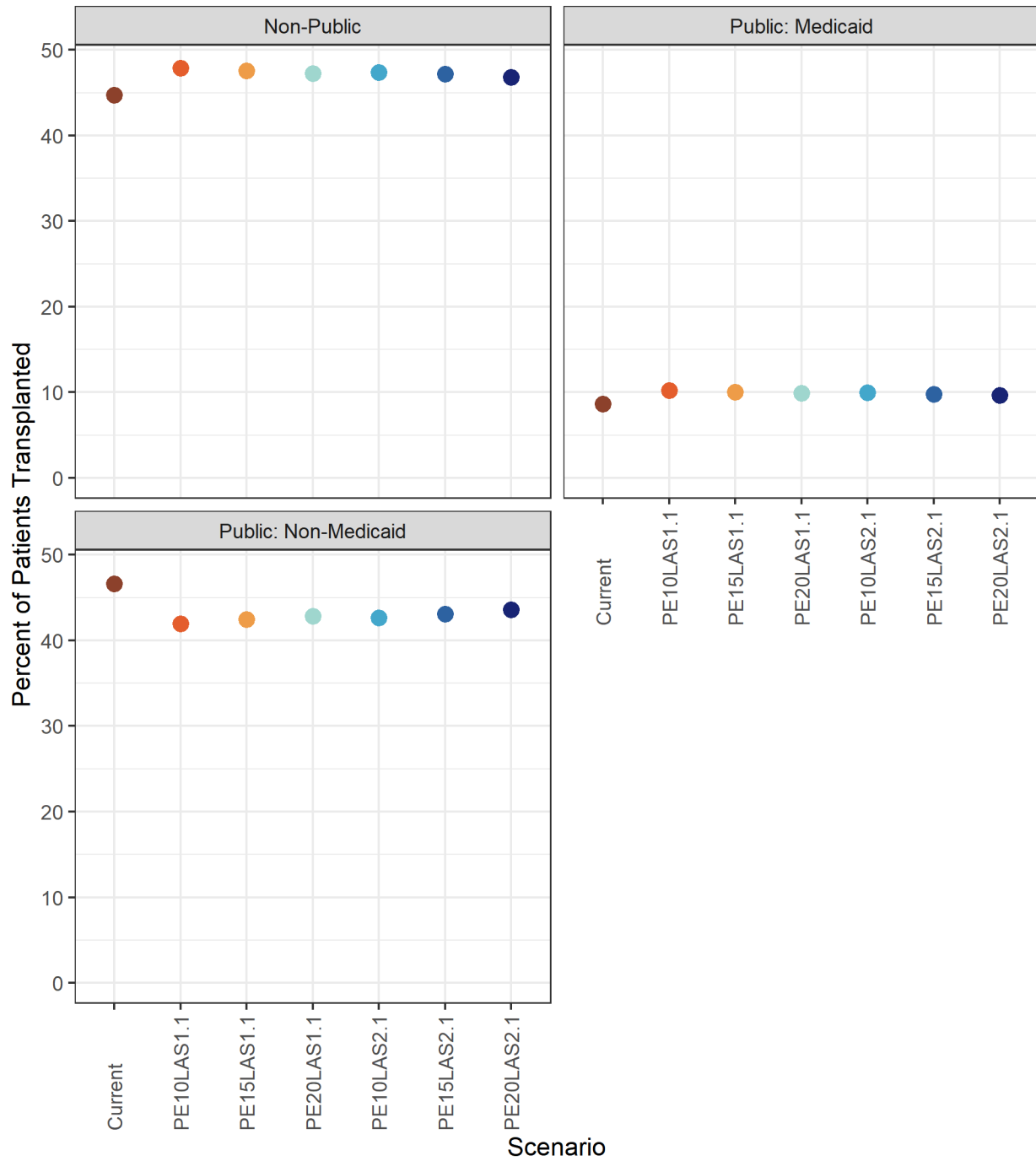


Figure 71: Transplant Distribution - Percent By Insurance Type

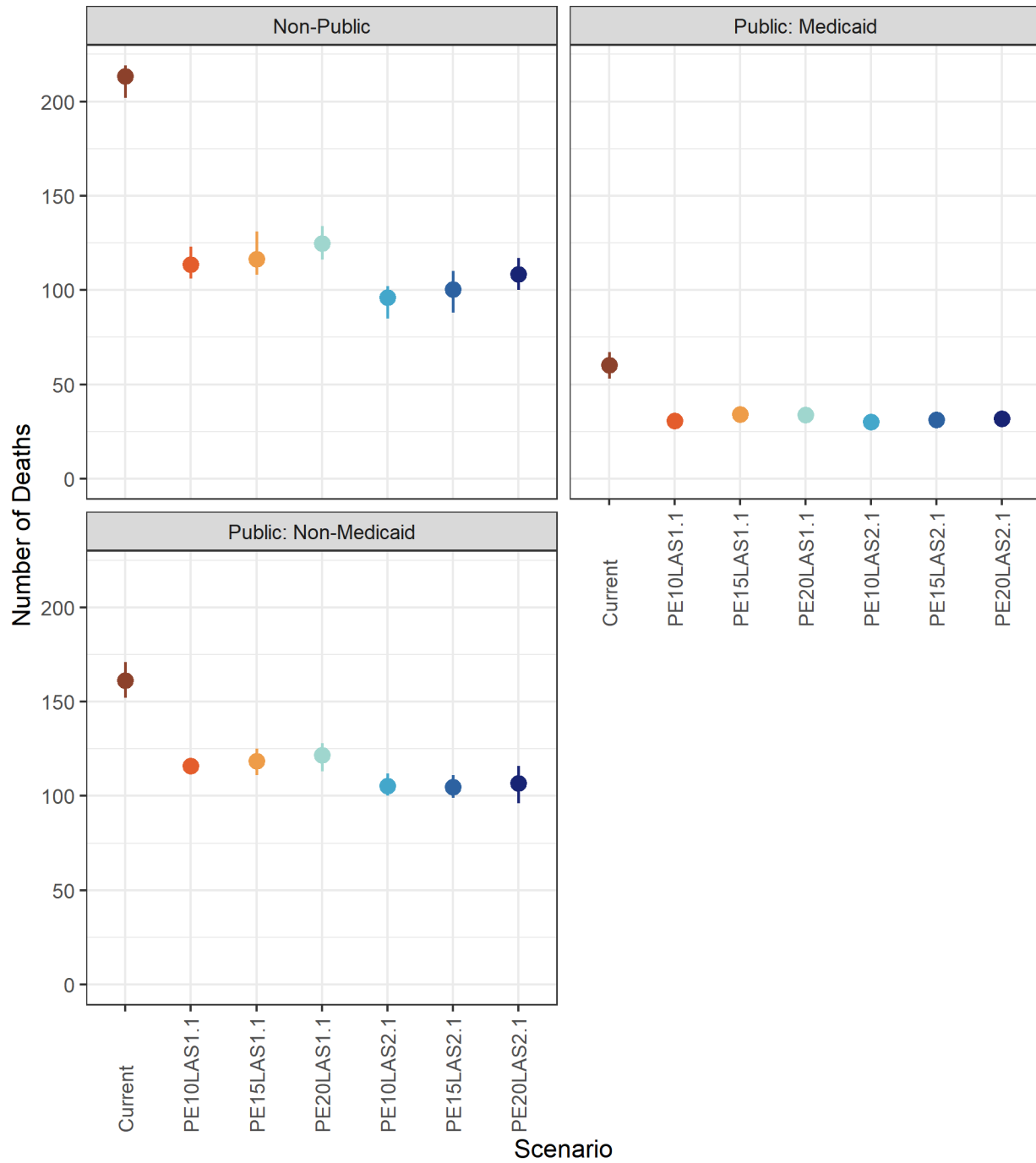


Figure 72: Waitlist Death Counts - By Insurance Type

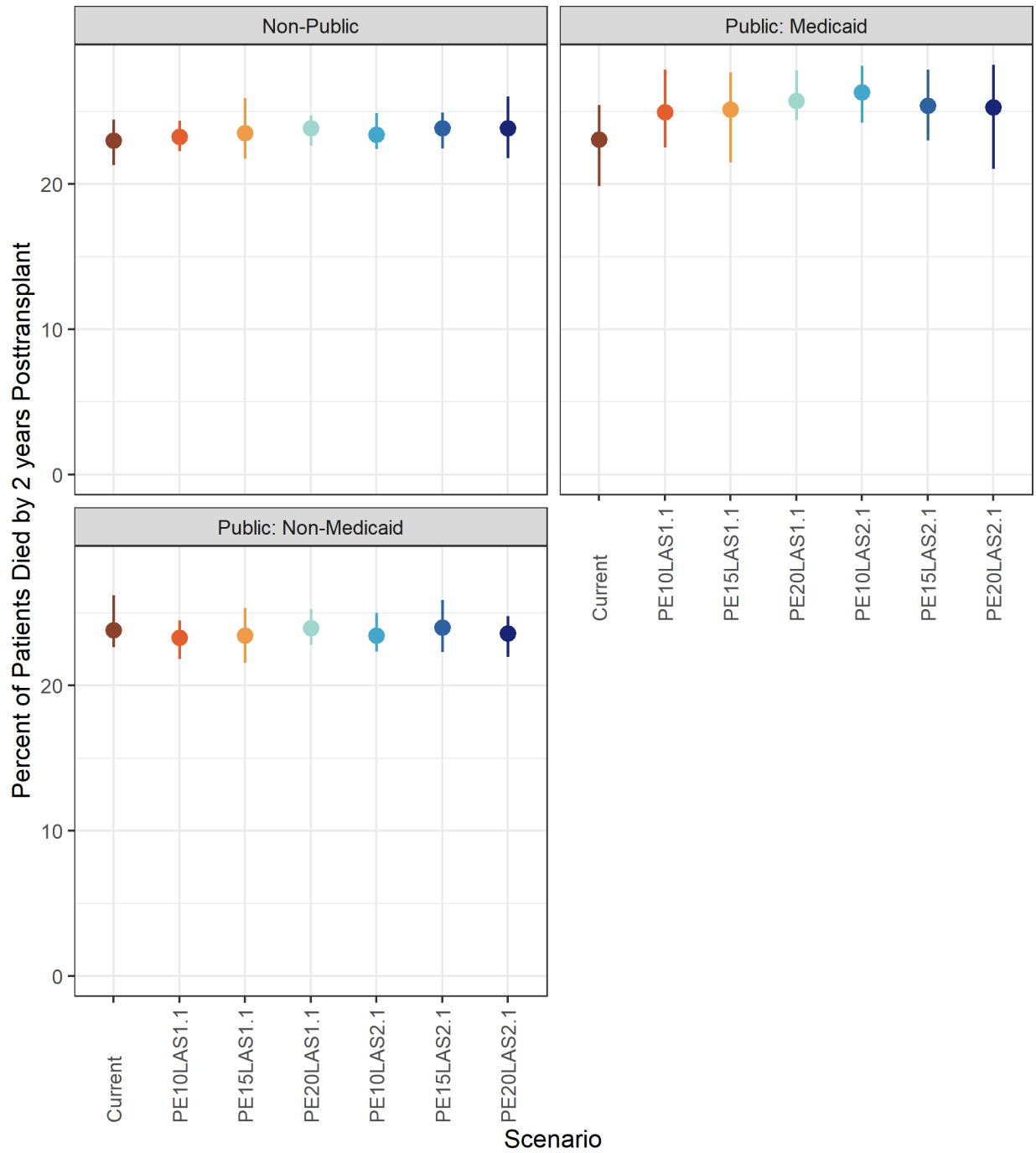


Figure 73: Percent Died by 2 Years Posttransplant - By Insurance Type

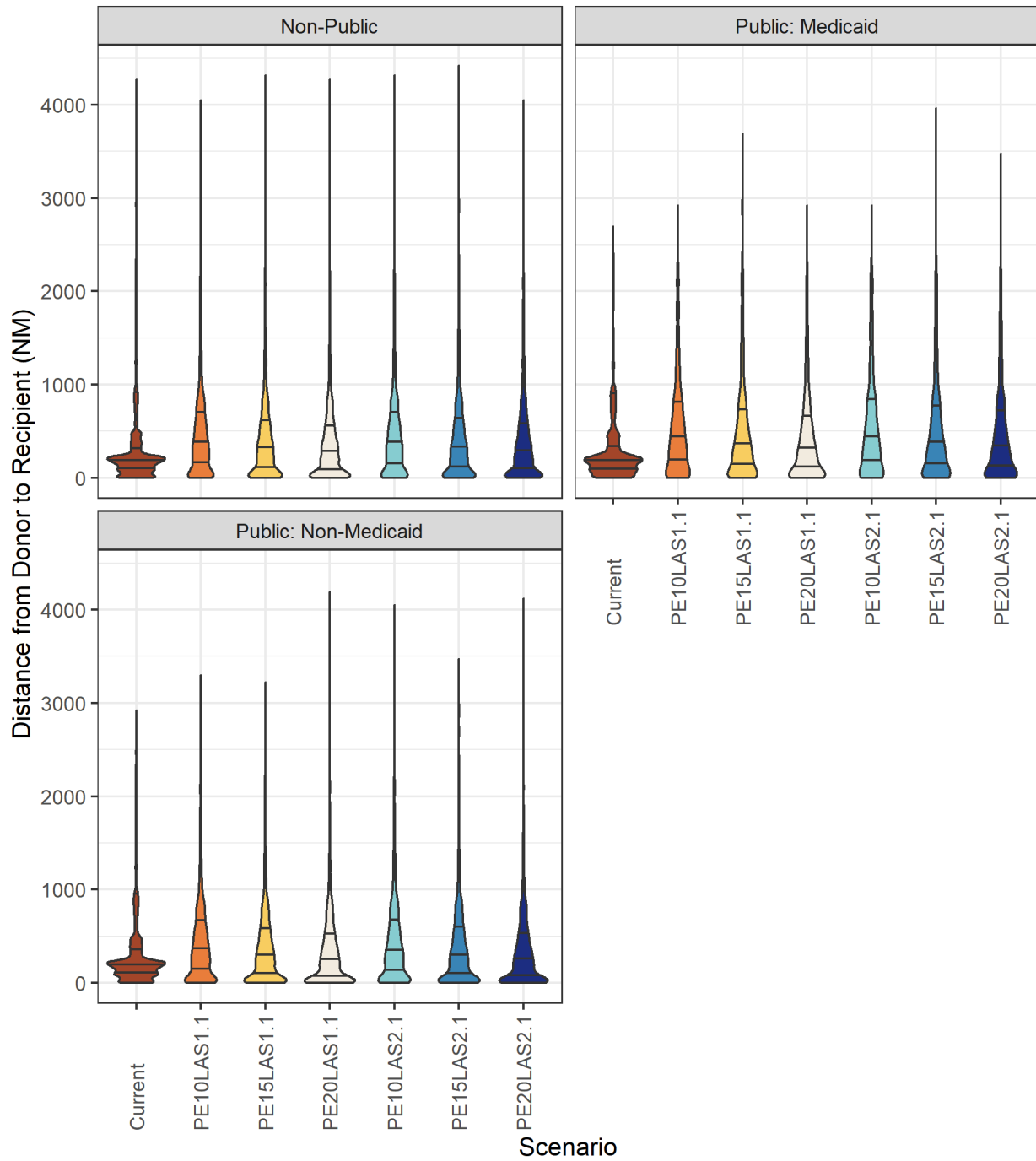


Figure 74: Distribution of Distance from Donor - By Insurance Type

Table 18: Outcome Counts and Rates by Scenario by Insurance Type

Outcome	can_primary_pay_col	Current	PE10LAS1.1	PE15LAS1.1	PE20LAS1.1	PE10LAS2.1	PE15LAS2.1	PE20LAS2.1
Transplant Count (N)								
Non-Public	2262 (2241,2289)	2423 (2398,2438)	2416 (2394,2435)	2402 (2384,2422)	2409 (2392,2425)	2404 (2383,2422)	2387 (2363,2409)	
Public: Medicaid	437 (425,451)	517 (507,530)	508 (501,519)	503 (489,514)	507 (492,513)	498 (482,505)	491 (483,504)	
Public: Non-Medicaid	2357 (2319,2383)	2124 (2107,2153)	2157 (2132,2175)	2179 (2149,2208)	2170 (2159,2184)	2195 (2176,2214)	2224 (2197,2249)	
Transplant Rate per Patient-Year								
Non-Public	1.74 (1.71,1.79)	1.83 (1.79,1.85)	1.83 (1.8,1.86)	1.81 (1.77,1.86)	1.76 (1.73,1.8)	1.76 (1.71,1.8)	1.74 (1.7,1.8)	
Public: Medicaid	1.26 (1.21,1.32)	1.72 (1.64,1.83)	1.65 (1.6,1.71)	1.62 (1.54,1.72)	1.58 (1.47,1.63)	1.52 (1.45,1.58)	1.47 (1.39,1.57)	
Public: Non-Medicaid	1.95 (1.86,2)	1.39 (1.37,1.41)	1.45 (1.42,1.47)	1.49 (1.45,1.51)	1.43 (1.41,1.45)	1.48 (1.46,1.51)	1.55 (1.5,1.58)	
Transplant Distribution (Percent)								
Non-Public	44.74 (44.34,45.17)	47.85 (47.37,48.16)	47.56 (47.2,47.97)	47.25 (46.91,47.59)	47.37 (47.15,47.62)	47.16 (46.78,47.59)	46.78 (46.32,47.26)	
Public: Medicaid	8.65 (8.41,8.95)	10.21 (10.01,10.48)	10 (9.85,10.19)	9.89 (9.62,10.11)	9.96 (9.67,10.09)	9.77 (9.46,9.9)	9.62 (9.45,9.88)	
Public: Non-Medicaid	46.61 (46.03,47.05)	41.94 (41.63,42.53)	42.45 (42.07,42.77)	42.86 (42.31,43.42)	42.67 (42.37,42.88)	43.07 (42.76,43.46)	43.6 (43.1,44.06)	
Waitlist Mortality Count (N)								
Non-Public	213 (202,219)	114 (106,123)	116 (108,131)	125 (116,134)	96 (85,102)	100 (88,110)	108 (100,117)	
Public: Medicaid	60 (53,67)	31 (29,33)	34 (31,37)	34 (30,37)	30 (27,33)	31 (29,34)	32 (29,35)	
Public: Non-Medicaid	161 (152,171)	116 (112,118)	119 (111,125)	122 (113,128)	105 (100,112)	105 (99,111)	107 (96,116)	
Percent Died by 2 Years Posttransplant								
Non-Public	22.99 (21.29,24.42)	23.24 (22.27,24.36)	23.51 (21.75,25.9)	23.84 (22.64,24.74)	23.41 (22.41,24.88)	23.85 (22.45,24.93)	23.83 (21.79,26.01)	
Public: Medicaid	23.06 (19.86,25.45)	24.96 (22.5,27.88)	25.15 (21.47,27.69)	25.72 (24.4,27.82)	26.32 (24.21,28.12)	25.41 (23.01,27.89)	25.3 (21.03,28.19)	





Table 18: Outcome Counts and Rates by Scenario by Insurance Type

Outcome	can_primary_pay_col	Current	PE10LAS1.1	PE15LAS1.1	PE20LAS1.1	PE10LAS2.1	PE15LAS2.1	PE20LAS2.1
	Public: Non-Medicaid	23.82 (22.62,26.22)	23.28 (21.84,24.48)	23.44 (21.58,25.34)	23.96 (22.8,25.25)	23.44 (22.33,25)	24.02 (22.3,25.87)	23.59 (21.98,24.77)
Median Donor to Recipient Distance								
	Non-Public	192 (188,198)	361 (350,377)	295 (281,306)	252 (224,267)	356 (338,383)	302 (291,313)	259 (249,269)
	Public: Medicaid	188 (178,194)	398 (356,446)	319 (306,339)	274 (242,292)	393 (349,441)	330 (306,353)	291 (264,312)
	Public: Non-Medicaid	198 (191,202)	333 (311,358)	262 (256,274)	217 (207,235)	318 (311,342)	265 (248,275)	223 (217,230)
Percent Expected to Fly (>75 NM)								
	Non-Public	80.31 (79.36,81.48)	80.06 (78.8,81.19)	74.33 (73.22,76.51)	70.7 (69.56,71.6)	79.05 (77.88,80.69)	74.84 (73.76,76.73)	72.13 (70.64,73.29)
	Public: Medicaid	79.93 (77.52,82.62)	80.61 (78.08,84.22)	75.7 (73.45,77.29)	71.76 (69.59,73.82)	79.42 (77.34,82.74)	76.69 (73.93,79.88)	73.39 (70.78,75.51)
	Public: Non-Medicaid	82.54 (81.38,84.13)	77.45 (75.93,78.77)	71.15 (69.91,72.14)	67.47 (66.45,69.2)	76.9 (76.14,77.85)	71.38 (70.05,73.16)	68.4 (67.51,69.79)

Table 19: Age Group (Percent) by Insurance Type

Insurance Type	Age: 0-11	Age: 12-17	Age: 18-34	Age: 35-49	Age: 50-64	Age: 65+
Non-Public	1.0	1.5	9.8	17.0	57.2	13.5
Public: Medicaid	4.3	5.0	21.1	18.7	45.9	5.1
Public: Non-Medicaid	0.1	0.1	4.2	7.5	31.9	56.3

Table 20: LAS Distribution (Percent) by Insurance Type

Insurance Type	LAS: <35	LAS: 35-<40	LAS: 40-<50	LAS: 50-<60	LAS: 60+
Non-Public	21.9	25.9	22.5	8.3	21.4
Public: Medicaid	24.2	26.2	19.2	9.1	21.3
Public: Non-Medicaid	28.7	21.2	25.9	8.6	15.6

Table 21: WLAUC Distribution (Percent) by Insurance Type

Insurance Type	WLAUC: <293.66	WLAUC: 293.66-331.86	WLAUC: 331.86-352.52	WLAUC: 352.52+
Non-Public	39.5	24.6	20.3	15.6
Public: Medicaid	37.7	22.7	20.6	19.0
Public: Non-Medicaid	36.6	24.2	17.8	21.4

Table 21: PTAUC Distribution (Percent) by Insurance Type

Insurance Type	PTAUC: <1381.06	PTAUC: 1381.06-1446.36	PTAUC: 1446.36-1499.46	PTAUC: 1499.46+
Non-Public	28.4	24.9	23.8	23.0
Public: Medicaid	28.7	20.2	22.4	28.7
Public: Non-Medicaid	38.1	28.3	19.4	14.2

Table 22: Diagnosis (Percent) by Insurance Type

Insurance Type	Diagnosis: A	Diagnosis: B	Diagnosis: C	Diagnosis: D
Non-Public	20.3	7.3	10.4	62.0
Public: Medicaid	21.4	11.7	19.8	47.1
Public: Non-Medicaid	32.9	5.8	4.8	56.4