Analysis Report

Data Request from the OPTN Liver & Intestinal Organ Transplantation Committee

Date: 5/1/2017

This report was provided to HRSA by SRTR in support of ongoing policy consideration by the OPTN Liver and Intestinal Organ Transplantation 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.

Prepared By:

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Data Request ID#: LI2016_04

Timeline:

Committee met	Original meeting: November 17, 2016 Subsequent meeting: February 27, 2017 (Redistribution Subcommittee)
Request made	Original request: December 1, 2016 Updated request: March 10, 2017
Analysis plan submitted	Original analysis plan: December 15, 2016 Updated analysis plan: March 21, 2017
Analysis report to be submitted	May 1, 2017
Next Committee meeting	May 8, 2017

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Executive Summary

The OPTN Liver and Intestinal Organ Transplantation Committee (the Committee) requested that SRTR update the liver simulated allocation model (LSAM) and use the updated LSAM to assess the simulated impact of conceptualized liver redistribution policies, including the use of circles, districts, or neighborhoods for liver distribution.

What's new in this analysis? The Committee has seen several reports assessing different types and variations of conceptualized liver redistribution policies. The major differences between this report and previous analyses include:

- **MELD/PELD 29 sharing threshold:** All policies examined here include a "sharing threshold" of allocation MELD/PELD of 29 or above. This means that only candidates with an allocation MELD/PELD score of 29 or above are included in the first level of circle, district, or neighborhood allocation. (See details of allocation orders for these polices in Appendix E.)
- **Proximity points:** All policies examined here include three additional MELD/PELD points awarded to candidates within a certain proximity to the donor hospital. Two variations on proximity point policies are included: (1) proximity points awarded to candidates within a 150-mile radius of the donor hospital, and (2) proximity points awarded to candidates within the DSA of the donor hospital.
- **Neighborhoods, districts, and circles:** Circle and district distribution policies have been assessed in various reports, though not with the DSA-based proximity points (for districts and circles) or the MELD/PELD 29 sharing threshold (for circles). Neighborhoods distribution policies are assessed for the first time in SRTR reports here.
- **Updated LSAM**: All policies in this report are assessed using an updated LSAM software package.

LSAM update: As requested, SRTR rebuilt the LSAM software using recent data collected July 2011 through June 2016. The rebuild included updating the input data and rebuilding the LSAM's predictive models (travel model, organ acceptance model, and posttransplant model). This update also included adding capability to model neighborhood concepts and implementing MELD sodium and HCC cap and delay policies.

Main Findings

MELD scores at transplant: The variation in median MELD/PELD at transplant between DSAs is projected to decrease 2-fold in all alternative policy scenarios compared with current policy for all patients, and 3-fold for patients with no exceptions. At the same time, the national median MELD/PELD at transplant for all patients nationwide is projected to increase 1.5 to 2 MELD points for all alternative policy scenarios compared with current policy. This is likely due to the broader sharing of organs, as the highest-MELD patients undergo transplant more quickly due to increased access to deceased donor organs, while somewhat lower-MELD patients wait longer for transplant.

Transplant rates and counts: Transplant rates overall are projected to decrease slightly in alternative policy scenarios compared with current policy, from a rate of 0.44 transplants per patient-year (44 per 100 patient-years) under current policy to approximately 0.42 transplants per patient-year (42 per 100 patient-years) in alternative policy scenarios. Similarly, LSAM projects that transplant counts overall may decrease from around 6,600 to 6,500 (decrease of 100) under current

and alternative policies, but ranges of estimates overlap, indicating that we cannot be confident a change will occur. The LSAM model of organ discards predicts a discard event when an organ has been offered 200 times without being accepted, so this difference in transplant counts indicates that offer numbers increase in alternative policy scenarios, consistent with broader sharing. In population subgroups, transplant rates decrease slightly for patients with HCC and Other exceptions, with no change in transplant counts, indicating that these patients may wait longer for transplant but that numbers of transplants are not projected to decrease.

- Transplant rates for M/P 35+ increase under all alternative policy scenarios compared with current policy. However, transplant counts for these patients remain the same as under current policy in all alternative policy scenarios. Since transplant rate is a measure of transplants per time on the waiting list, this indicates that M/P 35+ patients are projected to spend less time waiting for transplant under alternative policy scenarios, but the overall count of transplants in this population is not projected to change.
- Transplant rates and counts for patients with M/P 29-34 increase in all alternative policy scenarios compared with current policy. This projected increase is likely due to M/P 29+ patients being included in the district/circle/neighborhood-wide offer pool, just behind status 1A and 1B patients.
- Transplant counts are projected to decrease for M/P 25-28 and 15-24 patients under alternative policies compared with current policy. Transplant rates for these patients may decrease slightly or remain the same as under current policy. Transplant rates and counts for patients with M/P < 15 remain constant, but low, under current policy and alternative policy scenarios.
- The variation in transplant rates between DSAs decreases slightly in all alternative policy scenarios compared with current policy.

Waitlist mortality rates and counts: Overall waitlist mortality rates and counts for all patients are projected to decrease in all alternative policy scenarios compared with current policy. This is likely due to more transplants occurring more quickly for higher-MELD/PELD patients on the waiting list.

- Waitlist mortality rates and counts are projected to decrease for M/P 35+ patients in all alternative policy scenarios compared with current policy. Waitlist mortality counts are also projected to be slightly lower for M/P 29-34 patients, but waitlist mortality rates for these patients remain unchanged under current and alternative policies.
- Waitlist mortality counts may increase very slightly for M/P 25-28 patients, or may remain the same as under current policy. Waitlist mortality counts increase for M/P 15-24 patients under alternative policies compared with current policy. However, waitlist mortality rates for these patients are projected to remain unchanged from current policy.
- The overall variation in rates of waitlist mortality between DSAs may decrease very slightly or remain unchanged from current policy under alternative policy scenarios.

Posttransplant mortality rates and counts: Post-transplant mortality rates and counts are not expected to change in alternative policy scenarios.

Transport metrics: Overall transport time, transport distance, and percentages of organs flown are projected to increase under alternative policies compared with current policy. This is likely due to more transplants in MELD/PELD 29+ patients over larger geographic areas.

Subgroup analysis: SRTR also assessed the projected effect of the alternative policies on age (pediatric), sex (female), and race/ethnicity (African American, Hispanic/Latino, Asian) subgroups. For most metrics, sex and race/ethnicity subgroups were affected similarly to the overall population (as described above). However, projected effects for pediatric patients differed from overall patient results.

- **Pediatrics:** Variance in median MELD/PELD at transplant is much higher in the pediatric population than in the overall population under current policy, and variance decreases more for pediatric patients than for the overall population under alternative policies compared with current policy. Transplant counts and rates increase for the pediatric population, but remain stable under current policy or decrease slightly under alternative policies for the overall population. Median travel time, median travel distance, and percentage of organs flown are higher for pediatric populations than for the overall population under current policy, and the magnitude of increase in travel for pediatric populations is similar to the magnitude for the overall population.

Comparison of Alternative Policy Scenarios

Tradeoff between transport increases and disparity reductions: Alternative policy scenarios that decrease disparities more are those with a greater effect on increased travel time, distance, and flight percentages. However, all of the alternative policy scenarios examined here are projected to notably decrease the disparity in median MELD/PELD at transplant from current policy, while increasing travel time, distance, and percentage of organs flown.

Proximity points: A notable projected difference between the two types of proximity points (150-mile radius circle versus DSA) is present only with regard to transport metrics. Proximity points awarded within the DSA produce somewhat higher transport metrics across all alternative policy types than proximity points awarded within a 150-mile radius circle from the donor hospital. This is likely because many DSAs are larger geographically than a 300-mile diameter circle, and organs are distributed to patients with proximity points within these somewhat larger (although variably-sized) geographic areas.

Overview data tables

Table 1 Overview of main metrics

	variance in median M/P at transplant	median MELD/PELD at transplant	median transport time (hours)	median transport distance (miles)	% of organs flown
Current	10.3 (9.2,11.4)	29 (29,29)	1.57 (1.56,1.58)	114.2 (114.2,114.2)	56.6 (56.1,57.1)
8D 150m	3.2 (2.6,3.6)	30.5 (30,31)	1.75 (1.74,1.76)	168.6 (164.1,170.9)	70.1 (69.6,70.7)
8D DSA	3.1 (2.7,3.4)	30.4 (30,31)	1.77 (1.76,1.78)	184.7 (178.9,189.8)	70.5 (69.9,71.1)
500c 150m	4.3 (3.2,5.8)	31 (31,31)	1.84 (1.83,1.86)	221.1 (215.4,229.5)	74.8 (74.4,75.3)
500c DSA	4.1 (3.2,5.2)	31 (31,31)	1.87 (1.86,1.88)	238.1 (235.4,241.9)	75.7 (75.4,76.3)
N'hood 150m	1.8 (1.6,2)	31 (31,31)	1.87 (1.87,1.88)	234.6 (230.9,237.8)	76 (75.5,76.5)
N'hood DSA	2 (1.5,4.1)	31 (31,31)	1.9 (1.89,1.91)	255.3 (252,257.6)	76.9 (76.5,77.2)

All metrics reported as *mean (min, max)* across the 10 simulation iterations.

Table 2 Overview of additional metrics

	transplant rate	transplant count	waitlist mortality rate	waitlist mortality count	post-tx mortality rate	post-tx mortality count
Current	0.436 (0.427,0.446)	6568 (6504,6649)	0.084 (0.083,0.086)	1272 (1252,1300)	0.077 (0.075,0.079)	2037 (1951,2097)
8D 150m	0.421 (0.414,0.429)	6487 (6413,6567)	0.079 (0.077,0.08)	1213 (1189,1235)	0.078 (0.074,0.081)	2034 (1942,2122)
8D DSA	0.421 (0.415,0.43)	6488 (6426,6580)	0.079 (0.078,0.08)	1215 (1195,1234)	0.078 (0.076,0.081)	2040 (1978,2123)
500c 150m	0.418 (0.41,0.424)	6480 (6403,6548)	0.076 (0.075,0.077)	1183 (1155,1201)	0.078 (0.076,0.08)	2049 (1998,2107)
500c DSA	0.418 (0.411,0.428)	6484 (6405,6569)	0.076 (0.074,0.077)	1179 (1150,1193)	0.078 (0.075,0.082)	2042 (1962,2158)
N'hood 150m	0.416 (0.41,0.426)	6466 (6393,6556)	0.076 (0.074,0.077)	1177 (1147,1197)	0.078 (0.076,0.081)	2051 (1974,2123)
N'hood DSA	0.416 (0.41,0.426)	6469 (6405,6559)	0.076 (0.075,0.077)	1179 (1157,1204)	0.079 (0.077,0.082)	2072 (2006,2206)

All metrics reported as *mean (min, max)* across the 10 simulation iterations. All rates are per patient-year.

Policy concepts

This section provides a brief overview of policy concepts used in conversations regarding liver redistribution and in this report.

Area of Distribution

Distribution indicates the geographic area within which available donor organs are distributed. For liver transplant, organs are currently distributed within the DSA, the OPTN region, and nationally. See OPTN Policy 9.6.E – 9.6.G for more detail.

Circles

Circles indicate a geographic area of distribution of a given radius around the donor hospital. This is similar to the concept of zones used in thoracic organ allocation.

Districts

Districts are groupings of DSAs with static, non-overlapping boundaries.

Neighborhoods

Neighborhoods are groupings of DSAs with static, overlapping boundaries.

Allocation

Allocation indicates the process by which available donor organs are distributed. For liver transplant, organs are generally allocated by model for end-stage liver disease (MELD) and pediatric end-stage liver disease (PELD) scores and by blood type and waiting time. See OPTN Policy 9 for more detail.

Scientific concepts

Mathematical optimization

Both the neighborhoods and districts concepts examined in this analysis result from applying a mathematical optimization approach to the issue of inequality in liver allocation. Optimization in this context has four main parts:

Choose the objective: Select the goal of the optimization, and express this goal in a mathematical form that can be used to evaluate potential solutions. This often involves taking a general goal, such as reducing disparity, and selecting a specific definition of that goal that can be represented quantitatively. Several such definitions are reasonable in different contexts for reducing disparity; for example: minimizing the sum of absolute differences, minimizing the maximum squared difference of ratios, minimizing pairwise differences, etc. Each has a slightly different implication in expressing the goal of a policy change.

Identify the constraints: Real-world systems have limitations in factors such as cost, implementation difficulty, and minimum performance standards. The constraints specify the acceptable standards in these areas for solutions resulting from the optimization process. For example, the Committee has suggested that liver distribution areas should contain at least six transplant programs.

Search for a solution: The constraints identified in the previous step define the universe of acceptable solutions to the problem, while the objective specifies a way of rating each solution. To identify the optimal solution, it is necessary to generate a set of alternative solutions that meet the constraints and find those with the highest objective scores.

Evaluate the solution: The solution search identifies optimal solutions based only on the objective and the constraints. In many complex systems, these will not describe every aspect of the system being optimized, and so it is often important to evaluate the proposed solution in a live trial or simulated implementation. This evaluation provides a wider range of performance metrics and helps to identify unintended consequences.

Simulation modeling

One method used for policy evaluation is simulation modeling. Simulation modeling uses data and software to simulate the functioning of the nationwide liver transplant system. Patients are listed on the waiting list, donor organs arrive, and transplants occur, just as in real life. Policy conditions can be modified within the simulations, allowing us to examine the probable outcomes of various policy scenarios in a way that is close to real life without putting patients at risk.

The software tool that SRTR uses to conduct simulation modeling of the US liver transplant system is the liver simulated allocation model (LSAM). The LSAM is a discrete-event simulation of the liver allocation system, which simulates the allocation of donated livers to waitlisted candidates by drawing on historical patient data including candidate listing, candidate status changes, and organ donations.

Data request: provide revised LSAM data on key proposals for redistricting

The full text of the original OPTN data request to which this report responds is shown below, as submitted on November 2, 2016.

Date Form Submitted to HRSA:

Requesting Committee: OPTN Liver and Intestinal Organ Transplantation Committee, Redistribution Subcommittee

Date Committee Met: February 27, 2017

Date of Next Meeting: TBD

OPTN staff member referring Committee's requests: Ann Harper

Chair Approval?

ANALYSES REQUESTED:

▪ Descriptive Statistical Requests (responsibility of OPTN contractor)

NONE.

▪ Inferential STATISTICAL REQUESTS (RESPONSIBILITY OF SRTR CONTRACTOR)

Data Request 1: Provide revised LSAM data on key proposals for redistricting

Background: At the in-person meeting on October 24, 2016, the committee discussed feedback received on the redistricting proposal that went out for public comment in the fall. The majority of the respondents were not in favor of the proposal, citing, for example, the need to develop more recent cohorts in LSAM and the need to consider alternatives such as concentric circles and the "neighborhoods" concept. The Committee agreed to continue to develop the 8 district model, as well as consider these alternative concepts. The Committee also requested that any future LSAM runs be done with a more recent cohort.

Strategic Goal or Committee Project Addressed: Reduce disparities in access to liver transplants

Request: Using the most recently available data (preferably since the beginning of "Share 35" on 6/18/2013), model the following distribution systems:

- *Current system*
- *8 districts with 3 additional priority points given to candidates within a 150 mile radius of the donor hospital with a sharing threshold of 29*
- *8 districts with 3 additional priority points given to candidates within the DSA of the donor hospital and a sharing threshold of 29*

- *500 mile radius concentric circles with 3 additional priority points given to candidates within a 150 mile radius of the donor hospital and a sharing threshold of 29*
- *500 mile radius concentric circles with 3 additional priority points given to candidates within the DSA of donor hospital and a sharing threshold of 29*
- *"Neighborhoods" as defined by Dr. Mehrotra in 2017 (see attachment) with 3 additional priority points given to candidates within a 150 mile radius of the donor hospital and a sharing threshold of 29*
- *"Neighborhoods" as defined by Dr. Mehrotra in 2017 (see attachment) with 3 additional priority points given to candidates within the DSA of the donor hospital and a sharing threshold of 29*

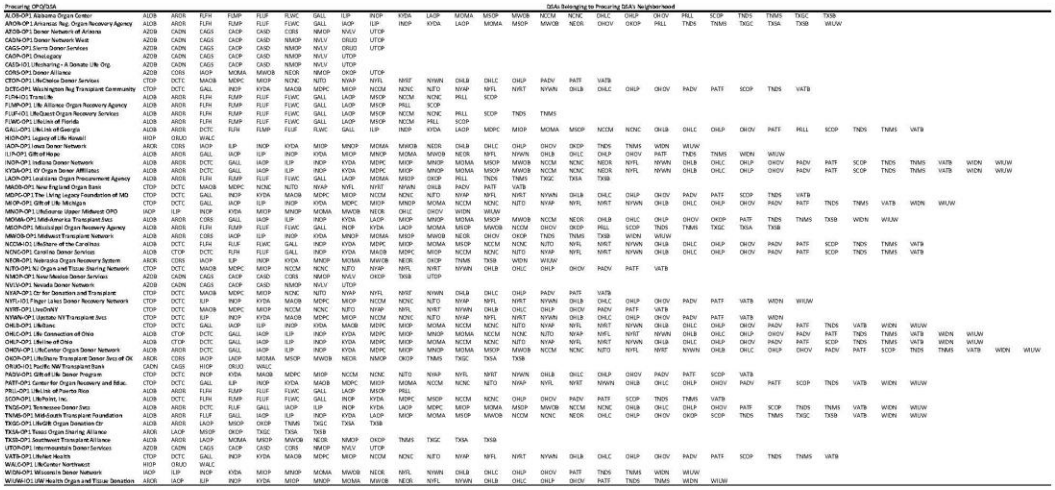
Note: Alternative scenarios to use the "in-district" paradigm
Additional Note: The attachment shows the list of DSAs assigned to Neighborhoods by Dr. Mehrotra in 2017. These are the Neighborhoods to use in simulation modeling. The allocation order for the modeling is to match that listed above for the concentric circle and 8 district scenarios.

Based on the above scenarios, provide the following metrics overall and by current regions:

- *Waiting list mortality rates*
- *Variance in waiting list mortality rates*
- *Transplant rates*
- *Variance in transplant rates*
- *Median MELD/PELD at transplant*
- *Variance in median MELD/PELD at transplant*
- *Transport metrics (specifics to be determined)*

▪ OTHER Requests

None



Procuring OPO/DSA	DSAs Belonging to Procuring DSA's Neighborhood																														
ALOB-OP1 Alabama Organ Center	ALOB	ARKR	FLFH	FLMP	FLUF	FLWC	GALL	ILIP	INOP	KYDA	LAOP	MOMA	MSOP	MWOB	NCCM	NCNC	OHLC	OHLP	OHOV	PALL	SCOP	TNDS	TNMS	TXGC	TXSA	TXSB	WIUW				
ARON-OP1 Arkansas Reg. Organ Recovery Agency	ALOB	ARKR	FLFH	FLMP	FLUF	FLWC	GALL	IAOP	ILIP	INOP	KYDA	LAOP	MOMA	MSOP	MWOB	NEOR	OHOV	OKOP	PALL	TNDS	TNMS	TXGC	TXSA	TXSB	WIUW						
AZOB-OP1 Donor Network of Arizona	AZOB	CADN	CAGS	CAOP	CAXD	CORS	NMOP	NVLV	UTOP																						
CADN-OP1 Donor Network West	AZOB	CADN	CAGS	CAOP	CAXD	NMOP	NVLV	ORUO	UTOP																						
CAGS-OP1 Sierra Donor Services	AZOB	CADN	CAGS	CAOP	CAXD	NMOP	NVLV	ORUO	UTOP																						
CAOP-OP1 Donor Legacy	AZOB	CADN	CAGS	CAOP	CAXD	NMOP	NVLV	UTOP																							
CASS-IO1 LifeSharing - A Donate Life Org.	AZOB	CADN	CAGS	CAOP	CAXD	NMOP	NVLV	UTOP																							
CORS-OP1 Donor Alliance	AZOB	CORS	IAOP	MOMA	MWOB	NEOR	NMOP	OKOP	UTOP																						
CTON-OP1 LifeChoice Donor Services	CTOP	DCTC	MACB	MDPC	MIOP	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	PADV	PATT	VATB														
DCTC-OP1 Washington Reg Transplant Community	CTOP	DCTC	GALL	INOP	KYDA	MACB	MDPC	MIOP	NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	SCOP	TNDS	VATB							
FLTM-IO1 TransLife	ALOB	ARKR	FLFH	FLMP	FLUF	FLWC	GALL	LAOP	MSOP	NCCM	NCNC	PALL	SCOP																		
FLMP-OP1 Life Alliance Organ Recovery Agency	ALOB	ARKR	FLFH	FLMP	FLUF	FLWC	GALL	LAOP	MSOP	PALL	SCOP																				
FLUF-IO1 LifeQuest Organ Recovery Services	ALOB	ARKR	FLFH	FLMP	FLUF	FLWC	GALL	LAOP	MSOP	NCCM	NCNC	PALL	SCOP	TNDS	TNMS																
FLWC-OP1 LifeLink of Florida	ALOB	ARKR	FLFH	FLMP	FLUF	FLWC	GALL	LAOP	MSOP	NCCM	PALL	SCOP																			
GALL-OP1 LifeLink of Georgia	ALOB	ARKR	DCTC	FLFH	FLMP	FLUF	FLWC	GALL	ILIP	INOP	KYDA	LAOP	MDPC	MIOP	MOMA	MSOP	NCCM	NCNC	OHLB	OHLC	OHLP	OHOV	PATT	PALL	SCOP	TNDS	TNMS	VATB			
HIOP-OP1 Legacy of Life Hawaii	HIOP	ORUO	WALC																												
IAOP-OP1 Iowa Donor Network	ARKR	CORS	IAOP	ILIP	INOP	KYDA	MIOP	MNOP	MOMA	MWOB	NEOR	OHLB	OHLC	OHLP	OHOV	OKOP	TNDS	TNMS	WIDN	WIUW											
ILIN-OP1 Gift of Hope	ALOB	ARKR	GALL	IAOP	ILIP	INOP	KYDA	MIOP	MNOP	MOMA	MWOB	NEOR	NYFL	NYWN	OHLB	OHLC	OHLP	OHOV	PATT	TNDS	TNMS	WIDN	WIUW								
INOR-OP1 Indiana Donor Network	ALOB	ARKR	DCTC	GALL	IAOP	ILIP	INOP	KYDA	MDPC	MIOP	MNOP	MOMA	MSOP	MWOB	NCCM	NCNC	NEOR	NYFL	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	SCOP	TNDS	TNMS	VATB	WIDN	WIUW
KYDA-OP1 KY Organ Donor Affiliates	ALOB	ARKR	DCTC	GALL	IAOP	ILIP	INOP	KYDA	MDPC	MIOP	MNOP	MOMA	MSOP	MWOB	NCCM	NCNC	NEOR	NYFL	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	SCOP	TNDS	TNMS	VATB	WIDN	WIUW
LAOP-OP1 Louisiana Organ Procurement Agency	ALOB	ARKR	FLFH	FLMP	FLUF	FLWC	GALL	LAOP	MOMA	MSOP	OKOP	PALL	TNDS	TNMS	TXGC	TXSA	TXSB														
MASB-OP1 New England Organ Bank	CTOP	DCTC	MACB	MDPC	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	PADV	PATT	VATB																	
MDPC-OP1 The Living Legacy Foundation of MD	CTOP	DCTC	GALL	INOP	KYDA	MACB	MDPC	MIOP	NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	SCOP	TNDS	VATB							
MIOP-OP1 Gift of Life Michigan	CTOP	DCTC	GALL	IAOP	ILIP	INOP	KYDA	MDPC	MIOP	MNOP	MOMA	NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	TNDS	TNMS	VATB	WIDN	WIUW		
MNOP-OP1 LifeSource Upper Midwest OPO	IAOP	ILIP	INOP	KYDA	MIOP	MNOP	MOMA	MWOB	NEOR	OHLC	OHOV	WIDN	WIUW																		
MOMA-OP1 Mid-America Transplant Svcs	ALOB	ARKR	CORS	GALL	IAOP	ILIP	INOP	KYDA	LAOP	MIOP	MNOP	MOMA	MSOP	MWOB	NCCM	NEOR	OHLB	OHLC	OHLP	OHOV	OKOP	PATT	TNDS	TNMS	TXSB	WIDN	WIUW				
MSOP-OP1 Mississippi Organ Recovery Agency	ALOB	ARKR	FLFH	FLMP	FLUF	FLWC	GALL	INOP	KYDA	LAOP	MOMA	MIOP	MWOB	NCCM	OHOV	OKOP	PALL	SCOP	TNDS	TNMS	TXGC	TXSA	TXSB								
MWOB-OP1 Midwest Transplant Network	ALOB	ARKR	CORS	IAOP	ILIP	INOP	KYDA	MNOP	MOMA	MSOP	MWOB	NEOR	OHOV	OKOP	TNDS	TNMS	TXSB	WIDN	WIUW												
NCDA-IO1 LifeShare of the Carolinas	ALOB	DCTC	FLFH	FLUF	FLWC	GALL	INOP	KYDA	MDPC	MIOP	MOMA	MSOP	NCCM	NCNC	NJTO	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	SCOP	TNDS	TNMS	VATB			
NCNO-OP1 Carolina Donor Services	ALOB	CTOP	DCTC	FLFH	FLUF	GALL	INOP	KYDA	MACB	MDPC	MIOP	NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	SCOP	TNDS	TNMS	VATB				
NEOR-OP1 Nebraska Organ Recovery System	ARKR	CORS	IAOP	ILIP	INOP	KYDA	MNOP	MOMA	MWOB	NEOR	OKOP	TNMS	TXSB	WIDN	WIUW																
NJTO-OP1 NJ Organ and Tissue Sharing Network	CTOP	DCTC	MACB	MDPC	MIOP	NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	VATB												
NMOP-OP1 New Mexico Donor Services	AZOB	CADN	CAGS	CAOP	CAXD	CORS	NMOP	NVLV	OKOP	TXSB	UTOP																				
NVLV-OP1 Nevada Donor Network	AZOB	CADN	CAGS	CAOP	CAXD	NMOP	NVLV	UTOP																							
NYAM-OP1 Ctr for Donation and Transplant	CTOP	DCTC	MACB	MDPC	MIOP	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	PADV	PATT	VATB														
NYFL-IO1 Finger Lakes Donor Recovery Network	CTOP	DCTC	ILIP	INOP	KYDA	MACB	MDPC	MIOP	NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	VATB	WIDN	WIUW							
NYRR-OP1 LiveOnNY	CTOP	DCTC	MACB	MDPC	MIOP	NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	VATB												
NYWN-OP1 Upstate NY Transplant Svcs	CTOP	DCTC	ILIP	INOP	KYDA	MACB	MDPC	MIOP	NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	VATB	WIDN								
OHLB-OP1 LifeGenc	CTOP	DCTC	GALL	IAOP	ILIP	INOP	KYDA	MACB	MDPC	MIOP	MOMA	NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	TNDS	VATB	WIDN	WIUW			
OHLC-OP1 Life Connection of Ohio	ALOB	CTOP	DCTC	GALL	IAOP	ILIP	INOP	KYDA	MDPC	MIOP	MNOP	MOMA	NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	TNDS	TNMS	VATB	WIDN	WIUW	
OHLP-OP1 LifeLine of Ohio	ALOB	CTOP	DCTC	GALL	IAOP	ILIP	INOP	KYDA	MDPC	MIOP	MOMA	NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	SCOP	TNDS	TNMS	VATB	WIDN	WIUW	
OHOV-OP1 LifeCenter Organ Donor Network	ALOB	ARKR	DCTC	GALL	IAOP	ILIP	INOP	KYDA	MDPC	MIOP	MNOP	MOMA	MSOP	MWOB	NCCM	NCNC	NJTO	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	SCOP	TNDS	TNMS	VATB	WIDN	WIUW
OKOP-OP1 LifeShare Transplant Donor Svcs of OK	ARKR	CORS	IAOP	LAOP	MOMA	MSOP	MWOB	NEOR	NMOP	OKOP	TNMS	TXGC	TXSA	TXSB																	
ORUO-IO1 Pacific NW Transplant Bank	CADN	CAGS	HIOP	ORUO	WALC																										
PADV-OP1 Gift of Life Donor Program	CTOP	DCTC	INOP	KYDA	MACB	MDPC	MIOP	NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	SCOP	VATB									
PATT-OP1 Center for Organ Recovery and Educ.	CTOP	DCTC	GALL	ILIP	INOP	KYDA	MACB	MDPC	MIOP	MOMA	NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	SCOP	TNDS	VATB	WIDN	WIUW			
PRLL-OP1 LifeLink of Puerto Rico	ALOB	ARKR	FLFH	FLMP	FLUF	FLWC	GALL	LAOP	MSOP	PRLL																					
SCOP-OP1 LifePoint, Inc	ALOB	DCTC	FLFH	FLMP	FLUF	FLWC	GALL	INOP	KYDA	MDPC	MSOP	NCCM	NCNC	OHLP	OHOV	PADV	PATT	SCOP	TNDS	TNMS	VATB										
TNDA-OP1 Tennessee Donor Svcs	ALOB	ARKR	DCTC	FLUF	GALL	IAOP	ILIP	INOP	KYDA	LAOP	MDPC	MIOP	MOMA	MSOP	MWOB	NCCM	NCNC	OHLB	OHLC	OHLP	OHOV	PATT	SCOP	TNDS	TNMS	VATB	WIDN	WIUW			
TNMS-OP1 Mid-South Transplant Foundation	ALOB	ARKR	FLUF	GALL	IAOP	ILIP	INOP	KYDA	LAOP	MIOP	MOMA	MSOP	MWOB	NCOM	NCNC	NEOR	OHLC	OHLP	OHOV	OKOP	SCOP	TNDS	TNMS	TXGC	TXSB	VATB	WIDN	WIUW			
TXGC-OP1 LifeGift Organ Donation Ctr	ALOB	ARKR	LAOP	MIOP	OKOP	TNMS	TXGC	TXSA	TXSB																						
TXSA-OP1 Texas Organ Sharing Alliance	ARKR	LAOP	MSOP	OKOP	TXGC	TXSA	TXSB																								
TXSB-OP1 Southwest Transplant Alliance	ALOB	ARKR	LAOP	MOMA	MSOP	MWOB	NEOR	NMOP	OKOP	TNMS	TXGC	TXSA	TXSB																		
UTOP-OP1 Intermountain Donor Services	AZOB	CADN	CAGS	CAOP	CAXD	CORS	NMOP	NVLV	UTOP																						
VATB-OP1 LifeNet Health	CTOP	DCTC	GALL	INOP	KYDA	MACB	MDPC	MIOP	NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATT	SCOP	TNDS	TNMS	VATB						
WALC-OP1 LifeCenter Northwest	HIOP	ORUO	WALC																												
WIDN-OP1 Wisconsin Donor Network	IAOP	ILIP	INOP	KYDA	MIOP	MNOP	MOMA	MWOB	NEOR	NYFL	NYWN	OHLB	OHLC	OHLP	OHOV	PATT	TNDS	TNMS	WIDN	WIUW											
WIUW-IO1 UW Health Organ and Tissue Donation	ARKR	IAOP	ILIP	INOP	KYDA	MIOP	MNOP	MOMA	MWOB	NEOR	NYFL	NYWN	OHLB	OHLC	OHLP	OHOV	PATT	TNDS	TNMS	WIDN	WIUW										

Study population

The Committee has expressed strong interest in simulations based on the most recent data possible, and, if available, data collected after the Share35 liver allocation policy implementation. Reflecting this request, data for these policy simulations were collected between July 2013 and June 2016, post-Share35 implementation.

The simulation uses donor and candidate populations created by the LSAM donor and candidate generators. This software draws on patient data for transplant candidates listed at the beginning of the data cohort period, and candidates added to the waiting list and organs donated during the data cohort period. The generators use these real patient data to create independent donor and candidate populations for each of the multiple LSAM iterations involved in simulating each allocation scenario.

Analytical approach

Policy scenarios

As noted in the OPTN data request, the Committee requested evaluation of simulation results for liver allocation scenarios using different types of distribution systems. These include the current system, an 8-district system, a 500-mile radius circle system, and a neighborhoods system.

The policy scenarios simulated as part of this request are shown in Table 3.

Table 3: Policy scenarios simulated in LI2016_04.

Scenario	System type	Proximity point implementation	Sharing threshold*
1	Current system	n/a	n/a
2	8 districts	3 points awarded to candidates within a 150-mile radius of the donor hospital	MELD/PELD of 29
3	8 districts	3 points awarded to candidates within the DSA of the donor hospital	MELD/PELD of 29
4	500-mile radius concentric circles	3 points awarded to candidates within a 150-mile radius of the donor hospital	MELD/PELD of 29
5	500-mile radius concentric circles	3 points awarded to candidates within the DSA of the donor hospital	MELD/PELD of 29
6	Neighborhoods (as defined in February 2017)	3 points awarded to candidates within a 150-mile radius of the donor hospital	MELD/PELD of 29
7	Neighborhoods (as defined in February 2017)	3 points awarded to candidates within the DSA of the donor hospital	MELD/PELD of 29

*Sharing threshold indicates that adult candidates with this MELD/PELD or higher are included in the first level of district, circle, or neighborhood allocation.

District type policy scenarios use the “in-district” designation for proximity points: Candidates listed within the donor hospital district and within 150 miles of the donor hospital receive 3 proximity

MELD/PELD points at the district level of allocation. If the offered organ reaches the national level of allocation, candidates listed within 150 miles of the donor hospital receive 3 proximity MELD/PELD points.

The update to this data request from the Committee's Redistribution Subcommittee stipulates that the neighborhoods to be simulated are those defined by Dr. Mehrotra in February 2017. The list of DSAs assigned to neighborhoods in this formulation is shown in the data request (above) and in Appendix D. As also noted in the updated data request, the allocation order for modeling the neighborhoods is to match that listed for the concentric circle and 8-district scenarios. The allocation order used for neighborhoods is shown in Appendix E.

Metrics

The OPTN data request specified that the following outcome metrics be assessed. Metrics are assessed for the overall population, and, where possible, by current OPTN region and patient exception status. Although not specified in the OPTN data request, SRTR also assessed metrics by subgroup populations including pediatrics (age younger than 18 years), sex (female), and race/ethnicity (African American, Asian/Pacific Islander, Hispanic, white).

Metrics include:

- Waitlist mortality rates
- Variance in waitlist mortality rates
- Transplant rates
- Variance in transplant rates
- Transplant counts
- Median MELD/PELD at transplant
- Variance in median MELD/PELD at transplant
- Median transport distance
- Median transport time
- Percentage of organs flown for transport
- Posttransplant patient survival

LSAM Update

As requested by the Committee, SRTR rebuilt the LSAM software with updates to the data cohort, predictive models, and functionality. This includes the following changes:

Data cohort period: The updated LSAM includes data for a 5-year cohort of candidates and donors collected between July 1, 2011, and June 30, 2016. The simulations in this report use data from the last 3 years of this cohort, from July 1, 2013, to June 30, 2016, so all data are from the period after implementation of Share35.

Changes to MELD: Two recent policy updates changed the way MELD scores are calculated. All adult candidates with laboratory MELD scores of 11 or higher now receive MELD adjustments based on serum sodium levels. The scores awarded to HCC exception candidates also changed, with a delay of 6 months before exception points are awarded and a cap of 34. The HCC cap and delay policies apply to both standard and out-of-policy HCC exceptions, which may differ from regional review board practice in some regions today. These policies went into effect during the period covered by the 3-year request cohort. In the updated LSAM cohort, these rules are applied across the entire period so as to represent current policy as it exists now.

Predictive models: LSAM uses statistical models trained on historical transplant data to predict offer acceptance and graft and patient survival. These models have been rebuilt using the most recent data available. The LSAM also uses a travel model to predict whether a given pair of donor and transplant program would use ground or air transportation to transport an organ, and this model has been updated with the locations of all programs in the new data cohort.

Neighborhood modeling: LSAM has been updated to support overlapping neighborhood distribution systems.

Results

Results for the simulated scenarios are reported primarily in the form of plots, with each plot displaying the values for a given metric across the 5 scenarios tested. In viewing these results, it is important to compare each of the 5 scenarios with the current allocation policy scenario to identify changes in outcome metrics due to the proposed policy changes. Each scenario was simulated 10 times, and the plot displays the range of results across the 10 simulations as a vertical line extending from the minimum value to the maximum value found for that metric and scenario. A point along that line marks the mean value of the metric across the 10 iterations.

MELD/PELD at Transplant

Variance in Median MELD/PELD at Transplant by DSA

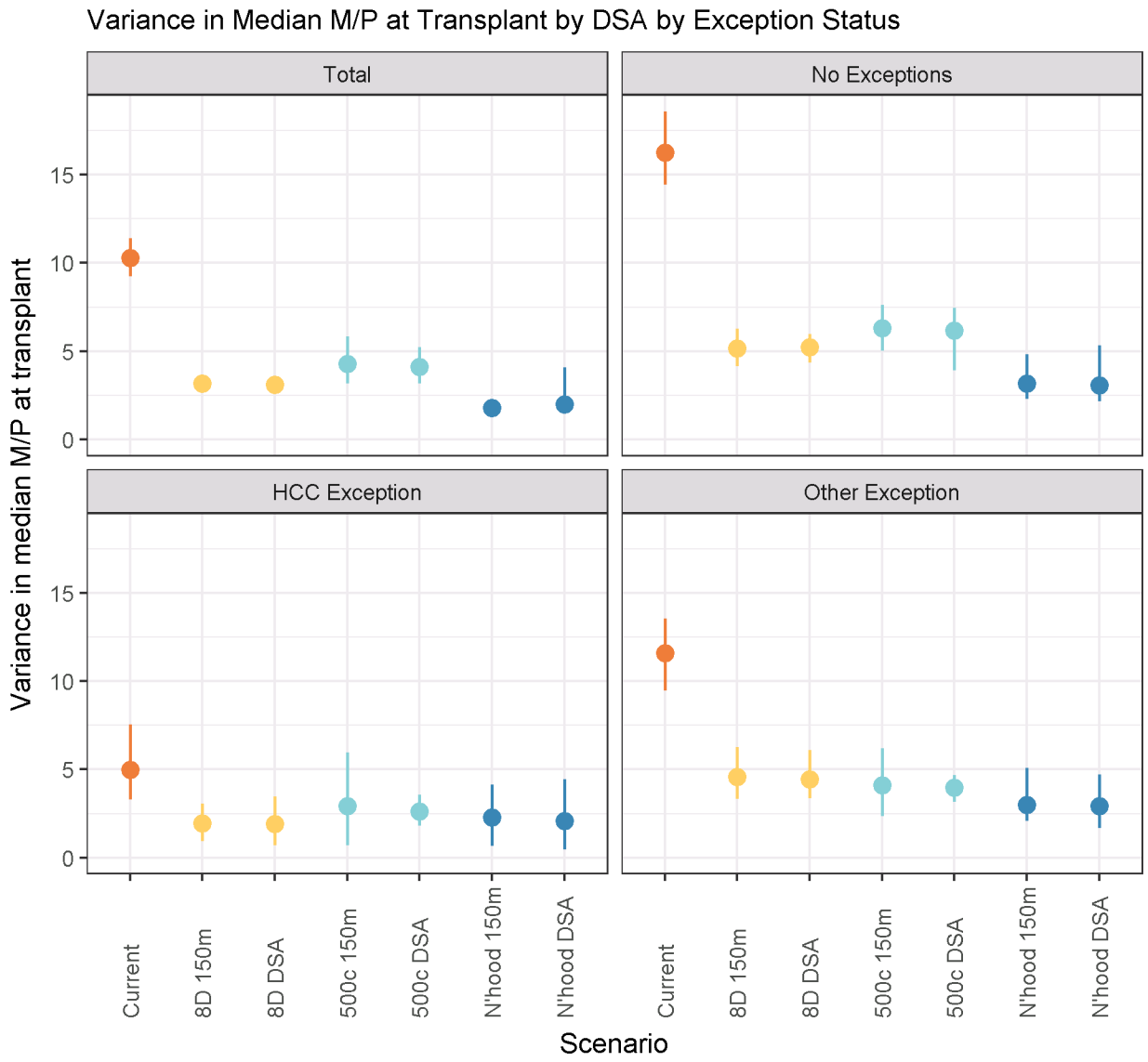


Figure 1 Variance in median M/P at transplant by DSA by exception status

Median MELD/PELD at Transplant

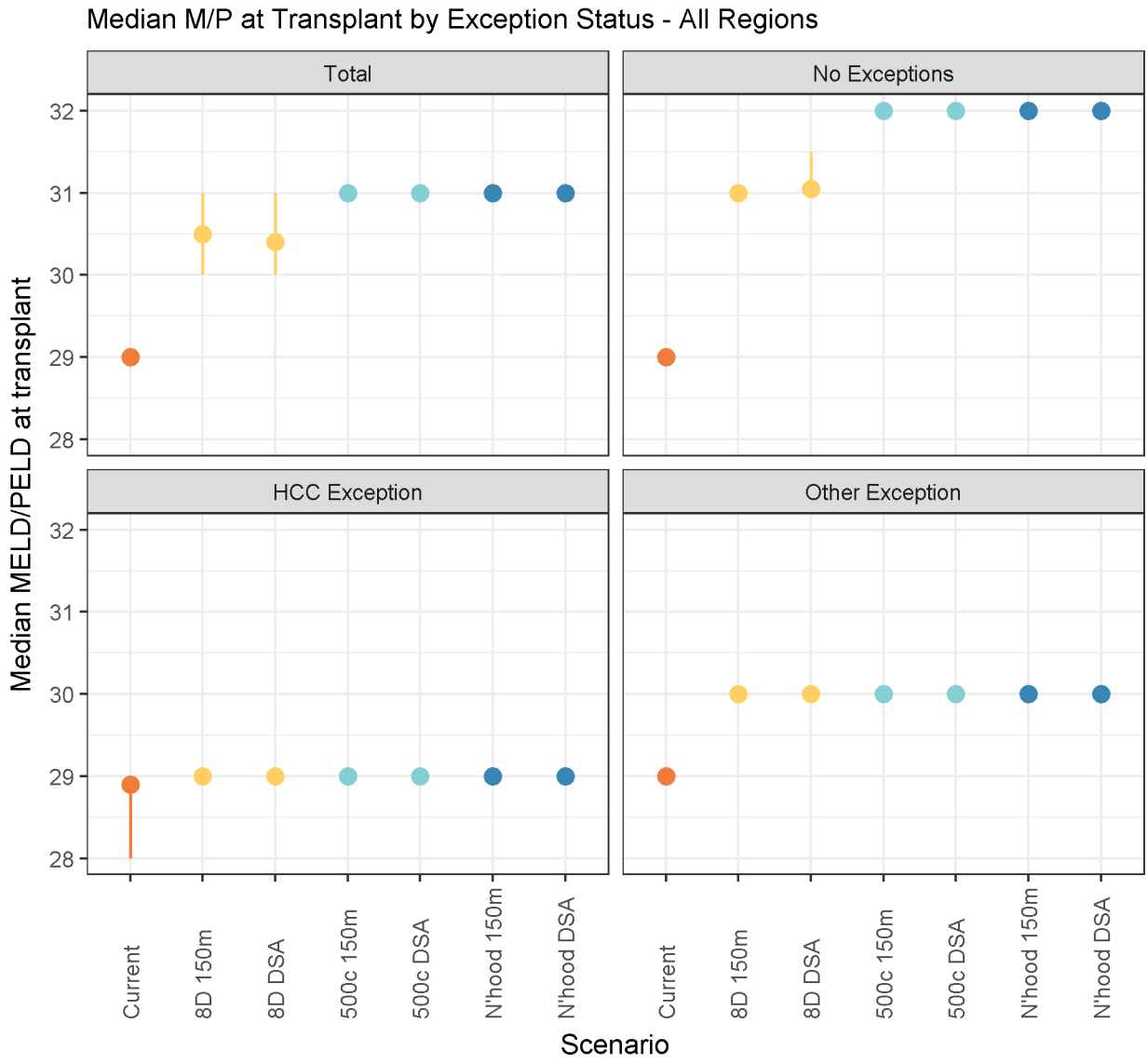


Figure 2 Median MELD/PELD at transplant by exception status - all regions

Maps of Median MELD/PELD at Transplant by DSA

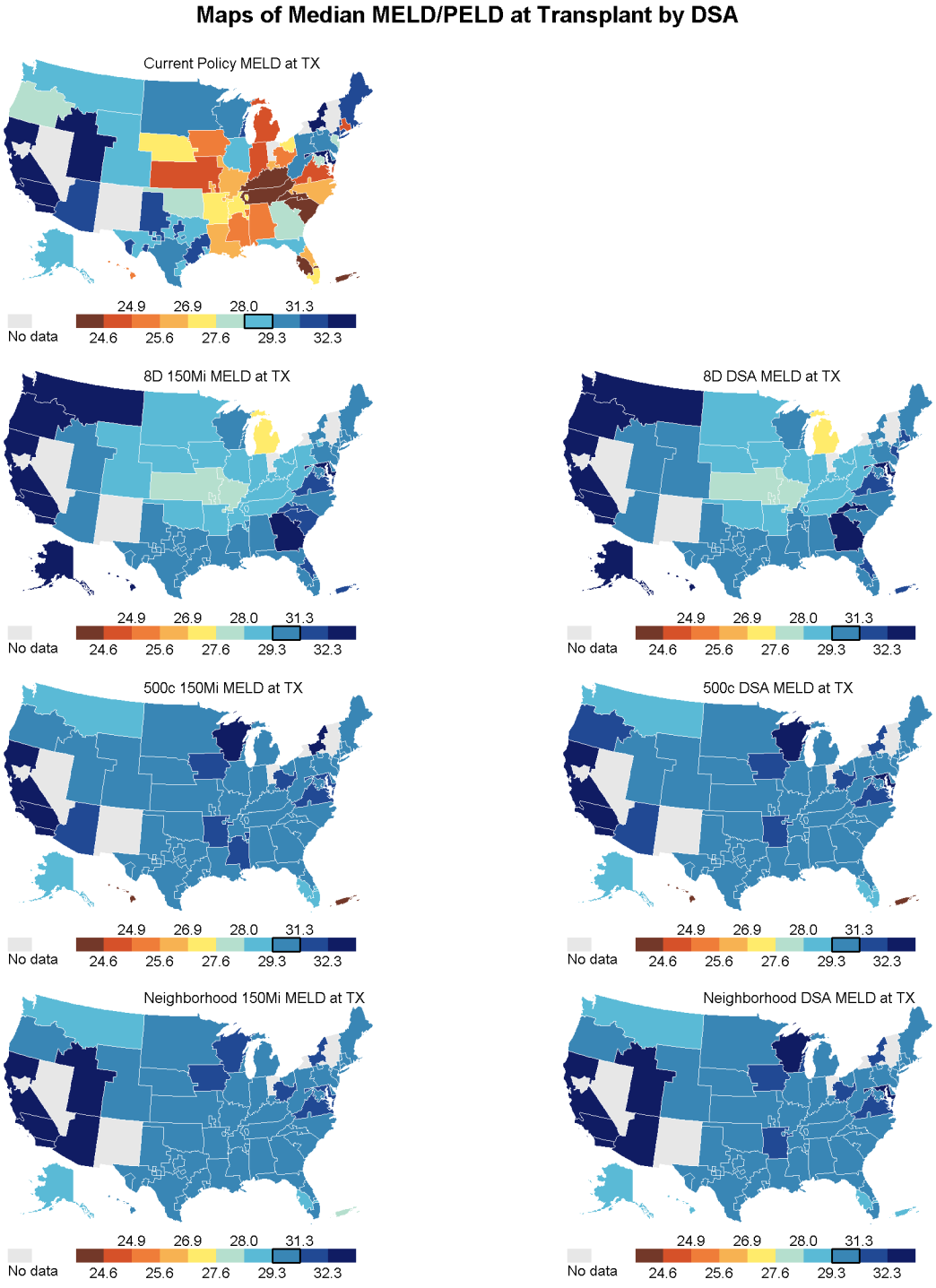


Figure 3 Maps of median MELD/PELD at transplant by DSA

Transplant

Transplant Rates

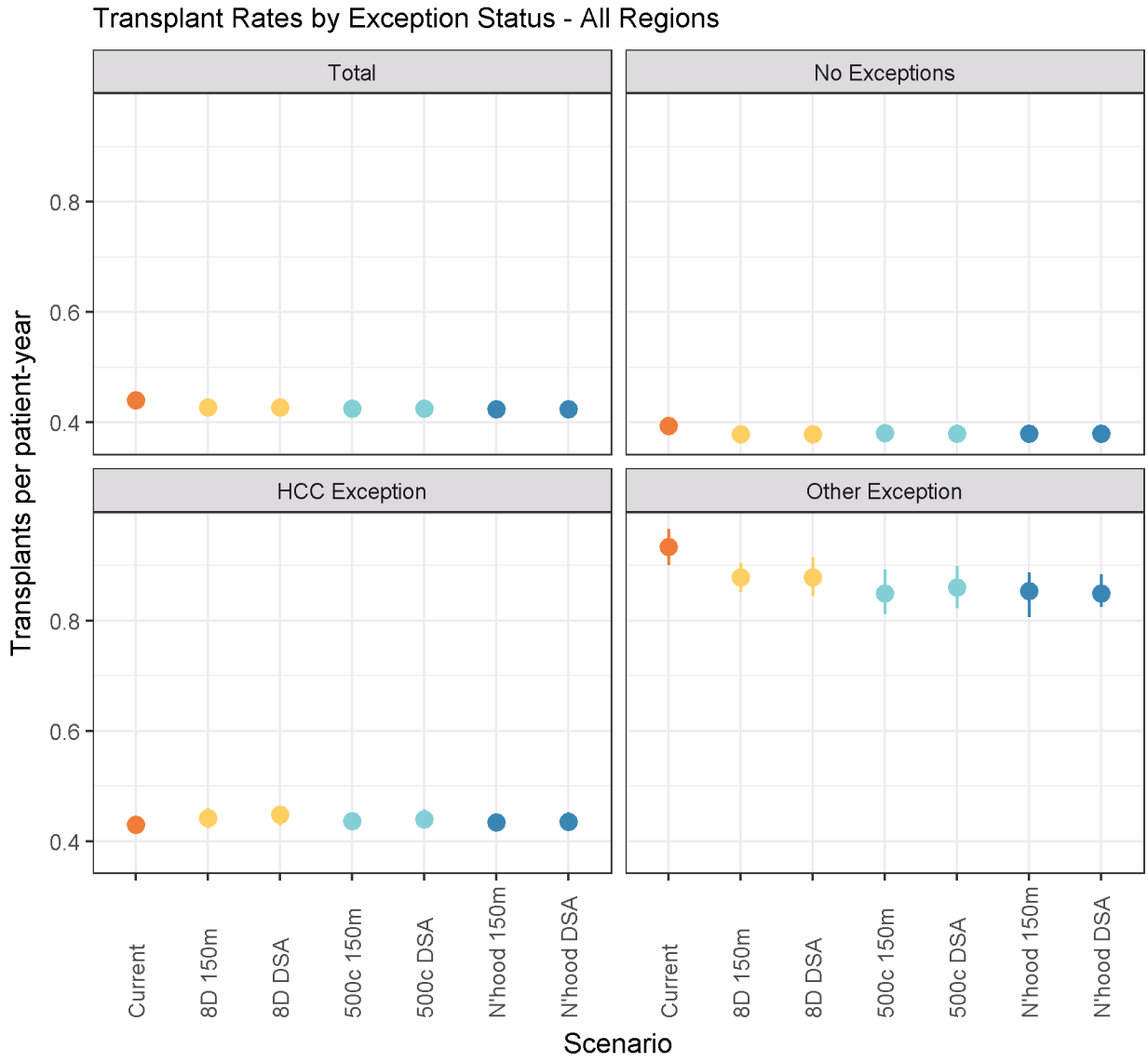


Figure 4 Transplant rates by exception status - all regions

Transplant Counts

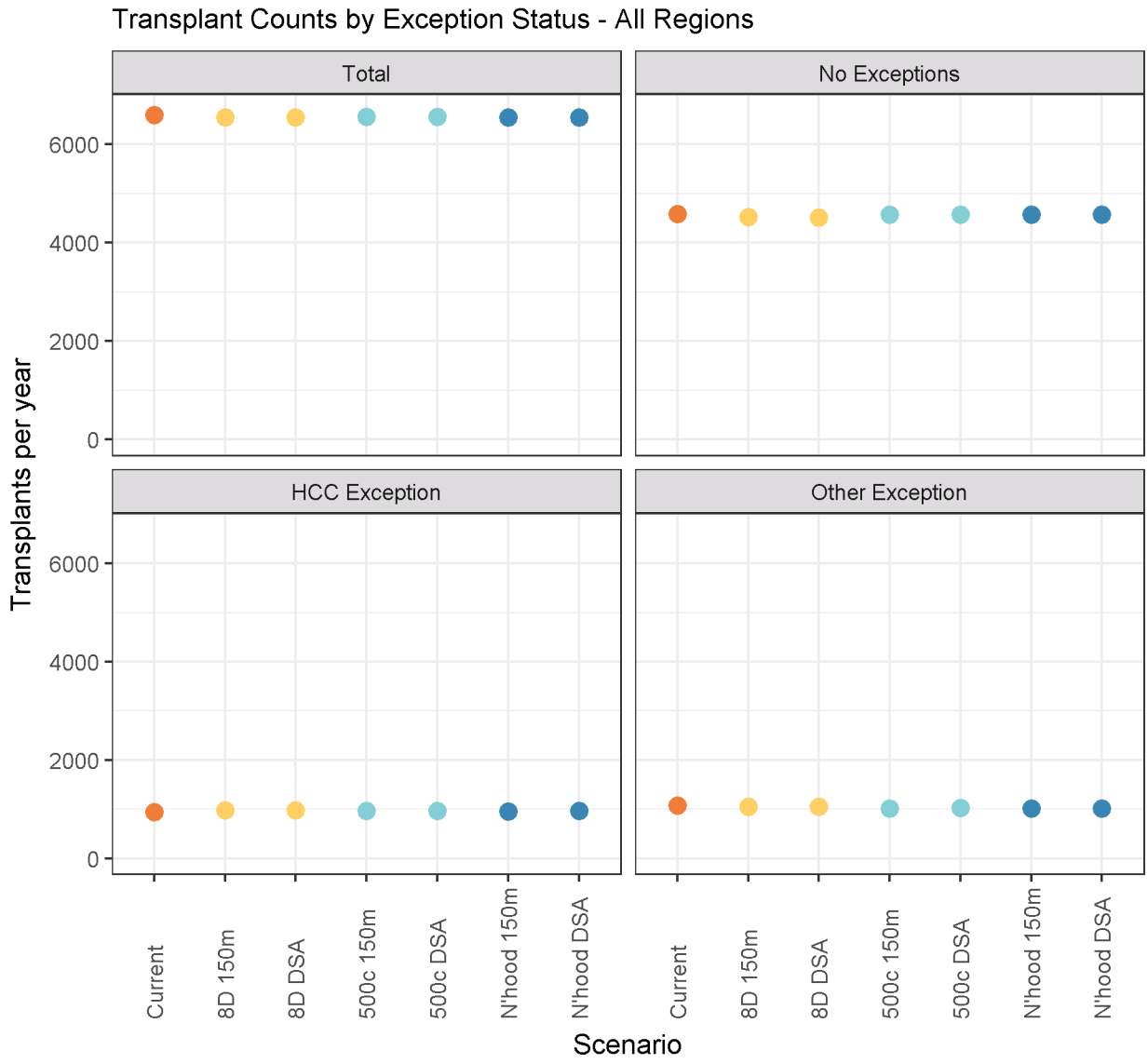


Figure 5 Transplant counts by exception status - all regions

Transplant Rates by MELD/PELD

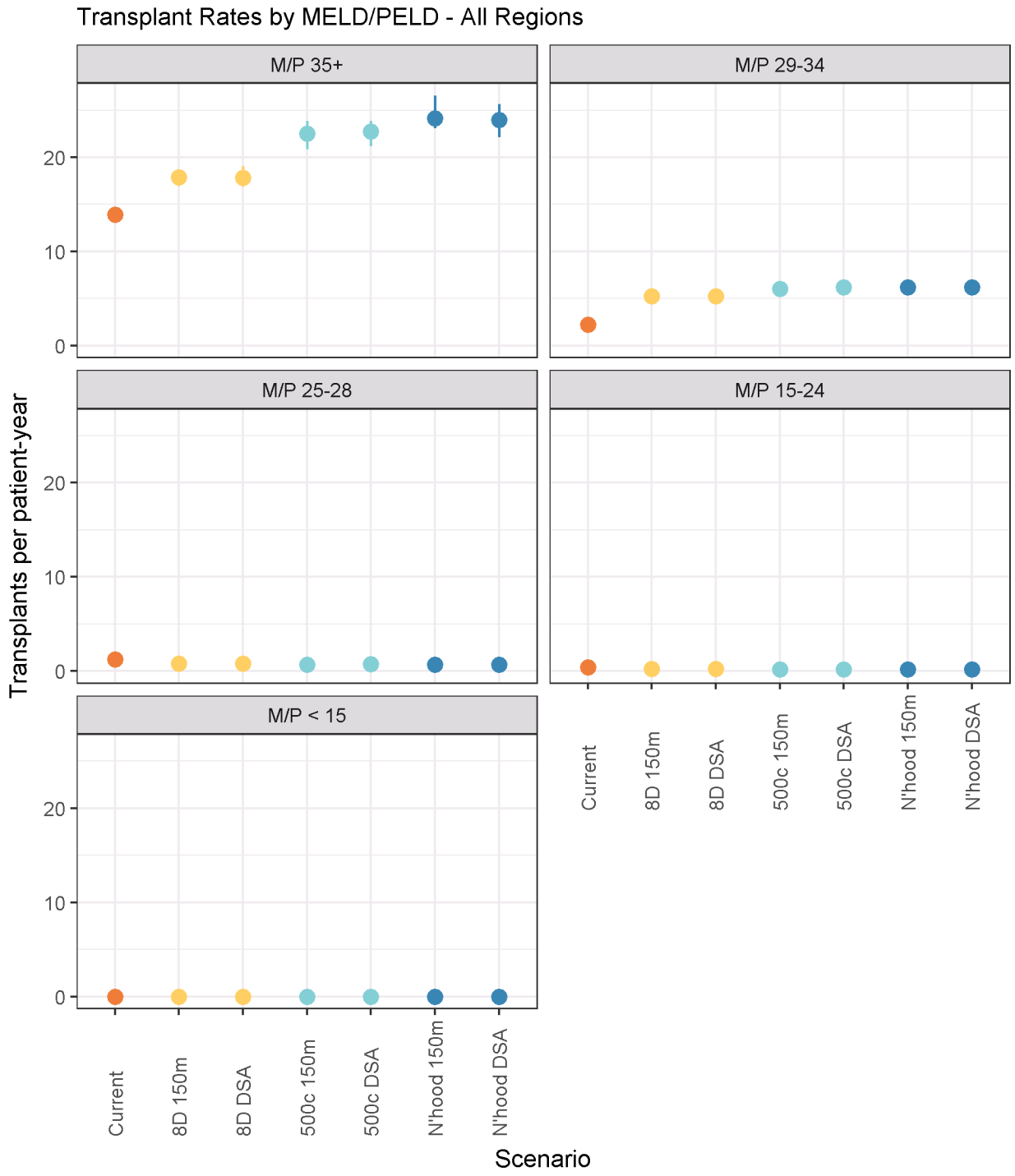


Figure 6 Transplant rates by MELD/PELD - all regions

Transplant Counts by MELD/PELD

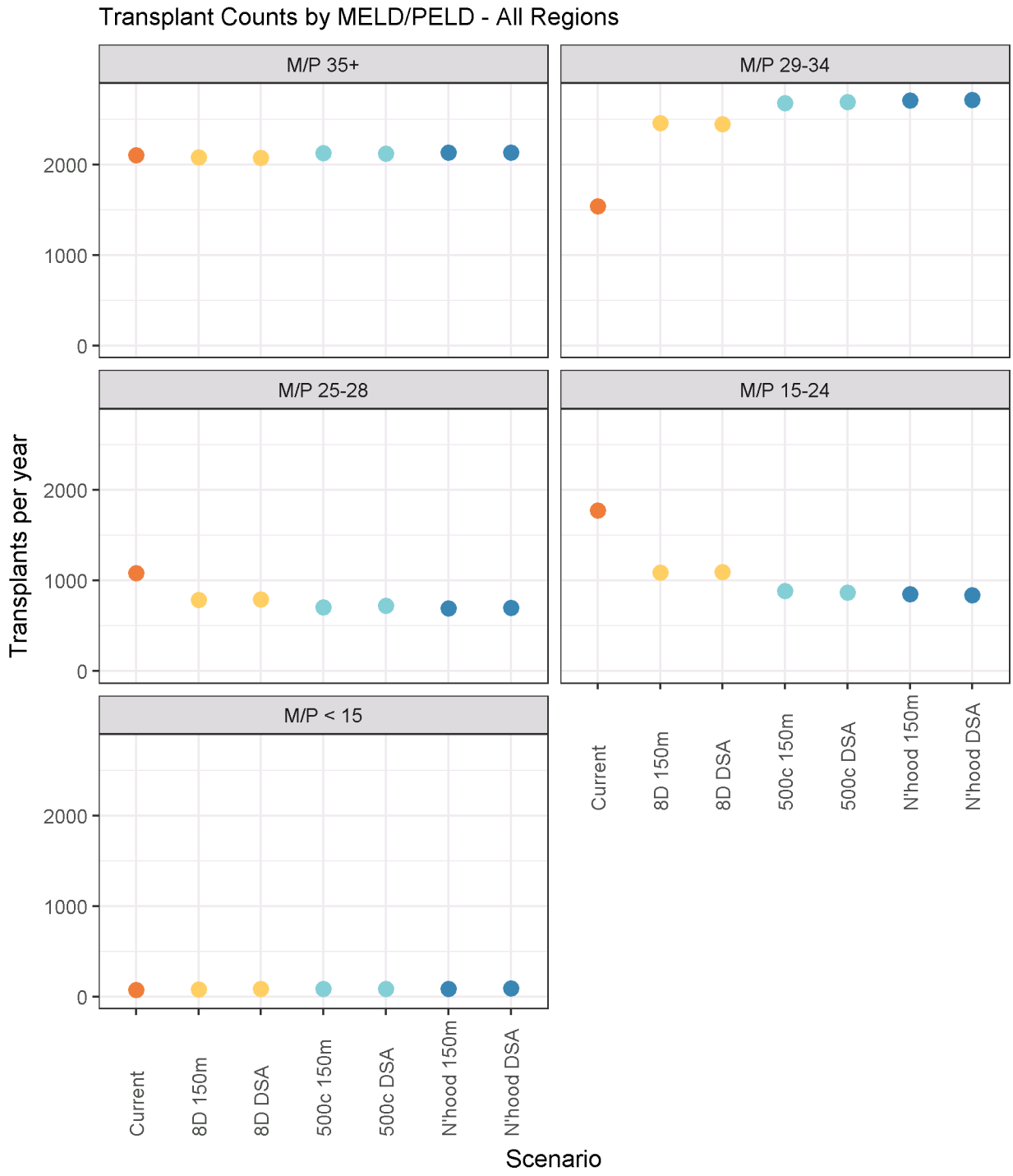


Figure 7 Transplant counts by MELD/PELD - all regions

Variance in Transplant Rates by DSA

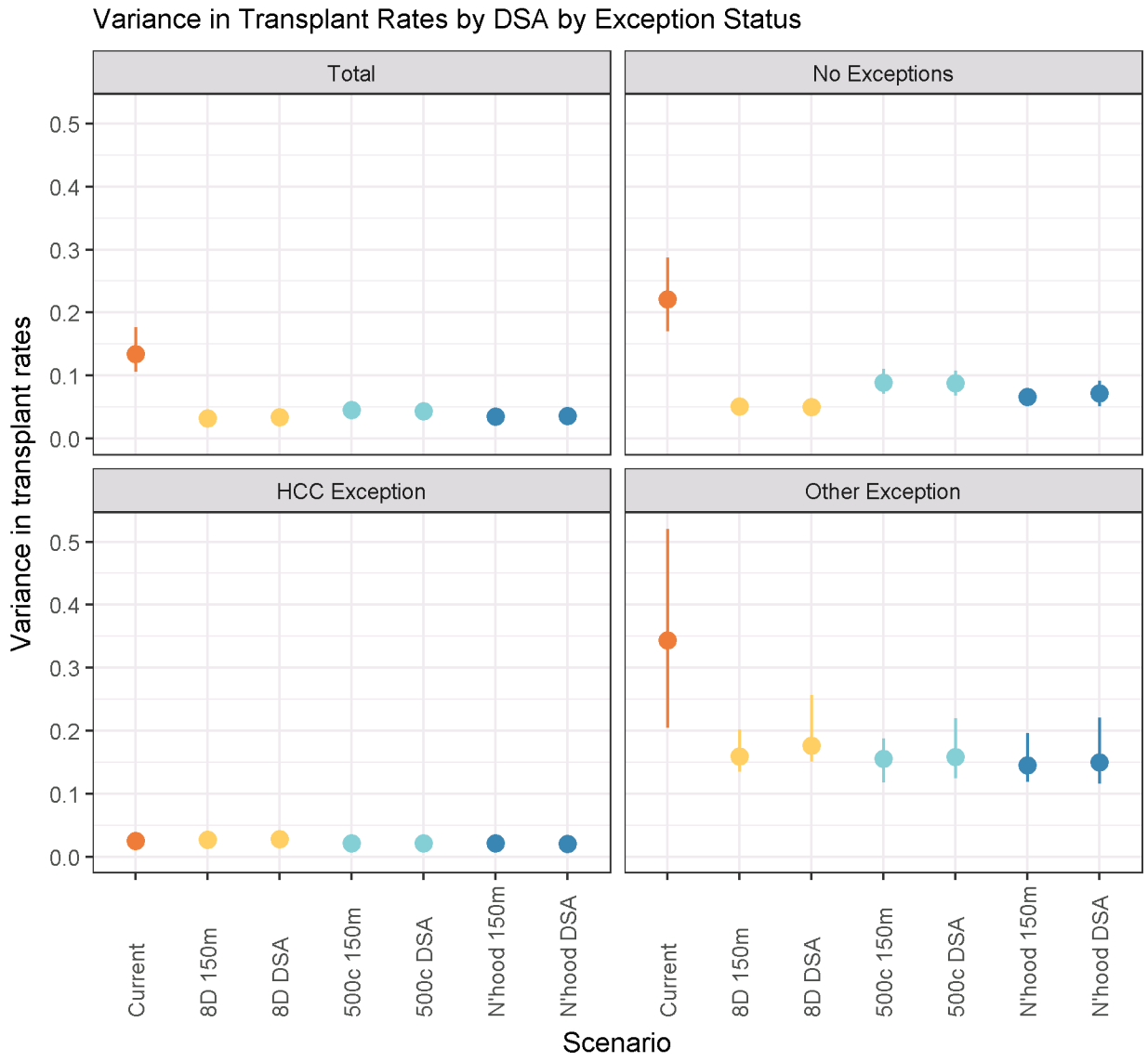


Figure 8 Variance in transplant rates by DSA by exception status

Maps of Transplant Rates by DSA

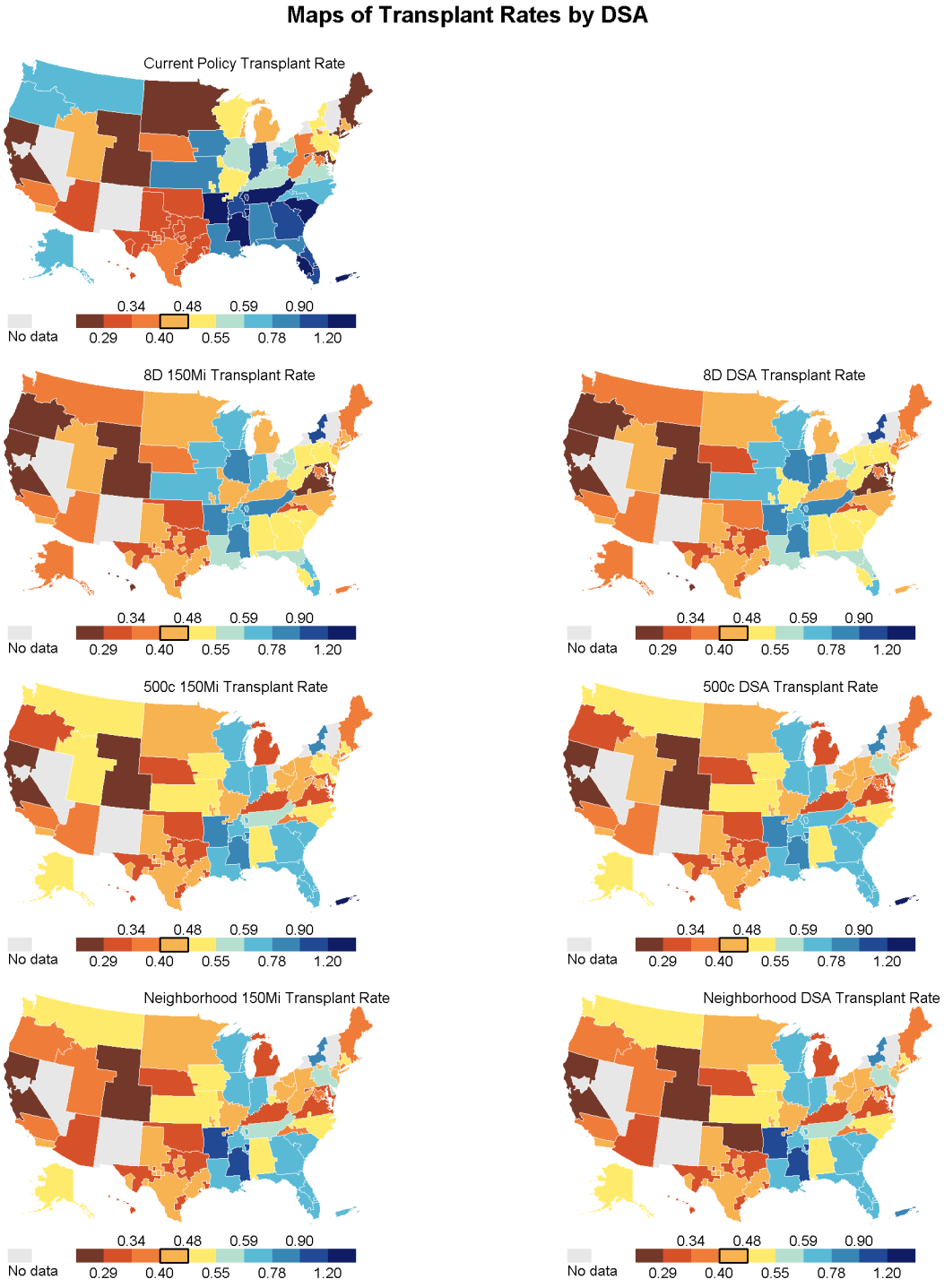


Figure 9 Maps of transplant rates by DSA

Waitlist Mortality

Waitlist Mortality Rates

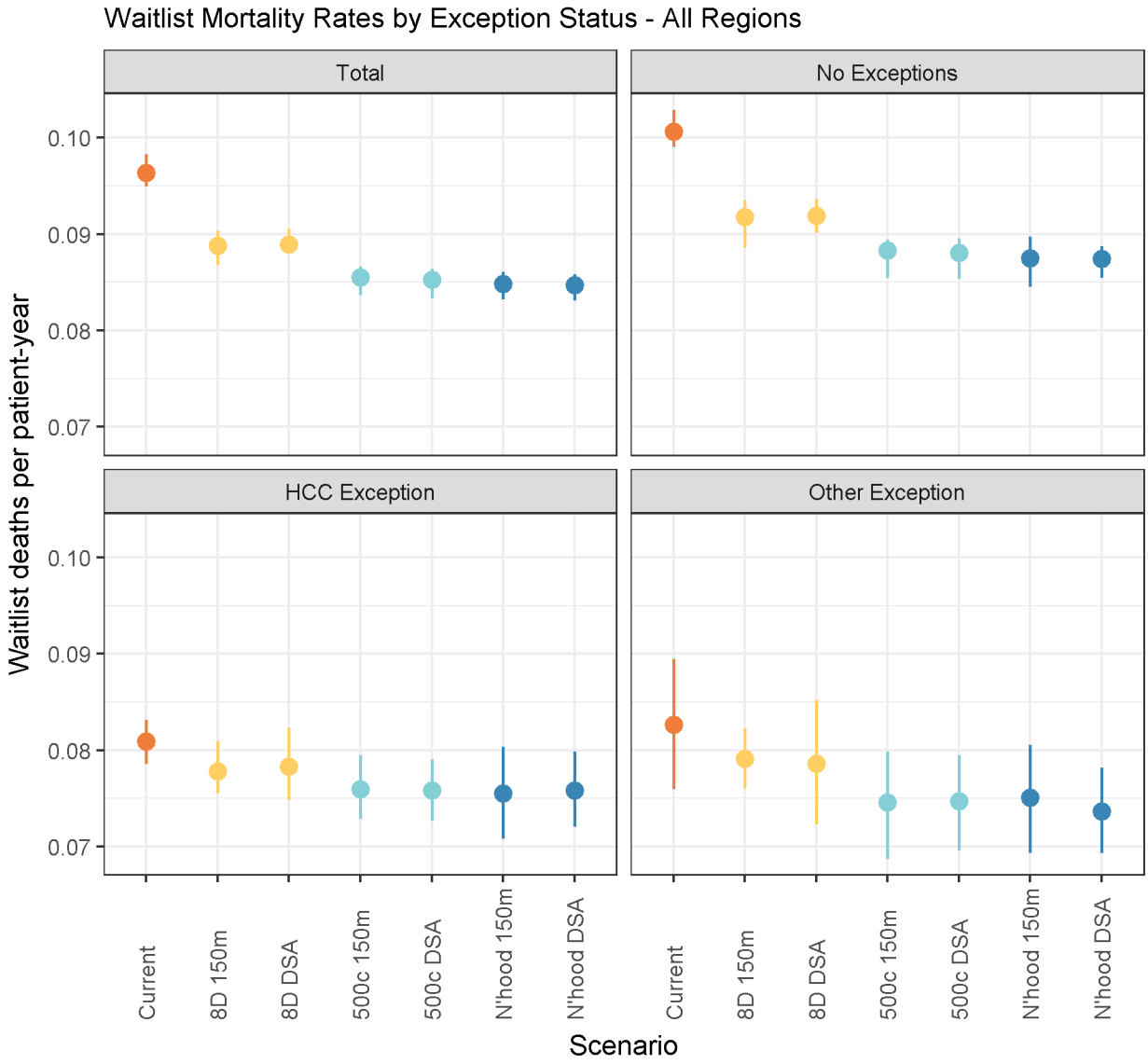


Figure 10 Waitlist mortality rates by exception status - all regions

Waitlist Mortality Counts

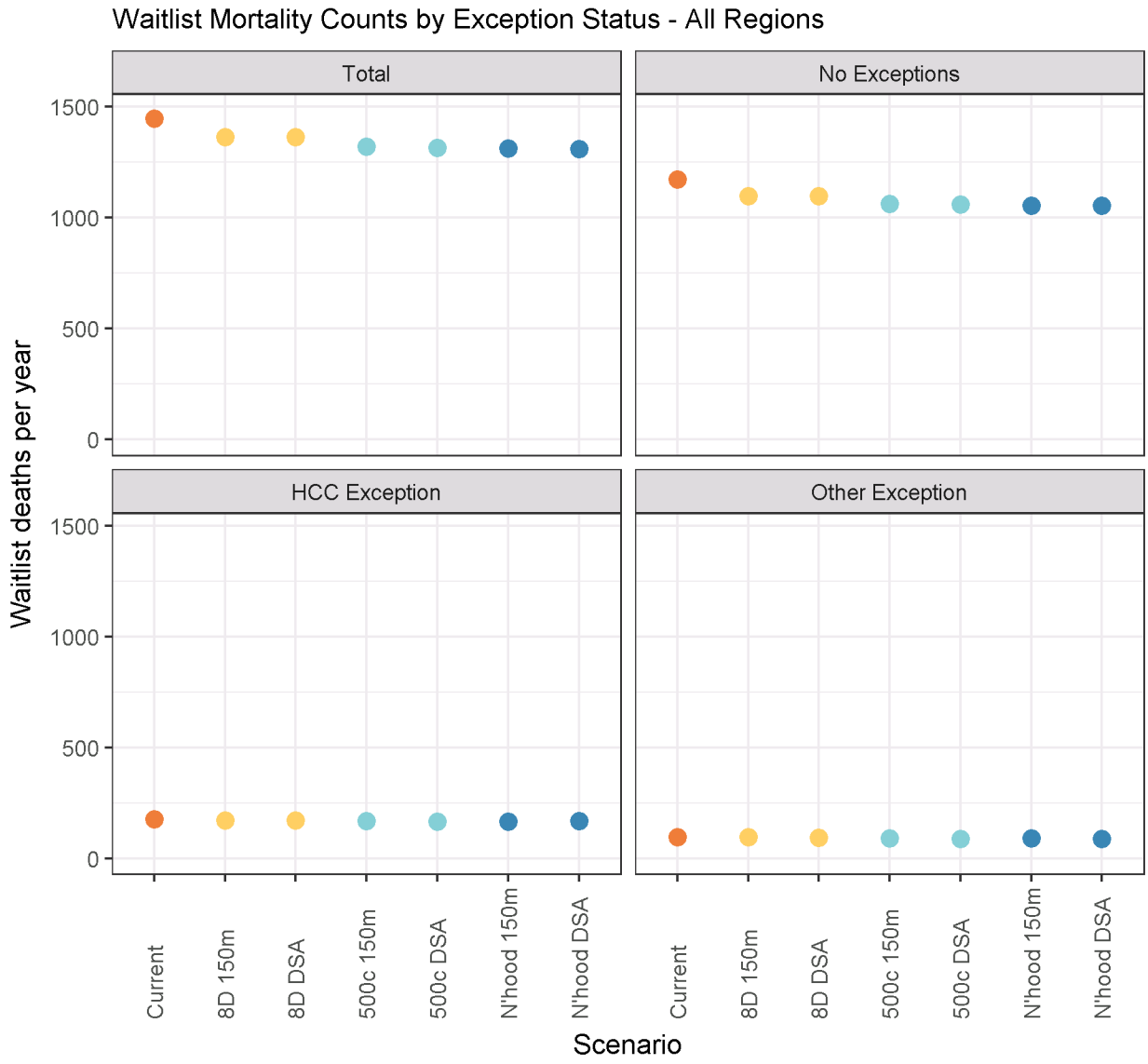


Figure 11 Waitlist mortality counts by exception status - all regions

Waitlist Mortality Rates by MELD/PELD

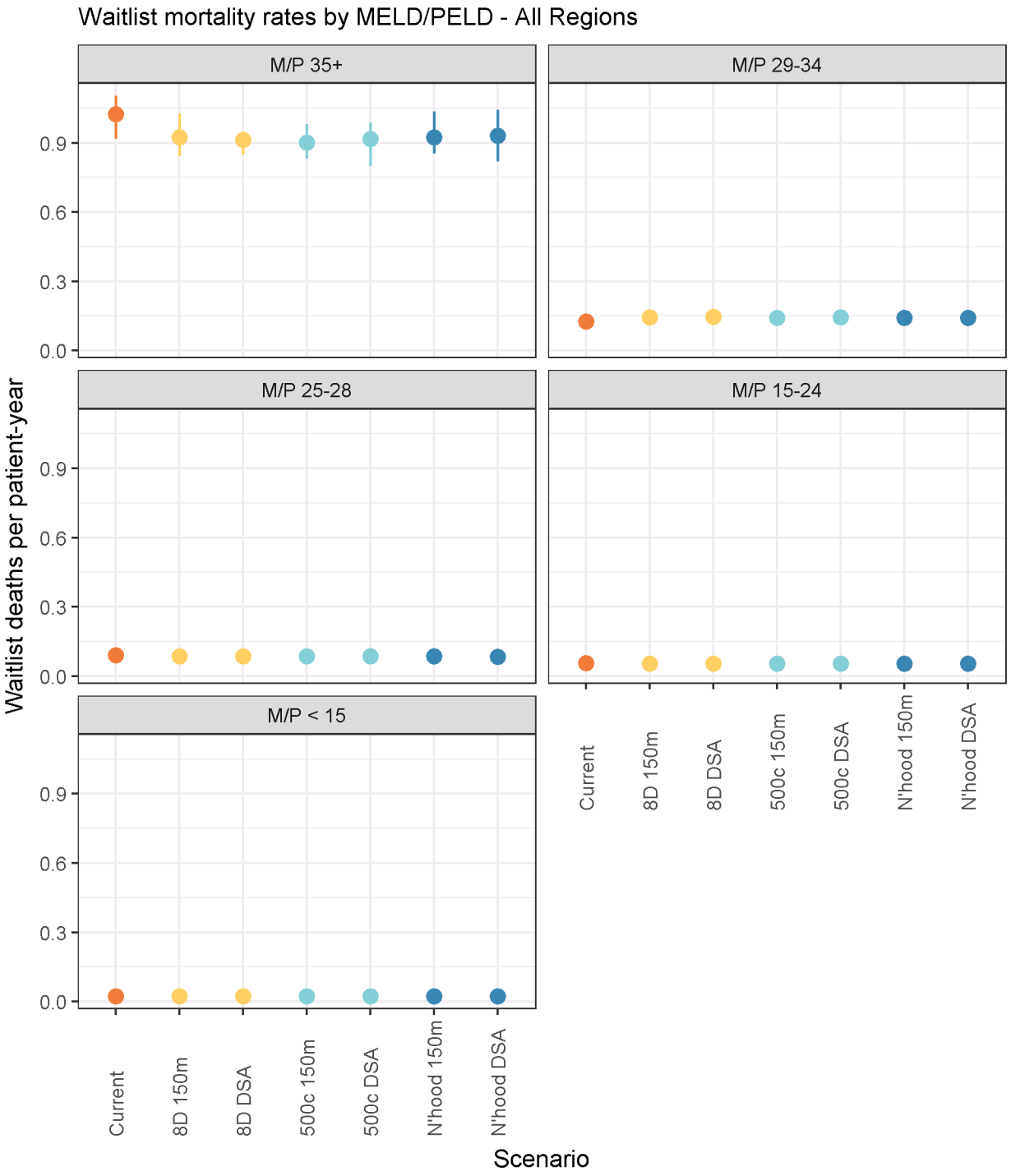


Figure 12 Waitlist mortality rates by MELD/PELD - all regions

Waitlist Mortality Counts by MELD/PELD

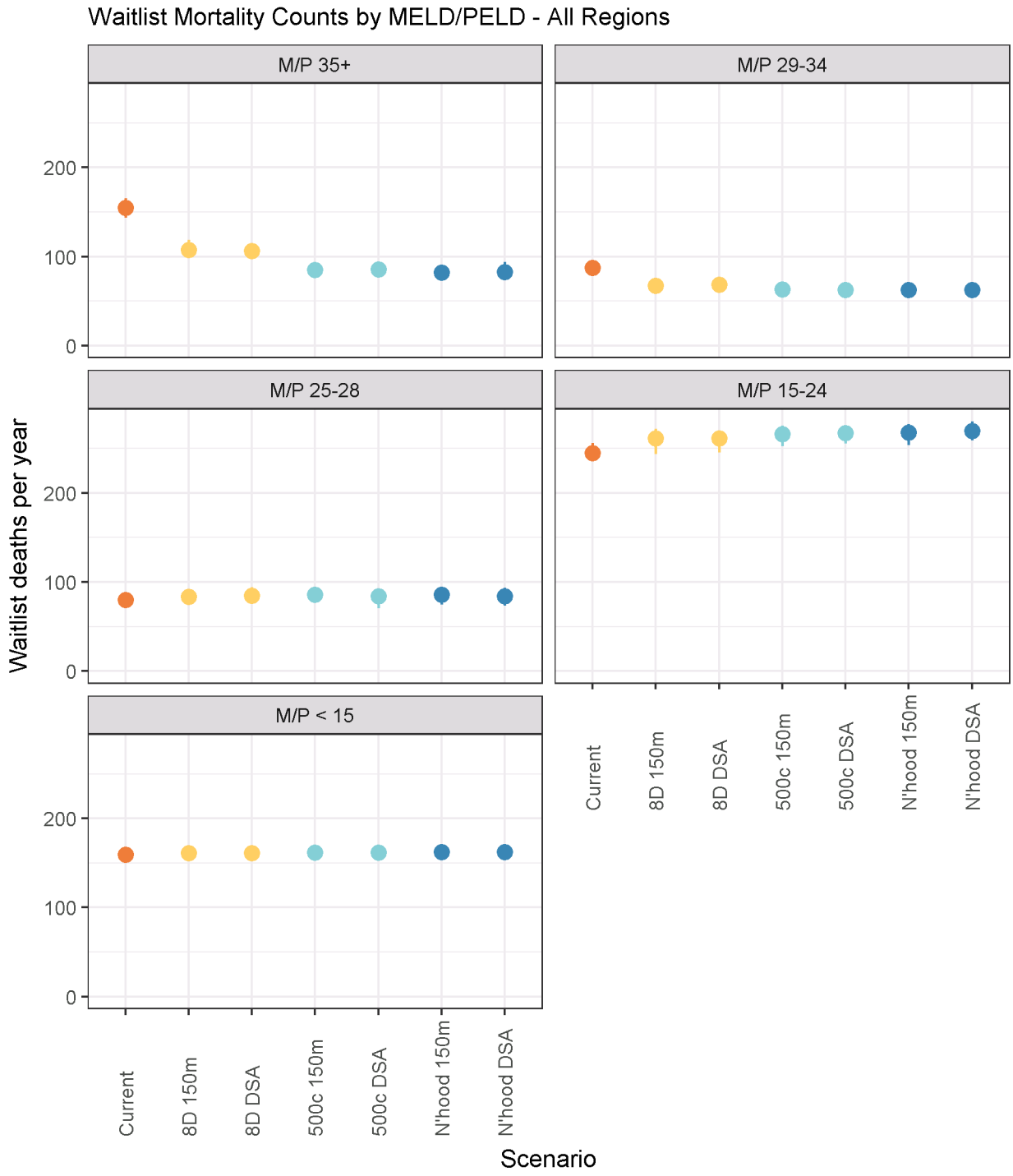


Figure 13 Waitlist mortality counts by MELD/PELD - all regions

Variance in Waitlist Mortality Rates by DSA

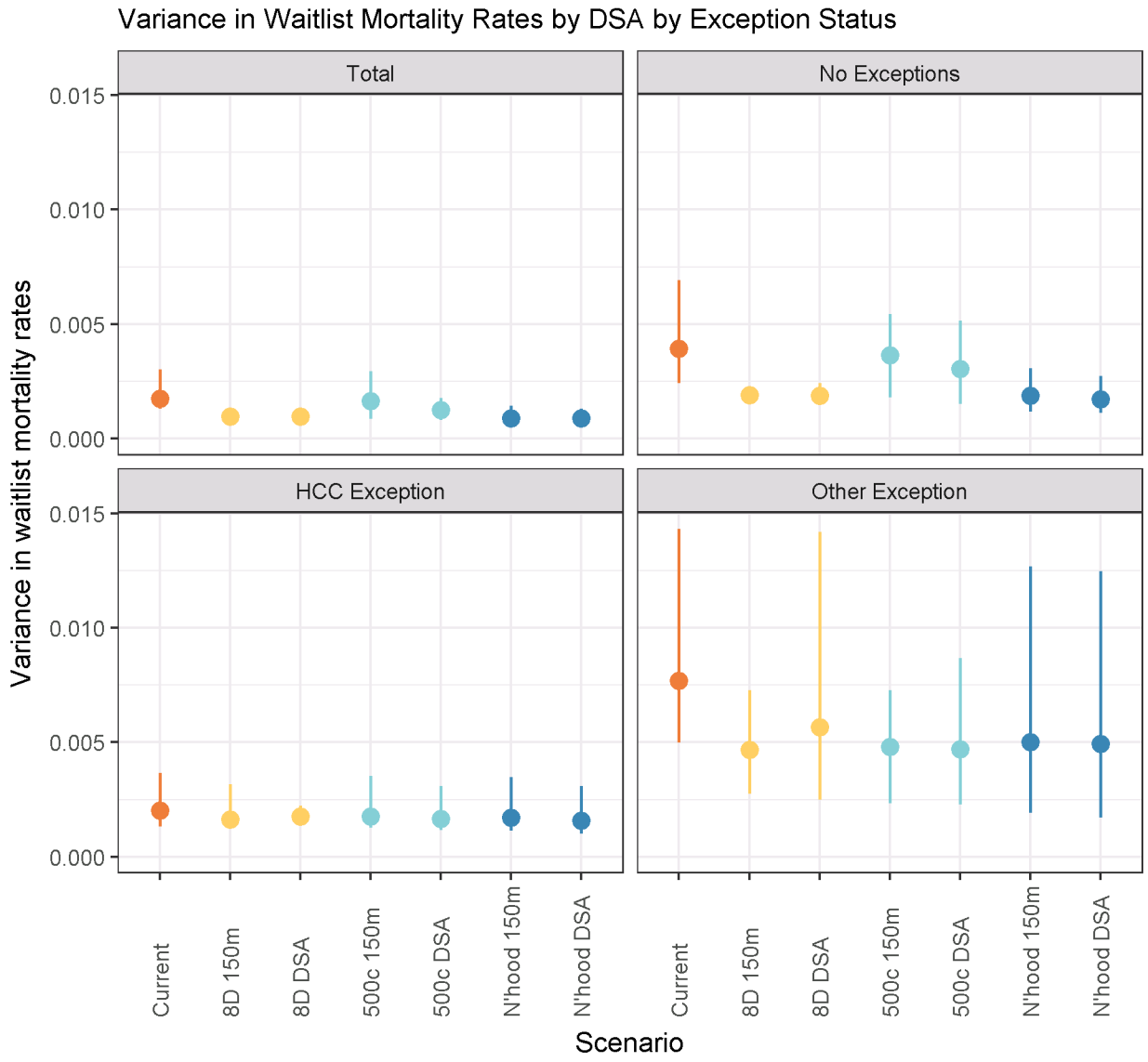


Figure 14 Variance in waitlist mortality rates by DSA by exception status

Maps of Waitlist Mortality Rates by DSA

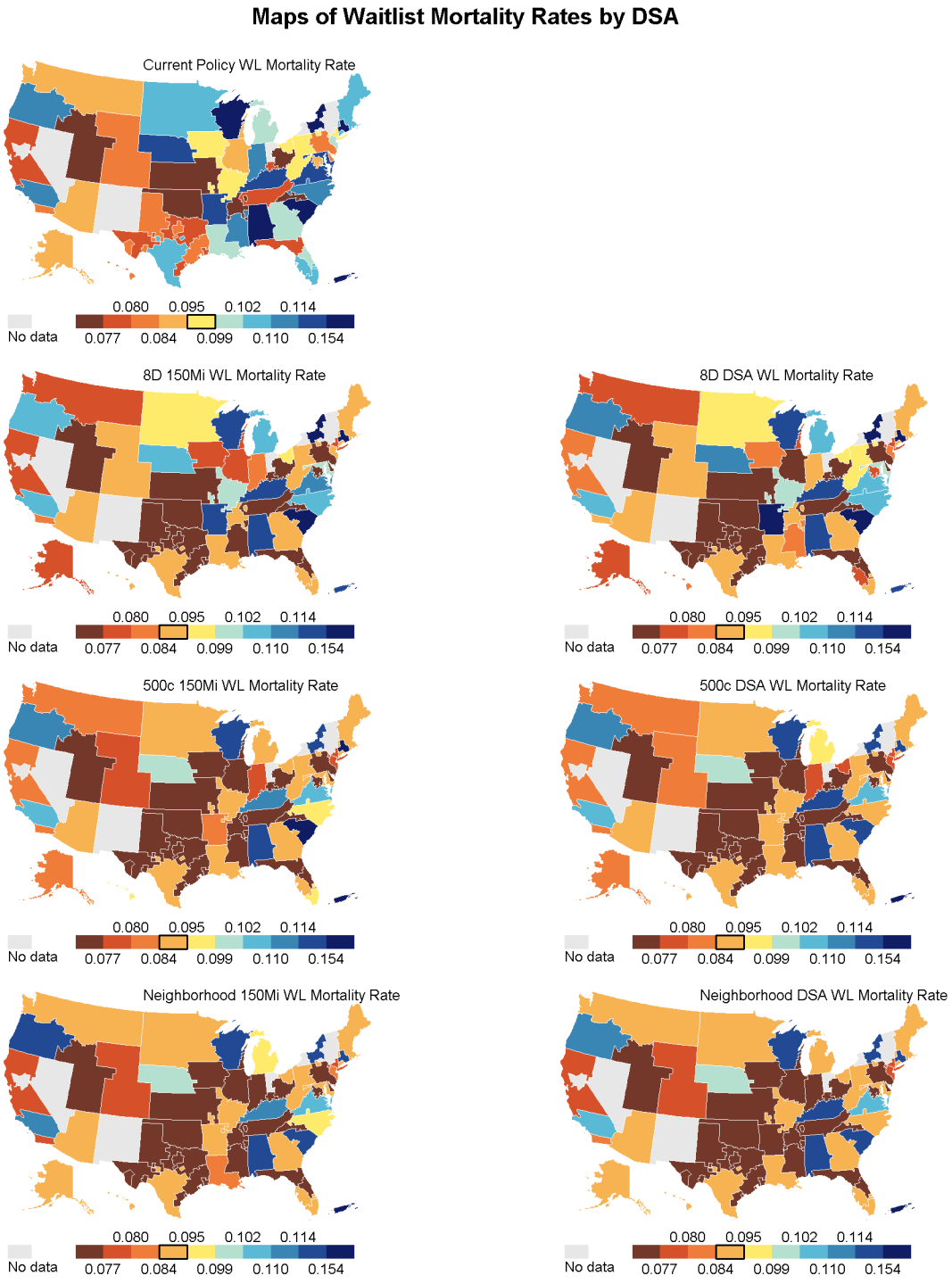


Figure 15 Maps of waitlist mortality rates by DSA

Posttransplant Mortality

Posttransplant Mortality Rates

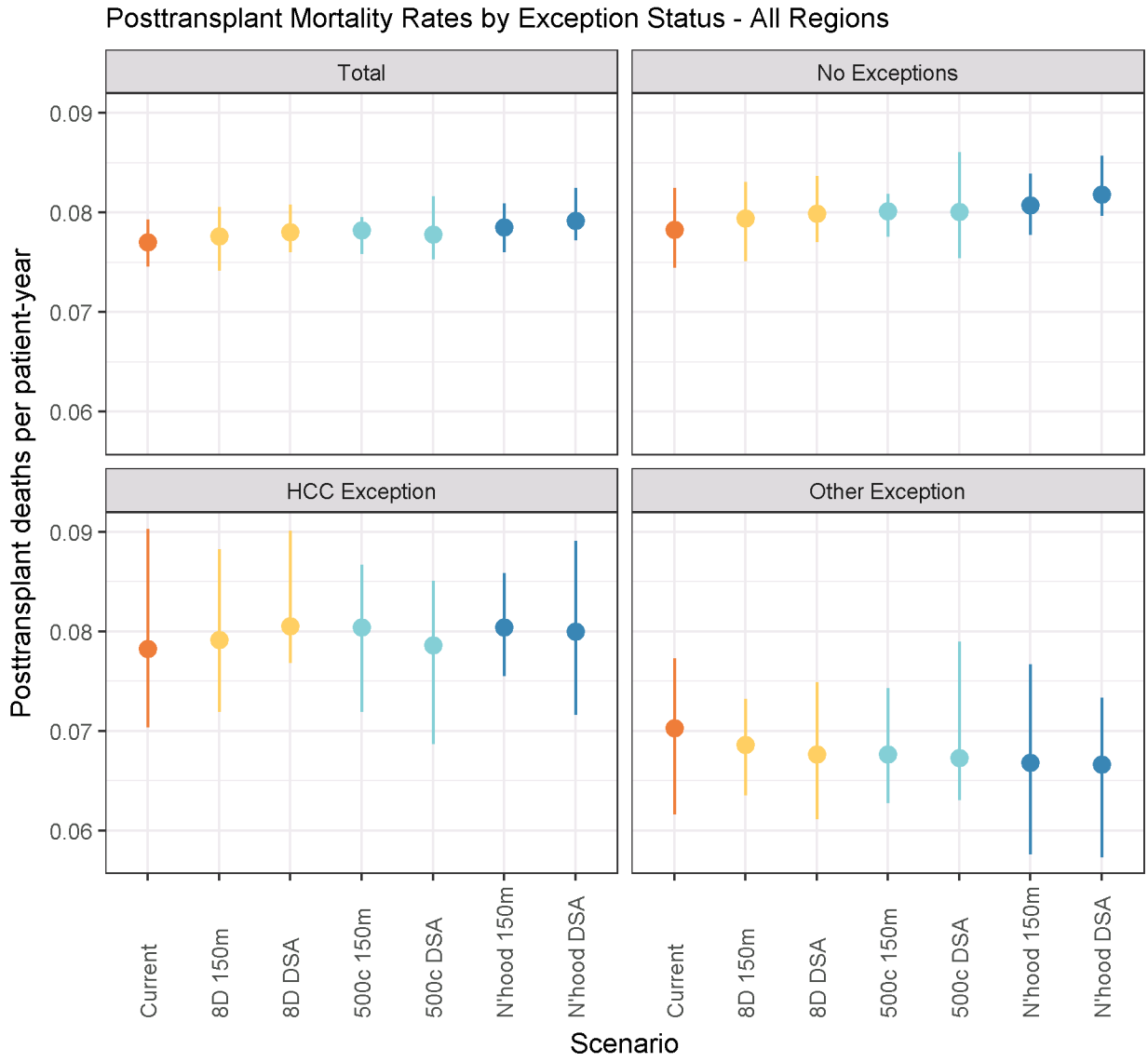


Figure 16 Posttransplant mortality rates by exception status - all regions

Posttransplant Mortality Counts

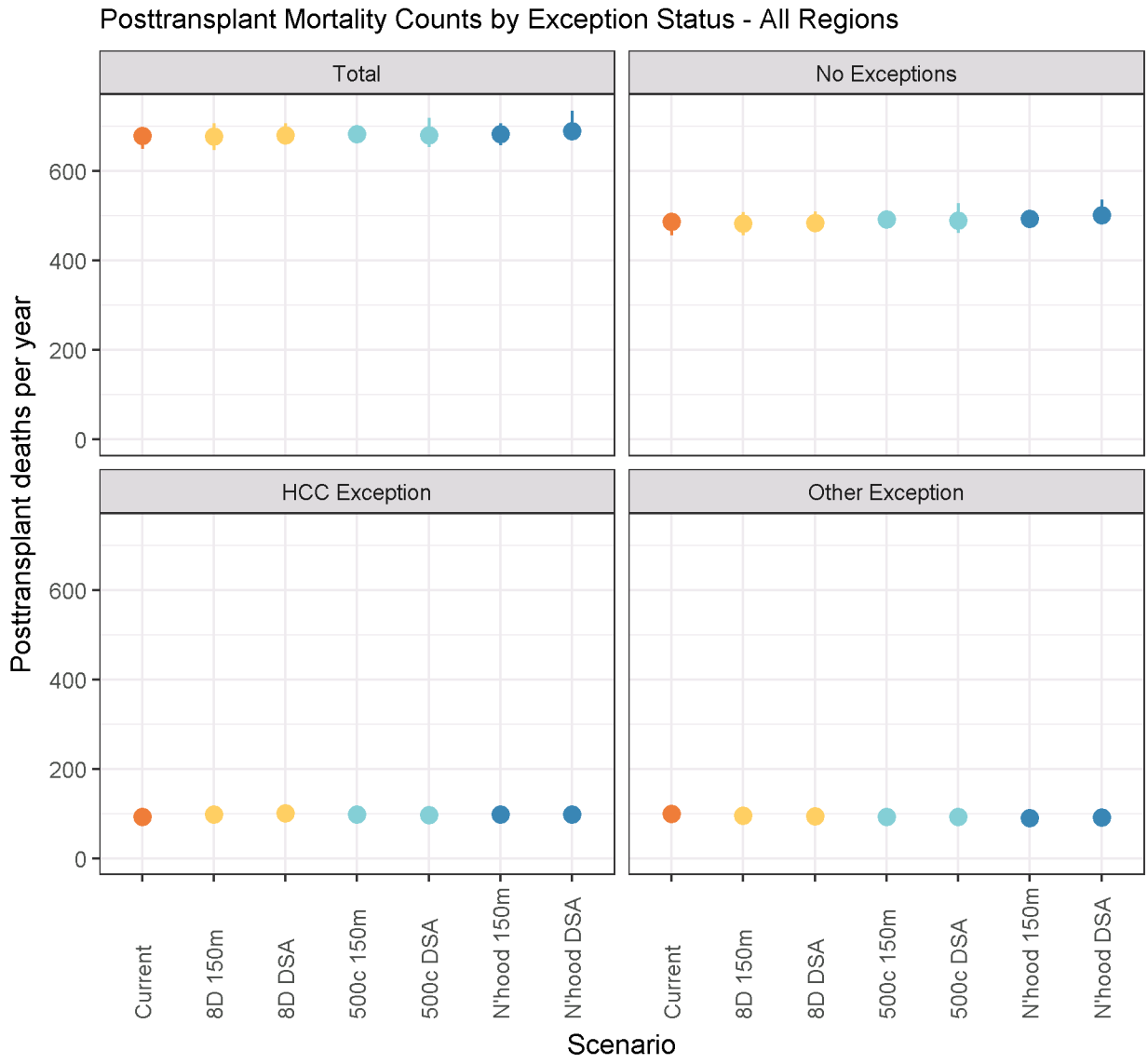


Figure 17 Posttransplant mortality counts by exception status - all regions

Transport

Median Transport Time

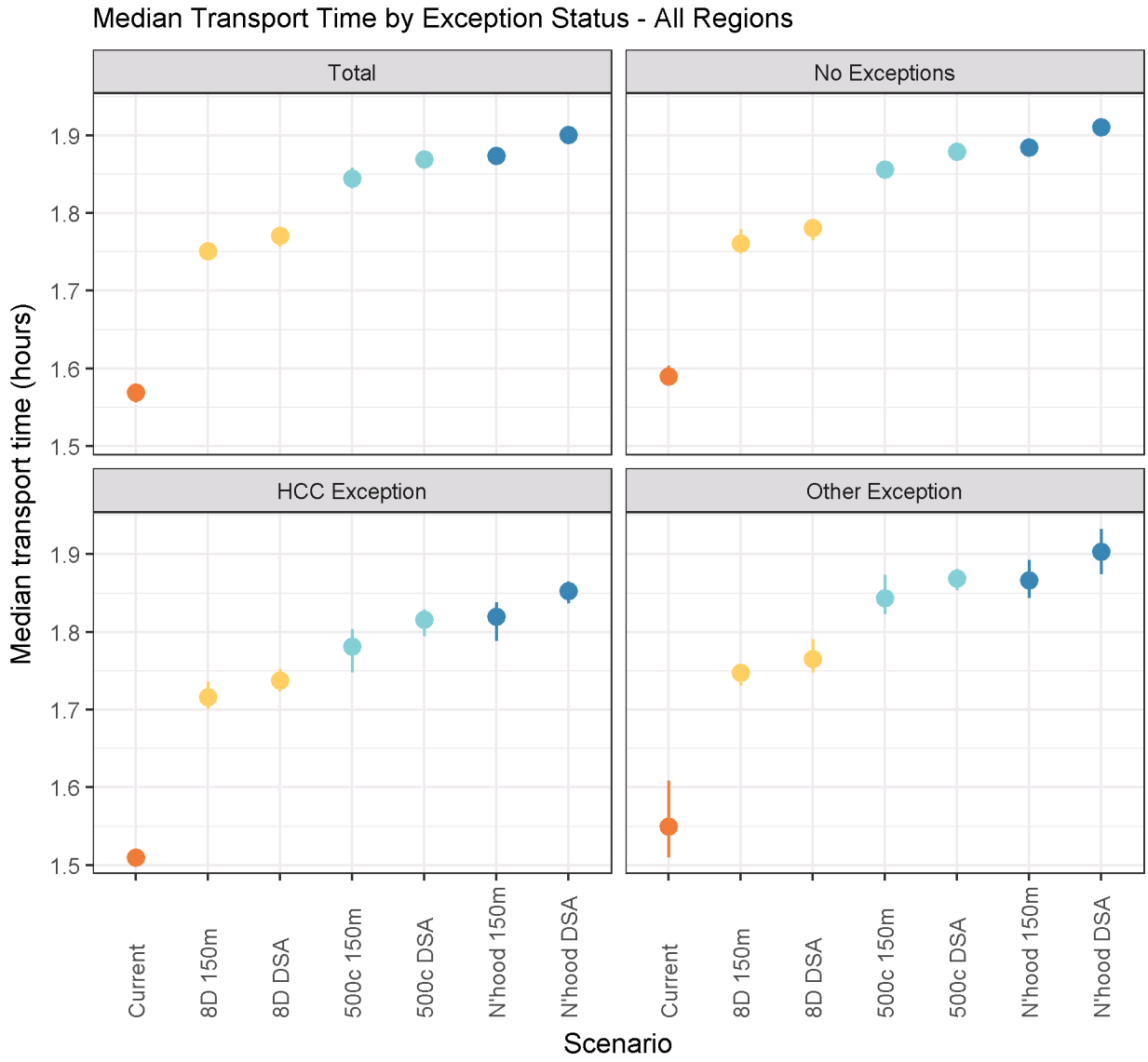


Figure 18 Median Transport Time by exception status - all regions

Median Transport Distance

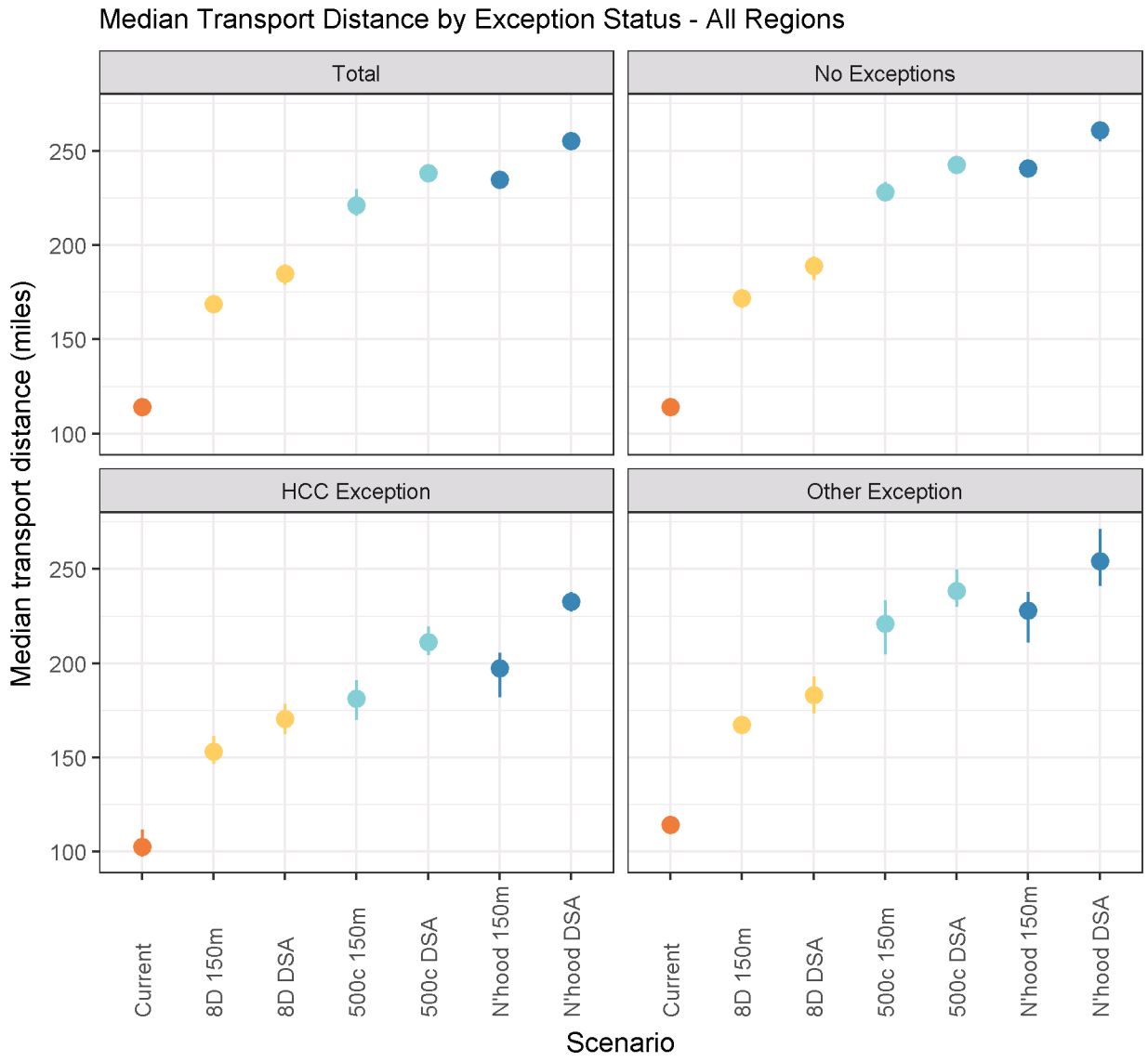


Figure 19 Median Transport Distance by exception status - all regions

Percent of Organs Flown

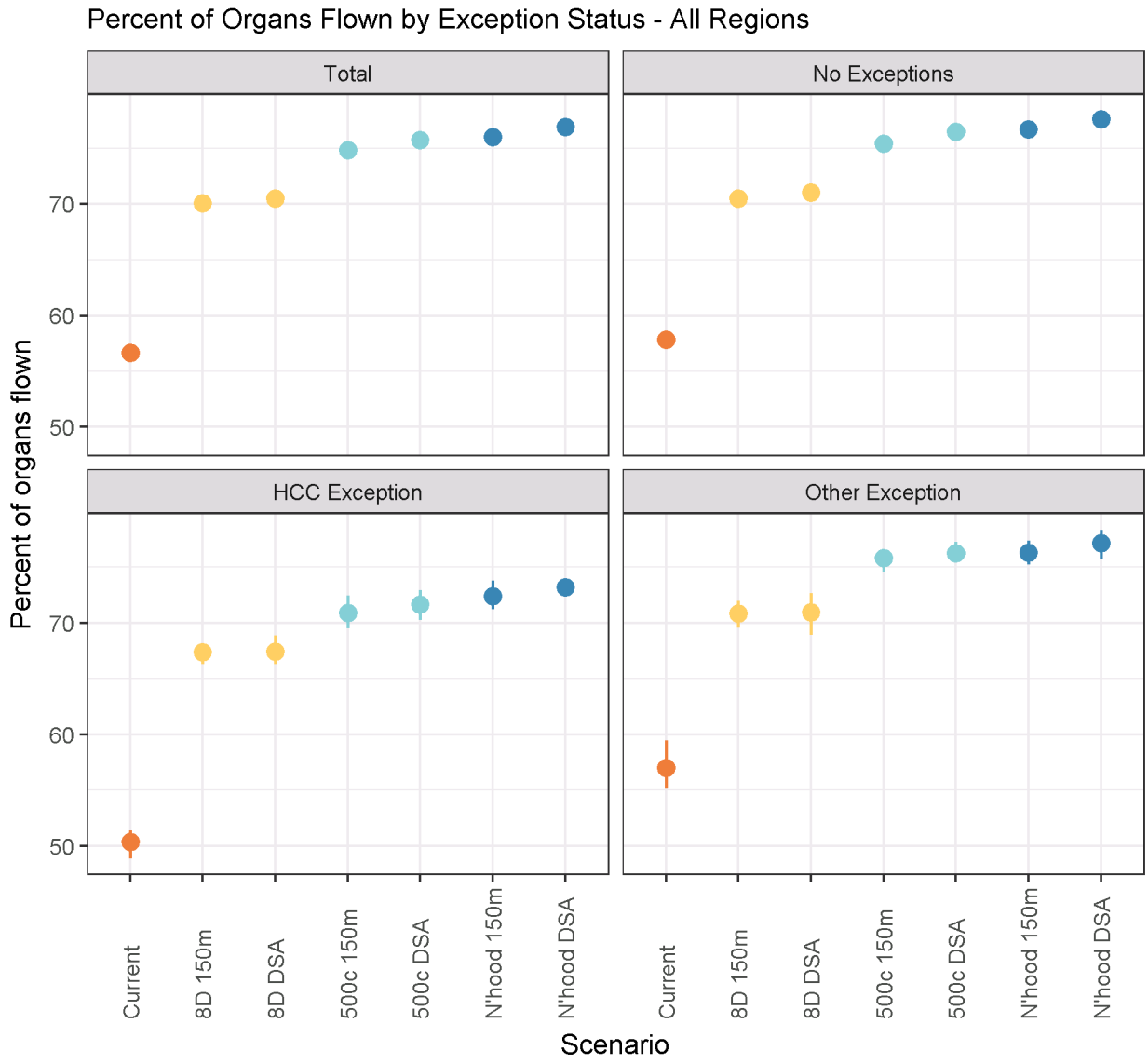


Figure 20 Percent of Organs Flown by exception status - all regions

Appendix A: Results by UNOS region

MELD/PELD at Transplant

Median MELD/PELD at Transplant

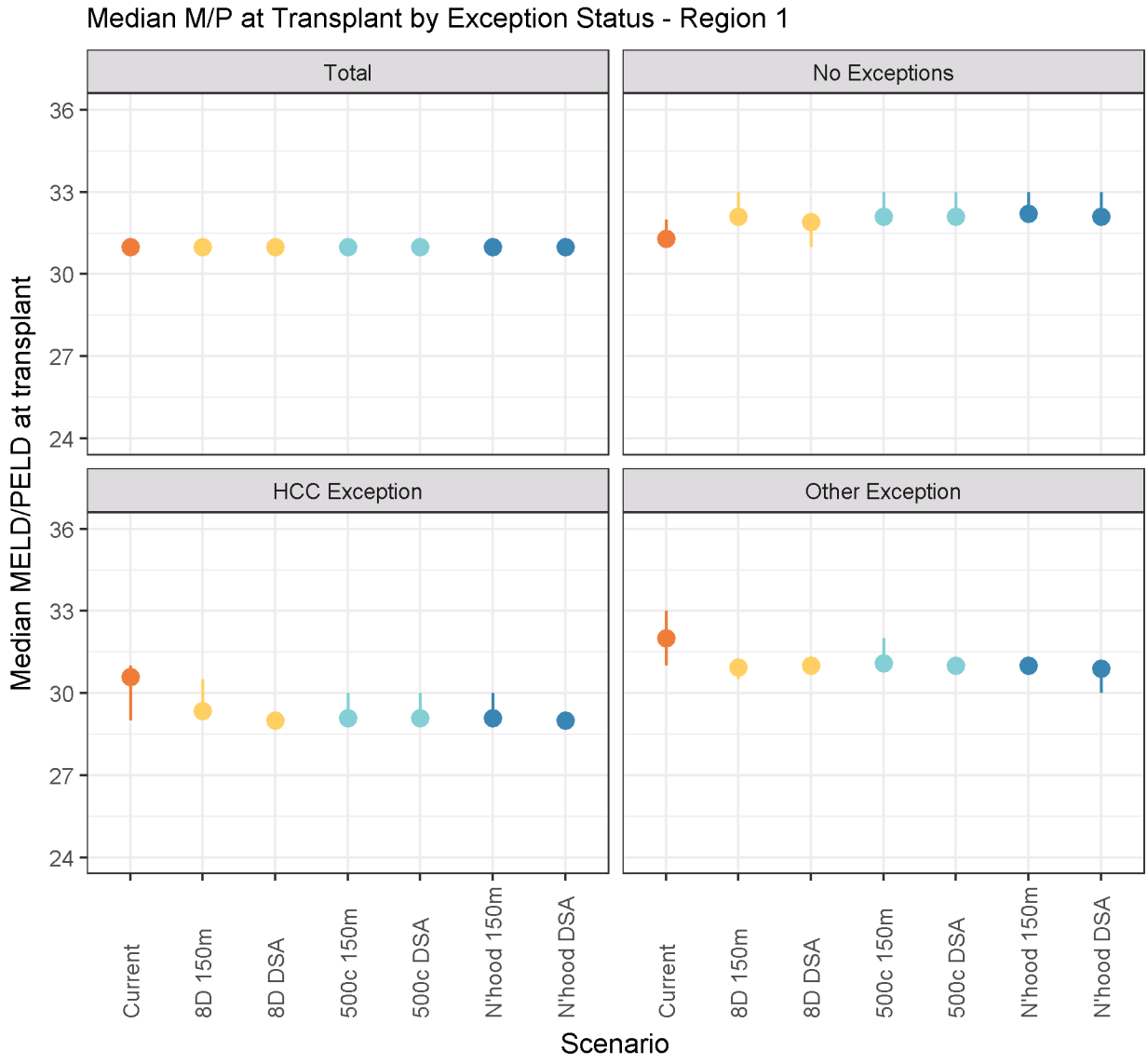


Figure 21 Median MELD/PELD at transplant by exception status - region 1

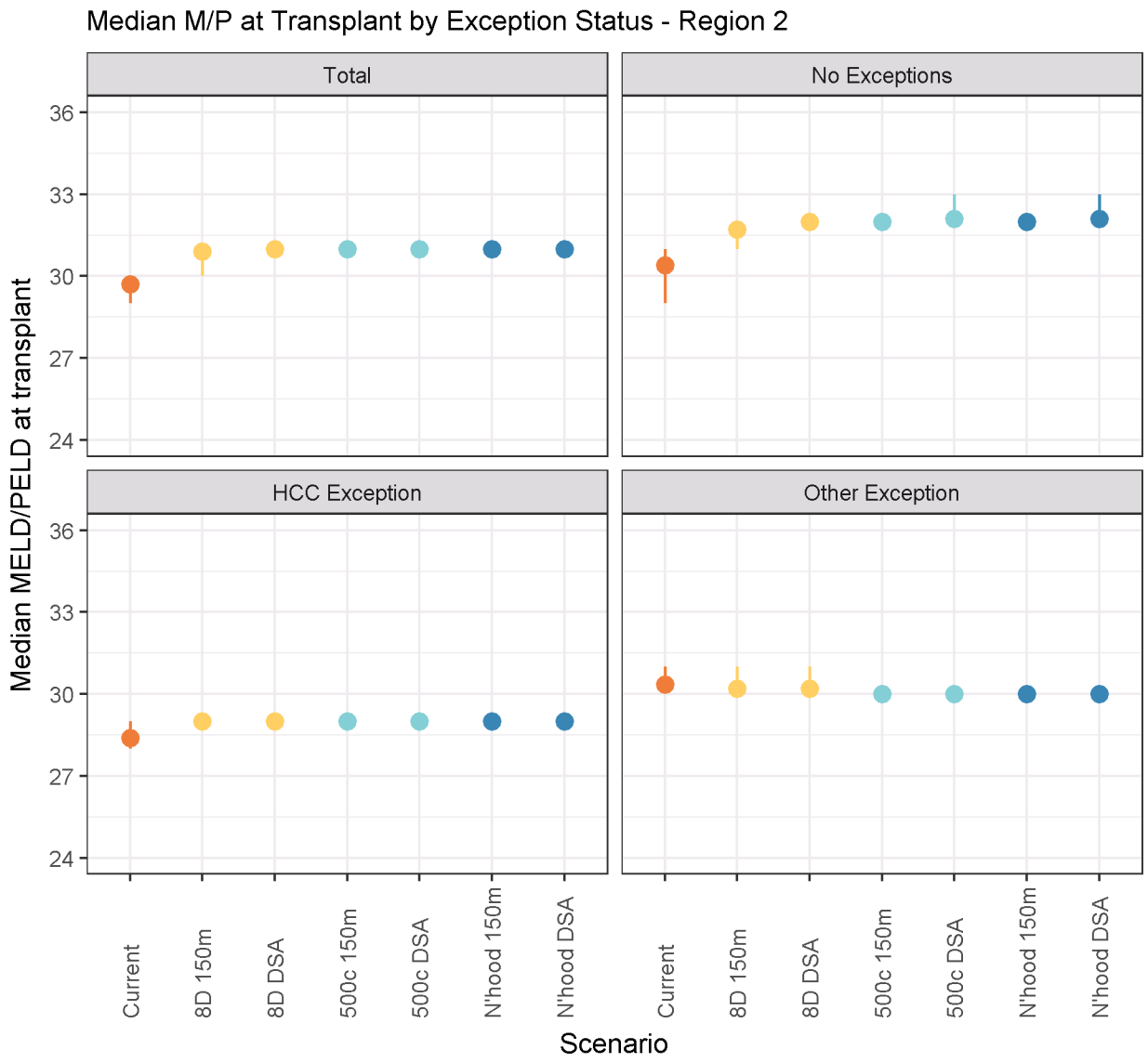


Figure 22 Median MELD/PELD at transplant by exception status - region 2

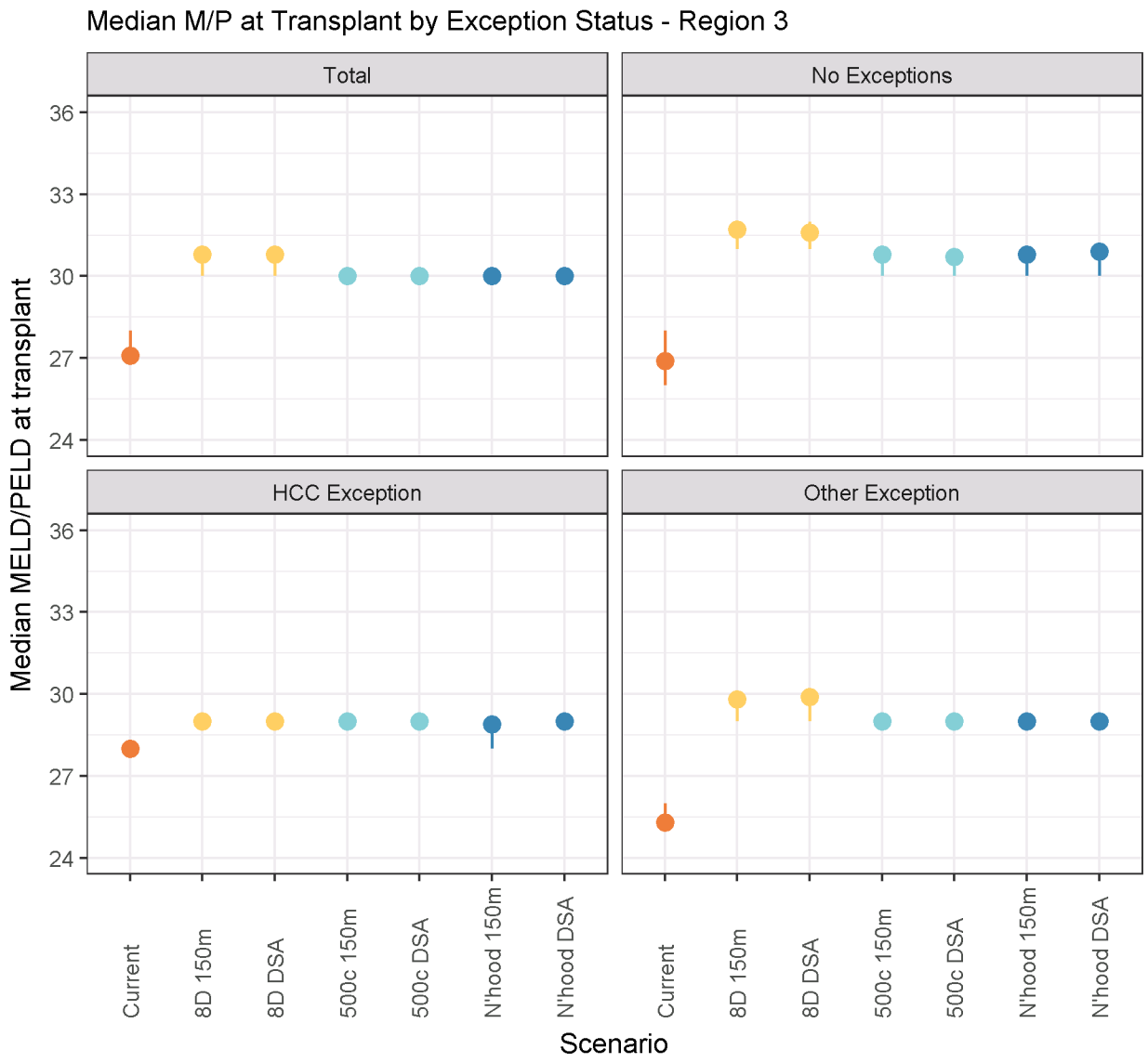


Figure 23 Median MELD/PELD at transplant by exception status - region 3

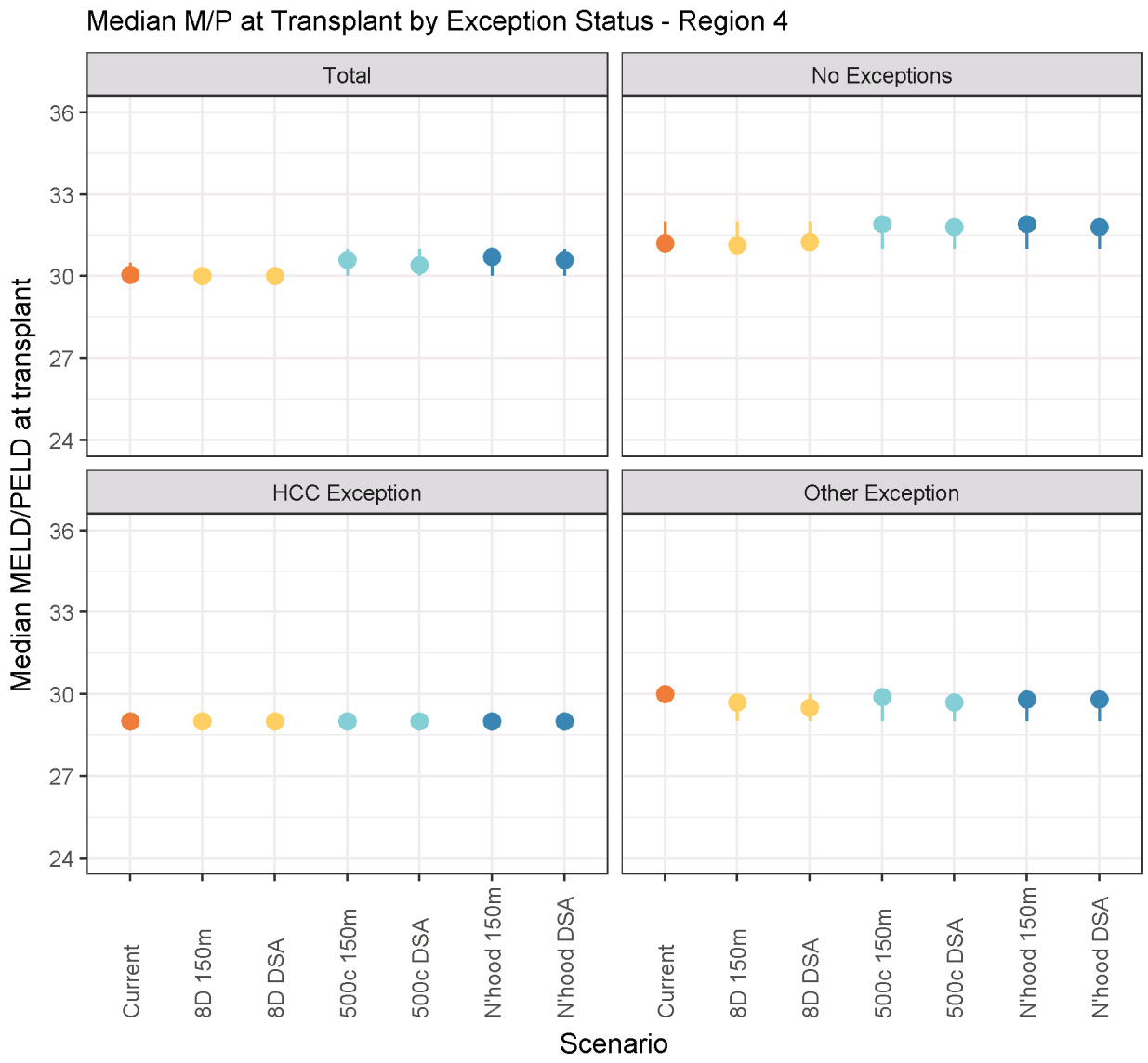


Figure 24 Median MELD/PELD at transplant by exception status - region 4

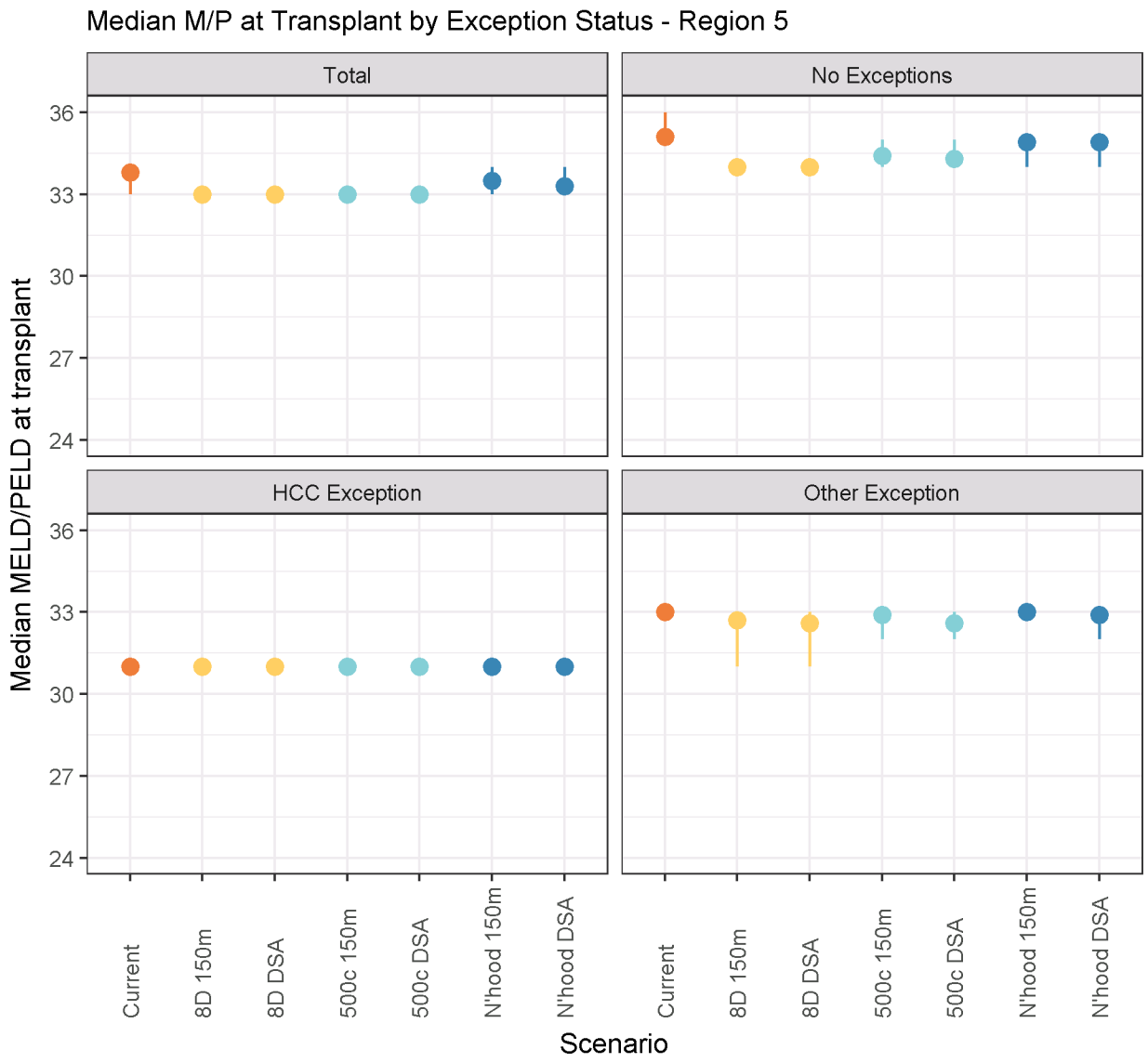


Figure 25 Median MELD/PELD at transplant by exception status - region 5

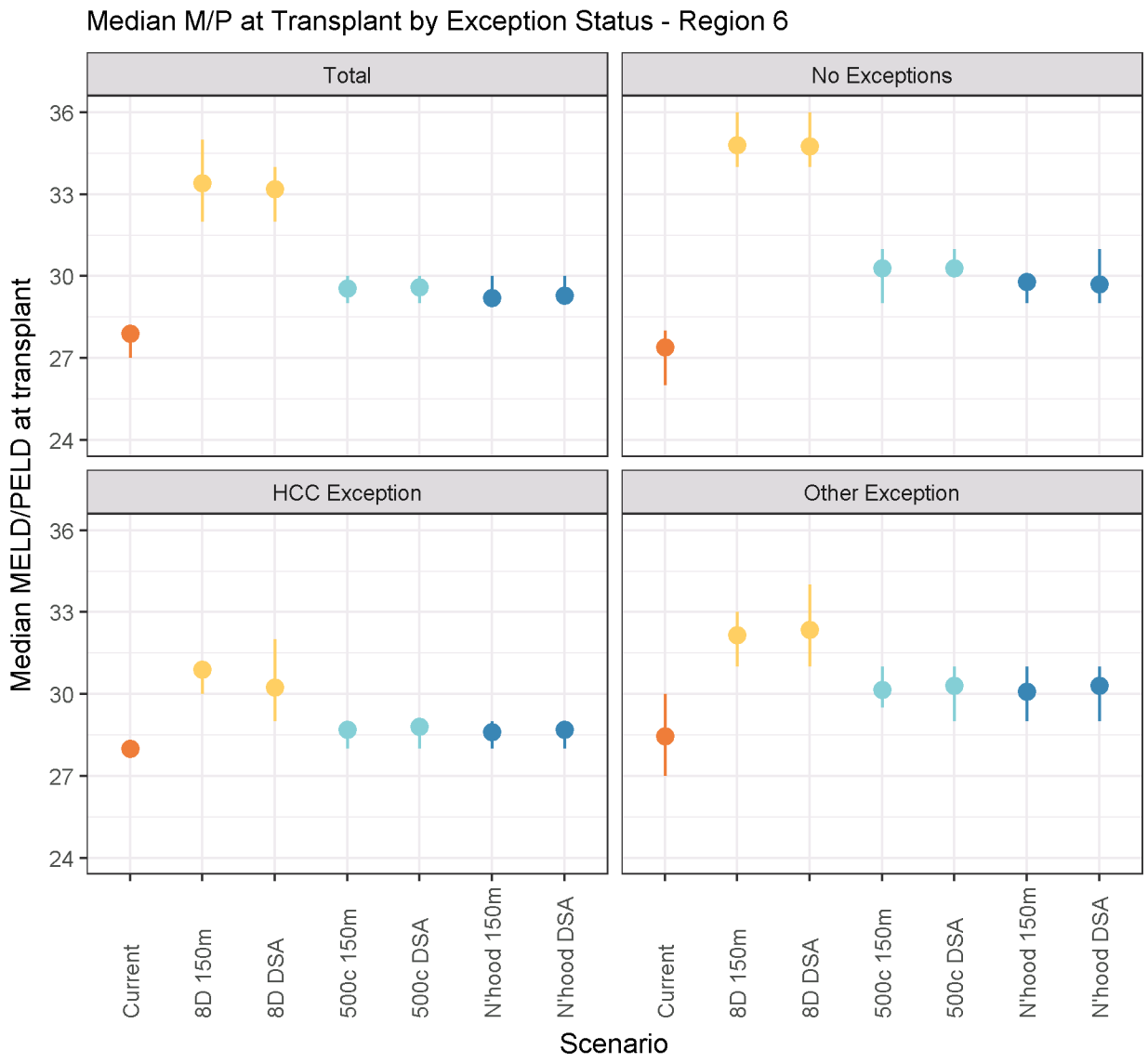


Figure 26 Median MELD/PELD at transplant by exception status - region 6

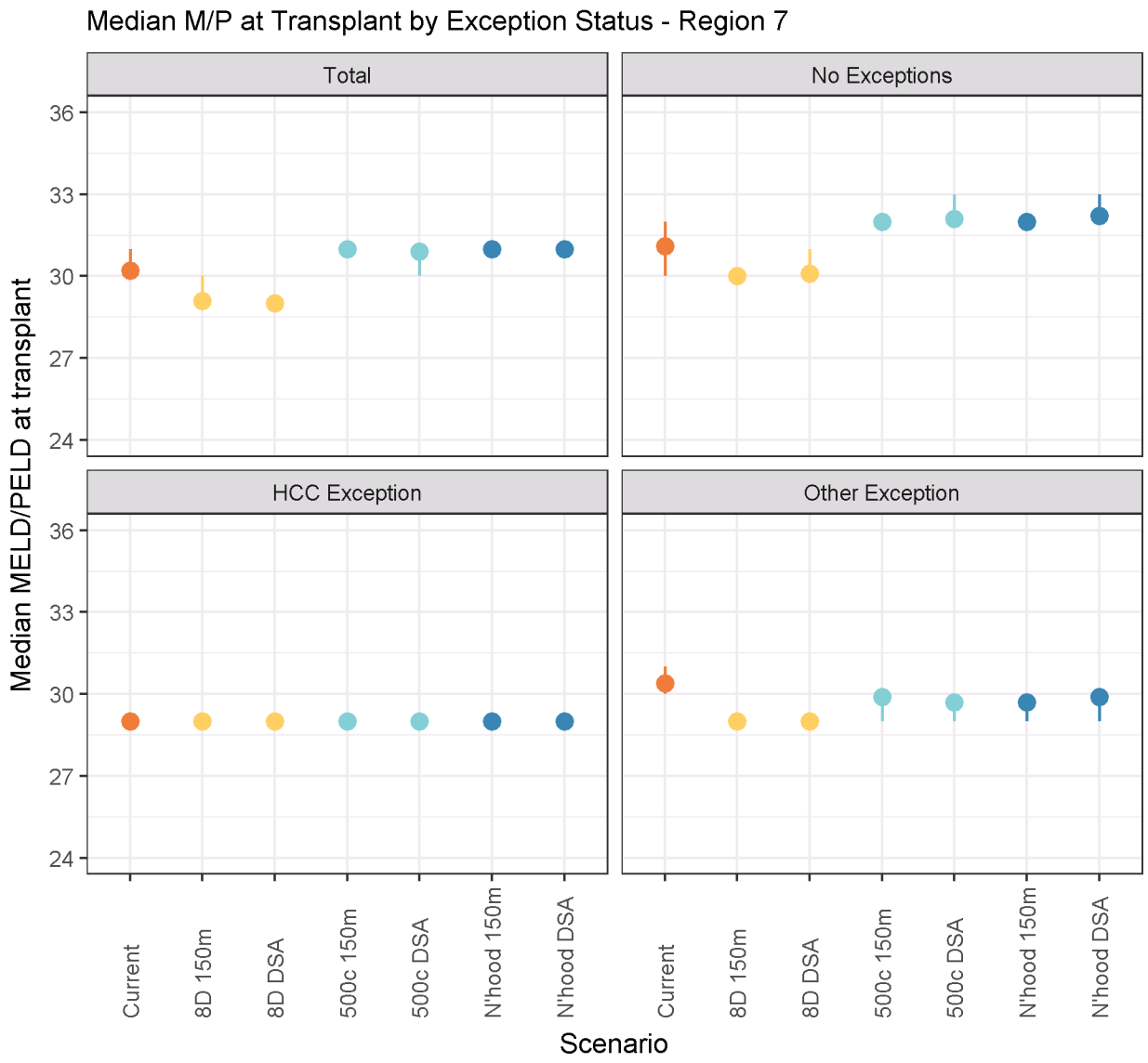


Figure 27 Median MELD/PELD at transplant by exception status - region 7

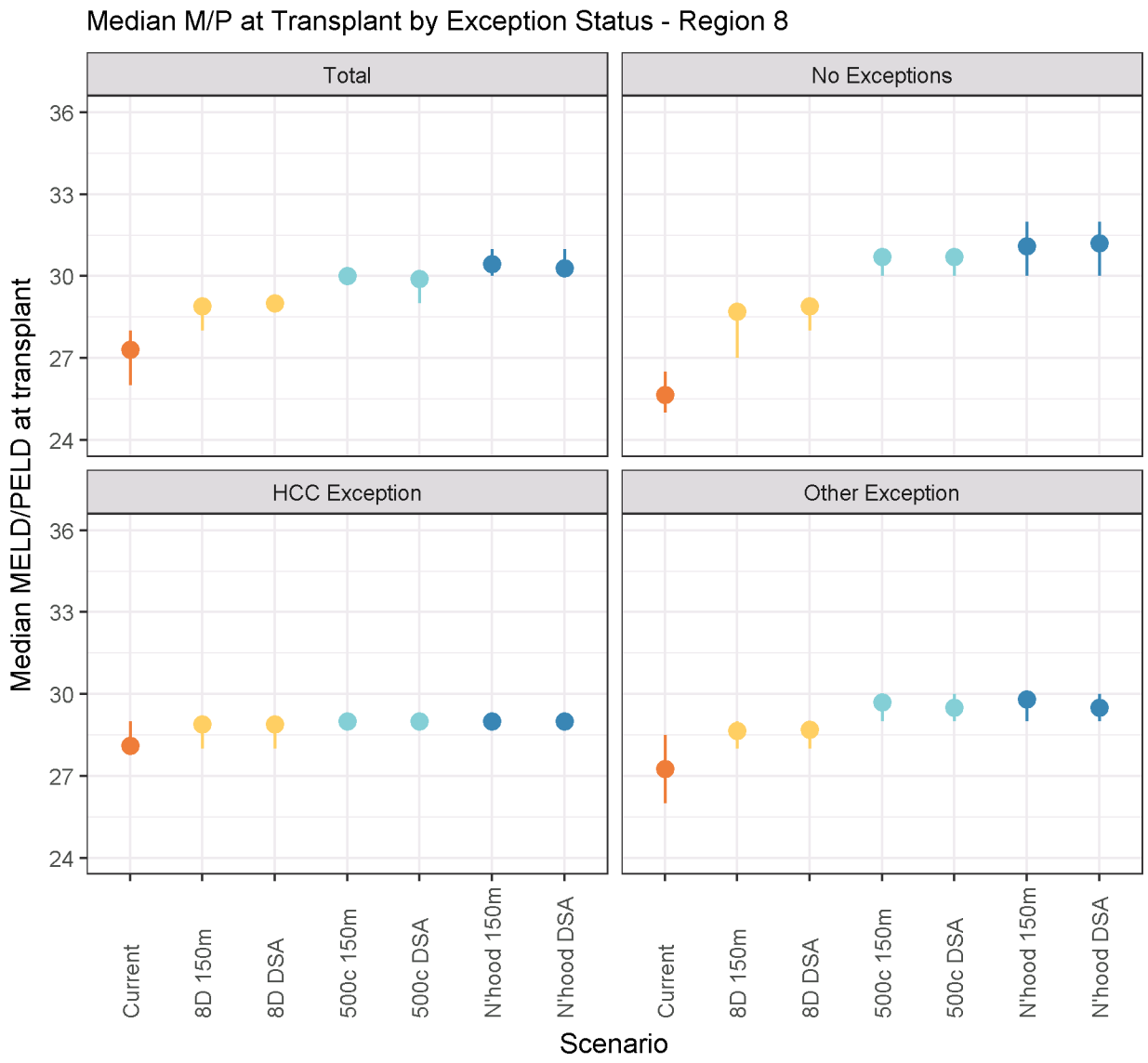


Figure 28 Median MELD/PELD at transplant by exception status - region 8

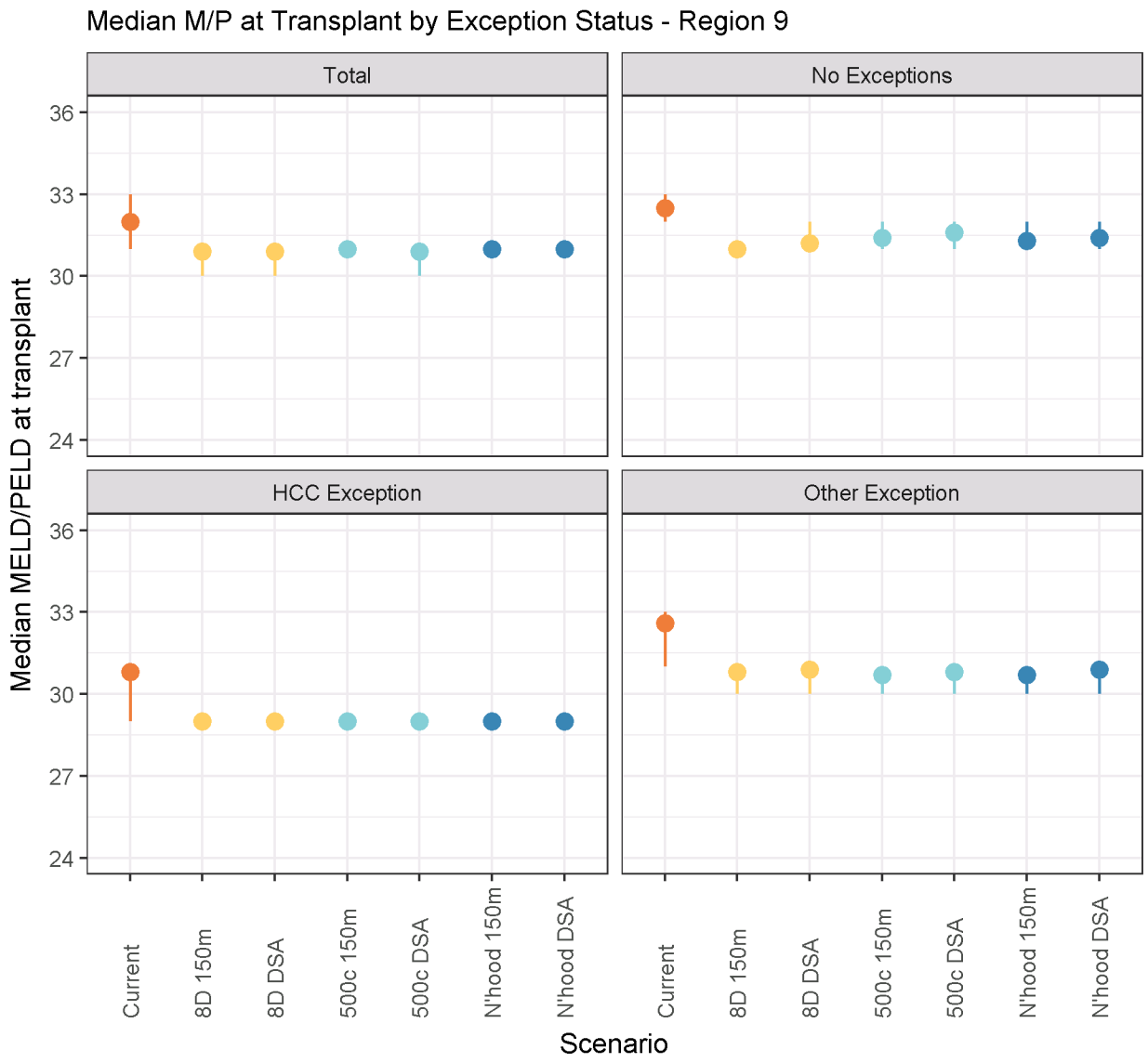


Figure 29 Median MELD/PELD at transplant by exception status - region 9

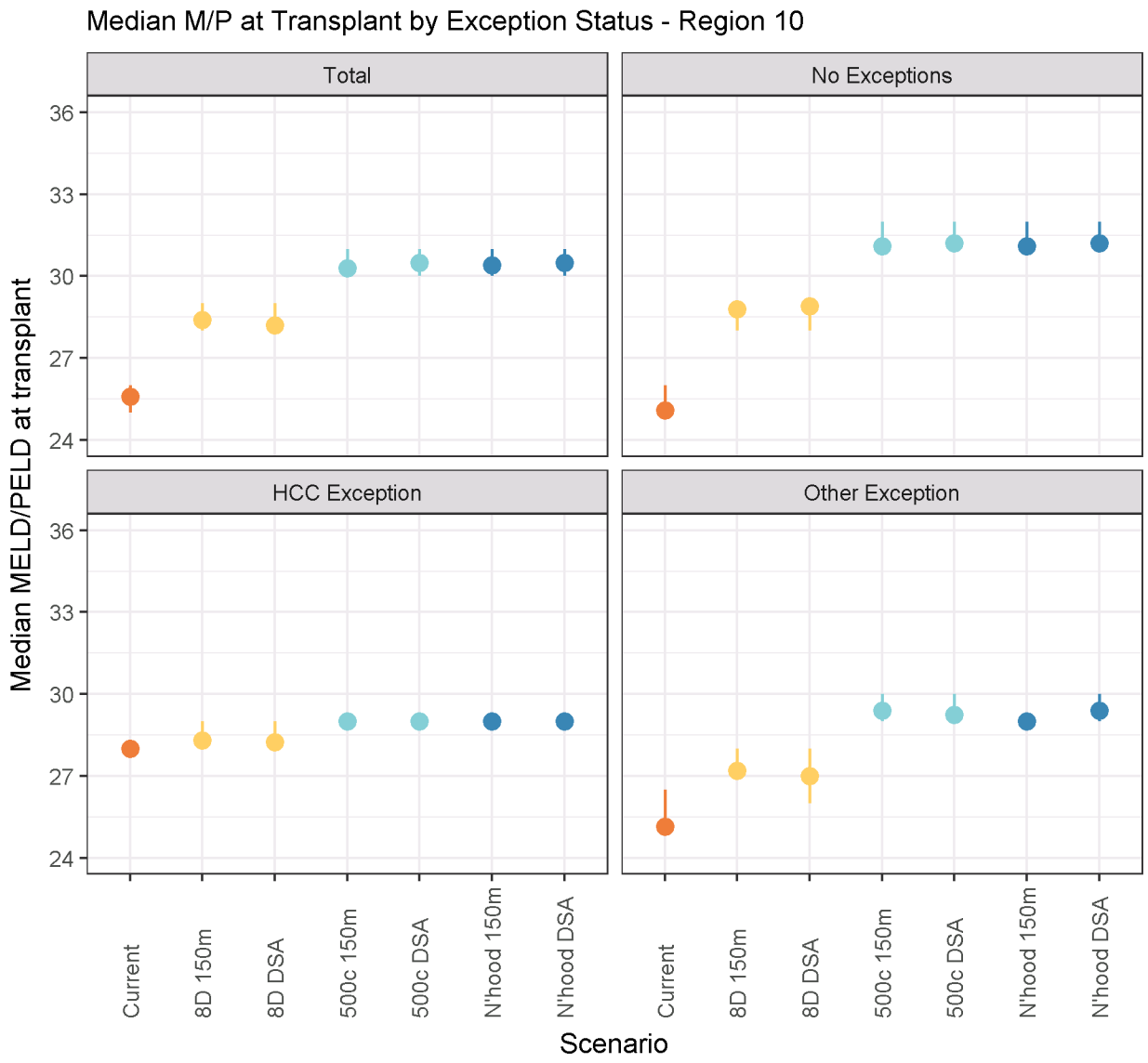


Figure 30 Median MELD/PELD at transplant by exception status - region 10

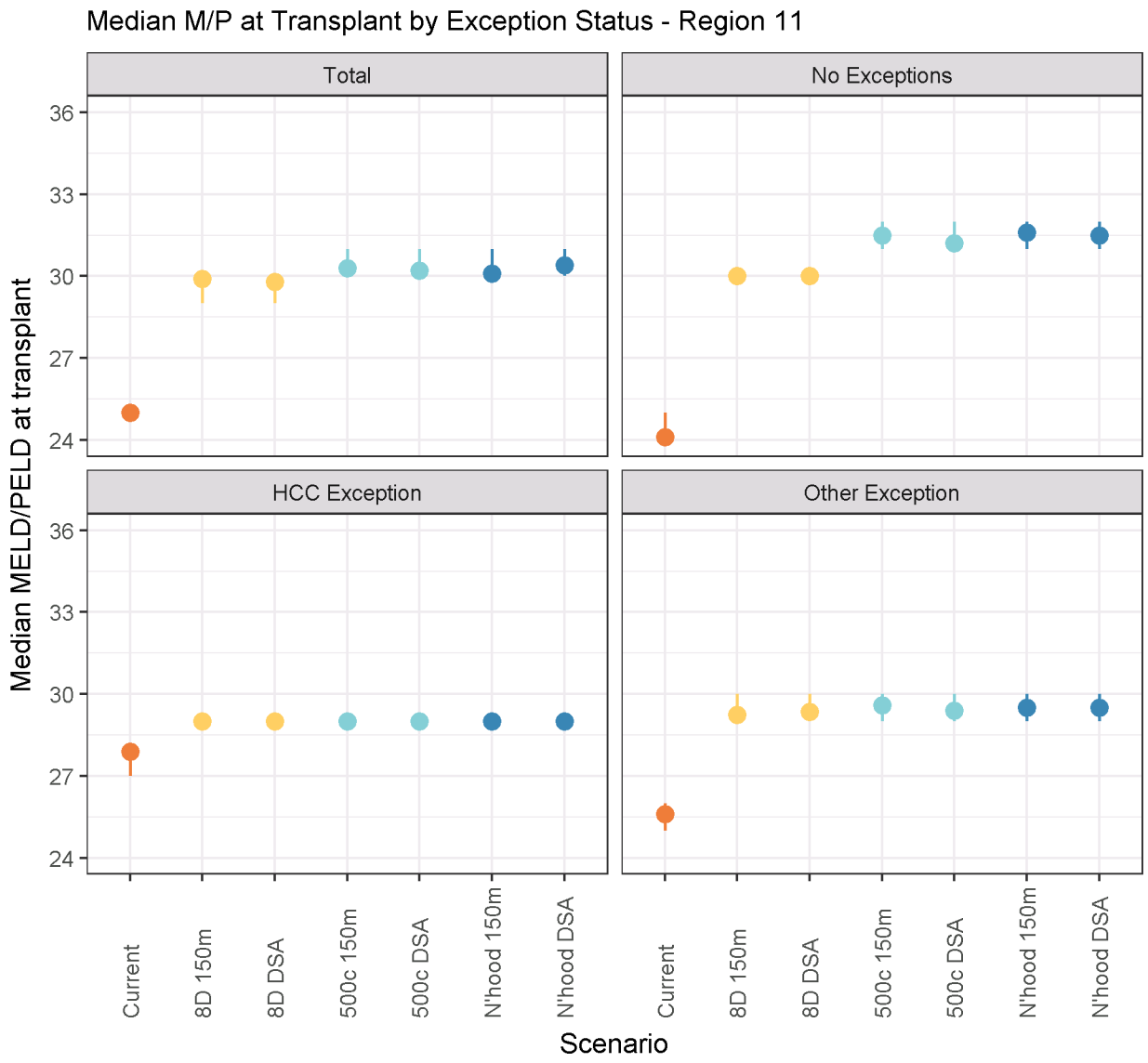


Figure 31 Median MELD/PELD at transplant by exception status - region 11

Transplant

Transplant Rates

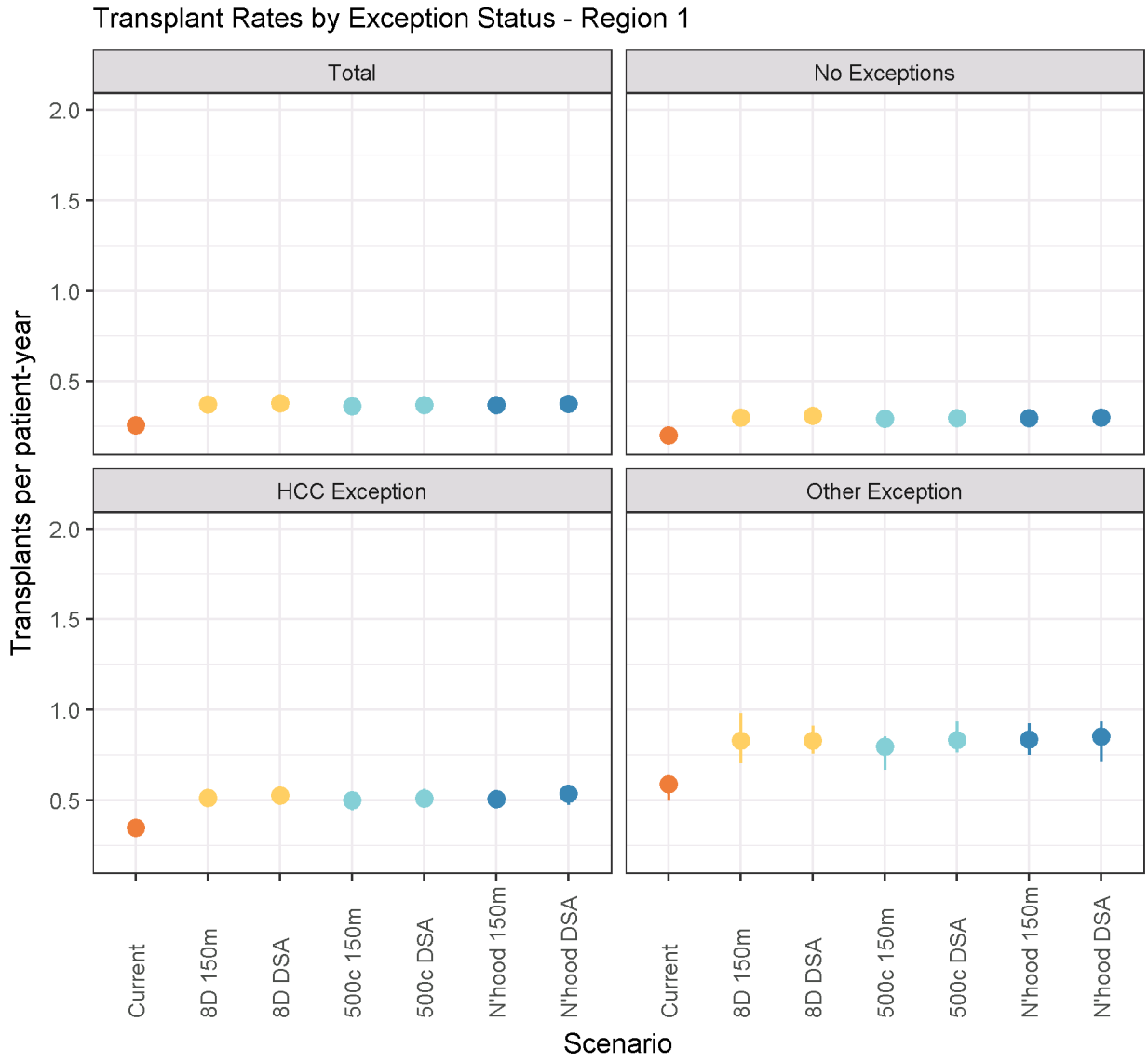


Figure 32 Transplant rates by exception status - region 1

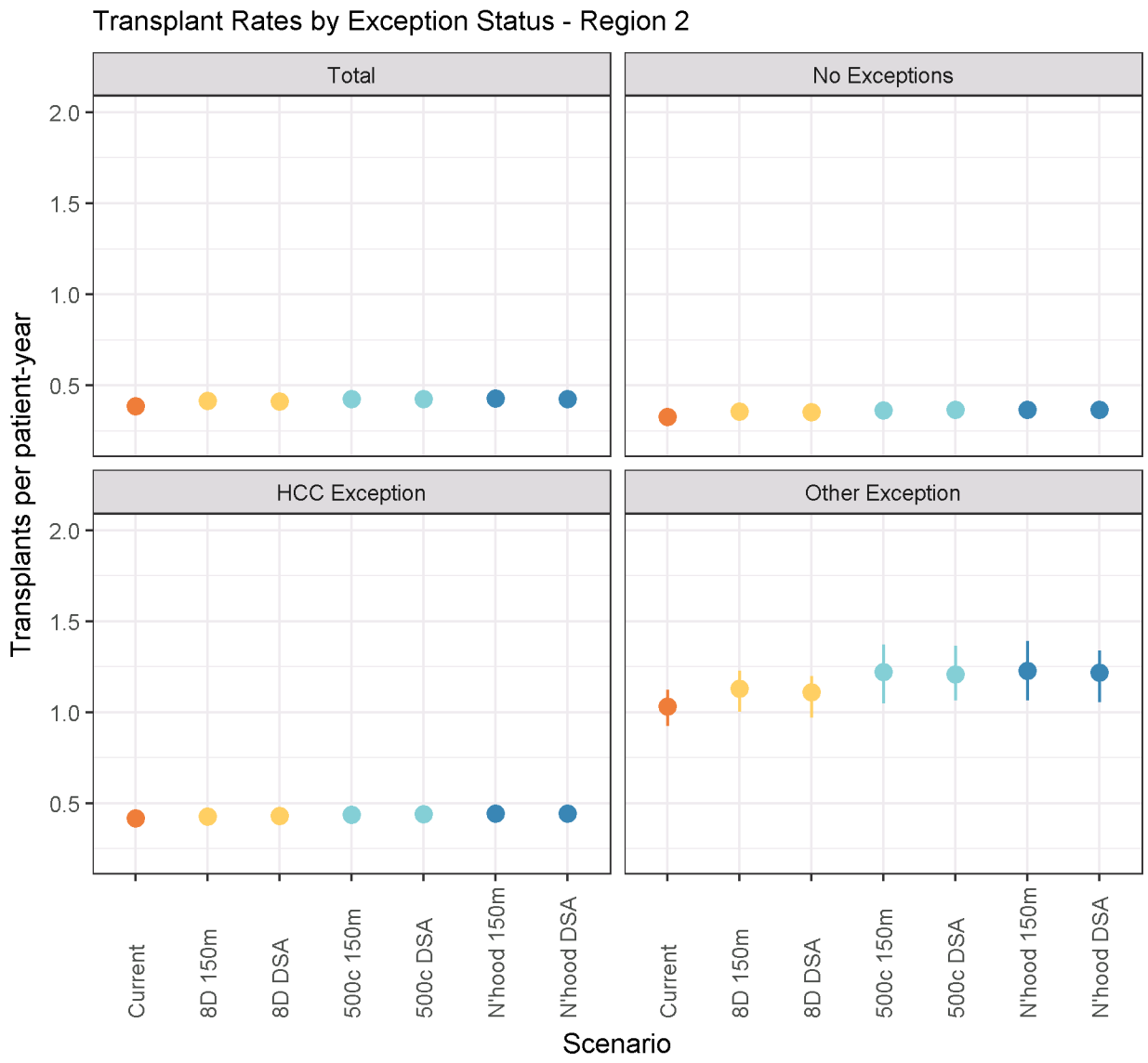


Figure 33 Transplant rates by exception status - region 2

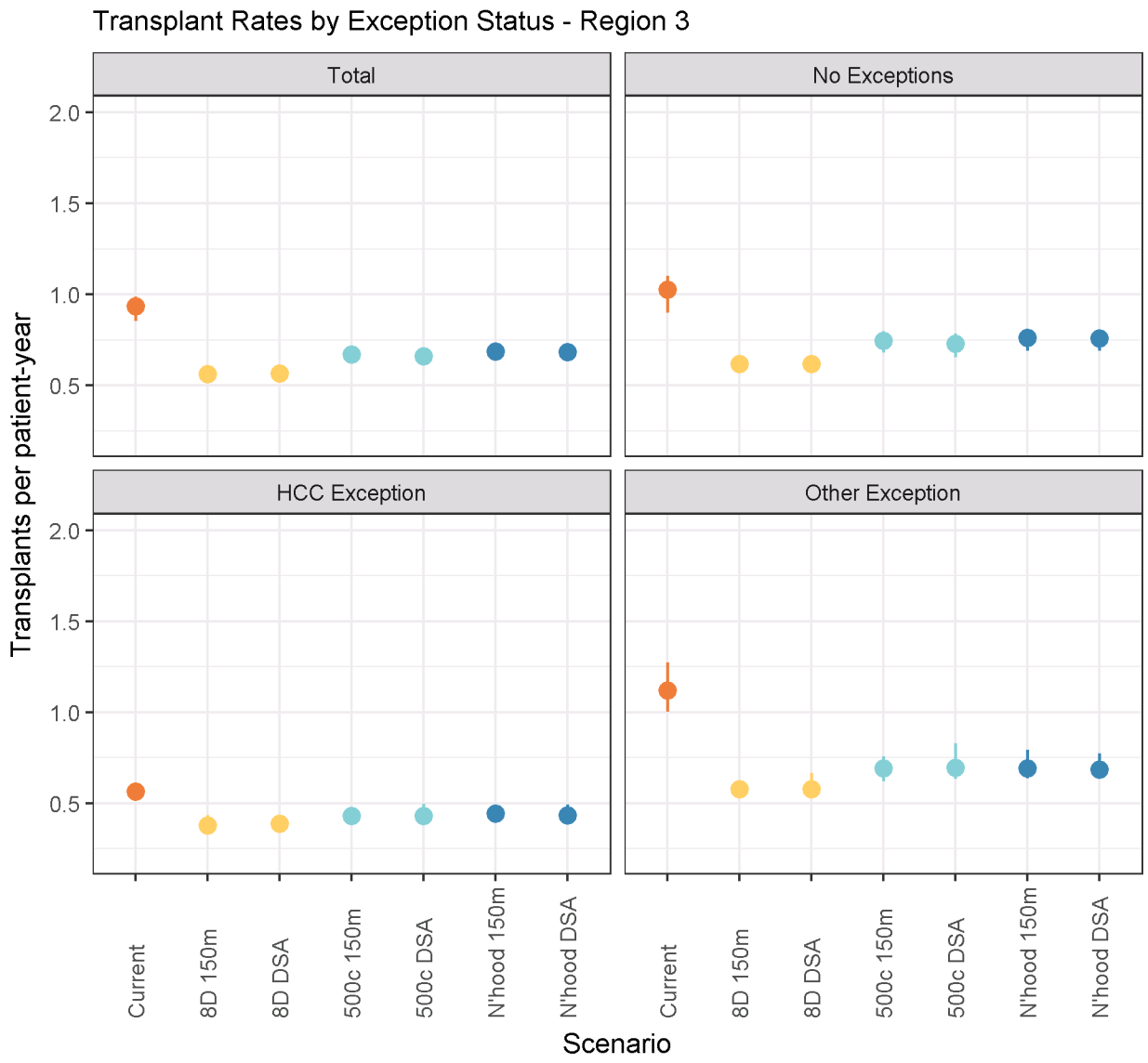


Figure 34 Transplant rates by exception status - region 3

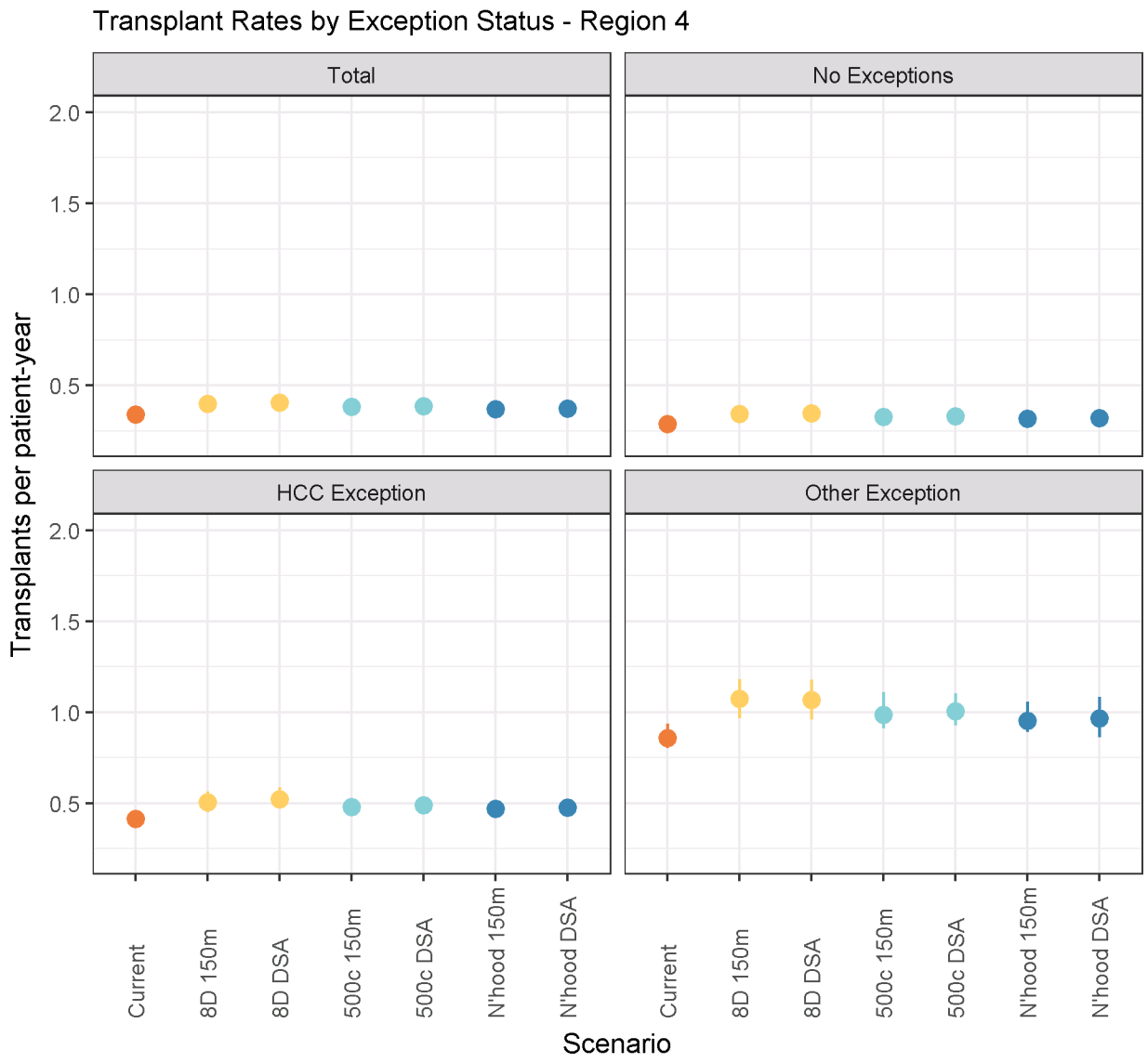


Figure 35 Transplant rates by exception status - region 4

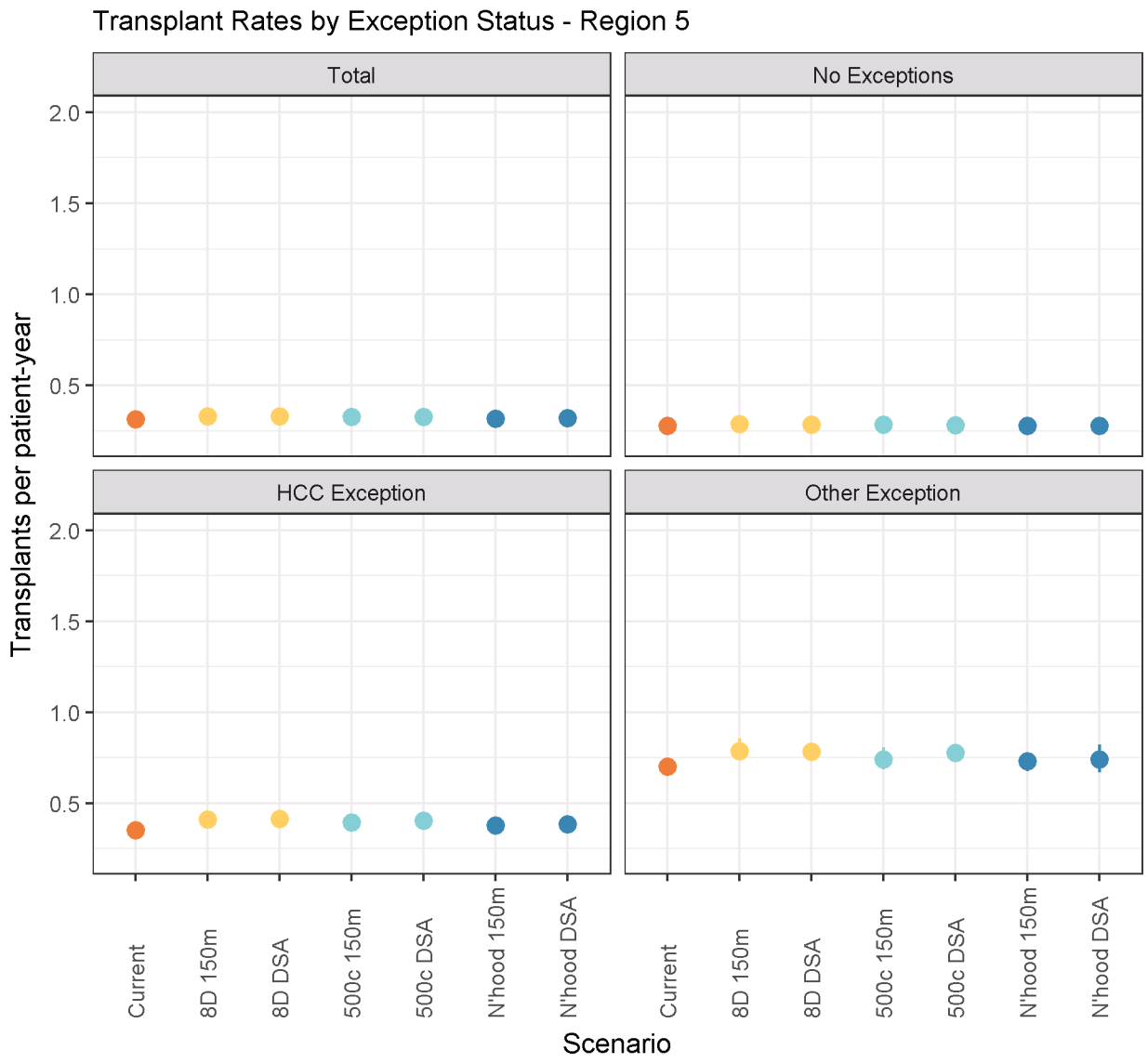


Figure 36 Transplant rates by exception status - region 5

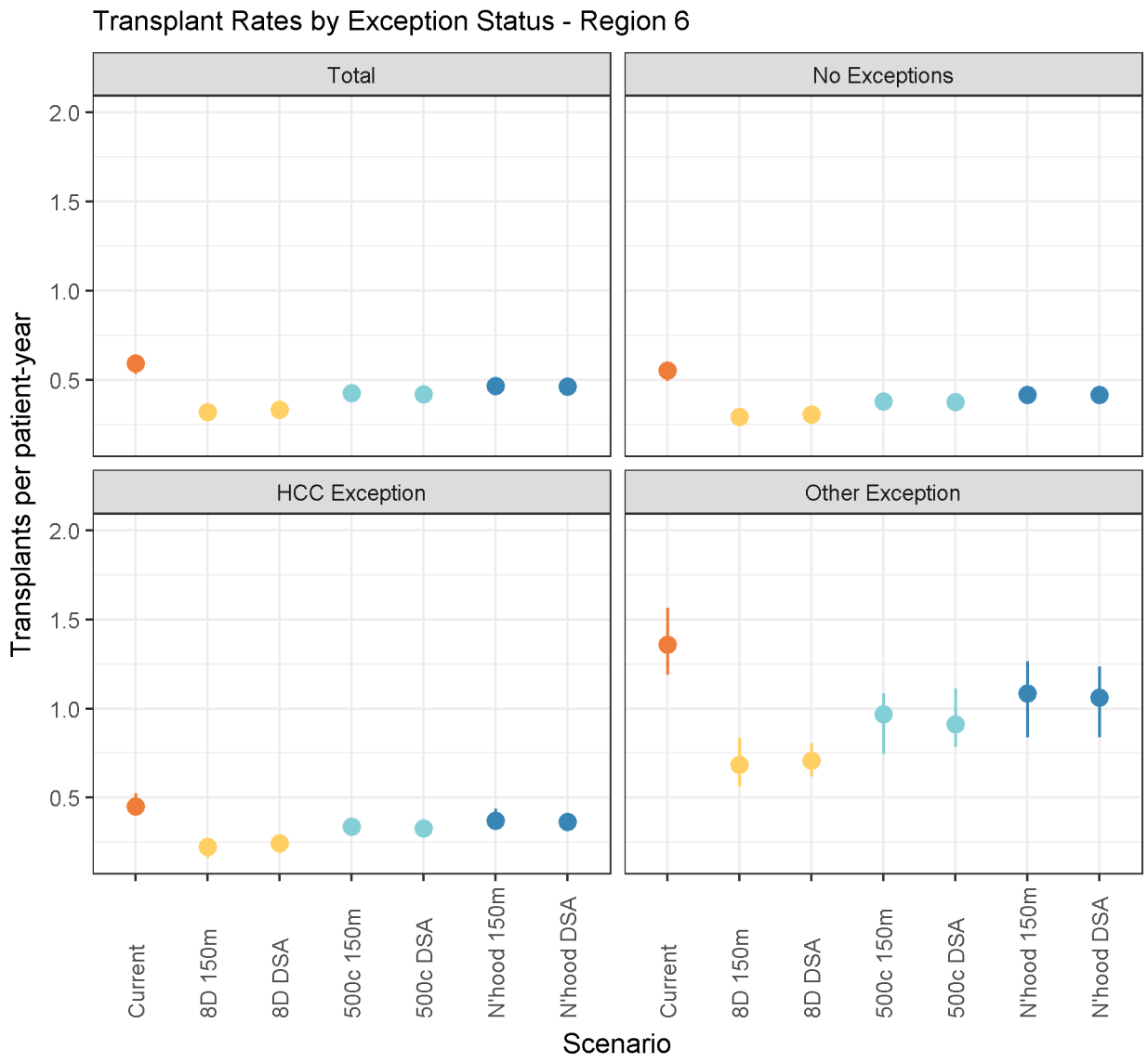


Figure 37 Transplant rates by exception status - region 6

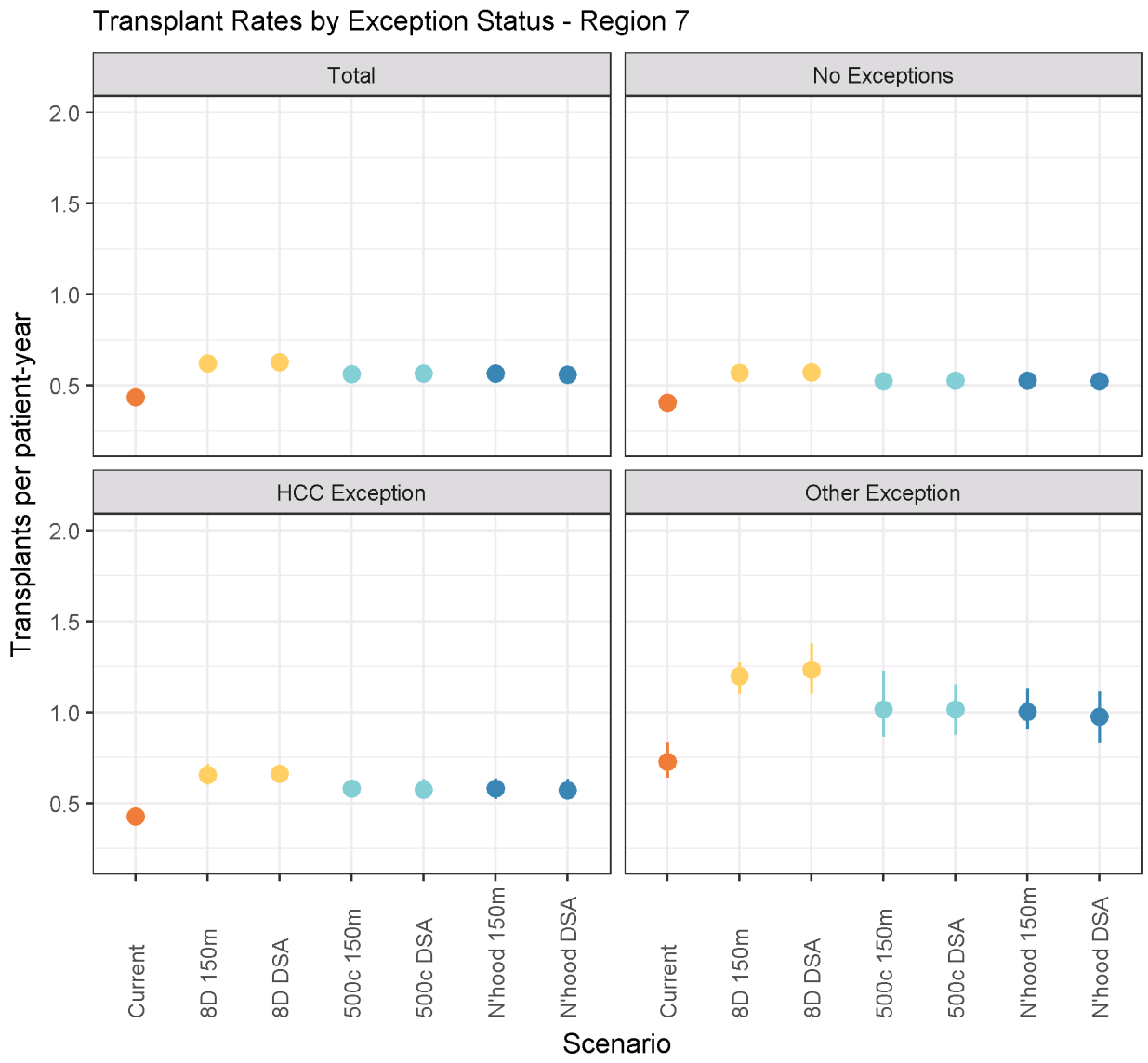


Figure 38 Transplant rates by exception status - region 7

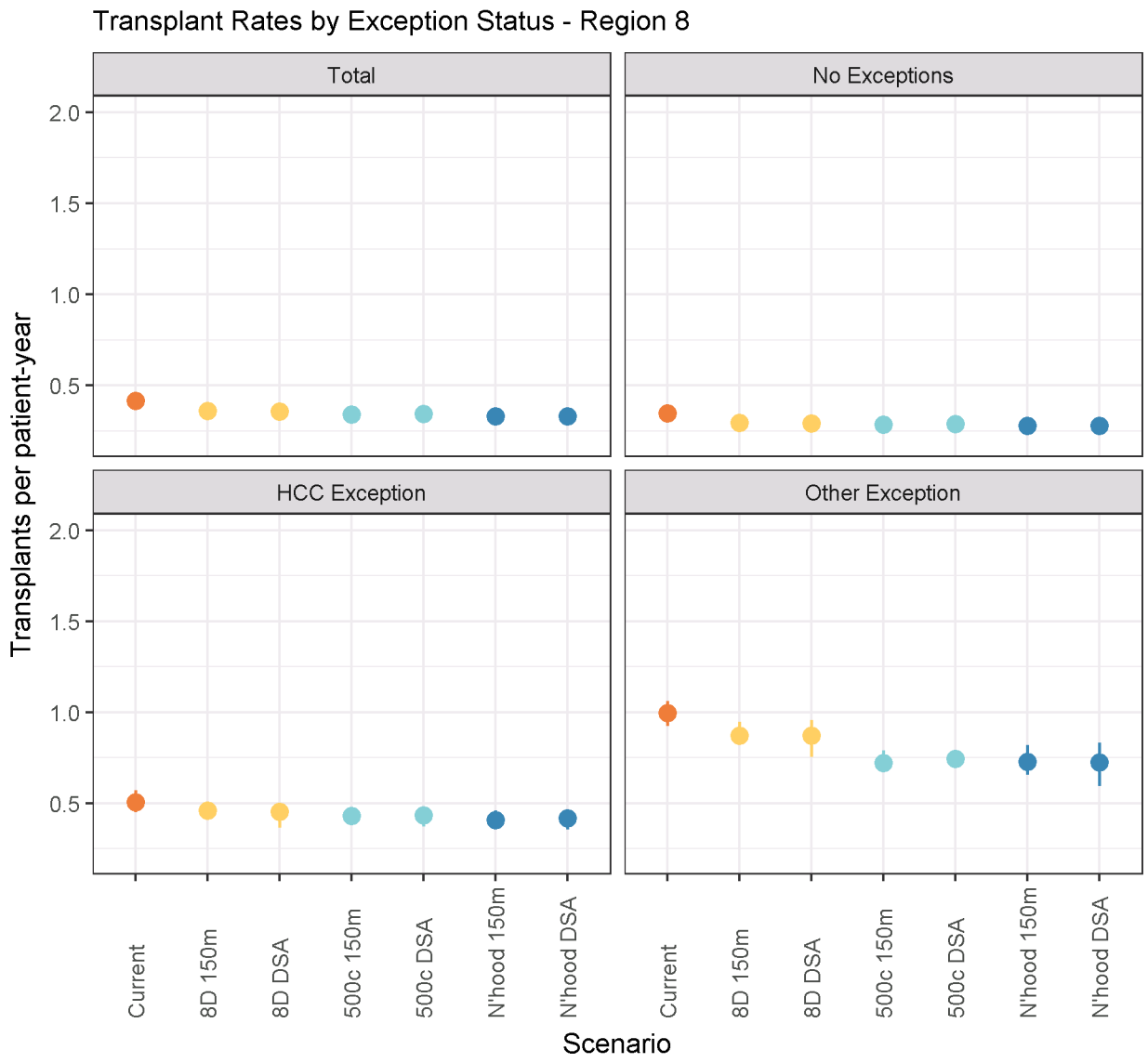


Figure 39 Transplant rates by exception status - region 8

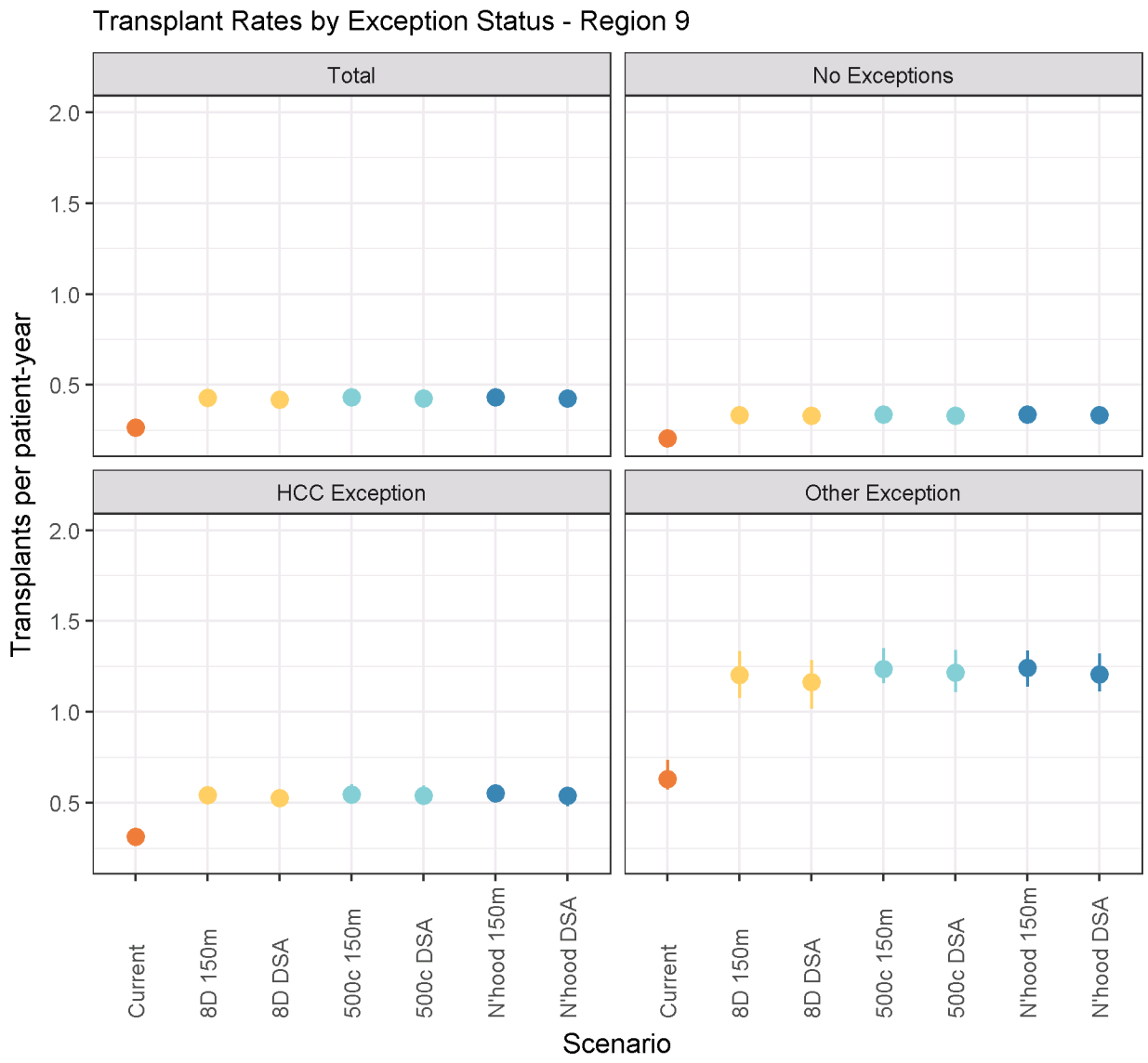


Figure 40 Transplant rates by exception status - region 9

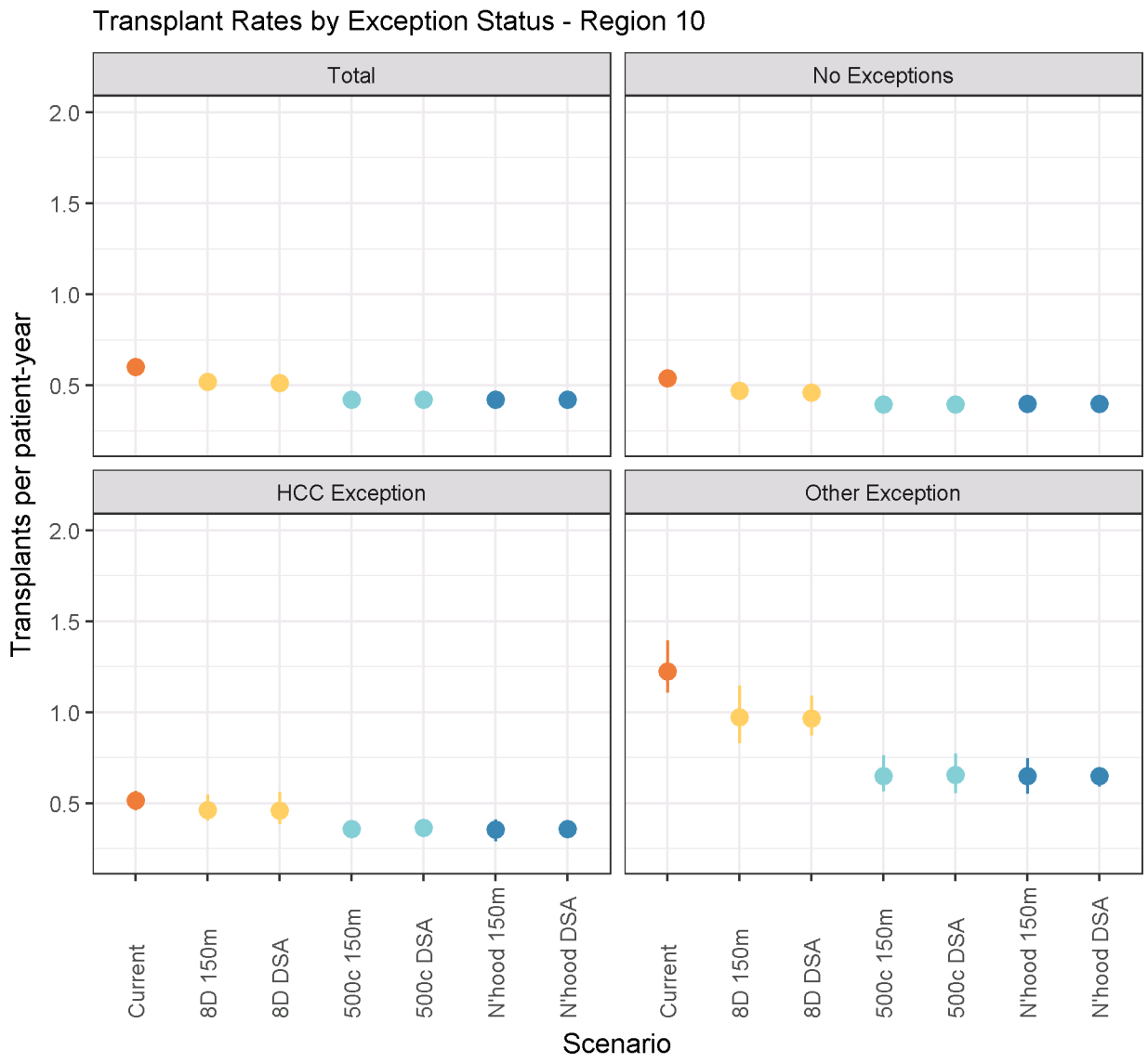


Figure 41 Transplant rates by exception status - region 10

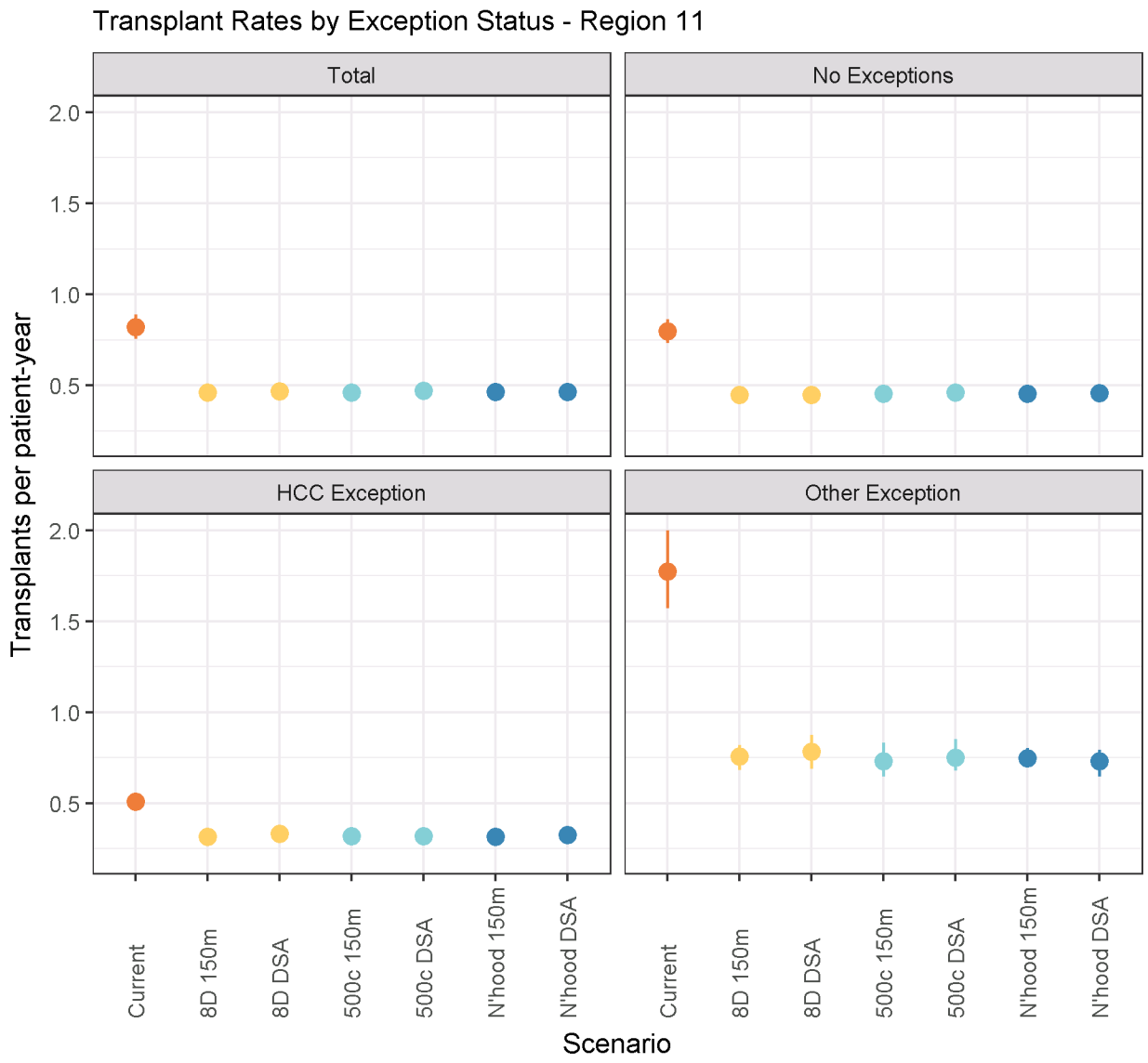


Figure 42 Transplant rates by exception status - region 11

Transplant Counts

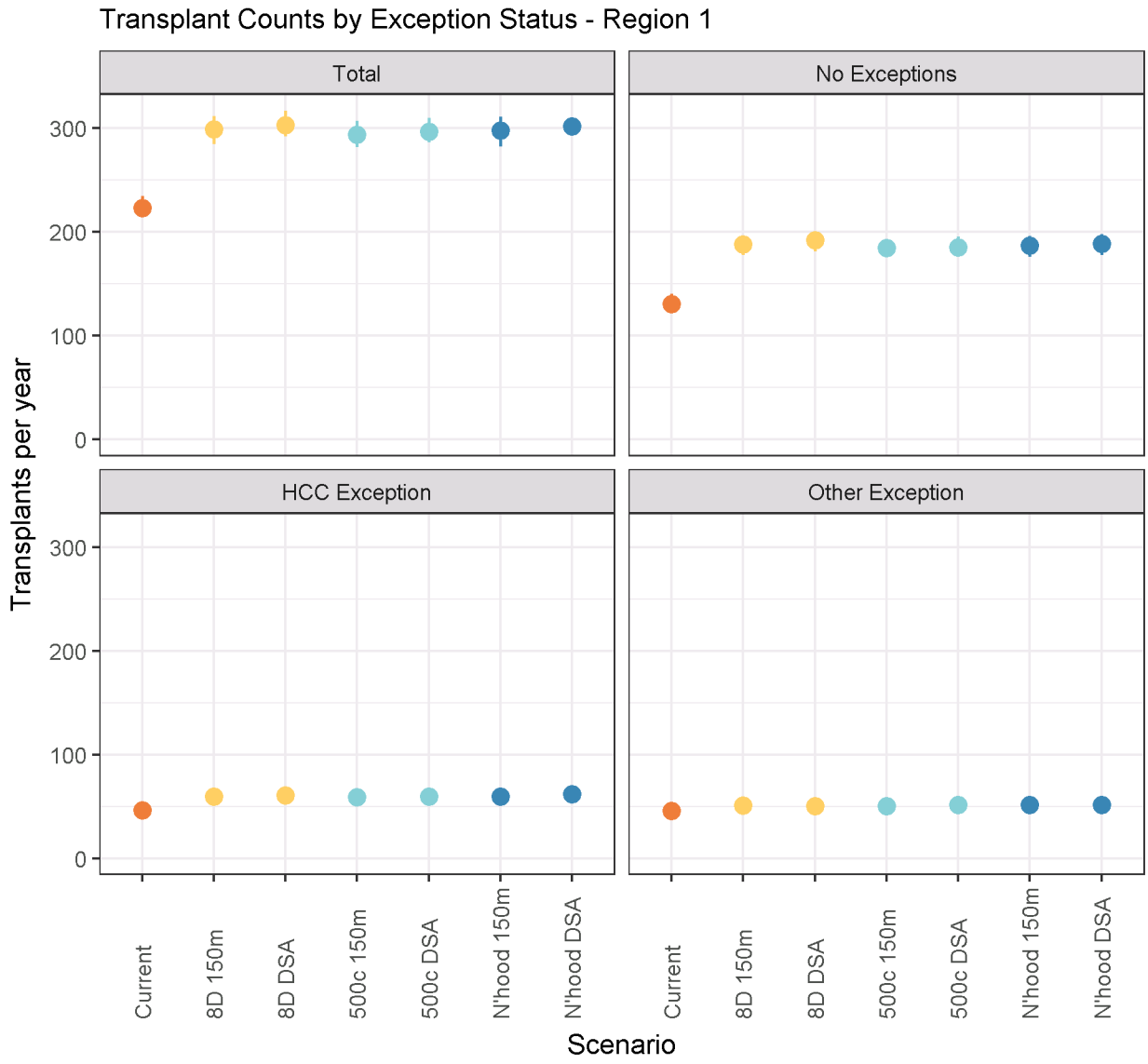


Figure 43 Transplant counts by exception status - region 1

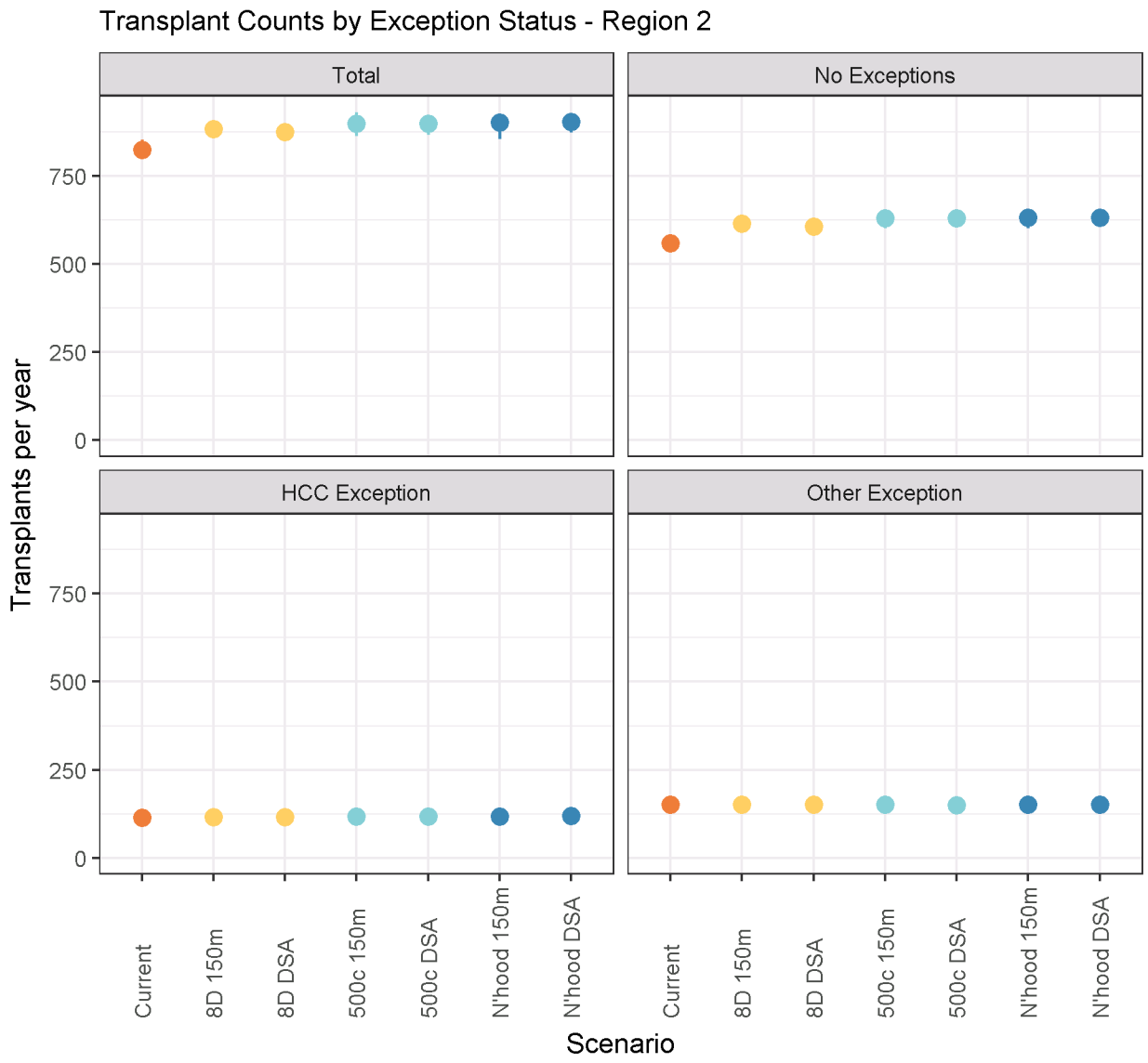


Figure 44 Transplant counts by exception status - region 2

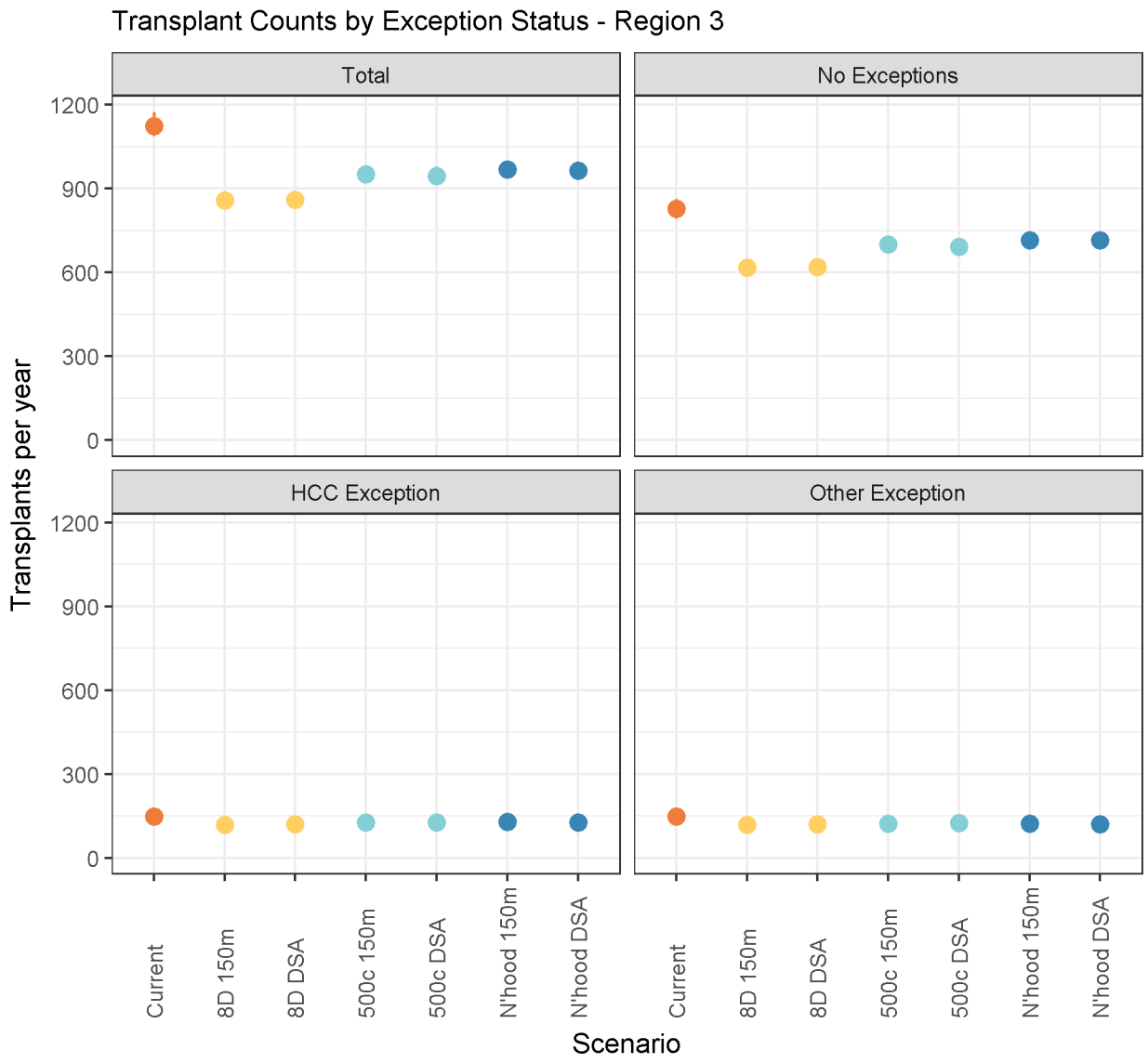


Figure 45 Transplant counts by exception status - region 3

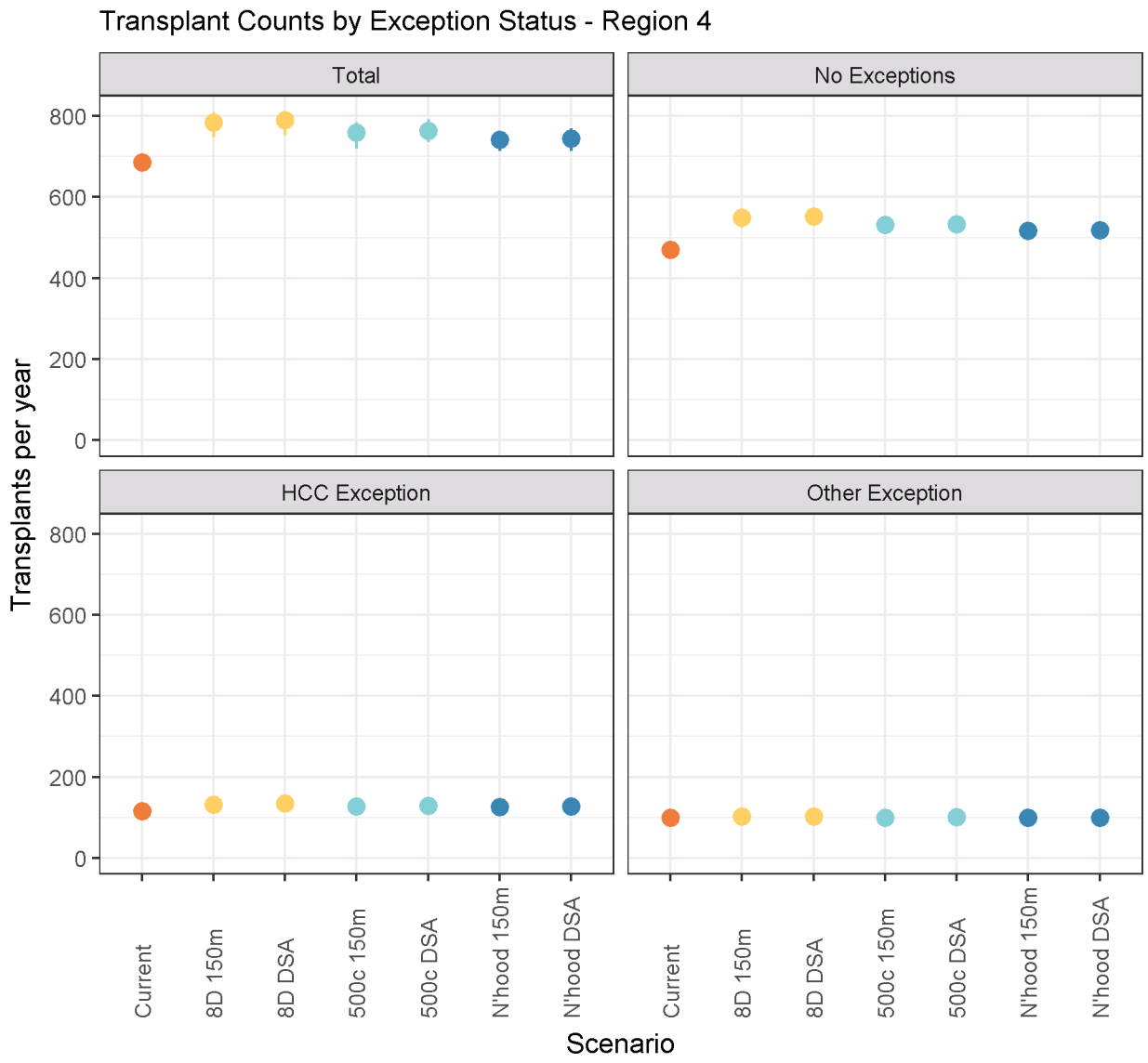


Figure 46 Transplant counts by exception status - region 4

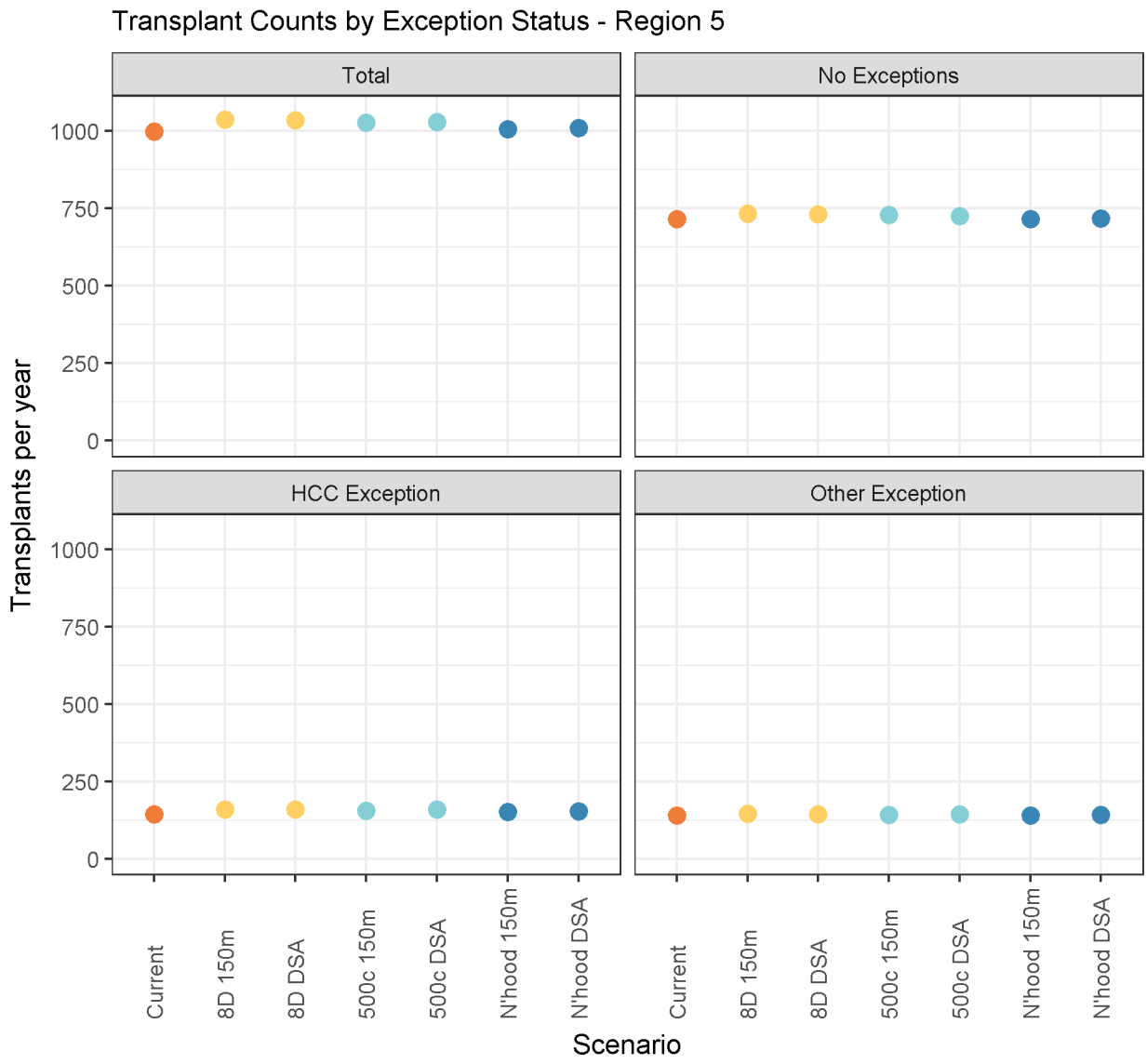


Figure 47 Transplant counts by exception status - region 5

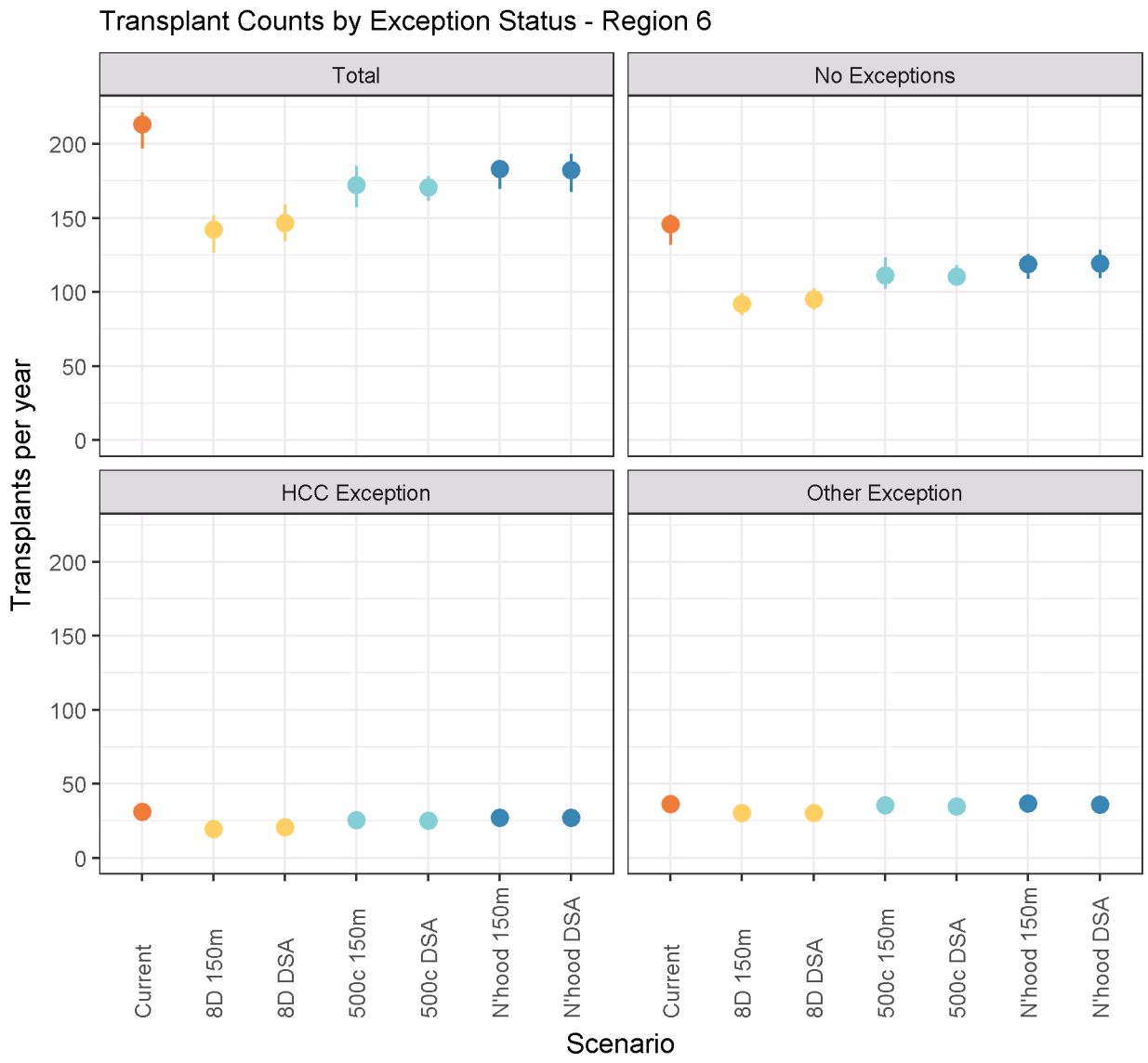


Figure 48 Transplant counts by exception status - region 6

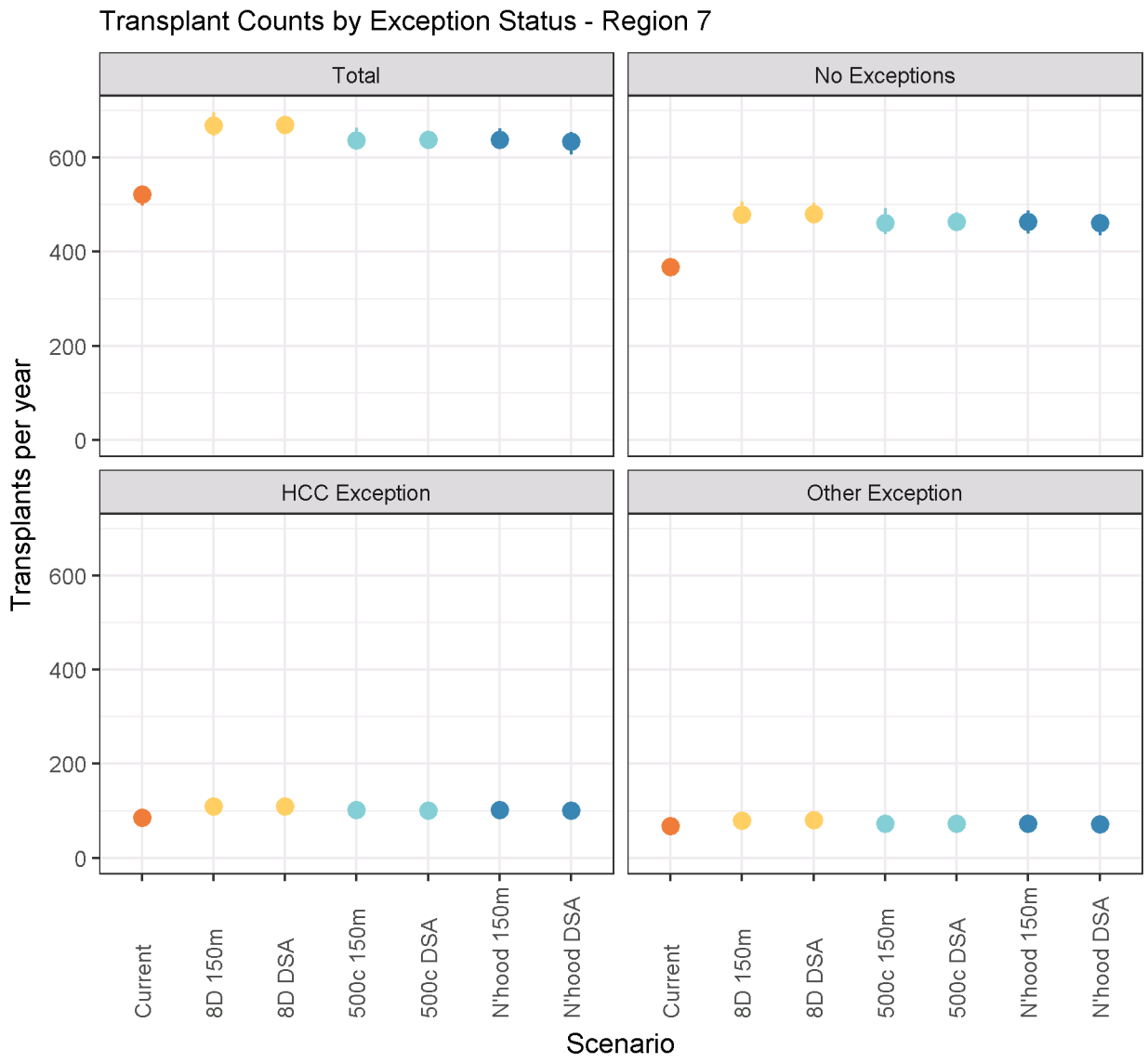


Figure 49 Transplant counts by exception status - region 7

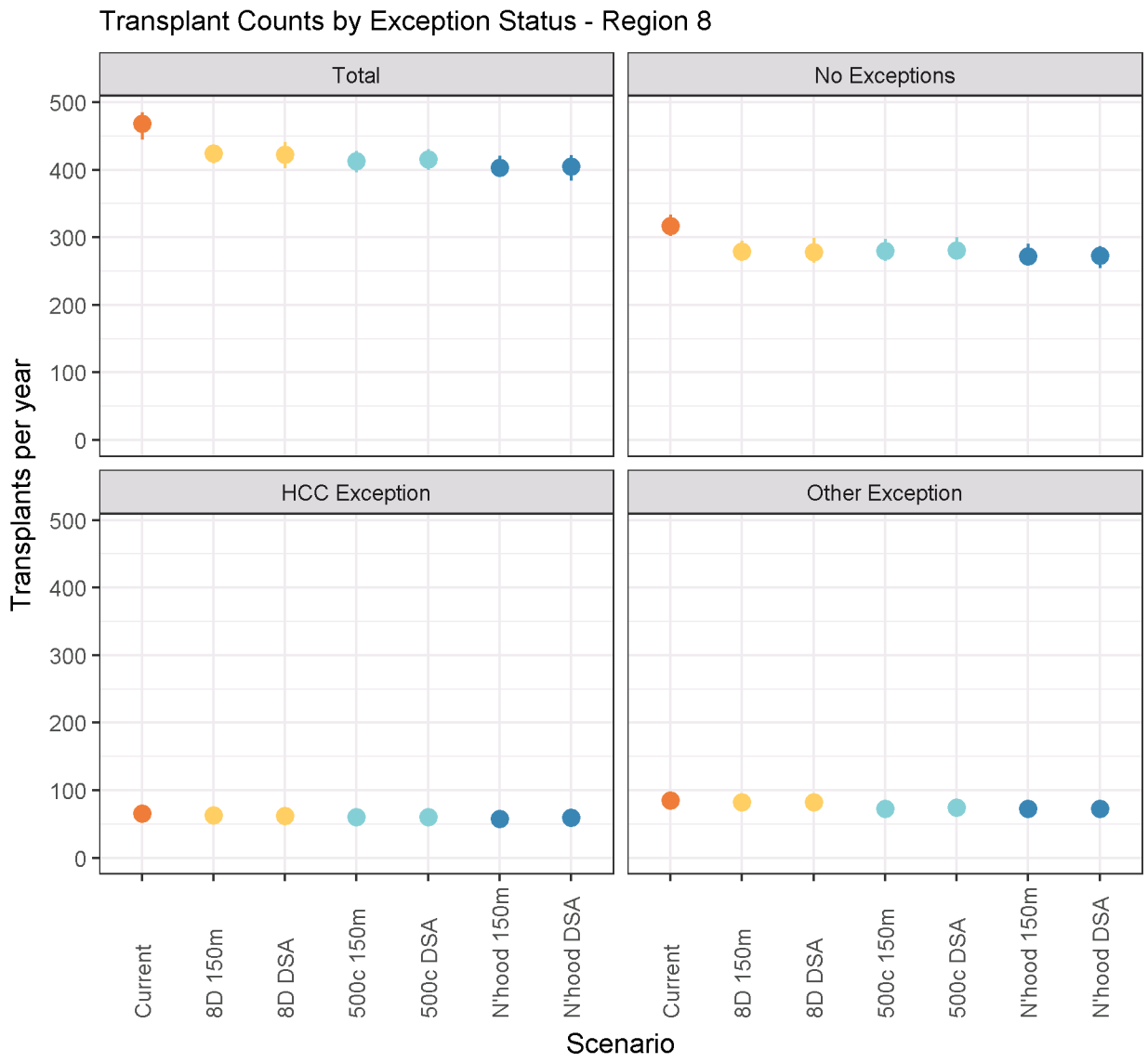


Figure 50 Transplant counts by exception status - region 8

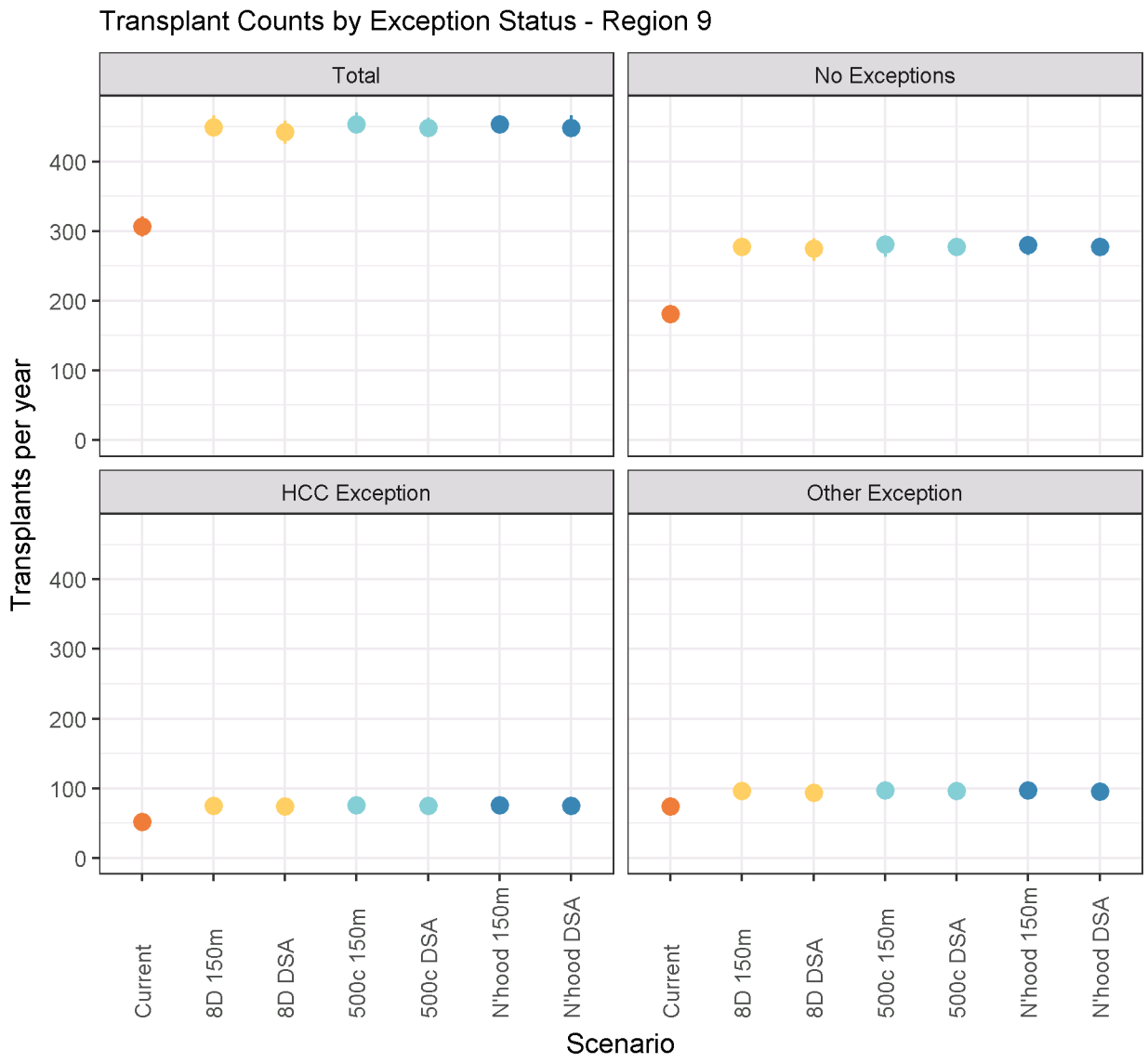


Figure 51 Transplant counts by exception status - region 9

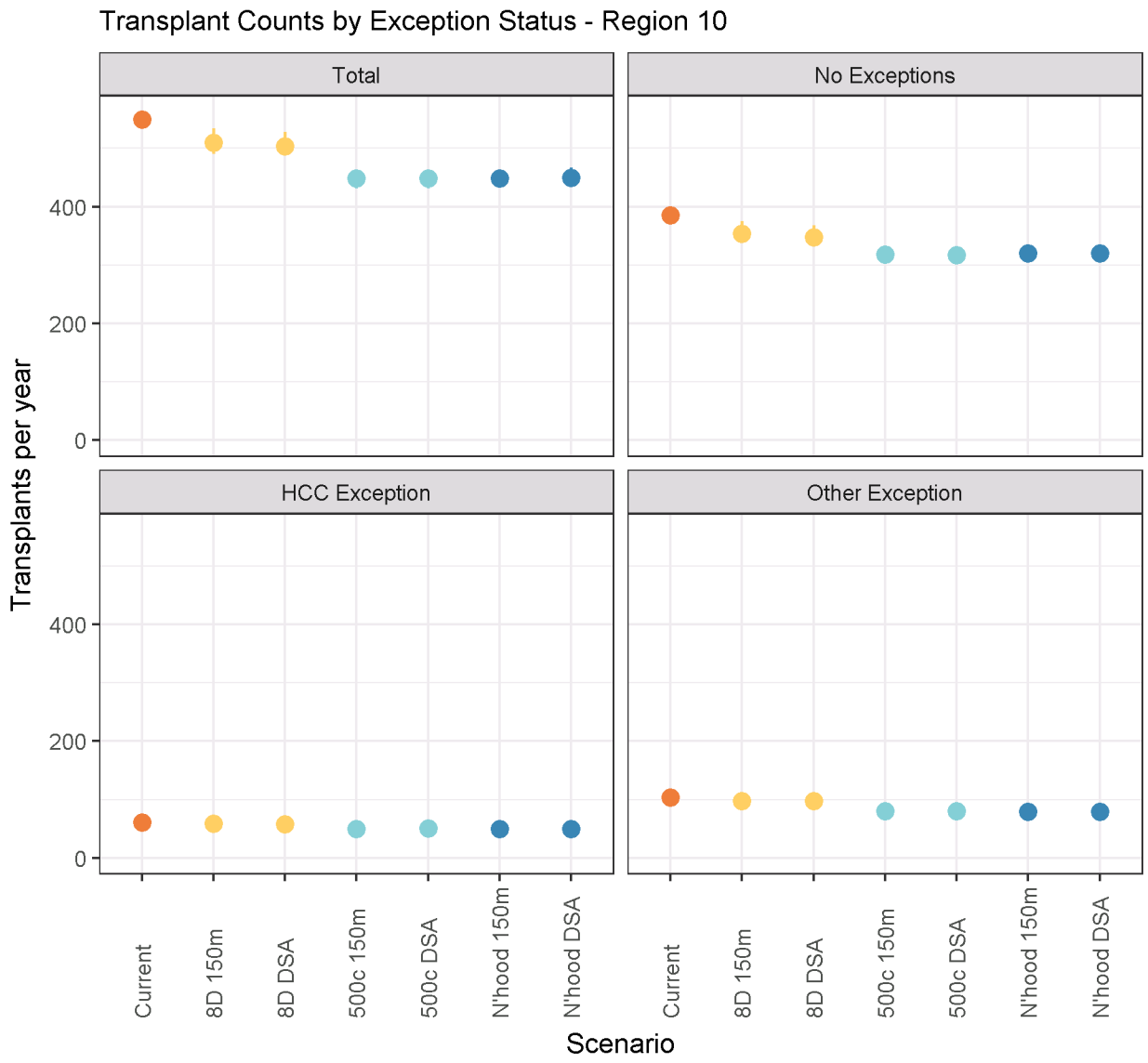


Figure 52 Transplant counts by exception status - region 10

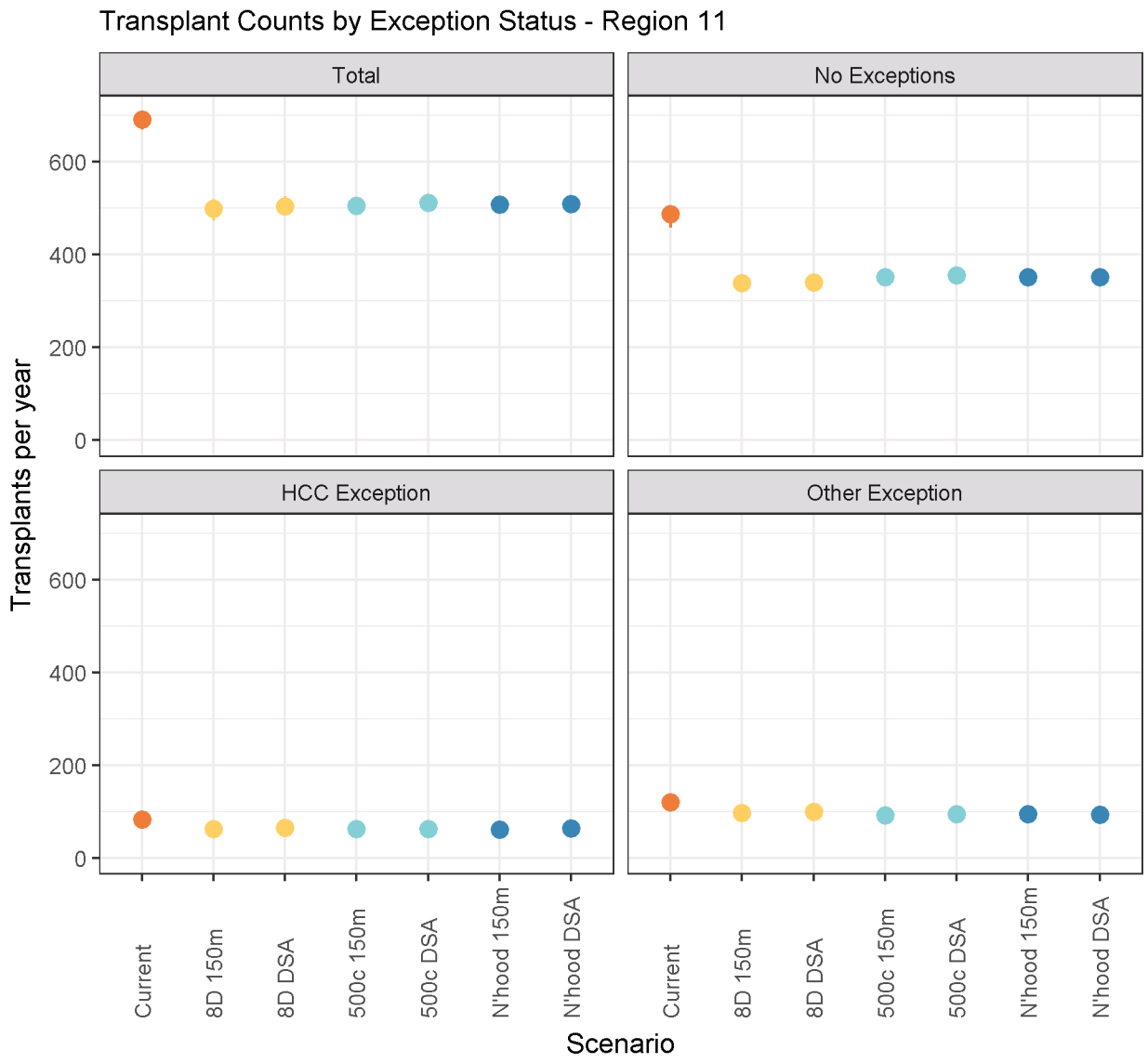


Figure 53 Transplant counts by exception status - region 11

Waitlist Mortality

Waitlist Mortality Rates

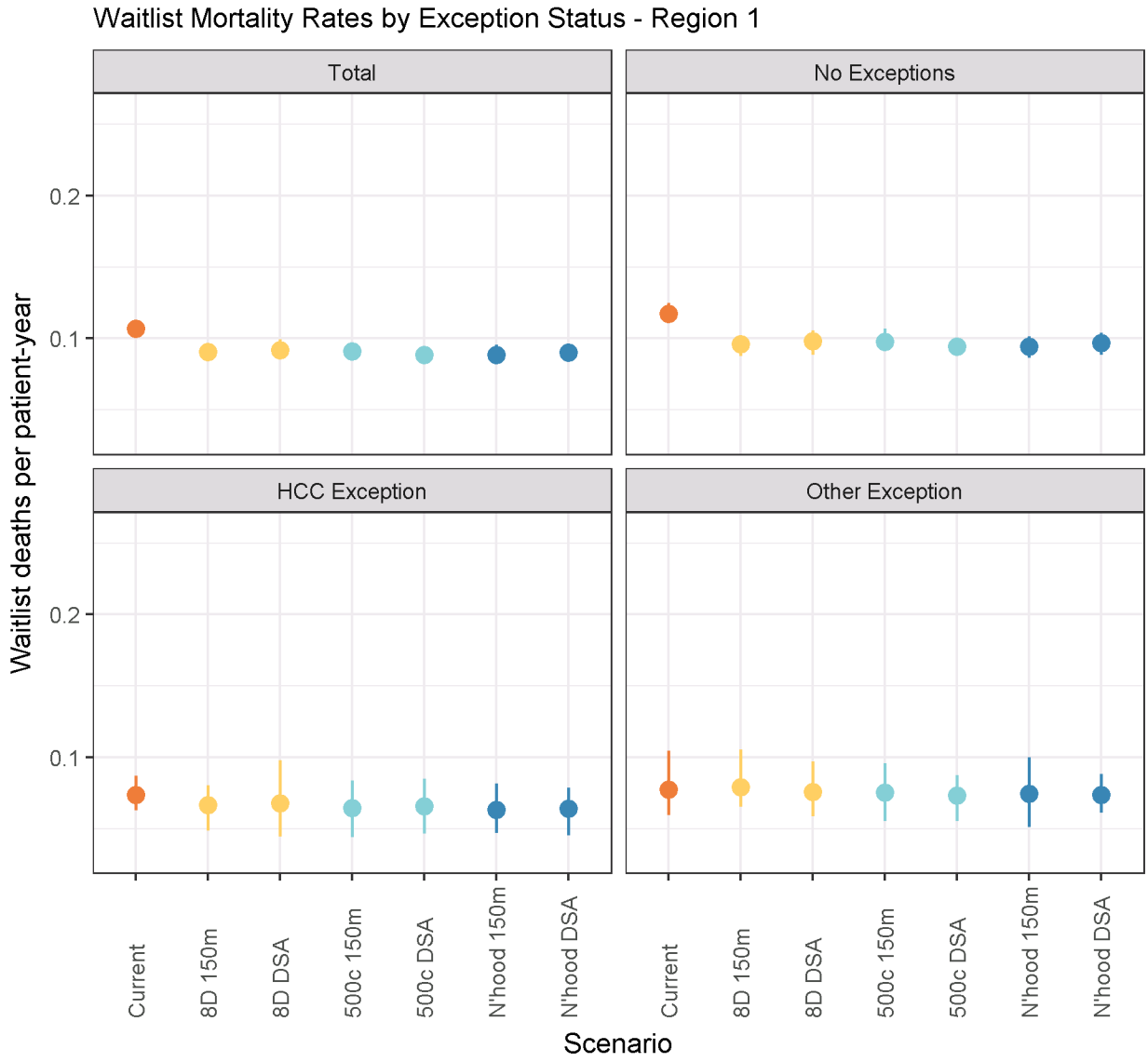


Figure 54 Waitlist mortality rates by exception status - region 1

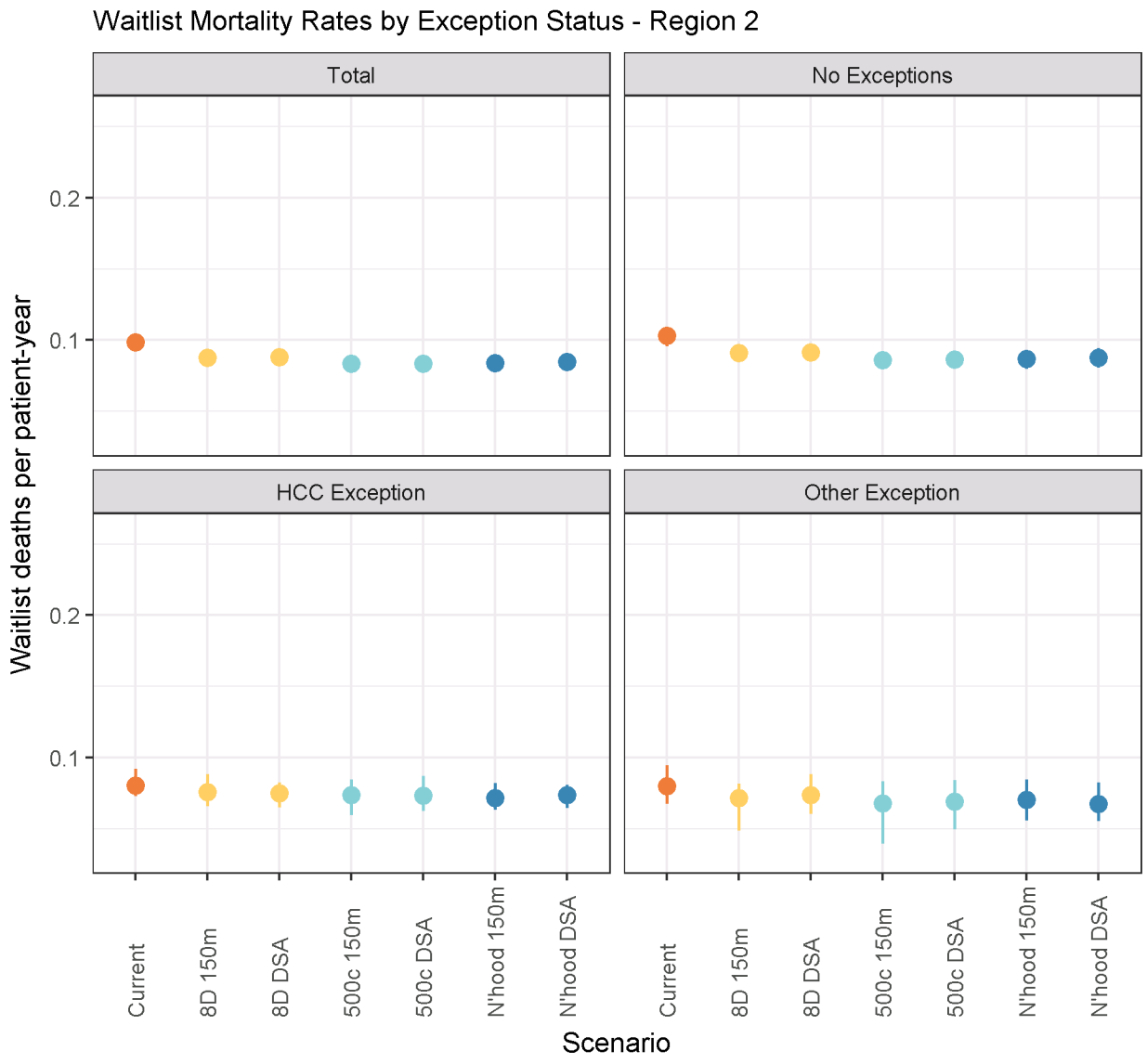


Figure 55 Waitlist mortality rates by exception status - region 2

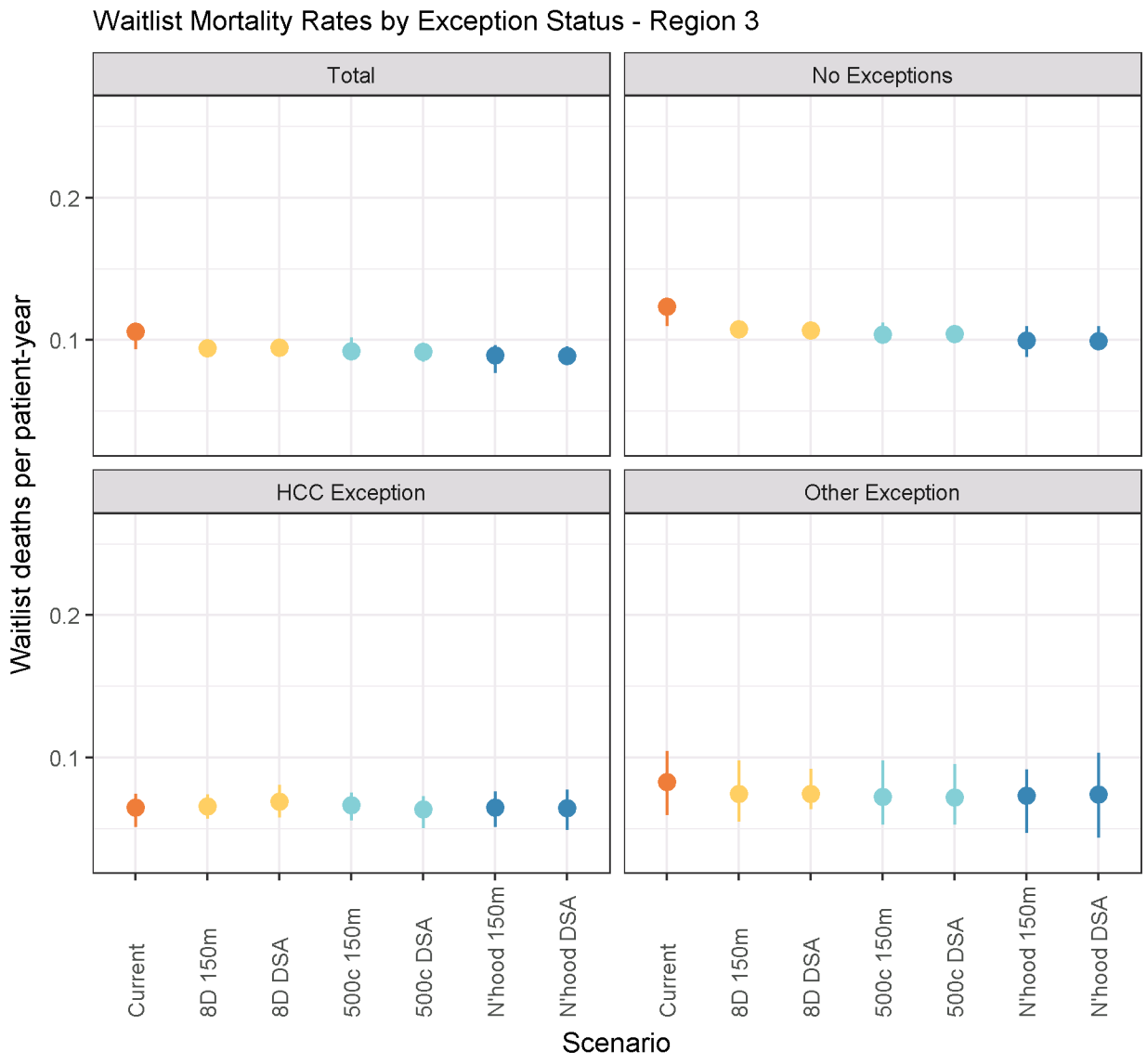


Figure 56 Waitlist mortality rates by exception status - region 3

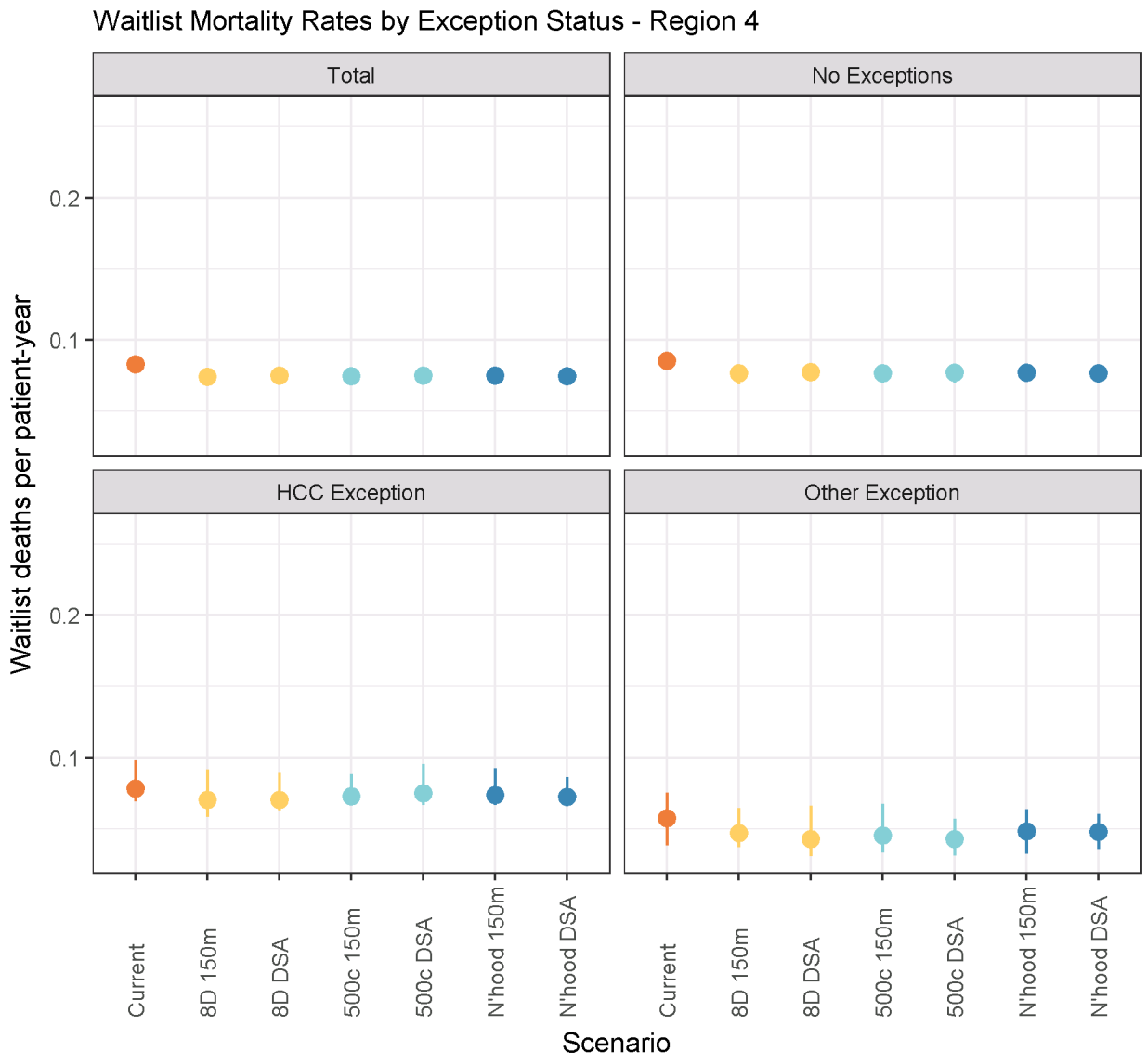


Figure 57 Waitlist mortality rates by exception status - region 4

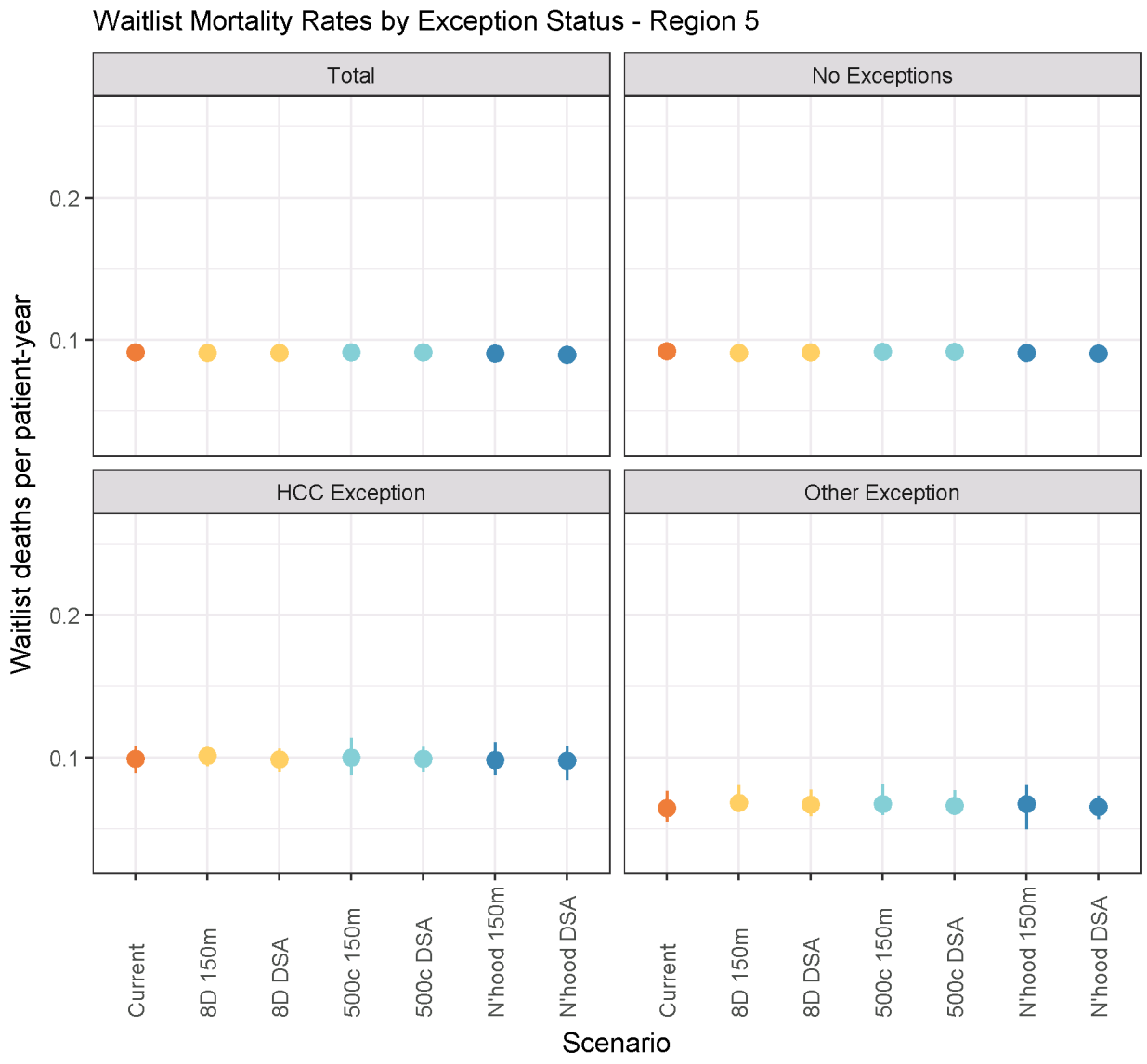


Figure 58 Waitlist mortality rates by exception status - region 5

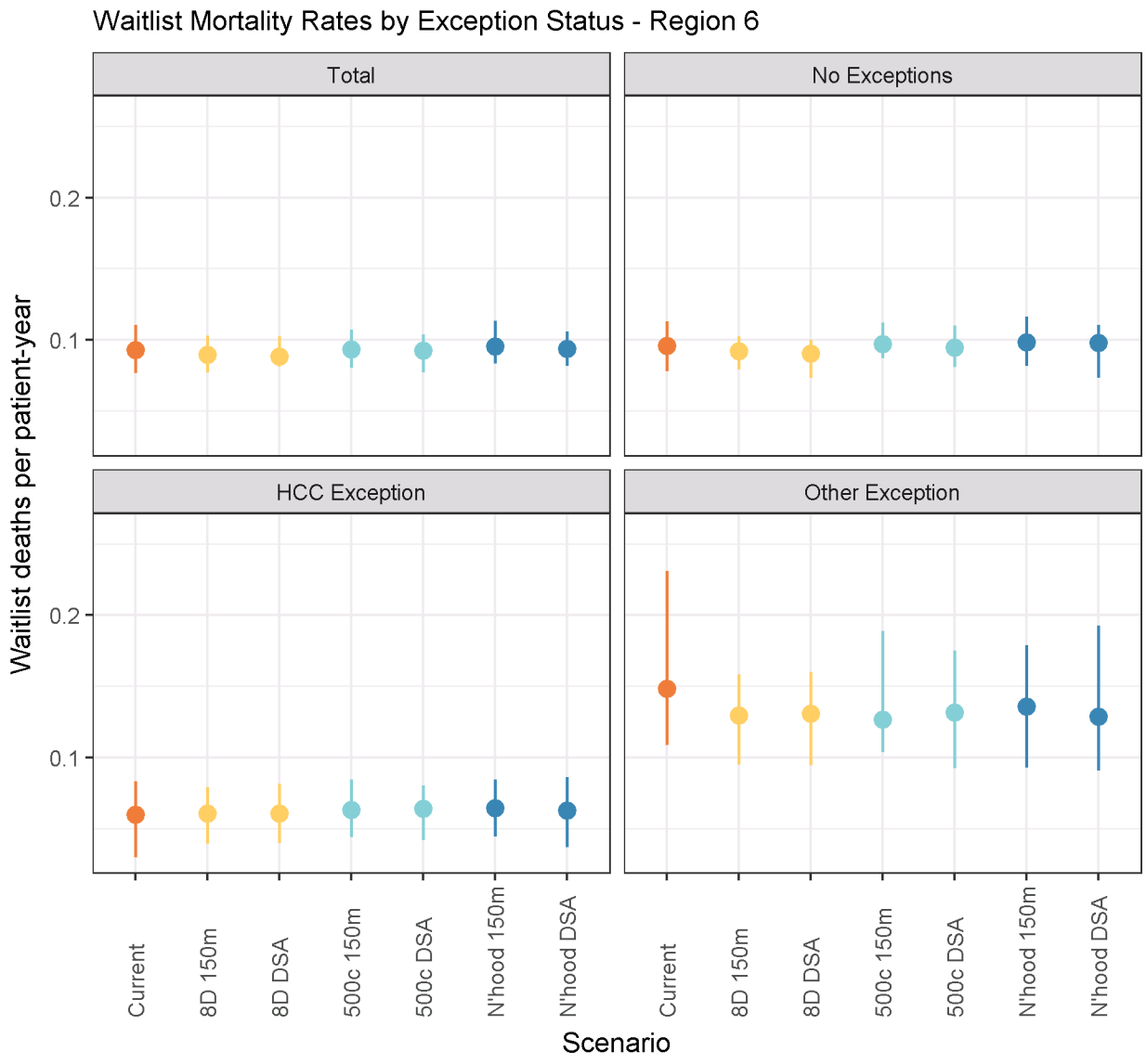


Figure 59 Waitlist mortality rates by exception status - region 6

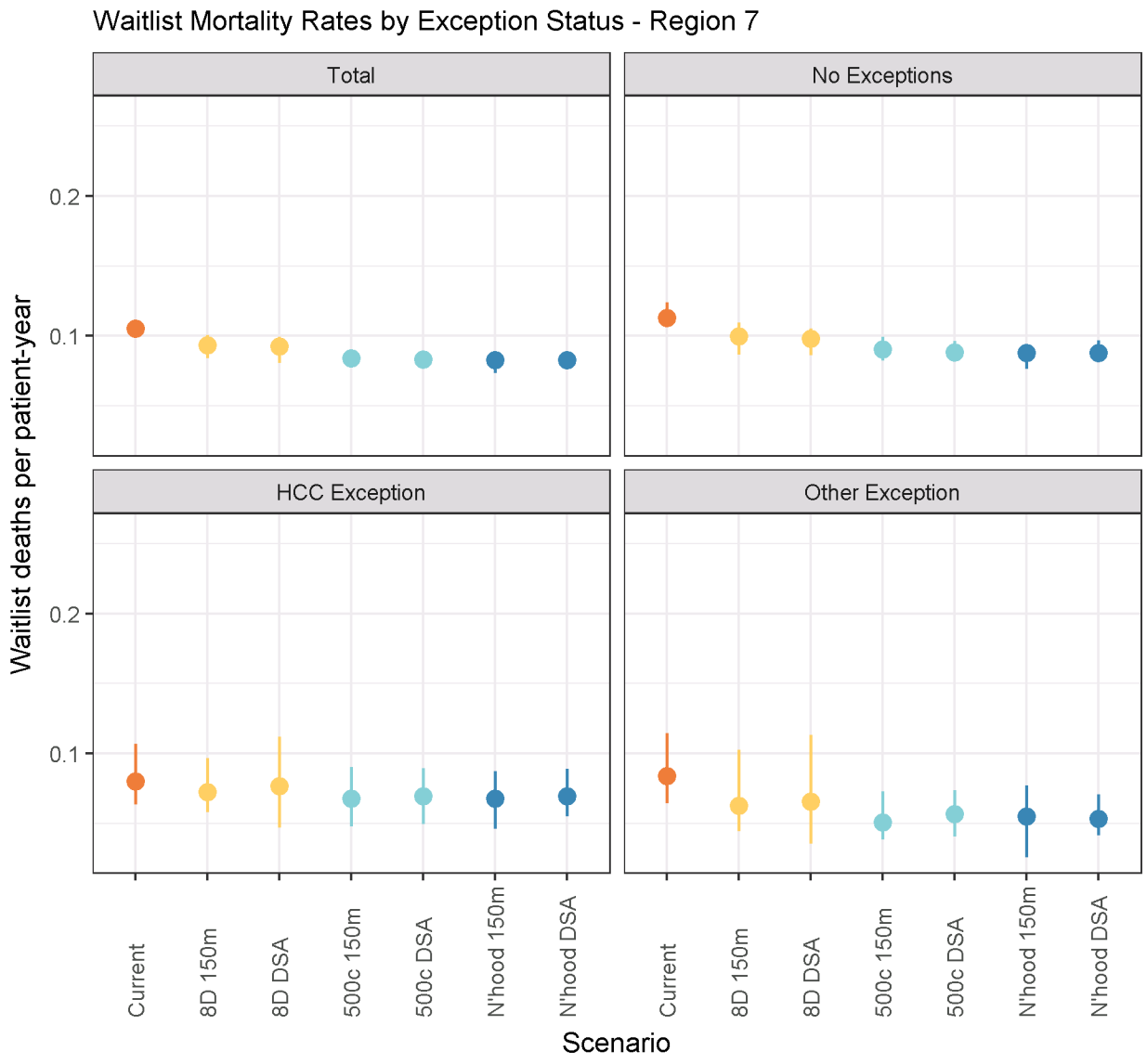


Figure 60 Waitlist mortality rates by exception status - region 7

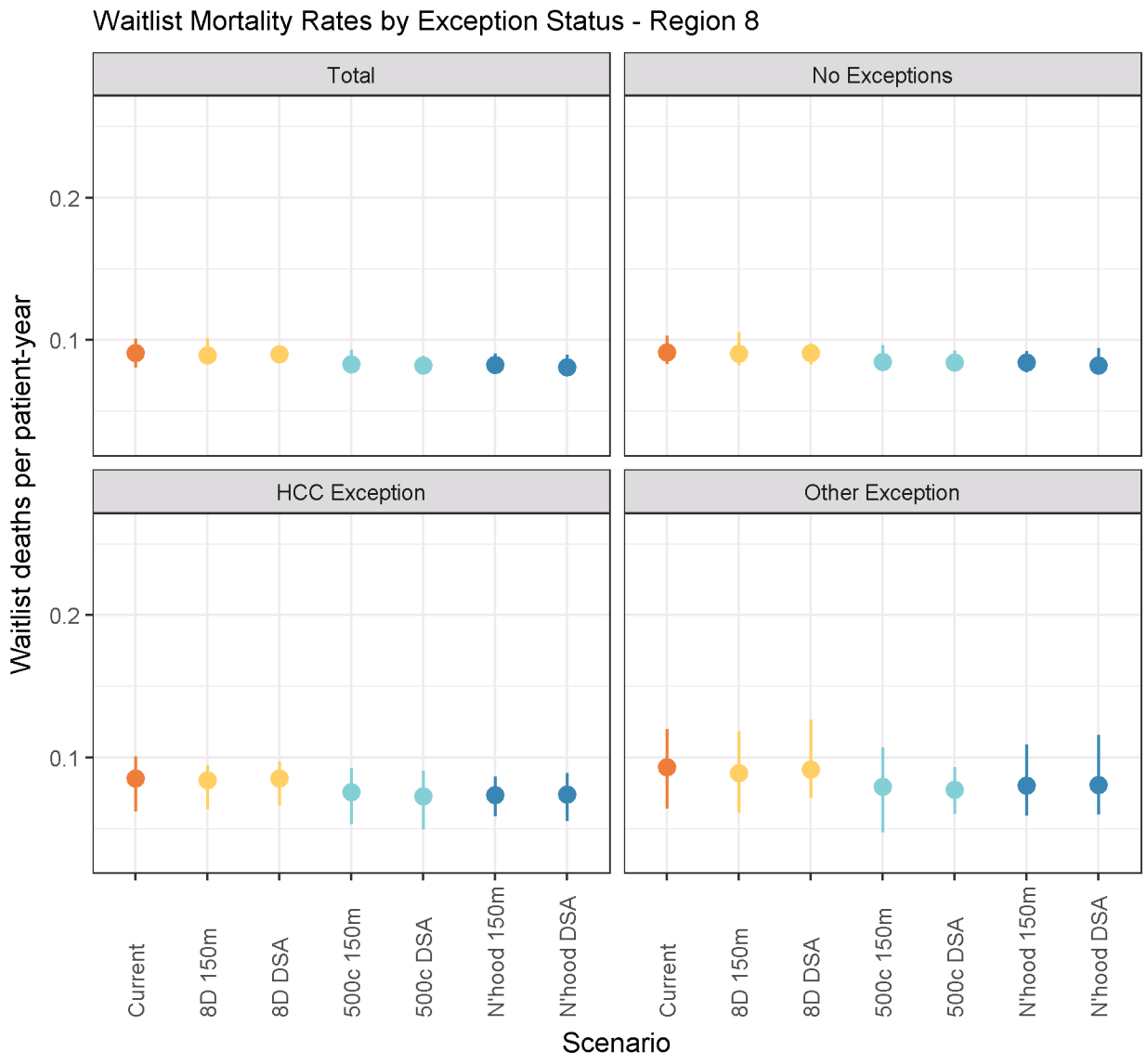


Figure 61 Waitlist mortality rates by exception status - region 8

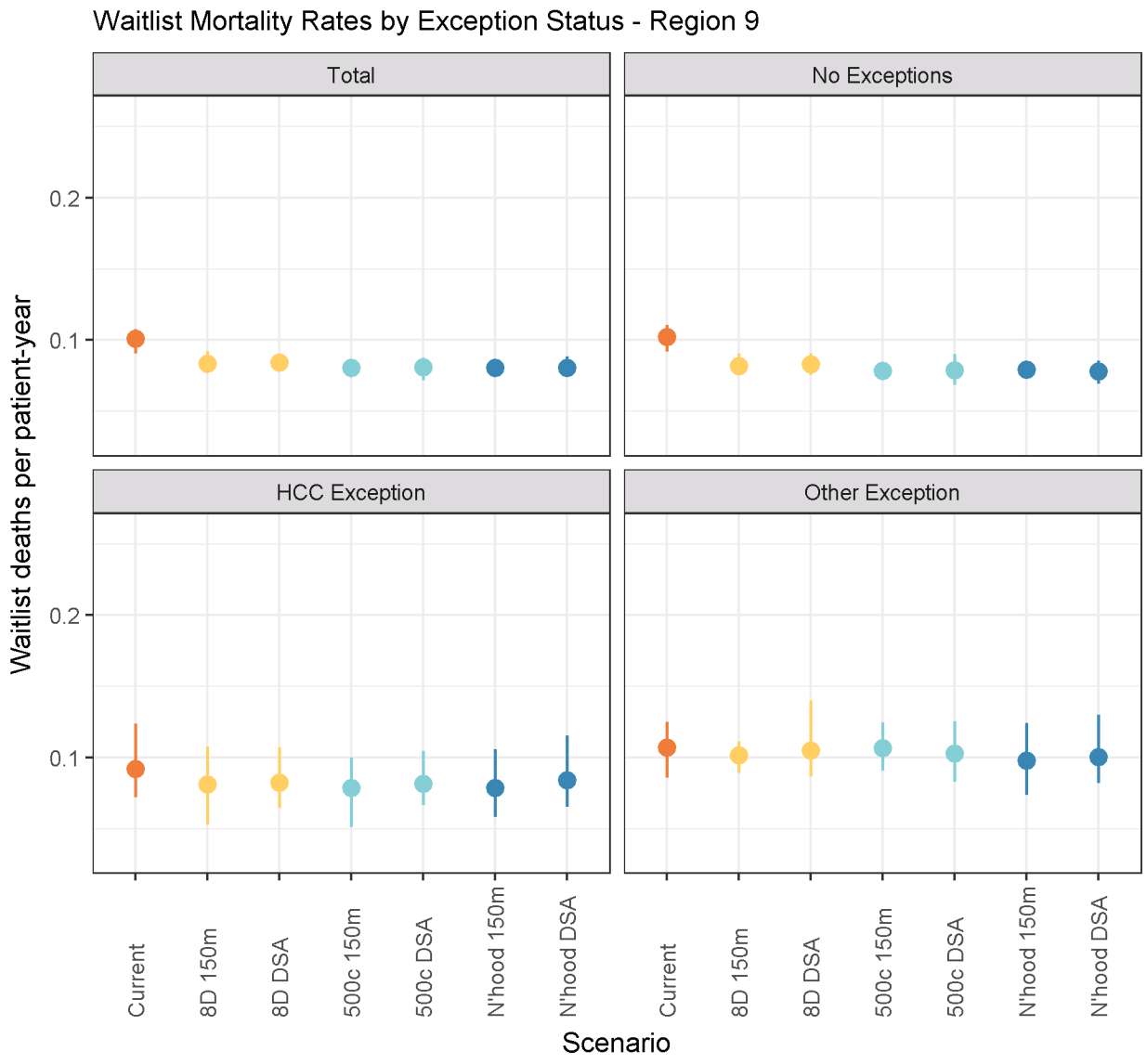


Figure 62 Waitlist mortality rates by exception status - region 9

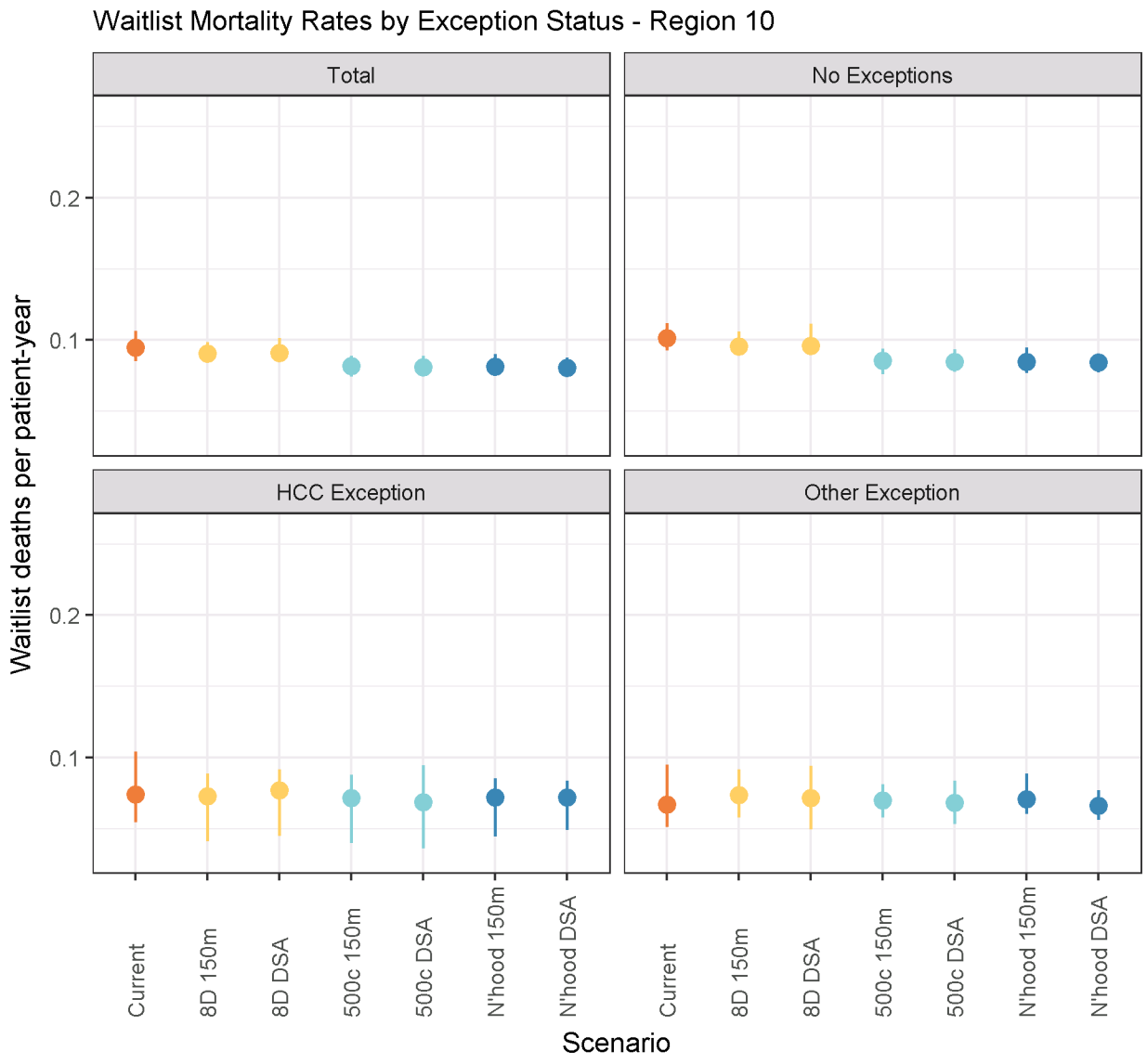


Figure 63 Waitlist mortality rates by exception status - region 10

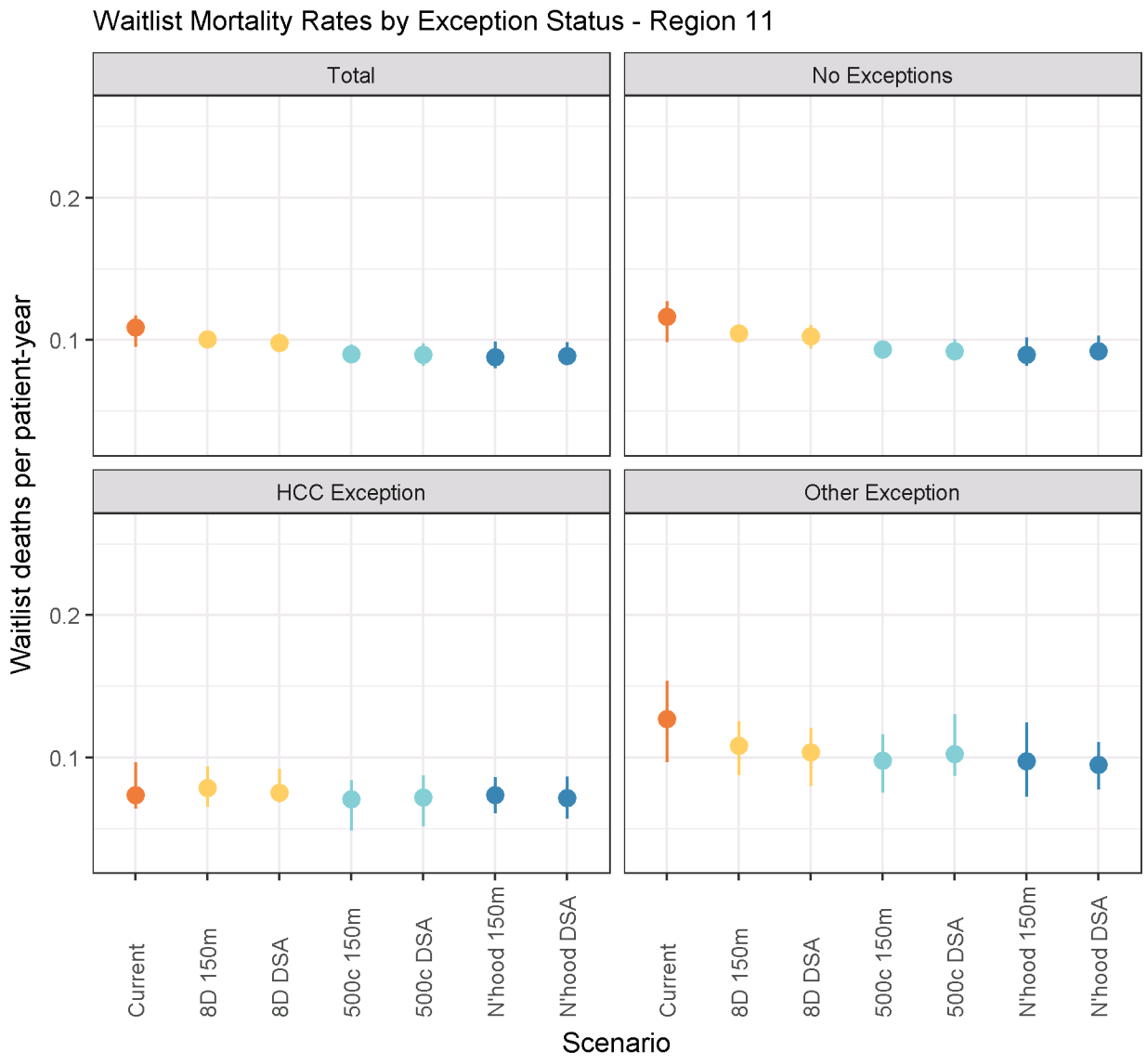


Figure 64 Waitlist mortality rates by exception status - region 11

Waitlist Mortality Counts

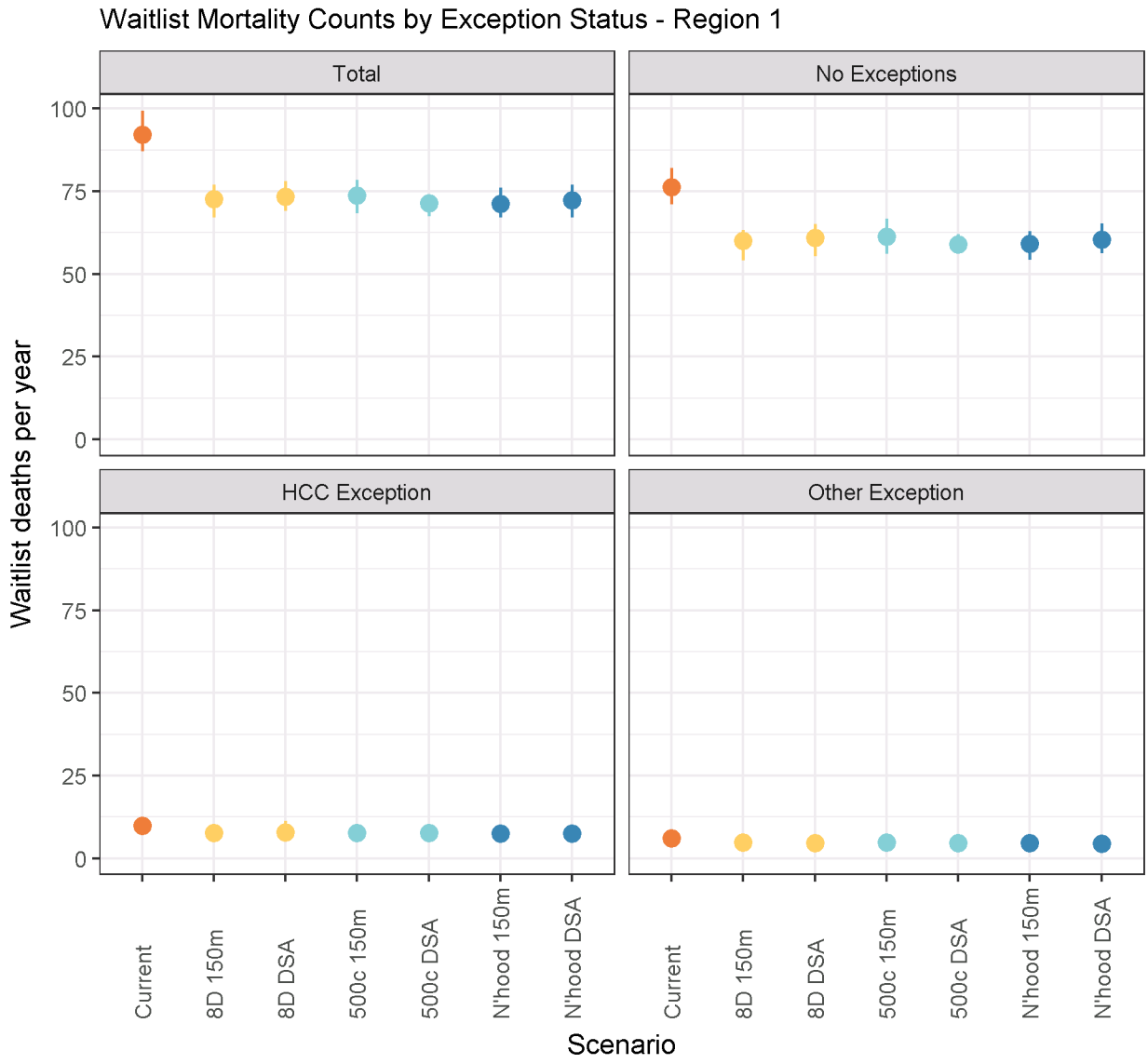


Figure 65 Waitlist mortality counts by exception status - region 1

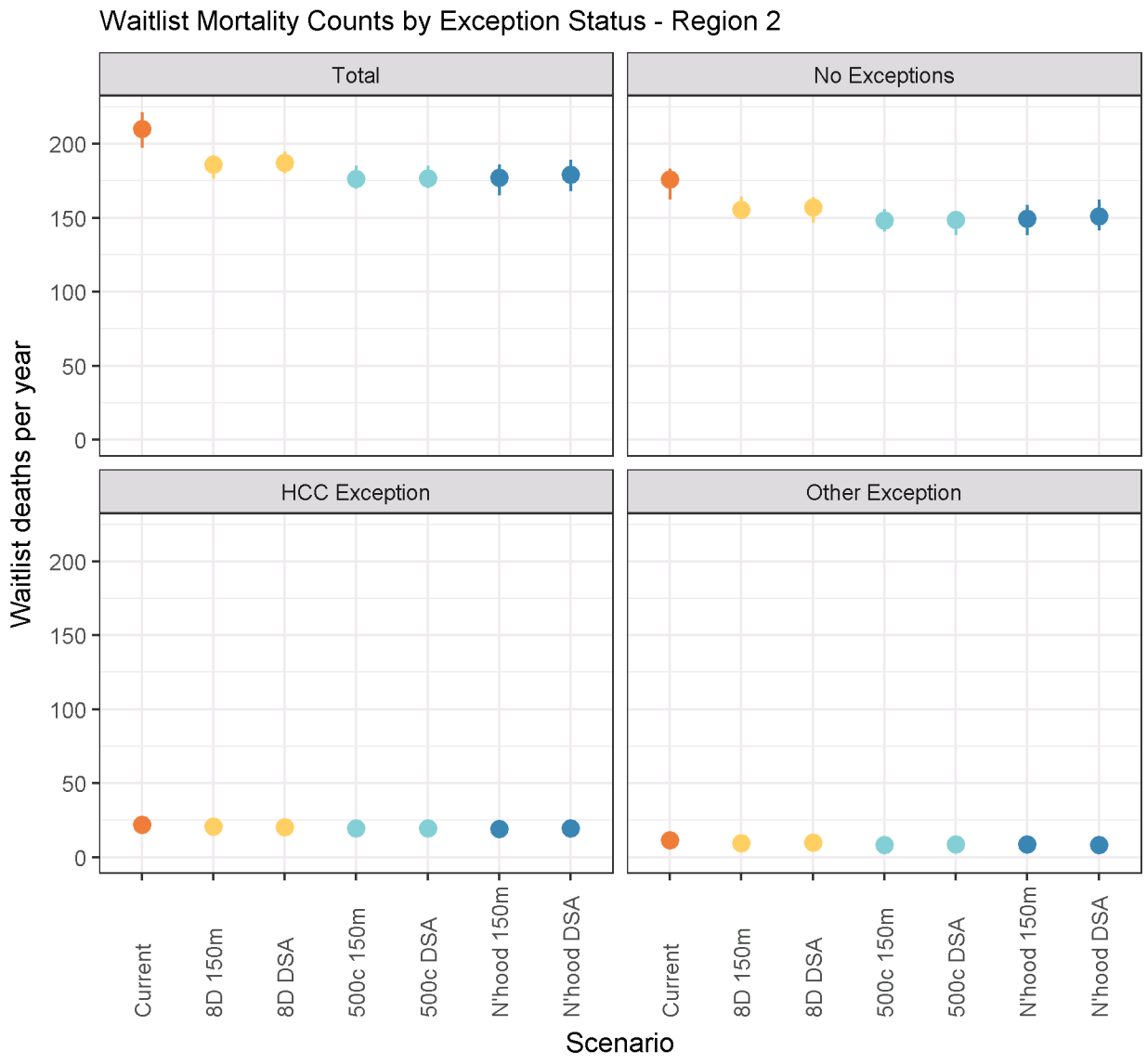


Figure 66 Waitlist mortality counts by exception status - region 2

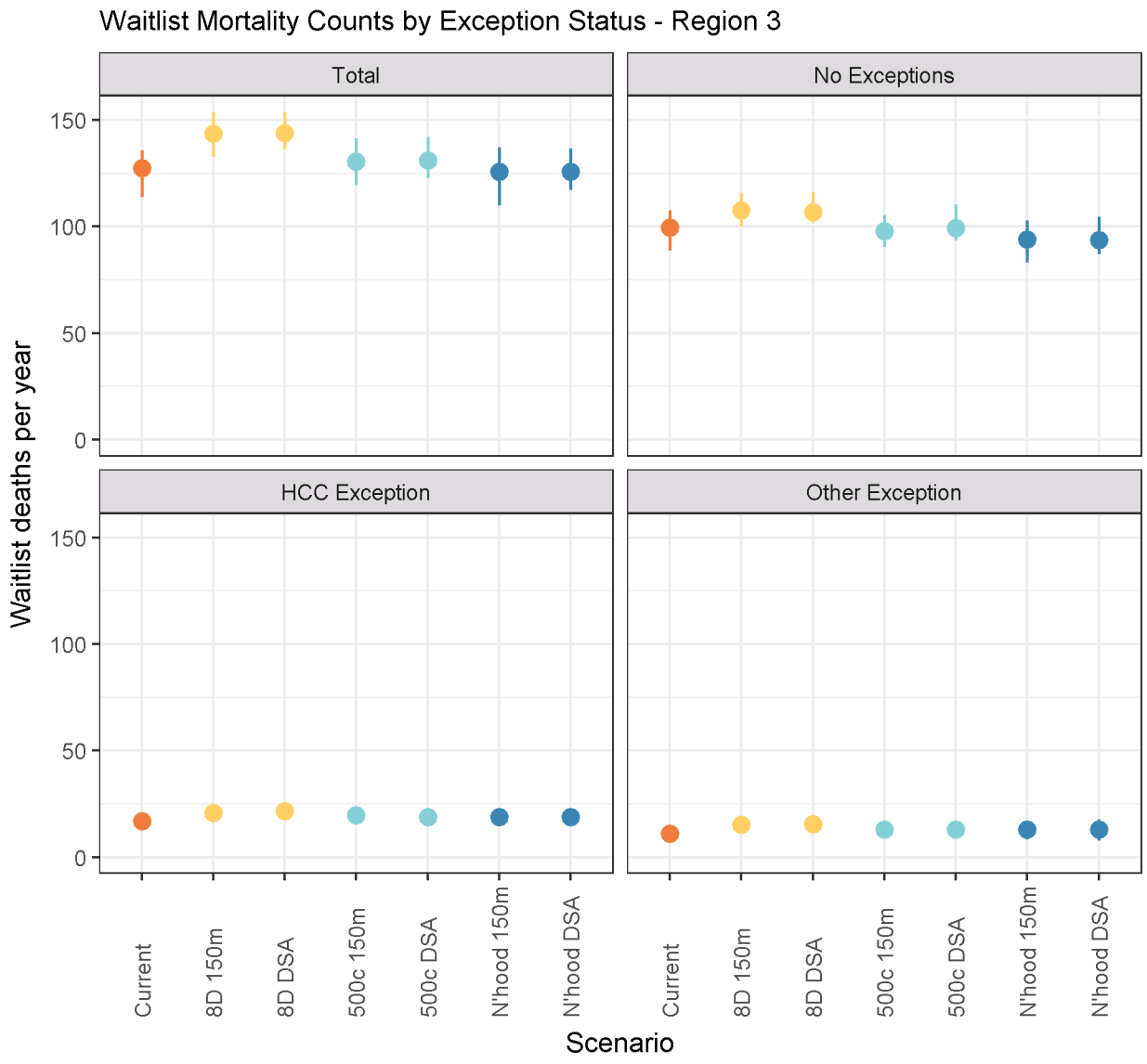


Figure 67 Waitlist mortality counts by exception status - region 3

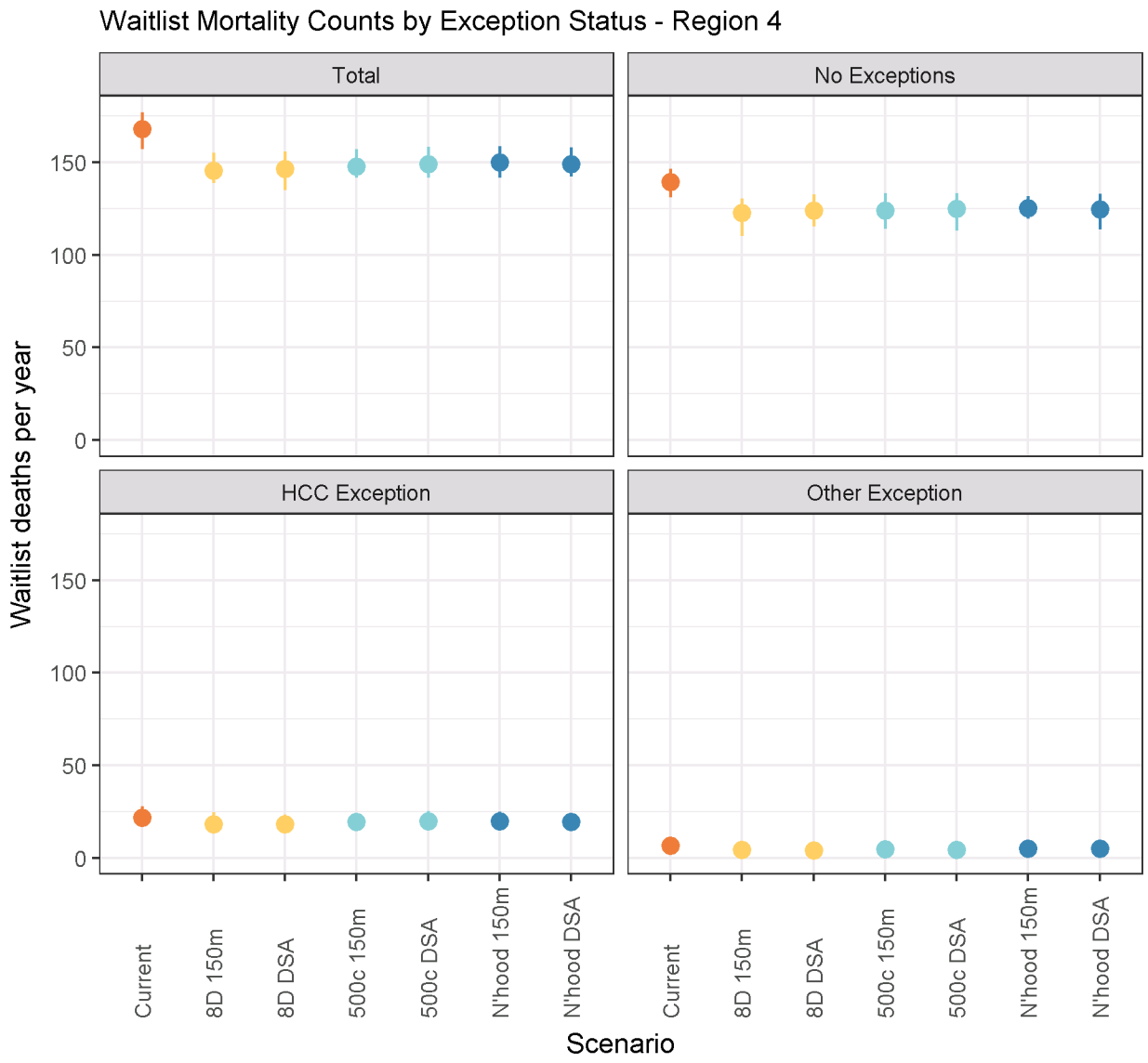


Figure 68 Waitlist mortality counts by exception status - region 4

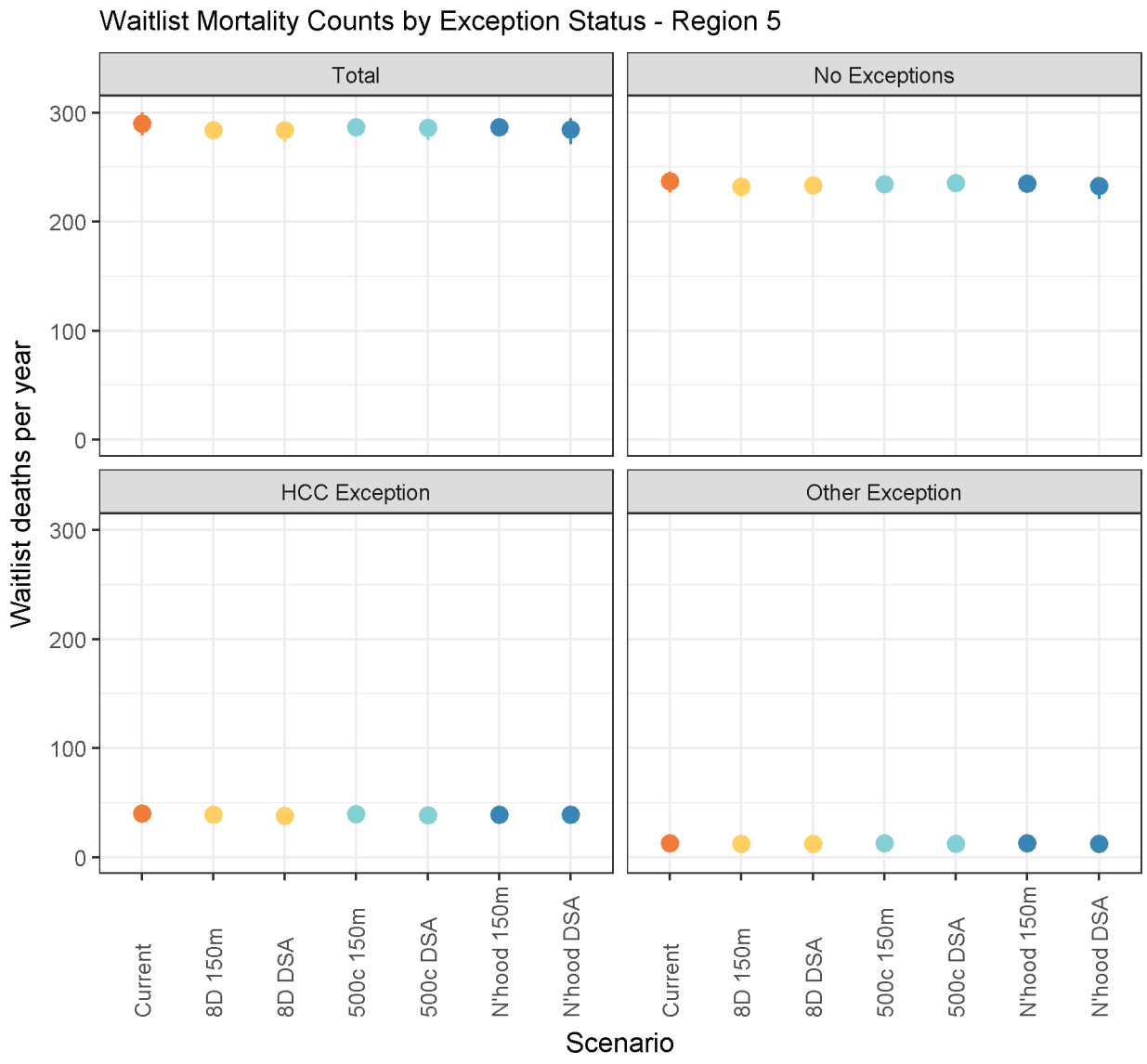


Figure 69 Waitlist mortality counts by exception status - region 5

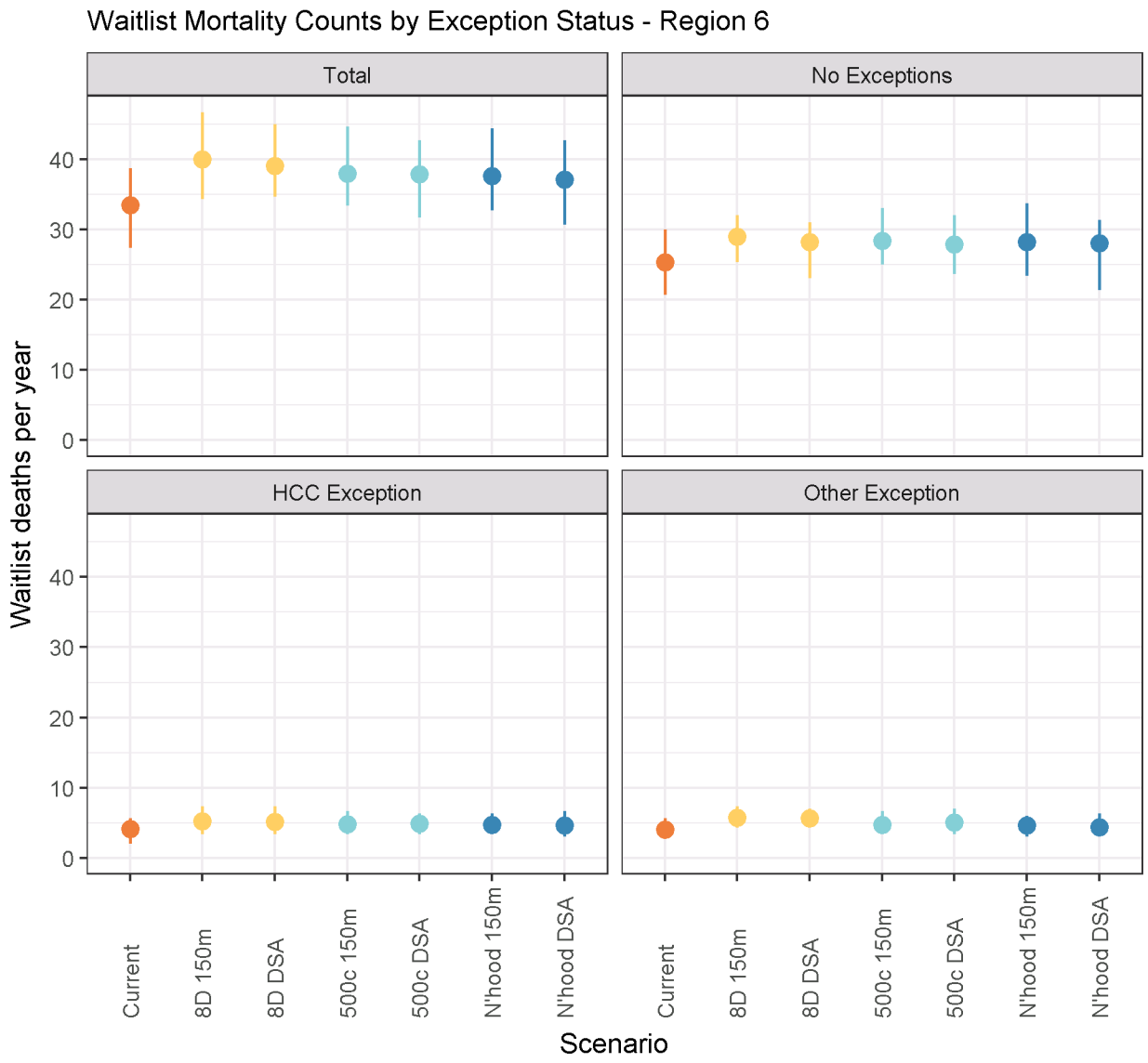


Figure 70 Waitlist mortality counts by exception status - region 6

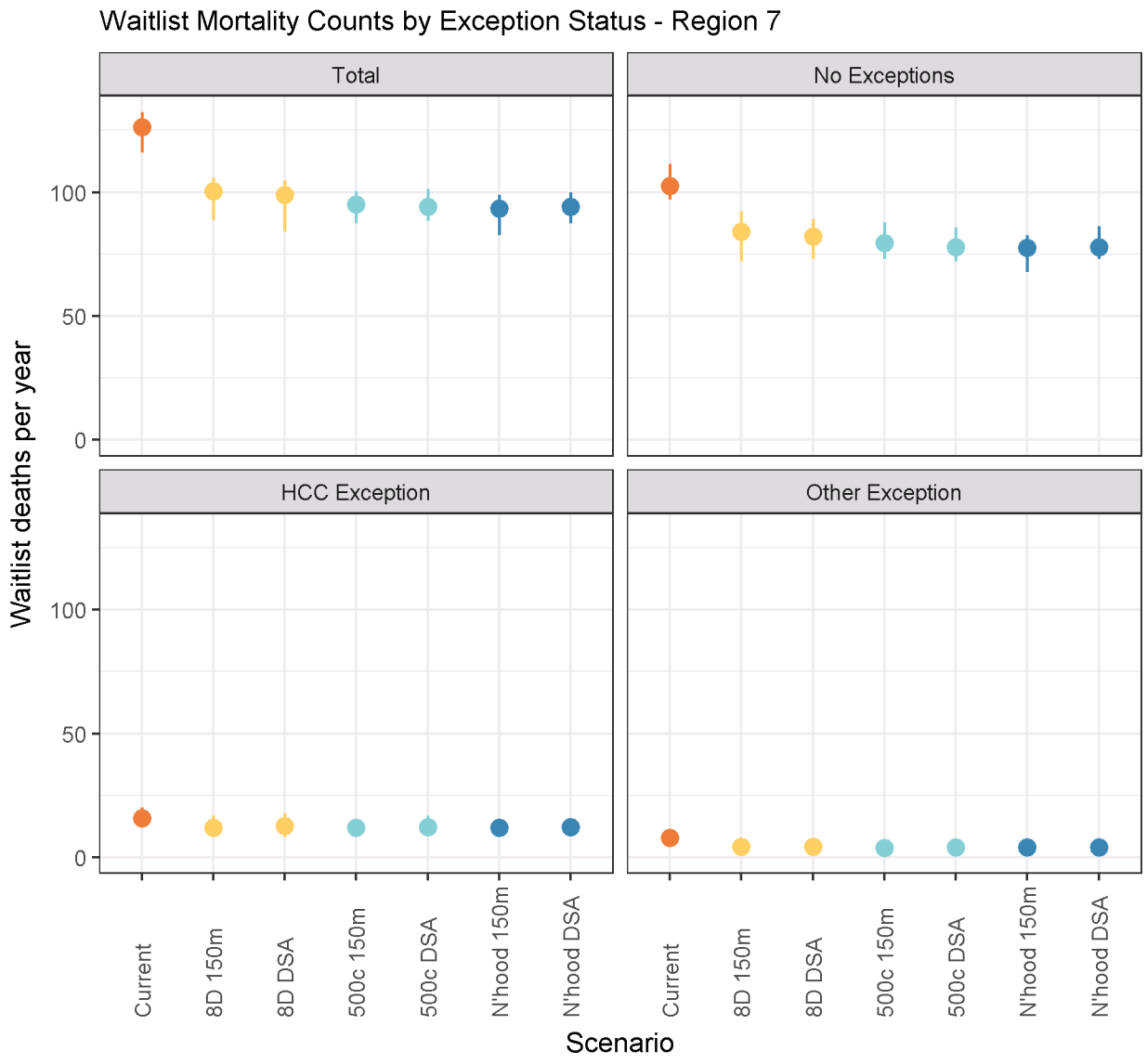


Figure 71 Waitlist mortality counts by exception status - region 7

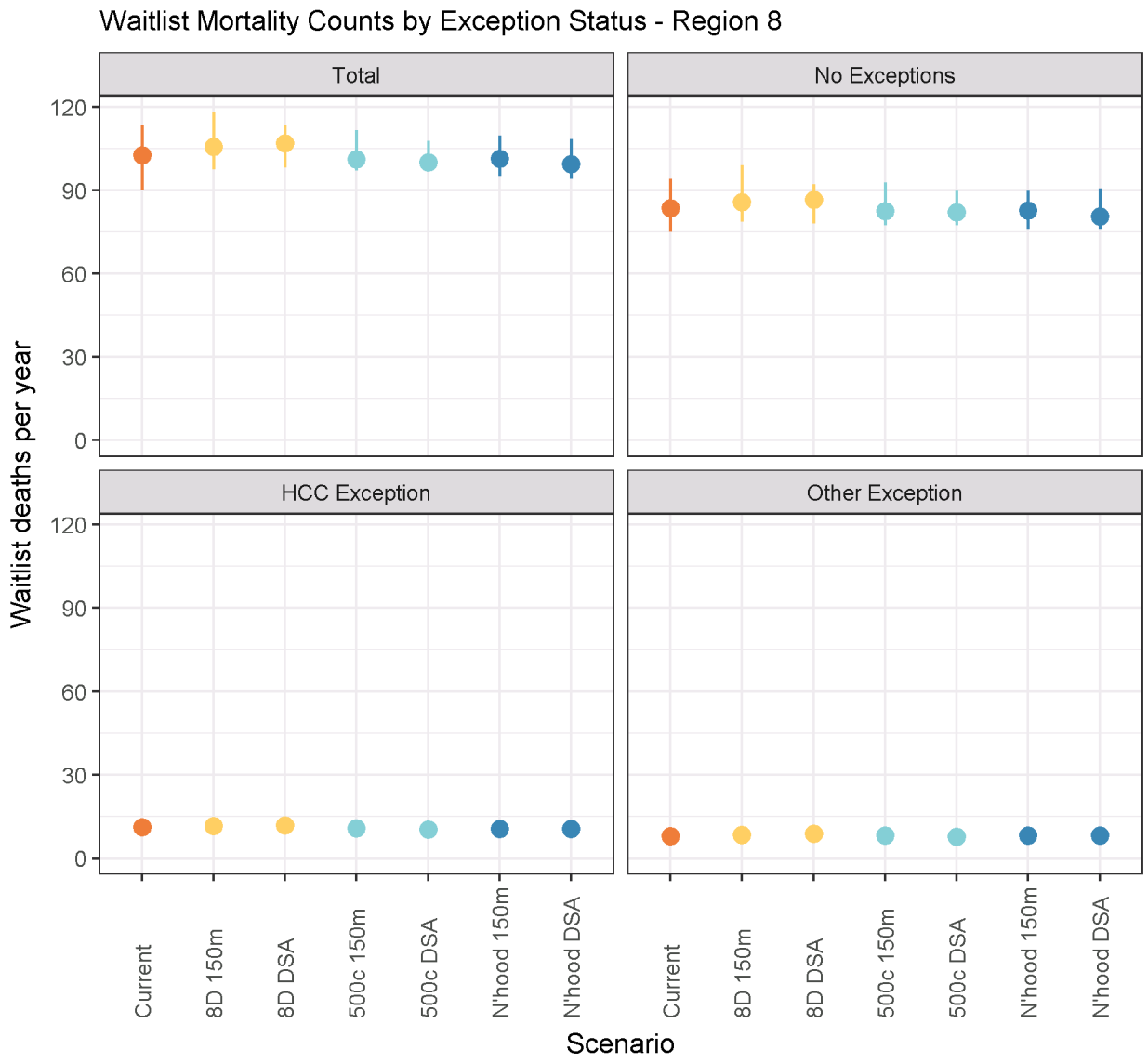


Figure 72 Waitlist mortality counts by exception status - region 8

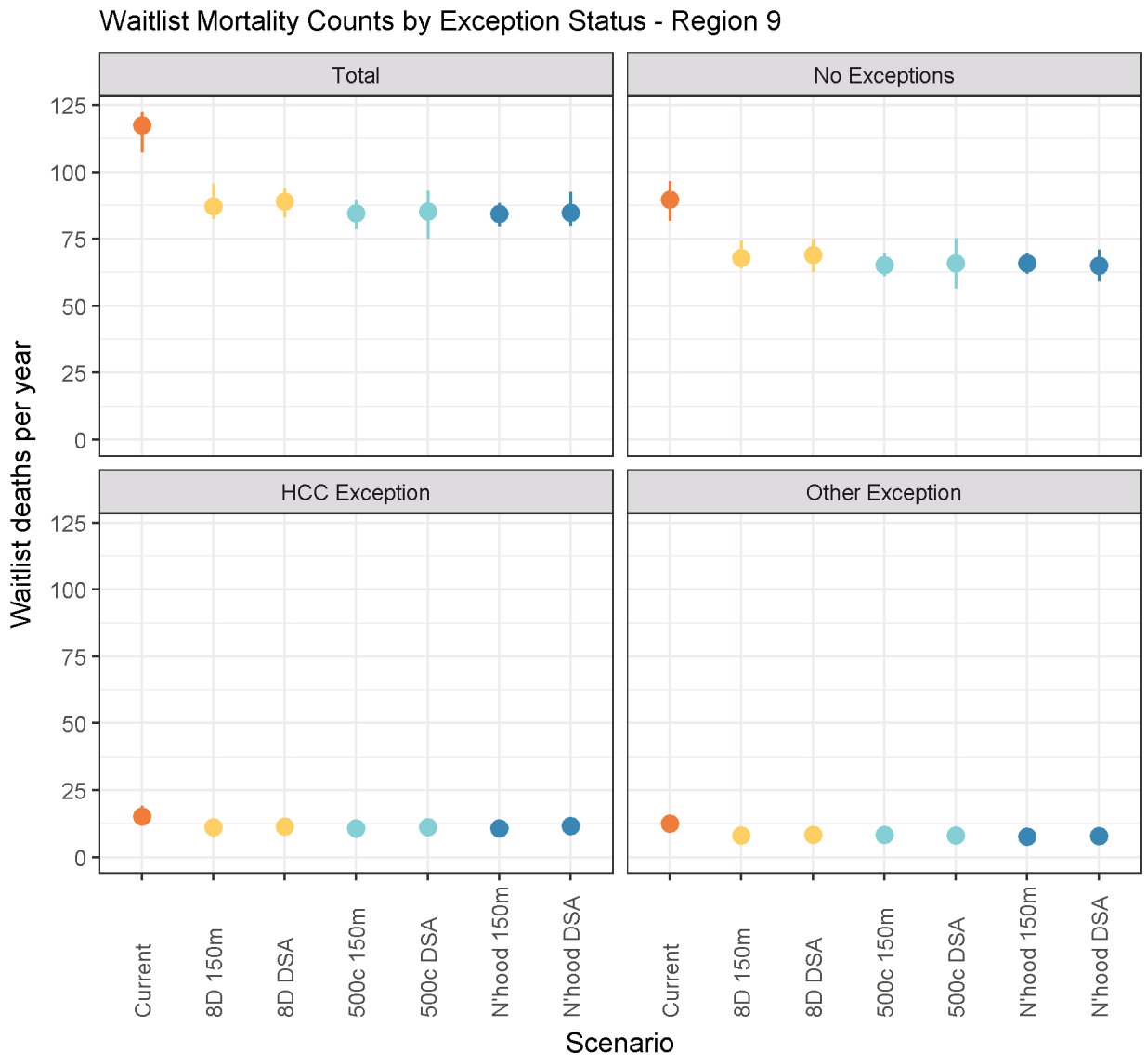


Figure 73 Waitlist mortality counts by exception status - region 9

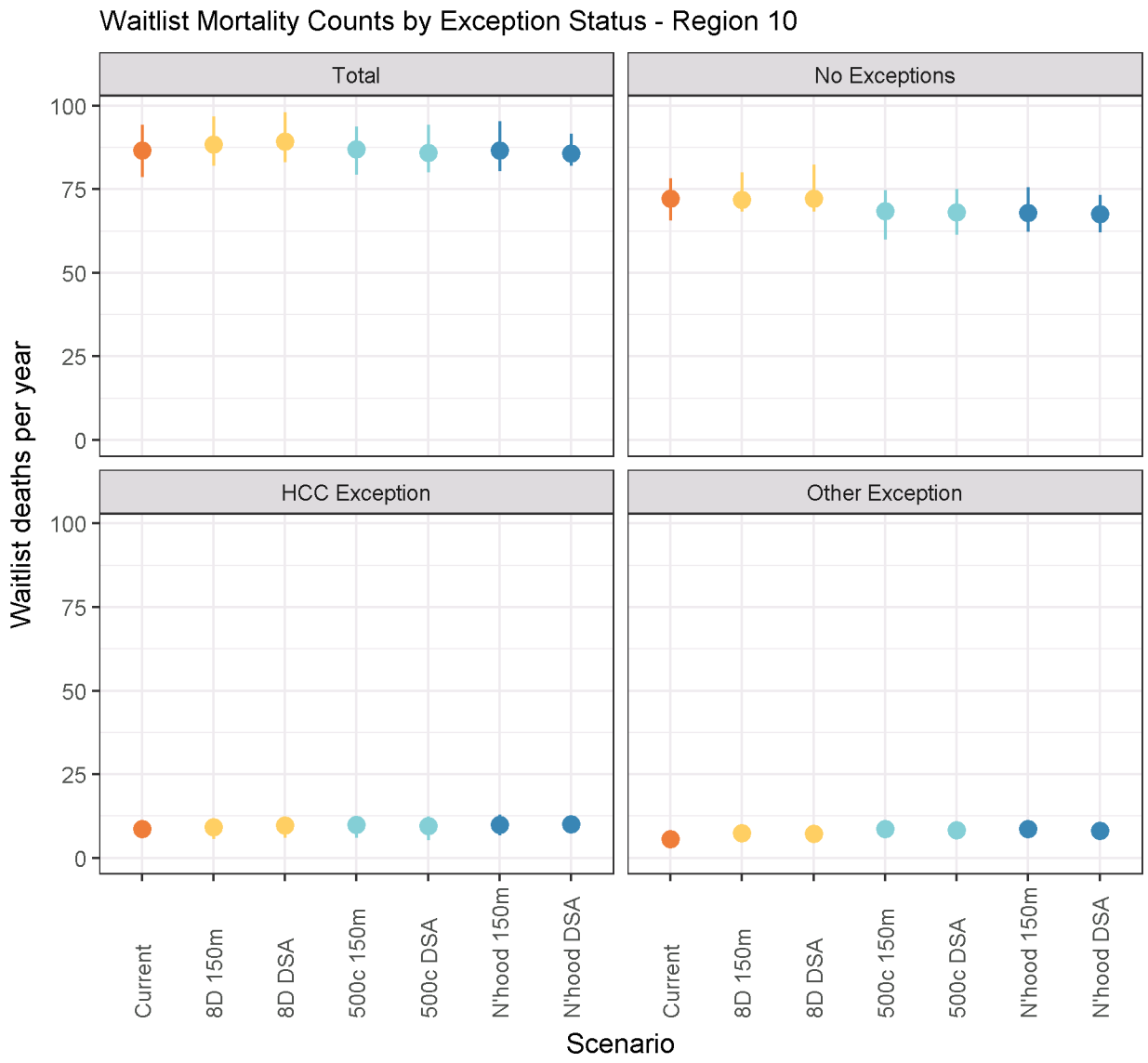


Figure 74 Waitlist mortality counts by exception status - region 10

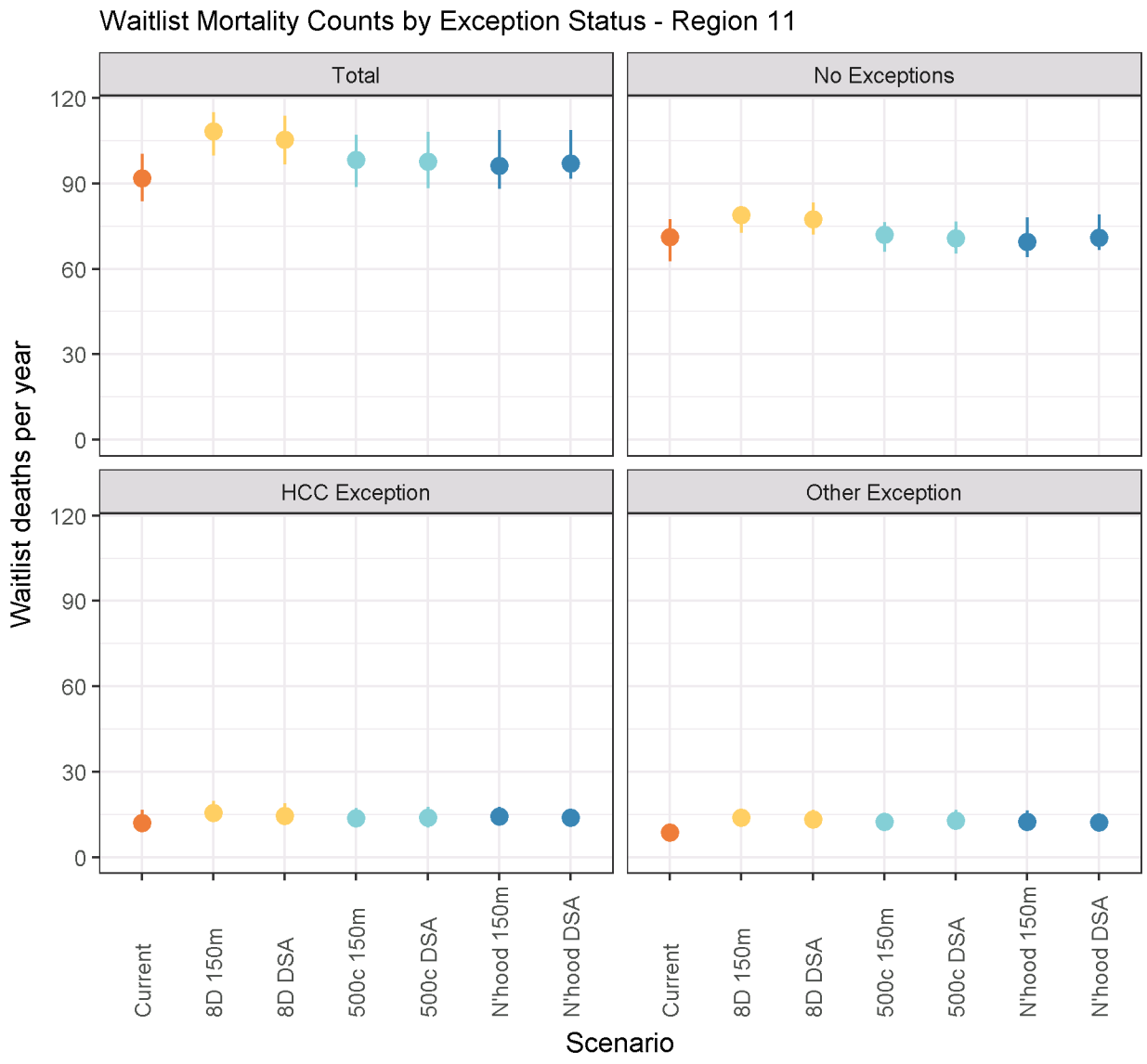


Figure 75 Waitlist mortality counts by exception status - region 11

Posttransplant Mortality

Posttransplant Mortality Rates

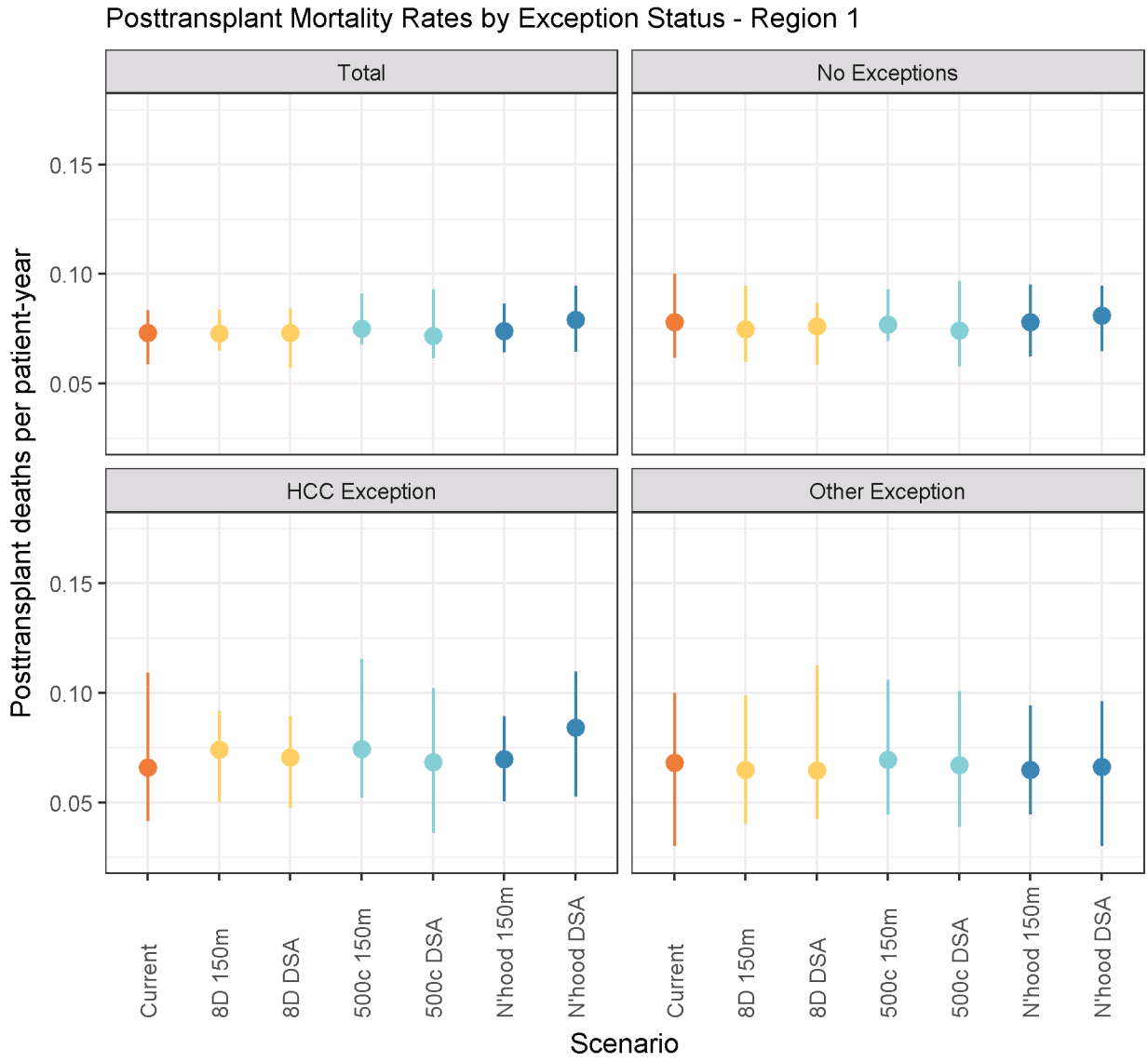


Figure 76 Posttransplant mortality rates by exception status - region 1

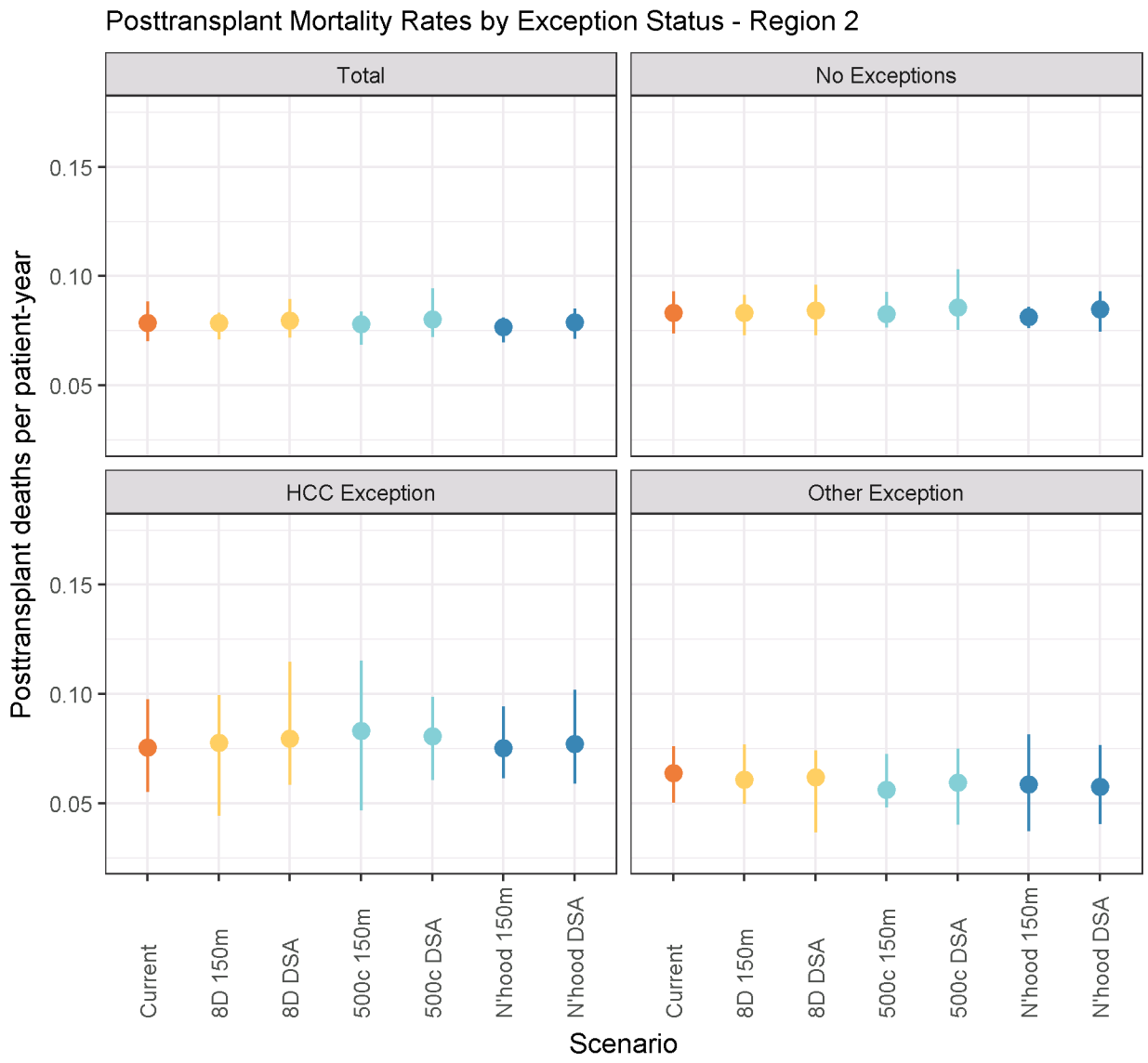


Figure 77 Posttransplant mortality rates by exception status - region 2

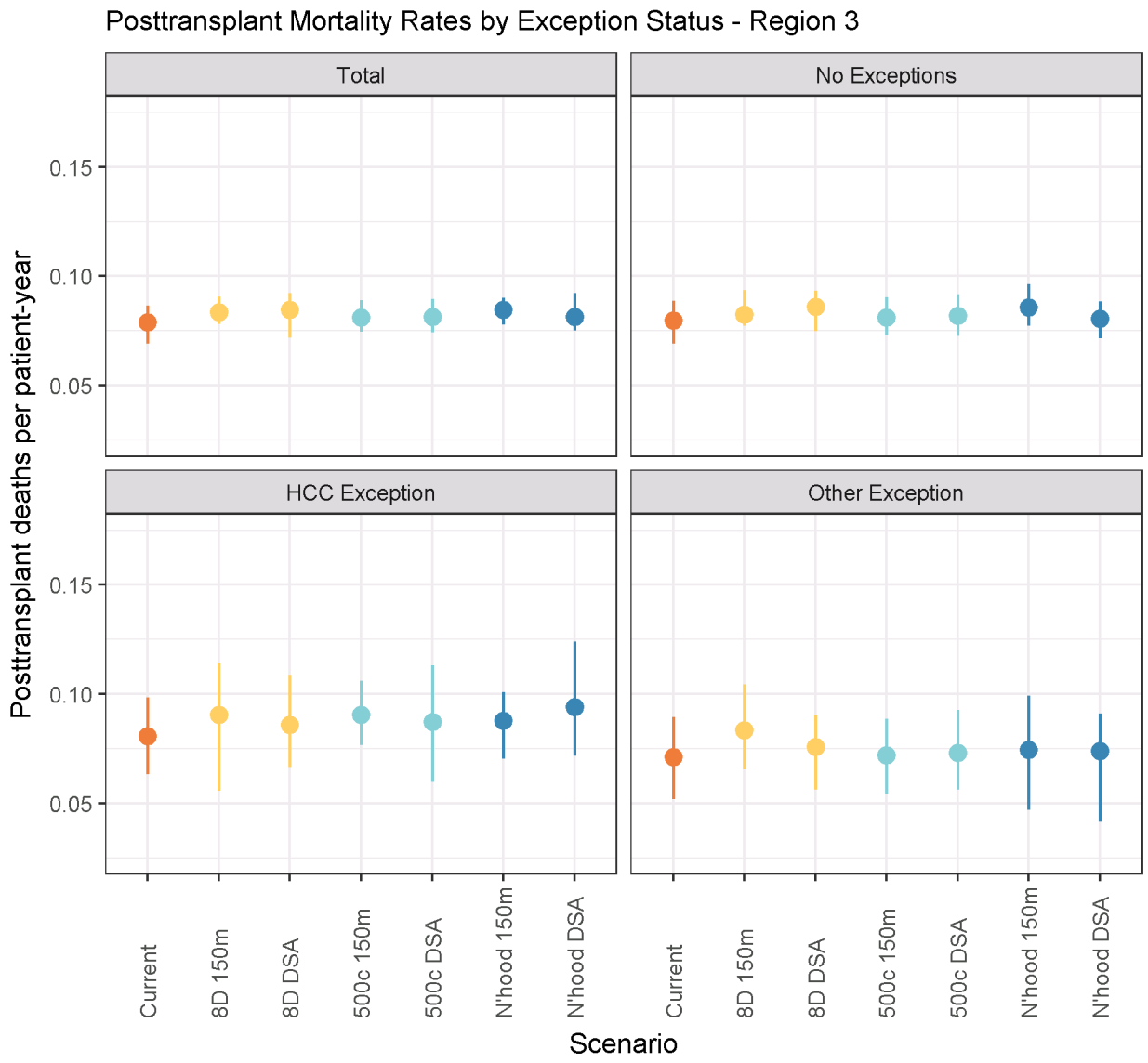


Figure 78 Posttransplant mortality rates by exception status - region 3

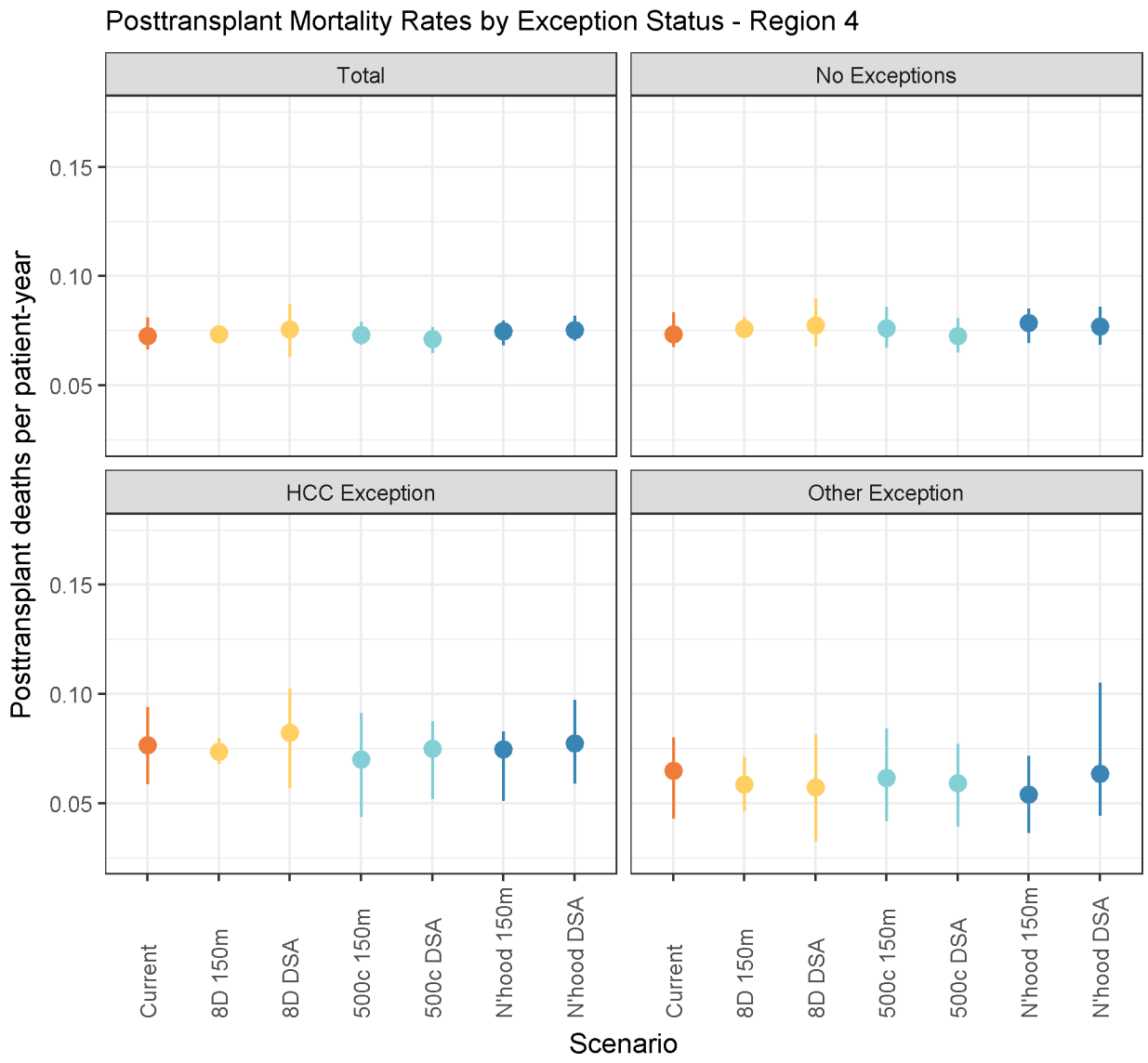


Figure 79 Posttransplant mortality rates by exception status - region 4

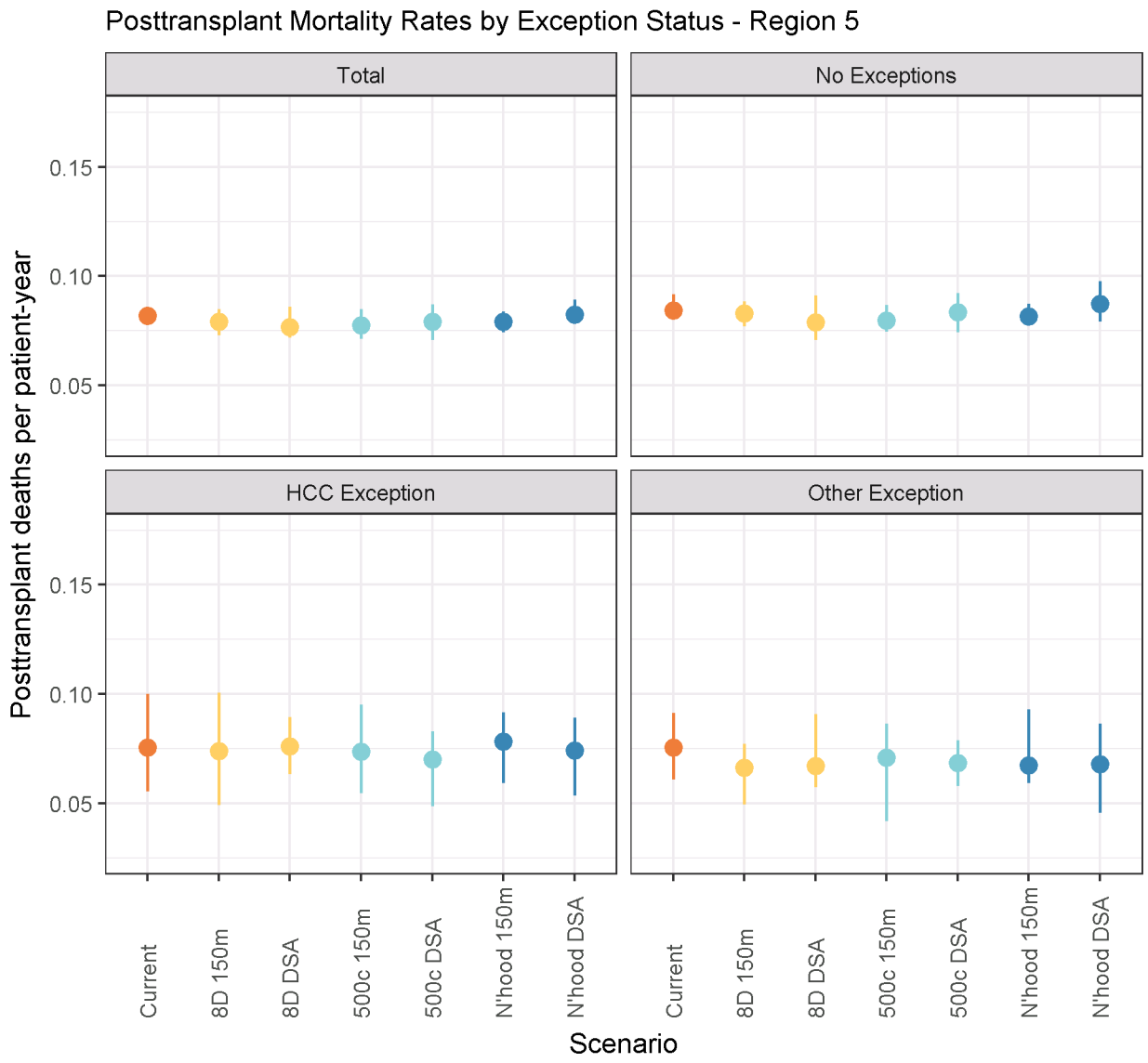


Figure 80 Posttransplant mortality rates by exception status - region 5

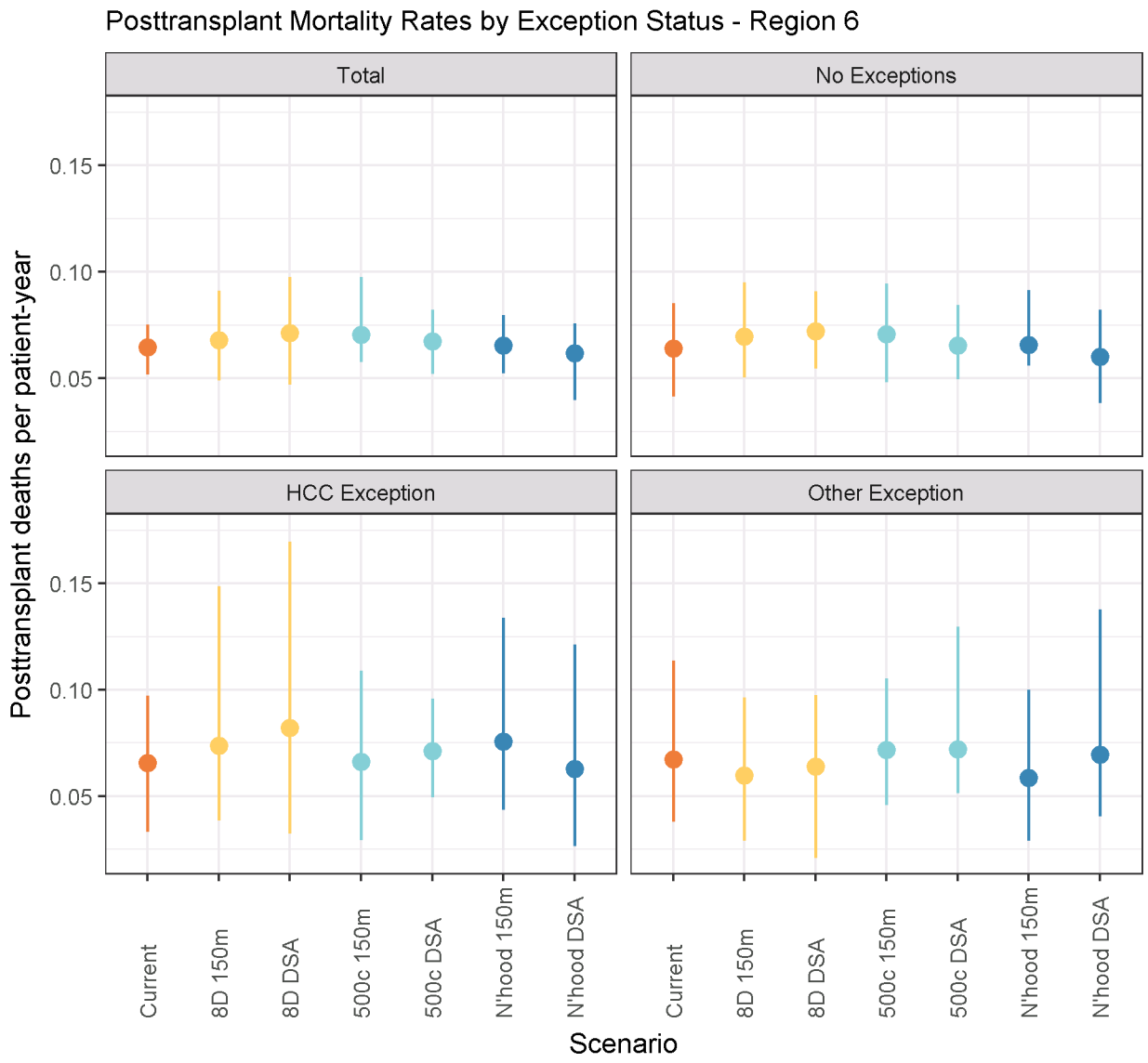


Figure 81 Posttransplant mortality rates by exception status - region 6

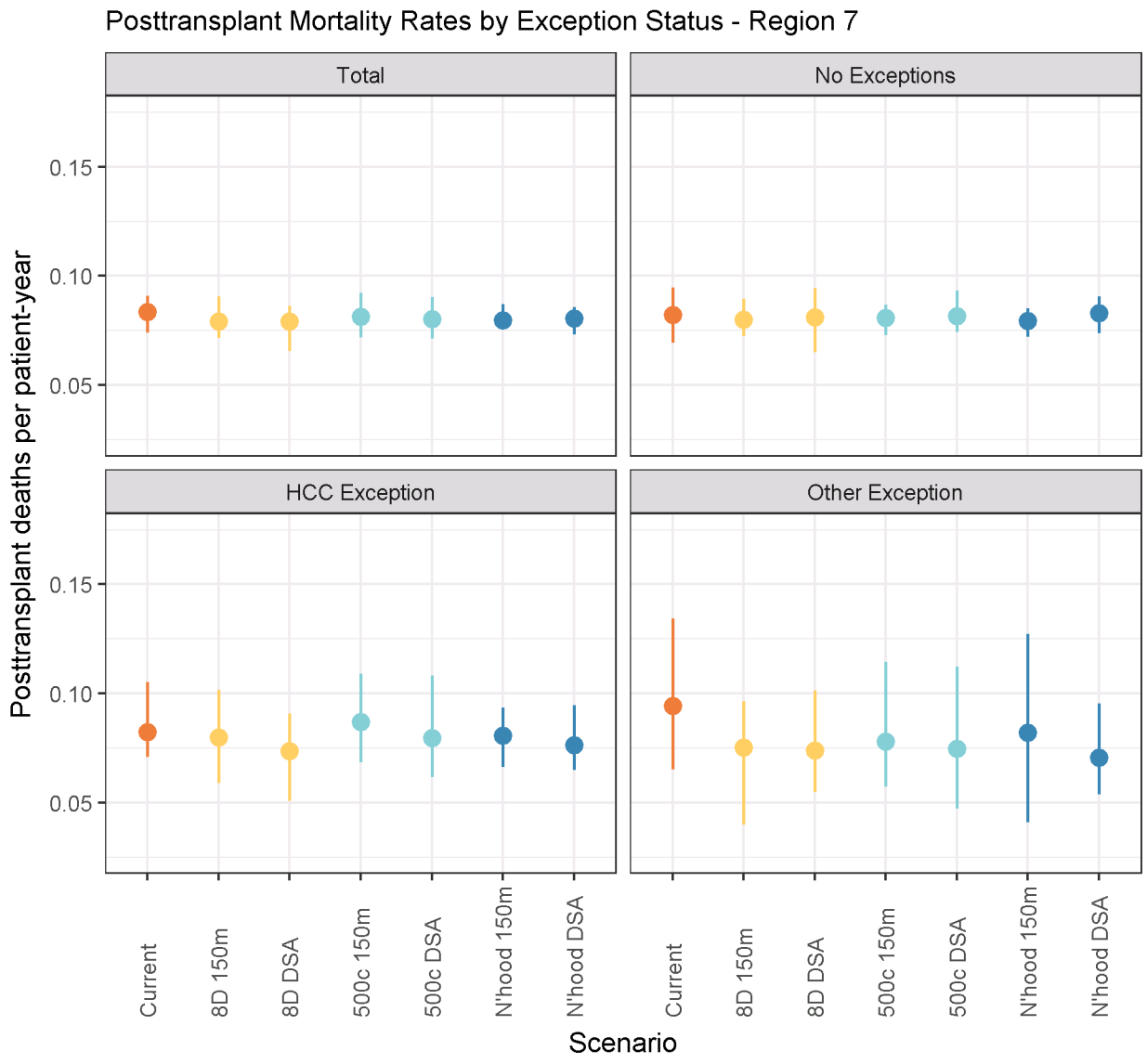


Figure 82 Posttransplant mortality rates by exception status - region 7

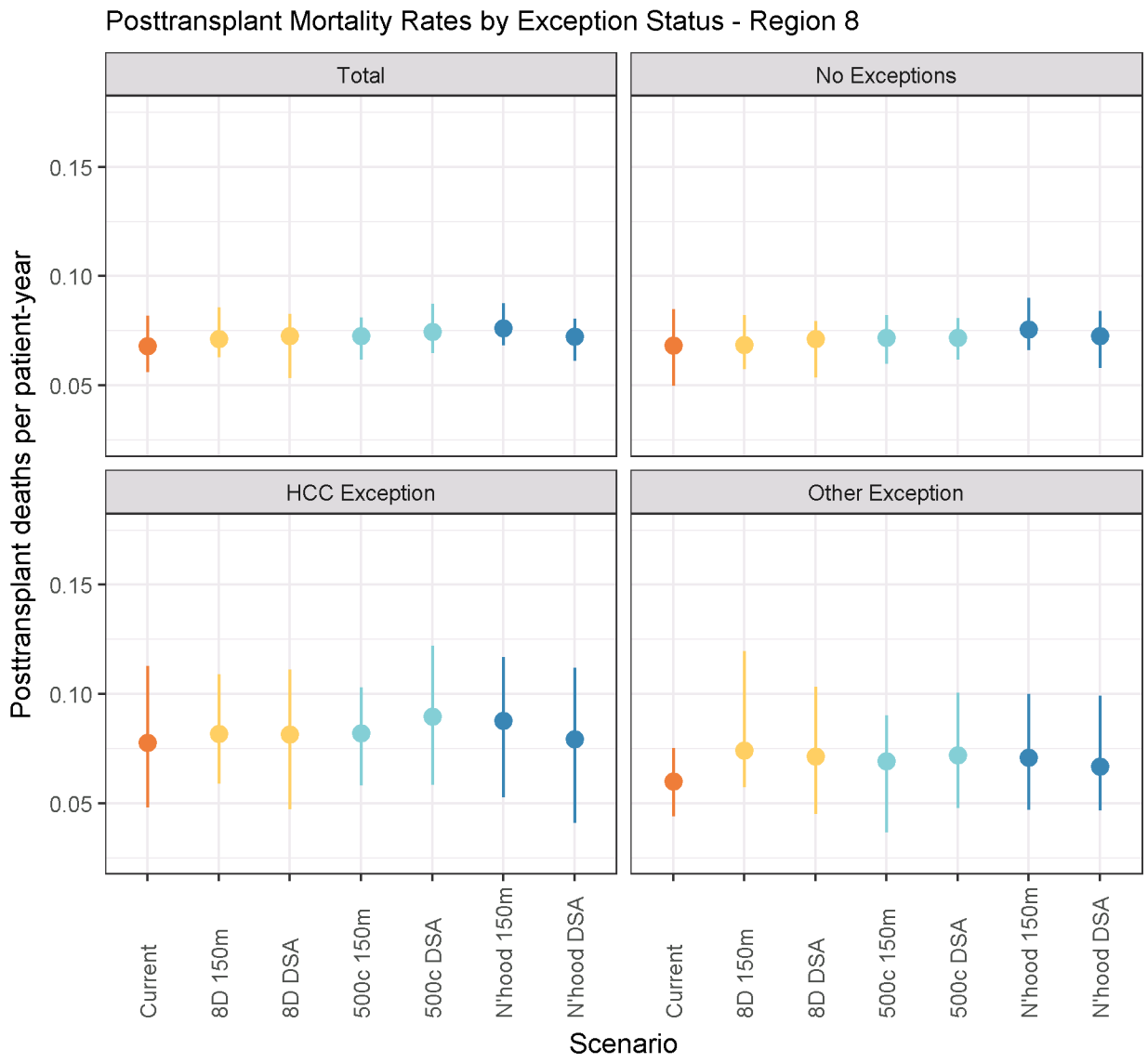


Figure 83 Posttransplant mortality rates by exception status - region 8

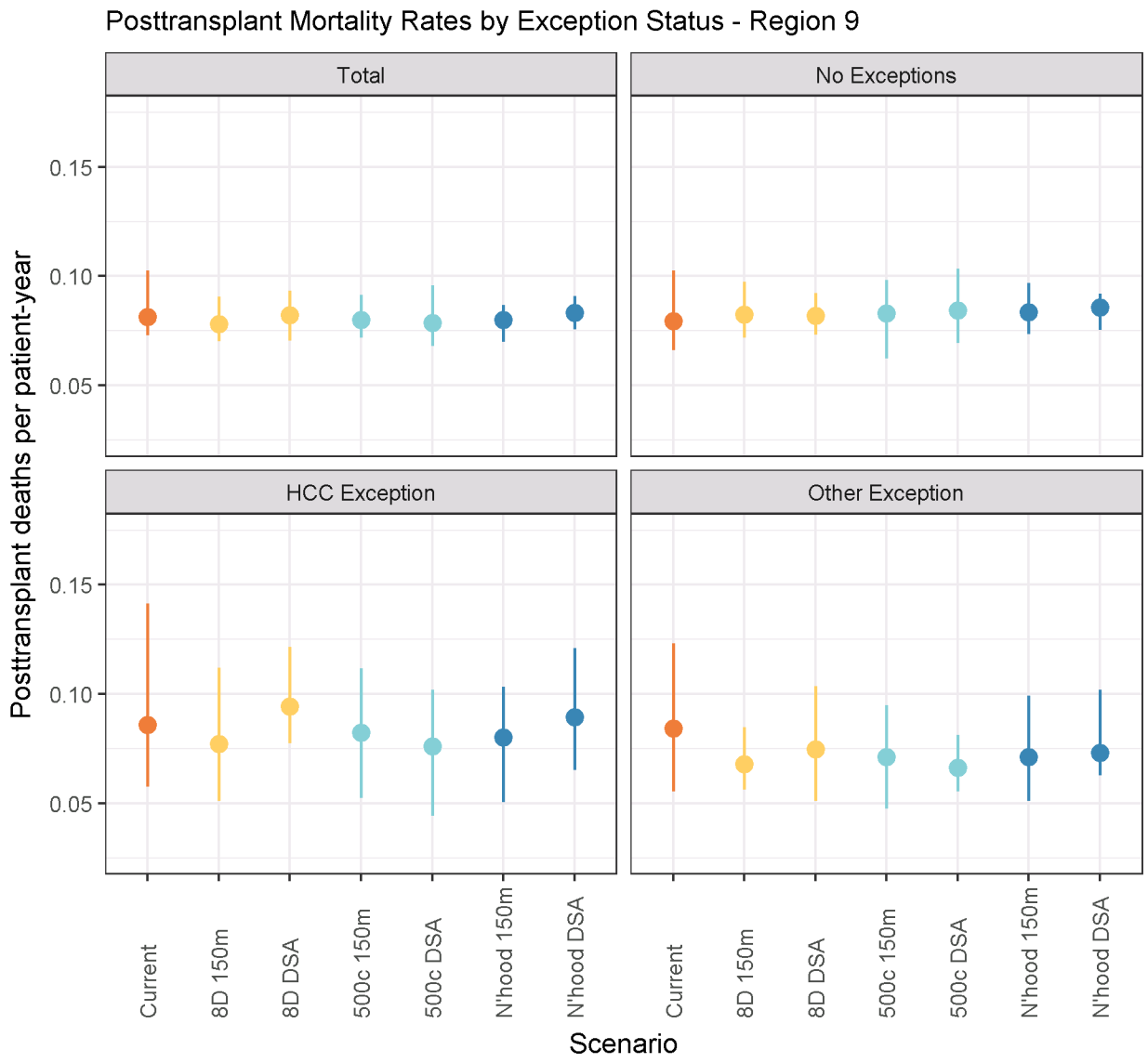


Figure 84 Posttransplant mortality rates by exception status - region 9

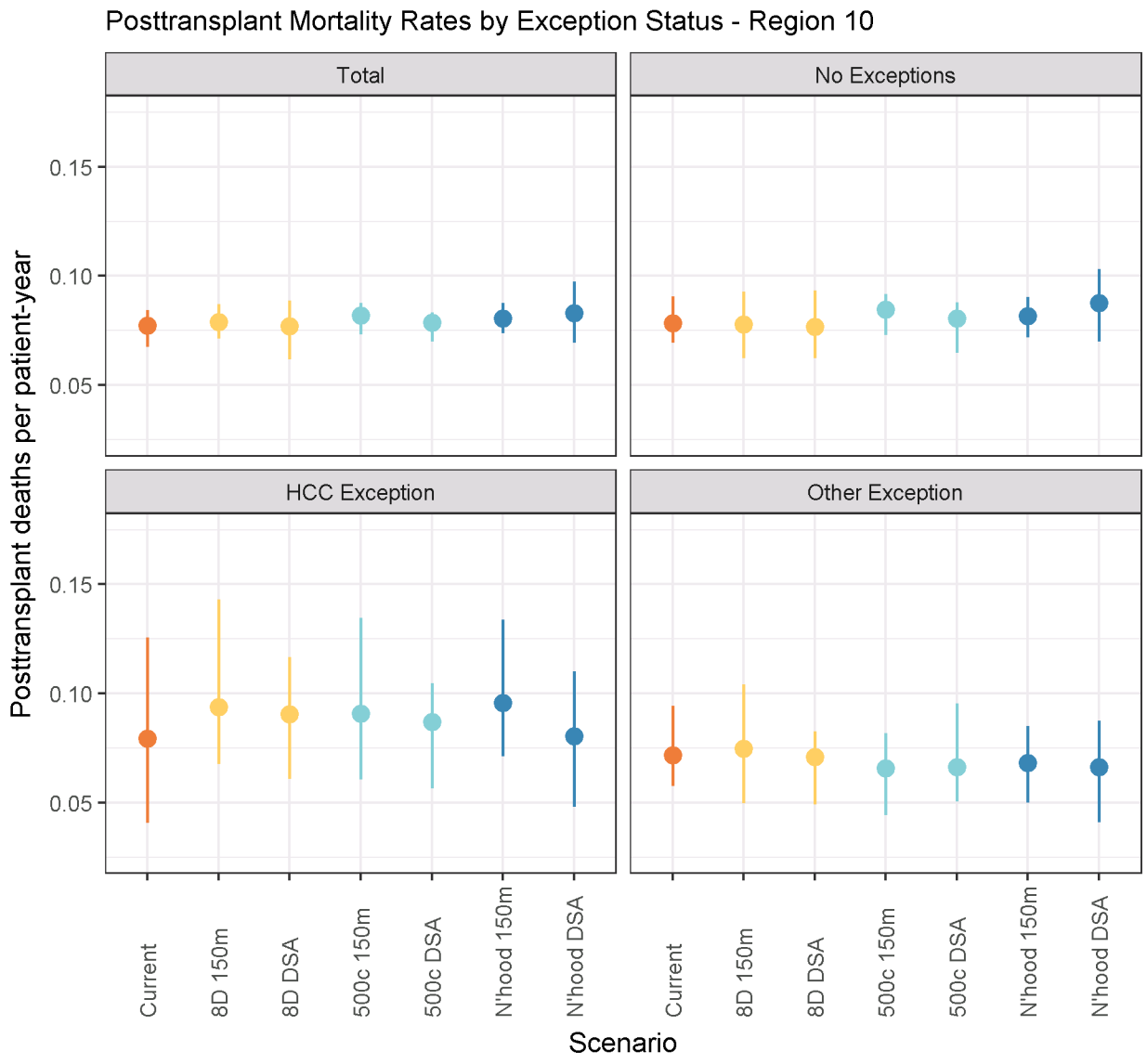


Figure 85 Posttransplant mortality rates by exception status - region 10

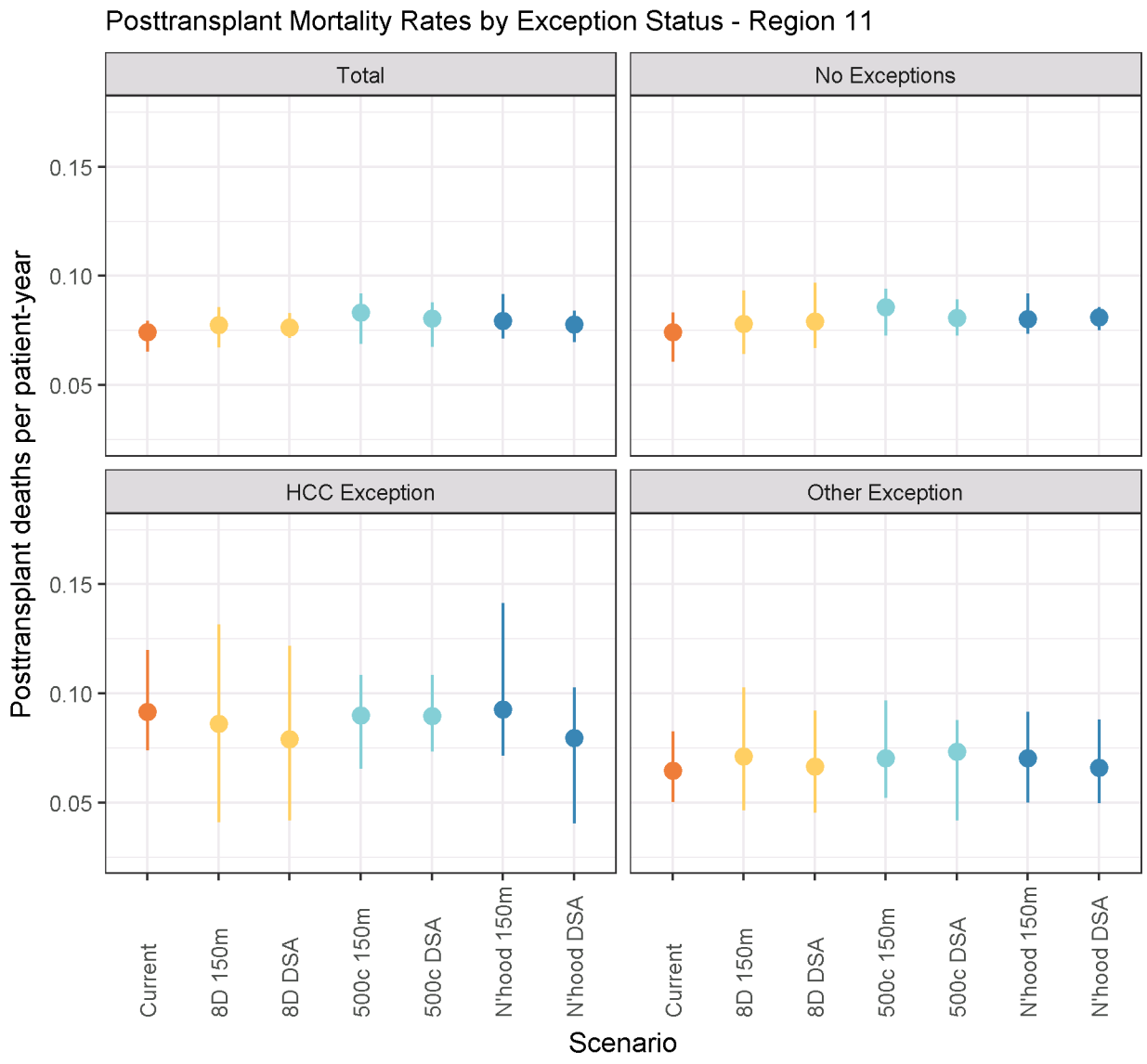


Figure 86 Posttransplant mortality rates by exception status - region 11

Posttransplant Mortality Counts

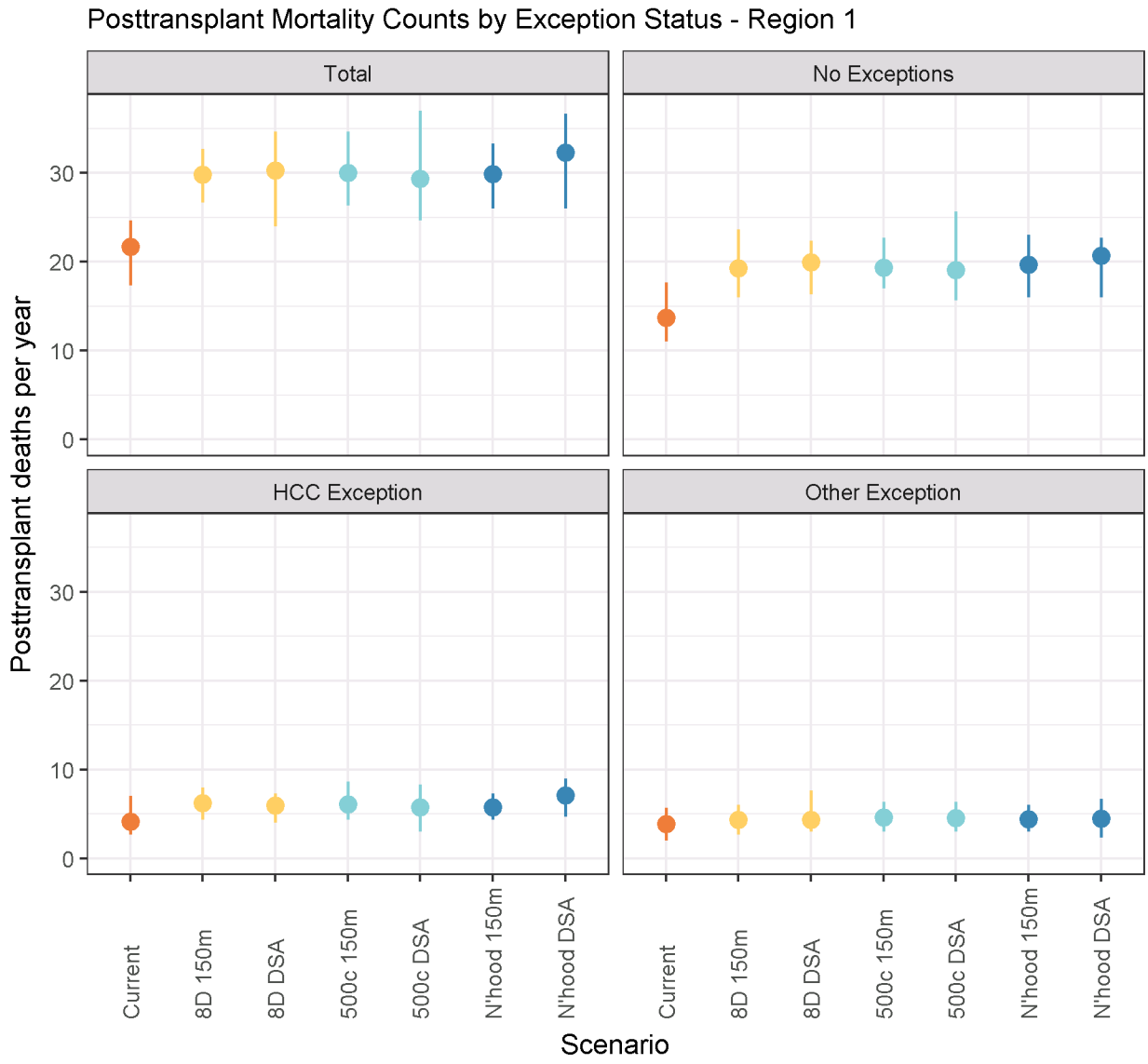


Figure 87 Posttransplant mortality counts by exception status - region 1

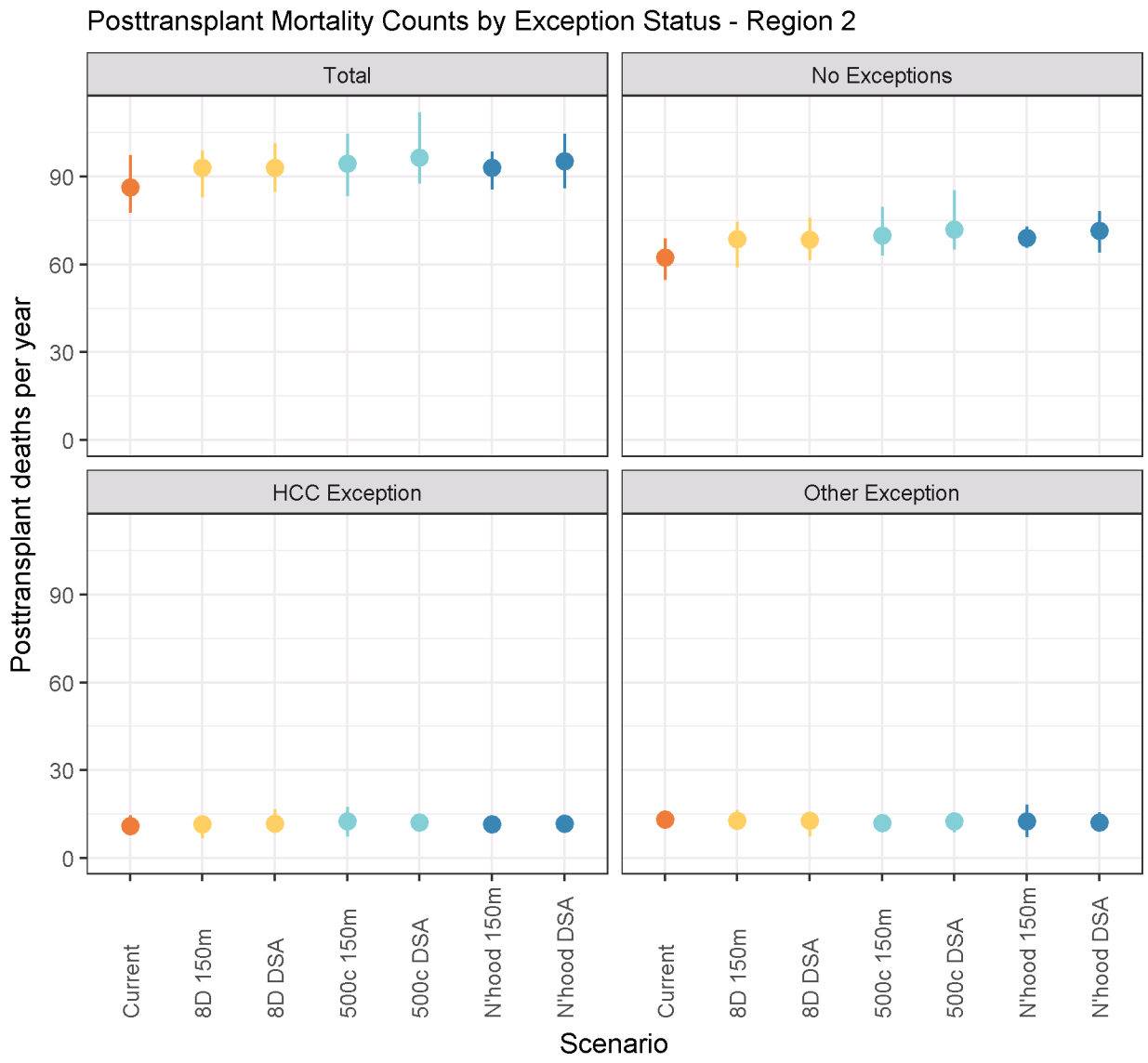


Figure 88 Posttransplant mortality counts by exception status - region 2

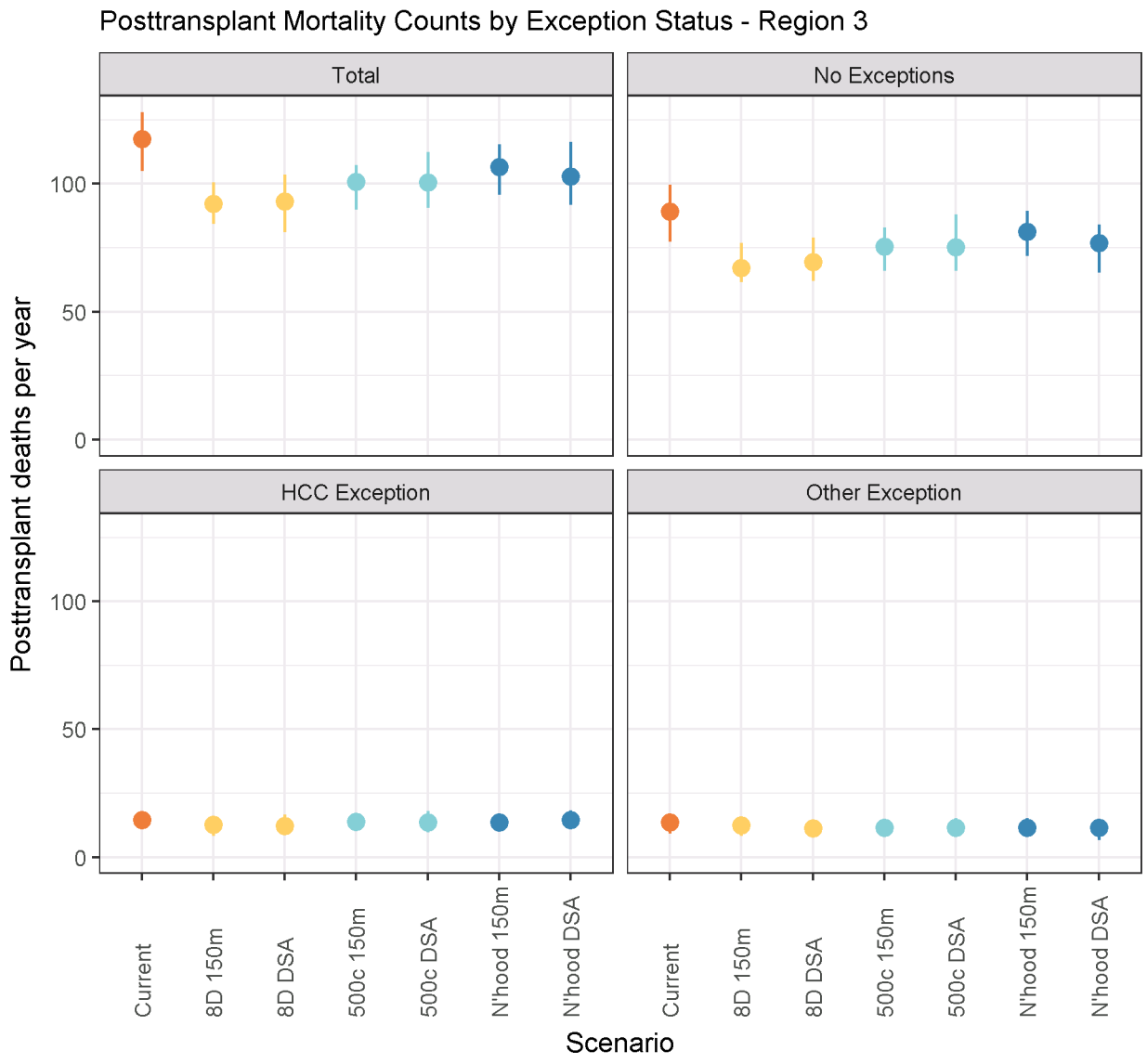


Figure 89 Posttransplant mortality counts by exception status - region 3

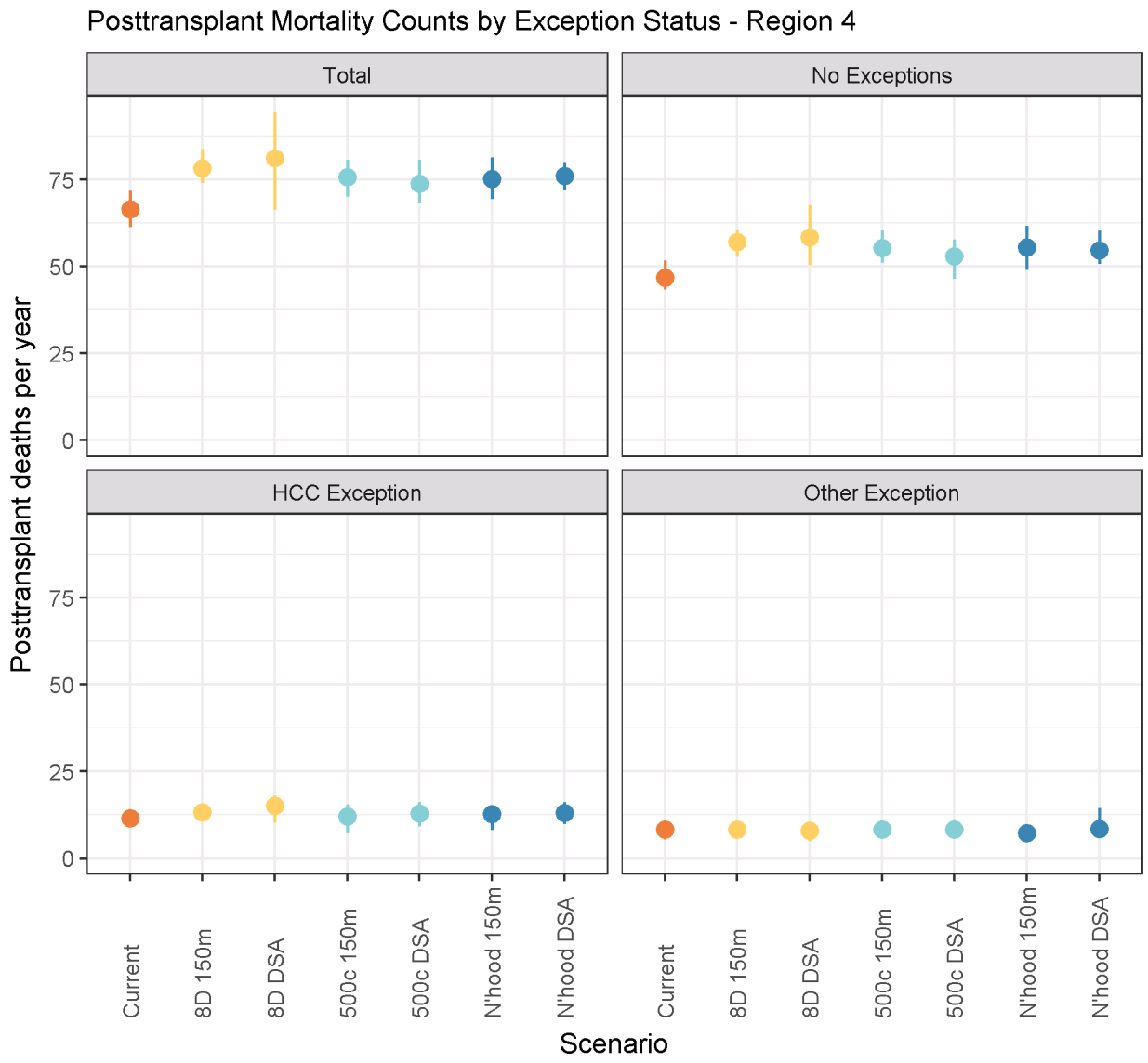


Figure 90 Posttransplant mortality counts by exception status - region 4

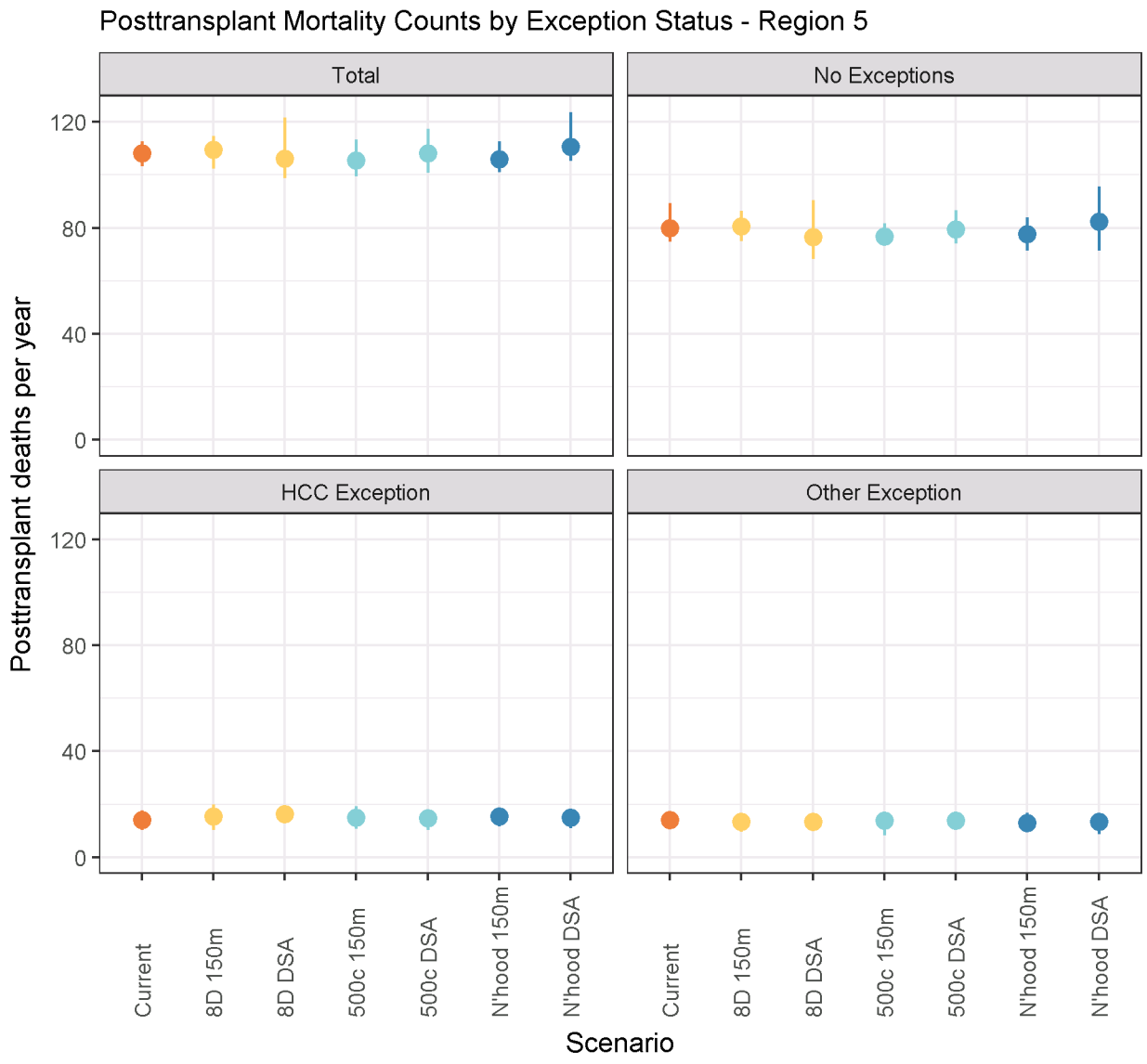


Figure 91 Posttransplant mortality counts by exception status - region 5

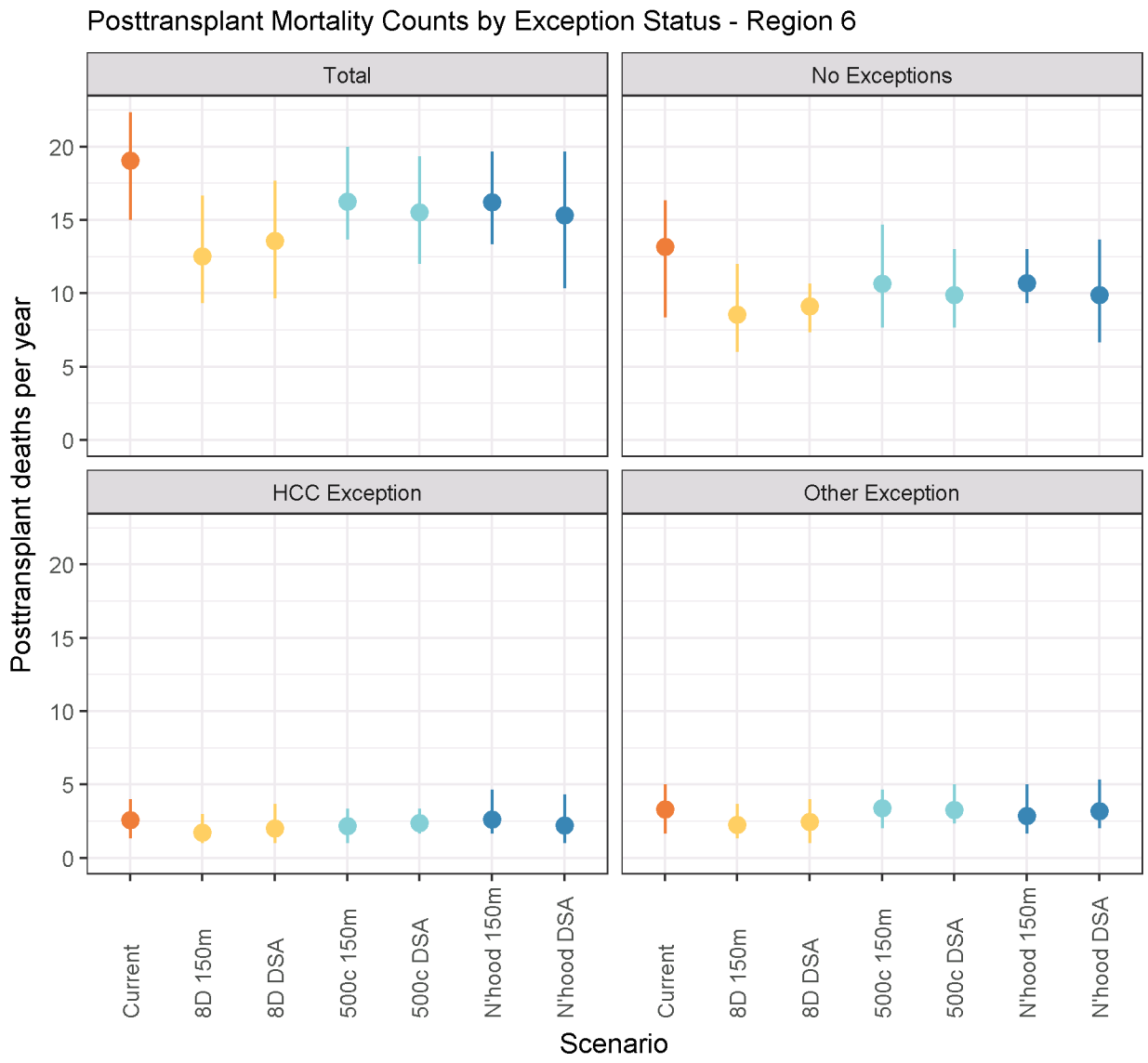


Figure 92 Posttransplant mortality counts by exception status - region 6

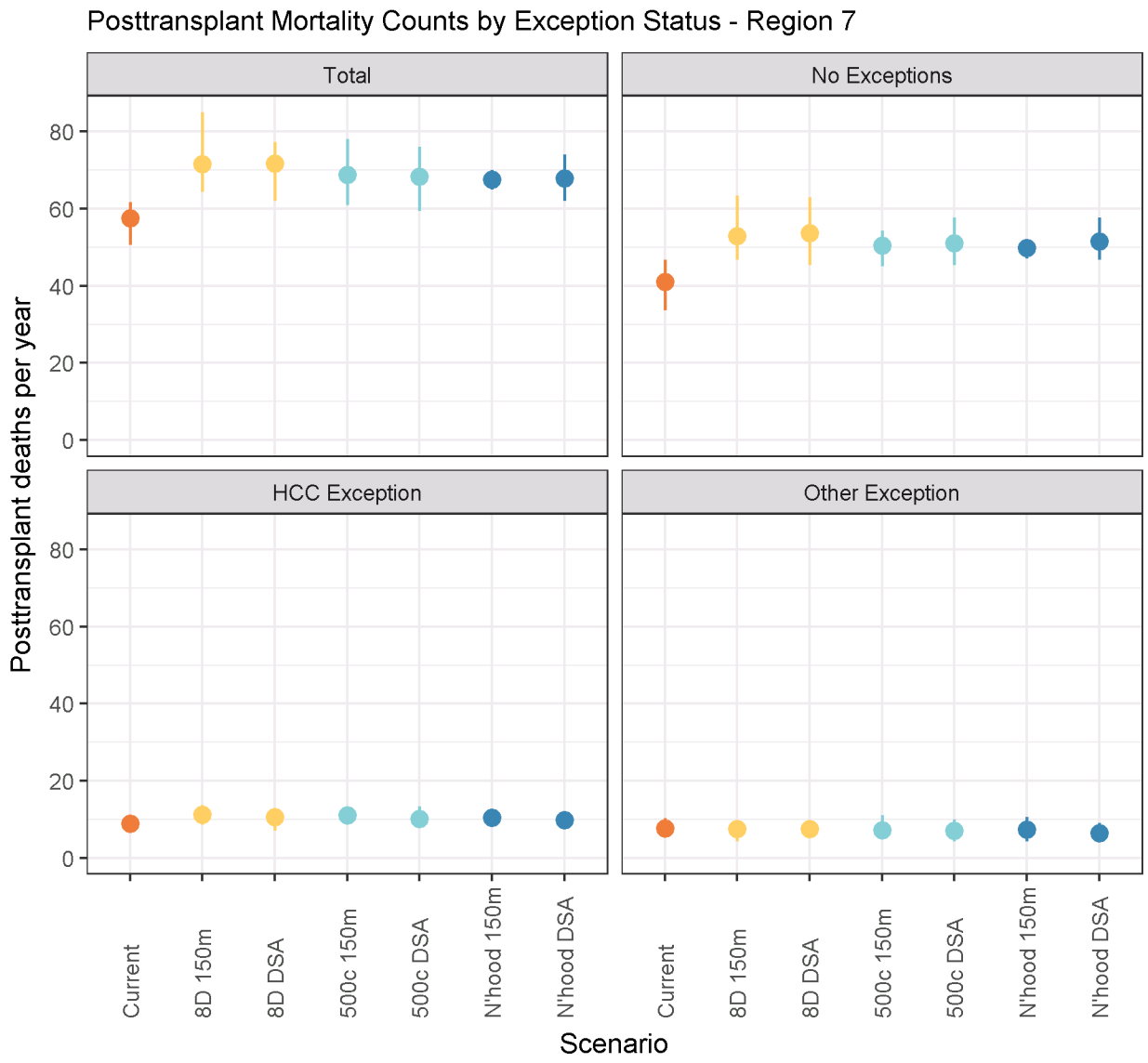


Figure 93 Posttransplant mortality counts by exception status - region 7

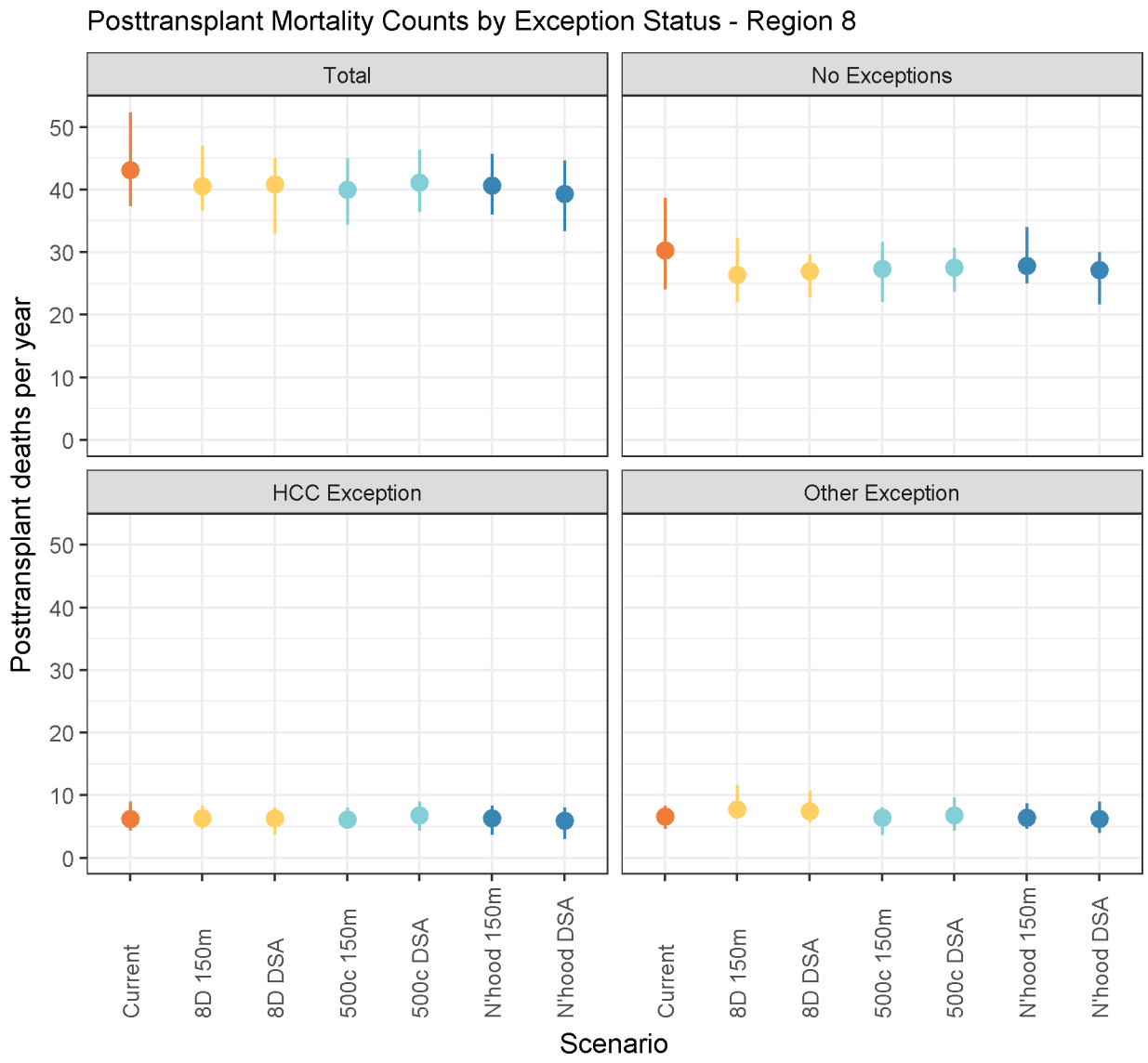


Figure 94 Posttransplant mortality counts by exception status - region 8

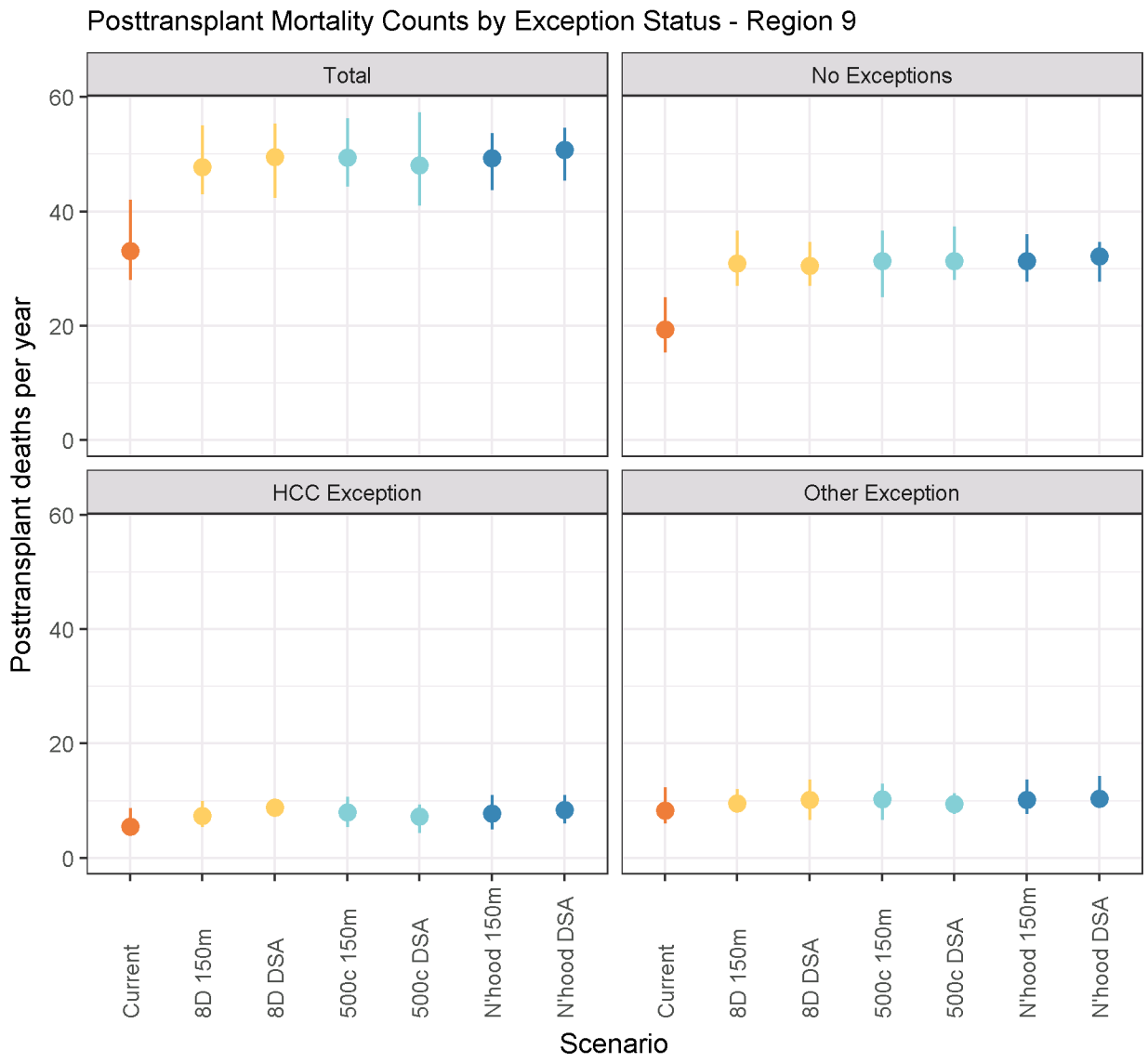


Figure 95 Posttransplant mortality counts by exception status - region 9

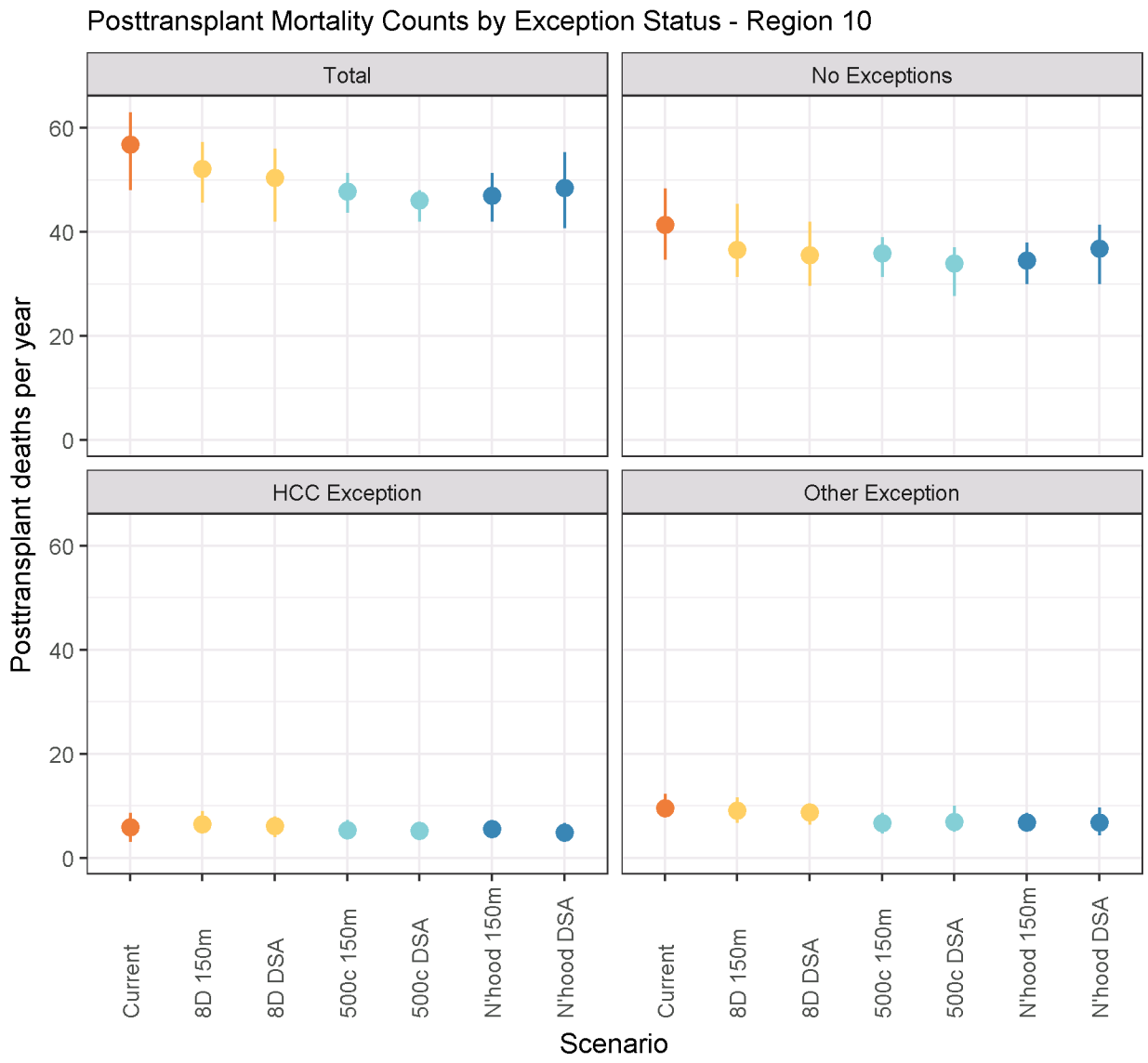


Figure 96 Posttransplant mortality counts by exception status - region 10

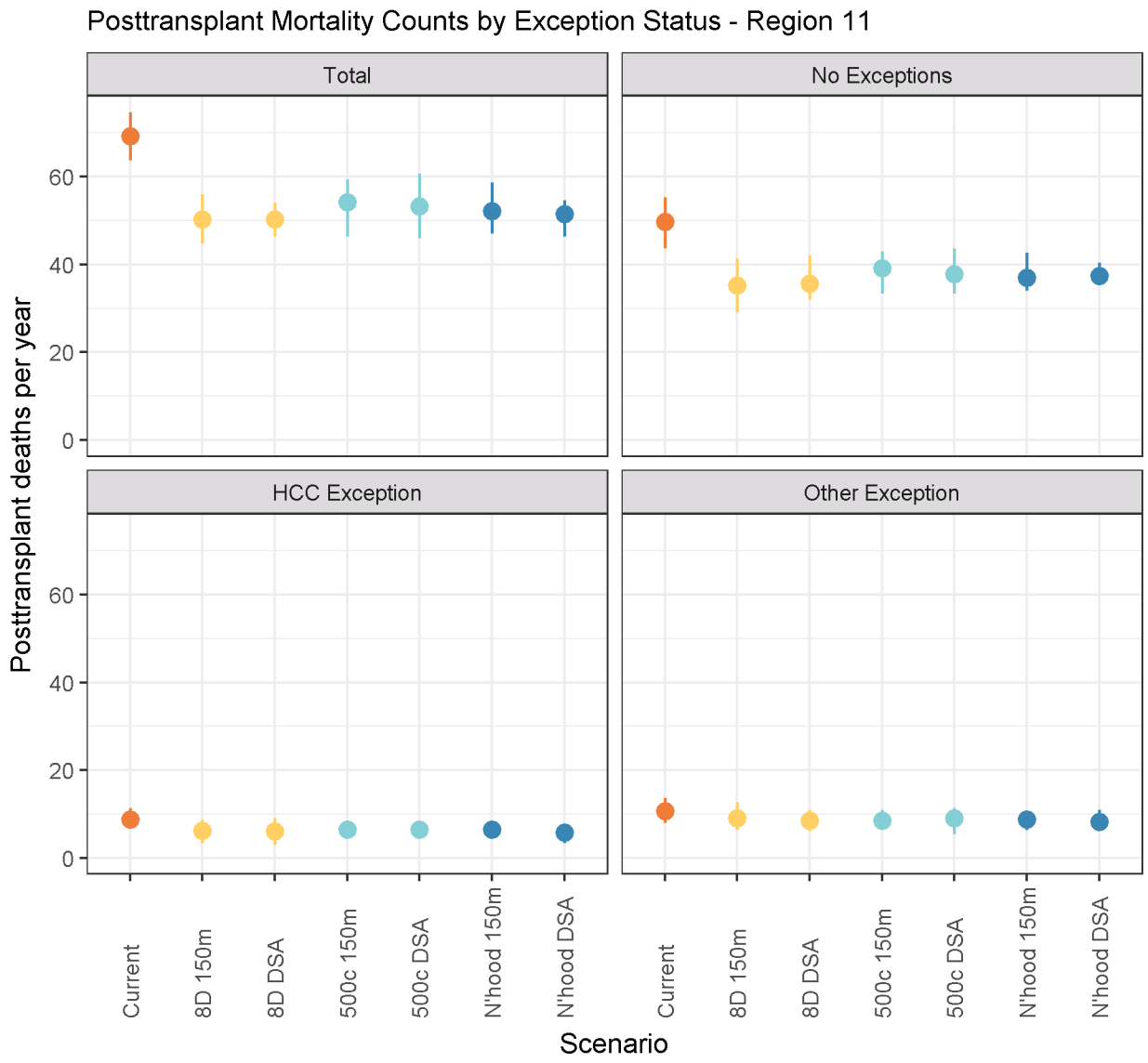


Figure 97 Posttransplant mortality counts by exception status - region 11

Transport

Median Transport Time

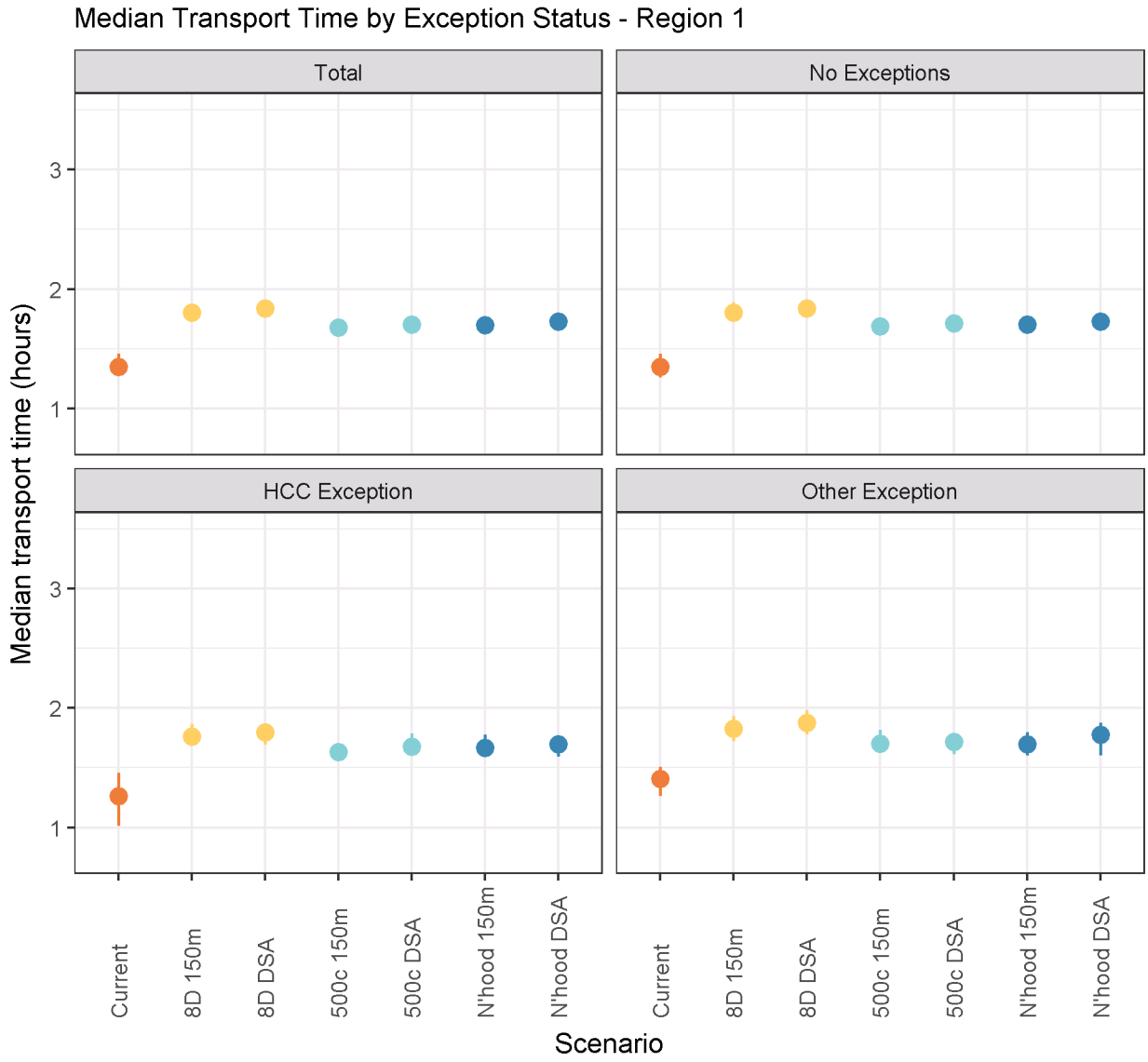


Figure 98 Median Transport Time by exception status - region 1

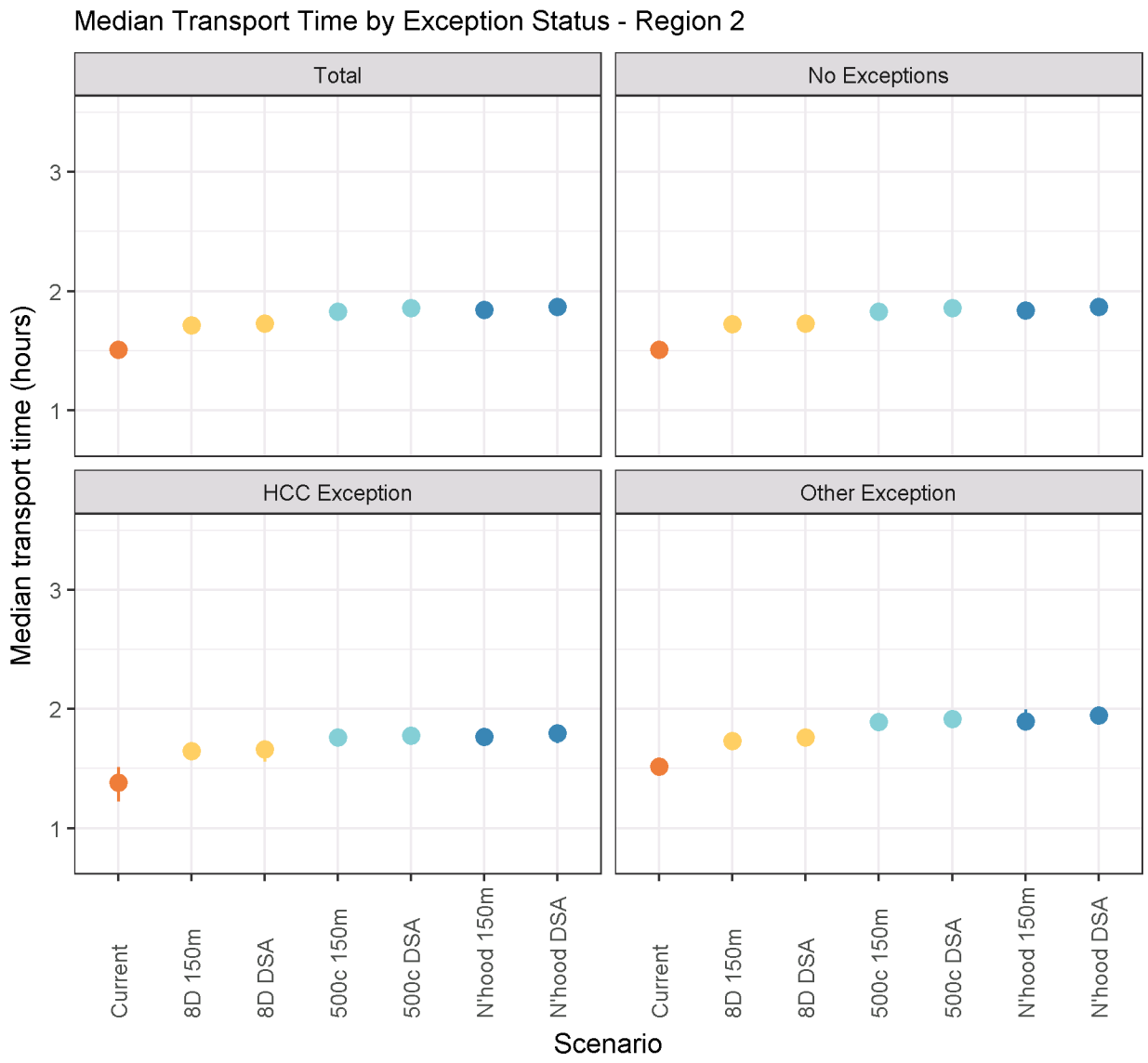


Figure 99 Median Transport Time by exception status - region 2

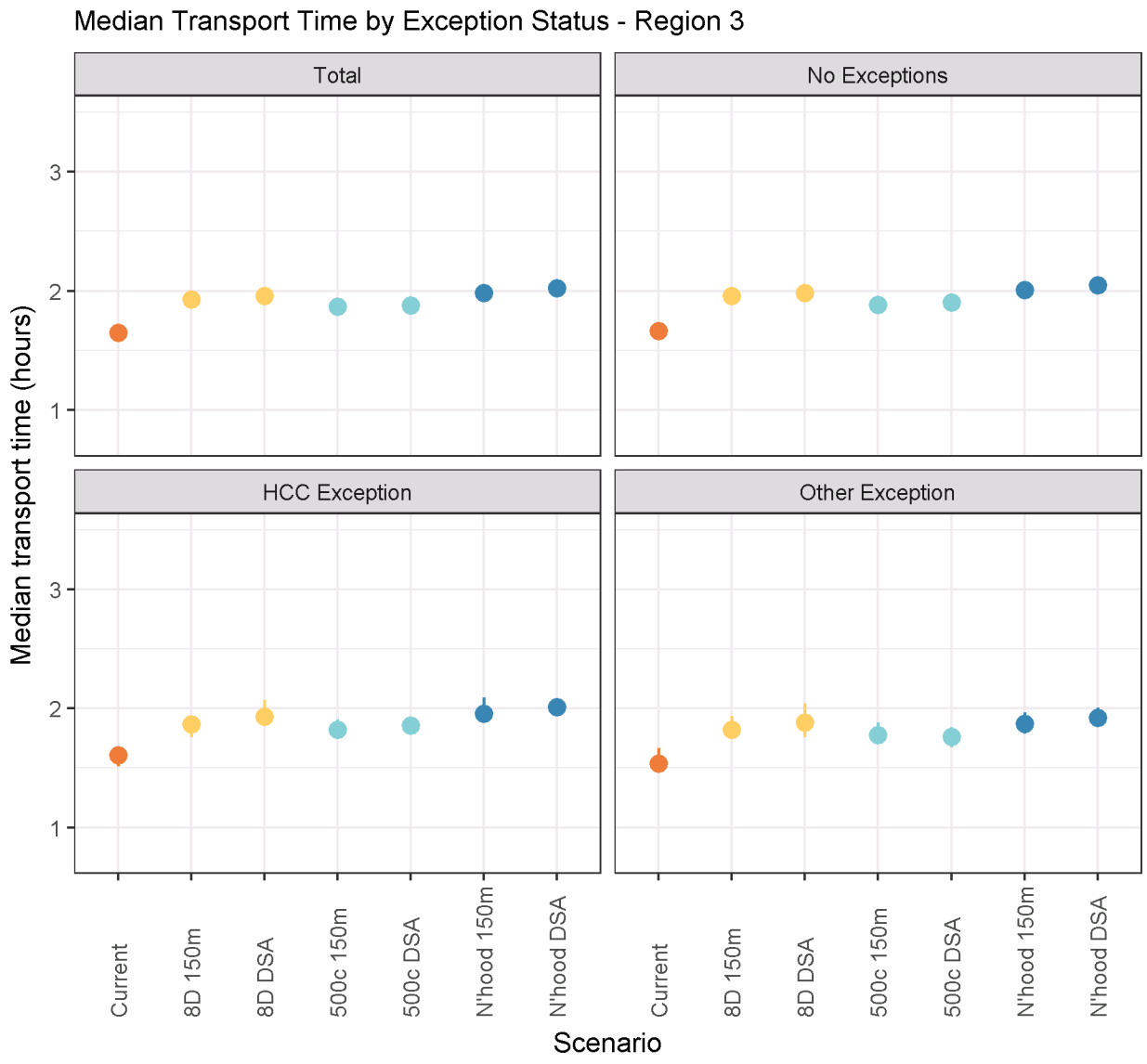


Figure 100 Median Transport Time by exception status - region 3

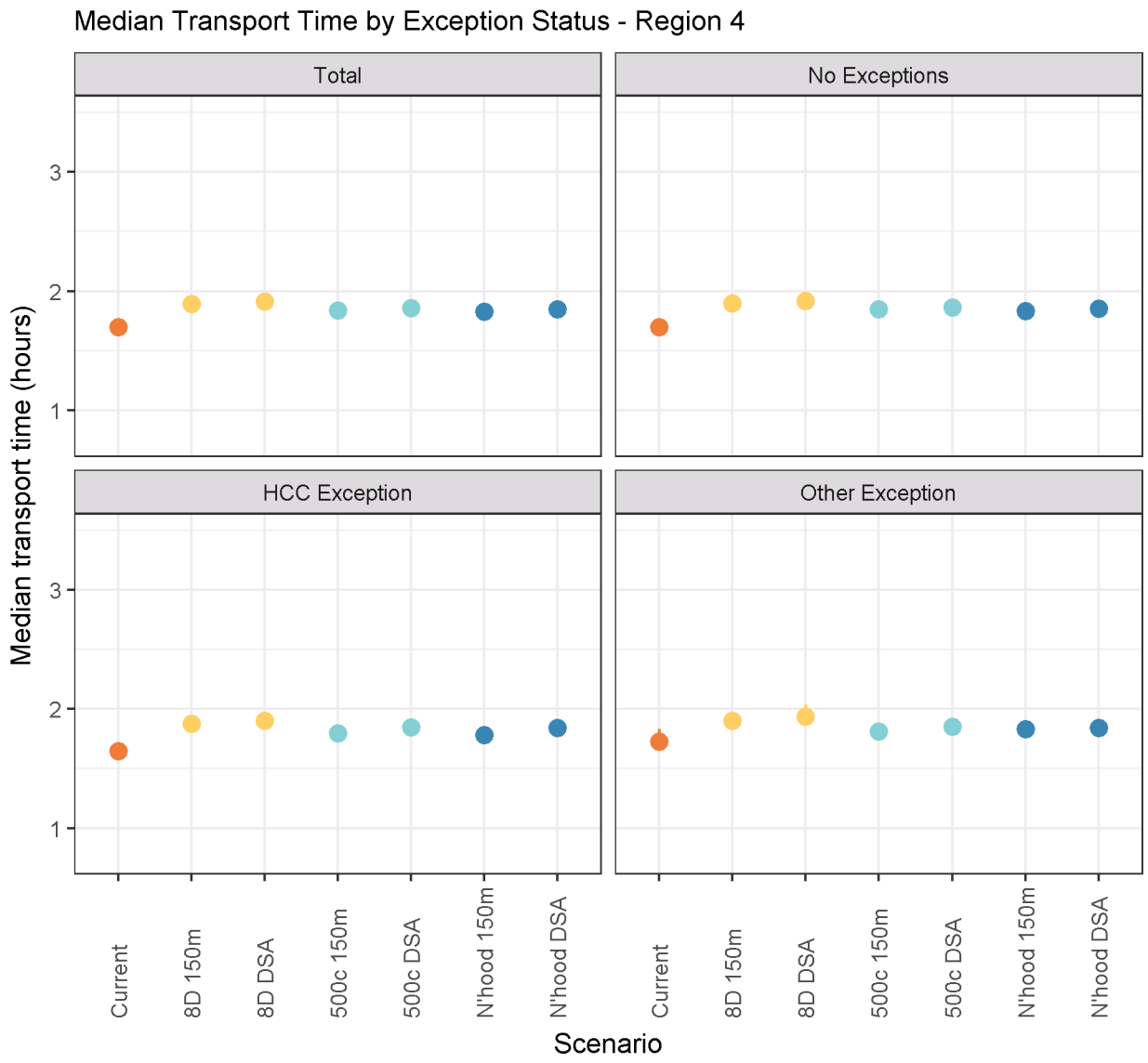


Figure 101 Median Transport Time by exception status - region 4

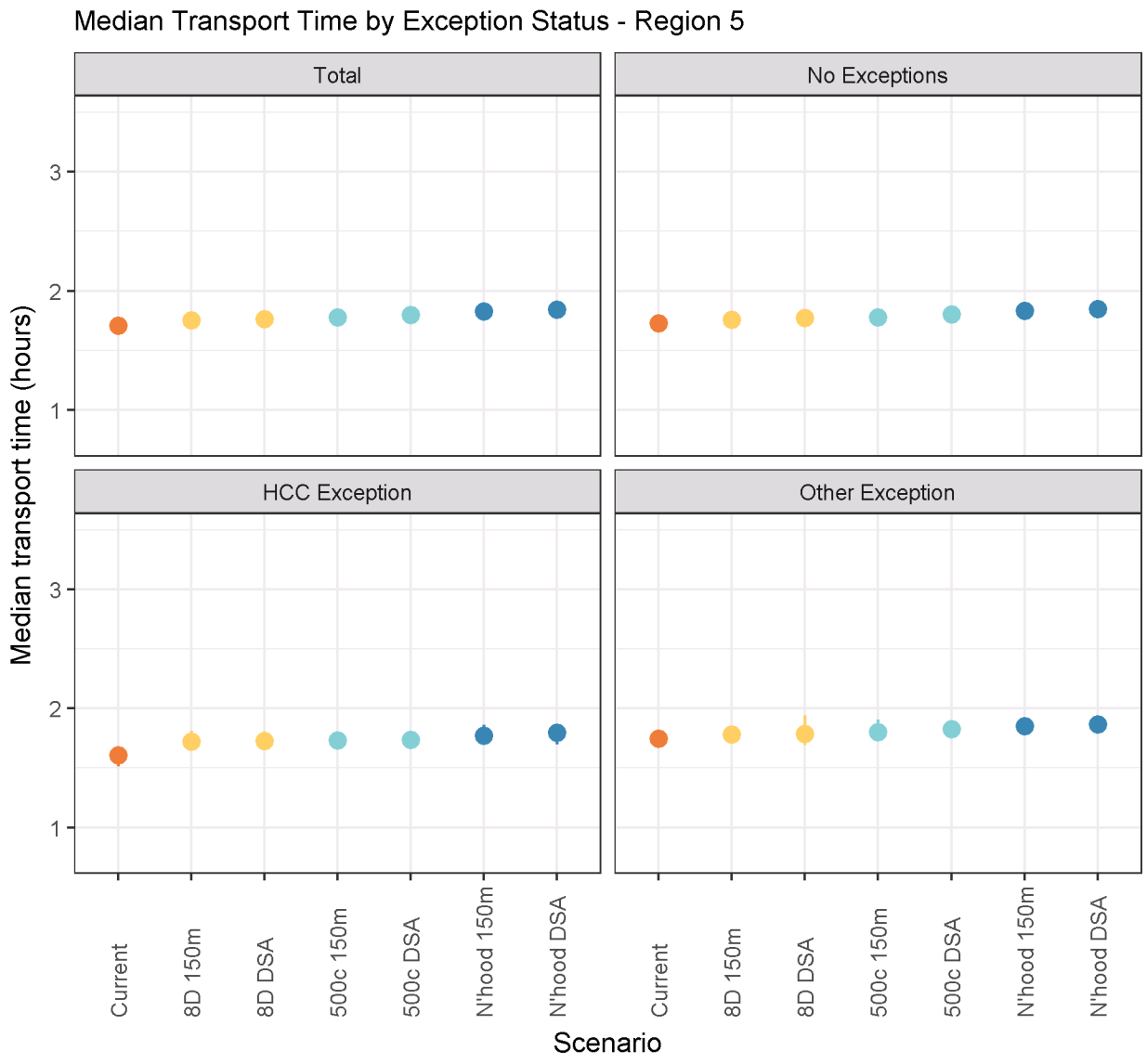


Figure 102 Median Transport Time by exception status - region 5

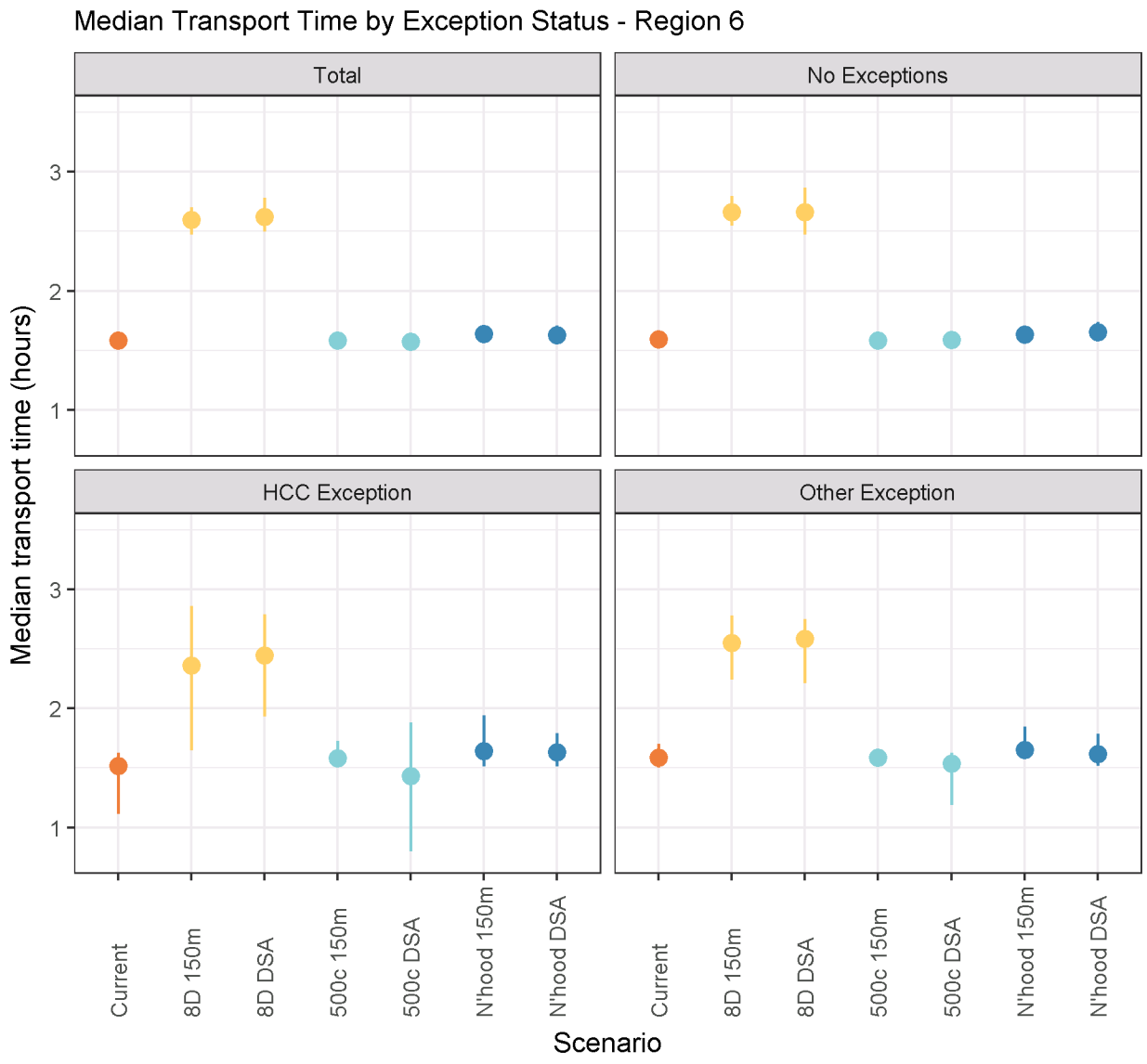


Figure 103 Median Transport Time by exception status - region 6

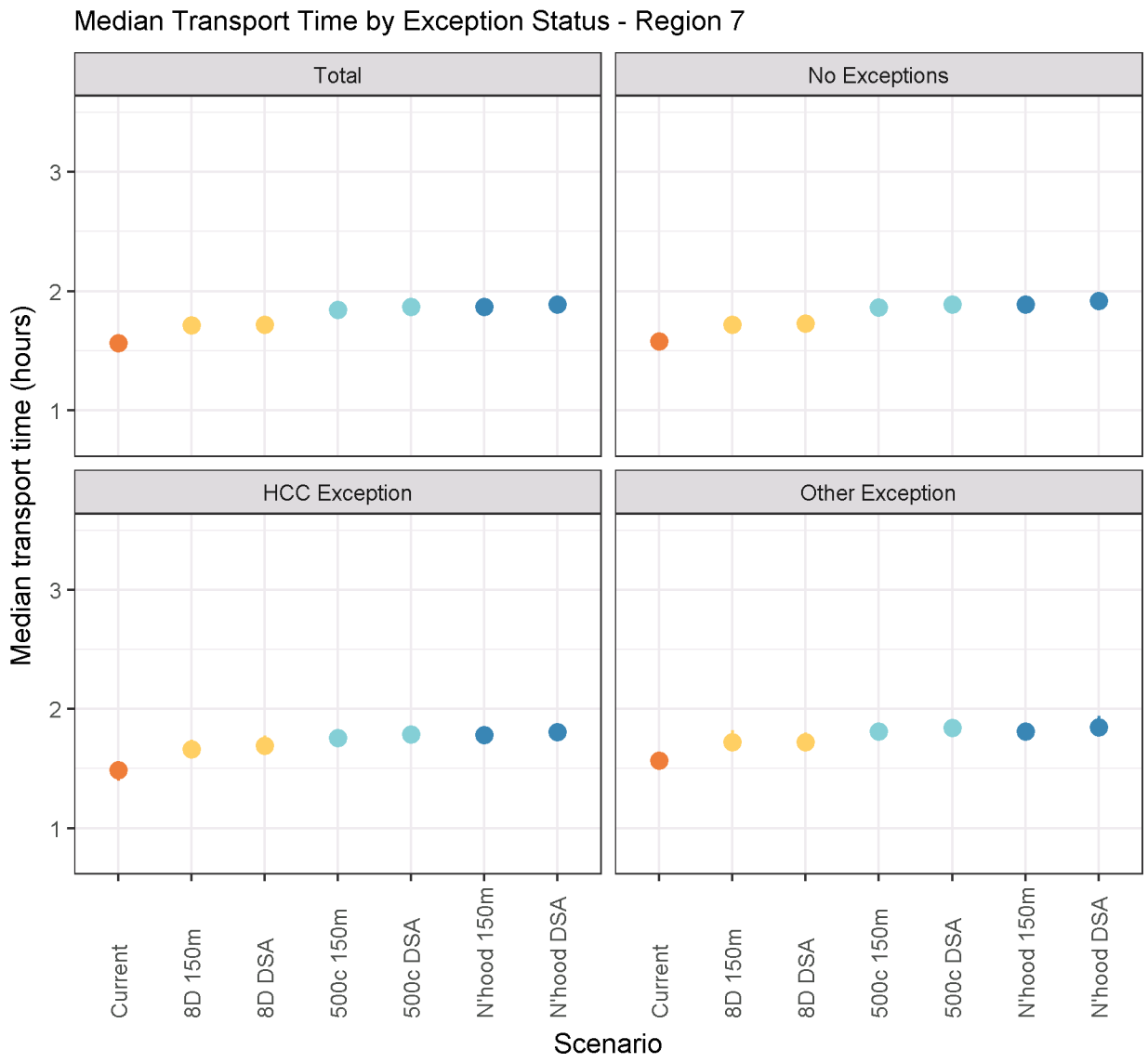


Figure 104 Median Transport Time by exception status - region 7

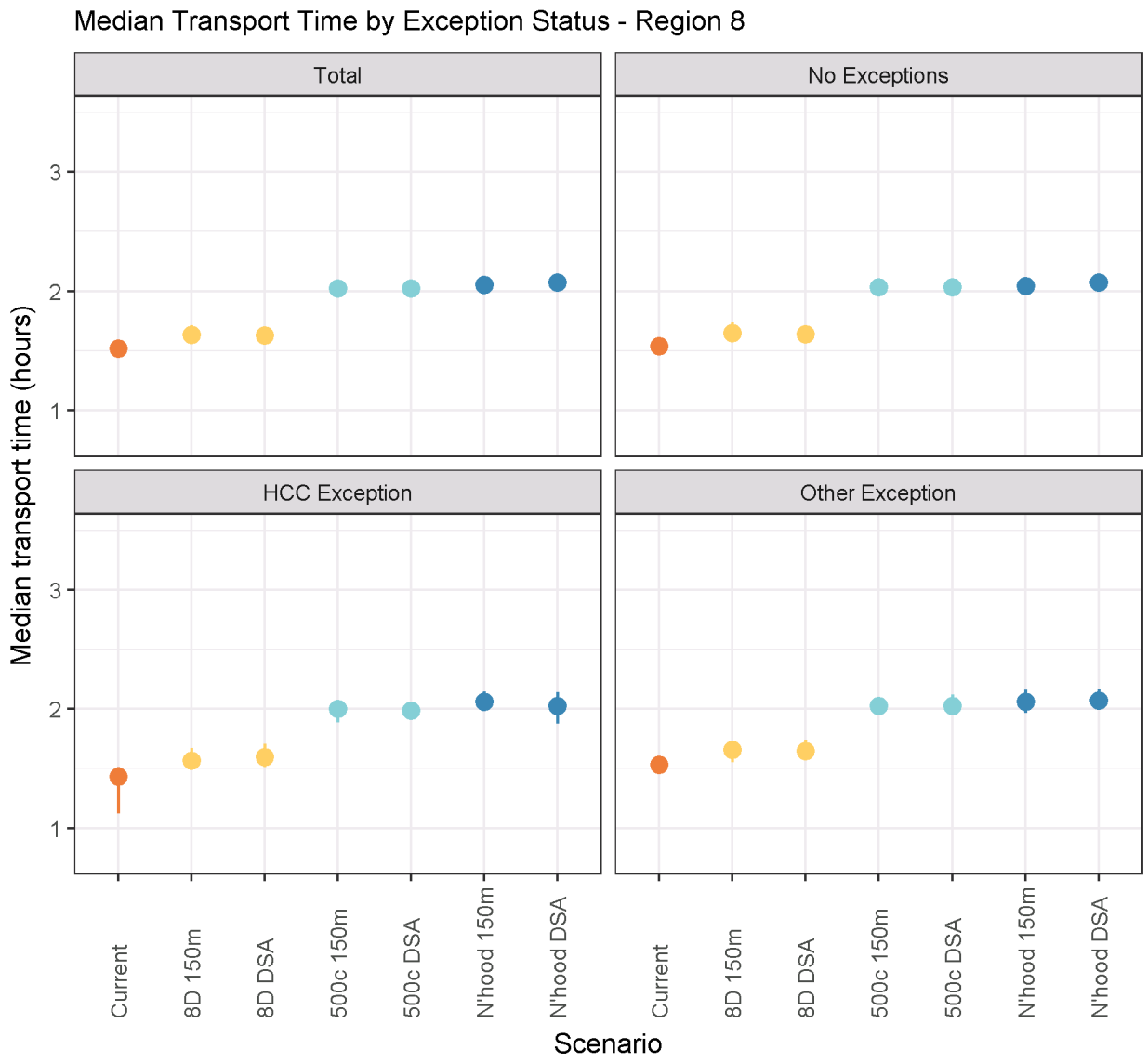


Figure 105 Median Transport Time by exception status - region 8

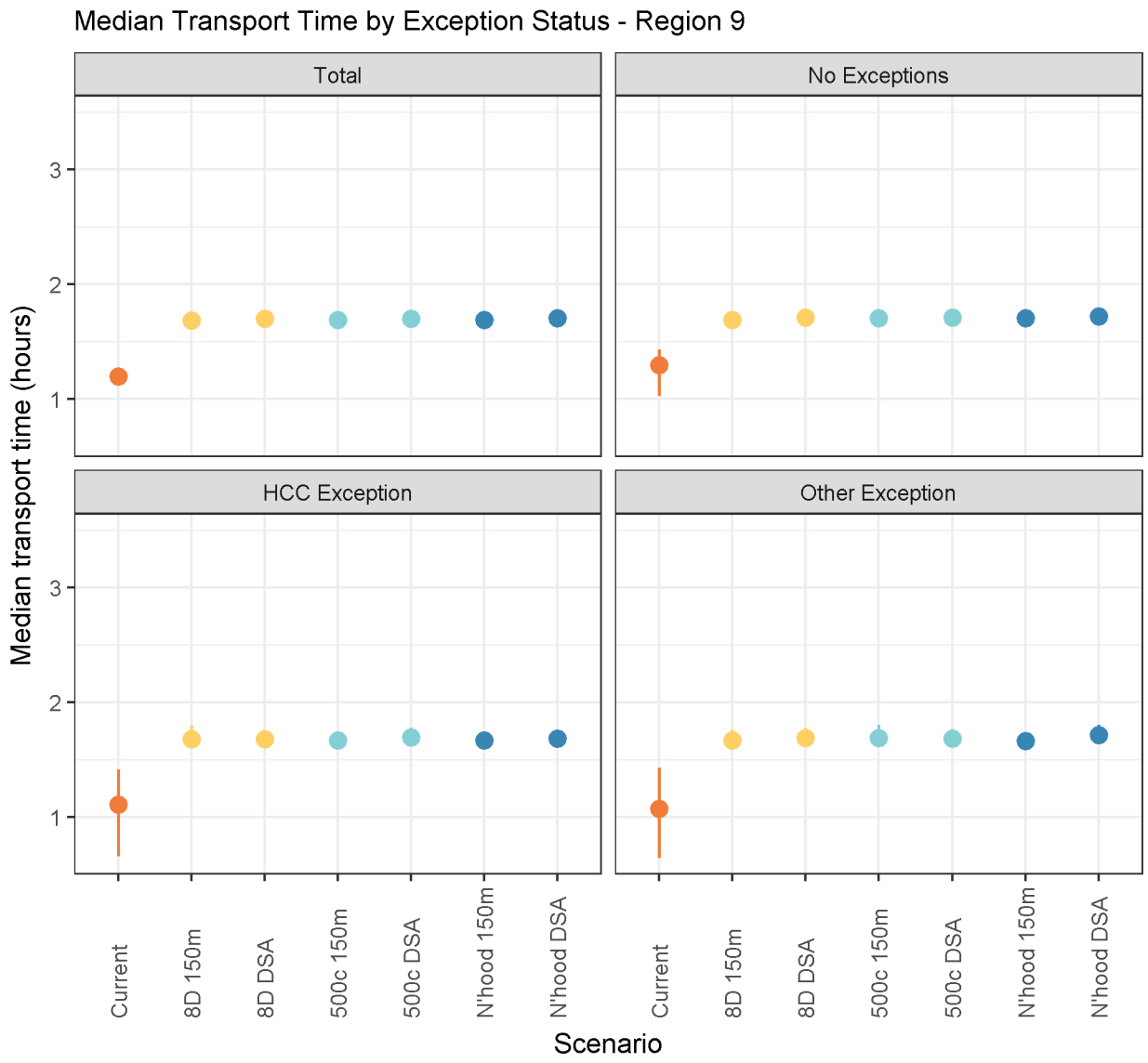


Figure 106 Median Transport Time by exception status - region 9

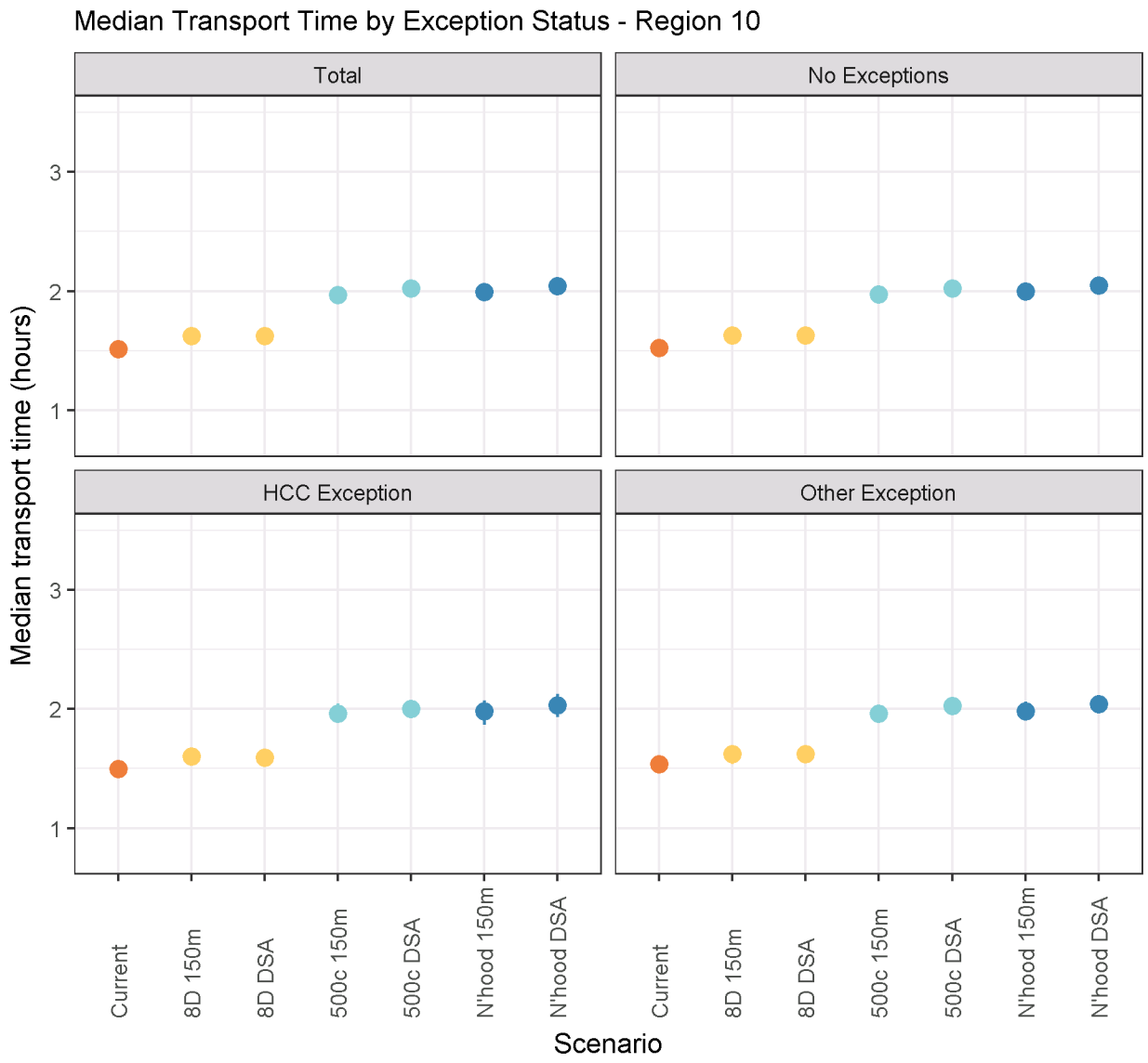


Figure 107 Median Transport Time by exception status - region 10

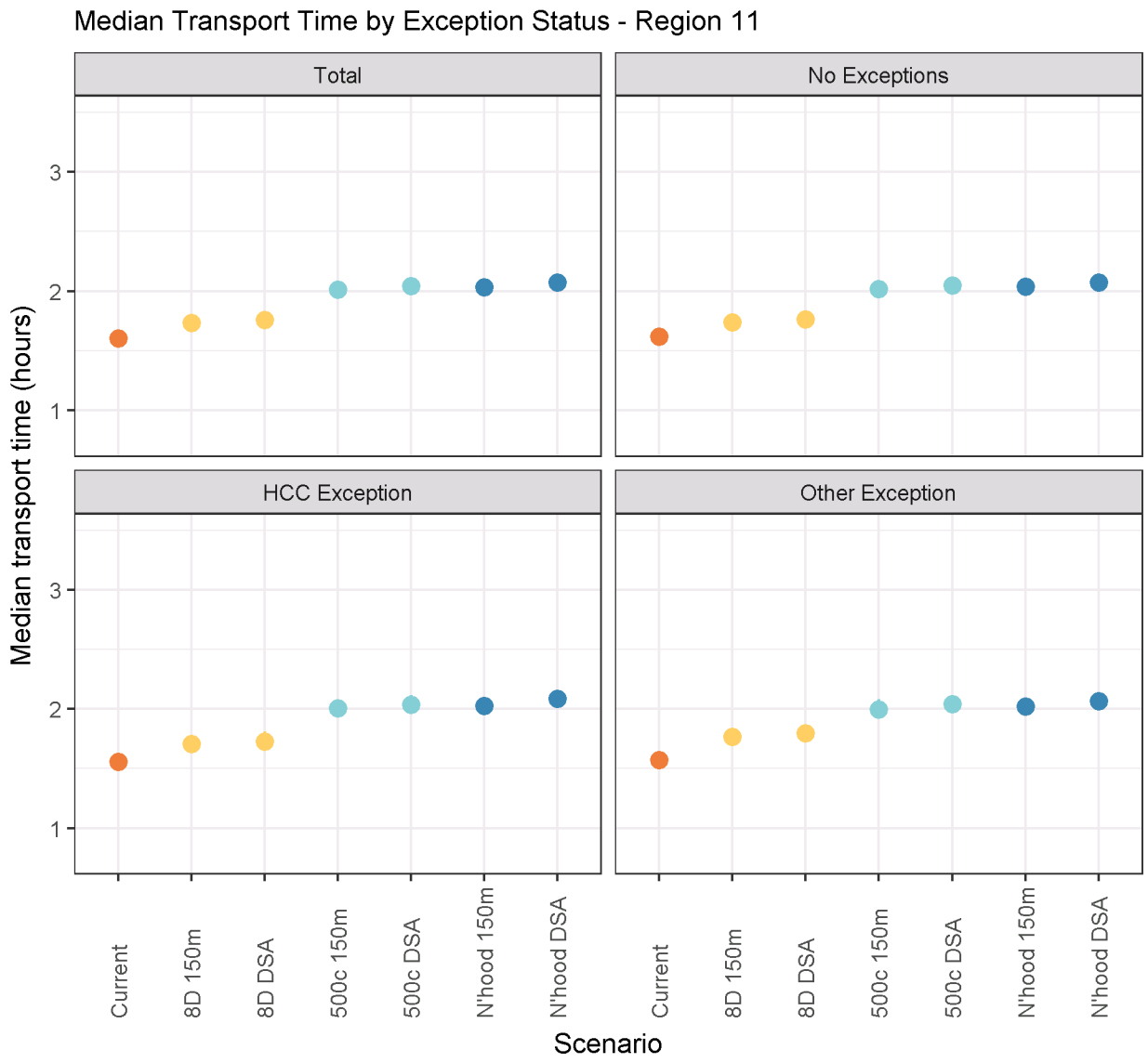


Figure 108 Median Transport Time by exception status - region 11

Median Transport Distance

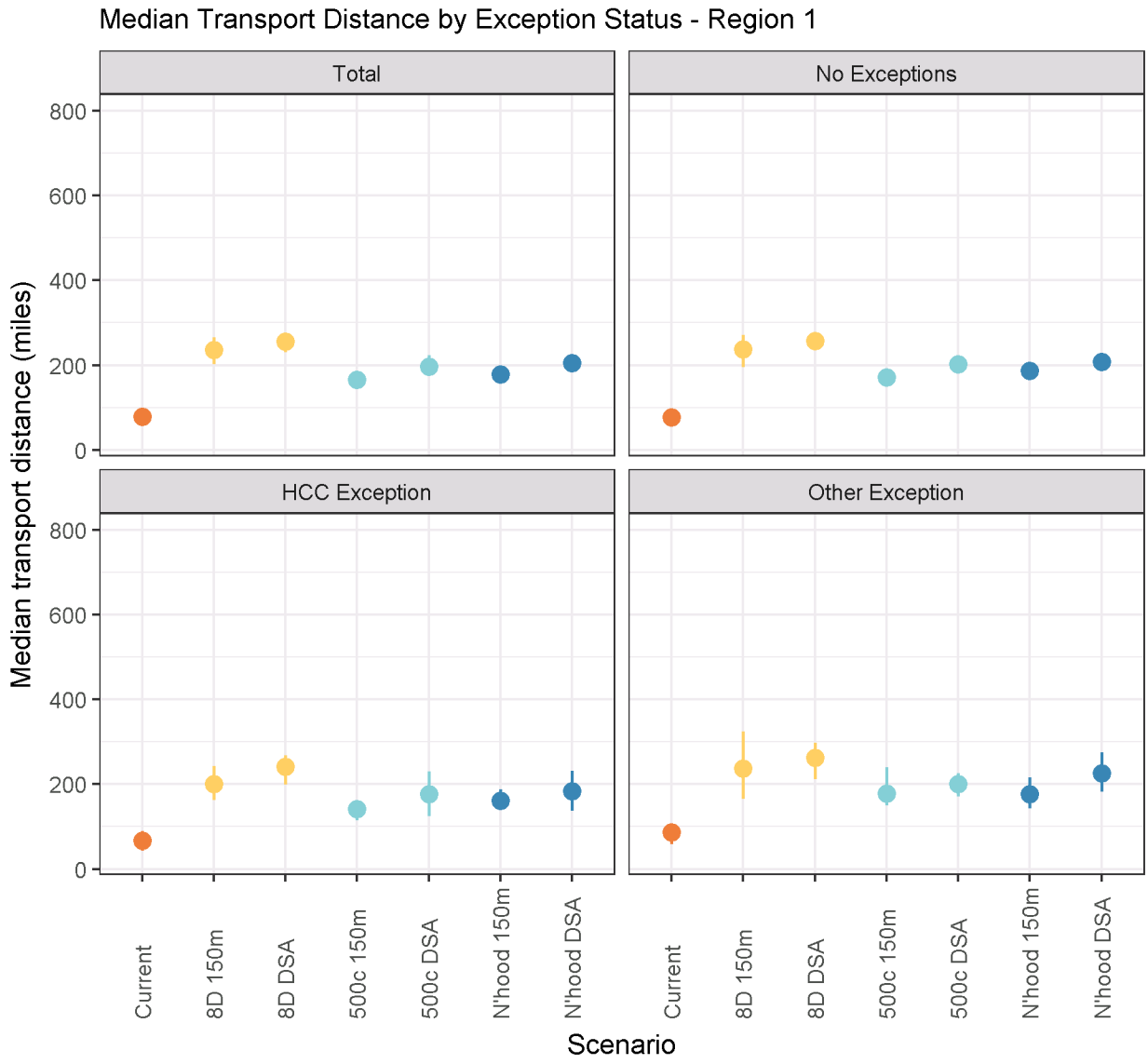


Figure 109 Median Transport Distance by exception status - region 1

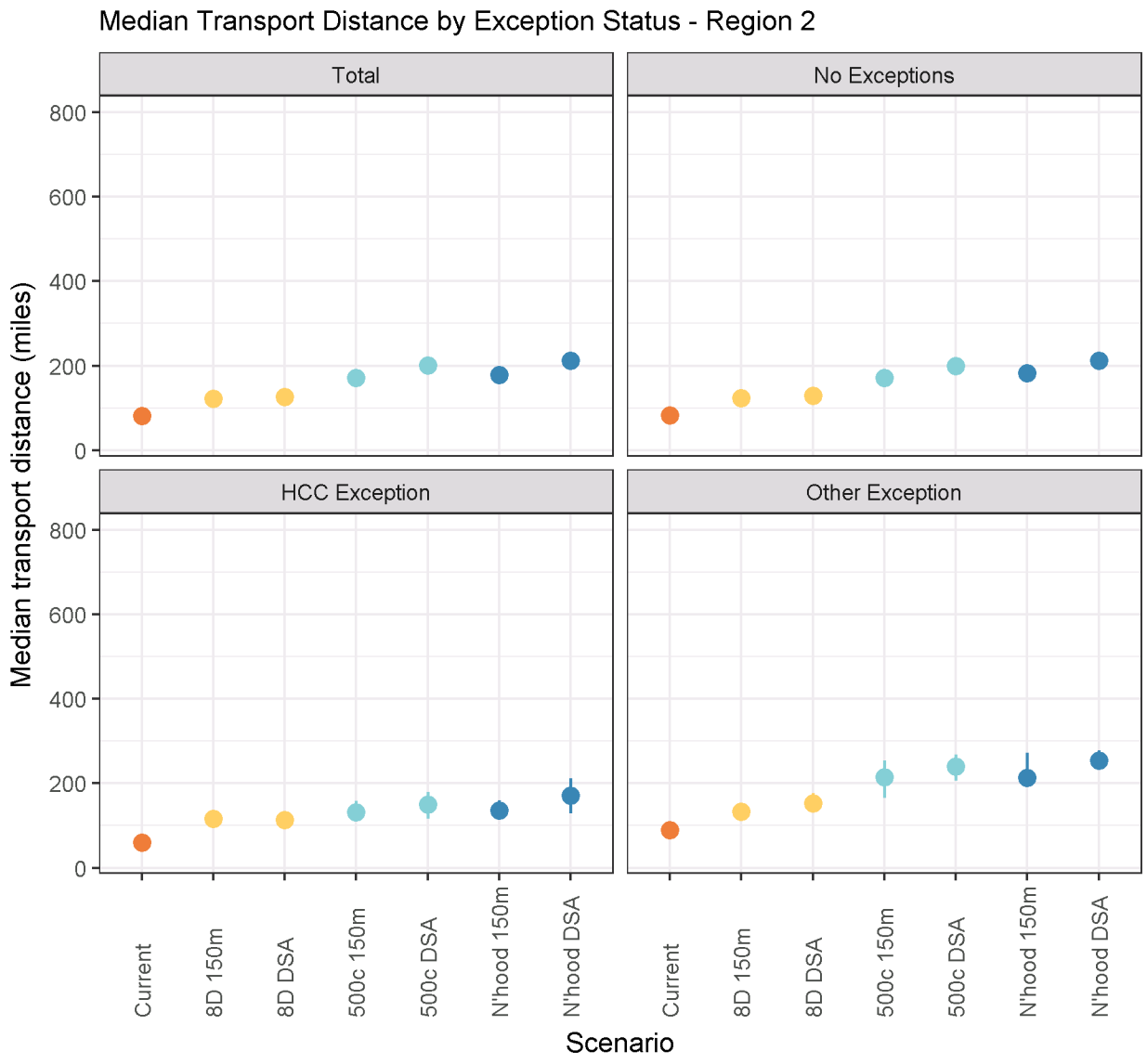


Figure 110 Median Transport Distance by exception status - region 2

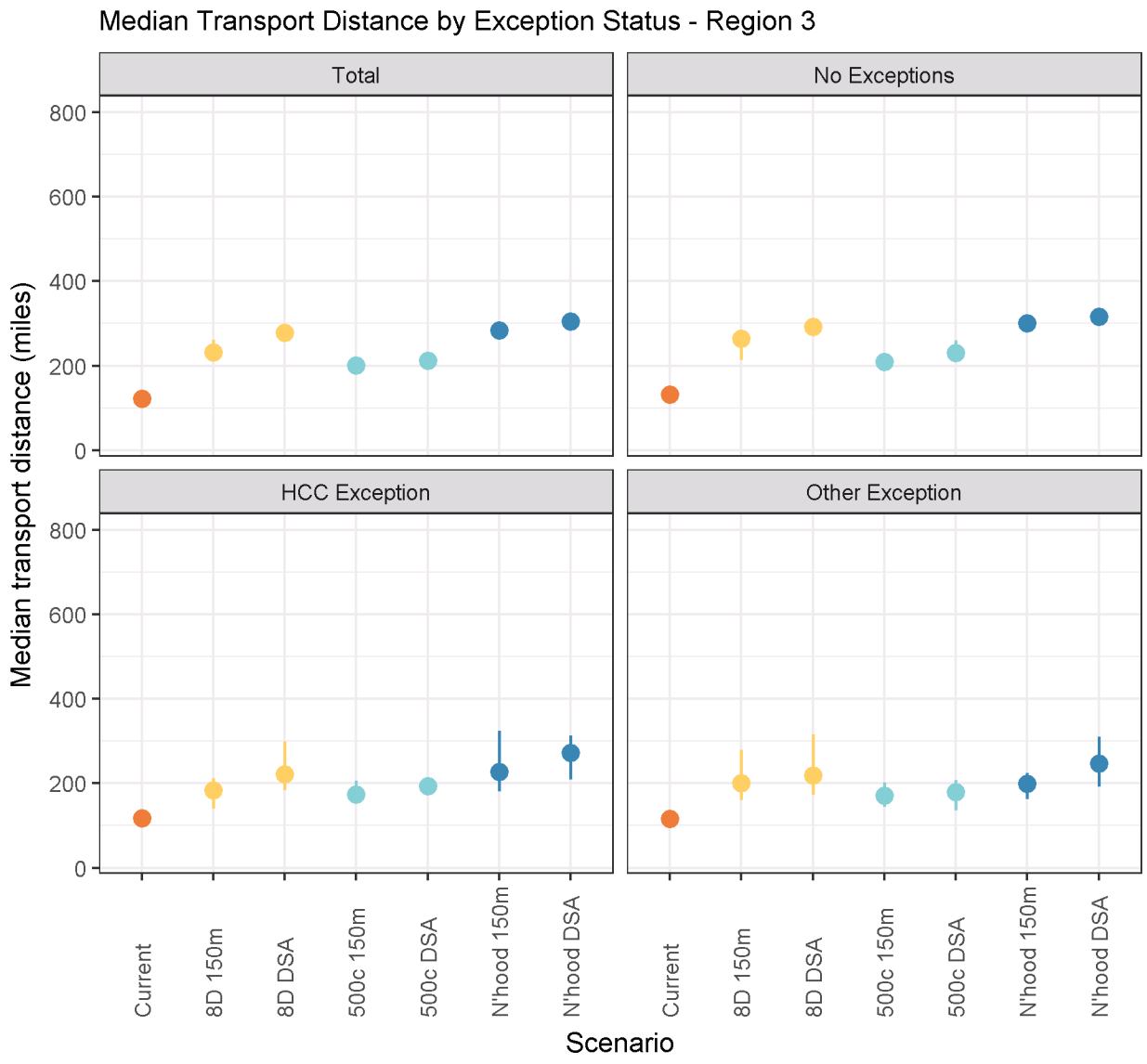


Figure 111 Median Transport Distance by exception status - region 3

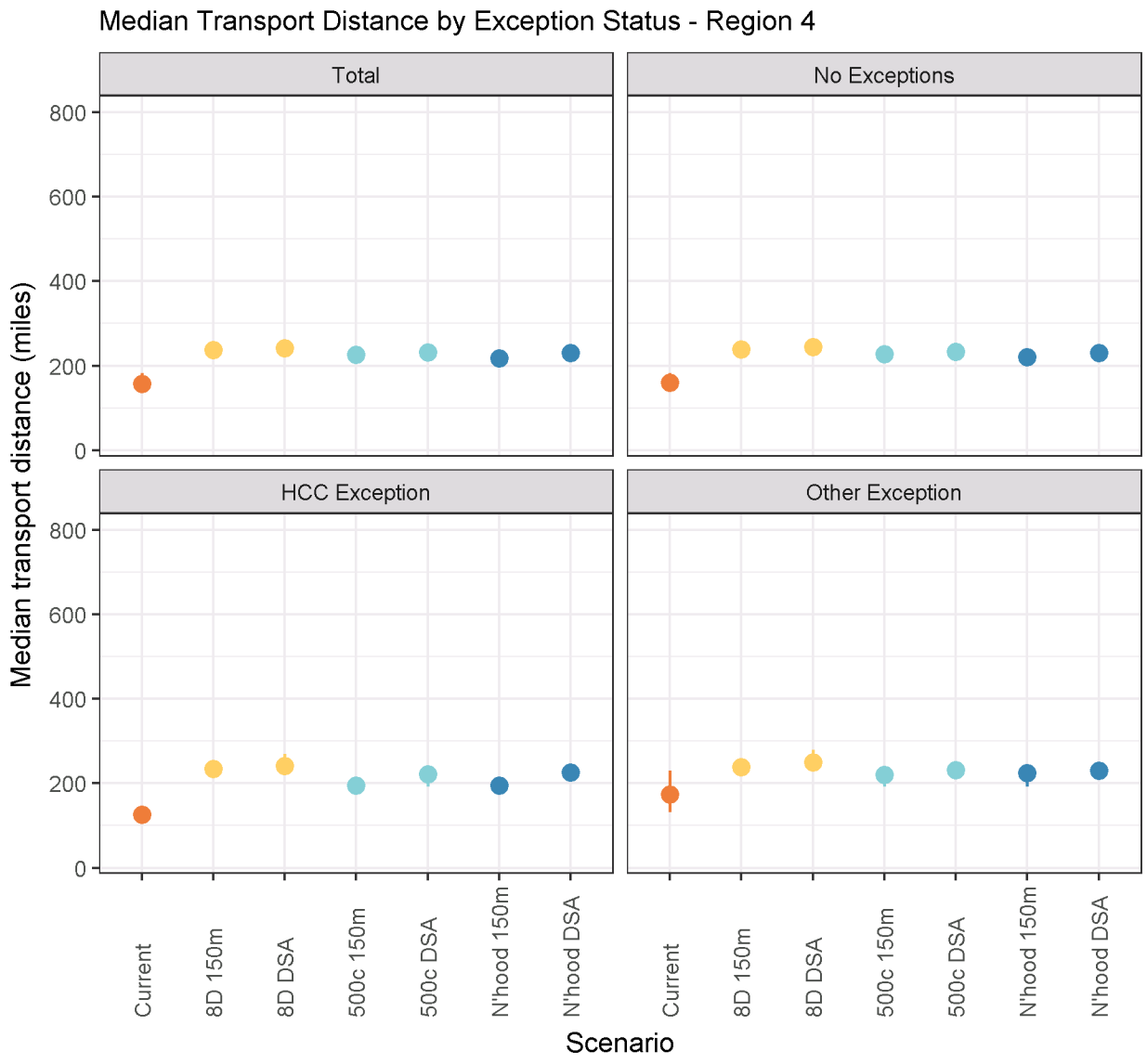


Figure 112 Median Transport Distance by exception status - region 4

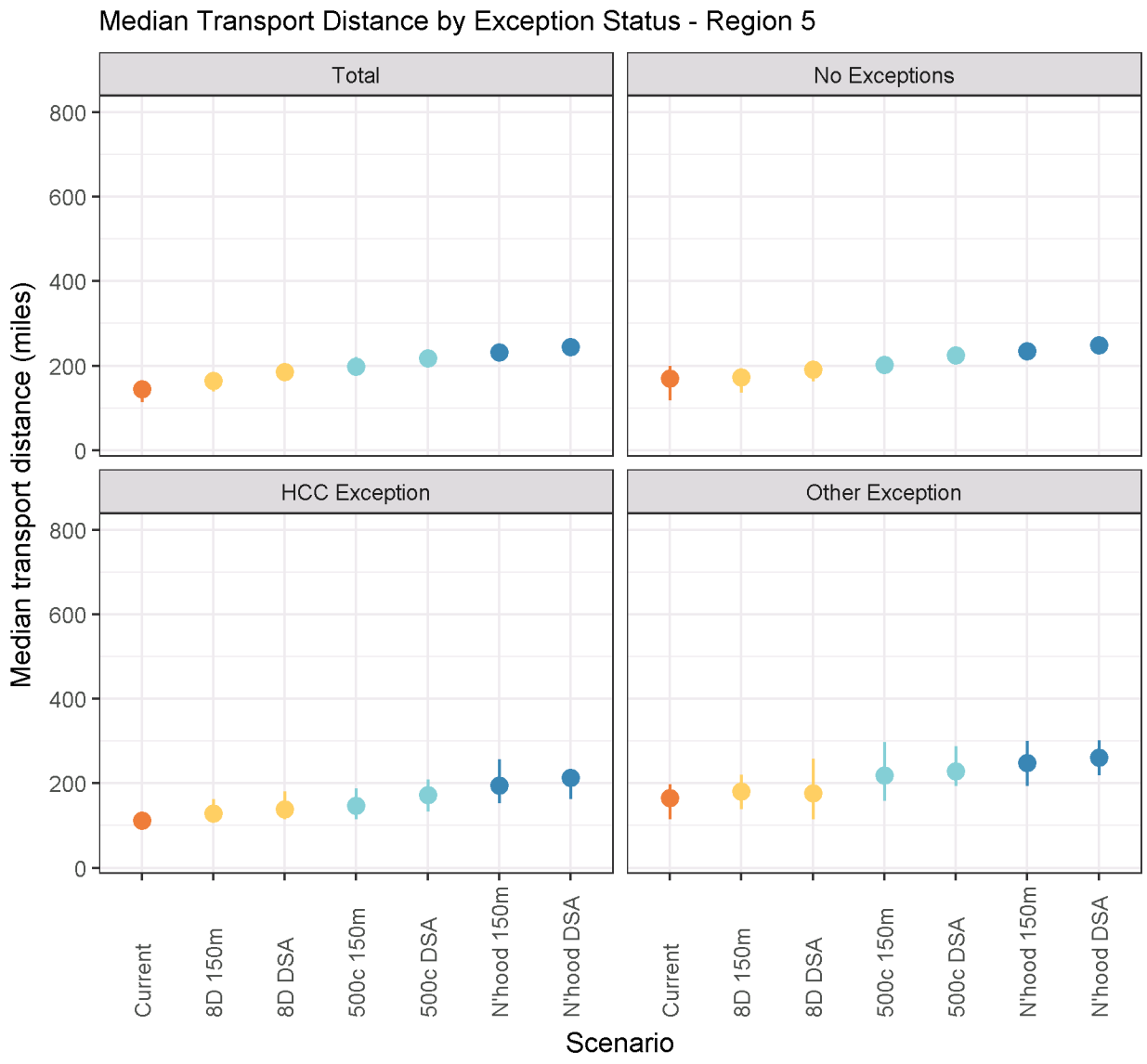


Figure 113 Median Transport Distance by exception status - region 5

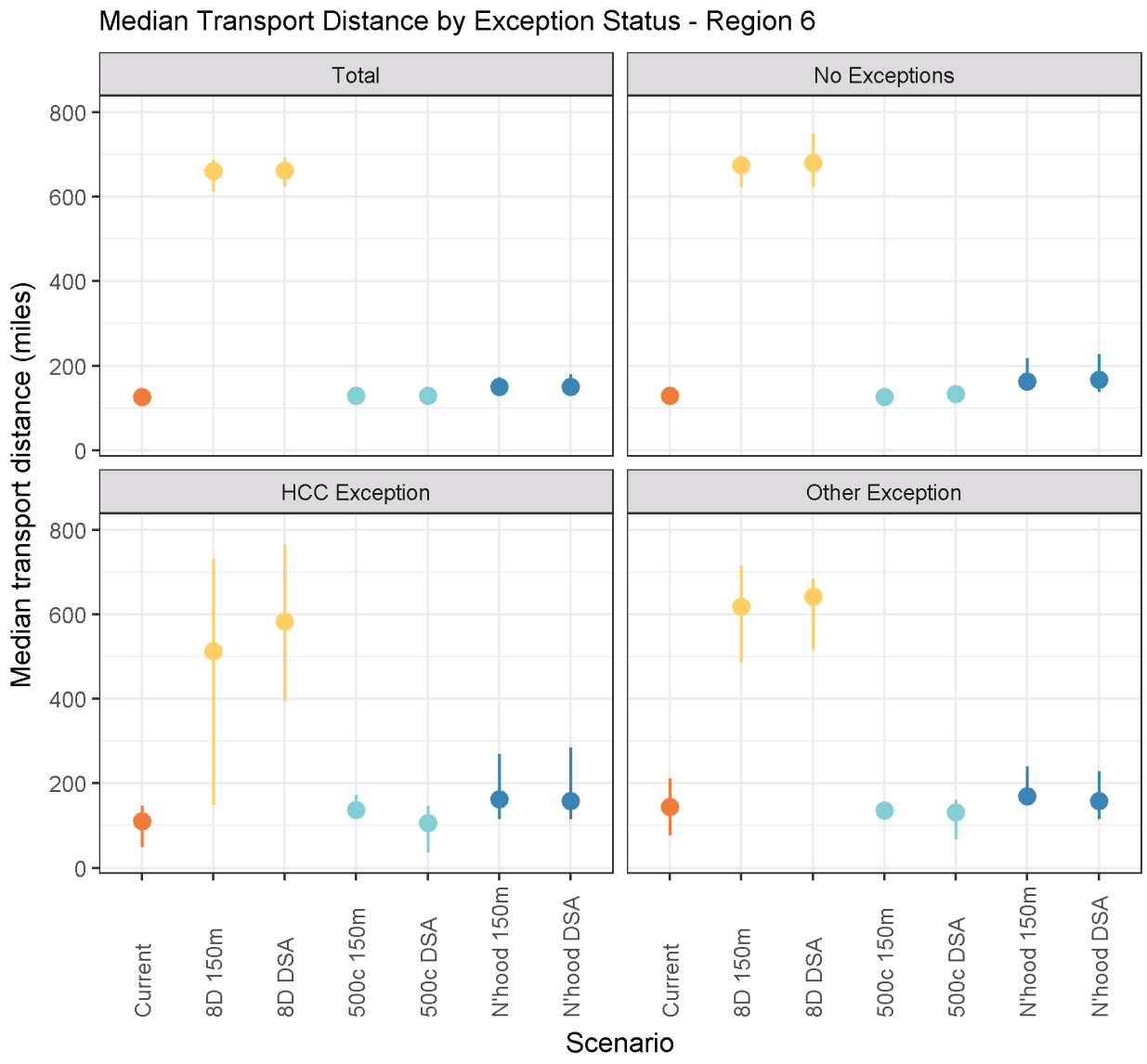


Figure 114 Median Transport Distance by exception status - region 6

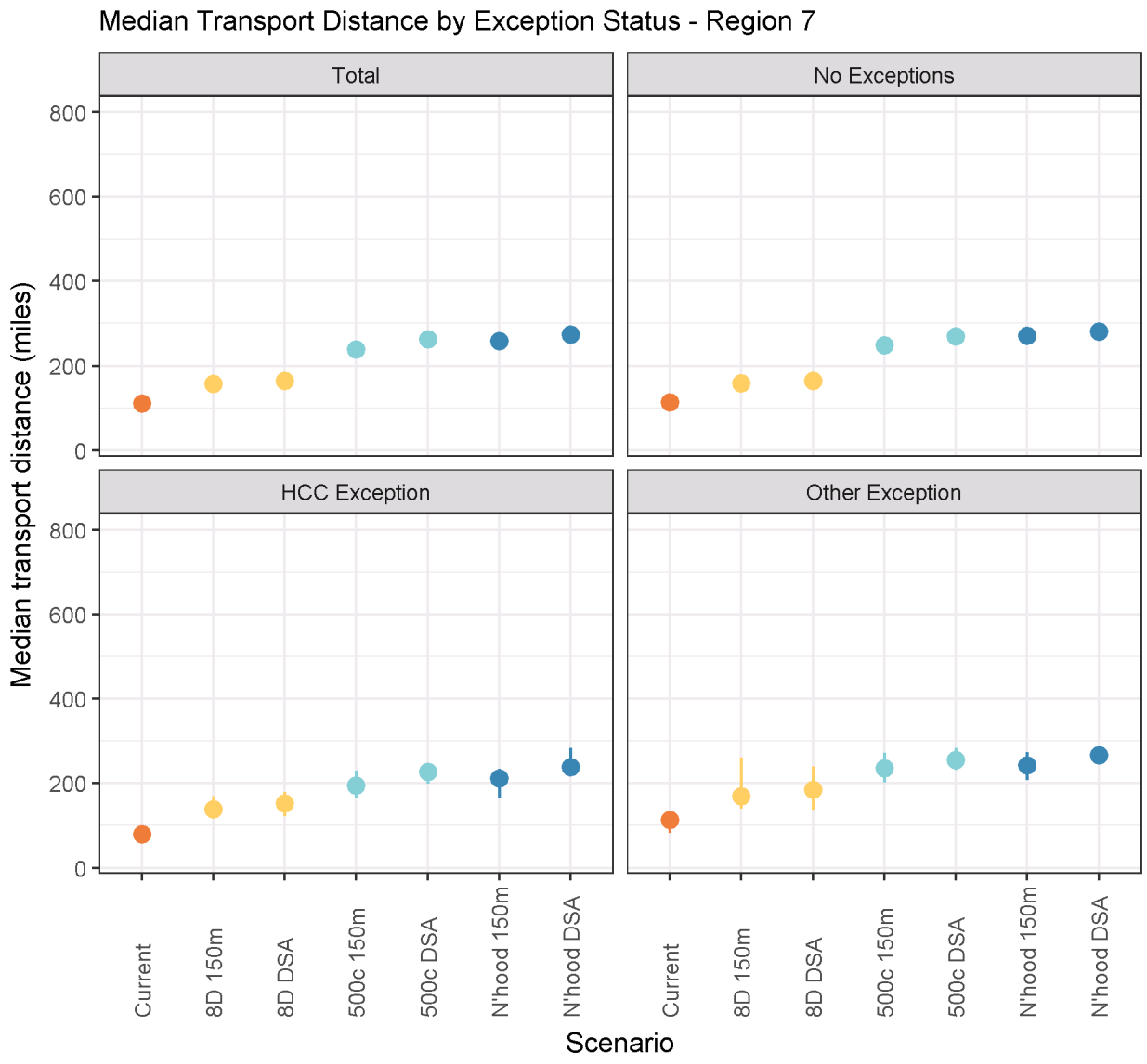


Figure 115 Median Transport Distance by exception status - region 7

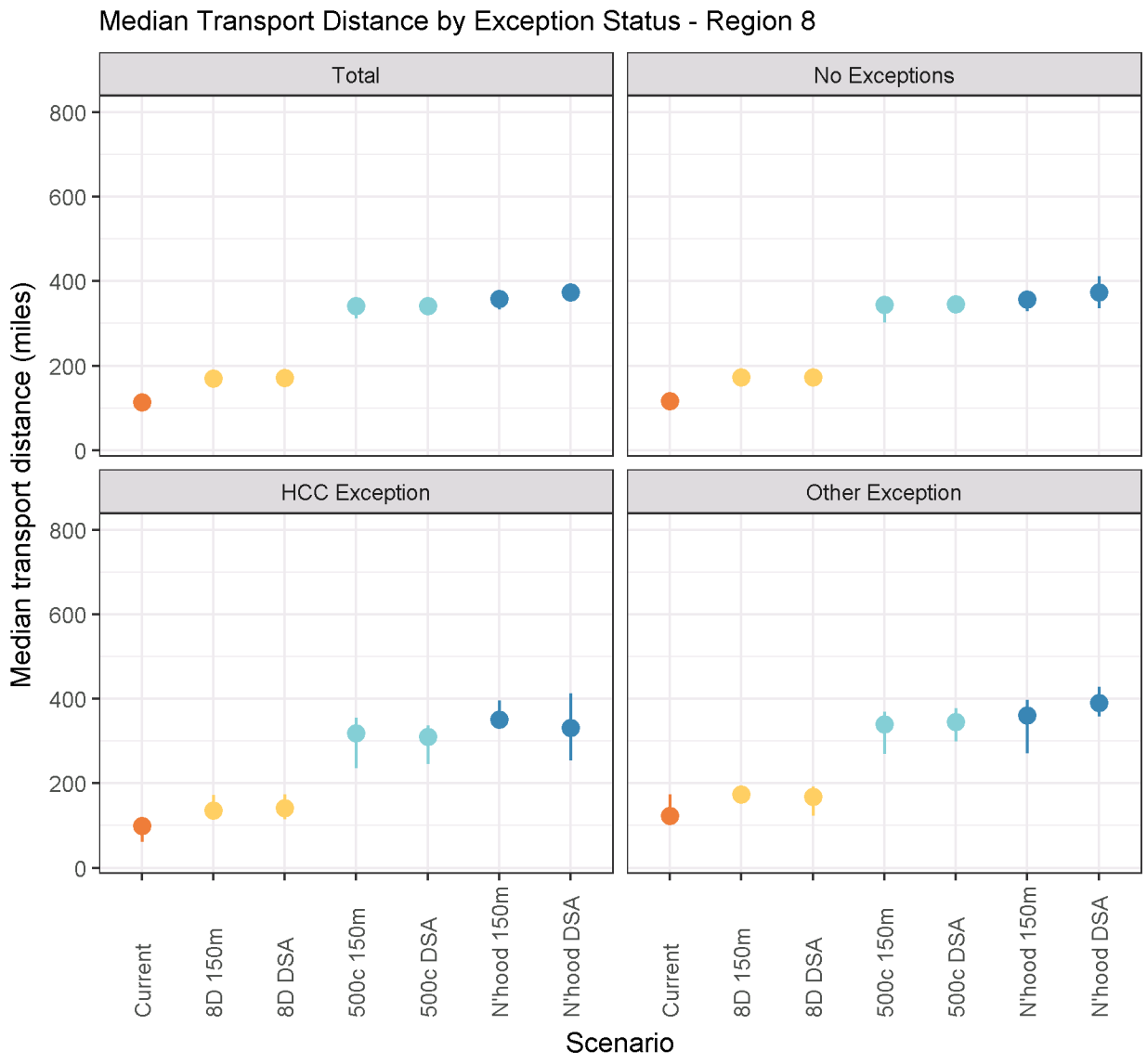


Figure 116 Median Transport Distance by exception status - region 8

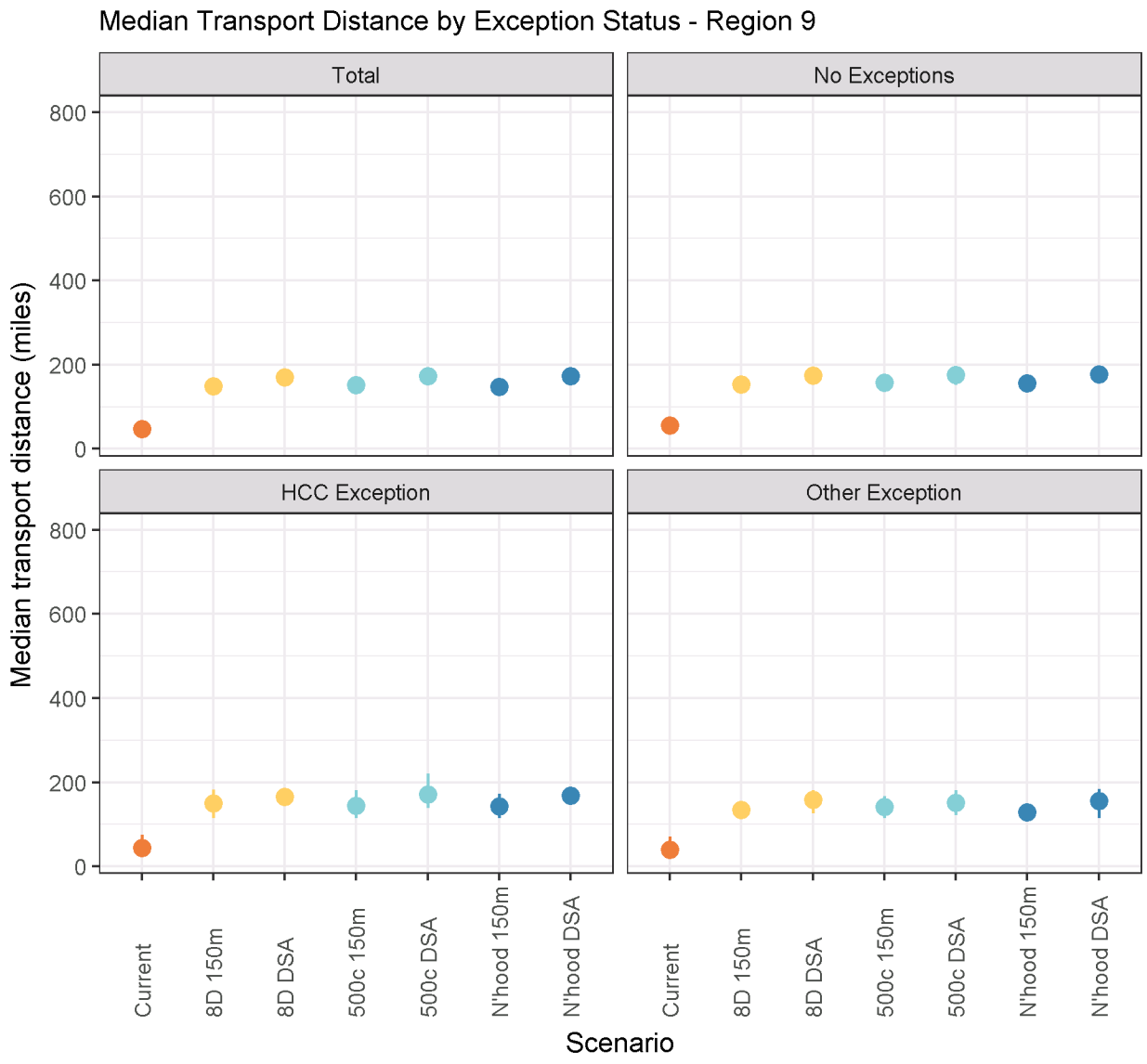


Figure 117 Median Transport Distance by exception status - region 9

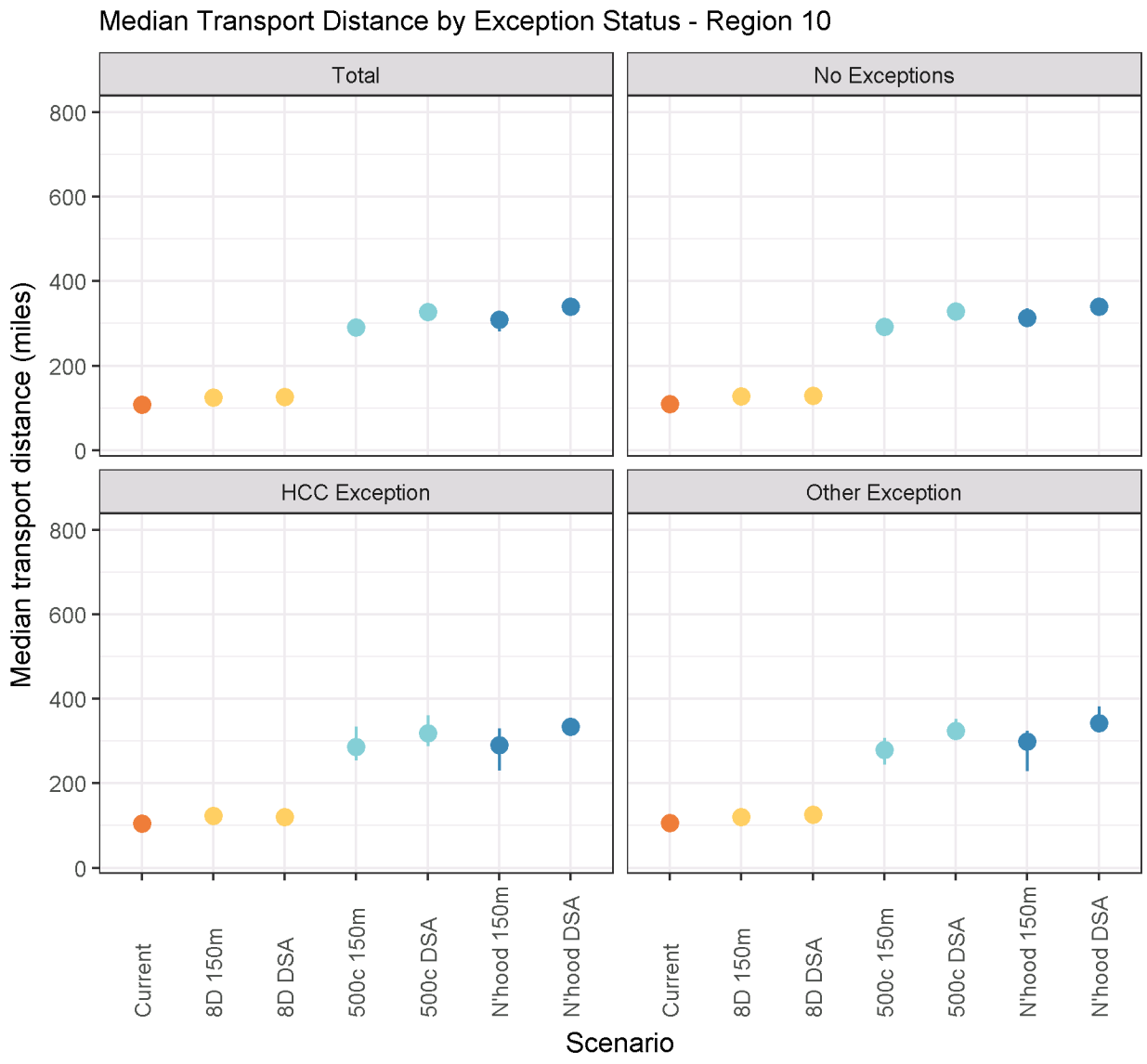


Figure 118 Median Transport Distance by exception status - region 10

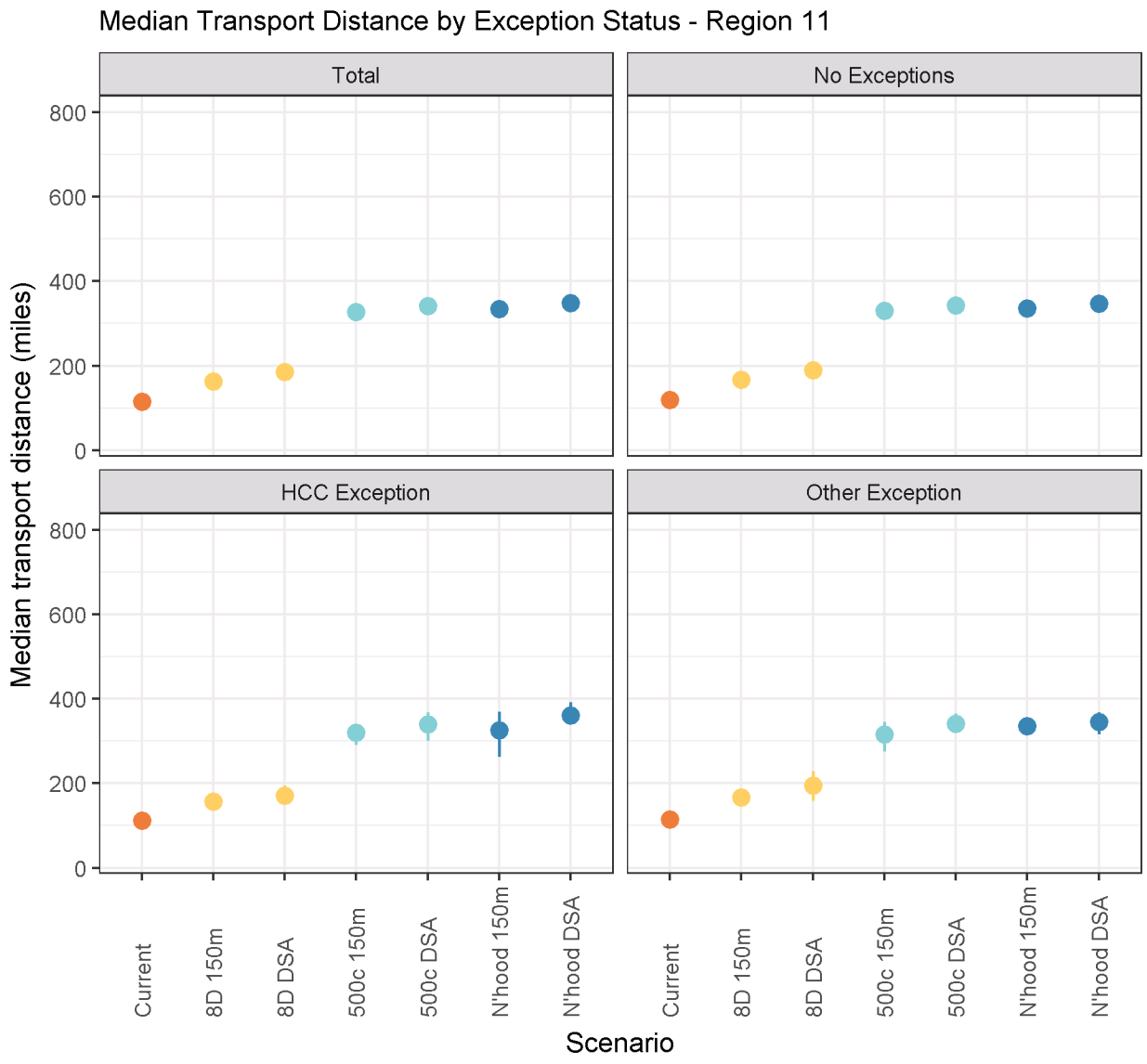


Figure 119 Median Transport Distance by exception status - region 11

Percent of Organs Flown

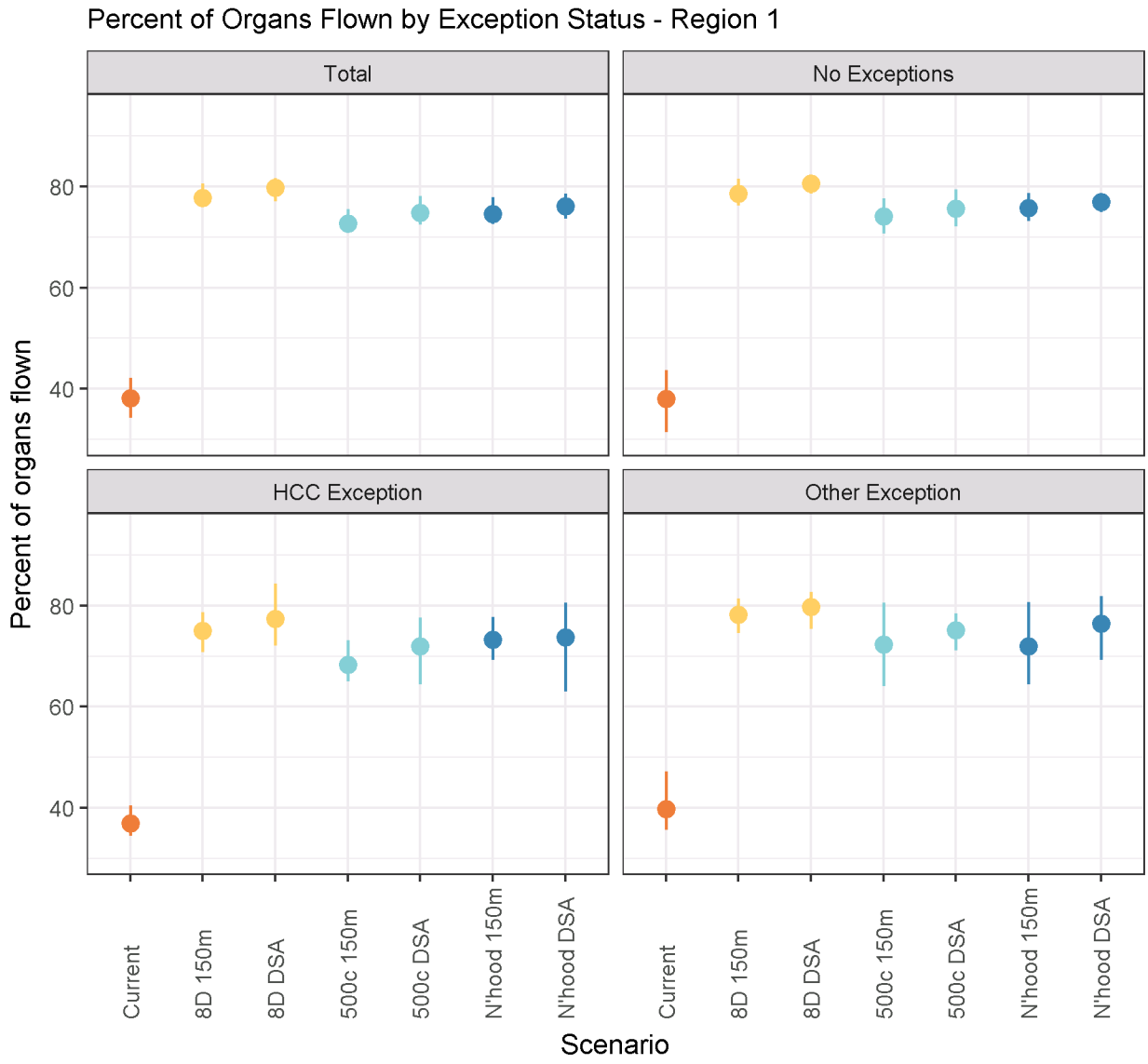


Figure 120 Percent of Organs Flown by exception status - region 1

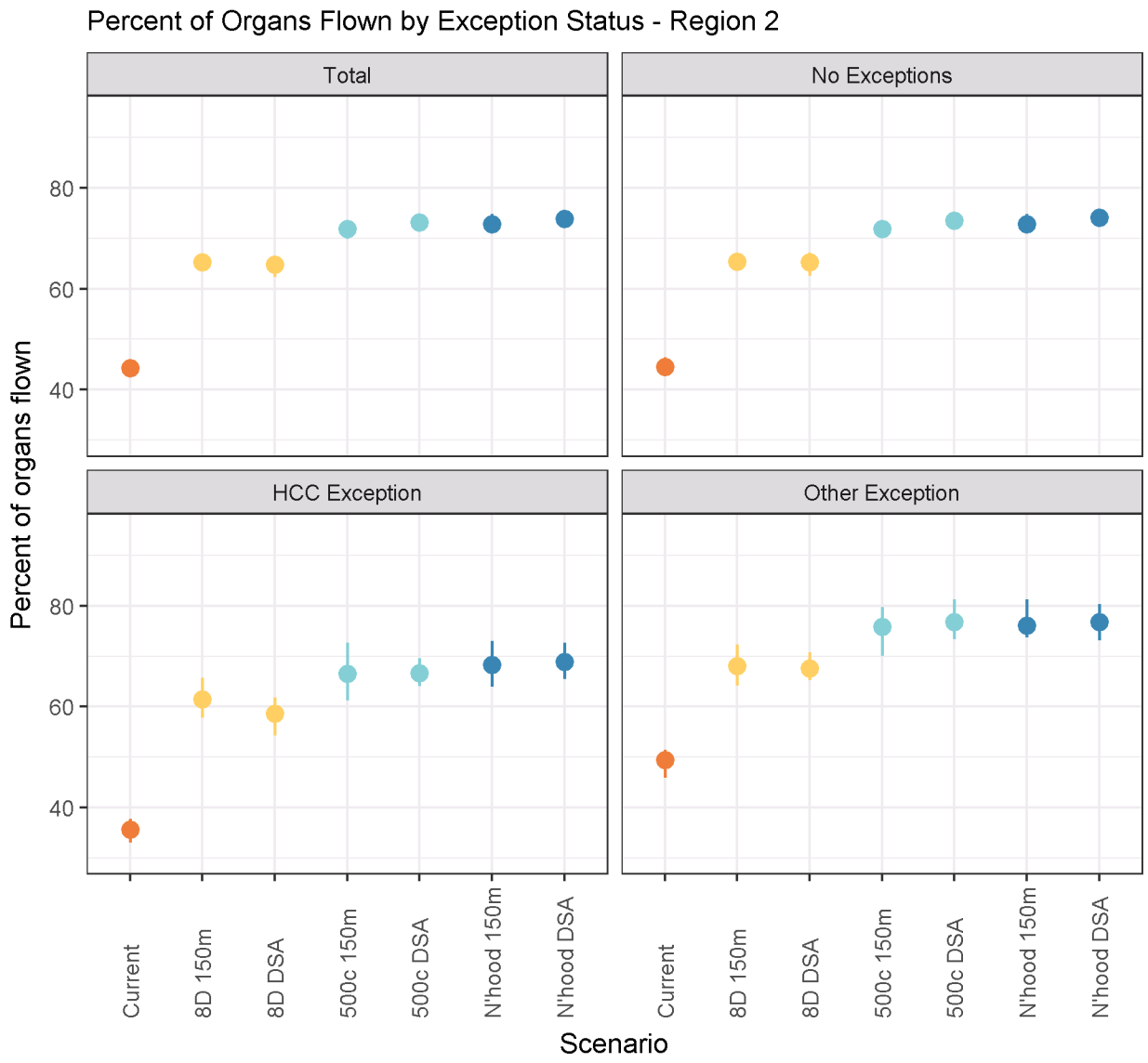


Figure 121 Percent of Organs Flown by exception status - region 2

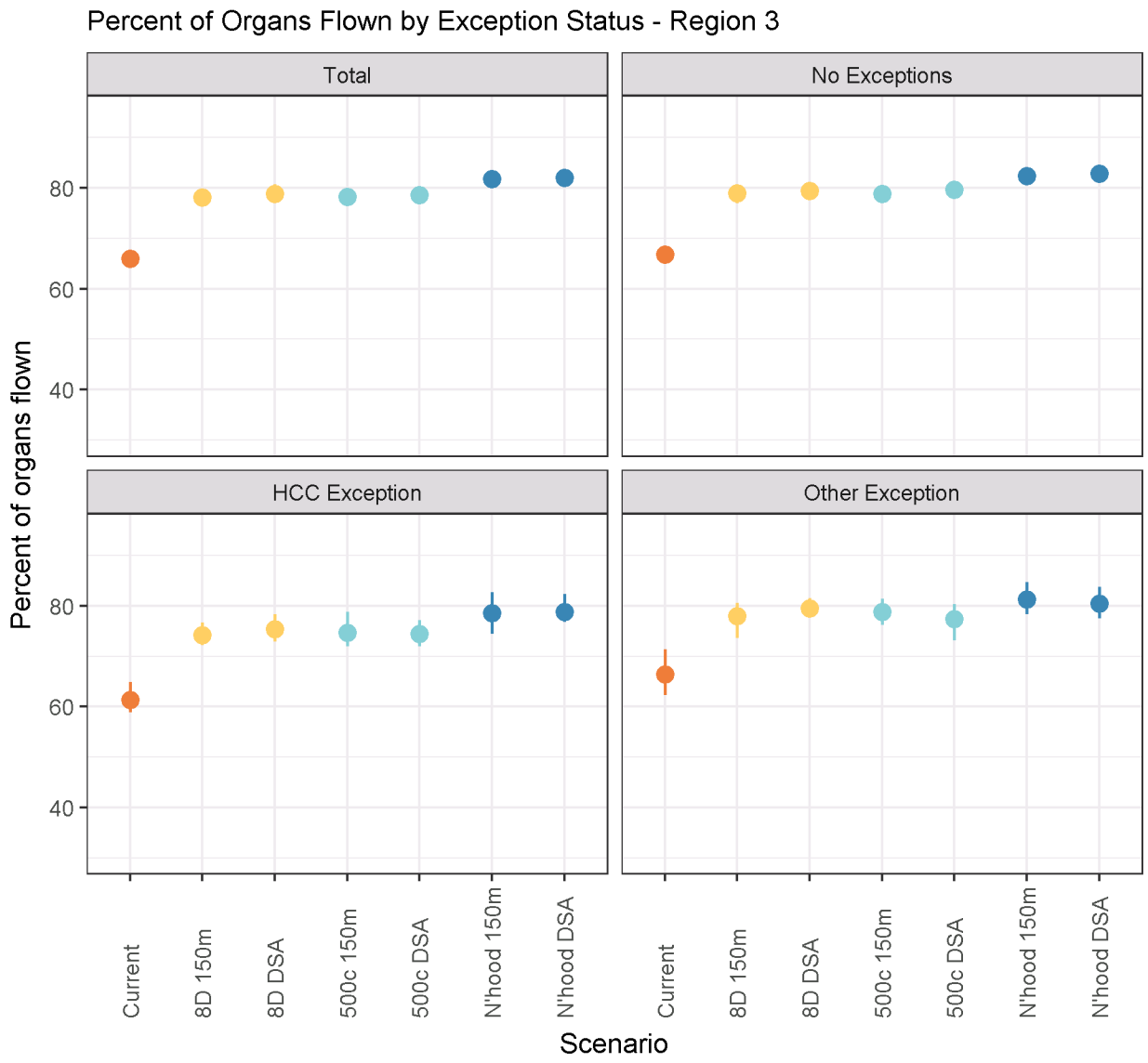


Figure 122 Percent of Organs Flown by exception status - region 3

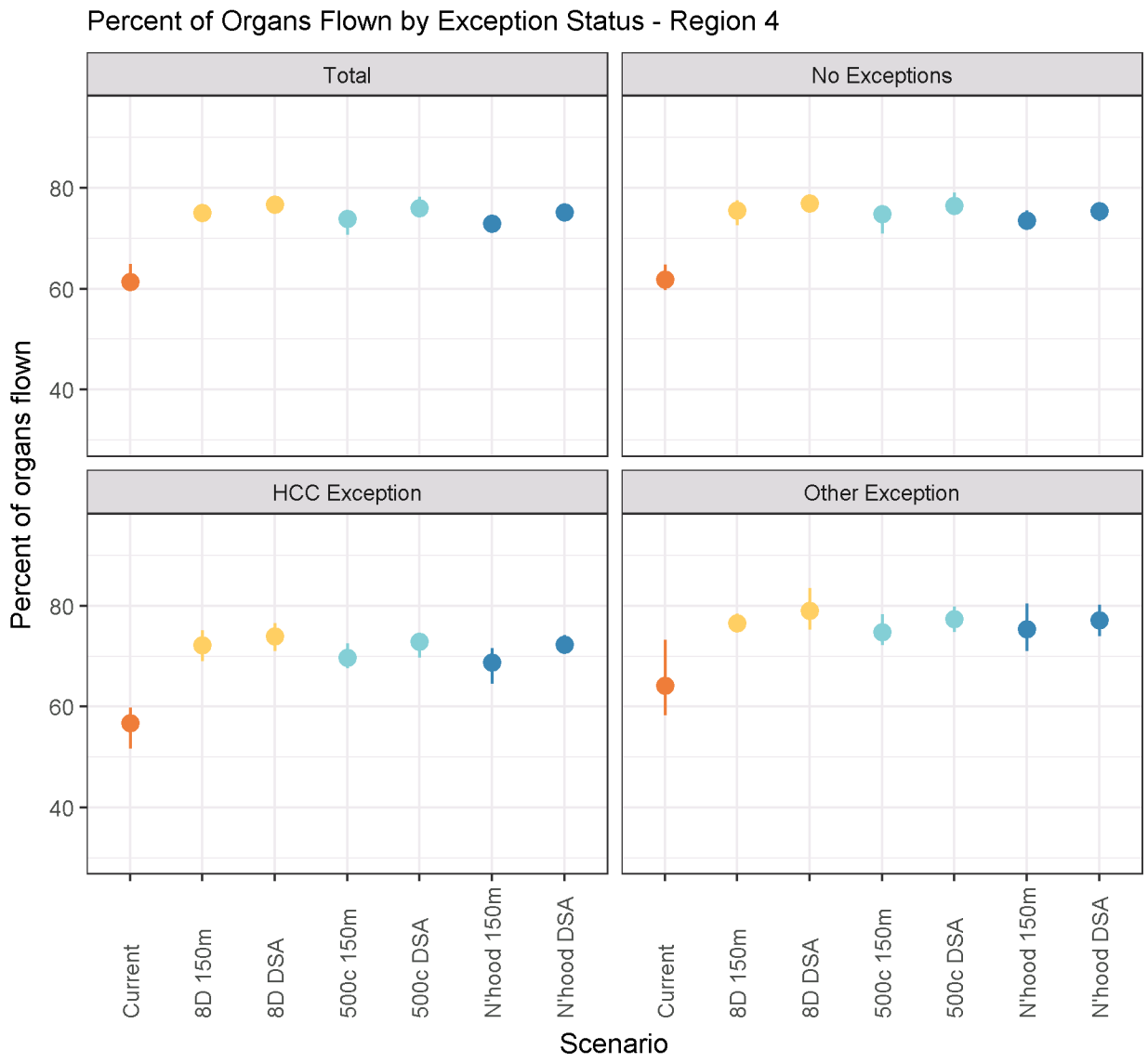


Figure 123 Percent of Organs Flown by exception status - region 4

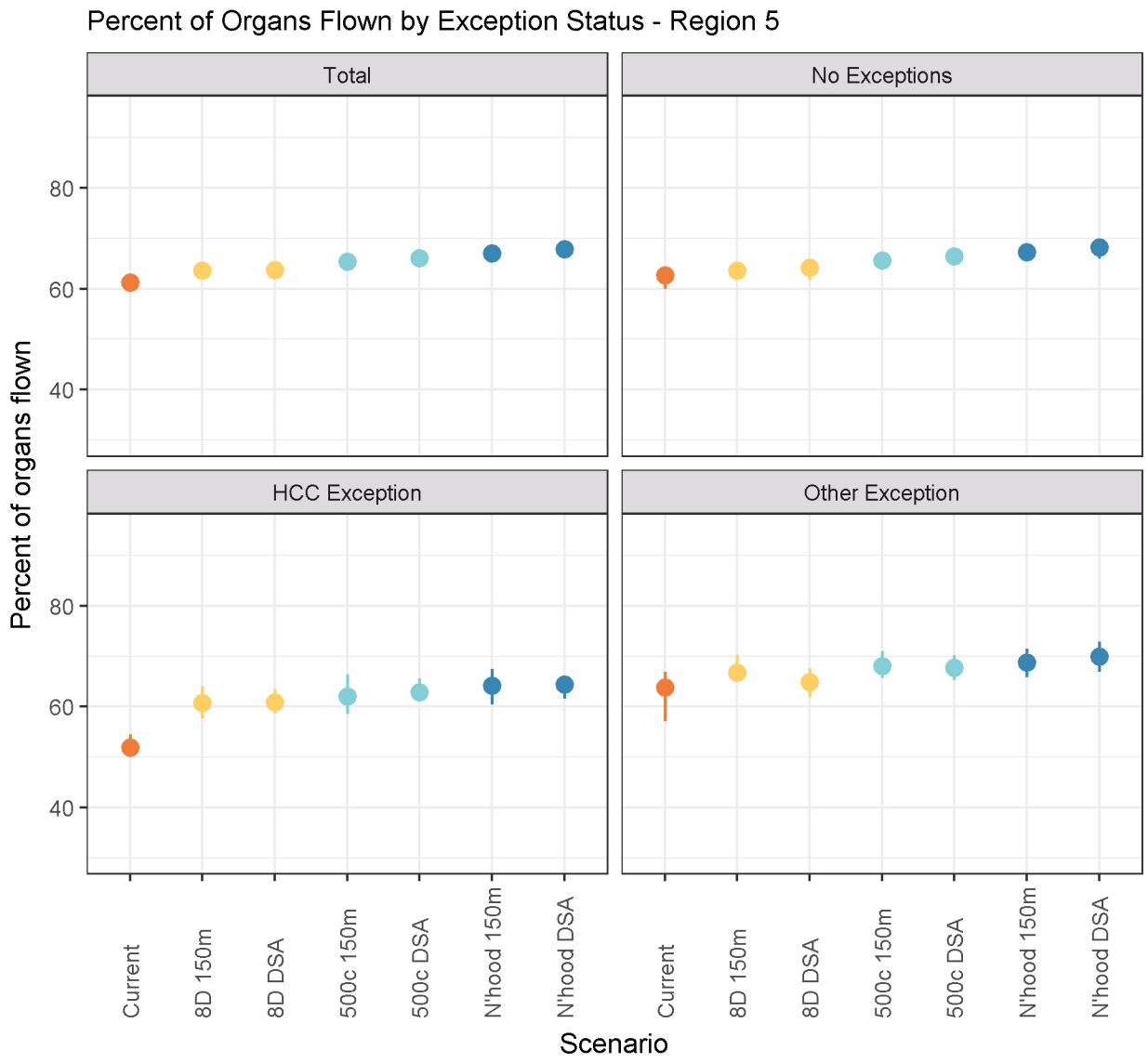


Figure 124 Percent of Organs Flown by exception status - region 5

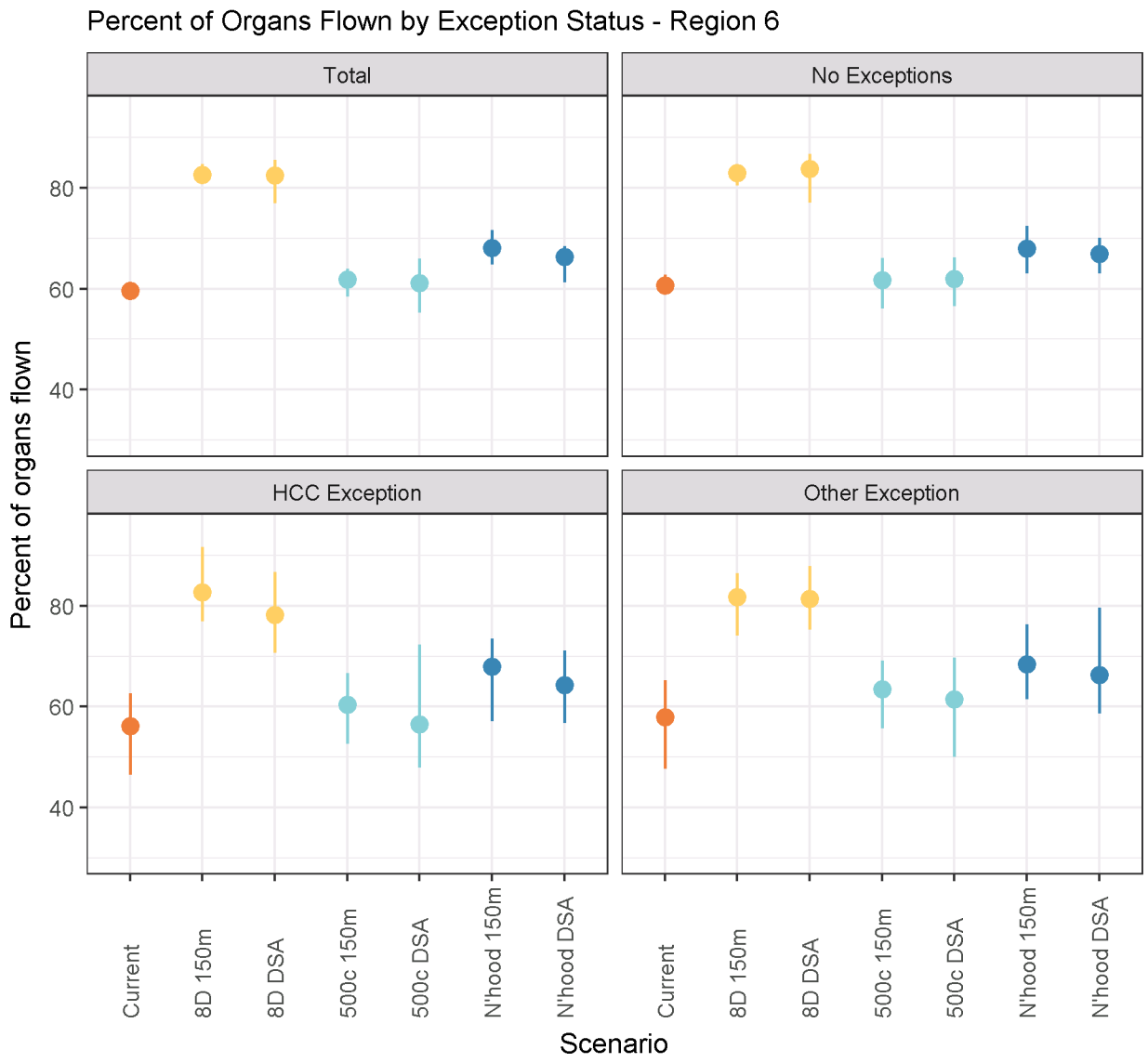


Figure 125 Percent of Organs Flown by exception status - region 6

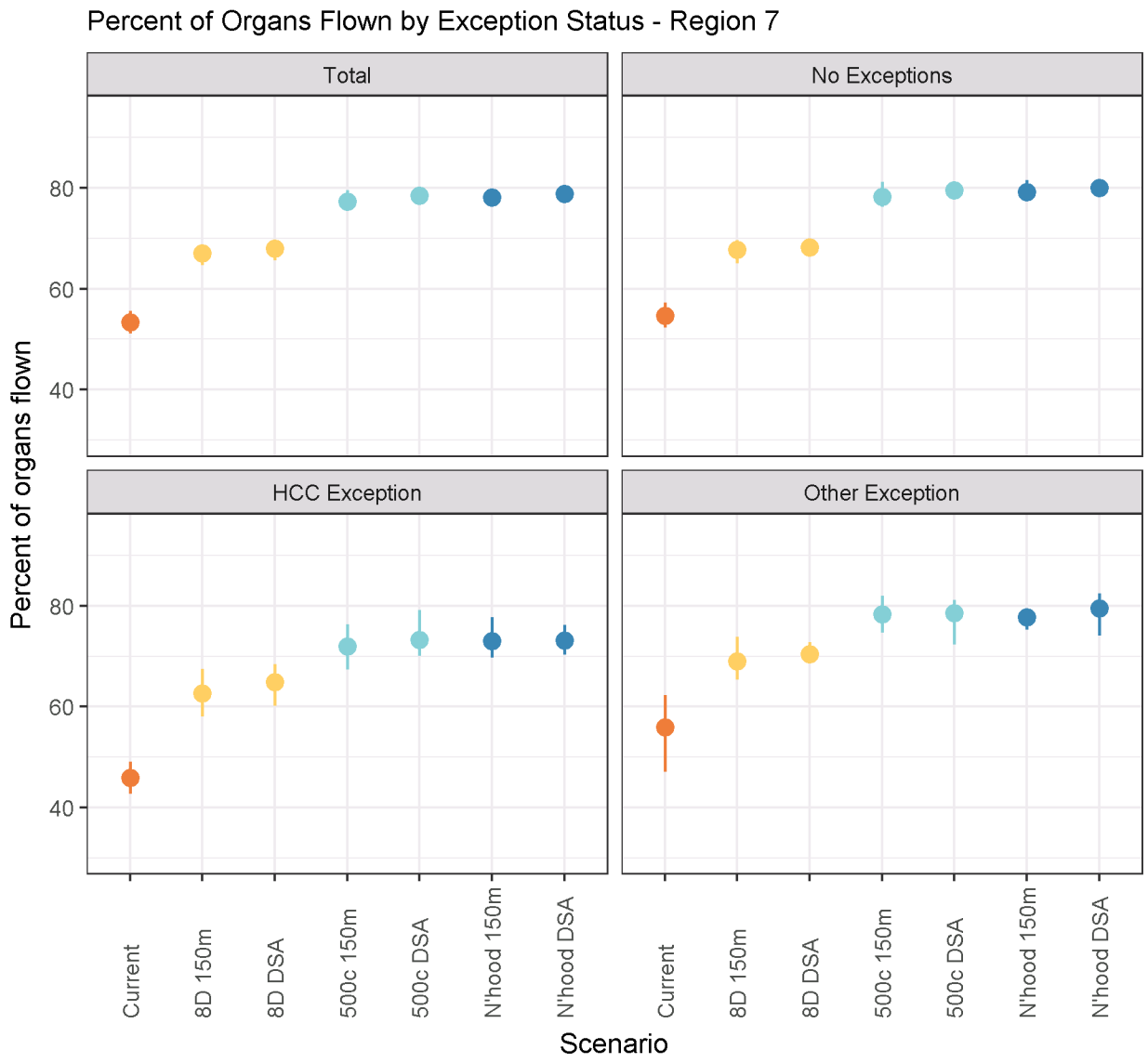


Figure 126 Percent of Organs Flown by exception status - region 7

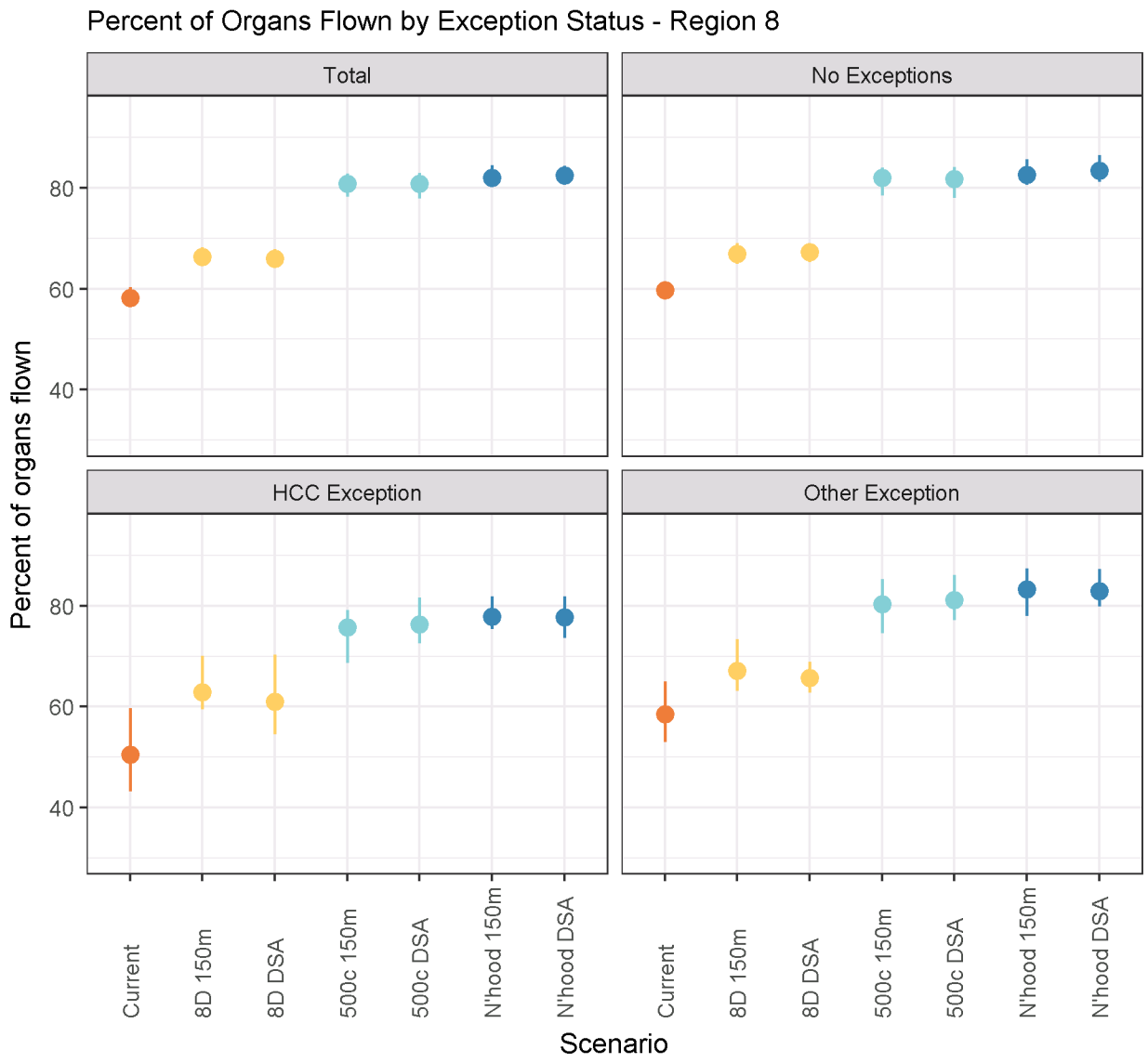


Figure 127 Percent of Organs Flown by exception status - region 8

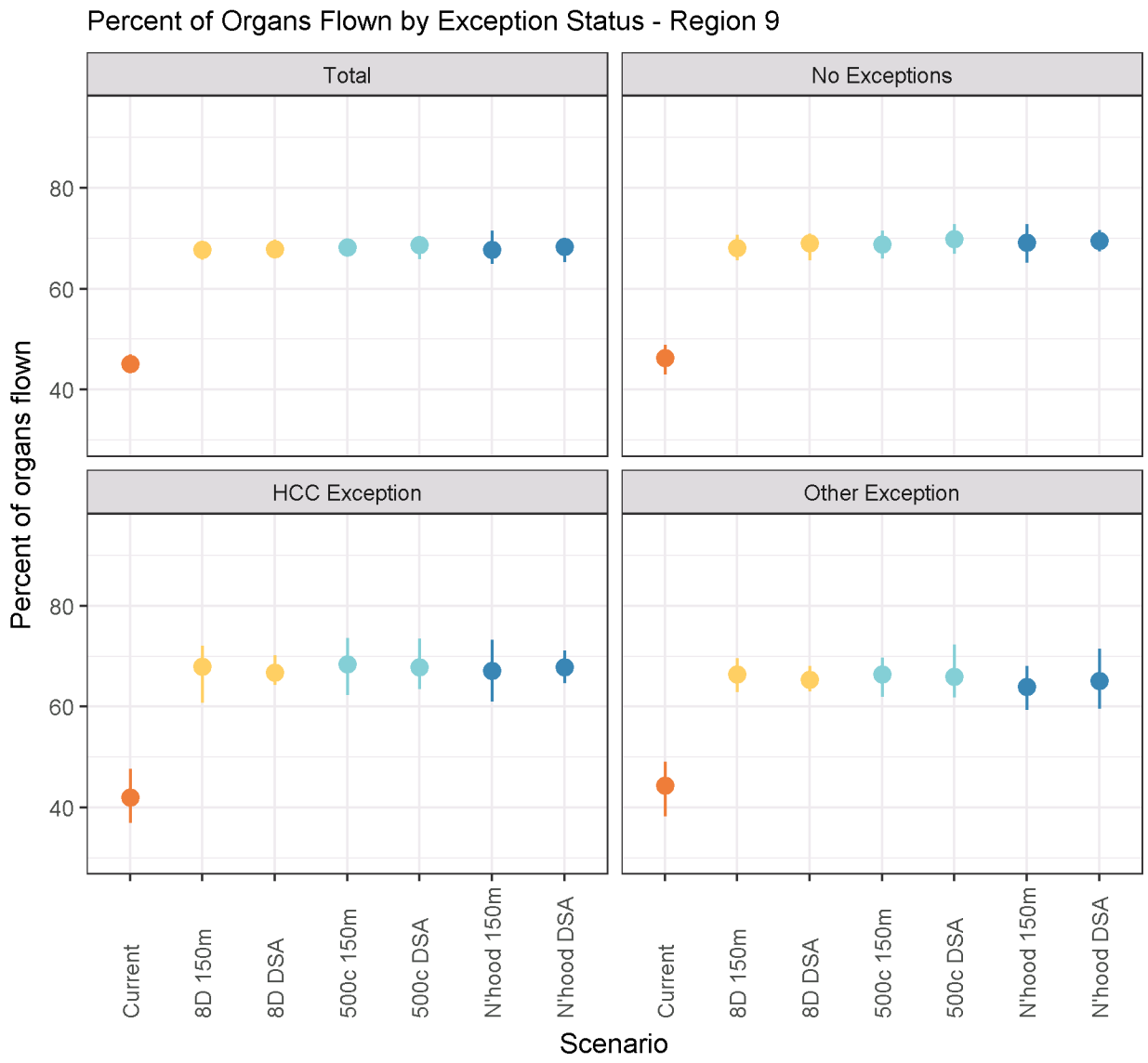


Figure 128 Percent of Organs Flown by exception status - region 9

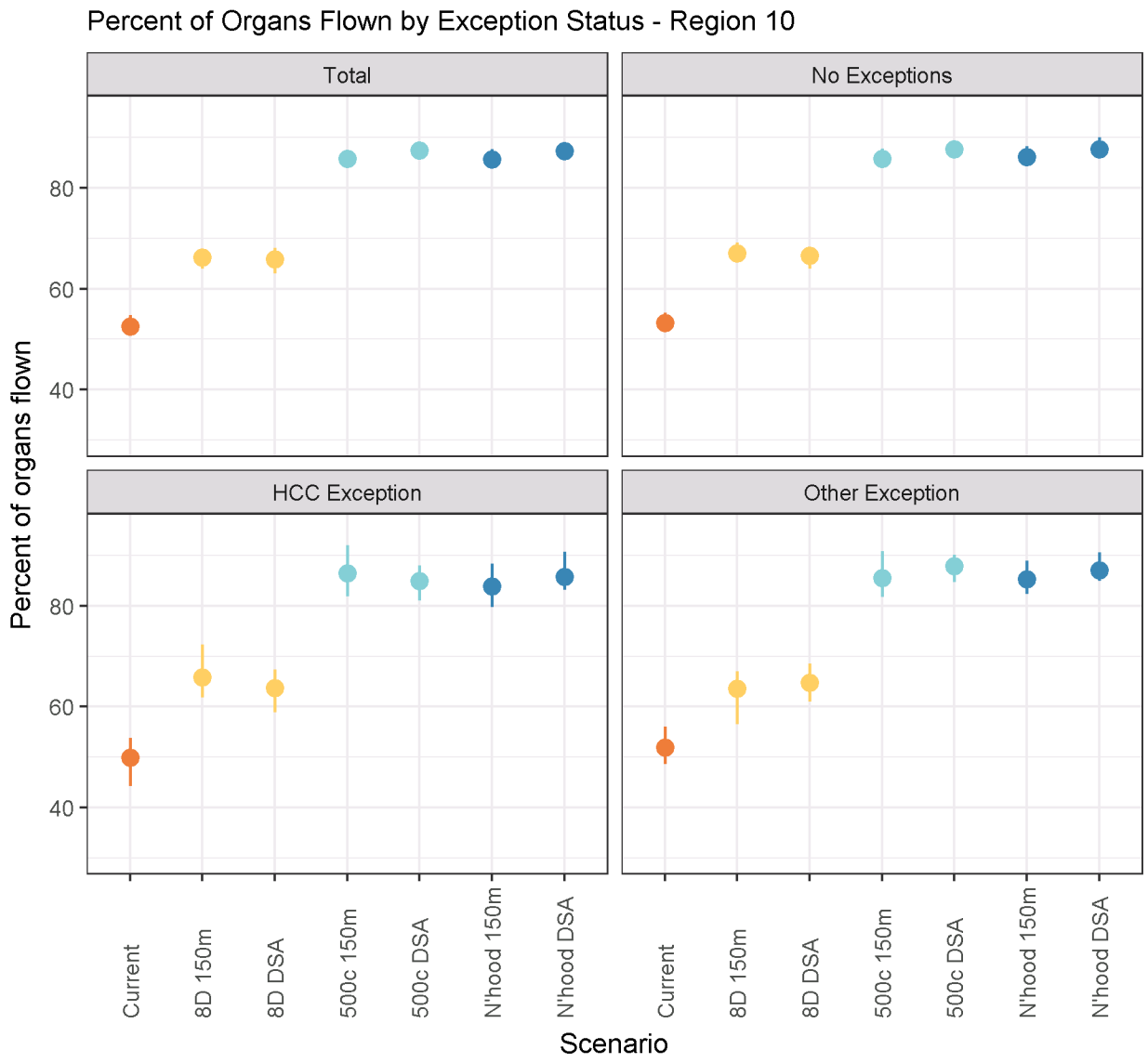


Figure 129 Percent of Organs Flown by exception status - region 10

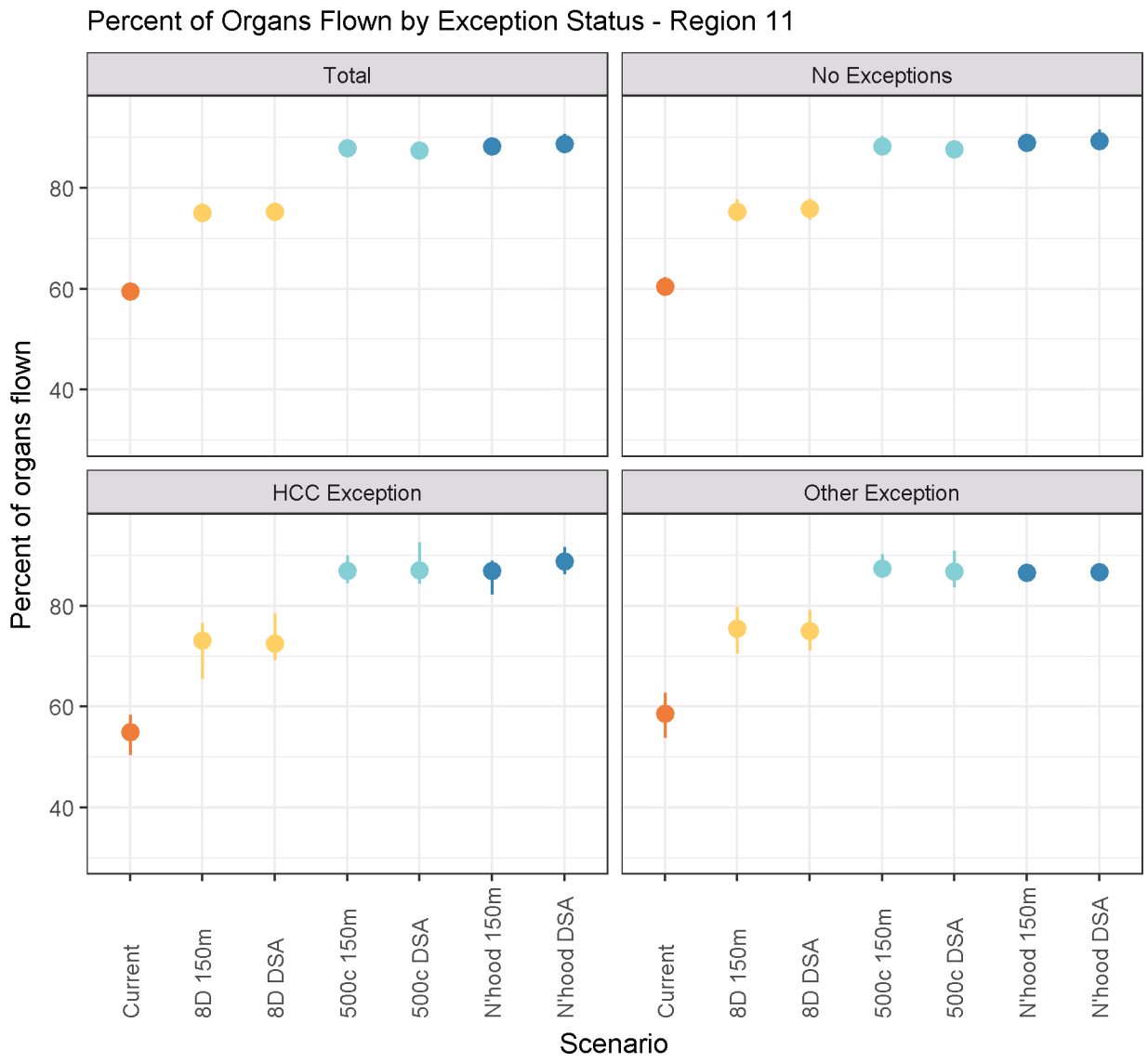


Figure 130 Percent of Organs Flown by exception status - region 11

Appendix B: Results by age, sex, and race/ethnicity

MELD/PELD at Transplant

Variance in Median MELD/PELD at Transplant by DSA

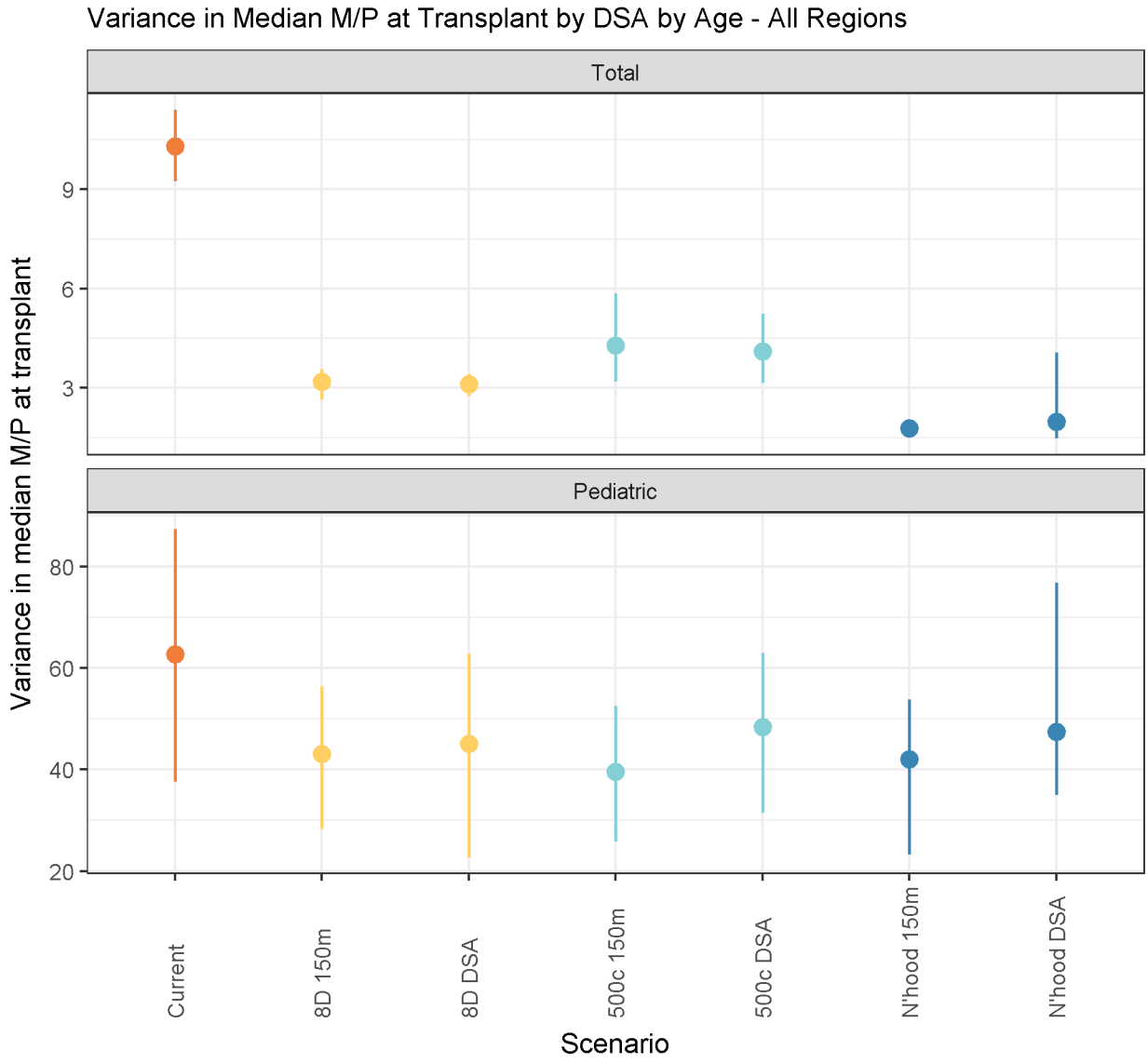


Figure 131 Variance in median M/P at transplant by DSA by age - all regions

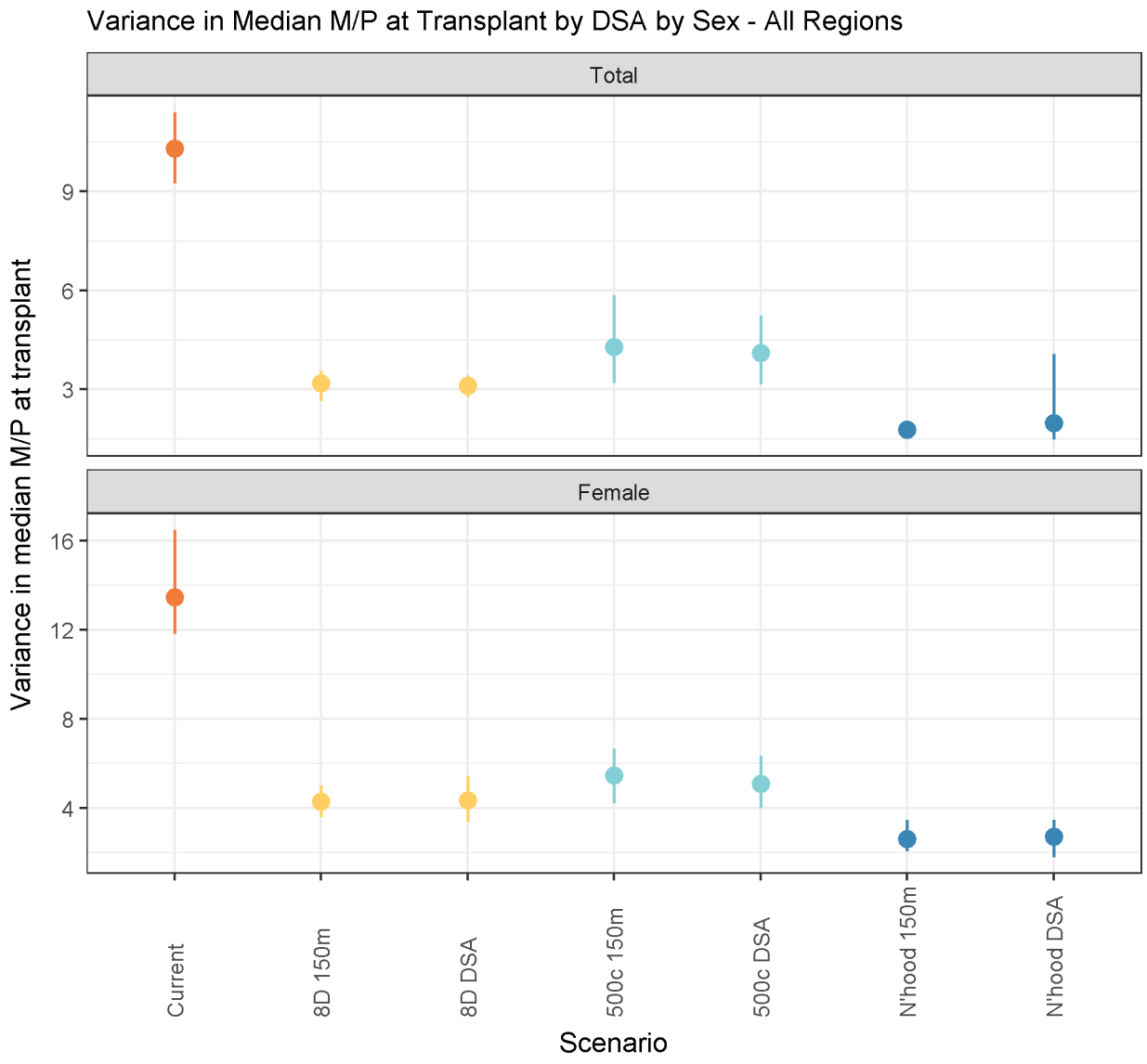


Figure 132 Variance in median M/P at transplant by DSA by sex - all regions

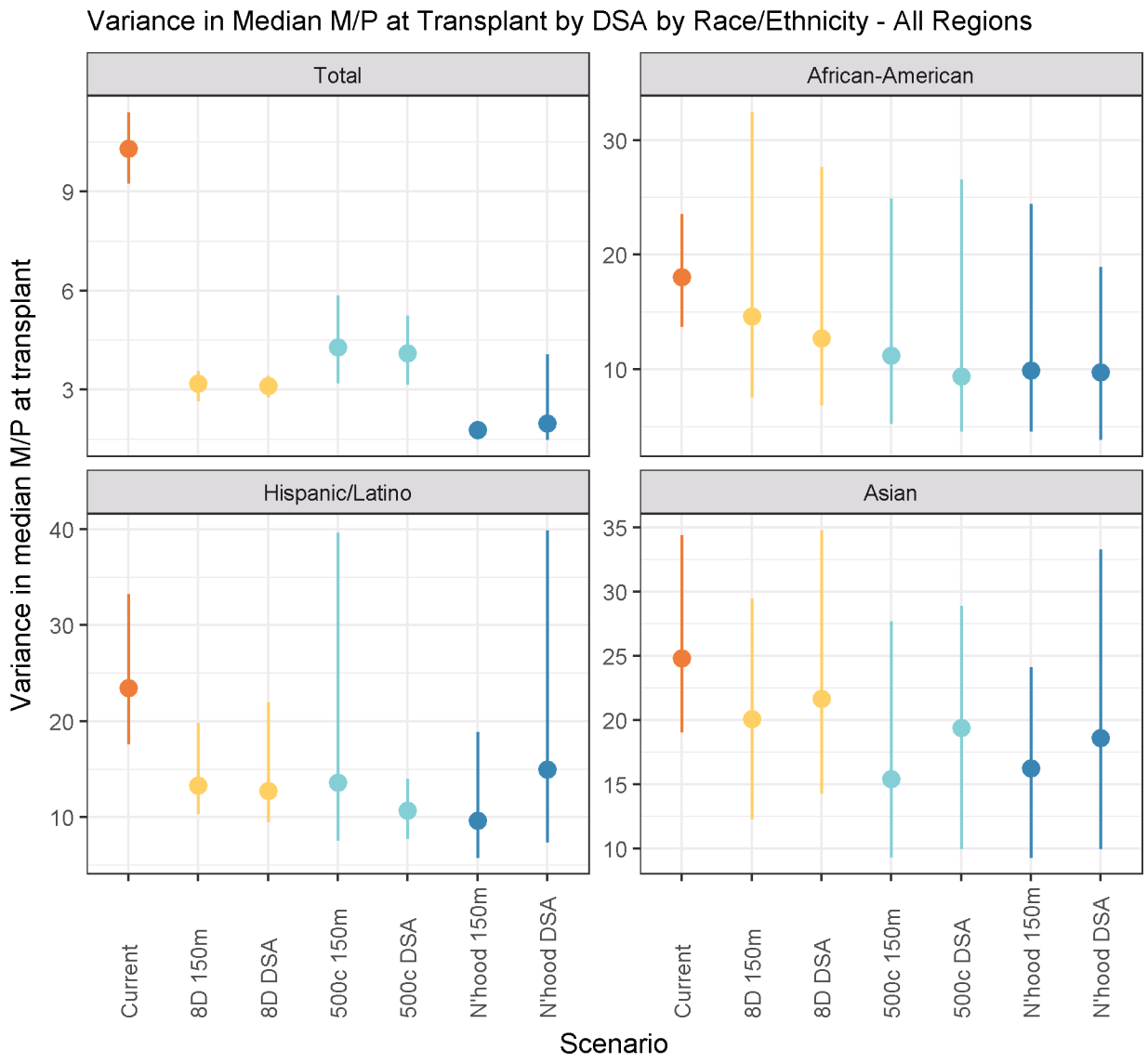


Figure 133 Variance in median M/P at transplant by DSA by race/ethnicity - all regions

Median MELD/PELD at Transplant

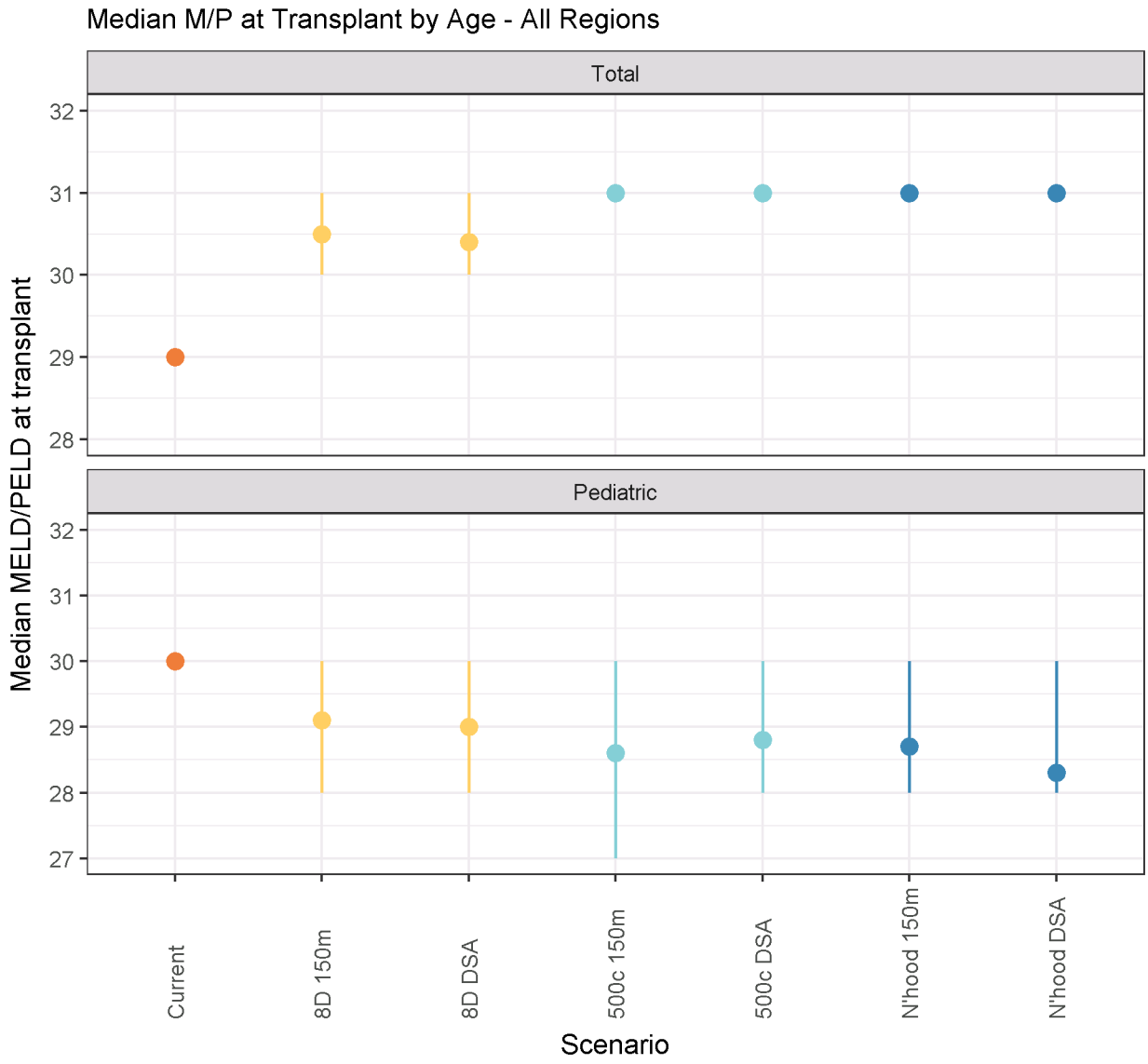


Figure 134 Median MELD/PELD at transplant by age - all regions

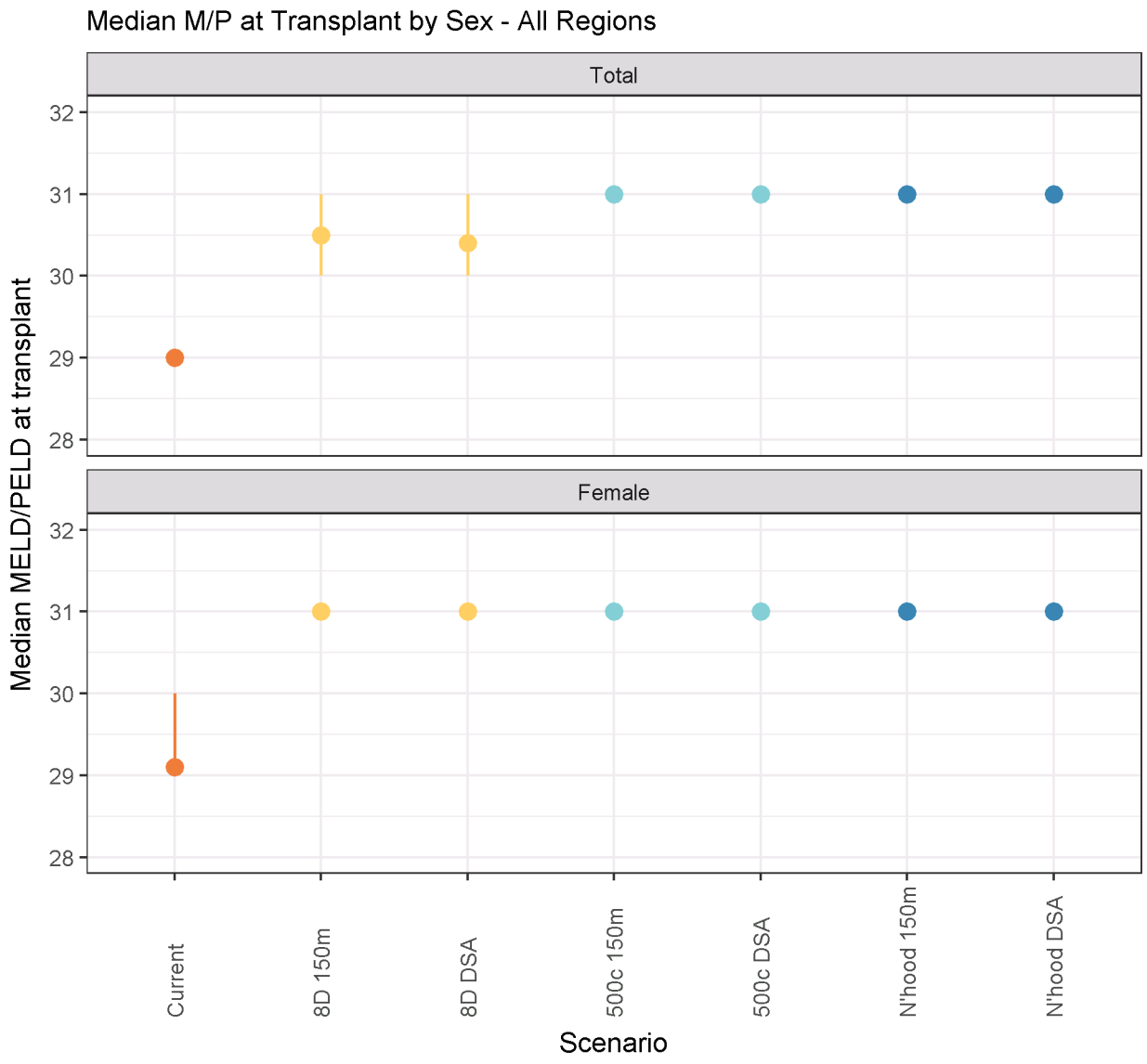


Figure 135 Median MELD/PELD at transplant by sex - all regions

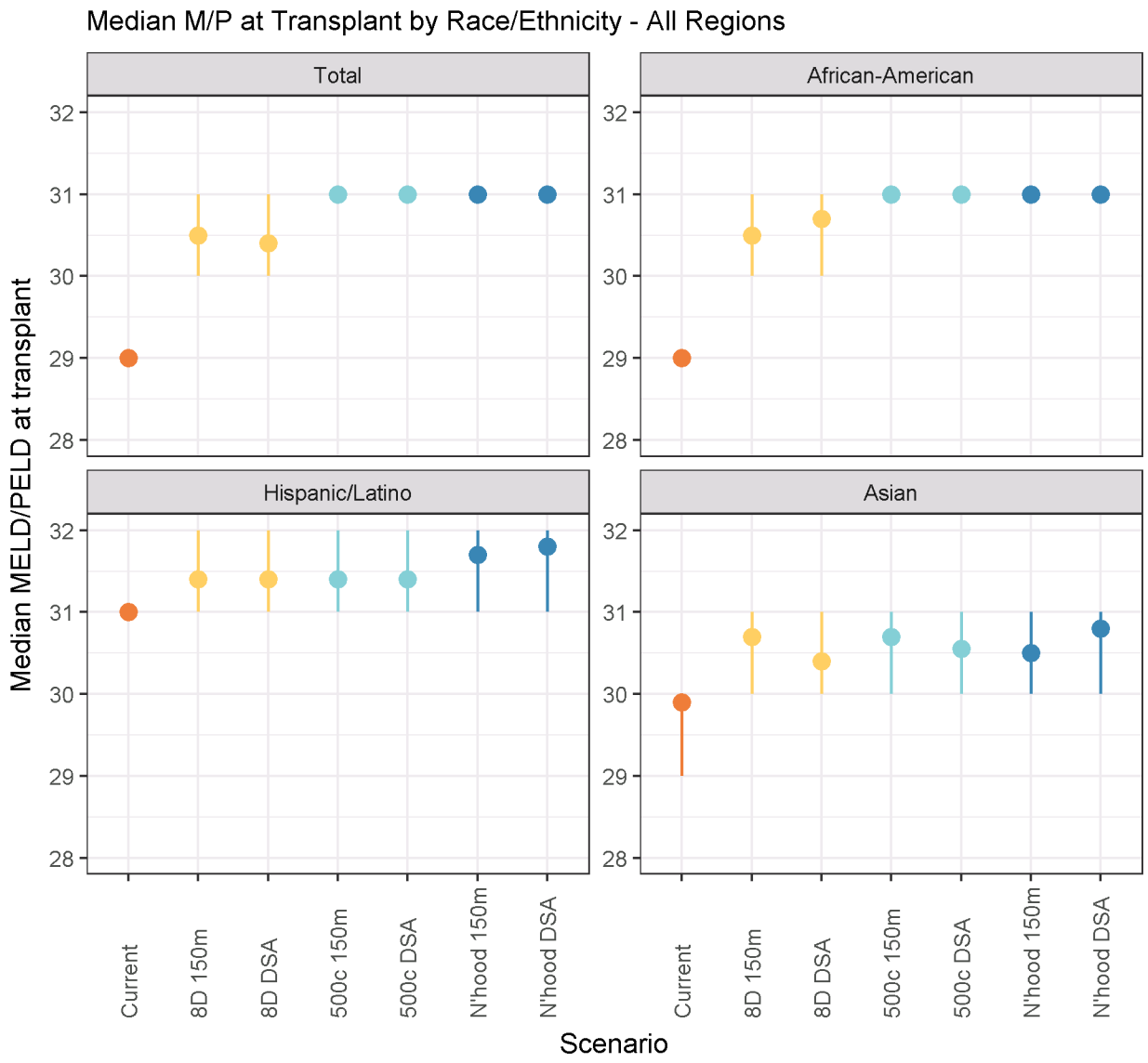


Figure 136 Median MELD/PELD at transplant by race/ethnicity - all regions

Transplant

Transplant Rates

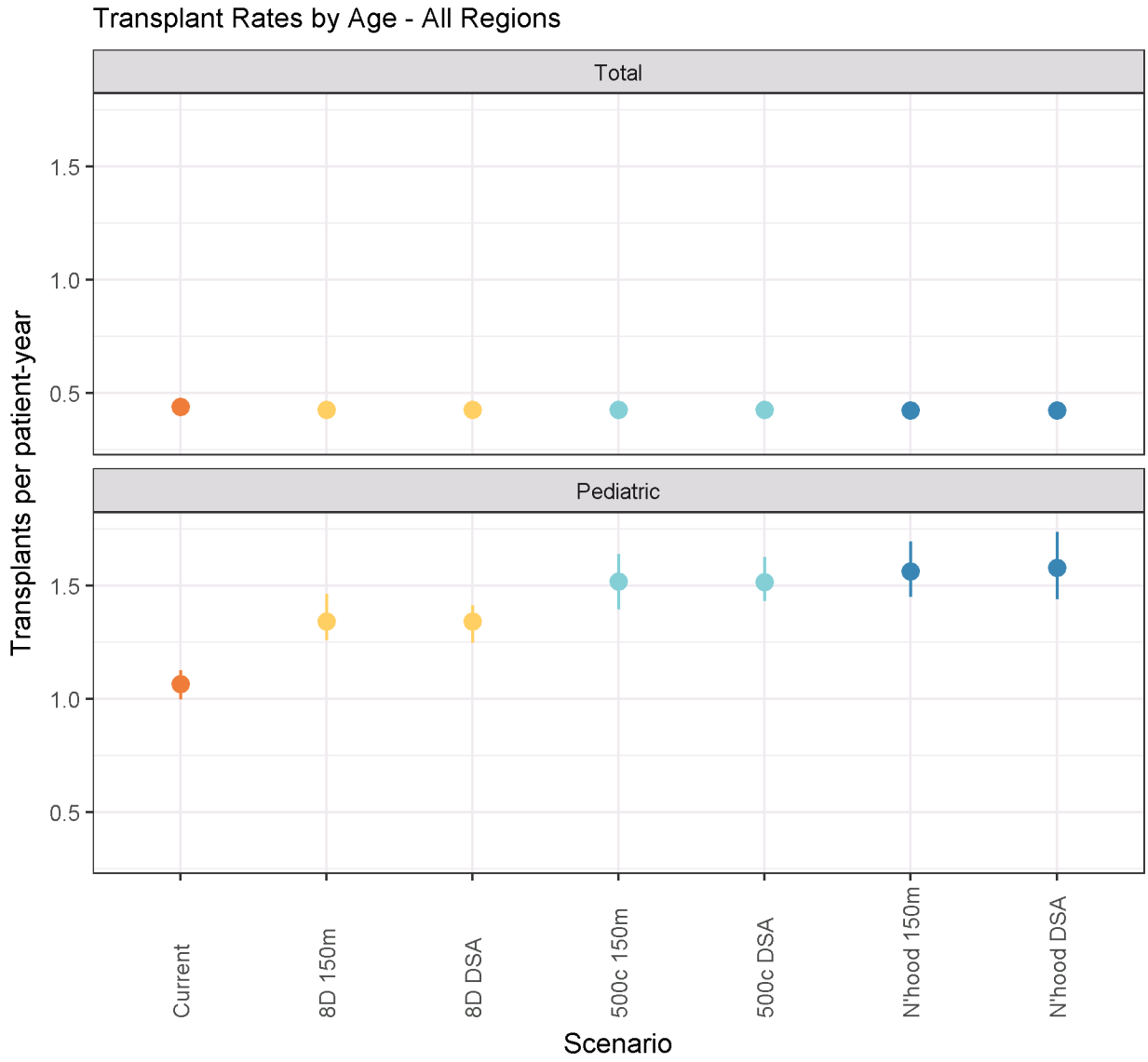


Figure 137 Transplant rates by age - all regions

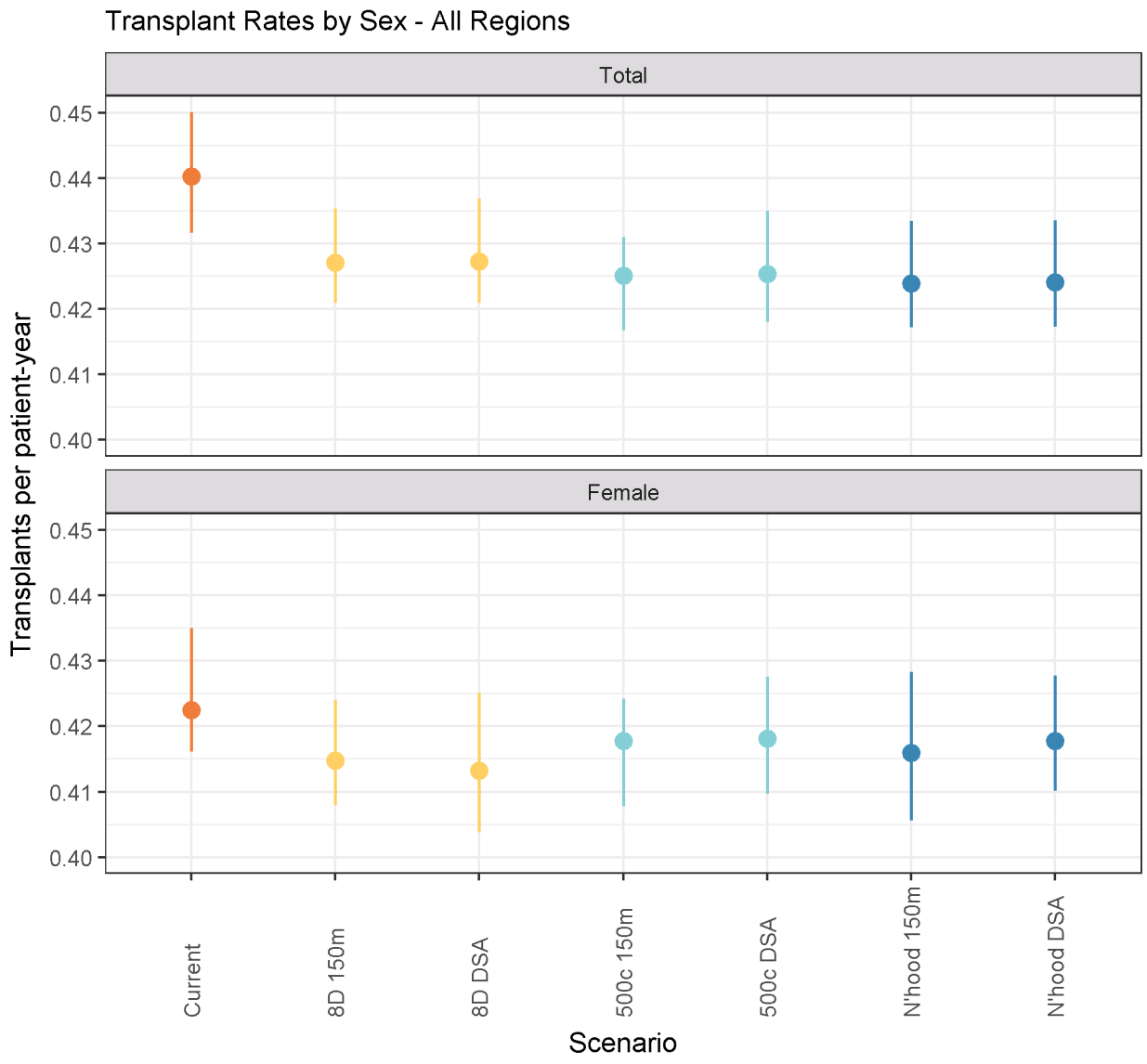


Figure 138 Transplant rates by sex - all regions

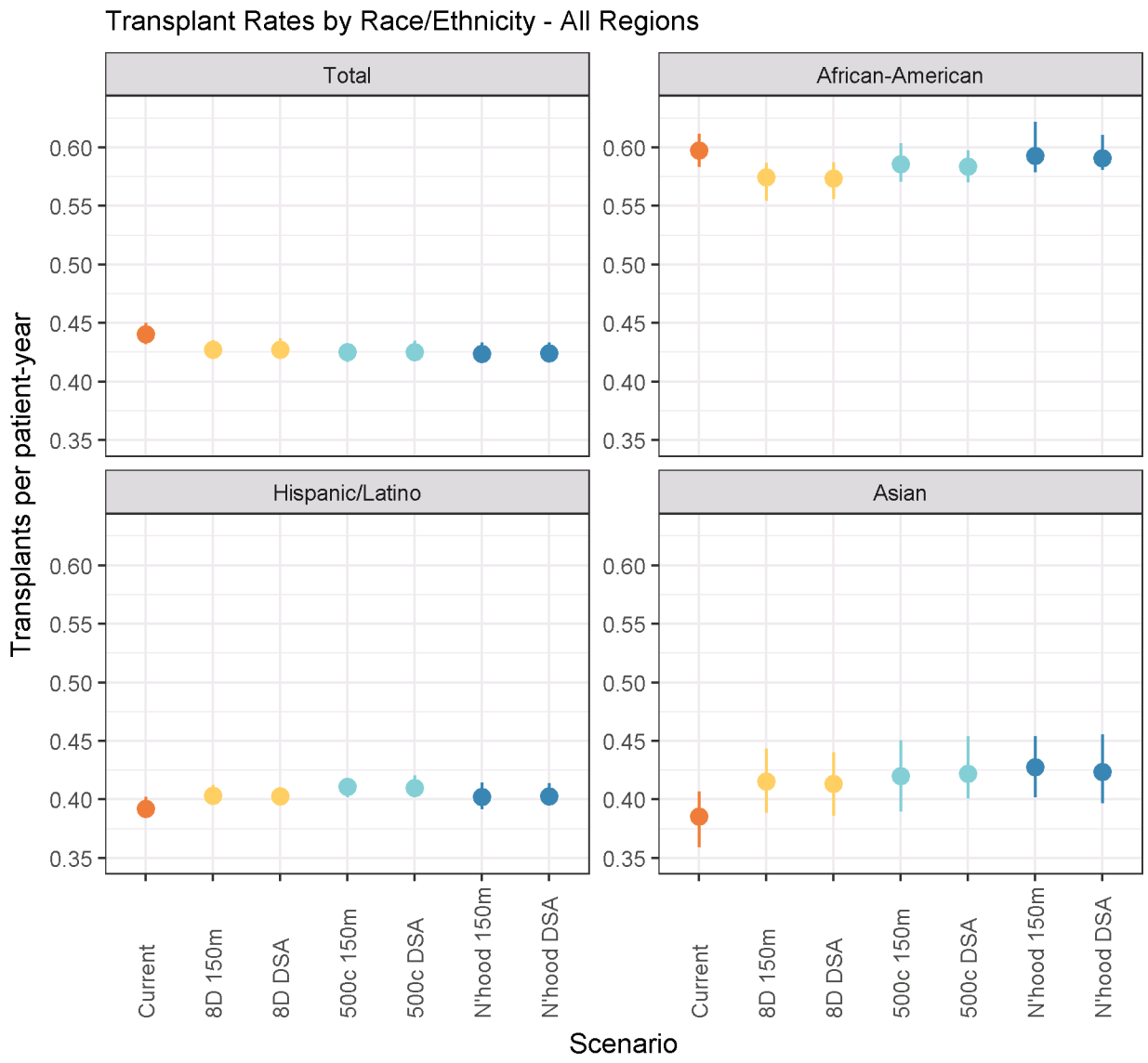


Figure 139 Transplant rates by race/ethnicity - all regions

Transplant Counts

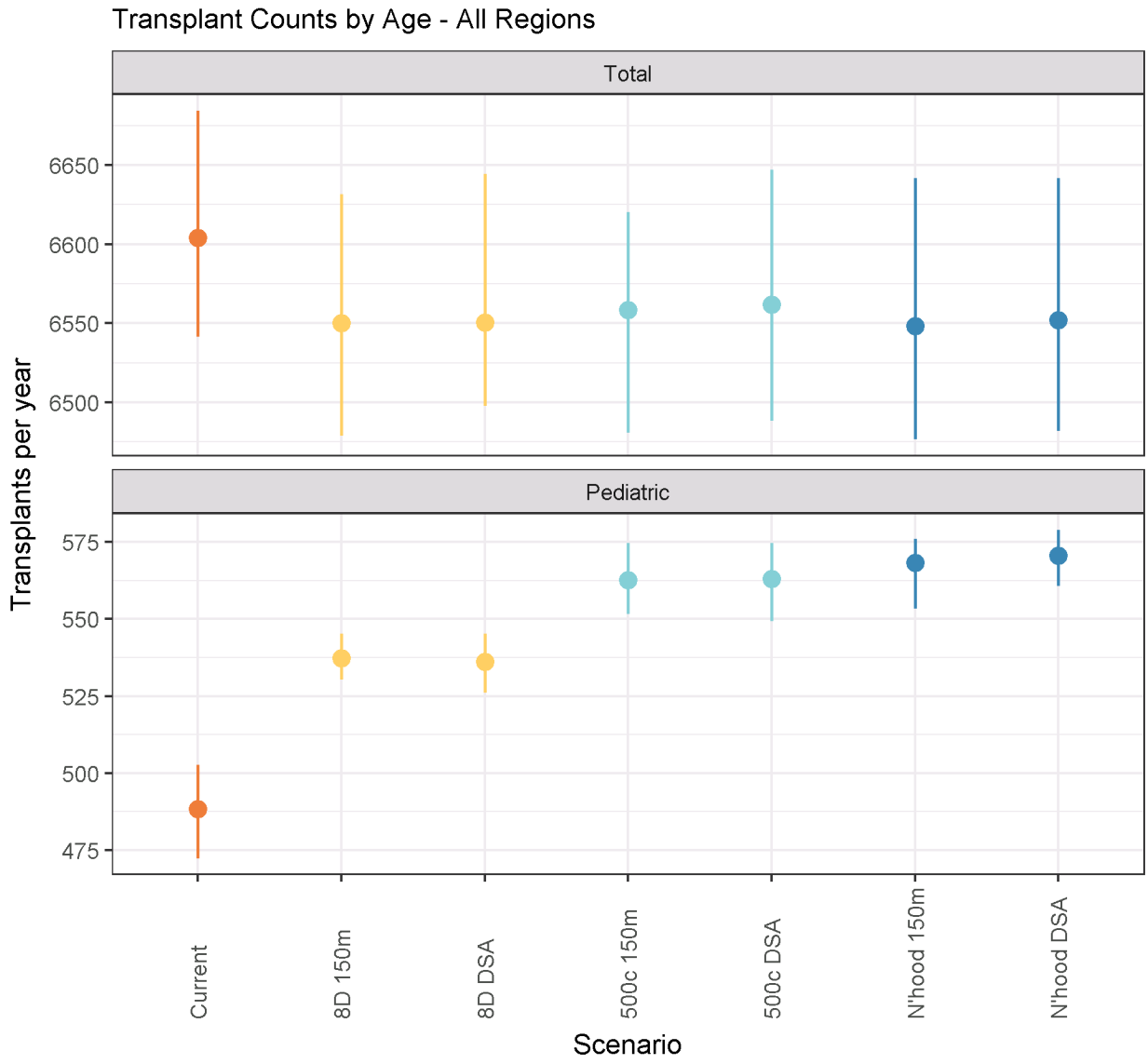


Figure 140 Transplant counts by age - all regions

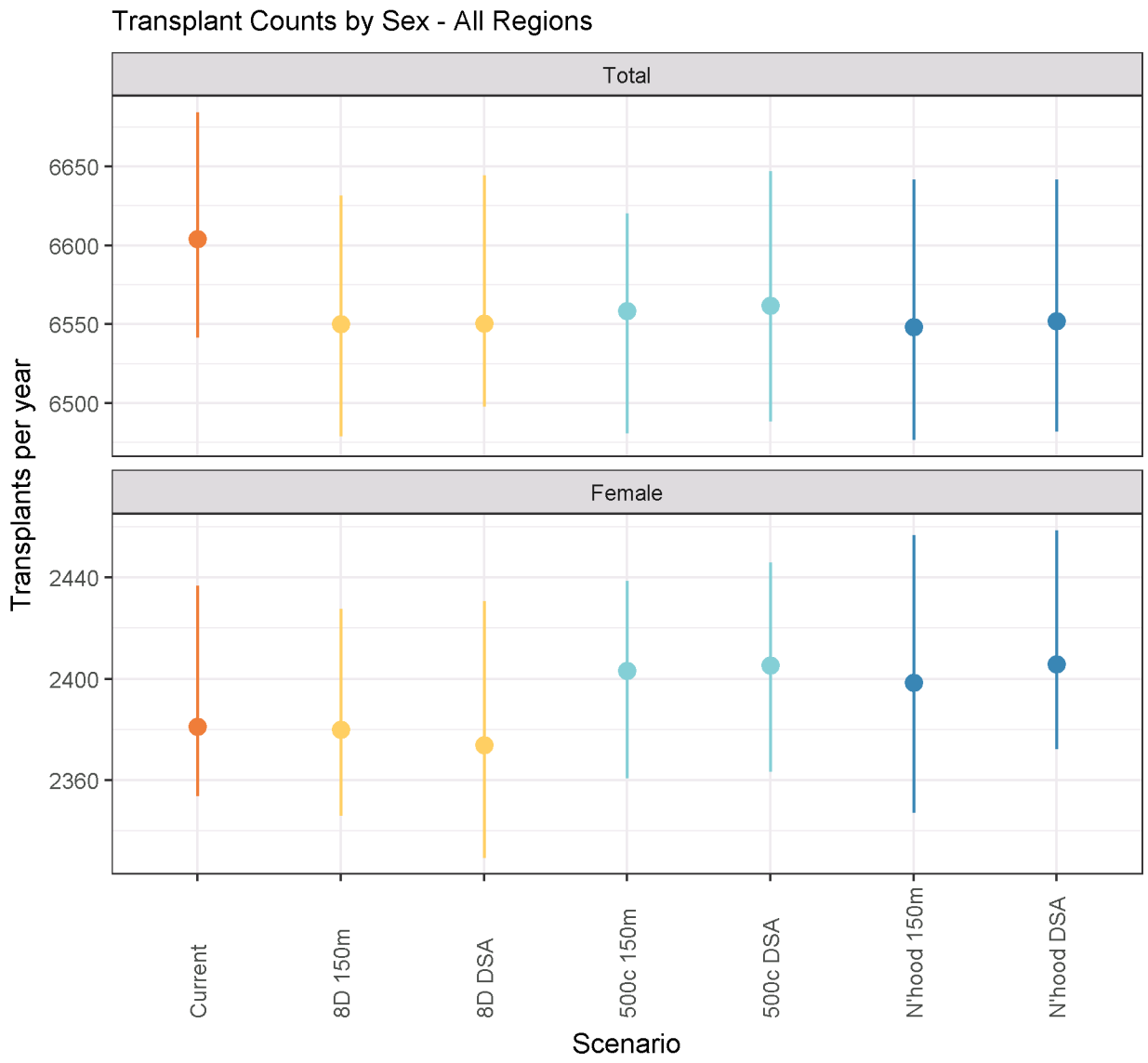


Figure 141 Transplant counts by sex - all regions

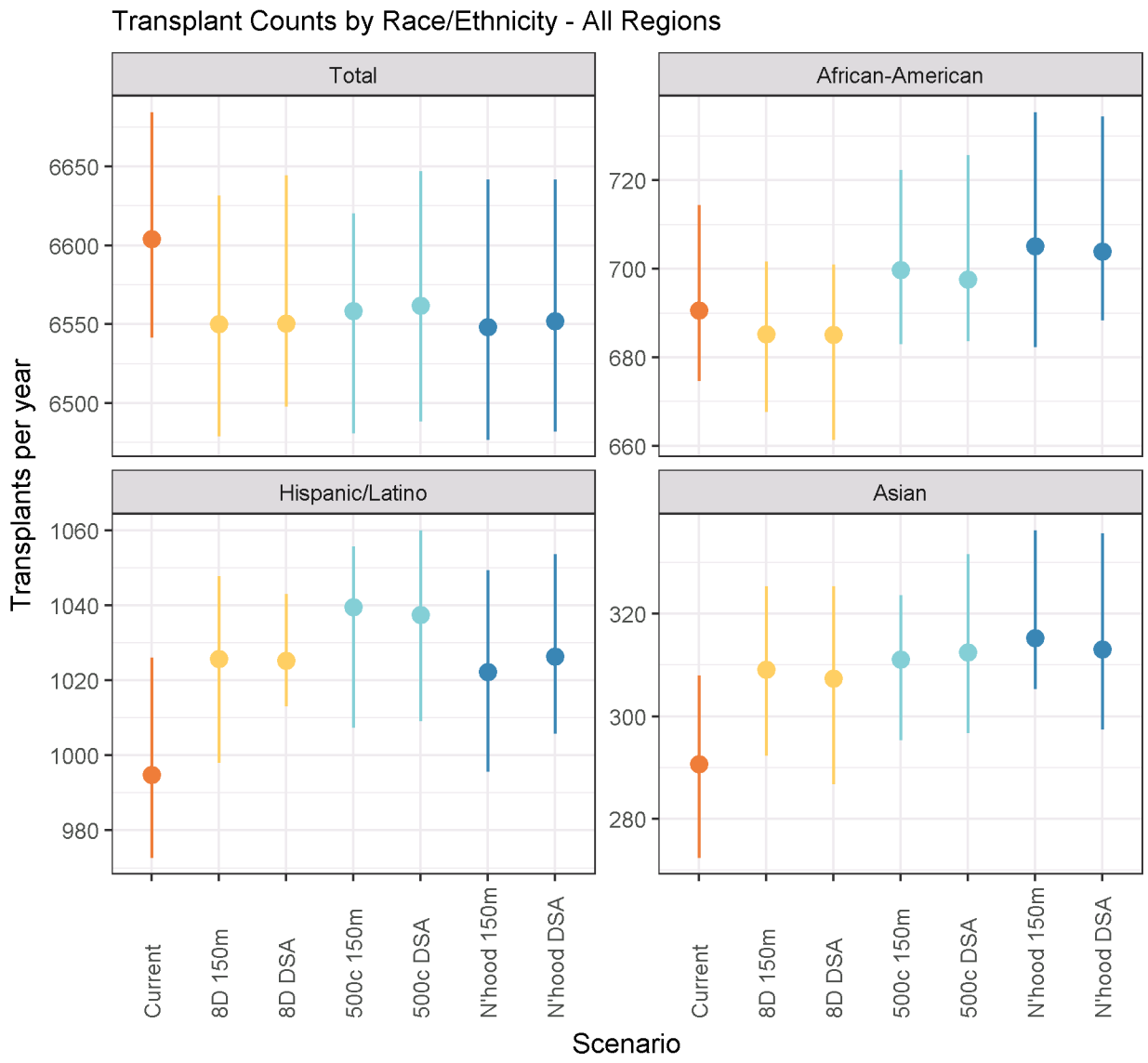


Figure 142 Transplant counts by race/ethnicity - all regions

Variance in Transplant Rates by DSA

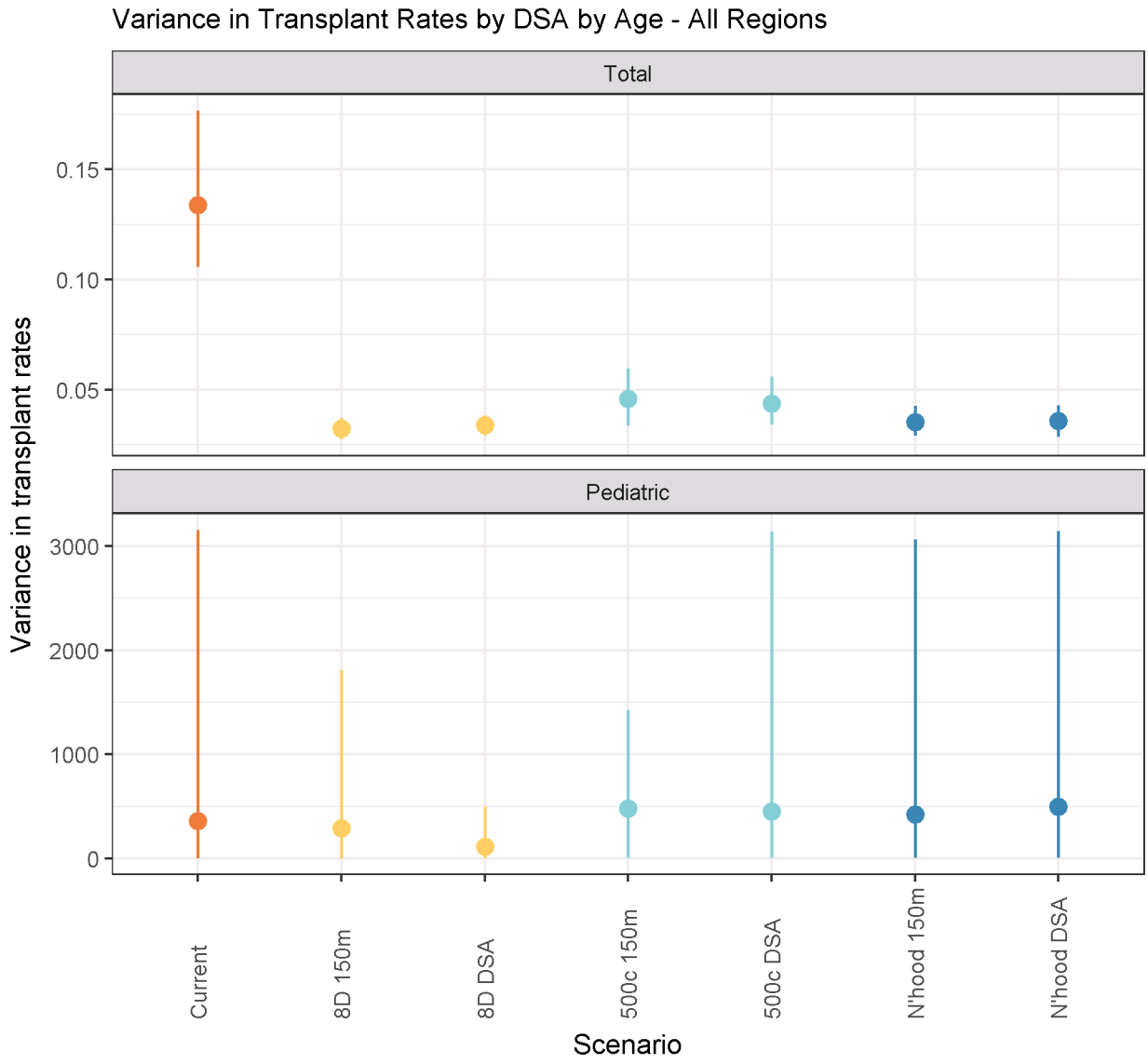


Figure 143 Variance in transplant rates by DSA by age - all regions

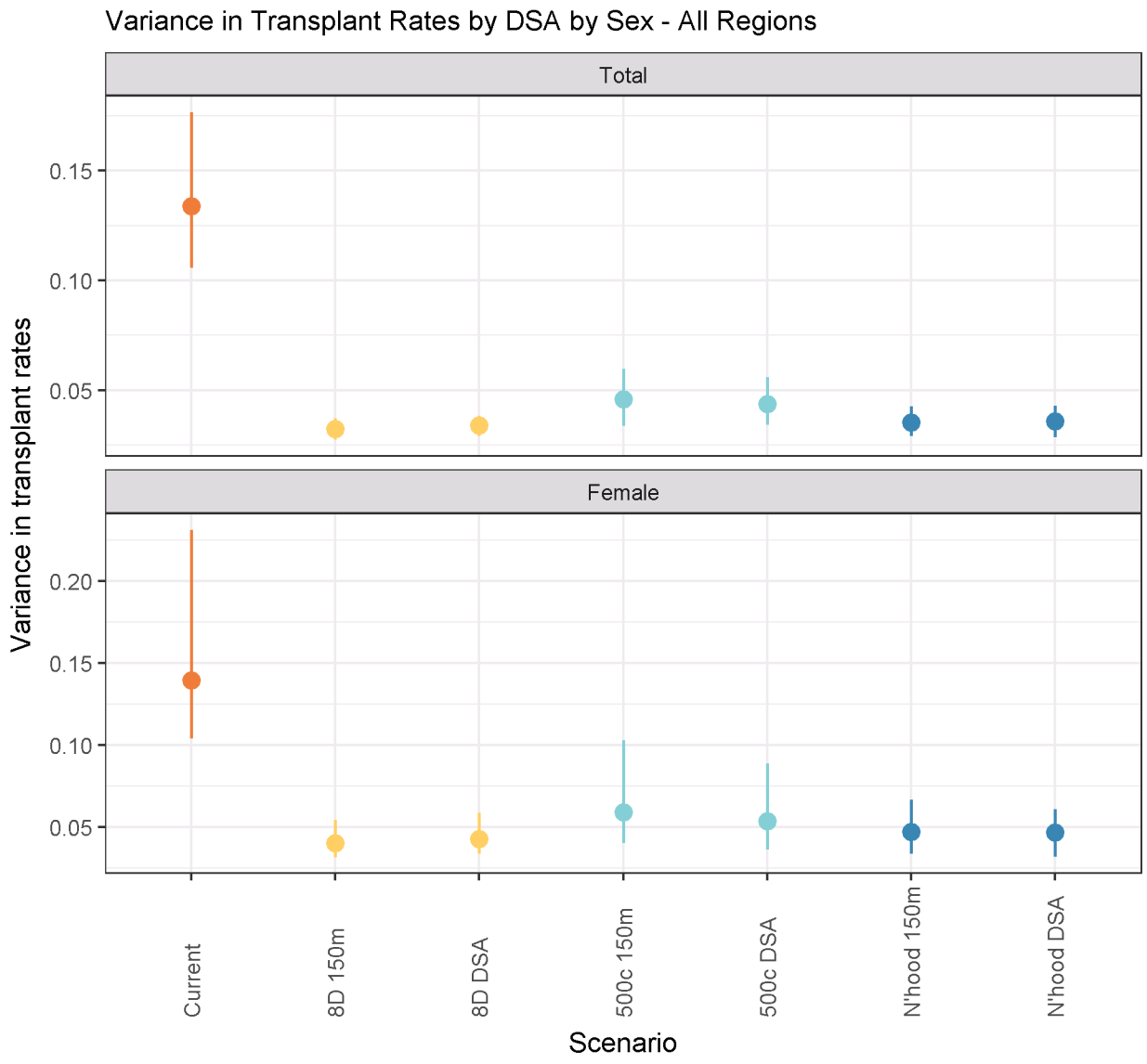


Figure 144 Variance in transplant rates by DSA by sex - all regions

Figure 145 Variance in transplant rates by DSA by race/ethnicity - all regions

Waitlist Mortality

Waitlist Mortality Rates

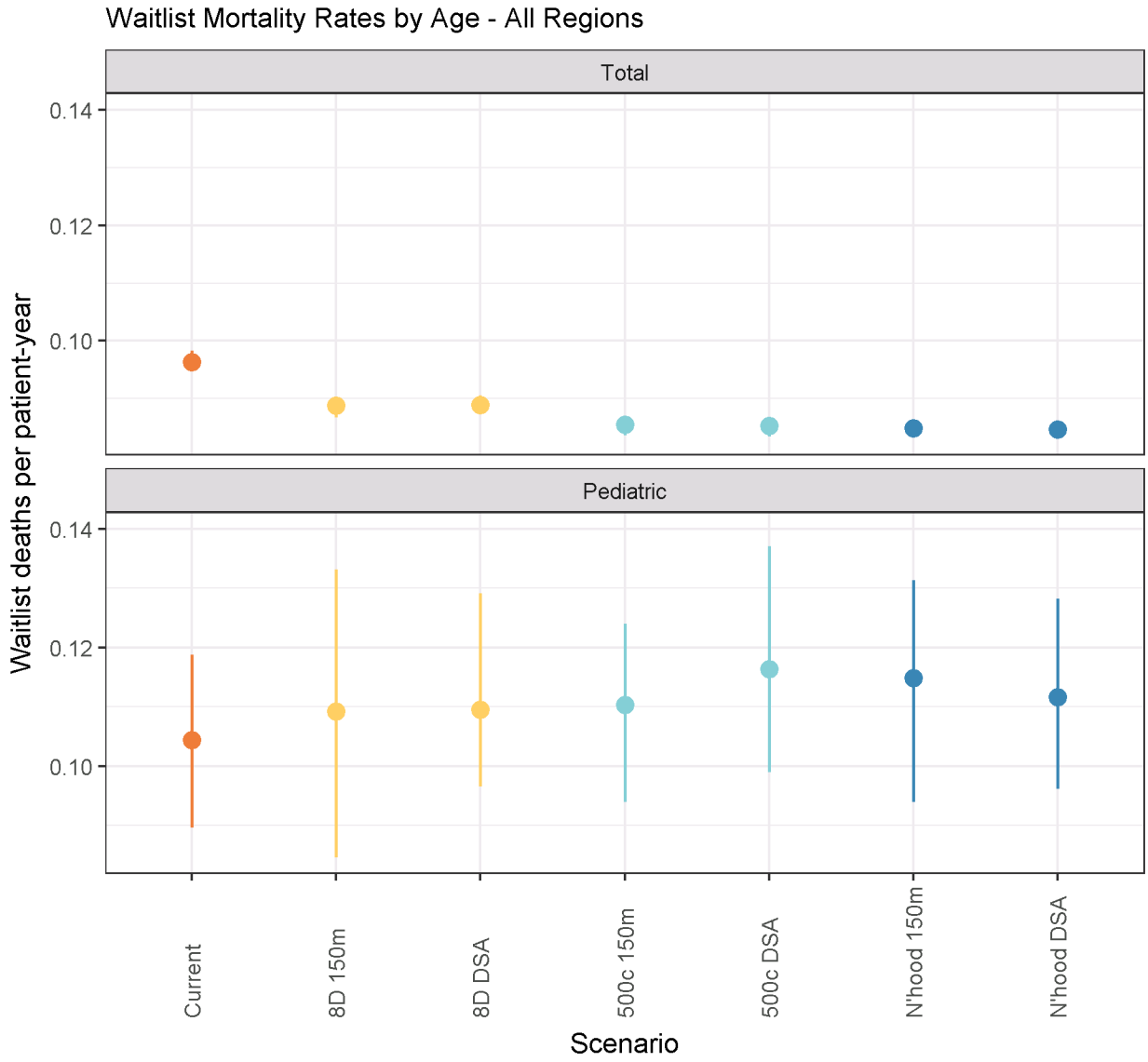


Figure 146 Waitlist mortality rates by age - all regions

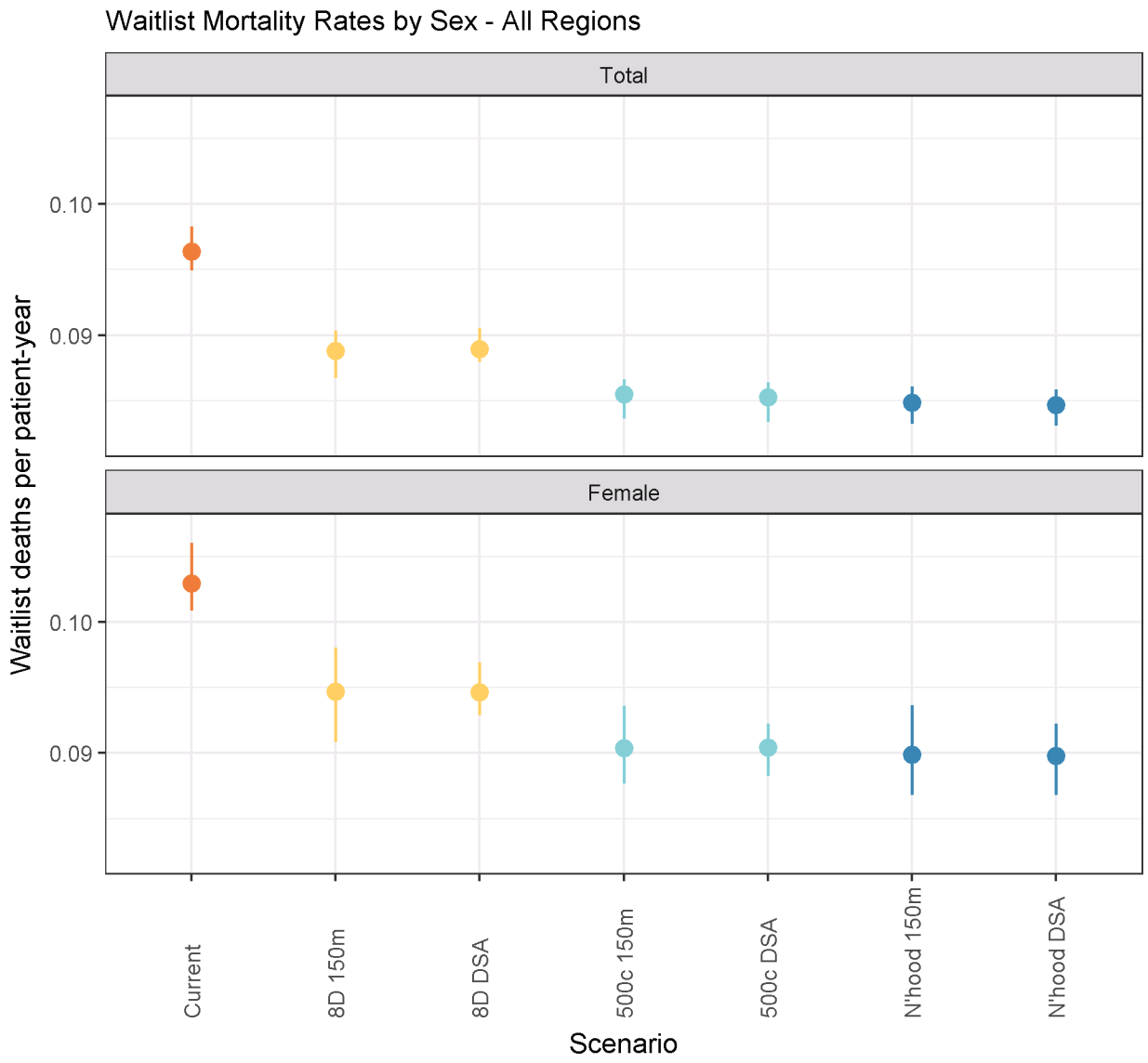


Figure 147 Waitlist mortality rates by sex - all regions

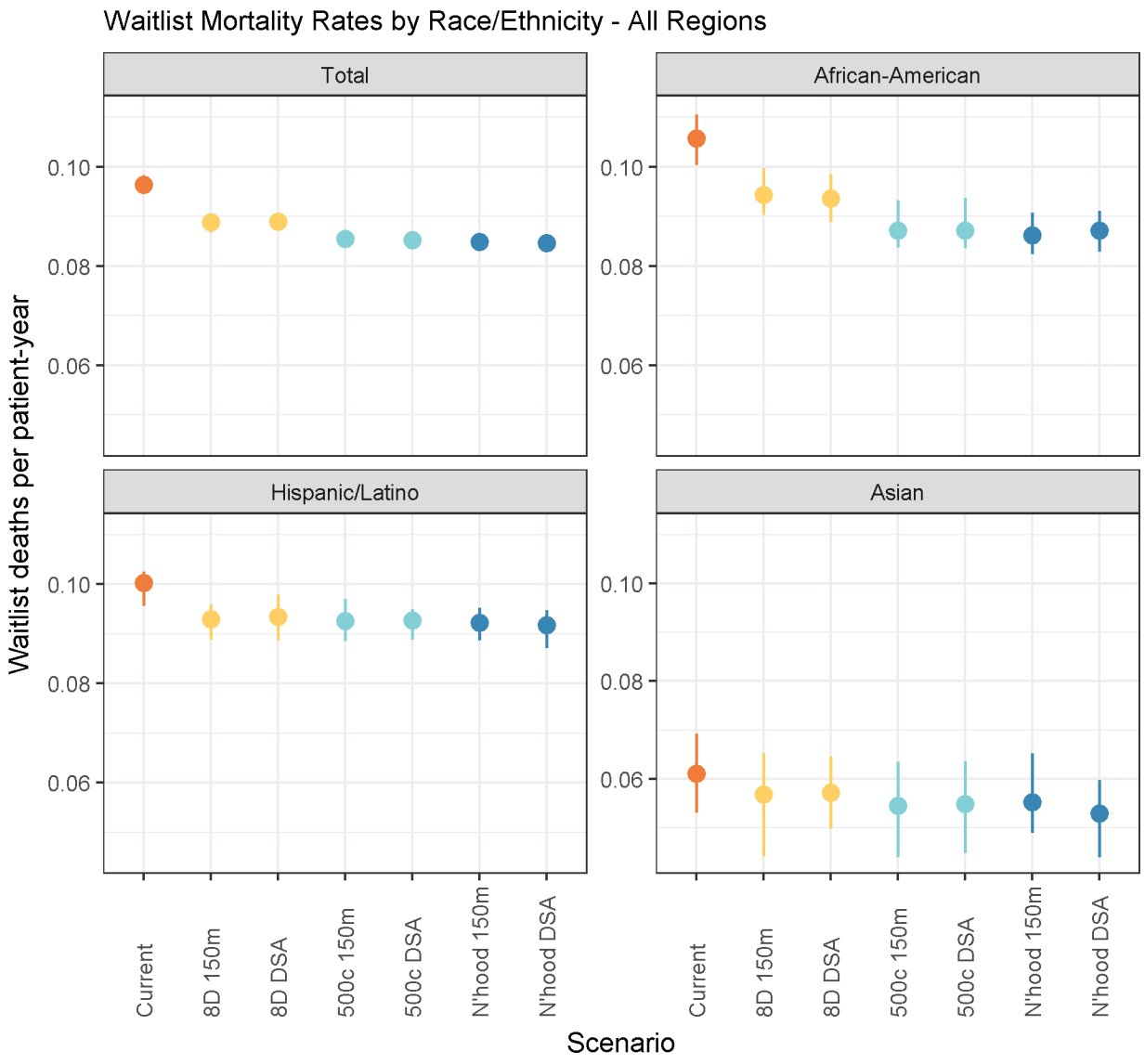


Figure 148 Waitlist mortality rates by race/ethnicity - all regions

Waitlist Mortality Counts

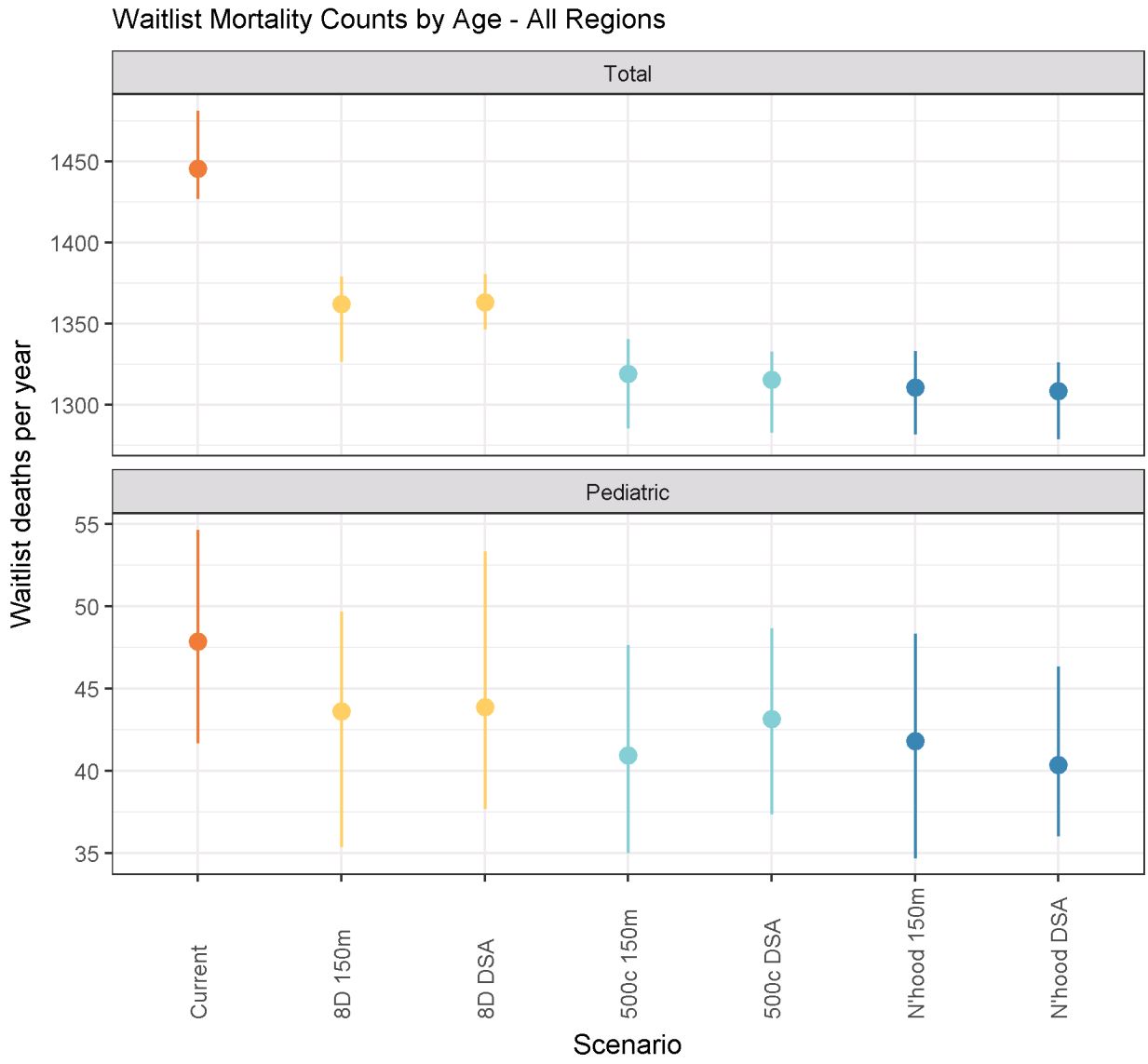


Figure 149 Waitlist mortality counts by age - all regions

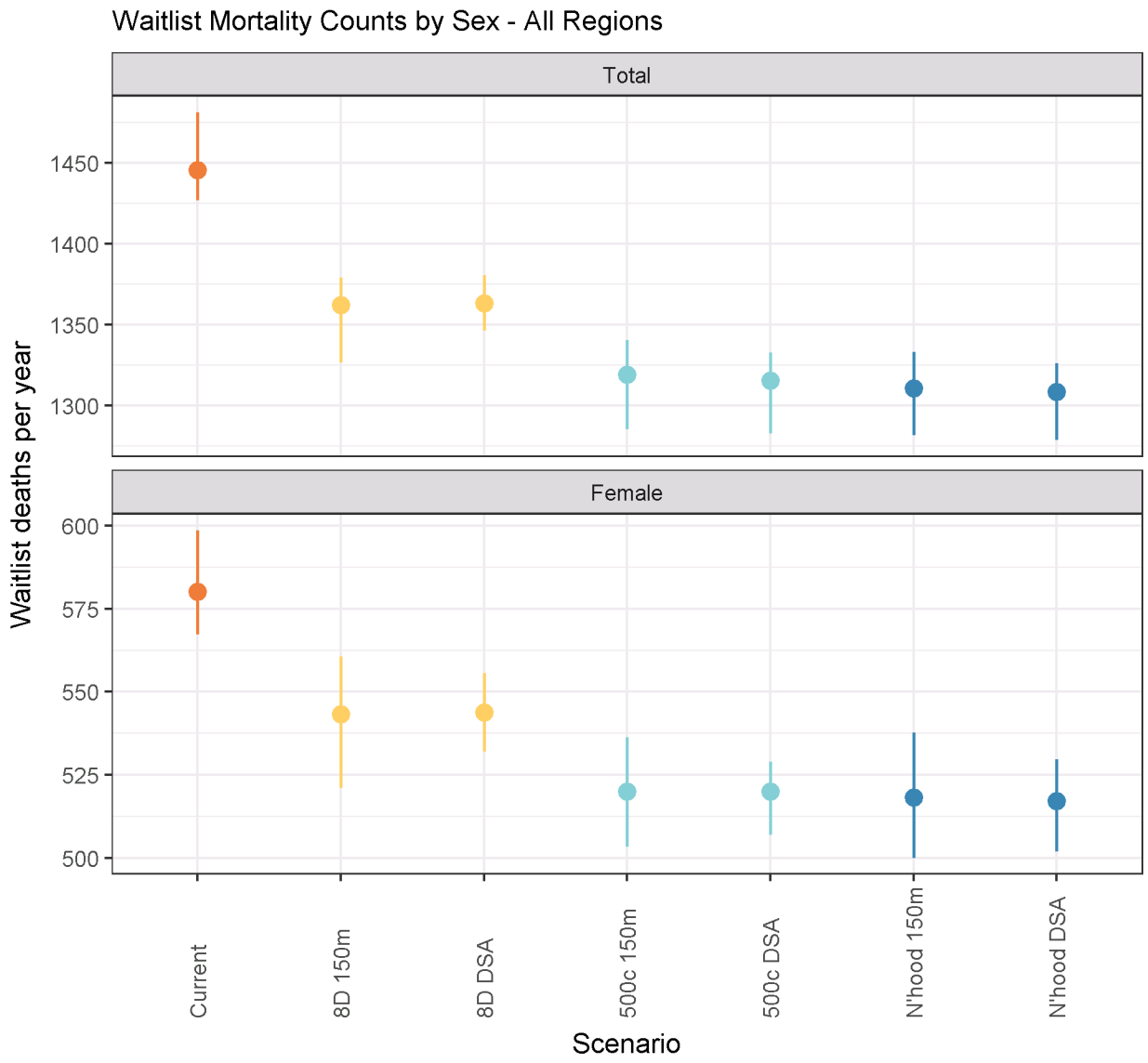


Figure 150 Waitlist mortality counts by sex - all regions

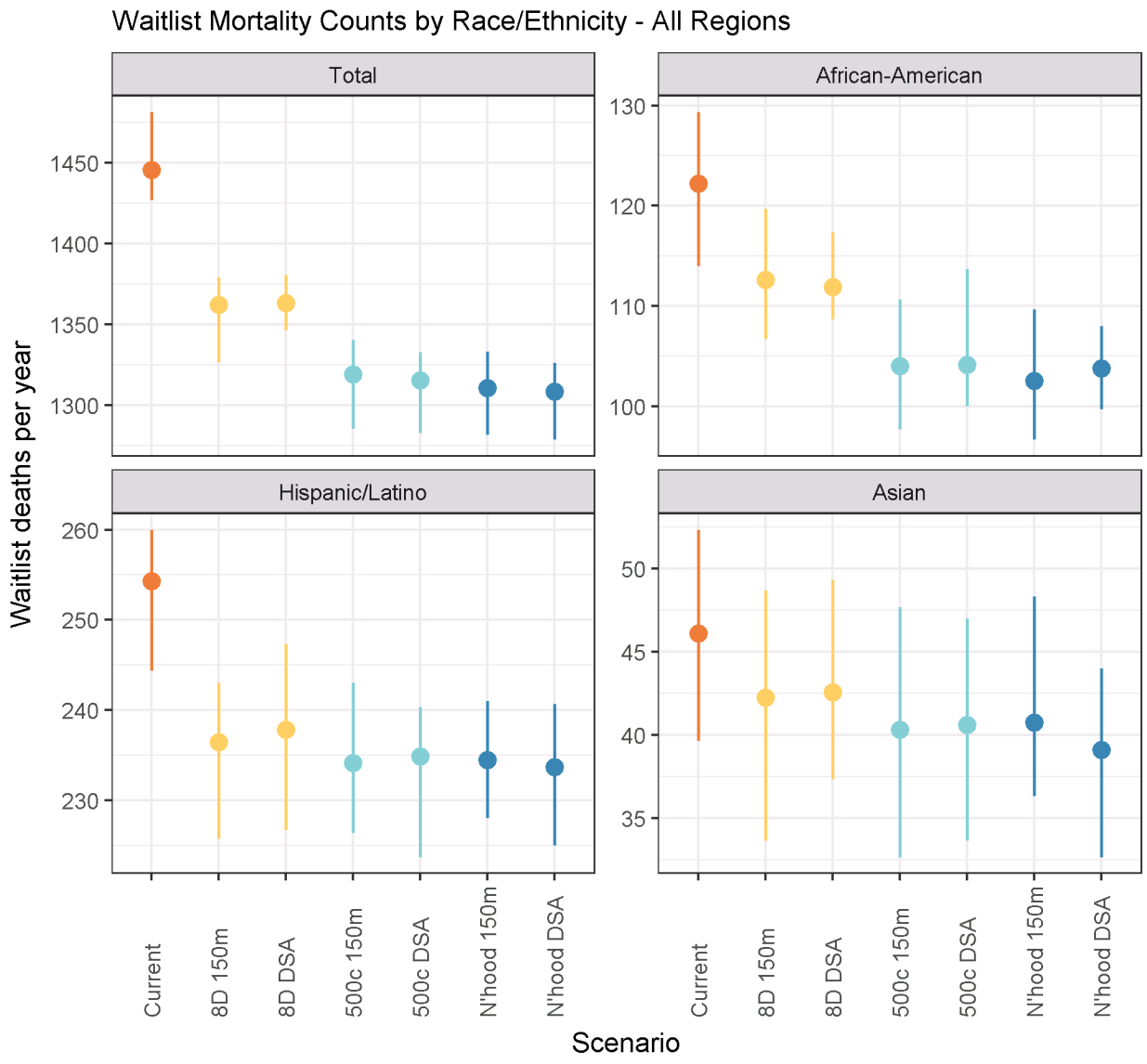


Figure 151 Waitlist mortality counts by race/ethnicity - all regions

Variance in Waitlist Mortality Rates by DSA

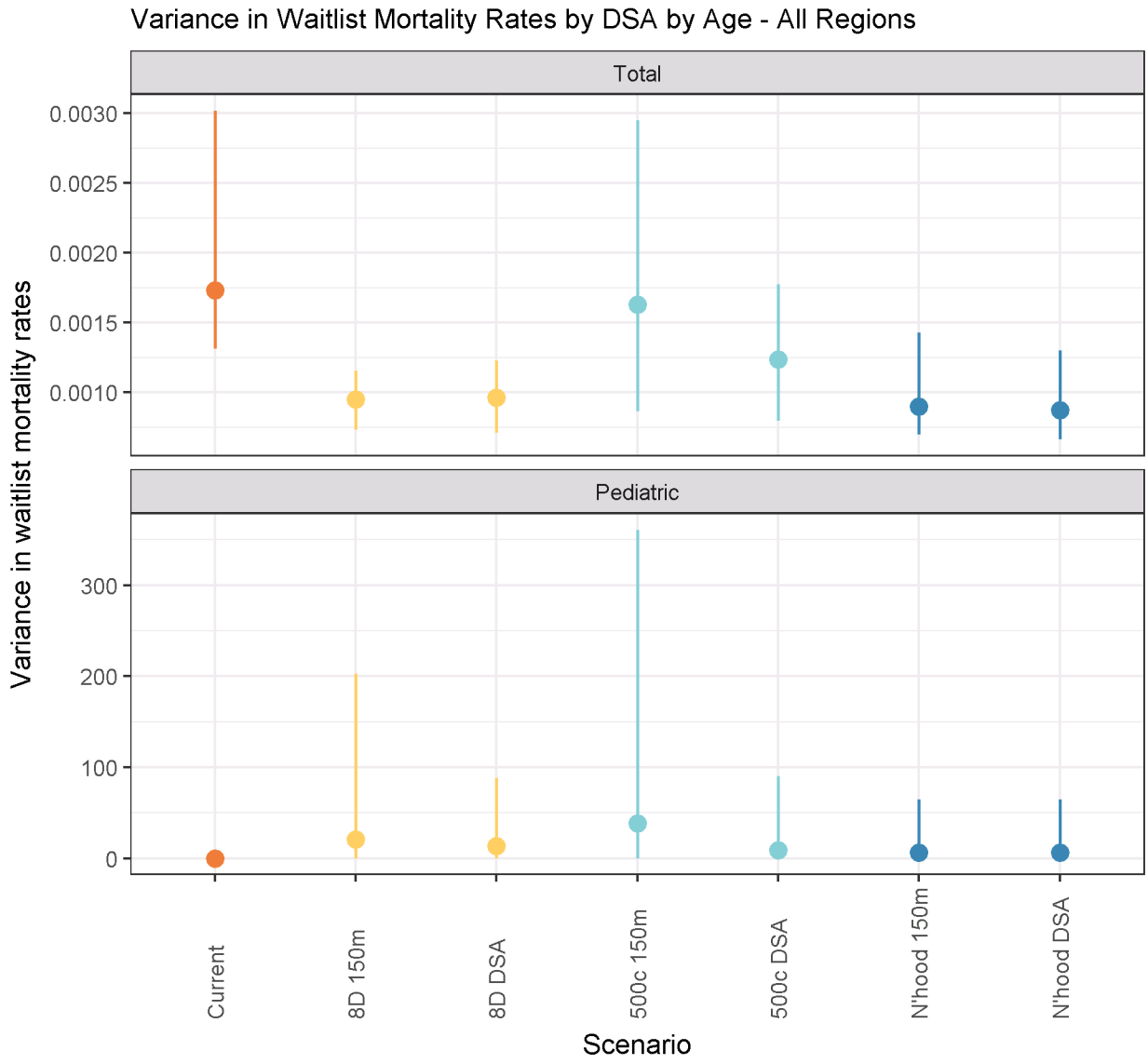


Figure 152 Variance in waitlist mortality rates by DSA by age - all regions

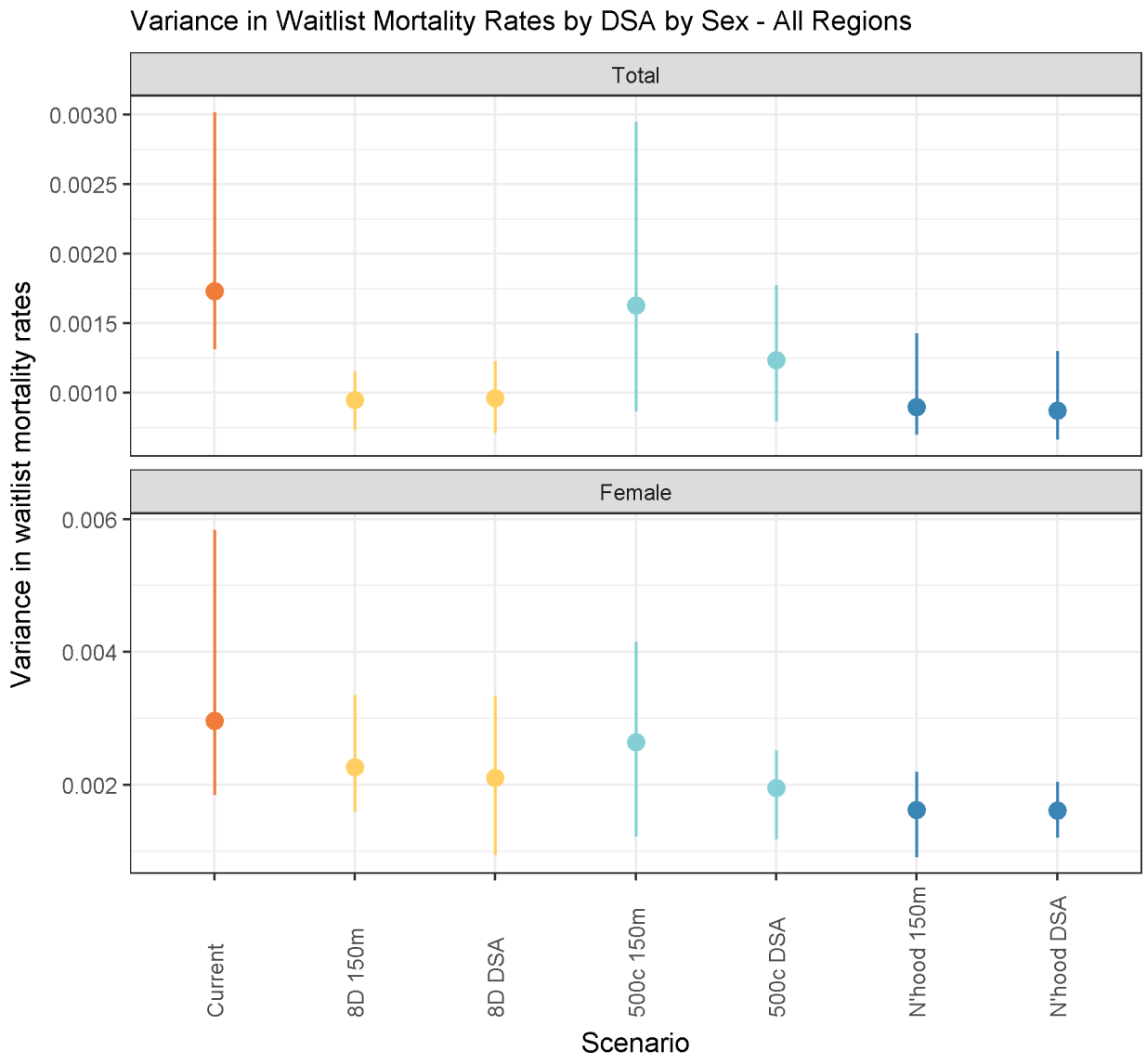


Figure 153 Variance in waitlist mortality rates by DSA by sex - all regions

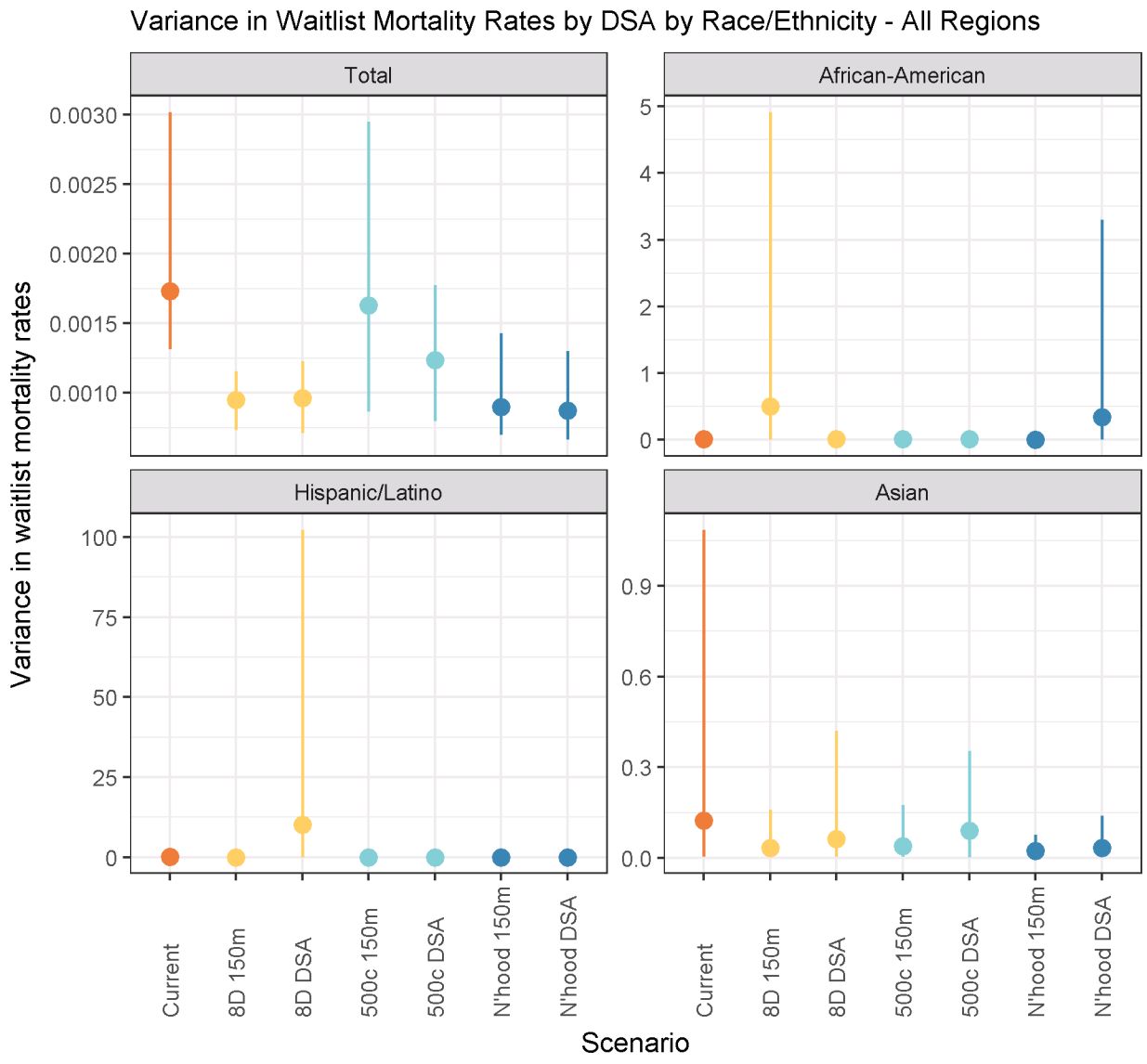


Figure 154 Variance in waitlist mortality rates by DSA by race/ethnicity - all regions

Posttransplant Mortality

Posttransplant Mortality Rates

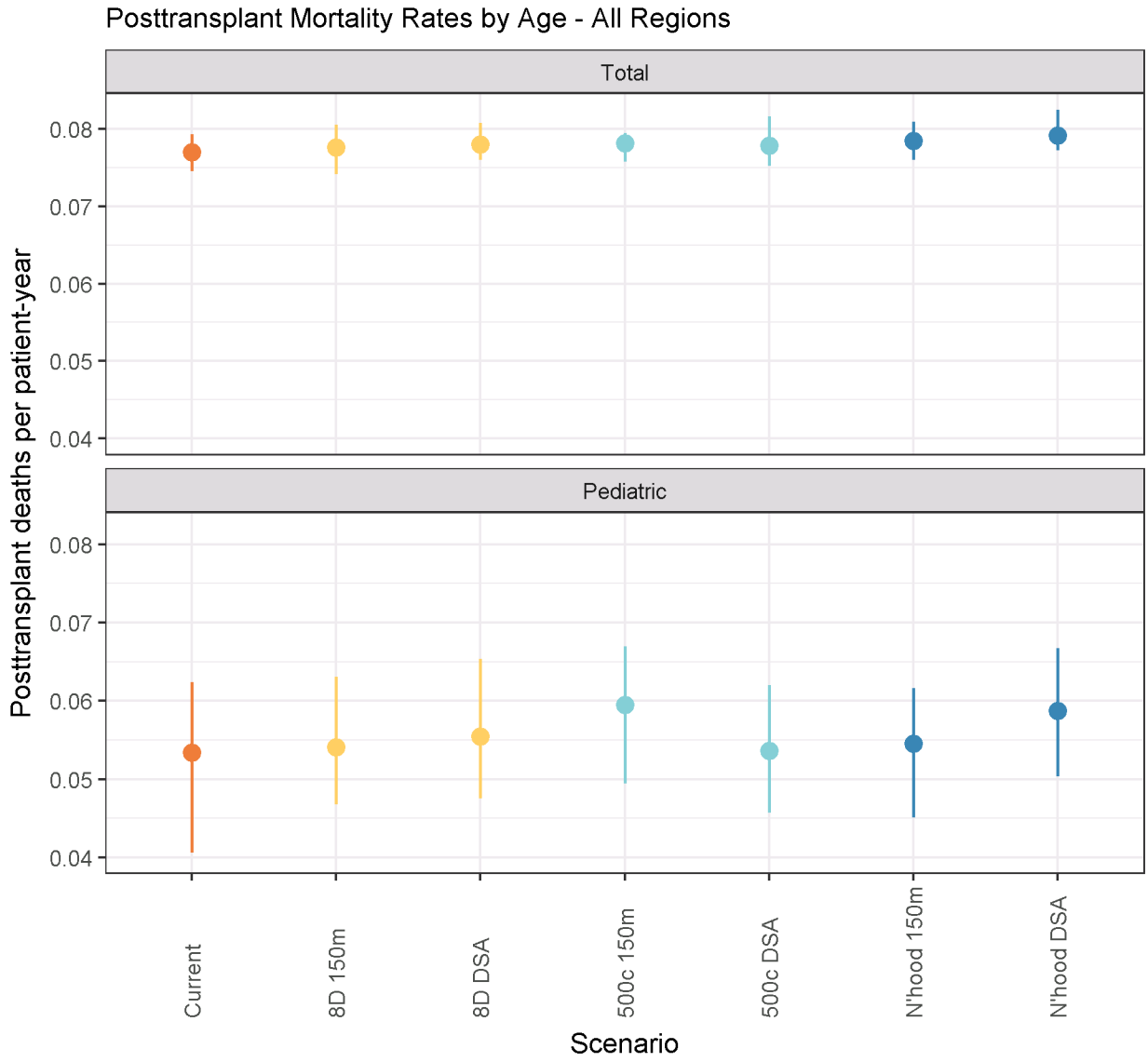


Figure 155 Posttransplant mortality rates by age - all regions

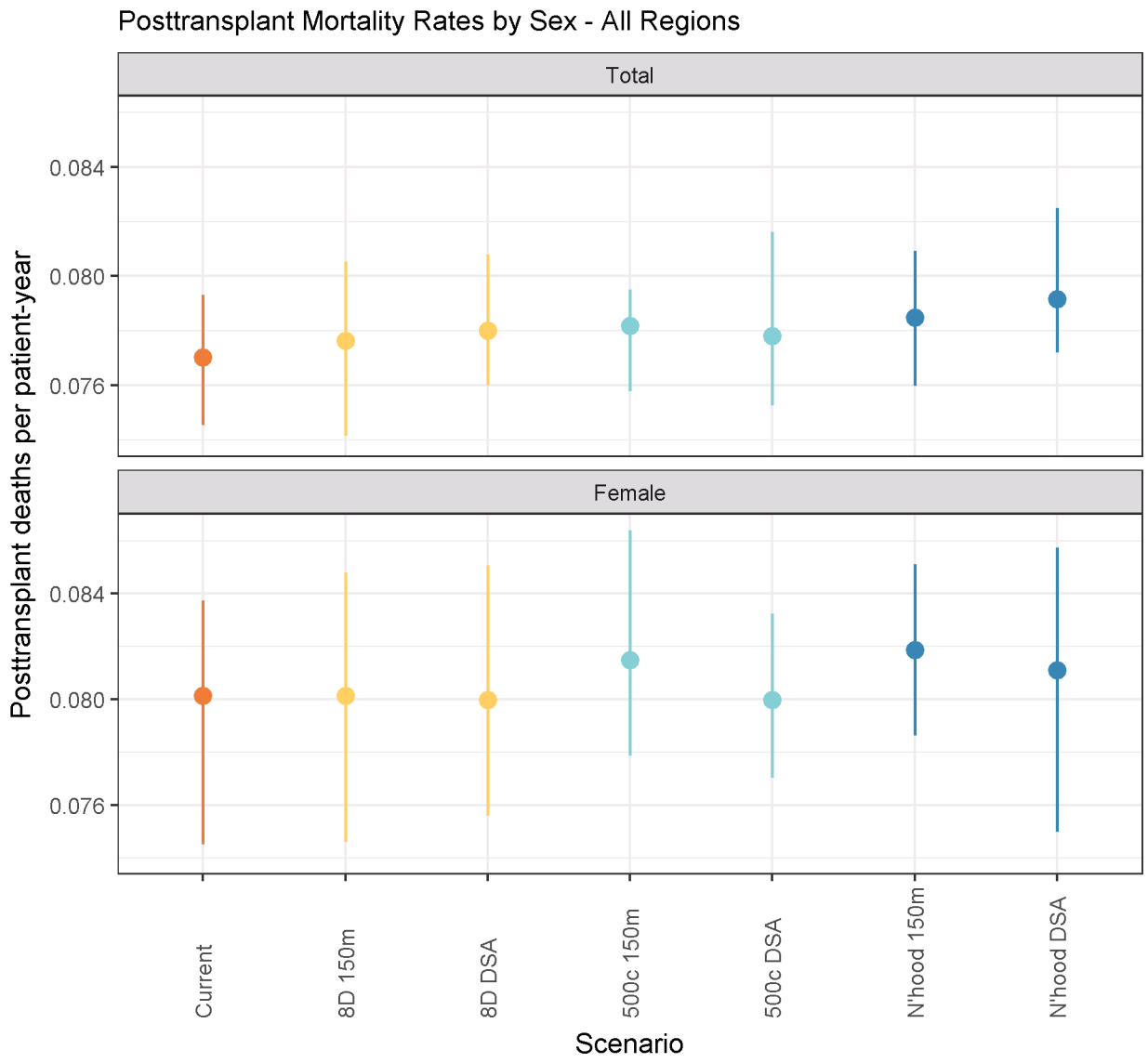


Figure 156 Posttransplant mortality rates by sex - all regions

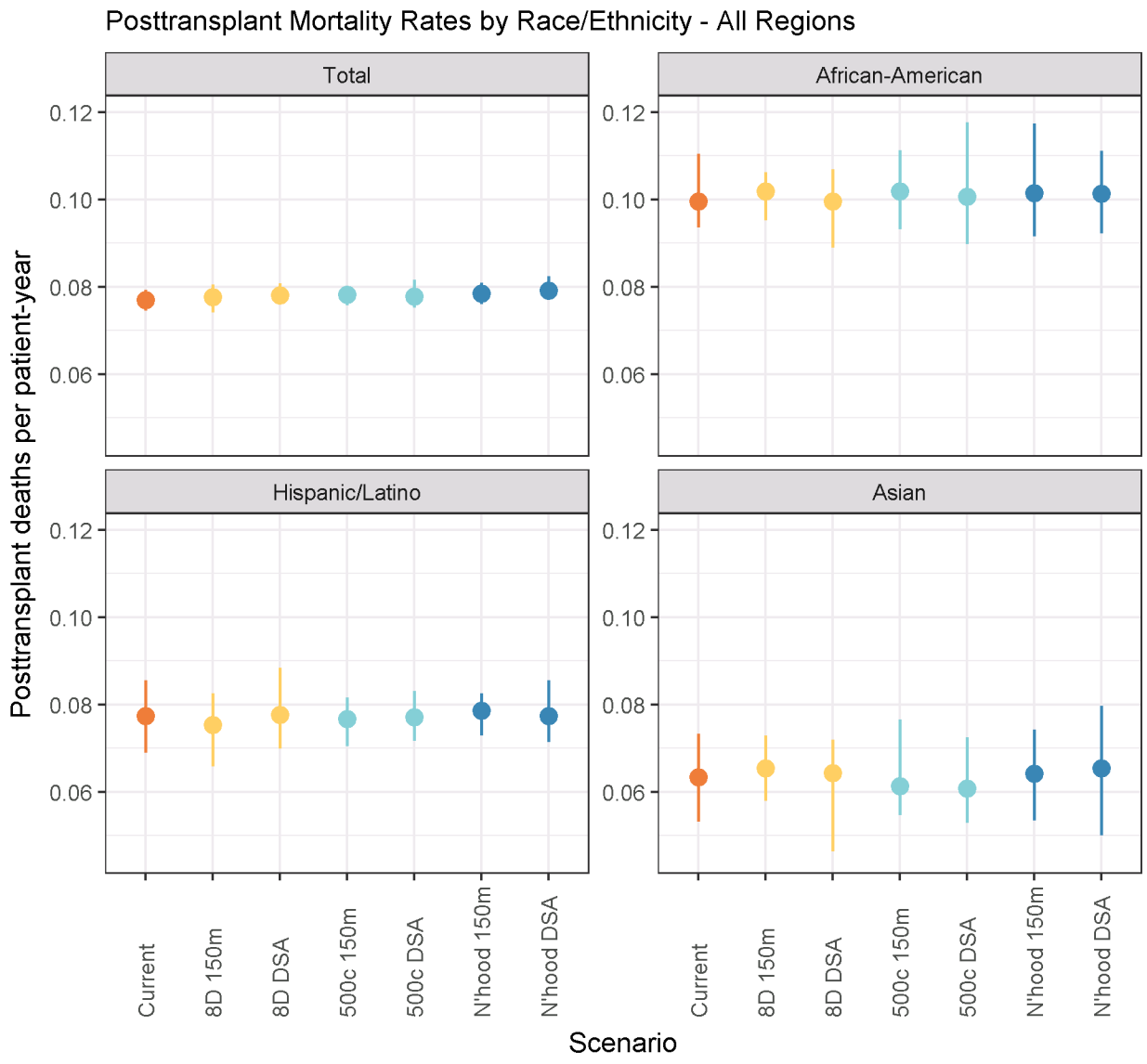


Figure 157 Posttransplant mortality rates by race/ethnicity - all regions

Posttransplant Mortality Counts

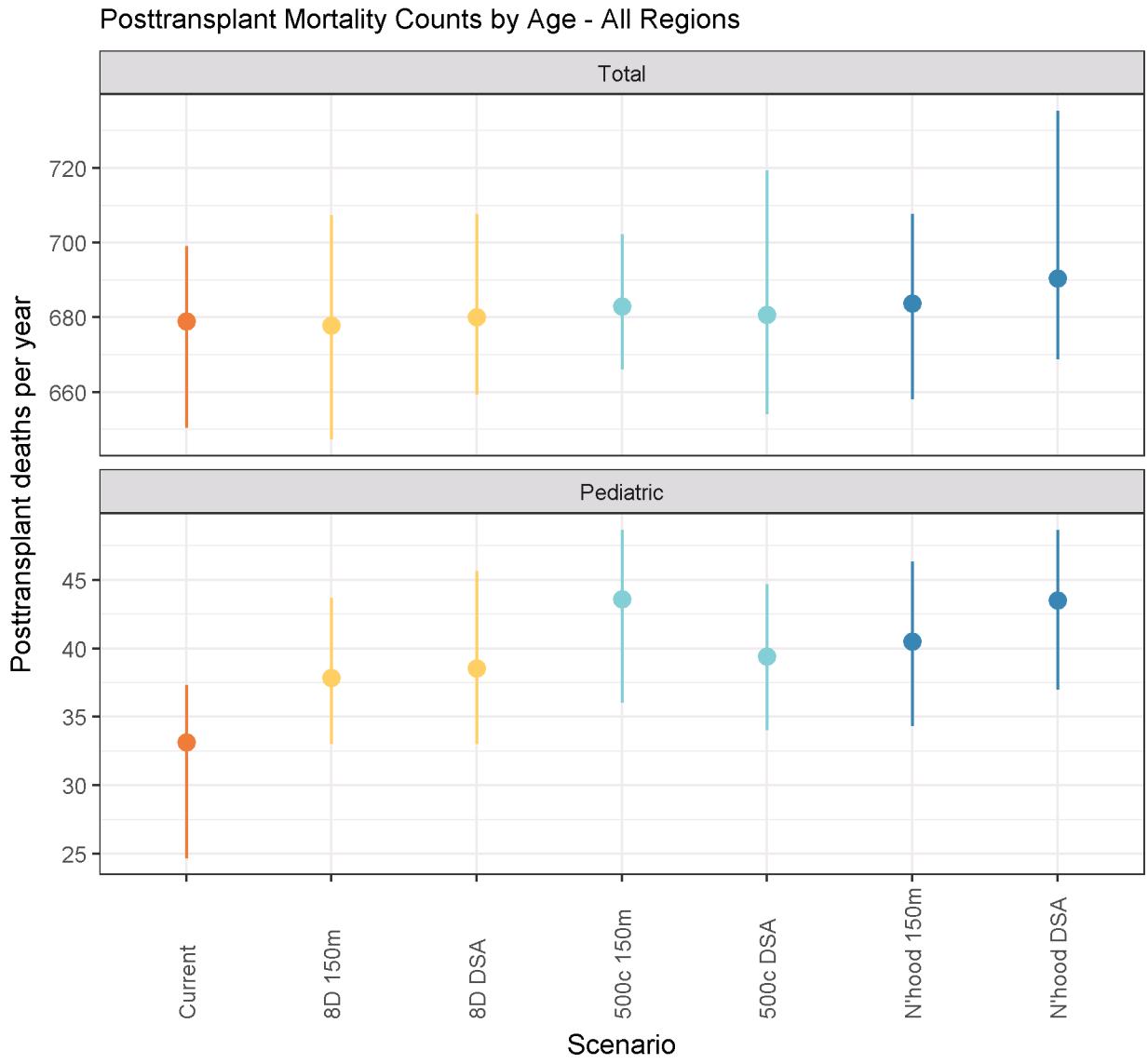


Figure 158 Posttransplant mortality counts by age - all regions

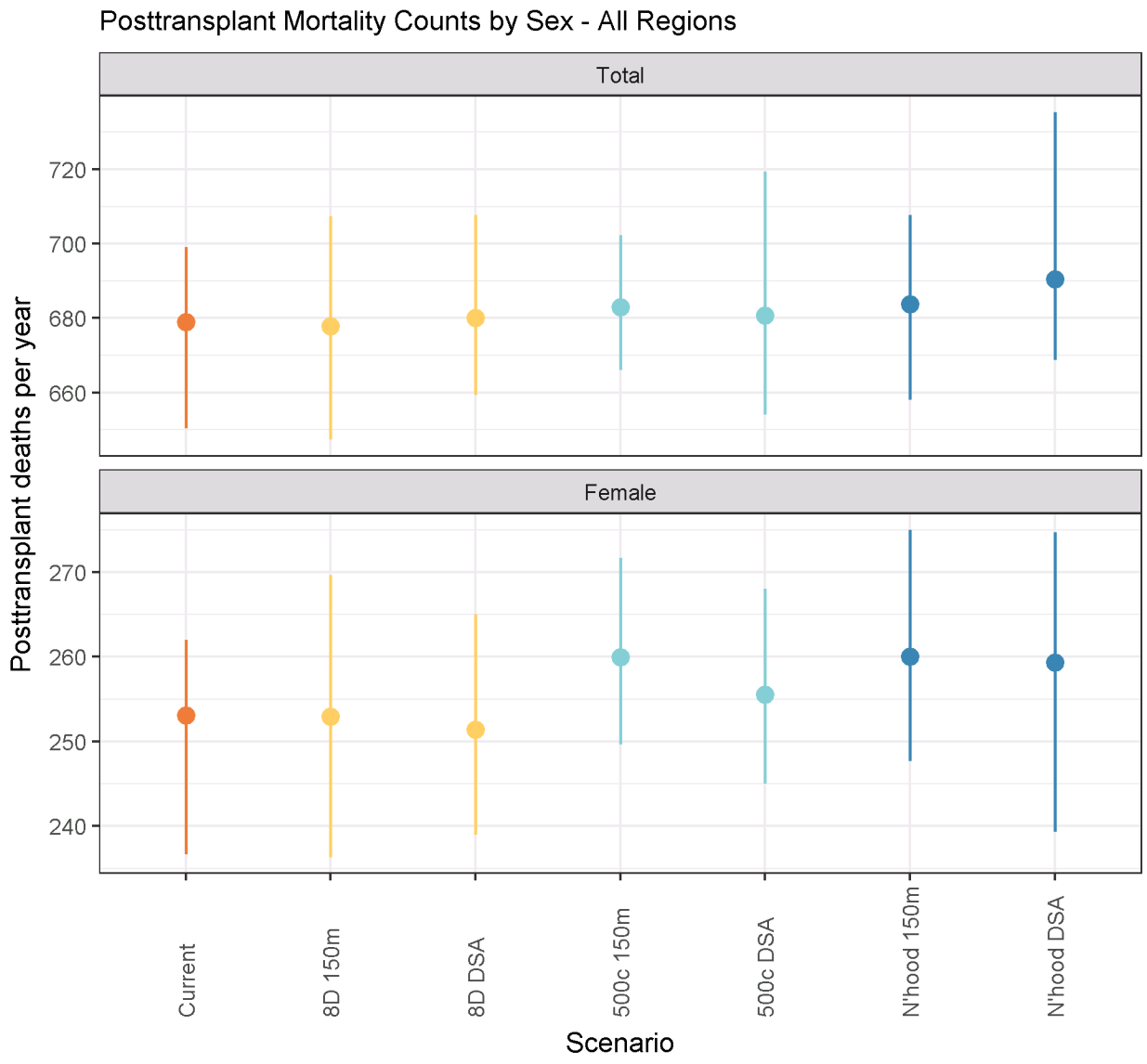


Figure 159 Posttransplant mortality counts by sex - all regions

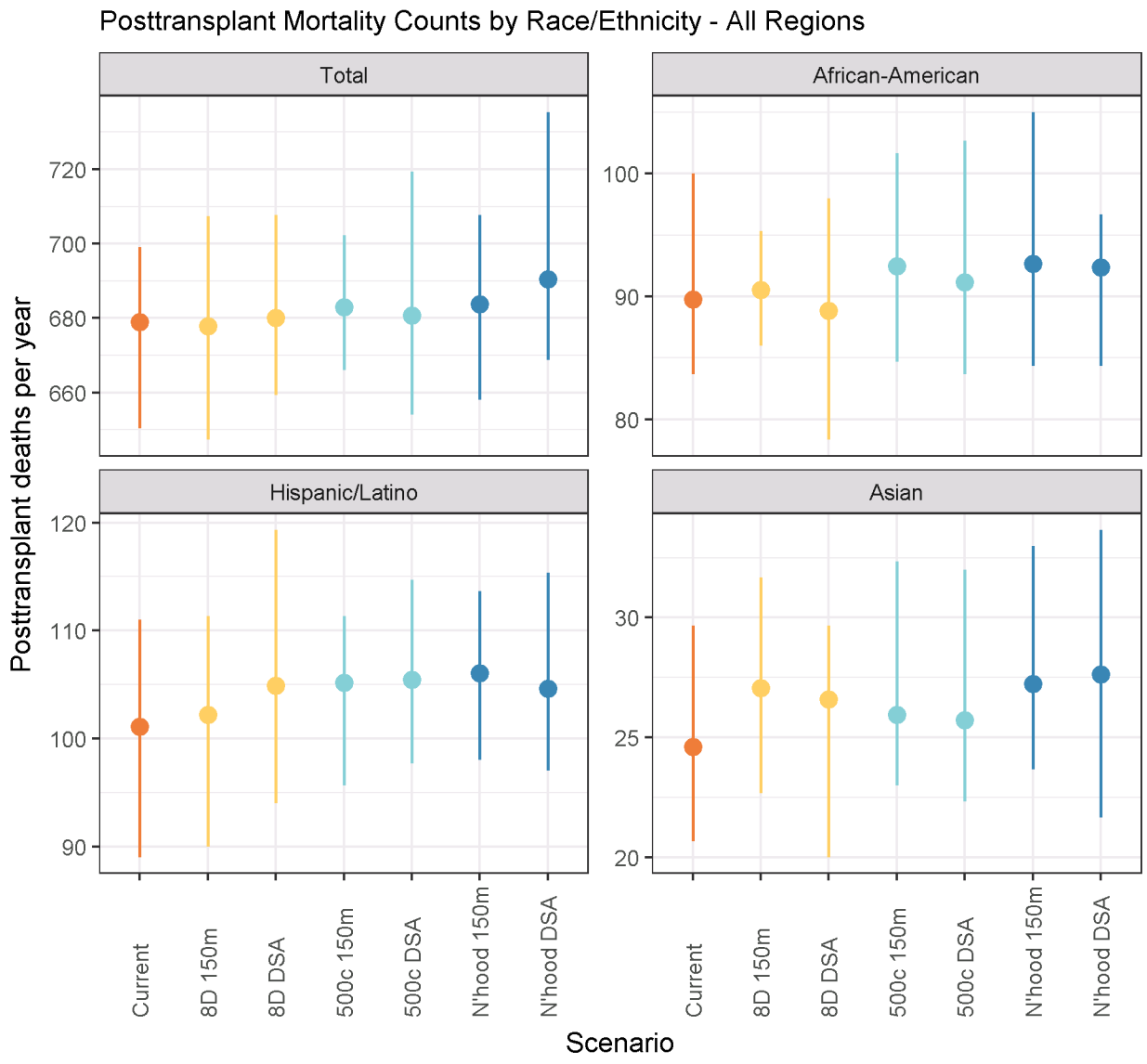


Figure 160 Posttransplant mortality counts by race/ethnicity - all regions

Transport

Median Transport Time

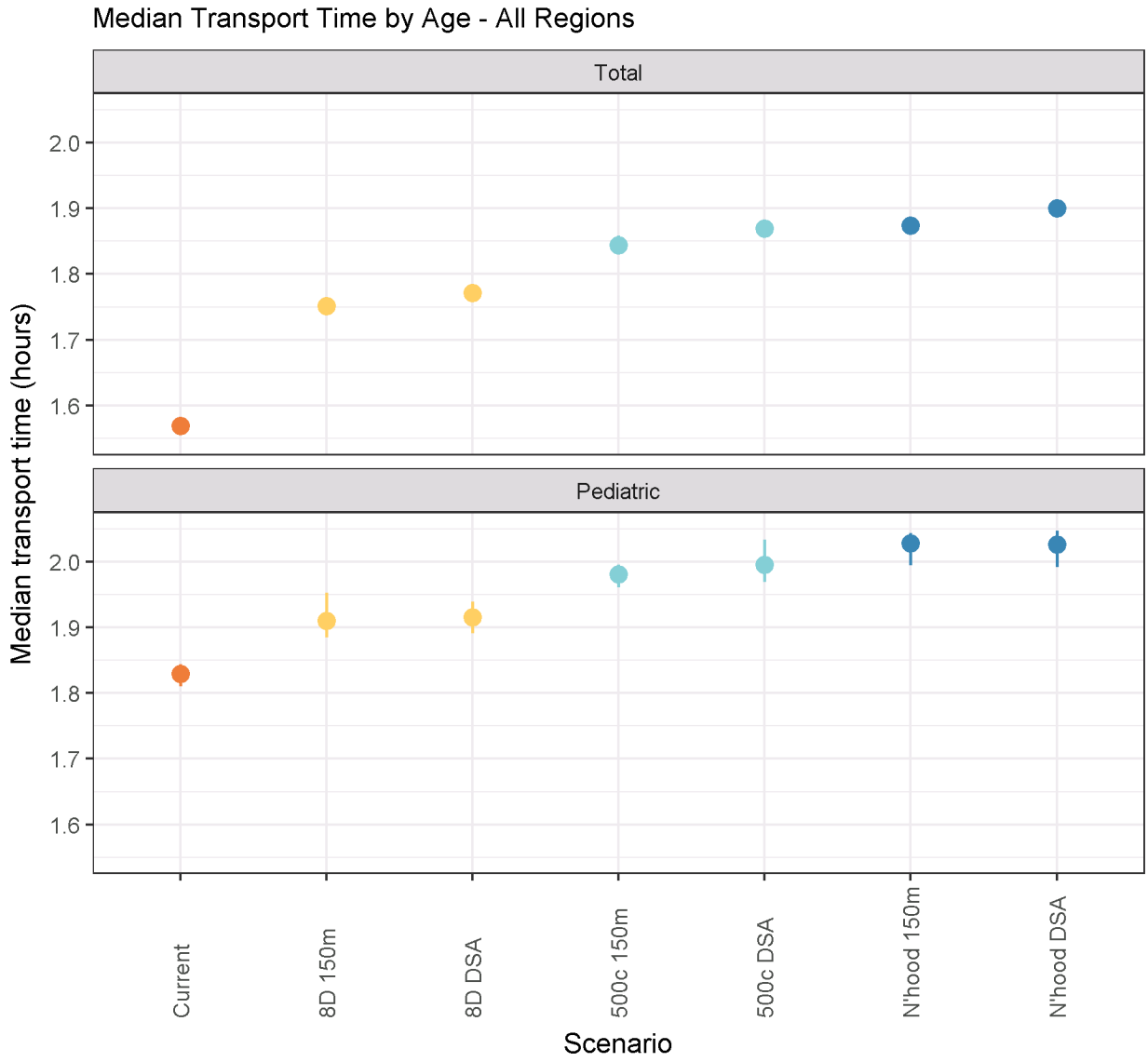


Figure 161 Median Transport Time by age - all regions

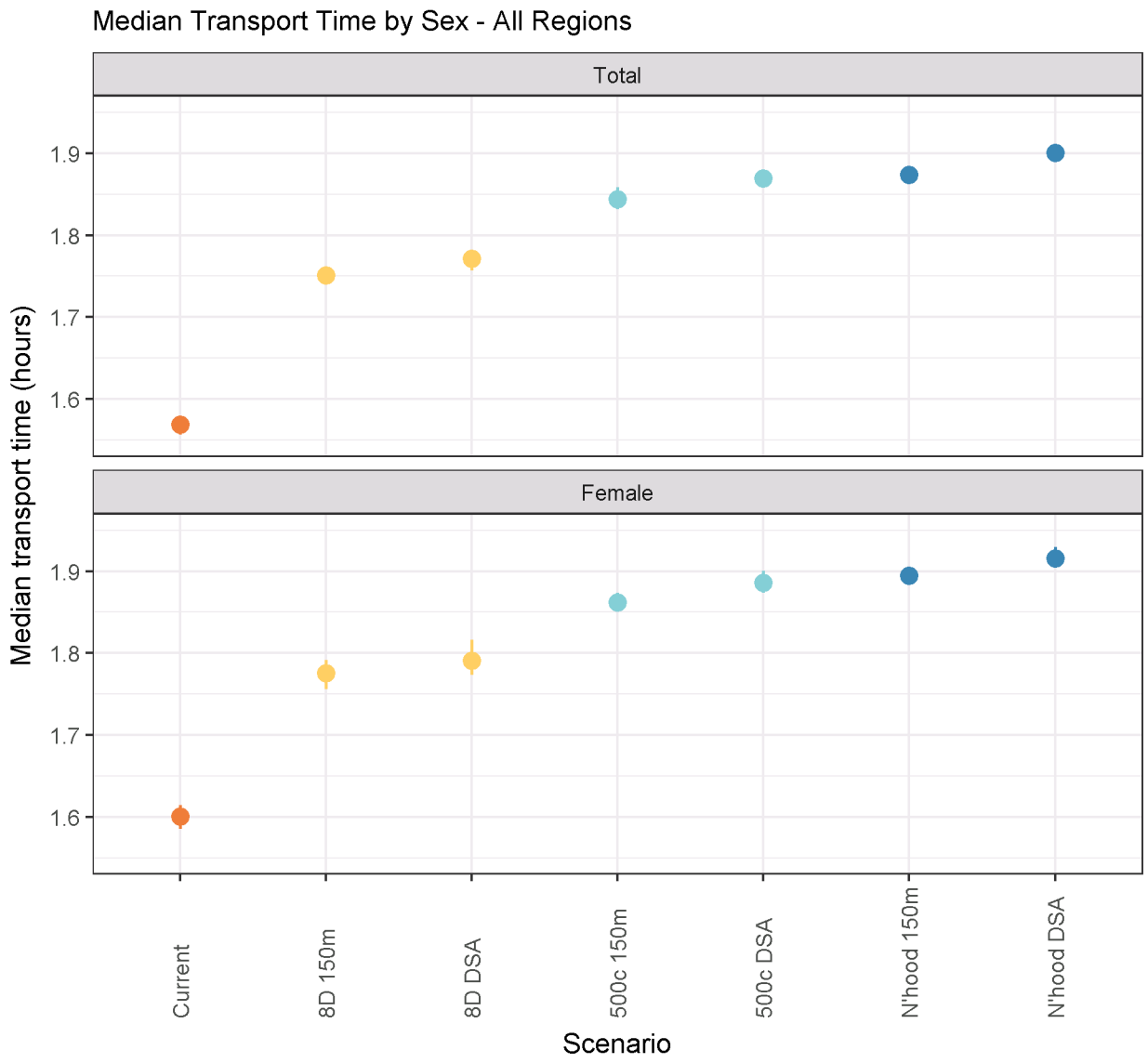


Figure 162 Median Transport Time by sex - all regions

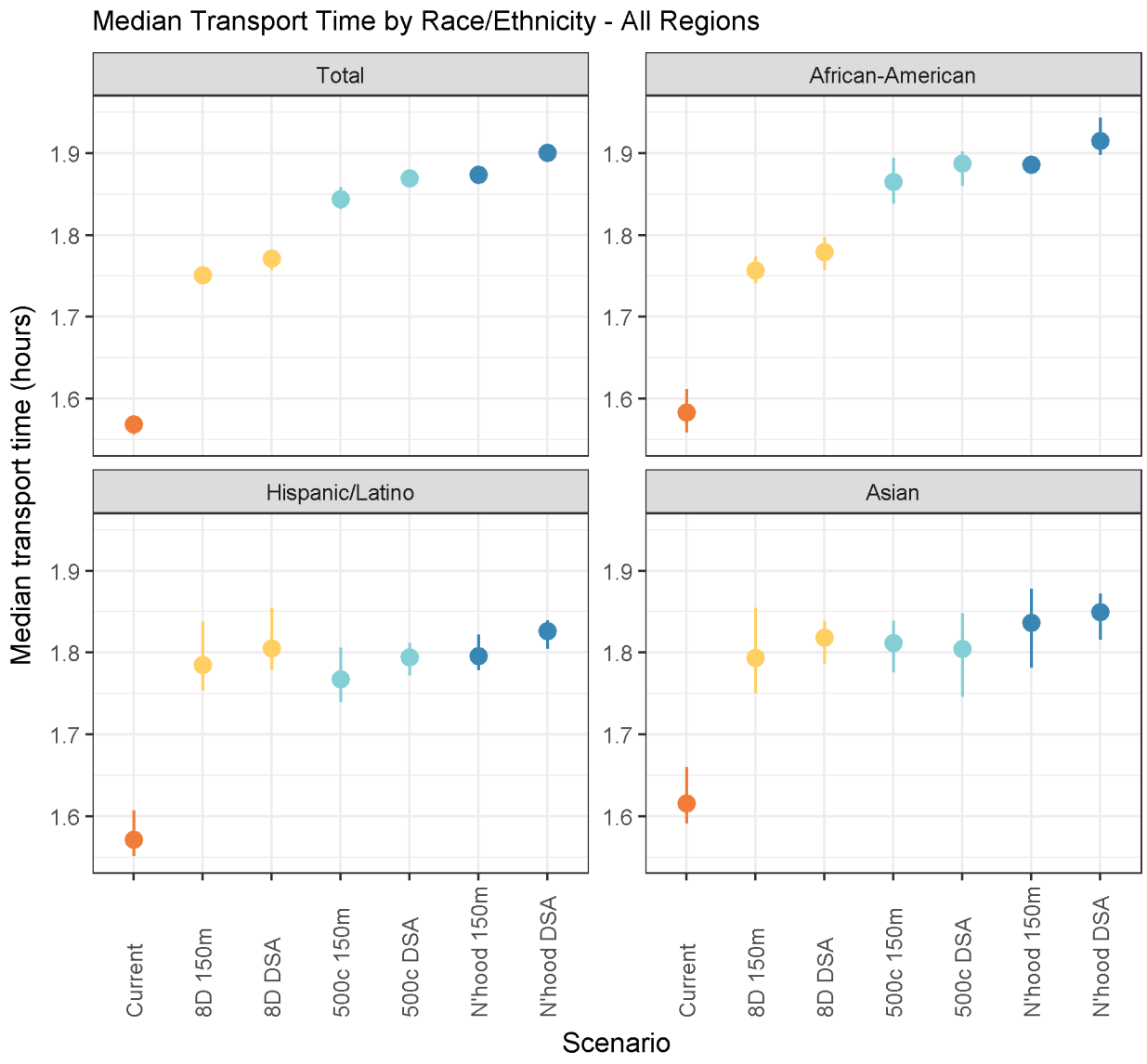


Figure 163 Median Transport Time by race/ethnicity - all regions

Median Transport Distance

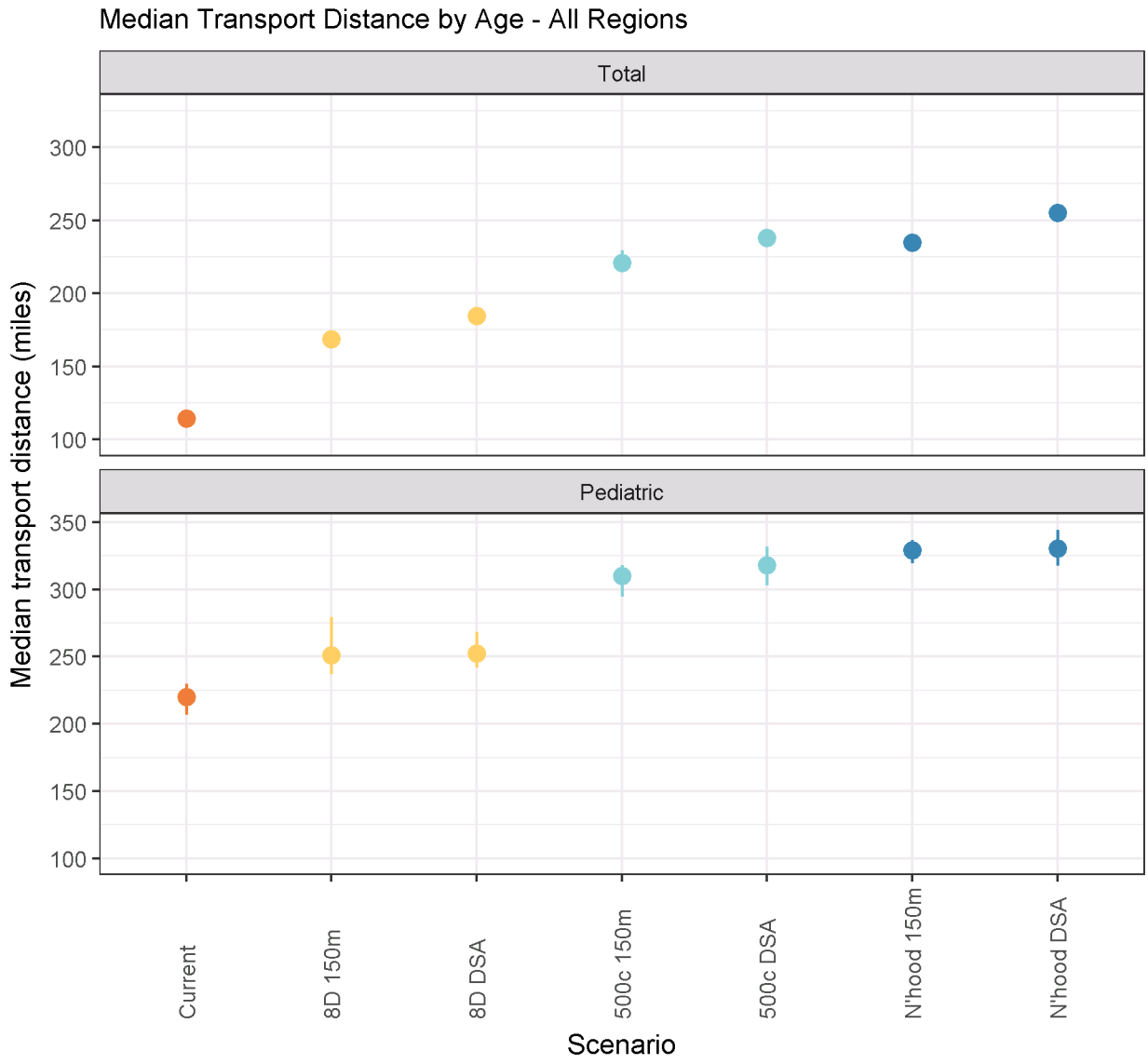


Figure 164 Median Transport Distance by age - all regions

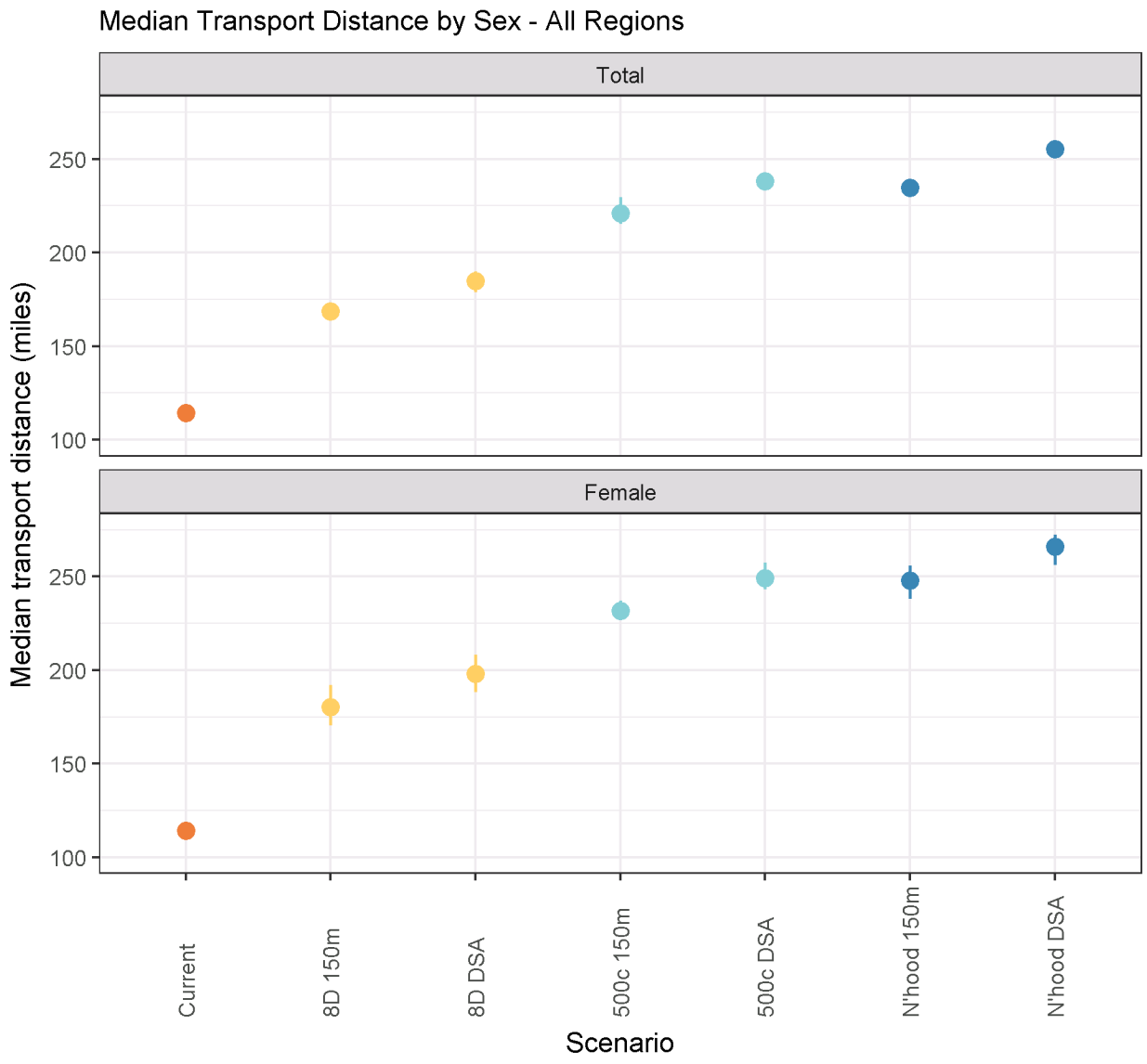


Figure 165 Median Transport Distance by sex - all regions

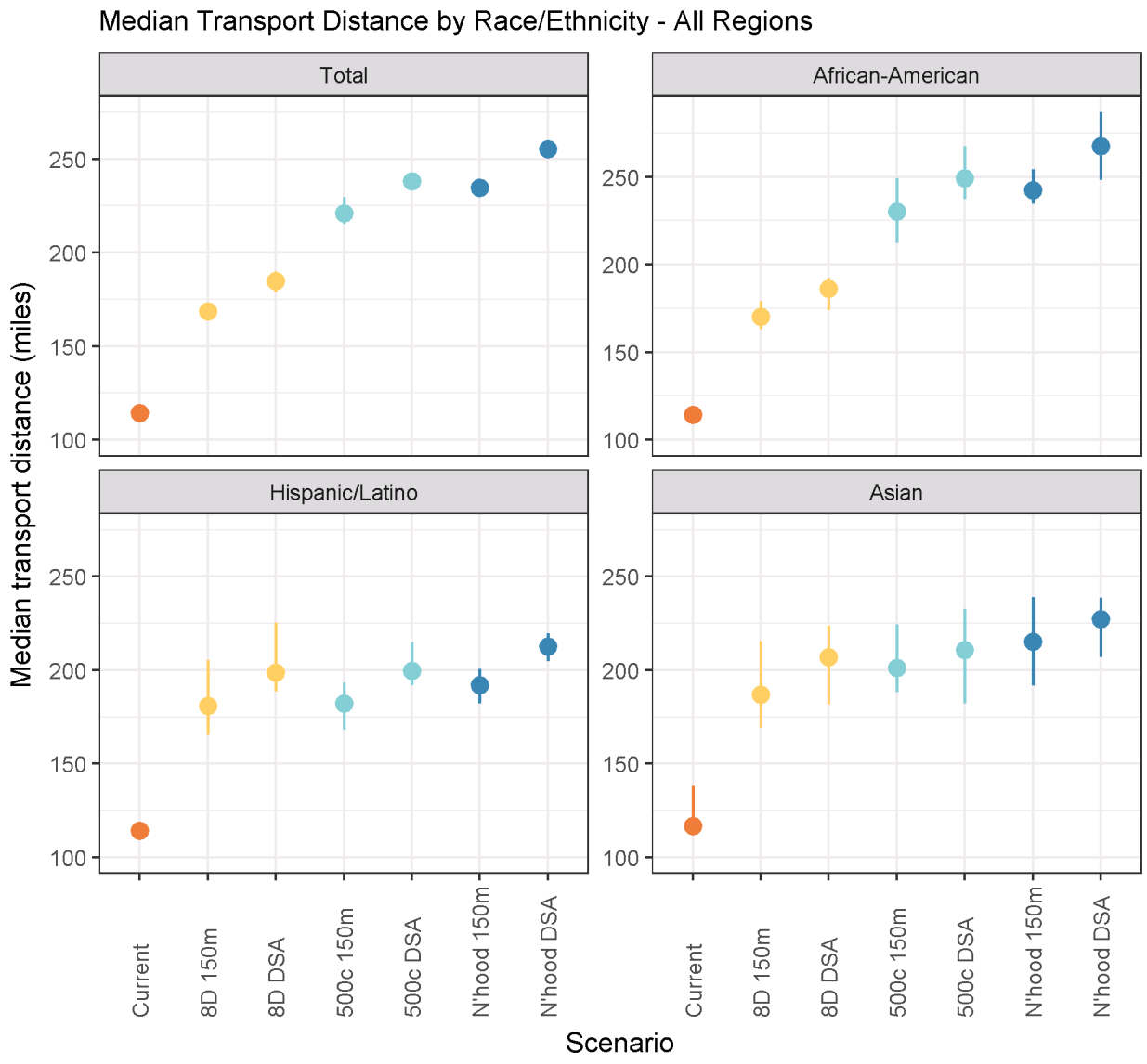


Figure 166 Median Transport Distance by race/ethnicity - all regions

Percent of Organs Flown

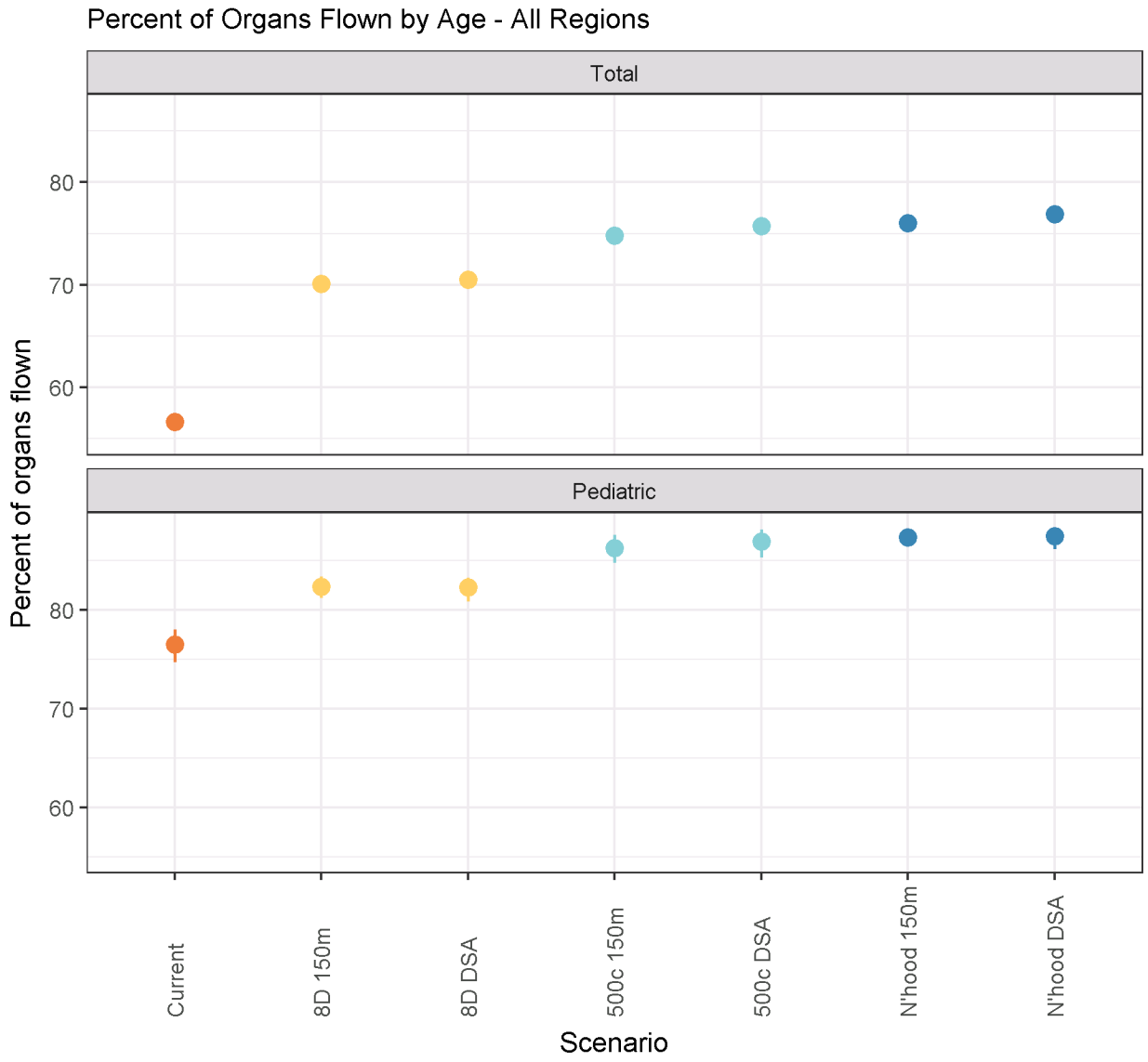


Figure 167 Percent of Organs Flown by age - all regions

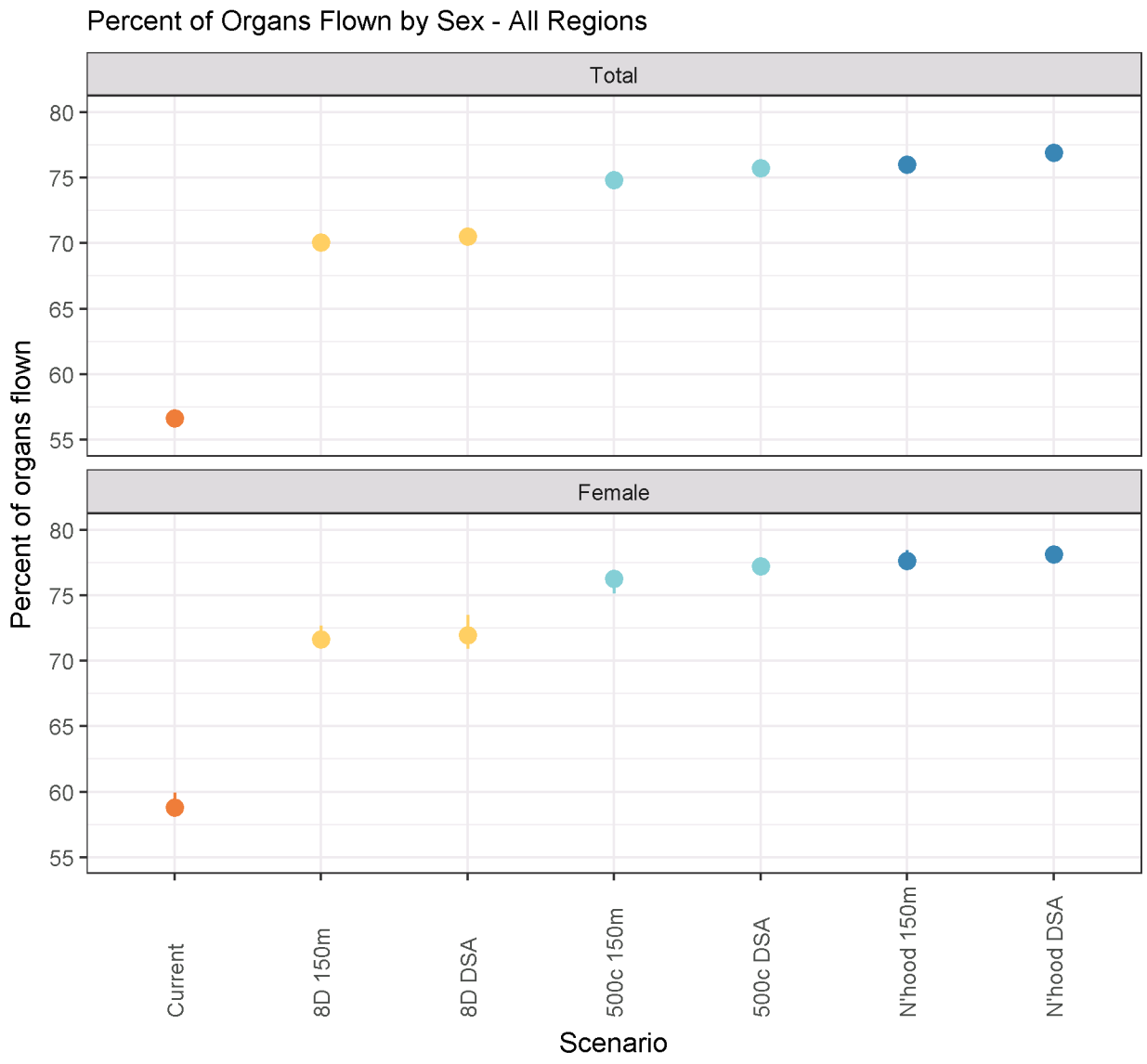


Figure 168 Percent of Organs Flown by sex - all regions

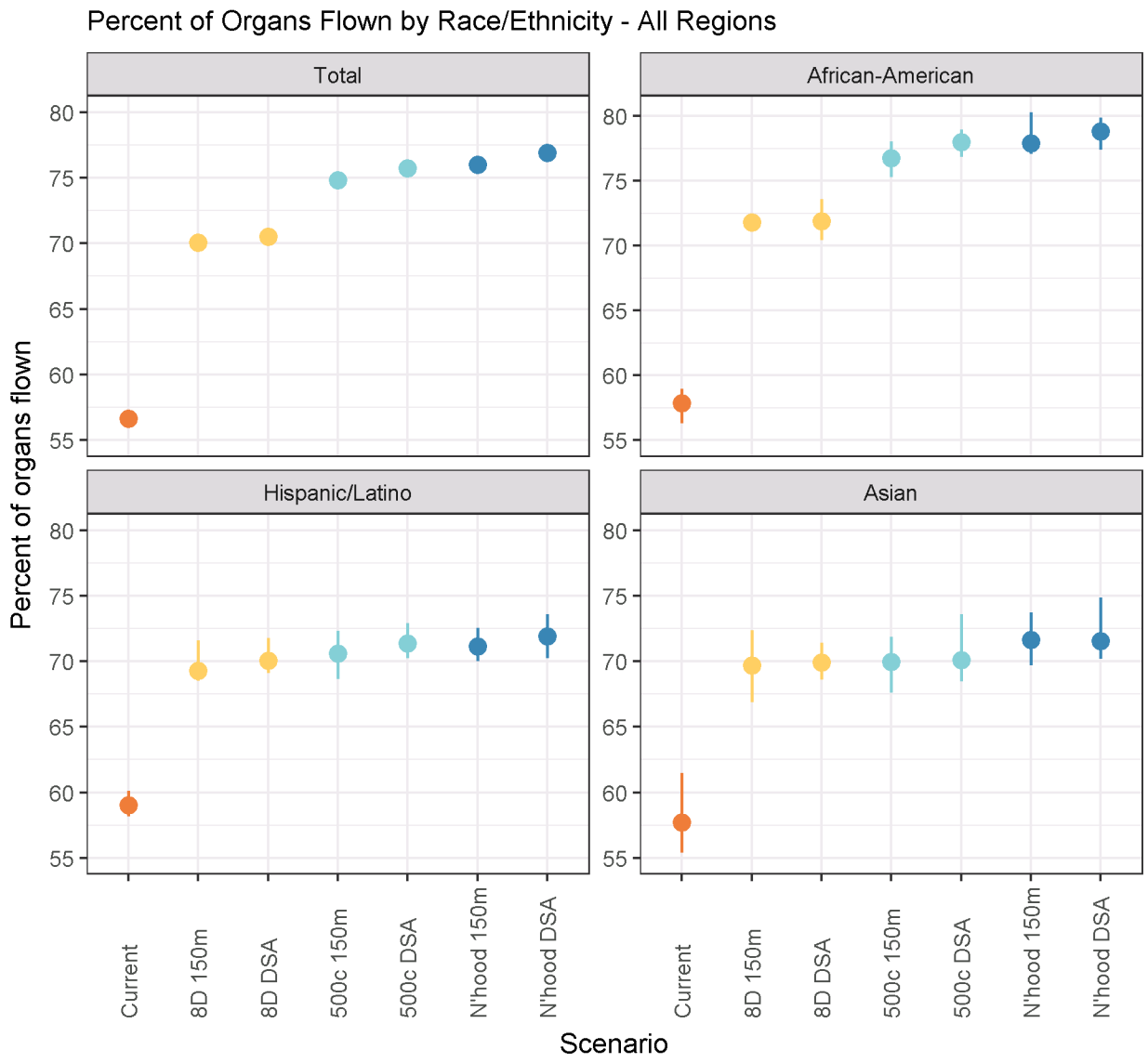


Figure 169 Percent of Organs Flown by race/ethnicity - all regions

Appendix C: district definitions

As specified in previous OPTN data requests, the 8 districts modeled as part of this analysis will be defined as follows:

District Number	Includes the DSAs served by the following OPOs
District 1	LifeChoice Donor Services (CTOP), Washington Regional Transplant Community (DCTC), LifeLink of Georgia (GALL), New England Organ Bank (MAOB), The Living Legacy Foundation of Maryland (MDPC), LifeShare of the Carolinas (NCCM), Carolina Donor Services (NCNC), New Jersey Organ and Tissue Sharing Network (NJTO), Center for Donation and Transplant (NYAP), LiveOnNY (NYRT), Gift of Life Donor Program (PADV), LifeLink of Puerto Rico (PRLL), LifePoint (SCOP), LifeNet Heath (VATB)
District 2	Gift of Life Michigan (MIOP), Finger Lakes Donor Recovery Network (NYFL), Upstate New York Transplant Services Inc (NYWN), LifeBanc (OHLB), Life Connection of Ohio (OHLC), Lifeline of Ohio (OHLP), and Center for Organ Recovery and Education (PATF).
District 3	Gift of Hope Organ & Tissue Donor Network (ILIP), Indiana Donor Network (INOP), Kentucky Organ Donor Affiliates (KYDA), LifeCenter Organ Donor Network (OHOV), Tennessee Donor Services (TNDS), Wisconsin Donor Network (WIDN), and UW Health Organ and Tissue Donation (WIUW)
District 4	Arkansas Regional Organ Recovery Agency (AROR), Mid-America Transplant Services (MOMA), and Mid-South Transplant Foundation (TNMS)
District 5	Iowa Donor Network (IAOP), LifeSource Upper Midwest Organ Procurement Organization (MNOP), Midwest Transplant Network (MWOB), Nebraska Organ Recovery System (NEOR), and LifeShare Transplant Donor Services of Oklahoma (OKOP)
District 6	Alabama Organ Center (ALOB), TransLife (FLFH), Life Alliance Organ Recovery Agency (FLMP), LifeQuest Organ Recovery Services (FLUF), LifeLink of Florida (FLWC), Louisiana Organ Procurement Agency (LAOP), Mississippi Organ Recovery Agency (MSOP), LifeGift Organ Donation Center (TXGC), Texas Organ Sharing Alliance (TXSA), and Southwest Transplant Alliance (TXSB)
District 7	Donor Network of Arizona (AZOB), Donor Alliance (CORS), New Mexico Donor Services (NMOP), and Intermountain Donor Services (UTOP)
District 8	Donor Network West (CADN), Sierra Donor Services (CAGS), OneLegacy (CAOP), Lifesharing - A Donate Life Organization (CASD), Legacy of Life Hawaii (HIOP), Nevada Donor Network (NVLV), Pacific Northwest Transplant Bank (ORUO), and LifeCenter Northwest (WALC)

Appendix D: neighborhood definitions

As specified in the updated OPTN data request, the 58 neighborhoods modeled as part of this analysis will be defined as follows:

#	Neighborhood (procuring OPO/DSA)	Includes the DSAs served by the following OPOs							
1	**ALOB-OP1 Alabama Organ Center**	ALOB	AROR	FLFH	FLMP	FLUF	FLWC	GALL	ILIP
		INOP	KYDA	LAOP	MOMA	MSOP	MWOB	NCCM	NCNC
		OHLC	OHLP	OHOV	PRLL	SCOP	TNDS	TNMS	TXGC
		TXSB							
2	**AROR-OP1 Arkansas Reg. Organ Recovery Agency**	ALOB	AROR	FLFH	FLMP	FLUF	FLWC	GALL	IAOP
		ILIP	INOP	KYDA	LAOP	MOMA	MSOP	MWOB	NEOR
		OHOV	OKOP	PRLL	TNDS	TNMS	TXGC	TXSA	TXSB
		WIUW							
3	**AZOB-OP1 Donor Network of Arizona**	AZOB	CADN	CAGS	CAOP	CASD	CORS	NMOP	NVLV
		UTOP							
4	**CADN-OP1 Donor Network West**	AZOB	CADN	CAGS	CAOP	CASD	NMOP	NVLV	ORUO
		UTOP							
5	**CAGS-OP1 Sierra Donor Services**	AZOB	CADN	CAGS	CAOP	CASD	NMOP	NVLV	ORUO
		UTOP							
6	**CAOP-OP1 OneLegacy**	AZOB	CADN	CAGS	CAOP	CASD	NMOP	NVLV	UTOP
7	**CASD-IO1 Lifesharing - A Donate Life Org.**	AZOB	CADN	CAGS	CAOP	CASD	NMOP	NVLV	UTOP
8	**CORS-OP1 Donor Alliance**	AZOB	CADN	CAGS	CAOP	CASD	NMOP	NVLV	UTOP
9	**CTOP-OP1 LifeChoice Donor Services**	CTOP	DCTC	MAOB	MDPC	MIOP	NCNC	NJTO	NYAP
		NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	PADV	PATF
		VATB							
10	**DCTC-OP1 Washington Reg Transplant Community**	CTOP	DCTC	GALL	INOP	KYDA	MAOB	MDPC	MIOP
		NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB
		OHLC	OHLP	OHOV	PADV	PATF	SCOP	TNDS	VATB
11	**FLFH-IO1 TransLife**	ALOB	AROR	FLFH	FLMP	FLUF	FLWC	GALL	LAOP
		MSOP	NCCM	NCNC	PRLL	SCOP			
12	**FLMP-OP1 Life Alliance Organ Recovery Agency**	ALOB	AROR	FLFH	FLMP	FLUF	FLWC	GALL	LAOP
		MSOP	PRLL	SCOP					
13	**FLUF-IO1 LifeQuest Organ Recovery Services**	ALOB	AROR	FLFH	FLMP	FLUF	FLWC	GALL	LAOP
		MSOP	NCCM	NCNC	PRLL	SCOP	TNDS	TNMS	
14	**FLWC-OP1 LifeLink of Florida**	ALOB	AROR	FLFH	FLMP	FLUF	FLWC	GALL	LAOP
		MSOP	NCCM	PRLL	SCOP				
15	**GALL-OP1 LifeLink of Georgia**	ALOB	AROR	DCTC	FLFH	FLMP	FLUF	FLWC	GALL
		ILIP	INOP	KYDA	LAOP	MDPC	MIOP	MOMA	MSOP
		NCCM	NCNC	OHLB	OHLC	OHLP	OHOV	PATF	PRLL
		SCOP	TNDS	TNMS	VATB				
16	**HIOP-OP1 Legacy of Life Hawaii**	HIOP	ORUO	WALC					
17	**IAOP-OP1 Iowa Donor Network**	AROR	CORS	IAOP	ILIP	INOP	KYDA	MIOP	MNOP
		MOMA	MWOB	NEOR	OHLB	OHLC	OHLP	OHOV	OKOP
		TNDS	TNMS	WIDN	WIUW				
18	**ILIP-OP1 Gift of Hope**	ALOB	AROR	GALL	IAOP	ILIP	INOP	KYDA	MIOP
		MNOP	MOMA	MWOB	NEOR	NYFL	NYWN	OHLB	OHLC
		OHLP	OHOV	PATF	TNDS	TNMS	WIDN	WIUW	
19	**INOP-OP1 Indiana Donor Network**	ALOB	AROR	DCTC	GALL	IAOP	ILIP	INOP	KYDA
		MDPC	MIOP	MNOP	MOMA	MSOP	MWOB	NCCM	NCNC
		NEOR	NYFL	NYWN	OHLB	OHLC	OHLP	OHOV	PADV
		PATF	SCOP	TNDS	TNMS	VATB	WIDN	WIUW	
20	**KYDA-OP1 KY Organ Donor Affiliates**	ALOB	AROR	DCTC	GALL	IAOP	ILIP	INOP	KYDA
		MDPC	MIOP	MNOP	MOMA	MSOP	MWOB	NCCM	NCNC

#	Neighborhood (procuring OPO/DSA)	Includes the DSAs served by the following OPOs							
		NEOR	NYFL	NYWN	OHLB	OHLC	OHLP	OHOV	PADV
		PATF	SCOP	TNDS	TNMS	VATB	WIDN	WIUW	
21	LAOP-OP1 Louisiana Organ Procurement Agency	ALOB	AROR	FLFH	FLMP	FLUF	FLWC	GALL	LAOP
		MOMA	MSOP	OKOP	PRLL	TNDS	TNMS	TXGC	TXSA
		TXSB							
22	MAOB-OP1 New England Organ Bank	CTOP	DCTC	MAOB	MDPC	NCNC	NJTO	NYAP	NYFL
		NYRT	NYWN	OHLB	PADV	PATF	VATB		
23	MDPC-OP1 The Living Legacy Foundation of MD	CTOP	DCTC	GALL	INOP	KYDA	MAOB	MDPC	MIOP
		NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB
		OHLC	OHLP	OHOV	PADV	PATF	SCOP	TNDS	VATB
24	MIOP-OP1 Gift of Life Michigan	CTOP	DCTC	GALL	IAOP	ILIP	INOP	KYDA	MDPC
		MIOP	MNOP	MOMA	NCCM	NCNC	NJTO	NYAP	NYFL
		NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATF
		TNDS	TNMS	VATB	WIDN	WIUW			
25	MNOP-OP1 LifeSource Upper Midwest OPO	IAOP	ILIP	INOP	KYDA	MIOP	MNOP	MOMA	MWOB
		NEOR	OHLC	OHOV	WIDN	WIUW			
26	MOMA-OP1 Mid-America Transplant Svcs	ALOB	AROR	CORS	GALL	IAOP	ILIP	INOP	KYDA
		LAOP	MIOP	MNOP	MOMA	MSOP	MWOB	NCCM	NEOR
		OHLB	OHLC	OHLP	OHOV	OKOP	PATF	TNDS	TNMS
		TXSB	WIDN	WIUW					
27	MSOP-OP1 Mississippi Organ Recovery Agency	ALOB	AROR	FLFH	FLMP	FLUF	FLWC	GALL	INOP
		KYDA	LAOP	MOMA	MSOP	MWOB	NCCM	OHOV	OKOP
		PRLL	SCOP	TNDS	TNMS	TXGC	TXSA	TXSB	
28	MWOB-OP1 Midwest Transplant Network	ALOB	AROR	CORS	IAOP	ILIP	INOP	KYDA	MNOP
		MOMA	MSOP	MWOB	NEOR	OHOV	OKOP	TNDS	TNMS
		TXSB	WIDN	WIUW					
29	NCCM-IO1 LifeShare of the Carolinas	ALOB	DCTC	FLFH	FLUF	FLWC	GALL	INOP	KYDA
		MDPC	MIOP	MOMA	MSOP	NCCM	NCNC	NJTO	NYFL
		NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATF
		SCOP	TNDS	TNMS	VATB				
30	NCNC-OP1 Carolina Donor Services	ALOB	CTOP	DCTC	FLFH	FLUF	GALL	INOP	KYDA
		MAOB	MDPC	MIOP	NCCM	NCNC	NJTO	NYAP	NYFL
		NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATF
		SCOP	TNDS	TNMS	VATB				
31	NEOR-OP1 Nebraska Organ Recovery System	AROR	CORS	IAOP	ILIP	INOP	KYDA	MNOP	MOMA
		MWOB	NEOR	OKOP	TNMS	TXSB	WIDN	WIUW	
32	NJTO-OP1 NJ Organ and Tissue Sharing Network	CTOP	DCTC	MAOB	MDPC	MIOP	NCCM	NCNC	NJTO
		NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV
		PADV	PATF	VATB					
33	NMOP-OP1 New Mexico Donor Services	AZOB	CADN	CAGS	CAOP	CASD	CORS	NMOP	NVLV
		OKOP	TXSB	UTOP					
34	NVLV-OP1 Nevada Donor Network	AZOB	CADN	CAGS	CAOP	CASD	NMOP	NVLV	UTOP
35	NYAP-OP1 Ctr for Donation and Transplant	CTOP	DCTC	MAOB	MDPC	MIOP	NCNC	NJTO	NYAP
		NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	PADV	PATF
		VATB							
36	NYFL-IO1 Finger Lakes Donor Recovery Network	CTOP	DCTC	ILIP	INOP	KYDA	MAOB	MDPC	MIOP
		NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB
		OHLC	OHLP	OHOV	PADV	PATF	VATB	WIDN	WIUW
37	NYRT-OP1 LiveOnNY	CTOP	DCTC	MAOB	MDPC	MIOP	NCCM	NCNC	NJTO
		NYAP	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV
		PADV	PATF	VATB					
38	NYWN-OP1 Upstate NY Transplant Svcs	CTOP	DCTC	ILIP	INOP	KYDA	MAOB	MDPC	MIOP
		NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB
		OHLC	OHLP	OHOV	PADV	PATF	VATB	WIDN	
39	OHLB-OP1 LifeBanc	CTOP	DCTC	GALL	IAOP	ILIP	INOP	KYDA	MAOB

#	Neighborhood (procuring OPO/DSA)	Includes the DSAs served by the following OPOs							
		MDPC	MIOP	MOMA	NCCM	NCNC	NJTO	NYAP	NYFL
		NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATF
		TNDS	VATB	WIDN	WIUW				
40	OHLC-OP1 Life Connection of Ohio	ALOB	CTOP	DCTC	GALL	IAOP	ILIP	INOP	KYDA
		MDPC	MIOP	MNOP	MOMA	NCCM	NCNC	NJTO	NYAP
		NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV
		PATF	TNDS	TNMS	VATB	WIDN	WIUW		
41	OHLP-OP1 Lifeline of Ohio	ALOB	CTOP	DCTC	GALL	IAOP	ILIP	INOP	KYDA
		MDPC	MIOP	MOMA	NCCM	NCNC	NJTO	NYAP	NYFL
		NYRT	NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATF
		SCOP	TNDS	TNMS	VATB	WIDN	WIUW		
42	OHOV-OP1 LifeCenter Organ Donor Network	ALOB	AROR	DCTC	GALL	IAOP	ILIP	INOP	KYDA
		MDPC	MIOP	MNOP	MOMA	MSOP	MWOB	NCCM	NCNC
		NJTO	NYFL	NYRT	NYWN	OHLB	OHLC	OHLP	OHOV
		PADV	PATF	SCOP	TNDS	TNMS	VATB	WIDN	WIUW
43	OKOP-OP1 LifeShare Transplant Donor Svcs of OK	AROR	CORS	IAOP	LAOP	MOMA	MSOP	MWOB	NEOR
		NMOP	OKOP	TNMS	TXGC	TXSA	TXSB		
44	ORUO-IO1 Pacific NW Transplant Bank	CADN	CAGS	HIOP	ORUO	WALC			
45	PADV-OP1 Gift of Life Donor Program	CTOP	DCTC	INOP	KYDA	MAOB	MDPC	MIOP	NCCM
		NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB	OHLC
		OHLP	OHOV	PADV	PATF	SCOP	VATB		
46	PATF-OP1 Center for Organ Recovery and Educ.	CTOP	DCTC	GALL	ILIP	INOP	KYDA	MAOB	MDPC
		MIOP	MOMA	NCCM	NCNC	NJTO	NYAP	NYFL	NYRT
		NYWN	OHLB	OHLC	OHLP	OHOV	PADV	PATF	SCOP
		TNDS	VATB	WIDN	WIUW				
47	PRLL-OP1 LifeLink of Puerto Rico	ALOB	AROR	FLFH	FLMP	FLUF	FLWC	GALL	LAOP
		MSOP	PRLL						
48	SCOP-OP1 LifePoint, Inc.	ALOB	DCTC	FLFH	FLMP	FLUF	FLWC	GALL	INOP
		KYDA	MDPC	MSOP	NCCM	NCNC	OHLP	OHOV	PADV
		PATF	SCOP	TNDS	TNMS	VATB			
49	TNDS-OP1 Tennessee Donor Svcs	ALOB	AROR	DCTC	FLUF	GALL	IAOP	ILIP	INOP
		KYDA	LAOP	MDPC	MIOP	MOMA	MSOP	MWOB	NCCM
		NCNC	OHLB	OHLC	OHLP	OHOV	PATF	SCOP	TNDS
		TNMS	VATB	WIDN	WIUW				
50	TNMS-OP1 Mid-South Transplant Foundation	ALOB	AROR	FLUF	GALL	IAOP	ILIP	INOP	KYDA
		LAOP	MIOP	MOMA	MSOP	MWOB	NCCM	NCNC	NEOR
		OHLC	OHLP	OHOV	OKOP	SCOP	TNDS	TNMS	TXGC
		TXSB	VATB	WIDN	WIUW				
51	TXGC-OP1 LifeGift Organ Donation Ctr	ALOB	AROR	LAOP	MSOP	OKOP	TNMS	TXGC	TXSA
		TXSB							
52	TXSA-OP1 Texas Organ Sharing Alliance	AROR	LAOP	MSOP	OKOP	TXGC	TXSA	TXSB	
53	TXSB-OP1 Southwest Transplant Alliance	ALOB	AROR	LAOP	MOMA	MSOP	MWOB	NEOR	NMOP
		OKOP	TNMS	TXGC	TXSA	TXSB			
54	UTOP-OP1 Intermountain Donor Services	AZOB	CADN	CAGS	CAOP	CASD	CORS	NMOP	NVLV
		UTOP							
55	VATB-OP1 LifeNet Health	CTOP	DCTC	GALL	INOP	KYDA	MAOB	MDPC	MIOP
		NCCM	NCNC	NJTO	NYAP	NYFL	NYRT	NYWN	OHLB
		OHLC	OHLP	OHOV	PADV	PATF	SCOP	TNDS	TNMS
		VATB							
56	WALC-OP1 LifeCenter Northwest	HIOP	ORUO	WALC					
57	WIDN-OP1 Wisconsin Donor Network	IAOP	ILIP	INOP	KYDA	MIOP	MNOP	MOMA	MWOB
		NEOR	NYFL	NYWN	OHLB	OHLC	OHLP	OHOV	PATF
		TNDS	TNMS	WIDN	WIUW				

#	Neighborhood (procuring OPO/DSA)	Includes the DSAs served by the following OPOs							
58	**WIUW-IO1 UW Health Organ and Tissue Donation**	AROR	IAOP	ILIP	INOP	KYDA	MIOP	MNOP	MOMA
		MWOB	NEOR	NYFL	NYWN	OHLB	OHLC	OHLP	OHOV
		PATF	TNDS	TNMS	WIDN	WIUW			

Appendix E: allocation ordering for policy scenarios simulated in LI2016_04

As specified in previous OPTN data requests, the allocation ordering for current policy allocation, 8 district policy allocation, 500-mile concentric circle policy allocation, and neighborhood allocation are shown below.

Current allocation (scenario 1)

For adult donors:

Regional Status 1A
Regional Status 1B
DSA and Regional MELD/PELD >= 35 (by MELD)
DSA MELD/PELD 15-34
Regional MELD/PELD 15-34
National Status 1A
National Status 1B
National MELD/PELD >= 15
DSA MELD/PELD < 15
Regional MELD/PELD < 15
National MELD/PELD < 15

For adolescent donors (11-17 years):

DSA Pediatric Status 1A
Regional Pediatric Status 1A
DSA Adult Status 1A
Regional Adult Status 1A
DSA Pediatric Status 1B
Regional Pediatric Status 1B
DSA and Regional Any PELD
DSA MELD >= 15, 12-17 years
DSA MELD >= 15, 18+ years
Regional MELD >= 15, 12-17 years
Regional MELD >= 15, 18+ years
DSA MELD < 15, 12-17 years
DSA MELD < 15, 18+ years
Regional MELD < 15, 12-17 years
Regional MELD < 15, 18+ years
National Pediatric Status 1A
National Adult Status 1A
National Pediatric Status 1B

National Any PELD
National Any MELD, 12-17 years
National Any MELD, 18+ years

For child donors (0-10 years):
Regional Pediatric Status 1A
National Pediatric Status 1A, 0-11 years
DSA Adult Status 1A
Regional Adult Status 1A
Regional Pediatric Status 1B
Regional Any PELD
DSA MELD >= 15, 12-17 years
DSA MELD >= 15, 18+ years
Regional MELD >= 15, 12-17 years
Regional MELD >= 15, 18+ years
DSA MELD < 15, 12-17 years
DSA MELD < 15, 18+ years
Regional MELD < 15, 12-17 years
Regional MELD < 15, 18+ years
National Status 1A, 12-17 years
National Status 1A, 18+ years
National Status 1B, 0-17 years
National Any PELD
National Any MELD, 12-17 years
National Any MELD, 18+ years

8 district allocation with threshold of MELD/PELD 29 or greater (scenarios 2 & 3)

For adult donors:
District Status 1A
District Status 1B
District MELD/PELD >=29
DSA MELD/PELD >=15
District MELD/PELD >=15
National Status 1A
National Status 1B
National MELD/PELD >=15
DSA MELD/PELD <15
District MELD/PELD < 15
National MELD/PELD <15

For adolescent donors (11-17 years):
District Pediatric Status 1A
District Adult Status 1A
District Pediatric Status 1B

District Any PELD
District MELD >= 15, 12-17 years
District MELD >= 15, 18+ years
District MELD < 15, 12-17 years
District MELD < 15, 18+ years
National Pediatric Status 1A
National Adult Status 1A
National Pediatric Status 1B
National Any PELD
National Any MELD, 12-17 years
National Any MELD, 18+ years

For child donors (0-10 years):
District Pediatric Status 1A
National Pediatric Status 1A, 0-11 years
District Adult Status 1A
District Pediatric Status 1B
District Any PELD
District MELD >= 15, 12-17 years
District MELD >= 15, 18+ years
District MELD < 15, 12-17 years
District MELD < 15, 18+ years
National Status 1A, 12-17 years
National Status 1A, 18+ years
National Status 1B, 0-17 years
National PELD
National MELD, 12-17 years
National MELD, 18+ years

500-mile radius circle allocation with threshold of MELD/PELD 29 or greater (scenarios 4 & 5)

For adult donors:
In-circle Status 1A
In-circle Status 1B
In-circle MELD/PELD >= 29
DSA MELD/PELD >=15
In-circle MELD/PELD >=15
National Status 1A
National Status 1B
National MELD/PELD >= 15
DSA MELD/PELD <15
In-circle MELD/PELD < 15
National MELD/PELD < 15

For adolescent donors (11-17 years):

In-circle Pediatric Status 1A
In-circle Adult Status 1A
In-circle Pediatric Status 1B
In-circle Any PELD
In-circle MELD >= 15, 12-17 years
In-circle MELD >= 15, 18+ years
In-circle MELD < 15, 12-17 years
In-circle MELD < 15, 18+ years
National Pediatric Status 1A
National Adult Status 1A
National Pediatric Status 1B
National Any PELD
National Any MELD, 12-17 years
National Any MELD, 18+ years

For child donors (0-10 years):

In-circle Pediatric Status 1A
National Pediatric Status 1A, 0-11 years
In-circle Adult Status 1A
In-circle Pediatric Status 1B
In-circle Any PELD
In-circle MELD >= 15, 12-17 years
In-circle MELD >= 15, 18+ years
In-circle MELD < 15, 12-17 years
In-circle MELD < 15, 18+ years
National Status 1A, 12-17 years
National Status 1A, 18+ years
National Status 1B, 0-17 years
National PELD
National MELD, 12-17 years
National MELD, 18+ years

Neighborhood allocation with threshold of MELD/PELD 29 or greater (scenarios 6 & 7)

For adult donors:

Neighborhood Status 1A
Neighborhood Status 1B
Neighborhood MELD/PELD >= 29
DSA MELD/PELD >=15
Neighborhood MELD/PELD >=15
National Status 1A
National Status 1B
National MELD/PELD >= 15
DSA MELD/PELD <15
Neighborhood MELD/PELD < 15
National MELD/PELD < 15

For adolescent donors (11-17 years):

Neighborhood Pediatric Status 1A
Neighborhood Adult Status 1A
Neighborhood Pediatric Status 1B
Neighborhood Any PELD
Neighborhood MELD >= 15, 12-17 years
Neighborhood MELD >= 15, 18+ years
Neighborhood MELD < 15, 12-17 years
Neighborhood MELD < 15, 18+ years
National Pediatric Status 1A
National Adult Status 1A
National Pediatric Status 1B
National Any PELD
National Any MELD, 12-17 years
National Any MELD, 18+ years

For child donors (0-10 years):

Neighborhood Pediatric Status 1A
National Pediatric Status 1A, 0-11 years
Neighborhood Adult Status 1A
Neighborhood Pediatric Status 1B
Neighborhood Any PELD
Neighborhood MELD >= 15, 12-17 years
Neighborhood MELD >= 15, 18+ years
Neighborhood MELD < 15, 12-17 years
Neighborhood MELD < 15, 18+ years
National Status 1A, 12-17 years
National Status 1A, 18+ years
National Status 1B, 0-17 years

National PELD
National MELD, 12-17 years
National MELD, 18+ years