Supplementary Figure 1. Flowchart of patients in the study


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┌─────────────────────────────┐
│ Patients assessed (n=1060)  │
└─────────────────────────────┘
         │
         │      ┌──────────────────────────────────────────────────────┐
         │      │ Not meeting eligibility criteria for the study (n=99) * │
         │──────│  ▪ Unfit for chemotherapy (n=25)                      │
         │      │  ▪ Neoadjuvant therapy (n=17)                         │
         │      │  ▪ Adjuvant hormone therapy alone (n=31)              │
         │      │  ▪ Radiotherapy without chemotherapy (n=11)           │
         │      │  ▪ Another tumor in the previous 5 years or           │
         │      │    concomitant cancer (n=6)                           │
         │      │  ▪ Advanced cancer (n=4)                              │
         │      │  ▪ Any condition that impedes comprehension of        │
         │      │    participation in the study (n=3)                   │
         │      │  ▪ Declined to participate (n=2)                      │
         │      └──────────────────────────────────────────────────────┘
         │
         │      ┌──────────────────────────────────────────────────────┐
         │      │ Not eligible for this analysis (n=742)                │
         │──────│  ▪ Primary tumor other than breast cancer (n=622)     │
         │      │  ▪ Patients without questionnaires at the end of adjuvant │
         │      │    chemotherapy (n=120)                               │
         │      └──────────────────────────────────────────────────────┘
         │
         ▼
┌─────────────────────────────┐
│ Analyzed (n=219)            │
└─────────────────────────────┘
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Supplementary Figure 2. Distribution of global health status scores
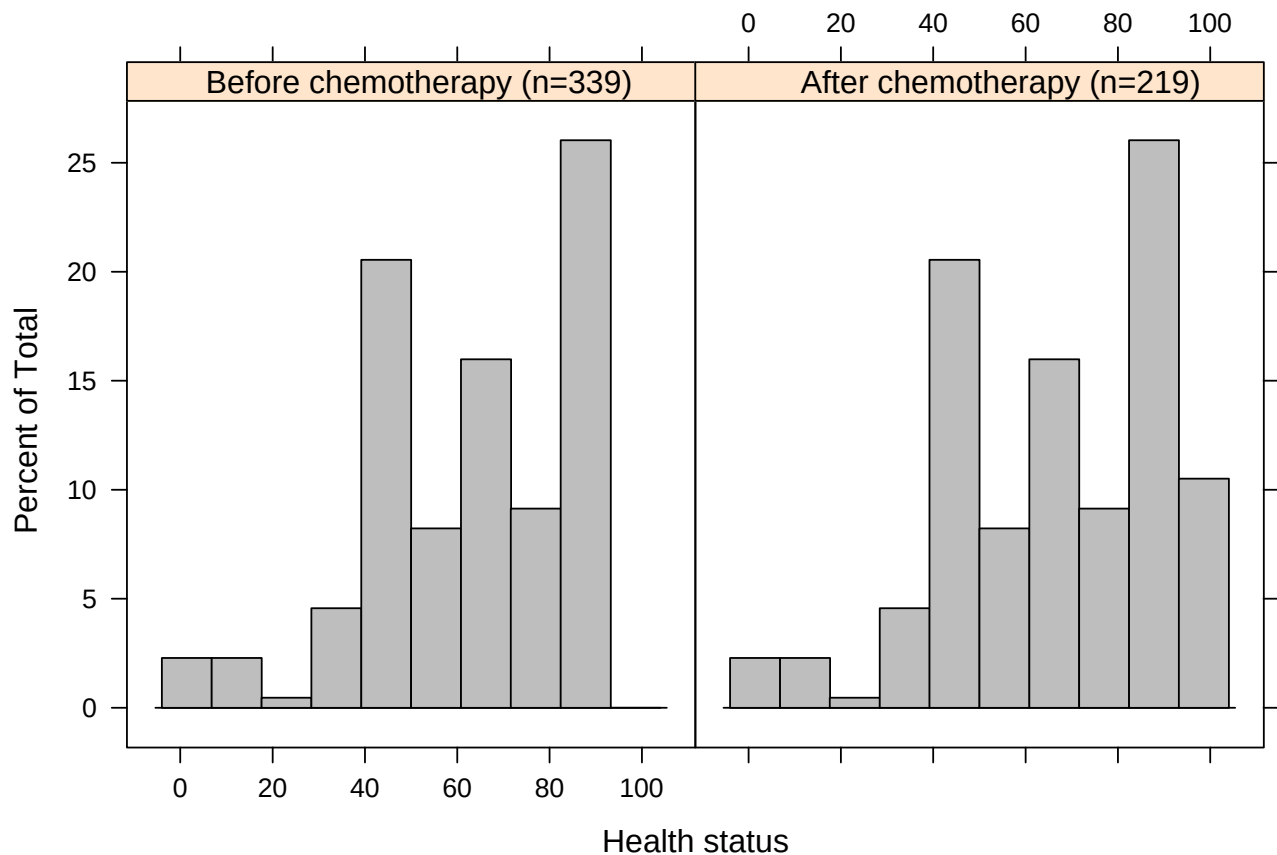
Supplementary Figure 3A. Perceived risk of recurrence based on stage
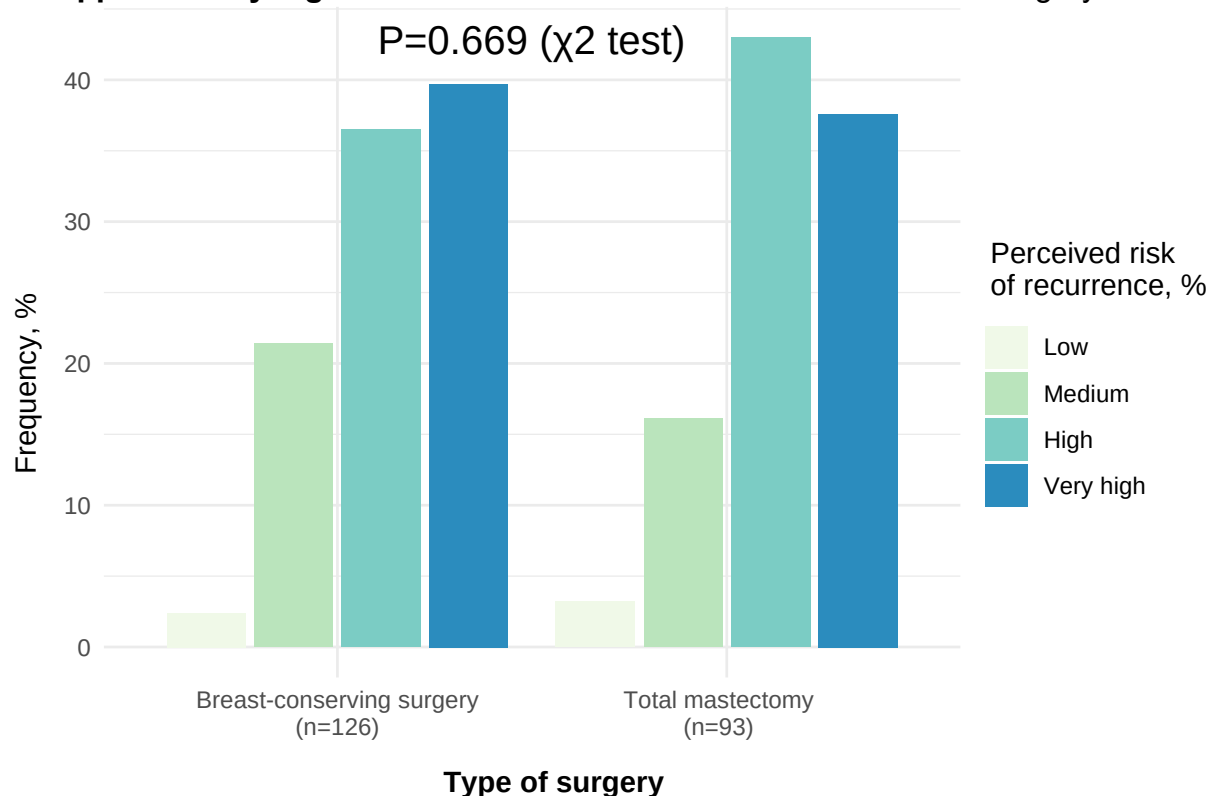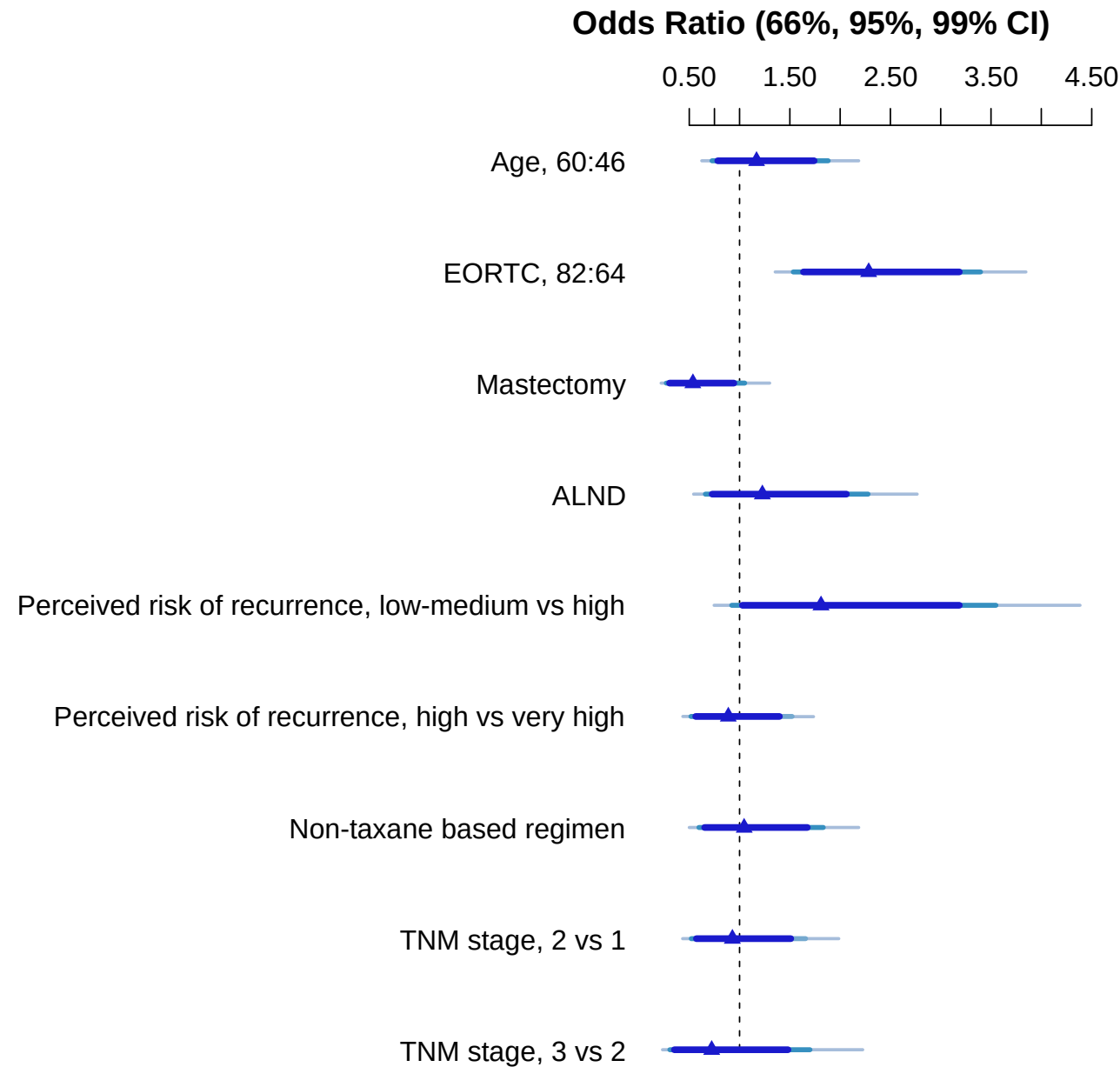
**Supplementary Figure 3B.** Perceived risk of recurrence based on surgery
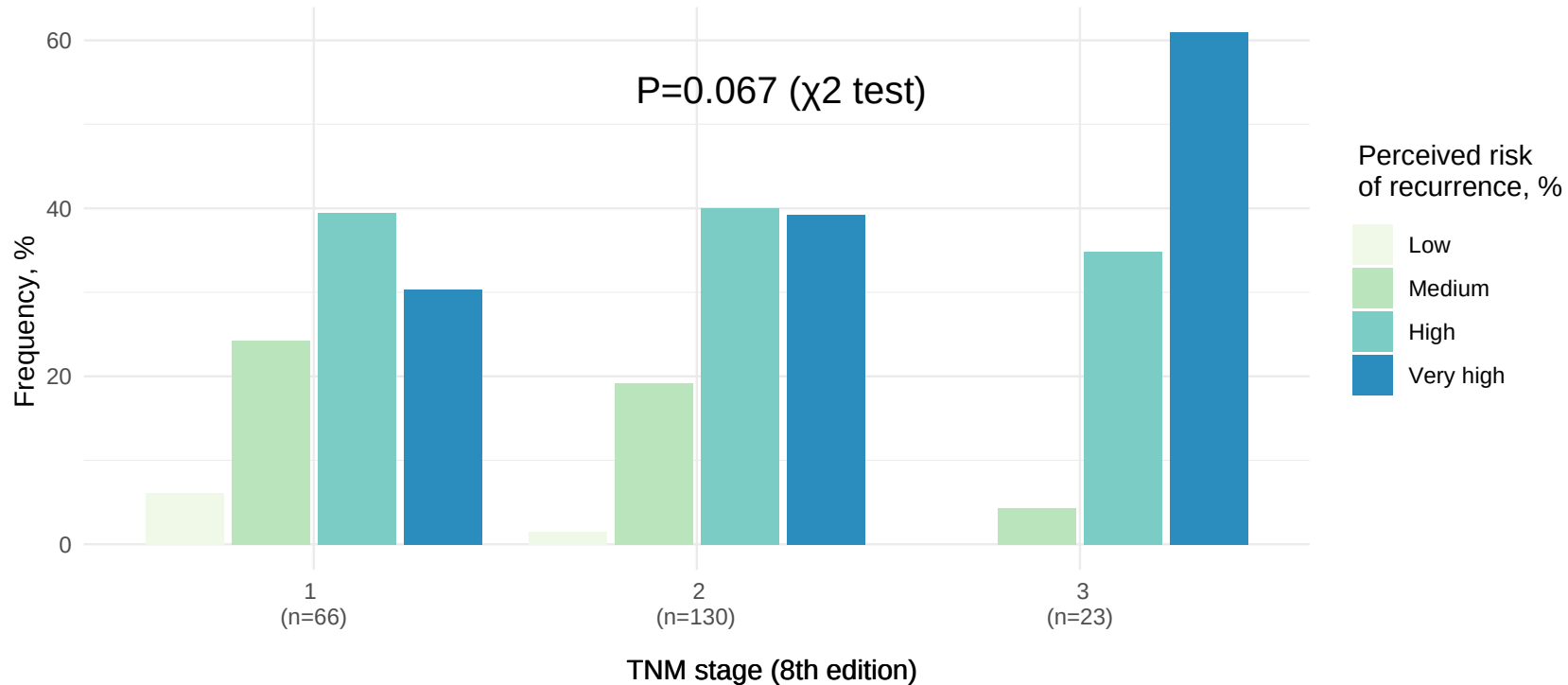
Note: The p-value is established by means of a χ2 test

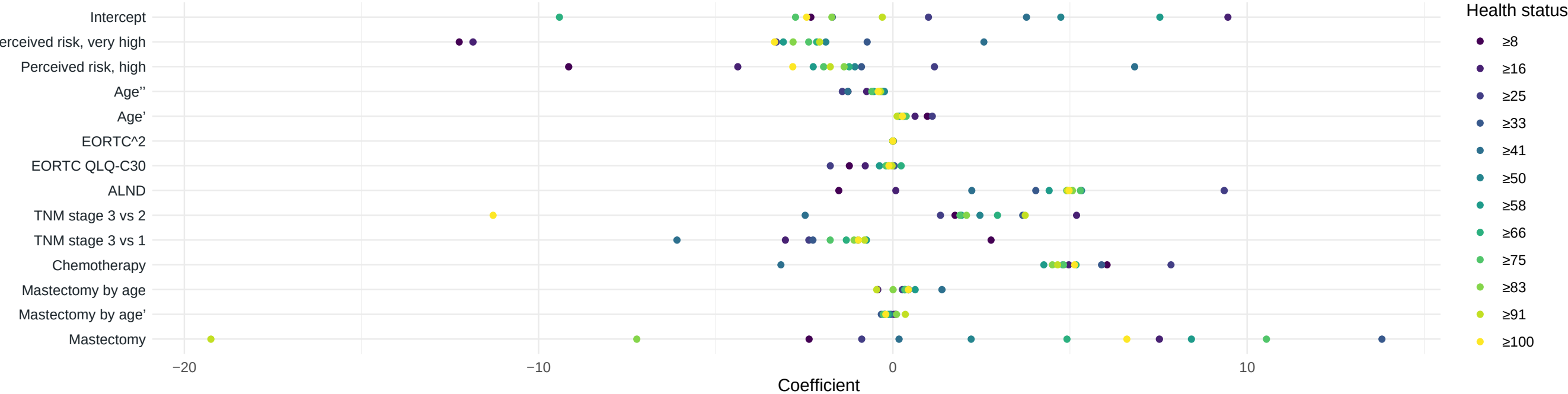**Supplementary Figure 4.** Proportional odds model (frequentist)

Abbreviations: ALND= axillary lymph node dissection; EORTC= European Organisation for Research and Treatment of Cancer; TNM= tumor-node-metastases; CI= confidence interval. Note: The EORTC variable refers to the sum score before chemotherapy. The response variable (endpoint) is the health status after chemotherapy.

Supplementary Figure 5. Separate evaluations of the proportional odds (PO) assumption for each of the model's covariates.

N=219
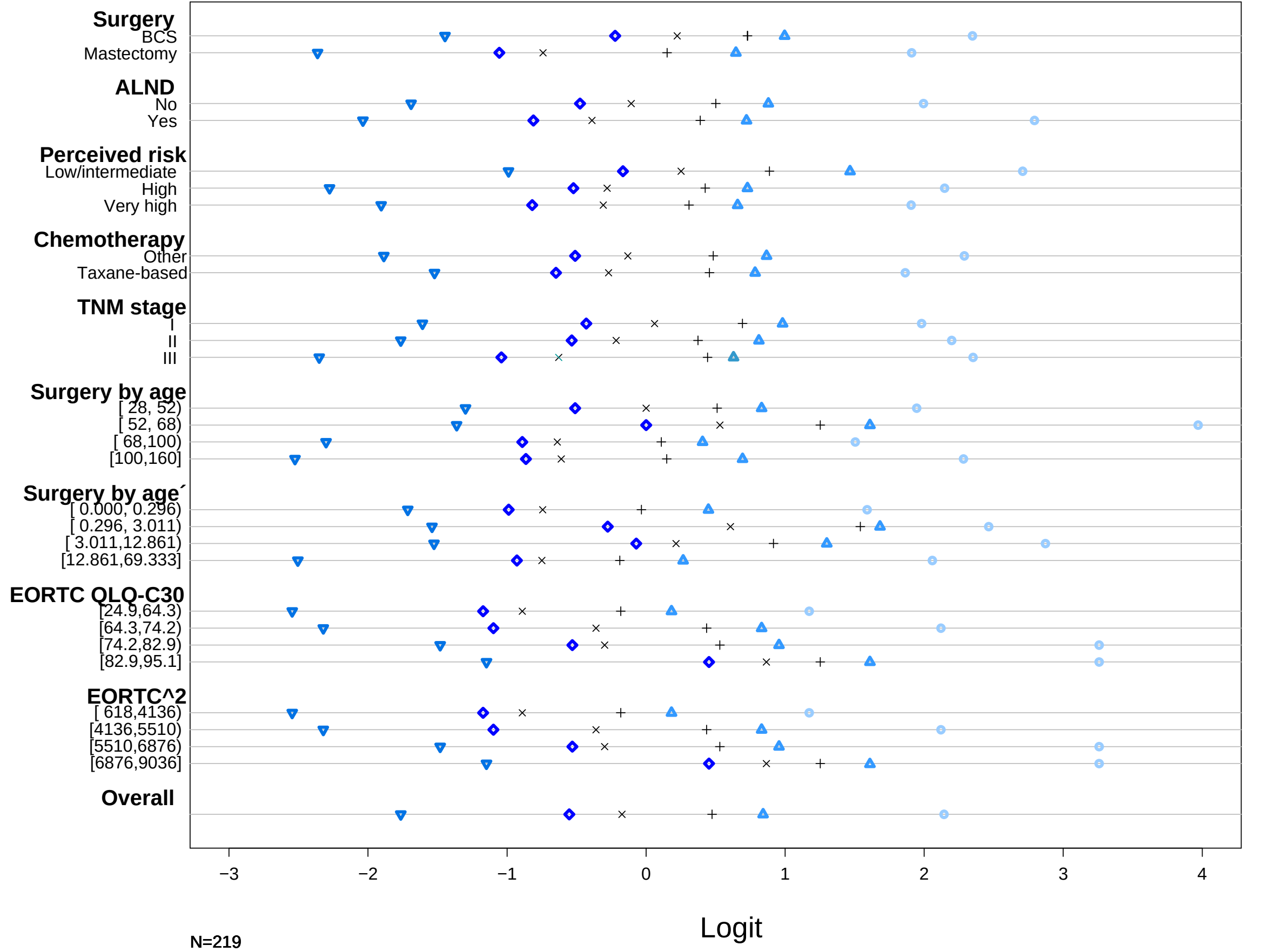
Note: In this case, circle, triangle, plus sign, cross, diamond, and inverted triangle correspond to the endpoint level of Y ≥ 50, 58, 66, 75, 83, and 91, respectively. The PO is checked by inspecting the vertical homogeneity of the distance of any of these symbols within the levels for each predictor. The response variable (endpoint) is the health status after chemotherapy. Abbreviations: BSC= breast-conserving surgery; ALND= axillary lymph node dissection; TNM= tumor-node-metastases; EORTC= European Organisation for Research and Treatment of Cancer. The EORTC variable refers to the sum score before chemotherapy.

**Supplementary Figure 6.** Multinomial (frequentist) model.

Each individual point represents one of the model's parameters. The reader can see the point to which the model is further complicated after assuming multinomial effects (one coefficient for each cut-off of the endpoint as illustrated by the color gradient).
Abbreviations: ALND, axillary lymph node dissection; TNM= tumor-node-metastases; EORTC= European Organisation for Research and Treatment of Cancer.
The response variable (endpoint) is the health status after chemotherapy. The EORTC variable refers to the sum score after chemotherapy.

Supplementary Figure 7: Coefficients of the constrained partial proportional odds model.
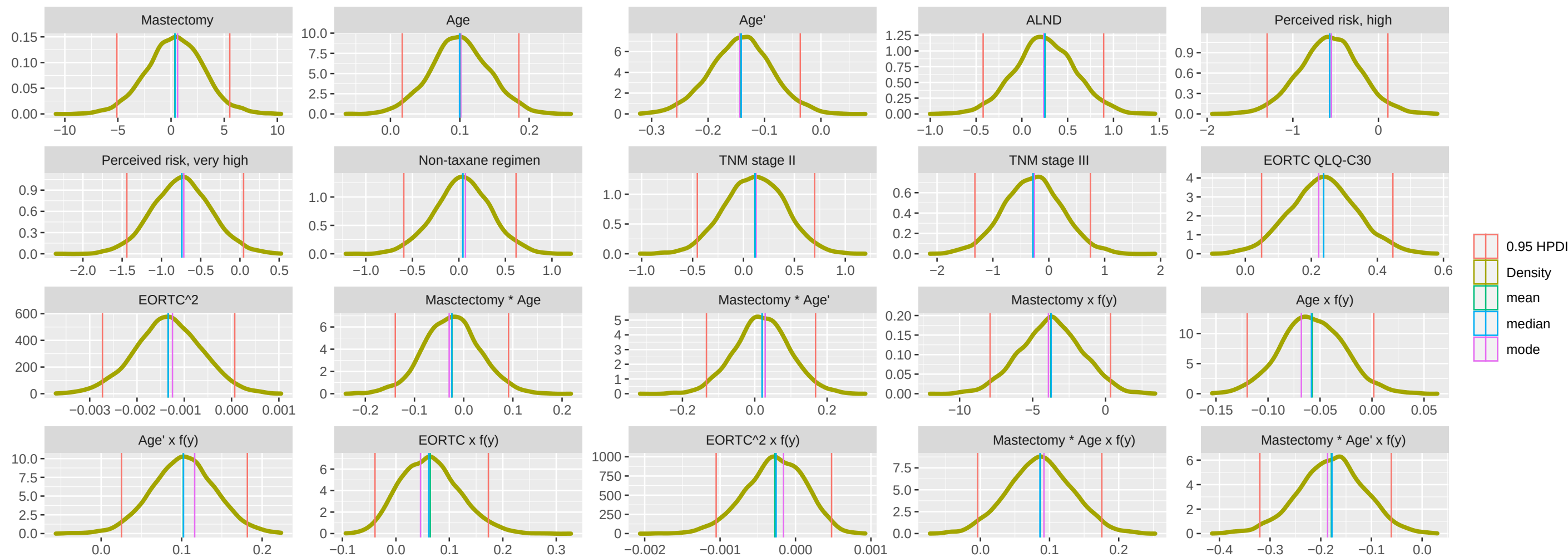
Abbreviations: ALND, axillary lymph node dissection; TNM= tumor-node-metastases; OR= odds ratio; HPDI= highest posterior density interval; EORTC= European Organisation for Research and Treatment of Cancer. Note: The EORTC variable refers to the sum score before chemotherapy. The response variable is the health status after chemotherapy.

Supplementary Figure 8. Model performance measures.
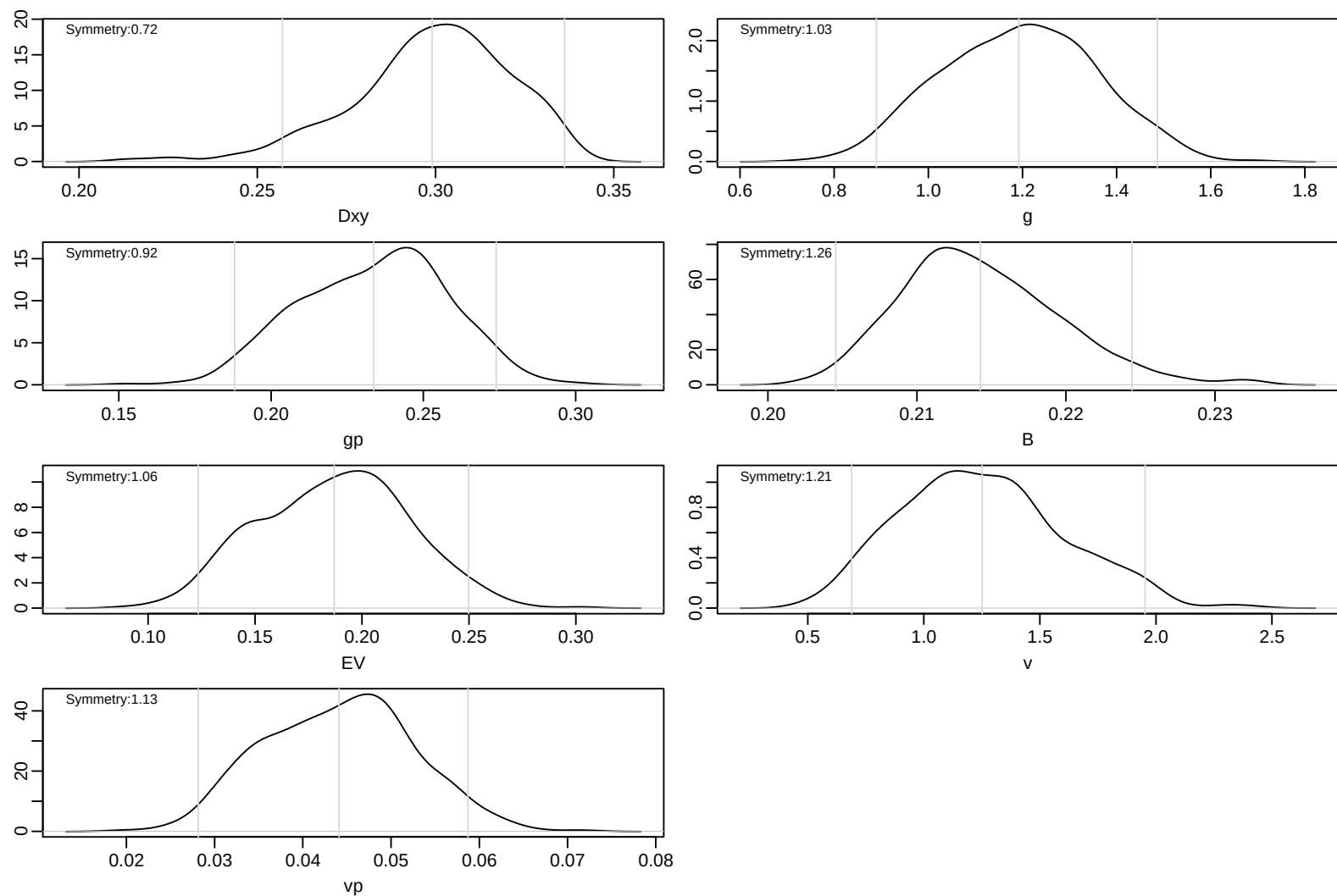
Dxy= Somers' Dxy rank correlation between predicted and observed. The concordance probability (c-index; AUROC in the binary Y case) can be obtained from the relationship Dxy=2(c0.5); g= Gini's mean difference: the average absolute difference over all pairs of linear predictor values; gp= Gini's mean difference on the predicted probability scale; B= Brier score; EV= explained variation; v= variance of linear predictor; vp= variable of estimated probabilities.

Supplementary Table 1: Hospitals participating in the study

Hospital Virgen de la Macarena, Sevilla
Hospital Quirón Salud Sagrado Corazón, Sevilla
Hospital Universitario Central de Asturias, Oviedo
Hospital Universitario Son Espases, Mallorca
Hospital Universitario Insular de Gran Canarias, Las Palmas
Hospital Universitario de Canarias, Tenerife
Hospital Universitario Marqués de Valdecilla, Santander
Hospital General Virgen de la Luz, Cuenca
Hospital General de Segovia, Segovia
Hospital Universitari Santa Creu i Sant Pau, Barcelona
Hospital Universitario La Paz, Madrid
Hospital Universitario La Princesa, Madrid
Hospital Universitario Fundación Alcorcón, Madrid
Hospital Universitario del Sureste, Arganda del Rey, Madrid
Hospital Universitario Morales Meseguer, Murcia
Hospital Galdakao-Usansolo, Galdacano, Vizcaya
Hospital General Universitario de Elche, Elche

Supplementary Table 2. Characteristics of patients according to type of surgery (N=219)

	BSC N=126 (%)	Total mastectomy N=93 (%)
Age (median, range)	53 (32-76)	52 (28-80)
Axillary lymph node dissection	21 (16.7)	31 (33.3)
TNM stage		
I	46 (36.5)	20 (21.5)
II	69 (54.8)	61 (65.6)
III	11 (8.7)	12 (12.9)
Chemotherapy regimen		
Taxane-based	89 (70.6)	63 (67.7)
Other	37 (29.4)	30 (32.3)
HER2-positive cancer	39 (31.0)	14 (15.1)
ECOG Performance status		
0	95 (75.4)	70 (75.3)
1	29 (23.0)	21 (22.6)
2	2 (1.6)	2 (2.2)
Social status		
Secondary or higher education	65 (51.6)	50 (53.8)
Employed	64 (50.8)	36 (38.7)
Married/ partnered	96 (76.2)	74 (79.6)
Number of children		
None	27 (21.4)	14 (15.2)
1	20 (15.9)	20 (21.7)
2	53 (42.1)	48 (52.2)
>2	26 (20.6)	10 (10.9)

Abbreviations: BSC, breast-conserving surgery; MRM, modified radical mastectomy.

Supplementary Table 3. Assessment of quality of life through the EORTC QLQ-C30 questionnaire

	Overall (mean, sd)		BCS (mean, sd)		Total mastectomy (mean, sd)		p-value	
	Baseline	At the end of Ct	Baseline	At the end of Ct	Baseline	At the end of Ct	Baseline	At the end of Ct
Global health status	70.4 (18.6)	67.0 (22.3)	71.5 (18.3)	70.6 (21.7)	69.3 (18.9)	62.0 (22.6)	0.238	**0.004**
Physical funct.	86.2 (14.0)	80.8 (17.7)	88.6 (12.8)	83.1 (16.6)	84.6 (15.0)	77.7 (18.7)	**0.007**	**0.024**
Role funct.	75.6 (25.7)	71.6 (28.9)	77.9 (23.6)	77.0 (27.8)	74.1 (27.9)	64.4 (28.8)	0.629	**<0.001**
Emotional funct.	68.9 (26.6)	72.3 (26.7)	68.7 (25.8)	76.4 (24.3)	69.1 (27.5)	66.9 (28.8)	0.680	**0.001**
Social funct.	74.6 (25.7)	72.2 (28.5)	76.6 (24.9)	75.1 (27.9)	72.5 (26.4)	68.5 (29.1)	0.158	0.060
Cognitive funct.	83.0 (21.2)	80.0 (24.4)	82.5 (20.8)	81.8 (23.6)	83.2 (21.6)	77.5 (25.3)	0.705	0.146
Fatigue	30.6 (25.7)	43.1 (28.0)	31.4 (26.2)	38.1 (26.3)	29.8 (24.2)	49.5 (28.5)	0.689	**0.002**
Nausea&vomiting	9.5 (18.2)	9.8 (18.9)	9.9 (18.3)	7.2 (18.0)	9.0 (17.8)	12.4 (19.5)	0.593	**0.005**
Pain	20.6 (25.5)	25.2 (28.4)	18.8 (24.3)	22.1 (25.9)	22.5 (26.8)	28.3 (30.5)	0.249	0.217
Dyspnoea	6.2 (5.5)	9.8 (23.6)	6.7 (19.1)	8.0 (20.6)	5.5 (18.1)	11.6 (26.2)	0.382	0.315
Insomnia	35.0 (33.5)	36.2 (33.5)	33.7 (33.7)	33.6 (32.7)	36.5 (33.2)	38.8 (34.3)	0.376	0.246
Appetite loss	19.5 (28.5)	17.6 (27.7)	19.1 (28.4)	13.7 (24.1)	19.9 (28.8)	22.7 (31.3)	0.798	0.022
Constipation	23.9 (33.2)	26.1 (31.6)	25.2 (33.4)	25.5 (31.6)	22.4 (33.0)	26.6 (31.7)	0.296	0.754
Diarrhea	13.0 (24.0)	13.2 (23.7)	12.3 (22.9)	10.4 (20.3)	13.7 (25.1)	17.0 (27.1)	0.867	0.063
Financial difficulties	18.1 (28.3)	14.4 (26.4)	16.1 (26.3)	11.4 (23.0)	20.2 (30.2)	18.3 (29.9)	0.335	0.095
Symptoms score	19.6 (16.0)	21.7 (16.5)	19.4 (15.8)	19.0 (15.3)	19.9 (16.2)	24.4 (17.2)	0.765	0.002

Abbreviatures: BSC, breast-conserving surgery; sd, standard deviation; Ct, adjuvant chemotherapy; funct., functioning. The term 'baseline' refers to the QoL scores prior to chemotherapy. The p-values proceed from two-sample Wilcoxon tests that compare the distribution of scores in subjects with BSC vs total mastectomy. This evaluation is performed separately before and after chemotherapy