

Interim Presentation

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2017-01-17

Objectives

- Determining the erectile function rates following SBRT
- Determining predictors of erectile function preservation after SBRT
- If you undergo SBRT, how likely is it that you will lose erectile function?

Potential Predictors

Negatively Associated: - Age, Gleason Score, T-stage, PSA, ADT, BMI

Positively Associated: - HRQOL, Erectile Function at Baseline

We expect HRQOL and Erectile Function at Baseline to be highly correlated, because erectile function is included in the questionnaire.

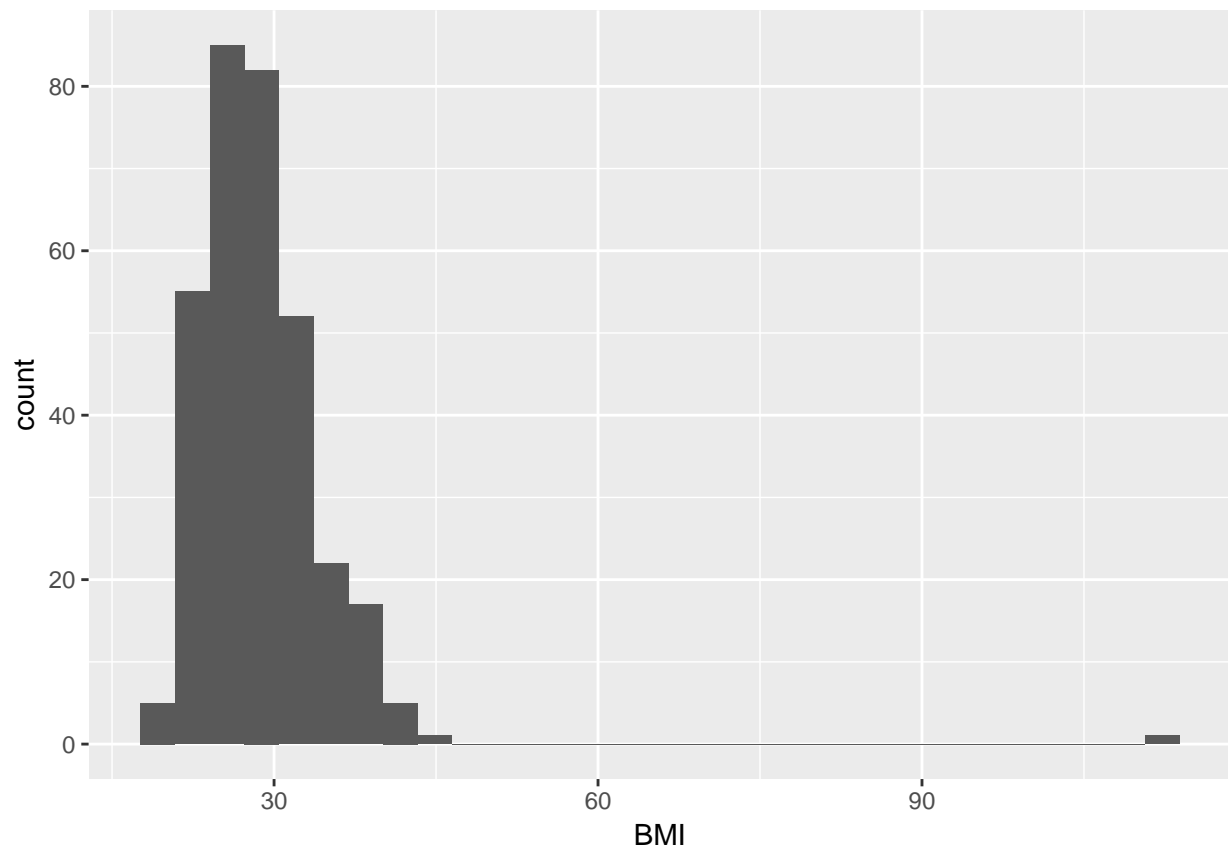
How many people lose function?

- At baseline: 158 with function, 167 without (0.49)
- At two years: 102 with function, 223 without (0.31)
- A seemingly large number of people lose function in just two years

never_functional	gain_function	loss_function	retain_function
153	14	70	88

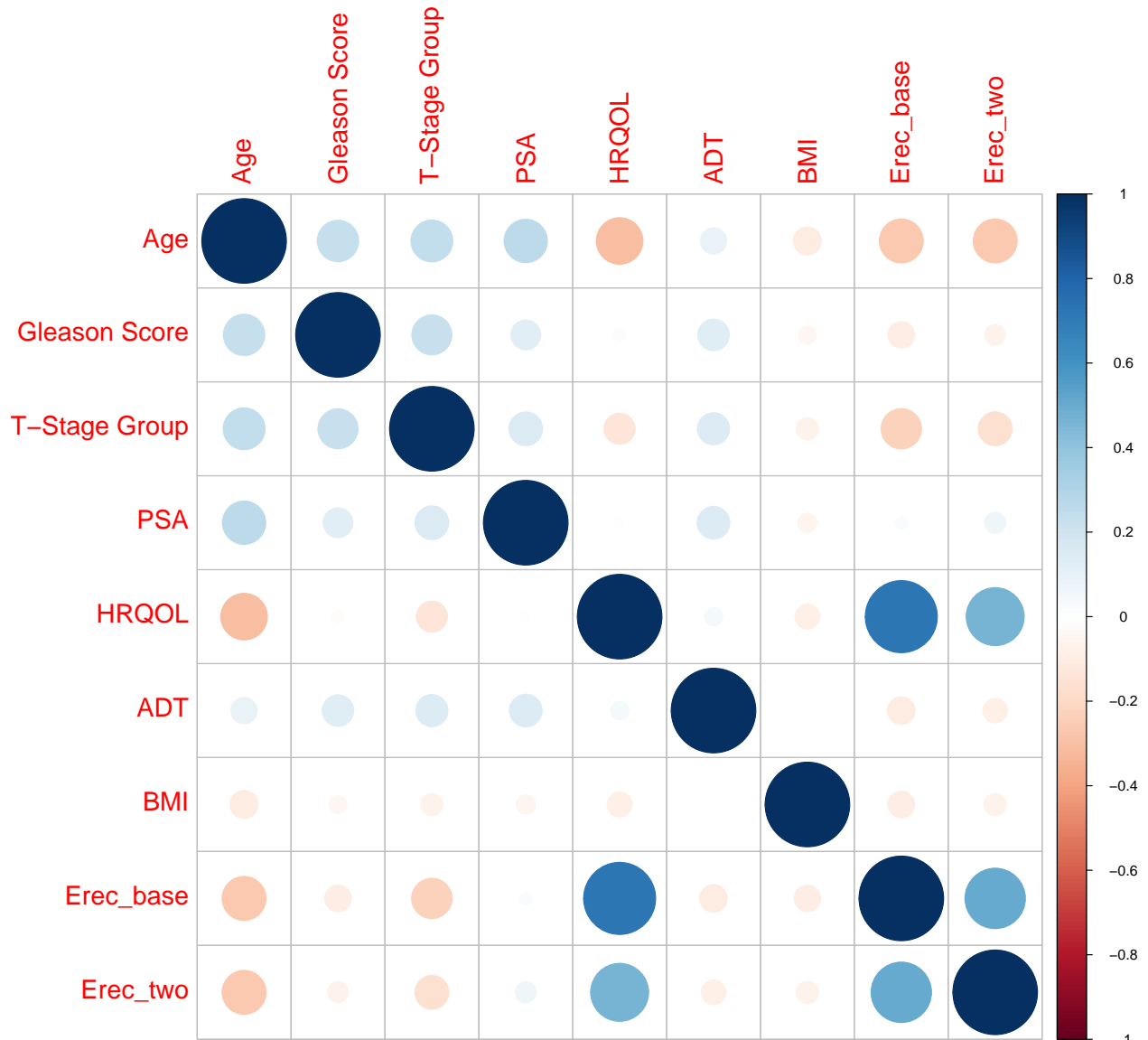
Questions and Concerns

- BMI Outlier



Subject 67 has a BMI of 112. This is theoretically possible.

Multicollinearity



Model

$$\text{logit}(EF2) = \beta_{\text{intercept}} + \beta_{\text{age}}\text{Age} + \beta_{\text{Gleason}}\text{Gleason} + \beta_{\text{Tstage}}\text{TStage} + \beta_{\text{PSA}}\text{PSA} + \beta_{\text{HRQOL}}\text{HRQOL} + \beta_{\text{ADT}}\text{ADT} + \beta_{\text{BMI}}\text{BMI} + \beta_{\text{EFbase}}\text{EFBase}$$

Results

term	lower	OR	upper	p.value
(Intercept)	0.00	0.03	0.21	0.07
centered_age	0.92	0.94	0.96	0.01
Gleason Score	0.84	1.08	1.39	0.75

term	lower	OR	upper	p.value
T-Stage Group	0.33	0.56	0.96	0.28
PSA	1.03	1.06	1.10	0.07
HRQOL	1.01	1.02	1.03	0.00
ADT	0.26	0.47	0.87	0.22
BMI	0.95	0.98	1.01	0.47
Erectile Function at Baseline	2.81	4.35	6.73	0.00

Results

$$\text{Error rate} = \frac{\sum |predicted - actual|}{total}$$

[1] 0.2307692

Conclusions

- Age, HRQOL, and erectile function are predictive of erectile function at two years
- PSA is somewhat protective
- Holding everything else constant, each one-year increase in baseline age increases the odds of losing erectile function by 6%.
- Holding everything else constant, HRQOL score is protective of erectile function.

Prediction

cen_age	Gleason Score	T_Stage	PSA	HRQOL	ADT	BMI	Erec_base	prob_func	pred_func
0.00	7	0	7.7	56	0	29	1	0.43	0
-7.14	7	0	32.5	88	0	25	1	0.92	1
7.86	8	1	9.5	25	1	27	1	0.07	0
-6.14	7	0	5.4	71	0	31	0	0.23	0
10.86	7	1	13.9	0	1	24	0	0.01	0
7.86	7	1	2.9	4	0	34	0	0.01	0