

Cost-Effectiveness Analysis of ¹⁷⁷Lu-PSMA-617 versus Cabazitaxel in Metastatic Castration-Resistant Prostate Cancer: An Analysis Based on Real-World Data and TheraP Trial

Kemal C. Gogebakan, PhD¹, Natalia Kunst, PhD², Amir Iravani, MD¹, Ruth Etzioni, PhD¹

¹ Fred Hutchinson Cancer Center

² Cancer Outcomes, Public Policy, and Effectiveness Research Center, Yale School of Medicine

EE49

Background

- Metastatic castration-resistant prostate cancer (mCRPC) remains a major therapeutic challenge. PSMA-targeted ¹⁷⁷Lu-PSMA-617 has emerged as a radiopharmaceutical therapy option in mCRPC.
- In the TheraP trial, ¹⁷⁷Lu-PSMA-617 improved PFS vs cabazitaxel with no significant OS difference, fewer grade ≥3 AEs, and better patient reported outcomes.
- Despite clinical benefits, ¹⁷⁷Lu-PSMA-617 carries higher costs; whether these are justified relative to cabazitaxel requires economic evaluation.
- Existing cost-effectiveness analyses from other countries may have limited applicability to the U.S. setting.

Methods

Model Overview

- Partitioned survival model; 3 states (progression-free, progressed, death); 60-mo horizon; 1-mo cycles

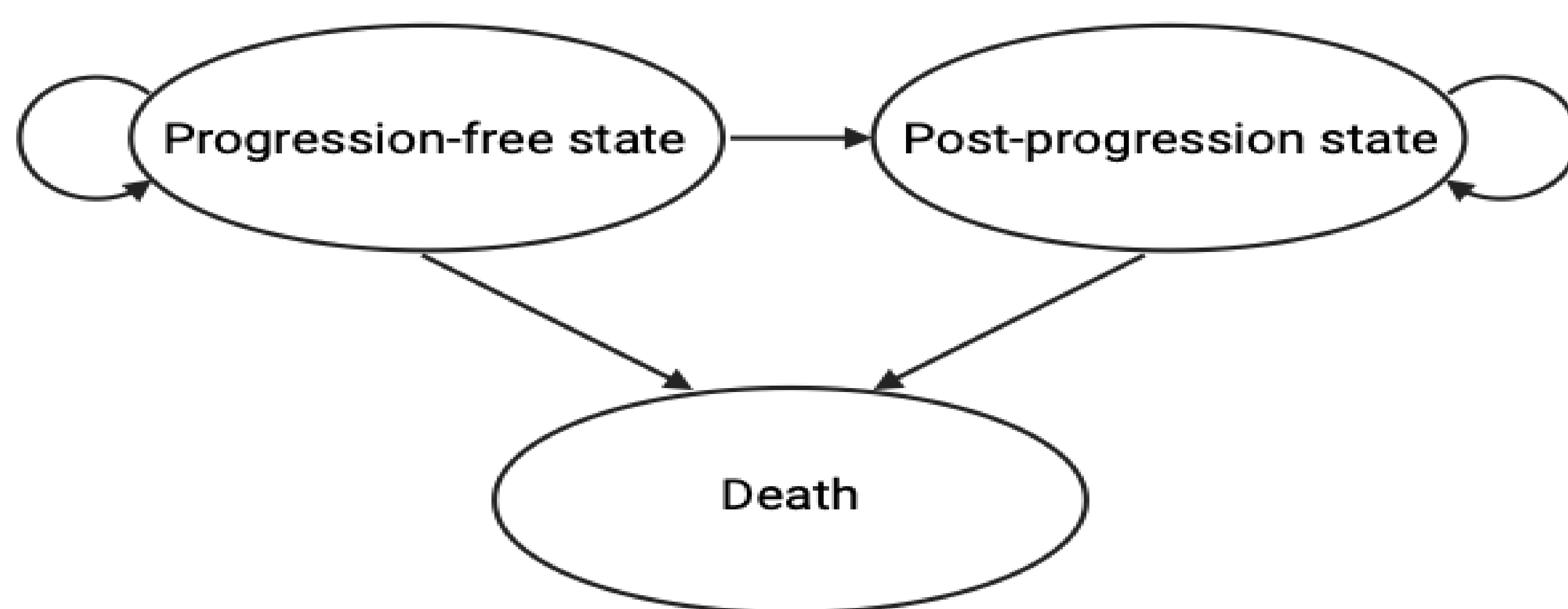


Figure 1. Decision model

Study Population: Informed by cohort treated with ¹⁷⁷Lu-PSMA from Fred Hutch Center (n=168; median age 73)

Survival: ¹⁷⁷Lu-PSMA PFS and OS were derived from Fred Hutch cohort and fitted to Weibull distribution. Relative treatment effects from TheraP trial were applied to generate survival curves for the Cabazitaxel group.

Costs/Utilities: Health-state utilities, AE disutilities, costs from published sources

Outcomes: Costs, QALYs, ICERs, NMB, 3% discount rate.

Perspective: U.S. healthcare perspective.

Results

Base-case Analyses

Patient Group	Cost (\$)	IC (\$)	QALY	IE (QALY)	NMB (\$)	ICER (\$/QALY)
Cabazitaxel	129,700	—	0.76	—	—	—
¹⁷⁷ Lu-PSMA-617	165,958	36,258	0.86	0.1	16,058	358,990

Deterministic Analyses

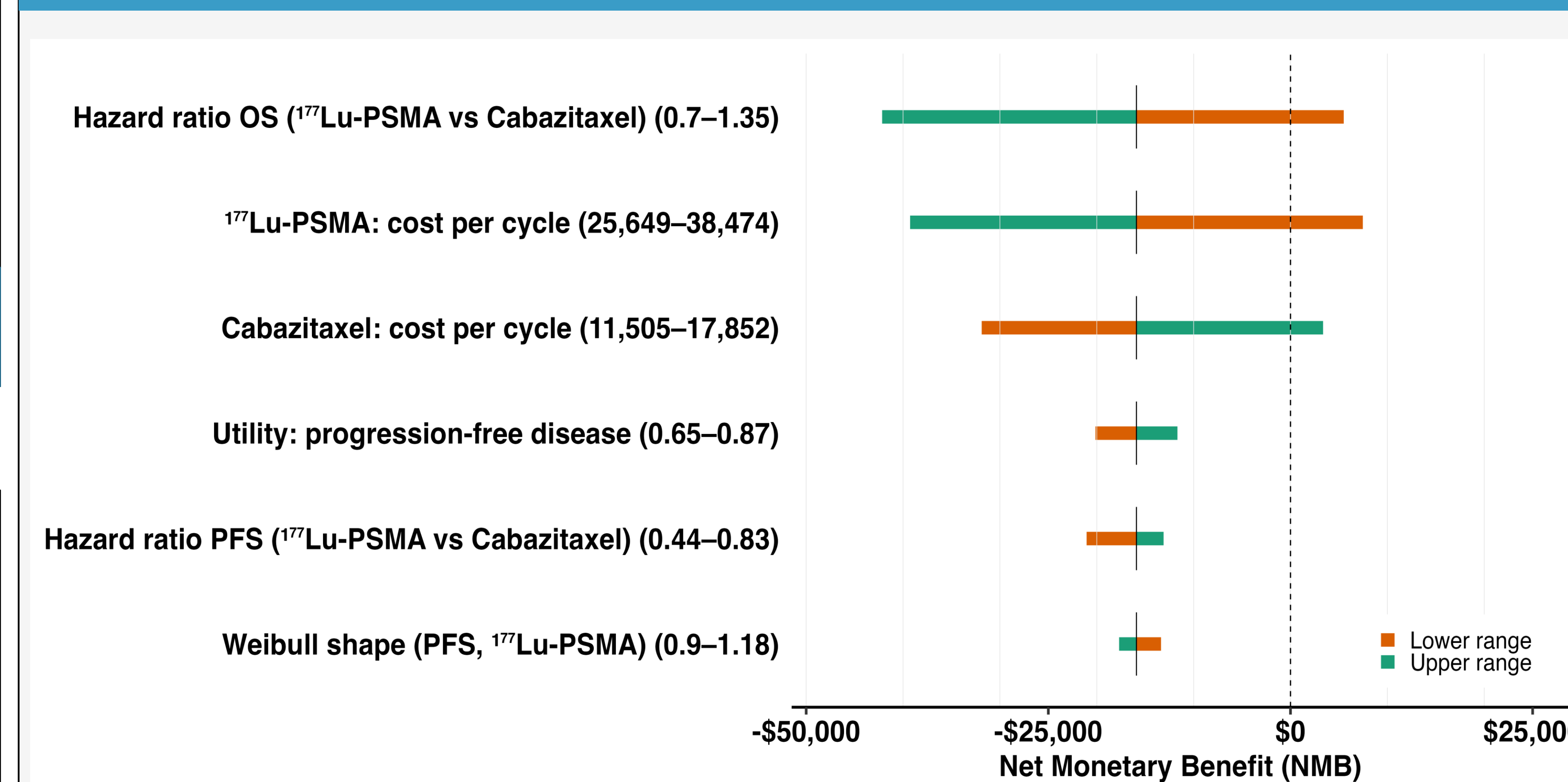


Figure 2. Tornado diagram

Probabilistic Sensitivity Analyses

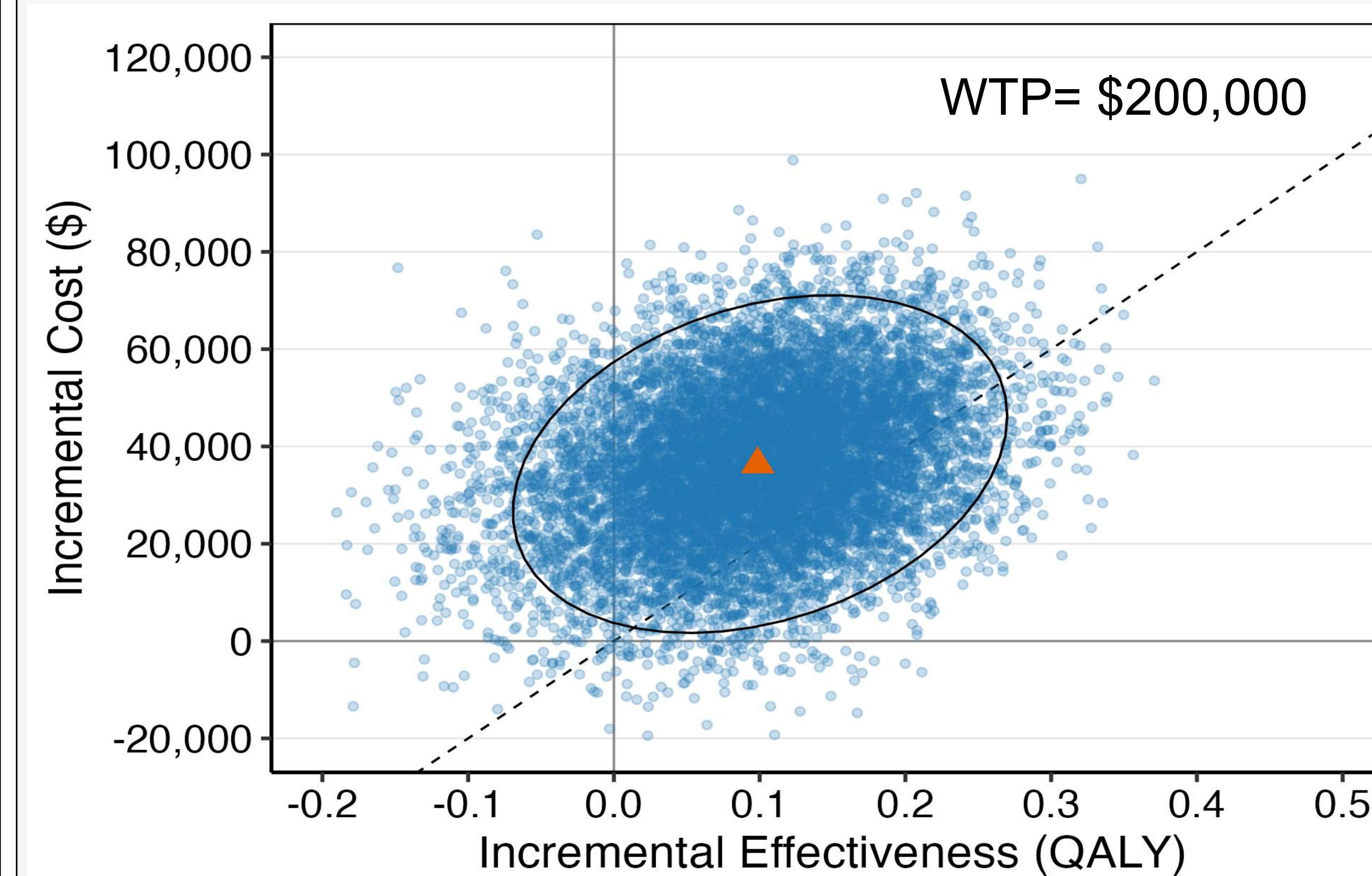


Figure 3. Cost effectiveness plane

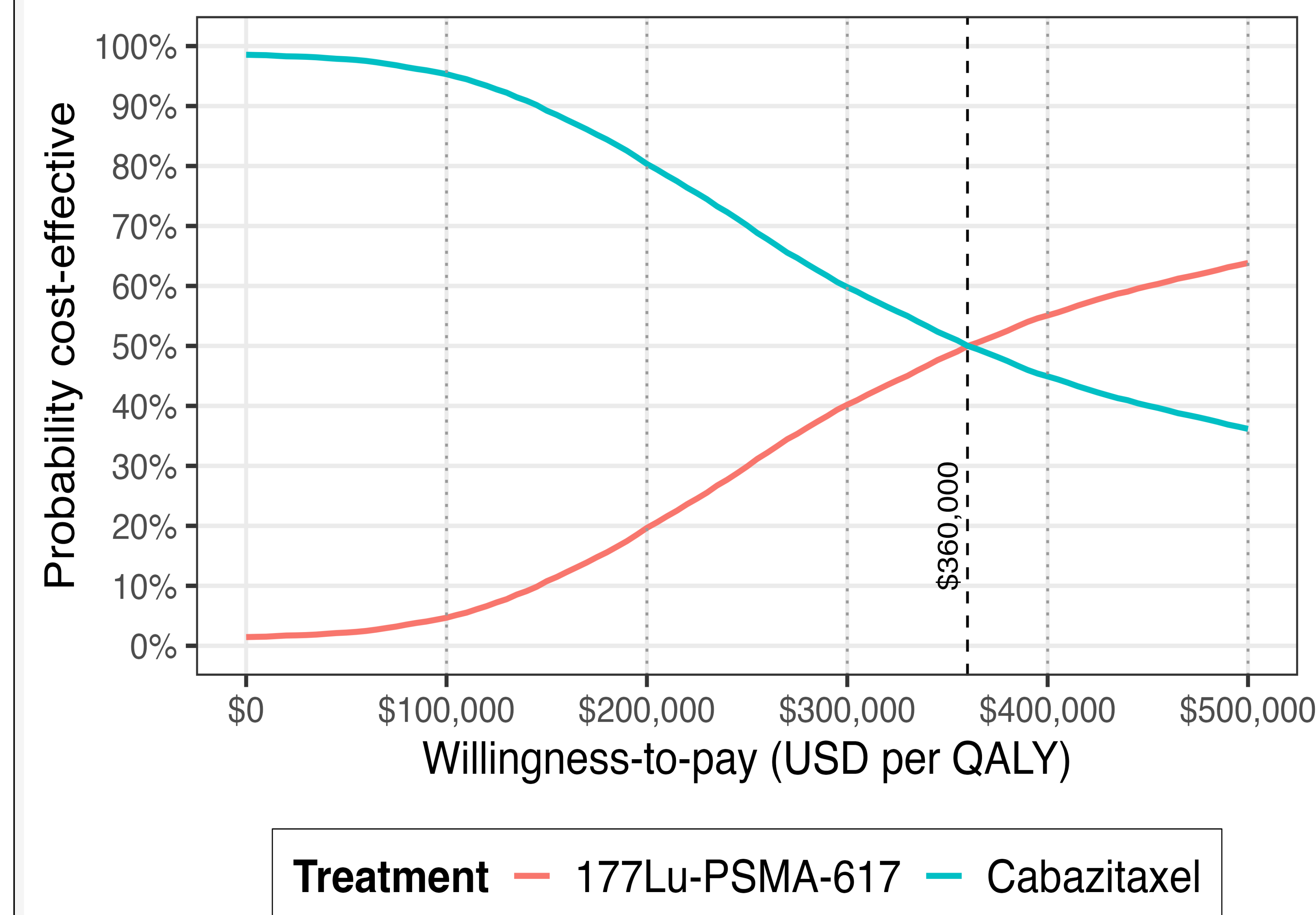


Figure 4. Cost Effectiveness Acceptability Curve

Threshold Analyses

- Max cost/cycle of ¹⁷⁷Lu-PSMA-617 for cost-effectiveness at WTP \$50K, \$100K, \$200K/QALY: \$23,499, \$24,885, \$27,656
- At \$200K/QALY, OS HR must be ≤0.761 for ¹⁷⁷Lu-PSMA-617 to be cost-effective

Conclusions

- Base-case ICER of \$358,990/QALY - nearly 2x the most generous US threshold
- PSA: 19.7% probability of CE at \$200K/QALY; 4.7% at \$100K; 2.2% at \$50K
- Cost effectiveness requires OS HR ≤0.76 or cost reduction to ~\$27,656/cycle
- As ¹⁷⁷Lu-PSMA-617 is moving to the earlier line of treatment, our model can be applied to understand the economic value of ¹⁷⁷Lu-PSMA-617 in earlier stages of disease compared to docetaxel or androgen receptor pathway inhibitors.
- The results of this cost-effectiveness analysis are valid only for the U.S. healthcare setting.