

# Package: OSsurvival (via r-universe)

September 12, 2024

**Title** Assessing Surrogacy with a Censored Outcome

**Version** 1.0

**Description** Identifies the optimal transformation of a surrogate marker and estimates the proportion of treatment explained (PTE) by the optimally-transformed surrogate at an earlier time point when the primary outcome of interest is a censored time-to-event outcome; details are described in Wang et al (2021) <[doi:10.1002/sim.9185](https://doi.org/10.1002/sim.9185)>.

**License** GPL-3

**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 7.1.1

**Depends** R (>= 2.10)

**Suggests** testthat, stats

**NeedsCompilation** no

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**Repository** <https://laylaparast.r-universe.dev>

**RemoteUrl** <https://github.com/cran/OSsurvival>

**RemoteRef** HEAD

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## Contents

|              |   |
|--------------|---|
| data.example | 2 |
| pte.survival | 2 |

|              |          |
|--------------|----------|
| <b>Index</b> | <b>4</b> |
|--------------|----------|

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|              |  |
|--------------|--|
| data.example | <i>Simulated data for the example.</i> |
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**Description**

Simulated data for the example.

**Usage**

data.example

**Format**

A data list with 5 elements:

**t.0** time at which the surrogate is measured

**t** time at which the primary outcome is measured

**xob** observed survival time

**s.ob** surrogate information at t.0

**deltaob** event indicator

**aob** treatment indicator

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|              |   |
|--------------|---|
| pte.survival | <i>Estimates the proportion of treatment effect explained</i> |
|--------------|---|

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**Description**

Estimates the proportion of treatment effect explained by the optimally transformed surrogate

**Usage**

pte.survival(xob, s.ob, deltaob, aob, t, t.0, varind = 0, re = 100)

**Arguments**

|         |  |
|---------|--|
| xob     | observed survival time                             |
| s.ob    | surrogate information at time t.0                  |
| deltaob | event indicator                                    |
| aob     | treatment indicator                                |
| t       | time at which the primary outcome is measured      |
| t.0     | time at which the surrogate is measured            |
| varind  | whether to estimate variance (yes=0, no=1)         |
| re      | number of replications for resampling, if varind=0 |

**Value**

A list of the following:

|         |   |
|---------|---|
| pte.est | The estimated proportion of treatment effect explained (PTE) by the optimally transformed surrogate |
| pte.es  | Standard error estimate for the PTE, provided if var.ind=0  |
| g1.est  | Estimated g1  |
| g1.es   | Standard error estimate for ge, provided if var.ind = 0   |
| sgrid   | Grid used for the surrogate marker, equally spaced  |
| gs.est  | Estimated g(s), optimal transformation of s, for the sgrid  |
| gs.es   | Standard error estimate for g(s), provided if var.ind = 0   |

**Examples**

```
# load the data
data("sysdata")

# time at which the surrogate is measured
t.0 = data.example$t.0

# time at which the primary outcome is measured
t = data.example$t

# observed survival time
xob = data.example$data$xob

# surrogate information at t.0
s.ob = data.example$data$s.ob

# event indicator
deltaob = data.example$data$deltaob

# treatment indicator
aob = data.example$data$aob

# main estimation function
# varind: whether to estimate variance; re:number of replications for resampling
out = pte.survival(xob, s.ob, deltaob, aob, t, t.0, varind=0, re=100)

# estimated PTE
out$pte.est

# estimated g1
out$g1.est

# estimated g2(s) at equally spaced s point
plot(out$sgrid, out$gs.est, type="l", xlab = "Surrogate Marker", ylab = "Optimal Transformation")
#The PTE result indicates that this is a moderate to high surrogate marker in this setting.
```

# Index

## \* **datasets**

data.example, [2](#)

data.example, [2](#)

pte.survival, [2](#)