Two Arm Time-To-Event Outcome: Patient Outcome Simulation Examples

J. Kyle Wathen

March 25, 2024 CDT

# Two Arm, Time-To-Event Outcome - Patient Outcome Simulation Examples

The following examples demonstrate how to add new patient outcome simulation capabilities into East using an R function in the context of a two-arm trial with a time-to-event patient outcome. For all examples, we assume the trial design consists of standard of care and an experimental treatment and the trial design assumes patient outcomes are normally distributed.

**East Workbook**: 2ArmTimeToEventOutcomePatientSimulation.cywx

**R Studio Project File**: 2ArmTimeToEventOutcomePatientSimulation.Rproj.

In the RCode directory of this example you will find the following R files:

1. SimulatePatientSurvivalWeibull.R - This file provides an example R function to simulate patient time-to-event data from a Weibull distribution.
2. SimulatePatientSurvivalMixtureExponential.R - This file provides an example R function to simulate patient data from a mixture of exponential distributions. The mixture is based on having any number of patient groups in the study where each group has a different Exponential distribution for simulating the time-to-event from.

In addition, if you would like to experiment with these examples to and would like some code to help you get started, we have provided fill-in-the-blank type code files in the FillInTheBlankRCode directory.

## Example 1 - Simulation of Patient Time-To-Event Data from a Weibull Distribution

To replace the patient outcome simulation..

## Example 2 - Simulation of Patient Time-To-Event Data from a Mixture of Distributions

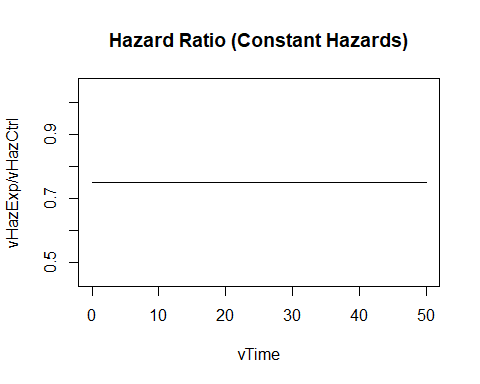
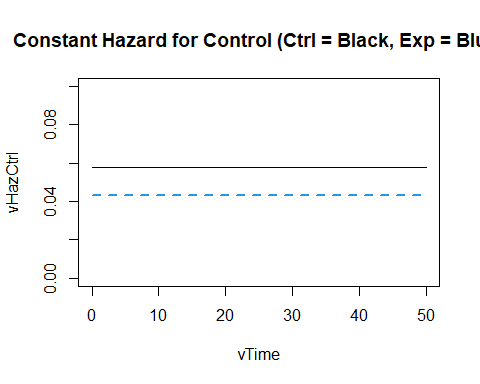
Simulate patient data from a mixture of exponential distributions. The mixture is based on having any number of patient groups in the study where each group has a different Exponential distribution for simulating the time-to-event from.

## [1] 1

## [1] 1

## [1] 17.31234

## [1] 23.08312

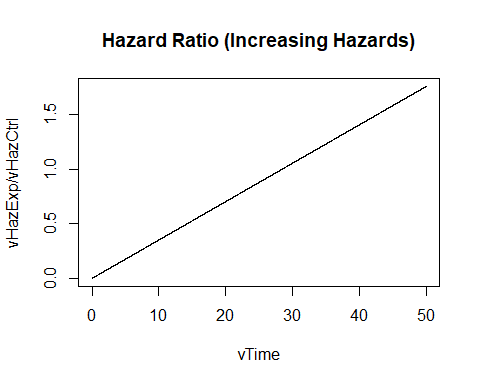
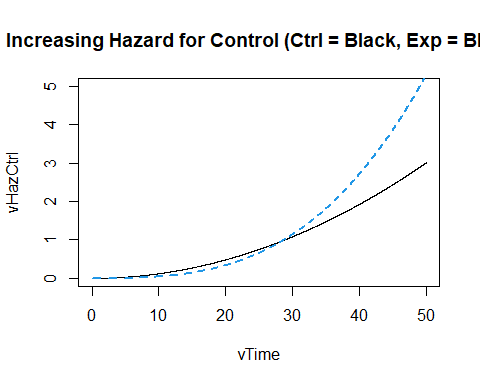


## [1] 3

## [1] 4

## [1] 13.55937

## [1] 17.53532



## [1] 0.7

## [1] 0.8

## [1] 20.25692

## [1] 25.29811

