

# Package ‘manCTMed’

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**Version** 1.0.9

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in Continuous-Time Mediation Models.  
Psychological Methods.  
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|          |                             |
|----------|-----------------------------|
| BootPara | <i>Parametric Bootstrap</i> |
|----------|-----------------------------|

---

## Description

The function generates simulated datasets based on a fitted model and refits the model to each generated dataset using the dynr package.

## Usage

```
BootPara(
  fit,
  path,
  prefix,
  taskid,
  B = 1000L,
  ncores = NULL,
  seed = NULL,
  clean = TRUE
)
```

## Arguments

|        |   |
|--------|---|
| fit    | R object. Output of the <code>FitDynr()</code> , <code>FitMx()</code> , <code>IllustrationFitDynr()</code> , or <code>IllustrationFitMx()</code> , functions. |
| path   | Path to a directory to store bootstrap samples and estimates.   |
| prefix | Character string. Prefix used for the file names for the bootstrap samples and estimates.   |
| taskid | Positive integer. Task ID.  |
| B      | Positive integer. Number of bootstrap samples.  |
| ncores | Positive integer. Number of cores to use.   |
| seed   | Integer. Random seed.   |
| clean  | Logical. If <code>clean = TRUE</code> , delete intermediate files generated by the function.  |

**See Also**

Other Confidence Interval Functions: [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
BootPara(
  fit = fit,
  path = getwd(),
  prefix = "pb",
  taskid = 1,
  B = 1000L
)

## End(Not run)
```

---

 BootParaStdXMY

---

*Parametric Bootstrap Confidence Intervals for X-M-Y (Standardized)*


---

**Description**

The function generates parametric bootstrap method confidence intervals for the mediation model  $X \rightarrow M \rightarrow Y$  (Standardized).

**Usage**

```
BootParaStdXMY(boot, theta_hat, delta_t = 1:30, ncores = NULL)
```

**Arguments**

|           |  |
|-----------|--|
| boot      | R object. Output of the <a href="#">BootPara()</a> function. |
| theta_hat | R object. Output of the <a href="#">ThetaHat()</a> function. |
| delta_t   | Numeric vector. Vector of time intervals.                    |
| ncores    | Positive integer. Number of cores to use.                    |

**See Also**

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

## Examples

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
boot <- BootPara(
  fit = fit,
  path = getwd(),
  prefix = "pb",
  taskid = 1,
  B = 1000L
)
theta_hat <- ThetaHat(fit)
ci <- BootParaStdXMY(boot = boot, theta_hat = theta_hat)
plot(ci)
plot(ci, type = "bc")

## End(Not run)
```

---

BootParaStdXYM

*Parametric Bootstrap Confidence Intervals for X-Y-M (Standardized)*

---

## Description

The function generates parametric bootstrap method confidence intervals for the mediation model  $X \rightarrow Y \rightarrow M$  (Standardized).

## Usage

```
BootParaStdXYM(boot, theta_hat, delta_t = 1:30, ncores = NULL)
```

## Arguments

|           |  |
|-----------|--|
| boot      | R object. Output of the <a href="#">BootPara()</a> function. |
| theta_hat | R object. Output of the <a href="#">ThetaHat()</a> function. |
| delta_t   | Numeric vector. Vector of time intervals.                    |
| ncores    | Positive integer. Number of cores to use.                    |

## See Also

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

## Examples

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
boot <- BootPara(
  fit = fit,
  path = getwd(),
  prefix = "pb",
  taskid = 1,
  B = 1000L
)
theta_hat <- ThetaHat(fit)
ci <- BootParaStdXYM(boot = boot, theta_hat = theta_hat)
plot(ci)
plot(ci, type = "bc")

## End(Not run)
```

---

 BootParaStdYMX

---

*Parametric Bootstrap Confidence Intervals for Y-M-X (Standardized)*


---

## Description

The function generates parametric bootstrap method confidence intervals for the mediation model  $Y \rightarrow M \rightarrow X$  (Standardized).

## Usage

```
BootParaStdYMX(boot, theta_hat, delta_t = 1:30, ncores = NULL)
```

## Arguments

|           |  |
|-----------|--|
| boot      | R object. Output of the <a href="#">BootPara()</a> function. |
| theta_hat | R object. Output of the <a href="#">ThetaHat()</a> function. |
| delta_t   | Numeric vector. Vector of time intervals.                    |
| ncores    | Positive integer. Number of cores to use.                    |

## See Also

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

## Examples

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
boot <- BootPara(
  fit = fit,
  path = getwd(),
  prefix = "pb",
  taskid = 1,
  B = 1000L
)
theta_hat <- ThetaHat(fit)
ci <- BootParaStdYMX(boot = boot, theta_hat = theta_hat)
plot(ci)
plot(ci, type = "bc")

## End(Not run)
```

---

 BootParaXMY

---

*Parametric Bootstrap Confidence Intervals for X-M-Y*


---

## Description

The function generates parametric bootstrap method confidence intervals for the mediation model  $X \rightarrow M \rightarrow Y$ .

## Usage

```
BootParaXMY(boot, phi_hat, delta_t = 1:30, ncores = NULL)
```

## Arguments

|         |  |
|---------|--|
| boot    | R object. Output of the <a href="#">BootPara()</a> function. |
| phi_hat | R object. Output of the <a href="#">PhiHat()</a> function.   |
| delta_t | Numeric vector. Vector of time intervals.                    |
| ncores  | Positive integer. Number of cores to use.                    |

## See Also

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)



## Examples

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
boot <- BootPara(
  fit = fit,
  path = getwd(),
  prefix = "pb",
  taskid = 1,
  B = 1000L
)
phi_hat <- PhiHat(fit)
ci <- BootParaXYM(boot = boot, phi_hat = phi_hat)
plot(ci)
plot(ci, type = "bc")

## End(Not run)
```

---

 BootParaXYM

---

*Parametric Bootstrap Confidence Intervals for X-Y-M*


---

## Description

The function generates parametric bootstrap method confidence intervals for the mediation model  $X \rightarrow Y \rightarrow M$ .

## Usage

```
BootParaXYM(boot, phi_hat, delta_t = 1:30, ncores = NULL)
```

## Arguments

|         |  |
|---------|--|
| boot    | R object. Output of the <a href="#">BootPara()</a> function. |
| phi_hat | R object. Output of the <a href="#">PhiHat()</a> function.   |
| delta_t | Numeric vector. Vector of time intervals.                    |
| ncores  | Positive integer. Number of cores to use.                    |

## See Also

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

## Examples

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
boot <- BootPara(
  fit = fit,
  path = getwd(),
  prefix = "pb",
  taskid = 1,
  B = 1000L
)
phi_hat <- PhiHat(fit)
ci <- BootParaXYM(boot = boot, phi_hat = phi_hat)
plot(ci)
plot(ci, type = "bc")

## End(Not run)
```

---

 BootParaYMX

---

*Parametric Bootstrap Confidence Intervals for Y-M-X*


---

## Description

The function generates parametric bootstrap method confidence intervals for the mediation model  $Y \rightarrow M \rightarrow X$ .

## Usage

```
BootParaYMX(boot, phi_hat, delta_t = 1:30, ncores = NULL)
```

## Arguments

|         |  |
|---------|--|
| boot    | R object. Output of the <a href="#">BootPara()</a> function. |
| phi_hat | R object. Output of the <a href="#">PhiHat()</a> function.   |
| delta_t | Numeric vector. Vector of time intervals.                    |
| ncores  | Positive integer. Number of cores to use.                    |

## See Also

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
boot <- BootPara(
  fit = fit,
  path = getwd(),
  prefix = "pb",
  taskid = 1,
  B = 1000L
)
phi_hat <- PhiHat(fit)
ci <- BootParaYMX(boot = boot, phi_hat = phi_hat)
plot(ci)
plot(ci, type = "bc")

## End(Not run)
```

Compress

*Compress Replication***Description**

Compress Replication

**Usage**

```
Compress(taskid, repid, output_folder)
```

**Arguments**

|               |                                   |
|---------------|-----------------------------------|
| taskid        | Positive integer. Task ID.        |
| repid         | Positive integer. Replication ID. |
| output_folder | Character string. Output folder.  |

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

**See Also**

Other Compression Functions: [IllustrationCompress\(\)](#)

---

|             |   |
|-------------|---|
| DeltaStdXMY | <i>Delta Method Confidence Intervals for X-M-Y (Standardized)</i> |
|-------------|---|

---

**Description**

The function generates delta method confidence intervals for the mediation model  $X \rightarrow M \rightarrow Y$  (Standardized).

**Usage**

```
DeltaStdXMY(theta_hat, delta_t = 1:30)
```

**Arguments**

- theta\_hat      R object. Output of the [ThetaHat\(\)](#) function.
- delta\_t        Numeric vector. Vector of time intervals.

**See Also**

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
theta_hat <- ThetaHat(fit)
ci <- DeltaStdXMY(theta_hat)
plot(ci)

## End(Not run)
```

---

|             |   |
|-------------|---|
| DeltaStdXYM | <i>Delta Method Confidence Intervals for X-Y-M (Standardized)</i> |
|-------------|---|

---

**Description**

The function generates delta method confidence intervals for the mediation model  $X \rightarrow Y \rightarrow M$  (Standardized).

**Usage**

```
DeltaStdXYM(theta_hat, delta_t = 1:30)
```

**Arguments**

theta\_hat      R object. Output of the [ThetaHat\(\)](#) function.

delta\_t        Numeric vector. Vector of time intervals.

**See Also**

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
theta_hat <- ThetaHat(fit)
ci <- DeltaStdXYM(theta_hat)
plot(ci)

## End(Not run)
```

---

DeltaStdYMX

*Delta Method Confidence Intervals for Y-M-X (Standardized)*


---

**Description**

The function generates delta method confidence intervals for the mediation model  $Y \rightarrow M \rightarrow X$  (Standardized).

**Usage**

```
DeltaStdYMX(theta_hat, delta_t = 1:30)
```

**Arguments**

theta\_hat      R object. Output of the [ThetaHat\(\)](#) function.

delta\_t        Numeric vector. Vector of time intervals.

**See Also**

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
theta_hat <- ThetaHat(fit)
ci <- DeltaStdYMX(theta_hat)
plot(ci)

## End(Not run)
```

DeltaXMY

*Delta Method Confidence Intervals for X-M-Y***Description**

The function generates delta method confidence intervals for the mediation model  $X \rightarrow M \rightarrow Y$ .

**Usage**

```
DeltaXMY(phi_hat, delta_t = 1:30)
```

**Arguments**

|         |  |
|---------|--|
| phi_hat | R object. Output of the <a href="#">PhiHat()</a> function. |
| delta_t | Numeric vector. Vector of time intervals.                  |

**See Also**

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
phi_hat <- PhiHat(fit)
ci <- DeltaXYM(phi_hat)
plot(ci)

## End(Not run)
```

DeltaXYM

*Delta Method Confidence Intervals for X-Y-M***Description**

The function generates delta method confidence intervals for the mediation model  $X \rightarrow Y \rightarrow M$ .

**Usage**

```
DeltaXYM(phi_hat, delta_t = 1:30)
```

**Arguments**

|         |  |
|---------|--|
| phi_hat | R object. Output of the <a href="#">PhiHat()</a> function. |
| delta_t | Numeric vector. Vector of time intervals.                  |

**See Also**

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
phi_hat <- PhiHat(fit)
ci <- DeltaXYM(phi_hat)
plot(ci)

## End(Not run)
```

DeltaYMX

*Delta Method Confidence Intervals for Y-M-X***Description**

The function generates delta method confidence intervals for the mediation model  $Y \rightarrow M \rightarrow X$ .

**Usage**

```
DeltaYMX(phi_hat, delta_t = 1:30)
```

**Arguments**

phi\_hat            R object. Output of the [PhiHat\(\)](#) function.  
delta\_t            Numeric vector. Vector of time intervals.

**See Also**

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
phi_hat <- PhiHat(fit)
ci <- DeltaYMX(phi_hat)
plot(ci)

## End(Not run)
```

FigPlotEffects

*Plot Total, Direct, and Indirect Effects***Description**

Effects for the model  $X \rightarrow M \rightarrow Y$ .

**Usage**

```
FigPlotEffects(dynamics = 0, std = FALSE, max_delta_t = 30, xmy = TRUE)
```



**Arguments**

|             |   |
|-------------|---|
| dynamics    | Integer. dynamics = 0 for original drift matrix, dynamics = -1 for near-neutral dynamics, and dynamics = 1 for stronger damping.  |
| std         | Logical. If std = TRUE, standardized total, direct, and indirect effects. If std = FALSE, unstandardized total, direct, and indirect effects.   |
| max_delta_t | Numeric. Maximum time interval.   |
| xmy         | Logical. If xmy = TRUE, plot the effects for the $x \rightarrow m \rightarrow y$ mediation model. If xmy = FALSE, plot the effects for the $y \rightarrow m \rightarrow x$ mediation model. |

**Author(s)**

Ivan Jacob Agaloos Pesigan

**See Also**

Other Figure Functions: [FigScatterPlotCoverage\(\)](#), [FigScatterPlotPower\(\)](#), [FigScatterPlotSeBias\(\)](#), [FigScatterPlotType1\(\)](#), [IllustrationFigPlotEffects\(\)](#), [IllustrationFigScatterPlotCoverage\(\)](#), [IllustrationFigScatterPlotPower\(\)](#), [IllustrationFigScatterPlotSeBias\(\)](#)

**Examples**

```
FigPlotEffects()
```

---

```
FigScatterPlotCoverage
```

*Plot Coverage Probabilities*

---

**Description**

Coverage probabilities for the model  $X \rightarrow M \rightarrow Y$ .

**Usage**

```
FigScatterPlotCoverage(results, delta_t = NULL, dynamics = 0, std = FALSE)
```

**Arguments**

|          |   |
|----------|---|
| results  | Summary results data frame.   |
| delta_t  | Vector of time-interval value. If delta_t = NULL, use all available time-intervals  |
| dynamics | Integer. dynamics = 0 for original drift matrix, dynamics = -1 for near-neutral dynamics, and dynamics = 1 for stronger damping.              |
| std      | Logical. If std = TRUE, standardized total, direct, and indirect effects. If std = FALSE, unstandardized total, direct, and indirect effects. |

**Author(s)**

Ivan Jacob Agaloos Pesigan

**See Also**

Other Figure Functions: [FigPlotEffects\(\)](#), [FigScatterPlotPower\(\)](#), [FigScatterPlotSeBias\(\)](#), [FigScatterPlotType1\(\)](#), [IllustrationFigPlotEffects\(\)](#), [IllustrationFigScatterPlotCoverage\(\)](#), [IllustrationFigScatterPlotPower\(\)](#), [IllustrationFigScatterPlotSeBias\(\)](#)

**Examples**

```
data(results, package = "manCTMed")
FigScatterPlotCoverage(results)
FigScatterPlotCoverage(results, delta_t = 1:14)
FigScatterPlotCoverage(results, delta_t = 15:30)
```

---

FigScatterPlotPower      *Plot Statistical Power*

---

**Description**

Statistical power for the model  $X \rightarrow M \rightarrow Y$ .

**Usage**

```
FigScatterPlotPower(results, delta_t = NULL, dynamics = 0, std = FALSE)
```

**Arguments**

|          |   |
|----------|---|
| results  | Summary results data frame.   |
| delta_t  | Vector of time-interval value. If delta_t = NULL, use all available time-intervals  |
| dynamics | Integer. dynamics = 0 for original drift matrix, dynamics = -1 for near-neutral dynamics, and dynamics = 1 for stronger damping.              |
| std      | Logical. If std = TRUE, standardized total, direct, and indirect effects. If std = FALSE, unstandardized total, direct, and indirect effects. |

**Author(s)**

Ivan Jacob Agaloos Pesigan

**See Also**

Other Figure Functions: [FigPlotEffects\(\)](#), [FigScatterPlotCoverage\(\)](#), [FigScatterPlotSeBias\(\)](#), [FigScatterPlotType1\(\)](#), [IllustrationFigPlotEffects\(\)](#), [IllustrationFigScatterPlotCoverage\(\)](#), [IllustrationFigScatterPlotPower\(\)](#), [IllustrationFigScatterPlotSeBias\(\)](#)

**Examples**

```
data(results, package = "manCTMed")
FigScatterPlotPower(results)
FigScatterPlotPower(results, delta_t = 1:14)
FigScatterPlotPower(results, delta_t = 15:30)
```

---

FigScatterPlotSeBias    *Plot Standard Error Bias*

---

**Description**

Standard Error Bias for the model  $X \rightarrow M \rightarrow Y$ .

**Usage**

```
FigScatterPlotSeBias(results, delta_t = NULL, dynamics = 0, std = FALSE)
```

**Arguments**

|          |   |
|----------|---|
| results  | Summary results data frame.   |
| delta_t  | Vector of time-interval value. If delta_t = NULL, use all available time-intervals  |
| dynamics | Integer. dynamics = 0 for original drift matrix, dynamics = -1 for near-neutral dynamics, and dynamics = 1 for stronger damping.              |
| std      | Logical. If std = TRUE, standardized total, direct, and indirect effects. If std = FALSE, unstandardized total, direct, and indirect effects. |

**Author(s)**

Ivan Jacob Agaloos Pesigan

**See Also**

Other Figure Functions: [FigPlotEffects\(\)](#), [FigScatterPlotCoverage\(\)](#), [FigScatterPlotPower\(\)](#), [FigScatterPlotType1\(\)](#), [IllustrationFigPlotEffects\(\)](#), [IllustrationFigScatterPlotCoverage\(\)](#), [IllustrationFigScatterPlotPower\(\)](#), [IllustrationFigScatterPlotSeBias\(\)](#)

**Examples**

```
data(results, package = "manCTMed")
FigScatterPlotSeBias(results)
```

---

FigScatterPlotType1     *Plot Type I Error*

---

### Description

Type I error for the model  $Y \rightarrow M \rightarrow X$ .

### Usage

```
FigScatterPlotType1(results, delta_t = NULL, dynamics = 0, std = FALSE)
```

### Arguments

|          |   |
|----------|---|
| results  | Summary results data frame.   |
| delta_t  | Vector of time-interval value. If delta_t = NULL, use all available time-intervals  |
| dynamics | Integer. dynamics = 0 for original drift matrix, dynamics = -1 for near-neutral dynamics, and dynamics = 1 for stronger damping.              |
| std      | Logical. If std = TRUE, standardized total, direct, and indirect effects. If std = FALSE, unstandardized total, direct, and indirect effects. |

### Author(s)

Ivan Jacob Agaloos Pesigan

### See Also

Other Figure Functions: [FigPlotEffects\(\)](#), [FigScatterPlotCoverage\(\)](#), [FigScatterPlotPower\(\)](#), [FigScatterPlotSeBias\(\)](#), [IllustrationFigPlotEffects\(\)](#), [IllustrationFigScatterPlotCoverage\(\)](#), [IllustrationFigScatterPlotPower\(\)](#), [IllustrationFigScatterPlotSeBias\(\)](#)

### Examples

```
data(results, package = "manCTMed")
FigScatterPlotType1(results)
FigScatterPlotType1(results, delta_t = 1:14)
FigScatterPlotType1(results, delta_t = 15:30)
```

**Description**

The function fits the model using the [dynr](#) package.

**Usage**

```
FitDynr(data, taskid)
```

**Arguments**

|        |   |
|--------|---|
| data   | R object. Output of the <a href="#">RandomMeasurement()</a> function. |
| taskid | Positive integer. Task ID.  |

**See Also**

Other Model Fitting Functions: [FitMx\(\)](#), [IllustrationFitDynr\(\)](#), [IllustrationFitMx\(\)](#), [IllustrationMCPhiSigma\(\)](#), [IllustrationPrepData\(\)](#), [PhiHat\(\)](#), [ThetaHat\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
summary(fit)

## End(Not run)
```

**Description**

The function fits the model using the [OpenMx](#) package.

**Usage**

```
FitMx(data, taskid)
```

**Arguments**

`data` R object. Output of the [RandomMeasurement\(\)](#) function.  
`taskid` Positive integer. Task ID.

**See Also**

Other Model Fitting Functions: [FitDynr\(\)](#), [IllustrationFitDynr\(\)](#), [IllustrationFitMx\(\)](#), [IllustrationMCPHiSigma\(\)](#), [IllustrationPrepData\(\)](#), [PhiHat\(\)](#), [ThetaHat\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(OpenMx)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitMx(data, taskid = 1)
summary(fit)

## End(Not run)
```

---

GenData

---

*Simulate Data*


---

**Description**

The function simulates data using the [simStateSpace::SimSSMOUFixed\(\)](#) function.

**Usage**

```
GenData(taskid)
```

**Arguments**

`taskid` Positive integer. Task ID.

**See Also**

Other Data Generation Functions: [IllustrationGenData\(\)](#), [RandomMeasurement\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
sim <- GenData(taskid = 1)
plot(sim)

## End(Not run)
```

---

IllustrationBootPara    *Parametric Bootstrap (Illustration)*


---

**Description**

The function generates simulated datasets based on a fitted model and refits the model to each generated dataset using the dynr package.

**Usage**

```
IllustrationBootPara(
  fit,
  path,
  prefix,
  taskid,
  B = 1000L,
  ncores = NULL,
  seed = NULL
)
```

**Arguments**

|        |   |
|--------|---|
| fit    | R object. Fitted CT-VAR model.  |
| path   | Path to a directory to store bootstrap samples and estimates.                             |
| prefix | Character string. Prefix used for the file names for the bootstrap samples and estimates. |
| taskid | Positive integer. Task ID.  |
| B      | Positive integer. Number of bootstrap samples.  |
| ncores | Positive integer. Number of cores to use.   |
| seed   | Integer. Random seed.   |

**See Also**

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

**Examples**

```
## Not run:
library(dynr)
sim <- IllustrationGenData(seed = 42)
data <- IllustrationPrepData(sim)
fit <- IllustrationFitDynr(data)
summary(fit)
```

```

IllustrationBootPara(
    fit = fit,
    path = getwd(),
    prefix = "pb",
    taskid = 1,
    B = 1000L,
    seed = 42
)

## End(Not run)

```

---

IllustrationCompress    *Compress Replication (Illustration)*

---

## Description

Compress Replication (Illustration)

## Usage

```
IllustrationCompress(taskid, repid, output_folder)
```

## Arguments

|               |                                   |
|---------------|-----------------------------------|
| taskid        | Positive integer. Task ID.        |
| repid         | Positive integer. Replication ID. |
| output_folder | Character string. Output folder.  |

## Value

The output is saved as an external file in output\_folder.

## Author(s)

Ivan Jacob Agaloos Pesigan

## See Also

Other Compression Functions: [Compress\(\)](#)



---

IllustrationFigPlotEffects

*Plot Total, Direct, and Indirect Effects (Illustration)*


---

**Description**

Effects for the model  $X \rightarrow M \rightarrow Y$ .

**Usage**

```
IllustrationFigPlotEffects(std = FALSE, max_delta_t = 30)
```

**Arguments**

|             |   |
|-------------|---|
| std         | Logical. If std = TRUE, standardized total, direct, and indirect effects. If std = FALSE, unstandardized total, direct, and indirect effects. |
| max_delta_t | Numeric. Maximum time interval.   |

**Author(s)**

Ivan Jacob Agaloos Pesigan

**See Also**

Other Figure Functions: [FigPlotEffects\(\)](#), [FigScatterPlotCoverage\(\)](#), [FigScatterPlotPower\(\)](#), [FigScatterPlotSeBias\(\)](#), [FigScatterPlotType1\(\)](#), [IllustrationFigScatterPlotCoverage\(\)](#), [IllustrationFigScatterPlotPower\(\)](#), [IllustrationFigScatterPlotSeBias\(\)](#)

**Examples**

```
IllustrationFigPlotEffects(std = FALSE)
IllustrationFigPlotEffects(std = TRUE)
```

---

IllustrationFigScatterPlotCoverage

*Illustration Plot Coverage Probabilities*


---

**Description**

Coverage probabilities for the model  $X \rightarrow M \rightarrow Y$ .

**Usage**

```
IllustrationFigScatterPlotCoverage(illustration_results)
```

**Arguments**

`illustration_results`  
Summary results data frame.

**Author(s)**

Ivan Jacob Agaloos Pesigan

**See Also**

Other Figure Functions: [FigPlotEffects\(\)](#), [FigScatterPlotCoverage\(\)](#), [FigScatterPlotPower\(\)](#), [FigScatterPlotSeBias\(\)](#), [FigScatterPlotType1\(\)](#), [IllustrationFigPlotEffects\(\)](#), [IllustrationFigScatterPlotCoverage\(\)](#), [IllustrationFigScatterPlotPower\(\)](#), [IllustrationFigScatterPlotSeBias\(\)](#)

**Examples**

```
data(illustration_results, package = "manCTMed")
IllustrationFigScatterPlotCoverage(illustration_results)
```

---

IllustrationFigScatterPlotPower

*Illustration Plot Statistical Power*

---

**Description**

Statistical Power for the model  $X \rightarrow M \rightarrow Y$ .

**Usage**

```
IllustrationFigScatterPlotPower(illustration_results)
```

**Arguments**

`illustration_results`  
Summary results data frame.

**Author(s)**

Ivan Jacob Agaloos Pesigan

**See Also**

Other Figure Functions: [FigPlotEffects\(\)](#), [FigScatterPlotCoverage\(\)](#), [FigScatterPlotPower\(\)](#), [FigScatterPlotSeBias\(\)](#), [FigScatterPlotType1\(\)](#), [IllustrationFigPlotEffects\(\)](#), [IllustrationFigScatterPlotCoverage\(\)](#), [IllustrationFigScatterPlotPower\(\)](#), [IllustrationFigScatterPlotSeBias\(\)](#)

**Examples**

```
data(illustration_results, package = "manCTMed")
IllustrationFigScatterPlotPower(illustration_results)
```

---

IllustrationFigScatterPlotSeBias

*Illustration Plot Standard Error Bias*

---

**Description**

Standard Error Bias for the model  $X \rightarrow M \rightarrow Y$ .

**Usage**

```
IllustrationFigScatterPlotSeBias(illustration_results)
```

**Arguments**

illustration\_results  
Summary results data frame.

**Author(s)**

Ivan Jacob Agaloos Pesigan

**See Also**

Other Figure Functions: [FigPlotEffects\(\)](#), [FigScatterPlotCoverage\(\)](#), [FigScatterPlotPower\(\)](#),  
[FigScatterPlotSeBias\(\)](#), [FigScatterPlotType1\(\)](#), [IllustrationFigPlotEffects\(\)](#), [IllustrationFigScatterPlotPower\(\)](#)

**Examples**

```
data(illustration_results, package = "manCTMed")
IllustrationFigScatterPlotSeBias(illustration_results)
```

---

|                     |  |
|---------------------|--|
| IllustrationFitDynr | <i>Fit the Model using the dynr Package (Illustration)</i> |
|---------------------|--|

---

**Description**

The function fits the model using the [dynr](#) package.

**Usage**

```
IllustrationFitDynr(data)
```

**Arguments**

|      |  |
|------|--|
| data | R object. Output of the <a href="#">IllustrationPrepData()</a> function. |
|------|--|

**See Also**

Other Model Fitting Functions: [FitDynr\(\)](#), [FitMx\(\)](#), [IllustrationFitMx\(\)](#), [IllustrationMCPhiSigma\(\)](#), [IllustrationPrepData\(\)](#), [PhiHat\(\)](#), [ThetaHat\(\)](#)

**Examples**

```
## Not run:
library(dynr)
sim <- IllustrationGenData(seed = 42)
data <- IllustrationPrepData(sim)
fit <- IllustrationFitDynr(data)
summary(fit)

## End(Not run)
```

---

|                   |  |
|-------------------|--|
| IllustrationFitMx | <i>Fit the Model using the OpenMx Package (Illustration)</i> |
|-------------------|--|

---

**Description**

The function fits the model using the [OpenMx](#) package.

**Usage**

```
IllustrationFitMx(data)
```

**Arguments**

|      |  |
|------|--|
| data | R object. Output of the <a href="#">IllustrationPrepData()</a> function. |
|------|--|

**See Also**

Other Model Fitting Functions: [FitDynr\(\)](#), [FitMx\(\)](#), [IllustrationFitDynr\(\)](#), [IllustrationMCPhiSigma\(\)](#), [IllustrationPrepData\(\)](#), [PhiHat\(\)](#), [ThetaHat\(\)](#)

**Examples**

```
## Not run:
library(OpenMx)
sim <- IllustrationGenData(seed = 42)
data <- IllustrationPrepData(sim)
fit <- IllustrationFitMx(data)
summary(fit)

## End(Not run)
```

---

|                     |                                     |
|---------------------|-------------------------------------|
| IllustrationGenData | <i>Simulate Data (Illustration)</i> |
|---------------------|-------------------------------------|

---

**Description**

The function simulates data using the [simStateSpace::SimSSMOUFixed\(\)](#) function.

**Usage**

```
IllustrationGenData(seed = NULL, n = 133, m = 101, delta_t_gen = 0.1)
```

**Arguments**

|             |   |
|-------------|---|
| seed        | Integer. Random seed.                         |
| n           | Positive integer. Sample size.                |
| m           | Positive integer. Measurement occasions.      |
| delta_t_gen | Numeric. Time interval used to generate data. |

**See Also**

Other Data Generation Functions: [GenData\(\)](#), [RandomMeasurement\(\)](#)

**Examples**

```
## Not run:
sim <- IllustrationGenData(seed = 42)
plot(sim)

## End(Not run)
```

---

**IllustrationMCPhiSigma**

*Generate a Sampling Distribution of Drift Matrices and Process Noise Covariance Matrices (Illustration)*

---

**Description**

The function generates a sampling distribution of drift matrices and process noise covariance matrices using the Monte Carlo method.

**Usage**

```
IllustrationMCPhiSigma(fit, R = 20000L, seed = NULL)
```

**Arguments**

|      |   |
|------|---|
| fit  | R object. Fitted CT-VAR model.                        |
| R    | Positive integer. Number of Monte Carlo replications. |
| seed | Integer. Random seed.                                 |

**See Also**

Other Model Fitting Functions: [FitDynr\(\)](#), [FitMx\(\)](#), [IllustrationFitDynr\(\)](#), [IllustrationFitMx\(\)](#), [IllustrationPrepData\(\)](#), [PhiHat\(\)](#), [ThetaHat\(\)](#)

**Examples**

```
## Not run:
library(dynr)
sim <- IllustrationGenData(seed = 42)
data <- IllustrationPrepData(sim)
fit <- IllustrationFitDynr(data)
IllustrationMCPhiSigma(fit, seed = 42)

## End(Not run)
```

---

**IllustrationPrepData**    *Prepare Data Before Model Fitting (Illustration)*


---

**Description**

The function converts the output of [IllustrationGenData\(\)](#) into a data frame.

**Usage**

```
IllustrationPrepData(sim)
```

**Arguments**

**sim** R object. Output of the `IllustrationGenData()` function.

**See Also**

Other Model Fitting Functions: `FitDynr()`, `FitMx()`, `IllustrationFitDynr()`, `IllustrationFitMx()`, `IllustrationMCPhiSigma()`, `PhiHat()`, `ThetaHat()`

**Examples**

```
## Not run:
sim <- IllustrationGenData(seed = 42)
data <- IllustrationPrepData(sim)
head(data)
dim(data)

## End(Not run)
```

---

|                   |   |
|-------------------|---|
| illustration_dist | <i>Illustration Sampling Distribution</i> |
|-------------------|---|

---

**Description**

Illustration Sampling Distribution

**Usage**

```
data(illustration_dist)
```

**Format**

A matrix with 1000 rows and 27 columns:

**phi\_xx** Elements of the drift matrix.

**sigma\_xx** Elements of the process noise covariance matrix.

**theta\_xx** Elements of the measurement error covariance matrix.

**mu0\_x** Elements of the initial condition mean vector.

**sigma0\_xx** Elements of the initial condition covariance matrix.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

illustration\_dist\_dt    *Illustration Sampling Distribution Discrete Time - Time Interval of 1*

---

### Description

Illustration Sampling Distribution Discrete Time - Time Interval of 1

### Usage

```
data(illustration_dist_dt)
```

### Format

A matrix with 1000 rows and 15 columns:

**beta\_xx** Elements of the matrix of lagged coefficients.

**psi\_xx** Elements of the process noise covariance matrix.

### Author(s)

Ivan Jacob Agaloos Pesigan

---

illustration\_dist\_dt\_mc  
                                   *Illustration Sampling Distribution Discrete Time - Time Interval of 1*  
                                   *(Monte Carlo Method)*

---

### Description

Illustration Sampling Distribution Discrete Time - Time Interval of 1 (Monte Carlo Method)

### Usage

```
data(illustration_dist_dt_mc)
```

### Format

A matrix with 20000 rows and 15 columns:

**beta\_xx** Elements of the matrix of lagged coefficients.

**psi\_xx** Elements of the process noise covariance matrix.

### Author(s)

Ivan Jacob Agaloos Pesigan



---

illustration\_dist\_mc    *Illustration Sampling Distribution (Monte Carlo Method)*

---

**Description**

Illustration Sampling Distribution (Monte Carlo Method)

**Usage**

```
data(illustration_dist_mc)
```

**Format**

A matrix with 20000 rows and 15 columns:

**phi\_xx** Elements of the drift matrix.

**sigma\_xx** Elements of the process noise covariance matrix.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

illustration\_dist\_med    *Illustration Sampling Distribution Total, Direct, and Indirect Effects - Time Interval of 1*

---

**Description**

Illustration Sampling Distribution Total, Direct, and Indirect Effects - Time Interval of 1

**Usage**

```
data(illustration_dist_med)
```

**Format**

A matrix with 1000 rows and 27 columns:

**total** Total effect.

**direct** Direct effect.

**indirect** Indirect effect.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

```
illustration_dist_med_mc
```

*Illustration Sampling Distribution Total, Direct, and Indirect Effects - Time Interval of 1 (Monte Carlo Method)*

---

### Description

Illustration Sampling Distribution Total, Direct, and Indirect Effects - Time Interval of 1 (Monte Carlo Method)

### Usage

```
data(illustration_dist_med_mc)
```

### Format

A matrix with 20000 rows and 27 columns:

**total** Total effect.

**direct** Direct effect.

**indirect** Indirect effect.

### Author(s)

Ivan Jacob Agaloos Pesigan

---

```
illustration_dist_med_std
```

*Illustration Sampling Distribution Standardized Total, Direct, and Indirect Effects - Time Interval of 1*

---

### Description

Illustration Sampling Distribution Standardized Total, Direct, and Indirect Effects - Time Interval of 1

### Usage

```
data(illustration_dist_med_std)
```

### Format

A matrix with 1000 rows and 27 columns:

**total** Total effect.

**direct** Direct effect.

**indirect** Indirect effect.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

illustration\_dist\_med\_std\_mc

*Illustration Sampling Distribution Standardized Total, Direct, and Indirect Effects - Time Interval of 1 (Monte Carlo Method)*

---

**Description**

Illustration Sampling Distribution Standardized Total, Direct, and Indirect Effects - Time Interval of 1 (Monte Carlo Method)

**Usage**

```
data(illustration_dist_med_std_mc)
```

**Format**

A matrix with 20000 rows and 27 columns:

**total** Total effect.

**direct** Direct effect.

**indirect** Indirect effect.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

illustration\_results    *Illustration Small Scale Simulation Results*

---

**Description**

Illustration Small Scale Simulation Results

**Usage**

```
data(illustration_results)
```

**Format**

A with 22 columns:

**taskid** Task ID.

**replications** Number of replications.

**effect** Total, direct, or indirect effect.

**interval** Time interval.

**parameter** Population parameter.

**method** Method used to generate confidence intervals.

**xmy** Logical. TRUE for x to m to y path.

**std** Logical. TRUE for standardized. FALSE for unstandardized.

**est** Mean parameter estimate.

**se** Mean standard error.

**z** Mean  $z$  statistic.

**p** Mean  $p$ -value.

**R** Number of Monte Carlo or bootstrap replications.

**ll** Mean lower limit of the 95% confidence interval.

**ul** Mean upper limit of the 95% confidence interval.

**sig** Proportion of statistically significant results.

**zero\_hit** Proportion of replications where the confidence intervals included zero.

**theta\_hit** Proportion of replications where the confidence intervals included the population parameter.

**sq\_error** Mean squared error.

**se\_bias** Bias in standard error estimate.

**coverage** Coverage probability.

**power** Statistical power.

**Author(s)**

Ivan Jacob Agaloos Pesigan

MCStdXMY

*Monte Carlo Method Confidence Intervals for X-M-Y (Standardized)***Description**

The function generates Monte Carlo method confidence intervals for the mediation model  $X \rightarrow M \rightarrow Y$  (Standardized).

**Usage**

```
MCStdXMY(theta_hat, delta_t = 1:30, R = 20000L, seed = NULL)
```

**Arguments**

|           |  |
|-----------|--|
| theta_hat | R object. Output of the <a href="#">ThetaHat()</a> function. |
| delta_t   | Numeric vector. Vector of time intervals.                    |
| R         | Positive integer. Number of Monte Carlo replications.        |
| seed      | Integer. Random seed.  |

**See Also**

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
theta_hat <- ThetaHat(fit)
ci <- MCStdXMY(theta_hat, seed = 42)
plot(ci)

## End(Not run)
```

MCStdXYM

*Monte Carlo Method Confidence Intervals for X-Y-M (Standardized)***Description**

The function generates Monte Carlo method confidence intervals for the mediation model  $X \rightarrow Y \rightarrow M$  (Standardized).

**Usage**

```
MCStdXYM(theta_hat, delta_t = 1:30, R = 20000L, seed = NULL)
```

**Arguments**

|           |  |
|-----------|--|
| theta_hat | R object. Output of the <a href="#">ThetaHat()</a> function. |
| delta_t   | Numeric vector. Vector of time intervals.                    |
| R         | Positive integer. Number of Monte Carlo replications.        |
| seed      | Integer. Random seed.  |

**See Also**

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
theta_hat <- ThetaHat(fit)
ci <- MCStdXYM(theta_hat, seed = 42)
plot(ci)

## End(Not run)
```

MCStdYMX

*Monte Carlo Method Confidence Intervals for Y-M-X (Standardized)***Description**

The function generates Monte Carlo method confidence intervals for the mediation model  $Y \rightarrow M \rightarrow X$  (Standardized).

**Usage**

```
MCStdYMX(theta_hat, delta_t = 1:30, R = 20000L, seed = NULL)
```

**Arguments**

|           |  |
|-----------|--|
| theta_hat | R object. Output of the <a href="#">ThetaHat()</a> function. |
| delta_t   | Numeric vector. Vector of time intervals.                    |
| R         | Positive integer. Number of Monte Carlo replications.        |
| seed      | Integer. Random seed.  |

**See Also**

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
theta_hat <- ThetaHat(fit)
ci <- MCStdYMX(phi_hat, seed = 42)
plot(ci)

## End(Not run)
```

**Description**

The function generates Monte Carlo method confidence intervals for the mediation model  $X \rightarrow M \rightarrow Y$ .

**Usage**

```
MCXMY(phi_hat, delta_t = 1:30, R = 20000L, seed = NULL)
```

**Arguments**

|         |  |
|---------|--|
| phi_hat | R object. Output of the <a href="#">PhiHat()</a> function. |
| delta_t | Numeric vector. Vector of time intervals.                  |
| R       | Positive integer. Number of Monte Carlo replications.      |
| seed    | Integer. Random seed.                                      |

**See Also**

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXYM\(\)](#), [MCYMX\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
phi_hat <- PhiHat(fit)
ci <- MCXMY(phi_hat, seed = 42)
plot(ci)

## End(Not run)
```



**Description**

The function generates Monte Carlo method confidence intervals for the mediation model  $X \rightarrow Y \rightarrow M$ .

**Usage**

```
MCXYM(phi_hat, delta_t = 1:30, R = 20000L, seed = NULL)
```

**Arguments**

|         |  |
|---------|--|
| phi_hat | R object. Output of the <a href="#">PhiHat()</a> function. |
| delta_t | Numeric vector. Vector of time intervals.                  |
| R       | Positive integer. Number of Monte Carlo replications.      |
| seed    | Integer. Random seed.                                      |

**See Also**

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCYMX\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
phi_hat <- PhiHat(fit)
ci <- MCXYM(phi_hat, seed = 42)
plot(ci)

## End(Not run)
```

MCYMX

*Monte Carlo Method Confidence Intervals for Y-M-X***Description**

The function generates Monte Carlo method confidence intervals for the mediation model  $Y \rightarrow M \rightarrow X$ .

**Usage**

```
MCYMX(phi_hat, delta_t = 1:30, R = 20000L, seed = NULL)
```

**Arguments**

|         |  |
|---------|--|
| phi_hat | R object. Output of the <a href="#">PhiHat()</a> function. |
| delta_t | Numeric vector. Vector of time intervals.                  |
| R       | Positive integer. Number of Monte Carlo replications.      |
| seed    | Integer. Random seed.                                      |

**See Also**

Other Confidence Interval Functions: [BootPara\(\)](#), [BootParaStdXMY\(\)](#), [BootParaStdXYM\(\)](#), [BootParaStdYMX\(\)](#), [BootParaXMY\(\)](#), [BootParaXYM\(\)](#), [BootParaYMX\(\)](#), [DeltaStdXMY\(\)](#), [DeltaStdXYM\(\)](#), [DeltaStdYMX\(\)](#), [DeltaXMY\(\)](#), [DeltaXYM\(\)](#), [DeltaYMX\(\)](#), [IllustrationBootPara\(\)](#), [MCStdXMY\(\)](#), [MCStdXYM\(\)](#), [MCStdYMX\(\)](#), [MCXMY\(\)](#), [MCXYM\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(taskid = 1)
data <- RandomMeasurement(sim)
fit <- FitDynr(data, taskid = 1)
phi_hat <- PhiHat(fit)
ci <- MCYMX(phi_hat, seed = 42)
plot(ci)

## End(Not run)
```

---

|        |                              |
|--------|------------------------------|
| params | <i>Simulation Parameters</i> |
|--------|------------------------------|

---

**Description**

Simulation Parameters

**Usage**

```
data(params)
```

**Format**

A dataframe with 30 rows and 3 columns:

**taskid** Simulation Task ID.

**n** Sample size.

**dynamics** Dynamics. 0 for original drift matrix, -1 for near-neutral dynamics, and 1 for stronger damping.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

|        |                               |
|--------|-------------------------------|
| PhiHat | <i>Estimated Drift Matrix</i> |
|--------|-------------------------------|

---

**Description**

The function extracts the estimated drift matrix from the fitted model.

**Usage**

```
PhiHat(fit)
```

**Arguments**

**fit** R object. Output of the [FitDynr\(\)](#), [FitMx\(\)](#), [IllustrationFitDynr\(\)](#), or [IllustrationFitMx\(\)](#), functions.

**See Also**

Other Model Fitting Functions: [FitDynr\(\)](#), [FitMx\(\)](#), [IllustrationFitDynr\(\)](#), [IllustrationFitMx\(\)](#), [IllustrationMCPhiSigma\(\)](#), [IllustrationPrepData\(\)](#), [ThetaHat\(\)](#)

### Examples

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(n = 50)
data <- RandomMeasurement(sim)
fit <- FitDynr(data)
PhiHat(fit)

## End(Not run)
```

---

|                   |                                    |
|-------------------|------------------------------------|
| RandomMeasurement | <i>Simulate Random Measurement</i> |
|-------------------|------------------------------------|

---

### Description

The function randomly selects 100 observations from the generated data and replaces the unselected observations with NA.

### Usage

```
RandomMeasurement(sim)
```

### Arguments

`sim` R object. Output of the [GenData\(\)](#) function.

### See Also

Other Data Generation Functions: [GenData\(\)](#), [IllustrationGenData\(\)](#)

### Examples

```
## Not run:
set.seed(42)
sim <- GenData(taskid = 1)
RandomMeasurement(sim)

## End(Not run)
```

results

*Simulation Results***Description**

Simulation Results

**Usage**`data(results)`**Format**

A dataframe with 24 columns:

**taskid** Task ID.**replications** Number of replications.**effect** Total, direct, or indirect effect.**interval** Time interval.**dynamics** Dynamics. 0 for original drift matrix, -1 for near-neutral dynamics, and 1 for stronger damping.**parameter** Population parameter.**method** Method used to generate confidence intervals.**xmy** If TRUE, the mediation model is  $X \rightarrow M \rightarrow Y$ . If FALSE, the mediation model is  $Y \rightarrow M \rightarrow X$ .**std** If TRUE, standardized total, direct, and indirect effects. If FALSE, unstandardized total, direct, and indirect effects.**n** Sample size.**est** Mean parameter estimate.**se** Mean standard error.**z** Mean  $z$  statistic.**p** Mean  $p$ -value.**R** Number of Monte Carlo replications.**ll** Mean lower limit of the 95% confidence interval.**ul** Mean upper limit of the 95% confidence interval.**sig** Proportion of statistically significant results.**zero\_hit** Proportion of replications where the confidence intervals contained zero.**theta\_hit** Proportion of replications where the confidence intervals contained the population parameter.**sq\_error** Mean squared error.**se\_bias** Bias in standard error estimate.**coverage** Coverage probability.**power** Statistical power.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

|     |                               |
|-----|-------------------------------|
| Sim | <i>Simulation Replication</i> |
|-----|-------------------------------|

---

**Description**

Simulation Replication

**Usage**

```
Sim(  
  taskid,  
  repid,  
  output_folder,  
  overwrite,  
  integrity,  
  seed,  
  ci,  
  pb,  
  delta_t,  
  R,  
  B  
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |
| seed          | Integer. Random seed.   |
| ci            | Logical. Run simulations for confidence intervals.  |
| pb            | Logical. Run simulations for parametric bootstrap confidence intervals.                   |
| delta_t       | Numeric vector. Vector of time intervals.   |
| R             | Positive integer. Number of Monte Carlo replications.                                     |
| B             | Positive integer. Number of bootstrap samples.  |

**Value**

The output is saved as an external file in output\_folder.

Author(s)

Ivan Jacob Agaloos Pesigan

---

|                 |  |
|-----------------|--|
| SimDynrBootPara | <i>Simulation Replication - BootPara</i> |
|-----------------|--|

---

Description

Simulation Replication - BootPara

Usage

```
SimDynrBootPara(  
  taskid,  
  repid,  
  output_folder,  
  seed,  
  suffix,  
  overwrite,  
  integrity,  
  B,  
  ncores = NULL  
)
```

Arguments

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .   |
| overwrite     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| integrity     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |
| B             | Positive integer. Number of bootstrap samples.  |
| ncores        | Positive integer. Number of cores to use.   |

Details

This function is executed via the `Sim` function.

Value

The output is saved as an external file in `output_folder`.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SimDynrBootParaStdXMY *Simulation Replication - BootParaStdXMY*

---

**Description**

Simulation Replication - BootParaStdXMY

**Usage**

```
SimDynrBootParaStdXMY(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity,
  delta_t
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .   |
| overwrite     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| integrity     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |
| delta_t       | Numeric vector. Vector of time intervals.   |

**Details**

This function is executed via the `Sim` function.

**Value**

The output is saved as an external file in `output_folder`.

**Author(s)**

Ivan Jacob Agaloos Pesigan



---

SimDynrBootParaStdYMX *Simulation Replication - BootParaStdYMX*


---

**Description**

Simulation Replication - BootParaStdYMX

**Usage**

```
SimDynrBootParaStdYMX(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity,
  delta_t
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .   |
| overwrite     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| integrity     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |
| delta_t       | Numeric vector. Vector of time intervals.   |

**Details**

This function is executed via the `Sim` function.

**Value**

The output is saved as an external file in `output_folder`.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SimDynrBootParaXMY      *Simulation Replication - BootParaXMY*

---

## Description

Simulation Replication - BootParaXMY

## Usage

```
SimDynrBootParaXMY(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity,
  delta_t
)
```

## Arguments

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .   |
| overwrite     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| integrity     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |
| delta_t       | Numeric vector. Vector of time intervals.   |

## Details

This function is executed via the `Sim` function.

## Value

The output is saved as an external file in `output_folder`.

## Author(s)

Ivan Jacob Agaloos Pesigan

---

|                    |   |
|--------------------|---|
| SimDynrBootParaYMX | <i>Simulation Replication - BootParaYMX</i> |
|--------------------|---|

---

**Description**

Simulation Replication - BootParaYMX

**Usage**

```
SimDynrBootParaYMX(  
  taskid,  
  repid,  
  output_folder,  
  seed,  
  suffix,  
  overwrite,  
  integrity,  
  delta_t  
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .   |
| overwrite     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| integrity     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |
| delta_t       | Numeric vector. Vector of time intervals.   |

**Details**

This function is executed via the `Sim` function.

**Value**

The output is saved as an external file in `output_folder`.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SimDynrDeltaStdXMY      *Simulation Replication - DynrDeltaStdXMY*

---

### Description

Simulation Replication - DynrDeltaStdXMY

### Usage

```
SimDynrDeltaStdXMY(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity,
  delta_t
)
```

### Arguments

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed::SimSuffix()</code> .  |
| overwrite     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| integrity     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |
| delta_t       | Numeric vector. Vector of time intervals.   |

### Details

This function is executed via the `Sim` function.

### Value

The output is saved as an external file in `output_folder`.

### Author(s)

Ivan Jacob Agaloos Pesigan

---

|                    |   |
|--------------------|---|
| SimDynrDeltaStdYMX | <i>Simulation Replication - DynrDeltaStdYMX</i> |
|--------------------|---|

---

**Description**

Simulation Replication - DynrDeltaStdYMX

**Usage**

```
SimDynrDeltaStdYMX(  
  taskid,  
  repid,  
  output_folder,  
  seed,  
  suffix,  
  overwrite,  
  integrity,  
  delta_t  
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed::SimSuffix()</code> .  |
| overwrite     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| integrity     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |
| delta_t       | Numeric vector. Vector of time intervals.   |

**Details**

This function is executed via the `Sim` function.

**Value**

The output is saved as an external file in `output_folder`.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SimDynrDeltaXMY

*Simulation Replication - DynrDeltaXMY*


---

## Description

Simulation Replication - DynrDeltaXMY

## Usage

```
SimDynrDeltaXMY(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity,
  delta_t
)
```

## Arguments

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .   |
| overwrite     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| integrity     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |
| delta_t       | Numeric vector. Vector of time intervals.   |

## Details

This function is executed via the `Sim` function.

## Value

The output is saved as an external file in `output_folder`.

## Author(s)

Ivan Jacob Agaloos Pesigan

---

SimDynrDeltaYMX*Simulation Replication - DynrDeltaYMX*

---

**Description**

Simulation Replication - DynrDeltaYMX

**Usage**

```
SimDynrDeltaYMX(  
  taskid,  
  repid,  
  output_folder,  
  seed,  
  suffix,  
  overwrite,  
  integrity,  
  delta_t  
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed::SimSuffix()</code> .  |
| overwrite     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| integrity     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |
| delta_t       | Numeric vector. Vector of time intervals.   |

**Details**

This function is executed via the `Sim` function.

**Value**

The output is saved as an external file in `output_folder`.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SimDynrMCStdXMY

*Simulation Replication - DynrMCStdXMY*


---

## Description

Simulation Replication - DynrMCStdXMY

## Usage

```
SimDynrMCStdXMY(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity,
  delta_t,
  R
)
```

## Arguments

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .   |
| overwrite     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| integrity     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |
| delta_t       | Numeric vector. Vector of time intervals.   |
| R             | Positive integer. Number of Monte Carlo replications.   |

## Details

This function is executed via the `Sim` function.

## Value

The output is saved as an external file in `output_folder`.

## Author(s)

Ivan Jacob Agaloos Pesigan



---

SimDynrMCStdYMX

---

*Simulation Replication - DynrMCStdYMX*


---

**Description**

Simulation Replication - DynrMCStdYMX

**Usage**

```
SimDynrMCStdYMX(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity,
  delta_t,
  R
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .   |
| overwrite     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| integrity     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |
| delta_t       | Numeric vector. Vector of time intervals.   |
| R             | Positive integer. Number of Monte Carlo replications.   |

**Details**

This function is executed via the `Sim` function.

**Value**

The output is saved as an external file in `output_folder`.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SimDynrMCXMY

---

*Simulation Replication - DynrMCXMY*


---

## Description

Simulation Replication - DynrMCXMY

## Usage

```
SimDynrMCXMY(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity,
  delta_t,
  R
)
```

## Arguments

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .   |
| overwrite     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| integrity     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |
| delta_t       | Numeric vector. Vector of time intervals.   |
| R             | Positive integer. Number of Monte Carlo replications.   |

## Details

This function is executed via the `Sim` function.

## Value

The output is saved as an external file in `output_folder`.

## Author(s)

Ivan Jacob Agaloos Pesigan

---

SimDynrMCYMX

---

*Simulation Replication - DynrMCYMX*


---

**Description**

Simulation Replication - DynrMCYMX

**Usage**

```
SimDynrMCYMX(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity,
  delta_t,
  R
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .   |
| overwrite     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| integrity     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |
| delta_t       | Numeric vector. Vector of time intervals.   |
| R             | Positive integer. Number of Monte Carlo replications.   |

**Details**

This function is executed via the `Sim` function.

**Value**

The output is saved as an external file in `output_folder`.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

`SimFitDynr`*Simulation Replication - FitDynr*

---

**Description**

Simulation Replication - FitDynr

**Usage**

```
SimFitDynr(taskid, repid, output_folder, seed, suffix, overwrite, integrity)
```

**Arguments**

|                            |   |
|----------------------------|---|
| <code>taskid</code>        | Positive integer. Task ID.  |
| <code>repid</code>         | Positive integer. Replication ID.   |
| <code>output_folder</code> | Character string. Output folder.  |
| <code>seed</code>          | Integer. Random seed.   |
| <code>suffix</code>        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .   |
| <code>overwrite</code>     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| <code>integrity</code>     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |

**Details**

This function is executed via the `Sim` function.

**Value**

The output is saved as an external file in `output_folder`.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

|          |                                       |
|----------|---------------------------------------|
| SimFitMx | <i>Simulation Replication - FitMx</i> |
|----------|---------------------------------------|

---

**Description**

Simulation Replication - FitMx

**Usage**

```
SimFitMx(taskid, repid, output_folder, seed, suffix, overwrite, integrity)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed::SimSuffix()</code> .  |
| overwrite     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| integrity     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |

**Details**

This function is executed via the `Sim` function.

**Value**

The output is saved as an external file in `output_folder`.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

|       |                             |
|-------|-----------------------------|
| SimFN | <i>Simulation File Name</i> |
|-------|-----------------------------|

---

**Description**

Simulation File Name

**Usage**

```
SimFN(output_type, output_folder, suffix)
```

**Arguments**

|               |   |
|---------------|---|
| output_type   | Character string. Output type.                      |
| output_folder | Character string. Output folder.                    |
| suffix        | Character string. Output of manCTMed:::SimSuffix(). |

**Value**

Returns a character string file name with the output\_folder in the OS-specific format.

---

|            |   |
|------------|---|
| SimGenData | <i>Simulation Replication - GenData</i> |
|------------|---|

---

**Description**

Simulation Replication - GenData

**Usage**

```
SimGenData(taskid, repid, output_folder, seed, suffix, overwrite, integrity)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of manCTMed:::SimSuffix().                                       |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Details**

This function is executed via the `Sim` function.

**Value**

The output is saved as an external file in `output_folder`.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

|                 |  |
|-----------------|--|
| SimIllustration | <i>Simulation Replication (Illustration)</i> |
|-----------------|--|

---

**Description**

Simulation Replication (Illustration)

**Usage**

```
SimIllustration(  
  taskid,  
  repid,  
  output_folder,  
  overwrite,  
  integrity,  
  seed,  
  ci,  
  pb,  
  delta_t,  
  R,  
  B  
)
```

**Arguments**

|                            |   |
|----------------------------|---|
| <code>taskid</code>        | Positive integer. Task ID.  |
| <code>repid</code>         | Positive integer. Replication ID.   |
| <code>output_folder</code> | Character string. Output folder.  |
| <code>overwrite</code>     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| <code>integrity</code>     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |
| <code>seed</code>          | Integer. Random seed.   |
| <code>ci</code>            | Logical. Run simulations for confidence intervals.  |
| <code>pb</code>            | Logical. Run simulations for parametric bootstrap confidence intervals.   |

|         |   |
|---------|---|
| delta_t | Numeric vector. Vector of time intervals.             |
| R       | Positive integer. Number of Monte Carlo replications. |
| B       | Positive integer. Number of bootstrap samples.        |

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SimIllustrationDynrBootPara

*Simulation Replication - BootPara*

---

**Description**

Simulation Replication - BootPara

**Usage**

```
SimIllustrationDynrBootPara(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity,
  B,
  ncores = NULL
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .                         |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |
| B             | Positive integer. Number of bootstrap samples.  |
| ncores        | Positive integer. Number of cores to use.   |



**Details**

This function is executed via the IllustrationSim function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

|  |
|--|
| SimIllustrationDynrBootParaStdXMY              |
| <i>Simulation Replication - BootParaStdXMY</i> |

---

**Description**

Simulation Replication - BootParaStdXMY

**Usage**

```
SimIllustrationDynrBootParaStdXMY(  
  taskid,  
  repid,  
  output_folder,  
  seed,  
  suffix,  
  overwrite,  
  integrity,  
  delta_t  
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of manCTMed:::SimSuffix().                                       |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |
| delta_t       | Numeric vector. Vector of time intervals.   |

**Details**

This function is executed via the IllustrationSim function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

|   |
|---|
| SimIllustrationDynrBootParaXMY              |
| <i>Simulation Replication - BootParaXMY</i> |

---

**Description**

Simulation Replication - BootParaXMY

**Usage**

```
SimIllustrationDynrBootParaXMY(  
  taskid,  
  repid,  
  output_folder,  
  seed,  
  suffix,  
  overwrite,  
  integrity,  
  delta_t  
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of manCTMed:::SimSuffix().                                       |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |
| delta_t       | Numeric vector. Vector of time intervals.   |

**Details**

This function is executed via the `IllustrationSim` function.

**Value**

The output is saved as an external file in `output_folder`.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

`SimIllustrationDynrDeltaStdXMY`*Simulation Replication - Illustration (DynrDeltaStdXMY)*

---

**Description**

Simulation Replication - Illustration (DynrDeltaStdXMY)

**Usage**

```
SimIllustrationDynrDeltaStdXMY(  
  taskid,  
  repid,  
  output_folder,  
  seed,  
  suffix,  
  overwrite,  
  integrity,  
  delta_t  
)
```

**Arguments**

|                            |   |
|----------------------------|---|
| <code>taskid</code>        | Positive integer. Task ID.  |
| <code>repid</code>         | Positive integer. Replication ID.   |
| <code>output_folder</code> | Character string. Output folder.  |
| <code>seed</code>          | Integer. Random seed.   |
| <code>suffix</code>        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .   |
| <code>overwrite</code>     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| <code>integrity</code>     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |
| <code>delta_t</code>       | Numeric vector. Vector of time intervals.   |

**Details**

This function is executed via the IllustrationSim function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SimIllustrationDynrDeltaXMY

*Simulation Replication - Illustration (DynrDeltaXMY)*

---

**Description**

Simulation Replication - Illustration (DynrDeltaXMY)

**Usage**

```
SimIllustrationDynrDeltaXMY(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity,
  delta_t
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of manCTMed:::SimSuffix().                                       |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |
| delta_t       | Numeric vector. Vector of time intervals.   |

**Details**

This function is executed via the IllustrationSim function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

|   |
|---|
| SimIllustrationDynrMCPhiSigma                             |
| <i>Simulation Replication - Illustration (MCPhiSigma)</i> |

---

**Description**

Simulation Replication - Illustration (MCPhiSigma)

**Usage**

```
SimIllustrationDynrMCPhiSigma(  
  taskid,  
  repid,  
  output_folder,  
  seed,  
  suffix,  
  overwrite,  
  integrity,  
  R  
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of manCTMed:::SimSuffix().                                       |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |
| R             | Positive integer. Number of Monte Carlo replications.                                     |

**Details**

This function is executed via the IllustrationSim function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SimIllustrationDynrMCStdXMY

*Simulation Replication - Illustration (DynrMCStdXMY)*

---

**Description**

Simulation Replication - Illustration (DynrMCStdXMY)

**Usage**

```
SimIllustrationDynrMCStdXMY(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity,
  delta_t,
  R
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of manCTMed:::SimSuffix().                                       |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |
| delta_t       | Numeric vector. Vector of time intervals.   |
| R             | Positive integer. Number of Monte Carlo replications.                                     |

**Details**

This function is executed via the IllustrationSim function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SimIllustrationDynrMCXMY

*Simulation Replication - Illustration (DynrMCXMY)*

---

**Description**

Simulation Replication - Illustration (DynrMCXMY)

**Usage**

```
SimIllustrationDynrMCXMY(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity,
  delta_t,
  R
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of manCTMed:::SimSuffix().                                       |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |
| delta_t       | Numeric vector. Vector of time intervals.   |
| R             | Positive integer. Number of Monte Carlo replications.                                     |

**Details**

This function is executed via the `IllustrationSim` function.

**Value**

The output is saved as an external file in `output_folder`.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

`SimIllustrationFitDynr`

*Simulation Replication - IllustrationFitDynr*

---

**Description**

Simulation Replication - IllustrationFitDynr

**Usage**

```
SimIllustrationFitDynr(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity
)
```

**Arguments**

|                            |   |
|----------------------------|---|
| <code>taskid</code>        | Positive integer. Task ID.  |
| <code>repid</code>         | Positive integer. Replication ID.   |
| <code>output_folder</code> | Character string. Output folder.  |
| <code>seed</code>          | Integer. Random seed.   |
| <code>suffix</code>        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .   |
| <code>overwrite</code>     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| <code>integrity</code>     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |

**Details**

This function is executed via the `IllustrationSim` function.



**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SimIllustrationFitMx    *Simulation Replication - IllustrationFitMx*

---

**Description**

Simulation Replication - IllustrationFitMx

**Usage**

```
SimIllustrationFitMx(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .                         |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Details**

This function is executed via the `IllustrationSim` function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SimIllustrationGenData

*Simulation Replication - IllustrationGenData*

---

**Description**

Simulation Replication - IllustrationGenData

**Usage**

```
SimIllustrationGenData(
  taskid,
  repid,
  output_folder,
  seed,
  suffix,
  overwrite,
  integrity
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| seed          | Integer. Random seed.   |
| suffix        | Character string. Output of <code>manCTMed:::SimSuffix()</code> .   |
| overwrite     | Logical. Overwrite existing output in <code>output_folder</code> .  |
| integrity     | Logical. If <code>integrity = TRUE</code> , check for the output file integrity when <code>overwrite = FALSE</code> . |

**Details**

This function is executed via the `IllustrationSim` function.

**Value**

The output is saved as an external file in `output_folder`.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

|                     |   |
|---------------------|---|
| SimIllustrationPara | <i>Simulation Replication Parametric Bootstrap (Parallel)</i> |
|---------------------|---|

---

**Description**

Simulation Replication Parametric Bootstrap (Parallel)

**Usage**

```
SimIllustrationPara(  
  taskid,  
  repid,  
  output_folder,  
  overwrite,  
  integrity,  
  seed,  
  B  
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |
| seed          | Integer. Random seed.   |
| B             | Positive integer. Number of bootstrap samples.  |

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SimPara

*Simulation Replication Parametric Bootstrap (Parallel)*


---

**Description**

Simulation Replication Parametric Bootstrap (Parallel)

**Usage**

SimPara(taskid, repid, output\_folder, overwrite, integrity, seed, B)

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| repid         | Positive integer. Replication ID.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |
| seed          | Integer. Random seed.   |
| B             | Positive integer. Number of bootstrap samples.  |

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SimProj

*Simulation Project Name*


---

**Description**

Simulation Project Name

**Usage**

SimProj()

**Value**

Returns the project name as a character string.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

|     |                |
|-----|----------------|
| Sum | <i>Summary</i> |
|-----|----------------|

---

**Description**

Summary

**Usage**

Sum(taskid, reps, output\_folder, overwrite, integrity)

**Arguments**

- |               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

|                    |                                  |
|--------------------|----------------------------------|
| SumDynrDeltaStdXMY | <i>Summary (DynrDeltaStdXMY)</i> |
|--------------------|----------------------------------|

---

**Description**

Summary (DynrDeltaStdXMY)

**Usage**

SumDynrDeltaStdXMY(taskid, reps, output\_folder, overwrite, integrity)

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Details**

This function is executed via the Sum function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

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|                    |                                  |
|--------------------|----------------------------------|
| SumDynrDeltaStdYMX | <i>Summary (DynrDeltaStdYMX)</i> |
|--------------------|----------------------------------|

---

**Description**

Summary (DynrDeltaStdYMX)

**Usage**

SumDynrDeltaStdYMX(taskid, reps, output\_folder, overwrite, integrity)

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Details**

This function is executed via the Sum function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

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|                 |                               |
|-----------------|-------------------------------|
| SumDynrDeltaXMY | <i>Summary (DynrDeltaXMY)</i> |
|-----------------|-------------------------------|

---

**Description**

Summary (DynrDeltaXMY)

**Usage**

SumDynrDeltaXMY(taskid, reps, output\_folder, overwrite, integrity)

**Arguments**

- |               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Details**

This function is executed via the Sum function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

|                 |                               |
|-----------------|-------------------------------|
| SumDynrDeltaYMX | <i>Summary (DynrDeltaYMX)</i> |
|-----------------|-------------------------------|

---

**Description**

Summary (DynrDeltaYMX)

**Usage**

SumDynrDeltaYMX(taskid, reps, output\_folder, overwrite, integrity)

**Arguments**

- taskid            Positive integer. Task ID.
- reps             Positive integer. Number of replications.
- output\_folder   Character string. Output folder.
- overwrite       Logical. Overwrite existing output in output\_folder.
- integrity       Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE.

**Details**

This function is executed via the Sum function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

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|                 |                               |
|-----------------|-------------------------------|
| SumDynrMCStdXMY | <i>Summary (DynrMCStdXMY)</i> |
|-----------------|-------------------------------|

---

**Description**

Summary (DynrMCStdXMY)

**Usage**

SumDynrMCStdXMY(taskid, reps, output\_folder, overwrite, integrity)



**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Details**

This function is executed via the Sum function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

|                 |                               |
|-----------------|-------------------------------|
| SumDynrMCStdYMX | <i>Summary (DynrMCStdYMX)</i> |
|-----------------|-------------------------------|

---

**Description**

Summary (DynrMCStdYMX)

**Usage**

SumDynrMCStdYMX(taskid, reps, output\_folder, overwrite, integrity)

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Details**

This function is executed via the Sum function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

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|              |                            |
|--------------|----------------------------|
| SumDynrMCXMY | <i>Summary (DynrMCXMY)</i> |
|--------------|----------------------------|

---

**Description**

Summary (DynrMCXMY)

**Usage**

SumDynrMCXMY(taskid, reps, output\_folder, overwrite, integrity)

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Details**

This function is executed via the Sum function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

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|              |                            |
|--------------|----------------------------|
| SumDynrMCYMX | <i>Summary (DynrMCYMX)</i> |
|--------------|----------------------------|

---

**Description**

Summary (DynrMCYMX)

**Usage**

SumDynrMCYMX(taskid, reps, output\_folder, overwrite, integrity)

**Arguments**

- taskid            Positive integer. Task ID.
- reps             Positive integer. Number of replications.
- output\_folder   Character string. Output folder.
- overwrite       Logical. Overwrite existing output in output\_folder.
- integrity       Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE.

**Details**

This function is executed via the Sum function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

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|            |                          |
|------------|--------------------------|
| SumFitDynr | <i>Summary (FitDynr)</i> |
|------------|--------------------------|

---

**Description**

Summary (FitDynr)

**Usage**

SumFitDynr(taskid, reps, output\_folder, overwrite, integrity)

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Details**

This function is executed via the Sum function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

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|                 |                               |
|-----------------|-------------------------------|
| SumIllustration | <i>Summary (Illustration)</i> |
|-----------------|-------------------------------|

---

**Description**

Summary (Illustration)

**Usage**

SumIllustration(taskid, reps, output\_folder, overwrite, integrity)

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

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|  |
|--|
| SumIllustrationDynrBootParaStdXMY                  |
| <i>Summary - Illustration (DynrBootParaStdXMY)</i> |

---

**Description**

Summary - Illustration (DynrBootParaStdXMY)

**Usage**

```
SumIllustrationDynrBootParaStdXMY(  
    taskid,  
    reps,  
    output_folder,  
    overwrite,  
    integrity,  
    type = "pc"  
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |
| type          | Character string. Confidence interval type.   |

**Details**

This function is executed via the IllustrationSum function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SumIllustrationDynrBootParaXMY

*Summary - Illustration (DynrBootParaXMY)*


---

## Description

Summary - Illustration (DynrBootParaXMY)

## Usage

```
SumIllustrationDynrBootParaXMY(
  taskid,
  reps,
  output_folder,
  overwrite,
  integrity,
  type = "pc"
)
```

## Arguments

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |
| type          | Character string. Confidence interval type.   |

## Details

This function is executed via the IllustrationSum function.

## Value

The output is saved as an external file in output\_folder.

## Author(s)

Ivan Jacob Agaloos Pesigan

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|   |
|---|
| SumIllustrationDynrDeltaStdXMY                  |
| <i>Summary - Illustration (DynrDeltaStdXMY)</i> |

---

**Description**

Summary - Illustration (DynrDeltaStdXMY)

**Usage**

```
SumIllustrationDynrDeltaStdXMY(  
    taskid,  
    reps,  
    output_folder,  
    overwrite,  
    integrity  
)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Details**

This function is executed via the IllustrationSum function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

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|  |
|--|
| SumIllustrationDynrDeltaXMY                  |
| <i>Summary - Illustration (DynrDeltaXMY)</i> |

---

**Description**

Summary - Illustration (DynrDeltaXMY)

**Usage**

SumIllustrationDynrDeltaXMY(taskid, reps, output\_folder, overwrite, integrity)

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Details**

This function is executed via the IllustrationSum function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

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|  |
|--|
| SumIllustrationDynrMCStdXMY                  |
| <i>Summary - Illustration (DynrMCStdXMY)</i> |

---

**Description**

Summary - Illustration (DynrMCStdXMY)

**Usage**

SumIllustrationDynrMCStdXMY(taskid, reps, output\_folder, overwrite, integrity)



**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Details**

This function is executed via the IllustrationSum function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

SumIllustrationDynrMCXMY

*Summary - Illustration (DynrMCXMY)*

---

**Description**

Summary - Illustration (DynrMCXMY)

**Usage**

```
SumIllustrationDynrMCXMY(taskid, reps, output_folder, overwrite, integrity)
```

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Details**

This function is executed via the IllustrationSum function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

|   |
|---|
| SumIllustrationFitDynr                  |
| <i>Summary - Illustration (FitDynr)</i> |

---

**Description**

Summary - Illustration (FitDynr)

**Usage**

SumIllustrationFitDynr(taskid, reps, output\_folder, overwrite, integrity)

**Arguments**

|               |   |
|---------------|---|
| taskid        | Positive integer. Task ID.  |
| reps          | Positive integer. Number of replications.   |
| output_folder | Character string. Output folder.  |
| overwrite     | Logical. Overwrite existing output in output_folder.                                      |
| integrity     | Logical. If integrity = TRUE, check for the output file integrity when overwrite = FALSE. |

**Details**

This function is executed via the IllustrationSum function.

**Value**

The output is saved as an external file in output\_folder.

**Author(s)**

Ivan Jacob Agaloos Pesigan

---

ThetaHat

---

*Estimated Drift Matrix and Process Noise***Description**

The function extracts the estimated drift matrix and process noise from the fitted model.

**Usage**

```
ThetaHat(fit)
```

**Arguments**

`fit` R object. Output of the [FitDynr\(\)](#), [FitMx\(\)](#), [IllustrationFitDynr\(\)](#), or [IllustrationFitMx\(\)](#), functions.

**See Also**

Other Model Fitting Functions: [FitDynr\(\)](#), [FitMx\(\)](#), [IllustrationFitDynr\(\)](#), [IllustrationFitMx\(\)](#), [IllustrationMCPhiSigma\(\)](#), [IllustrationPrepData\(\)](#), [PhiHat\(\)](#)

**Examples**

```
## Not run:
set.seed(42)
library(dynr)
sim <- GenData(n = 50)
data <- RandomMeasurement(sim)
fit <- FitDynr(data)
ThetaHat(fit)

## End(Not run)
```

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