

# Package ‘ChangePointTaylor’

June 9, 2020

**Type** Package

**Title** Identify Changes in Mean

**Version** 0.1.0

**Date** 2020-05-27

**Maintainer** Michael Marks <michaelmarks@analyticaconsulting.com>

**Description** A basic implementation of the change in mean detection method outlined in: Taylor, Wayne A. (2000) <<https://variation.com/wp-content/uploads/change-point-analyzer/change-point-analysis-a-powerful-new-tool-for-detecting-changes.pdf>>. The package recursively uses the mean-squared error change point calculation to identify candidate change points. The candidate change points are then re-estimated and Taylor's backwards elimination process is then employed to come up with a final set of change points. Many of the underlying functions are written in C++ for improved performance.

**License** GPL (>= 2)

**Imports** Rcpp (>= 1.0.4), dplyr, purrr, tidyr, magrittr, bench, rlang, ggplot2

**LinkingTo** Rcpp

**LazyData** true

**RoxygenNote** 7.1.0

**Suggests** knitr

**VignetteBuilder** knitr

**Encoding** UTF-8

**NeedsCompilation** yes

**Author** Michael Marks [aut, cre]

**Depends** R (>= 3.5.0)

**Repository** CRAN

**Date/Publication** 2020-06-09 09:40:06 UTC

**R topics documented:**

ChangePointAnalyzer-package . . . . .	2
change_point_analyzer . . . . .	3
US_Trade_Deficit . . . . .	4

<b>Index</b>	<b>5</b>
--------------	----------

---

ChangePointAnalyzer-package

*A short title line describing what the package does*

---

**Description**

A more detailed description of what the package does. A length of about one to five lines is recommended.

**Details**

This section should provide a more detailed overview of how to use the package, including the most important functions.

**Author(s)**

Your Name, email optional.

Maintainer: Your Name <your@email.com>

**References**

This optional section can contain literature or other references for background information.

**See Also**

Optional links to other man pages

**Examples**

```
## Not run:
## Optional simple examples of the most important functions
## These can be in \dontrun{} and \donttest{} blocks.

## End(Not run)
```

---

`change_point_analyzer change_point_analyzer`

---

## Description

a simple implementation of the change in mean detection [methods](#) developed by Wayne Taylor and utilized in his [Change Point Analyzer](#) software. The package recursively uses the 'MSE' change point calculation to identify candidate change points. Taylor's backwards elimination process is then employed to come up with a final set of change points.

## Usage

```
change_point_analyzer(  
  x,  
  labels = NA,  
  n_bootstraps = 1000,  
  min_candidate_conf = 0.5,  
  min_tbl_conf = 0.9,  
  CI = 0.95  
)
```

## Arguments

<code>x</code>	a numeric vector
<code>labels</code>	a vector the same length as <code>x</code> . Will generate labels for the change points in the output dataframe.
<code>n_bootstraps</code>	an integer value. Determines the number of bootstraps when calculating the change confidence level.
<code>min_candidate_conf</code>	a value between 0 and 1. The minimum change confidence level to become a candidate change point before re-estimation and backwards elimination.
<code>min_tbl_conf</code>	a value between 0 and 1. The minimum change confidence level below which a candidate change point will be eliminated after re-estimation and backwards elimination.
<code>CI</code>	a value between 0 and 1. The value of the confidence interval.

## Value

a dataframe containing the change points, their confidence levels, and other relevant information

## References

[Taylor, W. A. \(2000\). Change-point analysis: a powerful new tool for detecting changes.](#)

**Examples**

```
x <- US_Trade_Deficit$deficit_billions
label_vals <- US_Trade_Deficit$date

change_point_analyzer(x)

change_point_analyzer(x, label = label_vals)

change_point_analyzer(x, label = label_vals, n_bootstraps = 10000)

change_point_analyzer(x, label = label_vals, min_candidate_conf = 0.66, min_tbl_conf = 0.95)
```

---

US\_Trade\_Deficit      *US Trade Deficit Data: 1987-1988.*

---

**Description**

A replication of the US Trade Deficit data used in [Taylor's manuscript](#).

**Usage**

```
US_Trade_Deficit
```

**Format**

A data frame with 24 rows and 2 variables:

**date** observation month

**deficit\_billions** US trade deficit in billions of dollars ...

# Index

\*Topic **datasets**

US\_Trade\_Deficit, [4](#)

\*Topic **package**

ChangePointAnalyzer-package, [2](#)

change\_point\_analyzer, [3](#)

ChangePointAnalyzer

(ChangePointAnalyzer-package),

[2](#)

ChangePointAnalyzer-package, [2](#)

US\_Trade\_Deficit, [4](#)