Vignette for Package simplin

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Introduction

simplin provides a function for fast simple linear regression. The package includes two functions sim_lin_R and sim_lin. sim_lin is written in Rcpp and intakes two numeric vectors and outputs, in a list, point estimates, standard errors, and 95% confidence intervals for the regression parameters β_0 and β_1 as well as the predicted values ($\hat{\mathbf{y}}$) and residuals ($\mathbf{e_i} = \mathbf{y} - \hat{\mathbf{y}}$). sim_lin_R is an R function that checks if input vectors are numeric and of the same length before calling sim_lin.

Implementation

```
### Load package
library(simplin)

### Simulate Data
x = rnorm(10)
y = x + rnorm(10)

### Fit Simple Linear Regression Model
output <- simp_lin_R(x,y)

### Point Estimates
output[[1]]
```

```
## [1] 0.5760456 0.5119699
```

```
### Standard Errors
output[[2]]
```

```
## [1] 0.2277399 0.3180897
```

```
### 95% Confidence Intervals
### Column 1 => beta_0, Column 2 => beta_1
output[[3]]
```

```
##              [,1]       [,2]
## [1,] 0.05087643 -0.2215462
## [2,] 1.10121474  1.2454860
```

Predicted Values
```
output[[4]]
```

```
##  [1]  1.0574301  0.8371018  0.9152769  0.4952731  0.5023635  0.1926317
##  [7]  0.8321930 -0.1615448  0.5469731  0.9750177
```

Residuals
```
output[[5]]
```

```
##  [1]  0.60392480  0.26163573 -0.88710756  0.66297866  0.38379676  0.01164909
##  [7]  0.60199759  0.04182620 -1.34428095 -0.33642031
```