Vignette for Package simplin

Justin Van Ee

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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, order beta_0, beta_1
output$Point.Estimates
```

```
## [1] 0.3343438 1.1026015
```

```
### Standard Errors
output$Standard.Error
```

```
## [1] 0.4133904 0.3296232
```

```
### 95% Confidence Intervals
output$`CI_95%s`
```

```
##           Intercept     Slope
## 0.025 % -0.6189362 0.3424891
## 97.5 %   1.2876239 1.8627139
```

```
### Predicted Values
output$Predictions
```

```
##  [1]  1.93891328  0.42876694 -1.05347600 -0.62526062 -1.75722756 -0.54088914
##  [7]  0.90497634 -1.22474916 -2.04692408 -0.01715307
```

```
### Residuals
output$Residuals
```

```
##  [1] -0.5457174  0.1664330 -0.2507015  1.3585827 -1.7636804  1.2874275
##  [7] -1.1255906  0.8852092 -0.6265991  0.6146366
```