

# Package ‘SLOS’

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**Type** Package

**Title** ICU Length of Stay Prediction and Efficiency Evaluation

**Version** 1.0.1

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**Description** Provides tools for predicting ICU length of stay and assessing ICU efficiency.

It is based on the methodologies proposed by Peres et al. (2022, 2023), which utilize data-driven approaches for modeling and validation, offering insights into ICU performance and patient outcomes. References: Peres et al. (2022)<<https://pubmed.ncbi.nlm.nih.gov/35988701/>>, Peres et al. (2023)<<https://pubmed.ncbi.nlm.nih.gov/37922007/>>.

More information: <<https://github.com/igor-peres/ICU-Length-of-Stay-Prediction>>.

**License** MIT + file LICENSE

**Encoding** UTF-8

**Imports** htrr, MLmetrics, ems, dplyr, ggplot2, magrittr, caretEnsemble,  
ranger

**Suggests** testthat

**RoxygenNote** 7.3.2

**NeedsCompilation** no

**Depends** R (>= 3.5.0)

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**Repository** CRAN

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load\_SLOSModel      *Load the SLOS model*

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**Description**

This function loads the pre-trained model from the package. It's available on GitHub

**Usage**

```
load_SLOSModel()
```

**Value**

The SLOS model

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predict\_and\_evaluate      *Predict using the SLOS model*

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**Description**

This function makes predictions using the pre-trained SLOS model and evaluates it based on RMSE, MAE, and R2 values.

**Usage**

```
predict_and_evaluate(data)
```

**Arguments**

data      A data frame or matrix of new data for prediction.

**Value**

A list containing the predictions made on the input data, a data frame combining the observed values and predictions side by side, and the RMSE, MAE, and R2.

**Examples**

```
# Load example data
data(SampledData)

# Make predictions and evaluate
results <- predict_and_evaluate(sampled_data)

# View results
print(results$RMSE)
print(results$MAE)
print(results$R2)
```

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sampled_data	<i>Sampled Data</i>
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**Description**

An anonymized dataset with 1000 entries used for testing the SLOS prediction model.

**Usage**

```
data(SampledData)
```

**Format**

An object of class "data.frame"

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SLOS	<i>SLOS function</i>
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**Description**

This function is the core of the SLOS package. It generates the prediction for each unit, a funnel plot for the SLOS analysis and a plot comparing observed vs predicted SLOS. To access the funnel plot, run `ems::plot(result$funnel_plot)`.

**Usage**

```
SLOS(data)
```

**Arguments**

data                    Data frame or matrix containing testing data

**Value**

Displays the funnel plot, returns the comparing plot as a ggplot object and the SLOS table.

**Examples**

```
# Load example data
data(SampledData)

# Call the SLOS function on your data
result <- SLOS(sampled_data)

# Access the comparison plot
result$plot_SLOS_obv_prev
```

```
# Access the predictions for each unit  
result$df_unit_slos
```

```
# The funnel plot will be displayed automatically, and you can access it again by calling  
plot(result$funnel_plot)
```

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\* **datasets**

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