Package 'pridit'

July 11, 2025

Type Package

Title Principal Component Analysis Applied to Ridit Scoring

Version 1.0-4

Maintainer Robert D. Lieberthal <rlieberthal@gmail.com>

Description Implements the 'PRIDIT' (Principal Component Analysis applied to
'RIDITs') scoring system described in Brockett et al. (2002)
<doi:10.1111/1539-6975.00027>. Provides functions for ridit scoring
originally developed by Bross (1958) <doi:10.2307/2527727>, calculating
'PRIDIT' weights, and computing final 'PRIDIT' scores for multivariate
analysis of ordinal data.

License Apache License (>= 2)

URL https://github.com/rlieberthal/PRIDIT

BugReports https://github.com/rlieberthal/PRIDIT/issues

Encoding UTF-8

LazyData true

Depends R (>= 4.0.0)

Suggests testthat (>= 3.0.0)

NeedsCompilation no

RoxygenNote 7.3.2

Author Robert D. Lieberthal [aut, cre]

Repository CRAN

Date/Publication 2025-07-11 13:00:02 UTC

Contents

---

pridit   *pridit: Principal Component Analysis Applied to Ridit Scoring*

Description

The pridit package provides functions for implementing the PRIDIT (Principal Component Analysis applied to RIDITs) scoring system.

Author(s)

Maintainer: Robert D. Lieberthal <rlieberthal@gmail.com>

See Also

Useful links:

- <https://github.com/rlieberthal/PRIDIT>
- Report bugs at <https://github.com/rlieberthal/PRIDIT/issues>

PRIDITscore   *Calculate the PRIDIT scores for a ridit matrix*

Description

This function takes ridit scores and PRIDIT weights to calculate final PRIDIT scores for each observation.

Usage

```
PRIDITscore(riditscores, id_vector, weightvec)
```

Arguments

riditscores	A data frame where the first column represents IDs. The IDs uniquely identify each row in the matrix. The remaining columns contain the ridit scores for each ID.
id_vector	A vector of IDs corresponding to the observations.
weightvec	A numeric vector of PRIDIT weights (from PRIDITweight function).

Value

A data frame with two columns: "Claim.ID" containing the IDs and "PRIDITscore" containing the calculated PRIDIT scores (ranging from -1 to 1).

References

Brockett, P. L., Derrig, R. A., Golden, L. L., Levine, A., & Alpert, M. (2002). Fraud classification using principal component analysis of RIDITs. Journal of Risk and Insurance, 69(3), 341-371.

Examples

```
# Complete workflow example
test_data <- data.frame(
  ID = c("A", "B", "C", "D", "E"),
  var1 = c(0.9, 0.85, 0.89, 1.0, 0.89),
  var2 = c(0.99, 0.92, 0.90, 1.0, 0.93),
  var3 = c(1.0, 0.99, 0.98, 1.0, 0.99)
)

# Step 1: Calculate ridit scores
ridit_result <- ridit(test_data)

# Step 2: Calculate PRIDIT weights
weights <- PRIDITweight(ridit_result)

# Step 3: Calculate final PRIDIT scores
final_scores <- PRIDITscore(ridit_result, test_data$ID, weights)
print(final_scores)
```

PRIDITweight	*Calculate the PRIDIT weights for a ridit matrix*

Description

This function takes a ridit-scored matrix and returns PRIDIT weights for each variable as a vector using Principal Component Analysis.

Usage

```
PRIDITweight(riditscores)
```

Arguments

riditscores   A data frame where the first column represents IDs. The IDs uniquely identify each row in the matrix. The remaining columns contain the ridit scores for each ID.

Value

A numeric vector containing PRIDIT weights for each variable.

References

Brockett, P. L., Derrig, R. A., Golden, L. L., Levine, A., & Alpert, M. (2002). Fraud classification using principal component analysis of RIDITs. Journal of Risk and Insurance, 69(3), 341-371.

Examples

```
# Create sample data and calculate ridit scores first
test_data <- data.frame(
  ID = c("A", "B", "C", "D", "E"),
  var1 = c(0.9, 0.85, 0.89, 1.0, 0.89),
  var2 = c(0.99, 0.92, 0.90, 1.0, 0.93),
  var3 = c(1.0, 0.99, 0.98, 1.0, 0.99)
)

# First calculate ridit scores
ridit_result <- ridit(test_data)

# Then calculate PRIDIT weights
weights <- PRIDITweight(ridit_result)
print(weights)
```

---

ridit   *Calculate the ridit values for a matrix*

Description

This function takes a matrix of data and returns the matrix transformed as ridit values using the method developed by Bross (1958) and modified by Brockett et al. (2002).

Usage

```
ridit(allrawdata)
```

Arguments

allrawdata   A data frame where the first column represents IDs. The IDs uniquely identify each row in the matrix. The remaining columns contain the numerical data for each ID.

Value

A data frame with the first column containing IDs (named "Claim.ID") and the remaining columns containing ridit scores for each variable.

References

Bross, I. D. (1958). How to use ridit analysis. Biometrics, 14(1), 18-38. doi:10.2307/2527727

Brockett, P. L., Derrig, R. A., Golden, L. L., Levine, A., & Alpert, M. (2002). Fraud classification using principal component analysis of RIDITs. Journal of Risk and Insurance, 69(3), 341-371. doi:10.1111/15396975.00027

Examples

```
# Create sample data
test_data <- data.frame(
  ID = c("A", "B", "C", "D", "E"),
  var1 = c(0.9, 0.85, 0.89, 1.0, 0.89),
  var2 = c(0.99, 0.92, 0.90, 1.0, 0.93),
  var3 = c(1.0, 0.99, 0.98, 1.0, 0.99)
)

# Calculate ridit scores
ridit_result <- ridit(test_data)
print(ridit_result)
```

---

test *Test dataset for PRIDIT analysis*

Description

A sample dataset containing health quality metrics for 5 healthcare providers, used to demonstrate the PRIDIT scoring methodology.

Usage

```
test
```

Format

A data frame with 5 rows and 4 variables:

ID Character. Unique identifier for each healthcare provider (A through E)

Smoking_cessation Numeric. Smoking cessation counseling rate (0.85-1.0)

ACE_Inhibitor Numeric. ACE inhibitor prescription rate (0.90-1.0)

Proper_Antibiotic Numeric. Proper antibiotic usage rate (0.98-1.0)

Source

Synthetic data created for package examples

Examples

```
data(test)
head(test)

# Calculate PRIDIT scores
ridit_scores <- ridit(test)
weights <- PRIDITweight(ridit_scores)
final_scores <- PRIDITscore(ridit_scores, test$ID, weights)
```

Index