

# Package ‘SurveyDefense’

September 11, 2024

**Type** Package

**Title** Survey Defense Tool

**Version** 0.2.0

**Description**

This tool is designed to analyze up to 5 Fraud Detection Questions integrated into a survey, focusing on potential fraudulent participants to clean the survey dataset from potential fraud. Fraud Detection Questions and further information available at <https://surveydefense.org>.

**License** GPL-3

**Encoding** UTF-8

**Depends** R (>= 3.5.0)

**Imports** dplyr, flextable, utils

**Suggests** officer

**RoxygenNote** 7.3.2

**NeedsCompilation** no

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**Repository** CRAN

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## Description

This function analyzes survey data based on up to 5 Fraud Detection Questions and generates results in Word and HTML formats.

## Usage

```
FraudDetec1(  
  output_dir,  
  data,  
  FraudList,  
  correct_answers = c(0, 0, 0, 0, 0),  
  ...  
)
```

## Arguments

<code>output_dir</code>	Path specifying where the Word and HTML files will be saved.
<code>data</code>	The data frame containing all the survey data.
<code>FraudList</code>	A character vector of up to 5 Fraud Detection Questions.
<code>correct_answers</code>	A numeric vector representing correct answers for each question. Default is <code>c(0, 0, 0, 0, 0)</code> .
<code>...</code>	Survey questions to be analyzed.

## Value

A flextable object with the fraud detection analysis results. The results include summary statistics and metrics comparing responses from reliable and fraudulent participants.

## Examples

```
if (requireNamespace("flextable", quietly = TRUE) && requireNamespace("officer", quietly = TRUE)) {  
  library(flextable)  
  library(officer)  
  
  # Example data for fraud detection analysis  
  Q1 <- c(4, 5, 3, 2, 5, 2)  
  Q2 <- c(3, 4, 2, 5, 4, 3)  
  Q3 <- c(5, 4, 3, 5, 4, 5)  
  Q4 <- c(1, 2, 3, 4, 5, 2)  
  Q5 <- c(5, 2, 2, 1, 4, 1)  
  Q6 <- c(5, 2, 3, 5, 1, 2)  
  Q7 <- c(5, 2, 4, 5, 3, 4)
```

```
Fraud1 <- c(0, 1, 0, 0, 0, 0)
Fraud2 <- c(0, 0, 0, 0, 0, 0)
Fraud3 <- c(0, 1, 0, 0, 0, 0)
Fraud4 <- c(0, 0, 1, 0, 0, 1)
Fraud5 <- c(0, 0, 0, 1, 1, 1)

Test_Data_Fraud <- data.frame(Q1, Q2, Q3, Q4, Q5, Q6, Q7, Fraud1, Fraud2, Fraud3, Fraud4, Fraud5)

temp_dir <- tempdir()

FraudDetec1(
  output_dir = temp_dir,
  data = Test_Data_Fraud,
  FraudList = c("Fraud1", "Fraud2", "Fraud3", "Fraud4", "Fraud5"),
  correct_answers = c(0, 0, 0, 0, 0),
  Q1, Q2, Q3, Q4, Q5, Q6, Q7
)
}
```

---

FraudDetec2

*Fraud Detection Analysis Tool 2*

---

## Description

This function analyzes survey data using up to 5 Fraud Detection Questions and generates a report in Word and HTML formats.

## Usage

```
FraudDetec2(
  output_dir,
  data,
  FraudList,
  correct_answers = c(0, 0, 0, 0, 0),
  ...
)
```

## Arguments

<code>output_dir</code>	Path specifying where the Word and HTML files will be saved.
<code>data</code>	The data frame containing all the survey data.
<code>FraudList</code>	A character vector of up to 5 Fraud Detection Questions.
<code>correct_answers</code>	A numeric vector representing correct answers for each question. Default is <code>c(0, 0, 0, 0, 0)</code> .
<code>...</code>	Survey questions to be analyzed.

**Value**

A flextable object with the fraud detection analysis results, including summary statistics for the overall sample and identified fraudulent responses.

**Examples**

```
if (requireNamespace("flextable", quietly = TRUE) && requireNamespace("officer", quietly = TRUE)) {
  library(flextable)
  library(officer)

  # Example data for fraud detection analysis
  Q1 <- c(4, 5, 3, 2, 5, 2)
  Q2 <- c(3, 4, 2, 5, 4, 3)
  Q3 <- c(5, 4, 3, 5, 4, 5)
  Q4 <- c(1, 2, 3, 4, 5, 2)
  Q5 <- c(5, 2, 2, 1, 4, 1)
  Q6 <- c(5, 2, 3, 5, 1, 2)
  Q7 <- c(5, 2, 4, 5, 3, 4)

  Fraud1 <- c(0, 1, 0, 0, 0, 0)
  Fraud2 <- c(0, 0, 0, 0, 0, 0)
  Fraud3 <- c(0, 1, 0, 0, 0, 0)
  Fraud4 <- c(0, 0, 1, 0, 0, 1)
  Fraud5 <- c(0, 0, 0, 1, 1, 1)

  Test_Data_Fraud <- data.frame(Q1, Q2, Q3, Q4, Q5, Q6, Q7, Fraud1, Fraud2, Fraud3, Fraud4, Fraud5)

  temp_dir <- tempdir()

  FraudDetec2(
    output_dir = temp_dir,
    data = Test_Data_Fraud,
    FraudList = c("Fraud1", "Fraud2", "Fraud3", "Fraud4", "Fraud5"),
    correct_answers = c(0, 0, 0, 0, 0),
    Q1, Q2, Q3, Q4, Q5, Q6, Q7
  )
}
```

---

 FraudDetec3

*Fraud Detection Analysis Tool 3*


---

**Description**

Fraud Detection Analysis Tool 3

**Usage**

```
FraudDetec3(
  output_dir,
```

```

    data,
    FraudList,
    correct_answers = c(0, 0, 0, 0, 0),
    ...
  )

```

### Arguments

output_dir	Path specifying where the Word and HTML files will be saved.
data	The data frame containing all the survey data.
FraudList	A character vector of up to 5 Fraud Detection Questions.
correct_answers	A numeric vector representing correct answers for each question. Default is c(0, 0, 0, 0, 0).
...	Survey questions to be analyzed.

### Value

A flextable object with the results.

### Examples

```

if (requireNamespace("flextable", quietly = TRUE) && requireNamespace("officer", quietly = TRUE)) {
  library(flextable)
  library(officer)

  # Example data for fraud detection analysis
  Q1 <- c(4, 5, 3, 2, 5, 2)
  Q2 <- c(3, 4, 2, 5, 4, 3)
  Q3 <- c(5, 4, 3, 5, 4, 5)
  Q4 <- c(1, 2, 3, 4, 5, 2)
  Q5 <- c(5, 2, 2, 1, 4, 1)
  Q6 <- c(5, 2, 3, 5, 1, 2)
  Q7 <- c(5, 2, 4, 5, 3, 4)

  Fraud1 <- c(0, 1, 0, 0, 0, 0)
  Fraud2 <- c(0, 0, 0, 0, 0, 0)
  Fraud3 <- c(0, 1, 0, 0, 0, 0)
  Fraud4 <- c(0, 0, 1, 0, 0, 1)
  Fraud5 <- c(0, 0, 0, 1, 1, 1)

  Test_Data_Fraud <- data.frame(Q1, Q2, Q3, Q4, Q5, Q6, Q7, Fraud1, Fraud2, Fraud3, Fraud4, Fraud5)

  temp_dir <- tempdir()

  FraudDetec3(
    output_dir = temp_dir,
    data = Test_Data_Fraud,
    FraudList = c("Fraud1", "Fraud2", "Fraud3", "Fraud4", "Fraud5"),
    correct_answers = c(0, 0, 0, 0, 0),
    Q1, Q2, Q3, Q4, Q5, Q6, Q7
  )
}

```

```

  )
}

```

---

 FraudDetec4

*Fraud Detection Analysis Tool 4*


---

## Description

Fraud Detection Analysis Tool 4

## Usage

```

FraudDetec4(
  output_dir,
  data,
  FraudList,
  correct_answers = c(0, 0, 0, 0, 0),
  ...
)

```

## Arguments

<code>output_dir</code>	Path specifying where the Word and HTML files will be saved.
<code>data</code>	The data frame containing all the survey data.
<code>FraudList</code>	A character vector of up to 5 Fraud Detection Questions.
<code>correct_answers</code>	A numeric vector representing correct answers for each question. Default is <code>c(0, 0, 0, 0, 0)</code> .
<code>...</code>	Survey questions to be analyzed.

## Value

A flextable object with the results.

## Examples

```

if (requireNamespace("flextable", quietly = TRUE) && requireNamespace("officer", quietly = TRUE)) {
  library(flextable)
  library(officer)

  # Example data for fraud detection analysis
  Q1 <- c(4, 5, 3, 2, 5, 2)
  Q2 <- c(3, 4, 2, 5, 4, 3)
  Q3 <- c(5, 4, 3, 5, 4, 5)
  Q4 <- c(1, 2, 3, 4, 5, 2)
  Q5 <- c(5, 2, 2, 1, 4, 1)
  Q6 <- c(5, 2, 3, 5, 1, 2)
  Q7 <- c(5, 2, 4, 5, 3, 4)
}

```

```

Fraud1 <- c(0, 1, 0, 0, 0, 0)
Fraud2 <- c(0, 0, 0, 0, 0, 0)
Fraud3 <- c(0, 1, 0, 0, 0, 0)
Fraud4 <- c(0, 0, 1, 0, 0, 1)
Fraud5 <- c(0, 0, 0, 1, 1, 1)

Test_Data_Fraud <- data.frame(Q1, Q2, Q3, Q4, Q5, Q6, Q7, Fraud1, Fraud2, Fraud3, Fraud4, Fraud5)

temp_dir <- tempdir()

FraudDetec4(
  output_dir = temp_dir,
  data = Test_Data_Fraud,
  FraudList = c("Fraud1", "Fraud2", "Fraud3", "Fraud4", "Fraud5"),
  correct_answers = c(0, 0, 0, 0, 0),
  Q1, Q2, Q3, Q4, Q5, Q6, Q7
)
}

```

---

FraudDetec5

*Fraud Detection Analysis Tool 5*


---

## Description

Fraud Detection Analysis Tool 5

## Usage

```

FraudDetec5(
  output_dir,
  data,
  FraudList,
  correct_answers = c(0, 0, 0, 0, 0),
  ...
)

```

## Arguments

output_dir	Path specifying where the Word and HTML files will be saved.
data	The data frame containing all the survey data.
FraudList	A character vector of up to 5 Fraud Detection Questions.
correct_answers	A numeric vector representing correct answers for each question. Default is c(0, 0, 0, 0, 0).
...	Survey questions to be analyzed.

**Value**

A flextable object with the results.

**Examples**

```
if (requireNamespace("flextable", quietly = TRUE) && requireNamespace("officer", quietly = TRUE)) {
  library(flextable)
  library(officer)

  # Example data for fraud detection analysis
  Q1 <- c(4, 5, 3, 2, 5, 2)
  Q2 <- c(3, 4, 2, 5, 4, 3)
  Q3 <- c(5, 4, 3, 5, 4, 5)
  Q4 <- c(1, 2, 3, 4, 5, 2)
  Q5 <- c(5, 2, 2, 1, 4, 1)
  Q6 <- c(5, 2, 3, 5, 1, 2)
  Q7 <- c(5, 2, 4, 5, 3, 4)

  Fraud1 <- c(0, 1, 0, 0, 0, 0)
  Fraud2 <- c(0, 0, 0, 0, 0, 0)
  Fraud3 <- c(0, 1, 0, 0, 0, 0)
  Fraud4 <- c(0, 0, 1, 0, 0, 1)
  Fraud5 <- c(0, 0, 0, 1, 1, 1)

  Test_Data_Fraud <- data.frame(Q1, Q2, Q3, Q4, Q5, Q6, Q7, Fraud1, Fraud2, Fraud3, Fraud4, Fraud5)

  temp_dir <- tempdir()

  FraudDetec5(
    output_dir = temp_dir,
    data = Test_Data_Fraud,
    FraudList = c("Fraud1", "Fraud2", "Fraud3", "Fraud4", "Fraud5"),
    correct_answers = c(0, 0, 0, 0, 0),
    Q1, Q2, Q3, Q4, Q5, Q6, Q7
  )
}
```



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