

# MVLU COLLEGE

## Subject:-Data Analysis with SAS / SPSS /R

### 7 Performing one-way ANOVA using aov() (R).

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function Addins Project (None)

S098 M2 P7.R\* Insurance S098 M2 P8.R CarPrice\_Assignment S098 M2 P9.R WA\_Fn\_UseC\_Telco\_Customer\_Churn

Source on Save Run Source Environment History Connections Tutorial

# One-way ANOVA using Medical Insurance dataset

```
1 # Load dataset
2 data <- read.csv("insurance.csv")
3 # Convert smoker column to factor
4 data$smoker <- as.factor(data$smoker)
5
6 # Apply one-way ANOVA
7 anova_result <- aov(charges ~ smoker, data = data)
8
9 # Display ANOVA table
10 summary(anova_result)
```

(Top Level) R Script

Console Terminal Background Jobs

```
> # Load dataset
> data <- read.csv("insurance.csv")
> # Convert smoker column to factor
> data$smoker <- as.factor(data$smoker)
> # Apply one-way ANOVA
> anova_result <- aov(charges ~ smoker, data = data)
> # Display ANOVA table
> summary(anova_result)
```

DF	Sum Sq	Mean Sq	F value	Pr(>F)
smoker	1 1.215e+11	1.215e+11	2178	<2e-16 ***
Residuals	1336	7.455e+10	5.580e+07	

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

07:51 PM 21-12-2025

Project (None)

Environment History Connections Tutorial

Data

- anova\_result List of 13
- boston 101 obs. of 11 variables
- CarPrice\_Ass... 205 obs. of 26 variables
- chi\_result List of 9
- data 1338 obs. of 7 variables
- dep\_arix\_subs... 18 obs. of 11 variables
- female den f 29 obs. of 11 variables

Files Plots Packages Help Viewer Presentation

Home

Name	Size	Modified
S098 P3.R	333 B	Nov 24, 2025, 6:11 AM
S098 P4.R	1.5 KB	Nov 24, 2025, 7:25 AM
S098 P5.R	596 B	Nov 24, 2025, 10:45 AM
sales_data.csv	101.2 KB	Nov 18, 2025, 6:32 AM
Sleep_Efficiency (1).csv	40.4 KB	Dec 15, 2025, 7:10 AM
Student Mental health.csv	7.2 KB	Nov 18, 2025, 7:22 AM
student_exam_scores.csv	5.2 KB	Nov 18, 2025, 7:37 AM
StudentsPerformance.csv	70.3 KB	Dec 15, 2025, 7:09 AM
test.csv	878.1 KB	Dec 21, 2025, 7:17 AM
Untitled.R	39 B	Nov 24, 2025, 5:55 AM
xAPI-Edu-Data (1).csv	37.1 KB	Dec 15, 2025, 7:08 AM
CarPrice_Assignment.csv	261.1 KB	Dec 21, 2025, 7:21 AM
WA_Fn-UseC-Telco-Customer-Churn.csv	954.6 KB	Dec 21, 2025, 7:21 AM
S098 M2 P9.R	431 B	Dec 21, 2025, 7:47 AM

On-Screen Keyboard

# MVLU COLLEGE

## Subject:-Data Analysis with SAS / SPSS /R

### 8 Performing two-way ANOVA using aov() (R).

The screenshot shows the RStudio interface with the following details:

- File Menu:** File Edit Code View Plots Session Build Debug Profile Tools Help
- Toolbar:** Source on Save, Run, Source
- Environment Tab:** Shows objects like anova\_result, boston, CarPrice\_Ass..., chi\_result, data, dep\_anx\_subs..., female, den\_f.
- Files Tab:** Shows files like S098 P3.R, S098 P4.R, sales\_data.csv, Sleep\_Efficiency (1).csv, Student\_Mental\_health.csv, student\_exam\_scores.csv, StudentsPerformance.csv, test.csv, Untitled.R, xAPI-Edu-Data (1).csv, CarPrice\_Assignment.csv, WA\_Fn-UseC\_Telco-Customer-Churn.csv, and S098 M2 P9.R.
- Console Tab:** Displays R code and output for a two-way ANOVA. The output table is as follows:

	DF	Sum Sq	Mean Sq	F value	Pr(>F)
fueltype	1	1.454e+08	145405324	2.595	0.109
carbody	4	1.716e+09	428973871	7.656	9.44e-06 ***
fueltype:carbody	3	1.759e+08	58645132	1.047	0.373
Residuals	196	1.098e+10	56032669		

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

# MVLU COLLEGE

## Subject:-Data Analysis with SAS / SPSS /R

### 9 Conducting Chi-square tests using chisq.test() (R).

The screenshot shows the RStudio interface with the following details:

- File Menu:** File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, Help.
- Project:** Project: (None)
- Environment:** Global Environment pane showing variables like `chi_result`, `data`, etc.
- Console:** Displays the R code for loading the dataset and creating a contingency table.
- Terminal:** Shows the R version as R 4.5.2.
- Background Jobs:** No jobs listed.
- File Explorer:** Home folder containing various R scripts and CSV files.
- Taskbar:** Shows the Windows taskbar with the search bar, system tray, and clock indicating 07:48 PM on 21-12-2025.

```

# Practical 9: Chi-Square Test of Independence
# Load the dataset
data <- read.csv("WA_Fn-UseC_Telco-Customer-Churn.csv")
# View first few rows
head(data)
# Create contingency table between Gender and Churn

```

The screenshot shows the RStudio interface with the following details:

- File Menu:** File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, Help.
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- Taskbar:** Shows the Windows taskbar with the search bar, system tray, and clock indicating 07:48 PM on 21-12-2025.

```

# Practical 9: Chi-Square Test of Independence
# Load the dataset
data <- read.csv("WA_Fn-UseC_Telco-Customer-Churn.csv")
# View first few rows
head(data)
# Create contingency table between Gender and Churn
contingency_table <- table(data$gender, data$churn)
# Display the table
print(contingency_table)

Pearson's Chi-squared test with Yates' continuity correction

data: contingency_table
X-squared = 0.48408, df = 1, p-value = 0.4866

```