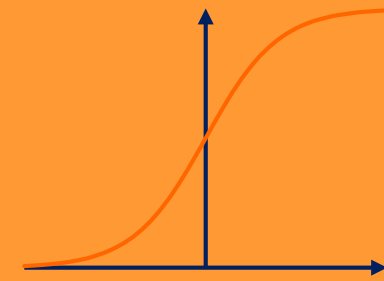
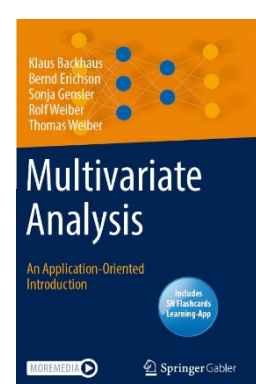


# LOGISTIC REGRESSION



|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MAIN RESEARCH QUESTION | WHICH OF TWO OR MORE ALTERNATIVES WILL OCCUR? WHAT FACTORS INFLUENCE AN EVENT AND WHAT IS THEIR EFFECT?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| EXAMPLE                | WHICH INDIVIDUAL CHARACTERISTICS INFLUENCE THE CHOICE BETWEEN CERTAIN CAR BRANDS?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| TYPE OF ANALYSIS       | STRUCTURE-TESTING METHOD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| MEASUREMENT LEVEL      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| DEPENDENT VARIABLE     | INPUT: CATEGORICAL (BINARY OR MULTINOMIAL LOGISTIC REGRESSION)<br><br>OUTPUT: PROBABILITIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| INDEPENDENT VARIABLES  | METRIC OR CATEGORICAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| RECOMMENDATIONS        | <ul style="list-style-type: none"><li>▪ START YOUR ANALYSIS WITH ONLY TWO CATEGORIES, WHICH REQUIRE THE ESTIMATION OF ONLY ONE FUNCTION (BINARY LOGISTIC REGRESSION).</li><li>▪ AS LOGISTIC REGRESSION YIELDS PROBABILITIES, A NONLINEAR FUNCTIONAL FORM BECOMES NECESSARY. A LINEAR ALTERNATIVE FOR PROBLEMS WITH A CATEGORICAL DEPENDENT VARIABLE IS DISCRIMINANT ANALYSIS, AND FOR PROBLEMS WITH TWO CATEGORIES, LINEAR REGRESSION CAN BE USED. THESE METHODS ARE EASIER TO HANDLE BUT DO NOT PROVIDE PROBABILITIES.</li><li>▪ AN ADVANTAGE OF LOGISTIC REGRESSION IS THAT IT REQUIRES FEWER ASSUMPTIONS (COMPARED TO DISCRIMINANT ANALYSIS AND REGRESSION ANALYSIS) CONCERNING THE DATA AND IS THUS MORE ROBUST. A DISADVANTAGE OF LOGISTIC REGRESSION IS THAT IT REQUIRES A LARGER SAMPLE SIZE.</li></ul> |
| KEYWORDS               | AKAIKE INFORMATION CRITERION, BAYESIAN INFORMATION CRITERION, CHI-SQUARE STATISTIC, CLASSIFICATION TABLE, CONFUSION MATRIX, COX & SNELL R <sup>2</sup> , CUTOFF VALUE, DEVIANCE, HIT RATE, LEAVE-ONE-OUT METHOD, LEVERAGE EFFECT, LIKELIHOOD RATIO STATISTIC, LINEAR PROBABILITY MODEL, LINK FUNCTION, LOGISTIC FUNCTION, LOGIT CHOICE MODEL, MAXIMUM LIKELIHOOD METHOD, MCFADDEN'S R <sup>2</sup> , NAGELKERKE'S R <sup>2</sup> , NULL MODEL, ODDS RATIO, PEARSON RESIDUALS, PREDICTIVE ACCURACY, PSEUDO-R <sup>2</sup> STATISTICS, ROC CURVE, SENSITIVITY, SPECIFICITY, WALD TEST                                                                                                                                                                                                                            |



BACKHAUS, KLAUS; ERICHSON, BERND; GENSLER, SONJA; WEIBER, ROLF; WEIBER, THOMAS (2021)  
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[WWW.MULTIVARIATE-METHODS.INFO](http://WWW.MULTIVARIATE-METHODS.INFO)