Lineer Regresyon Analizi

**Çoklu regresyon analizi için yapılması gereken işlemler**

1. Analyze > Regression > Linear
2. Bağımlı değişkeni Dependent kutusuna yerleştirin.
3. Bağımsız değişkenlerinizi Independents kutusuna yerleştirin.
4. Method için Enter’ın seçili olduğundan emin olun.
5. Statistics düğmesine basin.
6. Residuals bölümünde Casewise diagnostics ve Outliers outside 3 standard deviations’I seçin.
7. Plots düğmesine tıklayın.
8. ZRESID’I Y kutusuna, ZPRED’I X kutusuna taşıyın.
9. Standardized residual plots bölümünde normal probability plots’I seçin.
10. Continue > OK

## Varsayımlar

Lineer regresyon analizinin uygulanabilmesi için yeterli örneklem büyüklüğüne sahip olunması çok önemlidir. Bunun için N > 50 + 8m (m modelled kullanılan bağımsız değişken sayısı) koşulunun sağlandığından emin olunmalıdır.

Örneğin, 5 bağımsız değişkenin dahil edildiği bir analizde örneklem büyüklüğü en az 90 olmalıdır.

Bağımsız değişkenler arasında çoklu bağlantılılık olmadığı, ya da yok sayılacak kadar önemsiz olduğundan emin olunmalıdır. Bunun için bazı istatistiksel göstergeler değerlendirilmelidir.

Bağımsız ve bağımlı değişken arasında doğrusal bir ilişki olmalıdır.

# ÇIKTILARIN YORUMLANMASI

1. Model summary tablosu kurulan bu modelin bağımlı değişkeni hangi oranda açıklayabildiğini gösterir. Büyük örneklemli analizlerde R square değeri yorumlanmalıdır. Örneklem büyüklüğü çok büyük değilse, Adjusted R square değeri daha doğru sonuçlar verir.

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| **Model Summary** |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .132a | .018 | .017 | 2.206 |

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| a. Predictors: (Constant), How important is God in your life, Marital status, Self positioning in political scale, How many children do you have |

1. ANOVA tablosunda kurulan regresyon modelinin anlamlılığı incelenir. Sig. değeri .05’ten küçükse, regresyon modelinin istatistiksel olarak anlamlı olduğu söylenebilir.

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| **ANOVAa** |
| Model | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 5260.290 | 4 | 1315.073 | 270.255 | .000b |
| Residual | 294410.768 | 60503 | 4.866 |  |  |
| Total | 299671.058 | 60507 |  |  |  |

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| a. Dependent Variable: Satisfaction with your life |
| b. Predictors: (Constant), How important is God in your life, Marital status, Self positioning in political scale, How many children do you have |

1. Coefficients tablosundaki Sig. değerleri .05’ten küçükse, her bir değişkenin modelde olmasının anlamlı olduğu sonucuna ulaşılır. Değilse, ilgili değişkenin modelde olması istatistiksel olarak anlamlı değildir.
2. Beta değerleri her bir değişkenin bağımlı değişkenin varyansının ne kadarını açıkladığını gösterir. Bu göstergelerin mutlak değerlerine bakılarak kıyaslamalar yapılabilir.

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| **Coefficientsa** |
| Model | Unstandardized Coefficients | Standardized Coefficients | t | Sig. | Correlations |
| B | Std. Error | Beta | Zero-order | Partial |
| 1 | (Constant) | 6.272 | .036 |  | 175.432 | .000 |  |  |
| Marital status | -.055 | .005 | -.054 | -11.827 | .000 | -.040 | -.048 |
| How many children do you have | -.053 | .006 | -.041 | -8.954 | .000 | -.001 | -.036 |
| Self positioning in political scale | .104 | .004 | .108 | 26.506 | .000 | .115 | .107 |
| How important is God in your life | .037 | .003 | .049 | 11.944 | .000 | .060 | .049 |

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| **Coefficientsa** |
| Model | Correlations | Collinearity Statistics |
| Part | Tolerance | VIF |
| 1 | (Constant) |  |  |  |
| Marital status | -.048 | .775 | 1.290 |
| How many children do you have | -.036 | .760 | 1.316 |
| Self positioning in political scale | .107 | .974 | 1.027 |
| How important is God in your life | .048 | .957 | 1.045 |

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| **Collinearity Diagnosticsa** |
| Model | Dimension | Eigenvalue | Condition Index | Variance Proportions |
| (Constant) | Marital status | How many children do you have | Self positioning in political scale |
| 1 | 1 | 4.015 | 1.000 | .00 | .01 | .01 | .01 |
| 2 | .641 | 2.502 | .00 | .21 | .32 | .00 |
| 3 | .184 | 4.673 | .01 | .58 | .56 | .20 |
| 4 | .113 | 5.970 | .00 | .03 | .03 | .47 |
| 5 | .047 | 9.228 | .99 | .17 | .08 | .32 |

Çoklu Lineer Regresyon Analizi - 2

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| **Correlations** |
|  | What age did you complete your education | Marital status | Self positioning in political scale | Religious person | Sex |
| Pearson Correlation | What age did you complete your education | 1.000 | .019 | -.020 | .000 | -.012 |
| Marital status | .019 | 1.000 | -.039 | .031 | -.008 |
| Self positioning in political scale | -.020 | -.039 | 1.000 | -.098 | -.009 |
| Religious person | .000 | .031 | -.098 | 1.000 | -.088 |
| Sex | -.012 | -.008 | -.009 | -.088 | 1.000 |
| Size of town | .092 | .008 | -.057 | .074 | .013 |
| Sig. (1-tailed) | What age did you complete your education | . | .000 | .000 | .462 | .005 |
| Marital status | .000 | . | .000 | .000 | .041 |
| Self positioning in political scale | .000 | .000 | . | .000 | .024 |
| Religious person | .462 | .000 | .000 | . | .000 |
| Sex | .005 | .041 | .024 | .000 | . |
| Size of town | .000 | .038 | .000 | .000 | .002 |

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| **Model Summary** |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .096a | .009 | .009 | 10.615 |

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| a. Predictors: (Constant), Size of town, Marital status, Sex, Self positioning in political scale, Religious person |

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| **ANOVAa** |
| Model | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 47770.268 | 5 | 9554.054 | 84.787 | .000b |
| Residual | 5120465.380 | 45441 | 112.683 |  |  |
| Total | 5168235.649 | 45446 |  |  |  |

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| a. Dependent Variable: What age did you complete your education |
| b. Predictors: (Constant), Size of town, Marital status, Sex, Self positioning in political scale, Religious person |

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| **Coefficientsa** |
| Model | Unstandardized Coefficients | Standardized Coefficients | t | Sig. | Correlations |
| B | Std. Error | Beta | Zero-order | Partial |
| 1 | (Constant) | 19.675 | .271 |  | 72.737 | .000 |  |  |
| Marital status | .089 | .023 | .018 | 3.897 | .000 | .019 | .018 |
| Self positioning in political scale | -.069 | .022 | -.015 | -3.202 | .001 | -.020 | -.015 |
| Religious person | -.198 | .089 | -.011 | -2.228 | .026 | .000 | -.010 |
| Sex | -.302 | .100 | -.014 | -3.019 | .003 | -.012 | -.014 |
| Size of town | .394 | .020 | .092 | 19.560 | .000 | .092 | .091 |

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| **Coefficientsa** |
| Model | Correlations | Collinearity Statistics |
| Part | Tolerance | VIF |
| 1 | (Constant) |  |  |  |
| Marital status | .018 | .998 | 1.002 |
| Self positioning in political scale | -.015 | .986 | 1.014 |
| Religious person | -.010 | .977 | 1.024 |
| Sex | -.014 | .992 | 1.009 |
| Size of town | .091 | .992 | 1.008 |

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| **Collinearity Diagnosticsa** |
| Model | Dimension | Eigenvalue | Condition Index | Variance Proportions |
| (Constant) | Marital status | Self positioning in political scale | Religious person |
| 1 | 1 | 5.152 | 1.000 | .00 | .01 | .00 | .00 |
| 2 | .345 | 3.867 | .00 | .93 | .01 | .01 |
| 3 | .204 | 5.026 | .00 | .01 | .18 | .00 |
| 4 | .156 | 5.741 | .00 | .01 | .18 | .66 |
| 5 | .117 | 6.641 | .00 | .01 | .34 | .06 |
| 6 | .027 | 13.942 | .99 | .04 | .28 | .26 |

Çoklu Lineer Regresyon Analizi – 3

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| **Correlations** |
|  | How important is God in your life | Self positioning in political scale | Religious person | Sex | What age did you complete your education |
| Pearson Correlation | How important is God in your life | 1.000 | .148 | -.552 | .069 | .011 |
| Self positioning in political scale | .148 | 1.000 | -.120 | -.009 | -.031 |
| Religious person | -.552 | -.120 | 1.000 | -.084 | .007 |
| Sex | .069 | -.009 | -.084 | 1.000 | -.011 |
| What age did you complete your education | .011 | -.031 | .007 | -.011 | 1.000 |
| Important in life: Family | -.105 | -.019 | .076 | -.040 | -.011 |
| Sig. (1-tailed) | How important is God in your life | . | .000 | .000 | .000 | .004 |
| Self positioning in political scale | .000 | . | .000 | .018 | .000 |
| Religious person | .000 | .000 | . | .000 | .049 |
| Sex | .000 | .018 | .000 | . | .004 |
| What age did you complete your education | .004 | .000 | .049 | .004 | . |
| Important in life: Family | .000 | .000 | .000 | .000 | .004 |

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| **Model Summary** |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .562a | .316 | .316 | 2.486 |

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| a. Predictors: (Constant), Important in life: Family, What age did you complete your education, Self positioning in political scale, Sex, Religious person |

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| **ANOVAa** |
| Model | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 160484.911 | 5 | 32096.982 | 5195.258 | .000b |
| Residual | 347655.135 | 56272 | 6.178 |  |  |
| Total | 508140.046 | 56277 |  |  |  |

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| a. Dependent Variable: How important is God in your life |
| b. Predictors: (Constant), Important in life: Family, What age did you complete your education, Self positioning in political scale, Sex, Religious person |

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| **Coefficientsa** |
| Model | Unstandardized Coefficients | Standardized Coefficients | t | Sig. | Correlations |
| B | Std. Error | Beta | Zero-order |
| 1 | (Constant) | 10.955 | .064 |  | 170.395 | .000 |  |
| Self positioning in political scale | .109 | .005 | .084 | 23.814 | .000 | .148 |
| Religious person | -2.701 | .018 | -.535 | -151.386 | .000 | -.552 |
| Sex | .137 | .021 | .023 | 6.500 | .000 | .069 |
| What age did you complete your education | .005 | .001 | .017 | 4.928 | .000 | .011 |
| Important in life: Family | -.486 | .028 | -.061 | -17.573 | .000 | -.105 |

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| **Coefficientsa** |
| Model | Correlations |
| Partial | Part | Tolerance | VIF |
| 1 | (Constant) |  |  |  |  |
| Self positioning in political scale | .100 | .083 | .984 | 1.016 |
| Religious person | -.538 | -.528 | .973 | 1.028 |
| Sex | .027 | .023 | .991 | 1.009 |
| What age did you complete your education | .021 | .017 | .999 | 1.001 |
| Important in life: Family | -.074 | -.061 | .993 | 1.007 |

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| **Collinearity Diagnosticsa** |
| Model | Dimension | Eigenvalue | Condition Index | Variance Proportions |
| (Constant) | Self positioning in political scale | Religious person | Sex |
| 1 | 1 | 5.399 | 1.000 | .00 | .00 | .00 | .00 |
| 2 | .192 | 5.308 | .00 | .05 | .04 | .01 |
| 3 | .167 | 5.680 | .00 | .32 | .52 | .02 |
| 4 | .117 | 6.794 | .00 | .40 | .15 | .39 |
| 5 | .103 | 7.225 | .00 | .01 | .10 | .24 |
| 6 | .021 | 15.851 | 1.00 | .22 | .18 | .34 |