# İKİ FAKTÖRLÜ ANOVA

İki faktörlü ANOVA için yapılması gereken işlemler

1. Analyze > General linear model > Univariate
2. Bağımlı değişkeninizi Dependent variable kutusuna taşıyın.
3. Bağımsız değişkenlerinizi Fixed factors kutusuna taşıyın.
4. Options butonuna basin.
5. Descriptive statistics, Estimates of effect size ve homogeneity tests üzerine tıklayın.
6. Plots butonuna basin.
7. Yatay eksene en fazla gruba sahip olan bağımsız değişkeninizi yerleştirin.
8. Separate lines’a diğer bağımsız değişkeninizi yerleştirin.
9. Add üzerine tıklayın.
10. Continue > OK

**Çıktıların yorumlanması**

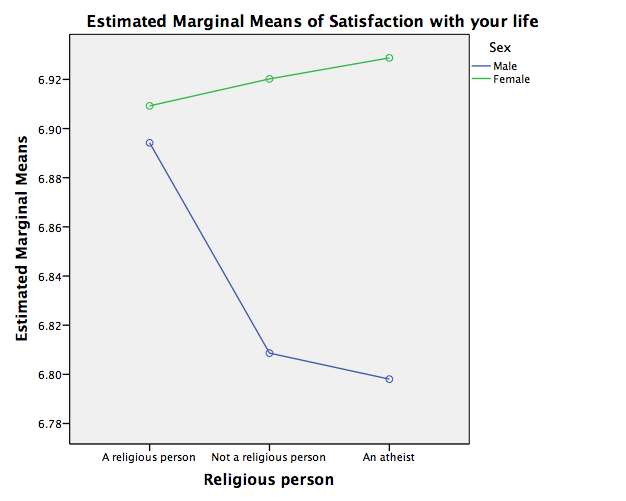
1. Descriptive tablosu 3 grup için ayrı ayrı örneklem büyüklüğü, ortalama ve standart sapma değerlerini gösterir.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Descriptive Statistics** | | | | |
| Dependent Variable: Satisfaction with your life | | | | |
| Religious person | Sex | Mean | Std. Deviation | N |
| A religious person | Male | 6.89 | 2.313 | 24351 |
| Female | 6.91 | 2.316 | 29483 |
| Total | 6.90 | 2.314 | 53834 |
| Not a religious person | Male | 6.81 | 2.149 | 11915 |
| Female | 6.92 | 2.112 | 10527 |
| Total | 6.86 | 2.132 | 22442 |
| An atheist | Male | 6.80 | 2.133 | 2768 |
| Female | 6.93 | 1.974 | 1951 |
| Total | 6.85 | 2.069 | 4719 |
| Total | Male | 6.86 | 2.252 | 39034 |
| Female | 6.91 | 2.251 | 41961 |
| Total | 6.89 | 2.252 | 80995 |

1. Tests of between subjects effect tablosundaki p değerleri (sig.) .05’ten küçükse, gruplar arasında istatistiksel olarak anlamlı bir fark olduğunu gösterir. Değilse, gruplar arasında anlamlı bir fark olmadığı söylenecektir. Değişkenlerin birlikte olduğu satırda iki faktörün etkileşimsel etkisi test edilir.

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| --- | --- | --- | --- | --- | --- |
| **Tests of Between-Subjects Effects** | | | | | |
| Dependent Variable: Satisfaction with your life | | | | | |
| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
| Corrected Model | 125.823a | 5 | 25.165 | 4.965 | .000 |
| Intercept | 1509497.986 | 1 | 1509497.986 | 297831.259 | .000 |
| V147 | 25.137 | 2 | 12.568 | 2.480 | .084 |
| V240 | 58.699 | 1 | 58.699 | 11.582 | .001 |
| V147 \* V240 | 44.906 | 2 | 22.453 | 4.430 | .012 |
| Error | 410476.498 | 80989 | 5.068 |  |  |
| Total | 4253393.000 | 80995 |  |  |  |
| Corrected Total | 410602.321 | 80994 |  |  |  |
| a. R Squared = .000 (Adjusted R Squared = .000) | | | | | |

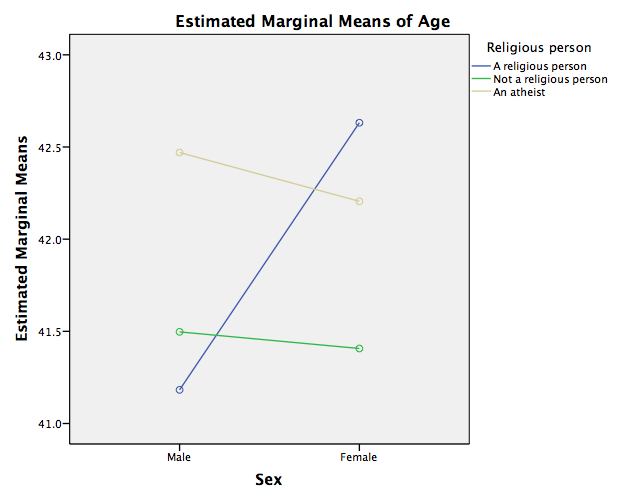
1. Değişkenlerin etkileşimsel etkisini aşağıdaki grafik yardımıyla yorumlayabilirsiniz. Bu grafik gruplar arasındaki farklılıkların nerelerde artıp nerelerde azaldığını göstererek etkileşimin etkisini görselleştirir.



İKİ FAKTÖRLÜ ANOVA – 2

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| **Descriptive Statistics** | | | | |
| Dependent Variable: Age | | | | |
| Religious person | Sex | Mean | Std. Deviation | N |
| A religious person | Male | 41.18 | 16.662 | 24428 |
| Female | 42.63 | 16.772 | 29600 |
| Total | 41.98 | 16.738 | 54028 |
| Not a religious person | Male | 41.50 | 16.489 | 11964 |
| Female | 41.41 | 16.127 | 10604 |
| Total | 41.45 | 16.320 | 22568 |
| An atheist | Male | 42.47 | 17.072 | 2778 |
| Female | 42.21 | 16.089 | 1968 |
| Total | 42.36 | 16.670 | 4746 |
| Total | Male | 41.37 | 16.642 | 39170 |
| Female | 42.30 | 16.589 | 42172 |
| Total | 41.85 | 16.621 | 81342 |

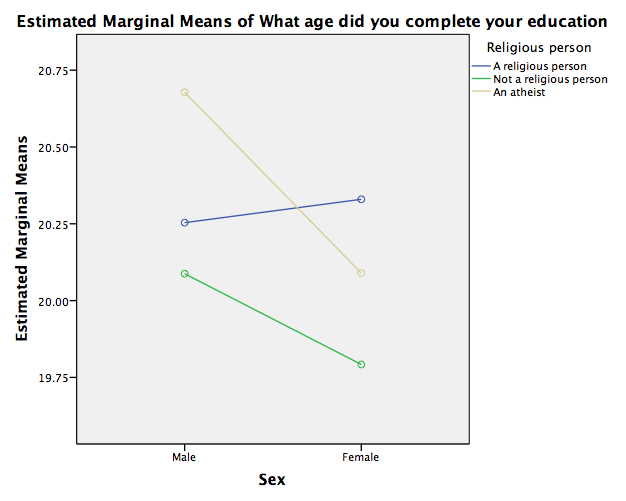
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tests of Between-Subjects Effects** | | | | | |
| Dependent Variable: Age | | | | | |
| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
| Corrected Model | 33854.168a | 5 | 6770.834 | 24.545 | .000 |
| Intercept | 56391677.431 | 1 | 56391677.431 | 204428.148 | .000 |
| V147 | 4666.067 | 2 | 2333.034 | 8.458 | .000 |
| V240 | 1068.042 | 1 | 1068.042 | 3.872 | .089 |
| V147 \* V240 | 11101.317 | 2 | 5550.659 | 20.122 | .000 |
| Error | 22436604.386 | 81336 | 275.851 |  |  |
| Total | 164962315.000 | 81342 |  |  |  |
| Corrected Total | 22470458.554 | 81341 |  |  |  |
| a. R Squared = .002 (Adjusted R Squared = .001) | | | | | |



İKİ FAKTÖRLÜ ANOVA – 3

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| **Descriptive Statistics** | | | | |
| Dependent Variable: What age did you complete your education | | | | |
| Religious person | Sex | Mean | Std. Deviation | N |
| A religious person | Male | 20.25 | 10.177 | 21745 |
| Female | 20.33 | 11.727 | 26128 |
| Total | 20.30 | 11.050 | 47873 |
| Not a religious person | Male | 20.09 | 8.164 | 11143 |
| Female | 19.79 | 7.975 | 9874 |
| Total | 19.95 | 8.077 | 21017 |
| An atheist | Male | 20.68 | 7.588 | 2574 |
| Female | 20.09 | 6.907 | 1805 |
| Total | 20.44 | 7.320 | 4379 |
| Total | Male | 20.23 | 9.415 | 35462 |
| Female | 20.18 | 10.676 | 37807 |
| Total | 20.20 | 10.085 | 73269 |

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| **Tests of Between-Subjects Effects** | | | | | |
| Dependent Variable: What age did you complete your education | | | | | |
| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
| Corrected Model | 2895.518a | 5 | 579.104 | 5.695 | .000 |
| Intercept | 12068560.229 | 1 | 12068560.229 | 118687.191 | .000 |
| V147 | 1959.020 | 2 | 979.510 | 9.633 | .000 |
| V240 | 535.990 | 1 | 535.990 | 5.271 | .022 |
| V147 \* V240 | 804.498 | 2 | 402.249 | 3.956 | .019 |
| Error | 7449657.558 | 73263 | 101.684 |  |  |
| Total | 37361870.250 | 73269 |  |  |  |
| Corrected Total | 7452553.075 | 73268 |  |  |  |
| a. R Squared = .000 (Adjusted R Squared = .000) | | | | | |



İKİ FAKTÖRLÜ ANOVA – 4

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| --- | --- | --- | --- | --- |
| **Descriptive Statistics** | | | | |
| Dependent Variable: Self positioning in political scale | | | | |
| Religious person | Sex | Mean | Std. Deviation | N |
| A religious person | Male | 5.98 | 2.358 | 19369 |
| Female | 5.87 | 2.305 | 22016 |
| Total | 5.92 | 2.331 | 41385 |
| Not a religious person | Male | 5.50 | 2.196 | 9212 |
| Female | 5.45 | 2.166 | 7597 |
| Total | 5.48 | 2.182 | 16809 |
| An atheist | Male | 4.94 | 2.250 | 2188 |
| Female | 4.94 | 2.099 | 1419 |
| Total | 4.94 | 2.192 | 3607 |
| Total | Male | 5.77 | 2.324 | 30769 |
| Female | 5.72 | 2.276 | 31032 |
| Total | 5.75 | 2.300 | 61801 |

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| **Tests of Between-Subjects Effects** | | | | | |
| Dependent Variable: Self positioning in political scale | | | | | |
| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
| Corrected Model | 5002.335a | 5 | 1000.467 | 191.990 | .000 |
| Intercept | 712699.651 | 1 | 712699.651 | 136766.981 | .000 |
| V147 | 4815.589 | 2 | 2407.794 | 462.055 | .000 |
| V240 | 19.887 | 1 | 19.887 | 3.816 | .081 |
| V147 \* V240 | 16.841 | 2 | 8.421 | 1.616 | .199 |
| Error | 322016.869 | 61795 | 5.211 |  |  |
| Total | 2366984.000 | 61801 |  |  |  |
| Corrected Total | 327019.204 | 61800 |  |  |  |
| a. R Squared = .015 (Adjusted R Squared = .015) | | | | | |

