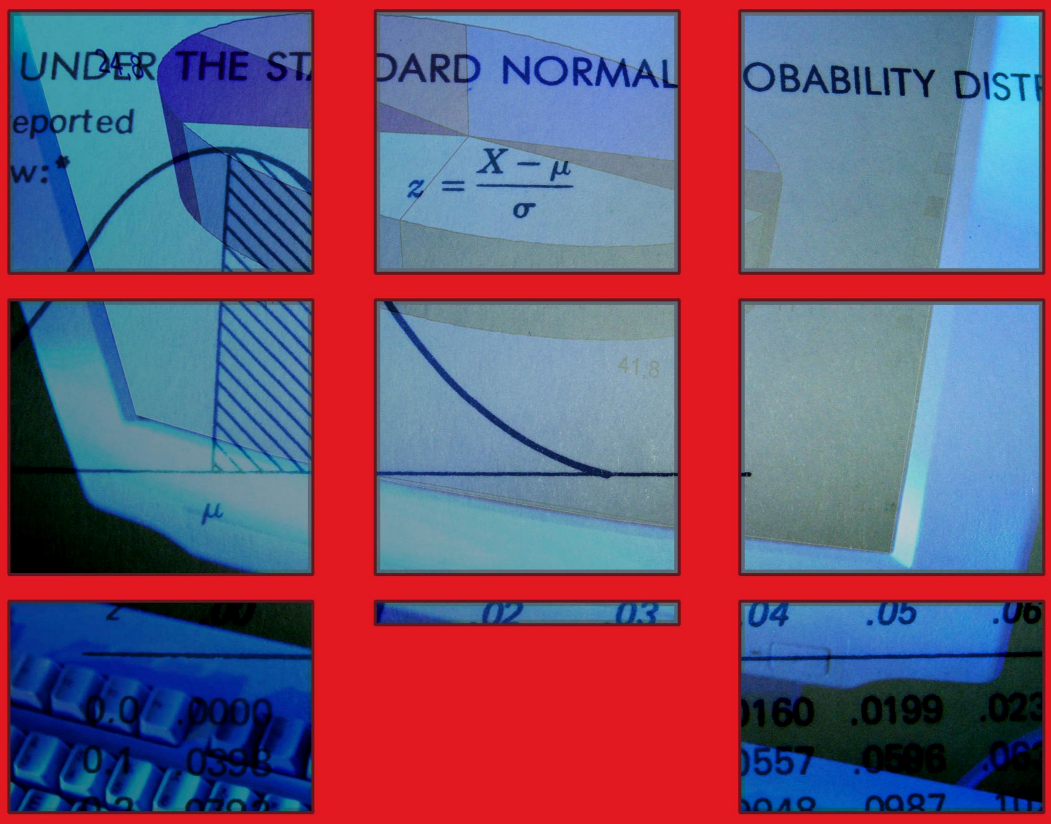
BAŞKENT ÜNİVERSİTESİ
İKTİSADİ VE İDARİ BİLİMLER FAKÜLTESİ

İSTATİSTİKSEL FORMÜLLER ve TABLOLAR



ELEŞTİREL – YARATICI DÜŞÜNME ve DAVRANIŞ ARAŞTIRMALARI LABORATUVARI

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İSTATİSTİKSEL FORMÜLLER VE TABLOLAR

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DAVRANIŞ ARAŞTIRMALARI LABORATUVARI
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Ankara
Mart 2005

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Önsöz

Bilimselliğin önemli kriterlerinden biri, rakamsallaştırılmış ölçümlerin çeşitli istatistiksel teknikler kullanılarak gruplandırılması, özetlenmesi ve anlamlandırılmasıdır. O nedenle uygulamalı istatistik pek çok bilimsel disiplinin ayrılmaz bir parçasıdır. Elinizdeki bu kitapçık, çeşitli istatistiksel uygulamaların formüllerini ve bu uygulamalar sonucunda değerlendirme yapmayı sağlayacak kritik istatistiksel değerlerin tablolarını derlediğimiz bir başvuru kaynağıdır.

Artık bilgisayar paket programlarıyla yapılan istatistiksel analizleri kağıt ve kalem ile yapmaya gerek var mıdır? Dolayısıyla bu kitapçık gerçekten işlevsel midir? Biz öyle olduğuna inanıyoruz. İstatistiksel uygulamaların altında yatan mantığın, veri kümelerini formülleri uygulayarak analiz etmek yoluyla öğrenilebileceğini düşünüyoruz. Bilgisayar paket programlarının getirdiği kolaylıklardan yararlanmak ve analiz çıktılarını doğru anlamlandırmak ancak bu temel kavrayışın üzerine mümkün olabiliyor. Aksi taktirde hatalı analiz sonucu raporlarının yazılabildiğini sıkça görmekteyiz.

Bu kitapçıktaki bilgiler, temel istatistiksel bilgiye sahip olanların anlayabileceği biçimde düzenlenmiştir. Bunun ötesinde bir bilgilendirme, bu kitapçığı hızlı bir başvuru kaynağı olmaktan çıkarıp, derinlikli bir istatistik ders kitabına dönüştürebilirdi. Bu da bu kitapçığa başvuranlar için kitabı daha başından işlevsizleştirecekti. Dolayısıyla, kitapçığı kullanırken karşılaşılan kavramsal zorluklar olduğunda siz kullanıcıların çeşitli istatistik kitaplarına başvurmanız daha sağlıklı olacaktır düşüncesindeyiz.

Şüphesiz böyle bir çalışmada en dikkat edilmesi gereken nokta, formüllerin ve tablo değerlerinin yazılı ortama hatasız aktarılmasıydı. N. Can Okay ve Ayşegül Yaman ile bu amacı gerçekleştirebilmek için çok titiz bir çalışma çıkardık. Öte yandan, ancak bağımsız gözlerin ikinci kontrolü ile biraz daha hatasız bir aktarım söz konusu olabilirdi. F. Efe Kıvanç, Bahar Muratoğlu ve Zuhal Yeniçeri bu kritik görevi dikkatle yerine getirdiler. Sonuçta çeşitli bilimsel alanlarda niceliksel çalışmalar yapan uzmanların ve öğrencilerin kullanabileceğini düşündüğümüz ve olabildiğince hatalardan arınmış bu başvuru kitapçığı ortaya çıktı.

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Laboratuvarın bütün çalışmalarında olduğu gibi bu kitapçığın size ulaşmasında en önemli destek elbette Başkent Üniversitesi yönetiminden gelmiştir. Elinizdeki başvuru kaynağının çalışmalarınızda yararlı olması umuduyla, bu üründe emeği geçen herkese teşekkür ederim.

Kürşad Demirutku,
Mart, 2005

İSTATİSTİKSEL FORMÜLLER

A. Veri Gruplama

A1. Sınıf sayısı

$2^k > n$ [k: sınıf sayısı; n: örneklem büyüklüğü]

A2. Aralık / Ranj

En yüksek değer – En düşük değer (Y – D)

A3. Sınıf genişliği

$$i = \frac{Y - D}{k}$$

B. Veri Betimleme

B1. Aritmetik ortalama

$$\overline{X} = \frac{\sum_{i=1}^{n} x_i}{n} = \frac{x_1 + x_2 + \cdots + x_n}{n}$$

$$\overline{X} = \frac{\sum_{i=1}^{k} f_i \cdot X_m}{n}$$

k: sınıf sayısı

f_i: belli bir sınıfta gözlenen frekans

X_m: belli bir sınıfın orta noktası

B2. Geometrik ortalama

- **İki sayı için**

$$\overline{X}_g = \sqrt{x_1 x_2}$$

- **n sayı için**

$$\overline{X}_g = \sqrt[n]{x_1 x_2 \cdots x_n}$$

B3. Harmonik ortalama

$$\overline{X}_h = \frac{n}{\sum_{i=1}^{n} 1/x}$$

B4. Kuadratik ortalama

$$\overline{X}_q = \sqrt{\frac{\sum_{i=1}^{n} x^2}{n}}$$

B5. Ortanca / Medyan

$$M_d = x_L + i\left[\frac{(n/2) - Cf_L}{f_i}\right]$$

x_L: x'i içeren sınıfın alt limiti

i: sınıf genişliği

Cf_L: x'i içeren sınıfın alt limitine kadarki kümülatif frekans

f_i: x'i içeren sınıfın frekansı

B6. Varyans

- **Populasyon Varyansı**

$$\sigma^2 = \frac{\sum (x - \mu)^2}{N}$$

- **Örneklem Varyansı**

$$s^2 = \frac{\sum (x - \overline{X})^2}{n-1};\ s^2 = \frac{\sum x^2 - \left[\left(\sum x\right)^2 / n\right]}{n-1}$$

- **Gruplanmış Veri İçin Örneklem Varyansı**

$$s^2 = \frac{\sum f(x_m - \overline{X})}{n-1};\ s^2 = \frac{\sum f \cdot x_m^2 - \left[\left(\sum f \cdot x_m\right)^2 / n\right]}{n-1}$$

f: belli bir sınıfın frekansı

x_m: belli bir sınıfın orta noktası

B7. Standart sapma

$$\sigma = \sqrt{\sigma^2}$$

$$s = \sqrt{s^2}$$

B8. Varyasyon katsayısı

$$c_{\text{var}} = \frac{s}{\overline{X}} \cdot 100$$

B9. Yüzebölenler

$$P_x = \frac{Cf_L + \left[(x - x_L)/i\right] f_i}{n} \times 100$$

P_x: belli bir puana karşılık gelen yüzebölen

Cf_L: belli bir puanı içeren sınıfın alt limitine kadarki kümülatif frekans

x: puan

x_L: x'i içeren sınıfın alt limiti

i: sınıf genişliği

f_i: x'i içeren sınıfın frekansı

$$X_p = x_L + \left[\frac{p \cdot n - Cf_L}{f_i}\right] \cdot i$$

Xp: belli bir yüzebölene denk gelen puan

p: söz konusu yüzebölen (ondalık biçimde ifade edilir)

C. Sayma Kuralları

C1. Çarpma kuralı

$$k_1 \cdot k_2 \cdot k_3 \cdot \cdots \cdot k_n$$

C2. Permütasyon

$${}_nP_r = \frac{n!}{(n-r)!}$$

C3. Kombinasyon

$${}_nC_r = \frac{n!}{(n-r)! \cdot r!}$$

D. Olasılık

D1. Toplama kuralları

$$P(A \cup B) = P(A) + P(B)$$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

D2. Çarpma kuralları

$$P(A \cap B) = P(A) \cdot P(B)$$

$$P(A \cap B) = P(A) \cdot P(B \mid A)$$

$$P(A \cap B) = P(B) \cdot P(A \mid B)$$

D3. Koşullu olasılık

$$P(B \mid A) = \frac{P(A \cap B)}{P(A)}$$

$$P(A \mid B) = \frac{P(A \cap B)}{P(B)}$$

D4. Tümleyen

$$P(A) + P(A') = 1.00$$

$$P(\overline{E}) = 1.00 - P(E)$$

E. Olasılık Dağılımları

E1. Bir olasılık dağılımının ortalaması

$$\mu = \sum x \cdot P(x)$$

E2. Bir olasılık dağılımının varyansı

$$\sigma^2 = \sum \left[x^2 \cdot P(x)\right] - \mu^2$$

E3. Beklenen değer

$$E(x) = \sum x \cdot P(x)$$

E4. Binom olasılığı

$$P(X) = \frac{n!}{(n-X)!X!} \cdot p^X \cdot q^{n-X}$$

E5. Binom dağılımının ortalaması

$$\mu = n \cdot p$$

E6. Binom dağılımının varyansı ve standart sapması

$$\sigma^2 = n \cdot p \cdot q \; ; \; \sigma = \sqrt{n \cdot p \cdot q}$$

E7. Multinom olasılık

$$P(X) = \frac{n!}{X_1!X_2!X_3!\cdots X_k!} \cdot p_1^{X_1} \cdot p_2^{X_2} \cdot p_3^{X_3} \cdot \cdots \cdot p_k^{X_k}$$

E8. Poisson olasılığı

$$P(X,\lambda) = \frac{e^{-\lambda} \cdot \lambda^X}{X!}$$

$E(x) = Var(x) = \lambda$

E9. Hipergeometrik olasılık

$$P(X) = \frac{{}_aC_X \cdot {}_bC_{n-X}}{{}_{(a+b)}C_n}$$

F. Normal Dağılım

F1. Standart puan

$$z = \frac{x-\mu}{\sigma} \; ; \; z = \frac{x-\overline{X}}{s}$$

F2. Standart ortalama hatası

- **Sonsuz örneklem**

$$\sigma_{\overline{X}} = \frac{\sigma}{\sqrt{n}}$$

- **Sonlu örneklem**

$$\sigma_{\overline{X}} = \left(\frac{\sigma}{\sqrt{n}}\right)\sqrt{\frac{N-n}{N-1}}$$

F3. Merkezi limit teoremi

$$z = \frac{\overline{X} - \mu_{\overline{X}}}{\sigma_{\overline{X}}} \; ; \; z = \frac{\overline{X} - \mu}{\sigma/\sqrt{n}}$$

G. Güven Aralıkları ve Örneklem Büyüklükleri

G1. Ortalama için güven aralığı (σ biliniyorsa)

$$\overline{X} - z_{\alpha/2}\left(\frac{\sigma}{\sqrt{n}}\right) < \mu < \overline{X} + z_{\alpha/2}\left(\frac{\sigma}{\sqrt{n}}\right)$$

σ bilinmiyorsa s kullanılır.

G2. Ortalama için güven aralığı (n ≥ 30)

$$\overline{X} - z_{\alpha/2}\left(\frac{s}{\sqrt{n}}\right) < \mu < \overline{X} + z_{\alpha/2}\left(\frac{s}{\sqrt{n}}\right)$$

G3. Ortalama için güven aralığı (n < 30)

$$\overline{X} - t_{\alpha/2}\left(\frac{s}{\sqrt{n}}\right) < \mu < \overline{X} + t_{\alpha/2}\left(\frac{s}{\sqrt{n}}\right)$$

G4. Ortalama için örneklem büyüklüğü

$$n = \left(\frac{z_{\alpha/2} \cdot \sigma}{E}\right)^2$$

E: maksimum tahmin hatası

G5. Oran için güven aralığı

$$\hat{p} - \left(z_{\alpha/2}\right)\sqrt{\frac{\hat{p}\hat{q}}{n}} < p < \hat{p} + \left(z_{\alpha/2}\right)\sqrt{\frac{\hat{p}\hat{q}}{n}}$$

$\hat{p}$: örneklem oranı

$\hat{q}$: 1 – $\hat{p}$

p: populasyon oranı

G6. Oran için örneklem büyüklüğü

$$n = \hat{p}\hat{q}\left(\frac{z_{\alpha/2}}{E}\right)^2 \; ; \; \hat{p} = \frac{X}{n} \; ; \; \hat{q} = 1 - \hat{p}$$

G7. Standart sapma ve varyans için güven aralığı

$$\frac{(n-1)s^2}{\chi^2_{sağ}} < \sigma^2 < \frac{(n-1)s^2}{\chi^2_{sol}}$$

$$\sqrt{\frac{(n-1)s^2}{\chi^2_{sağ}}} < \sigma < \sqrt{\frac{(n-1)s^2}{\chi^2_{sol}}}$$

H. Hipotez Testleri

H1. Tek örneklem hipotez testleri

- **Ortalama için (σ biliniyorsa)**

$$z = \frac{\overline{X} - \mu}{\sigma/\sqrt{n}}$$

- **Ortalama için (n ≥ 30)**

$$z = \frac{\overline{X} - \mu}{s/\sqrt{n}}$$

- **Küçük örneklem t testi (n < 30)**

$$t = \frac{\overline{X} - \mu}{s/\sqrt{n}} \text{ ; df = n − 1}$$

- **Oran için z testi**

$$z = \frac{\hat{p} - p}{\sqrt{pq/n}}$$

- **Standart sapma için hipotez testi**

$$\chi^2 = \frac{(n-1)s^2}{\sigma^2} \text{ ; } df = \text{n − 1}$$

H2. Bağımsız iki örneklem z testi

- **İki ortalamanın karşılaştırılması (σ'lar biliniyorsa)**

$$z = \frac{\left(\overline{X}_1 - \overline{X}_2\right) - \left(\mu_1 - \mu_2\right)}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

- **İki ortalamanın karşılaştırılması (n ≥ 30)**

$$z = \frac{\left(\overline{X}_1 - \overline{X}_2\right) - \left(\mu_1 - \mu_2\right)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

H3. Varyans eşitliği / homojenliği testi

$$F = \frac{s_1^2}{s_2^2} \quad \text{; } df_1 = n_1 - 1 \text{; } df_2 = n_2 - 1$$

H4. Bağımsız örneklem t testi

- **Varyanslar eşit / homojen değilse**

$$t = \frac{\left(\overline{X}_1 - \overline{X}_2\right) - \left(\mu_1 - \mu_2\right)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \text{ ; } df = \text{küçük olan n − 1}$$

- **Varyanslar eşit / homojen ise**

$$t = \frac{\left(\overline{X}_1 - \overline{X}_2\right) - \left(\mu_1 - \mu_2\right)}{\sqrt{\frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{(n_1+n_2-2)}} \cdot \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \text{ ; } df = n_1 + n_2 - 2$$

H5. Ortalama farkı için güven aralığı

- **Büyük Örneklemler**

$$\left[\left(\overline{X}1-\overline{X}2\right)\mp z_{\alpha/2}\sqrt{\frac{\sigma_1^2}{n_1}+\frac{\sigma_2^2}{n_2}}\right]$$

- **Küçük Örneklemler (varyanslar eşit değilse)**

$$\left[\left(\overline{X}1-\overline{X}2\right)\mp t_{\alpha/2}\sqrt{\frac{s_1^2}{n_1}+\frac{s_2^2}{n_2}}\right]$$

- **Küçük Örneklemler (varyanslar eşitse)**

$$\left[\left(\overline{X}1-\overline{X}2\right)\mp t_{\alpha/2}\sqrt{\frac{\left(n_1-1\right)s_1^2+\left(n_2-1\right)s_2^2}{n_1+n_2-2}}\sqrt{\frac{1}{n_1}+\frac{1}{n_2}}\right]$$

$df = n_1 + n_2 - 2$

H6. Bağımlı / Eşleştirilmiş örneklemler hipotez testi

$$t=\frac{\overline{D}-\mu_D}{s_D/\sqrt{n}}\ ;\ \text{df} = \text{n} - 1$$

$$\overline{D}=\frac{\sum D}{n}$$

$$s_D=\sqrt{\frac{\sum D^2-\left[\left(\sum D\right)^2/n\right]}{n-1}}$$

H7. İki oranın karşılaştırılması

$$z=\frac{\left(\hat{p}_1-\hat{p}_2\right)-\left(p_1-p_2\right)}{\sqrt{\overline{p}\overline{q}\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}}$$

$$\overline{p}=\frac{X_1+X_2}{n_1+n_2};\ \hat{p}_1=\frac{X_1}{n_1}$$

$$\overline{q}=1-\overline{p}\ ;\ \hat{p}_2=\frac{X_2}{n_2}$$

H8. Oran farkı için güven aralığı

$$\left(\hat{p}_1-\hat{p}_2\right)\mp z_{\alpha/2}\sqrt{\frac{\hat{p}_1\hat{q}_1}{n_1}+\frac{\hat{p}_2\hat{q}_2}{n_2}}$$

I. Varyans Analizi

I1. Varyans testi

$$F=\frac{MST}{MSE}=\frac{S_T^2}{S_E^2}=\frac{S_B^2}{S_W^2}$$

Paydaki varyanslar uygulama/gruplararası değişkenliği, paydadaki varyanslar ise hata/grupiçi değişkenliği belirtir.

I2. Tek yönlü varyans analizi

- **Uygulama kareler toplamı ve varyansı**

$$SS_T = \sum_{i=1}^{k} n_i (\overline{X}_i - \overline{X}_{GM})^2$$

$\overline{X}_{GM}$: büyük ortalama

$\overline{X}_i$: grup ortalaması

$$df_T = k - 1;\ S_T^2 = \frac{SS_T}{df_T}$$

- **Hata kareler toplamı ve varyansı**

$$SS_E = \sum_{j=1}^{n_1} (X_{1j} - \overline{X}_1)^2 + \sum_{j=1}^{n_2} (X_{2j} - \overline{X}_2)^2 + \cdots + \sum_{j=1}^{n_k} (X_{kj} - \overline{X}_k)^2$$

$$df_E = N - k;\ S_E^2 = \frac{SS_E}{df_E}$$

$$SS_{TOT} = SS_T + SS_E\ ;\ df_{TOT} = N - 1$$

- **İlişkinin gücü**

$$\omega^2 = \frac{SS_E - (k-1)S_E^2}{SS_{TOT} + S_E^2}$$

I3. Tukey testi

$$q = \frac{\overline{X}_i - \overline{X}_j}{\sqrt{s_E^2 / n}}$$

I4. Scheffé testi

$$F_S = \frac{(\overline{X}_i - \overline{X}_j)^2}{s_E^2 \left[(1/n_i) + (1/n_j)\right]};\ F' = (k-1) \cdot F_{krit}$$

I5. Tek yönlü varyans analizi tablosu

Kaynak	SS	Df	MS (S^2)	$F_{göz}$
Uygulama (T)	SS_T	k – 1	MST	MST/MSE
Hata (E)	SS_E	N – k	MSE	
Toplam	SS_{TOT}	N – 1		

I6. Çift Yönlü Varyans Analizi

- **Toplam kareler toplamı**

$$SS_{TOT} = \sum_{i=1}^{a} \sum_{j=1}^{b} \sum_{k=1}^{m} (x_{ij,k} - \overline{X}_{GM})^2$$

$df_{TOT} = abm - 1$

- **Uygulama A için kareler toplamı ve varyansı**

$$SS_A = bm\sum_{i=1}^{a}(\overline{X}_{iA} - \overline{X}_{GM})^2$$

$$df_A = a - 1;\ s_A^2 = \frac{SS_A}{df_A}$$

- **Uygulama B için kareler toplamı ve varyansı**

$$SS_B = am\sum_{j=1}^{b}(\overline{X}_{jB} - \overline{X}_{GM})^2$$

$$df_B = b - 1;\ s_B^2 = \frac{SS_B}{df_B}$$

- **Etkileşim kareler toplamı ve varyansı**

$$SS_{A\times B} = m\sum_{i=1}^{a}\sum_{j=1}^{b}(\overline{X}_{ij} - \overline{X}_{iA} - \overline{X}_{jB} + \overline{X}_{GM})^2$$

$$df_{A\times B} = (a - 1)(b - 1);\ s_{A\times B}^2 = \frac{SS_{A\times B}}{df_{A\times B}}$$

- **Hata kareler toplamı ve varyansı**

$SS_E = SS_{TOT} - SS_A - SS_B - SS_{A\times B}$

$$df_E = ab(m - 1);\ s_E^2 = \frac{SS_E}{df_E}$$

17. Çift yönlü varyans analizi tablosu

Kaynak	SS	Df	MS (S^2)	$F_{göz}$
A	SS_A	a – 1	s_A^2	s_A^2/s_E^2
B	SS_B	b – 1	s_B^2	s_B^2/s_E^2
A × B	$SS_{A\times B}$	(a – 1)(b – 1)	$s_{A\times B}^2$	$s_{A\times B}^2/s_E^2$
Hata (E)	SS_E	ab(m – 1)	s_E^2	
Toplam	SS_{TOT}	abm – 1		

I8. Rassal blok deseni

- **Uygulama için kareler toplamı ve varyansı**

$$SS_T = b\sum_{i=1}^{t}(X_{i\bullet} - \overline{X})^2$$

df_T = t − 1; $s_T^2 = \frac{SS_T}{df_T}$; $F_T = \frac{S_T^2}{S_E^2}$

- **Bloklar için kareler toplamı ve varyansı**

$$SS_B = t\sum_{j=1}^{b}(X_{\bullet j} - \overline{X})^2$$

df_B = b − 1; $s_B^2 = \frac{SS_B}{df_B}$; $F_B = \frac{S_B^2}{S_E^2}$

- **Toplam kareler toplamı**

$$SS_{TOT} = \sum_{i=1}^{t}\sum_{j=1}^{b}(X_{ij} - \overline{X})^2$$

df_{TOT} = tb − 1

- **Hata için kareler toplamı ve varyansı**

$SS_E = SS_{TOT} - SS_T - SS_B$

df_E = (t − 1)(b − 1); $s_E^2 = \frac{SS_E}{df_E}$

I9. Rassal blok deseni tablosu

Kaynak	SS	df	MS (S^2)	$F_{göz}$
Uygulama (T)	SS_T	t − 1	s_T^2	F_T
Blok (B)	SS_B	b − 1	s_B^2	F_B
Hata (E)	SS_E	(t − 1)(b − 1)	s_E^2	
Toplam	SS_{TOT}	tb − 1		

J. Korelasyon ve Regresyon

Parametre tahminlerini göstermek için ′ (üst) veya ^ (şapka) kullanılabilir.

J1. Pearson momentler çarpımı korelasyon katsayısı ve anlamlılığı

$$r = \frac{n\left(\sum xy\right) - \left(\sum x\right)\left(\sum y\right)}{\sqrt{\left[n\left(\sum x^2\right) - \left(\sum x\right)^2\right] \cdot \left[n\left(\sum y^2\right) - \left(\sum y\right)^2\right]}}$$

$t = r\sqrt{\frac{n-2}{1-r^2}}$; df = n − 2

J2. Regresyon eşitliği

$$\hat{y} = y' = a + bx$$

J3. Regresyon katsayısı / ağırlığı (beta)

$$b = \frac{n\left(\sum xy\right) - \left(\sum x\right)\left(\sum y\right)}{n\left(\sum x^2\right) - \left(\sum x\right)^2}$$

J4. Regresyon sabiti

$$a = \overline{Y} - b\overline{X}$$

J5. Tahmin hatası

$$\hat{\sigma} = s_{est} = \sqrt{\frac{\sum (y - y')^2}{n - 2}}$$

J6. Regresyonun açıkladığı varyans

$$r^2 = \frac{\sum (y' - \overline{y})^2}{\sum (y - \overline{y})^2}$$

J7. Tahmin aralığı

$$y' \mp t_{\alpha/2} S_{est} \sqrt{1 + \frac{1}{n} + \frac{n\left(x - \overline{X}\right)^2}{n\left(\sum x^2\right) - \left(\sum x\right)^2}}$$

df = n – 2

K. Ki Kare Uyum İyiliği ve Bağımsızlık Testleri

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

O: gözlenen frekans

E: beklenen frekans

Uyum iyiliği testi df = (kategori sayısı - 1)

Bağımsızlık testi df = (satır – 1)(sütun – 1)

L. Parametrik Olmayan Bazı Testler

L1. İşaret testi (n ≥ 26)

$$z = \frac{(X + 0.5) - (n/2)}{\sqrt{n}/2}$$

X: + veya – işaret toplamlarından küçük olanı

L2. İlişkili örneklem işaret testi

$$z = \frac{|D| - 1}{\sqrt{N}}$$

L3. Wilcoxon sıralama toplamı testi ($n_1 \geq 10$ ve $n_2 \geq 10$)

$$z = \frac{R - \mu_R}{\sigma_R}$$

$$\mu_R = \frac{n_1(n_1 + n_2 + 1)}{2}$$

$$\sigma_R = \sqrt{\frac{n_1 n_2(n_1 + n_2 + 1)}{12}}$$

R: küçük örneklem büyüklüğü (n_1) için sıra toplamı

n_1: küçük örneklem büyüklüğü

n_2: büyük örneklem büyüklüğü

L4. Wilcoxon işaretli sıralama testi

$$z = \frac{w_s - \frac{n(n+1)}{4}}{\sqrt{\frac{n(n+1)(2n+1)}{24}}}$$

n: farkın 0 olmadığı çiftlerin sayısı

w_s: işaretli sıralar için küçük olan toplamın mutlak değeri

L5. Mann-Whitney U testi

- **$N_1 \leq 20$ ve $N_2 \leq 20$**

$$U = N_1 N_2 - U'$$

$$U = N_1 N_2 + \frac{N_1(N_1 + 1)}{2} - R_1$$

$$U' = N_1 N_2 + \frac{N_2(N_2 + 1)}{2} - R_2$$

R: ilgili örneklemin sıralar toplamı

- **$N_1 > 20$ ve $N_2 > 20$**

$$z = \frac{U_1 - U_E}{s_U}$$

U_1: birinci grubun sıralar toplamı

U_E: beklenen sıralar toplamı

s_U: standart hata

$$U_E = \frac{N_1(N_1 + N_2 + 1)}{2}$$

$$s_U = \sqrt{\frac{N_1 N_2(N_1 + N_2 + 1)}{12}}$$

L6. Kruskal-Wallis testi

$$H = \frac{12}{N(N+1)}\left(\frac{R_1^2}{n_1} + \frac{R_2^2}{n_2} + \cdots + \frac{R_k^2}{n_k}\right) - 3(N+1)$$

R: ilgili örneklemin sıra toplamı

L7. Spearman sıralama korelasyon katsayısı

$$r_s = 1 - \frac{6\sum d^2}{n(n^2 - 1)}$$

d: sıralama farkı

L8. Durbin-Watson testi

$$d = \frac{\sum_{t=2}^{T} \left(\hat{e}_t - \hat{e}_{t-1}\right)^2}{\sum_{t=1}^{T} \hat{e}_t^2}$$

İSTATİSTİKSEL TABLOLAR

Tablo 1. Rassal Sayılar

29 32 95 99 57 98 08 36 97 08 65 30 47 22 00 38 60 10 01 10
12 11 80 16 17 01 03 97 59 73 74 98 73 65 85 59 74 66 37 58
87 58 22 25 55 35 72 79 28 15 69 17 42 98 72 05 47 12 40 99
02 92 42 87 57 53 53 34 55 75 83 64 09 10 19 33 29 57 62 98
69 28 63 73 98 45 61 10 43 20 08 10 43 16 81 17 62 99 09 16

11 95 68 77 86 91 76 11 63 34 15 08 35 39 37 12 74 15 00 10
06 43 41 02 13 65 23 94 48 88 88 87 03 90 77 68 98 09 17 22
68 55 98 08 39 59 85 46 66 13 42 90 86 13 29 12 38 48 27 54
41 01 06 65 10 29 29 91 86 24 45 59 04 88 17 68 31 01 91 13
46 75 71 76 88 04 42 94 41 42 39 79 14 46 13 49 37 18 28 08

80 14 13 43 24 47 61 47 42 24 24 82 12 23 54 81 33 18 96 89
30 56 60 77 80 33 67 68 31 67 73 23 45 30 55 81 51 87 68 58
53 50 41 02 98 49 97 32 43 55 75 33 51 20 99 64 76 20 80 98
84 14 75 87 37 58 51 94 06 76 27 94 23 76 77 81 72 90 45 41
08 27 89 33 87 52 24 57 50 22 22 76 60 05 79 86 58 83 88 41

97 08 50 16 41 67 40 56 13 12 68 67 36 22 08 55 76 86 45 67
97 08 37 42 48 95 90 48 34 88 19 66 38 94 64 95 07 78 23 86
70 15 04 10 34 95 57 63 75 82 88 74 28 24 66 99 52 65 36 98
06 38 31 17 38 24 98 52 67 04 95 54 89 79 45 28 05 18 60 17
63 87 79 25 86 56 74 17 45 32 53 62 09 04 86 65 87 48 82 02

17 00 56 31 14 18 56 97 91 78 85 82 06 24 88 49 17 68 51 50
17 76 35 38 19 24 47 21 09 43 09 72 02 64 66 06 78 21 70 41
57 77 32 13 60 37 68 66 11 23 30 62 97 71 02 20 13 22 00 40
35 86 97 84 91 77 73 03 37 77 50 24 54 51 40 20 66 16 34 84
72 68 64 77 89 72 77 67 45 72 25 56 78 69 72 63 86 52 07 43

91 01 78 50 50 91 99 15 36 02 74 42 55 33 19 88 35 17 58 37
70 37 55 94 53 05 78 53 23 29 15 57 70 30 88 63 20 12 64 38
11 06 17 48 24 57 50 76 81 77 30 12 92 27 19 32 63 70 97 80
60 37 89 98 61 05 51 89 47 28 34 83 98 44 66 96 84 64 64 92
37 41 11 09 04 84 38 51 91 49 23 78 53 95 40 17 73 23 04 70

28 97 38 27 97 54 95 94 54 79 93 88 00 82 39 61 93 78 07 88
14 29 17 18 84 03 10 62 15 70 01 15 06 30 97 79 55 98 79 39
81 70 53 83 20 25 26 56 55 56 33 58 74 21 76 94 24 80 12 50
08 20 90 25 43 22 81 74 51 76 53 39 59 35 34 46 55 54 73 50
61 95 25 85 66 34 76 39 98 88 45 57 64 11 17 06 43 35 27 09

64 58 31 05 45 77 25 20 02 09 36 87 63 01 10 08 01 19 19 06
75 49 97 87 79 31 66 57 89 56 56 97 71 43 65 62 36 77 50 87
66 95 10 78 42 24 91 82 74 29 00 53 44 70 18 23 48 09 90 99
85 37 61 48 07 99 13 01 16 94 37 31 28 96 59 77 62 24 95 84
06 87 15 09 48 31 18 66 87 11 19 71 67 20 93 92 02 96 15 65

11 15 95 59 69 81 75 75 88 69 95 12 75 69 18 10 60 35 31 47
03 64 44 33 46 16 02 28 14 33 61 57 28 33 96 47 49 86 85 83
68 89 57 51 94 84 09 80 37 90 52 99 85 52 49 66 63 69 11 31
43 13 09 12 00 65 69 54 11 00 20 94 22 93 90 16 82 64 27 46
42 68 71 56 74 17 71 63 80 81 02 41 49 27 92 44 44 13 45 21

Tablo 1. Rassal Sayılar (*devam*)

12 55 09 80 30 50 34 96 31 71 19 21 79 42 17 57 04 04 19 00
88 84 87 74 01 39 99 02 75 76 61 88 97 89 06 97 15 70 26 27
49 27 92 08 87 65 12 32 27 96 11 26 30 88 48 89 29 73 50 47
46 51 54 92 06 44 85 83 14 78 68 83 33 17 03 10 99 10 17 34
34 96 78 90 18 41 44 69 10 30 48 98 32 76 12 81 29 83 02 87

80 07 15 41 15 37 42 39 24 45 48 73 61 15 44 74 40 27 26 47
39 08 51 67 63 03 76 76 86 09 39 32 62 77 60 85 37 14 69 76
51 32 57 06 49 13 01 25 98 83 44 96 92 78 37 24 49 35 54 52
84 46 17 46 71 53 88 78 30 71 53 85 55 10 93 40 05 66 72 38
04 88 20 78 89 94 31 36 83 74 51 25 28 43 54 76 57 08 21 23

21 45 86 26 12 21 28 37 56 47 86 18 38 39 18 89 99 62 81 98
71 38 27 31 40 52 36 03 51 54 83 14 51 17 86 77 66 84 50 84
78 50 39 32 55 17 25 06 90 90 69 48 70 68 22 07 85 07 95 84
22 76 93 40 26 30 77 61 71 74 81 13 73 21 99 00 47 52 43 18
25 21 70 62 69 05 05 58 75 92 85 60 50 87 81 35 80 83 42 16

96 79 06 87 51 04 17 61 42 12 64 77 45 06 55 68 19 39 17 22
97 76 01 89 33 70 46 23 44 83 99 55 95 03 41 89 33 49 89 86
78 03 18 58 00 47 18 01 33 49 99 55 54 70 65 34 76 58 86 20
09 63 31 80 30 17 11 75 34 81 25 45 91 80 50 25 64 70 05 48
61 33 89 72 78 98 26 56 88 66 51 69 71 48 13 71 40 57 31 22

64 83 61 76 37 68 22 25 09 82 53 59 78 66 81 66 45 56 64 78
18 93 65 67 39 81 96 44 68 46 96 50 08 71 70 81 23 32 89 61
86 84 70 40 22 89 25 42 62 69 95 98 59 26 69 55 33 62 91 88
96 57 56 48 81 92 77 95 43 50 29 89 07 58 10 83 66 04 15 74
54 35 65 28 09 99 04 41 86 60 69 54 82 74 49 86 82 25 07 29

18 79 09 01 55 60 31 19 19 48 01 89 54 63 96 70 99 15 71 84
19 78 77 63 36 52 38 88 16 92 23 42 49 79 27 15 09 94 49 35
55 71 79 75 30 29 13 32 60 07 33 73 61 89 63 64 17 15 21 39
38 58 83 62 94 73 84 48 95 17 79 74 78 38 09 37 35 75 74 70
78 29 66 85 65 45 79 70 88 92 73 24 71 71 63 70 47 56 70 28

87 55 81 22 04 62 21 45 81 82 43 96 17 70 61 80 59 10 59 00
06 98 70 24 03 20 67 45 67 65 04 61 76 89 25 13 73 06 41 16
33 08 62 21 90 70 72 16 01 23 26 05 10 33 23 23 03 07 46 08
54 03 25 45 50 40 58 15 41 07 16 24 16 63 46 64 27 85 27 47
68 90 88 08 25 70 23 82 53 40 51 91 84 67 84 08 09 76 19 19

90 18 00 18 76 88 55 07 52 00 30 04 83 72 04 74 87 56 90 80
70 07 33 78 52 59 92 46 58 33 61 42 31 47 58 89 32 02 55 36
19 13 05 69 12 74 49 85 21 49 18 11 60 96 94 04 74 26 23 44
95 70 86 00 19 44 74 51 22 34 63 14 11 30 48 54 71 78 97 12
65 12 41 20 32 33 72 70 71 24 51 39 43 28 90 51 14 46 17 40

15 53 57 75 61 54 95 63 75 51 28 43 39 55 90 58 01 50 31 88
60 27 72 94 00 25 71 09 76 19 66 69 44 09 39 12 60 43 02 52
57 91 58 68 24 78 33 54 25 46 08 87 72 85 28 98 89 67 68 92
40 15 42 80 71 35 81 75 95 40 04 85 70 88 19 44 75 50 63 41
23 97 89 48 74 96 60 10 40 24 33 88 86 93 30 79 96 32 25 34

48 25 55 19 87 97 39 79 66 73 50 78 72 75 08 78 66 69 13 35
24 58 57 51 61 90 39 52 91 33 77 67 76 78 40 42 05 70 73 08
60 22 38 11 98 95 66 00 95 19 32 99 90 77 55 50 86 94 41 83
84 89 06 96 10 47 83 22 11 81 19 13 48 21 71 99 16 81 88 56
30 80 70 60 93 09 74 04 99 72 67 91 91 75 20 36 08 45 28 35

Tablo 1. Rassal Sayılar (*devam*)

23 95 78 32 20 71 90 24 20 66 09 27 14 97 94 78 67 45 20 62
48 52 58 73 69 63 54 77 76 89 09 15 50 05 85 91 12 10 12 29
33 69 72 87 15 96 24 09 14 84 41 57 16 17 78 18 46 46 23 04
71 71 53 72 84 65 86 16 70 43 62 10 33 15 61 60 80 73 18 21
29 53 27 21 49 53 31 68 21 10 17 47 35 74 84 18 58 07 17 32

17 70 60 84 24 50 82 33 67 40 15 88 50 22 54 28 39 46 14 28
98 37 60 93 52 27 20 93 10 62 90 69 27 96 44 54 01 13 81 14
16 39 86 14 17 56 74 44 76 20 77 74 52 52 56 06 99 78 52 67
53 17 93 61 99 15 08 47 04 09 46 95 53 02 57 60 02 02 99 83
05 38 06 80 55 75 49 12 95 96 98 63 46 51 49 74 97 71 95 88

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Tablo 2. Faktöryel Değerleri

n	***n!***
0	1
1	1
2	2
3	6
4	24
5	120
6	720
7	5,040
8	40,320
9	362,880
10	3,628,800
11	39,916,800
12	479,001,600
13	6,227,020,800
14	87,178,291,200
15	1,307,674,368,000

Tablo 3. Binom Dağılımı

		P										
n	x	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	.95
2	0	.902	.810	.640	.490	.360	.250	.160	.090	.040	.010	.002
	1	.095	.180	.320	.420	.480	.500	.480	.420	.320	.180	.095
	2	.002	.010	.040	.090	.160	.250	.360	.490	.640	.810	.902
3	0	.857	.729	.512	.343	.216	.125	.064	.027	.008	.001	
	1	.135	.243	.384	.441	.432	.375	.288	.189	.096	.027	.007
	2	.007	.027	.096	.189	.288	.375	.432	.441	.384	.243	.135
	3		.001	.008	.027	.064	.125	.216	.343	.512	.729	.857
4	0	.815	.656	.410	.240	.130	.062	.026	.008	.002		
	1	.171	.292	.410	.412	.346	.250	.154	.076	.026	.004	
	2	.014	.049	.154	.265	.346	.375	.346	.265	.154	.049	.014
	3		.004	.026	.076	.154	.250	.346	.412	.410	.292	.171
	4			.002	.008	.026	.062	.130	.240	.410	.656	.815
5	0	.774	.590	.328	.168	.078	.031	.010	.002			
	1	.204	.328	.410	.360	.259	.156	.077	.028	.006		
	2	.021	.073	.205	.309	.346	.312	.230	.132	.051	.008	.001
	3	.001	.008	.051	.132	.230	.312	.346	.309	.205	.073	.021
	4			.006	.028	.077	.156	.259	.360	.410	.328	.204
	5				.002	.010	.031	.078	.168	.328	.590	.774
6	0	.735	.531	.262	.118	.047	.016	.004	.001			
	1	.232	.354	.393	.303	.187	.094	.037	.010	.002		
	2	.031	.098	.246	.324	.311	.234	.138	.060	.015	.001	
	3	.002	.015	.082	.185	.276	.312	.276	.185	.082	.015	.002
	4		.001	.015	.060	.138	.234	.311	.324	.246	.098	.031
	5			.002	.010	.037	.094	.187	.303	.393	.354	.232
	6				.001	.004	.016	.047	.118	.262	.531	.735
7	0	.698	.478	.210	.082	.028	.008	.002				
	1	.257	.372	.367	.247	.131	.055	.017	.004			
	2	.041	.124	.275	.318	.261	.164	.077	.025	.004		
	3	.004	.023	.115	.227	.290	.273	.194	.097	.029	.003	
	4		.003	.029	.097	.194	.273	.290	.227	.115	.023	.004
	5			.004	.025	.077	.164	.261	.318	.275	.124	.041
	6				.004	.017	.055	.131	.247	.367	.372	.257
	7					.002	.008	.028	.082	.210	.478	.698
8	0	.663	.430	.168	.058	.017	.004	.001				
	1	.279	.383	.336	.198	.090	.031	.008	.001			
	2	.051	.149	.294	.296	.209	.109	.041	.010	.001		
	3	.005	.033	.147	.254	.279	.219	.124	.047	.009		
	4		.005	.046	.136	.232	.273	.232	.136	.046	.005	
	5			.009	.047	.124	.219	.279	.254	.147	.033	.005
	6			.001	.010	.041	.109	.209	.296	.294	.149	.051
	7				.001	.008	.031	.090	.198	.336	.383	.279
	8					.001	.004	.017	.058	.168	.430	.663

Tablo 3. Binom Dağılımı (*devam*)

		P										
n	x	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	.95
9	0	.630	.387	.134	.040	.010	.002					
	1	.299	.387	.302	.156	.060	.018	.004				
	2	.063	.172	.302	.267	.161	.070	.021	.004			
	3	.008	.045	.176	.267	.251	.164	.074	.021	.003		
	4	.001	.007	.066	.172	.251	.246	.167	.074	.017	.001	
	5		.001	.017	.074	.167	.246	.251	.172	.066	.007	.001
	6			.003	.021	.074	.164	.251	.267	.176	.045	.008
	7				.004	.021	.070	.161	.267	.302	.172	.063
	8					.004	.018	.060	.156	.302	.387	.299
	9						.002	.010	.040	.134	.387	.630
10	0	.599	.349	.107	.028	.006	.001					
	1	.315	.387	.268	.121	.040	.010	.002				
	2	.075	.194	.302	.233	.121	.044	.011	.001			
	3	.010	.057	.201	.267	.215	.117	.042	.009	.001		
	4	.001	.011	.088	.200	.251	.205	.111	.037	.006		
	5		.001	.026	.103	.201	.246	.201	.103	.026	.001	
	6			.006	.037	.111	.205	.251	.200	.088	.011	.001
	7			.001	.009	.042	.117	.215	.267	.201	.057	.010
	8				.001	.011	.044	.121	.233	.302	.194	.075
	9					.002	.010	.040	.121	.268	.387	.315
	10						.001	.006	.028	.107	.349	.599
11	0	.569	.314	.086	.020	.004						
	1	.329	.384	.236	.093	.027	.005	.001				
	2	.087	.213	.295	.200	.089	.027	.005	.001			
	3	.014	.071	.221	.257	.177	.081	.023	.004			
	4	.001	.016	.111	.220	.236	.161	.070	.017	.002		
	5		.002	.039	.132	.221	.226	.147	.057	.010		
	6			.010	.057	.147	.226	.221	.132	.039	.002	
	7			.002	.017	.070	.161	.236	.220	.111	.016	.001
	8				.004	.023	.081	.177	.257	.221	.071	.014
	9				.001	.005	.027	.089	.200	.295	.213	.087
	10					.001	.005	.027	.093	.236	.384	.329
	11							.004	.020	.086	.314	.569
12	0	.540	.282	.069	.014	.002						
	1	.341	.377	.206	.071	.017	.003					
	2	.099	.230	.283	.168	.064	.016	.002				
	3	.017	.085	.236	.240	.142	.054	.012	.001			
	4	.002	.021	.133	.231	.213	.121	.042	.008	.001		
	5		.004	.053	.158	.227	.193	.101	.029	.003		
	6			.016	.079	.177	.226	.177	.079	.016		
	7			.003	.029	.101	.193	.227	.158	.053	.004	
	8			.001	.008	.042	.121	.213	.231	.133	.021	.002
	9				.001	.012	.054	.142	.240	.236	.085	.017
	10					.002	.016	.064	.168	.283	.230	.099
	11						.003	.017	.071	.206	.377	.341
	12							.002	.014	.069	.282	.540

Tablo 3. Binom Dağılımı (*devam*)

		p										
n	x	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	.95
13	0	.513	.254	.055	.010	.001						
	1	.351	.367	.179	.054	.011	.002					
	2	.111	.245	.268	.139	.045	.010	.001				
	3	.021	.100	.246	.218	.111	.035	.006	.001			
	4	.003	.028	.154	.234	.184	.087	.024	.003			
	5		.006	.069	.180	.221	.157	.066	.014	.001		
	6		.001	.023	.103	.197	.209	.131	.044	.006		
	7			.006	.044	.131	.209	.197	.103	.023	.001	
	8			.001	.014	.066	.157	.221	.180	.069	.006	
	9				.003	.024	.087	.184	.234	.154	.028	.003
	10				.001	.006	.035	.111	.218	.246	.100	.021
	11					.001	.010	.045	.139	.268	.245	.111
	12						.002	.011	.054	.179	.367	.351
	13							.001	.010	.055	.254	.513
14	0	.488	.229	.044	.007	.001						
	1	.359	.356	.154	.041	.007	.001					
	2	.123	.257	.250	.113	.032	.006	.001				
	3	.026	.114	.250	.194	.085	.022	.003				
	4	.004	.035	.172	.229	.155	.061	.014	.001			
	5		.008	.086	.196	.207	.122	.041	.007			
	6		.001	.032	.126	.207	.183	.092	.023	.002		
	7			.009	.062	.157	.209	.157	.062	.009		
	8			.002	.023	.092	.183	.207	.126	.032	.001	
	9				.007	.041	.122	.207	.196	.086	.008	
	10				.001	.014	.061	.155	.229	.172	.035	.004
	11					.003	.022	.085	.194	.250	.114	.026
	12					.001	.006	.032	.113	.250	.257	.123
	13						.001	.007	.041	.154	.356	.359
	14							.001	.007	.044	.229	.488
15	0	.463	.206	.035	.005							
	1	.366	.343	.132	.031	.005						
	2	.135	.267	.231	.092	.022	.003					
	3	.031	.129	.250	.170	.063	.014	.002				
	4	.005	.043	.188	.219	.127	.042	.007	.001			
	5	.001	.010	.103	.206	.186	.092	.024	.003			
	6		.002	.043	.147	.207	.153	.061	.012	.001		
	7			.014	.081	.177	.196	.118	.035	.003		
	8			.003	.035	.118	.196	.177	.081	.014		
	9			.001	.012	.061	.153	.207	.147	.043	.002	
	10				.003	.024	.092	.186	.206	.103	.010	.001
	11				.001	.007	.042	.127	.219	.188	.043	.005
	12					.002	.014	.063	.170	.250	.129	.031
	13						.003	.022	.092	.231	.267	.135
	14							.005	.031	.132	.343	.366
	15								.005	.035	.206	.463

Tablo 3. Binom Dağılımı (*devam*)

16	0	.440	.185	.028	.003						
	1	.371	.329	.113	.023	.003					
	2	.146	.275	.211	.073	.015	.002				
	3	.036	.142	.246	.146	.047	.009	.001			
	4	.006	.051	.200	.204	.101	.028	.004			
	5	.001	.014	.120	.210	.162	.067	.014	.001		
	6		.003	.055	.165	.198	.122	.039	.006		
	7			.020	.101	.189	.175	.084	.019	.001	
	8			.006	.049	.142	.196	.142	.049	.006	
	9			.001	.019	.084	.175	.189	.101	.020	
	10				.006	.039	.122	.198	.165	.055	.003
	11				.001	.014	.067	.162	.210	.120	.014	.001
	12					.004	.028	.101	.204	.200	.051	.006
	13					.001	.009	.047	.146	.246	.142	.036
	14						.002	.015	.073	.211	.275	.146
	15							.003	.023	.113	.329	.371
	16								.003	.028	.185	.440
17	0	.418	.167	.023	.002						
	1	.374	.315	.096	.017	.002					
	2	.158	.280	.191	.058	.010	.001				
	3	.041	.156	.239	.125	.034	.005				
	4	.008	.060	.209	.187	.080	.018	.002			
	5	.001	.017	.136	.208	.138	.047	.008	.001		
	6		.004	.068	.178	.184	.094	.024	.003		
	7		.001	.027	.120	.193	.148	.057	.009		
	8			.008	.064	.161	.185	.107	.028	.002	
	9			.002	.028	.107	.185	.161	.064	.008	
	10				.009	.057	.148	.193	.120	.027	.001
	11				.003	.024	.094	.184	.178	.068	.004
	12				.001	.008	.047	.138	.208	.136	.017	.001
	13					.002	.018	.080	.187	.209	.060	.008
	14						.005	.034	.125	.239	.156	.041
	15						.001	.010	.058	.191	.280	.158
	16							.002	.017	.096	.315	.374
	17								.002	.023	.167	.418
18	0	.397	.150	.018	.002						
	1	.376	.300	.081	.013	.001					
	2	.168	.284	.172	.046	.007	.001				
	3	.047	.168	.230	.105	.025	.003				
	4	.009	.070	.215	.168	.061	.012	.001			
	5	.001	.022	.151	.202	.115	.033	.004			
	6		.005	.082	.187	.166	.071	.015	.001		
	7		.001	.035	.138	.189	.121	.037	.005		
	8			.012	.081	.173	.167	.077	.015	.001	
	9			.003	.039	.128	.185	.128	.039	.003	
	10			.001	.015	.077	.167	.173	.081	.012	
	11				.005	.037	.121	.189	.138	.035	.001
	12				.001	.015	.071	.166	.187	.082	.005
	13					.004	.033	.115	.202	.151	.022	.001
	14					.001	.012	.061	.168	.215	.070	.009
	15						.003	.025	.105	.230	.168	.047
	16						.001	.007	.046	.172	.284	.168
	17							.001	.013	.081	.300	.376
	18								.002	.018	.150	.397

Tablo 3. Binom Dağılımı (*devam*)

19	0	.377	.135	.014	.001							
	1	.377	.285	.068	.009	.001						
	2	.179	.285	.154	.036	.005						
	3	.053	.180	.218	.087	.017	.002					
	4	.011	.080	.218	.149	.047	.007	.001				
	5	.002	.027	.164	.192	.093	.022	.002				
	6		.007	.095	.192	.145	.052	.008	.001			
	7		.001	.044	.153	.180	.096	.024	.002			
	8			.017	.098	.180	.144	.053	.008			
	9			.005	.051	.146	.176	.098	.022	.001		
	10			.001	.022	.098	.176	.146	.051	.005		
	11				.008	.053	.144	.180	.098	.071		
	12				.002	.024	.096	.180	.153	.044	.001	
	13				.001	.008	.052	.145	.192	.095	.007	
	14					.002	.022	.093	.192	.164	.027	.002
	15					.001	.007	.047	.149	.218	.080	.011
	16						.002	.017	.087	.218	.180	.053
	17							.005	.036	.154	.285	.179
	18							.001	.009	.068	.285	.377
	19								.001	.014	.135	.377
20	0	.358	.122	.012	.001							
	1	.377	.270	.058	.007							
	2	.189	.285	.137	.028	.003						
	3	.060	.190	.205	.072	.012	.001					
	4	.013	.090	.218	.130	.035	.005					
	5	.002	.032	.175	.179	.075	.015	.001				
	6		.009	.109	.192	.124	.037	.005				
	7		.002	.055	.164	.166	.074	.015	.001			
	8			.022	.114	.180	.120	.035	.004			
	9			.007	.065	.160	.160	.071	.012			
	10			.002	.031	.117	.176	.117	.031	.002		
	11				.012	.071	.160	.160	.065	.007		
	12				.004	.035	.120	.180	.114	.022		
	13				.001	.015	.074	.166	.164	.055	.002	
	14					.005	.037	.124	.192	.109	.009	
	15					.001	.015	.075	.179	.175	.032	.002
	16						.005	.035	.130	.218	.090	.013
	17						.001	.012	.072	.205	.190	.060
	18							.003	.028	.137	.285	.189
	19								.007	.058	.270	.377
	20								.001	.012	.122	.358

Kaynak. Bluman, A. G. (2001). *Elementary statistics: A step by step approach* (4. basım). NY: McGraw-Hill.

Tablo 4. Poisson Dağılımı

						λ				
X	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
0	.9048	.8187	.7408	.6703	.6065	.5488	.4966	.4493	.4066	.3679
1	.0905	.1637	.2222	.2681	.3033	.3293	.3476	.3595	.3659	.3679
2	.0045	.0164	.0333	.0536	.0758	.0988	.1217	.1438	.1647	.1839
3	.0002	.0011	.0033	.0072	.0126	.0198	.0284	.0383	.0494	.0613
4	.0000	.0001	.0003	.0007	.0016	.0030	.0050	.0077	.0111	.0153
5	.0000	.0000	.0000	.0001	.0002	.0004	.0007	.0012	.0020	.0031
6	.0000	.0000	.0000	.0000	.0000	.0000	.0001	.0002	.0003	.0005
7	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0001

						λ				
X	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
0	.3329	.3012	.2725	.2466	.2231	.2019	.1827	.1653	.1496	.1353
1	.3662	.3614	.3543	.3452	.3347	.3230	.3106	.2975	.2842	.2707
2	.2014	.2169	.2303	.2417	.2510	.2584	.2640	.2678	.2700	.2707
3	.0738	.0867	.0998	.1128	.1255	.1378	.1496	.1607	.1710	.1804
4	.0203	.0260	.0324	.0395	.0471	.0551	.0636	.0723	.0812	.0902
5	.0045	.0062	.0084	.0111	.0141	.0176	.0216	.0260	.0309	.0361
6	.0008	.0012	.0018	.0026	.0035	.0047	.0061	.0078	.0098	.0120
7	.0001	.0002	.0003	.0005	.0008	.0011	.0015	.0020	.0027	.0034
8	.0000	.0000	.0001	.0001	.0001	.0002	.0003	.0005	.0006	.0009
9	.0000	.0000	.0000	.0000	.0000	.0000	.0001	.0001	.0001	.0002

						λ				
X	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0
0	.1225	.1108	.1003	.0907	.0821	.0743	.0672	.0608	.0550	.0498
1	.2572	.2438	.2306	.2177	.2052	.1931	.1815	.1703	.1596	.1494
2	.2700	.2681	.2652	.2613	.2565	.2510	.2450	.2384	.2314	.2240
3	.1890	.1966	.2033	.2090	.2138	.2176	.2205	.2225	.2237	.2240
4	.0992	.1082	.1169	.1254	.1336	.1414	.1488	.1557	.1622	.1680
5	.0417	.0476	.0538	.0602	.0668	.0735	.0804	.0872	.0940	.1008
6	.0146	.0174	.0206	.0241	.0278	.0319	.0362	.0407	.0455	.0504
7	.0044	.0055	.0068	.0083	.0099	.0118	.0139	.0163	.0188	.0216
8	.0011	.0015	.0019	.0025	.0031	.0038	.0047	.0057	.0068	.0081
9	.0003	.0004	.0005	.0007	.0009	.0011	.0014	.0018	.0022	.0027
10	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0005	.0006	.0008
11	.0000	.0000	.0000	.0000	.0000	.0001	.0001	.0001	.0002	.0002
12	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0001

Tablo 4. Poisson Dağılımı (*devam*)

	λ									
X	**3.1**	**3.2**	**3.3**	**3.4**	**3.5**	**3.6**	**3.7**	**3.8**	**3.9**	**4.0**
0	.0450	.0408	.0369	.0334	.0302	.0273	.0247	.0224	.0202	.0183
1	.1397	.1304	.1217	.1135	.1057	.0984	.0915	.0850	.0789	.0733
2	.2165	.2087	.2008	.1929	.1850	.1771	.1692	.1615	.1539	.1465
3	.2237	.2226	.2209	.2186	.2158	.2125	.2087	.2046	.2001	.1954
4	.1734	.1781	.1823	.1858	.1888	.1912	.1931	.1944	.1951	.1954
5	.1075	.1140	.1203	.1264	.1322	.1377	.1429	.1477	.1522	.1563
6	.0555	.0608	.0662	.0716	.0771	.0826	.0881	.0936	.0989	.1042
7	.0246	.0278	.0312	.0348	.0385	.0425	.0466	.0508	.0551	.0595
8	.0095	.0111	.0129	.0148	.0169	.0191	.0215	.0241	.0269	.0298
9	.0033	.0040	.0047	.0056	.0066	.0076	.0089	.0102	.0116	.0132
10	.0010	.0013	.0016	.0019	.0023	.0028	.0033	.0039	.0045	.0053
11	.0003	.0004	.0005	.0006	.0007	.0009	.0011	.0013	.0016	.0019
12	.0001	.0001	.0001	.0002	.0002	.0003	.0003	.0004	.0005	.0006
13	.0000	.0000	.0000	.0000	.0001	.0001	.0001	.0001	.0002	.0002
14	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0001

	λ									
X	**4.1**	**4.2**	**4.3**	**4.4**	**4.5**	**4.6**	**4.7**	**4.8**	**4.9**	**5.0**
0	.0166	.0150	.0136	.0123	.0111	.0101	.0091	.0082	.0074	.0067
1	.0679	.0630	.0583	.0540	.0500	.0462	.0427	.0395	.0365	.0337
2	.1393	.1323	.1254	.1188	.1125	.1063	.1005	.0948	.0894	.0842
3	.1904	.1852	.1798	.1743	.1687	.1631	.1574	.1517	.1460	.1404
4	.1951	.1944	.1933	.1917	.1898	.1875	.1849	.1820	.1789	.1755
5	.1600	.1633	.1662	.1687	.1708	.1725	.1738	.1747	.1753	.1755
6	.1093	.1143	.1191	.1237	.1281	.1323	.1362	.1398	.1432	.1462
7	.0640	.0686	.0732	.0778	.0824	.0869	.0914	.0959	.1002	.1044
8	.0328	.0360	.0393	.0428	.0463	.0500	.0537	.0575	.0614	.0653
9	.0150	.0168	.0188	.0209	.0232	.0255	.0280	.0307	.0334	.0363
10	.0061	.0071	.0081	.0092	.0104	.0118	.0132	.0147	.0164	.0181
11	.0023	.0027	.0032	.0037	.0043	.0049	.0056	.0064	.0073	.0082
12	.0008	.0009	.0011	.0014	.0016	.0019	.0022	.0026	.0030	.0034
13	.0002	.0003	.0004	.0005	.0006	.0007	.0008	.0009	.0011	.0013
14	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0003	.0004	.0005
15	.0000	.0000	.0000	.0000	.0001	.0001	.0001	.0001	.0001	.0002

Tablo 4. Poisson Dağılımı (*devam*)

	λ									
X	**5.1**	**5.2**	**5.3**	**5.4**	**5.5**	**5.6**	**5.7**	**5.8**	**5.9**	**6.0**
0	.0061	.0055	.0050	.0045	.0041	.0037	.0033	.0030	.0027	.0025
1	.0311	.0287	.0265	.0244	.0225	.0207	.0191	.0176	.0162	.0149
2	.0793	.0746	.0701	.0659	.0618	.0580	.0544	.0509	.0477	.0446
3	.1348	.1293	.1239	.1185	.1133	.1082	.1033	.0985	.0938	.0892
4	.1719	.1681	.1641	.1600	.1558	.1515	.1472	.1428	.1383	.1339
5	.1753	.1748	.1740	.1728	.1714	.1697	.1678	.1656	.1632	.1606
6	.1490	.1515	.1537	.1555	.1571	.1584	.1594	.1601	.1605	.1606
7	.1086	.1125	.1163	.1200	.1234	.1267	.1298	.1326	.1353	.1377
8	.0692	.0731	.0771	.0810	.0849	.0887	.0925	.0962	.0998	.1033
9	.0392	.0423	.0454	.0486	.0519	.0552	.0586	.0620	.0654	.0688
10	.0200	.0220	.0241	.0262	.0285	.0309	.0334	.0359	.0386	.0413
11	.0093	.0104	.0116	.0129	.0143	.0157	.0173	.0190	.0207	.0225
12	.0039	.0045	.0051	.0058	.0065	.0073	.0082	.0092	.0102	.0113
13	.0015	.0018	.0021	.0024	.0028	.0032	.0036	.0041	.0046	.0052
14	.0006	.0007	.0008	.0009	.0011	.0013	.0015	.0017	.0019	.0022
15	.0002	.0002	.0003	.0003	.0004	.0005	.0006	.0007	.0008	.0009
16	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0003
17	.0000	.0000	.0000	.0000	.0000	.0000	.0001	.0001	.0001	.0001

	λ									
X	**6.1**	**6.2**	**6.3**	**6.4**	**6.5**	**6.6**	**6.7**	**6.8**	**6.9**	**7.0**
0	.0022	.0020	.0018	.0017	.0015	.0014	.0012	.0011	.0010	.0009
1	.0137	.0126	.0116	.0106	.0098	.0090	.0082	.0076	.0070	.0064
2	.0417	.0390	.0364	.0340	.0318	.0296	.0276	.0258	.0240	.0223
3	.0848	.0806	.0765	.0726	.0688	.0652	.0617	.0584	.0552	.0521
4	.1294	.1249	.1205	.1162	.1118	.1076	.1034	.0992	.0952	.0912
5	.1579	.1549	.1519	.1487	.1454	.1420	.1385	.1349	.1314	.1277
6	.1605	.1601	.1595	.1586	.1575	.1562	.1546	.1529	.1511	.1490
7	.1399	.1418	.1435	.1450	.1462	.1472	.1480	.1486	.1489	.1490
8	.1066	.1099	.1130	.1160	.1188	.1215	.1240	.1263	.1284	.1304
9	.0723	.0757	.0791	.0825	.0858	.0891	.0923	.0954	.0985	.1014
10	.0441	.0469	.0498	.0528	.0558	.0588	.0618	.0649	.0679	.0710
11	.0245	.0265	.0285	.0307	.0330	.0353	.0377	.0401	.0426	.0452
12	.0124	.0137	.0150	.0164	.0179	.0194	.0210	.0227	.0245	.0264
13	.0058	.0065	.0073	.0081	.0089	.0098	.0108	.0119	.0130	.0142
14	.0025	.0029	.0033	.0037	.0041	.0046	.0052	.0058	.0064	.0071
15	.0010	.0012	.0014	.0016	.0018	.0020	.0023	.0026	.0029	.0033
16	.0004	.0005	.0005	.0006	.0007	.0008	.0010	.0011	.0013	.0014
17	.0001	.0002	.0002	.0002	.0003	.0003	.0004	.0004	.0005	.0006
18	.0000	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002
19	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0001	.0001	.0001

Tablo 4. Poisson Dağılımı (*devam*)

	λ									
X	**7.1**	**7.2**	**7.3**	**7.4**	**7.5**	**7.6**	**7.7**	**7.8**	**7.9**	**8.0**
0	.0008	.0007	.0007	.0006	.0006	.0005	.0005	.0004	.0004	.0003
1	.0059	.0054	.0049	.0045	.0041	.0038	.0035	.0032	.0029	.0027
2	.0208	.0194	.0180	.0167	.0156	.0145	.0134	.0125	.0116	.0107
3	.0492	.0464	.0438	.0413	.0389	.0366	.0345	.0324	.0305	.0286
4	.0874	.0836	.0799	.0764	.0729	.0696	.0663	.0632	.0602	.0573
5	.1241	.1204	.1167	.1130	.1094	.1057	.1021	.0986	.0951	.0916
6	.1468	.1445	.1420	.1394	.1367	.1339	.1311	.1282	.1252	.1221
7	.1489	.1486	.1481	.1474	.1465	.1454	.1442	.1428	.1413	.1396
8	.1321	.1337	.1351	.1363	.1373	.1382	.1388	.1392	.1395	.1396
9	.1042	.1070	.1096	.1121	.1144	.1167	.1187	.1207	.1224	.1241
10	.0740	.0770	.0800	.0829	.0858	.0887	.0914	.0941	.0967	.0993
11	.0478	.0504	.0531	.0558	.0585	.0613	.0640	.0667	.0695	.0722
12	.0283	.0303	.0323	.0344	.0366	.0388	.0411	.0434	.0457	.0481
13	.0154	.0168	.0181	.0196	.0211	.0227	.0243	.0260	.0278	.0296
14	.0078	.0086	.0095	.0104	.0113	.0123	.0134	.0145	.0157	.0169
15	.0037	.0041	.0046	.0051	.0057	.0062	.0069	.0075	.0083	.0090
16	.0016	.0019	.0021	.0024	.0026	.0030	.0033	.0037	.0041	.0045
17	.0007	.0008	.0009	.0010	.0012	.0013	.0015	.0017	.0019	.0021
18	.0003	.0003	.0004	.0004	.0005	.0006	.0006	.0007	.0008	.0009
19	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0003	.0003	.0004
20	.0000	.0000	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002
21	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0001	.0001

	λ									
X	**8.1**	**8.2**	**8.3**	**8.4**	**8.5**	**8.6**	**8.7**	**8.8**	**8.9**	**9.0**
0	.0003	.0003	.0002	.0002	.0002	.0002	.0002	.0002	.0001	.0001
1	.0025	.0023	.0021	.0019	.0017	.0016	.0014	.0013	.0012	.0011
2	.0100	.0092	.0086	.0079	.0074	.0068	.0063	.0058	.0054	.0050
3	.0269	.0252	.0237	.0222	.0208	.0195	.0183	.0171	.0160	.0150
4	.0544	.0517	.0491	.0466	.0443	.0420	.0398	.0377	.0357	.0337
5	.0882	.0849	.0816	.0784	.0752	.0722	.0692	.0663	.0635	.0607
6	.1191	.1160	.1128	.1097	.1066	.1034	.1003	.0972	.0941	.0911
7	.1378	.1358	.1338	.1317	.1294	.1271	.1247	.1222	.1197	.1171
8	.1395	.1392	.1388	.1382	.1375	.1366	.1356	.1344	.1332	.1318
9	.1256	.1269	.1280	.1290	.1299	.1306	.1311	.1315	.1317	.1318
10	.1017	.1040	.1063	.1084	.1104	.1123	.1140	.1157	.1172	.1186

Tablo 4. Poisson Dağılımı (*devam*)

	λ									
X	**8.1**	**8.2**	**8.3**	**8.4**	**8.5**	**8.6**	**8.7**	**8.8**	**8.9**	**9.0**
11	.0749	.0776	.0802	.0828	.0853	.0878	.0902	.0925	.0948	.0970
12	.0505	.0530	.0555	.0579	.0604	.0629	.0654	.0679	.0703	.0728
13	.0315	.0334	.0354	.0374	.0395	.0416	.0438	.0459	.0481	.0504
14	.0182	.0196	.0210	.0225	.0240	.0256	.0272	.0289	.0306	.0324
15	.0098	.0107	.0116	.0126	.0136	.0147	.0158	.0169	.0182	.0194
16	.0050	.0055	.0060	.0066	.0072	.0079	.0086	.0093	.0101	.0109
17	.0024	.0026	.0029	.0033	.0036	.0040	.0044	.0048	.0053	.0058
18	.0011	.0012	.0014	.0015	.0017	.0019	.0021	.0024	.0026	.0029
19	.0005	.0005	.0006	.0007	.0008	.0009	.0010	.0011	.0012	.0014
20	.0002	.0002	.0002	.0003	.0003	.0004	.0004	.0005	.0005	.0006
21	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0003
22	.0000	.0000	.0000	.0000	.0001	.0001	.0001	.0001	.0001	.0001

	λ									
X	**9.1**	**9.2**	**9.3**	**9.4**	**9.5**	**9.6**	**9.7**	**9.8**	**9.9**	**10**
0	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0000
1	.0010	.0009	.0009	.0008	.0007	.0007	.0006	.0005	.0005	.0005
2	.0046	.0043	.0040	.0037	.0034	.0031	.0029	.0027	.0025	.0023
3	.0140	.0131	.0123	.0115	.0107	.0100	.0093	.0087	.0081	.0076
4	.0319	.0302	.0285	.0269	.0254	.0240	.0226	.0213	.0201	.0189
5	.0581	.0555	.0530	.0506	.0483	.0460	.0439	.0418	.0398	.0378
6	.0881	.0851	.0822	.0793	.0764	.0736	.0709	.0682	.0656	.0631
7	.1145	.1118	.1091	.1064	.1037	.1010	.0982	.0955	.0928	.0901
8	.1302	.1286	.1269	.1251	.1232	.1212	.1191	.1170	.1148	.1126
9	.1317	.1315	.1311	.1306	.1300	.1293	.1284	.1274	.1263	.1251
10	.1198	.1210	.1219	.1228	.1235	.1241	.1245	.1249	.1250	.1251
11	.0991	.1012	.1031	.1049	.1067	.1083	.1098	.1112	.1125	.1137
12	.0752	.0776	.0799	.0822	.0844	.0866	.0888	.0908	.0928	.0948
13	.0526	.0549	.0572	.0594	.0617	.0640	.0662	.0685	.0707	.0729
14	.0342	.0361	.0380	.0399	.0419	.0439	.0459	.0479	.0500	.0521
15	.0208	.0221	.0235	.0250	.0265	.0281	.0297	.0313	.0330	.0347
16	.0118	.0127	.0137	.0147	.0157	.0168	.0180	.0192	.0204	.0217
17	.0063	.0069	.0075	.0081	.0088	.0095	.0103	.0111	.0119	.0128
18	.0032	.0035	.0039	.0042	.0046	.0051	.0055	.0060	.0065	.0071
19	.0015	.0017	.0019	.0021	.0023	.0026	.0028	.0031	.0034	.0037
20	.0007	.0008	.0009	.0010	.0011	.0012	.0014	.0015	.0017	.0019
21	.0003	.0003	.0004	.0004	.0005	.0006	.0006	.0007	.0008	.0009
22	.0001	.0001	.0002	.0002	.0002	.0002	.0003	.0003	.0004	.0004
23	.0000	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002
24	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0001	.0001	.0001

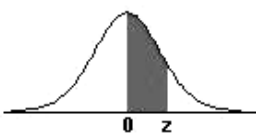
Tablo 4. Poisson Dağılımı (*devam*)

	λ									
X	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
0	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
1	.0002	.0001	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
2	.0010	.0004	.0002	.0001	.0000	.0000	.0000	.0000	.0000	.0000
3	.0037	.0018	.0008	.0004	.0002	.0001	.0000	.0000	.0000	.0000
4	.0102	.0053	.0027	.0013	.0006	.0003	.0001	.0001	.0000	.0000
5	.0224	.0127	.0070	.0037	.0019	.0010	.0005	.0002	.0001	.0001
6	.0411	.0255	.0152	.0087	.0048	.0026	.0014	.0007	.0004	.0002
7	.0646	.0437	.0281	.0174	.0104	.0060	.0034	.0018	.0010	.0005
8	.0888	.0655	.0457	.0304	.0194	.0120	.0072	.0042	.0024	.0013
9	.1085	.0874	.0661	.0473	.0324	.0213	.0135	.0083	.0050	.0029
10	.1194	.1048	.0859	.0663	.0486	.0341	.0230	.0150	.0095	.0058
11	.1194	.1144	.1015	.0844	.0663	.0496	.0355	.0245	.0164	.0106
12	.1094	.1144	.1099	.0984	.0829	.0661	.0504	.0368	.0259	.0176
13	.0926	.1056	.1099	.1060	.0956	.0814	.0658	.0509	.0378	.0271
14	.0728	.0905	.1021	.1060	.1024	.0930	.0800	.0655	.0514	.0387
15	.0534	.0724	.0885	.0989	.1024	.0992	.0906	.0786	.0650	.0516
16	.0367	.0543	.0719	.0866	.0960	.0992	.0963	.0884	.0772	.0646
17	.0237	.0383	.0550	.0713	.0847	.0934	.0963	.0936	.0863	.0760
18	.0145	.0256	.0397	.0554	.0706	.0830	.0909	.0936	.0911	.0844
19	.0084	.0161	.0272	.0409	.0557	.0699	.0814	.0887	.0911	.0888
20	.0046	.0097	.0177	.0286	.0418	.0559	.0692	.0798	.0866	.0888
21	.0024	.0055	.0109	.0191	.0299	.0426	.0560	.0684	.0783	.0846
22	.0012	.0030	.0065	.0121	.0204	.0310	.0433	.0560	.0676	.0769
23	.0006	.0016	.0037	.0074	.0133	.0216	.0320	.0438	.0559	.0669
24	.0003	.0008	.0020	.0043	.0083	.0144	.0226	.0328	.0442	.0557
25	.0001	.0004	.0010	.0024	.0050	.0092	.0154	.0237	.0336	.0446
26	.0000	.0002	.0005	.0013	.0029	.0057	.0101	.0164	.0246	.0343
27	.0000	.0001	.0002	.0007	.0016	.0034	.0063	.0109	.0173	.0254
28	.0000	.0000	.0001	.0003	.0009	.0019	.0038	.0070	.0117	.0181
29	.0000	.0000	.0001	.0002	.0004	.0011	.0023	.0044	.0077	.0125
30	.0000	.0000	.0000	.0001	.0002	.0006	.0013	.0026	.0049	.0083
31	.0000	.0000	.0000	.0000	.0001	.0003	.0007	.0015	.0030	.0054
32	.0000	.0000	.0000	.0000	.0001	.0001	.0004	.0009	.0018	.0034
33	.0000	.0000	.0000	.0000	.0000	.0001	.0002	.0005	.0010	.0020
34	.0000	.0000	.0000	.0000	.0000	.0000	.0001	.0002	.0006	.0012
35	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0001	.0003	.0007
36	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0001	.0002	.0004
37	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0001	.0002
38	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0001
39	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0001

Kaynak. Bluman, A. G. (2001). *Elementary statistics: A step by step approach* (4. basım). NY: McGraw-Hill.

Tablo 5. Standart Normal Dağılım

	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2517	.2549
0.7	.2580	.2611	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990



Not: Tablodaki değerler (0, *z*) aralığındaki olasılıklardır. z > 3.09 için (0, z) aralığındaki olasılık .4999'dur.

Kaynak. Bluman, A. G. (2001). *Elementary statistics: A step by step approach* (4. basım). NY: McGraw-Hill.

Tablo 6. *t* Dağılımı

	α			
df	**.05**	**.025**	**.01**	**.005**
1	6.314	12.706	31.821	63.657
2	2.920	4.303	6.965	9.925
3	2.353	3.182	4.541	5.841
4	2.132	2.776	3.747	4.604
5	2.015	2.571	3.365	4.032
6	1.943	2.447	3.143	3.707
7	1.895	2.365	2.998	3.499
8	1.860	2.306	2.896	3.355
9	1.833	2.262	2.821	3.250
10	1.812	2.228	2.764	3.169
11	1.796	2.201	2.718	3.106
12	1.782	2.179	2.681	3.055
13	1.771	2.160	2.650	3.012
14	1.761	2.145	2.624	2.977
15	1.753	2.131	2.602	2.947
16	1.746	2.120	2.583	2.921
17	1.740	2.110	2.567	2.898
18	1.734	2.101	2.552	2.878
19	1.729	2.093	2.539	2.861
20	1.725	2.086	2.528	2.845
21	1.721	2.080	2.518	2.831
22	1.717	2.074	2.508	2.819
23	1.714	2.069	2.500	2.807
24	1.711	2.064	2.492	2.797
25	1.708	2.060	2.485	2.787
26	1.706	2.056	2.479	2.779
27	1.703	2.052	2.473	2.771
28	1.701	2.048	2.467	2.763
29	1.699	2.045	2.462	2.756
30	1.697	2.042	2.457	2.750
40	1.684	2.021	2.423	2.704
60	1.671	2.000	2.390	2.660
120	1.658	1.980	2.358	2.617
(*z*) ∞	1.645	1.960	2.326	2.576

Not: Tablodaki değerler tek kuyrukludur.

Kaynak. Murdoch, J., Barnes, J. A. (1998). *Statistical tables* (4. basım). London: Macmillan Press.

Tablo 7. χ^2 Dağılımı

	α									
df	**0.995**	**0.99**	**0.975**	**0.95**	**0.9**	**0.1**	**0.05**	**0.025**	**0.01**	**0.005**
1	-	-	-	-	0.02	2.71	3.84	5.02	6.64	7.88
2	0.01	0.02	0.05	0.10	0.21	4.61	5.99	7.38	9.21	10.60
3	0.07	0.12	0.22	0.35	0.58	6.25	7.82	9.35	11.35	12.84
4	0.21	0.30	0.48	0.71	1.06	7.78	9.49	11.14	13.28	14.86
5	0.41	0.55	0.83	1.15	1.61	9.24	11.07	12.83	15.09	16.75
6	0.68	0.87	1.24	1.64	2.20	10.65	12.59	14.45	16.81	18.55
7	0.99	1.24	1.69	2.17	2.83	12.02	14.07	16.01	18.48	20.28
8	1.34	1.65	2.18	2.73	3.49	13.36	15.51	17.54	20.09	21.96
9	1.74	2.09	2.70	3.33	4.17	14.68	16.92	19.02	21.67	23.59
10	2.16	2.56	3.25	3.94	4.87	15.99	18.31	20.48	23.21	25.19
11	2.60	3.05	3.82	4.58	5.58	17.28	19.68	21.92	24.73	26.76
12	3.07	3.57	4.40	5.23	6.30	18.55	21.03	23.34	26.22	28.30
13	3.57	4.11	5.01	5.89	7.04	19.81	22.36	24.74	27.69	29.82
14	4.08	4.66	5.63	6.57	7.79	21.06	23.69	26.12	29.14	31.32
15	4.60	5.23	6.26	7.26	8.55	22.31	25.00	27.49	30.58	32.80
16	5.14	5.81	6.91	7.96	9.31	23.54	26.30	28.85	32.00	34.27
17	5.70	6.41	7.56	8.67	10.09	24.77	27.59	30.19	33.41	35.72
18	6.27	7.02	8.23	9.39	10.87	25.99	28.87	31.53	34.81	37.16
19	6.84	7.63	8.91	10.12	11.65	27.20	30.14	32.85	36.19	38.58
20	7.43	8.26	9.59	10.85	12.44	28.41	31.41	34.17	37.57	40.00
21	8.03	8.90	10.28	11.59	13.24	29.62	32.67	35.48	38.93	41.40
22	8.64	9.54	10.98	12.34	14.04	30.81	33.92	36.78	40.29	42.80
23	9.26	10.20	11.69	13.09	14.85	32.01	35.17	38.08	41.64	44.18
24	9.89	10.86	12.40	13.85	15.66	33.20	36.42	39.36	42.98	45.56
25	10.52	11.52	13.12	14.61	16.47	34.38	37.65	40.65	44.31	46.93
26	11.16	12.20	13.84	15.38	17.29	35.56	38.89	41.92	45.64	48.29
27	11.81	12.88	14.57	16.15	18.11	36.74	40.11	43.19	46.96	49.65
28	12.46	13.57	15.31	16.93	18.94	37.92	41.34	44.46	48.28	50.99
29	13.12	14.26	16.05	17.71	19.77	39.09	42.56	45.72	49.59	52.34
30	13.79	14.95	16.79	18.49	20.60	40.26	43.77	46.98	50.89	53.67
40	20.71	22.16	24.43	26.51	29.05	51.81	55.76	59.34	63.69	66.77
50	27.99	29.71	32.36	34.76	37.69	63.17	67.51	71.42	76.15	79.49
60	35.53	37.49	40.48	43.19	46.46	74.40	79.08	83.30	88.38	91.95
70	43.28	45.44	48.76	51.74	55.33	85.53	90.53	95.02	100.43	104.22
80	51.17	53.54	57.15	60.39	64.28	96.58	101.88	106.63	112.33	116.32
90	59.20	61.75	65.65	69.13	73.29	107.57	113.15	118.14	124.12	128.30
100	67.33	70.07	74.22	77.93	82.36	118.50	124.34	129.56	135.81	140.17

Not: Tablodaki değerler tek kuyrukludur.

Kaynak. Kmietowicz, Z. W., Yannoulis, Y. (1988). *Statistical tables for economic, business, and social studies* (2. basım). UK: Longman.

Tablo 8. *F* Dağılımı (α = .005)

sd*	sd PAY								
PAYDA	1	2	3	4	5	6	7	8	9
1	16211	20000	21615	22500	23056	23437	23715	23925	24091
2	198.5	199.0	199.2	199.2	199.3	199.3	199.4	199.4	199.4
3	55.55	49.80	47.47	46.19	45.39	44.84	44.43	44.13	43.88
4	31.33	26.28	24.26	23.15	22.46	21.97	21.62	21.35	21.14
5	22.78	18.31	16.53	15.56	14.94	14.51	14.20	13.96	13.77
6	18.63	14.54	12.92	12.03	11.46	11.07	10.79	10.57	10.39
7	16.24	12.40	10.88	10.05	9.52	9.16	8.89	8.68	8.51
8	14.69	11.04	9.60	8.81	8.30	7.95	7.69	7.50	7.34
9	13.61	10.11	8.72	7.96	7.47	7.13	6.88	6.69	6.54
10	12.83	9.43	8.08	7.34	6.87	6.54	6.30	6.12	5.97
11	12.23	8.91	7.60	6.88	6.42	6.10	5.86	5.68	5.54
12	11.75	8.51	7.23	6.52	6.07	5.76	5.52	5.35	5.20
13	11.37	8.19	6.93	6.23	5.79	5.48	5.25	5.08	4.94
14	11.06	7.92	6.68	6.00	5.56	5.26	5.03	4.86	4.72
15	10.80	7.70	6.48	5.80	5.37	5.07	4.85	4.67	4.54
16	10.58	7.51	6.30	5.64	5.21	4.91	4.69	4.52	4.38
17	10.38	7.35	6.16	5.50	5.07	4.78	4.56	4.39	4.25
18	10.22	7.21	6.03	5.37	4.96	4.66	4.44	4.28	4.14
19	10.07	7.09	5.92	5.27	4.85	4.56	4.34	4.18	4.04
20	9.94	6.99	5.82	5.17	4.76	4.47	4.26	4.09	3.96
21	9.83	6.89	5.73	5.09	4.68	4.39	4.18	4.01	3.88
22	9.73	6.81	5.65	5.02	4.61	4.32	4.11	3.94	3.81
23	9.63	6.73	5.58	4.95	4.54	4.26	4.05	3.88	3.75
24	9.55	6.66	5.52	4.89	4.49	4.20	3.99	3.83	3.69
25	9.48	6.60	5.46	4.84	4.43	4.15	3.94	3.78	3.64
26	9.41	6.54	5.41	4.79	4.38	4.10	3.89	3.73	3.60
27	9.34	6.49	5.36	4.74	4.34	4.06	3.85	3.69	3.56
28	9.28	6.44	5.32	4.70	4.30	4.02	3.81	3.65	3.52
29	9.23	6.40	5.28	4.66	4.26	3.98	3.77	3.61	3.48
30	9.18	6.35	5.24	4.62	4.23	3.95	3.74	3.58	3.45
40	8.83	6.07	4.98	4.37	3.99	3.71	3.51	3.35	3.22
60	8.49	5.79	4.73	4.14	3.76	3.49	3.29	3.13	3.01
120	8.18	5.54	4.50	3.92	3.55	3.28	3.09	2.93	2.81
∞	7.88	5.30	4.28	3.72	3.35	3.09	2.90	2.74	2.62

***sd** *serbestlik derecesi* [**df** *degrees of freedom*]
sd PAY $df_{NUMERATOR}$ ve **sd PAYDA** $df_{DENOMINATOR}$

Kaynaklar

Kmietowicz, Z. W., Yannoulis, Y. (1988). *Statistical tables for economic, business, and social studies* (2. basım). UK: Longman.

Murdoch, J., Barnes, J. A. (1998). *Statistical tables* (4. basım). London: Macmillan Press.

Tablo 8. *F* Dağılımı (α = .005 – *devam*)

sd*	sd PAY									
PAYDA	**10**	**12**	**15**	**20**	**24**	**30**	**40**	**60**	**120**	**∞**
1	24224	24426	24630	24836	24940	25044	25148	25253	25359	25465
2	199.4	199.4	199.4	199.4	199.5	199.5	199.5	199.5	199.5	199.5
3	43.69	43.39	43.08	42.78	42.62	42.47	42.31	42.15	41.99	41.83
4	20.97	20.70	20.44	20.17	20.03	19.89	19.75	19.61	19.47	19.32
5	13.62	13.38	13.15	12.90	12.78	12.66	12.53	12.40	12.27	12.14
6	10.25	10.03	9.81	9.59	9.47	9.36	9.24	9.12	9.00	8.88
7	8.38	8.18	7.97	7.75	7.65	7.53	7.42	7.31	7.19	7.08
8	7.21	7.01	6.81	6.61	6.50	6.40	6.29	6.18	6.06	5.95
9	6.42	6.23	6.03	5.83	5.73	5.62	5.52	5.41	5.30	5.19
10	5.85	5.66	5.47	5.27	5.17	5.07	4.97	4.86	4.75	4.64
11	5.42	5.24	5.05	4.86	4.76	4.65	4.55	4.44	4.34	4.23
12	5.09	4.91	4.72	4.53	4.43	4.33	4.23	4.12	4.01	3.90
13	4.82	4.64	4.46	4.27	4.17	4.07	3.97	3.87	3.76	3.65
14	4.60	4.43	4.25	4.06	3.96	3.86	3.76	3.66	3.55	3.44
15	4.42	4.25	4.07	3.88	3.79	3.69	3.58	3.48	3.37	3.26
16	4.27	4.10	3.92	3.73	3.64	3.54	3.44	3.33	3.22	3.11
17	4.14	3.97	3.79	3.61	3.51	3.41	3.31	3.21	3.10	2.98
18	4.03	3.86	3.68	3.50	3.40	3.30	3.20	3.10	2.99	2.87
19	3.93	3.76	3.59	3.40	3.31	3.21	3.11	3.00	2.89	2.78
20	3.85	3.68	3.50	3.32	3.22	3.12	3.02	2.92	2.81	2.69
21	3.77	3.60	3.43	3.24	3.15	3.05	2.95	2.84	2.73	2.61
22	3.70	3.54	3.36	3.18	3.08	2.98	2.88	2.77	2.66	2.55
23	3.64	3.47	3.30	3.12	3.02	2.92	2.82	2.71	2.60	2.48
24	3.59	3.42	3.25	3.06	2.97	2.87	2.77	2.66	2.55	2.43
25	3.54	3.37	3.20	3.01	2.92	2.82	2.72	2.61	2.50	2.38
26	3.49	3.33	3.15	2.97	2.87	2.77	2.67	2.56	2.45	2.33
27	3.45	3.28	3.11	2.93	2.83	2.73	2.63	2.52	2.41	2.25
28	3.41	3.25	3.07	2.89	2.79	2.69	2.59	2.48	2.37	2.29
29	3.38	3.21	3.04	2.86	2.76	2.66	2.56	2.45	2.33	2.24
30	3.34	3.18	3.01	2.82	2.73	2.63	2.52	2.42	2.30	2.18
40	3.12	2.95	2.78	2.60	2.50	2.40	2.30	2.18	2.06	1.93
60	2.90	2.74	2.57	2.39	2.29	2.19	2.08	1.96	1.83	1.69
120	2.71	2.54	2.37	2.19	2.09	1.98	1.87	1.75	1.61	1.43
∞	2.52	2.36	2.19	2.00	1.90	1.79	1.67	1.53	1.36	1.00

***sd** *serbestlik derecesi* [**df** *degrees of freedom*]
sd PAY $df_{NUMERATOR}$ ve **sd PAYDA** $df_{DENOMINATOR}$

Kaynaklar

Kmietowicz, Z. W., Yannoulis, Y. (1988). *Statistical tables for economic, business, and social studies* (2. basım). UK: Longman.

Murdoch, J., Barnes, J. A. (1998). *Statistical tables* (4. basım). London: Macmillan Press.

Tablo 8. *F* Dağılımı (α = .01)

sd*	sd PAY								
PAYDA	1	2	3	4	5	6	7	8	9
1	4052	4999.5	5403	5625	5764	5859	5928	5982	6022
2	98.50	99.00	99.17	99.25	99.30	99.33	99.36	99.37	99.39
3	34.12	30.82	29.46	28.71	28.24	27.91	27.67	27.49	27.35
4	21.20	18.00	16.69	15.98	15.52	15.21	14.98	14.80	14.66
5	16.26	13.27	12.06	11.39	10.97	10.67	10.46	10.29	10.16
6	13.75	10.92	9.78	9.15	8.75	8.47	8.26	8.10	7.98
7	12.25	9.55	8.45	7.85	7.46	7.19	6.99	6.84	6.72
8	11.26	8.65	7.59	7.01	6.63	6.37	6.18	6.03	5.91
9	10.56	8.02	6.99	6.42	6.06	5.80	5.61	5.47	5.35
10	10.04	7.56	6.55	5.99	5.64	5.39	5.20	5.06	4.94
11	9.65	7.21	6.22	5.67	5.32	5.07	4.89	4.74	4.63
12	9.33	6.93	5.95	5.41	5.06	4.82	4.64	4.50	4.39
13	9.07	6.70	5.74	5.21	4.86	4.62	4.44	4.30	4.19
14	8.86	6.51	5.56	5.04	4.69	4.46	4.28	4.14	4.03
15	8.68	6.36	5.42	4.89	4.56	4.32	4.14	4.00	3.89
16	8.53	6.23	5.29	4.77	4.44	4.20	4.03	3.89	3.78
17	8.40	6.11	5.18	4.67	4.34	4.10	3.93	3.79	3.68
18	8.29	6.01	5.09	4.58	4.25	4.01	3.84	3.71	3.60
19	8.18	5.93	5.01	4.50	4.17	3.94	3.77	3.63	3.52
20	8.10	5.85	4.94	4.43	4.10	3.87	3.70	3.56	3.46
21	8.02	5.78	4.87	4.37	4.04	3.81	3.64	3.51	3.40
22	7.95	5.72	4.82	4.31	3.99	3.76	3.59	3.45	3.35
23	7.88	5.66	4.76	4.26	3.94	3.71	3.54	3.41	3.30
24	7.82	5.61	4.72	4.22	3.90	3.67	3.50	3.36	3.26
25	7.77	5.57	4.68	4.18	3.85	3.63	3.46	3.32	3.22
26	7.72	5.53	4.64	4.14	3.82	3.59	3.42	3.29	3.18
27	7.68	5.49	4.60	4.11	3.78	3.56	3.39	3.26	3.15
28	7.64	5.45	4.57	4.07	3.75	3.53	3.36	3.23	3.12
29	7.60	5.42	4.54	4.04	3.73	3.50	3.33	3.20	3.09
30	7.56	5.39	4.51	4.02	3.70	3.47	3.30	3.17	3.07
40	7.31	5.18	4.31	3.83	3.51	3.29	3.12	2.99	2.89
60	7.08	4.98	4.13	3.65	3.34	3.12	2.95	2.82	2.72
120	6.85	4.79	3.95	3.48	3.17	2.96	2.79	2.66	2.56
∞	6.63	4.61	3.78	3.32	3.02	2.80	2.64	2.51	2.41

***sd** *serbestlik derecesi* [**df** *degrees of freedom*]
sd PAY $df_{NUMERATOR}$ ve **sd PAYDA** $df_{DENOMINATOR}$

Kaynaklar

Kmietowicz, Z. W., Yannoulis, Y. (1988). *Statistical tables for economic, business, and social studies* (2. basım). UK: Longman.

Murdoch, J., Barnes, J. A. (1998). *Statistical tables* (4. basım). London: Macmillan Press.

Tablo 8. *F* Dağılımı (α = .01 – devam)

sd*	sd PAY									
PAYDA	**10**	**12**	**15**	**20**	**24**	**30**	**40**	**60**	**120**	**∞**
1	6056	6106	6157	6209	6235	6261	6287	6313	6339	6366
2	99.40	99.42	99.43	99.45	99.46	99.47	99.47	99.48	99.49	99.50
3	27.23	27.05	26.87	26.69	26.60	26.50	26.41	26.32	26.22	26.13
4	14.55	14.37	14.20	14.02	13.93	13.84	13.75	13.65	13.56	13.46
5	10.05	9.89	9.72	9.55	9.47	9.38	9.29	9.20	9.11	9.02
6	7.87	7.72	7.56	7.40	7.31	7.23	7.14	7.06	6.97	6.88
7	6.62	6.47	6.31	6.16	6.07	5.99	5.91	5.82	5.74	5.65
8	5.81	5.67	5.52	5.36	5.28	5.20	5.12	5.03	4.95	4.86
9	5.26	5.11	4.96	4.81	4.73	4.65	4.57	4.48	4.40	4.31
10	4.85	4.71	4.56	4.41	4.33	4.25	4.17	4.08	4.00	3.91
11	4.54	4.40	4.25	4.10	4.02	3.94	3.86	3.78	3.69	3.60
12	4.30	4.16	4.01	3.86	3.78	3.70	3.62	3.54	3.45	3.36
13	4.10	3.96	3.82	3.66	3.59	3.51	3.43	3.34	3.25	3.17
14	3.94	3.80	3.66	3.51	3.43	3.35	3.27	3.18	3.09	3.00
15	3.80	3.67	3.52	3.37	3.29	3.21	3.13	3.05	2.96	2.87
16	3.69	3.55	3.41	3.26	3.18	3.10	3.02	2.93	2.84	2.75
17	3.59	3.46	3.31	3.16	3.08	3.00	2.92	2.83	2.75	2.65
18	3.51	3.37	3.23	3.08	3.00	2.92	2.84	2.75	2.66	2.57
19	3.43	3.30	3.15	3.00	2.92	2.84	2.76	2.67	2.58	2.49
20	3.37	3.23	3.09	2.94	2.86	2.78	2.69	2.61	2.52	2.42
21	3.31	3.17	3.03	2.88	2.80	2.72	2.64	2.55	2.46	2.36
22	3.26	3.12	2.98	2.83	2.75	2.67	2.58	2.50	2.40	2.31
23	3.21	3.07	2.93	2.78	2.70	2.62	2.54	2.45	2.35	2.26
24	3.17	3.03	2.89	2.74	2.66	2.58	2.49	2.40	2.31	2.21
25	3.13	2.99	2.85	2.70	2.62	2.54	2.45	2.36	2.27	2.17
26	3.09	2.96	2.81	2.66	2.58	2.50	2.42	2.33	2.23	2.13
27	3.06	2.93	2.78	2.63	2.55	2.47	2.38	2.29	2.20	2.10
28	3.03	2.90	2.75	2.60	2.52	2.44	2.35	2.26	2.17	2.06
29	3.00	2.87	2.73	2.57	2.49	2.41	2.33	2.23	2.14	2.03
30	2.98	2.84	2.70	2.55	2.47	2.39	2.30	2.21	2.11	2.01
40	2.80	2.66	2.52	2.37	2.29	2.20	2.11	2.02	1.92	1.80
60	2.63	2.50	2.35	2.20	2.12	2.03	1.94	1.84	1.73	1.60
120	2.47	2.34	2.19	2.03	1.95	1.86	1.76	1.66	1.53	1.38
∞	2.32	2.18	2.04	1.88	1.79	1.70	1.59	1.47	1.32	1.00

***sd** *serbestlik derecesi* [**df** *degrees of freedom*]
sd PAY $df_{NUMERATOR}$ ve **sd PAYDA** $df_{DENOMINATOR}$

Kaynaklar

Kmietowicz, Z. W., Yannoulis, Y. (1988). *Statistical tables for economic, business, and social studies* (2. basım). UK: Longman.

Murdoch, J., Barnes, J. A. (1998). *Statistical tables* (4. basım). London: Macmillan Press.

Tablo 8. *F* Dağılımı (α = .025)

sd*	sd PAY								
PAYDA	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1	647.8	799.5	864.2	899.6	921.8	937.1	948.2	956.7	963.3
2	38.51	39.00	39.17	39.25	39.30	39.33	39.36	39.37	39.39
3	17.44	16.04	15.44	15.10	14.88	14.73	14.62	14.54	14.47
4	12.22	10.65	9.98	9.60	9.36	9.20	9.07	8.98	8.90
5	10.01	8.43	7.76	7.39	7.15	6.98	6.85	6.76	6.68
6	8.81	7.26	6.60	6.23	5.99	5.82	5.70	5.60	5.52
7	8.07	6.54	5.89	5.52	5.29	5.12	4.99	4.90	4.82
8	7.57	6.06	5.42	5.05	4.82	4.65	4.53	4.43	4.36
9	7.21	5.71	5.08	4.72	4.48	4.32	4.20	4.10	4.03
10	6.94	5.46	4.83	4.47	4.24	4.07	3.95	3.85	3.78
11	6.72	5.26	4.63	4.28	4.04	3.88	3.76	3.66	3.59
12	6.55	5.10	4.47	4.12	3.89	3.73	3.61	3.51	3.41
13	6.41	4.97	4.35	4.00	3.77	3.60	3.48	3.39	3.31
14	6.30	4.86	4.24	3.89	3.66	3.50	3.38	3.29	3.21
15	6.20	4.77	4.15	3.80	3.58	3.41	3.29	3.20	3.12
16	6.12	4.69	4.08	3.73	3.50	3.34	3.22	3.12	3.05
17	6.04	4.62	4.01	3.66	3.44	3.28	3.16	3.06	2.98
18	5.98	4.56	3.95	3.61	3.38	3.22	3.10	3.01	2.93
19	5.92	4.51	3.90	3.56	3.33	3.17	3.05	2.96	2.88
20	5.87	4.46	3.86	3.51	3.29	3.13	3.01	2.91	2.84
21	5.83	4.42	3.82	3.48	3.25	3.09	2.97	2.87	2.80
22	5.79	4.38	3.78	3.44	3.22	3.05	2.93	2.84	2.76
23	5.75	4.35	3.75	3.41	3.18	3.02	2.90	2.81	2.73
24	5.72	4.32	3.72	3.38	3.15	2.99	2.87	2.78	2.70
25	5.69	4.29	3.69	3.35	3.13	2.97	2.85	2.75	2.68
26	5.66	4.27	3.67	3.33	3.10	2.94	2.82	2.73	2.65
27	5.63	4.24	3.65	3.31	3.08	2.92	2.80	2.71	2.63
28	5.61	4.22	3.63	3.29	3.06	2.90	2.78	2.69	2.61
29	5.59	4.20	3.61	3.27	3.04	2.88	2.76	2.67	2.59
30	5.57	4.18	3.59	3.25	3.03	2.87	2.75	2.65	2.57
40	5.42	4.05	3.46	3.13	2.90	2.74	2.62	2.53	2.45
60	5.29	3.93	3.34	3.01	2.79	2.63	2.51	2.41	2.33
120	5.15	3.80	3.23	2.89	2.67	2.52	2.39	2.30	2.22
∞	5.02	3.69	3.12	2.79	2.57	2.41	2.29	2.19	2.11

***sd** *serbestlik derecesi* [**df** *degrees of freedom*]
sd PAY $df_{NUMERATOR}$ ve **sd PAYDA** $df_{DENOMINATOR}$

Kaynaklar

Kmietowicz, Z. W., Yannoulis, Y. (1988). *Statistical tables for economic, business, and social studies* (2. basım). UK: Longman.

Murdoch, J., Barnes, J. A. (1998). *Statistical tables* (4. basım). London: Macmillan Press.

Tablo 8. *F* Dağılımı (α = .025 – *devam*)

sd*	sd PAY									
PAYDA	**10**	**12**	**15**	**20**	**24**	**30**	**40**	**60**	**120**	**∞**
1	968.6	976.7	984.9	993.1	997.2	1001	1006	1010	1014	1018
2	39.40	39.41	39.43	39.45	39.46	39.46	39.47	39.48	39.49	39.50
3	14.42	14.34	14.25	14.17	14.12	14.08	14.04	13.99	13.95	13.90
4	8.84	8.75	8.66	8.56	8.51	8.46	8.41	8.36	8.31	8.26
5	6.62	6.52	6.43	6.33	6.28	6.23	6.18	6.12	6.07	6.02
6	5.46	5.37	5.27	5.17	5.12	5.07	5.01	4.96	4.90	4.85
7	4.76	4.67	4.57	4.47	4.42	4.36	4.31	4.25	4.20	4.14
8	4.30	4.20	4.10	4.00	3.95	3.89	3.84	3.78	3.73	3.67
9	3.96	3.87	3.77	3.67	3.61	3.56	3.51	3.45	3.39	3.33
10	3.72	3.62	3.52	3.42	3.37	3.31	3.26	3.20	3.14	3.08
11	3.53	3.43	3.33	3.23	3.17	3.12	3.06	3.00	2.94	2.88
12	3.37	3.28	3.18	3.07	3.02	2.96	2.91	2.85	2.79	2.72
13	3.25	3.15	3.05	2.95	2.89	2.84	2.78	2.72	2.66	2.60
14	3.15	3.05	2.95	2.84	2.79	2.73	2.67	2.61	2.55	2.49
15	3.06	2.96	2.86	2.76	2.70	2.64	2.59	2.52	2.46	2.40
16	2.99	2.89	2.79	2.68	2.63	2.57	2.51	2.45	2.38	2.32
17	2.92	2.82	2.72	2.62	2.56	2.50	2.44	2.38	2.32	2.25
18	2.87	2.77	2.67	2.56	2.50	2.44	2.38	2.32	2.26	2.19
19	2.82	2.72	2.62	2.51	2.45	2.39	2.33	2.27	2.20	2.13
20	2.77	2.68	2.57	2.46	2.41	2.35	2.29	2.22	2.16	2.09
21	2.73	2.64	2.53	2.42	2.37	2.31	2.25	2.18	2.11	2.04
22	2.70	2.60	2.50	2.39	2.33	2.27	2.21	2.14	2.08	2.00
23	2.67	2.57	2.47	2.36	2.30	2.24	2.18	2.11	2.04	1.97
24	2.64	2.54	2.44	2.33	2.27	2.21	2.15	2.08	2.01	1.94
25	2.61	2.51	2.41	2.30	2.24	2.18	2.12	2.05	1.98	1.91
26	2.59	2.49	2.39	2.28	2.22	2.16	2.09	2.03	1.95	1.88
27	2.57	2.47	2.36	2.25	2.19	2.13	2.07	2.00	1.93	1.85
28	2.55	2.45	2.34	2.23	2.17	2.11	2.05	1.98	1.91	1.83
29	2.53	2.43	2.32	2.21	2.15	2.09	2.03	1.96	1.89	1.81
30	2.51	2.41	2.31	2.20	2.14	2.07	2.01	1.94	1.87	1.79
40	2.39	2.29	2.18	2.07	2.01	1.94	1.88	1.80	1.72	1.64
60	2.27	2.17	2.06	1.94	1.88	1.82	1.74	1.67	1.58	1.48
120	2.16	2.05	1.94	1.82	1.76	1.69	1.61	1.53	1.43	1.31
∞	2.05	1.94	1.83	1.71	1.64	1.57	1.48	1.39	1.27	1.00

***sd** *serbestlik derecesi* [**df** *degrees of freedom*]
sd PAY $df_{NUMERATOR}$ ve **sd PAYDA** $df_{DENOMINATOR}$

Kaynaklar

Kmietowicz, Z. W., Yannoulis, Y. (1988). *Statistical tables for economic, business, and social studies* (2. basım). UK: Longman.

Murdoch, J., Barnes, J. A. (1998). *Statistical tables* (4. basım). London: Macmillan Press.

Tablo 8. *F* Dağılımı (α = .05)

sd*	sd PAY								
PAYDA	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1	161.4	199.5	215.7	224.6	230.2	234.0	236.8	238.9	240.5
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04
120	3.92	3.07	2.68	2.45	2.29	2.17	2.09	2.02	1.96
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88

***sd** *serbestlik derecesi* [**df** *degrees of freedom*]
sd PAY $df_{NUMERATOR}$ ve **sd PAYDA** $df_{DENOMINATOR}$

Kaynaklar

Kmietowicz, Z. W., Yannoulis, Y. (1988). *Statistical tables for economic, business, and social studies* (2. basım). UK: Longman.

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Tablo 8. *F* Dağılımı (α = .05 – *devam*)

sd*	**sd PAY**									
PAYDA	**10**	**12**	**15**	**20**	**24**	**30**	**40**	**60**	**120**	**∞**
1	241.9	243.9	245.9	248.0	249.1	250.1	251.1	252.2	253.3	254.3
2	19.40	19.41	19.43	19.45	19.45	19.46	19.47	19.48	19.49	19.50
3	8.79	8.74	8.70	8.66	8.64	8.62	8.59	8.57	8.55	8.53
4	5.96	5.91	5.86	5.80	5.77	5.75	5.72	5.69	5.66	5.63
5	4.74	4.68	4.62	4.56	4.53	4.50	4.46	4.43	4.40	4.36
6	4.06	4.00	3.94	3.87	3.84	3.81	3.77	3.74	3.70	3.67
7	3.64	3.57	3.51	3.44	3.41	3.38	3.34	3.30	3.27	3.23
8	3.35	3.28	3.22	3.15	3.12	3.08	3.04	3.01	2.97	2.93
9	3.14	3.07	3.01	2.94	2.90	2.86	2.83	2.79	2.75	2.71
10	2.98	2.91	2.85	2.77	2.74	2.70	2.66	2.62	2.58	2.54
11	2.85	2.79	2.72	2.65	2.61	2.57	2.53	2.49	2.45	2.40
12	2.75	2.69	2.62	2.54	2.51	2.47	2.43	2.38	2.34	2.30
13	2.67	2.60	2.53	2.46	2.42	2.38	2.34	2.30	2.25	2.21
14	2.60	2.53	2.46	2.39	2.35	2.31	2.27	2.22	2.18	2.13
15	2.54	2.48	2.40	2.33	2.29	2.25	2.20	2.16	2.11	2.07
16	2.49	2.42	2.35	2.28	2.24	2.19	2.15	2.11	2.06	2.01
17	2.45	2.38	2.31	2.23	2.19	2.15	2.10	2.06	2.01	1.96
18	2.41	2.34	2.27	2.19	2.15	2.11	2.06	2.02	1.97	1.92
19	2.38	2.31	2.23	2.16	2.11	2.07	2.03	1.98	1.93	1.88
20	2.35	2.28	2.20	2.12	2.08	2.04	1.99	1.95	1.90	1.84
21	2.32	2.25	2.18	2.10	2.05	2.01	1.96	1.92	1.87	1.81
22	2.30	2.23	2.15	2.07	2.03	1.98	1.94	1.89	1.84	1.78
23	2.27	2.20	2.13	2.05	2.01	1.96	1.91	1.86	1.81	1.76
24	2.25	2.18	2.11	2.03	1.98	1.94	1.89	1.84	1.79	1.73
25	2.24	2.16	2.09	2.01	1.96	1.92	1.87	1.82	1.77	1.71
26	2.22	2.15	2.07	1.99	1.95	1.90	1.85	1.80	1.75	1.69
27	2.20	2.13	2.06	1.97	1.93	1.88	1.84	1.79	1.73	1.67
28	2.19	2.12	2.04	1.96	1.91	1.87	1.82	1.77	1.71	1.65
29	2.18	2.10	2.03	1.94	1.90	1.85	1.81	1.75	1.70	1.64
30	2.16	2.09	2.01	1.93	1.89	1.84	1.79	1.74	1.68	1.62
40	2.08	2.00	1.92	1.84	1.79	1.74	1.69	1.64	1.58	1.51
60	1.99	1.92	1.84	1.75	1.70	1.65	1.59	1.53	1.47	1.39
120	1.91	1.83	1.75	1.66	1.61	1.55	1.50	1.43	1.35	1.25
∞	1.83	1.75	1.67	1.57	1.52	1.46	1.39	1.32	1.22	1.00

***sd** *serbestlik derecesi* [**df** *degrees of freedom*]
sd PAY $df_{NUMERATOR}$ ve **sd PAYDA** $df_{DENOMINATOR}$

Kaynaklar

Kmietowicz, Z. W., Yannoulis, Y. (1988). *Statistical tables for economic, business, and social studies* (2. basım). UK: Longman.

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Tablo 8. *F* Dağılımı (α = .10)

sd*	sd PAY								
PAYDA	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1	39.86	49.50	53.59	55.83	57.24	58.20	58.91	59.44	59.86
2	8.53	9.00	9.16	9.24	9.29	9.33	9.35	9.37	9.38
3	5.54	5.46	5.39	5.34	5.31	5.28	5.27	5.25	5.24
4	4.54	4.32	4.19	4.11	4.05	4.01	3.98	3.95	3.94
5	4.06	3.78	3.62	3.52	3.45	3.40	3.37	3.34	3.32
6	3.78	3.46	3.29	3.18	3.11	3.05	3.01	2.98	2.96
7	3.59	3.26	3.07	2.96	2.88	2.83	2.78	2.75	2.72
8	3.46	3.11	2.92	2.81	2.73	2.67	2.62	2.59	2.56
9	3.36	3.01	2.81	2.69	2.61	2.55	2.51	2.47	2.44
10	3.29	2.92	2.73	2.61	2.52	2.46	2.41	2.38	2.35
11	3.23	2.86	2.66	2.54	2.45	2.39	2.34	2.30	2.27
12	3.18	2.81	2.61	2.48	2.39	2.33	2.28	2.24	2.21
13	3.14	2.76	2.56	2.43	2.35	2.28	2.23	2.20	2.16
14	3.10	2.73	2.52	2.39	2.31	2.24	2.19	2.15	2.12
15	3.07	2.70	2.49	2.36	2.27	2.21	2.16	2.12	2.09
16	3.05	2.67	2.46	2.33	2.24	2.18	2.13	2.09	2.06
17	3.03	2.64	2.44	2.31	2.22	2.15	2.10	2.06	2.03
18	3.01	2.62	2.42	2.29	2.20	2.13	2.08	2.04	2.00
19	2.99	2.61	2.40	2.27	2.18	2.11	2.06	2.02	1.98
20	2.97	2.59	2.38	2.25	2.16	2.09	2.04	2.00	1.96
21	2.96	2.57	2.36	2.23	2.14	2.08	2.02	1.98	1.95
22	2.95	2.56	2.35	2.22	2.13	2.06	2.01	1.97	1.93
23	2.94	2.55	2.34	2.21	2.11	2.05	1.99	1.95	1.92
24	2.93	2.54	2.33	2.19	2.10	2.04	1.98	1.94	1.91
25	2.92	2.53	2.32	2.18	2.09	2.02	1.97	1.93	1.89
26	2.91	2.52	2.31	2.17	2.08	2.01	1.96	1.92	1.88
27	2.90	2.51	2.30	2.17	2.07	2.00	1.95	1.91	1.87
28	2.89	2.50	2.29	2.16	2.06	2.00	1.94	1.90	1.87
29	2.89	2.50	2.28	2.15	2.06	1.99	1.93	1.89	1.86
30	2.88	2.49	2.28	2.14	2.05	1.98	1.93	1.88	1.85
40	2.84	2.44	2.23	2.09	2.00	1.93	1.87	1.83	1.79
60	2.79	2.39	2.18	2.04	1.95	1.87	1.82	1.77	1.74
120	2.75	2.35	2.13	1.99	1.90	1.82	1.77	1.72	1.68
∞	2.71	2.30	2.08	1.94	1.85	1.77	1.72	1.67	1.63

***sd** *serbestlik derecesi* [**df** *degrees of freedom*]
sd PAY $df_{NUMERATOR}$ ve **sd PAYDA** $df_{DENOMINATOR}$

Kaynaklar

Kmietowicz, Z. W., Yannoulis, Y. (1988). *Statistical tables for economic, business, and social studies* (2. basım). UK: Longman.

Murdoch, J., Barnes, J. A. (1998). *Statistical tables* (4. basım). London: Macmillan Press.

Tablo 8. F Dağılımı (α = .10 – *devam*)

sd*	**sd PAY**									
PAYDA	**10**	**12**	**15**	**20**	**24**	**30**	**40**	**60**	**120**	**∞**
1	60.19	60.71	61.22	61.74	62.00	62.26	62.53	62.79	63.06	63.33
2	9.39	9.41	9.42	9.44	9.45	9.46	9.47	9.47	9.48	9.49
3	5.23	5.22	5.20	5.18	5.18	5.17	5.16	5.15	5.14	5.13
4	3.92	3.90	3.87	3.84	3.83	3.82	3.80	3.79	3.78	3.76
5	3.30	3.27	3.24	3.21	3.19	3.17	3.16	3.14	3.12	3.10
6	2.94	2.90	2.87	2.84	2.82	2.80	2.78	2.76	2.74	2.72
7	2.70	2.67	2.63	2.59	2.58	2.56	2.54	2.51	2.49	2.47
8	2.54	2.50	2.46	2.42	2.40	2.38	2.36	2.34	2.32	2.29
9	2.42	2.38	2.34	2.30	2.28	2.25	2.23	2.21	2.18	2.16
10	2.32	2.28	2.24	2.20	2.18	2.16	2.13	2.11	2.08	2.06
11	2.25	2.21	2.17	2.12	2.10	2.08	2.05	2.03	2.00	1.97
12	2.19	2.15	2.10	2.06	2.04	2.01	1.99	1.96	1.93	1.90
13	2.14	2.10	2.05	2.01	1.98	1.96	1.93	1.90	1.88	1.85
14	2.10	2.05	2.01	1.96	1.94	1.91	1.89	1.86	1.83	1.80
15	2.06	2.02	1.97	1.92	1.90	1.87	1.85	1.82	1.79	1.76
16	2.03	1.99	1.94	1.89	1.87	1.84	1.81	1.78	1.75	1.72
17	2.00	1.96	1.91	1.86	1.84	1.81	1.78	1.75	1.72	1.69
18	1.98	1.93	1.89	1.84	1.81	1.78	1.75	1.72	1.69	1.66
19	1.96	1.91	1.86	1.81	1.79	1.76	1.73	1.70	1.67	1.63
20	1.94	1.89	1.84	1.79	1.77	1.74	1.71	1.68	1.64	1.61
21	1.92	1.87	1.83	1.78	1.75	1.72	1.69	1.66	1.62	1.59
22	1.90	1.86	1.81	1.76	1.73	1.70	1.67	1.64	1.60	1.57
23	1.89	1.84	1.80	1.74	1.72	1.69	1.66	1.62	1.59	1.55
24	1.88	1.83	1.78	1.73	1.70	1.67	1.64	1.61	1.57	1.53
25	1.87	1.82	1.77	1.72	1.69	1.66	1.63	1.59	1.56	1.52
26	1.86	1.81	1.76	1.71	1.68	1.65	1.61	1.58	1.54	1.50
27	1.85	1.80	1.75	1.70	1.67	1.64	1.60	1.57	1.53	1.49
28	1.84	1.79	1.74	1.69	1.66	1.63	1.59	1.56	1.52	1.48
29	1.83	1.78	1.73	1.68	1.65	1.62	1.58	1.55	1.51	1.47
30	1.82	1.77	1.72	1.67	1.64	1.61	1.57	1.54	1.50	1.46
40	1.76	1.71	1.66	1.61	1.57	1.54	1.51	1.47	1.42	1.38
60	1.71	1.66	1.60	1.54	1.51	1.48	1.44	1.40	1.35	1.29
120	1.65	1.60	1.55	1.48	1.45	1.41	1.37	1.32	1.26	1.19
∞	1.60	1.55	1.49	1.42	1.38	1.34	1.30	1.24	1.17	1.00

***sd** *serbestlik derecesi* [**df** *degrees of freedom*]
sd PAY $df_{NUMERATOR}$ ve **sd PAYDA** $df_{DENOMINATOR}$

Kaynaklar

Kmietowicz, Z. W., Yannoulis, Y. (1988). *Statistical tables for economic, business, and social studies* (2. basım). UK: Longman.

Murdoch, J., Barnes, J. A. (1998). *Statistical tables* (4. basım). London: Macmillan Press.

Tablo 9. Tukey Testi Kritik Değerleri (α = .01)

	k								
v	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	90.03	135.0	164.3	185.6	202.2	215.8	227.2	237.0	245.6
2	14.04	19.02	22.29	24.72	26.63	28.20	29.53	30.68	31.69
3	8.26	10.62	12.17	13.33	14.24	15.00	15.64	16.20	16.69
4	6.51	8.12	9.17	9.96	10.58	11.10	11.55	11.93	12.27
5	5.70	6.98	7.80	8.42	8.91	9.32	9.67	9.97	10.24
6	5.24	6.33	7.03	7.56	7.97	8.32	8.61	8.87	9.10
7	4.95	5.92	6.54	7.01	7.37	7.68	7.94	8.17	8.37
8	4.75	5.64	6.20	6.62	6.96	7.24	7.47	7.68	7.86
9	4.60	5.43	5.96	6.35	6.66	6.91	7.13	7.33	7.49
10	4.48	5.27	5.77	6.14	6.43	6.67	6.87	7.05	7.21
11	4.39	5.15	5.62	5.97	6.25	6.48	6.67	6.84	6.99
12	4.32	5.05	5.50	5.84	6.10	6.32	6.51	6.67	6.81
13	4.26	4.96	5.40	5.73	5.98	6.19	6.37	6.53	6.67
14	4.21	4.89	5.32	5.63	5.88	6.08	6.26	6.41	6.54
15	4.17	4.84	5.25	5.56	5.80	5.99	6.16	6.31	6.44
16	4.13	4.79	5.19	5.49	5.72	5.92	6.08	6.22	6.35
17	4.10	4.74	5.14	5.43	5.66	5.85	6.01	6.15	6.27
18	4.07	4.70	5.09	5.38	5.60	5.79	5.94	6.08	6.20
19	4.05	4.67	5.05	5.33	5.55	5.73	5.89	6.02	6.14
20	4.02	4.64	5.02	5.29	5.51	5.69	5.84	5.97	6.09
24	3.96	4.55	4.91	5.17	5.37	5.54	5.69	5.81	5.92
30	3.89	4.45	4.80	5.05	5.24	5.40	5.54	5.65	5.76
40	3.82	4.37	4.70	4.93	5.11	5.26	5.39	5.50	5.60
60	3.76	4.28	4.59	4.82	4.99	5.13	5.25	5.36	5.45
120	3.70	4.20	4.50	4.71	4.87	5.01	5.12	5.21	5.30
∞	3.64	4.12	4.40	4.60	4.76	4.88	4.99	5.08	5.16

Kaynak. Bluman, A. G. (2001). *Elementary statistics: A step by step approach* (4. basım). NY: McGraw-Hill.

Tablo 9. Tukey Testi Kritik Değerleri (α = .01 - *devam*)

	k									
v	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	253.2	260.0	266.2	271.8	277.0	281.8	286.3	290.4	294.3	298.0
2	32.59	33.40	34.13	34.81	35.43	36.00	36.53	37.03	37.50	37.95
3	17.13	17.53	17.89	18.22	18.52	18.81	19.07	19.32	19.55	19.77
4	12.57	12.84	13.09	13.32	13.53	13.73	13.91	14.08	14.24	14.40
5	10.48	10.70	10.89	11.08	11.24	11.40	11.55	11.68	11.81	11.93
6	9.30	9.48	9.65	9.81	9.95	10.08	10.21	10.32	10.43	10.54
7	8.55	8.71	8.86	9.00	9.12	9.24	9.35	9.46	9.55	9.65
8	8.03	8.18	8.31	8.44	8.55	8.66	8.76	8.85	8.94	9.03
9	7.65	7.78	7.91	8.03	8.13	8.23	8.33	8.41	8.49	8.57
10	7.36	7.49	7.60	7.71	7.81	7.91	7.99	8.08	8.15	8.23
11	7.13	7.25	7.36	7.46	7.56	7.65	7.73	7.81	7.88	7.95
12	6.94	7.06	7.17	7.26	7.36	7.44	7.52	7.59	7.66	7.73
13	6.79	6.90	7.01	7.10	7.19	7.27	7.35	7.42	7.48	7.55
14	6.66	6.77	6.87	6.96	7.05	7.13	7.20	7.27	7.33	7.39
15	6.55	6.66	6.76	6.84	6.93	7.00	7.07	7.14	7.20	7.26
16	6.46	6.56	6.66	6.74	6.82	6.90	6.97	7.03	7.09	7.15
17	6.38	6.48	6.57	6.66	6.73	6.81	6.87	6.94	7.00	7.05
18	6.31	6.41	6.50	6.58	6.65	6.73	6.79	6.85	6.91	6.97
19	6.25	6.34	6.43	6.51	6.58	6.65	6.72	6.78	6.84	6.89
20	6.19	6.28	6.37	6.45	6.52	6.59	6.65	6.71	6.77	6.82
24	6.02	6.11	6.19	6.26	6.33	6.39	6.45	6.51	6.56	6.61
30	5.85	5.93	6.01	6.08	6.14	6.20	6.26	6.31	6.36	6.41
40	5.69	5.76	5.83	5.90	5.96	6.02	6.07	6.12	6.16	6.21
60	5.53	5.60	5.67	5.73	5.78	5.84	5.89	5.93	5.97	6.01
120	5.37	5.44	5.50	5.56	5.61	5.66	5.71	5.75	5.79	5.83
∞	5.23	5.29	5.35	5.40	5.45	5.49	5.54	5.57	5.61	5.65

Kaynak. Bluman, A. G. (2001). *Elementary statistics: A step by step approach* (4. basım). NY: McGraw-Hill.

Tablo 9. Tukey Testi Kritik Değerleri (α = .05)

	k								
v	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	17.97	26.98	32.82	37.08	40.41	43.12	45.40	47.36	49.07
2	6.08	8.33	9.80	10.88	11.74	12.44	13.03	13.54	13.99
3	4.50	5.91	6.82	7.50	8.04	8.48	8.85	9.18	9.46
4	3.93	5.04	5.76	6.29	6.71	7.05	7.35	7.60	7.83
5	3.64	4.60	5.22	5.67	6.03	6.33	6.58	6.80	6.99
6	3.46	4.34	4.90	5.30	5.63	5.90	6.12	6.32	6.49
7	3.34	4.16	4.68	5.06	5.36	5.61	5.82	6.00	6.16
8	3.26	4.04	4.53	4.89	5.17	5.40	5.60	5.77	5.92
9	3.20	3.95	4.41	4.76	5.02	5.24	5.43	5.59	5.74
10	3.15	3.88	4.33	4.65	4.91	5.12	5.30	5.46	5.60
11	3.11	3.82	4.26	4.57	4.82	5.03	5.20	5.35	5.49
12	3.08	3.77	4.20	4.51	4.75	4.95	5.12	5.27	5.39
13	3.06	3.73	4.15	4.45	4.69	4.88	5.05	5.19	5.32
14	3.03	3.70	4.11	4.41	4.64	4.83	4.99	5.13	5.25
15	3.01	3.67	4.08	4.37	4.59	4.78	4.94	5.08	5.20
16	3.00	3.65	4.05	4.33	4.56	4.74	4.90	5.03	5.15
17	2.98	3.63	4.02	4.30	4.52	4.70	4.86	4.99	5.11
18	2.97	3.61	4.00	4.28	4.49	4.67	4.82	4.96	5.07
19	2.96	3.59	3.98	4.25	4.47	4.65	4.79	4.92	5.04
20	2.95	3.58	3.96	4.23	4.45	4.62	4.77	4.90	5.01
24	2.92	3.53	3.90	4.17	4.37	4.54	4.68	4.81	4.92
30	2.89	3.49	3.85	4.10	4.30	4.46	4.60	4.72	4.82
40	2.86	3.44	3.79	4.04	4.23	4.39	4.52	4.63	4.73
60	2.83	3.40	3.74	3.98	4.16	4.31	4.44	4.55	4.65
120	2.80	3.36	3.68	3.92	4.10	4.24	4.36	4.47	4.56
∞	2.77	3.31	3.63	3.86	4.03	4.17	4.29	4.39	4.47

Kaynak. Bluman, A. G. (2001). *Elementary statistics: A step by step approach* (4. basım). NY: McGraw-Hill.

Tablo 9. Tukey Testi Kritik Değerleri (α = .05 - *devam*)

	k									
v	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	50.59	51.96	53.20	54.33	55.36	56.32	57.22	58.04	58.83	59.56
2	14.39	14.75	15.08	15.38	15.65	15.91	16.14	16.37	16.57	16.77
3	9.72	9.95	10.15	10.35	10.53	10.69	10.84	10.98	11.11	11.24
4	8.03	8.21	8.37	8.52	8.66	8.79	8.91	9.03	9.13	9.23
5	7.17	7.32	7.47	7.60	7.72	7.83	7.93	8.03	8.12	8.21
6	6.65	6.79	6.92	7.03	7.14	7.24	7.34	7.43	7.51	7.59
7	6.30	6.43	6.55	6.66	6.76	6.85	6.94	7.02	7.10	7.17
8	6.05	6.18	6.29	6.39	6.48	6.57	6.65	6.73	6.80	6.87
9	5.87	5.98	6.09	6.19	6.28	6.36	6.44	6.51	6.58	6.64
10	5.72	5.83	5.93	6.03	6.11	6.19	6.27	6.34	6.40	6.47
11	5.61	5.71	5.81	5.90	5.98	6.06	6.13	6.20	6.27	6.33
12	5.51	5.61	5.71	5.80	5.88	5.95	6.02	6.09	6.15	6.21
13	5.43	5.53	5.63	5.71	5.79	5.86	5.93	5.99	6.05	6.11
14	5.36	5.46	5.55	5.64	5.71	5.79	5.85	5.91	5.97	6.03
15	5.31	5.40	5.49	5.57	5.65	5.72	5.78	5.85	5.90	5.96
16	5.26	5.35	5.44	5.52	5.59	5.66	5.73	5.79	5.84	5.90
17	5.21	5.31	5.39	5.47	5.54	5.61	5.67	5.73	5.79	5.84
18	5.17	5.27	5.35	5.43	5.50	5.57	5.63	5.69	5.74	5.79
19	5.14	5.23	5.31	5.39	5.46	5.53	5.59	5.65	5.70	5.75
20	5.11	5.20	5.28	5.36	5.43	5.49	5.55	5.61	5.66	5.71
24	5.01	5.10	5.18	5.25	5.32	5.38	5.44	5.49	5.55	5.59
30	4.92	5.00	5.08	5.15	5.21	5.27	5.33	5.38	5.43	5.47
40	4.82	4.90	4.98	5.04	5.11	5.16	5.22	5.27	5.31	5.36
60	4.73	4.81	4.88	4.94	5.00	5.06	5.11	5.15	5.20	5.24
120	4.64	4.71	4.78	4.84	4.90	4.95	5.00	5.04	5.09	5.13
∞	4.55	4.62	4.68	4.74	4.80	4.85	4.89	4.93	4.97	5.01

Kaynak. Bluman, A. G. (2001). *Elementary statistics: A step by step approach* (4. basım). NY: McGraw-Hill.

Tablo 10 – Pearson Momentler Çarpımı Korelasyonu Tablosu

	α	
df	**.05**	**.01**
1	.999	.999
2	.950	.999
3	.878	.959
4	.811	.917
5	.754	.875
6	.707	.834
7	.666	.798
8	.632	.765
9	.602	.735
10	.576	.708
11	.553	.684
12	.532	.661
13	.514	.641
14	.497	.623
15	.482	.606
16	.468	.590
17	.456	.575
18	.444	.561
19	.433	.549
20	.423	.537
21	.413	.526
22	.404	.515
23	.396	.505
24	.388	.496
25	.381	.487
26	.374	.479
27	.367	.471
28	.361	.463
29	.355	.456
30	.349	.449
35	.325	.418
40	.304	.393
45	.288	.372
50	.273	.354
60	.250	.325
70	.232	.302
80	.217	.283
90	.205	.267
100	.195	.254

Not: Tablodaki değerler çift kuyrukludur. df = n – 2.

Kaynak. Lindley, D. V., Scott, W. F. (1995). *New Cambridge statistical tables* (2. basım). Cambridge: Cambridge University Press.

Tablo 11. İşaret Testi Kritik Değerleri

	α			
Tek kuyruklu	.005	.01	.025	.05
Çift kuyruklu	.01	.02	.05	.10
n				
8	0	0	0	1
9	0	0	1	1
10	0	0	1	1
11	0	1	1	2
12	1	1	2	2
13	1	1	2	3
14	1	2	3	3
15	2	2	3	3
16	2	2	3	4
17	2	3	4	4
18	3	3	4	5
19	3	4	4	5
20	3	4	5	5
21	4	4	5	6
22	4	5	5	6
23	4	5	6	7
24	5	5	6	7
25	5	6	6	7

Kaynak. Bluman, A. G. (2001). *Elementary statistics: A step by step approach* (4. basım). NY: McGraw-Hill.

Tablo 11. Wilcoxon İşaretli Sıra Testi Kritik Değerleri

	α			
Tek kuyruk	.05	.025	.01	.005
Çift kuyruk	.10	.05	.02	.01
n				
5	1	-	-	-
6	2	1	-	-
7	4	2	0	-
8	6	4	2	0
9	8	6	3	2
10	11	8	5	3
11	14	11	7	5
12	17	14	10	7
13	21	17	13	10
14	26	21	16	13
15	30	25	20	16
16	36	30	24	19
17	41	35	28	23
18	47	40	33	28
19	54	46	38	32
20	60	52	43	37
21	68	59	49	43
22	75	66	56	49
23	83	73	62	55
24	92	81	69	61
25	101	90	77	68
26	110	98	85	76
27	120	107	93	84
28	130	117	102	92
29	141	127	111	100
30	152	137	120	109

Kaynaklar.

Kmietowicz, Z. W., Yannoulis, Y. (1988). *Statistical tables for economic, business, and social studies* (2. basım). UK: Longman.

Bluman, A. G. (2001). *Elementary statistics: A step by step approach* (4. basım). NY: McGraw-Hill.

Tablo 13. Spearman Korelasyonu Kritik Değerleri

	α	
sd	**.05**	**.01**
5	-	-
6	.886	-
7	.786	.929
8	.738	.881
9	.700	.833
10	.648	.794
11	.618	.818
12	.591	.780
13	.566	.745
14	.545	.716
15	.525	.689
16	.507	.666
17	.490	.645
18	.476	.625
19	.462	.608
20	.450	.591
21	.438	.576
22	.428	.562
23	.418	.549
24	.409	.537
25	.400	.526
26	.392	.515
27	.385	.505
28	.377	.496
29	.370	.487
30	.364	.478

Not: r_s tablo değerlerinden büyükse H_0: $\rho = 0.00$ reddedilir; n, sıralanan çiftlerin sayısıdır.

Kaynak. Keiss, H. O. (1996). *Statistical concepts for the behavioral sciences (2. basım)*. Massachusetts: Allyn & Bacon.

Tablo 14. U ve U' için Kritik Değerler Tablosu (α = .005)

	N_1																		
N_2	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2																		0	0
																		38	40
3								0	0	0	1	1	1	2	2	2	2	3	3
								27	30	33	35	38	41	43	46	49	52	54	57
4					0	0	1	1	2	2	3	3	4	5	5	6	6	7	8
					24	28	31	35	38	42	45	49	52	55	59	62	66	69	72
5				0	1	1	2	3	4	5	6	7	7	8	9	10	11	12	13
				25	29	34	38	42	46	50	54	58	63	67	71	75	79	83	87
6			0	1	2	3	4	5	6	7	9	10	11	12	13	15	16	17	18
			24	29	34	39	44	49	54	59	63	68	73	78	83	87	92	97	102
7			0	1	3	4	6	7	9	10	12	13	15	16	18	19	21	22	24
			28	34	39	45	50	56	61	67	72	78	83	89	94	100	105	111	116
8			1	2	4	6	7	9	11	13	15	17	18	20	22	24	26	28	30
			31	38	44	50	57	63	69	75	81	87	94	100	106	112	118	124	130
9		0	1	3	5	7	9	11	13	16	18	20	22	24	27	29	31	33	36
		27	35	42	49	56	63	70	77	83	90	97	104	111	117	124	131	138	144
10		0	2	4	6	9	11	13	16	18	21	24	26	29	31	34	37	39	42
		30	38	46	54	61	69	77	84	92	99	106	114	121	129	136	143	151	158
11		0	2	5	7	10	13	16	18	21	24	27	30	33	36	39	42	45	48
		33	42	50	59	67	75	83	92	100	108	116	124	132	140	148	156	164	172
12		1	3	6	9	12	15	18	21	24	27	31	34	37	41	44	47	51	54
		35	45	54	63	72	81	90	99	108	117	125	134	143	151	160	169	177	186
13		1	3	7	10	13	17	20	24	27	31	34	38	42	45	49	53	56	60
		38	49	58	68	78	87	97	106	116	125	125	144	153	163	172	181	191	200
14		1	4	7	11	15	18	22	26	30	34	38	42	46	50	54	58	63	67
		41	52	63	73	83	94	104	114	124	134	144	154	164	174	184	194	203	213
15		2	5	8	12	16	20	24	29	33	37	42	46	51	55	60	64	69	73
		43	55	67	78	89	100	111	121	132	143	153	164	174	185	195	206	216	227
16		2	5	9	13	18	22	27	31	36	41	45	50	55	60	65	70	74	79
		46	59	71	83	94	106	117	129	140	151	163	174	185	196	207	218	230	241
17		2	6	10	15	19	24	29	34	39	44	49	54	60	65	70	75	81	86
		49	62	75	87	100	112	124	148	148	160	172	184	195	207	219	231	242	254
18		2	6	11	16	21	26	31	37	42	47	53	58	64	70	75	81	87	92
		52	66	79	92	105	118	131	143	156	169	181	194	206	218	231	243	255	268
19	0	3	7	12	17	22	28	33	39	45	51	56	63	69	74	81	87	93	99
	38	54	69	83	97	111	124	138	151	164	177	191	203	216	230	242	255	268	281
20	0	3	8	13	18	24	30	36	42	48	54	60	67	73	79	86	92	99	105
	40	57	72	87	102	116	130	144	158	172	186	200	213	227	241	254	268	281	295

Not: Tablo değerleri tek kuyrukludur.

Kaynak. Runyon, R. P., Haber, A. (1991). *Fundamentals of behavioral statistics* (7. basım). NY: McGraw-Hill.

Tablo 14. U ve U' için Kritik Değerler Tablosu (α = .01)

	N_1																		
N_2	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2												0	0	0	0	0	0	1	1
												26	28	30	32	34	36	37	39
3						0	0	1	1	1	2	2	2	3	3	4	4	4	5
						21	24	26	29	32	34	37	40	42	45	47	50	52	55
4				0	1	1	2	3	3	4	5	5	6	7	7	8	9	9	10
				20	23	27	30	33	37	40	43	47	50	53	57	60	63	67	70
5			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
			20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84
6			1	2	3	4	6	7	8	9	11	12	13	15	16	18	19	20	22
			23	28	33	38	42	47	52	57	61	66	71	75	80	84	89	94	98
7		0	1	3	4	6	7	9	11	12	14	16	17	19	21	23	24	26	28
		21	27	32	38	43	49	54	59	65	70	75	81	86	91	96	102	107	112
8		0	2	4	6	7	9	11	13	15	17	20	22	24	26	28	30	32	34
		24	30	36	42	49	55	61	67	73	79	84	90	96	102	108	114	120	126
9		1	3	5	7	9	11	14	16	18	21	23	26	28	31	33	36	38	40
		26	33	40	47	54	61	67	74	81	87	94	100	107	113	120	126	133	140
10		1	3	6	8	11	13	16	19	22	24	27	30	33	36	38	41	44	47
		29	37	44	52	59	67	74	81	88	96	103	110	117	124	132	139	146	153
11		1	4	7	9	12	15	18	22	25	28	31	34	37	41	44	47	50	53
		32	40	48	57	65	73	81	88	96	104	112	120	128	135	143	151	159	167
12		2	5	8	11	14	17	21	24	28	31	35	38	42	46	49	53	56	60
		34	43	52	61	70	79	87	96	104	113	121	130	138	146	155	163	172	180
13	0	2	5	9	12	16	20	23	27	31	35	39	43	47	51	55	59	63	67
	26	37	47	56	66	75	84	94	103	112	121	130	139	148	157	166	175	184	193
14	0	2	6	10	13	17	22	26	30	34	38	43	47	51	56	60	65	69	73
	28	40	50	60	71	81	90	100	110	120	130	139	149	159	168	178	187	197	207
15	0	3	7	11	15	19	24	28	33	37	42	47	51	56	61	66	70	75	80
	30	42	53	64	75	86	96	107	117	128	138	148	159	169	179	189	200	210	220
16	0	3	7	12	16	21	26	31	36	41	46	51	56	61	66	71	76	82	87
	32	45	57	68	80	91	102	113	124	135	146	157	168	179	190	201	212	222	233
17	0	4	8	13	18	23	28	33	38	44	49	55	60	66	71	77	82	88	93
	34	47	60	72	84	96	108	120	132	143	155	166	178	189	201	212	224	234	247
18	0	4	9	14	19	24	30	36	41	47	53	59	65	70	76	82	88	94	100
	36	50	63	76	89	102	114	126	139	151	163	175	187	200	212	224	236	248	260
19	1	4	9	15	20	26	32	38	44	50	56	63	69	75	82	88	94	101	107
	37	53	67	80	94	107	120	133	146	159	172	184	197	210	222	235	248	260	273
20	1	5	10	16	22	28	34	40	47	53	60	67	73	80	87	93	100	107	114
	39	55	70	84	98	112	126	140	153	167	180	193	207	220	233	247	260	273	286

Not: Tablo değerleri tek kuyrukludur.

Kaynak. Runyon, R. P., Haber, A. (1991). *Fundamentals of behavioral statistics* (7. basım). NY: McGraw-Hill.

Tablo 14. U ve U' için Kritik Değerler Tablosu (α = .025)

	N_1																		
N_2	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2							0	0	0	0	1	1	1	1	1	2	2	2	2
							16	18	20	22	23	25	27	29	31	32	34	36	38
3				0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8
				15	17	20	22	25	27	30	32	35	37	40	42	45	47	50	52
4			0	1	2	3	4	4	5	6	7	8	9	10	11	11	12	13	13
			16	19	22	25	28	32	35	38	41	44	47	50	53	57	60	63	67
5		0	1	2	3	5	6	7	8	9	11	12	13	14	15	17	18	19	20
		15	19	23	27	30	34	38	42	46	49	53	57	61	65	68	72	76	80
6		1	2	3	5	6	8	10	11	13	14	16	17	19	21	22	24	25	27
		17	22	27	31	36	40	44	49	53	58	62	67	71	75	80	84	89	93
7		1	3	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
		20	25	30	36	41	46	51	56	61	66	71	76	81	86	91	96	101	106
8	0	2	4	6	8	10	13	15	17	19	22	24	26	29	31	34	36	38	41
	16	22	28	34	40	46	51	57	63	69	74	80	86	91	97	102	108	111	119
9	0	2	4	7	10	12	15	17	20	23	26	28	31	34	37	39	42	45	48
	18	25	32	38	44	51	57	64	70	76	82	89	95	101	107	114	120	126	132
10	0	3	5	8	11	14	17	20	23	26	29	33	36	39	42	45	48	52	55
	20	27	35	42	49	56	63	70	77	84	91	97	104	111	118	125	132	138	145
11	0	3	6	9	13	16	19	23	26	30	33	37	40	44	47	51	55	58	62
	22	30	38	46	53	61	69	76	84	91	99	106	114	121	129	136	143	151	158
12	1	4	7	11	14	18	22	26	29	33	37	41	45	49	53	57	61	65	69
	23	32	41	49	58	66	74	82	91	99	107	115	123	131	139	147	155	163	171
13	1	4	8	12	16	20	24	28	33	37	41	45	50	54	59	63	67	72	76
	25	35	44	53	62	71	80	89	97	106	115	124	132	141	149	158	167	175	184
14	1	5	9	13	17	22	26	31	36	40	45	50	55	59	64	67	74	78	83
	27	37	47	51	67	76	86	95	104	114	123	132	141	151	160	171	178	188	197
15	1	5	10	14	19	24	29	34	39	44	49	54	59	64	70	75	80	85	90
	29	40	50	61	71	81	91	101	111	121	131	141	151	161	170	180	190	200	210
16	1	6	11	15	21	26	31	37	42	47	53	59	64	70	75	81	86	92	98
	31	42	53	65	75	86	97	107	118	129	139	149	160	170	181	191	202	212	222
17	2	6	11	17	22	28	34	39	45	51	57	63	67	75	81	87	93	99	105
	32	45	57	68	80	91	102	114	125	136	147	158	171	180	191	202	213	224	235
18	2	7	12	18	24	30	36	42	48	55	61	67	74	80	86	93	99	106	112
	34	47	60	72	84	96	108	120	132	143	155	167	178	190	202	213	225	236	248
19	2	7	13	19	25	32	38	45	52	58	65	72	78	85	92	99	106	113	119
	36	50	63	76	89	101	114	126	138	151	163	175	188	200	212	224	236	248	261
20	2	8	13	20	27	34	41	48	55	62	69	76	83	90	98	105	112	119	127
	38	52	67	80	93	106	119	132	145	158	171	184	197	210	222	235	248	261	273

Not: Tablo değerleri tek kuyrukludur.

Kaynak. Runyon, R. P., Haber, A. (1991). *Fundamentals of behavioral statistics* (7. basım). NY: McGraw-Hill.

Tablo 14. U ve U' için Kritik Değerler Tablosu (α = .05)

	N_1																			
N_2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1																			0	0
																			19	20
2					0	0	0	1	1	1	1	2	2	2	3	3	3	4	4	4
					10	12	14	15	17	19	21	22	24	26	27	29	31	32	34	36
3			0	0	1	2	2	3	3	4	5	5	6	7	7	8	9	9	10	11
			9	12	14	16	19	21	24	26	28	31	33	35	38	40	42	45	47	49
4			0	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	17	18
			12	15	18	21	24	27	30	33	36	39	42	45	48	50	53	56	59	62
5		0	1	2	4	5	6	8	9	11	12	13	15	16	18	19	20	22	23	25
		10	14	18	21	25	29	32	36	39	43	47	50	54	57	61	65	68	72	75
6		0	2	3	5	7	8	10	12	14	16	17	19	21	23	25	26	28	30	32
		12	16	21	25	29	34	38	42	46	50	55	59	63	67	71	76	80	84	88
7		0	2	4	6	8	11	13	15	17	19	21	24	26	28	30	33	35	37	39
		14	19	24	29	34	38	43	48	53	58	63	67	72	77	82	86	91	96	101
8		1	3	5	8	10	13	15	18	20	23	26	28	31	33	36	39	41	44	47
		15	21	27	32	38	43	49	54	60	65	70	76	81	87	92	97	103	108	113
9		1	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54
		17	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126
10		1	4	7	11	14	17	20	24	27	31	34	37	41	44	48	51	55	58	62
		19	26	33	39	46	53	60	66	73	79	86	93	99	106	112	119	125	132	138
11		1	5	8	12	16	19	23	27	31	34	38	42	46	50	54	57	61	65	69
		21	28	36	43	50	58	65	72	79	87	94	101	108	115	122	130	137	144	151
12		2	5	9	13	17	21	26	30	34	38	42	47	51	55	60	64	68	72	77
		22	31	39	47	55	63	70	78	86	94	102	109	117	125	132	140	148	156	163
13		2	6	10	15	19	24	28	33	37	42	47	51	56	61	65	70	75	80	84
		24	33	42	50	59	67	76	84	93	101	109	118	126	134	143	151	159	167	176
14		2	7	11	16	21	26	31	36	41	46	51	56	61	66	71	77	82	87	92
		26	35	45	54	63	72	81	90	99	108	117	126	135	144	153	161	170	179	188
15		3	7	12	18	23	28	33	39	44	50	55	61	66	72	77	83	88	94	100
		27	38	48	57	67	77	87	96	106	115	125	134	144	153	163	172	182	191	200
16		3	8	14	19	25	30	36	42	48	54	60	65	71	77	83	89	95	101	107
		29	40	50	61	71	82	92	102	112	122	132	143	153	163	173	183	193	203	213
17		3	9	15	20	26	33	39	45	51	57	64	70	77	83	89	96	102	109	115
		31	42	53	65	76	86	97	108	119	130	140	151	161	172	183	193	204	214	225
18		4	9	16	22	28	35	41	48	55	61	68	75	82	88	95	102	109	116	123
		32	45	56	68	80	91	103	114	123	137	148	159	170	182	193	204	215	226	237
19	0	4	10	17	23	30	37	44	51	58	65	72	80	87	94	101	109	116	123	130
	19	34	47	59	72	84	96	108	120	132	144	156	167	179	191	203	214	226	238	250
20	0	4	11	18	25	32	39	47	54	62	69	77	84	92	100	107	115	123	130	138
	20	36	49	62	75	88	101	113	126	138	151	163	176	188	200	213	225	237	250	262

Not: Tablo değerleri tek kuyrukludur.

Kaynak. Runyon, R. P., Haber, A. (1991). *Fundamentals of behavioral statistics* (7. basım). NY: McGraw-Hill.

Tablo 15. Durbin-Watson Kritik Değerleri (α = .05)

	K=2		K=3		K=4		K=5	
T	d^*_L	d^*_u	d^*_L	d^*_u	d^*_L	d^*_u	d^*_L	d^*_u
6	0.610	1.400						
7	0.700	1.356	0.467	1.896				
8	0.763	1.332	0.559	1.777	0.368	2.287		
9	0.824	1.320	0.629	1.699	0.455	2.128	0.296	2.588
10	0.879	1.320	0.697	1.641	0.525	2.016	0.376	2.414
11	0.927	1.324	0.758	1.604	0.595	1.928	0.444	2.283
12	0.971	1.331	0.812	1.579	0.658	1.864	0.512	2.177
13	1.010	1.340	0.861	1.562	0.715	1.816	0.574	2.094
14	1.045	1.350	0.905	1.551	0.767	1.779	0.632	2.030
15	1.077	1.361	0.946	1.543	0.814	1.750	0.685	1.977
16	1.106	1.371	0.982	1.539	0.857	1.728	0.734	1.935
17	1.133	1.381	1.015	1.536	0.897	1.710	0.779	1.900
18	1.158	1.391	1.046	1.535	0.933	1.696	0.820	1.872
19	1.180	1.401	1.074	1.536	0.967	1.685	0.859	1.848
20	1.201	1.411	1.100	1.537	0.998	1.676	0.894	1.828
21	1.221	1.420	1.125	1.538	1.026	1.669	0.927	1.812
22	1.239	1.429	1.147	1.541	1.053	1.664	0.958	1.797
23	1.257	1.437	1.168	1.543	1.078	1.660	0.986	1.785
24	1.273	1.446	1.188	1.546	1.101	1.656	1.013	1.775
25	1.288	1.454	1.206	1.550	1.123	1.654	1.038	1.767
26	1.302	1.461	1.224	1.553	1.143	1.652	1.062	1.759
27	1.316	1.469	1.240	1.556	1.162	1.651	1.084	1.753
28	1.328	1.476	1.255	1.560	1.181	1.650	1.104	1.747
29	1.341	1.483	1.270	1.563	1.198	1.650	1.124	1.743
30	1.352	1.489	1.284	1.567	1.214	1.650	1.143	1.739
31	1.363	1.496	1.297	1.570	1.229	1.650	1.160	1.735

Not: "K", sabit terimi de içeren "x"deki sütunlar sayısıdır.

Kaynak. Griffiths, W. E., Hill, R. C. and Judge, G. G. (1993). *Learning and Practicing Econometrics*. Wiley.

Tablo 15. Durbin-Watson Kritik Değerleri (α = .05 – *devam*)

	K=6		K=7		K=8		K=9	
T	d^*_L	d^*_u	d^*_L	d^*_u	d^*_L	d^*_u	d^*_L	d^*_u
6								
7								
8								
9								
10	0.243	2.822						
11	0.316	2.645	0.203	3.005				
12	0.379	2.506	0.268	2.832	0.171	3.149		
13	0.445	2.390	0.328	2.692	0.230	2.985	0.147	3.266
14	0.505	2.296	0.389	2.572	0.286	2.848	0.200	3.111
15	0.562	2.220	0.447	2.472	0.343	2.727	0.251	2.979
16	0.615	2.157	0.502	2.388	0.398	2.624	0.304	2.860
17	0.664	2.104	0.554	2.318	0.451	2.537	0.356	2.757
18	0.710	2.060	0.603	2.257	0.502	2.461	0.407	2.667
19	0.752	2.023	0.649	2.206	0.549	2.396	0.456	2.589
20	0.792	1.991	0.692	2.162	0.595	2.339	0.502	2.521
21	0.829	1.964	0.732	2.124	0.637	2.290	0.547	2.460
22	0.863	1.940	0.769	2.090	0.677	2.246	0.588	2.407
23	0.895	1.920	0.804	2.061	0.715	2.208	0.628	2.360
24	0.925	1.902	0.837	2.035	0.751	2.174	0.666	2.318
25	0.953	1.886	0.868	2.012	0.784	2.144	0.702	2.280
26	0.979	1.873	0.897	1.992	0.816	2.117	0.735	2.246
27	1.004	1.861	0.925	1.974	0.845	2.093	0.767	2.216
28	1.028	1.850	0.951	1.958	0.874	2.071	0.798	2.188
29	1.050	1.841	0.975	1.944	0.900	2.052	0.826	2.164
30	1.071	1.833	0.998	1.931	0.926	2.034	0.854	2.141
31	1.090	1.825	1.020	1.920	0.950	2.018	0.879	2.120

Not: "K", sabit terimi de içeren "x"deki sütunlar sayısıdır.

Kaynak. Griffiths, W. E., Hill, R. C. and Judge, G. G. (1993). *Learning and Practicing Econometrics*. Wiley.

Tablo 15. Durbin-Watson Kritik Değerleri (α = .05 – *devam*)

	K=10		K=11	
T	d^*_L	d^*_u	d^*_L	d^*_u
6				
7				
8				
9				
10				
11				
12				
13				
14	0.127	3.360		
15	0.175	3.216	0.111	3.438
16	0.222	3.090	0.155	3.304
17	0.272	2.975	0.198	3.184
18	0.321	2.873	0.244	3.073
19	0.369	2.783	0.290	2.974
20	0.416	2.704	0.336	2.885
21	0.461	2.633	0.380	2.806
22	0.504	2.571	0.424	2.734
23	0.545	2.514	0.465	2.670
24	0.584	2.464	0.506	2.613
25	0.621	2.419	0.544	2.560
26	0.657	2.379	0.581	2.513
27	0.691	2.342	0.616	2.470
28	0.723	2.309	0.650	2.431
29	0.753	2.278	0.682	2.396
30	0.782	2.251	0.712	2.363
31	0.810	2.226	0.741	2.333

Not: "K", sabit terimi de içeren "x"deki sütunlar sayısıdır.

Kaynak. Griffiths, W. E., Hill, R. C. and Judge, G. G. (1993). *Learning and Practicing Econometrics*. Wiley.

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