16 Estadística descriptiva

Los distintos tipos de media

In[1]:= **a = {21, 22, 21, 23, 22, 21, 23, 23, 21, 21, 21, 24, 22}**

Out[1]= {21, 22, 21, 23, 22, 21, 23, 23, 21, 21, 21, 24, 22}

In[2]:= **Mean[a]**

Out[2]= $\dfrac{285}{13}$

In[3]:= **Total[a]**

Out[3]= 285

In[4]:= **Total[a] / Length[a]**

Out[4]= $\dfrac{285}{13}$

In[5]:= **HarmonicMean[a]**

Out[5]= $\dfrac{552\,552}{25\,255}$

In[6]:= **Length[a] / Total[1 / a]**

Out[6]= $\dfrac{552\,552}{25\,255}$

In[7]:= **GeometricMean[a]**

Out[7]= $3^{7/13} \times 14^{6/13} \times 253^{3/13}$

In[8]:= **GeometricMean[a] // N**

Out[8]= 21.9008

In[9]:= **ContraharmonicMean[a]**

Out[9]= $\dfrac{2087}{95}$

In[10]:= **Total[a^2] / Total[a]**

Out[10]= $\dfrac{2087}{95}$

In[11]:= **RootMeanSquare[a]**

Out[11]= $\sqrt{\dfrac{6261}{13}}$

In[12]:= **Sqrt[Total[a^2] / Length[a]]**

Out[12]= $\sqrt{\dfrac{6261}{13}}$

Mediana y moda

In[13]:= **Median[a]**

Out[13]= 22

In[14]:= **Sort[a]**

Out[14]= {21, 21, 21, 21, 21, 21, 22, 22, 22, 23, 23, 23, 24}

In[15]:= **Commonest[a]**

Out[15]= {21}

Máximo, mímino y cuantiles

In[16]:= **Max[a]**

Out[16]= 24

In[17]:= **Min[a]**

Out[17]= 21

In[18]:= **Max[a] – Min[a]**

Out[18]= 3

In[19]:= **Quartiles[a]**

Out[19]= {21, 22, 23}

In[20]:= **InterquartileRange[a]**

Out[20]= 2

In[21]:= **Quantile[a, 0.1]**

Out[21]= 21

Varianza y desviación típica

In[22]:= **Variance[a]**

Out[22]= $\dfrac{14}{13}$

In[23]:= **Total[(a – Mean[a])^2] / 12**

Out[23]= $\dfrac{14}{13}$

In[24]:= **StandardDeviation[a]**

Out[24]= $\sqrt{\dfrac{14}{13}}$

In[25]:= **MeanDeviation[a]**

Out[25]= $\dfrac{144}{169}$

Asimetría, kurtosis y momentos

In[26]:= **Skewness[a]**

Out[26]= $\dfrac{75\sqrt{\dfrac{3}{14}}}{56}$

In[27]:= **Skewness[a] // N**

Out[27]= 0.619969

In[28]:= **Kurtosis[a]**

Out[28]= $\dfrac{4943}{2352}$

In[29]:= **Kurtosis[a] // N**

Out[29]= 2.10162

In[30]:= **Moment[a, 4]**

Out[30]= $\dfrac{3\,040\,953}{13}$

In[31]:= **CentralMoment[a, 5]**

Out[31]= $\dfrac{1\,113\,030}{371\,293}$

Covarianza y correlación

In[32]:= **u = RandomInteger[6, 100]**

Out[32]= {3, 6, 6, 0, 5, 3, 5, 2, 1, 4, 6, 1, 2, 3, 2, 6, 2, 1, 6, 6, 2, 5, 4, 5, 4, 4, 1, 1, 1, 6, 1, 1, 3, 1, 2,
4, 1, 0, 0, 5, 0, 0, 6, 0, 0, 3, 0, 2, 0, 6, 5, 6, 1, 1, 5, 0, 4, 5, 0, 3, 2, 4, 2, 4, 3, 5, 5,
5, 4, 2, 0, 2, 1, 3, 5, 6, 5, 5, 4, 2, 5, 4, 0, 6, 0, 1, 5, 2, 6, 1, 3, 6, 4, 4, 3, 6, 2, 5, 2, 1}

In[33]:= **v = RandomInteger[8, 100]**

Out[33]= {5, 6, 6, 7, 1, 7, 0, 1, 8, 4, 5, 4, 2, 2, 3, 6, 5, 8, 3, 8, 6, 5, 5, 0, 1, 5, 4, 2, 0, 3, 8, 8, 6, 1, 6,
0, 5, 7, 6, 7, 6, 7, 4, 6, 7, 0, 6, 5, 7, 3, 6, 4, 8, 3, 3, 8, 0, 2, 6, 1, 6, 8, 7, 6, 5, 6, 8,
7, 2, 6, 8, 4, 6, 4, 5, 8, 1, 4, 7, 7, 4, 7, 2, 7, 7, 1, 6, 7, 2, 0, 5, 7, 3, 7, 2, 3, 2, 4, 5, 5}

In[34]:= **Correlation[u, v]**

Out[34]= $-\dfrac{2669\sqrt{\dfrac{3}{16\,761\,667}}}{7}$

In[35]:= **Correlation[u, v] // N**

Out[35]= −0.161307

In[36]:= **Covariance[u, v]**

Out[36]= $-\dfrac{2669}{3300}$

In[37]:= $\mathbf{N\left[-\dfrac{101}{2475}\right]}$

Out[37]= −0.0408081