

In[228]:=

```
(*Como ejemplo vamos a comparar 10^5 resultados  
aleatorios con respecto a una PDF Normal teorica*)  
data = RandomVariate[NormalDistribution[], 10^5];  
(*Nos entrega el p-value*)  
PearsonChiSquareTest[data]
```

Out[229]= 0.111058

In[230]:= (*Nos entrega un pequeño analisis*)

In[231]:= \mathcal{H} = DistributionFitTest[data, Automatic, "HypothesisTestData"]

Out[231]= HypothesisTestData [



Type: DistributionFitTest

p-Value: 0.757

Test: CramerVonMises

Test statistic: 0.0355

Data: Univariate

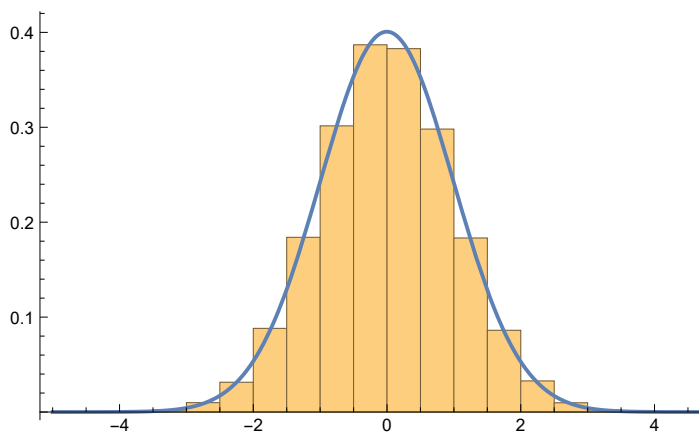
Conclusion: The null hypothesis that the data is distributed
according to the NormalDistribution[x, y] is not rejected
at the 5 percent level based on the Cramér-von Mises
test.

In[232]:=

```
(*Graficamo el histograma de los datos  
experimentales contra la PDF Normal Teorica*)
```

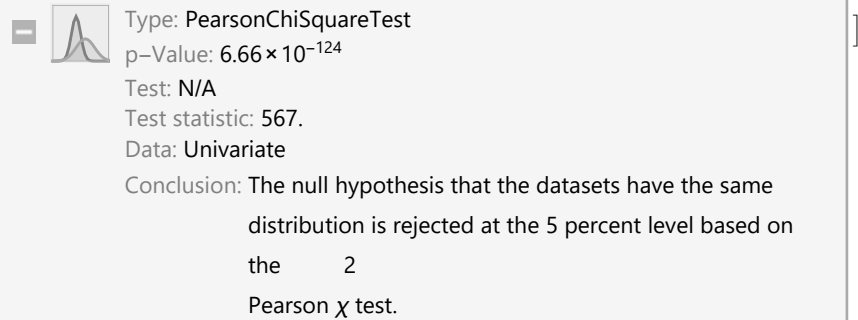
In[233]:= Show[Histogram[data, Automatic, "ProbabilityDensity"],
Plot[PDF[\mathcal{H} ["FittedDistribution"], x], {x, -5, 5}, PlotStyle -> Thick]]

Out[233]=



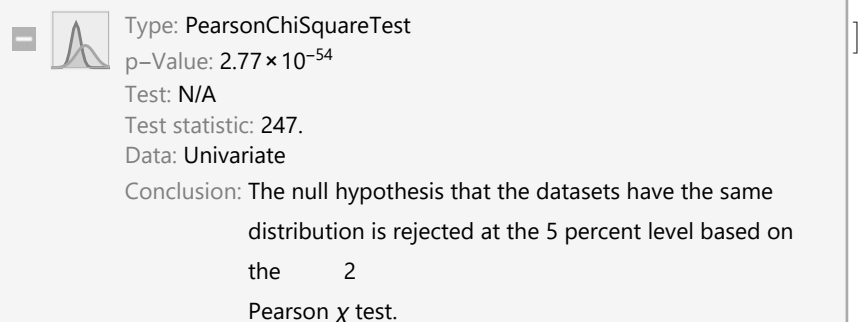
In[237]:= **PearsonChiSquareTest[X1, X4, "HypothesisTestData"]**

Out[237]= HypothesisTestData [



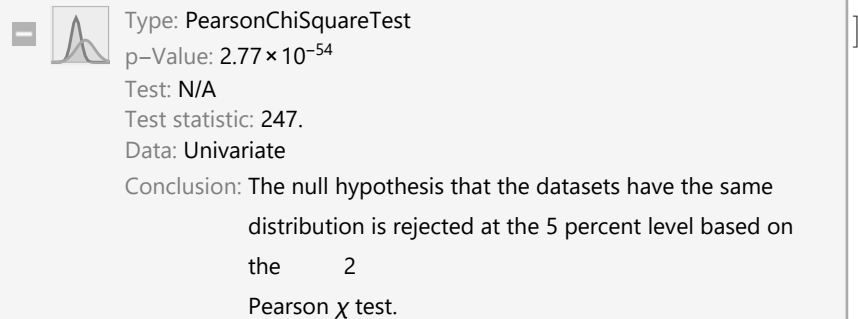
In[238]:= **PearsonChiSquareTest[X1, X5, "HypothesisTestData"]**

Out[238]= HypothesisTestData [



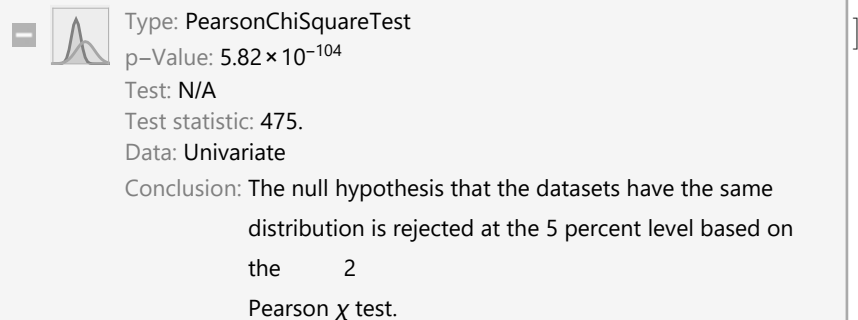
In[239]:= **PearsonChiSquareTest[X1, X5, "HypothesisTestData"]**

Out[239]= HypothesisTestData [



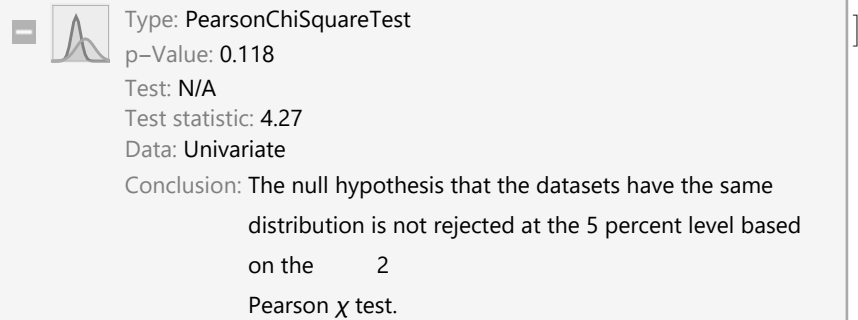
In[240]:= **PearsonChiSquareTest[X1, X6, "HypothesisTestData"]**

Out[240]= HypothesisTestData [



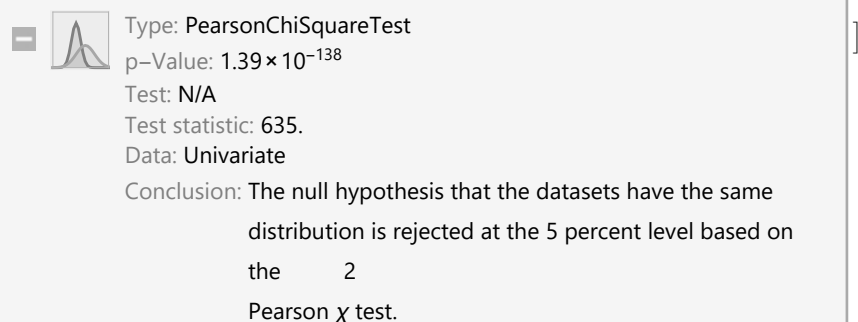
```
In[241]:= PearsonChiSquareTest[X1, X7, "HypothesisTestData"]
```

```
Out[241]= HypothesisTestData [
```



```
In[242]:= PearsonChiSquareTest[X1, X8, "HypothesisTestData"]
```

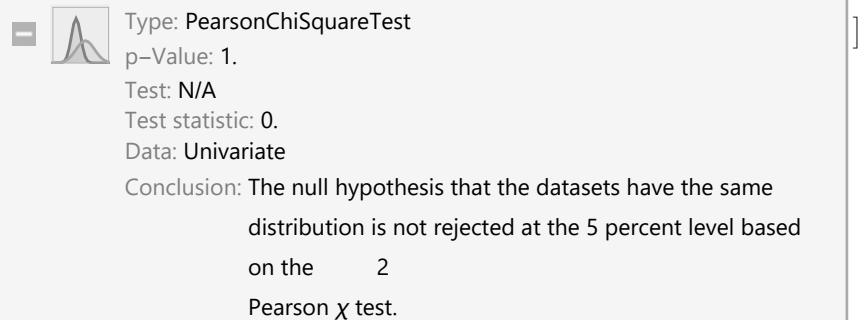
```
Out[242]= HypothesisTestData [
```



```
In[243]:= (***)
```

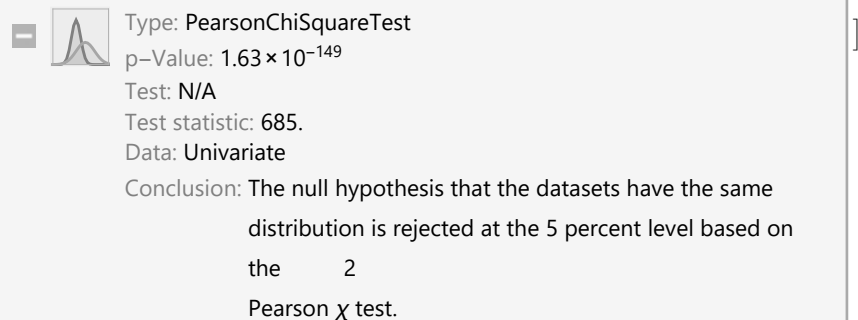
```
In[244]:= PearsonChiSquareTest[X2, X2, "HypothesisTestData"]
```

```
Out[244]= HypothesisTestData [
```



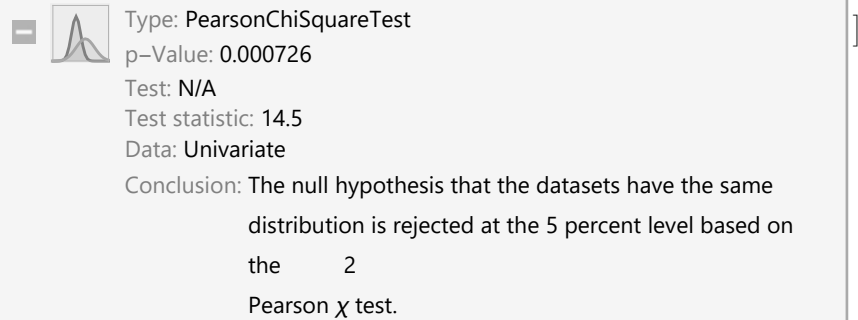
```
In[245]:= PearsonChiSquareTest[X2, X3, "HypothesisTestData"]
```

```
Out[245]= HypothesisTestData [
```



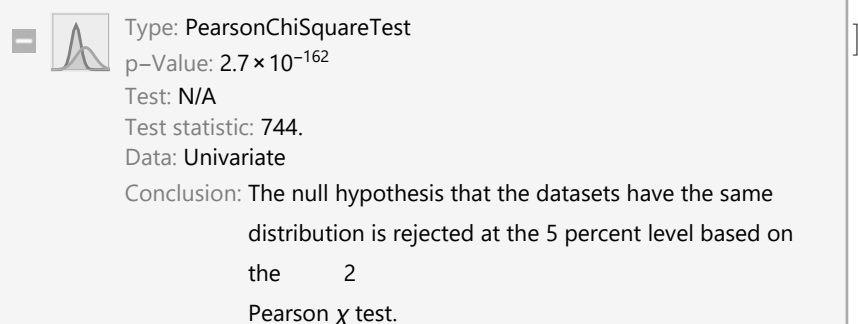
In[246]:= **PearsonChiSquareTest[X2, X4, "HypothesisTestData"]**

Out[246]= HypothesisTestData [



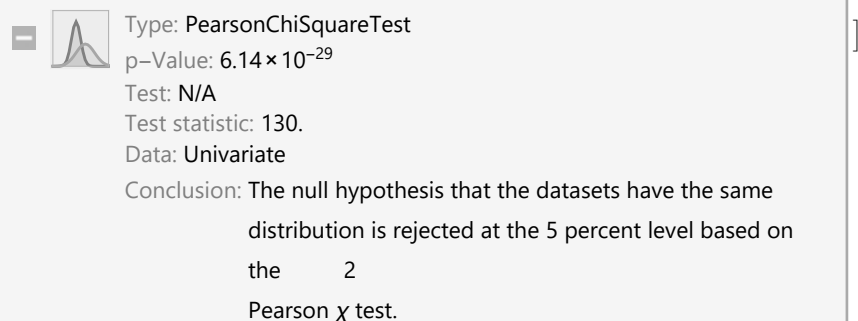
In[247]:= **PearsonChiSquareTest[X2, X5, "HypothesisTestData"]**

Out[247]= HypothesisTestData [



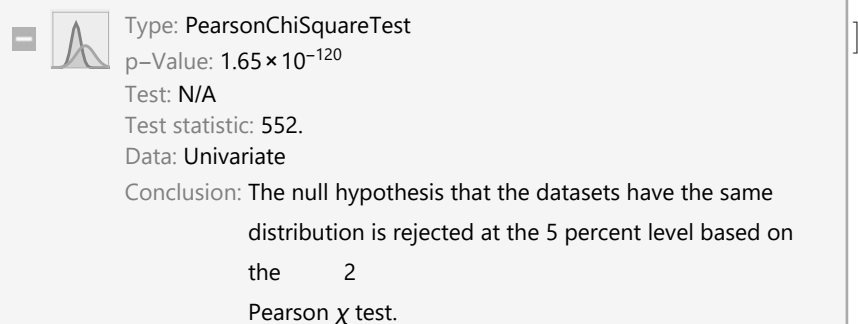
In[248]:= **PearsonChiSquareTest[X2, X6, "HypothesisTestData"]**

Out[248]= HypothesisTestData [



In[249]:= **PearsonChiSquareTest[X2, X7, "HypothesisTestData"]**

Out[249]= HypothesisTestData [



```
In[250]:= PearsonChiSquareTest[X2, X8, "HypothesisTestData"]
```

```
Out[250]= HypothesisTestData [
```



Type: PearsonChiSquareTest

p-Value: 9.65×10^{-7}

Test: N/A

Test statistic: 27.7

Data: Univariate

Conclusion: The null hypothesis that the datasets have the same distribution is rejected at the 5 percent level based on the 2 Pearson χ test.

]

```
In[251]:= (***)
```

```
PearsonChiSquareTest[X3, X3, "HypothesisTestData"]
```

```
Out[251]= HypothesisTestData [
```



Type: PearsonChiSquareTest

p-Value: 1.

Test: N/A

Test statistic: 0.

Data: Univariate

Conclusion: The null hypothesis that the datasets have the same distribution is not rejected at the 5 percent level based on the 2 Pearson χ test.

]

```
In[252]:= %32["TestDataTable"]
```

```
Out[252]=
```

| | Statistic | P-Value |
|------------------|-----------|---------|
| Pearson χ^2 | 0. | 1. |

```
In[253]:= PearsonChiSquareTest[X3, X4, "HypothesisTestData"]
```

```
Out[253]= HypothesisTestData [
```



Type: PearsonChiSquareTest

p-Value: 1.6×10^{-195}

Test: N/A

Test statistic: 897.

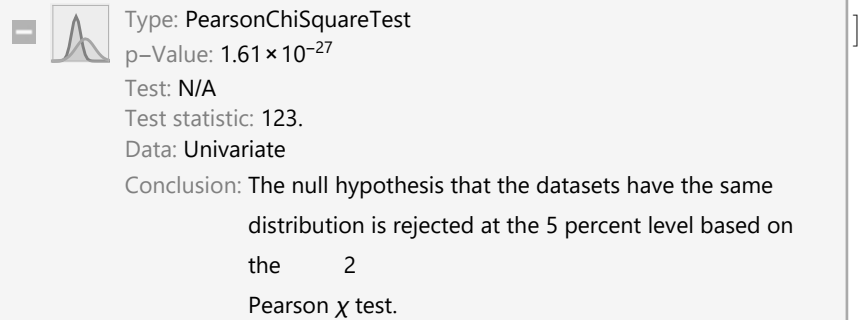
Data: Univariate

Conclusion: The null hypothesis that the datasets have the same distribution is rejected at the 5 percent level based on the 2 Pearson χ test.

]

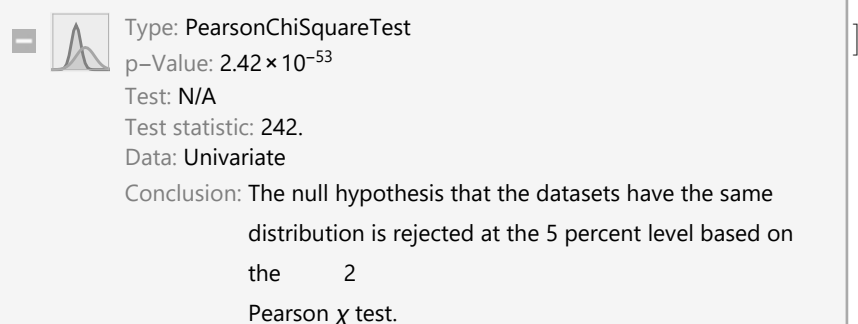
```
In[254]:= PearsonChiSquareTest[X3, X5, "HypothesisTestData"]
```

```
Out[254]= HypothesisTestData [
```



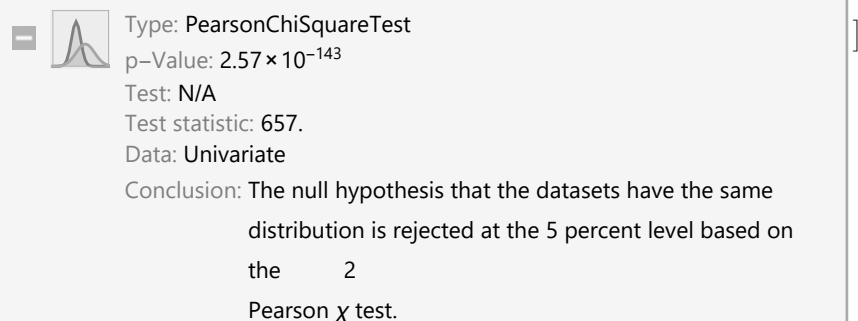
```
In[255]:= PearsonChiSquareTest[X3, X6, "HypothesisTestData"]
```

```
Out[255]= HypothesisTestData [
```



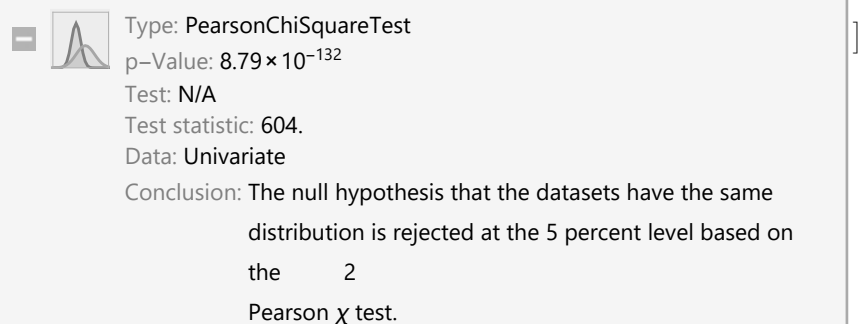
```
In[256]:= PearsonChiSquareTest[X3, X7, "HypothesisTestData"]
```

```
Out[256]= HypothesisTestData [
```



```
In[257]:= PearsonChiSquareTest[X3, X8, "HypothesisTestData"]
```


```
Out[257]= HypothesisTestData [
```



In[258]:= **(***)**

PearsonChiSquareTest[X4, X5, "HypothesisTestData"]


Out[258]= HypothesisTestData [



Type: PearsonChiSquareTest
 p-Value: 1.62×10^{-205}
 Test: N/A
 Test statistic: 943.
 Data: Univariate
 Conclusion: The null hypothesis that the datasets have the same
 distribution is rejected at the 5 percent level based on
 the 2
 Pearson χ test.

In[259]:= **PearsonChiSquareTest[X4, X6, "HypothesisTestData"]**

Out[259]= HypothesisTestData [



Type: PearsonChiSquareTest
 p-Value: 2.38×10^{-50}
 Test: N/A
 Test statistic: 229.
 Data: Univariate
 Conclusion: The null hypothesis that the datasets have the same
 distribution is rejected at the 5 percent level based on
 the 2
 Pearson χ test.

In[260]:= **%40["PValue"]**


Out[260]=

| | Statistic | P- Value |
|------------------|-----------|----------|
| Pearson χ^2 | 0. | 1. |

 [PValue]

In[261]:= **PearsonChiSquareTest[X4, X7, "HypothesisTestData"]**

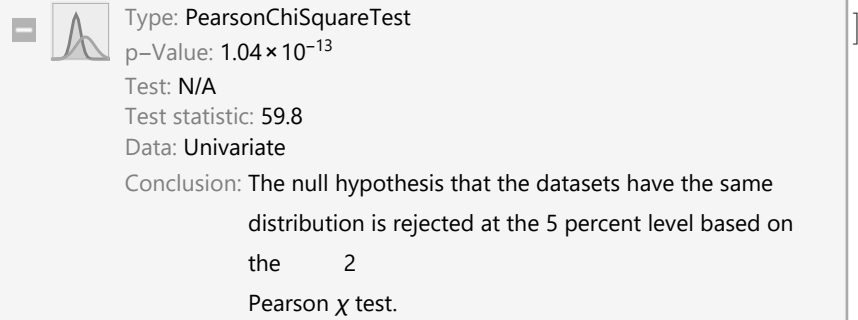
Out[261]= HypothesisTestData [



Type: PearsonChiSquareTest
 p-Value: 3.39×10^{-140}
 Test: N/A
 Test statistic: 642.
 Data: Univariate
 Conclusion: The null hypothesis that the datasets have the same
 distribution is rejected at the 5 percent level based on
 the 2
 Pearson χ test.

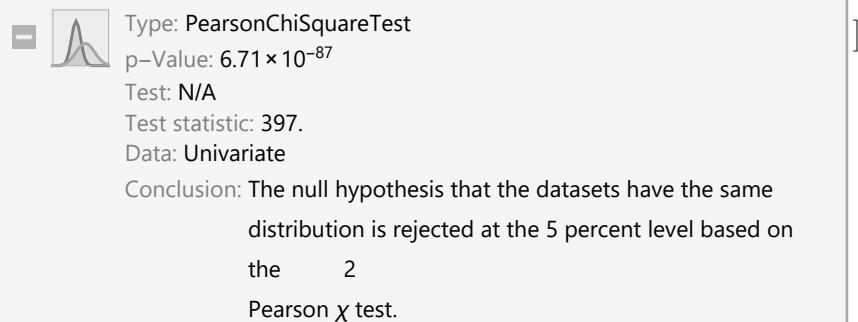

```
In[262]:= PearsonChiSquareTest[X4, X8, "HypothesisTestData"]
```

```
Out[262]= HypothesisTestData [
```



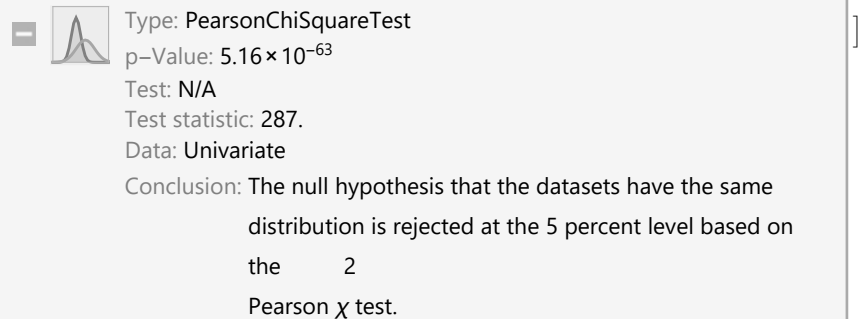
```
In[263]:= PearsonChiSquareTest[X5, X6, "HypothesisTestData"]
```

```
Out[263]= HypothesisTestData [
```



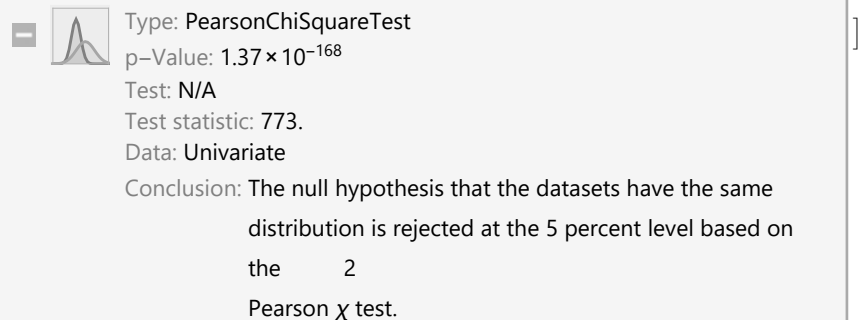
```
In[264]:= PearsonChiSquareTest[X5, X7, "HypothesisTestData"]
```

```
Out[264]= HypothesisTestData [
```




```
In[265]:= PearsonChiSquareTest[X5, X8, "HypothesisTestData"]
```

```
Out[265]= HypothesisTestData [
```



```
In[266]:= PearsonChiSquareTest[X6, X7, "HypothesisTestData"]
```


```
Out[266]= HypothesisTestData [
```



Type: PearsonChiSquareTest
 p-Value: 2.47×10^{-124}
 Test: N/A
 Test statistic: 569.
 Data: Univariate
 Conclusion: The null hypothesis that the datasets have the same
 distribution is rejected at the 5 percent level based on
 the 2
 Pearson χ test.

```
In[267]:= PearsonChiSquareTest[X6, X8, "HypothesisTestData"]
```


```
Out[267]= HypothesisTestData [
```



Type: PearsonChiSquareTest
 p-Value: 2.1×10^{-18}
 Test: N/A
 Test statistic: 81.4
 Data: Univariate
 Conclusion: The null hypothesis that the datasets have the same
 distribution is rejected at the 5 percent level based on
 the 2
 Pearson χ test.

```
In[268]:= PearsonChiSquareTest[X7, X8, "HypothesisTestData"]
```

```
Out[268]= HypothesisTestData [
```




Type: PearsonChiSquareTest
 p-Value: 8.71×10^{-160}
 Test: N/A
 Test statistic: 732.
 Data: Univariate
 Conclusion: The null hypothesis that the datasets have the same
 distribution is rejected at the 5 percent level based on
 the 2
 Pearson χ test.

```
In[269]:= (*****  

          *****)
```


Out[272]= HypothesisTestData [



Type: PearsonChiSquareTest

p-Value: $2. \times 10^{-235}$

Test: N/A


Test statistic: 1.08×10^3

Data: Univariate

Conclusion: The null hypothesis that the datasets have the same distribution is rejected at the 5 percent level based on the 2 Pearson χ test.

x10, x3

Out[274]= HypothesisTestData [



Type: PearsonChiSquareTest

p-Value: 0.00465

Test: N/A


Test statistic: 10.7

Data: Univariate

Conclusion: The null hypothesis that the datasets have the same distribution is rejected at the 5 percent level based on the 2 Pearson χ test.

x10, x4

Out[276]= HypothesisTestData [



Type: PearsonChiSquareTest

p-Value: 5.5×10^{-251}

Test: N/A


Test statistic: 1.15×10^3

Data: Univariate

Conclusion: The null hypothesis that the datasets have the same distribution is rejected at the 5 percent level based on the 2 Pearson χ test.

x10, x5

Out[278]= HypothesisTestData [



Type: PearsonChiSquareTest

p-Value: 3.47×10^{-69}

Test: N/A


Test statistic: 315.

Data: Univariate

Conclusion: The null hypothesis that the datasets have the same distribution is rejected at the 5 percent level based on the 2 Pearson χ test.

x10, x6

Out[280]= HypothesisTestData [



Type: PearsonChiSquareTest

p-Value: 1.75×10^{-174}

Test: N/A


Test statistic: 800.

Data: Univariate

Conclusion: The null hypothesis that the datasets have the same distribution is rejected at the 5 percent level based on the χ^2 Pearson χ test.

x10, x7

Out[282]= HypothesisTestData [



Type: PearsonChiSquareTest

p-Value: 2.92×10^{-20}

Test: N/A


Test statistic: 90.

Data: Univariate

Conclusion: The null hypothesis that the datasets have the same distribution is rejected at the 5 percent level based on the χ^2 Pearson χ test.

x10, x8

Out[284]= HypothesisTestData [



Type: PearsonChiSquareTest

p-Value: 7.07×10^{-79}

Test: N/A


Test statistic: 360.

Data: Univariate


Conclusion: The null hypothesis that the datasets have the same distribution is rejected at the 5 percent level based on the χ^2 Pearson χ test.

x10, x9

```
In[287]:= (*****
*****
PearsonChiSquareTest[X9, X1, "HypothesisTestData"]
Print["X9, X1"]
PearsonChiSquareTest[X9, X2, "HypothesisTestData"]
Print["X9, X2"]
```

```
Out[287]= HypothesisTestData [  Type: PearsonChiSquareTest
p-Value:  $2.1 \times 10^{-34}$ 
Test: N/A
Test statistic: 155.
Data: Univariate
Conclusion: The null hypothesis that the datasets have the same
distribution is rejected at the 5 percent level based on
the 2
Pearson  $\chi$  test. ]
```


X9, X1

```
Out[289]= HypothesisTestData [  Type: PearsonChiSquareTest
p-Value:  $1.81 \times 10^{-62}$ 
Test: N/A
Test statistic: 284.
Data: Univariate
Conclusion: The null hypothesis that the datasets have the same
distribution is rejected at the 5 percent level based on
the 2
Pearson  $\chi$  test. ]
```

X9, X2

```
In[291]:= PearsonChiSquareTest[X9, X3, "HypothesisTestData"]
Print["X9, X3"]
PearsonChiSquareTest[X9, X4, "HypothesisTestData"]
Print["X9, X4"]
PearsonChiSquareTest[X9, X5, "HypothesisTestData"]
Print["X9, X5"]
PearsonChiSquareTest[X9, X6, "HypothesisTestData"]
Print["X9, X6"]
PearsonChiSquareTest[X9, X7, "HypothesisTestData"]
Print["X9, X7"]
PearsonChiSquareTest[X9, X8, "HypothesisTestData"]
Print["X9, X8"]
```

Out[291]= HypothesisTestData [



Type: PearsonChiSquareTest

p-Value: 1.57×10^{-221}

Test: N/A


Test statistic: 1020.

Data: Univariate

Conclusion: The null hypothesis that the datasets have the same distribution is rejected at the 5 percent level based on the χ^2 Pearson χ test.

x9, x3

Out[293]= HypothesisTestData [



Type: PearsonChiSquareTest

p-Value: 1.83×10^{-62}

Test: N/A


Test statistic: 284.

Data: Univariate

Conclusion: The null hypothesis that the datasets have the same distribution is rejected at the 5 percent level based on the χ^2 Pearson χ test.

x9, x4

Out[295]= HypothesisTestData [



Type: PearsonChiSquareTest

p-Value: 2.17×10^{-154}

Test: N/A


Test statistic: 708.

Data: Univariate

Conclusion: The null hypothesis that the datasets have the same distribution is rejected at the 5 percent level based on the χ^2 Pearson χ test.

x9, x5

Out[297]= HypothesisTestData [



Type: PearsonChiSquareTest

p-Value: 2.72×10^{-118}

Test: N/A



Test statistic: 541.

Data: Univariate

Conclusion: The null hypothesis that the datasets have the same distribution is rejected at the 5 percent level based on the χ^2 Pearson χ test.

x9, x6



Out[299]= HypothesisTestData [



Type: PearsonChiSquareTest
p-Value: 5.04×10^{-36}
Test: N/A
Test statistic: 163.
Data: Univariate
Conclusion: The null hypothesis that the datasets have the same distribution is rejected at the 5 percent level based on the χ^2 Pearson χ test.

x9, x7

Out[301]= HypothesisTestData [



Type: PearsonChiSquareTest
p-Value: 1.53×10^{-104}
Test: N/A
Test statistic: 478.
Data: Univariate
Conclusion: The null hypothesis that the datasets have the same distribution is rejected at the 5 percent level based on the χ^2 Pearson χ test.

x9, x8