

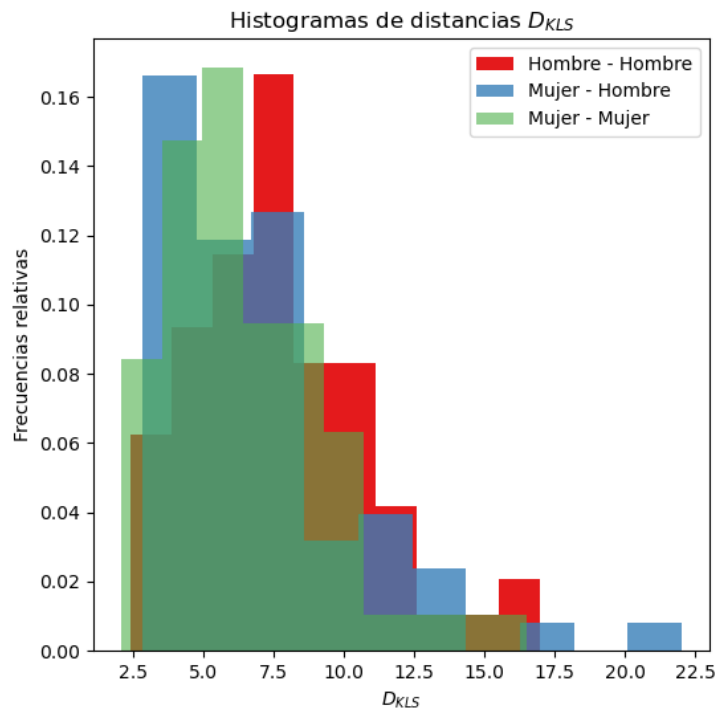
Búsqueda estadística de diferencias en las distribuciones de datos procesados

Se evaluó la distancia entre todos los sujetos (utilizando la divergencia de Kullback-Liebler simetrizada). Este calculo , se realizó sobre los registros procesados de la base de datos Shu Dataset, estos registros fueron preprocesados y luego se aplicó Commun Spatial Patterns para extraer 6 características de cada trial de imagenería motora. Se agruparon las distancias en intra (MUJER-MUJER y HOMBRE-HOMBRE) e inter-categoría (MUJER-HOMBRE). Para comparar las 3 distribuciones a igual número de muestras, se procedió a sub-muestrear tomando 66 pares, correspondiente al conjunto de menor cardinalidad. Dado que poseemos un número dispar de hombres y mujeres, se excluyó del análisis al hombre cuyo valor medio estuviera más alejado del promedio de los hombres, y en el caso de los pares de sexo mixto se sub-muestreó de forma aleatoria sin repetición.

Se realizaron test de normalidad y test de comparación de medias, para determinar si las distancias inter e intra categoría provienen de distribuciones cuyos valores medios son iguales. A continuación se muestran las diferentes repeticiones del experimento, con su histograma y los resultados del test de comparación de distribuciones

Iteración 0:

Histograma



Test de Normalidad

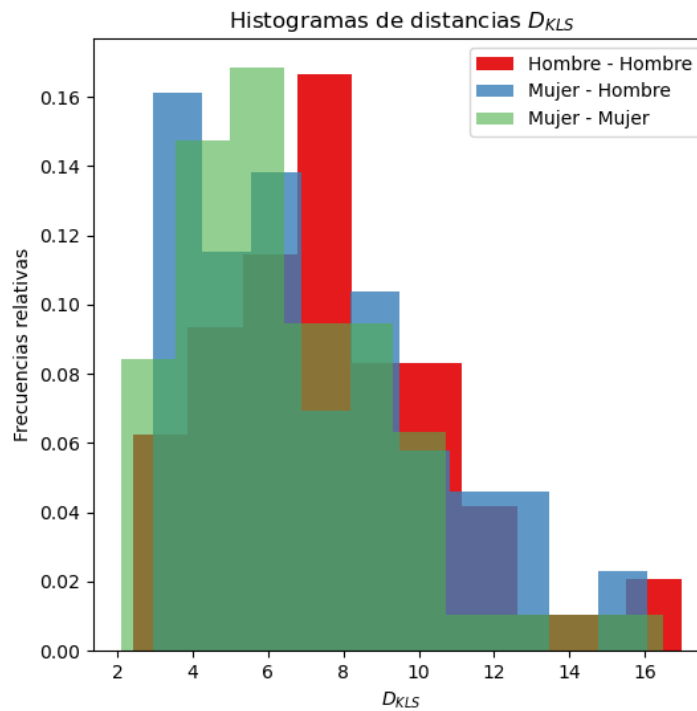
Distances	statistics	p-value	H0	Description
Female - Male	0.9979159294706036	2.234854271900846e-177	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1756.0	0.0550719081832494	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)
Female - Male / Female - Female	2239.0	0.7830516591244077	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 1:

Histograma



Test de Normalidad

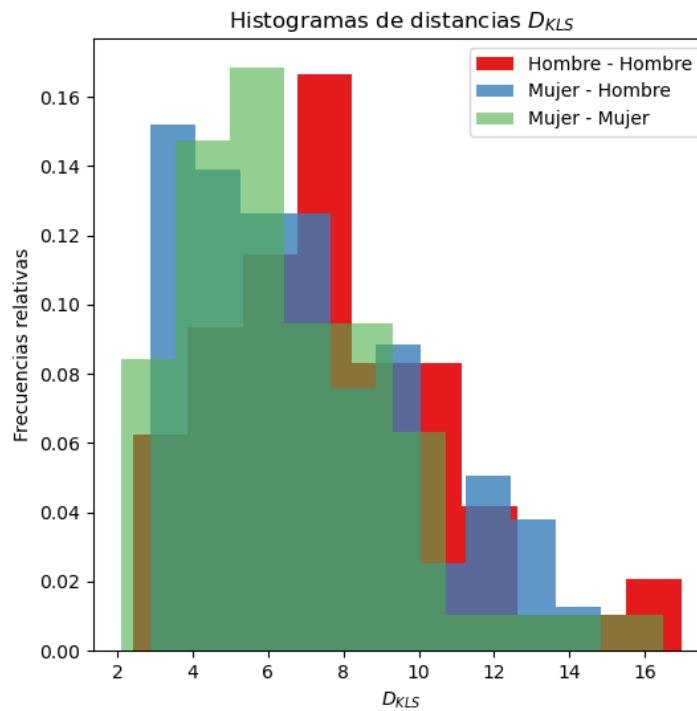
Distances	statistics	p-value	H0	Description
Female - Male	0.9983224872434324	1.345782478764602e-183	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1946.0	0.2920704223415603	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)
Female - Male / Female - Female	2435.0	0.2430612975456607	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 2:

Histograma



Test de Normalidad

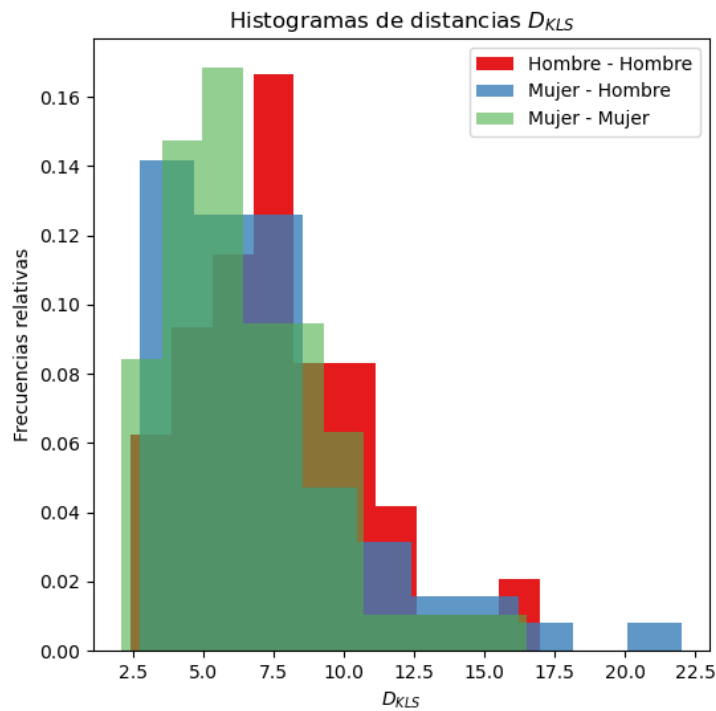
Distances	statistics	p-value	H0	Description
Female - Male	0.9980057536564636	1.2202001916045369e-178	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1847.0	0.1325416940217958	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)
Female - Male / Female - Female	2361.0	0.4062084874040115	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 3:

Histograma



Test de Normalidad

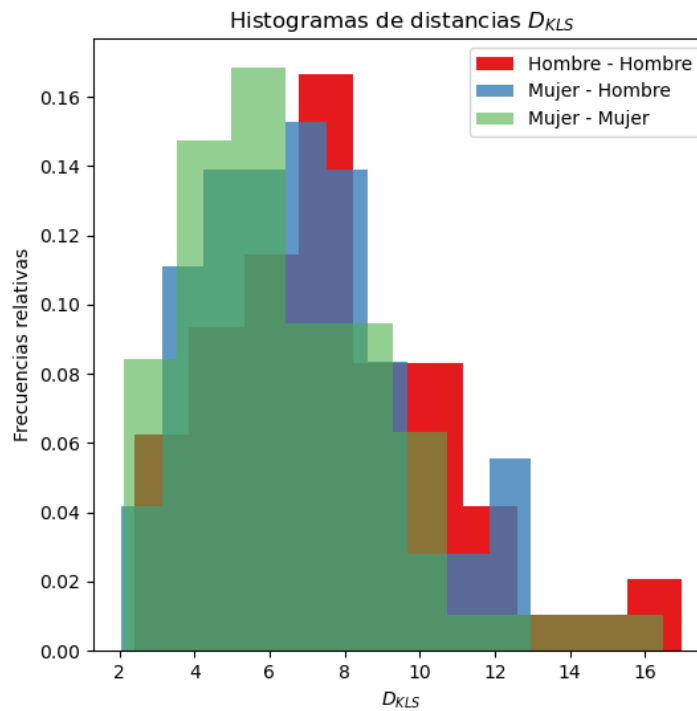
Distances	statistics	p-value	H0	Description
Female - Male	0.9972573880907132	1.6591192109033993e-169	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1870.0	0.1616697765986864	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)
Female - Male / Female - Female	2391.0	0.3334846753481487	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 4:

Histograma



Test de Normalidad

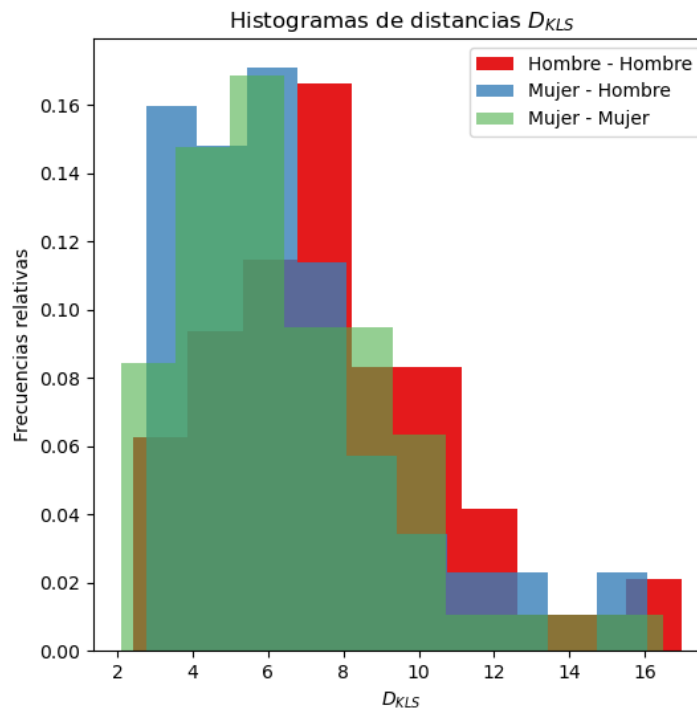
Distances	statistics	p-value	H0	Description
Female - Male	0.9831709720919172	1.6631293098423517e-117	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1812.0	0.0962235431385673	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)
Female - Male / Female - Female	2370.0	0.3834568330822834	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 5:

Histograma



Test de Normalidad

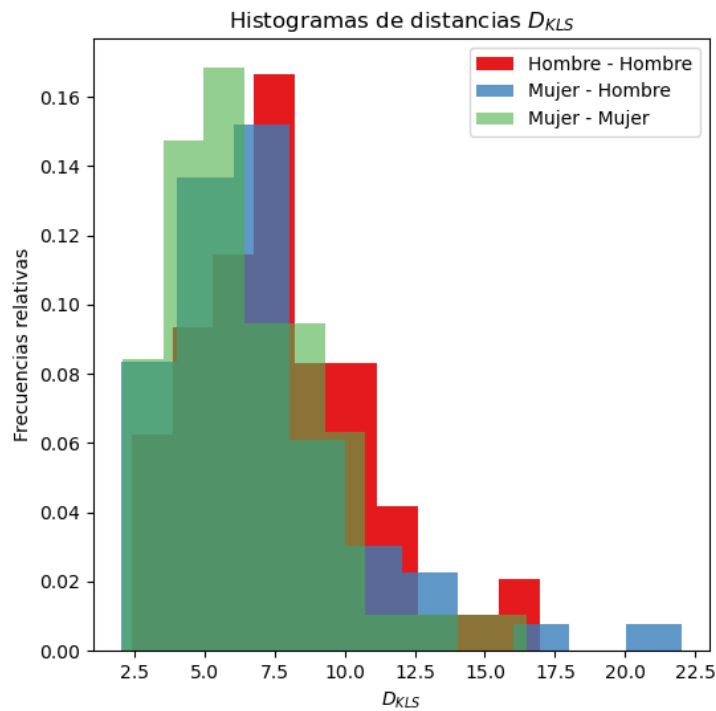
Distances	statistics	p-value	H0	Description
Female - Male	0.9972573880907132	1.6591192109033993e-169	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparation	statics	p-value	H0	Description
Female - Male / Male - Male	1630.0	0.0127114399379122	False	Reject H0, two distribution have not equal mean($p < 0.05$)
Female - Male / Female - Female	2155.0	0.9184385420489658	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 6:

Histograma



Test de Normalidad

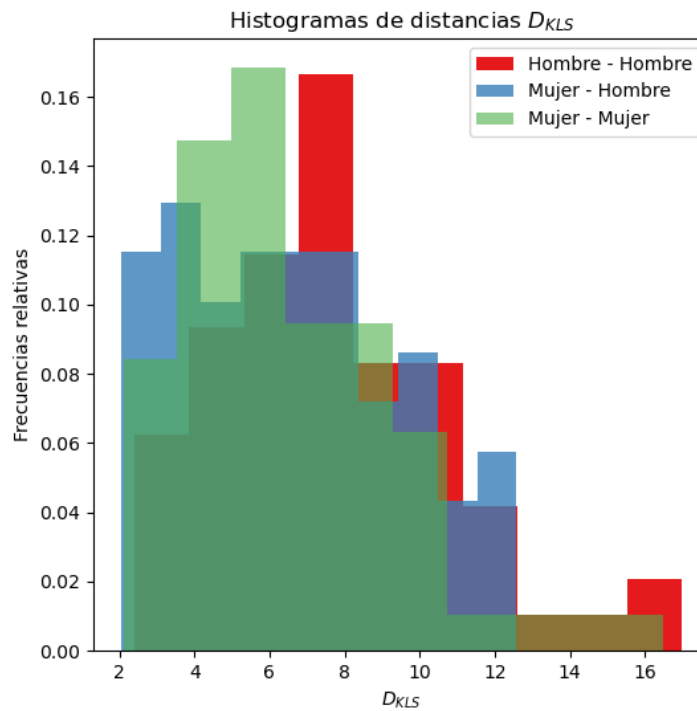
Distances	statistics	p-value	H0	Description
Female - Male	0.9828738560416872	5.279137259883139e-117	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparation	statics	p-value	H0	Description
Female - Male / Male - Male	1770.0	0.0636544515916106	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)
Female - Male / Female - Female	2278.0	0.6506645843803738	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 7:

Histograma



Test de Normalidad

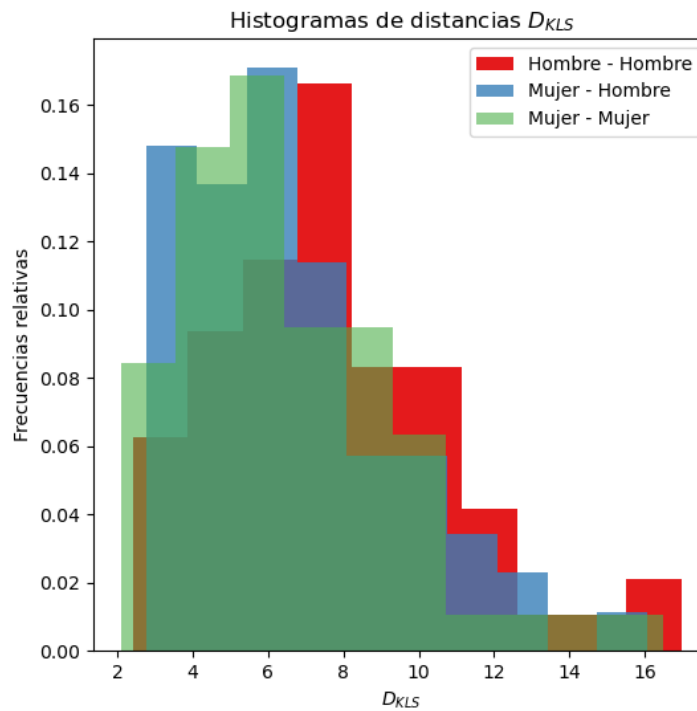
Distances	statistics	p-value	H0	Description
Female - Male	0.9827644143190885	8.038018714274121e-117	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1740.0	0.0464669455108157	False	Reject H0, two distribution have not equal mean($p < 0.05$)
Female - Male / Female - Female	2201.0	0.9184385420489658	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 8:

Histograma



Test de Normalidad

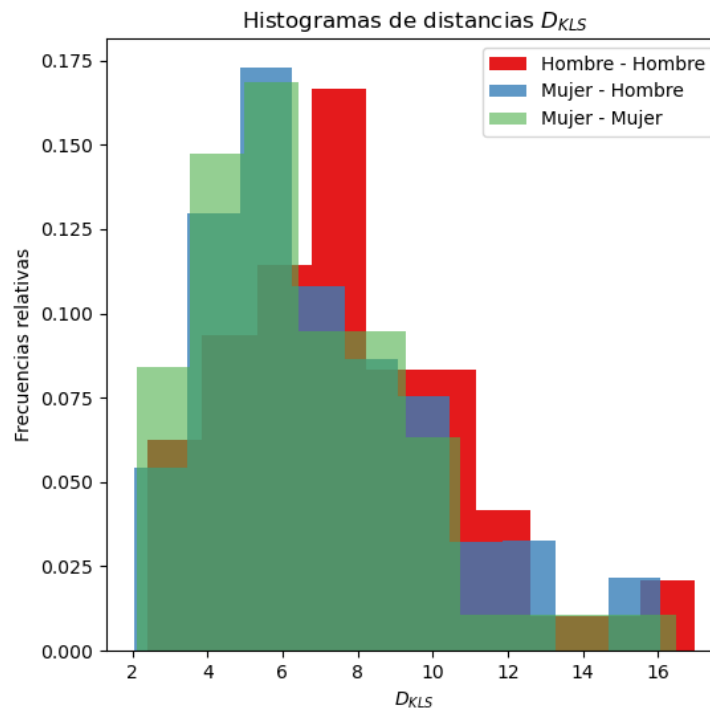
Distances	statistics	p-value	H0	Description
Female - Male	0.9972573880907132	1.6591192109033993e-169	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1686.0	0.0252936107235615	False	Reject H0, two distribution have not equal mean($p < 0.05$)
Female - Male / Female - Female	2225.0	0.8323970000313691	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 9:

Histograma



Test de Normalidad

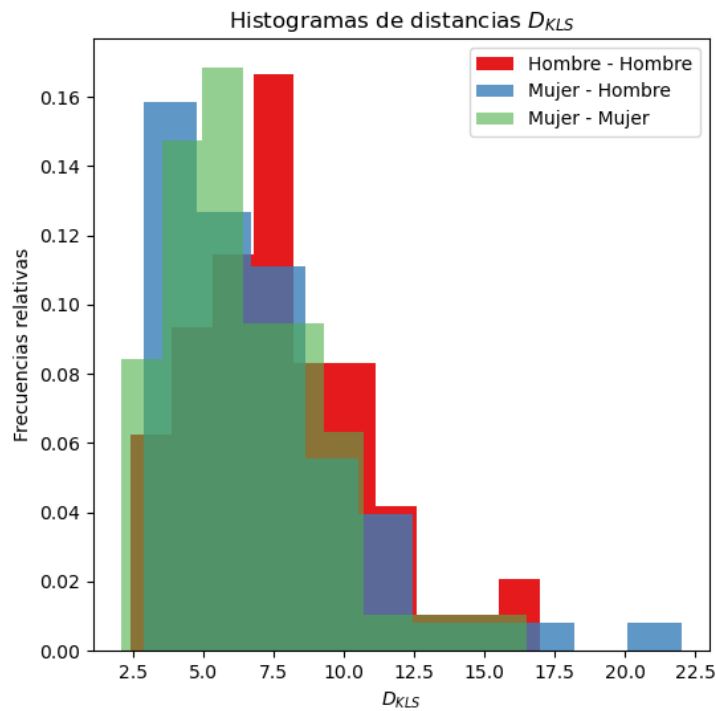
Distances	statistics	p-value	H0	Description
Female - Male	0.9827644143190885	8.038018714274121e-117	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1830.0	0.1137583680993255	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)
Female - Male / Female - Female	2374.0	0.3736005445659651	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 10:

Histograma



Test de Normalidad

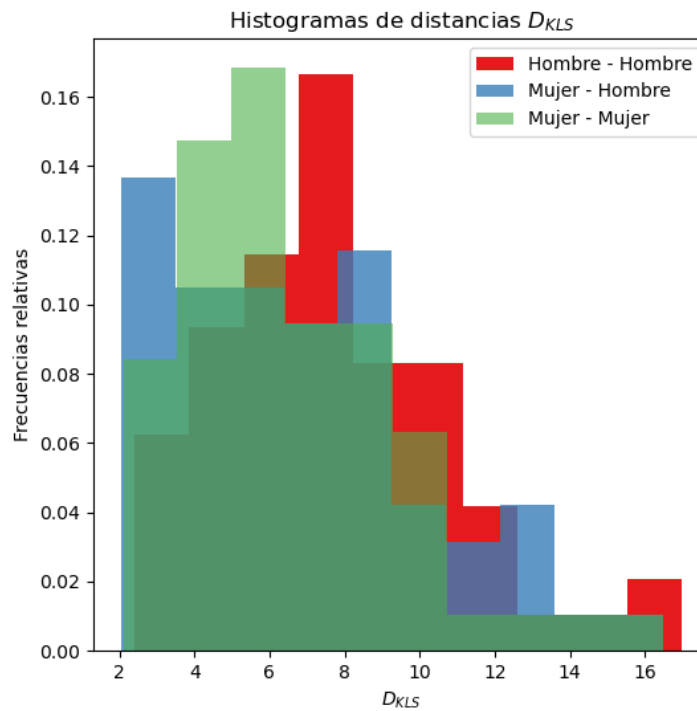
Distances	statistics	p-value	H0	Description
Female - Male	0.9980057536564636	1.2202001916045369e-178	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1770.0	0.0636544515916106	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)
Female - Male / Female - Female	2252.0	0.7379952687396313	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 11:

Histograma



Test de Normalidad

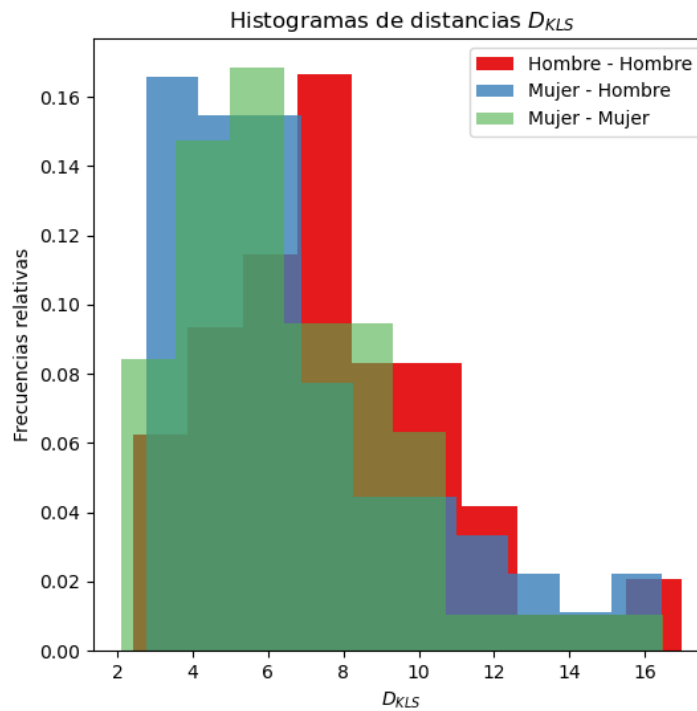
Distances	statistics	p-value	H0	Description
Female - Male	0.982105872939198	9.548257117887721e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparation	statics	p-value	H0	Description
Female - Male / Male - Male	1823.0	0.1066616226375805	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)
Female - Male / Female - Female	2287.0	0.621447818972305	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 12:

Histograma



Test de Normalidad

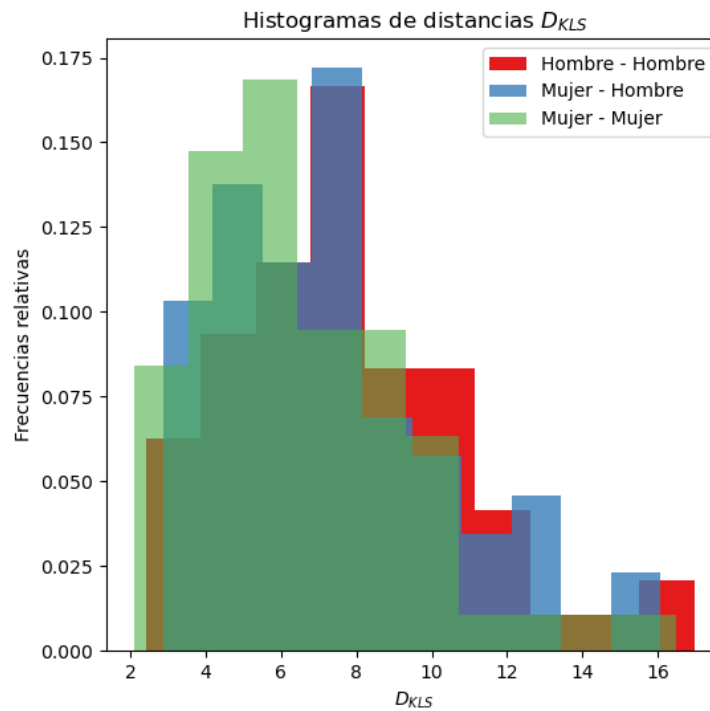
Distances	statistics	p-value	H0	Description
Female - Male	0.9972573880907132	1.6591192109033993e-169	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1654.0	0.0171943422536171	False	Reject H0, two distribution have not equal mean($p < 0.05$)
Female - Male / Female - Female	2143.0	0.8752333630815539	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 13:

Histograma



Test de Normalidad

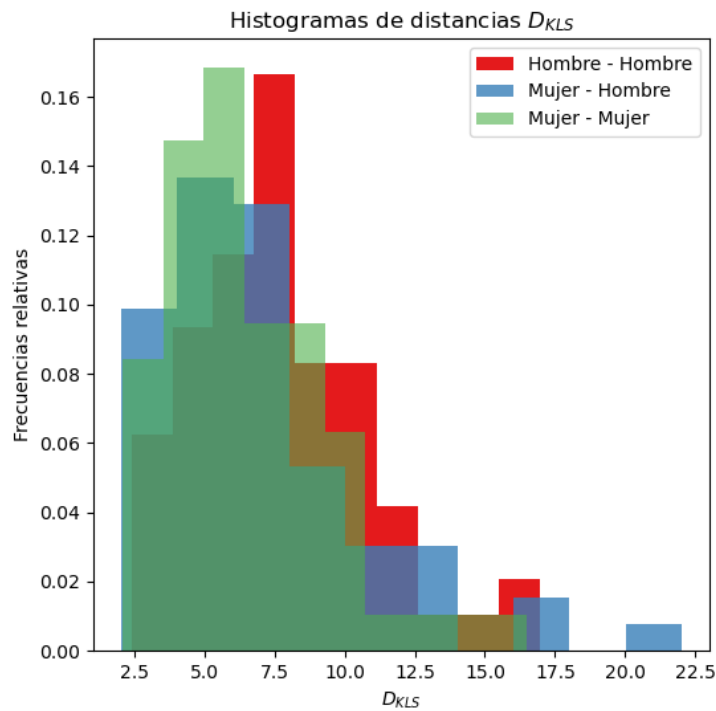
Distances	statistics	p-value	H0	Description
Female - Male	0.9979159294706036	2.234854271900846e-177	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1985.0	0.3809779530891121	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)
Female - Male / Female - Female	2511.0	0.1302145453426921	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 14:

Histograma



Test de Normalidad

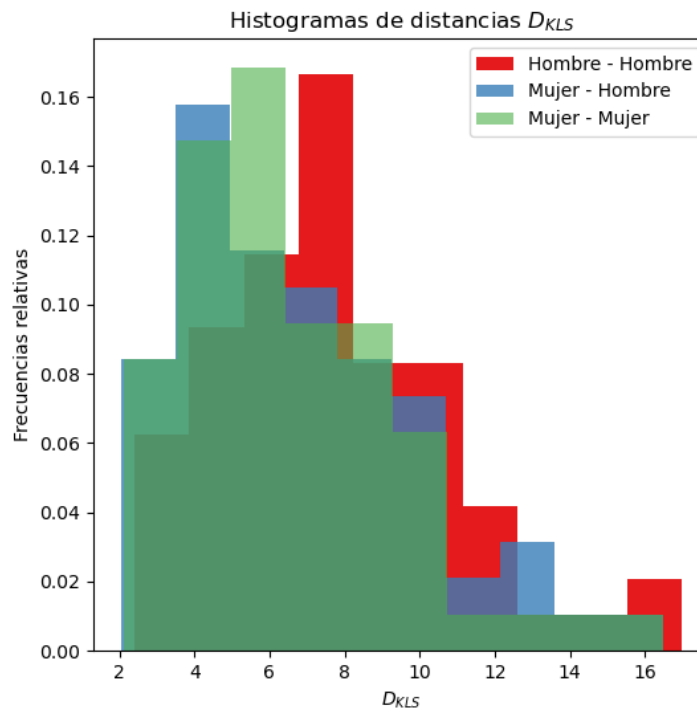
Distances	statistics	p-value	H0	Description
Female - Male	0.983189526780099	1.5463435187407976e-117	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1790.0	0.0778044902771038	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)
Female - Male / Female - Female	2267.0	0.6871126409385466	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 15:

Histograma



Test de Normalidad

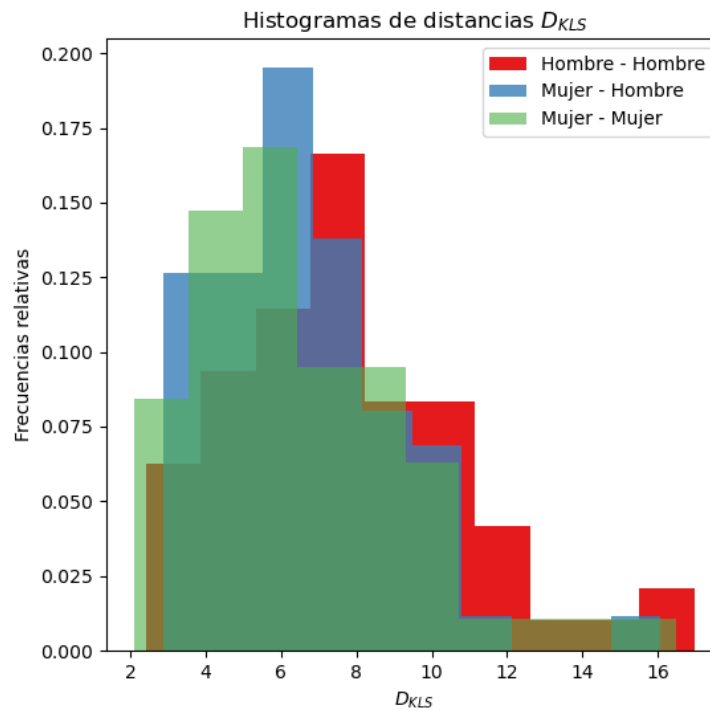
Distances	statistics	p-value	H0	Description
Female - Male	0.982105872939198	9.548257117887721e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1795.0	0.0817162322903198	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)
Female - Male / Female - Female	2305.0	0.5648043867596639	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 16:

Histograma



Test de Normalidad

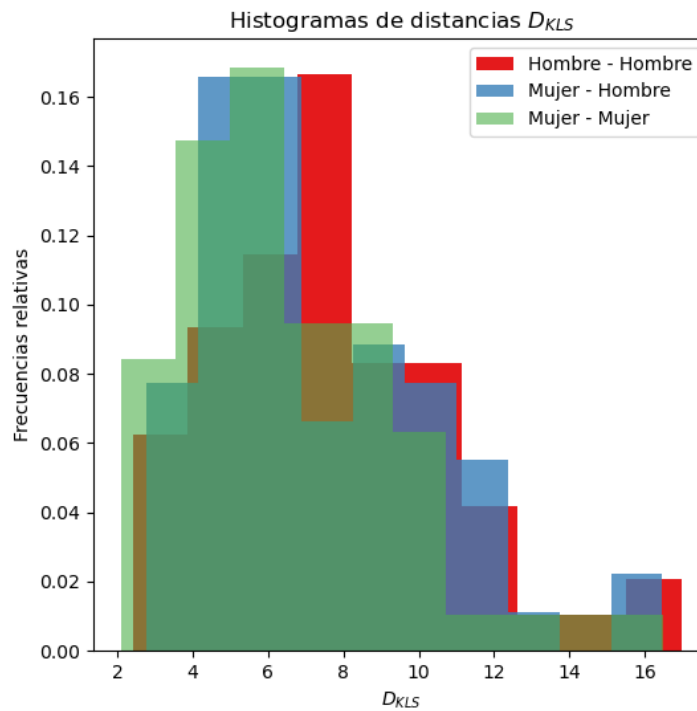
Distances	statistics	p-value	H0	Description
Female - Male	0.9980057536564636	1.2202001916045369e-178	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1698.0	0.0290892425467451	False	Reject H0, two distribution have not equal mean($p < 0.05$)
Female - Male / Female - Female	2294.0	0.5991262096439134	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 17:

Histograma



Test de Normalidad

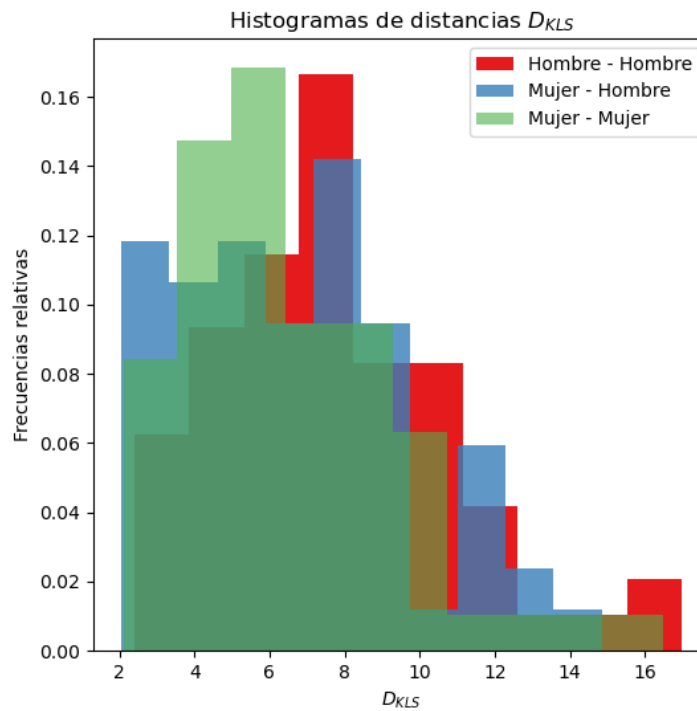
Distances	statistics	p-value	H0	Description
Female - Male	0.9972573880907132	1.6591192109033993e-169	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1929.0	0.2580719110866359	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)
Female - Male / Female - Female	2482.0	0.1671949978181157	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 18:

Histograma



Test de Normalidad

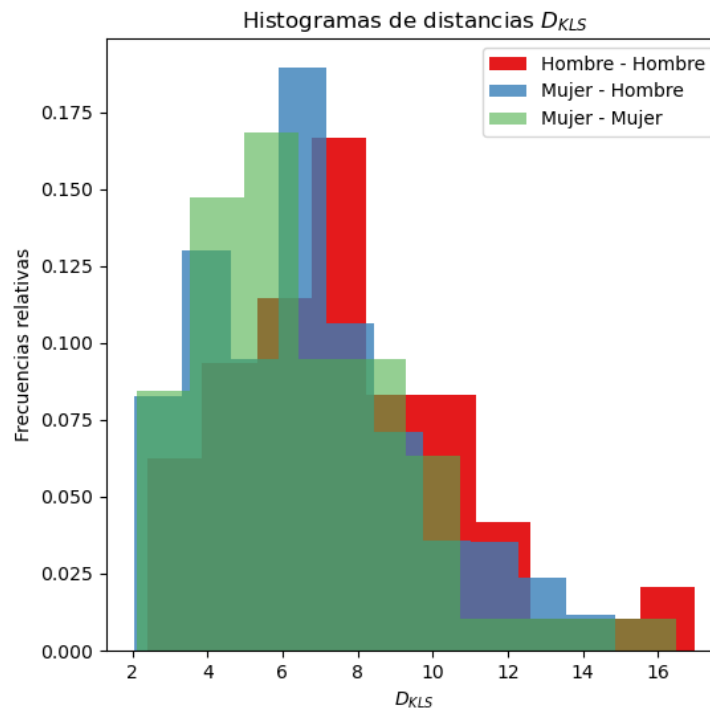
Distances	statistics	p-value	H0	Description
Female - Male	0.982105872939198	9.548257117887721e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1771.0	0.0643076013715889	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)
Female - Male / Female - Female	2243.0	0.7691025637954605	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)

Iteración 19:

Histograma



Test de Normalidad

Distances	statistics	p-value	H0	Description
Female - Male	0.982105872939198	9.548257117887721e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Female - Female	0.9822536075688836	5.524530042313224e-116	False	Reject H0, distribution is not normal($p < 0.05$)
Male - Male	0.9920377535407604	5.880045367203014e-139	False	Reject H0, distribution is not normal($p < 0.05$)

Test de Mann-Whitney U

Comparison	statics	p-value	H0	Description
Female - Male / Male - Male	1750.0	0.0517009606265649	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)
Female - Male / Female - Female	2270.0	0.6770954133947937	True	Accept H0, two distribution maybe have equal mean($p > 0.05$)