

CURSO TALLER

ANALISIS DE COMPONENTES PRINCIPALES

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Análisis de Componentes Principales con la Matriz de Varianza y Covarianza

Variables

pH

conductividad

viscosidad

Densidad

Velocidad de sonido

Índice refracción

EJEMPLO: Resultados de medidas de marcas de tequila

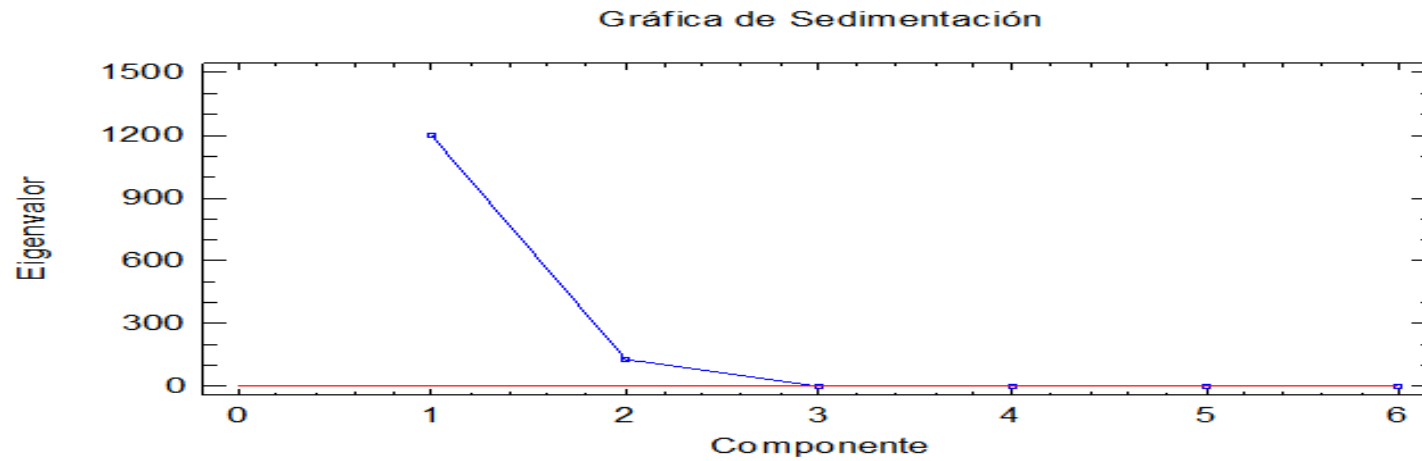
Category	Núm de mue	pH	conductividad	viscosidad	Densidad	Velocidad de sonido	Indice Refraccion
Aged	1	3.72	48.9	0.0025	0.94786	1596.5	1.35297
Aged	2	3.44	162.87	0.00221	0.98448	1550.21	1.3376
Aged	3	4.11	41.6	0.00238	0.95481	1612.52	1.35156
Aged	4	3.82	29.28	0.00231	0.9641	1620.17	1.35063
Aged	5	3.98	25.68	0.00252	0.94738	1595.07	1.35327
Aged	6	4.22	34.1	0.00247	0.95261	1608.45	1.3516
Silver	7	4.05	18.42	0.00248	0.94851	1597.98	1.35303
Gold	8	4.87	41.6	0.00234	0.95409	1611.64	1.3515
Aged	9	3.99	30.3	0.00249	0.94831	1596.51	1.3534
Aged	10	4.07	39.8	0.00249	0.94552	1589.53	1.3535
Silver	11	3.62	103.47	0.00194	0.96814	1613.03	1.3449
Silver	12	3.95	50.03	0.0025	0.94802	1596.7	1.353
Aged	13	4.14	35.17	0.00218	0.95232	1606.35	1.346
Silver	14	4.76	13.09	0.0025	0.94612	1591.84	1.35353
Gold	15	3.9	44.5	0.00243	0.95196	1606.42	1.3522
Gold	16	3.97	55.8	0.00246	0.94927	1599.58	1.35267
Gold	17	5.25	222.03	0.00267	1.01763	1631.45	1.3617
Aged	18	4.23	19.43	0.00243	0.95353	1607.88	1.35213
Aged	19	4.05	28.18	0.00247	0.9505	1603.46	1.35243
Silver	20	4.06	25.55	0.00245	0.94787	1596.21	1.3529
Aged	21	4.72	56.77	0.00239	0.95392	1611.18	1.3513
Aged	22	3.73	38.13	0.00237	0.95315	1609.13	1.35126
Aged	23	3.8	31.67	0.00241	0.9535	1607.76	1.3515
Aged	24	3.63	40.67	0.00248	0.9481	1596.28	1.35143
Aged	25	3.64	48.43	0.00247	0.94774	1595.07	1.35313
Aged	26	4.07	35	0.00248	0.9479	1595.59	1.35303
Aged	27	4.2	37.73	0.00243	0.95142	1604.65	1.3516
Aged	28	4.61	20.04	0.00236	0.95572	1611.06	1.35126
Aged	29	3.98	36.47	0.00245	0.95489	1609.68	1.3523
Aged	30	4.55	29.13	0.00251	0.95106	1601.03	1.3525
Extra aged	31	3.95	31.33	0.00251	0.95167	1600.14	1.3535
Extra aged	32	3.97	24.59	0.00247	0.94933	1596.28	1.35293
Silver	33	5.27	13.46	0.00247	0.95005	1602.26	1.35233
Extra aged	34	4.06	34.43	0.00249	0.9497	1599	1.35363
Aged	35	4.08	17.67	0.00248	0.94911	1597.41	1.35303
Silver	36	4.56	38.87	0.00249	0.9489	1598.81	1.35297
Gold	37	4.52	40.83	0.00244	0.94922	1599.07	1.3532
Aged	38	4.56	49.5	0.00246	0.95025	1602.03	1.35263
Aged	39	4.86	20.19	0.00247	0.95143	1602.65	1.35306
Extra aged	40	4.7	28.52	0.00244	0.9487	1598.43	1.3531
Aged	41	4.02	20.12	0.00247	0.95046	1598.69	1.35316
Silver	42	4.28	19.99	0.00249	0.94872	1597.97	1.35313
Aged	43	4.58	27.26	0.00235	0.95348	1608.99	1.35087
Extra aged	44	4.42	40.3	0.00253	0.94612	1590.15	1.3541
Silver	45	3.97	18.13	0.00232	0.95471	1610.59	1.3509
Aged	46	4.15	27.5	0.00239	0.95343	1607.91	1.35076
Extra aged	47	4.12	43.67	0.00248	0.95042	1601.57	1.35166
Aged	48	4.3	11.72	0.00248	0.95272	1607.36	1.352
Aged	49	3.61	32.1	0.00248	0.94476	1586.2	1.35406
Extra aged	50	3.75	33.4	0.00252	0.94637	1585.99	1.3543
Silver	51	4.19	12.18	0.0026	0.94476	1586.95	1.3535
Aged	52	4.14	14.72	0.00258	0.9455	1587.57	1.3541
Extra aged	53	3.97	23.26	0.00254	0.94484	1586.91	1.35417

	Recuento	Promedio	Varianza	Desviación Estándar
pH	53	4.17283	0.161632	0.402035
conductividad	53	39.0109	1200.96	34.6549
viscosidad	53	0.0024438	1.19E-08	0.000109267
Densidad	53	0.952549	0.000122716	0.0110777
Velocidad de sonido	53	1600.49	129.061	11.3605
Índice refracción	53	1.35221	8.65159E-06	0.00294136
	VARIANZA TOTAL		1330.182763	

	pH	conductividad	viscosidad	Densidad	Velocidad de sonido	RI
pH	0.161632	0.480767	1.1233E-05	0.00085408	1.75714	0.000451423
	-53	-53	-53	-53	-53	-53
conductividad	0.480767	1200.96	-0.00058535	0.342538	14.3726	-0.0140171
	-53	-53	-53	-53	-53	-53
viscosidad	1.12333E-05	-0.000585352	1.19E-08	-2.12E-07	-0.000168604	2.61E-07
	-53	-53	-53	-53	-53	-53
Densidad	0.000854079	0.342538	-2.12E-07	0.00012272	0.0368873	-0.0000028
	-53	-53	-53	-53	-53	-53
Velocidad de sonido	1.75714	14.3726	-0.0001686	0.0368873	129.061	0.0108572
	-53	-53	-53	-53	-53	-53
Indice refraccion	0.000451423	-0.0140171	2.61E-07	-0.0000028	0.0108572	8.65159E-06
	-53	-53	-53	-53	-53	-53

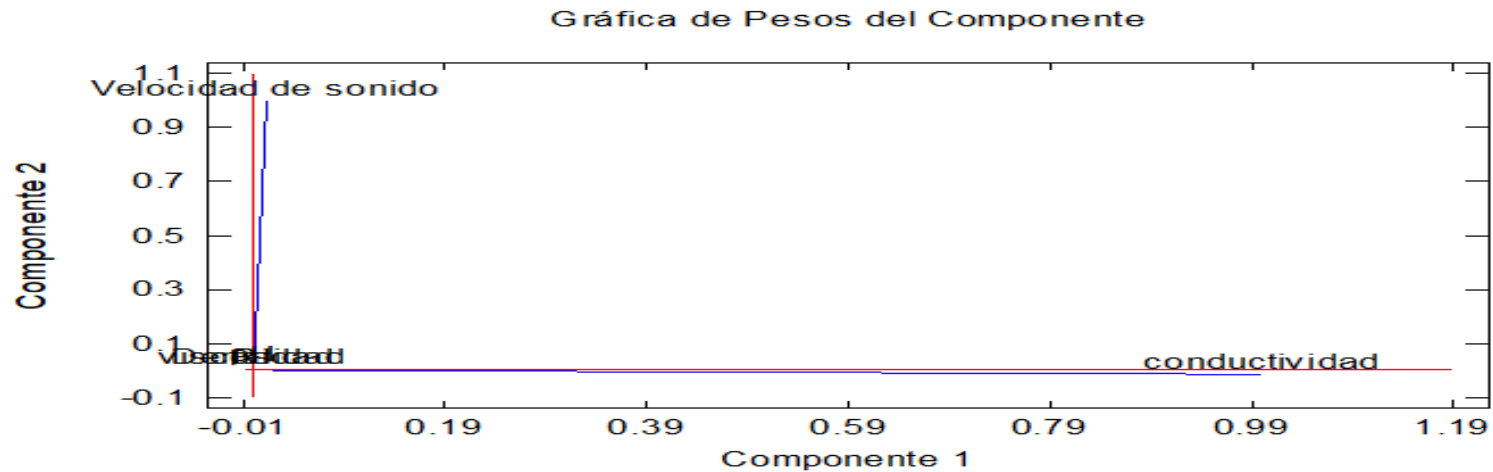
Análisis de Componentes Principales con la Matriz de Varianza y Covarianza

Componente Número	Eigenvalor	Porcentaje de Varianza	Porcentaje Acumulado
1	1201.16	90.3	90.3
2	128.892	9.69	99.99
3	0.137617	0.01	100
4	1.66416E-05	0	100



Análisis de Componentes Principales con la Matriz de Varianza y Covarianza

	Componente 1	Componente 2
pH	0.000419885	0.0135972
conductividad	0.99991	-0.0134101
viscosidad	-4.89E-07	0.00000
Densidad	0.00028556	0.000250587
Velocidad de sonido	0.0134056	0.999818
Índice refracción	-1.15473E-05	8.57255E-05



Bigráfica

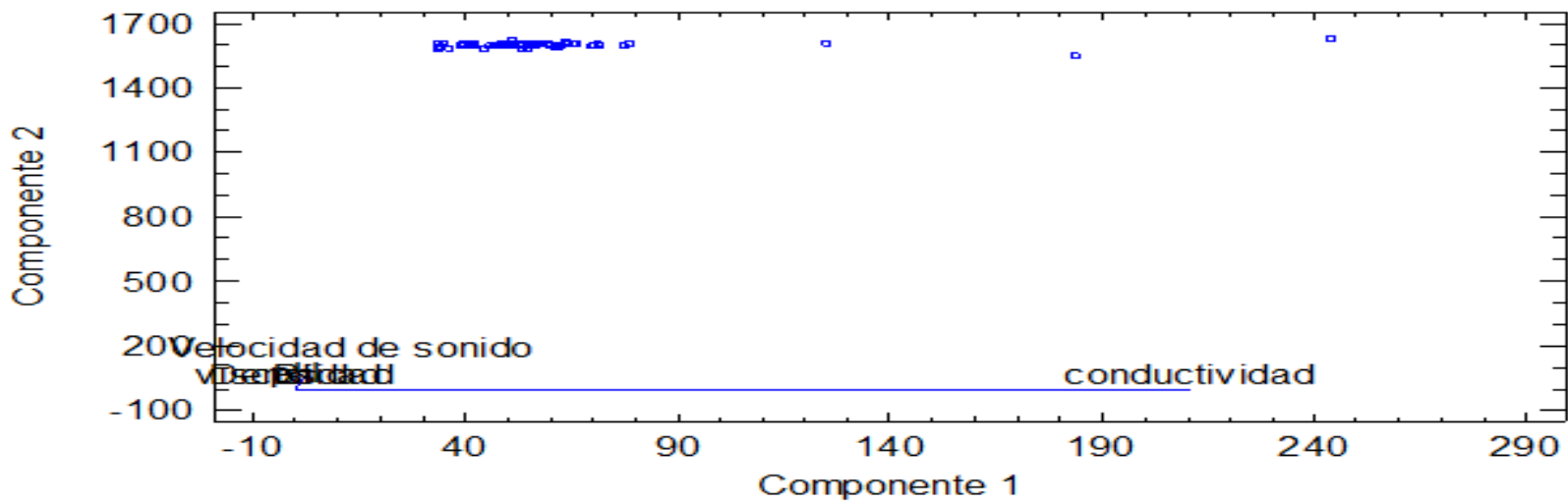
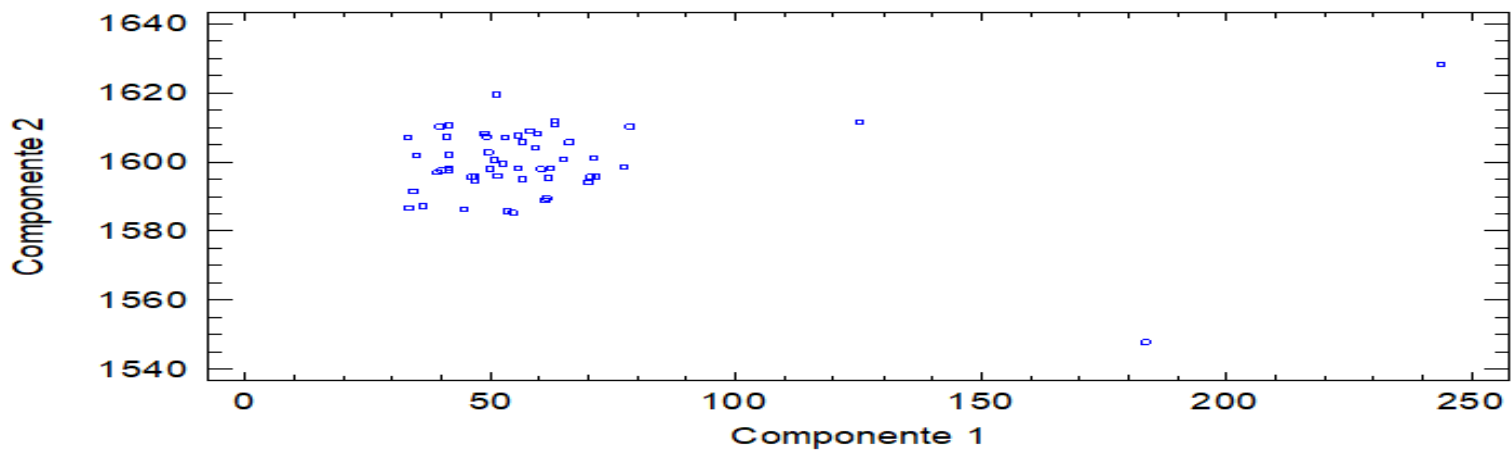


Diagrama de Dispersión



**MEDIDAS DE TENDENCIA CENTRAL Y VARIACION DE MARCAS DE TEQUILA
DATOS ESTANDARIZADOS**

	Recuento	Promedio	Varianza	Desviación Estándar
pH	53	0	1	1
conductividad	53	0	1	1
viscosidad	53	0	1	1
Densidad	53	0	1	1
Velocidad de sonido	53	0	1	1
Índice refracción	53	0	1	1
	VARIANZA TOTAL		6	

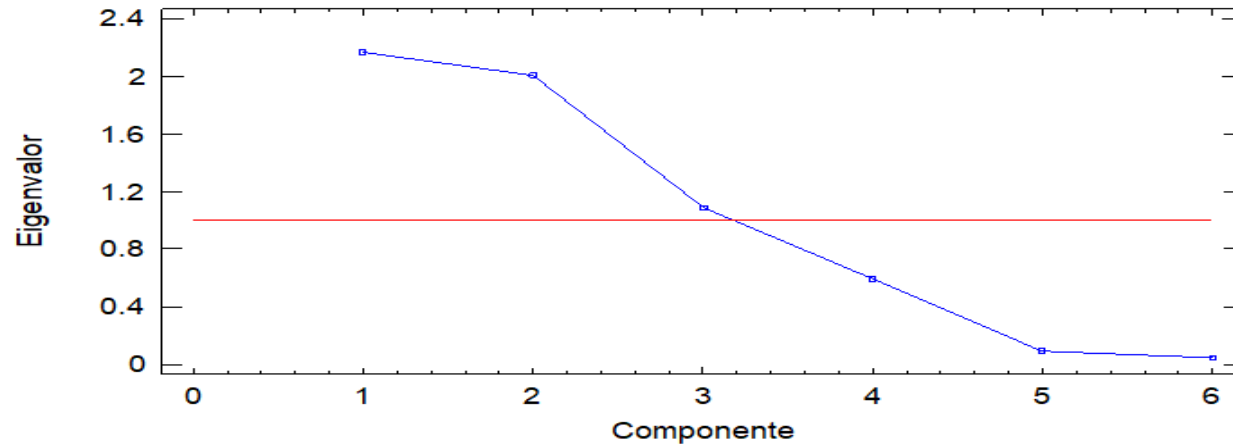
MATRIZ DE CORRELACIONES

	pH	conductividad	viscosidad	Densidad	Velocidad de sonido	Índice refracción
pH		0.0345	0.2557	0.1918	0.3847	0.3817
		-53	-53	-53	-53	-53
		0.8062	0.0646	0.1689	0.0044	0.0048
conductividad	0.0345		-0.1546	0.8923	0.0365	-0.1375
	-53		-53	-53	-53	-53
	0.8062		0.2691	0	0.7952	0.3261
viscosidad	0.2557	-0.1546		-0.1749	-0.1358	0.8124
	-53	-53		-53	-53	-53
	0.0646	0.2691		0.2103	0.3322	0
Densidad	0.1918	0.8923	-0.1749		0.2931	-0.0859
	-53	-53	-53		-53	-53
	0.1689	0	0.2103		0.0332	0.5407
Velocidad de sonido	0.3847	0.0365	-0.1358	0.2931		0.3249
	-53	-53	-53	-53		-53
	0.0044	0.7952	0.3322	0.0332		0.0176
RI	0.3817	-0.1375	0.8124	-0.0859	0.3249	
	-53	-53	-53	-53	-53	
	0.0048	0.3261	0	0.5407	0.0176	

Análisis de Componentes Principales con la Matriz Correlación

Componente Número	Eigenvalor	Porcentaje de Varianza	Porcentaje Acumulado
1	2.17045	36.174	36.174
2	2.0095	33.492	69.666
3	1.0855	18.092	87.758
4	0.593453	9.891	97.648
5	0.0952907	1.588	99.237
6	0.0458014	0.763	100

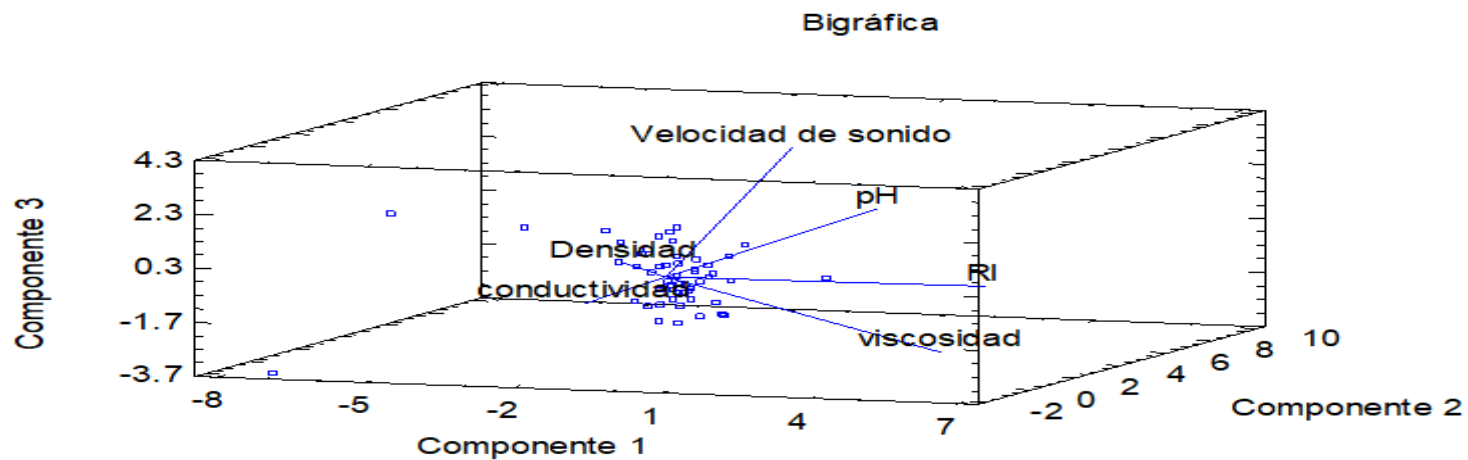
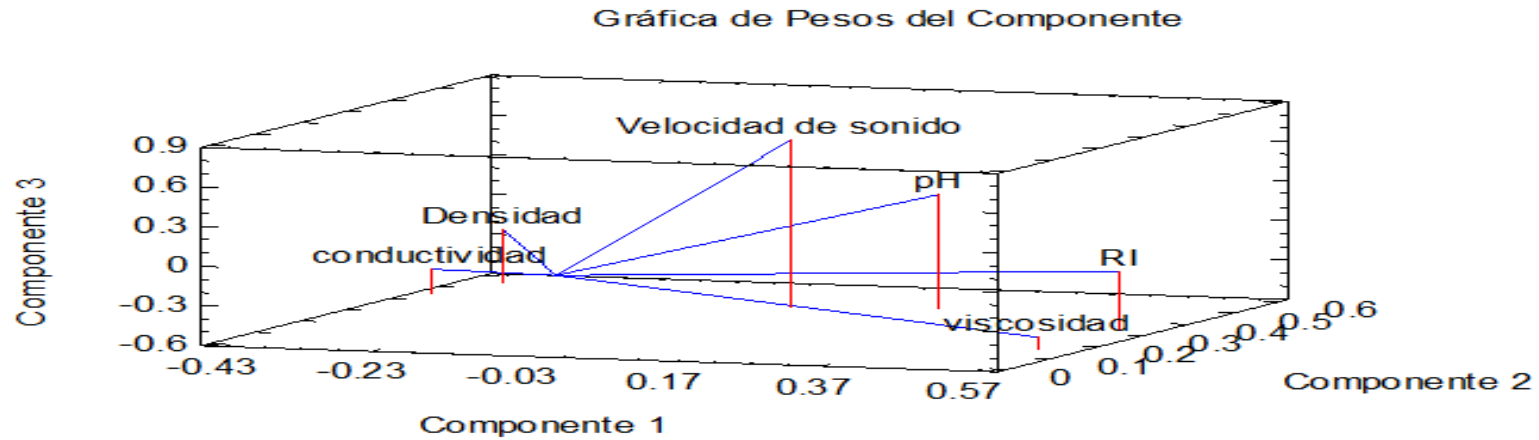
Gráfica de Sedimentación



Análisis de Componentes Principales con la Matriz Correlación

	Componente	Componente	Componente
	1	2	3
pH	0.238999	0.446694	0.275948
conductividad	-0.429585	0.437078	-0.40954
viscosidad	0.543652	0.162192	-0.501823
Densidad	-0.396038	0.538949	-0.18673
Velocidad de sonido	0.055658	0.42743	0.669443
RI	0.550304	0.331601	-0.145879

Análisis de Componentes Principales con la Matriz Correlación



Análisis de Componentes Principales con la Matriz Correlación

