

# breast\_cancer.R

roshn

Fri Mar 08 16:28:17 2019

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#Multivariate Analysis
#Part 2 of Project : Breast Cancer Analysis

#Loading and Reading the data here
wisc_bc_df <- read.csv("C:/Users/roshn/Desktop/RBS/mva/wisc_bc_data.csv")
wisc_bc_df
```

```
##          id diagnosis radius_mean texture_mean perimeter_mean area_mean
## 1    87139402         B      12.320      12.39           78.85     464.1
## 2    8910251         B      10.600      18.95           69.28     346.4
## 3    905520         B      11.040      16.83           70.92     373.2
## 4    868871         B      11.280      13.39           73.00     384.8
## 5    9012568         B      15.190      13.21           97.65     711.8
## 6    906539         B      11.570      19.04           74.20     409.7
## 7    925291         B      11.510      23.93           74.52     403.5
## 8     87880         M      13.810      23.75           91.56     597.8
## 9    862989         B      10.490      19.29           67.41     336.1
## 10   89827         B      11.060      14.96           71.49     373.9
## 11   91485         M      20.590      21.24          137.80    1320.0
## 12   8711003         B      12.250      17.94           78.27     460.3
## 13   9113455         B      13.140      20.74           85.98     536.9
## 14   857810         B      13.050      19.31           82.61     527.2
## 15   9111805         M      19.590      25.00          127.70    1191.0
## 16   925277         B      14.590      22.68           96.39     657.1
## 17   867387         B      15.710      13.93          102.00     761.7
## 18   89511502        B      12.670      17.30           81.25     489.9
## 19   89263202        M      20.090      23.86          134.70    1247.0
## 20   866714         B      12.190      13.29           79.08     455.8
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## 21	874373	B	11.710	17.19	74.68	420.3
## 22	919812	B	11.690	24.44	76.37	406.4
## 23	904971	B	10.940	18.59	70.39	370.0
## 24	866458	B	15.100	16.39	99.58	674.5
## 25	864292	B	10.510	20.19	68.64	334.2
## 26	859983	M	13.800	15.79	90.43	584.1
## 27	862009	B	13.450	18.30	86.60	555.1
## 28	852973	M	15.300	25.27	102.40	732.4
## 29	898143	B	9.606	16.84	61.64	280.5
## 30	9010877	B	13.400	16.95	85.48	552.4
## 31	893548	B	13.050	13.84	82.71	530.6
## 32	868202	M	12.770	22.47	81.72	506.3
## 33	9113538	M	17.600	23.33	119.00	980.5
## 34	905501	B	12.270	17.92	78.41	466.1
## 35	915940	B	14.580	13.66	94.29	658.8
## 36	9013594	B	13.660	15.15	88.27	580.6
## 37	859575	M	18.940	21.31	123.60	1130.0
## 38	869476	B	11.900	14.65	78.11	432.8
## 39	8712729	M	16.780	18.80	109.30	886.3
## 40	8912280	M	16.240	18.77	108.80	805.1
## 41	887549	M	20.310	27.06	132.90	1288.0
## 42	871201	M	19.590	18.15	130.70	1214.0
## 43	84348301	M	11.420	20.38	77.58	386.1
## 44	897604	B	12.990	14.23	84.08	514.3
## 45	911673	B	13.900	16.62	88.97	599.4
## 46	877159	M	18.080	21.84	117.40	1024.0
## 47	90769601	B	11.130	16.62	70.47	381.1
## 48	899987	M	25.730	17.46	174.20	2010.0
## 49	90401601	B	13.510	18.89	88.10	558.1
## 50	892604	B	12.460	19.89	80.43	471.3
## 51	8810987	M	13.860	16.93	90.96	578.9
## 52	88147102	B	15.000	15.51	97.45	684.5
## 53	904357	B	11.800	17.26	75.26	431.9
## 54	883270	B	14.220	27.85	92.55	623.9
## 55	878796	M	23.290	26.67	158.90	1685.0
## 56	8611161	B	13.340	15.86	86.49	520.0
## 57	91550	B	11.740	14.69	76.31	426.0

## 58	874158	B	10.080	15.11	63.76	317.5
## 59	865423	M	24.250	20.20	166.20	1761.0
## 60	89122	M	19.400	18.18	127.20	1145.0
## 61	855625	M	19.070	24.81	128.30	1104.0
## 62	8712766	M	17.470	24.68	116.10	984.6
## 63	881094802	M	17.420	25.56	114.50	948.0
## 64	855167	M	13.440	21.58	86.18	563.0
## 65	8511133	M	15.340	14.26	102.50	704.4
## 66	8712064	B	12.340	22.22	79.85	464.5
## 67	8813129	B	13.270	17.02	84.55	546.4
## 68	89382601	B	14.610	15.69	92.68	664.9
## 69	8911834	B	13.850	15.18	88.99	587.4
## 70	91903901	B	11.670	20.02	75.21	416.2
## 71	855138	M	13.480	20.82	88.40	559.2
## 72	897880	B	10.050	17.53	64.41	310.8
## 73	894329	B	9.042	18.90	60.07	244.5
## 74	91376702	B	17.850	13.23	114.60	992.1
## 75	8711216	B	16.840	19.46	108.40	880.2
## 76	861597	B	12.360	21.80	79.78	466.1
## 77	874217	M	18.310	18.58	118.60	1041.0
## 78	859465	B	11.310	19.04	71.80	394.1
## 79	89382602	B	12.760	13.37	82.29	504.1
## 80	90524101	M	17.990	20.66	117.80	991.7
## 81	8712853	B	14.970	16.95	96.22	685.9
## 82	874839	B	12.300	15.90	78.83	463.7
## 83	901041	B	13.300	21.57	85.24	546.1
## 84	861598	B	14.640	15.24	95.77	651.9
## 85	901549	B	11.270	12.96	73.16	386.3
## 86	8913	B	12.890	13.12	81.89	515.9
## 87	91813702	B	12.340	12.27	78.94	468.5
## 88	9112085	B	13.380	30.72	86.34	557.2
## 89	851509	M	21.160	23.04	137.20	1404.0
## 90	917896	B	13.710	18.68	88.73	571.0
## 91	873586	B	12.810	13.06	81.29	508.8
## 92	914580	B	12.470	17.31	80.45	480.1
## 93	889403	M	15.610	19.38	100.00	758.6
## 94	9112594	B	13.000	25.13	82.61	520.2

## 95	874858	M	14.220	23.12	94.37	609.9
## 96	896839	M	16.030	15.51	105.80	793.2
## 97	904689	B	12.960	18.29	84.18	525.2
## 98	891703	B	11.850	17.46	75.54	432.7
## 99	8812844	B	10.180	17.53	65.12	313.1
## 100	8611555	M	25.220	24.91	171.50	1878.0
## 101	8910720	B	10.710	20.39	69.50	344.9
## 102	875099	B	9.720	18.22	60.73	288.1
## 103	8910748	B	11.290	13.04	72.23	388.0
## 104	848406	M	14.680	20.13	94.74	684.5
## 105	884448	B	13.200	17.43	84.13	541.6
## 106	911685	B	11.490	14.59	73.99	404.9
## 107	9010258	B	12.560	19.07	81.92	485.8
## 108	91544001	B	12.220	20.04	79.47	453.1
## 109	923465	B	10.820	24.21	68.89	361.6
## 110	906290	B	11.160	21.41	70.95	380.3
## 111	863031	B	11.640	18.33	75.17	412.5
## 112	871001502	B	8.219	20.70	53.27	203.9
## 113	86517	M	18.660	17.12	121.40	1077.0
## 114	84667401	M	13.730	22.61	93.60	578.3
## 115	857343	B	11.760	21.60	74.72	427.9
## 116	909445	M	17.270	25.42	112.40	928.8
## 117	877500	M	14.450	20.22	94.49	642.7
## 118	903507	M	15.490	19.97	102.40	744.7
## 119	8811842	M	19.800	21.56	129.70	1230.0
## 120	9010259	B	13.050	18.59	85.09	512.0
## 121	86561	B	13.850	17.21	88.44	588.7
## 122	881046502	M	20.580	22.14	134.70	1290.0
## 123	893061	B	11.600	24.49	74.23	417.2
## 124	9011971	M	21.710	17.25	140.90	1546.0
## 125	898690	B	11.470	16.03	73.02	402.7
## 126	89296	B	11.460	18.16	73.59	403.1
## 127	863030	M	13.110	15.56	87.21	530.2
## 128	90291	M	14.600	23.29	93.97	664.7
## 129	866203	M	19.000	18.91	123.40	1138.0
## 130	91979701	M	14.270	22.55	93.77	629.8
## 131	907914	M	14.900	22.53	102.10	685.0

## 132	906878	B	13.660	19.13	89.46	575.3
## 133	922296	B	13.210	28.06	84.88	538.4
## 134	926424	M	21.560	22.39	142.00	1479.0
## 135	91544002	B	11.060	17.12	71.25	366.5
## 136	852552	M	16.650	21.38	110.00	904.6
## 137	903483	B	8.734	16.84	55.27	234.3
## 138	871122	B	12.060	12.74	76.84	448.6
## 139	89742801	M	17.060	21.00	111.80	918.6
## 140	857374	B	11.940	18.24	75.71	437.6
## 141	852781	M	18.610	20.25	122.10	1094.0
## 142	842302	M	17.990	10.38	122.80	1001.0
## 143	926682	M	20.130	28.25	131.20	1261.0
## 144	858986	M	14.250	22.15	96.42	645.7
## 145	852763	M	14.580	21.53	97.41	644.8
## 146	874662	B	11.810	17.39	75.27	428.9
## 147	84610002	M	15.780	17.89	103.60	781.0
## 148	9010872	B	16.500	18.29	106.60	838.1
## 149	894335	B	12.430	17.00	78.60	477.3
## 150	863270	B	12.360	18.54	79.01	466.7
## 151	894089	B	12.490	16.85	79.19	481.6
## 152	907145	B	9.742	19.12	61.93	289.7
## 153	869224	B	12.900	15.92	83.74	512.2
## 154	922577	B	10.320	16.35	65.31	324.9
## 155	89143602	B	14.410	19.73	96.03	651.0
## 156	901034301	B	9.436	18.32	59.82	278.6
## 157	8911800	B	13.590	17.84	86.24	572.3
## 158	855563	M	10.950	21.35	71.90	371.1
## 159	909777	B	10.570	18.32	66.82	340.9
## 160	857156	B	13.490	22.30	86.91	561.0
## 161	861853	B	13.270	14.76	84.74	551.7
## 162	8913049	B	11.260	19.96	73.72	394.1
## 163	901028	B	13.870	16.21	88.52	593.7
## 164	89346	B	9.000	14.40	56.36	246.3
## 165	915143	M	23.090	19.83	152.10	1682.0
## 166	873592	M	27.220	21.87	182.10	2250.0
## 167	88143502	B	14.340	13.47	92.51	641.2
## 168	888570	M	17.290	22.13	114.40	947.8

## 169	8711002	B	13.150	15.34	85.31	538.9
## 170	869931	B	13.740	17.91	88.12	585.0
## 171	85715	M	13.170	18.66	85.98	534.6
## 172	908489	M	13.980	19.62	91.12	599.5
## 173	84458202	M	13.710	20.83	90.20	577.9
## 174	8910499	B	13.590	21.84	87.16	561.0
## 175	87163	M	13.430	19.63	85.84	565.4
## 176	8610908	B	12.860	18.00	83.19	506.3
## 177	857637	M	19.210	18.57	125.50	1152.0
## 178	904302	B	11.060	14.83	70.31	378.2
## 179	857010	M	18.650	17.60	123.70	1076.0
## 180	862965	B	12.180	20.52	77.22	458.7
## 181	877501	B	12.230	19.56	78.54	461.0
## 182	8610404	M	16.070	19.65	104.10	817.7
## 183	891923	B	13.770	13.27	88.06	582.7
## 184	879523	M	15.120	16.68	98.78	716.6
## 185	897132	B	11.220	19.86	71.94	387.3
## 186	891936	B	10.910	12.35	69.14	363.7
## 187	881972	M	17.050	19.08	113.40	895.0
## 188	867739	M	18.450	21.91	120.20	1075.0
## 189	894618	M	20.160	19.66	131.10	1274.0
## 190	8910996	B	9.742	15.67	61.50	289.9
## 191	869104	M	16.110	18.05	105.10	813.0
## 192	904647	B	11.930	10.91	76.14	442.7
## 193	911384	B	14.920	14.93	96.45	686.9
## 194	84799002	M	14.540	27.54	96.73	658.8
## 195	873701	M	15.700	20.31	101.20	766.6
## 196	8611792	M	19.100	26.29	129.10	1132.0
## 197	9010018	M	15.080	25.74	98.00	716.6
## 198	861648	B	14.620	24.02	94.57	662.7
## 199	91813701	B	13.460	18.75	87.44	551.1
## 200	902975	B	12.210	14.09	78.78	462.0
## 201	855133	M	14.990	25.20	95.54	698.8
## 202	90745	B	10.800	21.98	68.79	359.9
## 203	905557	B	14.990	22.11	97.53	693.7
## 204	86408	B	12.630	20.76	82.15	480.4
## 205	89864002	B	11.710	15.45	75.03	420.3

## 206	915460	M	15.460	23.95	103.80	731.3
## 207	911320501	B	11.600	18.36	73.88	412.7
## 208	892189	M	11.760	18.14	75.00	431.1
## 209	893526	B	13.500	12.71	85.69	566.2
## 210	873593	M	21.090	26.57	142.70	1311.0
## 211	8912284	B	12.890	15.70	84.08	516.6
## 212	857793	M	14.710	21.59	95.55	656.9
## 213	859717	M	17.200	24.52	114.20	929.4
## 214	902727	B	13.280	13.72	85.79	541.8
## 215	911391	B	10.880	15.62	70.41	358.9
## 216	858970	B	10.170	14.88	64.55	311.9
## 217	917080	B	12.750	16.70	82.51	493.8
## 218	911654	B	14.200	20.53	92.41	618.4
## 219	843786	M	12.450	15.70	82.57	477.1
## 220	8712289	M	23.270	22.04	152.10	1686.0
## 221	891716	B	12.720	13.78	81.78	492.1
## 222	906024	B	12.700	12.17	80.88	495.0
## 223	892438	M	19.530	18.90	129.50	1217.0
## 224	861103	B	11.450	20.97	73.81	401.5
## 225	871642	B	10.660	15.15	67.49	349.6
## 226	894047	B	8.597	18.60	54.09	221.2
## 227	915276	B	9.676	13.14	64.12	272.5
## 228	908194	M	20.180	19.54	133.80	1250.0
## 229	877989	M	17.540	19.32	115.10	951.6
## 230	897137	B	11.250	14.78	71.38	390.0
## 231	9112366	B	11.630	29.29	74.87	415.1
## 232	904969	B	12.340	14.95	78.29	469.1
## 233	86409	B	14.260	19.65	97.83	629.9
## 234	8953902	M	16.270	20.71	106.90	813.7
## 235	924084	B	12.770	29.43	81.35	507.9
## 236	913512	B	11.680	16.17	75.49	420.5
## 237	87556202	M	14.860	23.21	100.40	671.4
## 238	91805	B	8.571	13.10	54.53	221.3
## 239	88466802	B	10.650	25.22	68.01	347.0
## 240	884437	B	10.480	19.86	66.72	337.7
## 241	886452	M	13.960	17.05	91.43	602.4
## 242	864496	B	8.726	15.83	55.84	230.9

## 243	905539	B	9.397	21.68	59.75	268.8
## 244	888264	M	17.350	23.06	111.00	933.1
## 245	885429	M	19.730	19.82	130.70	1206.0
## 246	923169	B	9.683	19.34	61.05	285.7
## 247	907367	B	10.030	21.28	63.19	307.3
## 248	921386	B	14.470	24.99	95.81	656.4
## 249	85713702	B	8.196	16.84	51.71	201.9
## 250	9111843	B	12.000	28.23	76.77	442.5
## 251	914862	B	15.040	16.74	98.73	689.4
## 252	887181	M	15.660	23.20	110.20	773.5
## 253	903011	B	11.270	15.50	73.38	392.0
## 254	90439701	M	17.910	21.02	124.40	994.0
## 255	918192	B	13.940	13.17	90.31	594.2
## 256	905978	B	9.405	21.70	59.60	271.2
## 257	911150	B	14.530	19.34	94.25	659.7
## 258	905502	B	11.360	17.57	72.49	399.8
## 259	859487	B	12.780	16.49	81.37	502.5
## 260	8510426	B	13.540	14.36	87.46	566.3
## 261	903554	B	12.100	17.72	78.07	446.2
## 262	924934	B	10.290	27.61	65.67	321.4
## 263	8670	M	15.460	19.48	101.70	748.9
## 264	91227	B	13.900	19.24	88.73	602.9
## 265	85382601	M	17.020	23.98	112.80	899.3
## 266	844981	M	13.000	21.82	87.50	519.8
## 267	8811779	B	10.200	17.48	65.05	321.2
## 268	859711	B	8.888	14.64	58.79	244.0
## 269	91376701	B	12.250	22.44	78.18	466.5
## 270	884180	M	19.400	23.50	129.10	1155.0
## 271	90401602	B	12.800	17.46	83.05	508.3
## 272	846226	M	19.170	24.80	132.40	1123.0
## 273	903811	B	14.060	17.18	89.75	609.1
## 274	8610175	B	12.310	16.52	79.19	470.9
## 275	877486	M	19.180	22.49	127.50	1148.0
## 276	8810703	M	28.110	18.47	188.50	2499.0
## 277	914333	B	14.870	20.21	96.12	680.9
## 278	926954	M	16.600	28.08	108.30	858.1
## 279	923748	B	10.860	21.48	68.51	360.5



## 280	921092	B	7.729	25.49	47.98	178.8
## 281	8610637	M	18.050	16.15	120.20	1006.0
## 282	91789	B	11.260	19.83	71.30	388.1
## 283	898678	B	12.060	18.90	76.66	445.3
## 284	88350402	B	13.640	15.60	87.38	575.3
## 285	889719	M	17.190	22.07	111.60	928.3
## 286	913102	B	14.640	16.85	94.21	666.0
## 287	8810955	M	14.190	23.81	92.87	610.7
## 288	916838	M	19.890	20.26	130.50	1214.0
## 289	884948	M	20.940	23.56	138.90	1364.0
## 290	914366	B	12.650	18.17	82.69	485.6
## 291	925236	B	9.423	27.88	59.26	271.3
## 292	9013005	B	13.690	16.07	87.84	579.1
## 293	875938	M	13.770	22.29	90.63	588.9
## 294	9011495	B	12.210	18.02	78.31	458.4
## 295	9012000	M	22.010	21.90	147.20	1482.0
## 296	91762702	M	24.630	21.60	165.50	1841.0
## 297	919555	M	20.550	20.86	137.80	1308.0
## 298	849014	M	19.810	22.15	130.00	1260.0
## 299	918465	B	12.070	13.44	77.83	445.2
## 300	911916	M	16.250	19.51	109.80	815.8
## 301	8711803	M	19.190	15.94	126.30	1157.0
## 302	892214	B	14.260	18.17	91.22	633.1
## 303	871149	B	10.900	12.96	68.69	366.8
## 304	915691	M	13.400	20.52	88.64	556.7
## 305	8812877	M	15.750	20.25	102.60	761.3
## 306	88206102	M	20.510	27.81	134.40	1319.0
## 307	925622	M	15.220	30.62	103.40	716.9
## 308	9047	B	12.940	16.17	83.18	507.6
## 309	86973701	B	14.950	18.77	97.84	689.5
## 310	8812818	B	13.560	13.90	88.59	561.3
## 311	91930402	M	20.470	20.67	134.70	1299.0
## 312	8860702	M	17.300	17.08	113.00	928.2
## 313	912558	B	13.700	17.64	87.76	571.1
## 314	8911164	B	11.890	17.36	76.20	435.6
## 315	856106	M	13.280	20.28	87.32	545.2
## 316	9013579	B	13.460	28.21	85.89	562.1

## 317	84358402	M	20.290	14.34	135.10	1297.0
## 318	88299702	M	23.210	26.97	153.50	1670.0
## 319	923780	B	11.130	22.44	71.49	378.4
## 320	89869	B	14.760	14.74	94.87	668.7
## 321	913063	B	12.450	16.41	82.85	476.7
## 322	854253	M	16.740	21.59	110.10	869.5
## 323	86208	M	20.260	23.03	132.40	1264.0
## 324	864685	B	11.930	21.53	76.53	438.6
## 325	883539	B	12.420	15.04	78.61	476.5
## 326	8612399	M	18.460	18.52	121.10	1075.0
## 327	88249602	B	14.030	21.25	89.79	603.4
## 328	864877	M	15.780	22.91	105.70	782.6
## 329	871001501	B	13.000	20.78	83.51	519.4
## 330	89812	M	23.510	24.27	155.10	1747.0
## 331	868999	B	9.738	11.97	61.24	288.5
## 332	908916	B	12.870	19.54	82.67	509.2
## 333	87127	B	10.800	9.71	68.77	357.6
## 334	894090	B	12.180	14.08	77.25	461.4
## 335	868826	M	14.950	17.57	96.85	678.1
## 336	8810436	B	15.270	12.91	98.17	725.5
## 337	901034302	B	12.540	18.07	79.42	491.9
## 338	859471	B	9.029	17.33	58.79	250.5
## 339	897630	M	18.770	21.43	122.90	1092.0
## 340	912600	B	15.730	11.28	102.80	747.2
## 341	905189	B	16.140	14.86	104.30	800.0
## 342	86135502	M	19.020	24.59	122.00	1076.0
## 343	895633	M	16.260	21.88	107.50	826.8
## 344	883852	B	11.300	18.19	73.93	389.4
## 345	86730502	M	16.160	21.54	106.20	809.8
## 346	864033	B	9.777	16.99	62.50	290.2
## 347	9010333	B	8.878	15.49	56.74	241.0
## 348	869218	B	11.430	17.31	73.66	398.0
## 349	91594602	M	15.050	19.07	97.26	701.9
## 350	9110720	B	11.990	24.89	77.61	441.3
## 351	909410	B	14.020	15.66	89.59	606.5
## 352	853201	M	17.570	15.05	115.00	955.1
## 353	924632	B	12.880	28.92	82.50	514.3

## 354	864018	B	11.340	21.26	72.48	396.5
## 355	859283	M	14.780	23.94	97.40	668.3
## 356	859464	B	9.465	21.01	60.11	269.4
## 357	879804	B	9.876	17.27	62.92	295.4
## 358	8810528	B	11.840	18.94	75.51	428.0
## 359	844359	M	18.250	19.98	119.60	1040.0
## 360	924342	B	9.333	21.94	59.01	264.0
## 361	883263	M	20.480	21.46	132.50	1306.0
## 362	846381	M	15.850	23.95	103.70	782.7
## 363	9113846	B	12.270	29.97	77.42	465.4
## 364	90317302	B	10.260	12.22	65.75	321.6
## 365	86211	B	12.180	17.84	77.79	451.1
## 366	921385	B	11.540	14.44	74.65	402.9
## 367	8711202	M	17.680	20.74	117.40	963.7
## 368	9112712	B	9.755	28.20	61.68	290.9
## 369	893988	B	11.540	10.72	73.73	409.1
## 370	886226	M	19.450	19.33	126.50	1169.0
## 371	91505	B	12.540	16.32	81.25	476.3
## 372	859196	B	9.173	13.86	59.20	260.9
## 373	897374	B	12.300	19.02	77.88	464.4
## 374	912193	B	12.160	18.03	78.29	455.3
## 375	911202	B	12.620	17.15	80.62	492.9
## 376	914101	B	12.460	12.83	78.83	477.3
## 377	921644	B	14.740	25.42	94.70	668.6
## 378	90251	B	12.390	17.48	80.64	462.9
## 379	8911230	B	11.330	14.16	71.79	396.6
## 380	884689	B	11.520	14.93	73.87	406.3
## 381	909231	B	13.850	19.60	88.68	592.6
## 382	892399	B	10.510	23.09	66.85	334.2
## 383	86135501	M	14.480	21.46	94.25	648.2
## 384	854039	M	16.130	17.88	107.00	807.2
## 385	916221	B	11.340	18.61	72.76	391.2
## 386	922840	B	10.260	16.58	65.85	320.8
## 387	8910988	M	21.750	20.99	147.30	1491.0
## 388	892657	B	10.490	18.61	66.86	334.3
## 389	862717	M	13.610	24.98	88.05	582.7
## 390	915452	B	16.300	15.70	104.70	819.8

## 391	9110732	M	17.750	28.03	117.30	981.6
## 392	925311	B	11.200	29.37	70.67	386.0
## 393	857373	B	13.640	16.34	87.21	571.8
## 394	8912049	M	19.160	26.60	126.20	1138.0
## 395	91903902	B	13.680	16.33	87.76	575.5
## 396	902976	B	13.880	16.16	88.37	596.6
## 397	906616	B	11.610	16.02	75.46	408.2
## 398	861799	M	15.370	22.76	100.20	728.2
## 399	898431	M	19.680	21.68	129.90	1194.0
## 400	862261	B	9.787	19.94	62.11	294.5
## 401	917897	B	9.847	15.68	63.00	293.2
## 402	865468	B	13.370	16.39	86.10	553.5
## 403	854002	M	19.270	26.47	127.90	1162.0
## 404	901288	M	20.640	17.35	134.80	1335.0
## 405	9113239	B	13.240	20.13	86.87	542.9
## 406	901088	M	20.440	21.78	133.80	1293.0
## 407	901303	B	16.170	16.07	106.30	788.5
## 408	865137	B	11.410	10.82	73.34	403.3
## 409	864729	M	14.870	16.67	98.64	682.5
## 410	882488	B	9.567	15.91	60.21	279.6
## 411	884626	B	12.890	14.11	84.95	512.2
## 412	88199202	B	11.320	27.08	71.76	395.7
## 413	869254	B	10.750	14.97	68.26	355.3
## 414	868223	B	11.710	16.67	74.72	423.6
## 415	8912055	B	11.740	14.02	74.24	427.3
## 416	913505	M	19.440	18.82	128.10	1167.0
## 417	868682	B	11.430	15.39	73.06	399.8
## 418	89813	B	14.420	16.54	94.15	641.2
## 419	9011494	M	20.200	26.83	133.70	1234.0
## 420	869691	M	11.800	16.58	78.99	432.0
## 421	8710441	B	9.731	15.34	63.78	300.2
## 422	857438	M	15.100	22.02	97.26	712.8
## 423	87106	B	11.150	13.08	70.87	381.9
## 424	915186	B	9.268	12.87	61.49	248.7
## 425	873843	B	11.410	14.92	73.53	402.0
## 426	85922302	M	12.680	23.84	82.69	499.0
## 427	899147	B	11.950	14.96	77.23	426.7

## 428	908469	B	14.860	16.94	94.89	673.7
## 429	924964	B	10.160	19.59	64.73	311.7
## 430	886776	M	15.320	17.27	103.20	713.3
## 431	866083	M	13.610	24.69	87.76	572.6
## 432	916799	M	18.310	20.58	120.80	1052.0
## 433	8612080	B	12.000	15.65	76.95	443.3
## 434	914769	M	18.490	17.52	121.30	1068.0
## 435	909411	B	10.970	17.20	71.73	371.5
## 436	89524	B	14.110	12.88	90.03	616.5
## 437	8911670	M	18.810	19.98	120.90	1102.0
## 438	875878	B	12.910	16.33	82.53	516.4
## 439	858477	B	8.618	11.79	54.34	224.5
## 440	8711561	B	11.750	20.18	76.10	419.8
## 441	896864	B	12.980	19.35	84.52	514.0
## 442	922576	B	13.620	23.23	87.19	573.2
## 443	862028	M	15.060	19.83	100.30	705.6
## 444	912519	B	13.470	14.06	87.32	546.3
## 445	88330202	M	17.460	39.28	113.40	920.6
## 446	8510824	B	9.504	12.44	60.34	273.9
## 447	88411702	B	13.750	23.77	88.54	590.0
## 448	895299	B	12.030	17.93	76.09	446.0
## 449	8811523	B	11.890	18.35	77.32	432.2
## 450	911296201	M	17.080	27.15	111.20	930.9
## 451	88147101	B	10.440	15.46	66.62	329.6
## 452	875263	M	12.340	26.86	81.15	477.4
## 453	90312	M	19.550	23.21	128.90	1174.0
## 454	9111596	B	11.870	21.54	76.83	432.0
## 455	905686	B	11.890	21.17	76.39	433.8
## 456	86973702	B	14.440	15.18	93.97	640.1
## 457	8610629	B	13.530	10.94	87.91	559.2
## 458	88995002	M	20.730	31.12	135.70	1419.0
## 459	872113	B	8.671	14.45	54.42	227.2
## 460	873357	B	13.010	22.22	82.01	526.4
## 461	911296202	M	27.420	26.27	186.90	2501.0
## 462	908445	M	18.820	21.97	123.70	1110.0
## 463	901836	B	11.040	14.93	70.67	372.7
## 464	90944601	B	13.780	15.79	88.37	585.9

## 465	852631	M	17.140	16.40	116.00	912.7
## 466	907915	B	12.400	17.68	81.47	467.8
## 467	89344	B	13.200	15.82	84.07	537.3
## 468	9110127	M	18.030	16.85	117.50	990.0
## 469	894604	B	10.250	16.18	66.52	324.2
## 470	909220	B	14.040	15.98	89.78	611.2
## 471	875093	B	12.770	21.41	82.02	507.4
## 472	8712291	B	14.970	19.76	95.50	690.2
## 473	854941	B	13.030	18.42	82.61	523.8
## 474	88119002	M	19.530	32.47	128.00	1223.0
## 475	9113816	B	12.040	28.14	76.85	449.9
## 476	894326	M	18.220	18.87	118.70	1027.0
## 477	90250	B	12.050	22.72	78.75	447.8
## 478	911157302	M	21.100	20.52	138.10	1384.0
## 479	8915	B	14.960	19.10	97.03	687.3
## 480	91504	M	13.820	24.49	92.33	595.9
## 481	865432	B	14.500	10.89	94.28	640.7
## 482	862548	M	14.420	19.77	94.48	642.5
## 483	853401	M	18.630	25.11	124.80	1088.0
## 484	872608	B	9.904	18.06	64.60	302.4
## 485	899187	B	11.660	17.07	73.70	421.0
## 486	899667	M	15.750	19.22	107.10	758.6
## 487	9113778	B	9.667	18.49	61.49	289.1
## 488	86355	M	22.270	19.67	152.80	1509.0
## 489	914102	B	13.160	20.54	84.06	538.7
## 490	9013838	M	11.080	18.83	73.30	361.6
## 491	914062	M	18.010	20.56	118.40	1007.0
## 492	927241	M	20.600	29.33	140.10	1265.0
## 493	87164	M	15.460	11.89	102.50	736.9
## 494	919537	B	10.960	17.62	70.79	365.6
## 495	858981	B	8.598	20.98	54.66	221.8
## 496	917062	B	12.880	18.22	84.45	493.1
## 497	862980	B	9.876	19.40	63.95	298.3
## 498	85638502	M	13.170	21.81	85.42	531.5
## 499	88649001	M	19.550	28.77	133.60	1207.0
## 500	88725602	M	15.530	33.56	103.70	744.9
## 501	913535	M	16.690	20.20	107.10	857.6

## 502	845636	M	16.020	23.24	102.70	797.8
## 503	84862001	M	16.130	20.68	108.10	798.8
## 504	901315	B	10.570	20.22	70.15	338.3
## 505	911366	B	11.620	18.18	76.38	408.8
## 506	88203002	B	11.220	33.81	70.79	386.8
## 507	8910721	B	14.290	16.82	90.30	632.6
## 508	915664	B	14.810	14.70	94.66	680.7
## 509	926125	M	20.920	25.09	143.00	1347.0
## 510	90602302	M	15.500	21.08	102.90	803.1
## 511	8510653	B	13.080	15.71	85.63	520.0
## 512	8911163	M	17.930	24.48	115.20	998.9
## 513	853612	M	11.840	18.70	77.93	440.6
## 514	8812816	B	13.650	13.16	87.88	568.9
## 515	9012315	M	16.350	23.29	109.00	840.4
## 516	881861	M	12.830	22.33	85.26	503.2
## 517	842517	M	20.570	17.77	132.90	1326.0
## 518	84300903	M	19.690	21.25	130.00	1203.0
## 519	857392	M	18.220	18.70	120.30	1033.0
## 520	8810158	B	13.110	22.54	87.02	529.4
## 521	907409	B	10.480	14.98	67.49	333.6
## 522	87930	B	12.470	18.60	81.09	481.9
## 523	905680	M	15.130	29.81	96.71	719.5
## 524	92751	B	7.760	24.54	47.92	181.0
## 525	862722	B	6.981	13.43	43.79	143.5
## 526	8910506	B	12.870	16.21	82.38	512.2
## 527	88147202	B	12.620	23.97	81.35	496.4
## 528	865128	M	17.950	20.01	114.20	982.0
## 529	89143601	B	11.370	18.89	72.17	396.0
## 530	9113514	B	9.668	18.10	61.06	286.3
## 531	8912909	B	11.940	20.76	77.87	441.0
## 532	921362	B	7.691	25.44	48.34	170.4
## 533	90769602	B	12.720	17.67	80.98	501.3
## 534	87281702	M	16.460	20.11	109.30	832.9
## 535	866674	M	19.790	25.12	130.40	1192.0
## 536	911408	B	12.830	15.73	82.89	506.9
## 537	85759902	B	11.520	18.75	73.34	409.0
## 538	893783	B	11.700	19.11	74.33	418.7

## 539	922297	B	13.870	20.70	89.77	584.8
## 540	862485	B	11.600	12.84	74.34	412.6
## 541	879830	M	17.010	20.26	109.70	904.3
## 542	917092	B	9.295	13.90	59.96	257.8
## 543	8912521	B	12.580	18.40	79.83	489.0
## 544	895100	M	20.340	21.51	135.90	1264.0
## 545	8610862	M	20.180	23.97	143.70	1245.0
## 546	891670	B	12.950	16.02	83.14	513.7
## 547	864726	B	8.950	15.76	58.74	245.2
## 548	9010598	B	12.760	18.84	81.87	496.6
## 549	925292	B	14.050	27.15	91.38	600.4
## 550	857155	B	12.050	14.63	78.04	449.3
## 551	905190	B	12.850	21.37	82.63	514.5
## 552	901011	B	11.140	14.07	71.24	384.6
## 553	84501001	M	12.460	24.04	83.97	475.9
## 554	91858	B	11.750	17.56	75.89	422.9
## 555	9112367	B	13.210	25.25	84.10	537.9
## 556	903516	M	21.610	22.28	144.40	1407.0
## 557	88518501	B	11.500	18.45	73.28	407.4
## 558	906564	B	14.690	13.98	98.22	656.1
## 559	871641	B	11.080	14.71	70.21	372.7
## 560	9110944	B	14.800	17.66	95.88	674.8
## 561	854268	M	14.250	21.72	93.63	633.0
## 562	89511501	B	12.200	15.21	78.01	457.9
## 563	9113156	B	14.400	26.99	92.25	646.1
## 564	894855	B	12.860	13.32	82.82	504.8
## 565	911320502	B	13.170	18.22	84.28	537.3
## 566	898677	B	10.260	14.71	66.20	321.6
## 567	873885	M	15.280	22.41	98.92	710.6
## 568	911201	B	14.530	13.98	93.86	644.2
## 569	9012795	M	21.370	15.10	141.30	1386.0
##	smoothness_mean	compactness_mean	concavity_mean	points_mean		
## 1	0.10280	0.06981	0.0398700	0.037000		
## 2	0.09688	0.11470	0.0638700	0.026420		
## 3	0.10770	0.07804	0.0304600	0.024800		
## 4	0.11640	0.11360	0.0463500	0.047960		
## 5	0.07963	0.06934	0.0339300	0.026570		



## 6	0.08546	0.07722	0.0548500	0.014280
## 7	0.09261	0.10210	0.1112000	0.041050
## 8	0.13230	0.17680	0.1558000	0.091760
## 9	0.09989	0.08578	0.0299500	0.012010
## 10	0.10330	0.09097	0.0539700	0.033410
## 11	0.10850	0.16440	0.2188000	0.112100
## 12	0.08654	0.06679	0.0388500	0.023310
## 13	0.08675	0.10890	0.1085000	0.035100
## 14	0.08060	0.03789	0.0006920	0.004167
## 15	0.10320	0.09871	0.1655000	0.090630
## 16	0.08473	0.13300	0.1029000	0.037360
## 17	0.09462	0.09462	0.0713500	0.059330
## 18	0.10280	0.07664	0.0319300	0.021070
## 19	0.10800	0.18380	0.2283000	0.128000
## 20	0.10660	0.09509	0.0285500	0.028820
## 21	0.09774	0.06141	0.0380900	0.032390
## 22	0.12360	0.15520	0.0451500	0.045310
## 23	0.10040	0.07460	0.0494400	0.029320
## 24	0.11500	0.18070	0.1138000	0.085340
## 25	0.11220	0.13030	0.0647600	0.030680
## 26	0.10070	0.12800	0.0778900	0.050690
## 27	0.10220	0.08165	0.0397400	0.027800
## 28	0.10820	0.16970	0.1683000	0.087510
## 29	0.08481	0.09228	0.0842200	0.022920
## 30	0.07937	0.05696	0.0218100	0.014730
## 31	0.08352	0.03735	0.0045590	0.008829
## 32	0.09055	0.05761	0.0471100	0.027040
## 33	0.09289	0.20040	0.2136000	0.100200
## 34	0.08685	0.06526	0.0321100	0.026530
## 35	0.09832	0.08918	0.0822200	0.043490
## 36	0.08268	0.07548	0.0424900	0.024710
## 37	0.09009	0.10290	0.1080000	0.079510
## 38	0.11520	0.12960	0.0371000	0.030030
## 39	0.08865	0.09182	0.0842200	0.065760
## 40	0.10660	0.18020	0.1948000	0.090520
## 41	0.10000	0.10880	0.1519000	0.093330
## 42	0.11200	0.16660	0.2508000	0.128600

## 43	0.14250	0.28390	0.2414000	0.105200
## 44	0.09462	0.09965	0.0373800	0.020980
## 45	0.06828	0.05319	0.0222400	0.013390
## 46	0.07371	0.08642	0.1103000	0.057780
## 47	0.08151	0.03834	0.0136900	0.013700
## 48	0.11490	0.23630	0.3368000	0.191300
## 49	0.10590	0.11470	0.0858000	0.053810
## 50	0.08451	0.10140	0.0683000	0.030990
## 51	0.10260	0.15170	0.0990100	0.056020
## 52	0.08371	0.10960	0.0650500	0.037800
## 53	0.09087	0.06232	0.0285300	0.016380
## 54	0.08223	0.10390	0.1103000	0.044080
## 55	0.11410	0.20840	0.3523000	0.162000
## 56	0.10780	0.15350	0.1169000	0.069870
## 57	0.08099	0.09661	0.0672600	0.026390
## 58	0.09267	0.04695	0.0015970	0.002404
## 59	0.14470	0.28670	0.4268000	0.201200
## 60	0.10370	0.14420	0.1626000	0.094640
## 61	0.09081	0.21900	0.2107000	0.099610
## 62	0.10490	0.16030	0.2159000	0.104300
## 63	0.10060	0.11460	0.1682000	0.065970
## 64	0.08162	0.06031	0.0311000	0.020310
## 65	0.10730	0.21350	0.2077000	0.097560
## 66	0.10120	0.10150	0.0537000	0.028220
## 67	0.08445	0.04994	0.0355400	0.024560
## 68	0.07618	0.03515	0.0144700	0.018770
## 69	0.09516	0.07688	0.0447900	0.037110
## 70	0.10160	0.09453	0.0420000	0.021570
## 71	0.10160	0.12550	0.1063000	0.054390
## 72	0.10070	0.07326	0.0251100	0.017750
## 73	0.09968	0.19720	0.1975000	0.049080
## 74	0.07838	0.06217	0.0444500	0.041780
## 75	0.07445	0.07223	0.0515000	0.027710
## 76	0.08772	0.09445	0.0601500	0.037450
## 77	0.08588	0.08468	0.0816900	0.058140
## 78	0.08139	0.04701	0.0370900	0.022300
## 79	0.08794	0.07948	0.0405200	0.025480

## 80	0.10360	0.13040	0.1201000	0.088240
## 81	0.09855	0.07885	0.0260200	0.037810
## 82	0.08080	0.07253	0.0384400	0.016540
## 83	0.08582	0.06373	0.0334400	0.024240
## 84	0.11320	0.13390	0.0996600	0.070640
## 85	0.12370	0.11110	0.0790000	0.055500
## 86	0.06955	0.03729	0.0226000	0.011710
## 87	0.09003	0.06307	0.0295800	0.026470
## 88	0.09245	0.07426	0.0281900	0.032640
## 89	0.09428	0.10220	0.1097000	0.086320
## 90	0.09916	0.10700	0.0538500	0.037830
## 91	0.08739	0.03774	0.0091930	0.013300
## 92	0.08928	0.07630	0.0360900	0.023690
## 93	0.07840	0.05616	0.0420900	0.028470
## 94	0.08369	0.05073	0.0120600	0.017620
## 95	0.10750	0.24130	0.1981000	0.066180
## 96	0.09491	0.13710	0.1204000	0.070410
## 97	0.07351	0.07899	0.0405700	0.018830
## 98	0.08372	0.05642	0.0268800	0.022800
## 99	0.10610	0.08502	0.0176800	0.019150
## 100	0.10630	0.26650	0.3339000	0.184500
## 101	0.10820	0.12890	0.0844800	0.028670
## 102	0.06950	0.02344	0.0000000	0.000000
## 103	0.09834	0.07608	0.0326500	0.027550
## 104	0.09867	0.07200	0.0739500	0.052590
## 105	0.07215	0.04524	0.0433600	0.011050
## 106	0.10460	0.08228	0.0530800	0.019690
## 107	0.08760	0.10380	0.1030000	0.043910
## 108	0.10960	0.11520	0.0817500	0.021660
## 109	0.08192	0.06602	0.0154800	0.008160
## 110	0.10180	0.05978	0.0089550	0.010760
## 111	0.11420	0.10170	0.0707000	0.034850
## 112	0.09405	0.13050	0.1321000	0.021680
## 113	0.10540	0.11000	0.1457000	0.086650
## 114	0.11310	0.22930	0.2128000	0.080250
## 115	0.08637	0.04966	0.0165700	0.011150
## 116	0.08331	0.11090	0.1204000	0.057360

## 117	0.09872	0.12060	0.1180000	0.059800
## 118	0.11600	0.15620	0.1891000	0.091130
## 119	0.09383	0.13060	0.1272000	0.086910
## 120	0.10820	0.13040	0.0960300	0.056030
## 121	0.08785	0.06136	0.0142000	0.011410
## 122	0.09090	0.13480	0.1640000	0.095610
## 123	0.07474	0.05688	0.0197400	0.013130
## 124	0.09384	0.08562	0.1168000	0.084650
## 125	0.09076	0.05886	0.0258700	0.023220
## 126	0.08853	0.07694	0.0334400	0.015020
## 127	0.13980	0.17650	0.2071000	0.096010
## 128	0.08682	0.06636	0.0839000	0.052710
## 129	0.08217	0.08028	0.0927100	0.056270
## 130	0.10380	0.11540	0.1463000	0.061390
## 131	0.09947	0.22250	0.2733000	0.097110
## 132	0.09057	0.11470	0.0965700	0.048120
## 133	0.08671	0.06877	0.0298700	0.032750
## 134	0.11100	0.11590	0.2439000	0.138900
## 135	0.11940	0.10710	0.0406300	0.042680
## 136	0.11210	0.14570	0.1525000	0.091700
## 137	0.10390	0.07428	0.0000000	0.000000
## 138	0.09311	0.05241	0.0197200	0.019630
## 139	0.11190	0.10560	0.1508000	0.099340
## 140	0.08261	0.04751	0.0197200	0.013490
## 141	0.09440	0.10660	0.1490000	0.077310
## 142	0.11840	0.27760	0.3001000	0.147100
## 143	0.09780	0.10340	0.1440000	0.097910
## 144	0.10490	0.20080	0.2135000	0.086530
## 145	0.10540	0.18680	0.1425000	0.087830
## 146	0.10070	0.05562	0.0235300	0.015530
## 147	0.09710	0.12920	0.0995400	0.066060
## 148	0.09686	0.08468	0.0586200	0.048350
## 149	0.07557	0.03454	0.0134200	0.016990
## 150	0.08477	0.06815	0.0264300	0.019210
## 151	0.08511	0.03834	0.0044730	0.006423
## 152	0.10750	0.08333	0.0089340	0.019670
## 153	0.08677	0.09509	0.0489400	0.030880

## 154	0.09434	0.04994	0.0101200	0.005495
## 155	0.08757	0.16760	0.1362000	0.066020
## 156	0.10090	0.05956	0.0271000	0.014060
## 157	0.07948	0.04052	0.0199700	0.012380
## 158	0.12270	0.12180	0.1044000	0.056690
## 159	0.08142	0.04462	0.0199300	0.011110
## 160	0.08752	0.07698	0.0475100	0.033840
## 161	0.07355	0.05055	0.0326100	0.026480
## 162	0.08020	0.11810	0.0927400	0.055880
## 163	0.08743	0.05492	0.0150200	0.020880
## 164	0.07005	0.03116	0.0036810	0.003472
## 165	0.09342	0.12750	0.1676000	0.100300
## 166	0.10940	0.19140	0.2871000	0.187800
## 167	0.09906	0.07624	0.0572400	0.046030
## 168	0.08999	0.12730	0.0969700	0.075070
## 169	0.09384	0.08498	0.0929300	0.034830
## 170	0.07944	0.06376	0.0288100	0.013290
## 171	0.11580	0.12310	0.1226000	0.073400
## 172	0.10600	0.11330	0.1126000	0.064630
## 173	0.11890	0.16450	0.0936600	0.059850
## 174	0.07956	0.08259	0.0407200	0.021420
## 175	0.09048	0.06288	0.0585800	0.034380
## 176	0.09934	0.09546	0.0388900	0.023150
## 177	0.10530	0.12670	0.1323000	0.089940
## 178	0.07741	0.04768	0.0271200	0.007246
## 179	0.10990	0.16860	0.1974000	0.100900
## 180	0.08013	0.04038	0.0238300	0.017700
## 181	0.09586	0.08087	0.0418700	0.041070
## 182	0.09168	0.08424	0.0976900	0.066380
## 183	0.09198	0.06221	0.0106300	0.019170
## 184	0.08876	0.09588	0.0755000	0.040790
## 185	0.10540	0.06779	0.0050060	0.007583
## 186	0.08518	0.04721	0.0123600	0.013690
## 187	0.11410	0.15720	0.1910000	0.109000
## 188	0.09430	0.09709	0.1153000	0.068470
## 189	0.08020	0.08564	0.1155000	0.077260
## 190	0.09037	0.04689	0.0110300	0.014070

## 191	0.09721	0.11370	0.0944700	0.059430
## 192	0.08872	0.05242	0.0260600	0.017960
## 193	0.08098	0.08549	0.0553900	0.032210
## 194	0.11390	0.15950	0.1639000	0.073640
## 195	0.09597	0.08799	0.0659300	0.051890
## 196	0.12150	0.17910	0.1937000	0.146900
## 197	0.10240	0.09769	0.1235000	0.065530
## 198	0.08974	0.08606	0.0310200	0.029570
## 199	0.10750	0.11380	0.0420100	0.031520
## 200	0.08108	0.07823	0.0683900	0.025340
## 201	0.09387	0.05131	0.0239800	0.028990
## 202	0.08801	0.05743	0.0361400	0.014040
## 203	0.08515	0.10250	0.0685900	0.038760
## 204	0.09933	0.12090	0.1065000	0.060210
## 205	0.11500	0.07281	0.0400600	0.032500
## 206	0.11830	0.18700	0.2030000	0.085200
## 207	0.08508	0.05855	0.0336700	0.017770
## 208	0.09968	0.05914	0.0268500	0.035150
## 209	0.07376	0.03614	0.0027580	0.004419
## 210	0.11410	0.28320	0.2487000	0.149600
## 211	0.07818	0.09580	0.1115000	0.033900
## 212	0.11370	0.13650	0.1293000	0.081230
## 213	0.10710	0.18300	0.1692000	0.079440
## 214	0.08363	0.08575	0.0507700	0.028640
## 215	0.10070	0.10690	0.0511500	0.015710
## 216	0.11340	0.08061	0.0108400	0.012900
## 217	0.11250	0.11170	0.0388000	0.029950
## 218	0.08931	0.11080	0.0506300	0.030580
## 219	0.12780	0.17000	0.1578000	0.080890
## 220	0.08439	0.11450	0.1324000	0.097020
## 221	0.09667	0.08393	0.0128800	0.019240
## 222	0.08785	0.05794	0.0236000	0.024020
## 223	0.11500	0.16420	0.2197000	0.106200
## 224	0.11020	0.09362	0.0459100	0.022330
## 225	0.08792	0.04302	0.0000000	0.000000
## 226	0.10740	0.05847	0.0000000	0.000000
## 227	0.12550	0.22040	0.1188000	0.070380

## 228	0.11330	0.14890	0.2133000	0.125900
## 229	0.08968	0.11980	0.1036000	0.074880
## 230	0.08306	0.04458	0.0009737	0.002941
## 231	0.09357	0.08574	0.0716000	0.020170
## 232	0.08682	0.04571	0.0210900	0.020540
## 233	0.07837	0.22330	0.3003000	0.077980
## 234	0.11690	0.13190	0.1478000	0.084880
## 235	0.08276	0.04234	0.0199700	0.014990
## 236	0.11280	0.09263	0.0427900	0.031320
## 237	0.10440	0.19800	0.1697000	0.088780
## 238	0.10360	0.07632	0.0256500	0.015100
## 239	0.09657	0.07234	0.0237900	0.016150
## 240	0.10700	0.05971	0.0483100	0.030700
## 241	0.10960	0.12790	0.0978900	0.052460
## 242	0.11500	0.08201	0.0413200	0.019240
## 243	0.07969	0.06053	0.0373500	0.005128
## 244	0.08662	0.06290	0.0289100	0.028370
## 245	0.10620	0.18490	0.2417000	0.097400
## 246	0.08491	0.05030	0.0233700	0.009615
## 247	0.08117	0.03912	0.0024700	0.005159
## 248	0.08837	0.12300	0.1009000	0.038900
## 249	0.08600	0.05943	0.0158800	0.005917
## 250	0.08437	0.06450	0.0405500	0.019450
## 251	0.09883	0.13640	0.0772100	0.061420
## 252	0.11090	0.31140	0.3176000	0.137700
## 253	0.08365	0.11140	0.1007000	0.027570
## 254	0.12300	0.25760	0.3189000	0.119800
## 255	0.12480	0.09755	0.1010000	0.066150
## 256	0.10440	0.06159	0.0204700	0.012570
## 257	0.08388	0.07800	0.0881700	0.029250
## 258	0.08858	0.05313	0.0278300	0.021000
## 259	0.09831	0.05234	0.0365300	0.028640
## 260	0.09779	0.08129	0.0666400	0.047810
## 261	0.10290	0.09758	0.0478300	0.033260
## 262	0.09030	0.07658	0.0599900	0.027380
## 263	0.10920	0.12230	0.1466000	0.080870
## 264	0.07991	0.05326	0.0299500	0.020700

## 265	0.11970	0.14960	0.2417000	0.120300
## 266	0.12730	0.19320	0.1859000	0.093530
## 267	0.08054	0.05907	0.0577400	0.010710
## 268	0.09783	0.15310	0.0860600	0.028720
## 269	0.08192	0.05200	0.0171400	0.012610
## 270	0.10270	0.15580	0.2049000	0.088860
## 271	0.08044	0.08895	0.0739000	0.040830
## 272	0.09740	0.24580	0.2065000	0.111800
## 273	0.08045	0.05361	0.0268100	0.032510
## 274	0.09172	0.06829	0.0337200	0.022720
## 275	0.08523	0.14280	0.1114000	0.067720
## 276	0.11420	0.15160	0.3201000	0.159500
## 277	0.09587	0.08345	0.0682400	0.049510
## 278	0.08455	0.10230	0.0925100	0.053020
## 279	0.07431	0.04227	0.0000000	0.000000
## 280	0.08098	0.04878	0.0000000	0.000000
## 281	0.10650	0.21460	0.1684000	0.108000
## 282	0.08511	0.04413	0.0050670	0.005664
## 283	0.08386	0.05794	0.0075100	0.008488
## 284	0.09423	0.06630	0.0470500	0.037310
## 285	0.09726	0.08995	0.0906100	0.065270
## 286	0.08641	0.06698	0.0519200	0.027910
## 287	0.09463	0.13060	0.1115000	0.064620
## 288	0.10370	0.13100	0.1411000	0.094310
## 289	0.10070	0.16060	0.2712000	0.131000
## 290	0.10760	0.13340	0.0801700	0.050740
## 291	0.08123	0.04971	0.0000000	0.000000
## 292	0.08302	0.06374	0.0255600	0.020310
## 293	0.12000	0.12670	0.1385000	0.065260
## 294	0.09231	0.07175	0.0439200	0.020270
## 295	0.10630	0.19540	0.2448000	0.150100
## 296	0.10300	0.21060	0.2310000	0.147100
## 297	0.10460	0.17390	0.2085000	0.132200
## 298	0.09831	0.10270	0.1479000	0.094980
## 299	0.11000	0.09009	0.0378100	0.027980
## 300	0.10260	0.18930	0.2236000	0.091940
## 301	0.08694	0.11850	0.1193000	0.096670



## 302	0.06576	0.05220	0.0247500	0.013740
## 303	0.07515	0.03718	0.0030900	0.006588
## 304	0.11060	0.14690	0.1445000	0.081720
## 305	0.10250	0.12040	0.1147000	0.064620
## 306	0.09159	0.10740	0.1554000	0.083400
## 307	0.10480	0.20870	0.2550000	0.094290
## 308	0.09879	0.08836	0.0329600	0.023900
## 309	0.08138	0.11670	0.0905000	0.035620
## 310	0.10510	0.11920	0.0786000	0.044510
## 311	0.09156	0.13130	0.1523000	0.101500
## 312	0.10080	0.10410	0.1266000	0.083530
## 313	0.09950	0.07957	0.0454800	0.031600
## 314	0.12250	0.07210	0.0592900	0.074040
## 315	0.10410	0.14360	0.0984700	0.061580
## 316	0.07517	0.04726	0.0127100	0.011170
## 317	0.10030	0.13280	0.1980000	0.104300
## 318	0.09509	0.16820	0.1950000	0.123700
## 319	0.09566	0.08194	0.0482400	0.022570
## 320	0.08875	0.07780	0.0460800	0.035280
## 321	0.09514	0.15110	0.1544000	0.048460
## 322	0.09610	0.13360	0.1348000	0.060180
## 323	0.09078	0.13130	0.1465000	0.086830
## 324	0.09768	0.07849	0.0332800	0.020080
## 325	0.07926	0.03393	0.0105300	0.011080
## 326	0.09874	0.10530	0.1335000	0.087950
## 327	0.09070	0.06945	0.0146200	0.018960
## 328	0.11550	0.17520	0.2133000	0.094790
## 329	0.11350	0.07589	0.0313600	0.026450
## 330	0.10690	0.12830	0.2308000	0.141000
## 331	0.09250	0.04102	0.0000000	0.000000
## 332	0.09136	0.07883	0.0179700	0.020900
## 333	0.09594	0.05736	0.0253100	0.016980
## 334	0.07734	0.03212	0.0112300	0.005051
## 335	0.11670	0.13050	0.1539000	0.086240
## 336	0.08182	0.06230	0.0589200	0.031570
## 337	0.07436	0.02650	0.0011940	0.005449
## 338	0.10660	0.14130	0.3130000	0.043750

## 339	0.09116	0.14020	0.1060000	0.060900
## 340	0.10430	0.12990	0.1191000	0.062110
## 341	0.09495	0.08501	0.0550000	0.045280
## 342	0.09029	0.12060	0.1468000	0.082710
## 343	0.11650	0.12830	0.1799000	0.079810
## 344	0.09592	0.13250	0.1548000	0.028540
## 345	0.10080	0.12840	0.1043000	0.056130
## 346	0.10370	0.08404	0.0433400	0.017780
## 347	0.08293	0.07698	0.0472100	0.023810
## 348	0.10920	0.09486	0.0203100	0.018610
## 349	0.09215	0.08597	0.0748600	0.043350
## 350	0.10300	0.09218	0.0544100	0.042740
## 351	0.07966	0.05581	0.0208700	0.026520
## 352	0.09847	0.11570	0.0987500	0.079530
## 353	0.08123	0.05824	0.0619500	0.023430
## 354	0.08759	0.06575	0.0513300	0.018990
## 355	0.11720	0.14790	0.1267000	0.090290
## 356	0.10440	0.07773	0.0217200	0.015040
## 357	0.10890	0.07232	0.0175600	0.019520
## 358	0.08871	0.06900	0.0266900	0.013930
## 359	0.09463	0.10900	0.1127000	0.074000
## 360	0.09240	0.05605	0.0399600	0.012820
## 361	0.08355	0.08348	0.0904200	0.060220
## 362	0.08401	0.10020	0.0993800	0.053640
## 363	0.07699	0.03398	0.0000000	0.000000
## 364	0.09996	0.07542	0.0192300	0.019680
## 365	0.10450	0.07057	0.0249000	0.029410
## 366	0.09984	0.11200	0.0673700	0.025940
## 367	0.11150	0.16650	0.1855000	0.105400
## 368	0.07984	0.04626	0.0154100	0.010430
## 369	0.08597	0.05969	0.0136700	0.008907
## 370	0.10350	0.11880	0.1379000	0.085910
## 371	0.11580	0.10850	0.0592800	0.032790
## 372	0.07721	0.08751	0.0598800	0.021800
## 373	0.08313	0.04202	0.0077560	0.008535
## 374	0.09087	0.07838	0.0291600	0.015270
## 375	0.08583	0.05430	0.0296600	0.022720

## 376	0.07372	0.04043	0.0071730	0.011490
## 377	0.08275	0.07214	0.0410500	0.030270
## 378	0.10420	0.12970	0.0589200	0.028800
## 379	0.09379	0.03872	0.0014870	0.003333
## 380	0.10130	0.07808	0.0432800	0.029290
## 381	0.08684	0.06330	0.0134200	0.022930
## 382	0.10150	0.06797	0.0249500	0.018750
## 383	0.09444	0.09947	0.1204000	0.049380
## 384	0.10400	0.15590	0.1354000	0.077520
## 385	0.10490	0.08499	0.0430200	0.025940
## 386	0.08877	0.08066	0.0435800	0.024380
## 387	0.09401	0.19610	0.2195000	0.108800
## 388	0.10680	0.06678	0.0229700	0.017800
## 389	0.09488	0.08511	0.0862500	0.044890
## 390	0.09427	0.06712	0.0552600	0.045630
## 391	0.09997	0.13140	0.1698000	0.082930
## 392	0.07449	0.03558	0.0000000	0.000000
## 393	0.07685	0.06059	0.0185700	0.017230
## 394	0.10200	0.14530	0.1921000	0.096640
## 395	0.09277	0.07255	0.0175200	0.018800
## 396	0.07026	0.04831	0.0204500	0.008507
## 397	0.10880	0.11680	0.0709700	0.044970
## 398	0.09200	0.10360	0.1122000	0.074830
## 399	0.09797	0.13390	0.1863000	0.110300
## 400	0.10240	0.05301	0.0068290	0.007937
## 401	0.09492	0.08419	0.0233000	0.024160
## 402	0.07115	0.07325	0.0809200	0.028000
## 403	0.09401	0.17190	0.1657000	0.075930
## 404	0.09446	0.10760	0.1527000	0.089410
## 405	0.08284	0.12230	0.1010000	0.028330
## 406	0.09150	0.11310	0.0979900	0.077850
## 407	0.09880	0.14380	0.0665100	0.053970
## 408	0.09373	0.06685	0.0351200	0.026230
## 409	0.11620	0.16490	0.1690000	0.089230
## 410	0.08464	0.04087	0.0165200	0.016670
## 411	0.08760	0.13460	0.1374000	0.039800
## 412	0.06883	0.03813	0.0163300	0.003125

## 413	0.07793	0.05139	0.0225100	0.007875
## 414	0.10510	0.06095	0.0359200	0.026000
## 415	0.07813	0.04340	0.0224500	0.027630
## 416	0.10890	0.14480	0.2256000	0.119400
## 417	0.09639	0.06889	0.0350300	0.028750
## 418	0.09751	0.11390	0.0800700	0.042230
## 419	0.09905	0.16690	0.1641000	0.126500
## 420	0.10910	0.17000	0.1659000	0.074150
## 421	0.10720	0.15990	0.4108000	0.078570
## 422	0.09056	0.07081	0.0525300	0.033340
## 423	0.09754	0.05113	0.0198200	0.017860
## 424	0.16340	0.22390	0.0973000	0.052520
## 425	0.09059	0.08155	0.0618100	0.023610
## 426	0.11220	0.12620	0.1128000	0.068730
## 427	0.11580	0.12060	0.0117100	0.017870
## 428	0.08924	0.07074	0.0334600	0.028770
## 429	0.10030	0.07504	0.0050250	0.011160
## 430	0.13350	0.22840	0.2448000	0.124200
## 431	0.09258	0.07862	0.0528500	0.030850
## 432	0.10680	0.12480	0.1569000	0.094510
## 433	0.09723	0.07165	0.0415100	0.018630
## 434	0.10120	0.13170	0.1491000	0.091830
## 435	0.08915	0.11130	0.0945700	0.036130
## 436	0.09309	0.05306	0.0176500	0.027330
## 437	0.08923	0.05884	0.0802000	0.058430
## 438	0.07941	0.05366	0.0387300	0.023770
## 439	0.09752	0.05272	0.0206100	0.007799
## 440	0.10890	0.11410	0.0684300	0.037380
## 441	0.09579	0.11250	0.0710700	0.029500
## 442	0.09246	0.06747	0.0297400	0.024430
## 443	0.10390	0.15530	0.1700000	0.088150
## 444	0.10710	0.11550	0.0578600	0.052660
## 445	0.09812	0.12980	0.1417000	0.088110
## 446	0.10240	0.06492	0.0295600	0.020760
## 447	0.08043	0.06807	0.0469700	0.023440
## 448	0.07683	0.03892	0.0015460	0.005592
## 449	0.09363	0.11540	0.0663600	0.031420

## 450	0.09898	0.11100	0.1007000	0.064310
## 451	0.10530	0.07722	0.0066430	0.012160
## 452	0.10340	0.13530	0.1085000	0.045620
## 453	0.10100	0.13180	0.1856000	0.102100
## 454	0.06613	0.10640	0.0877700	0.023860
## 455	0.09773	0.08120	0.0255500	0.021790
## 456	0.09970	0.10210	0.0848700	0.055320
## 457	0.12910	0.10470	0.0687700	0.065560
## 458	0.09469	0.11430	0.1367000	0.086460
## 459	0.09138	0.04276	0.0000000	0.000000
## 460	0.06251	0.01938	0.0015950	0.001852
## 461	0.10840	0.19880	0.3635000	0.168900
## 462	0.10180	0.13890	0.1594000	0.087440
## 463	0.07987	0.07079	0.0354600	0.020740
## 464	0.08817	0.06718	0.0105500	0.009937
## 465	0.11860	0.22760	0.2229000	0.140100
## 466	0.10540	0.13160	0.0774100	0.027990
## 467	0.08511	0.05251	0.0014610	0.003261
## 468	0.08947	0.12320	0.1090000	0.062540
## 469	0.10610	0.11110	0.0672600	0.039650
## 470	0.08458	0.05895	0.0353400	0.029440
## 471	0.08749	0.06601	0.0311200	0.028640
## 472	0.08421	0.05352	0.0194700	0.019390
## 473	0.08983	0.03766	0.0256200	0.029230
## 474	0.08420	0.11300	0.1145000	0.066370
## 475	0.08752	0.06000	0.0236700	0.023770
## 476	0.09746	0.11170	0.1130000	0.079500
## 477	0.06935	0.10730	0.0794300	0.029780
## 478	0.09684	0.11750	0.1572000	0.115500
## 479	0.08992	0.09823	0.0594000	0.048190
## 480	0.11620	0.16810	0.1357000	0.067590
## 481	0.11010	0.10990	0.0884200	0.057780
## 482	0.09752	0.11410	0.0938800	0.058390
## 483	0.10640	0.18870	0.2319000	0.124400
## 484	0.09699	0.12940	0.1307000	0.037160
## 485	0.07561	0.03630	0.0083060	0.011620
## 486	0.12430	0.23640	0.2914000	0.124200

## 487	0.08946	0.06258	0.0294800	0.015140
## 488	0.13260	0.27680	0.4264000	0.182300
## 489	0.07335	0.05275	0.0180000	0.012560
## 490	0.12160	0.21540	0.1689000	0.063670
## 491	0.10010	0.12890	0.1170000	0.077620
## 492	0.11780	0.27700	0.3514000	0.152000
## 493	0.12570	0.15550	0.2032000	0.109700
## 494	0.09687	0.09752	0.0526300	0.027880
## 495	0.12430	0.08963	0.0300000	0.009259
## 496	0.12180	0.16610	0.0482500	0.053030
## 497	0.10050	0.09697	0.0615400	0.030290
## 498	0.09714	0.10470	0.0825900	0.052520
## 499	0.09260	0.20630	0.1784000	0.114400
## 500	0.10630	0.16390	0.1751000	0.083990
## 501	0.07497	0.07112	0.0364900	0.023070
## 502	0.08206	0.06669	0.0329900	0.033230
## 503	0.11700	0.20220	0.1722000	0.102800
## 504	0.09073	0.16600	0.2280000	0.059410
## 505	0.11750	0.14830	0.1020000	0.055640
## 506	0.07780	0.03574	0.0049670	0.006434
## 507	0.06429	0.02675	0.0072500	0.006250
## 508	0.08472	0.05016	0.0341600	0.025410
## 509	0.10990	0.22360	0.3174000	0.147400
## 510	0.11200	0.15710	0.1522000	0.084810
## 511	0.10750	0.12700	0.0456800	0.031100
## 512	0.08855	0.07027	0.0569900	0.047440
## 513	0.11090	0.15160	0.1218000	0.051820
## 514	0.09646	0.08711	0.0388800	0.025630
## 515	0.09742	0.14970	0.1811000	0.087730
## 516	0.10880	0.17990	0.1695000	0.068610
## 517	0.08474	0.07864	0.0869000	0.070170
## 518	0.10960	0.15990	0.1974000	0.127900
## 519	0.11480	0.14850	0.1772000	0.106000
## 520	0.10020	0.14830	0.0870500	0.051020
## 521	0.09816	0.10130	0.0633500	0.022180
## 522	0.09965	0.10580	0.0800500	0.038210
## 523	0.08320	0.04605	0.0468600	0.027390

## 524	0.05263	0.04362	0.0000000	0.0000000
## 525	0.11700	0.07568	0.0000000	0.0000000
## 526	0.09425	0.06219	0.0390000	0.016150
## 527	0.07903	0.07529	0.0543800	0.020360
## 528	0.08402	0.06722	0.0729300	0.055960
## 529	0.08713	0.05008	0.0239900	0.021730
## 530	0.08311	0.05428	0.0147900	0.005769
## 531	0.08605	0.10110	0.0657400	0.037910
## 532	0.08668	0.11990	0.0925200	0.013640
## 533	0.07896	0.04522	0.0140200	0.018350
## 534	0.09831	0.15560	0.1793000	0.088660
## 535	0.10150	0.15890	0.2545000	0.114900
## 536	0.09040	0.08269	0.0583500	0.030780
## 537	0.09524	0.05473	0.0303600	0.022780
## 538	0.08814	0.05253	0.0158300	0.011480
## 539	0.09578	0.10180	0.0368800	0.023690
## 540	0.08983	0.07525	0.0419600	0.033500
## 541	0.08772	0.07304	0.0695000	0.053900
## 542	0.13710	0.12250	0.0333200	0.024210
## 543	0.08393	0.04216	0.0018600	0.002924
## 544	0.11700	0.18750	0.2565000	0.150400
## 545	0.12860	0.34540	0.3754000	0.160400
## 546	0.10050	0.07943	0.0615500	0.033700
## 547	0.09462	0.12430	0.0926300	0.023080
## 548	0.09676	0.07952	0.0268800	0.017810
## 549	0.09929	0.11260	0.0446200	0.043040
## 550	0.10310	0.09092	0.0659200	0.027490
## 551	0.07551	0.08316	0.0612600	0.018670
## 552	0.07274	0.06064	0.0450500	0.014710
## 553	0.11860	0.23960	0.2273000	0.085430
## 554	0.10730	0.09713	0.0528200	0.044400
## 555	0.08791	0.05205	0.0277200	0.020680
## 556	0.11670	0.20870	0.2810000	0.156200
## 557	0.09345	0.05991	0.0263800	0.020690
## 558	0.10310	0.18360	0.1450000	0.063000
## 559	0.10060	0.05743	0.0236300	0.025830
## 560	0.09179	0.08890	0.0406900	0.022600

## 561	0.09823	0.10980	0.1319000	0.055980		
## 562	0.08673	0.06545	0.0199400	0.016920		
## 563	0.06995	0.05223	0.0347600	0.017370		
## 564	0.11340	0.08834	0.0380000	0.034000		
## 565	0.07466	0.05994	0.0485900	0.028700		
## 566	0.09882	0.09159	0.0358100	0.020370		
## 567	0.09057	0.10520	0.0537500	0.032630		
## 568	0.10990	0.09242	0.0689500	0.064950		
## 569	0.10010	0.15150	0.1932000	0.125500		
##	symmetry_mean	dimension_mean	radius_se	texture_se	perimeter_se	area_se
## 1	0.1959	0.05955	0.2360	0.6656	1.6700	17.430
## 2	0.1922	0.06491	0.4505	1.1970	3.4300	27.100
## 3	0.1714	0.06340	0.1967	1.3870	1.3420	13.540
## 4	0.1771	0.06072	0.3384	1.3430	1.8510	26.330
## 5	0.1721	0.05544	0.1783	0.4125	1.3380	17.720
## 6	0.2031	0.06267	0.2864	1.4400	2.2060	20.300
## 7	0.1388	0.06570	0.2388	2.9040	1.9360	16.970
## 8	0.2251	0.07421	0.5648	1.9300	3.9090	52.720
## 9	0.2217	0.06481	0.3550	1.5340	2.3020	23.130
## 10	0.1776	0.06907	0.1601	0.8225	1.3550	10.800
## 11	0.1848	0.06222	0.5904	1.2160	4.2060	75.090
## 12	0.1970	0.06228	0.2200	0.9823	1.4840	16.510
## 13	0.1562	0.06020	0.3152	0.7884	2.3120	27.400
## 14	0.1819	0.05501	0.4040	1.2140	2.5950	32.960
## 15	0.1663	0.05391	0.4674	1.3750	2.9160	56.180
## 16	0.1454	0.06147	0.2254	1.1080	2.2240	19.540
## 17	0.1816	0.05723	0.3117	0.8155	1.9720	27.940
## 18	0.1707	0.05984	0.2100	0.9505	1.5660	17.610
## 19	0.2249	0.07469	1.0720	1.7430	7.8040	130.800
## 20	0.1880	0.06471	0.2005	0.8163	1.9730	15.240
## 21	0.1516	0.06095	0.2451	0.7655	1.7420	17.860
## 22	0.2131	0.07405	0.2957	1.9780	2.1580	20.950
## 23	0.1486	0.06615	0.3796	1.7430	3.0180	25.780
## 24	0.2001	0.06467	0.4309	1.0680	2.7960	39.840
## 25	0.1922	0.07782	0.3336	1.8600	2.0410	19.910
## 26	0.1662	0.06566	0.2787	0.6205	1.9570	23.350
## 27	0.1638	0.05710	0.2950	1.3730	2.0990	25.220



## 28	0.1926	0.06540	0.4390	1.0120	3.4980	43.500
## 29	0.2036	0.07125	0.1844	0.9429	1.4290	12.070
## 30	0.1650	0.05701	0.1584	0.6124	1.0360	13.220
## 31	0.1453	0.05518	0.3975	0.8285	2.5670	33.010
## 32	0.1585	0.06065	0.2367	1.3800	1.4570	19.870
## 33	0.1696	0.07369	0.9289	1.4650	5.8010	104.900
## 34	0.1966	0.05597	0.3342	1.7810	2.0790	25.790
## 35	0.1739	0.05640	0.4165	0.6237	2.5610	37.110
## 36	0.1792	0.05897	0.1402	0.5417	1.1010	11.350
## 37	0.1582	0.05461	0.7888	0.7975	5.4860	96.050
## 38	0.1995	0.07839	0.3962	0.6538	3.0210	25.030
## 39	0.1893	0.05534	0.5990	1.3910	4.1290	67.340
## 40	0.1876	0.06684	0.2873	0.9173	2.4640	28.090
## 41	0.1814	0.05572	0.3977	1.0330	2.5870	52.340
## 42	0.2027	0.06082	0.7364	1.0480	4.7920	97.070
## 43	0.2597	0.09744	0.4956	1.1560	3.4450	27.230
## 44	0.1652	0.07238	0.1814	0.6412	0.9219	14.410
## 45	0.1813	0.05536	0.1555	0.5762	1.3920	14.030
## 46	0.1770	0.05340	0.6362	1.3050	4.3120	76.360
## 47	0.1511	0.06148	0.1415	0.9671	0.9680	9.704
## 48	0.1956	0.06121	0.9948	0.8509	7.2220	153.100
## 49	0.1806	0.06079	0.2136	1.3320	1.5130	19.290
## 50	0.1781	0.06249	0.3642	1.0400	2.5790	28.320
## 51	0.2106	0.06916	0.2563	1.1940	1.9330	22.690
## 52	0.1881	0.05907	0.2318	0.4966	2.2760	19.880
## 53	0.1847	0.06019	0.3438	1.1400	2.2250	25.060
## 54	0.1342	0.06129	0.3354	2.3240	2.1050	29.960
## 55	0.2200	0.06229	0.5539	1.5600	4.6670	83.160
## 56	0.1942	0.06902	0.2860	1.0160	1.5350	12.960
## 57	0.1499	0.06758	0.1924	0.6417	1.3450	13.040
## 58	0.1703	0.06048	0.4245	1.2680	2.6800	26.430
## 59	0.2655	0.06877	1.5090	3.1200	9.8070	233.000
## 60	0.1893	0.05892	0.4709	0.9951	2.9030	53.160
## 61	0.2310	0.06343	0.9811	1.6660	8.8300	104.900
## 62	0.1538	0.06365	1.0880	1.4100	7.3370	122.300
## 63	0.1308	0.05866	0.5296	1.6670	3.7670	58.530
## 64	0.1784	0.05587	0.2385	0.8265	1.5720	20.530

## 65	0.2521	0.07032	0.4388	0.7096	3.3840	44.910
## 66	0.1551	0.06761	0.2949	1.6560	1.9550	21.550
## 67	0.1496	0.05674	0.2927	0.8907	2.0440	24.680
## 68	0.1632	0.05255	0.3160	0.9115	1.9540	28.900
## 69	0.2110	0.05853	0.2479	0.9195	1.8300	19.410
## 70	0.1859	0.06461	0.2067	0.8745	1.3930	15.340
## 71	0.1720	0.06419	0.2130	0.5914	1.5450	18.520
## 72	0.1890	0.06331	0.2619	2.0150	1.7780	16.850
## 73	0.2330	0.08743	0.4653	1.9110	3.7690	24.200
## 74	0.1220	0.05243	0.4834	1.0460	3.1630	50.950
## 75	0.1844	0.05268	0.4789	2.0600	3.4790	46.610
## 76	0.1930	0.06404	0.2978	1.5020	2.2030	20.950
## 77	0.1621	0.05425	0.2577	0.4757	1.8170	28.920
## 78	0.1516	0.05667	0.2727	0.9429	1.8310	18.150
## 79	0.1601	0.06140	0.3265	0.6594	2.3460	25.180
## 80	0.1992	0.06069	0.4537	0.8733	3.0610	49.810
## 81	0.1780	0.05650	0.2713	1.2170	1.8930	24.280
## 82	0.1667	0.05474	0.2382	0.8355	1.6870	18.320
## 83	0.1815	0.05696	0.2621	1.5390	2.0280	20.980
## 84	0.2116	0.06346	0.5115	0.7372	3.8140	42.760
## 85	0.2018	0.06914	0.2562	0.9858	1.8090	16.040
## 86	0.1337	0.05581	0.1532	0.4690	1.1150	12.680
## 87	0.1689	0.05808	0.1166	0.4957	0.7714	8.955
## 88	0.1375	0.06016	0.3408	1.9240	2.2870	28.930
## 89	0.1769	0.05278	0.6917	1.1270	4.3030	93.990
## 90	0.1714	0.06843	0.3191	1.2490	2.2840	26.450
## 91	0.1466	0.06133	0.2889	0.9899	1.7780	21.790
## 92	0.1526	0.06046	0.1532	0.7810	1.2530	11.910
## 93	0.1547	0.05443	0.2298	0.9988	1.5340	22.180
## 94	0.1667	0.05449	0.2621	1.2320	1.6570	21.190
## 95	0.2384	0.07542	0.2860	2.1100	2.1120	31.720
## 96	0.1782	0.05976	0.3371	0.7476	2.6290	33.270
## 97	0.1874	0.05899	0.2357	1.2990	2.3970	20.210
## 98	0.1875	0.05715	0.2070	1.2380	1.2340	13.880
## 99	0.1910	0.06908	0.2467	1.2170	1.6410	15.050
## 100	0.1829	0.06782	0.8973	1.4740	7.3820	120.000
## 101	0.1668	0.06862	0.3198	1.4890	2.2300	20.740

## 102	0.1653	0.06447	0.3539	4.8850	2.2300	21.690
## 103	0.1769	0.06270	0.1904	0.5293	1.1640	13.170
## 104	0.1586	0.05922	0.4727	1.2400	3.1950	45.400
## 105	0.1487	0.05635	0.1630	1.6010	0.8730	13.560
## 106	0.1779	0.06574	0.2034	1.1660	1.5670	14.340
## 107	0.1533	0.06184	0.3602	1.4780	3.2120	27.490
## 108	0.2124	0.06894	0.1811	0.7959	0.9857	12.580
## 109	0.1976	0.06328	0.5196	1.9180	3.5640	33.000
## 110	0.1615	0.06144	0.2865	1.6780	1.9680	18.990
## 111	0.1801	0.06520	0.3060	1.6570	2.1550	20.620
## 112	0.2222	0.08261	0.1935	1.9620	1.2430	10.210
## 113	0.1966	0.06213	0.7128	1.5810	4.8950	90.470
## 114	0.2069	0.07682	0.2121	1.1690	2.0610	19.210
## 115	0.1495	0.05888	0.4062	1.2100	2.6350	28.470
## 116	0.1467	0.05407	0.5100	1.6790	3.2830	58.380
## 117	0.1950	0.06466	0.2092	0.6509	1.4460	19.420
## 118	0.1929	0.06744	0.6470	1.3310	4.6750	66.910
## 119	0.2094	0.05581	0.9553	1.1860	6.4870	124.400
## 120	0.2035	0.06501	0.3106	1.5100	2.5900	21.570
## 121	0.1614	0.05890	0.2185	0.8561	1.4950	17.910
## 122	0.1765	0.05024	0.8601	1.4800	7.0290	111.700
## 123	0.1935	0.05878	0.2512	1.7860	1.9610	18.210
## 124	0.1717	0.05054	1.2070	1.0510	7.7330	224.100
## 125	0.1634	0.06372	0.1707	0.7615	1.0900	12.250
## 126	0.1411	0.06243	0.3278	1.0590	2.4750	22.930
## 127	0.1925	0.07692	0.3908	0.9238	2.4100	34.660
## 128	0.1627	0.05416	0.4157	1.6270	2.9140	33.010
## 129	0.1946	0.05044	0.6896	1.3420	5.2160	81.230
## 130	0.1926	0.05982	0.2027	1.8510	1.8950	18.540
## 131	0.2041	0.06898	0.2530	0.8749	3.4660	24.190
## 132	0.1848	0.06181	0.2244	0.8950	1.8040	19.360
## 133	0.1628	0.05781	0.2351	1.5970	1.5390	17.850
## 134	0.1726	0.05623	1.1760	1.2560	7.6730	158.700
## 135	0.1954	0.07976	0.1779	1.0300	1.3180	12.300
## 136	0.1995	0.06330	0.8068	0.9017	5.4550	102.600
## 137	0.1985	0.07098	0.5169	2.0790	3.1670	28.850
## 138	0.1590	0.05907	0.1822	0.7285	1.1710	13.250

## 139	0.1727	0.06071	0.8161	2.1290	6.0760	87.170
## 140	0.1868	0.06110	0.2273	0.6329	1.5200	17.470
## 141	0.1697	0.05699	0.8529	1.8490	5.6320	93.540
## 142	0.2419	0.07871	1.0950	0.9053	8.5890	153.400
## 143	0.1752	0.05533	0.7655	2.4630	5.2030	99.040
## 144	0.1949	0.07292	0.7036	1.2680	5.3730	60.780
## 145	0.2252	0.06924	0.2545	0.9832	2.1100	21.050
## 146	0.1718	0.05780	0.1859	1.9260	1.0110	14.470
## 147	0.1842	0.06082	0.5058	0.9849	3.5640	54.160
## 148	0.1495	0.05593	0.3389	1.4390	2.3440	33.580
## 149	0.1472	0.05561	0.3778	2.2000	2.4870	31.160
## 150	0.1602	0.06066	0.1199	0.8944	0.8484	9.227
## 151	0.1215	0.05673	0.1716	0.7151	1.0470	12.690
## 152	0.2538	0.07029	0.6965	1.7470	4.6070	43.520
## 153	0.1778	0.06235	0.2143	0.7712	1.6890	16.640
## 154	0.1885	0.06201	0.2104	0.9670	1.3560	12.970
## 155	0.1714	0.07192	0.8811	1.7700	4.3600	77.110
## 156	0.1506	0.06959	0.5079	1.2470	3.2670	30.480
## 157	0.1573	0.05520	0.2580	1.1660	1.6830	22.220
## 158	0.1895	0.06870	0.2366	1.4280	1.8220	16.970
## 159	0.2372	0.05768	0.1818	2.5420	1.2770	13.120
## 160	0.1809	0.05718	0.2338	1.3530	1.7350	20.200
## 161	0.1386	0.05318	0.4057	1.1530	2.7010	36.350
## 162	0.2595	0.06233	0.4866	1.9050	2.8770	34.680
## 163	0.1424	0.05883	0.2543	1.3630	1.7370	20.740
## 164	0.1788	0.06833	0.1746	1.3050	1.1440	9.789
## 165	0.1505	0.05484	1.2910	0.7452	9.6350	180.200
## 166	0.1800	0.05770	0.8361	1.4810	5.8200	128.700
## 167	0.2075	0.05448	0.5220	0.8121	3.7630	48.290
## 168	0.2108	0.05464	0.8348	1.6330	6.1460	90.940
## 169	0.1822	0.06207	0.2710	0.7927	1.8190	22.790
## 170	0.1473	0.05580	0.2500	0.7574	1.5730	21.470
## 171	0.2128	0.06777	0.2871	0.8937	1.8970	24.250
## 172	0.1669	0.06544	0.2208	0.9533	1.6020	18.850
## 173	0.2196	0.07451	0.5835	1.3770	3.8560	50.960
## 174	0.1635	0.05859	0.3380	1.9160	2.5910	26.760
## 175	0.1598	0.05671	0.4697	1.1470	3.1420	43.400

## 176	0.1718	0.05997	0.2655	1.0950	1.7780	20.350
## 177	0.1917	0.05961	0.7275	1.1930	4.8370	102.500
## 178	0.1535	0.06214	0.1855	0.6881	1.2630	12.980
## 179	0.1907	0.06049	0.6289	0.6633	4.2930	71.560
## 180	0.1739	0.05677	0.1924	1.5710	1.1830	14.680
## 181	0.1979	0.06013	0.3534	1.3260	2.3080	27.240
## 182	0.1798	0.05391	0.7474	1.0160	5.0290	79.250
## 183	0.1592	0.05912	0.2191	0.6946	1.4790	17.740
## 184	0.1594	0.05986	0.2711	0.3621	1.9740	26.440
## 185	0.1940	0.06028	0.2976	1.9660	1.9590	19.620
## 186	0.1449	0.06031	0.1753	1.0270	1.2670	11.090
## 187	0.2131	0.06325	0.2959	0.6790	2.1530	31.980
## 188	0.1692	0.05727	0.5959	1.2020	3.7660	68.350
## 189	0.1928	0.05096	0.5925	0.6863	3.8680	74.850
## 190	0.2081	0.06312	0.2684	1.4090	1.7500	16.390
## 191	0.1861	0.06248	0.7049	1.3320	4.5330	74.080
## 192	0.1601	0.05541	0.2522	1.0450	1.6490	18.950
## 193	0.1687	0.05669	0.2446	0.4334	1.8260	23.310
## 194	0.2303	0.07077	0.3700	1.0330	2.8790	32.550
## 195	0.1618	0.05549	0.3699	1.1500	2.4060	40.980
## 196	0.1634	0.07224	0.5190	2.9100	5.8010	67.100
## 197	0.1647	0.06464	0.6534	1.5060	4.1740	63.370
## 198	0.1685	0.05866	0.3721	1.1110	2.2790	33.760
## 199	0.1723	0.06317	0.1998	0.6068	1.4430	16.070
## 200	0.1646	0.06154	0.2666	0.8309	2.0970	19.960
## 201	0.1565	0.05504	1.2140	2.1880	8.0770	106.000
## 202	0.2016	0.05977	0.3077	1.6210	2.2400	20.200
## 203	0.1944	0.05913	0.3186	1.3360	2.3100	28.510
## 204	0.1735	0.07070	0.3424	1.8030	2.7110	20.480
## 205	0.2009	0.06506	0.3446	0.7395	2.3550	24.530
## 206	0.1807	0.07083	0.3331	1.9610	2.9370	32.520
## 207	0.1516	0.05859	0.1816	0.7656	1.3030	12.890
## 208	0.1619	0.06287	0.6450	2.1050	4.1380	49.110
## 209	0.1365	0.05335	0.2244	0.6864	1.5090	20.390
## 210	0.2395	0.07398	0.6298	0.7629	4.4140	81.460
## 211	0.1432	0.05935	0.2913	1.3890	2.3470	23.290
## 212	0.2027	0.06758	0.4226	1.1500	2.7350	40.090

## 213	0.1927	0.06487	0.5907	1.0410	3.7050	69.470
## 214	0.1617	0.05594	0.1833	0.5308	1.5920	15.260
## 215	0.1861	0.06837	0.1482	0.5380	1.3010	9.597
## 216	0.2743	0.06960	0.5158	1.4410	3.3120	34.620
## 217	0.2120	0.06623	0.3834	1.0030	2.4950	28.620
## 218	0.1506	0.06009	0.3478	1.0180	2.7490	31.010
## 219	0.2087	0.07613	0.3345	0.8902	2.2170	27.190
## 220	0.1801	0.05553	0.6642	0.8561	4.6030	97.850
## 221	0.1638	0.06100	0.1807	0.6931	1.3400	13.380
## 222	0.1583	0.06275	0.2253	0.6457	1.5270	17.370
## 223	0.1792	0.06552	1.1110	1.1610	7.2370	133.000
## 224	0.1842	0.07005	0.3251	2.1740	2.0770	24.620
## 225	0.1928	0.05975	0.3309	1.9250	2.1550	21.980
## 226	0.2163	0.07359	0.3368	2.7770	2.2220	17.810
## 227	0.2057	0.09575	0.2744	1.3900	1.7870	17.670
## 228	0.1724	0.06053	0.4331	1.0010	3.0080	52.490
## 229	0.1506	0.05491	0.3971	0.8282	3.0880	40.730
## 230	0.1773	0.06081	0.2144	0.9961	1.5290	15.070
## 231	0.1799	0.06166	0.3135	2.4260	2.1500	23.130
## 232	0.1571	0.05708	0.3833	0.9078	2.6020	30.150
## 233	0.1704	0.07769	0.3628	1.4900	3.3990	29.250
## 234	0.1948	0.06277	0.4375	1.2320	3.2700	44.410
## 235	0.1539	0.05637	0.2409	1.3670	1.4770	18.760
## 236	0.1853	0.06401	0.3713	1.1540	2.5540	27.570
## 237	0.1737	0.06672	0.2796	0.9622	3.5910	25.200
## 238	0.1678	0.07126	0.1267	0.6793	1.0690	7.254
## 239	0.1897	0.06329	0.2497	1.4930	1.4970	16.640
## 240	0.1737	0.06440	0.3719	2.6120	2.5170	23.220
## 241	0.1908	0.06130	0.4250	0.8098	2.5630	35.740
## 242	0.1649	0.07633	0.1665	0.5864	1.3540	8.966
## 243	0.1274	0.06724	0.1186	1.1820	1.1740	6.802
## 244	0.1564	0.05307	0.4007	1.3170	2.5770	44.410
## 245	0.1733	0.06697	0.7661	0.7800	4.1150	92.810
## 246	0.1580	0.06235	0.2957	1.3630	2.0540	18.240
## 247	0.1630	0.06439	0.1851	1.3410	1.1840	11.600
## 248	0.1872	0.06341	0.2542	1.0790	2.6150	23.110
## 249	0.1769	0.06503	0.1563	0.9567	1.0940	8.205

## 250	0.1615	0.06104	0.1912	1.7050	1.5160	13.860
## 251	0.1668	0.06869	0.3720	0.8423	2.3040	34.840
## 252	0.2495	0.08104	1.2920	2.4540	10.1200	138.500
## 253	0.1810	0.07252	0.3305	1.0670	2.5690	22.970
## 254	0.2113	0.07115	0.4030	0.7747	3.1230	41.510
## 255	0.1976	0.06457	0.5461	2.6350	4.0910	44.740
## 256	0.2025	0.06601	0.4302	2.8780	2.7590	25.170
## 257	0.1473	0.05746	0.2535	1.3540	1.9940	23.040
## 258	0.1601	0.05913	0.1916	1.5550	1.3590	13.660
## 259	0.1590	0.05653	0.2368	0.8732	1.4710	18.330
## 260	0.1885	0.05766	0.2699	0.7886	2.0580	23.560
## 261	0.1937	0.06161	0.2841	1.6520	1.8690	22.220
## 262	0.1593	0.06127	0.2199	2.2390	1.4370	14.460
## 263	0.1931	0.05796	0.4743	0.7859	3.0940	48.310
## 264	0.1579	0.05594	0.3316	0.9264	2.0560	28.410
## 265	0.2248	0.06382	0.6009	1.3980	3.9990	67.780
## 266	0.2350	0.07389	0.3063	1.0020	2.4060	24.320
## 267	0.1964	0.06315	0.3567	1.9220	2.7470	22.790
## 268	0.1902	0.08980	0.5262	0.8522	3.1680	25.440
## 269	0.1544	0.05976	0.2239	1.1390	1.5770	18.040
## 270	0.1978	0.06000	0.5243	1.8020	4.0370	60.410
## 271	0.1574	0.05750	0.3639	1.2650	2.6680	30.570
## 272	0.2397	0.07800	0.9555	3.5680	11.0700	116.200
## 273	0.1641	0.05764	0.1504	1.6850	1.2370	12.670
## 274	0.1720	0.05914	0.2505	1.0250	1.7400	19.680
## 275	0.1767	0.05529	0.4357	1.0730	3.8330	54.220
## 276	0.1648	0.05525	2.8730	1.4760	21.9800	525.600
## 277	0.1487	0.05748	0.2323	1.6360	1.5960	21.840
## 278	0.1590	0.05648	0.4564	1.0750	3.4250	48.550
## 279	0.1661	0.05948	0.3163	1.3040	2.1150	20.670
## 280	0.1870	0.07285	0.3777	1.4620	2.4920	19.140
## 281	0.2152	0.06673	0.9806	0.5505	6.3110	134.800
## 282	0.1637	0.06343	0.1344	1.0830	0.9812	9.332
## 283	0.1555	0.06048	0.2430	1.1520	1.5590	18.020
## 284	0.1717	0.05660	0.3242	0.6612	1.9960	27.190
## 285	0.1867	0.05580	0.4203	0.7383	2.8190	45.420
## 286	0.1409	0.05355	0.2204	1.0060	1.4710	19.980

## 287	0.2235	0.06433	0.4207	1.8450	3.5340	31.000
## 288	0.1802	0.06188	0.5079	0.8737	3.6540	59.700
## 289	0.2205	0.05898	1.0040	0.8208	6.3720	137.900
## 290	0.1641	0.06854	0.2324	0.6332	1.6960	18.400
## 291	0.1742	0.06059	0.5375	2.9270	3.6180	29.110
## 292	0.1872	0.05669	0.1705	0.5066	1.3720	14.000
## 293	0.1834	0.06877	0.6191	2.1120	4.9060	49.700
## 294	0.1695	0.05916	0.2527	0.7786	1.8740	18.570
## 295	0.1824	0.06140	1.0080	0.6999	7.5610	130.200
## 296	0.1991	0.06739	0.9915	0.9004	7.0500	139.900
## 297	0.2127	0.06251	0.6986	0.9901	4.7060	87.780
## 298	0.1582	0.05395	0.7582	1.0170	5.8650	112.400
## 299	0.1657	0.06608	0.2513	0.5040	1.7140	18.540
## 300	0.2151	0.06578	0.3147	0.9857	3.0700	33.120
## 301	0.1741	0.05176	1.0000	0.6336	6.9710	119.300
## 302	0.1635	0.05586	0.2300	0.6690	1.6610	20.560
## 303	0.1442	0.05743	0.2818	0.7614	1.8080	18.540
## 304	0.2116	0.07325	0.3906	0.9306	3.0930	33.670
## 305	0.1935	0.06303	0.3473	0.9209	2.2440	32.190
## 306	0.1448	0.05592	0.5240	1.1890	3.7670	70.010
## 307	0.2128	0.07152	0.2602	1.2050	2.3620	22.650
## 308	0.1735	0.06200	0.1458	0.9050	0.9975	11.360
## 309	0.1744	0.06493	0.4220	1.9090	3.2710	39.430
## 310	0.1962	0.06303	0.2569	0.4981	2.0110	21.030
## 311	0.2166	0.05419	0.8336	1.7360	5.1680	100.400
## 312	0.1813	0.05613	0.3093	0.8568	2.1930	33.630
## 313	0.1732	0.06088	0.2431	0.9462	1.5640	20.640
## 314	0.2015	0.05875	0.6412	2.2930	4.0210	48.840
## 315	0.1974	0.06782	0.3704	0.8249	2.4270	31.330
## 316	0.1421	0.05763	0.1689	1.1500	1.4000	14.910
## 317	0.1809	0.05883	0.7572	0.7813	5.4380	94.440
## 318	0.1909	0.06309	1.0580	0.9635	7.2470	155.800
## 319	0.2030	0.06552	0.2800	1.4670	1.9940	17.850
## 320	0.1521	0.05912	0.3428	0.3981	2.5370	29.060
## 321	0.2082	0.07325	0.3921	1.2070	5.0040	30.190
## 322	0.1896	0.05656	0.4615	0.9197	3.0080	45.190
## 323	0.2095	0.05649	0.7576	1.5090	4.5540	87.870



## 324	0.1688	0.06194	0.3118	0.9227	2.0000	24.790
## 325	0.1546	0.05754	0.1153	0.6745	0.7570	9.006
## 326	0.2132	0.06022	0.6997	1.4750	4.7820	80.600
## 327	0.1517	0.05835	0.2589	1.5030	1.6670	22.070
## 328	0.2096	0.07331	0.5520	1.0720	3.5980	58.630
## 329	0.2540	0.06087	0.4202	1.3220	2.8730	34.780
## 330	0.1797	0.05506	1.0090	0.9245	6.4620	164.100
## 331	0.1903	0.06422	0.1988	0.4960	1.2180	12.260
## 332	0.1861	0.06347	0.3665	0.7693	2.5970	26.500
## 333	0.1381	0.06400	0.1728	0.4064	1.1260	11.480
## 334	0.1673	0.05649	0.2113	0.5996	1.4380	15.820
## 335	0.1957	0.06216	1.2960	1.4520	8.4190	101.900
## 336	0.1359	0.05526	0.2134	0.3628	1.5250	20.000
## 337	0.1528	0.05185	0.3511	0.9527	2.3290	28.300
## 338	0.2111	0.08046	0.3274	1.1940	1.8850	17.670
## 339	0.1953	0.06083	0.6422	1.5300	4.3690	88.250
## 340	0.1784	0.06259	0.1630	0.3871	1.1430	13.870
## 341	0.1735	0.05875	0.2387	0.6372	1.7290	21.830
## 342	0.1953	0.05629	0.5495	0.6636	3.0550	57.650
## 343	0.1869	0.06532	0.5706	1.4570	2.9610	57.720
## 344	0.2054	0.07669	0.2428	1.6420	2.3690	16.390
## 345	0.2160	0.05891	0.4332	1.2650	2.8440	43.680
## 346	0.1584	0.07065	0.4030	1.4240	2.7470	22.870
## 347	0.1930	0.06621	0.5381	1.2000	4.2770	30.180
## 348	0.1645	0.06562	0.2843	1.9080	1.9370	21.380
## 349	0.1561	0.05915	0.3860	1.1980	2.6300	38.490
## 350	0.1820	0.06850	0.2623	1.2040	1.8650	19.390
## 351	0.1589	0.05586	0.2142	0.6549	1.6060	19.250
## 352	0.1739	0.06149	0.6003	0.8225	4.6550	61.100
## 353	0.1566	0.05708	0.2116	1.3600	1.5020	16.830
## 354	0.1487	0.06529	0.2344	0.9861	1.5970	16.410
## 355	0.1953	0.06654	0.3577	1.2810	2.4500	35.240
## 356	0.1717	0.06899	0.2351	2.0110	1.6600	14.200
## 357	0.1934	0.06285	0.2137	1.3420	1.5170	12.330
## 358	0.1533	0.06057	0.2222	0.8652	1.4440	17.120
## 359	0.1794	0.05742	0.4467	0.7732	3.1800	53.910
## 360	0.1692	0.06576	0.3013	1.8790	2.1210	17.860

## 361	0.1467	0.05177	0.6874	1.0410	5.1440	83.500
## 362	0.1847	0.05338	0.4033	1.0780	2.9030	36.580
## 363	0.1701	0.05960	0.4455	3.6470	2.8840	35.130
## 364	0.1800	0.06569	0.1911	0.5477	1.3480	11.880
## 365	0.1900	0.06635	0.3661	1.5110	2.4100	24.440
## 366	0.1818	0.06782	0.2784	1.7680	1.6280	20.860
## 367	0.1971	0.06166	0.8113	1.4000	5.5400	93.910
## 368	0.1621	0.05952	0.1781	1.6870	1.2430	11.280
## 369	0.1833	0.06100	0.1312	0.3602	1.1070	9.438
## 370	0.1776	0.05647	0.5959	0.6342	3.7970	71.000
## 371	0.1943	0.06612	0.2577	1.0950	1.5660	18.490
## 372	0.2341	0.06963	0.4098	2.2650	2.6080	23.520
## 373	0.1539	0.05945	0.1840	1.5320	1.1990	13.240
## 374	0.1464	0.06284	0.2194	1.1900	1.6780	16.260
## 375	0.1799	0.05826	0.1692	0.6674	1.1160	13.320
## 376	0.1613	0.06013	0.3276	1.4860	2.1080	24.600
## 377	0.1840	0.05680	0.3031	1.3850	2.1770	27.410
## 378	0.1779	0.06588	0.2608	0.8730	2.1170	19.200
## 379	0.1954	0.05821	0.2375	1.2800	1.5650	17.090
## 380	0.1883	0.06168	0.2562	1.0380	1.6860	18.620
## 381	0.1555	0.05673	0.3419	1.6780	2.3310	29.630
## 382	0.1695	0.06556	0.2868	1.1430	2.2890	20.560
## 383	0.2075	0.05636	0.4204	2.2200	3.3010	38.870
## 384	0.1998	0.06515	0.3340	0.6857	2.1830	35.030
## 385	0.1927	0.06211	0.2430	1.0100	1.4910	18.190
## 386	0.1669	0.06714	0.1144	1.0230	0.9887	7.326
## 387	0.1721	0.06194	1.1670	1.3520	8.8670	156.800
## 388	0.1482	0.06600	0.1485	1.5630	1.0350	10.080
## 389	0.1609	0.05871	0.4565	1.2900	2.8610	43.140
## 390	0.1711	0.05657	0.2067	0.4706	1.1460	20.670
## 391	0.1713	0.05916	0.3897	1.0770	2.8730	43.950
## 392	0.1060	0.05502	0.3141	3.8960	2.0410	22.810
## 393	0.1353	0.05953	0.1872	0.9234	1.4490	14.550
## 394	0.1902	0.06220	0.6361	1.0010	4.3210	69.650
## 395	0.1631	0.06155	0.2047	0.4801	1.3730	17.250
## 396	0.1607	0.05474	0.2541	0.6218	1.7090	23.120
## 397	0.1886	0.06320	0.2456	0.7339	1.6670	15.890

## 398	0.1717	0.06097	0.3129	0.8413	2.0750	29.440
## 399	0.2082	0.05715	0.6226	2.2840	5.1730	67.660
## 400	0.1350	0.06890	0.3350	2.0430	2.1320	20.050
## 401	0.1387	0.06891	0.2498	1.2160	1.9760	15.240
## 402	0.1422	0.05823	0.1639	1.1400	1.2230	14.660
## 403	0.1853	0.06261	0.5558	0.6062	3.5280	68.170
## 404	0.1571	0.05478	0.6137	0.6575	4.1190	77.020
## 405	0.1601	0.06432	0.2810	0.8135	3.3690	23.810
## 406	0.1618	0.05557	0.5781	0.9168	4.2180	72.440
## 407	0.1990	0.06572	0.1745	0.4890	1.3490	14.910
## 408	0.1667	0.06113	0.1408	0.4607	1.1030	10.500
## 409	0.2157	0.06768	0.4266	0.9489	2.9890	41.180
## 410	0.1551	0.06403	0.2152	0.8301	1.2150	12.640
## 411	0.1596	0.06409	0.2025	0.4402	2.3930	16.350
## 412	0.1869	0.05628	0.1210	0.8927	1.0590	8.605
## 413	0.1399	0.05688	0.2525	1.2390	1.8060	17.740
## 414	0.1339	0.05945	0.4489	2.5080	3.2580	34.370
## 415	0.2101	0.06113	0.5619	1.2680	3.7170	37.830
## 416	0.1823	0.06115	0.5659	1.4080	3.6310	67.740
## 417	0.1734	0.05865	0.1759	0.9938	1.1430	12.670
## 418	0.1912	0.06412	0.3491	0.7706	2.6770	32.140
## 419	0.1875	0.06020	0.9761	1.8920	7.1280	103.600
## 420	0.2678	0.07371	0.3197	1.4260	2.2810	24.720
## 421	0.2548	0.09296	0.8245	2.6640	4.0730	49.850
## 422	0.1616	0.05684	0.3105	0.8339	2.0970	29.910
## 423	0.1830	0.06105	0.2251	0.7815	1.4290	15.480
## 424	0.2378	0.09502	0.4076	1.0930	3.0140	20.040
## 425	0.1167	0.06217	0.3344	1.1080	1.9020	22.770
## 426	0.1905	0.06590	0.4255	1.1780	2.9270	36.460
## 427	0.2459	0.06581	0.3610	1.0500	2.4550	26.650
## 428	0.1573	0.05703	0.3028	0.6683	1.6120	23.920
## 429	0.1791	0.06331	0.2441	2.0900	1.6480	16.800
## 430	0.2398	0.07596	0.6592	1.0590	4.0610	59.460
## 431	0.1761	0.06130	0.2310	1.0050	1.7520	19.830
## 432	0.1860	0.05941	0.5449	0.9225	3.2180	67.360
## 433	0.2079	0.05968	0.2271	1.2550	1.4410	16.160
## 434	0.1832	0.06697	0.7923	1.0450	4.8510	95.770

## 435	0.1489	0.06640	0.2574	1.3760	2.8060	18.150
## 436	0.1373	0.05700	0.2571	1.0810	1.5580	23.920
## 437	0.1550	0.04996	0.3283	0.8280	2.3630	36.740
## 438	0.1829	0.05667	0.1942	0.9086	1.4930	15.750
## 439	0.1683	0.07187	0.1559	0.5796	1.0460	8.322
## 440	0.1993	0.06453	0.5018	1.6930	3.9260	38.340
## 441	0.1761	0.06540	0.2684	0.5664	2.4650	20.650
## 442	0.1664	0.05801	0.3460	1.3360	2.0660	31.240
## 443	0.1855	0.06284	0.4768	0.9644	3.7060	47.140
## 444	0.1779	0.06639	0.1588	0.5733	1.1020	12.840
## 445	0.1809	0.05966	0.5366	0.8561	3.0020	49.000
## 446	0.1815	0.06905	0.2773	0.9768	1.9090	15.700
## 447	0.1773	0.05429	0.4347	1.0570	2.8290	39.930
## 448	0.1382	0.06070	0.2335	0.9097	1.4660	16.970
## 449	0.1967	0.06314	0.2963	1.5630	2.0870	21.460
## 450	0.1793	0.06281	0.9291	1.1520	6.0510	115.200
## 451	0.1788	0.06450	0.1913	0.9027	1.2080	11.860
## 452	0.1943	0.06937	0.4053	1.8090	2.6420	34.440
## 453	0.1989	0.05884	0.6107	2.8360	5.3830	70.100
## 454	0.1349	0.06612	0.2560	1.5540	1.9550	20.240
## 455	0.2019	0.06290	0.2747	1.2030	1.9300	19.530
## 456	0.1724	0.06081	0.2406	0.7394	2.1200	21.200
## 457	0.2403	0.06641	0.4101	1.0140	2.6520	32.650
## 458	0.1769	0.05674	1.1720	1.6170	7.7490	199.700
## 459	0.1722	0.06724	0.2204	0.7873	1.4350	11.360
## 460	0.1395	0.05234	0.1731	1.1420	1.1010	14.340
## 461	0.2061	0.05623	2.5470	1.3060	18.6500	542.200
## 462	0.1943	0.06132	0.8191	1.9310	4.4930	103.900
## 463	0.2003	0.06246	0.1642	1.0310	1.2810	11.680
## 464	0.1405	0.05848	0.3563	0.4833	2.2350	29.340
## 465	0.3040	0.07413	1.0460	0.9760	7.2760	111.400
## 466	0.1811	0.07102	0.1767	1.4600	2.2040	15.430
## 467	0.1632	0.05894	0.1903	0.5735	1.2040	15.500
## 468	0.1720	0.05780	0.2986	0.5906	1.9210	35.770
## 469	0.1743	0.07279	0.3677	1.4710	1.5970	22.680
## 470	0.1714	0.05898	0.3892	1.0460	2.6440	32.740
## 471	0.1694	0.06287	0.7311	1.7480	5.1180	53.650

## 472	0.1515	0.05266	0.1840	1.0650	1.2860	16.640
## 473	0.1467	0.05863	0.1839	2.3420	1.1700	14.160
## 474	0.1428	0.05313	0.7392	1.3210	4.7220	109.900
## 475	0.1854	0.05698	0.6061	2.6430	4.0990	44.960
## 476	0.1807	0.05664	0.4041	0.5503	2.5470	48.900
## 477	0.1203	0.06659	0.1194	1.4340	1.7780	9.549
## 478	0.1554	0.05661	0.6643	1.3610	4.5420	81.890
## 479	0.1879	0.05852	0.2877	0.9480	2.1710	24.870
## 480	0.2275	0.07237	0.4751	1.5280	2.9740	39.050
## 481	0.1856	0.06402	0.2929	0.8570	1.9280	24.190
## 482	0.1879	0.06390	0.2895	1.8510	2.3760	26.850
## 483	0.2183	0.06197	0.8307	1.4660	5.5740	105.000
## 484	0.1669	0.08116	0.4311	2.2610	3.1320	27.480
## 485	0.1671	0.05731	0.3534	0.6724	2.2250	26.030
## 486	0.2375	0.07603	0.5204	1.3240	3.4770	51.220
## 487	0.2238	0.06413	0.3776	1.3500	2.5690	22.730
## 488	0.2556	0.07039	1.2150	1.5450	10.0500	170.000
## 489	0.1713	0.05888	0.3237	1.4730	2.3260	26.070
## 490	0.2196	0.07950	0.2114	1.0270	1.7190	13.990
## 491	0.2116	0.06077	0.7548	1.2880	5.3530	89.740
## 492	0.2397	0.07016	0.7260	1.5950	5.7720	86.220
## 493	0.1966	0.07069	0.4209	0.6583	2.8050	44.640
## 494	0.1619	0.06408	0.1507	1.5830	1.1650	10.090
## 495	0.1828	0.06757	0.3582	2.0670	2.4930	18.390
## 496	0.1709	0.07253	0.4426	1.1690	3.1760	34.370
## 497	0.1945	0.06322	0.1803	1.2220	1.5280	11.770
## 498	0.1746	0.06177	0.1938	0.6123	1.3340	14.490
## 499	0.1893	0.06232	0.8426	1.1990	7.1580	106.400
## 500	0.2091	0.06650	0.2419	1.2780	1.9030	23.020
## 501	0.1846	0.05325	0.2473	0.5679	1.7750	22.950
## 502	0.1528	0.05697	0.3795	1.1870	2.4660	40.510
## 503	0.2164	0.07356	0.5692	1.0730	3.8540	54.180
## 504	0.2188	0.08450	0.1115	1.2310	2.3630	7.228
## 505	0.1957	0.07255	0.4101	1.7400	3.0270	27.850
## 506	0.1845	0.05828	0.2239	1.6470	1.4890	15.460
## 507	0.1508	0.05376	0.1302	0.7198	0.8439	10.770
## 508	0.1659	0.05348	0.2182	0.6232	1.6770	20.720

## 509	0.2149	0.06879	0.9622	1.0260	8.7580	118.800
## 510	0.2085	0.06864	1.3700	1.2130	9.4240	176.500
## 511	0.1967	0.06811	0.1852	0.7477	1.3830	14.670
## 512	0.1538	0.05510	0.4212	1.4330	2.7650	45.810
## 513	0.2301	0.07799	0.4825	1.0300	3.4750	41.000
## 514	0.1360	0.06344	0.2102	0.4336	1.3910	17.400
## 515	0.2175	0.06218	0.4312	1.0220	2.9720	45.500
## 516	0.2123	0.07254	0.3061	1.0690	2.2570	25.130
## 517	0.1812	0.05667	0.5435	0.7339	3.3980	74.080
## 518	0.2069	0.05999	0.7456	0.7869	4.5850	94.030
## 519	0.2092	0.06310	0.8337	1.5930	4.8770	98.810
## 520	0.1850	0.07310	0.1931	0.9223	1.4910	15.090
## 521	0.1925	0.06915	0.3276	1.1270	2.5640	20.770
## 522	0.1925	0.06373	0.3961	1.0440	2.4970	30.290
## 523	0.1852	0.05294	0.4681	1.6270	3.0430	45.380
## 524	0.1587	0.05884	0.3857	1.4280	2.5480	19.150
## 525	0.1930	0.07818	0.2241	1.5080	1.5530	9.833
## 526	0.2010	0.05769	0.2345	1.2190	1.5460	18.240
## 527	0.1514	0.06019	0.2449	1.0660	1.4450	18.510
## 528	0.2129	0.05025	0.5506	1.2140	3.3570	54.040
## 529	0.2013	0.05955	0.2656	1.9740	1.9540	17.490
## 530	0.1680	0.06412	0.3416	1.3120	2.2750	20.980
## 531	0.1588	0.06766	0.2742	1.3900	3.1980	21.910
## 532	0.2037	0.07751	0.2196	1.4790	1.4450	11.730
## 533	0.1459	0.05544	0.2954	0.8836	2.1090	23.240
## 534	0.1794	0.06323	0.3037	1.2840	2.4820	31.590
## 535	0.2202	0.06113	0.4953	1.1990	2.7650	63.330
## 536	0.1705	0.05913	0.1499	0.4875	1.1950	11.640
## 537	0.1920	0.05907	0.3249	0.9591	2.1830	23.470
## 538	0.1936	0.06128	0.1601	1.4300	1.1090	11.280
## 539	0.1620	0.06688	0.2720	1.0470	2.0760	23.120
## 540	0.1620	0.06582	0.2315	0.5391	1.4750	15.750
## 541	0.2026	0.05223	0.5858	0.8554	4.1060	68.460
## 542	0.2197	0.07696	0.3538	1.1300	2.3880	19.630
## 543	0.1697	0.05855	0.2719	1.3500	1.7210	22.450
## 544	0.2569	0.06670	0.5702	1.0230	4.0120	69.060
## 545	0.2906	0.08142	0.9317	1.8850	8.6490	116.400

## 546	0.1730	0.06470	0.2094	0.7636	1.2310	17.670
## 547	0.1305	0.07163	0.3132	0.9789	3.2800	16.940
## 548	0.1759	0.06183	0.2213	1.2850	1.5350	17.260
## 549	0.1537	0.06171	0.3645	1.4920	2.8880	29.840
## 550	0.1675	0.06043	0.2636	0.7294	1.8480	19.870
## 551	0.1580	0.06114	0.4993	1.7980	2.5520	41.240
## 552	0.1690	0.06083	0.4222	0.8092	3.3300	28.840
## 553	0.2030	0.08243	0.2976	1.5990	2.0390	23.940
## 554	0.1598	0.06677	0.4384	1.9070	3.1490	30.660
## 555	0.1619	0.05584	0.2084	1.3500	1.3140	17.580
## 556	0.2162	0.06606	0.6242	0.9209	4.1580	80.990
## 557	0.1834	0.05934	0.3927	0.8429	2.6840	26.990
## 558	0.2086	0.07406	0.5462	1.5110	4.7950	49.450
## 559	0.1566	0.06669	0.2073	1.8050	1.3770	19.080
## 560	0.1893	0.05886	0.2204	0.6221	1.4820	19.750
## 561	0.1885	0.06125	0.2860	1.0190	2.6570	24.910
## 562	0.1638	0.06129	0.2575	0.8073	1.9590	19.010
## 563	0.1707	0.05433	0.2315	0.9112	1.7270	20.520
## 564	0.1543	0.06476	0.2212	1.0420	1.6140	16.570
## 565	0.1454	0.05549	0.2023	0.6850	1.2360	16.890
## 566	0.1633	0.07005	0.3380	2.5090	2.3940	19.330
## 567	0.1727	0.06317	0.2054	0.4956	1.3440	19.530
## 568	0.1650	0.06121	0.3060	0.7213	2.1430	25.700
## 569	0.1973	0.06183	0.3414	1.3090	2.4070	39.060
##	smoothness_se	compactness_se	concavity_se	points_se	symmetry_se	
## 1	0.008045	0.011800	0.0168300	0.012410	0.019240	
## 2	0.007470	0.035810	0.0335400	0.013650	0.035040	
## 3	0.005158	0.009355	0.0105600	0.007483	0.017180	
## 4	0.011270	0.034980	0.0218700	0.019650	0.015800	
## 5	0.005012	0.014850	0.0155100	0.009155	0.016470	
## 6	0.007278	0.020470	0.0444700	0.008799	0.018680	
## 7	0.008200	0.029820	0.0573800	0.012670	0.014880	
## 8	0.008824	0.031080	0.0311200	0.012910	0.019980	
## 9	0.007595	0.022190	0.0288000	0.008614	0.027100	
## 10	0.007416	0.018770	0.0275800	0.010100	0.023480	
## 11	0.006666	0.027910	0.0406200	0.014790	0.011170	
## 12	0.005518	0.015620	0.0199400	0.007924	0.017990	

## 13	0.007295	0.031790	0.0461500	0.012540	0.015610
## 14	0.007491	0.008593	0.0006920	0.004167	0.021900
## 15	0.011900	0.019290	0.0490700	0.014990	0.016410
## 16	0.004242	0.046390	0.0657800	0.016060	0.016380
## 17	0.005217	0.015150	0.0167800	0.012680	0.016690
## 18	0.006809	0.009514	0.0132900	0.006474	0.020570
## 19	0.007964	0.047320	0.0764900	0.019360	0.027360
## 20	0.006773	0.024560	0.0101800	0.008094	0.026620
## 21	0.006905	0.008704	0.0197800	0.011850	0.018970
## 22	0.012880	0.034950	0.0186500	0.017660	0.015600
## 23	0.009519	0.021340	0.0199000	0.011550	0.020790
## 24	0.009006	0.041850	0.0320400	0.022580	0.023530
## 25	0.011880	0.037470	0.0459100	0.015440	0.022870
## 26	0.004717	0.020650	0.0175900	0.009206	0.012200
## 27	0.005884	0.014910	0.0187200	0.009366	0.018840
## 28	0.005233	0.030570	0.0357600	0.010830	0.017680
## 29	0.005954	0.034710	0.0502800	0.008510	0.017500
## 30	0.004394	0.012500	0.0145100	0.005484	0.012910
## 31	0.004148	0.004711	0.0028310	0.004821	0.014220
## 32	0.007499	0.012020	0.0233200	0.008920	0.016470
## 33	0.006766	0.070250	0.0659100	0.023110	0.016730
## 34	0.005888	0.023100	0.0205900	0.010750	0.025780
## 35	0.004953	0.018120	0.0303500	0.008648	0.015390
## 36	0.005212	0.029840	0.0244300	0.008356	0.018180
## 37	0.004444	0.016520	0.0226900	0.013700	0.013860
## 38	0.010170	0.047410	0.0278900	0.011100	0.031270
## 39	0.006123	0.024700	0.0262600	0.016040	0.020910
## 40	0.004563	0.034810	0.0387200	0.012090	0.013880
## 41	0.005043	0.015780	0.0211700	0.008185	0.012820
## 42	0.004057	0.022770	0.0402900	0.013030	0.016860
## 43	0.009110	0.074580	0.0566100	0.018670	0.059630
## 44	0.005231	0.023050	0.0311300	0.007315	0.016390
## 45	0.003308	0.013150	0.0099040	0.004832	0.013160
## 46	0.005530	0.052960	0.0611000	0.014440	0.021400
## 47	0.005883	0.006263	0.0093980	0.006189	0.020090
## 48	0.006369	0.042430	0.0426600	0.015080	0.023350
## 49	0.005442	0.019570	0.0330400	0.013670	0.013150



## 50	0.006530	0.033690	0.0471200	0.014030	0.027400
## 51	0.005960	0.034380	0.0390900	0.014350	0.019390
## 52	0.004119	0.032070	0.0364400	0.011550	0.013910
## 53	0.005463	0.019640	0.0207900	0.005398	0.014770
## 54	0.006307	0.028450	0.0385000	0.010110	0.011850
## 55	0.009327	0.051210	0.0895800	0.024650	0.021750
## 56	0.006794	0.035750	0.0398000	0.013830	0.021340
## 57	0.006982	0.039160	0.0401700	0.015280	0.022600
## 58	0.014390	0.012000	0.0015970	0.002404	0.025380
## 59	0.023330	0.098060	0.1278000	0.018220	0.045470
## 60	0.005654	0.021990	0.0305900	0.014990	0.016230
## 61	0.006548	0.100600	0.0972300	0.026380	0.053330
## 62	0.006174	0.036340	0.0464400	0.015690	0.011450
## 63	0.031130	0.085550	0.1438000	0.039270	0.021750
## 64	0.003280	0.011020	0.0139000	0.006881	0.013800
## 65	0.006789	0.053280	0.0644600	0.022520	0.036720
## 66	0.011340	0.031750	0.0312500	0.011350	0.018790
## 67	0.006032	0.011040	0.0225900	0.009057	0.014820
## 68	0.005031	0.006021	0.0053250	0.006324	0.014940
## 69	0.004235	0.015410	0.0145700	0.010430	0.015280
## 70	0.005251	0.017270	0.0184000	0.005298	0.014490
## 71	0.005367	0.022390	0.0304900	0.012620	0.013770
## 72	0.007803	0.014490	0.0169000	0.008043	0.021000
## 73	0.009845	0.065900	0.1027000	0.025270	0.034910
## 74	0.004369	0.008274	0.0115300	0.007437	0.013020
## 75	0.003443	0.026610	0.0305600	0.011100	0.015200
## 76	0.007112	0.024930	0.0270300	0.012930	0.019580
## 77	0.002866	0.009181	0.0141200	0.006719	0.010690
## 78	0.009282	0.009216	0.0206300	0.008965	0.021830
## 79	0.006494	0.027680	0.0313700	0.010690	0.017310
## 80	0.007231	0.027720	0.0250900	0.014800	0.014140
## 81	0.005080	0.013700	0.0072760	0.009073	0.013500
## 82	0.005996	0.022120	0.0211700	0.006433	0.020250
## 83	0.005498	0.020450	0.0179500	0.006399	0.018290
## 84	0.005508	0.044120	0.0443600	0.016230	0.024270
## 85	0.006635	0.017770	0.0210100	0.011640	0.021080
## 86	0.004731	0.013450	0.0165200	0.005905	0.016190

## 87	0.003681	0.009169	0.0087320	0.005740	0.011290
## 88	0.005841	0.012460	0.0079360	0.009128	0.015640
## 89	0.004728	0.012590	0.0171500	0.010380	0.010830
## 90	0.006739	0.022510	0.0208600	0.013520	0.018700
## 91	0.008534	0.006364	0.0061800	0.007408	0.010650
## 92	0.003796	0.013710	0.0134600	0.007096	0.015360
## 93	0.002826	0.009105	0.0131100	0.005174	0.010130
## 94	0.006054	0.008974	0.0056810	0.006336	0.012150
## 95	0.007970	0.135400	0.1166000	0.016660	0.051130
## 96	0.005839	0.032450	0.0371500	0.014590	0.014670
## 97	0.003629	0.037130	0.0345200	0.010650	0.026320
## 98	0.007595	0.015000	0.0141200	0.008578	0.017920
## 99	0.007899	0.014000	0.0085340	0.007624	0.026370
## 100	0.008166	0.056930	0.0573000	0.020300	0.010650
## 101	0.008902	0.047850	0.0733900	0.017450	0.027280
## 102	0.001713	0.006736	0.0000000	0.000000	0.037990
## 103	0.006472	0.011220	0.0128200	0.008849	0.016920
## 104	0.005718	0.011620	0.0199800	0.011090	0.014100
## 105	0.006261	0.015690	0.0307900	0.005383	0.019620
## 106	0.004957	0.021140	0.0415600	0.008038	0.018430
## 107	0.009853	0.042350	0.0627100	0.019660	0.026390
## 108	0.006272	0.021980	0.0396600	0.009894	0.013200
## 109	0.008263	0.018700	0.0127700	0.005917	0.024660
## 110	0.006908	0.009442	0.0069720	0.006159	0.026940
## 111	0.008540	0.023100	0.0294500	0.013980	0.015650
## 112	0.012430	0.054160	0.0775300	0.010220	0.023090
## 113	0.008102	0.021010	0.0334200	0.016010	0.020450
## 114	0.006429	0.059360	0.0550100	0.016280	0.019610
## 115	0.005857	0.009758	0.0116800	0.007445	0.024060
## 116	0.008109	0.043080	0.0494200	0.017420	0.015940
## 117	0.004044	0.015970	0.0200000	0.007303	0.015220
## 118	0.007269	0.029280	0.0497200	0.016390	0.018520
## 119	0.006804	0.031690	0.0344600	0.017120	0.018970
## 120	0.007807	0.039320	0.0511200	0.018760	0.028600
## 121	0.004599	0.009169	0.0091270	0.004814	0.012470
## 122	0.008124	0.036110	0.0548900	0.027650	0.031760
## 123	0.006122	0.023370	0.0159600	0.006998	0.031940

## 124	0.005568	0.011120	0.0209600	0.011970	0.012630
## 125	0.009191	0.008548	0.0094000	0.006315	0.017550
## 126	0.006652	0.026520	0.0222100	0.007807	0.018940
## 127	0.007162	0.029120	0.0547300	0.013880	0.015470
## 128	0.008312	0.017420	0.0338900	0.015760	0.017400
## 129	0.004428	0.027310	0.0404000	0.013610	0.020300
## 130	0.006113	0.025830	0.0464500	0.012760	0.014510
## 131	0.006965	0.062130	0.0792600	0.022340	0.014990
## 132	0.003980	0.028090	0.0366900	0.012740	0.015810
## 133	0.004973	0.013720	0.0149800	0.009117	0.017240
## 134	0.010300	0.028910	0.0519800	0.024540	0.011140
## 135	0.012620	0.023480	0.0180000	0.012850	0.022200
## 136	0.006048	0.018820	0.0274100	0.011300	0.014680
## 137	0.015820	0.019660	0.0000000	0.000000	0.018650
## 138	0.005528	0.009789	0.0083420	0.006273	0.014650
## 139	0.006455	0.017970	0.0450200	0.017440	0.018290
## 140	0.007210	0.008380	0.0131100	0.008000	0.019960
## 141	0.010750	0.027220	0.0508100	0.019110	0.022930
## 142	0.006399	0.049040	0.0537300	0.015870	0.030030
## 143	0.005769	0.024230	0.0395000	0.016780	0.018980
## 144	0.009407	0.070560	0.0689900	0.018480	0.017000
## 145	0.004452	0.030550	0.0268100	0.013520	0.014540
## 146	0.007831	0.008776	0.0155600	0.006240	0.031390
## 147	0.005771	0.040610	0.0279100	0.012820	0.020080
## 148	0.007257	0.018050	0.0183200	0.010330	0.016940
## 149	0.007357	0.010790	0.0099590	0.011200	0.034330
## 150	0.003457	0.010470	0.0116700	0.005558	0.012510
## 151	0.004928	0.003012	0.0026200	0.003390	0.013930
## 152	0.013070	0.018850	0.0060210	0.010520	0.031000
## 153	0.005324	0.015630	0.0151000	0.007584	0.021040
## 154	0.007086	0.007247	0.0101200	0.005495	0.015600
## 155	0.007762	0.106400	0.0996000	0.027710	0.040770
## 156	0.006836	0.008982	0.0234800	0.006565	0.019420
## 157	0.003741	0.005274	0.0106500	0.005044	0.013440
## 158	0.008064	0.017640	0.0259500	0.010370	0.013570
## 159	0.010720	0.013310	0.0199300	0.011110	0.017170
## 160	0.004455	0.013820	0.0209500	0.011840	0.016410

## 161	0.004481	0.010380	0.0135800	0.010820	0.010690
## 162	0.015740	0.082620	0.0809900	0.034870	0.034180
## 163	0.005638	0.007939	0.0052540	0.006042	0.015440
## 164	0.007389	0.004883	0.0036810	0.003472	0.027010
## 165	0.005753	0.033560	0.0397600	0.021560	0.022010
## 166	0.004631	0.025370	0.0310900	0.012410	0.015750
## 167	0.007089	0.014280	0.0236000	0.012860	0.022660
## 168	0.006717	0.059810	0.0463800	0.021490	0.027470
## 169	0.008584	0.020170	0.0304700	0.009536	0.027690
## 170	0.002838	0.015920	0.0178000	0.005828	0.013290
## 171	0.006532	0.023360	0.0290500	0.012150	0.017430
## 172	0.005314	0.017910	0.0218500	0.009567	0.012230
## 173	0.008805	0.030290	0.0248800	0.014480	0.014860
## 174	0.005436	0.024060	0.0309900	0.009919	0.020300
## 175	0.006003	0.010630	0.0215100	0.009443	0.015200
## 176	0.005293	0.016610	0.0207100	0.008179	0.017480
## 177	0.006458	0.023060	0.0294500	0.015380	0.018520
## 178	0.004259	0.014690	0.0194000	0.004168	0.011910
## 179	0.006294	0.039940	0.0555400	0.016950	0.024280
## 180	0.005080	0.006098	0.0106900	0.006797	0.014470
## 181	0.007514	0.017790	0.0140100	0.011400	0.015030
## 182	0.010820	0.022030	0.0350000	0.018090	0.015500
## 183	0.004348	0.008153	0.0042720	0.006829	0.021540
## 184	0.005472	0.019190	0.0203900	0.008260	0.015230
## 185	0.012890	0.011040	0.0032970	0.004967	0.042430
## 186	0.003478	0.012210	0.0107200	0.009393	0.029410
## 187	0.005532	0.020080	0.0305500	0.013840	0.011770
## 188	0.006001	0.014220	0.0285500	0.009148	0.014920
## 189	0.004536	0.013760	0.0264500	0.012470	0.021930
## 190	0.013800	0.010670	0.0083470	0.009472	0.017980
## 191	0.006770	0.019380	0.0306700	0.011670	0.018750
## 192	0.006175	0.012040	0.0137600	0.005832	0.010960
## 193	0.003271	0.017700	0.0231000	0.008399	0.011480
## 194	0.005607	0.042400	0.0474100	0.010900	0.018570
## 195	0.004626	0.022630	0.0195400	0.009767	0.015470
## 196	0.007545	0.060500	0.0213400	0.018430	0.030560
## 197	0.010520	0.024310	0.0491200	0.017460	0.021200

## 198	0.004868	0.018180	0.0112100	0.008606	0.020850
## 199	0.004413	0.014430	0.0150900	0.007369	0.013540
## 200	0.004405	0.030260	0.0434400	0.010870	0.019210
## 201	0.006883	0.010940	0.0181800	0.019170	0.007882
## 202	0.006543	0.021480	0.0299100	0.010450	0.018440
## 203	0.004449	0.028080	0.0331200	0.011960	0.019060
## 204	0.012910	0.040420	0.0510100	0.022950	0.021440
## 205	0.009536	0.010970	0.0165100	0.011210	0.019530
## 206	0.009538	0.049400	0.0601900	0.020410	0.021050
## 207	0.006709	0.017010	0.0208000	0.007497	0.021240
## 208	0.005596	0.010050	0.0127200	0.014320	0.015750
## 209	0.003338	0.003746	0.0020300	0.003242	0.014800
## 210	0.004253	0.047590	0.0387200	0.015670	0.017980
## 211	0.006418	0.039610	0.0792700	0.017740	0.018780
## 212	0.003659	0.028550	0.0257200	0.012720	0.018170
## 213	0.005820	0.056160	0.0425200	0.011270	0.015270
## 214	0.004271	0.020730	0.0282800	0.008468	0.014610
## 215	0.004474	0.030930	0.0275700	0.006691	0.012120
## 216	0.007514	0.010990	0.0076650	0.008193	0.041830
## 217	0.007509	0.015610	0.0197700	0.009199	0.018050
## 218	0.004107	0.032880	0.0282100	0.013500	0.016100
## 219	0.007510	0.033450	0.0367200	0.011370	0.021650
## 220	0.004910	0.025440	0.0282200	0.016230	0.019560
## 221	0.006064	0.011800	0.0065640	0.007978	0.013740
## 222	0.006131	0.012630	0.0090750	0.008231	0.017130
## 223	0.006056	0.032030	0.0563800	0.017330	0.018840
## 224	0.010370	0.017060	0.0258600	0.007506	0.018160
## 225	0.008713	0.010170	0.0000000	0.000000	0.032650
## 226	0.020750	0.014030	0.0000000	0.000000	0.061460
## 227	0.021770	0.048880	0.0518900	0.014500	0.026320
## 228	0.009087	0.027150	0.0554600	0.019100	0.024510
## 229	0.006090	0.025690	0.0271300	0.013450	0.015940
## 230	0.005617	0.007124	0.0009737	0.002941	0.017000
## 231	0.009861	0.024180	0.0427500	0.009215	0.024750
## 232	0.007702	0.008491	0.0130700	0.010300	0.029700
## 233	0.005298	0.074460	0.1435000	0.022920	0.025660
## 234	0.006697	0.020830	0.0324800	0.013920	0.015360

## 235	0.008835	0.012330	0.0132800	0.009305	0.018970
## 236	0.008998	0.012920	0.0185100	0.011670	0.021520
## 237	0.008081	0.051220	0.0555100	0.018830	0.025450
## 238	0.007897	0.017620	0.0180100	0.007320	0.015920
## 239	0.007189	0.010350	0.0108100	0.006245	0.021580
## 240	0.016040	0.013860	0.0186500	0.011330	0.034760
## 241	0.006351	0.026790	0.0311900	0.013420	0.020620
## 242	0.008261	0.022130	0.0325900	0.010400	0.017080
## 243	0.005515	0.026740	0.0373500	0.005128	0.019510
## 244	0.005726	0.011060	0.0124600	0.007671	0.014110
## 245	0.008482	0.050570	0.0680000	0.019710	0.014670
## 246	0.007440	0.011230	0.0233700	0.009615	0.022030
## 247	0.005724	0.005697	0.0020740	0.003527	0.014450
## 248	0.007138	0.046530	0.0382900	0.011620	0.020680
## 249	0.008968	0.016460	0.0158800	0.005917	0.025740
## 250	0.007334	0.025890	0.0294100	0.009166	0.017450
## 251	0.004123	0.018190	0.0199600	0.010040	0.010550
## 252	0.012360	0.059950	0.0823200	0.030240	0.023370
## 253	0.010380	0.066690	0.0947200	0.020470	0.012190
## 254	0.007159	0.037180	0.0616500	0.010510	0.015910
## 255	0.010040	0.032470	0.0476300	0.028530	0.017150
## 256	0.014740	0.016740	0.0136700	0.008674	0.030440
## 257	0.004147	0.020480	0.0337900	0.008848	0.013940
## 258	0.005391	0.009947	0.0116300	0.005872	0.013410
## 259	0.007962	0.005612	0.0158500	0.008662	0.022540
## 260	0.008462	0.014600	0.0238700	0.013150	0.019800
## 261	0.008146	0.016310	0.0184300	0.007513	0.020150
## 262	0.012050	0.027360	0.0480400	0.017210	0.018430
## 263	0.006240	0.014840	0.0281300	0.010930	0.013970
## 264	0.003704	0.010820	0.0153000	0.006275	0.010620
## 265	0.008268	0.030820	0.0504200	0.011120	0.021020
## 266	0.005731	0.035020	0.0355300	0.012260	0.021430
## 267	0.004680	0.031200	0.0577400	0.010710	0.025600
## 268	0.017210	0.093680	0.0567100	0.017660	0.025410
## 269	0.005096	0.012050	0.0094100	0.004551	0.016080
## 270	0.010610	0.032520	0.0391500	0.015590	0.021860
## 271	0.005421	0.034770	0.0454500	0.013840	0.018690

## 272	0.003139	0.082970	0.0889000	0.040900	0.044840
## 273	0.005371	0.012730	0.0113200	0.009155	0.017190
## 274	0.004854	0.018190	0.0182600	0.007965	0.013860
## 275	0.005524	0.036980	0.0270600	0.012210	0.014150
## 276	0.013450	0.027720	0.0638900	0.014070	0.047830
## 277	0.005415	0.013710	0.0215300	0.011830	0.019590
## 278	0.005903	0.037310	0.0473000	0.015570	0.013180
## 279	0.009579	0.011040	0.0000000	0.000000	0.030040
## 280	0.012660	0.009692	0.0000000	0.000000	0.028820
## 281	0.007940	0.058390	0.0465800	0.020700	0.025910
## 282	0.004200	0.005900	0.0038460	0.004065	0.014870
## 283	0.007180	0.010960	0.0058320	0.005495	0.019820
## 284	0.006470	0.012480	0.0181000	0.011030	0.018980
## 285	0.004493	0.012060	0.0204800	0.009875	0.011440
## 286	0.003535	0.013930	0.0180000	0.006144	0.012540
## 287	0.010880	0.037100	0.0368800	0.016270	0.044990
## 288	0.005089	0.023030	0.0305200	0.011780	0.010570
## 289	0.005283	0.039080	0.0951800	0.018640	0.024010
## 290	0.005704	0.025020	0.0263600	0.010320	0.017590
## 291	0.011590	0.011240	0.0000000	0.000000	0.030040
## 292	0.004230	0.015870	0.0116900	0.006335	0.019430
## 293	0.013800	0.033480	0.0466500	0.020600	0.026890
## 294	0.005833	0.013880	0.0200000	0.007087	0.019380
## 295	0.003978	0.028210	0.0357600	0.014710	0.015180
## 296	0.004989	0.032120	0.0357100	0.015970	0.018790
## 297	0.004578	0.026160	0.0400500	0.014210	0.019480
## 298	0.006494	0.018930	0.0339100	0.015210	0.013560
## 299	0.007327	0.011530	0.0179800	0.007986	0.019620
## 300	0.009197	0.054700	0.0807900	0.022150	0.027730
## 301	0.009406	0.030550	0.0434400	0.027940	0.031560
## 302	0.003169	0.013770	0.0107900	0.005243	0.011030
## 303	0.006142	0.006134	0.0018350	0.003576	0.016370
## 304	0.005414	0.022650	0.0345200	0.013340	0.017050
## 305	0.004766	0.023740	0.0238400	0.008637	0.017720
## 306	0.005020	0.020620	0.0345700	0.010910	0.012980
## 307	0.004625	0.048440	0.0735900	0.016080	0.021370
## 308	0.002887	0.012850	0.0161300	0.007308	0.018700

## 309	0.005790	0.048770	0.0530300	0.015270	0.033560
## 310	0.005851	0.023140	0.0254400	0.008360	0.018420
## 311	0.004938	0.030890	0.0409300	0.016990	0.028160
## 312	0.004757	0.015030	0.0233200	0.012620	0.013940
## 313	0.003245	0.008186	0.0169800	0.009233	0.012850
## 314	0.014180	0.014890	0.0126700	0.019100	0.026780
## 315	0.005072	0.021470	0.0218500	0.009560	0.017190
## 316	0.004942	0.012030	0.0075080	0.005179	0.014420
## 317	0.011490	0.024610	0.0568800	0.018850	0.017560
## 318	0.006428	0.028630	0.0449700	0.017160	0.015900
## 319	0.003495	0.030510	0.0344500	0.010240	0.029120
## 320	0.004732	0.015060	0.0185500	0.010670	0.021630
## 321	0.007234	0.074710	0.1114000	0.027210	0.032320
## 322	0.005776	0.024990	0.0369500	0.011950	0.027890
## 323	0.006016	0.034820	0.0423200	0.012690	0.026570
## 324	0.007803	0.025070	0.0183500	0.007711	0.012780
## 325	0.003265	0.004930	0.0064930	0.003762	0.017200
## 326	0.006471	0.016490	0.0280600	0.014200	0.023700
## 327	0.007389	0.013830	0.0073020	0.010040	0.012630
## 328	0.008699	0.039760	0.0595000	0.013900	0.014950
## 329	0.007017	0.011420	0.0194900	0.011530	0.029510
## 330	0.006292	0.019710	0.0358200	0.013010	0.014790
## 331	0.006040	0.005656	0.0000000	0.000000	0.022770
## 332	0.005910	0.013620	0.0070660	0.006502	0.022230
## 333	0.007809	0.009816	0.0109900	0.005344	0.012540
## 334	0.005343	0.005767	0.0112300	0.005051	0.019770
## 335	0.010000	0.034800	0.0657700	0.028010	0.051680
## 336	0.004291	0.012360	0.0184100	0.007373	0.009539
## 337	0.005783	0.004693	0.0007929	0.003617	0.020430
## 338	0.009549	0.086060	0.3038000	0.033220	0.041970
## 339	0.007548	0.038970	0.0391400	0.018160	0.021680
## 340	0.006034	0.018200	0.0333600	0.010670	0.011750
## 341	0.003958	0.012460	0.0183100	0.008747	0.015000
## 342	0.003872	0.018420	0.0371000	0.012000	0.019640
## 343	0.010560	0.037560	0.0583900	0.011860	0.040220
## 344	0.006663	0.059140	0.0888000	0.013140	0.019950
## 345	0.004877	0.019520	0.0221900	0.009231	0.015350



## 346	0.013850	0.029320	0.0272200	0.010230	0.032810
## 347	0.010930	0.028990	0.0321400	0.015060	0.028370
## 348	0.006664	0.017350	0.0115800	0.009520	0.022820
## 349	0.004952	0.016300	0.0296700	0.009423	0.011520
## 350	0.008320	0.020250	0.0233400	0.016650	0.020940
## 351	0.004837	0.009238	0.0092130	0.010760	0.011710
## 352	0.005627	0.030330	0.0340700	0.013540	0.019250
## 353	0.008412	0.021530	0.0389800	0.007620	0.016950
## 354	0.009113	0.015570	0.0244300	0.006435	0.015680
## 355	0.006703	0.023100	0.0231500	0.011840	0.019000
## 356	0.010520	0.017550	0.0171400	0.009333	0.022790
## 357	0.009719	0.012490	0.0079750	0.007527	0.022100
## 358	0.005517	0.017270	0.0204500	0.006747	0.016160
## 359	0.004314	0.013820	0.0225400	0.010390	0.013690
## 360	0.010940	0.018340	0.0399600	0.012820	0.037590
## 361	0.007959	0.031330	0.0425700	0.016710	0.013410
## 362	0.009769	0.031260	0.0505100	0.019920	0.029810
## 363	0.007339	0.008243	0.0000000	0.000000	0.031410
## 364	0.005682	0.013650	0.0084960	0.006929	0.019380
## 365	0.005433	0.011790	0.0113100	0.015190	0.022200
## 366	0.012150	0.041120	0.0555300	0.014940	0.018400
## 367	0.009037	0.049540	0.0520600	0.018410	0.017780
## 368	0.006588	0.012700	0.0145000	0.006104	0.015740
## 369	0.004124	0.013400	0.0100300	0.004667	0.020320
## 370	0.004649	0.018000	0.0274900	0.012670	0.013650
## 371	0.009702	0.015670	0.0257500	0.011610	0.028010
## 372	0.008738	0.039380	0.0431200	0.015600	0.041920
## 373	0.007881	0.008432	0.0070040	0.006522	0.019390
## 374	0.004911	0.016660	0.0139700	0.005161	0.014540
## 375	0.003888	0.008539	0.0125600	0.006888	0.016080
## 376	0.010390	0.010030	0.0064160	0.007895	0.028690
## 377	0.004775	0.011720	0.0194700	0.012690	0.018700
## 378	0.006715	0.037050	0.0475700	0.010510	0.018380
## 379	0.008426	0.008998	0.0014870	0.003333	0.023580
## 380	0.006662	0.012280	0.0210500	0.010060	0.016770
## 381	0.005836	0.010950	0.0058120	0.007039	0.020140
## 382	0.010170	0.014430	0.0186100	0.012500	0.034640

## 383	0.009369	0.029830	0.0537100	0.017610	0.024180
## 384	0.004185	0.028680	0.0266400	0.009067	0.017030
## 385	0.008577	0.016410	0.0209900	0.011070	0.024340
## 386	0.010270	0.030840	0.0261300	0.010970	0.022770
## 387	0.005687	0.049600	0.0632900	0.015610	0.019240
## 388	0.008875	0.009362	0.0180800	0.009199	0.017910
## 389	0.005872	0.014880	0.0264700	0.009921	0.014650
## 390	0.007394	0.012030	0.0247000	0.014310	0.013440
## 391	0.004714	0.020150	0.0369700	0.011100	0.012370
## 392	0.007594	0.008878	0.0000000	0.000000	0.019890
## 393	0.004477	0.011770	0.0107900	0.007956	0.013250
## 394	0.007392	0.024490	0.0398800	0.012930	0.014350
## 395	0.003828	0.007228	0.0070780	0.005077	0.010540
## 396	0.003728	0.014150	0.0198800	0.007016	0.016470
## 397	0.005884	0.020050	0.0263100	0.013040	0.018480
## 398	0.009882	0.024440	0.0453100	0.017630	0.024710
## 399	0.004756	0.033680	0.0434500	0.018060	0.037560
## 400	0.011130	0.014630	0.0053080	0.005250	0.018010
## 401	0.008732	0.020420	0.0106200	0.006801	0.018240
## 402	0.005919	0.032700	0.0495700	0.010380	0.012080
## 403	0.005015	0.033180	0.0349700	0.009643	0.015430
## 404	0.006211	0.018950	0.0268100	0.012320	0.012760
## 405	0.004929	0.066570	0.0768300	0.013680	0.015260
## 406	0.006208	0.019060	0.0237500	0.014610	0.014450
## 407	0.004510	0.018120	0.0195100	0.011960	0.019340
## 408	0.006040	0.015290	0.0151400	0.006460	0.013440
## 409	0.006985	0.025630	0.0301100	0.012710	0.016020
## 410	0.011640	0.010400	0.0118600	0.009623	0.023830
## 411	0.005501	0.055920	0.0815800	0.013700	0.012660
## 412	0.003653	0.016470	0.0163300	0.003125	0.015370
## 413	0.006547	0.017810	0.0201800	0.005612	0.016710
## 414	0.006578	0.013800	0.0266200	0.013070	0.013590
## 415	0.008034	0.014420	0.0151400	0.018460	0.029210
## 416	0.005288	0.028330	0.0425600	0.011760	0.017170
## 417	0.005133	0.015210	0.0143400	0.008602	0.015010
## 418	0.004577	0.030530	0.0384000	0.012430	0.018730
## 419	0.008439	0.046740	0.0590400	0.025360	0.037100

## 420	0.005427	0.036330	0.0464900	0.018430	0.056280
## 421	0.010970	0.095860	0.3960000	0.052790	0.035460
## 422	0.004675	0.010300	0.0160300	0.009222	0.010950
## 423	0.009019	0.008985	0.0119600	0.008232	0.023880
## 424	0.009783	0.045420	0.0348300	0.021880	0.025420
## 425	0.007356	0.037280	0.0591500	0.017120	0.021650
## 426	0.007781	0.026480	0.0297300	0.012900	0.016350
## 427	0.005800	0.024170	0.0078160	0.010520	0.027340
## 428	0.005756	0.016650	0.0146100	0.008281	0.015510
## 429	0.012910	0.022220	0.0041740	0.007082	0.025720
## 430	0.010150	0.045880	0.0498300	0.021270	0.018840
## 431	0.004088	0.011740	0.0179600	0.006880	0.013230
## 432	0.006176	0.018770	0.0291300	0.010460	0.015590
## 433	0.005969	0.018120	0.0200700	0.007027	0.019720
## 434	0.007974	0.032140	0.0443500	0.015730	0.016170
## 435	0.008565	0.046380	0.0643000	0.017680	0.015160
## 436	0.006692	0.011320	0.0057170	0.006627	0.014160
## 437	0.007571	0.011140	0.0262300	0.014630	0.019300
## 438	0.005298	0.015870	0.0232100	0.008420	0.018530
## 439	0.010110	0.010550	0.0198100	0.005742	0.020900
## 440	0.009433	0.024050	0.0416700	0.011520	0.033970
## 441	0.005727	0.032550	0.0439300	0.009811	0.027510
## 442	0.005868	0.020990	0.0202100	0.009064	0.020870
## 443	0.009250	0.037150	0.0486700	0.018510	0.014980
## 444	0.004450	0.014520	0.0133400	0.008791	0.016980
## 445	0.004860	0.027850	0.0260200	0.013740	0.012260
## 446	0.009606	0.014320	0.0198500	0.014210	0.020270
## 447	0.004351	0.026670	0.0337100	0.010070	0.025980
## 448	0.004729	0.006887	0.0011840	0.003951	0.014660
## 449	0.008872	0.041920	0.0594600	0.017850	0.027930
## 450	0.008740	0.022190	0.0272100	0.014580	0.020450
## 451	0.006513	0.008061	0.0028170	0.004972	0.015020
## 452	0.009098	0.038450	0.0376300	0.013210	0.018780
## 453	0.011240	0.040970	0.0746900	0.034410	0.027680
## 454	0.006854	0.060630	0.0666300	0.015530	0.023540
## 455	0.009895	0.030530	0.0163000	0.009276	0.022580
## 456	0.005706	0.022970	0.0311400	0.014930	0.014540

## 457	0.013400	0.028390	0.0116200	0.008239	0.025720
## 458	0.004551	0.014780	0.0214300	0.009280	0.013670
## 459	0.009172	0.008007	0.0000000	0.000000	0.027110
## 460	0.003418	0.002252	0.0015950	0.001852	0.016130
## 461	0.007650	0.053740	0.0805500	0.025980	0.016970
## 462	0.008074	0.040880	0.0532100	0.018340	0.023830
## 463	0.005296	0.019030	0.0172300	0.006960	0.018800
## 464	0.006432	0.011560	0.0077410	0.005657	0.012270
## 465	0.008029	0.037990	0.0373200	0.023970	0.023080
## 466	0.010000	0.032950	0.0486100	0.011670	0.021870
## 467	0.003632	0.007861	0.0011280	0.002386	0.013440
## 468	0.004117	0.015600	0.0297500	0.009753	0.012950
## 469	0.010490	0.042650	0.0400400	0.015440	0.027190
## 470	0.007976	0.012950	0.0160800	0.009046	0.020050
## 471	0.004571	0.017900	0.0217600	0.017570	0.033730
## 472	0.003634	0.007983	0.0082680	0.006432	0.019240
## 473	0.004352	0.004899	0.0134300	0.011640	0.026710
## 474	0.005539	0.026440	0.0266400	0.010780	0.013320
## 475	0.007517	0.015550	0.0146500	0.011830	0.020470
## 476	0.004821	0.016590	0.0240800	0.011430	0.012750
## 477	0.005042	0.045600	0.0430500	0.016670	0.024700
## 478	0.005467	0.020750	0.0318500	0.014660	0.010290
## 479	0.005332	0.021150	0.0153600	0.011870	0.015220
## 480	0.009680	0.038560	0.0347600	0.016160	0.024340
## 481	0.003818	0.012760	0.0288200	0.012000	0.019100
## 482	0.008005	0.028950	0.0332100	0.014240	0.014620
## 483	0.006248	0.033740	0.0519600	0.011580	0.020070
## 484	0.012860	0.088080	0.1197000	0.024600	0.038800
## 485	0.006583	0.006991	0.0059490	0.006296	0.022160
## 486	0.009329	0.065590	0.0995300	0.022830	0.055430
## 487	0.007501	0.019890	0.0271400	0.009883	0.019600
## 488	0.006515	0.086680	0.1040000	0.024800	0.031120
## 489	0.007802	0.020520	0.0134100	0.005564	0.020860
## 490	0.007405	0.045490	0.0458800	0.013390	0.017380
## 491	0.007997	0.027000	0.0373700	0.016480	0.028970
## 492	0.006522	0.061580	0.0711700	0.016640	0.023240
## 493	0.005393	0.023210	0.0430300	0.013200	0.017920

## 494	0.009501	0.033780	0.0440100	0.013460	0.013220
## 495	0.011930	0.031620	0.0300000	0.009259	0.033570
## 496	0.005273	0.023290	0.0140500	0.012440	0.018160
## 497	0.009058	0.021960	0.0302900	0.011120	0.016090
## 498	0.003350	0.013840	0.0145200	0.006853	0.011130
## 499	0.006356	0.047650	0.0386300	0.015190	0.019360
## 500	0.005345	0.025560	0.0288900	0.010220	0.009947
## 501	0.002667	0.014460	0.0142300	0.005297	0.019610
## 502	0.004029	0.009269	0.0110100	0.007591	0.014600
## 503	0.007026	0.025010	0.0318800	0.012970	0.016890
## 504	0.008499	0.076430	0.1535000	0.029190	0.016170
## 505	0.014590	0.032060	0.0496100	0.018410	0.018070
## 506	0.004359	0.006813	0.0032230	0.003419	0.019160
## 507	0.003492	0.003710	0.0048260	0.003608	0.015360
## 508	0.006708	0.011970	0.0148200	0.010560	0.015800
## 509	0.006399	0.043100	0.0784500	0.026240	0.020570
## 510	0.008198	0.038890	0.0449300	0.021390	0.020180
## 511	0.004097	0.018980	0.0169800	0.006490	0.016780
## 512	0.005444	0.011690	0.0162200	0.008522	0.014190
## 513	0.005551	0.034140	0.0420500	0.010440	0.022730
## 514	0.004133	0.016950	0.0165200	0.006659	0.013710
## 515	0.005635	0.039170	0.0607200	0.016560	0.031970
## 516	0.006983	0.038580	0.0468300	0.014990	0.016800
## 517	0.005225	0.013080	0.0186000	0.013400	0.013890
## 518	0.006150	0.040060	0.0383200	0.020580	0.022500
## 519	0.003899	0.029610	0.0281700	0.009222	0.026740
## 520	0.005251	0.030410	0.0252600	0.008304	0.025140
## 521	0.007364	0.038670	0.0526300	0.012640	0.021610
## 522	0.006953	0.019110	0.0270100	0.010370	0.017820
## 523	0.006831	0.014270	0.0248900	0.009087	0.031510
## 524	0.007189	0.004660	0.0000000	0.000000	0.026760
## 525	0.010190	0.010840	0.0000000	0.000000	0.026590
## 526	0.005518	0.021780	0.0258900	0.006330	0.025930
## 527	0.005169	0.022940	0.0301600	0.008691	0.013650
## 528	0.004024	0.008422	0.0229100	0.009863	0.050140
## 529	0.006538	0.013950	0.0137600	0.009924	0.034160
## 530	0.010980	0.012570	0.0103100	0.003934	0.026930

## 531	0.006719	0.051560	0.0438700	0.016330	0.018720
## 532	0.015470	0.064570	0.0925200	0.013640	0.021050
## 533	0.007337	0.011740	0.0053830	0.005623	0.019400
## 534	0.006627	0.040940	0.0537100	0.018130	0.016820
## 535	0.005033	0.031790	0.0475500	0.010430	0.015780
## 536	0.004873	0.017960	0.0331800	0.008360	0.016010
## 537	0.008328	0.008722	0.0134900	0.008670	0.032180
## 538	0.006064	0.009110	0.0104200	0.007638	0.023490
## 539	0.006298	0.021720	0.0261500	0.009061	0.014900
## 540	0.006153	0.013300	0.0169300	0.006884	0.016510
## 541	0.005038	0.015030	0.0194600	0.011230	0.022940
## 542	0.015460	0.025400	0.0219700	0.015800	0.039970
## 543	0.006383	0.008008	0.0018600	0.002924	0.025710
## 544	0.005485	0.024310	0.0319000	0.013690	0.027680
## 545	0.010380	0.068350	0.1091000	0.025930	0.078950
## 546	0.008725	0.020030	0.0233500	0.011320	0.026250
## 547	0.018350	0.067600	0.0926300	0.023080	0.023840
## 548	0.005608	0.016460	0.0152900	0.009997	0.019090
## 549	0.007256	0.026780	0.0207100	0.016260	0.020800
## 550	0.005488	0.014270	0.0232200	0.005660	0.014280
## 551	0.006011	0.044800	0.0517500	0.013410	0.026690
## 552	0.005541	0.033870	0.0450500	0.014710	0.031020
## 553	0.007149	0.072170	0.0774300	0.014320	0.017890
## 554	0.006587	0.018150	0.0173700	0.013160	0.018350
## 555	0.005768	0.008082	0.0151000	0.006451	0.013470
## 556	0.005215	0.037260	0.0471800	0.012880	0.020450
## 557	0.006380	0.010650	0.0124500	0.009175	0.022920
## 558	0.009976	0.052440	0.0527800	0.015800	0.026530
## 559	0.014960	0.021210	0.0145300	0.015830	0.030820
## 560	0.004796	0.011710	0.0175800	0.006897	0.022540
## 561	0.005878	0.029950	0.0481500	0.011610	0.020280
## 562	0.005403	0.014180	0.0105100	0.005142	0.013330
## 563	0.005356	0.016790	0.0197100	0.006370	0.014140
## 564	0.005910	0.020160	0.0190200	0.010110	0.012020
## 565	0.005969	0.014930	0.0156400	0.008463	0.010930
## 566	0.017360	0.046710	0.0261100	0.012960	0.036750
## 567	0.003290	0.013950	0.0177400	0.006009	0.011720

## 568	0.006133	0.012510	0.0161500	0.011360	0.022070
## 569	0.004426	0.026750	0.0343700	0.013430	0.016750
##	dimension_se	radius_worst	texture_worst	perimeter_worst	area_worst
## 1	0.0022480	13.500	15.64	86.97	549.1
## 2	0.0033180	11.880	22.94	78.28	424.8
## 3	0.0021980	12.410	26.44	79.93	471.4
## 4	0.0034420	11.920	15.77	76.53	434.0
## 5	0.0017670	16.200	15.73	104.50	819.1
## 6	0.0033390	13.070	26.98	86.43	520.5
## 7	0.0047380	12.480	37.16	82.28	474.2
## 8	0.0045060	19.200	41.85	128.50	1153.0
## 9	0.0034510	11.540	23.31	74.22	402.8
## 10	0.0029170	11.920	19.90	79.76	440.0
## 11	0.0037270	23.860	30.76	163.20	1760.0
## 12	0.0024840	13.590	25.22	86.60	564.2
## 13	0.0032300	14.800	25.46	100.90	689.1
## 14	0.0029900	14.230	22.25	90.24	624.1
## 15	0.0018070	21.440	30.96	139.80	1421.0
## 16	0.0044060	15.480	27.27	105.90	733.5
## 17	0.0023300	17.500	19.25	114.30	922.8
## 18	0.0017840	13.710	21.10	88.70	574.4
## 19	0.0059280	23.680	29.43	158.80	1696.0
## 20	0.0041430	13.340	17.81	91.38	545.2
## 21	0.0016710	13.010	21.39	84.42	521.5
## 22	0.0058240	12.980	32.19	86.12	487.7
## 23	0.0027010	12.400	25.58	82.76	472.4
## 24	0.0049840	16.110	18.33	105.90	762.6
## 25	0.0067920	11.160	22.75	72.62	374.4
## 26	0.0031300	16.570	20.86	110.30	812.4
## 27	0.0018170	15.100	25.94	97.59	699.4
## 28	0.0029670	20.270	36.71	149.30	1269.0
## 29	0.0040310	10.750	23.07	71.25	353.6
## 30	0.0020740	14.730	21.70	93.76	663.5
## 31	0.0022730	14.730	17.40	93.96	672.4
## 32	0.0026290	14.490	33.37	92.04	653.6
## 33	0.0113000	21.570	28.87	143.60	1437.0
## 34	0.0022670	14.100	28.88	89.00	610.2

## 35	0.0022810	16.760	17.24	108.50	862.0
## 36	0.0048680	14.540	19.64	97.96	657.0
## 37	0.0016980	24.860	26.58	165.90	1866.0
## 38	0.0094230	13.150	16.51	86.26	509.6
## 39	0.0034930	20.050	26.30	130.70	1260.0
## 40	0.0040810	18.550	25.09	126.90	1031.0
## 41	0.0018920	24.330	39.16	162.30	1844.0
## 42	0.0033180	26.730	26.39	174.90	2232.0
## 43	0.0092080	14.910	26.50	98.87	567.7
## 44	0.0057010	13.720	16.91	87.38	576.0
## 45	0.0020950	15.140	21.80	101.20	718.9
## 46	0.0050360	19.760	24.70	129.10	1228.0
## 47	0.0023770	11.680	20.29	74.35	421.1
## 48	0.0033850	33.130	23.58	229.30	3234.0
## 49	0.0024640	14.800	27.20	97.33	675.2
## 50	0.0046510	13.460	23.07	88.13	551.3
## 51	0.0045600	15.750	26.93	104.40	750.1
## 52	0.0032040	16.410	19.31	114.20	808.2
## 53	0.0030710	13.450	24.49	86.00	562.0
## 54	0.0035890	15.750	40.54	102.50	764.0
## 55	0.0051950	25.120	32.68	177.00	1986.0
## 56	0.0046030	15.530	23.19	96.66	614.9
## 57	0.0068220	12.450	17.60	81.25	473.8
## 58	0.0034700	11.870	21.18	75.39	437.0
## 59	0.0098750	26.020	23.99	180.90	2073.0
## 60	0.0019650	23.790	28.65	152.40	1628.0
## 61	0.0076460	24.090	33.17	177.40	1651.0
## 62	0.0051200	23.140	32.33	155.30	1660.0
## 63	0.0125600	18.070	28.07	120.40	1021.0
## 64	0.0012860	15.930	30.25	102.50	787.9
## 65	0.0043940	18.070	19.08	125.10	980.9
## 66	0.0053480	13.580	28.68	87.36	553.0
## 67	0.0024960	15.140	23.60	98.84	708.8
## 68	0.0008948	16.460	21.75	103.70	840.8
## 69	0.0015930	14.980	21.74	98.37	670.0
## 70	0.0026710	13.350	28.81	87.00	550.6
## 71	0.0031870	15.530	26.02	107.30	740.4



## 72	0.0027780	11.160	26.84	71.98	384.0
## 73	0.0078770	10.060	23.40	68.62	297.1
## 74	0.0013090	19.820	18.42	127.10	1210.0
## 75	0.0015190	18.220	28.07	120.30	1032.0
## 76	0.0044630	13.830	30.50	91.46	574.7
## 77	0.0010870	21.310	26.36	139.20	1410.0
## 78	0.0021460	12.330	23.84	78.00	466.7
## 79	0.0043920	14.190	16.40	92.04	618.8
## 80	0.0033360	21.080	25.41	138.10	1349.0
## 81	0.0017060	16.110	23.00	104.60	793.7
## 82	0.0017250	13.350	19.59	86.65	546.7
## 83	0.0019560	14.200	29.20	92.94	621.2
## 84	0.0048410	16.340	18.24	109.40	803.6
## 85	0.0037210	12.840	20.53	84.93	476.1
## 86	0.0020810	13.620	15.54	87.40	577.0
## 87	0.0013660	13.610	19.27	87.22	564.9
## 88	0.0029850	15.050	41.61	96.69	705.6
## 89	0.0019870	29.170	35.59	188.00	2615.0
## 90	0.0037470	15.110	25.63	99.43	701.9
## 91	0.0033510	13.630	16.15	86.70	570.7
## 92	0.0015410	14.060	24.34	92.82	607.3
## 93	0.0013450	17.910	31.67	115.90	988.6
## 94	0.0015140	14.340	31.88	91.06	628.5
## 95	0.0117200	15.740	37.18	106.40	762.4
## 96	0.0031210	18.760	21.98	124.30	1070.0
## 97	0.0037050	14.130	24.61	96.31	621.9
## 98	0.0017840	13.060	25.75	84.35	517.8
## 99	0.0037610	11.170	22.84	71.94	375.6
## 100	0.0058930	30.000	33.62	211.70	2562.0
## 101	0.0076100	11.690	25.21	76.51	410.4
## 102	0.0016880	9.968	20.83	62.25	303.8
## 103	0.0028170	12.320	16.18	78.27	457.5
## 104	0.0020850	19.070	30.88	123.40	1138.0
## 105	0.0022500	13.940	27.82	88.28	602.0
## 106	0.0036140	12.400	21.90	82.04	467.6
## 107	0.0042050	13.370	22.43	89.02	547.4
## 108	0.0038130	13.160	24.17	85.13	515.3

## 109	0.0029770	13.030	31.45	83.90	505.6
## 110	0.0020600	12.360	28.92	79.26	458.0
## 111	0.0038400	13.140	29.26	85.51	521.7
## 112	0.0117800	9.092	29.72	58.08	249.8
## 113	0.0045700	22.250	24.90	145.40	1549.0
## 114	0.0080930	15.030	32.01	108.80	697.7
## 115	0.0017690	12.980	25.72	82.98	516.5
## 116	0.0037390	20.380	35.46	132.80	1284.0
## 117	0.0019760	18.330	30.12	117.90	1044.0
## 118	0.0042320	21.200	29.41	142.10	1359.0
## 119	0.0040450	25.730	28.64	170.30	2009.0
## 120	0.0057150	14.190	24.85	94.22	591.2
## 121	0.0017080	15.490	23.58	100.30	725.9
## 122	0.0023650	23.240	27.84	158.30	1656.0
## 123	0.0022110	12.440	31.62	81.39	476.5
## 124	0.0018030	30.750	26.44	199.50	3143.0
## 125	0.0030090	12.510	20.79	79.67	475.8
## 126	0.0034110	12.680	21.61	82.69	489.8
## 127	0.0070980	16.310	22.40	106.40	827.2
## 128	0.0028710	15.790	31.71	102.20	758.2
## 129	0.0026860	22.320	25.73	148.20	1538.0
## 130	0.0037560	15.290	34.27	104.30	728.3
## 131	0.0057840	16.350	27.57	125.40	832.7
## 132	0.0039560	15.140	25.50	101.40	708.8
## 133	0.0013430	14.370	37.17	92.48	629.6
## 134	0.0042390	25.450	26.40	166.10	2027.0
## 135	0.0083130	11.690	20.74	76.08	411.1
## 136	0.0028010	26.460	31.56	177.00	2215.0
## 137	0.0067360	10.170	22.80	64.01	317.0
## 138	0.0025300	13.140	18.41	84.08	532.8
## 139	0.0037330	20.990	33.15	143.20	1362.0
## 140	0.0026350	13.100	21.33	83.67	527.2
## 141	0.0042170	21.310	27.26	139.90	1403.0
## 142	0.0061930	25.380	17.33	184.60	2019.0
## 143	0.0024980	23.690	38.25	155.00	1731.0
## 144	0.0061130	17.670	29.51	119.10	959.5
## 145	0.0037110	17.620	33.21	122.40	896.9

## 146	0.0019880	12.570	26.48	79.57	489.5
## 147	0.0041440	20.420	27.28	136.50	1299.0
## 148	0.0020010	18.130	25.45	117.20	1009.0
## 149	0.0029610	12.900	20.21	81.76	515.9
## 150	0.0013560	13.290	27.49	85.56	544.1
## 151	0.0013440	13.340	19.71	84.48	544.2
## 152	0.0042250	11.210	23.17	71.79	380.9
## 153	0.0018870	14.480	21.82	97.17	643.8
## 154	0.0026060	11.250	21.77	71.12	384.9
## 155	0.0228600	15.770	22.13	101.70	767.3
## 156	0.0027130	12.020	25.02	75.79	439.6
## 157	0.0011260	15.500	26.10	98.91	739.1
## 158	0.0030400	12.840	35.34	87.22	514.0
## 159	0.0044920	10.940	23.31	69.35	366.3
## 160	0.0019560	15.150	31.82	99.00	698.8
## 161	0.0014350	16.360	22.35	104.50	830.6
## 162	0.0065170	11.860	22.33	78.27	437.6
## 163	0.0020870	15.110	25.58	96.74	694.4
## 164	0.0021530	9.699	20.07	60.90	285.5
## 165	0.0028970	30.790	23.87	211.50	2782.0
## 166	0.0027470	33.120	32.85	220.80	3216.0
## 167	0.0014630	16.770	16.90	110.40	873.2
## 168	0.0058380	20.390	27.24	137.90	1295.0
## 169	0.0034790	14.770	20.50	97.67	677.3
## 170	0.0019760	15.340	22.46	97.19	725.9
## 171	0.0036430	15.670	27.95	102.80	759.4
## 172	0.0028460	17.040	30.80	113.90	869.3
## 173	0.0054120	17.060	28.14	110.60	897.0
## 174	0.0030090	14.800	30.04	97.66	661.5
## 175	0.0018680	17.980	29.87	116.60	993.6
## 176	0.0028480	14.240	24.82	91.88	622.1
## 177	0.0026080	26.140	28.14	170.10	2145.0
## 178	0.0035370	12.680	20.35	80.79	496.7
## 179	0.0035350	22.820	21.32	150.60	1567.0
## 180	0.0015320	13.340	32.84	84.58	547.8
## 181	0.0033380	14.440	28.36	92.15	638.4
## 182	0.0019480	19.770	24.56	128.80	1223.0

## 183	0.0018020	14.670	16.93	94.17	661.1
## 184	0.0028810	17.770	20.24	117.70	989.5
## 185	0.0019630	11.980	25.78	76.91	436.1
## 186	0.0034280	11.370	14.82	72.42	392.2
## 187	0.0023360	19.590	24.89	133.50	1189.0
## 188	0.0022050	22.520	31.39	145.60	1590.0
## 189	0.0015890	23.060	23.03	150.20	1657.0
## 190	0.0042610	10.750	20.88	68.09	355.2
## 191	0.0034340	19.920	25.27	129.00	1233.0
## 192	0.0018570	13.800	20.14	87.64	589.5
## 193	0.0023790	17.180	18.22	112.00	906.6
## 194	0.0054660	17.460	37.13	124.10	943.2
## 195	0.0024300	20.110	32.82	129.30	1269.0
## 196	0.0103900	20.330	32.72	141.30	1298.0
## 197	0.0048670	18.510	33.22	121.20	1050.0
## 198	0.0028930	16.110	29.11	102.90	803.7
## 199	0.0017870	15.350	25.16	101.90	719.8
## 200	0.0046220	13.130	19.29	87.65	529.9
## 201	0.0017540	14.990	25.20	95.54	698.8
## 202	0.0026900	12.760	32.04	83.69	489.5
## 203	0.0040150	16.760	31.55	110.20	867.1
## 204	0.0058910	13.330	25.47	89.00	527.4
## 205	0.0031000	13.060	18.16	84.16	516.4
## 206	0.0060000	17.110	36.33	117.70	909.4
## 207	0.0027680	12.770	24.02	82.68	495.1
## 208	0.0027580	13.360	23.39	85.10	553.6
## 209	0.0015660	14.970	16.94	95.48	698.7
## 210	0.0052950	26.680	33.48	176.50	2089.0
## 211	0.0036960	13.900	19.69	92.12	595.6
## 212	0.0041080	17.870	30.70	115.70	985.5
## 213	0.0062990	23.320	33.82	151.60	1681.0
## 214	0.0026130	14.240	17.37	96.59	623.7
## 215	0.0046720	11.940	19.35	80.78	433.1
## 216	0.0059530	11.020	17.45	69.86	368.6
## 217	0.0036290	14.450	21.74	93.63	624.1
## 218	0.0027440	16.450	27.26	112.10	828.5
## 219	0.0050820	15.470	23.75	103.40	741.6

## 220	0.0037400	28.010	28.22	184.20	2403.0
## 221	0.0013920	13.500	17.48	88.54	553.7
## 222	0.0044140	13.650	16.92	88.12	566.9
## 223	0.0047870	25.930	26.24	171.10	2053.0
## 224	0.0039760	13.110	32.16	84.53	525.1
## 225	0.0010020	11.540	19.20	73.20	408.3
## 226	0.0068200	8.952	22.44	56.65	240.1
## 227	0.0114800	10.600	18.04	69.47	328.1
## 228	0.0040050	22.030	25.07	146.00	1479.0
## 229	0.0026580	20.420	25.84	139.50	1239.0
## 230	0.0020300	12.760	22.06	82.08	492.7
## 231	0.0021280	13.120	38.81	86.04	527.8
## 232	0.0014320	13.180	16.85	84.11	533.1
## 233	0.0129800	15.300	23.73	107.00	709.0
## 234	0.0027890	19.280	30.38	129.80	1121.0
## 235	0.0017260	13.870	36.00	88.10	594.7
## 236	0.0032130	13.320	21.59	86.57	549.8
## 237	0.0043120	16.080	27.78	118.60	784.7
## 238	0.0039250	9.473	18.45	63.30	275.6
## 239	0.0026190	12.250	35.19	77.98	455.7
## 240	0.0035600	11.480	29.46	73.68	402.8
## 241	0.0026950	16.390	22.07	108.10	826.0
## 242	0.0038060	9.628	19.62	64.48	284.4
## 243	0.0045830	9.965	27.99	66.61	301.0
## 244	0.0015780	19.850	31.47	128.20	1218.0
## 245	0.0072590	25.280	25.59	159.80	1933.0
## 246	0.0041540	10.930	25.59	69.10	364.2
## 247	0.0024110	11.110	28.94	69.92	376.3
## 248	0.0061110	16.220	31.73	113.50	808.9
## 249	0.0025820	8.964	21.96	57.26	242.2
## 250	0.0043020	13.090	37.88	85.07	523.7
## 251	0.0032370	16.760	20.43	109.70	856.9
## 252	0.0060420	19.850	31.64	143.70	1226.0
## 253	0.0123300	12.040	18.93	79.73	450.0
## 254	0.0050990	20.800	27.78	149.60	1304.0
## 255	0.0055280	14.620	15.38	94.52	653.3
## 256	0.0045900	10.850	31.24	68.73	359.4

## 257	0.0023270	16.300	28.39	108.10	830.5
## 258	0.0016590	13.050	36.32	85.07	521.3
## 259	0.0019060	13.460	19.76	85.67	554.9
## 260	0.0023000	15.110	19.26	99.70	711.2
## 261	0.0017980	13.560	25.80	88.33	559.5
## 262	0.0049380	10.840	34.91	69.57	357.6
## 263	0.0024610	19.260	26.00	124.90	1156.0
## 264	0.0022170	16.410	26.42	104.40	830.5
## 265	0.0038540	20.880	32.09	136.10	1344.0
## 266	0.0037490	15.490	30.73	106.20	739.3
## 267	0.0046130	11.480	24.47	75.40	403.7
## 268	0.0219300	9.733	15.67	62.56	284.4
## 269	0.0023990	14.170	31.99	92.74	622.9
## 270	0.0039490	21.650	30.53	144.90	1417.0
## 271	0.0040670	13.740	21.06	90.72	591.0
## 272	0.0128400	20.960	29.94	151.70	1332.0
## 273	0.0014440	14.920	25.34	96.42	684.5
## 274	0.0023040	14.110	23.21	89.71	611.1
## 275	0.0033970	23.360	32.06	166.40	1688.0
## 276	0.0044760	28.110	18.47	188.50	2499.0
## 277	0.0018120	16.010	28.48	103.90	783.6
## 278	0.0038920	18.980	34.12	126.70	1124.0
## 279	0.0022280	11.660	24.77	74.08	412.3
## 280	0.0068720	9.077	30.92	57.17	248.0
## 281	0.0070540	22.390	18.91	150.10	1610.0
## 282	0.0022950	11.930	26.43	76.38	435.9
## 283	0.0027540	13.640	27.06	86.54	562.6
## 284	0.0017940	14.850	19.05	94.11	683.4
## 285	0.0015750	21.580	29.33	140.50	1436.0
## 286	0.0012190	16.460	25.44	106.00	831.0
## 287	0.0047680	16.860	34.85	115.00	811.3
## 288	0.0033910	23.730	25.23	160.50	1646.0
## 289	0.0050020	25.580	27.00	165.30	2010.0
## 290	0.0035630	14.380	22.15	95.29	633.7
## 291	0.0033240	10.490	34.24	66.50	330.6
## 292	0.0021770	14.840	20.21	99.16	670.6
## 293	0.0043060	16.390	34.01	111.60	806.9

## 294	0.0019600	14.290	24.04	93.85	624.6
## 295	0.0037960	27.660	25.80	195.00	2227.0
## 296	0.0047600	29.920	26.93	205.70	2642.0
## 297	0.0026890	24.300	25.48	160.20	1809.0
## 298	0.0019970	27.320	30.88	186.80	2398.0
## 299	0.0022340	13.450	15.77	86.92	549.9
## 300	0.0063550	17.390	23.05	122.10	939.7
## 301	0.0033620	22.030	17.81	146.60	1495.0
## 302	0.0019570	16.220	25.26	105.80	819.7
## 303	0.0026650	12.360	18.20	78.07	470.0
## 304	0.0040050	16.410	29.66	113.30	844.4
## 305	0.0031310	19.560	30.29	125.90	1088.0
## 306	0.0028870	24.470	37.38	162.70	1872.0
## 307	0.0061420	17.520	42.79	128.70	915.0
## 308	0.0019720	13.860	23.02	89.69	580.9
## 309	0.0093680	16.250	25.47	107.10	809.7
## 310	0.0029180	14.980	17.13	101.10	686.6
## 311	0.0027190	23.230	27.15	152.00	1645.0
## 312	0.0023620	19.850	25.09	130.90	1222.0
## 313	0.0015240	14.960	23.53	95.78	686.5
## 314	0.0030020	12.400	18.99	79.46	472.4
## 315	0.0033170	17.380	28.00	113.10	907.2
## 316	0.0016840	14.690	35.63	97.11	680.6
## 317	0.0051150	22.540	16.67	152.20	1575.0
## 318	0.0030530	31.010	34.51	206.00	2944.0
## 319	0.0047230	12.020	28.26	77.80	436.6
## 320	0.0027830	17.270	17.93	114.20	880.8
## 321	0.0096270	13.780	21.03	97.82	580.6
## 322	0.0026650	20.010	29.02	133.50	1229.0
## 323	0.0044110	24.220	31.59	156.10	1750.0
## 324	0.0038560	13.670	26.15	87.54	583.0
## 325	0.0013600	13.200	20.37	83.85	543.4
## 326	0.0037550	22.930	27.68	152.20	1603.0
## 327	0.0029250	15.330	30.28	98.27	715.5
## 328	0.0059840	20.190	30.50	130.30	1272.0
## 329	0.0015330	14.160	24.11	90.82	616.7
## 330	0.0031180	30.670	30.73	202.40	2906.0

## 331	0.0032200	10.620	14.10	66.53	342.9
## 332	0.0023780	14.450	24.38	95.14	626.9
## 333	0.0021200	11.600	12.02	73.66	414.0
## 334	0.0009502	12.850	16.47	81.60	513.1
## 335	0.0028870	18.550	21.43	121.40	971.4
## 336	0.0016560	17.380	15.92	113.70	932.7
## 337	0.0010580	13.720	20.98	86.82	585.7
## 338	0.0095590	10.310	22.65	65.50	324.7
## 339	0.0044450	24.540	34.37	161.10	1873.0
## 340	0.0022560	17.010	14.20	112.50	854.3
## 341	0.0016210	17.710	19.58	115.90	947.9
## 342	0.0033370	24.560	30.41	152.90	1623.0
## 343	0.0061870	17.730	25.21	113.70	975.2
## 344	0.0086750	12.580	27.96	87.16	472.9
## 345	0.0023730	19.470	31.68	129.70	1175.0
## 346	0.0046380	11.050	21.47	71.68	367.0
## 347	0.0041740	9.981	17.70	65.27	302.0
## 348	0.0035260	12.780	26.76	82.66	503.0
## 349	0.0017180	17.580	28.06	113.80	967.0
## 350	0.0036740	12.980	30.36	84.48	513.9
## 351	0.0021040	14.910	19.31	96.53	688.9
## 352	0.0037420	20.010	19.52	134.90	1227.0
## 353	0.0028010	13.890	35.74	88.84	595.7
## 354	0.0024770	13.010	29.15	83.99	518.1
## 355	0.0032240	17.310	33.39	114.60	925.1
## 356	0.0042370	10.410	31.56	67.03	330.7
## 357	0.0024720	10.420	23.22	67.08	331.6
## 358	0.0029220	13.300	24.99	85.22	546.3
## 359	0.0021790	22.880	27.66	153.20	1606.0
## 360	0.0046230	9.845	25.05	62.86	295.8
## 361	0.0039330	24.220	26.17	161.70	1750.0
## 362	0.0030020	16.840	27.66	112.00	876.5
## 363	0.0031360	13.450	38.05	85.08	558.9
## 364	0.0023710	11.380	15.65	73.23	394.5
## 365	0.0034080	12.830	20.92	82.14	495.2
## 366	0.0055120	12.260	19.68	78.78	457.8
## 367	0.0049680	20.470	25.11	132.90	1302.0



## 368	0.0022680	10.670	36.92	68.03	349.9
## 369	0.0019520	12.340	12.87	81.23	467.8
## 370	0.0025500	25.700	24.57	163.10	1972.0
## 371	0.0024800	13.570	21.40	86.67	552.0
## 372	0.0058220	10.010	19.23	65.59	310.1
## 373	0.0022220	13.350	28.46	84.53	544.3
## 374	0.0018580	13.340	27.87	88.83	547.4
## 375	0.0016380	14.340	22.15	91.62	633.5
## 376	0.0048210	13.190	16.36	83.24	534.0
## 377	0.0026260	16.510	32.29	107.40	826.4
## 378	0.0068840	14.180	23.13	95.23	600.5
## 379	0.0016270	12.200	18.99	77.37	458.0
## 380	0.0027840	12.650	21.19	80.88	491.8
## 381	0.0023260	15.630	28.01	100.90	749.1
## 382	0.0019710	10.930	24.22	70.10	362.7
## 383	0.0032490	16.210	29.25	108.40	808.9
## 384	0.0038170	20.210	27.26	132.70	1261.0
## 385	0.0012170	12.470	23.03	79.15	478.6
## 386	0.0058900	10.830	22.04	71.08	357.4
## 387	0.0046140	28.190	28.18	195.90	2384.0
## 388	0.0033170	11.060	24.54	70.76	375.4
## 389	0.0023550	16.990	35.27	108.60	906.5
## 390	0.0025690	17.320	17.76	109.80	928.2
## 391	0.0025560	21.530	38.54	145.40	1437.0
## 392	0.0017730	11.920	38.30	75.19	439.6
## 393	0.0025510	14.670	23.19	96.08	656.7
## 394	0.0034460	23.720	35.90	159.80	1724.0
## 395	0.0016970	15.850	20.20	101.60	773.4
## 396	0.0019700	15.510	19.97	99.66	745.3
## 397	0.0019820	12.640	19.67	81.93	475.7
## 398	0.0021420	16.430	25.84	107.50	830.9
## 399	0.0032880	22.750	34.66	157.60	1540.0
## 400	0.0056670	10.920	26.29	68.81	366.1
## 401	0.0034940	11.240	22.99	74.32	376.5
## 402	0.0040760	14.260	22.75	91.99	632.1
## 403	0.0038960	24.150	30.90	161.40	1813.0
## 404	0.0017110	25.370	23.17	166.80	1946.0

## 405	0.0081330	15.440	25.50	115.00	733.5
## 406	0.0019060	24.310	26.37	161.20	1780.0
## 407	0.0036960	16.970	19.14	113.10	861.5
## 408	0.0022060	12.820	15.97	83.74	510.5
## 409	0.0038840	18.810	27.37	127.10	1095.0
## 410	0.0035400	10.510	19.16	65.74	335.9
## 411	0.0075550	14.390	17.70	105.00	639.1
## 412	0.0020520	12.080	33.75	79.82	452.3
## 413	0.0023600	11.950	20.72	77.79	441.2
## 414	0.0037070	13.330	25.48	86.16	546.7
## 415	0.0020050	13.310	18.26	84.70	533.7
## 416	0.0032110	23.960	30.39	153.90	1740.0
## 417	0.0015880	12.320	22.02	79.93	462.0
## 418	0.0033730	16.670	21.51	111.40	862.1
## 419	0.0042860	24.190	33.81	160.00	1671.0
## 420	0.0046350	13.740	26.38	91.93	591.7
## 421	0.0298400	11.020	19.49	71.04	380.5
## 422	0.0016290	18.100	31.69	117.70	1030.0
## 423	0.0016190	11.990	16.30	76.25	440.8
## 424	0.0104500	10.280	16.38	69.05	300.2
## 425	0.0047840	12.370	17.70	79.12	467.2
## 426	0.0036010	17.090	33.47	111.80	888.3
## 427	0.0031140	12.810	17.72	83.09	496.2
## 428	0.0021680	16.310	20.54	102.30	777.5
## 429	0.0022780	10.650	22.88	67.88	347.3
## 430	0.0086600	17.730	22.66	119.80	928.8
## 431	0.0014650	16.890	35.64	113.20	848.7
## 432	0.0027250	21.860	26.20	142.20	1493.0
## 433	0.0026070	13.670	24.90	87.78	567.9
## 434	0.0052550	22.750	22.88	146.40	1600.0
## 435	0.0049760	12.360	26.87	90.14	476.4
## 436	0.0024760	15.530	18.00	98.40	749.9
## 437	0.0016760	19.960	24.30	129.00	1236.0
## 438	0.0021520	13.880	22.00	90.81	600.6
## 439	0.0027880	9.507	15.40	59.90	274.9
## 440	0.0050610	13.320	26.21	88.91	543.9
## 441	0.0045720	14.420	21.95	99.21	634.3

## 442	0.0025830	15.350	29.09	97.58	729.8
## 443	0.0035200	18.230	24.23	123.50	1025.0
## 444	0.0027870	14.830	18.32	94.94	660.2
## 445	0.0027590	22.510	44.87	141.20	1408.0
## 446	0.0029680	10.230	15.66	65.13	314.9
## 447	0.0030870	15.010	26.34	98.00	706.0
## 448	0.0017550	13.070	22.25	82.74	523.4
## 449	0.0047750	13.250	27.10	86.20	531.2
## 450	0.0044170	22.960	34.49	152.10	1648.0
## 451	0.0028210	11.520	19.80	73.47	395.4
## 452	0.0056720	15.650	39.34	101.70	768.9
## 453	0.0062400	20.820	30.44	142.00	1313.0
## 454	0.0089250	12.790	28.18	83.51	507.2
## 455	0.0022720	13.050	27.21	85.09	522.9
## 456	0.0025280	15.850	19.85	108.60	766.9
## 457	0.0061640	14.080	12.49	91.36	605.5
## 458	0.0022990	32.490	47.16	214.00	3432.0
## 459	0.0033990	9.262	17.04	58.36	259.2
## 460	0.0009683	14.000	29.02	88.18	608.8
## 461	0.0045580	36.040	31.37	251.20	4254.0
## 462	0.0045150	22.660	30.93	145.30	1603.0
## 463	0.0019410	12.090	20.83	79.73	447.1
## 464	0.0025640	15.270	17.50	97.90	706.6
## 465	0.0074440	22.250	21.40	152.40	1461.0
## 466	0.0060050	12.880	22.91	89.61	515.8
## 467	0.0025850	14.410	20.45	92.00	636.9
## 468	0.0024360	20.380	22.02	133.30	1292.0
## 469	0.0075960	11.280	20.61	71.53	390.4
## 470	0.0028300	15.660	21.58	101.20	750.0
## 471	0.0058750	13.750	23.50	89.04	579.5
## 472	0.0015200	15.980	25.82	102.30	782.1
## 473	0.0017770	13.300	22.81	84.46	545.9
## 474	0.0022560	27.900	45.41	180.20	2477.0
## 475	0.0038830	13.600	33.33	87.24	567.6
## 476	0.0024510	21.840	25.00	140.90	1485.0
## 477	0.0073580	12.570	28.71	87.36	488.4
## 478	0.0022050	25.680	32.07	168.20	2022.0

## 479	0.0028150	16.250	26.19	109.10	809.8
## 480	0.0069950	16.010	32.94	106.00	788.0
## 481	0.0028080	15.700	15.98	102.80	745.5
## 482	0.0044520	16.330	30.86	109.50	826.4
## 483	0.0045600	23.150	34.01	160.50	1670.0
## 484	0.0179200	11.260	24.39	73.07	390.2
## 485	0.0026680	13.280	19.74	83.61	542.5
## 486	0.0073300	17.360	24.17	119.40	915.3
## 487	0.0039130	11.140	25.62	70.88	385.2
## 488	0.0050370	28.400	28.01	206.80	2360.0
## 489	0.0027010	14.500	28.46	95.29	648.3
## 490	0.0044350	13.240	32.82	91.76	508.1
## 491	0.0039960	21.530	26.06	143.40	1426.0
## 492	0.0061850	25.740	39.42	184.60	1821.0
## 493	0.0041680	18.790	17.04	125.00	1102.0
## 494	0.0035340	11.620	26.51	76.43	407.5
## 495	0.0030480	9.565	27.04	62.06	273.9
## 496	0.0032990	15.050	24.37	99.31	674.7
## 497	0.0035700	10.760	26.83	72.22	361.2
## 498	0.0017200	16.230	29.89	105.50	740.7
## 499	0.0052520	25.050	36.27	178.60	1926.0
## 500	0.0033590	18.490	49.54	126.30	1035.0
## 501	0.0017000	19.180	26.56	127.30	1084.0
## 502	0.0030420	19.190	33.88	123.80	1150.0
## 503	0.0041420	20.960	31.48	136.80	1315.0
## 504	0.0122000	10.850	22.82	76.51	351.9
## 505	0.0052170	13.360	25.40	88.14	528.1
## 506	0.0025340	12.360	41.78	78.44	470.9
## 507	0.0013810	14.910	20.65	94.44	684.6
## 508	0.0017790	15.610	17.58	101.70	760.2
## 509	0.0062130	24.290	29.41	179.10	1819.0
## 510	0.0058150	23.170	27.65	157.10	1748.0
## 511	0.0024250	14.500	20.49	96.09	630.5
## 512	0.0027510	20.920	34.69	135.10	1320.0
## 513	0.0056670	16.820	28.12	119.40	888.7
## 514	0.0027350	15.340	16.35	99.71	706.2
## 515	0.0040850	19.380	31.03	129.30	1165.0

## 516	0.0056170	15.200	30.15	105.30	706.0
## 517	0.0035320	24.990	23.41	158.80	1956.0
## 518	0.0045710	23.570	25.53	152.50	1709.0
## 519	0.0051260	20.600	24.13	135.10	1321.0
## 520	0.0041980	14.550	29.16	99.48	639.3
## 521	0.0048300	12.130	21.57	81.41	440.4
## 522	0.0035860	14.970	24.64	96.05	677.9
## 523	0.0017500	17.260	36.91	110.10	931.4
## 524	0.0027830	9.456	30.37	59.16	268.6
## 525	0.0041000	7.930	19.54	50.41	185.2
## 526	0.0021570	13.900	23.64	89.27	597.5
## 527	0.0034070	14.200	31.31	90.67	624.0
## 528	0.0019020	20.580	27.83	129.20	1261.0
## 529	0.0029280	12.360	26.14	79.29	459.3
## 530	0.0029790	11.150	24.62	71.11	380.2
## 531	0.0080150	13.240	27.29	92.20	546.1
## 532	0.0075510	8.678	31.89	54.49	223.6
## 533	0.0011800	13.820	20.96	88.87	586.8
## 534	0.0045840	17.790	28.45	123.50	981.2
## 535	0.0032240	22.630	33.58	148.70	1589.0
## 536	0.0022890	14.090	19.35	93.22	605.8
## 537	0.0023860	12.840	22.47	81.81	506.2
## 538	0.0016610	12.610	26.55	80.92	483.1
## 539	0.0035990	15.050	24.75	99.17	688.6
## 540	0.0025510	13.060	17.16	82.96	512.5
## 541	0.0025810	19.800	25.05	130.00	1210.0
## 542	0.0039010	10.570	17.84	67.84	326.6
## 543	0.0020150	13.500	23.08	85.56	564.1
## 544	0.0033450	25.300	31.86	171.10	1938.0
## 545	0.0059870	23.370	31.72	170.30	1623.0
## 546	0.0047260	13.740	19.93	88.81	585.4
## 547	0.0056010	9.414	17.07	63.34	270.0
## 548	0.0021330	13.750	25.99	87.82	579.7
## 549	0.0053040	15.300	33.17	100.20	706.7
## 550	0.0024220	13.760	20.70	89.88	582.6
## 551	0.0077310	14.400	27.01	91.63	645.8
## 552	0.0048310	12.120	15.82	79.62	453.5

## 553	0.0100800	15.090	40.68	97.65	711.4
## 554	0.0023180	13.500	27.98	88.52	552.3
## 555	0.0018280	14.350	34.23	91.29	632.9
## 556	0.0040280	26.230	28.74	172.00	2081.0
## 557	0.0014610	12.970	22.46	83.12	508.9
## 558	0.0054440	16.460	18.34	114.10	809.2
## 559	0.0047850	11.350	16.82	72.01	396.5
## 560	0.0019710	16.430	22.74	105.90	829.5
## 561	0.0040220	15.890	30.36	116.20	799.6
## 562	0.0020650	13.750	21.38	91.11	583.1
## 563	0.0018920	15.400	31.98	100.40	734.6
## 564	0.0031070	14.040	21.08	92.80	599.5
## 565	0.0016720	14.900	23.89	95.10	687.6
## 566	0.0067580	10.880	19.48	70.89	357.1
## 567	0.0025750	17.800	28.03	113.80	973.1
## 568	0.0035630	15.800	16.93	103.10	749.9
## 569	0.0043670	22.690	21.84	152.10	1535.0
##	smoothness_worst	compactness_worst	concavity_worst	points_worst	
## 1	0.13850	0.12660	0.124200	0.093910	
## 2	0.12130	0.25150	0.191600	0.079260	
## 3	0.13690	0.14820	0.106700	0.074310	
## 4	0.13670	0.18220	0.086690	0.086110	
## 5	0.11260	0.17370	0.136200	0.081780	
## 6	0.12490	0.19370	0.256000	0.066640	
## 7	0.12980	0.25170	0.363000	0.096530	
## 8	0.22260	0.52090	0.464600	0.201300	
## 9	0.12190	0.14860	0.079870	0.032030	
## 10	0.14180	0.22100	0.229900	0.107500	
## 11	0.14640	0.35970	0.517900	0.211300	
## 12	0.12170	0.17880	0.194300	0.082110	
## 13	0.13510	0.35490	0.450400	0.118100	
## 14	0.10210	0.06191	0.001845	0.011110	
## 15	0.15280	0.18450	0.397700	0.146600	
## 16	0.10260	0.31710	0.366200	0.110500	
## 17	0.12230	0.19490	0.170900	0.137400	
## 18	0.13840	0.12120	0.102000	0.056020	
## 19	0.13470	0.33910	0.493200	0.192300	

## 20	0.14270	0.25850	0.099150	0.081870
## 21	0.13230	0.10400	0.152100	0.109900
## 22	0.17680	0.32510	0.139500	0.130800
## 23	0.13630	0.16440	0.141200	0.078870
## 24	0.13860	0.28830	0.196000	0.142300
## 25	0.13000	0.20490	0.129500	0.061360
## 26	0.14110	0.35420	0.277900	0.138300
## 27	0.13390	0.17510	0.138100	0.079110
## 28	0.16410	0.61100	0.633500	0.202400
## 29	0.12330	0.34160	0.434100	0.081200
## 30	0.12130	0.16760	0.136400	0.069870
## 31	0.10160	0.05847	0.018240	0.035320
## 32	0.14190	0.15230	0.217700	0.093310
## 33	0.12070	0.47850	0.516500	0.199600
## 34	0.12400	0.17950	0.137700	0.095320
## 35	0.12230	0.19280	0.249200	0.091860
## 36	0.12750	0.31040	0.256900	0.105400
## 37	0.11930	0.23360	0.268700	0.178900
## 38	0.14240	0.25170	0.094200	0.060420
## 39	0.11680	0.21190	0.231800	0.147400
## 40	0.13650	0.47060	0.502600	0.173200
## 41	0.15220	0.29450	0.378800	0.169700
## 42	0.14380	0.38460	0.681000	0.224700
## 43	0.20980	0.86630	0.686900	0.257500
## 44	0.11420	0.19750	0.145000	0.058500
## 45	0.09384	0.20060	0.138400	0.062220
## 46	0.08822	0.19630	0.253500	0.091810
## 47	0.10300	0.06219	0.045800	0.040440
## 48	0.15300	0.59370	0.645100	0.275600
## 49	0.14280	0.25700	0.343800	0.145300
## 50	0.10500	0.21580	0.190400	0.076250
## 51	0.14600	0.43700	0.463600	0.165400
## 52	0.11360	0.36270	0.340200	0.137900
## 53	0.12440	0.17260	0.144900	0.053560
## 54	0.10810	0.24260	0.306400	0.082190
## 55	0.15360	0.41670	0.789200	0.273300
## 56	0.15360	0.47910	0.485800	0.170800

## 57	0.10730	0.27930	0.269000	0.105600
## 58	0.15210	0.10190	0.006920	0.010420
## 59	0.16960	0.42440	0.580300	0.224800
## 60	0.15180	0.37490	0.431600	0.225200
## 61	0.12470	0.74440	0.724200	0.249300
## 62	0.13760	0.38300	0.489000	0.172100
## 63	0.12430	0.17930	0.280300	0.109900
## 64	0.10940	0.20430	0.208500	0.111200
## 65	0.13900	0.59540	0.630500	0.239300
## 66	0.14520	0.23380	0.168800	0.081940
## 67	0.12760	0.13110	0.178600	0.096780
## 68	0.10110	0.07087	0.047460	0.058130
## 69	0.11850	0.17240	0.145600	0.099930
## 70	0.15500	0.29640	0.275800	0.081200
## 71	0.16100	0.42250	0.503000	0.225800
## 72	0.14020	0.14020	0.105500	0.064990
## 73	0.12210	0.37480	0.460900	0.114500
## 74	0.09862	0.09976	0.104800	0.083410
## 75	0.08774	0.17100	0.188200	0.084360
## 76	0.13040	0.24630	0.243400	0.120500
## 77	0.12340	0.24450	0.353800	0.157100
## 78	0.12900	0.09148	0.144400	0.069610
## 79	0.11940	0.22080	0.176900	0.084110
## 80	0.14820	0.37350	0.330100	0.197400
## 81	0.12160	0.16370	0.066480	0.084850
## 82	0.10960	0.16500	0.142300	0.048150
## 83	0.11400	0.16670	0.121200	0.056140
## 84	0.12770	0.30890	0.260400	0.139700
## 85	0.16100	0.24290	0.224700	0.131800
## 86	0.09616	0.11470	0.118600	0.053660
## 87	0.12920	0.20740	0.179100	0.107000
## 88	0.11720	0.14210	0.070030	0.077630
## 89	0.14010	0.26000	0.315500	0.200900
## 90	0.14250	0.25660	0.193500	0.128400
## 91	0.11620	0.05445	0.027580	0.039900
## 92	0.12760	0.25060	0.202800	0.105300
## 93	0.10840	0.18070	0.226000	0.085680



## 94	0.12180	0.10930	0.044620	0.059210
## 95	0.15330	0.93270	0.848800	0.177200
## 96	0.14350	0.44780	0.495600	0.198100
## 97	0.09329	0.23180	0.160400	0.066080
## 98	0.13690	0.17580	0.131600	0.091400
## 99	0.14060	0.14400	0.065720	0.055750
## 100	0.15730	0.60760	0.647600	0.286700
## 101	0.13350	0.25500	0.253400	0.086000
## 102	0.07117	0.02729	0.000000	0.000000
## 103	0.13580	0.15070	0.127500	0.087500
## 104	0.14640	0.18710	0.291400	0.160900
## 105	0.11010	0.15080	0.229800	0.049700
## 106	0.13520	0.20100	0.259600	0.074310
## 107	0.10960	0.20020	0.238800	0.092650
## 108	0.14020	0.23150	0.353500	0.080880
## 109	0.12040	0.16330	0.061940	0.032640
## 110	0.12820	0.11080	0.035820	0.043060
## 111	0.16880	0.26600	0.287300	0.121800
## 112	0.16300	0.43100	0.538100	0.078790
## 113	0.15030	0.22910	0.327200	0.167400
## 114	0.16510	0.77250	0.694300	0.220800
## 115	0.10850	0.08615	0.055230	0.037150
## 116	0.14360	0.41220	0.503600	0.173900
## 117	0.15520	0.40560	0.496700	0.183800
## 118	0.16810	0.39130	0.555300	0.212100
## 119	0.13530	0.32350	0.361700	0.182000
## 120	0.13430	0.26580	0.257300	0.125800
## 121	0.11570	0.13500	0.081150	0.051040
## 122	0.11780	0.29200	0.386100	0.192000
## 123	0.09545	0.13610	0.072390	0.048150
## 124	0.13630	0.16280	0.286100	0.182000
## 125	0.15310	0.11200	0.098230	0.065480
## 126	0.11440	0.17890	0.122600	0.055090
## 127	0.18620	0.40990	0.637600	0.198600
## 128	0.13120	0.15810	0.267500	0.135900
## 129	0.10210	0.22640	0.320700	0.121800
## 130	0.13800	0.27330	0.423400	0.136200

## 131	0.14190	0.70900	0.901900	0.247500
## 132	0.11470	0.31670	0.366000	0.140700
## 133	0.10720	0.13810	0.106200	0.079580
## 134	0.14100	0.21130	0.410700	0.221600
## 135	0.16620	0.20310	0.125600	0.095140
## 136	0.18050	0.35780	0.469500	0.209500
## 137	0.14600	0.13100	0.000000	0.000000
## 138	0.12750	0.12320	0.086360	0.070250
## 139	0.14490	0.20530	0.392000	0.182700
## 140	0.11440	0.08906	0.092030	0.062960
## 141	0.13380	0.21170	0.344600	0.149000
## 142	0.16220	0.66560	0.711900	0.265400
## 143	0.11660	0.19220	0.321500	0.162800
## 144	0.16400	0.62470	0.692200	0.178500
## 145	0.15250	0.66430	0.553900	0.270100
## 146	0.13560	0.10000	0.088030	0.043060
## 147	0.13960	0.56090	0.396500	0.181000
## 148	0.13380	0.16790	0.166300	0.091230
## 149	0.08409	0.04712	0.022370	0.028320
## 150	0.11840	0.19630	0.193700	0.084420
## 151	0.11040	0.04953	0.019380	0.027840
## 152	0.13980	0.13520	0.020850	0.045890
## 153	0.13120	0.25480	0.209000	0.101200
## 154	0.12850	0.08842	0.043840	0.023810
## 155	0.09983	0.24720	0.222000	0.102100
## 156	0.13330	0.10490	0.114400	0.050520
## 157	0.10500	0.07622	0.106000	0.051850
## 158	0.19090	0.26980	0.402300	0.142400
## 159	0.09794	0.06542	0.039860	0.022220
## 160	0.11620	0.17110	0.228200	0.128200
## 161	0.10060	0.12380	0.135000	0.100100
## 162	0.10280	0.18430	0.154600	0.093140
## 163	0.11530	0.10080	0.052850	0.055560
## 164	0.09861	0.05232	0.014720	0.013890
## 165	0.11990	0.36250	0.379400	0.226400
## 166	0.14720	0.40340	0.534000	0.268800
## 167	0.12970	0.15250	0.163200	0.108700

## 168	0.11340	0.28670	0.229800	0.152800
## 169	0.14780	0.22560	0.300900	0.097220
## 170	0.09711	0.18240	0.156400	0.060190
## 171	0.17860	0.41660	0.500600	0.208800
## 172	0.16130	0.35680	0.406900	0.182700
## 173	0.16540	0.36820	0.267800	0.155600
## 174	0.10050	0.17300	0.145300	0.061890
## 175	0.14010	0.15460	0.264400	0.116000
## 176	0.12890	0.21410	0.173100	0.079260
## 177	0.16240	0.35110	0.387900	0.209100
## 178	0.11200	0.18790	0.207900	0.055560
## 179	0.16790	0.50900	0.734500	0.237800
## 180	0.11230	0.08862	0.114500	0.074310
## 181	0.14290	0.20420	0.137700	0.108000
## 182	0.15000	0.20450	0.282900	0.152000
## 183	0.11700	0.10720	0.037320	0.058020
## 184	0.14910	0.33310	0.332700	0.125200
## 185	0.14240	0.09669	0.013350	0.020220
## 186	0.09312	0.07506	0.028840	0.031940
## 187	0.17030	0.39340	0.501800	0.254300
## 188	0.14650	0.22750	0.396500	0.137900
## 189	0.10540	0.15370	0.260600	0.142500
## 190	0.14670	0.09370	0.040430	0.051590
## 191	0.13140	0.22360	0.280200	0.121600
## 192	0.13740	0.15750	0.151400	0.068760
## 193	0.10650	0.27910	0.315100	0.114700
## 194	0.16780	0.65770	0.702600	0.171200
## 195	0.14140	0.35470	0.290200	0.154100
## 196	0.13920	0.28170	0.243200	0.184100
## 197	0.16600	0.23560	0.402900	0.152600
## 198	0.11150	0.17660	0.091890	0.069460
## 199	0.16240	0.31240	0.265400	0.142700
## 200	0.10260	0.24310	0.307600	0.091400
## 201	0.09387	0.05131	0.023980	0.028990
## 202	0.13030	0.16960	0.192700	0.074850
## 203	0.10770	0.33450	0.311400	0.130800
## 204	0.12870	0.22500	0.221600	0.110500

## 205	0.14600	0.11150	0.108700	0.078640
## 206	0.17320	0.49670	0.591100	0.216300
## 207	0.13420	0.18080	0.186000	0.082880
## 208	0.11370	0.07974	0.061200	0.071600
## 209	0.09023	0.05836	0.013790	0.022100
## 210	0.14910	0.75840	0.678000	0.290300
## 211	0.09926	0.23170	0.334400	0.101700
## 212	0.13680	0.42900	0.358700	0.183400
## 213	0.15850	0.73940	0.656600	0.189900
## 214	0.11660	0.26850	0.286600	0.091730
## 215	0.13320	0.38980	0.336500	0.079660
## 216	0.12750	0.09866	0.021680	0.025790
## 217	0.14750	0.19790	0.142300	0.080450
## 218	0.11530	0.34290	0.251200	0.133900
## 219	0.17910	0.52490	0.535500	0.174100
## 220	0.12280	0.35830	0.394800	0.234600
## 221	0.12980	0.14720	0.052330	0.063430
## 222	0.13140	0.16070	0.093850	0.082240
## 223	0.14950	0.41160	0.612100	0.198000
## 224	0.15570	0.16760	0.175500	0.061270
## 225	0.10760	0.06791	0.000000	0.000000
## 226	0.13470	0.07767	0.000000	0.000000
## 227	0.20060	0.36630	0.291300	0.107500
## 228	0.16650	0.29420	0.530800	0.217300
## 229	0.13810	0.34200	0.350800	0.193900
## 230	0.11660	0.09794	0.005518	0.016670
## 231	0.14060	0.20310	0.292300	0.068350
## 232	0.10480	0.06744	0.049210	0.047930
## 233	0.08949	0.41930	0.678300	0.150500
## 234	0.15900	0.29470	0.359700	0.158300
## 235	0.12340	0.10640	0.086530	0.064980
## 236	0.15260	0.14770	0.149000	0.098150
## 237	0.13160	0.46480	0.458900	0.172700
## 238	0.16410	0.22350	0.175400	0.085120
## 239	0.14990	0.13980	0.112500	0.061360
## 240	0.15150	0.10260	0.118100	0.067360
## 241	0.15120	0.32620	0.320900	0.137400

## 242	0.17240	0.23640	0.245600	0.105000
## 243	0.10860	0.18870	0.186800	0.025640
## 244	0.12400	0.14860	0.121100	0.082350
## 245	0.17100	0.59550	0.848900	0.250700
## 246	0.11990	0.09546	0.093500	0.038460
## 247	0.11260	0.07094	0.012350	0.025790
## 248	0.13400	0.42020	0.404000	0.120500
## 249	0.12970	0.13570	0.068800	0.025640
## 250	0.12080	0.18560	0.181100	0.071160
## 251	0.11350	0.21760	0.185600	0.101800
## 252	0.15040	0.51720	0.618100	0.246200
## 253	0.11020	0.28090	0.302100	0.082720
## 254	0.18730	0.59170	0.903400	0.196400
## 255	0.13940	0.13640	0.155900	0.101500
## 256	0.15260	0.11930	0.061410	0.037700
## 257	0.10890	0.26490	0.377900	0.095940
## 258	0.14530	0.16220	0.181100	0.086980
## 259	0.12960	0.07061	0.103900	0.058820
## 260	0.14400	0.17730	0.239000	0.128800
## 261	0.14320	0.17730	0.160300	0.062660
## 262	0.13840	0.17100	0.200000	0.091270
## 263	0.15460	0.23940	0.379100	0.151400
## 264	0.10640	0.14150	0.167300	0.081500
## 265	0.16340	0.35590	0.558800	0.184700
## 266	0.17030	0.54010	0.539000	0.206000
## 267	0.09527	0.13970	0.192500	0.035710
## 268	0.12070	0.24360	0.143400	0.047860
## 269	0.12560	0.18040	0.123000	0.063350
## 270	0.14630	0.29680	0.345800	0.156400
## 271	0.09534	0.18120	0.190100	0.082960
## 272	0.10370	0.39030	0.363900	0.176700
## 273	0.10660	0.12310	0.084600	0.079110
## 274	0.11760	0.18430	0.170300	0.086600
## 275	0.13220	0.56010	0.386500	0.170800
## 276	0.11420	0.15160	0.320100	0.159500
## 277	0.12160	0.13880	0.170000	0.101700
## 278	0.11390	0.30940	0.340300	0.141800

## 279	0.10010	0.07348	0.000000	0.000000
## 280	0.12560	0.08340	0.000000	0.000000
## 281	0.14780	0.56340	0.378600	0.210200
## 282	0.11080	0.07723	0.025330	0.028320
## 283	0.12890	0.13520	0.045060	0.050930
## 284	0.12780	0.12910	0.153300	0.092220
## 285	0.15580	0.25670	0.388900	0.198400
## 286	0.11420	0.20700	0.243700	0.078280
## 287	0.15590	0.40590	0.374400	0.177200
## 288	0.14170	0.33090	0.418500	0.161300
## 289	0.12110	0.31720	0.699100	0.210500
## 290	0.15330	0.38420	0.358200	0.140700
## 291	0.10730	0.07158	0.000000	0.000000
## 292	0.11050	0.20960	0.134600	0.069870
## 293	0.17370	0.31220	0.380900	0.167300
## 294	0.13680	0.21700	0.241300	0.088290
## 295	0.12940	0.38850	0.475600	0.243200
## 296	0.13420	0.41880	0.465800	0.247500
## 297	0.12680	0.31350	0.443300	0.214800
## 298	0.15120	0.31500	0.537200	0.238800
## 299	0.15210	0.16320	0.162200	0.073930
## 300	0.13770	0.44620	0.589700	0.177500
## 301	0.11240	0.20160	0.226400	0.177700
## 302	0.09445	0.21670	0.156500	0.075300
## 303	0.11710	0.08294	0.018540	0.039530
## 304	0.15740	0.38560	0.510600	0.205100
## 305	0.15520	0.44800	0.397600	0.147900
## 306	0.12230	0.27610	0.414600	0.156300
## 307	0.14170	0.79170	1.170000	0.235600
## 308	0.11720	0.19580	0.181000	0.083880
## 309	0.09970	0.25210	0.250000	0.084050
## 310	0.13760	0.26980	0.257700	0.090900
## 311	0.10970	0.25340	0.309200	0.161300
## 312	0.14160	0.24050	0.337800	0.185700
## 313	0.11990	0.13460	0.174200	0.090770
## 314	0.13590	0.08368	0.071530	0.089460
## 315	0.15300	0.37240	0.366400	0.149200

## 316	0.11080	0.14570	0.079340	0.057810
## 317	0.13740	0.20500	0.400000	0.162500
## 318	0.14810	0.41260	0.582000	0.259300
## 319	0.10870	0.17820	0.156400	0.064130
## 320	0.12200	0.20090	0.215100	0.125100
## 321	0.11750	0.40610	0.489600	0.134200
## 322	0.15630	0.38350	0.540900	0.181300
## 323	0.11900	0.35390	0.409800	0.157300
## 324	0.15000	0.23990	0.150300	0.072470
## 325	0.10370	0.07776	0.062430	0.040520
## 326	0.13980	0.20890	0.315700	0.164200
## 327	0.12870	0.15130	0.062310	0.079630
## 328	0.18550	0.49250	0.735600	0.203400
## 329	0.12970	0.11050	0.081120	0.062960
## 330	0.15150	0.26780	0.481900	0.208900
## 331	0.12340	0.07204	0.000000	0.000000
## 332	0.12140	0.16520	0.071270	0.063840
## 333	0.14360	0.12570	0.104700	0.046030
## 334	0.10010	0.05332	0.041160	0.018520
## 335	0.14110	0.21640	0.335500	0.166700
## 336	0.12220	0.21860	0.296200	0.103500
## 337	0.09293	0.04327	0.003581	0.016350
## 338	0.14820	0.43650	1.252000	0.175000
## 339	0.14980	0.48270	0.463400	0.204800
## 340	0.15410	0.29790	0.400400	0.145200
## 341	0.12060	0.17220	0.231000	0.112900
## 342	0.12490	0.32060	0.575500	0.195600
## 343	0.14260	0.21160	0.334400	0.104700
## 344	0.13470	0.48480	0.743600	0.121800
## 345	0.13950	0.30550	0.299200	0.131200
## 346	0.14670	0.17650	0.130000	0.053340
## 347	0.10150	0.12480	0.094410	0.047620
## 348	0.14130	0.17920	0.077080	0.064020
## 349	0.12460	0.21010	0.286600	0.112000
## 350	0.13110	0.18220	0.160900	0.120200
## 351	0.10340	0.10170	0.062600	0.082160
## 352	0.12550	0.28120	0.248900	0.145600

## 353	0.12270	0.16200	0.243900	0.064930
## 354	0.16990	0.21960	0.312000	0.082780
## 355	0.16480	0.34160	0.302400	0.161400
## 356	0.15480	0.16640	0.094120	0.065170
## 357	0.14150	0.12470	0.062130	0.055880
## 358	0.12800	0.18800	0.147100	0.069130
## 359	0.14420	0.25760	0.378400	0.193200
## 360	0.11030	0.08298	0.079930	0.025640
## 361	0.12280	0.23110	0.315800	0.144500
## 362	0.11310	0.19240	0.232200	0.111900
## 363	0.09422	0.05213	0.000000	0.000000
## 364	0.13430	0.16500	0.086150	0.066960
## 365	0.11400	0.09358	0.049800	0.058820
## 366	0.13450	0.21180	0.179700	0.069180
## 367	0.14180	0.34980	0.358300	0.151500
## 368	0.11100	0.11090	0.071900	0.048660
## 369	0.10920	0.16260	0.083240	0.047150
## 370	0.14970	0.31610	0.431700	0.199900
## 371	0.15800	0.17510	0.188900	0.084110
## 372	0.09836	0.16780	0.139700	0.050870
## 373	0.12220	0.09052	0.036190	0.039830
## 374	0.12080	0.22790	0.162000	0.056900
## 375	0.12250	0.15170	0.188700	0.098510
## 376	0.09439	0.06477	0.016740	0.026800
## 377	0.10600	0.13760	0.161100	0.109500
## 378	0.14270	0.35930	0.320600	0.098040
## 379	0.12590	0.07348	0.004955	0.011110
## 380	0.13890	0.15820	0.180400	0.096080
## 381	0.11180	0.11410	0.047530	0.058900
## 382	0.11430	0.08614	0.041580	0.031250
## 383	0.13060	0.19760	0.334900	0.122500
## 384	0.14460	0.58040	0.527400	0.186400
## 385	0.14830	0.15740	0.162400	0.085420
## 386	0.14610	0.22460	0.178300	0.083330
## 387	0.12720	0.47250	0.580700	0.184100
## 388	0.14130	0.10440	0.084230	0.065280
## 389	0.12650	0.19430	0.316900	0.118400



## 390	0.13540	0.13610	0.194700	0.135700
## 391	0.14010	0.37620	0.639900	0.197000
## 392	0.09267	0.05494	0.000000	0.000000
## 393	0.10890	0.15820	0.105000	0.085860
## 394	0.17820	0.38410	0.575400	0.187200
## 395	0.12640	0.15640	0.120600	0.087040
## 396	0.08484	0.12330	0.109100	0.045370
## 397	0.14150	0.21700	0.230200	0.110500
## 398	0.12570	0.19970	0.284600	0.147600
## 399	0.12180	0.34580	0.473400	0.225500
## 400	0.13160	0.09473	0.020490	0.023810
## 401	0.14190	0.22430	0.084340	0.065280
## 402	0.10250	0.25310	0.330800	0.089780
## 403	0.15090	0.65900	0.609100	0.178500
## 404	0.15620	0.30550	0.415900	0.211200
## 405	0.12010	0.56460	0.655600	0.135700
## 406	0.13270	0.23760	0.270200	0.176500
## 407	0.12350	0.25500	0.211400	0.125100
## 408	0.15480	0.23900	0.210200	0.089580
## 409	0.18780	0.44800	0.470400	0.202700
## 410	0.15040	0.09515	0.071610	0.072220
## 411	0.12540	0.58490	0.772700	0.156100
## 412	0.09203	0.14320	0.108900	0.020830
## 413	0.10760	0.12230	0.097550	0.034130
## 414	0.12710	0.10280	0.104600	0.069680
## 415	0.10360	0.08500	0.067350	0.082900
## 416	0.15140	0.37250	0.593600	0.206000
## 417	0.11900	0.16480	0.139900	0.084760
## 418	0.12940	0.33710	0.375500	0.141400
## 419	0.12780	0.34160	0.370300	0.215200
## 420	0.13850	0.40920	0.450400	0.186500
## 421	0.12920	0.27720	0.821600	0.157100
## 422	0.13890	0.20570	0.271200	0.153000
## 423	0.13410	0.08971	0.071160	0.055060
## 424	0.19020	0.34410	0.209900	0.102500
## 425	0.11210	0.16100	0.164800	0.062960
## 426	0.18510	0.40610	0.402400	0.171600

## 427	0.12930	0.18850	0.031220	0.047660
## 428	0.12180	0.15500	0.122000	0.079710
## 429	0.12650	0.12000	0.010050	0.022320
## 430	0.17650	0.45030	0.442900	0.222900
## 431	0.14710	0.28840	0.379600	0.132900
## 432	0.14920	0.25360	0.375900	0.151000
## 433	0.13770	0.20030	0.226700	0.076320
## 434	0.14120	0.30890	0.353300	0.166300
## 435	0.13910	0.40820	0.477900	0.155500
## 436	0.12810	0.11090	0.053070	0.058900
## 437	0.12430	0.11600	0.221000	0.129400
## 438	0.10970	0.15060	0.176400	0.082350
## 439	0.17330	0.12390	0.116800	0.044190
## 440	0.13580	0.18920	0.195600	0.079090
## 441	0.12880	0.32530	0.343900	0.098580
## 442	0.12160	0.15170	0.104900	0.071740
## 443	0.15510	0.42030	0.520300	0.211500
## 444	0.13930	0.24990	0.184800	0.133500
## 445	0.13650	0.37350	0.324100	0.206600
## 446	0.13240	0.11480	0.088670	0.062270
## 447	0.09368	0.14420	0.135900	0.061060
## 448	0.10130	0.07390	0.007732	0.027960
## 449	0.14050	0.30460	0.280600	0.113800
## 450	0.16000	0.24440	0.263900	0.155500
## 451	0.13410	0.11530	0.026390	0.044640
## 452	0.17850	0.47060	0.442500	0.145900
## 453	0.12510	0.24140	0.382900	0.182500
## 454	0.09457	0.33990	0.321800	0.087500
## 455	0.14260	0.21870	0.116400	0.082630
## 456	0.13160	0.27350	0.310300	0.159900
## 457	0.14510	0.13790	0.085390	0.074070
## 458	0.14010	0.26440	0.344200	0.165900
## 459	0.11620	0.07057	0.000000	0.000000
## 460	0.08125	0.03432	0.007977	0.009259
## 461	0.13570	0.42560	0.683300	0.262500
## 462	0.13900	0.34630	0.391200	0.170800
## 463	0.10950	0.19820	0.155300	0.067540

## 464	0.10720	0.10710	0.035170	0.033120
## 465	0.15450	0.39490	0.385300	0.255000
## 466	0.14500	0.26290	0.240300	0.073700
## 467	0.11280	0.13460	0.011200	0.025000
## 468	0.12630	0.26660	0.429000	0.153500
## 469	0.14020	0.23600	0.189800	0.097440
## 470	0.11950	0.12520	0.111700	0.074530
## 471	0.09388	0.08978	0.051860	0.047730
## 472	0.10450	0.09995	0.077500	0.057540
## 473	0.09701	0.04619	0.048330	0.050130
## 474	0.14080	0.40970	0.399500	0.162500
## 475	0.10410	0.09726	0.055240	0.055470
## 476	0.14340	0.27630	0.385300	0.177600
## 477	0.08799	0.32140	0.291200	0.109200
## 478	0.13680	0.31010	0.439900	0.228000
## 479	0.13130	0.30300	0.180400	0.148900
## 480	0.17940	0.39660	0.338100	0.152100
## 481	0.13130	0.17880	0.256000	0.122100
## 482	0.14310	0.30260	0.319400	0.156500
## 483	0.14910	0.42570	0.613300	0.184800
## 484	0.13010	0.29500	0.348600	0.099100
## 485	0.09958	0.06476	0.030460	0.042620
## 486	0.15500	0.50460	0.687200	0.213500
## 487	0.12340	0.15420	0.127700	0.065600
## 488	0.17010	0.69970	0.960800	0.291000
## 489	0.11180	0.16460	0.076980	0.041950
## 490	0.21840	0.93790	0.840200	0.252400
## 491	0.13090	0.23270	0.254400	0.148900
## 492	0.16500	0.86810	0.938700	0.265000
## 493	0.15310	0.35830	0.583000	0.182700
## 494	0.14280	0.25100	0.212300	0.098610
## 495	0.16390	0.16980	0.090010	0.027780
## 496	0.14560	0.29610	0.124600	0.109600
## 497	0.15590	0.23020	0.264400	0.097490
## 498	0.15030	0.39040	0.372800	0.160700
## 499	0.12810	0.53290	0.425100	0.194100
## 500	0.18830	0.55640	0.570300	0.201400

## 501	0.10090	0.29200	0.247700	0.087370
## 502	0.11810	0.15510	0.145900	0.099750
## 503	0.17890	0.42330	0.478400	0.207300
## 504	0.11430	0.36190	0.603000	0.146500
## 505	0.17800	0.28780	0.318600	0.141600
## 506	0.09994	0.06885	0.023180	0.030020
## 507	0.08567	0.05036	0.038660	0.033330
## 508	0.11390	0.10110	0.110100	0.079550
## 509	0.14070	0.41860	0.659900	0.254200
## 510	0.15170	0.40020	0.421100	0.213400
## 511	0.13120	0.27760	0.189000	0.072830
## 512	0.13150	0.18060	0.208000	0.113600
## 513	0.16370	0.57750	0.695600	0.154600
## 514	0.13110	0.24740	0.175900	0.080560
## 515	0.14150	0.46650	0.708700	0.224800
## 516	0.17770	0.53430	0.628200	0.197700
## 517	0.12380	0.18660	0.241600	0.186000
## 518	0.14440	0.42450	0.450400	0.243000
## 519	0.12800	0.22970	0.262300	0.132500
## 520	0.13490	0.44020	0.316200	0.112600
## 521	0.13270	0.29960	0.293900	0.093100
## 522	0.14260	0.23780	0.267100	0.101500
## 523	0.11480	0.09866	0.154700	0.065750
## 524	0.08996	0.06444	0.000000	0.000000
## 525	0.15840	0.12020	0.000000	0.000000
## 526	0.12560	0.18080	0.199200	0.057800
## 527	0.12270	0.34540	0.391100	0.118000
## 528	0.10720	0.12020	0.224900	0.118500
## 529	0.11180	0.09708	0.075290	0.062030
## 530	0.13880	0.12550	0.064090	0.025000
## 531	0.11160	0.28130	0.236500	0.115500
## 532	0.15960	0.30640	0.339300	0.050000
## 533	0.10680	0.09605	0.034690	0.036120
## 534	0.14150	0.46670	0.586200	0.203500
## 535	0.12750	0.38610	0.567300	0.173200
## 536	0.13260	0.26100	0.347600	0.097830
## 537	0.12490	0.08720	0.090760	0.063160

## 538	0.12230	0.10870	0.079150	0.057410
## 539	0.12640	0.20370	0.137700	0.068450
## 540	0.14310	0.18510	0.192200	0.084490
## 541	0.11110	0.14860	0.193200	0.109600
## 542	0.18500	0.20970	0.099960	0.072620
## 543	0.10380	0.06624	0.005579	0.008772
## 544	0.15920	0.44920	0.534400	0.268500
## 545	0.16390	0.61640	0.768100	0.250800
## 546	0.14830	0.20680	0.224100	0.105600
## 547	0.11790	0.18790	0.154400	0.038460
## 548	0.12980	0.18390	0.125500	0.083120
## 549	0.12410	0.22640	0.132600	0.104800
## 550	0.14940	0.21560	0.305000	0.065480
## 551	0.09402	0.19360	0.183800	0.056010
## 552	0.08864	0.12560	0.120100	0.039220
## 553	0.18530	1.05800	1.105000	0.221000
## 554	0.13490	0.18540	0.136600	0.101000
## 555	0.12890	0.10630	0.139000	0.060050
## 556	0.15020	0.57170	0.705300	0.242200
## 557	0.11830	0.10490	0.081050	0.065440
## 558	0.13120	0.36350	0.321900	0.110800
## 559	0.12160	0.08240	0.039380	0.043060
## 560	0.12260	0.18810	0.206000	0.083080
## 561	0.14460	0.42380	0.518600	0.144700
## 562	0.12560	0.19280	0.116700	0.055560
## 563	0.10170	0.14600	0.147200	0.055630
## 564	0.15470	0.22310	0.179100	0.115500
## 565	0.12820	0.19650	0.187600	0.104500
## 566	0.13600	0.16360	0.071620	0.040740
## 567	0.13010	0.32990	0.363000	0.122600
## 568	0.13470	0.14780	0.137300	0.106900
## 569	0.11920	0.28400	0.402400	0.196600
##	symmetry_worst dimension_worst			
## 1	0.2827	0.06771		
## 2	0.2940	0.07587		
## 3	0.2998	0.07881		
## 4	0.2102	0.06784		

## 5	0.2487	0.06766
## 6	0.3035	0.08284
## 7	0.2112	0.08732
## 8	0.4432	0.10860
## 9	0.2826	0.07552
## 10	0.3301	0.09080
## 11	0.2480	0.08999
## 12	0.3113	0.08132
## 13	0.2563	0.08174
## 14	0.2439	0.06289
## 15	0.2293	0.06091
## 16	0.2258	0.08004
## 17	0.2723	0.07071
## 18	0.2688	0.06888
## 19	0.3294	0.09469
## 20	0.3469	0.09241
## 21	0.2572	0.07097
## 22	0.2803	0.09970
## 23	0.2251	0.07732
## 24	0.2590	0.07779
## 25	0.2383	0.09026
## 26	0.2589	0.10300
## 27	0.2678	0.06603
## 28	0.4027	0.09876
## 29	0.2982	0.09825
## 30	0.2741	0.07582
## 31	0.2107	0.06580
## 32	0.2829	0.08067
## 33	0.2301	0.12240
## 34	0.3455	0.06896
## 35	0.2626	0.07048
## 36	0.3387	0.09638
## 37	0.2551	0.06589
## 38	0.2727	0.10360
## 39	0.2810	0.07228
## 40	0.2770	0.10630
## 41	0.3151	0.07999

## 42	0.3643	0.09223
## 43	0.6638	0.17300
## 44	0.2432	0.10090
## 45	0.2679	0.07698
## 46	0.2369	0.06558
## 47	0.2383	0.07083
## 48	0.3690	0.08815
## 49	0.2666	0.07686
## 50	0.2685	0.07764
## 51	0.3630	0.10590
## 52	0.2954	0.08362
## 53	0.2779	0.08121
## 54	0.1890	0.07796
## 55	0.3198	0.08762
## 56	0.3527	0.10160
## 57	0.2604	0.09879
## 58	0.2933	0.07697
## 59	0.3222	0.08009
## 60	0.3590	0.07787
## 61	0.4670	0.10380
## 62	0.2160	0.09300
## 63	0.1603	0.06818
## 64	0.2994	0.07146
## 65	0.4667	0.09946
## 66	0.2268	0.09082
## 67	0.2506	0.07623
## 68	0.2530	0.05695
## 69	0.2955	0.06912
## 70	0.3206	0.08950
## 71	0.2807	0.10710
## 72	0.2894	0.07664
## 73	0.3135	0.10550
## 74	0.1783	0.05871
## 75	0.2527	0.05972
## 76	0.2972	0.09261
## 77	0.3206	0.06938
## 78	0.2400	0.06641

## 79	0.2564	0.08253
## 80	0.3060	0.08503
## 81	0.2404	0.06428
## 82	0.2482	0.06306
## 83	0.2637	0.06658
## 84	0.3151	0.08473
## 85	0.3343	0.09215
## 86	0.2309	0.06915
## 87	0.3110	0.07592
## 88	0.2196	0.07675
## 89	0.2822	0.07526
## 90	0.2849	0.09031
## 91	0.1783	0.07319
## 92	0.3035	0.07661
## 93	0.2683	0.06829
## 94	0.2306	0.06291
## 95	0.5166	0.14460
## 96	0.3019	0.09124
## 97	0.3207	0.07247
## 98	0.3101	0.07007
## 99	0.3055	0.08797
## 100	0.2355	0.10510
## 101	0.2605	0.08701
## 102	0.1909	0.06559
## 103	0.2733	0.08022
## 104	0.3029	0.08216
## 105	0.2767	0.07198
## 106	0.2941	0.09180
## 107	0.2121	0.07188
## 108	0.2709	0.08839
## 109	0.3059	0.07626
## 110	0.2976	0.07123
## 111	0.2806	0.09097
## 112	0.3322	0.14860
## 113	0.2894	0.08456
## 114	0.3596	0.14310
## 115	0.2433	0.06563



## 116	0.2500	0.07944
## 117	0.4753	0.10130
## 118	0.3187	0.10190
## 119	0.3070	0.08255
## 120	0.3113	0.08317
## 121	0.2364	0.07182
## 122	0.2909	0.05865
## 123	0.3244	0.06745
## 124	0.2510	0.06494
## 125	0.2851	0.08763
## 126	0.2208	0.07638
## 127	0.3147	0.14050
## 128	0.2477	0.06836
## 129	0.2841	0.06541
## 130	0.2698	0.08351
## 131	0.2866	0.11550
## 132	0.2744	0.08839
## 133	0.2473	0.06443
## 134	0.2060	0.07115
## 135	0.2780	0.11680
## 136	0.3613	0.09564
## 137	0.2445	0.08865
## 138	0.2514	0.07898
## 139	0.2623	0.07599
## 140	0.2785	0.07408
## 141	0.2341	0.07421
## 142	0.4601	0.11890
## 143	0.2572	0.06637
## 144	0.2844	0.11320
## 145	0.4264	0.12750
## 146	0.3200	0.06576
## 147	0.3792	0.10480
## 148	0.2394	0.06469
## 149	0.1901	0.05932
## 150	0.2983	0.07185
## 151	0.1917	0.06174
## 152	0.3196	0.08009

## 153	0.3549	0.08118
## 154	0.2681	0.07399
## 155	0.2272	0.08799
## 156	0.2454	0.08136
## 157	0.2335	0.06263
## 158	0.2964	0.09606
## 159	0.2699	0.06736
## 160	0.2871	0.06917
## 161	0.2027	0.06206
## 162	0.2955	0.07009
## 163	0.2362	0.07113
## 164	0.2991	0.07804
## 165	0.2908	0.07277
## 166	0.2856	0.08082
## 167	0.3062	0.06072
## 168	0.3067	0.07484
## 169	0.3849	0.08633
## 170	0.2350	0.07014
## 171	0.3900	0.11790
## 172	0.3179	0.10550
## 173	0.3196	0.11510
## 174	0.2446	0.07024
## 175	0.2884	0.07371
## 176	0.2779	0.07918
## 177	0.3537	0.08294
## 178	0.2590	0.09158
## 179	0.3799	0.09185
## 180	0.2694	0.06878
## 181	0.2668	0.08174
## 182	0.2650	0.06387
## 183	0.2823	0.06794
## 184	0.3415	0.09740
## 185	0.3292	0.06522
## 186	0.2143	0.06643
## 187	0.3109	0.09061
## 188	0.3109	0.07610
## 189	0.3055	0.05933

## 190	0.2841	0.08175
## 191	0.2792	0.08158
## 192	0.2460	0.07262
## 193	0.2688	0.08273
## 194	0.4218	0.13410
## 195	0.3437	0.08631
## 196	0.2311	0.09203
## 197	0.2654	0.09438
## 198	0.2522	0.07246
## 199	0.3518	0.08665
## 200	0.2677	0.08824
## 201	0.1565	0.05504
## 202	0.2965	0.07662
## 203	0.3163	0.09251
## 204	0.2226	0.08486
## 205	0.2765	0.07806
## 206	0.3013	0.10670
## 207	0.3210	0.07863
## 208	0.1978	0.06915
## 209	0.2267	0.06192
## 210	0.4098	0.12840
## 211	0.1999	0.07127
## 212	0.3698	0.10940
## 213	0.3313	0.13390
## 214	0.2736	0.07320
## 215	0.2581	0.10800
## 216	0.3557	0.08020
## 217	0.3071	0.08557
## 218	0.2534	0.07858
## 219	0.3985	0.12440
## 220	0.3589	0.09187
## 221	0.2369	0.06922
## 222	0.2775	0.09464
## 223	0.2968	0.09929
## 224	0.2762	0.08851
## 225	0.2710	0.06164
## 226	0.3142	0.08116

## 227	0.2848	0.13640
## 228	0.3032	0.08075
## 229	0.2928	0.07867
## 230	0.2815	0.07418
## 231	0.2884	0.07220
## 232	0.2298	0.05974
## 233	0.2398	0.10820
## 234	0.3103	0.08200
## 235	0.2407	0.06484
## 236	0.2804	0.08024
## 237	0.3000	0.08701
## 238	0.2983	0.10490
## 239	0.3409	0.08147
## 240	0.2883	0.07748
## 241	0.3068	0.07957
## 242	0.2926	0.10170
## 243	0.2376	0.09206
## 244	0.2452	0.06515
## 245	0.2749	0.12970
## 246	0.2552	0.07920
## 247	0.2349	0.08061
## 248	0.3187	0.10230
## 249	0.3105	0.07409
## 250	0.2447	0.08194
## 251	0.2177	0.08549
## 252	0.3277	0.10190
## 253	0.2157	0.10430
## 254	0.3245	0.11980
## 255	0.2160	0.07253
## 256	0.2872	0.08304
## 257	0.2471	0.07463
## 258	0.2973	0.07745
## 259	0.2383	0.06410
## 260	0.2977	0.07259
## 261	0.3049	0.07081
## 262	0.2226	0.08283
## 263	0.2837	0.08019

## 264	0.2356	0.07603
## 265	0.3530	0.08482
## 266	0.4378	0.10720
## 267	0.2868	0.07809
## 268	0.2254	0.10840
## 269	0.3100	0.08203
## 270	0.2920	0.07614
## 271	0.1988	0.07053
## 272	0.3176	0.10230
## 273	0.2523	0.06609
## 274	0.2618	0.07609
## 275	0.3193	0.09221
## 276	0.1648	0.05525
## 277	0.2369	0.06599
## 278	0.2218	0.07820
## 279	0.2458	0.06592
## 280	0.3058	0.09938
## 281	0.3751	0.11080
## 282	0.2557	0.07613
## 283	0.2880	0.08083
## 284	0.2530	0.06510
## 285	0.3216	0.07570
## 286	0.2455	0.06596
## 287	0.4724	0.10260
## 288	0.2549	0.09136
## 289	0.3126	0.07849
## 290	0.3230	0.10330
## 291	0.2475	0.06969
## 292	0.3323	0.07701
## 293	0.3080	0.09333
## 294	0.3218	0.07470
## 295	0.2741	0.08574
## 296	0.3157	0.09671
## 297	0.3077	0.07569
## 298	0.2768	0.07615
## 299	0.2781	0.08052
## 300	0.3318	0.09136

## 301	0.2443	0.06251
## 302	0.2636	0.07676
## 303	0.2738	0.07685
## 304	0.3585	0.11090
## 305	0.3993	0.10640
## 306	0.2437	0.08328
## 307	0.4089	0.14090
## 308	0.3297	0.07834
## 309	0.2852	0.09218
## 310	0.3065	0.08177
## 311	0.3220	0.06386
## 312	0.3138	0.08113
## 313	0.2518	0.06960
## 314	0.2220	0.06033
## 315	0.3739	0.10270
## 316	0.2694	0.07061
## 317	0.2364	0.07678
## 318	0.3103	0.08677
## 319	0.3169	0.08032
## 320	0.3109	0.08187
## 321	0.3231	0.10340
## 322	0.4863	0.08633
## 323	0.3689	0.08368
## 324	0.2438	0.08541
## 325	0.2901	0.06783
## 326	0.3695	0.08579
## 327	0.2226	0.07617
## 328	0.3274	0.12520
## 329	0.3196	0.06435
## 330	0.2593	0.07738
## 331	0.3105	0.08151
## 332	0.3313	0.07735
## 333	0.2090	0.07699
## 334	0.2293	0.06037
## 335	0.3414	0.07147
## 336	0.2320	0.07474
## 337	0.2233	0.05521

## 338	0.4228	0.11750
## 339	0.3679	0.09870
## 340	0.2557	0.08181
## 341	0.2778	0.07012
## 342	0.3956	0.09288
## 343	0.2736	0.07953
## 344	0.3308	0.12970
## 345	0.3480	0.07619
## 346	0.2533	0.08468
## 347	0.2434	0.07431
## 348	0.2584	0.08096
## 349	0.2282	0.06954
## 350	0.2599	0.08251
## 351	0.2136	0.06710
## 352	0.2756	0.07919
## 353	0.2372	0.07242
## 354	0.2829	0.08832
## 355	0.3321	0.08911
## 356	0.2878	0.09211
## 357	0.2989	0.07380
## 358	0.2535	0.07993
## 359	0.3063	0.08368
## 360	0.2435	0.07393
## 361	0.2238	0.07127
## 362	0.2809	0.06287
## 363	0.2409	0.06743
## 364	0.2937	0.07722
## 365	0.2227	0.07376
## 366	0.2329	0.08134
## 367	0.2463	0.07738
## 368	0.2321	0.07211
## 369	0.3390	0.07434
## 370	0.3379	0.08950
## 371	0.3155	0.07538
## 372	0.3282	0.08490
## 373	0.2554	0.07207
## 374	0.2406	0.07729

## 375	0.3270	0.07330
## 376	0.2280	0.07028
## 377	0.2722	0.06956
## 378	0.2819	0.11180
## 379	0.2758	0.06386
## 380	0.2664	0.07809
## 381	0.2513	0.06911
## 382	0.2227	0.06777
## 383	0.3020	0.06846
## 384	0.4270	0.12330
## 385	0.3060	0.06783
## 386	0.2691	0.09479
## 387	0.2833	0.08858
## 388	0.2213	0.07842
## 389	0.2651	0.07397
## 390	0.2300	0.07230
## 391	0.2972	0.09075
## 392	0.1566	0.05905
## 393	0.2346	0.08025
## 394	0.3258	0.09720
## 395	0.2806	0.07782
## 396	0.2542	0.06623
## 397	0.2787	0.07427
## 398	0.2556	0.06828
## 399	0.4045	0.07918
## 400	0.1934	0.08988
## 401	0.2502	0.09209
## 402	0.2048	0.07628
## 403	0.3672	0.11230
## 404	0.2689	0.07055
## 405	0.2845	0.12490
## 406	0.2609	0.06735
## 407	0.3153	0.08960
## 408	0.3016	0.08523
## 409	0.3585	0.10650
## 410	0.2757	0.08178
## 411	0.2639	0.11780



## 412	0.2849	0.07087
## 413	0.2300	0.06769
## 414	0.1712	0.07343
## 415	0.3101	0.06688
## 416	0.3266	0.09009
## 417	0.2676	0.06765
## 418	0.3053	0.08764
## 419	0.3271	0.07632
## 420	0.5774	0.10300
## 421	0.3108	0.12590
## 422	0.2675	0.07873
## 423	0.2859	0.06772
## 424	0.3038	0.12520
## 425	0.1811	0.07427
## 426	0.3383	0.10310
## 427	0.3124	0.07590
## 428	0.2525	0.06827
## 429	0.2262	0.06742
## 430	0.3258	0.11910
## 431	0.3470	0.07900
## 432	0.3074	0.07863
## 433	0.3379	0.07924
## 434	0.2510	0.09445
## 435	0.2540	0.09532
## 436	0.2100	0.07083
## 437	0.2567	0.05737
## 438	0.3024	0.06949
## 439	0.3220	0.09026
## 440	0.3168	0.07987
## 441	0.3596	0.09166
## 442	0.2642	0.06953
## 443	0.2834	0.08234
## 444	0.3227	0.09326
## 445	0.2853	0.08496
## 446	0.2450	0.07773
## 447	0.2663	0.06321
## 448	0.2171	0.07037

## 449	0.3397	0.08365
## 450	0.3010	0.09060
## 451	0.2615	0.08269
## 452	0.3215	0.12050
## 453	0.2576	0.07602
## 454	0.2305	0.09952
## 455	0.3075	0.07351
## 456	0.2691	0.07683
## 457	0.2710	0.07191
## 458	0.2868	0.08218
## 459	0.2592	0.07848
## 460	0.2295	0.05843
## 461	0.2641	0.07427
## 462	0.3007	0.08314
## 463	0.3202	0.07287
## 464	0.1859	0.06810
## 465	0.4066	0.10590
## 466	0.2556	0.09359
## 467	0.2651	0.08385
## 468	0.2842	0.08225
## 469	0.2608	0.09702
## 470	0.2725	0.07234
## 471	0.2179	0.06871
## 472	0.2646	0.06085
## 473	0.1987	0.06169
## 474	0.2713	0.07568
## 475	0.2404	0.06639
## 476	0.2812	0.08198
## 477	0.2191	0.09349
## 478	0.2268	0.07425
## 479	0.2962	0.08472
## 480	0.3651	0.11830
## 481	0.2889	0.08006
## 482	0.2718	0.09353
## 483	0.3444	0.09782
## 484	0.2614	0.11620
## 485	0.2731	0.06825

## 486	0.4245	0.10500
## 487	0.3174	0.08524
## 488	0.4055	0.09789
## 489	0.2687	0.07429
## 490	0.4154	0.14030
## 491	0.3251	0.07625
## 492	0.4087	0.12400
## 493	0.3216	0.10100
## 494	0.2289	0.08278
## 495	0.2972	0.07712
## 496	0.2582	0.08893
## 497	0.2622	0.08490
## 498	0.3693	0.09618
## 499	0.2818	0.10050
## 500	0.3512	0.12040
## 501	0.4677	0.07623
## 502	0.2948	0.08452
## 503	0.3706	0.11420
## 504	0.2597	0.12000
## 505	0.2660	0.09270
## 506	0.2911	0.07307
## 507	0.2458	0.06120
## 508	0.2334	0.06142
## 509	0.2929	0.09873
## 510	0.3003	0.10480
## 511	0.3184	0.08183
## 512	0.2504	0.07948
## 513	0.4761	0.14020
## 514	0.2380	0.08718
## 515	0.4824	0.09614
## 516	0.3407	0.12430
## 517	0.2750	0.08902
## 518	0.3613	0.08758
## 519	0.3021	0.07987
## 520	0.4128	0.10760
## 521	0.3020	0.09646
## 522	0.3014	0.08750

## 523	0.3233	0.06165
## 524	0.2871	0.07039
## 525	0.2932	0.09382
## 526	0.3604	0.07062
## 527	0.2826	0.09585
## 528	0.4882	0.06111
## 529	0.3267	0.06994
## 530	0.3057	0.07875
## 531	0.2465	0.09981
## 532	0.2790	0.10660
## 533	0.2165	0.06025
## 534	0.3054	0.09519
## 535	0.3305	0.08465
## 536	0.3006	0.07802
## 537	0.3306	0.07036
## 538	0.3487	0.06958
## 539	0.2249	0.08492
## 540	0.2772	0.08756
## 541	0.3275	0.06469
## 542	0.3681	0.08982
## 543	0.2505	0.06431
## 544	0.5558	0.10240
## 545	0.5440	0.09964
## 546	0.3380	0.09584
## 547	0.1652	0.07722
## 548	0.2744	0.07238
## 549	0.2250	0.08321
## 550	0.2747	0.08301
## 551	0.2488	0.08151
## 552	0.2576	0.07018
## 553	0.4366	0.20750
## 554	0.2478	0.07757
## 555	0.2444	0.06788
## 556	0.3828	0.10070
## 557	0.2740	0.06487
## 558	0.2827	0.09208
## 559	0.1902	0.07313

```
## 560      0.3600      0.07285
## 561      0.3591      0.10140
## 562      0.2661      0.07961
## 563      0.2345      0.06464
## 564      0.2382      0.08553
## 565      0.2235      0.06925
## 566      0.2434      0.08488
## 567      0.3175      0.09772
## 568      0.2606      0.07810
## 569      0.2730      0.08666
```

```
#Here we use View func to get the excel style view of the data
#It is convenient to read the data
View(wisc_bc_df)
```

```
#Here we are renaming the data set for our ease
cancer<-wisc_bc_df
```

```
#After installing the following 3 packages, we use library() to execute it
#We use ggplot2 for the graphs. It lets us add details to the graphs such as aes value and color etc
#corrplot is used for correlatiional matrix
#reshape is for change how the data looks. eg : you can change the matrix columns of your matrix
library("ggplot2")
```

```
## Warning: package 'ggplot2' was built under R version 3.5.2
```

```
library("corrplot")
```

```
## Warning: package 'corrplot' was built under R version 3.5.2
```

```
## corrplot 0.84 loaded
```

```
library("reshape")
```

```
## Warning: package 'reshape' was built under R version 3.5.2
```

```
#str() tells us the data type of data in each column  
str(cancer)
```

```
## 'data.frame': 569 obs. of 32 variables:  
## $ id : int 87139402 8910251 905520 868871 9012568 906539 925291 87880 862989 89827 ...  
## $ diagnosis : Factor w/ 2 levels "B","M": 1 1 1 1 1 1 1 2 1 1 ...  
## $ radius_mean : num 12.3 10.6 11 11.3 15.2 ...  
## $ texture_mean : num 12.4 18.9 16.8 13.4 13.2 ...  
## $ perimeter_mean : num 78.8 69.3 70.9 73 97.7 ...  
## $ area_mean : num 464 346 373 385 712 ...  
## $ smoothness_mean : num 0.1028 0.0969 0.1077 0.1164 0.0796 ...  
## $ compactness_mean : num 0.0698 0.1147 0.078 0.1136 0.0693 ...  
## $ concavity_mean : num 0.0399 0.0639 0.0305 0.0464 0.0339 ...  
## $ points_mean : num 0.037 0.0264 0.0248 0.048 0.0266 ...  
## $ symmetry_mean : num 0.196 0.192 0.171 0.177 0.172 ...  
## $ dimension_mean : num 0.0595 0.0649 0.0634 0.0607 0.0554 ...  
## $ radius_se : num 0.236 0.451 0.197 0.338 0.178 ...  
## $ texture_se : num 0.666 1.197 1.387 1.343 0.412 ...  
## $ perimeter_se : num 1.67 3.43 1.34 1.85 1.34 ...  
## $ area_se : num 17.4 27.1 13.5 26.3 17.7 ...  
## $ smoothness_se : num 0.00805 0.00747 0.00516 0.01127 0.00501 ...  
## $ compactness_se : num 0.0118 0.03581 0.00936 0.03498 0.01485 ...  
## $ concavity_se : num 0.0168 0.0335 0.0106 0.0219 0.0155 ...  
## $ points_se : num 0.01241 0.01365 0.00748 0.01965 0.00915 ...  
## $ symmetry_se : num 0.0192 0.035 0.0172 0.0158 0.0165 ...  
## $ dimension_se : num 0.00225 0.00332 0.0022 0.00344 0.00177 ...  
## $ radius_worst : num 13.5 11.9 12.4 11.9 16.2 ...  
## $ texture_worst : num 15.6 22.9 26.4 15.8 15.7 ...  
## $ perimeter_worst : num 87 78.3 79.9 76.5 104.5 ...  
## $ area_worst : num 549 425 471 434 819 ...  
## $ smoothness_worst : num 0.139 0.121 0.137 0.137 0.113 ...  
## $ compactness_worst : num 0.127 0.252 0.148 0.182 0.174 ...
```

```
## $ concavity_worst : num 0.1242 0.1916 0.1067 0.0867 0.1362 ...
## $ points_worst : num 0.0939 0.0793 0.0743 0.0861 0.0818 ...
## $ symmetry_worst : num 0.283 0.294 0.3 0.21 0.249 ...
## $ dimension_worst : num 0.0677 0.0759 0.0788 0.0678 0.0677 ...
```

```
#displays the summary of the dataset
summary(cancer)
```

```
##      id      diagnosis radius_mean texture_mean
## Min.   :    8670    B:357   Min.   : 6.981   Min.   : 9.71
## 1st Qu.:   869218    M:212   1st Qu.:11.700   1st Qu.:16.17
## Median :    906024                Median :13.370   Median :18.84
## Mean   :   30371831                Mean   :14.127   Mean   :19.29
## 3rd Qu.:    8813129                3rd Qu.:15.780   3rd Qu.:21.80
## Max.   :   911320502            Max.   :28.110   Max.   :39.28
## perimeter_mean area_mean smoothness_mean compactness_mean
## Min.   : 43.79   Min.   : 143.5   Min.   :0.05263   Min.   :0.01938
## 1st Qu.: 75.17   1st Qu.: 420.3   1st Qu.:0.08637   1st Qu.:0.06492
## Median : 86.24   Median : 551.1   Median :0.09587   Median :0.09263
## Mean   : 91.97   Mean   : 654.9   Mean   :0.09636   Mean   :0.10434
## 3rd Qu.:104.10   3rd Qu.: 782.7   3rd Qu.:0.10530   3rd Qu.:0.13040
## Max.   :188.50   Max.   :2501.0   Max.   :0.16340   Max.   :0.34540
## concavity_mean points_mean symmetry_mean dimension_mean
## Min.   :0.00000   Min.   :0.00000   Min.   :0.1060   Min.   :0.04996
## 1st Qu.:0.02956   1st Qu.:0.02031   1st Qu.:0.1619   1st Qu.:0.05770
## Median :0.06154   Median :0.03350   Median :0.1792   Median :0.06154
## Mean   :0.08880   Mean   :0.04892   Mean   :0.1812   Mean   :0.06280
## 3rd Qu.:0.13070   3rd Qu.:0.07400   3rd Qu.:0.1957   3rd Qu.:0.06612
## Max.   :0.42680   Max.   :0.20120   Max.   :0.3040   Max.   :0.09744
## radius_se texture_se perimeter_se area_se
## Min.   :0.1115   Min.   :0.3602   Min.   : 0.757   Min.   : 6.802
## 1st Qu.:0.2324   1st Qu.:0.8339   1st Qu.: 1.606   1st Qu.: 17.850
## Median :0.3242   Median :1.1080   Median : 2.287   Median : 24.530
## Mean   :0.4052   Mean   :1.2169   Mean   : 2.866   Mean   : 40.337
## 3rd Qu.:0.4789   3rd Qu.:1.4740   3rd Qu.: 3.357   3rd Qu.: 45.190
## Max.   :2.8730   Max.   :4.8850   Max.   :21.980   Max.   :542.200
```

```

## smoothness_se      compactness_se      concavity_se
## Min.      :0.001713  Min.      :0.002252  Min.      :0.000000
## 1st Qu.:0.005169    1st Qu.:0.013080    1st Qu.:0.01509
## Median :0.006380    Median :0.020450    Median :0.02589
## Mean   :0.007041    Mean   :0.025478    Mean   :0.03189
## 3rd Qu.:0.008146    3rd Qu.:0.032450    3rd Qu.:0.04205
## Max.   :0.031130    Max.   :0.135400    Max.   :0.39600
##
## points_se          symmetry_se          dimension_se          radius_worst
## Min.      :0.000000  Min.      :0.007882  Min.      :0.0008948  Min.      : 7.93
## 1st Qu.:0.007638    1st Qu.:0.015160    1st Qu.:0.0022480    1st Qu.:13.01
## Median :0.010930    Median :0.018730    Median :0.0031870    Median :14.97
## Mean   :0.011796    Mean   :0.020542    Mean   :0.0037949    Mean   :16.27
## 3rd Qu.:0.014710    3rd Qu.:0.023480    3rd Qu.:0.0045580    3rd Qu.:18.79
## Max.   :0.052790    Max.   :0.078950    Max.   :0.0298400    Max.   :36.04
##
## texture_worst      perimeter_worst      area_worst      smoothness_worst
## Min.      :12.02    Min.      : 50.41    Min.      : 185.2    Min.      :0.07117
## 1st Qu.:21.08      1st Qu.: 84.11      1st Qu.: 515.3      1st Qu.:0.11660
## Median :25.41      Median : 97.66      Median : 686.5      Median :0.13130
## Mean   :25.68      Mean   :107.26      Mean   : 880.6      Mean   :0.13237
## 3rd Qu.:29.72      3rd Qu.:125.40      3rd Qu.:1084.0      3rd Qu.:0.14600
## Max.   :49.54      Max.   :251.20      Max.   :4254.0      Max.   :0.22260
##
## compactness_worst  concavity_worst      points_worst          symmetry_worst
## Min.      :0.02729  Min.      :0.0000      Min.      :0.00000      Min.      :0.1565
## 1st Qu.:0.14720     1st Qu.:0.1145      1st Qu.:0.06493      1st Qu.:0.2504
## Median :0.21190     Median :0.2267      Median :0.09993      Median :0.2822
## Mean   :0.25427     Mean   :0.2722      Mean   :0.11461      Mean   :0.2901
## 3rd Qu.:0.33910     3rd Qu.:0.3829      3rd Qu.:0.16140      3rd Qu.:0.3179
## Max.   :1.05800     Max.   :1.2520      Max.   :0.29100      Max.   :0.6638
##
## dimension_worst
## Min.      :0.05504
## 1st Qu.:0.07146
## Median :0.08004
## Mean   :0.08395
## 3rd Qu.:0.09208
## Max.   :0.20750

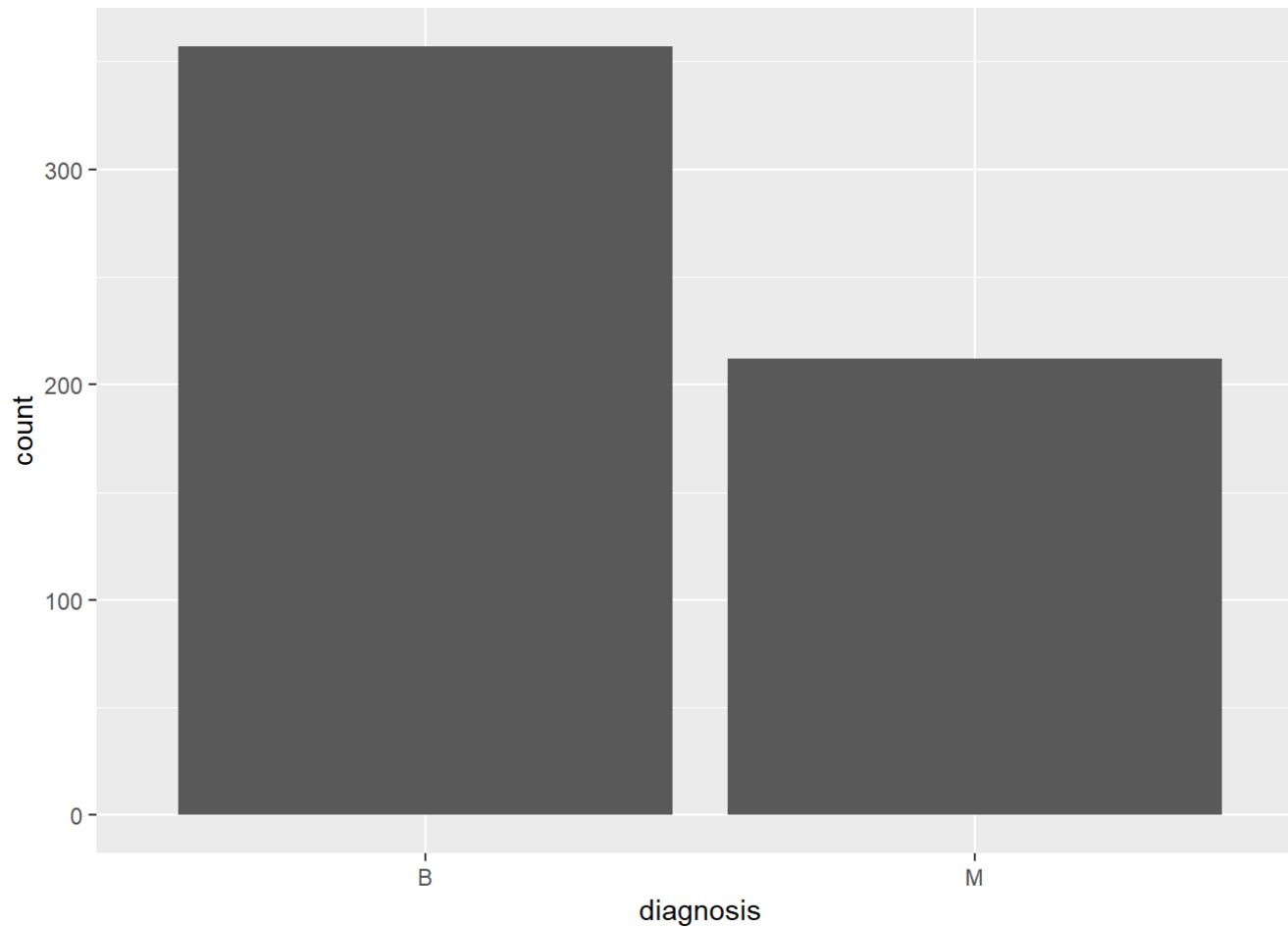
```



```
#Gives you frequency table  
#creating a data frame for categorizing benign & malignant  
diagnosis.table <- table(cancer$diagnosis)  
#shows the frequency of number of ids diagnosed with B or M  
diagnosis.table
```

```
##  
##    B    M  
## 357 212
```

```
#Bar Plot  
#Plotting the frequency of the 2 categories in a bar plot  
ggplot(data=cancer, aes(x=diagnosis)) + geom_bar(stat = "count")
```



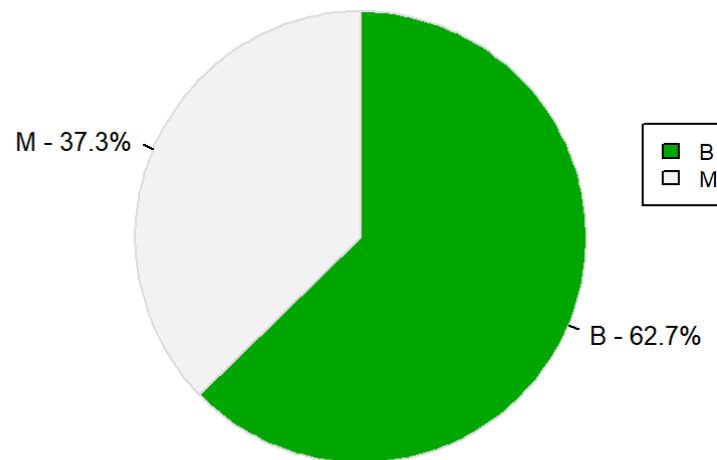
```
#Pie chart represented in frequency in terms of %
diagnosis.prop.table <- prop.table(diagnosis.table)*100
diagnosis.prop.df <- as.data.frame(diagnosis.prop.table)

#Here we labeling the 2 categories of the pie chart
pielabels <- sprintf("%s - %3.1f%s", diagnosis.prop.df[,1], diagnosis.prop.table, "%")

#using colors to show distinction
colors <- terrain.colors(2)
```

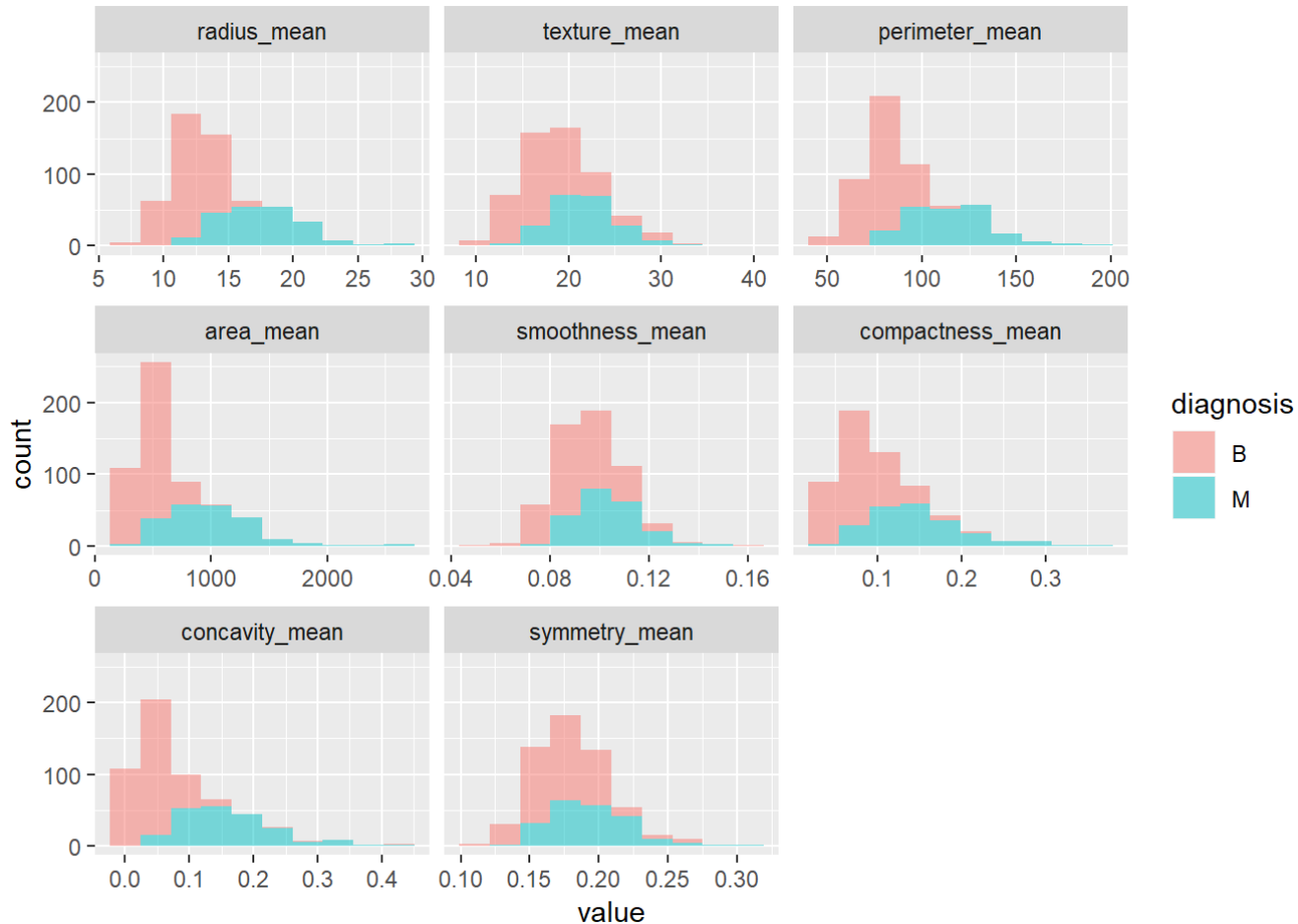
```
pie(diagnosis.prop.table,  
    labels=pielabels,  
    clockwise=TRUE,  
    col=colors,  
    border="gainsboro",  
    radius=0.8,  
    cex=0.8,  
    main="frequency of cancer diagnosis")  
legend(1, .4, legend=diagnosis.prop.df[,1], cex = 0.7, fill = colors)
```

### frequency of cancer diagnosis



```
#Plot histograms of "mean" variables group by diagnosis
data_mean <- cancer[,c("diagnosis", "radius_mean", "texture_mean", "perimeter_mean", "area_mean", "smoothness_mean", "compactness_mean", "concavity_mean", "symmetry_mean")]

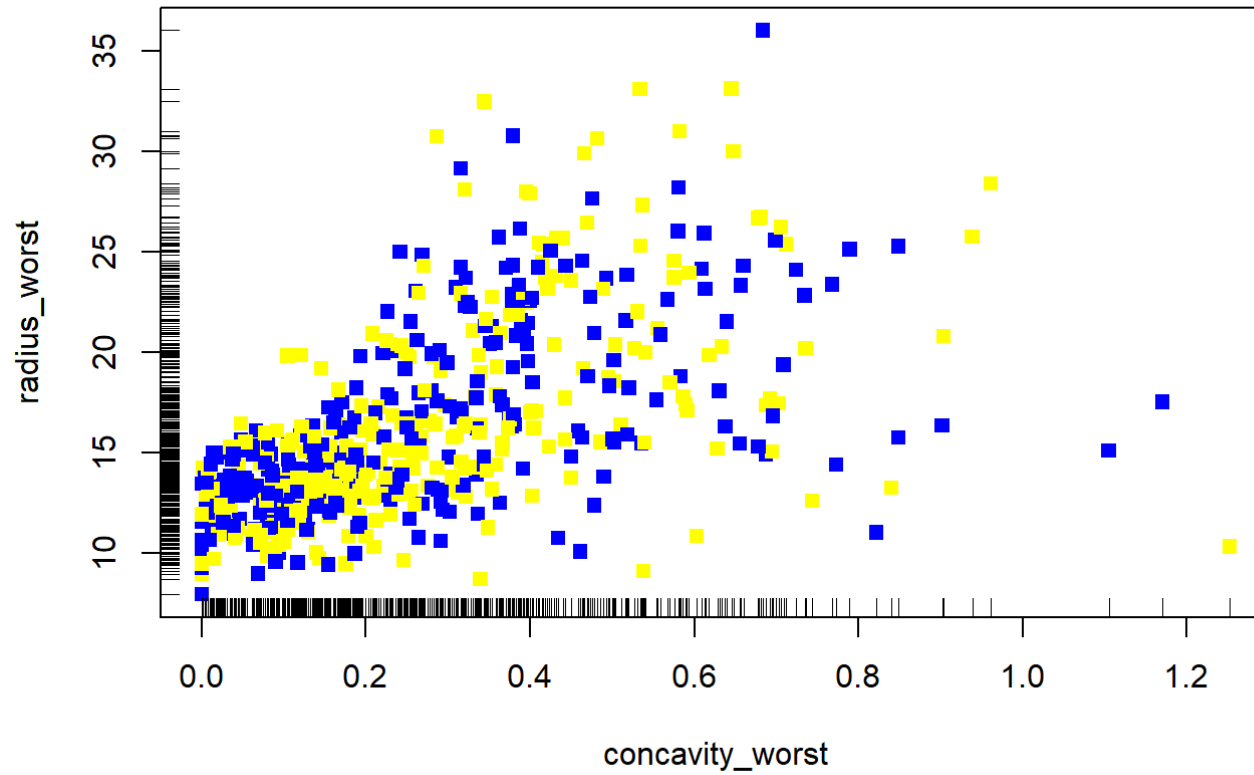
#Plot histograms for comparison
ggplot(data = melt(data_mean, id.var = "diagnosis"), mapping = aes(x = value)) +
  geom_histogram(bins = 10, aes(fill=diagnosis), alpha=0.5) + facet_wrap(~variable, scales = 'free_x')
```



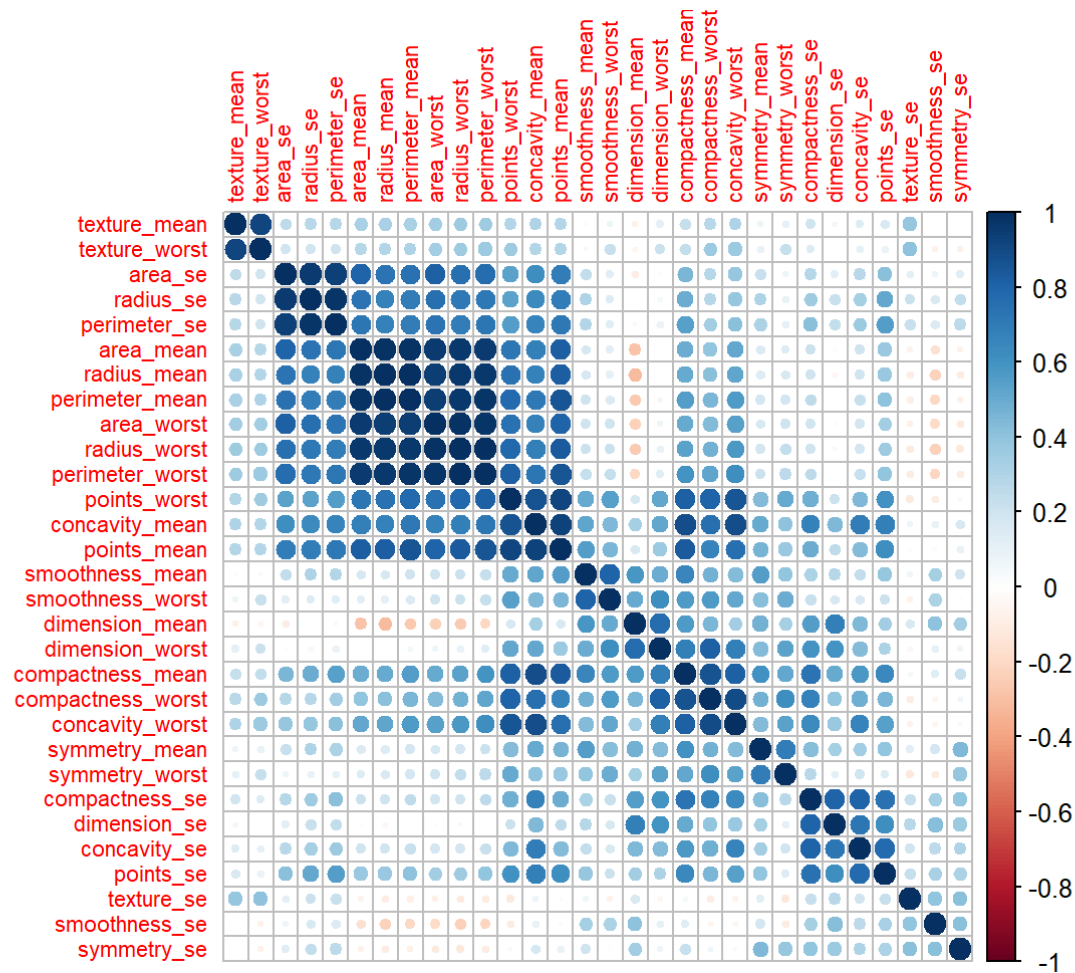
```
#Scatter plot of two variable (concavity against radius)
a <-cancer[,c('concavity_worst','radius_worst')]
plot(x = cancer$concavity_worst,y = cancer$radius_worst,
     xlab = "concavity_worst",
     ylab = "radius_worst",
     main = "Concavity_worst vs radius_worst",
     pch=15,col=c("blue","yellow"))
rug(cancer$concavity_worst, side = 1)

rug(cancer$radius_worst, side = 2)
```

Concavity\_worst vs radius\_worst



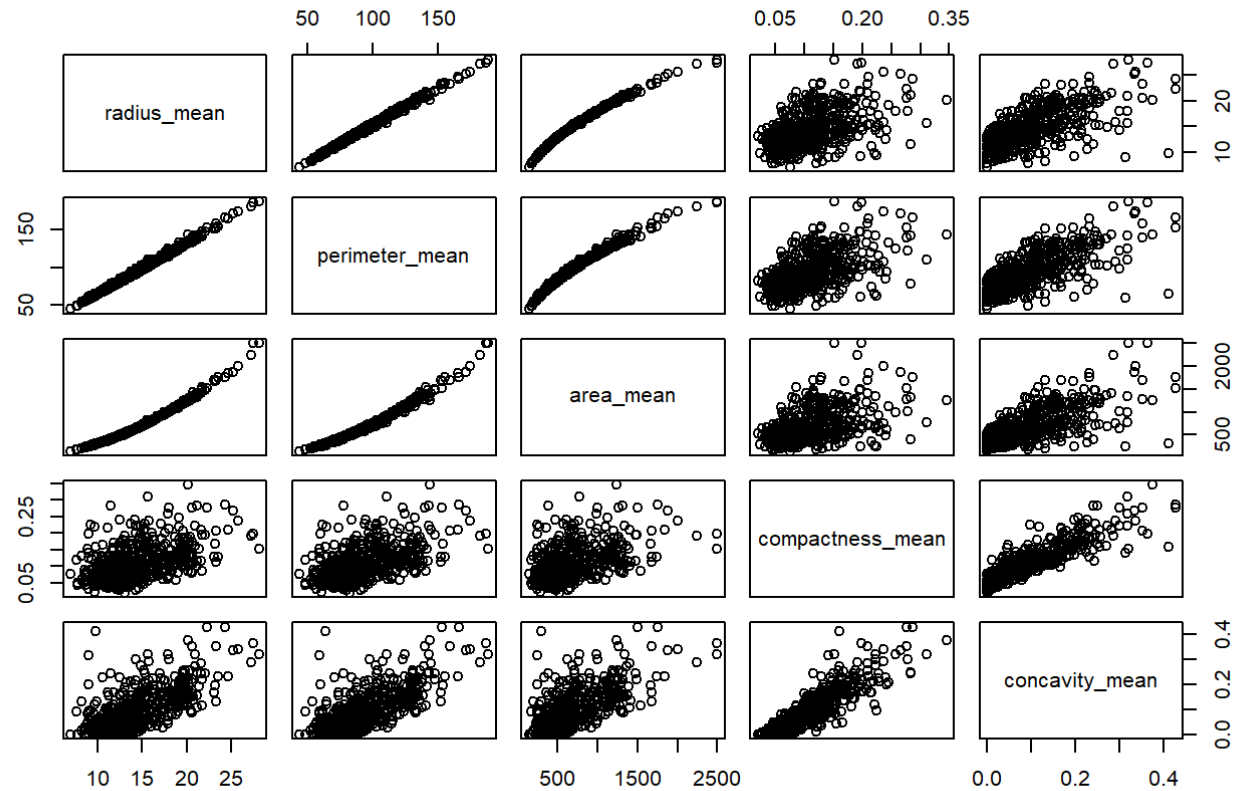
```
#Correlation Matrix of columns  
corMatMy <- cor(cancer[,3:32])  
corrplot(corMatMy, order = "hclust", tl.cex = 0.7)
```



```
#Scatterplot Matrix
```

```
pairs(~radius_mean+perimeter_mean+area_mean+compactness_mean+concavity_mean,data = cancer,main = "Scatterplot Matrix")
```

## Scatterplot Matrix



```
names(cancer)
```

```
## [1] "id"           "diagnosis"    "radius_mean"
## [4] "texture_mean" "perimeter_mean" "area_mean"
## [7] "smoothness_mean" "compactness_mean" "concavity_mean"
## [10] "points_mean" "symmetry_mean" "dimension_mean"
## [13] "radius_se" "texture_se" "perimeter_se"
## [16] "area_se" "smoothness_se" "compactness_se"
## [19] "concavity_se" "points_se" "symmetry_se"
```



```
## [22] "dimension_se"      "radius_worst"      "texture_worst"
## [25] "perimeter_worst"   "area_worst"         "smoothness_worst"
## [28] "compactness_worst" "concavity_worst"    "points_worst"
## [31] "symmetry_worst"    "dimension_worst"
```

```
#Multivariate analysis
```

```
#T TEST
```

```
with(data=cancer,t.test(radius_mean[diagnosis=="B"],radius_mean[diagnosis=="M"],var.equal=TRUE))
```

```
##
## Two Sample t-test
##
## data: radius_mean[diagnosis == "B"] and radius_mean[diagnosis == "M"]
## t = -25.436, df = 567, p-value < 2.2e-16
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -5.726832 -4.905781
## sample estimates:
## mean of x mean of y
## 12.14652 17.46283
```

```
with(data=cancer,t.test(texture_mean[diagnosis=="B"],texture_mean[diagnosis=="M"],var.equal=TRUE))
```

```
##
## Two Sample t-test
##
## data: texture_mean[diagnosis == "B"] and texture_mean[diagnosis == "M"]
## t = -10.867, df = 567, p-value < 2.2e-16
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -4.357107 -3.023181
## sample estimates:
## mean of x mean of y
## 17.91476 21.60491
```

```
with(data=cancer,t.test(perimeter_mean[diagnosis=="B"],perimeter_mean[diagnosis=="M"],var.equal=TRUE))
```

```
##  
## Two Sample t-test  
##  
## data: perimeter_mean[diagnosis == "B"] and perimeter_mean[diagnosis == "M"]  
## t = -26.405, df = 567, p-value < 2.2e-16  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -40.06379 -34.51615  
## sample estimates:  
## mean of x mean of y  
## 78.07541 115.36538
```

```
with(data=cancer,t.test(area_mean[diagnosis=="B"],area_mean[diagnosis=="M"],var.equal=TRUE))
```

```
##  
## Two Sample t-test  
##  
## data: area_mean[diagnosis == "B"] and area_mean[diagnosis == "M"]  
## t = -23.939, df = 567, p-value < 2.2e-16  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -557.8898 -473.2826  
## sample estimates:  
## mean of x mean of y  
## 462.7902 978.3764
```

```
with(data=cancer,t.test(smoothness_mean[diagnosis=="B"],smoothness_mean[diagnosis=="M"],var.equal=TRUE))
```

```
##  
## Two Sample t-test  
##
```

```
## data: smoothness_mean[diagnosis == "B"] and smoothness_mean[diagnosis == "M"]
## t = -9.1461, df = 567, p-value < 2.2e-16
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.012658756 -0.008182931
## sample estimates:
## mean of x mean of y
## 0.09247765 0.10289849
```

```
with(data=cancer,t.test(compactness_mean[diagnosis=="B"],compactness_mean[diagnosis=="M"],var.equal=TRUE))
```

```
##
## Two Sample t-test
##
## data: compactness_mean[diagnosis == "B"] and compactness_mean[diagnosis == "M"]
## t = -17.698, df = 567, p-value < 2.2e-16
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.07232827 -0.05787805
## sample estimates:
## mean of x mean of y
## 0.08008462 0.14518778
```

```
with(data=cancer,t.test(concavity_mean[diagnosis=="B"],concavity_mean[diagnosis=="M"],var.equal=TRUE))
```

```
##
## Two Sample t-test
##
## data: concavity_mean[diagnosis == "B"] and concavity_mean[diagnosis == "M"]
## t = -23.104, df = 567, p-value < 2.2e-16
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.1244696 -0.1049646
## sample estimates:
```

```
## mean of x mean of y
## 0.04605762 0.16077472
```

```
with(data=cancer,t.test(points_mean[diagnosis=="B"],points_mean[diagnosis=="M"],var.equal=TRUE))
```

```
##
## Two Sample t-test
##
## data: points_mean[diagnosis == "B"] and points_mean[diagnosis == "M"]
## t = -29.354, df = 567, p-value < 2.2e-16
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.06643938 -0.05810581
## sample estimates:
## mean of x mean of y
## 0.02571741 0.08799000
```

```
with(data=cancer,t.test(symmetry_mean[diagnosis=="B"],symmetry_mean[diagnosis=="M"],var.equal=TRUE))
```

```
##
## Two Sample t-test
##
## data: symmetry_mean[diagnosis == "B"] and symmetry_mean[diagnosis == "M"]
## t = -8.3383, df = 567, p-value = 5.733e-16
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.02313331 -0.01431262
## sample estimates:
## mean of x mean of y
## 0.174186 0.192909
```

```
with(data=cancer,t.test(dimension_mean[diagnosis=="B"],dimension_mean[diagnosis=="M"],var.equal=TRUE))
```

```
##
## Two Sample t-test
##
## data: dimension_mean[diagnosis == "B"] and dimension_mean[diagnosis == "M"]
## t = 0.30571, df = 567, p-value = 0.7599
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.001016083 0.001390684
## sample estimates:
## mean of x mean of y
## 0.06286739 0.06268009
```

```
#Hotelling T2 test
#install.packages("Hotelling")
library(Hotelling)
```

```
## Warning: package 'Hotelling' was built under R version 3.5.2
```

```
## Loading required package: corpcor
```

```
## Warning: package 'corpcor' was built under R version 3.5.2
```

```
t2testcan <- hotelling.test(radius_mean + texture_mean + perimeter_mean + area_mean + smoothness_mean + compactness_mean + concavity_mean + points_mean + symmetry_mean + dimension_mean ~ diagnosis, data=cancer)
# Output of the function hotelling.test is given
cat("T2 statistic =", t2testcan$stat[[1]], "\n")
```

```
## T2 statistic = 1220.313
```

```
#print(t2testcan)
# T2 statistic is located in the first element of the list "stat"
#View(t2testcan)
```

```
## Levene's tests based on absolute differences around means using t-tests. Standarizing the sparrows data set with scale()
matstand <- scale(cancer[,3:10])
matstand
```

```
##      radius_mean texture_mean perimeter_mean area_mean
## [1,] -0.512845261 -1.604183e+00 -0.53990056 -0.542146756
## [2,] -1.000920224 -7.896900e-02 -0.93374423 -0.876603348
## [3,] -0.876063838 -5.718735e-01 -0.86625169 -0.800448406
## [4,] -0.807960355 -1.371681e+00 -0.78065139 -0.767485819
## [5,]  0.301558892 -1.413531e+00  0.23379444  0.161718134
## [6,] -0.725668646 -5.804381e-02 -0.73126661 -0.696729922
## [7,] -0.742694517  1.078892e+00 -0.71809733 -0.714347856
## [8,] -0.090036136  1.037041e+00 -0.01683336 -0.162224529
## [9,] -1.032134320  8.172307e-05 -1.01070219 -0.905871851
## [10,] -0.870388548 -1.006653e+00 -0.84279392 -0.798459284
## [11,]  1.833887264  4.534609e-01  1.88612710  1.889980655
## [12,] -0.532708777 -3.137962e-01 -0.56376987 -0.552944845
## [13,] -0.280158360  3.372098e-01 -0.24647261 -0.335278109
## [14,] -0.305697166  4.731766e-03 -0.38516156 -0.362841651
## [15,]  1.550122751  1.327669e+00  1.47047181  1.523413958
## [16,]  0.131300184  7.882640e-01  0.18194041  0.006282488
## [17,]  0.449116439 -1.246130e+00  0.41281429  0.303514089
## [18,] -0.413527681 -4.625975e-01 -0.44113098 -0.468833417
## [19,]  1.692005007  1.062616e+00  1.75854973  1.682543687
## [20,] -0.549734648 -1.394931e+00 -0.53043514 -0.565732056
## [21,] -0.685941614 -4.881728e-01 -0.71151269 -0.666608937
## [22,] -0.691616904  1.197468e+00 -0.64196245 -0.706107209
## [23,] -0.904440289 -1.626698e-01 -0.88806330 -0.809541533
## [24,]  0.276020086 -6.741745e-01  0.31322164  0.055726368
## [25,] -1.026459030  2.093336e-01 -0.96008279 -0.911270896
## [26,] -0.092873781 -8.136758e-01 -0.06333736 -0.201154480
## [27,] -0.192191361 -2.300954e-01 -0.22095714 -0.283560947
## [28,]  0.332772989  1.390444e+00  0.42927589  0.220255141
```

```
## [29,] -1.282982150 -5.695485e-01 -1.24816071 -1.063864939
## [30,] -0.206379587 -5.439733e-01 -0.26704961 -0.291233273
## [31,] -0.305697166 -1.267055e+00 -0.38104616 -0.353180203
## [32,] -0.385151230 7.394385e-01 -0.42178861 -0.422231139
## [33,] 0.985431369 9.393903e-01 1.11243210 0.925256673
## [34,] -0.527033487 -3.184462e-01 -0.55800831 -0.536463552
## [35,] 0.128462539 -1.308905e+00 0.09551703 0.011113212
## [36,] -0.132600813 -9.624771e-01 -0.15222998 -0.211100088
## [37,] 1.365675817 4.697360e-01 1.30174045 1.350076217
## [38,] -0.632026357 -1.078728e+00 -0.57035451 -0.631088909
## [39,] 0.752744468 -1.138443e-01 0.71323841 0.657577736
## [40,] 0.599511631 -1.208194e-01 0.69266142 0.426839629
## [41,] 1.754433200 1.806623e+00 1.68447255 1.799049381
## [42,] 1.550122751 -2.649707e-01 1.59393378 1.588770811
## [43,] -0.768233323 2.535091e-01 -0.59216612 -0.763791736
## [44,] -0.322723037 -1.176379e+00 -0.32466519 -0.399498321
## [45,] -0.064497330 -6.206990e-01 -0.12342219 -0.157677965
## [46,] 1.121638336 5.929622e-01 1.04658572 1.048866373
## [47,] -0.850525032 -6.206990e-01 -0.88477099 -0.777999748
## [48,] 3.292436862 -4.253972e-01 3.38413230 3.850686244
## [49,] -0.175165490 -9.291913e-02 -0.15922616 -0.275036140
## [50,] -0.473118229 1.395830e-01 -0.47487725 -0.521687220
## [51,] -0.075847910 -5.486233e-01 -0.04152575 -0.215930812
## [52,] 0.247643635 -8.787763e-01 0.22556364 0.084142391
## [53,] -0.660402808 -4.718976e-01 -0.68764338 -0.633646351
## [54,] 0.026307314 1.990300e+00 0.02390909 -0.088058708
## [55,] 2.600051450 1.715947e+00 2.75447627 2.927165495
## [56,] -0.223405457 -7.974006e-01 -0.22548408 -0.383301188
## [57,] -0.677428679 -1.069428e+00 -0.64443169 -0.650411804
## [58,] -1.148477771 -9.717772e-01 -1.16091425 -0.958725654
## [59,] 2.872465383 2.116587e-01 3.05490039 3.143127271
## [60,] 1.496207493 -2.579956e-01 1.44989481 1.392700252
## [61,] 1.402565204 1.283494e+00 1.49516420 1.276194557
## [62,] 0.948541983 1.253268e+00 0.99308554 0.936907242
## [63,] 0.934353757 1.457870e+00 0.92723915 0.832904598
## [64,] -0.195029006 5.325116e-01 -0.23824182 -0.261112289
## [65,] 0.344123569 -1.169404e+00 0.43339128 0.140690277
```

```
## [66,] -0.507169971 6.813130e-01 -0.49874657 -0.541010116
## [67,] -0.243268973 -5.276981e-01 -0.30532282 -0.308282887
## [68,] 0.136975474 -8.369260e-01 0.02925911 0.028446986
## [69,] -0.078685556 -9.555021e-01 -0.12259911 -0.191777192
## [70,] -0.697292195 1.698083e-01 -0.68970108 -0.678259507
## [71,] -0.183678426 3.558100e-01 -0.14687996 -0.271910377
## [72,] -1.156990706 -4.091220e-01 -1.13416416 -0.977764390
## [73,] -1.443025336 -9.059411e-02 -1.31277247 -1.166162622
## [74,] 1.056372498 -1.408881e+00 0.93135455 0.958219260
## [75,] 0.769770339 3.960709e-02 0.67619982 0.640243962
## [76,] -0.501494680 5.836621e-01 -0.50162735 -0.536463552
## [77,] 1.186904174 -1.649948e-01 1.09597051 1.097173612
## [78,] -0.799447419 -5.804381e-02 -0.83003618 -0.741058918
## [79,] -0.387988875 -1.376331e+00 -0.39833083 -0.428482664
## [80,] 1.096099529 3.186096e-01 1.06304732 0.957082619
## [81,] 0.239130699 -5.439733e-01 0.17494423 0.088120634
## [82,] -0.518520551 -7.881005e-01 -0.54072364 -0.543283397
## [83,] -0.234756038 5.301866e-01 -0.27692657 -0.309135368
## [84,] 0.145488410 -9.415519e-01 0.15642494 -0.008493844
## [85,] -0.810798000 -1.471657e+00 -0.77406675 -0.763223416
## [86,] -0.351099488 -1.434456e+00 -0.41479243 -0.394951757
## [87,] -0.507169971 -1.632083e+00 -0.53619670 -0.529643706
## [88,] -0.212054877 2.657581e+00 -0.23165718 -0.277593582
## [89,] 1.995633037 8.719647e-01 1.86143471 2.128675248
## [90,] -0.118412587 -1.417446e-01 -0.13329914 -0.238379470
## [91,] -0.373800649 -1.448407e+00 -0.43948482 -0.415127134
## [92,] -0.470280584 -4.602725e-01 -0.47405417 -0.496681120
## [93,] 0.420739988 2.100692e-02 0.33050631 0.294705122
## [94,] -0.319885392 1.357894e+00 -0.38516156 -0.382732867
## [95,] 0.026307314 8.905649e-01 0.09880935 -0.127841141
## [96,] 0.539921083 -8.787763e-01 0.56919945 0.393024562
## [97,] -0.331235972 -2.324204e-01 -0.32054980 -0.368524856
## [98,] -0.646214582 -4.253972e-01 -0.67612026 -0.631373069
## [99,] -1.120101319 -4.091220e-01 -1.10494483 -0.971228704
## [100,] 3.147716961 1.306744e+00 3.27301653 3.475594740
## [101,] -0.969706127 2.558341e-01 -0.92469035 -0.880865751
## [102,] -1.250632996 -2.486956e-01 -1.28561084 -1.042268762
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## [103,] -0.805122710 -1.453057e+00 -0.81233996 -0.758392692
## [104,] 0.156838990 1.953835e-01 0.11403633 0.084142391
## [105,] -0.263132489 -4.323722e-01 -0.32260749 -0.321922578
## [106,] -0.748369807 -1.092678e+00 -0.73990894 -0.710369613
## [107,] -0.444741778 -5.106875e-02 -0.41355781 -0.480483986
## [108,] -0.541221712 1.744583e-01 -0.51438508 -0.573404382
## [109,] -0.938492031 1.143992e+00 -0.94979429 -0.833410993
## [110,] -0.842012096 4.929862e-01 -0.86501707 -0.780273029
## [111,] -0.705805130 -2.231203e-01 -0.69134724 -0.688773435
## [112,] -1.676563530 3.279097e-01 -1.59261960 -1.281531676
## [113,] 1.286221753 -5.044479e-01 1.21120168 1.199471295
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## [115,] -0.671753388 5.371617e-01 -0.70986653 -0.645012760
## [116,] 0.891789080 1.425320e+00 0.84081578 0.778345834
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## [128,] 0.134137829 9.300903e-01 0.08234776 0.027878666
## [129,] 1.382701688 -8.826909e-02 1.29350966 1.372809036
## [130,] 0.040495540 7.580387e-01 0.07411696 -0.071293255
## [131,] 0.219267183 7.533886e-01 0.41692969 0.085563192
## [132,] -0.132600813 -3.711862e-02 -0.10325673 -0.226160580
## [133,] -0.260294844 2.039125e+00 -0.29174200 -0.331015705
## [134,] 2.109138842 7.208383e-01 2.05897385 2.341795421
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## [136,] 0.715855082 4.860112e-01 0.74204620 0.709579058
## [137,] -1.530424806 -5.695485e-01 -1.51031162 -1.195146966
## [138,] -0.586624034 -1.522807e+00 -0.62262007 -0.586191592
## [139,] 0.832198532 3.976604e-01 0.81612338 0.749361490
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## [140,] -0.620675776 -2.440455e-01 -0.66912408 -0.617449218
## [141,] 1.272033528 2.232838e-01 1.24000947 1.247778534
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## [143,] 1.703355588 2.083301e+00 1.61451077 1.722326119
## [144,] 0.034820250 6.650378e-01 0.18317503 -0.026111778
## [145,] 0.128462539 5.208865e-01 0.22391748 -0.028669220
## [146,] -0.657565163 -4.416723e-01 -0.68723184 -0.642171158
## [147,] 0.468979955 -3.254213e-01 0.47866067 0.358357013
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## [177,]	1.442292236	-1.673198e-01	1.37993303	1.412591468
## [178,]	-0.870388548	-1.036878e+00	-0.89135562	-0.786240394
## [179,]	1.283384108	-3.928469e-01	1.30585585	1.196629693
## [180,]	-0.552572293	2.860593e-01	-0.60698156	-0.557491409
## [181,]	-0.538384067	6.285730e-02	-0.55265829	-0.550955724
## [182,]	0.551271664	8.378249e-02	0.49923767	0.462643818
## [183,]	-0.101386717	-1.399581e+00	-0.16087232	-0.205132723
## [184,]	0.281695376	-6.067489e-01	0.28029845	0.175357825
## [185,]	-0.824986226	1.326079e-01	-0.82427462	-0.760381813
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## [187,]	0.829360887	-4.874373e-02	0.88196977	0.682299676
## [188,]	1.226631206	6.092373e-01	1.16181689	1.193788091
## [189,]	1.711868523	8.610751e-02	1.61039537	1.759266949
## [190,]	-1.244390176	-8.415760e-01	-1.25392227	-1.037153878
## [191,]	0.562622244	-2.882209e-01	0.54039166	0.449288287
## [192,]	-0.623513421	-1.948286e+00	-0.65142787	-0.602957046
## [193,]	0.224942474	-1.013628e+00	0.18440965	0.090962237
## [194,]	0.117111959	1.918224e+00	0.19593277	0.011113212
## [195,]	0.446278794	2.372339e-01	0.37989110	0.317437940
## [196,]	1.411078139	1.627597e+00	1.52808739	1.355759422
## [197,]	0.270344796	1.499720e+00	0.24819833	0.175357825
## [198,]	0.139813120	1.099817e+00	0.10704015	0.022195461
## [199,]	-0.189353716	-1.254694e-01	-0.18638779	-0.294927356
## [200,]	-0.544059357	-1.208929e+00	-0.54278134	-0.548114121
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## [204,]	-0.424878262	3.418599e-01	-0.40409239	-0.495828639
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## [210,]	1.975769521	1.692697e+00	2.08778165	1.864406234
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## [212,]	0.165351926	5.348366e-01	0.14737106	0.005714168
## [213,]	0.871925564	1.216068e+00	0.91489296	0.780050795

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## [214,] -0.240431328 -1.294955e+00 -0.25429187 -0.321354258
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## [251,] 0.258994215 -5.927987e-01 0.27824075 0.098066242
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## [332,] -0.356774779 5.820726e-02 -0.38269232 -0.413990493
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## [341,] 0.571135180 -1.029903e+00 0.50746846 0.412347457
## [342,] 1.388376978 1.232343e+00 1.23589407 1.196629693
## [343,] 0.605186921 6.022623e-01 0.63916123 0.488502399
## [344,] -0.802285065 -2.556706e-01 -0.74237818 -0.754414449
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## [349,] 0.261831860 -5.106875e-02 0.21774438 0.133586271
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## [358,] -0.649052227 -8.129402e-02 -0.67735488 -0.644728600
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## [362,] 0.488843471 1.083542e+00 0.48277607 0.363187737
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## [568,] 0.114274313 -1.234505e+00 0.07782082 -0.030374182
## [569,] 2.055223584 -9.741022e-01 2.03016606 2.077526407
##      smoothness_mean compactness_mean concavity_mean points_mean
## [1,] 0.457882546 -0.653837927 -0.613766097 -0.307171959
## [2,] 0.036953503 0.196146087 -0.312711686 -0.579832380
## [3,] 0.806286653 -0.498004369 -0.731804513 -0.621581896
## [4,] 1.424881700 0.175317786 -0.532481406 -0.024718442
## [5,] -1.189571158 -0.662737292 -0.688277063 -0.575966684
## [6,] -0.775041374 -0.513530920 -0.425857969 -0.892696038
## [7,] -0.266655790 -0.042432629 0.280992699 -0.202798168
## [8,] 2.555417474 1.371998332 0.840452144 1.104064774
## [9,] 0.250973169 -0.351448872 -0.738201920 -0.951196903
## [10,] 0.493433986 -0.253177162 -0.436896631 -0.399690949
## [11,] 0.863168956 1.137206580 1.630719971 1.628253144
## [12,] -0.698250265 -0.711021080 -0.626560909 -0.659981142
## [13,] -0.683318660 0.086324138 0.247124077 -0.356137441

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##	[14,]	-1.120601365	-1.258237342	-1.105212334	-1.153321259
##	[15,]	0.486323698	-0.106621665	0.962128302	1.074943198
##	[16,]	-0.826946476	0.542653271	0.176878048	-0.297894289
##	[17,]	-0.123739003	-0.184065074	-0.218883062	0.268301311
##	[18,]	0.457882546	-0.524513115	-0.713364931	-0.717708868
##	[19,]	0.827617517	1.504542064	1.749887342	2.038016914
##	[20,]	0.728073486	-0.175165709	-0.755763427	-0.517981244
##	[21,]	0.098101979	-0.812890405	-0.636094299	-0.425977681
##	[22,]	1.936822428	0.963006247	-0.547534126	-0.093012404
##	[23,]	0.287235637	-0.563140145	-0.493720651	-0.505095591
##	[24,]	1.325337669	1.445844126	0.313606926	0.938612987
##	[25,]	1.126249608	0.491529260	-0.301547585	-0.470046615
##	[26,]	0.308566501	0.447979177	-0.136845735	0.045637224
##	[27,]	0.415220819	-0.429649673	-0.615396808	-0.544267977
##	[28,]	0.841838093	1.237561119	0.997251316	0.994536722
##	[29,]	-0.821258245	-0.228372550	-0.057442634	-0.670031952
##	[30,]	-1.208057907	-0.897150348	-0.840309540	-0.881098950
##	[31,]	-0.912980959	-1.268462144	-1.056704942	-1.033175429
##	[32,]	-0.413127720	-0.884842716	-0.522948016	-0.563854170
##	[33,]	-0.246746984	1.818860055	1.565491516	1.321574599
##	[34,]	-0.676208372	-0.739991353	-0.711107023	-0.576997536
##	[35,]	0.139341649	-0.287070488	-0.082530502	-0.139916181
##	[36,]	-0.972707377	-0.546477505	-0.580900990	-0.623901313
##	[37,]	-0.445835045	-0.027284774	0.240852111	0.788366272
##	[38,]	1.339558245	0.478274887	-0.648512793	-0.486797964
##	[39,]	-0.548223190	-0.237082566	-0.057442634	0.434010810
##	[40,]	0.728073486	1.436376716	1.329665561	1.072108354
##	[41,]	0.258794485	0.084430656	0.791530803	1.144525725
##	[42,]	1.112029032	1.178863181	2.032125852	2.053479698
##	[43,]	3.280666839	3.399917422	1.914212875	1.450431130
##	[44,]	-0.123739003	-0.088822935	-0.645000492	-0.720028286
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##	[46,]	-1.610500201	-0.339330588	0.269703158	0.228355786
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##	[50,]	-0.842589109	-0.055687002	-0.257142060	-0.462057510

##	[51,]	0.443661971	0.896734381	0.128082146	0.182998287
##	[52,]	-0.899471412	0.099578511	-0.297909845	-0.286554914
##	[53,]	-0.390374799	-0.795659720	-0.756014306	-0.838576295
##	[54,]	-1.004703673	-0.008349956	0.269703158	-0.124711110
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##	[58,]	-0.262389617	-1.086687884	-1.093860074	-1.198756072
##	[59,]	3.437093173	3.452934915	4.239858194	3.924476535
##	[60,]	0.521875137	0.754723241	0.925750894	1.178286136
##	[61,]	-0.394640972	2.171047684	1.529114108	1.306369528
##	[62,]	0.607198592	1.059573823	1.594342564	1.427236955
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##	[64,]	-1.048076429	-0.833718706	-0.723776396	-0.737295061
##	[65,]	0.777845502	2.066906181	1.491482307	1.253538350
##	[66,]	0.344117940	-0.053793521	-0.440283493	-0.533444028
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##	[71,]	0.372559092	0.400642130	0.219527423	0.140991057
##	[72,]	0.308566501	-0.588512803	-0.798914559	-0.803269605
##	[73,]	0.236041564	1.758268635	1.363534182	0.004145421
##	[74,]	-1.278449757	-0.798499943	-0.556314880	-0.183985115
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##	[79,]	-0.598706234	-0.470738230	-0.605612540	-0.604057408
##	[80,]	0.514764850	0.493422742	0.392633709	1.013349776
##	[81,]	0.155695311	-0.482667166	-0.787499579	-0.286297201
##	[82,]	-1.106380790	-0.602335220	-0.631703922	-0.834452886
##	[83,]	-0.749444338	-0.768961625	-0.694423591	-0.636013827
##	[84,]	1.197352487	0.559694607	0.136235703	0.559774785
##	[85,]	1.943932716	0.127980740	-0.122921969	0.169597207
##	[86,]	-1.906288177	-1.269598234	-0.830399833	-0.958928295
##	[87,]	-0.450101217	-0.781458606	-0.742843175	-0.578543814



##	[88,]	-0.278032250	-0.569577984	-0.760279243	-0.419534854
##	[89,]	-0.147913982	-0.040539147	0.262176798	0.963868867
##	[90,]	0.199068067	0.050347983	-0.438401903	-0.285781775
##	[91,]	-0.637812818	-1.261077565	-0.998576353	-0.917951918
##	[92,]	-0.503428376	-0.530950954	-0.661182166	-0.650188046
##	[93,]	-1.277027699	-0.912298203	-0.585918564	-0.527001202
##	[94,]	-0.900893470	-1.015114269	-0.962612895	-0.806619875
##	[95,]	0.792066077	2.593294143	1.371060543	0.444834759
##	[96,]	-0.103119168	0.620286027	0.396396889	0.553847384
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##	[100,]	0.706742623	3.070451576	3.074526748	3.494095720
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##	[103,]	0.140763706	-0.535116614	-0.704333298	-0.550710803
##	[104,]	0.164227657	-0.612370674	-0.186268834	0.094602706
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##	[107,]	-0.622881213	-0.010243437	0.178132442	-0.129092232
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##	[114,]	1.190242199	2.366076318	1.555456369	0.807437038
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##	[121,]	-0.605105493	-0.813837146	-0.935768876	-0.966659687
##	[122,]	-0.388241713	0.576735944	0.943312401	1.203284303
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##	[124,]	-0.179199249	-0.354478443	0.351238728	0.920830786



## [125,]	-0.398196116	-0.861174193	-0.789381169	-0.662300560
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## [127,]	3.088689066	1.366317887	1.483955946	1.213592825
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## [142,]	1.567087457	3.280628064	2.650541786	2.530248864
## [143,]	0.102368152	-0.017817365	0.692433726	1.262558307
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## [215,]	0.308566501	0.048454501	-0.472270524	-0.855843070
## [216,]	1.211573063	-0.449341885	-0.977916494	-0.928260441
## [217,]	1.147580472	0.139341631	-0.627188106	-0.488859668
## [218,]	-0.501295290	0.122300294	-0.478793369	-0.472623745
## [219,]	2.235454519	1.243241565	0.865540012	0.823930674
## [220,]	-0.851121454	0.192359123	0.546924094	1.239621845
## [221,]	0.022021899	-0.386478286	-0.952326869	-0.764870359
## [222,]	-0.605105493	-0.878594226	-0.817855899	-0.641683515
## [223,]	1.325337669	1.133419616	1.642009512	1.476202437
## [224,]	0.984043850	-0.202999892	-0.538000737	-0.685237022
## [225,]	-0.600128292	-1.161101722	-1.113892736	-1.260710292
## [226,]	0.784955789	-0.868558772	-1.113892736	-1.260710292
## [227,]	2.071917898	2.197556431	0.376326595	0.553074245
## [228,]	1.204462775	0.843716889	1.561728336	1.983897171
## [229,]	-0.474987225	0.292713663	0.185658802	0.669045123
## [230,]	-0.945688283	-1.131563405	-1.101678707	-1.184916880
## [231,]	-0.198397026	-0.352206264	-0.215747078	-0.740903044
## [232,]	-0.678341459	-1.110167060	-0.849341173	-0.731367661
## [233,]	-1.279160785	2.252467405	2.653050573	0.748936173
## [234,]	1.460433139	0.521824970	0.740100674	0.926758186
## [235,]	-0.967019147	-1.173977399	-0.863390379	-0.874398411

## [236,]	1.168911336	-0.221745363	-0.577137810	-0.453552979
## [237,]	0.571647153	1.773416490	1.014812824	1.027266281
## [238,]	0.514764850	-0.530572257	-0.792140835	-0.871563567
## [239,]	0.014911611	-0.605932836	-0.815472552	-0.844503695
## [240,]	0.756514638	-0.845079597	-0.507895296	-0.469531189
## [241,]	0.941382123	0.446085695	0.114032940	0.091252436
## [242,]	1.325337669	-0.422833138	-0.595577393	-0.764870359
## [243,]	-1.185304985	-0.829553045	-0.645376810	-1.128555033
## [244,]	-0.692562034	-0.784677525	-0.751247611	-0.529578332
## [245,]	0.699632335	1.525370364	1.917976055	1.249414941
## [246,]	-0.814147957	-1.023256241	-0.820741004	-1.012919182
## [247,]	-1.080072724	-1.234947515	-1.082909219	-1.127756123
## [248,]	-0.568131996	0.353305083	0.151790181	-0.258206477
## [249,]	-0.736645819	-0.850381346	-0.914695068	-1.108221473
## [250,]	-0.852543512	-0.754381815	-0.605236222	-0.759458384
## [251,]	0.175604117	0.607031654	-0.145375610	0.322163341
## [252,]	1.033815866	3.920624938	2.870060627	2.287998585
## [253,]	-0.903737585	0.133661185	0.149281394	-0.550195377
## [254,]	1.894160700	2.901931689	2.886367741	1.826692202
## [255,]	2.022145883	-0.128586055	0.153044574	0.444061620
## [256,]	0.571647153	-0.809482138	-0.857118412	-0.936764972
## [257,]	-0.887383923	-0.498761762	-0.007894096	-0.506899583
## [258,]	-0.553200392	-0.969670704	-0.764795059	-0.719512860
## [259,]	0.138630620	-0.984629211	-0.655662835	-0.522620080
## [260,]	0.101657123	-0.436466208	-0.277964990	-0.028584138
## [261,]	0.464992834	-0.128018010	-0.513916384	-0.403556645
## [262,]	-0.430903440	-0.525649204	-0.361382149	-0.555091926
## [263,]	0.912940971	0.340050710	0.725047954	0.823415248
## [264,]	-1.169662352	-0.967209178	-0.738201920	-0.727244252
## [265,]	1.659521200	0.856971262	1.917976055	1.839577855
## [266,]	2.199903080	1.682529360	1.218024551	1.149679986
## [267,]	-1.124867538	-0.857197881	-0.389606000	-0.984699602
## [268,]	0.104501238	0.923243128	-0.034361796	-0.520558375
## [269,]	-1.026745565	-0.991067050	-0.898889711	-0.935734120
## [270,]	0.450772259	0.974367138	1.456359292	1.029327985
## [271,]	-1.131977826	-0.291425496	-0.186896031	-0.208467856
## [272,]	0.073927000	2.678500827	1.476429586	1.620521752

## [273,]	-1.131266797	-0.960581991	-0.777589872	-0.422885124
## [274,]	-0.329937352	-0.682618852	-0.690911289	-0.675186213
## [275,]	-0.791395036	0.728214494	0.283501485	0.484522570
## [276,]	1.268455366	0.894840900	2.901420462	2.849813062
## [277,]	-0.034860404	-0.395566999	-0.257894696	0.015227083
## [278,]	-0.839744994	-0.038645666	0.046546577	0.105684368
## [279,]	-1.567838474	-1.175302836	-1.113892736	-1.260710292
## [280,]	-1.093582271	-1.052037166	-1.113892736	-1.260710292
## [281,]	0.720963198	2.087734482	0.998505710	1.522590788
## [282,]	-0.799927382	-1.140084073	-1.050332623	-1.114741613
## [283,]	-0.888805980	-0.878594226	-1.019687793	-1.041963444
## [284,]	-0.151469126	-0.720299141	-0.523700652	-0.299182854
## [285,]	0.063972597	-0.272490677	0.022713102	0.421382870
## [286,]	-0.707493639	-0.707423464	-0.462611695	-0.541433133
## [287,]	-0.123027974	0.497209705	0.284755879	0.404631521
## [288,]	0.521875137	0.504783633	0.656056318	1.169781605
## [289,]	0.308566501	1.065254268	2.288022101	2.115330833
## [290,]	0.799176365	0.550227198	-0.108245566	0.046925790
## [291,]	-1.075806552	-1.034427785	-1.113892736	-1.260710292
## [292,]	-0.948532398	-0.768772277	-0.793269789	-0.737295061
## [293,]	1.680852064	0.423363912	0.623442090	0.421125157
## [294,]	-0.287986653	-0.617104379	-0.562963165	-0.738325913
## [295,]	0.706742623	1.724185962	1.956862249	2.607562783
## [296,]	0.472103122	2.011995207	1.783755963	2.530248864
## [297,]	0.585867728	1.317087358	1.501517454	2.146256400
## [298,]	0.138630620	-0.031071738	0.741355068	1.187048380
## [299,]	0.969823275	-0.269839803	-0.639606600	-0.539629142
## [300,]	0.443661971	1.608683567	1.690930854	1.108703609
## [301,]	-0.669809113	0.268098398	0.382598562	1.230601888
## [302,]	-2.175768089	-0.987280086	-0.803430375	-0.906612543
## [303,]	-1.508112056	-1.271681064	-1.075131980	-1.090928926
## [304,]	1.012485002	0.805847251	0.698705693	0.845320859
## [305,]	0.436551683	0.304074554	0.324896467	0.404631521
## [306,]	-0.339180726	0.057921910	0.835434571	0.888616653
## [307,]	0.600088304	1.976019051	2.084810374	1.169266179
## [308,]	0.172760002	-0.302597039	-0.700444679	-0.644776071
## [309,]	-1.065141120	0.234015725	0.021333270	-0.342736362

## [310,]	0.621419168	0.281352772	-0.127939542	-0.113629449
## [311,]	-0.341313813	0.510464079	0.796548376	1.355077297
## [312,]	0.315676789	-0.004562992	0.474169279	0.891966923
## [313,]	0.223243046	-0.469034096	-0.543394628	-0.446337013
## [314,]	1.858609261	-0.610477192	-0.370162903	0.647397226
## [315,]	0.550316289	0.743362349	0.121308422	0.326286750
## [316,]	-1.506689998	-1.080818091	-0.954459338	-0.972844801
## [317,]	0.280125349	0.538866307	1.369806149	1.427236955
## [318,]	-0.090320650	1.209158891	1.332174348	1.927200297
## [319,]	-0.049792009	-0.424158576	-0.508773371	-0.679051909
## [320,]	-0.541112902	-0.502548725	-0.535868268	-0.351498606
## [321,]	-0.086765506	0.885373490	0.822890637	-0.011832789
## [322,]	-0.018506742	0.554014162	0.577029535	0.290206921
## [323,]	-0.396774058	0.510464079	0.723793560	0.977012234
## [324,]	0.093835806	-0.489483700	-0.696430620	-0.743222462
## [325,]	-1.215879223	-1.333219225	-0.981805113	-0.975164218
## [326,]	0.169204858	0.018158791	0.560722422	1.005876097
## [327,]	-0.402462288	-0.660654462	-0.930500424	-0.772086325
## [328,]	1.360889109	1.341702622	1.561728336	1.182151832
## [329,]	1.218683351	-0.538714229	-0.720514973	-0.579059240
## [330,]	0.749404350	0.453659622	1.781247177	2.373043896
## [331,]	-0.274477106	-1.198971360	-1.113892736	-1.260710292
## [332,]	-0.355534388	-0.483045862	-0.888478246	-0.722089990
## [333,]	-0.029883203	-0.889576421	-0.796405772	-0.823113511
## [334,]	-1.352396751	-1.367491247	-0.973024360	-1.130539424
## [335,]	1.446212563	0.495316224	0.816618670	0.961807163
## [336,]	-1.033855853	-0.796038416	-0.374804158	-0.447110152
## [337,]	-1.564283330	-1.473904928	-1.098915279	-1.120282444
## [338,]	0.728073486	0.699812266	2.812358532	-0.133215642
## [339,]	-0.369754964	0.678983966	0.215764243	0.308762261
## [340,]	0.564536865	0.483955332	0.380089775	0.339945542
## [341,]	-0.100275053	-0.366028682	-0.423976379	-0.093785543
## [342,]	-0.431614469	0.307861518	0.727556741	0.870834452
## [343,]	1.431991988	0.453659622	1.142760948	0.796097664
## [344,]	-0.031305261	0.533185861	0.827908211	-0.525197210
## [345,]	0.315676789	0.455553104	0.194439556	0.185833130
## [346,]	0.521875137	-0.384395456	-0.570238647	-0.802496466

## [347,]	-0.954931658	-0.518075277	-0.521693623	-0.647095489
## [348,]	0.912940971	-0.179520717	-0.859125441	-0.781106282
## [349,]	-0.299363114	-0.347851256	-0.174853854	-0.143524164
## [350,]	0.472103122	-0.230266032	-0.431377300	-0.159244661
## [351,]	-1.187438072	-0.918925390	-0.852100838	-0.577255249
## [352,]	0.150007081	0.215080906	0.124820723	0.788881698
## [353,]	-1.075806552	-0.872913780	-0.336796039	-0.656888585
## [354,]	-0.623592242	-0.730713292	-0.470012616	-0.771313185
## [355,]	1.481764003	0.824782070	0.475423672	1.066180953
## [356,]	0.571647153	-0.503874163	-0.841438494	-0.873109845
## [357,]	0.891610108	-0.606311532	-0.893621259	-0.757654393
## [358,]	-0.543957017	-0.669175131	-0.779095144	-0.901715995
## [359,]	-0.123027974	0.088217620	0.299808599	0.646366374
## [360,]	-0.281587394	-0.914381034	-0.612637143	-0.930322145
## [361,]	-0.910847873	-0.394998955	0.020329755	0.291237773
## [362,]	-0.878140548	-0.078408785	0.132723402	0.121662578
## [363,]	-1.377282758	-1.332272484	-1.113892736	-1.260710292
## [364,]	0.255950370	-0.547613594	-0.872672890	-0.753530984
## [365,]	0.578757441	-0.639447465	-0.801548785	-0.502776174
## [366,]	0.247418025	0.145022076	-0.268807918	-0.592202607
## [367,]	1.076477593	1.176969699	1.213006977	1.455585392
## [368,]	-1.174639553	-1.099752909	-0.920590716	-0.991915567
## [369,]	-0.738778906	-0.845458293	-0.942417161	-1.031165267
## [370,]	0.507654562	0.273778844	0.615915730	0.953302632
## [371,]	1.382219972	0.078750211	-0.370288342	-0.415669158
## [372,]	-1.361640125	-0.318691635	-0.362761982	-0.698895815
## [373,]	-0.940711082	-1.180036541	-1.016601986	-1.040752193
## [374,]	-0.390374799	-0.491566530	-0.748111627	-0.867182445
## [375,]	-0.748733309	-0.947516966	-0.741839660	-0.675186213
## [376,]	-1.609789172	-1.210142903	-1.023915099	-0.964597983
## [377,]	-0.967730176	-0.609719800	-0.598964255	-0.480612850
## [378,]	0.557426577	0.480168369	-0.374804158	-0.518496671
## [379,]	-0.182754393	-1.242521443	-1.095239906	-1.174814528
## [380,]	0.351228228	-0.497246976	-0.570991283	-0.505868731
## [381,]	-0.676919401	-0.777103597	-0.945553145	-0.669774239
## [382,]	0.365448804	-0.688677994	-0.800921588	-0.777498299
## [383,]	-0.136537521	-0.092231203	0.396396889	0.011876813



## [384,]	0.543206001	0.976260620	0.584555896	0.737081372
## [385,]	0.607198592	-0.366407378	-0.574252705	-0.592202607
## [386,]	-0.539690845	-0.448395144	-0.567228102	-0.632405844
## [387,]	-0.167111759	1.737440335	1.639500725	1.543207833
## [388,]	0.742294062	-0.711210428	-0.825758577	-0.801981040
## [389,]	-0.105252255	-0.364135200	-0.031978449	-0.103836352
## [390,]	-0.148625011	-0.704772590	-0.420714956	-0.084765586
## [391,]	0.256661399	0.512357560	1.016067217	0.876504139
## [392,]	-1.555039956	-1.301976774	-1.113892736	-1.260710292
## [393,]	-1.387237161	-0.828416956	-0.880951886	-0.816670684
## [394,]	0.401000243	0.775551541	1.295796940	1.229828748
## [395,]	-0.255279329	-0.601956524	-0.894123016	-0.776209734
## [396,]	-1.855805133	-1.060936531	-0.857369290	-1.041473789
## [397,]	0.884499820	0.235909207	-0.223649757	-0.101774648
## [398,]	-0.310028546	-0.014030401	0.293536632	0.667756558
## [399,]	0.114455641	0.559694607	1.223042124	1.581864792
## [400,]	0.429441395	-0.971942883	-1.028230212	-1.056163434
## [401,]	-0.102408139	-0.381555233	-0.821619079	-0.638075532
## [402,]	-1.792523571	-0.588702151	-0.098837616	-0.539113716
## [403,]	-0.167111759	1.279217721	0.964637089	0.696104995
## [404,]	-0.135115464	0.061708874	0.801565950	1.043502204
## [405,]	-0.961330917	0.340050710	0.153044574	-0.530609185
## [406,]	-0.345579985	0.165850377	0.115287334	0.745585903
## [407,]	0.173471031	0.747149313	-0.279595701	0.130167109
## [408,]	-0.187020565	-0.709884991	-0.673349782	-0.584728928
## [409,]	1.410661124	1.146673989	1.006032070	1.038863369
## [410,]	-0.833345735	-1.201811582	-0.906666950	-0.831102616
## [411,]	-0.622881213	0.572948981	0.609643763	-0.235012301
## [412,]	-1.957482250	-1.253692986	-0.909050297	-1.180174960
## [413,]	-1.310446052	-1.002617289	-0.831528787	-1.057761255
## [414,]	0.621419168	-0.821600422	-0.663314635	-0.590656328
## [415,]	-1.296225476	-1.153906491	-0.832281423	-0.548649099
## [416,]	0.891610108	0.766084132	1.716018721	1.816383680
## [417,]	0.002113093	-0.671257961	-0.674478736	-0.519785236
## [418,]	0.081748317	0.180998232	-0.109499959	-0.172388027
## [419,]	0.191246750	1.184543627	0.944566795	1.999359954
## [420,]	0.905830684	1.243241565	0.967145875	0.650232070



## [421,]	0.770735214	1.051999895	4.039155254	0.764141244
## [422,]	-0.412416691	-0.634903109	-0.454959895	-0.401494940
## [423,]	0.083881403	-1.007540342	-0.865271969	-0.800434761
## [424,]	4.766717009	2.263828296	0.106632019	0.092798715
## [425,]	-0.410283605	-0.431543155	-0.338552190	-0.652249750
## [426,]	1.126249608	0.413896503	0.301062993	0.510551590
## [427,]	1.382219972	0.307861518	-0.967003271	-0.800177048
## [428,]	-0.506272492	-0.636228546	-0.694172712	-0.519269810
## [429,]	0.280125349	-0.554808825	-1.050859469	-0.973102514
## [430,]	2.640740929	2.349034981	1.956862249	1.940085950
## [431,]	-0.268788876	-0.487022174	-0.450945836	-0.465665493
## [432,]	0.742294062	0.387387757	0.854250472	1.174935866
## [433,]	0.061839511	-0.618997861	-0.593194045	-0.780590856
## [434,]	0.344117940	0.518038006	0.756407788	1.105868765
## [435,]	-0.512671751	0.131767703	0.072387080	-0.329592995
## [436,]	-0.232526408	-0.970996142	-0.892492305	-0.556380491
## [437,]	-0.506983520	-0.861552889	-0.107869248	0.245107135
## [438,]	-1.205213791	-0.959635250	-0.628066181	-0.648126341
## [439,]	0.082459346	-0.977433980	-0.855362261	-1.059719874
## [440,]	0.891610108	0.184785196	-0.255511348	-0.297378863
## [441,]	-0.040548635	0.154489486	-0.222395363	-0.500456756
## [442,]	-0.277321222	-0.698145403	-0.740836146	-0.631117279
## [443,]	0.536095713	0.964899729	1.018576004	1.011030358
## [444,]	0.763624926	0.211293942	-0.388100728	0.096406698
## [445,]	0.125121073	0.482061850	0.663582678	1.009999506
## [446,]	0.429441395	-0.746429191	-0.743094054	-0.725697973
## [447,]	-1.132688855	-0.686784512	-0.524704167	-0.656630872
## [448,]	-1.388659219	-1.238734479	-1.094499814	-1.116597147
## [449,]	-0.194130853	0.209400460	-0.281477291	-0.450975848
## [450,]	0.186269549	0.126087258	0.149281394	0.396642416
## [451,]	0.635639744	-0.513530920	-1.030563384	-0.947331207
## [452,]	0.500544274	0.586203354	0.247124077	-0.085023299
## [453,]	0.329897364	0.519931488	1.214261371	1.370540081
## [454,]	-2.149460023	0.038987091	-0.012911669	-0.645806924
## [455,]	0.097390950	-0.438170342	-0.793395228	-0.699153528
## [456,]	0.237463622	-0.042432629	-0.049289077	0.164958372
## [457,]	2.327888262	0.006797899	-0.251246411	0.428856549

## [458,]	-0.118761802	0.188572160	0.600863010	0.967476850
## [459,]	-0.354112331	-1.166024775	-1.113892736	-1.260710292
## [460,]	-2.406852445	-1.608720838	-1.093885161	-1.212981833
## [461,]	0.856058668	1.788564345	3.445827187	3.092063341
## [462,]	0.386779668	0.654368701	0.885610306	0.992732731
## [463,]	-1.172506467	-0.635281805	-0.669084845	-0.726213399
## [464,]	-0.582352572	-0.703636501	-0.981554235	-1.004620821
## [465,]	1.581308033	2.333887126	1.682150100	2.349849720
## [466,]	0.642750032	0.516144524	-0.142866823	-0.539371429
## [467,]	-0.799927382	-0.981410292	-1.095566049	-1.176670062
## [468,]	-0.489918829	0.357092047	0.253396044	0.351027204
## [469,]	0.692522047	0.127980740	-0.270187751	-0.238877997
## [470,]	-0.837611907	-0.859470059	-0.670590117	-0.502003035
## [471,]	-0.630702530	-0.725790239	-0.723525517	-0.522620080
## [472,]	-0.863919973	-0.962286125	-0.869662345	-0.761004663
## [473,]	-0.464321793	-1.262592351	-0.792517153	-0.507415009
## [474,]	-0.864631001	0.163956895	0.322387680	0.449731307
## [475,]	-0.628569443	-0.839588499	-0.816977824	-0.648126341
## [476,]	0.078193173	0.139341631	0.303571779	0.788108559
## [477,]	-1.920508753	0.056028428	-0.117528077	-0.493240790
## [478,]	0.034109388	0.249163580	0.858013652	1.715875585
## [479,]	-0.457922534	-0.115710378	-0.368783070	-0.018791042
## [480,]	1.410661124	1.207265409	0.588319076	0.481172301
## [481,]	0.976933562	0.105258957	-0.004758112	0.228355786
## [482,]	0.082459346	0.184785196	0.063731766	0.244076283
## [483,]	0.713852911	1.597322676	1.795045504	1.945240211
## [484,]	0.044774820	0.474487923	0.525599407	-0.303048550
## [485,]	-1.475404731	-1.288343704	-1.009702822	-0.961247713
## [486,]	1.986594443	2.500513531	2.541409563	1.940085950
## [487,]	-0.490629858	-0.790736667	-0.744097568	-0.870532715
## [488,]	2.576748338	3.265480209	4.234840621	3.437398846
## [489,]	-1.636097238	-0.976865935	-0.888101928	-0.937022685
## [490,]	1.794616670	2.102882337	1.004777677	0.380148780
## [491,]	0.265904773	0.465020514	0.353747514	0.739658503
## [492,]	1.524425730	3.269267173	3.294045588	2.656528265
## [493,]	2.086138474	0.968686693	1.435034605	1.566402009
## [494,]	0.036242474	-0.129154099	-0.453705502	-0.542206272

## [495,]	1.986594443	-0.278549819	-0.737574723	-1.022093767
## [496,]	1.808837246	1.169395772	-0.508647932	0.105942081
## [497,]	0.294345925	-0.139568250	-0.341939052	-0.480097424
## [498,]	0.055440252	0.006797899	-0.077889246	0.092798715
## [499,]	-0.267366818	1.930575486	1.123945047	1.687527148
## [500,]	0.706742623	1.127739170	1.082550066	0.903821724
## [501,]	-1.520910574	-0.629033315	-0.656164593	-0.666166256
## [502,]	-1.016791162	-0.712914562	-0.700068361	-0.404329784
## [503,]	1.467543427	1.852942729	1.046172658	1.388579995
## [504,]	-0.400329202	1.167502290	1.746124162	0.270363015
## [505,]	1.503094866	0.832355998	0.165588508	0.173205190
## [506,]	-1.319689426	-1.298947203	-1.051587017	-1.094897707
## [507,]	-2.280289321	-1.469171223	-1.022949216	-1.099639628
## [508,]	-0.827657504	-1.025907116	-0.685391958	-0.605861399
## [509,]	0.962712987	2.258147851	2.867551840	2.537980256
## [510,]	1.112029032	0.998982403	0.795293983	0.924954195
## [511,]	0.792066077	0.429044358	-0.540885842	-0.459222666
## [512,]	-0.555333478	-0.645127911	-0.399013951	-0.038119521
## [513,]	1.033815866	0.894840900	0.413958397	0.074758800
## [514,]	0.007090294	-0.326265563	-0.626184591	-0.600191712
## [515,]	0.075349058	0.858864744	1.157813669	1.000206409
## [516,]	0.884499820	1.430696271	1.012304037	0.507459033
## [517,]	-0.826235447	-0.486643478	-0.023824892	0.547662271
## [518,]	0.941382123	1.051999895	1.362279789	2.035439783
## [519,]	1.311117093	0.836142961	1.108892327	1.471048175
## [520,]	0.273015061	0.832355998	-0.021943302	0.054141755
## [521,]	0.127965188	-0.057580484	-0.319234532	-0.689102718
## [522,]	0.233908478	0.027626200	-0.109750838	-0.275988678
## [523,]	-0.935733880	-1.103729221	-0.526084000	-0.554834212
## [524,]	-3.109348889	-1.149740831	-1.113892736	-1.260710292
## [525,]	1.467543427	-0.542690541	-1.113892736	-1.260710292
## [526,]	-0.150047068	-0.798121246	-0.624679319	-0.844503695
## [527,]	-1.232232885	-0.550075120	-0.431753618	-0.736006496
## [528,]	-0.877429520	-0.702879108	-0.199063646	0.181452008
## [529,]	-0.656299566	-1.027421902	-0.812963765	-0.700699806
## [530,]	-0.942133139	-0.947895663	-0.928367955	-1.112035626
## [531,]	-0.733090675	-0.061367448	-0.289254530	-0.283720070

## [532,]	-0.688295862	0.294607145	0.046672016	-0.909189674
## [533,]	-1.237210087	-1.119445121	-0.938026784	-0.787806821
## [534,]	0.138630620	0.970580175	1.135234588	1.024173724
## [535,]	0.365448804	1.033065077	2.078538407	1.700412801
## [536,]	-0.423793152	-0.409957462	-0.381954201	-0.467469484
## [537,]	-0.079655218	-0.939374994	-0.733058907	-0.673639935
## [538,]	-0.584485658	-0.981031596	-0.915322264	-0.964855696
## [539,]	-0.041259664	-0.048113075	-0.651272459	-0.650188046
## [540,]	-0.464321793	-0.550832513	-0.587549275	-0.397371531
## [541,]	-0.614348868	-0.592678463	-0.242089339	0.128363117
## [542,]	2.896711293	0.343837673	-0.695928863	-0.636786967
## [543,]	-0.883828779	-1.177385666	-1.090561019	-1.185354992
## [544,]	1.467543427	1.574600893	2.103626274	2.615294175
## [545,]	2.292336822	4.564408776	3.595099999	2.873007238
## [546,]	0.294345925	-0.471684971	-0.341813613	-0.392217270
## [547,]	-0.123739003	0.377920347	0.048051849	-0.665908543
## [548,]	0.028421158	-0.469980837	-0.776711796	-0.801723327
## [549,]	0.208311441	0.156382968	-0.554182411	-0.151513269
## [550,]	0.479213410	-0.254123903	-0.286996622	-0.552257082
## [551,]	-1.482515019	-0.401058097	-0.345451353	-0.779560003
## [552,]	-1.679469994	-0.827470215	-0.548788520	-0.881614376
## [553,]	1.581308033	2.561104951	1.737343408	0.940932405
## [554,]	0.777845502	-0.136538679	-0.451322154	-0.116464292
## [555,]	-0.600839321	-0.990120309	-0.766174892	-0.727759678
## [556,]	1.446212563	1.976019051	2.410952652	2.764767751
## [557,]	-0.206929371	-0.841292633	-0.782983763	-0.727501965
## [558,]	0.479213410	1.500755100	0.704977660	0.362882005
## [559,]	0.301456213	-0.888250984	-0.817479581	-0.595037450
## [560,]	-0.324960150	-0.292372237	-0.603480071	-0.678278770
## [561,]	0.132942390	0.103365475	0.540652128	0.181967434
## [562,]	-0.684740718	-0.736393737	-0.863766697	-0.824659789
## [563,]	-1.877847026	-0.986712041	-0.677865598	-0.813062702
## [564,]	1.211573063	-0.302975736	-0.637223253	-0.384485878
## [565,]	-1.542952466	-0.840724589	-0.504382994	-0.521073801
## [566,]	0.174893088	-0.241437575	-0.664694468	-0.735748783
## [567,]	-0.411705663	0.016265309	-0.439656296	-0.419792568
## [568,]	0.962712987	-0.225721675	-0.248988503	0.413136052

```
## [569,]      0.265904773      0.892947418      1.309595267      1.973588648
## attr(,"scaled:center")
##      radius_mean      texture_mean      perimeter_mean      area_mean
##      14.12729174      19.28964851      91.96903339      654.88910369
## smoothness_mean compactness_mean      concavity_mean      points_mean
##      0.09636028      0.10434098      0.08879932      0.04891915
## attr(,"scaled:scale")
##      radius_mean      texture_mean      perimeter_mean      area_mean
##      3.52404883      4.30103577      24.29898104      351.91412918
## smoothness_mean compactness_mean      concavity_mean      points_mean
##      0.01406413      0.05281276      0.07971981      0.03880284
```

```
matsurv <- matstand[cancer$diagnosis == "B",]
matsurv
```

```
##      radius_mean      texture_mean      perimeter_mean      area_mean
## [1,] -0.512845261 -1.604183e+00      -0.53990056 -0.542146756
## [2,] -1.000920224 -7.896900e-02      -0.93374423 -0.876603348
## [3,] -0.876063838 -5.718735e-01      -0.86625169 -0.800448406
## [4,] -0.807960355 -1.371681e+00      -0.78065139 -0.767485819
## [5,]  0.301558892 -1.413531e+00      0.23379444  0.161718134
## [6,] -0.725668646 -5.804381e-02      -0.73126661 -0.696729922
## [7,] -0.742694517  1.078892e+00      -0.71809733 -0.714347856
## [8,] -1.032134320  8.172307e-05      -1.01070219 -0.905871851
## [9,] -0.870388548 -1.006653e+00      -0.84279392 -0.798459284
## [10,] -0.532708777 -3.137962e-01      -0.56376987 -0.552944845
## [11,] -0.280158360  3.372098e-01      -0.24647261 -0.335278109
## [12,] -0.305697166  4.731766e-03      -0.38516156 -0.362841651
## [13,]  0.131300184  7.882640e-01      0.18194041  0.006282488
## [14,]  0.449116439 -1.246130e+00      0.41281429  0.303514089
## [15,] -0.413527681 -4.625975e-01      -0.44113098 -0.468833417
## [16,] -0.549734648 -1.394931e+00      -0.53043514 -0.565732056
## [17,] -0.685941614 -4.881728e-01      -0.71151269 -0.666608937
## [18,] -0.691616904  1.197468e+00      -0.64196245 -0.706107209
## [19,] -0.904440289 -1.626698e-01      -0.88806330 -0.809541533
## [20,]  0.276020086 -6.741745e-01      0.31322164  0.055726368
```

```
## [21,] -1.026459030 2.093336e-01 -0.96008279 -0.911270896
## [22,] -0.192191361 -2.300954e-01 -0.22095714 -0.283560947
## [23,] -1.282982150 -5.695485e-01 -1.24816071 -1.063864939
## [24,] -0.206379587 -5.439733e-01 -0.26704961 -0.291233273
## [25,] -0.305697166 -1.267055e+00 -0.38104616 -0.353180203
## [26,] -0.527033487 -3.184462e-01 -0.55800831 -0.536463552
## [27,] 0.128462539 -1.308905e+00 0.09551703 0.011113212
## [28,] -0.132600813 -9.624771e-01 -0.15222998 -0.211100088
## [29,] -0.632026357 -1.078728e+00 -0.57035451 -0.631088909
## [30,] -0.322723037 -1.176379e+00 -0.32466519 -0.399498321
## [31,] -0.064497330 -6.206990e-01 -0.12342219 -0.157677965
## [32,] -0.850525032 -6.206990e-01 -0.88477099 -0.777999748
## [33,] -0.175165490 -9.291913e-02 -0.15922616 -0.275036140
## [34,] -0.473118229 1.395830e-01 -0.47487725 -0.521687220
## [35,] 0.247643635 -8.787763e-01 0.22556364 0.084142391
## [36,] -0.660402808 -4.718976e-01 -0.68764338 -0.633646351
## [37,] 0.026307314 1.990300e+00 0.02390909 -0.088058708
## [38,] -0.223405457 -7.974006e-01 -0.22548408 -0.383301188
## [39,] -0.677428679 -1.069428e+00 -0.64443169 -0.650411804
## [40,] -1.148477771 -9.717772e-01 -1.16091425 -0.958725654
## [41,] -0.507169971 6.813130e-01 -0.49874657 -0.541010116
## [42,] -0.243268973 -5.276981e-01 -0.30532282 -0.308282887
## [43,] 0.136975474 -8.369260e-01 0.02925911 0.028446986
## [44,] -0.078685556 -9.555021e-01 -0.12259911 -0.191777192
## [45,] -0.697292195 1.698083e-01 -0.68970108 -0.678259507
## [46,] -1.156990706 -4.091220e-01 -1.13416416 -0.977764390
## [47,] -1.443025336 -9.059411e-02 -1.31277247 -1.166162622
## [48,] 1.056372498 -1.408881e+00 0.93135455 0.958219260
## [49,] 0.769770339 3.960709e-02 0.67619982 0.640243962
## [50,] -0.501494680 5.836621e-01 -0.50162735 -0.536463552
## [51,] -0.799447419 -5.804381e-02 -0.83003618 -0.741058918
## [52,] -0.387988875 -1.376331e+00 -0.39833083 -0.428482664
## [53,] 0.239130699 -5.439733e-01 0.17494423 0.088120634
## [54,] -0.518520551 -7.881005e-01 -0.54072364 -0.543283397
## [55,] -0.234756038 5.301866e-01 -0.27692657 -0.309135368
## [56,] 0.145488410 -9.415519e-01 0.15642494 -0.008493844
## [57,] -0.810798000 -1.471657e+00 -0.77406675 -0.763223416
```

```
## [58,] -0.351099488 -1.434456e+00 -0.41479243 -0.394951757
## [59,] -0.507169971 -1.632083e+00 -0.53619670 -0.529643706
## [60,] -0.212054877 2.657581e+00 -0.23165718 -0.277593582
## [61,] -0.118412587 -1.417446e-01 -0.13329914 -0.238379470
## [62,] -0.373800649 -1.448407e+00 -0.43948482 -0.415127134
## [63,] -0.470280584 -4.602725e-01 -0.47405417 -0.496681120
## [64,] -0.319885392 1.357894e+00 -0.38516156 -0.382732867
## [65,] -0.331235972 -2.324204e-01 -0.32054980 -0.368524856
## [66,] -0.646214582 -4.253972e-01 -0.67612026 -0.631373069
## [67,] -1.120101319 -4.091220e-01 -1.10494483 -0.971228704
## [68,] -0.969706127 2.558341e-01 -0.92469035 -0.880865751
## [69,] -1.250632996 -2.486956e-01 -1.28561084 -1.042268762
## [70,] -0.805122710 -1.453057e+00 -0.81233996 -0.758392692
## [71,] -0.263132489 -4.323722e-01 -0.32260749 -0.321922578
## [72,] -0.748369807 -1.092678e+00 -0.73990894 -0.710369613
## [73,] -0.444741778 -5.106875e-02 -0.41355781 -0.480483986
## [74,] -0.541221712 1.744583e-01 -0.51438508 -0.573404382
## [75,] -0.938492031 1.143992e+00 -0.94979429 -0.833410993
## [76,] -0.842012096 4.929862e-01 -0.86501707 -0.780273029
## [77,] -0.705805130 -2.231203e-01 -0.69134724 -0.688773435
## [78,] -1.676563530 3.279097e-01 -1.59261960 -1.281531676
## [79,] -0.671753388 5.371617e-01 -0.70986653 -0.645012760
## [80,] -0.305697166 -1.626698e-01 -0.28309967 -0.406034006
## [81,] -0.078685556 -4.835227e-01 -0.14523380 -0.188083109
## [82,] -0.717155711 1.209093e+00 -0.73003199 -0.675417904
## [83,] -0.754045097 -7.578752e-01 -0.77982831 -0.716621138
## [84,] -0.756882742 -2.626457e-01 -0.75637054 -0.715484497
## [85,] -0.132600813 -3.711862e-02 -0.10325673 -0.226160580
## [86,] -0.260294844 2.039125e+00 -0.29174200 -0.331015705
## [87,] -0.870388548 -5.044479e-01 -0.85267087 -0.819487141
## [88,] -1.530424806 -5.695485e-01 -1.51031162 -1.195146966
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## [91,] -0.657565163 -4.416723e-01 -0.68723184 -0.642171158
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## [93,] -0.481631164 -5.323482e-01 -0.55018905 -0.504637606
## [94,] -0.501494680 -1.742949e-01 -0.53331592 -0.534758590
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## [95,] -0.464605294 -5.672235e-01 -0.52590820 -0.492418716
## [96,] -1.244390176 -3.944364e-02 -1.23622605 -1.037722198
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## [98,] -1.080374288 -6.834746e-01 -1.09712557 -0.937697797
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## [124,] -0.544059357 -1.208929e+00 -0.54278134 -0.548114121
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## [169,] -0.064497330 -1.154338e-02 -0.13329914 -0.147732357
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## [280,] -0.186516071 -1.215904e+00 -0.19132627 -0.308567047
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## [314,] -0.711480420 -2.579956e-01 -0.64155091 -0.699287364
## [315,] -0.824986226 3.376013e+00 -0.87160171 -0.761802615
## [316,] 0.046170830 -5.741986e-01 -0.06868738 -0.063336768
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## [319,] -0.135438458 -1.425156e+00 -0.16828004 -0.244346835
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## [321,] -1.034971965 -1.002002e+00 -1.00740987 -0.912975857
## [322,] -0.470280584 -1.603448e-01 -0.44771562 -0.491566235
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## [325,] -0.356774779 -7.160249e-01 -0.39462698 -0.405465686
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## [330,] -1.826391193 1.429970e+00 -1.79550876 -1.376725353
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## [346,] -0.674591034 -4.021470e-01 -0.66171636 -0.659220771
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## [357,] 0.114274313 -1.234505e+00 0.07782082 -0.030374182
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## [3,] 0.806286653 -0.498004369 -0.731804513 -0.621581896
## [4,] 1.424881700 0.175317786 -0.532481406 -0.024718442
## [5,] -1.189571158 -0.662737292 -0.688277063 -0.575966684
## [6,] -0.775041374 -0.513530920 -0.425857969 -0.892696038
## [7,] -0.266655790 -0.042432629 0.280992699 -0.202798168
## [8,] 0.250973169 -0.351448872 -0.738201920 -0.951196903
## [9,] 0.493433986 -0.253177162 -0.436896631 -0.399690949
## [10,] -0.698250265 -0.711021080 -0.626560909 -0.659981142
## [11,] -0.683318660 0.086324138 0.247124077 -0.356137441
## [12,] -1.120601365 -1.258237342 -1.105212334 -1.153321259
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## [18,] 1.936822428 0.963006247 -0.547534126 -0.093012404
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## [20,] 1.325337669 1.445844126 0.313606926 0.938612987
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## [27,] 0.139341649 -0.287070488 -0.082530502 -0.139916181
## [28,] -0.972707377 -0.546477505 -0.580900990 -0.623901313
## [29,] 1.339558245 0.478274887 -0.648512793 -0.486797964
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##	[33,]	0.678301471	0.196146087	-0.037623219	0.126043700
##	[34,]	-0.842589109	-0.055687002	-0.257142060	-0.462057510
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##	[37,]	-1.004703673	-0.008349956	0.269703158	-0.124711110
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##	[43,]	-1.434876090	-1.310118746	-0.932382014	-0.776982873
##	[44,]	-0.085343448	-0.519968759	-0.552049943	-0.304337115
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##	[55,]	-0.749444338	-0.768961625	-0.694423591	-0.636013827
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##	[69,]	-1.909843321	-1.531845474	-1.113892736	-1.260710292



##	[70,]	0.140763706	-0.535116614	-0.704333298	-0.550710803
##	[71,]	-1.721420692	-1.119066424	-0.569987768	-0.975937357
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##	[73,]	-0.622881213	-0.010243437	0.178132442	-0.129092232
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##	[75,]	-1.026745565	-0.725600890	-0.919712641	-1.050416433
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##	[102,]	-1.062297005	-1.130806012	-0.863892136	-0.974391079
##	[103,]	-0.628569443	-0.518075277	-0.517930443	-0.388609287
##	[104,]	-1.621876662	-1.018522537	-0.704835056	-0.578286101
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##	[106,]	-0.634968702	-0.935777379	-0.925482851	-0.722605416

## [107,]	-1.870736738	-1.385668673	-1.067718516	-1.171232316
## [108,]	0.191957779	-0.532087043	-0.395877967	-0.074457063
## [109,]	-0.179199249	-0.366596727	0.051815029	-0.363095694
## [110,]	-1.203080705	-0.768393581	-0.752502004	-0.918209631
## [111,]	-1.194548360	-0.411850943	-0.603103753	-0.708688911
## [112,]	0.211866585	-0.168159826	-0.626059152	-0.664104551
## [113,]	-1.347419549	-1.072865467	-0.773701252	-1.073971407
## [114,]	-1.154019719	-1.211089644	-0.814970794	-0.804558170
## [115,]	-0.035571433	-0.444418832	-0.588678229	-0.202282742
## [116,]	-0.311450603	-0.797742550	-0.980550720	-0.766674350
## [117,]	0.642750032	-0.692086261	-1.051097803	-1.065286476
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## [138,]	-0.605105493	-0.878594226	-0.817855899	-0.641683515
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## [140,]	-0.600128292	-1.161101722	-1.113892736	-1.260710292
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## [173,]	-1.131977826	-0.291425496	-0.186896031	-0.208467856
## [174,]	-1.131266797	-0.960581991	-0.777589872	-0.422885124
## [175,]	-0.329937352	-0.682618852	-0.690911289	-0.675186213
## [176,]	-0.034860404	-0.395566999	-0.257894696	0.015227083
## [177,]	-1.567838474	-1.175302836	-1.113892736	-1.260710292
## [178,]	-1.093582271	-1.052037166	-1.113892736	-1.260710292
## [179,]	-0.799927382	-1.140084073	-1.050332623	-1.114741613
## [180,]	-0.888805980	-0.878594226	-1.019687793	-1.041963444

## [181,]	-0.151469126	-0.720299141	-0.523700652	-0.299182854
## [182,]	-0.707493639	-0.707423464	-0.462611695	-0.541433133
## [183,]	0.799176365	0.550227198	-0.108245566	0.046925790
## [184,]	-1.075806552	-1.034427785	-1.113892736	-1.260710292
## [185,]	-0.948532398	-0.768772277	-0.793269789	-0.737295061
## [186,]	-0.287986653	-0.617104379	-0.562963165	-0.738325913
## [187,]	0.969823275	-0.269839803	-0.639606600	-0.539629142
## [188,]	-2.175768089	-0.987280086	-0.803430375	-0.906612543
## [189,]	-1.508112056	-1.271681064	-1.075131980	-1.090928926
## [190,]	0.172760002	-0.302597039	-0.700444679	-0.644776071
## [191,]	-1.065141120	0.234015725	0.021333270	-0.342736362
## [192,]	0.621419168	0.281352772	-0.127939542	-0.113629449
## [193,]	0.223243046	-0.469034096	-0.543394628	-0.446337013
## [194,]	1.858609261	-0.610477192	-0.370162903	0.647397226
## [195,]	-1.506689998	-1.080818091	-0.954459338	-0.972844801
## [196,]	-0.049792009	-0.424158576	-0.508773371	-0.679051909
## [197,]	-0.541112902	-0.502548725	-0.535868268	-0.351498606
## [198,]	-0.086765506	0.885373490	0.822890637	-0.011832789
## [199,]	0.093835806	-0.489483700	-0.696430620	-0.743222462
## [200,]	-1.215879223	-1.333219225	-0.981805113	-0.975164218
## [201,]	-0.402462288	-0.660654462	-0.930500424	-0.772086325
## [202,]	1.218683351	-0.538714229	-0.720514973	-0.579059240
## [203,]	-0.274477106	-1.198971360	-1.113892736	-1.260710292
## [204,]	-0.355534388	-0.483045862	-0.888478246	-0.722089990
## [205,]	-0.029883203	-0.889576421	-0.796405772	-0.823113511
## [206,]	-1.352396751	-1.367491247	-0.973024360	-1.130539424
## [207,]	-1.033855853	-0.796038416	-0.374804158	-0.447110152
## [208,]	-1.564283330	-1.473904928	-1.098915279	-1.120282444
## [209,]	0.728073486	0.699812266	2.812358532	-0.133215642
## [210,]	0.564536865	0.483955332	0.380089775	0.339945542
## [211,]	-0.100275053	-0.366028682	-0.423976379	-0.093785543
## [212,]	-0.031305261	0.533185861	0.827908211	-0.525197210
## [213,]	0.521875137	-0.384395456	-0.570238647	-0.802496466
## [214,]	-0.954931658	-0.518075277	-0.521693623	-0.647095489
## [215,]	0.912940971	-0.179520717	-0.859125441	-0.781106282
## [216,]	0.472103122	-0.230266032	-0.431377300	-0.159244661
## [217,]	-1.187438072	-0.918925390	-0.852100838	-0.577255249

## [218,]	-1.075806552	-0.872913780	-0.336796039	-0.656888585
## [219,]	-0.623592242	-0.730713292	-0.470012616	-0.771313185
## [220,]	0.571647153	-0.503874163	-0.841438494	-0.873109845
## [221,]	0.891610108	-0.606311532	-0.893621259	-0.757654393
## [222,]	-0.543957017	-0.669175131	-0.779095144	-0.901715995
## [223,]	-0.281587394	-0.914381034	-0.612637143	-0.930322145
## [224,]	-1.377282758	-1.332272484	-1.113892736	-1.260710292
## [225,]	0.255950370	-0.547613594	-0.872672890	-0.753530984
## [226,]	0.578757441	-0.639447465	-0.801548785	-0.502776174
## [227,]	0.247418025	0.145022076	-0.268807918	-0.592202607
## [228,]	-1.174639553	-1.099752909	-0.920590716	-0.991915567
## [229,]	-0.738778906	-0.845458293	-0.942417161	-1.031165267
## [230,]	1.382219972	0.078750211	-0.370288342	-0.415669158
## [231,]	-1.361640125	-0.318691635	-0.362761982	-0.698895815
## [232,]	-0.940711082	-1.180036541	-1.016601986	-1.040752193
## [233,]	-0.390374799	-0.491566530	-0.748111627	-0.867182445
## [234,]	-0.748733309	-0.947516966	-0.741839660	-0.675186213
## [235,]	-1.609789172	-1.210142903	-1.023915099	-0.964597983
## [236,]	-0.967730176	-0.609719800	-0.598964255	-0.480612850
## [237,]	0.557426577	0.480168369	-0.374804158	-0.518496671
## [238,]	-0.182754393	-1.242521443	-1.095239906	-1.174814528
## [239,]	0.351228228	-0.497246976	-0.570991283	-0.505868731
## [240,]	-0.676919401	-0.777103597	-0.945553145	-0.669774239
## [241,]	0.365448804	-0.688677994	-0.800921588	-0.777498299
## [242,]	0.607198592	-0.366407378	-0.574252705	-0.592202607
## [243,]	-0.539690845	-0.448395144	-0.567228102	-0.632405844
## [244,]	0.742294062	-0.711210428	-0.825758577	-0.801981040
## [245,]	-0.148625011	-0.704772590	-0.420714956	-0.084765586
## [246,]	-1.555039956	-1.301976774	-1.113892736	-1.260710292
## [247,]	-1.387237161	-0.828416956	-0.880951886	-0.816670684
## [248,]	-0.255279329	-0.601956524	-0.894123016	-0.776209734
## [249,]	-1.855805133	-1.060936531	-0.857369290	-1.041473789
## [250,]	0.884499820	0.235909207	-0.223649757	-0.101774648
## [251,]	0.429441395	-0.971942883	-1.028230212	-1.056163434
## [252,]	-0.102408139	-0.381555233	-0.821619079	-0.638075532
## [253,]	-1.792523571	-0.588702151	-0.098837616	-0.539113716
## [254,]	-0.961330917	0.340050710	0.153044574	-0.530609185

## [255,]	0.173471031	0.747149313	-0.279595701	0.130167109
## [256,]	-0.187020565	-0.709884991	-0.673349782	-0.584728928
## [257,]	-0.833345735	-1.201811582	-0.906666950	-0.831102616
## [258,]	-0.622881213	0.572948981	0.609643763	-0.235012301
## [259,]	-1.957482250	-1.253692986	-0.909050297	-1.180174960
## [260,]	-1.310446052	-1.002617289	-0.831528787	-1.057761255
## [261,]	0.621419168	-0.821600422	-0.663314635	-0.590656328
## [262,]	-1.296225476	-1.153906491	-0.832281423	-0.548649099
## [263,]	0.002113093	-0.671257961	-0.674478736	-0.519785236
## [264,]	0.081748317	0.180998232	-0.109499959	-0.172388027
## [265,]	0.770735214	1.051999895	4.039155254	0.764141244
## [266,]	0.083881403	-1.007540342	-0.865271969	-0.800434761
## [267,]	4.766717009	2.263828296	0.106632019	0.092798715
## [268,]	-0.410283605	-0.431543155	-0.338552190	-0.652249750
## [269,]	1.382219972	0.307861518	-0.967003271	-0.800177048
## [270,]	-0.506272492	-0.636228546	-0.694172712	-0.519269810
## [271,]	0.280125349	-0.554808825	-1.050859469	-0.973102514
## [272,]	0.061839511	-0.618997861	-0.593194045	-0.780590856
## [273,]	-0.512671751	0.131767703	0.072387080	-0.329592995
## [274,]	-0.232526408	-0.970996142	-0.892492305	-0.556380491
## [275,]	-1.205213791	-0.959635250	-0.628066181	-0.648126341
## [276,]	0.082459346	-0.977433980	-0.855362261	-1.059719874
## [277,]	0.891610108	0.184785196	-0.255511348	-0.297378863
## [278,]	-0.040548635	0.154489486	-0.222395363	-0.500456756
## [279,]	-0.277321222	-0.698145403	-0.740836146	-0.631117279
## [280,]	0.763624926	0.211293942	-0.388100728	0.096406698
## [281,]	0.429441395	-0.746429191	-0.743094054	-0.725697973
## [282,]	-1.132688855	-0.686784512	-0.524704167	-0.656630872
## [283,]	-1.388659219	-1.238734479	-1.094499814	-1.116597147
## [284,]	-0.194130853	0.209400460	-0.281477291	-0.450975848
## [285,]	0.635639744	-0.513530920	-1.030563384	-0.947331207
## [286,]	-2.149460023	0.038987091	-0.012911669	-0.645806924
## [287,]	0.097390950	-0.438170342	-0.793395228	-0.699153528
## [288,]	0.237463622	-0.042432629	-0.049289077	0.164958372
## [289,]	2.327888262	0.006797899	-0.251246411	0.428856549
## [290,]	-0.354112331	-1.166024775	-1.113892736	-1.260710292
## [291,]	-2.406852445	-1.608720838	-1.093885161	-1.212981833

## [292,]	-1.172506467	-0.635281805	-0.669084845	-0.726213399
## [293,]	-0.582352572	-0.703636501	-0.981554235	-1.004620821
## [294,]	0.642750032	0.516144524	-0.142866823	-0.539371429
## [295,]	-0.799927382	-0.981410292	-1.095566049	-1.176670062
## [296,]	0.692522047	0.127980740	-0.270187751	-0.238877997
## [297,]	-0.837611907	-0.859470059	-0.670590117	-0.502003035
## [298,]	-0.630702530	-0.725790239	-0.723525517	-0.522620080
## [299,]	-0.863919973	-0.962286125	-0.869662345	-0.761004663
## [300,]	-0.464321793	-1.262592351	-0.792517153	-0.507415009
## [301,]	-0.628569443	-0.839588499	-0.816977824	-0.648126341
## [302,]	-1.920508753	0.056028428	-0.117528077	-0.493240790
## [303,]	-0.457922534	-0.115710378	-0.368783070	-0.018791042
## [304,]	0.976933562	0.105258957	-0.004758112	0.228355786
## [305,]	0.044774820	0.474487923	0.525599407	-0.303048550
## [306,]	-1.475404731	-1.288343704	-1.009702822	-0.961247713
## [307,]	-0.490629858	-0.790736667	-0.744097568	-0.870532715
## [308,]	-1.636097238	-0.976865935	-0.888101928	-0.937022685
## [309,]	0.036242474	-0.129154099	-0.453705502	-0.542206272
## [310,]	1.986594443	-0.278549819	-0.737574723	-1.022093767
## [311,]	1.808837246	1.169395772	-0.508647932	0.105942081
## [312,]	0.294345925	-0.139568250	-0.341939052	-0.480097424
## [313,]	-0.400329202	1.167502290	1.746124162	0.270363015
## [314,]	1.503094866	0.832355998	0.165588508	0.173205190
## [315,]	-1.319689426	-1.298947203	-1.051587017	-1.094897707
## [316,]	-2.280289321	-1.469171223	-1.022949216	-1.099639628
## [317,]	-0.827657504	-1.025907116	-0.685391958	-0.605861399
## [318,]	0.792066077	0.429044358	-0.540885842	-0.459222666
## [319,]	0.007090294	-0.326265563	-0.626184591	-0.600191712
## [320,]	0.273015061	0.832355998	-0.021943302	0.054141755
## [321,]	0.127965188	-0.057580484	-0.319234532	-0.689102718
## [322,]	0.233908478	0.027626200	-0.109750838	-0.275988678
## [323,]	-3.109348889	-1.149740831	-1.113892736	-1.260710292
## [324,]	1.467543427	-0.542690541	-1.113892736	-1.260710292
## [325,]	-0.150047068	-0.798121246	-0.624679319	-0.844503695
## [326,]	-1.232232885	-0.550075120	-0.431753618	-0.736006496
## [327,]	-0.656299566	-1.027421902	-0.812963765	-0.700699806
## [328,]	-0.942133139	-0.947895663	-0.928367955	-1.112035626



```
## [329,] -0.733090675 -0.061367448 -0.289254530 -0.283720070
## [330,] -0.688295862 0.294607145 0.046672016 -0.909189674
## [331,] -1.237210087 -1.119445121 -0.938026784 -0.787806821
## [332,] -0.423793152 -0.409957462 -0.381954201 -0.467469484
## [333,] -0.079655218 -0.939374994 -0.733058907 -0.673639935
## [334,] -0.584485658 -0.981031596 -0.915322264 -0.964855696
## [335,] -0.041259664 -0.048113075 -0.651272459 -0.650188046
## [336,] -0.464321793 -0.550832513 -0.587549275 -0.397371531
## [337,] 2.896711293 0.343837673 -0.695928863 -0.636786967
## [338,] -0.883828779 -1.177385666 -1.090561019 -1.185354992
## [339,] 0.294345925 -0.471684971 -0.341813613 -0.392217270
## [340,] -0.123739003 0.377920347 0.048051849 -0.665908543
## [341,] 0.028421158 -0.469980837 -0.776711796 -0.801723327
## [342,] 0.208311441 0.156382968 -0.554182411 -0.151513269
## [343,] 0.479213410 -0.254123903 -0.286996622 -0.552257082
## [344,] -1.482515019 -0.401058097 -0.345451353 -0.779560003
## [345,] -1.679469994 -0.827470215 -0.548788520 -0.881614376
## [346,] 0.777845502 -0.136538679 -0.451322154 -0.116464292
## [347,] -0.600839321 -0.990120309 -0.766174892 -0.727759678
## [348,] -0.206929371 -0.841292633 -0.782983763 -0.727501965
## [349,] 0.479213410 1.500755100 0.704977660 0.362882005
## [350,] 0.301456213 -0.888250984 -0.817479581 -0.595037450
## [351,] -0.324960150 -0.292372237 -0.603480071 -0.678278770
## [352,] -0.684740718 -0.736393737 -0.863766697 -0.824659789
## [353,] -1.877847026 -0.986712041 -0.677865598 -0.813062702
## [354,] 1.211573063 -0.302975736 -0.637223253 -0.384485878
## [355,] -1.542952466 -0.840724589 -0.504382994 -0.521073801
## [356,] 0.174893088 -0.241437575 -0.664694468 -0.735748783
## [357,] 0.962712987 -0.225721675 -0.248988503 0.413136052
```

```
matnosurv <- matstand[cancer$diagnosis == "M",]
vecmediansurv <- apply(matsurv, 2, median)
# in the above 2 represents column. Hence, we are asking for column median
vecmediansurv
```



```
##      radius_mean    texture_mean    perimeter_mean    area_mean
##      -0.5468970    -0.4416723    -0.5674737    -0.5583439
## smoothness_mean compactness_mean    concavity_mean    points_mean
##      -0.3981961    -0.5500751    -0.6486382    -0.6566309
```

```
vecmediannosurv <- apply(matnosurv, 2, median)
matabsdevsurv <- abs(matsurv - matrix(rep(vecmediannosurv,nrow(matsurv)),nrow=nrow(matsurv), byrow=TRUE))

matabsdevnosurv <- abs(matnosurv - matrix(rep(vecmediannosurv,nrow(matnosurv)),nrow=nrow(matnosurv), byrow=TRUE))

matabsdevnosurv
```

```
##      radius_mean texture_mean perimeter_mean    area_mean smoothness_mean
## [1,] 0.997432264 0.532429890 0.931726312 0.949663490 2.14019666
## [2,] 0.926491136 0.051150470 0.971234142 1.102541694 0.44794814
## [3,] 0.642726623 0.823057559 0.555578852 0.735974997 0.07110288
## [4,] 0.784608879 0.558005125 0.843656776 0.895104725 0.41239670
## [5,] 1.000269909 1.318287107 0.978230320 0.988593441 0.10665432
## [6,] 0.574623139 0.885833135 0.485617071 0.567183820 0.42661727
## [7,] 1.292547358 0.234827157 1.336681565 1.209670100 0.82834854
## [8,] 0.078035241 0.434778993 0.197539148 0.137817712 0.66196780
## [9,] 0.458279689 0.034875320 0.386847497 0.562637256 0.86105586
## [10,] 0.154651660 0.618455680 0.201654546 0.129861225 0.96344401
## [11,] 0.307884497 0.625430744 0.222231541 0.360599332 0.31285267
## [12,] 0.847037072 1.302011958 0.769579596 1.011610420 0.15642633
## [13,] 0.642726623 0.769582068 0.679040820 0.801331849 0.69680821
## [14,] 1.675629451 0.251102306 1.507059080 1.551230697 2.86544602
## [15,] 0.214242208 0.088350811 0.131692765 0.261427412 2.02572102
## [16,] 2.385040734 0.930008541 2.469239344 3.063247283 0.90300656
## [17,] 0.983244039 1.053234673 0.956418706 1.003369773 0.02844115
## [18,] 1.692655322 1.211336125 1.839583311 2.139726534 0.84612426
## [19,] 1.965069255 0.292952690 2.140007431 2.355688309 3.02187235
## [20,] 0.588811365 0.762607004 0.535001858 0.605261291 0.10665432
## [21,] 0.495169076 0.778882153 0.580271246 0.488755596 0.80986179
## [22,] 0.041145854 0.748656876 0.078192579 0.149468281 0.19197777
```

##	[23,]	0.026957629	0.953258755	0.012346197	0.045465637	0.11376461
##	[24,]	1.102425134	0.027900256	1.153134774	1.048551250	1.46329725
##	[25,]	0.563272559	1.674015374	0.481501672	0.646748684	0.36262468
##	[26,]	1.091074554	0.148801367	1.061772918	1.059349339	0.04266173
##	[27,]	0.279508046	0.669606150	0.181077552	0.309734651	1.16039898
##	[28,]	0.188703401	0.186001708	0.148154361	0.169643657	0.09954403
##	[29,]	1.088236908	0.367353374	0.946541749	1.341236287	0.56313480
##	[30,]	0.486656140	0.483604441	0.584386645	0.492733839	1.69224852
##	[31,]	0.881088814	0.385953545	0.816083603	0.915280102	0.37684526
##	[32,]	0.367475045	1.383387705	0.345693508	0.394414400	0.51833999
##	[33,]	2.240320832	0.802132367	2.358123574	2.688155779	0.29152180
##	[34,]	0.750557138	0.309227840	0.800856627	0.703296570	0.25099316
##	[35,]	0.378825625	1.009059267	0.296308721	0.412032334	0.22752921
##	[36,]	1.020133425	0.267377456	0.847772175	1.005074735	0.77502138
##	[37,]	0.015607048	0.920708456	0.074077180	0.009093127	1.34313338
##	[38,]	0.815822976	0.288302648	0.811145125	0.822075546	0.24743802
##	[39,]	0.520707882	0.346428182	0.485617071	0.532232111	0.98121973
##	[40,]	0.702317170	0.023250214	0.637886831	0.846797486	0.59513110
##	[41,]	0.923653491	0.158101452	0.843656776	1.017293625	0.80346253
##	[42,]	1.244307391	0.978833990	1.098811508	1.744743814	0.59442007
##	[43,]	1.196067424	1.371762598	1.110746165	1.141755805	2.67346825
##	[44,]	0.773258299	0.425478908	0.832545199	0.759560296	1.09356228
##	[45,]	0.475305560	0.592880445	0.378616699	0.585370074	1.42419066
##	[46,]	0.866900588	0.253427327	0.840775997	0.858732216	0.11376461
##	[47,]	0.688128945	0.248777285	0.497963268	0.701875769	0.19411086
##	[48,]	1.201742714	0.216226986	1.144080896	1.554356460	0.62570533
##	[49,]	0.191541046	0.018600171	0.172846754	0.077859903	0.70391850
##	[50,]	0.075197596	0.106950982	0.098769574	0.038077471	0.68969793
##	[51,]	0.364637400	0.281327584	0.325116514	0.460339573	0.55460246
##	[52,]	0.188703401	2.576123659	0.353924306	0.196070559	1.15186664
##	[53,]	0.795959460	1.578689499	0.699617814	0.934887158	0.31285267
##	[54,]	0.872575878	0.160426473	0.731717926	0.813550739	0.19197777
##	[55,]	0.778933589	0.016275149	0.690975476	0.816108181	0.22752921
##	[56,]	0.438416173	0.830032623	0.436232284	0.429081948	0.36262468
##	[57,]	1.808998772	0.025575235	1.740813738	1.593854732	1.45760902
##	[58,]	1.635902419	0.378978481	1.559736186	2.131201727	0.62428328
##	[59,]	2.807849859	0.095325875	2.794355858	3.745231836	0.51194073

##	[60,]	0.009931758	0.155776431	0.008230798	0.044897316	0.86816615
##	[61,]	1.179041553	0.651005979	1.161365571	1.129252755	0.96699915
##	[62,]	0.949192297	0.427803929	0.949834068	0.944832766	0.27019094
##	[63,]	1.025808716	0.146476345	0.987695738	1.006211376	1.18741808
##	[64,]	1.105262779	0.425478908	1.167127130	1.041731404	0.83332574
##	[65,]	0.534896108	0.671931171	0.465040076	0.625152507	0.22041892
##	[66,]	0.375987980	0.897458242	0.390962896	0.409190732	0.54749217
##	[67,]	0.356124464	0.420828865	0.415655290	0.324795143	0.74800229
##	[68,]	0.625700752	1.111360207	0.634594511	0.612081136	0.95562269
##	[69,]	0.078035241	0.553355082	0.032923191	0.105139285	0.84612426
##	[70,]	0.319235077	0.104625961	0.246923934	0.406349129	0.56171274
##	[71,]	0.804472395	0.418503843	0.695502415	0.971827988	1.56426334
##	[72,]	0.344773884	0.792832281	0.374501301	0.338150674	0.35480337
##	[73,]	0.790284170	1.413612982	0.718960189	0.776325749	0.83190368
##	[74,]	0.461117334	0.267377456	0.535001858	0.470001021	0.44297094
##	[75,]	0.503682011	1.122985313	0.613194437	0.568320461	1.37228556
##	[76,]	0.637051332	0.995109139	0.666694623	0.612081136	0.01422058
##	[77,]	0.662590139	0.869557986	0.767933436	0.662661657	0.59228698
##	[78,]	0.529220817	0.578930317	0.428001486	0.570309582	1.14475635
##	[79,]	1.579149516	0.771907089	1.613236371	1.423358594	0.17917925
##	[80,]	1.068373393	1.188085911	1.172888688	1.076967273	0.84612426
##	[81,]	0.742044202	0.030225278	0.767521896	0.781724794	0.81768311
##	[82,]	0.035470564	0.711456534	0.000000000	0.007388166	0.34840411
##	[83,]	1.383352002	1.339212299	1.301700674	1.292644888	1.82023370
##	[84,]	1.686980032	0.134851238	1.559736186	2.142568137	1.26634227
##	[85,]	0.625700752	0.595205466	0.629656033	0.809856656	0.91011685
##	[86,]	0.810147685	0.446404100	0.806618186	0.903629532	0.78924196
##	[87,]	0.061009370	0.497554569	0.037038590	0.055695405	0.89020804
##	[88,]	0.299371562	0.174376601	0.300424120	0.336161552	1.04521232
##	[89,]	0.699479525	0.406878737	0.567925049	0.740521560	0.15642633
##	[90,]	0.954867587	1.025334417	0.937076331	0.936592119	0.52616130
##	[91,]	0.007094113	0.372003416	0.131692765	0.003125763	1.10778285
##	[92,]	0.682453654	0.381303502	0.679040820	0.778599031	0.28441152
##	[93,]	0.472467915	0.404553715	0.164615956	0.450393965	0.61859505
##	[94,]	0.166002240	0.102300940	0.419770688	0.176179343	1.47893988
##	[95,]	0.529220817	0.460354228	0.514424863	0.520297382	0.49772015
##	[96,]	0.086548177	0.585905381	0.057615585	0.092920395	1.24430038

##	[97,]	1.227281520	0.083700769	1.098811508	1.171308469	1.78468226
##	[98,]	0.588811365	0.474304356	0.613194437	0.633677314	0.03555144
##	[99,]	0.523545527	0.776557132	0.749002601	0.542746040	0.34129382
##	[100,]	0.526383172	0.239477199	0.547348055	0.613786097	1.20661586
##	[101,]	3.060400276	0.695181384	3.057741388	4.452790809	0.85323455
##	[102,]	0.205729272	1.539164136	0.242808535	0.209994410	1.25496581
##	[103,]	0.205729272	1.234586338	0.246923934	0.210278570	0.30574238
##	[104,]	0.038308209	0.141826303	0.107000372	0.010513929	0.35124822
##	[105,]	0.889601749	0.546380018	0.877814587	0.913006820	0.53824879
##	[106,]	0.727855977	0.279002562	0.670810022	0.801331849	0.10665432
##	[107,]	1.025808716	0.488254484	1.016503530	1.227572195	0.10665432
##	[108,]	1.008782845	0.192976772	0.969999522	0.974953750	1.26563124
##	[109,]	1.329436745	0.102300940	1.358081639	1.562881267	0.29152180
##	[110,]	2.072899770	0.032550299	2.111199639	2.583016494	0.05688230
##	[111,]	0.915140555	0.139501281	0.971234142	1.068442466	0.17064691
##	[112,]	0.705154816	0.160426473	0.650233027	0.932045555	0.27659020
##	[113,]	0.305046852	0.453379164	0.181077552	0.330194188	0.02844115
##	[114,]	0.529220817	1.283411787	0.497963268	0.639360518	1.08502993
##	[115,]	1.113775715	0.218552007	1.051895961	1.066453344	0.59726418
##	[116,]	0.446929108	0.281327584	0.477386273	0.485061513	0.02133086
##	[117,]	0.903789975	1.476388559	0.831310579	1.099700091	0.75440155
##	[118,]	0.597324300	2.129719559	0.444463082	0.611228655	0.18486749
##	[119,]	0.892439394	0.183676687	0.843656776	1.042868045	0.75653463
##	[120,]	0.007094113	1.018359353	0.049384787	0.010798089	0.09954403
##	[121,]	1.147827456	0.274352520	1.106219226	1.099131771	0.13509547
##	[122,]	0.841361782	1.655415203	0.860118371	1.037184841	0.13509547
##	[123,]	1.669954161	1.281086765	1.617351770	2.097102500	0.50554147
##	[124,]	0.166002240	0.030225278	0.168731355	0.177600144	0.43372756
##	[125,]	0.832848847	0.365028352	0.749002601	0.943411965	0.81199488
##	[126,]	0.322072723	0.683556278	0.283962525	0.406349129	0.24601596
##	[127,]	0.438416173	0.337128096	0.349808907	0.424535384	0.94566829
##	[128,]	1.755083515	0.653331000	1.683198153	2.315905877	0.33418353
##	[129,]	0.673940719	0.904433306	0.714021710	0.721482825	1.03099174
##	[130,]	0.410039722	0.006975064	0.358039705	0.454656369	0.78497578
##	[131,]	0.480980850	0.727731683	0.321001115	0.409190732	0.84683529
##	[132,]	0.302209207	0.097650897	0.275731727	0.298936562	1.01677117
##	[133,]	0.330585658	0.018600171	0.329231913	0.347243801	0.09954403

## [134,]	0.645564268	0.555680103	0.697148575	0.653852690	0.71458393
## [135,]	0.069522306	1.490338687	0.032923191	0.065641013	0.26521374
## [136,]	0.722180686	0.576605295	0.691387016	0.749330527	1.06654318
## [137,]	0.262482175	0.344103160	0.222231541	0.306893049	0.53824879
## [138,]	0.895277039	0.000000000	0.753118000	1.062759261	1.32606869
## [139,]	0.418552657	0.578930317	0.432116885	0.424251224	1.29336137
## [140,]	0.100736402	0.167401537	0.131692765	0.090078793	0.66125677
## [141,]	0.602999591	0.495229548	0.506194066	0.673459746	0.09243374
## [142,]	0.807310040	0.000000000	0.821022082	0.806446734	0.55175834
## [143,]	0.339098593	0.832357644	0.296308721	0.354631967	0.12798518
## [144,]	1.255657971	0.109276004	1.362197038	1.588455687	0.58233258
## [145,]	1.054185167	0.818407516	1.076176814	0.992571684	0.52047307
## [146,]	0.120599918	1.527539029	0.127577366	0.140943474	0.15855942
## [147,]	0.520707882	1.195060975	0.493847869	0.585370074	0.01422058
## [148,]	0.554759623	0.302252776	0.576155847	0.579118549	0.72524936
## [149,]	0.668265429	0.051150470	0.646117628	0.744499803	0.30076518
## [150,]	0.551921978	1.164835698	0.563809650	0.653568530	0.58233258
## [151,]	0.940679362	0.955583776	0.847772175	1.145165728	0.55033628
## [152,]	0.883926459	0.074400683	0.806618186	1.025818431	0.76080080
## [153,]	0.696641880	1.113685228	0.640356070	0.708979775	0.99544030
## [154,]	0.600161946	0.613805637	0.572040448	0.667776541	0.47638929
## [155,]	0.815822976	1.248536466	0.802502787	0.858163896	0.22397407
## [156,]	1.567798936	1.134610420	1.449031955	1.420801152	0.49060986
## [157,]	0.631376042	0.130201196	0.697148575	0.622879225	0.82763751
## [158,]	1.318086164	0.553355082	1.296762195	1.230413797	0.71102879
## [159,]	0.568947849	0.974183947	0.452693880	0.621458424	2.22552011
## [160,]	1.054185167	0.750981897	1.088111471	1.021271868	0.68400970
## [161,]	0.279508046	0.204601879	0.271616328	0.340992276	0.32707324
## [162,]	0.330585658	0.916058413	0.292193322	0.386457913	0.07110288
## [163,]	0.421390302	0.344103160	0.275731727	0.483072392	0.92220434
## [164,]	0.642726623	0.378978481	0.572040448	0.643338761	0.12087489
## [165,]	0.038308209	4.143188051	0.032923191	0.032394266	0.29009975
## [166,]	0.069522306	1.322937150	0.123461967	0.003125763	0.22895127
## [167,]	1.414566099	1.255511530	1.360139339	1.291792407	0.08532345
## [168,]	0.631376042	0.406878737	0.604963639	0.687667757	0.08532345
## [169,]	0.966218168	2.245970627	0.884810765	1.383860322	0.53398262
## [170,]	2.864602762	1.118335271	2.991895005	4.458474014	0.44083785

## [171,]	0.424227947	0.118576089	0.390962896	0.505805210	0.02844115
## [172,]	0.052496435	1.176460804	0.074077180	0.054842924	1.16608721
## [173,]	0.200053982	1.071834844	0.135808164	0.164812934	0.90513965
## [174,]	0.625700752	2.559848509	0.567925049	0.826906270	1.27985182
## [175,]	0.253969239	0.602180530	0.185192951	0.269952219	0.33702765
## [176,]	1.071211038	0.218552007	0.983580339	1.284404241	0.38111143
## [177,]	0.994594619	0.704481470	0.900037741	0.955062534	0.99544030
## [178,]	0.824335911	0.392928609	0.811556664	0.822643867	0.33276147
## [179,]	0.370312690	0.848632794	0.436232284	0.443289959	0.29863209
## [180,]	0.446929108	0.520804783	0.292193322	0.492733839	1.57137362
## [181,]	1.403215518	0.416178822	1.588543978	1.639604529	2.16152752
## [182,]	1.772109386	0.611480616	1.683198153	1.620849954	1.37939585
## [183,]	0.194378692	0.209251922	0.172846754	0.213120173	0.14931605
## [184,]	0.929328781	1.829791805	1.065888317	0.946253567	1.10920491
## [185,]	0.529220817	2.225045435	0.481501672	0.554396609	1.67091765
## [186,]	1.179041553	0.081375747	1.184411805	1.138061722	0.35978057
## [187,]	0.631376042	1.699590609	0.798387388	0.781440633	0.68258764
## [188,]	0.509357301	2.813275837	0.432116885	0.531663791	0.29152180
## [189,]	0.180190466	0.292952690	0.292193322	0.211415211	1.93613139
## [190,]	0.370312690	0.413853801	0.473270874	0.381343029	1.43201198
## [191,]	0.339098593	0.181351666	0.251039333	0.378501427	1.05232261
## [192,]	1.020133425	0.843982751	1.185234885	1.179264956	0.54749217
## [193,]	0.517870237	0.088350811	0.465040076	0.366282537	0.69680821
## [194,]	0.171677531	0.702156449	0.041153989	0.190103194	0.97055430
## [195,]	1.556448355	0.641705893	1.492655183	1.396363372	0.61859505
## [196,]	0.276670400	0.425478908	0.214000743	0.260290771	0.33987176
## [197,]	1.275521487	0.202276858	1.190996444	1.218479068	0.46927900
## [198,]	0.920815846	0.857932879	0.769579596	1.119591307	1.24145627
## [199,]	0.671103074	0.048825448	0.650233027	0.770074224	0.52616130
## [200,]	0.253969239	0.641705893	0.251039333	0.287001833	0.89589627
## [201,]	0.622863107	1.941392830	0.719783269	0.603840489	1.35095470
## [202,]	0.177352821	0.337128096	0.000000000	0.142080115	1.29265034
## [203,]	0.245456304	0.313877883	0.201654546	0.281602788	0.27659020
## [204,]	0.699479525	0.850957815	0.666694623	0.738816599	0.04977202
## [205,]	0.089385822	0.279002562	0.185192951	0.078712384	1.02956969
## [206,]	0.855550008	0.011625107	0.893041563	0.943411965	1.05232261
## [207,]	0.810147685	0.583580360	1.214042677	0.889421521	1.87711600

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## [208,] 1.380514357 0.599855509 1.244085089 1.296054810 1.16608721
## [209,] 1.215930939 0.190651751 1.242850470 1.349761094 1.03099174
## [210,] 0.872575878 0.060450555 0.846537555 0.849639089 0.28227843
## [211,] 0.580298430 0.220877029 0.628832953 0.629130750 0.82692648
## [212,] 1.147827456 1.478713580 1.115273104 1.290087446 0.14931605
## compactness_mean concavity_mean points_mean
## [1,] 0.841652694 0.055820505 0.141226758
## [2,] 0.606860941 0.846088332 0.665415129
## [3,] 0.636967303 0.177496663 0.112105182
## [4,] 0.974196426 0.965255703 1.075178899
## [5,] 0.082366462 0.921477374 0.917200791
## [6,] 0.707215481 0.212619677 0.031698707
## [7,] 1.415188355 1.307579655 1.526692185
## [8,] 1.288514417 0.780859877 0.358736584
## [9,] 0.557630413 0.543779529 0.174471744
## [10,] 0.767428205 0.842074273 0.528827205
## [11,] 0.906031078 0.545033922 0.109270339
## [12,] 0.445914982 0.006899164 0.181687709
## [13,] 0.648517543 1.247494213 1.090641682
## [14,] 2.869571784 1.129581235 0.487593115
## [15,] 0.869676226 0.514928481 0.734482229
## [16,] 1.968274411 2.326272516 2.706502587
## [17,] 0.366388743 0.656549493 0.779839729
## [18,] 1.439992967 2.520703490 1.951403313
## [19,] 2.922589277 3.455226555 2.961638519
## [20,] 0.224377602 0.141119255 0.215448121
## [21,] 1.640702046 0.744482469 0.343531513
## [22,] 0.529228185 0.809710924 0.464398939
## [23,] 0.336093033 0.211365284 0.523415231
## [24,] 1.364064344 1.508408035 1.700133076
## [25,] 1.536560543 0.706850668 0.290700335
## [26,] 0.129703509 0.565104216 0.821846958
## [27,] 0.902622811 0.873810426 0.725204559
## [28,] 0.036922897 0.391997930 0.050511760
## [29,] 0.570884786 0.522454841 0.001030852
## [30,] 1.442643842 1.370550203 1.489839217
## [31,] 2.062948505 0.586428903 0.518003257

```



##	[32,]	0.089940389	0.388234750	0.408990631
##	[33,]	2.540105937	2.289895108	2.531257704
##	[34,]	1.142716313	0.970900473	0.868235309
##	[35,]	0.423193199	0.070873226	0.009535383
##	[36,]	1.835730679	0.770824730	0.155400977
##	[37,]	0.406151863	0.388234750	0.745306178
##	[38,]	0.222484121	0.418340191	0.682424191
##	[39,]	0.451595428	0.473533500	0.124990836
##	[40,]	0.033135933	0.302936000	0.016235923
##	[41,]	0.046390306	0.158680762	0.240446288
##	[42,]	0.884824081	0.433392911	0.042007229
##	[43,]	0.835972249	0.699324307	0.250754810
##	[44,]	1.249508690	0.846088332	0.865142752
##	[45,]	0.985936013	0.735576276	0.773396902
##	[46,]	0.320945178	0.063346866	0.641447814
##	[47,]	1.706973912	1.529732722	0.279103247
##	[48,]	0.311477769	1.160941070	1.356086137
##	[49,]	0.252779831	0.014425524	0.139680480
##	[50,]	0.506506402	0.006899164	0.336573260
##	[51,]	0.487571583	0.029478244	0.231168617
##	[52,]	2.750282426	1.865910147	1.567410849
##	[53,]	0.548163003	0.092197913	0.299720292
##	[54,]	1.296088345	0.779605483	0.006442827
##	[55,]	1.031000882	0.111013814	0.039945525
##	[56,]	0.059644679	0.649901208	0.521095813
##	[57,]	0.199762338	0.588937690	0.762572953
##	[58,]	0.091833871	0.203838924	0.361313714
##	[59,]	1.118101048	1.702839008	2.616303015
##	[60,]	0.095620835	0.682139118	0.288896344
##	[61,]	0.175147074	0.360638096	0.331934425
##	[62,]	0.360708297	0.486077433	0.557948781
##	[63,]	0.608754423	0.723659539	0.681135625
##	[64,]	1.315401860	1.163700735	1.337530797
##	[65,]	0.106981726	0.238961938	0.094322981
##	[66,]	0.686387180	0.577648150	0.376776498
##	[67,]	0.910954131	0.673107486	0.512848995
##	[68,]	0.690552840	0.951457376	1.172336723



##	[69,]	0.470530246	0.497366974	0.585524079
##	[70,]	0.667641710	0.452208812	0.458986965
##	[71,]	0.884445385	0.449700025	0.232457183
##	[72,]	0.353134370	0.713498952	0.691959574
##	[73,]	0.514080330	0.157426369	0.325749312
##	[74,]	0.839948560	1.071502822	0.886275224
##	[75,]	0.885202777	0.531235595	1.562256588
##	[76,]	0.656280818	0.349348555	0.534754606
##	[77,]	1.534477713	1.597720843	1.476438138
##	[78,]	1.034787846	0.647894179	0.027833011
##	[79,]	1.386218082	1.561719753	1.317686891
##	[80,]	2.856317411	1.221151952	1.631839115
##	[81,]	0.078579498	0.276593739	0.130145097
##	[82,]	0.959048571	0.223909218	0.176275735
##	[83,]	0.712895927	0.080908373	0.138907341
##	[84,]	0.337986515	0.237707545	0.276783830
##	[85,]	0.603073978	0.857377873	0.513364421
##	[86,]	0.313371251	0.777096697	1.021059155
##	[87,]	0.237631976	0.598972837	0.293792892
##	[88,]	0.008520668	0.044530965	0.036079829
##	[89,]	1.243070852	0.230181185	0.064428266
##	[90,]	0.084259944	0.670598699	0.871585579
##	[91,]	1.315023163	1.535879250	1.492416348
##	[92,]	0.995024726	1.133344415	0.286576926
##	[93,]	3.390279300	2.085428988	1.325160570
##	[94,]	2.371586050	2.101736102	0.863854187
##	[95,]	0.190294929	0.059583685	0.139422767
##	[96,]	0.326625624	1.133344415	0.876739840
##	[97,]	1.152183722	0.433392911	0.186841971
##	[98,]	0.444021500	0.671727653	0.066489970
##	[99,]	2.148155189	0.691797947	0.657683737
##	[100,]	0.197868856	0.501130154	0.478315445
##	[101,]	0.364495261	2.116788822	1.886975047
##	[102,]	0.568991304	0.738085063	0.857153647
##	[103,]	1.557388844	0.213874071	0.559752773
##	[104,]	0.802836316	0.761918537	0.541455145
##	[105,]	0.033135933	0.499875760	0.558206494

## [106,]	0.025562005	0.128575321	0.206943590
## [107,]	0.534908630	1.503390461	1.152492818
## [108,]	0.106981726	0.161189549	0.541712858
## [109,]	1.193840323	1.172230610	1.644724768
## [110,]	1.481649568	0.999124324	1.567410849
## [111,]	0.786741720	0.716885815	1.183418385
## [112,]	0.561417376	0.043276571	0.224210365
## [113,]	1.078337929	0.906299214	0.145865594
## [114,]	0.262247240	0.402033077	0.267763872
## [115,]	0.275501613	0.085925946	0.117517157
## [116,]	0.226271084	0.459735172	0.558206494
## [117,]	0.472423728	0.050802932	0.074221362
## [118,]	1.445673413	1.300178734	0.206428163
## [119,]	0.019881560	0.011916737	0.392239282
## [120,]	0.534908630	0.310462361	0.070871092
## [121,]	0.213016711	0.663323217	0.636551265
## [122,]	0.008520668	0.585174510	0.464398939
## [123,]	0.678813253	0.547542709	0.964362282
## [124,]	0.023668523	0.207602104	0.672631094
## [125,]	0.019881560	0.060838079	0.014174218
## [126,]	0.512186848	0.223909218	0.043038082
## [127,]	0.811356984	0.777096697	0.219313817
## [128,]	0.076686016	0.996615537	1.410205880
## [129,]	0.035029415	0.031987031	0.001030852
## [130,]	0.148638327	0.568867396	0.654075754
## [131,]	0.222484121	0.057074899	0.092003563
## [132,]	0.076686016	0.358129309	0.166740352
## [133,]	0.074792534	0.590192084	0.777004885
## [134,]	0.878196894	0.959485494	1.106362179
## [135,]	0.315264732	0.659810916	0.173956317
## [136,]	0.294436432	0.309207967	0.103342938
## [137,]	0.442128018	0.484823040	0.316471641
## [138,]	0.925344593	0.764301884	0.671600242
## [139,]	0.608754423	0.651908238	0.841175437
## [140,]	0.646624061	0.428375338	0.492747376
## [141,]	0.256566794	0.168715909	0.009535383
## [142,]	0.622576841	0.388234750	0.950961202

## [143,]	0.445914982	0.200075744	0.225756643
## [144,]	1.207094696	0.854869086	0.580369818
## [145,]	0.894480839	0.816610088	1.066674368
## [146,]	0.017988078	0.231435578	0.086333876
## [147,]	0.245205903	0.511165301	0.266990733
## [148,]	0.544376040	0.491095007	0.295081457
## [149,]	0.029348969	0.438410485	0.619026777
## [150,]	0.748872082	0.180005449	0.266733020
## [151,]	0.468636764	0.016934311	0.080664189
## [152,]	0.364495261	0.669344306	0.217252112
## [153,]	0.616328351	0.221400431	0.076025354
## [154,]	0.235738494	0.931387082	0.853545665
## [155,]	0.654197988	0.159935155	1.036521939
## [156,]	0.712895927	0.182514236	0.312605945
## [157,]	1.165248747	1.239591534	1.364332955
## [158,]	0.116449135	0.483568647	0.452286425
## [159,]	1.818689343	1.172230610	0.977247935
## [160,]	1.017367812	1.235577476	1.428503508
## [161,]	0.142957882	0.069618832	0.212097851
## [162,]	0.012307632	0.028223851	0.143030750
## [163,]	1.391898528	0.892500887	0.717730880
## [164,]	0.434554091	0.233944365	0.048192343
## [165,]	0.048283788	0.121048961	0.047161491
## [166,]	0.404258381	0.635350245	0.566195599
## [167,]	0.055857715	0.537507562	1.047861314
## [168,]	0.010414150	0.429629731	0.407702066
## [169,]	0.341773479	0.183768630	0.004638835
## [170,]	1.258218707	2.661195548	2.129225326
## [171,]	0.124023063	0.100978667	0.029894715
## [172,]	1.803541487	0.897518461	1.387011705
## [173,]	0.173253592	0.531235595	0.611810811
## [174,]	0.366388743	0.462243959	0.513106708
## [175,]	0.391004008	0.481059860	0.174729457
## [176,]	0.281182059	0.073382013	0.753037570
## [177,]	0.676919771	0.196312563	0.481665715
## [178,]	0.345560442	0.720899873	0.718761733
## [179,]	1.066977037	1.010413865	0.982402196

```
## [180,]      1.970167893      1.756777923 0.977247935
## [181,]      2.735134571      3.450208981 2.474560830
## [182,]      1.572536699      0.220146038 0.582689235
## [183,]      0.065325125      0.430884125 0.223179513
## [184,]      2.738921535      2.509413949 1.693690250
## [185,]      0.438341054      0.650402966 0.603563993
## [186,]      0.523547739      0.862520886 0.870039301
## [187,]      1.400229848      0.339313408 0.724689133
## [188,]      0.597393532      0.297918427 0.059016291
## [189,]      1.159378953      1.440796232 1.629004271
## [190,]      1.243260200      1.484700000 1.367167799
## [191,]      1.322597091      0.261541019 0.425741980
## [192,]      1.727802212      2.082920201 1.575142241
## [193,]      0.468636764      0.010662344 0.037883820
## [194,]      1.175473549      1.183645590 1.000957537
## [195,]      0.364495261      0.370673243 0.888079215
## [196,]      0.328519106      0.373182029 0.037368394
## [197,]      0.900350632      0.227672398 0.455378982
## [198,]      1.016989116      0.808456531 0.415175744
## [199,]      0.521654257      0.577648150 1.072601768
## [200,]      0.305797323      0.324260688 0.508210160
## [201,]      1.634074860      1.310715639 1.517672228
## [202,]      1.233224746      0.983695286 0.781386007
## [203,]      0.440234536      0.350602949 0.061335709
## [204,]      0.502719438      1.293906768 0.737574786
## [205,]      1.123024101      1.026720978 0.834474898
## [206,]      1.044255255      1.318994635 1.652456160
## [207,]      4.034063138      2.810468360 1.910169223
## [208,]      2.030759313      0.952711769 0.021905610
## [209,]      1.445673413      1.626321012 1.801929736
## [210,]      0.426980163      0.243979512 0.780870581
## [211,]      0.514080330      1.224287935 1.382630583
## [212,]      0.362601779      0.524963628 1.010750633
```

```
matabsdev.all <- rbind(matabsdevsurv,matabsdevnosurv)
matabsdev.all <- data.frame(cancer$diagnosis, matabsdev.all)
```

```
t.test(matabsdev.all$radius_mean[cancer$diagnosis == "B"],matabsdev.all$radius_mean[cancer$diagnosis == "M"], alternative="less",var.equal = TRUE)
```

```
##  
## Two Sample t-test  
##  
## data: matabsdev.all$radius_mean[cancer$diagnosis == "B"] and matabsdev.all$radius_mean[cancer$diagnosis ==  
"M"]  
## t = 0.32562, df = 567, p-value = 0.6276  
## alternative hypothesis: true difference in means is less than 0  
## 95 percent confidence interval:  
##      -Inf 0.07485419  
## sample estimates:  
## mean of x mean of y  
## 0.5301158 0.5177632
```

```
t.test(matabsdev.all$texture_mean[cancer$diagnosis == "B"],matabsdev.all$texture_mean[cancer$diagnosis == "M"], alternative="less",var.equal = TRUE)
```

```
##  
## Two Sample t-test  
##  
## data: matabsdev.all$texture_mean[cancer$diagnosis == "B"] and matabsdev.all$texture_mean[cancer$diagnosis ==  
"M"]  
## t = -2.1618, df = 567, p-value = 0.01553  
## alternative hypothesis: true difference in means is less than 0  
## 95 percent confidence interval:  
##      -Inf -0.02723094  
## sample estimates:  
## mean of x mean of y  
## 0.6364762 0.7509490
```

```
t.test(matabsdev.all$perimeter_mean[cancer$diagnosis == "B"],matabsdev.all$perimeter_mean[cancer$diagnosis == "M"], alternative="less",var.equal = TRUE)
```

```
##  
## Two Sample t-test  
##  
## data: matabsdev.all$perimeter_mean[cancer$diagnosis == "B"] and matabsdev.all$perimeter_mean[cancer$diagnosis == "M"]  
## t = 0.2439, df = 567, p-value = 0.5963  
## alternative hypothesis: true difference in means is less than 0  
## 95 percent confidence interval:  
##      -Inf 0.07148672  
## sample estimates:  
## mean of x mean of y  
## 0.5125724 0.5033541
```

```
t.test(matabsdev.all$area_mean[cancer$diagnosis == "B"],matabsdev.all$area_mean[cancer$diagnosis == "M"], alternative="less",var.equal = TRUE)
```

```
##  
## Two Sample t-test  
##  
## data: matabsdev.all$area_mean[cancer$diagnosis == "B"] and matabsdev.all$area_mean[cancer$diagnosis == "M"]  
## t = 0.40112, df = 567, p-value = 0.6558  
## alternative hypothesis: true difference in means is less than 0  
## 95 percent confidence interval:  
##      -Inf 0.0909786  
## sample estimates:  
## mean of x mean of y  
## 0.4981297 0.4803166
```

```
t.test(matabsdev.all$smoothness_mean[cancer$diagnosis == "B"],matabsdev.all$smoothness_mean[cancer$diagnosis == "M"], alternative="less",var.equal = TRUE)
```

```
##  
## Two Sample t-test  
##
```

```
## data: matabsdev.all$smoothness_mean[cancer$diagnosis == "B"] and matabsdev.all$smoothness_mean[cancer$diagnosis == "M"]
## t = 1.6742, df = 567, p-value = 0.9527
## alternative hypothesis: true difference in means is less than 0
## 95 percent confidence interval:
##      -Inf 0.167207
## sample estimates:
## mean of x mean of y
## 0.7680704 0.6837950
```

```
t.test(matabsdev.all$compactness_mean[cancer$diagnosis == "B"],matabsdev.all$compactness_mean[cancer$diagnosis == "M"], alternative="less",var.equal = TRUE)
```

```
##
## Two Sample t-test
##
## data: matabsdev.all$compactness_mean[cancer$diagnosis == "B"] and matabsdev.all$compactness_mean[cancer$diagnosis == "M"]
## t = 1.8406, df = 567, p-value = 0.9669
## alternative hypothesis: true difference in means is less than 0
## 95 percent confidence interval:
##      -Inf 0.1710355
## sample estimates:
## mean of x mean of y
## 0.6249227 0.5346711
```

```
t.test(matabsdev.all$concavity_mean[cancer$diagnosis == "B"],matabsdev.all$concavity_mean[cancer$diagnosis == "M"], alternative="less",var.equal = TRUE)
```

```
##
## Two Sample t-test
##
## data: matabsdev.all$concavity_mean[cancer$diagnosis == "B"] and matabsdev.all$concavity_mean[cancer$diagnosis == "M"]
```

```
## t = 1.0995, df = 567, p-value = 0.864
## alternative hypothesis: true difference in means is less than 0
## 95 percent confidence interval:
##      -Inf 0.1302286
## sample estimates:
## mean of x mean of y
## 0.4977532 0.4456302
```

```
t.test(matabsdev.all$points_mean[cancer$diagnosis == "B"],matabsdev.all$points_mean[cancer$diagnosis == "M"], alt
ernative="less",var.equal = TRUE)
```

```
##
## Two Sample t-test
##
## data: matabsdev.all$points_mean[cancer$diagnosis == "B"] and matabsdev.all$points_mean[cancer$diagnosis ==
"M"]
## t = 0.31387, df = 567, p-value = 0.6231
## alternative hypothesis: true difference in means is less than 0
## 95 percent confidence interval:
##      -Inf 0.07740908
## sample estimates:
## mean of x mean of y
## 0.4434506 0.4310634
```

matstand

```
##      radius_mean texture_mean perimeter_mean area_mean
## [1,] -0.512845261 -1.604183e+00 -0.53990056 -0.542146756
## [2,] -1.000920224 -7.896900e-02 -0.93374423 -0.876603348
## [3,] -0.876063838 -5.718735e-01 -0.86625169 -0.800448406
## [4,] -0.807960355 -1.371681e+00 -0.78065139 -0.767485819
## [5,] 0.301558892 -1.413531e+00 0.23379444 0.161718134
## [6,] -0.725668646 -5.804381e-02 -0.73126661 -0.696729922
## [7,] -0.742694517 1.078892e+00 -0.71809733 -0.714347856
```



```
## [8,] -0.090036136 1.037041e+00 -0.01683336 -0.162224529
## [9,] -1.032134320 8.172307e-05 -1.01070219 -0.905871851
## [10,] -0.870388548 -1.006653e+00 -0.84279392 -0.798459284
## [11,] 1.833887264 4.534609e-01 1.88612710 1.889980655
## [12,] -0.532708777 -3.137962e-01 -0.56376987 -0.552944845
## [13,] -0.280158360 3.372098e-01 -0.24647261 -0.335278109
## [14,] -0.305697166 4.731766e-03 -0.38516156 -0.362841651
## [15,] 1.550122751 1.327669e+00 1.47047181 1.523413958
## [16,] 0.131300184 7.882640e-01 0.18194041 0.006282488
## [17,] 0.449116439 -1.246130e+00 0.41281429 0.303514089
## [18,] -0.413527681 -4.625975e-01 -0.44113098 -0.468833417
## [19,] 1.692005007 1.062616e+00 1.75854973 1.682543687
## [20,] -0.549734648 -1.394931e+00 -0.53043514 -0.565732056
## [21,] -0.685941614 -4.881728e-01 -0.71151269 -0.666608937
## [22,] -0.691616904 1.197468e+00 -0.64196245 -0.706107209
## [23,] -0.904440289 -1.626698e-01 -0.88806330 -0.809541533
## [24,] 0.276020086 -6.741745e-01 0.31322164 0.055726368
## [25,] -1.026459030 2.093336e-01 -0.96008279 -0.911270896
## [26,] -0.092873781 -8.136758e-01 -0.06333736 -0.201154480
## [27,] -0.192191361 -2.300954e-01 -0.22095714 -0.283560947
## [28,] 0.332772989 1.390444e+00 0.42927589 0.220255141
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## [32,] -0.385151230 7.394385e-01 -0.42178861 -0.422231139
## [33,] 0.985431369 9.393903e-01 1.11243210 0.925256673
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## [41,] 1.754433200 1.806623e+00 1.68447255 1.799049381
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## [74,] 1.056372498 -1.408881e+00 0.93135455 0.958219260
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## [265,] 0.820847952 1.090517e+00 0.85727737 0.694518566
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## [272,] 1.430941655 1.281168e+00 1.66389556 1.330185001
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## [291,] -1.334911056 1.997275e+00 -1.34610720 -1.090007681
## [292,] -0.124087878 -7.485752e-01 -0.16992620 -0.215362492
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## [300,] 0.602349276 5.123219e-02 0.73381540 0.457244774
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## [332,] -0.356774779 5.820726e-02 -0.38269232 -0.413990493
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## [503,] 0.568297535 3.232597e-01 0.66385362 0.408937534
## [504,] -1.009433159 2.163087e-01 -0.89794026 -0.899620326
## [505,] -0.711480420 -2.579956e-01 -0.64155091 -0.699287364
## [506,] -0.824986226 3.376013e+00 -0.87160171 -0.761802615
## [507,] 0.046170830 -5.741986e-01 -0.06868738 -0.063336768
## [508,] 0.193728377 -1.067103e+00 0.11074401 0.073344302
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## [511,] -0.297184231 -8.322759e-01 -0.26087651 -0.383301188
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## [522,] -0.470280584 -1.603448e-01 -0.44771562 -0.491566235
## [523,] 0.284533021 2.446004e+00 0.19510969 0.183598472
## [524,] -1.806811442 1.220718e+00 -1.81279344 -1.346604368
## [525,] -2.027863997 -1.362381e+00 -1.98275941 -1.453164455
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## [526,] -0.356774779 -7.160249e-01 -0.39462698 -0.405465686
## [527,] -0.427715907 1.088192e+00 -0.43701558 -0.450363002
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## [529,] -0.782421549 -9.291913e-02 -0.81480920 -0.735659873
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## [531,] -0.620675776 3.418599e-01 -0.58023147 -0.607787770
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## [534,] 0.661939824 1.907335e-01 0.71323841 0.505836173
## [535,] 1.606875653 1.355569e+00 1.58158758 1.526255560
## [536,] -0.368125359 -8.276259e-01 -0.37363844 -0.420526178
## [537,] -0.739856872 -1.254694e-01 -0.76665904 -0.698719043
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## [539,] -0.073010265 3.279097e-01 -0.09049900 -0.199165358
## [540,] -0.717155711 -1.499557e+00 -0.72550505 -0.688489275
## [541,] 0.818010306 2.256088e-01 0.72970001 0.708726577
## [542,] -1.371232914 -1.253105e+00 -1.31729941 -1.128369312
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## [544,] 1.762946136 5.162365e-01 1.80793452 1.730850926
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## [546,] -0.334073618 -7.602003e-01 -0.36334994 -0.401203282
## [547,] -1.469131671 -8.206508e-01 -1.36750728 -1.164173501
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## [551,] -0.362450069 4.836862e-01 -0.38433848 -0.398930000
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## [553,] -0.473118229 1.104467e+00 -0.32919213 -0.508615849
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## [555,] -0.260294844 1.385794e+00 -0.32384211 -0.332436506
## [556,] 2.123327068 6.952631e-01 2.15774343 2.137200055
## [557,] -0.745532162 -1.952201e-01 -0.76912828 -0.703265607
## [558,] 0.159676636 -1.234505e+00 0.25725221 0.003440886
## [559,] -0.864713257 -1.064778e+00 -0.89547102 -0.801869207
## [560,] 0.190890732 -3.788968e-01 0.16095188 0.056578849
## [561,] 0.034820250 5.650619e-01 0.06835540 -0.062200127
## [562,] -0.546897003 -9.485270e-01 -0.57446991 -0.559764691
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## [563,] 0.077384927 1.790348e+00 0.01156290 -0.024975137
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## [565,] -0.271645425 -2.486956e-01 -0.31643440 -0.334141468
## [566,] -1.097400158 -1.064778e+00 -1.06049852 -0.947075085
## [567,] 0.327097698 7.254884e-01 0.28606000 0.158308211
## [568,] 0.114274313 -1.234505e+00 0.07782082 -0.030374182
## [569,] 2.055223584 -9.741022e-01 2.03016606 2.077526407
##      smoothness_mean compactness_mean concavity_mean points_mean
## [1,] 0.457882546 -0.653837927 -0.613766097 -0.307171959
## [2,] 0.036953503 0.196146087 -0.312711686 -0.579832380
## [3,] 0.806286653 -0.498004369 -0.731804513 -0.621581896
## [4,] 1.424881700 0.175317786 -0.532481406 -0.024718442
## [5,] -1.189571158 -0.662737292 -0.688277063 -0.575966684
## [6,] -0.775041374 -0.513530920 -0.425857969 -0.892696038
## [7,] -0.266655790 -0.042432629 0.280992699 -0.202798168
## [8,] 2.555417474 1.371998332 0.840452144 1.104064774
## [9,] 0.250973169 -0.351448872 -0.738201920 -0.951196903
## [10,] 0.493433986 -0.253177162 -0.436896631 -0.399690949
## [11,] 0.863168956 1.137206580 1.630719971 1.628253144
## [12,] -0.698250265 -0.711021080 -0.626560909 -0.659981142
## [13,] -0.683318660 0.086324138 0.247124077 -0.356137441
## [14,] -1.120601365 -1.258237342 -1.105212334 -1.153321259
## [15,] 0.486323698 -0.106621665 0.962128302 1.074943198
## [16,] -0.826946476 0.542653271 0.176878048 -0.297894289
## [17,] -0.123739003 -0.184065074 -0.218883062 0.268301311
## [18,] 0.457882546 -0.524513115 -0.713364931 -0.717708868
## [19,] 0.827617517 1.504542064 1.749887342 2.038016914
## [20,] 0.728073486 -0.175165709 -0.755763427 -0.517981244
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## [22,] 1.936822428 0.963006247 -0.547534126 -0.093012404
## [23,] 0.287235637 -0.563140145 -0.493720651 -0.505095591
## [24,] 1.325337669 1.445844126 0.313606926 0.938612987
## [25,] 1.126249608 0.491529260 -0.301547585 -0.470046615
## [26,] 0.308566501 0.447979177 -0.136845735 0.045637224
## [27,] 0.415220819 -0.429649673 -0.615396808 -0.544267977
## [28,] 0.841838093 1.237561119 0.997251316 0.994536722
## [29,] -0.821258245 -0.228372550 -0.057442634 -0.670031952

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##	[30,]	-1.208057907	-0.897150348	-0.840309540	-0.881098950
##	[31,]	-0.912980959	-1.268462144	-1.056704942	-1.033175429
##	[32,]	-0.413127720	-0.884842716	-0.522948016	-0.563854170
##	[33,]	-0.246746984	1.818860055	1.565491516	1.321574599
##	[34,]	-0.676208372	-0.739991353	-0.711107023	-0.576997536
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##	[36,]	-0.972707377	-0.546477505	-0.580900990	-0.623901313
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##	[39,]	-0.548223190	-0.237082566	-0.057442634	0.434010810
##	[40,]	0.728073486	1.436376716	1.329665561	1.072108354
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##	[42,]	1.112029032	1.178863181	2.032125852	2.053479698
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##	[45,]	-1.996588834	-0.968534615	-0.834915649	-0.915632501
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##	[48,]	1.318227381	2.498620049	3.110904155	3.669340602
##	[49,]	0.678301471	0.196146087	-0.037623219	0.126043700
##	[50,]	-0.842589109	-0.055687002	-0.257142060	-0.462057510
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##	[55,]	1.261345078	1.970338605	3.305335129	2.914241328
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##	[59,]	3.437093173	3.452934915	4.239858194	3.924476535
##	[60,]	0.521875137	0.754723241	0.925750894	1.178286136
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##	[65,]	0.777845502	2.066906181	1.491482307	1.253538350
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##	[67,]	-0.846855282	-1.030072776	-0.668081330	-0.627767009
##	[68,]	-1.434876090	-1.310118746	-0.932382014	-0.776982873
##	[69,]	-0.085343448	-0.519968759	-0.552049943	-0.304337115
##	[70,]	0.372559092	-0.185769207	-0.587047518	-0.704823215
##	[71,]	0.372559092	0.400642130	0.219527423	0.140991057
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##	[73,]	0.236041564	1.758268635	1.363534182	0.004145421
##	[74,]	-1.278449757	-0.798499943	-0.556314880	-0.183985115
##	[75,]	-1.557884071	-0.608015666	-0.467880147	-0.546587394
##	[76,]	-0.614348868	-0.187283993	-0.359375120	-0.295574871
##	[77,]	-0.745178165	-0.372277172	-0.089178787	0.237633456
##	[78,]	-1.064430091	-1.085551795	-0.648638233	-0.686010162
##	[79,]	-0.598706234	-0.470738230	-0.605612540	-0.604057408
##	[80,]	0.514764850	0.493422742	0.392633709	1.013349776
##	[81,]	0.155695311	-0.482667166	-0.787499579	-0.286297201
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##	[87,]	-0.450101217	-0.781458606	-0.742843175	-0.578543814
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##	[93,]	-1.277027699	-0.912298203	-0.585918564	-0.527001202
##	[94,]	-0.900893470	-1.015114269	-0.962612895	-0.806619875
##	[95,]	0.792066077	2.593294143	1.371060543	0.444834759
##	[96,]	-0.103119168	0.620286027	0.396396889	0.553847384
##	[97,]	-1.624720777	-0.480016291	-0.604985343	-0.775436594
##	[98,]	-0.898760383	-0.907375151	-0.776711796	-0.673124508
##	[99,]	0.692522047	-0.365839334	-0.892115987	-0.767189776
##	[100,]	0.706742623	3.070451576	3.074526748	3.494095720
##	[101,]	0.841838093	0.465020514	-0.054181212	-0.521846940
##	[102,]	-1.909843321	-1.531845474	-1.113892736	-1.260710292
##	[103,]	0.140763706	-0.535116614	-0.704333298	-0.550710803

## [104,]	0.164227657	-0.612370674	-0.186268834	0.094602706
## [105,]	-1.721420692	-1.119066424	-0.569987768	-0.975937357
## [106,]	0.585867728	-0.417720737	-0.448060732	-0.753273271
## [107,]	-0.622881213	-0.010243437	0.178132442	-0.129092232
## [108,]	0.941382123	0.205613496	-0.088426151	-0.702503798
## [109,]	-1.026745565	-0.725600890	-0.919712641	-1.050416433
## [110,]	0.386779668	-0.843754160	-1.001561809	-0.983411036
## [111,]	1.268455366	-0.050006557	-0.227036619	-0.362580268
## [112,]	-0.164267644	0.495316224	0.543160914	-0.701988371
## [113,]	0.642750032	0.107152439	0.713758413	0.972373399
## [114,]	1.190242199	2.366076318	1.555456369	0.807437038
## [115,]	-0.710337754	-1.035374525	-0.906039753	-0.973360227
## [116,]	-0.927912564	0.124193776	0.396396889	0.217531837
## [117,]	0.167782800	0.307861518	0.366291448	0.280413825
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## [123,]	-1.537264236	-0.898665134	-0.866275483	-0.922333040
## [124,]	-0.179199249	-0.354478443	0.351238728	0.920830786
## [125,]	-0.398196116	-0.861174193	-0.789381169	-0.662300560
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## [130,]	0.528985425	0.209400460	0.721284774	0.321390202
## [131,]	0.221109960	2.237319550	2.314364362	1.241941262
## [132,]	-0.411705663	0.196146087	0.097474948	-0.020595033
## [133,]	-0.686162775	-0.673530139	-0.739205434	-0.416700011
## [134,]	1.040926154	0.218867870	1.945572709	2.318924153
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## [137,]	0.536095713	-0.569199287	-1.113892736	-1.260710292
## [138,]	-0.231104350	-0.983303774	-0.866526362	-0.754819549
## [139,]	1.104918745	0.023839236	0.777732476	1.299411275
## [140,]	-0.977684579	-1.076084386	-0.866526362	-0.913055370

## [141,]	-0.139381636	0.042774055	0.755153395	0.731669398
## [142,]	1.567087457	3.280628064	2.650541786	2.530248864
## [143,]	0.102368152	-0.017817365	0.692433726	1.262558307
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## [145,]	0.642750032	1.561346520	0.673617825	1.002783540
## [146,]	0.308566501	-0.922523006	-0.818733974	-0.860481905
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## [149,]	-1.478248846	-1.321668985	-0.945553145	-0.822855798
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## [157,]	-1.200236590	-1.208438769	-0.863390379	-0.941661520
## [158,]	1.872829837	0.330583300	0.195693949	0.200265062
## [159,]	-1.062297005	-1.130806012	-0.863892136	-0.974391079
## [160,]	-0.628569443	-0.518075277	-0.517930443	-0.388609287
## [161,]	-1.621876662	-1.018522537	-0.704835056	-0.578286101
## [162,]	-1.149042517	0.260524471	0.049431681	0.179390304
## [163,]	-0.634968702	-0.935777379	-0.925482851	-0.722605416
## [164,]	-1.870736738	-1.385668673	-1.067718516	-1.171232316
## [165,]	-0.209062458	0.438511767	0.988470563	1.324151730
## [166,]	0.927161547	1.648446686	2.487470647	3.579141030
## [167,]	0.191957779	-0.532087043	-0.395877967	-0.074457063
## [168,]	-0.452945332	0.434724804	0.102492521	0.673941672
## [169,]	-0.179199249	-0.366596727	0.051815029	-0.363095694
## [170,]	-1.203080705	-0.768393581	-0.752502004	-0.918209631
## [171,]	1.382219972	0.355198565	0.423993544	0.630903590
## [172,]	0.685411759	0.169637341	0.298554206	0.404889234
## [173,]	1.602638897	1.139100062	0.060972100	0.281702390
## [174,]	-1.194548360	-0.411850943	-0.603103753	-0.708688911
## [175,]	-0.418104922	-0.785056221	-0.379069096	-0.374692781
## [176,]	0.211866585	-0.168159826	-0.626059152	-0.664104551
## [177,]	0.635639744	0.423363912	0.545669701	1.057160996

## [178,]	-1.347419549	-1.072865467	-0.773701252	-1.073971407
## [179,]	0.962712987	1.216732819	1.362279789	1.339614513
## [180,]	-1.154019719	-1.211089644	-0.814970794	-0.804558170
## [181,]	-0.035571433	-0.444418832	-0.588678229	-0.202282742
## [182,]	-0.332781467	-0.380608493	0.111524153	0.449989020
## [183,]	-0.311450603	-0.797742550	-0.980550720	-0.766674350
## [184,]	-0.540401874	-0.160207202	-0.166825737	-0.209498708
## [185,]	0.642750032	-0.692086261	-1.051097803	-1.065286476
## [186,]	-0.794950180	-1.081764831	-0.958849714	-0.907901109
## [187,]	1.261345078	1.000875885	1.281998613	1.548362094
## [188,]	-0.146491924	-0.137296071	0.332422827	0.503851050
## [189,]	-1.149042517	-0.354099746	0.334931614	0.730380832
## [190,]	-0.425926238	-1.087823973	-0.975533146	-0.898108012
## [191,]	0.060417453	0.177211268	0.071132687	0.270878441
## [192,]	-0.543245989	-0.983114426	-0.786997822	-0.797857631
## [193,]	-1.093582271	-0.356939969	-0.419084245	-0.430616516
## [194,]	1.247124502	1.044425968	0.942058008	0.637088704
## [195,]	-0.027750117	-0.309602922	-0.286871183	0.076562792
## [196,]	1.787506382	1.415548416	1.315867234	2.525094603
## [197,]	0.429441395	-0.125935180	0.435283084	0.428083410
## [198,]	-0.470721052	-0.346147122	-0.724779910	-0.498652765
## [199,]	0.792066077	0.179104750	-0.586922078	-0.448398717
## [200,]	-1.086471984	-0.494406753	-0.256013106	-0.607665390
## [201,]	-0.177066162	-1.004132074	-0.813089204	-0.513600122
## [202,]	-0.593729033	-0.888250984	-0.660554970	-0.898881152
## [203,]	-0.797083266	-0.034858702	-0.253504319	-0.261814460
## [204,]	0.211155557	0.313541963	0.222036210	0.290980060
## [205,]	1.325337669	-0.597033471	-0.611382749	-0.423142837
## [206,]	1.559977170	1.565133484	1.432525818	0.935005004
## [207,]	-0.802060468	-0.867043987	-0.691538486	-0.802754179
## [208,]	0.236041564	-0.855872444	-0.777088114	-0.354848876
## [209,]	-1.606945057	-1.291373275	-1.079296566	-1.146826889
## [210,]	1.261345078	3.386663049	2.005783591	2.594677130
## [211,]	-1.292670332	-0.161721988	0.284755879	-0.387063009
## [212,]	1.232903927	0.608925136	0.508037900	0.832692918
## [213,]	0.763624926	1.489394209	1.008540857	0.786562280
## [214,]	-0.905159642	-0.352016916	-0.477037219	-0.522620080

## [215,]	0.308566501	0.048454501	-0.472270524	-0.855843070
## [216,]	1.211573063	-0.449341885	-0.977916494	-0.928260441
## [217,]	1.147580472	0.139341631	-0.627188106	-0.488859668
## [218,]	-0.501295290	0.122300294	-0.478793369	-0.472623745
## [219,]	2.235454519	1.243241565	0.865540012	0.823930674
## [220,]	-0.851121454	0.192359123	0.546924094	1.239621845
## [221,]	0.022021899	-0.386478286	-0.952326869	-0.764870359
## [222,]	-0.605105493	-0.878594226	-0.817855899	-0.641683515
## [223,]	1.325337669	1.133419616	1.642009512	1.476202437
## [224,]	0.984043850	-0.202999892	-0.538000737	-0.685237022
## [225,]	-0.600128292	-1.161101722	-1.113892736	-1.260710292
## [226,]	0.784955789	-0.868558772	-1.113892736	-1.260710292
## [227,]	2.071917898	2.197556431	0.376326595	0.553074245
## [228,]	1.204462775	0.843716889	1.561728336	1.983897171
## [229,]	-0.474987225	0.292713663	0.185658802	0.669045123
## [230,]	-0.945688283	-1.131563405	-1.101678707	-1.184916880
## [231,]	-0.198397026	-0.352206264	-0.215747078	-0.740903044
## [232,]	-0.678341459	-1.110167060	-0.849341173	-0.731367661
## [233,]	-1.279160785	2.252467405	2.653050573	0.748936173
## [234,]	1.460433139	0.521824970	0.740100674	0.926758186
## [235,]	-0.967019147	-1.173977399	-0.863390379	-0.874398411
## [236,]	1.168911336	-0.221745363	-0.577137810	-0.453552979
## [237,]	0.571647153	1.773416490	1.014812824	1.027266281
## [238,]	0.514764850	-0.530572257	-0.792140835	-0.871563567
## [239,]	0.014911611	-0.605932836	-0.815472552	-0.844503695
## [240,]	0.756514638	-0.845079597	-0.507895296	-0.469531189
## [241,]	0.941382123	0.446085695	0.114032940	0.091252436
## [242,]	1.325337669	-0.422833138	-0.595577393	-0.764870359
## [243,]	-1.185304985	-0.829553045	-0.645376810	-1.128555033
## [244,]	-0.692562034	-0.784677525	-0.751247611	-0.529578332
## [245,]	0.699632335	1.525370364	1.917976055	1.249414941
## [246,]	-0.814147957	-1.023256241	-0.820741004	-1.012919182
## [247,]	-1.080072724	-1.234947515	-1.082909219	-1.127756123
## [248,]	-0.568131996	0.353305083	0.151790181	-0.258206477
## [249,]	-0.736645819	-0.850381346	-0.914695068	-1.108221473
## [250,]	-0.852543512	-0.754381815	-0.605236222	-0.759458384
## [251,]	0.175604117	0.607031654	-0.145375610	0.322163341

## [252,]	1.033815866	3.920624938	2.870060627	2.287998585
## [253,]	-0.903737585	0.133661185	0.149281394	-0.550195377
## [254,]	1.894160700	2.901931689	2.886367741	1.826692202
## [255,]	2.022145883	-0.128586055	0.153044574	0.444061620
## [256,]	0.571647153	-0.809482138	-0.857118412	-0.936764972
## [257,]	-0.887383923	-0.498761762	-0.007894096	-0.506899583
## [258,]	-0.553200392	-0.969670704	-0.764795059	-0.719512860
## [259,]	0.138630620	-0.984629211	-0.655662835	-0.522620080
## [260,]	0.101657123	-0.436466208	-0.277964990	-0.028584138
## [261,]	0.464992834	-0.128018010	-0.513916384	-0.403556645
## [262,]	-0.430903440	-0.525649204	-0.361382149	-0.555091926
## [263,]	0.912940971	0.340050710	0.725047954	0.823415248
## [264,]	-1.169662352	-0.967209178	-0.738201920	-0.727244252
## [265,]	1.659521200	0.856971262	1.917976055	1.839577855
## [266,]	2.199903080	1.682529360	1.218024551	1.149679986
## [267,]	-1.124867538	-0.857197881	-0.389606000	-0.984699602
## [268,]	0.104501238	0.923243128	-0.034361796	-0.520558375
## [269,]	-1.026745565	-0.991067050	-0.898889711	-0.935734120
## [270,]	0.450772259	0.974367138	1.456359292	1.029327985
## [271,]	-1.131977826	-0.291425496	-0.186896031	-0.208467856
## [272,]	0.073927000	2.678500827	1.476429586	1.620521752
## [273,]	-1.131266797	-0.960581991	-0.777589872	-0.422885124
## [274,]	-0.329937352	-0.682618852	-0.690911289	-0.675186213
## [275,]	-0.791395036	0.728214494	0.283501485	0.484522570
## [276,]	1.268455366	0.894840900	2.901420462	2.849813062
## [277,]	-0.034860404	-0.395566999	-0.257894696	0.015227083
## [278,]	-0.839744994	-0.038645666	0.046546577	0.105684368
## [279,]	-1.567838474	-1.175302836	-1.113892736	-1.260710292
## [280,]	-1.093582271	-1.052037166	-1.113892736	-1.260710292
## [281,]	0.720963198	2.087734482	0.998505710	1.522590788
## [282,]	-0.799927382	-1.140084073	-1.050332623	-1.114741613
## [283,]	-0.888805980	-0.878594226	-1.019687793	-1.041963444
## [284,]	-0.151469126	-0.720299141	-0.523700652	-0.299182854
## [285,]	0.063972597	-0.272490677	0.022713102	0.421382870
## [286,]	-0.707493639	-0.707423464	-0.462611695	-0.541433133
## [287,]	-0.123027974	0.497209705	0.284755879	0.404631521
## [288,]	0.521875137	0.504783633	0.656056318	1.169781605



## [289,]	0.308566501	1.065254268	2.288022101	2.115330833
## [290,]	0.799176365	0.550227198	-0.108245566	0.046925790
## [291,]	-1.075806552	-1.034427785	-1.113892736	-1.260710292
## [292,]	-0.948532398	-0.768772277	-0.793269789	-0.737295061
## [293,]	1.680852064	0.423363912	0.623442090	0.421125157
## [294,]	-0.287986653	-0.617104379	-0.562963165	-0.738325913
## [295,]	0.706742623	1.724185962	1.956862249	2.607562783
## [296,]	0.472103122	2.011995207	1.783755963	2.530248864
## [297,]	0.585867728	1.317087358	1.501517454	2.146256400
## [298,]	0.138630620	-0.031071738	0.741355068	1.187048380
## [299,]	0.969823275	-0.269839803	-0.639606600	-0.539629142
## [300,]	0.443661971	1.608683567	1.690930854	1.108703609
## [301,]	-0.669809113	0.268098398	0.382598562	1.230601888
## [302,]	-2.175768089	-0.987280086	-0.803430375	-0.906612543
## [303,]	-1.508112056	-1.271681064	-1.075131980	-1.090928926
## [304,]	1.012485002	0.805847251	0.698705693	0.845320859
## [305,]	0.436551683	0.304074554	0.324896467	0.404631521
## [306,]	-0.339180726	0.057921910	0.835434571	0.888616653
## [307,]	0.600088304	1.976019051	2.084810374	1.169266179
## [308,]	0.172760002	-0.302597039	-0.700444679	-0.644776071
## [309,]	-1.065141120	0.234015725	0.021333270	-0.342736362
## [310,]	0.621419168	0.281352772	-0.127939542	-0.113629449
## [311,]	-0.341313813	0.510464079	0.796548376	1.355077297
## [312,]	0.315676789	-0.004562992	0.474169279	0.891966923
## [313,]	0.223243046	-0.469034096	-0.543394628	-0.446337013
## [314,]	1.858609261	-0.610477192	-0.370162903	0.647397226
## [315,]	0.550316289	0.743362349	0.121308422	0.326286750
## [316,]	-1.506689998	-1.080818091	-0.954459338	-0.972844801
## [317,]	0.280125349	0.538866307	1.369806149	1.427236955
## [318,]	-0.090320650	1.209158891	1.332174348	1.927200297
## [319,]	-0.049792009	-0.424158576	-0.508773371	-0.679051909
## [320,]	-0.541112902	-0.502548725	-0.535868268	-0.351498606
## [321,]	-0.086765506	0.885373490	0.822890637	-0.011832789
## [322,]	-0.018506742	0.554014162	0.577029535	0.290206921
## [323,]	-0.396774058	0.510464079	0.723793560	0.977012234
## [324,]	0.093835806	-0.489483700	-0.696430620	-0.743222462
## [325,]	-1.215879223	-1.333219225	-0.981805113	-0.975164218



## [326,]	0.169204858	0.018158791	0.560722422	1.005876097
## [327,]	-0.402462288	-0.660654462	-0.930500424	-0.772086325
## [328,]	1.360889109	1.341702622	1.561728336	1.182151832
## [329,]	1.218683351	-0.538714229	-0.720514973	-0.579059240
## [330,]	0.749404350	0.453659622	1.781247177	2.373043896
## [331,]	-0.274477106	-1.198971360	-1.113892736	-1.260710292
## [332,]	-0.355534388	-0.483045862	-0.888478246	-0.722089990
## [333,]	-0.029883203	-0.889576421	-0.796405772	-0.823113511
## [334,]	-1.352396751	-1.367491247	-0.973024360	-1.130539424
## [335,]	1.446212563	0.495316224	0.816618670	0.961807163
## [336,]	-1.033855853	-0.796038416	-0.374804158	-0.447110152
## [337,]	-1.564283330	-1.473904928	-1.098915279	-1.120282444
## [338,]	0.728073486	0.699812266	2.812358532	-0.133215642
## [339,]	-0.369754964	0.678983966	0.215764243	0.308762261
## [340,]	0.564536865	0.483955332	0.380089775	0.339945542
## [341,]	-0.100275053	-0.366028682	-0.423976379	-0.093785543
## [342,]	-0.431614469	0.307861518	0.727556741	0.870834452
## [343,]	1.431991988	0.453659622	1.142760948	0.796097664
## [344,]	-0.031305261	0.533185861	0.827908211	-0.525197210
## [345,]	0.315676789	0.455553104	0.194439556	0.185833130
## [346,]	0.521875137	-0.384395456	-0.570238647	-0.802496466
## [347,]	-0.954931658	-0.518075277	-0.521693623	-0.647095489
## [348,]	0.912940971	-0.179520717	-0.859125441	-0.781106282
## [349,]	-0.299363114	-0.347851256	-0.174853854	-0.143524164
## [350,]	0.472103122	-0.230266032	-0.431377300	-0.159244661
## [351,]	-1.187438072	-0.918925390	-0.852100838	-0.577255249
## [352,]	0.150007081	0.215080906	0.124820723	0.788881698
## [353,]	-1.075806552	-0.872913780	-0.336796039	-0.656888585
## [354,]	-0.623592242	-0.730713292	-0.470012616	-0.771313185
## [355,]	1.481764003	0.824782070	0.475423672	1.066180953
## [356,]	0.571647153	-0.503874163	-0.841438494	-0.873109845
## [357,]	0.891610108	-0.606311532	-0.893621259	-0.757654393
## [358,]	-0.543957017	-0.669175131	-0.779095144	-0.901715995
## [359,]	-0.123027974	0.088217620	0.299808599	0.646366374
## [360,]	-0.281587394	-0.914381034	-0.612637143	-0.930322145
## [361,]	-0.910847873	-0.394998955	0.020329755	0.291237773
## [362,]	-0.878140548	-0.078408785	0.132723402	0.121662578

## [363,]	-1.377282758	-1.332272484	-1.113892736	-1.260710292
## [364,]	0.255950370	-0.547613594	-0.872672890	-0.753530984
## [365,]	0.578757441	-0.639447465	-0.801548785	-0.502776174
## [366,]	0.247418025	0.145022076	-0.268807918	-0.592202607
## [367,]	1.076477593	1.176969699	1.213006977	1.455585392
## [368,]	-1.174639553	-1.099752909	-0.920590716	-0.991915567
## [369,]	-0.738778906	-0.845458293	-0.942417161	-1.031165267
## [370,]	0.507654562	0.273778844	0.615915730	0.953302632
## [371,]	1.382219972	0.078750211	-0.370288342	-0.415669158
## [372,]	-1.361640125	-0.318691635	-0.362761982	-0.698895815
## [373,]	-0.940711082	-1.180036541	-1.016601986	-1.040752193
## [374,]	-0.390374799	-0.491566530	-0.748111627	-0.867182445
## [375,]	-0.748733309	-0.947516966	-0.741839660	-0.675186213
## [376,]	-1.609789172	-1.210142903	-1.023915099	-0.964597983
## [377,]	-0.967730176	-0.609719800	-0.598964255	-0.480612850
## [378,]	0.557426577	0.480168369	-0.374804158	-0.518496671
## [379,]	-0.182754393	-1.242521443	-1.095239906	-1.174814528
## [380,]	0.351228228	-0.497246976	-0.570991283	-0.505868731
## [381,]	-0.676919401	-0.777103597	-0.945553145	-0.669774239
## [382,]	0.365448804	-0.688677994	-0.800921588	-0.777498299
## [383,]	-0.136537521	-0.092231203	0.396396889	0.011876813
## [384,]	0.543206001	0.976260620	0.584555896	0.737081372
## [385,]	0.607198592	-0.366407378	-0.574252705	-0.592202607
## [386,]	-0.539690845	-0.448395144	-0.567228102	-0.632405844
## [387,]	-0.167111759	1.737440335	1.639500725	1.543207833
## [388,]	0.742294062	-0.711210428	-0.825758577	-0.801981040
## [389,]	-0.105252255	-0.364135200	-0.031978449	-0.103836352
## [390,]	-0.148625011	-0.704772590	-0.420714956	-0.084765586
## [391,]	0.256661399	0.512357560	1.016067217	0.876504139
## [392,]	-1.555039956	-1.301976774	-1.113892736	-1.260710292
## [393,]	-1.387237161	-0.828416956	-0.880951886	-0.816670684
## [394,]	0.401000243	0.775551541	1.295796940	1.229828748
## [395,]	-0.255279329	-0.601956524	-0.894123016	-0.776209734
## [396,]	-1.855805133	-1.060936531	-0.857369290	-1.041473789
## [397,]	0.884499820	0.235909207	-0.223649757	-0.101774648
## [398,]	-0.310028546	-0.014030401	0.293536632	0.667756558
## [399,]	0.114455641	0.559694607	1.223042124	1.581864792

## [400,]	0.429441395	-0.971942883	-1.028230212	-1.056163434
## [401,]	-0.102408139	-0.381555233	-0.821619079	-0.638075532
## [402,]	-1.792523571	-0.588702151	-0.098837616	-0.539113716
## [403,]	-0.167111759	1.279217721	0.964637089	0.696104995
## [404,]	-0.135115464	0.061708874	0.801565950	1.043502204
## [405,]	-0.961330917	0.340050710	0.153044574	-0.530609185
## [406,]	-0.345579985	0.165850377	0.115287334	0.745585903
## [407,]	0.173471031	0.747149313	-0.279595701	0.130167109
## [408,]	-0.187020565	-0.709884991	-0.673349782	-0.584728928
## [409,]	1.410661124	1.146673989	1.006032070	1.038863369
## [410,]	-0.833345735	-1.201811582	-0.906666950	-0.831102616
## [411,]	-0.622881213	0.572948981	0.609643763	-0.235012301
## [412,]	-1.957482250	-1.253692986	-0.909050297	-1.180174960
## [413,]	-1.310446052	-1.002617289	-0.831528787	-1.057761255
## [414,]	0.621419168	-0.821600422	-0.663314635	-0.590656328
## [415,]	-1.296225476	-1.153906491	-0.832281423	-0.548649099
## [416,]	0.891610108	0.766084132	1.716018721	1.816383680
## [417,]	0.002113093	-0.671257961	-0.674478736	-0.519785236
## [418,]	0.081748317	0.180998232	-0.109499959	-0.172388027
## [419,]	0.191246750	1.184543627	0.944566795	1.999359954
## [420,]	0.905830684	1.243241565	0.967145875	0.650232070
## [421,]	0.770735214	1.051999895	4.039155254	0.764141244
## [422,]	-0.412416691	-0.634903109	-0.454959895	-0.401494940
## [423,]	0.083881403	-1.007540342	-0.865271969	-0.800434761
## [424,]	4.766717009	2.263828296	0.106632019	0.092798715
## [425,]	-0.410283605	-0.431543155	-0.338552190	-0.652249750
## [426,]	1.126249608	0.413896503	0.301062993	0.510551590
## [427,]	1.382219972	0.307861518	-0.967003271	-0.800177048
## [428,]	-0.506272492	-0.636228546	-0.694172712	-0.519269810
## [429,]	0.280125349	-0.554808825	-1.050859469	-0.973102514
## [430,]	2.640740929	2.349034981	1.956862249	1.940085950
## [431,]	-0.268788876	-0.487022174	-0.450945836	-0.465665493
## [432,]	0.742294062	0.387387757	0.854250472	1.174935866
## [433,]	0.061839511	-0.618997861	-0.593194045	-0.780590856
## [434,]	0.344117940	0.518038006	0.756407788	1.105868765
## [435,]	-0.512671751	0.131767703	0.072387080	-0.329592995
## [436,]	-0.232526408	-0.970996142	-0.892492305	-0.556380491

## [437,]	-0.506983520	-0.861552889	-0.107869248	0.245107135
## [438,]	-1.205213791	-0.959635250	-0.628066181	-0.648126341
## [439,]	0.082459346	-0.977433980	-0.855362261	-1.059719874
## [440,]	0.891610108	0.184785196	-0.255511348	-0.297378863
## [441,]	-0.040548635	0.154489486	-0.222395363	-0.500456756
## [442,]	-0.277321222	-0.698145403	-0.740836146	-0.631117279
## [443,]	0.536095713	0.964899729	1.018576004	1.011030358
## [444,]	0.763624926	0.211293942	-0.388100728	0.096406698
## [445,]	0.125121073	0.482061850	0.663582678	1.009999506
## [446,]	0.429441395	-0.746429191	-0.743094054	-0.725697973
## [447,]	-1.132688855	-0.686784512	-0.524704167	-0.656630872
## [448,]	-1.388659219	-1.238734479	-1.094499814	-1.116597147
## [449,]	-0.194130853	0.209400460	-0.281477291	-0.450975848
## [450,]	0.186269549	0.126087258	0.149281394	0.396642416
## [451,]	0.635639744	-0.513530920	-1.030563384	-0.947331207
## [452,]	0.500544274	0.586203354	0.247124077	-0.085023299
## [453,]	0.329897364	0.519931488	1.214261371	1.370540081
## [454,]	-2.149460023	0.038987091	-0.012911669	-0.645806924
## [455,]	0.097390950	-0.438170342	-0.793395228	-0.699153528
## [456,]	0.237463622	-0.042432629	-0.049289077	0.164958372
## [457,]	2.327888262	0.006797899	-0.251246411	0.428856549
## [458,]	-0.118761802	0.188572160	0.600863010	0.967476850
## [459,]	-0.354112331	-1.166024775	-1.113892736	-1.260710292
## [460,]	-2.406852445	-1.608720838	-1.093885161	-1.212981833
## [461,]	0.856058668	1.788564345	3.445827187	3.092063341
## [462,]	0.386779668	0.654368701	0.885610306	0.992732731
## [463,]	-1.172506467	-0.635281805	-0.669084845	-0.726213399
## [464,]	-0.582352572	-0.703636501	-0.981554235	-1.004620821
## [465,]	1.581308033	2.333887126	1.682150100	2.349849720
## [466,]	0.642750032	0.516144524	-0.142866823	-0.539371429
## [467,]	-0.799927382	-0.981410292	-1.095566049	-1.176670062
## [468,]	-0.489918829	0.357092047	0.253396044	0.351027204
## [469,]	0.692522047	0.127980740	-0.270187751	-0.238877997
## [470,]	-0.837611907	-0.859470059	-0.670590117	-0.502003035
## [471,]	-0.630702530	-0.725790239	-0.723525517	-0.522620080
## [472,]	-0.863919973	-0.962286125	-0.869662345	-0.761004663
## [473,]	-0.464321793	-1.262592351	-0.792517153	-0.507415009

## [474,]	-0.864631001	0.163956895	0.322387680	0.449731307
## [475,]	-0.628569443	-0.839588499	-0.816977824	-0.648126341
## [476,]	0.078193173	0.139341631	0.303571779	0.788108559
## [477,]	-1.920508753	0.056028428	-0.117528077	-0.493240790
## [478,]	0.034109388	0.249163580	0.858013652	1.715875585
## [479,]	-0.457922534	-0.115710378	-0.368783070	-0.018791042
## [480,]	1.410661124	1.207265409	0.588319076	0.481172301
## [481,]	0.976933562	0.105258957	-0.004758112	0.228355786
## [482,]	0.082459346	0.184785196	0.063731766	0.244076283
## [483,]	0.713852911	1.597322676	1.795045504	1.945240211
## [484,]	0.044774820	0.474487923	0.525599407	-0.303048550
## [485,]	-1.475404731	-1.288343704	-1.009702822	-0.961247713
## [486,]	1.986594443	2.500513531	2.541409563	1.940085950
## [487,]	-0.490629858	-0.790736667	-0.744097568	-0.870532715
## [488,]	2.576748338	3.265480209	4.234840621	3.437398846
## [489,]	-1.636097238	-0.976865935	-0.888101928	-0.937022685
## [490,]	1.794616670	2.102882337	1.004777677	0.380148780
## [491,]	0.265904773	0.465020514	0.353747514	0.739658503
## [492,]	1.524425730	3.269267173	3.294045588	2.656528265
## [493,]	2.086138474	0.968686693	1.435034605	1.566402009
## [494,]	0.036242474	-0.129154099	-0.453705502	-0.542206272
## [495,]	1.986594443	-0.278549819	-0.737574723	-1.022093767
## [496,]	1.808837246	1.169395772	-0.508647932	0.105942081
## [497,]	0.294345925	-0.139568250	-0.341939052	-0.480097424
## [498,]	0.055440252	0.006797899	-0.077889246	0.092798715
## [499,]	-0.267366818	1.930575486	1.123945047	1.687527148
## [500,]	0.706742623	1.127739170	1.082550066	0.903821724
## [501,]	-1.520910574	-0.629033315	-0.656164593	-0.666166256
## [502,]	-1.016791162	-0.712914562	-0.700068361	-0.404329784
## [503,]	1.467543427	1.852942729	1.046172658	1.388579995
## [504,]	-0.400329202	1.167502290	1.746124162	0.270363015
## [505,]	1.503094866	0.832355998	0.165588508	0.173205190
## [506,]	-1.319689426	-1.298947203	-1.051587017	-1.094897707
## [507,]	-2.280289321	-1.469171223	-1.022949216	-1.099639628
## [508,]	-0.827657504	-1.025907116	-0.685391958	-0.605861399
## [509,]	0.962712987	2.258147851	2.867551840	2.537980256
## [510,]	1.112029032	0.998982403	0.795293983	0.924954195

## [511,]	0.792066077	0.429044358	-0.540885842	-0.459222666
## [512,]	-0.555333478	-0.645127911	-0.399013951	-0.038119521
## [513,]	1.033815866	0.894840900	0.413958397	0.074758800
## [514,]	0.007090294	-0.326265563	-0.626184591	-0.600191712
## [515,]	0.075349058	0.858864744	1.157813669	1.000206409
## [516,]	0.884499820	1.430696271	1.012304037	0.507459033
## [517,]	-0.826235447	-0.486643478	-0.023824892	0.547662271
## [518,]	0.941382123	1.051999895	1.362279789	2.035439783
## [519,]	1.311117093	0.836142961	1.108892327	1.471048175
## [520,]	0.273015061	0.832355998	-0.021943302	0.054141755
## [521,]	0.127965188	-0.057580484	-0.319234532	-0.689102718
## [522,]	0.233908478	0.027626200	-0.109750838	-0.275988678
## [523,]	-0.935733880	-1.103729221	-0.526084000	-0.554834212
## [524,]	-3.109348889	-1.149740831	-1.113892736	-1.260710292
## [525,]	1.467543427	-0.542690541	-1.113892736	-1.260710292
## [526,]	-0.150047068	-0.798121246	-0.624679319	-0.844503695
## [527,]	-1.232232885	-0.550075120	-0.431753618	-0.736006496
## [528,]	-0.877429520	-0.702879108	-0.199063646	0.181452008
## [529,]	-0.656299566	-1.027421902	-0.812963765	-0.700699806
## [530,]	-0.942133139	-0.947895663	-0.928367955	-1.112035626
## [531,]	-0.733090675	-0.061367448	-0.289254530	-0.283720070
## [532,]	-0.688295862	0.294607145	0.046672016	-0.909189674
## [533,]	-1.237210087	-1.119445121	-0.938026784	-0.787806821
## [534,]	0.138630620	0.970580175	1.135234588	1.024173724
## [535,]	0.365448804	1.033065077	2.078538407	1.700412801
## [536,]	-0.423793152	-0.409957462	-0.381954201	-0.467469484
## [537,]	-0.079655218	-0.939374994	-0.733058907	-0.673639935
## [538,]	-0.584485658	-0.981031596	-0.915322264	-0.964855696
## [539,]	-0.041259664	-0.048113075	-0.651272459	-0.650188046
## [540,]	-0.464321793	-0.550832513	-0.587549275	-0.397371531
## [541,]	-0.614348868	-0.592678463	-0.242089339	0.128363117
## [542,]	2.896711293	0.343837673	-0.695928863	-0.636786967
## [543,]	-0.883828779	-1.177385666	-1.090561019	-1.185354992
## [544,]	1.467543427	1.574600893	2.103626274	2.615294175
## [545,]	2.292336822	4.564408776	3.595099999	2.873007238
## [546,]	0.294345925	-0.471684971	-0.341813613	-0.392217270
## [547,]	-0.123739003	0.377920347	0.048051849	-0.665908543

```
## [548,]      0.028421158      -0.469980837      -0.776711796      -0.801723327
## [549,]      0.208311441       0.156382968      -0.554182411      -0.151513269
## [550,]      0.479213410      -0.254123903      -0.286996622      -0.552257082
## [551,]     -1.482515019      -0.401058097      -0.345451353      -0.779560003
## [552,]     -1.679469994      -0.827470215      -0.548788520      -0.881614376
## [553,]      1.581308033       2.561104951       1.737343408       0.940932405
## [554,]      0.777845502      -0.136538679      -0.451322154      -0.116464292
## [555,]     -0.600839321      -0.990120309      -0.766174892      -0.727759678
## [556,]      1.446212563       1.976019051       2.410952652       2.764767751
## [557,]     -0.206929371      -0.841292633      -0.782983763      -0.727501965
## [558,]      0.479213410       1.500755100       0.704977660       0.362882005
## [559,]      0.301456213      -0.888250984      -0.817479581      -0.595037450
## [560,]     -0.324960150      -0.292372237      -0.603480071      -0.678278770
## [561,]      0.132942390       0.103365475       0.540652128       0.181967434
## [562,]     -0.684740718      -0.736393737      -0.863766697      -0.824659789
## [563,]     -1.877847026      -0.986712041      -0.677865598      -0.813062702
## [564,]      1.211573063      -0.302975736      -0.637223253      -0.384485878
## [565,]     -1.542952466      -0.840724589      -0.504382994      -0.521073801
## [566,]      0.174893088      -0.241437575      -0.664694468      -0.735748783
## [567,]     -0.411705663       0.016265309      -0.439656296      -0.419792568
## [568,]      0.962712987      -0.225721675      -0.248988503       0.413136052
## [569,]      0.265904773       0.892947418       1.309595267       1.973588648
## attr(,"scaled:center")
##      radius_mean      texture_mean      perimeter_mean      area_mean
##      14.12729174      19.28964851       91.96903339      654.88910369
## smoothness_mean compactness_mean      concavity_mean      points_mean
##      0.09636028       0.10434098       0.08879932       0.04891915
## attr(,"scaled:scale")
##      radius_mean      texture_mean      perimeter_mean      area_mean
##      3.52404883       4.30103577       24.29898104      351.91412918
## smoothness_mean compactness_mean      concavity_mean      points_mean
##      0.01406413       0.05281276       0.07971981       0.03880284
```

```
matstand.all <- data.frame(cancer$diagnosis, matstand)
matstand.all
```



##	cancer.diagnosis	radius_mean	texture_mean	perimeter_mean
## 1	B	-0.512845261	-1.604183e+00	-0.53990056
## 2	B	-1.000920224	-7.896900e-02	-0.93374423
## 3	B	-0.876063838	-5.718735e-01	-0.86625169
## 4	B	-0.807960355	-1.371681e+00	-0.78065139
## 5	B	0.301558892	-1.413531e+00	0.23379444
## 6	B	-0.725668646	-5.804381e-02	-0.73126661
## 7	B	-0.742694517	1.078892e+00	-0.71809733
## 8	M	-0.090036136	1.037041e+00	-0.01683336
## 9	B	-1.032134320	8.172307e-05	-1.01070219
## 10	B	-0.870388548	-1.006653e+00	-0.84279392
## 11	M	1.833887264	4.534609e-01	1.88612710
## 12	B	-0.532708777	-3.137962e-01	-0.56376987
## 13	B	-0.280158360	3.372098e-01	-0.24647261
## 14	B	-0.305697166	4.731766e-03	-0.38516156
## 15	M	1.550122751	1.327669e+00	1.47047181
## 16	B	0.131300184	7.882640e-01	0.18194041
## 17	B	0.449116439	-1.246130e+00	0.41281429
## 18	B	-0.413527681	-4.625975e-01	-0.44113098
## 19	M	1.692005007	1.062616e+00	1.75854973
## 20	B	-0.549734648	-1.394931e+00	-0.53043514
## 21	B	-0.685941614	-4.881728e-01	-0.71151269
## 22	B	-0.691616904	1.197468e+00	-0.64196245
## 23	B	-0.904440289	-1.626698e-01	-0.88806330
## 24	B	0.276020086	-6.741745e-01	0.31322164
## 25	B	-1.026459030	2.093336e-01	-0.96008279
## 26	M	-0.092873781	-8.136758e-01	-0.06333736
## 27	B	-0.192191361	-2.300954e-01	-0.22095714
## 28	M	0.332772989	1.390444e+00	0.42927589
## 29	B	-1.282982150	-5.695485e-01	-1.24816071
## 30	B	-0.206379587	-5.439733e-01	-0.26704961
## 31	B	-0.305697166	-1.267055e+00	-0.38104616
## 32	M	-0.385151230	7.394385e-01	-0.42178861
## 33	M	0.985431369	9.393903e-01	1.11243210
## 34	B	-0.527033487	-3.184462e-01	-0.55800831
## 35	B	0.128462539	-1.308905e+00	0.09551703
## 36	B	-0.132600813	-9.624771e-01	-0.15222998



## 37	M	1.365675817	4.697360e-01	1.30174045
## 38	B	-0.632026357	-1.078728e+00	-0.57035451
## 39	M	0.752744468	-1.138443e-01	0.71323841
## 40	M	0.599511631	-1.208194e-01	0.69266142
## 41	M	1.754433200	1.806623e+00	1.68447255
## 42	M	1.550122751	-2.649707e-01	1.59393378
## 43	M	-0.768233323	2.535091e-01	-0.59216612
## 44	B	-0.322723037	-1.176379e+00	-0.32466519
## 45	B	-0.064497330	-6.206990e-01	-0.12342219
## 46	M	1.121638336	5.929622e-01	1.04658572
## 47	B	-0.850525032	-6.206990e-01	-0.88477099
## 48	M	3.292436862	-4.253972e-01	3.38413230
## 49	B	-0.175165490	-9.291913e-02	-0.15922616
## 50	B	-0.473118229	1.395830e-01	-0.47487725
## 51	M	-0.075847910	-5.486233e-01	-0.04152575
## 52	B	0.247643635	-8.787763e-01	0.22556364
## 53	B	-0.660402808	-4.718976e-01	-0.68764338
## 54	B	0.026307314	1.990300e+00	0.02390909
## 55	M	2.600051450	1.715947e+00	2.75447627
## 56	B	-0.223405457	-7.974006e-01	-0.22548408
## 57	B	-0.677428679	-1.069428e+00	-0.64443169
## 58	B	-1.148477771	-9.717772e-01	-1.16091425
## 59	M	2.872465383	2.116587e-01	3.05490039
## 60	M	1.496207493	-2.579956e-01	1.44989481
## 61	M	1.402565204	1.283494e+00	1.49516420
## 62	M	0.948541983	1.253268e+00	0.99308554
## 63	M	0.934353757	1.457870e+00	0.92723915
## 64	M	-0.195029006	5.325116e-01	-0.23824182
## 65	M	0.344123569	-1.169404e+00	0.43339128
## 66	B	-0.507169971	6.813130e-01	-0.49874657
## 67	B	-0.243268973	-5.276981e-01	-0.30532282
## 68	B	0.136975474	-8.369260e-01	0.02925911
## 69	B	-0.078685556	-9.555021e-01	-0.12259911
## 70	B	-0.697292195	1.698083e-01	-0.68970108
## 71	M	-0.183678426	3.558100e-01	-0.14687996
## 72	B	-1.156990706	-4.091220e-01	-1.13416416
## 73	B	-1.443025336	-9.059411e-02	-1.31277247

## 74	B	1.056372498	-1.408881e+00	0.93135455
## 75	B	0.769770339	3.960709e-02	0.67619982
## 76	B	-0.501494680	5.836621e-01	-0.50162735
## 77	M	1.186904174	-1.649948e-01	1.09597051
## 78	B	-0.799447419	-5.804381e-02	-0.83003618
## 79	B	-0.387988875	-1.376331e+00	-0.39833083
## 80	M	1.096099529	3.186096e-01	1.06304732
## 81	B	0.239130699	-5.439733e-01	0.17494423
## 82	B	-0.518520551	-7.881005e-01	-0.54072364
## 83	B	-0.234756038	5.301866e-01	-0.27692657
## 84	B	0.145488410	-9.415519e-01	0.15642494
## 85	B	-0.810798000	-1.471657e+00	-0.77406675
## 86	B	-0.351099488	-1.434456e+00	-0.41479243
## 87	B	-0.507169971	-1.632083e+00	-0.53619670
## 88	B	-0.212054877	2.657581e+00	-0.23165718
## 89	M	1.995633037	8.719647e-01	1.86143471
## 90	B	-0.118412587	-1.417446e-01	-0.13329914
## 91	B	-0.373800649	-1.448407e+00	-0.43948482
## 92	B	-0.470280584	-4.602725e-01	-0.47405417
## 93	M	0.420739988	2.100692e-02	0.33050631
## 94	B	-0.319885392	1.357894e+00	-0.38516156
## 95	M	0.026307314	8.905649e-01	0.09880935
## 96	M	0.539921083	-8.787763e-01	0.56919945
## 97	B	-0.331235972	-2.324204e-01	-0.32054980
## 98	B	-0.646214582	-4.253972e-01	-0.67612026
## 99	B	-1.120101319	-4.091220e-01	-1.10494483
## 100	M	3.147716961	1.306744e+00	3.27301653
## 101	B	-0.969706127	2.558341e-01	-0.92469035
## 102	B	-1.250632996	-2.486956e-01	-1.28561084
## 103	B	-0.805122710	-1.453057e+00	-0.81233996
## 104	M	0.156838990	1.953835e-01	0.11403633
## 105	B	-0.263132489	-4.323722e-01	-0.32260749
## 106	B	-0.748369807	-1.092678e+00	-0.73990894
## 107	B	-0.444741778	-5.106875e-02	-0.41355781
## 108	B	-0.541221712	1.744583e-01	-0.51438508
## 109	B	-0.938492031	1.143992e+00	-0.94979429
## 110	B	-0.842012096	4.929862e-01	-0.86501707

## 111	B	-0.705805130	-2.231203e-01	-0.69134724
## 112	B	-1.676563530	3.279097e-01	-1.59261960
## 113	M	1.286221753	-5.044479e-01	1.21120168
## 114	M	-0.112737297	7.719888e-01	0.06712078
## 115	B	-0.671753388	5.371617e-01	-0.70986653
## 116	M	0.891789080	1.425320e+00	0.84081578
## 117	M	0.091573152	2.163087e-01	0.10374783
## 118	M	0.386688246	1.581832e-01	0.42927589
## 119	M	1.609713298	5.278616e-01	1.55277979
## 120	B	-0.305697166	-1.626698e-01	-0.28309967
## 121	B	-0.078685556	-4.835227e-01	-0.14523380
## 122	M	1.831049619	6.627128e-01	1.75854973
## 123	B	-0.717155711	1.209093e+00	-0.73003199
## 124	M	2.151703519	-4.742226e-01	2.01370446
## 125	B	-0.754045097	-7.578752e-01	-0.77982831
## 126	B	-0.756882742	-2.626457e-01	-0.75637054
## 127	M	-0.288671295	-8.671512e-01	-0.19585321
## 128	M	0.134137829	9.300903e-01	0.08234776
## 129	M	1.382701688	-8.826909e-02	1.29350966
## 130	M	0.040495540	7.580387e-01	0.07411696
## 131	M	0.219267183	7.533886e-01	0.41692969
## 132	B	-0.132600813	-3.711862e-02	-0.10325673
## 133	B	-0.260294844	2.039125e+00	-0.29174200
## 134	M	2.109138842	7.208383e-01	2.05897385
## 135	B	-0.870388548	-5.044479e-01	-0.85267087
## 136	M	0.715855082	4.860112e-01	0.74204620
## 137	B	-1.530424806	-5.695485e-01	-1.51031162
## 138	B	-0.586624034	-1.522807e+00	-0.62262007
## 139	M	0.832198532	3.976604e-01	0.81612338
## 140	B	-0.620675776	-2.440455e-01	-0.66912408
## 141	M	1.272033528	2.232838e-01	1.24000947
## 142	M	1.096099529	-2.071512e+00	1.26881726
## 143	M	1.703355588	2.083301e+00	1.61451077
## 144	M	0.034820250	6.650378e-01	0.18317503
## 145	M	0.128462539	5.208865e-01	0.22391748
## 146	B	-0.657565163	-4.416723e-01	-0.68723184
## 147	M	0.468979955	-3.254213e-01	0.47866067

## 148	B	0.673290405	-2.324204e-01	0.60212264
## 149	B	-0.481631164	-5.323482e-01	-0.55018905
## 150	B	-0.501494680	-1.742949e-01	-0.53331592
## 151	B	-0.464605294	-5.672235e-01	-0.52590820
## 152	B	-1.244390176	-3.944364e-02	-1.23622605
## 153	B	-0.348261843	-7.834505e-01	-0.33865755
## 154	B	-1.080374288	-6.834746e-01	-1.09712557
## 155	B	0.080222572	1.023827e-01	0.16712498
## 156	B	-1.331222117	-2.254453e-01	-1.32306097
## 157	B	-0.152464329	-3.370464e-01	-0.23577258
## 158	M	-0.901602644	4.790361e-01	-0.82592078
## 159	B	-1.009433159	-2.254453e-01	-1.03498305
## 160	B	-0.180840780	6.999132e-01	-0.20819940
## 161	B	-0.243268973	-1.053153e+00	-0.29750356
## 162	B	-0.813635645	1.558582e-01	-0.75102052
## 163	B	-0.073010265	-7.160249e-01	-0.14194148
## 164	B	-1.454943445	-1.136854e+00	-1.46545377
## 165	M	2.543298547	1.256329e-01	2.47462914
## 166	M	3.715245987	5.999372e-01	3.70924881
## 167	B	0.060359056	-1.353081e+00	0.02226293
## 168	M	0.897464370	6.603878e-01	0.92312375
## 169	B	-0.277320715	-9.183017e-01	-0.27404579
## 170	B	-0.109899652	-3.207712e-01	-0.15840308
## 171	M	-0.271645425	-1.463946e-01	-0.24647261
## 172	M	-0.041796169	7.680743e-02	-0.03494111
## 173	M	-0.118412587	3.581350e-01	-0.07280278
## 174	B	-0.152464329	5.929622e-01	-0.19791091
## 175	M	-0.197866651	7.913245e-02	-0.25223417
## 176	B	-0.359612424	-2.998460e-01	-0.36129224
## 177	M	1.442292236	-1.673198e-01	1.37993303
## 178	B	-0.870388548	-1.036878e+00	-0.89135562
## 179	M	1.283384108	-3.928469e-01	1.30585585
## 180	B	-0.552572293	2.860593e-01	-0.60698156
## 181	B	-0.538384067	6.285730e-02	-0.55265829
## 182	M	0.551271664	8.378249e-02	0.49923767
## 183	B	-0.101386717	-1.399581e+00	-0.16087232
## 184	M	0.281695376	-6.067489e-01	0.28029845

## 185	B	-0.824986226	1.326079e-01	-0.82427462
## 186	B	-0.912953225	-1.613483e+00	-0.93950579
## 187	M	0.829360887	-4.874373e-02	0.88196977
## 188	M	1.226631206	6.092373e-01	1.16181689
## 189	M	1.711868523	8.610751e-02	1.61039537
## 190	B	-1.244390176	-8.415760e-01	-1.25392227
## 191	M	0.562622244	-2.882209e-01	0.54039166
## 192	B	-0.623513421	-1.948286e+00	-0.65142787
## 193	B	0.224942474	-1.013628e+00	0.18440965
## 194	M	0.117111959	1.918224e+00	0.19593277
## 195	M	0.446278794	2.372339e-01	0.37989110
## 196	M	1.411078139	1.627597e+00	1.52808739
## 197	M	0.270344796	1.499720e+00	0.24819833
## 198	B	0.139813120	1.099817e+00	0.10704015
## 199	B	-0.189353716	-1.254694e-01	-0.18638779
## 200	B	-0.544059357	-1.208929e+00	-0.54278134
## 201	M	0.244805990	1.374169e+00	0.14695952
## 202	B	-0.944167321	6.255125e-01	-0.95390969
## 203	B	0.244805990	6.557377e-01	0.22885596
## 204	B	-0.424878262	3.418599e-01	-0.40409239
## 205	B	-0.685941614	-8.927265e-01	-0.69710880
## 206	M	0.378175311	1.083542e+00	0.48689147
## 207	B	-0.717155711	-2.161453e-01	-0.74443588
## 208	M	-0.671753388	-2.672957e-01	-0.69834341
## 209	B	-0.178003135	-1.529782e+00	-0.25840727
## 210	M	1.975769521	1.692697e+00	2.08778165
## 211	B	-0.351099488	-8.346009e-01	-0.32466519
## 212	M	0.165351926	5.348366e-01	0.14737106
## 213	M	0.871925564	1.216068e+00	0.91489296
## 214	B	-0.240431328	-1.294955e+00	-0.25429187
## 215	B	-0.921466160	-8.532011e-01	-0.88724022
## 216	B	-1.122938965	-1.025253e+00	-1.12840260
## 217	B	-0.390826520	-6.020988e-01	-0.38927696
## 218	B	0.020632024	2.883844e-01	0.01814753
## 219	M	-0.475955874	-8.346009e-01	-0.38680772
## 220	M	2.594376160	6.394626e-01	2.47462914
## 221	B	-0.399339456	-1.281005e+00	-0.41931937

## 222	B	-0.405014746	-1.655333e+00	-0.45635796
## 223	M	1.533096880	-9.059411e-02	1.54454899
## 224	B	-0.759720388	3.906853e-01	-0.74731666
## 225	B	-0.983894353	-9.624771e-01	-1.00740987
## 226	B	-1.569300544	-1.603448e-01	-1.55887333
## 227	B	-1.263118634	-1.429806e+00	-1.14609882
## 228	M	1.717543814	5.820726e-02	1.72151114
## 229	M	0.968405498	7.056787e-03	0.95193155
## 230	B	-0.816473290	-1.048503e+00	-0.84732086
## 231	B	-0.708642775	2.325103e+00	-0.70369343
## 232	B	-0.507169971	-1.008978e+00	-0.56294679
## 233	B	0.037657895	8.378249e-02	0.24120216
## 234	M	0.608024567	3.302348e-01	0.61446884
## 235	B	-0.385151230	2.357653e+00	-0.43701558
## 236	B	-0.694454549	-7.253249e-01	-0.67817796
## 237	M	0.207916603	9.114901e-01	0.34696791
## 238	B	-1.576678421	-1.439106e+00	-1.54076557
## 239	B	-0.986731998	1.378819e+00	-0.98600980
## 240	B	-1.034971965	1.326079e-01	-1.03909844
## 241	M	-0.047471459	-5.207231e-01	-0.02218337
## 242	B	-1.532694922	-8.043757e-01	-1.48685385
## 243	B	-1.342288933	5.557618e-01	-1.32594175
## 244	M	0.914490241	8.766148e-01	0.78320019
## 245	M	1.589849783	1.233079e-01	1.59393378
## 246	B	-1.261132283	1.170683e-02	-1.27244156
## 247	B	-1.162665996	4.627610e-01	-1.18437203
## 248	B	0.097248443	1.325344e+00	0.15807110
## 249	B	-1.683090114	-5.695485e-01	-1.65681982
## 250	B	-0.603649905	2.078651e+00	-0.62550085
## 251	B	0.258994215	-5.927987e-01	0.27824075
## 252	M	0.434928213	9.091651e-01	0.75027700
## 253	B	-0.810798000	-8.811014e-01	-0.76501288
## 254	M	1.073398368	4.023104e-01	1.33466365
## 255	B	-0.053146749	-1.422831e+00	-0.06827584
## 256	B	-1.340018817	5.604119e-01	-1.33211485
## 257	B	0.114274313	1.170683e-02	0.09387087
## 258	B	-0.785259194	-3.998219e-01	-0.80163993

## 259	B	-0.382313585	-6.509243e-01	-0.43619250
## 260	B	-0.166652555	-1.146154e+00	-0.18556471
## 261	B	-0.575273454	-3.649466e-01	-0.57200067
## 262	B	-1.088887223	1.934499e+00	-1.08231013
## 263	M	0.378175311	4.425713e-02	0.40046809
## 264	B	-0.064497330	-1.154338e-02	-0.13329914
## 265	M	0.820847952	1.090517e+00	0.85727737
## 266	M	-0.319885392	5.883121e-01	-0.18391855
## 267	B	-1.114426029	-4.207471e-01	-1.10782561
## 268	B	-1.486725071	-1.081053e+00	-1.36544958
## 269	B	-0.532708777	7.324634e-01	-0.56747373
## 270	M	1.496207493	9.789157e-01	1.52808739
## 271	B	-0.376638295	-4.253972e-01	-0.36705380
## 272	M	1.430941655	1.281168e+00	1.66389556
## 273	B	-0.019095008	-4.904978e-01	-0.09132208
## 274	B	-0.515682906	-6.439492e-01	-0.52590820
## 275	M	1.433779300	7.440886e-01	1.46224101
## 276	M	3.967796404	-1.905700e-01	3.97263434
## 277	B	0.210754248	2.139837e-01	0.17082883
## 278	M	0.701666856	2.043775e+00	0.67208442
## 279	B	-0.927141450	5.092614e-01	-0.96543280
## 280	B	-1.815608141	1.441595e+00	-1.81032420
## 281	M	1.113125400	-7.299750e-01	1.16181689
## 282	B	-0.813635645	1.256329e-01	-0.85061317
## 283	B	-0.586624034	-9.059411e-02	-0.63002779
## 284	B	-0.138276103	-8.578512e-01	-0.18885703
## 285	M	0.869087919	6.464377e-01	0.80789259
## 286	B	0.145488410	-5.672235e-01	0.09222472
## 287	M	0.017794379	1.050991e+00	0.03707837
## 288	M	1.635252105	2.256088e-01	1.58570298
## 289	M	1.933204844	9.928658e-01	1.93139649
## 290	B	-0.419202972	-2.603207e-01	-0.38186924
## 291	B	-1.334911056	1.997275e+00	-1.34610720
## 292	B	-0.124087878	-7.485752e-01	-0.16992620
## 293	M	-0.101386717	6.975881e-01	-0.05510657
## 294	B	-0.544059357	-2.951960e-01	-0.56212371
## 295	M	2.236832873	6.069123e-01	2.27297460

## 296	M	2.980295898	5.371617e-01	3.02609260
## 297	M	1.822536683	3.651101e-01	1.88612710
## 298	M	1.612550944	6.650378e-01	1.56512598
## 299	B	-0.583786389	-1.360056e+00	-0.58187763
## 300	M	0.602349276	5.123219e-02	0.73381540
## 301	M	1.436616945	-7.788004e-01	1.41285622
## 302	B	0.037657895	-2.603207e-01	-0.03082571
## 303	B	-0.915790870	-1.471657e+00	-0.95802509
## 304	M	-0.206379587	2.860593e-01	-0.13700300
## 305	M	0.460467020	2.232838e-01	0.43750668
## 306	M	1.811186103	1.981000e+00	1.74620354
## 307	M	0.310071828	2.634331e+00	0.47042987
## 308	B	-0.336911263	-7.253249e-01	-0.36170378
## 309	B	0.233455409	-1.208194e-01	0.24161370
## 310	B	-0.160977264	-1.253105e+00	-0.13906070
## 311	M	1.799835522	3.209347e-01	1.75854973
## 312	M	0.900302015	-5.137480e-01	0.86550817
## 313	B	-0.121250233	-3.835468e-01	-0.17321851
## 314	B	-0.634864002	-4.486474e-01	-0.64895863
## 315	M	-0.240431328	2.302588e-01	-0.19132627
## 316	B	-0.189353716	2.074001e+00	-0.25017647
## 317	M	1.748757910	-1.150804e+00	1.77501133
## 318	M	2.577350289	1.785698e+00	2.53224473
## 319	B	-0.850525032	7.324634e-01	-0.84279392
## 320	B	0.179540151	-1.057803e+00	0.11938635
## 321	B	-0.475955874	-6.695244e-01	-0.37528460
## 322	M	0.741393888	5.348366e-01	0.74616160
## 323	M	1.740244975	8.696397e-01	1.66389556
## 324	B	-0.623513421	5.208865e-01	-0.63537781
## 325	B	-0.484468810	-9.880524e-01	-0.54977751
## 326	M	1.229468851	-1.789449e-01	1.19885548
## 327	B	-0.027607943	4.557859e-01	-0.08967592
## 328	M	0.468979955	8.417395e-01	0.56508405
## 329	B	-0.319885392	3.465099e-01	-0.34812297
## 330	M	2.662479643	1.157942e+00	2.59809111
## 331	B	-1.245525234	-1.701834e+00	-1.26462230
## 332	B	-0.356774779	5.820726e-02	-0.38269232



## 333	B	-0.944167321	-2.227289e+00	-0.95473277
## 334	B	-0.552572293	-1.211254e+00	-0.60574694
## 335	M	0.233455409	-3.998219e-01	0.20087125
## 336	B	0.324260053	-1.483282e+00	0.25519451
## 337	B	-0.450417068	-2.835709e-01	-0.51644278
## 338	B	-1.446714274	-4.556225e-01	-1.36544958
## 339	M	1.317435850	4.976363e-01	1.27293266
## 340	B	0.454791729	-1.862260e+00	0.44573748
## 341	B	0.571135180	-1.029903e+00	0.50746846
## 342	M	1.388376978	1.232343e+00	1.23589407
## 343	M	0.605186921	6.022623e-01	0.63916123
## 344	B	-0.802285065	-2.556706e-01	-0.74237818
## 345	M	0.576810470	5.232115e-01	0.58566104
## 346	B	-1.234458418	-5.346732e-01	-1.21276828
## 347	B	-1.489562716	-8.834264e-01	-1.44981526
## 348	B	-0.765395678	-4.602725e-01	-0.75348976
## 349	M	0.261831860	-5.106875e-02	0.21774438
## 350	B	-0.606487550	1.302094e+00	-0.59093150
## 351	B	-0.030445588	-8.439010e-01	-0.09790671
## 352	M	0.976918434	-9.857273e-01	0.94781615
## 353	B	-0.353937134	2.239077e+00	-0.38968850
## 354	B	-0.790934484	4.581109e-01	-0.80205147
## 355	M	0.185215442	1.081217e+00	0.22350594
## 356	B	-1.322992946	3.999854e-01	-1.31112631
## 357	B	-1.206365731	-4.695726e-01	-1.19548360
## 358	B	-0.649052227	-8.129402e-02	-0.67735488
## 359	M	1.169878303	1.605082e-01	1.13712450
## 360	B	-1.360449862	6.162124e-01	-1.35639570
## 361	M	1.802673168	5.046114e-01	1.66801096
## 362	M	0.488843471	1.083542e+00	0.48277607
## 363	B	-0.527033487	2.483205e+00	-0.59875076
## 364	B	-1.097400158	-1.643708e+00	-1.07901781
## 365	B	-0.552572293	-3.370464e-01	-0.58352379
## 366	B	-0.734181581	-1.127554e+00	-0.71274731
## 367	M	1.008132530	3.372098e-01	1.04658572
## 368	B	-1.240701238	2.071676e+00	-1.24651455
## 369	B	-0.734181581	-1.992462e+00	-0.75060898

## 370	M	1.510395719	9.381808e-03	1.42108702
## 371	B	-0.450417068	-6.904496e-01	-0.44113098
## 372	B	-1.405852184	-1.262405e+00	-1.34857644
## 373	B	-0.518520551	-6.269385e-02	-0.57981993
## 374	B	-0.558247583	-2.928710e-01	-0.56294679
## 375	B	-0.427715907	-4.974728e-01	-0.46705800
## 376	B	-0.473118229	-1.501882e+00	-0.54072364
## 377	B	0.173864861	1.425320e+00	0.11239017
## 378	B	-0.492981745	-4.207471e-01	-0.46623492
## 379	B	-0.793772129	-1.192654e+00	-0.83044772
## 380	B	-0.739856872	-1.013628e+00	-0.74484742
## 381	B	-0.078685556	7.215739e-02	-0.13535684
## 382	B	-1.026459030	8.835898e-01	-1.03374843
## 383	M	0.100086088	5.046114e-01	0.09387087
## 384	M	0.568297535	-3.277463e-01	0.61858424
## 385	B	-0.790934484	-1.580197e-01	-0.79052835
## 386	B	-1.097400158	-6.299991e-01	-1.07490241
## 387	M	2.163054099	3.953354e-01	2.27708999
## 388	B	-1.032134320	-1.580197e-01	-1.03333689
## 389	M	-0.146789039	1.323019e+00	-0.16128386
## 390	B	0.616537502	-8.346009e-01	0.52393006
## 391	M	1.027996046	2.032150e+00	1.04247032
## 392	B	-0.830661516	2.343703e+00	-0.87654019
## 393	B	-0.138276103	-6.857996e-01	-0.19585321
## 394	M	1.428104010	1.699672e+00	1.40874083
## 395	B	-0.126925523	-6.881246e-01	-0.17321851
## 396	B	-0.070172620	-7.276500e-01	-0.14811458
## 397	B	-0.714318065	-7.602003e-01	-0.67941258
## 398	M	0.352636505	8.068641e-01	0.33873711
## 399	M	1.575661557	5.557618e-01	1.56101059
## 400	B	-1.231620773	1.512081e-01	-1.22881833
## 401	B	-1.214594902	-8.392510e-01	-1.19219128
## 402	B	-0.214892522	-6.741745e-01	-0.24153414
## 403	M	1.459318106	1.669447e+00	1.47870261
## 404	M	1.848075490	-4.509724e-01	1.76266513
## 405	B	-0.251781909	1.953835e-01	-0.20984556
## 406	M	1.791322587	5.790120e-01	1.72151114

## 407	B	0.579648115	-7.485752e-01	0.58977644
## 408	B	-0.771070968	-1.969211e+00	-0.76665904
## 409	M	0.210754248	-6.090739e-01	0.27453689
## 410	B	-1.294048966	-7.857755e-01	-1.30701091
## 411	B	-0.351099488	-1.204279e+00	-0.28886122
## 412	B	-0.796609774	1.811273e+00	-0.83168234
## 413	B	-0.958355547	-1.004328e+00	-0.97572130
## 414	B	-0.685941614	-6.090739e-01	-0.70986653
## 415	B	-0.677428679	-1.225205e+00	-0.72962045
## 416	M	1.507558074	-1.091943e-01	1.48693340
## 417	B	-0.765395678	-9.066766e-01	-0.77818215
## 418	B	0.083060217	-6.392991e-01	0.08975548
## 419	M	1.723219104	1.753148e+00	1.71739574
## 420	M	-0.660402808	-6.299991e-01	-0.53413900
## 421	B	-1.247511586	-9.183017e-01	-1.16009117
## 422	M	0.276020086	6.348126e-01	0.21774438
## 423	B	-0.844849742	-1.443757e+00	-0.86830939
## 424	B	-1.378894556	-1.492582e+00	-1.25433381
## 425	B	-0.771070968	-1.015953e+00	-0.75883978
## 426	M	-0.410690036	1.057966e+00	-0.38186924
## 427	B	-0.617838131	-1.006653e+00	-0.60657002
## 428	B	0.207916603	-5.462983e-01	0.12020943
## 429	B	-1.125776610	6.983236e-02	-1.12099488
## 430	M	0.338448279	-4.695726e-01	0.46219908
## 431	M	-0.146789039	1.255593e+00	-0.17321851
## 432	M	1.186904174	3.000095e-01	1.18650928
## 433	B	-0.603649905	-8.462260e-01	-0.61809314
## 434	M	1.237981786	-4.114471e-01	1.20708628
## 435	B	-0.895927354	-4.858477e-01	-0.83291696
## 436	B	-0.004906782	-1.490257e+00	-0.07979896
## 437	M	1.328786430	1.605082e-01	1.19062468
## 438	B	-0.345424198	-6.881246e-01	-0.38845388
## 439	B	-1.563341489	-1.743684e+00	-1.54858483
## 440	B	-0.674591034	2.070086e-01	-0.65307403
## 441	B	-0.325560682	1.403185e-02	-0.30655744
## 442	B	-0.143951394	9.161401e-01	-0.19667629
## 443	M	0.264669505	1.256329e-01	0.34285251

## 444	B	-0.186516071	-1.215904e+00	-0.19132627
## 445	M	0.945704337	4.647799e+00	0.88196977
## 446	B	-1.311926130	-1.592558e+00	-1.30166089
## 447	B	-0.107062007	1.041691e+00	-0.14111840
## 448	B	-0.595136970	-3.161212e-01	-0.65348557
## 449	B	-0.634864002	-2.184703e-01	-0.60286616
## 450	M	0.837873822	1.827549e+00	0.79143099
## 451	B	-1.046322546	-8.904015e-01	-1.04321384
## 452	M	-0.507169971	1.760123e+00	-0.44524638
## 453	M	1.538772170	9.114901e-01	1.51985660
## 454	B	-0.640539292	5.232115e-01	-0.62303161
## 455	B	-0.634864002	4.371857e-01	-0.64113937
## 456	B	0.088735507	-9.555021e-01	0.08234776
## 457	B	-0.169490200	-1.941311e+00	-0.16704542
## 458	M	1.873614296	2.750582e+00	1.79970372
## 459	B	-1.548301970	-1.125229e+00	-1.54529251
## 460	B	-0.317047747	6.813130e-01	-0.40985395
## 461	M	3.771998890	1.622947e+00	3.90678796
## 462	M	1.331624075	6.231874e-01	1.30585585
## 463	B	-0.876063838	-1.013628e+00	-0.87654019
## 464	B	-0.098549072	-8.136758e-01	-0.14811458
## 465	M	0.854899693	-6.718494e-01	0.98897014
## 466	B	-0.490144100	-3.742467e-01	-0.43207711
## 467	B	-0.263132489	-8.067007e-01	-0.32507673
## 468	M	1.107450110	-5.672235e-01	1.05070112
## 469	B	-1.100237803	-7.229999e-01	-1.04732924
## 470	B	-0.024770298	-7.695003e-01	-0.09008746
## 471	B	-0.385151230	4.929862e-01	-0.40944241
## 472	B	0.239130699	1.093577e-01	0.14531336
## 473	B	-0.311372457	-2.021951e-01	-0.38516156
## 474	M	1.533096880	3.064460e+00	1.48281801
## 475	B	-0.592299325	2.057726e+00	-0.62220853
## 476	M	1.161365367	-9.756917e-02	1.10008591
## 477	B	-0.589461680	7.975640e-01	-0.54401596
## 478	M	1.978607166	2.860593e-01	1.89847330
## 479	B	0.236293054	-4.409368e-02	0.20827896
## 480	M	-0.087198491	1.209093e+00	0.01485522

## 481	B	0.105761378	-1.952936e+00	0.09510549
## 482	M	0.083060217	1.116827e-01	0.10333629
## 483	M	1.277708818	1.353244e+00	1.35112524
## 484	B	-1.198420325	-2.858959e-01	-1.12634490
## 485	B	-0.700129840	-5.160730e-01	-0.75184360
## 486	M	0.460467020	-1.619343e-02	0.62269963
## 487	B	-1.265672515	-1.859200e-01	-1.25433381
## 488	M	2.310611646	8.843253e-02	2.50343693
## 489	B	-0.274483070	2.907094e-01	-0.32548827
## 490	M	-0.864713257	-1.068693e-01	-0.76830520
## 491	M	1.101774820	2.953594e-01	1.08773971
## 492	M	1.836724909	2.334403e+00	1.98078127
## 493	M	0.378175311	-1.720434e+00	0.43339128
## 494	B	-0.898764999	-3.881968e-01	-0.87160171
## 495	B	-1.569016779	3.930103e-01	-1.53541555
## 496	B	-0.353937134	-2.486956e-01	-0.30943822
## 497	B	-1.206365731	2.565696e-02	-1.15309499
## 498	M	-0.271645425	5.859871e-01	-0.26951885
## 499	M	1.538772170	2.204202e+00	1.71328034
## 500	M	0.398038827	3.317887e+00	0.48277607
## 501	M	0.727205662	2.116587e-01	0.62269963
## 502	M	0.537083438	9.184652e-01	0.44162208
## 503	M	0.568297535	3.232597e-01	0.66385362
## 504	B	-1.009433159	2.163087e-01	-0.89794026
## 505	B	-0.711480420	-2.579956e-01	-0.64155091
## 506	B	-0.824986226	3.376013e+00	-0.87160171
## 507	B	0.046170830	-5.741986e-01	-0.06868738
## 508	B	0.193728377	-1.067103e+00	0.11074401
## 509	M	1.927529553	1.348594e+00	2.10012784
## 510	M	0.389525891	4.162605e-01	0.44985288
## 511	B	-0.297184231	-8.322759e-01	-0.26087651
## 512	M	1.079073659	1.206768e+00	0.95604695
## 513	M	-0.649052227	-1.370945e-01	-0.57776223
## 514	B	-0.135438458	-1.425156e+00	-0.16828004
## 515	M	0.630725728	9.300903e-01	0.70089221
## 516	M	-0.368125359	7.068882e-01	-0.27610349
## 517	M	1.828211974	-3.533215e-01	1.68447255

## 518	M	1.578499202	4.557859e-01	1.56512598
## 519	M	1.161365367	-1.370945e-01	1.16593229
## 520	B	-0.288671295	7.557137e-01	-0.20367247
## 521	B	-1.034971965	-1.002002e+00	-1.00740987
## 522	B	-0.470280584	-1.603448e-01	-0.44771562
## 523	M	0.284533021	2.446004e+00	0.19510969
## 524	B	-1.806811442	1.220718e+00	-1.81279344
## 525	B	-2.027863997	-1.362381e+00	-1.98275941
## 526	B	-0.356774779	-7.160249e-01	-0.39462698
## 527	B	-0.427715907	1.088192e+00	-0.43701558
## 528	M	1.084748949	1.674833e-01	0.91489296
## 529	B	-0.782421549	-9.291913e-02	-0.81480920
## 530	B	-1.265388750	-2.765958e-01	-1.27203002
## 531	B	-0.620675776	3.418599e-01	-0.58023147
## 532	B	-1.826391193	1.429970e+00	-1.79550876
## 533	B	-0.399339456	-3.765717e-01	-0.45224256
## 534	M	0.661939824	1.907335e-01	0.71323841
## 535	M	1.606875653	1.355569e+00	1.58158758
## 536	B	-0.368125359	-8.276259e-01	-0.37363844
## 537	B	-0.739856872	-1.254694e-01	-0.76665904
## 538	B	-0.688779259	-4.176866e-02	-0.72591659
## 539	B	-0.073010265	3.279097e-01	-0.09049900
## 540	B	-0.717155711	-1.499557e+00	-0.72550505
## 541	M	0.818010306	2.256088e-01	0.72970001
## 542	B	-1.371232914	-1.253105e+00	-1.31729941
## 543	B	-0.439066487	-2.068452e-01	-0.49956965
## 544	M	1.762946136	5.162365e-01	1.80793452
## 545	M	1.717543814	1.088192e+00	2.12893563
## 546	B	-0.334073618	-7.602003e-01	-0.36334994
## 547	B	-1.469131671	-8.206508e-01	-1.36750728
## 548	B	-0.387988875	-1.045442e-01	-0.41561551
## 549	B	-0.021932653	1.827549e+00	-0.02424107
## 550	B	-0.589461680	-1.083378e+00	-0.57323529
## 551	B	-0.362450069	4.836862e-01	-0.38433848
## 552	B	-0.847687387	-1.213579e+00	-0.85308241
## 553	M	-0.473118229	1.104467e+00	-0.32919213
## 554	B	-0.674591034	-4.021470e-01	-0.66171636

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## 555      B -0.260294844  1.385794e+00  -0.32384211
## 556      M  2.123327068  6.952631e-01   2.15774343
## 557      B -0.745532162 -1.952201e-01  -0.76912828
## 558      B  0.159676636 -1.234505e+00   0.25725221
## 559      B -0.864713257 -1.064778e+00  -0.89547102
## 560      B  0.190890732 -3.788968e-01   0.16095188
## 561      M  0.034820250  5.650619e-01   0.06835540
## 562      B -0.546897003 -9.485270e-01  -0.57446991
## 563      B  0.077384927  1.790348e+00   0.01156290
## 564      B -0.359612424 -1.387956e+00  -0.37651922
## 565      B -0.271645425 -2.486956e-01  -0.31643440
## 566      B -1.097400158 -1.064778e+00  -1.06049852
## 567      M  0.327097698  7.254884e-01   0.28606000
## 568      B  0.114274313 -1.234505e+00   0.07782082
## 569      M  2.055223584 -9.741022e-01   2.03016606
##      area_mean smoothness_mean compactness_mean concavity_mean
## 1  -0.542146756  0.457882546  -0.653837927  -0.613766097
## 2  -0.876603348  0.036953503   0.196146087  -0.312711686
## 3  -0.800448406  0.806286653  -0.498004369  -0.731804513
## 4  -0.767485819  1.424881700   0.175317786  -0.532481406
## 5   0.161718134 -1.189571158  -0.662737292  -0.688277063
## 6  -0.696729922 -0.775041374  -0.513530920  -0.425857969
## 7  -0.714347856 -0.266655790  -0.042432629   0.280992699
## 8  -0.162224529  2.555417474   1.371998332   0.840452144
## 9  -0.905871851  0.250973169  -0.351448872  -0.738201920
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## 16  0.006282488 -0.826946476   0.542653271   0.176878048
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## 30	-0.291233273	-1.208057907	-0.897150348	-0.840309540
## 31	-0.353180203	-0.912980959	-1.268462144	-1.056704942
## 32	-0.422231139	-0.413127720	-0.884842716	-0.522948016
## 33	0.925256673	-0.246746984	1.818860055	1.565491516
## 34	-0.536463552	-0.676208372	-0.739991353	-0.711107023
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## 40	0.426839629	0.728073486	1.436376716	1.329665561
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## 61	1.276194557	-0.394640972	2.171047684	1.529114108
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## 63	0.832904598	0.301456213	0.194252605	0.995996923
## 64	-0.261112289	-1.048076429	-0.833718706	-0.723776396
## 65	0.140690277	0.777845502	2.066906181	1.491482307
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## 67	-0.308282887	-0.846855282	-1.030072776	-0.668081330
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## 245	1.566037992	0.699632335	1.525370364	1.917976055
## 246	-1.049088607	-0.814147957	-1.023256241	-0.820741004
## 247	-0.987709998	-1.080072724	-1.234947515	-1.082909219
## 248	0.004293366	-0.568131996	0.353305083	0.151790181
## 249	-1.287214880	-0.736645819	-0.850381346	-0.914695068
## 250	-0.603525366	-0.852543512	-0.754381815	-0.605236222
## 251	0.098066242	0.175604117	0.607031654	-0.145375610
## 252	0.337044996	1.033815866	3.920624938	2.870060627
## 253	-0.747026283	-0.903737585	0.133661185	0.149281394
## 254	0.963618304	1.894160700	2.901931689	2.886367741
## 255	-0.172454297	2.022145883	-0.128586055	0.153044574
## 256	-1.090291841	0.571647153	-0.809482138	-0.857118412
## 257	0.013670654	-0.887383923	-0.498761762	-0.007894096
## 258	-0.724861785	-0.553200392	-0.969670704	-0.764795059
## 259	-0.433029228	0.138630620	-0.984629211	-0.655662835
## 260	-0.251735001	0.101657123	-0.436466208	-0.277964990
## 261	-0.593011438	0.464992834	-0.128018010	-0.513916384
## 262	-0.947643405	-0.430903440	-0.525649204	-0.361382149
## 263	0.267141579	0.912940971	0.340050710	0.725047954
## 264	-0.147732357	-1.169662352	-0.967209178	-0.738201920
## 265	0.694518566	1.659521200	0.856971262	1.917976055
## 266	-0.383869508	2.199903080	1.682529360	1.218024551
## 267	-0.948211726	-1.124867538	-0.857197881	-0.389606000
## 268	-1.167583423	0.104501238	0.923243128	-0.034361796
## 269	-0.535326911	-1.026745565	-0.991067050	-0.898889711
## 270	1.421116275	0.450772259	0.974367138	1.456359292
## 271	-0.416547935	-1.131977826	-0.291425496	-0.186896031
## 272	1.330185001	0.073927000	2.678500827	1.476429586
## 273	-0.130114423	-1.131266797	-0.960581991	-0.777589872
## 274	-0.522823861	-0.329937352	-0.682618852	-0.690911289
## 275	1.401225059	-0.791395036	0.728214494	0.283501485
## 276	5.240229770	1.268455366	0.894840900	2.901420462
## 277	0.073912623	-0.034860404	-0.395566999	-0.257894696
## 278	0.577444551	-0.839744994	-0.038645666	0.046546577
## 279	-0.836536755	-1.567838474	-1.175302836	-1.113892736
## 280	-1.352855894	-1.093582271	-1.052037166	-1.113892736

## 281	0.997717532	0.720963198	2.087734482	0.998505710
## 282	-0.758108532	-0.799927382	-1.140084073	-1.050332623
## 283	-0.595568880	-0.888805980	-0.878594226	-1.019687793
## 284	-0.226160580	-0.151469126	-0.720299141	-0.523700652
## 285	0.776925033	0.063972597	-0.272490677	0.022713102
## 286	0.031572749	-0.707493639	-0.707423464	-0.462611695
## 287	-0.125567859	-0.123027974	0.497209705	0.284755879
## 288	1.588770811	0.521875137	0.504783633	0.656056318
## 289	2.015011156	0.308566501	1.065254268	2.288022101
## 290	-0.481052307	0.799176365	0.550227198	-0.108245566
## 291	-1.090007681	-1.075806552	-1.034427785	-1.113892736
## 292	-0.215362492	-0.948532398	-0.768772277	-0.793269789
## 293	-0.187514789	1.680852064	0.423363912	0.623442090
## 294	-0.558343890	-0.287986653	-0.617104379	-0.562963165
## 295	2.350320228	0.706742623	1.724185962	1.956862249
## 296	3.370455455	0.472103122	2.011995207	1.783755963
## 297	1.855881427	0.585867728	1.317087358	1.501517454
## 298	1.719484517	0.138630620	-0.031071738	0.741355068
## 299	-0.595853040	0.969823275	-0.269839803	-0.639606600
## 300	0.457244774	0.443661971	1.608683567	1.690930854
## 301	1.426799479	-0.669809113	0.268098398	0.382598562
## 302	-0.061915967	-2.175768089	-0.987280086	-0.803430375
## 303	-0.818634661	-1.508112056	-1.271681064	-1.075131980
## 304	-0.279014383	1.012485002	0.805847251	0.698705693
## 305	0.302377448	0.436551683	0.304074554	0.324896467
## 306	1.887139053	-0.339180726	0.057921910	0.835434571
## 307	0.176210306	0.600088304	1.976019051	2.084810374
## 308	-0.418537056	0.172760002	-0.302597039	-0.700444679
## 309	0.098350403	-1.065141120	0.234015725	0.021333270
## 310	-0.265943013	0.621419168	0.281352772	-0.127939542
## 311	1.830307006	-0.341313813	0.510464079	0.796548376
## 312	0.776640872	0.315676789	-0.004562992	0.474169279
## 313	-0.238095310	0.223243046	-0.469034096	-0.543394628
## 314	-0.623132422	1.858609261	-0.610477192	-0.370162903
## 315	-0.311692810	0.550316289	0.743362349	0.121308422
## 316	-0.263669731	-1.506689998	-1.080818091	-0.954459338
## 317	1.824623802	0.280125349	0.538866307	1.369806149



## 318	2.884541461	-0.090320650	1.209158891	1.332174348
## 319	-0.785672074	-0.049792009	-0.424158576	-0.508773371
## 320	0.039245075	-0.541112902	-0.502548725	-0.535868268
## 321	-0.506342567	-0.086765506	0.885373490	0.822890637
## 322	0.609838817	-0.018506742	0.554014162	0.577029535
## 323	1.730850926	-0.396774058	0.510464079	0.723793560
## 324	-0.614607615	0.093835806	-0.489483700	-0.696430620
## 325	-0.506910888	-1.215879223	-1.333219225	-0.981805113
## 326	1.193788091	0.169204858	0.018158791	0.560722422
## 327	-0.146311556	-0.402462288	-0.660654462	-0.930500424
## 328	0.362903577	1.360889109	1.341702622	1.561728336
## 329	-0.385006149	1.218683351	-0.538714229	-0.720514973
## 330	3.103344838	0.749404350	0.453659622	1.781247177
## 331	-1.041132121	-0.274477106	-1.198971360	-1.113892736
## 332	-0.413990493	-0.355534388	-0.483045862	-0.888478246
## 333	-0.844777402	-0.029883203	-0.889576421	-0.796405772
## 334	-0.549819083	-1.352396751	-1.367491247	-0.973024360
## 335	0.065956136	1.446212563	0.495316224	0.816618670
## 336	0.200648086	-1.033855853	-0.796038416	-0.374804158
## 337	-0.463150212	-1.564283330	-1.473904928	-1.098915279
## 338	-1.149113008	0.728073486	0.699812266	2.812358532
## 339	1.242095330	-0.369754964	0.678983966	0.215764243
## 340	0.262310856	0.564536865	0.483955332	0.380089775
## 341	0.412347457	-0.100275053	-0.366028682	-0.423976379
## 342	1.196629693	-0.431614469	0.307861518	0.727556741
## 343	0.488502399	1.431991988	0.453659622	1.142760948
## 344	-0.754414449	-0.031305261	0.533185861	0.827908211
## 345	0.440195160	0.315676789	0.455553104	0.194439556
## 346	-1.036301397	0.521875137	-0.384395456	-0.570238647
## 347	-1.176108230	-0.954931658	-0.518075277	-0.521693623
## 348	-0.729976669	0.912940971	-0.179520717	-0.859125441
## 349	0.133586271	-0.299363114	-0.347851256	-0.174853854
## 350	-0.606935289	0.472103122	-0.230266032	-0.431377300
## 351	-0.137502588	-1.187438072	-0.918925390	-0.852100838
## 352	0.853079974	0.150007081	0.215080906	0.124820723
## 353	-0.399498321	-1.075806552	-0.872913780	-0.336796039
## 354	-0.734239072	-0.623592242	-0.730713292	-0.470012616



## 355	0.038108434	1.481764003	0.824782070	0.475423672
## 356	-1.095406725	0.571647153	-0.503874163	-0.841438494
## 357	-1.021525065	0.891610108	-0.606311532	-0.893621259
## 358	-0.644728600	-0.543957017	-0.669175131	-0.779095144
## 359	1.094332010	-0.123027974	0.088217620	0.299808599
## 360	-1.110751377	-0.281587394	-0.914381034	-0.612637143
## 361	1.850198223	-0.910847873	-0.394998955	0.020329755
## 362	0.363187737	-0.878140548	-0.078408785	0.132723402
## 363	-0.538452673	-1.377282758	-1.332272484	-1.113892736
## 364	-0.947075085	0.255950370	-0.547613594	-0.872672890
## 365	-0.579087586	0.578757441	-0.639447465	-0.801548785
## 366	-0.716052817	0.247418025	0.145022076	-0.268807918
## 367	0.877517754	1.076477593	1.176969699	1.213006977
## 368	-1.034312275	-1.174639553	-1.099752909	-0.920590716
## 369	-0.698434883	-0.738778906	-0.845458293	-0.942417161
## 370	1.460898707	0.507654562	0.273778844	0.615915730
## 371	-0.507479208	1.382219972	0.078750211	-0.370288342
## 372	-1.119560344	-1.361640125	-0.318691635	-0.362761982
## 373	-0.541294276	-0.940711082	-1.180036541	-1.016601986
## 374	-0.567152857	-0.390374799	-0.491566530	-0.748111627
## 375	-0.460308610	-0.748733309	-0.947516966	-0.741839660
## 376	-0.504637606	-1.609789172	-1.210142903	-1.023915099
## 377	0.038960915	-0.967730176	-0.609719800	-0.598964255
## 378	-0.545556679	0.557426577	0.480168369	-0.374804158
## 379	-0.733954912	-0.182754393	-1.242521443	-1.095239906
## 380	-0.706391370	0.351228228	-0.497246976	-0.570991283
## 381	-0.177000861	-0.676919401	-0.777103597	-0.945553145
## 382	-0.911270896	0.365448804	-0.688677994	-0.800921588
## 383	-0.019007772	-0.136537521	-0.092231203	0.396396889
## 384	0.432806994	0.543206001	0.976260620	0.584555896
## 385	-0.749299564	0.607198592	-0.366407378	-0.574252705
## 386	-0.949348367	-0.539690845	-0.448395144	-0.567228102
## 387	2.375894649	-0.167111759	1.737440335	1.639500725
## 388	-0.910986735	0.742294062	-0.711210428	-0.825758577
## 389	-0.205132723	-0.105252255	-0.364135200	-0.031978449
## 390	0.468611183	-0.148625011	-0.704772590	-0.420714956
## 391	0.928382435	0.256661399	0.512357560	1.016067217

## 392	-0.764075896	-1.555039956	-1.301976774	-1.113892736
## 393	-0.236106188	-1.387237161	-0.828416956	-0.880951886
## 394	1.372809036	0.401000243	0.775551541	1.295796940
## 395	-0.225592260	-0.255279329	-0.601956524	-0.894123016
## 396	-0.165634451	-1.855805133	-1.060936531	-0.857369290
## 397	-0.700992325	0.884499820	0.235909207	-0.223649757
## 398	0.208320412	-0.310028546	-0.014030401	0.293536632
## 399	1.531938765	0.114455641	0.559694607	1.223042124
## 400	-1.024082507	0.429441395	-0.971942883	-1.028230212
## 401	-1.027776590	-0.102408139	-0.381555233	-0.821619079
## 402	-0.288107511	-1.792523571	-0.588702151	-0.098837616
## 403	1.441007491	-0.167111759	1.279217721	0.964637089
## 404	1.932604689	-0.135115464	0.061708874	0.801565950
## 405	-0.318228495	-0.961330917	0.340050710	0.153044574
## 406	1.813257393	-0.345579985	0.165850377	0.115287334
## 407	0.379669031	0.173471031	0.747149313	-0.279595701
## 408	-0.714916176	-0.187020565	-0.709884991	-0.673349782
## 409	0.078459187	1.410661124	1.146673989	1.006032070
## 410	-1.066422381	-0.833345735	-1.201811582	-0.906666950
## 411	-0.405465686	-0.622881213	0.572948981	0.609643763
## 412	-0.736512354	-1.957482250	-1.253692986	-0.909050297
## 413	-0.851313087	-1.310446052	-1.002617289	-0.831528787
## 414	-0.657231650	0.621419168	-0.821600422	-0.663314635
## 415	-0.646717721	-1.296225476	-1.153906491	-0.832281423
## 416	1.455215502	0.891610108	0.766084132	1.716018721
## 417	-0.724861785	0.002113093	-0.671257961	-0.674478736
## 418	-0.038898989	0.081748317	0.180998232	-0.109499959
## 419	1.645602857	0.191246750	1.184543627	0.944566795
## 420	-0.633362190	0.905830684	1.243241565	0.967145875
## 421	-1.007885374	0.770735214	1.051999895	4.039155254
## 422	0.164559736	-0.412416691	-0.634903109	-0.454959895
## 423	-0.775726466	0.083881403	-1.007540342	-0.865271969
## 424	-1.154227893	4.766717009	2.263828296	0.106632019
## 425	-0.718610259	-0.410283605	-0.431543155	-0.338552190
## 426	-0.442974836	1.126249608	0.413896503	0.301062993
## 427	-0.648422683	1.382219972	0.307861518	-0.967003271
## 428	0.053453086	-0.506272492	-0.636228546	-0.694172712

## 429	-0.975206947	0.280125349	-0.554808825	-1.050859469
## 430	0.165980537	2.640740929	2.349034981	1.956862249
## 431	-0.233832907	-0.268788876	-0.487022174	-0.450945836
## 432	1.128431238	0.742294062	0.387387757	0.854250472
## 433	-0.601252084	0.061839511	-0.618997861	-0.593194045
## 434	1.173896874	0.344117940	0.518038006	0.756407788
## 435	-0.805279130	-0.512671751	0.131767703	0.072387080
## 436	-0.109086565	-0.232526408	-0.970996142	-0.892492305
## 437	1.270511353	-0.506983520	-0.861552889	-0.107869248
## 438	-0.393530956	-1.205213791	-0.959635250	-0.628066181
## 439	-1.222994668	0.082459346	-0.977433980	-0.855362261
## 440	-0.668029738	0.891610108	0.184785196	-0.255511348
## 441	-0.400350802	-0.040548635	0.154489486	-0.222395363
## 442	-0.232127945	-0.277321222	-0.698145403	-0.740836146
## 443	0.144100200	0.536095713	0.964899729	1.018576004
## 444	-0.308567047	0.763624926	0.211293942	-0.388100728
## 445	0.755044695	0.125121073	0.482061850	0.663582678
## 446	-1.082619515	0.429441395	-0.746429191	-0.743094054
## 447	-0.184389026	-1.132688855	-0.686784512	-0.524704167
## 448	-0.593579758	-1.388659219	-1.238734479	-1.094499814
## 449	-0.632793870	-0.194130853	0.209400460	-0.281477291
## 450	0.784313199	0.186269549	0.126087258	0.149281394
## 451	-0.924342266	0.635639744	-0.513530920	-1.030563384
## 452	-0.504353446	0.500544274	0.586203354	0.247124077
## 453	1.475106719	0.329897364	0.519931488	1.214261371
## 454	-0.633362190	-2.149460023	0.038987091	-0.012911669
## 455	-0.628247306	0.097390950	-0.438170342	-0.793395228
## 456	-0.042024751	0.237463622	-0.042432629	-0.049289077
## 457	-0.271910377	2.327888262	0.006797899	-0.251246411
## 458	2.171299283	-0.118761802	0.188572160	0.600863010
## 459	-1.215322342	-0.354112331	-1.166024775	-1.113892736
## 460	-0.365114933	-2.406852445	-1.608720838	-1.093885161
## 461	5.245912975	0.856058668	1.788564345	3.445827187
## 462	1.293244171	0.386779668	0.654368701	0.885610306
## 463	-0.801869207	-1.172506467	-0.635281805	-0.669084845
## 464	-0.196039596	-0.582352572	-0.703636501	-0.981554235
## 465	0.732596037	1.581308033	2.333887126	1.682150100

## 466	-0.531632828	0.642750032	0.516144524	-0.142866823
## 467	-0.334141468	-0.799927382	-0.981410292	-1.095566049
## 468	0.952251895	-0.489918829	0.357092047	0.253396044
## 469	-0.939686919	0.692522047	0.127980740	-0.270187751
## 470	-0.124147058	-0.837611907	-0.859470059	-0.670590117
## 471	-0.419105377	-0.630702530	-0.725790239	-0.723525517
## 472	0.100339524	-0.863919973	-0.962286125	-0.869662345
## 473	-0.372503099	-0.464321793	-1.262592351	-0.792517153
## 474	1.614345231	-0.864631001	0.163956895	0.322387680
## 475	-0.582497509	-0.628569443	-0.839588499	-0.816977824
## 476	1.057391180	0.078193173	0.139341631	0.303571779
## 477	-0.588464874	-1.920508753	0.056028428	-0.117528077
## 478	2.071843202	0.034109388	0.249163580	0.858013652
## 479	0.092098878	-0.457922534	-0.115710378	-0.368783070
## 480	-0.167623573	1.410661124	1.207265409	0.588319076
## 481	-0.040319790	0.976933562	0.105258957	-0.004758112
## 482	-0.035204906	0.082459346	0.184785196	0.063731766
## 483	1.230728920	0.713852911	1.597322676	1.795045504
## 484	-1.001633849	0.044774820	0.474487923	0.525599407
## 485	-0.664619816	-1.475404731	-1.288343704	-1.009702822
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## 502 -0.404329784
## 503 1.388579995
## 504 0.270363015
## 505 0.173205190
## 506 -1.094897707
## 507 -1.099639628
## 508 -0.605861399
## 509 2.537980256
## 510 0.924954195
## 511 -0.459222666
## 512 -0.038119521
## 513 0.074758800
## 514 -0.600191712
## 515 1.000206409
## 516 0.507459033
## 517 0.547662271
## 518 2.035439783
## 519 1.471048175
## 520 0.054141755
## 521 -0.689102718
## 522 -0.275988678
## 523 -0.554834212
## 524 -1.260710292
```

## 525 -1.260710292  
## 526 -0.844503695  
## 527 -0.736006496  
## 528 0.181452008  
## 529 -0.700699806  
## 530 -1.112035626  
## 531 -0.283720070  
## 532 -0.909189674  
## 533 -0.787806821  
## 534 1.024173724  
## 535 1.700412801  
## 536 -0.467469484  
## 537 -0.673639935  
## 538 -0.964855696  
## 539 -0.650188046  
## 540 -0.397371531  
## 541 0.128363117  
## 542 -0.636786967  
## 543 -1.185354992  
## 544 2.615294175  
## 545 2.873007238  
## 546 -0.392217270  
## 547 -0.665908543  
## 548 -0.801723327  
## 549 -0.151513269  
## 550 -0.552257082  
## 551 -0.779560003  
## 552 -0.881614376  
## 553 0.940932405  
## 554 -0.116464292  
## 555 -0.727759678  
## 556 2.764767751  
## 557 -0.727501965  
## 558 0.362882005  
## 559 -0.595037450  
## 560 -0.678278770  
## 561 0.181967434

```
## 562 -0.824659789
## 563 -0.813062702
## 564 -0.384485878
## 565 -0.521073801
## 566 -0.735748783
## 567 -0.419792568
## 568  0.413136052
## 569  1.973588648
```

```
colnames(matstand.all) <- colnames(cancer[2:10])
t2testcan <- hotelling.test(radius_mean + texture_mean + perimeter_mean + area_mean + smoothness_mean + compactness_mean + concavity_mean + points_mean + symmetry_mean + dimension_mean ~ diagnosis, data=cancer)
cat("T2 statistic =", t2testcan$stat[[1]], "\n")
```

```
## T2 statistic = 1220.313
```

```
print(t2testcan)
```

```
## Test stat: 120.09
## Numerator df: 10
## Denominator df: 558
## P-value: 0
```

```
# In the above we standardized using scale function
matabsdev.all
```

```
##      cancer.diagnosis radius_mean texture_mean perimeter_mean   area_mean
## 1                B 0.034051742  1.162510676    0.027573173 0.0161971331
## 2                B 0.454023221  0.362703331    0.366270503 0.3182594580
## 3                B 0.329166835  0.130201196    0.298777961 0.2421045162
## 4                B 0.261063352  0.930008541    0.213177663 0.2091419295
## 5                B 0.848455895  0.971858925    0.801268167 0.7200620236
## 6                B 0.178771643  0.383628523    0.163792876 0.1383860322
```

## 7	B	0.195797514	1.520563965	0.150623600	0.1560039664
## 8	M	0.485237318	0.441754057	0.443228462	0.3475279617
## 9	B	0.323491545	0.564980189	0.275320187	0.2401153946
## 10	B	0.014188226	0.127876174	0.003703859	0.0053990444
## 11	M	0.266738642	0.778882153	0.321001115	0.2230657808
## 12	B	0.241199836	0.446404100	0.182312172	0.1955022385
## 13	B	0.678197187	1.229936296	0.749414141	0.5646263776
## 14	B	0.996013442	0.804457388	0.980288020	0.8618579786
## 15	M	0.133369321	0.020925192	0.126342746	0.0895104725
## 16	B	0.002837645	0.953258755	0.037038590	0.0073881660
## 17	B	0.139044612	0.046500427	0.144038962	0.1082650478
## 18	B	0.144719902	1.639140054	0.074488720	0.1477633198
## 19	M	0.357543287	0.279002562	0.320589575	0.2511976436
## 20	B	0.822917089	0.232502135	0.880695366	0.6140702577
## 21	B	0.479562027	0.651005979	0.392609056	0.3529270061
## 22	B	0.354705642	0.211576943	0.346516588	0.2747829427
## 23	B	0.736085147	0.127876174	0.680686979	0.5055210497
## 24	B	0.340517416	0.102300940	0.300424120	0.2671106165
## 25	B	0.241199836	0.825382580	0.186427570	0.2051636863
## 26	M	0.019863516	0.123226132	0.009465417	0.0218803377
## 27	B	0.675359542	0.867232965	0.662990764	0.5694571016
## 28	M	0.414296189	0.520804783	0.415243750	0.3472438014
## 29	B	0.085129354	0.637055851	0.002880779	0.0727450190
## 30	B	0.224173966	0.734706747	0.242808535	0.1588455687
## 31	B	0.482399673	0.179026644	0.444051542	0.4006659247
## 32	M	0.303628029	0.179026644	0.317297256	0.2196558580
## 33	M	0.371731512	0.348753203	0.408247572	0.2833077496
## 34	B	0.073778773	0.581255338	0.092596475	0.0366566697
## 35	B	0.794540637	0.437104014	0.793037369	0.6424862807
## 36	B	0.113505805	0.030225278	0.120169648	0.0753024610
## 37	M	0.573204317	2.431972335	0.591382823	0.4702851812
## 38	B	0.323491545	0.355728267	0.341989649	0.1750427019
## 39	M	0.130531676	0.627755765	0.076957960	0.0920679146
## 40	M	0.601580768	0.530104868	0.593440522	0.4003817645
## 41	M	0.039727032	1.122985313	0.068727162	0.0173337740
## 42	M	0.303628029	0.086025790	0.262150910	0.2500610027
## 43	M	0.683872477	0.395253630	0.596732841	0.5867908756

## 44	B	0.468211447	0.513829719	0.444874622	0.3665666971
## 45	B	0.150395192	0.611480616	0.122227348	0.1199156172
## 46	M	0.610093704	0.032550299	0.566690429	0.4194204999
## 47	B	0.896128333	0.351078224	0.745298742	0.6078187326
## 48	M	1.603269500	0.967208883	1.498828282	1.5165631492
## 49	B	1.316667342	0.481279420	1.243673550	1.1985878515
## 50	B	0.045402322	1.025334417	0.065846383	0.0218803377
## 51	M	0.252550417	0.383628523	0.262562450	0.1827150281
## 52	B	0.158908127	0.934658584	0.169142895	0.1298612253
## 53	B	0.786027702	0.102300940	0.742417963	0.6464645240
## 54	B	0.028376451	0.346428182	0.026750093	0.0150604922
## 55	M	0.312140965	0.971858925	0.290547163	0.2492085220
## 56	B	0.692385412	0.499879591	0.723898668	0.5498500457
## 57	B	0.263900997	1.029984459	0.206593025	0.2048795261
## 58	B	0.195797514	0.992784118	0.152681299	0.1633921324
## 59	M	0.039727032	1.190410933	0.031277032	0.0287001833
## 60	M	0.334842126	3.099253463	0.335816551	0.2807503076
## 61	M	0.428484415	0.299927755	0.434174585	0.3199644193
## 62	M	0.173096353	1.006734246	0.127988906	0.1432167561
## 63	M	0.076616419	0.018600171	0.093419555	0.0616627700
## 64	M	0.227011611	1.799566527	0.182312172	0.1756110223
## 65	M	0.215661030	0.209251922	0.246923934	0.1898190339
## 66	B	0.099317580	0.016275149	0.108646531	0.0730291792
## 67	B	0.573204317	0.032550299	0.537471097	0.4128848147
## 68	B	0.422809125	0.697506406	0.357216625	0.3225218614
## 69	B	0.703735993	0.192976772	0.718137109	0.4839248722
## 70	B	0.258225707	1.011384288	0.244866235	0.2000488021
## 71	M	0.283764513	0.009300085	0.244866235	0.2364213116
## 72	B	0.201472804	0.651005979	0.172435214	0.1520257232
## 73	B	0.102155225	0.390603587	0.153915919	0.0778599031
## 74	B	0.005675290	0.616130658	0.053088646	0.0150604922
## 75	B	0.391595028	1.585664563	0.382320558	0.2750671029
## 76	B	0.295115094	0.934658584	0.297543341	0.2219291399
## 77	M	0.158908127	0.218552007	0.123873507	0.1304295457
## 78	B	1.129666527	0.769582068	1.025145868	0.7231877862
## 79	B	0.124856386	0.978833990	0.142392802	0.0866688702
## 80	M	0.241199836	0.279002562	0.284374064	0.1523098834



## 81	B	0.468211447	0.041850384	0.422239928	0.3702607801
## 82	B	0.170258708	1.650765160	0.162558257	0.1170740149
## 83	B	0.207148095	0.316202904	0.212354584	0.1582772483
## 84	B	0.209985740	0.179026644	0.188896810	0.1571406074
## 85	B	0.414296189	0.404553715	0.464216997	0.3321833092
## 86	B	0.286602158	2.480797783	0.275731727	0.2273281843
## 87	B	0.323491545	0.062775577	0.285197144	0.2611432517
## 88	B	0.983527803	0.127876174	0.942837890	0.6368030761
## 89	M	0.039727032	1.081134929	0.055146345	0.0278477026
## 90	B	0.073778773	0.197626815	0.101650353	0.0591053279
## 91	B	0.110668160	0.000000000	0.119758108	0.0838272679
## 92	B	1.220187407	0.209251922	1.169596369	1.0789563945
## 93	M	0.065265838	0.090675833	0.017284675	0.0537062835
## 94	B	0.045402322	0.267377456	0.034157811	0.0235852991
## 95	M	0.082291709	0.125551153	0.041565529	0.0659251734
## 96	M	0.697493174	0.402228694	0.668752322	0.4793783085
## 97	B	0.198635159	0.341778139	0.228816179	0.1528782039
## 98	B	0.533477285	0.241802221	0.529651839	0.3793539075
## 99	B	0.627119574	0.544054997	0.734598705	0.5472926036
## 100	M	0.784325115	0.216226986	0.755587239	0.5109200941
## 101	B	0.394432673	0.104625961	0.331701152	0.3236585023
## 102	B	0.462536157	0.216226986	0.467509316	0.3338882706
## 103	B	0.366056222	1.141585484	0.359274325	0.2915483963
## 104	M	0.303628029	0.611480616	0.269970168	0.2651214949
## 105	B	0.266738642	0.597530488	0.183546791	0.1827150281
## 106	B	0.473886737	0.274352520	0.425532247	0.3844687916
## 107	B	0.908046443	0.695181384	0.897980041	0.6027038485
## 108	B	0.607256058	0.911408370	0.589736663	0.5194449010
## 109	B	0.269576288	0.476629377	0.293427942	0.2287489854
## 110	B	0.436997350	0.120901110	0.409070651	0.3597468516
## 111	B	0.394432673	1.034634502	0.369562822	0.2915483963
## 112	B	0.187284579	0.141826303	0.206181485	0.1361127503
## 113	M	0.323491545	0.595205466	0.323881894	0.2278965047
## 114	M	0.005675290	0.727731683	0.039507830	0.0008524807
## 115	B	0.008512935	0.504529634	0.014815436	0.0073881660
## 116	M	0.445510286	0.957908797	0.406601412	0.3532111663
## 117	M	0.278089223	0.574280274	0.256800892	0.2020379238

## 118	M	0.366056222	1.171810762	0.372032061	0.2690997381
## 119	M	0.697493174	0.399903673	0.686448538	0.4788099881
## 120	B	0.076616419	1.506613837	0.083954138	0.0446131562
## 121	B	0.771839476	0.571955253	0.751883380	0.6493061263
## 122	M	0.686710122	1.541489157	0.674513881	0.5805393505
## 123	B	0.357543287	0.316202904	0.381085939	0.2634165335
## 124	M	0.002837645	0.767257046	0.024692393	0.0102297683
## 125	B	0.397270319	1.067184801	0.386435957	0.2798978269
## 126	B	0.791702992	1.097410079	0.796329688	0.6686290219
## 127	M	0.122018741	0.783532196	0.163381337	0.0625152507
## 128	M	0.139044612	0.451054142	0.129635066	0.1082650478
## 129	M	0.170258708	0.225527071	0.176962153	0.1298612253
## 130	M	0.368893867	1.088109993	0.309066458	0.3063247283
## 131	M	0.195797514	0.392928609	0.242808535	0.1653812540
## 132	B	0.306465674	0.853282836	0.313181857	0.2369896321
## 133	B	0.374569158	0.411528779	0.319766495	0.2827394292
## 134	M	0.576041962	0.583580360	0.560928871	0.4162947374
## 135	B	0.156070482	0.160426473	0.178196773	0.1005927215
## 136	M	0.567529027	0.730056705	0.585621264	0.4546563685
## 137	B	0.147557547	0.839332708	0.148154361	0.0957619976
## 138	B	0.141882257	1.213661146	0.111115770	0.1040026443
## 139	M	0.212823385	0.832357644	0.179842932	0.1616871711
## 140	B	0.436997350	0.520804783	0.439936143	0.3091663306
## 141	M	1.022403541	0.281327584	0.991399597	0.6740280663
## 142	M	0.716221632	0.988134075	0.578625086	0.5282538682
## 143	M	0.269576288	0.606830573	0.279847126	0.1943655975
## 144	M	0.161745773	2.766775410	0.136219704	0.1230413797
## 145	M	0.039727032	0.567305210	0.004526939	0.0304051446
## 146	B	0.584554897	0.525454826	0.808675885	0.4873347950
## 147	M	0.161745773	2.799325709	0.130458145	0.1406593140
## 148	B	0.147557547	0.283652605	0.110704231	0.1076967273
## 149	B	1.029781419	0.997434160	0.973291841	0.6737439061
## 150	B	0.439834996	1.820491719	0.418536069	0.3165544966
## 151	B	0.488074963	0.574280274	0.471624715	0.3429813980
## 152	B	0.985797919	0.362703331	0.919380116	0.6464645240
## 153	B	0.795391931	0.997434160	0.758468018	0.5387677967
## 154	B	0.714235280	0.453379164	0.704967833	0.4907447178

## 155	B	0.615768994	0.904433306	0.616898296	0.4293661080
## 156	B	0.644145445	1.767016228	0.725544827	0.5626372560
## 157	B	1.136193111	0.127876174	1.089346091	0.7288709908
## 158	M	0.056752903	2.520323146	0.058027125	0.0451814766
## 159	B	0.805891218	0.151126388	0.845714475	0.6564101320
## 160	B	0.263900997	0.439429036	0.197539148	0.1886823929
## 161	B	0.493750253	0.981159011	0.499197887	0.3858895928
## 162	B	0.793121815	1.002084203	0.764641117	0.5319479512
## 163	B	0.661171316	0.453379164	0.661344604	0.5720145436
## 164	B	0.238362191	0.041850384	0.234166198	0.1665178950
## 165	M	0.164583418	0.209251922	0.131281225	0.1253146616
## 166	M	0.380244448	0.704481470	0.381909019	0.3066088885
## 167	B	0.028376451	0.076725705	0.004526939	0.0346675481
## 168	M	0.541990220	2.376171823	0.514836403	0.3892995155
## 169	B	0.482399673	0.430128950	0.434174585	0.4106115328
## 170	B	0.567529027	0.020925192	0.540351876	0.3898678360
## 171	M	0.939828068	0.639380872	0.797975848	0.6092395338
## 172	M	0.014188226	1.174135783	0.000000000	0.0230169787
## 173	M	0.170258708	0.016275149	0.200419927	0.1417959549
## 174	B	0.527801995	0.048825448	0.476151654	0.4282294671
## 175	M	0.031214096	0.202276858	0.041565529	0.0355200288
## 176	B	0.757651250	0.655656021	0.738302564	0.6322565125
## 177	M	0.380244448	0.950933733	0.397959074	0.2781928655
## 178	B	1.268711139	1.883267296	1.242850470	0.7945120040
## 179	M	0.266738642	0.567305210	0.283139445	0.1997646419
## 180	B	0.039727032	0.351078224	0.062554063	0.0372249902
## 181	B	0.408620899	0.416178822	0.378616699	0.3321833092
## 182	M	0.692385412	0.125551153	0.659698445	0.5899166381
## 183	B	0.127694031	0.181351666	0.185604491	0.0772915826
## 184	M	0.788014053	2.438947399	0.778633473	0.5316637909
## 185	B	0.422809125	0.306902819	0.397547534	0.3429813980
## 186	B	0.002837645	0.146476345	0.005350019	0.0000000000
## 187	M	0.036889387	0.918383434	0.014403896	0.0375091504
## 188	M	0.584554897	0.181351666	0.536648017	0.4964279224
## 189	M	0.368893867	1.029984459	0.390551356	0.2602907710
## 190	B	0.209985740	0.283652605	0.205769945	0.1398068333
## 191	M	0.780352412	0.320852947	0.809087425	0.6566942923

## 192	B	0.385919738	0.811432452	0.428413026	0.2924008770
## 193	B	0.425646770	0.058125534	0.394255215	0.3202485796
## 194	M	0.087966999	0.006975064	0.081484898	0.0647885325
## 195	M	0.357543287	2.515673104	0.317297256	0.2946741588
## 196	M	0.303628029	1.174135783	0.275320187	0.2273281843
## 197	M	0.726437154	0.616130658	0.686860078	0.5975889644
## 198	B	0.070941128	0.227852093	0.192189129	0.0520013221
## 199	B	0.076616419	0.962558840	0.067904082	0.0562637256
## 200	B	0.062428193	0.546380018	0.017696215	0.0514330017
## 201	M	0.519289059	0.897458242	0.477797813	0.4120323340
## 202	B	0.227011611	0.788182239	0.219350762	0.1733377405
## 203	B	0.698628232	1.260161573	0.697148575	0.4827882313
## 204	B	0.190122224	0.499879591	0.184781411	0.1443533970
## 205	B	0.397270319	1.785616399	0.387259037	0.2864335122
## 206	M	0.005675290	0.769582068	0.038273210	0.0085248069
## 207	B	0.871157056	1.041609566	0.822668241	0.7589919752
## 208	M	0.096479935	0.158101452	0.051030946	0.0951936772
## 209	B	0.899817272	0.013950128	0.797975848	0.5907691188
## 210	M	1.001688732	1.420588047	1.013211211	0.8206547452
## 211	B	1.118032182	0.588230402	1.074942194	0.9706913468
## 212	M	0.255388062	0.186001708	0.174904454	0.1960705589
## 213	M	0.687561416	0.093000854	0.645294549	0.4779575074
## 214	B	0.942665713	0.441754057	0.882341526	0.6177643407
## 215	B	0.218498675	0.018600171	0.186016031	0.1716327791
## 216	B	0.059590548	1.743766015	0.023457774	0.0485913994
## 217	B	0.516451414	0.402228694	0.469567015	0.4208413011
## 218	B	0.192959869	2.680749620	0.177785233	0.1588455687
## 219	M	0.244037481	0.899783264	0.234577738	0.1758951826
## 220	M	0.776095944	0.841657730	0.743652582	0.5370628353
## 221	B	0.659468729	0.027900256	0.628009873	0.4631811754
## 222	B	0.102155225	0.360378310	0.109881151	0.0863847100
## 223	M	0.813552860	1.057884716	0.788921970	0.5524074877
## 224	B	0.019863516	2.924876862	0.031277032	0.0198912161
## 225	B	0.550503156	1.202036039	0.511544084	0.3887311951
## 226	B	0.005675290	0.104625961	0.016050056	0.0207436968
## 227	B	0.187284579	0.685881299	0.145273581	0.1577089278
## 228	M	0.693804235	2.513348082	0.679040820	0.4759683858

## 229	M	0.187284579	1.550789242	0.183135251	0.1400909935
## 230	B	0.096479935	0.248777285	0.126342746	0.0508646812
## 231	B	0.858955182	0.820732538	0.781102712	0.5612164549
## 232	B	0.028376451	0.378978481	0.012346197	0.0170496138
## 233	B	0.011350581	0.148801367	0.004526939	0.0088089671
## 234	M	0.119181096	0.055800512	0.100415733	0.0980352795
## 235	B	0.073778773	1.060209737	0.026750093	0.0537062835
## 236	B	0.720761864	1.866992146	0.679863899	0.5973048041
## 237	M	0.053915258	0.020925192	0.101238813	0.0127872104
## 238	B	0.246875127	0.750981897	0.262973990	0.1756110223
## 239	B	0.192959869	0.571955253	0.177373693	0.1480474800
## 240	B	0.468211447	0.513829719	0.432116885	0.3813430291
## 241	M	0.479562027	1.325262171	0.466274696	0.3529270061
## 242	B	0.244037481	0.283652605	0.223054621	0.1909556748
## 243	B	0.550503156	0.188326730	0.507428685	0.3910044769
## 244	M	0.485237318	0.283652605	0.465863156	0.3526428458
## 245	M	1.163434505	0.392928609	1.091403790	1.0269550724
## 246	B	0.283764513	2.785375581	0.309066458	0.2057320067
## 247	B	0.408620899	0.244127242	0.371620521	0.3222377012
## 248	B	0.419971480	0.246452263	0.394255215	0.3327516297
## 249	B	0.476724382	0.285977626	0.419359149	0.3927094383
## 250	B	0.167421063	0.318527925	0.111938850	0.1426484356
## 251	B	0.684723771	0.592880445	0.661344604	0.4657386175
## 252	M	0.667697900	0.397578651	0.624717554	0.4694327005
## 253	B	0.332004481	0.232502135	0.325939593	0.2702363790
## 254	M	0.295115094	0.637055851	0.357628165	0.2401153946
## 255	B	1.126545118	0.306902819	1.157250173	0.9380129203
## 256	B	0.224173966	1.527539029	0.199185307	0.1565722869
## 257	B	0.747151964	0.344103160	0.739537184	0.5080784918
## 258	B	0.195797514	0.762607004	0.278612506	0.1528782039
## 259	B	0.249712772	2.252945691	0.264208610	0.1781684644
## 260	B	0.411458544	0.562655167	0.408247572	0.2929691975
## 261	B	0.139044612	0.167401537	0.142392802	0.0988877602
## 262	B	0.130531676	0.783532196	0.162146717	0.0883738316
## 263	M	0.218498675	0.465004271	0.210708424	0.1665178950
## 264	B	0.629957220	0.197626815	0.657229205	0.5194449010
## 265	M	0.700614583	0.476629377	0.592617443	0.4495414844

## 266	M	0.297952739	1.002084203	0.300835660	0.2173825762
## 267	B	0.831997553	1.050909651	0.686860078	0.5958840030
## 268	B	0.224173966	0.574280274	0.191366049	0.1602663699
## 269	B	0.070941128	0.564980189	0.039096290	0.0900787930
## 270	M	0.754813605	0.104625961	0.687683157	0.6117969759
## 271	B	0.578879607	0.511504698	0.553521153	0.4168630579
## 272	M	0.056752903	0.404553715	0.050619407	0.0429081948
## 273	B	0.349030351	0.044175406	0.265443229	0.2469352401
## 274	B	0.541990220	1.048584630	0.487674770	0.4492573241
## 275	M	0.201472804	0.246452263	0.179019852	0.1648129336
## 276	M	1.016444487	1.302011958	0.981111099	0.6646507787
## 277	B	0.127694031	0.648680957	0.085600297	0.1096858489
## 278	M	0.221336320	0.455704185	0.260916291	0.1579930881
## 279	B	0.402945609	1.357812470	0.370797441	0.3262159444
## 280	B	0.360380932	0.774232110	0.376147460	0.2497768424
## 281	M	0.765029128	1.150885570	0.734187165	0.5242756249
## 282	B	0.439834996	1.483363623	0.426355327	0.3739548631
## 283	B	0.048239967	0.125551153	0.086011837	0.0352358686
## 284	B	0.087966999	0.223202050	0.035392431	0.0744499803
## 285	M	0.499425543	0.448729121	0.475740114	0.3659983766
## 286	B	0.093642289	0.964883861	0.055557885	0.0750183008
## 287	M	0.087966999	0.878858071	0.073665640	0.0699034167
## 288	M	0.635632510	0.513829719	0.649821487	0.5163191385
## 289	M	0.377406803	1.499638773	0.400428314	0.2864335122
## 290	B	1.001404967	0.683556278	0.977818780	0.6569784525
## 291	B	0.229849256	1.122985313	0.157619778	0.1932289566
## 292	B	0.329166835	0.571955253	0.309066458	0.2435253174
## 293	M	0.448347931	0.372003416	0.419359149	0.3623042937
## 294	B	0.056752903	0.067425619	0.135396624	0.0267110616
## 295	M	0.283764513	0.365028352	0.242396996	0.2242024217
## 296	M	0.553340801	0.281327584	0.479855513	0.3813430291
## 297	M	0.522126704	0.327828011	0.477386273	0.4341968319
## 298	M	0.161745773	0.934658584	0.158031318	0.1392385129
## 299	B	0.786027702	0.551030061	0.712787091	0.6586834139
## 300	M	0.235524546	0.239477199	0.182312172	0.1858407906
## 301	M	0.045402322	2.499397954	0.054734805	0.0241536196
## 302	B	0.042564677	1.239236381	0.023457774	0.0301209844

## 303	B	0.783190057	0.397578651	0.775752694	0.6504427672
## 304	M	0.652658381	1.511263879	0.662579224	0.5180240999
## 305	M	0.651523323	0.155776431	0.558871172	0.4432899593
## 306	M	0.153232837	0.074400683	0.184369871	0.1062759261
## 307	M	0.718775512	0.255752349	0.686860078	0.4810832699
## 308	B	0.272413933	0.732381726	0.241985456	0.2281806649
## 309	B	0.351867996	0.053475491	0.304127979	0.2637006937
## 310	B	1.022119777	0.834682666	0.967941823	0.6723231049
## 311	M	0.192959869	0.192976772	0.258035511	0.0986035999
## 312	M	0.659468729	0.467329292	0.585621264	0.4549405287
## 313	B	0.462536157	0.657981043	0.330466532	0.3412764366
## 314	B	0.164583418	0.183676687	0.074077180	0.1409434742
## 315	M	0.278089223	3.817685061	0.304127979	0.2034587249
## 316	B	0.593067833	0.132526217	0.498786347	0.4950071212
## 317	M	0.740625380	0.625430744	0.678217740	0.6316881920
## 318	M	0.249712772	0.390603587	0.306597219	0.1750427019
## 319	B	0.411458544	0.983484032	0.399193694	0.3139970545
## 320	B	0.258225707	1.197385997	0.363801263	0.2017537635
## 321	B	0.488074963	0.560330146	0.439936143	0.3546319674
## 322	M	0.076616419	0.281327584	0.119758108	0.0667776541
## 323	M	1.259914439	1.662390267	1.245319709	0.7882604789
## 324	B	1.480966995	0.920708456	1.415285684	0.8948205653
## 325	B	0.190122224	0.274352520	0.172846754	0.1528782039
## 326	M	0.119181096	1.529864050	0.130458145	0.1079808875
## 327	B	0.235524546	0.348753203	0.247335474	0.1773159837
## 328	M	0.718491748	0.165076516	0.704556293	0.4890397564
## 329	B	0.073778773	0.783532196	0.012757737	0.0494438801
## 330	M	1.279494190	1.871642189	1.228035034	0.8183814633
## 331	B	0.147557547	0.065100598	0.115231169	0.1219047388
## 332	B	0.178771643	0.385953545	0.193835289	0.1378177117
## 333	B	0.192959869	0.316202904	0.199185307	0.1403751538
## 334	B	0.141882257	0.399903673	0.158442858	0.1128116114
## 335	M	0.473886737	0.769582068	0.476974733	0.3591785311
## 336	B	0.170258708	1.057884716	0.158031318	0.1301453855
## 337	B	0.824335911	0.811432452	0.749825681	0.5700254220
## 338	B	0.107830515	0.234827157	0.067904082	0.0869530305
## 339	M	0.212823385	0.318527925	0.204123786	0.1571406074



## 340	B	0.922234668	0.378978481	0.800033547	0.6058296110
## 341	B	0.158908127	0.337128096	0.151858220	0.1085492080
## 342	M	0.524964350	2.269220840	0.543232656	0.4035075270
## 343	M	0.042564677	0.641705893	0.005761558	0.0258585810
## 344	B	0.184446934	0.925358498	0.183135251	0.1594138892
## 345	M	0.300790384	0.771907089	0.285608684	0.2097102500
## 346	B	0.127694031	0.039525363	0.094242635	0.1008768818
## 347	B	0.286602158	1.827466783	0.243631615	0.2259073831
## 348	B	0.198635159	0.246452263	0.201654546	0.1449217175
## 349	M	0.706573638	0.792832281	0.824725941	0.5617847753
## 350	B	0.317816255	0.623105723	0.327997293	0.2435253174
## 351	B	0.737787735	0.062775577	0.728425606	0.6149227384
## 352	M	0.000000000	0.506854655	0.006996178	0.0014208012
## 353	B	0.624281929	2.232020499	0.579036626	0.5333687523
## 354	B	0.187284579	0.946283691	0.190954509	0.1318503469
## 355	M	0.275251578	0.192976772	0.251039333	0.2242024217
## 356	B	0.550503156	0.623105723	0.493024789	0.3887311951
## 357	B	0.661171316	0.792832281	0.645294549	0.5279697079
## 358	B	0.997432264	0.532429890	0.931726312	0.9496634897
## 359	M	0.926491136	0.051150470	0.971234142	1.1025416936
## 360	B	0.642726623	0.823057559	0.555578852	0.7359749965
## 361	M	0.784608879	0.558005125	0.843656776	0.8951047255
## 362	M	1.000269909	1.318287107	0.978230320	0.9885934413
## 363	B	0.574623139	0.885833135	0.485617071	0.5671838197
## 364	B	1.292547358	0.234827157	1.336681565	1.2096701005
## 365	B	0.078035241	0.434778993	0.197539148	0.1378177117
## 366	B	0.458279689	0.034875320	0.386847497	0.5626372560
## 367	M	0.154651660	0.618455680	0.201654546	0.1298612253
## 368	B	0.307884497	0.625430744	0.222231541	0.3605993323
## 369	B	0.847037072	1.302011958	0.769579596	1.0116104199
## 370	M	0.642726623	0.769582068	0.679040820	0.8013318495
## 371	B	1.675629451	0.251102306	1.507059080	1.5512306973
## 372	B	0.214242208	0.088350811	0.131692765	0.2614274119
## 373	B	2.385040734	0.930008541	2.469239344	3.0632472828
## 374	B	0.983244039	1.053234673	0.956418706	1.0033697732
## 375	B	1.692655322	1.211336125	1.839583311	2.1397265343
## 376	B	1.965069255	0.292952690	2.140007431	2.3556883093



## 377	B	0.588811365	0.762607004	0.535001858	0.6052612906
## 378	B	0.495169076	0.778882153	0.580271246	0.4887555961
## 379	B	0.041145854	0.748656876	0.078192579	0.1494682811
## 380	B	0.026957629	0.953258755	0.012346197	0.0454656369
## 381	B	1.102425134	0.027900256	1.153134774	1.0485512499
## 382	B	0.563272559	1.674015374	0.481501672	0.6467486842
## 383	M	1.091074554	0.148801367	1.061772918	1.0593493386
## 384	M	0.279508046	0.669606150	0.181077552	0.3097346510
## 385	B	0.188703401	0.186001708	0.148154361	0.1696436575
## 386	B	1.088236908	0.367353374	0.946541749	1.3412362871
## 387	M	0.486656140	0.483604441	0.584386645	0.4927338394
## 388	B	0.881088814	0.385953545	0.816083603	0.9152801019
## 389	M	0.367475045	1.383387705	0.345693508	0.3944143997
## 390	B	2.240320832	0.802132367	2.358123574	2.6881557788
## 391	M	0.750557138	0.309227840	0.800856627	0.7032965700
## 392	B	0.378825625	1.009059267	0.296308721	0.4120323340
## 393	B	1.020133425	0.267377456	0.847772175	1.0050747346
## 394	M	0.015607048	0.920708456	0.074077180	0.0090931274
## 395	B	0.815822976	0.288302648	0.811145125	0.8220755463
## 396	B	0.520707882	0.346428182	0.485617071	0.5322321114
## 397	B	0.702317170	0.023250214	0.637886831	0.8467974863
## 398	M	0.923653491	0.158101452	0.843656776	1.0172936245
## 399	M	1.244307391	0.978833990	1.098811508	1.7447438141
## 400	B	1.196067424	1.371762598	1.110746165	1.1417558054
## 401	B	0.773258299	0.425478908	0.832545199	0.7595602956
## 402	B	0.475305560	0.592880445	0.378616699	0.5853700745
## 403	M	0.866900588	0.253427327	0.840775997	0.8587322160
## 404	M	0.688128945	0.248777285	0.497963268	0.7018757689
## 405	B	1.201742714	0.216226986	1.144080896	1.5543564598
## 406	M	0.191541046	0.018600171	0.172846754	0.0778599031
## 407	B	0.075197596	0.106950982	0.098769574	0.0380774709
## 408	B	0.364637400	0.281327584	0.325116514	0.4603395731
## 409	M	0.188703401	2.576123659	0.353924306	0.1960705589
## 410	B	0.795959460	1.578689499	0.699617814	0.9348871577
## 411	B	0.872575878	0.160426473	0.731717926	0.8135507394
## 412	B	0.778933589	0.016275149	0.690975476	0.8161081815
## 413	B	0.438416173	0.830032623	0.436232284	0.4290819478

## 414	B	1.808998772	0.025575235	1.740813738	1.5938547318
## 415	B	1.635902419	0.378978481	1.559736186	2.1312017274
## 416	M	2.807849859	0.095325875	2.794355858	3.7452318356
## 417	B	0.009931758	0.155776431	0.008230798	0.0448973164
## 418	B	1.179041553	0.651005979	1.161365571	1.1292527553
## 419	M	0.949192297	0.427803929	0.949834068	0.9448327658
## 420	M	1.025808716	0.146476345	0.987695738	1.0062113756
## 421	B	1.105262779	0.425478908	1.167127130	1.0417314043
## 422	M	0.534896108	0.671931171	0.465040076	0.6251525067
## 423	B	0.375987980	0.897458242	0.390962896	0.4091907317
## 424	B	0.356124464	0.420828865	0.415655290	0.3247951433
## 425	B	0.625700752	1.111360207	0.634594511	0.6120811361
## 426	M	0.078035241	0.553355082	0.032923191	0.1051392852
## 427	B	0.319235077	0.104625961	0.246923934	0.4063491294
## 428	B	0.804472395	0.418503843	0.695502415	0.9718279877
## 429	B	0.344773884	0.792832281	0.374501301	0.3381506741
## 430	M	0.790284170	1.413612982	0.718960189	0.7763257492
## 431	M	0.461117334	0.267377456	0.535001858	0.4700010209
## 432	M	0.503682011	1.122985313	0.613194437	0.5683204606
## 433	B	0.637051332	0.995109139	0.666694623	0.6120811361
## 434	M	0.662590139	0.869557986	0.767933436	0.6626616571
## 435	B	0.529220817	0.578930317	0.428001486	0.5703095822
## 436	B	1.579149516	0.771907089	1.613236371	1.4233585937
## 437	M	1.068373393	1.188085911	1.172888688	1.0769672729
## 438	B	0.742044202	0.030225278	0.767521896	0.7817247936
## 439	B	0.035470564	0.711456534	0.000000000	0.0073881660
## 440	B	1.383352002	1.339212299	1.301700674	1.2926448877
## 441	B	1.686980032	0.134851238	1.559736186	2.1425681366
## 442	B	0.625700752	0.595205466	0.629656033	0.8098566564
## 443	M	0.810147685	0.446404100	0.806618186	0.9036295324
## 444	B	0.061009370	0.497554569	0.037038590	0.0556954051
## 445	M	0.299371562	0.174376601	0.300424120	0.3361615525
## 446	B	0.699479525	0.406878737	0.567925049	0.7405215602
## 447	B	0.954867587	1.025334417	0.937076331	0.9365921191
## 448	B	0.007094113	0.372003416	0.131692765	0.0031257625
## 449	B	0.682453654	0.381303502	0.679040820	0.7785990311
## 450	M	0.472467915	0.404553715	0.164615956	0.4503939651

## 451	B	0.166002240	0.102300940	0.419770688	0.1761793428
## 452	M	0.529220817	0.460354228	0.514424863	0.5202973817
## 453	M	0.086548177	0.585905381	0.057615585	0.0929203953
## 454	B	1.227281520	0.083700769	1.098811508	1.1713084694
## 455	B	0.588811365	0.474304356	0.613194437	0.6336773136
## 456	B	0.523545527	0.776557132	0.749002601	0.5427460399
## 457	B	0.526383172	0.239477199	0.547348055	0.6137860975
## 458	M	3.060400276	0.695181384	3.057741388	4.4527908091
## 459	B	0.205729272	1.539164136	0.242808535	0.2099944102
## 460	B	0.205729272	1.234586338	0.246923934	0.2102785704
## 461	M	0.038308209	0.141826303	0.107000372	0.0105139285
## 462	M	0.889601749	0.546380018	0.877814587	0.9130068200
## 463	B	0.727855977	0.279002562	0.670810022	0.8013318495
## 464	B	1.025808716	0.488254484	1.016503530	1.2275721950
## 465	M	1.008782845	0.192976772	0.969999522	0.9749537502
## 466	B	1.329436745	0.102300940	1.358081639	1.5628812667
## 467	B	2.072899770	0.032550299	2.111199639	2.5830164936
## 468	M	0.915140555	0.139501281	0.971234142	1.0684424660
## 469	B	0.705154816	0.160426473	0.650233027	0.9320455554
## 470	B	0.305046852	0.453379164	0.181077552	0.3301941876
## 471	B	0.529220817	1.283411787	0.497963268	0.6393605182
## 472	B	1.113775715	0.218552007	1.051895961	1.0664533444
## 473	B	0.446929108	0.281327584	0.477386273	0.4850615132
## 474	M	0.903789975	1.476388559	0.831310579	1.0997000913
## 475	B	0.597324300	2.129719559	0.444463082	0.6112286554
## 476	M	0.892439394	0.183676687	0.843656776	1.0428680453
## 477	B	0.007094113	1.018359353	0.049384787	0.0107980888
## 478	M	1.147827456	0.274352520	1.106219226	1.0991317709
## 479	B	0.841361782	1.655415203	0.860118371	1.0371848407
## 480	M	1.669954161	1.281086765	1.617351770	2.0971024997
## 481	B	0.166002240	0.030225278	0.168731355	0.1776001439
## 482	M	0.832848847	0.365028352	0.749002601	0.9434119647
## 483	M	0.322072723	0.683556278	0.283962525	0.4063491294
## 484	B	0.438416173	0.337128096	0.349808907	0.4245353841
## 485	B	1.755083515	0.653331000	1.683198153	2.3159058771
## 486	M	0.673940719	0.904433306	0.714021710	0.7214828248
## 487	B	0.410039722	0.006975064	0.358039705	0.4546563685

## 488	M	0.480980850	0.727731683	0.321001115	0.4091907317
## 489	B	0.302209207	0.097650897	0.275731727	0.2989365623
## 490	M	0.330585658	0.018600171	0.329231913	0.3472438014
## 491	M	0.645564268	0.555680103	0.697148575	0.6538526900
## 492	M	0.069522306	1.490338687	0.032923191	0.0656410132
## 493	M	0.722180686	0.576605295	0.691387016	0.7493305273
## 494	B	0.262482175	0.344103160	0.222231541	0.3068930487
## 495	B	0.895277039	0.000000000	0.753118000	1.0627592614
## 496	B	0.418552657	0.578930317	0.432116885	0.4242512239
## 497	B	0.100736402	0.167401537	0.131692765	0.0900787930
## 498	M	0.602999591	0.495229548	0.506194066	0.6734597459
## 499	M	0.807310040	0.000000000	0.821022082	0.8064467336
## 500	M	0.339098593	0.832357644	0.296308721	0.3546319674
## 501	M	1.255657971	0.109276004	1.362197038	1.5884556875
## 502	M	1.054185167	0.818407516	1.076176814	0.9925716845
## 503	M	0.120599918	1.527539029	0.127577366	0.1409434742
## 504	B	0.520707882	1.195060975	0.493847869	0.5853700745
## 505	B	0.554759623	0.302252776	0.576155847	0.5791185494
## 506	B	0.668265429	0.051150470	0.646117628	0.7444998034
## 507	B	0.551921978	1.164835698	0.563809650	0.6535685297
## 508	B	0.940679362	0.955583776	0.847772175	1.1451657282
## 509	M	0.883926459	0.074400683	0.806618186	1.0258184314
## 510	M	0.696641880	1.113685228	0.640356070	0.7089797746
## 511	B	0.600161946	0.613805637	0.572040448	0.6677765412
## 512	M	0.815822976	1.248536466	0.802502787	0.8581638956
## 513	M	1.567798936	1.134610420	1.449031955	1.4208011516
## 514	B	0.631376042	0.130201196	0.697148575	0.6228792249
## 515	M	1.318086164	0.553355082	1.296762195	1.2304137973
## 516	M	0.568947849	0.974183947	0.452693880	0.6214584237
## 517	M	1.054185167	0.750981897	1.088111471	1.0212718678
## 518	M	0.279508046	0.204601879	0.271616328	0.3409922764
## 519	M	0.330585658	0.916058413	0.292193322	0.3864579132
## 520	B	0.421390302	0.344103160	0.275731727	0.4830723915
## 521	B	0.642726623	0.378978481	0.572040448	0.6433387614
## 522	B	0.038308209	4.143188051	0.032923191	0.0323942663
## 523	M	0.069522306	1.322937150	0.123461967	0.0031257625
## 524	B	1.414566099	1.255511530	1.360139339	1.2917924070

## 525	B	0.631376042	0.406878737	0.604963639	0.6876677574
## 526	B	0.966218168	2.245970627	0.884810765	1.3838603216
## 527	B	2.864602762	1.118335271	2.991895005	4.4584740137
## 528	M	0.424227947	0.118576089	0.390962896	0.5058052100
## 529	B	0.052496435	1.176460804	0.074077180	0.0548429245
## 530	B	0.200053982	1.071834844	0.135808164	0.1648129336
## 531	B	0.625700752	2.559848509	0.567925049	0.8269062702
## 532	B	0.253969239	0.602180530	0.185192951	0.2699522188
## 533	B	1.071211038	0.218552007	0.983580339	1.2844042410
## 534	M	0.994594619	0.704481470	0.900037741	0.9550625341
## 535	M	0.824335911	0.392928609	0.811556664	0.8226438668
## 536	B	0.370312690	0.848632794	0.436232284	0.4432899593
## 537	B	0.446929108	0.520804783	0.292193322	0.4927338394
## 538	B	1.403215518	0.416178822	1.588543978	1.6396045289
## 539	B	1.772109386	0.611480616	1.683198153	1.6208499537
## 540	B	0.194378692	0.209251922	0.172846754	0.2131201727
## 541	M	0.929328781	1.829791805	1.065888317	0.9462535670
## 542	B	0.529220817	2.225045435	0.481501672	0.5543966093
## 543	B	1.179041553	0.081375747	1.184411805	1.1380617224
## 544	M	0.631376042	1.699590609	0.798387388	0.7814406334
## 545	M	0.509357301	2.813275837	0.432116885	0.5316637909
## 546	B	0.180190466	0.292952690	0.292193322	0.2114152114
## 547	B	0.370312690	0.413853801	0.473270874	0.3813430291
## 548	B	0.339098593	0.181351666	0.251039333	0.3785014268
## 549	B	1.020133425	0.843982751	1.185234885	1.1792649558
## 550	B	0.517870237	0.088350811	0.465040076	0.3662825369
## 551	B	0.171677531	0.702156449	0.041153989	0.1901031941
## 552	B	1.556448355	0.641705893	1.492655183	1.3963633718
## 553	M	0.276670400	0.425478908	0.214000743	0.2602907710
## 554	B	1.275521487	0.202276858	1.190996444	1.2184790676
## 555	B	0.920815846	0.857932879	0.769579596	1.1195913074
## 556	M	0.671103074	0.048825448	0.650233027	0.7700742242
## 557	B	0.253969239	0.641705893	0.251039333	0.2870018326
## 558	B	0.622863107	1.941392830	0.719783269	0.6038404894
## 559	B	0.177352821	0.337128096	0.000000000	0.1420801152
## 560	B	0.245456304	0.313877883	0.201654546	0.2816027882
## 561	M	0.699479525	0.850957815	0.666694623	0.7388165988

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## 562      B 0.089385822  0.279002562    0.185192951 0.0787123838
## 563      B 0.855550008  0.011625107    0.893041563 0.9434119647
## 564      B 0.810147685  0.583580360    1.214042677 0.8894215209
## 565      B 1.380514357  0.599855509    1.244085089 1.2960548105
## 566      B 1.215930939  0.190651751    1.242850470 1.3497610940
## 567      M 0.872575878  0.060450555    0.846537555 0.8496390886
## 568      B 0.580298430  0.220877029    0.628832953 0.6291307499
## 569      M 1.147827456  1.478713580    1.115273104 1.2900874456
##      smoothness_mean compactness_mean concavity_mean  points_mean
## 1      0.856078662      0.1037628068    0.0348721359 0.3494589134
## 2      0.435149619      0.7462212076    0.3359265462 0.0767984928
## 3      1.204482769      0.0520707516    0.0831662808 0.0350489766
## 4      1.823077815      0.7253929069    0.1161568266 0.6319124304
## 5      0.791375042      0.1126621717    0.0396388307 0.0806641887
## 6      0.376845258      0.0365442002    0.2227802636 0.2360651657
## 7      0.131540326      0.5076424911    0.9296309311 0.4538327039
## 8      0.649169284      0.1986262489    0.0895636871 0.2945660310
## 9      0.891630102      0.2968979583    0.2117416019 0.2569399238
## 10     0.300054149      0.1609459595    0.0220773234 0.0033502698
## 11     0.285122544      0.6363992587    0.8957623100 0.3004934314
## 12     0.722405250      0.7081622219    0.4565741011 0.4966903862
## 13     0.428750360      1.0927283910    0.8255162809 0.3587365836
## 14     0.274457113      0.3660100468    0.4297551707 0.9249321829
## 15     0.856078662      0.0255620053    0.0647266982 0.0610779959
## 16     1.126269602      0.3749094116    0.1071251943 0.1386496279
## 17     0.496298095      0.2628152845    0.0125439338 0.2306531913
## 18     2.335018544      1.5130813676    0.1011041061 0.5636184687
## 19     0.685431753      0.0130650249    0.1549175820 0.1515352810
## 20     1.723533785      1.9959192462    0.9622451589 1.5952438597
## 21     1.524445724      1.0416043803    0.3470906472 0.1865842576
## 22     0.813416935      0.1204254474    0.0332414245 0.1123628954
## 23     0.423062130      0.3217025708    0.5911955982 0.0134010793
## 24     0.809861791      0.3470752280    0.1916713079 0.2244680778
## 25     0.514784843      0.7183870240    0.4080667092 0.3765445563
## 26     0.278012257      0.1899162322    0.0624687901 0.0796333365
## 27     0.537537765      0.2630046327    0.5661077307 0.5167146912
## 28     0.574511262      0.0035976156    0.0677372423 0.0327295590

```

## 29	1.737754361	1.0283500072	0.0001254393	0.1698329085
## 30	0.274457113	0.4612521851	0.0036377408	0.0633974135
## 31	1.598392718	0.4184594947	0.1862774164	0.2590016283
## 32	0.657701630	0.6996415534	0.2935280500	0.2510125233
## 33	1.076497587	0.7462212076	0.6110150136	0.7826745722
## 34	0.444392993	0.4943881180	0.3914961727	0.1945733625
## 35	0.501275296	0.6496536319	0.3507283880	0.3700759584
## 36	0.007821317	0.2455845994	0.1073760730	0.1819454224
## 37	0.606507557	0.5417251649	0.9183413908	0.5319197619
## 38	1.211593057	1.4808921757	1.0011313536	1.1965617513
## 39	0.694675127	0.4036903361	0.3784504816	0.0760253536
## 40	0.135806499	0.5366127638	0.4452218410	0.5421251992
## 41	0.742314056	0.4962815999	0.2083547398	0.1231868441
## 42	0.448659166	0.4799976557	0.0194430973	0.0288638631
## 43	1.036679975	0.7600436253	0.2837437817	0.1203520004
## 44	0.312852667	0.0301063618	0.0965882900	0.3522937571
## 45	0.770755207	0.3643059131	0.0615907148	0.0481923428
## 46	0.706762616	0.0384376821	0.1502763265	0.1466387328
## 47	0.634237680	2.3083437558	2.0121724149	0.6607762934
## 48	0.880253641	0.2484248222	0.0923233525	0.4726457575
## 49	1.159687955	0.0579405454	0.1807580855	0.1100434779
## 50	0.216152752	0.3627911276	0.2892631126	0.3610560012
## 51	0.666233975	0.5354766747	0.0000000000	0.0293792892
## 52	0.200510119	0.0793368906	0.0430256928	0.0525734648
## 53	0.553891427	0.0674079548	0.1388613468	0.3703336715
## 54	0.708184674	0.0522600998	0.0169343106	0.1778220134
## 55	0.351248222	0.2188865049	0.0457853582	0.0206170450
## 56	1.595548603	1.1097697279	0.7848739355	1.2164056571
## 57	2.342128831	0.6780558600	0.5257162640	0.8262280798
## 58	1.508092062	0.7195231131	0.1817616002	0.3022974228
## 59	0.051905102	0.2313834853	0.0942049426	0.0780870581
## 60	0.120163865	0.0195028633	0.1116410105	0.2370960179
## 61	0.597264183	0.6004231031	0.2102363299	0.3708490976
## 62	0.239616702	0.7110024447	0.3499381202	0.2613210458
## 63	0.105232261	0.0191241670	0.0125439338	0.0064428266
## 64	0.502697354	0.4650391489	0.3139746621	0.1499890026
## 65	1.226524661	0.0700588294	0.0436528895	0.1188057220



## 66	0.500564268	0.3573000301	0.1280735637	0.0164936360
## 67	1.090718163	0.1842357866	0.2434777543	0.1105589040
## 68	1.240034208	1.0150956341	0.5944570210	0.1347839319
## 69	1.511647206	0.9817703530	0.4652545033	0.6040794196
## 70	0.538959822	0.0149585068	0.0556950659	0.1059200689
## 71	1.323224577	0.5689913039	0.0786504647	0.3193064850
## 72	0.984063844	0.1323543832	0.2005775009	0.0966423986
## 73	0.224685097	0.5398316830	0.8267706743	0.5275386399
## 74	1.339578239	0.7556886170	0.5602120818	0.0458729252
## 75	0.628549450	0.1755257700	0.2710744086	0.3937855602
## 76	0.784975783	0.2936790391	0.3529235764	0.3267801638
## 77	1.666651482	0.5000685636	0.4216016138	0.2940506048
## 78	0.233928472	1.0453913441	1.1917991468	0.0453574991
## 79	0.312141638	0.4852994050	0.2574015208	0.3167293544
## 80	1.240034208	1.0434978622	0.7393394560	0.8398868722
## 81	0.206909378	0.2637620254	0.2871306438	0.3100288147
## 82	1.139068120	0.3485900135	0.2176372508	0.2657021679
## 83	0.000000000	0.3110990723	0.1407429368	0.0056696874
## 84	0.158559420	0.0312424510	0.0457853582	0.2169943990
## 85	0.013509547	0.7462212076	0.7461131802	0.6360358394
## 86	0.287966660	0.1234550184	0.0905672018	0.2399308616
## 87	2.036386452	0.6023165850	0.0444055255	0.4958399331
## 88	0.934291829	0.0191241670	0.4652545033	0.6040794196
## 89	0.167091765	0.4332286534	0.2178881295	0.0981886770
## 90	0.579488463	0.5260092653	0.2178881295	0.2564244976
## 91	0.706762616	0.3724478851	0.1700957418	0.2038510328
## 92	0.433727561	0.1777979482	0.2700708939	0.6419632398
## 93	1.080052731	0.7715938647	0.2969149122	0.1662249256
## 94	0.425906245	0.1351946060	0.1337183339	0.1090126256
## 95	0.401731266	0.6996415534	0.4091454875	0.4385503192
## 96	1.190262193	0.1522359429	0.3531869990	0.0971578247
## 97	0.283700487	0.3749094116	0.1486456151	0.1917385188
## 98	0.254548307	0.4799976557	0.3383098936	0.4624660915
## 99	0.226818184	1.7478731203	1.2432292752	1.0973422221
## 100	0.720983192	0.2978446992	0.1253138983	0.2417348531
## 101	0.802040474	0.6583636485	0.2147521460	0.2850306476
## 102	0.664100889	0.5807308916	0.2152539034	0.3177602066



## 103	0.230373328	0.0319998437	0.1307077898	0.2680215855
## 104	1.223680546	0.4684474163	0.0561968233	0.0783447711
## 105	0.750846401	0.8105995914	0.6980699139	0.8360211762
## 106	0.236772587	0.3857022583	0.2768446181	0.0659745441
## 107	1.472540622	0.8355935522	0.4190802831	0.5146014441
## 108	0.590153895	0.0179880778	0.2527602653	0.5821738092
## 109	0.218996867	0.1834783938	0.7004532613	0.2935351787
## 110	0.804884589	0.2183184604	0.1038637716	0.2615787589
## 111	0.796352244	0.1382241770	0.0455344796	0.0520580387
## 112	0.610062701	0.3819152945	0.0225790808	0.0074736788
## 113	0.949223433	0.5227903461	0.1250630196	0.4173405341
## 114	0.755823603	0.6610145231	0.1663325617	0.1479272981
## 115	0.362624682	0.1056562887	0.0599600034	0.4543481300
## 116	0.086745512	0.2476674295	0.3319124874	0.1100434779
## 117	1.040946147	0.1420111407	0.4024595708	0.4086556039
## 118	0.396754064	0.5316897110	0.3102114819	0.2512702364
## 119	0.027730123	0.5377488530	0.3268949139	0.2414771400
## 120	0.145049873	0.4330393052	0.1383595894	0.1412267585
## 121	0.695386156	0.1931351514	0.2295539879	0.2260143562
## 122	0.072524936	0.2039279981	0.0761416779	0.1579781076
## 123	1.190262193	0.7291798707	0.0617161541	0.2082321549
## 124	0.688275868	0.0556683672	0.3926251268	0.0489654820
## 125	0.195532917	0.3381758632	0.0119167371	0.2422502792
## 126	0.398887151	0.5152164186	0.3951339135	0.3948164124
## 127	0.609351672	0.8636170839	0.8706744425	0.9476109325
## 128	1.723533785	0.0469583505	0.0372554833	0.2334880350
## 129	0.403864352	0.3169688661	0.0429002535	0.1461233067
## 130	1.208748942	0.7412981547	0.4306583339	0.4901960170
## 131	0.894474217	0.3883531329	0.9333941113	0.2695678639
## 132	0.506963527	0.1980582043	0.1716010139	0.1340107927
## 133	0.706762616	0.5985296212	0.1763677087	0.1992121977
## 134	1.609769179	0.1007332358	0.3292782613	0.2716295684
## 135	1.545776588	0.6894167513	0.0214501267	0.1677712040
## 136	0.103099174	0.6723754144	0.1698448631	0.1840071269
## 137	0.420218014	0.1635968341	0.3036886364	0.1082394864
## 138	0.206909378	0.3285191056	0.1692176665	0.0149473577
## 139	1.382239966	0.3470752280	0.1106374958	0.0286061500

## 140	0.201932176	0.6110266016	0.4652545033	0.6040794196
## 141	1.183151905	0.3184836516	0.4652545033	0.6040794196
## 142	2.470114013	2.7476315512	1.0249648277	1.2097051175
## 143	0.547492168	0.5814882843	0.4530404750	0.5282860078
## 144	0.199799090	0.1978688561	0.4328911541	0.0842721716
## 145	0.280145343	0.5600919391	0.2007029402	0.0747367883
## 146	0.880964670	2.8025425256	3.3016888057	1.4055670454
## 147	0.568823031	0.6239022783	0.2147521460	0.2177675382
## 148	1.567107451	0.3283297574	0.0715004224	0.2030778936
## 149	0.912960965	0.0195028633	0.1435026022	0.2149326945
## 150	0.413107726	0.0558577154	0.1668343190	0.1878728229
## 151	1.154710754	0.2950044764	0.1407429368	0.1870996837
## 152	1.723533785	0.1272419821	0.0530608398	0.1082394864
## 153	0.787108870	0.2794779250	0.0032614228	0.4719241609
## 154	0.415951842	0.4731811210	0.1721027712	0.3562883095
## 155	0.681876609	0.6848723948	0.4342709869	0.4711252504
## 156	0.169935881	0.9033802033	0.8004284134	0.3984243953
## 157	0.338449704	0.3003062256	0.2660568351	0.4515906002
## 158	0.454347396	0.2043066945	0.0434020108	0.1028275121
## 159	0.573800233	1.1571067748	0.5032626226	0.9787942131
## 160	0.505541469	0.6837363057	0.7979196266	0.1064354950
## 161	2.420341998	0.4214890657	0.8016828068	1.1006924919
## 162	0.969843268	0.2594070171	0.2084801791	0.2801340994
## 163	0.489187807	0.0513133589	0.6407441366	0.1497312896
## 164	0.155004276	0.4195955839	0.1161568266	0.0628819874
## 165	0.536826736	0.4345540907	0.0070246029	0.1340107927
## 166	0.499853239	0.1136089126	0.3706732427	0.6280467344
## 167	0.863188950	0.4220571103	0.1347218486	0.2530742278
## 168	0.032707324	0.0244259162	0.2872560832	0.1015389468
## 169	0.771466236	0.4171340574	0.0895636871	0.0706133792
## 170	0.726671422	0.3071227604	0.2590322322	0.3280687291
## 171	0.502697354	1.4733182482	0.6142764364	0.1360724972
## 172	0.628549450	0.4409919291	0.2502514786	0.2791032472
## 173	0.733781710	0.2586496243	0.4617422018	0.4481630165
## 174	0.733070682	0.4105068709	0.1289516391	0.2337457481
## 175	0.068258764	0.1325437314	0.0422730568	0.0185553405
## 176	0.363335711	0.1545081211	0.3907435367	0.6718579551

## 177	1.169642358	0.6252277157	0.4652545033	0.6040794196
## 178	0.695386156	0.5019620455	0.4652545033	0.6040794196
## 179	0.401731266	0.5900089528	0.4016943909	0.4581107407
## 180	0.490609865	0.3285191056	0.3710495607	0.3853325717
## 181	0.246726990	0.1702240207	0.1249375803	0.3574480183
## 182	0.309297523	0.1573483439	0.1860265377	0.1151977391
## 183	1.197372481	1.1003023185	0.5403926665	0.7035566619
## 184	0.677610436	0.4843526640	0.4652545033	0.6040794196
## 185	0.550336283	0.2186971568	0.1446315563	0.0806641887
## 186	0.110209462	0.0670292584	0.0856750676	0.0816950410
## 187	1.368019390	0.2802353177	0.0090316323	0.1170017306
## 188	1.777571973	0.4372049653	0.1547921426	0.2499816711
## 189	1.109915940	0.7216059432	0.4264937479	0.4342980537
## 190	0.570956118	0.2474780813	0.0518064464	0.0118548009
## 191	0.666945004	0.7840908451	0.6699715023	0.3138945107
## 192	1.019615284	0.8314278920	0.5206986905	0.5430014236
## 193	0.621439162	0.0810410243	0.1052436043	0.2102938594
## 194	2.256805377	0.0604020719	0.2784753295	1.3040280985
## 195	1.108493882	0.5307429700	0.3058211051	0.3162139282
## 196	0.348404107	0.1259165448	0.1398648615	0.0224210365
## 197	0.142916787	0.0475263951	0.1127699645	0.3051322665
## 198	0.311430610	1.4354486107	1.4715288697	0.6447980835
## 199	0.492031922	0.0605914201	0.0477923876	0.0865915892
## 200	0.817683108	0.7831441042	0.3331668807	0.3185333458
## 201	0.004266173	0.1105793416	0.2818621916	0.1154554522
## 202	1.616879466	0.0113608913	0.0718767405	0.0775716319
## 203	0.123719009	0.6488962391	0.4652545033	0.6040794196
## 204	0.042661727	0.0670292584	0.2398400135	0.0654591180
## 205	0.368312913	0.3395013005	0.1477675397	0.1664826387
## 206	0.954200635	0.8174161261	0.3243861271	0.4739085515
## 207	0.635659737	0.2459632958	0.2738340740	0.2095207202
## 208	1.166087214	0.9238298076	0.4502770463	0.4636515716
## 209	1.126269602	1.2498873868	3.4609967644	0.5234152309
## 210	0.962732980	1.0340304528	1.0287280079	0.9965764144
## 211	0.297921063	0.1840464384	0.2246618537	0.5628453295
## 212	0.366890855	1.0832609816	1.4765464432	0.1314336621
## 213	0.920071253	0.1656796642	0.0783995860	0.1458655936

## 214	0.556735542	0.0319998437	0.1269446097	0.0095353833
## 215	1.311137087	0.3705544033	0.2104872085	0.1244754094
## 216	0.870299238	0.3198090890	0.2172609328	0.4973862115
## 217	0.789241956	0.3688502696	0.2034626056	0.0793756234
## 218	0.677610436	0.3228386600	0.3118421933	0.0002577131
## 219	0.225396126	0.1806381710	0.1786256168	0.1146823130
## 220	0.969843268	0.0462009578	0.1928002619	0.2164789729
## 221	1.289806223	0.0562364117	0.2449830264	0.1010235207
## 222	0.145760902	0.1191000100	0.1304569111	0.2450851229
## 223	0.116608721	0.3643059131	0.0360010899	0.2736912729
## 224	0.979086643	0.7821973632	0.4652545033	0.6040794196
## 225	0.654146486	0.0024615264	0.2240346570	0.0969001117
## 226	0.976953556	0.0893723446	0.1529105526	0.1538546986
## 227	0.645614141	0.6950971969	0.3798303143	0.0644282657
## 228	0.776443438	0.5496777888	0.2719524840	0.3352846949
## 229	0.340582790	0.2953831728	0.2937789287	0.3745343944
## 230	1.780416088	0.6288253312	0.2783498902	0.2409617139
## 231	0.963444009	0.2313834853	0.2858762504	0.0422649423
## 232	0.542514966	0.6299614204	0.3679637530	0.3841213203
## 233	0.007821317	0.0585085900	0.0994733947	0.2105515724
## 234	0.350537193	0.3974418459	0.0932014279	0.0185553405
## 235	1.211593057	0.6600677822	0.3752768664	0.3079671102
## 236	0.569534060	0.0596446791	0.0496739777	0.1760180220
## 237	0.955622693	1.0302434891	0.2738340740	0.1381342017
## 238	0.215441723	0.6924463223	0.4466016738	0.5181836557
## 239	0.749424344	0.0528281444	0.0776469500	0.1507621418
## 240	0.278723285	0.2270284770	0.2969149122	0.0131433662
## 241	0.763644920	0.1386028734	0.1522833559	0.1208674265
## 242	1.005394708	0.1836677420	0.0743855272	0.0644282657
## 243	0.141494729	0.1016799768	0.0814101301	0.0242250279
## 244	1.140490178	0.1611353077	0.1771203447	0.1453501675
## 245	0.249571105	0.1546974693	0.2279232765	0.5718652867
## 246	1.156843840	0.7519016532	0.4652545033	0.6040794196
## 247	0.989041046	0.2783418359	0.2323136533	0.1600398121
## 248	0.142916787	0.0518814034	0.2454847837	0.1195788612
## 249	1.457609018	0.5108614103	0.2087310578	0.3848429169
## 250	1.282695936	0.7859843270	0.4249884759	0.5548562245

## 251	0.827637511	0.4218677621	0.3795919796	0.3995325615
## 252	0.295787976	0.1685198870	0.1729808466	0.0185553405
## 253	1.394327455	0.0386270303	0.5498006168	0.1175171567
## 254	0.563134801	0.8901258302	0.8016828068	0.1260216878
## 255	0.571667146	1.2972244337	0.3690425313	0.7867979812
## 256	0.211175550	0.1598098704	0.0247115495	0.0719019446
## 257	0.435149619	0.6517364619	0.2580287175	0.1744717436
## 258	0.224685097	1.1230241010	1.2582819957	0.4216185710
## 259	1.559286135	0.7036178654	0.2604120649	0.5235440874
## 260	0.912249936	0.4525421685	0.1828905543	0.4011303825
## 261	1.019615284	0.2715253011	0.0146764025	0.0659745441
## 262	0.898029361	0.6038313705	0.1836431903	0.1079817734
## 263	0.400309208	0.1211828401	0.0258405036	0.1368456364
## 264	0.479944433	0.7310733526	0.5391382731	0.4842428453
## 265	1.168931329	1.6020750158	4.6877934864	1.4207721161
## 266	0.482077519	0.4574652214	0.2166337361	0.1438038891
## 267	5.164913124	2.8139034169	0.7552702518	0.7494295871
## 268	0.012087489	0.1185319655	0.3100860426	0.0043811221
## 269	1.780416088	0.8579366383	0.3183650389	0.1435461761
## 270	0.108076376	0.0861534254	0.0455344796	0.1373610626
## 271	0.678321465	0.0047337047	0.4022212361	0.3164716413
## 272	0.460035627	0.0689227403	0.0554441872	0.1239599833
## 273	0.114475635	0.6818428238	0.7210253127	0.3270378769
## 274	0.165669708	0.4209210212	0.2438540723	0.1002503815
## 275	0.807017676	0.4095601299	0.0205720514	0.0085045311
## 276	0.480655461	0.4273588596	0.2067240284	0.4030890018
## 277	1.289806223	0.7348603163	0.3931268841	0.3592520098
## 278	0.357647481	0.7045646063	0.4262428693	0.1561741162
## 279	0.120874894	0.1480702828	0.0921979132	0.0255135932
## 280	1.161821041	0.7613690626	0.2605375042	0.7530375700
## 281	0.827637511	0.1963540706	0.0944558212	0.0690671009
## 282	0.734492739	0.1367093915	0.1239340656	0.0000000000
## 283	0.990463103	0.6886593585	0.4458615817	0.4599662748
## 284	0.204065262	0.7594755807	0.3671609412	0.2056550242
## 285	1.033835859	0.0365442002	0.3819251513	0.2907003350
## 286	1.751263908	0.5890622118	0.6357265631	0.0108239486
## 287	0.495587066	0.1119047789	0.1447569956	0.0425226554

## 288	0.635659737	0.5076424911	0.5993491552	0.8215892447
## 289	2.726084378	0.5568730199	0.3973918216	1.0854874212
## 290	0.044083785	0.6159496545	0.4652545033	0.6040794196
## 291	2.008656329	1.0586457172	0.4452469289	0.5563509603
## 292	0.774310351	0.0852066844	0.0204466120	0.0695825270
## 293	0.184156456	0.1535613802	0.3329160021	0.3479899489
## 294	1.040946147	1.0662196447	0.5057714093	0.1172594436
## 295	0.401731266	0.4313351715	0.4469278160	0.5200391897
## 296	1.090718163	0.6780558600	0.3784504816	0.4177528750
## 297	0.439415792	0.3093949386	0.0219518841	0.1546278378
## 298	0.232506414	0.1757151182	0.0748872846	0.1340107927
## 299	0.465723857	0.4122110045	0.2210241129	0.1043737905
## 300	0.066125677	0.7125172302	0.1438789203	0.1492158635
## 301	0.230373328	0.2895133789	0.1683395911	0.0085045311
## 302	1.522312638	0.6061035487	0.5311101555	0.1633900819
## 303	0.059726418	0.4343647425	0.2798551622	0.6378398308
## 304	1.375129678	0.6553340775	0.6438801200	0.8849866582
## 305	0.442970936	1.0245630434	1.1742376395	0.3535823224
## 306	1.077208616	0.7382685837	0.3610645894	0.3046168404
## 307	0.092433743	0.2406615465	0.0954593359	0.2139018423
## 308	1.237901122	0.4267908150	0.2394636955	0.2803918125
## 309	0.434438590	0.4209210212	0.1949327307	0.1144246000
## 310	2.384790559	0.2715253011	0.0889364904	0.3654628946
## 311	2.207033361	1.7194708922	0.1399903008	0.7625729533
## 312	0.692542041	0.4105068709	0.3066991805	0.1765334481
## 313	0.002133086	1.7175774103	2.3947623946	0.9269938874
## 314	1.901290982	1.3824311181	0.8142267405	0.8298360627
## 315	0.921493311	0.7488720822	0.4029487843	0.4382668349
## 316	1.882093205	0.9190961029	0.3743109835	0.4430087552
## 317	0.429461389	0.4758319956	0.0367537259	0.0507694734
## 318	1.190262193	0.9791194784	0.1077523910	0.1974082062
## 319	0.405286410	0.2238095578	0.0224536414	0.0564391608
## 320	0.671211177	1.3824311181	0.6266949308	0.7107726276
## 321	0.526161304	0.4924946361	0.3294037006	0.0324718459
## 322	0.632104594	0.5777013206	0.5388873944	0.3806421940
## 323	2.711152773	0.5996657103	0.4652545033	0.6040794196
## 324	1.865739543	0.0073845793	0.4652545033	0.6040794196

## 325	0.248149047	0.2480461258	0.0239589135	0.1878728229
## 326	0.834036770	0.0000000000	0.2168846148	0.0793756234
## 327	0.258103450	0.4773467811	0.1643255323	0.0440689338
## 328	0.543937024	0.3978205423	0.2797297229	0.4554047535
## 329	0.334894560	0.4887076724	0.3593837023	0.3729108021
## 330	0.290099746	0.8446822652	0.6953102485	0.2525588017
## 331	0.839013971	0.5693700003	0.2893885519	0.1311759490
## 332	0.025597036	0.1401176589	0.2666840318	0.1891613882
## 333	0.318540898	0.3892998738	0.0844206742	0.0170090622
## 334	0.186289543	0.4309564751	0.2666840318	0.3082248233
## 335	0.356936452	0.5019620455	0.0026342261	0.0064428266
## 336	0.066125677	0.0007573928	0.0610889574	0.2592593413
## 337	3.294907409	0.8939127940	0.0472906303	0.0198439058
## 338	0.485632663	0.6273105457	0.4419227865	0.5287241200
## 339	0.692542041	0.0783901497	0.3068246198	0.2644136026
## 340	0.274457113	0.9279954677	0.6966900812	0.0092776703
## 341	0.426617273	0.0800942834	0.1280735637	0.1450924544
## 342	0.606507557	0.7064580882	0.0944558212	0.5051176034
## 343	0.877409526	0.2959512173	0.3616416104	0.1043737905
## 344	1.084318903	0.1490170237	0.3031868790	0.1229291310
## 345	1.281273878	0.2773950949	0.0998497128	0.2249835040
## 346	1.176041617	0.4135364419	0.1973160781	0.5401665800
## 347	0.202643205	0.4400451881	0.1175366594	0.0711288054
## 348	0.191266744	0.2912175126	0.1343455306	0.0708710923
## 349	0.877409526	2.0508302206	1.3536158923	1.0195128770
## 350	0.699652329	0.3381758632	0.1688413484	0.0615934220
## 351	0.073235965	0.2577028834	0.0451581615	0.0216478973
## 352	0.286544602	0.1863186167	0.2151284640	0.1680289170
## 353	1.479650910	0.4366369208	0.0292273657	0.1564318292
## 354	1.609769179	0.2470993849	0.0114149797	0.2721449945
## 355	1.144756351	0.2906494681	0.1442552383	0.1355570711
## 356	0.573089204	0.3086375459	0.0160562352	0.0791179103
## 357	1.360909102	0.3243534455	0.3996497297	1.0697669243
## 358	2.140196655	0.8416526942	0.0558205052	0.1412267585
## 359	0.447948137	0.6068609415	0.8460883323	0.6654151285
## 360	0.071102879	0.6369673033	0.1774966627	0.1121051824
## 361	0.412396698	0.9741964255	0.9652557030	1.0751788986



## 362	0.106654318	0.0823664616	0.9214773742	0.9172007911
## 363	0.426617273	0.7072154809	0.2126196773	0.0316987067
## 364	0.828348539	1.4151883546	1.3075796554	1.5266921849
## 365	0.661967803	1.2885144170	0.7808598767	0.3587365836
## 366	0.861055864	0.5576304127	0.5437795286	0.1744717436
## 367	0.963444009	0.7674282046	0.8420742735	0.5288272052
## 368	0.312852667	0.9060310780	0.5450339220	0.1092703387
## 369	0.156426334	0.4459149819	0.0068991636	0.1816877094
## 370	0.696808213	0.6485175427	1.2474942127	1.0906416824
## 371	2.865446020	2.8695717840	1.1295812353	0.4875931151
## 372	2.025721020	0.8696762259	0.5149284810	0.7344822294
## 373	0.903006562	1.9682744108	2.3262725163	2.7065025871
## 374	0.028441152	0.3663887431	0.6565494931	0.7798397285
## 375	0.846124259	1.4399929672	2.5207034896	1.9514033127
## 376	3.021872354	2.9225892766	3.4552265549	2.9616385195
## 377	0.106654318	0.2243776024	0.1411192548	0.2154481206
## 378	0.809861791	1.6407020461	0.7444824688	0.3435315129
## 379	0.191977773	0.5292281845	0.8097109244	0.4643989394
## 380	0.113764606	0.3360930331	0.2113652839	0.5234152309
## 381	1.463297248	1.3640643439	1.5084080350	1.7001330763
## 382	0.362624682	1.5365605429	0.7068506675	0.2907003350
## 383	0.042661727	0.1297035085	0.5651042160	0.8218469578
## 384	1.160398984	0.9026228106	0.8738104259	0.7252045592
## 385	0.099544030	0.0369228966	0.3919979301	0.0505117603
## 386	0.563134801	0.5708847858	0.5224548412	0.0010308523
## 387	1.692248518	1.4426438418	1.3705502029	1.4898392169
## 388	0.376845258	2.0629485046	0.5864289034	0.5180032565
## 389	0.518339987	0.0899403891	0.3882347500	0.4089906309
## 390	0.291521804	2.5401059375	2.2898951084	2.5312577043
## 391	0.250993163	1.1427163125	0.9709004732	0.8682353091
## 392	0.227529213	0.4231931994	0.0708732258	0.0095353833
## 393	0.775021380	1.8357306794	0.7708247297	0.1554009770
## 394	1.343133383	0.4061518625	0.3882347500	0.7453061781
## 395	0.247438019	0.2224841205	0.4183401910	0.6824241907
## 396	0.981219729	0.4515954276	0.4735334995	0.1249908355
## 397	0.595131097	0.0331359328	0.3029360004	0.0162359230
## 398	0.803462532	0.0463903060	0.1586807621	0.2404462877



## 399	0.594420068	0.8848240809	0.4333929115	0.0420072293
## 400	2.673468247	0.8359722485	0.6993243073	0.2507548103
## 401	1.093562278	1.2495086904	0.8460883323	0.8651427523
## 402	1.424190665	0.9859360132	0.7355762758	0.7733969019
## 403	0.113764606	0.3209451781	0.0633468655	0.6414478137
## 404	0.194110859	1.7069739118	1.5297327224	0.2791032472
## 405	0.625705334	0.3114777687	1.1609410697	1.3560861373
## 406	0.703918501	0.2527798305	0.0144255238	0.1396804801
## 407	0.689697925	0.5065064020	0.0068991636	0.3365732602
## 408	0.554602456	0.4875715832	0.0294782443	0.2311686175
## 409	1.151866638	2.7502824258	1.8659101472	1.5674108489
## 410	0.312852667	0.5481630033	0.0921979132	0.2997202922
## 411	0.191977773	1.2960883446	0.7796054833	0.0064428266
## 412	0.227529213	1.0310008818	0.1110138138	0.0399455248
## 413	0.362624682	0.0596446791	0.6499012082	0.5210958133
## 414	1.457609018	0.1997623380	0.5889376902	0.7625729533
## 415	0.624283277	0.0918338710	0.2038389236	0.3613137143
## 416	0.511940728	1.1181010481	1.7028390083	2.6163030151
## 417	0.868166152	0.0956208348	0.6821391180	0.2888963436
## 418	0.966999153	0.1751470736	0.3606380957	0.3319344251
## 419	0.270190940	0.3607082975	0.4860774333	0.5579487813
## 420	1.187418078	0.6087544233	0.7236595388	0.6811356254
## 421	0.833325741	1.3154018597	1.1637007352	1.3375307967
## 422	0.220418925	0.1069817260	0.2389619382	0.0943229810
## 423	0.547492168	0.6863871803	0.5776481498	0.3767764980
## 424	0.748002286	0.9109541308	0.6731074857	0.5128489953
## 425	0.955622693	0.6905528404	0.9514573759	1.1723367234
## 426	0.846124259	0.4705302463	0.4973669737	0.5855240790
## 427	0.561712743	0.6676417097	0.4522088121	0.4589869651
## 428	1.564263336	0.8844453846	0.4497000254	0.2324571828
## 429	0.354803366	0.3531343700	0.7134989524	0.6919595740
## 430	0.831903683	0.5140803295	0.1574263687	0.3257493116
## 431	0.442970936	0.8399485605	1.0715028220	0.8862752235
## 432	1.372285563	0.8852027773	0.5312355948	1.5622565876
## 433	0.014220576	0.6562808184	0.3493485553	0.5347546056
## 434	0.592286981	1.5344777128	1.5977208433	1.4764381377
## 435	1.144756351	1.0347878456	0.6478941788	0.0278330108

## 436	0.179179255	1.3862180819	1.5617197534	1.3176868909
## 437	0.846124259	2.8563174109	1.2211519518	1.6318391146
## 438	0.817683108	0.0785794979	0.2765937395	0.1301450968
## 439	0.348404107	0.9590485705	0.2239092177	0.1762757351
## 440	1.820233700	0.7128959266	0.0809083728	0.1389073409
## 441	1.266342273	0.3379865150	0.2377075448	0.2767838296
## 442	0.910116850	0.6030739777	0.8573778727	0.5133644214
## 443	0.789241956	0.3133712506	0.7770966966	1.0210591554
## 444	0.890208044	0.2376319755	0.5989728372	0.2937928918
## 445	1.045212320	0.0085206684	0.0445309649	0.0360798288
## 446	0.156426334	1.2430708520	0.2301811845	0.0644282657
## 447	0.526161304	0.0842599435	0.6705986989	0.8715855789
## 448	1.107782853	1.3150231633	1.5358792499	1.4924163476
## 449	0.284411516	0.9950247262	1.1333444155	0.2865769260
## 450	0.618595047	3.3902793001	2.0854289880	1.3251605697
## 451	1.478939881	2.3715860505	2.1017361019	0.8638541870
## 452	0.497720152	0.1902949286	0.0595836854	0.1394227671
## 453	1.244300381	0.3266256237	1.1333444155	0.8767398402
## 454	1.784682261	1.1521837219	0.4333929115	0.1868419706
## 455	0.035551439	0.4440215001	0.6717276530	0.0664899702
## 456	0.341293819	2.1481551890	0.6917979470	0.6576837367
## 457	1.206615855	0.1978688561	0.5011301538	0.4783154448
## 458	0.853234547	0.3644952613	2.1167888224	1.8869750470
## 459	1.254965813	0.5689913039	0.7380850626	0.8571536474
## 460	0.305742379	1.5573888435	0.2138740707	0.5597527727
## 461	0.351248222	0.8028363157	0.7619185367	0.5414551453
## 462	0.538248793	0.0331359328	0.4998757604	0.5582064944
## 463	0.106654318	0.0255620053	0.1285753211	0.2069435896
## 464	0.106654318	0.5349086301	1.5033904614	1.1524928175
## 465	1.265631245	0.1069817260	0.1611895488	0.5417128583
## 466	0.291521804	1.1938403232	1.1722306101	1.6447247678
## 467	0.056882303	1.4816495685	0.9991243242	1.5674108489
## 468	0.170646909	0.7867417197	0.7168858145	1.1834183851
## 469	0.276590199	0.5614173764	0.0432765715	0.2242103648
## 470	0.028441152	1.0783379287	0.9062992143	0.1458655936
## 471	1.085029932	0.2622472399	0.4020330771	0.2677638724
## 472	0.597264183	0.2755016130	0.0859259463	0.1175171567

## 473	0.021330864	0.2262710843	0.4597351724	0.5582064944
## 474	0.754401545	0.4724237282	0.0508029317	0.0742213621
## 475	0.184867485	1.4456734128	1.3001787345	0.2064281634
## 476	0.756534632	0.0198815597	0.0119167371	0.3922392818
## 477	0.099544030	0.5349086301	0.3104623606	0.0708710923
## 478	0.135095470	0.2130167111	0.6633232174	0.6365512655
## 479	0.135095470	0.0085206684	0.5851745100	0.4643989394
## 480	0.505541469	0.6788132528	0.5475427087	0.9643622816
## 481	0.433727561	0.0236685235	0.2076021038	0.6726310943
## 482	0.811994877	0.0198815597	0.0608380787	0.0141742185
## 483	0.246015961	0.5121868476	0.2239092177	0.0430380815
## 484	0.945668290	0.8113569841	0.7770966966	0.2193138166
## 485	0.334183531	0.0766860160	0.9966155374	1.4102058805
## 486	1.030991744	0.0350294147	0.0319870311	0.0010308523
## 487	0.784975783	0.1486383273	0.5688673961	0.6540757538
## 488	0.846835288	0.2224841205	0.0570748986	0.0920035635
## 489	1.016771168	0.0766860160	0.3581293089	0.1667403517
## 490	0.099544030	0.0747925341	0.5901920835	0.7770048848
## 491	0.714583933	0.8781968944	0.9594854935	1.1063621793
## 492	0.265213738	0.3152647325	0.6598109159	0.1739563175
## 493	1.066543184	0.2944364318	0.3092079672	0.1033429382
## 494	0.538248793	0.4421280182	0.4848230399	0.3164716413
## 495	1.326068692	0.9253445931	0.7643018842	0.6716002421
## 496	1.293361367	0.6087544233	0.6519082376	0.8411754375
## 497	0.661256774	0.6466240609	0.4283753380	0.4927473764
## 498	0.092433743	0.2565667943	0.1687159091	0.0095353833
## 499	0.551758340	0.6225768410	0.3882347500	0.9509612023
## 500	0.127985182	0.4459149819	0.2000757435	0.2257566431
## 501	0.582332578	1.2070946964	0.8548690859	0.5803698178
## 502	0.520473074	0.8944808385	0.8166100879	1.0666743676
## 503	0.158559420	0.0179880778	0.2314355779	0.0863338761
## 504	0.014220576	0.2452059030	0.5111653008	0.2669907332
## 505	0.725249365	0.5443760395	0.4910950068	0.2950814571
## 506	0.300765178	0.0293489691	0.4384104850	0.6190267772
## 507	0.582332578	0.7488720822	0.1800054495	0.2667330202
## 508	0.550336283	0.4686367645	0.0169343106	0.0806641887
## 509	0.760800804	0.3644952613	0.6693443056	0.2172521121

## 510	0.995440305	0.6163283508	0.2214004309	0.0760253536
## 511	0.476389289	0.2357384936	0.9313870819	0.8535456645
## 512	0.223974069	0.6541979884	0.1599351555	1.0365219392
## 513	0.490609865	0.7128959266	0.1825142362	0.3126059454
## 514	0.827637511	1.1652487469	1.2395915344	1.3643329553
## 515	0.711028789	0.1164491354	0.4835686465	0.4522864255
## 516	2.225520110	1.8186893425	1.1722306101	0.9772479347
## 517	0.684009695	1.0173678123	1.2355774756	1.4285035080
## 518	0.327073243	0.1429578817	0.0696188324	0.2120978508
## 519	0.071102879	0.0123076322	0.0282238510	0.1430307499
## 520	0.922204340	1.3918985275	0.8925008872	0.7177308803
## 521	0.120874894	0.4345540907	0.2339443647	0.0481923428
## 522	0.290099746	0.0482837879	0.1210489608	0.0471614905
## 523	0.228951270	0.4042583807	0.6353502451	0.5661955993
## 524	0.085323455	0.0558577154	0.5375075617	1.0478613140
## 525	0.085323455	0.0104141503	0.4296297314	0.4077020656
## 526	0.533982621	0.3417734787	0.1837686296	0.0046388351
## 527	0.440837849	1.2582187070	2.6611955477	2.1292253261
## 528	0.028441152	0.1240230629	0.1009786668	0.0298947153
## 529	1.166087214	1.8035414875	0.8975184607	1.3870117048
## 530	0.905139649	0.1732535917	0.5312355948	0.6118108115
## 531	1.279851820	0.3663887431	0.4622439592	0.5131067083
## 532	0.337027646	0.3910040075	0.4810598598	0.1747294567
## 533	0.381111431	0.2811820587	0.0733820125	0.7530375700
## 534	0.995440305	0.6769197709	0.1963125634	0.4816657147
## 535	0.332761473	0.3455604425	0.7208998733	0.7187617326
## 536	0.298632091	1.0669770375	1.0104138646	0.9824021960
## 537	1.571373624	1.9701678926	1.7567779235	0.9772479347
## 538	2.161527519	2.7351345708	3.4502089814	2.4745608305
## 539	1.379395851	1.5725366985	0.2201460375	0.5826892353
## 540	0.149316046	0.0653251247	0.4308841247	0.2231795125
## 541	1.109204911	2.7389215345	2.5094139492	1.6936902497
## 542	1.670917654	0.4383410544	0.6504029656	0.6035639934
## 543	0.359780567	0.5235477389	0.8625208855	0.8700393005
## 544	0.682587638	1.4002298478	0.3393134083	0.7246891330
## 545	0.291521804	0.5973935321	0.2979184269	0.0590162914
## 546	1.936131393	1.1593789531	1.4407962320	1.6290042709

```
## 547      1.432011981      1.2432602002      1.4847000001      1.3671677990
## 548      1.052322608      1.3225970908      0.2615410190      0.4257419800
## 549      0.547492168      1.7278022124      2.0829202013      1.5751422408
## 550      0.696808213      0.4686367645      0.0106623437      0.0378838203
## 551      0.970554297      1.1754735490      1.1836455898      1.0009575365
## 552      0.618595047      0.3644952613      0.3706732427      0.8880792149
## 553      0.339871761      0.3285191056      0.3731820294      0.0373683941
## 554      0.469279001      0.9003506323      0.2276723978      0.4553789822
## 555      1.241456266      1.0169891159      0.8084565310      0.4151757444
## 556      0.526161304      0.5216542570      0.5776481498      1.0726017680
## 557      0.895896274      0.3057973231      0.3242606878      0.5082101601
## 558      1.350954699      1.6340748595      1.3107156389      1.5176722277
## 559      1.292650339      1.2332247462      0.9836952857      0.7813860069
## 560      0.276590199      0.4402345363      0.3506029487      0.0613357090
## 561      0.049772015      0.5027194382      1.2939067676      0.7375747862
## 562      1.029569687      1.1230241010      1.0267209785      0.8344748978
## 563      1.052322608      1.0442552550      1.3189946351      1.6524561597
## 564      1.877116003      4.0340631382      2.8104683595      1.9101692226
## 565      1.166087214      2.0307593127      0.9527117693      0.0219056104
## 566      1.030991744      1.4456734128      1.6263210123      1.8019297362
## 567      0.282278429      0.4269801632      0.2439795117      0.7808705808
## 568      0.826926482      0.5140803295      1.2242879352      1.3826305828
## 569      0.149316046      0.3626017794      0.5249636280      1.0107506329
```

```
#install.packages("car")
library(car)
```

```
## Warning: package 'car' was built under R version 3.5.2
```

```
## Loading required package: carData
```

```
## Warning: package 'carData' was built under R version 3.5.2
```

```
#leveneTest() produces a two-sided test
```

```
# Levene test is used to verify Homoscedasticity. It tests if the variance of two samples are # equal. Levene's test is an inferential statistic used to assess the equality of variances for a #variable calculated for two or more groups.[1] Some common statistical procedures assume that #variances of the populations from which different samples are drawn are equal. Levene's test #assesses this assumption.
```

```
leveneTest(radius_mean ~ diagnosis, data=cancer)
```

```
## Levene's Test for Homogeneity of Variance (center = median)
```

```
##      Df F value    Pr(>F)
```

```
## group  1  90.477 < 2.2e-16 ***
```

```
##      567
```

```
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
leveneTest(texture_mean ~ diagnosis, data=cancer)
```

```
## Levene's Test for Homogeneity of Variance (center = median)
```

```
##      Df F value Pr(>F)
```

```
## group  1   0.684 0.4086
```

```
##      567
```

```
leveneTest(perimeter_mean ~ diagnosis, data=cancer)
```

```
## Levene's Test for Homogeneity of Variance (center = median)
```

```
##      Df F value    Pr(>F)
```

```
## group  1  91.237 < 2.2e-16 ***
```

```
##      567
```

```
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
leveneTest(area_mean ~ diagnosis, data=cancer)
```

```
## Levene's Test for Homogeneity of Variance (center = median)
##      Df F value    Pr(>F)
## group  1  170.21 < 2.2e-16 ***
##      567
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
leveneTest(smoothness_mean ~ diagnosis, data=cancer)
```

```
## Levene's Test for Homogeneity of Variance (center = median)
##      Df F value Pr(>F)
## group  1  0.8377 0.3604
##      567
```

```
leveneTest(compactness_mean~ diagnosis, data=cancer)
```

```
## Levene's Test for Homogeneity of Variance (center = median)
##      Df F value    Pr(>F)
## group  1  39.892 5.428e-10 ***
##      567
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
leveneTest(concavity_mean~ diagnosis, data=cancer)
```

```
## Levene's Test for Homogeneity of Variance (center = median)
##      Df F value    Pr(>F)
## group  1  70.484 3.723e-16 ***
##      567
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
leveneTest(points_mean ~ diagnosis, data=cancer)
```

```
## Levene's Test for Homogeneity of Variance (center = median)
##      Df F value    Pr(>F)
## group  1  94.906 < 2.2e-16 ***
##      567
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
leveneTest(symmetry_mean ~ diagnosis, data=cancer)
```

```
## Levene's Test for Homogeneity of Variance (center = median)
##      Df F value Pr(>F)
## group  1   2.036 0.1542
##      567
```

```
leveneTest(dimension_mean ~ diagnosis, data=cancer)
```

```
## Levene's Test for Homogeneity of Variance (center = median)
##      Df F value  Pr(>F)
## group  1   6.113 0.01371 *
##      567
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
#PCA
```

```
dim(cancer)
```

```
## [1] 569 32
```



```
attach(cancer)
head(cancer)
```

```
##      id diagnosis radius_mean texture_mean perimeter_mean area_mean
## 1 87139402      B      12.32      12.39      78.85      464.1
## 2 8910251      B      10.60      18.95      69.28      346.4
## 3 905520      B      11.04      16.83      70.92      373.2
## 4 868871      B      11.28      13.39      73.00      384.8
## 5 9012568      B      15.19      13.21      97.65      711.8
## 6 906539      B      11.57      19.04      74.20      409.7
## smoothness_mean compactness_mean concavity_mean points_mean
## 1      0.10280      0.06981      0.03987      0.03700
## 2      0.09688      0.11470      0.06387      0.02642
## 3      0.10770      0.07804      0.03046      0.02480
## 4      0.11640      0.11360      0.04635      0.04796
## 5      0.07963      0.06934      0.03393      0.02657
## 6      0.08546      0.07722      0.05485      0.01428
## symmetry_mean dimension_mean radius_se texture_se perimeter_se area_se
## 1      0.1959      0.05955      0.2360      0.6656      1.670      17.43
## 2      0.1922      0.06491      0.4505      1.1970      3.430      27.10
## 3      0.1714      0.06340      0.1967      1.3870      1.342      13.54
## 4      0.1771      0.06072      0.3384      1.3430      1.851      26.33
## 5      0.1721      0.05544      0.1783      0.4125      1.338      17.72
## 6      0.2031      0.06267      0.2864      1.4400      2.206      20.30
## smoothness_se compactness_se concavity_se points_se symmetry_se
## 1      0.008045      0.011800      0.01683      0.012410      0.01924
## 2      0.007470      0.035810      0.03354      0.013650      0.03504
## 3      0.005158      0.009355      0.01056      0.007483      0.01718
## 4      0.011270      0.034980      0.02187      0.019650      0.01580
## 5      0.005012      0.014850      0.01551      0.009155      0.01647
## 6      0.007278      0.020470      0.04447      0.008799      0.01868
## dimension_se radius_worst texture_worst perimeter_worst area_worst
## 1      0.002248      13.50      15.64      86.97      549.1
## 2      0.003318      11.88      22.94      78.28      424.8
## 3      0.002198      12.41      26.44      79.93      471.4
## 4      0.003442      11.92      15.77      76.53      434.0
```

```
## 5      0.001767      16.20      15.73      104.50      819.1
## 6      0.003339      13.07      26.98      86.43      520.5
## smoothness_worst compactness_worst concavity_worst points_worst
## 1      0.1385      0.1266      0.12420      0.09391
## 2      0.1213      0.2515      0.19160      0.07926
## 3      0.1369      0.1482      0.10670      0.07431
## 4      0.1367      0.1822      0.08669      0.08611
## 5      0.1126      0.1737      0.13620      0.08178
## 6      0.1249      0.1937      0.25600      0.06664
## symmetry_worst dimension_worst
## 1      0.2827      0.06771
## 2      0.2940      0.07587
## 3      0.2998      0.07881
## 4      0.2102      0.06784
## 5      0.2487      0.06766
## 6      0.3035      0.08284
```

```
#Get the Correlations between the measurements
cor(cancer[-2])
```

```
##              id radius_mean texture_mean perimeter_mean
## id          1.00000000000 0.074626470 0.099769891 0.073159412
## radius_mean 0.0746264697 1.000000000 0.323781891 0.997855281
## texture_mean 0.0997698912 0.323781891 1.000000000 0.329533059
## perimeter_mean 0.0731594119 0.997855281 0.329533059 1.000000000
## area_mean    0.0968928233 0.987357170 0.321085696 0.986506804
## smoothness_mean -0.0129681975 0.170581187 -0.023388516 0.207278164
## compactness_mean 0.0000957011 0.506123578 0.236702222 0.556936211
## concavity_mean 0.0500799532 0.676763550 0.302417828 0.716135650
## points_mean   0.0441580956 0.822528522 0.293464051 0.850977041
## symmetry_mean -0.0221140609 0.147741242 0.071400980 0.183027212
## dimension_mean -0.0525114476 -0.311630826 -0.076437183 -0.261476908
## radius_se     0.1430475814 0.679090388 0.275868676 0.691765014
## texture_se    -0.0075261904 -0.097317443 0.386357623 -0.086761078
## perimeter_se  0.1373310660 0.674171616 0.281673115 0.693134890
## area_se       0.1777419152 0.735863663 0.259844987 0.744982694
```

```

## smoothness_se      0.0967805739 -0.222600125  0.006613777  -0.202694026
## compactness_se     0.0339609721  0.205999980  0.191974611   0.250743681
## concavity_se       0.0552393174  0.194203623  0.143293077   0.228082345
## points_se          0.0787680711  0.376168956  0.163851025   0.407216916
## symmetry_se        -0.0173062948 -0.104320881  0.009127168  -0.081629327
## dimension_se       0.0257253243 -0.042641269  0.054457520  -0.005523391
## radius_worst       0.0824053373  0.969538973  0.352572947   0.969476363
## texture_worst      0.0647195454  0.297007644  0.912044589   0.303038372
## perimeter_worst    0.0799858731  0.965136514  0.358039575   0.970386887
## area_worst         0.1071865233  0.941082460  0.343545947   0.941549808
## smoothness_worst   0.0103380343  0.119616140  0.077503359   0.150549404
## compactness_worst  -0.0029680998  0.413462823  0.277829592   0.455774228
## concavity_worst    0.0232027439  0.526911462  0.301025224   0.563879263
## points_worst       0.0351735794  0.744214198  0.295315843   0.771240789
## symmetry_worst     -0.0442242529  0.163953335  0.105007910   0.189115040
## dimension_worst    -0.0298656360  0.007065886  0.119205351   0.051018530
##                    area_mean smoothness_mean compactness_mean
## id                 0.096892823   -0.01296820    0.0000957011
## radius_mean        0.987357170    0.17058119    0.5061235775
## texture_mean       0.321085696   -0.02338852    0.2367022221
## perimeter_mean     0.986506804    0.20727816    0.5569362109
## area_mean          1.000000000    0.17702838    0.4985016822
## smoothness_mean    0.177028377    1.000000000    0.6591232152
## compactness_mean   0.498501682    0.65912322    1.0000000000
## concavity_mean     0.685982829    0.52198377    0.8831206702
## points_mean        0.823268869    0.55369517    0.8311350431
## symmetry_mean      0.151293079    0.55777479    0.6026410484
## dimension_mean     -0.283109812    0.58479200    0.5653686634
## radius_se          0.732562227    0.30146710    0.4974734461
## texture_se         -0.066280214    0.06840645    0.0462048307
## perimeter_se       0.726628328    0.29609193    0.5489052646
## area_se            0.800085921    0.24655243    0.4556528520
## smoothness_se     -0.166776667    0.33237544    0.1352992677
## compactness_se     0.212582551    0.31894330    0.7387217897
## concavity_se       0.207660060    0.24839568    0.5705168715
## points_se          0.372320282    0.38067569    0.6422618510
## symmetry_se        -0.072496588    0.20077438    0.2299765908

```

## dimension_se	-0.019886963	0.28360670	0.5073181269	
## radius_worst	0.962746086	0.21312014	0.5353153982	
## texture_worst	0.287488627	0.03607180	0.2481328333	
## perimeter_worst	0.959119574	0.23885263	0.5902104277	
## area_worst	0.959213326	0.20671836	0.5096038056	
## smoothness_worst	0.123522939	0.80532420	0.5655411664	
## compactness_worst	0.390410309	0.47246844	0.8658090398	
## concavity_worst	0.512605920	0.43492571	0.8162752498	
## points_worst	0.722016626	0.50305335	0.8155732236	
## symmetry_worst	0.143569914	0.39430948	0.5102234299	
## dimension_worst	0.003737597	0.49931637	0.6873823228	
##	concavity_mean	points_mean	symmetry_mean	dimension_mean
## id	0.05007995	0.04415810	-0.02211406	-0.0525114476
## radius_mean	0.67676355	0.82252852	0.14774124	-0.3116308263
## texture_mean	0.30241783	0.29346405	0.07140098	-0.0764371834
## perimeter_mean	0.71613565	0.85097704	0.18302721	-0.2614769081
## area_mean	0.68598283	0.82326887	0.15129308	-0.2831098117
## smoothness_mean	0.52198377	0.55369517	0.55777479	0.5847920019
## compactness_mean	0.88312067	0.83113504	0.60264105	0.5653686634
## concavity_mean	1.00000000	0.92139103	0.50066662	0.3367833594
## points_mean	0.92139103	1.00000000	0.46249739	0.1669173832
## symmetry_mean	0.50066662	0.46249739	1.00000000	0.4799213301
## dimension_mean	0.33678336	0.16691738	0.47992133	1.0000000000
## radius_se	0.63192482	0.69804983	0.30337926	0.0001109951
## texture_se	0.07621835	0.02147958	0.12805293	0.1641739659
## perimeter_se	0.66039079	0.71064987	0.31389276	0.0398299316
## area_se	0.61742681	0.69029854	0.22397022	-0.0901702475
## smoothness_se	0.09856375	0.02765331	0.18732117	0.4019644254
## compactness_se	0.67027882	0.49042425	0.42165915	0.5598366906
## concavity_se	0.69127021	0.43916707	0.34262702	0.4466303217
## points_se	0.68325992	0.61563413	0.39329787	0.3411980444
## symmetry_se	0.17800921	0.09535079	0.44913654	0.3450073971
## dimension_se	0.44930075	0.25758375	0.33178615	0.6881315775
## radius_worst	0.68823641	0.83031763	0.18572775	-0.2536914949
## texture_worst	0.29987889	0.29275171	0.09065069	-0.0512692020
## perimeter_worst	0.72956492	0.85592313	0.21916856	-0.2051512113
## area_worst	0.67598723	0.80962962	0.17719338	-0.2318544512

```

## smoothness_worst      0.44882204  0.45275305   0.42667503   0.5049420754
## compactness_worst    0.75496802  0.66745368   0.47320001   0.4587981567
## concavity_worst      0.88410264  0.75239950   0.43372101   0.3462338763
## points_worst         0.86132303  0.91015531   0.43029661   0.1753254492
## symmetry_worst       0.40946413  0.37574415   0.69982580   0.3340186839
## dimension_worst      0.51492989  0.36866113   0.43841350   0.7672967792
##
##      radius_se texture_se perimeter_se      area_se
## id      0.1430475814 -0.00752619   0.13733107   0.17774192
## radius_mean  0.6790903880 -0.09731744   0.67417162   0.73586366
## texture_mean  0.2758686762  0.38635762   0.28167311   0.25984499
## perimeter_mean 0.6917650135 -0.08676108   0.69313489   0.74498269
## area_mean    0.7325622270 -0.06628021   0.72662833   0.80008592
## smoothness_mean 0.3014670983  0.06840645   0.29609193   0.24655243
## compactness_mean 0.4974734461  0.04620483   0.54890526   0.45565285
## concavity_mean 0.6319248221  0.07621835   0.66039079   0.61742681
## points_mean   0.6980498336  0.02147958   0.71064987   0.69029854
## symmetry_mean  0.3033792632  0.12805293   0.31389276   0.22397022
## dimension_mean 0.0001109951  0.16417397   0.03982993 -0.09017025
## radius_se     1.0000000000  0.21324734   0.97279368   0.95183011
## texture_se     0.2132473373  1.00000000   0.22317073   0.11156725
## perimeter_se   0.9727936770  0.22317073   1.00000000   0.93765541
## area_se        0.9518301121  0.11156725   0.93765541   1.00000000
## smoothness_se  0.1645142198  0.39724285   0.15107533   0.07515034
## compactness_se 0.3560645755  0.23169970   0.41632237   0.28484006
## concavity_se   0.3323575376  0.19499846   0.36248158   0.27089473
## points_se      0.5133464414  0.23028340   0.55626408   0.41572957
## symmetry_se     0.2405673625  0.41162068   0.26648709   0.13410898
## dimension_se    0.2277535327  0.27972275   0.24414277   0.12707090
## radius_worst   0.7150651951 -0.11169031   0.69720059   0.75737319
## texture_worst   0.1947985568  0.40900277   0.20037085   0.19649665
## perimeter_worst 0.7196838037 -0.10224192   0.72103131   0.76121264
## area_worst     0.7515484761 -0.08319499   0.73071297   0.81140796
## smoothness_worst 0.1419185529 -0.07365766   0.13005439   0.12538943
## compactness_worst 0.2871031656 -0.09243935   0.34191945   0.28325654
## concavity_worst 0.3805846346 -0.06895622   0.41889882   0.38510014
## points_worst    0.5310623278 -0.11963752   0.55489723   0.53816631
## symmetry_worst  0.0945428304 -0.12821476   0.10993043   0.07412629

```

```

## dimension_worst 0.0495594325 -0.04565457 0.08543257 0.01753930
## smoothness_se compactness_se concavity_se points_se
## id 0.096780574 0.03396097 0.05523932 0.07876807
## radius_mean -0.222600125 0.20599998 0.19420362 0.37616896
## texture_mean 0.006613777 0.19197461 0.14329308 0.16385103
## perimeter_mean -0.202694026 0.25074368 0.22808235 0.40721692
## area_mean -0.166776667 0.21258255 0.20766006 0.37232028
## smoothness_mean 0.332375443 0.31894330 0.24839568 0.38067569
## compactness_mean 0.135299268 0.73872179 0.57051687 0.64226185
## concavity_mean 0.098563746 0.67027882 0.69127021 0.68325992
## points_mean 0.027653308 0.49042425 0.43916707 0.61563413
## symmetry_mean 0.187321165 0.42165915 0.34262702 0.39329787
## dimension_mean 0.401964425 0.55983669 0.44663032 0.34119804
## radius_se 0.164514220 0.35606458 0.33235754 0.51334644
## texture_se 0.397242853 0.23169970 0.19499846 0.23028340
## perimeter_se 0.151075331 0.41632237 0.36248158 0.55626408
## area_se 0.075150338 0.28484006 0.27089473 0.41572957
## smoothness_se 1.000000000 0.33669608 0.26868476 0.32842950
## compactness_se 0.336696081 1.00000000 0.80126834 0.74408267
## concavity_se 0.268684760 0.80126834 1.00000000 0.77180399
## points_se 0.328429499 0.74408267 0.77180399 1.00000000
## symmetry_se 0.413506125 0.39471283 0.30942858 0.31278022
## dimension_se 0.427374207 0.80326882 0.72737218 0.61104414
## radius_worst -0.230690710 0.20460717 0.18690352 0.35812667
## texture_worst -0.074742965 0.14300258 0.10024098 0.08674121
## perimeter_worst -0.217303755 0.26051584 0.22668043 0.39499925
## area_worst -0.182195478 0.19937133 0.18835265 0.34227116
## smoothness_worst 0.314457456 0.22739423 0.16848132 0.21535060
## compactness_worst -0.055558139 0.67878035 0.48485780 0.45288838
## concavity_worst -0.058298387 0.63914670 0.66256413 0.54959238
## points_worst -0.102006796 0.48320833 0.44047226 0.60244961
## symmetry_worst -0.107342098 0.27787843 0.19778782 0.14311567
## dimension_worst 0.101480315 0.59097276 0.43932927 0.31065455
## symmetry_se dimension_se radius_worst texture_worst
## id -0.017306295 0.025725324 0.08240534 0.064719545
## radius_mean -0.104320881 -0.042641269 0.96953897 0.297007644
## texture_mean 0.009127168 0.054457520 0.35257295 0.912044589

```

```

## perimeter_mean      -0.081629327 -0.005523391  0.96947636  0.303038372
## area_mean           -0.072496588 -0.019886963  0.96274609  0.287488627
## smoothness_mean     0.200774376  0.283606699  0.21312014  0.036071799
## compactness_mean    0.229976591  0.507318127  0.53531540  0.248132833
## concavity_mean      0.178009208  0.449300749  0.68823641  0.299878889
## points_mean         0.095350787  0.257583746  0.83031763  0.292751713
## symmetry_mean       0.449136542  0.331786146  0.18572775  0.090650688
## dimension_mean      0.345007397  0.688131577 -0.25369149 -0.051269202
## radius_se           0.240567362  0.227753533  0.71506520  0.194798557
## texture_se          0.411620680  0.279722748 -0.11169031  0.409002766
## perimeter_se        0.266487092  0.244142773  0.69720059  0.200370854
## area_se             0.134108980  0.127070903  0.75737319  0.196496649
## smoothness_se       0.413506125  0.427374207 -0.23069071 -0.074742965
## compactness_se      0.394712835  0.803268818  0.20460717  0.143002583
## concavity_se        0.309428578  0.727372184  0.18690352  0.100240984
## points_se           0.312780223  0.611044139  0.35812667  0.086741210
## symmetry_se         1.000000000  0.369078083 -0.12812077 -0.077473420
## dimension_se        0.369078083  1.000000000 -0.03748762 -0.003195029
## radius_worst        -0.128120769 -0.037487618  1.00000000  0.359920754
## texture_worst       -0.077473420 -0.003195029  0.35992075  1.000000000
## perimeter_worst     -0.103753044 -0.001000398  0.99370792  0.365098245
## area_worst          -0.110342743 -0.022736147  0.98401456  0.345842283
## smoothness_worst    -0.012661800  0.170568316  0.21657443  0.225429415
## compactness_worst   0.060254879  0.390158842  0.47582004  0.360832339
## concavity_worst     0.037119049  0.379974661  0.57397471  0.368365607
## points_worst        -0.030413396  0.215204013  0.78742385  0.359754610
## symmetry_worst      0.389402485  0.111093956  0.24352920  0.233027461
## dimension_worst     0.078079476  0.591328066  0.09349198  0.219122425
##
## perimeter_worst      area_worst smoothness_worst
## id                   0.079985873  0.10718652  0.01033803
## radius_mean          0.965136514  0.94108246  0.11961614
## texture_mean         0.358039575  0.34354595  0.07750336
## perimeter_mean       0.970386887  0.94154981  0.15054940
## area_mean            0.959119574  0.95921333  0.12352294
## smoothness_mean      0.238852626  0.20671836  0.80532420
## compactness_mean     0.590210428  0.50960381  0.56554117
## concavity_mean       0.729564917  0.67598723  0.44882204

```



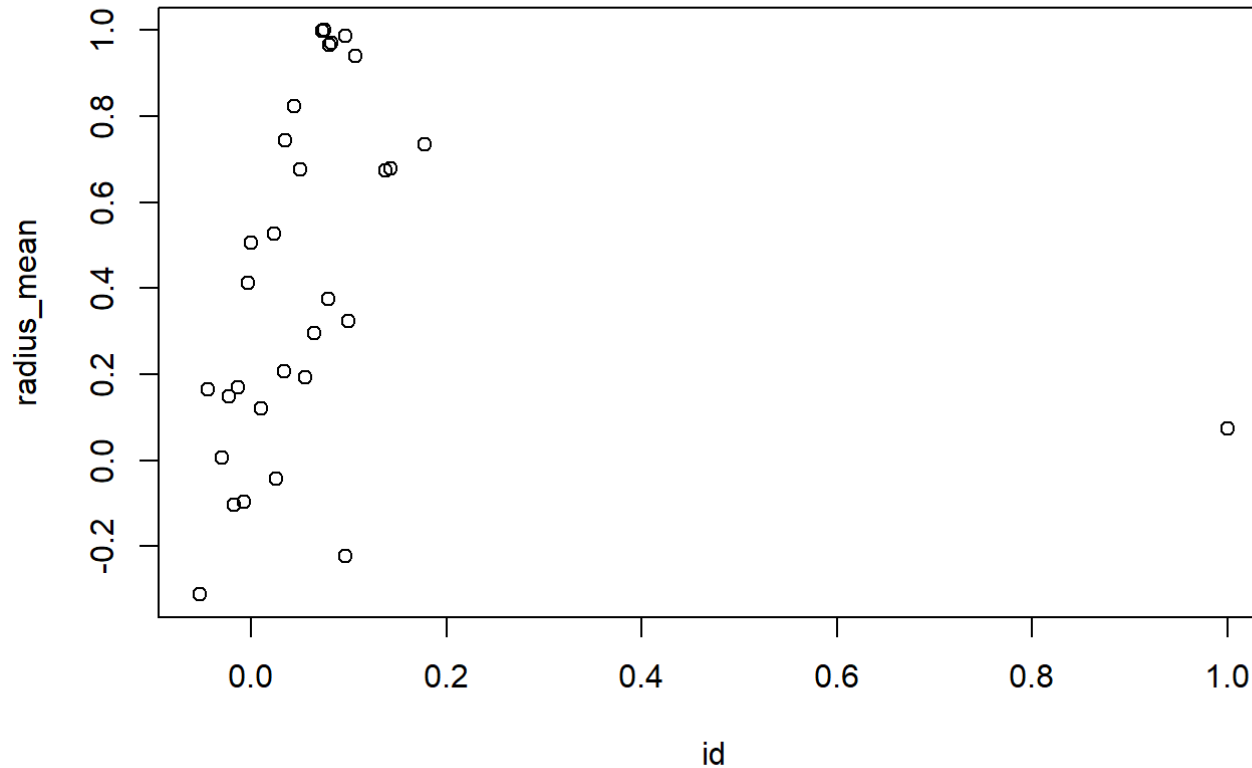
## points_mean	0.855923128	0.80962962	0.45275305
## symmetry_mean	0.219168559	0.17719338	0.42667503
## dimension_mean	-0.205151211	-0.23185445	0.50494208
## radius_se	0.719683804	0.75154848	0.14191855
## texture_se	-0.102241922	-0.08319499	-0.07365766
## perimeter_se	0.721031310	0.73071297	0.13005439
## area_se	0.761212636	0.81140796	0.12538943
## smoothness_se	-0.217303755	-0.18219548	0.31445746
## compactness_se	0.260515840	0.19937133	0.22739423
## concavity_se	0.226680426	0.18835265	0.16848132
## points_se	0.394999252	0.34227116	0.21535060
## symmetry_se	-0.103753044	-0.11034274	-0.01266180
## dimension_se	-0.001000398	-0.02273615	0.17056832
## radius_worst	0.993707916	0.98401456	0.21657443
## texture_worst	0.365098245	0.34584228	0.22542941
## perimeter_worst	1.000000000	0.97757809	0.23677460
## area_worst	0.977578091	1.000000000	0.20914533
## smoothness_worst	0.236774604	0.20914533	1.000000000
## compactness_worst	0.529407690	0.43829628	0.56818652
## concavity_worst	0.618344080	0.54333053	0.51852329
## points_worst	0.816322102	0.74741880	0.54769090
## symmetry_worst	0.269492769	0.20914551	0.49383833
## dimension_worst	0.138956862	0.07964703	0.61762419
##	compactness_worst	concavity_worst	points_worst
## id	-0.00296810	0.02320274	0.03517358
## radius_mean	0.41346282	0.52691146	0.74421420
## texture_mean	0.27782959	0.30102522	0.29531584
## perimeter_mean	0.45577423	0.56387926	0.77124079
## area_mean	0.39041031	0.51260592	0.72201663
## smoothness_mean	0.47246844	0.43492571	0.50305335
## compactness_mean	0.86580904	0.81627525	0.81557322
## concavity_mean	0.75496802	0.88410264	0.86132303
## points_mean	0.66745368	0.75239950	0.91015531
## symmetry_mean	0.47320001	0.43372101	0.43029661
## dimension_mean	0.45879816	0.34623388	0.17532545
## radius_se	0.28710317	0.38058463	0.53106233
## texture_se	-0.09243935	-0.06895622	-0.11963752



## perimeter_se	0.34191945	0.41889882	0.55489723
## area_se	0.28325654	0.38510014	0.53816631
## smoothness_se	-0.05555814	-0.05829839	-0.10200680
## compactness_se	0.67878035	0.63914670	0.48320833
## concavity_se	0.48485780	0.66256413	0.44047226
## points_se	0.45288838	0.54959238	0.60244961
## symmetry_se	0.06025488	0.03711905	-0.03041340
## dimension_se	0.39015884	0.37997466	0.21520401
## radius_worst	0.47582004	0.57397471	0.78742385
## texture_worst	0.36083234	0.36836561	0.35975461
## perimeter_worst	0.52940769	0.61834408	0.81632210
## area_worst	0.43829628	0.54333053	0.74741880
## smoothness_worst	0.56818652	0.51852329	0.54769090
## compactness_worst	1.00000000	0.89226090	0.80108036
## concavity_worst	0.89226090	1.00000000	0.85543386
## points_worst	0.80108036	0.85543386	1.00000000
## symmetry_worst	0.61444050	0.53251973	0.50252849
## dimension_worst	0.81045486	0.68651092	0.51111415
##	symmetry_worst	dimension_worst	
## id	-0.04422425	-0.029865636	
## radius_mean	0.16395333	0.007065886	
## texture_mean	0.10500791	0.119205351	
## perimeter_mean	0.18911504	0.051018530	
## area_mean	0.14356991	0.003737597	
## smoothness_mean	0.39430948	0.499316369	
## compactness_mean	0.51022343	0.687382323	
## concavity_mean	0.40946413	0.514929891	
## points_mean	0.37574415	0.368661134	
## symmetry_mean	0.69982580	0.438413498	
## dimension_mean	0.33401868	0.767296779	
## radius_se	0.09454283	0.049559432	
## texture_se	-0.12821476	-0.045654569	
## perimeter_se	0.10993043	0.085432572	
## area_se	0.07412629	0.017539295	
## smoothness_se	-0.10734210	0.101480315	
## compactness_se	0.27787843	0.590972763	
## concavity_se	0.19778782	0.439329269	

```
## points_se      0.14311567    0.310654551
## symmetry_se    0.38940248    0.078079476
## dimension_se   0.11109396    0.591328066
## radius_worst   0.24352920    0.093491979
## texture_worst  0.23302746    0.219122425
## perimeter_worst 0.26949277    0.138956862
## area_worst     0.20914551    0.079647034
## smoothness_worst 0.49383833    0.617624192
## compactness_worst 0.61444050    0.810454856
## concavity_worst 0.53251973    0.686510921
## points_worst   0.50252849    0.511114146
## symmetry_worst  1.00000000    0.537848206
## dimension_worst 0.53784821    1.000000000
```

```
c <- (cor(cancer[-2]))
plot(c)
```



```
# Using prcomp to compute the principal components (eigenvalues and eigenvectors). With scale=TRUE, variable means are set to zero, and variances set to one
cancer_pca <- prcomp(cancer[, -2], scale=TRUE)
cancer_pca
```

```
## Standard deviations (1, ..., p=31):
## [1] 3.64527878 2.38679814 1.68386313 1.40760690 1.28406203 1.11115827
## [7] 0.98907696 0.81960537 0.67881693 0.63492763 0.59089337 0.54211662
## [13] 0.51102537 0.49125372 0.39619900 0.30680373 0.28250655 0.24299439
```

```

## [19] 0.22932770 0.22163467 0.17626907 0.17303527 0.16562163 0.15572098
## [25] 0.13431069 0.12441756 0.09039745 0.08305482 0.03986650 0.02735646
## [31] 0.01153431
##
## Rotation (n x k) = (31 x 31):
##
##          PC1          PC2          PC3          PC4
## id      -0.02291216  0.034068491  0.096938436 -0.026598045
## radius_mean -0.21891302  0.233271401 -0.011393786  0.042187950
## texture_mean -0.10384388  0.060044199  0.066892342 -0.602954308
## perimeter_mean -0.22753491  0.214589002 -0.012124791  0.042752797
## area_mean -0.22104577  0.230668816  0.026293150  0.054114724
## smoothness_mean -0.14241471 -0.186422211 -0.103182400  0.158098177
## compactness_mean -0.23906730 -0.152454726 -0.074768623  0.031818117
## concavity_mean -0.25828025 -0.060541625  0.001758736  0.019497124
## points_mean -0.26073811  0.034167392 -0.027579607  0.065785353
## symmetry_mean -0.13797774 -0.190684979 -0.040962032  0.067502543
## dimension_mean -0.06414779 -0.366531055 -0.020817875  0.047957856
## radius_se -0.20611747  0.105935702  0.266917221  0.099114446
## texture_se -0.01741339 -0.089547789  0.371439885 -0.356497230
## perimeter_se -0.21144652  0.089807043  0.264925682  0.090293055
## area_se -0.20307642  0.152771289  0.215790250  0.108568705
## smoothness_se -0.01467821 -0.203189876  0.311787845  0.044368664
## compactness_se -0.17028840 -0.232503362  0.154557465 -0.026425360
## concavity_se -0.15354367 -0.196846081  0.176560052  0.002248291
## points_se -0.18340675 -0.129965181  0.223850479  0.075252232
## symmetry_se -0.04241552 -0.183558627  0.285265066  0.046936126
## dimension_se -0.10249607 -0.279584139  0.211893354  0.016212450
## radius_worst -0.22800935  0.219296044 -0.049406340  0.015659705
## texture_worst -0.10451545  0.045501223 -0.039828934 -0.633119655
## perimeter_worst -0.23663734  0.199295985 -0.050431945  0.014068572
## area_worst -0.22493214  0.218985461 -0.013188891  0.025970672
## smoothness_worst -0.12782441 -0.172562959 -0.255328751  0.014523359
## compactness_worst -0.20988456 -0.144253637 -0.234513609 -0.092562168
## concavity_worst -0.22860218 -0.098526524 -0.172024941 -0.074807188
## points_worst -0.25074620  0.007534367 -0.170480673  0.005305980
## symmetry_worst -0.12267993 -0.142619436 -0.270515902 -0.037129466
## dimension_worst -0.13156024 -0.275702077 -0.229474476 -0.078971489

```

##	PC5	PC6	PC7	PC8
## id	0.011327587	-0.316733438	0.9071156324	-0.096362415
## radius_mean	-0.038129861	0.029588521	-0.0422987777	-0.116427419
## texture_mean	0.049091450	-0.031394323	0.0149935618	0.001875482
## perimeter_mean	-0.037715592	0.028394008	-0.0435888242	-0.106272097
## area_mean	-0.010562229	0.006113155	-0.0289256668	-0.047414568
## smoothness_mean	0.365750055	-0.262508993	-0.1403403617	-0.123541189
## compactness_mean	-0.011786637	-0.004903894	-0.0453031106	0.043145968
## concavity_mean	-0.086512506	-0.002356338	-0.0325530646	-0.102436021
## points_mean	0.043667412	-0.034509273	-0.0814216298	-0.136923237
## symmetry_mean	0.305378893	0.335082168	0.1182592361	-0.098874531
## dimension_mean	0.044767906	-0.112784169	-0.0410588768	0.306499872
## radius_se	0.154254367	-0.023261199	0.0167882718	0.307415709
## texture_se	0.190001500	0.022856912	-0.1902676469	-0.052632477
## perimeter_se	0.120703357	0.003820151	0.0195081762	0.311265679
## area_se	0.127765023	-0.051958835	0.0565606078	0.334287959
## smoothness_se	0.232745603	-0.330867850	-0.0678348099	-0.260833914
## compactness_se	-0.280298048	0.066788120	0.0222220211	0.021001944
## concavity_se	-0.354164595	0.049699104	0.0336810725	-0.219193299
## points_se	-0.195758558	-0.023197526	-0.0378517870	-0.370217167
## symmetry_se	0.251331178	0.477530515	0.1184032606	-0.084854768
## dimension_se	-0.263395188	-0.048462373	-0.0157602244	0.194418818
## radius_worst	0.004280034	0.004521737	-0.0166458140	-0.007508307
## texture_worst	0.092551860	-0.045174516	-0.0094601240	0.006617640
## perimeter_worst	-0.007599144	0.012921166	-0.0145260986	0.002162488
## area_worst	0.027413595	-0.024033338	-0.0007372602	0.066173186
## smoothness_worst	0.325860028	-0.365048687	-0.0670682168	-0.116496117
## compactness_worst	-0.121503371	0.034042714	0.0507556727	0.136509363
## concavity_worst	-0.188280510	0.017962040	0.0352007117	-0.067085744
## points_worst	-0.043123573	-0.029549100	-0.0207238959	-0.166500918
## symmetry_worst	0.244245936	0.451404312	0.2340143294	-0.041439633
## dimension_worst	-0.093699078	-0.092479698	0.0347167538	0.372034479
##	PC9	PC10	PC11	PC12
## id	0.149115642	-0.16926751	0.058188997	-0.006721252
## radius_mean	-0.046270835	-0.22402704	-0.079466081	-0.042213788
## texture_mean	-0.088727168	0.11945674	-0.253258091	0.304032359
## perimeter_mean	-0.036230738	-0.22634517	-0.069865929	-0.017573055

## area_mean	-0.080649856	-0.18600385	-0.062795372	-0.110760120
## smoothness_mean	0.278996404	-0.06133822	0.084661549	0.135321954
## compactness_mean	0.099214048	-0.19518602	0.005172841	0.307036205
## concavity_mean	0.075750464	0.03395563	0.134664686	-0.124553100
## points_mean	0.116569072	-0.14261678	0.006124860	0.071564686
## symmetry_mean	0.315150303	0.13561452	-0.574417320	-0.161058144
## dimension_mean	0.130639482	-0.15848117	-0.066456112	0.037318709
## radius_se	0.026200456	0.26504403	0.025847282	0.027030250
## texture_se	0.372989606	-0.31521084	0.323158815	-0.348396233
## perimeter_se	0.052860114	0.23789288	0.094867442	0.168501485
## area_se	-0.030627892	0.24966405	0.071991560	-0.050731496
## smoothness_se	-0.580789293	-0.01015980	-0.179568831	-0.081753374
## compactness_se	-0.148593714	-0.11518343	-0.038615749	0.206959272
## concavity_se	0.034715098	0.36592141	0.113536362	-0.348342358
## points_se	0.189022962	0.21518752	-0.094066850	0.342855186
## symmetry_se	-0.292785738	-0.22049558	0.328314881	0.185998712
## dimension_se	-0.060203202	-0.22637997	-0.353844543	-0.250428852
## radius_worst	-0.070224590	-0.09981025	-0.073013014	-0.105030701
## texture_worst	-0.008571809	0.10669296	-0.038561250	-0.012490348
## perimeter_worst	-0.058854223	-0.09821693	-0.045750979	-0.051125158
## area_worst	-0.097034650	-0.06179787	-0.068822329	-0.184460981
## smoothness_worst	-0.173257498	0.16912753	0.109278029	-0.142996001
## compactness_worst	-0.111218083	-0.06445290	0.175401648	0.196805544
## concavity_worst	-0.035467377	0.19661986	0.295581609	-0.184959562
## points_worst	0.052322473	0.05121611	0.075496752	0.117518361
## symmetry_worst	-0.188266324	0.10308901	0.019223451	-0.157210098
## dimension_worst	-0.087222442	-0.11291399	-0.007071634	-0.118625115
##	PC13	PC14	PC15	PC16
## id	-0.004841084	-0.006500099	0.006885943	-0.002753492
## radius_mean	0.050603927	-0.012496988	-0.059054553	0.050789156
## texture_mean	0.256273666	-0.201876125	0.020701124	0.108089530
## perimeter_mean	0.038470392	-0.044684430	-0.048019221	0.039590476
## area_mean	0.065047550	-0.067879244	-0.010152279	-0.014636050
## smoothness_mean	0.315872261	-0.046461624	-0.444044654	0.117493291
## compactness_mean	-0.104264618	-0.230005458	-0.007661166	-0.230759682
## concavity_mean	0.065723393	-0.387349680	0.189733740	0.128386008
## points_mean	0.042253113	-0.132637847	0.245219266	0.217299938

## symmetry_mean	-0.288054252	-0.189570545	-0.030903840	0.073950596
## dimension_mean	0.236120382	-0.106390748	0.377436108	-0.518333769
## radius_se	-0.015625578	0.069635807	-0.011959877	0.111103952
## texture_se	-0.308499115	0.165408488	0.012614192	-0.033389049
## perimeter_se	-0.100597125	0.038865462	0.044358477	0.008991734
## area_se	-0.017226446	-0.055687709	-0.083203050	0.045171638
## smoothness_se	-0.293287983	-0.149148603	0.200139961	-0.018414232
## compactness_se	-0.263398426	-0.010320713	-0.491903153	-0.167886977
## concavity_se	0.251864823	-0.157777595	-0.135322845	-0.250292522
## points_se	-0.006430584	0.494527095	0.199547389	-0.062548716
## symmetry_se	0.319874237	-0.010836031	0.047340593	0.113219397
## dimension_se	0.275943072	0.240767973	-0.145958050	0.353782637
## radius_worst	0.039582217	0.138036550	-0.023526025	-0.166213790
## texture_worst	0.080142089	0.080737140	-0.053897961	-0.100862417
## perimeter_worst	-0.009084762	0.097004376	-0.012559001	-0.182407021
## area_worst	0.047986766	0.101235629	0.006646192	-0.315142865
## smoothness_worst	0.056931408	0.206026671	-0.163389545	-0.045226715
## compactness_worst	-0.371991007	-0.013117334	-0.165941776	0.049613607
## concavity_worst	-0.086870368	-0.218055908	0.066854662	0.204743734
## points_worst	-0.068367254	0.254345228	0.276401728	0.169597618
## symmetry_worst	0.043937722	0.256766084	-0.005448734	-0.139913723
## dimension_worst	-0.035134642	0.172524501	0.212520491	0.255448214
##	PC17	PC18	PC19	PC20
## id	-0.007779983	-0.019707372	0.005442248	0.020454908
## radius_mean	0.150008977	0.209908003	-0.156773206	0.211821385
## texture_mean	0.159152972	-0.034161758	0.040048687	0.029931705
## perimeter_mean	0.113792993	0.201233658	-0.168413120	0.227079273
## area_mean	0.130173978	0.251460456	-0.269145594	-0.045499625
## smoothness_mean	0.203117911	0.168171613	0.354463321	-0.160358262
## compactness_mean	-0.170379447	-0.016302860	-0.014259132	0.292092522
## concavity_mean	-0.270010606	-0.005071590	0.027973937	0.007197446
## points_mean	-0.381111880	0.028741889	0.087065594	-0.153991624
## symmetry_mean	0.165691481	-0.194702559	-0.169168737	-0.058503329
## dimension_mean	0.039119713	0.046298986	-0.086779501	-0.062879947
## radius_se	-0.055118880	-0.124562479	0.231233991	0.181436577
## texture_se	0.032768777	0.041652813	0.009177450	0.038681291
## perimeter_se	-0.023929011	-0.009084130	0.014508488	0.364045783

## area_se	-0.045538238	0.313148246	-0.296273515	-0.433949999
## smoothness_se	0.058326686	0.145306166	0.228819703	-0.013932678
## compactness_se	-0.190065826	-0.015610691	-0.094108380	-0.250216687
## concavity_se	0.126034946	0.092345618	-0.005794297	0.119490304
## points_se	0.197671940	0.106747906	-0.046944796	-0.015851066
## symmetry_se	0.158541381	-0.279918359	-0.180195394	-0.084242460
## dimension_se	-0.267180143	-0.122002438	0.059970839	0.097082660
## radius_worst	0.083459877	-0.235215809	0.218781792	0.027741137
## texture_worst	-0.185972310	0.065992656	-0.057250572	-0.080880841
## perimeter_worst	0.056649279	-0.228493742	0.189279122	0.105666112
## area_worst	0.090325036	-0.286471546	0.158722686	-0.393681440
## smoothness_worst	-0.142781922	-0.276751162	-0.504565504	0.228506719
## compactness_worst	0.153347954	-0.003683424	0.073627229	0.025544372
## concavity_worst	0.216302398	-0.190307542	0.107894455	-0.035839305
## points_worst	-0.178353485	-0.085180057	-0.067182996	-0.261323873
## symmetry_worst	-0.260033510	0.436706158	0.269313654	0.111738683
## dimension_worst	0.404957673	0.162920272	-0.026674889	-0.022516600
##	PC21	PC22	PC23	PC24
## id	0.009870917	0.006195707	0.003190337	-0.010289027
## radius_mean	0.046009507	0.070394387	-0.073021974	-0.098704322
## texture_mean	0.264801220	-0.436269565	-0.095890704	0.001311285
## perimeter_mean	0.015122205	0.070963404	-0.074821704	-0.040500943
## area_mean	0.087345298	0.021672998	-0.097428804	0.009396470
## smoothness_mean	-0.023842011	0.117945821	-0.063741313	-0.020088204
## compactness_mean	-0.476395571	-0.213187888	0.094254664	0.058295270
## concavity_mean	0.037771062	-0.001270114	0.188862925	0.321062737
## points_mean	0.231546040	0.017493297	0.313280824	-0.057974684
## symmetry_mean	-0.030776761	0.085067786	0.018331111	-0.052004767
## dimension_mean	0.172565576	0.085104005	-0.286892578	-0.084701081
## radius_se	0.090564458	-0.085660592	0.147793165	-0.263799753
## texture_se	0.083589382	-0.212168357	-0.048761201	-0.001150858
## perimeter_se	0.169586632	0.317246026	-0.153859020	0.081384223
## area_se	-0.270679518	-0.207916141	-0.068745790	0.110258620
## smoothness_se	-0.095370809	0.066602974	-0.051852247	-0.057154068
## compactness_se	0.451033960	0.159332265	0.048970757	0.003993806
## concavity_se	-0.070203251	-0.071023842	0.200850815	-0.388573085
## points_se	-0.064848884	-0.035557778	0.074494143	0.354040783



## symmetry_se	-0.112133933	0.092193625	0.084324570	-0.043455477
## dimension_se	-0.214213177	-0.069171668	-0.245408452	0.089594196
## radius_worst	0.006481267	-0.007068180	0.096292694	-0.057768458
## texture_worst	-0.330244412	0.578095532	0.111968438	-0.009473435
## perimeter_worst	-0.010544107	0.094457678	-0.014952244	0.058698441
## area_worst	-0.053510824	-0.149328216	0.096798702	0.193293235
## smoothness_worst	0.140127867	-0.156936236	0.069660581	0.091134610
## compactness_worst	-0.220884131	-0.191897773	-0.033373706	-0.145389941
## concavity_worst	0.047166544	0.139729448	-0.456817799	0.290302924
## points_worst	-0.039740929	-0.006870640	-0.305694162	-0.563297713
## symmetry_worst	0.125617213	-0.155827542	-0.096426675	0.122996111
## dimension_worst	0.095366679	0.092769737	0.470358007	0.002775112
##	PC25	PC26	PC27	PC28
## id	-0.004233388	-0.00132610	-0.002571324	-0.001623875
## radius_mean	-0.183664583	0.01859418	0.128713229	0.131697326
## texture_mean	0.099441545	-0.08442059	0.024821224	0.017622634
## perimeter_mean	-0.117262178	-0.02743488	0.124670225	0.115650274
## area_mean	0.070557041	0.21057100	-0.361014547	-0.467489167
## smoothness_mean	0.068940049	-0.02876100	0.037372832	-0.069482805
## compactness_mean	-0.102198309	-0.39651346	-0.262695425	-0.098624638
## concavity_mean	0.045550527	0.09717977	0.550227716	-0.363040016
## points_mean	0.082349955	0.18630114	-0.389316679	0.453345398
## symmetry_mean	0.018841491	0.02451053	0.015910368	0.015157593
## dimension_mean	-0.134601525	0.20670502	0.096796804	0.101343150
## radius_se	-0.561133900	0.17339784	-0.050411953	-0.213735821
## texture_se	0.023938591	-0.05709165	0.010893175	0.009925699
## perimeter_se	0.516048248	-0.07217201	-0.103485879	-0.041989200
## area_se	-0.018546693	-0.13093723	0.155929011	0.314758068
## smoothness_se	0.016193934	-0.03100551	0.008066566	0.009312365
## compactness_se	-0.122457873	-0.17364984	0.049404535	-0.046651501
## concavity_se	0.186159613	-0.01600952	-0.091931364	0.083824645
## points_se	-0.107166573	0.12999049	0.018674110	0.011675700
## symmetry_se	0.002613811	0.01936313	0.016991197	0.019891112
## dimension_se	0.076177800	0.08458109	-0.035156906	0.012141785
## radius_worst	-0.158114412	-0.07144112	0.195812320	0.178796461
## texture_worst	-0.118609952	0.11802219	-0.036347107	-0.021473842
## perimeter_worst	0.236463109	-0.11790535	0.243266456	0.241658719

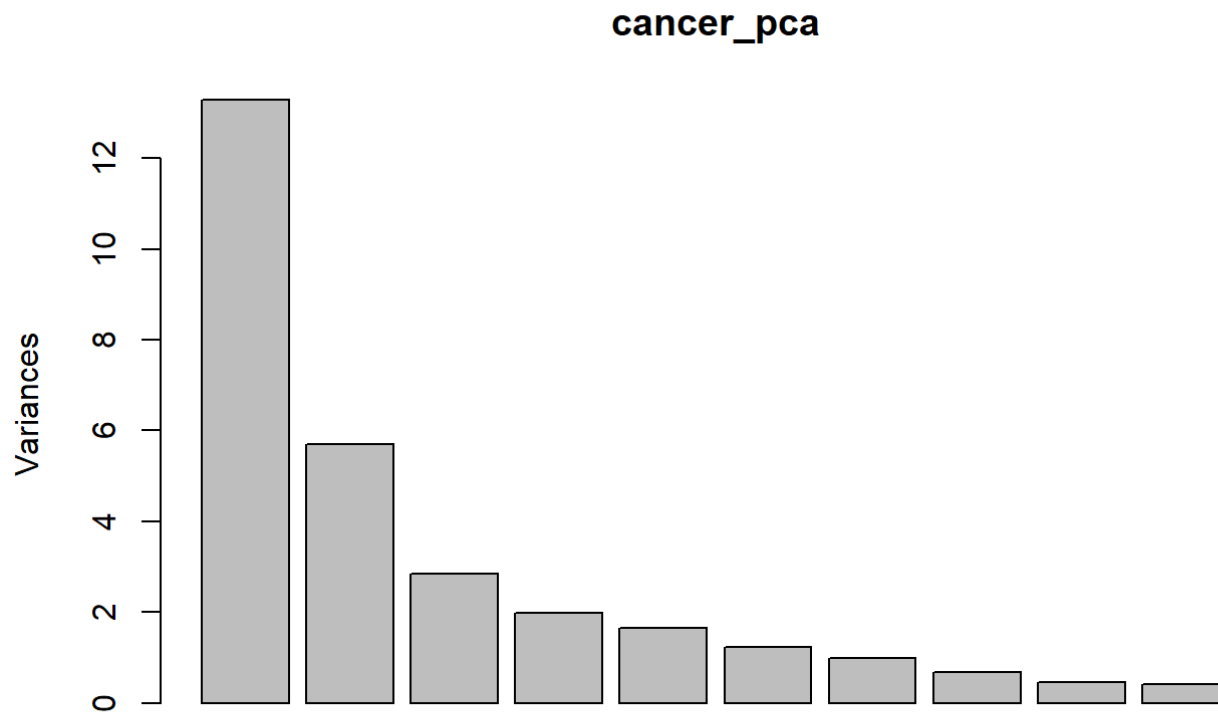
```

## area_worst      0.146339946  0.03921251 -0.229813188 -0.237323945
## smoothness_worst -0.011224935  0.04787154 -0.012860335  0.040730207
## compactness_worst 0.185437121  0.62471727  0.100772153  0.071087434
## concavity_worst  -0.286701322 -0.11586768 -0.267236886  0.142148446
## points_worst     0.105286798 -0.26352782  0.133749940 -0.230794105
## symmetry_worst   -0.013193455 -0.04505357 -0.027824916 -0.022695808
## dimension_worst  0.037882167 -0.28015574 -0.004500884 -0.060081371
##                  PC29          PC30          PC31
## id                -1.891724e-05 -0.0006852263 -7.122581e-05
## radius_mean        2.111968e-01 -0.2114371011 -7.024325e-01
## texture_mean       -6.362507e-05  0.0106165839 -2.644366e-04
## perimeter_mean      8.434280e-02 -0.3838889617  6.898676e-01
## area_mean          -2.725167e-01  0.4227208085  3.297173e-02
## smoothness_mean     1.480038e-03  0.0034638648  4.850746e-03
## compactness_mean   -5.466656e-03  0.0409079834 -4.468229e-02
## concavity_mean      4.554138e-02  0.0101122808 -2.512860e-02
## points_mean        -8.885707e-03  0.0041142627  1.067984e-03
## symmetry_mean       1.432581e-03  0.0075571475  1.279594e-03
## dimension_mean     -6.312291e-03 -0.0073311823  4.751885e-03
## radius_se          -1.922290e-01 -0.1186768422  8.679321e-03
## texture_se          -5.624974e-03  0.0086942153  1.063104e-03
## perimeter_se        2.631905e-01  0.0060612569 -1.373310e-02
## area_se            -4.205668e-02  0.0863645419 -1.054698e-03
## smoothness_se       9.795835e-03 -0.0016737982  1.618711e-03
## compactness_se     -1.539757e-02 -0.0032295613 -1.923037e-03
## concavity_se       5.819985e-03 -0.0161202167  8.921294e-03
## points_se          -2.900497e-02  0.0241014722  2.178643e-03
## symmetry_se        -7.637856e-03  0.0051771158 -3.338380e-04
## dimension_se       1.975791e-02  0.0083971145 -1.792802e-03
## radius_worst       4.126296e-01  0.6356796555  1.356846e-01
## texture_worst      -3.896988e-04 -0.0172219636 -1.020237e-03
## perimeter_worst    -7.286790e-01 -0.0228830657 -7.974244e-02
## area_worst         2.389679e-01 -0.4448733182 -3.976788e-02
## smoothness_worst   -1.535941e-03 -0.0074142082 -4.586820e-03
## compactness_worst  4.869512e-02  0.0001075081  1.285262e-02
## concavity_worst    -1.764174e-02  0.0126547542 -4.031809e-04
## points_worst       2.247340e-02 -0.0353341030  2.276561e-03

```

```
## symmetry_worst      4.922100e-03 -0.0133523613 -3.910451e-04  
## dimension_worst     -2.356283e-02 -0.0115053741 -1.897779e-03
```

```
plot(cancer_pca)
```



```
summary(cancer_pca)
```

```
## Importance of components:
##
##          PC1      PC2      PC3      PC4      PC5      PC6
## Standard deviation  3.6453 2.3868 1.68386 1.40761 1.28406 1.11116
## Proportion of Variance 0.4286 0.1838 0.09146 0.06391 0.05319 0.03983
## Cumulative Proportion 0.4286 0.6124 0.70388 0.76779 0.82098 0.86081
##
##          PC7      PC8      PC9      PC10     PC11     PC12
## Standard deviation  0.98908 0.81961 0.67882 0.6349 0.59089 0.54212
## Proportion of Variance 0.03156 0.02167 0.01486 0.0130 0.01126 0.00948
## Cumulative Proportion 0.89237 0.91404 0.92890 0.9419 0.95317 0.96265
##
##          PC13     PC14     PC15     PC16     PC17     PC18
## Standard deviation  0.51103 0.49125 0.39620 0.30680 0.28251 0.2430
## Proportion of Variance 0.00842 0.00778 0.00506 0.00304 0.00257 0.0019
## Cumulative Proportion 0.97107 0.97886 0.98392 0.98696 0.98953 0.9914
##
##          PC19     PC20     PC21     PC22     PC23     PC24
## Standard deviation  0.2293 0.22163 0.1763 0.17304 0.16562 0.15572
## Proportion of Variance 0.0017 0.00158 0.0010 0.00097 0.00088 0.00078
## Cumulative Proportion 0.9931 0.99472 0.9957 0.99669 0.99757 0.99835
##
##          PC25     PC26     PC27     PC28     PC29     PC30
## Standard deviation  0.13431 0.1244 0.09040 0.08305 0.03987 0.02736
## Proportion of Variance 0.00058 0.0005 0.00026 0.00022 0.00005 0.00002
## Cumulative Proportion 0.99893 0.9994 0.99970 0.99992 0.99997 1.00000
##
##          PC31
## Standard deviation  0.01153
## Proportion of Variance 0.00000
## Cumulative Proportion 1.00000
```

```
#View(cancer_pca)
head(cancer_pca$x)
```

```
##          PC1      PC2      PC3      PC4      PC5      PC6
## [1,] 2.501946 -0.09694805 -0.4489597 2.3341176 0.69771548 -0.2430058
## [2,] 1.467439 -1.68630059 1.1542039 0.3362109 0.45962538 1.2308248
## [3,] 2.929028 -0.38319924 -0.8955891 -0.1164828 0.98441377 -0.2587872
## [4,] 1.995342 -1.33046592 1.1172876 2.0502761 0.25303846 -1.5539634
## [5,] 2.500252 2.01035097 -0.7584035 1.9862169 -1.13537096 0.5940361
```

```

## [6,] 2.018308 -0.78242095 0.1125197 -0.6532280 0.01841577 0.6914453
##          PC7          PC8          PC9          PC10          PC11          PC12
## [1,] 0.5092015 -1.11423307 0.2840243 0.32463197 -0.3245353 0.04981306
## [2,] 0.2937434 0.10000461 -0.0668399 0.42612180 0.4564029 1.19357566
## [3,] -0.3303385 0.03599041 0.8734350 0.02222192 0.4208602 -0.06687286
## [4,] -0.9692185 -1.31852134 0.6254396 0.05666470 -0.0691646 0.97082409
## [5,] 0.1198201 -0.48279704 -0.2727816 -0.29439485 -0.3577533 0.03266208
## [6,] 0.1454026 0.06214539 0.2342454 0.73681239 -0.3671239 -0.77029743
##          PC13          PC14          PC15          PC16          PC17
## [1,] -0.19760220 0.1134403 -0.059302558 0.16637723 -0.04286656
## [2,] 0.01807424 -0.2824292 -0.204858888 -0.07067959 0.03088787
## [3,] 0.37435458 0.2585457 -0.330274216 -0.13000189 -0.24616091
## [4,] -0.90968379 0.2179117 -0.665825669 0.10213387 -0.10289446
## [5,] -0.35547138 -0.1480140 -0.005540503 -0.06495881 0.22273309
## [6,] -0.49542291 -0.2992431 0.049952835 -0.20161083 0.14920422
##          PC18          PC19          PC20          PC21          PC22
## [1,] -0.104542766 -0.03484189 -0.09691187 -0.02846306 -0.00673628
## [2,] -0.405534243 -0.02886103 -0.05262226 -0.05987170 0.05868642
## [3,] 0.327711259 0.15937793 -0.13804895 -0.13489743 0.10080029
## [4,] 0.197085181 0.36251771 -0.40018239 -0.10302093 -0.28821708
## [5,] -0.129129156 -0.35877054 0.08515543 -0.08500541 -0.06332008
## [6,] -0.002229379 -0.08178568 0.18970936 -0.06872875 0.09669594
##          PC23          PC24          PC25          PC26          PC27
## [1,] -0.038971937 0.062212075 0.088438866 0.04872948 -0.007000724
## [2,] 0.070978613 -0.030822339 -0.016741580 0.04173030 -0.059332996
## [3,] 0.053909008 0.085484364 0.038277664 -0.04151896 -0.035546410
## [4,] 0.182045907 0.222848059 -0.115720065 -0.03676948 -0.148171674
## [5,] 0.043591030 0.008165322 0.002738052 0.05983731 0.046167735
## [6,] -0.001458054 -0.031338348 0.042784223 -0.08646068 -0.030944690
##          PC28          PC29          PC30          PC31
## [1,] 0.05356131 0.015184882 0.015985406 0.001396101
## [2,] -0.18696553 0.027011311 -0.000803330 0.008096490
## [3,] -0.07653067 -0.014640388 0.010307894 0.009074601
## [4,] -0.01711665 -0.047828494 0.023862995 0.000265075
## [5,] 0.03835364 0.032450800 -0.002312178 -0.002563269
## [6,] 0.00955434 -0.004403431 0.003869919 -0.002931194

```

```
# sample scores stored in cancer_pca$x
# singular values (square roots of eigenvalues) stored in cancer_pca$sdev
# loadings (eigenvectors) are stored in cancer_pca$rotation
# variable means stored in cancer_pca$center
# variable standard deviations stored in sparrows_pca$scale
# A table containing eigenvalues and %'s accounted, follows
# Eigenvalues are sdev^2
(eigen_cancer <- cancer_pca$sdev^2) ## brackets for print
```

```
## [1] 1.328806e+01 5.696805e+00 2.835395e+00 1.981357e+00 1.648815e+00
## [6] 1.234673e+00 9.782732e-01 6.717530e-01 4.607924e-01 4.031331e-01
## [11] 3.491550e-01 2.938904e-01 2.611469e-01 2.413302e-01 1.569736e-01
## [16] 9.412853e-02 7.980995e-02 5.904627e-02 5.259119e-02 4.912193e-02
## [21] 3.107078e-02 2.994121e-02 2.743052e-02 2.424902e-02 1.803936e-02
## [26] 1.547973e-02 8.171699e-03 6.898103e-03 1.589338e-03 7.483761e-04
## [31] 1.330402e-04
```

```
names(eigen_cancer) <- paste("PC",1:31,sep="")
eigen_cancer
```

```
##          PC1          PC2          PC3          PC4          PC5
## 1.328806e+01 5.696805e+00 2.835395e+00 1.981357e+00 1.648815e+00
##          PC6          PC7          PC8          PC9          PC10
## 1.234673e+00 9.782732e-01 6.717530e-01 4.607924e-01 4.031331e-01
##          PC11         PC12         PC13         PC14         PC15
## 3.491550e-01 2.938904e-01 2.611469e-01 2.413302e-01 1.569736e-01
##          PC16         PC17         PC18         PC19         PC20
## 9.412853e-02 7.980995e-02 5.904627e-02 5.259119e-02 4.912193e-02
##          PC21         PC22         PC23         PC24         PC25
## 3.107078e-02 2.994121e-02 2.743052e-02 2.424902e-02 1.803936e-02
##          PC26         PC27         PC28         PC29         PC30
## 1.547973e-02 8.171699e-03 6.898103e-03 1.589338e-03 7.483761e-04
##          PC31
## 1.330402e-04
```

```
sumlambdas <- sum(eigen_cancer)
sumlambdas
```

```
## [1] 31
```

```
propvar <- eigen_cancer/sumlambdas
propvar
```

```
##          PC1          PC2          PC3          PC4          PC5
## 4.286470e-01 1.837679e-01 9.146436e-02 6.391475e-02 5.318759e-02
##          PC6          PC7          PC8          PC9          PC10
## 3.982815e-02 3.155720e-02 2.166945e-02 1.486427e-02 1.300429e-02
##          PC11         PC12         PC13         PC14         PC15
## 1.126306e-02 9.480337e-03 8.424094e-03 7.784846e-03 5.063666e-03
##          PC16         PC17         PC18         PC19         PC20
## 3.036404e-03 2.574514e-03 1.904718e-03 1.696490e-03 1.584578e-03
##          PC21         PC22         PC23         PC24         PC25
## 1.002283e-03 9.658453e-04 8.848556e-04 7.822265e-04 5.819149e-04
##          PC26         PC27         PC28         PC29         PC30
## 4.993461e-04 2.636032e-04 2.225194e-04 5.126895e-05 2.414116e-05
##          PC31
## 4.291620e-06
```

```
summary(eigen_cancer)
```

```
##      Min.   1st Qu.   Median     Mean   3rd Qu.    Max.
## 0.000133 0.025840 0.094129 1.000000 0.566273 13.288057
```

```
summary(cancer_pca)
```

```
## Importance of components:
##          PC1      PC2      PC3      PC4      PC5      PC6
```

```
## Standard deviation      3.6453 2.3868 1.68386 1.40761 1.28406 1.11116
## Proportion of Variance 0.4286 0.1838 0.09146 0.06391 0.05319 0.03983
## Cumulative Proportion 0.4286 0.6124 0.70388 0.76779 0.82098 0.86081
##
##          PC7      PC8      PC9      PC10      PC11      PC12
## Standard deviation    0.98908 0.81961 0.67882 0.6349 0.59089 0.54212
## Proportion of Variance 0.03156 0.02167 0.01486 0.0130 0.01126 0.00948
## Cumulative Proportion 0.89237 0.91404 0.92890 0.9419 0.95317 0.96265
##
##          PC13      PC14      PC15      PC16      PC17      PC18
## Standard deviation    0.51103 0.49125 0.39620 0.30680 0.28251 0.2430
## Proportion of Variance 0.00842 0.00778 0.00506 0.00304 0.00257 0.0019
## Cumulative Proportion 0.97107 0.97886 0.98392 0.98696 0.98953 0.9914
##
##          PC19      PC20      PC21      PC22      PC23      PC24
## Standard deviation    0.2293 0.22163 0.1763 0.17304 0.16562 0.15572
## Proportion of Variance 0.0017 0.00158 0.0010 0.00097 0.00088 0.00078
## Cumulative Proportion 0.9931 0.99472 0.9957 0.99669 0.99757 0.99835
##
##          PC25      PC26      PC27      PC28      PC29      PC30
## Standard deviation    0.13431 0.1244 0.09040 0.08305 0.03987 0.02736
## Proportion of Variance 0.00058 0.0005 0.00026 0.00022 0.00005 0.00002
## Cumulative Proportion 0.99893 0.9994 0.99970 0.99992 0.99997 1.00000
##
##          PC31
## Standard deviation    0.01153
## Proportion of Variance 0.00000
## Cumulative Proportion 1.00000
```

```
cumvar_cancer <- cumsum(propvar)
cumvar_cancer
```

```
##          PC1      PC2      PC3      PC4      PC5      PC6      PC7
## 0.4286470 0.6124149 0.7038793 0.7677940 0.8209816 0.8608098 0.8923670
##          PC8      PC9      PC10      PC11      PC12      PC13      PC14
## 0.9140364 0.9289007 0.9419050 0.9531681 0.9626484 0.9710725 0.9788573
##          PC15      PC16      PC17      PC18      PC19      PC20      PC21
## 0.9839210 0.9869574 0.9895319 0.9914366 0.9931331 0.9947177 0.9957200
##          PC22      PC23      PC24      PC25      PC26      PC27      PC28
## 0.9966858 0.9975707 0.9983529 0.9989348 0.9994342 0.9996978 0.9999203
```



```
##      PC29      PC30      PC31
## 0.9999716 0.9999957 1.0000000
```

```
matlambdas <- rbind(eigen_cancer,propvar,cumvar_cancer)
rownames(matlambdas) <- c("Eigenvalues","Prop. variance","Cum. prop. variance")
round(matlambdas,4)
```

```
##              PC1    PC2    PC3    PC4    PC5    PC6    PC7
## Eigenvalues   13.2881 5.6968 2.8354 1.9814 1.6488 1.2347 0.9783
## Prop. variance    0.4286 0.1838 0.0915 0.0639 0.0532 0.0398 0.0316
## Cum. prop. variance 0.4286 0.6124 0.7039 0.7678 0.8210 0.8608 0.8924
##              PC8    PC9    PC10   PC11   PC12   PC13   PC14
## Eigenvalues    0.6718 0.4608 0.4031 0.3492 0.2939 0.2611 0.2413
## Prop. variance    0.0217 0.0149 0.0130 0.0113 0.0095 0.0084 0.0078
## Cum. prop. variance 0.9140 0.9289 0.9419 0.9532 0.9626 0.9711 0.9789
##              PC15   PC16   PC17   PC18   PC19   PC20   PC21
## Eigenvalues    0.1570 0.0941 0.0798 0.0590 0.0526 0.0491 0.0311
## Prop. variance    0.0051 0.0030 0.0026 0.0019 0.0017 0.0016 0.0010
## Cum. prop. variance 0.9839 0.9870 0.9895 0.9914 0.9931 0.9947 0.9957
##              PC22   PC23   PC24   PC25   PC26   PC27   PC28
## Eigenvalues    0.0299 0.0274 0.0242 0.0180 0.0155 0.0082 0.0069
## Prop. variance    0.0010 0.0009 0.0008 0.0006 0.0005 0.0003 0.0002
## Cum. prop. variance 0.9967 0.9976 0.9984 0.9989 0.9994 0.9997 0.9999
##              PC29  PC30  PC31
## Eigenvalues    0.0016 7e-04 1e-04
## Prop. variance    0.0001 0e+00 0e+00
## Cum. prop. variance 1.0000 1e+00 1e+00
```

```
summary(cancer_pca)
```

```
## Importance of components:
##              PC1    PC2    PC3    PC4    PC5    PC6
## Standard deviation    3.6453 2.3868 1.68386 1.40761 1.28406 1.11116
## Proportion of Variance 0.4286 0.1838 0.09146 0.06391 0.05319 0.03983
```

```
## Cumulative Proportion 0.4286 0.6124 0.70388 0.76779 0.82098 0.86081
## PC7 PC8 PC9 PC10 PC11 PC12
## Standard deviation 0.98908 0.81961 0.67882 0.6349 0.59089 0.54212
## Proportion of Variance 0.03156 0.02167 0.01486 0.0130 0.01126 0.00948
## Cumulative Proportion 0.89237 0.91404 0.92890 0.9419 0.95317 0.96265
## PC13 PC14 PC15 PC16 PC17 PC18
## Standard deviation 0.51103 0.49125 0.39620 0.30680 0.28251 0.2430
## Proportion of Variance 0.00842 0.00778 0.00506 0.00304 0.00257 0.0019
## Cumulative Proportion 0.97107 0.97886 0.98392 0.98696 0.98953 0.9914
## PC19 PC20 PC21 PC22 PC23 PC24
## Standard deviation 0.2293 0.22163 0.1763 0.17304 0.16562 0.15572
## Proportion of Variance 0.0017 0.00158 0.0010 0.00097 0.00088 0.00078
## Cumulative Proportion 0.9931 0.99472 0.9957 0.99669 0.99757 0.99835
## PC25 PC26 PC27 PC28 PC29 PC30
## Standard deviation 0.13431 0.1244 0.09040 0.08305 0.03987 0.02736
## Proportion of Variance 0.00058 0.0005 0.00026 0.00022 0.00005 0.00002
## Cumulative Proportion 0.99893 0.9994 0.99970 0.99992 0.99997 1.00000
## PC31
## Standard deviation 0.01153
## Proportion of Variance 0.00000
## Cumulative Proportion 1.00000
```

cancer\_pca\$rotation

```
## PC1 PC2 PC3 PC4
## id -0.02291216 0.034068491 0.096938436 -0.026598045
## radius_mean -0.21891302 0.233271401 -0.011393786 0.042187950
## texture_mean -0.10384388 0.060044199 0.066892342 -0.602954308
## perimeter_mean -0.22753491 0.214589002 -0.012124791 0.042752797
## area_mean -0.22104577 0.230668816 0.026293150 0.054114724
## smoothness_mean -0.14241471 -0.186422211 -0.103182400 0.158098177
## compactness_mean -0.23906730 -0.152454726 -0.074768623 0.031818117
## concavity_mean -0.25828025 -0.060541625 0.001758736 0.019497124
## points_mean -0.26073811 0.034167392 -0.027579607 0.065785353
## symmetry_mean -0.13797774 -0.190684979 -0.040962032 0.067502543
## dimension_mean -0.06414779 -0.366531055 -0.020817875 0.047957856
```

## radius_se	-0.20611747	0.105935702	0.266917221	0.099114446
## texture_se	-0.01741339	-0.089547789	0.371439885	-0.356497230
## perimeter_se	-0.21144652	0.089807043	0.264925682	0.090293055
## area_se	-0.20307642	0.152771289	0.215790250	0.108568705
## smoothness_se	-0.01467821	-0.203189876	0.311787845	0.044368664
## compactness_se	-0.17028840	-0.232503362	0.154557465	-0.026425360
## concavity_se	-0.15354367	-0.196846081	0.176560052	0.002248291
## points_se	-0.18340675	-0.129965181	0.223850479	0.075252232
## symmetry_se	-0.04241552	-0.183558627	0.285265066	0.046936126
## dimension_se	-0.10249607	-0.279584139	0.211893354	0.016212450
## radius_worst	-0.22800935	0.219296044	-0.049406340	0.015659705
## texture_worst	-0.10451545	0.045501223	-0.039828934	-0.633119655
## perimeter_worst	-0.23663734	0.199295985	-0.050431945	0.014068572
## area_worst	-0.22493214	0.218985461	-0.013188891	0.025970672
## smoothness_worst	-0.12782441	-0.172562959	-0.255328751	0.014523359
## compactness_worst	-0.20988456	-0.144253637	-0.234513609	-0.092562168
## concavity_worst	-0.22860218	-0.098526524	-0.172024941	-0.074807188
## points_worst	-0.25074620	0.007534367	-0.170480673	0.005305980
## symmetry_worst	-0.12267993	-0.142619436	-0.270515902	-0.037129466
## dimension_worst	-0.13156024	-0.275702077	-0.229474476	-0.078971489
##	PC5	PC6	PC7	PC8
## id	0.011327587	-0.316733438	0.9071156324	-0.096362415
## radius_mean	-0.038129861	0.029588521	-0.0422987777	-0.116427419
## texture_mean	0.049091450	-0.031394323	0.0149935618	0.001875482
## perimeter_mean	-0.037715592	0.028394008	-0.0435888242	-0.106272097
## area_mean	-0.010562229	0.006113155	-0.0289256668	-0.047414568
## smoothness_mean	0.365750055	-0.262508993	-0.1403403617	-0.123541189
## compactness_mean	-0.011786637	-0.004903894	-0.0453031106	0.043145968
## concavity_mean	-0.086512506	-0.002356338	-0.0325530646	-0.102436021
## points_mean	0.043667412	-0.034509273	-0.0814216298	-0.136923237
## symmetry_mean	0.305378893	0.335082168	0.1182592361	-0.098874531
## dimension_mean	0.044767906	-0.112784169	-0.0410588768	0.306499872
## radius_se	0.154254367	-0.023261199	0.0167882718	0.307415709
## texture_se	0.190001500	0.022856912	-0.1902676469	-0.052632477
## perimeter_se	0.120703357	0.003820151	0.0195081762	0.311265679
## area_se	0.127765023	-0.051958835	0.0565606078	0.334287959
## smoothness_se	0.232745603	-0.330867850	-0.0678348099	-0.260833914

## compactness_se	-0.280298048	0.066788120	0.0222220211	0.021001944
## concavity_se	-0.354164595	0.049699104	0.0336810725	-0.219193299
## points_se	-0.195758558	-0.023197526	-0.0378517870	-0.370217167
## symmetry_se	0.251331178	0.477530515	0.1184032606	-0.084854768
## dimension_se	-0.263395188	-0.048462373	-0.0157602244	0.194418818
## radius_worst	0.004280034	0.004521737	-0.0166458140	-0.007508307
## texture_worst	0.092551860	-0.045174516	-0.0094601240	0.006617640
## perimeter_worst	-0.007599144	0.012921166	-0.0145260986	0.002162488
## area_worst	0.027413595	-0.024033338	-0.0007372602	0.066173186
## smoothness_worst	0.325860028	-0.365048687	-0.0670682168	-0.116496117
## compactness_worst	-0.121503371	0.034042714	0.0507556727	0.136509363
## concavity_worst	-0.188280510	0.017962040	0.0352007117	-0.067085744
## points_worst	-0.043123573	-0.029549100	-0.0207238959	-0.166500918
## symmetry_worst	0.244245936	0.451404312	0.2340143294	-0.041439633
## dimension_worst	-0.093699078	-0.092479698	0.0347167538	0.372034479
##	PC9	PC10	PC11	PC12
## id	0.149115642	-0.16926751	0.058188997	-0.006721252
## radius_mean	-0.046270835	-0.22402704	-0.079466081	-0.042213788
## texture_mean	-0.088727168	0.11945674	-0.253258091	0.304032359
## perimeter_mean	-0.036230738	-0.22634517	-0.069865929	-0.017573055
## area_mean	-0.080649856	-0.18600385	-0.062795372	-0.110760120
## smoothness_mean	0.278996404	-0.06133822	0.084661549	0.135321954
## compactness_mean	0.099214048	-0.19518602	0.005172841	0.307036205
## concavity_mean	0.075750464	0.03395563	0.134664686	-0.124553100
## points_mean	0.116569072	-0.14261678	0.006124860	0.071564686
## symmetry_mean	0.315150303	0.13561452	-0.574417320	-0.161058144
## dimension_mean	0.130639482	-0.15848117	-0.066456112	0.037318709
## radius_se	0.026200456	0.26504403	0.025847282	0.027030250
## texture_se	0.372989606	-0.31521084	0.323158815	-0.348396233
## perimeter_se	0.052860114	0.23789288	0.094867442	0.168501485
## area_se	-0.030627892	0.24966405	0.071991560	-0.050731496
## smoothness_se	-0.580789293	-0.01015980	-0.179568831	-0.081753374
## compactness_se	-0.148593714	-0.11518343	-0.038615749	0.206959272
## concavity_se	0.034715098	0.36592141	0.113536362	-0.348342358
## points_se	0.189022962	0.21518752	-0.094066850	0.342855186
## symmetry_se	-0.292785738	-0.22049558	0.328314881	0.185998712
## dimension_se	-0.060203202	-0.22637997	-0.353844543	-0.250428852

## radius_worst	-0.070224590	-0.09981025	-0.073013014	-0.105030701
## texture_worst	-0.008571809	0.10669296	-0.038561250	-0.012490348
## perimeter_worst	-0.058854223	-0.09821693	-0.045750979	-0.051125158
## area_worst	-0.097034650	-0.06179787	-0.068822329	-0.184460981
## smoothness_worst	-0.173257498	0.16912753	0.109278029	-0.142996001
## compactness_worst	-0.111218083	-0.06445290	0.175401648	0.196805544
## concavity_worst	-0.035467377	0.19661986	0.295581609	-0.184959562
## points_worst	0.052322473	0.05121611	0.075496752	0.117518361
## symmetry_worst	-0.188266324	0.10308901	0.019223451	-0.157210098
## dimension_worst	-0.087222442	-0.11291399	-0.007071634	-0.118625115
##	PC13	PC14	PC15	PC16
## id	-0.004841084	-0.006500099	0.006885943	-0.002753492
## radius_mean	0.050603927	-0.012496988	-0.059054553	0.050789156
## texture_mean	0.256273666	-0.201876125	0.020701124	0.108089530
## perimeter_mean	0.038470392	-0.044684430	-0.048019221	0.039590476
## area_mean	0.065047550	-0.067879244	-0.010152279	-0.014636050
## smoothness_mean	0.315872261	-0.046461624	-0.444044654	0.117493291
## compactness_mean	-0.104264618	-0.230005458	-0.007661166	-0.230759682
## concavity_mean	0.065723393	-0.387349680	0.189733740	0.128386008
## points_mean	0.042253113	-0.132637847	0.245219266	0.217299938
## symmetry_mean	-0.288054252	-0.189570545	-0.030903840	0.073950596
## dimension_mean	0.236120382	-0.106390748	0.377436108	-0.518333769
## radius_se	-0.015625578	0.069635807	-0.011959877	0.111103952
## texture_se	-0.308499115	0.165408488	0.012614192	-0.033389049
## perimeter_se	-0.100597125	0.038865462	0.044358477	0.008991734
## area_se	-0.017226446	-0.055687709	-0.083203050	0.045171638
## smoothness_se	-0.293287983	-0.149148603	0.200139961	-0.018414232
## compactness_se	-0.263398426	-0.010320713	-0.491903153	-0.167886977
## concavity_se	0.251864823	-0.157777595	-0.135322845	-0.250292522
## points_se	-0.006430584	0.494527095	0.199547389	-0.062548716
## symmetry_se	0.319874237	-0.010836031	0.047340593	0.113219397
## dimension_se	0.275943072	0.240767973	-0.145958050	0.353782637
## radius_worst	0.039582217	0.138036550	-0.023526025	-0.166213790
## texture_worst	0.080142089	0.080737140	-0.053897961	-0.100862417
## perimeter_worst	-0.009084762	0.097004376	-0.012559001	-0.182407021
## area_worst	0.047986766	0.101235629	0.006646192	-0.315142865
## smoothness_worst	0.056931408	0.206026671	-0.163389545	-0.045226715

## compactness_worst	-0.371991007	-0.013117334	-0.165941776	0.049613607
## concavity_worst	-0.086870368	-0.218055908	0.066854662	0.204743734
## points_worst	-0.068367254	0.254345228	0.276401728	0.169597618
## symmetry_worst	0.043937722	0.256766084	-0.005448734	-0.139913723
## dimension_worst	-0.035134642	0.172524501	0.212520491	0.255448214
##	PC17	PC18	PC19	PC20
## id	-0.007779983	-0.019707372	0.005442248	0.020454908
## radius_mean	0.150008977	0.209908003	-0.156773206	0.211821385
## texture_mean	0.159152972	-0.034161758	0.040048687	0.029931705
## perimeter_mean	0.113792993	0.201233658	-0.168413120	0.227079273
## area_mean	0.130173978	0.251460456	-0.269145594	-0.045499625
## smoothness_mean	0.203117911	0.168171613	0.354463321	-0.160358262
## compactness_mean	-0.170379447	-0.016302860	-0.014259132	0.292092522
## concavity_mean	-0.270010606	-0.005071590	0.027973937	0.007197446
## points_mean	-0.381111880	0.028741889	0.087065594	-0.153991624
## symmetry_mean	0.165691481	-0.194702559	-0.169168737	-0.058503329
## dimension_mean	0.039119713	0.046298986	-0.086779501	-0.062879947
## radius_se	-0.055118880	-0.124562479	0.231233991	0.181436577
## texture_se	0.032768777	0.041652813	0.009177450	0.038681291
## perimeter_se	-0.023929011	-0.009084130	0.014508488	0.364045783
## area_se	-0.045538238	0.313148246	-0.296273515	-0.433949999
## smoothness_se	0.058326686	0.145306166	0.228819703	-0.013932678
## compactness_se	-0.190065826	-0.015610691	-0.094108380	-0.250216687
## concavity_se	0.126034946	0.092345618	-0.005794297	0.119490304
## points_se	0.197671940	0.106747906	-0.046944796	-0.015851066
## symmetry_se	0.158541381	-0.279918359	-0.180195394	-0.084242460
## dimension_se	-0.267180143	-0.122002438	0.059970839	0.097082660
## radius_worst	0.083459877	-0.235215809	0.218781792	0.027741137
## texture_worst	-0.185972310	0.065992656	-0.057250572	-0.080880841
## perimeter_worst	0.056649279	-0.228493742	0.189279122	0.105666112
## area_worst	0.090325036	-0.286471546	0.158722686	-0.393681440
## smoothness_worst	-0.142781922	-0.276751162	-0.504565504	0.228506719
## compactness_worst	0.153347954	-0.003683424	0.073627229	0.025544372
## concavity_worst	0.216302398	-0.190307542	0.107894455	-0.035839305
## points_worst	-0.178353485	-0.085180057	-0.067182996	-0.261323873
## symmetry_worst	-0.260033510	0.436706158	0.269313654	0.111738683
## dimension_worst	0.404957673	0.162920272	-0.026674889	-0.022516600

##	PC21	PC22	PC23	PC24
## id	0.009870917	0.006195707	0.003190337	-0.010289027
## radius_mean	0.046009507	0.070394387	-0.073021974	-0.098704322
## texture_mean	0.264801220	-0.436269565	-0.095890704	0.001311285
## perimeter_mean	0.015122205	0.070963404	-0.074821704	-0.040500943
## area_mean	0.087345298	0.021672998	-0.097428804	0.009396470
## smoothness_mean	-0.023842011	0.117945821	-0.063741313	-0.020088204
## compactness_mean	-0.476395571	-0.213187888	0.094254664	0.058295270
## concavity_mean	0.037771062	-0.001270114	0.188862925	0.321062737
## points_mean	0.231546040	0.017493297	0.313280824	-0.057974684
## symmetry_mean	-0.030776761	0.085067786	0.018331111	-0.052004767
## dimension_mean	0.172565576	0.085104005	-0.286892578	-0.084701081
## radius_se	0.090564458	-0.085660592	0.147793165	-0.263799753
## texture_se	0.083589382	-0.212168357	-0.048761201	-0.001150858
## perimeter_se	0.169586632	0.317246026	-0.153859020	0.081384223
## area_se	-0.270679518	-0.207916141	-0.068745790	0.110258620
## smoothness_se	-0.095370809	0.066602974	-0.051852247	-0.057154068
## compactness_se	0.451033960	0.159332265	0.048970757	0.003993806
## concavity_se	-0.070203251	-0.071023842	0.200850815	-0.388573085
## points_se	-0.064848884	-0.035557778	0.074494143	0.354040783
## symmetry_se	-0.112133933	0.092193625	0.084324570	-0.043455477
## dimension_se	-0.214213177	-0.069171668	-0.245408452	0.089594196
## radius_worst	0.006481267	-0.007068180	0.096292694	-0.057768458
## texture_worst	-0.330244412	0.578095532	0.111968438	-0.009473435
## perimeter_worst	-0.010544107	0.094457678	-0.014952244	0.058698441
## area_worst	-0.053510824	-0.149328216	0.096798702	0.193293235
## smoothness_worst	0.140127867	-0.156936236	0.069660581	0.091134610
## compactness_worst	-0.220884131	-0.191897773	-0.033373706	-0.145389941
## concavity_worst	0.047166544	0.139729448	-0.456817799	0.290302924
## points_worst	-0.039740929	-0.006870640	-0.305694162	-0.563297713
## symmetry_worst	0.125617213	-0.155827542	-0.096426675	0.122996111
## dimension_worst	0.095366679	0.092769737	0.470358007	0.002775112
##	PC25	PC26	PC27	PC28
## id	-0.004233388	-0.00132610	-0.002571324	-0.001623875
## radius_mean	-0.183664583	0.01859418	0.128713229	0.131697326
## texture_mean	0.099441545	-0.08442059	0.024821224	0.017622634
## perimeter_mean	-0.117262178	-0.02743488	0.124670225	0.115650274



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## area_mean      0.070557041  0.21057100 -0.361014547 -0.467489167
## smoothness_mean 0.068940049 -0.02876100  0.037372832 -0.069482805
## compactness_mean -0.102198309 -0.39651346 -0.262695425 -0.098624638
## concavity_mean  0.045550527  0.09717977  0.550227716 -0.363040016
## points_mean     0.082349955  0.18630114 -0.389316679  0.453345398
## symmetry_mean   0.018841491  0.02451053  0.015910368  0.015157593
## dimension_mean  -0.134601525  0.20670502  0.096796804  0.101343150
## radius_se       -0.561133900  0.17339784 -0.050411953 -0.213735821
## texture_se       0.023938591 -0.05709165  0.010893175  0.009925699
## perimeter_se     0.516048248 -0.07217201 -0.103485879 -0.041989200
## area_se         -0.018546693 -0.13093723  0.155929011  0.314758068
## smoothness_se    0.016193934 -0.03100551  0.008066566  0.009312365
## compactness_se   -0.122457873 -0.17364984  0.049404535 -0.046651501
## concavity_se     0.186159613 -0.01600952 -0.091931364  0.083824645
## points_se        -0.107166573  0.12999049  0.018674110  0.011675700
## symmetry_se       0.002613811  0.01936313  0.016991197  0.019891112
## dimension_se      0.076177800  0.08458109 -0.035156906  0.012141785
## radius_worst     -0.158114412 -0.07144112  0.195812320  0.178796461
## texture_worst    -0.118609952  0.11802219 -0.036347107 -0.021473842
## perimeter_worst  0.236463109 -0.11790535  0.243266456  0.241658719
## area_worst       0.146339946  0.03921251 -0.229813188 -0.237323945
## smoothness_worst -0.011224935  0.04787154 -0.012860335  0.040730207
## compactness_worst 0.185437121  0.62471727  0.100772153  0.071087434
## concavity_worst  -0.286701322 -0.11586768 -0.267236886  0.142148446
## points_worst     0.105286798 -0.26352782  0.133749940 -0.230794105
## symmetry_worst   -0.013193455 -0.04505357 -0.027824916 -0.022695808
## dimension_worst  0.037882167 -0.28015574 -0.004500884 -0.060081371
##                PC29      PC30      PC31
## id                -1.891724e-05 -0.0006852263 -7.122581e-05
## radius_mean        2.111968e-01 -0.2114371011 -7.024325e-01
## texture_mean       -6.362507e-05  0.0106165839 -2.644366e-04
## perimeter_mean      8.434280e-02 -0.3838889617  6.898676e-01
## area_mean          -2.725167e-01  0.4227208085  3.297173e-02
## smoothness_mean     1.480038e-03  0.0034638648  4.850746e-03
## compactness_mean   -5.466656e-03  0.0409079834 -4.468229e-02
## concavity_mean      4.554138e-02  0.0101122808 -2.512860e-02
## points_mean        -8.885707e-03  0.0041142627  1.067984e-03

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## symmetry_mean      1.432581e-03  0.0075571475  1.279594e-03
## dimension_mean     -6.312291e-03 -0.0073311823  4.751885e-03
## radius_se          -1.922290e-01 -0.1186768422  8.679321e-03
## texture_se         -5.624974e-03  0.0086942153  1.063104e-03
## perimeter_se       2.631905e-01  0.0060612569 -1.373310e-02
## area_se            -4.205668e-02  0.0863645419 -1.054698e-03
## smoothness_se      9.795835e-03 -0.0016737982  1.618711e-03
## compactness_se     -1.539757e-02 -0.0032295613 -1.923037e-03
## concavity_se       5.819985e-03 -0.0161202167  8.921294e-03
## points_se          -2.900497e-02  0.0241014722  2.178643e-03
## symmetry_se        -7.637856e-03  0.0051771158 -3.338380e-04
## dimension_se       1.975791e-02  0.0083971145 -1.792802e-03
## radius_worst       4.126296e-01  0.6356796555  1.356846e-01
## texture_worst      -3.896988e-04 -0.0172219636 -1.020237e-03
## perimeter_worst    -7.286790e-01 -0.0228830657 -7.974244e-02
## area_worst         2.389679e-01 -0.4448733182 -3.976788e-02
## smoothness_worst   -1.535941e-03 -0.0074142082 -4.586820e-03
## compactness_worst  4.869512e-02  0.0001075081  1.285262e-02
## concavity_worst    -1.764174e-02  0.0126547542 -4.031809e-04
## points_worst       2.247340e-02 -0.0353341030  2.276561e-03
## symmetry_worst     4.922100e-03 -0.0133523613 -3.910451e-04
## dimension_worst    -2.356283e-02 -0.0115053741 -1.897779e-03
```

```
print(cancer_pca)
```

```
## Standard deviations (1, ..., p=31):
## [1] 3.64527878 2.38679814 1.68386313 1.40760690 1.28406203 1.11115827
## [7] 0.98907696 0.81960537 0.67881693 0.63492763 0.59089337 0.54211662
## [13] 0.51102537 0.49125372 0.39619900 0.30680373 0.28250655 0.24299439
## [19] 0.22932770 0.22163467 0.17626907 0.17303527 0.16562163 0.15572098
## [25] 0.13431069 0.12441756 0.09039745 0.08305482 0.03986650 0.02735646
## [31] 0.01153431
##
## Rotation (n x k) = (31 x 31):
##           PC1      PC2      PC3      PC4
## id      -0.02291216  0.034068491  0.096938436 -0.026598045
```

```

## radius_mean      -0.21891302  0.233271401 -0.011393786  0.042187950
## texture_mean     -0.10384388  0.060044199  0.066892342 -0.602954308
## perimeter_mean   -0.22753491  0.214589002 -0.012124791  0.042752797
## area_mean        -0.22104577  0.230668816  0.026293150  0.054114724
## smoothness_mean  -0.14241471 -0.186422211 -0.103182400  0.158098177
## compactness_mean -0.23906730 -0.152454726 -0.074768623  0.031818117
## concavity_mean   -0.25828025 -0.060541625  0.001758736  0.019497124
## points_mean      -0.26073811  0.034167392 -0.027579607  0.065785353
## symmetry_mean     -0.13797774 -0.190684979 -0.040962032  0.067502543
## dimension_mean    -0.06414779 -0.366531055 -0.020817875  0.047957856
## radius_se         -0.20611747  0.105935702  0.266917221  0.099114446
## texture_se         -0.01741339 -0.089547789  0.371439885 -0.356497230
## perimeter_se       -0.21144652  0.089807043  0.264925682  0.090293055
## area_se            -0.20307642  0.152771289  0.215790250  0.108568705
## smoothness_se      -0.01467821 -0.203189876  0.311787845  0.044368664
## compactness_se     -0.17028840 -0.232503362  0.154557465 -0.026425360
## concavity_se       -0.15354367 -0.196846081  0.176560052  0.002248291
## points_se          -0.18340675 -0.129965181  0.223850479  0.075252232
## symmetry_se         -0.04241552 -0.183558627  0.285265066  0.046936126
## dimension_se        -0.10249607 -0.279584139  0.211893354  0.016212450
## radius_worst       -0.22800935  0.219296044 -0.049406340  0.015659705
## texture_worst      -0.10451545  0.045501223 -0.039828934 -0.633119655
## perimeter_worst    -0.23663734  0.199295985 -0.050431945  0.014068572
## area_worst         -0.22493214  0.218985461 -0.013188891  0.025970672
## smoothness_worst   -0.12782441 -0.172562959 -0.255328751  0.014523359
## compactness_worst  -0.20988456 -0.144253637 -0.234513609 -0.092562168
## concavity_worst    -0.22860218 -0.098526524 -0.172024941 -0.074807188
## points_worst       -0.25074620  0.007534367 -0.170480673  0.005305980
## symmetry_worst     -0.12267993 -0.142619436 -0.270515902 -0.037129466
## dimension_worst    -0.13156024 -0.275702077 -0.229474476 -0.078971489
##
##                  PC5          PC6          PC7          PC8
## id                0.011327587 -0.316733438  0.9071156324 -0.096362415
## radius_mean       -0.038129861  0.029588521 -0.0422987777 -0.116427419
## texture_mean       0.049091450 -0.031394323  0.0149935618  0.001875482
## perimeter_mean    -0.037715592  0.028394008 -0.0435888242 -0.106272097
## area_mean         -0.010562229  0.006113155 -0.0289256668 -0.047414568
## smoothness_mean   0.365750055 -0.262508993 -0.1403403617 -0.123541189

```

## compactness_mean	-0.011786637	-0.004903894	-0.0453031106	0.043145968
## concavity_mean	-0.086512506	-0.002356338	-0.0325530646	-0.102436021
## points_mean	0.043667412	-0.034509273	-0.0814216298	-0.136923237
## symmetry_mean	0.305378893	0.335082168	0.1182592361	-0.098874531
## dimension_mean	0.044767906	-0.112784169	-0.0410588768	0.306499872
## radius_se	0.154254367	-0.023261199	0.0167882718	0.307415709
## texture_se	0.190001500	0.022856912	-0.1902676469	-0.052632477
## perimeter_se	0.120703357	0.003820151	0.0195081762	0.311265679
## area_se	0.127765023	-0.051958835	0.0565606078	0.334287959
## smoothness_se	0.232745603	-0.330867850	-0.0678348099	-0.260833914
## compactness_se	-0.280298048	0.066788120	0.0222220211	0.021001944
## concavity_se	-0.354164595	0.049699104	0.0336810725	-0.219193299
## points_se	-0.195758558	-0.023197526	-0.0378517870	-0.370217167
## symmetry_se	0.251331178	0.477530515	0.1184032606	-0.084854768
## dimension_se	-0.263395188	-0.048462373	-0.0157602244	0.194418818
## radius_worst	0.004280034	0.004521737	-0.0166458140	-0.007508307
## texture_worst	0.092551860	-0.045174516	-0.0094601240	0.006617640
## perimeter_worst	-0.007599144	0.012921166	-0.0145260986	0.002162488
## area_worst	0.027413595	-0.024033338	-0.0007372602	0.066173186
## smoothness_worst	0.325860028	-0.365048687	-0.0670682168	-0.116496117
## compactness_worst	-0.121503371	0.034042714	0.0507556727	0.136509363
## concavity_worst	-0.188280510	0.017962040	0.0352007117	-0.067085744
## points_worst	-0.043123573	-0.029549100	-0.0207238959	-0.166500918
## symmetry_worst	0.244245936	0.451404312	0.2340143294	-0.041439633
## dimension_worst	-0.093699078	-0.092479698	0.0347167538	0.372034479
##	PC9	PC10	PC11	PC12
## id	0.149115642	-0.16926751	0.058188997	-0.006721252
## radius_mean	-0.046270835	-0.22402704	-0.079466081	-0.042213788
## texture_mean	-0.088727168	0.11945674	-0.253258091	0.304032359
## perimeter_mean	-0.036230738	-0.22634517	-0.069865929	-0.017573055
## area_mean	-0.080649856	-0.18600385	-0.062795372	-0.110760120
## smoothness_mean	0.278996404	-0.06133822	0.084661549	0.135321954
## compactness_mean	0.099214048	-0.19518602	0.005172841	0.307036205
## concavity_mean	0.075750464	0.03395563	0.134664686	-0.124553100
## points_mean	0.116569072	-0.14261678	0.006124860	0.071564686
## symmetry_mean	0.315150303	0.13561452	-0.574417320	-0.161058144
## dimension_mean	0.130639482	-0.15848117	-0.066456112	0.037318709

## radius_se	0.026200456	0.26504403	0.025847282	0.027030250
## texture_se	0.372989606	-0.31521084	0.323158815	-0.348396233
## perimeter_se	0.052860114	0.23789288	0.094867442	0.168501485
## area_se	-0.030627892	0.24966405	0.071991560	-0.050731496
## smoothness_se	-0.580789293	-0.01015980	-0.179568831	-0.081753374
## compactness_se	-0.148593714	-0.11518343	-0.038615749	0.206959272
## concavity_se	0.034715098	0.36592141	0.113536362	-0.348342358
## points_se	0.189022962	0.21518752	-0.094066850	0.342855186
## symmetry_se	-0.292785738	-0.22049558	0.328314881	0.185998712
## dimension_se	-0.060203202	-0.22637997	-0.353844543	-0.250428852
## radius_worst	-0.070224590	-0.09981025	-0.073013014	-0.105030701
## texture_worst	-0.008571809	0.10669296	-0.038561250	-0.012490348
## perimeter_worst	-0.058854223	-0.09821693	-0.045750979	-0.051125158
## area_worst	-0.097034650	-0.06179787	-0.068822329	-0.184460981
## smoothness_worst	-0.173257498	0.16912753	0.109278029	-0.142996001
## compactness_worst	-0.111218083	-0.06445290	0.175401648	0.196805544
## concavity_worst	-0.035467377	0.19661986	0.295581609	-0.184959562
## points_worst	0.052322473	0.05121611	0.075496752	0.117518361
## symmetry_worst	-0.188266324	0.10308901	0.019223451	-0.157210098
## dimension_worst	-0.087222442	-0.11291399	-0.007071634	-0.118625115
##	PC13	PC14	PC15	PC16
## id	-0.004841084	-0.006500099	0.006885943	-0.002753492
## radius_mean	0.050603927	-0.012496988	-0.059054553	0.050789156
## texture_mean	0.256273666	-0.201876125	0.020701124	0.108089530
## perimeter_mean	0.038470392	-0.044684430	-0.048019221	0.039590476
## area_mean	0.065047550	-0.067879244	-0.010152279	-0.014636050
## smoothness_mean	0.315872261	-0.046461624	-0.444044654	0.117493291
## compactness_mean	-0.104264618	-0.230005458	-0.007661166	-0.230759682
## concavity_mean	0.065723393	-0.387349680	0.189733740	0.128386008
## points_mean	0.042253113	-0.132637847	0.245219266	0.217299938
## symmetry_mean	-0.288054252	-0.189570545	-0.030903840	0.073950596
## dimension_mean	0.236120382	-0.106390748	0.377436108	-0.518333769
## radius_se	-0.015625578	0.069635807	-0.011959877	0.111103952
## texture_se	-0.308499115	0.165408488	0.012614192	-0.033389049
## perimeter_se	-0.100597125	0.038865462	0.044358477	0.008991734
## area_se	-0.017226446	-0.055687709	-0.083203050	0.045171638
## smoothness_se	-0.293287983	-0.149148603	0.200139961	-0.018414232

## compactness_se	-0.263398426	-0.010320713	-0.491903153	-0.167886977
## concavity_se	0.251864823	-0.157777595	-0.135322845	-0.250292522
## points_se	-0.006430584	0.494527095	0.199547389	-0.062548716
## symmetry_se	0.319874237	-0.010836031	0.047340593	0.113219397
## dimension_se	0.275943072	0.240767973	-0.145958050	0.353782637
## radius_worst	0.039582217	0.138036550	-0.023526025	-0.166213790
## texture_worst	0.080142089	0.080737140	-0.053897961	-0.100862417
## perimeter_worst	-0.009084762	0.097004376	-0.012559001	-0.182407021
## area_worst	0.047986766	0.101235629	0.006646192	-0.315142865
## smoothness_worst	0.056931408	0.206026671	-0.163389545	-0.045226715
## compactness_worst	-0.371991007	-0.013117334	-0.165941776	0.049613607
## concavity_worst	-0.086870368	-0.218055908	0.066854662	0.204743734
## points_worst	-0.068367254	0.254345228	0.276401728	0.169597618
## symmetry_worst	0.043937722	0.256766084	-0.005448734	-0.139913723
## dimension_worst	-0.035134642	0.172524501	0.212520491	0.255448214
##	PC17	PC18	PC19	PC20
## id	-0.007779983	-0.019707372	0.005442248	0.020454908
## radius_mean	0.150008977	0.209908003	-0.156773206	0.211821385
## texture_mean	0.159152972	-0.034161758	0.040048687	0.029931705
## perimeter_mean	0.113792993	0.201233658	-0.168413120	0.227079273
## area_mean	0.130173978	0.251460456	-0.269145594	-0.045499625
## smoothness_mean	0.203117911	0.168171613	0.354463321	-0.160358262
## compactness_mean	-0.170379447	-0.016302860	-0.014259132	0.292092522
## concavity_mean	-0.270010606	-0.005071590	0.027973937	0.007197446
## points_mean	-0.381111880	0.028741889	0.087065594	-0.153991624
## symmetry_mean	0.165691481	-0.194702559	-0.169168737	-0.058503329
## dimension_mean	0.039119713	0.046298986	-0.086779501	-0.062879947
## radius_se	-0.055118880	-0.124562479	0.231233991	0.181436577
## texture_se	0.032768777	0.041652813	0.009177450	0.038681291
## perimeter_se	-0.023929011	-0.009084130	0.014508488	0.364045783
## area_se	-0.045538238	0.313148246	-0.296273515	-0.433949999
## smoothness_se	0.058326686	0.145306166	0.228819703	-0.013932678
## compactness_se	-0.190065826	-0.015610691	-0.094108380	-0.250216687
## concavity_se	0.126034946	0.092345618	-0.005794297	0.119490304
## points_se	0.197671940	0.106747906	-0.046944796	-0.015851066
## symmetry_se	0.158541381	-0.279918359	-0.180195394	-0.084242460
## dimension_se	-0.267180143	-0.122002438	0.059970839	0.097082660

## radius_worst	0.083459877	-0.235215809	0.218781792	0.027741137
## texture_worst	-0.185972310	0.065992656	-0.057250572	-0.080880841
## perimeter_worst	0.056649279	-0.228493742	0.189279122	0.105666112
## area_worst	0.090325036	-0.286471546	0.158722686	-0.393681440
## smoothness_worst	-0.142781922	-0.276751162	-0.504565504	0.228506719
## compactness_worst	0.153347954	-0.003683424	0.073627229	0.025544372
## concavity_worst	0.216302398	-0.190307542	0.107894455	-0.035839305
## points_worst	-0.178353485	-0.085180057	-0.067182996	-0.261323873
## symmetry_worst	-0.260033510	0.436706158	0.269313654	0.111738683
## dimension_worst	0.404957673	0.162920272	-0.026674889	-0.022516600
##	PC21	PC22	PC23	PC24
## id	0.009870917	0.006195707	0.003190337	-0.010289027
## radius_mean	0.046009507	0.070394387	-0.073021974	-0.098704322
## texture_mean	0.264801220	-0.436269565	-0.095890704	0.001311285
## perimeter_mean	0.015122205	0.070963404	-0.074821704	-0.040500943
## area_mean	0.087345298	0.021672998	-0.097428804	0.009396470
## smoothness_mean	-0.023842011	0.117945821	-0.063741313	-0.020088204
## compactness_mean	-0.476395571	-0.213187888	0.094254664	0.058295270
## concavity_mean	0.037771062	-0.001270114	0.188862925	0.321062737
## points_mean	0.231546040	0.017493297	0.313280824	-0.057974684
## symmetry_mean	-0.030776761	0.085067786	0.018331111	-0.052004767
## dimension_mean	0.172565576	0.085104005	-0.286892578	-0.084701081
## radius_se	0.090564458	-0.085660592	0.147793165	-0.263799753
## texture_se	0.083589382	-0.212168357	-0.048761201	-0.001150858
## perimeter_se	0.169586632	0.317246026	-0.153859020	0.081384223
## area_se	-0.270679518	-0.207916141	-0.068745790	0.110258620
## smoothness_se	-0.095370809	0.066602974	-0.051852247	-0.057154068
## compactness_se	0.451033960	0.159332265	0.048970757	0.003993806
## concavity_se	-0.070203251	-0.071023842	0.200850815	-0.388573085
## points_se	-0.064848884	-0.035557778	0.074494143	0.354040783
## symmetry_se	-0.112133933	0.092193625	0.084324570	-0.043455477
## dimension_se	-0.214213177	-0.069171668	-0.245408452	0.089594196
## radius_worst	0.006481267	-0.007068180	0.096292694	-0.057768458
## texture_worst	-0.330244412	0.578095532	0.111968438	-0.009473435
## perimeter_worst	-0.010544107	0.094457678	-0.014952244	0.058698441
## area_worst	-0.053510824	-0.149328216	0.096798702	0.193293235
## smoothness_worst	0.140127867	-0.156936236	0.069660581	0.091134610



## compactness_worst	-0.220884131	-0.191897773	-0.033373706	-0.145389941
## concavity_worst	0.047166544	0.139729448	-0.456817799	0.290302924
## points_worst	-0.039740929	-0.006870640	-0.305694162	-0.563297713
## symmetry_worst	0.125617213	-0.155827542	-0.096426675	0.122996111
## dimension_worst	0.095366679	0.092769737	0.470358007	0.002775112
##	PC25	PC26	PC27	PC28
## id	-0.004233388	-0.00132610	-0.002571324	-0.001623875
## radius_mean	-0.183664583	0.01859418	0.128713229	0.131697326
## texture_mean	0.099441545	-0.08442059	0.024821224	0.017622634
## perimeter_mean	-0.117262178	-0.02743488	0.124670225	0.115650274
## area_mean	0.070557041	0.21057100	-0.361014547	-0.467489167
## smoothness_mean	0.068940049	-0.02876100	0.037372832	-0.069482805
## compactness_mean	-0.102198309	-0.39651346	-0.262695425	-0.098624638
## concavity_mean	0.045550527	0.09717977	0.550227716	-0.363040016
## points_mean	0.082349955	0.18630114	-0.389316679	0.453345398
## symmetry_mean	0.018841491	0.02451053	0.015910368	0.015157593
## dimension_mean	-0.134601525	0.20670502	0.096796804	0.101343150
## radius_se	-0.561133900	0.17339784	-0.050411953	-0.213735821
## texture_se	0.023938591	-0.05709165	0.010893175	0.009925699
## perimeter_se	0.516048248	-0.07217201	-0.103485879	-0.041989200
## area_se	-0.018546693	-0.13093723	0.155929011	0.314758068
## smoothness_se	0.016193934	-0.03100551	0.008066566	0.009312365
## compactness_se	-0.122457873	-0.17364984	0.049404535	-0.046651501
## concavity_se	0.186159613	-0.01600952	-0.091931364	0.083824645
## points_se	-0.107166573	0.12999049	0.018674110	0.011675700
## symmetry_se	0.002613811	0.01936313	0.016991197	0.019891112
## dimension_se	0.076177800	0.08458109	-0.035156906	0.012141785
## radius_worst	-0.158114412	-0.07144112	0.195812320	0.178796461
## texture_worst	-0.118609952	0.11802219	-0.036347107	-0.021473842
## perimeter_worst	0.236463109	-0.11790535	0.243266456	0.241658719
## area_worst	0.146339946	0.03921251	-0.229813188	-0.237323945
## smoothness_worst	-0.011224935	0.04787154	-0.012860335	0.040730207
## compactness_worst	0.185437121	0.62471727	0.100772153	0.071087434
## concavity_worst	-0.286701322	-0.11586768	-0.267236886	0.142148446
## points_worst	0.105286798	-0.26352782	0.133749940	-0.230794105
## symmetry_worst	-0.013193455	-0.04505357	-0.027824916	-0.022695808
## dimension_worst	0.037882167	-0.28015574	-0.004500884	-0.060081371

```
##          PC29          PC30          PC31
## id      -1.891724e-05 -0.0006852263 -7.122581e-05
## radius_mean    2.111968e-01 -0.2114371011 -7.024325e-01
## texture_mean   -6.362507e-05  0.0106165839 -2.644366e-04
## perimeter_mean  8.434280e-02 -0.3838889617  6.898676e-01
## area_mean     -2.725167e-01  0.4227208085  3.297173e-02
## smoothness_mean 1.480038e-03  0.0034638648  4.850746e-03
## compactness_mean -5.466656e-03  0.0409079834 -4.468229e-02
## concavity_mean  4.554138e-02  0.0101122808 -2.512860e-02
## points_mean    -8.885707e-03  0.0041142627  1.067984e-03
## symmetry_mean   1.432581e-03  0.0075571475  1.279594e-03
## dimension_mean  -6.312291e-03 -0.0073311823  4.751885e-03
## radius_se      -1.922290e-01 -0.1186768422  8.679321e-03
## texture_se     -5.624974e-03  0.0086942153  1.063104e-03
## perimeter_se    2.631905e-01  0.0060612569 -1.373310e-02
## area_se        -4.205668e-02  0.0863645419 -1.054698e-03
## smoothness_se   9.795835e-03 -0.0016737982  1.618711e-03
## compactness_se  -1.539757e-02 -0.0032295613 -1.923037e-03
## concavity_se    5.819985e-03 -0.0161202167  8.921294e-03
## points_se      -2.900497e-02  0.0241014722  2.178643e-03
## symmetry_se     -7.637856e-03  0.0051771158 -3.338380e-04
## dimension_se    1.975791e-02  0.0083971145 -1.792802e-03
## radius_worst    4.126296e-01  0.6356796555  1.356846e-01
## texture_worst   -3.896988e-04 -0.0172219636 -1.020237e-03
## perimeter_worst -7.286790e-01 -0.0228830657 -7.974244e-02
## area_worst      2.389679e-01 -0.4448733182 -3.976788e-02
## smoothness_worst -1.535941e-03 -0.0074142082 -4.586820e-03
## compactness_worst 4.869512e-02  0.0001075081  1.285262e-02
## concavity_worst -1.764174e-02  0.0126547542 -4.031809e-04
## points_worst    2.247340e-02 -0.0353341030  2.276561e-03
## symmetry_worst   4.922100e-03 -0.0133523613 -3.910451e-04
## dimension_worst -2.356283e-02 -0.0115053741 -1.897779e-03
```

```
# Sample scores stored in cancer_pca$x
head(cancer_pca$x)
```



```

##          PC1          PC2          PC3          PC4          PC5          PC6
## [1,] 2.501946 -0.09694805 -0.4489597 2.3341176 0.69771548 -0.2430058
## [2,] 1.467439 -1.68630059 1.1542039 0.3362109 0.45962538 1.2308248
## [3,] 2.929028 -0.38319924 -0.8955891 -0.1164828 0.98441377 -0.2587872
## [4,] 1.995342 -1.33046592 1.1172876 2.0502761 0.25303846 -1.5539634
## [5,] 2.500252 2.01035097 -0.7584035 1.9862169 -1.13537096 0.5940361
## [6,] 2.018308 -0.78242095 0.1125197 -0.6532280 0.01841577 0.6914453
##          PC7          PC8          PC9          PC10          PC11          PC12
## [1,] 0.5092015 -1.11423307 0.2840243 0.32463197 -0.3245353 0.04981306
## [2,] 0.2937434 0.10000461 -0.0668399 0.42612180 0.4564029 1.19357566
## [3,] -0.3303385 0.03599041 0.8734350 0.02222192 0.4208602 -0.06687286
## [4,] -0.9692185 -1.31852134 0.6254396 0.05666470 -0.0691646 0.97082409
## [5,] 0.1198201 -0.48279704 -0.2727816 -0.29439485 -0.3577533 0.03266208
## [6,] 0.1454026 0.06214539 0.2342454 0.73681239 -0.3671239 -0.77029743
##          PC13          PC14          PC15          PC16          PC17
## [1,] -0.19760220 0.1134403 -0.059302558 0.16637723 -0.04286656
## [2,] 0.01807424 -0.2824292 -0.204858888 -0.07067959 0.03088787
## [3,] 0.37435458 0.2585457 -0.330274216 -0.13000189 -0.24616091
## [4,] -0.90968379 0.2179117 -0.665825669 0.10213387 -0.10289446
## [5,] -0.35547138 -0.1480140 -0.005540503 -0.06495881 0.22273309
## [6,] -0.49542291 -0.2992431 0.049952835 -0.20161083 0.14920422
##          PC18          PC19          PC20          PC21          PC22
## [1,] -0.104542766 -0.03484189 -0.09691187 -0.02846306 -0.00673628
## [2,] -0.405534243 -0.02886103 -0.05262226 -0.05987170 0.05868642
## [3,] 0.327711259 0.15937793 -0.13804895 -0.13489743 0.10080029
## [4,] 0.197085181 0.36251771 -0.40018239 -0.10302093 -0.28821708
## [5,] -0.129129156 -0.35877054 0.08515543 -0.08500541 -0.06332008
## [6,] -0.002229379 -0.08178568 0.18970936 -0.06872875 0.09669594
##          PC23          PC24          PC25          PC26          PC27
## [1,] -0.038971937 0.062212075 0.088438866 0.04872948 -0.007000724
## [2,] 0.070978613 -0.030822339 -0.016741580 0.04173030 -0.059332996
## [3,] 0.053909008 0.085484364 0.038277664 -0.04151896 -0.035546410
## [4,] 0.182045907 0.222848059 -0.115720065 -0.03676948 -0.148171674
## [5,] 0.043591030 0.008165322 0.002738052 0.05983731 0.046167735
## [6,] -0.001458054 -0.031338348 0.042784223 -0.08646068 -0.030944690
##          PC28          PC29          PC30          PC31
## [1,] 0.05356131 0.015184882 0.015985406 0.001396101

```

```
## [2,] -0.18696553  0.027011311 -0.000803330  0.008096490
## [3,] -0.07653067 -0.014640388  0.010307894  0.009074601
## [4,] -0.01711665 -0.047828494  0.023862995  0.000265075
## [5,]  0.03835364  0.032450800 -0.002312178 -0.002563269
## [6,]  0.00955434 -0.004403431  0.003869919 -0.002931194
```

```
# Identifying the scores by their diagnosis
```

```
diag_pca <- cbind(data.frame(diagnosis),cancer_pca$x)
head(diag_pca)
```

```
##  diagnosis      PC1      PC2      PC3      PC4      PC5
## 1          B 2.501946 -0.09694805 -0.4489597  2.3341176  0.69771548
## 2          B 1.467439 -1.68630059  1.1542039  0.3362109  0.45962538
## 3          B 2.929028 -0.38319924 -0.8955891 -0.1164828  0.98441377
## 4          B 1.995342 -1.33046592  1.1172876  2.0502761  0.25303846
## 5          B 2.500252  2.01035097 -0.7584035  1.9862169 -1.13537096
## 6          B 2.018308 -0.78242095  0.1125197 -0.6532280  0.01841577
##      PC6      PC7      PC8      PC9      PC10      PC11
## 1 -0.2430058  0.5092015 -1.11423307  0.2840243  0.32463197 -0.3245353
## 2  1.2308248  0.2937434  0.10000461 -0.0668399  0.42612180  0.4564029
## 3 -0.2587872 -0.3303385  0.03599041  0.8734350  0.02222192  0.4208602
## 4 -1.5539634 -0.9692185 -1.31852134  0.6254396  0.05666470 -0.0691646
## 5  0.5940361  0.1198201 -0.48279704 -0.2727816 -0.29439485 -0.3577533
## 6  0.6914453  0.1454026  0.06214539  0.2342454  0.73681239 -0.3671239
##      PC12      PC13      PC14      PC15      PC16      PC17
## 1  0.04981306 -0.19760220  0.1134403 -0.059302558  0.16637723 -0.04286656
## 2  1.19357566  0.01807424 -0.2824292 -0.204858888 -0.07067959  0.03088787
## 3 -0.06687286  0.37435458  0.2585457 -0.330274216 -0.13000189 -0.24616091
## 4  0.97082409 -0.90968379  0.2179117 -0.665825669  0.10213387 -0.10289446
## 5  0.03266208 -0.35547138 -0.1480140 -0.005540503 -0.06495881  0.22273309
## 6 -0.77029743 -0.49542291 -0.2992431  0.049952835 -0.20161083  0.14920422
##      PC18      PC19      PC20      PC21      PC22
## 1 -0.104542766 -0.03484189 -0.09691187 -0.02846306 -0.00673628
## 2 -0.405534243 -0.02886103 -0.05262226 -0.05987170  0.05868642
## 3  0.327711259  0.15937793 -0.13804895 -0.13489743  0.10080029
## 4  0.197085181  0.36251771 -0.40018239 -0.10302093 -0.28821708
```

```
## 5 -0.129129156 -0.35877054 0.08515543 -0.08500541 -0.06332008
## 6 -0.002229379 -0.08178568 0.18970936 -0.06872875 0.09669594
##          PC23          PC24          PC25          PC26          PC27
## 1 -0.038971937 0.062212075 0.088438866 0.04872948 -0.007000724
## 2 0.070978613 -0.030822339 -0.016741580 0.04173030 -0.059332996
## 3 0.053909008 0.085484364 0.038277664 -0.04151896 -0.035546410
## 4 0.182045907 0.222848059 -0.115720065 -0.03676948 -0.148171674
## 5 0.043591030 0.008165322 0.002738052 0.05983731 0.046167735
## 6 -0.001458054 -0.031338348 0.042784223 -0.08646068 -0.030944690
##          PC28          PC29          PC30          PC31
## 1 0.05356131 0.015184882 0.015985406 0.001396101
## 2 -0.18696553 0.027011311 -0.000803330 0.008096490
## 3 -0.07653067 -0.014640388 0.010307894 0.009074601
## 4 -0.01711665 -0.047828494 0.023862995 0.000265075
## 5 0.03835364 0.032450800 -0.002312178 -0.002563269
## 6 0.00955434 -0.004403431 0.003869919 -0.002931194
```

```
# Means of scores for all the PC's classified by diagnosis status
tabmeansPC <- aggregate(diag_pca[,2:31],by=list(diagnosis=cancer$diagnosis),mean)
tabmeansPC
```

```
## diagnosis      PC1      PC2      PC3      PC4      PC5
## 1          B 2.204253 -0.3436398 0.2160542 0.1384470 -0.09800974
## 2          M -3.711879 0.5786765 -0.3638272 -0.2331395 0.16504470
##          PC6      PC7      PC8      PC9      PC10
## 1 0.004373132 0.01691799 0.04905754 0.03377092 -0.01002704
## 2 -0.007364189 -0.02848926 -0.08261104 -0.05686895 0.01688516
##          PC11      PC12      PC13      PC14      PC15
## 1 -0.0007888591 0.006017621 0.003305282 -0.03736471 -0.02453152
## 2 0.0013284090 -0.010133446 -0.005565970 0.06292076 0.04131016
##          PC16      PC17      PC18      PC19      PC20
## 1 -0.02516699 0.0001112917 0.006103777 -0.01307695 -0.009733891
## 2 0.04238026 -0.0001874111 -0.010278530 0.02202108 0.016391505
##          PC21      PC22      PC23      PC24      PC25
## 1 -0.008359794 -0.006225063 -0.003024993 0.002609428 0.007813479
## 2 0.014077577 0.010482771 0.005093974 -0.004394179 -0.013157604
```

```
##          PC26          PC27          PC28          PC29          PC30
## 1 -0.000879209 -0.003967725 -0.001909259 -0.0003418423 -0.0009838392
## 2  0.001480555  0.006681499  0.003215121  0.0005756496  0.0016567480
```

```
tabmeansPC <- tabmeansPC[rev(order(tabmeansPC$diagnosis)),]
tabmeansPC
```

```
## diagnosis      PC1      PC2      PC3      PC4      PC5
## 2          M -3.711879  0.5786765 -0.3638272 -0.2331395  0.16504470
## 1          B  2.204253 -0.3436398  0.2160542  0.1384470 -0.09800974
##          PC6      PC7      PC8      PC9      PC10
## 2 -0.007364189 -0.02848926 -0.08261104 -0.05686895  0.01688516
## 1  0.004373132  0.01691799  0.04905754  0.03377092 -0.01002704
##          PC11      PC12      PC13      PC14      PC15
## 2  0.0013284090 -0.010133446 -0.005565970  0.06292076  0.04131016
## 1 -0.0007888591  0.006017621  0.003305282 -0.03736471 -0.02453152
##          PC16      PC17      PC18      PC19      PC20
## 2  0.04238026 -0.0001874111 -0.010278530  0.02202108  0.016391505
## 1 -0.02516699  0.0001112917  0.006103777 -0.01307695 -0.009733891
##          PC21      PC22      PC23      PC24      PC25
## 2  0.014077577  0.010482771  0.005093974 -0.004394179 -0.013157604
## 1 -0.008359794 -0.006225063 -0.003024993  0.002609428  0.007813479
##          PC26      PC27      PC28      PC29      PC30
## 2  0.001480555  0.006681499  0.003215121  0.0005756496  0.0016567480
## 1 -0.000879209 -0.003967725 -0.001909259 -0.0003418423 -0.0009838392
```

```
tabfmeans <- t(tabmeansPC[,-1])
tabfmeans
```

```
##          2          1
## PC1 -3.7118786952  2.2042528946
## PC2  0.5786764540 -0.3436397990
## PC3 -0.3638271826  0.2160542373
## PC4 -0.2331394896  0.1384469798
```

```
## PC5 0.1650447018 -0.0980097389
## PC6 -0.0073641886 0.0043731316
## PC7 -0.0284892608 0.0169179924
## PC8 -0.0826110415 0.0490575373
## PC9 -0.0568689505 0.0337709174
## PC10 0.0168851623 -0.0100270432
## PC11 0.0013284090 -0.0007888591
## PC12 -0.0101334459 0.0060176205
## PC13 -0.0055659702 0.0033052820
## PC14 0.0629207582 -0.0373647080
## PC15 0.0413101623 -0.0245315249
## PC16 0.0423802589 -0.0251669885
## PC17 -0.0001874111 0.0001112917
## PC18 -0.0102785304 0.0061037771
## PC19 0.0220210837 -0.0130769461
## PC20 0.0163915046 -0.0097338907
## PC21 0.0140775772 -0.0083597937
## PC22 0.0104827709 -0.0062250628
## PC23 0.0050939739 -0.0030249929
## PC24 -0.0043941787 0.0026094282
## PC25 -0.0131576035 0.0078134789
## PC26 0.0014805547 -0.0008792090
## PC27 0.0066814986 -0.0039677247
## PC28 0.0032151208 -0.0019092594
## PC29 0.0005756496 -0.0003418423
## PC30 0.0016567480 -0.0009838392
```

```
colnames(tabfmeans) <- t(as.vector(tabmeansPC[1]))
tabfmeans
```

```
##           M           B
## PC1 -3.7118786952 2.2042528946
## PC2 0.5786764540 -0.3436397990
## PC3 -0.3638271826 0.2160542373
## PC4 -0.2331394896 0.1384469798
## PC5 0.1650447018 -0.0980097389
```

```
## PC6 -0.0073641886 0.0043731316
## PC7 -0.0284892608 0.0169179924
## PC8 -0.0826110415 0.0490575373
## PC9 -0.0568689505 0.0337709174
## PC10 0.0168851623 -0.0100270432
## PC11 0.0013284090 -0.0007888591
## PC12 -0.0101334459 0.0060176205
## PC13 -0.0055659702 0.0033052820
## PC14 0.0629207582 -0.0373647080
## PC15 0.0413101623 -0.0245315249
## PC16 0.0423802589 -0.0251669885
## PC17 -0.0001874111 0.0001112917
## PC18 -0.0102785304 0.0061037771
## PC19 0.0220210837 -0.0130769461
## PC20 0.0163915046 -0.0097338907
## PC21 0.0140775772 -0.0083597937
## PC22 0.0104827709 -0.0062250628
## PC23 0.0050939739 -0.0030249929
## PC24 -0.0043941787 0.0026094282
## PC25 -0.0131576035 0.0078134789
## PC26 0.0014805547 -0.0008792090
## PC27 0.0066814986 -0.0039677247
## PC28 0.0032151208 -0.0019092594
## PC29 0.0005756496 -0.0003418423
## PC30 0.0016567480 -0.0009838392
```

```
# Standard deviations of scores for all the PC's classified by diagnosis status
tabstdsPC <- aggregate(diag_pca[,2:31],by=list(cancer$diagnosis),sd)
tabstds <- t(tabstdsPC[, -1])
colnames(tabstds) <- t(as.vector(tabstdsPC[1]))
tabstds
```

```
##           B           M
## PC1 1.63956487 3.02839244
## PC2 2.08691418 2.72966952
## PC3 1.36038677 2.07323861
```

```
## PC4 1.39613539 1.39927526
## PC5 1.39777817 1.04807636
## PC6 0.95340249 1.33789147
## PC7 0.95140466 1.05116532
## PC8 0.64932787 1.04212370
## PC9 0.65881989 0.70917409
## PC10 0.57998076 0.71917808
## PC11 0.60269891 0.57186757
## PC12 0.54006502 0.54668527
## PC13 0.51222488 0.51016086
## PC14 0.37926601 0.63294179
## PC15 0.38070917 0.41867516
## PC16 0.26760334 0.36012377
## PC17 0.26627925 0.30856638
## PC18 0.17881651 0.32377631
## PC19 0.17193548 0.30152802
## PC20 0.17202337 0.28613872
## PC21 0.15015083 0.21280261
## PC22 0.15982321 0.19320204
## PC23 0.14579937 0.19476702
## PC24 0.12247334 0.19984615
## PC25 0.11050781 0.16637188
## PC26 0.09806381 0.15950557
## PC27 0.07202620 0.11477556
## PC28 0.06617618 0.10565982
## PC29 0.02588741 0.05609976
## PC30 0.01834069 0.03798219
```

```
t.test(PC1~cancer$diagnosis,data=diag_pca)
```

```
##
## Welch Two Sample t-test
##
## data: PC1 by cancer$diagnosis
## t = 26.251, df = 285.72, p-value < 2.2e-16
## alternative hypothesis: true difference in means is not equal to 0
```

```
## 95 percent confidence interval:
##  5.472542 6.359721
## sample estimates:
## mean in group B mean in group M
##      2.204253      -3.711879
```

```
t.test(PC2~cancer$diagnosis,data=diag_pca)
```

```
##
## Welch Two Sample t-test
##
## data:  PC2 by cancer$diagnosis
## t = -4.2387, df = 357.38, p-value = 2.865e-05
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -1.3502373 -0.4943952
## sample estimates:
## mean in group B mean in group M
##      -0.3436398      0.5786765
```

```
t.test(PC3~cancer$diagnosis,data=diag_pca)
```

```
##
## Welch Two Sample t-test
##
## data:  PC3 by cancer$diagnosis
## t = 3.6343, df = 320.28, p-value = 0.0003246
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  0.2659658 0.8937970
## sample estimates:
## mean in group B mean in group M
##      0.2160542      -0.3638272
```



```
t.test(PC4~cancer$diagnosis,data=diag_pca)
```

```
##  
## Welch Two Sample t-test  
##  
## data: PC4 by cancer$diagnosis  
## t = 3.0652, df = 442.55, p-value = 0.002308  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## 0.1333371 0.6098358  
## sample estimates:  
## mean in group B mean in group M  
## 0.1384470 -0.2331395
```

```
t.test(PC5~cancer$diagnosis,data=diag_pca)
```

```
##  
## Welch Two Sample t-test  
##  
## data: PC5 by cancer$diagnosis  
## t = -2.5485, df = 537.03, p-value = 0.0111  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -0.46581747 -0.06029141  
## sample estimates:  
## mean in group B mean in group M  
## -0.09800974 0.16504470
```

```
t.test(PC6~cancer$diagnosis,data=diag_pca)
```

```
##  
## Welch Two Sample t-test  
##
```

```
## data: PC6 by cancer$diagnosis
## t = 0.11197, df = 339.17, p-value = 0.9109
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.1944615 0.2179362
## sample estimates:
## mean in group B mean in group M
## 0.004373132 -0.007364189
```

```
t.test(PC7~cancer$diagnosis,data=diag_pca)
```

```
##
## Welch Two Sample t-test
##
## data: PC7 by cancer$diagnosis
## t = 0.51587, df = 408.87, p-value = 0.6062
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.1276209 0.2184354
## sample estimates:
## mean in group B mean in group M
## 0.01691799 -0.02848926
```

```
t.test(PC8~cancer$diagnosis,data=diag_pca)
```

```
##
## Welch Two Sample t-test
##
## data: PC8 by cancer$diagnosis
## t = 1.6584, df = 309.75, p-value = 0.09825
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.02455572 0.28789287
## sample estimates:
```

```
## mean in group B mean in group M
##      0.04905754      -0.08261104
```

```
t.test(PC9~cancer$diagnosis,data=diag_pca)
```

```
##
##  Welch Two Sample t-test
##
## data:  PC9 by cancer$diagnosis
## t = 1.5132, df = 417.67, p-value = 0.131
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.0271048  0.2083845
## sample estimates:
## mean in group B mean in group M
##      0.03377092      -0.05686895
```

```
t.test(PC10~cancer$diagnosis,data=diag_pca)
```

```
##
##  Welch Two Sample t-test
##
## data:  PC10 by cancer$diagnosis
## t = -0.46277, df = 372.52, p-value = 0.6438
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.14126432  0.08743991
## sample estimates:
## mean in group B mean in group M
##      -0.01002704      0.01688516
```

```
t.test(PC11~cancer$diagnosis,data=diag_pca)
```

```
##  
## Welch Two Sample t-test  
##  
## data: PC11 by cancer$diagnosis  
## t = -0.041845, df = 462.01, p-value = 0.9666  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -0.10154692 0.09731238  
## sample estimates:  
## mean in group B mean in group M  
## -0.0007888591 0.0013284090
```

```
t.test(PC12~cancer$diagnosis,data=diag_pca)
```

```
##  
## Welch Two Sample t-test  
##  
## data: PC12 by cancer$diagnosis  
## t = 0.34227, df = 439.04, p-value = 0.7323  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -0.07659212 0.10889425  
## sample estimates:  
## mean in group B mean in group M  
## 0.006017621 -0.010133446
```

```
t.test(PC13~cancer$diagnosis,data=diag_pca)
```

```
##  
## Welch Two Sample t-test  
##  
## data: PC13 by cancer$diagnosis  
## t = 0.20025, df = 444.77, p-value = 0.8414  
## alternative hypothesis: true difference in means is not equal to 0
```

```
## 95 percent confidence interval:
## -0.07819457 0.09593708
## sample estimates:
## mean in group B mean in group M
## 0.003305282 -0.005565970
```

```
t.test(PC14~cancer$diagnosis,data=diag_pca)
```

```
##
## Welch Two Sample t-test
##
## data: PC14 by cancer$diagnosis
## t = -2.0945, df = 302.42, p-value = 0.03705
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.194508096 -0.006062836
## sample estimates:
## mean in group B mean in group M
## -0.03736471 0.06292076
```

```
t.test(PC15~cancer$diagnosis,data=diag_pca)
```

```
##
## Welch Two Sample t-test
##
## data: PC15 by cancer$diagnosis
## t = -1.8752, df = 410.43, p-value = 0.06147
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.134862771 0.003179396
## sample estimates:
## mean in group B mean in group M
## -0.02453152 0.04131016
```

```
t.test(PC16~cancer$diagnosis,data=diag_pca)
```

```
##  
## Welch Two Sample t-test  
##  
## data: PC16 by cancer$diagnosis  
## t = -2.37, df = 349.77, p-value = 0.01833  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -0.12360307 -0.01149143  
## sample estimates:  
## mean in group B mean in group M  
## -0.02516699 0.04238026
```

```
t.test(PC17~cancer$diagnosis,data=diag_pca)
```

```
##  
## Welch Two Sample t-test  
##  
## data: PC17 by cancer$diagnosis  
## t = 0.011737, df = 393.3, p-value = 0.9906  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -0.04973747 0.05033487  
## sample estimates:  
## mean in group B mean in group M  
## 0.0001112917 -0.0001874111
```

```
t.test(PC18~cancer$diagnosis,data=diag_pca)
```

```
##  
## Welch Two Sample t-test  
##
```

```
## data: PC18 by cancer$diagnosis
## t = 0.67787, df = 288.75, p-value = 0.4984
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.03118389 0.06394850
## sample estimates:
## mean in group B mean in group M
## 0.006103777 -0.010278530
```

```
t.test(PC19~cancer$diagnosis,data=diag_pca)
```

```
##
## Welch Two Sample t-test
##
## data: PC19 by cancer$diagnosis
## t = -1.5516, df = 293.85, p-value = 0.1218
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.079616015 0.009419955
## sample estimates:
## mean in group B mean in group M
## -0.01307695 0.02202108
```

```
t.test(PC20~cancer$diagnosis,data=diag_pca)
```

```
##
## Welch Two Sample t-test
##
## data: PC20 by cancer$diagnosis
## t = -1.2062, df = 303.02, p-value = 0.2287
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.06874572 0.01649493
## sample estimates:
```

```
## mean in group B mean in group M
## -0.009733891 0.016391505
```

```
t.test(PC21~cancer$diagnosis,data=diag_pca)
```

```
##
## Welch Two Sample t-test
##
## data: PC21 by cancer$diagnosis
## t = -1.3487, df = 336.76, p-value = 0.1783
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.05516116 0.01028642
## sample estimates:
## mean in group B mean in group M
## -0.008359794 0.014077577
```

```
t.test(PC22~cancer$diagnosis,data=diag_pca)
```

```
##
## Welch Two Sample t-test
##
## data: PC22 by cancer$diagnosis
## t = -1.0618, df = 380.13, p-value = 0.289
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.04764831 0.01423264
## sample estimates:
## mean in group B mean in group M
## -0.006225063 0.010482771
```

```
t.test(PC23~cancer$diagnosis,data=diag_pca)
```



```
##  
## Welch Two Sample t-test  
##  
## data: PC23 by cancer$diagnosis  
## t = -0.52575, df = 351.71, p-value = 0.5994  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -0.03849078 0.02225285  
## sample estimates:  
## mean in group B mean in group M  
## -0.003024993 0.005093974
```

```
t.test(PC24~cancer$diagnosis,data=diag_pca)
```

```
##  
## Welch Two Sample t-test  
##  
## data: PC24 by cancer$diagnosis  
## t = 0.4614, df = 306.57, p-value = 0.6448  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -0.02286480 0.03687201  
## sample estimates:  
## mean in group B mean in group M  
## 0.002609428 -0.004394179
```

```
t.test(PC25~cancer$diagnosis,data=diag_pca)
```

```
##  
## Welch Two Sample t-test  
##  
## data: PC25 by cancer$diagnosis  
## t = 1.6337, df = 322.91, p-value = 0.1033  
## alternative hypothesis: true difference in means is not equal to 0
```

```
## 95 percent confidence interval:
## -0.004282315  0.046224480
## sample estimates:
## mean in group B mean in group M
##      0.007813479    -0.013157604
```

```
t.test(PC26~cancer$diagnosis,data=diag_pca)
```

```
##
## Welch Two Sample t-test
##
## data:  PC26 by cancer$diagnosis
## t = -0.19467, df = 307.18, p-value = 0.8458
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.02621273  0.02149320
## sample estimates:
## mean in group B mean in group M
## -0.000879209      0.001480555
```

```
t.test(PC27~cancer$diagnosis,data=diag_pca)
```

```
##
## Welch Two Sample t-test
##
## data:  PC27 by cancer$diagnosis
## t = -1.2162, df = 311.14, p-value = 0.2248
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.027878004  0.006579557
## sample estimates:
## mean in group B mean in group M
## -0.003967725      0.006681499
```

```
t.test(PC28~cancer$diagnosis,data=diag_pca)
```

```
##  
## Welch Two Sample t-test  
##  
## data: PC28 by cancer$diagnosis  
## t = -0.63596, df = 310.76, p-value = 0.5253  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -0.02097902 0.01073026  
## sample estimates:  
## mean in group B mean in group M  
## -0.001909259 0.003215121
```

```
t.test(PC29~cancer$diagnosis,data=diag_pca)
```

```
##  
## Welch Two Sample t-test  
##  
## data: PC29 by cancer$diagnosis  
## t = -0.22436, df = 265.22, p-value = 0.8226  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -0.008969119 0.007134135  
## sample estimates:  
## mean in group B mean in group M  
## -0.0003418423 0.0005756496
```

```
t.test(PC30~cancer$diagnosis,data=diag_pca)
```

```
##  
## Welch Two Sample t-test  
##
```

```
## data: PC30 by cancer$diagnosis
## t = -0.9487, df = 270.4, p-value = 0.3436
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.008120430  0.002839256
## sample estimates:
## mean in group B mean in group M
##  -0.0009838392   0.0016567480
```

```
t.test(PC31~cancer$diagnosis,data=diag_pca)
```

```
##
##  Welch Two Sample t-test
##
## data: PC31 by cancer$diagnosis
## t = -0.54256, df = 278.74, p-value = 0.5879
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.002917016  0.001656473
## sample estimates:
## mean in group B mean in group M
##  -0.0002348289   0.0003954429
```

```
# F ratio tests
var.test(PC1~cancer$diagnosis,data=diag_pca)
```

```
##
##  F test to compare two variances
##
## data: PC1 by cancer$diagnosis
## F = 0.29311, num df = 356, denom df = 211, p-value < 2.2e-16
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
##  0.2293890 0.3717204
```

```
## sample estimates:  
## ratio of variances  
##          0.2931115
```

```
var.test(PC2~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##  
## data: PC2 by cancer$diagnosis  
## F = 0.58451, num df = 356, denom df = 211, p-value = 8.474e-06  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
##  0.4574343 0.7412633  
## sample estimates:  
## ratio of variances  
##          0.5845061
```

```
var.test(PC3~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##  
## data: PC3 by cancer$diagnosis  
## F = 0.43055, num df = 356, denom df = 211, p-value = 2.327e-12  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
##  0.3369504 0.5460214  
## sample estimates:  
## ratio of variances  
##          0.4305526
```

```
var.test(PC4~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##  
## data: PC4 by cancer$diagnosis  
## F = 0.99552, num df = 356, denom df = 211, p-value = 0.9625  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
## 0.7790915 1.2625024  
## sample estimates:  
## ratio of variances  
## 0.9955172
```

```
var.test(PC5~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##  
## data: PC5 by cancer$diagnosis  
## F = 1.7787, num df = 356, denom df = 211, p-value = 5.82e-06  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
## 1.391972 2.255662  
## sample estimates:  
## ratio of variances  
## 1.778651
```

```
var.test(PC6~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##  
## data: PC6 by cancer$diagnosis  
## F = 0.50782, num df = 356, denom df = 211, p-value = 1.795e-08  
## alternative hypothesis: true ratio of variances is not equal to 1
```

```
## 95 percent confidence interval:
## 0.3974207 0.6440124
## sample estimates:
## ratio of variances
## 0.5078212
```

```
var.test(PC7~cancer$diagnosis,data=diag_pca)
```

```
##
## F test to compare two variances
##
## data: PC7 by cancer$diagnosis
## F = 0.8192, num df = 356, denom df = 211, p-value = 0.1
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
## 0.6411036 1.0388957
## sample estimates:
## ratio of variances
## 0.8191973
```

```
var.test(PC8~cancer$diagnosis,data=diag_pca)
```

```
##
## F test to compare two variances
##
## data: PC8 by cancer$diagnosis
## F = 0.38823, num df = 356, denom df = 211, p-value = 3.319e-15
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
## 0.3038290 0.4923489
## sample estimates:
## ratio of variances
## 0.3882304
```

```
var.test(PC9~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##  
## data: PC9 by cancer$diagnosis  
## F = 0.86303, num df = 356, denom df = 211, p-value = 0.2243  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
## 0.6754099 1.0944883  
## sample estimates:  
## ratio of variances  
## 0.8630336
```

```
var.test(PC10~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##  
## data: PC10 by cancer$diagnosis  
## F = 0.65036, num df = 356, denom df = 211, p-value = 0.0003698  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
## 0.5089722 0.8247793  
## sample estimates:  
## ratio of variances  
## 0.6503607
```

```
var.test(PC11~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##
```



```
## data: PC11 by cancer$diagnosis
## F = 1.1107, num df = 356, denom df = 211, p-value = 0.4012
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
##  0.8692598 1.4086183
## sample estimates:
## ratio of variances
##      1.110734
```

```
var.test(PC12~cancer$diagnosis,data=diag_pca)
```

```
##
## F test to compare two variances
##
## data: PC12 by cancer$diagnosis
## F = 0.97593, num df = 356, denom df = 211, p-value = 0.8346
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
##  0.7637603 1.2376584
## sample estimates:
## ratio of variances
##      0.975927
```

```
var.test(PC13~cancer$diagnosis,data=diag_pca)
```

```
##
## F test to compare two variances
##
## data: PC13 by cancer$diagnosis
## F = 1.0081, num df = 356, denom df = 211, p-value = 0.956
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
##  0.7889451 1.2784699
## sample estimates:
```

```
## ratio of variances
##          1.008108
```

```
var.test(PC14~cancer$diagnosis,data=diag_pca)
```

```
##
## F test to compare two variances
##
## data:  PC14 by cancer$diagnosis
## F = 0.35905, num df = 356, denom df = 211, p-value < 2.2e-16
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
##  0.2809959 0.4553483
## sample estimates:
## ratio of variances
##          0.3590544
```

```
var.test(PC15~cancer$diagnosis,data=diag_pca)
```

```
##
## F test to compare two variances
##
## data:  PC15 by cancer$diagnosis
## F = 0.82686, num df = 356, denom df = 211, p-value = 0.1169
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
##  0.6471009 1.0486142
## sample estimates:
## ratio of variances
##          0.8268605
```

```
var.test(PC16~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##  
## data: PC16 by cancer$diagnosis  
## F = 0.55218, num df = 356, denom df = 211, p-value = 8.26e-07  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
## 0.4321348 0.7002658  
## sample estimates:  
## ratio of variances  
## 0.5521785
```

```
var.test(PC17~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##  
## data: PC17 by cancer$diagnosis  
## F = 0.74469, num df = 356, denom df = 211, p-value = 0.01494  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
## 0.5827968 0.9444106  
## sample estimates:  
## ratio of variances  
## 0.7446933
```

```
var.test(PC18~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##  
## data: PC18 by cancer$diagnosis  
## F = 0.30502, num df = 356, denom df = 211, p-value < 2.2e-16  
## alternative hypothesis: true ratio of variances is not equal to 1
```

```
## 95 percent confidence interval:
##  0.2387068 0.3868197
## sample estimates:
## ratio of variances
##           0.3050177
```

```
var.test(PC19~cancer$diagnosis,data=diag_pca)
```

```
##
## F test to compare two variances
##
## data:  PC19 by cancer$diagnosis
## F = 0.32514, num df = 356, denom df = 211, p-value < 2.2e-16
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
##  0.2544576 0.4123434
## sample estimates:
## ratio of variances
##           0.3251439
```

```
var.test(PC20~cancer$diagnosis,data=diag_pca)
```

```
##
## F test to compare two variances
##
## data:  PC20 by cancer$diagnosis
## F = 0.36143, num df = 356, denom df = 211, p-value < 2.2e-16
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
##  0.2828534 0.4583583
## sample estimates:
## ratio of variances
##           0.3614279
```

```
var.test(PC21~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##  
## data: PC21 by cancer$diagnosis  
## F = 0.49785, num df = 356, denom df = 211, p-value = 6.758e-09  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
## 0.3896201 0.6313716  
## sample estimates:  
## ratio of variances  
## 0.4978535
```

```
var.test(PC22~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##  
## data: PC22 by cancer$diagnosis  
## F = 0.68432, num df = 356, denom df = 211, p-value = 0.001709  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
## 0.5355451 0.8678402  
## sample estimates:  
## ratio of variances  
## 0.6843154
```

```
var.test(PC23~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##
```

```
## data: PC23 by cancer$diagnosis
## F = 0.56038, num df = 356, denom df = 211, p-value = 1.542e-06
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
##  0.4385511 0.7106634
## sample estimates:
## ratio of variances
##      0.5603772
```

```
var.test(PC24~cancer$diagnosis,data=diag_pca)
```

```
##
## F test to compare two variances
##
## data: PC24 by cancer$diagnosis
## F = 0.37557, num df = 356, denom df = 211, p-value = 3.495e-16
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
##  0.2939215 0.4762939
## sample estimates:
## ratio of variances
##      0.3755706
```

```
var.test(PC25~cancer$diagnosis,data=diag_pca)
```

```
##
## F test to compare two variances
##
## data: PC25 by cancer$diagnosis
## F = 0.44119, num df = 356, denom df = 211, p-value = 9.824e-12
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
##  0.3452756 0.5595122
## sample estimates:
```

```
## ratio of variances
##      0.4411905
```

```
var.test(PC26~cancer$diagnosis,data=diag_pca)
```

```
##
## F test to compare two variances
##
## data: PC26 by cancer$diagnosis
## F = 0.37798, num df = 356, denom df = 211, p-value = 5.423e-16
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
##  0.2958050 0.4793461
## sample estimates:
## ratio of variances
##      0.3779774
```

```
var.test(PC27~cancer$diagnosis,data=diag_pca)
```

```
##
## F test to compare two variances
##
## data: PC27 by cancer$diagnosis
## F = 0.39381, num df = 356, denom df = 211, p-value = 8.544e-15
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
##  0.3081924 0.4994196
## sample estimates:
## ratio of variances
##      0.3938058
```

```
var.test(PC28~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##  
## data: PC28 by cancer$diagnosis  
## F = 0.39227, num df = 356, denom df = 211, p-value = 6.601e-15  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
## 0.3069894 0.4974701  
## sample estimates:  
## ratio of variances  
## 0.3922686
```

```
var.test(PC29~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##  
## data: PC29 by cancer$diagnosis  
## F = 0.21294, num df = 356, denom df = 211, p-value < 2.2e-16  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
## 0.1666460 0.2700465  
## sample estimates:  
## ratio of variances  
## 0.2129389
```

```
var.test(PC30~cancer$diagnosis,data=diag_pca)
```

```
##  
## F test to compare two variances  
##  
## data: PC30 by cancer$diagnosis  
## F = 0.23317, num df = 356, denom df = 211, p-value < 2.2e-16  
## alternative hypothesis: true ratio of variances is not equal to 1
```



```
## 95 percent confidence interval:
##  0.1824782 0.2957024
## sample estimates:
## ratio of variances
##           0.2331693
```

```
var.test(PC31~cancer$diagnosis,data=diag_pca)
```

```
##
## F test to compare two variances
##
## data:  PC31 by cancer$diagnosis
## F = 0.26577, num df = 356, denom df = 211, p-value < 2.2e-16
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
##  0.2079951 0.3370519
## sample estimates:
## ratio of variances
##           0.2657746
```

```
# Levene's tests (one-sided)
library(car)
(LTPC1 <- leveneTest(PC1~cancer$diagnosis,data=diag_pca))
```

```
## Levene's Test for Homogeneity of Variance (center = median)
##           Df F value    Pr(>F)
## group    1  62.132 1.654e-14 ***
##           567
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
(p_PC1_1sided <- LTPC1[[3]][1]/2)
```

```
## [1] 8.268824e-15
```

```
(LTPC2 <- leveneTest(PC2~cancer$diagnosis,data=diag_pca))
```

```
## Levene's Test for Homogeneity of Variance (center = median)
##      Df F value    Pr(>F)
## group  1  18.786 1.73e-05 ***
##      567
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
(p_PC2_1sided=LTPC2[[3]][1]/2)
```

```
## [1] 8.651441e-06
```

```
(LTPC3 <- leveneTest(PC3~cancer$diagnosis,data=diag_pca))
```

```
## Levene's Test for Homogeneity of Variance (center = median)
##      Df F value    Pr(>F)
## group  1   27.65 2.063e-07 ***
##      567
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
(p_PC3_1sided <- LTPC3[[3]][1]/2)
```

```
## [1] 1.031266e-07
```

```
(LTPC4 <- leveneTest(PC4~cancer$diagnosis,data=diag_pca))
```

```
## Levene's Test for Homogeneity of Variance (center = median)
##           Df F value Pr(>F)
## group    1  2e-04  0.989
##           567
```

```
(p_PC4_1sided <- LTPC4[[3]][1]/2)
```

```
## [1] 0.4944984
```

```
(LTPC5 <- leveneTest(PC5~cancer$diagnosis,data=diag_pca))
```

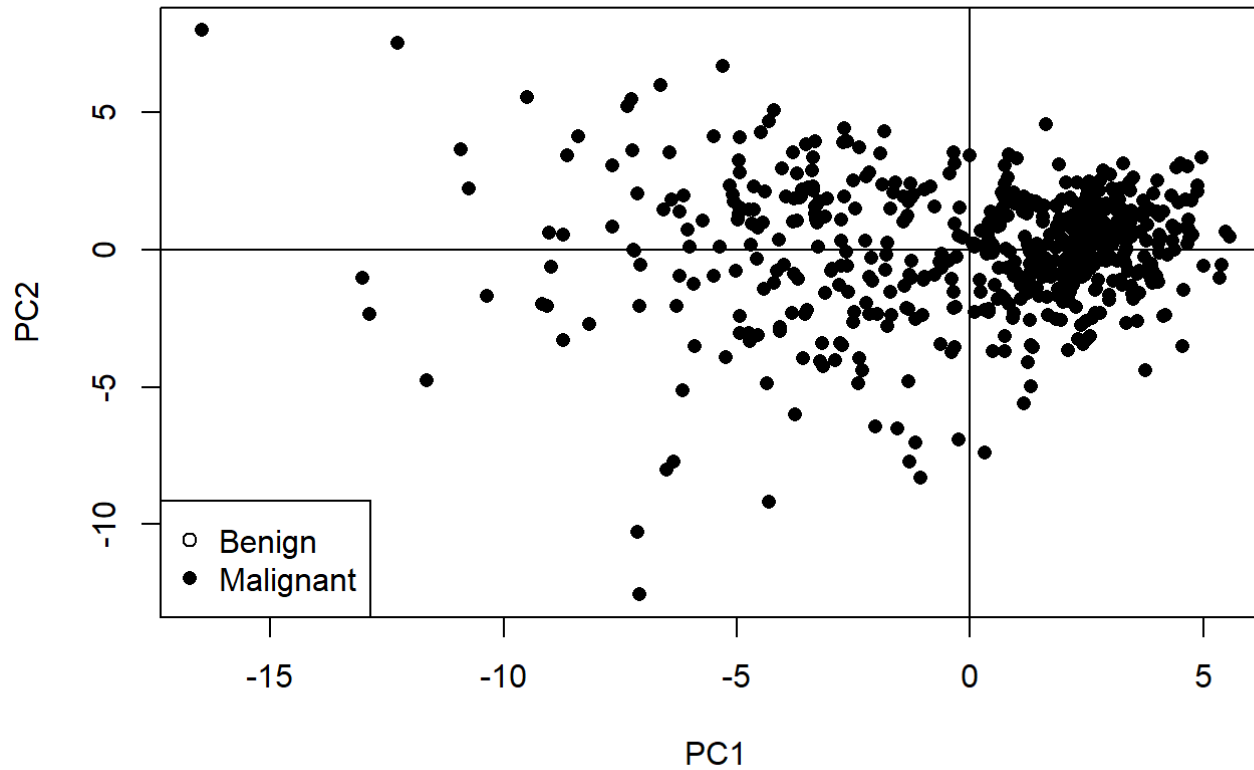
```
## Levene's Test for Homogeneity of Variance (center = median)
##           Df F value   Pr(>F)
## group    1  6.8535 0.009083 **
##           567
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
(p_PC5_1sided <- LTPC5[[3]][1]/2)
```

```
## [1] 0.004541533
```

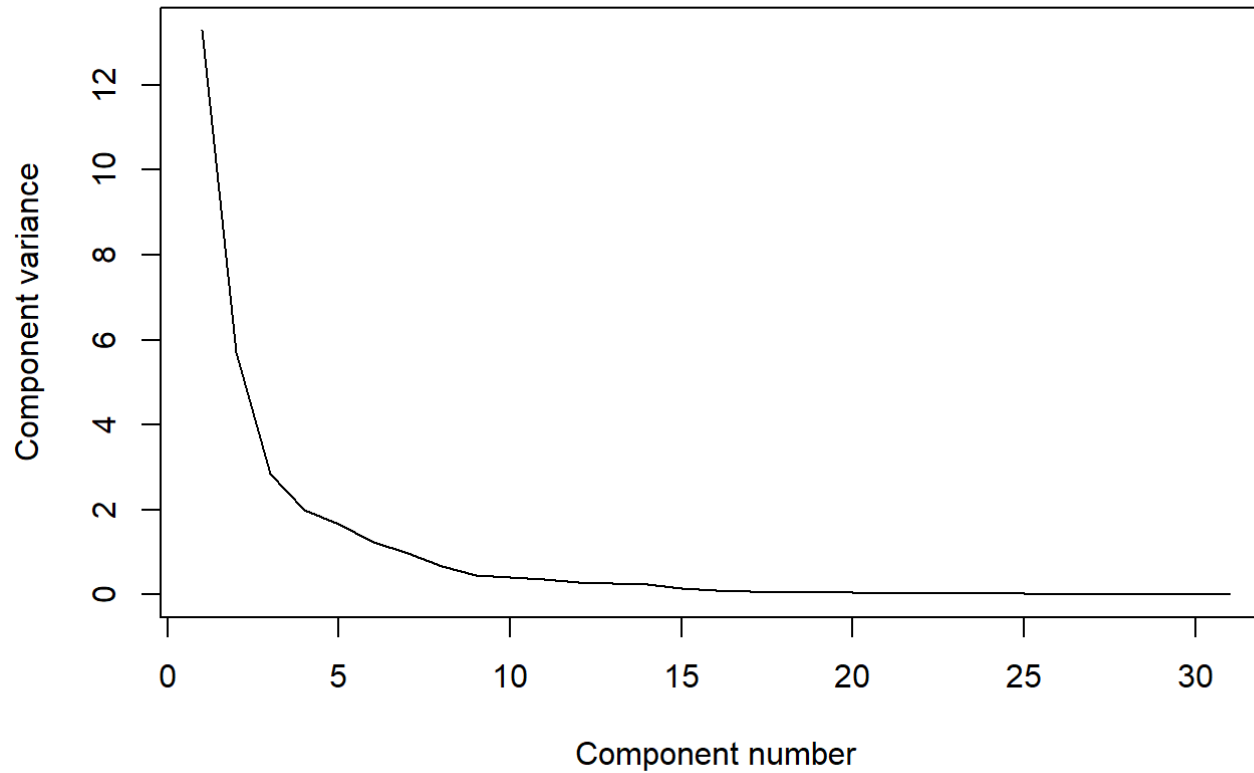
```
# Plotting the scores for the first and second components
plot(diag_pca$PC1, diag_pca$PC2, pch=ifelse(diag_pca$diagnosis == "S", 1, 16), xlab="PC1", ylab="PC2", main="569 entries against values for PC1 & PC2")
abline(h=0)
abline(v=0)
legend("bottomleft", legend=c("Benign", "Malignant"), pch=c(1, 16))
```

569 entries against values for PC1 & PC2



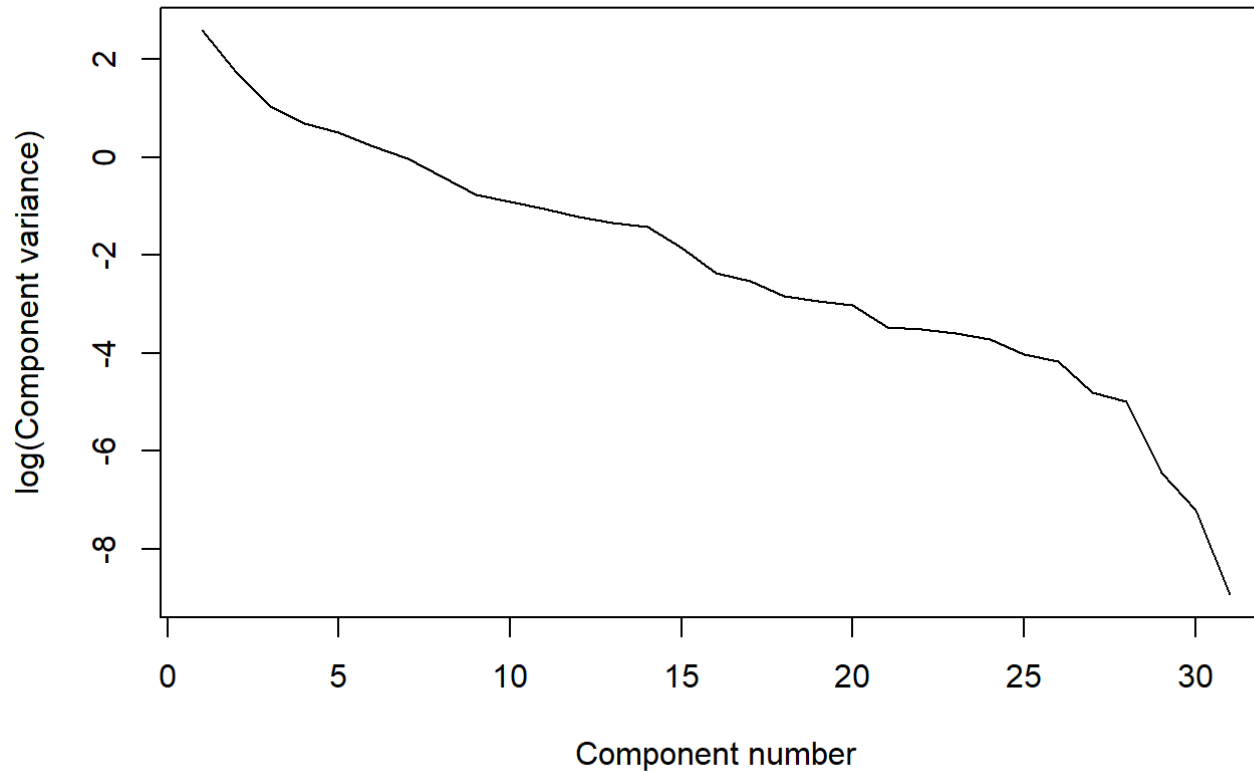
```
plot(eigen_cancer, xlab = "Component number", ylab = "Component variance", type = "l", main = "Scree diagram")
```

**Scree diagram**



```
plot(log(eigen_cancer), xlab = "Component number", ylab = "log(Component variance)", type="l", main = "Log(eigenvalue) diagram")
```

Log(eigenvalue) diagram



```
print(summary(cancer_pca))
```

```
## Importance of components:
##               PC1    PC2    PC3    PC4    PC5    PC6
## Standard deviation  3.6453 2.3868 1.68386 1.40761 1.28406 1.11116
## Proportion of Variance 0.4286 0.1838 0.09146 0.06391 0.05319 0.03983
## Cumulative Proportion 0.4286 0.6124 0.70388 0.76779 0.82098 0.86081
##               PC7    PC8    PC9   PC10   PC11   PC12
## Standard deviation  0.98908 0.81961 0.67882 0.6349 0.59089 0.54212
```

```
## Proportion of Variance 0.03156 0.02167 0.01486 0.0130 0.01126 0.00948
## Cumulative Proportion 0.89237 0.91404 0.92890 0.9419 0.95317 0.96265
##          PC13      PC14      PC15      PC16      PC17      PC18
## Standard deviation 0.51103 0.49125 0.39620 0.30680 0.28251 0.2430
## Proportion of Variance 0.00842 0.00778 0.00506 0.00304 0.00257 0.0019
## Cumulative Proportion 0.97107 0.97886 0.98392 0.98696 0.98953 0.9914
##          PC19      PC20      PC21      PC22      PC23      PC24
## Standard deviation 0.2293 0.22163 0.1763 0.17304 0.16562 0.15572
## Proportion of Variance 0.0017 0.00158 0.0010 0.00097 0.00088 0.00078
## Cumulative Proportion 0.9931 0.99472 0.9957 0.99669 0.99757 0.99835
##          PC25      PC26      PC27      PC28      PC29      PC30
## Standard deviation 0.13431 0.1244 0.09040 0.08305 0.03987 0.02736
## Proportion of Variance 0.00058 0.0005 0.00026 0.00022 0.00005 0.00002
## Cumulative Proportion 0.99893 0.9994 0.99970 0.99992 0.99997 1.00000
##          PC31
## Standard deviation 0.01153
## Proportion of Variance 0.00000
## Cumulative Proportion 1.00000
```

```
#View(cancer_pca)
diag(cov(cancer_pca$x))
```

```
##          PC1          PC2          PC3          PC4          PC5
## 1.328806e+01 5.696805e+00 2.835395e+00 1.981357e+00 1.648815e+00
##          PC6          PC7          PC8          PC9          PC10
## 1.234673e+00 9.782732e-01 6.717530e-01 4.607924e-01 4.031331e-01
##          PC11          PC12          PC13          PC14          PC15
## 3.491550e-01 2.938904e-01 2.611469e-01 2.413302e-01 1.569736e-01
##          PC16          PC17          PC18          PC19          PC20
## 9.412853e-02 7.980995e-02 5.904627e-02 5.259119e-02 4.912193e-02
##          PC21          PC22          PC23          PC24          PC25
## 3.107078e-02 2.994121e-02 2.743052e-02 2.424902e-02 1.803936e-02
##          PC26          PC27          PC28          PC29          PC30
## 1.547973e-02 8.171699e-03 6.898103e-03 1.589338e-03 7.483761e-04
##          PC31
## 1.330402e-04
```

```
xlim <- range(cancer_pca$x[,1])  
head(cancer_pca$x[,1])
```

```
## [1] 2.501946 1.467439 2.929028 1.995342 2.500252 2.018308
```

```
head(cancer_pca$x)
```

```
##           PC1           PC2           PC3           PC4           PC5           PC6  
## [1,] 2.501946 -0.09694805 -0.4489597  2.3341176  0.69771548 -0.2430058  
## [2,] 1.467439 -1.68630059  1.1542039  0.3362109  0.45962538  1.2308248  
## [3,] 2.929028 -0.38319924 -0.8955891 -0.1164828  0.98441377 -0.2587872  
## [4,] 1.995342 -1.33046592  1.1172876  2.0502761  0.25303846 -1.5539634  
## [5,] 2.500252  2.01035097 -0.7584035  1.9862169 -1.13537096  0.5940361  
## [6,] 2.018308 -0.78242095  0.1125197 -0.6532280  0.01841577  0.6914453  
##           PC7           PC8           PC9           PC10          PC11          PC12  
## [1,] 0.5092015 -1.11423307  0.2840243  0.32463197 -0.3245353  0.04981306  
## [2,] 0.2937434  0.10000461 -0.0668399  0.42612180  0.4564029  1.19357566  
## [3,] -0.3303385  0.03599041  0.8734350  0.02222192  0.4208602 -0.06687286  
## [4,] -0.9692185 -1.31852134  0.6254396  0.05666470 -0.0691646  0.97082409  
## [5,] 0.1198201 -0.48279704 -0.2727816 -0.29439485 -0.3577533  0.03266208  
## [6,] 0.1454026  0.06214539  0.2342454  0.73681239 -0.3671239 -0.77029743  
##           PC13          PC14          PC15          PC16          PC17  
## [1,] -0.19760220  0.1134403 -0.059302558  0.16637723 -0.04286656  
## [2,] 0.01807424 -0.2824292 -0.204858888 -0.07067959  0.03088787  
## [3,] 0.37435458  0.2585457 -0.330274216 -0.13000189 -0.24616091  
## [4,] -0.90968379  0.2179117 -0.665825669  0.10213387 -0.10289446  
## [5,] -0.35547138 -0.1480140 -0.005540503 -0.06495881  0.22273309  
## [6,] -0.49542291 -0.2992431  0.049952835 -0.20161083  0.14920422  
##           PC18          PC19          PC20          PC21          PC22  
## [1,] -0.104542766 -0.03484189 -0.09691187 -0.02846306 -0.00673628  
## [2,] -0.405534243 -0.02886103 -0.05262226 -0.05987170  0.05868642  
## [3,] 0.327711259  0.15937793 -0.13804895 -0.13489743  0.10080029  
## [4,] 0.197085181  0.36251771 -0.40018239 -0.10302093 -0.28821708  
## [5,] -0.129129156 -0.35877054  0.08515543 -0.08500541 -0.06332008
```



```
## [6,] -0.002229379 -0.08178568 0.18970936 -0.06872875 0.09669594
##          PC23          PC24          PC25          PC26          PC27
## [1,] -0.038971937 0.062212075 0.088438866 0.04872948 -0.007000724
## [2,] 0.070978613 -0.030822339 -0.016741580 0.04173030 -0.059332996
## [3,] 0.053909008 0.085484364 0.038277664 -0.04151896 -0.035546410
## [4,] 0.182045907 0.222848059 -0.115720065 -0.03676948 -0.148171674
## [5,] 0.043591030 0.008165322 0.002738052 0.05983731 0.046167735
## [6,] -0.001458054 -0.031338348 0.042784223 -0.08646068 -0.030944690
##          PC28          PC29          PC30          PC31
## [1,] 0.05356131 0.015184882 0.015985406 0.001396101
## [2,] -0.18696553 0.027011311 -0.000803330 0.008096490
## [3,] -0.07653067 -0.014640388 0.010307894 0.009074601
## [4,] -0.01711665 -0.047828494 0.023862995 0.000265075
## [5,] 0.03835364 0.032450800 -0.002312178 -0.002563269
## [6,] 0.00955434 -0.004403431 0.003869919 -0.002931194
```

```
plot(cancer_pca$x,xlim=xlim,ylim=xlim)
```

