EJERCICIO 1:

```
close all
clearvars
clear all
clc
load wine.data
```

Cargamos la data:

```
Data = wine;
[nr,nc] = size(Data);
```

Conforme el tipo de vino, separamos:

```
for i = 1:3
    imin = min(find(Data(:,1)==i));
    imax = max(find(Data(:,1)==i));
    if i == 1
        Type1 = Data([imin:imax],[2:nc]);
    elseif i == 2
        Type2 = Data([imin:imax],[2:nc]);
    else
        Type3 = Data([imin:imax],[2:nc]);
    end
end
clearvars -except Type1 Type2 Type3
```

Escogemos un número de clusters a diferenciar:
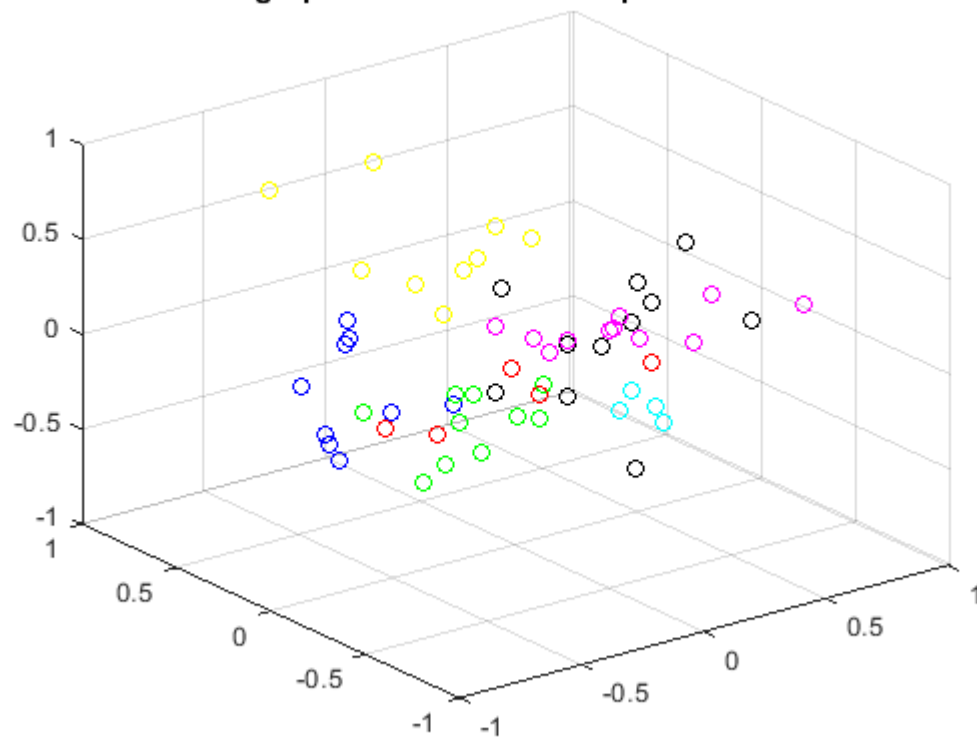
```
k = 7;
```

Con ello, le correspondemos una matriz de colores para identificar luego del scatter:

```
c = [0 0 0;1 0 0;0 1 0;0 0 1;0 1 1;1 1 0;1 0 1];
```
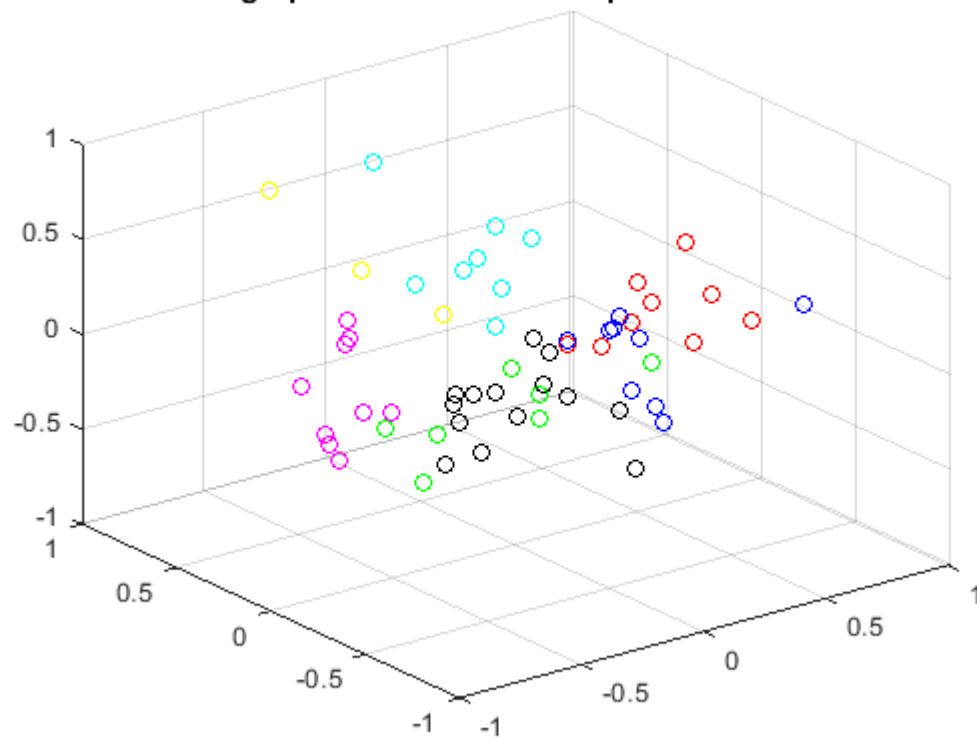
Vino tipo 1:

```
ScoreCluster(Type1,k,c)
```
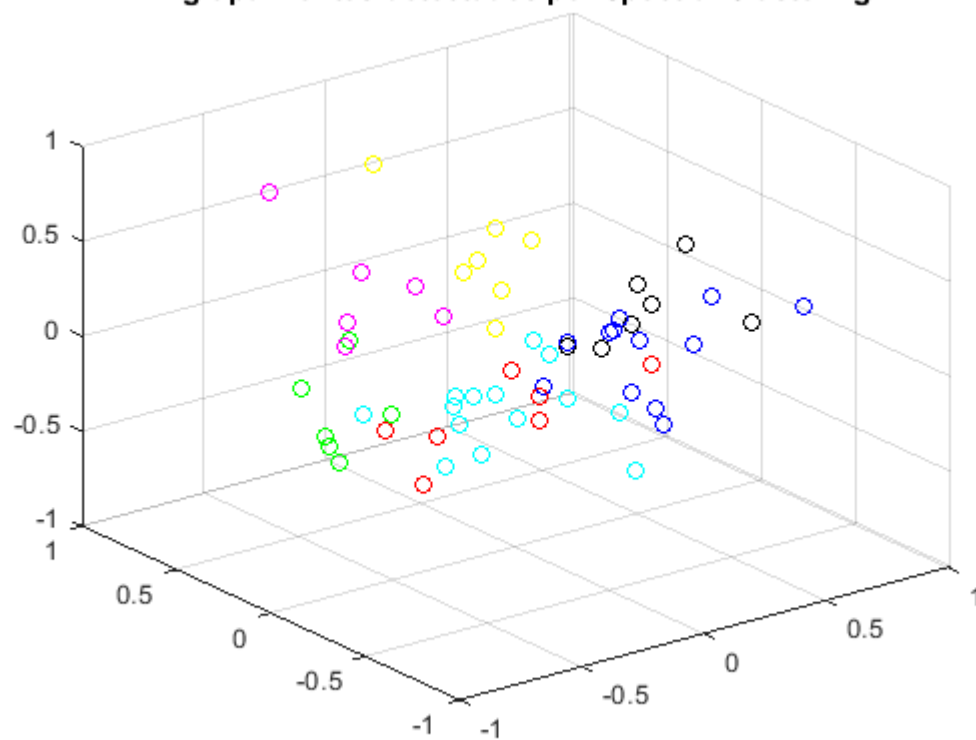
Agrupamientos detectados por K-means

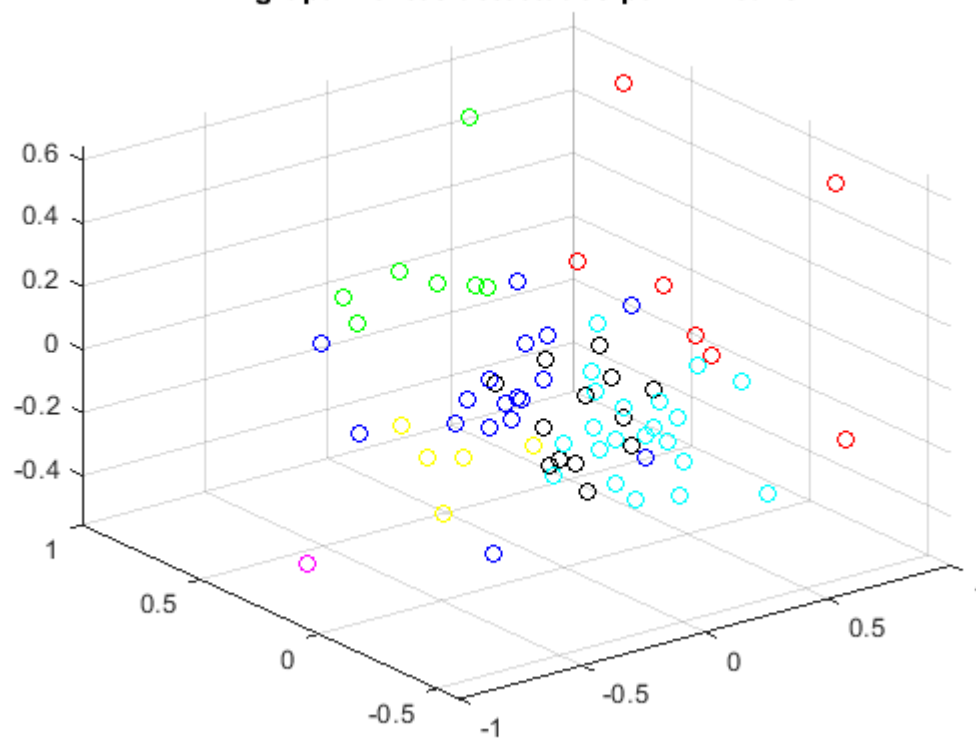**Agrupamientos detectados por K-medoids**

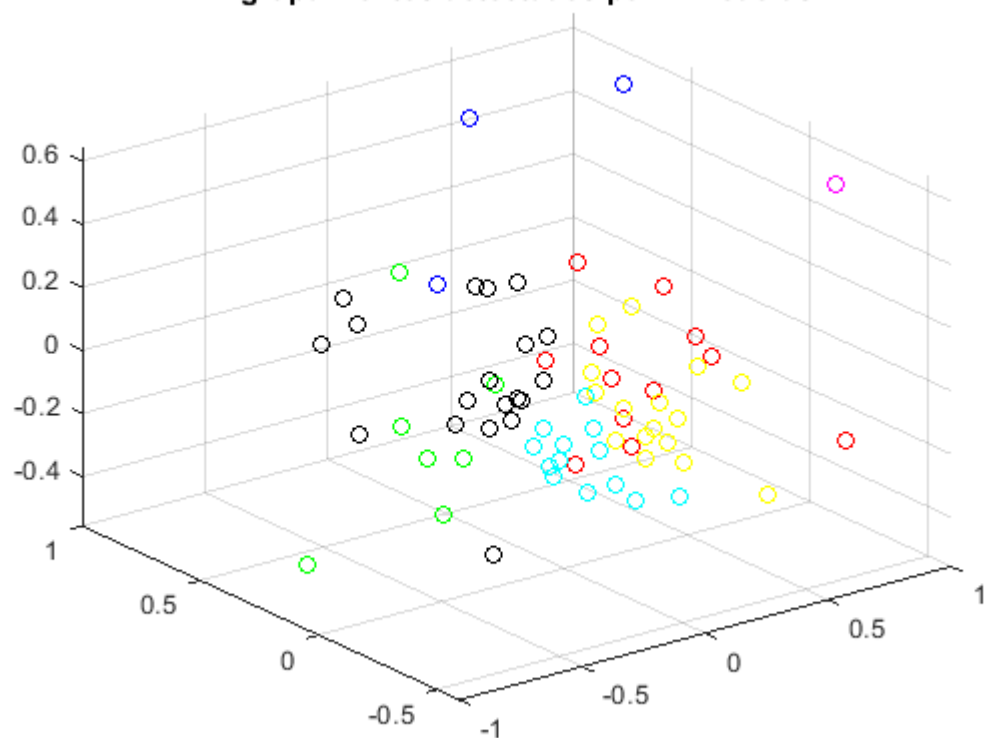Agrupamientos detectados por Spectral Clustering

Vino tipo 2:

```
ScoreCluster(Type2,k,c)
```


Agrupamientos detectados por K-means

Agrupamientos detectados por K-medoids

Agrupamientos detectados por Spectral Clustering

Vino tipo 3:
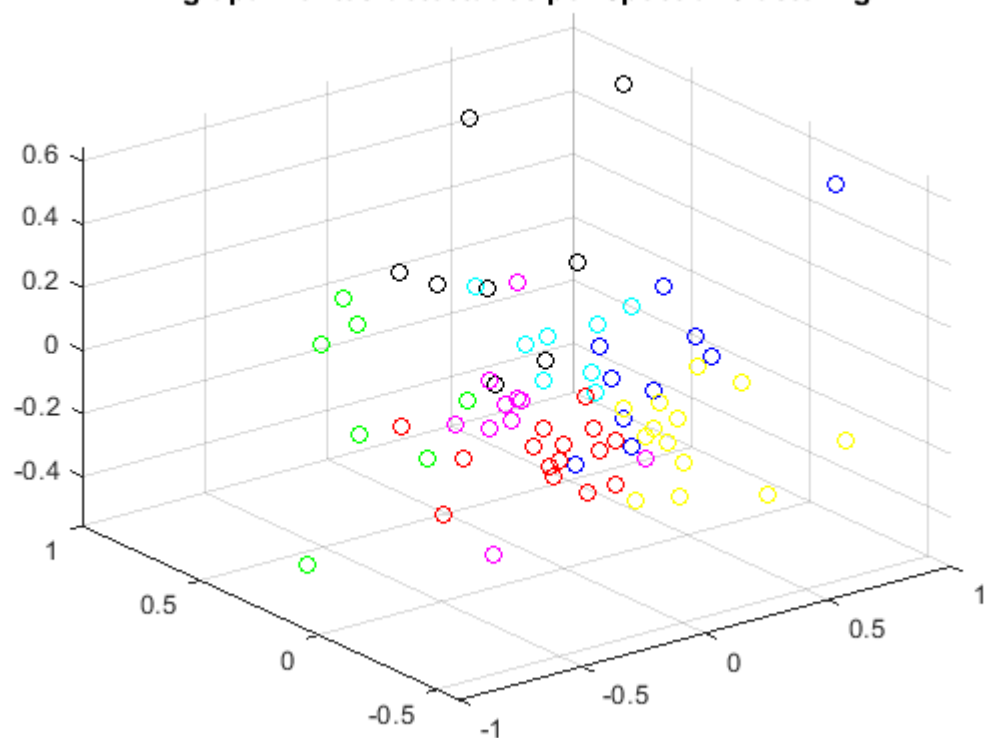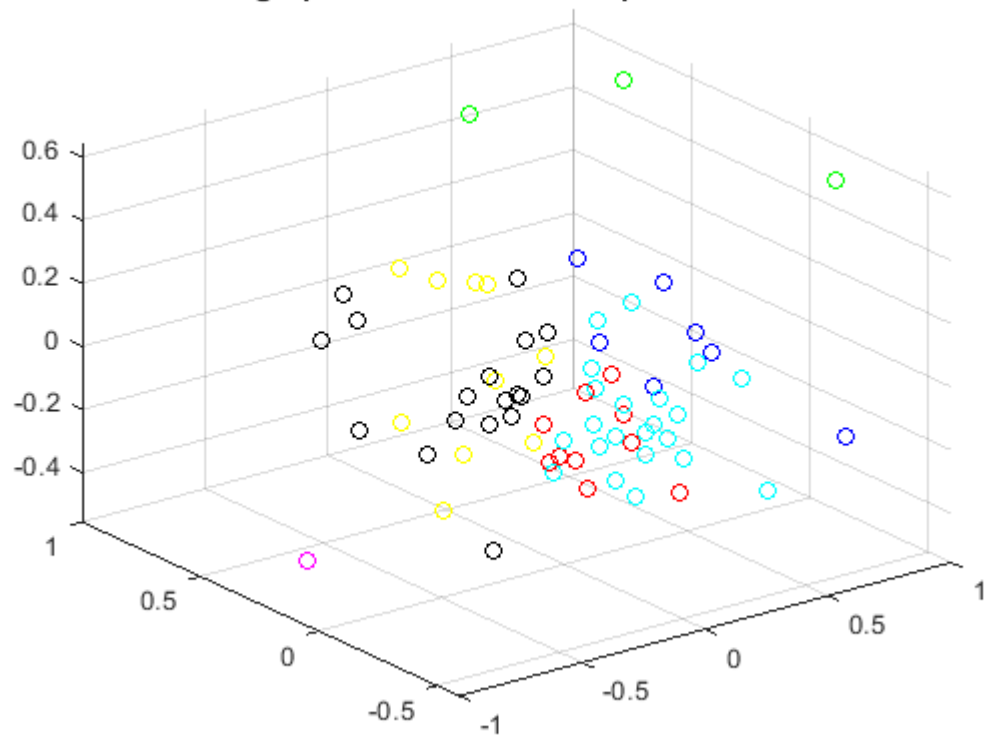
```
ScoreCluster(Type2,k,c)
```

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Agrupamientos detectados por K-means

Agrupamientos detectados por K-medoids
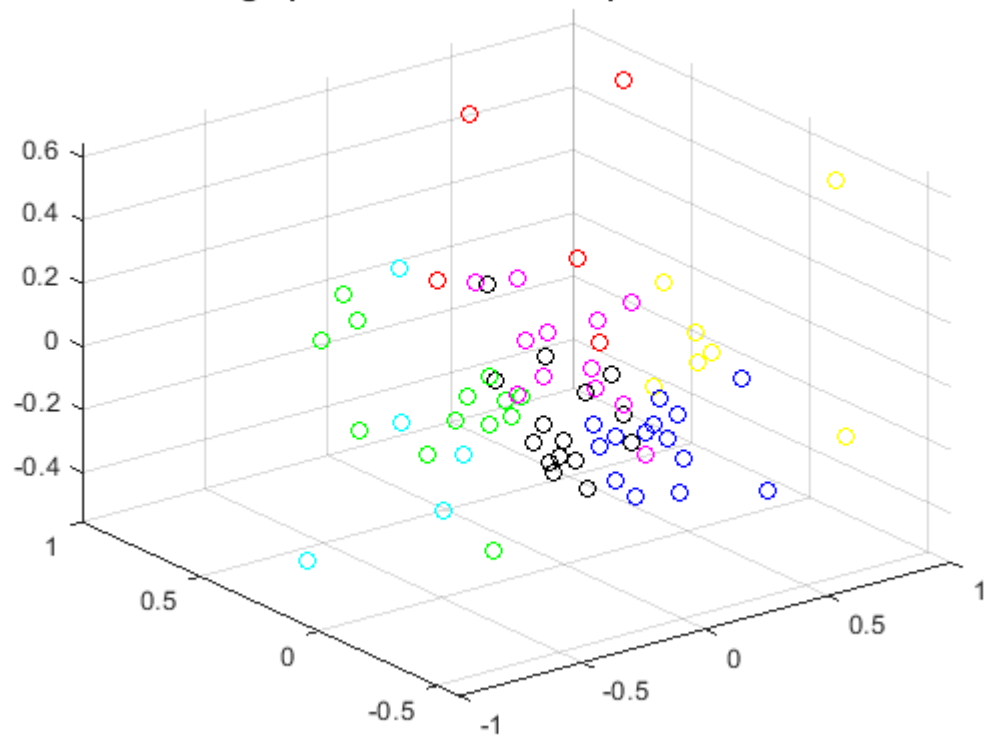
Agrupamientos detectados por Spectral Clustering
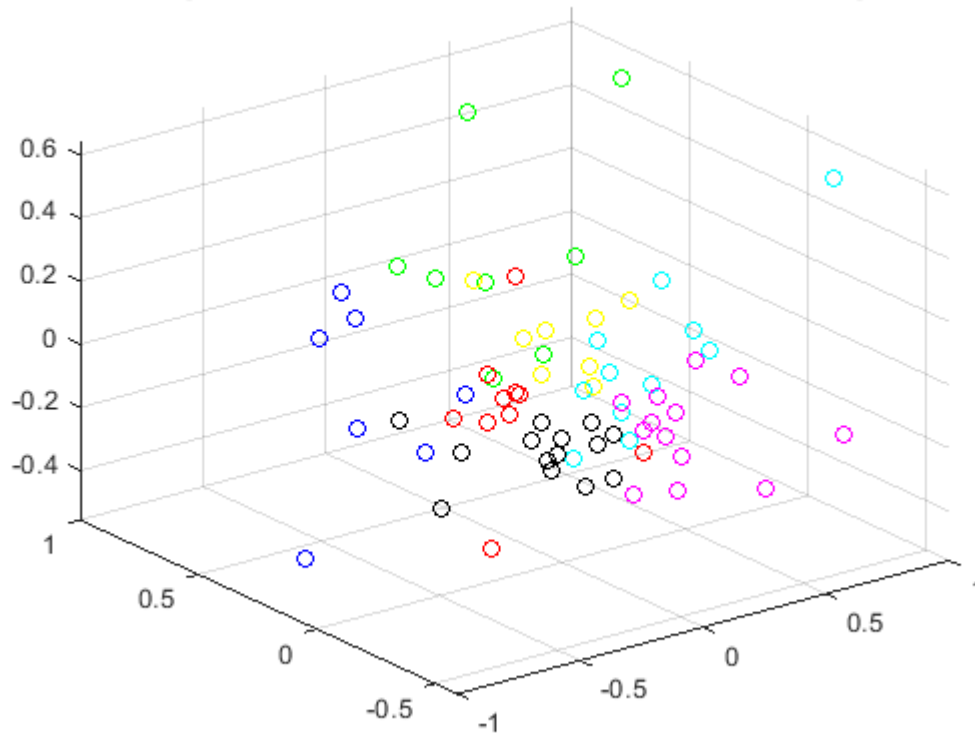

```matlab
function ScoreCluster(A,k,c)
```

Hacemos uso del análisis PCA:

```matlab
mA = mean(A);
rA = range(A);
sA = (A-mA)./rA;
```

Nos será de interés la matriz de Scores:

```matlab
[~,S,~] = pca(sA);
```

Usamos tres de los modelos de agrupamientos enseñados en clase:

```matlab
i = kmeans(S(:,1:3),k,"Distance","sqeuclidean","Replicates",1);
figure(1)
scatter3(S(:,1),S(:,2),S(:,3),[],c(i,:))
title('Agrupamientos detectados por K-means')
i = kmedoids(S(:,1:3),k,"Distance","sqeuclidean","Replicates",1);
figure(2)
scatter3(S(:,1),S(:,2),S(:,3),[],c(i,:))
title('Agrupamientos detectados por K-medoids')
i = spectralcluster(S(:,1:3),k);
figure(3)
scatter3(S(:,1),S(:,2),S(:,3),[],c(i,:))
title('Agrupamientos detectados por Spectral Clustering')
end
```

EJERCICIO 2:

```
close all
clearvars
clear all
clc
load CancerOvario.mat
Data = obs;
CaracteristicasOptimas(Data)
```
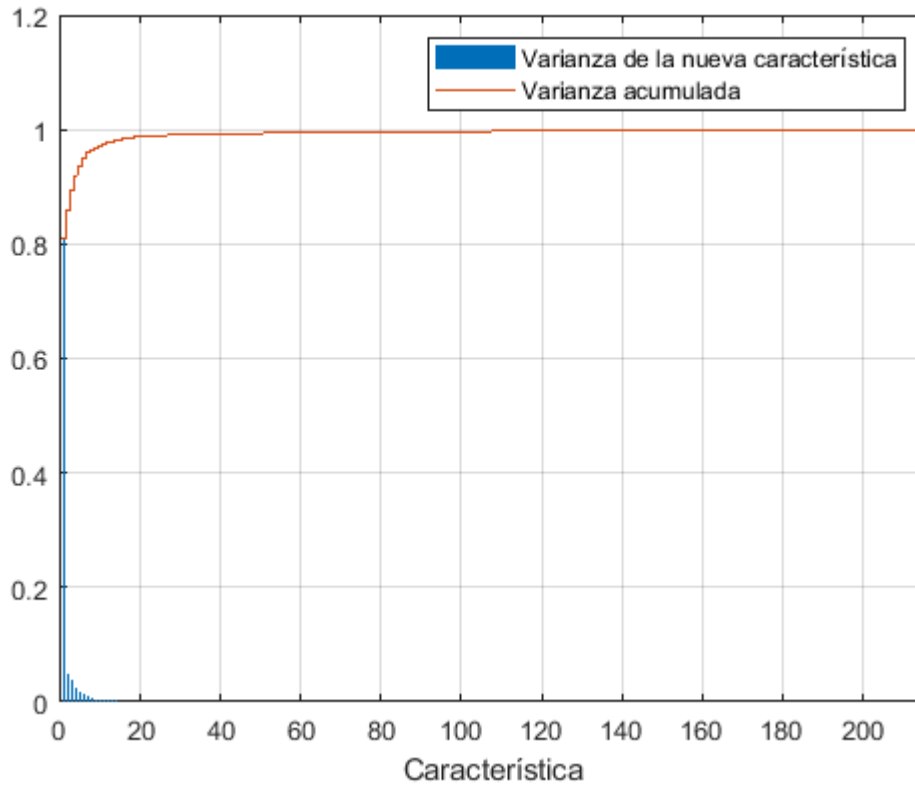

Observamos que con solo tomar 20 de las nuevas características, es suficiente trabajar con la mayor parte de información que la data brinda, pues aborda casi toda la varianza acumulada.

```
function CaracteristicasOptimas(Data)
    [~,~,V] = pca(Data);
    Vnorm = V/sum(V);
    figure; hold on;
    bar(Vnorm);
    stairs(0.5:length(V)-0.5,cumsum(Vnorm));
    grid on; box on; hold off;
    set(gca,'XTick',0:20:length(V))
    xlabel('Característica')
    legend({'Varianza de la nueva característica','Varianza acumulada'})
end
```

EJERCICIO 3:

```
close all
clear all
clc
Data = importTaxiData("yellow_tripdata_2015-03.csv");
Data = addTimeOfDay(Data);
Data = addDayOfWeek(Data);
nr = height(Data);
```

Una buena práctica en el machine learning es hacer una separación de la data a trabajar. El porcentaje adecuado a tomar es del 60 por ciento para el testeo de entrenamiento. Ahora bien, en virtud de que `cvpartition()` trabaja con el complemento, introducimos:

```
part = 0.4;
```

De ahí, hacemos:

```
DataTrain = cvpartition(nr,'HoldOut',part);
iTrain = training(DataTrain);
DataTrainVal = Data(iTrain,:);
iTest = test(DataTrain);
DataTest = Data(iTest,:);
```

Una vez hecho esto, podemos usar los modelos de regresión lineal.

Regresión lineal con interacciones

```
RLImodel = fitlm(DataTrainVal,"interactions","ResponseVar",...
    "AveSpeed","PredictorVars",["Distance","TimeOfDay","DayOfWeek"])
```

```
RLImodel =
Linear regression model:
    AveSpeed ~ 1 + Distance*TimeOfDay + Distance*DayOfWeek + TimeOfDay*DayOfWeek

Estimated Coefficients:
```

	Estimate	SE	tStat	pValue
(Intercept)	9.0797	0.081078	111.99	0
Distance	1.2335	0.011228	109.86	0
TimeOfDay	-0.069791	0.0048773	-14.309	2.0517e-46
DayOfWeek_Monday	-1.0179	0.1138	-8.9447	3.7709e-19
DayOfWeek_Saturday	1.4857	0.10491	14.162	1.6908e-45
DayOfWeek_Sunday	1.0628	0.10006	10.622	2.4034e-26
DayOfWeek_Thursday	-0.58671	0.11411	-5.1415	2.729e-07
DayOfWeek_Tuesday	-1.4192	0.11139	-12.741	3.6452e-37
DayOfWeek_Wednesday	-1.014	0.11461	-8.8472	9.0693e-19
Distance:TimeOfDay	-0.013559	0.00050691	-26.749	2.9043e-157
Distance:DayOfWeek_Monday	0.14085	0.011941	11.796	4.2433e-32
Distance:DayOfWeek_Saturday	0.15162	0.012754	11.888	1.4118e-32
Distance:DayOfWeek_Sunday	0.15289	0.011936	12.809	1.5305e-37
Distance:DayOfWeek_Thursday	0.059613	0.012968	4.597	4.2896e-06
Distance:DayOfWeek_Tuesday	0.12657	0.012219	10.358	3.9292e-25
Distance:DayOfWeek_Wednesday	0.095927	0.012624	7.5985	3.0137e-14
TimeOfDay:DayOfWeek_Monday	0.1127	0.0068156	16.535	2.3006e-61
TimeOfDay:DayOfWeek_Saturday	-0.055022	0.0061858	-8.8949	5.9076e-19
TimeOfDay:DayOfWeek_Sunday	0.024218	0.0061406	3.9439	8.0202e-05

```
    TimeOfDay:DayOfWeek_Thursday        0.037096      0.0068468       5.418      6.0355e-08
    TimeOfDay:DayOfWeek_Tuesday          0.07635      0.0066418      11.495      1.4332e-30
    TimeOfDay:DayOfWeek_Wednesday       0.070593      0.0068357      10.327      5.4091e-25


Number of observations: 155081, Error degrees of freedom: 155059
Root Mean Squared Error: 4.42
R-squared: 0.461,   Adjusted R-Squared: 0.461
F-statistic vs. constant model: 6.33e+03, p-value = 0
```

Teniéndose que:

```
RLImodel.Coefficients
```

ans = 22×4 table

	Estimate	SE	tStat	pValue
1 (Intercept)	9.0797	0.0811	111.9879	0
2 Distance	1.2335	0.0112	109.8597	0
3 TimeOfDay	-0.0698	0.0049	-14.3092	2.0517e-46
4 DayOfWeek_Monday	-1.0179	0.1138	-8.9447	3.7709e-19
5 DayOfWeek_Saturday	1.4857	0.1049	14.1616	1.6908e-45
6 DayOfWeek_Sunday	1.0628	0.1001	10.6220	2.4034e-26
7 DayOfWeek_Thursday	-0.5867	0.1141	-5.1415	2.7290e-07
8 DayOfWeek_Tuesday	-1.4192	0.1114	-12.7412	3.6452e-37
9 DayOfWeek_Wednesday	-1.0140	0.1146	-8.8472	9.0693e-19
10 Distance:TimeOfDay	-0.0136	0.0005	-26.7489	2.9043e-157
11 Distance:DayOfWeek_Monday	0.1408	0.0119	11.7956	4.2433e-32
12 Distance:DayOfWeek_Saturday	0.1516	0.0128	11.8880	1.4118e-32
13 Distance:DayOfWeek_Sunday	0.1529	0.0119	12.8087	1.5305e-37
14 Distance:DayOfWeek_Thursday	0.0596	0.0130	4.5970	4.2896e-06

$$\vdots$$

Y lo correspondiente a la variable respuesta vendría a ser:

```
AveSpeedPredictRLI = predict(RLImodel,DataTrainVal)
```

```
AveSpeedPredictRLI = 155081×1
    11.0662
     9.3586
    19.2041
    12.9486
    12.1727
    13.1939
     8.2157
     8.9517
     8.8290
    14.0385
      ⋮
```

Que vendría a ser lo predicho por el modelo.

Modelo de árbol de decisión

El problema pide que tomemos:

```
MinLeafSize = 36;
```

Luego, hacemos, con los mismos datos de lasvariables de respuesta y predictoras:

```
ADmodel = fitrtree(DataTrainVal,"AveSpeed",'MinLeafSize',MinLeafSize,...
    "PredictorNames",["Distance","TimeOfDay","DayOfWeek"])
```

```
ADmodel =
  RegressionTree
           PredictorNames: {'Distance'  'TimeOfDay'  'DayOfWeek'}
             ResponseName: 'AveSpeed'
    CategoricalPredictors: 3
        ResponseTransform: 'none'
          NumObservations: 155081


  Properties, Methods
```

```
view(ADmodel)
```

```
Decision tree for regression
   1  if Distance<5.455 then node 2 elseif Distance>=5.455 then node 3 else 11.7948
   2  if TimeOfDay<7.45111 then node 4 elseif TimeOfDay>=7.45111 then node 5 else 10.4591
   3  if Distance<12.505 then node 6 elseif Distance>=12.505 then node 7 else 21.3244
   4  if Distance<2.205 then node 8 elseif Distance>=2.205 then node 9 else 13.9835
   5  if Distance<2.625 then node 10 elseif Distance>=2.625 then node 11 else 9.83975
   6  if Distance<7.455 then node 12 elseif Distance>=7.455 then node 13 else 19.7577
   7  if TimeOfDay<6.18819 then node 14 elseif TimeOfDay>=6.18819 then node 15 else 26.0926
   8  if Distance<0.885 then node 16 elseif Distance>=0.885 then node 17 else 12.6254
   9  if Distance<3.205 then node 18 elseif Distance>=3.205 then node 19 else 16.1336
  10  if TimeOfDay<20.2354 then node 20 elseif TimeOfDay>=20.2354 then node 21 else 9.26955
  11  if TimeOfDay<20.5074 then node 22 elseif TimeOfDay>=20.5074 then node 23 else 12.1284
  12  if TimeOfDay<7.96139 then node 24 elseif TimeOfDay>=7.96139 then node 25 else 17.5408
  13  if TimeOfDay<7.25833 then node 26 elseif TimeOfDay>=7.25833 then node 27 else 21.4351
  14  if Distance<15.51 then node 28 elseif Distance>=15.51 then node 29 else 34.8778
  15  if TimeOfDay<19.8842 then node 30 elseif TimeOfDay>=19.8842 then node 31 else 24.5481
  16  if Distance<0.315 then node 32 elseif Distance>=0.315 then node 33 else 11.2712
  17  if TimeOfDay<2.08986 then node 34 elseif TimeOfDay>=2.08986 then node 35 else 13.1667
  18  if TimeOfDay<2.15514 then node 36 elseif TimeOfDay>=2.15514 then node 37 else 15.1588
  19  if TimeOfDay<2.19333 then node 38 elseif TimeOfDay>=2.19333 then node 39 else 16.9347
  20  if DayOfWeek in {Friday Monday Thursday Tuesday Wednesday} then node 40 elseif DayOfWeek in {Saturday Sunday}
  21  if DayOfWeek in {Friday Saturday} then node 42 elseif DayOfWeek in {Monday Sunday Thursday Tuesday Wednesday}
  22  if Distance<3.905 then node 44 elseif Distance>=3.905 then node 45 else 11.3361
  23  if DayOfWeek in {Friday Saturday Thursday} then node 46 elseif DayOfWeek in {Monday Sunday Tuesday Wednesday}
  24  if TimeOfDay<2.66153 then node 48 elseif TimeOfDay>=2.66153 then node 49 else 19.5187
  25  if Distance<6.475 then node 50 elseif Distance>=6.475 then node 51 else 16.6822
  26  if Distance<8.505 then node 52 elseif Distance>=8.505 then node 53 else 25.0982
  27  if TimeOfDay<19.6707 then node 54 elseif TimeOfDay>=19.6707 then node 55 else 20.4028
  28  if Distance<14.66 then node 56 elseif Distance>=14.66 then node 57 else 30.052
  29  if TimeOfDay<5.72319 then node 58 elseif TimeOfDay>=5.72319 then node 59 else 37.2601
  30  if DayOfWeek in {Friday Monday Thursday Tuesday Wednesday} then node 60 elseif DayOfWeek in {Saturday Sunday}
  31  if Distance<15.395 then node 62 elseif Distance>=15.395 then node 63 else 29.4658
  32  if Distance<0.185 then node 64 elseif Distance>=0.185 then node 65 else 7.31489
  33  if Distance<0.445 then node 66 elseif Distance>=0.445 then node 67 else 11.5921
  34  if DayOfWeek in {Saturday Sunday} then node 68 elseif DayOfWeek in {Friday Monday Thursday Tuesday Wednesday}
  35  if TimeOfDay<6.82542 then node 70 elseif TimeOfDay>=6.82542 then node 71 else 13.6886
```

```
36   if DayOfWeek in {Saturday Sunday} then node 72 elseif DayOfWeek in {Friday Monday Thursday Tuesday Wednesday}
37   if TimeOfDay<6.71972 then node 74 elseif TimeOfDay>=6.71972 then node 75 else 15.7865
38   if DayOfWeek in {Saturday Sunday} then node 76 elseif DayOfWeek in {Friday Monday Thursday Tuesday Wednesday}
39   if TimeOfDay<6.94708 then node 78 elseif TimeOfDay>=6.94708 then node 79 else 17.775
40   if TimeOfDay<16.3778 then node 80 elseif TimeOfDay>=16.3778 then node 81 else 8.25671
41   if TimeOfDay<11.0608 then node 82 elseif TimeOfDay>=11.0608 then node 83 else 10.1903
42   if Distance<1.485 then node 84 elseif Distance>=1.485 then node 85 else 9.87598
43   if Distance<1.515 then node 86 elseif Distance>=1.515 then node 87 else 11.5124
44   if DayOfWeek in {Friday Monday Thursday Tuesday Wednesday} then node 88 elseif DayOfWeek in {Saturday Sunday}
45   if DayOfWeek in {Friday Thursday Tuesday Wednesday} then node 90 elseif DayOfWeek in {Monday Saturday Sunday}
46   if Distance<3.745 then node 92 elseif Distance>=3.745 then node 93 else 13.0419
47   if Distance<3.745 then node 94 elseif Distance>=3.745 then node 95 else 14.6728
48   if Distance<6.155 then node 96 elseif Distance>=6.155 then node 97 else 18.5422
49   if TimeOfDay<7.30569 then node 98 elseif TimeOfDay>=7.30569 then node 99 else 20.4593
50   if TimeOfDay<19.389 then node 100 elseif TimeOfDay>=19.389 then node 101 else 15.9219
51   if TimeOfDay<19.5967 then node 102 elseif TimeOfDay>=19.5967 then node 103 else 17.8482
52   if DayOfWeek in {Friday Saturday Sunday Tuesday Wednesday} then node 104 elseif DayOfWeek in {Monday Thursday}
53   if TimeOfDay<2.86806 then node 106 elseif TimeOfDay>=2.86806 then node 107 else 26.4061
54   if DayOfWeek in {Friday Monday Thursday Tuesday Wednesday} then node 108 elseif DayOfWeek in {Saturday Sunday}
55   if DayOfWeek in {Friday Saturday Thursday Tuesday Wednesday} then node 110 elseif DayOfWeek in {Monday Sunday}
56   if DayOfWeek in {Friday Sunday Thursday Tuesday} then node 112 elseif DayOfWeek in {Monday Saturday Wednesday}
57   fit = 33.1809
58   if Distance<16.315 then node 114 elseif Distance>=16.315 then node 115 else 37.9197
59   fit = 33.2729
60   if Distance<23.4 then node 116 elseif Distance>=23.4 then node 117 else 21.1711
61   if TimeOfDay<12.8268 then node 118 elseif TimeOfDay>=12.8268 then node 119 else 26.4455
62   if TimeOfDay<21.7972 then node 120 elseif TimeOfDay>=21.7972 then node 121 else 26.3603
63   if DayOfWeek in {Friday Saturday Sunday Thursday Tuesday Wednesday} then node 122 elseif DayOfWeek=Monday then
64   fit = 4.11387
65   if TimeOfDay<2.90583 then node 124 elseif TimeOfDay>=2.90583 then node 125 else 7.94648
66   if DayOfWeek in {Friday Saturday Sunday Thursday} then node 126 elseif DayOfWeek in {Monday Tuesday Wednesday}
67   if DayOfWeek in {Friday Saturday Sunday} then node 128 elseif DayOfWeek in {Monday Thursday Tuesday Wednesday}
68   if Distance<1.415 then node 130 elseif Distance>=1.415 then node 131 else 11.5311
69   if Distance<1.775 then node 132 elseif Distance>=1.775 then node 133 else 13.5968
70   if DayOfWeek in {Friday Saturday Sunday} then node 134 elseif DayOfWeek in {Monday Thursday Tuesday Wednesday}
71   if DayOfWeek in {Friday Monday Thursday Tuesday Wednesday} then node 136 elseif DayOfWeek in {Saturday Sunday}
72   if TimeOfDay<0.870556 then node 138 elseif TimeOfDay>=0.870556 then node 139 else 13.2745
73   if TimeOfDay<1.26583 then node 140 elseif TimeOfDay>=1.26583 then node 141 else 15.7091
74   if TimeOfDay<4.40458 then node 142 elseif TimeOfDay>=4.40458 then node 143 else 16.37
75   if DayOfWeek in {Friday Monday Thursday Tuesday Wednesday} then node 144 elseif DayOfWeek in {Saturday Sunday}
76   if Distance<4.615 then node 146 elseif Distance>=4.615 then node 147 else 15.0779
77   if TimeOfDay<0.582917 then node 148 elseif TimeOfDay>=0.582917 then node 149 else 17.0775
78   if Distance<3.895 then node 150 elseif Distance>=3.895 then node 151 else 18.1534
79   if DayOfWeek in {Friday Monday Thursday Tuesday Wednesday} then node 152 elseif DayOfWeek in {Saturday Sunday}
80   if TimeOfDay<8.15167 then node 154 elseif TimeOfDay>=8.15167 then node 155 else 7.95391
81   if DayOfWeek in {Friday Thursday Tuesday Wednesday} then node 156 elseif DayOfWeek=Monday then node 157 else 8
82   if TimeOfDay<9.28889 then node 158 elseif TimeOfDay>=9.28889 then node 159 else 12.3526
83   if Distance<1.445 then node 160 elseif Distance>=1.445 then node 161 else 9.70212
84   if Distance<0.305 then node 162 elseif Distance>=0.305 then node 163 else 9.33944
85   if Distance<2.185 then node 164 elseif Distance>=2.185 then node 165 else 10.6296
86   if Distance<0.365 then node 166 elseif Distance>=0.365 then node 167 else 10.892
87   if TimeOfDay<22.1079 then node 168 elseif TimeOfDay>=22.1079 then node 169 else 12.4342
88   if TimeOfDay<19.2737 then node 170 elseif TimeOfDay>=19.2737 then node 171 else 10.0396
89   if TimeOfDay<10.8376 then node 172 elseif TimeOfDay>=10.8376 then node 173 else 11.9479
90   if Distance<4.785 then node 174 elseif Distance>=4.785 then node 175 else 12.0535
91   if TimeOfDay<11.3232 then node 176 elseif TimeOfDay>=11.3232 then node 177 else 13.691
92   if Distance<3.075 then node 178 elseif Distance>=3.075 then node 179 else 12.4073
93   if Distance<4.295 then node 180 elseif Distance>=4.295 then node 181 else 13.8605
94   if TimeOfDay<22.3289 then node 182 elseif TimeOfDay>=22.3289 then node 183 else 13.9948
95   if DayOfWeek in {Monday Sunday} then node 184 elseif DayOfWeek in {Tuesday Wednesday} then node 185 else 15.53
96   if DayOfWeek in {Saturday Sunday} then node 186 elseif DayOfWeek in {Friday Monday Thursday Tuesday Wednesday}
97   if DayOfWeek in {Friday Saturday Sunday} then node 188 elseif DayOfWeek in {Monday Thursday Tuesday Wednesday}
98   if TimeOfDay<4.61111 then node 190 elseif TimeOfDay>=4.61111 then node 191 else 20.7745
99   if DayOfWeek in {Thursday Wednesday} then node 192 elseif DayOfWeek in {Friday Monday Saturday Sunday Tuesday}
100  if TimeOfDay<14.5964 then node 194 elseif TimeOfDay>=14.5964 then node 195 else 15.1774
```

```
101  if DayOfWeek in {Friday Saturday Thursday Tuesday Wednesday} then node 196 elseif DayOfWeek in {Monday Sunday}
102  if DayOfWeek in {Friday Thursday Tuesday Wednesday} then node 198 elseif DayOfWeek in {Monday Saturday Sunday}
103  if DayOfWeek in {Friday Saturday Thursday Tuesday} then node 200 elseif DayOfWeek in {Monday Sunday Wednesday}
104  if TimeOfDay<4.55139 then node 202 elseif TimeOfDay>=4.55139 then node 203 else 21.5859
105  if Distance<7.99 then node 204 elseif Distance>=7.99 then node 205 else 25.6389
106  if DayOfWeek in {Friday Saturday Sunday} then node 206 elseif DayOfWeek in {Monday Thursday Tuesday Wednesday}
107  if TimeOfDay<6.31236 then node 208 elseif TimeOfDay>=6.31236 then node 209 else 27.5885
108  if TimeOfDay<14.76 then node 210 elseif TimeOfDay>=14.76 then node 211 else 18.0947
109  if TimeOfDay<12.1489 then node 212 elseif TimeOfDay>=12.1489 then node 213 else 22.0598
110  if Distance<9.845 then node 214 elseif Distance>=9.845 then node 215 else 22.2531
111  if Distance<8.23 then node 216 elseif Distance>=8.23 then node 217 else 24.9518
112  if TimeOfDay<2.85083 then node 218 elseif TimeOfDay>=2.85083 then node 219 else 27.7741
113  if TimeOfDay<2.27625 then node 220 elseif TimeOfDay>=2.27625 then node 221 else 30.6968
114  fit = 34.3039
115  if DayOfWeek in {Friday Saturday Sunday Tuesday Wednesday} then node 222 elseif DayOfWeek in {Monday Thursday}
116  if TimeOfDay<14.1537 then node 224 elseif TimeOfDay>=14.1537 then node 225 else 21.0097
117  fit = 30.2123
118  if TimeOfDay<10.019 then node 226 elseif TimeOfDay>=10.019 then node 227 else 33.045
119  if TimeOfDay<13.9715 then node 228 elseif TimeOfDay>=13.9715 then node 229 else 22.3148
120  if DayOfWeek in {Saturday Thursday Tuesday} then node 230 elseif DayOfWeek in {Friday Monday Sunday Wednesday}
121  if DayOfWeek in {Friday Saturday Thursday Wednesday} then node 232 elseif DayOfWeek in {Monday Sunday Tuesday}
122  if TimeOfDay<22.9008 then node 234 elseif TimeOfDay>=22.9008 then node 235 else 29.8649
123  if TimeOfDay<22.1367 then node 236 elseif TimeOfDay>=22.1367 then node 237 else 35.4078
124  if TimeOfDay<0.98875 then node 238 elseif TimeOfDay>=0.98875 then node 239 else 7.29817
125  if DayOfWeek in {Friday Monday Saturday Tuesday} then node 240 elseif DayOfWeek in {Sunday Thursday Wednesday}
126  if TimeOfDay<4.75125 then node 242 elseif TimeOfDay>=4.75125 then node 243 else 9.78603
127  if TimeOfDay<2.02194 then node 244 elseif TimeOfDay>=2.02194 then node 245 else 10.865
128  if TimeOfDay<3.36347 then node 246 elseif TimeOfDay>=3.36347 then node 247 else 11.3852
129  if TimeOfDay<6.53542 then node 248 elseif TimeOfDay>=6.53542 then node 249 else 12.2755
130  if TimeOfDay<0.455139 then node 250 elseif TimeOfDay>=0.455139 then node 251 else 10.994
131  if TimeOfDay<1.34889 then node 252 elseif TimeOfDay>=1.34889 then node 253 else 11.9601
132  if TimeOfDay<0.809167 then node 254 elseif TimeOfDay>=0.809167 then node 255 else 13.1924
133  if TimeOfDay<0.537222 then node 256 elseif TimeOfDay>=0.537222 then node 257 else 14.6514
134  if TimeOfDay<4.23722 then node 258 elseif TimeOfDay>=4.23722 then node 259 else 13.5472
135  if TimeOfDay<6.30903 then node 260 elseif TimeOfDay>=6.30903 then node 261 else 15
136  if TimeOfDay<7.24139 then node 262 elseif TimeOfDay>=7.24139 then node 263 else 12.0514
137  if DayOfWeek=Saturday then node 264 elseif DayOfWeek=Sunday then node 265 else 15.1068
138  if DayOfWeek=Saturday then node 266 elseif DayOfWeek=Sunday then node 267 else 12.6766
139  if DayOfWeek=Saturday then node 268 elseif DayOfWeek=Sunday then node 269 else 13.7048
140  if TimeOfDay<0.346667 then node 270 elseif TimeOfDay>=0.346667 then node 271 else 15.2719
141  if DayOfWeek in {Friday Wednesday} then node 272 elseif DayOfWeek in {Monday Thursday Tuesday} then node 273 e
142  if DayOfWeek in {Saturday Sunday} then node 274 elseif DayOfWeek in {Friday Monday Thursday Tuesday Wednesday}
143  if TimeOfDay<6.37347 then node 276 elseif TimeOfDay>=6.37347 then node 277 else 17.1556
144  if TimeOfDay<7.14389 then node 278 elseif TimeOfDay>=7.14389 then node 279 else 13.596
145  fit = 18.0368
146  if Distance<3.605 then node 280 elseif Distance>=3.605 then node 281 else 14.6922
147  if TimeOfDay<0.934861 then node 282 elseif TimeOfDay>=0.934861 then node 283 else 15.8831
148  if DayOfWeek in {Friday Thursday Tuesday Wednesday} then node 284 elseif DayOfWeek=Monday then node 285 else 1
149  if DayOfWeek=Friday then node 286 elseif DayOfWeek in {Monday Thursday Tuesday Wednesday} then node 287 else 1
150  if DayOfWeek in {Friday Saturday Sunday Wednesday} then node 288 elseif DayOfWeek in {Monday Thursday Tuesday}
151  if TimeOfDay<4.48958 then node 290 elseif TimeOfDay>=4.48958 then node 291 else 18.6329
152  if Distance<4.31 then node 292 elseif Distance>=4.31 then node 293 else 14.5252
153  fit = 18.6036
154  if Distance<1.565 then node 294 elseif Distance>=1.565 then node 295 else 9.81857
155  if Distance<1.635 then node 296 elseif Distance>=1.635 then node 297 else 7.79189
156  if Distance<1.685 then node 298 elseif Distance>=1.685 then node 299 else 8.64698
157  if TimeOfDay<19.2689 then node 300 elseif TimeOfDay>=19.2689 then node 301 else 9.70732
158  if DayOfWeek=Saturday then node 302 elseif DayOfWeek=Sunday then node 303 else 13.3799
159  if DayOfWeek=Saturday then node 304 elseif DayOfWeek=Sunday then node 305 else 11.8094
160  if Distance<0.255 then node 306 elseif Distance>=0.255 then node 307 else 9.35999
161  if TimeOfDay<12.7371 then node 308 elseif TimeOfDay>=12.7371 then node 309 else 10.2104
162  if Distance<0.215 then node 310 elseif Distance>=0.215 then node 311 else 5.49652
163  if Distance<1.045 then node 312 elseif Distance>=1.045 then node 313 else 9.43834
164  if TimeOfDay<21.5815 then node 314 elseif TimeOfDay>=21.5815 then node 315 else 10.3828
165  if TimeOfDay<23.5247 then node 316 elseif TimeOfDay>=23.5247 then node 317 else 11.1599
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166  if Distance<0.215 then node 318 elseif Distance>=0.215 then node 319 else 7.03518
167  if TimeOfDay<21.9088 then node 320 elseif TimeOfDay>=21.9088 then node 321 else 10.9895
168  if DayOfWeek in {Monday Sunday} then node 322 elseif DayOfWeek in {Thursday Tuesday Wednesday} then node 323 e
169  if DayOfWeek in {Monday Sunday} then node 324 elseif DayOfWeek in {Thursday Tuesday Wednesday} then node 325 e
170  if TimeOfDay<8.21319 then node 326 elseif TimeOfDay>=8.21319 then node 327 else 9.77141
171  if DayOfWeek in {Friday Thursday Tuesday} then node 328 elseif DayOfWeek in {Monday Wednesday} then node 329 e
172  if TimeOfDay<9.225 then node 330 elseif TimeOfDay>=9.225 then node 331 else 14.7645
173  if TimeOfDay<12.7096 then node 332 elseif TimeOfDay>=12.7096 then node 333 else 11.3621
174  if TimeOfDay<19.6353 then node 334 elseif TimeOfDay>=19.6353 then node 335 else 11.4726
175  if TimeOfDay<18.6143 then node 336 elseif TimeOfDay>=18.6143 then node 337 else 13.0977
176  if DayOfWeek in {Monday Saturday} then node 338 elseif DayOfWeek=Sunday then node 339 else 15.3933
177  if Distance<4.625 then node 340 elseif Distance>=4.625 then node 341 else 13.1089
178  if TimeOfDay<23.6661 then node 342 elseif TimeOfDay>=23.6661 then node 343 else 11.9189
179  if DayOfWeek in {Friday Saturday} then node 344 elseif DayOfWeek=Thursday then node 345 else 12.8205
180  if TimeOfDay<23.2308 then node 346 elseif TimeOfDay>=23.2308 then node 347 else 13.3402
181  if DayOfWeek in {Friday Saturday} then node 348 elseif DayOfWeek=Thursday then node 349 else 14.2148
182  if DayOfWeek in {Monday Sunday} then node 350 elseif DayOfWeek in {Tuesday Wednesday} then node 351 else 13.41
183  if DayOfWeek in {Monday Sunday} then node 352 elseif DayOfWeek in {Tuesday Wednesday} then node 353 else 14.83
184  if TimeOfDay<21.4236 then node 354 elseif TimeOfDay>=21.4236 then node 355 else 16.2733
185  if TimeOfDay<21.8171 then node 356 elseif TimeOfDay>=21.8171 then node 357 else 14.9712
186  if Distance<5.805 then node 358 elseif Distance>=5.805 then node 359 else 16.4355
187  if Distance<5.895 then node 360 elseif Distance>=5.895 then node 361 else 18.0855
188  if TimeOfDay<0.691806 then node 362 elseif TimeOfDay>=0.691806 then node 363 else 18.5006
189  if Distance<6.355 then node 364 elseif Distance>=6.355 then node 365 else 21.0761
190  if DayOfWeek in {Friday Saturday Sunday Thursday} then node 366 elseif DayOfWeek in {Monday Tuesday Wednesday}
191  if Distance<5.98 then node 368 elseif Distance>=5.98 then node 369 else 21.9406
192  fit = 17.3841
193  if TimeOfDay<7.63278 then node 370 elseif TimeOfDay>=7.63278 then node 371 else 19.6121
194  if DayOfWeek in {Friday Thursday Tuesday Wednesday} then node 372 elseif DayOfWeek in {Monday Saturday Sunday}
195  if DayOfWeek in {Friday Sunday Thursday Tuesday Wednesday} then node 374 elseif DayOfWeek in {Monday Saturday}
196  if TimeOfDay<20.6128 then node 376 elseif TimeOfDay>=20.6128 then node 377 else 16.4458
197  if Distance<5.925 then node 378 elseif Distance>=5.925 then node 379 else 18.0243
198  if TimeOfDay<14.2374 then node 380 elseif TimeOfDay>=14.2374 then node 381 else 15.7788
199  if TimeOfDay<12.094 then node 382 elseif TimeOfDay>=12.094 then node 383 else 18.5809
200  if Distance<7.195 then node 384 elseif Distance>=7.195 then node 385 else 18.2218
201  if Distance<7.095 then node 386 elseif Distance>=7.095 then node 387 else 19.8968
202  if DayOfWeek in {Saturday Sunday} then node 388 elseif DayOfWeek in {Friday Tuesday Wednesday} then node 389 e
203  if DayOfWeek in {Friday Tuesday Wednesday} then node 390 elseif DayOfWeek in {Saturday Sunday} then node 391 e
204  fit = 24.5691
205  fit = 26.9813
206  if Distance<8.98 then node 392 elseif Distance>=8.98 then node 393 else 23.7138
207  if Distance<9.955 then node 394 elseif Distance>=9.955 then node 395 else 26.5371
208  if DayOfWeek in {Friday Saturday Sunday} then node 396 elseif DayOfWeek in {Monday Thursday Tuesday Wednesday}
209  if DayOfWeek in {Friday Monday Thursday Tuesday} then node 398 elseif DayOfWeek in {Saturday Sunday Wednesday}
210  if TimeOfDay<10.094 then node 400 elseif TimeOfDay>=10.094 then node 401 else 18.9607
211  if TimeOfDay<18.3624 then node 402 elseif TimeOfDay>=18.3624 then node 403 else 16.7628
212  if Distance<8.655 then node 404 elseif Distance>=8.655 then node 405 else 25.918
213  if Distance<8.08 then node 406 elseif Distance>=8.08 then node 407 else 20.0913
214  if Distance<8.205 then node 408 elseif Distance>=8.205 then node 409 else 21.4508
215  if DayOfWeek in {Friday Saturday Thursday} then node 410 elseif DayOfWeek in {Tuesday Wednesday} then node 411
216  if Distance<7.905 then node 412 elseif Distance>=7.905 then node 413 else 21.7372
217  if TimeOfDay<21.2293 then node 414 elseif TimeOfDay>=21.2293 then node 415 else 25.6826
218  fit = 27.4561
219  fit = 28.1883
220  fit = 29.665
221  fit = 31.9004
222  if Distance<19.445 then node 416 elseif Distance>=19.445 then node 417 else 37.833
223  if TimeOfDay<0.851667 then node 418 elseif TimeOfDay>=0.851667 then node 419 else 39.6569
224  if TimeOfDay<8.79778 then node 420 elseif TimeOfDay>=8.79778 then node 421 else 22.2184
225  if TimeOfDay<18.4915 then node 422 elseif TimeOfDay>=18.4915 then node 423 else 19.8922
226  if DayOfWeek=Saturday then node 424 elseif DayOfWeek=Sunday then node 425 else 34.7136
227  if Distance<16.05 then node 426 elseif Distance>=16.05 then node 427 else 30.5664
228  if Distance<16.985 then node 428 elseif Distance>=16.985 then node 429 else 25.988
229  if TimeOfDay<18.5917 then node 430 elseif TimeOfDay>=18.5917 then node 431 else 21.6405
230  fit = 22.2458
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231  if DayOfWeek in {Friday Sunday} then node 432 elseif DayOfWeek in {Monday Wednesday} then node 433 else 25.994
232  if TimeOfDay<22.7497 then node 434 elseif TimeOfDay>=22.7497 then node 435 else 26.6028
233  if Distance<13.505 then node 436 elseif Distance>=13.505 then node 437 else 29.6426
234  if DayOfWeek in {Friday Saturday} then node 438 elseif DayOfWeek in {Sunday Thursday Tuesday Wednesday} then n
235  if DayOfWeek in {Friday Saturday Tuesday Wednesday} then node 440 elseif DayOfWeek in {Sunday Thursday} then n
236  fit = 33.6632
237  fit = 37.4431
238  fit = 6.54297
239  if Distance<0.295 then node 442 elseif Distance>=0.295 then node 443 else 7.73952
240  fit = 7.92668
241  fit = 9.45676
242  if TimeOfDay<3.09375 then node 444 elseif TimeOfDay>=3.09375 then node 445 else 9.59846
243  fit = 10.6196
244  fit = 12.1378
245  if TimeOfDay<6.73569 then node 446 elseif TimeOfDay>=6.73569 then node 447 else 10.3502
246  if TimeOfDay<0.772917 then node 448 elseif TimeOfDay>=0.772917 then node 449 else 10.8797
247  if TimeOfDay<6.87736 then node 450 elseif TimeOfDay>=6.87736 then node 451 else 12.3166
248  if TimeOfDay<3.28625 then node 452 elseif TimeOfDay>=3.28625 then node 453 else 12.9751
249  if TimeOfDay<7.03236 then node 454 elseif TimeOfDay>=7.03236 then node 455 else 11.1048
250  if TimeOfDay<0.185694 then node 456 elseif TimeOfDay>=0.185694 then node 457 else 10.1298
251  if DayOfWeek=Saturday then node 458 elseif DayOfWeek=Sunday then node 459 else 11.3053
252  if TimeOfDay<0.204444 then node 460 elseif TimeOfDay>=0.204444 then node 461 else 11.6641
253  if DayOfWeek=Saturday then node 462 elseif DayOfWeek=Sunday then node 463 else 12.6997
254  if DayOfWeek in {Friday Thursday} then node 464 elseif DayOfWeek in {Monday Tuesday Wednesday} then node 465 e
255  if DayOfWeek=Friday then node 466 elseif DayOfWeek in {Monday Thursday Tuesday Wednesday} then node 467 else 1
256  if DayOfWeek in {Friday Wednesday} then node 468 elseif DayOfWeek in {Monday Thursday Tuesday} then node 469 e
257  if Distance<1.825 then node 470 elseif Distance>=1.825 then node 471 else 15.2665
258  if Distance<1.145 then node 472 elseif Distance>=1.145 then node 473 else 12.9212
259  if Distance<1.005 then node 474 elseif Distance>=1.005 then node 475 else 14.7022
260  if Distance<1.415 then node 476 elseif Distance>=1.415 then node 477 else 15.6488
261  if Distance<1.305 then node 478 elseif Distance>=1.305 then node 479 else 13.7212
262  if Distance<1.725 then node 480 elseif Distance>=1.725 then node 481 else 12.5084
263  if Distance<1.595 then node 482 elseif Distance>=1.595 then node 483 else 11.2652
264  if TimeOfDay<7.13097 then node 484 elseif TimeOfDay>=7.13097 then node 485 else 14.3474
265  fit = 16.2313
266  if TimeOfDay<0.38625 then node 486 elseif TimeOfDay>=0.38625 then node 487 else 13.1226
267  if Distance<2.91 then node 488 elseif Distance>=2.91 then node 489 else 12.3193
268  if TimeOfDay<1.92264 then node 490 elseif TimeOfDay>=1.92264 then node 491 else 14.3169
269  if TimeOfDay<1.84222 then node 492 elseif TimeOfDay>=1.84222 then node 493 else 13.2479
270  if TimeOfDay<0.200278 then node 494 elseif TimeOfDay>=0.200278 then node 495 else 14.6079
271  if DayOfWeek=Friday then node 496 elseif DayOfWeek in {Monday Thursday Tuesday Wednesday} then node 497 else 1
272  if TimeOfDay<1.65125 then node 498 elseif TimeOfDay>=1.65125 then node 499 else 16.1074
273  if TimeOfDay<1.69306 then node 500 elseif TimeOfDay>=1.69306 then node 501 else 17.7931
274  if Distance<2.825 then node 502 elseif Distance>=2.825 then node 503 else 15.3194
275  if Distance<2.505 then node 504 elseif Distance>=2.505 then node 505 else 16.8053
276  if Distance<2.825 then node 506 elseif Distance>=2.825 then node 507 else 17.7809
277  if Distance<2.505 then node 508 elseif Distance>=2.505 then node 509 else 15.7915
278  if TimeOfDay<7.05819 then node 510 elseif TimeOfDay>=7.05819 then node 511 else 14.3166
279  if DayOfWeek in {Friday Monday Thursday} then node 512 elseif DayOfWeek in {Tuesday Wednesday} then node 513 e
280  if TimeOfDay<1.44472 then node 514 elseif TimeOfDay>=1.44472 then node 515 else 14.1318
281  if TimeOfDay<0.249028 then node 516 elseif TimeOfDay>=0.249028 then node 517 else 14.9965
282  if TimeOfDay<0.544444 then node 518 elseif TimeOfDay>=0.544444 then node 519 else 14.8942
283  if TimeOfDay<1.22486 then node 520 elseif TimeOfDay>=1.22486 then node 521 else 16.4364
284  if Distance<4.995 then node 522 elseif Distance>=4.995 then node 523 else 15.6561
285  fit = 18.5584
286  if Distance<4.365 then node 524 elseif Distance>=4.365 then node 525 else 16.751
287  if TimeOfDay<1.53653 then node 526 elseif TimeOfDay>=1.53653 then node 527 else 18.0669
288  if TimeOfDay<4.58375 then node 528 elseif TimeOfDay>=4.58375 then node 529 else 17.0517
289  if TimeOfDay<6.18528 then node 530 elseif TimeOfDay>=6.18528 then node 531 else 18.183
290  if DayOfWeek in {Saturday Sunday} then node 532 elseif DayOfWeek in {Friday Monday Thursday Tuesday Wednesday}
291  if TimeOfDay<6.12042 then node 534 elseif TimeOfDay>=6.12042 then node 535 else 19.7136
292  if TimeOfDay<7.09042 then node 536 elseif TimeOfDay>=7.09042 then node 537 else 13.7967
293  if TimeOfDay<7.19444 then node 538 elseif TimeOfDay>=7.19444 then node 539 else 15.9034
294  if TimeOfDay<8.03125 then node 540 elseif TimeOfDay>=8.03125 then node 541 else 9.44629
295  if TimeOfDay<7.75278 then node 542 elseif TimeOfDay>=7.75278 then node 543 else 10.5483
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296   if Distance<0.235 then node 544 elseif Distance>=0.235 then node 545 else 7.59877
297   if DayOfWeek in {Friday Thursday Tuesday Wednesday} then node 546 elseif DayOfWeek=Monday then node 547 else 8
298   if Distance<0.235 then node 548 elseif Distance>=0.235 then node 549 else 8.38946
299   if TimeOfDay<19.4526 then node 550 elseif TimeOfDay>=19.4526 then node 551 else 9.2827
300   if Distance<1.715 then node 552 elseif Distance>=1.715 then node 553 else 9.39259
301   if Distance<0.905 then node 554 elseif Distance>=0.905 then node 555 else 10.5563
302   if Distance<1.155 then node 556 elseif Distance>=1.155 then node 557 else 12.637
303   if Distance<2.045 then node 558 elseif Distance>=2.045 then node 559 else 14.2923
304   if Distance<1.695 then node 560 elseif Distance>=1.695 then node 561 else 11.0078
305   if Distance<1.505 then node 562 elseif Distance>=1.505 then node 563 else 12.546
306   if Distance<0.165 then node 564 elseif Distance>=0.165 then node 565 else 4.93259
307   if TimeOfDay<12.9054 then node 566 elseif TimeOfDay>=12.9054 then node 567 else 9.41337
308   if DayOfWeek=Saturday then node 568 elseif DayOfWeek=Sunday then node 569 else 10.9018
309   if Distance<1.845 then node 570 elseif Distance>=1.845 then node 571 else 10.0452
310   fit = 4.11921
311   fit = 6.57333
312   if TimeOfDay<23.6139 then node 572 elseif TimeOfDay>=23.6139 then node 573 else 9.24311
313   if TimeOfDay<22.78 then node 574 elseif TimeOfDay>=22.78 then node 575 else 9.73156
314   if Distance<1.775 then node 576 elseif Distance>=1.775 then node 577 else 9.76843
315   if TimeOfDay<21.6382 then node 578 elseif TimeOfDay>=21.6382 then node 579 else 10.7021
316   if TimeOfDay<20.5043 then node 580 elseif TimeOfDay>=20.5043 then node 581 else 11.0035
317   if TimeOfDay<23.6882 then node 582 elseif TimeOfDay>=23.6882 then node 583 else 12.2259
318   fit = 4.44617
319   if DayOfWeek in {Thursday Tuesday} then node 584 elseif DayOfWeek in {Monday Sunday Wednesday} then node 585 e
320   if DayOfWeek in {Monday Sunday} then node 586 elseif DayOfWeek in {Thursday Tuesday Wednesday} then node 587 e
321   if DayOfWeek in {Monday Sunday} then node 588 elseif DayOfWeek in {Thursday Tuesday Wednesday} then node 589 e
322   if TimeOfDay<21.0497 then node 590 elseif TimeOfDay>=21.0497 then node 591 else 12.6022
323   if TimeOfDay<21.3439 then node 592 elseif TimeOfDay>=21.3439 then node 593 else 11.4779
324   if Distance<1.735 then node 594 elseif Distance>=1.735 then node 595 else 13.9312
325   if TimeOfDay<23.0967 then node 596 elseif TimeOfDay>=23.0967 then node 597 else 12.6727
326   if TimeOfDay<7.65472 then node 598 elseif TimeOfDay>=7.65472 then node 599 else 11.6345
327   if Distance<3.065 then node 600 elseif Distance>=3.065 then node 601 else 9.59475
328   if Distance<3.365 then node 602 elseif Distance>=3.365 then node 603 else 11.0235
329   if TimeOfDay<20.0414 then node 604 elseif TimeOfDay>=20.0414 then node 605 else 12.475
330   if DayOfWeek=Saturday then node 606 elseif DayOfWeek=Sunday then node 607 else 16.3839
331   if DayOfWeek=Saturday then node 608 elseif DayOfWeek=Sunday then node 609 else 13.9011
332   if DayOfWeek=Saturday then node 610 elseif DayOfWeek=Sunday then node 611 else 12.2193
333   if TimeOfDay<17.2532 then node 612 elseif TimeOfDay>=17.2532 then node 613 else 11.1388
334   if TimeOfDay<8.30278 then node 614 elseif TimeOfDay>=8.30278 then node 615 else 11.2771
335   if Distance<4.57 then node 616 elseif Distance>=4.57 then node 617 else 13.1058
336   if TimeOfDay<14.1283 then node 618 elseif TimeOfDay>=14.1283 then node 619 else 12.7054
337   if Distance<5.01 then node 620 elseif Distance>=5.01 then node 621 else 14.5946
338   if Distance<4.21 then node 622 elseif Distance>=4.21 then node 623 else 14.6493
339   if TimeOfDay<9.30583 then node 624 elseif TimeOfDay>=9.30583 then node 625 else 16.9235
340   if TimeOfDay<18.2944 then node 626 elseif TimeOfDay>=18.2944 then node 627 else 12.4701
341   if TimeOfDay<12.5571 then node 628 elseif TimeOfDay>=12.5571 then node 629 else 14.0584
342   if TimeOfDay<22.8285 then node 630 elseif TimeOfDay>=22.8285 then node 631 else 11.7846
343   if Distance<2.85 then node 632 elseif Distance>=2.85 then node 633 else 13.0392
344   if TimeOfDay<22.5978 then node 634 elseif TimeOfDay>=22.5978 then node 635 else 12.5017
345   if TimeOfDay<22.5371 then node 636 elseif TimeOfDay>=22.5371 then node 637 else 13.4719
346   if TimeOfDay<22.0908 then node 638 elseif TimeOfDay>=22.0908 then node 639 else 13.098
347   if DayOfWeek=Saturday then node 640 elseif DayOfWeek in {Friday Thursday} then node 641 else 14.1878
348   if TimeOfDay<22.8896 then node 642 elseif TimeOfDay>=22.8896 then node 643 else 13.9492
349   if TimeOfDay<22.0099 then node 644 elseif TimeOfDay>=22.0099 then node 645 else 14.722
350   if TimeOfDay<21.175 then node 646 elseif TimeOfDay>=21.175 then node 647 else 13.8391
351   if TimeOfDay<21.1007 then node 648 elseif TimeOfDay>=21.1007 then node 649 else 13.0036
352   if Distance<3.37 then node 650 elseif Distance>=3.37 then node 651 else 15.5698
353   if TimeOfDay<23.1817 then node 652 elseif TimeOfDay>=23.1817 then node 653 else 14.3091
354   if Distance<4.095 then node 654 elseif Distance>=4.095 then node 655 else 15.0562
355   if TimeOfDay<21.6492 then node 656 elseif TimeOfDay>=21.6492 then node 657 else 16.7511
356   if Distance<4.385 then node 658 elseif Distance>=4.385 then node 659 else 14.2906
357   if TimeOfDay<23.7708 then node 660 elseif TimeOfDay>=23.7708 then node 661 else 15.3435
358   if TimeOfDay<1.25236 then node 662 elseif TimeOfDay>=1.25236 then node 663 else 15.7597
359   if TimeOfDay<1.59597 then node 664 elseif TimeOfDay>=1.59597 then node 665 else 17.3502
360   if Distance<5.745 then node 666 elseif Distance>=5.745 then node 667 else 17.5355
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361  fit = 19.1611
362  if TimeOfDay<0.294444 then node 668 elseif TimeOfDay>=0.294444 then node 669 else 16.9394
363  if Distance<7.13 then node 670 elseif Distance>=7.13 then node 671 else 19.2453
364  fit = 22.82
365  if TimeOfDay<0.521667 then node 672 elseif TimeOfDay>=0.521667 then node 673 else 20.5762
366  if Distance<6.89 then node 674 elseif Distance>=6.89 then node 675 else 19.3229
367  if Distance<6.425 then node 676 elseif Distance>=6.425 then node 677 else 22.1063
368  if Distance<5.745 then node 678 elseif Distance>=5.745 then node 679 else 20.4316
369  if DayOfWeek in {Friday Tuesday} then node 680 elseif DayOfWeek in {Monday Saturday Sunday Thursday Wednesday}
370  fit = 20.2763
371  fit = 19.0928
372  if Distance<6.265 then node 682 elseif Distance>=6.265 then node 683 else 15.0563
373  if Distance<5.825 then node 684 elseif Distance>=5.825 then node 685 else 17.5249
374  if TimeOfDay<17.9956 then node 686 elseif TimeOfDay>=17.9956 then node 687 else 12.946
375  if Distance<5.795 then node 688 elseif Distance>=5.795 then node 689 else 15.2072
376  if DayOfWeek in {Friday Saturday Tuesday} then node 690 elseif DayOfWeek in {Thursday Wednesday} then node 691
377  if DayOfWeek in {Friday Saturday} then node 692 elseif DayOfWeek in {Thursday Tuesday Wednesday} then node 693
378  if TimeOfDay<21.2264 then node 694 elseif TimeOfDay>=21.2264 then node 695 else 17.1292
379  if Distance<6.255 then node 696 elseif Distance>=6.255 then node 697 else 19.0531
380  if Distance<7.035 then node 698 elseif Distance>=7.035 then node 699 else 17.0029
381  if TimeOfDay<18.5162 then node 700 elseif TimeOfDay>=18.5162 then node 701 else 14.3771
382  if DayOfWeek=Monday then node 702 elseif DayOfWeek in {Saturday Sunday} then node 703 else 20.4436
383  if Distance<7.055 then node 704 elseif Distance>=7.055 then node 705 else 17.6231
384  if TimeOfDay<20.4147 then node 706 elseif TimeOfDay>=20.4147 then node 707 else 17.7172
385  if DayOfWeek in {Friday Thursday} then node 708 elseif DayOfWeek in {Saturday Tuesday} then node 709 else 19.8
386  if TimeOfDay<20.5226 then node 710 elseif TimeOfDay>=20.5226 then node 711 else 19.3784
387  if DayOfWeek=Monday then node 712 elseif DayOfWeek in {Sunday Wednesday} then node 713 else 20.7533
388  if Distance<8.01 then node 714 elseif Distance>=8.01 then node 715 else 20.0566
389  if TimeOfDay<1.57097 then node 716 elseif TimeOfDay>=1.57097 then node 717 else 22.3752
390  fit = 21.864
391  fit = 25.3248
392  fit = 21.7315
393  if DayOfWeek in {Friday Saturday} then node 718 elseif DayOfWeek=Sunday then node 719 else 24.1694
394  if DayOfWeek in {Monday Thursday} then node 720 elseif DayOfWeek in {Tuesday Wednesday} then node 721 else 25.
395  if TimeOfDay<1.15069 then node 722 elseif TimeOfDay>=1.15069 then node 723 else 28.0649
396  if TimeOfDay<4.44944 then node 724 elseif TimeOfDay>=4.44944 then node 725 else 26.9418
397  if Distance<10.015 then node 726 elseif Distance>=10.015 then node 727 else 29.9979
398  if Distance<10.815 then node 728 elseif Distance>=10.815 then node 729 else 23.5674
399  fit = 29.9036
400  if Distance<9.725 then node 730 elseif Distance>=9.725 then node 731 else 18.0994
401  if Distance<9.475 then node 732 elseif Distance>=9.475 then node 733 else 19.4073
402  if DayOfWeek in {Friday Thursday Tuesday Wednesday} then node 734 elseif DayOfWeek=Monday then node 735 else 1
403  if DayOfWeek in {Friday Thursday Tuesday Wednesday} then node 736 elseif DayOfWeek=Monday then node 737 else 1
404  if DayOfWeek=Saturday then node 738 elseif DayOfWeek=Sunday then node 739 else 23.0399
405  if TimeOfDay<10.0714 then node 740 elseif TimeOfDay>=10.0714 then node 741 else 26.8537
406  if TimeOfDay<16.7096 then node 742 elseif TimeOfDay>=16.7096 then node 743 else 17.9994
407  if TimeOfDay<14.3232 then node 744 elseif TimeOfDay>=14.3232 then node 745 else 20.4246
408  if TimeOfDay<21.4051 then node 746 elseif TimeOfDay>=21.4051 then node 747 else 20.6276
409  if TimeOfDay<20.6615 then node 748 elseif TimeOfDay>=20.6615 then node 749 else 21.906
410  if TimeOfDay<23.4408 then node 750 elseif TimeOfDay>=23.4408 then node 751 else 22.7258
411  if TimeOfDay<20.7203 then node 752 elseif TimeOfDay>=20.7203 then node 753 else 24.608
412  fit = 21.0964
413  fit = 22.7055
414  if DayOfWeek=Monday then node 754 elseif DayOfWeek=Sunday then node 755 else 24.5185
415  if DayOfWeek=Monday then node 756 elseif DayOfWeek=Sunday then node 757 else 26.2354
416  if TimeOfDay<1.02139 then node 758 elseif TimeOfDay>=1.02139 then node 759 else 38.5401
417  fit = 35.8575
418  fit = 38.0965
419  if TimeOfDay<3.805 then node 760 elseif TimeOfDay>=3.805 then node 761 else 40.3591
420  if TimeOfDay<6.91333 then node 762 elseif TimeOfDay>=6.91333 then node 763 else 20.1993
421  if Distance<13.925 then node 764 elseif Distance>=13.925 then node 765 else 23.295
422  if DayOfWeek in {Friday Thursday Wednesday} then node 766 elseif DayOfWeek in {Monday Tuesday} then node 767 e
423  if DayOfWeek in {Friday Thursday Tuesday Wednesday} then node 768 elseif DayOfWeek=Monday then node 769 else 2
424  if Distance<17.175 then node 770 elseif Distance>=17.175 then node 771 else 32.1372
425  if TimeOfDay<7.83847 then node 772 elseif TimeOfDay>=7.83847 then node 773 else 37.5821
```

```
426  fit = 27.4684
427  if TimeOfDay<11.4539 then node 774 elseif TimeOfDay>=11.4539 then node 775 else 31.7437
428  fit = 24.2457
429  fit = 27.331
430  if DayOfWeek=Saturday then node 776 elseif DayOfWeek=Sunday then node 777 else 21.1099
431  if TimeOfDay<19.1826 then node 778 elseif TimeOfDay>=19.1826 then node 779 else 24.1427
432  fit = 24.5772
433  fit = 26.9223
434  fit = 28.2048
435  fit = 25.3012
436  fit = 27.4443
437  fit = 31.8408
438  if DayOfWeek=Friday then node 780 elseif DayOfWeek=Saturday then node 781 else 26.1132
439  if TimeOfDay<20.3131 then node 782 elseif TimeOfDay>=20.3131 then node 783 else 29.9005
440  if Distance<17.445 then node 784 elseif Distance>=17.445 then node 785 else 31.673
441  fit = 35.5031
442  fit = 7.3293
443  fit = 8.20672
444  if TimeOfDay<2.28375 then node 786 elseif TimeOfDay>=2.28375 then node 787 else 9.82076
445  fit = 8.68079
446  fit = 10.7641
447  fit = 9.84313
448  if DayOfWeek=Friday then node 788 elseif DayOfWeek in {Saturday Sunday} then node 789 else 10.2854
449  if TimeOfDay<2.53431 then node 790 elseif TimeOfDay>=2.53431 then node 791 else 11.1419
450  if TimeOfDay<5.55069 then node 792 elseif TimeOfDay>=5.55069 then node 793 else 12.57
451  if DayOfWeek=Friday then node 794 elseif DayOfWeek in {Saturday Sunday} then node 795 else 11.3594
452  if Distance<0.605 then node 796 elseif Distance>=0.605 then node 797 else 12.4397
453  if TimeOfDay<5.88278 then node 798 elseif TimeOfDay>=5.88278 then node 799 else 13.7183
454  if Distance<0.675 then node 800 elseif Distance>=0.675 then node 801 else 11.6475
455  if TimeOfDay<7.13736 then node 802 elseif TimeOfDay>=7.13736 then node 803 else 10.5575
456  if TimeOfDay<0.109722 then node 804 elseif TimeOfDay>=0.109722 then node 805 else 10.7518
457  if TimeOfDay<0.291111 then node 806 elseif TimeOfDay>=0.291111 then node 807 else 9.79946
458  if TimeOfDay<1.00903 then node 808 elseif TimeOfDay>=1.00903 then node 809 else 11.7929
459  if TimeOfDay<1.735 then node 810 elseif TimeOfDay>=1.735 then node 811 else 10.934
460  if DayOfWeek=Saturday then node 812 elseif DayOfWeek=Sunday then node 813 else 10.9139
461  if Distance<1.705 then node 814 elseif Distance>=1.705 then node 815 else 11.817
462  if TimeOfDay<1.85028 then node 816 elseif TimeOfDay>=1.85028 then node 817 else 13.5425
463  if TimeOfDay<1.85306 then node 818 elseif TimeOfDay>=1.85306 then node 819 else 12.0264
464  if Distance<0.985 then node 820 elseif Distance>=0.985 then node 821 else 11.9501
465  if Distance<1.135 then node 822 elseif Distance>=1.135 then node 823 else 13.2802
466  if Distance<1.205 then node 824 elseif Distance>=1.205 then node 825 else 12.8293
467  if TimeOfDay<1.12056 then node 826 elseif TimeOfDay>=1.12056 then node 827 else 14.276
468  if Distance<1.985 then node 828 elseif Distance>=1.985 then node 829 else 12.9336
469  if Distance<1.975 then node 830 elseif Distance>=1.975 then node 831 else 14.3813
470  fit = 16.9517
471  if DayOfWeek in {Friday Wednesday} then node 832 elseif DayOfWeek in {Monday Thursday Tuesday} then node 833 e
472  if TimeOfDay<3.78153 then node 834 elseif TimeOfDay>=3.78153 then node 835 else 11.8566
473  if DayOfWeek=Friday then node 836 elseif DayOfWeek in {Saturday Sunday} then node 837 else 13.2837
474  if Distance<0.905 then node 838 elseif Distance>=0.905 then node 839 else 13.1646
475  if DayOfWeek=Friday then node 840 elseif DayOfWeek in {Saturday Sunday} then node 841 else 14.9813
476  if TimeOfDay<6.18472 then node 842 elseif TimeOfDay>=6.18472 then node 843 else 14.9738
477  if TimeOfDay<4.8125 then node 844 elseif TimeOfDay>=4.8125 then node 845 else 16.285
478  if TimeOfDay<6.55042 then node 846 elseif TimeOfDay>=6.55042 then node 847 else 13.0102
479  if Distance<2.095 then node 848 elseif Distance>=2.095 then node 849 else 14.2961
480  if TimeOfDay<7.09069 then node 850 elseif TimeOfDay>=7.09069 then node 851 else 12.1412
481  if TimeOfDay<6.95097 then node 852 elseif TimeOfDay>=6.95097 then node 853 else 13.5949
482  if TimeOfDay<7.27528 then node 854 elseif TimeOfDay>=7.27528 then node 855 else 10.8861
483  if TimeOfDay<7.40931 then node 856 elseif TimeOfDay>=7.40931 then node 857 else 11.852
484  fit = 14.9792
485  fit = 13.7928
486  if Distance<2.575 then node 858 elseif Distance>=2.575 then node 859 else 12.6256
487  if Distance<2.685 then node 860 elseif Distance>=2.685 then node 861 else 13.6015
488  if TimeOfDay<0.56375 then node 862 elseif TimeOfDay>=0.56375 then node 863 else 12.0929
489  fit = 12.9516
490  if Distance<2.745 then node 864 elseif Distance>=2.745 then node 865 else 14.1554
```

```
491  fit = 15.1201
492  if TimeOfDay<1.36028 then node 866 elseif TimeOfDay>=1.36028 then node 867 else 13.619
493  fit = 11.8075
494  if Distance<2.655 then node 868 elseif Distance>=2.655 then node 869 else 14.9806
495  if Distance<2.655 then node 870 elseif Distance>=2.655 then node 871 else 14.0988
496  if Distance<2.79 then node 872 elseif Distance>=2.79 then node 873 else 14.6834
497  if Distance<2.99 then node 874 elseif Distance>=2.99 then node 875 else 16.0761
498  fit = 16.7518
499  fit = 15.6208
500  fit = 17.225
501  fit = 18.437
502  if TimeOfDay<2.92347 then node 876 elseif TimeOfDay>=2.92347 then node 877 else 14.8675
503  if TimeOfDay<2.93194 then node 878 elseif TimeOfDay>=2.93194 then node 879 else 16.1954
504  if Distance<2.385 then node 880 elseif Distance>=2.385 then node 881 else 16.2175
505  if TimeOfDay<2.64889 then node 882 elseif TimeOfDay>=2.64889 then node 883 else 17.1972
506  if TimeOfDay<5.77306 then node 884 elseif TimeOfDay>=5.77306 then node 885 else 17.3132
507  if TimeOfDay<5.09264 then node 886 elseif TimeOfDay>=5.09264 then node 887 else 18.6003
508  if TimeOfDay<6.57736 then node 888 elseif TimeOfDay>=6.57736 then node 889 else 15.0214
509  if TimeOfDay<6.49833 then node 890 elseif TimeOfDay>=6.49833 then node 891 else 16.26
510  if Distance<2.765 then node 892 elseif Distance>=2.765 then node 893 else 14.0737
511  fit = 15.2122
512  if TimeOfDay<7.30333 then node 894 elseif TimeOfDay>=7.30333 then node 895 else 13.336
513  if TimeOfDay<7.26889 then node 896 elseif TimeOfDay>=7.26889 then node 897 else 12.2839
514  if TimeOfDay<0.745556 then node 898 elseif TimeOfDay>=0.745556 then node 899 else 13.7164
515  if TimeOfDay<1.80694 then node 900 elseif TimeOfDay>=1.80694 then node 901 else 14.9298
516  fit = 13.8547
517  if Distance<4.505 then node 902 elseif Distance>=4.505 then node 903 else 15.1446
518  if TimeOfDay<0.232083 then node 904 elseif TimeOfDay>=0.232083 then node 905 else 15.3036
519  fit = 14.0942
520  fit = 17.46
521  if DayOfWeek=Saturday then node 906 elseif DayOfWeek=Sunday then node 907 else 16.1619
522  if Distance<4.655 then node 908 elseif Distance>=4.655 then node 909 else 15.4988
523  fit = 16.6744
524  if Distance<3.435 then node 910 elseif Distance>=3.435 then node 911 else 16.0637
525  if TimeOfDay<1.36083 then node 912 elseif TimeOfDay>=1.36083 then node 913 else 18.0126
526  if Distance<4.91 then node 914 elseif Distance>=4.91 then node 915 else 17.7827
527  if Distance<4.075 then node 916 elseif Distance>=4.075 then node 917 else 18.839
528  if DayOfWeek=Sunday then node 918 elseif DayOfWeek in {Friday Saturday Wednesday} then node 919 else 16.719
529  if TimeOfDay<6.46278 then node 920 elseif TimeOfDay>=6.46278 then node 921 else 17.7245
530  if TimeOfDay<3.56931 then node 922 elseif TimeOfDay>=3.56931 then node 923 else 19.4877
531  if TimeOfDay<6.66278 then node 924 elseif TimeOfDay>=6.66278 then node 925 else 16.4528
532  if TimeOfDay<3.46319 then node 926 elseif TimeOfDay>=3.46319 then node 927 else 17.2986
533  if TimeOfDay<2.86778 then node 928 elseif TimeOfDay>=2.86778 then node 929 else 19.2721
534  if DayOfWeek in {Friday Monday Saturday Sunday Tuesday} then node 930 elseif DayOfWeek in {Thursday Wednesday}
535  if Distance<4.81 then node 932 elseif Distance>=4.81 then node 933 else 18.7333
536  fit = 14.7401
537  if TimeOfDay<7.36014 then node 934 elseif TimeOfDay>=7.36014 then node 935 else 13.516
538  fit = 17.0721
539  fit = 14.7625
540  if TimeOfDay<7.59139 then node 936 elseif TimeOfDay>=7.59139 then node 937 else 9.62491
541  if Distance<0.575 then node 938 elseif Distance>=0.575 then node 939 else 8.64719
542  if DayOfWeek in {Friday Monday Thursday} then node 940 elseif DayOfWeek in {Tuesday Wednesday} then node 941 e
543  if Distance<2.135 then node 942 elseif Distance>=2.135 then node 943 else 10.1001
544  if Distance<0.105 then node 944 elseif Distance>=0.105 then node 945 else 4.29892
545  if DayOfWeek in {Friday Thursday Tuesday Wednesday} then node 946 elseif DayOfWeek=Monday then node 947 else 7
546  if TimeOfDay<9.07556 then node 948 elseif TimeOfDay>=9.07556 then node 949 else 8.15274
547  if TimeOfDay<8.66611 then node 950 elseif TimeOfDay>=8.66611 then node 951 else 8.91573
548  if DayOfWeek in {Friday Thursday} then node 952 elseif DayOfWeek in {Tuesday Wednesday} then node 953 else 4.2
549  if TimeOfDay<19.1393 then node 954 elseif TimeOfDay>=19.1393 then node 955 else 8.42872
550  if TimeOfDay<18.309 then node 956 elseif TimeOfDay>=18.309 then node 957 else 8.98283
551  if Distance<1.815 then node 958 elseif Distance>=1.815 then node 959 else 10.1914
552  if Distance<0.315 then node 960 elseif Distance>=0.315 then node 961 else 9.15784
553  if TimeOfDay<18.3293 then node 962 elseif TimeOfDay>=18.3293 then node 963 else 10.0496
554  if Distance<0.405 then node 964 elseif Distance>=0.405 then node 965 else 9.41925
555  if Distance<1.515 then node 966 elseif Distance>=1.515 then node 967 else 10.9736
```

```
556  if TimeOfDay<8.5675 then node 968 elseif TimeOfDay>=8.5675 then node 969 else 11.5777
557  if TimeOfDay<8.51708 then node 970 elseif TimeOfDay>=8.51708 then node 971 else 13.4396
558  if TimeOfDay<8.52194 then node 972 elseif TimeOfDay>=8.52194 then node 973 else 13.9431
559  if Distance<2.36 then node 974 elseif Distance>=2.36 then node 975 else 16.1199
560  if Distance<0.435 then node 976 elseif Distance>=0.435 then node 977 else 10.7636
561  if TimeOfDay<9.57792 then node 978 elseif TimeOfDay>=9.57792 then node 979 else 11.6439
562  if Distance<0.595 then node 980 elseif Distance>=0.595 then node 981 else 12.054
563  if TimeOfDay<10.5183 then node 982 elseif TimeOfDay>=10.5183 then node 983 else 13.3804
564  fit = 3.23236
565  if DayOfWeek=Saturday then node 984 elseif DayOfWeek=Sunday then node 985 else 5.78271
566  if DayOfWeek=Saturday then node 986 elseif DayOfWeek=Sunday then node 987 else 10.0936
567  if Distance<0.505 then node 988 elseif Distance>=0.505 then node 989 else 9.23798
568  if Distance<2.095 then node 990 elseif Distance>=2.095 then node 991 else 10.3153
569  if Distance<2.115 then node 992 elseif Distance>=2.115 then node 993 else 11.3882
570  if TimeOfDay<12.9039 then node 994 elseif TimeOfDay>=12.9039 then node 995 else 9.77529
571  if TimeOfDay<18.354 then node 996 elseif TimeOfDay>=18.354 then node 997 else 10.2618
572  if TimeOfDay<21.6785 then node 998 elseif TimeOfDay>=21.6785 then node 999 else 9.15684
573  if Distance<0.785 then node 1000 elseif Distance>=0.785 then node 1001 else 10.1236
574  if TimeOfDay<21.0399 then node 1002 elseif TimeOfDay>=21.0399 then node 1003 else 9.52829
575  if DayOfWeek=Friday then node 1004 elseif DayOfWeek=Saturday then node 1005 else 10.1851
576  if TimeOfDay<21.2551 then node 1006 elseif TimeOfDay>=21.2551 then node 1007 else 9.41549
577  if TimeOfDay<21.3237 then node 1008 elseif TimeOfDay>=21.3237 then node 1009 else 10.0853
578  fit = 11.8079
579  if TimeOfDay<22.3711 then node 1010 elseif TimeOfDay>=22.3711 then node 1011 else 10.6674
580  fit = 11.6756
581  if TimeOfDay<20.765 then node 1012 elseif TimeOfDay>=20.765 then node 1013 else 10.9395
582  fit = 12.8925
583  if TimeOfDay<23.8513 then node 1014 elseif TimeOfDay>=23.8513 then node 1015 else 11.9143
584  if TimeOfDay<21.8674 then node 1016 elseif TimeOfDay>=21.8674 then node 1017 else 7.70916
585  fit = 8.56634
586  if Distance<1.205 then node 1018 elseif Distance>=1.205 then node 1019 else 11.1474
587  if Distance<0.925 then node 1020 elseif Distance>=0.925 then node 1021 else 10.2024
588  if Distance<1.115 then node 1022 elseif Distance>=1.115 then node 1023 else 12.0659
589  if TimeOfDay<23.454 then node 1024 elseif TimeOfDay>=23.454 then node 1025 else 11.1977
590  if Distance<2.49 then node 1026 elseif Distance>=2.49 then node 1027 else 12.2239
591  if Distance<2.125 then node 1028 elseif Distance>=2.125 then node 1029 else 12.9269
592  if Distance<1.855 then node 1030 elseif Distance>=1.855 then node 1031 else 11.1989
593  if Distance<1.825 then node 1032 elseif Distance>=1.825 then node 1033 else 11.915
594  if TimeOfDay<22.4599 then node 1034 elseif TimeOfDay>=22.4599 then node 1035 else 12.8953
595  if TimeOfDay<23.5763 then node 1036 elseif TimeOfDay>=23.5763 then node 1037 else 14.2428
596  if Distance<1.955 then node 1038 elseif Distance>=1.955 then node 1039 else 12.2873
597  if Distance<2.015 then node 1040 elseif Distance>=2.015 then node 1041 else 13.2607
598  if DayOfWeek in {Friday Tuesday} then node 1042 elseif DayOfWeek in {Monday Thursday Wednesday} then node 1043
599  if Distance<3.425 then node 1044 elseif Distance>=3.425 then node 1045 else 11.3116
600  if DayOfWeek in {Friday Thursday Tuesday Wednesday} then node 1046 elseif DayOfWeek=Monday then node 1047 else
601  if DayOfWeek in {Friday Thursday Tuesday Wednesday} then node 1048 elseif DayOfWeek=Monday then node 1049 else
602  if TimeOfDay<19.9142 then node 1050 elseif TimeOfDay>=19.9142 then node 1051 else 10.6259
603  if Distance<3.465 then node 1052 elseif Distance>=3.465 then node 1053 else 11.7867
604  if DayOfWeek=Monday then node 1054 elseif DayOfWeek=Wednesday then node 1055 else 12.031
605  if DayOfWeek=Monday then node 1056 elseif DayOfWeek=Wednesday then node 1057 else 13.1802
606  if TimeOfDay<8.31847 then node 1058 elseif TimeOfDay>=8.31847 then node 1059 else 15.5746
607  if TimeOfDay<8.44722 then node 1060 elseif TimeOfDay>=8.44722 then node 1061 else 17.2472
608  if Distance<3.52 then node 1062 elseif Distance>=3.52 then node 1063 else 12.7882
609  if TimeOfDay<9.51625 then node 1064 elseif TimeOfDay>=9.51625 then node 1065 else 14.8014
610  if Distance<3.29 then node 1066 elseif Distance>=3.29 then node 1067 else 11.6064
611  if TimeOfDay<11.5093 then node 1068 elseif TimeOfDay>=11.5093 then node 1069 else 12.7274
612  if Distance<3.595 then node 1070 elseif Distance>=3.595 then node 1071 else 10.753
613  if DayOfWeek=Saturday then node 1072 elseif DayOfWeek=Sunday then node 1073 else 11.6192
614  if DayOfWeek in {Friday Tuesday} then node 1074 elseif DayOfWeek in {Thursday Wednesday} then node 1075 else 1
615  if TimeOfDay<14.6711 then node 1076 elseif TimeOfDay>=14.6711 then node 1077 else 11.0807
616  if TimeOfDay<19.904 then node 1078 elseif TimeOfDay>=19.904 then node 1079 else 12.6663
617  fit = 14.9372
618  if Distance<4.825 then node 1080 elseif Distance>=4.825 then node 1081 else 13.4322
619  if TimeOfDay<18.0915 then node 1082 elseif TimeOfDay>=18.0915 then node 1083 else 11.4624
620  if TimeOfDay<19.4721 then node 1084 elseif TimeOfDay>=19.4721 then node 1085 else 13.4299
```

```
621  if DayOfWeek in {Friday Thursday} then node 1086 elseif DayOfWeek in {Tuesday Wednesday} then node 1087 else 1
622  if TimeOfDay<9.21486 then node 1088 elseif TimeOfDay>=9.21486 then node 1089 else 12.8048
623  if TimeOfDay<8.195 then node 1090 elseif TimeOfDay>=8.195 then node 1091 else 15.2458
624  fit = 18.6774
625  if Distance<4.355 then node 1092 elseif Distance>=4.355 then node 1093 else 15.9413
626  if TimeOfDay<13.8275 then node 1094 elseif TimeOfDay>=13.8275 then node 1095 else 12.1652
627  if Distance<4.355 then node 1096 elseif Distance>=4.355 then node 1097 else 13.1935
628  if Distance<5.025 then node 1098 elseif Distance>=5.025 then node 1099 else 15.2367
629  if TimeOfDay<17.885 then node 1100 elseif TimeOfDay>=17.885 then node 1101 else 13.8736
630  if TimeOfDay<22.4879 then node 1102 elseif TimeOfDay>=22.4879 then node 1103 else 11.9541
631  if TimeOfDay<23.0892 then node 1104 elseif TimeOfDay>=23.0892 then node 1105 else 11.276
632  fit = 12.5751
633  fit = 13.4923
634  if Distance<3.39 then node 1106 elseif Distance>=3.39 then node 1107 else 12.1582
635  if Distance<3.515 then node 1108 elseif Distance>=3.515 then node 1109 else 12.9074
636  if Distance<3.59 then node 1110 elseif Distance>=3.59 then node 1111 else 12.9182
637  if TimeOfDay<23.5075 then node 1112 elseif TimeOfDay>=23.5075 then node 1113 else 14.3675
638  if TimeOfDay<21.7408 then node 1114 elseif TimeOfDay>=21.7408 then node 1115 else 13.4252
639  if Distance<3.855 then node 1116 elseif Distance>=3.855 then node 1117 else 12.7661
640  fit = 13.2506
641  fit = 14.8082
642  if Distance<4.695 then node 1118 elseif Distance>=4.695 then node 1119 else 14.3353
643  if TimeOfDay<23.2294 then node 1120 elseif TimeOfDay>=23.2294 then node 1121 else 13.3711
644  if Distance<4.665 then node 1122 elseif Distance>=4.665 then node 1123 else 13.748
645  if Distance<5.085 then node 1124 elseif Distance>=5.085 then node 1125 else 15.3897
646  if Distance<3.565 then node 1126 elseif Distance>=3.565 then node 1127 else 13.3937
647  if TimeOfDay<21.5158 then node 1128 elseif TimeOfDay>=21.5158 then node 1129 else 14.1227
648  if Distance<3.505 then node 1130 elseif Distance>=3.505 then node 1131 else 12.2319
649  if Distance<3.205 then node 1132 elseif Distance>=3.205 then node 1133 else 13.3211
650  if TimeOfDay<23.4922 then node 1134 elseif TimeOfDay>=23.4922 then node 1135 else 15.21
651  if DayOfWeek=Monday then node 1136 elseif DayOfWeek=Sunday then node 1137 else 16.4966
652  if Distance<3.195 then node 1138 elseif Distance>=3.195 then node 1139 else 13.9611
653  if Distance<2.885 then node 1140 elseif Distance>=2.885 then node 1141 else 14.7914
654  fit = 13.9191
655  if TimeOfDay<21.1388 then node 1142 elseif TimeOfDay>=21.1388 then node 1143 else 15.4947
656  fit = 18.5895
657  if TimeOfDay<22.1729 then node 1144 elseif TimeOfDay>=22.1729 then node 1145 else 16.5552
658  if DayOfWeek=Tuesday then node 1146 elseif DayOfWeek=Wednesday then node 1147 else 13.4743
659  if Distance<5.115 then node 1148 elseif Distance>=5.115 then node 1149 else 14.9774
660  if Distance<4.925 then node 1150 elseif Distance>=4.925 then node 1151 else 15.2139
661  fit = 16.7692
662  fit = 15.1361
663  fit = 16.418
664  fit = 18.2718
665  fit = 16.1725
666  if Distance<5.575 then node 1152 elseif Distance>=5.575 then node 1153 else 17.99
667  fit = 16.3563
668  fit = 18.5041
669  fit = 15.6985
670  if TimeOfDay<1.33236 then node 1154 elseif TimeOfDay>=1.33236 then node 1155 else 18.9194
671  fit = 20.6955
672  fit = 19.1719
673  if TimeOfDay<1.50514 then node 1156 elseif TimeOfDay>=1.50514 then node 1157 else 21.2133
674  if TimeOfDay<3.09931 then node 1158 elseif TimeOfDay>=3.09931 then node 1159 else 18.8298
675  if Distance<7.06 then node 1160 elseif Distance>=7.06 then node 1161 else 20.8134
676  fit = 20.9306
677  fit = 23.6843
678  if TimeOfDay<6.21972 then node 1162 elseif TimeOfDay>=6.21972 then node 1163 else 21.18
679  fit = 19.0471
680  fit = 20.637
681  if Distance<6.64 then node 1164 elseif Distance>=6.64 then node 1165 else 23.3706
682  if TimeOfDay<9.64472 then node 1166 elseif TimeOfDay>=9.64472 then node 1167 else 14.7093
683  if DayOfWeek in {Thursday Tuesday} then node 1168 elseif DayOfWeek in {Friday Wednesday} then node 1169 else 1
684  if TimeOfDay<11.4485 then node 1170 elseif TimeOfDay>=11.4485 then node 1171 else 16.4552
685  if TimeOfDay<11.1851 then node 1172 elseif TimeOfDay>=11.1851 then node 1173 else 18.3212
```

```
686  if TimeOfDay<15.3832 then node 1174 elseif TimeOfDay>=15.3832 then node 1175 else 12.4047
687  if DayOfWeek in {Friday Tuesday Wednesday} then node 1176 elseif DayOfWeek in {Sunday Thursday} then node 1177
688  if Distance<5.615 then node 1178 elseif Distance>=5.615 then node 1179 else 14.3704
689  if Distance<6.125 then node 1180 elseif Distance>=6.125 then node 1181 else 15.8627
690  if Distance<5.955 then node 1182 elseif Distance>=5.955 then node 1183 else 14.7741
691  fit = 16.7989
692  if Distance<5.835 then node 1184 elseif Distance>=5.835 then node 1185 else 16.2545
693  ...
```

```
AveSpeedPredictAD = predict(ADmodel,DataTrainVal)
```

```
AveSpeedPredictAD = 155081×1
      8.4999
      6.9043
     25.4958
     18.0368
     15.1892
     12.7928
      7.3440
      6.1612
      6.1612
     13.6446
        :
        :
        :
```

Modelo adicional usando *Regresion Learner*

Del workspace, importamos a la App la data previamente separada `DataTrainVal` y escogemos como variable de respuesta a lo pedido por el problema: `AveSpeed`.

Además, como variables predictoras usamos `Distance`, `TimeOfDay` y `DayOfWeek`, como se pide en el problema; y dejamos afuera el 40% de la data. Con esto:

Inicializándolo:

Y teniendo en cuenta que:
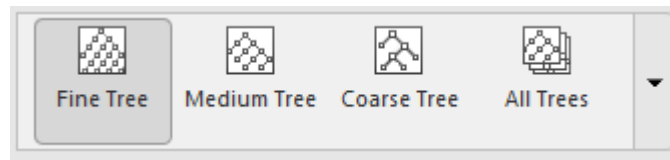
Podemos escoger un modelo para entrenar; con lo que escogeremos la siguiente opción:
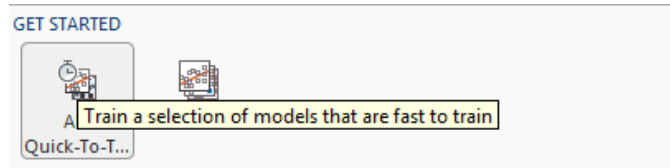
Y estudiaremos los modelos que se pueden entrenar de manera rápida.

Determinación de métricas

Para la regresión lineal por interacciones:

```
RLIMAE = sum(abs(DataTrainVal.AveSpeed-AveSpeedPredictRLI))/length(DataTrainVal.AveSpeed)
```

```
RLIMAE = 3.3039
```

```
RLIMSE = RLImodel.MSE
```

```
RLIMSE = 19.5137
```

```
RLIRMSE = RLImodel.RMSE
```

```
RLIRMSE = 4.4174
```

Para el regresión por arbol de decisión:

```
ADMAE = sum(abs(DataTrainVal.AveSpeed-AveSpeedPredictAD))/length(DataTrainVal.AveSpeed)
```

```
ADMAE = 2.6892
```

```
ADMSE = sum((DataTrainVal.AveSpeed-AveSpeedPredictAD).^2)/length(DataTrainVal.AveSpeed)
```

```
ADMSE = 13.1064
```

```
ADRMSE = sqrt(ADMSE)
```

```
ADRMSE = 3.6203
```

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EJERCICIO 4:

```
close all
clear all
clc
Data = importTaxiData("yellow_tripdata_2015-03.csv");
Data = addTimeOfDay(Data);
Data = addCrowDirection(Data);
Data = addCrowDistance(Data);
nr = height(Data);
```

Trabajaremos con el 70 por ciento, como impone el problema. Para ello, usamos el complemento:

```
part = 0.3;
```

De ahí, hacemos:

```
DataTrain = cvpartition(nr,'HoldOut',part);
iTrain = training(DataTrain);
DataTrainVal = Data(iTrain,:);
```

Ahora bien, haremos uso de la app Regression Learner. Hacemos:

Obsérvese que además hicimos uso del método de K-Folds. Obtenemos:
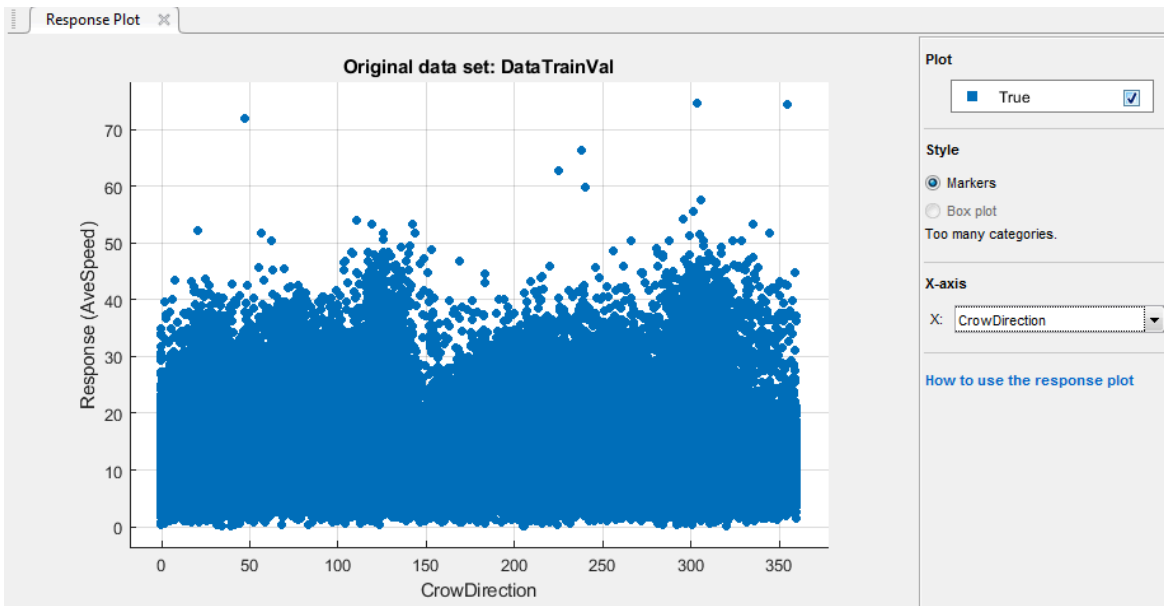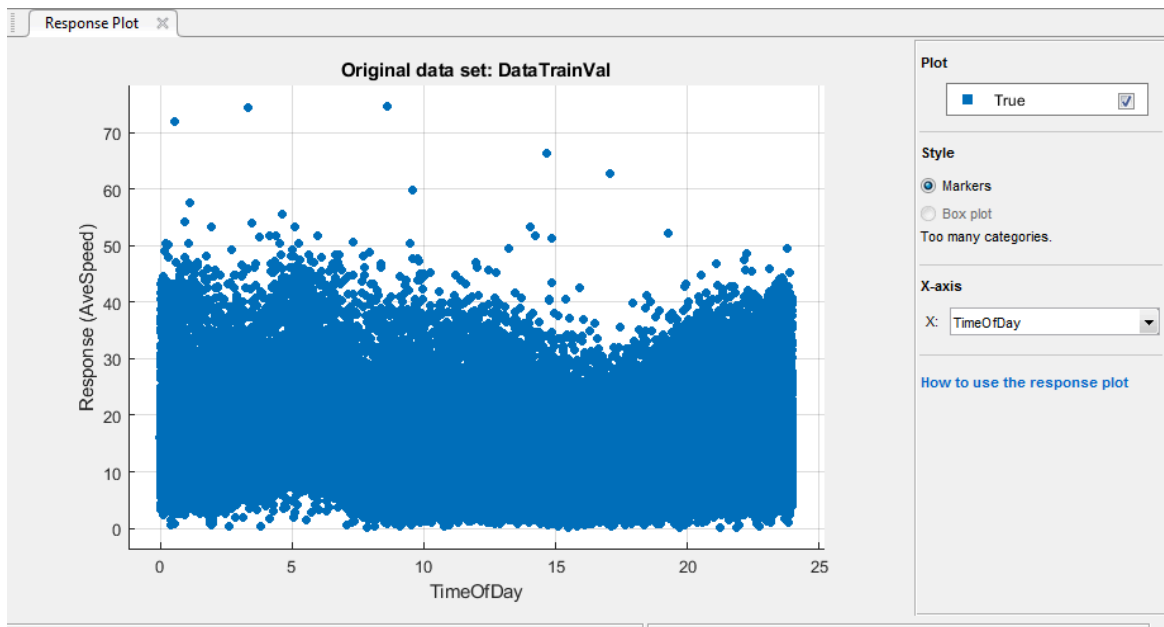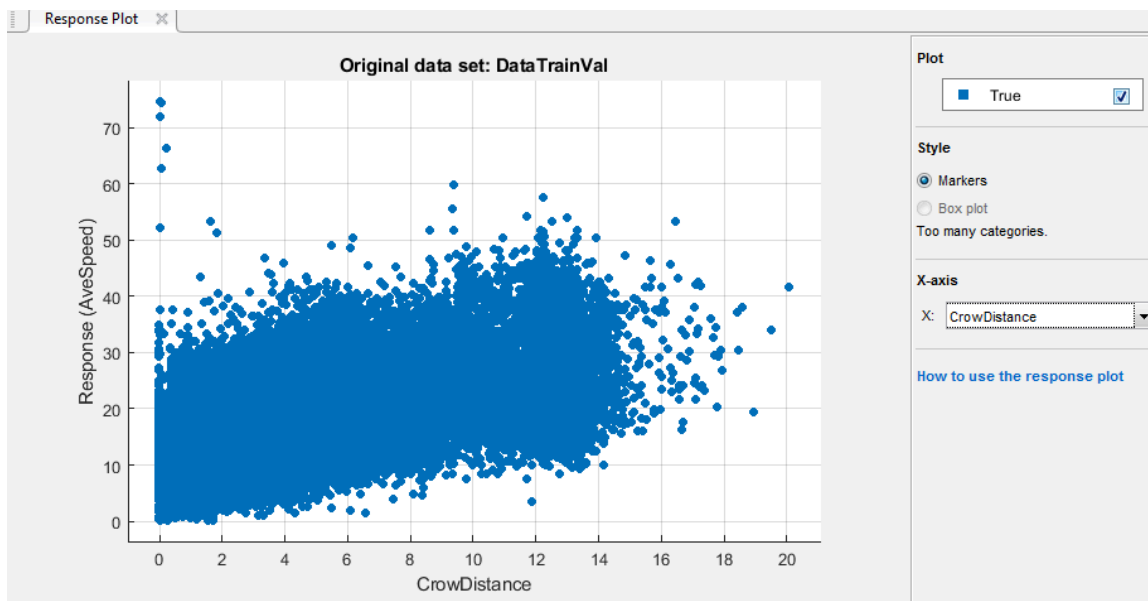
Ahora, entrenando mediante el modelo por regresión lineal robusto, tenemos:

Model 1: Trained

Results

RMSE	4.5352
R-Squared	0.43
MSE	20.568
MAE	3.3454
Prediction speed	~770000 obs/sec
Training time	44.616 sec