Case Study

Paulina, Leo, Benedikt und Felix

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Contents

Daten einlesen

```r
rawdata = read.csv("data_sss.csv")

#Daten zusammenfassen
cat("Struktur der Daten:\n\n")
```

```
## Struktur der Daten:
```

```r
str(rawdata)
```

```
## 'data.frame':    119399 obs. of  32 variables:
##  $ hotel                         : chr  "Resort Hotel" "Resort Hotel" "Resort Hotel" "Resort Hotel"
##  $ is_canceled                   : int  0 0 0 0 0 0 0 0 1 1 ...
##  $ lead_time                     : int  342 737 7 13 14 14 0 9 85 75 ...
##  $ arrival_date_year             : int  2015 2015 2015 2015 2015 2015 2015 2015 2015 2015 ...
##  $ arrival_date_month            : chr  "July" "July" "July" "July" ...
##  $ arrival_date_week_number      : int  27 27 27 27 27 27 27 27 27 27 ...
##  $ arrival_date_day_of_month     : int  1 1 1 1 1 1 1 1 1 1 ...
##  $ stays_in_weekend_nights       : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ stays_in_week_nights          : int  0 0 1 1 2 2 2 2 3 3 ...
##  $ adults                        : int  2 2 1 1 2 2 2 2 2 2 ...
##  $ children                      : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ babies                        : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ meal                          : chr  "BB" "BB" "BB" "BB" ...
##  $ country                       : chr  "PRT" "PRT" "GBR" "GBR" ...
##  $ market_segment                : chr  "Direct" "Direct" "Direct" "Corporate" ...
##  $ distribution_channel          : chr  "Direct" "Direct" "Direct" "Corporate" ...
##  $ is_repeated_guest             : chr  "0" "0" "0" "0" ...
##  $ previous_cancellations        : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ previous_bookings_not_canceled: int  0 0 0 0 0 0 0 0 0 0 ...
##  $ reserved_room_type            : chr  "C" "C" "A" "A" ...
##  $ assigned_room_type            : chr  "C" "C" "C" "A" ...
##  $ booking_changes               : int  3 4 0 0 0 0 0 0 0 0 ...
##  $ deposit_type                  : chr  "No Deposit" "No Deposit" "No Deposit" "No Deposit" ...
##  $ agent                         : chr  "NULL" "NULL" "NULL" "304" ...
##  $ company                       : chr  "NULL" "NULL" "NULL" "NULL" ...
##  $ days_in_waiting_list          : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ customer_type                 : chr  "Transient" "Transient" "Transient" "Transient" ...
##  $ adr                           : num  0 0 75 75 98 ...
##  $ required_car_parking_spaces   : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ total_of_special_requests     : int  0 0 0 0 1 1 0 1 1 0 ...
##  $ reservation_status            : chr  "Check-Out" "Check-Out" "Check-Out" "Check-Out" ...
##  $ reservation_status_date       : chr  "2015-07-01" "2015-07-01" "2015-07-02" "2015-07-02" ...
```

```r
cat("\n\nZusammenfassung:\n\n")
```

```
##
##
## Zusammenfassung:
```

```r
summary(rawdata)
```

```
##     hotel              is_canceled        lead_time      arrival_date_year
##  Length:119399      Min.   :0.0000    Min.   :  0     Min.   :2015
##  Class :character   1st Qu.:0.0000    1st Qu.: 18     1st Qu.:2016
##  Mode  :character   Median :0.0000    Median : 69     Median :2016
##                     Mean   :0.3704    Mean   :104     Mean   :2016
##                     3rd Qu.:1.0000    3rd Qu.:160     3rd Qu.:2017
##                     Max.   :1.0000    Max.   :737     Max.   :2017
##
##  arrival_date_month arrival_date_week_number arrival_date_day_of_month
##  Length:119399      Min.   : 1.00            Min.   : 1.0
##  Class :character   1st Qu.:16.00            1st Qu.: 8.0
##  Mode  :character   Median :28.00            Median :16.0
##                     Mean   :27.17            Mean   :15.8
##                     3rd Qu.:38.00            3rd Qu.:23.0
##                     Max.   :53.00            Max.   :31.0
##
##  stays_in_weekend_nights stays_in_week_nights     adults
##  Min.   : 0.0000         Min.   : 0.0          Min.   : 0.000
##  1st Qu.: 0.0000         1st Qu.: 1.0          1st Qu.: 2.000
##  Median : 1.0000         Median : 2.0          Median : 2.000
##  Mean   : 0.9275         Mean   : 2.5          Mean   : 1.856
##  3rd Qu.: 2.0000         3rd Qu.: 3.0          3rd Qu.: 2.000
##  Max.   :19.0000         Max.   :50.0          Max.   :55.000
##
##     children          babies              meal             country
##  Min.   : 0.0000   Min.   : 0.00000   Length:119399      Length:119399
##  1st Qu.: 0.0000   1st Qu.: 0.00000   Class :character   Class :character
##  Median : 0.0000   Median : 0.00000   Mode  :character   Mode  :character
##  Mean   : 0.1039   Mean   : 0.00825
##  3rd Qu.: 0.0000   3rd Qu.: 0.00000
##  Max.   :10.0000   Max.   :10.00000
##  NA's   :4
##  market_segment     distribution_channel is_repeated_guest
##  Length:119399      Length:119399        Length:119399
##  Class :character   Class :character     Class :character
##  Mode  :character   Mode  :character     Mode  :character
##
##
##
##
##  previous_cancellations previous_bookings_not_canceled reserved_room_type
##  Min.   : 0.00000       Min.   : 0.0000                Length:119399
##  1st Qu.: 0.00000       1st Qu.: 0.0000                Class :character
##  Median : 0.00000       Median : 0.0000                Mode  :character
##  Mean   : 0.08711       Mean   : 0.1371
##  3rd Qu.: 0.00000       3rd Qu.: 0.0000
##  Max.   :26.00000       Max.   :72.0000
##
##  assigned_room_type booking_changes   deposit_type          agent
##  Length:119399      Min.   : 0.0000   Length:119399      Length:119399
##  Class :character   1st Qu.: 0.0000   Class :character   Class :character
```

```
## Mode   :character   Median : 0.0000   Mode   :character   Mode   :character
##                      Mean   : 0.2211
##                      3rd Qu.: 0.0000
##                      Max.   :21.0000
##
##    company         days_in_waiting_list customer_type          adr
## Length:119399    Min.   :  0.000      Length:119399    Min.   :  -6.38
## Class :character  1st Qu.:  0.000      Class :character  1st Qu.:  69.29
## Mode  :character  Median :  0.000      Mode  :character  Median :  94.60
##                   Mean   :  2.321                        Mean   : 101.83
##                   3rd Qu.:  0.000                        3rd Qu.: 126.00
##                   Max.   :391.000                        Max.   :5400.00
##
## required_car_parking_spaces total_of_special_requests reservation_status
## Min.   :0.00000             Min.   :0.0000            Length:119399
## 1st Qu.:0.00000             1st Qu.:0.0000            Class :character
## Median :0.00000             Median :0.0000            Mode  :character
## Mean   :0.06251             Mean   :0.5714
## 3rd Qu.:0.00000             3rd Qu.:1.0000
## Max.   :8.00000             Max.   :5.0000
##
## reservation_status_date
## Length:119399
## Class :character
## Mode  :character
##
##
##
##
```

Daten bereinigen

```
#Datenbereinigung
clndata = rawdata

#repeated_guest "no" mit "0" ersetzen
clndata$is_repeated_guest <- stringr::str_replace_all (clndata$is_repeated_guest,pattern="no",repl="0")

summary(clndata)
```

```
##     hotel            is_canceled       lead_time    arrival_date_year
## Length:119399    Min.   :0.0000    Min.   :  0    Min.   :2015
## Class :character  1st Qu.:0.0000    1st Qu.: 18    1st Qu.:2016
## Mode  :character  Median :0.0000    Median : 69    Median :2016
##                   Mean   :0.3704    Mean   :104    Mean   :2016
##                   3rd Qu.:1.0000    3rd Qu.:160    3rd Qu.:2017
##                   Max.   :1.0000    Max.   :737    Max.   :2017
##
## arrival_date_month arrival_date_week_number arrival_date_day_of_month
## Length:119399     Min.   : 1.00            Min.   : 1.0
## Class :character   1st Qu.:16.00            1st Qu.: 8.0
## Mode  :character   Median :28.00            Median :16.0
##                    Mean   :27.17            Mean   :15.8
```

4

```
##                        3rd Qu.:38.00            3rd Qu.:23.0
##                        Max.   :53.00            Max.    :31.0
##
##  stays_in_weekend_nights stays_in_week_nights     adults
##  Min.   : 0.0000         Min.   : 0.0        Min.    : 0.000
##  1st Qu.: 0.0000         1st Qu.: 1.0        1st Qu.: 2.000
##  Median : 1.0000         Median : 2.0        Median : 2.000
##  Mean   : 0.9275         Mean   : 2.5        Mean    : 1.856
##  3rd Qu.: 2.0000         3rd Qu.: 3.0        3rd Qu.: 2.000
##  Max.   :19.0000         Max.   :50.0        Max.    :55.000
##
##     children          babies            meal             country
##  Min.   : 0.0000   Min.   : 0.00000   Length:119399    Length:119399
##  1st Qu.: 0.0000   1st Qu.: 0.00000   Class :character  Class :character
##  Median : 0.0000   Median : 0.00000   Mode  :character  Mode  :character
##  Mean   : 0.1039   Mean   : 0.00825
##  3rd Qu.: 0.0000   3rd Qu.: 0.00000
##  Max.   :10.0000   Max.   :10.00000
##  NA's   :4
##  market_segment     distribution_channel is_repeated_guest
##  Length:119399      Length:119399        Length:119399
##  Class :character   Class :character     Class :character
##  Mode  :character   Mode  :character     Mode  :character
##
##
##
##
##  previous_cancellations previous_bookings_not_canceled reserved_room_type
##  Min.   : 0.00000       Min.   : 0.0000                Length:119399
##  1st Qu.: 0.00000       1st Qu.: 0.0000                Class :character
##  Median : 0.00000       Median : 0.0000                Mode  :character
##  Mean   : 0.08711       Mean   : 0.1371
##  3rd Qu.: 0.00000       3rd Qu.: 0.0000
##  Max.   :26.00000       Max.   :72.0000
##
##  assigned_room_type booking_changes    deposit_type         agent
##  Length:119399      Min.   : 0.0000    Length:119399    Length:119399
##  Class :character   1st Qu.: 0.0000    Class :character  Class :character
##  Mode  :character   Median : 0.0000    Mode  :character  Mode  :character
##                     Mean   : 0.2211
##                     3rd Qu.: 0.0000
##                     Max.   :21.0000
##
##     company        days_in_waiting_list customer_type            adr
##  Length:119399     Min.   : 0.000      Length:119399    Min.    :  -6.38
##  Class :character  1st Qu.: 0.000      Class :character  1st Qu.:  69.29
##  Mode  :character  Median : 0.000      Mode  :character  Median :  94.60
##                    Mean   : 2.321                        Mean    : 101.83
##                    3rd Qu.: 0.000                        3rd Qu.: 126.00
##                    Max.   :391.000                       Max.    :5400.00
##
##  required_car_parking_spaces total_of_special_requests reservation_status
##  Min.   :0.00000             Min.    :0.0000           Length:119399
##  1st Qu.:0.00000             1st Qu.:0.0000            Class :character
```

```
##    Median :0.00000         Median :0.0000              Mode  :character
##    Mean   :0.06251         Mean   :0.5714
##    3rd Qu.:0.00000         3rd Qu.:1.0000
##    Max.   :8.00000         Max.   :5.0000
##
##   reservation_status_date
##   Length:119399
##   Class :character
##   Mode  :character
##
##
##
##
```

```r
clndatacity = subset(clndata, hotel== "Resort Hotel")
clndataresort = subset(clndata, hotel== "City Hotel")
```

```r
adr_roomtype = aggregate(adr ~ reserved_room_type,data=clndata, mean)
adr_roomtype
```

```
##    reserved_room_type        adr
## 1                   A   90.80213
## 2                   B   90.36045
## 3                   C  160.21679
## 4                   D  120.68779
## 5                   E  124.54018
## 6                   F  167.68965
## 7                   G  175.99603
## 8                   H  188.22311
## 9                   L  124.66667
## 10                  P    0.00000
```

```r
adr_assigned_roomtype = aggregate(adr ~ assigned_room_type,data=clndata, mean)
adr_assigned_roomtype
```

```
##    assigned_room_type        adr
## 1                   A   93.14692
## 2                   B   94.45026
## 3                   C  113.42358
## 4                   D  107.46063
## 5                   E  117.70422
## 6                   F  151.88993
## 7                   G  166.53031
## 8                   H  171.38077
## 9                   I   40.84377
## 10                  K   53.69889
## 11                  L    8.00000
## 12                  P    0.00000
```

```r
agent = aggregate(is_canceled ~ agent,data=clndata, mean)
agent
```

```
##     agent is_canceled
## 1       1 0.734251147
## 2      10 0.245210728
## 3     103 0.095238095
## 4     104 0.094339623
## 5     105 0.285714286
## 6     106 0.000000000
## 7     107 1.000000000
## 8      11 0.265822785
## 9     110 0.333333333
## 10    111 0.125000000
## 11    112 0.000000000
## 12    114 0.000000000
## 13    115 0.053333333
## 14    117 0.000000000
## 15    118 0.405797101
## 16    119 0.694078947
## 17     12 0.525951557
## 18    121 0.081081081
## 19    122 0.000000000
## 20    126 0.142857143
## 21    127 0.044444444
## 22    128 0.086956522
## 23    129 0.071428571
## 24     13 0.304878049
## 25    132 0.307692308
## 26    133 0.678571429
## 27    134 0.620331950
## 28    135 0.000000000
## 29    138 0.135888502
## 30    139 0.125000000
## 31     14 0.179120879
## 32    141 0.000000000
## 33    142 0.328467153
## 34    143 0.098837209
## 35    144 0.000000000
## 36    146 0.088709677
## 37    147 0.275641026
## 38    148 0.000000000
## 39    149 0.357142857
## 40     15 0.300995025
## 41    150 0.000000000
## 42    151 0.517857143
## 43    152 0.032786885
## 44    153 0.240000000
## 45    154 0.704663212
## 46    155 0.553191489
## 47    156 0.110526316
## 48    157 0.131147541
## 49    158 0.000000000
## 50    159 0.101123596
## 51     16 0.077235772
## 52    162 1.000000000
## 53    163 0.000000000
```

```
## 54     165 0.000000000
## 55     167 0.000000000
## 56     168 0.081521739
## 57      17 0.477178423
## 58     170 1.000000000
## 59     171 0.283360791
## 60     173 0.103448276
## 61     174 0.136363636
## 62     175 0.246153846
## 63     177 0.233429395
## 64     179 0.500000000
## 65     180 0.000000000
## 66     181 0.271186441
## 67     182 0.750000000
## 68     183 0.333333333
## 69     184 0.211538462
## 70     185 0.115384615
## 71     187 0.083333333
## 72      19 0.735155514
## 73     191 0.520202020
## 74     192 0.829268293
## 75     193 0.000000000
## 76     195 0.196891192
## 77     196 0.189368771
## 78     197 0.000000000
## 79       2 0.209876543
## 80      20 0.664814815
## 81     201 0.023809524
## 82     205 0.148148148
## 83     208 0.549132948
## 84      21 0.578285714
## 85     210 0.142857143
## 86     211 0.000000000
## 87     213 0.000000000
## 88     214 0.600000000
## 89     215 0.066666667
## 90     216 0.000000000
## 91     219 0.153846154
## 92      22 0.117801047
## 93     220 0.009615385
## 94     223 0.000000000
## 95     227 0.000000000
## 96     229 0.615776081
## 97      23 0.080000000
## 98     232 0.000000000
## 99     234 0.398437500
## 100    235 1.000000000
## 101    236 1.000000000
## 102     24 0.000000000
## 103    240 0.393908921
## 104    241 0.137129576
## 105    242 0.333333333
## 106    243 0.054474708
## 107    244 0.250000000
```

```
## 108     245 0.702702703
## 109     247 0.000000000
## 110     248 0.633587786
## 111     249 0.607843137
## 112      25 0.000000000
## 113     250 0.178745645
## 114     251 0.095454545
## 115     252 0.896551724
## 116     253 0.172413793
## 117     254 0.241379310
## 118     256 0.083333333
## 119     257 1.000000000
## 120     258 0.000000000
## 121      26 0.326683292
## 122     261 0.210526316
## 123     262 0.363636364
## 124     265 0.000000000
## 125     267 0.000000000
## 126     269 0.000000000
## 127      27 0.100000000
## 128     270 0.166666667
## 129     273 0.346704871
## 130     275 0.250000000
## 131     276 1.000000000
## 132     278 0.000000000
## 133      28 0.065986803
## 134     280 0.000000000
## 135     281 0.646341463
## 136     282 0.000000000
## 137     283 0.000000000
## 138     285 0.000000000
## 139     286 1.000000000
## 140     287 1.000000000
## 141     288 0.000000000
## 142     289 0.000000000
## 143      29 0.799414348
## 144     290 0.157894737
## 145     291 1.000000000
## 146     294 0.000000000
## 147     295 0.000000000
## 148     296 0.571428571
## 149     298 0.300847458
## 150     299 0.000000000
## 151       3 0.577095808
## 152      30 0.390495868
## 153     300 0.000000000
## 154     301 0.000000000
## 155     302 0.000000000
## 156     303 0.000000000
## 157     304 0.000000000
## 158     305 0.577777778
## 159     306 0.057142857
## 160     307 0.500000000
## 161     308 0.037037037
```

```
## 162    31 0.950617284
## 163   310 0.800000000
## 164   313 0.055555556
## 165   314 0.175836030
## 166   315 0.362676056
## 167    32 0.066666667
## 168   321 0.000000000
## 169   323 1.000000000
## 170   324 0.111111111
## 171   325 0.000000000
## 172   326 0.975757576
## 173   327 0.200000000
## 174   328 0.000000000
## 175    33 0.806451613
## 176   330 0.064000000
## 177   331 0.500000000
## 178   332 0.745454545
## 179   333 0.000000000
## 180   334 0.035714286
## 181   335 0.000000000
## 182   336 0.086956522
## 183   337 0.000000000
## 184   339 0.194805195
## 185    34 0.608843537
## 186   341 0.500000000
## 187   344 0.000000000
## 188   346 0.000000000
## 189   348 0.363636364
## 190    35 0.596330275
## 191   350 0.000000000
## 192   352 0.000000000
## 193   354 0.000000000
## 194   355 0.500000000
## 195   358 0.000000000
## 196   359 0.000000000
## 197    36 0.050000000
## 198   360 0.000000000
## 199   363 0.000000000
## 200   364 0.000000000
## 201   367 0.000000000
## 202   368 0.377777778
## 203    37 0.581980519
## 204   370 0.000000000
## 205   371 0.000000000
## 206   375 0.250000000
## 207   378 0.750000000
## 208    38 0.503649635
## 209   384 0.000000000
## 210   385 0.283333333
## 211   387 0.093750000
## 212   388 0.000000000
## 213    39 0.354330709
## 214   390 0.210526316
## 215   391 0.000000000
```

```
## 216     393 0.153846154
## 217     394 0.060606061
## 218     397 0.000000000
## 219       4 0.659574468
## 220      40 0.080846968
## 221     403 1.000000000
## 222     404 0.000000000
## 223     405 0.200000000
## 224     406 0.000000000
## 225     408 0.000000000
## 226      41 1.000000000
## 227     410 0.353383459
## 228     411 0.062500000
## 229     414 0.000000000
## 230     416 0.000000000
## 231     418 0.000000000
## 232      42 0.137440758
## 233     420 0.333333333
## 234     423 0.052631579
## 235     425 0.187500000
## 236     426 0.000000000
## 237     427 0.000000000
## 238     429 0.200000000
## 239     430 0.000000000
## 240     431 0.000000000
## 241     432 0.000000000
## 242     433 0.000000000
## 243     434 0.060606061
## 244     436 0.081632653
## 245     438 0.000000000
## 246      44 0.794520548
## 247     440 0.678571429
## 248     441 0.000000000
## 249     444 0.000000000
## 250     446 0.000000000
## 251     449 0.000000000
## 252      45 0.156250000
## 253     450 0.000000000
## 254     451 0.000000000
## 255     453 0.000000000
## 256     454 0.000000000
## 257     455 0.000000000
## 258     459 0.000000000
## 259     461 0.000000000
## 260     464 0.010204082
## 261     467 0.000000000
## 262     468 0.163265306
## 263     469 0.000000000
## 264      47 0.520000000
## 265     472 1.000000000
## 266     474 0.000000000
## 267     475 0.000000000
## 268     476 0.000000000
## 269     479 0.000000000
```

```
## 270     480 0.000000000
## 271     481 0.125000000
## 272     483 1.000000000
## 273     484 0.090909091
## 274     492 1.000000000
## 275     493 0.142857143
## 276     495 0.877192982
## 277     497 0.000000000
## 278       5 0.451515152
## 279      50 0.400000000
## 280     502 0.000000000
## 281     508 0.000000000
## 282     509 0.200000000
## 283     510 0.000000000
## 284      52 0.277372263
## 285     526 0.100000000
## 286     527 0.000000000
## 287      53 0.777777778
## 288     531 0.676470588
## 289     535 0.000000000
## 290      54 0.000000000
## 291      55 1.000000000
## 292      56 0.682666667
## 293      57 0.321428571
## 294      58 0.880597015
## 295      59 0.000000000
## 296       6 0.311550152
## 297      60 1.000000000
## 298      61 0.000000000
## 299      63 0.000000000
## 300      64 0.956521739
## 301      66 0.181818182
## 302      67 0.598425197
## 303      68 0.781990521
## 304      69 0.033333333
## 305       7 0.133936140
## 306      70 0.000000000
## 307      71 0.547945205
## 308      72 0.000000000
## 309      73 0.000000000
## 310      74 0.000000000
## 311      75 0.136986301
## 312      77 0.060606061
## 313      78 0.783783784
## 314      79 0.148936170
## 315       8 0.282034346
## 316      81 0.166666667
## 317      82 0.545454545
## 318      83 0.271551724
## 319      85 0.198555957
## 320      86 0.581120944
## 321      87 0.467532468
## 322      88 0.000000000
## 323      89 0.050505051
```

```
## 324       9 0.414953856
## 325      90 0.000000000
## 326      91 0.051724138
## 327      92 0.000000000
## 328      93 1.000000000
## 329      94 0.157894737
## 330      95 0.140740741
## 331      96 0.454376164
## 332      98 0.491935484
## 333      99 0.382352941
## 334   NULL 0.246634027
```

```r
company = aggregate(is_canceled ~ company,data=clndata, mean)
company
```

```
##     company is_canceled
## 1        10   0.00000000
## 2       100   0.00000000
## 3       101   0.00000000
## 4       102   1.00000000
## 5       103   0.00000000
## 6       104   0.00000000
## 7       105   0.00000000
## 8       106   0.00000000
## 9       107   0.11111111
## 10      108   0.00000000
## 11      109   0.00000000
## 12       11   0.00000000
## 13      110   0.32692308
## 14      112   0.23076923
## 15      113   0.08333333
## 16      115   0.25000000
## 17      116   0.00000000
## 18      118   0.00000000
## 19       12   0.00000000
## 20      120   0.07142857
## 21      122   1.00000000
## 22      126   0.00000000
## 23      127   0.06666667
## 24      130   0.08333333
## 25      132   0.00000000
## 26      135   0.28787879
## 27      137   0.00000000
## 28      139   0.00000000
## 29       14   0.11111111
## 30      140   0.00000000
## 31      142   0.00000000
## 32      143   0.47058824
## 33      144   0.00000000
## 34      146   0.00000000
## 35      148   0.05405405
## 36      149   0.00000000
## 37      150   0.10526316
## 38      153   0.22325581
```

```
## 39         154  0.03759398
## 40         158  0.00000000
## 41         159  0.00000000
## 42          16  0.00000000
## 43         160  0.00000000
## 44         163  0.00000000
## 45         165  0.00000000
## 46         167  0.00000000
## 47         168  0.00000000
## 48         169  0.24615385
## 49         174  0.14093960
## 50         178  0.11111111
## 51         179  0.33333333
## 52          18  0.00000000
## 53         180  0.00000000
## 54         183  0.00000000
## 55         184  0.00000000
## 56         185  0.00000000
## 57         186  0.08333333
## 58         192  0.00000000
## 59         193  0.00000000
## 60         195  0.07894737
## 61         197  0.74468085
## 62          20  0.22000000
## 63         200  0.00000000
## 64         202  1.00000000
## 65         203  0.07692308
## 66         204  0.14705882
## 67         207  0.11111111
## 68         209  0.10526316
## 69         210  0.00000000
## 70         212  0.00000000
## 71         213  0.00000000
## 72         215  0.00000000
## 73         216  0.14285714
## 74         217  0.00000000
## 75         218  0.25581395
## 76         219  0.06382979
## 77          22  0.00000000
## 78         220  0.00000000
## 79         221  0.11111111
## 80         222  0.00000000
## 81         223  0.15178571
## 82         224  0.33333333
## 83         225  0.00000000
## 84         227  0.08333333
## 85         229  0.00000000
## 86         230  0.00000000
## 87         232  0.00000000
## 88         233  0.09649123
## 89         234  0.00000000
## 90         237  0.00000000
## 91         238  0.09090909
## 92         240  0.00000000
```

```
## 93      242  0.03225806
## 94      243  0.00000000
## 95      245  0.00000000
## 96      246  0.00000000
## 97      250  0.50000000
## 98      251  0.05555556
## 99      253  1.00000000
## 100     254  0.10000000
## 101     255  0.00000000
## 102     257  0.00000000
## 103     258  0.00000000
## 104     259  0.00000000
## 105     260  0.00000000
## 106     263  0.07142857
## 107     264  0.00000000
## 108     268  0.00000000
## 109     269  0.09090909
## 110     270  0.13953488
## 111     271  0.00000000
## 112     272  0.00000000
## 113     273  0.00000000
## 114     274  0.07142857
## 115     275  0.33333333
## 116     277  0.40000000
## 117     278  0.00000000
## 118     279  1.00000000
## 119      28  0.00000000
## 120     280  0.35416667
## 121     281  0.12318841
## 122     282  0.00000000
## 123     284  0.00000000
## 124     286  0.19047619
## 125     287  0.00000000
## 126     288  0.00000000
## 127     289  0.00000000
## 128      29  0.00000000
## 129     290  0.00000000
## 130     291  0.00000000
## 131     292  0.22222222
## 132     293  0.00000000
## 133     297  0.00000000
## 134     301  0.00000000
## 135     302  0.00000000
## 136     304  0.00000000
## 137     305  0.00000000
## 138     307  0.05555556
## 139     308  0.36363636
## 140     309  1.00000000
## 141      31  0.23529412
## 142     311  0.00000000
## 143     312  0.00000000
## 144     313  0.00000000
## 145     314  0.00000000
## 146     316  1.00000000
```

```
## 147    317  0.11111111
## 148    318  0.00000000
## 149    319  0.00000000
## 150     32  0.00000000
## 151    320  0.00000000
## 152    321  1.00000000
## 153    323  0.00000000
## 154    324  0.11111111
## 155    325  0.00000000
## 156    329  0.25000000
## 157    330  0.00000000
## 158    331  0.19672131
## 159    332  0.00000000
## 160    333  0.00000000
## 161    334  0.33333333
## 162    337  0.04000000
## 163    338  0.00000000
## 164     34  0.12500000
## 165    341  0.00000000
## 166    342  0.04166667
## 167    343  0.00000000
## 168    346  0.00000000
## 169    347  0.00000000
## 170    348  1.00000000
## 171    349  0.00000000
## 172     35  0.00000000
## 173    350  0.66666667
## 174    351  0.00000000
## 175    352  0.00000000
## 176    353  0.00000000
## 177    355  0.15384615
## 178    356  0.20000000
## 179    357  0.00000000
## 180    358  0.14285714
## 181    360  0.08333333
## 182    361  0.00000000
## 183    362  0.00000000
## 184    364  0.00000000
## 185    365  0.17241379
## 186    366  0.16666667
## 187    367  0.21428571
## 188    368  0.00000000
## 189    369  0.00000000
## 190     37  1.00000000
## 191    370  0.50000000
## 192    371  0.00000000
## 193    372  0.00000000
## 194    373  1.00000000
## 195    376  0.00000000
## 196    377  0.00000000
## 197    378  0.00000000
## 198    379  0.00000000
## 199     38  0.27450980
## 200    380  0.08333333
```

```
## 201      382  0.20000000
## 202      383  0.16666667
## 203      384  0.00000000
## 204      385  1.00000000
## 205      386  1.00000000
## 206      388  0.14285714
## 207       39  0.12500000
## 208      390  0.07692308
## 209      391  0.00000000
## 210      392  0.50000000
## 211      393  0.00000000
## 212      394  0.33333333
## 213      395  0.25000000
## 214      396  0.00000000
## 215      397  0.13333333
## 216      398  0.00000000
## 217      399  0.00000000
## 218       40  0.08306365
## 219      400  0.00000000
## 220      401  0.00000000
## 221      402  0.00000000
## 222      403  0.00000000
## 223      405  0.15126050
## 224      407  0.04545455
## 225      408  0.00000000
## 226      409  0.08333333
## 227      410  0.00000000
## 228      411  0.00000000
## 229      412  0.00000000
## 230      413  0.00000000
## 231      415  0.00000000
## 232      416  1.00000000
## 233      417  0.00000000
## 234      418  0.12000000
## 235      419  0.00000000
## 236       42  0.00000000
## 237      420  0.00000000
## 238      421  0.22222222
## 239      422  0.00000000
## 240      423  0.00000000
## 241      424  0.00000000
## 242      425  0.00000000
## 243      426  0.00000000
## 244      428  0.38461538
## 245      429  0.00000000
## 246       43  0.62068966
## 247      433  0.00000000
## 248      435  0.08333333
## 249      436  0.00000000
## 250      437  0.00000000
## 251      439  0.00000000
## 252      442  0.00000000
## 253      443  0.00000000
## 254      444  0.00000000
```

```
## 255      445  0.25000000
## 256      446  0.00000000
## 257      447  0.00000000
## 258      448  0.00000000
## 259       45  0.11200000
## 260      450  0.20000000
## 261      451  0.00000000
## 262      452  1.00000000
## 263      454  0.00000000
## 264      455  0.00000000
## 265      456  0.00000000
## 266      457  0.33333333
## 267      458  0.00000000
## 268      459  0.00000000
## 269       46  0.03846154
## 270      460  0.00000000
## 271      461  1.00000000
## 272      465  0.16666667
## 273      466  0.66666667
## 274       47  0.15277778
## 275      470  0.20000000
## 276      477  0.21739130
## 277      478  0.50000000
## 278      479  0.00000000
## 279       48  1.00000000
## 280      481  0.00000000
## 281      482  0.00000000
## 282      483  0.00000000
## 283      484  0.00000000
## 284      485  0.00000000
## 285      486  0.50000000
## 286      487  0.00000000
## 287      489  0.00000000
## 288       49  0.00000000
## 289      490  0.00000000
## 290      491  0.00000000
## 291      492  0.00000000
## 292      494  0.00000000
## 293      496  0.00000000
## 294      497  0.00000000
## 295      498  0.27586207
## 296      499  0.00000000
## 297      501  0.00000000
## 298      504  0.18181818
## 299      506  0.00000000
## 300      507  0.00000000
## 301       51  0.35353535
## 302      511  0.00000000
## 303      512  0.00000000
## 304      513  1.00000000
## 305      514  0.00000000
## 306      515  0.16666667
## 307      516  0.00000000
## 308      518  0.00000000
```

```
## 309        52   0.00000000
## 310       520   0.00000000
## 311       521   0.14285714
## 312       523   0.00000000
## 313       525   0.00000000
## 314       528   0.00000000
## 315        53   0.25000000
## 316       530   0.20000000
## 317       531   1.00000000
## 318       534   0.00000000
## 319       539   0.00000000
## 320        54   0.00000000
## 321       541   0.00000000
## 322       543   1.00000000
## 323        59   0.14285714
## 324         6   0.00000000
## 325        61   0.00000000
## 326        62   0.06382979
## 327        64   0.00000000
## 328        65   0.00000000
## 329        67   0.65543071
## 330        68   0.17391304
## 331        71   0.00000000
## 332        72   0.03333333
## 333        73   0.33333333
## 334        76   0.00000000
## 335        77   1.00000000
## 336        78   0.04545455
## 337         8   0.00000000
## 338        80   0.00000000
## 339        81   0.08695652
## 340        82   0.21428571
## 341        83   0.22222222
## 342        84   0.33333333
## 343        85   0.50000000
## 344        86   0.15625000
## 345        88   0.18181818
## 346         9   0.08108108
## 347        91   0.08333333
## 348        92   0.00000000
## 349        93   0.33333333
## 350        94   0.16091954
## 351        96   0.00000000
## 352        99   0.08333333
## 353      NULL   0.38216906
```

```r
deposit = aggregate(is_canceled ~ deposit_type,data=clndata, mean)
deposit
```

```
##   deposit_type is_canceled
## 1   No Deposit   0.2837458
## 2   Non Refund   0.9936245
## 3   Refundable   0.2222222
```

```
customer_type = aggregate(is_canceled ~ customer_type,data=clndata, mean)
customer_type
```

```
##       customer_type is_canceled
## 1          Contract   0.3096173
## 2             Group   0.1022530
## 3         Transient   0.4074223
## 4 Transient-Party   0.2542987
```

```
previous_bookings_not_canceled = aggregate(is_canceled ~ previous_bookings_not_canceled,data=clndata, me
previous_bookings_not_canceled
```

```
##     previous_bookings_not_canceled is_canceled
## 1                                0  0.38024167
## 2                                1  0.05123217
## 3                                2  0.05517241
## 4                                3  0.05105105
## 5                                4  0.05240175
## 6                                5  0.06077348
## 7                                6  0.02608696
## 8                                7  0.05681818
## 9                                8  0.04285714
## 10                               9  0.00000000
## 11                              10  0.13207547
## 12                              11  0.11627907
## 13                              12  0.08108108
## 14                              13  0.06666667
## 15                              14  0.07142857
## 16                              15  0.09523810
## 17                              16  0.05000000
## 18                              17  0.06250000
## 19                              18  0.00000000
## 20                              19  0.00000000
## 21                              20  0.00000000
## 22                              21  0.00000000
## 23                              22  0.00000000
## 24                              23  0.00000000
## 25                              24  0.00000000
## 26                              25  0.47058824
## 27                              26  0.14285714
## 28                              27  0.22222222
## 29                              28  0.00000000
## 30                              29  0.16666667
## 31                              30  0.00000000
## 32                              31  0.00000000
## 33                              32  0.00000000
## 34                              33  0.00000000
## 35                              34  0.00000000
## 36                              35  0.00000000
## 37                              36  0.00000000
## 38                              37  0.00000000
## 39                              38  0.00000000
```

```
## 40                                39   0.00000000
## 41                                40   0.00000000
## 42                                41   0.00000000
## 43                                42   0.00000000
## 44                                43   0.00000000
## 45                                44   0.50000000
## 46                                45   0.00000000
## 47                                46   0.00000000
## 48                                47   0.00000000
## 49                                48   0.50000000
## 50                                49   0.00000000
## 51                                50   0.00000000
## 52                                51   0.00000000
## 53                                52   0.00000000
## 54                                53   0.00000000
## 55                                54   0.00000000
## 56                                55   0.00000000
## 57                                56   0.00000000
## 58                                57   0.00000000
## 59                                58   0.50000000
## 60                                59   0.00000000
## 61                                60   0.00000000
## 62                                61   0.00000000
## 63                                62   0.00000000
## 64                                63   0.00000000
## 65                                64   0.00000000
## 66                                65   0.00000000
## 67                                66   0.00000000
## 68                                67   0.00000000
## 69                                68   0.00000000
## 70                                69   0.00000000
## 71                                70   0.00000000
## 72                                71   0.00000000
## 73                                72   0.00000000
```

```r
is_repeated_guest = aggregate(is_canceled ~ is_repeated_guest,data=clndata, mean)
is_repeated_guest
```

```
##   is_repeated_guest is_canceled
## 1                 0   0.3778214
## 2                 1   0.1448819
```

```r
distribution_channel = aggregate(is_canceled ~ distribution_channel,data=clndata, mean)
distribution_channel
```

```
##   distribution_channel is_canceled
## 1            Corporate   0.2207578
## 2               Direct   0.1737555
## 3               Direkt   0.7619048
## 4                  GDS   0.1917098
## 5                TA/TO   0.4102208
## 6            Undefined   0.8000000
```

```
market_segment = aggregate(is_canceled ~ market_segment,data=clndata, mean)
market_segment
```

```
##    market_segment is_canceled
## 1        Aviation   0.2194093
## 2   Complementary   0.1305518
## 3       Corporate   0.1873466
## 4          Direct   0.1534190
## 5          Groups   0.6105587
## 6    Offline TA/TO  0.3431462
## 7       Online TA   0.3671724
## 8       Undefined   1.0000000
```

```
meal = aggregate(is_canceled ~ meal,data=clndata, mean)
meal
```

```
##        meal is_canceled
## 1        BB   0.3738166
## 2        FB   0.5989975
## 3        HB   0.3446035
## 4        SC   0.3723594
## 5 Undefined   0.2446536
```

```
country = aggregate(is_canceled ~ country,data=clndata, mean)
country
```

```
##      country is_canceled
## 1        ABW  0.00000000
## 2        AGO  0.56629834
## 3        AIA  0.00000000
## 4        ALB  0.16666667
## 5        AND  0.71428571
## 6        ARE  0.84313725
## 7        ARG  0.25233645
## 8        ARM  0.25000000
## 9        ASM  0.00000000
## 10       ATA  0.00000000
## 11       ATF  0.00000000
## 12       AUS  0.25117371
## 13       AUT  0.18210610
## 14       AZE  0.52941176
## 15       BDI  0.00000000
## 16       BEL  0.20221843
## 17       BEN  1.00000000
## 18       BFA  0.00000000
## 19       BGD  0.75000000
## 20       BGR  0.16000000
## 21       BHR  0.80000000
## 22       BHS  0.00000000
## 23       BIH  0.23076923
## 24       BLR  0.34615385
## 25       BOL  0.00000000
```

```
## 26          BRA  0.37320144
## 27          BRB  0.00000000
## 28          BWA  0.00000000
## 29          CAF  0.00000000
## 30          CHE  0.24739884
## 31          CHL  0.24615385
## 32          CHN  0.46246246
## 33          CIV  0.33333333
## 34          CMR  0.00000000
## 35           CN  0.19843750
## 36          COL  0.32394366
## 37          COM  0.00000000
## 38          CPV  0.50000000
## 39          CRI  0.05263158
## 40          CUB  0.00000000
## 41          CYM  0.00000000
## 42          CYP  0.21568627
## 43          CZE  0.21637427
## 44          DEU  0.16712404
## 45          DJI  0.00000000
## 46          DMA  0.00000000
## 47          DNK  0.25057471
## 48          DOM  0.57142857
## 49          DZA  0.20388350
## 50          ECU  0.29629630
## 51          EGY  0.34375000
## 52          ESP  0.25408497
## 53          EST  0.21686747
## 54          ETH  0.33333333
## 55          FIN  0.15436242
## 56          FJI  1.00000000
## 57          FRA  0.18567588
## 58          FRO  0.80000000
## 59          GAB  0.50000000
## 60          GBR  0.20224256
## 61          GEO  0.68181818
## 62          GGY  1.00000000
## 63          GHA  0.50000000
## 64          GIB  0.61111111
## 65          GLP  1.00000000
## 66          GNB  0.11111111
## 67          GRC  0.27343750
## 68          GTM  0.00000000
## 69          GUY  0.00000000
## 70          HKG  0.89655172
## 71          HND  1.00000000
## 72          HRV  0.25000000
## 73          HUN  0.33478261
## 74          IDN  0.68571429
## 75          IMN  1.00000000
## 76          IND  0.23026316
## 77          IRL  0.24651852
## 78          IRN  0.27710843
## 79          IRQ  0.00000000
```

```
## 80        ISL   0.07017544
## 81        ISR   0.25186289
## 82        ITA   0.35386249
## 83        JAM   0.00000000
## 84        JEY   1.00000000
## 85        JOR   0.14285714
## 86        JPN   0.14213198
## 87        KAZ   0.26315789
## 88        KEN   0.33333333
## 89        KHM   1.00000000
## 90        KIR   0.00000000
## 91        KNA   0.00000000
## 92        KOR   0.41353383
## 93        KWT   0.37500000
## 94        LAO   0.00000000
## 95        LBN   0.29032258
## 96        LBY   0.00000000
## 97        LCA   0.00000000
## 98        LIE   0.33333333
## 99        LKA   0.00000000
## 100       LTU   0.08641975
## 101       LUX   0.37979094
## 102       LVA   0.16363636
## 103       MAC   0.93750000
## 104       MAR   0.42084942
## 105       MCO   0.25000000
## 106       MDG   0.00000000
## 107       MDV   0.75000000
## 108       MEX   0.11764706
## 109       MKD   0.20000000
## 110       MLI   0.00000000
## 111       MLT   0.27777778
## 112       MMR   0.00000000
## 113       MNE   0.40000000
## 114       MOZ   0.28358209
## 115       MRT   0.00000000
## 116       MUS   0.14285714
## 117       MWI   0.00000000
## 118       MYS   0.10714286
## 119       MYT   1.00000000
## 120       NAM   0.00000000
## 121       NCL   0.00000000
## 122       NGA   0.61764706
## 123       NIC   1.00000000
## 124       NLD   0.18393536
## 125       NOR   0.29818781
## 126       NPL   0.00000000
## 127      NULL   0.13729508
## 128       NZL   0.08108108
## 129       OMN   0.22222222
## 130       PAK   0.64285714
## 131       PAN   0.00000000
## 132       PER   0.20689655
## 133       PHL   0.62500000
```

```
## 134     PLW  0.00000000
## 135     POL  0.23394995
## 136     PRI  0.16666667
## 137     PRT  0.56633945
## 138     PRY  0.00000000
## 139     PYF  0.00000000
## 140     QAT  0.73333333
## 141     ROU  0.26800000
## 142     RUS  0.37816456
## 143     RWA  0.00000000
## 144     SAU  0.68750000
## 145     SDN  0.00000000
## 146     SEN  0.72727273
## 147     SGP  0.41025641
## 148     SLE  0.00000000
## 149     SLV  0.00000000
## 150     SMR  0.00000000
## 151     SRB  0.02970297
## 152     STP  0.00000000
## 153     SUR  0.00000000
## 154     SVK  0.36923077
## 155     SVN  0.26315789
## 156     SWE  0.22167969
## 157     SYC  0.50000000
## 158     SYR  0.00000000
## 159     TGO  0.00000000
## 160     THA  0.30508475
## 161     TJK  0.88888889
## 162     TMP  0.33333333
## 163     TUN  0.48717949
## 164     TUR  0.41129032
## 165     TWN  0.27450980
## 166     TZA  0.60000000
## 167     UGA  0.00000000
## 168     UKR  0.29411765
## 169     UMI  1.00000000
## 170     URY  0.28125000
## 171     USA  0.23891273
## 172     UZB  0.50000000
## 173     VEN  0.46153846
## 174     VGB  1.00000000
## 175     VNM  0.25000000
## 176     ZAF  0.38750000
## 177     ZMB  0.50000000
## 178     ZWE  0.50000000
```

```r
country <- country[order(country$is_canceled,decreasing=T),]
head(country[c("country","is_canceled")],5)
```

```
##    country is_canceled
## 17     BEN           1
## 56     FJI           1
## 62     GGY           1
## 65     GLP           1
```

```
## 71      HND          1
```

```r
arrival_date_year = aggregate(is_canceled ~ arrival_date_year,data=clndata, mean)
arrival_date_year
```

```
##   arrival_date_year is_canceled
## 1              2015   0.3701582
## 2              2016   0.3585761
## 3              2017   0.3869786
```

```r
arrival_date_month = aggregate(is_canceled ~ arrival_date_month,data=clndata, mean)
arrival_date_month
```

```
##    arrival_date_month is_canceled
## 1               April   0.4079719
## 2              August   0.3775312
## 3            December   0.3497050
## 4            February   0.3341596
## 5             January   0.3047731
## 6                July   0.3745360
## 7                June   0.4145717
## 8               March   0.3215234
## 9                 May   0.3966585
## 10           November   0.3119212
## 11            October   0.3804659
## 12          September   0.3917016
```

```r
hotel = aggregate(is_canceled ~ hotel,data=clndata, mean)
hotel
```

```
##          hotel is_canceled
## 1   City Hotel   0.4172223
## 2 Resort Hotel   0.2776335
```

```r
AggregateIFR = aggregate(clndata$adr, list(clndata$reserved_room_type,clndata$adults), mean)
AggregateIFR
```

```
##    Group.1 Group.2         x
## 1        A       0  21.52173
## 2        B       0  82.64986
## 3        C       0   0.00000
## 4        D       0  20.81958
## 5        E       0  25.85235
## 6        F       0   4.92000
## 7        G       0   0.00000
## 8        P       0   0.00000
## 9        A       1  79.12619
## 10       B       1  92.63224
## 11       C       1 141.60854
## 12       D       1 102.85193
## 13       E       1 107.68098
```

```
## 14        F        1 133.48618
## 15        G        1 123.53103
## 16        H        1  98.00000
## 17        L        1  82.00000
## 18        A        2  93.93504
## 19        B        2  91.86387
## 20        C        2 162.01379
## 21        D        2 113.88139
## 22        E        2 121.21773
## 23        F        2 168.21887
## 24        G        2 175.71632
## 25        H        2 174.41273
## 26        L        2 129.00000
## 27        A        3 124.55461
## 28        B        3 118.34500
## 29        C        3 154.49712
## 30        D        3 157.34938
## 31        E        3 181.83028
## 32        F        3 202.09794
## 33        G        3 200.67312
## 34        H        3 195.13937
## 35        A        4 208.00000
## 36        C        4 136.28857
## 37        D        4 228.53333
## 38        E        4 185.35000
## 39        F        4 145.80000
## 40        G        4 206.30958
## 41        H        4 209.26211
## 42        L        4 150.00000
## 43        A        5   0.00000
## 44        E        6   0.00000
## 45        E       10   0.00000
## 46        D       20   0.00000
## 47        A       26   0.00000
## 48        A       27   0.00000
## 49        A       40   0.00000
## 50        A       50   0.00000
## 51        A       55   0.00000
```

```r
#median passt sehr gut
AggregateIFR1 = aggregate(clndatacity$adr, list(clndatacity$reserved_room_type,clndatacity$adults), med:
AggregateIFR1
```

```
##      Group.1 Group.2       x
## 1        A        0   0.000
## 2        D        0  28.000
## 3        P        0   0.000
## 4        A        1  43.000
## 5        C        1 165.000
## 6        D        1  67.500
## 7        E        1  72.000
## 8        F        1  85.000
## 9        G        1 100.000
## 10       H        1 109.500
```
```

```
## 11      L      1  82.000
## 12      A      2  69.000
## 13      B      2 110.000
## 14      C      2 165.000
## 15      D      2  83.090
## 16      E      2  99.000
## 17      F      2 117.000
## 18      G      2 158.100
## 19      H      2 169.300
## 20      L      2 154.000
## 21      A      3 128.000
## 22      C      3 158.875
## 23      D      3 166.030
## 24      E      3 165.125
## 25      F      3 220.150
## 26      G      3 145.000
## 27      H      3 187.515
## 28      A      4 208.000
## 29      C      4 139.680
## 30      D      4 252.600
## 31      G      4  16.000
## 32      H      4 209.000
## 33      L      4 150.000
## 34      A      5   0.000
## 35      E      6   0.000
## 36      E     10   0.000
## 37      D     20   0.000
## 38      A     26   0.000
## 39      A     27   0.000
## 40      A     40   0.000
## 41      A     50   0.000
## 42      A     55   0.000
```

```r
AggregateIFR2 = aggregate(clndatacity$adr, list(clndatacity$reserved_room_type,clndatacity$adults,clnda
AggregateIFR2
```

```
##      Group.1 Group.2 Group.3  Group.4       x
## 1        A       0       0      BB   0.000
## 2        D       0       0      BB  28.000
## 3        A       1       0      BB  42.000
## 4        C       1       0      BB  50.000
## 5        D       1       0      BB  66.000
## 6        E       1       0      BB  72.000
## 7        F       1       0      BB  79.200
## 8        G       1       0      BB  95.670
## 9        H       1       0      BB 106.500
## 10       L       1       0      BB  82.000
## 11       A       2       0      BB  60.000
## 12       B       2       0      BB 110.000
## 13       C       2       0      BB 132.000
## 14       D       2       0      BB  75.000
## 15       E       2       0      BB  90.000
## 16       F       2       0      BB 106.000
## 17       G       2       0      BB 135.000
```

```
## 18          H      2      0      BB 163.000
## 19          L      2      0      BB 154.000
## 20          A      3      0      BB 110.500
## 21          C      3      0      BB 119.250
## 22          D      3      0      BB 139.685
## 23          E      3      0      BB 153.000
## 24          F      3      0      BB 209.000
## 25          G      3      0      BB 130.500
## 26          H      3      0      BB 180.500
## 27          A      4      0      BB 208.000
## 28          C      4      0      BB 143.840
## 29          D      4      0      BB 252.600
## 30          G      4      0      BB  16.000
## 31          H      4      0      BB 207.335
## 32          L      4      0      BB 150.000
## 33          A      5      0      BB   0.000
## 34          E      6      0      BB   0.000
## 35          E     10      0      BB   0.000
## 36          D     20      0      BB   0.000
## 37          A     26      0      BB   0.000
## 38          A     40      0      BB   0.000
## 39          A     50      0      BB   0.000
## 40          A      1      1      BB  83.310
## 41          C      1      1      BB 186.000
## 42          D      1      1      BB  81.000
## 43          E      1      1      BB 124.440
## 44          F      1      1      BB 145.025
## 45          G      1      1      BB 117.000
## 46          A      2      1      BB  94.160
## 47          C      2      1      BB 121.350
## 48          D      2      1      BB 140.770
## 49          E      2      1      BB 158.100
## 50          F      2      1      BB 192.660
## 51          G      2      1      BB 127.000
## 52          H      2      1      BB 150.000
## 53          C      3      1      BB 199.000
## 54          G      3      1      BB 135.625
## 55          H      3      1      BB 172.000
## 56          H      4      1      BB 194.030
## 57          A      1      2      BB  78.500
## 58          C      1      2      BB 185.000
## 59          D      1      2      BB  95.000
## 60          E      1      2      BB 200.790
## 61          F      1      2      BB 183.105
## 62          G      1      2      BB 168.000
## 63          H      1      2      BB 163.000
## 64          A      2      2      BB 106.000
## 65          C      2      2      BB 160.000
## 66          D      2      2      BB 195.585
## 67          E      2      2      BB 284.000
## 68          F      2      2      BB 188.000
## 69          G      2      2      BB 155.000
## 70          H      2      2      BB 175.950
## 71          C      3      2      BB   0.000
```

```
## 72          H        3        2        BB 156.000
## 73          C        1        3        BB 201.700
## 74          A        2        3        BB 124.000
## 75          C        2        3        BB 158.000
## 76          G        2        3        BB 105.000
## 77          H        2        3        BB 140.000
## 78          D        2       10        BB 133.160
## 79          A        1        0        FB  52.000
## 80          D        1        0        FB 116.170
## 81          E        1        0        FB 124.380
## 82          A        2        0        FB  80.000
## 83          C        2        0        FB  89.000
## 84          D        2        0        FB 156.600
## 85          E        2        0        FB 134.400
## 86          F        2        0        FB 171.560
## 87          A        3        0        FB 206.600
## 88          C        3        0        FB 158.000
## 89          D        3        0        FB 195.750
## 90          E        3        0        FB 199.500
## 91          F        3        0        FB 317.910
## 92          H        4        0        FB   0.000
## 93          A        1        1        FB  24.700
## 94          D        1        1        FB 160.680
## 95          E        1        1        FB 283.000
## 96          A        2        1        FB 215.350
## 97          C        2        1        FB 211.390
## 98          D        2        1        FB 238.750
## 99          E        2        1        FB 260.200
## 100         F        2        1        FB 216.570
## 101         H        3        1        FB 328.500
## 102         C        2        2        FB 255.200
## 103         D        2        2        FB 310.000
## 104         G        2        2        FB 242.350
## 105         H        2        2        FB 437.000
## 106         A        1        0        HB  54.500
## 107         C        1        0        HB 171.000
## 108         D        1        0        HB  68.000
## 109         E        1        0        HB  77.000
## 110         F        1        0        HB 169.385
## 111         G        1        0        HB 146.000
## 112         H        1        0        HB 123.000
## 113         A        2        0        HB  84.000
## 114         C        2        0        HB 180.000
## 115         D        2        0        HB  97.330
## 116         E        2        0        HB 118.000
## 117         F        2        0        HB 139.860
## 118         G        2        0        HB 169.400
## 119         H        2        0        HB 202.000
## 120         A        3        0        HB 165.110
## 121         C        3        0        HB 199.500
## 122         D        3        0        HB 206.030
## 123         E        3        0        HB 206.220
## 124         F        3        0        HB 252.260
## 125         G        3        0        HB 207.850
```

```
## 126        H        3        0            HB 208.140
## 127        C        4        0            HB 108.360
## 128        H        4        0            HB 306.750
## 129        A       27        0            HB   0.000
## 130        A       55        0            HB   0.000
## 131        A        1        1            HB 107.300
## 132        C        1        1            HB 203.000
## 133        D        1        1            HB 141.490
## 134        E        1        1            HB 114.230
## 135        F        1        1            HB 253.800
## 136        G        1        1            HB 106.000
## 137        A        2        1            HB 162.620
## 138        C        2        1            HB 187.200
## 139        D        2        1            HB 185.375
## 140        E        2        1            HB 179.890
## 141        F        2        1            HB 193.810
## 142        G        2        1            HB 184.250
## 143        H        2        1            HB 206.100
## 144        C        3        1            HB 262.625
## 145        G        3        1            HB 234.790
## 146        H        3        1            HB 253.000
## 147        A        1        2            HB 101.985
## 148        C        1        2            HB 225.535
## 149        D        1        2            HB 260.280
## 150        E        1        2            HB 217.200
## 151        F        1        2            HB 300.650
## 152        G        1        2            HB 229.400
## 153        A        2        2            HB  95.400
## 154        C        2        2            HB 213.600
## 155        D        2        2            HB 261.190
## 156        G        2        2            HB 244.000
## 157        H        2        2            HB 226.835
## 158        H        3        2            HB 270.975
## 159        G        2        3            HB 311.330
## 160        H        2        3            HB 219.015
## 161        A        0        0            SC   0.000
## 162        P        0        0            SC   0.000
## 163        A        1        0            SC   0.000
## 164        E        1        0            SC   0.000
## 165        F        1        0            SC   0.000
## 166        A        2        0            SC   0.000
## 167        D        2        0            SC   0.260
## 168        E        2        0            SC   0.000
## 169        F        2        0            SC   0.000
## 170        G        2        0            SC   0.000
## 171        A        3        0            SC  48.000
## 172        A        2        1            SC   0.000
## 173        D        2        1            SC   0.000
## 174        C        2        2            SC   0.000
## 175        A        1        0 Undefined  55.000
## 176        C        1        0 Undefined  48.000
## 177        D        1        0 Undefined  56.670
## 178        E        1        0 Undefined  72.000
## 179        A        2        0 Undefined  79.000
```

```
## 180          C       2          0 Undefined 131.000
## 181          D       2          0 Undefined 117.710
## 182          E       2          0 Undefined 143.350
## 183          F       2          0 Undefined 213.570
## 184          G       2          0 Undefined 139.485
## 185          A       3          0 Undefined 113.400
## 186          C       3          0 Undefined 160.000
## 187          D       3          0 Undefined 256.540
## 188          F       3          0 Undefined 318.000
## 189          A       2          1 Undefined 165.000
## 190          C       2          1 Undefined 265.250
## 191          D       2          1 Undefined 162.140
## 192          E       2          1 Undefined 309.100
## 193          G       2          1 Undefined 184.000
## 194          C       2          2 Undefined 216.780
## 195          G       2          2 Undefined 368.625
```

```r
AggregateIFR2 <- AggregateIFR2[order(AggregateIFR2$Group.1,decreasing=FALSE),]

colnames(AggregateIFR2) = c("Room_Type","adults","children","meal","adr")

AggregateIFR2 <- subset(AggregateIFR2, !meal
 == "Undefined")

AggregateIFR2 <- subset(AggregateIFR2, !adults == "0")
AggregateIFR2 <- subset(AggregateIFR2, !adr == "0")

kable(AggregateIFR2, caption = "AggregateOTDShangh")
```

Table 1: AggregateOTDShangh

	Room_Type	adults	children	meal	adr
3	A	1	0	BB	42.000
11	A	2	0	BB	60.000
20	A	3	0	BB	110.500
27	A	4	0	BB	208.000
40	A	1	1	BB	83.310
46	A	2	1	BB	94.160
57	A	1	2	BB	78.500
64	A	2	2	BB	106.000
74	A	2	3	BB	124.000
79	A	1	0	FB	52.000
82	A	2	0	FB	80.000
87	A	3	0	FB	206.600
93	A	1	1	FB	24.700
96	A	2	1	FB	215.350
106	A	1	0	HB	54.500
113	A	2	0	HB	84.000
120	A	3	0	HB	165.110
131	A	1	1	HB	107.300
137	A	2	1	HB	162.620
147	A	1	2	HB	101.985
153	A	2	2	HB	95.400

	Room_Type	adults	children	meal	adr
171	A	3	0	SC	48.000
12	B	2	0	BB	110.000
4	C	1	0	BB	50.000
13	C	2	0	BB	132.000
21	C	3	0	BB	119.250
28	C	4	0	BB	143.840
41	C	1	1	BB	186.000
47	C	2	1	BB	121.350
53	C	3	1	BB	199.000
58	C	1	2	BB	185.000
65	C	2	2	BB	160.000
73	C	1	3	BB	201.700
75	C	2	3	BB	158.000
83	C	2	0	FB	89.000
88	C	3	0	FB	158.000
97	C	2	1	FB	211.390
102	C	2	2	FB	255.200
107	C	1	0	HB	171.000
114	C	2	0	HB	180.000
121	C	3	0	HB	199.500
127	C	4	0	HB	108.360
132	C	1	1	HB	203.000
138	C	2	1	HB	187.200
144	C	3	1	HB	262.625
148	C	1	2	HB	225.535
154	C	2	2	HB	213.600
5	D	1	0	BB	66.000
14	D	2	0	BB	75.000
22	D	3	0	BB	139.685
29	D	4	0	BB	252.600
42	D	1	1	BB	81.000
48	D	2	1	BB	140.770
59	D	1	2	BB	95.000
66	D	2	2	BB	195.585
78	D	2	10	BB	133.160
80	D	1	0	FB	116.170
84	D	2	0	FB	156.600
89	D	3	0	FB	195.750
94	D	1	1	FB	160.680
98	D	2	1	FB	238.750
103	D	2	2	FB	310.000
108	D	1	0	HB	68.000
115	D	2	0	HB	97.330
122	D	3	0	HB	206.030
133	D	1	1	HB	141.490
139	D	2	1	HB	185.375
149	D	1	2	HB	260.280
155	D	2	2	HB	261.190
167	D	2	0	SC	0.260
6	E	1	0	BB	72.000
15	E	2	0	BB	90.000
23	E	3	0	BB	153.000

	Room_Type	adults	children	meal	adr
43	E	1	1	BB	124.440
49	E	2	1	BB	158.100
60	E	1	2	BB	200.790
67	E	2	2	BB	284.000
81	E	1	0	FB	124.380
85	E	2	0	FB	134.400
90	E	3	0	FB	199.500
95	E	1	1	FB	283.000
99	E	2	1	FB	260.200
109	E	1	0	HB	77.000
116	E	2	0	HB	118.000
123	E	3	0	HB	206.220
134	E	1	1	HB	114.230
140	E	2	1	HB	179.890
150	E	1	2	HB	217.200
7	F	1	0	BB	79.200
16	F	2	0	BB	106.000
24	F	3	0	BB	209.000
44	F	1	1	BB	145.025
50	F	2	1	BB	192.660
61	F	1	2	BB	183.105
68	F	2	2	BB	188.000
86	F	2	0	FB	171.560
91	F	3	0	FB	317.910
100	F	2	1	FB	216.570
110	F	1	0	HB	169.385
117	F	2	0	HB	139.860
124	F	3	0	HB	252.260
135	F	1	1	HB	253.800
141	F	2	1	HB	193.810
151	F	1	2	HB	300.650
8	G	1	0	BB	95.670
17	G	2	0	BB	135.000
25	G	3	0	BB	130.500
30	G	4	0	BB	16.000
45	G	1	1	BB	117.000
51	G	2	1	BB	127.000
54	G	3	1	BB	135.625
62	G	1	2	BB	168.000
69	G	2	2	BB	155.000
76	G	2	3	BB	105.000
104	G	2	2	FB	242.350
111	G	1	0	HB	146.000
118	G	2	0	HB	169.400
125	G	3	0	HB	207.850
136	G	1	1	HB	106.000
142	G	2	1	HB	184.250
145	G	3	1	HB	234.790
152	G	1	2	HB	229.400
156	G	2	2	HB	244.000
159	G	2	3	HB	311.330
9	H	1	0	BB	106.500

	Room_Type	adults	children	meal	adr
18	H	2	0	BB	163.000
26	H	3	0	BB	180.500
31	H	4	0	BB	207.335
52	H	2	1	BB	150.000
55	H	3	1	BB	172.000
56	H	4	1	BB	194.030
63	H	1	2	BB	163.000
70	H	2	2	BB	175.950
72	H	3	2	BB	156.000
77	H	2	3	BB	140.000
101	H	3	1	FB	328.500
105	H	2	2	FB	437.000
112	H	1	0	HB	123.000
119	H	2	0	HB	202.000
126	H	3	0	HB	208.140
128	H	4	0	HB	306.750
143	H	2	1	HB	206.100
146	H	3	1	HB	253.000
157	H	2	2	HB	226.835
158	H	3	2	HB	270.975
160	H	2	3	HB	219.015
10	L	1	0	BB	82.000
19	L	2	0	BB	154.000
32	L	4	0	BB	150.000

```r
# Anzahl einfügen
```

```r
#Kapazitäten der beiden Hotels speichern
capLis = data.frame(Zimmer = 403,
                    Parkpl = 20,
                    Sitzpl = 200,
                    Babysitzpl = 20)

capAlga = data.frame(Zimmer = 318,
                     Parkpl = 50,
                     Sitzpl = 800,
                     Babysitzpl = 10)

#tests
#was ist mit Typ undefined?
unique(rawdata$market_segment)
```

```
## [1] "Direct"        "Corporate"     "Online TA"     "Offline TA/TO"
## [5] "Complementary" "Groups"        "Undefined"     "Aviation"
```

```r
unique(rawdata$meal)
```

```
## [1] "BB"        "FB"        "HB"        "SC"        "Undefined"
```

```
unique(rawdata$distribution_channel)
```

```
## [1] "Direct"    "Corporate" "TA/TO"     "Direkt"    "Undefined" "GDS"
```

```
unique(rawdata$country) #hier heißts NULL
```

```
##   [1] "PRT" "GBR" "USA" "ESP" "IRL" "FRA" "NULL" "ROU" "NOR" "OMN"
##  [11] "ARG" "POL" "DEU" "BEL" "CHE" "CN"  "GRC" "ITA" "NLD" "DNK"
##  [21] "RUS" "SWE" "AUS" "EST" "CZE" "BRA" "FIN" "MOZ" "BWA" "LUX"
##  [31] "SVN" "ALB" "IND" "CHN" "MEX" "MAR" "UKR" "SMR" "LVA" "PRI"
##  [41] "SRB" "CHL" "AUT" "BLR" "LTU" "TUR" "ZAF" "AGO" "ISR" "CYM"
##  [51] "ZMB" "CPV" "ZWE" "DZA" "KOR" "CRI" "HUN" "ARE" "TUN" "JAM"
##  [61] "HRV" "HKG" "IRN" "GEO" "AND" "GIB" "URY" "JEY" "CAF" "CYP"
##  [71] "COL" "GGY" "KWT" "NGA" "MDV" "VEN" "SVK" "FJI" "KAZ" "PAK"
##  [81] "IDN" "LBN" "PHL" "SEN" "SYC" "AZE" "BHR" "NZL" "THA" "DOM"
##  [91] "MKD" "MYS" "ARM" "JPN" "LKA" "CUB" "CMR" "BIH" "MUS" "COM"
## [101] "SUR" "UGA" "BGR" "CIV" "JOR" "SYR" "SGP" "BDI" "SAU" "VNM"
## [111] "PLW" "QAT" "EGY" "PER" "MLT" "MWI" "ECU" "MDG" "ISL" "UZB"
## [121] "NPL" "BHS" "MAC" "TGO" "TWN" "DJI" "STP" "KNA" "ETH" "IRQ"
## [131] "HND" "RWA" "KHM" "MCO" "BGD" "IMN" "TJK" "NIC" "BEN" "VGB"
## [141] "TZA" "GAB" "GHA" "TMP" "GLP" "KEN" "LIE" "GNB" "MNE" "UMI"
## [151] "MYT" "FRO" "MMR" "PAN" "BFA" "LBY" "MLI" "NAM" "BOL" "PRY"
## [161] "BRB" "ABW" "AIA" "SLV" "DMA" "PYF" "GUY" "LCA" "ATA" "GTM"
## [171] "ASM" "MRT" "NCL" "KIR" "SDN" "ATF" "SLE" "LAO"
```

```
#andere Anzahl belegter Raumtypen als reservierte?
unique(rawdata$reserved_room_type)
```

```
##  [1] "C" "A" "D" "E" "G" "F" "H" "L" "P" "B"
```

```
unique(rawdata$assigned_room_type)
```

```
##  [1] "C" "A" "D" "E" "G" "F" "I" "B" "H" "P" "L" "K"
```

```
#Kinder oder Babies ohne Erwachsenen da?
rawdata[rawdata$adults == 0 & (rawdata$children != 0 | rawdata$babies !=0),]
```

```
##           hotel is_canceled lead_time arrival_date_year arrival_date_month
## 40985 City Hotel           0         1              2015             August
## 41049 City Hotel           0       104              2015             August
## 41447 City Hotel           0         3              2015             August
## 41953 City Hotel           0        15              2015             August
## 45159 City Hotel           1        48              2015            October
## 46133 City Hotel           1         6              2015           December
## 46151 City Hotel           0         6              2015           December
## 46187 City Hotel           0         1              2015           December
## 46197 City Hotel           1        12              2015           December
## 46221 City Hotel           0         7              2015           December
## 46489 City Hotel           0        30              2016            January
## 46547 City Hotel           0        33              2016            January
```

```
## 46560  City Hotel          0        0    2016      January
## 46647  City Hotel          0       40    2016      January
## 46649  City Hotel          0       40    2016      January
## 46656  City Hotel          0       40    2016      January
## 46689  City Hotel          1       11    2016      January
## 46741  City Hotel          1       16    2016      January
## 47047  City Hotel          1       43    2016     February
## 47075  City Hotel          0       35    2016     February
## 47111  City Hotel          0       46    2016     February
## 47122  City Hotel          1       44    2016     February
## 47134  City Hotel          0       64    2016     February
## 47176  City Hotel          0       40    2016     February
## 47202  City Hotel          0       37    2016     February
## 47435  City Hotel          0       73    2016     February
## 47569  City Hotel          1       65    2016     February
## 47818  City Hotel          1        7    2016        March
## 48225  City Hotel          1       72    2016        March
## 48234  City Hotel          1       75    2016        March
## 48456  City Hotel          0      107    2016        March
## 48509  City Hotel          0      108    2016        March
## 48631  City Hotel          0       34    2016        March
## 48776  City Hotel          1      123    2016        March
## 48847  City Hotel          0      113    2016        March
## 48901  City Hotel          0      109    2016        April
## 49008  City Hotel          1      147    2016        April
## 49016  City Hotel          0       91    2016        April
## 49404  City Hotel          0      123    2016        April
## 50163  City Hotel          1       68    2016        April
## 51331  City Hotel          1        9    2016          May
## 51586  City Hotel          1       23    2016          May
## 52157  City Hotel          0      150    2016          May
## 53335  City Hotel          1       45    2016         June
## 53642  City Hotel          1      115    2016         June
## 54001  City Hotel          0      193    2016         July
## 54123  City Hotel          0      187    2016         July
## 54137  City Hotel          1      187    2016         July
## 54141  City Hotel          0      187    2016         July
## 54225  City Hotel          1      194    2016         July
## 54411  City Hotel          0      193    2016         July
## 54473  City Hotel          0      197    2016         July
## 54596  City Hotel          0      201    2016         July
## 54727  City Hotel          1       59    2016         July
## 54778  City Hotel          1      230    2016         July
## 54888  City Hotel          0      236    2016         July
## 54889  City Hotel          1      225    2016         July
## 55000  City Hotel          1       36    2016       August
## 55119  City Hotel          1      237    2016       August
## 55320  City Hotel          1      219    2016       August
## 55425  City Hotel          1       14    2016       August
## 55501  City Hotel          1      251    2016       August
## 55727  City Hotel          1      151    2016       August
## 55869  City Hotel          1      178    2016       August
## 56030  City Hotel          1      247    2016       August
## 56177  City Hotel          1      156    2016       August
```

```
## 56294   City Hotel              1       179        2016      September
## 56384   City Hotel              1        62        2016      September
## 56393   City Hotel              1        40        2016      September
## 56645   City Hotel              1        17        2016      September
## 56755   City Hotel              1        32        2016      September
## 57039   City Hotel              1        31        2016      September
## 57212   City Hotel              1        76        2016      September
## 59655   City Hotel              1       158        2016        October
## 60512   City Hotel              1       255        2016       November
## 60718   City Hotel              1        44        2016       November
## 60832   City Hotel              1        30        2016       November
## 60998   City Hotel              1       136        2016       November
## 61037   City Hotel              1       215        2016       November
## 61094   City Hotel              1       195        2016       December
## 61428   City Hotel              1         9        2016       December
## 61697   City Hotel              1       381        2016       December
## 61789   City Hotel              1       102        2016       December
## 61934   City Hotel              1       251        2016       December
## 62131   City Hotel              1       111        2017        January
## 62139   City Hotel              1       268        2017        January
## 63293   City Hotel              1       148        2017       February
## 63817   City Hotel              1       134        2017       February
## 63896   City Hotel              1       148        2017       February
## 64290   City Hotel              1       144        2017          March
## 64860   City Hotel              1       160        2017          March
## 65111   City Hotel              1       200        2017          March
## 65114   City Hotel              1       200        2017          March
## 65119   City Hotel              1       172        2017          March
## 65273   City Hotel              1       160        2017          March
## 65672   City Hotel              1       230        2017          April
## 65751   City Hotel              1       179        2017          April
## 65758   City Hotel              1       212        2017          April
## 65995   City Hotel              1       219        2017          April
## 66476   City Hotel              1       204        2017          April
## 67045   City Hotel              1       232        2017          April
## 68434   City Hotel              1       266        2017            May
## 68855   City Hotel              1       209        2017            May
## 68990   City Hotel              1       273        2017            May
## 69018   City Hotel              1       310        2017            May
## 69045   City Hotel              1       311        2017            May
## 69047   City Hotel              1       310        2017            May
## 69762   City Hotel              1       238        2017           June
## 71385   City Hotel              1       257        2017           July
## 71511   City Hotel              1       315        2017           July
## 71513   City Hotel              1       315        2017           July
## 71516   City Hotel              1       315        2017           July
## 71668   City Hotel              1       340        2017           July
## 73137   City Hotel              1       308        2017         August
## 73186   City Hotel              1       316        2017         August
## 79597   City Hotel              0       296        2015        October
## 81228   City Hotel              0        13        2015       December
## 81376   City Hotel              1        22        2015       December
## 82202   City Hotel              1        13        2015       December
## 82288   City Hotel              0         0        2017        January
```

```
## 82304  City Hotel          0      5      2015      December
## 82649  City Hotel          1    150      2016         March
## 82989  City Hotel          0      0      2016       January
## 83206  City Hotel          0     13      2016       January
## 83638  City Hotel          0     28      2016      February
## 84047  City Hotel          0    121      2016      February
## 84455  City Hotel          0     39      2016      February
## 84543  City Hotel          0      1      2016      February
## 86042  City Hotel          0    130      2016         March
## 86800  City Hotel          0      0      2016         April
## 87205  City Hotel          0     70      2016         April
## 88358  City Hotel          0     40      2016         April
## 88754  City Hotel          0      3      2016      November
## 88755  City Hotel          0      3      2016      November
## 88756  City Hotel          0     44      2016      November
## 88757  City Hotel          0     14      2016      November
## 88758  City Hotel          0    124      2016      November
## 88759  City Hotel          0      7      2016      November
## 88760  City Hotel          0     16      2016      November
## 88761  City Hotel          0     90      2016      November
## 88762  City Hotel          0     13      2016      November
## 88996  City Hotel          0     38      2016           May
## 89159  City Hotel          0     53      2016           May
## 89883  City Hotel          0     84      2016           May
## 90127  City Hotel          0     87      2016           May
## 90129  City Hotel          0     87      2016           May
## 90797  City Hotel          0     14      2016          June
## 90800  City Hotel          0     14      2016          June
## 90995  City Hotel          0     34      2016          June
## 91161  City Hotel          0      3      2016          June
## 92142  City Hotel          0    131      2016          June
## 92172  City Hotel          0    120      2016          June
## 93683  City Hotel          0    237      2016          July
## 93726  City Hotel          0     82      2016          July
## 93851  City Hotel          0     72      2016          July
## 93915  City Hotel          0     85      2016          July
## 93928  City Hotel          0      1      2016          July
## 94107  City Hotel          0    242      2016          July
## 94465  City Hotel          0     65      2016        August
## 94573  City Hotel          0     94      2016        August
## 95061  City Hotel          0     93      2016        August
## 95136  City Hotel          0     14      2016        August
## 95265  City Hotel          0    136      2016        August
## 95303  City Hotel          0     14      2016        August
## 95329  City Hotel          0    145      2016        August
## 95395  City Hotel          0    143      2016        August
## 95452  City Hotel          0     11      2016        August
## 95618  City Hotel          0    180      2016        August
## 95656  City Hotel          0    120      2016        August
## 95678  City Hotel          0     78      2016        August
## 95710  City Hotel          0     21      2016        August
## 95957  City Hotel          0    142      2016        August
## 96116  City Hotel          0    178      2016        August
## 96186  City Hotel          0    185      2016        August
```

```
## 96805  City Hotel            0    186    2016    September
## 97756  City Hotel            0     34    2016    September
## 98014  City Hotel            0      3    2016    September
## 98415  City Hotel            0    107    2016    September
## 99042  City Hotel            0     71    2016      October
## 99318  City Hotel            0     88    2016      October
## 99412  City Hotel            0    125    2016      October
## 99929  City Hotel            0     57    2016      October
## 100052 City Hotel            0     66    2016      October
## 100070 City Hotel            0    130    2016      October
## 100390 City Hotel            0    208    2016      October
## 100461 City Hotel            0    216    2016      October
## 100645 City Hotel            0      0    2016      October
## 100683 City Hotel            0     92    2016      October
## 100816 City Hotel            0    241    2016      October
## 100880 City Hotel            0    200    2016      October
## 100955 City Hotel            0    182    2016      October
## 102640 City Hotel            0     53    2016     November
## 102786 City Hotel            0     38    2016     December
## 102948 City Hotel            0     56    2016     December
## 102959 City Hotel            0     61    2016     December
## 103008 City Hotel            0     56    2016     December
## 103371 City Hotel            0    109    2016     December
## 103487 City Hotel            0    197    2016     December
## 103622 City Hotel            0    104    2016     December
## 103632 City Hotel            0    104    2016     December
## 103645 City Hotel            0    247    2016     December
## 104071 City Hotel            0    110    2017      January
## 104270 City Hotel            0    128    2017      January
## 104557 City Hotel            0    137    2017      January
## 104749 City Hotel            0     76    2017      January
## 104889 City Hotel            0     16    2017      January
## 105361 City Hotel            0      0    2017     February
## 106800 City Hotel            0    201    2017     February
## 108466 City Hotel            0     34    2017        March
## 108949 City Hotel            0     82    2017        April
## 109440 City Hotel            0    177    2017        April
## 109466 City Hotel            0    202    2017        April
## 109695 City Hotel            0    182    2017        April
## 109712 City Hotel            0    181    2017        April
## 110075 City Hotel            0    255    2017        April
## 110414 City Hotel            0    202    2017        April
## 112740 City Hotel            0    248    2017          May
## 112764 City Hotel            0    159    2017          May
## 113751 City Hotel            0    239    2017         June
## 113902 City Hotel            0     28    2017         June
## 113903 City Hotel            0     28    2017         June
## 115966 City Hotel            0    250    2017         July
## 116208 City Hotel            0    315    2017         July
## 116568 City Hotel            0    295    2017         July
## 116842 City Hotel            0     14    2017         July
## 117138 City Hotel            0    351    2017         July
## 117140 City Hotel            0    329    2017         July
## 117214 City Hotel            0    296    2017         July
```

```
## 117284 City Hotel            0       276         2017                  July
## 117313 City Hotel            0       291         2017                  July
## 117463 City Hotel            0       159         2017                  July
## 118210 City Hotel            0        10         2017                August
##        arrival_date_week_number arrival_date_day_of_month
## 40985                        33                        10
## 41049                        33                        11
## 41447                        34                        16
## 41953                        35                        28
## 45159                        43                        19
## 46133                        51                        13
## 46151                        51                        18
## 46187                        52                        23
## 46197                        52                        24
## 46221                        52                        26
## 46489                         2                         3
## 46547                         2                         6
## 46560                         2                         7
## 46647                         3                        14
## 46649                         3                        14
## 46656                         3                        14
## 46689                         3                        15
## 46741                         4                        18
## 47047                         6                         5
## 47075                         6                         6
## 47111                         7                         7
## 47122                         7                         8
## 47134                         7                         9
## 47176                         7                        11
## 47202                         7                        12
## 47435                         9                        21
## 47569                         9                        27
## 47818                        10                         4
## 48225                        12                        19
## 48234                        12                        19
## 48456                        13                        23
## 48509                        13                        24
## 48631                        13                        25
## 48776                        14                        30
## 48847                        14                        31
## 48901                        14                         1
## 49008                        15                         4
## 49016                        15                         4
## 49404                        16                        12
## 50163                        18                        24
## 51331                        21                        18
## 51586                        21                        21
## 52157                        23                        31
## 53335                        25                        17
## 53642                        27                        26
## 54001                        28                         4
## 54123                        28                         7
## 54137                        28                         7
## 54141                        28                         7
```

```
## 54225                      28                         9
## 54411                      29                        15
## 54473                      30                        17
## 54596                      30                        21
## 54727                      31                        24
## 54778                      31                        26
## 54888                      31                        28
## 54889                      31                        28
## 55000                      32                         2
## 55119                      32                         5
## 55320                      33                        10
## 55425                      33                        13
## 55501                      34                        14
## 55727                      34                        19
## 55869                      35                        23
## 56030                      35                        27
## 56177                      36                        31
## 56294                      36                         2
## 56384                      37                         4
## 56393                      37                         4
## 56645                      37                         9
## 56755                      38                        12
## 57039                      38                        16
## 57212                      39                        21
## 59655                      45                        30
## 60512                      46                        12
## 60718                      47                        19
## 60832                      48                        23
## 60998                      49                        28
## 61037                      49                        30
## 61094                      49                         2
## 61428                      50                        10
## 61697                      52                        23
## 61789                      53                        26
## 61934                      53                        28
## 62131                       1                         2
## 62139                       1                         2
## 63293                       6                         5
## 63817                       8                        22
## 63896                       8                        24
## 64290                       9                         4
## 64860                      11                        17
## 65111                      12                        24
## 65114                      12                        24
## 65119                      12                        24
## 65273                      13                        30
## 65672                      14                         6
## 65751                      14                         7
## 65758                      14                         7
## 65995                      15                        12
## 66476                      16                        21
## 67045                      17                        27
## 68434                      20                        17
## 68855                      21                        21
```

```
## 68990            21            24
## 69018            21            24
## 69045            21            24
## 69047            21            24
## 69762            23             5
## 71385            27             4
## 71511            27             7
## 71513            27             7
## 71516            27             7
## 71668            28             9
## 73137            33            15
## 73186            33            16
## 79597            43            24
## 81228            49             4
## 81376            50             9
## 82202            53            29
## 82288             3            21
## 82304            52            22
## 82649            13            24
## 82989             2             8
## 83206             4            21
## 83638             6             5
## 84047             8            15
## 84455             9            22
## 84543             9            25
## 86042            13            25
## 86800            15             8
## 87205            16            12
## 88358            18            30
## 88754            46             7
## 88755            46             7
## 88756            45             5
## 88757            46             7
## 88758            45             5
## 88759            46             7
## 88760            46             6
## 88761            46             7
## 88762            46             8
## 88996            20            13
## 89159            21            16
## 89883            22            26
## 90127            23            29
## 90129            23            29
## 90797            24             9
## 90800            24             9
## 90995            25            12
## 91161            25            16
## 92142            27            26
## 92172            27            30
## 93683            31            24
## 93726            30            23
## 93851            31            27
## 93915            31            26
## 93928            29            16
```

```
## 94107       31        29
## 94465       32         4
## 94573       32         4
## 95061       33        13
## 95136       33        13
## 95265       34        15
## 95303       34        17
## 95329       34        15
## 95395       34        18
## 95452       34        19
## 95618       34        20
## 95656       34        16
## 95678       34        19
## 95710       34        20
## 95957       35        21
## 96116       35        27
## 96186       35        25
## 96805       37         4
## 97756       39        18
## 98014       39        20
## 98415       39        24
## 99042       41         7
## 99318       41         8
## 99412       42         9
## 99929       42        15
## 100052      43        20
## 100070      43        21
## 100390      44        23
## 100461      44        23
## 100645      44        27
## 100683      44        29
## 100816      44        29
## 100880      45        31
## 100955      45        31
## 102640      49        29
## 102786      49         2
## 102948      50         7
## 102959      50         8
## 103008      50         8
## 103371      51        16
## 103487      52        21
## 103622      53        25
## 103632      53        25
## 103645      52        24
## 104071       1         3
## 104270       1         6
## 104557       2        13
## 104749       3        15
## 104889       3        20
## 105361       5         4
## 106800       9        27
## 108466      12        21
## 108949      13         1
## 109440      14         7
```

```
## 109466                       15                    9
## 109695                       15                   11
## 109712                       15                   10
## 110075                       15                   13
## 110414                       17                   23
## 112740                       21                   25
## 112764                       21                   24
## 113751                       23                    4
## 113902                       24                   13
## 113903                       24                   13
## 115966                       27                    8
## 116208                       28                   11
## 116568                       29                   20
## 116842                       30                   24
## 117138                       30                   27
## 117140                       30                   24
## 117214                       30                   27
## 117284                       31                   30
## 117313                       30                   29
## 117463                       31                   31
## 118210                       32                   12
##      stays_in_weekend_nights stays_in_week_nights adults children babies meal
## 40985                       1                    1      0        3      0   BB
## 41049                       0                    3      0        2      0   BB
## 41447                       2                    0      0        2      0   BB
## 41953                       0                    1      0        2      0   BB
## 45159                       1                    3      0        2      0   BB
## 46133                       1                    0      0        3      0   BB
## 46151                       0                    1      0        2      1   BB
## 46187                       0                    3      0        2      0   BB
## 46197                       0                    2      0        2      0   BB
## 46221                       2                    1      0        2      0   BB
## 46489                       1                    0      0        2      0   BB
## 46547                       0                    2      0        2      0   BB
## 46560                       0                    1      0        2      0   BB
## 46647                       0                    3      0        2      0   BB
## 46649                       0                    3      0        2      0   BB
## 46656                       0                    3      0        2      0   BB
## 46689                       2                    2      0        2      0   BB
## 46741                       1                    3      0        2      0   BB
## 47047                       1                    2      0        2      0   BB
## 47075                       1                    1      0        2      0   BB
## 47111                       2                    3      0        1      0   BB
## 47122                       1                    3      0        2      0   BB
## 47134                       0                    3      0        2      0   BB
## 47176                       1                    3      0        2      0   BB
## 47202                       1                    2      0        2      0   BB
## 47435                       2                    1      0        2      0   BB
## 47569                       2                    2      0        2      0   BB
## 47818                       2                    2      0        2      0   BB
## 48225                       0                    1      0        2      0   BB
## 48234                       2                    1      0        2      0   BB
## 48456                       2                    5      0        2      0   BB
## 48509                       2                    3      0        2      0   BB
```

```
## 48631                       2                    2       0       2       0     BB
## 48776                       0                    3       0       2       0     BB
## 48847                       0                    3       0       2       0     BB
## 48901                       2                    4       0       1       0     BB
## 49008                       1                    3       0       2       0     BB
## 49016                       1                    3       0       2       0     BB
## 49404                       0                    5       0       2       0     BB
## 50163                       2                    2       0       2       0     BB
## 51331                       0                    2       0       2       0     BB
## 51586                       2                    4       0       2       0     BB
## 52157                       0                    3       0       2       0     BB
## 53335                       2                    2       0       2       0     BB
## 53642                       2                    2       0       2       0     BB
## 54001                       3                   10       0       2       0     BB
## 54123                       0                    2       0       2       0     BB
## 54137                       0                    2       0       2       0     BB
## 54141                       0                    2       0       2       0     BB
## 54225                       2                    1       0       2       0     BB
## 54411                       0                    1       0       2       0     BB
## 54473                       1                    0       0       2       0     BB
## 54596                       0                    1       0       2       0     BB
## 54727                       2                    4       0       3       0     BB
## 54778                       0                    3       0       2       0     BB
## 54888                       2                    4       0       2       0     BB
## 54889                       2                    4       0       3       0     BB
## 55000                       0                    3       0       2       0     BB
## 55119                       0                    2       0       2       0     BB
## 55320                       0                    3       0       2       0     BB
## 55425                       1                    1       0       2       0     BB
## 55501                       2                    3       0       2       0     BB
## 55727                       2                    3       0       2       0     BB
## 55869                       0                    3       0       2       0     BB
## 56030                       1                    1       0       2       0     BB
## 56177                       0                    3       0       2       0     BB
## 56294                       2                    5       0       2       0     BB
## 56384                       2                    2       0       2       0     BB
## 56393                       2                    5       0       2       0     BB
## 56645                       1                    2       0       2       0     BB
## 56755                       1                    4       0       2       0     BB
## 57039                       2                    2       0       2       0     BB
## 57212                       0                    3       0       2       0     BB
## 59655                       2                    2       0       2       0     BB
## 60512                       2                    5       0       2       0     BB
## 60718                       0                    1       0       2       0     BB
## 60832                       0                    4       0       2       0     BB
## 60998                       1                    4       0       2       0     BB
## 61037                       0                    4       0       2       0     BB
## 61094                       0                    2       0       2       0     BB
## 61428                       0                    1       0       2       0     BB
## 61697                       1                    2       0       2       0     BB
## 61789                       1                    3       0       2       0     BB
## 61934                       2                    9       0       2       0     BB
## 62131                       1                    3       0       2       0     BB
## 62139                       1                    4       0       2       0     BB
```

```
## 63293                2          5       0       2       0       BB
## 63817                2          4       0       2       0       BB
## 63896                2          2       0       2       0       BB
## 64290                2          1       0       2       0       BB
## 64860                2          6       0       2       0       BB
## 65111                2          2       0       2       0       BB
## 65114                2          2       0       2       0       BB
## 65119                2          6       0       2       0       BB
## 65273                1          3       0       2       0       BB
## 65672                0          3       0       2       0       BB
## 65751                1          2       0       2       0       BB
## 65758                1          2       0       2       0       BB
## 65995                0          4       0       2       0       BB
## 66476                0          1       0       2       0       BB
## 67045                2          3       0       2       0       BB
## 68434                0          3       0       2       0       BB
## 68855                2          4       0       2       0       BB
## 68990                0          3       0       2       0       BB
## 69018                0          4       0       2       0       BB
## 69045                0          4       0       2       0       BB
## 69047                0          4       0       2       0       BB
## 69762                2          5       0       2       0       BB
## 71385                0          3       0       2       0       BB
## 71511                0          1       0       2       0       BB
## 71513                0          1       0       2       0       BB
## 71516                0          1       0       2       0       BB
## 71668                2          2       0       2       0       BB
## 73137                0          4       0       2       0       BB
## 73186                0          3       0       2       0       BB
## 79597                2          4       0       2       0       BB
## 81228                1          2       0       2       0       BB
## 81376                1          4       0       2       1       BB
## 82202                2          5       0       2       0       BB
## 82288                0          1       0       2       0       BB
## 82304                0          5       0       2       0       BB
## 82649                1          3       0       2       0       BB
## 82989                0          2       0       3       0       BB
## 83206                0          3       0       2       0       BB
## 83638                2          2       0       2       0       BB
## 84047                1          3       0       2       0       BB
## 84455                1          4       0       2       0       BB
## 84543                0          3       0       2       0       BB
## 86042                0          1       0       2       0       BB
## 86800                0          1       0       2       0       BB
## 87205                0          4       0       3       0       BB
## 88358                2          3       0       2       0       BB
## 88754                1          1       0       0       4       BB
## 88755                1          1       0       0       4       BB
## 88756                2          2       0       0       4       BB
## 88757                1          1       0       0       4       BB
## 88758                2          2       0       0       4       BB
## 88759                1          1       0       0       4       BB
## 88760                2          1       0       0       4       BB
## 88761                1          1       0       0       4       BB
```

```
## 88762                          0                      1    0    0    4    SC
## 88996                          1                      2    0    2    0    BB
## 89159                          1                      1    0    2    0    BB
## 89883                          0                      2    0    2    0    BB
## 90127                          2                      2    0    2    0    BB
## 90129                          2                      2    0    2    0    BB
## 90797                          0                      3    0    2    0    BB
## 90800                          0                      3    0    2    1    BB
## 90995                          2                      1    0    2    0    BB
## 91161                          0                      1    0    2    0    BB
## 92142                          2                      3    0    2    0    BB
## 92172                          0                      2    0    2    0    BB
## 93683                          1                      0    0    2    0    BB
## 93726                          2                      1    0    2    0    BB
## 93851                          0                      1    0    2    0    BB
## 93915                          0                      3    0    2    0    BB
## 93928                          4                      9    0    2    0    BB
## 94107                          0                      2    0    2    0    BB
## 94465                          0                      1    0    2    0    BB
## 94573                          0                      2    0    2    0    BB
## 95061                          0                      1    0    2    0    BB
## 95136                          1                      1    0    2    0    BB
## 95265                          1                      1    0    2    0    BB
## 95303                          0                      1    0    2    0    BB
## 95329                          1                      2    0    2    0    BB
## 95395                          0                      1    0    2    0    BB
## 95452                          0                      1    0    2    0    BB
## 95618                          0                      1    0    2    0    BB
## 95656                          1                      5    0    3    0    HB
## 95678                          1                      2    0    2    0    BB
## 95710                          2                      1    0    2    0    BB
## 95957                          2                      3    0    2    0    BB
## 96116                          1                      1    0    2    0    BB
## 96186                          2                      3    0    2    0    BB
## 96805                          2                      2    0    2    0    BB
## 97756                          2                      0    0    2    0    BB
## 98014                          0                      3    0    2    0    BB
## 98415                          2                      3    0    2    0    BB
## 99042                          0                      1    0    2    0    BB
## 99318                          2                      2    0    2    0    BB
## 99412                          2                      2    0    2    0    BB
## 99929                          2                      3    0    2    0    BB
## 100052                         0                      2    0    2    0    BB
## 100070                         0                      2    0    2    0    BB
## 100390                         2                      2    0    2    0    BB
## 100461                         2                      3    0    2    0    BB
## 100645                         0                      3    0    2    0    HB
## 100683                         1                      1    0    2    0    BB
## 100816                         2                      2    0    2    0    BB
## 100880                         1                      2    0    2    0    BB
## 100955                         1                      3    0    2    0    BB
## 102640                         0                      4    0    2    0    BB
## 102786                         2                      2    0    2    0    BB
## 102948                         0                      3    0    2    0    BB
```

```
## 102959                        0                        2    0    2    0    BB
## 103008                        0                        3    0    2    0    BB
## 103371                        2                        3    0    2    0    BB
## 103487                        1                        4    0    3    0    HB
## 103622                        2                        1    0    2    0    BB
## 103632                        2                        1    0    2    0    BB
## 103645                        2                        3    0    2    0    BB
## 104071                        0                        2    0    2    0    BB
## 104270                        1                        2    0    2    0    BB
## 104557                        2                        2    0    2    0    BB
## 104749                        2                        4    0    2    0    BB
## 104889                        2                        2    0    2    0    BB
## 105361                        0                        1    0    2    0    BB
## 106800                        1                        3    0    2    0    BB
## 108466                        2                        5    0    1    0    BB
## 108949                        2                        1    0    2    0    BB
## 109440                        2                        2    0    2    0    BB
## 109466                        2                        1    0    2    0    BB
## 109695                        0                        4    0    2    0    BB
## 109712                        1                        4    0    2    0    BB
## 110075                        2                        6    0    2    0    BB
## 110414                        2                        2    0    2    0    BB
## 112740                        0                        3    0    2    0    BB
## 112764                        0                        4    0    3    0    HB
## 113751                        2                        5    0    1    0    BB
## 113902                        0                        1    0    2    0    SC
## 113903                        0                        1    0    2    0    SC
## 115966                        2                        3    0    2    0    BB
## 116208                        0                        5    0    2    0    BB
## 116568                        0                        2    0    2    0    BB
## 116842                        1                        1    0    3    0    BB
## 117138                        0                        3    0    2    0    BB
## 117140                        1                        5    0    2    0    BB
## 117214                        1                        3    0    2    0    BB
## 117284                        2                        1    0    2    0    BB
## 117313                        2                        2    0    2    0    BB
## 117463                        1                        3    0    2    0    SC
## 118210                        2                        2    0    3    0    BB
##         country market_segment distribution_channel is_repeated_guest
## 40985       PRT         Direct               Direct                 0
## 41049       FRA      Online TA                TA/TO                 0
## 41447       PRT         Direct               Direct                 0
## 41953       PRT  Complementary               Direct                 0
## 45159       PRT  Offline TA/TO                TA/TO                 0
## 46133       PRT      Online TA                TA/TO                 0
## 46151       PRT      Online TA                TA/TO                 0
## 46187       DEU      Online TA                TA/TO                 0
## 46197       BEL      Online TA                TA/TO                 0
## 46221       ESP      Online TA                TA/TO                 0
## 46489       PRT      Online TA                TA/TO                 0
## 46547       BRA      Online TA                TA/TO                 0
## 46560       FRA      Online TA                TA/TO                 0
## 46647       ESP      Online TA                TA/TO                 0
## 46649       ESP      Online TA                TA/TO                 0
```

```
## 46656      ESP     Online TA              TA/TO              0
## 46689      OMN     Online TA              TA/TO              0
## 46741      BRA     Online TA              TA/TO              0
## 47047      BEL     Online TA              TA/TO              0
## 47075      PRT     Online TA              TA/TO              0
## 47111      PRT        Direct              Direct             0
## 47122      ITA     Online TA              TA/TO              0
## 47134      POL     Online TA              TA/TO              0
## 47176      KOR        Direct              Direct             0
## 47202      USA     Online TA              TA/TO              0
## 47435      PRT     Online TA              TA/TO              0
## 47569      ITA     Online TA              TA/TO              0
## 47818      CHN     Online TA              TA/TO              0
## 48225      PRT     Online TA              TA/TO              0
## 48234      MEX     Online TA              TA/TO              0
## 48456      CHE        Direct              Direct             0
## 48509      PRT     Online TA              TA/TO              0
## 48631      AUT     Online TA              TA/TO              0
## 48776      PRT     Online TA              TA/TO              0
## 48847      BEL     Online TA              TA/TO              0
## 48901      BEL     Online TA              TA/TO              0
## 49008      PRT     Online TA              TA/TO              0
## 49016      BEL     Online TA              TA/TO              0
## 49404      FRA     Online TA              TA/TO              0
## 50163      NLD     Online TA              TA/TO              0
## 51331      GBR     Online TA              TA/TO              0
## 51586      IND     Online TA              TA/TO              0
## 52157      GBR     Online TA              TA/TO              0
## 53335      PRT        Direct              Direct             0
## 53642      SWE     Online TA              TA/TO              0
## 54001      DEU     Online TA              TA/TO              0
## 54123      PRT     Online TA              TA/TO              0
## 54137      GBR     Online TA              TA/TO              0
## 54141      PRT     Online TA              TA/TO              0
## 54225      NLD     Online TA              TA/TO              0
## 54411      CHE     Online TA              TA/TO              0
## 54473      GBR     Online TA              TA/TO              0
## 54596      PRT     Online TA              TA/TO              0
## 54727      PRT        Direct              Direct             0
## 54778      BEL     Online TA              TA/TO              0
## 54888      NLD     Online TA              TA/TO              0
## 54889      FRA        Direct              Direct             0
## 55000      ESP        Direct              Direct             0
## 55119      NLD     Online TA              TA/TO              0
## 55320      MAR     Online TA              TA/TO              0
## 55425      PRT     Online TA              TA/TO              0
## 55501      DEU     Online TA              TA/TO              0
## 55727      POL     Online TA              TA/TO              0
## 55869      ITA     Online TA              TA/TO              0
## 56030      RUS     Online TA              TA/TO              0
## 56177      ITA     Online TA              TA/TO              0
## 56294      ESP     Online TA              TA/TO              0
## 56384      USA     Online TA              TA/TO              0
## 56393      DEU     Online TA              TA/TO              0
```

```
## 56645      NLD     Online TA              TA/TO              0
## 56755      SAU     Online TA              TA/TO              0
## 57039      TZA     Online TA              TA/TO              0
## 57212      IRL     Online TA              TA/TO              0
## 59655      GBR     Online TA              TA/TO              0
## 60512      TUR     Online TA              TA/TO              0
## 60718      PRT     Online TA              TA/TO              0
## 60832      MAR     Online TA              TA/TO              0
## 60998      ARG     Online TA              TA/TO              0
## 61037      ROU     Online TA              TA/TO              0
## 61094      FRA     Online TA              TA/TO              0
## 61428      PRT  Complementary             Direct             0
## 61697      DEU     Online TA              TA/TO              0
## 61789      ESP     Online TA              TA/TO              0
## 61934      CHE     Online TA              TA/TO              0
## 62131      RUS     Online TA              TA/TO              0
## 62139      RUS     Online TA              TA/TO              0
## 63293      FRA     Online TA              TA/TO              0
## 63817      BRA     Online TA              TA/TO              0
## 63896      BRA     Online TA              TA/TO              0
## 64290      BRA     Online TA              TA/TO              0
## 64860      EGY     Online TA              TA/TO              0
## 65111      HUN     Online TA              TA/TO              0
## 65114      HUN     Online TA              TA/TO              0
## 65119      ARE     Online TA              TA/TO              0
## 65273      ROU     Online TA              TA/TO              0
## 65672      IRL     Online TA              TA/TO              0
## 65751      ESP     Online TA              TA/TO              0
## 65758      ISR     Online TA              TA/TO              0
## 65995      SWE        Direct              Direct             0
## 66476      NLD     Online TA              TA/TO              0
## 67045      POL     Online TA              TA/TO              0
## 68434      AUT     Online TA              TA/TO              0
## 68855      DNK     Online TA              TA/TO              0
## 68990      AUT     Online TA              TA/TO              0
## 69018      DNK     Online TA              TA/TO              0
## 69045      DNK     Online TA              TA/TO              0
## 69047      DNK     Online TA              TA/TO              0
## 69762      FRA     Online TA              TA/TO              0
## 71385      BRA     Online TA              TA/TO              0
## 71511      USA     Online TA              TA/TO              0
## 71513      USA     Online TA              TA/TO              0
## 71516      USA     Online TA              TA/TO              0
## 71668      NOR     Online TA              TA/TO              0
## 73137      ITA     Online TA              TA/TO              0
## 73186      FRA     Online TA              TA/TO              0
## 79597      GBR     Online TA              TA/TO              0
## 81228      ESP        Direct              Direct             0
## 81376      PRT        Direct              Direct             0
## 82202      BRA        Direct              Direct             0
## 82288      PRT        Direct              Direct             1
## 82304      PRT  Complementary             Direct             0
## 82649      PRT     Online TA              TA/TO              0
## 82989      PRT        Direct              Direct             0
```

```
## 83206   PRT    Online TA          TA/TO          0
## 83638   PRT    Online TA          TA/TO          0
## 84047   DNK    Online TA          TA/TO          0
## 84455   FIN    Online TA          TA/TO          0
## 84543   ESP    Online TA          TA/TO          0
## 86042   ITA  Complementary        Direct         0
## 86800   FRA    Online TA          TA/TO          0
## 87205   PRT  Offline TA/TO        TA/TO          0
## 88358   NLD    Online TA          TA/TO          0
## 88754   ISR      Groups           TA/TO          0
## 88755   ISR      Groups           TA/TO          0
## 88756   ITA  Offline TA/TO        TA/TO          0
## 88757   BEL    Online TA          TA/TO          0
## 88758   DEU    Online TA          TA/TO          0
## 88759   FRA    Online TA          TA/TO          0
## 88760    CN    Online TA          TA/TO          0
## 88761   PRT    Online TA          TA/TO          0
## 88762   BEL    Online TA          TA/TO          0
## 88996   FRA    Online TA          TA/TO          0
## 89159   PRT    Online TA          TA/TO          0
## 89883   PRT      Direct           Direct         0
## 90127   PRT    Online TA          TA/TO          0
## 90129   PRT    Online TA          TA/TO          0
## 90797   ITA    Online TA          TA/TO          0
## 90800   ITA    Online TA          TA/TO          0
## 90995   USA    Online TA          TA/TO          0
## 91161   FRA    Online TA          TA/TO          0
## 92142   PRT    Online TA          TA/TO          0
## 92172   FIN    Online TA          TA/TO          0
## 93683   BEL      Direct           Direct         0
## 93726   BEL    Online TA          TA/TO          0
## 93851   BRA    Online TA          TA/TO          0
## 93915   CHE    Online TA          TA/TO          0
## 93928   FRA      Direct           Direct         0
## 94107   BEL      Direct           Direct         0
## 94465   GBR    Online TA          TA/TO          0
## 94573   BEL      Direct           Direct         0
## 95061   FRA    Online TA          TA/TO          0
## 95136   NLD    Online TA          TA/TO          0
## 95265   BEL      Direct           Direct         0
## 95303   BEL    Online TA          TA/TO          0
## 95329   FRA    Online TA          TA/TO          0
## 95395   FRA    Online TA          TA/TO          0
## 95452   BEL    Online TA          TA/TO          0
## 95618   GBR    Online TA          TA/TO          0
## 95656   FRA      Direct           Direct         0
## 95678   GBR    Online TA          TA/TO          0
## 95710   GBR    Online TA          TA/TO          0
## 95957   IRL    Online TA          TA/TO          0
## 96116   DEU    Online TA          TA/TO          0
## 96186   BEL    Online TA          TA/TO          0
## 96805   DEU    Online TA          TA/TO          0
## 97756   CHL    Online TA          TA/TO          0
## 98014   PRT    Online TA          TA/TO          0
```

```
## 98415    DEU    Online TA         TA/TO    0
## 99042    CHE    Online TA         TA/TO    0
## 99318    CHE    Online TA         TA/TO    0
## 99412    DEU    Online TA         TA/TO    0
## 99929    DEU    Online TA         TA/TO    0
## 100052   RUS    Online TA         TA/TO    0
## 100070   IRL    Online TA         TA/TO    0
## 100390   GBR    Online TA         TA/TO    0
## 100461   GBR    Online TA         TA/TO    0
## 100645   FRA    Online TA         TA/TO    0
## 100683   ESP    Online TA         TA/TO    0
## 100816   SWE    Online TA         TA/TO    0
## 100880   CHE    Online TA         TA/TO    0
## 100955   GBR    Online TA         TA/TO    0
## 102640   ROU    Online TA         TA/TO    0
## 102786   ESP    Online TA         TA/TO    0
## 102948   ITA    Online TA         TA/TO    0
## 102959   PRT    Online TA         TA/TO    0
## 103008   ESP    Online TA         TA/TO    0
## 103371   BRA    Online TA         TA/TO    0
## 103487   FRA    Offline TA/TO     TA/TO    0
## 103622   PRT    Online TA         TA/TO    0
## 103632   FRA    Online TA         TA/TO    0
## 103645   PRT    Online TA         TA/TO    0
## 104071   ESP    Online TA         TA/TO    0
## 104270   THA    Online TA         TA/TO    0
## 104557   BEL    Online TA         TA/TO    0
## 104749   BRA    Online TA         TA/TO    0
## 104889   PRT       Direct         Direct   0
## 105361   PRT       Direct         Direct   0
## 106800   NLD    Online TA         TA/TO    0
## 108466   BLR       Direct         Direct   0
## 108949   FRA       Direct         Direct   0
## 109440   LUX    Online TA         TA/TO    0
## 109466   USA    Online TA         TA/TO    0
## 109695   BEL    Online TA         TA/TO    0
## 109712   DEU    Online TA         TA/TO    0
## 110075   USA    Online TA         TA/TO    0
## 110414   CHE    Online TA         TA/TO    0
## 112740   FRA    Online TA         TA/TO    0
## 112764   FRA    Online TA         TA/TO    0
## 113751   FRA    Online TA         TA/TO    0
## 113902   DEU    Online TA         TA/TO    0
## 113903   DEU    Online TA         TA/TO    0
## 115966   JOR    Online TA         TA/TO    0
## 116208   FRA    Online TA         TA/TO    0
## 116568   ZAF       Direct         Direct   0
## 116842   PRT       Direct         Direct   0
## 117138   CHE    Online TA         TA/TO    0
## 117140   GBR    Online TA         TA/TO    0
## 117214   GBR    Online TA         TA/TO    0
## 117284   DEU    Online TA         TA/TO    0
## 117313   PRT    Online TA         TA/TO    0
## 117463   FRA    Online TA         TA/TO    0
```

```
## 118210      MAR       Direct              Direct                      0
##         previous_cancellations previous_bookings_not_canceled reserved_room_type
## 40985                      0                             0                 B
## 41049                      0                             0                 B
## 41447                      0                             0                 B
## 41953                      0                             0                 B
## 45159                      0                             0                 B
## 46133                      0                             0                 B
## 46151                      0                             0                 B
## 46187                      0                             0                 B
## 46197                      0                             0                 B
## 46221                      0                             0                 B
## 46489                      0                             0                 B
## 46547                      0                             0                 B
## 46560                      0                             0                 B
## 46647                      0                             0                 B
## 46649                      0                             0                 B
## 46656                      0                             0                 B
## 46689                      0                             0                 B
## 46741                      0                             0                 B
## 47047                      0                             0                 B
## 47075                      0                             0                 B
## 47111                      0                             0                 B
## 47122                      0                             0                 B
## 47134                      0                             0                 B
## 47176                      0                             0                 B
## 47202                      0                             0                 B
## 47435                      0                             0                 B
## 47569                      0                             0                 B
## 47818                      0                             0                 B
## 48225                      0                             0                 B
## 48234                      0                             0                 B
## 48456                      0                             0                 B
## 48509                      0                             0                 B
## 48631                      0                             0                 B
## 48776                      0                             0                 B
## 48847                      0                             0                 B
## 48901                      0                             0                 B
## 49008                      0                             0                 B
## 49016                      0                             0                 B
## 49404                      0                             0                 B
## 50163                      0                             0                 A
## 51331                      0                             0                 B
## 51586                      0                             0                 B
## 52157                      0                             0                 B
## 53335                      0                             0                 B
## 53642                      0                             0                 B
## 54001                      0                             0                 B
## 54123                      0                             0                 B
## 54137                      0                             0                 B
## 54141                      0                             0                 B
## 54225                      0                             0                 B
## 54411                      0                             0                 B
## 54473                      0                             0                 B
```

```
## 54596                    0                         0                    B
## 54727                    0                         0                    B
## 54778                    0                         0                    B
## 54888                    0                         0                    B
## 54889                    0                         0                    B
## 55000                    0                         0                    B
## 55119                    0                         0                    B
## 55320                    0                         0                    B
## 55425                    0                         0                    G
## 55501                    0                         0                    B
## 55727                    0                         0                    B
## 55869                    0                         0                    B
## 56030                    0                         0                    B
## 56177                    0                         0                    B
## 56294                    0                         0                    B
## 56384                    0                         0                    B
## 56393                    0                         0                    B
## 56645                    0                         0                    B
## 56755                    0                         0                    B
## 57039                    0                         0                    B
## 57212                    0                         0                    B
## 59655                    0                         0                    B
## 60512                    0                         0                    B
## 60718                    0                         0                    B
## 60832                    0                         0                    B
## 60998                    0                         0                    B
## 61037                    0                         0                    B
## 61094                    0                         0                    B
## 61428                    0                         0                    B
## 61697                    0                         0                    B
## 61789                    0                         0                    B
## 61934                    0                         0                    B
## 62131                    0                         0                    B
## 62139                    0                         0                    B
## 63293                    0                         0                    B
## 63817                    0                         0                    B
## 63896                    0                         0                    B
## 64290                    0                         0                    B
## 64860                    0                         0                    B
## 65111                    0                         0                    B
## 65114                    0                         0                    B
## 65119                    0                         0                    B
## 65273                    0                         0                    B
## 65672                    0                         0                    B
## 65751                    0                         0                    B
## 65758                    0                         0                    B
## 65995                    0                         0                    B
## 66476                    0                         0                    B
## 67045                    0                         0                    B
## 68434                    0                         0                    B
## 68855                    0                         0                    B
## 68990                    0                         0                    B
## 69018                    0                         0                    B
## 69045                    0                         0                    B
```

```
## 69047                  0                              0                    B
## 69762                  0                              0                    B
## 71385                  0                              0                    B
## 71511                  0                              0                    B
## 71513                  0                              0                    B
## 71516                  0                              0                    B
## 71668                  0                              0                    B
## 73137                  0                              0                    B
## 73186                  0                              0                    B
## 79597                  0                              0                    B
## 81228                  0                              0                    B
## 81376                  0                              0                    B
## 82202                  1                              0                    B
## 82288                  0                              1                    A
## 82304                  0                              0                    B
## 82649                  1                              0                    B
## 82989                  0                              0                    B
## 83206                  0                              0                    B
## 83638                  0                              0                    B
## 84047                  0                              0                    B
## 84455                  0                              0                    B
## 84543                  0                              0                    B
## 86042                  0                              0                    A
## 86800                  0                              0                    F
## 87205                  0                              0                    B
## 88358                  0                              0                    B
## 88754                  0                              0                    A
## 88755                  0                              0                    A
## 88756                  0                              0                    A
## 88757                  0                              0                    A
## 88758                  0                              0                    A
## 88759                  0                              0                    D
## 88760                  0                              0                    A
## 88761                  0                              0                    A
## 88762                  0                              0                    A
## 88996                  0                              0                    B
## 89159                  0                              0                    B
## 89883                  0                              0                    B
## 90127                  0                              0                    B
## 90129                  0                              0                    B
## 90797                  0                              0                    B
## 90800                  0                              0                    B
## 90995                  0                              0                    B
## 91161                  0                              0                    B
## 92142                  0                              0                    B
## 92172                  0                              0                    B
## 93683                  0                              0                    B
## 93726                  0                              0                    B
## 93851                  0                              0                    B
## 93915                  0                              0                    B
## 93928                  0                              0                    E
## 94107                  0                              0                    B
## 94465                  0                              0                    B
## 94573                  0                              0                    B
```

```
## 95061                      0                         0                   B
## 95136                      0                         0                   B
## 95265                      0                         0                   B
## 95303                      0                         0                   B
## 95329                      0                         0                   B
## 95395                      0                         0                   B
## 95452                      0                         0                   B
## 95618                      0                         0                   B
## 95656                      0                         0                   D
## 95678                      0                         0                   B
## 95710                      0                         0                   B
## 95957                      0                         0                   B
## 96116                      0                         0                   B
## 96186                      0                         0                   B
## 96805                      0                         0                   B
## 97756                      0                         0                   B
## 98014                      0                         0                   B
## 98415                      0                         0                   B
## 99042                      0                         0                   B
## 99318                      0                         0                   B
## 99412                      0                         0                   B
## 99929                      0                         0                   B
## 100052                     0                         0                   B
## 100070                     0                         0                   B
## 100390                     0                         0                   B
## 100461                     0                         0                   B
## 100645                     0                         0                   F
## 100683                     0                         0                   B
## 100816                     0                         0                   B
## 100880                     0                         0                   B
## 100955                     0                         0                   B
## 102640                     0                         0                   B
## 102786                     0                         0                   B
## 102948                     0                         0                   B
## 102959                     0                         0                   B
## 103008                     0                         0                   B
## 103371                     0                         0                   B
## 103487                     0                         0                   A
## 103622                     0                         0                   B
## 103632                     0                         0                   B
## 103645                     0                         0                   B
## 104071                     0                         0                   B
## 104270                     0                         0                   B
## 104557                     0                         0                   B
## 104749                     0                         0                   B
## 104889                     0                         0                   B
## 105361                     0                         0                   A
## 106800                     0                         0                   B
## 108466                     0                         0                   B
## 108949                     0                         0                   B
## 109440                     0                         0                   B
## 109466                     0                         0                   B
## 109695                     0                         0                   B
## 109712                     0                         0                   B
```

```
## 110075                        0                         0                     B
## 110414                        0                         0                     B
## 112740                        0                         0                     B
## 112764                        0                         0                     A
## 113751                        0                         0                     B
## 113902                        0                         0                     A
## 113903                        0                         0                     A
## 115966                        0                         0                     B
## 116208                        0                         0                     B
## 116568                        0                         0                     B
## 116842                        0                         0                     A
## 117138                        0                         0                     B
## 117140                        0                         0                     B
## 117214                        0                         0                     B
## 117284                        0                         0                     B
## 117313                        0                         0                     B
## 117463                        0                         0                     A
## 118210                        0                         0                     B
##       assigned_room_type booking_changes deposit_type agent company
## 40985                  B               1   No Deposit  NULL    NULL
## 41049                  B               1   No Deposit     7    NULL
## 41447                  B               1   No Deposit  NULL    NULL
## 41953                  B               0   No Deposit  NULL      45
## 45159                  B               0   No Deposit    13    NULL
## 46133                  B               0   No Deposit     8    NULL
## 46151                  B               0   No Deposit     9    NULL
## 46187                  B               0   No Deposit     9    NULL
## 46197                  B               0   No Deposit     9    NULL
## 46221                  B               0   No Deposit     9    NULL
## 46489                  B               2   No Deposit     9    NULL
## 46547                  B               0   No Deposit     9    NULL
## 46560                  B               0   No Deposit     9    NULL
## 46647                  B               1   No Deposit     9    NULL
## 46649                  B               0   No Deposit     9    NULL
## 46656                  B               0   No Deposit     9    NULL
## 46689                  B               0   No Deposit     9    NULL
## 46741                  B               1   No Deposit     9    NULL
## 47047                  B               0   No Deposit     9    NULL
## 47075                  B               0   No Deposit     9    NULL
## 47111                  B               0   No Deposit    14    NULL
## 47122                  B               0   No Deposit     9    NULL
## 47134                  B               0   No Deposit     9    NULL
## 47176                  B               0   No Deposit    14    NULL
## 47202                  B               0   No Deposit     9    NULL
## 47435                  B               1   No Deposit     9    NULL
## 47569                  B               0   No Deposit     9    NULL
## 47818                  B               0   No Deposit     9    NULL
## 48225                  B               1   No Deposit     9    NULL
## 48234                  B               0   No Deposit     9    NULL
## 48456                  B               0   No Deposit    14    NULL
## 48509                  B               0   No Deposit     8    NULL
## 48631                  B               0   No Deposit     9    NULL
## 48776                  B               0   No Deposit     9    NULL
## 48847                  B               0   No Deposit     9    NULL
```

```
## 48901                         B          1   No Deposit     9    NULL
## 49008                         B          2   No Deposit     9    NULL
## 49016                         B          0   No Deposit     9    NULL
## 49404                         B          0   No Deposit     9    NULL
## 50163                         A          1   No Deposit     9    NULL
## 51331                         B          0   No Deposit     9    NULL
## 51586                         B          0   No Deposit     9    NULL
## 52157                         B          0   No Deposit     9    NULL
## 53335                         B          0   No Deposit  NULL    NULL
## 53642                         B          0   No Deposit     9    NULL
## 54001                         B          0   No Deposit     9    NULL
## 54123                         A          0   No Deposit     9    NULL
## 54137                         B          0   No Deposit     9    NULL
## 54141                         B          0   No Deposit     9    NULL
## 54225                         B          1   No Deposit     9    NULL
## 54411                         A          0   No Deposit     9    NULL
## 54473                         B          0   No Deposit     9    NULL
## 54596                         A          0   No Deposit     9    NULL
## 54727                         B          0   No Deposit  NULL    NULL
## 54778                         B          0   No Deposit     9    NULL
## 54888                         B          1   No Deposit     9    NULL
## 54889                         B          0   No Deposit    14    NULL
## 55000                         B          0   No Deposit    14    NULL
## 55119                         B          0   No Deposit     9    NULL
## 55320                         B          0   No Deposit     9    NULL
## 55425                         G          0   No Deposit     7    NULL
## 55501                         B          0   No Deposit     9    NULL
## 55727                         B          0   No Deposit     9    NULL
## 55869                         B          0   No Deposit     9    NULL
## 56030                         B          0   No Deposit     9    NULL
## 56177                         B          1   No Deposit     9    NULL
## 56294                         B          3   No Deposit     9    NULL
## 56384                         B          0   No Deposit     9    NULL
## 56393                         B          0   No Deposit     9    NULL
## 56645                         B          0   No Deposit     9    NULL
## 56755                         B          0   No Deposit     9    NULL
## 57039                         B          0   No Deposit     9    NULL
## 57212                         B          0   No Deposit     9    NULL
## 59655                         B          0   No Deposit     9    NULL
## 60512                         B          0   No Deposit     9    NULL
## 60718                         B          0   No Deposit     9    NULL
## 60832                         B          0   No Deposit     9    NULL
## 60998                         B          0   No Deposit     9    NULL
## 61037                         B          0   No Deposit     9    NULL
## 61094                         B          0   No Deposit     9    NULL
## 61428                         A          0   No Deposit  NULL      45
## 61697                         B          0   No Deposit     9    NULL
## 61789                         B          0   No Deposit     9    NULL
## 61934                         B          1   No Deposit     9    NULL
## 62131                         B          0   No Deposit     9    NULL
## 62139                         B          0   No Deposit     9    NULL
## 63293                         B          0   No Deposit     9    NULL
## 63817                         B          0   No Deposit     9    NULL
## 63896                         B          1   No Deposit     9    NULL
```

```
## 64290                 B          0   No Deposit     9    NULL
## 64860                 B          0   No Deposit     9    NULL
## 65111                 B          0   No Deposit     9    NULL
## 65114                 B          0   No Deposit     9    NULL
## 65119                 B          0   No Deposit     9    NULL
## 65273                 B          0   No Deposit     9    NULL
## 65672                 B          0   No Deposit     9    NULL
## 65751                 B          0   No Deposit     9    NULL
## 65758                 B          0   No Deposit     9    NULL
## 65995                 B          0   No Deposit    14    NULL
## 66476                 B          0   No Deposit     9    NULL
## 67045                 B          0   No Deposit     9    NULL
## 68434                 B          0   No Deposit     9    NULL
## 68855                 B          0   No Deposit     9    NULL
## 68990                 B          0   No Deposit     9    NULL
## 69018                 B          0   No Deposit     9    NULL
## 69045                 B          2   No Deposit     9    NULL
## 69047                 B          0   No Deposit     9    NULL
## 69762                 B          0   No Deposit     9    NULL
## 71385                 B          0   No Deposit     9    NULL
## 71511                 B          0   No Deposit     9    NULL
## 71513                 B          0   No Deposit     9    NULL
## 71516                 B          2   No Deposit     9    NULL
## 71668                 B          0   No Deposit     9    NULL
## 73137                 B          0   No Deposit     9    NULL
## 73186                 B          0   No Deposit     9    NULL
## 79597                 B          0   No Deposit     7    NULL
## 81228                 B          0   No Deposit    14    NULL
## 81376                 B          1   No Deposit    14    NULL
## 82202                 B          1   No Deposit  NULL    NULL
## 82288                 A          1   No Deposit  NULL    NULL
## 82304                 B          1   No Deposit  NULL    NULL
## 82649                 B          0   No Deposit     8    NULL
## 82989                 B          1   No Deposit  NULL    NULL
## 83206                 B          0   No Deposit     9    NULL
## 83638                 B          0   No Deposit     9    NULL
## 84047                 B          1   No Deposit     7    NULL
## 84455                 B          1   No Deposit     9    NULL
## 84543                 B          1   No Deposit     9    NULL
## 86042                 D          1   No Deposit  NULL    NULL
## 86800                 B          0   No Deposit     9    NULL
## 87205                 B          0   No Deposit    20    NULL
## 88358                 B          0   No Deposit     9    NULL
## 88754                 D          0   No Deposit    37    NULL
## 88755                 D          0   No Deposit    37    NULL
## 88756                 D          0   No Deposit    28    NULL
## 88757                 A          0   No Deposit     9    NULL
## 88758                 A          3   No Deposit    10    NULL
## 88759                 D          0   No Deposit     9    NULL
## 88760                 A          0   No Deposit     9    NULL
## 88761                 A          0   No Deposit     9    NULL
## 88762                 A          0   No Deposit    86    NULL
## 88996                 B          0   No Deposit     9    NULL
## 89159                 B          1   No Deposit     9    NULL
```

```
## 89883                   B              1    No Deposit   14     NULL
## 90127                   B              0    No Deposit    9     NULL
## 90129                   B              0    No Deposit    9     NULL
## 90797                   B              0    No Deposit    9     NULL
## 90800                   B              2    No Deposit    9     NULL
## 90995                   B              0    No Deposit    9     NULL
## 91161                   B              0    No Deposit    9     NULL
## 92142                   B              0    No Deposit    9     NULL
## 92172                   B              0    No Deposit    9     NULL
## 93683                   B              0    No Deposit   14     NULL
## 93726                   B              0    No Deposit    9     NULL
## 93851                   B              0    No Deposit    9     NULL
## 93915                   B              0    No Deposit    9     NULL
## 93928                   A              0    No Deposit   14     NULL
## 94107                   B              0    No Deposit   14     NULL
## 94465                   B              0    No Deposit    9     NULL
## 94573                   B              0    No Deposit   14     NULL
## 95061                   B              0    No Deposit    9     NULL
## 95136                   B              0    No Deposit    9     NULL
## 95265                   B              0    No Deposit   14     NULL
## 95303                   B              0    No Deposit    9     NULL
## 95329                   B              1    No Deposit    9     NULL
## 95395                   B              0    No Deposit    9     NULL
## 95452                   B              0    No Deposit    9     NULL
## 95618                   B              0    No Deposit    9     NULL
## 95656                   D              3    No Deposit  NULL    NULL
## 95678                   B              0    No Deposit    9     NULL
## 95710                   B              0    No Deposit    9     NULL
## 95957                   B              0    No Deposit    9     NULL
## 96116                   B              0    No Deposit    9     NULL
## 96186                   B              2    No Deposit    9     NULL
## 96805                   B              1    No Deposit    9     NULL
## 97756                   B              1    No Deposit    9     NULL
## 98014                   B              0    No Deposit    9     NULL
## 98415                   D              0    No Deposit    9     NULL
## 99042                   B              1    No Deposit    9     NULL
## 99318                   B              0    No Deposit    9     NULL
## 99412                   B              0    No Deposit    9     NULL
## 99929                   A              0    No Deposit    9     NULL
## 100052                  B              0    No Deposit    9     NULL
## 100070                  B              0    No Deposit    9     NULL
## 100390                  B              3    No Deposit    9     NULL
## 100461                  B              0    No Deposit    9     NULL
## 100645                  B              3    No Deposit    9     NULL
## 100683                  B              0    No Deposit    9     NULL
## 100816                  B              0    No Deposit    9     NULL
## 100880                  B              1    No Deposit    9     NULL
## 100955                  B              0    No Deposit    9     NULL
## 102640                  A              0    No Deposit    9     NULL
## 102786                  A              0    No Deposit    9     NULL
## 102948                  A              1    No Deposit    9     NULL
## 102959                  B              0    No Deposit    9     NULL
## 103008                  A              0    No Deposit    9     NULL
## 103371                  B              0    No Deposit    9     NULL
```

```
## 103487                         A              7  No Deposit     3     NULL
## 103622                         A              1  No Deposit     9     NULL
## 103632                         A              0  No Deposit     9     NULL
## 103645                         A              0  No Deposit     9     NULL
## 104071                         A              0  No Deposit     9     NULL
## 104270                         A              0  No Deposit     9     NULL
## 104557                         B              0  No Deposit     9     NULL
## 104749                         A              0  No Deposit     9     NULL
## 104889                         B              1  No Deposit  NULL     NULL
## 105361                         A              1  No Deposit  NULL     NULL
## 106800                         A              0  No Deposit     9     NULL
## 108466                         A              1  No Deposit    14     NULL
## 108949                         B              0  No Deposit    14     NULL
## 109440                         A              1  No Deposit     9     NULL
## 109466                         B              0  No Deposit     9     NULL
## 109695                         A              0  No Deposit     9     NULL
## 109712                         A              1  No Deposit     9     NULL
## 110075                         B              1  No Deposit     9     NULL
## 110414                         A              0  No Deposit     9     NULL
## 112740                         A              0  No Deposit     9     NULL
## 112764                         A              5  No Deposit    83     NULL
## 113751                         B              1  No Deposit     9     NULL
## 113902                         A              1  No Deposit     9     NULL
## 113903                         A              1  No Deposit     9     NULL
## 115966                         B              0  No Deposit     9     NULL
## 116208                         A              0  No Deposit     9     NULL
## 116568                         B              0  No Deposit  NULL     NULL
## 116842                         A              1  No Deposit  NULL     NULL
## 117138                         A              0  No Deposit     9     NULL
## 117140                         B              0  No Deposit     9     NULL
## 117214                         A              0  No Deposit     9     NULL
## 117284                         B              1  No Deposit     9     NULL
## 117313                         A              0  No Deposit     9     NULL
## 117463                         A              1  No Deposit     9     NULL
## 118210                         A              1  No Deposit  NULL     NULL
##       days_in_waiting_list   customer_type    adr required_car_parking_spaces
## 40985                    0 Transient-Party   9.00                            0
## 41049                    0 Transient-Party   6.00                            0
## 41447                    0 Transient-Party   6.00                            0
## 41953                    0       Transient   0.00                            0
## 45159                    0 Transient-Party   6.00                            0
## 46133                    0 Transient-Party 104.25                            0
## 46151                    0 Transient-Party  77.00                            0
## 46187                    0 Transient-Party   6.00                            0
## 46197                    0 Transient-Party  77.25                            0
## 46221                    0 Transient-Party  83.58                            0
## 46489                    0 Transient-Party  15.00                            0
## 46547                    0 Transient-Party   6.00                            0
## 46560                    0 Transient-Party   6.00                            0
## 46647                    0       Transient   6.00                            0
## 46649                    0       Transient   6.00                            0
## 46656                    0       Transient   6.67                            0
## 46689                    0 Transient-Party  77.25                            0
## 46741                    0 Transient-Party  77.25                            0
```

```
## 47047                  0      Transient  69.53                        0
## 47075                  0 Transient-Party  69.50                        0
## 47111                  0      Transient  63.12                        0
## 47122                  0 Transient-Party  66.50                        0
## 47134                  0 Transient-Party  69.50                        0
## 47176                  0 Transient-Party  67.15                        0
## 47202                  0      Transient  69.50                        0
## 47435                  0 Transient-Party  69.53                        0
## 47569                  0      Transient  65.66                        0
## 47818                  0 Transient-Party  85.96                        0
## 48225                  0 Transient-Party  78.00                        0
## 48234                  0      Transient  78.00                        0
## 48456                  0 Transient-Party  75.00                        0
## 48509                  0 Transient-Party 120.00                        0
## 48631                  0      Transient  79.80                        0
## 48776                  0 Transient-Party  89.92                        0
## 48847                  0 Transient-Party  78.00                        0
## 48901                  0      Transient  73.74                        0
## 49008                  0 Transient-Party   6.00                        0
## 49016                  0 Transient-Party  73.74                        0
## 49404                  0 Transient-Party  81.50                        0
## 50163                  0      Transient 108.38                        0
## 51331                  0      Transient 119.50                        0
## 51586                  0      Transient 128.49                        0
## 52157                  0 Transient-Party  95.82                        0
## 53335                  0 Transient-Party   6.00                        0
## 53642                  0      Transient  92.12                        0
## 54001                  0      Transient  81.82                        0
## 54123                  0 Transient-Party  86.50                        0
## 54137                  0 Transient-Party  86.50                        0
## 54141                  0 Transient-Party  86.50                        0
## 54225                  0      Transient  86.63                        0
## 54411                  0 Transient-Party  86.50                        0
## 54473                  0 Transient-Party  86.50                        0
## 54596                  0 Transient-Party  86.50                        0
## 54727                  0      Transient   9.00                        0
## 54778                  0 Transient-Party  86.50                        0
## 54888                  0 Transient-Party   6.00                        0
## 54889                  0      Transient  79.27                        0
## 55000                  0      Transient 118.15                        0
## 55119                  0 Transient-Party  86.50                        0
## 55320                  0 Transient-Party  86.50                        0
## 55425                  0      Transient   0.00                        0
## 55501                  0 Transient-Party  81.50                        0
## 55727                  0      Transient  99.30                        0
## 55869                  0 Transient-Party  94.62                        0
## 56030                  0      Transient  86.63                        0
## 56177                  0      Transient 108.66                        0
## 56294                  0 Transient-Party 121.01                        0
## 56384                  0      Transient  96.23                        0
## 56393                  0      Transient 106.90                        0
## 56645                  0      Transient 109.45                        0
## 56755                  0      Transient 124.25                        0
## 57039                  0      Transient 124.25                        0
```

```
## 57212                   0       Transient 127.38                              0
## 59655                   0       Transient  83.50                              0
## 60512                   0 Transient-Party  72.00                              0
## 60718                   0       Transient  82.44                              0
## 60832                   0       Transient  77.86                              0
## 60998                   0       Transient  76.16                              0
## 61037                   0       Transient  67.26                              0
## 61094                   0 Transient-Party  71.22                              0
## 61428                   0 Transient-Party   0.00                              0
## 61697                   0       Transient  69.50                              0
## 61789                   0 Transient-Party 101.34                              0
## 61934                   0       Transient  74.29                              0
## 62131                   0       Transient  91.60                              0
## 62139                   0       Transient 141.14                              0
## 63293                   0       Transient  91.60                              0
## 63817                   0       Transient  82.44                              0
## 63896                   0       Transient  91.60                              0
## 64290                   0       Transient  91.60                              0
## 64860                   0       Transient  89.88                              0
## 65111                   0       Transient  77.86                              0
## 65114                   0       Transient  77.86                              0
## 65119                   0       Transient  84.73                              0
## 65273                   0       Transient  90.46                              0
## 65672                   0       Transient 101.25                              0
## 65751                   0       Transient 110.68                              0
## 65758                   0       Transient 103.05                              0
## 65995                   0       Transient 101.25                              0
## 66476                   0       Transient 103.05                              0
## 67045                   0       Transient 103.05                              0
## 68434                   0       Transient 108.95                              0
## 68855                   0       Transient 110.75                              0
## 68990                   0       Transient 108.95                              0
## 69018                   0       Transient  99.45                              0
## 69045                   0       Transient  99.45                              0
## 69047                   0       Transient  99.45                              0
## 69762                   0       Transient 106.35                              0
## 71385                   0       Transient  93.65                              0
## 71511                   0       Transient  91.85                              0
## 71513                   0       Transient  91.85                              0
## 71516                   0       Transient  91.85                              0
## 71668                   0       Transient  90.05                              0
## 73137                   0       Transient  96.25                              0
## 73186                   0       Transient 104.05                              0
## 79597                   0 Transient-Party  65.29                              0
## 81228                   0       Transient  87.08                              0
## 81376                   0       Transient  80.75                              0
## 82202                   0 Transient-Party   7.80                              0
## 82288                   0       Transient   6.00                              0
## 82304                   0       Transient   0.00                              0
## 82649                   0 Transient-Party   6.00                              0
## 82989                   0 Transient-Party   9.00                              0
## 83206                   0 Transient-Party  77.25                              0
## 83638                   0 Transient-Party  73.39                              0
## 84047                   0           Group  58.91                              0
```

```
## 84455                0          Transient  68.76                              0
## 84543                0 Transient-Party  71.00                              0
## 86042                0          Contract   6.00                              0
## 86800                0 Transient-Party   6.00                              1
## 87205                0 Transient-Party   9.00                              0
## 88358                0          Transient 127.83                              0
## 88754                0          Transient 140.00                              0
## 88755                0          Transient 140.00                              0
## 88756                0          Transient 112.00                              0
## 88757                0          Transient 189.50                              0
## 88758                0          Transient 140.15                              0
## 88759                0          Transient 215.00                              0
## 88760                0          Transient 163.17                              0
## 88761                0          Transient 171.90                              0
## 88762                0          Transient 140.00                              0
## 88996                0          Transient 127.39                              0
## 89159                0          Transient 127.60                              0
## 89883                0          Transient 128.78                              0
## 90127                0 Transient-Party 112.01                              0
## 90129                0          Transient 112.01                              0
## 90797                0          Transient 116.49                              0
## 90800                0          Transient 116.49                              0
## 90995                0          Transient 119.50                              0
## 91161                0          Transient 131.78                              0
## 92142                0          Transient  83.83                              0
## 92172                0 Transient-Party  97.55                              0
## 93683                0 Transient-Party   6.00                              0
## 93726                0          Transient  97.54                              0
## 93851                0          Transient  97.54                              0
## 93915                0          Transient 106.54                              0
## 93928                0          Transient   0.00                              0
## 94107                0 Transient-Party   6.00                              0
## 94465                0 Transient-Party 127.38                              0
## 94573                0          Transient  90.25                              0
## 95061                0          Transient 109.83                              0
## 95136                0 Transient-Party 138.05                              0
## 95265                0 Transient-Party 120.63                              0
## 95303                0          Transient 109.55                              0
## 95329                0          Transient 106.32                              0
## 95395                0          Transient  97.54                              0
## 95452                0          Transient 127.60                              0
## 95618                0          Transient  97.54                              0
## 95656                0 Transient-Party  53.40                              0
## 95678                0          Transient 115.68                              0
## 95710                0 Transient-Party 109.83                              0
## 95957                0          Transient  95.79                              0
## 96116                0 Transient-Party  88.77                              0
## 96186                0          Transient  84.82                              0
## 96805                0 Transient-Party 112.01                              0
## 97756                0 Transient-Party 124.25                              0
## 98014                0          Transient 155.68                              0
## 98415                0          Transient 127.38                              0
## 99042                0          Transient 108.00                              0
## 99318                0          Transient 108.00                              0
```

```
## 99412                   0       Transient 110.70                          0
## 99929                   0       Transient 110.36                          0
## 100052                  0 Transient-Party 108.00                          0
## 100070                  0       Transient 110.70                          0
## 100390                  0 Transient-Party  88.77                          0
## 100461                  0       Transient  83.83                          0
## 100645                  0       Transient  18.60                          0
## 100683                  0       Transient  81.50                          0
## 100816                  0 Transient-Party  81.76                          0
## 100880                  0       Transient  82.92                          0
## 100955                  0       Transient  83.50                          0
## 102640                  0       Transient  77.86                          0
## 102786                  0       Transient  77.86                          0
## 102948                  0       Transient  82.44                          0
## 102959                  0 Transient-Party  91.60                          0
## 103008                  0       Transient  82.44                          0
## 103371                  0       Transient  77.86                          0
## 103487                  0 Transient-Party  43.80                          0
## 103622                  0       Transient  91.60                          0
## 103632                  0       Transient  91.60                          0
## 103645                  0       Transient  67.26                          0
## 104071                  0       Transient  91.60                          0
## 104270                  0       Transient  82.44                          0
## 104557                  0       Transient  86.86                          0
## 104749                  0       Transient  77.86                          0
## 104889                  0 Transient-Party   6.00                          1
## 105361                  0 Transient-Party   6.00                          0
## 106800                  0       Transient  76.16                          0
## 108466                  0       Transient  93.82                          0
## 108949                  0 Transient-Party  98.55                          0
## 109440                  0       Transient 103.05                          0
## 109466                  0       Transient 103.05                          0
## 109695                  0       Transient 103.05                          0
## 109712                  0       Transient 103.05                          0
## 110075                  0       Transient 101.70                          0
## 110414                  0       Transient 114.50                          0
## 112740                  0       Transient 123.05                          0
## 112764                  0       Transient 129.60                          0
## 113751                  0 Transient-Party 107.45                          0
## 113902                  0 Transient-Party 109.00                          0
## 113903                  0 Transient-Party 109.00                          0
## 115966                  0       Transient  93.65                          0
## 116208                  0       Transient  91.85                          0
## 116568                  0 Transient-Party  91.40                          0
## 116842                  0 Transient-Party   0.00                          0
## 117138                  0       Transient  90.05                          0
## 117140                  0       Transient  91.85                          0
## 117214                  0       Transient  98.85                          0
## 117284                  0       Transient  93.64                          0
## 117313                  0       Transient  98.85                          0
## 117463                  0       Transient 121.88                          0
## 118210                  0 Transient-Party   6.00                          0
##       total_of_special_requests reservation_status reservation_status_date
## 40985                         0          Check-Out              2015-08-12
```

```
## 41049                         2          Check-Out          2015-08-14
## 41447                         1          Check-Out          2015-08-18
## 41953                         1          Check-Out          2015-08-29
## 45159                         1           Canceled          2015-09-02
## 46133                         1           Canceled          2015-12-10
## 46151                         2          Check-Out          2015-12-19
## 46187                         0          Check-Out          2015-12-26
## 46197                         1           Canceled          2015-12-19
## 46221                         0          Check-Out          2015-12-29
## 46489                         1          Check-Out          2016-01-04
## 46547                         1          Check-Out          2016-01-08
## 46560                         0          Check-Out          2016-01-08
## 46647                         1          Check-Out          2016-01-17
## 46649                         1          Check-Out          2016-01-17
## 46656                         1          Check-Out          2016-01-17
## 46689                         0           Canceled          2016-01-11
## 46741                         0           Canceled          2016-01-04
## 47047                         0           Canceled          2016-01-18
## 47075                         1          Check-Out          2016-02-08
## 47111                         0          Check-Out          2016-02-12
## 47122                         1           Canceled          2016-01-26
## 47134                         1          Check-Out          2016-02-12
## 47176                         0          Check-Out          2016-02-15
## 47202                         1          Check-Out          2016-02-15
## 47435                         1          Check-Out          2016-02-24
## 47569                         0           Canceled          2016-02-20
## 47818                         1           Canceled          2016-03-01
## 48225                         0           Canceled          2016-01-11
## 48234                         0           Canceled          2016-03-18
## 48456                         1          Check-Out          2016-03-30
## 48509                         1          Check-Out          2016-03-29
## 48631                         2          Check-Out          2016-03-29
## 48776                         0           Canceled          2016-01-13
## 48847                         1          Check-Out          2016-04-03
## 48901                         1          Check-Out          2016-04-07
## 49008                         1           Canceled          2016-03-28
## 49016                         0          Check-Out          2016-04-08
## 49404                         1          Check-Out          2016-04-17
## 50163                         1           Canceled          2016-02-17
## 51331                         0           Canceled          2016-05-17
## 51586                         0           Canceled          2016-05-05
## 52157                         1          Check-Out          2016-06-03
## 53335                         1           Canceled          2016-05-04
## 53642                         0           Canceled          2016-06-23
## 54001                         2          Check-Out          2016-07-17
## 54123                         1          Check-Out          2016-07-09
## 54137                         0           Canceled          2016-02-20
## 54141                         1          Check-Out          2016-07-09
## 54225                         0           Canceled          2015-12-30
## 54411                         0          Check-Out          2016-07-16
## 54473                         0          Check-Out          2016-07-18
## 54596                         0          Check-Out          2016-07-22
## 54727                         2           Canceled          2016-06-02
## 54778                         1           Canceled          2016-01-26
```

```
## 54888                         1          Check-Out        2016-08-03
## 54889                         1           Canceled        2016-06-04
## 55000                         0           Canceled        2016-06-29
## 55119                         1           Canceled        2016-07-14
## 55320                         0           Canceled        2016-06-27
## 55425                         1           Canceled        2016-07-30
## 55501                         1           Canceled        2016-07-21
## 55727                         1           Canceled        2016-05-10
## 55869                         1           Canceled        2016-02-27
## 56030                         1           Canceled        2016-01-13
## 56177                         0           Canceled        2016-08-11
## 56294                         0           Canceled        2016-09-01
## 56384                         0           Canceled        2016-07-04
## 56393                         0           Canceled        2016-08-02
## 56645                         2           Canceled        2016-09-09
## 56755                         0            No-Show        2016-09-12
## 57039                         2            No-Show        2016-09-16
## 57212                         3           Canceled        2016-07-08
## 59655                         2           Canceled        2016-09-05
## 60512                         0           Canceled        2016-03-10
## 60718                         2           Canceled        2016-10-27
## 60832                         1           Canceled        2016-11-11
## 60998                         0           Canceled        2016-08-03
## 61037                         0           Canceled        2016-08-03
## 61094                         0           Canceled        2016-06-24
## 61428                         1           Canceled        2016-12-09
## 61697                         1           Canceled        2015-12-23
## 61789                         0           Canceled        2016-09-22
## 61934                         2           Canceled        2016-10-13
## 62131                         2           Canceled        2016-11-22
## 62139                         1           Canceled        2016-06-13
## 63293                         2           Canceled        2016-09-13
## 63817                         1           Canceled        2017-02-02
## 63896                         1           Canceled        2017-02-03
## 64290                         1           Canceled        2016-11-22
## 64860                         1           Canceled        2016-11-22
## 65111                         2           Canceled        2016-09-17
## 65114                         2           Canceled        2016-09-17
## 65119                         0           Canceled        2017-02-02
## 65273                         2           Canceled        2016-10-31
## 65672                         0           Canceled        2017-01-19
## 65751                         1           Canceled        2017-01-25
## 65758                         3           Canceled        2016-11-14
## 65995                         0           Canceled        2016-09-15
## 66476                         0           Canceled        2017-03-24
## 67045                         3           Canceled        2017-04-07
## 68434                         2           Canceled        2017-01-06
## 68855                         1           Canceled        2017-01-17
## 68990                         2           Canceled        2017-01-06
## 69018                         0           Canceled        2016-08-15
## 69045                         0           Canceled        2016-08-14
## 69047                         0           Canceled        2016-08-15
## 69762                         1           Canceled        2016-11-14
## 71385                         1           Canceled        2016-12-12
```

```
## 71511                2        Canceled       2016-09-19
## 71513                2        Canceled       2016-09-19
## 71516                2        Canceled       2016-09-19
## 71668                2        Canceled       2016-09-17
## 73137                0        Canceled       2017-01-20
## 73186                3        Canceled       2016-12-09
## 79597                0        Check-Out      2015-10-30
## 81228                1        Check-Out      2015-12-07
## 81376                1        No-Show        2015-12-09
## 82202                1        Canceled       2015-12-23
## 82288                1        Check-Out      2017-01-22
## 82304                0        Check-Out      2015-12-27
## 82649                1        Canceled       2016-01-04
## 82989                1        Check-Out      2016-01-10
## 83206                0        Check-Out      2016-01-24
## 83638                1        Check-Out      2016-02-09
## 84047                2        Check-Out      2016-02-19
## 84455                0        Check-Out      2016-02-27
## 84543                0        Check-Out      2016-02-28
## 86042                2        Check-Out      2016-03-26
## 86800                0        Check-Out      2016-04-09
## 87205                1        Check-Out      2016-04-16
## 88358                1        Check-Out      2016-05-05
## 88754                1        Check-Out      2016-11-09
## 88755                1        Check-Out      2016-11-09
## 88756                0        Check-Out      2016-11-09
## 88757                1        Check-Out      2016-11-09
## 88758                0        Check-Out      2016-11-09
## 88759                1        Check-Out      2016-11-09
## 88760                2        Check-Out      2016-11-09
## 88761                1        Check-Out      2016-11-09
## 88762                0        Check-Out      2016-11-09
## 88996                0        Check-Out      2016-05-16
## 89159                0        Check-Out      2016-05-18
## 89883                0        Check-Out      2016-05-28
## 90127                1        Check-Out      2016-06-02
## 90129                1        Check-Out      2016-06-02
## 90797                0        Check-Out      2016-06-12
## 90800                2        Check-Out      2016-06-12
## 90995                1        Check-Out      2016-06-15
## 91161                0        Check-Out      2016-06-17
## 92142                1        Check-Out      2016-07-01
## 92172                0        Check-Out      2016-07-02
## 93683                1        Check-Out      2016-07-25
## 93726                1        Check-Out      2016-07-26
## 93851                0        Check-Out      2016-07-28
## 93915                1        Check-Out      2016-07-29
## 93928                1        Check-Out      2016-07-29
## 94107                1        Check-Out      2016-07-31
## 94465                1        Check-Out      2016-08-05
## 94573                1        Check-Out      2016-08-06
## 95061                1        Check-Out      2016-08-14
## 95136                3        Check-Out      2016-08-15
## 95265                0        Check-Out      2016-08-17
```

```
## 95303                     1         Check-Out         2016-08-18
## 95329                     0         Check-Out         2016-08-18
## 95395                     1         Check-Out         2016-08-19
## 95452                     1         Check-Out         2016-08-20
## 95618                     1         Check-Out         2016-08-21
## 95656                     3         Check-Out         2016-08-22
## 95678                     1         Check-Out         2016-08-22
## 95710                     2         Check-Out         2016-08-23
## 95957                     1         Check-Out         2016-08-26
## 96116                     0         Check-Out         2016-08-29
## 96186                     0         Check-Out         2016-08-30
## 96805                     1         Check-Out         2016-09-08
## 97756                     1         Check-Out         2016-09-20
## 98014                     4         Check-Out         2016-09-23
## 98415                     3         Check-Out         2016-09-29
## 99042                     1         Check-Out         2016-10-08
## 99318                     3         Check-Out         2016-10-12
## 99412                     4         Check-Out         2016-10-13
## 99929                     2         Check-Out         2016-10-20
## 100052                    1         Check-Out         2016-10-22
## 100070                    1         Check-Out         2016-10-23
## 100390                    2         Check-Out         2016-10-27
## 100461                    3         Check-Out         2016-10-28
## 100645                    2         Check-Out         2016-10-30
## 100683                    2         Check-Out         2016-10-31
## 100816                    1         Check-Out         2016-11-02
## 100880                    3         Check-Out         2016-11-03
## 100955                    1         Check-Out         2016-11-04
## 102640                    2         Check-Out         2016-12-03
## 102786                    1         Check-Out         2016-12-06
## 102948                    1         Check-Out         2016-12-10
## 102959                    0         Check-Out         2016-12-10
## 103008                    1         Check-Out         2016-12-11
## 103371                    2         Check-Out         2016-12-21
## 103487                    0         Check-Out         2016-12-26
## 103622                    2         Check-Out         2016-12-28
## 103632                    2         Check-Out         2016-12-28
## 103645                    1         Check-Out         2016-12-29
## 104071                    1         Check-Out         2017-01-05
## 104270                    0         Check-Out         2017-01-09
## 104557                    0         Check-Out         2017-01-17
## 104749                    2         Check-Out         2017-01-21
## 104889                    1         Check-Out         2017-01-24
## 105361                    0         Check-Out         2017-02-05
## 106800                    2         Check-Out         2017-03-03
## 108466                    0         Check-Out         2017-03-28
## 108949                    0         Check-Out         2017-04-04
## 109440                    0         Check-Out         2017-04-11
## 109466                    1         Check-Out         2017-04-12
## 109695                    2         Check-Out         2017-04-15
## 109712                    2         Check-Out         2017-04-15
## 110075                    1         Check-Out         2017-04-21
## 110414                    3         Check-Out         2017-04-27
## 112740                    2         Check-Out         2017-05-28
```

```
## 112764                              0             Check-Out           2017-05-28
## 113751                              1             Check-Out           2017-06-11
## 113902                              2             Check-Out           2017-06-14
## 113903                              2             Check-Out           2017-06-14
## 115966                              1             Check-Out           2017-07-13
## 116208                              3             Check-Out           2017-07-16
## 116568                              1             Check-Out           2017-07-22
## 116842                              3             Check-Out           2017-07-26
## 117138                              1             Check-Out           2017-07-30
## 117140                              3             Check-Out           2017-07-30
## 117214                              1             Check-Out           2017-07-31
## 117284                              2             Check-Out           2017-08-02
## 117313                              1             Check-Out           2017-08-02
## 117463                              1             Check-Out           2017-08-04
## 118210                              1             Check-Out           2017-08-16
```

```r
#das CHeck in Datum als as.Date Datenformat abspeichern
Sys.setlocale("LC_ALL","English")
```

```
## [1] "LC_COLLATE=English_United States.1252;LC_CTYPE=English_United States.1252;LC_MONETARY=English_U
```

```r
rawdata$checkin_date = as.Date(paste(rawdata$arrival_date_day_of_month, rawdata$arrival_date_month, rawd

#0-6 day of the week, starting on Sunday.
rawdata$wkday=as.POSIXlt(paste(rawdata$arrival_date_day_of_month, rawdata$arrival_date_month, rawdata$ar

#für einfachere Nutzung wird Sonntag zu 7 gesetzt
rawdata$wkday[rawdata$wkday==0] = 7

#check for weekend (5,6,7)
rawdata$wkend = rawdata$wkday > 4

#nur die Gäste, die tatsächlich gekommen sind
rawdata_showup = rawdata[rawdata$reservation_status== "Check-Out",]

#bei Unteschied gleich null trotzdem auf 1 setzen, da Zimmer auch ohne Übernachtung bis zum nächsten Ta
rawdata_showup$stay_totaldays=as.numeric(as.Date(rawdata_showup$reservation_status_date)-rawdata_showup$

#komische hohe Werte!
unique(rawdata_showup$stay_totaldays)
```

```
##  [1]  0  1  2  4  5  6  7 14 15 11  3  8  9 10 13 12 46 18 28 21 17 22 29 19 42
## [26] 16 60 69 30 35 23 45 56 25 38 20 48 49 24 57 34 43 27
```

```r
#check for correctness of Weekend/weekday entries
for(i in (1:length(rawdata_showup$stay_totaldays))){
  wkendcntr=0
  wkdaycntr=0
  checkin_wkday = rawdata_showup$wkday[i]
  total = rawdata_showup$stay_totaldays[i]
  cmpltweeks = floor((checkin_wkday+total)/7)
```

```r
  rest = (checkin_wkday+total) %% 7

  wkendcntr= cmpltweeks*2
  if(rest == 6){
    wkendcntr= wkendcntr+1
  }

  rawdata_showup$stays_in_week_nights_corr[i] = total-wkendcntr
  rawdata_showup$stays_in_weekend_nights_corr[i] = wkendcntr

}



#Buchungen löschen, die keine Anzahl an Tagen haben
clndata = clndata[!(clndata$stay_totaldays == 0),]

#Buchungen löschen bei denen keine Gastanzahl gegeben ist
clndata = clndata[!(clndata$adults == 0 & clndata$children == 0),]
```