

# rentHousesInfo

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Llegim el document i mostrem el resum numèric de les variables:

```
rentHousesInfo <- read.csv2("dataOutput.csv", header = TRUE, sep = ";", dec = ".")
rentHousesInfo$pricePerMeter <- rentHousesInfo$price / rentHousesInfo$size
rentHousesInfo$priceRang <- floor(rentHousesInfo$price / 1000) * 1000 + 1000
rentHousesInfo$priceRangString <- toString(rentHousesInfo$priceRang)
rentHousesInfoPalma <- filter(rentHousesInfo, municipality == 'Palma de Mallorca')
summary(rentHousesInfo)
```

```
##   propertyCode
##   Min.      : 922769
##   1st Qu.:85678650
##   Median :87122480
##   Mean    :82582329
##   3rd Qu.:87567906
##   Max.    :87761745
##
##
##                                     thumbnail
## https://img3.idealista.com/blur/WEB_LISTING/0/id.pro.es.image.master/00/07/f4/729429492.jpg: 1
## https://img3.idealista.com/blur/WEB_LISTING/0/id.pro.es.image.master/00/26/6c/683326374.jpg: 1
## https://img3.idealista.com/blur/WEB_LISTING/0/id.pro.es.image.master/00/39/45/706380166.jpg: 1
## https://img3.idealista.com/blur/WEB_LISTING/0/id.pro.es.image.master/00/3c/77/729410670.jpg: 1
## https://img3.idealista.com/blur/WEB_LISTING/0/id.pro.es.image.master/00/5b/af/714633131.jpg: 1
## (Other)                                     :3585
## NA's                                     : 10
##
##      externalReference  numPhotos      floor      price
## GC MASCARELL 1: 6      Min.      : 0.00    1      : 600    Min.      : 350
## 1082           : 3      1st Qu.:11.00    2      : 463    1st Qu.: 1000
## A-135          : 3      Median :16.00    bj      : 382    Median : 1450
## 059            : 2      Mean    :19.01    3      : 333    Mean    : 2085
## 1007           : 2      3rd Qu.:24.00    4      : 191    3rd Qu.: 2300
## (Other)        :2973    Max.    :92.00    (Other): 294    Max.    :90000
## NA's           : 611    NA's      :1337
##
##      propertyType  operation      size      exterior
## chalet           : 885    rent:3600    Min.      : 22.0    False:1757
## countryHouse: 174      1st Qu.: 81.0    True :1843
## duplex           : 71      Median : 120.0
## flat             :2115    Mean    : 169.7
## penthouse        : 259    3rd Qu.: 183.0
## studio           : 96      Max.    :13700.0
##
##
##      rooms      bathrooms
## Min.      : 0.000    Min.      : 1.000
## 1st Qu.: 2.000    1st Qu.: 1.000
## Median : 3.000    Median : 2.000
## Mean    : 2.806    Mean    : 2.125
## 3rd Qu.: 4.000    3rd Qu.: 2.000
## Max.    :13.000    Max.    :100.000
```

```

##
##                                address                province
## Santa Ponça                      : 119    Balears (Illes):3600
## Portals Nous - Bendinat          : 69
## barrio La Seu - Cort - Monti-Sion: 65
## barrio La Bonanova - Porto Pi    : 64
## Marina Botafoc - Talamanca        : 56
## barrio La Missio - Mercat         : 47
## (Other)                          :3180
##                                municipality
## Palma de Mallorca                :1380
## Calvià                           : 579
## Eivissa                           : 229
## Llucmajor                        : 209
## Santa Eulalia del Río            : 178
## Sant Josep de Sa Talaia: 175
## (Other)                          : 850
##                                district    country    latitude
## Ciutat Antigua                    : 313    es:3600    Min.    :38.67
## Playa de Palma                    : 236                                1st Qu.:39.45
## Genova - Bonanova - Sant Agustí   : 219                                Median :39.54
## Sta Catalina - Son Armadans - Maritim: 205    Mean    :39.44
## Santa Ponça                       : 149                                3rd Qu.:39.57
## (Other)                          :1952    Max.    :40.06
## NA's                             : 526
##    longitude    showAddress
## Min.    :1.220    False:3064
## 1st Qu.:2.477    True : 536
## Median :2.632
## Mean    :2.471
## 3rd Qu.:2.726
## Max.    :4.292
##
##                                url                hasVideo
## https://www.idealista.com/inmueble/1135092/ : 1    False:3486
## https://www.idealista.com/inmueble/1248620/ : 1    True : 114
## https://www.idealista.com/inmueble/1477283/ : 1
## https://www.idealista.com/inmueble/25344779/: 1
## https://www.idealista.com/inmueble/25543140/: 1
## https://www.idealista.com/inmueble/26348917/: 1
## (Other)                                :3594
##    status    newDevelopment    hasLift    pricePerMeter
## good :2915    False:3600    False: 724    Min.    : 0.1945
## renew: 11                                True :1487    1st Qu.: 10.0000
## NA's : 674                                NA's :1389    Median : 12.5000
##                                Mean    : 13.8964
##                                3rd Qu.: 16.2500
##                                Max.    :275.8621
##
##    priceRang    priceRangString
## Min.    : 1000    Length:3600
## 1st Qu.: 2000    Class :character
## Median : 2000    Mode  :character
## Mean    : 2629

```

```
## 3rd Qu.: 3000
## Max.    :91000
##
```

Podem veure de forma intuitiva la distribució dels lloguers a les Illes Balears pintant un punt per cada coodenada de lloguer (el color indica el rang de preu):

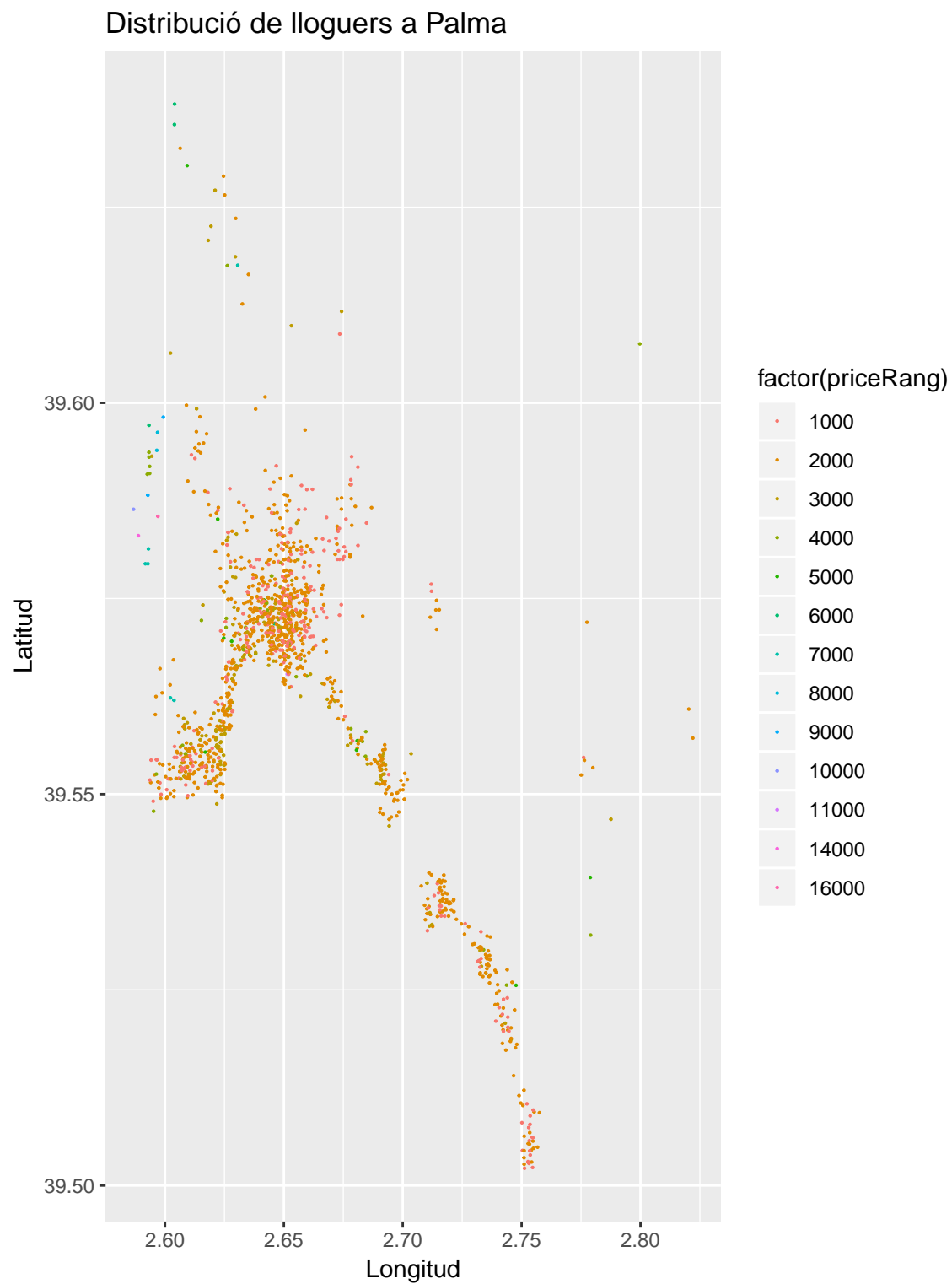
```
ggplot(rentHousesInfo, aes(longitude, latitude)) +
  labs(title="Distribució de lloguers", x="Longitud", y = "Latitud") +
  geom_point(size=0.1, aes(colour = factor(priceRang)))
```



Es pot veure com els lloguers de Mallorca es concentren a Palma i a la costa; els d'Eivissa a la costa est i sub-oest; pràcticament no existeix ni a Menorca (més enllà de Ciutadella) ni a Formentera (només 2 habitatges). Sembla que els lloguers per Internet funcionen més a les zones úrbanes i turístiques. Tot indica que els lloguers a poble funcionen més de forma tradicional.

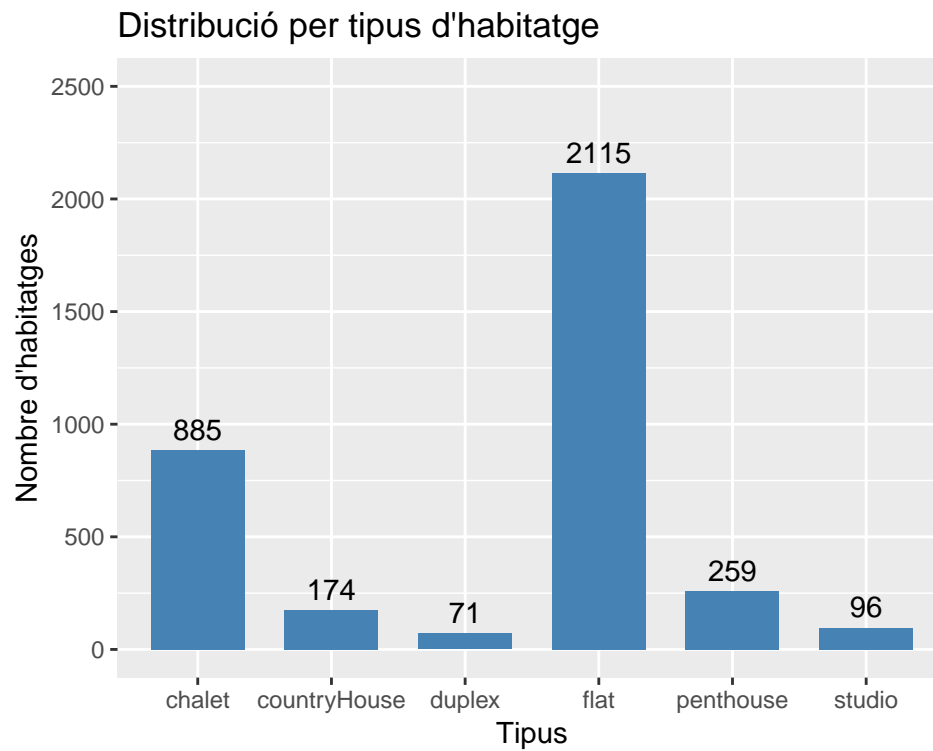
Si ens acostem a Palma, podem veure com la majoria dels lloguers es concentren al centre i a la costa:

```
ggplot(rentHousesInfoPalma, aes(longitude, latitude)) +
  labs(title="Distribució de lloguers a Palma", x="Longitud", y = "Latitud") +
  geom_point(size=0.1, aes(colour = factor(priceRang)))
```

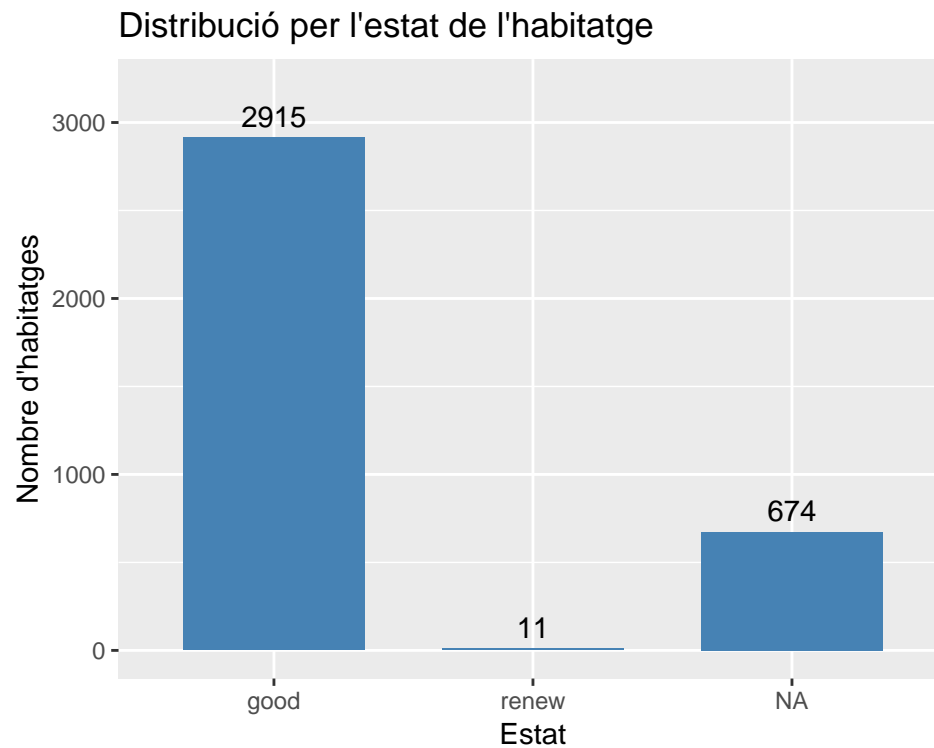


Mostrem la distribució de les variables categòriques:

```
ggplot(rentHousesInfo, aes(x=factor(propertyType))) +
  labs(title="Distribució per tipus d'habitatge", x="Tipus", y = "Nombre d'habitatges")+
  geom_bar(stat="count", width=0.7, fill="steelblue") +
  ylim(0, 2500) +
  geom_text(stat="count", aes(label=..count..), vjust=-0.5)
```

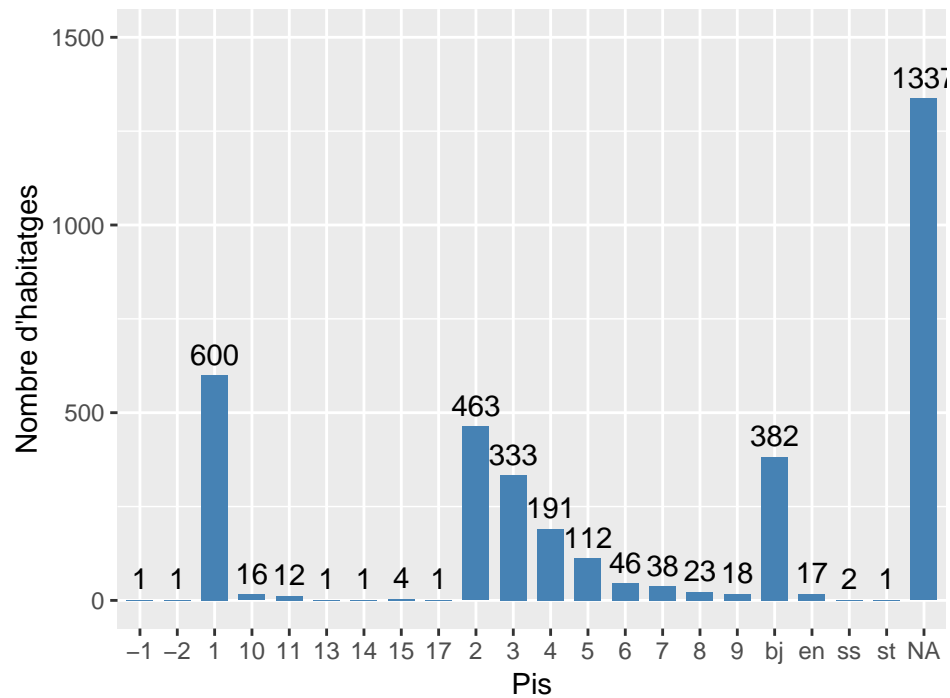


```
ggplot(rentHousesInfo, aes(x=factor(status))) +
  labs(title="Distribució per l'estat de l'habitatge", x="Estat", y = "Nombre d'habitatges")+
  geom_bar(stat="count", width=0.7, fill="steelblue") +
  ylim(0, 3200) +
  geom_text(stat="count", aes(label=..count..), vjust=-0.5)
```



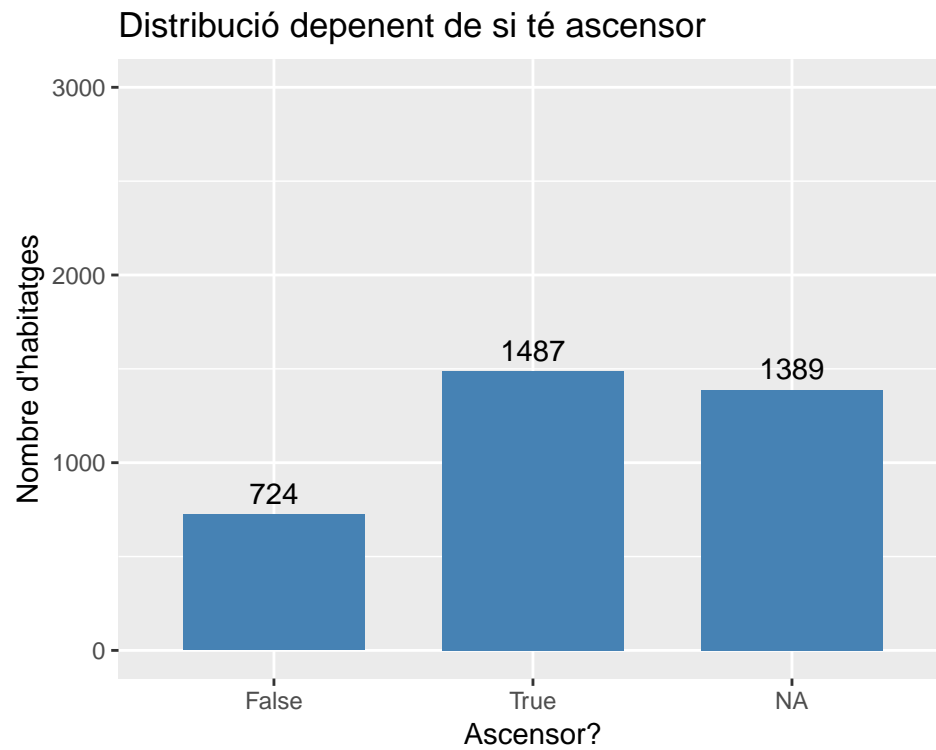
```
ggplot(rentHousesInfo, aes(x=factor(floor))) +  
  labs(title="Distribució pel pis de l'habitatge", x="Pis", y = "Nombre d'habitatges")+  
  geom_bar(stat="count", width=0.7, fill="steelblue") +  
  ylim(0, 1500) +  
  geom_text(stat="count", aes(label=..count..), vjust=-0.5)
```

Distribució pel pis de l'habitatge



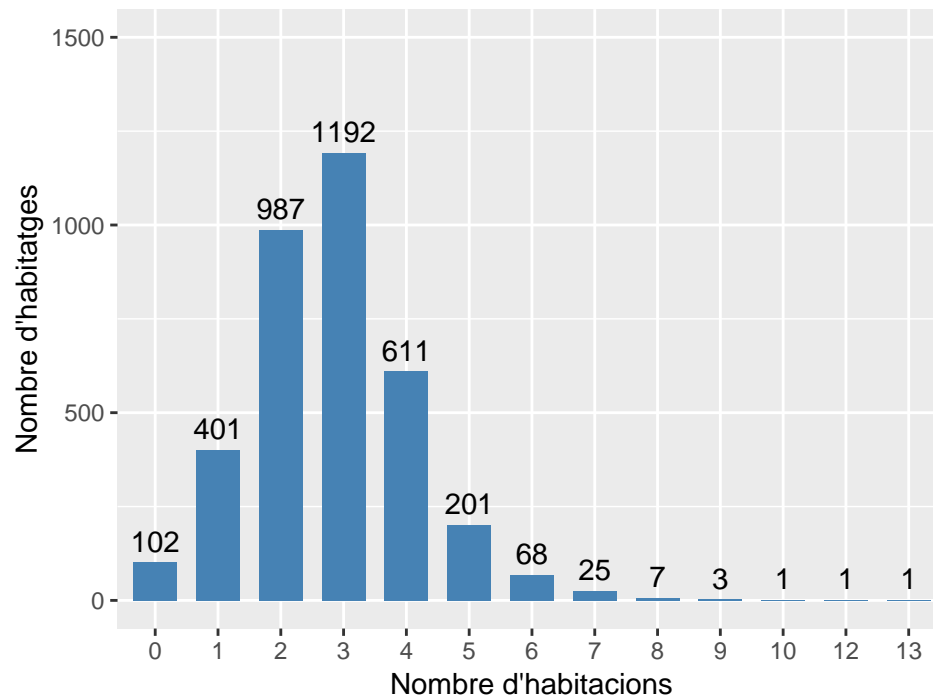
```
ggplot(rentHousesInfo, aes(x=factor(hasLift))) +
  labs(title="Distribució depenent de si té ascensor", x="Ascensor?", y = "Nombre d'habitatges")+
  geom_bar(stat="count", width=0.7, fill="steelblue") +
  ylim(0, 3000) +
  geom_text(stat="count", aes(label=..count..), vjust=-0.5)
```





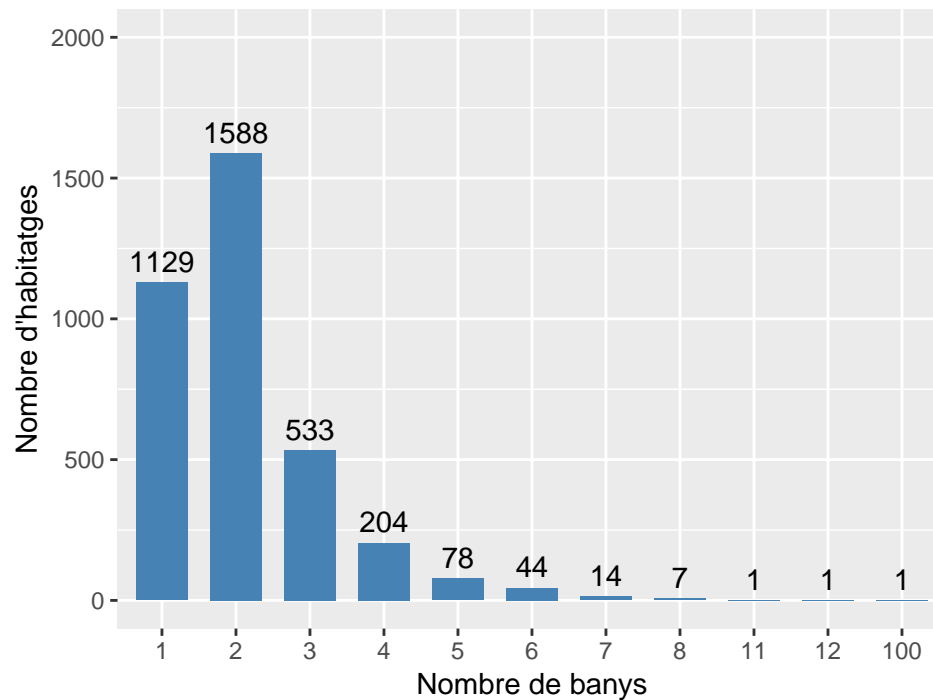
```
ggplot(rentHousesInfo, aes(x=factor(rooms))) +  
  labs(title="Distribució depenent del nombre d'habitacions", x="Nombre d'habitacions", y = "Nombre d'h") +  
  geom_bar(stat="count", width=0.7, fill="steelblue") +  
  ylim(0, 1500) +  
  geom_text(stat="count", aes(label=..count..), vjust=-0.5)
```

Distribució depenent del nombre d'habitacions



```
ggplot(rentHousesInfo, aes(x=factor(bathrooms))) +  
  labs(title="Distribució depenent del nombre de banys", x="Nombre de banys", y = "Nombre d'habitatges") +  
  geom_bar(stat="count", width=0.7, fill="steelblue") +  
  ylim(0, 2000) +  
  geom_text(stat="count", aes(label=..count..), vjust=-0.5)
```

Distribució dependent del nombre de banys



Nombre de lloguers per municipi(val a dir que no tots els municipis són correcte; per exemple, Cala Rajada no és un municipi):

```
ggplot(rentHousesInfo, aes(x=factor(municipality))) +
  labs(title="Distribució d'habitatges per municipi", x="Municipi", y = "Nombre d'habitatges")+
  geom_bar(stat="count", width=0.1, fill="steelblue") +
  ylim(0, 1500) +
  geom_text(stat="count", aes(label=..count..), vjust=0.5, hjust=-0.5, size=2) +
  theme(axis.text.y = element_text(angle = 0, hjust = 0, size=8))+
  coord_flip()
```

## Distribució d'habitatges per municipi



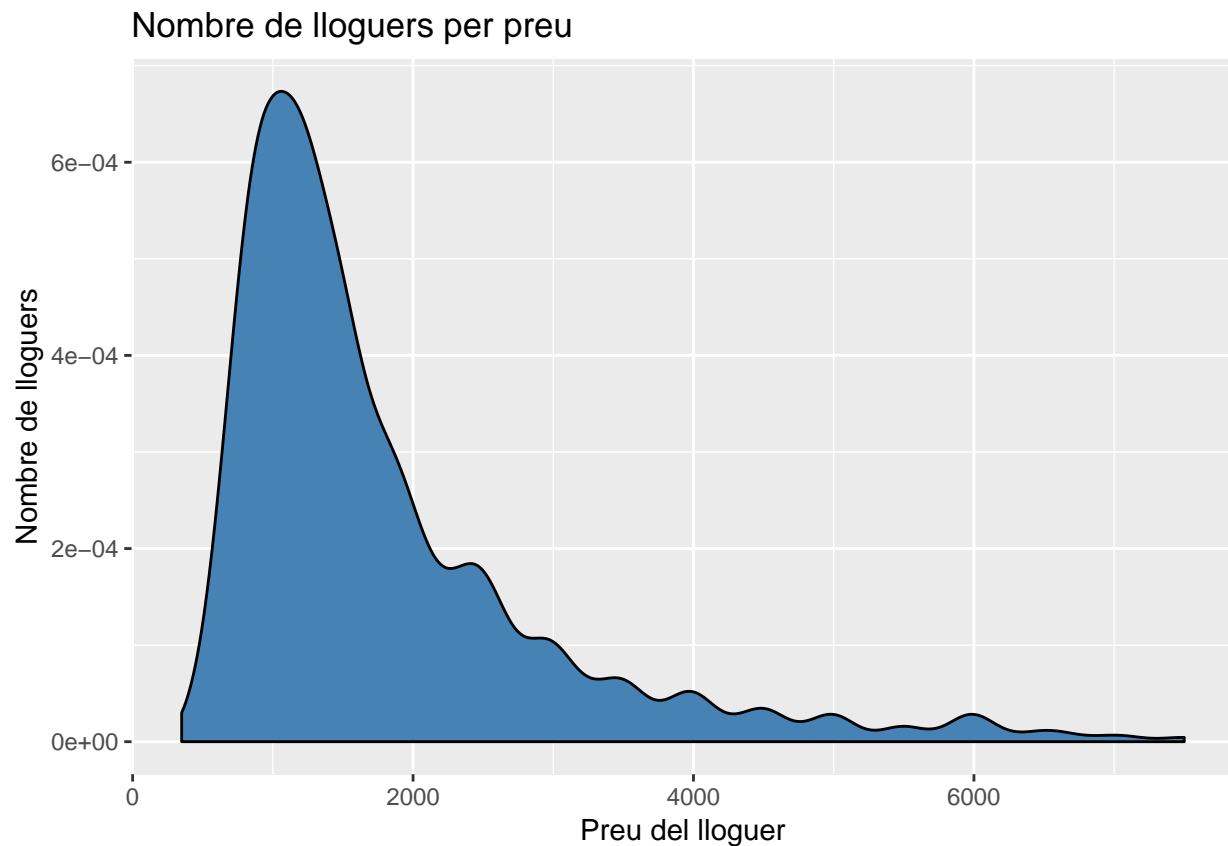
Si mostrem el nombre d'habitatges per preu, la gràfica no mostra res ja que hi ha massa dispersió. Llevant els outliers (preus superiors a la mitja + dues vegades la desviació estàndar) podem veure la distribució de la majoria dels lloguers. De fet, les dades són més correctes: hi ha lloguers alts que el que indiquen és el preu per a tota la temporada<sup>1</sup>. Passa el mateix amb el tamany dels habitatges. Hi ha finques molt grans que

<sup>1</sup><https://www.idealista.com/inmueble/84555611/>

desvirtuen les estadístiques generals; mostrem les dades eliminant els outliers.

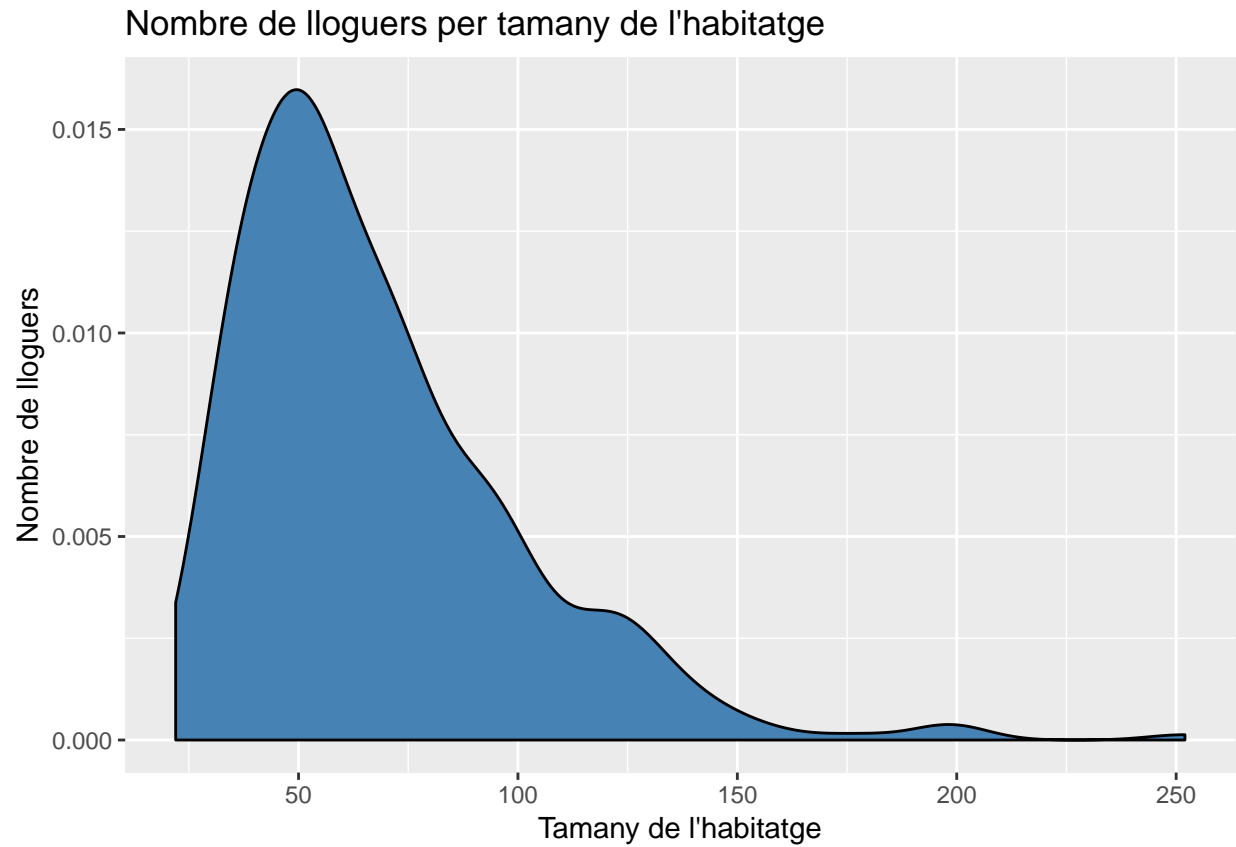
```
rentHousesInfoPriceSD <- sd(rentHousesInfo$price)
rentHousesInfoPriceMean <- mean(rentHousesInfo$price)
rentHousesInfoWithoutOutliers <- filter(rentHousesInfo, price <= rentHousesInfoPriceMean + 2 * rentHousesInfoPriceSD)

ggplot() +
  xlab("Preu del lloguer") + ylab("Nombre de lloguers") + ggtitle("Nombre de lloguers per preu") +
  geom_density(data=rentHousesInfoWithoutOutliers, aes(x = price), fill="steelblue")
```



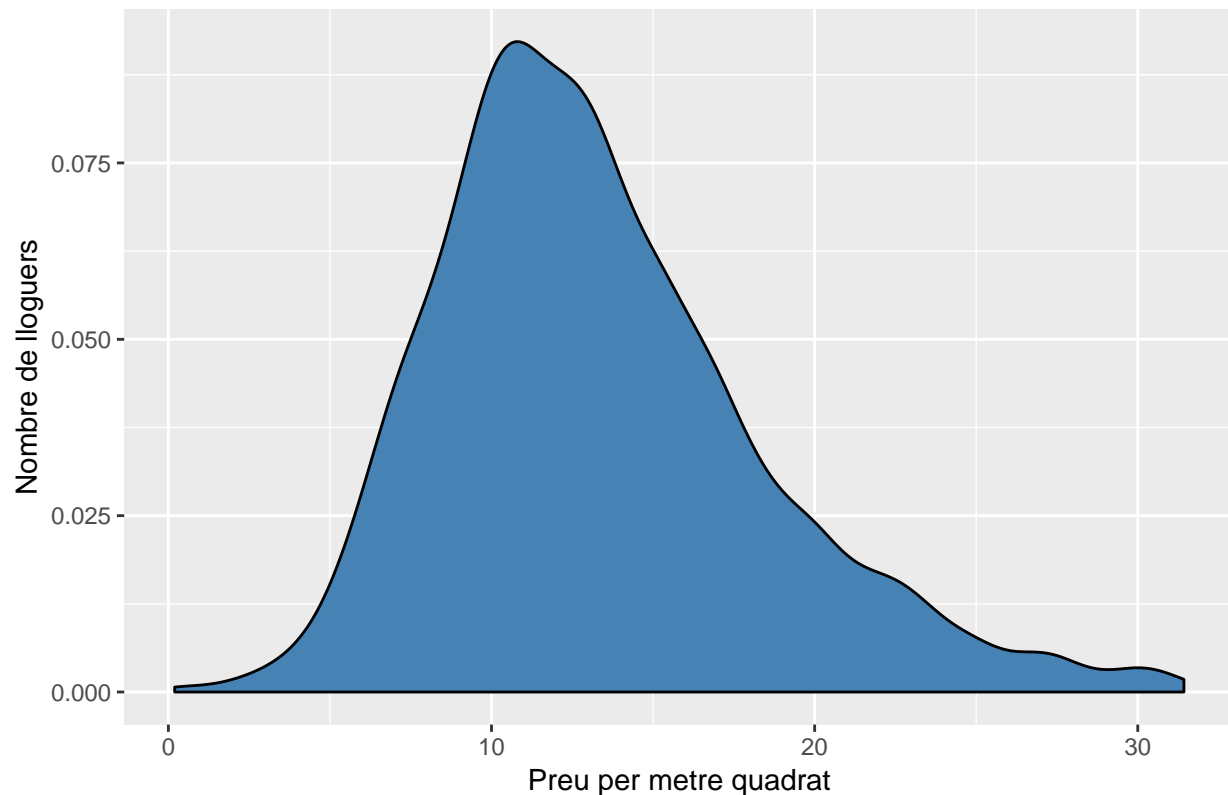
```
rentHousesInfoSizeSD <- sd(rentHousesInfo$size)
rentHousesInfoSizeMean <- mean(rentHousesInfo$size)
rentHousesInfoWithoutOutliersSize <- filter(rentHousesInfo, size <= rentHousesInfoSizeMean + 2 * rentHousesInfoSizeSD)

ggplot() +
  xlab("Tamany de l'habitatge") + ylab("Nombre de lloguers") + ggtitle("Nombre de lloguers per tamany d'habitatge") +
  geom_density(data=rentHousesInfoWithoutOutliersSize, aes(x = size), fill="steelblue")
```



```
rentHousesInfoPrizeMeterSD <- sd(rentHousesInfo$pricePerMeter)
rentHousesInfoPrizeMeterMean <- mean(rentHousesInfo$pricePerMeter)
rentHousesInfoPrizeMeterWithoutOutliers <- filter(rentHousesInfo, pricePerMeter <= rentHousesInfoPrizeMeterMean)
ggplot() +
  xlab("Preu per metre quadrat") + ylab("Nombre de lloguers") + ggtitle("Nombre de lloguers per preu per metre quadrat") +
  geom_density(data=rentHousesInfoPrizeMeterWithoutOutliers, aes(x = pricePerMeter), fill="steelblue")
```

## Nombre de lloguers per preu per metre quadrat



```
rentHousesInfoNum <- select(rentHousesInfo, price, numPhotos, size, rooms, bathrooms)
cor(rentHousesInfoNum)
```

```
##           price numPhotos      size      rooms bathrooms
## price      1.0000000 0.1974195 0.2346911 0.4272299 0.3063589
## numPhotos  0.1974195 1.0000000 0.1561616 0.3257555 0.1722801
## size       0.2346911 0.1561616 1.0000000 0.2948533 0.1745796
## rooms      0.4272299 0.3257555 0.2948533 1.0000000 0.4277965
## bathrooms  0.3063589 0.1722801 0.1745796 0.4277965 1.0000000
```

```
linearMod <- lm(price ~ numPhotos + size + rooms + bathrooms, data=rentHousesInfo)
summary(linearMod)
```

```
##
## Call:
## lm(formula = price ~ numPhotos + size + rooms + bathrooms, data = rentHousesInfo)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -19546    -791    -224     361    84955
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -559.8956   103.8890  -5.389 7.53e-08 ***
## numPhotos     12.7458     3.7952   3.358 0.000792 ***
## size          0.9171     0.1318   6.960 4.02e-12 ***
## rooms       652.5191    35.9629  18.144 < 2e-16 ***
```

```
## bathrooms      195.7269      22.4651      8.713 < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2416 on 3595 degrees of freedom
## Multiple R-squared:  0.215, Adjusted R-squared:  0.2141
## F-statistic: 246.1 on 4 and 3595 DF,  p-value: < 2.2e-16

linearModPT <- lm(price ~ propertyType, data=rentHousesInfo)
summary(linearModPT)

##
## Call:
## lm(formula = price ~ propertyType, data = rentHousesInfo)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -3209    -673    -273     241   86241
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      3758.91      85.36  44.038 < 2e-16 ***
## propertyTypecountryHouse -1166.03     210.58  -5.537 3.29e-08 ***
## propertyTypeduplex      -1983.51     313.21  -6.333 2.70e-10 ***
## propertyTypeflat        -2285.62     101.66 -22.483 < 2e-16 ***
## propertyTypepenthouse   -2174.44     179.39 -12.121 < 2e-16 ***
## propertyTypestudio      -2971.46     272.86 -10.890 < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2539 on 3594 degrees of freedom
## Multiple R-squared:  0.1328, Adjusted R-squared:  0.1316
## F-statistic: 110.1 on 5 and 3594 DF,  p-value: < 2.2e-16

linearModFloor <- lm(price ~ floor, data=rentHousesInfo)
summary(linearModFloor)

##
## Call:
## lm(formula = price ~ floor, data = rentHousesInfo)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1421    -537    -238     154   88229
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    2500.0      2134.0   1.171   0.242
## floor-2        -1300.0      3018.0  -0.431   0.667
## floor1         -1062.9      2135.8  -0.498   0.619
## floor10        -1134.4      2199.7  -0.516   0.606
## floor11        -1137.5      2221.2  -0.512   0.609
## floor13        -1850.0      3018.0  -0.613   0.540
## floor14        -1200.0      3018.0  -0.398   0.691
## floor15        -1650.0      2385.9  -0.692   0.489
```



```
## floor17      -1800.0      3018.0  -0.596    0.551
## floor2       -1115.7      2136.3  -0.522    0.602
## floor3       -1154.5      2137.2  -0.540    0.589
## floor4       -1024.7      2139.6  -0.479    0.632
## floor5        -911.5      2143.5  -0.425    0.671
## floor6        -704.9      2157.1  -0.327    0.744
## floor7       -1121.9      2161.9  -0.519    0.604
## floor8       -1149.1      2179.9  -0.527    0.598
## floor9       -1203.9      2192.5  -0.549    0.583
## floorbj       -728.9      2136.8  -0.341    0.733
## flooren      -1229.4      2195.9  -0.560    0.576
## floorss      -1675.0      2613.6  -0.641    0.522
## floorst       150.0       3018.0   0.050    0.960
##
## Residual standard error: 2134 on 2242 degrees of freedom
## (1337 observations deleted due to missingness)
## Multiple R-squared:  0.005686, Adjusted R-squared:  -0.003184
## F-statistic: 0.641 on 20 and 2242 DF, p-value: 0.8843
```

```
linearModDi <- lm(price ~ district, data=rentHousesInfo)
summary(linearModDi)
```

```
##
## Call:
## lm(formula = price ~ district, data = rentHousesInfo)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -11787   -639   -203    256   77312
##
## Coefficients:
##                                     Estimate Std. Error
## (Intercept)                       1447.86     440.05
## districtBadia Blava-Badia Gran-Tollerio      797.12     602.57
## districtBarcarés - Manresa - Bonaire     -297.86    1892.74
## districtBlanquer                     -532.86    1892.74
## districtCala Blava-Bellavista             362.14    1244.66
## districtCala En Blanes                   -797.86    2640.31
## districtCala En Bosch-Serpentona         -72.86    1892.74
## districtCala Llonga-Sa Mesquida           302.14    2640.31
## districtCala Magrana-Cala Anguila-Cala Mendia -102.86     933.49
## districtCala Morell                    -247.86    2640.31
## districtCala Pi-Vallgornera              506.31    1150.32
## districtCala Vedella - Cala Tarida - Cala Conta 1469.46     560.96
## districtCala Vinyes                     2546.14     681.73
## districtCales de Mallorca               -764.52    1150.32
## districtCalvià pueblo                   1246.97     653.73
## districtCan Picafort                    -597.86     785.65
## districtCas Catala                      674.37     586.74
## districtCentro                       -152.86    1374.06
## districtCentro - S'Eixample - Can Misses     432.61     592.68
## districtCiutadella                     -807.23    1020.22
## districtCiutat Antigua                   19.09     464.00
## districtCiutat d'Alcúdia                 -81.19    1566.16
## districtCosta d'En Blanes               6102.14     972.99
```

## districtCosta de la Calma	694.60	708.32
## districtCristo Rey - Parque Europa	-456.19	1566.16
## districtDalt Vila - La Marina	175.83	741.86
## districtEl Toro	1447.67	741.86
## districtEs Camp de Mar	1543.05	899.88
## districtEs Cubells	3414.64	1020.22
## districtEs Forti - Son Cotoner - Son Dameto	-167.34	541.59
## districtEs Garrovers	1443.05	899.88
## districtEstabliments - Son Sardina	1510.81	803.42
## districtFelanitx centro	68.81	870.89
## districtFigueretes - Platja d'En Bossa	773.17	589.65
## districtFornells	-797.86	2640.31
## districtGenova - Bonanova - Sant Agustí	154.91	473.91
## districtGran Via de Colom	-97.86	1150.32
## districtIlletes	145.67	626.89
## districtJesús/Nuestra Señora de Jesús	2359.49	552.05
## districtLa Vileta - Son Rapinya	69.34	681.73
## districtLas Avenidas	-242.01	496.58
## districtLlevant - La Soledat	-336.52	803.42
## districtLlucmajor Interior	696.79	660.08
## districtMagaluf	-489.37	631.69
## districtMaioris-Puig de Ros	124.20	626.89
## districtManacor Centro	554.26	674.03
## districtMaó	152.14	2640.31
## districtMarina Botafoc - Talamanca	1513.77	498.75
## districtMarratxinet	-497.86	2640.31
## districtPalmanova	-158.90	541.59
## districtPeguera	-158.57	823.26
## districtPla de na Tesa	2052.14	2640.31
## districtPlaya de Palma	-45.19	471.56
## districtPlayas de Fornells	-1047.86	2640.31
## districtPont d'Inca	-197.86	2640.31
## districtPort d'Addaia	552.14	2640.31
## districtPort d'Alcúdia - Platja d'Alcúdia	-341.19	803.42
## districtPort d'Andratx	4372.67	602.57
## districtPortals Nous - Bendinat	1246.35	518.61
## districtPortixol-Molinar	541.01	586.74
## districtPorto Cristo	110.48	870.89
## districtPortocolom	378.33	718.60
## districtPòrtol	1352.14	2640.31
## districtPuig Den Valls	11239.64	1020.22
## districtRafal - Son Forteza	-487.86	636.75
## districtS'Arenal	-197.86	626.89
## districtS'Estanyol	-605.00	1077.90
## districtS'Horta - Cas Concos des Cavaller	-364.52	1566.16
## districtS'Illot-Cala Morlanda	-340.71	1077.90
## districtS'Arracó	452.14	2640.31
## districtSa Cabana - Can Carbonell - Ses Cases Noves	467.98	1150.32
## districtSa Cabaneta	1064.87	708.32
## districtSa Indioteria - Son Castelló	-97.86	1566.16
## districtSa Torre	-352.14	660.08
## districtSan Agustín - Cala de Bou	709.19	589.65
## districtSan Carlos	1163.75	660.08
## districtSant Elm	49.29	823.26

## districtSant Jordi de Ses Salines	1833.28	589.65
## districtSant Josep	2117.36	698.80
## districtSanta Eulalia del Río	931.37	548.84
## districtSanta Gertrudis	7091.03	755.10
## districtSanta Margalida	1802.14	1892.74
## districtSanta Ponça	1434.69	489.01
## districtSecar de la Real	-281.19	1566.16
## districtSes Palmeres	-13.24	845.58
## districtSol de Mallorca	2536.60	595.83
## districtSon Amonda - Reis Catòlics	-747.86	2640.31
## districtSon Ferriol - Sant Jordi	319.09	755.10
## districtSon Oliva - Plaza Toros - Camp Redó	-184.88	613.86
## districtSon Ramonell - Es Figueras	252.14	1566.16
## districtSon Serra de Marina	-697.86	2640.31
## districtSon Verí	302.14	823.26
## districtSon Vida	4821.59	755.10
## districtSta Catalina - Son Armadans - Maritim	139.47	476.14
## districtZona periurbana	664.64	1020.22
##	t value	Pr(> t )
## (Intercept)	3.290	0.001013 **
## districtBadia Blava-Badia Gran-Tollerica	1.323	0.185980
## districtBarcarés - Manresa - Bonaire	-0.157	0.874965
## districtBlanquer	-0.282	0.778325
## districtCala Blava-Bellavista	0.291	0.771103
## districtCala En Blanes	-0.302	0.762534
## districtCala En Bosch-Serpentona	-0.038	0.969297
## districtCala Llonga-Sa Mesquida	0.114	0.908901
## districtCala Magrana-Cala Anguila-Cala Mendia	-0.110	0.912270
## districtCala Morell	-0.094	0.925215
## districtCala Pi-Vallgornera	0.440	0.659864
## districtCala Vedella - Cala Tarida - Cala Conta	2.620	0.008849 **
## districtCala Vinyes	3.735	0.000191 ***
## districtCales de Mallorca	-0.665	0.506348
## districtCalvià pueblo	1.907	0.056554 .
## districtCan Picafort	-0.761	0.446735
## districtCas Catala	1.149	0.250504
## districtCentro	-0.111	0.911430
## districtCentro - S'Eixample - Can Misses	0.730	0.465494
## districtCiutadella	-0.791	0.428870
## districtCiutat Antigua	0.041	0.967183
## districtCiutat d'Alcúdia	-0.052	0.958659
## districtCosta d'En Blanes	6.272	4.09e-10 ***
## districtCosta de la Calma	0.981	0.326857
## districtCristo Rey - Parque Europa	-0.291	0.770857
## districtDalt Vila - La Marina	0.237	0.812668
## districtEl Toro	1.951	0.051104 .
## districtEs Camp de Mar	1.715	0.086500 .
## districtEs Cubells	3.347	0.000827 ***
## districtEs Forti - Son Cotoner - Son Dameto	-0.309	0.757354
## districtEs Garrovers	1.604	0.108909
## districtEstabliments - Son Sardina	1.880	0.060142 .
## districtFelanitx centro	0.079	0.937029
## districtFigueretes - Platja d'En Bossa	1.311	0.189879
## districtFornells	-0.302	0.762534

## districtGenova - Bonanova - Sant Agustí	0.327 0.743793
## districtGran Via de Colom	-0.085 0.932212
## districtIlletes	0.232 0.816263
## districtJesús/Nuestra Señora de Jesús	4.274 1.98e-05 ***
## districtLa Vileta - Son Rapinya	0.102 0.918988
## districtLas Avenidas	-0.487 0.626053
## districtLlevant - La Soledat	-0.419 0.675346
## districtLlucmajor Interior	1.056 0.291232
## districtMagaluf	-0.775 0.438574
## districtMaioris-Puig de Ros	0.198 0.842961
## districtManacor Centro	0.822 0.410973
## districtMaó	0.058 0.954053
## districtMarina Botafoc - Talamanca	3.035 0.002425 **
## districtMarratxinet	-0.189 0.850451
## districtPalmanova	-0.293 0.769237
## districtPeguera	-0.193 0.847275
## districtPla de na Tesa	0.777 0.437082
## districtPlaya de Palma	-0.096 0.923665
## districtPlayas de Fornells	-0.397 0.691493
## districtPont d'Inca	-0.075 0.940270
## districtPort d'Addaia	0.209 0.834369
## districtPort d'Alcúdia - Platja d'Alcúdia	-0.425 0.671107
## districtPort d'Andratx	7.257 5.03e-13 ***
## districtPortals Nous - Bendinat	2.403 0.016310 *
## districtPortixol-Molinar	0.922 0.356569
## districtPorto Cristo	0.127 0.899064
## districtPortocolom	0.526 0.598590
## districtPòrtol	0.512 0.608609
## districtPuig Den Valls	11.017 < 2e-16 ***
## districtRafal - Son Forteza	-0.766 0.443635
## districtS'Arenal	-0.316 0.752314
## districtS'Estanyol	-0.561 0.574652
## districtS'Horta - Cas Concos des Cavaller	-0.233 0.815971
## districtS'Illot-Cala Morlanda	-0.316 0.751956
## districtS'Arracó	0.171 0.864042
## districtSa Cabana - Can Carbonell - Ses Cases Noves	0.407 0.684169
## districtSa Cabaneta	1.503 0.132849
## districtSa Indioteria - Son Castelló	-0.062 0.950183
## districtSa Torre	-0.533 0.593737
## districtSan Agustín - Cala de Bou	1.203 0.229174
## districtSan Carlos	1.763 0.077995 .
## districtSant Elm	0.060 0.952266
## districtSant Jordi de Ses Salines	3.109 0.001894 **
## districtSant Josep	3.030 0.002467 **
## districtSanta Eulalia del Río	1.697 0.089808 .
## districtSanta Gertrudis	9.391 < 2e-16 ***
## districtSanta Margalida	0.952 0.341105
## districtSanta Ponça	2.934 0.003373 **
## districtSecar de la Real	-0.180 0.857525
## districtSes Palmeres	-0.016 0.987507
## districtSol de Mallorca	4.257 2.13e-05 ***
## districtSon Amonda - Reis Catòlics	-0.283 0.777008
## districtSon Ferriol - Sant Jordi	0.423 0.672636
## districtSon Oliva - Plaza Toros - Camp Redó	-0.301 0.763296

```
## districtSon Ramonell - Es Figueral          0.161 0.872109
## districtSon Serra de Marina                -0.264 0.791560
## districtSon Verí                          0.367 0.713640
## districtSon Vida                          6.385 1.98e-10 ***
## districtSta Catalina - Son Armadans - Maritim 0.293 0.769605
## districtZona periurbana                    0.651 0.514793
```

```
## ---
```

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

```
##
```

```
## Residual standard error: 2603 on 2979 degrees of freedom
```

```
## (526 observations deleted due to missingness)
```

```
## Multiple R-squared:  0.1863, Adjusted R-squared:  0.1606
```

```
## F-statistic: 7.255 on 94 and 2979 DF, p-value: < 2.2e-16
```

```
linearModMu <- lm(price ~ municipality, data=rentHousesInfo)
summary(linearModMu)
```

```
##
```

```
## Call:
```

```
## lm(formula = price ~ municipality, data = rentHousesInfo)
```

```
##
```

```
## Residuals:
```

```
##      Min       1Q   Median       3Q      Max
## -3491    -822    -341     259   86009
```

```
##
```

```
## Coefficients:
```

```
##              Estimate Std. Error t value
## (Intercept)      8.000e+02  2.646e+03   0.302
## municipalityAlaró      2.567e+03  2.708e+03   0.948
## municipalityAlcúdia     3.500e+02  2.711e+03   0.129
## municipalityAlgaida     1.717e+03  2.858e+03   0.601
## municipalityAlqueria Blanca 9.000e+01  2.899e+03   0.031
## municipalityAndratx     2.559e+03  2.659e+03   0.962
## municipalityAriany       4.000e+02  3.742e+03   0.107
## municipalityArta        1.008e+03  2.858e+03   0.353
## municipalityBañalbufar    1.200e+03  3.742e+03   0.321
## municipalityBetlem       1.067e+02  3.055e+03   0.035
## municipalityBinissalem    1.180e+03  2.706e+03   0.436
## municipalityBunyola      1.300e+03  2.858e+03   0.455
## municipalityCala Bona     2.760e+02  2.899e+03   0.095
## municipalityCala d'Or     1.214e+02  2.829e+03   0.043
## municipalityCala Millor    2.100e+02  2.899e+03   0.072
## municipalityCala Ratjada   1.158e+02  2.858e+03   0.041
## municipalityCalvià        1.747e+03  2.648e+03   0.659
## municipalityCampanet      7.167e+02  2.789e+03   0.257
## municipalityCampos        7.392e+02  2.701e+03   0.274
## municipalityCanyamel     -1.200e+02  3.055e+03  -0.039
## municipalityCapdepera     3.475e+02  2.807e+03   0.124
## municipalityCiutadella de Menorca 1.042e+01  2.754e+03   0.004
## municipalityColonia de Sant Jordi 5.027e+02  2.706e+03   0.186
## municipalityColonia de Sant Pere 2.667e+02  2.858e+03   0.093
## municipalityConsell       1.200e+03  3.742e+03   0.321
## municipalityCosta de los Pinos 1.767e+03  3.055e+03   0.578
## municipalityCostitx       4.512e+02  2.807e+03   0.161
## municipalityEivissa       1.705e+03  2.652e+03   0.643
```

## municipalityEs Castell	-2.000e+02	3.742e+03	-0.053
## municipalityEs Mercadal	2.167e+02	3.055e+03	0.071
## municipalityEsporles	2.965e+03	2.711e+03	1.094
## municipalityEstellenchs	-1.064e-08	3.742e+03	0.000
## municipalityFelanitx	8.611e+02	2.683e+03	0.321
## municipalityFerrerries	-4.500e+02	3.742e+03	-0.120
## municipalityFormentera	5.500e+02	3.241e+03	0.170
## municipalityFornalutx	4.000e+02	3.742e+03	0.107
## municipalityInca	6.869e+02	2.701e+03	0.254
## municipalityLloret de Vista Alegre	9.818e+02	2.764e+03	0.355
## municipalityLloseta	1.237e+03	2.958e+03	0.418
## municipalityLlubi	-5.000e+01	3.742e+03	-0.013
## municipalityLlucmajor	8.570e+02	2.652e+03	0.323
## municipalityManacor	7.747e+02	2.668e+03	0.290
## municipalityMancor de la Vall	2.842e+02	2.858e+03	0.099
## municipalityMaó/Mahon	8.750e+02	3.241e+03	0.270
## municipalityMaria de la Salut	2.500e+01	3.241e+03	0.008
## municipalityMarratxi	1.639e+03	2.675e+03	0.613
## municipalityMontuiri	-6.000e+01	2.899e+03	-0.021
## municipalityMuro	3.194e+02	2.789e+03	0.115
## municipalityPalma de Mallorca	7.407e+02	2.647e+03	0.280
## municipalityPalmanyola	1.298e+03	2.764e+03	0.470
## municipalityPetra	8.000e+01	3.241e+03	0.025
## municipalityPobla (Sa)	-1.066e-08	2.899e+03	0.000
## municipalityPollença	1.558e+03	2.754e+03	0.566
## municipalityPorreres	1.090e+03	2.775e+03	0.393
## municipalityPortinax	5.000e+01	3.241e+03	0.015
## municipalityPuerto de Pollença	1.406e+03	2.789e+03	0.504
## municipalityPuigpunyent	2.260e+03	2.899e+03	0.780
## municipalityS'Stanyol	3.000e+02	3.742e+03	0.080
## municipalityS'Illo	-5.000e+01	3.241e+03	-0.015
## municipalitySa Coma	2.667e+02	3.055e+03	0.087
## municipalitySa Ràpita	8.357e+02	2.829e+03	0.295
## municipalitySan Rafael	1.330e+03	2.775e+03	0.479
## municipalitySan Vicente	6.250e+01	2.958e+03	0.021
## municipalitySant Antoni de Portmany	1.668e+03	2.667e+03	0.625
## municipalitySant Joan	1.819e+03	2.807e+03	0.648
## municipalitySant Joan de Labritja	4.120e+03	2.739e+03	1.504
## municipalitySant Josep de Sa Talaia	2.192e+03	2.654e+03	0.826
## municipalitySant Llorenç Des Cardassar	1.016e+03	2.807e+03	0.362
## municipalitySanta Eugenia	9.821e+02	2.829e+03	0.347
## municipalitySanta Eulalia del Río	3.191e+03	2.654e+03	1.203
## municipalitySanta Margalida	2.974e+02	2.715e+03	0.110
## municipalitySanta Maria del Cami	2.327e+03	2.764e+03	0.842
## municipalitySantanyi	6.110e+02	2.699e+03	0.226
## municipalitySelva	7.091e+02	2.764e+03	0.257
## municipalitySencelles	9.500e+02	2.958e+03	0.321
## municipalitySes Salines (Mallorca)	1.058e+03	2.829e+03	0.374
## municipalitySineu	5.900e+02	2.746e+03	0.215
## municipalitySoller	1.817e+03	2.739e+03	0.663
## municipalitySon Carrio	7.000e+02	3.742e+03	0.187
## municipalitySon Servera	8.300e+02	2.899e+03	0.286
## municipalityValldemossa	1.725e+03	2.958e+03	0.583
## municipalityVillafranca de Bonany	9.250e+01	2.958e+03	0.031

##	Pr(> t )
## (Intercept)	0.762
## municipalityAlaró	0.343
## municipalityAlcúdia	0.897
## municipalityAlgaida	0.548
## municipalityAlqueria Blanca	0.975
## municipalityAndratx	0.336
## municipalityAriany	0.915
## municipalityArta	0.724
## municipalityBañalbufar	0.748
## municipalityBetlem	0.972
## municipalityBinissalem	0.663
## municipalityBunyola	0.649
## municipalityCala Bona	0.924
## municipalityCala d'Or	0.966
## municipalityCala Millor	0.942
## municipalityCala Ratjada	0.968
## municipalityCalvià	0.510
## municipalityCampanet	0.797
## municipalityCampos	0.784
## municipalityCanyamel	0.969
## municipalityCapdepera	0.901
## municipalityCiutadella de Menorca	0.997
## municipalityColonia de Sant Jordi	0.853
## municipalityColonia de Sant Pere	0.926
## municipalityConsell	0.748
## municipalityCosta de los Pinos	0.563
## municipalityCostitx	0.872
## municipalityEivissa	0.520
## municipalityEs Castell	0.957
## municipalityEs Mercadal	0.943
## municipalityEsporles	0.274
## municipalityEstellenchs	1.000
## municipalityFelanitx	0.748
## municipalityFerrerries	0.904
## municipalityFormentera	0.865
## municipalityFornalutx	0.915
## municipalityInca	0.799
## municipalityLloret de Vista Alegre	0.722
## municipalityLloseta	0.676
## municipalityLlubi	0.989
## municipalityLlucmajor	0.747
## municipalityManacor	0.772
## municipalityMancor de la Vall	0.921
## municipalityMaó/Mahon	0.787
## municipalityMaria de la Salud	0.994
## municipalityMarratxi	0.540
## municipalityMontuiri	0.983
## municipalityMuro	0.909
## municipalityPalma de Mallorca	0.780
## municipalityPalmanyola	0.639
## municipalityPetra	0.980
## municipalityPobla (Sa)	1.000
## municipalityPollença	0.572

```

## municipalityPorreres          0.695
## municipalityPortinax          0.988
## municipalityPuerto de Pollena 0.614
## municipalityPuigpunyent       0.436
## municipalityS'Stanyol         0.936
## municipalityS`Illot           0.988
## municipalitySa Coma           0.930
## municipalitySa R pita         0.768
## municipalitySan Rafael        0.632
## municipalitySan Vicente       0.983
## municipalitySant Antoni de Portmany 0.532
## municipalitySant Joan         0.517
## municipalitySant Joan de Labritja 0.133
## municipalitySant Josep de Sa Talaia 0.409
## municipalitySant Lloren Des Cardassar 0.717
## municipalitySanta Eugenia     0.728
## municipalitySanta Eulalia del R o 0.229
## municipalitySanta Margalida   0.913
## municipalitySanta Maria del Cami 0.400
## municipalitySantanyi         0.821
## municipalitySelva             0.798
## municipalitySencelles        0.748
## municipalitySes Salines (Mallorca) 0.708
## municipalitySineu            0.830
## municipalitySoller           0.507
## municipalitySon Carrio        0.852
## municipalitySon Servera       0.775
## municipalityValldemossa       0.560
## municipalityVillafranca de Bonany 0.975
##
## Residual standard error: 2646 on 3518 degrees of freedom
## Multiple R-squared:  0.07823,    Adjusted R-squared:  0.057
## F-statistic: 3.686 on 81 and 3518 DF,  p-value: < 2.2e-16
ncol(rentHousesInfo)

## [1] 28

```