



Airbnb in the Parisian market

Minimising revenue risk
of legal challenges in the
rental market

Agenda

01 Context

Where were we 2 years ago?

02 Current Status

Where are we today?

03 Recommendations

Where do we go from here?



01

Context

Recognising the regulatory climate

Paris City Hall has sought fines for Airbnb in the order of **€12.5 million**.*

There is an active risk to the host base as well, which could face a **collective total of €268 million in fines**, conservatively.**

Pressure in Paris also strengthens the position of other cities where Airbnb is facing legal challenges, as well as the ongoing case with the European Commission.



* Taken from France24 news network.

** Taken from The Local news network.

** Figure obtained from multiplying the value of the fines by the number of unlicensed properties in 2018.

“While we may not have all the details yet, it looks increasingly likely that holiday rentals in Paris will be subject to **even tighter restrictions going forward**”

**Susie Hollands,
CEO, VINGT Editorial**

“There are about 30,000 Airbnb-type rentals in Paris,
the task is to get them back”

**Anne Hidalgo,
Mayor of Paris**

Grounding it in numbers

According to Parisian regulations of 2018, most hosts are required to have a license and Airbnb is required to display their license in the marketplace.

Only **19% of hosts in the marketplace have a license.**

Total Marketplace	
Listings with licenses	12,409
Listings requiring licenses	66,006
% of listings licensed	19%

Differentiating between hosts

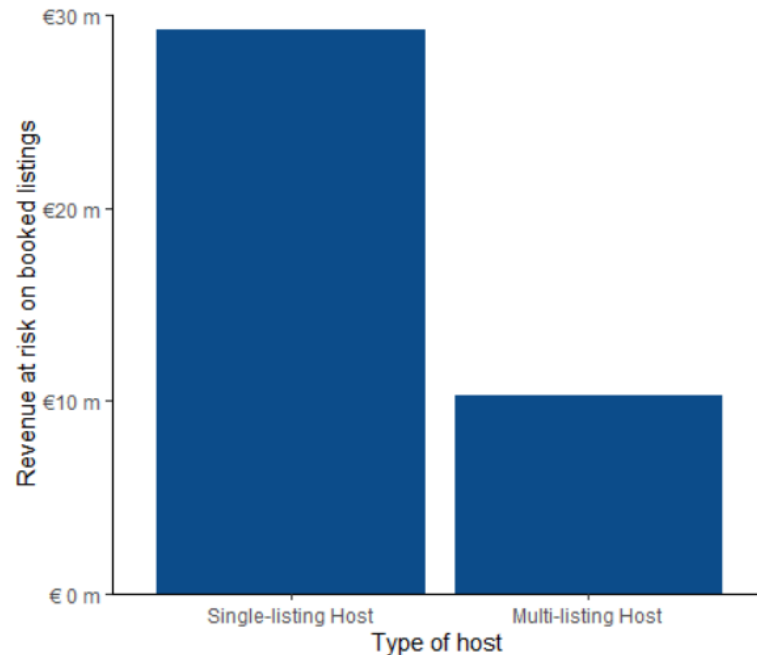
The licensing requirement situation was not differentiated across hosts types, with single-property hosts falling in line with the global average while **22% of listings of multi-property hosts had licenses.**

	Total Marketplace	Single-property hosts	Multi-property hosts
Listings with licenses	12,409	8,613	3,796
Listings requiring licenses	66,006	48,755	17,277
% of listings licensed	19%	18%	22%

Assessing historical revenue risk

The direct revenue at risk from booked properties is **€39.5M***.
Single-listing hosts account for 74% of this number, and multi-listing ones for the remainder 26%.

```
ggplot(df_unlicensed) +  
  aes(x = host_is_multihost, weight = revenueABNB_Booked) +  
  geom_bar(fill = "#0c4c8a") +  
  labs(x = "Type of host", y = "Revenue at risk on booked listings") +  
  theme_classic() +  
  scale_x_discrete(labels = host_labels) +  
  scale_y_continuous(labels = unit_format(scale = 0.000001, prefix =  
    "$", unit = "m", trim = FALSE), expand = c(0,0), limits =  
    c(0,300000000))
```



* All revenue figures are taken using Airbnb's 3% fee.



02

Current Status

Evaluating change over time

Airbnb has almost **doubled the licensed listings** compared to 2018.

There has been a **major shift in the distribution of host types**, with most properties now listed belonging to single-property hosts.

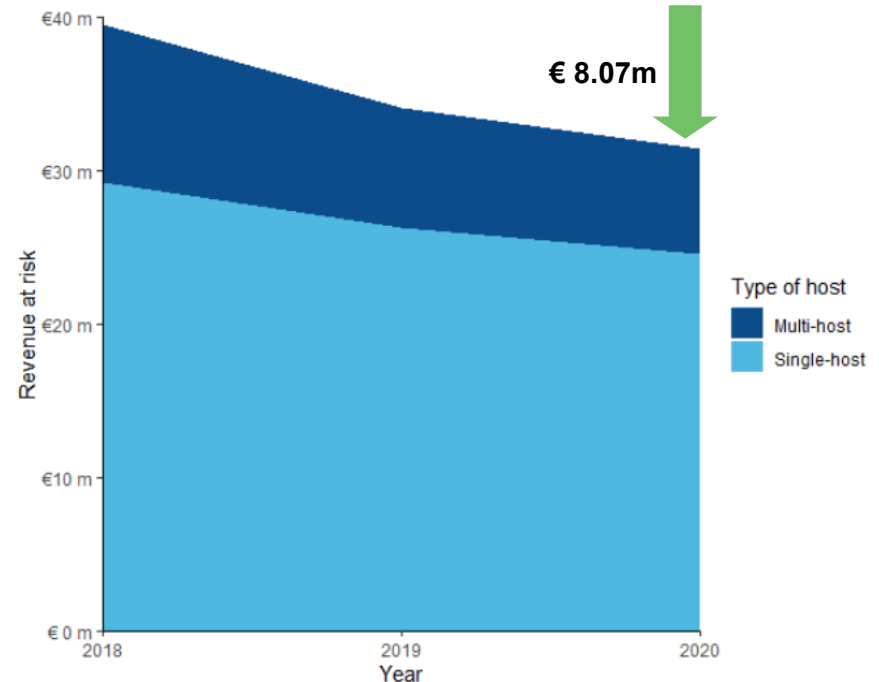
	Total Marketplace*	Single-property hosts	Multi-property hosts
Listings with licenses	21,695 (+9,286)	16,666 (+8,053)	5,029 (+1,233)
Listings requiring licenses	66,326 (+320)	57,903 (+9,148)	8,423 (-8,854)
% of listings licensed	38% (+19%)	29% (+11%)	60% (+38%)

* Data from 2020.

Revisiting revenue at risk

The greater number of overall licenses has **decreased revenue risk by 20%**, €3.4m for single-listing hosts and €4.7m for hosts with multiple listings.

```
compYearlyRev %>% ggplot(aes(x = Year, y = `Revenue at risk`, fill =  
`Type of host`)) +  
  geom_area(aes(group = `Type of host`, fill = `Type of host`)) +  
  theme_classic() +  
  scale_x_discrete(expand = c(0,0)) +  
  scale_y_continuous(labels = unit_format(scale = 0.000001, prefix = "€",  
unit = "m", trim = FALSE), expand = c(0,0), limits = c(0, 40000000)) +  
  scale_fill_manual(values=c("#0c4c8a", "#4eb8e1"))
```



Understanding change vectors

	2020			
	<i>Licensed</i>	<i>Unlicensed</i>	<i>Offline</i>	
	<hr/>			
	<i>Unlicensed</i>	6,902	26,900	22,180
	<hr/>			
2018	<i>Licensed</i>	7,161	55	5,193
	<hr/>			
	<i>Non-existing</i>	10,108	21,169	N/A

Properties in Paris experience a strong churn, with **41.4% of them offline** after two years.

In the marketplace there are **21,169 new listings without a license**.

Additionally, the **majority of unlicensed properties in 2018 remain so** today.

Understanding change vectors

	2020		
	Licensed	Unlicensed	Offline
2018 Unlicensed	6,902	26,900	22,180
Licensed	7,161	55	5,193
Non-existing	10,108	21,169	N/A

Properties in Paris experience a strong churn, with **41.4% of them offline** after two years.

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03

Recommendations

Planning for present and future hosts

01

Future hosts

Up-front licensing
requirements

02

Current hosts

Enforcement
mechanisms

03

Current hosts

Educational effort



9,210

Unlicensed old (+1 year)
listings without a single
review

Removing them would reduce Airbnb's liability
without impacting user experience.

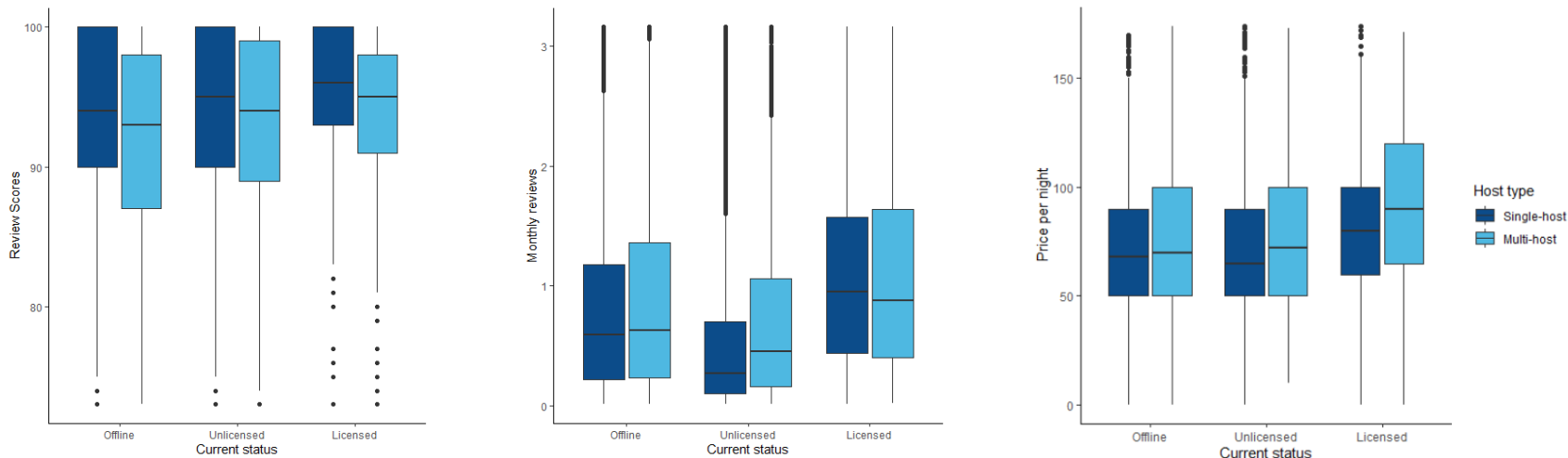
These listings can amount to **over €46m in fines
to hosts**, without considering the company's
direct exposition to regulatory efforts.

1,759 of these listings come from only 1,000 multi-
property hosts.

Enhancing the conversation with metrics

Having a **licensed status improves listing value** due to improved review scores, number of monthly reviews (i.e. bookings), and price per night.

Multi-licensing hosts also tend to show more bookings and a higher price point.





Thanks!

Juan Vásquez

Appendix

Cleaning the dataset

```
library(tidyverse)
library(readr)

df <- read_csv("C:/Users/juan.vasquez/OneDrive - Tremor International/01 PROJECTS/3CV - Legwork/Liveramp/Paris Airbnb Listings Final.csv")
df_clean <- df[, -c(2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,21,22,24,25,28,30,31,32,33,38,41,42,43,45,46,47,48,51,76,91)]
rm(df)

df_clean$host_id <- as.factor(df_clean$host_id)
df_clean$host_is_superhost <- ifelse(df_clean$host_is_superhost == TRUE, 1, 0)
df_clean$has_license <- ifelse(!is.na(df_clean$license), 1, 0)
df_clean$host_is_multihost <- ifelse(df_clean$host_total_listings_count > 1, 1, 0)
df_clean$revenueABNB <- df_clean$price * 0.03
df_clean$future_occupancy <- 365 - df_clean$availability_365
df_clean$revenueABNB_Booked <- df_clean$revenueABNB * df_clean$future_occupancy
df_clean <- df_clean[!is.na(df_clean$host_is_multihost),]

df_clean$d_requires_license <- ifelse(df_clean$host_is_multihost == 1 || (df_clean$host_is_multihost == 0 && df_clean$room_type != "Private room"), 1, 0)
```

Appendix

Secondary datasets

```
str(df_2020)
tibble [66,326 x 80] (S3: tbl_df/tbl/data.frame)
 $ id                               : num [1:66326] 2577 3109 4890 5396 7397
 $ listing_url                     : chr [1:66326] "https://www.airbnb.com/rooms/5396" ...
 $ scrape_id                       : num [1:66326] 2.02e+13 2.02e+13 2.02e+13
 $ last_scraped                   : Date [1:66326], format: "2020-11-05" "2020-11-05" ...
 $ name                           : chr [1:66326] "Loft for 4 by Canal Saint-Martin" ...
 $ description                     : chr [1:66326] "100 m2 loft (1100 sq feet) in a beautiful building in the 11th arrondissement of Paris. The apartment is bright and airy, with a high ceiling and large windows. It features a modern kitchen, a living area with a fireplace, and a bedroom with a double bed. The location is perfect for exploring the city, with many restaurants, shops, and museums nearby." ...
>the space/<br><br> />I bedroom apartment in Paris 14" "Stylish & Classic one bedroom apartment with a modern kitchen, a living area with a fireplace, and a bedroom with a double bed. The location is perfect for exploring the city, with many restaurants, shops, and museums nearby." ...
 $ neighborhood_overview          : chr [1:66326] NA "Good restaurants" "Good restaurants" ...
 $ neighborhood                    : chr [1:66326] "3rd Arrondissement or the Haut Marais" "3rd Arrondissement or the Haut Marais" ...
 $ picture_url                    : chr [1:66326] "https://a0.muscache.com/c4-455c0bb2e77.jpg" "https://a0.muscache.com/pictures/b144884f-b655410b-87c7-46009f06c4-455c0bb2e77.jpg" ...
 $ host_id                        : factor w/ 54656 levels "2626", "2827", ...
 $ host_url                       : chr [1:66326] "https://www.airbnb.com/users/show/7903" ...
 $ host_name                      : chr [1:66326] "Karine" "Anne" "Ryan" ...
 $ host_since                     : Date [1:66326], format: "2008-09-09" "2008-09-09" ...
 $ host_location                  : chr [1:66326] "Casablanca, Grand Casablanca" "Casablanca, Grand Casablanca" ...
 $ host_about                     : chr [1:66326] "Arrivée à Casablanca il y a 450+ Positive TripAdvisor Reviews and we are looking forward to welcoming you to our home." ...
 $ host_response_time             : chr [1:66326] "a few days or more" "within a few days" ...
 $ host_response_rate             : chr [1:66326] "0%" "100%" "96%" "100%" ...
 $ host_acceptance_rate          : chr [1:66326] "67%" "0%" "100%" "100%" ...
 $ host_is_superhost              : num [1:66326] 0 0 0 1 0 0 1 1 1 ...
 $ host_thumbnail_url            : chr [1:66326] "https://a0.muscache.com/1m/users/3631/profile_pic/1375800198/original.jpg?aki_policy=profile-small" "https://a0.muscache.com/1m/users/3631/profile_pic/1280002723/original.jpg?aki_policy=profile-small" ...
 $ host_picture_url              : chr [1:66326] "https://a0.muscache.com/1m/users/3631/profile_pic/1375800198/original.jpg?aki_policy=profile-x_medium" "https://a0.muscache.com/1m/users/3631/profile_pic/1280002723/original.jpg?aki_policy=profile-x_medium" ...
 $ host_neighbourhood            : chr [1:66326] "Le Marais" "Le Marais" "Le Marais" ...
 $ host_listings_count            : num [1:66326] 2 1 9 1 3 0 3 1 4 ...
 $ host_total_listings_count      : num [1:66326] 2 1 9 1 3 0 3 1 4 ...
 $ host_verifications             : chr [1:66326] "I've verified my identity" "I've verified my identity" ...
 $ offline_government_id         : chr [1:66326] "I've verified my identity" "I've verified my identity" ...
 $ host_has_profile_pic           : logi [1:66326] TRUE TRUE TRUE TRUE TRUE TRUE ...
 $ host_identity_verified         : logi [1:66326] TRUE FALSE TRUE TRUE TRUE TRUE ...
 $ neighbourhood                 : chr [1:66326] NA "Paris, 11e-de-France" "Paris, 11e-de-France" ...
 $ neighbourhood_cleaned         : chr [1:66326] "Entrepôt" "Observatoire" "Observatoire" ...
 $ neighbourhood_group_cleaned   : logi [1:66326] NA NA NA NA NA NA NA ...
 $ latitude                      : num [1:66326] 48.9 48.8 48.9 48.9 48.9 48.9 ...
 $ longitude                     : num [1:66326] 2.36 2.32 2.36 2.32 2.36 2.32 ...
```

```

str(df,2015)
tibble[[66,515 x 112]] (df3: tbl_df<tbl/data.frame>)
  $ id : num [1:66515] 3109 5396 7397 7964 8522 ...
  $ listing_url : chr [1:66515] "https://www.airbnb.com/rooms/3109/" "https://www.airbnb.c
rooms/7964/..."
  $ scrape_id : num [1:66515] 2,02e13 2,02e13 2,02e13 2,02e13 2,02e13 ...
  $ last_scraped : Date[1:66515], format: "2019-08-12" "2019-08-12" "2019-08-12" "2019-08-12" "2019-08-12"
  $ name : chr [1:66515] "zen and calm" "Explore the heart of old Paris" "MARAIIS -
  $ summary : chr [1:66515] "Appartement très calme de 50M2 utilisation de l'appartem
zy, well-appointed and graciously designed studio apartment that mixes old and new aesthetics at the very hea" | truncated
e, for you! - Sunny living room & bedroom" | truncated
  $ space : chr [1:66515] "I bedroom apartment in Paris 14" "Small, well appointed
FOUR-NIGHT MINI" | truncated. "PLEASE ASK ME BEFORE TO MAKE A REQUEST !!! No check-in hour: I do my best ! HEART OF T
e meter apartment in the 9e arrondissement. It is located on a pedestrian stre" | truncated...
  $ description : chr [1:66515] "I bedroom apartment in Paris 14 Good restaurants very c
zy, well-appointed and graciously designed studio apartment that mixes old and new aesthetics at the very hea" | trunca
KE A REQUEST !!! No check-in hour: I do my" | truncated. "Very large & nice apartment all for you! - Sunny living ro
e, for you! - Sunny living room & bedroom" | truncated
  $ neighborhood_overview : chr [1:66515] "none" "none" "none"
  $ neighborhood_overview : chr [1:66515] "Good restaurants very close the Montparnasse Station 15
Notre Dame, Le Marais, Les Halles, Chatelet, St. Germain, Les Tu" | truncated. NA NA ...
  $ notes : chr [1:66515] NA "The staircase leading up to the apartment is narrow a
"Important: Be conscious that an apartment in a building of the old Paris is not an apartment in a tower of Sing" | tr
  $ transit : chr [1:66515] "RER B Metro Ligne 13 Pernety Metro Ligne 13 Plaisance Me
e, for you! - Sunny living room & bedroom" | truncated. "Metro station HOTEL-DE-VILLE is 100
  $ access : chr [1:66515] "A la demande, vous pouvez avoir accès à la chambre d'enf
e, stove, oven, toaster and coffee press. For sleepi" | truncated. NA "You have access to all the apartment." ...
  $ interaction : chr [1:66515] "yes I can help you out" "we expect guests to operate rou
to ca" | truncated. NA "We are there to welcome you, give you keys and advice you on great places to eat & drink arou
  $ house_rules : chr [1:66515] NA "this is a small flat in a very old building that we tr
  $ important_information_included_for_normal_using_please_read_this_before_you_leave_important_for_tras" | truncated
  $ thumbnail_url : logi [1:66515] NA NA NA NA NA NA NA ...
  $ medium_url : logi [1:66515] NA NA NA NA NA NA NA ...
  $ picture_url : chr [1:66515] "https://a0.muscache.com/im/pictures/baaee9e2-cd53-4ac3-b
s/52413/99b76f5-original.jpg?aki_policy=Target" | truncated. "https://a0.muscache.com/im/pictures/67928287/330bd78c-original.jpg?aki
l.jpg?aki_policy=large" ...
  $ picture_url : chr [1:66515] NA NA NA NA NA NA NA ...
  $ host_id : Factor w/ 55629 levels: "2419", "7626", ...: 3 4 2 15 17 18 22 25 26 ...
  $ host_url : chr [1:66515] "https://www.airbnb.com/users/show/3631/" "https://www.air
www.airbnb.com/users/show/22155" ...
  $ host_name : chr [1:66515] "Anne" "Borzo" "Franck" "Anaïs" ...
  $ host_since : Date[1:66515], format: "2008-10-14" "2009-02-14" "2008-08-30" "2009-06-
  $ host_location : chr [1:66515] "Paris, Île-de-France, France" "Istanbul, Istanbul, Turke
  $ host_about : chr [1:66515] "Hi I'm both Linguistics based in the Middle East, and
  $ I_am_a_writer_51_author_of_novels_books_of_linguistics... : chr [1:66515] "Hello ! \r\nOur apartment is great and I am sure you wil
  $ host_response_time : chr [1:66515] "within a few hours" "within an hour" "within an hour" "N
  $ host_response_rate : chr [1:66515] "100%" "100%" "100%" "N/A" ...
  $ host_acceptance_rate : chr [1:66515] "N/A" "N/A" "N/A" "N/A" ...
  $ host_is_superhost : num [1:66515] 0 0 0 0 0 0 1 1 0 ...
  $ listing_url : chr [1:66515] "https://a0.muscache.com/im/users/3631/profile_pic/137580
re/7903/profile_pic/1280000273/original.jpg?aki_policy=profile_small" | truncated. "https://a0.muscache.com/im/pictures/58f00c4d-f80580
com/in/users/22155/profile_pic/1271497205/original.jpg?aki_policy=profile_small" ...
  $ picture_url : chr [1:66515] "https://a0.muscache.com/im/users/3631/profile_pic/137580
users/7903/profile_pic/128000273/original.jpg?aki_policy=profile_x_medium" | truncated. "https://a0.muscache.com/im/pictures/58f00c4d-f80580
muscache.com/in/users/22155/profile_pic/1271497205/original.jpg?aki_policy=profile_x_medium" ...

```


Appendix

Calculating in changes in licenses across time

```
l_2018 <- df_clean[df_clean$has_license == 1,]
l_2019 <- df_2019[df_2019$has_license == 1,]
l_2020 <- df_2020[df_2020$has_license == 1,]

ulHosts2019 <- ul[ul$id %in% ul_2019$id,] # ul that have not acquired licenses (2019)
licHosts2019 <- ul[ul$id %in% l_2019$id,] # lic_props that have acquired licenses (2019)

licHosts2020 <- ul[ul$id %in% l_2020$id,] # ul that have acquired licenses (2020)
ulHosts2020 <- ul[ul$id %in% ul_2020$id,] # ul that have not acquired licenses (2020)
ul_lostListings <- ul[!(ul$id %in% df_2020$id),] # ul props gone offline

unlicHosts2020 <- l_2018[l_2018$id %in% l_2020$id,] #properties that have kept license
unlicNewHosts2020 <- l_2018[l_2018$id %in% ul_2020$id,] #properties that have lost license
l_lostListings <- l_2018[!(l_2018$id %in% df_2020$id),] #licensed properties gone offline

nrow(l_2020[!(l_2020$id %in% df_clean$id),]) # number of licensed props that didn't exist before
nrow(ul_2020[!(ul_2020$id %in% df_clean$id),]) # number of unlicensed props that didn't exist before
```

Appendix

Calculating old inactive listings still in the platform

```
u1_2020 <- df_2020[df_2020$has_license == 0,]  
  
listings_old <- df_2019[df_2019$id %in% u1_2020$id,]  
listings_old <- listings_old[is.na(listings_old$last_review),]  
  
sum(listings_old$host_is_multihost)  
  
listings_old_mh <- listings_old[listings_old$host_is_multihost ==1,]  
listings_old_sh <- listings_old[listings_old$host_is_multihost ==0,]  
  
length(unique(listings_old_mh$host_id))  
length(unique(listings_old_sh$host_id))  
|
```

Appendix

Calculating and plotting statistical differences

```
#eliminating outliers for price

price_Q <- quantile(anova_df$price, probs=c(.25, .75), na.rm = TRUE)
price_iqr <- IQR(anova_df$price, na.rm = TRUE)
price_up <- price_Q[2]+1.5*price_iqr # Upper Range
price_low<- price_Q[1]-1.5*price_iqr # Lower Range

price_df <- subset(anova_df, anova_df$price > (price_Q[1] - 1.5*price_iqr) & anova_df$price < (price_Q[2]+1.5*price_iqr))

#checking significance of relationships

aov_price <- aov(data = price_df, price ~ anova_group + host_is_multihost)
summary(aov_price)
TukeyHSD(aov_price)

# plotting price

ggplot(price_df) +
  aes(x = anova_group, y = price, fill = host_is_multihost) +
  geom_boxplot() +
  scale_fill_hue() +
  labs(x = "Current status", y = "Price per night", fill = "Host type") +
  scale_fill_manual(labels = c("Single-host", "Multi-host"), values = c("#0c4c8a", "#4eb8e1")) +
  scale_x_discrete(labels = c("offline", "unlicensed", "licensed")) +
  theme_classic()
```