

AIRBNB - ANALYTICS CASE STUDY



INTRODUCTION

About Airbnb :- Airbnb is an online marketplace that connects people who want to rent out their homes with people who are looking for accommodations in specific locales.

Problem Statement :- Over the past five years, Airbnb has observed a clear trend indicating that the number of property images significantly impacts booking rates. Listings with fewer or no images often remain unbooked, leading to a high number of redundant entries on the platform. To tackle this challenge, it's essential to determine the minimum number of images required to make a listing attractive to potential guests while also identifying the optimal number of images that maximize booking potential. This analysis will help Airbnb hosts create more compelling listings and boost their booking rates.

DATA OVERVIEW

Dataset	Description	Key Variables
Listings	Sample of 500 listings from last 5 years, includes Regular and Superhosts.	Listing_Id, Posting_Date, Posting_Time, Location, Images (number), Bookings, Host_Type (Regular / Superhost)
Open Listings	Daily data (Aug 2018–Aug 2019) showing listings available but with zero bookings by day end.	Date, Open_Listings_0_2, Open_Listings_3_5, Open_Listings_6_10, Open_Listings_11_15, Open_Listings_16+
Redundant Listings	Snapshot as of Aug 31, 2019 showing listings with no bookings in the past year, categorized by number of images.	Property_Images (image count range), Total_Listings (active), Redundant_Listings (no bookings in last year)

Want to Deep Dive into the Project ?

If you would like to explore my project in detail, feel free to visit my Tableau Public profile.

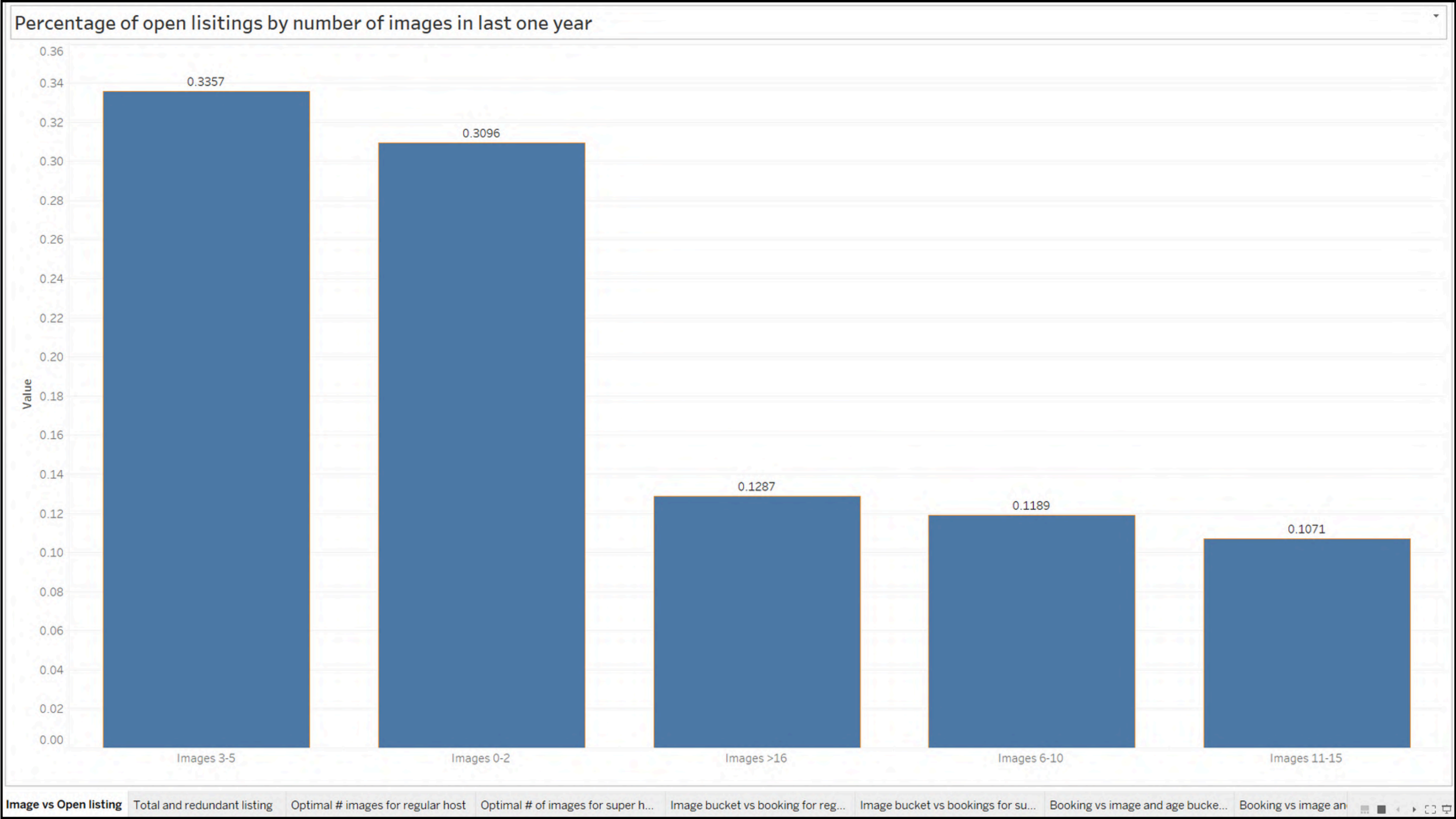
Link:- [Airbnb - Analytics Case Study](#)

In the PDF, I have shared interactive charts and insights to give you a deeper understanding of the analysis.

Thank you for exploring my project!

Percentage of Open Listings by Number of Images in the Last One Year

Using the Open Listings dataset from August 1, 2018, to August 31, 2019, I analyzed the percentage of open listings by the number of images to identify patterns over the past year.

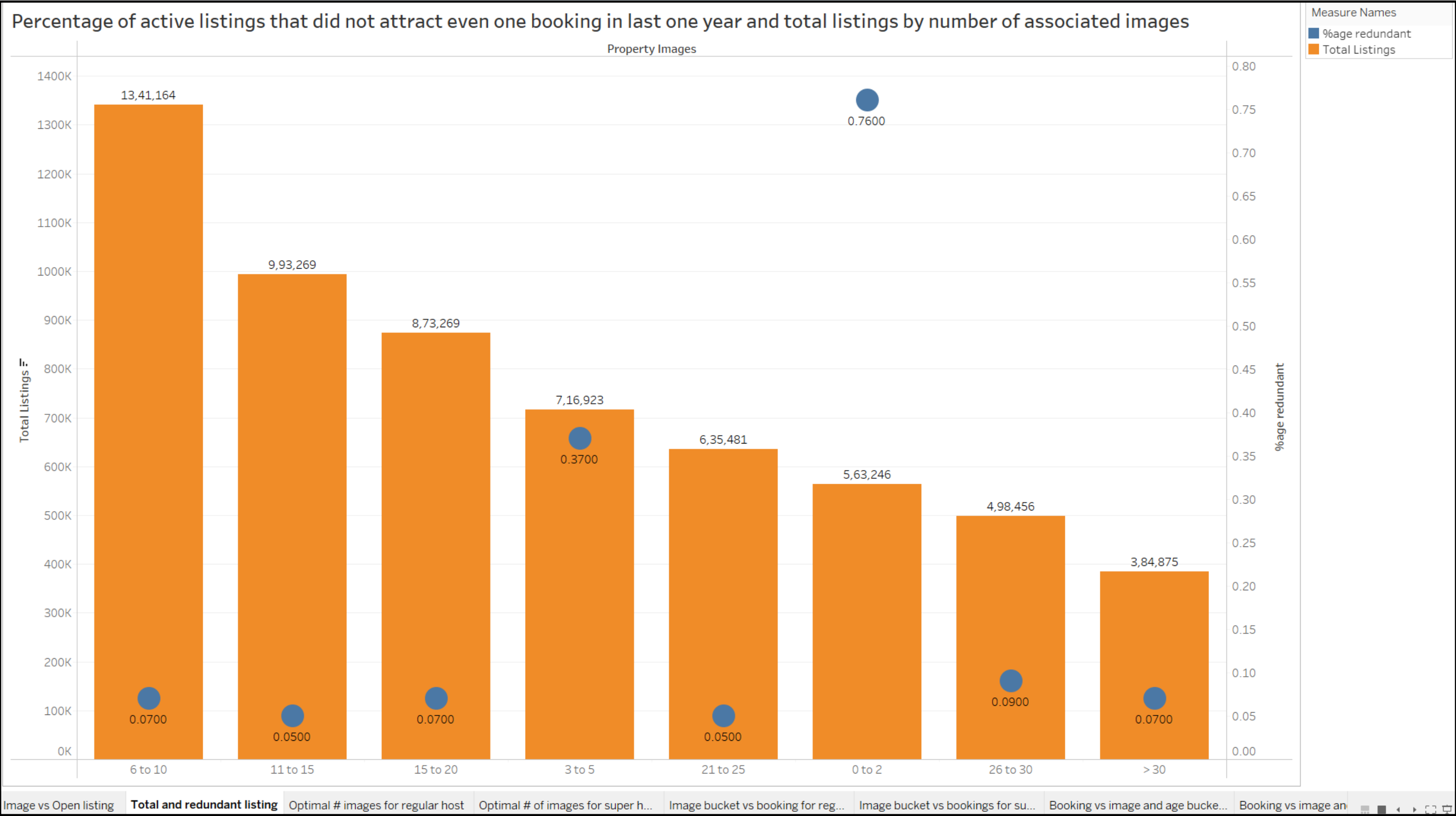


Insight from the chart :-

- We can see that listings with an associated number of images ranging from 11 to 15 had the least open listings.
- We can also see that listings with an associated number of images ranging from 6 to 10 had the second-lowest number of open listings.
- Listings with images between 0 to 5 had the highest open listings .
- We can assume that images for a listing should be at least 6 to attract bookings and should not be more than 15.

Percentage of Active Listings without Bookings in the Last Year by Number of Images

Using the Redundant Listing dataset, I analyzed the total number of listings up to August 31, 2019

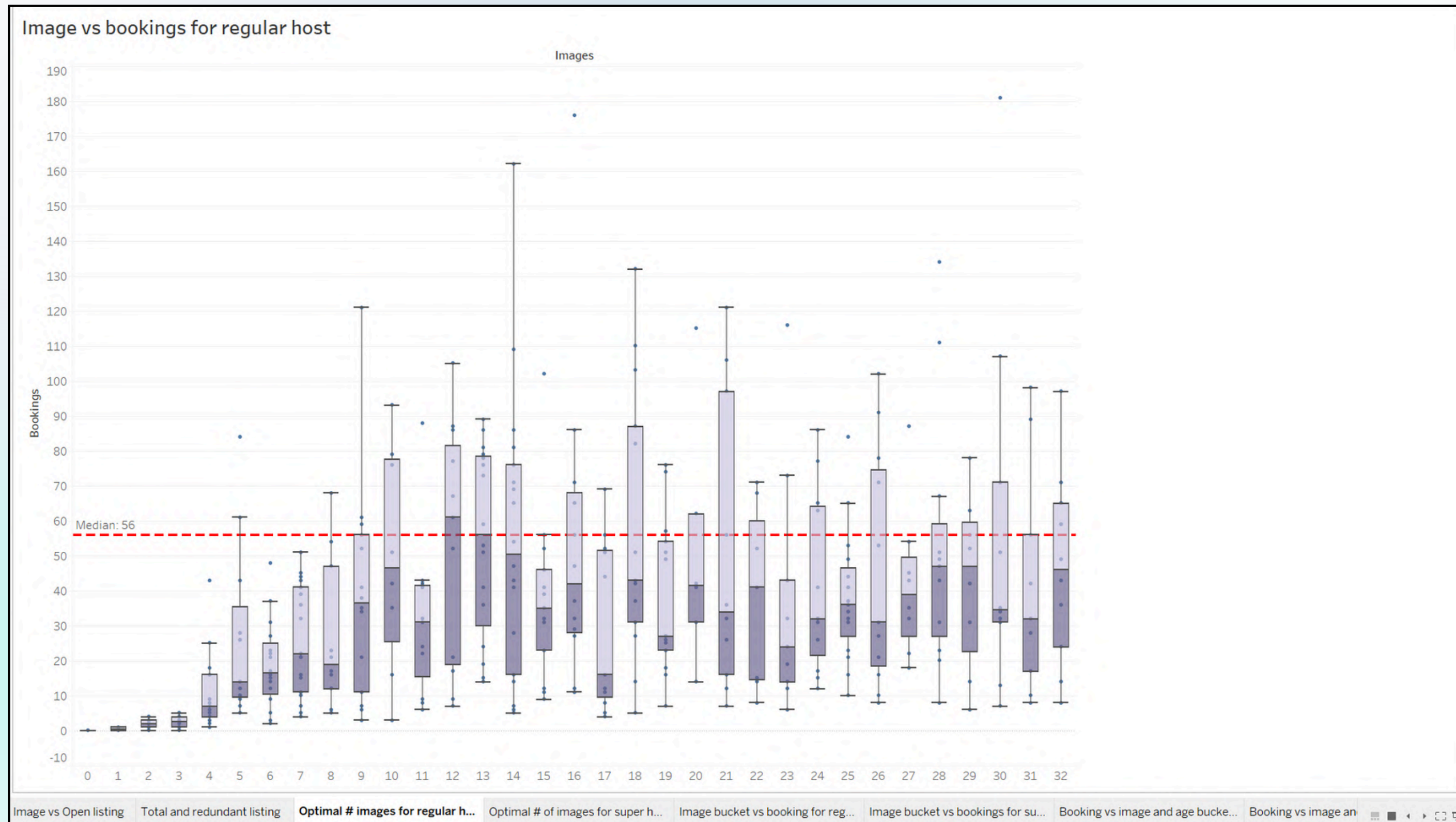


Insight from the chart :-

- Listings with the associated number of images between 6 to 15 had the highest number of active listings indicating that the hosts prefer to have images in this range.
- We can also see that the percentage of redundant listings in the past year was the lowest for listings with images between 11 to 15 thus further strengthening our earlier assumption that 11 to 15 should be an optimal number of images to attract bookings and images should range in between 6 to 15.

Analysis of Bookings and Images (Box Plot)

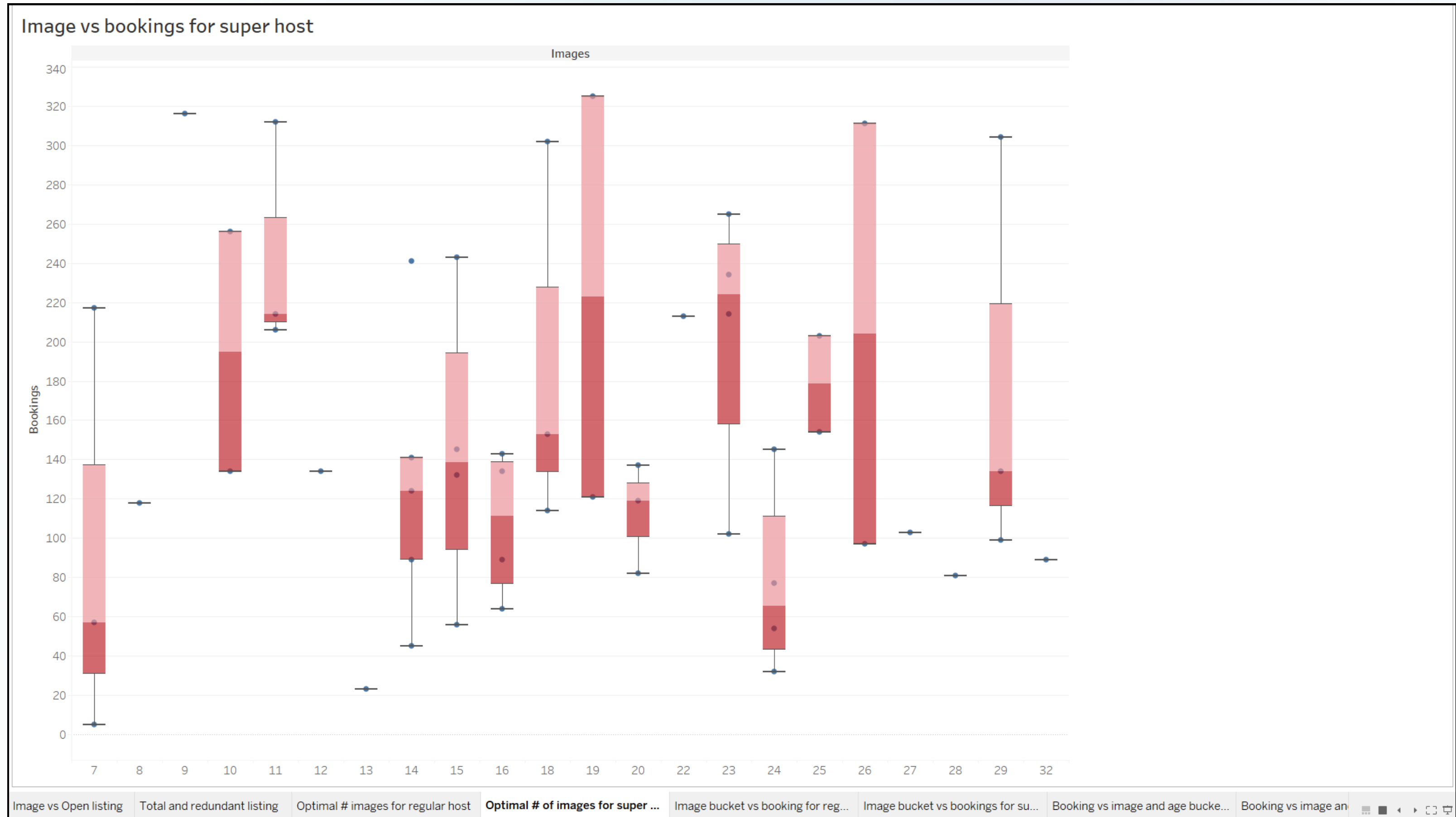
To analyze the distribution of bookings across different numbers of images for various host types, I used the Listings Dataset and a Box Plot. This plot efficiently summarizes key statistics, helping identify the impact of image count on bookings while comparing regular hosts and Superhosts.



Insights from the chart :-

- We can see that the median number of bookings for listings with 12 to 13 images is the highest.
- Median is a simple metric that is not affected by outliers and we can use it to decide on an optimal number of images that would maximize bookings for a host.
- Thus we can say that the optimal number of images for a regular host would be 12 or 13 and backing our prior analyses that images between 11 to 15 are optimal.

Here is a visualization using a box plot that compares the distribution of bookings across different numbers of images specifically for Superhosts.

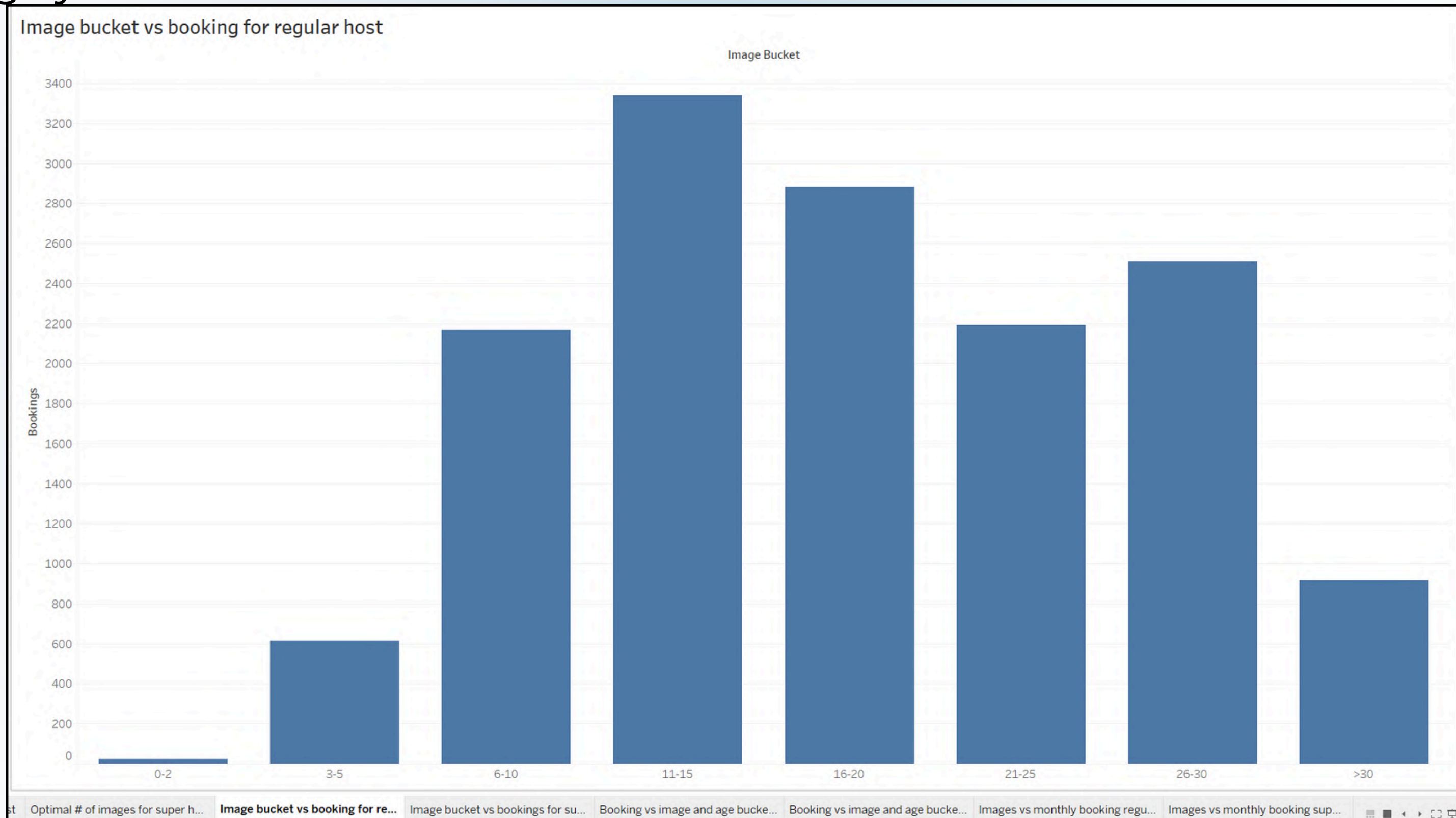


Insights from the chart :-

- The median value for listings with the number of images equal to 23 is the highest but we also have to keep in mind that 23 images are a lot to click and upload for a host.
- The median value for listings with the number of images equal to 19 is the Second highest but we can see that there are only 2 listings (number of blue dots).
- Keeping the above points in mind we can say that listings with Superhost type should have 11 images for a listing that will maximize their bookings and also because it has the third highest median value.

Booking Trends by Image Count Bins for Different Host Types

The chart visualizes total bookings across predefined image count bins, comparing Regular hosts and Superhosts. It highlights how the number of images correlates with booking volume for each host category.

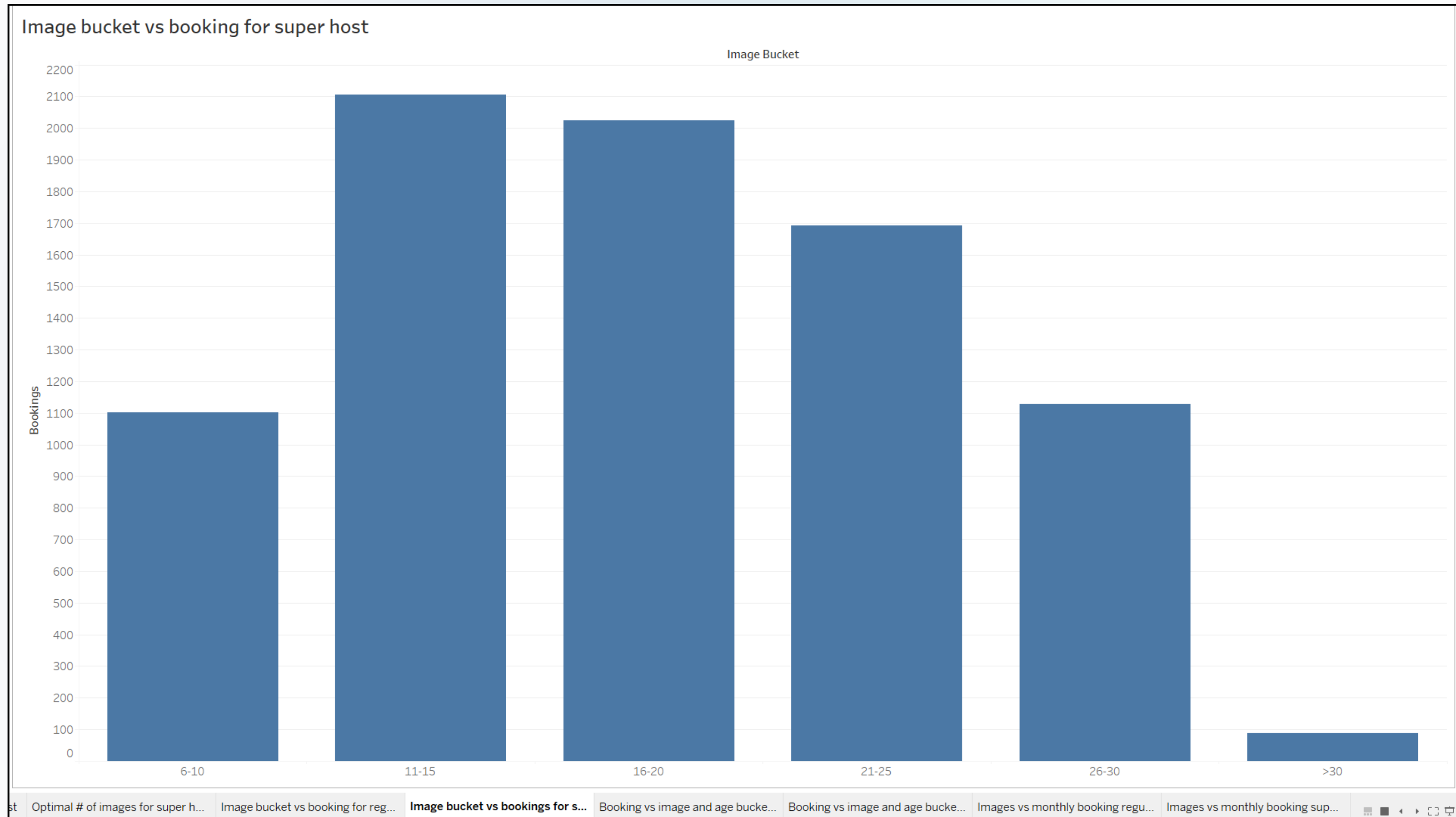


Insights from the chart :-

- From the previous chart, we can see that listings with a regular host with images between 11 to 15 had received the highest number of bookings which further strengthens our findings from the box plot for a regular host.

Bookings by Number of Images for Superhosts

This chart shows how the number of bookings changes with different groups of images for Superhosts. It helps us see which image counts bring more bookings.

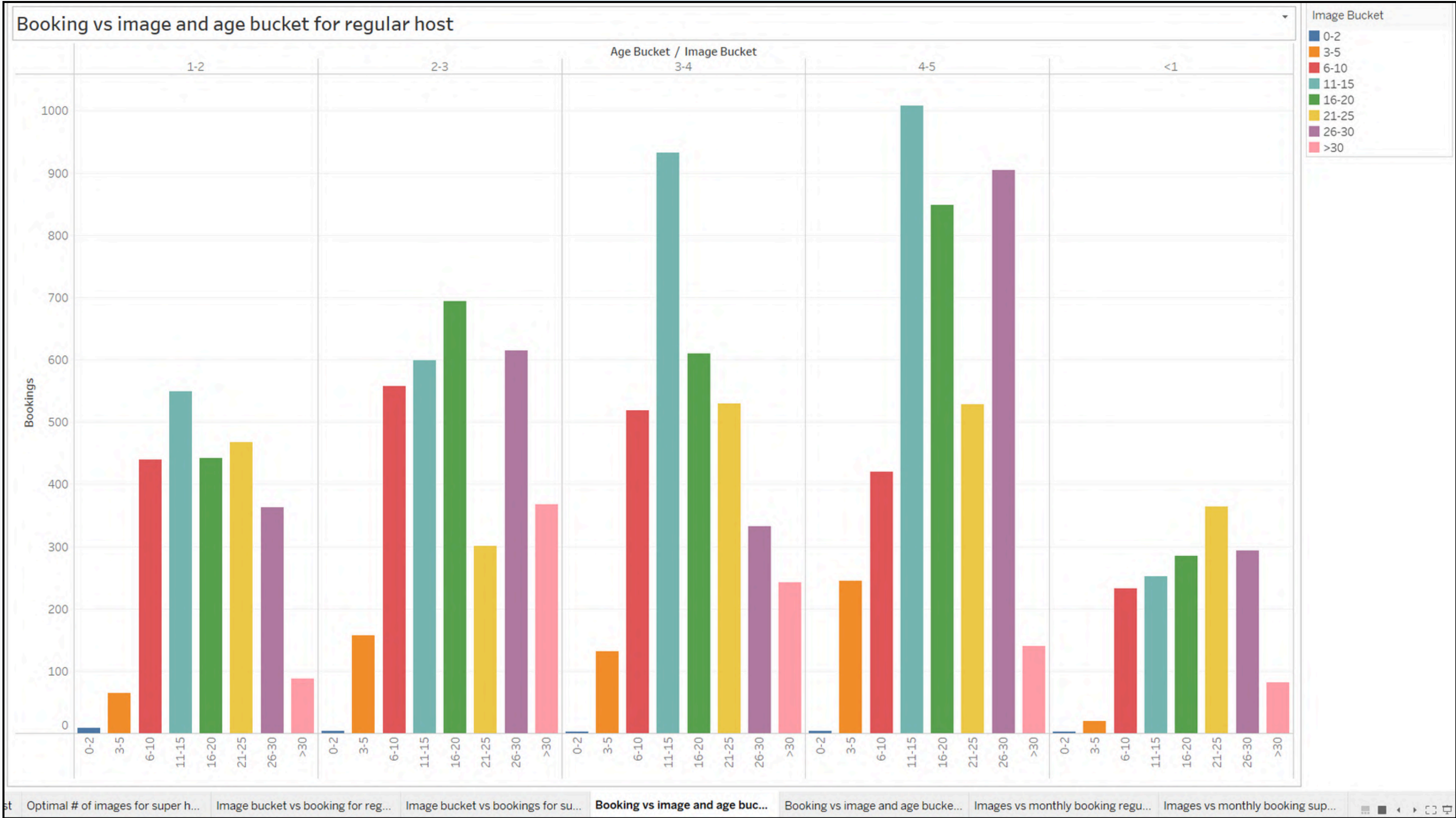


Insights from the chart :-

- We can see that listings with the super host type tend to upload more than 6 images.
- Here too we can see that listings with 11 to 15 images received the most bookings, supporting the findings from the box plot for super hosts.

Analyzing Bookings by Property Age and Image Count for Regular Hosts

This section groups listings by their age (time since posting) and number of images, helping us understand how property age and image count together impact bookings for regular hosts.

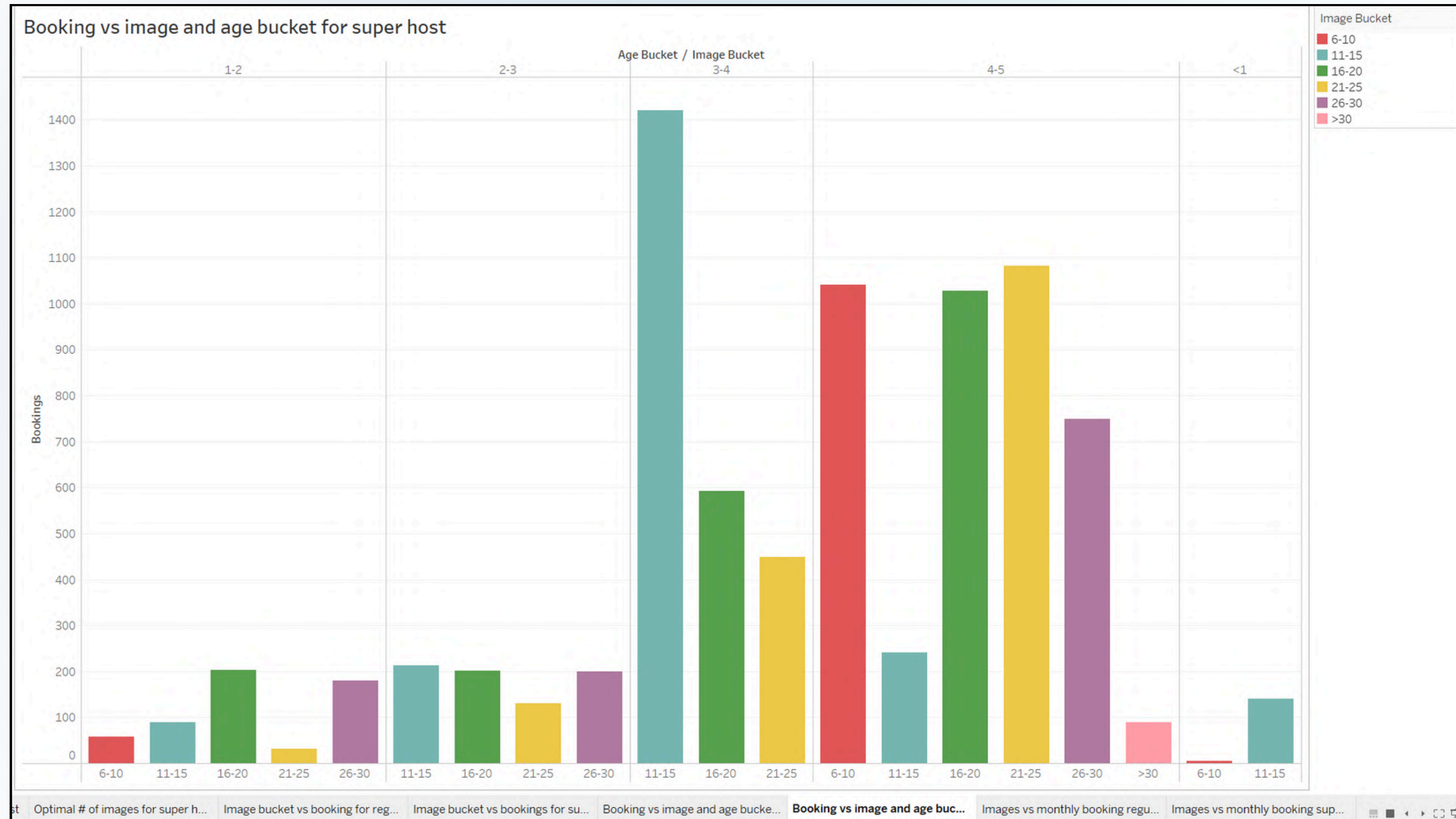


Insights from the chart :-

- We can see from the above plot that listings with regular hosts with 4 to 5, 3 to 4 and 1 to 2 years had the highest number of bookings for listings with 11 to 15 associated images.
- Listings with 2 to 3 and less than 1 year had the second highest and third highest number of bookings with 11 to 15 associated images.
- Thus this further strengthens our analysis that the optimal number of images for the regular host should be between 11 to 15.

Analyzing Bookings by Property Age and Image Count for Superhosts

Here, listings are grouped by their age and number of images to study how these factors affect bookings specifically for Superhosts. This helps reveal trends in booking patterns for experienced hosts over time.

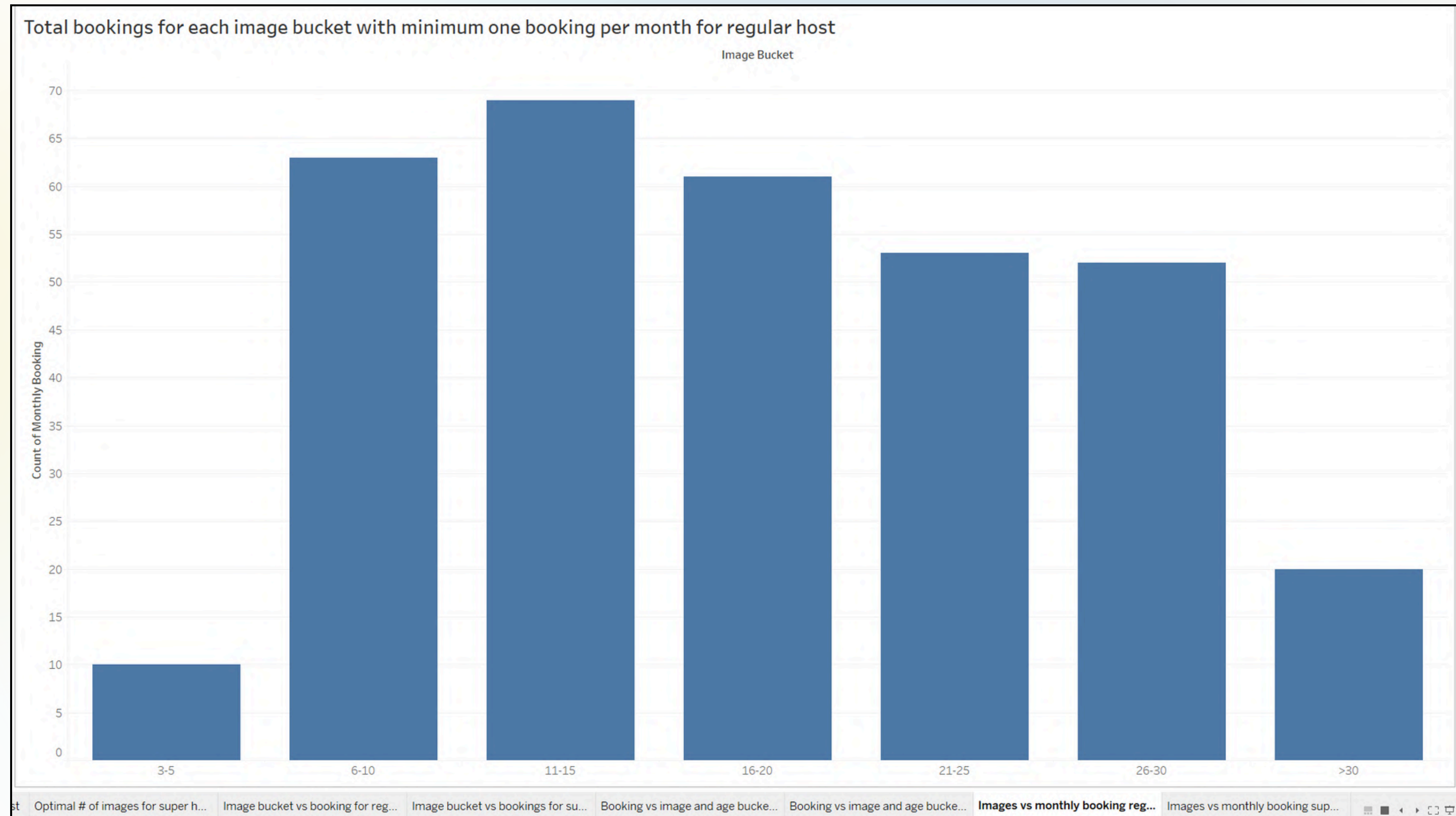


Insight from the plot :-

From this plot, we cannot conclude the same as we did for regular hosts.

Calculating Monthly Bookings per Listing by Image Buckets

Here, I calculate monthly bookings by dividing total bookings by each listing's age in months. This helps me analyze how the number of images affects bookings for regular host type.

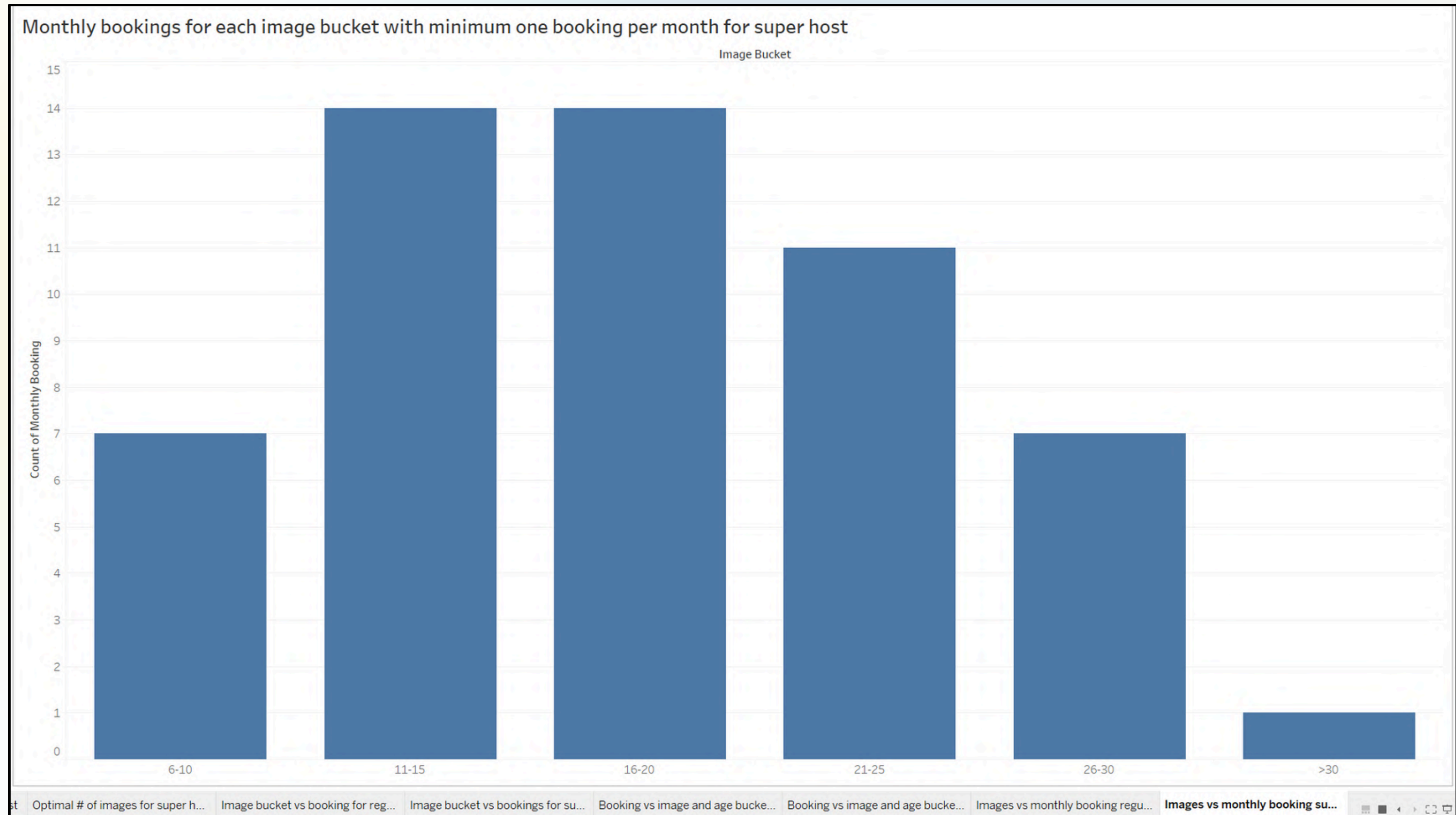


Insights from the chart :-

- From the above plot, we can see that the listings with images between 6 to 10 have received the second-highest number of bookings.
- Given that we are suggesting images between 11 to 15 to be an optimal number of images, we can say that for the regular host to attract at least one booking per month they should have a minimum of 6 images. This would ensure that they would have a minimum of 60 bookings in 5 years.

Monthly Bookings by Image Buckets for Super Hosts

I calculated the average monthly bookings for Super Hosts by dividing the total bookings by the listing age in months, helping to understand the impact of image count on booking frequency.



Insights from the plot :-

- We are already suggesting the optimal number of images to be between 11 to 15. Hence to get the minimum number of images for a listing, we would focus on a number of images less than 11.
- So from the plot, we can see that there are 7 listings with images between 6 to 10 with at least one booking per month.
- Hence we can suggest that for the super host to attract at least one booking per month they should have a minimum of 6 images. This would ensure that they would have a minimum of 60 bookings in 5 years.

CONCLUSION

From the above analysis, we can conclude that:

- The optimal number of images to be suggested to the host in order to maximize bookings is between 11 to 15, as listings within this range consistently attract higher bookings.
- To ensure at least one booking per month, it is recommended that hosts include a minimum of 6 images with their listing.
- Super Hosts with image counts between 11 and 15 tend to achieve significantly better booking rates compared to Regular Hosts, highlighting the importance of visual appeal.
- Listings with fewer than 6 images often struggle to secure consistent bookings, indicating that image quantity is a key factor in guest engagement and decision-making.
- Improving image quality and optimizing the number of images could further enhance booking rates, especially for Regular Hosts aiming to match Super Host performance.

THANK YOU

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