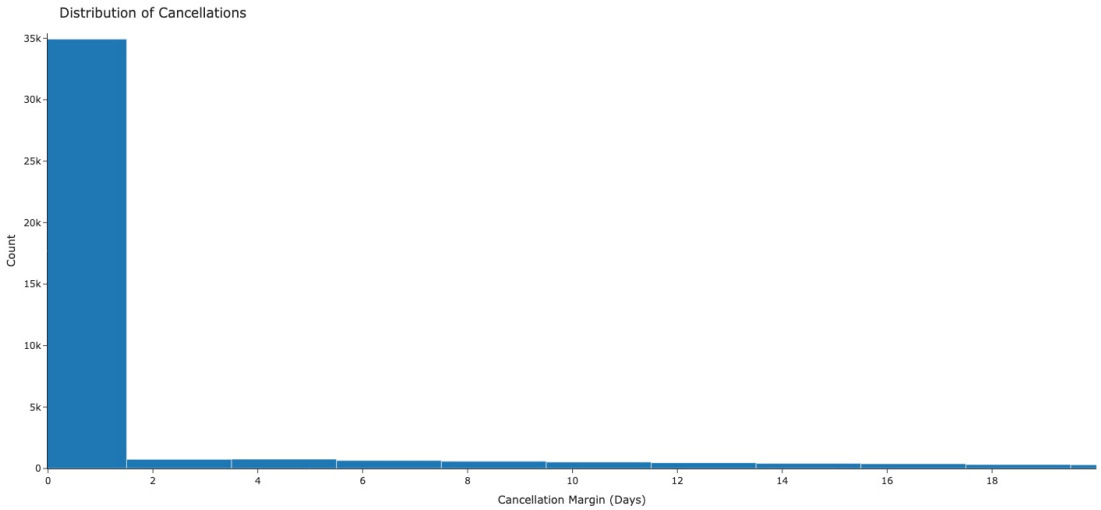
Question 4:

We propose the following cost function:

Cost = Base Cost + Penalty Factor * Days Remaining

The base cost represents the minimum cost of cancellation, and the penalty factor determines the rate at which the cost increases as the check-in date nears. The number of days remaining can be calculated as the difference between the current date and the check-in date.

We've plot the following histogram of occurrences of cancellation as a function of difference in days between checkin and cancellation date:



Based on the data analysis, we have observed that a significant number of customers tend to cancel their reservations just one day before the actual check-in date. This information provides valuable insights for designing an effective cancellation policy that minimizes cancellations while still allowing flexibility for customers. Here's our suggested policy:

For reservations canceled one day before the check-in date: Charge 100% of the payment as a cancellation fee. For reservations canceled prior to one day before the check-in date: Allow customers to cancel without any charge. For now-show we'll charge also 100% of the original payment amount. (= 1D100P_100P)

Rationale:

- By charging 100% of the payment for last-minute cancellations, we incentivize customers to make their cancellation decisions earlier. This helps reduce the likelihood of cancellations on the day of check-in, which can result in lost revenue and operational challenges.
- Allowing customers to cancel without charge for cancellations made before one day before the check-in date promotes flexibility and customer satisfaction. It recognizes that plans may change, and customers should have the freedom to modify or cancel their reservations without financial consequences within a reasonable timeframe.

We believe that this policy strikes a good balance between minimizing cancellations and providing flexibility to customers. It addresses the specific cancellation pattern observed in the data, reducing last-minute cancellations while still allowing customers to make changes to their reservations without financial repercussions. By implementing this policy, Agoda can improve revenue stability, optimize resource allocation, and enhance customer experience.

One more thing to notice is that there's no correlation between the cancellation margin and the original amount of selling as we can see in the following graph: