# Boosting revenue from Russian guests using a predictive algorithm.

Guests coming from Russia are because of their spending habits a particular profitable group, that also comes with a major downside. They are more likely than other nationalities to cause damage to our hotel infrastructure and hurt our staff or other guests. The cost that we incur because of this behavior is often not recoverable form the Russian guests. Like with all our guests, Russian clients are screened before they are admitted to our hotel. With these guests the screening is a bit more critical than normal because of the high potential earnings, but also because of the higher than normal risks involved with entertaining Russian guests.

We tasked several data scientists with developing an algorithm that is able to aid our staff to, each season select from the Russian applicants, the ones with most attractive balance between profit and the anticipated cost for the damages. To develop the algorithm the data scientist used the data on Russian guests from previous seasons. Using our guest inventory we were able to collect enough information so that the data scientist could develop an effective algorithm.

The data scientists take into account in their algorithm the following information: information on the financial situation of the guest, information on the interactions of the guests with our hotel chain, their booking for their hotel stay and their personal information. Using this data they investigated several approaches and eventually a machine learning algorithm is created that is able to predict how much profit the hotel will earn from the guests stay, if the guest is expected to cause damage and how high the cost will be that will need to be incurred by the hotel. Not only this information is predicted but also the revenue each individual guest will generate for the hotel.

For a selection of 200 of the highest revenue generating guests, form the 500 applicants for next season, a total revenue of 427.000 US Dollar is predicted. A random selection 200 of applicants for next season form the 500 applicants is on average predicted to result in around 346.000 US Dollar. Using the algorithm we are predicted to potentially increase our revenue on the Russian guests for around 80.000 US Dollars. By using the algorithm to improve our applications screening process we can increase our revenue and better assess whether it is worth the risk to accept specific Russian applicants a guests. To prove the reliability of their approach the data scientists also selected 200 guests from the previous seasons and compared their predicted revenue for those guests with the actual revenue gained from those guests. With a total actual revenue of 304.000 US Dollars for those 200 guests, the algorithm was only off by 2000 US Dollars.

Given these results we recommend that the hotel manager, starting from the applicant screening for this season, implements the algorithm to assist our screening team in selecting the Russian guests. By adjusting our current approach we can select those guests that allow us to optimize our profitability on this specific nationality.