**Statistical Inquiry into the Commercial Viability of Hotel Overbooking**

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Using commercial hotel booking data this study models hotel cancellations with a binomial distribution[[1]](#footnote-2) and optimizes an overbooking strategy. We find these hotels have a no-show rate of 0.01[[2]](#footnote-3), therefore a hotel would need to have at least TBD[[3]](#footnote-4) rooms before overbooking is appropriate to manage no-shows. However, 36% of reservations are subsequently canceled, therefore overbooking is almost certainly appropriate. To optimize bookings, we define a function that inputs hotel capacity, days until reservation, time of year, and cost of providing alternative accommodations and outputs the maximum number of reservations to schedule on a given day. Splitting data into training and testing sets, we find that this over booking strategy is TBD[[4]](#footnote-5) more profitable than accepting every booking, and TBD more profitable than abstaining from any overbooking.

**Abstract** [100-110 words (about 5 sentences), for instance, a compact structure is used often:

-- First sentence: to state in simple declarative sentences what was attempted, how it was accomplished, and what was achieved.

-- 2-3 sentences: to highlight the main points of the report such as objective (goal), data, and methods used. Although this is the shortest and most difficult section to write, it is the most important.

-- Last sentence: to give a brief summary of the conclusion/outcomes.]

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# Nomenclature (*In order of its appearance*)

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# Introduction [This section must start on a new page. The following sections are essential to generate a technical report.]

# Data

# Analysis

# Methods (or Procedure)

# Results and Discussion

# Conclusions

# References [This section must start on a new page. Please stay with uniform format (e.g., MLA format) for the references list below.]

# 

# Appendix A [Each appendix section must start on a new page.]

# Appendix B [Each appendix section must start on a new page in case you have more than one appendix section.]

1. The data do not justify using a Poisson distribution. Binomial is more appropriate. [↑](#footnote-ref-2)
2. Preliminary finding, we have yet to be more specific. [↑](#footnote-ref-3)
3. Yet to be determined [↑](#footnote-ref-4)
4. To be Determined [↑](#footnote-ref-5)