# My title*

## My subtitle if needed

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April 13, 2024

First sentence. Second sentence. Third sentence. Fourth sentence.

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*Code and data are available at: https://github.com/atn-ly/beyonce

# 1 Introduction

# 2 Data

## 2.1 Source

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# 3 Model

The goal of our modeling strategy is to predict the number of Spotify streams for a Beyoncé song based on the number of weeks it spent on the *Billboard Hot 100*. We used a negative binomial regression model in a Bayesian framework. Negative binomial regression is a type of generalized linear model that is useful for modeling count data.

## 3.1 Model set-up

The model that we are interested in is:

$$y_i|\mu_i, r \sim \text{NegBinom}(\mu_i, r) \tag{1}$$
$$\log(\mu_i) = \alpha + \beta \times \text{Number of weeks}_i \tag{2}$$
$$\alpha \sim \text{Normal}(0, 2.5) \tag{3}$$
$$\beta \sim \text{Normal}(0, 2.5) \tag{4}$$
$$\tag{5}$$

Where:

- $y_i$ is the outcome variable, representing the number of Spotify streams for song $i$,

- $\mu_i$ is a parameter for the negative binomial distribution, representing the probability of success in a single trial,
- $r$ is a parameter for the negative binomial distribution, representing the number of successes,
- Number of weeks$_i$ is the predictor variable, representing the number of weeks spent on the Billboard Hot 100 for song $i$,
- $\alpha$ is a parameter, representing the intercept with a default prior probability distribution that is Normal with a mean of 0 and standard deviation of 2.5,
- $\beta$ is a parameter, representing the slope coefficient with a default prior probability distribution that is Normal with a mean of 0 and standard deviation of 2.5.

## 3.2 Model justification

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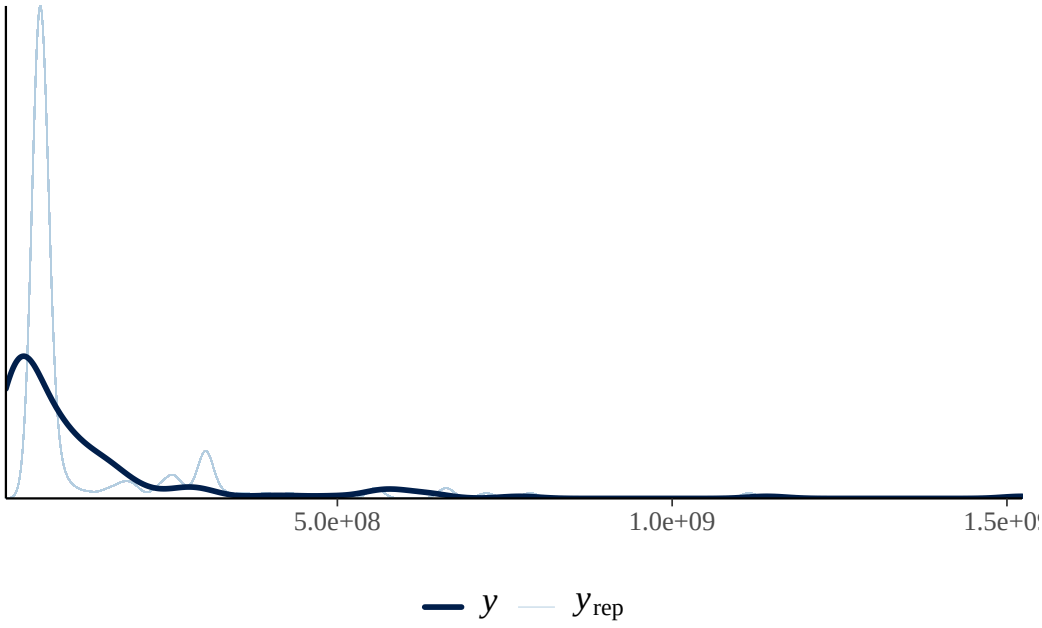


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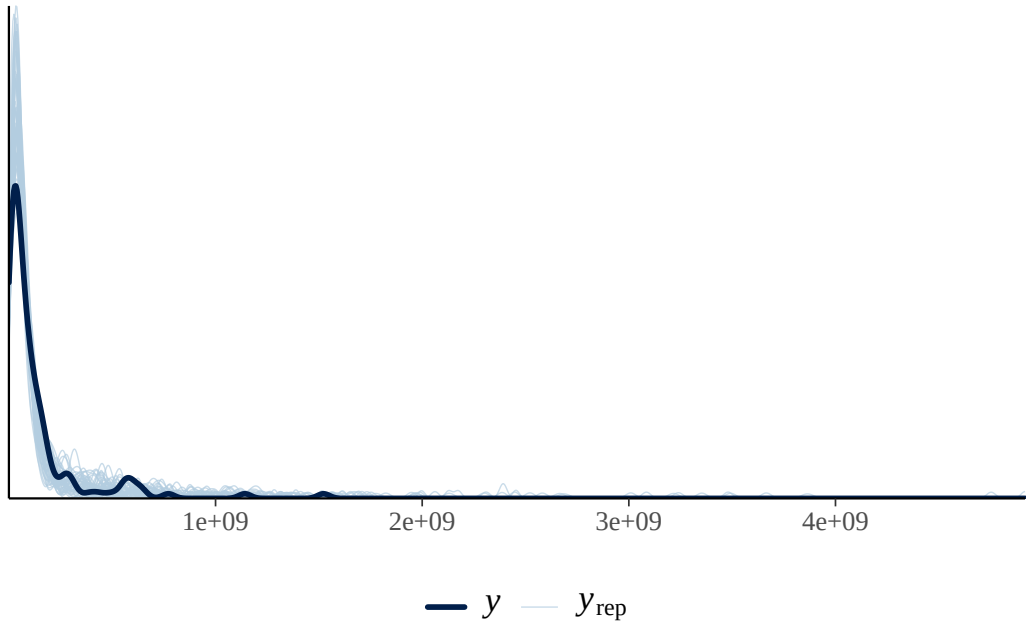


# 4 Results

# 5 Discussion

## 5.1 First discussion point

## 5.2 Second discussion point

## 5.3 Third discussion point

## 5.4 Weaknesses and next steps

# Appendix

## A Model details

### A.1 Posterior predictive check

### A.2 Diagnostics

## B References