STSCI 4100: IMDb Analysis Q5

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QUESTION 5:

An extra question we want to ask is: **does experience in creative roles improve film ratings?**

In previous questions, we explored whether a film having a specified **writer** (Question 2) impacts ratings or whether the **number of votes** (Question 1) impacts ratings. But now we want to ask a deeper question: **Does the experience of the writers, directors, or actors improve a film's average rating?**

We defined experience as the **number of films** an individual has previously been in with a specific role. For each film, we compute the **median experience** of each group.
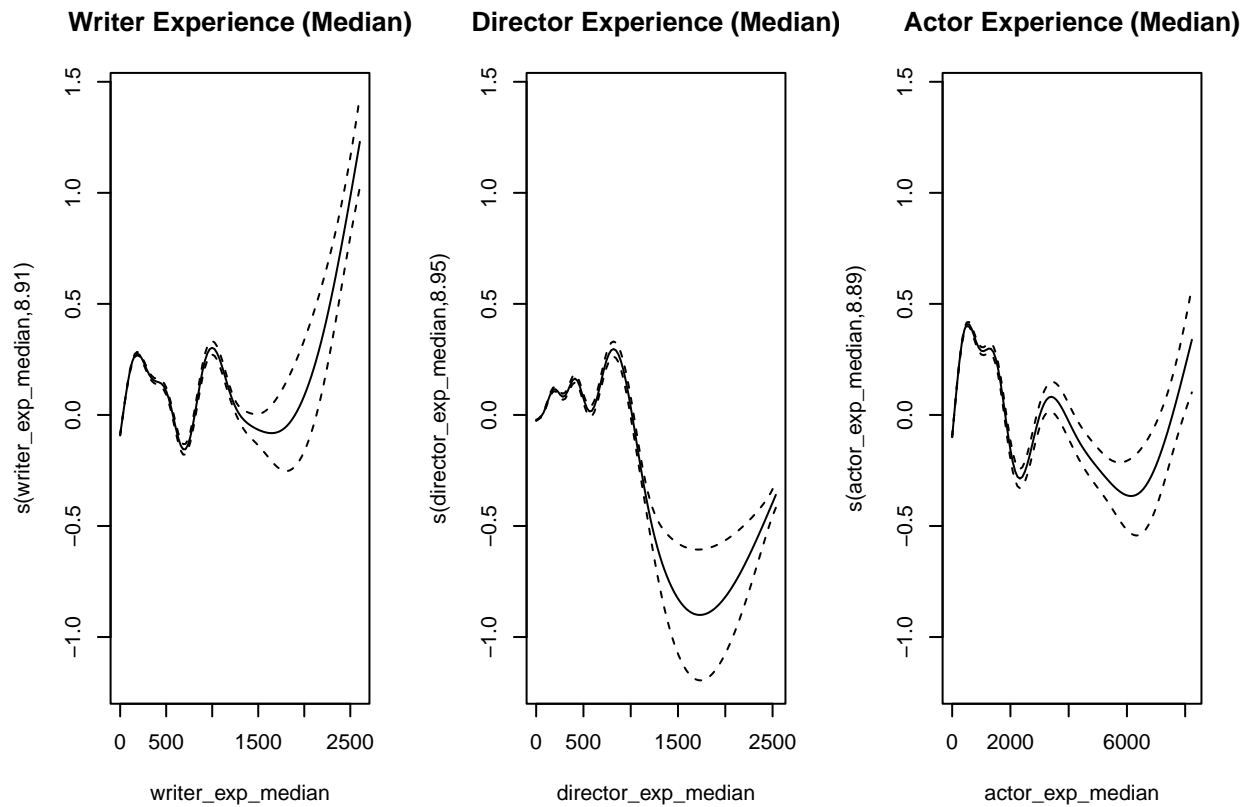
We start by reshaping `principals` for an easier count of a person's experience. Then, we compute the **median experience** per film, and merge it into our dataset.

We fit two GAMs:
- One casual with separate effects for each group
- One with an interaction between writer and director experience

```
# [2] Fit GAMs
# Median
gam_median <- gam(averageRating ~
                    s(writer_exp_median) +
                    s(director_exp_median) +
                    s(actor_exp_median),
                 data = q5_dt)

# Median, Interaction
gam_median_inter <- gam(averageRating ~
                          te(writer_exp_median, director_exp_median),
                        data = q5_dt)
```
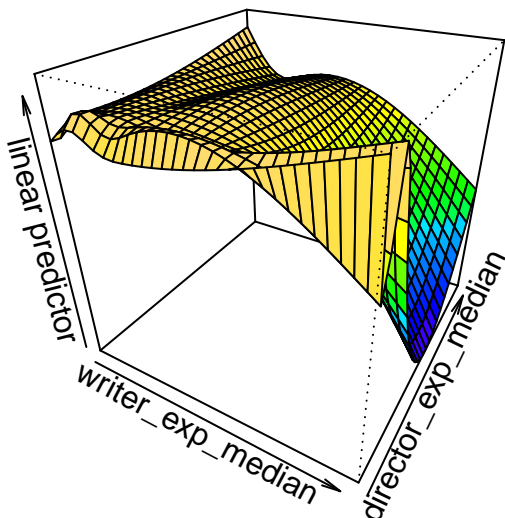
Each of the three plots shows how the median experience in one group affects the rating prediction while holding the other groups constant.

Writer, Director Median Experience

This plot shows the interaction between writer median experience and director median experience and how it affects the ratings prediction.

Here is what we can takeaway from our analysis:

- **Writer experience** shows a positive trend.
- **Director experience** shows a nonlinear shape, where more director experience tends to decrease the ratings predictions.
- **Actor experience** has a mostly flat effect.
- The **interaction plot** reveals that a moderate level of combined experience gives good ratings predictions rather than high levels of both.

These trends are statistically significant due to large sample size, but practically unreasonable to consider convincing. Still, we seem to be able to see that writer experience may be important in a film's success.