The Cost of Coming Out*

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Abstract

Sexual orientation is a fundamental aspect of human identity, and being open about it is strongly associated with an individual's psychological and emotional well-being. While disclosing one's sexual minority status can lead to positive outcomes, experiences of repercussion can also have lasting negative outcomes. This paper aims to investigate how people react to stigma disclosure based on sexual orientation. Measuring discrimination against sexual minority groups and understanding responses to sexual minority status disclosure is challenging due to data and methodological limitations. To overcome these challenges, we propose to use an innovative source of data from the online video game industry. Our analysis focuses on one of the playable characters of a famous online video game, whose sexual minority status was exogenously disclosed by the video game developers. This provides a quasi-experimental research design that allows for estimating causal effects. We use synthetic control methods to estimate how the disclosure impacts the players' revealed preferences for the character who disclosed his sexual minority status. Our preliminary results suggest a substantial negative impact of coming out that lasts for more than six weeks, which is unlikely to be driven by statistical discrimination.

Keywords: LGBTQ+, stigma concealment, taste-based discrimination.
JEL Codes: J15, J71

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1 Introduction

Despite significant progress in advancing LGBTQ+ rights, discrimination based on sexual orientation remains a prevalent issue in many countries. A 2019 survey conducted in the European Union among 140,000 individuals who identify as LGBTQ+ revealed that over half of the respondents had experienced discrimination within the past year, with almost 40% reporting discrimination also in non-work settings.[1]

Discrimination against LGBTQ+ individuals not only affects their living conditions but also has indirect costs when they feel obliged to hide their sexual orientation. Sexual orientation is a fundamental aspect of human identity, and being open about one's identity is strongly associated with life satisfaction and individual well-being (Akerlof & Kranton, 2000). Research has also consistently shown that hiding one's sexual orientation can result in significant health costs (e.g., Meyer, 2003).

Despite the potential benefits of being open about our sexual orientation, it is important to acknowledge that the act of coming out is often accompanied by feelings of uncertainty, anxiety, and fear of negative consequences, as its positive impact depends heavily on the reception of support and understanding from others (Pachankis et al., 2020). This paper aims to contribute to a better understanding of the reactions to disclosing one's sexual orientation.

Measuring discrimination against sexual minority groups and understanding responses to sexual minority status disclosure poses significant challenges. An ideal experiment would involve randomly asking individuals to disclose their sexual minority status and observing their peer group's reactions for a meaningful period. Since this approach is ethically not feasible, the current literature predominantly relies on correspondence designs in which sexual orientation is manipulated in job applications (e.g., Tilcsik, 2011), or compares the labor market outcomes of sexual minority individuals with those of non-minority individuals with similar observable characteristics (e.g., Badgett, 1995; Plug et al., 2014). Despite their widespread use, these approaches face several limitations that make it challenging to draw causal inferences from the results. Furthermore, no study

[1] https://fra.europa.eu/en/publication/2020/eu-lgbti-survey-results.

has investigated immediate reactions to coming out, which can be a significant barrier to disclosing one's sexual minority status.

This paper uses a lab-in-the-field approach that closely approximates the ideal experiment and uses an innovative source of data from the online video game industry. Video games offer a controlled research environment, allowing for the observation of behavior that is often not accessible through traditional survey methods. Moreover, video games enable individuals to remain anonymous, thus reducing social desirability bias and increasing the likelihood that participants will disclose their attitudes towards sexual minority individuals.

On June 1^{st}, 2022, the developers of the online video game *League of Legends* announced that one of the playable characters, *Graves*, is gay. This offers a unique opportunity to study responses to revealing sexual minority status. We show that the announcement was not anticipated and observe players' revealed preferences for Graves before and after his coming out. We use detailed daily data to track responses over a meaningful period and employ synthetic control methods (e.g., Abadie, 2021) to isolate the causal effect of the disclosure. This enables us to shed light on the potential negative consequences of coming out. Our preliminary analysis reveals a substantial negative effect of coming out that persists for several weeks after the character's disclosure. We argue that our findings cannot be attributed to statistical discrimination since all players were aware that the game-relevant features of the character did not change.

Our project will make important further contributions to the existing literature by leveraging several unique features of our setting. Specifically, we plan to investigate regional heterogeneity in reactions to coming out by taking advantage of the fact that *League of Legends* is played in various countries around the world and link survey information on attitudes towards the LGBTQ+ community to our findings. Furthermore, we plan to use data from streaming platforms to uncover the mechanisms behind our results. This allows us to differentiate between responses to coming out that result from peer pressure and those that reflect the players' own attitudes.

2 Related Literature

Previous research has made significant advances in understanding the labor and mental health outcomes of sexual minority individuals. A growing literature shows that LGBT individuals experience lower wages and fewer job benefits than their heterosexual counterparts (Plug et al., 2014; Burn, 2020; Badgett et al., 2021). Furthermore, LGBT individuals experience higher rates of depression, anxiety, and suicide attempts (Meyer, 2003).

Except for a few experimental studies (Weichselbaumer, 2003; Tilcsik, 2011; Neumark, 2018), the majority of research relies on self-identification in surveys. However, Coffman et al. (2017) show that a substantial share of respondents misreports their identity, which complicates the interpretation of existing results and makes understanding identity disclosure even more important. Our use of video game data provides an objective measure of behavior and identity, circumventing the limitations of self-reported identity in surveys.

In their seminal work, Akerlof and Kranton (2000) argue that limits to identity disclosure are among the most important determinants of an individual's economic well-being. While concealment of a stigmatized identity can help avoid discrimination (Kudashvili & Lergetporer, 2022), research has shown that it can also lead to negative outcomes such as depression and anxiety (Pachankis et al., 2020). Coming out as a sexual minority individual may improve mental health outcomes by reducing the stress and psychological challenges associated with concealing one's identity. However, individuals often face uncertainty and fear of negative repercussions. This is consistent with the results of Gromadzki and Siemaszko (2022), who find that individuals with more supportive social networks and positive attitudes towards their sexual orientation are more likely to come out. In this study, we contribute to the understanding of barriers to coming out by leveraging a natural experiment and using high-frequency data along with information on revealed preferences to investigate public reactions to identity disclosure.

3 Data and Methodology

We draw on data from *League of Legends*, a multiplayer online game developed and published by Riot Games. In *League of Legends*, players with similar skill levels are divided into two teams of five players each to compete in matches with the aim of destroying the opposing team's base. Before a match begins, players select a playable character, to control during the match from a pool of 162 available characters. In our project, we leverage information from the character selection process.

The selection process takes place in a lobby where players can communicate with their teammates via a chat function. Players take turns selecting their characters for the match according to a random pick order that alternates between teams. After a player selects a character, the choice becomes visible to all players, including the opponent team. Once all players have selected their characters, the match begins.

Our analysis focuses on *Graves*, one of the playable characters whose sexual minority status was disclosed by Riot in June 1^{st}, 2022. The disclosure coincided with the start of Riot's Pride Month, a celebration of LGBTQ+ individuals to promote inclusivity and diversity within the gaming community. It is worth noting that the game mechanics, as well as Graves' characteristics and abilities, remained unchanged during this period.

We construct a balanced panel data set spanning the period of January-August 2022 by pulling information from Riot's API. We target the top tier of the *League of Legends* ranked system, which consists of the game's most skilled and competitive players. All the games in the data set were played on European servers. To gauge players' revealed preferences for characters, we use a metric called *pick level*, which counts the number of times players choose a specific character in their games. The red line in Figure 3.1 depicts Graves' pick level series, which exhibits some upward trend despite daily variations. However, we observe a sharp drop in the series on the day of disclosure (indicated by a dashed vertical line) which persisted for around six weeks.

A simple comparison of Graves' pick levels before and after June 1^{st}, 2022 may not accurately reflect the impact of the disclosure, as other unobserved factors could have changed during that period. To address this issue, we construct a synthetic control (see

e.g., Abadie, 2021) by weighting other characters, with the weights chosen to minimize the squared deviations between the weighted average of the pick levels of the control units and the pick levels of Graves before the disclosure (see Appendix A). This method allows us to isolate the effect of the disclosure on Graves' pick levels and gain insight into what would have happened to Graves without the disclosure.

The results are shown in Figure 3.1. Before the disclosure, Graves and the synthetic control behave similarly. However, from June 1^{st}, 2022, the two series diverge substantially, with Graves' pick levels reaching values up to 66% lower than those of the synthetic control. This gap persisted for more than six weeks after the disclosure before it declines.

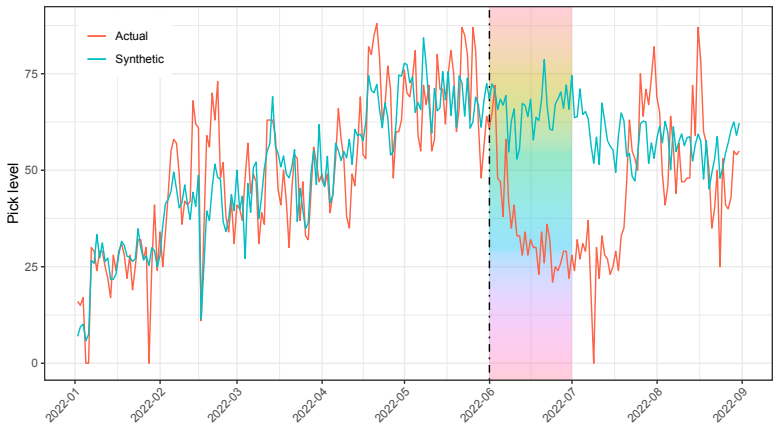

Figure 3.1: Daily pick levels of Graves and synthetic control. The red line depicts Graves' pick levels, while the blue line represents the synthetic control. The dashed vertical line denotes the day of the treatment, and the rainbow area highlights Riot's pride month.

4 Public Policy Relevance

Discrimination based on sexual orientation is first and foremost a human rights issue. However, when LGBTQ+ individuals are unfairly targeted in education, health, social, and political settings, there is a loss of human capital that can have detrimental effects on the economy as a whole (Badgett, 2020). For example, bullying and discrimination act as barriers to LGBTQ+ students' acquisition of skills and knowledge. Furthermore, even short experiences of bullying can have severe long-term health consequences (e.g., Boden et al., 2016). Our findings suggest that revealing sexual minority status can lead to negative outcomes. This is a crucial insight for policymakers who seek to develop

interventions to address discrimination and improve the well-being of LGB people.

One potential policy strategy would be to create inclusive social environments that reduce stigma and promote acceptance of sexual minority individuals. Raising awareness about the reaction to stigma disclosure could be an important step to develop such a society. Additionally, policymakers can consider providing resources and support to individuals who have recently come out, such as access to counseling and mental health services. By doing so, they can mitigate some of the negative outcomes that may arise from coming out.

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Appendix A Syntehtic Controls

In this section, we describe how we construct the synthetic control unit depicted in Figure 3.1. We follow the methodology and notation outlined in Abadie (2021) and Arkhangelsky et al. (2021).

We collect data on $n = 159$ units ($i = 1, \ldots, n$) over $T = 241$ days, with $T^{pre} = 150$ days prior to the disclosure event. Without loss of generality, we let the first unit $i = 1$ be the treated unit (Graves). For each unit i and time t, we denote the observed pick level as $Y_{i,t}$. We also define the potential pick level in the absence of disclosure as $Y^0_{i,t}$ and the potential pick level in the presence of disclosure as $Y^1_{i,t}$.[2] Our estimands of interest are the effects of the disclosure for Graves in each period $t > T^{pre}$:

$$\tau_t := Y^1_{1,t} - Y^0_{1,t} \tag{A.1}$$

Note that we allow the effect to change over time. Since Graves disclosed his sexual orientation after period T^{pre} (which corresponds to *31-05-2022*), we observe $Y_{1,t} = Y^1_{1,t}$ for all $t > T^{pre}$. Thus, as shown in Equation (A.1), the challenge in estimating our causal effects of interest is to estimate $Y^0_{1,t}$ for $t > T^{pre}$, i.e., how Graves' pick levels would have evolved in the absence of the disclosure.

To estimate $Y^0_{1,t}$ for $t > T^{pre}$, we construct a synthetic control unit that approximates the pick levels of Graves before the disclosure. The idea is that if the synthetic control and Graves behave similarly before the disclosure, then the synthetic control should provide a valid counterfactual. Our synthetic control is represented by a set of weights $\omega_2, \ldots, \omega_{159}$ that make the pretreatment pick level trends of the synthetic unit roughly match those of Graves. We construct these weights by solving the following optimization problem:

$$\begin{aligned} \hat{\omega} &= \arg\min_{\omega \in \Omega} \ell(\omega) \\ \ell(\omega) &= \sum_{t=1}^{T_{pre}} \left(\sum_{i=2}^{n} \omega_i Y_{i,t} - Y_{1,t} \right)^2 \\ \Omega &= \left\{ \omega \in \mathbb{R}_+^{n-1} : \sum_{i=2}^{n} \omega_i = 1 \right\} \end{aligned} \tag{A.2}$$

[2] These potential outcomes are based on Rubin's model for causal inference (Neyman, 1923; Rubin, 1974).

where the weights are restricted to be non-negative and to sum up to one in order to avoid extrapolation. Then, we estimate the counterfactual outcome of Graves as a weighted average of the outcome of the control units:

$$\widehat{Y}^0_{1,t} = \sum_{i=2}^{n} \hat{\omega}_i Y_{i,t} \tag{A.3}$$

The estimated counterfactual $\widehat{Y}^0_{1,t}$ should closely resemble Graves' observed pick levels before the disclosure, i.e., for all $t < T^{pre}$. This is also a way to visually assess the credibility of the final results.

Finally, to estimate the causal effects of interest, we compute the differences between Graves' observed pick levels and the synthetic counterfactual for all $t > T^{pre}$:

$$\hat{\tau}_t = Y^1_{1,t} - \widehat{Y}^0_{1,t} \tag{A.4}$$