Do Social Movements Evoke Sympathetic Response? Evidence from Online Food Orders in Black-owned Restaurants after George Floyd's Murder

Sumit Agarwal
National University of Singapore
bizagarw@nus.edu.sg

Yupeng Lin
National University of Singapore
bizliny@nus.edu.sg

Jean (Jieyin) Zeng
National University of Singapore
jeanzeng@nus.edu.sg

This Version: March 2023

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We utilize the rise of Black Lives Matter (BLM) and the sentiment of racial sympathy to provide quantitative analyses on the interplay between the social movement and citizens' sympathetic actions in supporting Black lives. Using detailed food order flow information from one of the largest online food delivery platforms in the U.S, we find that the total number and the total dollar amount of food orders in Black-owned restaurants increase by about 38% relative to those in non-Black-owned restaurants within the same delivery zone in the 140 days following George Floyd's murder by a Minneapolis police officer. Further analysis reveals that the platform company's strategic allocation of traffic acts as an accelerator enhancing the sympathetic responses of individual citizens but it does not drive the entire surge in food orders. Our study provides a large-scale, micro-level evidence that social movements and increased sympathy can foster collective actions to support marginalized groups.

1. Introduction

Sympathy is deeply ingrained in the emotional and psychological makeup of humans and serves as a foundational element of social order, promoting cooperation and mutual support among individuals and groups (Becker 1974; Andreoni 1989, 1990; Dellavigna, List, and Malmendier 2012).[1] Therefore, to what extent a social movement can mobilize individual and corporation citizens to take sympathetic actions is essential for the movement to have lasting and significant impacts (McCarthy and Zald 1977; Klanderman 1984; Oegema and Klandermans 1994). This question is becoming more pertinent in an atmosphere of heightened social tension. In today's society, citizens hold varying and often opposing views on a range of socio-economic and political issues, including but not limited to abortion law, race relations, gun control, trade, immigration, and LGBTQ rights. The promotion of a social movement can inspire empathy and support in one group, while simultaneously leading another to view it as subversive and dangerous, and therefore reject the movement (Dunivin, Yan, Ince and Rojas, 2022). As society continues to face various social and environmental challenges, the role of corporate citizens, such as platform companies that control online traffic, in promoting change is also becoming increasingly critical.

In this paper, we utilize the rise of Black Lives Matter (BLM) and the strengthening sentiment of racial sympathy to provide quantitative analyses on how citizens sympathetically respond to a social movement. Our analysis also examines the impact of corporate citizens' participation on the sympathetic response of individual citizens, with a specific focus on the role of impression boosting by platform companies. By taking a nuanced approach that recognizes the complex interactions between platform companies, social

[1] We do not distinguish between genuine sympathy and the warm glow feeling that comes from performing an act of kindness.

movements, and individual citizens, we aim at providing insights into mechanisms driving sympathetic responses in the social movement.

The BLM movement is the largest social movement in U.S history and gained international attention during the global anti-racist protest wave of 2020 following George Floyd's murder by a Minneapolis police officer (The murder, hereafter). Prior studies show that protests for Black rights affect public opinion (Gillion 2013; 2016; Wasow; 2020), election outcomes (Teeselink and Melios, 2021; Mutz, 2022), and public disclosures (Dunivin, Yan, Ince, and Rojas 2021). Our study contributes to this literature by providing large-scale micro evidence on how the BLM movement affects the citizens' sympathetic behaviors that economically support Black lives.

One important aspect of the BLM movement was to increase the awareness of racial inequality issues and a call for Americans to support Black-owned businesses. We view the date of the murder as a national-wide shock that evokes citizens' racial sympathy. [2] Using detailed food order flow information from one of the largest online food delivery platforms in the U.S, our difference-in-difference analysis finds that the total number (the total dollar amount) of food orders in Black-owned restaurants increased by 38.9% (38.4%) relative to those in non-Black-owned restaurants within the same delivery zone, following the 2020 George Floyd's murder. We find insignificant effects on order size or order price, suggesting that our finding is not driven by the change in Black-owned restaurants' pricing strategies, such as offering discounts, to attract more customers.

We conduct further analyses to gain a more nuanced understanding of the demographic characteristics of the individuals who are supporting Black-owned restaurants in the wake

[2] The sympathy is directly driven by the death of George Floyd rather than the local protests. We show significant sympathetic responses after the date of the murder but before the onset of local protests.

of the BLM movement. We begin by focusing on the relationship between income and sympathetic behaviors, which has yielded mixed results in prior studies (Hoffman, 2011;; Piff et al., 2015). To proxy for individual income level, we track mobile device models and identify IOS app users as the wealthier group compared with Android app users (Comscore, 2014). Our analysis reveals that IOS app users place more orders at Black-owned restaurants during the BLM movement, compared to Android app users. This finding is consistent with Hoffman (2011)conclusion that an increase in income leads to an increase inaltursim.

Prior studies have found a political divide in support for the BLM movement, with politically conservative groups being less likely to support it, while liberal groups with more positive racial attitudes are more likely to do so. Consistent with this notion, our analysis shows that during the movement, customers in blue counties increased their purchases from Black-owned restaurants more than those in red counties, despite an increase in purchases in both groups. In addition, we find that the increase in food orders in Black-owned restaurants is particularly pronounced for customers located in white-majority block groups. This finding can be in line with the notion that the BLM movement has increased awareness and sympathy towards issues of racial inequality, particularly among white individuals who may have previously been less aware or less engaged with these issues.

We then focus on the salience of target group's identity in a social movement, which plays a crucial role in determining its impact on the public (Klandermans, 1997, Simon and Klandermans 2001). We separate the customer into two groups based on their geographic proximity to the restaurant and find that the incremental effect in food order in Black-owned restaurants is stronger for remote customers who did not pay sufficient attention to Black-owned restaurants before the murder.

The relationship between salience of Black-owned restaurants' identities and customer purchases raises a question on the role of platform companies in shaping individual citizen behaviors in a social movement via impression boosting (i.e., featuring the Black-owned resturants on the app homepage). Our analysis seeks to demonstrate how corporate citizens' behaviors can act as an accelerator, strengthening sympathetic responses of individual citizens. Following the BLM movement's call to support black communities and businesses, the food delivery platform launched a new in-app feature aimed at highlighting nearby Black-owned restaurants. The feature introduced about weeks after George Floyd's murder was intended to facilitate customers to identify and support Black-owned businesses. Specifically, the platform compiled the list of Black-owned restaurants from various sources and it featured the nearby Black-owned restaurants to customers on the app's homepage. However, there were occasional technical outages that caused the feature to malfunction. Therefore, the feature generates rich variations in information salience that enables use to delve into the mechanisms. We have several interesting findings. First, we observe a significant increase in food orders at Black-owned restaurants prior to the launch of the feature or during occassions when the feature was malfunctioning. The increase in food purchases is also significant for customers who did not order through clicking the feature. These findings collectively indicate that the BLM movement itself is a strong motivator for customers to support Black-owned businesses and the impression boosting by the platform company does not drive the entire effect. Second, when the feature is functioning properly, it had a significant positive impact on the increase in food orders for Black-owned restaurants. This suggests that the platform company's featuring of the black-owned restaurants play a crucial role in enhancing customers' support for Black-owned businesses.

One empirical challenge lies in whether information salience acts as an accelerator of sympathetic responses, or if it directly drives the increase in purchases entirely by raising awareness of the restaurants. While the former effect would be linked to sympathy towards African Americans, the latter would not necessarily involve it and could occur in any restaurant with an increase in marketing activities. To address this concern, we first divide the full sample into pre-existing customers and new customers based on their order history. If the increase in purchases is merely driven by raising awareness of the restaurants, we would not be able to find any increase in purchases by pre-existing customers who purchased the food before and have been aware of the restaurants. Despite the increase in purchases being slightly greater in new customers, we find that the increase total number of food orders in Black-owned restaurants increased by 31.2% for the group of customers who had made repeated purchases. Such a big economic increase in orders by pre-existing customers suggests that salience acts as an accelerator of sympathetic responses rather than directly driving the full effect.

Another interesting mechanism is the role of customer experience in shaping their future purchases. When customers have positive experiences at a restaurant, they are more likely to identify it as a high-quality restaurant and return for future purchases. However, it is important to note that learning alone cannot fully account for the increase in food purchases at Black-owned restaurants during the BLM movement, as there is weak theoretical support for the argument that the food quality of Black-owned restaurants is inherently better than that of other restaurants. In addition, we observe a significant increase in food purchases among pre-existing customers who had made purchases before. These customers were unlikely to exhibit a learning effect. To investigate this further, we divide the sample of pre-existing customers into three groups based on the number of repeated purchases. We find a

significant increase in food purchases during the BLM movement across all three groups, although the effect was strongest among the group that had made only one repeated purchase.

Finally, we investigated the potential impact of local protests on the increase in food orders at Black-owned restaurants. Protests may have served to amplify the message of the BLM movement, encouraging people to show their support by placing more orders at Black-owned restaurants. Consistent with this prediction, we find that the increase in food orders at Black-owned restaurants became more pronounced after the onset of local protests. However, it is important to note that protests can also be a reflection of local sentiment and sympathetic responses, and therefore we caution against drawing strong conclusions about causation based solely on this finding.

Our work directly contributes to the literature on the consequences of the BLM movement. Prior studies primarily focus on the political consequences of the BLM such as public opinion and presidential votes (Tesselink and Melios 2020; Wasow 2020; Mutz 2022). Dunivin, Yan, Ince, and Rojas (2021) examine public disclosure and focus on the framing of the movement. Our study shifts the attention to the question of whether the BLM movement effectively mobilizes sympathetic observers to engage in supporting economic activities. This paper is perhaps one of the first studies that provide large-scale micro evidence on how social movement shapes sympathy-driven consumption. Our analysis also reveals how impression boosting by the platform company would interact with individual citizens' sympathetic responses in the movement, shedding light on the important role of corporate citizens in a social movement (Fan, 2019). Anejia, Luca, and Reshef (2023) highlight the important effect of online platforms' labeling of race information on consumer behaviors. Our study is also related to the economic literature on sympathy (Becker 1974; Andreoni 1989, 1990;Dellavigna, List, and Malmendier 2012). Our micro evidence suggests that social

movement and strengthened sympathy can encourage collective actions to support the vulnerable group.

2. Data and Descriptive Statistics

2.1. Sample selection

Food delivery platforms, which enable consumers to order food online and get it delivered to their doorsteps, are among the fastest-growing sectors of mobile applications. These platforms experienced explosive growth during the global pandemic of coronavirus, as the lockdown and continued mobility restriction earlier during the pandemic created huge demand for food deliveries. It is estimated that the online food delivery business has reached US$189.70 billion worldwide in 2021 and it is expected to expand at an annual growth rate of 10.8% from 2022 to 2028 (Grand View Research 2021).

We obtain proprietary data from one of the largest food delivery platforms in the US over a period of two years from 2019 to 2020. This data provides detailed order level information, which allows us to identify the timing, dollar amount, cuisine as well as customers' location and mobile devices. It also provides detailed information on all operating restaurants including information on location, cuisine, and history with the platform.

To start our analyses, we obtain a list of 752 Black-owned restaurants that operate on the platform and that lcoate in over sixty cities. The list of Black-owned restaurants is compiled by the platform in response to the BLM movement's calls to support black communities and businesses.[3] The list is compiled based on various sources including customers and employees' recommendation, business owners' sign-up and referral, and other

[3] The platform does not ask for owner's race information when including restaurants on the platform. The compliation of a list of black-owned restaurants was a response towards the BLM movement after George Floyd's murder and the business owners of the list agreed to be featured as Black-owned restaurants.

publicly available sources. To facilitate customers to easily find and support Black-owned restaurants, the platform launched a new in-app feature that highlights nearby Black-owned restaurants to customers on the homepage of their app. The new feature was introduced weeks after George Floyd's murder and it makes the restaurant' information more salient to customers. Given the nuance of the setting, it enables us to examine consumers' sympathetic response and how salience acts as an accelerator of consumers' sympathetic response.

On average, the Black-owned restaurants have been on the platform for 608.5 days prior to the date of George Floyd's murder by a Minneapolis police officer. The top cuisines of Black-owned restaurants are Caribbean, American, Jamaican and Soul food. Examples of Black-owned restaurants in New York city are Caribbean Starr, Harlem Shake, Golden Krust, and Tings Jamaican Jerk Chicken.

To construct the control group, for each Black-owned restaurant, we first identify all nearby restaurants that locate in the same delivery zones as the focal Black-owned restaurant. Our choice of nearby control restaurants ensures high comparability of the local economic environment across matched pairs. This procedure identifies 2,311 control restaurants with an average of 3 nearby control restaurants per Black-owned restaurant. We find that the Black-owned restaurants exhibit different characteristics, compared with the nearby control restaurants. We also construct an alternative control group in our robustness analysis as we relax the requirement of the same delivery zones, but instead, we require control restaurants to have overlapping delivery zones but with the same cuisine as the treated restaurant.

We then obtain all food ordering information for Black-owned restaurants and the corresponding nearby control restaurants. The ordering data include all food orders completed on the platform for Black-owned restaurants and nearby control restaurants during that period. For our main analyses, we examine orders from the beginning of 2020 till

140 days after the murder, with the event date of the murder occurring approximately in the middle of the period, and we use the 2019 ordering data for the placebo analysis. For each transaction, we observe the identity id of the user and restaurant, the date and time on which the order was made, the type of device on which the order was made (ios vs. Android), the exact location of the device, food items, prices and break-down of services and delivery fees. We aggregate transactions to the restaurant-daily level and the main outcome of interest for this study is the number of daily orders and the dollar amount of daily orders. The final sample includes 462,704 restaurant-daily observations.

We also combine our proprietary data with the American Community Survey (ACS)2019 five-year survey of race distribution at the block group level and the BLM protesting data sourced from the *Crowd Counting Consortium Crowd Data* maintained by the Harvard Nonviolent Action Lab[4].

3. Research Design

We analyze the effect of BLM on households' sympathetic support for Black-owned restaurants using a difference-in-difference approach. The treatment group is the Black-owned restaurants and the control group is the nearby restaurants within the same delivery zone. The sample period for our main specification is from January 1, 2020 (-145) to October 12, 2020 (+140), with the date of George Floyd's death, May 25, 2020, occurring approximately in the middle of the period. The key assumption of a difference-in-difference framework is that, in the absence of the BLM movement following George Floyd's death, Black-owned restaurant would have trends in orders similar to that of control restaurants.

[4] See https://sites.google.com/view/crowdcountingconsortium/home and the data is available at the following link: https://github.com/nonviolent-action-lab/crowd-counting-consortium/blob/master/ccc_compiled.csv

To investigate whether the key parallel trend assumption holds, we start by exploring the dynamics of the change in Black-owned restaurants' orders due to BLM through an event-time analysis by estimating the following model:

$$Y_{it} = \alpha + \sum_{-138}^{+140} \beta_t D_t^{day} + \gamma Treat_i + \sum_{-138}^{+140} \theta_t D_t^{day} * Treat_i + \varepsilon_{it} \qquad (1)$$

The dependent variable Y_{it} is the inverse hyperbolic sine transformation of the daily number of orders for restaurant i on day t, which should be interpreted as percentage changes in the number of orders for restaurant i on day t.[5] D_t^{day} is a set of relative time dummies that corresponds to each of the date of the (-138, +140) window surrounding the date of the murder. $Treat_i$ is a binary indicator variable that is equal to one for Black-owned restaurants. The intercept α captures the average number of daily orders for nearby control restaurants during the first week of 2020, i.e., from day -145 to day -139. β_t captures the average difference in the number of daily orders between day t and that of the first week for nearby control restaurants. γ captures the average difference in the number of daily orders between the treatment group and control group during the first week of 2020. Our parameter of interest θ_t compares the change in the number of daily orders between the treatment and control group for day t, i.e., difference-in-difference. The time-series plot of θ_t is useful for visualizing the time trend but also useful for explicitly testing the parallel trend assumption that is key to the difference-in-difference design.

We also evaluate the average causal effect of BLM on Black-owned restaurants in regression analysis in Table 2 and Table 6 by estimating the following equation:

$$Y_{it} = \theta Post_t \times Treat_i + \gamma_i + \pi_t + \delta_{pm} + \varepsilon_{i,t} \quad (2)$$

The dependent variable Y_{it} is the inverse hyperbolic sine transformation of the daily

[5] The formula for inverse hyperbolic sine transformation is: $IHST(Y) = \log(Y + (Y^2 + 1)^{0.5})$.

revenue, the number of daily orders, the average dollar amount per order, the average price per dish item for the restaurant i on day t for Table 2. $Post_t$ is an indicator variable that is equal to one for days after the murder. We consider the date of the murder rather than the incidence of local protest as the starting point of a shock that evokes citizen sympathy because the sympathy is directly driven by the unexpected death of George Floyd rather than the local protests. When and where local protests take place are endogenously determined. $Treat_i$ is a binary indicator variable that is equal to one for Black-owned restaurants. γ_i denotes the restaurant-level fixed effects to control for time-invariant restaurant characteristics, π_t denotes daily fixed effects to control for the time trend, and δ_{pm} denotes pair-month fixed effects to control for time-variant local economic conditions. The standard errors are clustered both at the restaurant and daily level. Our variable of interest θ captures the average treatment effect of BLM on sympathetic support for Black-owned restaurants.

Next, we carry out three tests to examine the interaction between the platform company's online impression boosting and individual consumers' sympathetic responses towards Black-owned restaurants. To this end, we estimate the incremental treatment effects after the platform company introduces the new feature that directs online traffic to Black-owned restaurants:

$$Y_{it} = \theta_1 Post_t \times Treat_i + \theta_2 PostFeaturing_t \times Treat_i + \gamma_i + \pi_t + \delta_{pm} + \varepsilon_{i,t} \quad (3)$$

$PostFeaturing_t$ is an indicator variable that is equal to one for days after the platform's introduction of the new feature. θ_1 captures the average treatment effect between the date of George Floyd's death and the date immediately prior to the platform's featuring of Black-owned restaurants. $\theta_2$captures the incremental treatment effect posterior to the platform's featuring of black-owned restaurants.

We also take advantage of the institutional detail that the new feature was not shown

for several time intervals after its introduction due to technical issues, and estimate the average treatment effects separately for outage days and non-outage days:

$$Y_{it} = \theta_1 Outage_t \times Treat_i + \theta_2 Non\_Outage_t \times Treat_i + \gamma_i + \pi_t + \delta_{pm} + \varepsilon_{i,t} \quad (4)$$

$Outage_t$ is an indicator variable that is equal to one for days after the platform's introduction of the new feature. Non_Outage_t is an indicator variable that is equal to one for days that the feature is properly shown. θ_1 captures the average treatment effect for days that the new feature experienced outage. $\theta_2$captures the average treatment effect for normal days.

Lastly, we are interested in examining whether the local protests enhance people's sympathetic responses by estimating the following equation:

$$Y_{it} = \theta_1 Treat_i \times Inter_{it} + \theta_2 \mathrm{Treat_i} \times PostProtest_{it} + \gamma_i + \pi_t + \delta_{pm} + \varepsilon_{i,t} \quad (5)$$

Beyond the variables defined above, $Inter_{it}$ is an indicator variable that takes the value of 1 if the date t is between the date of George Floyd's death and the date of first protest in the local county. $PostProtest_{it}$ is an indicator variable that takes the value of 1 if the date is posterior to the date of the first protest in the county. This specification allows us to compare the level of individual customers' sympathetic responses in the intermediate period between George Floyd's death and the date of first local protest and that after the occurrence of first local protest. The average (median) number of days of the intermediate period are about 4.3 (4) days.

In a robustness analysis, we also introduce two continuous measures of protesting intensity and estimate heterogeneous effects by protesting intensity, using the triple difference-in-difference framework:

$$Y_{it} = \theta_1 Post_t \times Treat_i + \theta_2 Post_t \times Treat_i \times ProtestInt_{it} + \theta_3 Post_t \times ProtestInt_{it} + \gamma_i + \pi_t + \delta_{pm} + \varepsilon_{i,t} \quad (6)$$

The first measure of protesting intensity, $ProtestInt_{it}$, is $\#Protest_{it}$, which is the cumulative

number of BLM protests that have occurred in the local county where restaurant i is located before day t. The second measure is $SizeProtest_{it}$, which is the logarithm of one plus the cumulative number of BLM protestors that have participated in protests in the local county where restaurant i is located before day t.

4. Main Findings

4.1. Baseline Analyses

Table 1 presents the summary statistics of the order information. Prior to the murder, Black-owned restaurants received slightly fewer orders (11.17 vs. 11.95) and lower revenue (271.45 v.s. 293.21) per day. Orders in Black-owned restaurants are usually smaller in size (24.39 v.s. 25.42). In addition, compared to control restaurants, Black-owned restaurants received more orders from black-majority block groups, and fewer orders from white-majority block groups, which is consistent with the social identity theory that individuals prefer to establish a relationship with those with the same affinity. Compared to control restaurants, Black-owned restaurants also received more orders from Android device users, and fewer orders from IOS device users. Collectively, these statistics suggest that Black-owned restaurants are smaller in size and get more orders from lower-income black groups, prior to the date of the murder. Notably, after the murder, Black-owned restaurants received much higher orders (16.04 vs. 13.45) and higher revenue (388.91 vs. 334.46) per day than control restaurants, though orders in Black-owned restaurants are still smaller in size. We further provide a summary of the restaurant-level characteristics of our sample. The average Black-owned and control restaurant has operated on the platform for more than a year. Compared to control restaurants, Black-owned restaurants are located in blocks with higher black population.

Figure 2 reports the estimates of Equation (1). As shown in Figure 1, the percentage differences in the daily number of orders between Black-owned restaurants and control restaurants follow similar trends in the 140-day period prior to the murder. The pre-trend serves as suggestive evidence that the key identifying assumption of parallel trends in the absence of treatment holds in this setting. Right after the murder, the difference increases sharply and such an increase persists at least 140 days after the murder.[6] This finding suggests that Black-owned restaurants received an abrupt increase in orders after the murder. To better estimate the average increase in orders in Black-owned restaurants after the murder, we further estimate Equation (2) and report the results in Table 2. Column (1) of Table 2 shows that the total number of food orders in Black-owned restaurants increased by 38.9%, compared to control restaurants within the same delivery zones, following the murder.

To strengthen the causal inference, we conduct several robustness tests. First, we use the same calendar window in 2019 to conduct a falsification test. In particular, we view May 25, 2019 as a pseudo-murder event and examine the differences in the daily number of orders between Black-owned restaurants and control restaurants in a [-140 days, +140 days] window. Appendix Figure A1 shows that the differences between Black-owned restaurants and control restaurants evolve smoothly when the treatment effect does not present. In Appendix Figure A2, we construct an alternative control group and require control restaurants to have the same cuisine as the treated restaurant and overlapping delivery zones. The inference is consistent with that of Panel A Figure 2 and Column (1) of Table 2.

[6] We note that on Aug 1st and 2nd of 2022, orders in Black-owned restaurants exhibit a short-run reversal (see Panel A of Figure 2). Our further analysts reveal that affected restaurants with a short-run reversal in orders are geographically dispersed. In addition, the drops appear to be driven by orders from new clients. Since there wasn't any important event on these dates, we thus attribute this effect to data noise. In Figure 2 Panel B where we use the first local protest as the onset of local BLM sentiment and use a stacked difference-in-difference estimation, the short-run reversal in the treatment effect is mitigated.

In Appendix Figure A3, we further consider the first local protest activities after the murder as the beginning of the local shock of the BLM sentiment and plot the percentage differences in the daily number of orders between Black-owned restaurants and control restaurants in a stacked window of [-140 days, +140 days] surrounding the first local protest and the inference remains similar.

A natural follow-up question is whether there is a reallocation effect, i.e., whether customers switch from non-Black-owned restaurants to Black-owned restaurant. However, in Figure 1 we do not find any evidence of decrease in orders of nearby control restaurants or alternative control restaurants with the same cuisine. This suggests that the increase in food orders in Black-owned restaurants is not likely driven by any reallocation effect, and instead the BLM social movement creates additional demand for Black-owned restaurants.

In Column (2) of Table 2, we examine the change in the total dollar amount of orders in Black-owned restaurants versus those of control restaurants after the murder. Compared to control restaurants, Black-owned restaurants receive 38.4% more dollar amounts after the murder. In Column (3), we examine the change in order size. Compared to control restaurants, the order size of Black-owned restaurants becomes 1.3% smaller, though the coefficient is not significant.[7]

Note that the increase in food orders can be driven by strategic pricing behaviors of Black-owned restaurants during the BLM movement. One direct approach to examine this possibility is to test the changes in item price. In Column (4), we show that the item price does not change during the BLM movement, suggesting that the increase in food orders is not driven by the supply side effect of the Black-owned restaurants.

[7] Both the total dollar amount and the dollar value per order exclude delivery fees.

4.2. Who is Supporting the Black-owned Restaurants?

We further examine households' characteristics to understand who is supporting the Black-owned restaurants in the wake of the BLM movement. We utilize the information on mobile phone devices, on the location of customers, to examine the heterogeneous responses by households. We first focus on the income level as prior studies have demonstrated an important relationship between income and altruism (Piff et al., 2012). To This end, we differentiate the orders placed by IOS users and those placed by Android users. Comscore (2014) shows that IOS users have a median income around 40 percent higher than Android users. Therefore, the mobile device can act as a proxy for household incomes. Panel A of Table 3 shows that the increase in the number of orders in Black-owned restaurants is larger for iOS users compared to Android users (0.38 v.s. 0.33). This finding suggests that the marginal sympathizers are lower-income groups. This finding can be useful in drawing inferences about the enduring influence of the BLM movement. The support of resourceful groups can play a crucial role in amplifying the impacts of a social movement. Ongoing engagement and collective actions of higher-income groups would help achieve the goals of the BLM movement.

We next examine the political leaning of individual customers. There exists a political divide regarding support for the social movement, with politically conservative groups displaying less support compared to liberal groups with more favorable attitudes towards racial inequality (Madestam et al. 2013; Mazumder, 2018). To explore whether citizen's sympathetic response is asymmetric along the partisan line, we divide the sample into two subsamples of restaurants located in red counties and those located in blue counties. In Panel B of Table 3, we find that customers in red and blue counties both increased their purchases from Black-owned restaurants. And consistent with this expectation that liberal groups are more likely to support the BLM movement, our analysis shows that customers in blue counties increased their purchases from Black-owned restaurants more than those in red

counties (39.2% vs. 27.0%).

In Panel C of Table 3, we differentiate the orders placed by customers located in a black-majority block and by those located in a white-majority block. Our findings reveal that the increase in food orders in Black-owned restaurants is more pronounced for customers located in a white-majority block groups (0.370 v.s. 0.239). This result is consistent with the racial sympathy argument suggesting that the group of Whites could distress over black suffering (Chudy, 2020). The murder makes this group of Whites feel more guilty and therefore induce them to take more sympathetic actions to support the Black lives. It could also be explained by the notion that the BLM movement has increased awareness towards issues of racial inequality, particularly among white individuals who previously were less aware of these issues.

This motivates us to further investigate the information salience effect. To this end, we separate orders placed by nearby customers and by remote customers. Panel D of Table 3 highlights the economic significance of the surge in orders at Black-owned restaurants, as evidenced by the considerable increase in businesses from both remote and nearby customers following the BLM movement. The effect is especially pronounced among remote customers who previously paid less attention to the restaurants, with a sizable increase of 45.2% in orders. However, nearby customers also showed a noteworthy increase in orders with a value of 26.7%, indicating that the movement has had a positive impact on raising awareness and increasing support for Black-owned restaurants among consumers.

Collectively, our tests show that high-income Whites are more likely to increase their support for black after the murder. In addition, the BLM movement also successfully mobilized remote customers to support the Black-owned restaurants.

4.3. The Role of Platform Company: Impression Boosting and Individual Customer Responses

The significance of information salience in driving the success of social movements allows platform companies to make an unprecedented impact. With their immense power to control online traffic, these companies have a unique opportunity to amplify the messages and increase the visibility of social movements. To understand this important role of online platform companies, we utilized the engagement actions of the platform company in the BLM movement to examine the interaction between impression boosting and sympathetic responses of customer purchases. Note that this analysis does not aim to isolate the information salience effect, but rather demonstrates how it can act as an accelerator, strengthening sympathetic responses and sheds light on the significant role that big corporations such as platform companies play in framing, messaging, and promoting social movements.

Following the BLM movement's calls to support black communities and businesses, the platform launched new in-app features aimed at highlighting nearby Black-owned restaurants. These features were intended to facilitate customers' ability to support the Black-owned businesses and were introduced weeks after the murder. To create the list of Black-owned restaurants, the company compiled information from various sources and highlighted the list to customers through features on the homepage of the app. This feature specifically highlighted the Black-owned status of the restaurants and direct online traffic to these Black-owned restaurants. However, there were occasional technical issues that caused the feature to malfunction temporarily at different points in time. Therefore, the feature generates rich variations in information salience.

The effectiveness of the feature in capturing customers' attention is expected to be most prominent during the post-feature period when customers can actively interact with it.

During this period, the feature's targeted messaging will stand out and attract customers who may have previously been unaware of the presence of Black-owned restaurants in the area. However, it is anticipated that the impact of the feature on customer behavior will be weaker during the pre-feature period and during periods when the feature malfunctions due to technical difficulties since the platform's online impression boosting are impeded. Furthermore, the effect of the feature is expected to vary based on customers' interaction with it. Those who click the feature and place an order through it are likely to be more influenced by its message than those who proactively search for the restaurant without using the feature. This suggests that the feature's effectiveness depends on customers' receptivity to its message and their willingness to engage with the feature's call-to-action.

Our findings are consistent with these predictions. First, Panel A of Table 4 shows a 15% significant increase in the food order amount at Black-owned restaurants during the BLM movement, even prior to the launch of the feature. This finding suggests that the feature is not driving the entire surge in food orders but acting as an accelerator. This inference is further strengthened by the result reported in Panel B of Table 4 that food order amount at Black-owned restaurants increase by 27.2% in the BLM movement even during periods when the feature was not functioning properly.

In addition, our findings in Panels A and B of Table 4 also reveal an important role played by the feature. We find that with the impression boosting effect of the feature, there is an additional 11.4% (=38.6%-27.2%) further surge in food order amounts at Black-owned restaurants in the BLM movement. During the normal period, a well-functioning feature further increases the food order mount at Black-owned restaurants by 38.6%.

We further isolate the impression boosting effect by exploring orders from customers who place an order by clicking the feature than for those who place the order without using the feature. The platform tracks the analytics regarding how customers place their orders.

Based on the platform's analytics data for order attribution, we are able to identify the "funnel" for each restaurant order. For example, we can distinguish between "feature" orders, which are attributed to customers clicking through the platform's front-page feature of Black-owned restaurants, and "non-feature" orders attributed to search results, reorder list or personalized recommendations not related to Black-owned restaurants, etc. We find the economically significant increase in food order amounts at Black-owned restaurants is driven by both customers who place an order by clicking the feature and those who search for the restaurant proactively without using the feature. That is the impression boosting by the platform company does not drive the full effect.

Collectively, findings in Table 4 suggest that the platform company's messaging and support of the BLM movement play a crucial role in motivating customers to support Black-owned restaurants.

4.4. Alternative Explanations: Information Salience (only) and Learning Effect.

One concern in interpreting our main finding is related to the role of information salience. It is unclear whether increased salience of information related to a social movement accelerates sympathetic responses or simply raises awareness of the targeted restaurants. While the former effect would likely involve sympathy towards the African American group, the latter effect could occur in any business with an increase in marketing activities.

To better understand the underlying mechanisms, we can divide the sample into two groups based on their order history: pre-existing customers and new customers. If the increase in purchases is solely driven by heightened awareness of the restaurants, we would expect to see no significant increase in purchases by pre-existing customers who were already aware of the restaurants before the social movement. Finding an economical increase in purchases by pre-existing customers who have been aware of the restaurant would suggest

that the surge in food orders can not be fully explained by the increase in awareness due to marketing activities.

Columns (1) to (4) of Table 5 report the results. We find that pre-existing customers who have been already aware of the restaurants also exhibit an economically significant increase in their purchases at Black-owned restaurants, although the new customers do exhibit a greater surge in their purchases (Column 5 of Table 5). The magnitude of the increase in order number (amount) is 31.2% (27.1%) for customers who had previously ordered at least once from the restaurants.[8] Such a large increase in magnitude suggests that sympathy is an important driver of the surge of food orders at Black-owned restaurants.

A related but different mechanism is the role of customer experience in shaping their future purchases. When customers have positive experiences at a restaurant, they are more likely to identify it as a high-quality restaurant and return for future purchases. Columns (1) to (4) show significant increases in food purchases among pre-existing customers who made purchases before. These customers were unlikely to exhibit a learning effect. When we divide the sample of pre-existing customers into different groups based on the number of repeated purchases. We find a significant increase in food purchases during the BLM movement across all groups, although the effect was strongest among the group that had made only one repeated purchase.

Collectively, the results presented in Table 5 provide insight into the extent to which information salience and learning effects contribute to the surge in food orders at Black-owned restaurants. Our findings suggest that information salience alone does not fully explain the increase in food orders observed during the study period. Furthermore, our

[8] One may argue that pre-existing customers may not be aware of the ownership information of the restaurant. In untabulated results, we show a quantitative similar increase in orders by pre-existing customers when restricting those Black-owned restaurants that were located in black-dominant areas, ruling out this explantion.

anistalysis suggests that the learning effect has limited explanatory power on the increase in food orders, indicating that customers were not simply trying out Black-owned restaurants for the first time and then returning to their previous dining habits in BLM.

4.5. Protests and Sympathetic Responses

As a key driver of the social movement, protest highlights the ability of people to make their disapproval of racial discrimination heard. It is crucial for creating the groundwork for change, encouraging people to express empathy via placing more orders in Black-owned restaurants. On the other hand, intense protests could make local citizens, especially right-wing people, view the movement as violent and dangerous, and therefore boycott the movement (Dunivin, Yan, Ince and Rojas, 2021). We thus test the incremental effect of protests. The results are reported in Table 6. We find that citizens responded to the murder and place more orders in Black-owned restaurants before the onset of local protest, reinforcing the notion that the death of George Floyd immediately gave rise to African American sympathy. Please noet that the average (median) number of days of the intermediate period are about 4.3 (4) days. In addition, we find that the increase in food orders in Black-owned restaurants becomes more pronounced after the onset of local protests. However, to the extent that protects are also a reflection of the sentiment of sympathy, we caution against a strong casual interpretation based on these findings.

4.6. Manipulation of the Black Ownership Information

The positive impact of the BLM movement on food orders at Black-owned restaurants raises an issue about the potential strategic manipulation of ownership information by businesses seeking to exploit this sentiment for financial gain. Please note this effect does

not alter our inference on whether the BLM movement incentivizes individual customers to take sympathetic actions. The investigation on this issue merely seeks to reveal whether the BLM movement achieved its goal of supporting "real" Black-owned businesses.

To this end, we focus on restaurants located in areas with a high proportion of Black residents (i.e., Black-dominant areas) and restaurants serving cuisine commonly associated with Black culture, including Caribbean, Jamaican, Soul Food, Ethiopian, and African cuisine. The underlying assumption is that manipulation cost is higher for these restaurants as the black ownership can be easily figured out and monitored by the local community. We further restrict our sample to restaurants that were in existence before the murder that sparked the movement. By analyzing these three subsamples, we find consistent evidence that food orders significantly increased at Black-owned restaurants in these subsets (See Table A1 and A2)

5. Conclusion

This paper presents a large-scale analysis of the impact of the Black Lives Matter (BLM) movement on households' sympathetic responses using detailed food order flow data from one of the largest online food delivery platforms in the United States. Specifically, we examine how the movement affects the total number and dollar amount of food orders in Black-owned restaurants relative to non-Black-owned restaurants in the same delivery zone following the murder of George Floyd by a Minneapolis police officer in 2020.

Our analysis reveals a significant increase in food orders at Black-owned restaurants, suggesting that the BLM movement had a positive impact on consumer behavior and helped support Black-owned businesses. We also explore heterogeneities in sympathetic responses, finding that IOS users, who tend to be wealthier, and those located in white-majority blocks

place more orders at Black-owned restaurants following the murder. Additionally, new and remote customers placed more orders at Black-owned restaurants during this time.

We also investigate the interaction between the platform company and individual behaviors during the BLM movement. We find that the platform company's use of online impression boosting tool, a feature highlighting Black-owned restaurants within the app, has a significant enhancement effect on the surge of food orders. However, even without such impression boosting, the increase in food orders at Black-owned restaurants is also economically significant.

Finally, we rule out the possibility that information salience and learning effects drive the entire surge in food orders at Black-owned restaurants during the BLM movement. Our findings have important implications for understanding the impact of social movements on consumer behavior and the role of platform companies in promoting social causes.

References

Andreoni, J. (1989). Giving with Impure Altruism: Applications to Charity and Ricardian Equivalence. *Journal of Political Economy*, *97*(6), 1447–1458.

Andreoni, J. (1990). Impure Altruism and Donations to Public Goods: A Theory of Warm-Glow Giving. *The Economic Journal*, *100*(401), 464.

Aneja, A., Luca, M., & Reshef, O. (2023). Black Ownership Matters: Does Revealing Race Increase Demand For Minority-Owned Businesses? (No. w30932). National Bureau of Economic Research

Archibong, B., Moerenhout, T., & Osabuohien, E. S. (2022). Protest Matters: The Effects of Protests on Economic Redistribution. *SSRN Electronic Journal*.

Becker, G. S. (1974). A Theory of Social Interactions. *Journal of Political Economy*, *82*(6), 1063–1093.

Chudy, J. (2021). Racial Sympathy and Its Political Consequences. *The Journal of Politics*, *83*(1), 122–136.

Comscore (2014). iPhone Users Earn Higher Income, Engage More on Apps than Android Users. https://www.comscore.com/ita/Public-Relations/Infographics/iPhone-Users-Earn-Higher-Income-Engage-More-on-Apps-than-Android-Users

DellaVigna, S., List, J. A., & Malmendier, U. (2012). Testing for Altruism and Social Pressure in Charitable Giving. *The Quarterly Journal of Economics*, *127*(1), 1–56.

Dunivin, Z. O., Yan, H. Y., Ince, J., & Rojas, F. (2022). Black Lives Matter Protests Shift Public Discourse. *Proceedings of the National Academy of Sciences*, *119*(10).

Fan, Jennifer. (2019) Woke Capital: The Role of Corporations in Social Movements. *Harv. Bus. L. Rev*. 441, https://digitalcommons.law.uw.edu/faculty-articles/586

Gillion, D. Q. (2013). The Political Power of Protest: Minority Activism and Shifts in Public Policy. Cambridge University Press.

Gillion, D. Q. (2016). Governing with words: The Political Dialogue on Race, *Public Policy, and Inequality in America. Cambridge* University Press.

Grand View Research (2021). Online Food Delivery Market Size, Share & Trends Analysis Report by Type, By Region and Segment Forecasts, 2022-2028. https://www.grandviewresearch.com/industry-analysis/online-food-delivery-market-report

Hambrick, D. C., & Wowak, A. J. (2021). CEO Sociopolitical Activism: A Stakeholder Alignment Model. *Academy of Management Review*, *46*(1), 33–59.

Hoffman, M. (2011). Does Higher Income Make You More Altruistic? Evidence from the Holocasut. The Review of Economics and Statistics, 93(3), 876–887.

Klandermans, B. (1984). Mobilization and Participation: Social-Psychological Expansisons of Resource Mobilization Theory. *American Sociological Review*, *49*(5), 583.

Klandermans, B. (1997). The social psychology of protest. Blackwell.

Klein Teeselink, B., & Melios, G. (2021). Weather to Protest: The Effect of Black Lives Matter Protests on the 2020 Presidential Election. *SSRN Electronic Journal*.

McCarthy, J. D., & Zald, M. N. (1977). Resource Mobilization and Social Movements: A Partial Theory. *American Journal of Sociology*, *82*(6), 1212–1241.

Madestam, Andreas, Daniel Shoag, Stan Veuger, & David Yanagizawa-Drott (2013). Do Political Protesst Matter? Evidence from the Tea Party movement. *The Quarterly Journal of Economics 128,* no. 4 (2013): 1633–86.

Mazumder, Soumyajit (2018). The Persistent Effect of U.S. Civil Rights Protests on Political Attitudes. *American Journal of Political Science* 62, no. 4 (2018): 922–35.

Mutz, D. C. (2022). Effects of Changes in Perceived Discrimination during BLM on the 2020 presidential election. *Science Advances*, *8*(9), 9140.

Oegema, D., & Klandermans, B. (1994). Why Social Movement Sympathizers Don't Participate: Erosion and Nonconversion of Support. *American Sociological Review*, *59*(5), 703.

Piff, P. K., Stancato, D. M., Côté, S., Mendoza-Denton, R., & Keltner, D. (2012). Higher social class predicts increased unethical behavior. *Proceedings of the National Academy of Sciences*, 112(11), 3489–3494.

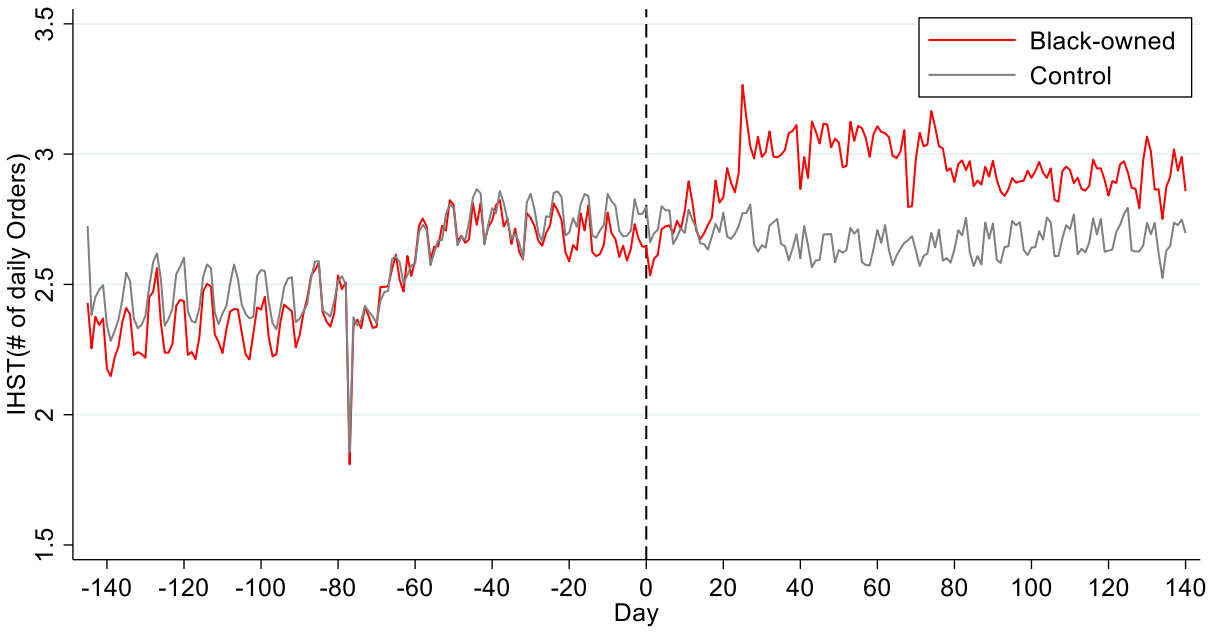
Simon, B., & Klandermans, B. (2001). Politicized collective identity: A social psychological analysis. *American Psychologist, 56*(4), 319–331.

Tajfel, H. (1979). Individuals and Groups in Social Psychology. *British Journal of Social and Clinical Psychology*, *18*(2), 1

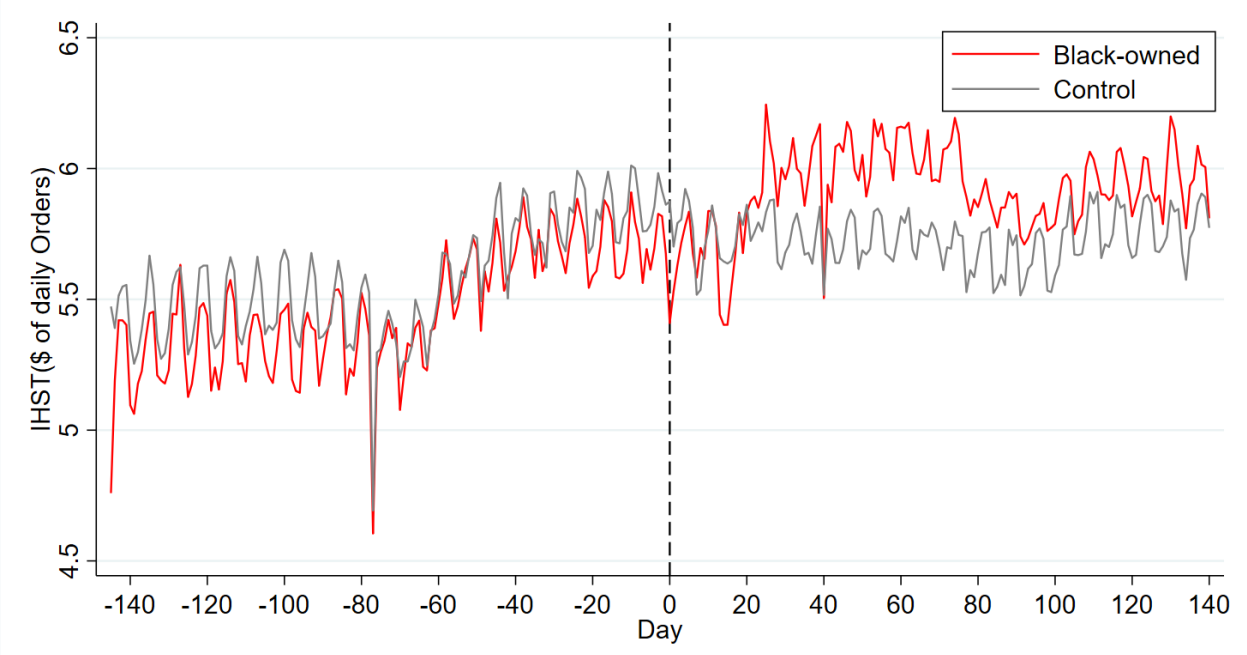
Wasow, O. (2020). Agenda Seeding: How 1960s Black Protests Moved Elites, Public Opinion and Voting. *American Political Science Review*, *114*(3), 638–659.

Figure 1
Number of daily orders over time for Black-owned and nearby control restaurants

Panel A: Number of orders



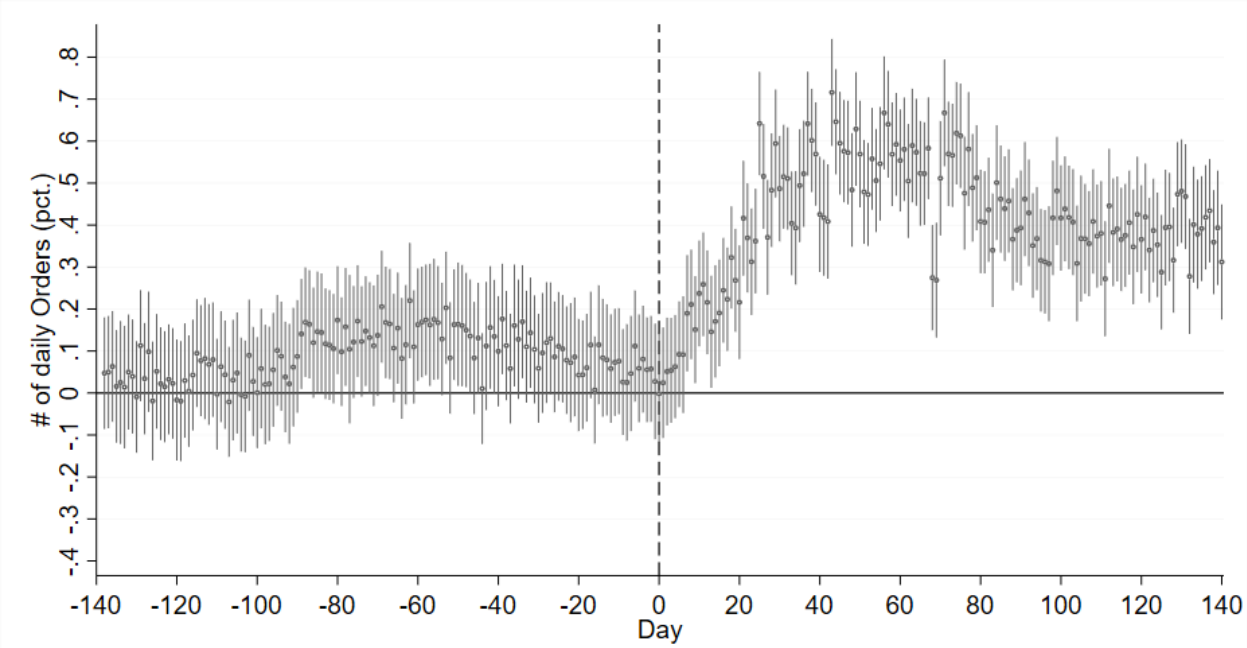
Panel B: Dollar amount of orders



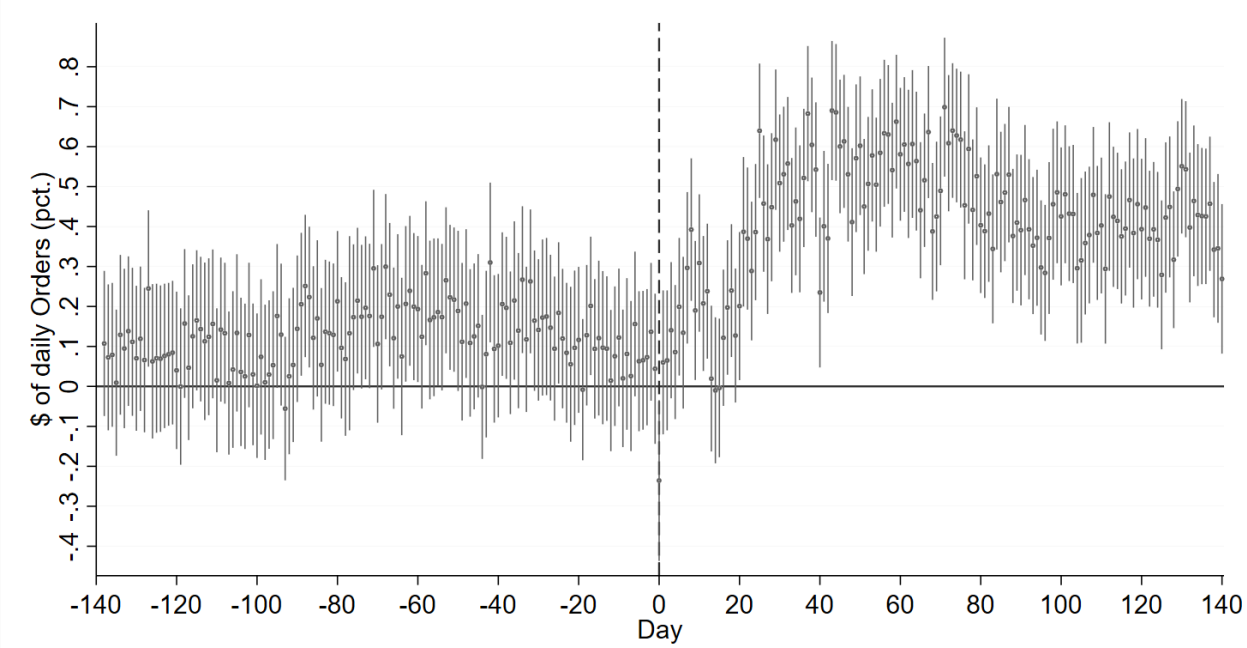
Note: Panel A (B) plots the inverse hyperbolic sine transformation of the daily number (dollar amount) of orders separately for Black-owned restaurants and control restaurants.

Figure 2
Evolvement of orders for Black-owned vs. nearby control restaurants

Panel A: Number of orders



Panel B: Dollar amount of orders



Note: Panel A (B) plots the mean and corresponding 95% confidence intervals for the percentage difference in the daily number (dollar amount) of orders between Black-owned restaurants and nearby control restaurants over the window from -140 to 140 days surrounding the date of George Floyd's murder.

Table 1
Descriptive Statistics

	(1) Black-owned restaurants		(2) Control restaurants		(3)
	Mean	SD	Mean	SD	Dif
Panel A: Restaurant daily orders prior to BLM					
# of daily orders	11.17	14.61	11.95	15.13	-0.77
$ of daily orders	271.45	367.64	293.21	372.20	-21.76
$ per order	24.39	11.72	25.42	13.26	-1.03
# of daily orders from black-majority block groups	4.91	9.19	3.25	8.22	1.65
# of daily orders from white-majority block groups	3.88	5.77	5.84	8.83	-1.96
# of daily orders from Android devices	2.83	4.22	2.64	4.15	0.18
# of daily orders from ios devices	8.34	11.35	9.30	12.01	-0.96
# of daily orders from old customers	4.12	6.53	4.42	7.05	-0.30
# of daily orders from new customers	7.05	9.26	7.52	9.70	-0.47
# of daily nearby orders	6.12	8.38	6.28	8.09	-0.16
# of daily distant orders	4.85	7.01	5.66	8.04	-0.81
Panel B: Restaurant daily orders posterior to BLM					
# of daily orders	16.04	18.52	13.45	17.19	2.59
$ of daily orders	388.91	472.49	334.46	419.28	54.45
$ per order	23.77	10.80	26.00	13.72	-2.22
# of daily orders from black-majority block groups	6.66	11.34	3.92	10.17	2.74
# of daily orders from white-majority block groups	6.19	8.05	6.48	9.55	-0.28
# of daily orders from Android devices	3.76	4.79	2.75	5.12	1.01
# of daily orders from ios devices	12.29	14.75	10.70	13.80	1.58
# of daily orders from old customers	7.07	9.38	6.46	9.93	0.61
# of daily orders from new customers	8.97	10.42	6.99	8.70	1.98
# of daily nearby orders	7.46	9.31	6.76	9.17	0.70
# of daily distant orders	7.73	9.98	6.69	8.99	1.04
Panel B: Restaurant Characteristics					
# of days on the platform	608.52	428.63	547.75	433.73	60.77
% black population of local block group	0.42	0.31	0.28	0.27	0.13
% white population of local block group	0.42	0.28	0.50	0.25	-0.08

Note: This table provides the mean and standard deviation for daily orders (Panels A and B) and restaurant characteristics (Panel C) for the Black-owned restaurants (column 1) and control restaurants (column 2). Differences between the two groups are provided in column (3).

Table 2
Average treatment effect of BLM on Black-owned restaurants

	(1) Number of orders	(2) Dollar amount of orders	(3) Dollar per order	(4) Average price per dish item
BlackRes×post	0.389***	0.384***	-0.013	-0.003
	(14.29)	(12.39)	(-1.13)	(-0.65)
Observations	462,512	459,800	459,800	437,392
R-squared	0.763	0.602	0.281	0.519
Restaurant FE	Yes	Yes	Yes	Yes
Date FE	Yes	Yes	Yes	Yes
Pair-month FE	Yes	Yes	Yes	Yes

Note: This table presents the average treatment effect of BLM on daily orders for Black-owned restaurants post BLM, relative to control restaurants. The dependent variables are the inverse hyperbolic sine transformation of outcome variables including the number of daily orders, the dollar amount of daily orders and dollar amount per order, the average price per dish item, and the coefficients should be interpreted as percentage changes. *BlackRes* is an indicator variable that is equal to 1 for Black-owned restaurants; *post* is an indicator variable that takes the value of 1 if the date is posterior to the outbreak of BLM, i.e., the date of George Floyd's murder by a Minneapolis police officer. We report t-statistics in parentheses based on clustered standard errors by restaurant and date.

Table 3
Who is supporting Black-owned restaurants?

Panel A: Android vs. iOS devices

	(1)	(2)	(3)	(4)
	Android devices		**iOS devices**	
	Number of orders	Dollar amount of orders	Number of orders	Dollar amount of orders
BlackRes×post	0.330***	0.263***	0.380***	0.365***
	(13.59)	(10.69)	(14.11)	(12.36)
Observations	462,512	321,175	462,512	441,244
R-squared	0.576	0.403	0.739	0.589
Restaurant FE	Yes	Yes	Yes	Yes
Date FE	Yes	Yes	Yes	Yes
Pair-month FE	Yes	Yes	Yes	Yes

Panel B: Red vs. Blue

	(1)	(2)	(3)	(4)
	Red County		**Blue County**	
	Number of orders	Dollar amount of orders	Number of orders	Dollar amount of orders
BlackRes×post	0.270***	0.214**	0.392***	0.387***
	(3.53)	(2.09)	(14.22)	(12.36)
Observations	8,644	8,582	453,866	451,217
R-squared	0.711	0.576	0.764	0.602
Restaurant FE	Yes	Yes	Yes	Yes
Date FE	Yes	Yes	Yes	Yes
Pair-month FE	Yes	Yes	Yes	Yes

Panel C: Black-majority vs. white-majority block groups

	(1)	(2)	(3)	(4)
	Black-majority block groups		**White-majority block groups**	
	Number of orders	Dollar amount of orders	Number of orders	Dollar amount of orders
BlackRes×post	0.239***	0.269***	0.370***	0.339***
	(10.68)	(8.87)	(14.35)	(11.61)
Observations	462,512	252,181	462,512	378,959
R-squared	0.819	0.562	0.733	0.559
Restaurant FE	Yes	Yes	Yes	Yes
Date FE	Yes	Yes	Yes	Yes
Pair-month FE	Yes	Yes	Yes	Yes

Panel D: Nearby vs. remote customers

	(1)	(2)	(3)	(4)
	Nearby customers		**Remoted customers**	
	Number of orders	Dollar amount of orders	Number of orders	Dollar amount of orders
BlackRes×post	0.267***	0.272***	0.452***	0.367***
	(11.37)	(10.42)	(13.49)	(11.35)
Observations	462,512	405,262	462,512	393,372
R-squared	0.699	0.551	0.669	0.517
Restaurant FE	Yes	Yes	Yes	Yes
Date FE	Yes	Yes	Yes	Yes
Pair-month FE	Yes	Yes	Yes	Yes

Note: This table presents the average treatment effect of BLM on daily orders for Black-owned restaurants, relative to control restaurants for subgroups. Variable definitions are the same as those in Table 2. We report t-statistics in parentheses based on clustered standard errors by restaurant and date.

Table 4
The interplay between consumers' sympathetic responses and information salience

Panel A: Effects surrounding platform's featuring of Black-owned restaurants

	(1) Number of orders	(2) Dollar amount of orders
BlackRes×Post	0.105***	0.154***
	(3.24)	(3.49)
BlackRes×PostFeaturing	0.323***	0.261***
	(9.58)	(5.76)
Observations	462,512	459,800
R-squared	0.764	0.603
Restaurant FE	Yes	Yes
Date FE	Yes	Yes
Pair-month FE	Yes	Yes

Panel B: Evidence from feature malfunctions

	(1) Number of orders	(2) Dollar amount of orders
BlackRes×Outage	0.219***	0.272***
	(6.44)	(8.54)
BlackRes×Non-outage	0.392***	0.386***
	(14.36)	(12.43)
Observations	462,512	459,800
R-squared	0.763	0.602
Restaurant FE	Yes	Yes
Date FE	Yes	Yes
Pair-month FE	Yes	Yes

Panel C: Evidence from non-feature orders

	(1) Number of non-feature orders	(2) Dollar amount non-feature orders
BlackRes×Post	0.277***	0.290***
	(11.43)	(10.17)
Observations	462,512	458,622
R-squared	0.765	0.604
Restaurant FE	Yes	Yes
Date FE	Yes	Yes
Pair-month FE	Yes	Yes

Note: Panel A presents the average treatment effect of BLM on daily orders for Black-owned restaurants surrounding the platform's featuring of Black-owned restaurants. *PostFeaturing* is an indicator variable that takes the value of 1 if the date is posterior to the platform's featuring of Black-owned restaurants. In Panel B, we utilize the variation created by occasional technical issues that caused the feature which highlight the Black-owned restaurants to malfunction temporarily and estimate the average treatment effects separately for outage days and normal days. Panel C presents the average treatment effect of BLM on daily non-feature orders for Black-owned restaurants. The platform tracks the analytics regarding how customers place their orders. Based on the platform's analytics data for order attribution, we are able to identify the "funnel" for each restaurant order with high accuracy. For example, we can distinguish between "feature" orders, which are attributed to customers clicking through the platform's front-page feature that features the platform's curated list of Black-owned restaurants, and "non-feature" orders attributed to search results, reorder list or personalized recommendations not related to Black-owned restaurants, etc. The daily non-feature orders are the number of orders that are not placed through clicking front-page features. We report t-statistics in parentheses based on clustered standard errors by restaurant and date.

Table 5
Pre-existing vs. new customers

	(1)	(2)	(3)	(4)	(5)	(6)
	Pre-existing customers who have ordereded N>=2 times		**Pre-existing customers who have ordereded N>=1 times**		**New customers**	
	Number of orders	Dollar amount of orders	number of orders	Dollar amount of orders	number of orders	Dollar amount of orders
BlackRes×post	0.256***	0.208***	0.312***	0.271***	0.399***	0.378***
	(9.88)	(7.93)	(11.31)	(9.96)	(14.44)	(12.59)
Observations	462,512	329,037	462,512	374,675	462,512	423,888
R-squared	0.710	0.540	0.731	0.576	0.645	0.513
Restaurant FE	Yes	Yes	Yes	Yes	Yes	Yes
Date FE	Yes	Yes	Yes	Yes	Yes	Yes
Pair-month FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table presents the average treatment effect of BLM on daily orders from pre-existing customers and new customers for Black-owned restaurants, relative to control restaurants.

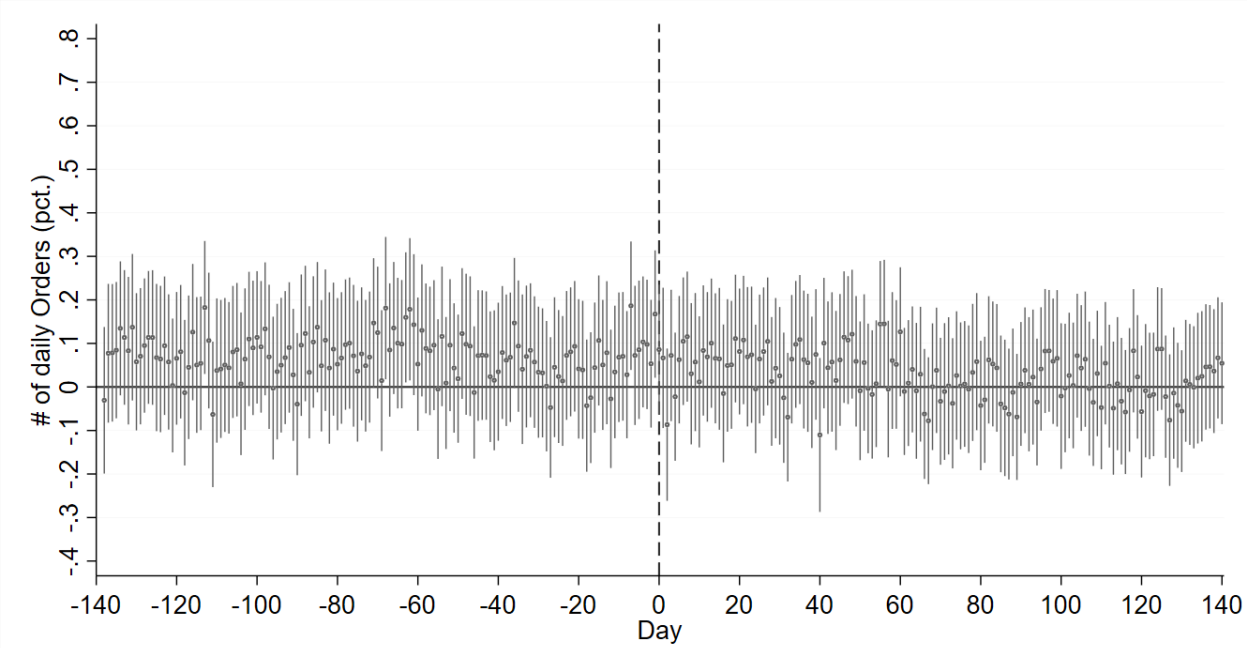
Table 6
Do local protests enhance sympathetic responses?

	(1) Number of orders	(2) Dollar Amount of orders
BlackRes×inter	0.058**	0.070**
	(2.36)	(1.87)
BlackRes×postprotest	0.410***	0.403***
	(15.67)	(13.20)
Observations	462,512	459,800
R-squared	0.764	0.603
Restaurant FE	Yes	Yes
Date FE	Yes	Yes
Pair-month FE	Yes	Yes

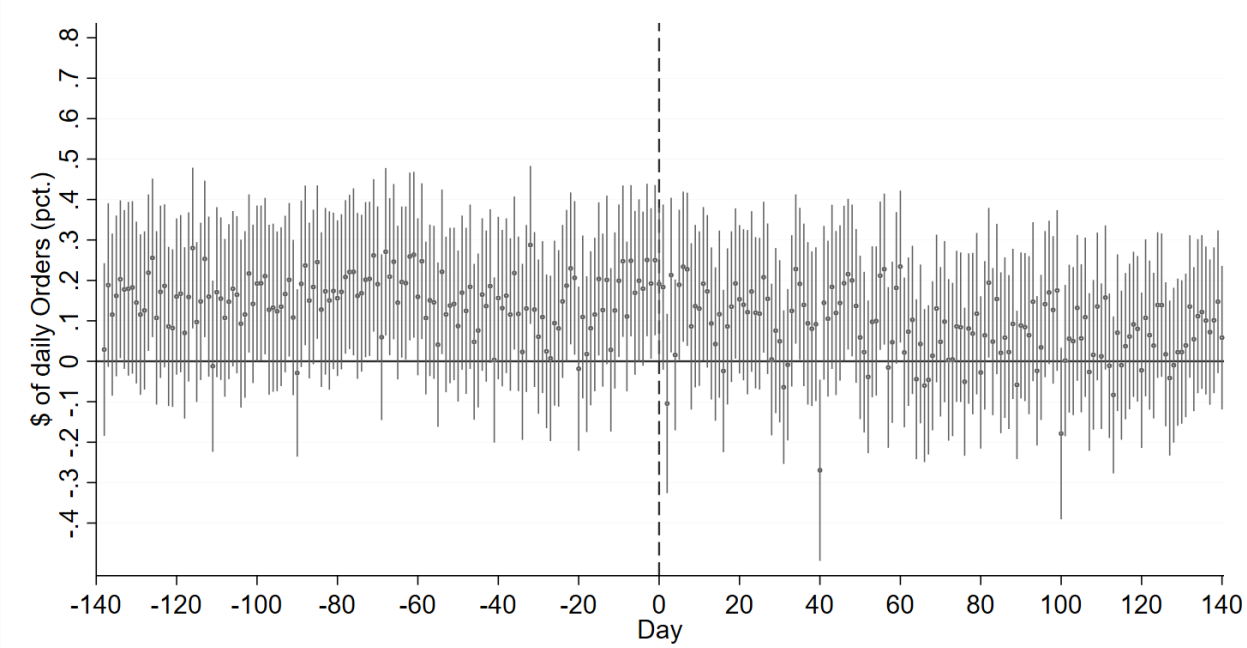
Note: This table presents the results using an alternative DID specification to examine whether local protests enhance sympathetic responses. This table presents the average treatment effect of BLM on daily orders for Black-owned restaurants post BLM, relative to control restaurants. The dependent variables are the inverse hyperbolic sine transformation of outcome variables including the number of daily orders, the dollar amount of daily orders and dollar amount per order, and the coefficients should be interpreted as percentage changes. *BlackRes* is an indicator variable that is equal to 1 for Black-owned restaurants; *inter* is an indicator variable that takes the value of 1 if the date is between the date of George Floyd's death and the date of the first protest in the local county. *postprotest* is an indicator variable that takes the value of 1 if the date is posterior to the date of the first protest in the local county. We report t-statistics in parentheses based on clustered standard errors by restaurant and date.

Figure A1
Placebo test for year 2019

Panel A: Number of orders



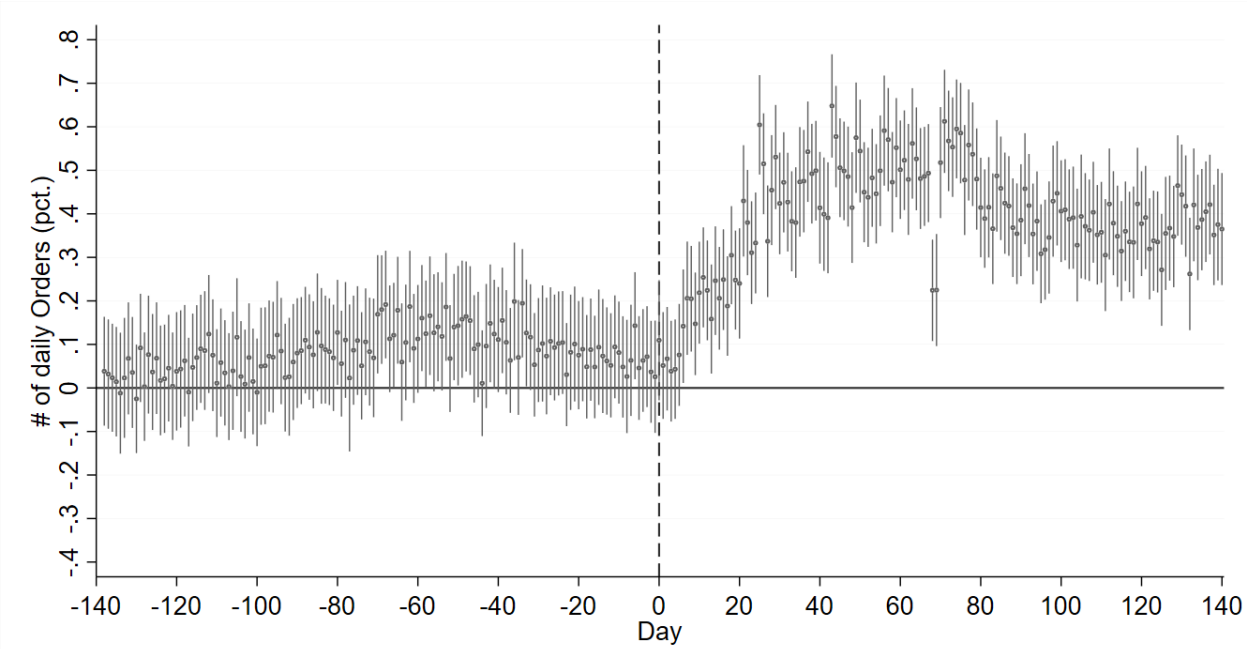
Panel B: Dollar amount of orders



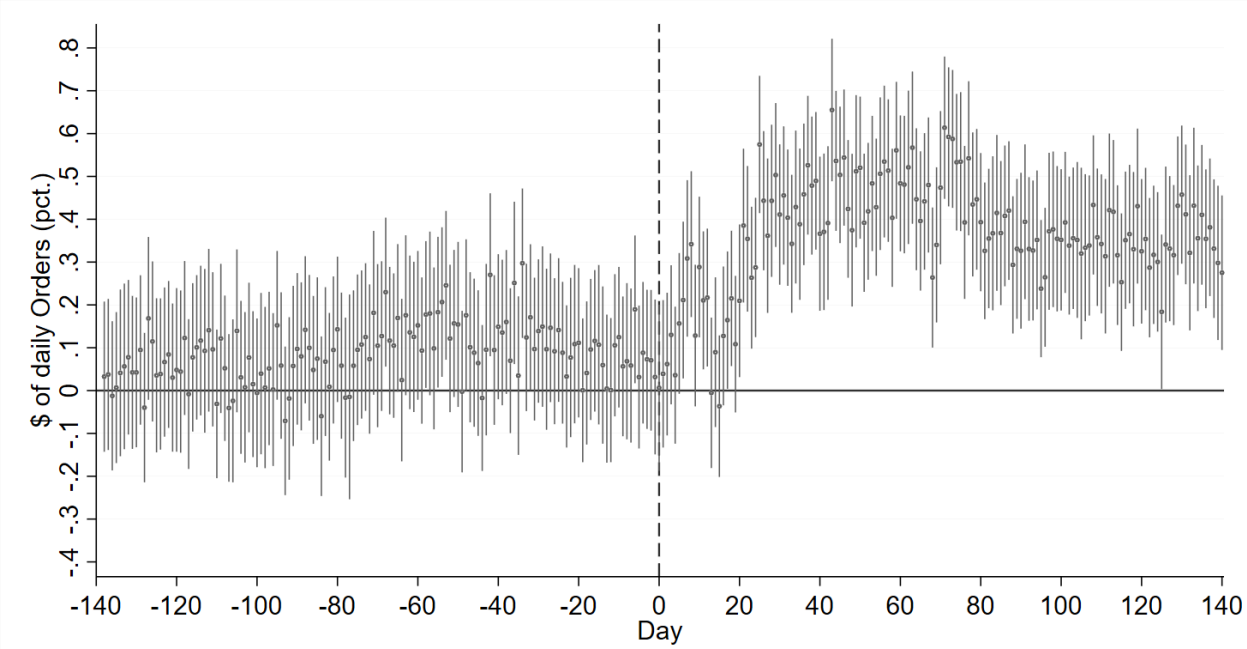
Note: Panel A(B) plots the mean and corresponding 95% confidence intervals for the percentage difference in the daily number (dollar amount) of orders between Black-owned restaurants and nearby control restaurants over the window from -140 to 140 days surrounding the psudo date of May 25, 2019, i.e., a year before George Floyd's murder.

Figure A2
Robustness analysis using alternative control sample

Panel A: Number of orders



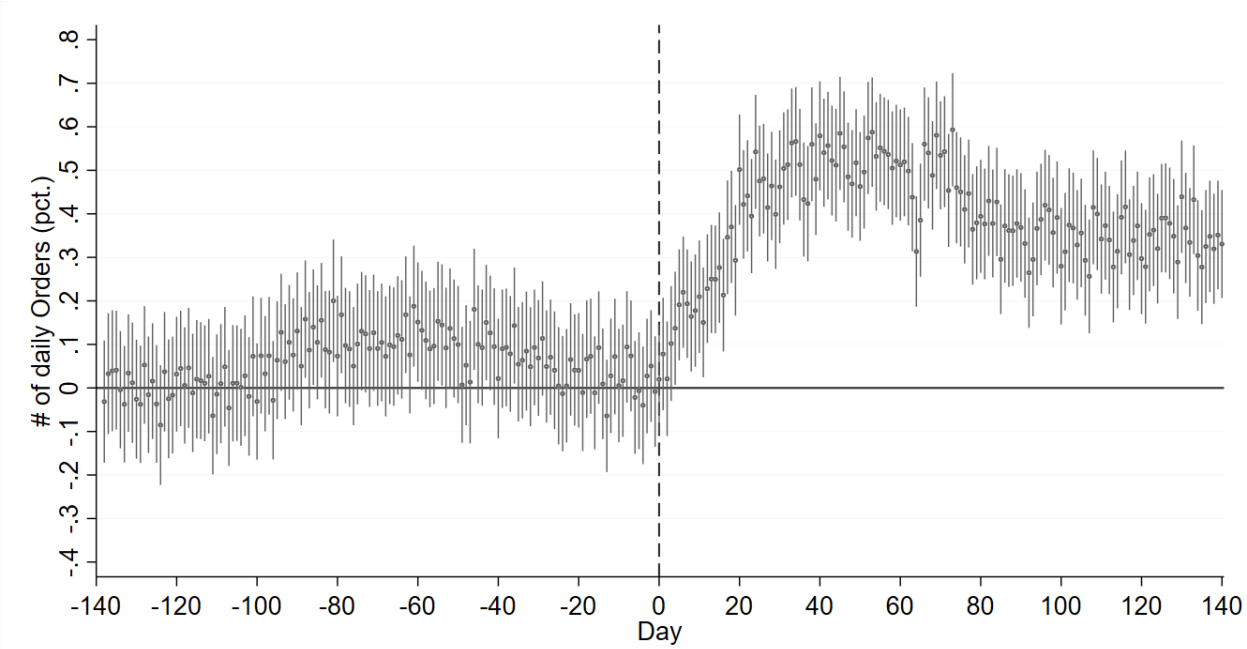
Panel B: Dollar amount of orders



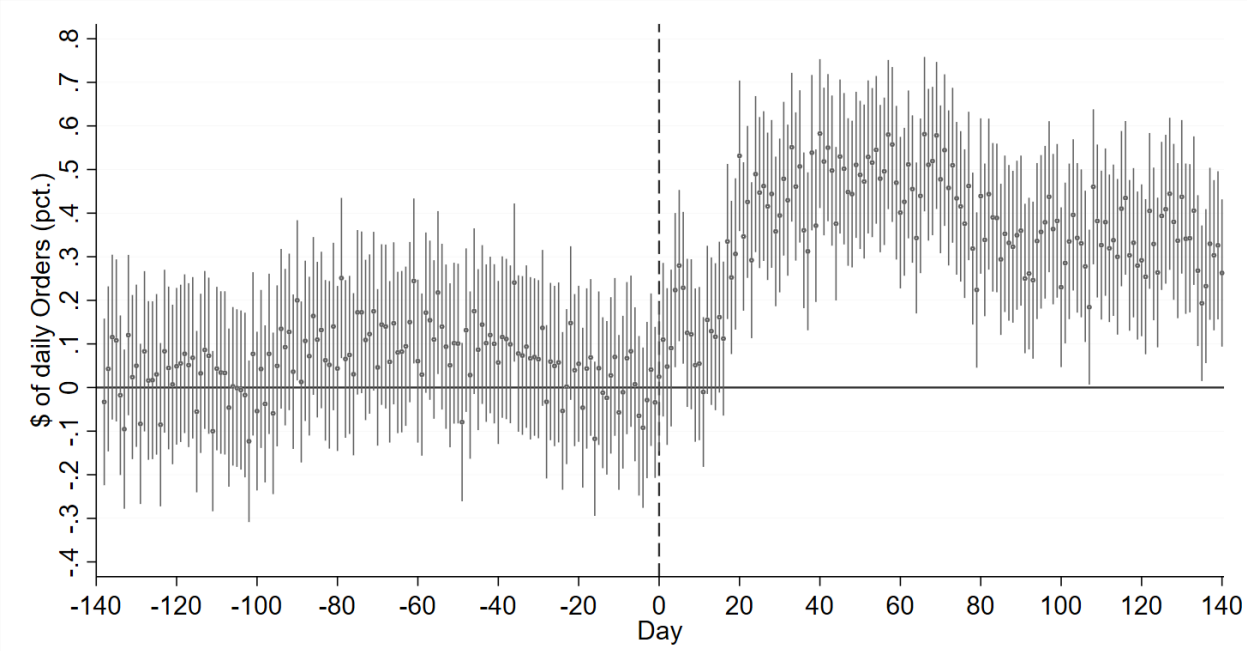
Note: This figure repeats Figure 2 using an alternative control sample. We construct an alternative control group as we relax the requirement of the same delivery zones, but instead, we require control restaurants to have the same cuisine as the treated restaurant and overlapping delivery zones. Panel A(B) plots the mean and corresponding 95% confidence intervals for the percentage difference in the daily number (dollar amount) of orders between Black-owned restaurants and control restaurants over the window from -140 to 140 days surrounding the date of George Floyd's murder.

Figure A3
Evolvement of orders for Black-owned vs. nearby control restaurants relative to the date of the first local protest

Panel A: Number of orders



Panel B: Dollar amount of orders



Note: This figure repeats figure 3 by using the first date of local protesting as the reference date.

Table A1

Addresing the concern of restaurants' manipulation of their identities

	(1)	(2)	(3)	(4)
	Restaurant located in blocks with >=90% black population		**Restaurants with cuisine identified as Caribbean, Jamaican, SoulFood, Ethiopian, African**	
	Number of orders	Dollar amount of orders	number of orders	Dollar amount of orders
BlackRes×post	0.398***	0.392***	0.403***	0.398***
	(4.64)	(3.84)	(12.01)	(10.03)
Observations	29,400	29,230	197,514	196,424
R-squared	0.767	0.593	0.777	0.607
Restaurant FE	Yes	Yes	Yes	Yes
Date FE	Yes	Yes	Yes	Yes
Pair-month FE	Yes	Yes	Yes	Yes

Note: This table presents the average treatment effect of BLM on daily orders for two subsample of Black-owned restaurants. The first subsample consists of Black-owned restaurants that are located in blocks with 90% black population. The second subsample consists of Black-owned restaurants whose cuisines are identified as Caribbean, Jamaican, SoulFood, Ethiopian, and African. We report t-statistics in parentheses based on clustered standard errors by restaurant and date.

Table A2
Repeat Table 2 by focusing on restaurants that have operated on the platform since Jan 1, 2020

	(1) Number of orders	(2) Dollar Amount of orders
BlackRes×post	0.381***	0.364***
	(13.26)	(11.22)
Observations	362,511	360,540
R-squared	0.761	0.599
Restaurant FE	Yes	Yes
Date FE	Yes	Yes
Pair-month FE	Yes	Yes

Note: This table presents the average treatment effect of BLM on daily orders for Black-owned restaurants post BLM, relative to control restaurants. The dependent variables are the inverse hyperbolic sine transformation of outcome variables including the number of daily orders, the dollar amount of daily orders and dollar amount per order, and the coefficients should be interpreted as percentage changes. *BlackRes* is an indicator variable that is equal to 1 for Black-owned restaurants; *post* is an indicator variable that takes the value of 1 if the date is posterior to the outbreak of BLM, i.e., the date of George Floyd's murder by a Minneapolis police officer. We report t-statistics in parentheses based on clustered standard errors by restaurant and date.

Table A3
Repeat Table 2 using an extended period till end of 2020

	(1) Number of orders	(2) Dollar Amount of orders
BlackRes×post	0.365***	0.351***
	(14.31)	(11.77)
Observations	595,557	592,459
R-squared	0.763	0.603
Restaurant FE	Yes	Yes
Date FE	Yes	Yes
Pair-month FE	Yes	Yes

Note: This table presents the average treatment effect of BLM on daily orders for Black-owned restaurants post BLM, relative to control restaurants. The dependent variables are the inverse hyperbolic sine transformation of outcome variables including the number of daily orders, the dollar amount of daily orders and dollar amount per order, and the coefficients should be interpreted as percentage changes. *BlackRes* is an indicator variable that is equal to 1 for Black-owned restaurants; *post* is an indicator variable that takes the value of 1 if the date is posterior to the outbreak of BLM, i.e., the date of George Floyd's murder by a Minneapolis police officer. We report t-statistics in parentheses based on clustered standard errors by restaurant and date.

Table A4
Do local protests enhance sympathetic responses? Robustness analysis using continuous variable

	(1) Number of orders	(2) Number of orders
BlackRes×post	0.350***	0.024
	(11.06)	(0.68)
BlackRes×post × #protest	0.001**	
	(2.08)	
BlackRes×post × sizeprotest		0.043***
		(9.68)
Observations	462,512	462,512
R-squared	0.764	0.764
Restaurant FE	Yes	Yes
Date FE	Yes	Yes
Pair-month FE	Yes	Yes

Note: This table presents the average treatment effect of BLM on daily orders as a function of the protesting intensity of local counties for Black-owned restaurants post BLM, relative to control restaurants. The dependent variables are the inverse hyperbolic sine transformation of outcome variables including number of daily orders, dollar amount of daily orders and dollar amount per order, and the coefficients should be interpreted as percentage changes. *BlackRes* is an indicator variable that is equal to 1 for Black-owned restaurants; *post* is an indicator variable that takes the value of 1 if the date is posterior to the outbreak of BLM, i.e., the date of George Floyd's murder by a Minneapolis police officer; #*protest* is the cumulative number of BLM protests that have occurred in the local county of restaurant *i* before day *t*; *sizeprotest* is the logarithm of one plus the cumulative number of BLM protestors that have participated in protests in the local county of restaurant *i* before day *t*. We report t-statistics in parentheses based on clustered standard errors by restaurant and date.