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# Do Religious People Cope Better in a Crisis?

## Evidence from the UK Pandemic Lockdowns<sup>\*</sup>

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24<sup>th</sup> June 2025

### Abstract

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# 1 Introduction

Both adherents of religion and those who take a more sceptical view have long acknowledged its potential to help coping during a crisis and in ameliorating psychological distress (Koenig, Al-Zaben and VanderWeele, 2020). Despite intense interest from other disciplines such as psychology and sociology, economic analysis of the relationship between religion, crises and psychological distress is sparse (Iyer and Rosso, 2022). This is so, despite the the potentially large welfare and economic implications. Mental health problems have been estimated to cost the UK economy the equivalent of around 5 percent of GDP (McDaid et al., 2022). The rise in mental health problems since the pandemic is also having a significant impact on the UK’s labour market and budgetary position<sup>1</sup> (OBR, 2024).

In terms of the mechanisms linking religious belonging (‘belonging’) and religious intensity (‘intensity’) to improved mental health in times of crisis, two main channels have been identified<sup>2</sup>. The first is that religion may foster a sense of ‘belonging’ leading to the development of social capital and social networks. These can in turn provide support to individuals when they face stressors and difficulties<sup>3</sup>. The second is that one’s faith may act as a coping device, for example by providing hope, consolation and meaning when dealing with adversity; and has been advanced by both believers and sceptics alike. Indeed, many prominent thinkers of the past, including Marx, Weber and Freud, have written on the ‘palliative’ effects of religion (Wolff and Leopold, 2021).

More recently, many empirical studies in psychology have identified religion as a ‘stress buffer’ by allowing people to better cope with shocks and stressful events (Pearlin, 1989; Koenig et al., 2014). Such analysis identifies different stressors and shows how religion can help ameliorate them. Of most

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<sup>1</sup><https://www.thetimes.co.uk/article/benefits-data-reveals-extent-of-claims-over-mental-health-n8cj7007k> (last accessed: 16/06/25).

<sup>2</sup>It may also be possible for intensity of faith (via religiosity) to negatively affect mental health, for example through spiritual struggles or anxiety caused by breaching a religious proscription or obligation (Iyer and Rosso 2022). There is also an important literature showing that religious proscriptions may help with self-regulation and reduce the incidence of risky or self-destructive behaviour (James and Wells, 2003; Gruber and Hungerman, 2008; Fletcher et al., 2014). Fruehwirth et al. (2019) have shown that religiosity can help adolescents adopt positive behaviour and to be more motivated in their activities, through peer effects.

<sup>3</sup>For instance, Koenig and Larson (2001) found that 19 of the 20 studies they reviewed showed that religious communities fostered social interactions.

interest to our study is the role belonging and intensity can play when coping with a negative shock. As noted by [Iyer and Rosso \(2022, p. 6\)](#), “perceiving one’s own stressful experiences through the lens of religiosity might provide solace because of meaning-making and stress-buffering.” For instance, religious people may interpret the negative event as part of a greater plan. Indeed, [Upenieks and Schieman \(2021\)](#) have found that belief in ‘divine control’ is associated with lower stress levels for similar sized negative shocks, and [Ellison et al. \(2019\)](#) find a relationship between religion and sleep quality. [Krause and Pargament \(2018\)](#) find a relationship between reading the Bible and reduced stress, while [Pirutinsky et al. \(2020\)](#) find a correlation between religiosity and lower stress among the American Orthodox Jewish community during the early stages of the COVID-19 pandemic. [Giles, Hungerman and Oostrom \(2023\)](#) also show that increases in the ‘deaths of despair’, as reflected in higher mortality due to negative behaviours such as alcoholism, has been affected by the decline in religious participation in the US.

In terms of the empirical literature that links religiosity with mental health, much of it is based on cross-sectional datasets that analyse correlations between the two. From this literature, we know that those who identify as religious tend to have better mental health; however it must be stressed that most of the studies are unable to make a causal claim ([Iyer and Rosso, 2022](#)). [Garssen et al.’s \(2021\)](#) meta-analysis of longitudinal studies in the United States found religion to have a small positive relationship with mental health. A recent study by [Bahal et al. \(2023\)](#) shows that while the incidence of a COVID-19 infection is associated with significantly worse mental health, this negative association is significantly smaller for religious people. Attending online religious services also weakens the association between COVID-19 and worse mental health. In other countries, the results seem more mixed. [Hodapp and Zwingmann’s \(2019\)](#) meta-analysis of German-speaking countries found a small statistical relationship between spirituality and mental health. However, they found no evidence of religion as a coping mechanism for stress.

One of the most difficult issues when studying the empirical relationship between religion and mental health is the *selection into religion* problem – and the selection bias takes two main forms. The first is that people may select into a religion or increase their intensity of faith as a tool for coping

with a negative shock to mental health. There is growing evidence that this is indeed the case. Using an identification strategy pioneered by Angrist (1990), Cesur, Friedman and Sabia (2020) found that soldiers exposed to combat zones were more likely to be religious afterwards. Similarly Bentzen (2019) found that religiosity increases in response to those who experience unpredictable natural disasters, such as earthquakes, volcanic eruptions and tsunamis. More recently, Bentzen (2021) has found compelling evidence using Google search data that religiosity increased during the pandemic. The second potential source of selection bias is that belonging or intensity proxy for difficult to measure attributes, such as family background, innate personal and psychological characteristics that affect mental health – not the impact of religion itself. To date, few studies have been able to adequately deal with the selection into religion problem. One that has is that of Fruehwirth, Iyer and Zhang (2019) who exploit random variation in exposure to religious peers at school in the United States, which is an exogenous predictor of religiosity. They find that an increase in religiosity among adolescents leads to a decrease in the probability of being depressed.

We aim to deal with the selection into religion problem as follows. First we use the pandemic lockdowns as a source of an exogenous mental health shock affecting the whole of society. In this sense, religious and non-religious were treated alike in terms of freedom of movement, health risk, and so forth. Second, we use indicators of belonging and intensity taken *before* the pandemic commenced. This enables us to deal with the potential of selecting into religion as a way of coping from the shock of the pandemic. Third, due to the longitudinal nature of our dataset, we employ individual fixed effects that enable us to control for non-time varying individual characteristics, ranging from family background, innate personality traits and other factors that may affect an individual’s ability to cope from an adverse event.

While our econometric strategy enables us to deal with the selection into religion problem generated by the pandemic itself, it does not allow us to deal with potential pre-pandemic selection into religion. Furthermore, while we are able to accurately measure differences in coping between religious and non-religious people during the pandemic, we cannot determine the cause of these differences, which could potentially be generated via a non-religious mechanism. Nonetheless, by measuring

both belonging and intensity prior to the pandemic; and including individual fixed effects, time varying controls, and especially lockdown interaction terms (i.e., control variables interacted with the lockdown dummy), we are able to ameliorate the selection problem and rule out many potential non-religious causes for the differences in coping.

Thus, our paper continues as follows: Section 2 provides background on the UK lockdowns; Section 3 discusses our data; Section 4 details our econometric strategies; Section 5 contains descriptive statistics; Section 6 has our results; and Section 7 concludes.

## 2 The Lockdowns

The pandemic and the associated lockdowns imposed acute psychological pressure on many people in the UK (see [Burdett, Davillas, and Etheridge, 2021](#)). It is also well known that some groups of people, for instance women, suffered higher degrees of psychological distress than others ([Etheridge and Spantig, 2022](#)). In addition to the fear and anxiety generated by a large-scale public health crisis, UK residents also had their freedom of movement severely curtailed. People were only allowed to go outside to buy food, for exercise, and were only able to go to work if they could not work from home (schools were also closed).

In order to determine the lockdown dates we draw upon the analysis of the Institute of Government: 23 March 2020 to 23 June 2020 and 5 November 2020 to 8 March 2021<sup>4</sup>. Previous empirical evidence suggests that increases in psychological distress were similar during the two main national lockdowns ([Daly and Robinson, 2022](#)). Churches and places of worship were closed in the first lockdown, but not in the second, however it must be noted that there were other factors that differed between the two lockdown periods<sup>5</sup>.

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<sup>4</sup><https://www.instituteforgovernment.org.uk/charts/uk-government-coronavirus-lockdowns> (last accessed: 16/06/25).

<sup>5</sup><https://lordslibrary.parliament.uk/covid-19-reopening-church-buildings-and-the-financial-impact-of-closure/> (last accessed: 16/06/25).

### 3 Data

We use data from the Understanding Society dataset which is the UK’s main household longitudinal survey, administered by the Institute for Social and Economic Research (ISER) at the University of Essex, capturing information on “people’s social and economic circumstances, attitudes, lifestyle, health, family relationships and employment”. The dataset is representative of the UK population for a range of demographic and socioeconomic variables (including gender, age, ethnicity, region and income). We use a balanced panel dataset from the four Waves (8 to 11) which covers the period from January 2016 to May 2021<sup>6</sup>. Importantly, a significant portion of Wave 11 (Jan 2019 to May 2021) was collected during the pandemic period, which enables us to extract survey data collected during the lockdowns. We use these lockdown observations, and those of the three previous waves, to create a balanced panel of 3884 individuals<sup>7</sup>.

#### 3.1 Measures of Religious Belonging and Religious Intensity

We use data from the Understanding Society dataset on religious belonging and religious intensity. This distinction is important, as belonging to a religion does not necessarily mean that someone is religious, and vice versa.

To measure religious belonging, we use responses to the following question: “Which religion do you regard yourself as belonging to?”. Importantly, available responses include ‘no religion’. We also use these responses to measure differences between religious denominations (e.g., between Christianity and Islam) in our paper. This question is asked in each wave and we use the latest response *before*

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<sup>6</sup>While the dataset is longitudinal, attrition (due to death, drop-outs or migration) from wave to wave is non-trivial. Given our use of a balanced panel, this leads to a trade-off in total number of observations with the number of waves to include, where more waves increase the timespan but reduce the number of people we can use for who provided a response. Prior to estimation we settled in four waves: Wave 8 for Jan 2016 to May 2018, Wave 9 for Jan 2017 to May 2019, Wave 10 for Jan 2018 to May 2020, Wave 11 for Jan 2019 to May 2021.

<sup>7</sup>We use individuals who were measured in Wave 11 during the two main national lockdown periods *only*. After these time periods, COVID-19 restrictions became more fractured and varied (including localised and regional lockdowns). Also, anyone sampled after the first lockdown had been recently ‘treated’ even if not in lockdown at the time of completing the survey, and may have been suffering residual mental health distress, complicating our analysis and the interpretation of the results.

the period of lockdowns (Wave 10, Jan 2018 to May 2020).

To measure religious intensity, we use the answers to the following question: “How much difference would you say religious beliefs make to your life? Would you say they make...a great difference (1), some difference (2), a little difference (3), no difference (4)?”. We recode the answers so that ‘no difference’ = 0, ‘a little difference’ = 1, ‘some difference’ = 2, and ‘a great difference’ = 3. Religious intensity questions are not asked in every wave and the last time these questions were asked was during Wave 8 (Jan 2016 to May 2019).

### 3.2 Measures of Mental Health

The Understanding Society survey includes the General Health Questionnaire (GHQ) which consists of 12 questions on subjective mental health outcomes. These questions relate to: concentration; lost sleep; usefulness; ability to make decisions; strain; ability to overcome difficulties; enjoyment of day-to-day activities; facing up to problems; unhappiness or depression; confidence; worthlessness; and general unhappiness. The questions ask respondents of their ‘recent’ feelings and are relative to ‘usual’. Each question requires an answer from 1 to 4 with the higher number representing a higher degree of psychological distress. The full list of questions and the potential responses are contained in the Appendix (see Table A1).

There are two established methods of aggregating the GHQ to measure mental health outcomes (Goldberg and Williams, 1988). Given the findings of Goldberg et al. (1997) that reports it is a better measure of aggregation, we lead with the results from the “Caseness” aggregation method, which converts the answers of the 12 questions into a single scale by recoding 1 and 2 values on individual variables to 0, and 3 and 4 values to 1, and then summing. In this case, the aggregate scale runs from 0 (least distressed) to 12 (most distressed). We also report the second aggregate measure (Likert), which converts answers of the 12 individual questions of the GHQ to a single scale by summing the individual question scores. The individual variable scores run from 0 to 3 (instead of 1 to 4), and this produces an aggregate scale from 0 (least distressed) to 36 (most distressed).



We note that the aggregate measures are regularly used in panel regressions similar to ours (Zhang et al., 2021). Finally, we also include the results from the ‘Unhappiness or Depression’ question, which asks “Have you recently been feeling unhappy or depressed?” given that this question is the most directly targeted to our research aims.

## 4 Econometric Estimation

To measure if religious people coped better during the lockdowns, we estimate the following equation:

$$p_{i,t} = \alpha_i + \beta d_t^{lock} + \gamma(d_t^{lock} \cdot d_i^{relig}) + \Phi'_{i,t} + \lambda_t + \zeta'(d_t^{lock} \cdot \Phi'_{i,t}) + \varepsilon_{i,t} \quad (1)$$

Where  $p_{i,t}$  denotes the measure of psychological distress, where a higher number represents a higher level of psychological distress, for individual  $i$ , at time  $t$ .

We include individual fixed effects, captured by the term  $\alpha_i$ . This captures demographic and innate factors at the individual level that do not change over the observation period. The use of individual fixed effects provides us the average ‘within individual’ treatment effect. Since we use individual fixed effects in combination with interaction terms, we employ a linear probability model (LPM)<sup>8</sup>.

Given that we have a measure for both religious *belonging* and religious *intensity*,  $d_i^{relig}$  takes two forms, and we estimate the equation using both forms (separately). We estimate these measures separately, as while they capture different aspects of one’s religious faith, they are highly correlated, with a Spearman correlation coefficient of 0.64 and a p-value of 0.000 against the null hypothesis of independence. First,  $d_i^{relig}$  is a dummy variable denoted by  $d_i^{belong}$ , taking the value of 1 if individual  $i$  identifies as belonging to a religion, and 0 otherwise (before the lockdowns). Second,  $d_i^{relig}$  takes the form of a categorical variable denoted by  $Intensity_i$ , where 0 = no difference to one’s life, 1 = a little difference, 2 = some difference, and 3 = a great difference (again reported before the lockdowns). Additionally, it is worth noting that in both versions,  $d_i^{relig}$  does not vary

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<sup>8</sup>In using OLS with the presence of categorical dependent variables, we draw on the analysis of Ferrer-i-Carbonell and Frijters (2004).

with time. This is because data on belonging and intensity were collected *before* the pandemic (Waves 10 and 8 respectively). This means that  $d_i^{relig}$  by itself is absorbed by the individual fixed effects and thus does not appear in an uninteracted form in Equation 1.

$d_t^{lock}$  is a dummy variable that takes the value of 1 for all responses during the two main lockdown periods, and 0 otherwise.

The coefficient  $\gamma$  of the interaction term  $(d_t^{lock} \cdot d_i^{relig})$  is our variable of interest. It measures the difference in depression among religious people during the lockdown periods, relative to the non-religious population (who experienced the same negative shock).

$\Phi'_{i,t}$  represents a vector of time varying individual characteristics, including: age, cohabitation arrangements, physical health status, employment status age, income, employment status, education, cohabitation status, if they have young children, physical health, and if they worked in the health sector.

In including time varying controls, we draw on the results of [Leung et al. \(2022\)](#) who conducted a systematic literature review and meta-analysis on mental disorders following COVID-19 and other epidemics. Their analysis specifically identified correlates associated with both depression and psychological distress. We then searched the Understanding Society database for the best available measures. We aimed to include all key covariates, apart from those that we considered “bad controls”, in that they were likely to be manifestations of poor coping caused by the pandemic (e.g., higher pandemic related worries/fears, higher perceived susceptibility and various negative coping strategies). We provide a list and definition of all the time varying controls in the Appendix (see Table A2). In addition, we also include year fixed effects to account for any aggregate year-specific factors (represented by  $\lambda_t$ ).

Finally, we also include control variables interacted with the lockdown dummy (‘lockdown interaction terms’) alongside our time varying individual characteristics (age, cohabitation arrangements, physical health status, employment status age, income, employment status, education, cohabitation status, if they have young children, physical health, and if worked in the health sector) and

gender, represented by  $\zeta'(d_t^{lock} \cdot \Phi'_{i,t})$ . We do so to ameliorate for the potential for confounding relationships between religion and the lockdowns. This is because we know that the portion of our sample that belongs to a religion differs from the portion that does not belong in some key demographic characteristics, *and* that the lockdowns impacted different demographic groups differently. For instance, we know that those who belong to a religion are more likely to be female, and we know that females suffered higher degrees of psychological distress during the lockdowns (Adams-Prassl et al., 2022).

The term  $\varepsilon_{i,t}$  represents the error terms. We adjust the standard errors for clustering at the NUTS 1 level. This captures Scotland, Wales and Northern Ireland as 3 regions and divides England into 9 regions<sup>9</sup> (leading to 12 country/region clusters). Due to the small number of clusters, we also apply Rademacher weighted cluster adjusted standard errors (Canay, Santos, and Shaikh, 2021).

## 4.1 Interacting Belonging with Intensity

In our main specification above, we estimate the relationship between mental health and our two measures, belonging and intensity, separately. We did so as they can be interpreted as two different measures of *religiosity*. Nonetheless, the two different measures can also be interpreted as a measure of treatment ('belonging') and the intensity of that treatment ('intensity'). As such, this interpretation allows us to measure the relationship between religious intensity and mental health among those that belong to a religion. This is shown in Equation 2 below:

$$p_{i,t} = \alpha_i + \beta d_t^{lock} + \gamma(d_t^{lock} \cdot Intensity_i) + \zeta(d_t^{lock} \cdot d_i^{belong}) + \theta(d_t^{lock} \cdot Intensity_i \cdot d_i^{belong}) + \tau'(d_t^{lock} \cdot d_i^{belong} \cdot \Phi'_{i,t}) + \Phi'_{i,t} + \lambda_t + \zeta'(d_t^{lock} \cdot \Phi'_{i,t}) + \varepsilon_{i,t} \quad (2)$$

The coefficient of interest here is  $\theta$ , capturing the effect of intensity of faith on psychological distress, across the lockdowns, for those who belong to a religion. We run the specification both including and excluding the 'triple interaction controls' (this relates to the  $\tau'(d_t^{lock} \cdot d_i^{belong} \cdot \Phi'_{i,t})$  term).

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<sup>9</sup><https://geoportal.statistics.gov.uk/datasets/ons::nuts-level-1-january-2018-boundaries-uk-bfe-1/about> (last accessed: 16/06/25).

## 4.2 By Religious Denomination

While most religions share common attributes, they also differ considerably in terms of belief and practice. It may be that certain religious beliefs (or practices associated with a given religion) make it easier or more difficult to cope in times of crisis. Also, the lockdowns may make practice more difficult (or impossible) relative to other religions (particularly due to the closure of places of worship during the first of the two national lockdowns<sup>10</sup>).

Therefore, we estimate the following equation, only using those individuals that belong to a religion:

$$p_{i,t} = \alpha_i + \beta d_t^{lock} + \theta(d_t^{lock} \cdot d_i^{type}) + \Phi'_{i,t} + \lambda_t + \zeta'(d_t^{lock} \cdot \Phi'_{i,t}) + \varepsilon_{i,t} \quad (3)$$

Our coefficient of interest is,  $\theta$ , from the interaction term  $(d_t^{lock} \cdot d_i^{type})$  that captures the change in unhappiness or depression by *type* of religion<sup>11</sup>, relative to the rest of the sample (that belongs to other religions). We estimate this equation for the UK's main religious denominations by size. Due to the limited sample size of our dataset, we restrict our analysis to those religions that make up approximately 5 percent or more of the sample size, leaving us to analyse Christianity, Islam, and Hinduism. We also estimate the equation for Anglicanism (Church of England), Catholicism and 'Christian Other' (which consists of Christians who do not belong to the Church of England or the Catholic Church).

## 4.3 By Religious Denomination and Intensity of Faith

In addition to measuring differences by religious denomination as above, we also measure differences by denomination *and* intensity of faith. This estimate captures the situation where one may identify with a religious group but not possess a strong faith in the religion (in that the religion makes no

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<sup>10</sup><https://lordslibrary.parliament.uk/covid-19-reopening-church-buildings-and-the-financial-impact-of-closure/> (last accessed: 16/06/25).

<sup>11</sup>As with  $d_i^{elig}$  from before, data on  $d_i^{type}$  was collected before the pandemic (in Wave 10) deeming it time-invariant in our regressions. Thus, it is absorbed by the individual fixed effects and does not appear in an uninteracted form.

difference to one's life). To do this, we interact our measure for intensity of faith (which takes the form of a categorical variable, where 0 = no difference to one's life, 1 = a little difference, 2 = some difference, and 3 = a great difference (again reported before the lockdown)) with the lockdown dummy and type of religion dummy. To estimate this, we build on Equation 3 and estimate the following equation (again, only using those individuals that belong to a religion):

$$p_{i,t} = \alpha_i + \beta d_t^{lock} + \gamma(d_t^{lock} \cdot Intensity_i) + \zeta(d_t^{lock} \cdot d_i^{type}) + \theta(d_t^{lock} \cdot Intensity_i \cdot d_i^{type}) \\ + \tau'(d_t^{lock} \cdot d_i^{type} \cdot \Phi'_{i,t}) + \Phi'_{i,t} + \lambda_t + \zeta'(d_t^{lock} \cdot \Phi'_{i,t}) + \varepsilon_{i,t} \quad (4)$$

Our coefficient of interest is,  $\theta$ , from the triple interaction term  $(d_t^{lock} \cdot Intensity_i \cdot d_i^{type})$  that captures the difference in psychological distress by intensity of faith, across the lockdowns, for a given type of religion. That is, it aims to capture differences in psychological distress across the lockdown periods for higher intensity versus lower intensity individuals from the same religious denomination. Additionally, we run the specification both including and excluding the ‘triple interaction controls’ (this relates to the  $\tau'(d_t^{lock} \cdot d_i^{type} \cdot \Phi'_{i,t})$  term).

## 5 Descriptive Statistics

We present descriptive statistics for before and during the lockdowns, and also for those who belong and do not belong to a religion from our sample. As can be seen in Table 1 below we have a total sample size of 15536 observations over the four waves, or 3884 individuals.

The two aggregate measures of psychological distress and being “depressed” were evidently higher during the lockdowns compared to the pre-lockdown averages. It can also be seen that those who belong to a religion have lower levels of psychological distress and depression. Additionally, this group, comprising approximately 52 percent of the total sample, is on average older, more likely to cohabitate with a spouse, receive a pension, and be female. They are also less likely to have children or be employed, and have lower levels of education. They are also more likely to be suffering from

ill-health. This highlights the fact that those who belong to a religion have different demographic characteristics than those who do not. This is particularly apparent from the results of the difference tests in Table 2 where those who belong and do not belong to a religion differ statistically by all the demographic characteristics, other than being a student and working in the health sector. The different demographic characteristics between the two groups provides justification for our time varying controls and lockdown interaction terms.

Finally, it is worth noting that our two measures (belonging and intensity) differ to some degree. While there is a very strong overlap between the two measures, in that the mean value for religious intensity is much higher for those who identify as belonging to a religion, at 1.83, it is not zero for those who do not identify as belonging to a religion, at 0.34. This indicates that for a sub-set of respondents, religious beliefs make a difference to their life without belonging to a religion.

Table 1: Descriptive Statistics

	Total Sample				Pre-Lockdown				During Lockdowns				Belongs to a Religion				Belongs to No Religion			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Depressed	1.86	0.81	1	4	1.84	0.81	1	4	1.93	0.83	1	4	1.82	0.80	1	4	1.91	0.83	1	4
Caseness	1.81	3.03	0	12	1.67	2.98	0	12	2.21	3.12	0	12	1.72	2.94	0	12	1.89	3.12	0	12
Likert	11.27	5.47	0	36	11.06	5.43	0	36	11.91	5.52	0	36	11.05	5.27	0	36	11.52	5.66	0	36
Religious Belonging	0.52	0.50	0	1	0.52	0.50	0	1	0.52	0.50	0	1	1.00	0.00	1	1	0.00	0.00	0	0
Religious Intensity	1.11	1.19	0	3	1.11	1.19	0	3	1.11	1.19	0	3	1.83	1.12	0	3	0.34	0.68	0	3
Lockdown	0.25	0.43	0	1	0.00	0.00	0	0	1.00	0.00	1	1	0.25	0.44	0	1	0.25	0.43	0	1
Female	0.571	0.495	0	1	0.571	0.495	0	1	0.57	0.495	0	1	0.622	0.485	0	1	0.515	0.5	0	1
Age	51.39	17.2	16	96	50.9	17.19	16	95	52.83	17.16	18	96	54.06	17.47	16	96	48.51	16.45	16	91
Cohabit	0.55	0.50	0	1	0.55	0.50	0	1	0.56	0.50	0	1	0.62	0.49	0	1	0.48	0.50	0	1
Education	2.29	0.72	1	3	2.29	0.72	1	3	2.31	0.72	1	3	2.28	0.75	1	3	2.31	0.70	1	3
Children	0.09	0.29	0	1	0.09	0.29	0	1	0.08	0.27	0	1	0.08	0.28	0	1	0.10	0.30	0	1
Employed	0.57	0.50	0	1	0.58	0.50	0	1	0.552	0.50	0	1	0.51	0.50	0	1	0.63	0.48	0	1
Student	0.04	0.20	0	1	0.05	0.21	0	1	0.03	0.16	0	1	0.04	0.20	0	1	0.04	0.20	0	1
Pension	0.23	0.42	0	1	0.23	0.42	0	1	0.24	0.43	0	1	0.27	0.45	0	1	0.04	0.19	0	1
Physical	4.142	1.14	1	5	4.17	1.13	1	5	4.05	1.19	1	5	4.08	1.16	1	5	4.21	1.12	1	5
Income	2007.1	1784.9	0	28149.7	1992.5	1783.8	0	2819.7	2050.4	1787.5	0	22583.2	1943.6	1806.2	0	28149.7	2074.7	1759.6	0	19123.9
HHSW	0.0973	0.296	0	1	0.0975	0.297	0	1	0.0968	0.296	0	1	0.101	0.301	0	1	0.0939	0.292	0	1
Observations	15536				11615				3921				8008				7528			

**Table 2: T-test of difference for Religious Belonging v. No Belonging**

Variables	Belongs to No Religion		Belongs to a Religion		Comparison		
	Mean	SD	Mean	SD	Diff.	t-stat.	p-value
Female	0.516	0.500	0.623	0.485	-0.107	(-13.497)	0.001
Age	48.551	16.449	54.072	17.468	-5.521	(-20.276)	0.001
Cohabit	0.481	0.500	0.619	0.486	-0.138	(-17.399)	0.001
Education	2.314	0.695	2.280	0.746	0.034	(2.926)	0.003
Children	0.100	0.300	0.082	0.275	0.018	(3.819)	0.001
Employed	0.629	0.483	0.514	0.500	0.115	(14.609)	0.001
Student	0.039	0.195	0.041	0.198	-0.001	(-0.473)	0.636
Pension	0.186	0.389	0.274	0.446	-0.088	(-13.133)	0.001
Physical	4.209	1.118	4.077	1.164	0.132	(7.184)	0.001
Income	2074.667	1759.562	1943.633	1806.164	131.034	(4.577)	0.001
HHSW	0.094	0.292	0.101	0.301	-0.007	(-1.381)	0.167
Observations	7516		8000		15516		

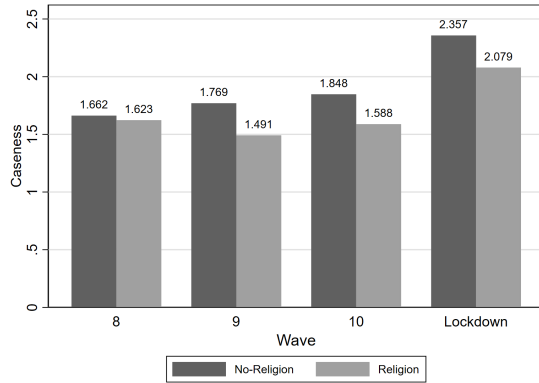
We next present the mean values for psychological distress and depression over the 4 waves graphically. Figure 1 presents the means by both religious belonging and religious intensity (whether religious beliefs make a difference to one’s life, or not), and Figure 2 presents the means by the various categories of religious intensity: no difference (to one’s life), a little difference, some difference and a great difference. We present figures for both aggregate mental health distress measures (Caseness and Likert), and also for the targeted measure of Unhappiness or Depression (‘Depression’).

As can be seen from the graphs in Figures 1 and 2, people who belonged to a religion, and those with higher religious intensity, generally experienced lower levels of psychological distress both before and after the lockdowns (for detailed analysis, please see the Appendix).

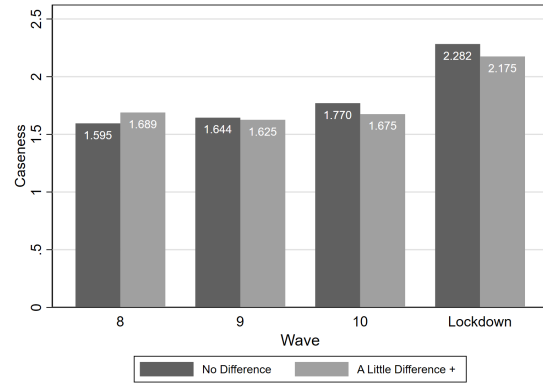
Now, while presenting the means over the waves can be useful in better understanding the changes in depression between the two groups, some care needs be taken in their interpretation. This is because we know from Tables 1 and 2 that those who belong to a religion have different demo-



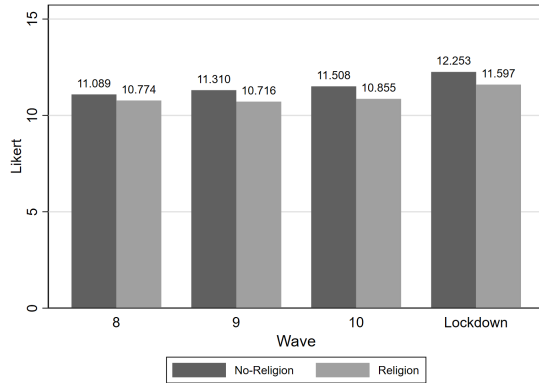
graphic characteristics to those who do not. These differences between the two groups underscore our empirical strategy, which aims to exploit the same exogenous shock that falls on two groups that we know are different, at the very least in terms of their religious beliefs and demographic characteristics. In other words, while both groups were equally ‘treated’, the groups themselves are different. This diverges markedly from a difference-in-difference approach, where the two groups are assumed to be the same (ideally randomly allocated) but only one group is treated. This highlights the importance of our empirical strategy, measuring both the overall relative change in depression between our two groups, and also controlling for time invariant individual characteristics and time varying demographic differences. Given that psychological distress looks to be on an upward trend (over our whole sample period), the inclusion of age provides an in-built time trend control at the individual level.



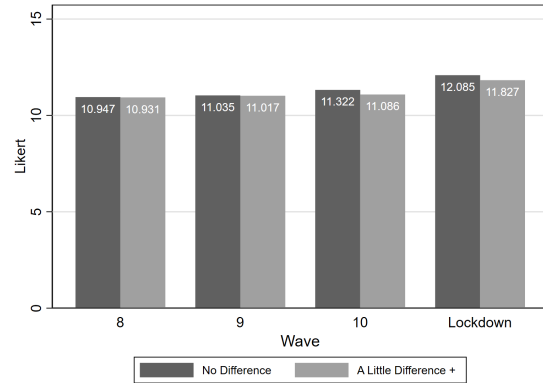
(a) Belonging and No Belonging (Caseness)



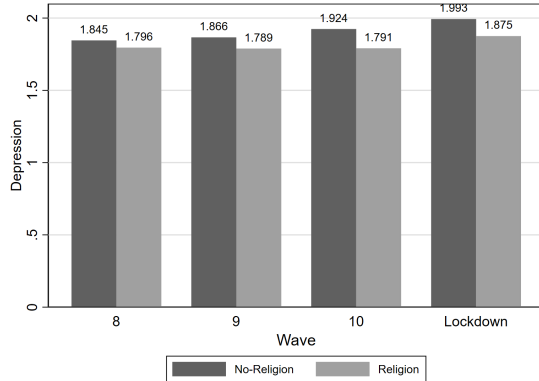
(d) Zero v. Non-Zero Intensity (Caseness)



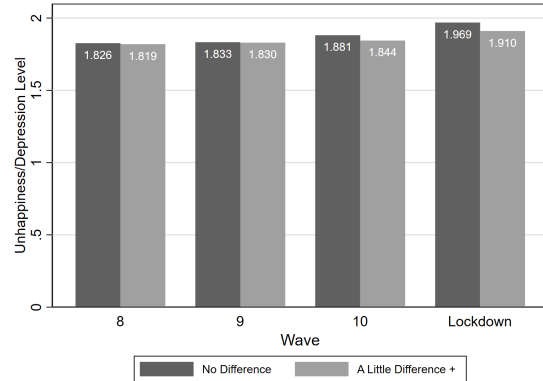
(b) Belonging and No Belonging (Likert)



(e) Zero v. Non-Zero Intensity (Likert)



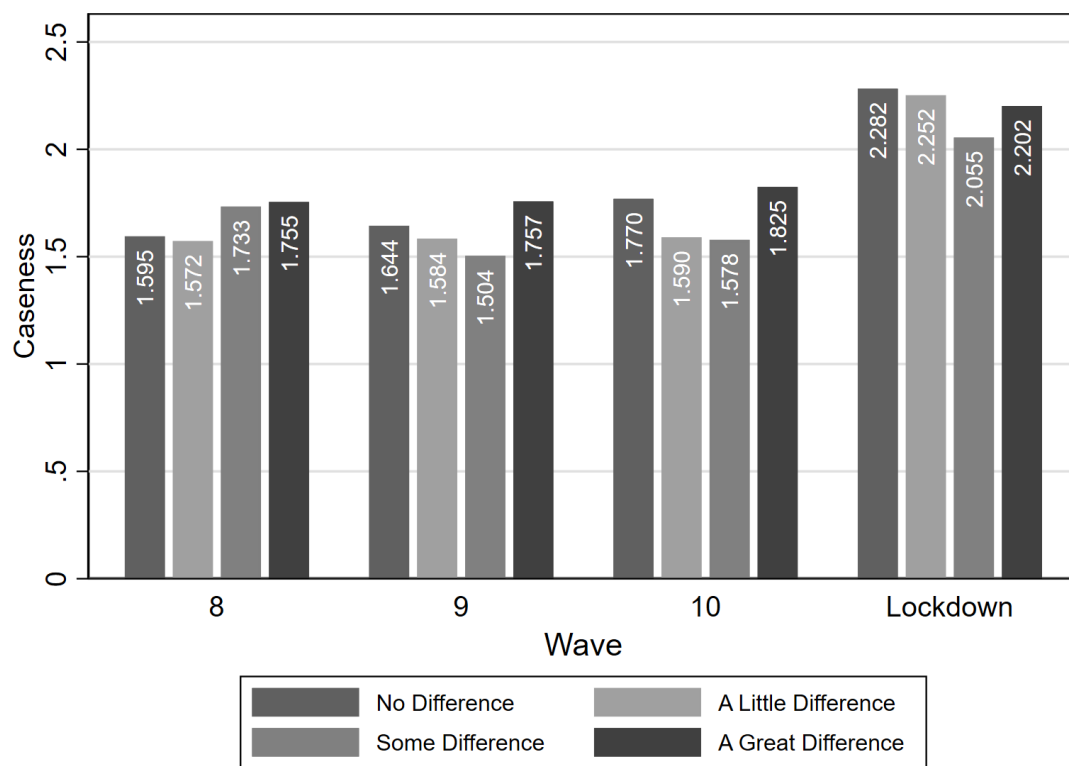
(c) Belonging and No Belonging (Depression)



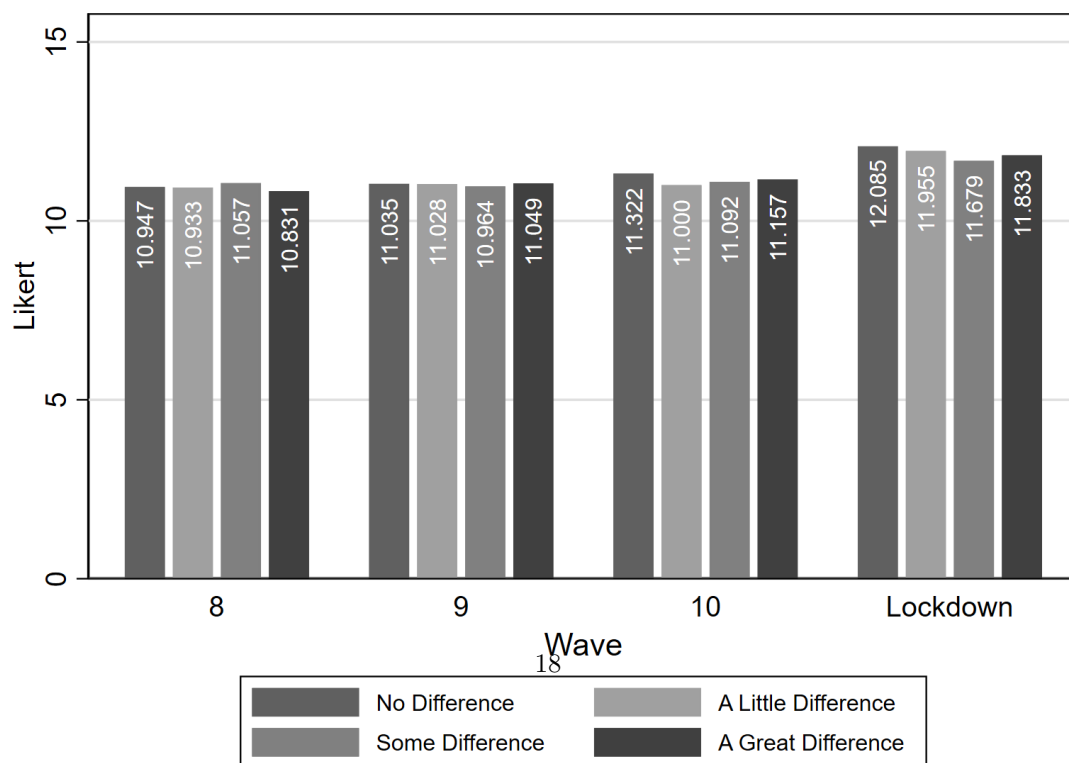
(f) Zero v. Non-Zero Intensity (Depression)

**Figure 1:** Trends in Mental Health Outcomes by Religious Belonging and Intensity, over Waves 8-11

Notes: In graphs (a) to (c), ‘Belonging’ corresponds to ‘Religion’ and ‘No Belonging’ corresponds to ‘No Religion’. Additionally, recall that ‘Caseness’ and ‘Likert’ are two ways of aggregating the GHQ, and ‘Depression’ relates to the answer to the question “Have you recently been feeling unhappy or depressed?” (see Section 3.2 for more information).

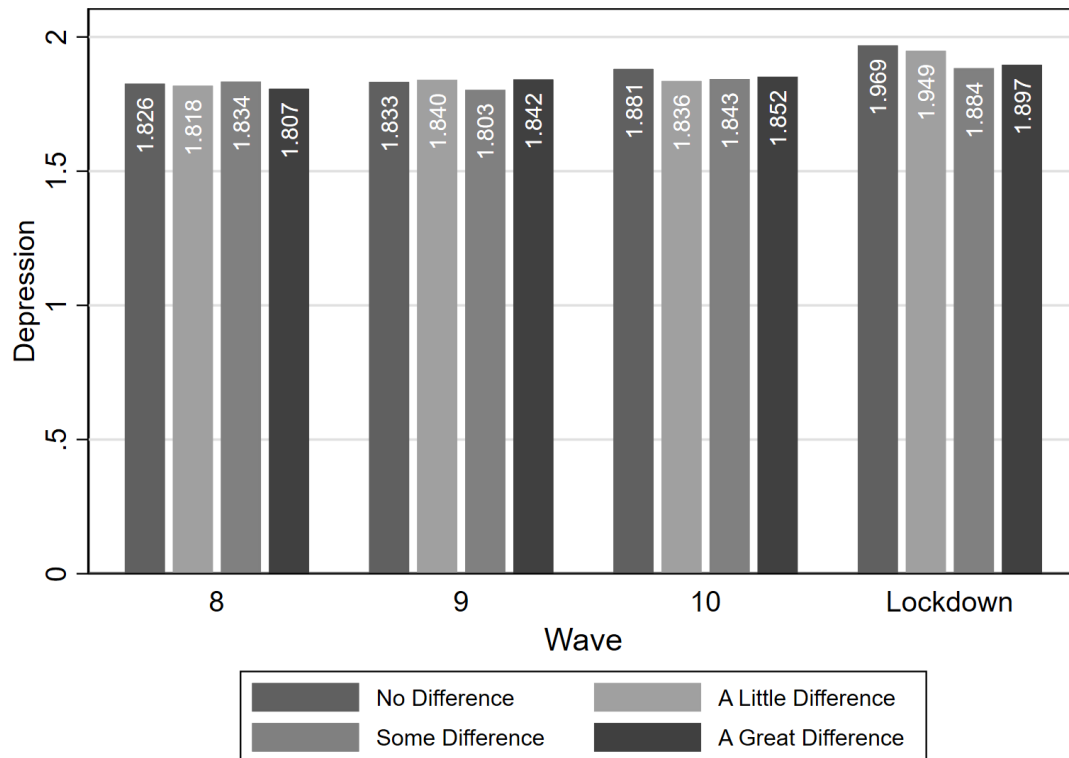


(a) Lowest to Highest Intensity of Faith, by category (Caseness)



(b) Lowest to Highest Intensity of Faith, by category (Likert)

**Figure 2:** Trends in Mental Health Outcomes by degrees of Religious Intensity, over Waves 8-11



(c) Lowest to Highest Intensity of Faith, by category (Depression)

**Figure 2 Continued**

Notes: The four categories mentioned in this figure relate to the difference that religious beliefs make to one's life. Choices range from "no difference" to "a great difference" (see Section 3.1 for more information). Additionally, recall that 'Caseness' and 'Likert' are two ways of aggregating the GHQ, and 'Depression' relates to the answer to the question "Have you recently been feeling unhappy or depressed?" (see Section 3.2 for more information).

## 6 Results

We present our econometric estimates that measure the degree of religious coping during the UK lockdown periods. All our results contain Rademacher weighted cluster adjusted standard errors. Consistent with the recommendations of [Canay, Santos, and Shaikh \(2021\)](#), we only report the p-values and not the standard errors.

In Tables 3, 4 and 5, we report estimates of both  $\beta$ , the lockdown dummy, and  $\gamma$ , the coefficient of the interaction term  $(d_t^{lock} \cdot d_i^{relig})$  from Equation 1 above.  $\gamma$  is our coefficient of interest as it is the estimate of the difference in probability of depression among religious people during the lockdown periods, relative to the non-religious population. Table 3 presents the results for the Caseness aggregate mental health distress measure, Table 4 presents results for the Likert aggregate mental health distress measure and Table 5 presents the results for the more targeted “Unhappiness or Depression” question.

The top section of each table contains results for those individuals who belong to a religion. Specifically, the  $d_i^{relig}$  variable is in the form  $d_i^{belong}$ , taking the value of 1 if individual  $i$  identifies as belonging to a religion, and 0 otherwise (before the lockdowns). The bottom section contain results for intensity of faith. Here,  $d_i^{relig}$  is in the form  $Intensity_i$ . This is a categorical variable, where 0 = no difference to one’s life, 1 = a little difference, 2 = some difference, and 3 = a great difference (again reported before the lockdowns). For both measures (belonging and intensity), we incrementally add individual fixed effects, individual time varying controls, year fixed effects, controls interacted with the lockdown dummy (‘lockdown interaction terms’) and the lockdown interaction terms deviated from their regional means (from columns 1 to 5).

As can be seen from column 1 in Table 3,  $\beta$ , the lockdown dummy is positive and highly significant for both belonging and intensity. This confirms the well documented psychological cost of the pandemic lockdowns on UK society. In columns 2 and 3, when we include time varying controls and year fixed effects,  $\beta$  remains of a broadly similar magnitude and significance. In column 4, when we add the lockdown interaction terms in an effort to control for any omitted factors, the coefficient of  $\beta$  switches sign. This is not to be unexpected, as  $\beta$  refers to the exposure of different reference groups from the previous estimations, and the lockdown interaction terms are absorbing some of the impact of the lockdown that was previously captured by  $\beta$ . Hence,  $\beta$  alone in column 4 is not capturing the full impact of the lockdowns. Importantly for our analysis, the coefficients and p-values of  $\gamma$  are robust, and indeed strengthened, with the inclusion of the lockdown interaction terms. Lastly, column 5 includes the lockdown interaction terms but deviated from their regional

means. Here,  $\beta$  stays positive but loses significance. However, the magnitude and statistical significance of  $\gamma$  is virtually unaffected. Thus, column 5 provides further evidence of the robustness of our estimates for  $\gamma$ .

Furthermore, the coefficients of our variable of interest,  $\gamma$ , are consistently negative for both *religious belonging* and *religious intensity*. A negative coefficient indicates that religious people were less likely to suffer an increase in psychological distress during the lockdowns, compared to non-religious people.

In terms of significance for *religious belonging*, it can be seen that the p-values for  $\gamma$  are around the 10 percent level for the first three columns. For column 4, which includes lockdown interaction terms, the coefficient is -0.205 and is significant at the 5 percent level with a p-value of 0.024. The results are very similar in the final column (the estimated coefficient being -0.205 with a p-value 0.031). As discussed previously, religious people differ in terms of their demographic characteristics (for example, in that they are older or more likely to be female) and some characteristics are known to have had more difficult lockdown experiences. Our results indicate that when accounting for potential demographic lockdown interactions, the magnitude and significance of  $\gamma$  increases. It must be noted that the coefficients cannot be interpreted in a straightforward manner, given the categorical nature of our outcome and explanatory variables (with ‘belonging’ coded as a binary variable). Thus, given the binary and categorical nature of our measures, our results should be interpreted in terms of a decreased probability of suffering psychological distress.

In terms of significance for *religious intensity*, the p-values are under or around the five percent level for the first three columns. Indicating that religious people (i.e., those for whom religion makes a difference to their life) were less likely to suffer from an increase in psychological distress, compared to those who are non-religious. As above, the significance grows with the inclusion of the lockdown interaction terms and is very similar when the lockdown interaction terms are deviated from their regional means. For our preferred specification, which is column 4 (including individual fixed effects, time varying controls, year fixed effects and lockdown interaction terms), the coefficient is -0.096 and significant at the five percent level with a p-value of 0.015.

Table 4 presents the results for Equation 1 using the Likert aggregate measure for mental health distress. It follows near identical patterns to Table 3 above for both  $\gamma$  and  $\beta$ . The main difference from the Caseness results is that the p-values for  $\gamma$  are generally higher. For belonging, under our preferred specification of column 4, the coefficient for  $\gamma$  is -0.321 and has a p-value of 0.038. For intensity, the coefficient for  $\gamma$  is -0.124 and has a p-value of 0.066.

Table 5 presents the results for Equation 1 using the targeted measure of “Unhappiness or Depression”. Once again, they follow a similar pattern to the two aggregate measures. The two main differences are that the results are slightly stronger (under belonging *and* intensity for  $\gamma$ ), and that the p-values for  $\beta$  increase substantially from columns 4 to 5. Thus, despite column 5 being a valid robustness check ( $\beta$  no longer switches signs and  $\gamma$  has a similar magnitude and statistical significance), the large increase in the p-values for  $\beta$  led us to prefer column 4. Moreover, for our preferred specification,  $\gamma$  has a coefficient of -0.058 for belonging and is significant at the 5 percent level with a p-value of 0.020. For intensity, the coefficient is -0.028 and is significant at the 1 percent level with a p-value of 0.007.

Given that the significance of  $\gamma$  grows with the inclusion of time varying controls and lockdown interaction terms, across the three measures of psychological distress, we provide the coefficients and p-values for all variables included in the estimation in the Appendix (Tables A3, A4 and A5). As can be seen, a number of variables are regularly significant including gender, employment status, physical health and income (and sometimes when also interacted with the lockdown term).

In summary, our main econometric results provide evidence that religious people coped better during the UK pandemic lockdowns. Also, when we include the lockdown interaction terms, the results are stronger, particularly in terms of statistical significance. This suggests that religious people had demographic characteristics that were associated with worse mental health characteristics during the lockdowns. Once controlling for these demographic lockdown interactions, the results provide stronger evidence that religious people coped better during the lockdowns. The different results between *belonging* (identifying with a religious group) and *intensity* (it making a difference to your life), is also noteworthy, in that intensity has a higher level of significance across the range of

different specifications. While we can only speculate, this difference may be due to the two measures capturing different things (merely belonging to a religion versus making a difference to one's life), or that the measure for intensity is more granular (with four possible responses) than the binary measure for belonging to a religion (or not). What we do know, is that there is a high degree of correlation between the two measures, as would be expected.



Table 3

Caseness Aggregate Measure of Psychological Distress	(1)	(2)	(3)	(4)	(5)
$\beta$ (Coefficient on Lockdown)	0.624***	0.553***	0.647***	-0.670*	4.816
<b>p-value</b>	0.000	0.000	0.000	0.076	0.314
$\gamma$ (Coefficient on Lockdown $\times$ Belonging)	-0.143	-0.155*	-0.153*	-0.205**	-0.205**
<b>p-value</b>	0.110	0.080	0.082	0.024	0.031
$R^2$	0.590	0.599	0.599	0.600	0.601
<b>Observations</b>	15516	15516	15516	15516	15516
$\beta$ (Coefficient on Lockdown)	0.631***	0.561***	0.652***	-0.643*	4.947
<b>p-value</b>	0.000	0.000	0.000	0.099	0.336
$\gamma$ (Coefficient on Lockdown $\times$ Intensity)	-0.070*	-0.076**	-0.074*	-0.096**	-0.097**
<b>p-value</b>	0.053	0.047	0.053	0.015	0.014
$R^2$	0.589	0.598	0.598	0.600	0.600
<b>Observations</b>	15464	15464	15464	15464	15464
<b>Individual FE</b>	Yes	Yes	Yes	Yes	Yes
<b>Time Varying Controls</b>	No	Yes	Yes	Yes	Yes
<b>Year FE</b>	No	No	Yes	Yes	Yes
<b>Lockdown Interaction Terms</b>	No	No	No	Yes	Yes
<b>Lockdown Interactions Deviated From Mean</b>	No	No	No	No	Yes

Notes: The top half of the table is for Belonging, and the bottom half is for Intensity. The dependent variable is the Caseness measure for psychological distress. OLS estimates of Equation 1.  $\beta$  coefficient estimates are for the lockdown dummy.  $\gamma$  coefficient estimates are for the Relig  $\times$  Lock interaction term. 'Relig' takes two forms: for Belonging, it takes the form of a binary variable where 0 = not belonging to a religion and 1 = belonging to a religion; for Intensity, it takes the form of 0 = religion makes no difference to one's life, 1 = a little difference, 2 = some difference, and 3 = a great difference. Time varying controls are: age, income, employment status, education, cohabitation status, with young children, physical health, and if worked in health sector (HHSW). Lockdown interaction terms are for each of the time varying controls and gender. In column 5, lockdown interaction terms were deviated from their mean, by region. Standard errors are wild bootstrap cluster adjusted at the country/region level with Rademacher weights. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 4

<b>Likert Aggregate Measure of Psychological Distress</b>	(1)	(2)	(3)	(4)	(5)
$\beta$ (Coefficient on Lockdown)	0.988***	0.769***	0.865***	-0.807	6.165
<b>p-value</b>	0.000	0.000	0.000	0.222	0.445
$\gamma$ (Coefficient on Lockdown $\times$ Belonging)	-0.226	-0.248*	-0.243	-0.321**	-0.330**
<b>p-value</b>	0.139	0.097	0.107	0.038	0.031
$R^2$	0.644	0.654	0.654	0.655	0.656
<b>Observations</b>	15516	15516	15516	15516	15516
$\beta$ (Coefficient on Lockdown)	0.965***	0.743***	0.838***	-0.790	6.236
<b>p-value</b>	0.000	0.000	0.000	0.252	0.423
$\gamma$ (Coefficient on Lockdown $\times$ Intensity)	-0.079	-0.091	-0.087	-0.124*	-0.130*
<b>p-value</b>	0.227	0.164	0.177	0.066	0.064
$R^2$	0.643	0.653	0.653	0.655	0.655
<b>Observations</b>	15464	15464	15464	15464	15464
<b>Individual FE</b>	Yes	Yes	Yes	Yes	Yes
<b>Time Varying Controls</b>	No	Yes	Yes	Yes	Yes
<b>Year FE</b>	No	No	Yes	Yes	Yes
<b>Lockdown Interaction Terms</b>	No	No	No	Yes	Yes
<b>Lockdown Interactions Deviated From Mean</b>	No	No	No	No	Yes

Notes: The top half of the table is for Belonging, and the bottom half is for Intensity. Dependent variable is psychological distress (Likert). OLS estimates of Equation 1.  $\beta$  coefficient estimates are for the lockdown dummy.  $\gamma$  coefficient estimates are for the Relig  $\times$  Lock interaction term. 'Relig' takes two forms: for Belonging, it takes the form of a binary variable where 0 = not belonging to a religion and 1 = belonging to a religion; for Intensity, it takes the form of 0 = religion makes no difference to one's life, 1 = a little difference, 2 = some difference, and 3 = a great difference. Time varying controls are: age, income, employment status, education, cohabitation status, with young children, physical health, and if worked in health sector (HHSW). Lockdown interaction terms are for each of the time varying controls and gender. In column 5, lockdown interaction terms were deviated from their mean, by region. Standard errors are wild bootstrap cluster adjusted at the country/region level with Rademacher weights. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 5

Depression or Unhappiness	(1)	(2)	(3)	(4)	(5)
$\beta$ (Coefficient on Lockdown)	0.119***	0.086***	0.094**	-0.231**	0.406
p-value	0.000	0.000	0.012	0.015	0.760
$\gamma$ (Coefficient on Lockdown $\times$ Belonging)	-0.041*	-0.042*	-0.042*	-0.058**	-0.063**
p-value	0.095	0.087	0.090	0.020	0.013
$R^2$	0.579	0.584	0.584	0.586	0.586
Observations	15516	15516	15516	15516	15516
$\beta$ (Coefficient on Lockdown)	0.122***	0.089***	0.096**	-0.234**	0.594
p-value	0.000	0.000	0.017	0.031	0.665
$\gamma$ (Coefficient on Lockdown $\times$ Intensity)	-0.021**	-0.022**	-0.022**	-0.028***	-0.032***
p-value	0.036	0.029	0.035	0.007	0.004
$R^2$	0.579	0.584	0.584	0.585	0.585
Observations	15464	15464	15464	15464	15464
Individual FE	Yes	Yes	Yes	Yes	Yes
Time Varying Controls	No	Yes	Yes	Yes	Yes
Year FE	No	No	Yes	Yes	Yes
Lockdown Interaction Terms	No	No	No	Yes	Yes
Lockdown Interactions Deviated From Mean	No	No	No	No	Yes

Notes: The top half of the table is for Belonging, and the bottom half is for Intensity. Dependent variable is Depression or Unhappiness. OLS estimates of Equation 1.  $\beta$  coefficient estimates are for the lockdown dummy.  $\gamma$  coefficient estimates are for the Relig  $\times$  Lock interaction term. ‘Relig’ takes two forms: for Belonging, it takes the form of a binary variable where 0 = not belonging to a religion and 1 = belonging to a religion; for Intensity, it takes the form of 0 = religion makes no difference to one’s life, 1 = a little difference, 2 = some difference, and 3 = a great difference. Time varying controls are: age, income, employment status, education, cohabitation status, with young children, physical health, and if worked in health sector (HHSW). Lockdown interaction terms are for each of the time varying controls and gender. In column 5, lockdown interaction terms were deviated from their mean, by region. Standard errors are wild bootstrap cluster adjusted at the country/region level with Rademacher weights. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

## 6.1 Magnitude of Difference in Coping

To better gauge the magnitude of the difference between coping for religious and non-religious people, we computed the standardised coefficients of both  $\beta$  and  $\gamma$  for the three measures of psychological distress contained in Tables 3, 4 and 5 (the standardised coefficients can be found in Table A6 in the Appendix). We provide estimates for the specifications in columns 1 through to 4. We cannot easily compare the standardised coefficients for column 4, our preferred specification, as the composite impact of the lockdowns is captured by the lockdown coefficient and the various lockdown interaction terms, which vary considerably in terms of significance (see Tables A3, A4 and A5 in the Appendix). Nonetheless, we can gather some measure of magnitude by comparing  $\gamma$  to  $\beta$  in columns 1-3. For our religious belonging variable,  $\gamma$  ranges from around 18 to 22 percent of  $\beta$  for the Caseness measure, 18 to 25 percent for the Likert measure and 27 to 39 percent for Depression. For religious intensity, comparing the standardised  $\gamma$  to  $\beta$  shows that it ranges from 20 to 24 percent for Caseness, 14 to 22 percent for Likert and 31 to 44 percent for Depression. While we are unable to calculate the decrease in the probability of suffering psychological distress with precision, not to mention that it is heavily dependent on the measure and specification used, all of the comparisons above suggest it is of a sizable magnitude. If we are to take the Caseness comparisons for belonging as most indicative, the standardised belonging coefficients are around 20 percent of the lockdown coefficient. This suggests that people who belong to a religion were 20 percent less likely to suffer an increase in psychological distress generated by the pandemic lockdowns.

## 6.2 Outcomes Interacting Belonging with Intensity

In our main results above, we estimated the relationship between mental health and our two measures, belonging and intensity, separately. As discussed in Section 4.1, we did so because they can be interpreted as two different measures of *religiosity*. They are also closely correlated, with a Spearman correlation coefficient of 0.64 and a p-value of 0.000. Nonetheless, another interpretation is that one measure reflects the treatment ('belonging'), while the other captures the intensity of the

treatment ('intensity'). This interpretation allows us to measure the relationship between religious intensity and mental health among those who belong to a religion.

$\theta$  from Equation 2 provides an estimate of the triple interaction term ( $d_t^{lock} \cdot Intensity_i \cdot d_i^{belong}$ ) using the full sample. This coefficient aims to capture the relationship between mental health and religious intensity among those who belong to a religion. For columns 1 to 3, we present estimates using a standard triple interaction set-up. For columns 4 to 6, we present estimates that include the additional triple interaction controls for robustness.

As can be seen in Table 6 below, the coefficients are small in magnitude, vary in sign across the different measures of mental health, and are all statistically insignificant. These results suggest there is no, average within-individual, relationship between religious intensity and mental health among those that belong to a religion. These results should be interpreted with caution as they could be due to heterogeneous relationships between religious intensity among different religious groups that move in opposite directions (see Section 6.3 below). They could also be due to the belonging and intensity measures in this dataset being too closely related to one another, making it difficult to separate out the theoretical difference between belonging to a religion and intensity of one's faith.

**Table 6: Interacting Belonging with Intensity**

	(1)	(2)	(3)	(4)	(5)	(6)
	Caseness	Likert	Depression	Caseness	Likert	Depression
$\theta$	-0.007	0.161	0.023	0.004	0.205	0.026
p-value	0.953	0.415	0.416	0.970	0.295	0.363
$R^2$	0.600	0.655	0.585	0.600	0.655	0.586
Observations	15464	15464	15464	15464	15464	15464

Notes: Columns 1, 2 & 3 contain estimates of  $\theta$  from Equation 2's (Lock x Intensity x Belong) triple interaction term. Columns 4, 5 & 6 contain estimates of  $\theta$  with additional triple interaction controls. All OLS estimates include individual FE, time varying controls (age, income, employment status, education, cohabitation status, with young children, physical health, and if worked in health sector (HHSW), year fixed effects and lockdown interaction terms. Standard errors are wild bootstrap cluster adjusted at the country/region level with Rademacher weights.

\* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

### 6.3 Outcomes by Religious Denominations

In Table 7 below, we present our results by *type* of religion (i.e., religious denomination). In these estimates, we restrict our sample to those who belong to a religion. Also, as aforementioned, we restrict our estimates to religions that make up approximately 5 percent or more of the UK population. Due to their size, we also estimate separate results for the two largest Christian denominations, as well grouping those who belong to the remaining Christian denominations, which we label ‘Christian Other’.

We present the results for the interaction term  $(d_t^{lock} \cdot d_i^{type})$  from Equation 3, capturing the change in mental health distress by type of religion, relative to the rest of the sample who belong to another religion. As can be seen, there is quite a high degree of homogeneity in outcomes across the different religions. However, Christians had a significantly higher probability of increased mental health distress during the lockdown periods, relative to those who belong to a different religion. When estimating results for the different categories of Christians, only ‘Christian Other’ had results that showed any difference from the rest of the sample of those who belong to a religion (but this is only significant for the ‘Depression’ measure). The ‘Christian Other’ grouping consists of those who belong to Christian denominations other than the Church of England and the Catholic Church (mainly consisting of Protestant denominations). In addition, there is statistically significant evidence that Muslim respondents had a lower probability of increased distress in comparison to the rest of the sample (belonging to other religions). However, this is once again only the case for the ‘Depression’ measure.

In Table 8, we present the results for the triple interaction term  $(d_t^{lock} \cdot Intensity_i \cdot d_i^{type})$  from Equation 4. These estimates are a variant of Equation 2 presented in Table 6, where we substitute ‘belong’ by ‘type’ of religion. Hence, this measures the difference in psychological distress by intensity of faith, across the lockdowns, for a given type of religion. Once again, we restrict our sample to those who belong to a religion. In columns 1 to 3, we present estimates for  $\theta$  using a standard triple interaction set-up. For columns 4 to 6, we present estimates for  $\theta$  including

additional triple interaction controls for robustness.

As can be seen below, there are few differences by intensity for a given type of religion. The two main exceptions relate to Christianity and Islam. For Christianity, the coefficient for the triple interaction term is significant and negative, but only for the Likert measures. This provides some evidence that Christians with a higher intensity of faith coped better relative to Christians with a lower intensity of faith (noting that as a religious group overall, they were more likely to suffer from increased psychological distress as per Table 7). For Muslims, the coefficients for most measures are statistically significant and positive. This indicates that Muslims with a higher intensity of faith (that is, religion makes more of a difference to their life), were more likely to have increased mental health distress during the lockdown periods, relative to Muslims who were less so. There is also some very limited evidence of this for Catholics too, but this only applies for the Depression measure when additional triple interaction controls are included. While speculative, these results could be at least partly explained by places of worship being closed for the first lockdown period, as Muslims and Catholics are the only two religious groups from our study that normally require weekly communal attendance from their followers (“Surah Al-Jumu’ah 62:9-10” in the Qur’an<sup>12</sup> and “Canon 1247” in the Vatican’s Canon Law<sup>13</sup> explicitly state a Friday and Sunday congregational requirement, respectively).

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<sup>12</sup><https://quran.com/62/9-10> (last accessed: 16/06/25).

<sup>13</sup>[https://www.vatican.va/archive/cod-iuris-canonici/eng/documents/cic\\_lib4-cann1244-1253\\_en.html](https://www.vatican.va/archive/cod-iuris-canonici/eng/documents/cic_lib4-cann1244-1253_en.html) (last accessed: 16/06/25).

**Table 7: Results by Religious Denomination for Lock x Type**

By Religion	(1)	(2)	(3)
	Caseness	Likert	Depression
<b>Christianity</b>			
$\theta$	0.419**	0.655**	0.100**
p-value	0.016	0.018	0.031
$R^2$	0.594	0.652	0.576
<b><i>Church of England</i></b>			
$\theta$	0.183	0.238	-0.006
p-value	0.164	0.266	0.846
$R^2$	0.593	0.652	0.575
<b><i>Catholic</i></b>			
$\theta$	0.156	0.188	0.008
p-value	0.376	0.500	0.872
$R^2$	0.593	0.652	0.575
<b><i>Christian Other</i></b>			
$\theta$	0.032	0.147	0.088**
p-value	0.830	0.591	0.032
$R^2$	0.593	0.652	0.576
<b>Islam</b>			
$\theta$	-0.304	-0.600	-0.114**
p-value	0.150	0.114	0.045
$R^2$	0.593	0.652	0.576
<b>Hinduism</b>			
$\theta$	-0.208	-0.047	0.051
p-value	0.453	0.939	0.540
$R^2$	0.593	0.652	0.575
<b>Observations</b>	7996	7996	7996

Notes:  $\theta$  contain estimates of the Equation 3's (Lock x Type) interaction term. All OLS estimates include individual FE, time varying controls (age, education, cohabitation status, with young children, physical health, employment status, income, and health worker status), year fixed effects and lockdown interaction terms. Standard errors are wild bootstrap cluster adjusted at the country/region level with Rademacher weights. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$



Table 8: Results by Religious Denomination for Lock x Intensity x Type

By Religion	(1)	(2)	(3)	(4)	(5)	(6)
	Caseness	Likert	Depression	Caseness	Likert	Depression
<b>Christianity</b>						
$\theta$	-0.231	-0.524**	-0.018	-0.252	-0.516*	-0.017
p-value	0.129	0.044	0.654	0.107	0.051	0.696
$R^2$	0.594	0.652	0.576	0.596	0.654	0.577
<b>Church of England</b>						
$\theta$	-0.031	-0.101	-0.017	-0.044	-0.108	-0.010
p-value	0.804	0.616	0.637	0.720	0.607	0.790
$R^2$	0.594	0.651	0.575	0.595	0.653	0.577
<b>Catholic</b>						
$\theta$	-0.030	-0.125	0.070	0.062	0.012	0.082*
p-value	0.880	0.699	0.142	0.760	0.976	0.099
$R^2$	0.594	0.651	0.575	0.594	0.652	0.576
<b>Christian Other</b>						
$\theta$	-0.042	-0.037	0.019	0.055	0.110	-0.019
p-value	0.548	0.761	0.368	0.690	0.632	0.624
$R^2$	0.594	0.652	0.576	0.595	0.653	0.576
<b>Islam</b>						
$\theta$	0.768***	1.276**	0.115*	0.781***	1.187**	0.102
p-value	0.004	0.011	0.084	0.003	0.014	0.145
$R^2$	0.595	0.652	0.576	0.596	0.653	0.577
<b>Hinduism</b>						
$\theta$	-0.083	0.318	-0.021	-0.009	0.407	-0.006
p-value	0.706	0.453	0.832	0.966	0.343	0.966
$R^2$	0.594	0.651	0.575	0.594	0.652	0.575
<b>Observations</b>	7976	7976	7976	7976	7976	7976

Notes: Columns 1, 2 & 3 contain estimates of  $\theta$  from Equation 4's (Lock x Intensity x Type) triple interaction term. Columns 4, 5 & 6 contain estimates of  $\theta$  with additional triple interaction controls. All OLS estimates include individual FE, time varying controls (age, income, employment status, education, cohabitation status, with young children, physical health, and if worked in health sector (HHSW), year fixed effects and lockdown interaction terms. Standard errors are wild bootstrap cluster adjusted at the country/region level with Rademacher weights.

\* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

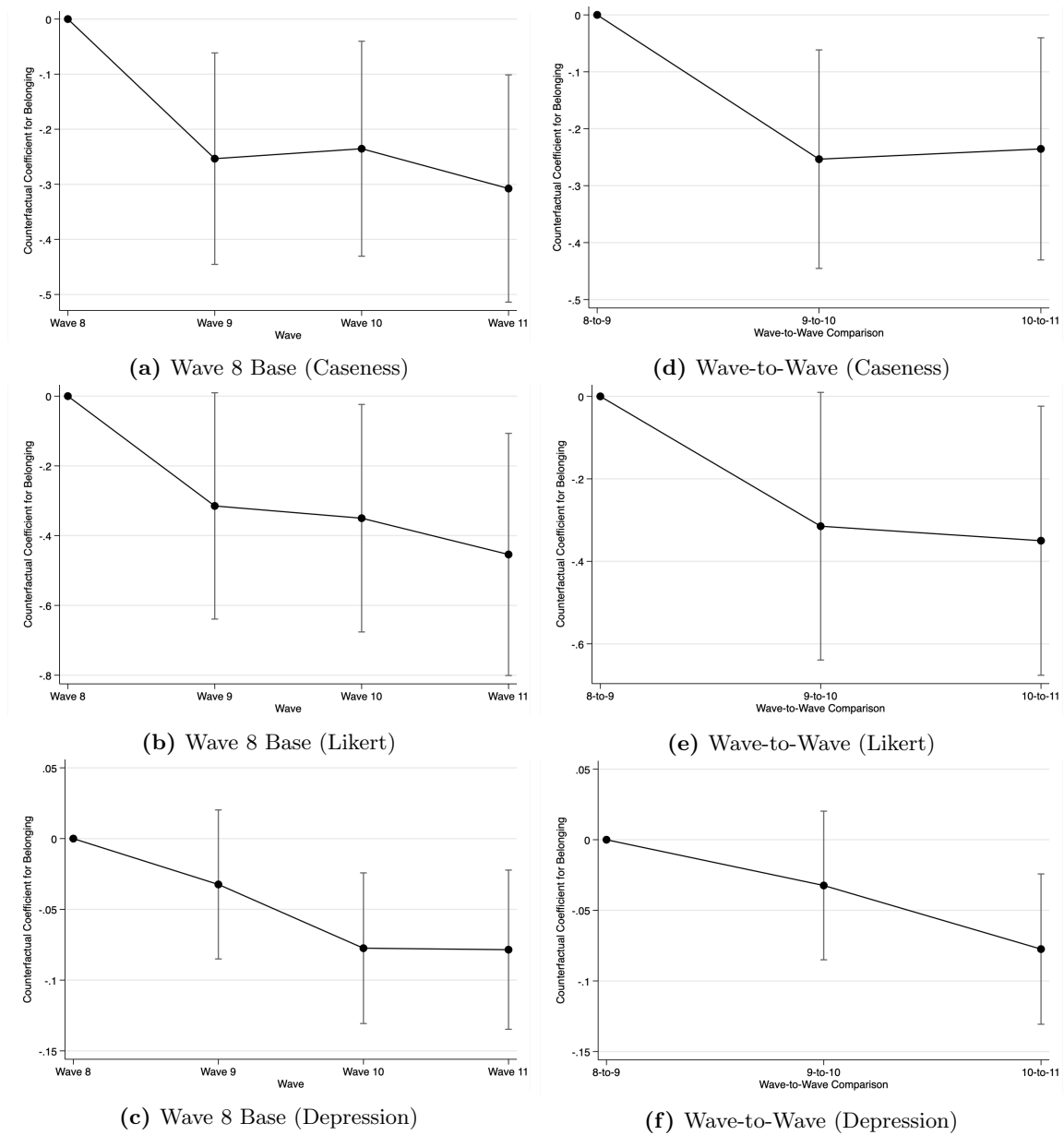
## 6.4 Event Study Analysis

We also performed a ‘placebo test’ using event study analysis (see Figure 3 below for the relevant graphs). This involved running counterfactual regressions comparing previous Waves in order to show the magnitude of the COVID-19 shock between Waves 10 and 11. As we only have religious *intensity* data in Wave 8, we only performed the event study analysis for religious *belonging* (to avoid imputing intensity data in Waves 9 and 10 for the counterfactual regressions). We present the results using two methods: Wave 8 as the base and Wave-to-Wave comparisons (i.e., Waves 8 v. 9, Waves 9 v. 10, and Wave 10 v. 11). In both methods, the plotted points are all relative to the left-hand-side point (i.e., to Wave 8 or the Wave 8-to-9 coefficient<sup>14</sup>). The final piece of background to note is that all counterfactual regressions were run with: individual fixed effects, time varying controls and year fixed effects.

Now, in terms of graphs (a), (b) and (c) (with Wave 8 as the base), it is clear that the largest coefficient in absolute value is for Wave 11 (albeit narrowly for the Depression measure). Graphs (d), (e) and (f) (for Wave-to-Wave comparisons) show broadly similar results, except the Wave 9-to-10 coefficient is marginally larger in absolute value for the Caseness measure. This conveys that, on the whole, religious belonging had a more significant role to play in mitigating the effect of COVID-19 on psychological distress than belonging’s role in response to other shocks in the preceding years. This is reiterated by noticing the extent of the decrease from the penultimate to the final coefficient in the graphs – particularly for Caseness and Likert in the graphs with Wave 8 as the base, and Likert and Depression in the Wave-to-Wave comparisons. In fact, noting the 95% confidence interval represented by the vertical bars, the Wave 9-to-10 counterfactual coefficients are statistically *insignificant*, but the Wave 10-to-11 coefficients are statistically *significant* under both the Likert and Depression measures (in the Wave-to-Wave comparisons). Hence, this validates the important role of belonging, in coping with the COVID-19 shock, in comparison to coping with shocks in the years prior.

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<sup>14</sup>This is exactly why the coefficients for the Wave 10-to-11 comparison do not match the  $\gamma$  coefficients in column 3 across Tables 3, 4 and 5.



**Figure 3:** Event Study Graphs for Religious Belonging

Notes: Counterfactual regressions were all run with individual FE, time varying controls and year fixed effects (with religious belonging as the explanatory variable). All coefficients are relative to the left-hand-side point (i.e., Wave 8 for 'Wave 8 Base' or the Wave 8-to-9 coefficient for 'Wave-to-Wave'). Vertical bars represent the 95% confidence interval.

## 6.5 Added-Variable Analysis

Lastly, this section includes added-variable plots for the lockdown dummy and its interaction with belonging or intensity (the plots can be found in the Appendix). Each is presented under both a simple regression specification (column 1 of Tables 3, 4 and 5) and a fully specified model with fixed effects (column 5 of Tables 3, 4 and 5).

Figure B1 (a) presents a significant negative association in the simple model. The lockdown coefficient is 0.624. This shows that the lockdowns worsened mental health overall with the Caseness measurement. Figure B1 (b) presents the coefficient of the interactive term between the lockdown dummy and belonging. It is -0.143 and statistically significant. Thus, for people who belong to a religion, the detrimental effect of the lockdowns on mental health is weaker than for those who do not belong to a religion. This implies that religious belonging appears to buffer the negative mental health impact of the lockdowns.

Next, Figures B1 (c) and (d) visualise the estimation of religious belonging from a full specification model (column 5 of Table 3). The lockdown coefficient is insignificantly positive. The negative slope of the interaction between the lockdown dummy and belonging remains, confirming the moderating effect of religious belonging on mental health.

Figures B1 (e) and (f) represent the estimations using religious intensity with the simple specification (column 1 of Table 3), while Figures B1 (g) and (h) show the same relationships from the full model. Figure B1 (e) shows the estimated effect is positive and statistically significant. Figure B1 (f) shows the interaction between lockdown and religious intensity under the simple model. The slope is negative, but statistically insignificant. Figure B1 (g) shows that the lockdown effect under the full model is no longer statistically significant, but Figure B1 (h) shows that the interaction is significantly negative, indicating a moderating effect of religious intensity with the full specified model.

Figure B2 shows the results of the Likert measure, which are consistent with the Caseness mea-

sure. First, the lockdown dummy remains positively associated with worse mental health in the simple specification, consistent with a substantial deterioration in mental well-being during lockdown periods. However, when interaction terms and fixed effects are included, the direct impact of the lockdowns becomes statistically insignificant, suggesting that heterogeneity across subgroups mediates this average relationship.

Second, both the Lockdown  $\times$  Belonging and Lockdown  $\times$  Intensity interaction terms yield statistically significant negative coefficients in the full model. This confirms that individuals with religious belonging or stronger religious intensity exhibit relatively better mental health during the lockdowns, echoing the finding with the Caseness measurement.

Figure B3 shows the added-variable plot with the level of Depression. The visual pattern of the plots remains consistent with the findings above. This implies that our findings are stable and are not sensitive to how we define mental health.

Importantly, all added-variable plots display no extreme points or outlier clusters (e.g., from London). Furthermore, we also tried to exclude the sample of London. In this case, all of the features of the new added-variable plots were consistent with what was mentioned above. Therefore, this supports the notion that our main results are robust to excluding the group of London.

## 7 Conclusion

Religious faith may help people deal with crises through coping mechanisms. Within the social sciences, the religious coping hypothesis dates back to Marx and Freud, who suggested that in times of hardship, all religions provide individuals with a higher power that provides comfort (Clark, 1958; Bentzen, 2019). After the 9/11 attacks, 9 out of 10 Americans coped with their distress by turning to religion (Schuster et al., 2001). During COVID-19, Google searches for prayer increased dramatically and over half of the global population prayed to end the pandemic (Bentzen, 2021). Not only did people resort to prayer during the pandemic as an alternative means of practicing religion, but the demand for religion also increased. Thus, it is clear in the literature that religion may provide coping mechanisms during crises, even in pandemics (Bahal et al., 2023). Furthermore, the unpredictable nature of these health epidemics favours emotion-focused coping (Folkman and Lazarus, 1980) and bolsters the role of religious coping strategies. The most common strategies are faith in God, gaining strength in God, and prayer, even compared to church participation (Koenig et al., 1998).

Hence, in this study, we explore the link between religion and coping in the United Kingdom. Our analysis shows that religious people and non-religious people differ in terms of most key demographic characteristics. Nevertheless, our econometric results do demonstrate that religious people coped better during the pandemic lockdowns. Additionally, we find that Christians, compared to other religions, were more likely to suffer an increase in psychological distress during the pandemic. We also find some evidence that Christians with higher religious intensity were less likely to experience an increase in psychological distress than their less religious Christian counterparts, while the opposite was true for Muslims. These results may be partially explained by the closure of places of worship for a significant period of time during the pandemic. Finally, when examining the aggregate relationship between religious intensity and coping among those who belong to a religion, we find no evidence that intensity is related to better coping – it could be that the heterogeneity is cancelling out the aggregate relationship.

While our results show that religious people were less likely to suffer from increases in psychological distress during the lockdowns, we are unable to provide evidence as to why this is the case. It could be that it is the hope and consolation that religion may bring to people, or something else. While our empirical approach uses measures for religious *belonging* and religious *intensity* taken before the pandemic (to mitigate the selection into religion problem) and a number of lockdown interaction terms (to mitigate for potential confounders), we cannot rule out that our results are being driven by some unknown or unobserved variable that is linked both to religion and lockdown mental health outcomes.

If one were to ask if religious people cope better in a crisis, an examination of the shock of the COVID-19 pandemic would suggest that the answer is yes, even in a society such as the United Kingdom that is not particularly religious, compared to many other parts of the globe. The findings of this study may then also have policy implications for future pandemics in terms of what to do about closures of places of worship during a pandemic.

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<sup>15</sup><https://www.keynesfund.econ.cam.ac.uk/projects/jhuw> (last accessed: 19/06/25).



## Bibliography

- Adams-Prassl, A., Boneva, T., Golin, M., & Rauh, C. (2022). The impact of the coronavirus lockdown on mental health: evidence from the United States. *Economic Policy*, 37(109), 139-155.
- Angrist, J. D. (1990). Lifetime earnings and the Vietnam era draft lottery: evidence from social security administrative records. *The American Economic Review*, 313-336.
- Bentzen, J. S. (2019). Acts of God? Religiosity and natural disasters across subnational world districts. *The Economic Journal*, 129(622), 2295-2321.
- Bentzen, J. S. (2021). In crisis, we pray: Religiosity and the COVID-19 pandemic. *Journal of Economic Behavior & Organization*, 192, 541-583.
- Bahal, G., Iyer, S., Shastry, K. S. K., & Shrivastava, A. (2023). *Religion, Covid-19 and Mental Health*. European Economic Review 160.
- Burdett, A., Davillas, A., & Etheridge, B. (2021). Weather, mental health, and mobility during the first wave of the COVID-19 pandemic. *Health Economics*, 30(9), 2296-2306.
- Canay, I. A., Santos, A., & Shaikh, A. M. (2021). The wild bootstrap with a “small” number of “large” clusters. *The Review of Economics and Statistics*, 103(2), 346-363.
- Cesur, R., Freidman, T., & Sabia, J. J. (2020). War, traumatic health shocks, and religiosity. *Journal of Economic Behavior & Organization*, 179, 475-502.
- Clark, W. H. (1958). How do social scientists define religion? *The Journal of Social Psychology*, 47(1), 143-147.
- Daly, M., & Robinson, E. (2022). Psychological distress associated with the second COVID-19 wave: Prospective evidence from the UK Household Longitudinal Study. *Journal of Affective Disorders*, 310, 274-278.
- Ellison, C. G., Deangelis, R. T., Hill, T. D., & Froese, P. (2019). Sleep quality and the stress-

buffering role of religious involvement: a mediated moderation analysis. *Journal for the Scientific Study of Religion*, 58(1), 251-268.

Etheridge, B., & Spantig, L. (2022). The gender gap in mental well-being at the onset of the Covid-19 pandemic: Evidence from the UK. *European Economic Review*, 145, 104114.

Ferrer-i-Carbonell, A., & Frijters, P. (2004). How important is methodology for the estimates of the determinants of happiness? *The Economic Journal*, 114(497), 641-659.

Fletcher, J., & Kumar, S. (2014). Religion and risky health behaviors among US adolescents and adults. *Journal of Economic Behavior & Organization*, 104, 123-140.

Folkman, S., & Lazarus R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior*, 21(3), 219-239.

Fruehwirth, J. C., Iyer, S., & Zhang, A. (2019). Religion and depression in adolescence. *Journal of Political Economy*, 127(3), 1178-1209.

Garssen, B., Visser, A., & Pool, G. (2021). Does spirituality or religion positively affect mental health? Meta-analysis of longitudinal studies. *The International Journal for the Psychology of Religion*, 31(1), 4-20.

Giles, T., Hungerman, D. M., & Oostrom, T. (2023). *Opiates of the Masses? Deaths of Despair and the Decline of American Religion* (No. w30840). National Bureau of Economic Research.

Goldberg, D.P., Gater, R., Sartorius, N., Ustun, T.B., Piccinelli, M., Gureje, O. and Rutter, C. (1997). The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychological Medicine*, 27(1), 191-197.

Goldberg, D. P., & Williams, P. (1988). *A user's guide to the General Health Questionnaire*, Windsor: NFER-Nelson.

Gruber, J., & Hungerman, D. M. (2008). The church versus the mall: What happens when religion faces increased secular competition? *The Quarterly Journal of Economics*, 123(2), 831-862.

- Hodapp, B., & Zwingmann, C. (2019). Religiosity/spirituality and mental health: A meta-analysis of studies from the German-speaking area. *Journal of Religion and Health*, 58, 1970-1998.
- Iannaccone, L. R. (1992). Sacrifice and stigma: Reducing free-riding in cults, communes, and other collectives. *Journal of Political Economy*, 100(2), 271-291.
- Iyer, S., & Rosso, G. (2022). Religion and mental health. In Zimmermann, K. F. (ed.), *Handbook of Labor, Human Resources and Population Economics* (pp. 1-20). Cham: Springer International Publishing.
- James, A., & Wells, A. (2003). Religion and mental health: Towards a cognitive-behavioural framework. *British Journal of Health Psychology*, 8(3), 359-376.
- Koenig, H. G., & Larson, D. B. (2001). Religion and mental health: Evidence for an association. *International Review of Psychiatry*, 13(2), 67-78.
- Koenig, H. G., Al-Zaben, F., & VanderWeele, T. J. (2020). Religion and psychiatry: Recent developments in research. *BJPsych Advances*, 26(5), 262-272.
- Koenig, H. G., Berk, L. S., Daher, N. S., Pearce, M. J., Bellinger, D. L., Robins, C. J., ... & King, M. B. (2014). Religious involvement is associated with greater purpose, optimism, generosity and gratitude in persons with major depression and chronic medical illness. *Journal of Psychosomatic Research*, 77(2), 135-143.
- Koenig, H. G., Pargament, K. I., & Nielsen, J. (1998). Religious coping and health status in medically ill hospitalized older adults. *The Journal of Nervous and Mental Disease*, 186(9), 513-521.
- Krause, N., & Pargament, K. I. (2018). Reading the Bible, stressful life events, and hope: Assessing an overlooked coping resource. *Journal of Religion and Health*, 57, 1428-1439.
- Leung, C.M., Ho, M.K., Bharwani, A.A., Cogo-Moreira, H., Wang, Y., Chow, M.S., Fan, X., Galea, S., Leung, G.M. and Ni, M.Y. (2022). "Mental disorders following COVID-19 and other epidemics:

a systematic review and meta-analysis.” *Translational Psychiatry* 12(1): 205.

McDaid, D., Park, A-L., Davidson, G., John, A., Knifton, L., McDaid, S., Morton, A., Thorpe, L., and Wilson, N. (2022). The economic case for investing in the prevention of mental health conditions in the UK. Mental Health Foundation.

Office for Budget Responsibility (2024). Economic and Fiscal Outlook, Presented to Parliament by the Exchequer Secretary to the Treasury by Command of His Majesty, UK, March 2024.

Pearlin, L. I. (1989). The sociological study of stress. *Journal of Health and Social Behavior*, 241-256.

Pirutinsky, S., Cherniak, A. D., & Rosmarin, D. H. (2020). COVID-19, mental health, and religious coping among American Orthodox Jews. *Journal of Religion and Health*, 59, 2288-2301.

Schuster, M. A., Stein, B. D., Jaycox, L. H., Collins, R. L., Marshall, G. N., Elliott, M. N., ... & Berry, S. H. (2001). A national survey of stress reactions after the September 11, 2001, terrorist attacks. *New England Journal of Medicine*, 345(20), 1507-1512.

University of Essex, Institute for Social and Economic Research. (2025). *Understanding Society: Waves 1-14, 2009-2023 and Harmonised BHPS: Waves 1-18, 1991-2009*. [data collection]. 19th Edition. UK Data Service. SN: 6614, DOI: <http://doi.org/10.5255/UKDA-SN-6614-20>

Upenieks, L., & Schieman, S. (2021). The belief in divine control and the mental health effects of stressful life events: A study of education-based contingencies. *Review of Religious Research*, 63, 183-215.

Wolff, J., & Leopold, D. (2021). Karl Marx. In Zalta, E. N. (ed.), *The Stanford Encyclopedia of Philosophy*. <https://plato.stanford.edu/archives/spr2021/entries/marx/>.

Zhang, Yanan, Matthew R. Bennett, and Sue Yeandle (2021). "Longitudinal analysis of local government spending on adult social care and carers' subjective well-being in England." *BMJ Open* 11(12).

## Appendix

### Detailed Analysis of Figures 1 and 2

As can be seen throughout Figure 1, there is a sharp increase in psychological distress during the lockdown periods. This is particularly evident from the Caseness mental health distress measure. Furthermore, the increase in distress is present for both those who belong and do not belong to a religion. However, the increase for the former group is almost universally lower than that of the latter.

Furthermore, graphs (a), (b) and (c) in Figure 1 present the means for those who do not identify with a religion and those who do. In graph (a), we present the means for the aggregate Caseness measure for psychological distress. Here, individuals that belong to a religion have lower levels of psychological distress across all four Waves, which is consistent with much of the literature. The increase during the lockdown wave (compared to the average of the first three waves) is slightly lower for those who belong to a religion (32.6 percent increase) to those who don't (33.9 percent increase). Next, in graph (b), we present the means for the Likert measure. In this graph, the increase during the lockdown wave (compared to the average of the first three waves) is almost half for those who belong to a religion (4.63 percent increase) compared to those who don't (8.42 percent increase). Lastly, in graph (c), we present the the means for Unhappiness or Depression, containing trends similar to those above. Again, if we compare the pre-lockdown mean (for Waves 8, 9 and 10) with that of the lockdowns (Wave 11), the increase was 6.1 percent for people who do not identify with a religion, compared to an increase of 4.6 percent for those who do. This indicates that the increase in depression during the lockdowns for people who belong to a religion was 24 percent lower compared to those who do not identify with a religion.

In graphs (d), (e) and (f) of Figure 1, we present the means for religious intensity. Here, individuals are grouped into two categories: those where religion makes *at least* a little difference to their

life<sup>16</sup> (the ‘difference’ group) and those who say that religion makes no difference to their life (the ‘no-difference’ group<sup>17</sup>). Graph (d) shows the means for the aggregate Caseness measure of psychological distress. Here we can also see that the increase in depression during the pandemic was larger for the no-difference group than for the difference group. As before, comparing the pre-lockdown mean with the lockdowns mean, the increase is 36.7 percent for the no-difference group, compared to 30.8 percent for those where religion does make a difference. This indicates that the increase in psychological distress was 16 percent lower for difference group. Next, in graph (e), we present means for the aggregated Likert measure. The increase for the difference group is lower at 7.41 percent compared to no-difference at 8.86 percent. Lastly, graph (f) shows the results for the Depression measure, and finds similar trends as above. The key distinction is that the increase during the lockdowns for both groups was smaller, but the difference between the two groups is larger. The increase in depression for the no-difference group during the lockdowns was 6.6 percent (compared to the pre-lockdown mean), while 4.3 percent for the difference group (a gap of 34.9 percent).

Finally, in graphs (a), (b) and (c) of Figure 2 we present the means by the degrees of intensity. In graph (a), the percent increase in the Caseness measure for the lockdown wave was generally lower for the various categories in the difference group compared to the no-difference group. Specifically, the increase for “some difference” and “a great difference” were much lower (at 28 percent and 23.8 percent) compared to an increase of 36.7 percent for “no difference”. The only exception was for those who indicated that religion makes “a little difference”, where the increase was actually more than the no-difference group at 42.3 percent. Graph (b) shows that the increase in Likert-measured psychological distress was lower for each category of the difference group compared to the no-difference group (8.81, 5.81, and 7.45 percent for “a little difference” to “a great difference”, and 8.86 percent for “no difference”). In graph (c), Depression shows similar trends to the Caseness measure. For those where religion makes a little difference to their life, the increase during the lockdowns was 6.6 percent. For “some difference” or “a great difference”, the increase was around

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<sup>16</sup>This therefore includes: “a little difference”, “some difference”, and “a great difference”.

<sup>17</sup>In terms of the wording in the graphs, the ‘no-difference’ group has a value of zero for their intensity, and the ‘difference’ group has a non-zero value for their intensity.

half of that, at 3.1 percent and 3.5 percent respectively. Lastly, the increase for “no difference” was 6.4 percent, and thus very similar to the increase for “a little difference”. These breakdowns suggest that it is not just possessing faith, but also the intensity of that faith that is important when measuring the relationship between religious faith and coping.

## Appendix Tables

Table A1: Mental Health Questions of the General Health Questionnaire

Label	Text of questionnaire
Could not concentrate	“Have you recently been able to concentrate on whatever you’re doing?”. The value of answers is defined as following: 1. Better than usual, 2. Same as usual, 3. Less than usual, 4. Much less than usual.
Lost sleep	“Have you recently lost much sleep over worry?”. The value of answers is defined as following: 1. Not at all, 2. No more than usual, 3. Rather more than usual, 4. Much more than usual.
Not playing a useful role	“Have you recently felt that you were playing a useful part in things?”. The value of answers is defined as following: 1. More so than usual, 2. Same as usual, 3. Less so than usual, 4. Much less than usual.
Could not make decisions	“Have you recently felt capable of making decisions about things?”. The value of answers is defined as following: 1. More so than usual, 2. Same as usual, 3. Less so than usual, 4. Much less than capable.
Felt under strain	“Have you recently felt constantly under strain?”. The value of answers is defined as following: 1. Not at all, 2. No more than usual, 3. Rather more than usual, 4. Much more than usual.
Could not overcome difficulties	“Have you recently felt you couldn’t overcome your difficulties?”. The value of answers is defined as following: 1. Not at all, 2. No more than usual, 3. Rather more than usual, 4. Much more than usual.
Not enjoy day-to-day activities	“Have you recently been able to enjoy your normal day-to-day activities?”. The value of answers is defined as following: 1. More so than usual, 2. Same as usual, 3. Less so than usual, 4. Much less than usual.
Could not face problems	“Have you recently been able to face up to problems?”. The value of answers is defined as following: 1. More so than usual, 2. Same as usual, 3. Less so than usual, 4. Much less able.
Unhappiness or depression	“Have you recently been feeling unhappy or depressed?”. The value of answers is defined as following: 1. Not at all, 2. No more than usual, 3. Rather more than usual, 4. Much more than usual.
Lost confidence	“Have you recently been losing confidence in yourself?”. The value of answers is defined as following: 1. Not at all, 2. No more than usual, 3. Rather more than usual, 4. Much more than usual.
Felt worthless	“Have you recently been thinking of yourself as a worthless person?”. The value of answers is defined as following: 1. Not at all, 2. No more than usual, 3. Rather more than usual, 4. Much more than usual.
Not feeling happy	“Have you recently been feeling reasonably happy, all things considered?”. The value of answers is defined as following: 1. More so than usual, 2. Same as usual, 3. Less so than usual, 4. Much less than usual.



Table A2: List of Time Varying Variables

Variable	Description
Female	If a respondent is female = 1. Otherwise 0
Age	Age of respondent in years
Cohabit	A dummy variable indicates if a participant is married/cohabitation or not.
Education	A participant's education level. 1. Lower than GCSE, 2. A Level or equivalent, and GCSE 3. Degree or equivalent
Children	A dummy variable indicates if a respondent has any kids aged below 4.
Employed	A dummy variable indicates if a respondent is employed.
Student	A dummy variable indicates if a respondent is a student.
Pension	A dummy variable indicates if a respondent receives any pension.
Physical	During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health? 1. All the time, 2. Most of the time, 3. Some of the time, 4. A little of the time, 5. None of the time
Income	A respondent's total monthly personal income (gross).
HHSW	A dummy variable indicates if a respondent who works in 'Human Health and Social Work' activities. The definition of Human Health and Social Work is defined as the section Q of Standard Industrial Classification 2007.

Table A3: The coefficients of the estimations. (Caseness)

	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
LockdownXBelong	-0.143 (0.087)	-0.155* (0.087)	-0.153* (0.087)	-0.205** (0.090)				
LockdownXIntensity					-0.070* (0.038)	-0.076** (0.037)	-0.074** (0.037)	-0.096** (0.038)
Lockdown	0.624*** (0.064)	0.553*** (0.080)	0.647*** (0.136)	-0.670* (0.387)	0.631*** (0.060)	0.561*** (0.076)	0.652*** (0.134)	-0.643* (0.388)
Female		-0.293** (0.116)	-0.301** (0.122)	-0.466*** (0.124)		-0.294*** (0.100)	-0.303*** (0.107)	-0.468*** (0.121)
Age		0.010 (0.025)	0.053 (0.069)	0.045 (0.069)		0.009 (0.025)	0.057 (0.070)	0.049 (0.070)
Cohabit		0.007 (0.216)	0.008 (0.216)	-0.027 (0.218)		0.012 (0.216)	0.014 (0.216)	-0.019 (0.218)
Education		-0.123 (0.314)	-0.116 (0.314)	-0.156 (0.317)		-0.077 (0.325)	-0.070 (0.325)	-0.119 (0.329)
Children		-0.178 (0.142)	-0.182 (0.142)	-0.212 (0.149)		-0.179 (0.142)	-0.183 (0.143)	-0.214 (0.149)
Employed		-0.398*** (0.116)	-0.400*** (0.116)	-0.393*** (0.120)		-0.400*** (0.116)	-0.401*** (0.116)	-0.390*** (0.120)
Student		0.003 (0.247)	-0.005 (0.247)	-0.073 (0.255)		-0.003 (0.248)	-0.011 (0.248)	-0.072 (0.255)
Pension		-0.019 (0.131)	-0.019 (0.131)	-0.070 (0.135)		-0.022 (0.132)	-0.023 (0.132)	-0.066 (0.136)
Physical		-0.380*** (0.030)	-0.380*** (0.030)	-0.424*** (0.033)		-0.382*** (0.030)	-0.382*** (0.030)	-0.424*** (0.033)
Income		-0.000 (0.000)	-0.000 (0.000)	-0.000* (0.000)		-0.000 (0.000)	-0.000 (0.000)	-0.000* (0.000)
HHSW		-0.126 (0.211)	-0.121 (0.212)	-0.103 (0.215)		-0.133 (0.212)	-0.128 (0.212)	-0.111 (0.216)
2017			0.018 (0.795)	0.011 (0.793)			0.018 (0.795)	0.011 (0.793)
2018			-0.022 (0.799)	-0.020 (0.797)			-0.027 (0.799)	-0.026 (0.797)
2019			-0.066 (0.811)	-0.063 (0.809)			-0.077 (0.811)	-0.075 (0.809)
2020			-0.190 (0.831)	-0.180 (0.829)			-0.205 (0.831)	-0.196 (0.829)
2021			-0.451 (0.859)	-0.378 (0.856)			-0.466 (0.859)	-0.392 (0.857)
LockdownXFemale				0.453*** (0.091)				0.446*** (0.091)
LockdownXAge				0.001 (0.004)				0.001 (0.004)
LockdownXCohab				0.105 (0.094)				0.099 (0.094)
LockdownXEducation				0.117* (0.063)				0.138** (0.063)
LockdownXChildren				0.174 (0.182)				0.174 (0.183)
LockdownXEmployed				-0.057 (0.133)				-0.068 (0.133)
LockdownXStudent				0.298 (0.381)				0.280 (0.382)
LockdownXPension				0.101 (0.121)				0.084 (0.122)
LockdownXPhysical				0.148*** (0.046)				0.141*** (0.046)
LockdownXIncome				0.000* (0.000)				0.000 (0.000)
LockdownXHHSW				-0.062 (0.166)				-0.063 (0.166)
Constant	1.666*** (0.020)	3.520** (1.421)	1.351 (3.597)	2.177 (3.594)	1.666*** (0.020)	3.466** (1.435)	1.040 (3.619)	1.867 (3.618)
Individual FEs	X	X	X	X	X	X	X	X
Observations	15516	15516	15516	15516	15464	15464	15464	15464
R <sup>2</sup>	0.590	0.599	0.599	0.601	0.589	0.598	0.598	0.600

Standard errors are in parentheses.

\* p &lt; 0.10, \*\* p &lt; 0.05, \*\*\* p &lt; 0.01

Table A4: The coefficients of the estimations. (Likert)

	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
LockdownXBelong	-0.226 (0.147)	-0.248* (0.145)	-0.243* (0.145)	-0.321** (0.152)				
LockdownXIntensity					-0.079 (0.064)	-0.091 (0.064)	-0.087 (0.064)	-0.124* (0.065)
Lockdown	0.988*** (0.108)	0.769*** (0.133)	0.865*** (0.228)	-0.807 (0.670)	0.965*** (0.101)	0.743*** (0.127)	0.838*** (0.226)	-0.790 (0.671)
Female		-0.914 (1.000)	-0.925 (1.010)	-1.186 (1.008)		-0.915 (0.993)	-0.927 (1.003)	-1.187 (1.000)
Age		0.062 (0.041)	0.073 (0.116)	0.064 (0.116)		0.064 (0.041)	0.085 (0.116)	0.076 (0.116)
Cohabit		-0.027 (0.371)	-0.025 (0.372)	-0.132 (0.375)		-0.018 (0.371)	-0.016 (0.372)	-0.117 (0.375)
Education		-0.150 (0.544)	-0.140 (0.544)	-0.228 (0.549)		-0.090 (0.564)	-0.078 (0.565)	-0.181 (0.569)
Children		-0.346 (0.246)	-0.352 (0.246)	-0.437* (0.257)		-0.349 (0.247)	-0.355 (0.247)	-0.440* (0.258)
Employed		-0.581*** (0.202)	-0.587*** (0.202)	-0.587*** (0.208)		-0.583*** (0.203)	-0.589*** (0.203)	-0.581*** (0.209)
Student		-0.217 (0.459)	-0.242 (0.460)	-0.383 (0.470)		-0.251 (0.460)	-0.276 (0.461)	-0.400 (0.471)
Pension		-0.280 (0.222)	-0.288 (0.222)	-0.408* (0.228)		-0.297 (0.224)	-0.305 (0.224)	-0.410* (0.229)
Physical		-0.745*** (0.050)	-0.744*** (0.050)	-0.797*** (0.056)		-0.746*** (0.050)	-0.745*** (0.050)	-0.795*** (0.056)
Income		-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)		-0.000* (0.000)	-0.000* (0.000)	-0.000** (0.000)
HHSW		-0.420 (0.372)	-0.408 (0.372)	-0.404 (0.380)		-0.433 (0.374)	-0.422 (0.374)	-0.420 (0.382)
2017			-0.814 (1.365)	-0.831 (1.362)			-0.823 (1.365)	-0.841 (1.362)
2018			-0.757 (1.371)	-0.765 (1.367)			-0.780 (1.371)	-0.789 (1.368)
2019			-0.814 (1.390)	-0.820 (1.386)			-0.846 (1.390)	-0.853 (1.387)
2020			-0.880 (1.423)	-0.877 (1.419)			-0.923 (1.423)	-0.922 (1.419)
2021			-1.300 (1.466)	-1.194 (1.462)			-1.353 (1.466)	-1.247 (1.463)
LockdownXFemale				0.615*** (0.153)				0.601*** (0.153)
LockdownXAge				-0.003 (0.007)				-0.003 (0.007)
LockdownXCohab				0.273* (0.156)				0.252 (0.155)
LockdownXEducation				0.174* (0.106)				0.204* (0.107)
LockdownXChildren				0.451 (0.308)				0.446 (0.309)
LockdownXEmployed				-0.056 (0.223)				-0.075 (0.223)
LockdownXStudent				0.695 (0.700)				0.653 (0.700)
LockdownXPension				0.301 (0.203)				0.269 (0.204)
LockdownXPhysical				0.176** (0.078)				0.168** (0.079)
LockdownXIncome				0.000 (0.000)				0.000 (0.000)
LockdownXHHSW				-0.026 (0.278)				-0.028 (0.279)
Constant	11.054*** (0.034)	12.497*** (2.476)	12.765** (6.079)	13.910** (6.073)	11.055*** (0.034)	12.293*** (2.501)	12.038** (6.109)	13.187** (6.105)
Individual FEs	X	X	X	X	X	X	X	X
Observations	15516	15516	15516	15516	15464	15464	15464	15464
R <sup>2</sup>	0.644	0.654	0.654	0.655	0.643	0.653	0.654	0.655

Standard errors are in parentheses.

\* p &lt; 0.10, \*\* p &lt; 0.05, \*\*\* p &lt; 0.01

Table A5: The coefficients of the estimations. (Depression)

	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
LockdownXBelong	-0.041*	-0.042*	-0.042*	-0.058**				
	(0.024)	(0.024)	(0.024)	(0.024)				
LockdownXIntensity					-0.021**	-0.022**	-0.022**	-0.028***
					(0.010)	(0.010)	(0.010)	(0.010)
Lockdown	0.119***	0.086***	0.094**	-0.231**	0.122***	0.089***	0.096**	-0.234**
	(0.017)	(0.021)	(0.039)	(0.103)	(0.016)	(0.021)	(0.039)	(0.103)
Female		-0.221	-0.220	-0.259		-0.221	-0.220	-0.260
		(0.202)	(0.202)	(0.196)		(0.201)	(0.201)	(0.194)
Age		0.012*	0.013	0.011		0.013*	0.015	0.013
		(0.007)	(0.019)	(0.019)		(0.007)	(0.019)	(0.019)
Cohabit		0.003	0.003	-0.008		0.004	0.004	-0.006
		(0.060)	(0.060)	(0.060)		(0.060)	(0.060)	(0.060)
Education		-0.126	-0.124	-0.133*		-0.127	-0.125	-0.136*
		(0.077)	(0.077)	(0.078)		(0.080)	(0.080)	(0.081)
Children		0.006	0.006	-0.007		0.006	0.006	-0.008
		(0.039)	(0.039)	(0.040)		(0.039)	(0.039)	(0.041)
Employed		-0.034	-0.035	-0.028		-0.035	-0.036	-0.028
		(0.030)	(0.030)	(0.032)		(0.030)	(0.030)	(0.032)
Student		-0.095	-0.098	-0.117*		-0.098	-0.101	-0.119*
		(0.061)	(0.061)	(0.063)		(0.061)	(0.062)	(0.064)
Pension		-0.022	-0.023	-0.023		-0.028	-0.029	-0.026
		(0.040)	(0.040)	(0.041)		(0.040)	(0.040)	(0.041)
Physical		-0.074***	-0.074***	-0.084***		-0.075***	-0.074***	-0.084***
		(0.008)	(0.008)	(0.008)		(0.008)	(0.008)	(0.008)
Income		-0.000**	-0.000**	-0.000**		-0.000**	-0.000**	-0.000**
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
HHSW		-0.028	-0.027	-0.017		-0.028	-0.027	-0.018
		(0.054)	(0.054)	(0.056)		(0.055)	(0.055)	(0.056)
2017			-0.094	-0.096			-0.094	-0.096
			(0.198)	(0.198)			(0.198)	(0.198)
2018			-0.101	-0.102			-0.103	-0.104
			(0.199)	(0.199)			(0.199)	(0.199)
2019			-0.095	-0.095			-0.099	-0.099
			(0.203)	(0.202)			(0.203)	(0.202)
2020			-0.101	-0.100			-0.106	-0.106
			(0.209)	(0.208)			(0.209)	(0.208)
2021			-0.165	-0.151			-0.171	-0.157
			(0.217)	(0.216)			(0.217)	(0.217)
LockdownXFemale				0.100***				0.099***
				(0.025)				(0.025)
LockdownXAge				0.001				0.001
				(0.001)				(0.001)
LockdownXCohab				0.036				0.034
				(0.026)				(0.026)
LockdownXEducation				0.034*				0.042**
				(0.018)				(0.018)
LockdownXChildren				0.070				0.071
				(0.050)				(0.051)
LockdownXEmployed				-0.030				-0.031
				(0.036)				(0.036)
LockdownXStudent				0.089				0.089
				(0.104)				(0.104)
LockdownXPension				-0.011				-0.017
				(0.036)				(0.036)
LockdownXPhysical				0.034***				0.032***
				(0.012)				(0.012)
LockdownXIncome				0.000				0.000
				(0.000)				(0.000)
LockdownXHHSW				-0.027				-0.028
				(0.045)				(0.045)
Constant	1.837***	1.997***	2.058**	2.243**	1.838***	1.992***	1.956**	2.145**
	(0.006)	(0.398)	(0.984)	(0.982)	(0.006)	(0.401)	(0.989)	(0.987)
Individual FEs	X	X	X	X	X	X	X	X
Observations	15516	15516	15516	15516	15464	15464	15464	15464
R <sup>2</sup>	0.579	0.584	0.584	0.586	0.579	0.584	0.584	0.585

Standard errors are in parentheses.

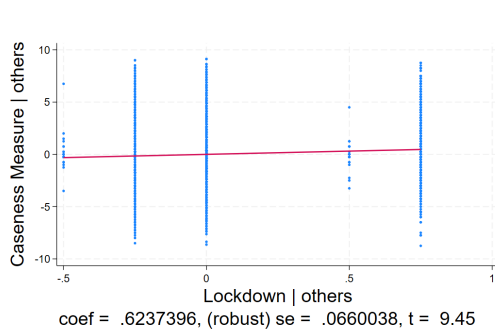
\* p &lt; 0.10, \*\* p &lt; 0.05, \*\*\* p &lt; 0.01

Table A6: Standardised Coefficients

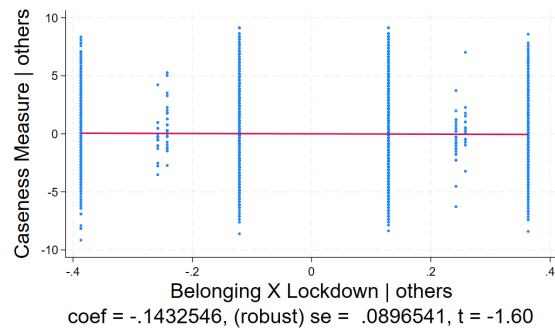
			(1)	(2)	(3)	(4)
Belonging	$\beta$	(Caseness)	0.089	0.079	0.093	-0.096
	$\gamma$	(Caseness)	-0.016	-0.017	-0.017	-0.023
	$\beta$	(Likert)	0.078	0.061	0.069	-0.064
	$\gamma$	(Likert)	-0.014	-0.015	-0.015	-0.020
	$\beta$	(Depression)	0.063	0.046	0.050	-0.123
	$\gamma$	(Depression)	-0.017	-0.018	-0.017	-0.024
Intensity	$\beta$	(Caseness)	0.090	0.080	0.094	-0.092
	$\gamma$	(Caseness)	-0.018	-0.019	-0.019	-0.024
	$\beta$	(Likert)	0.077	0.059	0.067	-0.063
	$\gamma$	(Likert)	-0.011	-0.013	-0.012	-0.017
	$\beta$	(Depression)	0.065	0.048	0.051	-0.125
	$\gamma$	(Depression)	-0.020	-0.021	-0.021	-0.027
Individual FE			Yes	Yes	Yes	Yes
Time Varying Controls			No	Yes	Yes	Yes
Year FE			No	No	Yes	Yes
Lockdown Interaction Terms			No	No	No	Yes

Notes: The top half of the table is for Belonging, and the bottom half is for Intensity. Standardised coefficients are for both  $\beta$  and  $\gamma$  found in Tables 3, 4, and 5 (for Caseness, Likert, and Depression respectively).

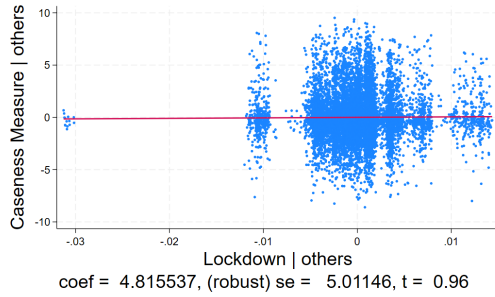
## Appendix Figures



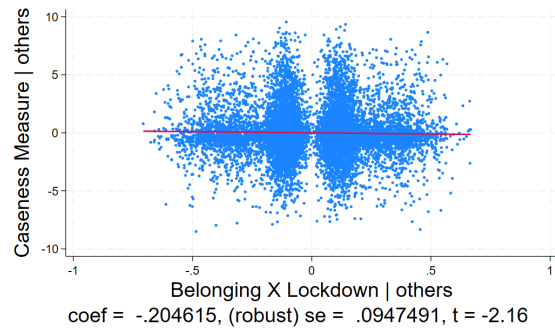
(a) Lockdown  
(Belonging, Column 1 of Table 3)



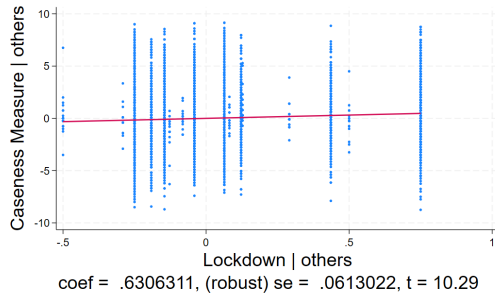
(b) Lockdown X Belonging  
(Belonging, Column 1 of Table 3)



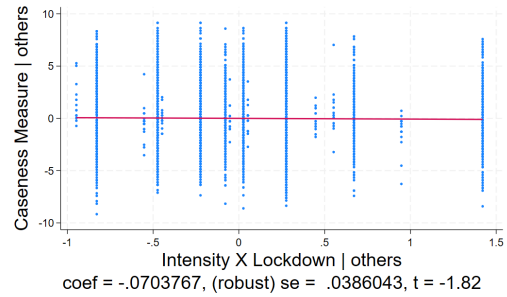
(c) Lockdown  
(Belonging, Column 5 of Table 3)



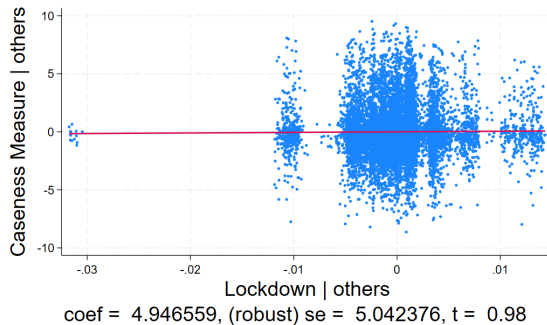
(d) Lockdown X Belonging  
(Belonging, Column 5 of Table 3)



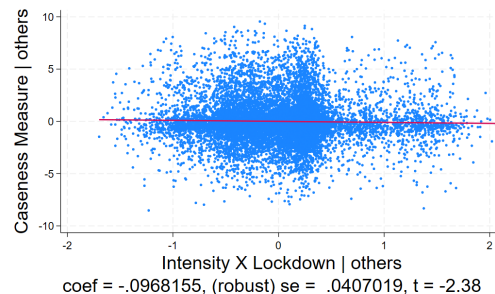
(e) Lockdown  
(Intensity, Column 1 of Table 3)



(f) Lockdown X Intensity  
(Intensity, Column 1 of Table 3)

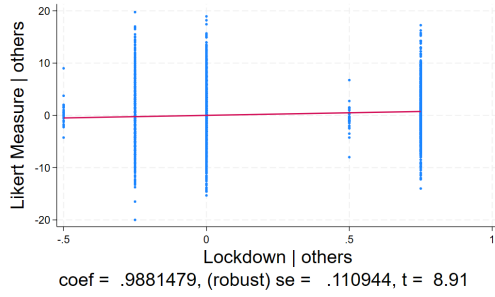


(g) Lockdown  
(Intensity, Column 5 of Table 3)

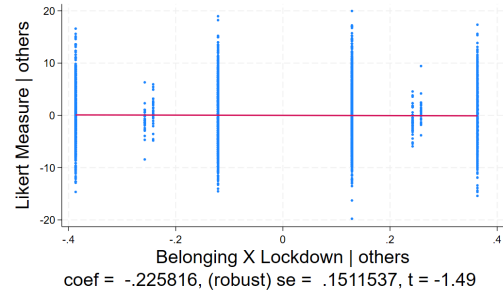


(h) Lockdown X Intensity  
(Intensity, Column 5 of Table 3)

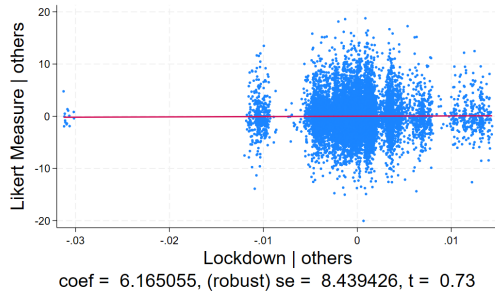
Figure B1: Added-Variable Plot (Caseness Measure: Belonging and Intensity)



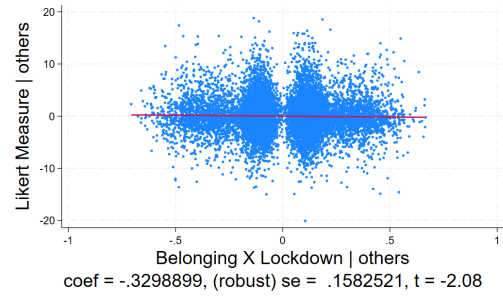
(a) Lockdown  
(Belonging, Column 1 of Table 4)



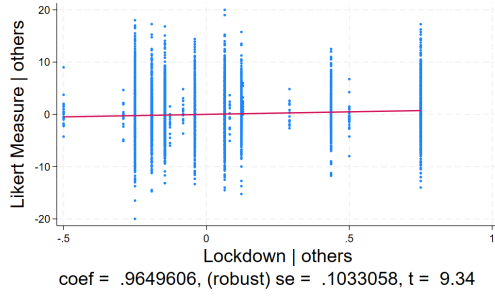
(b) Lockdown X Belonging  
(Belonging, Column 1 of Table 4)



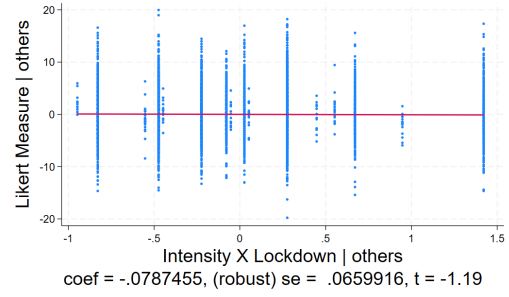
(c) Lockdown  
(Belonging, Column 5 of Table 4)



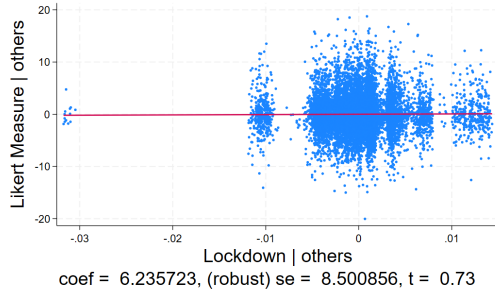
(d) Lockdown X Belonging  
(Belonging, Column 5 of Table 4)



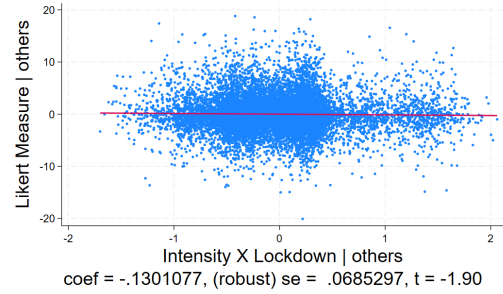
(e) Lockdown  
(Intensity, Column 1 of Table 4)



(f) Lockdown X Intensity  
(Intensity, Column 1 of Table 4)

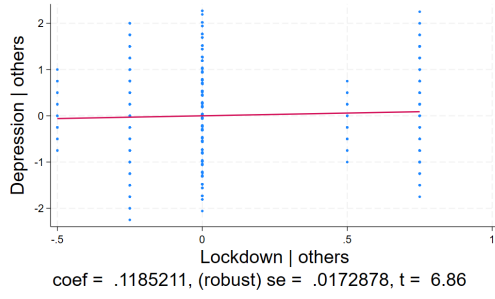


(g) Lockdown  
(Intensity, Column 5 of Table 4)

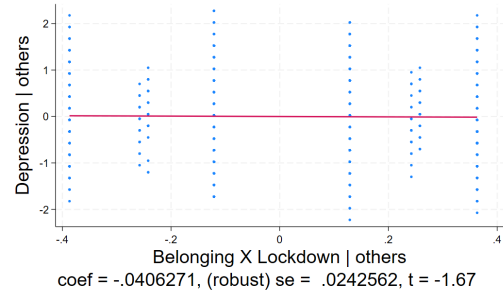


(h) Lockdown X Intensity  
(Intensity, Column 5 of Table 4)

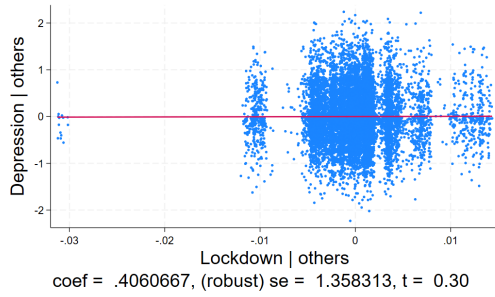
Figure B2: Added-Variable Plot (Likert Measure: Belonging and Intensity)



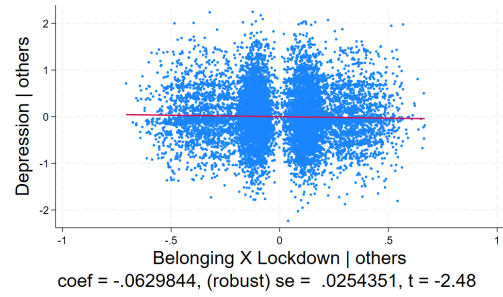
(a) Lockdown  
(Belonging, Column 1 of Table 5)



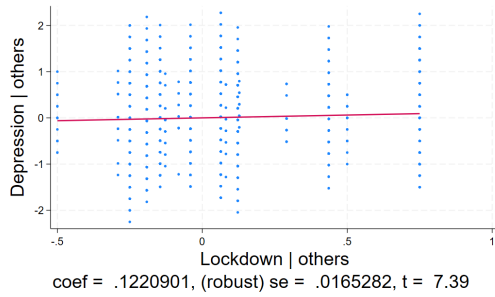
(b) Lockdown X Belonging  
(Belonging, Column 1 of Table 5)



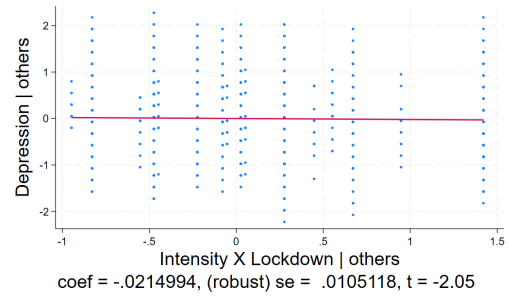
(c) Lockdown  
(Belonging, Column 5 of Table 5)



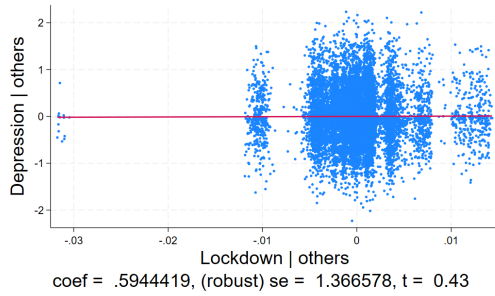
(d) Lockdown X Belonging  
(Belonging, Column 5 of Table 5)



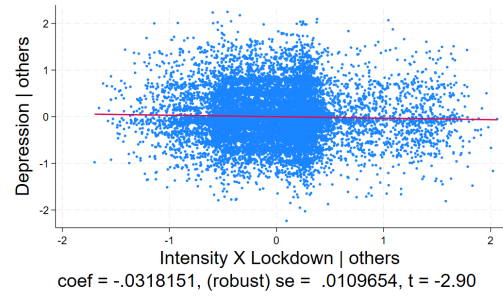
(e) Lockdown  
(Intensity, Column 1 of Table 5)



(f) Lockdown X Intensity  
(Intensity, Column 1 of Table 5)



(g) Lockdown  
(Intensity, Column 5 of Table 5)



(h) Lockdown X Intensity  
(Intensity, Column 5 of Table 5)

Figure B3: Added-Variable Plot (Depression: Belonging and Intensity)