

1 Mullin, E. M., Hutchinson, J. C., Mellano, K. T., Bird, J. M., & Karageorghis, C. I. (2021).  
2 Impact of COVID-19 restrictions on mental health and physical activity among LGBTQAP  
3 and heterosexual adults. *Journal of Gay & Lesbian Mental Health*, 1–18. Advance online  
4 publication. <https://doi.org/10.1080/19359705.2021.1995097>

5

6

7 Impact of COVID-19 Restrictions on Mental Health and Physical Activity Among

8

LGBTQAP and Heterosexual Adults

9

**Structured Abstract**

10 **Introduction:** We compared the impact of the COVID-19 lockdown on mental health (MH) and  
11 physical activity (PA) between US adults who identify as lesbian, gay men, bisexual, queer,  
12 asexual, and pansexual (LGBQAP) and heterosexual US adults.

13 **Method:** Participants completed online questionnaires to assess PA and MH.

14 **Results:** No difference in MH was identified between LGBQAP and heterosexual participants  
15 prior to lockdown, however LGBQAP participants reported significantly worse mental health  
16 during lockdown. No group differences were found in PA, but all participants exhibited a decline  
17 in PA during lockdown.

18 **Conclusion:** This study highlights the differential impact of social restrictions on marginalized  
19 populations.

20

21 **Keywords:** coronavirus, LGBTQ+ communities, pandemic, wellbeing



45           Marginalized communities have been identified as “those excluded from mainstream  
46 social, economic, educational, and/or cultural life” (Sevelius et al., 2020, p. 2009), including, but  
47 not limited to groups that are excluded on the basis of race, gender identity, sexual orientation,  
48 age, physical ability, language, and/or immigration status (Sevelius et al., 2020). One such  
49 subgroup includes individuals who identify as lesbian, gay, bisexual, transgender, queer, and  
50 other diverse sexual orientations and gender identities (LGBTQ+), who, despite well-  
51 documented vulnerability to a number of social, health, and psychological risks, have received  
52 minimal attention during the COVID-19 pandemic (Salerno et al., 2020).

53           Mental and physical health disparities have been documented between LGBTQ+ persons  
54 and their heterosexual, cisgender counterparts (Gorczyński & Fasoli, 2020). Researchers have  
55 reported increased prevalence of chronic diseases, substance abuse, anxiety, depression, and  
56 suicide (Gorczyński & Fasoli, 2020). These disparities are likely a result of exposure to prejudice  
57 and discrimination in the social environment, referred to as *minority stress* (Meyer, 2003), and  
58 thus related to social inequalities, such as poorer access to healthcare and higher rates of poverty,  
59 that disproportionately affect LGBTQ+ persons compared to heterosexual and cisgender peers  
60 and may be intensified by the global pandemic (Salerno et al., 2020). For example, as a higher  
61 percentage of LGBTQ+ individuals work in service industry jobs (40% compared to 20% of  
62 heterosexuals), thus likely being at a higher risk of unemployment, loss of healthcare, and facing  
63 greater financial distress as a result of lockdown (Salerno et al., 2020). As the pandemic  
64 continues to impact societies the world over, it is important to find ways to improve or maintain  
65 psychological health (Holmes et al., 2020), particularly among groups that are marginalized.

66           PA has been shown to protect both physical and mental health (Rebar et al., 2015) and  
67 shows inverse associations with anxiety and depressive symptoms (McDowell et al., 2019;

68 Schuch et al., 2018). Therefore, engaging in PA might help people in coping with COVID-19-  
69 related stress and mitigate its detrimental effects on mental health and wellbeing. In addition, PA  
70 is strongly associated with a reduced risk for severe COVID-19 outcomes, including  
71 hospitalization, intensive care unit admission, and death, even after controlling for other risk  
72 factors (Sallis et al., 2021). However, the restrictions and social distancing measures adopted in  
73 response to the COVID-19 pandemic left limited opportunities for planned PA, as most sports  
74 facilities, gyms, and public swimming pools were closed. Likewise, opportunities for unplanned  
75 PA diminished with the closure of parks and playgrounds and greater reliance on virtual  
76 communication for activities such as work, education, and shopping.

77       Tison et al. (2020) examined the effect of COVID-19-related lockdown on daily step  
78 counts using de-identified data collected via a smartphone app. Across 455,404 app users from  
79 187 countries, there was a 27.3% decrease in mean daily step counts after 30 days of  
80 confinement when compared to prepandemic data. Likewise, an analysis of Fitbit's user data  
81 indicated a 5–20% reduction in total steps worldwide during the early stages of the pandemic  
82 (Fitbit Inc., 2020). A number of other studies – primarily those collecting self-report data – have  
83 indicated significant decreases in moderate-to-vigorous PA (Dunton et al., 2020), walking time  
84 (Cheval et al., 2020; Dunton et al., 2020), and resistance-based exercise (Faulkner et al., 2020).

85       Despite overwhelming evidence of reductions in PA during the COVID-19 pandemic, it  
86 is important to note that some groups have been able to sustain, or even increase, PA behavior  
87 (Brand et al., 2020; Nienhuis & Lesser, 2020). Notably, it appears that individuals who have  
88 been more physically active during COVID-19 restrictions have better overall mental health  
89 (Jacob et al., 2020). For example, those who report a negative change (i.e., decrease) in PA and  
90 exercise habits from prior to during COVID-19, also report poorer mental health (Faulkner et al.,

91 2020), increased loneliness and stress (Meyer et al., 2020), lower social, emotional and  
92 psychological wellbeing, and higher generalized anxiety (Nienhuis & Lesser, 2020). Although  
93 the evidence is limited by (necessarily) cross-sectional approaches to data collection, it indicates  
94 that the known association between PA and superior mental health status (McDowell et al., 2019;  
95 Schuch et al., 2018) can be sustained during times of stress or crisis (Cheval et al., 2020).

96 Generally, LGBTQ+ communities have been understudied in the realm of PA  
97 (Gorczynski & Brittain, 2016), yet warrant special attention given the health disparities that  
98 affect its members. Evidence from the few studies relating to PA has been equivocal. For  
99 example, compared to heterosexual youth, LGB youth exhibit lower participation rates in terms  
100 of 60 min of moderate-to-vigorous PA each week (lesbian/gay = 19%; bisexual = 17%  
101 heterosexual = 25%; Mereish & Poteat, 2015). This discrepancy has been attributed to  
102 microaggressions, discrimination, and harassment experienced in sport and PA during formative  
103 years (Herrick & Duncan, 2018). Furthermore, Herrick et al. (2021) found that proximal  
104 minority stressors were negatively associated with the satisfaction of psychological needs in PA  
105 settings among LGBTQ+ adults. The lack of satisfaction, in turn, undermined the motivation to  
106 engage in PA.

107 In contrast, other researchers have indicated that PA participation among adult lesbians,  
108 gay men, and bisexual men and women is similar or greater than individuals who identify as  
109 heterosexual (Boehmer et al., 2012; VanKim et al., 2017). More specifically, VanKim et al.  
110 (2017) reported that lesbian and bisexual women reported higher MET-hours/week in aerobic  
111 activity compared to heterosexual women. Bisexual women, as well as gay and bisexual men,  
112 report higher levels of muscle strengthening activity when compared to their heterosexual  
113 counterparts (Boehmer et al., 2012).

114           LGBTQ+ adults often seek safe and inclusive environments to engage in sport and PA  
115 such as queer-friendly gyms (Herrick & Duncan, 2018), competitive sports teams (Willis, 2015),  
116 or recreational leagues and club teams (Calwood & Smith, 2019). Lockdown restrictions and  
117 social distancing measures due to COVID-19 likely impact the way in which LGBTQ+ adults  
118 engage in PA. The combined impact of social restrictions and limited access to LGBTQ+  
119 inclusive spaces for leisure, PA, and sport may, therefore, have a disproportionately negative  
120 impact on LGBTQ+ individuals.

### 121 **Purpose and Hypotheses**

122           It is evident that COVID-19 has disproportionately impacted marginalized communities  
123 in the United States and across the world. Nonetheless, little is known about the ramifications for  
124 LGBTQ+ communities, bearing in mind that this subgroup of the population is already subject to  
125 higher levels of disparity in mental and physical health. Accordingly, we investigated the impact  
126 of the United States COVID-19 lockdown on mental health and PA among individuals who  
127 identify as lesbian, bisexual, gay, queer, and other diverse sexual orientations compared to  
128 heterosexual identifying participants. We tested two hypotheses:  $H_1$  Participants representing a  
129 diverse array of sexual orientations would report a larger decline in mental health from prior-to-  
130 lockdown to during lockdown when compared to heterosexual participants;  $H_2$  Participants  
131 representing a diverse array of sexual orientations would report a larger decrease in planned and  
132 unplanned PA from prior-to-lockdown to during lockdown when compared to heterosexual  
133 participants.

### 134 **Method**

135           Some of the data from the present study are drawn from a larger study examining PA,  
136 sedentary behavior, and mental health across four Western nations (Author citation, in press).

137 We assessed mental health and PA during the United States' initial COVID-19 lockdown.  
138 Participants were also asked to answer questions about their mental health and PA prior to  
139 lockdown by use of a retrospective frame.

#### 140 **Participants**

141 Overall, 585 individuals residing in the United States participated in this study, including  
142 452 (77%) women, 130 (22%) men, two (< 1%) individuals who identified as "other" and one (<  
143 1%) person who "preferred not to say". Participants were all at least 18 years old and their age  
144 range was 18–92 years ( $M = 37.6$ ,  $SD = 15.8$ ). Most participants identified their sexual  
145 orientation as heterosexual ( $n = 533$ , 91%). Individuals also identified as lesbian ( $n = 19$ , 3%),  
146 bisexual ( $n = 21$ , 4%), gay man ( $n = 4$ , 1%), queer ( $n = 2$ , < 1%), asexual ( $n = 3$ , < 1%), or  
147 pansexual ( $n = 3$ , 1%). For the purposes of the current study, individuals who identified as  
148 lesbian, bisexual, gay man, queer, asexual, or pansexual were collapsed into a single category ( $n$   
149 = 52, 9%). We labeled the category LGBQAP to recognize all sexual orientations indicated by  
150 participants. Initial comparisons were made between LGBQAP and heterosexual participants on  
151 key anthropometric indices. No significant mean differences were found in age, height, weight,  
152 and BMI. Additional descriptive data pertaining to the sample can be found in Table 1.

#### 153 **Instrumentation**

##### 154 *Planned and Unplanned Physical Activity*

155 The Brunel Lifestyle Physical Activity Questionnaire (BLPAQ; Karageorghis et al.,  
156 2005) was used to assess participants' planned and unplanned PA prior to and during the  
157 COVID-19 lockdown. Planned PA was defined as, "...any activity that is scheduled into your  
158 daily routine, which may enhance your health, fitness or wellbeing." Examples included brisk  
159 walking, jogging, cycling, and gardening. Unplanned PA was defined as any other form of PA

160 “excluding pre-planned physical activity” and was assessed with items such as, “In general, how  
161 physically demanding has your job or day-to-day activities been *during* the social distancing  
162 period?” Participants were asked to respond to the nine items in this scale (six for planned PA  
163 and three for unplanned PA) using a 5-point, continuous-closed numerical scale (e.g., 1 = *Not at*  
164 *all*, 5 = *Highly*). Reliability and validity of the BLPAQ scores have been demonstrated in  
165 previous studies (Vencato et al., 2017a; Vencato et al., 2017b). In the present sample, internal  
166 consistency estimates for planned PA were .91 (prior to lockdown) and .93 during lockdown).  
167 Alpha estimates were lower for the 3-item unplanned PA scale (prior to lockdown = .55, during  
168 lockdown = .65). Cronbach’s alpha is often smaller among scales with fewer items (Loewenthal  
169 & Lewis, 2020). The retrospective nature of measures for behaviors prior to lockdown may also  
170 have served to reduce internal consistency.

### 171 ***Mental Health***

172 The General Health Questionnaire-12 (GHQ-12; Goldberg & Williams, 1988) was used  
173 to assess participants’ mental health prior to and during the COVID-19 lockdown. This 12-item  
174 scale includes items such as, “Have you recently been able to enjoy your normal day-to-day  
175 activities?” to which participants respond using a 4-point scale (e.g., 0 = *More so than usual* to 3  
176 = *Much less than usual*). Adequate reliability and validity evidence has been reported in previous  
177 studies (see Hardy et al., 1999). In the present sample, the internal consistency estimate was .86  
178 for the retrospective, prior to lockdown, administration, and .91 during lockdown.

### 179 **Procedures**

180 Procedures for the protection of human research participants were reviewed and accepted  
181 by an institutional ethics review board. Data were collected via Qualtrics (Provo, UT) at one time  
182 point using a self-report, survey-based approach. Individuals were invited to take part in the

183 study and provided with direct access to the online survey via recruitment posts on social media  
184 (e.g., Facebook, Instagram, and Twitter) and direct email communication. Collection occurred in  
185 the early phases of the COVID-19 pandemic in the United States (April 24–May 18, 2020). The  
186 timing of the collection captured the initial, and possibly most dramatic, change to people’s daily  
187 routines related to various pandemic restrictions. Participants provided informed consent and the  
188 survey took ~20 min to complete.

### 189 **Statistical Analysis**

190       The Statistical Package for the Social Sciences (SPSS) v26.0 (Armonk, NY) was used to  
191 conduct the analyses described herein. Prior to the analyses, data were screened for missing data,  
192 outliers, normality within each cell of the analysis, and other assumptions that underlie analysis  
193 of variance (ANOVA). Descriptive statistics were conducted to evaluate the demographic  
194 variables, COVID-19 status, and PA both prior to and during COVID-19 lockdown. A 2 (Time)  
195  $\times$  2 (Sexual Orientation) mixed-model (within–between) ANOVA was conducted to examine  
196 mental health, and a 2 (Time)  $\times$  2 (Sexual Orientation) mixed-model (within–between)  
197 MANOVA was conducted to examine planned and unplanned PA. Simple effects tests and  
198 Bonferroni-adjusted post hoc comparisons were used as appropriate. Additionally, Pearson  
199 product-moment correlations were computed to examine the relationship between mental health  
200 and PA for both LGBTQAP and heterosexual participants. Alpha was set at .05 for all analyses,  
201 unless otherwise specified.

### 202 **Results**

203       The survey was opened 1,858 times and 1,153 participants met the initial criteria of  
204 residing in the United States, being  $\geq$ 18 years old and able to complete the survey in English.  
205 Participants who did not complete the survey in its entirety were removed prior to the analyses,

206 resulting in 595 usable survey responses. Ten participants were removed because they did not  
207 identify their sexual orientation. Consequently, 585 surveys were deemed suitable for analysis.  
208 Data were inspected for univariate outliers exhibiting  $z$ -scores  $> \pm 3.29$ . Outlying scores were  
209 reduced to the highest or lowest value not considered an outlier (Tabachnick & Fidell, 2019).  
210 The normality of dependent variables was then assessed and all were negatively skewed (planned  
211 PA at both time periods) or positively skewed (unplanned PA and mental health at both time  
212 periods; all  $ps < .001$ ). Given the relative robustness of (M)ANOVA in the case of skewed  
213 distributions (Tabachnick & Fidell, 2019), data transformations were not applied.

214 To address our first hypothesis, we compared the impact of lockdown on the mental  
215 health of LGBQAP vs. heterosexual participants. A 2 (Time)  $\times$  2 (Sexual Orientation) ANOVA  
216 revealed a significant two-way interaction,  $F(1, 583) = 6.19, p = .013, \eta_p^2 = .01$ . A simple effects  
217 test was conducted to analyze the interaction. No significant mean difference was found between  
218 LGBQAP ( $M = 11.7, SD = 4.9$ ) and heterosexual participants' ( $M = 11.1, SD = 4.2$ ) retrospective  
219 responses to the GHQ-12,  $t(583) = -0.97, p = .331, d = .14, 95\%CI: -1.8-0.6$ . However, during  
220 lockdown, LGBQAP participants ( $M = 19.6, SD = 6.9$ ) reported significantly higher GHQ-12  
221 scores, indicating poorer mental health when compared to heterosexuals ( $M = 16.4, SD = 7.2$ ),  
222  $t(583) = -3.06, p = .002, d = .45, 95\%CI: -5.2-1.1$ .

223 Thereafter, we considered the impact of the COVID-19 lockdown restrictions on PA.  
224 Prior to lockdown, participants estimated that they completed 33.7% ( $SD = 30.8$ ) of their  
225 exercise at home, 31.1% ( $SD = 31.8$ ) at a gym or health club, and 35.2% ( $SD = 26.8$ ) outdoors.  
226 During lockdown, home based ( $M = 56.8\%, SD = 31.7$ ), and outdoor exercise ( $M = 42.0\%, SD =$   
227  $31.4$ ) significantly increased,  $t(584) = -17.03, p < .001, d = 0.70, 95\%CI: -25.8-20.4$  and  $t(584)$

228 = -5.58,  $p < .001$ ,  $d = 0.23$ , 95%CI: -9.2--4.4, respectively. Gym or health club use significantly  
229 decreased to 1.3% ( $SD = 8.4\%$ ),  $t(584) = 22.72$ ,  $p < .001$ ,  $d = 1.25$ , 95%CI: 27.3--32.5.

230 We computed a mixed-model MANOVA to determine whether PA frequency (planned  
231 and unplanned) differed between LGBQAP and heterosexual participants. No Time  $\times$  Sexual  
232 Orientation interaction emerged, Wilks's  $\Lambda = 1.00$ ,  $F(2, 582) = 1.55$ ,  $p = .212$ ,  $\eta_p^2 = .00$ .  
233 Additionally, no significant mean differences were found in PA between LGBQAP and  
234 heterosexual participants, Wilks's  $\Lambda = 1.00$ ,  $F(2, 582) = 0.24$ ,  $p = .79$ ,  $\eta_p^2 = .00$ . Nonetheless, a  
235 significant main effect of time emerged, Wilks's  $\Lambda = .92$ ,  $F(2, 582) = 25.50$ ,  $p < .001$ ,  $\eta_p^2 = .08$ .  
236 Participants reported higher planned PA prior to lockdown ( $M = 3.8$ ,  $SD = 1.0$ ) compared to  
237 during ( $M = 3.5$ ,  $SD = 1.1$ ),  $F(1, 583) = 17.13$ ,  $p < .001$ ,  $d = 0.28$ , 95%CI: 0.16--0.46. Similarly,  
238 unplanned PA was significantly higher prior to lockdown ( $M = 2.4$ ,  $SD = 0.7$ ) compared to  
239 during ( $M = 2.1$ ,  $SD = 0.8$ ),  $F(1, 583) = 46.91$ ,  $p < .001$ ,  $d = 0.38$ , 95%CI: .28--.50.

240 We ran correlation analyses between mental health and PA in both groups of participants,  
241 both prior to and during lockdown. For LGBQAP individuals prior to lockdown, no significant  
242 linear relationship was found between mental health and planned PA ( $r = .00$ ,  $p = .984$ ), but a  
243 marginally significant negative relationship was found between mental health and unplanned PA  
244 ( $r = -.28$ ,  $p = .046$ ). As unplanned PA increased, GHQ-12 scores decreased (i.e., mental health  
245 was improved). This pattern of relationships remained consistent during lockdown ( $r = -.13$ ,  $p =$   
246  $.377$  and  $r = -.36$ ,  $p = .008$ , respectively). For heterosexual participants prior to lockdown, a  
247 weak but significant relationship was found between mental health and planned PA ( $r = -.14$ ,  $p =$   
248  $.002$ ), but there was no significant relationship with unplanned PA ( $r = -.08$ ,  $p = .070$ ). During  
249 lockdown, mental health exhibited a significant negative correlation with both planned ( $r = -.22$ ,  
250  $p < .001$ ) and unplanned PA ( $r = -.22$ ,  $p < .001$ ) in heterosexual participants.

251 **Discussion**

252 The sudden onset of the COVID-19 pandemic and the restrictions set in place to combat  
253 the virus have disrupted daily activities, leading to changes in mental and physical wellbeing.  
254 While the global pandemic has disaffected all segments of society, marginalized groups have  
255 experienced a substantially greater burden. The purpose of the present study was to examine the  
256 impact of the COVID-19 lockdown on mental health and PA among individuals who identify as  
257 lesbian, bisexual, gay, queer, and other diverse sexual orientations compared to those who  
258 identify as heterosexual.

259 To address our first hypothesis ( $H_1$ ), we found that while all participants reported a  
260 decrease in mental health during lockdown, this drop was significantly larger for LGBQAP  
261 participants. This finding is consistent with how other marginalized groups have been afflicted  
262 by the COVID-19 pandemic. For example, researchers have reported mental health disparities as  
263 a consequence of race and ethnicity (McKnight et al., 2021) as well as gender (Gausman &  
264 Langer, 2020). Thus far, sexual orientation has been largely ignored. The present findings begin  
265 to fill a gap in the literature that will serve as a bridge toward appropriate mental health support  
266 for LGBQAP persons (Gorczynisk & Fasoli, 2020). As PA has a potentially protective effect in  
267 regard to decrements in mental health, we explored how both groups engaged in PA prior to and  
268 during lockdown, as well the relationships between mental health and PA.

269 Prior to the COVID-19 lockdown, participants in the current study reported a fair level of  
270 PA. More specifically, the BLPAQ scores illustrate that, relative to the normative values for  
271 planned and unplanned PA reported by Karageorghis et al. (2005), both groups of present  
272 participants exceeded these pre-lockdown. Moreover, PA levels on the whole were indicative of  
273 a frequency, duration, and intensity of weekly activity that is a small degree below what is

274 recommended by the ACSM (2018). The during lockdown scores show a decrement in PA that is  
275 of an equal measure in the planned and unplanned dimensions. The drop shifts the weekly  
276 frequency, duration, and intensity of activity to a moderate degree below ACMS  
277 recommendations.

278         The levels of PA engagement between LGBQAP and heterosexual participants were  
279 similar, consistent with previous research that has demonstrated similar PA participation rates  
280 between LGB and heterosexual individuals (Boehmer et al., 2012; VanKim et al., 2017). We  
281 observed a small but significant decrease in both planned and unplanned PA across the study  
282 sample during the initial COVID-19 lockdown, which is consistent with other researchers (e.g.,  
283 Cheval et al., 2020; Dunton et al., 2020; Tison et al., 2020) who reported decreases in PA as a  
284 result of lockdown restrictions, but did not distinguish between planned and unplanned PA. The  
285 magnitude of the drop in planned and unplanned PA was broadly analogous to that reported in  
286 other Western nations over the same time period (e.g., France; Guérin et al., 2021). No  
287 differences in PA habits, planned or unplanned, were observed between LGBQAP and  
288 heterosexual individuals during lockdown. This finding is contrary to our expectation that  
289 COVID-19 restrictions would have a more negative impact on LGBQAP participants ( $H_2$ ). It  
290 also contrasts with initial findings pertaining to other marginalized groups; for example, racial  
291 differences have been reported during but not prior to lockdown for exercise frequency (Bann et  
292 al., 2020). We did find that PA positively contributed to mental health in both groups. During  
293 lockdown, both planned and unplanned PA were weakly, but significantly, associated with  
294 mental health in heterosexual respondents. For LGBQAP participants, a moderate association  
295 was found between mental health and the frequency of unplanned PA.

296 While only minimal differences were found in frequency of PA, participant responses  
297 reflected a notable shift in *where* PA took place. Certainly, access to gyms and other organized  
298 PA venues was limited or entirely unavailable given the imposition of social distancing and  
299 quarantine restrictions. Accordingly, it is unsurprising that the percentage of time spent  
300 exercising in a gym or health club exhibited a dramatic decline (from 31.1% to 1.3%). This was  
301 offset somewhat by an increase in time spent exercising at home and in outdoor spaces during  
302 lockdown. This change in exercise environment would have forced many individuals into  
303 modifying current exercise habits and/or adopting new PA behaviors. Albeit these changes did  
304 not result in a difference in PA between groups based on sexual orientation, it is possible that the  
305 changes in the social facets of PA affected these groups differentially. For example, given that  
306 individuals who identify as LGBTQAP would already have been more likely to avoid traditional  
307 gym settings (Herrick & Duncan, 2018), unplanned PA could be more conducive to LGBTQAP  
308 participation, thus resulting in a stronger link with mental health than planned PA.

309 Social restrictions imposed in March 2020 across the United States to “flatten the curve”  
310 such as social distancing, self-isolation, and quarantine had the likely consequence of detaching  
311 many LGBTQAP individuals from their PA and social networks. While Herrick and Duncan  
312 (2018) noted that sport and PA are generally in the heterosexual domain, increased opportunities  
313 to participate in queer-inclusive spaces exist that encourage PA participation in LGBTQ+  
314 communities. Inclusive spaces for sport and PA offer a sense of community and belonging  
315 (Calwood & Smith, 2019), promote collective self-efficacy, and foster a sense of self-  
316 empowerment (Krane et al., 2005). Inclusive competitive recreational teams (e.g., gay male  
317 soccer team; Willis, 2015) or leagues also provide a safe space for individuals to participate in  
318 sport and socialize with other LGBTQ+ individuals or allies. During lockdown, as most gyms

319 closed and athletic teams were unable to compete, individuals shifted their PA primarily to the  
320 home and outdoors, likely reducing more social forms of PA.

321 In addition to PA restrictions, individuals were no longer able to access some LGBTQ+-  
322 inclusive spaces like gay bars or teen and community centers that can foster social bonds  
323 (Anderson & Knee, 2020). Similarly, COVID-19 restrictions limited access to large community  
324 events like Pride Parades, commonly held in the month of June (Haynes, 2020). Many LGBTQ+  
325 adolescents may have been forced to spend more time in home environments where they are not  
326 accepted or supported, or where they may have not disclosed their sexual orientation or gender  
327 identity (Salerno et al., 2020). Older members of LGBTQ+ communities are twice as likely to  
328 live alone when compared with their heterosexual counterparts, and 3–4 times less likely to have  
329 children, making them more vulnerable to social isolation and its potentially deleterious  
330 consequences (Yang et al., 2018). In the current study, a greater percentage of LGBQAP  
331 participants identified as single (63.5% compared to 46.2% of heterosexual participants) and  
332 fewer indicated that had children living at home with them (12% compared to 30% of  
333 heterosexual participants). Thus, it is not surprising that the imposed restrictions had a marked  
334 effect on the mental health of LGBQAP participants.

### 335 **Implications of the Present Findings**

336 Lessons learned from the present study can be applied to benefit LGBTQ+ communities  
337 for future disturbances to social norms of this nature. Health, wellness, and sport professionals  
338 who work with LGBQAP clients/patients/athletes should take note of the differential impact on  
339 mental health and adjust their level of support as necessary during such times of social isolation.  
340 Additional digital check-ins or increased scheduling of virtual or socially-distanced gatherings  
341 may be warranted to maintain a sense of social connectedness (e.g., Perone et al., 2020).

342 Practitioners might also discuss how maintaining PA habits at home or outdoors can support  
343 mental health. Individuals and companies that provide digital exercise instruction might consider  
344 engaging the LGBQAP population, offering inclusive programming that is directly targeted at  
345 them. Finally, exercise/sport professionals should be prepared to refer any individual who is  
346 experiencing mental health challenges to an appropriate health professional.

### 347 **Suggestions for Future Research**

348 Future researchers might address the long-term effects of lockdown on LGBTQ+  
349 communities. Negative impacts on mental health have likely continued past the end of the first  
350 lockdown (approximately May 25 2020, varying by state), as many states continue to encourage  
351 or mandate social-distancing measures that inhibit social gatherings, until COVID-19 vaccines  
352 are widely administered. Surveillance and interventions aimed at maintaining and improving  
353 mental health are particularly important in this subgroup of the population. Researchers should  
354 also continue to examine LGBQAP persons' access to mental healthcare against a backdrop of a  
355 highly increased need among the general population.

### 356 **Limitations of the Present Study**

357 We acknowledge that some aspects of the research design limit generalizability of our  
358 findings. Retrospective assessment of mental health and PA in relation to the pre-lockdown  
359 period could have introduced recall errors and biases, potentially represented by greater  
360 variability in those assessments. Caution should be exercised when considering the retrospective  
361 analysis. In addition, the disproportionate sample sizes of heterosexual and LGBQAP adults may  
362 have influenced the analysis and outcomes of this study. For example, while the LGBQAP  
363 participant representation in this study is similar to national estimates and reflects other work  
364 examining PA in this population (e.g., Boehmer et al., 2012; VanKim et al., 2012), we were

365 unable to control for other factors associated with PA participation, such as gender and education  
366 level, due to the uneven subsamples within the overall sample. We acknowledge that the  
367 relationship between mental health and PA is highly complex and nuanced, but offer the present  
368 findings as a point of origin in furthering understanding of the impact of the COVID-19  
369 pandemic.

370 In order to allow for comparisons, we condensed individuals who identify as LGBQAP  
371 into a single group. In doing so, we risk homogenizing a complex community. Further, our data  
372 do not represent transgender adults or other diverse gender identities. As transgender individuals  
373 tend to report lower levels of PA (Jones et al., 2017) and disproportionality greater negative  
374 mental health outcomes (James et al., 2016), it is critical that gender identity also be considered  
375 when considering the impact of lockdown on mental and physical health in marginalized groups.  
376 Moreover, as Herrick and Duncan (2018) noted, intersectionality should be accounted for when  
377 considering PA participation among the LGBTQ+ population. Our sample was primarily white  
378 and of a middle-class background. The experiences of LGBTQ+ individuals who also identify as  
379 Black, Indigenous, and people of color (BIPOC) are therefore underrepresented. We recognize  
380 that the study findings and associated limitations are specific to the COVID-19 context.  
381 However, the limitations acknowledged should be addressed in future mental and physical  
382 wellbeing research involving marginalized groups as they appear to be a recurring issue within  
383 the extant literature (Gorczynski & Brittain, 2016).

### 384 **Conclusions**

385 The present findings add to a rapidly growing literature that serves to increase  
386 understanding of the wide-ranging psychological and physical impact of COVID-19. While the  
387 drastic social restrictions of COVID-19 touched all parts of society, the isolating impact of such

388 measures will vary for different groups within society. Our findings indicate that the COVID-19  
389 lockdown had a more negative impact on LGBTQAP individuals. This is particularly concerning  
390 given that such individuals are already more likely to struggle with mental health concerns and  
391 have poorer access to healthcare.

392 **References**

- 393 American College of Sports Medicine. (2018). *ACSM's Guidelines for exercise testing and*  
394 *prescription* (11th ed.). Wolters Kluwer.
- 395 Anderson, A. R., & Knee, E. (2020). Queer isolation of queering isolation? Reflecting upon the  
396 ramifications of COVID-19 on the future of queer leisure spaces. *Leisure Sciences*, 43(1–  
397 2), 118-124. <https://doi.org/10.1080/01490400.2020.1773992>
- 398 Author Citation. (in press).
- 399 Bann, D., Villadsen, A., Maddock, J., Hughes, A., Ploubidis, G., Silverwood, R., & Patalay, P.  
400 (2020). Changes in the behavioural determinants of health during the coronavirus  
401 (COVID-19) pandemic: Gender, socioeconomic and ethnic inequalities in 5 British  
402 cohort studies. *Journal of Epidemiological Community Health*, 1–7. Advanced online  
403 publication. <https://doi.org/10.1136/jech-2020-215664>
- 404 Boehmer, U., Miao, X., Linkletter, C., & Clark, M. A. (2012). Adult health behaviors over the  
405 life course by sexual orientation. *American Journal of Public Health*, 102(2), 292–300.  
406 <https://doi.org/10.2105/AJPH.2011.300334>
- 407 Brand, R., Timme, S., & Nosrat, S. (2020). When pandemic hits: Exercise frequency and  
408 subjective well-being during COVID-19 pandemic. *Frontiers in Psychology*, 11, 2391.  
409 <https://doi.org/10.3389/fpsyg.2020.570567>
- 410 Calwood, D., & Smith, M. (2019). Out on the pitch: Sport and mental health in LGBT people.  
411 *The Lancet*, 394, 1704–1705.
- 412 Cheval, B., Sivaramakrishnan, H., Maltagliati, S., Fessler, L., Forestier, C., Sarrazin, P.,  
413 Orsholits, D., Chalabaev, A., Sander, D., Ntoumanis, N., & Boisgontier, M. P. (2020).  
414 Relationships between changes in self-reported physical activity, sedentary behaviour and

- 415 health during the coronavirus (COVID-19) pandemic in France and Switzerland. *Journal*  
416 *of Sports Sciences*, 39(6), 699–704. <https://doi.org/10.1080/02640414.2020.1841396>
- 417 Dunton, G. F., Wang, S. D., Do, B., & Courtney, J. (2020). Early effects of the COVID-19  
418 pandemic on physical activity locations and behaviors in adults living in the United  
419 States. *Preventive Medicine Reports*, 20, Article 101241.  
420 <https://doi.org/10.1016/j.pmedr.2020.101241>
- 421 Faulkner, J., O'Brien, W. J., McGrane, B., Wadsworth, D., Batten, J., Askew, C. D., Badenhorst,  
422 C., Byrd, E., Coulter, M., Draper, N., Elliot, C., Fryer, S., Hamlin, M. J., Jakeman, J.,  
423 Mackintosh, K. A., McNarry, M. A., Mitchelmore, A., Murphy, J., Ryan-Stewart, H.,  
424 Saynor, Z., ...Lambrick, D. (2020). Physical activity, mental health and well-being of  
425 adults during initial COVID-19 containment strategies: A multi-country cross-sectional  
426 analysis. *Journal of Science and Medicine in Sport*, 24(4), 320–326. Advance online  
427 publication. <https://doi.org/10.1016/j.jsams.2020.11.016>
- 428 Fitbit Inc. (2020, March 23). The impact of coronavirus on global activity. Fitbit Blog.  
429 <https://blog.fitbit.com/covid-19-global-activity/>
- 430 Gausman, J., & Langer, A. (2020). Sex and gender disparities in the COVID-19 pandemic.  
431 *Women's Health*, 29(4), 465–466. <http://doi.org/10.1089/jwh.2020.8472>.
- 432 Gauthier, G. R., Smith, J. A., García, C., Garcia, M. A., & Thomas, P. A. (2020). Exacerbating  
433 inequalities: Social networks, racial/ethnic disparities, and the  
434 COVID-19 pandemic. *The Journals of Gerontology: Series B*, 76(3), e88–e92.  
435 <http://doi.org/10.1093/geronb/gbaa117>
- 436 Goldberg, D. P., & Williams, P. (1988). *A user's guide to the General Health Questionnaire*.  
437 NFER-Nelson.

- 438 Gorczynski, P. F., & Brittain, D. R. (2016). Call to action: The need for an LGBT-focused  
439 physical activity research strategy. *American Journal of Preventive Medicine, 51*,  
440 527–530. <https://doi.org/10.1016/j.amepre.2016.03.022>
- 441 Gorczynski, P., & Fasoli, F. (2020). LGBTQ+ focused mental health research strategy in  
442 response to COVID-19. *Lancet Psychiatry, 7*, Article e56.  
443 [https://doi.org/10.1016/S2215-03666\(20\)30300-X](https://doi.org/10.1016/S2215-03666(20)30300-X)
- 444 Guérin, S. M. R., Delevoeye-Turrell, Y. N., Bird, J. M., & Karageorghis, C. I. (2021).  
445 #RestezChezVous: The importance of active lifestyles and living environments to prevent  
446 sedentary and mental health disparities during COVID-19 lockdown. *Canadian*  
447 *Psychology, 62*(1), 32–43.
- 448 Hardy, G. E., Shapiro, D. A., Haynes, C. E., & Rick, J. E. (1999). Validation of the General  
449 Health Questionnaire-12: Using a sample of employees from England’s health care  
450 services. *Psychological Assessment, 11*(2), 159–165. [https://doi.org/10.1037/1040-](https://doi.org/10.1037/1040-3590.11.2.159)  
451 [3590.11.2.159](https://doi.org/10.1037/1040-3590.11.2.159)
- 452 Haynes, S. (2020, April 3). ‘There’s always a rainbow after the rain.’ Challenged by coronavirus,  
453 LGBTQ communities worldwide plan digital pride celebrations. *Time.com*.  
454 <https://time.com/5814554/coronavirus-lgbtq-community-pride/>
- 455 Herrick, S. S. C., & Duncan, L. R. (2018). A qualitative exploration of LGBTQ+ and  
456 intersecting identities within physical activity contexts. *Journal of Sport & Exercise*  
457 *Psychology, 40*, 325–335. <https://doi.org/doi10.1123/jsep.2018-0090>
- 458 Herrick, S. S. C., Rocchi, M. A., Sweet, S. N., & Duncan, L. R. (2021). Exploring proximal  
459 LGBT+ minority stressors within physical activity contexts from a self-determination

- 460 theory perspective. *Annals of Behavioral Medicine*. Advance online publication.  
461 <https://doi.org/10.1093/abm/kaab052>.
- 462 Holmes, E. A., O'Connor, R. C., Perry, V. H., Tracey, I., Wessely, S., Arseneault, L., Ballard,  
463 C., Christensen, H., Cohen Silver, R., Everall, I., Ford, T., John, A., Kabir, T., King, K.,  
464 Madan, I., Michie, S., Przybylski, A. K., Shafran, R., Sweeney, A., Worthman, C. M., ...  
465 & Bullmore, E. (2020). Multidisciplinary research priorities for the COVID-19  
466 pandemic: A call for action for mental health science. *The Lancet Psychiatry*, 7, 547–560.
- 467 Jacob, L., Tully, M. A., Barnett, Y., Lopez-Sanchez, G. F., Butler, L., Schuch, F., López-Bueno,  
468 R., McDermott, D., Firth, J., Grabovac, I., & Yakkundi, A., Armstrong, N., Young, T., &  
469 Smith, L. (2020). The relationship between physical activity and mental health in a  
470 sample of the UK public: A cross-sectional study during the implementation of COVID-  
471 19 social distancing measures. *Mental Health and Physical Activity*, 19, 100345.  
472 <https://doi.org/10.1016/j.mhpa.2020.100345>
- 473 James, S. E., Herman, J. L., Rankin, S., Keisling, M., Mottet, L., & Anafi, M. (2016). The report  
474 of the 2015 U.S. transgender survey. *National Center for Transgender Equality*.  
475 [https://transequality.org/sites/default/files/docs/usts/USTS-Full-Report-](https://transequality.org/sites/default/files/docs/usts/USTS-Full-Report-Dec17.pdf)  
476 [Dec17.pdf](https://transequality.org/sites/default/files/docs/usts/USTS-Full-Report-Dec17.pdf)
- 477 Jones, B. A., Haycraft, E., Bouman, W. P. & Arcelus, J. (2017). The levels and predictors of  
478 physical activity engagement within the treatment seeking transgender population: A  
479 matched control study. *Journal of Physical Activity and Health*, 15(2), 99–107.
- 480 Karageorghis, C. I., Vencato, M. M., Chatzisarantis, N. L. D., & Carron, A. V. (2005).  
481 Development and initial validation of the Brunel Lifestyle Physical Activity  
482 Questionnaire. *British Journal of Sports Medicine*, 39(5), 1–7.

- 483 Krane, V., Barber, H., & McClung, L. R. (2005). Social psychological benefits of Gay Games  
484 participation: A Social Identity Theory explanation. *Journal of Applied Sport*  
485 *Psychology, 14*(1), 27–42.
- 486 McKnight-Eily, L. R., Okoro, C. A., Strine, T. W., Verlenden, J., Hollis, N. H., Njai, R.,  
487 Mitchell, E. W., Board, A., Puddy, R., & Thomas, C. (2021). Racial and ethnic disparities  
488 in the prevalence of stress and worry, mental health conditions, and increased substance  
489 use among adults during the COVID-19 pandemic—United States, April and May 2020.  
490 *Morbidity and Mortality Weekly Report, 70*(5), 162–166.  
491 [https://www.cdc.gov/mmwr/volumes/70/wr/mm7005a3.htm#T1\\_down](https://www.cdc.gov/mmwr/volumes/70/wr/mm7005a3.htm#T1_down)
- 492 Loewenthal, K. M., & Lewis, C. A. (2020). *An introduction to psychological tests and scales*  
493 (3rd ed.). Routledge. <https://doi.org/10.4324/9781315561387>
- 494 Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual  
495 populations: Conceptual issues and research evidence. *Psychological Bulletin, 129*(5),  
496 674–697.
- 497 Meyer, J., McDowell, C., Lansing, J., Brower, C., Smith, L., Tully, M., & Herring, M. (2020).  
498 Changes in physical activity and sedentary behavior in response to COVID-19 and their  
499 associations with mental health in 3052 US adults. *International Journal of*  
500 *Environmental Research and Public Health, 17*, 6469.  
501 <https://doi.org/10.3390/ijerph17186469>
- 502 McDowell, C. P., Dishman, R. K., Gordon, B. R., & Herring, M. P. (2019). Physical activity and  
503 anxiety: A systematic review and meta-analysis of prospective cohort studies. *American*  
504 *Journal of Preventive Medicine, 57*(4), 545–556.  
505 <https://doi.org/10.1016/j.amepre.2019.50.012>

- 506 McGinty, E. E., Presskreischer, R., Han, H., & Barry, C. L. (2020). Psychological distress and  
507 loneliness reported by US adults in 2018 and April 2020. *JAMA*, 324(1), 93–  
508 94. <https://doi.org/10.1001/jama.2020.9740>
- 509 Mereish, E. H. & Poteat, P. (2015). Let's get physical: Sexual orientation disparities in physical  
510 activity, sports involvement, and obesity among a population-based sample of  
511 adolescents. *American Journal of Public Health*, 105(9), 1842–1848. <http://doi.org/233>  
512 [10.2105/AJPH.2015.302682](http://doi.org/10.2105/AJPH.2015.302682)
- 513 Nienhuis, C. P., & Lesser, I. A. (2020). The impact of COVID-19 on women's physical activity  
514 behavior and mental well-being. *International Journal of Environmental Research and*  
515 *Public Health*, 17(23), 9036. <https://doi.org/10.3390/ijerph17239036>
- 516 Perone, A. K., Ingersoll-Dayton, B., & Watkins-Dukhie, K. (2020). Social isolation loneliness  
517 among LGBT older adults: Lessons learned from a pilot friendly caller program. *Clinical*  
518 *Social Work Journal*, 48(1), 126–139. <https://doi.org/10.1007/s10615-019-00738-8>
- 519 Pfefferbaum, B., & North C. S. (2020). Mental health and the Covid-19 pandemic. *New England*  
520 *Journal of Medicine*, 1–3. <https://doi.org/10.1056/NEJMp2008017>
- 521 Rebar, A. L., Stanton, R., Geard, D., Short, C., Duncan, M. J., & Vandelanotte, C. (2015). A  
522 meta-meta-analysis of the effect of physical activity on depression and anxiety in non-  
523 clinical adult populations. *Health Psychology Review*, 9(3), 366–378.  
524 <https://doi.org/10.1080/17437199.2015.1022901>
- 525 Salari, N., Hosseinian-Far, A., Jalali, R., Vaisi-Raygani, A., Rasoulpoor, S., Mohammadi, M.,  
526 Rasoulpoor, S., & Khaledi-Paveh, B. (2020). Prevalence of stress, anxiety, depression  
527 among the general population during the COVID-19 pandemic: A systematic review and

- 528 meta-analysis. *Globalization and Health*, 16(1), 1–11. [https://doi.org/10.1186/s12992-](https://doi.org/10.1186/s12992-020-00589-w)
- 529 [020-00589-w](https://doi.org/10.1186/s12992-020-00589-w)
- 530 Salerno, J. P., Williams, N. D., & Gattamorta, K. A. (2020). LGBTQ populations:  
531 Psychologically vulnerable communities in the COVID-19 pandemic. *Psychological*  
532 *Trauma: Theory, Research, Practice and Policy*, 12(S1), S239–S242.  
533 <https://doi.org/10.1037/tra0000837>
- 534 Sallis, R., Young, D. R., Tartof, S. Y., Sallis, J. F., Sall, J., Li, Q., Smith, G. N., & Cohen, D. A.  
535 (2021). Physical inactivity is associated with higher risk of severe COVID-19 outcomes:  
536 A study in 48 400 adult patients. *British Journal of Sports Medicine*, 55, 1099–1105.  
537 <https://doi.org/10.1136/bjsports-2021-104080>
- 538 Schuch, F. B., Vancampfort, D., Firth, J., Rosenbaum, S., Ward, P. B., Silva, E. S., Hallgren, M.,  
539 Ponce De Leon, A., Dunn, A. L., Deslandes, A. C., Fleck, M. P., Carvalho, A. F., &  
540 Stubbs, B. (2018). Physical activity and incident depression: A meta-analysis of  
541 prospective cohort studies. *American Journal of Psychiatry*, 175(7), 631–648.  
542 <https://doi.org/10.1176/appi.ajp.2018.17111194>
- 543 Shadmi, E., Chen, Y., Dourado, I., Faran-Perach, I., Furler, J., Hangoma, P., Hanvoravongchai,  
544 P., Obando, C., Petrosyan, V., Rao, K. D., Ruano, A. L., Shi, L., de Souza, L. E., Spitzer-  
545 Shohat, S., Sturgiss, E Suphanchaimat, R., Uribe, M. V., & Willems, S. (2020). Health  
546 equity and COVID-19: global perspectives. *International Journal for Equity in Health*,  
547 19(1), 104. <https://doi.org/10.1186/s12939-020-01218-z>
- 548 Tabachnick, B. G., & Fidell, L. S. (2019). *Using multivariate statistics* (7th ed.). Pearson.
- 549 Tison, G. H., Avram, R., Kuhar, P., Abreau, S., Marcus, G. M., Pletcher, M. J., & Olgin, J. E.  
550 (2020). Worldwide effect of COVID-19 on physical activity: A descriptive study. *Annals*

- 551           of *Internal Medicine*, 173(9), 767–770. <https://doi.org/10.7326.M20-2665>
- 552 VanKim, N. A., Austin, S. B., Jun, H-J. J., & Corliss, H. L. (2017). Physical activity and  
553           sedentary behaviors among lesbian, bisexual, and heterosexual women: Findings from the  
554           Nurses' Health Study II. *Journal of Women's Health*, 26(10), 1077–1085.  
555           <https://doi.org/10.1089.jwh.2017.6389>
- 556 Vencato, M. M., Karageorghis, C. I., Nevill, A. M., & Priest, D. L. (2017a). Test–retest  
557           reliability of the Brunel Lifestyle Physical Activity Questionnaire. *Psychology of Sport*  
558           *and Exercise*, 33, 24–30. <https://doi.org/j.psychsport.2017.07.003>
- 559 Vencato, M. M., Karageorghis, C. I., Priest, D. L., & Nevill, A. M. (2017b). Concurrent validity  
560           and cross-validation of the Brunel Lifestyle Physical Activity Questionnaire. *Journal of*  
561           *Science and Medicine in Sport*, 20(8), 766–770.  
562           <https://doi.org/101016/j.jsams.2016.12.077>
- 563 Willis, T. (2015). Kicking down barriers: Gay footballers, challenging stereotypes and changing  
564           attitudes in amateur league play. *Soccer & Society*, 16(2–3), 377–392.  
565           <https://dx.doi.org/10.1080/14660970.2014.961717>
- 566 World Health Organization (2020a). *Coronavirus disease (COVID-19) pandemic: WHO*  
567           *characterizes COVID-19 as a pandemic*. Geneva, Switzerland: Author.
- 568 World Health Organization. (2020b). *Mental health and psychosocial considerations during the*  
569           *COVID-19 Outbreak*. Author.
- 570 Yang, J., Chu, Y., & Salmon, M. A. (2018). Predicting perceived isolation among midlife and  
571           older LGBT adults: The role of welcoming aging service providers. *The Gerontologist*,  
572           58(5), 904–912. <https://doi.org/10.1093/geront/gnx092>

573 Table 1  
 574  
 575 *Sample Demographic and Anthropometric Data*  
 576

Variable	LGBQ ( <i>n</i> = 52)		Heterosexual ( <i>n</i> = 533)		Total ( <i>N</i> = 583)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age (years)	35.1	13.9	37.8	16.0	37.6	15.8
Height (in.)	65.5	3.2	66.3	3.9	66.2	3.9
Weight (lb)	167.3	42.1	166.9	38.7	167.0	39.0
BMI	27.1	6.0	26.5	5.6	26.5	5.6

  

	LGBQ ( <i>n</i> = 52)		Heterosexual ( <i>n</i> = 533)		Total ( <i>N</i> = 583)	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
<b>Sex</b>						
Male	5	10	125	24	130	22
Female	45	87	407	76	452	77
Other	1	2	1	< 1	2	< 1
Prefer not to say	1	2	0	0	1	< 1
<b>Race</b>						
American Indian/Alaska Native	1	< 1	0	0	1	< 1
Asian	29	5	29	5	30	5
Black or African American	3	6	29	5	32	6
White	42	81	434	81	476	81
Native Hawaiian or Other Pacific Islander	0	0	2	< 1	2	< 1
More than one race	3	6	27	5	30	5
Prefer not to say	1	2	1	< 1	2	< 1
Other	1	2	11	2	12	2
<b>Ethnicity</b>						
Hispanic or Latino	3	6	37	7	40	7
Not Hispanic or Latino	494	93	48	92	542	92
Did not respond	1	2	2	< 1	3	< 1