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DISCUSSION PAPER SERIES

IZA DP No. 14733

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ABSTRACT

Social Rejection, Family Acceptance, Economic Recession and Physical and Mental Health of Sexual Minorities*

Utilizing two panel datasets covering the periods 2013-2014 and 2018-2019, the study examines whether social rejection, family acceptance, and economic conditions bear an association with self-rated physical and mental health of sexual minorities. Social rejection bears a negative association with physical and mental health. Family acceptance shares a positive association with physical and mental health. Periods characterized by worse economic conditions (2013-2014 versus 2018-2019) correlate with a decline in sexual minorities' physical and mental health. It is found that women, trans people, people without higher education degrees, unemployed people, and relatively poor people, experience worse physical and mental health than the corresponding reference categories. The study indicates that sexual minorities who experienced societal rejections, such as unfair treatment in educational, workplace environments, and/or services (public/health) prompted deteriorated physical and mental health. Sexual minorities who experienced acceptance from their families over their sexual orientation status, experienced better physical and mental health. Moreover, during periods of increased aggregate unemployment, the physical and mental health status of sexual minorities was deteriorated. Antidiscrimination policies help reduce homophobic incidents and positively impact sexual/gender identity minorities' progression, self-esteem, income, and well-being. Public health services should ensure that policies are inclusive of the physical and mental health needs of sexual/gender identity minority groups. Addressing financial hardships for minority population groups should form part of the policymakers' agenda. This is among the first international studies to examine whether, during a period of economic recession, sexual minorities experience deteriorated physical and mental health.

JEL Classification: J70, I14, O52

Keywords: sexual orientation, health, mental health, minority stress, exclusion, family, economic recession, LGBT

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1. Introduction

Lesbian, gay, bisexual and trans (LGBT) people experience poor physical and psychological conditions relative to their heterosexual peers (Meads, 2020; Drydakis, 2020; Lick et al., 2013; Frost et al., 2011). The feature primarily refers to LGBT stigma, which can take several forms such as social rejection and exclusion, discrimination, and victimization (Hafeez et al., 2017; Goldbach and Holleran Steiker, 2011; Herek, 2007; Meyer, 2003; Link and Phelan, 2001). Minority stress resulting from stigma may prompt a range of feelings, from self-doubt and shame to self-hatred, which associate with risky health behaviors including substance use and unprotected sexual activity (Slater et al., 2017; King et al., 2008; Szymanski et al., 2008; Meyer, 2003; King et al., 2003). The European Union regards the reduction of stigma and the entailing health inequalities as a fundamental goal of public health and one of the foremost public health challenges facing its Member States (European Commission, 2017).

The concept of minority stress theory for sexual minorities has not yet undergone testing in Greece. Quantitative data and studies on sexual minorities' health-orientated conditions, characteristics, and inequalities from a socio-epidemiological perspective do not exist (Giannou and Ioakimidis, 2020; Economou, 2010). In Greece, studies on sexual minorities have a link to HIV epidemiology, indicating that the burden of this disease disproportionately affects gay men (Nikolopoulos et al., 2019; Paraskevis et al., 2011; Nikolopoulos et al., 2008). In a recent study, Halkitis et al. (2018) highlighted the lack of minority stress studies on sexual minorities and evaluated the importance of relevant research in Greece. An exemption is a qualitative study of Giannou and Ioakimidis (2020), who reported that sexual minorities and medical care professionals consider homophobia a profound factor of systematic exclusion and restriction from access to good-quality healthcare.

This study aims to fill the gap in the literature by empirically examining associations between social rejection and physical and mental health outcomes in Greece. In addition, the

present study examines associations between family acceptance and physical and mental health outcomes. Two longitudinal datasets cover the periods 2013-2014 and 2018-2019 to provide evaluations. The 36-Item Short Form Health Survey's General Heath dimension (Ware et al., 1994) and the European Quality of Life Visual Analogue Scale (EQ-VAS) (Priestman and Baum, 1976; Aitken, 1969) capture physical health outcomes. Mental health is captured through the 36-Item Short Form Health Survey's Mental Health dimension (Ware et al., 1994) and the Center for Epidemiological Studies Depression Scale (CESD-20) (Radloff, 1977).

In Greece, the empirical sexual minority literature remains limited. Few labor market studies indicate that gay/bisexual men and lesbian/bisexual women experience lower wages, higher unemployment, and more adverse experiences in the workplace than their heterosexual peers (Drydakis, 2021a; 2012a; 2011; 2009). These patterns might indicate that LGB people face higher financial hardships than heterosexuals (Drydakis, 2021a; 2019a). In addition, studies found that gay men and lesbian women experience lower job satisfaction than comparable heterosexual men and women (Drydakis, 2015a). Greek literature hypothesized that stigma and homophobia should bear an association with the unequal workplace experiences of LGB people (Drydakis, 2015a; 2012a; 2011; 2009).

A Eurobarometer survey in 2019 indicated that Greece is more homophobic than the EU28 average (Eurobarometer, 2019). For instance, 53 percent of Greeks consider sexual relationships between two persons of the same sex wrong. The EU28 average indicated 24 percent. Giannou and Ioakimidis (2020) evaluated that the Greek state has historically pursued an intolerant approach to sexual minority civil and human rights issues. Indeed, equality in civil partnerships only became law in 2015 after the country's conviction by the European Court of Human Rights (Giannou and Ioakimidis, 2020).

In Greece, harsh austerity programs implemented in 2010 to correct macroeconomic imbalances due to the financial crisis saw the GDP drop by 25 percent and the unemployment rate

rise by nearly 16 percentage points, while people facing poverty added up to 36 percent (Papanastasiou and Papatheodorou, 2018; Drydakis, 2015b). The austerity measures were accompanied by a rise of a far-right political party with its members' racist and homophobic rhetoric legitimized within the public sphere (Drydakis, 2021b; Eleftheriadis, 2017). Sexual orientation minorities returned to their position as the 'others' in a more violent and visible way than before (Drydakis, 2021b; Papanikolaou, 2018; Eleftheriadis, 2017). In Athens, the capital city, the period 2012 to 2014 saw an increase in verbal abuse and physical violence against sexual minorities (Sroiter, 2014). Organized street gangs were formed, and persecutions against sexual minorities took place (Sroiter, 2014). The phenomenon referred to as a 'barrage of homophobic violence', became associated with the adverse political and socio-economic effects of the economic recession in the region (Sroiter, 2014).

In Athens, Drydakis (2021b) found that in 2013-2014 and 2018-2019, gay men experienced increasingly biased employment treatments compared to 2006-2007. Drydakis (2021b) found that during the economic recession there was an increase in homophobic attitudes, as well as, annual aggregate unemployment enhanced discriminatory workplace experiences for gay men. Drydakis (2021b) evaluated that a gay rights backlash due to LGBT groups' attempt to advance their agenda, rising far-right rhetoric and prejudice associated with economic downturns experienced in Greece might have driven biases against gay men. Figure 1, presents Drydakis (2021b) framework. The Appendix provides a time trend of key macroeconomic variables alongside major events that relate to LGBTQ+ issues in Greece.

Given the presented conditions, it remains a surprise that no empirical work examined how societal rejections and increased homophobia during the economic recession correlated with sexual minorities' physical and mental health conditions.

The study contributes to the literature in different ways. This is the first Greek study to examine associations between social exclusion and self-rated physical/mental health outcomes. It

is also among the first international studies to simultaneously examine social exclusion and family acceptance and assess self-rated physical and mental health outcomes. Methodologically, by utilizing two measurements to assess physical health and two measurements to assess mental health, the study practices with a few instruments in an effort to determine the robustness of the empirical patterns.

In sexual minority health-oriented studies, it remains uncommonly utilized feature panel data. The design of this study allowed the capture of longitudinal information to offer more informed estimates. A unique characteristic of this study is the notable levels of unemployment between the two periods, namely, 2013-2014 and 2018-2019. This feature enables an examination of how periods characterized by increasing adverse economic conditions bear an association with sexual minorities' physical and mental health. In the international literature, no known socio-economic study examined whether economic conditions could deteriorate sexual minorities' physical/mental health outcomes. Policymakers and the interested public might demonstrate an interest in observing the patterns in a process to inform policies aiming to support sexual minorities and consider how societal rejection, supportive family environments, and economic fluctuations correlate with sexual minorities' physical and mental health outcomes.

2. Related literature

2.1 Minority stress framework

Stigma represents a process of devaluing minority groups and treating them less favorably than majorities (Goffman, 1963). Based on the minority stress model of stigma, a minority status bringing societal exclusions, hostility, and discrimination can serve as a chronic stressor increasing minority population groups' susceptibility to illness and disease (Meyer, 2003; 1995). Studies posit that health and mental disparities are related to minority stress processes that follow exposure to exclusions and discrimination (Meads, 2020; Institute of Medicine, 2011). If sexual minorities have

a stressful minority position, and if this stress relates to psychological distress, then they might be characterized by higher rates of distress than heterosexual people (Hafeez et al., 2017; Goldbach and Holleran Steiker, 2011; Institute of Medicine, 2011; Meyer, 2003). For sexual minorities, prejudice and discrimination over time bear a relation to worse physical health and everyday stress (Frost et al., 2015).

Minority stress refers to the multiple social stressors resulting from stigmatized social status (Rendina et al., 2017; Pantalone et al., 2010; Huebner and Davis, 2007). Stigma-related life events resulting from a minority sexual orientation can include distal stressors such as experiencing rejection from family and friends, unfair treatment in educational and workplace environments, job losses, negative treatment in social situations, poor services, and harassment (Frost, 2011). These demonstrations are inseparable from one another and interrelated manifestations of stigma (Frost, 2011).

The minority stress model brings together stress theory and the concept of stigma to explain sexual minorities' health and mental health patterns (Meyer, 2003). Stress theory emphasizes external events as stressors, with minority stress expanding this view to include proximal attitudes against sexual minorities (Meyer, 2003). If sexual minorities feel undervalued by their family and society, they may fail to value themselves or adopt good health behaviors (Meyer, 2003). For sexual orientation minorities, the application of the negative social meanings of stigma to their self-concept is demonstrated through internalized stigma (Frost, 2011; Frost and Meyer, 2011; Williamson, 2000). Given that sexual minorities live within societies shaped by social stigma, the socially generated negative meanings surrounding a minority sexual orientation identity can be internalized and attached to the self (Frost, 2011). Hostility to sexual minorities could negatively shape their self-perception and create weak self-esteem, and the internalization of prejudice could foster psychological distress (Meyer and Dean, 1998; Shidlo, 1994).

People perceive stressors as either threats or challenges (Lazarus and Folkman, 1984). This attribution of meaning to the stressor will indicate how the stressor affects individuals' experience and coping strategies (Frost, 2011). Repetitive stigma-related stressful life events can result in chronic stigma-related stress (Frost, 2011). However, in those cases where sexual minorities can cope with their experiences of stigma-related stress, the negative effects of stigma can prove diminishing or neutralizing (Frost, 2011). If sexual minorities do not internalize the stigma as a fault of themselves but attribute the stigma to a fault of society, then they might find the ability to engage in meaning-making processes resulting in reduced stigma in their lives (Frost, 2011). Occasionally, sexual minorities can decide to conceal their stigmatized status (Frost, 2011). Studies found that, on the one hand, concealing one's sexual orientation from others can create protection from societal biases. On the other hand, concealment can prove stressful because it might generate burdens resulting from the fear of discovery and living a dual life (Frost, 2011; Herek and Berrill, 1992).

Deviations from expectations and homophobia regularly lead parents to show less support to their children or even reject them (Ryan et al., 2009). Sexual minority youth report lower levels of parental closeness and elevated instances of parental abuse and homelessness relative to heterosexual peers (Pearson and Wilkinson, 2013; Waller and Sanchez, 2011). Furthermore, associations exist between parental rejection during adolescence and sexual minority adults' internalized stigma, adverse mental health, suicide attempts, use of drugs, and sexual health risks (Hall, 2018; Katz-Wise et al., 2016; Bregman et al., 2013; D'Augelli, 2010; Ryan et al., 2009). In addition, low family support consistently comprises a risk factor for bullying against sexual minorities (Perren and Hornung, 2005).

Sexual minority children who receive family support can approach stressful situations in an adaptive manner, enabling them to develop and implement coping strategies to reduce stigma and stressors (Rosario, 2015). Family acceptance and support in sexual minority adolescents

prompts lower depression, substance use, and suicidal ideation and promotes a greater level of self-esteem and health (Hall, 2018; Katz-Wise et al., 2016; Ryan et al., 2010). Moreover, sexual minorities can rely on minority communities to find supportive environments (Frost, 2011; Frable et al., 1998). Positive associations exist between connectedness to minority communities and general well-being and mental health (Frost and Meyer, 2011). Social support models found that support can bring positive mental health outcomes and enhance self-worth (Cohen, 2004). Support also positively correlates with well-being and bears a negative correlation with depression incidents (Rueger et al., 2017).

2.2 Minority stress and epidemiological patterns

Sexual minority youth experience higher levels of peer victimization, isolation, rejection, sexual abuse, and parental physical abuse compared to the general population (Hafeez et al., 2017; Friedman et al., 2011). Sexual minority youth face higher risks of anxiety, depression, emotional distress, interpersonal problems, suicide, and suicidal ideation relative to their heterosexual peers (Hafeez et al., 2017; Woodford et al., 2012; Marshal et al., 2008). Additionally, minority youth are more likely to participate in high-risk sexual behaviors at an earlier age than their heterosexual counterparts (Friedman et al., 2011; Corliss et al., 2011). Sexual minority youth demonstrate a greater likelihood of substance use, including tobacco, alcohol, and drugs (Goldbach et al., 2014; Marshal, 2008).

For sexual minority adults, stigma-related stress results in poorer mental health across a variety of outcomes such as mental health disorders, suicide, and subthreshold symptoms (Meads, 2020; Hafeez et al., 2017; Frost, 2011; Frost and Meyer, 2011; Meads et al., 2009; King et al., 2008). Moreover, internalized stigma contributes to depression, anxiety, and hopelessness (Herek, 2007). According to research, more sexual minorities report issues related to arthritis, spinal problems and chronic fatigue syndrome, allergies, gastrointestinal problems, musculoskeletal

problems, osteoarthritis, and disabilities compared to heterosexual people (ONS, 2014; Lick et al., 2013; Goldbach and Holleran Steiker, 2011). In addition, sexual minorities report taking part in less physical activity compared to heterosexuals (National LGBT Partnership 2016).

Gay men face increased risks of cardiovascular disease, chronic disease, namely, high blood pressure, more frequent reports of pain and various cancers including prostate, testicular, anal, and colon, and have lower cancer survival rates relative to heterosexuals (Meads, 2020; Hafeez et al., 2017). Gay and bisexual men experience higher rates of diabetes mellitus compared to heterosexual men (Beach, 2018). Gay and bisexual men also encounter higher rates of sexually transmitted diseases, including a high prevalence of HIV/AIDS, compared to heterosexual men (Meads, 2020; Aghaizu, 2016). Additionally, lesbians experience a greater risk of cardiovascular disease, asthma, and a higher mortality rate from breast cancer than heterosexual women (Meads et al., 2018; Cochran and Mays, 2012). Studies also revealed that lesbians experience higher urinary tract infections, Hepatitis B and C, cardiovascular disease, increased risk of obesity, polycystic ovaries, and mortality rates compared to heterosexual women (Semlyen et al., 2019; Meads et al., 2018; Lick et al., 2013).

Sexual minorities may engage in passive and/or avoidant coping strategies, such as substance use, including smoking, drinking, unhealthy eating, and drug consumption, to buffer the negative effects of stigma-related stress on mental health. Moreover, in practice, their mental health and/or health deteriorates (Slater et al., 2017; Goldbach et al., 2014; Frost, 2011; Jackson et al., 2010; Ramirez-Valles et al., 2010; Bruce et al., 2008; Meyer 2003; Pohorecky, 1991; Lazarus and Folkman, 1984). Substance use can decrease anxiety, which would prove attractive for anxious individuals (Chutuape and de Wit, 1995). The proportions who smoke and consume alcohol rank higher among both younger and adult sexual minorities compared with heterosexuals (ONS, 2014). Studies also found a positive association between stigma, substance use, and sexual health

risk behaviors (Ramirez-Valles et al., 2010; Borrell et al., 2010; Todorova, et al., 2010; Bruce et al., 2008).

Collectively, the presented findings reveal notable physical health problems among sexual orientation minorities (Meads, 2020; Lick et al., 2013). Sexual minorities' deteriorated health potentially bears an association with stigmatizing, hostile, and uninclusive social environments that boost substance rates, risky sexual behaviors, and high prevalence of HIV/AIDS (among gay men) (Meads, 2020; Semlyen et al., 2019; Meads et al., 2018; Hafeez et al., 2017; Lick et al., 2013; Woodford et al., 2012). Moreover, due to stigma, societal exclusions, higher rates of unemployment and poverty, financial hardships, and the inexistence of health insurance could negatively impact access to and quality of medical care, cause delays in seeking medical treatment and reduce budgets for healthy living (Fredriksen-Goldsen et al., 2012; Goldbach and Holleran Steiker, 2011; Cochran and Mays, 2012; Makadon et al., 2006). Furthermore, lack of healthcare providers' awareness and sensitivity of LGBT needs can act as determinants of health inequalities against sexual minorities (Meads, 2020; Meads et al., 2018).

In relation to adverse mental health, the aforementioned socio-cultural and economic determinants of poor health potentially determine distress (Pesola et al., 2014; Cochran and Mays, 2012). Mental and physical health share an intricate relationship with one another (Salovey et al., 2000). Psychological stress correlates with chronic disease, acute health problems, and dysregulated immune functioning (Meads, 2020; Miller and Chen, 2010; Pascoe and Smart-Richman, 2009; Cohen et al., 2007; Cochran and Mays, 2012; McEwen, 2006; Segerstrom and Miller, 2004). Dimensions associated with demographic differences shape sexual minorities' physical and mental health (Goldbach and Holleran Steiker, 2011). Studies found that living in rural areas, being a refugee, being younger or older, and living with a disability status compounded sexual minorities' physical and mental health inequalities (Goldbach and Holleran Steiker, 2011).

This study, given the presented theoretical and empirical patterns, hypothesizes that social exclusion has an association with deteriorated physical and mental health for sexual minorities (Meads, 2020; Hafeez et al., 2017; Frost et al., 2015; Goldbach and Holleran Steiker, 2011; Meyer, 2003). On the other hand, the study hypothesizes that family acceptance has an association with better physical and mental health for sexual minorities (Hall, 2018; Rueger et al., 2017; Katz-Wise et al., 2016; Rosario, 2015; Perren and Hornung, 2005; D'Augelli, 2010; Ryan et al., 2009; Cohen, 2004; Meyer, 2003).

2.3 Economic recession, minority stress, and epidemiological patterns

Global patterns indicate that economic recessions are associated with adverse physical and mental health, especially for working-age, unemployed, and low-income people (Drydakis, 2016a; Ruhm, 2015). During economic recessions, income loss can decrease investments in health-enhancing goods and services, and austerity measures, such as budget cuts to social welfare and supporting health/mental health services, can negatively affect vulnerable population groups and long-term unemployed people's well-being (Drydakis, 2016a; 2015b; Ruhm, 2015). In addition, studies found that substance use typically increases during unemployment and after income loss (Bruguera et al., 2018; Colell et al., 2015; Dom et al., 2016; Bosque-Prous et al., 2015; Gallus et al., 2015). This behavior represents a method of coping with the stress that comes with losing a social role (Drydakis, 2016a). Substance use during an economic recession can put individuals at a greater risk of long-term unemployment, deteriorating further their economic condition and well-being (Bruguera et al., 2018; Colell et al., 2015).

Empirical studies found that during recessions, the economic condition of disadvantaged population groups suffers in comparison to majorities' economic status (Johnston and Lordan, 2016; Biddle and Hamermesh, 2013; Taylor et al., 2011). During periods of financial stability, sexual minorities face the risk of experiencing unique challenges such as higher unemployment,

poverty, and underinvestment in healthcare (Drydakis and Zimmermann, 2020; OECD, 2019; Drydakis, 2019a). Such findings indicate that the chronic experience of homophobia, in conjunction with the impact of austerity measures, could pose a direct threat to sexual minorities' dignity, health, and well-being (OECD, 2019; Drydakis, 2019a; Giannou and Ioakimidis, 2020; Halkitis et al., 2018).

Studies found that economic recessions trigger uncertainty which can, in turn, kindle animosity (Baker et al., 2016; Bianchi, 2016). During recessions, individuals tend to gravitate toward extremist political parties that provide prescriptions for behavior and mitigate uncertainty (Doty et al., 1991). A decline in resources creates antagonism toward out-group members and intensifies intergroup competition (Taylor et al., 1978; LeVine and Campbell, 1972). Research suggests that increasing unemployment can induce people without discriminatory attitudes to aggressively discriminate (Smith, 2012). During the Great Recession, empirical studies evaluated that racial hostility increased when majority population groups experienced a higher unemployment rate (Vargas et al., 2018; Bianci et al., 2018). Increased discriminatory attitudes during periods of economic recessions potentially create psychosocial burdens to minority population groups that have the potential to undermine their health and well-being (Giannou and Ioakimidis, 2020; Halkitis et al., 2018).

This study hypothesizes that during periods of economic recession, sexual orientation minorities might experience poorer physical and mental health due to increased financial hardships, reduction in health budgets, and/or increased counter-cyclical hostility and homophobia (Giannou and Ioakimidis, 2020; Vargas et al., 2018; Halkitis et al., 2018; Bianci et al., 2018; Baker et al., 2016; Johnston and Lordan, 2016; Biddle and Hamermesh, 2013; Bianchi, 2016; Drydakis, 2016a; 2015b).

Figure 2, presents the conceptual model of this study.

3. Data gathering, variables, and estimation strategy

3.1 Data gathering

The sample of the study comprises two independent panel datasets, in which people participating in LGBT events in Athens in 2013 and 2018 received follow-up information. In 2013, the research team approached LGBT unions and NGOs working on sexual orientation minorities' rights to gather information on the dates of public gatherings during the preparation of the LGBT-pride, an event taking place in Athens every June. The pride preparation and pride week attract thousands of people. During the preparation, a variety of events take place, such as round-table talks and workshops, lectures, film screenings, and artistic and cultural exhibitions. The occasions provide a unique opportunity for researchers to undertake face-to-face collaborations with a large number of sexual orientation minority individuals, enabling them to recruit people for surveys, conduct interviews, provide questionnaires, and collect valuable data (Sidiropoulou et al., 2020; Drydakis, 2019b).

Between April to June 2013, the research team attended the aforementioned events and distributed participation forms. The organizers of the events facilitated the process and allowed the distribution of the participation forms. In each event, the researchers informed the public that a university research team was conducting a project and introduced its aims. The researchers stated that the study aimed to research health-oriented patterns and outcomes for non-heterosexual people. The team invited non-heterosexual people to participate in the survey. The participation form read, '*You are invited to participate in the current university survey if you are self-identified as non-heterosexual, that is, you are self-identified as a gay, lesbian, bisexual, queer, etc. This survey aims to capture health-oriented behaviors and patterns for non-heterosexual people*.'

The participation forms provided information on the research team, as well as the project's aim to collect longitudinal information on non-heterosexual people's demographic characteristics

and habits, societal approval, and health-oriented behaviors and outcomes. The participation forms asked potential participants to provide an email address to allow them to receive an e-questionnaire for completion. The participation form mentioned that those who complete the survey would receive an invite in 2014 to take part in a follow-up study. The first data gathering took place between April and August 2013. An e-questionnaire was forwarded to the participants' provided email address, as were two reminder emails. The follow-up data gathering took place in 2014 between April and August. Those who had provided information in the first wave received another invitation. Similar to the first data gathering, participants received two reminder emails to consider the follow-up study. The consensus form highlighted that the email address of the participants would form part of follow-up surveys. Each correspondence provided participants with information on raising concerns, asking for clarifications, and/or making complaints. However, no participant submitted a complaint.

Between April and June 2018, a new recruitment process took place by utilizing the same research protocol as in 2013-2014. The research team attended LGBT events in Athens before and during the pride week in 2018 and distributed and collected participation forms. Participants received e-questionnaires between April and June 2018. A follow-up data took place between April and June 2019.

3.2 Variables

Table 1 presents the basic demographic characteristics as included in the questionnaire. To measure general physical health patterns, two scales were utilized: the 36-Item Short Form Health Survey's General Health dimension (Ware et al., 1994), and the European Quality of Life Visual Analogue Scale (EQ-VAS) (Priestman and Baum, 1976; Aitken, 1969).

The SF-36 General Health dimension is a component of the 36-Item Short Form Health Survey, which represents the most widely used measure of health-related quality of life in

population-based studies (Ware et al., 1994; Ware, 2000). The SF-36 General Heath dimension assesses perceived physical health status through five items, such as whether people believe they are 'in good health, get sick a little easier than other people, and expect their health to get worse' (Garratt et al., 2002; Ware, 2000). The SF-36 General Health dimension was standardized to a T-score using the standard SF-36 scoring algorithms described by the developers (Ware et al., 2004). Higher values reflecting better-perceived physical health. The SF-36 General Health dimension provides valid and reliable patterns (Alonso et al., 2004; Garratt et al., 2002) and received validation in Greek contexts (Pappa et al., 2009; Kontodimopoulos et al., 2008; Pappa et al., 2005).

In addition, physical health was measured through the European Quality of Life Visual Analogue Scale (McDowell, 2006; Priestman and Baum, 1976; Aitken, 1969). The EQ-VAS scale is a quantitative measure that summarizes overall physical health that mirrors the individual's perspective (Feng, 2014). The EQ-VAS scale records individuals' self-rated physical health on a vertical and visual analog scale with endpoints labeled 'Best imaginable health state' and 'Worst imaginable health state' (McDowell, 2006; Priestman and Baum, 1976; Aitken, 1969). Higher scores indicate increasing levels of good physical health (McDowell, 2006). The EQ-VAS scale correlates with other general physical health status scales such as the SF-36 General Health Survey (Lubetkin et al., 2004). Studies reported high levels of validity (Feng, 2014; McDowell, 2006). The EQ-VAS scale has demonstrated construct validity in representative samples of the Greek general population (Kontodimopoulos et al., 2008).

To measure mental health status, the study utilized the 36-Item Short Form Health Survey's Mental Health dimension (Ware et al., 1994) and the Center for Epidemiological Studies Depression Scale (CESD-20) (Radloff, 1977).

The SF-36 Mental Health dimension constitutes an element of the 36-Item Short Form Health Survey assessing perceived mental health status over the previous four weeks (Ware et al., 1993; Ware et al., 1994; Ware, 2000). Mental health is evaluated through five items assessing, for

instance, whether people believe that they 'feel happy, calm, and peaceful' (Alonso et al., 2004; Garratt et al., 2002; Ware, 2000). The SF-36 Mental Health dimension was standardized to a T-score (Ware et al., 2004). Increased scores reflecting better-perceived mental health (Ware, 2000). The SF-36 Mental Health scale received validation in Greece (Pappa et al., 2009; Pappa et al., 2005; Anagnostopoulos et al., 2005).

Moreover, the Center for Epidemiological Studies Depression Scale (CESD-20) measures adverse mental health symptoms (Radloff, 1977). CESD constitutes a 20-item self-report depression inventory (McDowell, 2006). Questions ask whether individuals 'felt depressed, unhappy, everything they were doing was an effort' in the past week. The CESD-20 scale has good psychometric properties (Björgvinsson et al., 2013; Van Dam and Earleywine, 2011; McDowell, 2006). Higher CESD-20 scores indicate increasing levels of adverse mental health symptoms (Björgvinsson et al., 2013; McDowell, 2006). The scale has demonstrated validity in Greek studies (Drydakis, 2015b, 2012b; Madianos et al., 1994).

The Internalized Homosexual Stigma framework of Ramirez-Valles et al. (2010) measured social rejection and family acceptance. The social rejection dimension was captured through four items assessing whether people, due to their minority sexual orientation, have been 'rejected by a friend', 'treated unfairly in educational and/or workplace environments, or when looking for work', 'treated negatively in social situations', and 'received poor services (i.e., public/health services)' (Kuhns et al., 2008; Ramirez-Valles et al., 2010). Higher values indicate higher social rejection. The dimension demonstrated internal validity (Ramirez-Valles et al., 2013; Ramirez-Valles et al., 2010; Kuhns et al., 2008). Three items measured the family acceptance dimension and assessed whether their family has 'accepted their minority sexual orientation', 'made them feel comfortable with their minority sexual orientation', and 'received support in relation to their minority sexual orientation'. Higher scale values indicate higher family acceptance due to a

minority sexual orientation. Family support scales can provide consistent patterns (Sidiropoulou et al., 2020; Ramirez-Valles et al., 2013; Ramirez-Valles et al., 2010).

3.3 Estimation strategy

Random Effects models assessed the determinants of physical health and mental health statuses (Morgan, 2013; Andreß et al., 2013). In all measurements, three models are offered and robust standard errors are reported (Wooldridge, 2010). Model I includes a dummy variable controlling for the 2013-2014 period, as well as information on social rejection and family acceptance. Model II adds additional variables, such as gender, gender identity, age, and higher education. Finally, Model III includes unemployment, inactivity statuses, and relative poverty (i.e., if an individual receives 50 percent less than average individual incomes). Multicollinearity tests were conducted to assess whether the inclusion of these variables was recommended (Belsley, 1991). A statistically significant negative time-period estimate will indicate that in 2013-2014, individuals experienced deteriorated physical and/or mental health status compared to 2018-2019. Moreover, a statistically significant negative social rejection estimate shall indicate a negative association between social rejection and physical/mental health. In addition, a statistically significant positive family acceptance estimate will indicate a positive association between family acceptance and physical/mental health.

If the time period and the social rejection and family acceptance coefficients remain statistically significant in Models II and III, which include more covariates, then these features potentially indicate the insensitivity of the empirical specification by unobserved factors related to societal experiences, outside and inside the family (Andreß et al., 2013; Menard, 2008). Although panel information has been utilized, and spurious relationships might be captured, the research cannot ignore the possibility that deteriorated physical/mental health might exaggerate or reduce societal rejection. An exaggeration might hold due to multi-level stigma arising from being both

health-impaired and belonging to a sexual minority group. Reductions in societal rejection can arise in the presence of empathy towards health-impaired people. Comparable considerations hold for family acceptance. A lack of information on chronic health conditions, scales on societal approval for minority population groups, and family member relationships mean the outcomes, as represented in the following sections, require interpretation as associations and not causal effects.

4. Descriptive statistics

In the first survey, between April and June 2013, the research team gathered 281 participation forms, where individuals confirmed their participation, indicated a non-heterosexual status, and provided an email address. E-questionnaires were forwarded to the provided email addresses; the study received 252 responses. In 2014, the follow-up data gathering brought 204 responses. In the second survey, between April and June 2018, the research team gathered 268 new participation forms, 223 individuals completed the e-questionnaire, and in 2019, the follow-up data gathering brought 187 responses. Thus, the 2013-2014 panel sample comprises 456 observations, and the 2018-2019 panel sample consists of 410 observations.

Table 1 presents the descriptive statistics. Panel I has information on the 2013-2014 period. Panel II offers the 2018-2019 period's statistics. Panel III presents the pooled data. Panel III also observes that on average, 63.5 percent are men, 91.4 percent are cis people, the mean age stands at 32.6 years of age, and 33.1 percent hold a higher education degree. The study observes that the unemployment rate stands at 31.9 percent. Statistically significant unemployment differences hold between the first and second periods. In 2013-2014, the unemployment rate stood at 37.0 percent. In 2018-2019, the unemployment rate stood at 26.3 percent[1].

[1] In Greece, in the general population, in 2013-2014 the unemployment rate was 27 percent (Eurostat, 2019). In 2018-2019, the unemployment rate was 18.2 percent (Eurostat, 2019).

[Table 1]

In 2013-2014, the social rejection scale reached a higher figure than in 2018-2019 (0.51 versus 0.43). Furthermore, in 2013-2014 the family acceptance scale was lower than in 2018-2019 (0.58 versus 0.65).

Moreover, the study observes that in 2013-2014, the SF-36 General Health scale stood at 64.0, while in 2018-2019, it equaled to 66.7. In 2013-2014, the EQ-VAS scale stood at 65.9, and in 2018-2019, it increased to 69.9. In 2013-2014, the SF-36 Mental Health scale reached 63.7. In 2018-2019, the same score was 68.2. Furthermore, the CESD-20 scale was 10.20, while in 2018-2019, the measurement decreased to 8.83. The patterns indicate that in 2013-2014, worse physical and mental health characterized the population. The differences remain statistically significant.

Table 2 focuses on physical and mental health scores across different key socio-demographic population groups. The pooled data observes that women, trans people, people without higher education degrees, unemployed people, and relatively poor people, experience worse physical health (SF-36 GH, EQ-VAS) and mental health (SF-36 MH, CESD-20) than the corresponding reference categories. In all cases, the differences remain statistically significant at least at the 5 percent level. In the SF-36 General Health, the EQ-VAS, and the SF-36 Mental Health scales, the highest differences are observed for the relatively poor. In the CESD-20 scale, the highest difference is observed for unemployed people.

Moreover, Table 2 indicates that socially rejected people experience worse physical health (SF-36 GH, EQ-VAS) and mental health (SF-36 MH, CESD-20) than their socially accepted

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Moreover, in 2013-2014 the youth unemployment rate (i.e., those aged between 15 and 24 years) was 55.1 percent (Eurostat, 2019). In 2018-2019, the unemployment rate was 37.2 percent (Eurostat, 2019).

counterparts. Additionally, those accepted by their families (in all three dimensions) experience better physical health (SF-36 GH, EQ-VAS) and mental health (SF-36 MH, CESD-20). In all cases, the differences prove statistically significant at least at the 5 percent level.

[Table 2]

Table 3 presents a correlation matrix. A positive correlation exists between the SF-36 General Health and the EQ-VAS ($r=0.81$, $p<0.01$). Furthermore, there exist positive correlations between the SF-36 Mental Health and SF-36 General Health ($r=0.81$, $p<0.01$) and the EQ-VAS ($r=0.85$, $p<0.01$). Additionally, the CESD-20 negatively correlates with the SF-36 General Health ($r=-0.71$), the EQ-VAS ($r=-0.71$, $p<0.01$), and the SF-36 Mental Health ($r=-0.72$, $p<0.01$). The correlations indicate a link between good physical and good mental health. Moreover, the study indicates that the period 2013-2014 negatively correlates with the SF-36 General Health ($r=-0.09$, $p<0.01$), the EQ-VAS ($r=-0.16$, $p<0.01$), and the SF-36 Mental Health ($r=-0.16$, $p<0.01$), and positively correlates with the CESD-20 ($r=0.17$, $p<0.01$).

[Table 3]

Table 3 indicates a negative correlation between social rejection and the SF-36 General Health ($r=-0.42$, $p<0.01$), the EQ-VAS ($r=-0.41$, $p<0.01$), and the SF-36 Mental Health ($r=-0.45$, $p<0.01$). A positive correlation exists between social rejection and the CESD-20 ($r=0.44$, $p<0.01$). In addition, family acceptance positively correlates with the SF-36 General Health ($r=0.28$, $p<0.01$), the EQ-VAS ($r=0.28$, $p<0.01$), and the SF-36 Mental Health ($r=0.27$, $p<0.01$), and negatively correlates with the CESD-20 ($r=-0.21$, $p<0.01$).

5. Estimates

5.1 Self-rated physical health status: SF-36 General Health dimension

Table 4 presents the SF-36 General Health estimates. Model I observes that the 2013-2014 period bears an association with worse physical health as compared to the health status in the

period 2018-2019 (b=-2.304, p<0.05, or e=-1.8 percent). Social rejection associates with worse physical health (b=-3.462, p<0.01, or e=-2.5 percent[2]). Family acceptance associates with better health (b=3.297, p<0.01, or e=3.1 percent[3]).

[Table 4]

Model II includes additional information on demographic characteristics and observes that physical health retains a negative association with the 2013-2014 period (b=-2.436, p<0.05, or e=-1.9 percent) and social rejection (b=-3.255, p<0.01, or e=-2.3 percent), while physical health positively associates with family acceptance (b=2.887, p<0.01, or e=2.7 percent). Moreover, the findings show that men experience better physical health than women (b=1.935, p<0.10, or e=1.8 percent), cis people experience better physical health than trans people (b=3.536, p<0.05, or e=4.9 percent), and higher education correlates with better physical health (b=2.724, p<0.01, or e=1.3 percent). In addition, the estimates indicate that older people experience worse physical health (b=-21.530, p<0.01, or e=-10.5 percent).

Model III controls for unemployment, inactivity, and relative poverty. The estimates indicate that physical health deteriorated in 2013-2014 (b=-1.706, p<0.10, or e=-1.3 percent). Negative associations exist between social rejection and physical health (b=-1.753, p<0.01, or e=-1.2 percent), and positive associations exist between family acceptance and better physical health (b=2.493, p<0.01, or e=2.3 percent). The new covariates indicate negative associations between physical health and unemployment (b=-9.227, p<0.01, or e=-4.8 percent), inactivity (b=-4.373, p<0.01, or e=-0.5 percent), and relative poverty (b=-7.074, p<0.01, or e=-0.7 percent).

[2] A one standard deviation increase in social rejection is associated with 2.5 percent decrease in the SF-36 General Health dimension (elasticity).

[3] A one standard deviation increase in family acceptance is associated with 3.1 percent increase in the SF-36 General Health dimension (elasticity).

5.2 Self-rated physical health status: EQ-VAS

Table 5 offers the EQ-VAS estimates. The full informative specification, namely, Model III, indicates that the 2013-2014 period associates with worse physical health as compared to the physical health status in 2018-2019 (b=-2.846, p<0.01, or e=-2.2 percent). Social rejection associates with worse physical health (b=-1.887, p<0.01, or e=-1.3 percent), and family acceptance associates with better physical health (b=2.281, p<0.01, or e=2.0 percent). Moreover, estimates show that men experience better physical health than women (b=1.588, p<0.10, or e=1.4 percent), and cis people experience better physical health than trans people (b=2.964, p<0.05, or e=3.9 percent). In addition, higher education associates with better physical health (b=1.846, p<0.05, or e=0.9 percent), while a negative association exists between older people and physical health (b=-18.389, p<0.01, or e=-8.6 percent). Moreover, a negative association exists between physical health and unemployment (b=-7.341, p<0.01, or e=-3.4 percent), inactivity (b=-5.569, p<0.01, or e=-0.7 percent), and relative poverty (b=-4.017, p<0.01, or e=-0.4 percent).

[Table 5]

5.3 Self-rated mental health status: SF-36 Mental Health dimension

Table 6 offers the SF-36 Mental Health estimates. Model III presents an association between worse mental health and the 2013-2014 period (b=-3.237, p<0.01, or e=-2.5 percent). The findings show that social rejection is associated with deteriorated mental health (b=-1.620, p<0.01, or e=-1.1 percent). Family acceptance correlates with better mental health (b=2.015, p<0.01, or e=1.8 percent). Men experience better mental health than women (b=2.878, p<0.01, or e=2.7 percent), and cis people experience better mental health than trans people (b=3.093, p<0.10, or e=4.3 percent). Higher education correlates with better mental health (b=2.574, p<0.01, or e=1.2 percent), while a negative association exists between older people and mental health (b=-22.864, p<0.01, or e=-11.05 percent). Mental health bears a negative association with

unemployment (b=-9.217, p<0.01, or e=-4.4 percent), inactivity (b=-5.989, p<0.01, or e=-0.7), and relative poverty (b=-3.831, p<0.01, or e=-0.4 percent).

[Table 6]

5.4 Self-rated mental health status: CESD-20

Table 7 presents the CESD-20 estimates. Model III observes the adverse mental health symptoms' positive association with the 2013-2014 period (b=1.059, p<0.01, or e=5.8 percent) and social rejection (b=0.716, p<0.01, or e=3.5 percent). Adverse mental health negatively associates with family acceptance (b=-0.379, p<0.05 or e=-2.4 percent). Cis people experience lower adverse mental health symptoms than trans people (b=-1.258, p<0.01, or e=-12.0 percent). Higher education correlates with lower adverse mental health symptoms (b=-0.478, p<0.05, or e=-1.6 percent). The findings reveal a positive association between older age and adverse mental health (b=4.564, p<0.01, or e=15.1 percent). Moreover, a positive association exists between adverse mental health and unemployment (b=3.187, p<0.01, or e=10.6 percent) and relative poverty (b=1.734, p<0.01, or e=1.2 percent).

[Table 7]

5.5 Estimates per-period

Table 8 presents full-informative estimates per period. Models I-IV offer estimates in 2013-2014 period. Models V-VIII present estimates in 2018-2019 period. The general pattern confirms the outcomes found in Tables 4-7. There is a negative association between physical and mental health and the 2013 year. Moreover, the findings show that social rejection is associated with deteriorated physical and mental health. On the other hand, family acceptance associates with better physical and mental health.

[Table 8]

5.6 Aggregate unemployment level on physical and mental health status per period

Table 9 replicates Table 8, however instead of period information, new full-informative estimates are offered which control for aggregate unemployment levels. Aggregate unemployment is a critical macroeconomic indicators of a country's economic performance (Drydakis, 2015). The estimates indicate that aggregate unemployment is associated with deteriorated physical and mental health in 2013-2014 period. Since in the present sample, unemployment fluctuations (i.e., un_{2013}= 27.4 per cent; un_{2014}= 26.4 per cent; un_{2018}= 19.2 per cent; un_{2019}= 17.2 per cent) are remarkable, it might be suggested that during periods of increased unemployment, i.e., 2013 and 2014, the physical and mental health status of sexual minorities is deteriorated.

[Table 9]

6. Discussion and conclusions

6.1 Outcomes' evaluation

In Greece, no research examines how social conditions, family, and the economy are associated with sexual minorities' physical and mental health. This study aimed to examine associations between social rejection and physical and mental health status for sexual minorities. In addition, the study examined associations between family support for sexual minorities and physical and mental health. Two panel datasets, covering observations for the periods 2013-2014 and 2018-2019 and adopting the minority stress framework, aided the hypotheses that social exclusion could be associated with deteriorated physical and mental health for sexual minorities (Hafeez et al., 2017; Frost et al., 2015; Goldbach and Holleran Steiker, 2011; Meyer, 2003). Moreover, hypotheses suggest that family acceptance could be associated with enhanced physical and mental health outcomes for sexual minorities (Hall, 2018; Rueger et al., 2017; Katz-Wise et al.,

2016; D'Augelli, 2010; Meyer, 2003). In addition, the hypotheses state that during periods of economic recession, sexual minorities might experience worse physical and mental health (Giannou and Ioakimidis, 2020; Vargas et al., 2018; Halkitis et al., 2018; Bianci et al., 2018). The utilization of a variety of general physical and mental health inventories and well-informed specifications saw the theoretical predictions accepted.

The estimates indicate that sexual minorities who experienced societal rejections, such as rejection by friends, unfair treatment in educational and/or workplace environments, negative treatment in social situations, and the receipt of poor services (i.e., public/health), prompted deteriorated physical and mental health (Ramirez-Valles et al., 2013; Kuhns et al., 2008; Ramirez-Valles et al., 2010). On the other hand, the estimates indicated that sexual minorities who experienced acceptance from their families over their sexual orientation status, felt comfortable and received support due to their sexual orientation status, experienced better physical and mental health (Sidiropoulou et al., 2020; Ramirez-Valles et al., 2013; Ramirez-Valles et al., 2010).

Societal rejections, unequal treatments, and internalized stigma due to a minority sexual orientation bear a relationship with psychological distress (Hafeez et al., 2017; Goldbach and Holleran Steiker, 2011; Institute of Medicine, 2011). Moreover, risky health behaviors, such as substance use and unprotected sex, might represent maladaptive coping strategies for sexual minorities that can harm their physical and psychological health (Goldbach et al., 2014; Friedman et al., 2011; Corliss et al., 2011; Marshal, 2008). Furthermore, financial hardships due to exclusions and discrimination should have an impact on sexual minorities' budget, quality of healthcare and mental health, and general well-being (Drydakis 2019a; Fredriksen-Goldsen et al., 2012; Goldbach and Holleran Steiker, 2011; Cochran and Mays, 2012). The aforementioned adverse events can rise during recessions where racism has been found to increase (Vargas et al., 2018; Bianci et al., 2018; Taylor et al., 1978; LeVine and Campbell, 1972).

The scarce sexual orientation studies in Greece indicate that sexual orientation minorities experience workplace discrimination with financial implications, such as lower employment rates and wages compared to heterosexual peers (Drydakis, 2021b). Moreover, research shows that during the Great Recession, homophobia and victimization increased in the region (Drydakis, 2021b; Papanikolaou, 2018; Eleftheriadis, 2017; Sroiter, 2014). Findings also show that homophobia represents a profound factor of systematic exclusion and restriction from access to good quality healthcare for sexual minorities (Giannou and Ioakimidis, 2020) and that sexually transmitted disease disproportionately affects gay men (Nikolopoulos et al., 2019; Paraskevis et al., 2011).

The literature found that sexual minorities experience worse physical and mental health than heterosexuals (Meads, 2020). This study did not have data on heterosexual people. However, the SP-36 General Health and SP-36 Mental Health instruments can offer comparisons. In Greece, for the general population, the SF-36 General Health dimension ranged between 71.0 and 67.4, and the SF-36 Mental Health dimension ranged between 73.3 and 68.2 (Pappa et al., 2009; Pappa et al., 2005). In the present study, the SF-36 General Health dimension equaled 65.3, while the SF-36 Mental Health dimension equaled 65.8. Based on the raw comparisons, sexual minorities potentially experience worse physical and mental health than heterosexual people. Further comparisons suggest a yield to comparable conclusions if the focus remains on the EQ-VAS scale. In Greece, for the general population, the EQ-VAS measured 75.0 (Kontodimopoulos et al., 2008). The current study sees the EQ-VAS equal to 67.8. The differences might be evaluated by re-employing the minority stress framework and the adverse effects on sexual orientation minorities (Meyer, 2003).

The present study assessed the family's positive role in sexual minorities' physical and mental health. In the literature, supportive family environments bear an association with lower stress, depression rates, suicidal ideation, victimization, bullying, and higher self-esteem and

health status (Sidiropoulou et al., 2020; Hall, 2018; Katz-Wise et al., 2016; Ryan et al., 2010). If sexual minorities have received effective aid whenever needed and family actively prevented or/and addressed adverse consequences due to homophobia, minority population groups could cope better with stressors related to their status (Sidiropoulou et al., 2020).

The estimates indicate that higher education and employment status were associated with better physical and mental health, suggesting that status characteristics, linked to higher income, might act as determinants of sexual minorities' well-being. These represent well-known patterns in social-epidemiology research (Drydakis, 2015b; Kawachi and Beckman, 2000). Moreover, the estimates suggested that male and cis people experience better physical and mental health than women and trans people. In the international literature, comparable patterns indicate that majority population groups' demographic characteristics are associated with well-being (Drydakis, 2020; Kawachi and Beckman, 2000). Women and trans' vulnerability to physical and mental health might be explained by factors such as higher unemployment, poverty, debt, and sex discrimination (Drydakis, 2015b). Trans people experience unique socio-economic exclusions associated with deteriorated well-being (Drydakis, 2017a; b; 2020).

6.2 Policy implications

The outcomes of this study call for policy attention. Policies to reduce stigma against sexual minorities in households, schools, workplaces, and services would help protect their rights, equal and full participation in society, which, in turn, should reduce the factors negatively impacting their health (Drydakis, 2019a; Halkitis et al., 2018). Antidiscrimination, antibullying and inclusive policies in schools and workplaces help reduce homophobic incidents and positively impact sexual minorities' progression, self-esteem, income, and well-being (Badgett, 2020; Bozani et al., 2020; Sidiropoulou, et al., 2020; Drydakis, 2019a).

Programs to prevent and support sexual minorities' health and addiction to substances require consideration (Mericle et al., 2019; Substance Abuse and Mental Health Services Administration, 2016). Policy makers should explicitly address the needs of LGBT people in national health strategies. In Greece, there exists a need for the implementation of training programs for healthcare providers on LGBT health needs, cultural competency, and discrimination awareness (Meads, 2020; Giannou and Ioakimidis, 2020; Halkitis et al., 2018). The Greek Ministry of Health should train staff on the physical and mental health needs of LGBT people, and monitor patients' sexual orientation and gender identity to consider inequalities in LGBT patient experience and outcome and develop targeted services and initiatives to address these (Stonewall, 2018).

The Greek Ministry of Health should inform their public health services and ensure that policies are inclusive of the physical and mental health needs of LGBT people (Stonewall, 2018). The Greek Ministry of Health should create LGBT-centered health care programs and enact policies at the local and central levels to protect the LGBT populations, which would directly protect LGBT health (Halkitis et al., 2018). A few studies in North America and Europe have demonstrated the effectiveness of a short-focused intervention in changing the knowledge, attitudes and comfort of medical students toward LGBT people (Wahlen et al., 2020; Felder-Heim et al., 2017). It is indicated that, medical students and professionals should receive such training to increase their knowledge about LGBT patients as it, together with favorable attitudes, has the potential to improve LGBT people's health outcomes (Wahlen et al., 2020; Felder-Heim et al., 2017). Moreover, in the UK, research has found that children who received LGBT sexual health education experience a greater chance of being employed or having had a job than children who did not (British LGBT Awards, 2020).

In England, the National Health Services (NHS England, 2018) indicates that to tackle health inequalities against LGBT people should (1) appoint a National Advisor to lead LGBT improvements

in healthcare; (2) improve the way gender identity services work; (3) improve understanding of the impacts on children and adolescents of reassigning their gender; (4) improve mental health care for LGBT people; (5) enhance fertility services for LGBT people; (6) ensure LGBT people's needs are taken into account in health and social care regulation; (7) support improved monitoring of sexual orientation and gender identity in healthcare services; (8) continue to review the blood donation referral period for men who have sex with men; (9) continue to tackling HIV/AIDS transmission, and (10) improve support for LGBT people with disabilities. The Greek Ministry of Health might have an interest to observe international experiences on the subject matter domain.

In addition, a supportive climate characterized by policies granting equal rights and prohibiting discrimination reduces stigma and stress, serving a protective role for physical and mental (Hatzenbuehler et al., 2012; Buffie, 2011). In the US, reports in the medical and social science literature suggest that legal and social recognition of same-sex marriage has had positive effects on the physical and mental health status of gay men and lesbian women (Hatzenbuehler et al., 2012; Buffie, 2011). Improved outcomes are to be expected because of the improved access to health care conferred by marriage benefits under federal or state law and as a result of attenuating the effects of institutionalized stigma on a sexual minority group (Buffie, 2011). Furthermore, in the UK, trans people's self-esteem and self-respect are enhanced by policy makers' positive actions to promote inclusivity in the workplace (Bozani et al., 2020). It is indicated that if a workplace policy is perceived to be a recognition of trans people's worth this may be internalized, resulting in positive self-evaluations (Bozani et al., 2020).

The present study indicated that an accepting and welcoming family environment for sexual minorities might prevent internalization of the adverse effect of homophobic incidents, enabling them to meet developmental demands critical in dealing with homophobic demonstrations (Sidiropoulou et al., 2020; Katz-Wise et al., 2016; Bregman et al., 2013; D'Augelli, 2010). For sexual and gender identity minorities, family acceptance might enable them to prevent,

avoid, and/or deal with victimization and avoid the adoption of maladaptive coping strategies and/or risky health behaviors (Sidiropoulou et al., 2020; Hall, 2018; Katz-Wise et al., 2016; Rosario, 2015). In the UK, it is found that family support plays an integral role in the progression of young LGBT people (British LGBT Awards, 2020). It is estimated that, young LGBT people who are able to be out to immediate family experience better outcomes in both school and the workplace (British LGBT Awards, 2020). In addition, in Britain, it is found that supportive family environments toward LGB children reduce both school-age and workplace bullying (Sidiropoulou et al., 2020).

Finally, policymakers should consider the factors which exaggerate racism when general unemployment increases. During recessions, sexual minorities should receive protection from increased exclusions, discrimination, and harassment, all of which might associate with deteriorated physical and mental health (Drydakis, 2015b; 2016).

6.3 Limitations and future research

The estimated patterns of this study cannot be generalized. The current study focused only on the capital city of Greece. New studies should consider additional regions to create firmer evaluations. Regional heterogeneity might impact social exclusion, family acceptance, and sexual minorities' physical and mental health. Sexual minorities living in rural areas in Greece might experience more stigmatization and unequal treatment (Drydakis, 2015a). In addition, this study saw participants recruited through community events. Thus, the sample was not random. If sexual minorities participating in community events experience more or less severe stigmatization than the average sexual minority remains an open question. Moreover, whether sexual minorities participating in community events demonstrate greater openness regarding their sexual orientation in family and society remains an open question. A new study examining the physical and mental health status of sexual minorities based on the degree of openness should bring new

insights. Closed sexual minorities might not experience social exclusions and family rejection but they face stress related to hiding their sexual orientation (Drydakis, 2015a).

The present study did not differentiate between different groups of sexual minorities such as gay men/lesbian women, bisexual people, queer, questioning, pansexual, and asexual people. An in-depth classification will potentially bring interesting results (Drydakis, 2019a). Furthermore, a clearer focus on trans people's experiences in relation to physical/mental health status in comparison to cis people requires attention (Drydakis, 2016b; 2017a; 2017b).

Despite the utilization of panel data, the presented patterns should be treated as associations and not causal patterns. It remains difficult minimizing and excluding endogenous relationships, such as from better physical/mental health status to a lower level of stigmatization and exclusion. Added to this, vital information, such as personality characteristics, history of victimization, and chronic health conditions and coping strategies, remains missing (Sidiropoulou et al., 2020; Drydakis et al., 2018). Difficulties exist in assessing whether deteriorated physical and mental health could exaggerate pre-existing stigma and exclusions. A new study evaluating the interaction between personality characteristics, coping strategies and physical and mental health status of sexual minorities should bring new insights.

Finally, this study aimed to assess the association between social rejection, family acceptance, and physical/mental health. Heterosexual people did not take part since questions on social rejection and family acceptance due to sexual orientation did not apply to them. Future research might consider collecting data on both heterosexual and non-heterosexual people and offer evaluations on health inequalities.

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Table 1. Descriptive statistics. Non-heterosexual people

	Panel I 2013-2014	Panel II 2018-2019	Difference test	Panel III 2013-2014 and 2018-2019
Men (percent)	61.62 (0.48)	65.60 (0.47)	-1.21	63.51 (0.48)
Cis people (percent)	91.22 (0.28)	91.70 (0.27)	-0.25	91.45 (0.27)
Age (c.)	32.46 (8.64)	32.82 (9.91)	-0.56	32.63 (9.26)
Higher education (percent)	32.89 (0.47)	33.41 (0.47)	0.16	33.14 (0.47)
Unemployed people (percent)	37.06 (0.48)	26.34 (0.44)	3.39***	31.98 (0.46)
Inactive people (percent)	9.86 (0.29)	7.07 (0.25)	1.46*	8.54 (0.27)
Relative poverty (percent)	5.92 (0.23)	8.04 (0.27)	-1.20	6.95 (0.25)
Social rejection scale (c.)	0.513 (0.71)	0.439 (0.83)	1.51	0.478 (0.71)
Family acceptance scale (c.)	0.589 (0.77)	0.653 (0.83)	-1.16	0.620 (0.80)
SF-36 General Health scale^ (c.)	64.06 (13.45)	66.71 (13.89)	-2.85***	65.32 (13.72)
EQ-VAS scale^ (c.)	65.96 (10.62)	69.91 (13.24)	-4.86***	67.83 (12.09)
SF-36 Mental Health scale^^ (c.)	63.73 (12.49)	68.22 (14.92)	-4.81***	65.86 (13.87)
CESD-20 scale^^ (c.)	10.20 (3.64)	8.83 (4.25)	5.09***	9.55 (3.99)
Observations	456	410		866

Notes. (^) Self-rated physical health status. (^^) Self-rated mental health status. (c.) Continuous variable. (***) Statistically significant at the 1 per cent. (*) Statistically significant at the 10 per cent. Standard deviations are in parentheses.

Table 2. Descriptive statistics. Non-heterosexual people. Tabulation analysis. Physical health and mental health per demographic/socio-economic characteristic

	Panel I SF-36 General Health scale^ (c.)	Panel II EQ-VAS scale^ (c.)	Panel III SF-36 Mental Health scale^^ (c.)	Panel IV CESD-20 scale^^ (c.)
Men	66.70 (13.13)	69.54 (11.75)	68.14 (13.12)	9.29 (3.73)
Women	62.91 (14.40)	64.84 (12.11)	61.88 (14.24)	10.02 (4.39)
Cis people	65.85 (13.44)	68.39 (11.90)	66.86 (13.60)	9.38 (3.84)
Trans people	59.59 (15.38)	61.75 (12.55)	58.86 (14.79)	11.45 (5.02)
Higher education degree	68.83 (12.49)	70.98 (11.21)	69.67 (11.98)	8.64 (3.36)
No higher education degree	63.58 (13.98)	66.26 (12.21)	63.97 (14.35)	10.21 (4.20)
Employed people	70.41 (12.42)	71.95 (10.96)	70.92 (11.64)	7.98 (3.08)
Unemployed people	54.58 (9.40)	59.06 (9.41)	55.10 (11.97)	12.90 (3.65)
No relatively poor people	66.71 (13.04)	68.91 (11.62)	67.12 (13.21)	9.22 (3.73)
Relatively poor people	46.58 (7.56)	53.23 (8.30)	48.93 (11.27)	14.06 (3.99)
Not socially rejected people	70.17 (12.43)	71.97 (11.14)	70.79 (12.01)	8.07 (3.26)
Socially rejected people	50.83 (7.35)	53.33 (7.52)	45.66 (5.42)	13.66 (1.96)
People accepted by their family	78.07 (11.66)	76.88 (9.81)	75.92 (9.83)	7.03 (2.79)
People not accepted by their family	62.51 (13.14)	65.36 (11.65)	63.11 (14.18)	10.24 (4.02)

Notes: Obs.=866. Period: 2013-2014 and 2018-2019. (^) Self-rated physical health status. (^^) Self-rated mental health status. (c.) Continuous variable. Standard deviations are in parentheses. The per-group differences are statistically significant at least at the 5 percent level.

Table 3. Correlation matrix. Non-heterosexual people

	SF-36 General Health scale^	EQ-VAS scale^	SF-36 Mental Health scale^^	CESD-20 scale^^	2013-2014 period^^^	Social rejection scale	Family acceptance scale
SF-36 General Health scale^	1						
EQ-VAS scale^	0.81***	1					
SF-36 Mental Health scale^^	0.81***	0.85***	1				
CESD-20 scale^^	-0.71***	-0.71***	-0.72***	1			
2013-2014 period^^^	-0.09***	-0.16***	-0.16***	0.17***	1		
Social rejection scale	-0.42***	-0.41***	-0.45***	0.44***	0.05	1	
Family acceptance scale	0.28***	0.28***	0.27***	-0.21***	-0.03	-0.10***	1

Notes. Obs.=866. Periods: 2013-2014 and 2018-2019. (^) Self-rated physical health status. (^^) Self-rated mental health status. (^^^) The reference category is 2018-2019. (***) Statistically significant at the 1 per cent.

Table 4. SF-36 General Health estimates. Non-heterosexual people

	Model I	Model II	Modell III
2013-2014 period^	-2.304**	-2.436**	-1.706*
	(1.103)	(1.003)	(0.912)
Social rejection scale	-3.462***	-3.255***	-1.753***
	(0.579)	(0.557)	(0.538)
Family acceptance scale	3.297***	2.887***	2.493***
	(0.586)	(0.536)	(0.487)
Men	-	1.935*	0.612
		(1.095)	(1.016)
Cis people	-	3.536**	2.169
		(2.012)	(1.668)
Age	-	-21.530***	-18.511***
		(2.177)	(2.229)
Higher education degree	-	2.724***	2.028**
		(0.085)	(0.807)
Unemployed people	-	-	-9.227***
			(1.114)
Inactive people	-	-	-4.373***
			(1.716)
Relatively poor people	-	-	-7.074***
			(1.338)
Wald-test	81.45	287.41	546.81
Prob>chi-squared	0.000	0.000	0.000
Breusch-Pagan LM-test	284.36	285.77	268.18
Prob>chi-bar-squared	0.000	0.000	0.000
Observations	866	866	866

Notes. Period: 2013-2014 and 2018-2019. Random Effects self-rated physical health estimates. Robust standard errors are reported in parentheses. (^) The reference category is the 2018-2019 period. (***) Statistically significant at the 1 percent. (**) Statistically significant at the 5 percent. (*) Statistically significant at the 10 percent.

Table 5. EQ-VAS estimates. Non-heterosexual people

	Model I	Model II	Modell III
2013-2014 period^	-3.388*** (0.986)	-3.470*** (0.882)	-2.846*** (0.815)
Social rejection scale	-3.087*** (0.445)	-2.870*** (0.406)	-1.887*** (0.412)
Family acceptance scale	2.885*** (0.489)	2.514*** (0.450)	2.281*** (0.413)
Men	-	2.776*** (0.912)	1.588* (0.848)
Cis people	-	3.998** (1.546)	2.964** (1.336)
Age	-	-19.593*** (2.081)	-18.389*** (2.033)
Higher education degree	-	2.250*** (0.774)	1.846** (0.734)
Unemployed people	-	-	-7.341*** (0.848)
Inactive people	-	-	-5.569*** (1.211)
Relatively poor people	-	-	-4.017*** (1.628)
Wald-test	103.54	271.43	436.99
Prob>chi-squared	0.000	0.000	0.000
Breusch-Pagan LM-test	287.54	289.29	290.27
Prob>chi-bar-squared	0.000	0.000	0.000
Observations	866	866	866

Notes. Period: 2013-2014 and 2018-2019. Random Effects self-rated physical health estimates. Robust standard errors are reported in parentheses. (^) The reference category is the 2018-2019 period. (***) Statistically significant at the 1 percent. (**) Statistically significant at the 5 percent. (*) Statistically significant at the 10 percent.

Table 6. SF-36 Mental Health estimates. Non-heterosexual people

	Model I	Model II	Modell III
2013-2014 period^	-4.016***	-4.062***	-3.237***
	(1.116)	(1.013)	(0.923)
Social rejection scale	-2.635***	-2.575***	-1.620***
	(0.515)	(0.511)	(0.427)
Family acceptance scale	2.560***	2.241***	2.015***
	(0.523)	(0.457)	(0.417)
Men	-	4.268***	2.878***
		(1.067)	(0.961)
Cis people	-	4.187***	3.093*
		(1.920)	(1.545)
Age	-	-24.718***	-22.864***
		(2.352)	(2.346)
Higher education degree	-	3.088***	2.574***
		(0.758)	(0.729)
Unemployed people	-	-	-9.217***
			(1.180)
Inactive people	-	-	-5.989***
			(1.664)
Relatively poor people	-	-	-3.831***
			(1.472)
Wald-test	70.45	322.67	517.02
Prob>chi-squared	0.000	0.000	0.000
Breusch-Pagan LM-test	270.95	273.45	277.25
Prob>chi-bar-squared	0.000	0.000	0.000
Observations	866	866	866

Notes. Period: 2013-2014 and 2018-2019. Random Effects self-rated mental health estimates. Robust standard errors are reported in parentheses. (^) The reference category is the 2018-2019 period. (***) Statistically significant at the 1 percent. (*) Statistically significant at the 10 percent.

Table 7. CESD-20 estimates. Non-heterosexual people

	Model I	Model II	Modell III
2013-2014 period^	1.190***	1.253***	1.059***
	(0.305)	(0.276)	(0.245)
Social rejection scale	1.598***	1.488***	0.716***
	(0.236)	(0.213)	(0.219)
Family acceptance scale	-0.741***	-0.565***	-0.379**
	(0.160)	(0.148)	(0.134)
Men	-	-0.048	0.017
		(0.304)	(0.274)
Cis people	-	-1.496***	-1.258***
		(0.630)	(0.559)
Age	-	6.199***	4.564***
		(0.672)	(0.615)
Higher education degree	-	-0.808***	-0.478**
		(0.264)	(0.237)
Unemployed people	-	-	3.187***
			(0.359)
Inactive people	-	-	-0.971**
			(0.395)
Relatively poor people	-	-	1.734***
			(0.636)
Wald-test	101.26	265.59	506.86
Prob>chi-squared	0.000	0.000	0.000
Breusch-Pagan LM-test	187.13	170.76	146.21
Prob>chi-bar-squared	0.000	0.000	0.000
Observations	866	866	866

Notes. Period: 2013-2014 and 2018-2019. Random Effects self-rated mental health estimates. Robust standard errors are reported in parentheses. (^) The reference category is the 2018-2019 period. (***) Statistically significant at the 1 percent. (**) Statistically significant at the 5 percent.

Table 8. Physical and mental health estimates per period. Non-heterosexual people

	Model I SF-36 General Health Scale^	Model II EQ-VAS scale^	Modell III SF-36 Mental Health scale^^	Model IV CESD-20 scale^^	Model V SF-36 General Health scale^	Modell VI EQ-VAS scale^	Model VII SF-36 Mental Health scale^^	Modell VIII CESD-20 scale^^
	2013-2014 period				2018-2019 period			
2013[#]	-1.076***	-0.243	-0.875***	0.566***	-	-	-	-
	(0.345)	(0.358)	(0.301)	(0.175)				
2018[##]	-	-	-	-	0.548	0.359	0.419	0.215
					(0.496)	(0.334)	(0.377)	(0.196)
Social rejection scale	-0.611	-1.290***	-0.565	0.586**	-3.541***	-2.770***	-3.073***	0.804**
	(0.511)	(0.434)	(0.459)	(0.259)	(0.972)	(0.712)	(0.804)	(0.335)
Family acceptance scale	1.981***	1.815***	1.323***	-0.454**	3.038***	2.551***	2.490***	-0.264
	(0.664)	(0.550)	(0.478)	(0.197)	(0.680)	(0.666)	(0.724)	(0.186)
Wald-test	331.11	161.27	325.68	193.96	428.32	285.26	273.79	418.72
Prob>chi-squared	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Breusch-Pagan LM-test	157.30	141.93	140.76	87.72	99.21	142.84	134.19	50.15
Prob>chi-bar-squared	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	456	456	456	456	410	410	410	410

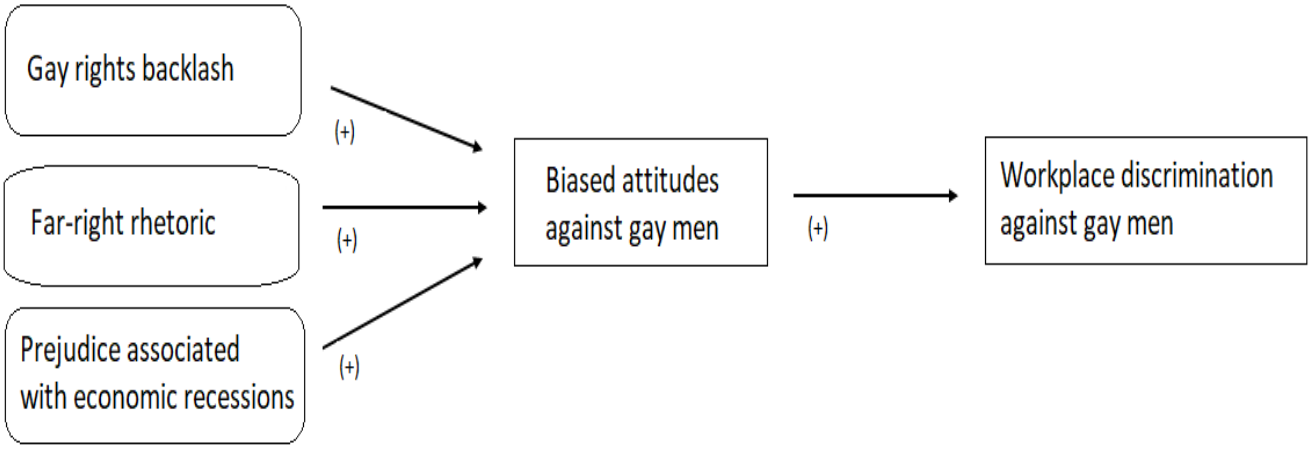
Notes. (^) Random Effects self-rated physical health estimates. (^^) Random Effects self-rated mental health estimates. Each model controls for gender, gender identity, age, higher education, unemployment, inactivity status and relative poverty. Random Effects estimates. Robust standard errors are reported in parentheses. ([#]) The reference category is 2014. ([##]) The reference category is 2019. (***) Statistically significant at the 1 percent. (**) Statistically significant at the 5 percent.

Table 9. Physical and mental health estimates per period. Non-heterosexual people

	Model I SF-36 General Health Scale^	Model II EQ-VAS scale^	Modell III SF-36 Mental Health scale^^	Model IV CESD-20 scale^^	Model V SF-36 General Health scale^	Modell VI EQ-VAS scale^	Model VII SF-36 Mental Health scale^^	Modell VIII CESD-20 scale^^
	2013-2014 period				2018-2019 period			
Aggregate unemployment	-107.698***	-24.306	-0.875***	56.610***	27.416	17.983	20.953	10.770
	(34.527)	(35.811)	(0.301)	(17.535)	(24.841)	(16.744)	(18.876)	(9.837)
Social rejection scale	-0.611	-1.290***	-0.565	0.586**	-3.541***	-2.770***	-3.073***	0.804**
	(0.511)	(0.434)	(0.459)	(0.259)	(0.972)	(0.712)	(0.804)	(0.335)
Family acceptance scale	1.981***	1.815***	1.323***	-0.454**	3.038***	2.551***	2.490***	-0.264
	(0.664)	(0.550)	(0.478)	(0.197)	(0.680)	(0.666)	(0.724)	(0.186)
Wald-test	331.11	161.27	325.68	193.96	428.32	285.26	273.79	418.72
Prob>chi-squared	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Breusch-Pagan LM-test	157.30	141.93	140.76	87.72	99.21	142.84	134.19	50.15
Prob>chi-bar-squared	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	456	456	456	456	410	410	410	410

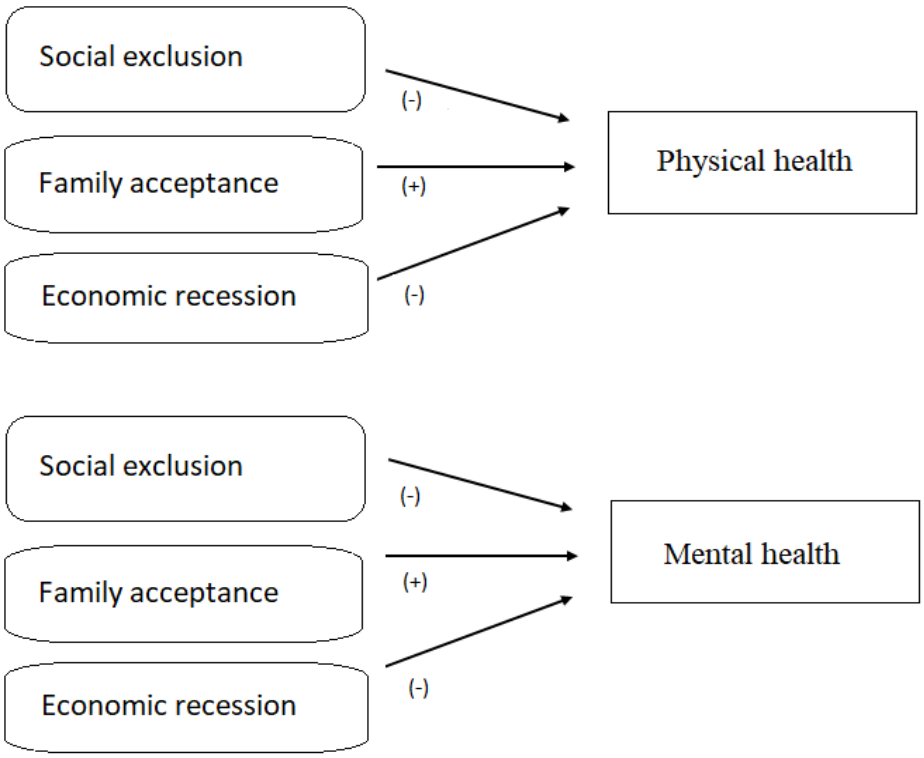
Notes. (^) Random Effects self-rated physical health estimates. (^^) Random Effects self-rated mental health estimates. Each model controls for gender, gender identity, age, higher education, unemployment, inactivity status and relative poverty. Robust standard errors are reported in parentheses. (***) Statistically significant at the 1 percent. (**) Statistically significant at the 5 percent.

Figure 1. Workplace discrimination against gay men in Greece



Notes: A gay rights backlash due to LGBT groups' attempt to advance their agenda, rising far-right rhetoric and prejudice associated with economic recessions might bring biased attitudes against gay men, resulting in workplace discrimination against them (Drydakis, 2021b).

Figure 2. Conceptual model. Social exclusion, family acceptance, economic recession and physical and mental health of sexual minorities



Notes: Social exclusion has an association with deteriorated physical and mental health for sexual minorities. Family acceptance has an association with better physical and mental health for sexual minorities. During periods of economic recessions, sexual orientation minorities experience poorer physical and mental health.

Appendix. Greece. Macroeconomic indicators, LGBTIQ+ acceptance indicators, politics and employment indicators (adapted from Drydakis, 2021b)

Macroeconomic indicators	LGBTIQ+ acceptance indicators	Politics: Far-right political party	Institutional policies	Firms' discriminatory attitudes against sexual minorities (RAG index) (^)	Occupational access discrimination against sexual minorities (OAD index) (^)	Level of wage sorting in vacancies offering lower wages experienced by sexual minorities (WSO index) (^)
In **2006-2007**, the unemployment rate was 8.7%, the GDP was 295.9b, the growth rate was 4.5%, the rate of people living at risk of poverty or social exclusion was 20%. ([1])			In January **2005** the 3304/2005 Law combated discrimination on grounds of sexual orientation in the workplace. ([9,10])	In **2006-2007**, the RAG index was 2.81 (out of 5).	In **2006-2007**, the OAD index was 26.4%	In **2006-2007**, the WSO index was 3.9%
In **2013-2014**, the unemployment rate was 26.9%, the GDP was 238.4b, the growth rate was -1.2%, the rate of people living at risk of poverty or social exclusion was 35.1%. ([1])	In **2012-2014**, verbal abuse and physical violence against LGBTIQ+ people increased. Organized street gangs were formed, and persecutions against LGBTIQ+ people took place across the country. ([2]) Between **2013** and **2019**, reportages in the popular international press indicated that homophobia escalated. ([3])	In the **2012** parliamentary elections a far-right political party won 7% of the vote, finished third in the **2014** European elections (9.4%), and gained third place in the parliamentary elections of **2015** (6.4%). ([8])	In December **2015**, the 4356/2015 Law legalized same-sex partnerships. ([9,10])	In **2013-2014**, the RAG index was 3.39 (out of 5).	In **2013-2014**, the OAD index was 28%.	In **2013-2014**, the WSO index was 5.7%
In **2018-2019**, the unemployment rate was 18.2%, the GDP was 213.9b, the growth rate was 1.8%, the rate of people living at risk of poverty or social exclusion was 31.8%. ([1])	The **2018** annual report of the Racist Violence Recording Network revealed increased homophobic attacks, aggressiveness, and anger since **2015**. ([4]) The **2019** OECD report found that the country experienced a decreased acceptance of homosexuality. ([5]) The **2019** Eurobarometer survey suggested that more homophobia existed in Greece than the EU28 average. ([6]) The **2020** European Union Agency for Fundamental Rights survey indicated that the shares of EU respondents who felt discriminated against were highest in Greece. ([7])	During the **2019** European elections the far-right political party won 4.8% of the vote and during the **2019** parliamentary election lost all of its seats in the Hellenic Parliament, winning only 2.9% of the vote. ([8]) In October **2020**, a court ruled that nearly the entire leadership of the far-right political party will be imprisoned for operating a criminal gang under the guise of being a political party. ([8])	In October **2017** the 4491/2017 Law permitted people to legally change their gender on all official documents without undergoing sterilization. ([9,10])	In **2018-2019**, the RAG index was 3.31 (out of 5).	In **2018-2019**, the OAD index was 30.4%.	In **2018-2019**, the WSO index was 7.1%

Notes: (^) Drydakis (2021b, on-line first). Sexual orientation discrimination in the labor market against gay men. Review of Economics of the Household. ([1]): Eurostat database, World Bank database, Hellenic Statistical Authority database. ([2]) Sroiter, A. (2014). Autopsy: Homophobic Attacks. Athens: Alpha TV. ([3]) BBC News, 2 October 2013; The Guardian, 7 September 2014; The New York Times, 5 October 2015; Deutsche Welle, 2 May 2017; The EU Observer, 28 Mai 2018; TRT World, 19 April 2019; The Independent, 1 March 2019. ([4]) Racist Violence Recording Network (2018). Annual Report: 2018. Athens: Racist Violence Recording Network. ([5]) OECD (2019). Society at a Glance 2019. OECD Social Indicators. Paris: OECD. ([6]) Eurobarometer (2019). Special Eurobarometer 493. Discrimination in the European Union: The Social Acceptance of LGBTI People in the EU. Brussels: European Commission. ([7]) European Union Agency for Fundamental Rights (FRA, 2020). A Long Way to Go for LGBTI Equality. Brussels: FRA. ([8]) The New York Times, 7 October 2020; BBC News, 7 October 2020; CNN News, 8 October 2020. ([9]) The Guardian, 23 December 2015. ([10]) The Guardian, 10 October 2017.