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### Title

Parenthood and the Physical and Mental Health of Sexual and Gender Minority Parents: A Cross-Sectional, Observational Analysis from The PRIDE Study

### Permalink

<https://escholarship.org/uc/item/6f44t49g>

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### Publication Date

2024-07-01

### DOI

10.1016/j.annepidem.2024.07.046

### Supplemental Material

<https://escholarship.org/uc/item/6f44t49g#supplemental>

Peer reviewed

1 **TITLE:** Parenthood and the Physical and Mental Health of Sexual and Gender  
2 Minority Parents: A Cross-Sectional, Observational Analysis from The PRIDE Study

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23 **RUNNING TITLE:** Sexual and Gender Minority Parents' Health

24  
25 **FUNDING:** Funding for this work was provided by the Stanford Maternal and Child  
26 Health Research Institute Seed Grant program to J.O.M. and S.A.L. and the Stanford  
27 University School of Medicine Department of Obstetrics and Gynecology. Research  
28 reported in this article was partially funded through a Patient-Centered Outcomes  
29 Research Institute (PCORI) Award [award number PPRN-1501-26848] to M.R.L. The  
30 statements in this article are solely the responsibility of the authors and do not  
31 necessarily represent the views of PCORI, its Board of Governors or Methodology  
32 Committee, or the National Institutes of Health. J.O.M. was partially supported by  
33 the National Institute of Diabetes, Digestive, and Kidney Disorders [grant number  
34 K12DK111028]. A.F. was partially supported by the National Institute on Drug Abuse  
35 [grant number K23DA039800]. The funding sponsors had no role in study design;  
36 the data collection, analysis, and interpretation of data; the writing of the report;  
37 the decision to submit the article for publication; or the preparation of the  
38 manuscript.

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**CONFLICTS OF INTEREST:** Dr. Obedin-Maliver received consultation fees from Ibis Reproductive Health, Hims Inc., Folx Health Inc., and Sage Therapeutics on topics unrelated to this work. Dr. Lunn received consultation fees from Hims Inc., Folx Health Inc., and Otsuka Pharmaceutical Development and Commercialization, Inc. on topics unrelated to this work. All other authors have no conflicts of interest to report.

**ACKNOWLEDGEMENTS:** The PRIDE Study is a community-engaged research project that serves and is made possible by LGBTQ+ community involvement at multiple points in the research process, including the dissemination of findings. We acknowledge the courage and dedication of The PRIDE Study participants for sharing their stories; the careful attention of PRIDENet Participant Advisory Committee (PAC) members for reviewing and improving every study application; and the enthusiastic engagement of PRIDENet Ambassadors and Community Partners for bringing thoughtful perspectives as well as promoting enrollment and disseminating findings. For more information, please visit <https://pridestudy.org/pridenet>.

**DATA SHARING STATEMENT:** We welcome the opportunity to facilitate high-quality, community-engaged research collaborations that aim to improve the health and well-being of LGBTQ+ communities. Through The PRIDE Study’s ancillary studies, a wide variety of investigators working on academic or community-based projects related to LGBTQ+ health can apply to work collaboratively with The PRIDE Study team and access data. For more information, please visit: <https://pridestudy.org/collaborate>

**WORD & ITEM COUNT:** abstract 200 words, manuscript 3070 words, 4 tables/figures, 45 references

70 **ABSTRACT**

71 **Purpose:** To compare the physical and mental health of sexual and gender  
72 minority (SGM) parents to SGM non-parents.

73 **Methods:** A cross-sectional analysis using 2018-2020 data from The PRIDE Study, a  
74 national longitudinal cohort of SGM adults. We used Poisson regression adjusted for  
75 age, gender, relationship status, race/ethnicity, household income, and education to  
76 assess the association between parental status and each outcome.

77 **Results:** Among 9,625 SGM participants, 1,460 (15%) were parents. Older  
78 participants were more likely to be parents: 2% of participants aged 18-30, 18%  
79 aged 30-39, and 38% aged 40+ were parents. In adjusted analyses, parenthood  
80 was associated with greater depression, anxiety, and post-traumatic stress  
81 symptoms as well as ever cigarette smoking. Among individuals assigned female  
82 sex at birth, parents were twice as likely to have been diagnosed with pelvic  
83 inflammatory disease compared to non-parents. There was no association between  
84 parenthood status and alcohol use, substance use, diabetes, HIV, hypertension, or  
85 autism.

86 **Conclusions:** In this national cohort of SGM adults, parenthood was associated with  
87 differences in physical and mental health measures. Understanding how parenthood  
88 influences the health and well-being of the estimated 3 million SGM parents in the  
89 US will help our health systems support diverse families.

90

91 **KEY WORDS:**

92 Sexual and Gender Minority, LGBTQ Persons, Parents, Mental Health, Chronic Health

- 93 **ABBREVIATIONS:**
- 94 AFAB, assigned female at birth
- 95 AMAB, assigned male at birth
- 96 AUDIT, Alcohol Use Disorders Identification Test
- 97 CI, confidence interval
- 98 GAD-7, General Anxiety Disorder 7-item scale
- 99 HIV, human immunodeficiency virus
- 100 SGM, sexual and gender minority
- 101 PHQ-9, Patient Health Questionnaire-9
- 102 PR, prevalence ratio
- 103 PROMIS, Patient-Reported Outcomes Measurement Information System
- 104 PTSD, post-traumatic stress disorder

105 **INTRODUCTION**

106 An estimated 3 million sexual and gender minority (SGM) adults in the US are  
107 parents.<sup>1</sup> The number of SGM parents is expected to increase as younger  
108 generations are more likely to identify as SGM (20.8% of Generation Z, compared to  
109 10.5% of Millennials and 4.2% of Generation X)<sup>2</sup> and are twice as likely to desire  
110 children compared to older cohorts.<sup>3</sup> In the general population, parents report worse  
111 physical and mental health outcomes which are generally attributed to the  
112 increased emotional, physical, and financial stress of raising children.<sup>4</sup> At the same  
113 time, older adults who are parents live longer than those without children, a  
114 phenomenon that may be partially attributed to increased social support.<sup>5</sup> However,  
115 there has been little investigation into the health of SGM parents.

116 SGM people are an underserved population who experience significant  
117 physical and mental health disparities, including higher rates of cardiovascular  
118 disease, depression, and anxiety as well as worse cancer outcomes.<sup>6-10</sup> These  
119 disparities are understood to be the result of individual exposure to discrimination  
120 and chronic stress (e.g., minority stress)<sup>11-13</sup> as well as socio-structural systems  
121 (e.g., economic, legal, and health) that impact social determinants of health for  
122 SGM people.<sup>14-16</sup> These stressors likely extend to SGM people who are parents. SGM  
123 parents are two to three times as likely to be living below the federal poverty line  
124 compared to non-SGM parents.<sup>1</sup> Existing research also demonstrates that receiving  
125 less support from their families and/or living in less supportive legal environments  
126 exacerbates poor mental health for SGM parents.<sup>17,18</sup>

127 SGM people experience significant barriers to family formation, including  
128 financial, legal, and institutional barriers to accessing assisted reproductive  
129 technology, adoption, and fostering.<sup>19-21</sup> SGM parents also face unique stressors  
130 including legal environments that lack protections for SGM parents, difficulty finding  
131 SGM parenting communities, their children experiencing bullying due to their family  
132 structure, and stigmatizing interactions with other parents and healthcare  
133 professionals.<sup>19,20,22,23</sup> Despite these challenges, children raised by SGM parents have  
134 positive outcomes in health, education, and overall well-being.<sup>24-26</sup>

135 Understanding how parenthood influences the physical and mental health of  
136 SGM adults is important to prepare our social and health systems to support diverse  
137 families, and because parental health has important implications for child well-being

138 and development.<sup>27</sup> To address these gaps in our understanding of SGM parents, we  
139 analyzed data from a large national cohort of SGM adults to compare the physical  
140 and mental health outcomes of parents to those who are not parents.

141

## 142 **METHODS**

### 143 **Study Sample**

144 We conducted a cross-sectional analysis of data collected through The  
145 Population Research in Identity and Disparities for Equality (PRIDE) Study, a  
146 national, online, longitudinal, cohort study of SGM adults within the US. The PRIDE  
147 Study is a community-engaged research study with an active Participant Advisory  
148 Committee and multiple stakeholders that inform all stages of the research  
149 process.<sup>28</sup> We used data from the 2018, 2019, and 2020 annual questionnaires as  
150 well as a baseline questionnaire that assessed lifetime health experiences. If  
151 participants responded to multiple annual questionnaires, we restricted our analysis  
152 to only include responses from the first year a participant responded to the annual  
153 questionnaire (Supplemental Figure 1).

### 154 **Measures**

155 **Parenthood.** Our definition of parenthood broadly included all participants  
156 who self-identified as a parent. We categorized participants as parents if they  
157 responded yes to either question that asked, “Are you a parent?” (baseline  
158 questionnaire and 2018 annual questionnaire) or “Did you become a parent in the  
159 past 12 months?” (2019 and 2020 annual questionnaires). Our definition of  
160 parenthood was thus inclusive of individuals with children living at home as well as  
161 those with adult children, and children who were brought into their lives in a variety  
162 of ways, including via pregnancy, adoption, fostering, and step-parenting.

163 **Sociodemographic characteristics.** Participants self-reported their age,  
164 race/ethnicity, intersex status, relationship status, educational attainment, and  
165 annual household income. Participant could select more than one race/ethnicity.

166 **SGM subgroups.** Participant could select more than one sexual orientation  
167 or gender identity and provide write-in responses (response options listed in Table  
168 1). We constructed six mutually exclusive subgroups of SGM participants based on  
169 self-reported sexual orientation, gender, and sex assigned at birth (methods  
170 described in Supplemental Table 1): (1) cisgender sexual minority men, (2)

171 cisgender sexual minority women, (3) gender diverse people who were assigned  
172 female at birth (AFAB) of any sexual orientation, (4) gender diverse people who  
173 were assigned male at birth (AMAB) of any sexual orientation, (5) transgender men  
174 of any sexual orientation, and (6) transgender women of any sexual orientation.

175 **Health Outcomes and Diagnosis History.** We considered outcomes  
176 related to the physical and mental health of SGM parents with a focus on chronic  
177 physical health diagnoses, common mental health conditions, and substance use.  
178 Self-reported lifetime diagnoses were obtained from the baseline and annual  
179 questionnaires. We also used standardized screening measures to assess current  
180 symptoms and health behaviors on the annual questionnaires.

181 **Mental Health.** Participants self-reported if they had ever been diagnosed  
182 with depression, anxiety, or post-traumatic stress disorder (PTSD) by a clinician.  
183 Overall mental health was assessed using the Patient-Reported Outcomes  
184 Measurement Information System (PROMIS) 4-item global mental health scale.<sup>29</sup> We  
185 calculated T-scores from each participant's raw score such that T-scores of 50  
186 represent the mean for the US population with a standard deviation of 10 (higher  
187 scores indicate better mental health). Depressive symptoms in the past two weeks  
188 were assessed using the Patient Health Questionnaire-9 (PHQ-9; score range 0-27).  
189 Anxiety symptoms in the past two weeks were assessed using the General Anxiety  
190 Disorder 7-item scale (GAD-7; score range 0-21). For the PHQ-9 and GAD-7, scores  
191 greater than or equal to 10 indicate moderate to severe depression or anxiety  
192 symptoms, respectively.<sup>30,31</sup> We assessed PTSD symptoms in the last month using a  
193 brief 6-item version of the PTSD Checklist (PCL-6; score range 6-30).<sup>32</sup> PCL-6 scores  
194 of greater than or equal to 17 are suggestive of high likelihood of current PTSD.

195 **Alcohol, Cigarette, and Substance Use.** Participants self-reported if they  
196 had ever been diagnosed with substance use disorder or alcohol use disorder. We  
197 assessed current alcohol behaviors using the Alcohol Use Disorders Identification  
198 Test (AUDIT; score range 0-40). An AUDIT score of greater than or equal to 15 is  
199 indicative of moderate to severe alcohol use disorder.<sup>33</sup> Participants self-reported if  
200 they had ever smoked 100 cigarettes or more in their lifetime.

201 **Physical Health.** General physical health was assessed using the PROMIS 4-  
202 item global physical health scale.<sup>29</sup> Participants self-reported if they had ever been



203 diagnosed by a clinician for key chronic health conditions: diabetes mellitus, human  
204 immunodeficiency virus (HIV), hypertension, and pelvic inflammatory disease.

205 **Neurodiversity.** Participants self-reported if a clinician had ever diagnosed  
206 them with autism spectrum disorder.

## 207 **Statistical Analysis**

208 Our primary analysis assessed the associations between parenthood and all  
209 outcome variables using linear regression for continuous outcomes and Poisson  
210 regression with robust standard errors to calculate prevalence ratios (PRs) for  
211 binary outcomes. We use directed acyclic graphs to select confounders  
212 (Supplemental Figure 2). All models were adjusted for age (as a continuous  
213 variable), SGM subgroup, annual household income, educational attainment,  
214 race/ethnicity, and relationship status. For pelvic inflammatory disease, we  
215 restricted our analyses to participants who were assigned female at birth or who  
216 reported ever having a uterus. We estimated regression models overall and  
217 stratified by cisgender sexual minority participants and transgender or gender  
218 diverse participants.

219 Due to the potential for severe confounding by age and because covariate  
220 adjustment provides biased estimates when age and the exposure variable (*i.e.*,  
221 parental status) are significantly colinear, we conducted sensitivity analyses using  
222 propensity score matching. Propensity scores were estimated using logit models  
223 with a 1:1 nearest neighbor matching algorithm without replacement (*via* the  
224 *MatchIt* package).<sup>34</sup> We assessed two propensity score models: (1) matched on age  
225 (continuous) only, and (2) matched on age (continuous), SGM subgroup, annual  
226 household income, educational attainment, race/ethnicity, and relationship status.

227 All analyses were conducted in R statistical software version 4.2.1. This study  
228 received ethical approval from the University of California, San Francisco; Stanford  
229 University School of Medicine Research Compliance Office; and WIRB-Copernicus  
230 Group Institutional Review Boards before data collection.

231

## 232 **RESULTS**

### 233 **Participant Characteristics**

234 There were 9,625 SGM participants included in our primary analysis, among  
235 whom 1,460 (15.2%) were parents and 8,165 (84.8%) were not parents. Most

236 participants were cisgender (65.8%) and assigned female at birth (66.6%; Table 1).  
237 Overall, 19.6% of participants selected at least one non-White race/ethnicity, 7.7%  
238 were multiracial, and 90.6% selected White race alone or in combination with other  
239 race/ethnicities.

240 The median age of parents was 45.1 years (Q1-Q3=37-56), nearly 17 years  
241 older than non-parents' median age of 28.2 years (Q1-Q3=24-36; Supplemental  
242 Figure 3). The proportion of SGM participants who were parents increased with age:  
243 2% of participants aged 18-30, 18% of participants aged 30-39, and 38% of  
244 participants aged 40 and older indicated that they were parents. Transgender  
245 women and cisgender sexual minority women were most likely to be parents  
246 (41.2% and 18.4%, respectively; Supplemental Table 2) compared to other SGM  
247 groups. In addition, 13.7% of gender diverse people AMAB, 12.6% of transgender  
248 men, 12.4% of cisgender sexual minority men, and 8.7% of gender diverse people  
249 AFAB were parents. However, some of these differences by gender may be related  
250 to age. Parents were more likely to be in a relationship (81.4% v. 57.6%,  $p < 0.001$ )  
251 and reported higher levels of educational achievement and annual household  
252 incomes.

253 Unadjusted analyses revealed many physical and mental health differences  
254 between SGM people who were and were not parents (Table 2). Many of these  
255 associations were no longer significant or reversed direction after covariate  
256 adjustment, largely due to confounding by age. In the sections that follow, we only  
257 discuss adjusted regression results.

## 258 **Mental Health**

259 Both parents and non-parents reported a high prevalence of mental health  
260 diagnoses and symptoms (Table 2). Many parents reported a lifetime diagnosis of  
261 depression (61.6%), an anxiety disorder (49.0%), or PTSD (28.3%). In addition, a  
262 high proportion of parents reported current symptoms consistent with moderate to  
263 severe depression (27.9%), moderate to severe anxiety (21.1%), or probable PTSD  
264 (20.8%).

265 In adjusted models, parents reported higher scores for current depression ( $\beta$   
266 0.43; 95%CI: 0.05, 0.82), anxiety ( $\beta$  0.41; 95%CI: 0.07, 0.74), and PTSD symptoms  
267 ( $\beta$  0.50; 95%CI: 0.17, 0.83) compared to non-parents. There was no association  
268 between parenthood and lifetime diagnoses of depression, anxiety, or PTSD.

269            Among transgender and gender diverse parents, parenthood was associated  
270 with worse PROMIS global mental health scores ( $\beta$  -0.81; 95%CI: -1.63, 0.00; Figure  
271 1 and Supplemental Table 2) but not among cisgender sexual minority participants.  
272 Stratification suggested that parenthood may have a stronger association with  
273 current depression, anxiety, and PTSD symptoms among transgender and gender  
274 diverse participants relative to cisgender sexual minority participants (Figure 1 and  
275 Supplemental Table 3).

### 276 **Alcohol, Cigarette, and Substance Use**

277            Parents were more likely to have ever smoked cigarettes (42.5% v. 23.3%;  
278 aPR 1.16; 95%CI: 1.04, 1.28). There were no associations between parenthood and  
279 a history of alcohol use disorder, substance use disorder, or AUDIT scores.

### 280 **Physical Health**

281            When we looked at SGM parents overall, there were no association between  
282 parenthood and PROMIS global physical health scores.

283            Parents who were AFAB were more likely to have been diagnosed with pelvic  
284 inflammatory disease (7.3% v. 2.5%; aPR 1.78; 95%CI: 1.22, 2.61) compared with  
285 non-parents. There were no associations between parenthood and diabetes, HIV, or  
286 hypertension. Stratification suggested that parenthood may be associated with a  
287 higher prevalence of diabetes among transgender and gender diverse participants  
288 (aPR 1.50; 95%CI: 0.85, 2.64) and a lower prevalence of diabetes among cisgender  
289 sexual minority participants (aPR 0.66; 95%CI: 0.42, 1.03), although these  
290 confidence intervals both contain 1.0.

### 291 **Neurodiversity**

292            In our cohort, 5.6% of parents and 7.6% of non-parents had ever been  
293 diagnosed with autism spectrum disorder. There were no associations between  
294 parenthood and autism in adjusted models.

### 295 **Differences by Age**

296            There were notable trends in mental and physical health outcomes among  
297 SGM parents when we stratified by age (Figure 2 and Supplemental Table 4).  
298 Compared to parents aged 40 and older, younger cohorts of SGM parents  
299 (especially those ages 21-29 years) reported poorer mental health as measured by  
300 both diagnoses and current symptoms. Younger parents also reported a higher  
301 prevalence of autism. Older cohorts were more likely than younger cohorts to have

302 ever smoked cigarettes or been diagnosed with alcohol use disorder. In addition,  
303 those in the older cohorts were more likely to report chronic health conditions such  
304 as diabetes, HIV, and hypertension, as well as pelvic inflammatory disease.

### 305 **Sensitivity Analyses**

306 Sensitivity analyses using propensity score matching on age obtained nearly  
307 identical results (Supplemental Tables 6-8). For most outcomes, our primary results  
308 were conservative and slightly attenuated towards the null compared to the results  
309 of our propensity score models matched on age.

310

## 311 **DISCUSSION**

312 To date, most research on parenthood and health outcomes has focused on  
313 heterosexual and cisgender populations. SGM parenthood is likely associated with  
314 unique minority stressors and experiences of structural stigma that can influence  
315 the health and well-being of SGM parents. Using data from a large cohort of SGM  
316 adults across the US, we found that parenthood was associated with worse mental  
317 health symptoms (including depression, anxiety, and PTSD).

318 Similar to studies conducted among the general population, we found that  
319 the health and well-being of SGM parents is highly age-dependent.<sup>35</sup> Among older  
320 adults in the general population, parenthood is associated with better physical and  
321 mental health outcomes, while younger parents report worse physical and mental  
322 health outcomes.<sup>35</sup> We similarly observed that younger parents, especially those 29  
323 years or younger, reported the highest prevalence of poor mental health symptoms.  
324 In contrast, older parents reported more chronic physical health conditions (e.g.,  
325 hypertension, diabetes). This is consistent with patterns of aging as well as prior  
326 research that found distinct mental health differences among younger and older  
327 cohorts of SGM adults in the US.<sup>36</sup>

328 Prior studies in the general population have similarly found that parents  
329 experience depression more frequently than non-parents.<sup>4</sup> However, the prevalence  
330 of prior mental health diagnoses and current adverse mental health symptoms in  
331 our sample was higher than what has been reported in the general population.<sup>37,38</sup>  
332 While SGM people overall experience significant mental health disparities compared  
333 to their cisgender heterosexual peers, family building and parenthood experiences  
334 may place SGM parents at increased exposure to structural inequities and minority

335 stressors, including interpersonal experiences of discrimination. For example, SGM  
336 couples are more likely to adopt, foster children, and/or undergo medically assisted  
337 reproduction (e.g., intrauterine insemination, *in vitro* fertilization).<sup>7,36</sup> Qualitative  
338 studies highlighted how SGM adoptive parents are more likely to experience  
339 overlapping stressors, such as engagement with the foster system, encountering  
340 stigma during the adoption process, and invalidation of non-gestational parents.<sup>20,39</sup>  
341 Additionally, internalized homophobia and unfavorable legal environments have  
342 strong associations with increased symptoms of anxiety and depression among new  
343 parents.<sup>18</sup> This may be especially true of younger SGM parents, who reported the  
344 highest prevalence of poor mental health symptoms in our cohort. Thus, fully  
345 understanding the findings of this study necessitates future research that considers  
346 measures of internalized stigma and minority stress.

347 Notably, cisgender sexual minority women parents were over twice as likely  
348 to have been diagnosed with pelvic inflammatory disease compared to non-parents.  
349 Pelvic inflammatory disease is often underdiagnosed; therefore, the higher  
350 prevalence we observed may reflect an increased diagnosis rate among individuals  
351 who attempted to build their families through pregnancy and had increased contact  
352 with sexual and reproductive healthcare providers. Overall, this has important  
353 implications for family building since pelvic inflammatory disease is associated with  
354 infertility, ectopic pregnancy, and pelvic pain.<sup>40</sup>

355 Except for smoking, we found no association between parenthood and ever  
356 being diagnosed with alcohol or substance use disorder. However, parents were  
357 more likely to report ever having smoked tobacco, and this prevalence increased  
358 slightly with age. This may be indicative of generational patterns of smoking or may  
359 be a result of coping with the stress of parenthood.

360 Lastly, the prevalence of parenthood was similar among participants with and  
361 without autism. In our sample, 5.8% of parents had been diagnosed with autism,  
362 which is higher than what is reported in the general adult US population (2.2-  
363 2.4%)<sup>41</sup>, and was highest among young parents (16.2% among parents <30 years  
364 old). This may be specific to The PRIDE Study, which is a convenience sample,  
365 although there are very limited data with which to compare these estimates. The  
366 limited research on autistic parents suggest that while they often experience stigma  
367 related to their neurodivergence, they report similar levels of parenting efficacy

368 compared to non-autistic mothers.<sup>42-44</sup> In addition, most autistic parents with autistic  
369 children report feeling well-equipped to support their children based on their own  
370 lived experience, expertise, and heightened empathy for their children.<sup>45</sup> We did not  
371 identify any existing studies on the specific experiences of SGM parents with  
372 autism, which is an important area for future research.

### 373 **Strengths and Limitations**

374 Our study had numerous strengths, including a large national sample of SGM  
375 adults, and inclusion of participants diverse in age, geographic location, sexual  
376 orientation, and gender identity in a community-engaged cohort.

377 Our results should be considered in the context of several limitations. The  
378 PRIDE Study is a convenience sample and does not include the experiences of  
379 parents under the age of 18. In addition, our sample was predominantly White, and  
380 there is a need to examine health disparities among SGM parents at the intersection  
381 of race/ethnicity. We relied on self-reported health outcomes and diagnoses, which  
382 may be subject to recall bias or social desirability bias. Lastly, we did not assess  
383 when participants first became a parent, so age of the participants who reported  
384 being parents is not indicative of the age at which participants began their families.  
385 Similarly, we were unable to determine whether participants currently have children  
386 who live at home. Nor can we examine order of effects, such as whether parenting-  
387 related stressors have an impact on later mental and physical health. Future  
388 research directions include longitudinal studies on family building and parenting to  
389 understand causal relationships and identify points for intervention to address  
390 mental health disparities associated with parenthood among SGM adults.

### 391 **Conclusions**

392 Although SGM people often experience barriers to achieving parenthood, the  
393 number of SGM families is expected to increase in the coming decades as younger  
394 generations fulfill their family building intentions.<sup>19</sup> Our study adds nuance to our  
395 understanding of the health and well-being of SGM families. Overall, SGM parents  
396 experience worse mental health symptoms compared to SGM adults who were not  
397 parents, a population that is already underserved and disproportionately burdened  
398 by health disparities. These findings have important implications for the healthcare  
399 professionals and systems who aim to provide affirming and culturally competent  
400 care to diverse families.

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**Table 1. Demographic characteristics of sexual and gender minority parent and non-parent participants (N=9,625), The PRIDE Study, 2018-2020**

	Overall	Parents	Non-parents	p-value
<b>N</b>	9625	1460	8165	
<b>Age (years), median (Q1-Q3)</b>	30.0 (24.3-40.6)	45.1 (36.9-56.3)	28.2 (23.5-36.0)	<b>&lt;0.001</b>
<b>Race/Ethnicity<sup>1</sup>, n (%)</b>				
American Indian or Alaskan Native	349 (3.6)	75 (5.1)	274 (3.4)	<b>0.001</b>
Asian	503 (5.2)	30 (2.1)	473 (5.8)	<b>&lt;0.001</b>
Black, African American or African	387 (4.0)	53 (3.6)	334 (4.1)	0.452
Hispanic, Latino, or Spanish	715 (7.4)	75 (5.1)	640 (7.8)	<b>&lt;0.001</b>
Middle Eastern or North African	153 (1.6)	16 (1.1)	137 (1.7)	0.128
Native Hawaiian or Pacific Islander	39 (0.4)	<5 (<0.3)	37 (0.5)	0.127
White	8723 (90.6)	1366 (93.6)	7357 (90.1)	<b>&lt;0.001</b>
Multiracial	741 (7.7)	114 (7.8)	627 (7.7)	<b>0.907</b>
None of the above	188 (2.0)	43 (2.9)	145 (1.8)	<b>0.004</b>
<b>Sexual Orientation<sup>1</sup>, n (%)</b>				
Asexual	978 (10.2)	64 (4.4)	914 (11.2)	<b>&lt;0.001</b>
Bisexual	2928 (30.4)	459 (31.4)	2469 (30.2)	0.375
Gay	3212 (33.4)	327 (22.4)	2885 (35.3)	<b>&lt;0.001</b>
Lesbian	2167 (22.5)	471 (32.3)	1696 (20.8)	<b>&lt;0.001</b>
Pansexual	1583 (16.4)	278 (19.0)	1305 (16.0)	<b>0.004</b>
Queer	3696 (38.4)	399 (27.3)	3297 (40.4)	<b>&lt;0.001</b>
Questioning	292 (3.0)	34 (2.3)	258 (3.2)	0.105
Same-gender loving	503 (5.2)	66 (4.5)	437 (5.4)	0.211
Straight/heterosexual	180 (1.9)	53 (3.6)	127 (1.6)	<b>&lt;0.001</b>
Two-spirit	254 (2.6)	43 (2.9)	211 (2.6)	0.481
Selected more than one	3959 (41.1)	82 (33.0)	3477 (42.6)	<b>&lt;0.001</b>
Another sexual orientation	254 (2.6)	43 (2.9)	211 (2.6)	0.481
<b>Gender<sup>1</sup>, n (%)</b>				
Agender	167 (1.7)	8 (0.5)	159 (1.9)	<b>&lt;0.001</b>
Cisgender man	2501 (26.0)	308 (21.1)	2193 (26.9)	<b>&lt;0.001</b>
Cisgender woman	3829 (39.8)	666 (45.6)	3163 (38.7)	<b>&lt;0.001</b>
Genderqueer	1491 (15.5)	152 (10.4)	1339 (16.4)	<b>&lt;0.001</b>
Non-binary	793 (8.2)	76 (5.2)	717 (8.8)	<b>&lt;0.001</b>

Questioning	177 (1.8)	8 (0.5)	169 (2.1)	<b>&lt;0.001</b>
Transgender man	1254 (13.0)	141 (9.7)	1113 (13.6)	<b>&lt;0.001</b>
Transgender woman	559 (5.8)	202 (13.8)	357 (4.4)	<b>&lt;0.001</b>
Two-spirit	36 (0.4)	12 (0.8)	24 (0.3)	<b>0.005</b>
Selected more than one	1263 (13.1)	120 (8.2)	1143 (14.0)	<b>&lt;0.001</b>
Another gender identity	963 (10.0)	84 (5.8)	879 (10.8)	<b>&lt;0.001</b>
<b>Sex assigned at birth, n (%)</b>				
Female	6407 (66.6)	923 (63.2)	5484 (67.2)	<b>0.011</b>
Male	3214 (33.4)	537 (36.8)	2677 (32.8)	
<b>Intersex, n (%)</b>	129 (1.6)	28 (2.3)	101 (1.5)	0.065
<b>Currently in a Relationship, n (%)</b>	5866 (61.2)	1181 (81.4)	4685 (57.6)	<b>&lt;0.001</b>
<b>Education, n (%)</b>				
Less than high school degree	529 (5.5)	39 (2.7)	490 (6.0)	
High school degree or equivalent	79 (0.8)	7 (0.5)	72 (0.9)	<b>&lt;0.001</b>
Some college	2560 (26.6)	351 (24.1)	2209 (27.1)	
Undergraduate degree or higher	6439 (67.0)	1062 (72.8)	5377 (66.0)	
<b>Annual Household Income, n (%)</b>				
\$0	229 (2.4)	15 (1.0)	214 (2.7)	
\$1 - \$10,000	812 (8.6)	50 (3.5)	762 (9.6)	
\$10,001 - \$20,000	813 (8.7)	82 (5.7)	731 (9.2)	
\$20,001 - \$50,000	2463 (26.2)	256 (17.8)	2207 (27.7)	<b>&lt;0.001</b>
\$50,001 - \$80,000	1746 (18.6)	273 (19.0)	1473 (18.5)	
\$80,001 - \$100,000	854 (9.1)	177 (12.3)	677 (8.5)	
\$100,001 - \$150,000	2239 (23.8)	537 (37.3)	1702 (21.4)	
More than \$150,000	241 (2.6)	49 (3.4)	192 (2.4)	

Cell values of 5 or fewer are suppressed.

<sup>1</sup>Participants could select more than one race/ethnicity, sexual orientation, and gender.

Therefore, proportions may sum to greater than 1.0.

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**Table 2. Differences in health outcomes between sexual and gender minority parents and non-parents (N=9,625), The PRIDE Study, 2018-2020**

	Parents	Non- parents	Unadjusted		Adjusted	
<b>Continuous Outcomes</b>	mean (sd)	mean (sd)	$\beta$ (95% CI)	p- value	adj. $\beta$ (95% CI)	p-value
PROMIS Global Physical Health T-score <sup>1</sup>	46.5 (9.1)	45.0 (8.5)	1.43 (0.94, 1.92)	<b>&lt;0.001</b>	-0.21 (-0.72, 0.31)	0.427
PROMIS Global Mental Health T-score <sup>1</sup>	47.8 (8.3)	46.6 (7.9)	1.28 (0.82, 1.73)	<b>&lt;0.001</b>	-0.30 (-0.77, 0.18)	0.223
PHQ-9 Score for Depressive Symptoms <sup>2</sup>	7.0 (6.1)	8.4 (6.4)	-1.43 (-1.80, - 1.06)	<b>&lt;0.001</b>	0.43 (0.05, 0.82)	<b>0.026</b>
GAD-7 Score for Anxiety Symptoms <sup>3</sup>	5.62 (5.26)	6.90 (5.48)	-1.28 (-1.59, - 0.96)	<b>&lt;0.001</b>	0.41 (0.07, 0.74)	<b>0.016</b>
PCL-6 Score for PTSD Symptoms <sup>4</sup>	12.4 (5.3)	13.4 (5.5)	-0.97 (-1.29, - 0.65)	<b>&lt;0.001</b>	0.50 (0.17, 0.83)	<b>0.003</b>
AUDIT Score for Disordered Alcohol Use <sup>5</sup>	3.7 (4.4)	4.1 (4.4)	-0.36 (-0.62, - 0.11)	<b>0.005</b>	-0.01 (-0.3, 0.28)	0.943
<b>Binary Outcomes</b>	n (%)	n (%)	PR (95% CI)	p- value	aPR (95% CI)	p-value
<b>Mental Health</b>						
Ever had a Depression Diagnosis	900 (61.6)	5115 (62.6)	0.98 (0.92, 1.06)	0.656	0.98 (0.9, 1.06)	0.611
Moderate to Severe Depressive Symptoms <sup>2</sup>	376 (27.9)	2848 (37.4)	0.75 (0.67, 0.83)	<b>&lt;0.001</b>	1.12 (0.99, 1.27)	0.072
Ever had an Anxiety Diagnosis	715 (49.0)	4757 (58.3)	0.84 (0.78, 0.91)	<b>&lt;0.001</b>	0.99 (0.9, 1.08)	0.799
Moderate to Severe Anxiety Symptoms <sup>3</sup>	286 (21.1)	2228 (29.2)	0.72 (0.64, 0.82)	<b>&lt;0.001</b>	1.15 (1.00, 1.33)	<b>0.050</b>

Ever had a PTSD Diagnosis	413 (28.3)	1851 (22.7)	1.25 (1.12, 1.39)	<b>&lt;0.00</b> <b>1</b>	1.09 (0.96, 1.24)	0.166
High Risk for PTSD Symptoms <sup>4</sup>	281 (20.8)	2047 (26.8)	0.78 (0.69, 0.88)	<b>&lt;0.00</b> <b>1</b>	1.17 (1.01, 1.35)	<b>0.039</b>
<b>Substance Use</b>						
Ever Smoked Cigarettes	620 (42.5)	1904 (23.3)	1.82 (1.66, 1.99)	<b>&lt;0.00</b> <b>1</b>	1.16 (1.04, 1.28)	<b>0.006</b>
Ever Substance Use Disorder Diagnosis	84 (5.8)	358 (4.4)	1.31 (1.03, 1.66)	<b>0.025</b>	0.98 (0.75, 1.29)	0.907
Ever Alcohol Use Disorder Diagnosis	131 (9.0)	437 (5.4)	1.68 (1.38, 2.04)	<b>&lt;0.00</b> <b>1</b>	1.09 (0.87, 1.36)	0.440
Moderate to Severe Alcohol Use Disorder <sup>5</sup>	48 (3.6)	285 (3.8)	0.95 (0.70, 1.29)	0.759	1.08 (0.76, 1.53)	0.656
<b>Physical Health</b>						
Diabetes mellitus	61 (4.2)	170 (2.1)	2.01 (1.50, 2.69)	<b>&lt;0.00</b> <b>1</b>	0.93 (0.67, 1.30)	0.689
HIV	25 (1.7)	141 (1.7)	0.99 (0.65, 1.52)	0.969	0.66 (0.42, 1.04)	0.073
Hypertension	211 (14.5)	579 (7.1)	2.04 (1.74, 2.39)	<b>&lt;0.00</b> <b>1</b>	1.02 (0.86, 1.23)	0.792
Pelvic inflammatory disease <sup>6</sup>	56 (7.3)	110 (2.5)	2.97 (2.15, 4.09)	<b>&lt;0.00</b> <b>1</b>	1.78 (1.22, 2.61)	<b>0.003</b>
<b>Neurodiversity/Autism</b>	71 (5.8)	506 (7.6)	0.76 (0.60, 0.98)	<b>0.033</b>	1.15 (0.86, 1.55)	0.342

AUDIT, Alcohol Use Identification Test; BMI, body mass index; GAD7, Generalized Anxiety Disorder; HIV, human immunodeficiency virus; PCL6, PTSD Check List; PHQ9, Patient Health Questionnaire; PROMIS, Patient-Reported Outcomes Measurement Information System; PTSD, Post-Traumatic Stress Disorder. For continuous outcomes, we used linear regression. For binary outcomes, we used Poisson regression to estimate the prevalence ratio. Adjusted models adjust for age as a continuous variable, SGM subgroup, annual household income, educational attainment, race/ethnicity, and relationship status.

<sup>1</sup> PROMIS T-Scores of 50 represents the mean for the US population and has a standard deviation of 10 and here higher scores indicate better health.

<sup>2</sup> PHQ-9 scores range from 0-27, where higher scores indicate more depressive symptoms in the past two weeks. Scores  $\geq 10$  are suggestive of moderate to severe depression.

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<sup>3</sup> GAD-7 scores range from 0-21, where higher scores indicate more anxiety symptoms in the past two weeks. Scores  $\geq 10$  are suggestive of moderate to severe anxiety.

<sup>4</sup> PCL-6 scores range from 6-30, where higher scores indicate more PTSD symptoms. Scores  $\geq 17$  are suggestive of being at high risk for PTSD.

<sup>5</sup> AUDIT score range from 0-40, where higher scores indicate disordered alcohol use. Scores  $\geq 15$  are suggestive of moderate to severe alcohol use disorder.

<sup>6</sup> Restricted to participants assigned female at birth or who report ever having a uterus

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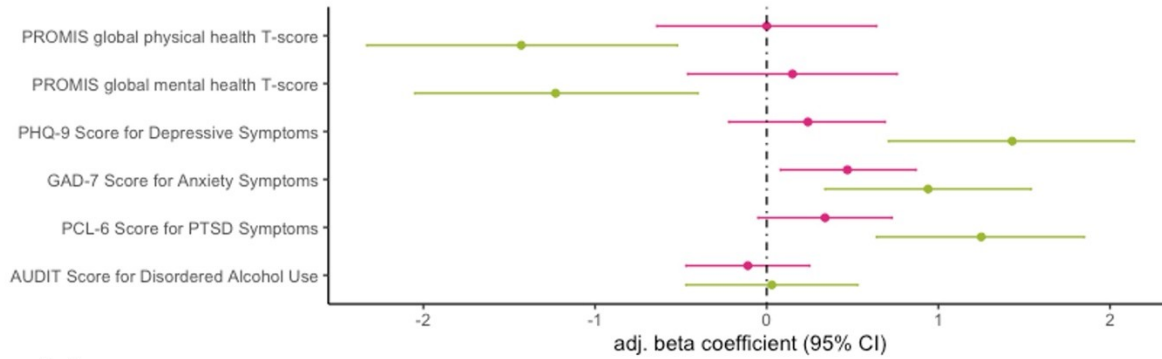
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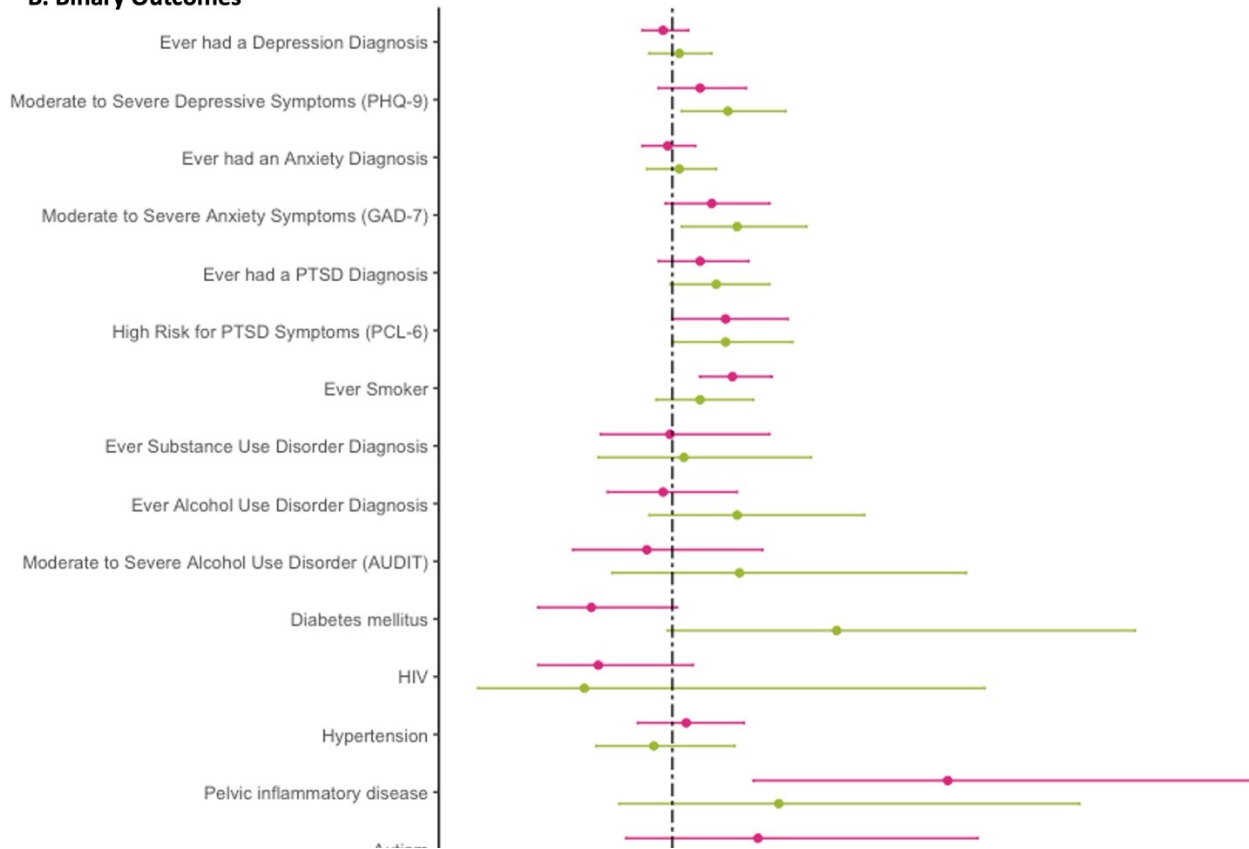
556 **Figure 1. Adjusted regression results for differences in health outcomes between**  
557 **sexual and gender minority parents and non-parents stratified by cisgender sexual**  
558 **minority and transgender and gender diverse participants, The PRIDE Study, 2018-**  
559 **2020.**

560 For continuous outcomes, we used linear regression. For binary outcomes, we used Poisson regression to  
561 estimate the prevalence ratio. Adjusted models adjust for age as a continuous variable, SGM subgroup,  
562 annual household income, educational attainment, race/ethnicity, and relationship status.

**A. Continuous Outcomes**

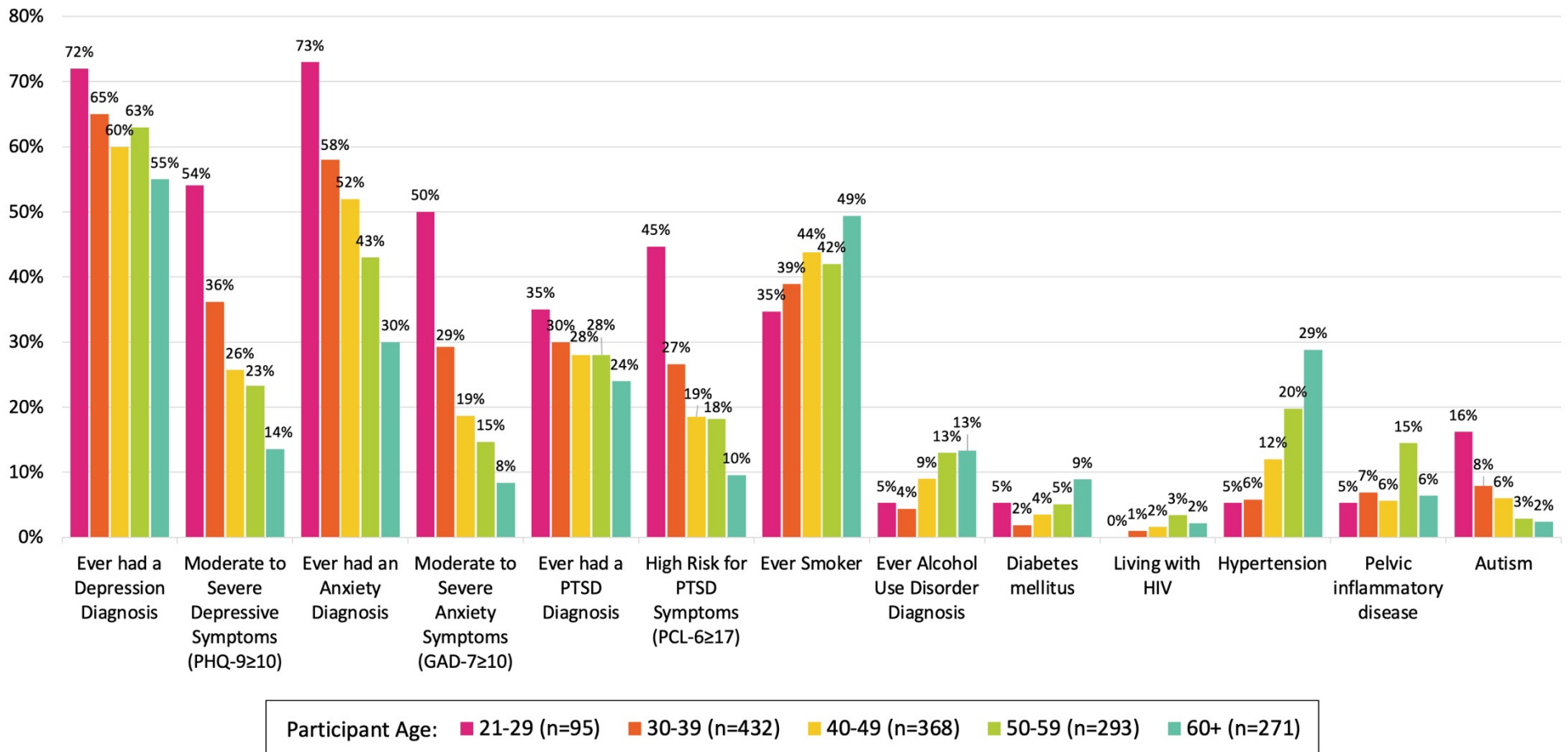


**B. Binary Outcomes**



564 **Figure 2. Differences in health outcomes among sexual and gender minority parents by age (N=1,460), The PRIDE**  
 565 **Study, 2018-2020**

566 This figure is restricted to the SGM participants who are parents. We included all binary outcomes except for substance use  
 567 disorder and AUDIT scores, neither of which varied by age category.



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