1 **Title:**

2 **Students' experience and adherence to containment measures during COVID-19 in**
3 **Switzerland**

4 *Number of words: 4787*

5 **Abstract**

6 **Background:** Young adults are not considered a risk group, but the public health response to

7 COVID-19 impacts all citizens. We investigated the impact on young adults' and their

8 adherence to containment measures addressing potential gender differences.

9 **Methods**: In April 2020 12'341 students of the x University were invited to a longitudinal

10 health survey. Survey topics spanned socio-demographic data, students' health status and

11 behavior, COVID-19 specific impact, concerns, information sources, adherence to

12 containment measures, and trust in government bodies. Group comparisons by gender and

13 multivariate ordinal regression models assessing adherence to restrictions of mobility and

14 social contacts were conducted (n=2'373).

15 **Results:** Mean age was 26.4 (SD=5.6), 70% were female. 43.5% reported some concern

16 about their own health, 2.7% stated major worries. Women experienced more conflicts

17 (p<.000) and, enjoyed time with the family more (p<.000). Men felt less locked up (p=.001).

18 The most frequented COVID-19 information source was public media (48%) and confidence

19 in government bodies was high (82%) for both genders. Men yielded lower adjusted odds

20 (OR; 95%-CI) of adherence regarding the following measures: social distancing (0.68; 0.53-

21 0.87), non-utilization of public transport (0.74; 0.56-0.97), 5-person limit for social gatherings

22 (0.47; 0.35-0.64) and the stay at home rule (0.64; 0.51-0.82).

23 **Conclusion:** Early in the pandemic a high degree of adherence was observed in this young

24 academic population. Containment measures restricting movement and social contact yielded

25 considerable differences by gender, information source and perceived susceptibility to the

26 virus. More targeted communication may increase adherence regarding mobility restrictions.

Background

27

28   On 11 March 2020, the World Health Organization (WHO) declared the coronavirus

29 disease (COVID-19) outbreak a world-wide pandemic (WHO, 2020). As countries quickly

30 developed responses to curb local outbreaks, one of many challenges was the communication

31 of risks and public health measures to gain public cooperation (Ratzan et al., 2020). First data

32 from Europe indicate a generally high acceptance of the public health measures implemented

33 in the respective countries. However, while most people approved fines for 14-day quarantine

34 violations, ban of public gatherings and border closures, curfews and suspension of travel

35 were less accepted, and the under-25 year-olds were significantly opposed to stay-at-home

36 orders (Sabat et al., 2020). An Israeli study points to differing associations between risk

37 perceptions, evaluation of crisis management and compliance by age (Gesser-Edelsburg et al.,

38 2020). Furthermore, perception of norms and social pressure, as well as personal

39 susceptibility and consequences are major predictors of compliance (Eastwood et al., 2009;

40 Emanuel et al., 2012). A key factor in reaching the public is their utilization of information

41 sources. Sabat et al. observed that during the current pandemic 86 % of European respondents

42 mentioned receiving updates from TV and 50 % additionally searched for information online.

43 As younger generations are more likely to seek health information on the internet in general,

44 they may especially resort to this medium now, thus using a medium known to transport

45 excessive non-validated information (Ratzan et al., 2020). Apart from age, gender is a

46 relevant determinant of social health and health behavior. However, gender is often neglected

47 when developing health promotion and prevention strategies (Östlin et al., 2006) based on the

48 assumption that communication will be just as effective for men as for women. Experience

49 from previous epidemics, however, indicates that women are more likely than men to be

50 compliant, as are older people compared to younger generations (Brown et al., 2010).

51   For successful health promotion and disease prevention strategies and communication, local

52   knowledge of socio-demographic factors and factors of compliance seem of utmost

53   importance (Betsch et al., 2020).

54   In the initial phase of the pandemic, younger age cohorts (< 29 yrs.) were not

55   considered a high risk group for COVID-19 infections (CDC, 2020). However, public health

56   measures implemented in Switzerland and other countries in response to COVID-19 had an

57   enormous impact on all citizens. In Switzerland, young people were publicly criticized for

58   non-compliance (20min, 2020). Containment measures impacting mobility and social contacts

59   may indeed have been more difficult to follow for this age group, for whom high mobility, an

60   active social life and various contacts are typical, especially as risk perception was low. Early

61   on in the epidemic, shortly after universities implemented online-teaching, we developed a

62   longitudinal study at xx, a Swiss University of Applied Sciences. The main aim of the Health

63   Study during the Corona pandemic (HES -C) is to (1) investigate the impact of COVID-19 on

64   the students' lives, (2) explore the impact on students' health and health behavior, and (3) to

65   study students' perception of the pandemic and the corresponding measures. This paper

66   presents the impact that containment measures had on student's lives, focusing on their

67   adherence to various containment measures by gender and investigating potential influencing

68   factors, such as concern for one's own health, confidence in the measures, social trust and

69   information behavior

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Methods

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Procedure

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73   We employed a prospective open cohort study design with four survey time points

74   between April and September 2020. The first survey (T0) took place from 3 to 14 April 2020

75   and covered seven working days. The present study uses cross-sectional data from the first

76   survey (T0). Students from all faculties of the xx (N =12'431) received a non-personalized

77   email with information about the study and an online-link inviting them to fill in the online-

78   survey. Participants had to actively provide their consent to participate in the study before

79   filling in the online questionnaire. Anonymity was guaranteed at all times. The study is in

80   accordance with the Declaration of Helsinki and was approved by both the local cantonal

81   ethics committee (BASEC-Nr.x) and the xx data protection officer.

82

83   *Study population and data*

84   The net participation rate was 20% (n=2'429). For the present study, a sample of

85   2'373 students with valid information was included, 'other' gender (n=10) were excluded for

86   analysis of gender differences.

87   *Questionnaire Outcomes and measures*

88   The survey questions covered both COVID-19 and health related topics ([Link to

89   study homepage will be inscerted]). In this paper we analyze the following items:

90   Adherence to the *COVID-19 public health containment measures and hygiene*

91   *recommendations* was assessed with the following question "Do you follow the

92   recommendation on ….?" with students responding with either "never", "rarely", "often" or

93   "always", or "not relevant". The following nine adherence indicators were assessed: (1)

94   Washing your hands regularly and thoroughly; (2) Avoiding shaking hands; (3) Maintaining

95   distance to other persons; (4) Sneezing and coughing into a tissue or the crook of your arm;

96   (5) Avoiding unnecessary journeys by public transport; (6) Avoiding gatherings of more than

97   five people; (7) Staying at home with fever and a cough; (8) Only going to the doctor's office

98   or emergency station ward after making an appointment by telephone; (9) Not leaving the

99   house if possible. In this manuscript we focus on measures restricting social activities and

100   mobility, (3), (5), (6), and (7), because these measures affect young people the most.

101   Responses were coded as (1) never/rarely, (2) often or (3) always.

102   The *impact of COVID-19 pandemic and the public health measures* on students' and

103   their social life was measured with statements, shown in Figure 1. (Sotomo, 2020).

104   Concern *about their own health or about the health status of their family* (parents,

105   siblings, grand-parents, own child/child of partner, other relative) was collected. The answer

106   categories were "no concerns", "some concerns" or "great concerns", and 'not relevant' (for

107   family members). (Sotomo, 2020).

108   *COVID-19 information behavior* was assessed with a list of information sources, with

109   students indicating the first, second, and third most frequently used source: "Public health

110   institutions, Homepage of the Federal Office of Public Health, Cantons, WHO)", "Internet

111   (non-specific), "Public media (live ticker, daily news, radio)", "Scientific articles/internet

112   pages", "Social media (Facebook, YouTube, Twitter, etc.)", "Friends/Family", "Others,

113   namely: Free text".

114   Students' *confidence* in the Federal Council, Federal Office of Public Health and the

115   university in terms of their competence, openness of communication and trust in the measures

116   implemented was assessed with the following answer categories (1) "no confidence at all", (2)

117   "little confidence", (3) "high confidence", (4) "very high confidence" or (5) "don't know"

118   (Scheibler et al., 2011).

119   *Social trust* was measured with the Social Trust Scale (SST; Breyer, 2015). The

120   statement 'Do you usually assume that most people can be trusted, or do you rather think that

121   you cannot be careful enough?' was rated on an 11-point Likert scale, with lower scores

122   indicating a less social confidence.

123   *Socio-demographic variables* collected were gender, age, nationality, university

124   faculty affiliation, pursued degree (BSc, MSc.), part-time vs. full-time degree and perceived

125   parental social status at student age 16. (MacArthur scale; Hoebel et al., 2015).

126

127   *Statistical analyses*

128   Descriptive statistics include means and standard deviations for continuous variables

129   and percentages for categorical variables. Bivariate gender differences were assessed using

130   Chi^2-tests and Bonferroni corrected p-values were calculated where appropriate. For

131   multivariate analyses, we focused on four of the nine containment and public health measures:

132   3) social distancing, 5) avoiding public transport, 6) avoiding gatherings 7) staying home, and

133   used ordered logistic regressions models, i.e. cumulative odds models, with robust standard

134   errors to estimate adjusted models for all four containment measures . The main investigated

135   predictors were gender and age (emerging adulthood (18-24 years) vs. older students),

136   adjusted for nationality, parental social status, and university faculty affiliation. In addition,

137   factors that might influence adherence, namely concerns for one's own health, the primary

138   source of information regarding COVID-19, trust in the Swiss Federal Council's measures to

139   contain the COVID-19 epidemic, and trust in other people, were included into the model. We

140   report Odds Ratios (OR) with corresponding 95% confidence intervals (95% CI) and P-values

141   from the full model. Sensitivity analyses yielded no significant interactions between gender

142   and age in any of the models. Consequently, only main effects for these parameters are

143   reported. We calculated adjusted predictive margins and average marginal effects with 95%

144   CI for gender. Statistical significance level alpha was set at $P<0.05$. We used Stata Version

145   15.1 (StataCorp, College Station, TX, USA) for all statistical analyses.

146

147 **Results**

148   Descriptive statistics of the study sample are shown in S-Table 1 (Supplemental-

149 Table). Students from all fields of studies participated. Women (70%) and students from the

150 School of Health Professions (25%) were overrepresented. The mean age of the total sample

151 was 26.4 years (SD=5.6), 47% were defined as "emerging adults" (18-24-years-old).

152   With respect to the impact of the containment measures on the students' lives, the vast

153 majority (76%) reported that their timetable and their daily routine had changed considerably,

154 while the workload had increased for 48% of the students. Many appreciated the freedom that

155 increased self-study brings (57%), but most students missed social contact with their fellow

156 students (81%). Just over a third worried about their semester completion (39%), and felt that

157 they were not well informed about the consequences regarding semester exams and the

158 continuation of their studies (32%) (Figure 1). With respect to their every-day life, around

159 10% of students experienced little or no negative effects (Figure 1). A good third reported

160 'experiencing more tension and conflict' (33%) and 'feeling lonely' (31%). 42% stated that

161 they felt locked up. On the positive side, over half of the students said they enjoyed their

162 increased time with their family and/or partner (65.8%).

163   Gender differences were found regarding the impact of all four containment measures.

164 Significantly more women agreed that the timetable had changed considerably (p=.003), men

165 felt less well informed about university decisions (p=.000). Women experienced more tension

166 and conflict (p=.000), but also reported enjoying time with their family more (p=.000)

167 compared to men. While men were more frequently bored (p=.001), they felt less locked up.

168 Men stated more often that they felt no specific impact (p=.000) compared to women.

169   [insert - Figure 1: Impact of COVID-19 on study and social life]

170   Generally, adherence to containment measures and hygiene recommendations was

171 high, with at least 95% of the students reporting following most of these measures often or

172 always (Table 2). A little lower, but still high (81.5%) was the adherence to the containment

173 measure 'Not leaving the house if possible'. 18.5% reported not to follow this specific

174 measure, the most frequently stated reasons for this were "shopping", "going for walks" and

175 "sports". Bivariate analyses for each containment measure and hygiene recommendation

176 showed significant associations between gender and non-adherence for seven out of nine

177 measures (see Table 2). Adjusted predictive margins of adherence to containment measures

178 and marginal effects, showing the absolute probabilities and differences regarding adherence

179 by gender, are presented in the last section. Overall, women showed lower non-adherence

180 compared to male students.

181   [insert - Table 2 - here]

182   More than half of the students reported being worried about their own health (43.5%),

183 among them 2.7% reported major worries, 56.5% had no worries. While not relevant to all

184 students, most reported to be worried about grandparents and parents (S-Figure 2). There was

185 a significant difference between gender and health concerns for grandparents (p=.000),

186 parents (p=.004), siblings (p=.000) and other family members (p=.000), but not for partners

187 and students' own health. Overall, women were more often worried and men voiced major

188 concerns less often.

189   Students' first and second choice of information source in relation to COVID-19 were

190 public media, 47.9% and 29.4% respectively, and public health institutions, 34.5% and

191 26.7%. Participants who chose a third information source, reported friends/family (28.1%)

192 and the internet (21.4%) as their most frequent source of information, followed by scientific

193 journals (13.1%) and social media (13.9%). We observed significant differences by gender for

194 all three sources (1st (p<.001), 2nd (p<.05) and 3nd (p<.05)). As their primary source of

195 information, women were more likely to choose public health institution compared to men

196 (37% vs. 29.5%), while men were more likely to choose the internet (13.1% vs. 6.7%) or

197 scientific articles (4.2% vs. 1.3%) (S-Table 3). Trust in the Federal Council, the Federal

198 Office of Public Health and their university was generally high on all three dimensions:

199 confidence in the competence to cope with the COVID-19 epidemic (72.9 – 92.5%), openness

200 of communication regarding the COVID-19 epidemic (78.1 – 84%) and confidence in

201 measures taken (79.6 – 82%). Trust was highest for the Federal Council and lowest for the

202 university (S-Figure 3). Bivariate analysis for confidence in institutions by gender revealed

203 women had more confidence in the university, for all three aspects (competence [p=.015],

204 communication [p=.000], actions [p=.000]).

205

Multivariate analyses

206

207 Gender was associated with all four containment measures. Male students had lower

208 odds compared to females regarding maintaining distance to other persons (OR=0.7; p=.003),

209 avoiding unnecessary journeys by public transport (OR=0.7; p=.030), avoiding gatherings of

210 more than five people (OR=0.5; p=.000) and not leaving the house (OR=0.6; p=.000) (Table

211 4). Age was associated with one containment measure. Students in the age group emerging

212 adulthood (18-24 years) had lower odds of maintaining distance compared to older students

213 (OR=0.7; p=.002). Moreover, the association of age and staying at home was borderline

214 significant (OR=1.2; p=.084).

215 Concern, information resources, trust and confidence in measures implemented by the

216 Federal Council and social trust proved to be independent factors associated with one or more

217 of the containment measures. Participants who used public media or public health institutions

218 as information sources had higher odds regarding maintaining distance (OR=1.5; p=.003) and

219 higher odds regarding avoiding unnecessary journeys by public transport (OR=1.6; p=.001),

220 but no association with the other two containment measures was found. Concerns about their

221 own health was significantly associated with three containment measures. Students with little

222 or major concerns about their own health, compared to those with no concerns, had higher

223 odds to maintain distance (few: OR=1.4; p=.001, major: OR=2.9; p<.000), to avoid

224 unnecessary journeys by public transport (few: OR=1.5; p=.001, major: OR=3.8; p=.013), and

225 to not leave the house (few: OR=1.7; p<.000, major: OR=4.7; p<.000). Confidence in

226 measures by the Federal Council was positively associated with all four containment

227 measures. Students with very high confidence in measures had significantly higher odds of

228 maintaining distance to other persons compared to students with high confidence (OR=1.5,

229 p<.000). Weak evidence with P<0.1 (Bland, 2015) was found for avoiding unnecessary

230 journeys by public transport (OR=1.3; p=.073) and not leaving the house if possible (OR=1.2;

231 p=.052) in students with very high confidence compared to high confidence. Students with no

232 confidence in measures had significantly lower odds of avoiding gatherings of more than 5

233 persons compared to students with high confidence in measures (OR=0.3; p=.014). Lastly,

234 social trust was positively associated with avoidance of unnecessary journeys by public

235 transport (OR=0.9; p=.004).

236

237 [insert – Table 4. Adherence to containment measures and its correlates: Ordered logistic
238 regression model - here]

239

240 Additionally, we calculated adjusted predictive margins of adherence to containment

241 measures by gender, as well as average marginal effects. The adjusted probabilities of

242 *never/rarely*, corresponding to non-adherence to the four containment measures, were

243 consistently higher for men than for women (see S-Figure 4). Differences in the adjusted

244 absolute probabilities of adhering to measures between genders are presented in Figure 5, the

245 reference category being women. An example of interpretation by means of 'maintaining

246 distance': the adjusted predicted probability of never/rarely complying with maintaining

247 distance is 0.042 (95%-CI: 0.033 - 0.051) for women and 0.061 (95%-CI: 0.044 - 0.077) for

248   men (S-Figure 4.A). The absolute difference of the probability between gender is 0.018 (95%

249   CI: 0.005 - 0.032, p=0.009) Figure 5.A. Absolute differences in never/rarely, often and always

250   complying differed significantly, but were small. The largest absolute difference between

251   genders is consistently found in the category "always" (approx. 10%; i.e. delta p = 0.1). Thus,

252   the probability that men always comply is lower compared to women.

253   [insert - Figure 5. - here]

254

255

256   **Discussion**

257   Overall, adherence to containment measures and hygiene recommendations was very

258   high among Swiss university students. Avoiding leaving the house and social distancing were

259   the two containment measures with the highest non-compliance of 18% and 5%, respectively.

260   Containment measures restricting movement and social contact yielded differences by gender

261   and perceived susceptibility. Further, gender differences were present in the COVID-19

262   information behavior. Confidence in institutions to cope with the pandemic was high

263   irrespective of gender. Adjusted odds of adherence in men were 30 - 50% lower than in

264   women, and students who were highly concerned about their own health showed a 30 - 70%

265   higher odds of adherence to one or the other containment measure. On a population

266   prevalence level, the odds correlate with an absolute difference of roughly 2 % in non-

267   compliance by gender.

268   Daily routines and lives abruptly changed for all students with the closing of

269   universities and the national implementation of containment measures. However, the

270   lockdown was perceived very differently. While more than half of the students appreciated

271   the freedom of self-study, just as many struggled with it. The majority of students missed

272   having social contact with other students. In-person social contact could obviously not be

273   replaced by online contact, and in line with this hypothesis, one third of our sample reported

274   that they felt lonely and 42% felt locked up. In a comparable age group (18-29 year olds) in

275   Italy, only 9% reported feeling lonely and 15% reported lack of freedom during the lock-

276   down (Barari et al., 2020). As containment measures in Italy were even more restrictive, this

277   is rather surprising. Maybe fewer Italians felt lonely because a majority spent the social

278   distancing period with their family, according to Mazza et al. 75% lived at home and only 9%

279   spent the time alone (Mazza et al., 2020).

280   While only few students perceived themselves to be at risk, many voiced major

281   concerns for family members, especially for grandparents and parents, in accordance with

282   media reportings and scientific literature at the time. However, students had very concrete

283   concerns related to the COVID-lockdown. A little over a third were worried about their

284   semester completion, and just as many felt insufficiently informed about the consequences of

285   the university's decisions for their semester exams. This lack of confidence could also be seen

286   in their confidence rating of the universities.

287   The primary sources of information in our sample were public media and official

288   public health institutions. The internet ranked third. Considering data on general and health

289   specific information behavior of younger and higher educated persons (Bonfadelli & Signer,

290   2008; Cotten & Gupta, 2004), this was an unexpected result. A major reason for the use of

291   digital information resources is the accessibility and availability of information overweighing

292   the lack of trust in internet sources (Cotten & Gupta, 2004; Jaks et al., 2019). In the case of

293   COVID-19, however, there was abundant information in all types of media and accessibility

294   was not an issue. Furthermore, literature on risk and catastrophe communication indicates that

295   in critical situations people resort to public media. Bonfadelli & Signer point out that

296   traditional media may have continued to be the most used information resource in the initial

297   phase of a public crisis, followed by communication with family and friends, for the

298 emotional processing of the event. Overall, the internet increasingly comes into play

299 (Bonfadelli & Signer, 2008). The use of public media and public institutions as primary

300 information sources was significantly associated with adherence to social distancing and

301 avoidance of public transport, regardless of the confidence in the measures, indicating that

302 these information sources are considered trustful. Social media use as the primary source of

303 information for COVID-19 has been found to be associated with conspiracy beliefs and with

304 lower adherence to health protective behavior (Allington et al., 2020).

305   Confidence in the Federal Council, the Federal Office of Public Health and the

306 university to cope, openly communicate, and confidence in the measures taken was very high,

307 although confidence was lowest for the university. Switzerland's pandemic response was, in

308 fact, decided and communicated by the Federal Council, with thematic support by the Federal

309 Office of Public Health, whereas the universities only re-communicated aspects relevant to

310 the university. Understandably, the universities were cautious in their communication

311 concerning the academic year, possibly underestimating the need for information of many

312 students. Even during non-pandemic times, abrupt changes to university life lead to high

313 insecurities (Zhai & Du, 2020). Not all countries report equally high confidence in

314 government bodies (Sabat et al., 2020). For example, Italians were more skeptical (Barari et

315 al., 2020), only about half had confidence in the openness of communication (58%) or had

316 confidence in the competence of the government to cope with the COVID-19 pandemic

317 (51%). Certainly, the German-speaking part of Switzerland was at no time equally affected

318 (ECDC, 2020; FOPH, 2020), nor is Italy known for high trust in their government with 26%

319 of young Italians rusting the government, compared to, 88% of young Swiss people (15-29

320 years) (OECD, 2019). A comparisons across different EU countries with respect to measures

321 and trust in government support during the pandemic indicates a general north-south gradient,

322   with higher trust in the north and higher acceptance of measures in the more affected south

323   (Sabat et al., 2020).

324   Adherence to containment measures was very high in our student sample. That is

325   rather surprising since the media frequently depicted young people not complying with

326   containment measures (20min, 2020) and since the age-group is more risk-prone (Schwartz

327   & Petrova, 2019) and less easily reached by health promoting messages in general. In line

328   with other studies (Allington et al., 2020; Barari et al., 2020; Brouard et al., 2020; Mazza et

329   al., 2020; Prati et al., 2011; Rubin et al., 2009), we found that female gender was positively

330   associated with higher adherence to all containment measures. Male gender had a

331   significantly higher probability to never or rarely follow the containment measures

332   investigated in this study. Compared with the relative effect of gender, expressed by the OR,

333   the absolute differences of the probability between genders were rather small, but nevertheless

334   noteworthy. Although, gender has been repeatedly found to be associated with adherence,

335   explanations of this effect are rarely given (Allington et al., 2020; Barari et al., 2020; Brouard

336   et al., 2020). A possible explanation for gender differences with respect to adherence was

337   thought to be higher concern voiced by women. However, adjusting the model for concern

338   and further covariates still yielded a significant gender effect. Another potential explanation is

339   the generally higher compliance to health promoting and prevention behavior repeatedly

340   observed in women compared to men (Emanuel et al., 2012; Turrell, 1997). Olcaysoy Okten

341   et al. argue that higher female adherence can be related to higher attention to one's own and

342   other people's health-related needs as well as greater empathic response to others' pain in

343   women compared to men (Olcaysoy Okten et al., 2020). How best to reach men in health

344   promotion is a constant narrative that may seem less a concern regarding this global health

345   topic and overall high adherence. However, we see in our data, that despite the medial

346   presence of the topic and tremendous communication efforts by government bodies, the

347   current communication does not reach genders equally. A more targeted communication

348   directed to young men would probably increase adherence.

349   Among the investigated factors, the information source, confidence in federal council,

350   and social trust, were all significantly associated with one containment measure or another.

351   Concern was the most consistent across the various measures, with higher concern associated

352   with higher odds of a higher adherence. Interestingly, concern for others showed no

353   association, possibly due to the fact, that the measures we investigated were not perceived to

354   directly put grandparents or parents at risk, especially if students and relatives didn't share a

355   household.

356   In this unprecedented situation, data indicates that trust in government bodies is not a

357   prerequisite for adherence to containment measures (Barari et al., 2020; Sabat et al., 2020).

358   However, high adherence is most consistently associated with high trust (Prati et al., 2011;

359   Rubin et al., 2009). Prati et al. conclude, that it is important to build trust and commitment in

360   advance of a pandemic outbreak (Prati et al., 2011). In our young, academic population, the

361   low variability of trust limits the assessment of its relevance for adherence. Therefore it is

362   noteworthy that a lack of confidence in COVID-19 measures, was associated with low

363   adherence to the measure restricting group gatherings to no more than five people, while

364   social distancing was associated with high confidence in measures. Social trust was

365   negatively associated with avoiding public transport but with no other measures. Apparently,

366   the non-socio-demographic predictors are associated very specifically with certain measures,

367   whereas socio-demographic traits show a more general pattern of associations.

368   Other socio-demographic factors included in the model were rarely associated with

369   outcomes. Regarding age, younger students had significantly lower odds to maintain distance,

370   but other containment measures showed no difference across the two defined age groups.

371   Nationality and social status yielded little or no association with adherence. Some differences

372 could be observed across the various students' affiliations, mostly related to the "stay at

373 home" measure. Interestingly, compared to the reference group of students of the School of

374 Health Professions (HP) other students had higher odds of adherence.

375   Our study results are not generalizable to Swiss young adults from other language

376 regions. The Italian-speaking region of Switzerland for example had far more COVID-19

377 cases than the German-speaking region, and the geographic closeness to Italy may have also

378 impacted health behavior. It is also possible that young working adults or adults in other

379 educational settings perceived the pandemic and adhered to measures differently. On the other

380 hand, a third of our sample are part-time students, and a university of applied sciences

381 typically draws from a wider educational background compared to a classic university.

382 Moreover, in a current study from France using a large community based sample, education

383 was not associated with adherence (Brouard et al., 2020). With respect to potential biases, we

384 cannot exclude selection bias. Students taking the pandemic more seriously might have been

385 more likely to participate in the current study. While the sample is representative with respect

386 to age and gender compared to the overall student body, no additional data on non-

387 participants is available. Furthermore, self-reported data on adherence could be biased by

388 social desirability, even if data collection was completely anonymous. A clear strength of the

389 study is the inclusion of a large number of students from different fields of study, coming

390 from different geographical areas in the German-speaking region of Switzerland, as well as

391 the early collection of data during the first wave and during the lock-down.

392

393 *Conclusion*

394 Our data provides early insight into students' experience of the pandemic, and the successful

395 communication of the Swiss public health institutions with respect to containment and

396 hygiene measure. The seriousness of the COVID-19 pandemic was obviously recognized,

397   leading to a very high level of adherence in containment and hygiene measures in both

398   genders. Although gender differences in non-adherence were significant, they are small in

399   absolute terms. In addition, although students reported little personal susceptibility, the

400   subjective risk perception was associated with higher adherence, as did utilization of public

401   media and public institutions as information sources. These insights may lead the way for

402   future improvements of public health communication strategies to increase adherence to

403   public health measures in young men and women.

404

405   **References**
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509

510   **Table 2:** Adherence with containment measures and hygiene recommendations in the context of

511   COVID-19

	totale	Female %	Male %	Pearson Chi^2 [1]
	Never/ rarely	never/ rarely	never/ rarely	
Wash your hands regularly and thoroughly	3.3	2.2	6.2	20.58, p < .001
Avoid shaking hands	1.4	0.5	3.7	30.52, p < .001
Maintain distance to other persons	4.7	3.5	7.8	16.74, p < .001
Sneezing and coughing into a tissue or the crook of your arm	2.5	1.4	5.3	25.49, p < .001
Avoiding unnecessary journeys by public transport	2.8	2.4	4.1	4.47, p = .035
Avoid accumulations of more than five people	1.4	0.8	2.8	11.51, p = .001
Stay at home with fever and cough[2]	2.5	2.3	3.1	0.58, p = .445
Only go to the doctor's office or emergency ward after making an appointment by telephone[2]	2.3	2.2	2.8	0.31, p = .581
Do not leave the house if possible	18.5	16.1	24.6	19.28, p < .001

512   [1] df (1)

513   [2] smaller sample size due to many 'not relevant' answers, which were excluded for bivariate analysis

514

515   **Table 4:** Adherence to containment measures and its correlates: Ordered logistic regression model.

Variable	Maintain distance OR	Maintain distance 95% CI	Use public transport OR	Use public transport 95% CI	5 persons rule OR	5 persons rule 95% CI	Stay at home OR	Stay at home 95% CI
Gender (ref=female)								
Male	0.68**	0.53-0.87	0.74*	0.56-0.97	0.47***	0.35-0.64	0.64***	0.51-0.82
e_adulthood (ref=students >24years)								
Emerging adulthood	0.73**	0.60-0.89	0.92	0.73-1.16	0.81	0.62-1.05	1.18	0.98-1.42
Nationality (ref=Swiss)								
Swiss dual nationality	0.96	0.75-1.23	1.18	0.88-1.59	0.85	0.61-1.19	0.99	0.79-1.25
Foreign nationality	1.64**	1.17-2.29	1.19	0.76-1.85	1.01	0.62-1.63	1.08	0.77-1.54
sh_status	0.99	0.93-1.05	1.02	0.96-1.09	1.06	0.98-1.15	0.99	0.93-1.04
Faculty (ref=health professions)								
AL	1.32	0.92-1.90	0.83	0.55-1.25	1.35	0.80-2.27	1.94***	1.36-2.76
AP	1.37	0.95-1.95	1.19	0.74-1.91	2.61**	1.33-5.14	1.06	0.74-1.51
ADC	1.59	0.84-3.00	1.27	0.60-2.67	2.40	0.90-6.38	1.26	0.69-2.28
LS	1.30	0.94-1.80	0.83	0.57-1.20	1.53	0.97-2.42	1.52*	1.11-2.08
E	1.61*	1.12-2.33	1.32	0.87-2.01	1.70*	1.08-2.69	1.93***	1.38-2.70
ML	1.04	0.78-1.39	0.96	0.68-1.34	1.29	0.89-1.88	1.27	0.97-1.66
SW	1.20	0.85-1.71	1.14	0.74-1.78	1.16	0.71-1.87	1.64**	1.19-2.25
primary source of information (ref=all other sources)								
health/public services	1.52**	1.15-2.01	1.61**	1.21-2.13	1.30	0.94-1.81	1.03	0.81-1.30
concerns about own health (ref=no concerns)								
a little concerns	1.36**	1.13-1.65	1.45**	1.15-1.82	1.30	1.00-1.69	1.69***	1.41-2.03
big concerns	2.88***	1.59-5.23	3.77*	1.32-10.81	1.87	0.71-4.95	4.67***	2.58-8.45
Trust in measures (ref=trust much)								
no trust at all	0.49	0.14-1.66	0.54	0.20-1.47	0.28*	0.10-0.77	0.53	0.21-1.34
littel trust	0.93	0.68-1.27	0.95	0.66-1.36	0.77	0.52-1.13	0.89	0.67-1.18
very much trust	1.54***	1.25-1.88	1.25	0.98-1.60	1.19	0.89-1.59	1.21	1.00-1.46
I don't know	0.89	0.53-1.49	0.86	0.50-1.47	1.14	0.55-2.37	0.67	0.36-1.23
Social trust[1]	0.96	0.92-1.01	0.92**	0.87-0.97	0.95	0.89-1.01	0.97	0.93-1.02
Cutpoint 1	-2.83	-3.43-(-2.22)	-3.49	-4.20-(-2.77)	-4.08	-4.87-(-3.29)	-1.25	-1.77-(-0.72)
Cutpoint 2	0.86	0.29-1.44	-1.1	-1.74-(-0.45)	-1.43	-2.11-(-0.74)	1.20	0.67-1.72

516   *** p< 0.001, ** p<0.01, *p<0.05

517   Note. AL=Applied Linguistics, AP=Applied Psychology, ADC=Architecture, Design and Civil
518   Engineering, HP=School of Health Professions, LS=Life Sciences and Facility Management, E=School of
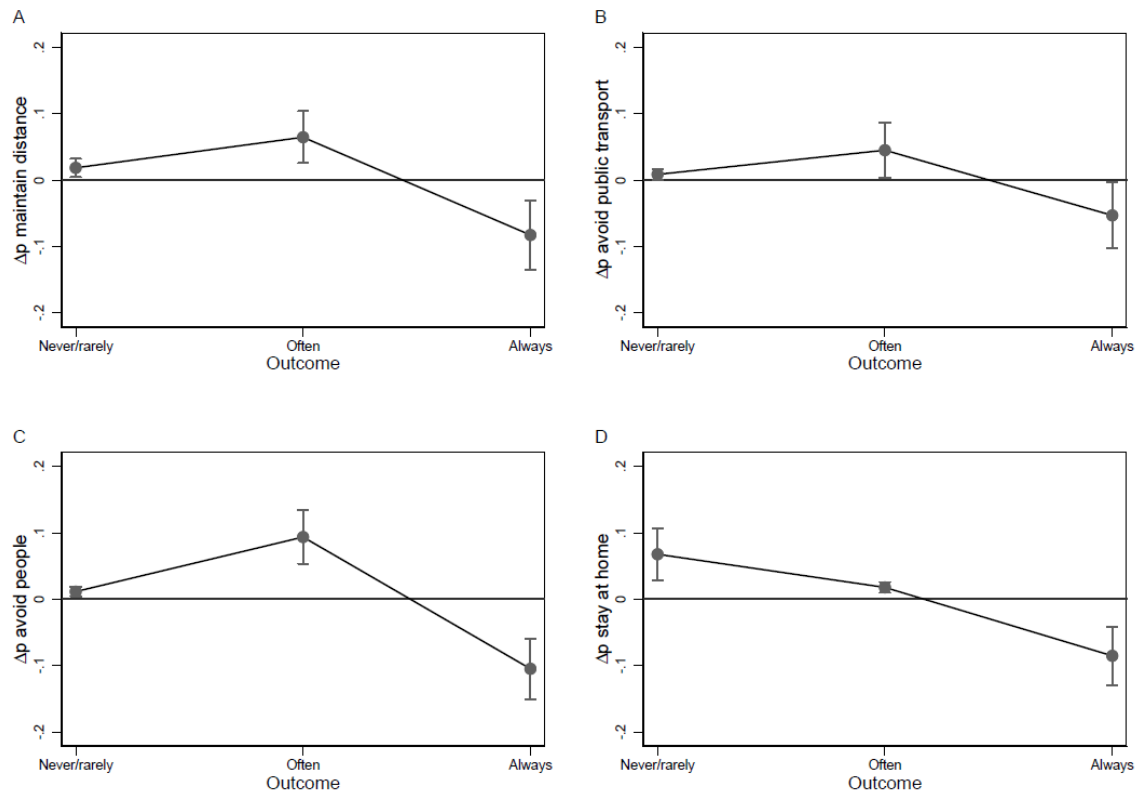519   Engineering, ML=School of Management and Law, SW=Social Work

520   [1] Social Trust Scale (SST; Breyer, 2015)

521
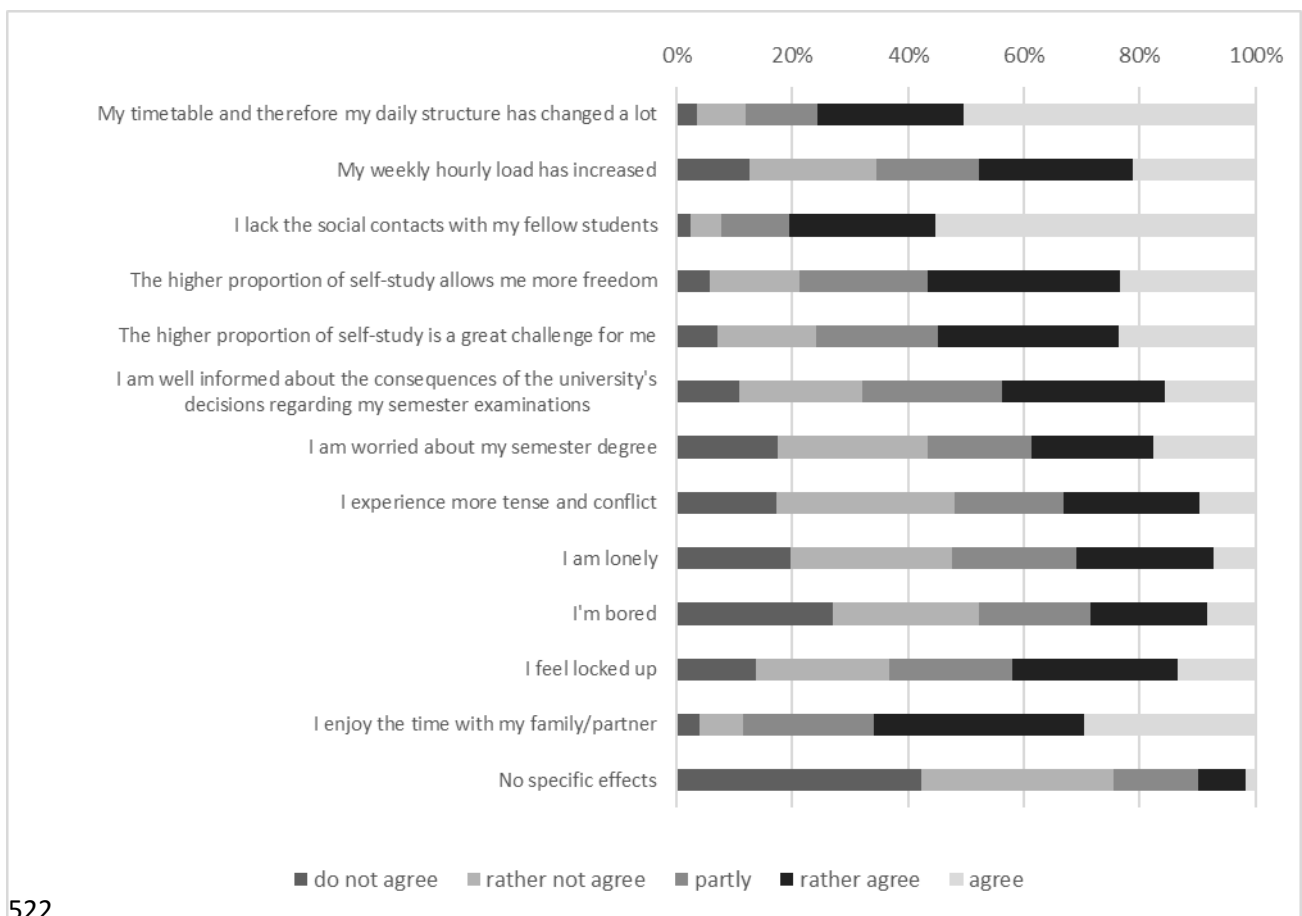
Figure 1: Impact of COVID-19 on study and social life

524

Figure 5: Differences in adherence between genders