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Food Insecurity and Lived Experience of Students (FILES)

(Submitted to the Education Select Committee Inquiry on The impact of COVID-19 on education and children's services, 03 June 2020)

FILES is a research collaboration involving a number of academics and student union officers from across England, Northern Ireland and the USA. The group's key objective is to research food insecurity and lived experiences of students in Higher Education. Food insecurity has been explored in other populations, but no evidence has been presented that examines food insecurity and lived experiences of students in higher education following Covid-19 lockdown.

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Summary

This paper provides evidence of the impact of Covid-19 on higher education students' levels of food security and lived experiences. We surveyed higher education students, attending three universities in the UK and one in the USA, from 1st April to 30th April 2020, during the Covid-19 pandemic and after universities closed the majority of their buildings and ceased campus-based teaching. A total of 1,234 surveys were returned. The preliminary findings show that nearly 35% of students surveyed reported low or very low levels of food security and 41% of students were worried that their food would run out. We also found high levels of poor mental health and well-being; and mental health was associated with level of food security. The best predictor of the level of food security was students' living arrangements during the Covid-19 pandemic. Students who were living on their own or with other students were more likely to experience low or very low levels of food insecurity compared to those students living with family members. The financial data collected show that many students relied on employment as their main source of income, and students are very worried about their current financial security. Furthermore, we found a relatively high reliance on ultra-processed foods as the main food type in students' diets. The data from open-ended questions lend further support to the quantitative findings reported and provide further insight into students' lived experiences. Finally, this paper concludes with key recommendations for policy makers, universities and student unions.

Background

Recently, a number of reports have highlighted the negative impact of Covid-19 on issues such as food security (<https://foodfoundation.org.uk/>), mental health and well-being (The Guardian, 2020), and unemployment (Richiardi & Collado, 2020). Overall, a picture is emerging that shows that those already experiencing disadvantage (e.g. living in poverty) appear to be disproportionately impacted by

Covid-19. However, whilst a number of reports have highlighted issues experienced by those clinically self-isolating, families with children entitled to receive free school meals, the elderly and BAME communities, little has been reported about students in higher education. A recent call to action (Grubic et al., 2020) has highlighted the immediate need to investigate students' mental health and general well-being and to date, a small number of papers have explored the impact of Covid-19 on students' education and well-being (e.g. Cao et al. 2020). However, to our knowledge, no papers have been published that have investigated the level of food insecurity in higher education students during the Covid-19 pandemic.

This paper presents preliminary findings from data collected from 1st April to 30th April 2020 that reveal a high level of food insecurity alongside high levels of poor mental health in students. We predict that the factors that were important considerations pre-Covid-19 will be even more important during and post-Covid-19 as students' needs increase. The role of universities in supporting both new and returning students requires careful consideration, and we argue that such support needs to seriously consider student food insecurity within a whole university approach.

Student Food Insecurity

The United Nations Food and Agriculture Organization (FAO) defines "food security" as a situation *"when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for active and healthy lifestyles"* (FAO, 2015)." Conversely, individuals and households face "food insecurity" when they have restricted access to nutritious and culturally appropriate food (Pinstrup-Andersen, 2009). Recent data suggest that one in ten UK citizens live in food insecurity (Food Foundation, 2016). Food insecurity disproportionately affects marginalised populations such as low-income individuals, people of colour, women and children. Scholars note that the COVID-19 pandemic will likely worsen existing inequalities in the UK food system (Power et al., 2020) and throughout the developed world (Long et al., 2020).

We suggest that university students will disproportionately suffer the myriad social, physical and mental consequences of living with food insecurity (Hanson and Connor 2014; Eisenmann et al., 2011; Gundersen and Ziliak, 2013; Laraia, 2013). A burgeoning literature that documents high levels of food insecurity in university student populations in numerous countries now exists. In a review of much of that literature, Bruening et al. (2017) found that across 17 peer-reviewed studies student food insecurity rates averaged 35%, while the rates averaged 42% across 41 sources of grey

literature. In other words, over a third of all students in these universities live in food insecurity. We suggest that this already high percentage will climb even higher due to the COVID-19 pandemic that has seen food supply shortages and panic buying coupled with substantial job loss.

While, DEFRA is providing funding to front line food aid charities to provide food to vulnerable people, the majority of university food banks are closed, leaving many students unsure of where to turn for food aid. Indeed many of the campus-based initiatives introduced to support students seeking food aid (e.g. Ulster University's *Hungry in Halls* Initiative); university food banks and food pantries have closed. While a number of universities refer students to community-based food banks or hand out food bank vouchers, use of this service is relatively low.

Health and Wellbeing

Social Capital: Promoting Health and Wellbeing

Within the 21st Century, Institutions of Higher Education have long been concerned about promoting health and wellbeing among students. Students enrolled in higher education face many challenges engaging in programmes of learning, and are entering an environment which they need to adapt rapidly to enable them to engage in academic and socio-cultural changes (Morosanu et al., 2010).

Development of a Social Capital culture between Higher Education Institutes (HEI) and students will empower and enable students to develop skills required for independent living and development of resilience. Putnam (2000) notes that social capital is cooperation across networks that enable participants to act together more effectively to pursue shared objectives. Social capital may benefit individuals, the community and/or wider society and is inherent within the relationships that people have. An educational experience which recognises the need to build on social capital may go towards minimising stress and maximising health and retention. By enhancing social capital the student community can thrive and experience a positive culture which has a positive impact on their health and wellbeing. During the Covid-19 pandemic, social capital and the welfare of students has been not as apparent. There has been an increase in reporting of concern for the welfare of the most vulnerable students. Some students have not been able to return home, including international students who are reporting feelings of isolation because they do not have the support mechanisms readily available. Students who relied on part-time jobs to supplement their living costs, now find themselves struggling to meet their daily needs, which may include the inability to buy food.

Mental Health & Wellbeing

Mental health and wellbeing are linked but separable constructs, with the former generally viewed as a continuum from no mental health difficulty to severe mental illness, and the latter defined by positive functioning, feeling good, and life satisfaction (Hughes & Spanner, 2019; Universities UK, 2015).

Student mental health and wellbeing have taken centre stage as a national strategic priority in the UK, with Universities UK prioritising this in their #StepChange framework (2017), and UKRI recently funding a network dedicated to student mental health (www.smartten.org.uk). Given that all students will lie somewhere on these dimensions of mental health and wellbeing, the #StepChange framework advocates 'whole university approaches' that provide all students with 'health-promoting and supportive environments'.

#StepChange also emphasises the importance of building skills and resilience among students to help them manage their mental health and wellbeing. Students are typically passing through the peak age of onset for a number of psychological disorders (Kessler & Wang, 2008), and the transition from needs being met by families to taking responsibility for meeting their own needs, coupled with feeling too independent to seek help from their families, were stressors among UK students (Laidlaw et al., 2015).

A number of factors linked to food insecurity are associated with poor mental health and/or wellbeing among students in the UK, including nutrition and financial difficulties (e.g., Aceijas et al., 2017). In addition, poor diet and finances were both identified as 'grand challenges' for student mental health by the voluntary organisation *Student Minds* (Byrom, 2014). The Mental Health Foundation (2020) has reported that greater financial inequalities are linked to increasing mental health difficulties during the COVID-19 pandemic, with worries about food common among unemployed people during this time. The voluntary sector organisation *Student Minds* has developed a number of resources for students during this pandemic in acknowledgement of the wide-reaching influence this situation could have on student mental health and wellbeing.

Despite links between student wellbeing and both financial concerns, nutrition, and navigating the transition to independent living, which may influence and be influenced by food insecurity, the role of food insecurity in student mental health and wellbeing has not been investigated among UK students. Among worldwide university networks, only the Australia-Africa Universities Network emphasises food security as part of its remit (Universities UK, 2013). Leading organisations for Higher Education and mental health prioritise the provision of holistic support within multiple

domains that may influence student mental health and wellbeing, including supporting finances, healthy lifestyles and nutrition (Hughes & Spanner, 2019; Royal College of Psychiatrists, 2011; Universities UK, 2017). It is vital to understand the barriers some students may face in accessing food. In line with social drift theory, the experience of poor mental health could itself be a barrier, while food insecurity could exacerbate mental health difficulties even in those with no prior experience (social causation; Martin et al., 2016). As recommended for mental health in the general population (Martin et al., 2016), helping students to eat well as part of the support package offered by universities would arguably benefit all, irrespective of whether they have an existing mental health difficulty or not.

Diet: Cooking Skills and Health Outcomes

The UK diet is constantly changing. A relevant trend for the current paper is the increased consumption of ultra-processed food (Rauber, et al. (2020)). There has also been a long term outcry in the media about the lack of cooking and food skills confidence in the UK population.

Ultra-processed food consumption has been linked to obesity and other diet-related, chronic, non-communicable diseases. A recent study (Rauber et al., 2018) found that the typical UK citizen obtains 56.8% of their daily energy from ultra-processed foods (UPF). This is alarmingly high, reflecting the ubiquity of these products in the food environment and their endemic advertising and promotion. Indeed, even in the lowest quintile of ultra-processed food consumption in the UK, the majority of people did not meet WHO recommendations for most nutrient intakes – highlighting health concerns.

Concern around the lack of cooking skills and a decline of confidence with food have become the hallmarks of the “knowledge deficit model” for many food policy makers. Though it is true that poor cooking skills may be a barrier to healthy eating and a contributor to overweight and obesity for many, UK population-level evidence on this point is inconsistent (<https://doi.org/10.1186/s12966-015-0261-x>). However, confidence in cooking and food skills has some correlation to higher fruit and vegetables intake (McGowan et al., 2017) and (Adams et al., 2015).

The Covid-19 pandemic and lockdown has resulted in changes to global food systems and consumer eating habits, both what is being eaten and where meals are being eaten (Hubbub, 2020; Wall, 2020). Since lockdown, purchases of food and beverages have increased by 19%. More purchases are being made at convenience stores and local outlets such as independent butchers, alongside an increase in

online shopping (AHDB, 2020; McKeivitt, 2020). The COVID-19 pandemic and lockdown have exacerbated many of the above food trends, in particular trends around cooking and UPF consumption have been dramatically shifted. This can be seen in the Hubbub report (2020) that found that in a UK representative sample (n=2000) 90% of respondents said their shopping or cooking habits had changed since lockdown, 43% of respondents were specifically worried about the extra cost of providing food for their household, and 31% of respondents said that they are not eating as much fresh fruit and vegetables as usual due to avoiding shops as much as possible. When focused on just respondents aged 16-24; the Hubbub survey found that 15% had to use a food bank for the first time; 47% saw lockdown as an opportunity to improve their cooking skills; and 40% admitted to comfort-eating more during the lockdown to deal with anxiety or boredom.

Finance

A recent student survey, conducted by Youthsight on behalf of Which, (<https://www.which.co.uk/money/university-and-student-finance/student-money-and-budgeting/how-much-it-costs-to-live-at-university-aw9gp0v2sq7r>), surveyed 3,874 undergraduate students at UK universities between 20 March and 12 April 2019. Accommodation costs were collated from the cheapest, non-catered hall prices as advertised on individual university websites (correct as of October 2019). All other living costs are reported as the median expenditure for students in the UK, from the Living Costs and Food Survey (2014, 2015-16, 2016-17 and 2017-18) from the Office for National Statistics, with figures adjusted for inflation.

Shaw (2020) points out that students have many independent costs that can cause worry and anxiety, with monthly expenditures approximating £74 on food; £46 on utilities; and £80 on transport. In addition to financial cost, the availability of food on university campuses appears to be highly variable, and is influenced by a number of factors, e.g. location (rural vs. urban), catering provider, transport costs, etc. (Sellick, 2019). Many students supplement their income through part-time, temporary jobs (e.g. working in pubs or restaurants) and it is notable that these sectors have been hardest hit as a result of the government lockdown. In general, universities have responded by increasing the available funding for students through their hardship funds. These funds support students struggling with their finances (e.g. rent, food) and some universities also support students in gaining access to IT equipment and broadband. It is anticipated that, compared to the same period last year, the majority of universities will report a significant increase in applications and awards.

Covid-19 and Higher Education Institutions.

Universities have been advised that the following student support should be in place: a) guaranteed accommodation, b) access to established financial support and to immediate hardship funds, if necessary, c) practical support to access food, and d) ongoing access to student support networks, mental health and academic support, where required.

Across the UK, universities have been quick to respond to the Covid-19 lockdown. For example, service departments quickly mobilised to ensure adequate accommodation was available to meet the needs of students requiring university accommodation, and key services (e.g. student support) were maintained through online or telephone provision. To support students financially, many universities put a freeze on students having to pay rent in university-owned accommodation, and provided a refund for students who had paid rent in advance. Teaching and learning moved from being delivered through face to face teaching to online delivery.

Overall, universities are responding quickly to the many challenges faced by institutions, staff, students and parents. Universities have, in the main, employed innovative, technology enhanced learning platforms and teaching methods, and utilised web-based resources to ensure continuity of student support networks, mental health services, and frequent communication updates to current and future students. However, despite universities being quick to adapt to new ways of supporting students, little is known about the efficacy of these interventions. Moreover, little is known about the current level of students' food insecurity and their lived experiences during the Covid-19 lockdown. This paper aims to address these gaps in knowledge to inform academia, policy makers and practitioners.

The Research Study

To investigate the level of food insecurity and mental health and wellbeing in higher education students we developed a Food Affordability and Skills Survey. Data were gathered during April 2020 with the support of student union officers using an electronic questionnaire distributed to all students in the four participating universities. Importantly, for the purposes of this research, we incorporated reliable and valid measures of food insecurity (USDA Household Food Security Module) and mental health and well-being (Warwick-Edinburgh Mental Health and Well-being Scale). The survey was distributed to all students currently studying at two universities in the North of England, one university in Northern Ireland and one university in the USA. The survey also incorporated a range of questions on mode of study, level and year of study, age, gender, income, residence, and dietary habits. Finally, the survey contained a number of open-ended questions to provide the students with opportunities to express their views and experiences.

Food Insecurity Measure

Food (in)security was measured using the USDA Household Food Security Module. This measure consists of six items, and is a subset of the questions in the larger ten- and 18-item USDA food security modules. The six-item scale has frequently been used by researchers to assess levels of adult food insecurity (Blumberg et al. 1999), while keeping the burden of respondents lower than the larger scales. Responses of “yes,” “often,” “sometimes,” “almost every month,” and “some months but not every month” are coded as affirmative. The sum of affirmative responses to the six questions in the USDA Household Food Security Module is the household’s raw score on the scale. Food security status is assigned as follows: Raw score zero—High food security among adults; raw score 1—Marginal food security among adults; raw score 2-4—Low food security among adults; raw score 5-6—Very low food security among adults. The food security status of the first two categories in combination is described as food secure and the latter two as food insecure.

Mental Health & Well-being Scale

The Warwick-Edinburgh Mental Well-being Scale was developed to enable the monitoring of mental wellbeing in the general population and the evaluation of projects, programmes and policies which aim to improve mental wellbeing. The scales have been validated for use in a wide variety of different geographical locations and cultural contexts. Furthermore, this scale has been used across a number of different settings including schools and universities. In the current study, mental health & wellbeing was measured using the Warwick-Edinburgh Mental Well-being Scale seven-item scale. This version is shorter than the 14-item scale but both scales are considered to be robust and valid

when applied in population, community, educational, occupational and clinical settings. The shorter item scale was chosen due to the complexity and length of the Food Affordability and Skills Survey.

Preliminary Findings

Income and Employment.

Preliminary findings begin by examining the financial situation of students within the UK. Nearly 56% of the students in the sample report that they are employed and working during the year. Those that are employed work an average of 17 hours per week. As Table 1 indicates, income derived from work is critical to their education and maintenance. That is, 21.9% of students mainly rely on income generated from employment to fund their education and education related expenses.

Table 1. Students' Primary Financial Support (n=1,234) *

<u>Source</u>	
Employment	21.9%
Parents/Relatives	18.3%
Scholarships/Grants/Bursary	21.7%
Loans/Maintenance	32.9%
Other Sources	06.1%

* Source from which students derived over half of their financial support; missing cases (n=192) not included in table percentages.

Our data show that while many students rely on employment to live and pay for their education, most have relatively low-income levels. For instance, in this sample, 35.1% of all students reported their total annual income from all combined sources was less than £5,000 p.a. Given this financial situation, Covid-19 has had a unique impact on students and their distinctive needs. For instance, when asked *"how has Covid-19 impacted your food choices?"*, a large number of students reported to researchers that they recently became unemployed, which impacted their access to food (e.g., *"Lost part time job and living with dad ... cannot afford a lot of food"* or *"I lost my job because of the corona virus, they have decided to close their doors which means I have no income"* or *"There is no income, so I eat less."*). In short, it is increasingly clear from our survey that student job loss, combined with low income levels, have uniquely impacted students in higher education. These preliminary data suggest that, for some students, their income is not (and perhaps cannot) be supplemented by parents who may also be at risk of unemployment or are economically disadvantaged themselves. Moreover, these students may not always be able to rely on loans and scholarships to make up for their lost employment income should they decide to leave the university or defer their education. Even when students want to leave the university it is not always clear that

they can get away from their financial commitments (i.e., *"I have no income [and my] letting agents won't close my tenancy agreement."*)

Food Security

The level of food security among students enrolled in higher education are presented in Table 2. As that table indicates, 49.0% of all students report that they have high levels of food security while 15.5% of students have marginal levels of food security, suggesting that they face some problems accessing food during the Covid-19 lockdown. It is notable that 17.1% of university students experience low levels of food security while 17.2% experience very low levels of food security, meaning that sourcing food during the Covid-19 lockdown is likely to be a daily struggle. This level of food insecurity is striking and likely to impact students' cognition, mental health, and academic performance as noted in the research we have reviewed above. Consistent with Table 1 and the fact that many students are on a limited income, they reported that their finances were impacting their ability to buy food. For instance, one told the researchers, *"I am shopping on a budget, [and eating] cheap and unhealthy food"* while another explains *"I don't have enough money to feed."* Some students are unable to access food because they are unable to get to grocery shops and food markets to source food (i.e., *"I am unable to find my regular food i.e. I eat pasta and rice all year long, and both products have vanished. There was hardly any decent food left on shelves at Waitrose."*) One student conveyed that they *"eat less meat, fish, dairy and eggs, because they weren't available at shops."* In some instances, this created problems for students when they had special dietary needs (i.e., *"I cannot buy the lactose-free food I need, I've had to buy normal which makes me ill"*). Despite all these observations many students pointed out that they simply had to *"reduce the amount of times I eat in a day"* as a result of Covid19, which may explain the results in Table 2 with respect to the high percentage of students in the low and very low food security categories

Still, it is important to note that not all students felt they faced reduced levels of food insecurity. For instance, one student notes, *"I am preparing and cooking more traditional meals. Before I would eat more junk, non-meal type food."* Together these findings are expressed in patterns of food insecurity in Table 2, below.

Table 2. Frequency Distribution of Levels of Self-Reported Food Security by University Students during Covid-19 Lockdown (May 2020).*

Food Security	Frequency %
High Food Security	605 49.0%
Marginal Food Security	191 15.4%
Low Food Security	211 17.1%
Very Low Food Security	212 17.2%
Missing	15 1.2%
Total (n)	1,234

* Categories based on the Six-Item Food Security Scale developed by the U.S. National Center for Health Statistics in collaboration with Abt Associates Inc. See "by S.J. Blumberg, K. Bialostosky, W.L. Hamilton, and R.R. Briefel, 1999. "The effectiveness of a short form of the household food security scale," American Journal of Public Health, 89, 1231-1234.

Table 2 suggests that an alarming percentage of university students are food insecure. Table 3 suggests that students also worry about becoming food insecure. That is, 41% of university students worry that they may run out of food before they get money to buy more. Thus, university students are not only experiencing high levels of food insecurity, but many who are not food insecure believe they will become food insecure in the near future.

Table 3. *Since Covid19 I am worried that food will run out before I get money to buy more.*

	Frequency
	%
No	627 50.8%
Yes	506 41.0%
Missing Cases	101 8.2%
Total n	1,234

Predicting Food Security

We explore some of the correlates of food security in our data to identify those students who are likely to be most at risk of experiencing low levels of food security. We begin by examining gender. In particular, Table 4 suggests that female students have slightly higher levels of food security than male students. For instance, 50.5% of female students report high levels of food security while 47.3% of male students report high levels of food security. In contrast, Table 4 also suggests that 21.3% of males have very low levels of food security compared to 15.3% of female students. This trend is consistent with other research on food security among university students (Bruening et al., 2017) and signals that male students are particularly vulnerable during the Covid-19 lockdown as approximately one in five are likely to consistently struggle to access healthy and nutritious food and some are hungry. While the sample size for non-binary students is low, these frequencies exceed reports of non-binary gender in the general public. While the frequencies for non-binary students are low, 33.3% face very low levels of food security and 41.7% experience high levels of food security. This group of students needs additional research attention and it is unknown whether those students with low levels of food security could face weakened support networks and housing circumstances that produced this research. This is speculative given the numbers in our sample, but existing research suggests that they may be isolated from their family networks, for example, because of their gender status (Ryan et al. 2010).

Table 4. Gender by Level of Food Insecurity

<u>Level of Food Security</u>	<u>Gender</u>		
	Males	Female	Non-Binary
High Food Security	160 47.3%	438 50.5%	5 41.7%
Marginal Food Security	44 13.0%	144 16.6%	3 25.0%
Low Food Security	58 17.2%	152 17.5%	0 0.0%
Very Low Food Security	72 21.3%	133 15.3%	4 33.3%
Total (n)*	330	867	12

*Missing (n) = 17

Table 5 suggests that one of the best predictors of student food security is the living arrangements of students during the Covid-19 lockdown. In particular, students who return to live with their parents are the most likely group of students to report that they have high levels of food security. In this sample 55.7% of those students living with their parents report that they have high levels of food security. The benefits of living with parents are remarkable as one student explains, *“I eat better than I do at university, as I am in a house with family therefore the cooking is shared between us, giving us more time to prepare more interesting dishes.”* Another student says, *“my parents take responsibility for food shopping where I have done so myself while at university.”*

These types of experiences of living with parents during the Covid-19 lockdown stand in sharp contrast to those students living alone (as indicated in Table 5). For instance, 32.3% of those students living alone during the Covid-19 lockdown report that they experience very low levels of food security. This is, perhaps, not surprising as one student notes that her eating habits have changed because she lives alone and her *“house mates aren't here to drive me to the shop.”* In short,

it is striking to note that nearly one in three students who live alone face very low levels of food security. It is important to note that students residing with other students doesn't insulate a student against food insecurity. That is, 26.0% of students residing together during the Covid-19 lockdown report they face very low levels of food security. Nevertheless, there are students who have reported that they have benefited from living with their flatmates during the Covid-19 lockdown. As one student explained to the researchers, *"I began to share all groceries and meals with my housemate to make better use of our food supplies."*

Table 5. Level of Food Insecurity by Student Living Arrangements During Covid-19 Lockdown

	Student Living Arrangements					
	Living Alone	Living with Children Only	Living with Other Students	Living with Parents & Other Adults	Living with Spouse / Partner	Other Living Arrangements
High Food Security	59 37.3%	70 47.6%	58 39.7%	313 55.7%	66 57.4%	36 41.4%
Marginal Food Security	24 15.2%	23 15.7%	22 15.1%	88 15.7%	16 13.9%	16 18.4%
Low Food Security	24 15.2%	29 19.7%	28 19.2%	94 16.7%	20 17.4%	16 18.4%
Very Low Food Security	51 32.3%	24 16.3%	38 26.0%	66 11.7%	13 11.3%	17 19.5%
Total (n)*	158	147	146	562	115	85

Missing n =21

Mental Health

It appears that students' mental health and wellbeing may also be impacted by the Covid-19 lockdown. As noted in Table 6, the Warwick-Edinburgh Mental Well-being Scale is nearly 5.5 points lower for university students during the Covid-19 crisis than for the general population before the Covid-19 crisis (18.153 vs. 23.609). This is a substantive difference and is not surprising given the increasing evidence that Covid-19 is having an impact on mental health and wellbeing.

Table 6. Descriptive Statistics for Short Warwick-Edinburgh Mental Well-being Scale (0 to 35 points) for University Students Post Covid-19 Lockdown (May 2020) and England Residents Pre-Covid-19 Lockdown (2011).

	University Students in Post-Covid-19 Lockdown*	Population <i>Health Survey of England</i> Pre-Covid19 Lockdown**
Mean Scaled Score	18.153	23.609
Standard Deviation	4.737	3.902
Median Scaled Score	17.43	23.21
Skewness	0.709	0.177
Kurtosis	4.194	1.451
Missing	381	3,421
Total (n)	1,234	7,196

* McKay, MT. & Andretta, JR. (2017) Evidence for the Psychometric Validity, Internal consistency and measurement invariance of Warwick Edinburgh Mental Well-being Scale Scores in Scottish and Irish Adolescents. *Psychiatry Research*, 255: 382-386.

** Ng Fat, L., Scholes, S., Boniface, S., Mindell J., & Stewart-Brown S. (2017) Evaluating and establishing the national norms for mental well-being using the short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS): findings from the Health Survey for England. *Quality of Life Research*, 26(5), 1129-1144. Available at https://warwick.ac.uk/fac/sci/med/research/platform/wemwbs/using/howto/wemwbs_population_norms_in_health_survey_for_england_data_2011.pdf

Table 7 examines the relationship between mental health and food security. Importantly, 71.1% of students that are classified as having a high mental wellbeing score on the Warwick-Edinburgh Mental Well-Being Scale are likely to report high levels of food security. In short, there is an association between these variables. For those students who report low levels of mental well-being only 38.7% report that they experience high levels of food security. Table 6 also reveals that among those students who report very low levels of food security 26.1% also suffer from low mental well-being compared to 10.0% who have average levels of well-being and 4.2% who have high levels of mental well-being.

The relationship between food insecurity and mental health, however, is not always straightforward. While it is likely that low levels of food security are impacting mental health, it is also clear that stress-related mental health can lead to lower levels of food security among the students in our sample. For instance, one student suggested that they were *“too stressed and too afraid to go [to the store] and no frozen food left, so I skip meals”* while another said, *“I have moved home to my parents. I am now stress eating.”* Sometimes students’ financial situations appear to be driving food insecurity that may lead to lower levels of mental wellbeing (e.g., *“I am not eating as much [because I am] scared of running out of food.”*). Whatever the case for the association in Table 7, student data suggests that their food insecurity is tied to mental health and wellbeing.

Overall, the results from Table 7 are striking in that just over one in five students suffer from both low levels of food security and low levels of mental wellbeing. Thus, this group of students represents the most “at risk” among all university students and suggests that many students are likely to suffer from low mental wellbeing because of Covid-19 and perhaps because of a lack of food security, a commonly identified outcome of low level food security (Long et al. 2019).

Table 7. Level of Food Security by Mental Wellbeing on the Warwick-Edinburgh Mental Well-Being Scale*

	<u>Level of Mental Well-being</u>		
	Low Mental Wellbeing	Average Mental Wellbeing	High Mental Wellbeing
<u>Level of Food Security</u>			
High Food Security	43 38.7%	340 56.7%	101 71.1%
Marginal Food Security	14 12.6%	99 16.5%	20 14.1%
Low Food Security	25 22.5%	99 16.5%	14 9.9%
Very Low Food Security	29 26.1%	60 10.0%	6 4.2%
Total (n)	111	598	141

* [Low Mental Well-being" scoring students are those who fall at least 1 standard deviation or more below the mean score on the Warwick-Edinburgh Mental Well-Being Scale; "High Mental Well-being" scoring students are those students who fall at least 1 standard deviation or more above the mean on the Warwick-Edinburgh Mental Well-Being Scale; "Average Mental Well-being" scoring students are those who fall within 1 standard deviation of the mean on the Warwick-Edinburgh Mental Well-Being Scale.]

Changes to diet due to Covid-19

Cooking Skills

Table 8 suggests students have different levels of self-reported cooking skills. Indeed, 21.3% of students who rate their cooking skills “excellent” while only 7.1% rate their cooking skills as “poor”. This highlights that cooking skills may not be a barrier to students accessing healthy diets; rather access to or the ability to afford food is the key issue.

Table 8. Student Self-Reported Cooking Skills

Poor	07.1%
Average	31.8%
Good	37.6%
Excellent	21.6%

Missing cases (n) = 23

Table 9 shows that around 80% of the respondents were omnivorous, but only 22.8% of these would not be interested in trying a vegetarian diet. This is a much lower number than the ~73% meat eating found in the 2019 Yougov report. However, the proportions of vegans, vegetarians etc. are similar to the YouGov study. This shows that students are more aware of (and inclined to follow) sustainable dietary trends than the general UK population. During Covid19 lockdown student diets have shifted, however, impacting meat consumption in particular. For instance, in some cases culturally appropriate food is inaccessible, contributing to levels of food insecurity. As one student notes, *“I am eating more vegetarian due to rising meat prices and not wanting to travel further out to halal butchers because of risk of coronavirus”* while another student pointed out *“I used to have meat occasionally, now none.”* One student suggested that moving home to his grandmother’s house meant *“I am subject to whatever she had in the house prior to my arrival, but I am trying to stick to the plant-based diet I adopted.”* It is clear, however that the impact on student food consumption has shifted significantly across all different types of diet types (e.g., *“I eat less protein, it’s harder to get plant substitutes so I am relying on more dairy”*).

Table 9. Frequency Distribution of Self-Reported Student Diet

Type of Diet	Frequency %
Omnivore - Often Eat Vegetarian	293 23.8%
Ovo-Lacto Vegetarian	72 5.8%
Lacto Vegetarian	26 2.0%
Pescatarian	40 3.2%
Omnivore-But Happy to Try Vegetarian	444 36.7%
Omnivore-Not Interested in Vegetarian	280 22.8%
Vegan	42 3.3%
Other	27 2.1%
Missing (n)	10 0.80%
Total	1,234

Table 10 show the typical self-reported method of food preparation and ingredient use for student cooking. The overall table highlights that students' self-reported UPF consumption is slightly higher at 7.5% (i.e., n=93 / 1,234) compared to ~5% in previous UK representative sample surveys. However, this does not mean that UPF is not consumed by other students, just that it has not been reported as their "main" food prepared, cooked, and consumed. This might be a result of food access during Covid-19. One student suggested, *"I have been unable to get the basic foods I would eat, resulting eating lot less fresh products"* while another student said, *"I am not able to secure rice or flour and fresh meats."* Some students even suggest that their food consumption of UPF is simply a reflection of the Covid-19 lockdown (i.e., *"I'm eating more unhealthy out of boredom"*). Table 10 also links UPF consumption to the level of food security. The most dramatic finding is that 33.0% of those who self-reported UPF as their main type of food, also experience very low food security - higher than that found in other dietary patterns. Likewise, 54.4% of those experiencing high food security report their main food as being prepared from "scratch" with minimally processed food, while 33.0% of those experiencing high food security report UPF as their main food type.

Table 10. How Students Prepare Food by Level of Food Insecurity

<u>Level of Food Security</u>	<u>Method of Preparation</u>		
	From Scratch - Minimally Processed Food	Semi-Finished - Minimally Processed	Ultra-Processed Foods
High Food Security	323 54.4%	251 47.5%	31 33.0%
Marginal Food Security	87 14.7%	88 16.7%	14 14.9%
Low Food Security	83 14.0%	109 20.6%	17 18.1%
Very Low Food Security	100 16.8%	80 15.1%	31 33.0%
Total n	593	528	93

*Missing Cases = 20

**Frequency (or number of students in each category) & (percentages)

Tackling Food Insecurity, Financial Hardship and Poor Mental Health amongst HE Students

The findings of this co-produced survey reveal a significant and an immediate cause for concern; specifically in terms of the high level of food insecurity (one in three university students have (very) low food security) and the high level of poor mental health (5.5 points lower for university students during the Covid-19 crisis than the general population pre-Covid-19 levels) experienced by higher education students. When the two substantive issues are conflated this means that one in five university students reported experiencing both low levels of food security and low mental health and wellbeing since the Covid-19 pandemic necessitated lockdown. The impact of the closure of university campuses is likely to result in acute and chronic negative health and educational outcomes for students which are likely to prevail beyond the current pandemic period.

The Food Insecurity and Lived Experiences of Students (FILES) group proposes that a national survey needs to be conducted to investigate food security and mental health and wellbeing and the correlation to academic non-continuation, transfer and attainment.

While some research is already being undertaken in terms of students' mental health and wellbeing, there is, to our knowledge, no prior studies that have investigated food insecurity in higher education students, or the association between food insecurity and mental health and wellbeing in university students during the Covid-19 pandemic.

A national survey will provide evidence regarding the extent of these issues across the UK and the findings will inform the government, and other interested parties, on the necessary action required to address this pressing issue. Food insecurity has been referred to previously as “*an economic imperative*” (Jones *et al.*, 2013, p. 481). Under the concept of human capital, not to take action in this way would be cost-prohibitive, given that a poorly nourished population is less economically productive and this may be considered especially to be the case for this population of students seeking to be the next generation of employment-ready graduate practitioners, professionals and policy makers.

To help in the immediate, recognising the policies of the UK government, the uncertainty of how the next academic year will look and the likely continued unemployment faced by higher education students reliant on employment to fund their education, the FILES group recommends that a special task force of stakeholders be convened to include at a minimum the DfE, OfS, Universities UK, UCAS, DEFRA, DWP and the NUS with a remit of reviewing the viability and efficacy of:

- increasing the Hardship Fund provided to UK universities with the guidance that the task force review ways in which the fund can reach those students making the tough decision to pay rent and utilities or buy food;
- lowering the household income thresholds for eligibility for maintenance grants;
- expanding student maintenance loans to part-time students;
- increasing maintenance grant and loan awards;
- increasing the number of years of student tuition loan eligibility for students needing to transfer institutions to live at home to continue their studies;
- requiring, through the regulatory authority of the OfS, the inclusion within access and participation plans the food insecure as a target group and investment be made to support participation in higher education for food insecure students;
- creating a system that allows students to easily transfer, at any stage of their degree, amongst institutions without losing credits toward attainment; and
- creating and maintaining a national programme providing food aid to higher education students along with a campaign jointly owned by all stakeholders with the aim of reducing the stigma around food aid.

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