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Gender, Mental Health and Travel

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Abstract

This paper examines gender differences in travel behaviour by people with mental health conditions based on the results of an on-line survey. Responses from 363 people have been weighted by figures from the Adult Psychiatric Morbidity Survey 2014 to make them representative of the population with mental illness in England. The evidence from the surveys presented in this paper shows that more women than men have panic attacks, but that more men than women have communication difficulties. More women than men are prevented by their mental health condition from leaving home, using bus, rail and metro and from buying rail tickets in advance. Significantly more women than men suffered from the following anxieties when travelling: the need for support, wayfinding, interacting with fellow travellers and concerns about the failure of the bus, train or car. For women, the greatest need seems to be policies and actions that will increase their confidence when travelling such as access to staff when assistance is required and clear information when travelling, plus the opportunity to receive travel training. More men than women wanted improvements to the travelling environment, such as less clutter on the street. Summing up, implementing improvements to increase confidence when travelling could help to reduce gender inequalities.

Key words Gender, Mental health, Travel, Anxiety, Panic attacks, Wayfinding

Declarations

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Availability of data and material The data may be obtained from the author.

Code availability Not applicable

Authors' contribution Apart from the distribution of the link to the questionnaire and the completion of the questionnaires by the respondents, and the advice received on statistical analysis, the author was solely responsible for all aspects of this work including study conception and design, data analysis and interpretation of results, and manuscript preparation.

Biography Roger Mackett is Emeritus Professor of Transport Studies at University College London. He has researched into various aspects of transport policy including the barriers to access for older and disabled people, the use of cars for short trips and the effects of car use on children's lives. He is a member of the Disabled Persons' Transport Advisory Committee (DPTAC) and the Standing Committee on Accessible Transportation and Mobility of the US Transportation Research Board (TRB).

Introduction

The purpose of this paper is to explore gender differences in travel behaviour by people with mental health conditions. These conditions are generally characterized by a combination of abnormal thoughts, perceptions, emotions, behaviour and relationships with others. Mental health conditions include anxiety, depression and various phobias. Anxiety can affect concentration and self-confidence, and depression can affect the ability to make decisions (NHS 2020). They can affect the skills used when travelling such as interpreting information, remembering routes and interacting with other people and so can influence the ability to travel (Mackett 2017).

This paper commences with a review of the existing literature on the links between gender, mental health and travel. Then the results of an on-line survey on this theme are discussed. Policies and actions that may help to address the issues are then identified.

Review of the links between gender, mental health and travel

Before considering the relatively limited evidence on the three-way association between gender, mental health and travel, the evidence on the association between each pair of the three will be examined.

Across the whole population, gender and mobility have profound influences on each other, some of which are quite subtle (Hanson 2010). These interactions manifest themselves in differences in travel behaviour between the genders (CIVITAS 2014). Men and women tend to have different mixes of journey purposes with men making more work-related journeys and women making more family-related ones. This is because women tend to have a greater share of home and child and other care responsibilities and so have lower employment rates than men and are more likely to be employed in part-time jobs. This has several implications, with women having a greater scattering of destinations, many quite close to home, with fewer constraints on timing, with many outside the rush hour and more trips than men accompanied by other people, often children or older people.

Men use car and motorcycle more than women, while women use public transport, walk and bicycle more than men, according to surveys in 27 countries in Europe (Eurobarometer 2007). When travelling by car, men tend to drive while women tend to be passengers. Males are more likely to live in a household with one or more cars, are more likely to have a car primarily for their own use and are more likely than women to use a car daily. Overall, women often have more complex trip patterns in both time and space than men but have lower access to the car.

These patterns are found in many countries. Elias et al. (2015) reviewed the academic literature and found evidence from Brazil, Kenya, India, Mali, Bangladesh, Turkmenistan and Peru that men tended to be more mobile, travel to work more frequently, and spent less time shopping than women. They looked at such difference in Arab communities in Israel and found similar results with women travelling less than men, working more within their communities and conducting more of their activities by walking; they were also the ones who made more child-serving trips. Basarić et al. (2016) found similar differences in Serbia which they attributed to traditional societal values and poor economic conditions, but the evidence across a wide range of countries (European Commission 2013) suggests this pattern is also true in more prosperous countries.

Similar tendencies have been found in the US (Mauch and Taylor 1997), with women doing more child chauffeuring and making more household-serving trips than men. In general, they found that gender was a far more robust predictor of child-serving and grocery shopping trips than either race or ethnicity.

Evidence for England suggest that differences between men and women in travel behaviour are reducing. The proportion of males aged 17 and over who held a full car driving licence remained steady at 80% over the period 2002 to 2019, while that of women increased from 61% to 71% (Department for Transport 2021a). This contributed to an increase in the proportion of women who had access to a car for which they were the main driver from 45% to 54% over the period, while the proportion for men decreased from 65% to 64%. These changes affected modal shares by the two genders. The proportion of men's trips on which they drove a car decreased from 47% to 43% while that for women increased from 35% to 37%. The proportions of trips made for commuting, shopping and escorting children became more similar for the two genders over the period.

Before examining the evidence on the links with gender, the literature on the relationship between mental health and travel will be examined. There is limited relevant evidence on the links between mental health and travel in the community, which is the focus of this paper, because much of the research in this area has taken place in clinical settings rather than in the community (Posner et al. 2018).

Posner and Sharp (2020) found that the impact of transport systems on mental health were overwhelmingly negative, with only cycling and walking having a positive impact on mental health. The latter effect is probably because these modes offer physical activity which can improve mental health (US Department of Health and Human Services 2018). This is confirmed by Kelly et al. (2018) who found evidence in the literature of the positive effects of walking on depression and anxiety, and Choi and DiNitto (2016) who found that people who walked had lower levels of depression than those who did not.

Some research has shown that improving access can improve mental health by opening up opportunities. For example, the free public transport scheme for older people in London has improved their mental health (Reinhard et al. 2018; Whitley and Prince 2005), but it is the new opportunities not the actual travel that has had this effect.

Longer commuting journeys have been found to be associated with higher levels of stress in the US, Sweden and Austria (Evans and Wener 2006; Hansson et al. 2011; Sposato et al. 2012). Increased predictability of the arrival time of public transport can reduce stress (Gottholmseder et al. 2009; Wener et al. 2003). This is an example of how uncertainty and lack of control can cause stress when travelling (Penfold et al. 2008; Posner and Sharp 2020).

Travelling by public transport involves interactions with other people which can cause stress. For example, Hofmann et al. (2007) carried out a literature review on social anxiety disorder and concluded that people who had found themselves in challenging social situations in the past adopted avoidance strategies. In a study of the prevalence of social anxiety amongst 535 students, the most commonly avoided situation was found to be talking to strangers (Hajure and Abdu 2020). Overcrowding on commuting trains has been found to cause stress (Norgate et al. 2020) as has having to sit in close proximity to strangers on trains (Evans and Wener 2007).

The need to have easy access to toilet facilities can be another cause of stress when travelling, leading to avoidance of certain modes or routes. Kamboj et al. (2015) found that, 62% of a sample of 140 people

who had panic attacks were concerned about being incontinent during an attack. Roy et al. (2018) studied the avoidance of public spaces with no toilet facilities by a man who had urgent requirements to use such facilities.

Another aspect of travel where mental health can have an impact is wayfinding (Mackett 2021c). Anxiety can cause wayfinding errors (Hund and Minarik 2006). For example, it can reduce the accuracy of being able to point in the correct direction at non-visible landmarks (Lawton 1996) and can lead to a greater reliance on directional signs rather than landmarks for wayfinding (Su et al. 2021). Stress during route planning can bias people away from planning efficient shortcuts towards the use of familiar routes (Brown et al. 2020). Wayfinding can become less efficient under increased time pressure (Brunyéa et al. 2017).

Wayfinding anxiety can be caused by various factors including poor navigation ability (Lyons et al. 2018), childhood experience in terms of not being allowed out to explore the local area (Lawton and Kellai 2002; Vieites et al. 2020) and perceived lack of competence at wayfinding, leading to an adverse effect on well-being (Cheng 2019). Having disorientation episodes can cause cognitive dissonance in the wayfinding process by generating anxiety, frustration and delay (Montello and Sas 2006). The anxiety associated with wayfinding can be reduced by planning journeys in advance (Penfold et al. 2008) and by using wayfinding apps (Qing et al. 2021).

Turning to the associations between gender and mental health, the Health Survey for England in 2014 showed that gender differences exist for the number of people reporting ever having been diagnosed with a mental illness: 33% of women compared to 19% of men (Bridges 2015). Many more women suffered from depression: 24% of women and 13% of men. According to the Adult Psychiatric Morbidity Survey 2014 (McManus et al. 2016), in the week prior to being surveyed, 21% of women and 13% of men in England had a Common Mental Disorder (CMD) such as depression, anxiety or a phobia. This is supported by a body of evidence in the academic literature that more women than men suffer from anxiety (McLean et al. 2011) and depression (Ferrari et al. 2013; Salk et al. 2017). Amongst adults, obsessive-compulsive disorder (OCD) is more common amongst females (Mathes et al. 2019). In 2019, 19% of the population in the US aged 18 or over had had a mental illness in the previous year (U.S. Department of Health & Human Services 2019). There were gender differences: 15% of males and 23% of females. There were differences in the nature of their mental illness, with women showing higher rates of mood and anxiety disorders, and men showing higher rates of antisocial personality and substance use disorders (Eaton et al. 2012).

WHO (2020) explains gender differences in CMDs in terms of the risk factors that disproportionately affect women including gender-based violence, socioeconomic disadvantage, low income, low or subordinate social status and unremitting responsibility for the care of others. Women tend to have higher levels of PTSD (Post-traumatic stress disorder) because of the higher prevalence of sexual violence to which women are exposed. This has been shown by Andrews et al. (2003) who looked at the experiences of 157 victims of violent crime (118 male and 39 female) and found that women had higher levels of PTSD after crime, which the authors suggest may be because they receive more negative responses from family and friends than men do. Gender differences in psychophysiological responses to repeated stressors were examined by Schmaus et al. (2008) by measuring reactions to watching a film about the Holocaust. Women exhibited significantly greater heart rate and negative affect reactivity to the second exposure compared to men although significant gender differences had not been found following initial exposure to the film.

Physiological reasons for these differences have been explored by Ingalhalikar et al. (2014) who examined differences in the brains of men and women. They used diffusion tensor imaging on a sample of 949 young people aged 8–22 years with 428 males and 521 females. They discovered unique sex differences in brain connectivity during the course of development. They found that males had better motor and spatial abilities, whereas females had superior memory and social cognition skills.

These differences in brain function may help explain gender differences in wayfinding skills. For example, Ferguson et al. (2019) carried out laboratory experiments involving 62 undergraduate psychology students (32 male, 30 female, average age 21 years). They found that the females showed a stronger preference for egocentric navigation, responding to outside stimuli, compared with males who tended to base their wayfinding on cognitive mapping. In a test examining spatial navigation which required the 233 student participants to follow a route using an on-screen image of a street map, Lyons et al. (2018) found that females showed significantly higher anxiety ratings when carrying out the test.

Such differences in wayfinding may reflect childhood experience. Vieites et al. (2020) carried out a study involving 159 undergraduate psychology students. Compared with females, males reported spending more time outside and travelling further as children, and currently having more orientation strategy use and less wayfinding anxiety. This may reflect differences between the independent mobility patterns of boys and girls, with boys permitted to enjoy greater independent mobility than girls from an earlier age (Brown et al. 2008).

Gender differences exist in the experience of travel. Costa et al. (1988) examined gender differences in the effects of commuting on stress among 1,167 industrial Italian workers. They found that commuters experienced a more stressed lifestyle than non-commuters, with women commuters at a greater disadvantage than men, having more family difficulties, more complaints about travelling and higher absenteeism. Roberts et al. (2011) also looked at the association between commuting and psychological health. Using data from the British Household Panel Survey, they found that commuting had an important detrimental effect on the psychological health of women, but not of men. They found no evidence that the difference was due to women's shorter working hours or weaker occupational position. They attributed women's greater sensitivity to commuting time to their larger responsibility for day-to-day household tasks, including childcare and housework. Similarly, Feng and Boyle (2014), also using the British Household Panel Survey, found that long journeys to work were associated with a higher risk of poor mental health for women but not for men. Larger effects of commuting on stress and depression for women compared with men were found in Southern California by Novaco and Collier (1994) which they suggested was due to women having to juggle labour market and home working responsibilities.

Gender differences have also been found for active travel. Asztalos et al. (2010) analysed data on 6803 adults aged 25-64 years from the Belgian National Health Interview Survey. They found that physical activity such as walking and cycling helped improve mental health but had different effects on men and women. In men, it addressed palpable discomfort whereas in women, it helped address distress reflected in lowered mood, anxiety and altered well-being. A different effect of cycling was explored using surveys of 894 cyclists in Brisbane and Copenhagen (Chataway et al. 2014) where male cyclists were found to have less fear of traffic in comparison with female cyclists. This may have reflected different levels of anxiety.

The literature discussed above shows that men and women have different patterns of travel behaviour, with women often having more complicated trip patterns than men because of greater domestic responsibilities, but also having lower access to the car. More women than men have mental health conditions, and some of the adverse effects of travel seem to be greater for women, possibly because of the differences in travel behaviour as well as other aspects of their lives. These may affect anxiety levels when travelling. Gender differences also appear to exist for wayfinding. These issues are explored in this paper using evidence from a survey that is described in the next section.

Methodology

The survey was carried out on-line using a questionnaire coded using Opinio software after being given ethical approval by the UCL Research Ethics Committee. The questionnaire is shown in the Appendix to Mackett (2021a). It covered the following topics:

- The mental health of the respondent;
- The effects of the respondent's mental health on travelling;
- Bus travel;
- Rail travel;
- Travel by car;
- Walking;
- 'Please off me a seat' badges;
- Travel training;
- Use of mobile phone apps;
- Employment;
- Information about the respondent (gender, age group, and type of area that they live in).

Of the forty questions, thirty-six had pre-defined answers to be ticked, including, where relevant, 'Other' with a space to explain. The other six were open-ended such as one asking those who had indicated that their mental health condition had led to them becoming lost, experiencing severe anxiety or needing to seek help when travelling to explain what had happened.

A link to the questionnaire was distributed using social media, mainly Twitter, newsletters and websites by eighteen organizations in Great Britain, including some involved in mental health such as Anxiety UK, the Centre for Mental Health and SANE and some transport organizations such as Bus Users UK, Sustrans, Transport for London and Transport Scotland, plus three individuals with a range of suitable contacts.

Responses were received from 389 people with mental health conditions. Of these, 26 did not indicate their gender, leaving 363 responses which are discussed in this paper. Because the survey was carried out online, there was no way to ensure that the respondents matched the population in the country with mental health conditions in terms of age and gender. To make the results more representative of the whole population in England with mental illness, the sample has been weighted using figures from the Adult Psychiatric Morbidity Survey (APMS) for 2014 (McManus et al. 2016), which is the most recent comprehensive survey on mental illness in the country.[1] Weightings were applied to the age-gender

[1] The only other survey that could have been used to weight the responses was the Health Survey for England. That survey is carried out annually but some topics such as mental health are only included occasionally. The last time that mental health was included was 2014. In that survey, the respondents were shown a list of 17 different mental health conditions and asked to say which of these they had ever experienced (Bridges 2015). This means that people who had recovered from mental illness would be included. Older people are more likely than younger people to

cohorts in the based on the number of people in each age-gender cohort in APMS who had a score on the Clinical Interview Schedule (CIS-R) which indicated symptoms of anxiety and depression of a level likely to benefit from acknowledgement and possible intervention. In the weighted sample, there were 131 males and 232 females, reflecting the gender balance shown in APMS.

The full results of the survey are presented elsewhere (Mackett 2019). In this paper, the focus is on issues where the differences between males and females are statistically significant. The statistical analysis has been carried out using SPSS (Statistical Package for the Social Sciences). In order to incorporate the age and gender weightings, linear regression was used. The respondents were asked to indicate their gender, age and the type of area that they that lived in. In order to keep the questionnaire relatively simple to complete, they were asked to tick which age group they were in. Because of small numbers in the highest and lowest age groups, these had to be combined with adjacent groups as part of the weighting process, to prevent the extreme age groups having excessive effects on the results. This meant that there were five age groups: 30 and under, 31-40, 41-50, 51-60, and 61 and over. This meant that it was not possible to calculate an average age for each age group, so they were assigned values from 1 for those aged 30 and under to 5 for those aged 61 and over. The area types they could choose from were 'A rural area', 'A village', 'A town', 'A city other than London' and 'London'. These were assigned values from 1 for rural areas to 5 for London, indicating the degree of urbanicity (or rurality). Gender, age and area type were used as independent variables and the binary responses to each question as the dependent variable (in effect 'yes' or 'no' to questions such as 'Do you have depression?').

Gender was coded as 0 for men, 1 for women. This means that a positive regression coefficient for 'Gender' means that more women have the condition and a negative one means more men. A positive coefficient for 'Age' means that the effect increases with age and a negative sign means it decreases. A positive coefficient for 'Area' means that the effect increases with the degree of urbanicity and a negative sign means it increases with the degree of rurality.

SPSS uses Student's t test to indicate the level of statistical significance. Significance is indicated in the results tables at three levels: the 10% level when $t < 0.10$ implying that there is a 90% chance that the independent variable has a statistically significant association with the dependent variable (indicated by * in the tables), the 5% level when $t < 0.05$ (a 95% chance, indicated by **) and the 1% level when $t < 0.01$ (a 99% chance, indicated by ***). For each dependent variable where the difference between the genders is statistically significant, linear regression has been carried out for males and females separately, using age and area type as independent variables.

The results are presented in a series of tables below. In all cases the number of respondents is 363 unless otherwise indicated.

Results

The mental health of the respondents

All the respondents had one or more mental health condition, as shown in Table 1. Most of the respondents had several conditions, with males having 2.1 on average and females 2.5. Nearly all the

have had mental illness during their lifetime simply because they have lived longer. In contrast, APMS considered the current state of the mental health of the participants and so is closer to the question asked in the survey being considered in this paper which was 'Do you have any of the following mental health conditions:' followed by a list for them to tick as many as were relevant.

respondents had anxiety and about 68% suffered from depression. Significantly more women than men had two of the conditions: post-traumatic stress disorder (PTSD) and obsessive-compulsive disorder (OCD), the former significant at the 5% level, the latter at 10%. As Table 2 shows, OCD decreases very significantly with age for women, implying that this is an issue that effects more younger females than older ones.

Table 1 The mental health of the respondents in the survey.

	% of respondents with the condition			Regression coefficients			
	Male and female	**Male**	**Female**	**Constant**	**Gender**	**Age**	**Area**
Anxiety (including social anxiety and panic attacks)	89	87	90	1.024	0.038	-0.040 ***	-0.012
Depression	68	69	68	0.527	-0.011	0.045 ***	0.011
Post-traumatic stress disorder (PTSD)	20	14	23	0.022	0.098 **	0.014	0.023
Obsessive-compulsive disorder (OCD)	14	11	17	0.082	0.066 *	-0.022 *	0.025
Agoraphobia	13	9	14	0.048	0.056	-0.013	0.023
Bipolar disorder	7	6	7	0.076	0.014	0.004	-0.008
Other conditions	23	19	26	0.144	0.065	0.022	-0.044

Note: *** indicates statistical significance at the 1% level, ** at the 5% level and * at the 10% level.

Table 2 The associations between mental health and age and area of residence for each gender

	Regression coefficients					
	Male			**Female**		
	Constant	**Age**	**Area**	**Constant**	**Age**	**Area**
Post-traumatic stress disorder (PTSD)	0.131	0.019	-0.013	0.083	0.013	0.036
Obsessive-compulsive disorder (OCD)	0.022	0.022	0.007	0.207	-0.045***	0.026

The effects of having a mental health condition on travel

The survey results showed that having a mental health condition affects travel, reflecting the evidence in the literature discussed above, often with differences between the genders. For example, Table 3 shows that significantly more women than men had become lost, experienced severe anxiety or needed to seek help when travelling: 55% of the female respondents compared with 41% of the males. Further information about the experiences is presented elsewhere where there are many individual examples quoted, indicating the gender and age group of the respondent (Mackett 2019; 2021a). As Table 4 shows, these effects increase with age for both men and women, with a stronger age effect for women. This may be partly because a longer life means that there has been more opportunity for incidents to have happened.

Table 3 Whether having a mental health condition has led to respondents becoming lost, experiencing severe anxiety, or needing to seek help when travelling.

	% of respondents			Regression coefficients			
	Male and female	Male	Female	Constant	Gender	Age	Area
Respondents whose mental health condition has led to them becoming lost, experiencing severe anxiety, or needing to seek help when travelling (n=360)	50	41	55	0.138	0.143 ***	0.068 ***	0.025

Table 4 The associations between whether having a mental health condition has led to respondents becoming lost, experiencing severe anxiety or needing to seek help when travelling and age and area of residence for each gender.

	Regression coefficients					
	Male			Female		
	Constant	Age	Area	Constant	Age	Area
Respondents whose mental health condition has led to them becoming lost, experiencing severe anxiety or needing to seek help when travelling (n=360)	0.112	0.101***	0.006	0.317	0.052**	0.028

Table 5 shows four of the possible effects of having a mental health condition: social anxiety, panic attacks, communication difficulties and impaired memory. In two cases, the differences are statistically significant: more women have panic attacks (76% compared with 51%), and more men have communication difficulties (56% compared with 45%). The numbers having communication difficulties have an inverse association with age. As Table 6 shows, this is the case for females, but that the relationship is not statistically significant for males, implying that it is younger women for whom this is a major issue, as well as many men. It is interesting that for both genders, communication difficulties increase significantly with greater rurality. This may reflect fewer opportunities to interact with other people in rural areas and so build up confidence to do so, or that some people with such difficulties have chosen to live in more rural areas.

Table 5 The effects of the mental health conditions on the respondents.

	% of respondents who suffer from the effect			Regression coefficients			
	Male and female	Male	Female	Constant	Gender	Age	Area
Social anxiety	87	87	87	0.871	0.003	0.009	-0.009
Panic attacks	67	51	76	0.604	0.239 ***	0.014	-0.038 *
Communication difficulties	49	56	45	0.952	-0.123 **	-0.052 ***	-0.072 ***
Impaired memory	45	43	45	0.593	0.008	0.024	-0.066 ***

Table 6 The associations between the effects of mental health conditions and age and area of residence for each gender.

	Regression coefficients					
	Male			Female		
	Constant	Age	Area	Constant	Age	Area
Panic attacks	0.652	0.022	-0.058	0.830	0.011	-0.031
Communication difficulties	1.132	-0.055	-0.122**	0.757	-0.049**	-0.053**

Sometimes, having a mental health condition can be so serious that the person cannot leave home on occasion. As Table 7 shows, this happens to 89% of the respondents, but significantly more females: 96% compared to 78% of the males.

Many mental health conditions fluctuate in their impact over time. This means that it is difficult for some people to plan their journeys in advance because they do not know whether they will be well enough to travel on a particular day. In Great Britain, some train operating companies offer cheaper rail tickets if they are bought in advance, which means that having a mental health condition can prevent some people from obtaining the cheapest rail tickets. As Table 7 shows, this is the case for 67% of the respondents, particularly the women of whom 74% are in this situation compared with 55% of the men, a statistically significant difference. This effect increases with age. As Table 8 shows, it is only females for whom there is a statistically significant relationship with increasing age implying that more older women have major fluctuations in their mental health.

Table 7 Prevention of travel by having a mental health condition.

	% of respondents			Regression coefficients			
	Male and female	Male	Female	Constant	Gender	Age	Area
Sometimes prevented from leaving home (n=362)	89	78	96	0.731	0.181 ***	0.016	0.001
Prevented from buying rail tickets in advance (n=311)	67	55	74	0.345	0.179 ***	0.080 ***	-0.006

Table 8 The associations between the prevention of travel because of a mental health condition and age and area of residence for each gender.

	Regression coefficients					
	Male			Female		
	Constant	Age	Area	Constant	Age	Area
Sometimes prevented from leaving home (n=362)	0.628	0.021	0.027	0.955	0.012	-0.009
Prevented from buying rail tickets in advance (n=311)	0.274	0.043	0.044	0.515	0.101***	-0.021

Having a mental health condition may prevent some people from using various modes of travel, as Table 9 indicates. In all cases, except cycling and taxi, more women are unable to use the mode than men. For four modes the differences are statistically significant: metro at the 1% level, bus at the 5% level and train and being a car passenger at the 10% level. Looking at the two genders separately, shown in Table 10, for females, increasing rurality is associated with more people being unable to use both bus and train. This may reflect lifestyle choices, where women who are unable to use buses and trains have chosen to live in more rural areas, where car use may be easier.

Table 9 Inability to use various forms of transport because of a mental health condition.

	% of respondents not able to use each mode			Regression coefficients			
Mode	Male and female	Male	Female	Constant	Gender	Age	Area
Metro	36	27	41	0.219	0.139***	0.034*	-0.012
Bus	30	23	35	0.295	0.115**	0.016	-0.033
Driving a car	30	27	31	0.146	0.036	0.026	0.016
Train	29	21	34	0.246	0.128*	0.013	-0.022
Tram	20	15	22	0.157	0.057	0.032**	-0.026
Cycling	17	18	17	0.146	-0.016	0.015	-0.003
Taxi	16	17	16	0.244	-0.011	-0.030**	0.003
Walking	10	7	11	0.053	0.044	0.022**	-0.014
Being a car passenger	9	5	11	0.085	0.056*	0.004	-0.012

Table 10 The associations between the inability to use various forms of transport because of a mental health condition and age and area of residence for each gender.

	Regression coefficients					
	Male			Female		
	Constant	**Age**	**Area**	**Constant**	**Age**	**Area**
Metro	0.081	0.036	0.026	0.413	0.031	-0.027
Bus	0.031	0.040	0.025	0.532	0.001	-0.058**
Train	-0.008	0.023	0.044	0.480	0.005	-0.047*
Being a car passenger	0.135	-0.031	0.010	0.132	0.013	-0.017

Anxiety when travelling

The respondents were presented with a list of 15 factors that could make people anxious when travelling. They also had the opportunity to indicate 'Something else' and to write down what that was. The numbers with various anxieties when travelling are shown in Table 11. At the analysis stage, the fifteen factors were grouped under headings to help structure the discussion. These are also shown in Table 11. Not all the differences between the genders are statistically significant, but in all cases where they are, more women than men said that they had the anxiety when travelling. The associations with age and type of residential area for each gender are shown in Table 12.

The group of anxieties that affects the greatest number of respondents is 'Interacting with fellow travellers', which affects 88% of the females and 79% of the males and is a statistically significant difference at the 5% level. None of the three factors that make up this category of anxiety has differences between the genders that are statistically significant.[2] For females, there is a statistically significant (at the 10% level) relationship with the type of area, with more women with this anxiety living in more rural areas, suggesting that they may have chosen to live in more rural areas to avoid interacting with many people when travelling, possibly by using the car for travel, reflecting the greater anxiety about travelling by public transport shown in Table 10.

[2] It may seem curious that the difference between the numbers of males and females in the overall anxiety of 'Interacting with fellow travellers' is statistically significant while the differences for the three factors that constitute this overall factor are not. 36% of the male respondents cited all three sub-reasons, whereas only 4% of the female respondents did so, meaning that more females cited one or two sub-reasons, which, partly at least, explains why there is a significant difference for the overall reason.

Table 11 Causes of the anxieties that the respondents had when they travelled.

	% of respondents			Regression coefficients			
	Male and female	**Male**	**Female**	**Constant**	**Gender**	**Age**	**Area**
Interacting with fellow travellers	84	79	88	0.958	0.083 **	-0.024 *	-0.029 *
What other people think about them	66	63	68	0.882	0.055	-0.053 ***	-0.032
Having to mix with strangers	65	65	65	0.814	-0.009	0.005	-0.053 **
How other people behave	48	52	46	0.625	-0.054	-0.039 **	0.001
Needing support	82	74	87	0.658	0.129 ***	-0.014	0.036 *
Feeling out of control	64	55	69	0.386	0.145 ***	-0.011	0.058 **
Feeling claustrophobic and unable to escape	56	45	62	0.191	0.187 ***	-0.003	0.077 ***
Not being able to obtain help	34	27	37	0.364	0.089 *	0.024	-0.045 **
Wayfinding	67	60	71	0.743	0.092 *	0.002	-0.039 *
Feeling disorientated	46	43	48	0.537	0.035	0.025	-0.050 **
Getting lost	36	33	37	0.412	0.039	-0.007	-0.017
Having to take decisions about where to go	35	24	41	0.310	0.166 ***	-0.007	-0.014
Remembering where they are going to	19	15	21	0.097	0.058	0.031 **	-0.011
Needing to take urgent action	63	60	65	0.568	0.044	0.045 **	-0.025
Failure of the bus, train or car	46	39	50	0.391	0.102 *	0.036 *	-0.027
Finding suitable toilet facilities	42	44	41	0.446	-0.037	0.058 ***	-0.049 **
Interacting with staff and purchasing tickets	51	49	53	0.616	0.023	0.004	-0.039
Having to talk to staff such as bus drivers	45	46	44	0.637	-0.029	-0.002	-0.050 **
Using ticket machines	20	16	22	0.140	0.047	0.044 ***	-0.028
Handling money	14	13	15	0.182	0.015	0.001	-0.016
Something else	14	9	16	-0.024	0.074 **	0.013	0.023

Table 12 The associations between the causes of the anxieties that the respondents had when they travelled and age and area of residence for each gender.

	Regression coefficients					
	Male			Female		
	Constant	**Age**	**Area**	**Constant**	**Age**	**Area**
Interacting with fellow travellers	0.983	-0.040	-0.023	1.017	-0.015	-0.029*
Needing support	0.613	0.000	0.038	0.815	-0.021	0.033*
Feeling out of control	0.261	0.033	0.059	0.616	-0.035*	0.052**
Feeling claustrophobic and unable to escape	0307	-0.067*	0.093*	0.280	0.030	0.078***
Not being able to obtain help	0.444	0.042	-0.083*	0.436	0.016	-0.034
Wayfinding	0.694	0.032	-0.048	0.878	-0.014	-0.039
Having to take decisions about where to go	0.289	-0.023	0.005	0.471	0.001	-0.020
Failure of the bus, train or car	0.305	0.058	-0.020	0.544	0.024	-0.033
Something else	0.146	-0.006	-0.011	-0.030	0.024	0.038*

The next group of anxieties is 'Needing support'. Not only is the difference between the proportions of males and females for the overall group statistically significant, it also is for the three travel anxieties in this category which are 'Feeling out of control', 'Feeling claustrophobic and unable to escape' and 'Not being able to obtain help'. The relationships with age are not very strong, but for men, anxiety about claustrophobia and being unable to escape, and for women, 'Feeling out of control', decrease with increasing age. For both men and women, 'Feeling claustrophobic and unable to escape' have positive relationships with increasing urbanicity of the areas, with a stronger relationship for women. This may be associated increased likelihood of travel on the London Underground and other metros, which tend to be in cities. For women, anxiety about feeling out of control also increases with greater urbanicity, possibly because of increased perceived fear of threat from other people, reflecting the higher levels of sexual violence towards women shown in the literature (WHO 2020). For men, anxiety about not being able to obtain help increases with greater rurality. This may be because of greater need to rely on asking for assistance from strangers, rather than being able to approach a more formal assistance point, along with having communication difficulties which is an issue for more men than women, as shown in Table 5.

Wayfinding is another topic that caused more women than men to feel anxious when travelling. Overall, the difference is statistically significant at the 10% level. Only one of the four subtopics shows a statistically significant difference between females and males, at the 1% level. This is 'Having to take decisions about where to go' which covers issues such as whether to turn left or right on the street or when to alight from the bus or train. For the other three subtopics of 'Feeling disorientated', 'Getting lost' and 'Remembering where they are going to', more females than men suffer from the anxiety, but the differences are not statistically significant.

The next category is 'Needing to take urgent action' which covers two topics 'Failure of the bus, train or car' and 'Finding suitable toilet facilities'. Of these topics, only 'Failure of the bus, train or car' has a statistically significant difference, at the 10% level, between the number of women and men suffering from the anxiety, 50% of females, compared to 39% of males.

For the topic, 'Interacting with staff and purchasing tickets' the differences between the numbers of females and males are not statistically significant for this topic and the three subtopics.

Finally, more females than males said that 'Something else', caused them anxiety when travelling. Examples given by the respondents included 'being attacked' (both genders), traffic noise (a male), dogs (a female) and various phobias.

Some of the ways in which the anxieties can be addressed will be considered in the next section.

Addressing the issues

One way to help overcome travel anxiety when travelling is to provide travel training. People undergoing travel training usually participate in classroom exercises and then go on journeys with a trainer on a one-to-one basis to gain experience and so increase their confidence to make unaccompanied journeys. As Table 13 shows, only about 3% of the respondents had received travel training, with no significant difference between males and females. However, many of the respondents believe that receiving such training would encourage them to travel more, with significantly more females than males believing this. As Table 14 shows, this belief does not vary significantly by age or by the type of area.

Table 13 Travel training.

	% of respondents			Regression coefficients			
	Male and female	**Male**	**Female**	**Constant**	**Gender**	**Age**	**Area**
Have received travel training (n=355)	3	3	3	0.073	0.002	-0.006	-0.008
Of those who have not received travel training, respondents who think that this type of training would encourage them to travel more (n=337)	40	31	46	0.179	0.009 ***	0.021	0.022

Table 14 The associations between travel training and age and area of residence for each gender.

	Regression coefficients					
	Male			**Female**		
	Constant	**Age**	**Area**	**Constant**	**Age**	**Area**
Of those who have not received travel training, respondents who think that this type of training would encourage them to travel more (n=337)	0.219	0.041	-0.006	0.331	0.011	0.029

There may be actions and policies that could be implemented to address some of the concerns that people with mental health conditions have about using specific modes. Tables 15 to 20 show the proportions of each gender who indicated which factors from a list would encourage them to walk or travel by bus or train more, respectively, and the associations with age and degree of urbanicity.

Table 15 shows the factors that might encourage the respondents to walk more by gender. Some of them would encourage more males to walk more, others would encourage more females, but in only one case is the difference statistically significant. This is 'Less clutter on the street', which 32% of the men, but only

14% of the women, cited. When the effects of age and type of area are considered for the genders separately (Table 16) there is an interesting difference: for men the association with greater age increases whereas for women, it decreases. The association with the degree of urbanicity is not statistically significant.

Table 15 Factors that might encourage the respondents to walk more.

	% of respondents			Regression coefficients			
	Male and female	**Male**	**Female**	**Constant**	**Gender**	**Age**	**Area**
Better behaviour by other people	44	48	42	0.322	-0.066	0.037 **	0.017
Less noise	37	32	40	0.411	0.079	-0.022	-0.009
Less traffic	34	36	33	0.518	-0.031	-0.045 **	-0.010
More toilet facilities	29	32	27	0.195	-0.057	0.051 ***	-0.004
Better pavements	28	30	27	0.303	-0.028	-0.014	0.011
Less clutter on the street	21	32	14	0.219	-0.174 ***	-0.001	0.030
Better signposting on the street	21	21	20	0.041	-0.002	-0.006	0.055 ***
More places to ask for help	18	15	20	0.206	0.042	0.002	-0.018
Something else	13	11	14	0.28	0.031	0.025 **	0.004

Table 16 The associations between the factors that might encourage the respondents to walk more and age and area of residence for each gender.

	Regression coefficients					
	Male			**Female**		
	Constant	**Age**	**Area**	**Constant**	**Age**	**Area**
Less clutter on the street	0.080	0.063*	0.020	0.150	-0.034**	0.026

Moving to buses, Table 17 shows how many respondents indicated which factors would encourage them to travel by bus more. Of the seven factors, more men than women identified four factors and more women than men identified three, but in only one case was the difference statistically significant. That was 'Clearer information on board the bus about the route and the next stop', which was identified by 55% of the females and 35% of the males, a difference significant at the 1% level. As Table 18 shows, there is no significant difference with age or type of area.

Table 17 Factors that might encourage the respondents to travel by bus more.

	% of respondents			Regression coefficients			
	Male and female	Male	Female	Constant	Gender	Age	Area
Better behaviour by other travellers	50	54	48	0.390	-0.058	0.015	0.032
Clearer information on board the bus about the route and the next stop	48	35	55	0.373	0.199 ***	-0.017	0.008
Clearer bus timetables and maps	45	44	46	0.486	0.015	-0.018	0.002
Better trained bus drivers	32	34	31	0.513	-0.043	-0.005	-0.045 **
Clearer websites	30	32	29	0.347	-0.032	-0.011	0.001
More toilet facilities	28	33	26	0.333	-0.073	0.019	-0.016
Something else	12	10	13	0.023	0.029	0.022 *	0.005

Table 18 The associations between the factors that might encourage the respondents to travel by bus more and age and area of residence for each gender.

	Regression coefficients					
	Male			Female		
	Constant	Age	Area	Constant	Age	Area
Clearer information on board the bus about the route and the next stop	0.570	-0.013	-0.053	0.499	-0.017	0.030

A similar pattern emerges for factors that would encourage more rail use, as shown in Table 19, where about half of the eight factors would encourage more men than women to travel and about half would encourage more women to travel. In three cases, the differences are statistically significant. In two cases, 'Being able to contact a member of staff in person when on the train' and 'Clearer information on board the train about the route and the next stop', they were identified by more women than men. As Table 20 shows, the anxiety about being able to contact a member of staff in person increases with age for both genders, with a statistically stronger relationship for women. The opposite is true for the anxiety about clearer information on board the train, where the anxiety decreases with increasing age for women. The final statistically significant difference between the genders is the need for more toilet facilities, mentioned by 42% 0f the men and 34% of the women. As Table 20 shows, for women there is a statistically significantly increase with age for women, but not for men.

Table 19 Factors that might encourage the respondents to travel by rail more.

	% of respondents			Regression coefficients			
	Male and female	Male	Female	Constant	Gender	Age	Area
Better behaviour by other travellers	48	51	46	0.599	-0.068	0.022	-0.063***
Being able to contact a member of staff in person when on the train	42	28	50	0.050	0.215***	0.056	0.024
Better trained station and on-board staff	41	44	39	0.599	-0.068	0.022	-0.063***
Clearer information on board the train about the route and the next stop	33	23	39	0.294	0.163***	-0.020	-0.003
Clearer rail timetables and maps	36	34	38	0.192	0.039	0.024	0.024
More toilet facilities	37	42	34	0.379	-0.096*	0.052***	-0.029
Clearer websites	25	27	24	0.064	-0.031	0.035**	0.034
Something else	13	13	13	0.157	0.003	-0.016	0.006

Table 20 The associations between the factors that might encourage the respondents to travel by rail more and age and area of residence for each gender.

	Regression coefficients					
	Male			Female		
	Constant	Age	Area	Constant	Age	Area
Being able to contact a member of staff in person when on the train	0.120	0.065*	-0.003	0.246	0.052**	0.033
Clearer information on board the train about the route and the next stop	0.125	0.017	0.017	0.552	-0.040*	-0.015
More toilet facilities	0.304	0.056	-0.010	0.316	0.049**	-0.036

Discussion

The survey attracted 363 respondents who were male or female: 91 males and 272 females. This implies that more females and fewer males responded compared with the figures for men and women in the Health Survey for England 2014 (Bridges 2015) and the Adult Psychiatric Morbidity Survey 2014 (APMS) (McManus et al. 2016). This may be because men tend to be more reluctant to talk about their mental health than women (Mental Health Foundation 2021) and so, proportionately, fewer participated in the survey.

Women's greater willingness to talk about mental health issues may help explain the greater proportion of women who gave examples of becoming lost, experiencing severe anxiety or needed to seek help when travelling (Table 3), the greater proportions of females who said that they were anxious about needing

support when travelling (Table 6) and the greater proportion who wanted to be able to contact a member of staff in person when on a train (Table 10). Younger people were also over-represented in the original sample. That may be because the survey was carried out on-line and older people are less digitally-included than younger people are (Matthews et al. 2019). The potential gender and age biases were addressed by applying weightings based on APMS to the sample.

From the review of the literature at the beginning of this paper, it is evident that more women than men have mental illness and that the effects on their lives are greater, which corresponds to the results from the survey being discussed in this paper. The evidence cited in the literature review outlining the differences in the travel behaviour of men and women, with women having less access to cars, despite having more complex trip patterns, with many journeys involving escorting others, may be part of the cause of the higher levels of travel anxiety for women (Table 11). These reflect the evidence in the literature of the greater effects of commuting on stress and psychological health for women than men. That was attributed in the literature to women bearing more of the burden of family life such as childcare and housework than men (Costa et al. 1988; Feng and Boyle 2014; Novaco and Collier 1994; Roberts et al. 2011).

The lower levels of car availability for women discussed in the literature review (Basarić et al. 2016; Elias et al. 2015; Eurobarometer 2007; European Commission 2013) and the greater number of women unable to use bus and rail because of their mental health condition (Table 9) may be part of the cause of more of them being able to out at all (Table 7). The greater inability to use public transport may be because more of them have PTSD and panic attacks both of which may make use of public transport more challenging. PTSD is the mental health condition that has the largest difference between the genders in this survey (Table 1). It is explicitly discussed in the literature as affecting more women than men (Andrews et al. 2003; WHO 2020) often as a result of the greater sexual violence to which women are subjected (WHO 2020). Some of that violence may have been during a public transport journey. Women's greater prevalence to have panic attacks (Table 5) and OCD (Table 1) may also deter them from using public transport because they may not wish to be seen having a panic attack or exhibiting OCD, reflecting the concerns about other people's perceptions of their behaviour and their greater anxiety about feeling out of control (Table 11), reflecting the evidence that feeling out of control can cause stress (Penfold et al. 2008; Posner and Sharp 2020) as can interacting with other people (Hofmann et al. 2007), having to sit next to strangers (Evans and Wener 2007) and overcrowding (Norgate et al. 2020).

Another issue that makes travel by public transport more difficult for women, particularly older ones, is fluctuations in their mental health condition which prevents them from buying rail tickets in advance (Tables 7 and 8).

One of the causes of anxiety that affected significantly more females than males is wayfinding, particularly, having to take decisions about where to go. This is an area where there is explicit evidence of differences between the genders and the anxiety it can cause (Ferguson et al. 2019; Lyons et al. 2018). These differences may be due to differences in the physiology of the brain (Ingalhalikar et al. 2014) or childhood experience (Vietes et al. 2020), or a combination of the two.

The need for greater assistance with finding the way, particularly taking decisions, is probably why more women than men mentioned better information on board buses and trains would encourage more travel, and part of the reason they would like to be able to contact a member of staff in person when on the train (Tables 17 and 19). The difference between younger and older women in the form of information

preferred on board train is interesting, with the former preferring information on an electronic screen, the latter preferring contact with a person. This difference may reflect the higher levels of communication difficulty for younger women (Table 6) and lower levels of digital inclusion for older people (Matthews et al. 2019). One of the reasons that fewer men are anxious about being able to find a member of staff on board the train may be because more of them have communication difficulties (Table 5) and they have greater confidence in their own ability to find the way using their superior motor and spatial abilities (Ingalhalikar et al. 2014). This may also be why women have greater anxiety about failure of the bus, rail or car (Table 11), because men will use these skills to find the way for themselves while women would like to be given the relevant information. For older women, in particular, this would, preferably, be from a person rather than a screen because fewer of them have communication difficulties, unlike men and younger women (Table 6). It may also be partly why more women than men felt that travel training would encourage them to travel more so that they had a clearer idea about how to take decisions when travelling and coping strategies when the transport system fails (Table 13).

One interesting difference between men and women was that significantly more men said that they would be encouraged to walk more if there were less clutter on the street, especially older men. However, for women, it is younger women who were keen on less street clutter, which may be associated with their higher levels of OCD (Table 2).

The only factor that would encourage more men to travel by train was more toilet facilities, but this was an issue that increased with age significantly for women, reflecting evidence in the literature (Bauer and Huebner 2013; Kamboj et al. 2105; Roy et al. 2018).

Some interesting differences emerge between those living in urban and rural areas. A major issue in urban areas is claustrophobia which affected more women than men (Table 11) but for both genders increased with greater urbanicity (Table 12), probably because metro systems such as the London Underground are in urban areas. This was the mode that the greatest percentages of each gender, especially women, were unable to use (Table 9). This may also be partly why more people feel out of control in urban areas (Table 11). Better signposting on the street would encourage more walking by those in urban areas (Table 15) reflecting greater complexity of wayfinding when walking in urban areas.

In more rural areas, more women than men are unable to use bus and train (Table 10) and feel anxious about interacting with other people (Table 12). These may be related and suggest that some people, particularly women, are choosing to live in more rural areas where they can travel by car. Some female respondents explained that they made all their travel by car because of the greater level of control it gave them as well as the opportunity to avoid overcrowding and travelling with strangers (Evans and Wener 2007; Mackett 2021a; Norgate et al. 2020). Another interesting aspect of greater rurality was the higher levels of feeling disorientated (Table 11), possibly because there are likely to be fewer useful landmarks which are often used for wayfinding (Mackett 2021c).

Policy implications

It is clear from the evidence presented in this paper that many aspects of travel cause barriers to people with mental health conditions, and that these barriers tend to be greater for women. Various policies could be introduced by government to help address these. Focusing on the barriers which are greater for women would help to redress the balance (but may also help men, and also people without mental health conditions). These include:

- The first action that would help would be to introduce more staff with appropriate training, to provide information and support when needed. They should be at points where decisions need to be made such as stations, and also on trains. Bus drivers need to be given suitable training to be empathetic with people with anxieties.
- The second area where improvements are required is the provision of clear, reliable travel information, both online and on signposts. Again, there needs to be careful thought given to where, when and how information is made available so that it assists in decision-making and provides reassurance. It is particularly important to provide information (and assistance) when the bus or train fails to operate as advertised.
- Travel training should be made more widely available so that all who would benefit from it, could access it.
- The provision of more toilet facilities would assist both men and women, but would be particularly helpful for older women.
- The rail ticketing system in Britain which means that cheaper fares are available to people can book in advance. People who are unable to book cheaper fares in advance because they do not know whether they will be able to travel at a specific time in the future, should be enabled to buy tickets on the day of travel at the price that they would be able to have done in advance.
- One of the biggest causes of concern was the how other people behave and what they thought about the person with mental health issues. There needs to be a major campaign to educate the public that other people may need greater understanding without them having to explain why. This might be carried out along the 'It's Everybody's Journey' campaign being run in England by the Department for Transport (2021b) but with greater emphasis on people with non-visible disabilities such as mental health conditions.
- When improvements are implemented, there needs to be extensive marketing to make people who are anxious about travelling aware of the improvements. There is a risk that someone who has had a bad experience that has deterred them from travelling by a particular mode, will not be aware of the improvements that have been made.

There is a more comprehensive list of recommendations arising out of this work elsewhere (Mackett 2019). There is also an analysis of how effective the types of policy action shown in Tables 15, 17 and 19 might be (Mackett 2012b) and a comprehensive description of various relevant policy and actions (Mackett 2017).

Limitations of the study

The research described in this paper is based on a convenience survey, which meant that there was no control over who responded. This was done so that the respondents could be certain that their answers were confidential. However, this meant that there was no control over the demographic structure of the sample. Compared with larger surveys which focus solely on health issues, it seems that this sample over-represented females and young people. Some possible reasons for this were considered in the Discussion section above. The data was adjusted by applying weights to the age and gender cohorts in the sample so that they were in the same proportions as in APMS which is the national survey on mental health with the more similar definition of being mentally ill to that used in this work. However, both the larger surveys that were potentially useful for this process were carried out in 2014, and the demographic structure might have changed since then. As mentioned above, there was a difference of definition of having mental

illness between this survey and APMS. In this survey the simple question 'Do you have a mental health condition?' was asked whereas the APMS uses complex clinical questionnaires to assess the degree of mental illness. The advantage of the simpler method used in this paper was that all the respondents acknowledged that they had a mental health condition. In all cases, they indicated that their mental health did have some effect on their patterns of travel, enabling the survey to achieve its objectives of producing useful results on this topic.

The questionnaire was distributed on-line, mainly through social media, which meant that it only reached people who look at such media or were directed to the questionnaire by friends and family. This may be partly why the number of older respondents was fewer than equivalent proportion identified in APMS. The weightings based on APMS were used help address this issue.

In order to ensure that the respondents felt comfortable completing the questionnaire and to increase the chances of them completing it, they were asked to indicate which age group they were in, rather than their exact age. This meant that, in the analysis, age was represented by giving the five age groups integer values of one to five in ascending order, which is a relatively crude way of representing age. There may have been a degree of subjectivity in the respondents' interpretation of the type of area that they lived in, for example, in deciding whether they lived in a town or village. It could also be argued that giving the type of area a value from one for rural areas to five for London was not very sophisticated. However, both the age and type of area measures were useful in helping give a richer picture to some of the gender differences.

Conclusions

The literature review shows that there are a number of papers on aspects of gender, mental health and travel (for example: Elias et al. 2015; Evans and Wener 2006; Ferguson et al. 2019) but very few integrating the three topics. This paper makes a useful contribution by examining gender differences in ways in which travel is affected by having a mental health condition for people living in the community. The results in this paper are generally consistent with the existing evidence and add to it. The fairly extensive literature search revealed no other papers that address these themes comprehensively, so this paper makes a useful contribution to the literature.

This paper has shown that among a group of people who all acknowledge that they have a mental health condition, women face more challenges when they travel than men. The evidence presented in this paper shows that more women than men have panic attacks, are prevented by their mental health condition from leaving home, using bus, rail and metro and from buying rail tickets in advance. More women than men suffered from many of the travel anxieties. The main differences were in the greater need for support, wayfinding, interacting with fellow travellers and concerns about the failure of the bus, train or car. A number of possible causes of these differences have been identified from the literature: for example, greater stress in women's lives because they tend to have a greater share of caring responsibilities (Novaco and Collier 1994) and suffer more sexual violence causing PTSD (Andrews et al. 2003), plus differences in the physiology of the brain and in childhood experience (Ingalhalikar et al. 2014).

For women, the greatest need seems to be policies and actions that will increase their confidence when travelling such as access to staff when assistance is required and clear information when travelling, plus the opportunity to receive travel training. Men wanted improvements to the travelling environment, such as less clutter on the street.

There are a number of areas where further research would be useful. First, a survey using a larger sample based on a representative sample of people who have a mental health condition, would reveal more about the nature of the issues faced by people with these types of issues, and enable a deeper analysis by characteristics such as age, gender and ethnicity. One area that would merit further analysis is why some people are unable to leave home on occasion. In particular, are there aspects of the transport system, such as improved staffing levels, that would help to overcome these barriers? A third area that needs exploring further is how to implement solutions so that they actually meet the needs of people with anxieties about travel so that they feel able to travel more. There are some specific aspects of travel that need further research such as the best ways to assist travellers when there is system failure and how to be fair to people who cannot commit to buying rail tickets in advance without significant loss of fare revenue.

This paper has shown that there are significant gender differences in both the causes of anxiety when travelling and the improvements that are seen as useful to help address the issues. Implementing improvements to increase confidence when travelling could help improve the quality of life for many people and help to reduce gender inequalities.

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