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[Department
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Research and analysis

Technical appendix: Investigating factors associated with loneliness, isolation and social connection among boys and young men in England

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Applies to England

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Data from two surveys were used in this analysis to allow us to address each research question.

Understanding Society

Understanding Society (the UK Household Longitudinal Study) is a long-running, nationally representative household panel survey. This analysis used data from households in England only. Those aged 16 and over are asked the adult questionnaire, with a subset of questions asked to only young people aged 16 to 21 (Self-Completion Young Adults Module).[\[footnote 1\]](#) Children aged 10 to 15 are asked a separate youth questionnaire.

Wave 15 data

The analysis primarily used Wave 15 data, collected in 2023 to 2025,[\[footnote 2\]](#) which includes data on loneliness, isolation and social connection, alongside a range of potential explanatory factors, and covers the full age range of interest (boys and young men aged 10 to 25). Due to the differences in survey contents by age, explanatory variables including family support, number of friends, experiences of bullying and social media use were only available for boys aged 10 to 15 (youth questionnaire) and young men aged 16 to 21 (Young Adults Module) and not for young men aged 22 to 25.

Wave 14 data

Wave 14 data, collected between 2022 to 2024, were also used to examine participation in extracurricular activities, which were not measured at Wave 15. Participation in extracurricular activities was captured in the youth questionnaire only, so only data from boys aged 10 to 15 is used in the analysis.

The unweighted sample comprised 1,915 boys and young men aged 10 to 25 years old at Wave 15 and 620 boys aged 10 to 15 years old at Wave 14.

Mental Health of Children and Young People survey

The Mental Health of Children and Young People Survey (MHCYP) is a longitudinal survey series collecting data on children and young people aged 2 to 25 in England. The main survey was first carried out in 2017, with four follow-ups of the same participants, the most recent in 2023. Data from the most recent survey (follow-up 4, 2023) [\[footnote 3\]](#) was used as a supplementary dataset in this analysis to investigate the relationship between measures of mental health and wellbeing and loneliness. Children and young people were administered slightly different questionnaires depending on their age. The child questionnaire was administered to children aged 11 to 16 and the young people questionnaire was administered to young adults aged 17 to 25.

For this study, we used data from the child and young person questionnaires covering an overall age range of 11 to 25. The analysis of the MHCYP survey was carried out on an unweighted sample of 626 boys and young men in England.

Additionally, the parent questionnaire, asked of parents of participants aged 8 to 16 years old, was used to complement data for participants aged 11 to 16 which was collected from parents and not young people themselves (the data on the household's financial situation and questions on whether the child has support from peers or adults).

This means that there was a small difference in the ages covered by both surveys, with Understanding Society covering those aged 10 to 25 and MHCYP covering those aged 11 to 25.

Weighting

The analysis in this report uses survey weights and controls for the complex survey design of both Understanding Society and the MHCYP to ensure that results were representative of boys and young men living in England.

For Understanding Society we used the weights to adjust for unequal selection probabilities, differential nonresponse, and potential sampling error. The [analysis took into account](#) the sample design (stratification and clustering) to ensure that the standard errors are accurate for modelling and significance testing.

For [MHCYP analysis](#) the weighting was used to adjust for non-response, so that the results were representative of the population of young people in England.

Significance testing

All results presented in this report were formally tested for statistical significance. For brevity, the report only presents findings, odds ratios and differences in proportions that were found to be statistically significant at the 95% level.

A range of analytical techniques were used for this report to offer insights into each research question in the most appropriate manner. Details of the analytical methods used in each section of the report are summarised in the table below (Table 1. Analysis methods used across the report sections).

Descriptive statistics

As described in the methods table below (Table 1. Analysis methods used across the report sections), this report employs descriptive statistics to examine the prevalence of loneliness and the relationship between loneliness and a range of factors. This report used proportions – reporting the percentage of people estimated to be experiencing loneliness in different groups – to compare levels of loneliness across key characteristics and experiences.

Pairwise correlation

The report used correlation analysis to summarise the extent to which loneliness, social isolation and a proxy measure of social connection are related among young men. Pairwise correlation calculates a correlation coefficient for each pair of variables, providing a standardised measure of the direction and strength of association. In this report, correlations were calculated between self-reported loneliness, self-reported isolation, and the number of close friends as a proxy for social connection, using available cases for each pair. This approach was used as a descriptive step to assess overlap between constructs and to inform subsequent analytical choices; correlations do not imply causation and may reflect shared

underlying factors rather than direct effects.

Logistic regression

The primary analytical method used in this report was binary logistic regression, which examines the relationship between a set of explanatory (or predictor) variables and a binary categorical outcome. In this report the outcome was a measure of loneliness or isolation, and specific outcome measures for each section are set out in the table below.

Predictors were tested in groups reflecting conceptually related factors; for instance a social connections domain included number of friends, family support and frequency of socialising with friends. Only explanatory variables that were significant within these domain-specific models were taken forward into the final combined model (statistical significance was assessed using a 0.05 threshold). Control variables (age, ethnicity, household size and disability status) were included in the final models to provide more accurate estimates regardless of their predictive power if the sample sizes allowed this. This means that the control variables were included in the final models based on Understanding Society data, but not for supplementary models that used MHCYP dataset, as due to modest sample sizes adding control variables to these models would have resulted in too many variables relative to the number of events.

After fitting the final combined models, the final coefficients and respondents' observed characteristics to estimate each respondent's predicted probability of feeling lonely more often. For key predictors, average predicted probabilities by category (e.g., wellbeing groups) to compare groups' likelihood of feeling lonely more often, while reflecting their other observed characteristics.

Decision tree modelling

Decision tree models were used to explore whether there are any natural age divisions based on experiences of loneliness. These models are well suited to the task because they evaluate all possible age thresholds and select the split that best distinguishes groups with differing levels of loneliness, based on variance reduction. To focus on meaningful age distinctions, tree growth by limiting splits, helping to prevent overfitting and avoid capturing random noise. The results from the analysis

yielded weak evidence for distinctive age bands thus the produced splits were ultimately not used.

Table 1. Analysis methods used across the report sections

Report Section	Figure/table	Survey	Outcome variable	Analytical approach
Exploring variation in loneliness by age in the Understanding Society Wave 15	No data	Understanding Society Wave 15	Frequency of feeling lonely	Decision tree modelling
Comparison of loneliness reported in the Understanding Society Wave 15 and Mental Health of Children and Young People survey Wave 4	No data	Understanding Society Wave 15, MHCYP Wave 4	Frequency of feeling lonely	Proportions
Loneliness by personal characteristics including age, ethnicity, disability, household size, employment status (16 to 25), mental health and wellbeing, number of friends, frequency of	Figure 1. Levels of loneliness by age among boys and young men aged 11 to 25	Understanding Society Wave 15	Frequency of feeling lonely	Proportions
	Figure 2. Levels of loneliness by family support among young men aged 16 to 21			
	Figure 3. Levels of loneliness by family			

meeting with friends, social media use, and experiences of bullying.

support among boys aged 10 to 15

Figure 4. Levels of loneliness by the number of close friends among young men aged 16 to 21.

Figure 5. Levels of loneliness by the number of close friends among boys aged 10 to 15.

Figure 6. Levels of loneliness by the frequency of meeting friends in person among young men aged 16 to 21.

Figure 7. Levels of loneliness by the frequency of getting together with friends online among young men aged 16 to 21.

Figure 8. Levels of loneliness by frequency of being bullied at school among boys aged 10 to 15.

Loneliness by engagement in activities

Figure 9. Levels of loneliness by engagement in

MHCYP Wave 4, Understanding

Frequency of feeling lonely

Proportions

including participation in cultural, creative, sporting, educational and social activities	organized group activities among young men aged 17 to 25. Figure 10. Levels of loneliness by engagement in extracurricular among boys aged 10 to 16. Figure 11. Levels of loneliness by frequency of watching live sport among boys aged 10 to 15.	Society Wave 14		
Factors predicting feeling lonely sometimes or often/all the times for boys aged 10 to 15 and young men aged 16 to 21 with reduced factors for young men aged 22 to 25	Table 2. Staged regression modelling: control and explanatory variables by domain and inclusion in the final model (Understanding Society, Wave 15, boys aged 10 to 15). Table 3. Staged regression modelling: control and explanatory variables by domain and inclusion in the final model (Understanding Society, Wave 14, boys aged 10 to 15).	Understanding Society Wave 15, Understanding Society Wave 14	Frequency of feeling lonely often, some of the time or always	Logistic regression

Table 4. Staged regression modelling: control and explanatory variables by domain and inclusion in the final model (Understanding Society, Wave 15, young men aged 16 to 21).

Factors predicting feeling lonely sometimes or often/all the times for boys aged 11 to 16 and young men aged 17 to 25	Table 5. Staged regression modelling: control and explanatory variables by domain and inclusion in the final model (MHCYP, Wave 4, boys aged 10 to 16)	MHCYP Wave 4	Frequency of feeling lonely often or always	Logistic regression
	Table 6. Staged regression modelling: control and explanatory variables by domain and inclusion in the final model (MHCYP, Wave 4, young men aged 17 to 25).			

1. [Understanding society. Questionnaires](#) ↩
2. University of Essex, Institute for Social and Economic Research. (2025). Understanding Society: Waves 1-15, 2009-2024 and Harmonised BHPS: Waves 1-18, 1991-2009. [data collection]. 20th Edition. UK Data Service. SN: 6614, DOI: <http://doi.org/10.5255/UKDA-SN-6614-21> ↩
3. National Centre for Social Research, Office for National Statistics, University of Cambridge, University of Exeter. (2025). Mental Health of Children and Young

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