



Loneliness data insights: Methodological appendix

This appendix accompanies the following three data insights on loneliness and provides detail on the data and methodologies used in the analysis:

Goldstone, R., Hodges, H., Durrant, H., and Taylor-Collins, E. (2021). **Who is lonely in Wales?** Cardiff: Wales Centre for Public Policy.

Hodges, H., Goldstone, R., Durrant, H., and Taylor-Collins, E. (2021). **General health and loneliness in Wales.** Cardiff: Wales Centre for Public Policy.

Hodges, H., Goldstone, R., Durrant, H., and Taylor-Collins, E. (2021). **Age and loneliness in Wales.** Cardiff: Wales Centre for Public Policy.

About the National Survey for Wales

The National Survey for Wales (NSW) is carried out by The Office for National Statistics (ONS) on behalf of the Welsh Government. The sample is drawn from individual addresses in the Royal Mail Small Users Postcode File (PAF) with interviews being conducted with one randomly selected adult (aged 16+) per household.

Loneliness was measured for the first time in the NSW in 2016-17 with the same questions again being asked in 2017-18 and more recently in 2019-20.

About the samples

Across the three waves, 30,912 unique individuals responded to questions about loneliness – respondents are prevented from participating in the NSW for four years following participation in any ONS social survey (Welsh Government, 2019). However, not all completed the various socio-demographic questions included in the survey.

The **'Who is lonely in Wales?'** insight is based on the unweighted responses of individuals from across Wales who answered questions on loneliness and the respective questions about their socio-demographic characteristics.

The **'General health and loneliness'** insight is based on the unweighted responses of 30,868 individuals from across Wales who answered questions on: loneliness; general health; age; ethnicity; household type and provided their home postcode.

The **'Age and loneliness'** insight is based on the unweighted responses of 30,788 individuals from across Wales who answered questions on: loneliness; age; general health; ethnicity; disability and provided their home postcode.

Grouping responses

Whilst most of the questions used in this data insight were asked in a consistent manner across the three waves of the NSW, in some cases it has been necessary to group responses to allow comparison across different waves. For example, owing to low numbers it has been necessary to combine those reporting being in a registered same-sex civil partnership with those

reporting being married. Furthermore, the 2017/18 survey offers a greater range of potential responses to questions on religion and sexual orientation than both the 2016/17 and 2019/20 surveys. To allow comparison, responses from the 2017/18 dataset have been grouped and combined.

In all surveys, respondents had the option to 'prefer not to say' either their religion or their sexuality. In the case of religion, approximately 1% of respondents opted to do this and have been excluded from the valid responses. However, in keeping with the way in which sexual orientation is reported in the Welsh Government's NSW analysis, those who preferred not to say have been included within the group 'Another response'.

Determining the highest educational qualification of respondents across the three waves has been complicated by changes to the reporting of apprenticeship levels in 2017/18. The data presented here is based on the variable 'EduCat' that is reported consistently across all three waves and reports sufficient variation in highest qualification. We have combined the numbers reporting other qualifications, foreign qualifications, and none of these / no qualifications into a single category.

As a result of pooling the responses from the three surveys it is not possible to make direct comparisons with figures published by the Welsh Government.

Measuring Loneliness

The De Jong Gierveld loneliness scale is used by the Welsh Government to assess levels of loneliness, with individuals being asked the extent to which the statement applies to their situation. These statements have been grouped as per Table 1 to provide an overall measure of loneliness along with subscales reflecting emotional and social loneliness.

Further information on the computing of social and emotional loneliness is available in De Jong Gierveld & Van Tilburg (2010; see also Tomás et al., 2017; Uysal-Bozkir et al., 2017; &

Rodríguez-Blázquez et al., 2021 for assessments of the scale's validity).

About the decision tree analysis

Data analysis for the 'General health and loneliness' and 'Age and loneliness' insights was conducted using SPSS version 26 and IBM Decision Tree analysis. IBM SPSS Decision Tree was chosen rather than employing regression analysis since the software has been designed to identify groups and look for relationships between independent 'predictor' variables (level of general health, age, household type, ethnicity and quintile of WIMD) regarding the dependent or 'target' variable (loneliness) and displays this information in a non-technical way.

IBM Decision Tree uses Pearson's Chi-Squared to decide on statistically significant variable splits to create 'parent' and 'child' nodes. The resulting classification tree therefore resembles a family tree with different branches or levels. The maximum tree depth beneath the root node is 3. Throughout the analysis the minimum number of cases for parent and child nodes have been set at 100 and 50 respectively. Nodes that do not satisfy these criteria will not be split. This means that no first-level group (e.g., level of general health) in trees presented can have a total number of respondents below 100. Likewise, no second-level groups (e.g. ethnicity; household type; quintile of WIMD) can have a total number of respondents below 50. The underlying statistical procedure (termed 'growing method' in SPSS) used for this report is CHAID (Chi-squared automatic interaction detection).

All three data insights use the 5-group 'age group' variable (DvAgeGrp5). This was done to enable decision tree analysis to be conducted for the Age and loneliness and General health and loneliness insights. Available responses are: 16-24, 25-44, 45-64, 65-74, 75+. This is a derived variable contained in the NSW datasets. To confirm our findings, a continuous, variable for age ('Age') was used to conduct ordinal regression analysis to further explore the relationship between age and loneliness. This

substantiated that age was negatively associated with levels of overall loneliness, specifically that each single increase in age translated into being 1% less likely to be lonely ($\beta = -.011$, $p = 0.05$).

Further information about IBM Decision Tree can be found: <https://www.ibm.com/uk-en/products/spss-decision-trees>

Table 1: The De Jong Gierveld Loneliness Scale

Statement		Overall	Emotional Subscale	Social Subscale
1	'I experience a general sense of emptiness'	Measured on a scale of 0 to 6, a score of 4 to 6 is used to identify those who are lonely.	Measured on a scale of 0 to 3, scores of 2 or more represent emotional loneliness	
2	'I miss having people around'			
3	'I often feel rejected'			
4	'There are plenty of people I can rely on when I have problems'		Measured on a scale of 0 to 3, scores of 2 or more represent social loneliness	
5	'There are many people I can trust completely'			
6	'There are enough people I feel close to'			

Adapted from De Jong Gierveld & Van Tilburg, 2010

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Sources

De Jong Gierveld, J., and Van Tilburg, T. 2010. **The De Jong Gierveld short scales for emotional and social loneliness: tested on data from 7 countries in the UN generations and gender surveys.**

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