Demographic Resilience

GGS

Identifying loneliness levels and key associated risk factors throughout the lifespan in the Republic of Moldova

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Author:

Tara Keck, *Professor, University College London*

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Executive Summary

Loneliness is a critical risk factor for health and well-being throughout the lifespan, with an increased effect on older people, and is linked to an increased risk for numerous diseases, including dementia, cardiovascular disease and depression, as well as a decrease in lifespan. There are numerous risk factors that contribute to loneliness and the most prominent risk factors for people vary with age. Thus, understanding key risk factors for a given population and age-group is critical for developing effective interventions. Using data from the Generations and Gender Survey conducted in the Republic of Moldova, loneliness levels were measured for the population. Over 1 in 4 people experience moderate to extreme loneliness, with an increase in loneliness frequency for older people. A model was developed to assess twenty-eight key risk factors for loneliness across the entire population, as well as for individual age-groups.

In this model, nine of the risk factors significantly contributed to the loneliness scores across the entire population: Depressive Symptoms, Being Partnered/Married, Partner Relationship Satisfaction, Children Relationship Satisfaction, Life Satisfaction Level, Happiness Level, Levels of Social Participation, Work Status and Financial Instability. The model was adapted for each age-group (14-24 years old, 25-34 years old, 35-44 years old, 45-54 years old, 55-64 years old and 65-79 years old) and for specific aspects of loneliness. While many of the population risk factors affected all age-groups and aspects of loneliness, there were loneliness and age-specific risk factors, in line with life stage, including physical health, living with disability (specifically hearing loss), work status and having tangible support for day-to-day tasks, among others. Overall, these results point to the importance of mental health and well-being for combating loneliness in the overall population and specific risk factors for different age-groups, including continued social and work engagement for older people.

Overall Recommendations
- Mental health and well-being are a key risk factor for loneliness in the Republic of Moldova across all age-groups. Develop awareness campaigns about the importance of mental health and signs of mental health issues.
- Train community members in basic mental health support (such as UNFPA/WHO's Psychological First Aid) to both provide compassionate non-judgemental support and strengthen and feed into mental health referral pathways. For example:
  - To support young people, train teachers and youth centre workers.
  - To support mothers and families, train midwives and nurses.
  - To support the general population, train health care workers and community volunteers.
- Overall health is a risk factor, particularly among younger people, as is living with disability. Develop risk-

assessment inclusivity checklists to help ensure that any activities developed to address loneliness are inclusive for people living with disability.

● Work status is a risk factor for older people. Create age-friendly work spaces to facilitate working later in life. This could include policies to support part-time work and inclusive work spaces for people living with disabilities that are common for older people, such as movement difficulties and partial deafness.

● Develop inclusive community-based group activities for all ages to expand social networks and promote intergenerational relationships. These activities should have a clear goal – for example, volunteerism, supporting people in the community who need tangible support, or learning new skills – to best support the reduction of loneliness. By creating volunteer opportunities that provide tangible support to those who need it, programs can address multiple risk factors for loneliness.

● To increase social engagement and networks, develop life-long group learning programmes throughout the lifespan that target skills relevant for different age-groups:

　o Develop learning programmes to be implemented in youth centres that train young people in employment-ready skills, such as technological skills including computer programming.

　o Develop social support programmes for people with young children, particularly women, who are not actively in work. This could include learning programmes for children and parents, which would support life-long learning and expand social networks.

　o Develop life-long learning programmes in digital technologies and other employment skills for older people to support their ability to remain in the workforce if desired and communicate with family and friends virtually.

Loneliness and Associated Risk Factors in the Republic of Moldova

Loneliness is a key risk factor for health and well-being throughout the lifespan. Loneliness is a subjective measure – do people *feel* like they have enough friends, family and acquaintances? Some people may need dozens of friends to not feel lonely, while others only need a few friends and family to feel socially fulfilled. There are two separate, but complementary, aspects of loneliness: emotional and social loneliness. Emotional loneliness is when a person lacks close relationships and people to confide in (Masi et al., 2011). Social loneliness, on the other hand, is when a person's social network is too small (Domenech-Abella et al., 2017). These two measures are often correlated, but specific events may preferentially affect one more than the other. For example, retirement from a job may affect social loneliness by reducing network size or a close friend moving away could affect emotional loneliness. Both aspects are key to loneliness levels and overall mental well-being.

Based on past research, it is clear that there are a wide-range of risk factors for loneliness. Importantly, the most prominent risk factors for loneliness can vary with a number of demographic characteristics, such as gender and age (Masi et al., 2011), with older people having a high risk for loneliness. Given that the Republic of Moldova has an ageing population, with over 22% of people over 60 years old[1], identifying risk factors for specific age-groups is important for developing appropriate approaches to prevent loneliness. Furthermore, each of these individual risk factors pose different health risks. Risk factors associated with emotional loneliness are linked to increases in cardiovascular disease (Knox and Uvnas-Moberg, 1998; Yang et al., 2016) and depression (Santini et al., 2015), and are a risk factor for dementia (Livingston et al., 2017); whereas risk factors associated with social loneliness have been shown to have a high mortality risk, particularly in older people, as large as regular smoking or obesity, and are more strongly correlated with a decrease in lifespan than physical inactivity (Holt-Lunstad et al., 2010).

Potential risk factors for loneliness

A number of potential risk factors have been identified for loneliness. Specific demographic situations, for example remaining unmarried/unpartnered, are associated with higher levels of loneliness. Further, living with disability, a lack of internet/technology access or financial instability can reduce the ability to participate in social activities or make those interactions more difficult and therefore more likely to be avoided (Masi et al., 2011). This can increase loneliness.

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[1]https://statistica.gov.md/public/files/publicatii_electronice/Moldova_in_cifre/2022/Moldova_in_cifre_editia_2022.pdf

Loneliness can also arise from a lack of tangible support. People who do not have support to carry out household and daily-life tasks if they are unwell report higher levels of loneliness (Keck, 2022; Masi et al., 2011; Sherbourne and Stewart, 1993). Other risk factors include mental health issues and a lack of satisfaction and closeness in relationships. A lack of support in any of these areas can result in an increase in feelings of loneliness and social disconnectedness (Masi et al., 2011; Sander, 2005; Sherbourne and Stewart, 1993), but the ideal approaches to address each risk factor are different. Therefore, it is critical to understand the relevant risk factors that contribute to loneliness and how they change throughout the lifespan to develop targeted interventions to address loneliness across all age-groups. To better understand loneliness and the associated risk factors in the Republic of Moldova, the data in the Generations and Gender Survey (GGS) for the Republic of Moldova were analysed to examine the levels of loneliness in the entire population and in different age cohorts. Then a model was developed to determine the key risk factors that contribute to loneliness in the population across different age-groups.

Survey Analysis

Loneliness Levels in the Republic of Moldova

Loneliness was measured using the six item De Jong Gierveld loneliness scale as a part of the GGS (De Jong Gierveld and Van Tilburg, 2010). Respondents were asked three questions related to social loneliness and three questions related to emotional loneliness, which were then added to get a total loneliness score that ranges between zero and six. Higher scores are associated with higher levels of loneliness. Across all ages, there was a median loneliness score of two and 26% of respondents were either moderately lonely or extremely lonely, with scores of four or higher out of six (Figure 1). Loneliness occurred across the entire lifespan, with older people reporting the highest levels of loneliness (Figure 2; percent of people moderately or extremely lonely: 14-24, 16%; 25-34, 19%; 35-44, 23%; 45-54, 26%; 55-64, 27%; 65-79, 33%), consistent with previous studies (Caycho-Rodriguez et al., 2021; Keck, 2020; Masi et al., 2011; Uysal-Bozkir et al., 2017; van Tilburg et al., 2004). Interestingly, there was no significant effect of gender on loneliness levels (Table 1). Next, social and emotional loneliness were examined independently in the population and scores for emotional loneliness were shown to be shifted to be higher than scores for social loneliness (Figures 3-4; Ranksum, p < 0.00001).
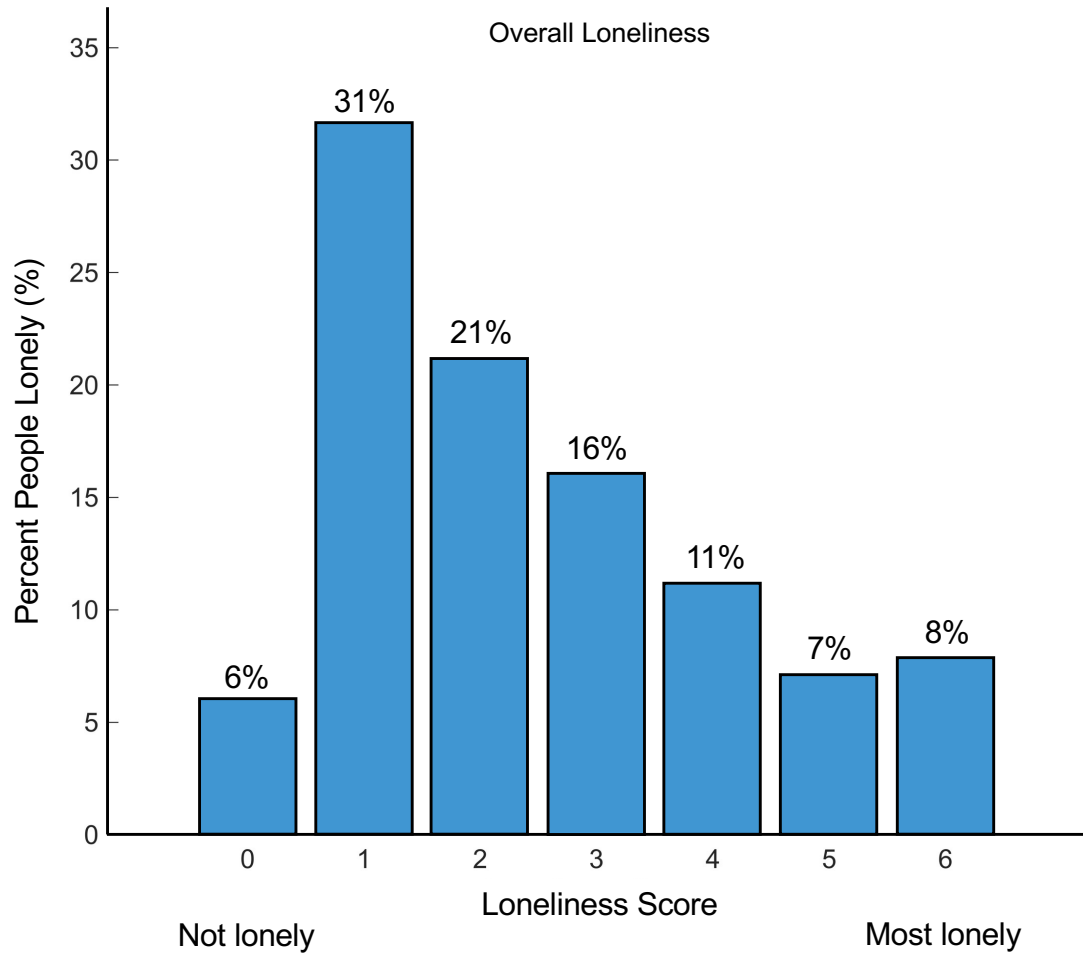
Figure 1: Loneliness score across the entire population. Each bar indicates the percentage of people with a given loneliness score. Loneliness increases with scores with 0 being not at all lonely and 6 being extremely lonely.

Figure 2: Percentage of people with a loneliness score of four to six (moderately to extremely lonely) in each age-group.
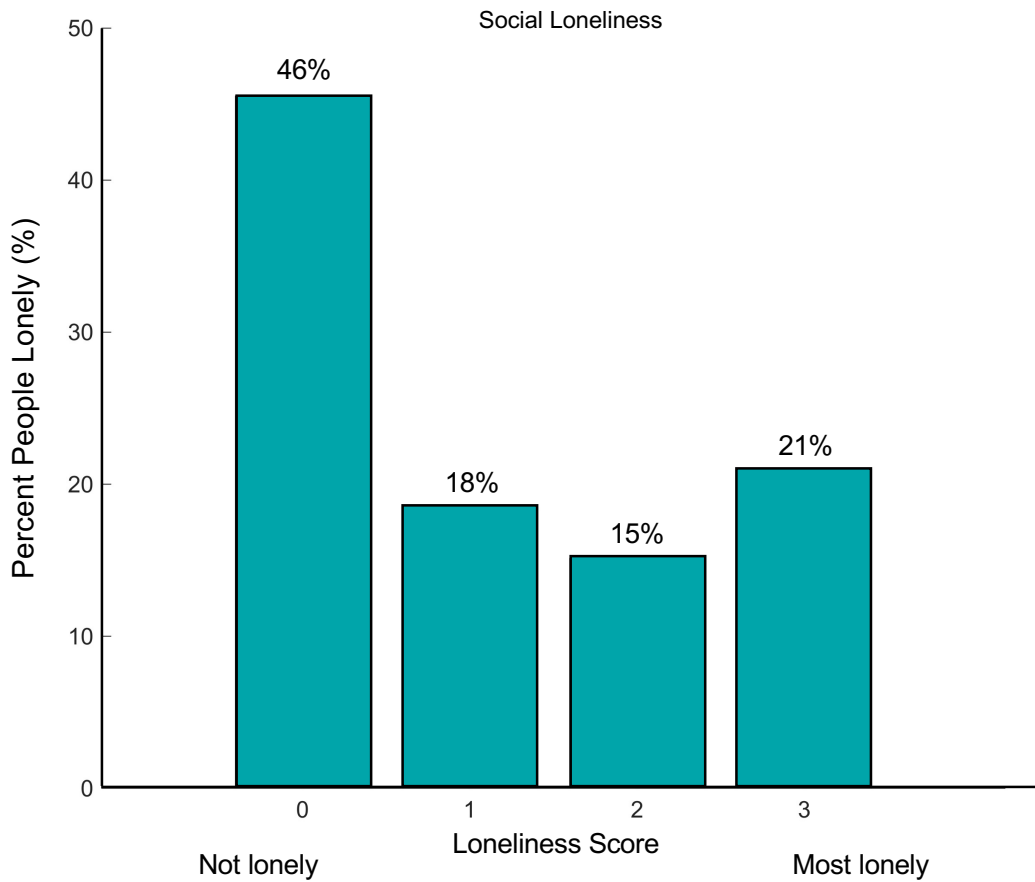
Figure 3: Social loneliness score across the entire population. Each bar indicates the percentage of people with a given loneliness score. Social loneliness increases with scores with 0 being not at all socially lonely and 3 being extremely socially lonely.

Figure 4: Emotional loneliness score across the entire population. Each bar indicates the percentage of people with a given loneliness score. Emotional loneliness increases with scores with 0 being not at all emotionally lonely and 3 being extremely emotionally lonely.

Effects of the COVID-19 Pandemic on Loneliness

The Republic of Moldova GGS was conducted across the COVID-19 pandemic, with a third of the survey done prior to the start of the pandemic in March 2020 and two-thirds of the survey conducted once the pandemic was ongoing. This provided an opportunity to look at the effect of the pandemic on loneliness levels. Loneliness was examined across these two groups and no significant difference was found between loneliness scores before and during the pandemic (Figure 5; ANOVA with post-hoc testing, p=0.17). Interestingly, when separated into social and emotional loneliness scores, there were significant differences between before and during the pandemic. Social loneliness during the pandemic increased compared to before the pandemic (Figure 6, p<0.001) and emotional loneliness decreased during the pandemic (Figure 7, p<0.001). These offsetting changes resulted in no change in the overall loneliness score (Figure 5). An increase in social loneliness, reflecting a decrease in the size

and breadth of one's social network, during lockdowns is consistent with previously reported results (Smith and Lim, 2020). A decrease in emotional loneliness during the pandemic could be due to an increase in time spent with individuals in one's household during lockdowns, and therefore an increase in the quality of this limited number of relationships.
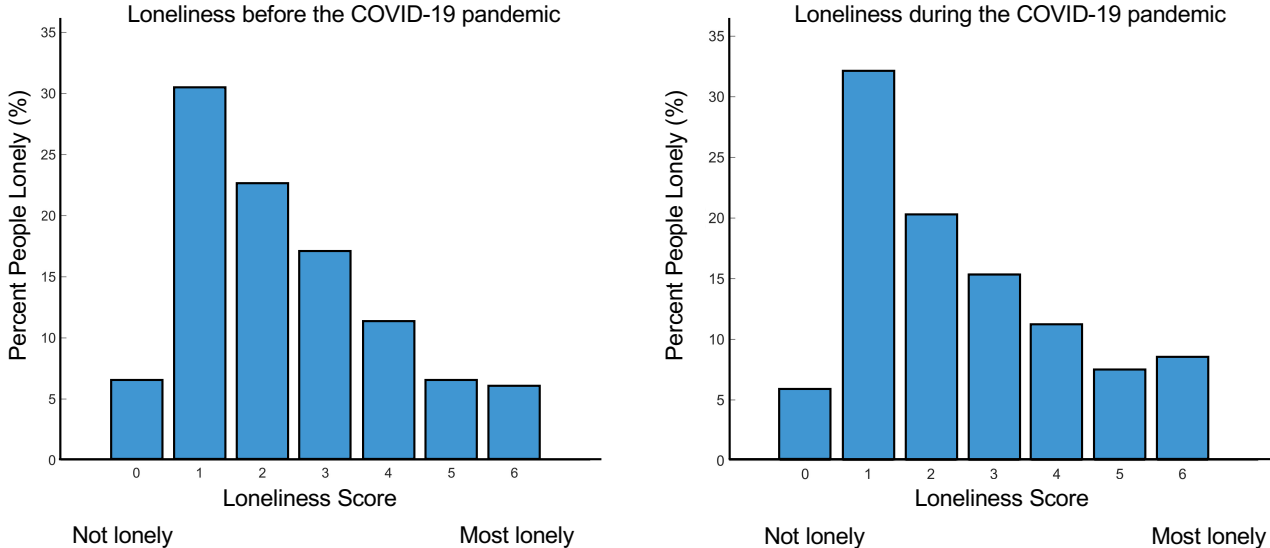
Figure 5: Loneliness scores across the entire population before (left) and during (right) the COVID-19 pandemic. Each bar indicates the percentage of people with a given loneliness score. Loneliness increases with scores with 0 being not at all lonely and 6 being extremely lonely.
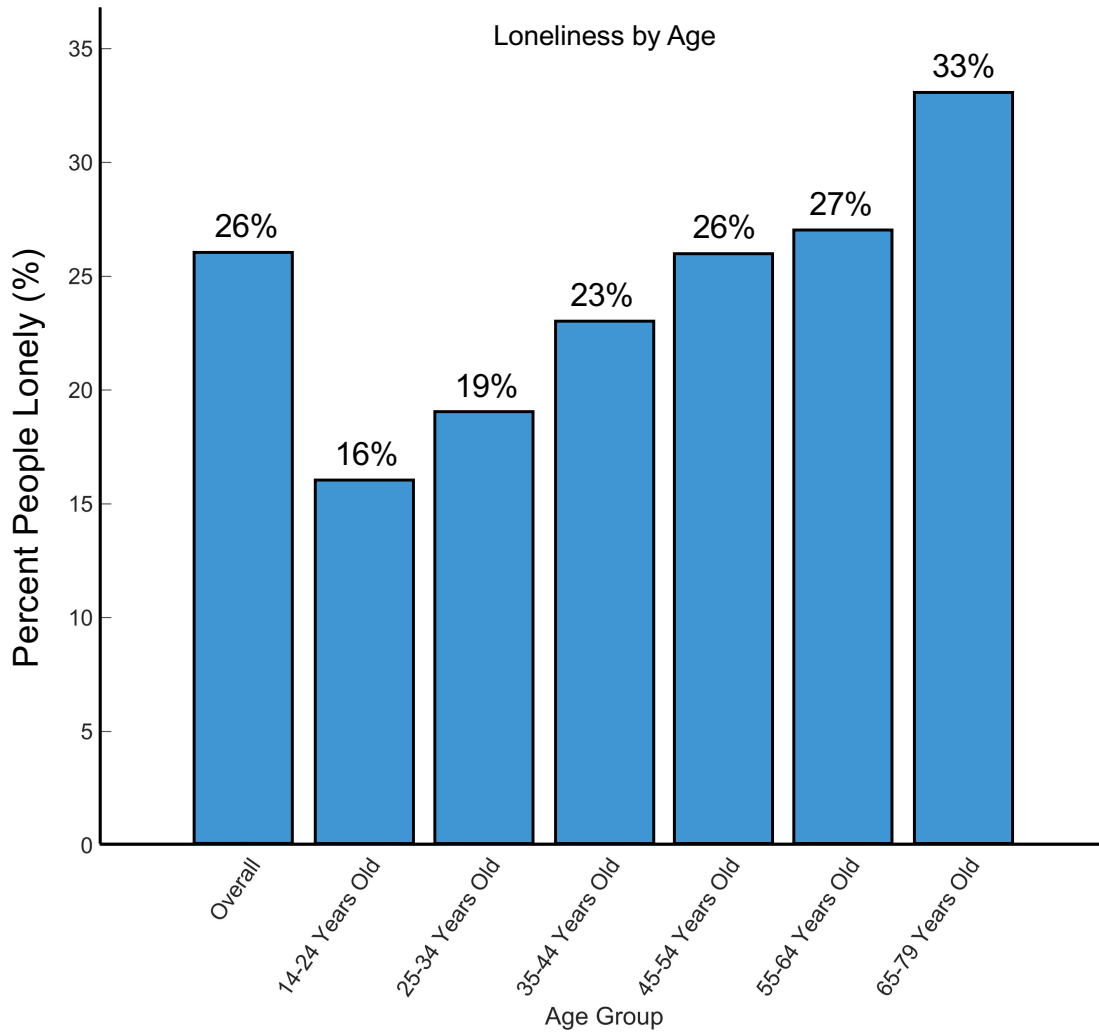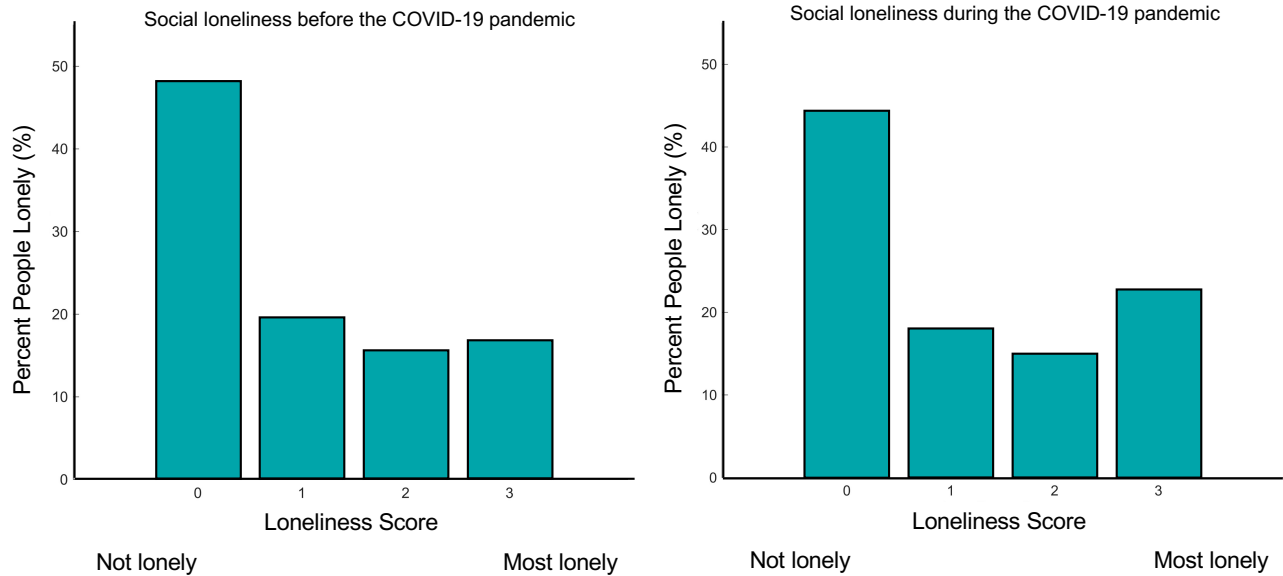
Figure 6: Social loneliness scores across the entire population before (left) and during (right) the COVID-19 pandemic. Each bar indicates the percentage of people with a given social loneliness score. Social loneliness increases with scores with 0 being not at all socially lonely and 3 being extremely socially lonely.
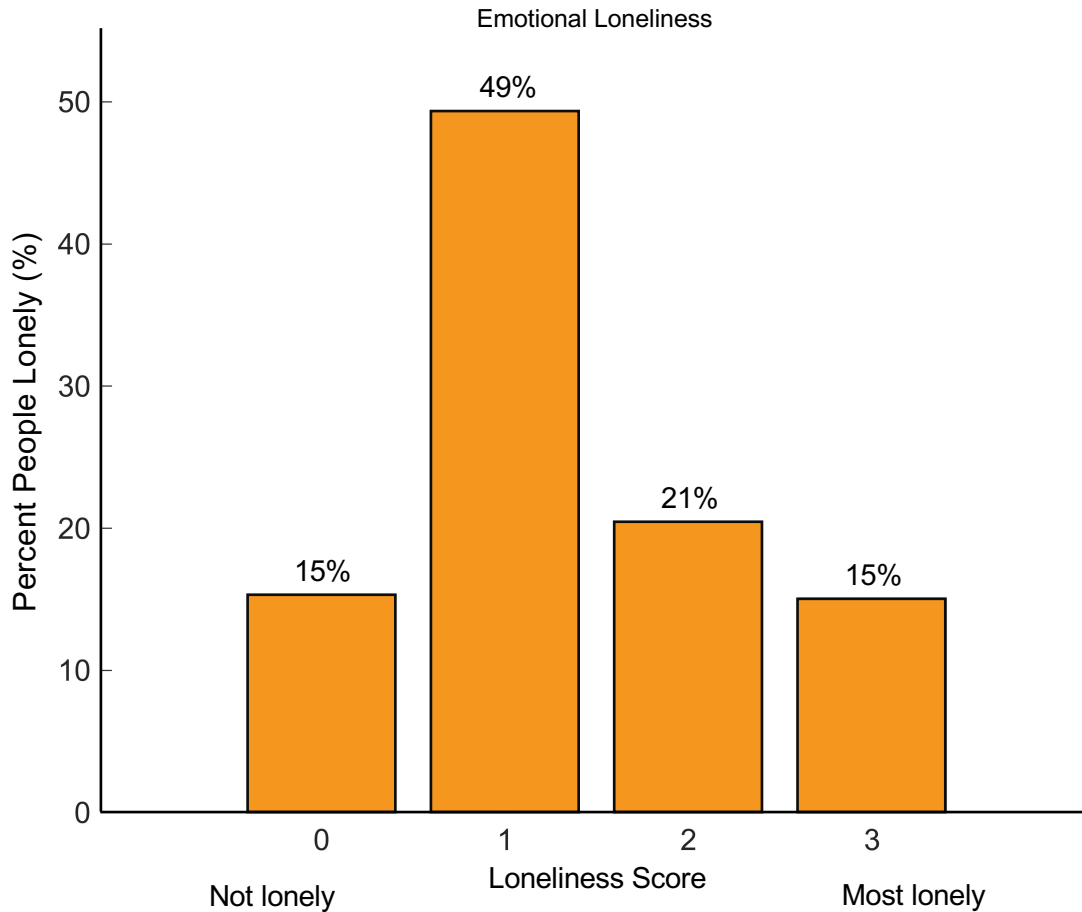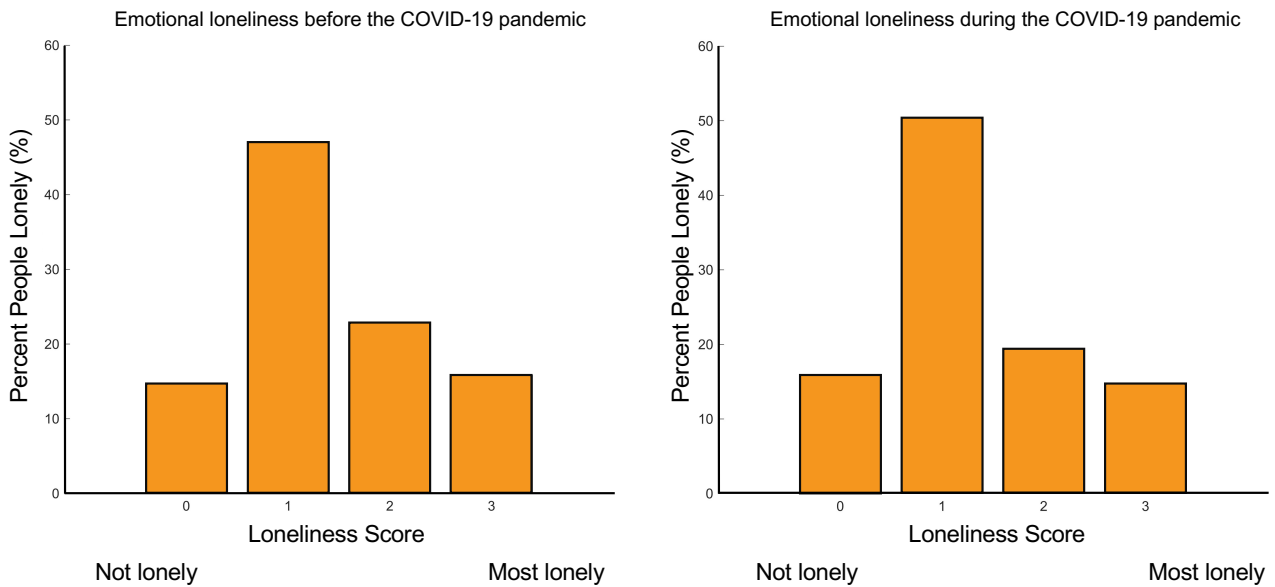

Figure 7: Emotional loneliness scores across the entire population before (left) and during (right) the COVID-19 pandemic. Each bar indicates the percentage of people with a given emotional loneliness score. Emotional loneliness increases with scores with 0 being not emotionally lonely and 3 being extremely emotionally lonely.

Identifying Risk Factors that Predict Loneliness

Having identified loneliness levels, a linear regression model was developed (see Methodology, Regression Coefficients are reported in Appendix Tables 3-4) to examine the risk factors with the most predictive power for overall loneliness, social loneliness and emotional loneliness. Twenty-eight different risk factors for loneliness were included in the model, based on previous risk factors described in the literature and the questions posed in the GGS (see Methodology). This model explained 27% of the overall loneliness variance (for R-squared values for other aspects of the model, see Table 3-4). Of the tested risk factors, nine risk factors were found to significantly contribute to the loneliness scores overall: depressive symptoms, being partnered/married, partner relationship satisfaction, children relationship satisfaction, life satisfaction level, happiness level, level of social participation, work status and financial instability (Figure 8, Table 1). While many of these factors were consistent across loneliness types (overall, social and emotional) and age-groups, there were some different risk factors for social loneliness (Figure 9, Table 1) and emotional loneliness (Figure 10, Table 1) and for different age cohorts (Table 2). These risk factors will be discussed in turn below.

Figure 8: Relative contributions of the significant risk factors to overall loneliness for the overall population. Each risk factor's relative contribution is out of 100%.

Relative Contribution of Each Significant Risk Factor

	Overall	Social Loneliness	Emotional Loneliness
Depression Symptoms	27%	34%	14%
Financial Instability	3%		4%
Have a Partner	11%		12%
Gender			
Age			
Internet Usage Time			
Life Satisfaction	8%	6%	7%
Health			
Happiness	12%	9%	12%
Health Limitations		2%	
Disability		17%	
Household Size		9%	
Closeness to Others		5%	
Vision Loss			
Hearing Loss			4%
Movement Disability			
Memory Issues			
Tangible Support		4%	
Partner Relationship Satisfaciton	15%		17%
Mother Relationship Satistfaction			
Father Reationship Satisfaction			
Children Relationship Satisfaciton	10%		14%
Household Relationship Satisfaction			
Social Issues Attitudes			
Gender Equality Attitidues		6%	6%
Social Participation	9%		10%
COVID-19			
Work Status	5%	8%	

Table 1: Relative percentages for each risk factor that was statistically significant, overall and for each loneliness type. Each relative percentage is normalised within each group. Blank entries mean that the risk factor did not make a statistically significant contribution in the model.

Relative Contribution of Each Significant Risk Factor

	14-24	25-34	35-44	45-54	55-64	65-79
Depression Symptoms	27%	30%	21%	23%	26%	20%
Financial Instability			5%			
Have a Partner			19%	17%		18%
Gender					6%	
Age			4%	5%	5%	3%
Internet Usage Time						3%
Life Satisfaction		8%	7%		7%	7%
Health	6%	7%		5%		
Happiness	8%	15%		7%	10%	10%
Health Limitations				6%	4%	
Disability						
Household Size	23%					5%
Closeness to Others						
Vision Loss						
Hearing Loss						
Movement Disability					7%	
Memory Issues						
Tangible Support					4%	
Partner Relationship Satisfaciton			23%	23%		17%
Mother Relationship Satistfaction		9%	5%	6%		
Father Reationship Satisfaction	7%	5%	5%			
Children Relationship Satisfaciton			6%	8%	9%	7%
Household Relationship Satisfaction	29%	15%	5%		7%	
Social Issues Attitudes		5%				
Gender Equality Attitidues						
Social Participation					8%	7%
COVID-19						
Work Status		6%			7%	3%

Table 2: Relative percentages for each risk factor that was statistically significant in each age-group. Each relative percentage is normalised within each group. Blank entries mean that the risk factor did not make a statistically significant contribution in the model.
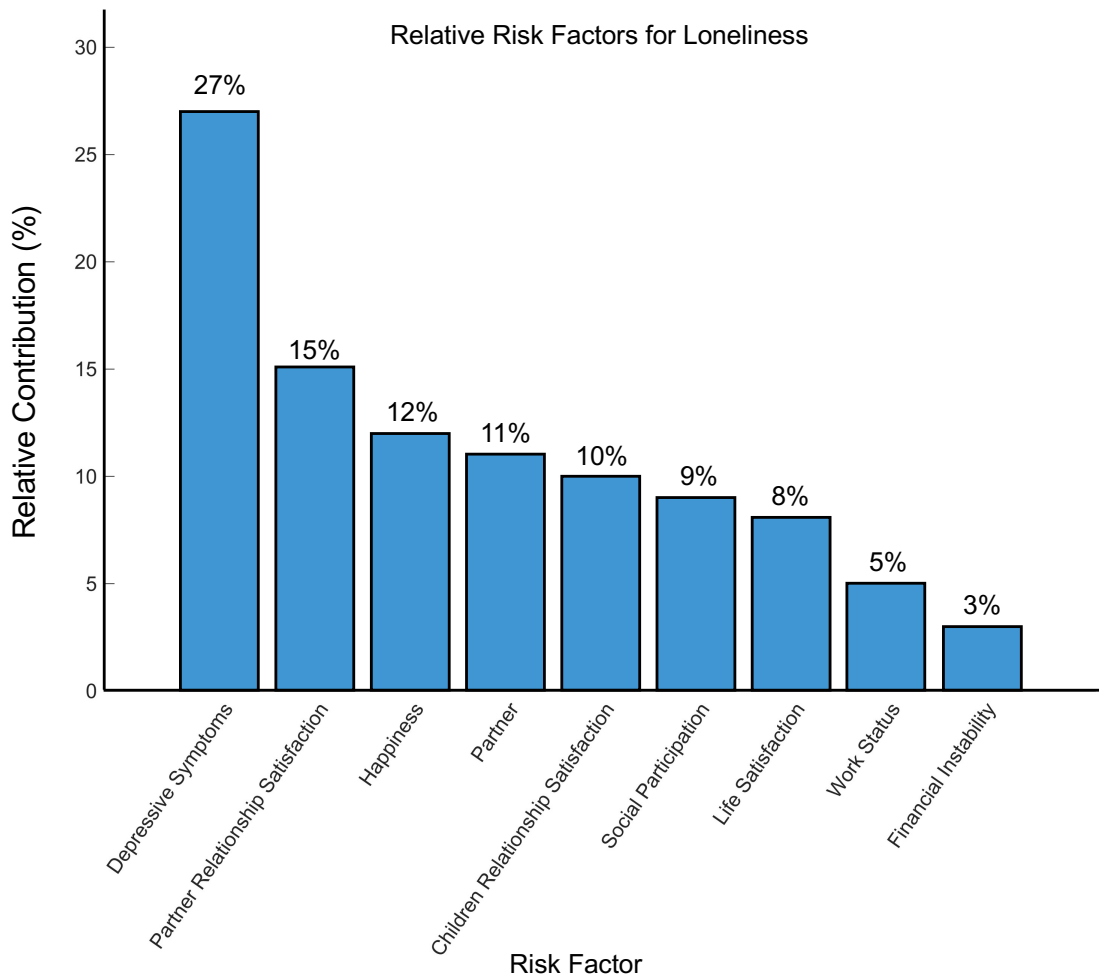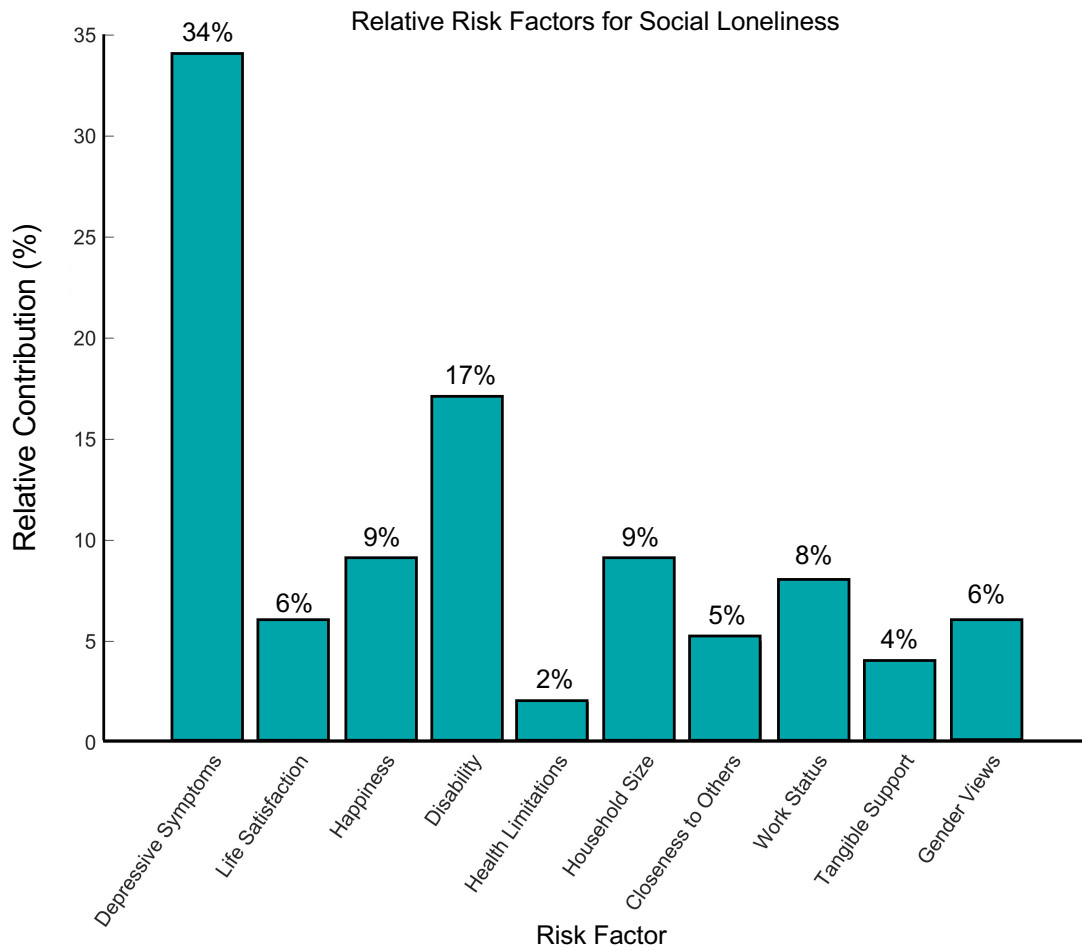
Figure 9: Relative contributions of the significant risk factors to social loneliness for the overall population. Each risk factor's relative contribution is out of 100%.

Relative Risk Factors for Emotional Loneliness
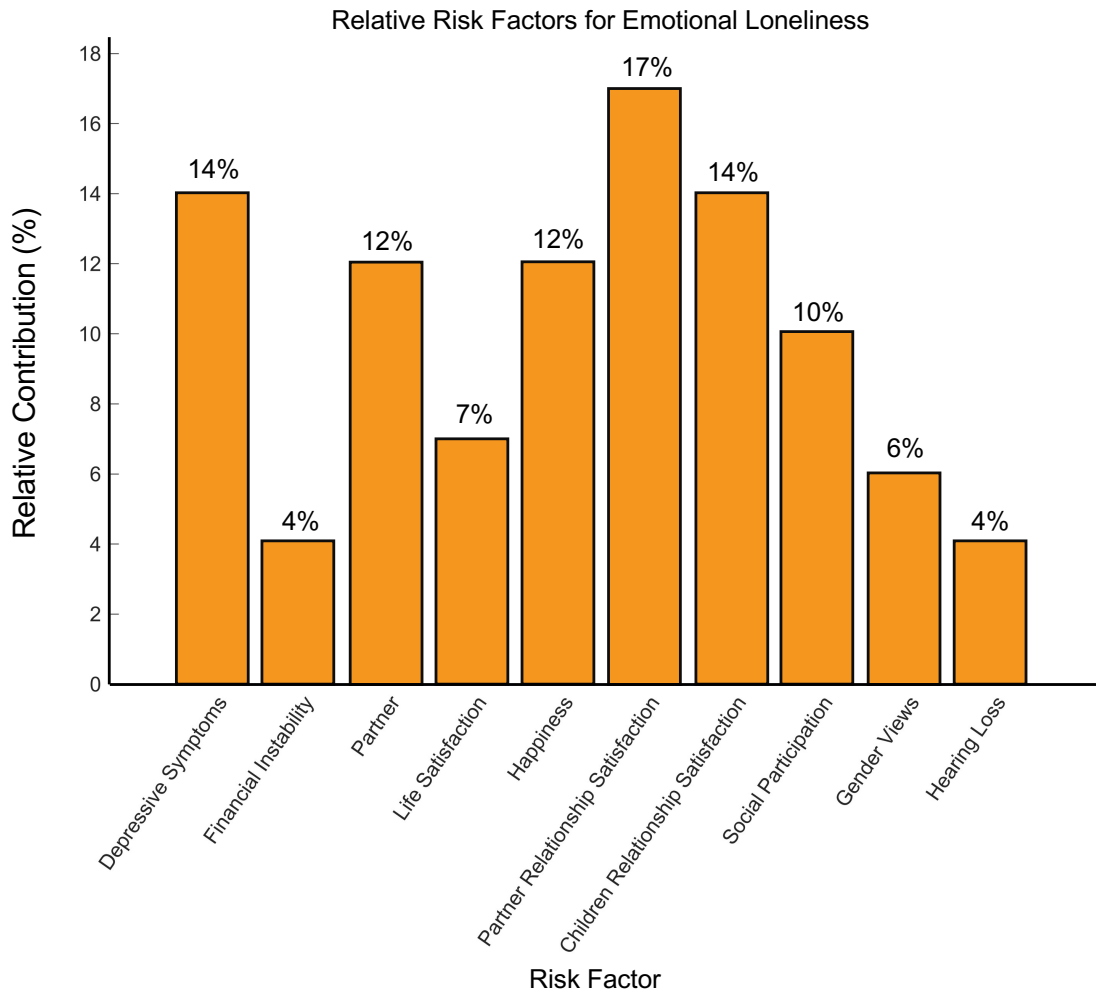
Figure 10: Relative contributions of the significant risk factors to emotional loneliness for the overall population. Each risk factor's relative contribution is out of 100%.

Risk Factor: Satisfaction with Relationships

Having satisfying and high quality relationships is key for preventing loneliness throughout life and not being married or partnered has been previously identified as a key risk factor for loneliness in adults (Masi et al., 2011). Consistent with these results, not having a partner/spouse is a risk factor for loneliness in the overall population of the Republic of Moldova (11% relative contribution). Within individual age-groups, it was found that in the older age-groups (35-44, 45-54, 65-79), not having a partner was a risk factor for loneliness, aside from the 55-64 age-group. Younger age-groups, who were less likely to be partnered or married yet, did not have a significant risk factor in not having a partner.

The GGS also asked about the respondents' satisfaction with their relationships, including with their partner, mother, father, children and members of their household (often siblings, roommates/friends and extended family), where higher numbers reflected higher levels of satisfaction with the relationship. In the overall population, higher scores of relationship satisfaction with one's partner were associated with lower scores of loneliness (Figure 11; 15% relative contribution). This anti-correlation was consistent across the same age-groups where not having a partner/spouse was a risk factor for loneliness (35-44, 45-54, 65-79).

Figure 11: Relationship satisfaction with one's partner (0 unsatisfied to 10 completely satisfied) for each loneliness scale score (0 low loneliness, 6 high loneliness). Lower loneliness scores (0-1) were associated with higher relationship satisfaction compared to higher loneliness scores (5-6), which were associated with much lower relationship satisfaction.

Across the entire population, low levels of relationship satisfaction with one's children was also predictive of higher loneliness levels (Figure 12; 10% relative contribution). This result was also observed in the age-groups of people 35 and older, who are the people most likely to have children, particularly older children.

Having a partner (Table 1; 12% relative contribution) and satisfaction with partner (Table 1; 17% relative contribution) and child relationships (Table 1; 14% relative contribution) were also risk factors for emotional loneliness.
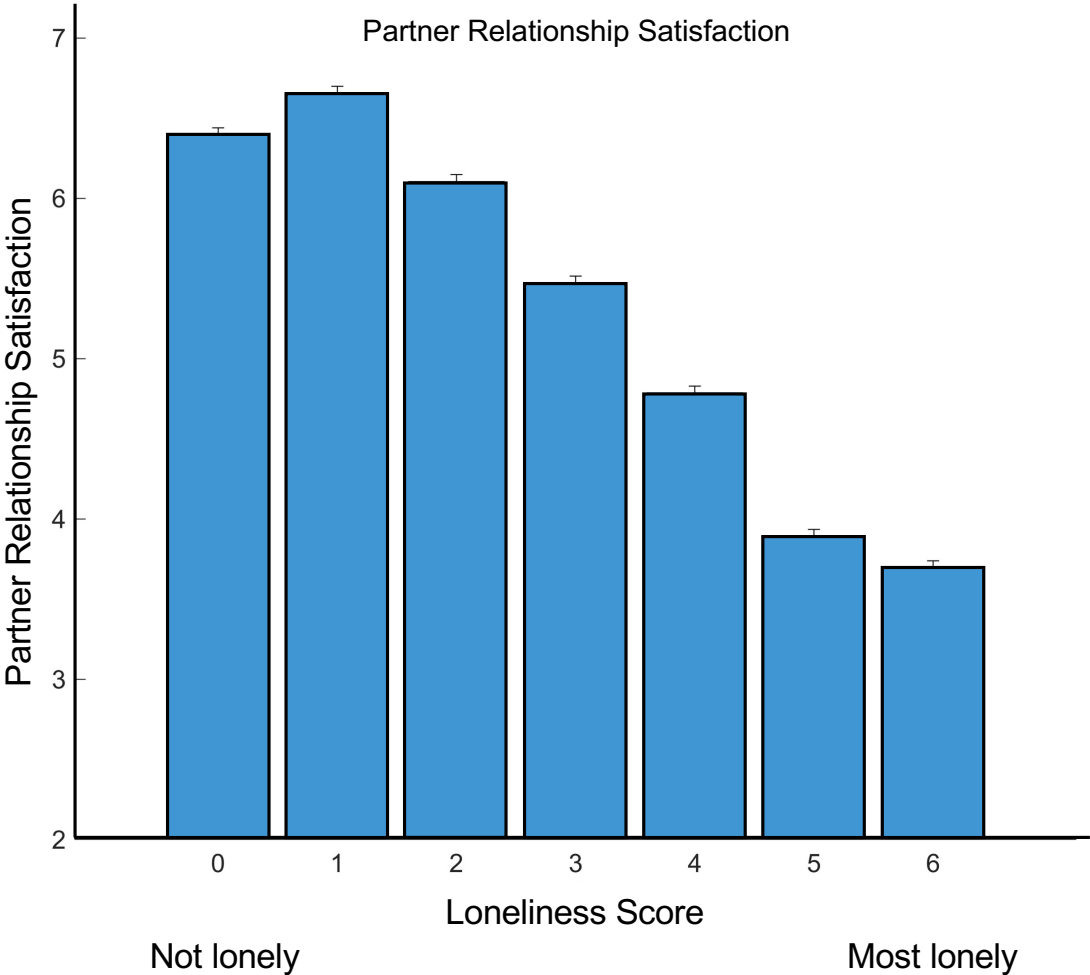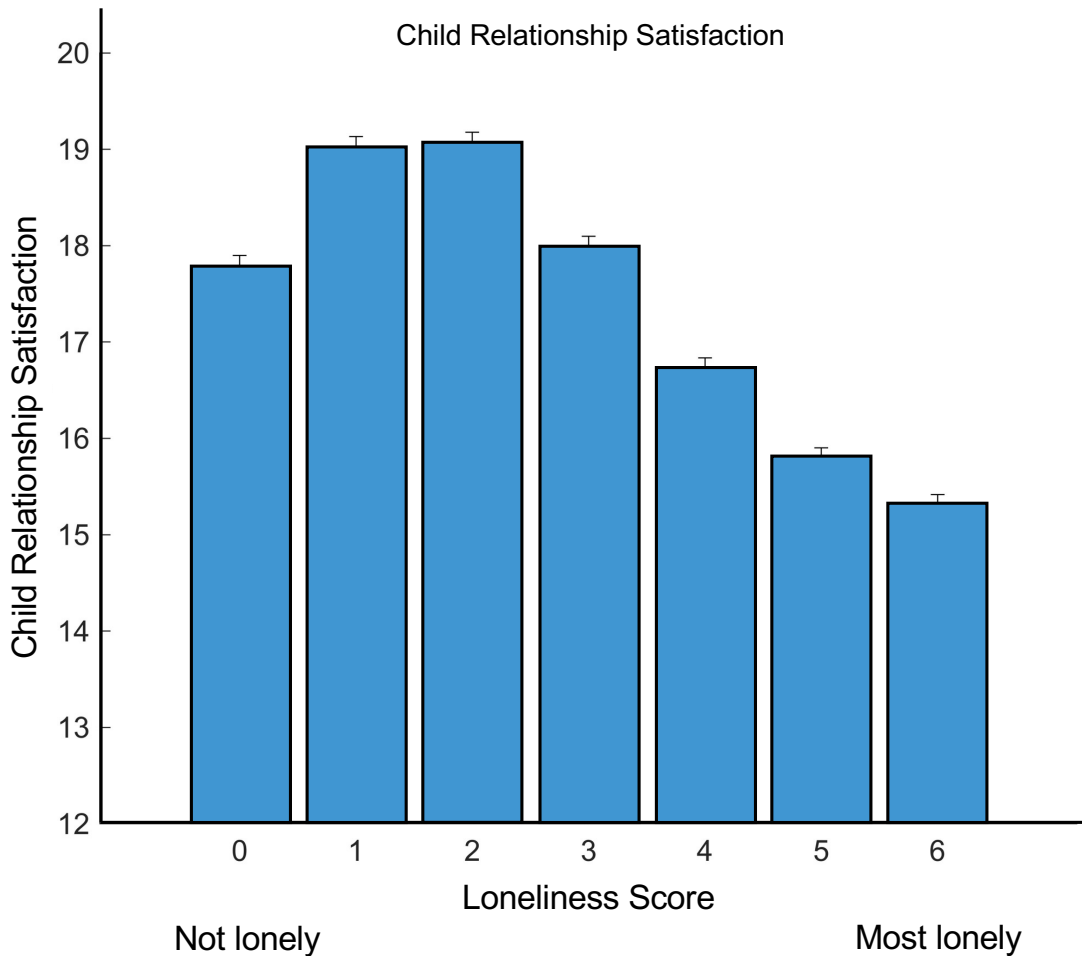

Figure 12: Relationship satisfaction with one's children (0 unsatisfied to 20 completely satisfied) for each loneliness scale score (0 low loneliness, 6 high loneliness). Lower loneliness scores (0-2) were associated with higher relationship satisfaction compared to higher loneliness scores (5-6), which were associated with lower relationship satisfaction.

Respondents were also asked about relationships with their parents and other household members, none of which were significant risk factors across the entire population; however, within individual age-groups, relationship satisfaction with one's mother, father and other household members were risk factors for loneliness. Specifically for younger and middle-age age-groups, who still have living parents, mother and father relationship satisfaction was a key risk factor, as was household member relationship satisfaction, which in many cases included siblings, roommates/friends and extended family members (Table 2).

Overall, satisfaction with relationships was a strong risk factor for loneliness and depending on life-stage, the person with whom the strongest relationships were held varied. An important caveat to this result is that there was not a question about satisfaction with friendships in this survey. Particularly for younger people, strong friendships will play a critical role in reducing loneliness. This may be partially reflected in the relationship between household member satisfaction and loneliness for younger people, where as a part of the survey, respondents reported that household members include siblings and, in many cases in the 14-34 year old cohort, friends/roommates. Consistent with this idea, household size was a strong risk factor for loneliness among 14-24 year olds (Table 2; 23% relative contribution), where lower levels of loneliness were associated with larger households that may contain additional siblings or roommates. Taken together, these data suggest the importance of the role of satisfying relationships with both friends and family in reducing loneliness levels. Given that the measures reported here do not directly measure friendships, these measures may be an underestimate of this effect, particularly in the younger age-groups.

Risk Factor: Mental Health and Well-Being

Next, mental health measures associated with loneliness were identified. First, symptoms of depression, as measured by the Center for Epidemiological Studies Depression (CESD) five factor scale, were examined. Here respondents were asked about shaking off the blues, feeling depressed, feeling they were a failure, feeling fearful or feeling sad. These scores were summed and total scores ranged from 0-15, where higher scores were associated with more depressive symptoms. Depressive symptoms were the strongest risk factor for overall loneliness (Figure 13; 27% relative contribution), with high levels of depressive symptoms being associated with high levels of loneliness. Depressive symptom levels were also one of the highest risk factors across all age-groups (Table 2) and for both social (Table 1; 34% relative contribution) and emotional (Table 1; 14% relative contribution) loneliness scores. This result is consistent with past literature, suggesting that untreated mental health conditions are a strong risk factor for loneliness (Masi et al., 2011), as well as other ageing-related diseases such as dementia (Livingston et al., 2017). This result points to the importance of mental health support, diagnoses and treatments throughout the entire lifespan.
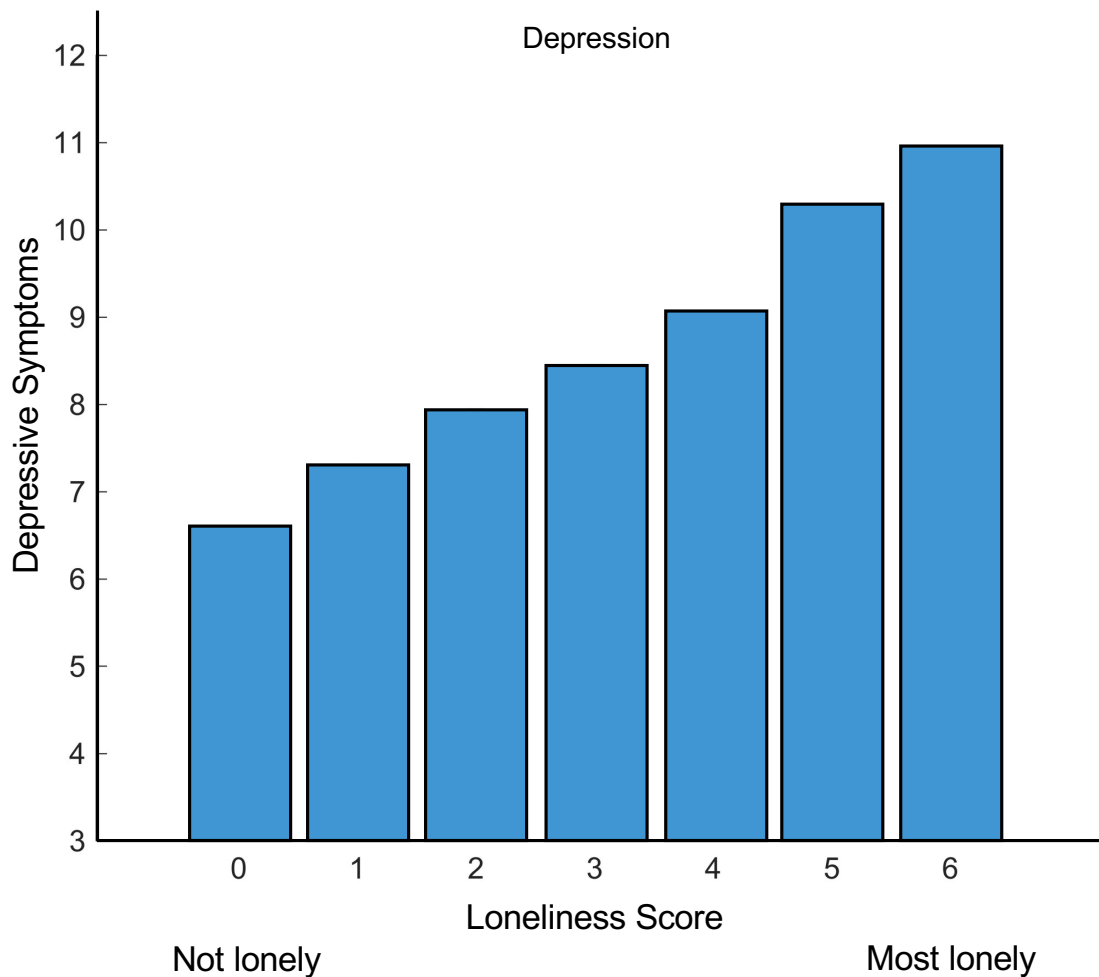
Figure 13: Depressive symptoms (0 no symptoms to 15 severe depressive symptoms) for each loneliness scale score (0 low loneliness, 6 high loneliness). Lower loneliness scores (0-2) were associated with lower levels of depressive symptoms compared to higher loneliness scores (5-6), which were associated with higher levels of depressive symptoms.

Other forms of mental well-being were also measured in the survey, including happiness levels and life satisfaction levels, which are often used to capture overall well-being in the short- (happiness) and long-term (life satisfaction) (Schimmack and Oishi, 2005; Yap et al., 2017). Both of these risk factors were predictive of loneliness across the population. Happiness scores, where a higher score reflects higher levels of happiness in life (0 not at all happy to 10 very happy), were inversely correlated with loneliness scores, such that happier people had lower loneliness scores (Figure 14; 12% relative contribution). Happiness was a strong predictive risk factor for all age-groups

except 35-44 (where life satisfaction played a bigger role, Table 2) and for both social (Table 1; 9% relative contribution) and emotional (Table 1; 12% relative contribution) loneliness.
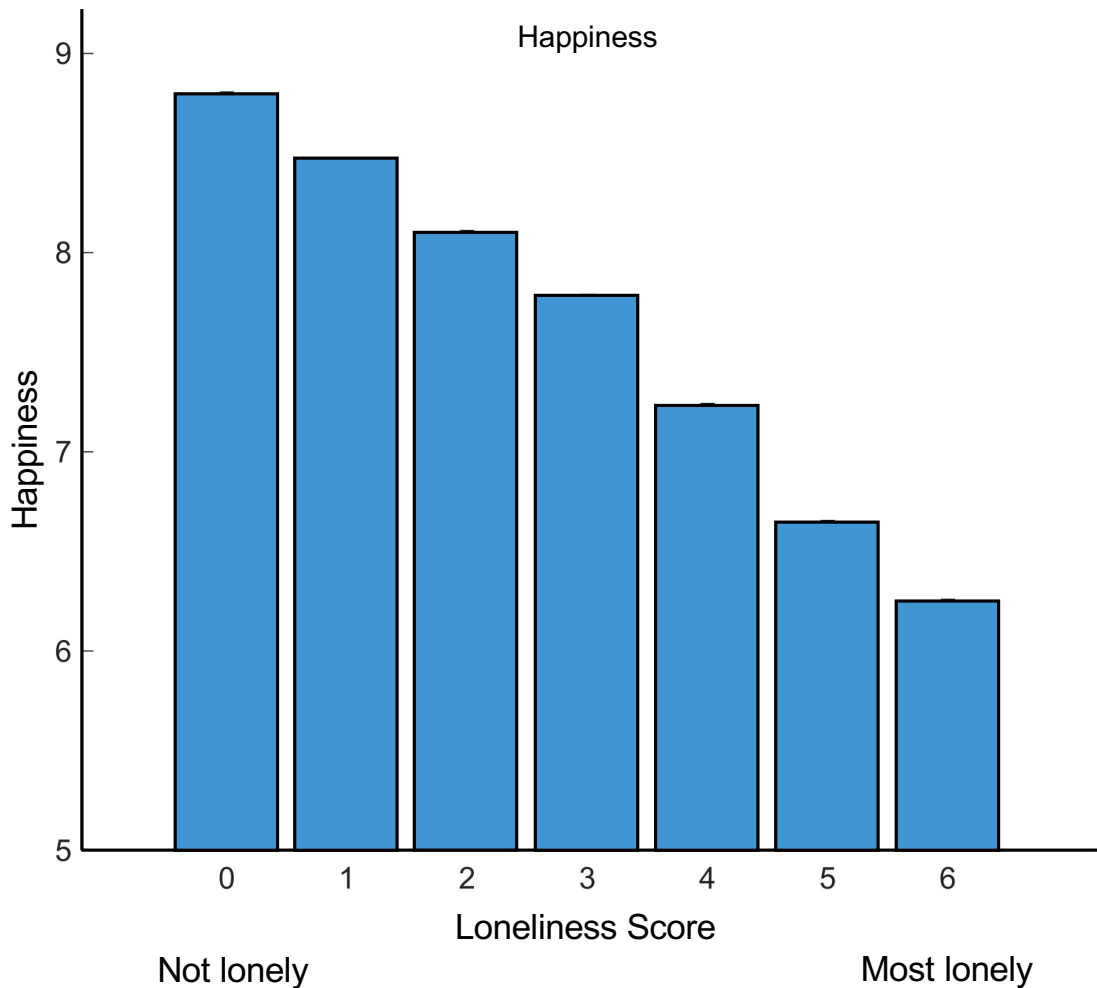
Figure 14: Overall happiness (0 very unhappy to 10 very happy) for each loneliness scale score (0 low loneliness, 6 high loneliness). Lower loneliness scores (0-2) were associated with higher happiness scores, compared to higher loneliness scores (5-6), which were associated with lower happiness scores.

Similarly, life satisfaction was measured on a scale of 0-10 (0 not at all satisfied to 10 very satisfied) and was inversely correlated with loneliness, such that people with higher life satisfaction scores had lower loneliness scores (Figure 15; 8% relative contribution). Life satisfaction was a risk factor in all age-groups except for 14-24 and 45-54, although happiness was a risk factor for those age groups, indicating mental well-being measures (either happiness or life satisfaction) are key across all age-groups (Table 2). Similar to happiness, life satisfaction was also a predictive risk factor for both social (6% relative contribution) and emotional (7% relative contribution) loneliness (Table 1).
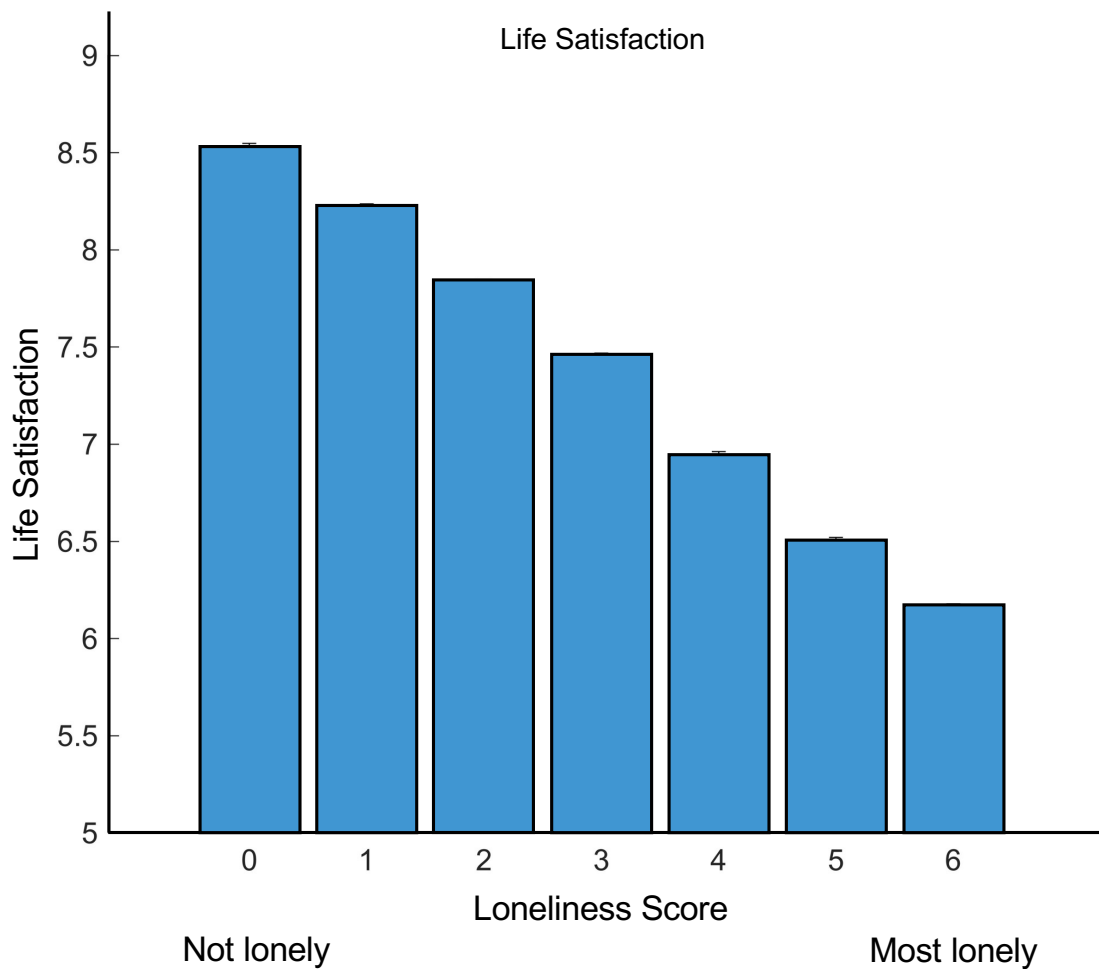
Figure 15: Overall life satisfaction (0 very unsatisfied to 10 very satisfied) for each loneliness scale score (0 low loneliness, 6 high loneliness). Lower loneliness scores (0-2) were associated with higher life satisfaction scores, compared to higher loneliness scores (5-6), which were associated with lower life satisfaction scores.

Together, these three mental health risk factors point to the critical relationship between mental well-being and loneliness. While these results may be somewhat intuitive, both happiness and life satisfaction responses may be influenced by recent events (Schwarz, 1999), although this is debated (Schimmack and Oishi, 2005; Yap et al., 2017), and results should potentially be considered in that context. Whether or not loneliness scores are as strongly influenced by recent events has not been determined. If they were, the correlation between these measures could reflect this recency bias.

Risk Factor: Social Participation

Social participation is a key indicator for loneliness, but it is important to note taking part in social activities alone

is not sufficient to prevent loneliness (Keck, 2020). The GGS asked only older respondents (ages 55+) about their social participation in social events, sporting events, community events, educational and cultural events, social movements or volunteer work. Participation in each of these areas was summed to get a total participation score. The survey quantified levels of participation (weekly, monthly, occasionally, never) to account for people who are very active in one area, but not others. Social participation was a key risk factor for loneliness, with lower levels of participation being associated with higher levels of loneliness overall (Figure 16; 9% relative contribution). Social participation was also a risk factor for emotional loneliness (10% relative contribution), with people who participate in fewer social activities having higher levels of loneliness.

Figure 16: Overall social participation levels (0 no participation to 6 very active participation) for each loneliness scale score (0 low loneliness, 6 high loneliness). Lower loneliness scores (0-2) were associated with higher participation scores, compared to higher loneliness scores (5-6), which were associated with lower participation scores. Only for ages 55-79.

It is important to note that not all people enjoy the types of social engagements included in the GGS and this type of active participation is not necessary for preventing loneliness (Masi et al., 2011). High quality relationships and social interactions can also be created in one-on-one informal social engagements, which is particularly key for older people who may live with mobility issues or other forms of disability, such as hearing or vision difficulties, that prevent them from participating in organised social events. Thus, investigations into the types of social interactions people undertake could be useful for understanding how people choose to engage socially throughout their lifespan and the factors that prevent people from engaging in organised social activities.

Risk Factor: Work Status and Financial Instability

Work status and retirement is a key risk factor for loneliness (Masi et al., 2011). In the GGS, respondents were asked if they were: 1) actively in work, 2) not working but looking for work, or 3) not working and not looking for work (potentially reflecting retirement or unpaid domestic/caring responsibilities). In the population of the Republic of Moldova, work status was a significant risk factor for loneliness (5% relative contribution), where people who were not working/not looking for work had higher levels of loneliness. This risk factor was also significant in the older 55-64 (7% relative contribution) and 65-79 (3% relative contribution) age cohorts, where many people were retired from work. The fact that this effect is already seen in the 55-64 age cohort suggests that early retirement may be a risk factor for loneliness, although early retirement may also reflect other risk factors, such as disability which would result in an early retirement. Not looking for work is also a risk factor in the 25-34 age cohort, with a bias toward women, who may be mothers staying home with young children (Kent-Marvick et al., 2020; Nowland et al., 2021). Not working/not actively seeking work is also a risk factor for social loneliness (8% relative contribution), which may reflect the fact that many people have extended social networks through their workplaces and thus by not working, this network would be reduced.

Financial instability is known to be associated with an increase in loneliness (Hawkley et al., 2008; Savikko et al., 2005), as well as numerous other health issues. Respondents were asked the degree to which they struggle to make ends meet, if they can afford basic needs and whether their household had been unable to pay basic bills in the previous year. These answers were compiled into a single financial stability measure, where a higher value reflects a higher level of financial instability. Financial instability was a significant risk factor for loneliness levels (Figure 17; 3% relative contribution), such that higher levels of financial instability are associated with higher levels of loneliness. Financial instability was also a risk factor for loneliness in the 35-44 age cohort (5% relative contribution), which may reflect the financial challenges that come from having families with children during that period of life. Finally, financial instability was also a risk factor for emotional loneliness (4% relative contribution), where financial difficulties may limit the ability to engage socially.
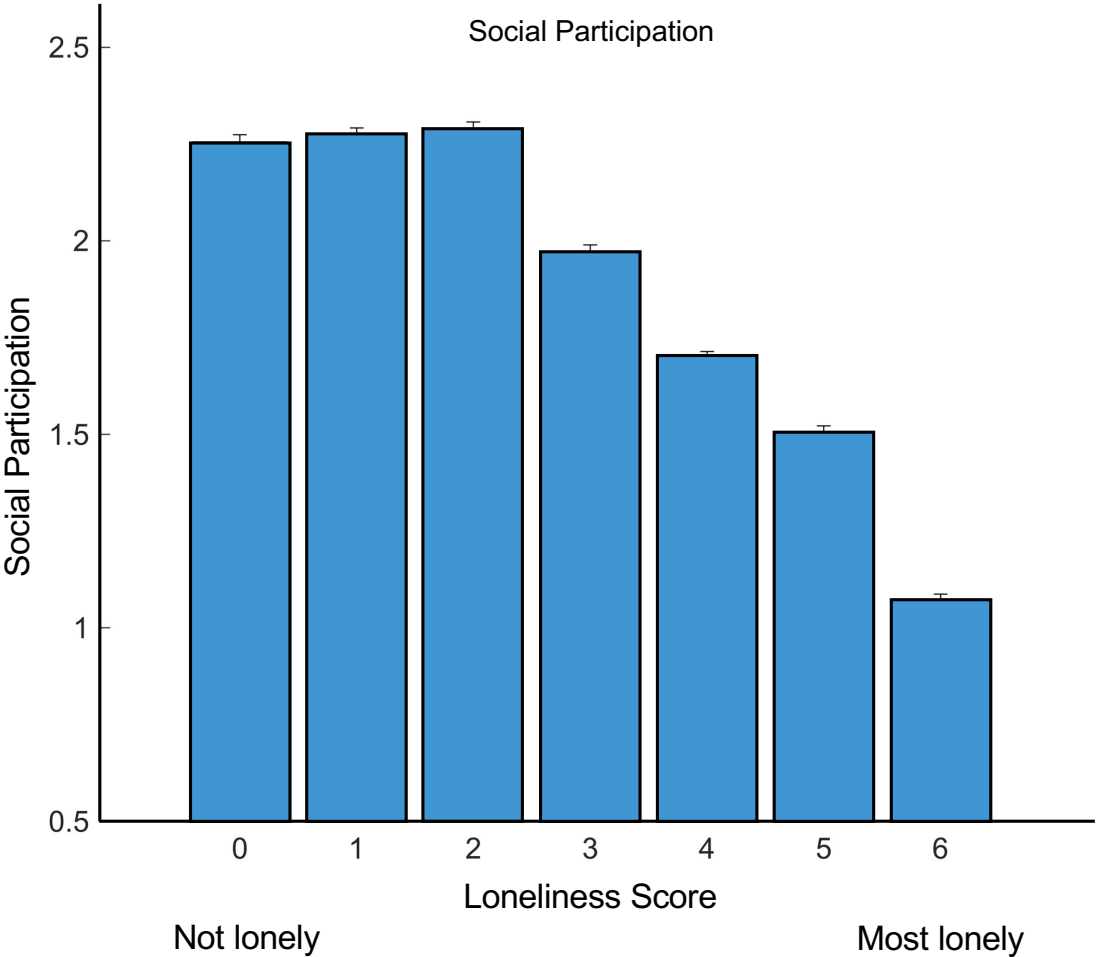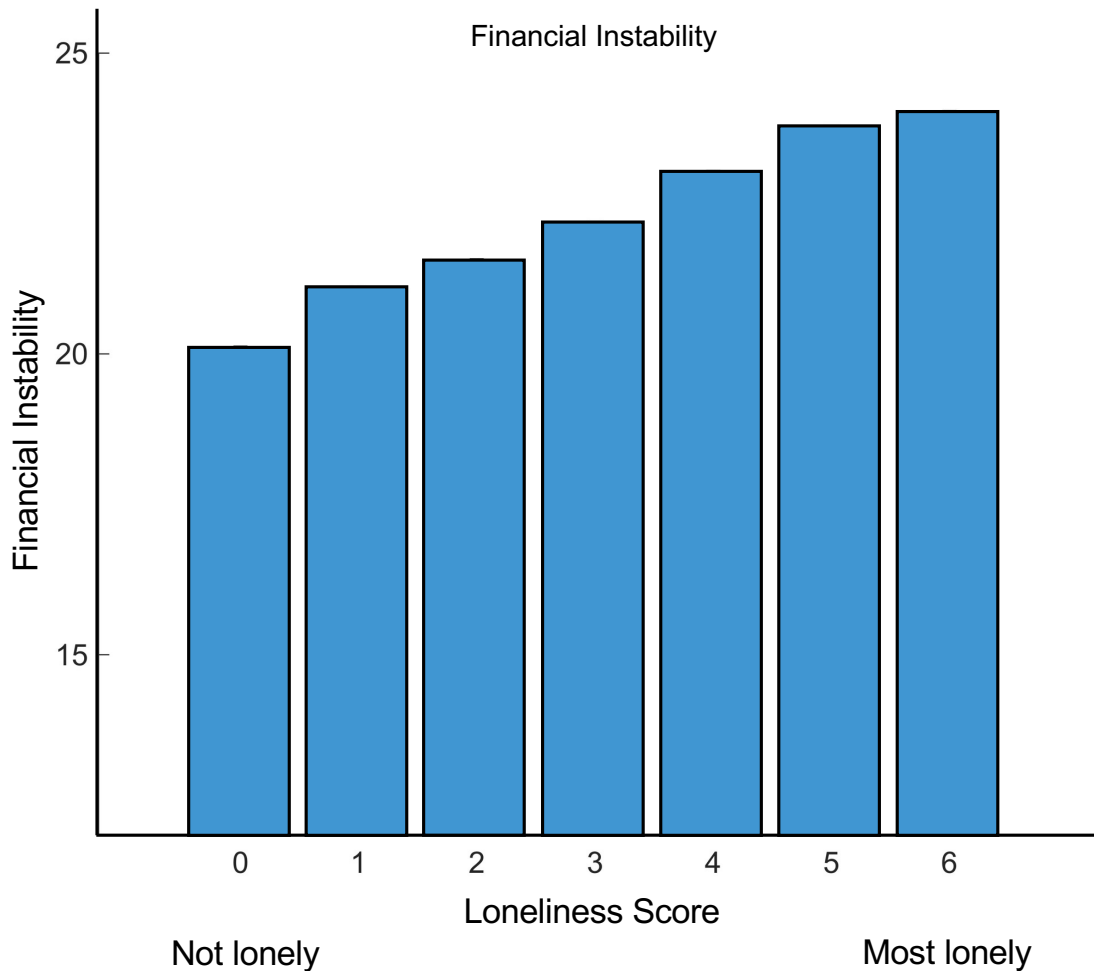
Figure 17: Overall financial instability (0 very financially stable to 30 very unstable) for each loneliness scale score (0 low loneliness, 6 high loneliness). Lower loneliness scores (0-2) were associated with lower financial instability scores, compared to higher loneliness scores (5-6), which were associated with higher levels of financial instability.

Risk Factor: Other risk factors

Several other of the twenty-eight risk factors were predictive for loneliness in individual age-groups, but not for the population as a whole. This is consistent with other studies that have examined loneliness across the lifespan (Masi et al., 2011), suggesting that different risk factors will be more or less prominent in different phases of life.

Risk Factor: Physical Health and Living with Disability

While mental health and well-being are strong predictive risk factors across the entire population, physical health levels were a risk factor for younger and middle-age groups, but not older age-groups. Respondents were asked

'how good is your health in general?' (with very bad to very good as responses on a five item scale) and an increase in health status was associated with lower loneliness scores for age-groups 14-24 (6% relative contribution), 25-34 (7% relative contribution) and 45-54 (5% relative contribution). This surprising age disparity may be due to the fact that a majority of older people had some form of health issue (ages 55+ only 19% reported their health as good or very good, compared to 63% for ages 14-54). Therefore, health levels may not have been a distinguishing risk factor for loneliness in older people, whereas they are a more unique factor for younger people. Social activities for older people may also be more inclusive of people with health issues, since they are more common among this population.

In addition to overall health, respondents were asked about health limitations and living with disability. Respondents were first asked about the extent to which they have been limited in their activities due a health problem, and for the 45-54 (6% relative contribution) and 55-64 (4% relative contribution) age groups, this factor was predictive of loneliness scores, where larger limitations in activities due to health were associated with a higher loneliness score. Health limitation scores were also weakly predictive of social loneliness scores (2% relative contribution), consistent with the idea that limitations to daily activities may affect one's relationships and ability to engage.

Respondents in the GGS for the Republic of Moldova were also directly asked about living with disability, using the Washington Group Short Set Scale, which asks about limitations of vision, hearing, movement, and memory (ranging from 0 no difficulty to 3 complete incapacity). In the Washington Group Scales, people are typically classified as either living with a disability or not, based on whether or not they have difficulty in any area; however, recent studies have started to look at the range of disability, rather than classifying people with a binary threshold, as there is a difference between moderate difficulty and complete incapacity (Mirta, 2018). In line with these new approaches, the model here uses an overall disability score as a range (0-12, with 12 being the highest level), summing all the scores. Overall disability was found to be a predictive risk factor for social loneliness (17% relative contribution), indicating that living with a disability may limit people's ability to participate socially. When looking at specific components of disability, hearing disability is predictive of emotional loneliness (4% relative contribution), consistent with previous results (Keck, 2020, 2022; World Health Organization, 2021) and the idea that hearing issues make social interactions difficult, particularly in groups or settings with background noise (Barnett et al., 2017; World Health Organization, 2021).

While disability had a small but limited effect on loneliness, a key aspect that is not captured in the GGS is whether the person has been living with the disability for their entire life or if it is a recent change. Lifelong living with

disability would likely have lower effects on loneliness, as building social networks and relationships would have been done in the context of living with the disability. For example, a person born deaf or partially deaf would have developed other ways to communicate within their communities, whereas someone who becomes partially deaf later in life would potentially struggle with their previous approaches to social interactions and would need to make adjustments to not experience a reduction in social interactions. Thus, distinguishing the onset time of living with a disability may result in a stronger effect, particularly with a recent onset, for example the development of visual, hearing or movement disability during ageing.

Risk Factor: Social Attitudes

The relationship between loneliness and social attitudes, including attitudes towards gender equality, were also examined. More traditional gender attitudes, such that it is more important for men to go to university and get a job and more important for women to take care of children and be married, were associated with higher levels of both social (6% relative contribution) and emotional (6% relative contribution) loneliness. There were no significant associations for overall loneliness or for any individual age-groups, despite the population having wide-range of social attitude scores (reflecting a range of conservative to liberal viewpoints).

One possibility is that the lack of a strong effect of social attitudes may be because these attitudes may differ and change with age. Therefore, social attitudes alone may not be predictive, but instead how well an individual's attitudes align with their age-group. Thus, the hypothesis that having social attitudes that are different from one's age-group could be associated with higher levels of loneliness was tested by measuring the difference between a person's social attitudes and their age-group's average social attitude. There was no significant relationship between difference in social attitudes and loneliness. One possibility is that people are more likely to form social relationships with people who have similar social attitudes and values, rather than within an age-group, but the data to test this hypothesis was not collected in this survey. Thus, one cannot rule out that a difference in social attitudes may affect loneliness if a person was unable to form relationships with people of similar attitudes.

Risk Factor: Tangible Support

Finally, past work has identified tangible support as a key risk factor for loneliness in older populations in the Eastern Europe and Central Asia region (Keck, 2022), where not having support for day-to-day tasks, such as doing chores, preparing meals and visiting the doctor, increases the risk for loneliness. While these questions were not directly a part of the GGS, there were several questions about whether or not a respondent needed help for daily tasks and was able to get such help, which were used as a proxy for tangible support. In the 55-64 age-group, the need for tangible support with household tasks, but inability to get that support, was associated with higher levels of loneliness (4% relative contribution). An inability to get tangible support when needed was also a risk factor for

social loneliness (4% relative contribution). This result is consistent with past results, where people with smaller social networks were more likely to lack tangible support (Keck, 2022).

Summary Age-Group Loneliness Risk Factors

It was hypothesized that loneliness risk factors would vary with age, as relationships and life situations (marriage, family, health issues, caring roles, financial stability) vary throughout the lifespan. Several risk factors for loneliness were identified that were consistent across a majority, if not all, of the lifespan, including depressive symptoms and happiness and life satisfaction levels. Consistent with the hypothesis, other risk factors varied with life stage, which are outlined here.

Young People (ages 14-34)

Young people had risk factors associated with their key relationships, in particular satisfaction with their relationships with their parents, other household members (siblings and roommates), but not yet with partners or children, since they were less likely to be married or have children than middle-age and older age-groups. Overall health was a key risk factor for this age-group. This could potentially be due to the fact that within this age-group, health issues are overall less likely to be a concern than with older cohorts and thus having health conditions at this younger age is a difference from their age-group, which may affect their social interactions and ability to form social networks. In older age-groups, health issues are much more common and therefore may be more likely to be accommodated in social activities.

Household size was also an important risk factor for younger people, which may also be influenced by the COVID-19 pandemic. Since social restrictions were in place for large parts of the pandemic, a larger household would provide additional social interactions compared to a smaller household and thus may have helped alleviate loneliness. Further studies on the role of household size in preventing loneliness outside of social restrictions could be helpful for clarification on the importance of this issue.

Not working or actively looking for work was an associated risk factor for young people (25-34), particularly women, many of whom were new mothers undertaking caring duties of young children. This result is consistent with previous studies that have identified increases in loneliness for some new parents, particularly mothers (Kent-Marvick et al., 2020; Nowland et al., 2021), and highlights the need for social support for new parents and families.

Middle-Aged People (35-54)

Middle-aged people had a range of risk factors for loneliness. Satisfaction with their relationships included both with parents, many of whom are still alive, but also with partners and children, since many people in this age-group have married and started families. People who are married or partnered in this cohort are also less likely to be lonely. Finally, financial instability is a risk factor for 35-44 year olds, which could reflect the costs associated with families, and the change in disposable income levels that they may have had previously prior to starting families.

Older People (55-79)

In many instances, previous research on loneliness has focused on older people and the results reported here related to risk factors for loneliness in this age-group are largely consistent with previous work (Masi et al., 2011). Older people's relationship satisfaction with their partner and children was a key risk factor, but not parents, who are no longer living for many people in this age-group.

Having lower levels of organised social engagement was a strong risk factor for older people and interestingly, more time spent on the internet was correlated with increases in loneliness, particularly in the oldest age-group (65-79 years old). Given the recent emphasis on teaching older people technology skills (Harvey et al., 2020; Scanlon et al., 2015; Schirmer et al., 2022), further research into this area would be important. One potential explanation could be that people who spend more time on the internet are doing so because they are not living close to family and friends, which could be a factor for loneliness, although this is not directly testable from the questions in this survey. Another possibility is that during the COVID-19 pandemic, people who were self-isolating may have had increased internet use. Thus, internet use may simply reflect other risk factors for loneliness that were not directly measured in this survey.

Not working or actively looking for work was also a risk factor for increased loneliness for 55-79 year olds, which at this age frequently reflects retirement. This result is consistent with previous studies suggesting that retirement can increase loneliness levels, as many people's social networks include work colleagues (Abramowska-Kmon and Latkowski, 2021; Morrish and Medina-Lara, 2021). Finally, these results in the older age-group are consistent with the recent Active Ageing Index Report in the Republic of Moldova (Buciuceanu-Vrabie, 2021), which highlighted the importance of mental and physical health for healthy ageing in people over 55 years old.

Conclusions and Recommendations

Here, data from the GGS conducted in the Republic of Moldova was used to measure loneliness levels throughout

the population. Overall, 26% of the population reported moderate to extreme levels of loneliness, which is generally lower than what has been reported for the region, particularly in the older population (Keck, 2022). Loneliness across the population of the Republic of Moldova increased with age, with the oldest people (65-79 years old), experiencing the highest levels of loneliness (Figure 2; Table 2). A model was used to determine risk factors that are associated with loneliness scores in the population of the Republic of Moldova. Several risk factors were consistent throughout the lifespan, including depressive symptoms, happiness and life satisfaction, work status and satisfaction with key family relationships (parents, partner, children, household members). Within age-cohorts, there were other specific risk factors for loneliness that were consistent with life phase.

Mental Health and Well-Being

The biggest risk factors across the entire population and in nearly every age-cohort were associated with mental health and well-being. Depressive symptoms were the strongest risk factor for loneliness, with happiness and life satisfaction levels also being strong predictors. While it is difficult from the data in the GGS to truly determine the direction of causality of this relationship between mental health (depression, happiness and life satisfaction) and loneliness, identifying and treating mental health concerns is critically important, independent of the nature of this relationship, as untreated mental health issues is a major risk factor for a number of diseases (Holt-Lunstad et al., 2010; Livingston et al., 2017). Loneliness, depressive symptoms, happiness and life satisfaction may provide a group of different measures that all converge on potential mental health and well-being issues within a lonely population.

While the Republic of Moldova has a high level of specialised mental health care in hospitals and institutions for the region (de Vetten-Mc Mahon et al., 2019), increasing community-level mental health and psychosocial support could be beneficial to help tackle loneliness. Specifically, expanding and strengthening referral pathways to help identify and treat mental health issues could be key to improving loneliness and well-being across the lifespan, as well as increasing education on the importance of caring for mental health and symptoms of mental health issues. These programmes could be implemented for younger people in existing youth centres and for adults through medical centres. While mental well-being issues can potentially be addressed with interventions targeted at strengthening mental health support in society, satisfaction with close family relationships is more difficult to address from a societal perspective.

Social Participation

The data show that social participation in organised events for older people (55-79 years old) was protective against loneliness. Thus, organisation of further events could be helpful in addressing loneliness in this age-group.

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It should be noted that numerous loneliness studies have shown that social activities are most effective at reducing loneliness when they have a focused purpose, such as learning a new skill or volunteering, whereas just organising social activities is less effective at reducing loneliness in the long-term (Michela et al., 1982; Rook, 1984; Sander, 2005). The need for social activities to be purposeful is potentially due to social confidence issues that many people face in new social situations, which has been described as a loneliness risk factor (Masi et al., 2011; Sander, 2005). Social confidence was not addressed in the GGS, thus whether or not it is a risk factor in the population of the Republic of Moldova is not clear.

Purposeful activities could include life-long learning programmes, including with digital and language skills that can be helpful for older people, particularly those whose families (including children and grandchildren) are not living nearby. While increased internet usage for older people is predictive of higher loneliness levels, this could be indicative of the fact that people who use internet communication more are less likely to have family nearby, but this should be investigated more thoroughly.

Increasing age-appropriate life-long learning activities for social participation in all age cohorts could help increase social networks. This could include group activities that develop job-readiness employment skills for young people (implemented at youth centres), parenting groups and activities for young children for people with families and digital and employment skills for all ages. Given the need for tangible support in the older age-group, one possibility for addressing loneliness would be to organise volunteer activities in groups for people of all ages to support people in the community who need tangible support, which could address multiple risk factors at once. Activities could also be developed for retirees and stay-at-home mothers of young children, who have an increased risk of loneliness when not working.

Physical Health and Living with Disability
While living with disability and physical health were only a risk factor in a subset of the population, the effect of living with disability or physical health issues on loneliness may be underrepresented. In particular, the effect of the onset of a disability or physical health issue is more likely to affect loneliness, as the adjustment to social networks and participation may be difficult for some people, particularly older people who may experience multiple health issues at once. Ensuring that any organised social activities in the community are inclusive to people living with disability, including accessible events for people with mobility issues and events in hearing-friendly environments, could be helpful for reducing loneliness for people living with disability.

Developing Interventions for Loneliness

Finally, this report highlights that there are a wide-range of risk factors for loneliness and that they change throughout the lifespan. This supports the idea that loneliness is complicated and that a single intervention will not reduce loneliness for all people. Thus, before implementing any interventions in a small population, it is critical to survey the group first to determine their key risk factors for loneliness. To date, many loneliness interventions that have failed to improve loneliness scores have not surveyed the population in advance and thus may have been addressing the wrong risk factor (Masi et al., 2011). Understanding key risk factors for the sub-population in question will increase the effectiveness of any interventions. Finally, the GGS did not survey a few key risk factors for loneliness, most notably social confidence. Thus, a more limited survey for loneliness and loneliness-specific risk factors could be useful in advance of the development of any targeted interventions to address loneliness in a specific cohort of people.

Overall Recommendations

- Mental health and well-being are a key risk factor for loneliness in the Republic of Moldova across all age-groups. Develop awareness campaigns about the importance of mental health and signs of mental health issues.
- Train community members in basic mental health support (such as UNFPA/WHO's Psychological First Aid) to both provide compassionate non-judgemental support and strengthen and feed into mental health referral pathways. For example:
  - To support young people, train teachers and youth centre workers.
  - To support mothers and families, train midwives and nurses.
  - To support the general population, train health care workers and community volunteers.
- Overall health is a risk factor, particularly among younger people, as is living with disability. Develop risk-assessment inclusivity checklists to help ensure that any activities developed to address loneliness are inclusive for people living with disability.
- Work status is a risk factor for older people. Create age-friendly work spaces to facilitate working later in life. This could include policies to support part-time work and inclusive work spaces for people living with disabilities that are common for older people, such as movement difficulties and partial deafness.
- Develop inclusive community-based group activities for all ages to expand social networks and promote intergenerational relationships. These activities should have a clear goal – for example, volunteerism, supporting people in the community who need tangible support, or learning new skills – to best support the reduction of loneliness. By creating volunteer opportunities that provide tangible support to those who need it, programs can address multiple risk factors for loneliness.

- To increase social engagement and networks, develop life-long group learning programmes throughout the lifespan that target skills relevant for different age-groups:
  - Develop learning programmes to be implemented in youth centres that train young people in employment-ready skills, such as technological skills including computer programming.
  - Develop social support programmes for people with young children, particularly women, who are not actively in work. This could include learning programmes for children and parents, which would support life-long learning and expand social networks.
  - Develop life-long learning programmes in digital technologies and other employment skills for older people to support their ability to remain in the workforce if desired and communicate with family and friends virtually.

Appendix

Methodology

In this study, the Generations and Gender Survey (GGS) data from the Republic of Moldova (Wave 1 2020, 10,044 respondents) was used to examine the key risk factors for loneliness across all ages in the Republic of Moldova. Loneliness scores were first measured for individuals across the lifespan using the six item De Jong Gierveld loneliness scale (WEL9a-f). Each answer was scored with a 0 or 1, as has been previously established, such that scores ranged from 0-6 and a higher score is associated with higher levels of loneliness. Social and emotional loneliness scores were separated from the overall loneliness scores. A linear regression model was then developed with loneliness score as the dependent variable. This approach allowed examination of the contribution of loneliness 'risk-factors' that have been established in the literature (Keck et al., 2022; Masi et al., 2011) to the loneliness score. Twenty-eight potential factors were included: financial instability, having a partner, gender, age, daily hours spent on the internet, life satisfaction, health overall satisfaction, health limitations, happiness, disability (based on the Washington Group scale) including vision, hearing, movement or memory issues, household size, how many people the respondent considers 'close', having support for daily tasks if needed (tangible support), satisfaction with relationships including with a partner, mother, father, children or other household members (such as siblings, roommates), social participation, work status, views on social issues and views on gender equality. Differences between surveys conducted prior to and during the COVID-19 pandemic were also examined, as well as risk factors for specific age-groups: 14-24 (887 respondents), 25-34 (1333 respondents), 35-44 (1492 respondents), 45-54 (1461 respondents), 55-64 (2289 respondents) and 65-79 (2582 respondents). Post-hoc adjustments were made for these age-specific calculations.

When inputting the risk factors into the model, all factors were normalized to be on the same scale (values had the population mean subtracted and the resulting value was divided by the population standard deviation). Relative contributions reported in Tables 1-2 and throughout the report were calculated for each loneliness type (overall, social, emotional) and age-group, by normalising the statistically significant regression coefficients for each group to sum to 100%. Regression coefficients are reported in appendix Tables 3-4. Financial instability was calculated by summing responses to questions: can you make ends meet (INC03), can your household afford basic needs (INC04a-k) and could you not pay bills in the last month (INC05). These responses were adapted so that higher scores reflected more financial instability. Social views value was calculated by summing responses to questions about views on unmarried cohabitation (ATT03b), women needing to have children for fulfilment (ATT03e), single motherhood (ATT03f) and rights for homosexual couples (ATT03i). Gender equity was calculated by summing equality responses on which gender makes better political leaders (ATT07a), most needs to attend university (ATT07b), for whom it is more important to have a job (ATT07c), should look after children (ATT07d)

and are better at caring for children (ATT07g), with higher scores reflecting answers of gender equality.

Overall Contribution of Each Significant Risk Factor

	Overall	Social Loneliness	Emotional Loneliness
Depression Symptoms	0.44***	0.27***	0.16***
Financial Instability	0.05*		0.04*
Have a Partner	0.19*		0.13*
Gender			
Age			
Internet Usage Time			
Life Satisfaction	0.13***	0.05**	0.08***
Health			
Happiness	0.2***	0.07***	0.13***
Health Limitations		0.02*	
Disability		0.14***	
Household Size		0.07*	
Closeness to Others		0.04***	
Vision Loss			
Hearing Loss			0.04*
Movement Disability			
Memory Issues			
Tangible Support		0.03**	
Partner Relationship Satisfaciton	0.24***		0.19***
Mother Relationship Satistfaction			
Father Reationship Satisfaction			
Children Relationship Satisfaciton	0.17***		0.16***
Household Relationship Satisfaction			
Social Issues Attitudes			
Gender Equality Attitidues		0.05***	0.07***
Social Participation	0.15***		0.12***
COVID-19			
Work Status	0.08*	0.06*	
R-squared	0.27	0.17	0.21
* p<0.05, **p<0.01, **p<0.01			

Table 3: Statistically significant regression coefficients returned from the linear regression model for each type of loneliness. The asterisk reflects the statistical significance of a given risk factor *p<0.05, **p<0.01, ***p<0.001. Blank cells reflect that the particular risk factor was not a significant contributor to the model for that group.

Overall Contribution of Each Significant Risk Factor

	14-24	25-34	35-44	45-54	55-64	65-79
Depression Symptoms	0.54***	.45***	0.47***	0.5***	0.45***	0.46***
Financial Instability			0.11**			
Have a Partner			0.41***	0.36***		0.42**
Gender					0.10**	
Age			0.08*	0.1**	0.09*	0.07*
Internet Usage Time						0.06**
Life Satisfaction		0.12**	0.16***		0.11**	0.15***
Health	0.12*	0.1*		0.1*		
Happiness	0.17***	0.22***		0.14**	0.17***	0.24***
Health Limitations				0.13**	0.07*	
Disability						
Household Size	0.46**					0.11*
Closeness to Others						
Vision Loss						
Hearing Loss						
Movement Disability					0.11*	
Memory Issues						
Tangible Support					0.07*	
Partner Relationship Satisfaciton			0.51***	0.50***		0.38**
Mother Relationship Satistfaction		0.14**	0.1*	0.12**		
Father Reationship Satisfaction	0.13**	0.08*	0.12***			
Children Relationship Satisfaciton			0.13*	0.17***	0.15***	0.17***
Household Relationship Satisfaction	0.59***	0.23**	0.1*		0.11**	
Social Issues Attitudes		0.08*				
Gender Equality Attitidues						
Social Participation	N/A	N/A	N/A	N/A	0.14***	0.15***
COVID-19						
Work Status		0.09*			0.11**	0.06*
R-squared	0.32	0.28	0.26	0.3	0.25	0.29
* p<0.05, **p<0.01, **p<0.01						

Table 4: Statistically significant regression coefficients returned from the linear regression model for each age-group. The asterisk reflects the statistical significance of a given risk factor *p<0.05, **p<0.01, ***p<0.001. Blank cells reflect that the particular risk factor was not a significant contributor to the model for that group.

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