



# NorDark, Uppsala/SE: Snowball Effect Questionnaire Study Results

Technical Report

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NorDark  NordForsk

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# 1. Introduction

## 1.1. Background to the project

This technical report presents the questionnaire results from the "*Snowball Effect*" study conducted in Uppsala, Sweden, as part of the NorDark research consortium. The aim of the study was to examine how people use and interact with local green areas during the dark season, focusing on their perceptions, health, and behaviour, including experiences in darkness and under snow-covered conditions.

Overall, the NorDark research consortium strives to develop new knowledge crucial to design for sustainability in the urban after-dark. In order to develop in a sustainable way, we need to balance the needs of humans with the needs of nature. In this broader context, one focus area particularly relevant in Nordic countries is the use of electric light in after-dark outdoor environments, and the impact it has on flora, fauna, and energy use, as well as human behaviour and wellbeing.

The project's strategy is to bring relevant disciplines together with representatives from design, technology, psychology, and ecology to produce knowledge and develop a new sustainable approach to lighting after-dark urban green environments, with consideration to human and non-human organism groups. To enable that, the NorDark consortium includes six universities from Sweden, Norway, and Finland as well as the industry partner Tyréns covering different research fields and working on dedicated work packages (WPs). The NorDark research consortium consists of: WP1: Environmental Psychology, Lund University; WP2: Stress Physiology, Stockholm University; WP3: Wildlife Ecology, Swedish University of Agricultural Sciences; WP4: Lighting Design, KTH Royal Institute of Technology; WP5: Digital Technology, Norwegian University of Science and Technology; and WP6: Sustainable Futures, Aalto University (Dincel 2023; 2024; 2025).

The consortium approached Uppsala Municipality to explore the possibility of engaging a southern part of the city in the project "*Unconventional Methods to Inform Sustainable Design: Mediating the Needs of People and Nature in Nordic After-Dark Environments*." Following several site visits, a section of Northern Sävja in Uppsala, Sweden, was selected as the test site. One objective of the project was to examine how people interact with local green spaces during the dark season. WP2: Stress Physiology, Stockholm University was responsible for developing the questionnaire based on input from researchers in the other WPs, as well as administering and analysing the survey. A particular focus of WP2 was to investigate how snow cover affects selected population groups. Accordingly, the study was presented as "*The Snowball Effect – Physiological, Psychological and Environmental Impacts of Changes in Lighting Quality and Intensity Caused by Snow*."

The present questionnaire study aims to examine how people perceive and use local green areas on snowy or bare-ground days and evenings, and how these use patterns relate to health. The questionnaire consisted of 23 questions, see Appendix. The questions centred on the frequency of visits to local green areas in daylight/during hours of darkness and what activities were performed, as well as the time spent outdoors at different seasons. Further, questions on obstacles to visiting green areas, the effect on willingness to stay outside during dark hours, in the case of bare ground/snow cover and which aspects are appreciated with and without electric lighting were included. Health problems in relation to season (depression, fatigue, lack of energy), exercise habits, gender, type of living, household size, and own children were reported. The questionnaire ended with an invitation to participate in a field study, and those interested could provide an e-mail address. The study was approved by the Swedish Ethical Review Authority (Number 2022-03692-01).

## 1.2. Background to the questionnaire study

Several studies have investigated some of the health consequences of living at a high latitude. At Nordic latitudes, the photoperiod, the part of the 24-hour day illuminated by natural light, dramatically changes based on seasonal changes. The photoperiod is significantly shorter in winter than in summer, determining how much daylight is available in each season. Data from studies of groups in Canada (Montreal, 45° N) who spend a lot of time outdoors and those who do not (indoor work) showed that spending time outdoors provided 3.6 times as much natural daylight intake in winter when the limit was set at an exposure above 1,000 lux (Beaulieu et al. 2009). The outdoor group received 2.6 hours of exposure, and the indoor group 35 minutes. In summer, the difference between the groups was not significant in terms of daylight exposure (3.9 hours (outdoor group) compared to 1.15 hours (indoor group)). Seasonal differences also have consequences for the body's ability to regulate circadian rhythms and increase the risk of mental illness. A comparison between two groups, one at the equator (Ghana) and one in northern Scandinavia (Tromsø), showed seasonal changes in sleep problems and fatigue experience (Friborg et al. 2012). Lack of daylight was associated with more problems. In comparisons between groups living at different latitudes and who spent their time mostly indoors (England, Sweden, Argentina, Saudi Arabia), the outcome on an index for mental health was more negative in winter for England and Sweden but more positive in summer than the other groups, which showed unchanged mental health over the year (Küller et al. 2007). In a large survey study (n=8,951) in Tromsø, no seasonal differences in mental stress were found; however, sleep worsened in winter (Johnsen et al. 2013). Apart from latitude, other differences between geographical locations can also explain the results, e.g. differences in temperature and humidity.

The length of the photoperiod affects the profile of melatonin production. During the dark season, melatonin can be secreted for several hours per day. Melatonin has a positive effect on the immune system, thereby providing protection against disease processes. It has been hypothesised that this protection has favoured survival for animals living during the cool part of the year with high stress and demands for energy mobilisation (Nelson and Draize 2000). Thus, a longer photoperiod would increase the risk of disease and susceptibility to it, according to this so-called "winter immune boosting" theory (Castro et al. 2012). Mortality over the year was examined in 11,439 seriously ill patients admitted to intensive care. Here, the length of the photoperiod prior to admission was determined using meteorological data. No difference in mortality was found between seasons, but the risk of dying decreased for groups if the photoperiod and the period before illness were short. Results from animal studies are extensive, but the corresponding more comprehensive human data are lacking, among other things, due to the high complexity of light exposure.

In a recent survey study in southern Sweden (Gerhardsson 2016), preliminary results for the 18-80-year group show that during November, people spend an average of 2.75 hours outdoors, which corresponds to 11.5% of the day. A clear pattern can be seen in when one spends time outside: the most common pattern is that time spent outdoors occurs in the morning and/or later in the afternoon.

Previous studies show that 50% of indoor workers experience increased fatigue, poorer sleep, and lower mood during the dark season (unpublished data from the SLOSH Occupational Health Database).

Nordic countries show dramatic changes in weather conditions across the year, aligned with changes in the number of sun hours. According to climate change projections, the Nordic countries are facing global warming and must develop coping strategies to adapt; for example, the most densely populated areas will have very little winter snow cover. This might be a possible health hazard in the future.

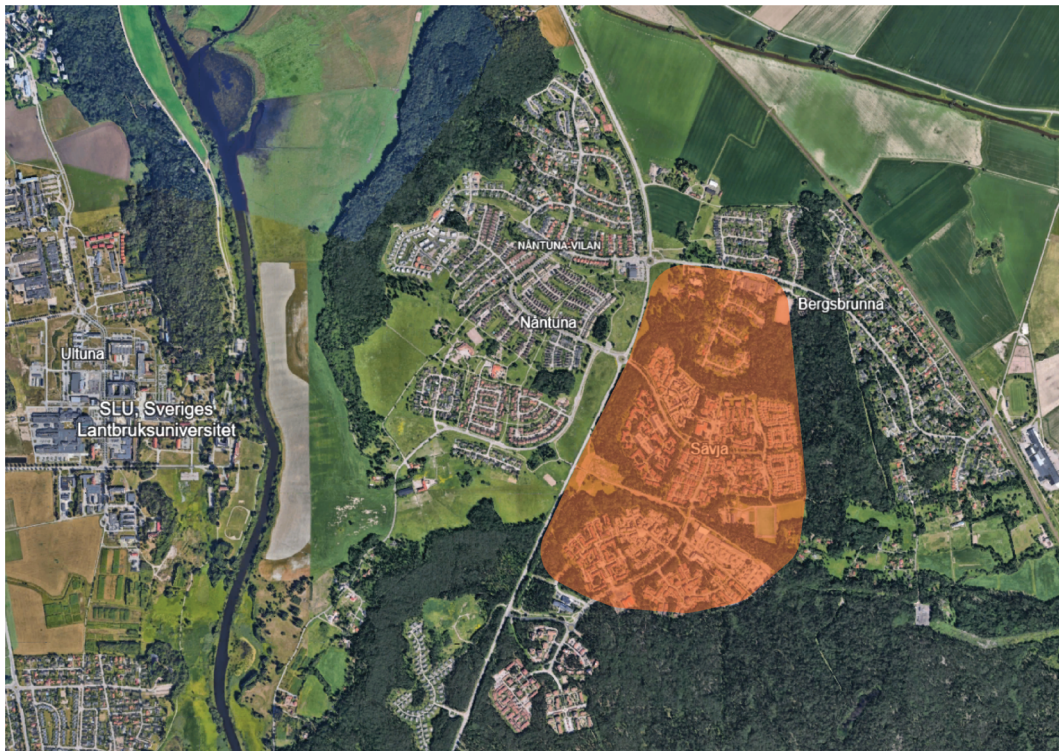
The proposed study aims to examine the effects of winter snow on human biology and behaviour. We know that hormonal changes are dramatic across the year; melatonin secretion is twice as high in the winter as in the summer (Leppäluoto, et al. 2004), affecting sleep, circadian adjustment, alertness and mood. Snow reflects light at a level of 95%, whereas a non-covered ground reflects about 15% of light. Our knowledge of the health effects of snow-covered outdoor environments is very limited, although effects on outdoor activity have been reported (Chan & Ryan 2009).

A study was proposed to evaluate a large sample of pedestrians' assessments (using questionnaires) of their perceptions, health, and behaviour when confronting a snow-covered vs non-snow-covered environment. A sub-population of the group would be tracked more closely using actigraphy (light and motion loggers) and assessment of melatonin levels (saliva samples) at regular intervals throughout the seasons. Results would later be related to meteorological data such as global radiation, precipitation, and rain and snow.

## 2. Method

### 2.1. Area of the study

The chosen area may be characterised as an urban settlement close to green spaces (Figure 1). Apartment housing and family houses are included in the study. The NorDark project aimed to find a walking path that was close to nature yet close to housing to capture respondents' perceptions and interactions with green spaces in the local neighbourhood.



**Figure 1.** Geographic distribution of printed questionnaires in Uppsala, Sweden. Illustration created by the authors using open-source map data.

### 2.2. Questionnaire

The questionnaire was formed collectively by the NorDark Consortium research partners contained 23 questions (Figure 2). The areas of study was local green area use (frequency during daylight and during dark hours), self-selected character of the participant (urban orientation or nature-oriented), reason for green area use (15 items during daylight and during dark hours), agreement to statements of wildlife (6 items), preference and listing of five animals happy/not happy to see in the neighborhood, perception of wildlife protection (3 items), light exposure during winter/spring during workdays/days off, preference of using electric light at pathways at night, preventive factors of local green area usage



(10 items), appreciated aspects in darkness/snow of local green area (8 items), influence of snow/no snow (12 items), seasonality and mood (2 items), exercise during days off/location (2 items), perceived health, perception of sufficient sleep, gender, type of housing, age, number of household members/children (7 items).

The figure shows two pages of a printed questionnaire. The left page is titled 'SNÖBOLLSEFFekten - EN STUDIE AV LJUSET UNDER MÖRK ÅRSTID' and contains introductory text about the study, a welcome message to participate, and a QR code for digital participation. The right page is titled 'GRÖNOMRÅDE/GREEN AREA USE' and contains questions about how often respondents visit local green spaces during daylight hours and dark hours, and how they feel about urban life and nature. The questionnaire includes various radio button options for frequency and Likert scales for attitudes.

**Figure 2.** The printed questionnaire, including a QR code for digital participation, was distributed to residential postal code areas in autumn 2022. The full questionnaire is included in the Appendix.

## 2.3. Respondents

Addresses and names of all 4044 inhabitants in three postal number areas were ordered (SPAR). Only respondents aged 17 or older were included. These were ordered alphabetically, and in the next step, every third address was selected. Names of companies and persons that forwarded their mail to other geographical areas were excluded. The group was thus narrowed to 1500 persons.

## 2.4. Distribution

The questionnaire was sent out by postal mail in November 2022. Respondents were offered the option to return the questionnaire in a prepaid envelope or to download an electronic version to complete online. In total, 80% of responses were submitted by postal mail and 20% electronically. The invitation to participate in the questionnaire also included a form to be sent back in the envelope if respondents were willing to participate in either (or both) a field study of walking and a study of light exposure and sleep during a week with snow cover and a week with no snow.

### 3. Questionnaire results

#### 3.1. Studied population

The response rate to the questionnaire was 16%. The analyses were based on 234 responses; however, internal dropouts amounted to about 1%. Data from the background questions are presented in Table 1. The results showed that the gender distribution was even and that the age distribution was dominated by respondents born between 1956 and 1975 (44%).

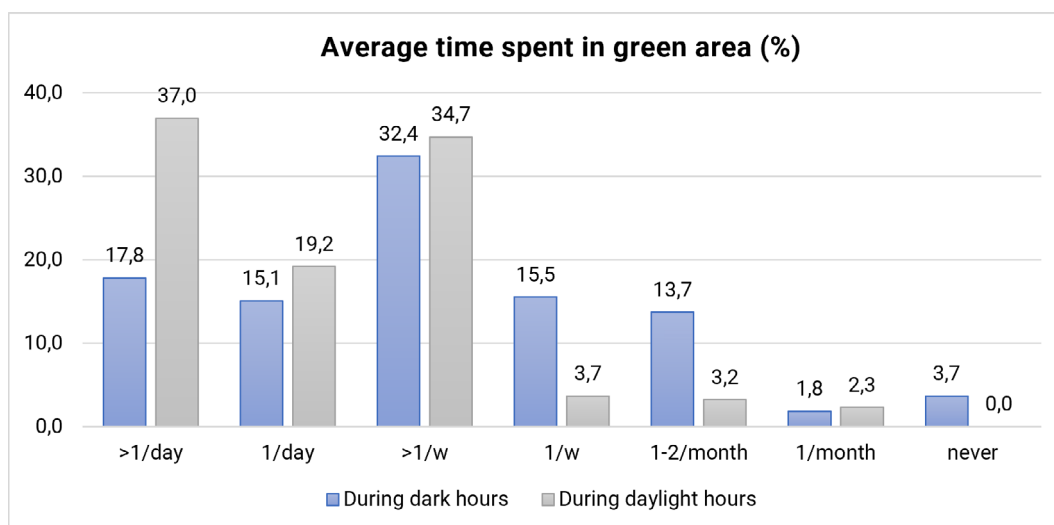
**Table 1.** Demographics of the studied population in Uppsala, Sweden.

|                   |           | N   | Percentage |
|-------------------|-----------|-----|------------|
| Sex               | Male      | 99  | 45%        |
|                   | Female    | 120 | 55%        |
| Age               | Born:     |     |            |
|                   | 1925-1935 | 2   | 1%         |
|                   | 1936-1945 | 18  | 8%         |
|                   | 1946-1955 | 31  | 14%        |
|                   | 1956-1965 | 54  | 25%        |
|                   | 1966-1975 | 43  | 20%        |
|                   | 1976-1985 | 34  | 15%        |
|                   | 1986-1995 | 21  | 10%        |
| Household members | #         |     |            |
|                   | 1         | 41  | 19%        |
|                   | 2         | 123 | 56%        |
|                   | 3         | 49  | 22%        |
|                   | ≥4        | 7   | 3%         |
| Children          | #         |     |            |
|                   | 1         | 138 | 63%        |
|                   | 2         | 39  | 18%        |
|                   | 3         | 30  | 14%        |
|                   | 4         | 12  | 5%         |

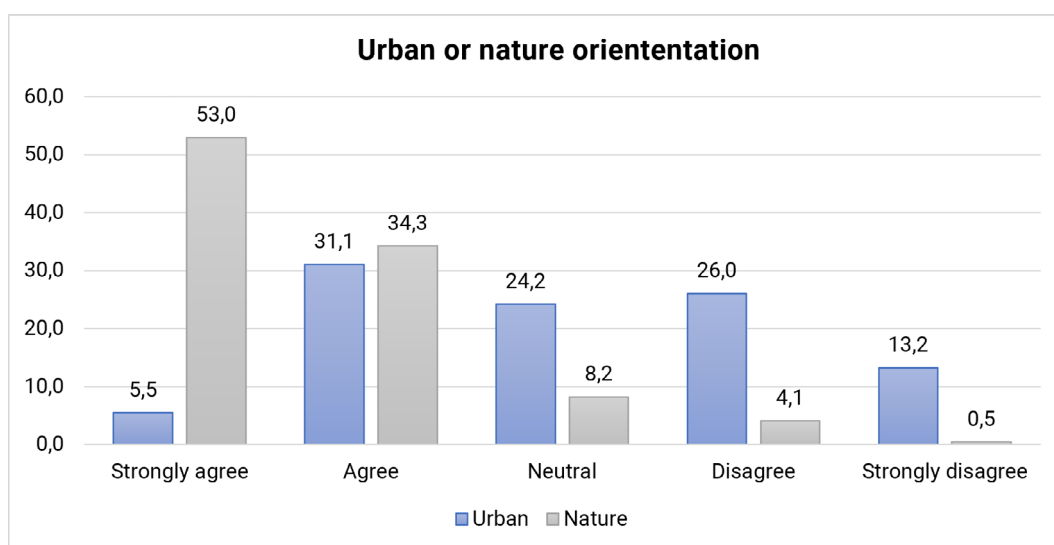
#### 3.2. Green area use

An initial question was given to measure the frequency of visits to or passing through a local green area during daylight and dark hours; see Figure 3. The data in Figure 3 show large differences in the use of local green areas across the time of day. The scale ranged from "Several times per day (1)" to "Never (7)". Use was less frequent during dark hours ( $m \text{ Dark} = 3.12 \pm 0.10$ ;  $m \text{ Day} = 2.24 \pm 0.08$ ;  $t = 11.4$ ;  $P < 0.0000$ ).

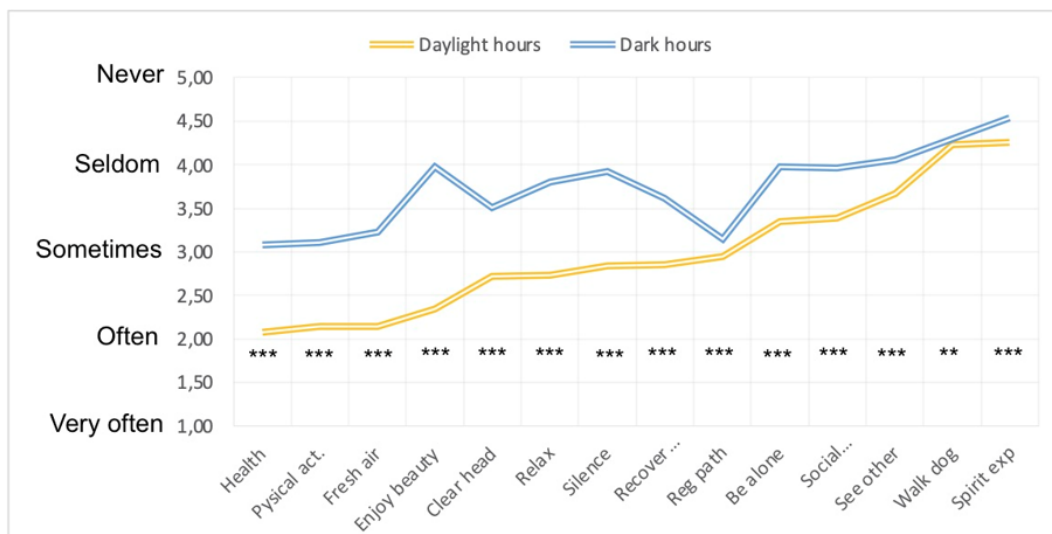
We then asked respondents to what extent they felt they were an urban-oriented person and, in a second question, a nature-oriented person. The question on being urban asked if the person finds amusement in street life, shopping, and amusements of the city. The second question was whether the person would find pleasure in the sea, woods, and nature. The results (Figure 4) showed that the studied population strongly leaned towards being associated with nature rather than urban life.



**Figure 3.** Use of local green areas during daylight and at night. An initial question was given to measure the frequency of visits to or passing through a local green area during daylight and dark hours. The data showed large differences in the use of local green areas across the time of day. The scale ranged from “Several times per day (1)” to “Never (7)”. Use was less frequent during dark hours ( $m\text{ Dark}=3.12\pm0.10$ ;  $m\text{ Day}=2.24\pm0.08$ ;  $t=11.4$ ;  $P<0.0000$ ).



**Figure 4.** Distribution (%) of answers on perceived type of orientation. We then asked respondents to what extent they felt they were an urban-oriented person and, in a second question, a nature-oriented person. The question on being urban asked if the person finds amusement in street life, shopping, and amusements of the city. The second question was whether the person would find pleasure in the sea, woods, and nature.



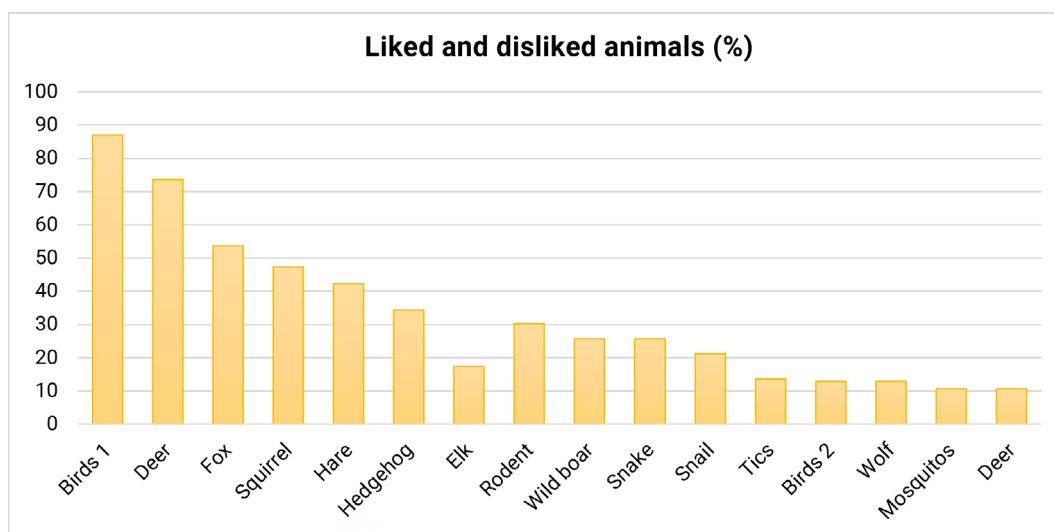
**Figure 5.** Reason for time spent outdoors in daylight and during dark hours. \*\*\* =  $P < 0.001$  mean difference. Respondents were questioned on the reasons for visiting local green areas. Data show that the primary reasons for spending time in local green areas were health, physical activity, and fresh air. The least reported reasons were walking the dog and for the spiritual experience. Frequency for each item differed between daylight and dark hours, with all items occurring less frequently during dark hours.

### 3.3. Wildlife

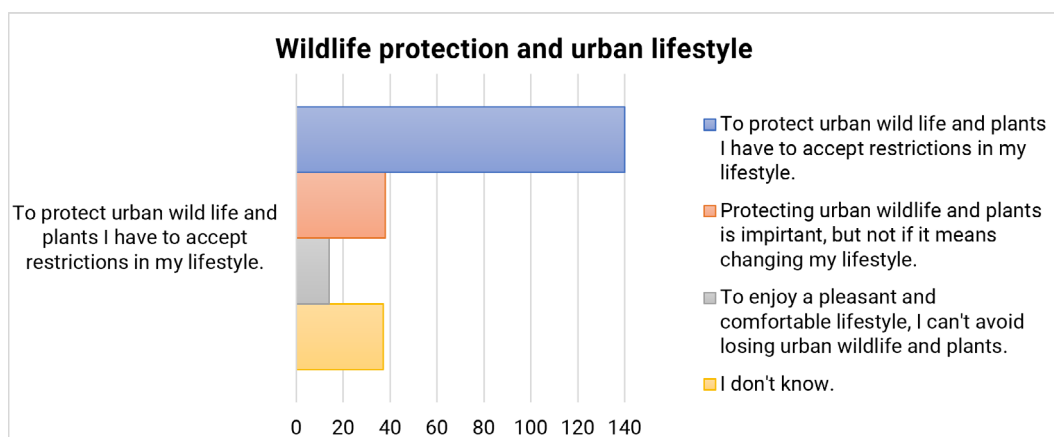
Respondents were asked to rate their opinion on statements concerning wildlife in their neighbourhood. Answers were given on a scale of 1-5 with verbal anchors (1=Strongly agree, 2= Agree, 3=Neutral, 4=Disagree, 5=Strongly disagree). Results are presented in Table 2. The table shows that respondents strongly agreed on the importance of the local green space. Knowledge of wild animals was greater than knowledge of wild plants and birds. To a lesser extent, respondents agreed that there should be more green space.

**Table 2.** Items concerning wildlife in the neighbourhood.

| In my <u>neighbourhood</u> :                                    | Agree/Strongly agree (%) | Mean $\pm$ se   |
|-----------------------------------------------------------------|--------------------------|-----------------|
| There should be more green space.                               | 34.6                     | $2.77 \pm 0.07$ |
| The green space is very important.                              | 94.5                     | $1.34 \pm 0.05$ |
| I know a lot about wild plants.                                 | 44.9                     | $2.68 \pm 0.08$ |
| I know a lot about wild animals.                                | 66.2                     | $2.32 \pm 0.07$ |
| I know a lot about the birds.                                   | 47.5                     | $2.66 \pm 0.07$ |
| Urban animals and plants have as much right to exist as humans. | 82.0                     | $1.77 \pm 0.06$ |



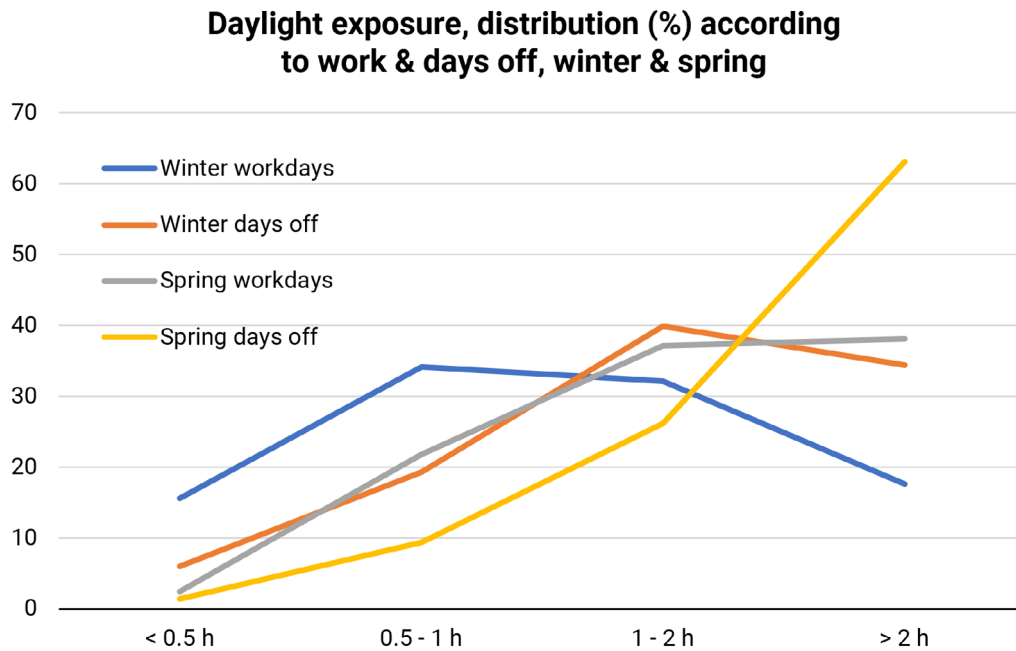
**Figure 6.** Respondents were also asked to list up to five animals living in the area that they were happy or not to have in their neighbourhood. Responses from 201 respondents were reported in percentages for liked animals, and 132 respondents gave answers on animals not liked. The category Birds 1 is summed for a number of stated preferences, such as “woodpecker”, “small birds”, “birds”, etc., and Birds 2 comprises other kinds of birds, such as “crows”, “magpies”, “doves”, and “seagulls”. Rodents in the figure represent “mice” and “rats”. It seemed that Deer could be liked by some and disliked by others.



**Figure 7.** Another question investigated opinions on how wildlife should relate to urban life. The answers indicated that a majority are willing to accept lifestyle restrictions to protect wildlife. Opinion on the relationship between wildlife and urban lifestyle, frequency, n=231.

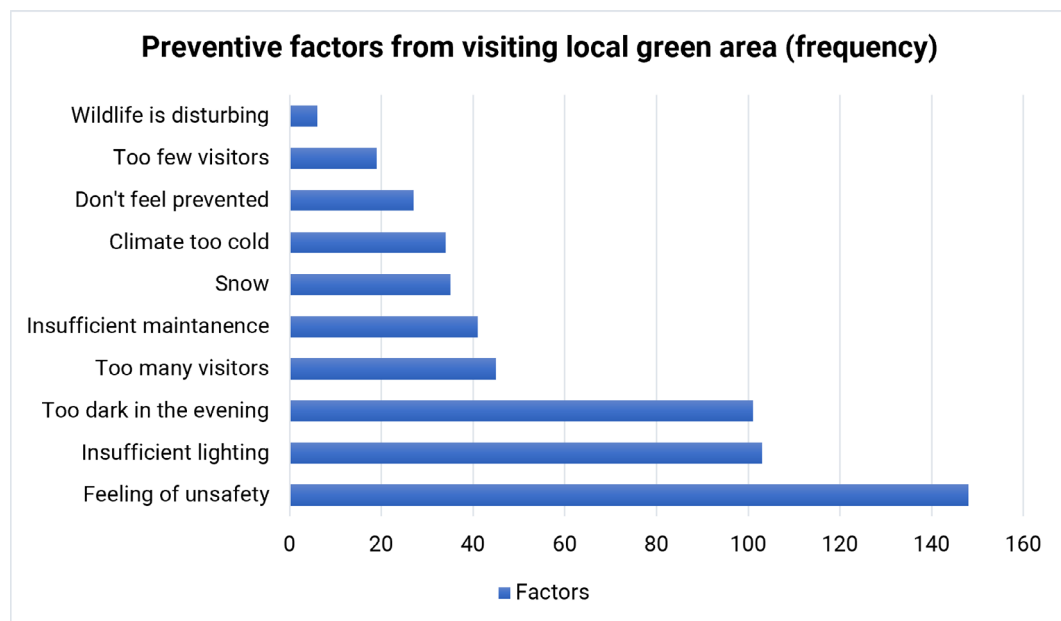
### 3.4. Daylight exposure

When asked how many hours of daylight respondents reported, the number of daylight hours varied between workdays and days off across seasons (Figure 8). In winter, daylight exposure was low during workdays. Exposure levels were very similar during winter days off compared to spring workdays. Exposure levels were high during days off in spring.



**Figure 8.** Daylight exposure in connection with workdays and days off in winter (Nov-Jan) and spring (Feb-May). Percentages of distribution at both seasons, on workdays, & during days off.

### 3.5. Lighting



**Figure 9.** Preventive factors (multiple choice) that would prevent visits to local green areas, n=219.

Questions about lighting raised concerns that could prevent the use of local green areas. Responses to some aspects that would prevent use are listed in Figure 9. Three factors dominated answers: concerns about safety, insufficient lighting and too much darkness.

When asked whether respondents would use a pathway during dark hours not lit by electric light, 37.3% would probably not or never use the path (20.1%). A smaller group would likely use the path (21.8%) or gladly (9.6%), and for some, it would not matter (11.4%). When further asked which aspects are appreciated during dark hours (Table 3), the responses indicated that the safety provided by street lighting is highly valued, as are views of the stars and the moon.

**Table 3.** Items concerning using a pathway during dark hours not lit by electric lighting.

| I appreciate:                        | Very much/To a great extent (%) | Mean $\pm$ se   |
|--------------------------------------|---------------------------------|-----------------|
| The safety that street lights bring. | 79.8                            | 1.75 $\pm$ 0.06 |
| Ability to use dark vision.          | 29.1                            | 2.91 $\pm$ 0.06 |
| To experience moonlight.             | 70.4                            | 2.03 $\pm$ 0.07 |
| To experience starlight.             | 75.3                            | 1.93 $\pm$ 0.07 |

Questionnaire items using 4 levels (1=very much, 2=to a great extent, 3=to a less extent, 4=doesn't matter)

### 3.6. Snow

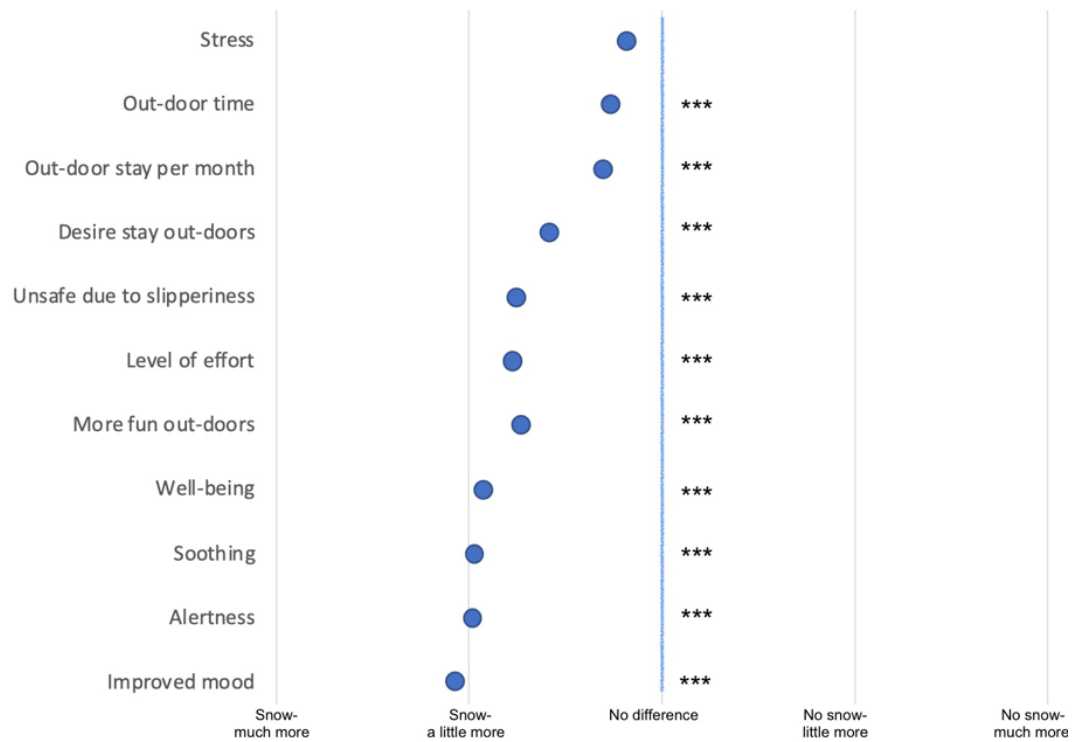
A set of items addressed respondents' relationship to snow cover in the local neighbourhood. Answers are presented in Table 4. Results show that respondents, to a great extent, appreciate all selected aspects of snow: increased safety, elevated light, nature experience, and increased well-being during darkness.

The perception of snow-covered days was compared with that of days without snow in winter. The results (Figure 10) showed that all items except stress differed between environmental conditions. All other items increased by snow cover, all reaching significantly more "positive" responses except slipperiness, which increased unsafety. The strongest effects were reached for improved mood, increased alertness, increased well-being and soothing. An additional question was asked about whether snow would affect exercise. The answers showed that snow would be decreasing by 23.7%, making no difference (76.3%), or increasing (23.7%).

**Table 4.** Items concerning aspects appreciated outdoors covered in snow during dark hours.

| I appreciate:                              | Very much/To a great extent (%) | Mean $\pm$ se   |
|--------------------------------------------|---------------------------------|-----------------|
| Snow increases safety in darkness.         | 62.0                            | 2.16 $\pm$ 0.07 |
| Elevated light due to snow.                | 78.7                            | 1.71 $\pm$ 0.06 |
| Snow increases the nature experience.      | 72.7                            | 1.82 $\pm$ 0.06 |
| Snow increases well-being during darkness. | 75.3                            | 1.73 $\pm$ 0.06 |

Questionnaire items using 4 levels (1=very much, 2=to a great extent, 3=to a less extent, 4=doesn't matter)

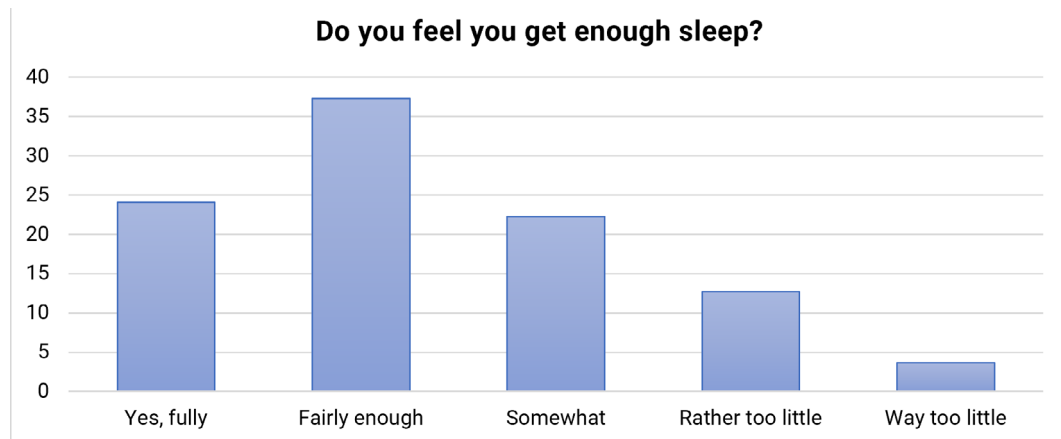


**Figure 10.** Differences between the environmental conditions, snow-covered days or not, means, one-sample t-tests, \*\*\*P<0.001, tested against 3.0 (No difference), n=214.



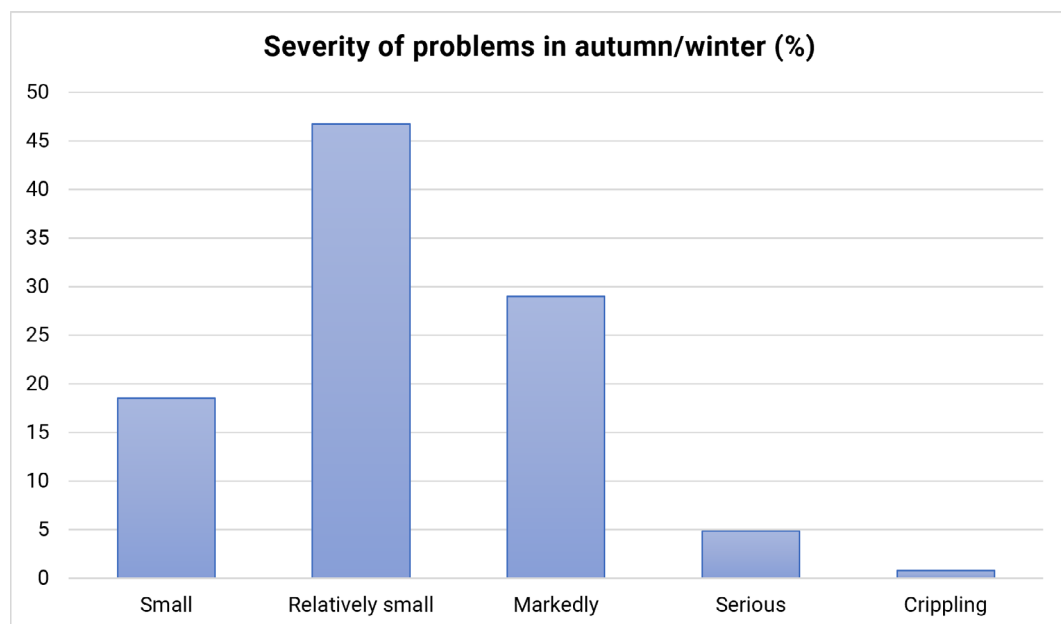
### 3.7. Health

A few questions concerned health aspects. In general, a large proportion of respondents reported having fairly good or very good health (69.1%). Fewer had “somewhat” good health (24.1%), and a small group (6.8 %) reported having “fairly bad” or “bad” health. More mixed results were obtained regarding whether respondents get enough sleep (Figure 11).



**Figure 11.** Fully restoring sleep (%).

Another question measured seasonality, and respondents were asked if they experienced more problems with decreased mood, fatigue or lack of energy during autumn/winter than during other seasons. In all, 55.5% agreed that the dark season was more burdensome (44.5% were not affected). In the follow-up question, those with reported problems could indicate the severity of their problems. The results are shown in Figure 12. It seems that, for most, the problems are relatively small (46.7%) or small (18.6%). Slightly more in the group showed marked problems (29.0%) or serious/crippling problems (5.6%).



**Figure 12.** Severity of the experienced problems during autumn/winter than during other seasons.

Half the group (51.6%) exercised lightly weekly, while heavier exercise or sports were less common (30.6%). Others exercised seldom (15.1%) or never (2.7%). It was clear that during autumn/winter, 32.8% exercised mainly indoors and 41% mainly outdoors in daylight. 11.6% would exercise in the evening under electric lighting. About 8 % would mix where they exercised.

## 4. Discussion

The data indicate that the response group frequently used their local green area; a majority (56.8%) used a green area at least once a week during daylight hours (32.8% during dark hours). The group were dominated by a perception of being nature-oriented rather than urban-oriented. This is consistent with the character of the selected test site, which did not contain any city amusements, despite good public transport to the city centre. It is also not surprising that the desire to increase green space in the area was weak, since access to the site was very close to a large nature reserve. The group placed strong emphasis on the point that, to protect wildlife and plants, they were willing to accept lifestyle restrictions. Also, 45% of the group were living in a freestanding house with access to a garden.

When considering daylight exposure across seasons, it is not surprising that light exposure is lower in winter than in spring. Half the group (49.8%) received 1 hour or less during winter workdays, which poses a potential threat of circadian disruption. It seems green area access was well provided, and preventive factors for visiting were few; however, instead, they were elevated at dark hours. The most common factors were feelings of unsafety, insufficient lighting, and a too-dark environment; actually, 57.4% would not or probably would not use a path without electric lighting during dark hours. Therefore, the safety that street lights provide was especially appreciated, underscoring the importance of finding an ecological solution that balances the needs of humans and wildlife.

Interestingly, snow was widely viewed as increasing safety in darkness but also enhancing the experience of nature and well-being. In general, snow cover would yield more positive responses than the no-snow option. The strongest positive effects of snow were improved mood, increased alertness, well-being, and a sense of soothing. The potential positive effects of snow on health perceptions may be important, since 55.5% agreed that the dark season was more burdened by decreased mood, fatigue, or lack of energy.

The response rate was low in the study. It is likely that the scope of the questionnaire would be of greater interest to groups that frequently visit and use local green areas, as well as to groups that appreciate nature and snow in winter. The results, therefore, might not be representative of the whole community. Also, the age distribution might not fully represent all age groups; rather, few elderly and young participants responded to the questionnaire.

The questionnaire yielded high response rates in the research process, with 35% of participants agreeing to sign up for field studies. The low response rate might have been due to the perception that some selected inhabitants believed the questionnaire was only meant for those willing to participate in a field study.

## References

- Juhani Leppäluoto, Kirsti Sikkilä, Victor Benno Meyer-Rochow & Juhani Hassi (2004). Spring snow lowers human melatonin, *International Journal of Circumpolar Health*, 63:sup2, 161-164, DOI: 10.3402/ijch.v63i0.17888
- Beaulieu, Catherine, Æ. Marianne Rufiange, Marie Dumont, and Æ. Pierre Lachapelle. 2009. *Modulation of ERG Retinal Sensitivity Parameters with Light Environment and Photoperiod*. *Doc Ophthalmol* 118:89–99.
- Castro, Ricardo A. et al. 2012. *Light and the Outcome of the Critically Ill: An Observational Cohort Study*. *Critical Care (London, England)* 16(4):R132.
- Chan, Catherine B. and Daniel A. Ryan. 2009. *Assessing the Effects of Weather Conditions on Physical Activity Participation Using Objective Measures*. *International Journal of Environmental Research and Public Health* 6(10):2639–54.
- Davis, Scott, William T. Kaune, Dana K. Mirick, Chu Chen, and Richard G. Stevens. 2001. *Residential Magnetic Fields, Light-at-Night, and Nocturnal Urinary 6-Sulfatoxymelatonin Concentration in Women*. *American Journal of Epidemiology* 154:591–600.
- Dincel, Seren. 2023. *NorDark Testbed, Uppsala/SE Light Level Measurements, Methods and Values: Technical Report, Part I*. Stockholm: KTH Royal Institute of Technology.
- Dincel, Seren. 2024. *NorDark Testbed, Uppsala/SE Spectral Properties and Values: Technical Report, Part II*. Stockholm: KTH Royal Institute of Technology.
- Dincel, Seren. 2025. *NorDark Testbed, Uppsala/SE: Post-intervention Design and Light Measurements, Part III*. Stockholm: KTH Royal Institute of Technology.
- Friborg, Oddgeir, Bjorn Bjorvatn, Benjamin Amponsah, and Ståle Pallesen. 2012. *Season and Sleep Associations between Seasonal Variations in Day Length ( Photoperiod ), Sleep Timing , Sleep Quality and Mood : A Comparison between Ghana (5°) and Norway (69°)*. *Journal of Sleep Research* 21:176–84.
- Friborg, Oddgeir, Jan H. Rosenvinge, Rolf Wynn, and Michael Gradisar. 2014. *Sleep Timing, Chronotype, Mood, and Behavior at an Arctic Latitude (69°N)*. *Sleep Medicine* 15(7):798–807.
- Gerhardsson, Kiran M. 2016. *Light at Home Survey : Summary of Results for LRC*. Rapport Från Lunds Universitet 1–29.
- Johnsen, May Trude, Rolf Wynn, Karla Allebrandt, and Trond Bratlid. 2013. *Lack of Major Seasonal Variations in Self-Reported Sleep-Wake Rhythms and Chronotypes among Middle Aged and Older People at 69 Degrees North : The Tromsø Study*. *Sleep Medicine* 14(2):140–48.
- Johnsen, May Trude, Rolf Wynn, and Trond Bratlid. 2012. *Is There a Negative Impact of Winter on Mental Distress and Sleeping Problems in the Subarctic : The Tromsø Study*. *BMC Psychiatry* 12:225.
- Küller, Rikard, Seifeddin Ballal, Thorbjörn Laike, and Byron Mikellides. 2007. *The Impact of Light and Colour on Psychological Mood : A Cross-Cultural Study of Indoor Work Environments The Impact of Light and Colour on Psychological Mood: A Cross-Cultural Study of Indoor Work Environments*. *Ergonomics* 49(14):1496–1507.
- Leppäluoto, Juhani, Kirsti Sikkilä, Victor Benno Meyer-Rochow, and Juhani Hassi. 2003. *Low Melatonin Secretion*

- Associates with Albedo in Circumpolar Environments*. Journal of Pineal Research 35(3):158–62.
- Nelson, R. J. and D. L. Drazen. 2000. *Melatonin Mediates Seasonal Changes in Immune Function*. Annals of the New York Academy of Sciences 917:404–15.
- Paul, Michel A. et al. 2015. *Sleep Deficits in the High Arctic Summer in Relation to Light Exposure and Behaviour: Use of Melatonin as a Countermeasure*. Sleep Medicine 16(3):406–13.



*Snowball effect, English version - see next page*

## SNÖBOLLSEFFEKTEN - EN STUDIE AV LJUSET UNDER MÖRK ÅRSTID

Hej! Du bor i en del av Uppsala kommun som har valts ut som testområde för bla ny utomhusbelysning på gång- och cykelvägar. I denna enkätstudie ställs frågor som gör att vi forskare kan beskriva hur olika grupper av människor samverkar med omgivande grönområden under mörk årstid och hur snö påverkar oss. Här får du anonymt ange vad du anser viktigt för hur man belyser nära grönområden i din stadsdel inom studien som vi kallar "Snöbollseffekten- Effekt av miljöförändring i ljusets kvalitet och styrka utomhus orsakade av snö vid utomhusvistelse och påverkan på fysiologi och psykologi".

## VÄLKOMMEN ATT DELTA I STRESSFORSKNINGSINSTITUTETS STUDIE!

Vi har erhållit ditt namn och adress via ett offentligt adressregister (SPAR). Ditt deltagande i studien är frivilligt och du kan när som helst avbryta ditt deltagande utan särskild förklaring, genom att klicka på länken längst ner i inbjudningsmejllet eller genom att kontakta ansvariga forskare. Namn, kontaktuppgifter och data som kopplas till enskilda individer förvaras separat under databearbetningen och kommer sedan att förstöras när studien avslutas 2025. Ansvarig för dina personuppgifter är Stockholms Universitet. Genom att besvara enkäten lämnar du samtidigt samtycke till att du tagit del av denna information och accepterat att delta i studien. Skriv gärna ut denna information. Enkäten tar ungefär 15 minuter att fylla i. Vi redovisar resultat genom rapporter, artiklar, på konferenser och genom kontakt med media och Uppsala Kommun. Har du några frågor, tveka inte att kontakta oss.

**Stort tack på förhand!**  
**Arne Lowden**



Arne Lowden, docent, ansvarig forskare  
arne.lowden@su.se  
Projektnfo och support: 08-5537 89 15



Skanna QR-koden med din kamera för att svara på den digitala versionen av enkäten.





## SNOWBALL EFFECT - A STUDY ON LIGHT DURING DARK SEASONS

Hi! You live in a part of Uppsala Municipality that has been selected as a test area for, among other things, new outdoor lighting on pedestrian and bicycle paths. This questionnaire is part of the research for that test. The questions within this questionnaire provide a better understanding of the ways how different groups of people interact with surrounding green areas during the dark season and the effect of snow on those interactions. Here you can anonymously state what you consider important about the illumination near green areas in your neighbourhood within the study, which is called "The snowball effect- physiological, psychological, and environmental Impacts of the changes to the quality and intensity of lighting outdoors caused by snow".

## WELCOME TO JOIN THE STUDY FROM THE STRESS RESEARCH INSTITUTE!

We have received your name and address via a public address register (SPAR). Your participation in the study is voluntary and you can cancel your participation at any time without special explanation, by clicking on the link at the bottom of the invitation email or by contacting the responsible researchers. Names, contact information and data linked to individuals are stored separately during data processing and will then be destroyed when the study ends in 2025. Stockholm University is responsible for your personal information. By answering the questionnaire, you confirm that you have read this information and agree to participate in the study. Feel free to print out this information. The survey takes about 15 minutes to complete. We communicate results through reports, articles, conferences and contact with the media and Uppsala Municipality. If you have any questions, do not hesitate to contact us.

**Thanks in advance**  
**Arne Lowden**



Arne Lowden, Associate Professor, responsible researcher  
[arne.lowden@su.se](mailto:arne.lowden@su.se)  
Project info and support: 08-5537 89 15



Scan the QR code with your camera  
for responding to the digital version of  
questionnaire.

## GRÖNOMRÅDE/GREEN AREA USE

Hur ofta har du det sista året **under timmar med dagsljus** besökt/ passerat genom nära grönområde? Med nära grönområde menar vi ex. park, sportfält, lekpark, gräsmatta eller skog, gångstråk eller cykelväg i grönområde nära bebyggelse.

*In the past year, how often on average have you visited your local greenspace areas **during daylight hours**? By greenspace, we mean public green or open spaces in urban areas, for example, parks, playing fields, play areas, woodland and more natural areas.*

- ☐ Flera gånger per dag (*Several times per day*)
- ☐ 1 gång per dag (*Once a day*)
- ☐ Flera gånger per vecka (*Several days per week*)
- ☐ 1 gång per vecka (*Once a week*)
- ☐ 1-2 gånger i månaden (*1-2 times per month*)
- ☐ 1 gång eller 2 gånger per år (*1-2 times per year*)
- ☐ Aldrig (*Never*)

Hur ofta har du det sista året **under timmar med mörker** besökt/passerat genom nära grönområde? Med nära grönområde menar vi ex. park, sportfält, lekpark, gräsmatta eller skog, gångstråk eller cykelväg i grönområde nära bebyggelse.

*In the past year, how often on average have you visited your local greenspace areas **during dark hours**? By greenspace, we mean public green or open spaces in urban areas, for example, parks, playing fields, play areas, woodland and more natural areas.*

- ☐ Flera gånger per dag (*Several times per day*)
- ☐ 1 gång per dag (*Once a day*)
- ☐ Flera gånger per vecka (*Several days per week*)
- ☐ 1 gång per vecka (*Once a week*)
- ☐ 1-2 gånger i månaden (*1-2 times per month*)
- ☐ 1 gång eller 2 gånger per år (*1-2 times per year*)
- ☐ Aldrig (*Never*)

Är du en stadsorienterad person som finner nöje i gatuliv, shopping och nöjen i staden?

*Are you an urban-oriented person, finding pleasure in street life, shopping, and amusements of the city?*

- ☐ Håller helt med  
*Strongly agree*
- ☐ Håller med  
*Agree*
- ☐ Varken eller  
*Neutral*
- ☐ Håller inte med  
*Disagree*
- ☐ Håller inte alls med  
*Strongly disagree*

Är du en naturinriktad person som finner nöje i havet, skogen och naturen?

*Are you a nature-oriented person, finding pleasure in the sea, woods, and nature?*

- ☐ Håller helt med  
*Strongly agree*
- ☐ Håller med  
*Agree*
- ☐ Varken eller  
*Neutral*
- ☐ Håller inte med  
*Disagree*
- ☐ Håller inte alls med  
*Strongly disagree*





## GRÖNOMRÅDE/GREEN AREA USE

Vilket är anledningen till att du vistas i i ditt nära grönområde under timmar med dagsljus ute?

What is the reason for time spent out-doors in daylight hours?

|                                                                                                             | Mycket ofta<br>Very often | Ofta<br>Often         | Ibland<br>Sometimes   | Sällan<br>Seldom      | Aldrig<br>Never       |
|-------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| För att få frisk luft<br><i>To be in the fresh air</i>                                                      | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att stressa ner<br><i>To recover from stress</i>                                                        | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För fysisk aktivitet<br><i>For physical activity</i>                                                        | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att få uppleva tystnad/<br>naturljud<br><i>To experience silence/nature<br/>sounds</i>                  | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Av sociala skäl<br><i>For social reasons</i>                                                                | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Att få träffa andra<br><i>To see other people</i>                                                           | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För avslappning<br><i>To relax</i>                                                                          | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att uppleva vacker natur<br><i>To enjoy the beauty of nature</i>                                        | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att få vara ensam<br><i>To be alone</i>                                                                 | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att gå ut med hunden<br>(andra husdjur)<br><i>To walk my dog (other pets)</i>                           | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För andlig upplevelse<br><i>For spiritual experience</i>                                                    | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att det är bra för hälsan<br><i>Because it is good for health</i>                                       | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att rensa huvudet/tänk klart<br><i>To clear my head/think clearly</i>                                   | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att det är min vanliga<br>transportväg <i>Because it is part of<br/>my regular transportation route</i> | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Annan orsak<br><i>Other reason</i> .....                                                                    |                           |                       |                       |                       |                       |



## GRÖNOMRÅDE/GREEN AREA USE

Vilket är anledningen till att du vistas i i ditt nära grönområde under timmar med mörker ute?

What is the reason for time spent out-doors in dark hours?

|                                                                                                             | Mycket ofta<br>Very often | Ofta<br>Often         | Ibland<br>Sometimes   | Sällan<br>Seldom      | Aldrig<br>Never       |
|-------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| För att få frisk luft<br><i>To be in the fresh air</i>                                                      | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att stressa ner<br><i>To recover from stress</i>                                                        | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För fysisk aktivitet<br><i>For physical activity</i>                                                        | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att få uppleva tystnad/<br>naturljud<br><i>To experience silence/nature<br/>sounds</i>                  | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Av sociala skäl<br><i>For social reasons</i>                                                                | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Att få träffa andra<br><i>To see other people</i>                                                           | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För avslappning<br><i>To relax</i>                                                                          | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att uppleva vacker natur<br><i>To enjoy the beauty of nature</i>                                        | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att få vara ensam<br><i>To be alone</i>                                                                 | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att gå ut med hunden<br>(andra husdjur)<br><i>To walk my dog (other pets)</i>                           | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För andlig upplevelse<br><i>For spiritual experience</i>                                                    | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att det är bra för hälsan<br><i>Because it is good for health</i>                                       | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att rensa huvudet/tänk klart<br><i>To clear my head/think clearly</i>                                   | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| För att det är min vanliga<br>transportväg <i>Because it is part of<br/>my regular transportation route</i> | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Annan orsak<br><i>Other reason</i> .....                                                                    |                           |                       |                       |                       |                       |



## STADENS VILDA VÄXT- OCH DJURLIV/WILDLIFE

Hur viktigt för dig är följande påståenden?

*How strongly do you agree with the statements below?*

|                                                                                                                                                     | Håller helt med<br><i>Strongly agree</i> | Håller med<br><i>Agree</i> | Varken eller<br><i>Neutral</i> | Håller inte med<br><i>Disagree</i> | Håller inte alls med<br><i>Strongly disagree</i> | Vet ej<br><i>I don't know</i> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------|--------------------------------|------------------------------------|--------------------------------------------------|-------------------------------|
| Det borde finnas mer grönområde i mitt grannskap.<br><i>There should be more green space in my neighbourhood.</i>                                   | <input type="radio"/>                    | <input type="radio"/>      | <input type="radio"/>          | <input type="radio"/>              | <input type="radio"/>                            | <input type="radio"/>         |
| Grönområdet i mitt grannskap betyder mycket för mig.<br><i>The green space in my neighbourhood is very important to me.</i>                         | <input type="radio"/>                    | <input type="radio"/>      | <input type="radio"/>          | <input type="radio"/>              | <input type="radio"/>                            | <input type="radio"/>         |
| Jag känner väl till de vilda växterna i mitt grannskap.<br><i>I know a lot about the wild plants in my neighbourhood.</i>                           | <input type="radio"/>                    | <input type="radio"/>      | <input type="radio"/>          | <input type="radio"/>              | <input type="radio"/>                            | <input type="radio"/>         |
| Jag känner väl till de vilda djuren i mitt grannskap.<br><i>I know a lot about the wild animals in my neighbourhood.</i>                            | <input type="radio"/>                    | <input type="radio"/>      | <input type="radio"/>          | <input type="radio"/>              | <input type="radio"/>                            | <input type="radio"/>         |
| Jag känner väl till de vilda fåglarna i mitt grannskap.<br><i>I know a lot about the birds in my neighbourhood.</i>                                 | <input type="radio"/>                    | <input type="radio"/>      | <input type="radio"/>          | <input type="radio"/>              | <input type="radio"/>                            | <input type="radio"/>         |
| Stadens djur och växter har lika stor rätt som människor att finnas till.<br><i>Urban animals and plants have as much right as humans to exist.</i> | <input type="radio"/>                    | <input type="radio"/>      | <input type="radio"/>          | <input type="radio"/>              | <input type="radio"/>                            | <input type="radio"/>         |



## STADENS VILDA VÄXT- OCH DJURLIV/WILDLIFE

Lista upp till fem (5) djur som lever i grannskapet och som du gärna eller inte gärna ser finns där.

List up to five (5) animals (except pets) that live in your area and you are happy or not to have them in your neighbourhood.

|                                                                                             |                                                                        |                                                                             |                                             |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------|
| Djur jag <b>gillar</b> se i grannskapet<br>Animals I <b>want</b> to see in my neighbourhood | Var träffar du på dessa djur?<br>Where do you encounter these animals? | Mest dagtid (D)/mest vid natt (N) Mostly at daytime (D)/mostly at night (N) | Under vilken årstid?<br>During what season? |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------|

| Exempel/Example:<br>Älg/Elk | I skogen/In the woods | N | Hela året/Whole year |
|-----------------------------|-----------------------|---|----------------------|
| 1)                          |                       |   |                      |
| 2)                          |                       |   |                      |
| 3)                          |                       |   |                      |
| 4)                          |                       |   |                      |
| 5)                          |                       |   |                      |

Djur jag **inte gillar** se i grannskapet  
Animals I **don't want** to see in my neighbourhood

|    |  |
|----|--|
| 1) |  |
| 2) |  |
| 3) |  |
| 4) |  |
| 5) |  |

Var tycker du djur (inte husdjur) bör få vistas? (Du kan ange fler alternativ)

How do you think about wildlife protection and urban lifestyle? (Please choose the answer you most agree with)

- ☐ För att värna stadens växt- och djurliv måste jag acceptera restriktioner i min livsstil.  
To protect urban wildlife and plants I have to accept restrictions in my lifestyle.
- ☐ Att värna stadens växt- och djurliv är viktigt men inte om jag måste förändra min livsstil.  
Protecting urban wildlife and plants is important, but not if it means changing my lifestyle.
- ☐ För att njuta av en behaglig och komfortabel livsstil går det inte att undvika att jag tappar del av stadens vilda växt- och djurliv.  
To enjoy a pleasant and comfortable lifestyle, I can't avoid losing urban wildlife and plants.
- ☐ Vet ej  
I don't know



## LJUSPÅVERKAN/LIGHT EXPOSURE

Hur lång tid brukar du dagligen vistas i dagsljus utomhus under **november - januari**? (Räkna även bil- och busstransporter i dagsljus)

*How long is your daily stay out-doors during **November-January**? (Include time spent in car and bus in daylight)*

|                                              | Mindre än 30 min<br><i>Less than 30 min</i> | 30 min - 1 timme<br><i>30 min - 1 hour</i> | 1- 2 timmar<br><i>1 - 2 hours</i> | Mer än 2 timmar<br><i>More than 2 hours</i> |
|----------------------------------------------|---------------------------------------------|--------------------------------------------|-----------------------------------|---------------------------------------------|
| Under arbetsdagar<br><i>During workdays</i>  | <input type="radio"/>                       | <input type="radio"/>                      | <input type="radio"/>             | <input type="radio"/>                       |
| Under lediga dagar<br><i>During days off</i> | <input type="radio"/>                       | <input type="radio"/>                      | <input type="radio"/>             | <input type="radio"/>                       |

Hur lång tid brukar du dagligen vistas i dagsljus utomhus under **februari - maj**? (Räkna även bil- och busstransporter i dagsljus)

*How long is your daily stay out-doors during **February-May**? (Include time spent in car and bus in daylight)*

|                                              | Mindre än 30 min<br><i>Less than 30 min</i> | 30 min - 1 timme<br><i>30 min - 1 hour</i> | 1- 2 timmar<br><i>1 - 2 hours</i> | Mer än 2 timmar<br><i>More than 2 hours</i> |
|----------------------------------------------|---------------------------------------------|--------------------------------------------|-----------------------------------|---------------------------------------------|
| Under arbetsdagar<br><i>During workdays</i>  | <input type="radio"/>                       | <input type="radio"/>                      | <input type="radio"/>             | <input type="radio"/>                       |
| Under lediga dagar<br><i>During days off</i> | <input type="radio"/>                       | <input type="radio"/>                      | <input type="radio"/>             | <input type="radio"/>                       |

## BELYSNING/LIGHTING

Skulle du i ditt bostadsområde under dygnets mörka timmar använda ett gång/cykelstråk som inte är upplyst med elektrisk belysning?

*Would you during dark hours use a pathway that is not lit by electric light?*

- ☐ Aldrig (*Never*)
- ☐ Troligen inte (*Probably not*)
- ☐ Spelar ingen roll (*Doesn't matter*)
- ☐ Troligen (*Likely*)
- ☐ Gärna (*Gladly*)



## BELYSNING/LIGHTING

Skulle något av nedanstående hindra dig från att besöka ditt nära grönområde? Du kan ange flera svar.  
*Would anything below prevent you from visiting your local green area? You may post several reasons.*

- ☐ Känsla av otrygghet (*Feelings of unsafety*)
- ☐ För mörkt kväll och natt (*Too dark in the evening*)
- ☐ Otillräcklig belysning (*Insufficient lighting*)
- ☐ Snö (*Snow*)
- ☐ För mycket människor besöker området (*Too many visitors use the area*)
- ☐ För få människor besöker området (*Too few visitors use the area*)
- ☐ Djurlivet stör, ex däggdjur, insekter (*Wildlife is disturbing*)
- ☐ För kallt klimat (*Climate too cold*)
- ☐ Otillräckligt underhåll, ex inte sandat (*Insufficient maintenance*)
- ☐ Känner inte hinder (*Don't feel prevented*)

Under dygnets mörka timmar, vilka aspekter uppskattar du hos ditt nära grönområde?  
*Outdoor during dark hours, what aspects do you appreciate?*

|                                                                             | Väldigt mycket<br><i>Very much</i> | Ganska mycket<br><i>To a great extent</i> | I mindre grad<br><i>To a less extent</i> | Spelar ingen roll<br><i>Doesn't matter</i> |
|-----------------------------------------------------------------------------|------------------------------------|-------------------------------------------|------------------------------------------|--------------------------------------------|
| Trygghet som gatubelysning ger<br><i>Safety that street lighting brings</i> | <input type="radio"/>              | <input type="radio"/>                     | <input type="radio"/>                    | <input type="radio"/>                      |
| Möjlighet använda mörkerseende<br><i>Ability to use dark vision</i>         | <input type="radio"/>              | <input type="radio"/>                     | <input type="radio"/>                    | <input type="radio"/>                      |
| Uppleva månljus<br><i>To experience moonlight</i>                           | <input type="radio"/>              | <input type="radio"/>                     | <input type="radio"/>                    | <input type="radio"/>                      |
| Uppleva stjärnhimmel<br><i>To experience starlight</i>                      | <input type="radio"/>              | <input type="radio"/>                     | <input type="radio"/>                    | <input type="radio"/>                      |



## SNÖ/SNOW

Under dygnets mörka timmar, vilka aspekter uppskattar du hos ditt nära grönområde?

*Outdoor during dark hours, what aspects do you appreciate?*

|                                                                                 | Väldigt mycket<br><i>Very much</i> | Ganska mycket<br><i>To a great extent</i> | I mindre grad<br><i>To a less extent</i> | Spelar ingen roll<br><i>Doesn't matter</i> |
|---------------------------------------------------------------------------------|------------------------------------|-------------------------------------------|------------------------------------------|--------------------------------------------|
| Snö ökar trygghet under mörker<br><i>Snow increases safety in darkness</i>      | <input type="radio"/>              | <input type="radio"/>                     | <input type="radio"/>                    | <input type="radio"/>                      |
| Ökad ljusnivå pga snö<br><i>Elevated light due to snow</i>                      | <input type="radio"/>              | <input type="radio"/>                     | <input type="radio"/>                    | <input type="radio"/>                      |
| Snö ökar naturupplevelsen<br><i>Snow increases nature experience</i>            | <input type="radio"/>              | <input type="radio"/>                     | <input type="radio"/>                    | <input type="radio"/>                      |
| Snö ökar trivsel vid mörker<br><i>Snow increases well-being during darkness</i> | <input type="radio"/>              | <input type="radio"/>                     | <input type="radio"/>                    | <input type="radio"/>                      |

Jämför hur du vintertid påverkas under snörika dagar jämfört med barmark.

*Compare how much snow covered days affects me compared to days without snow in winter.*

|                                                                        | Snödagar mycket mer<br><i>Snow-much more</i> | Snödagar lite mer<br><i>Snow-a little more</i> | Ingen skillnad<br><i>No difference</i> | Barmark lite mer<br><i>No snow-a little more</i> | Barmark mycket mer<br><i>No snow-much more</i> |
|------------------------------------------------------------------------|----------------------------------------------|------------------------------------------------|----------------------------------------|--------------------------------------------------|------------------------------------------------|
| Grad av ansträngning<br><i>Level of effort</i>                         | <input type="radio"/>                        | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                            | <input type="radio"/>                          |
| Förbättrat humör<br><i>Improved mood</i>                               | <input type="radio"/>                        | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                            | <input type="radio"/>                          |
| Pigghet<br><i>Alertness</i>                                            | <input type="radio"/>                        | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                            | <input type="radio"/>                          |
| Välbefinnande<br><i>Well-being</i>                                     | <input type="radio"/>                        | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                            | <input type="radio"/>                          |
| Rogivande<br><i>Soothing</i>                                           | <input type="radio"/>                        | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                            | <input type="radio"/>                          |
| Stress<br><i>Stress</i>                                                | <input type="radio"/>                        | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                            | <input type="radio"/>                          |
| Utomhusvistelse, antal ggr per månad<br><i>Out-door stay per month</i> | <input type="radio"/>                        | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                            | <input type="radio"/>                          |
| Utomhusvistelse, tid<br><i>Out-door time</i>                           | <input type="radio"/>                        | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                            | <input type="radio"/>                          |
| Lust vistas utomhus<br><i>Desire stay out-doors</i>                    | <input type="radio"/>                        | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                            | <input type="radio"/>                          |
| Roligare vistas utomhus<br><i>More fun stay out-doors</i>              | <input type="radio"/>                        | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                            | <input type="radio"/>                          |
| Osäkerhet pga halkrisk<br><i>Unsafe due to slipperiness</i>            | <input type="radio"/>                        | <input type="radio"/>                          | <input type="radio"/>                  | <input type="radio"/>                            | <input type="radio"/>                          |

Minskar eller ökar din motion när det finns snö?

*Does your exercise decrease or increase when there is snow?*

☐ Minskar (*Decreases*)      ☐ Ingen skillnad (*No difference*)      ☐ Ökar (*Increases*)



## HÄLSA/HEALTH

Har du mer problem med nedstämdhet, trötthet eller brist på energi under hösten/vintern än under andra årstider?  
*Do you have more problems with decreased mood, fatigue or lack of energy during autumn/winter than during other seasons?*

- ☐ Nej (*No*)
- ☐ Ja (*Yes*)

Då du svarat ja på förra frågan. Är problemen i så fall:  
*If you answered yes on the previous question, are problems in that case:*

- ☐ Små (*Small*)
- ☐ Relativt små (*Relatively small*)
- ☐ Markanta (*Markedly*)
- ☐ Allvarliga (*Serious*)
- ☐ Förlamande (*Crippling*)

Hur mycket rör och anstränger du dig på fritiden?  
*How much do you exercise during free time?*

- ☐ Nästan ingen motion alls, mest stillasittande (*Barely nothing*)
- ☐ Sällan motion, ej regelbundet, cyklar, promenerar ibland (*Seldom*)
- ☐ Lätt motion ca 2 ggr/vecka, går i trappport, promenader, joggar lätt (*Light exercise*)
- ☐ Ordentlig motion >2 ggr/vecka, blir ordentligt svettig (*Heavy exercise*)
- ☐ Hård träning, tävlingsidrott (*Sports training*)

Var någonstans får du din motion under höst/vinter?  
*Where do you exercise during autumn/winter?*

- ☐ I huvudsak utomhus kvällstid i elektriskt ljus (*Out-doors evening*)
- ☐ I huvudsak utomhus i dagsljus (*Out-doors in daylight*)
- ☐ I huvudsak inomhus (*Indoor*)





## HÄLSA/HEALTH

Hur tycker du ditt hälsotillstånd varit de senaste två månaderna?

*How do you perceive your health in the past two months?*

- ☐ Mycket gott (*Very good*)
- ☐ Ganska gott (*Fairly good*)
- ☐ Någorlunda (*Somewhat*)
- ☐ Tämigen dåligt (*Fairly bad*)
- ☐ Dåligt (*Bad*)

Tycker du att du får tillräckligt med sömn?

*Do you feel you get enough sleep?*

- ☐ Ja, fullt tillräckligt (*Yes, fully*)
- ☐ I stort sett tillräckligt (*Fairly enough*)
- ☐ Någorlunda (*Somewhat*)
- ☐ Tämigen otillräckligt (*Rather too little*)
- ☐ Alldeles för otillräckligt (*Way too little*)

## BAKGRUND/BACKGROUND

Jag är:

*I am:*

- ☐ Man (*Male*)
- ☐ Kvinna (*Female*)
- ☐ Annat (*Other*)

Hur bor du?

*How do you live?*

- ☐ Inneboende (*In a home owned by someone else*)
- ☐ I andra hand (*In a home with second hand contract*)
- ☐ I hyresrätt (*In an apartment with first hand contract*)
- ☐ I bostadsrätt (*In an apartment owned by me/us*)
- ☐ I villa (*In a freestanding house*)

## BAKGRUND/BACKGROUND

Vilken åldersgrupp tillhör du?

*Which age group do you belong to?*

☐ 1925 - 1935

☐ 1935 - 1945

☐ 1945 - 1955

☐ 1955 - 1965

☐ 1965 - 1975

☐ 1975 - 1985

☐ 1985 - 1995

☐ 1995 - 2005

Hur många vuxna (>17 år) personer ingår i ditt hushåll?

*How many adults (>17 yrs) stay in your household?*

☐ Bara jag (*Only me*)

☐ Vi är två (*We are two people*)

☐ Vi är 2-4 personer (*We are 2-4 people*)

☐ Vi är 4-6 personer (*We are 4-6 people*)

☐ Fler än 6 personer (*We are more than 6 people*)

Hur många barn (<18 år) ingår i ditt hushåll?

*How many children (<18 yrs) stay in your household?*

☐ Inga barn (*No children*)

☐ 1 barn (*1 child*)

☐ 2 barn (*2 children*)

☐ 3-4 barn (*3-4 children*)

☐ Fler än 4 barn (*More than 4 children*)