# Predicting life satisfaction from social leisure

*Do we really need to spend our free time with others to live a happy life?*

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# Abstract

Dutch people are considered to be some of the happiest people on earth and according to themselves they live good lives. As we know, Dutch weather is not always great, thus there has to be something else that influences their life satisfaction. Most Dutch people have a good balance between their work life and private life, and they spend at least the same amount of time on leisure as they do on work obligations. This might be a reason for the high ratings of life satisfaction because most of the time, leisure time is spent doing something you like. Doing things we like has a positive influence on our life satisfaction. Because much research has been done on the relation between leisure and life satisfaction, and not much on social leisure in particular, the choice was made to focus on social leisure. This research explores the relation between life satisfaction and social leisure time. Three personal factors that have an influence on life satisfaction – age, subjective health, and level of education – are used as control variables, as these were also measured in the questionnaire used for this research. Previous research found that there are several factors that have an influence on life satisfaction, but this research only focuses on social leisure. Data from the LISS-panel was used to conduct a linear regression analysis. The analysis was done twice, once with people who either did or did not participate in social leisure activities, and once with only people who did participate in social leisure activities. Contrary to what previous research found, this research did not find evidence for the assumptions that the more social leisure activities someone participates in, the higher they score their life satisfaction and whether work situation has an influence on the relationship between life satisfaction and social leisure time.

# Table of contents

# 1. Introduction

Dutch people are considered to be happy people (Centraal Bureau voor de Statistiek, 2019). In 2018, 85% of the Dutch adults said they considered themselves to be satisfied with their life (CBS, 2019). People are always looking for how they can live a better life; life satisfaction is an attribute that is desired by just about every individual (Rohrer et al., 2018). Because life satisfaction extends to different areas of life and society, it is an important research topic in sociology. Much research has been done about life satisfaction, but because it is such a broad topic, much remains unsaid and unknown. Which is why there is always more to find out about what factors of life have an influence on life satisfaction.

Life satisfaction is determined by several different aspects of life which are called domains (Cummins, 1996; Van Praag et al., 2003; Loewe et al., 2014). The domains of life - health, financial situation, social relationships, self-worth, leisure-time, family, and work - all have an influence on an individual's life satisfaction. Each domain has its own influence, and because these domains are part of a person's life, they are all connected to each other (Cummins, 1996; Van Praag et al., 2003; Loewe et al., 2014). This means that one domain can influence another domain and thus, does each domain directly and indirectly influence a person's life satisfaction. This research focuses on two of these domains: work situation and leisure time, it focuses on the relationship between leisure time and life satisfaction and whether this relationship is influenced by one's work situation. In this research work situation is therefore used as a moderator. Because leisure time is such a broad concept (how an individual spends their free time), the choice was made to look into social leisure time (free time spent with other people) to make it narrower. The other aforementioned domains will not be explored in this research. Many researchers have found that spending leisure time with other people has a positive influence on one's self-observed life satisfaction (Waldinger, 2015; Inglehart et al., 2014). In general, it can be said that people who spend much time with others outside of work and other obligations, consider themselves to be happy (Ortiz-Ospina, 2019).

Someone's work situation is one of the domains in life that have an influence on one's life satisfaction. Whether someone is employed, unemployed, or retired decides how they fill in their daily life, therefore the work situation determines whether they can do more of what they enjoy or not (Lachmann et al., 2018). Whether someone is employed or not makes a difference in the amount of time they have for leisure, thus their work situation influences the time they spend on social leisure. It is interesting to find out whether someone's work situation affects the relationship between social leisure time and life satisfaction. This research will thus focus on the association between social leisure time and life satisfaction and whether an individual's work situation has an influence on this association, this means that work situation will be used as a moderator variable in this research.

With this research I hope to give the reader more insight into one factor that has an influence on people's happiness and how people themselves have an influence on this factor and thus, how we can become (even a little) more satisfied with our life. This research paper will focus on the effect of social leisure time on life satisfaction. As said before, Dutch people rate their life satisfaction high. In the Netherlands, the weather is often not great, thus there has to be another factor that causes this high life satisfaction. This research will explore whether social leisure time is one of these factors, because Dutch people spend around 40 hours a week on leisure time, which is more hours than most people spend at work (Roeters, 2019). Previous research showed that doing things you like makes us happier. Dutch people spending half their time on leisure might therefore be an indicator of why they rate their life satisfaction so high. Much research into life satisfaction has found that spending time with others and doing something we like makes people happier than spending much time on their own (Ortiz-Ospina, 2019). Thus, this research will explore whether there is a connection between how much time Dutch people spend on social leisure time and their high scores on life satisfaction. This means that research will be done to find out whether spending leisure time with other people has a positive or negative effect on an individual's satisfaction with life. This kind of research has already been done before and these researchers have found

that (while it depends on the individual) on average, spending time with people outside of work or school makes people happier than spending much time on their own (Ortiz-Ospina, 2019).

The research question that will be answered in this thesis research is:

*What is the effect of social leisure (activities conducted with other people) on life satisfaction in the Dutch population? Is this related to the work situation?*

# 2. Theory

In this chapter I will discuss the concepts used in this research and the relationship between the concepts on which I base the hypotheses and my research. Firstly, the main concepts life satisfaction and social leisure will be defined, and their relationship will be discussed, then I will explain the moderator variable work situation and the influence this concept has on the association between life satisfaction and social leisure. Lastly, I will discuss the control variables.

## 2.1 Life satisfaction and social leisure

Life satisfaction and social leisure are the main concepts in this research. Life satisfaction is often defined as happiness or subjective well-being. The term happiness is very ambiguous and is often only used to describe how a person is feeling, a state of being, whereas life satisfaction or subjective well-being looks at what someone thinks of their life as a whole (Suikkanen, 2011; Veenhoven, 2015). For this reason, the term happiness will not be used in this research. Here, the focus will be on how satisfied an individual is with their life as a whole, which is how Veenhoven (2015) explains life satisfaction. According to Veenhoven (2015), life satisfaction is the subjective appreciation of an individual's life by said individual.

As stated in the introduction, how an individual rates their own life satisfaction depends on several factors or domains in their life (Cummins, 1996; Van Praag et al., 2003; Loewe et al., 2014). Cummins (1996) found that most researchers look at five main domains (emotional well-being, health, social and family relationships, material wealth or well-being, and work) in their research about life satisfaction. Emotional well-being can be seen as leisure, spiritual well-being, and morale (Cummins, 1996). Van Praag et al. (2003) split these five domains into six domains. According to Van Praag et al. (2003), life satisfaction is a combination of satisfaction with six domains of life: job, financial situation, housing, health, leisure, and environment. Loewe et al. (2014) selected seven domains to focus on during their research: health, financial situation, social relationships, self-worth, leisure-time, family,

and work. These examples show that it depends on the researchers which domains are selected when looking at what domains influence life satisfaction. The domains all have common explanatory variables and are therefore strongly interrelated (Van Praag et al. 2003). For example, financial situation is strongly dependent on having a job, and health depends on housing and environment (Van Praag et al., 2003). When a person is satisfied with these different domains of their life, it can be said they are satisfied with their life as a whole.

A combination of the definitions given by Veenhoven (2015) and Cummins (1996), Van Praag et al. (2003), and Loewe et al. (2014) will be used during this thesis research. This choice was made because the research looks at the relation between social leisure time and life satisfaction. Thus, in this instance the domains proposed by Cummins (1996), Van Praag et al. (2003), and Loewe et al. (2014) apply, as leisure is one of the domains considered in all three of their studies. On the other hand, this research relies on the answers of the respondents to see how satisfied they are with their life, which aligns more with the definition of life satisfaction given by Veenhoven (2015).

To measure life satisfaction, this research will use Cantril's ladder. Cantril (1965) was the first known researcher to give respondents a scale to answer a subjective question. He used a scale from 0 to 10 to ask about a person's fears and aspirations. A respondent was asked to define the top and bottom of this 'ladder' and these definitions were then used to define a person's rating. Cantril gave every respondent the possibility to give their own meaning to this ladder, which means that for his research the same rating is not necessarily considered to have the same meaning (Cantril, 1965). Nowadays this scale is still used to let people give ratings, but respondents are no longer asked to give their own definitions to the top and bottom of the ladder, since now the scale has one set meaning. This means that when asked to rate their life satisfaction, a rating of 5 for one person is considered to mean the same as a rating of 5 for another person. Often the meanings of the lowest and the highest ratings are given to respondents, 0 meaning 'not at all […]' and 10 meaning

'completely […]'. This way respondents can answer subjectively, but the meaning of the scale remains the same for the research.

The main aim of this research is to study the relation between social leisure and life satisfaction. As stated, life satisfaction comes from happiness in life's domains. One of these domains is leisure time. According to Van Praag and his colleagues, leisure time is one of the most important domains that are relevant to life satisfaction (Van Praag et al., 2003; Loewe et al., 2014). Leisure time is 'free time, freed from the urgencies of the world, which allows a free and liberated relation to those urgencies and to the world' (Bourdieu, 2000, p. 1). Thus, it is the time where no obligations have to be met and an individual can decide what they want to do. Examples of leisure are practising sports, being part of a club, going out with friends, and taking part in activities organised by organisations. Leisure time can be spent alone and with others. Spending free time with others is called social leisure time. This form of leisure time will be used in this research. How people spend their leisure time is often decided by themselves and voluntarily undertaken (Hills & Argyle, 1998). Since leisure time is voluntarily undertaken, it can be expected that people choose to spend this time for their enjoyment (Hills & Argyle, 1998). Therefore, leisure time is a source of satisfaction over which an individual has a lot of personal control (Hills & Argyle, 1998). Since leisure time is often spent doing something an individual likes, it is to be expected that people who spend leisure time together, all enjoy doing this. Spending time with other people while doing something you enjoy gives a sense of belonging and support, which in turn leads to a higher sense of life satisfaction (Hills & Argyle, 1998; Pressman et al., 2009).

The association between life satisfaction and social leisure is positive, but the direction of this relation is not clear (Becchetti et al., 2012). This means that it is unclear whether life satisfaction is positively influenced by social leisure time, or social leisure time increases with higher life satisfaction. It is possible that when someone is happy with their life, they tend to be more outgoing and thus spend more of their leisure time with other people, but it could also be the case that people who spend more of their leisure time with other people tend to be happier (Becchetti et al., 2012). Despite the direction of the

relationship not being clear, it can be said that people who spend more leisure time with others, consider themselves to be happier with life than people who spend less time with others (Waldinger, 2015).

In this research it is important that leisure activities are spent with other people because the focus is on social leisure time and not on leisure time as a whole. As stated before, there are multiple ways to spend leisure time with other people and this research focuses on organisational activities. Organisational activities are always organised for more people and will only take place if a group of people participate. The choice was made to use organisational activities as research concept for social leisure time because this study specifically focuses on the fact that leisure time is spent in social situations. Organisational activities have multiple participants, organisations do not organise activities for one individual. Where other leisure activities, such as going to the cinema, going out for dinner, or practising a sport, can also be spent alone. In the dataset that was used in this research it was not specified whether these aforementioned activities were spent with other people, therefore the choice was made to use organisational activities as social leisure time. Activities that are conducted by organisations are participated by people with the same mindset, because participants know what to expect. They have knowingly chosen to be a member of the organisation and take part in its activities; therefore, it can be expected that the participants enjoy these activities. Doing things they like makes people happy (Hills & Argyle, 1998; Pressman et al., 2009). Thus, it can be said that people who participate in activities organised by organisations of which they are a member, enjoy the activities with other people and thus enjoy their social leisure time. In general, it can therefore be said that people who take part in these activities are satisfied with their life.

Taking the above into consideration, the first hypothesis is as follows:

*Hypothesis 1. Social leisure time has a positive influence on an individual's life satisfaction.*

## 2.2 Work situation

As explained in the previous section, several domains have an influence on life satisfaction (Cummins, 1996; Van Praag et al., 2003; Loewe et al., 2014). This thesis research will focus on the influence of one domain (leisure time) on life satisfaction and whether another domain (work situation) has an influence on the relationship between these two. For the sake of parsimony, no other domains will be included. In this research work situation will mean whether an individual is employed, unemployed, or retired. Being employed, unemployed, or retired has a big influence on how a person organises their life. An unemployed person or retired person has a lot of free time to plan, whereas an employed person has less free time, because they have a job. Not only does an individual's work situation have an influence on how they arrange their daily lives, but it also has an influence on an individual's life satisfaction. As stated in an earlier section, someone's work situation is a domain of life that influences our satisfaction with life. The influence of an individual's work situation on their life satisfaction can be explained in different ways.

Workers are often healthier than non-workers and are less likely to suffer from illnesses or disabilities (Loewe et al., 2014). This means that by having a job, another domain of life – health – increases. With this increase in health, life satisfaction as a whole increases as well, because as said before, increases in domains that have an influence on life satisfaction, when the other domains are considered to be constant, cause an increase in life satisfaction. This way work situation has an indirect positive effect on life satisfaction via health. Another explanation is that employees have social relationships at work and social relationships have a positive influence on life satisfaction (Amati et al., 2018). Social participation, along with social relationships, in this case with colleagues, is an important predictor of life satisfaction (Harlow & Cantor, 1996). Satisfying interactions make us happier (Staff, 2020). Losing a job limits the opportunity for social interaction, and with that daily social interactions with colleagues, which are important for people (Amati et al., 2018; Harlow & Cantor, 1996). Contradictory, not having a job, in this case more often retired rather than unemployed, gives individuals more opportunities to spend time with friends or

meeting new people, therefore being jobless might increase social participation (Harlow & Cantor, 1996). This contradiction of the influence of the work situation on life satisfaction is mostly due to age. Younger people benefit from meeting new people at work, and thus losing a job, or being unable to find a job, limits their social interactions and possibilities to meet new people and form a social network (Harlow & Cantor, 1996; Patacchini & Engelhardt, 2016). Older people who get to retire often have formed their social network during their working years, hence losing the social interactions at work does not necessarily mean they lose their social network (Patacchini & Engelhardt, 2016).

Taking this all into account, while also taking knowledge of the contradiction, in this research I assume that employed people have more daily interactions with colleagues, but retired people have more possibilities to spend time with their social network outside of work. Unemployed people often do not have a big social network yet, and because they are not employed, they do not have the opportunity to broaden their social network. Because there is an obvious distinction between employed, unemployed and retired people, the choice was made to look at the concept of the work situation in these three terms, rather than looking at an individual's actual job.

For the influence of work situation on the relation between social leisure and life satisfaction, I will focus on the Marshallian Law of Diminishing Marginal Utility. According to Marshall, 'there is utility only as far as there is a desire (or want) being satisfied' (Ormazabal, 1995, p. 96). Marshall's law states that once a desire is satisfied, a new desire arises, and once this desire is satisfied, it is replaced by a new one, etc. Thus, once a desire is satisfied, more is no longer needed (Ormazabal, 1995). The additional level of satisfaction decreases with each increase in units of consumption within the same period of time (Ormazabal, 1995). Applying this theory to leisure time, it can be said that the more free time an individual has, the less it satisfies them, and the less they want of it. The other way around, when someone has a small amount of free time, they crave it more, and when they get to have leisure time, they appreciate it more (Just, 1980). This would suggest that leisure time has more influence on someone's life satisfaction when they do not have much of it. Based on

this statement I assume that leisure time has more influence on the life satisfaction of employed people, than of unemployed and retired people. Retired people often have the most leisure time and based on the Law of Diminishing Marginal Utility, it would give less satisfaction. In this research, unemployed people are often looking for a job and therefore have less leisure time than retired people, but more leisure time than employed people. This suggests that unemployed people are happier with leisure time than retired people, but less happy with leisure time than employed people.

Taking the above into account, the following hypotheses can be established:

*Hypothesis 2. Employed people experience more effect of social leisure time on their life satisfaction than unemployed people.*

*Hypothesis 3. Employed people experience more effect of social leisure time on their life satisfaction than retired people.*

## 2.3 Control variables

As stated before, several factors have an influence on our life satisfaction. The choice was made to only look at the influence of two of these factors. Three factors will be considered constant in this research: level of education, general health, and age.

People with a high level of education — people who went to college or university — consider themselves to be happier than people with a lower level of education (Melin et al., 2003; Daniels, 2015). This is often related to the fact that people with a higher level of education find a better paying job than people with a lower level of education. Against widespread belief, having more money does make people more satisfied with their life (Muilenburg-Trevino et al., 2012; Schnaiter, 2013; Berger, 2021). Having a higher paying job leads to more control over life (Berger, 2021). Being able to make choices about how to live your life and having more stability in life leads to a feeling of security (Berger, 2021). This feeling of security is connected to a higher sense of life satisfaction (Muilenburg-Trevino et al., 2012; Berger, 2021). This way, a high level of education is associated with a higher sense of life satisfaction (Melin et al. 2003; Daniels, 2015). Since this research does not

focus on the association between level of education and life satisfaction, the level of education of the respondents is considered to be constant, because it could influence the outcome.

Another control variable in this research is subjective health. Health is one of the domains considered to influence life satisfaction, but subjective health is considered an even more important determinant of life satisfaction (Palmore & Luikart, 1972; Cummins, 1996; Van Praag et al., 2014). Subjective health is the answer to how healthy a person considers themselves to be, there is no input from a doctor needed for this, it is one's own perception (Palmore & Luikart, 1972). Self-reported health is a decisive parameter when it comes to subjective well-being and life satisfaction (Palmore & Luikart, 1972; Schnaiter, 2013). Subjective health being such a key factor for life satisfaction can be linked to several other factors. Feeling healthy gives people more freedom and independency (Schnaiter, 2013). This relates to the sense of control that was considered earlier in this chapter. Having control over your life and being able to make your own choice gives people a sense of security and thus a higher sense of life satisfaction (Muilenburg-Trevino et al., 2012; Berger, 2021). People who feel unhealthy often feel less socially included (Schnaiter, 2013). Physical and mental handicaps can take away the possibility of social interactions and independency (Schnaiter, 2013). As stated earlier, social interaction is a crucial factor when it comes to predicting life satisfaction (Harlow & Cantor, 1996). This research does not focus on subjective health, but because it is one of the main determinants for life satisfaction, this variable will be considered constant for every respondent, this way subjective health does not have an influence on the outcome.

A third important factor when it comes to predicting a person's life satisfaction is age. Someone's life satisfaction is highly determined by their age; this can be linked to the fact that older people are often less healthy than younger people, thus have less independency and social interaction, which can lead to a feeling of dissatisfaction (Harlow & Cantor, 1996; Schnaiter, 2013). However, it is also said that life satisfaction has a U-shape over time; life satisfaction is considerably high for young people, low for people in their forties to sixties,

and gets higher again for older people (Blanchflower & Oswald, 2019). This U-shape of life satisfaction is said to be linked to the phenomenon of 'midlife-crisis' (Blanchflower & Oswald, 2019). This can be linked to the fact that people in their forties peak when it comes to depression (Blanchflower & Oswald, 2008). These two examples show that there are several ways in which age has an influence on perceived life satisfaction. Age is an important determinant of life satisfaction, but it will not be used as a predictor in this research. Therefore, the choice was made to consider age to be constant. When age is used as a control variable, everyone will be considered to be of the same age, thus the effect it has on life satisfaction is no longer perceived.

The conceptual model below shows the direction this research will be undertaken.
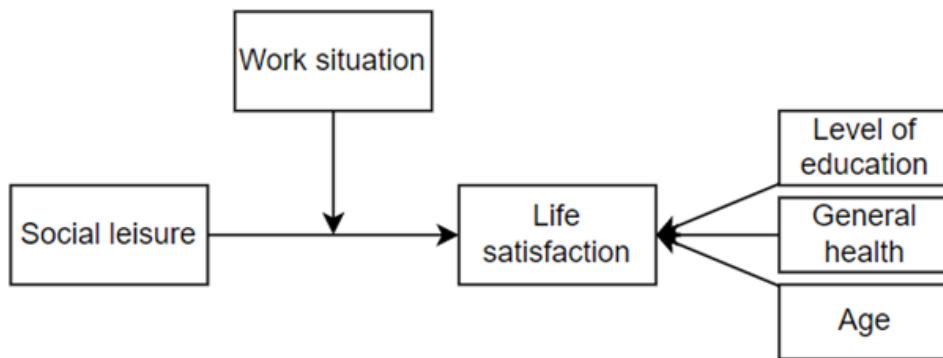


*Figure 1: Conceptual model*

# 3. Methods

## 3.1 Research design

The research question 'What is the effect of social leisure (activities conducted with other people) on life satisfaction in the Dutch population? Is this related to the work situation?' focuses on the connection between participation in social activities and perceived life satisfaction, and whether an individual's occupation has an influence on this connection.

## 3.2 Participants

This research draws on data from the Longitudinal Internet studies for the Social Sciences panel (LISS-panel) of CentERdata, which is a study conducted in the Netherlands. The LISS-panel is the core element of the Measurement and Experimentation in the Social Sciences project, which enables researchers to use existing data, conduct their own survey or design a special experiment. The LISS-panel consists of 5,000 households, comprising approximately 7,500 individuals that complete the online questionnaires every month. For this research wave 13 of the LISS Core panel will be used. The LISS-panel is based on a true probability sample of households that was from the population register by Statistics Netherlands. People who had difficulty participating because they did not have a computer or an internet connection were provided with this, this way everyone from the draw was able to participate. Researchers tried to reduce any possible bias by providing the supplies needed to participate. The participants receive payment for every questionnaire they fill in.

## 3.3 Operationalisations

The main variables used in this research are the dependent variable *life satisfaction*, the independent variable *social leisure* and the moderator variable *work situation*. The control variables are *age*, *health*, and *education*.

The dependent variable *life satisfaction* was measured in the questionnaire with the question 'How satisfied are you with your life…?'. Respondents could answer this question

with a rating of 0 to 10, 0 meaning 'not satisfied at all', and 10 meaning 'completely satisfied'. Respondents could also give a score of -9, meaning 'I don't know'. This score of -9 and missing scores were considered as nonresponse and will not be taken into consideration for this research. This operationalisation leaves the research with 5279 respondents for this variable.

The independent variable *social leisure* was measured in the questionnaire using 13 different questions. These questions asked if a respondent had participated in an activity of a certain organisation. These organisations range from political parties to environment protection organisations, and from cultural organisations to trade unions. For this research, a new variable participated was constructed where the answers of the 13 different organisations were transformed into one score. This means that a respondent who has participated in activities of all organisations will get a score of 13 on this new variable, someone who has participated in 5 activities will get a score of 5, and so on. A respondent who has not participated in any activities will thus get a score of 0 on the new variable. This leaves the research with 5948 respondents for this variable.

The moderator variable *work situation* was measured in the questionnaire with the question about primary occupation. Respondents could answer question with: (1) paid employment, (2) works or assists in family business, (3) autonomous professional, freelancer, or self-employed, (4) job seeker following job loss, (5) first-time job seeker, (6) exempted from job seeking following job loss, (7) attends school or is studying, (8) takes care of the householding, (9) is pensioner ([voluntary] early retirement, old age pension scheme), (10) has (partial) work disability, (11) performs unpaid work while retaining unemployment benefit, (12) performs voluntary work, (13) does something else, (14) is too young to have an occupation. The new variable occupation has three groups, one group for employed respondents, one group for unemployed respondents, and one group for retired respondents. The respondents who had a score of 1, 2, 3, 10, 11, 12, or 13 were put in the employed group; they got a score of 1 on the new variable. Respondents who had a score of 4, 5, 6, 7, or 8 were put in the unemployed group; they got a score of 2 on the new variable.

The respondents with a score of 9 were put in the retired group, meaning they got a score of 3 on the new variable. To be able to use this variable in the regression analysis, dummy variables needed to be constructed. Of these three groups two dummy variables were made. One dummy variable called unemployed, and one called retired. For the dummy variable unemployed a score of 1 means the respondent is unemployed and a score of 0 means the respondent is employed or retired. For the dummy variable retired a score of 1 means the respondent is retired and a score of 0 means the respondent is employed or unemployed. This makes the group with employed respondents the reference group. Respondents who said they were too young to have an occupation and respondents who did not fill in this question will be considered as missing data. The choice was made to put volunteers and students in the employed group, since it is about the amount of time participants spend working and not about their actual occupation. For the same reason, the choice was made to put people searching for a job in the unemployed group. This leaves the research with 6795 respondents for this variable.

The control variable *health* was measured using the question 'How would you describe your health, generally speaking?' in the questionnaire. Respondents could answer this question with: (1) poor, (2) moderate, (3) good, (4) very good, (5) excellent. Respondents who did not answer this question will be considered as nonresponses. The scores of the respondents will remain the same. This leaves the research with 5730 respondents for this variable.

The control variable *age* was measured in the questionnaire with the question about how old the respondent was. The answers ranged from 16 to 103. The choice was made to only use respondents aged 18 and older in this research, because previous research also mainly focuses on adults. This way I can make better comparisons and possibly generalise about this group. This means I decided to consider respondents aged 16 and 17 as nonresponses. This leaves the research with 6612 respondents for this variable.

The control variable *education* was measured using the question about a respondent's highest level of education with a diploma. Respondents could answer this

question with: (1) primary school, (2) vmbo, (3) havo/vwo, (4) mbo, (5) hbo, (6) wo, (7) other, (8) not (yet) completely any education, (9) not yet started education. The choice was made to consider respondents who answered with scores of 7, 8, or 9 and respondents who did not answer the question as nonresponses. I made this choice, because for this research the level of education is important and not whether a respondent has followed an education or not. This leaves the research with 6511 respondents for this variable.

In total, 2223 respondents were considered as nonresponses for at least one or more relevant questions. The 4572 respondents that did answer all the relevant questions with useful answers will be taken into account in this research. The end results and conclusions are thus based on these 4572 respondents.

## 3.4 Analysis plan

This thesis research will use a linear regression analysis to answer the research question. To find out the extent to which the independent and moderation variables have an influence on the dependent variable, several regression models must be estimated.

The first regression model will look at the connection between life satisfaction and the control variables general health, education level, and age. To be able to use these three variables as control variables, a connection between the variables and the dependent variable is needed. This first model will determine if this association exists.

In the second model the independent variable will be added to the first model. This model will look at the connection between life satisfaction and participant activity, controlled for general health, education level, and age.

In the third model the moderation variable will be added. This model will look at whether occupation has an influence on the connection between life satisfaction and participation activity, controlled for general health, education level, and age.

In the fourth model the interaction between the independent variable and the moderator will be added. If the interaction between participant activity and occupation is significant, then the moderation is supported.

# 4. Results

Before the regression analysis can be observed it is important to look at the variables that will be used in the analysis. In this chapter the univariate and bivariate descriptive statistics will be discussed, once more information is known about the data and the variables, the regression analysis can be constructed. Based on the results of the regression analysis the research question will be answered with help of the hypotheses that were determined earlier.

## 4.1 Descriptive statistics

### 4.1.1 Univariate statistics

Table 1 shows the univariate statistics of all the variables used in the upcoming regression analysis. Looking at the dependent variable life satisfaction the average score on the question 'How satisfied are you with your life at the moment?' is 7.27. This means that overall, the respondents in this research say they are satisfied with their life, considering a score of 0 means not satisfied at all and a score of 10 means completely satisfied.

The average score of participant activity is very low: 0.51. This average score and the median of 0 means that most respondents in this research did not participate in any activity. Looking further into the results of this variable it is clear that almost 70% of the respondents (3192 respondents) did not attend any organisational activities and only 0.1% (3 respondents) participated in all thirteen activities. This table is shown in appendix A.

The average age of the respondents in this research is 54 years old. Most respondents in this research are employed, only 16% are unemployed and 28% are retired. Most respondents (more than 56.4%) indicate their health is good, only 1.4% have poor health and almost 5% say their health is excellent. Most respondents have had mbo or hbo education with respectively 25.3% and 27.5%, this corresponds to the Dutch population (Maslowski, 2020).

**Table 1**
*Description of the variables used in the analysis: total amount of respondents, mean (standard deviation), minimum and maximum value, and median.*

| Variables | Mean (Standard deviation)[a] | Min | Max | Median | N total |
|---|---|---|---|---|---|
| Participant activity | 0.51 (1.07) | 0 | 13 | 0 | 4572 |
| Life satisfaction | 7.27 (1.51) | 0 | 10 | 7 | 4572 |
| Age | 54.38 (17.47) | 18 | 103 | 57 | 4572 |
| Occupation 1 = employed 2 = unemployed 3 = retired | 56.01% employed 15.97% unemployed 28.02% retired | | | | 4572 |
| General health 1 = poor 2 = moderate 3 = good 4 = very good 5 = excellent | 1.44% poor 15.70% moderate 56.39% good 21.61% very good 4.86% excellent | | | | 4572 |
| Education level 1 = primary school 2 = vmbo 3 = havo/vwo 4 = mbo 5 = hbo 6 = wo | 2.97% primary education 19.84% vmbo education 10.72% havo/vwo education 25.28% mbo education 27.49% hbo education 13.69% wo education | | | | 4572 |

*[a] For categorical variables, the frequency distribution is given in percentages*

## 4.1.2 Bivariate statistics

Table 2 shows the association measures between all the variables used in this research. Most association measures correspond with assumed associations; older people are retired, thus the t-test score between age and retired is remarkably high ($t(4572 = 59.48$, $p<0.01$)). There is also a strong positive association between general health and life satisfaction ($r(4572) = 0.31$, $p<0.01$), this means that the healthier respondents are, the higher they score their life satisfaction. There is also a quite strong association between age and life satisfaction ($r(4572) = 0.11$, $p<0.01$), this suggests that older respondents are happier with their life than younger people.

**Table 2**
*Correlation between continuous variables and Cramer's V coherence between categorical variables with N = 4572*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7 |
|---|---|---|---|---|---|---|---|
| 1 Participant activity | - | | | | | | |
| 2. Life satisfaction | 0.01 | - | | | | | |
| 3. General health | 0.03 | 0.31** | - | | | | |
| 4. Education level | 0.10** | 0.04** | 0.16** | - | | | |
| 5. Age | -0.05** | 0.11** | -0.21** | -0.21** | - | | |
| 6. Unemployed | 2.42[b]** | -4.96[b]** | 1.50[b] | -11.07[b]** | -13.87[b]** | - | |
| 7. Retired | -1.33[b]** | 6.09[b]* | -9.29[b]** | -8.86[b]** | 59.48[b]** | 0.27[a]** | - |

[*] *Correlation is significant at p<0.05; two-tailed test* [**] *Correlation is significant at p<0.01; two-tailed test*
[a] *Coherence measured with Cramer's V;* [b] *Coherence measured with t-test for difference in means*

## 4.2 Model evaluations

Table 3 shows the linear regression analysis, for this research four models were estimated with model 1 containing the dependent variable and the control variables. In model 2 the independent variable participant activity was added, in the third model the moderator variables were added and in the last model the interaction variables were added. Each model has almost the same score for R-square adjusted. The first two models have a score of 0.136 and the last two models have a score of 0.137. This means that participating in organisational activities does not explain more variance in life satisfaction than the control variables and that the moderator variables only explain 0.1% more variance in life satisfaction than the control variables. This confirms that the control variables explain most of the variance in life satisfaction.

Looking at the F-change scores, only the third model has a significant F-change value (F-change(2, 4565) = 3.40, p=0.03). This means that these variables together are better at predicting the scores on life satisfactions than the combination of variables in the other three models. The added variables that make this model better at predicting life satisfaction are the two moderator variables unemployed and retired.

In model 4 the interaction variables were added to the third model. This model does not explain more variance in life satisfaction than the other models as the F-change value is

not significant (F-change(2, 4563) = 1.30, p=0.27). The interaction variables are not significant, and the other coefficients remain the same.

## 4.2.1 Assumptions

To be able to interpret the results of the linear regression analysis, there are several assumptions that must be met. These assumptions are explained in detail in appendix C. The first assumption of independent observations was not met since some respondents live in the same household. This means household members could influence each other's answers. The second assumption of linearity was met, social leisure does influence life satisfaction. The third assumption of homoscedasticity and the fourth assumption of normality were both met as well.

The fact that the first assumption of independency was violated, means there might be misleading results but because this is taken into account, the choice was made to continue this research.

## 4.2.2 Multicollinearity

Multicollinearity occurs when independent variables are highly correlated with another variable in a regression model. This means that these variables explain the same variance in the dependent variable. Multicollinearity can be found using the VIF-score of the complete model, when the score of VIF is 1, it means there is no correlation between the variables and a VIF-score higher than 5 means there is high multicollinearity between the given variable and the other variables. In this research the two highest VIF-scores are 1.85 and 1.92. These scores are respectively for the variables retired and age. These two variables are strongly associated, because older people are often the only people that are retired. Since the scores are not higher than 5, the choice was made to continue using these variables to answer the research question. The other variables are not strongly associated with each other, this means they all explain their own portion of the variance in life satisfaction.

### 4.2.3 Outliers

Outliers in this research are discussed in detail in appendix C. The seventy outliers in this research all scored their life satisfaction 4 or lower, when their predicted value was 5.4 or higher. This suggests that the model does not fit well with respondents who score their life satisfaction low.

**Table 3**
*Model estimates of all independent variables, including slopes, standard deviation, p-value of the slope, VIF-value of the fourth model, adjusted R² value, F-change value, and p-value of F-change.*

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | VIF |
|---|---|---|---|---|---|---|---|---|---|
| | b (SE) | p | b (SE) | p | b (SE) | p | b (SE) | p | |
| Constant | 3.98 (0.13) | <0.01 | 3.97 (0.14) | <0.01 | 4.07 (0.15) | <0.01 | 4.08 (0.15) | <0.01 | |
| Level of education | 0.03 (0.02) | <0.05 | 0.03 (0.02) | <0.05 | 0.02 (0.02) | 0.15 | 0.02 (0.02) | 0.15 | 1.12 |
| General health | 0.70 (0.03) | <0.01 | 0.70 (0.03) | <0.01 | 0.70 (0.03) | <0.01 | 0.70 (0.03) | <0.01 | 1.08 |
| Age | 0.02 (0.00) | <0.01 | 0.02 (0.00) | <0.01 | 0.02 (0.00) | <0.01 | 0.02 (0.00) | <0.01 | 1.92 |
| Main effect: Participant activity | | | 0.00 (0.02) | 0.96 | 0.00 (0.02) | 0.86 | 0.01 (0.02) | 0.75 | 1.06 |
| Moderator: Unemployed (0 = Employed or retired; 1 = Unemployed) | | | | | -0.16 (0.06) | <0.05 | -0.15 (0.06) | <0.05 | 1.14 |
| Moderator: Retired (0 = Employed or unemployed; 1 = Retired) | | | | | -0.01 (0.06) | 0.87 | -0.01 (0.06) | 0.93 | 1.85 |
| Interaction: Participant activity x unemployed | | | | | | | -0.08 (0.05) | 0.11 | 1.11 |
| Interaction: Participant activity x retired | | | | | | | -0.02 (0.05) | 0.68 | 1.11 |
| $R_a^2$ | 0.14 | | 0.14 | | 0.14 | | 0.14 | | |
| Partial F | 241.57 | <0.01 | 0.00 | 0.96 | 3.40 | 0.03 | 1.30 | 0.27 | |
| N | 4572 | | 4572 | | 4572 | | 4572 | | |

## 4.3 Hypothesis testing

Of all the variables used in this regression analysis only the coefficients of two control variables and one moderator variable are significant. Model 4 will be used to analyse the predictors and moderator and will also be used to test the hypotheses.

The coefficients of general health and age are both significant ($p<0.01$). The coefficient of general health is 0.7, this means that for each point a respondent scores higher on general health, on average their score on life satisfaction increases with 0.7 points. Thus, it can be concluded that the healthier a person is, the happier they are with their life. This

corresponds with what was shown in table 2. The variable age has a significant coefficient of 0.02. This means that on average a respondent scores 0.02 points higher on life satisfaction than a respondent who is a year younger than them. This is a small difference, it could seem as if there is close to no effect of age on life satisfaction, but since age is looked at in years, there is a bigger difference between young people and old people. Someone who is 70 years old scores 1 point higher on life satisfaction than someone who is 20 years old, on average, this means that the older the respondents get, the slightly happier they are with their life. This also corresponds with what was shown in table 2.

The first hypothesis suggested that people who participate in organisational activities would rate their life satisfaction higher than people who did not participate in these activities. The effect of participated activity on life satisfaction, controlled for the other variables in the full model was 0.01 and not significant (p=0.75). Because participating in activities has a scale from 0 to 13, people who participate in all 13 activities rate their life satisfaction 0.13 points higher than someone who did not participate in any activities. However, because the coefficient is not significant, there was no evidence found that supports the first hypothesis.

The second hypothesis suggested that employed people felt a bigger influence of social leisure time on their life satisfaction than unemployed and retired people. This hypothesis can be tested using the interaction variables. Both interaction variables are negative and not significant (ß=-0.08, p=0.11; ß=-0.02, p=0.68). Since the reference group for both these dummy variables was the employed group, I can conclude that the negative coefficient for both interaction variables means that the effect of social leisure time on life is stronger for employed people than it is for unemployed and retired people. However, because both interaction variables are not significant, there was no evidence found that supports the second hypothesis. There was also no evidence found for the last hypothesis since this hypothesis uses the same interaction variables and builds upon the second hypothesis.

# 5. Results additional analysis

Because no evidence was found for any of the hypotheses, it was decided to do the analysis again without the respondents who did not participate in any of the activities. In the total dataset there were 3192 respondents who did not participate in any activities. As stated in the first analysis the other variables also had respondents who did not answer the question or gave an answer that could not be used in this research. After taking all the missing data out of the dataset, the second analysis will contain 1380 respondents.

## 5.1 Descriptive statistics

### 5.1.1 Univariate statistics

Table 4 shows the univariate statistics of the variables used in this research. In this second analysis the means of the variables do not change much. The dependent variable life satisfaction has an average score of 7.37 which means that overall, the respondents who do participate in one or more organisation activity are satisfied with their life. On a scale from 0 to 10 an average score of 7.37 is high. The average score of participant activity is obviously higher in this analysis than in the one before, since the people who did not participate in any activities are no longer taken into account and this was almost 70% of the respondents. The average score is 1.71, this means that on average participants participated in almost two activities. In appendix A it is shown that 62.2% of the respondents participated in one activity, almost 22.5% participated in two activities, 8.2% participated in three activities and about 8% participated in four or more activities. Only 0.2%, which translates to three respondents participated in all thirteen activities.

The average age of the respondents is almost 54 years old. Most respondents are employed (55.1%), almost 17% are unemployed and 28.2% of the respondents are retired. Looking at the scores for general health it can be seen that most respondents say they have good health (54.1%). As for level of education, most respondents have had an mbo or hbo education with respectively 21.5% and 30.7%.

**Table 4**
*Description of the variables used in the analysis: total amount of respondents, mean (standard deviation), minimum and maximum value, and median.*

| Variables | Mean (Standard deviation)[a] | Min | Max | Median | N total |
|---|---|---|---|---|---|
| Participant activity | 1.71 (1.34) | 1 | 13 | 1 | 1380 |
| Life satisfaction | 7.37 (1.42) | 0 | 10 | 8 | 1380 |
| Age | 53.81 (18.05) | 18 | 103 | 57 | 1380 |
| Occupation 0 = employed 1 = unemployed 2 = retired | 55.07% employed 16.67% unemployed 28.26% retired | | | | 1380 |
| General health 1 = poor 2 = moderate 3 = good 4 = very good 5 = excellent | 1.16% poor 13.84% moderate 54.06% good 25.29% very good 5.65% excellent | | | | 1380 |
| Education level 1 = primary school 2 = vmbo 3 = havo/vwo 4 = mbo 5 = hbo 6 = wo | 2.25% primary education 14.28% vmbo education 12.46% havo/vwo education 21.52% mbo education 30.72% hbo education 18.77% wo education | | | | 1380 |

[a] For categorical variables, the frequency distribution is given in percentages

## 5.1.2 Bivariate statistics

Table 5 shows the association measures between all the variables used in this research. The table shows the correlation between two continuous variables, the Cramer's V value between two binary variables and the t-test score between a continuous and a binary variable. Looking at the correlation, it is clear that the highest correlation exists between general health and life satisfaction, and age and general health. The correlation between general health and life satisfaction shows that there is a positive correlation between the two that is significant ($r(1380) = 0.30$, $p<0.01$). This means that the healthier the person, the happier they are with their life. The correlation between age and general health is negative and significant ($r(1380) = -0.25$, $p<0.01$). This means that the older the respondent, the less healthy they are. Looking at the t-test values it can be concluded that for most variables there is a significant difference in the group means. The t-test score for life satisfaction for unemployed people is negative and significant ($t(1380 = -4.29$, $p<0.01$)). This means that unemployed people are less satisfied with their life than people who are employed or retired.

The t-test score for life satisfaction for retired people is positive and significant (t(1380 = 3.36, p<0.05)). This means that retired people are happier with their life than employed and unemployed people. Based on this information it can be said that retired people score their life satisfaction the highest, employed people score their life satisfaction the second highest and unemployed people score their life satisfaction the lowest. The other associations are not relevant for this research.

**Table 5**
*Correlation between continuous variables and Cramer's V coherence between categorical variables with N = 1380*

|  | 1. | 2. | 3. | 4. | 5. | 6. | 7 |
|---|---|---|---|---|---|---|---|
| 1 Participant activity | - | | | | | | |
| 2. Life satisfaction | -0.08[**] | - | | | | | |
| 3. General health | -0.03 | 0.30[**] | - | | | | |
| 4. Education level | 0.04 | 0.03 | 0.14[**] | - | | | |
| 5. Age | -0.08[**] | 0.13[**] | -0.25[**] | -0.17[**] | - | | |
| 6. Unemployed | 2.59[b**] | -4.29[b**] | 1.47[b] | -6.14[b**] | -10.58[b**] | - | |
| 7. Retired | -2.20[b] | 3.36[b*] | -5.65[b**] | -4.13[b] | 32.04[b**] | 0.28[a**] | - |

*[*]Correlation is significant at p<0.05; two-tailed test [**]Correlation is significant at p<0.01; two-tailed test*
*[a] Coherence measured with Cramer's V; [b] Coherence measured with t-test for difference in means*

## 5.2 Model evaluations

Table 6 shows the linear regression analysis done to be able to answer the research question for this research. The analysis that was done is a hierarchic linear regression analysis, this means variables were added to an existing model which makes it possible to see if added variables explain more variance in the dependent variable than the variables that are already in the model.

There is a small difference between the R-square adjusted scores in the models. Model 1 has a score of 0.134, model 2 scores 0.135, model 3 scores 0.139, and model 4 scores 0.138. This means that the variables added in models 2 and 3 explain a bit more variance in life satisfaction than the variables that were already in the model. The interaction variables do not explain more variance in life satisfaction than the variables already in the model. This difference is shown in the table in Appendix B. Model 2 explains 0.1% variance more than model 1, and model 3 explains 0.4% more variance than model 2.

Looking at the F-change scores, the second and fourth models are not significant at 0.05 level (F-change(1,1375) = 3.80, p=0.052; F-change(2,1371) = 0.61, p=0.55)). The

variables together in model 3 are better at predicting the scores on life satisfaction than the combination of variables in model 2.

In model 4 the interaction variables were added to the third model. This model does not explain more variance in life satisfaction than the other models as the R-square adjusted score is lower than the score for model 3. The interaction variables are also not significant, and the other coefficients remain the same.

### 5.2.1 Assumptions

As stated in chapter 4.2.1, the assumptions are discussed in detail in appendix C. Since the same dataset is used, what was said in chapter 4.2.1 remains the same.

### 5.2.2 Multicollinearity

Multicollinearity was explained in chapter 4.2.2. The highest VIF-scores in this research are 1.80 and 1.91. These scores are respectively found for the variables retired and age. This was the same for the first research. These variables are strongly associated with each other, because older people are often the only people that are retired, age is associated with being retired or not. The scores are not higher than 5, thus the choice was made to continue using all the variables to answer the research question. The other scores are relatively low, which means the other variables are not strongly associated with each other. They explain their own portion of the variance in life satisfaction.

### 5.2.3 Outliers

Outliers in this research are discussed in detail in appendix C. The twenty outliers in this research all scored their life satisfaction 4 or lower, when their predicted value was 5.9 or higher. This was the same in the first analysis and suggests that the model still does not fit well with respondents who score their life satisfaction low.

**Table 6**
*Model estimates of all independent variables, including slopes, standard deviation, p-value of the slope, VIF-value of the fourth model, adjusted R² value, F-change value, and p-value of F-change.*

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | VIF |
|---|---|---|---|---|---|---|---|---|---|
| | *b* (SE) | *p* | *b* (SE) | *p* | *b* (SE) | *p* | *b* (SE) | *p* | |
| Constant | 4.31 (0.24) | <0.01 | 4.43 (0.25) | <0.01 | 4.61 (0.26) | <0.01 | 4.61 (0.26) | <0.01 | |
| Level of education | 0.02 (0.03) | 0.43 | 0.02 (0.03) | 0.40 | 0.01 (0.03) | 0.82 | 0.01 (0.03) | 0.81 | 1.11 |
| General health | 0.64 (0.05) | <0.01 | 0.63 (0.05) | <0.01 | 0.63 (0.05) | <0.01 | 0.63 (0.05) | <0.01 | 1.09 |
| Age | 0.02 (0.00) | <0.01 | 0.02 (0.00) | <0.01 | 0.02 (0.00) | <0.01 | 0.02 (0.00) | <0.01 | 1.91 |
| Main effect: Participant activity | | | -0.05 (0.03) | 0.05 | -0.05 (0.03) | 0.07 | -0.05 (0.03) | 0.09 | 1.14 |
| Moderator: Unemployed (0 = Employed or retired; 1 = Unemployed) | | | | | -0.28 (0.10) | <0.01 | -0.27 (0.10) | <0.05 | 1.17 |
| Moderator: Retired (0 = Employed or unemployed; 1 = Retired) | | | | | -0.04 (0.11) | 0.73 | -0.04 (0.11) | 0.74 | 1.80 |
| Interaction: Participant activity x unemployed | | | | | | | -0.07 (0.07) | 0.29 | 1.10 |
| Interaction: Participant activity x retired | | | | | | | -0.04 (0.08) | 0.60 | 1.20 |
| $R_a^2$ | 0.13 | | 0.14 | | 0.14 | | 0.14 | | |
| Partial F | 71.96 | <0.01 | 3.80 | 0.05 | 3.61 | <0.05 | 0.61 | 0.55 | |
| N | 1380 | | 1380 | | 1380 | | 1380 | | |

# 5.3 Hypothesis testing

Compared to the first analysis there are now more significant coefficients in this research at a significance level of $p < 0.05$. In the second model, the main effect, the effect of participant activity on life satisfaction is almost significant, with a coefficient score of -0.05. This suggests that people who score higher on participant activity, score lower on life satisfaction. With every extra activity a person participates in, they score 0.05 points lower on life satisfaction, thus a person who participated in 11 activities scores 0.5 points lower on life satisfaction than someone who participated in one activity. The first hypothesis suggested the opposite: people who participate in organisational activities would rate their life satisfaction higher than people who did not participate in these activities. The second model found evidence that this is not the case, therefore I cannot accept the first hypothesis.

Looking at model 3 there are three significant effects. The significant effects were found for general health, age, and unemployed. The control variables are both positive, the

moderator variable is negative. For the control variables this respectively means that healthier people consider themselves to be happier with their life than unhealthy people (β=0.63, p<0.01), this effect is remarkably high, for every point that a respondent scores higher on general health, they score 0.63 higher on life satisfaction. Age has a small effect on life satisfaction, but it is significant. With every year a person ages, they score 0.02 higher on life satisfaction (p<0.01). This was the same in the first analysis. The moderator variable unemployed has a significant, negative score of 0.28 (p<0.05) this means that unemployed people score 0.27 points lower on life satisfaction than people who are employed or retired. This means that unemployed people are less happy with their life than employed or retired people.

Both interaction variables are still negative, which means that the conclusions from the previous analysis remain the same. The second hypothesis suggested that employed people felt a bigger influence of social leisure time on their life satisfaction than unemployed and retired people. This hypothesis can be tested using the interaction variables. Both interaction variables are negative and not significant (ß=-0.07, p=0.29; ß=-0.04, p=0.60). Since the reference group for both these dummy variables was the employed group, I can conclude that the negative coefficient for both interaction variables means that the effect of social leisure time on life is stronger for employed people than it is for unemployed and retired people. However, because both interaction variables are not significant, there was no evidence found that supports the second hypothesis. There was also no evidence found for the last hypothesis since this hypothesis uses the same interaction variables and builds upon the second hypothesis.

# 6. Conclusion and discussion

This thesis research explored the relationship between social leisure time and subjective life satisfaction and whether this relation was influenced by one's work situation. This was done using two linear regression analyses, the first analysis contained people who did not participate in any organisation activities and people who did participate in these activities, the second analysis only contained people who participated in activities. The first analysis did not find an effect between participating in an activity (or not) and life satisfaction and because this is the main effect for this research it was decided to do a second analysis using only respondents who participated in activities.

The research question 'What is the effect of social leisure (activities conducted with other people) on life satisfaction in the Dutch population? Is this related to the work situation?' was answered using sub-conclusions based on three hypotheses. The first hypothesis suggested that people who participate in organisation activities in their leisure time are more satisfied with their life than people who do not participate in these activities, participate in less activities. Thus, it was assumed that the more people participate in organisation activities the happier they are with their life. The results of the first analysis did not find evidence that this assumption was indeed the case. Therefore, it could not be concluded that the first hypothesis was right. The second analysis however, found a small effect between social leisure and life satisfaction. This small effect was negative, which means that the opposite of the assumption was the case for this research. With the second analysis I could conclude that people who participate in more activities are actually less satisfied with their life than people who participate less in activities. Thus, I was still unable to accept the first hypothesis, as the opposite seems to be the case. The other two hypotheses were all based on the interaction between work situation and social leisure time. It was assumed that participating in organisation activities had a bigger effect on life satisfaction for employed people than for unemployed or retired people. There was no evidence found for these hypotheses in either analysis, therefore it cannot be concluded that this is the case.

Based on previous research, I expected a positive association between social leisure time and life satisfaction. In other words, I assumed a person would score their life satisfaction higher when they took part in more social leisure activities. This was assumed because people choose the way they spend their leisure time, and it was stated that people choose to do things they like in their free time. When people enjoy the activities they participate in, they consider themselves to be happier than people who spend their time doing things they do not enjoy. Based on this knowledge it was assumed that people would be happier when they spend more of their time on social leisure than when they spend much time on other things. This research did not find evidence for this effect.

There can be several reasons for the fact that this research did not find the assumed results. This research has several limitations which might have been the cause for the fact that the results did not match the assumptions. Based on these limitations I will make suggestions for future research.

Firstly, the amount of 'domains' used can have an influence on the results. Previous research stated that several domains in an individual's life have an influence on one's life satisfaction. These domains were emotional well-being, health, social and family relationships, material wealth, work, self-worth, and leisure-time. Some researchers combined some of these domains and others split these domains into smaller domains. What these domains have in common is that together they form someone's whole life. Therefore, it can be said that these domains are all connected to each other. This research only looked at social leisure time, the influence of the other domains on life satisfaction was not taken into account. This might be a reason the results are not what I expected them to be. If I had used the other domains as control variables, I probably would have been able to interpret the results without having to take external factors into account, as was the case now. Life satisfaction is influenced by many different factors, for next research I would therefore suggest using more control variables, so the influence of external factors is omitted.

Secondly, the variables used to measure social leisure time might need to be re-evaluated. The choice was made to use the questions about 'taking part in an organisation activity of which respondent is a member' because it was believed that people are only member of an organisation when this organisation's values connect with their own values or when this organisation stands for something they agree with, or just because being part of this organisation means they can practice their hobby. There are several other ways to spend leisure time with others, such as going to movies with friends, going out for dinner with others, going to a festival, playing games, going shopping, anything you do with other people that are not obligatory can be considered social leisure time. The choice was made not to use these variables for this research as it was not explicitly stated that these activities were done with other people. For example, an individual can go to the cinema, a concert, or dinner by themselves. Since it was not explicitly stated that these leisure activities were done with other people, and organisational activities are done with more people, this choice was made. Looking back on this, I probably should have made the choice to use the more common leisure activities for this research, because they are more well known than 'organisational activities,' and they might have given me different results. I would suggest using the common leisure activities that are often done with other people as social leisure time in future research on this topic.

Thirdly, the assumption of independency of observations was not met. This was due to the fact that people from the same household could take part in answering the questionnaire. Members from the same household can influence each other's answers and they might thus give different answers than they would have given if household members did not influence them. People who are not satisfied with their life, but do not want their household members to know they feel unhappy, will have given a higher score to life satisfaction than they would have done if the questionnaire was handed in by themselves instead of another member of their household. People were probably less honest because they knew another member of their family would be able to look at their answers. I would therefore suggest using a self-made and fully anonymous questionnaire.

Lastly, life satisfaction is an extremely broad concept, one that can mean different things for different people. A rating of 7 for one person on life satisfaction can mean something different for another person. Comparing subjective life satisfaction scores is therefore almost impossible. In this research life satisfaction was measured as happiness with life at this moment, but life satisfaction can also be seen as contentment with life as a whole. In this research I considered a score of 7 to have the same meaning for every respondent. I would suggest using a combination of different questions when you measure life satisfaction, instead of just one question that asks, "how satisfied are you with your life."

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# Appendices A, B and C

# Appendix A – Variables

Appendix A contains an overview of all the variables used in this research. The descriptive statistics of the original variables are shown as well as the way they were transformed for the analysis and the descriptive statistics of the new variables.

## A1 – Dependent variable: Life satisfaction

The question used for the dependent variable *life satisfaction* (ch21m011) asks respondents 'How satisfied are you with the life you lead at the moment?'

```
***Frequencies of original dependent variable life satisfaction.
FREQUENCIES VARIABLES=cp21m011
  /STATISTICS=STDDEV MEAN
  /HISTOGRAM NORMAL
  /ORDER=ANALYSIS.
```

**cp21m011 How satisfied are you with the life you lead at the moment?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | -9 I don't know | 83 | 1.2 | 1.5 | 1.5 |
| | 0 not at all satisfied | 18 | .3 | .3 | 1.9 |
| | 1 | 12 | .2 | .2 | 2.1 |
| | 2 | 44 | .6 | .8 | 2.9 |
| | 3 | 91 | 1.3 | 1.7 | 4.6 |
| | 4 | 152 | 2.2 | 2.8 | 7.5 |
| | 5 | 272 | 4.0 | 5.1 | 12.5 |
| | 6 | 572 | 8.4 | 10.7 | 23.2 |
| | 7 | 1551 | 22.8 | 28.9 | 52.1 |
| | 8 | 1781 | 26.2 | 33.2 | 85.3 |
| | 9 | 579 | 8.5 | 10.8 | 96.1 |
| | 10 completely satisfied | 207 | 3.0 | 3.9 | 100.0 |
| | Total | 5362 | 78.9 | 100.0 | |
| Missing | System | 1433 | 21.1 | | |
| Total | | 6795 | 100.0 | | |



Histogram. Mean = 6.98, Std. Dev. = 2.522, N = 5,362
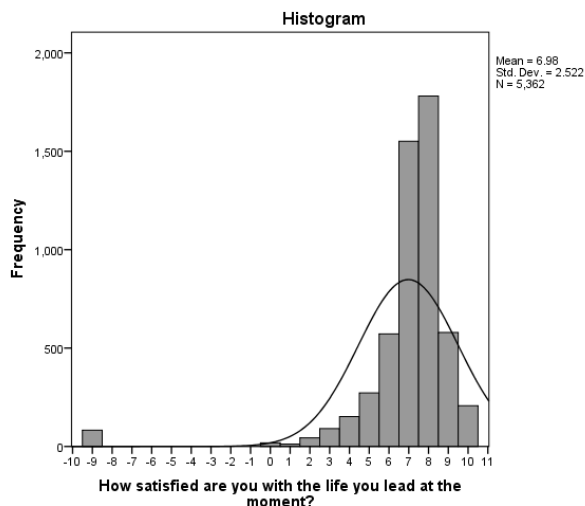
The variable has 1433 missing and 83 respondents who answered they 'do not know' how satisfied they are with their life. The respondents who gave this score of -9 are considered missing.

```
*Recode life satisfaction so a score of -9 becomes missing.
RECODE cp21m011 (-9=SYSMIS) (ELSE=Copy) INTO satisfied.
EXECUTE.
```

**satisfied Satisfaction with life.**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | .00 | 18 | .3 | .3 | .3 |
| | 1.00 | 12 | .2 | .2 | .6 |
| | 2.00 | 44 | .6 | .8 | 1.4 |
| | 3.00 | 91 | 1.3 | 1.7 | 3.1 |
| | 4.00 | 152 | 2.2 | 2.9 | 6.0 |
| | 5.00 | 272 | 4.0 | 5.2 | 11.2 |
| | 6.00 | 572 | 8.4 | 10.8 | 22.0 |
| | 7.00 | 1551 | 22.8 | 29.4 | 51.4 |
| | 8.00 | 1781 | 26.2 | 33.7 | 85.1 |
| | 9.00 | 579 | 8.5 | 11.0 | 96.1 |
| | 10.00 | 207 | 3.0 | 3.9 | 100.0 |
| | Total | 5279 | 77.7 | 100.0 | |
| Missing | System | 1516 | 22.3 | | |
| Total | | 6795 | 100.0 | | |

```
***Chart Builder for variable life satisfaction.
GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=satsfied MISSING=LISTWISE
REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: satsfied =col(source(s), name("satsfied"))
  GUIDE: axis(dim(1), label("satsfied"))
  GUIDE: axis(dim(2), label("Frequency"))
  ELEMENT: interval(position(summary.count(bin.rect(satsfied))),
    shape.interior(shape.square))
END GPL.
```
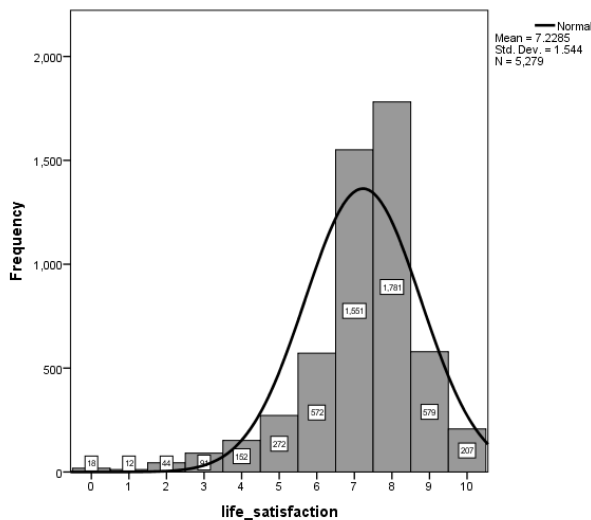


# A2 – Independent variable: participant in an activity

The independent variable is computed from the sum of the answers to the 13 questions about 'participated in an activity' for several organisations.

```
*** Frequencies of the items used for the independent variable participated.
FREQUENCIES VARIABLES=cs20m005 cs20m010 cs20m015 cs20m020 cs20m025 cs20m030 cs20m525
cs20m035 cs20m040 cs20m045 cs20m050 cs20m055 cs20m060
  /ORDER=ANALYSIS.
```

**s20m010 a cultural association or hobby club, participated in an activity**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 No | 5461 | 80.4 | 91.8 | 91.8 |
| | 1 Yes | 489 | 7.2 | 8.2 | 100.0 |
| | Total | 5950 | 87.6 | 100.0 | |
| Missing | System | 845 | 12.4 | | |
| Total | | 6795 | 100.0 | | |

**cs20m005 a sports club, participated in an activity**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 No | 5220 | 76.8 | 87.7 | 87.7 |
| | 1 Yes | 730 | 10.7 | 12.3 | 100.0 |
| | Total | 5950 | 87.6 | 100.0 | |
| Missing | System | 845 | 12.4 | | |
| Total | | 6795 | 100.0 | | |

**cs20m020 a business, professional or agrarian organization, participated in an activity**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 No | 5729 | 84.3 | 96.3 | 96.3 |
| | 1 Yes | 219 | 3.2 | 3.7 | 100.0 |
| | Total | 5948 | 87.5 | 100.0 | |
| Missing | System | 847 | 12.5 | | |
| Total | | 6795 | 100.0 | | |

**cs20m015 a trade union, participated in an activity**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 No | 5877 | 86.5 | 98.8 | 98.8 |
| | 1 Yes | 73 | 1.1 | 1.2 | 100.0 |
| | Total | 5950 | 87.6 | 100.0 | |
| Missing | System | 845 | 12.4 | | |
| Total | | 6795 | 100.0 | | |

**cs20m030 an organization for humanitarian aid or human rights, participated in an activity**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 No | 5821 | 85.7 | 97.8 | 97.8 |
| | 1 Yes | 129 | 1.9 | 2.2 | 100.0 |
| | Total | 5950 | 87.6 | 100.0 | |
| Missing | System | 845 | 12.4 | | |
| Total | | 6795 | 100.0 | | |

**cs20m025 a consumers organization or automobile club, participated in an activity**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 No | 5874 | 86.4 | 98.7 | 98.7 |
| | 1 Yes | 76 | 1.1 | 1.3 | 100.0 |
| | Total | 5950 | 87.6 | 100.0 | |
| Missing | System | 845 | 12.4 | | |
| Total | | 6795 | 100.0 | | |

**cs20m035 an organization for environmental protection, peace organization or animal right**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 No | 5804 | 85.4 | 97.5 | 97.5 |
| | 1 Yes | 146 | 2.1 | 2.5 | 100.0 |
| | Total | 5950 | 87.6 | 100.0 | |
| Missing | System | 845 | 12.4 | | |
| Total | | 6795 | 100.0 | | |

**cs20m525 an organization for migrants, participated in an activity**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 No | 5855 | 86.2 | 98.4 | 98.4 |
| | 1 Yes | 94 | 1.4 | 1.6 | 100.0 |
| | Total | 5949 | 87.5 | 100.0 | |
| Missing | System | 846 | 12.5 | | |
| Total | | 6795 | 100.0 | | |

**cs20m045 a political party, participated in an activity**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 No | 5830 | 85.8 | 98.0 | 98.0 |
| | 1 Yes | 121 | 1.8 | 2.0 | 100.0 |
| | Total | 5951 | 87.6 | 100.0 | |
| Missing | System | 844 | 12.4 | | |
| Total | | 6795 | 100.0 | | |

**cs20m040 a religious or church organization, participated in an activity**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 No | 5572 | 82.0 | 93.6 | 93.6 |
| | 1 Yes | 378 | 5.6 | 6.4 | 100.0 |
| | Total | 5950 | 87.6 | 100.0 | |
| Missing | System | 845 | 12.4 | | |
| Total | | 6795 | 100.0 | | |

**cs20m050 a science, education, teachers or parents association, participated in an activity**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 No | 5660 | 83.3 | 95.1 | 95.1 |
| | 1 Yes | 289 | 4.3 | 4.9 | 100.0 |
| | Total | 5949 | 87.5 | 100.0 | |
| Missing | System | 846 | 12.5 | | |
| Total | | 6795 | 100.0 | | |

**cs20m055 a social society; an association for youth, pensioners/senior citizens, women; o**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 No | 5684 | 83.6 | 95.5 | 95.5 |
| | 1 Yes | 266 | 3.9 | 4.5 | 100.0 |
| | Total | 5950 | 87.6 | 100.0 | |
| Missing | System | 845 | 12.4 | | |
| Total | | 6795 | 100.0 | | |

**cs20m060 other organizations that you can freely join, participated in an activity**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 No | 5782 | 85.1 | 97.2 | 97.2 |
| | 1 Yes | 168 | 2.5 | 2.8 | 100.0 |
| | Total | 5950 | 87.6 | 100.0 | |
| Missing | System | 845 | 12.4 | | |
| Total | | 6795 | 100.0 | | |

The new variable *participant* was computed using the sum of the items.

```
***Compute variable for participated in activity.
COMPUTE Participated=(cs20m005 + cs20m010 + cs20m015 + cs20m020 + cs20m025 +
cs20m030 + cs20m525 + cs20m035 + cs20m040 + cs20m045 + cs20m050 + cs20m055 +
cs20m060).
EXECUTE.
```

```
***Frequencies of the independent variable participated.
FREQUENCIES VARIABLES=participated
  /STATISTICS=STDDEV MEAN
  /ORDER=ANALYSIS.
```

**participated Amount of activities participated.**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | .00 | 4118 | 60.6 | 69.2 | 69.2 |
| | 1.00 | 1121 | 16.5 | 18.8 | 88.1 |
| | 2.00 | 423 | 6.2 | 7.1 | 95.2 |
| | 3.00 | 145 | 2.1 | 2.4 | 97.6 |
| | 4.00 | 66 | 1.0 | 1.1 | 98.7 |
| | 5.00 | 32 | .5 | .5 | 99.3 |
| | 6.00 | 11 | .2 | .2 | 99.5 |
| | 7.00 | 13 | .2 | .2 | 99.7 |
| | 8.00 | 6 | .1 | .1 | 99.8 |
| | 9.00 | 3 | .0 | .1 | 99.8 |
| | 10.00 | 5 | .1 | .1 | 99.9 |
| | 11.00 | 1 | .0 | .0 | 99.9 |
| | 13.00 | 4 | .1 | .1 | 100.0 |
| | Total | 5948 | 87.5 | 100.0 | |
| Missing | System | 847 | 12.5 | | |
| Total | | 6795 | 100.0 | | |

```
***Chart Builder for variable participated.
GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=participated MISSING=LISTWISE
REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: participated=col(source(s), name("participated"))
  GUIDE: axis(dim(1), label("participated"))
  GUIDE: axis(dim(2), label("Frequency"))
  ELEMENT: interval(position(summary.count(bin.rect(participated))),
shape.interior(shape.square))
END GPL.
```

Mean = .5331
Std. Dev. = 1.1034
N = 5,948
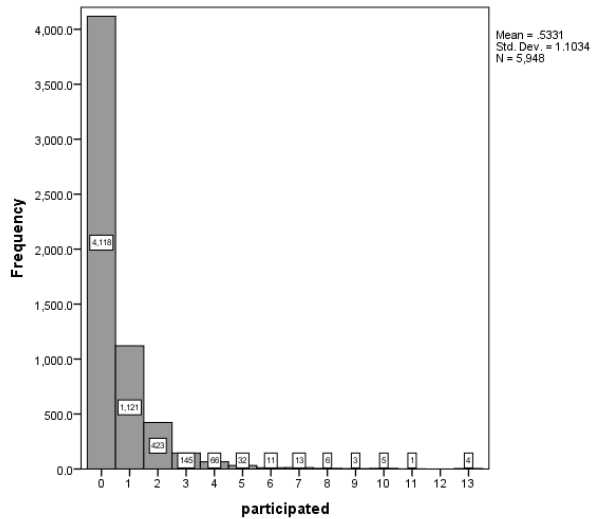
# A3 – Moderator variable: occupation

The question used for the moderator variable *occupation (belbezig)* asks respondents 'What is your primary occupation?'

```
***Frequencies of the variable used for the moderator occupation.
FREQUENCIES VARIABLES=belbezig
  /STATISTICS=STDDEV MEAN
  /ORDER=ANALYSIS.
```

**belbezig Primary occupation**

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid  1 Paid employment | 3066 | 45.1 | 45.1 | 45.1 |
| 2 Works or assists in family business | 52 | .8 | .8 | 45.9 |
| 3 Autonomous professional, freelancer, or self-employed | 352 | 5.2 | 5.2 | 51.1 |
| 4 Job seeker following job loss | 119 | 1.8 | 1.8 | 52.8 |
| 5 First-time job seeker | 27 | .4 | .4 | 53.2 |
| 6 Exempted from job seeking following job loss | 24 | .4 | .4 | 53.6 |
| 7 Attends school or is studying | 634 | 9.3 | 9.3 | 62.9 |
| 8 Takes care of the housekeeping | 497 | 7.3 | 7.3 | 70.2 |
| 9 Is pensioner ([voluntary] early retirement, old age pension scheme) | 1529 | 22.5 | 22.5 | 92.7 |
| 10 Has (partial) work disability | 294 | 4.3 | 4.3 | 97.0 |
| 11 Performs unpaid work while retaining unemployment benefit | 18 | .3 | .3 | 97.3 |
| 12 Performs voluntary work | 121 | 1.8 | 1.8 | 99.1 |
| 13 Does something else | 62 | .9 | .9 | 100.0 |
| Total | 6795 | 100.0 | 100.0 | |

Primary occupation
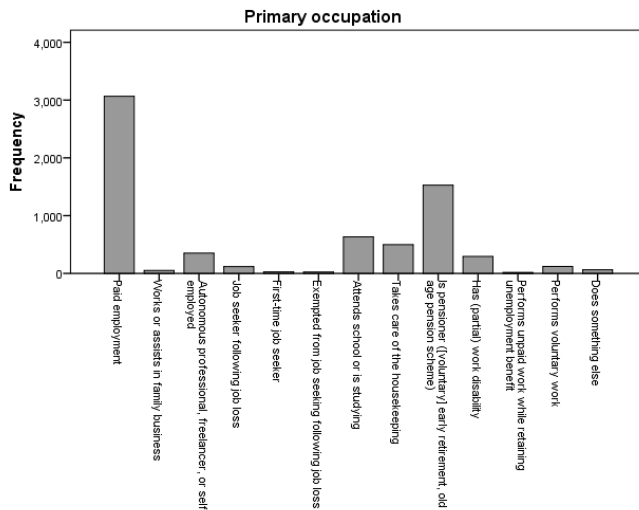
The new variable will show whether someone is employed (0), unemployed (1) or retired (2).

```
***Compute variable for  occupation (employed, unemployed or pensioned).
RECODE belbezig (1=1) (SYSMIS=SYSMIS) (2=1) (3=1) (4=2) (5=2) (6=2) (7=2) (8=2)
 (9=3) (10=1) (11=1) (12=1) (13=1) (14=SYSMIS) INTO Occupation.
EXECUTE.
```

```
***Frequencies of variable occupation.
FREQUENCIES VARIABLES=occupation
  /ORDER=ANALYSIS.
```

**occupation Employed, unemployed or retired.**

|  |  | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 Employed | 3965 | 58.4 | 58.4 | 58.4 |
|  | 1 Unemployed | 1301 | 19.1 | 19.1 | 77.5 |
|  | 2 Retired | 1529 | 22.5 | 22.5 | 100.0 |
|  | Total | 6795 | 100.0 | 100.0 |  |

# A4 – Control variables: education, general health, and age

The question used for the control variable *education (oplmet)* asks respondents for the highest level of education with diploma. The question used for *health* (*ch20m004*) asks respondents 'How would you describe your health, generally speaking?'. The question for the control variable *age* (*leeftijd*) asks respondents for their age.

```
***Frequencies of control variables education, health, and age.
FREQUENCIES VARIABLES=oplmet ch20m004 leeftijd
  /STATISTICS=STDDEV MEAN
  /BARCHART FREQ
  /ORDER=ANALYSIS.
```

**oplmet Highest level of education with diploma**

|  |  | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 primary school | 277 | 4.1 | 4.1 | 4.1 |
|  | 2 vmbo (intermediate secondary education, US: junior high school) | 1195 | 17.6 | 17.6 | 21.7 |
|  | 3 havo/vwo (higher secondary education/preparatory university education, US: senio | 722 | 10.6 | 10.6 | 32.3 |
|  | 4 mbo (intermediate vocational education, US: junior college) | 1627 | 23.9 | 23.9 | 56.2 |
|  | 5 hbo (higher vocational education, US: college) | 1764 | 26.0 | 26.0 | 82.2 |
|  | 6 wo (university) | 926 | 13.6 | 13.6 | 95.8 |
|  | 7 other | 127 | 1.9 | 1.9 | 97.7 |

| | | | | | |
|---|---|---|---|---|---|
| | 8 Not (yet) completed any education | 127 | 1.9 | 1.9 | 99.6 |
| | 9 Not yet started any education* | 30 | .4 | .4 | 100.0 |
| | Total | 6795 | 100.0 | 100.0 | |

### Highest level of education with diploma
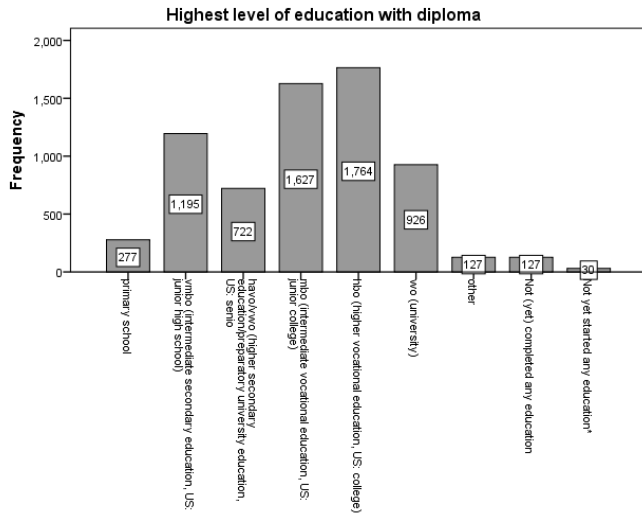


### ch20m004 How would you describe your health, generally speaking?

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 poor | 89 | 1.3 | 1.6 | 1.6 |
| | 2 moderate | 892 | 13.1 | 15.6 | 17.1 |
| | 3 good | 3169 | 46.6 | 55.3 | 72.4 |
| | 4 very good | 1283 | 18.9 | 22.4 | 94.8 |
| | 5 excellent | 297 | 4.4 | 5.2 | 100.0 |
| | Total | 5730 | 84.3 | 100.0 | |
| Missing | System | 1065 | 15.7 | | |
| Total | | 6795 | 100.0 | | |

### How would you describe your health, generally speaking?
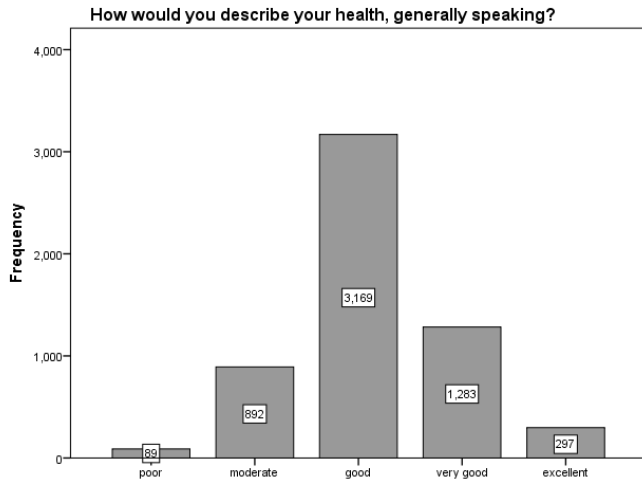


### leeftijd Age of the household member

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 16 | 110 | 1.6 | 1.6 | 1.6 |
| | 17 | 73 | 1.1 | 1.1 | 2.7 |
| | 18 | 63 | .9 | .9 | 3.6 |
| | 19 | 77 | 1.1 | 1.1 | 4.8 |
| | 20 | 86 | 1.3 | 1.3 | 6.0 |
| | 21 | 66 | 1.0 | 1.0 | 7.0 |
| | 22 | 75 | 1.1 | 1.1 | 8.1 |
| | 23 | 103 | 1.5 | 1.5 | 9.6 |
| | 24 | 74 | 1.1 | 1.1 | 10.7 |
| | 25 | 84 | 1.2 | 1.2 | 11.9 |
| | 26 | 100 | 1.5 | 1.5 | 13.4 |
| | 27 | 105 | 1.5 | 1.5 | 15.0 |

| | | | | |
|---|---|---|---|---|
| 28 | 111 | 1.6 | 1.6 | 16.6 |
| 29 | 90 | 1.3 | 1.3 | 17.9 |
| 30 | 99 | 1.5 | 1.5 | 19.4 |
| 31 | 98 | 1.4 | 1.4 | 20.8 |
| 32 | 92 | 1.4 | 1.4 | 22.2 |
| 33 | 115 | 1.7 | 1.7 | 23.9 |
| 34 | 104 | 1.5 | 1.5 | 25.4 |
| 35 | 87 | 1.3 | 1.3 | 26.7 |
| 36 | 96 | 1.4 | 1.4 | 28.1 |
| 37 | 91 | 1.3 | 1.3 | 29.4 |
| 38 | 92 | 1.4 | 1.4 | 30.8 |
| 39 | 96 | 1.4 | 1.4 | 32.2 |
| 40 | 102 | 1.5 | 1.5 | 33.7 |
| 41 | 119 | 1.8 | 1.8 | 35.4 |
| 42 | 91 | 1.3 | 1.3 | 36.8 |
| 43 | 90 | 1.3 | 1.3 | 38.1 |
| 44 | 78 | 1.1 | 1.1 | 39.2 |
| 45 | 93 | 1.4 | 1.4 | 40.6 |
| 46 | 103 | 1.5 | 1.5 | 42.1 |
| 47 | 113 | 1.7 | 1.7 | 43.8 |
| 48 | 94 | 1.4 | 1.4 | 45.2 |
| 49 | 90 | 1.3 | 1.3 | 46.5 |
| 50 | 117 | 1.7 | 1.7 | 48.2 |
| 51 | 110 | 1.6 | 1.6 | 49.8 |
| 52 | 106 | 1.6 | 1.6 | 51.4 |
| 53 | 90 | 1.3 | 1.3 | 52.7 |
| 54 | 105 | 1.5 | 1.5 | 54.3 |
| 55 | 118 | 1.7 | 1.7 | 56.0 |
| 56 | 109 | 1.6 | 1.6 | 57.6 |
| 57 | 128 | 1.9 | 1.9 | 59.5 |
| 58 | 134 | 2.0 | 2.0 | 61.5 |
| 59 | 113 | 1.7 | 1.7 | 63.1 |
| 60 | 122 | 1.8 | 1.8 | 64.9 |
| 61 | 112 | 1.6 | 1.6 | 66.6 |
| 62 | 142 | 2.1 | 2.1 | 68.7 |
| 63 | 112 | 1.6 | 1.6 | 70.3 |
| 64 | 118 | 1.7 | 1.7 | 72.1 |
| 65 | 110 | 1.6 | 1.6 | 73.7 |
| 66 | 132 | 1.9 | 1.9 | 75.6 |
| 67 | 130 | 1.9 | 1.9 | 77.5 |
| 68 | 127 | 1.9 | 1.9 | 79.4 |
| 69 | 124 | 1.8 | 1.8 | 81.2 |
| 70 | 129 | 1.9 | 1.9 | 83.1 |
| 71 | 130 | 1.9 | 1.9 | 85.0 |
| 72 | 120 | 1.8 | 1.8 | 86.8 |
| 73 | 136 | 2.0 | 2.0 | 88.8 |
| 74 | 107 | 1.6 | 1.6 | 90.4 |
| 75 | 78 | 1.1 | 1.1 | 91.5 |
| 76 | 86 | 1.3 | 1.3 | 92.8 |
| 77 | 71 | 1.0 | 1.0 | 93.8 |
| 78 | 67 | 1.0 | 1.0 | 94.8 |
| 79 | 47 | .7 | .7 | 95.5 |
| 80 | 69 | 1.0 | 1.0 | 96.5 |
| 81 | 49 | .7 | .7 | 97.2 |
| 82 | 34 | .5 | .5 | 97.7 |
| 83 | 25 | .4 | .4 | 98.1 |
| 84 | 26 | .4 | .4 | 98.5 |
| 85 | 25 | .4 | .4 | 98.9 |
| 86 | 16 | .2 | .2 | 99.1 |
| 87 | 17 | .3 | .3 | 99.4 |
| 88 | 5 | .1 | .1 | 99.4 |
| 89 | 9 | .1 | .1 | 99.6 |

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | 90 | 6 | .1 | .1 | 99.6 |
| | 91 | 8 | .1 | .1 | 99.8 |
| | 92 | 5 | .1 | .1 | 99.8 |
| | 93 | 4 | .1 | .1 | 99.9 |
| | 94 | 3 | .0 | .0 | 99.9 |
| | 95 | 1 | .0 | .0 | 100.0 |
| | 96 | 1 | .0 | .0 | 100.0 |
| | 97 | 1 | .0 | .0 | 100.0 |
| | 103 | 1 | .0 | .0 | 100.0 |
| | Total | 6795 | 100.0 | 100.0 | |

Age is recoded so that respondents younger than 18 years old are not taken into account in this research.

```
***Recode age so a score of 16 and 17
becomes missing.
RECODE leeftijd (16=SYSMIS) (17=SYSMIS)
(SYSMIS=SYSMIS) (ELSE=Copy) INTO Age.
```

The name of the variable health (*ch20m004*) is changed into respectively *age* and *health*.

```
***Change name of variable for health.
RECODE ch20m004 (SYSMIS=SYSMIS)
(ELSE=Copy) INTO Health.
EXECUTE.
```

Respondents who have not (yet) started or finished any education will be considered missing.

```
***Recode oplmet into education, so not (yet) started
education, finished education, and other become missing.
RECODE oplmet (7=SYSMIS) (8=SYSMIS) (9=SYSMIS) (SYSMIS=SYSMIS)
(ELSE=Copy) INTO Education.
EXECUTE.
***Frequencies of control variable education.
FREQUENCIES VARIABLES=education
  /STATISTICS=STDDEV MEAN
  /BARCHART FREQ
  /ORDER=ANALYSIS.
```

**education Education level**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 primary school | 277 | 4.1 | 4.2 | 4.2 |
| | 2 vmbo | 1195 | 17.6 | 18.0 | 22.2 |
| | 3 havo/vwo | 722 | 10.6 | 10.9 | 33.1 |
| | 4 mbo | 1627 | 23.9 | 24.5 | 57.6 |
| | 5 hbo | 1764 | 26.0 | 26.6 | 84.1 |
| | 6 wo | 926 | 13.6 | 13.9 | 98.1 |
| | 7 other | 127 | 1.9 | 1.9 | 100.0 |
| | Total | 6638 | 97.7 | 100.0 | |
| Missing | System | 157 | 2.3 | | |
| Total | | 6795 | 100.0 | | |

education
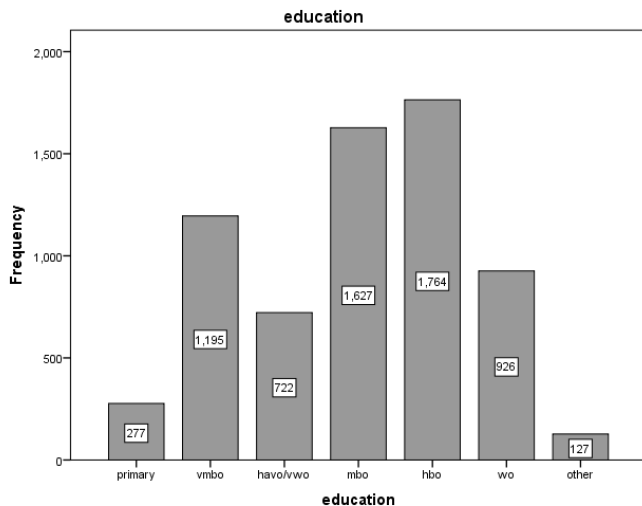
All respondents with missing data will not be used in the regression analysis, therefore a new dataset will be made without the respondents with missing data.

```
***Dummy for missing (1) and not missing (0).
COMPUTE m1=0.
IF MISSING(nomem_encr) m1=1.
COMPUTE m2=0.
IF MISSING(age) m2=1.
COMPUTE m3=0.
IF MISSING(occupation) m3=1.
COMPUTE m4=0.
IF MISSING(education) m4=1.
COMPUTE m5=0.
IF MISSING(health) m5=1.
COMPUTE m6=0.
IF MISSING(satisfied) m6=1.
COMPUTE m7=0.
IF MISSING(participated) m7=1.
EXECUTE.
COMPUTE m8=0.
IF MISSING(participant) m8=1.

***How many missing scores does everyone have?.
COMPUTE miss = m1+m2+m3+m4+m5+m6+m7+m8.
EXECUTE.
FREQUENCIES VARIABLES=miss
  /ORDER=ANALYSIS.
```

**miss**

|       |       | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | .00   | 4572      | 67.3    | 67.3          | 67.3               |
|       | 1.00  | 1027      | 15.1    | 15.1          | 82.4               |
|       | 2.00  | 438       | 6.4     | 6.4           | 88.8               |
|       | 3.00  | 256       | 3.8     | 3.8           | 92.6               |
|       | 4.00  | 448       | 6.6     | 6.6           | 99.2               |
|       | 5.00  | 45        | .7      | .7            | 99.9               |
|       | 6.00  | 9         | .1      | .1            | 100.0              |
|       | Total | 6795      | 100.0   | 100.0         |                    |

Only the respondents without any missing data are taken into account during the regression analysis. This means the new dataset will consist of 4572 respondents.

```
***New dataset without missing data.
DATASET COPY  RepairAug.
DATASET ACTIVATE  RepairAug.
FILTER OFF.
USE ALL.
SELECT IF (miss<=0).
EXECUTE.
DATASET ACTIVATE  RepairAug.
```

Frequencies of the used variables without the missing data were also calculated.

```
***Univariate statistics.
FREQUENCIES VARIABLES=Participated Participant Satisfied Occupation
Education Age Health
   /ORDER=ANALYSIS.
```

**Satisfied How satisfied are they with their life?**

|  |  | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 | 16 | .3 | .3 | .3 |
|  | 1 | 10 | .2 | .2 | .6 |
|  | 2 | 32 | .7 | .7 | 1.3 |
|  | 3 | 74 | 1.6 | 1.6 | 2.9 |
|  | 4 | 119 | 2.6 | 2.6 | 5.5 |
|  | 5 | 224 | 4.9 | 4.9 | 10.4 |
|  | 6 | 479 | 10.5 | 10.5 | 20.9 |
|  | 7 | 1346 | 29.4 | 29.4 | 50.3 |
|  | 8 | 1585 | 34.7 | 34.7 | 85.0 |
|  | 9 | 511 | 11.2 | 11.2 | 96.2 |
|  | 10 | 176 | 3.8 | 3.8 | 100.0 |
|  | Total | 4572 | 100.0 | 100.0 |  |



Life satisfaction

Mean = 7.27
Std. Dev. = 1.513
N = 4,572
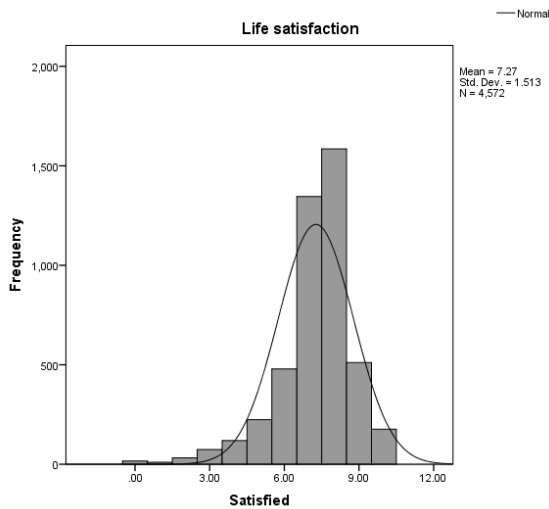
**Participated In how many activities did they participate?**

|  |  | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 | 3192 | 69.8 | 69.8 | 69.8 |
|  | 1 | 858 | 18.8 | 18.8 | 88.6 |
|  | 2 | 310 | 6.8 | 6.8 | 95.4 |
|  | 3 | 113 | 2.5 | 2.5 | 97.8 |
|  | 4 | 49 | 1.1 | 1.1 | 98.9 |
|  | 5 | 21 | .5 | .5 | 99.4 |
|  | 6 | 8 | .2 | .2 | 99.5 |
|  | 7 | 9 | .2 | .2 | 99.7 |
|  | 8 | 2 | .0 | .0 | 99.8 |
|  | 9 | 2 | .0 | .0 | 99.8 |
|  | 10 | 4 | .1 | .1 | 99.9 |

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | 11 | 1 | .0 | .0 | 99.9 |
| | 13 | 3 | .1 | .1 | 100.0 |
| | Total | 4572 | 100.0 | 100.0 | |

**In how many activities did they participate?**
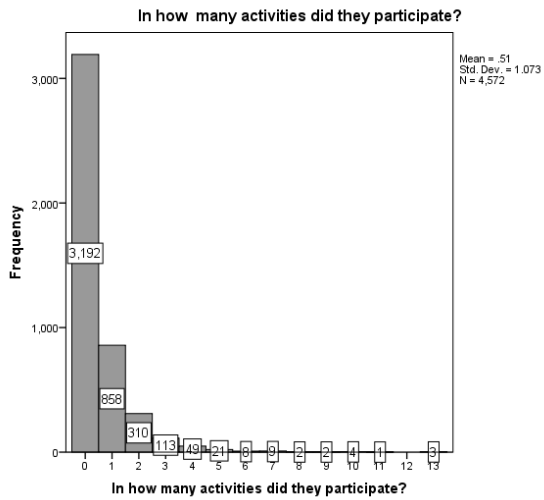


**Occupation What is their occupation?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 Employed | 2561 | 56.0 | 56.0 | 56.0 |
| | 2 Unemployed | 730 | 16.0 | 16.0 | 72.0 |
| | 3 Retired | 1281 | 28.0 | 28.0 | 100.0 |
| | Total | 4572 | 100.0 | 100.0 | |
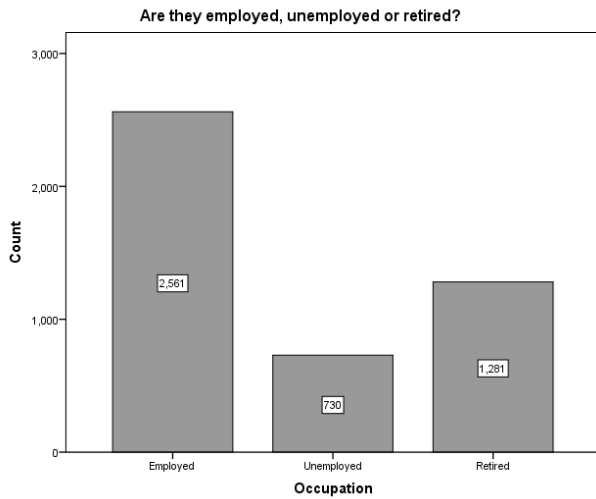


**Age How old are they?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 18 | 25 | .5 | .5 | .5 |
| | 19 | 35 | .8 | .8 | 1.3 |
| | 20 | 39 | .9 | .9 | 2.2 |
| | 21 | 32 | .7 | .7 | 2.9 |
| | 22 | 42 | .9 | .9 | 3.8 |
| | 23 | 53 | 1.2 | 1.2 | 4.9 |
| | 24 | 35 | .8 | .8 | 5.7 |
| | 25 | 47 | 1.0 | 1.0 | 6.7 |
| | 26 | 52 | 1.1 | 1.1 | 7.9 |
| | 27 | 57 | 1.2 | 1.2 | 9.1 |
| | 28 | 62 | 1.4 | 1.4 | 10.5 |
| | 29 | 52 | 1.1 | 1.1 | 11.6 |
| | 30 | 51 | 1.1 | 1.1 | 12.7 |
| | 31 | 61 | 1.3 | 1.3 | 14.1 |

53

| | | | | |
|---|---|---|---|---|
| 32 | 50 | 1.1 | 1.1 | 15.2 |
| 33 | 71 | 1.6 | 1.6 | 16.7 |
| 34 | 68 | 1.5 | 1.5 | 18.2 |
| 35 | 47 | 1.0 | 1.0 | 19.2 |
| 36 | 43 | .9 | .9 | 20.2 |
| 37 | 46 | 1.0 | 1.0 | 21.2 |
| 38 | 51 | 1.1 | 1.1 | 22.3 |
| 39 | 54 | 1.2 | 1.2 | 23.5 |
| 40 | 60 | 1.3 | 1.3 | 24.8 |
| 41 | 73 | 1.6 | 1.6 | 26.4 |
| 42 | 54 | 1.2 | 1.2 | 27.6 |
| 43 | 49 | 1.1 | 1.1 | 28.6 |
| 44 | 48 | 1.0 | 1.0 | 29.7 |
| 45 | 58 | 1.3 | 1.3 | 30.9 |
| 46 | 70 | 1.5 | 1.5 | 32.5 |
| 47 | 79 | 1.7 | 1.7 | 34.2 |
| 48 | 65 | 1.4 | 1.4 | 35.6 |
| 49 | 56 | 1.2 | 1.2 | 36.9 |
| 50 | 87 | 1.9 | 1.9 | 38.8 |
| 51 | 78 | 1.7 | 1.7 | 40.5 |
| 52 | 78 | 1.7 | 1.7 | 42.2 |
| 53 | 61 | 1.3 | 1.3 | 43.5 |
| 54 | 75 | 1.6 | 1.6 | 45.1 |
| 55 | 79 | 1.7 | 1.7 | 46.9 |
| 56 | 85 | 1.9 | 1.9 | 48.7 |
| 57 | 98 | 2.1 | 2.1 | 50.9 |
| 58 | 97 | 2.1 | 2.1 | 53.0 |
| 59 | 85 | 1.9 | 1.9 | 54.9 |
| 60 | 99 | 2.2 | 2.2 | 57.0 |
| 61 | 92 | 2.0 | 2.0 | 59.0 |
| 62 | 118 | 2.6 | 2.6 | 61.6 |
| 63 | 89 | 1.9 | 1.9 | 63.6 |
| 64 | 98 | 2.1 | 2.1 | 65.7 |
| 65 | 94 | 2.1 | 2.1 | 67.8 |
| 66 | 107 | 2.3 | 2.3 | 70.1 |
| 67 | 117 | 2.6 | 2.6 | 72.7 |
| 68 | 108 | 2.4 | 2.4 | 75.0 |
| 69 | 108 | 2.4 | 2.4 | 77.4 |
| 70 | 113 | 2.5 | 2.5 | 79.9 |
| 71 | 113 | 2.5 | 2.5 | 82.3 |
| 72 | 101 | 2.2 | 2.2 | 84.5 |
| 73 | 101 | 2.2 | 2.2 | 86.7 |
| 74 | 92 | 2.0 | 2.0 | 88.8 |
| 75 | 65 | 1.4 | 1.4 | 90.2 |
| 76 | 73 | 1.6 | 1.6 | 91.8 |
| 77 | 59 | 1.3 | 1.3 | 93.1 |
| 78 | 54 | 1.2 | 1.2 | 94.2 |
| 79 | 35 | .8 | .8 | 95.0 |
| 80 | 51 | 1.1 | 1.1 | 96.1 |
| 81 | 40 | .9 | .9 | 97.0 |
| 82 | 27 | .6 | .6 | 97.6 |
| 83 | 22 | .5 | .5 | 98.1 |
| 84 | 23 | .5 | .5 | 98.6 |
| 85 | 18 | .4 | .4 | 99.0 |
| 86 | 12 | .3 | .3 | 99.2 |
| 87 | 10 | .2 | .2 | 99.5 |
| 88 | 2 | .0 | .0 | 99.5 |
| 89 | 6 | .1 | .1 | 99.6 |
| 90 | 5 | .1 | .1 | 99.7 |
| 91 | 3 | .1 | .1 | 99.8 |
| 92 | 3 | .1 | .1 | 99.9 |
| 93 | 3 | .1 | .1 | 99.9 |

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | 94 | 2 | .0 | .0 | 100.0 |
| | 103 | 1 | .0 | .0 | 100.0 |
| | Total | 4572 | 100.0 | 100.0 | |

**Health How do they rate their health?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 Poor | 66 | 1.4 | 1.4 | 1.4 |
| | 2 Moderate | 718 | 15.7 | 15.7 | 17.1 |
| | 3 Good | 2578 | 56.4 | 56.4 | 73.5 |
| | 4 Very good | 988 | 21.6 | 21.6 | 95.1 |
| | 5 Excellent | 222 | 4.9 | 4.9 | 100.0 |
| | Total | 4572 | 100.0 | 100.0 | |



How do they rate their health?
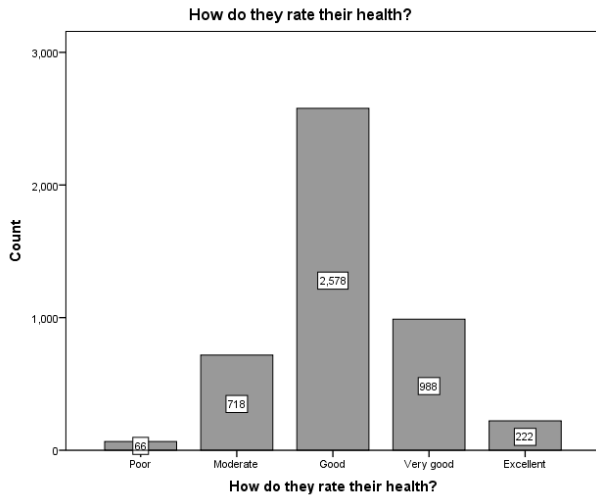
**Education What is their education?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 primary | 136 | 3.0 | 3.0 | 3.0 |
| | 2 VMBO | 907 | 19.8 | 19.8 | 22.8 |
| | 3 Havo/vwo | 490 | 10.7 | 10.7 | 33.5 |
| | 4 mbo | 1156 | 25.3 | 25.3 | 58.8 |
| | 5 hbo | 1257 | 27.5 | 27.5 | 86.3 |
| | 6 wo | 626 | 13.7 | 13.7 | 100.0 |
| | Total | 4572 | 100.0 | 100.0 | |



What is their education?
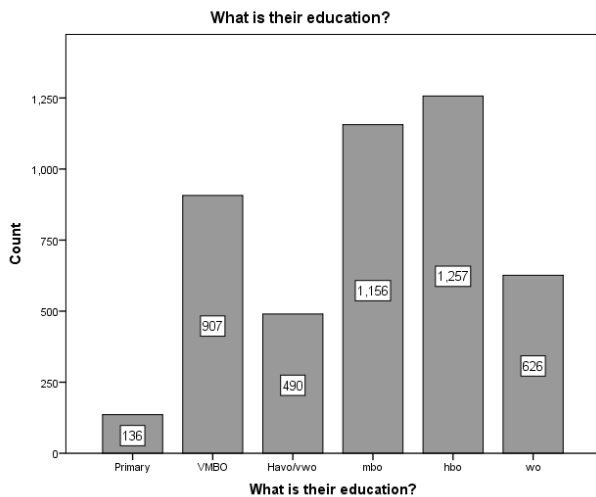
# Appendix B – Statistical analyses

This appendix contains an overview of the bivariate statistics, the regression analysis and the preliminary work that needs to be done, such as making interaction variables.

## B1 – Bivariate statistics

The bivariate statistics were measured using Pearson Correlation, Cramer's V, and T-test for groups. The correlation between two continuous variables was measured using Pearson Correlation.

```
***Correlations between continuous variables.
CORRELATIONS
  /VARIABLES=satisfied participated education
health age
  /PRINT=TWOTAIL NOSIG
  /MISSING=PAIRWISE.
```

**Correlations**

| | | Satisfied How satisfied are they with their life? | Participated In how many activities did they participate? | Education What is their education? | Health How do they rate their health? | Age How old are they? |
|---|---|---|---|---|---|---|
| Satisfied How satisfied are they with their life? | Pearson Correlation | 1 | .006 | .042** | .311** | .113** |
| | Sig. (2-tailed) | | .678 | .005 | .000 | .000 |
| | N | 4572 | 4572 | 4572 | 4572 | 4572 |
| Participated In how many activities did they participate? | Pearson Correlation | .006 | 1 | .098** | .034* | -.047** |
| | Sig. (2-tailed) | .678 | | .000 | .020 | .002 |
| | N | 4572 | 4572 | 4572 | 4572 | 4572 |
| Education What is their education? | Pearson Correlation | .042** | .098** | 1 | .158** | -.211** |
| | Sig. (2-tailed) | .005 | .000 | | .000 | .000 |
| | N | 4572 | 4572 | 4572 | 4572 | 4572 |
| Health How do they rate their health? | Pearson Correlation | .311** | .034* | .158** | 1 | -.254** |
| | Sig. (2-tailed) | .000 | .020 | .000 | | .000 |
| | N | 4572 | 4572 | 4572 | 4572 | 4572 |
| Age How old are they? | Pearson Correlation | .113** | -.047** | -.211** | -.254** | 1 |
| | Sig. (2-tailed) | .000 | .002 | .000 | .000 | |
| | N | 4572 | 4572 | 4572 | 4572 | 4572 |

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The association between the two binary variables was measured using a crosstab and Pearson's Chi-Square and Cramer's V.

```
***Make dummy variables for occupation.
RECODE Occupation (2=1) (ELSE=0) INTO
UnemployedDum.
EXECUTE.
RECODE Occupation (3=1) (ELSE=0) INTO
RetiredDum.
EXECUTE.
***Crosstabs for binary variables.
CROSSTABS
  /TABLES=unemployeddum BY retireddum
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ PHI
  /CELLS=COUNT
  /COUNT ROUND CELL.
```

**UnemployedDum Are they unemployed? * RetiredDum Are they retired?**
**Crosstabulation**

Count

| | | RetiredDum Are they retired? | | |
| --- | --- | --- | --- | --- |
| | | 0 Employed or unemployed | 1 Retired | Total |
| UnemployedDum Are they unemployed? | 0 Employed or retired | 2561 | 1281 | 3842 |
| | 1 Unemployed | 730 | 0 | 730 |
| Total | | 3291 | 1281 | 4572 |

**Chi-Square Tests**

| | Value | df | Asymptotic Significance (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
| --- | --- | --- | --- | --- | --- |
| Pearson Chi-Square | 338.137[a] | 1 | .000 | | |
| Continuity Correction[b] | 336.486 | 1 | .000 | | |
| Likelihood Ratio | 532.114 | 1 | .000 | | |
| Fisher's Exact Test | | | | .000 | .000 |
| Linear-by-Linear Association | 338.063 | 1 | .000 | | |
| N of Valid Cases | 4572 | | | | |

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 204.53.
b. Computed only for a 2x2 table

**Chi-Square Tests**

| | Value | df | Asymptotic Significance (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
| --- | --- | --- | --- | --- | --- |
| Pearson Chi-Square | 338.137[a] | 1 | .000 | | |
| Continuity Correction[b] | 336.486 | 1 | .000 | | |
| Likelihood Ratio | 532.114 | 1 | .000 | | |
| Fisher's Exact Test | | | | .000 | .000 |
| Linear-by-Linear Association | 338.063 | 1 | .000 | | |
| N of Valid Cases | 4572 | | | | |

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 204.53.
b. Computed only for a 2x2 table

The association between a binary and a continuous variable was measured using a T-test for difference between means in each group.

```
***T-test for binary and continuous variables.
T-TEST GROUPS=unemployed(1 0)
  /MISSING=ANALYSIS
  /VARIABLES=satisfied participated education age health
  /CRITERIA=CI(.95).
```

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | 95% Confidence Interval of the Difference | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| Satisfied How satisfied are they with their life? | Equal variances assumed | 19.106 | .000 | -4.958 | 4570 | .000 | -.302 | .061 | -.421 | -.183 |
| | Equal variances not assumed | | | -4.505 | 949.189 | .000 | -.302 | .067 | -.434 | -.170 |
| Participated In how many activities did they participate? | Equal variances assumed | 15.899 | .000 | 2.421 | 4570 | .015 | .105 | .043 | .020 | .190 |
| | Equal variances not assumed | | | 2.127 | 926.959 | .034 | .105 | .049 | .008 | .202 |
| Education What is their education? | Equal variances assumed | 10.452 | .001 | -11.067 | 4570 | .000 | -.622 | .056 | -.732 | -.512 |
| | Equal variances not assumed | | | -10.862 | 1008.618 | .000 | -.622 | .057 | -.734 | -.510 |
| Age How old are they? | Equal variances assumed | 172.327 | .000 | -13.868 | 4570 | .000 | -9.588 | .691 | -10.944 | -8.233 |
| | Equal variances not assumed | | | -11.909 | 913.529 | .000 | -9.588 | .805 | -11.168 | -8.008 |
| Health How do they rate their health? | Equal variances assumed | 1.774 | .183 | 1.504 | 4570 | .133 | .047 | .032 | -.014 | .109 |
| | Equal variances not assumed | | | 1.505 | 1025.535 | .133 | .047 | .031 | -.014 | .109 |

```
T-TEST GROUPS=retired(1 0)
  /MISSING=ANALYSIS
  /VARIABLES=satisfied
participated education age health
  /CRITERIA=CI(.95).
```

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | 95% Confidence Interval of the Difference | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| Satisfied How satisfied are they with their life? | Equal variances assumed | 4.050 | .044 | 6.083 | 4570 | .000 | .302 | .050 | .205 | .399 |
| | Equal variances not assumed | | | 6.322 | 2530.869 | .000 | .302 | .048 | .208 | .395 |
| Participated In how many activities did | Equal variances assumed | 6.960 | .008 | -1.329 | 4570 | .184 | -.047 | .035 | -.116 | .022 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| they participate? | Equal variances not assumed | | | -1.458 | 2867.172 | .145 | -.047 | .032 | -.110 | .016 |
| Education What is their education? | Equal variances assumed | 72.183 | .000 | -8.856 | 4570 | .000 | -.408 | .046 | -.498 | -.318 |
| | Equal variances not assumed | | | -8.560 | 2181.410 | .000 | -.408 | .048 | -.501 | -.314 |
| Age How old are they? | Equal variances assumed | 1198.880 | .000 | 59.482 | 4570 | .000 | 25.707 | .432 | 24.860 | 26.554 |
| | Equal variances not assumed | | | 83.333 | 4569.924 | .000 | 25.707 | .308 | 25.102 | 26.312 |
| Health How do they rate their health? | Equal variances assumed | 88.924 | .000 | -9.287 | 4570 | .000 | -.236 | .025 | -.286 | -.187 |
| | Equal variances not assumed | | | -9.884 | 2669.250 | .000 | -.236 | .024 | -.283 | -.190 |

# B2 – Regression analysis

Before the regression analysis can be done, variables need to be made for the interaction. Without interaction between the moderator variables and the independent variable it is not possible to make conclusions about the whether the moderator variables actually have a moderator effect. To be able to make the interaction variables, the variables that will be used need to be centred.

```
***New variables computed for the interaction variables.
***Calculate the mean to be able to center the variables.
FREQUENCIES VARIABLES= unemployeddum retireddum participated
  /STATISTICS=MEAN
  /ORDER=ANALYSIS.
```

**Statistics**

| | UnemployedDum Are they unemployed? | RetiredDum Are they retired? | Participated In how many activities did they participate? |
|---|---|---|---|
| N Valid | 4572 | 4572 | 4572 |
| Missing | 0 | 0 | 0 |
| Mean | .1597 | .2802 | .5147 |

Centring variables means you take each respondent's score on a variable and take away the mean from the respondent's score, so only the difference between the mean and the original score remains as the respondent's new value.

```
***Center variables that are part of the interaction variables.
COMPUTE partic_c=participated - 0.5147.
EXECUTE.
COMPUTE unemployed_c=unemployeddum - 0.1597.
EXECUTE.
COMPUTE retired_c=retireddum - 0.2802.
EXECUTE.

***Make the interaction variables.
COMPUTE interaction1=partic_c * unemployed_c.
EXECUTE.
COMPUTE interaction2=partic_c * retired_c.
EXECUTE.
```

For this research, a linear regression analysis was done. A hierarchic regression was done which means variables can be added to the prior model. This gives the ability to see if the added variable or variables has/have influence on the existing model. For example, it shows if the added variable is able to explain more variance than the other variables and whether the model fit gets better when a variable is added. This way you can quickly choose the best fitting model to be able to test the hypotheses.

```
***Regression analysis.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) BCOV R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT satisfied
  /METHOD=ENTER education health age
  /METHOD=ENTER participated
  /METHOD=ENTER unemployeddum retireddum
  /METHOD=ENTER interaction1 interaction2
  /PARTIALPLOT ALL
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /CASEWISE PLOT(ZRESID) OUTLIERS(3)
  /SAVE PRED ZPRED ADJPRED SEPRED COOK LEVER RESID ZRESID SRESID DRESID SDRESID
DFBETA SDBETA DFFIT
    SDFIT COVRATIO.
```

**Model Summary[e]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | R Square Change | F Change | df1 | df2 | Sig. F Change | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | .370[a] | .137 | .136 | 1.406 | .137 | 241.574 | 3 | 4568 | .000 | |
| 2 | .370[b] | .137 | .136 | 1.406 | .000 | .003 | 1 | 4567 | .957 | |
| 3 | .372[c] | .138 | .137 | 1.405 | .001 | 3.404 | 2 | 4565 | .033 | |
| 4 | .372[d] | .139 | .137 | 1.405 | .000 | 1.302 | 2 | 4563 | .272 | 2.019 |

a. Predictors: (Constant), Age How old are they?, Education What is their education?, Health How do they rate their health?
b. Predictors: (Constant), Age How old are they?, Education What is their education?, Health How do they rate their health?, Participated In how many activities did they participate?
c. Predictors: (Constant), Age How old are they?, Education What is their education?, Health How do they rate their health?, Participated In how many activities did they participate?, UnemployedDum Are they unemployed?, RetiredDum Are they retired?
d. Predictors: (Constant), Age How old are they?, Education What is their education?, Health How do they rate their health?, Participated In how many activities did they participate?, UnemployedDum Are they unemployed?, RetiredDum Are they retired?, interaction1, interaction2
e. Dependent Variable: Satisfied How satisfied are they with their life?

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 1432.245 | 3 | 477.415 | 241.574 | .000[b] |
| | Residual | 9027.606 | 4568 | 1.976 | | |
| | Total | 10459.850 | 4571 | | | |
| 2 | Regression | 1432.250 | 4 | 358.063 | 181.141 | .000[c] |
| | Residual | 9027.600 | 4567 | 1.977 | | |
| | Total | 10459.850 | 4571 | | | |
| 3 | Regression | 1445.696 | 6 | 240.949 | 122.023 | .000[d] |
| | Residual | 9014.155 | 4565 | 1.975 | | |
| | Total | 10459.850 | 4571 | | | |
| 4 | Regression | 1450.836 | 8 | 181.354 | 91.855 | .000[e] |
| | Residual | 9009.015 | 4563 | 1.974 | | |
| | Total | 10459.850 | 4571 | | | |

a. Dependent Variable: Satisfied How satisfied are they with their life?
b. Predictors: (Constant), Age How old are they?, Education What is their education?, Health How do they rate their health?
c. Predictors: (Constant), Age How old are they?, Education What is their education?, Health How do they rate their health?, Participated In how many activities did they participate?
d. Predictors: (Constant), Age How old are they?, Education What is their education?, Health How do they rate their health?, Participated In how many activities did they participate?, UnemployedDum Are they unemployed?, RetiredDum Are they retired?

**Coefficients^a**

| Model | | Unstandardized Coefficients B | Std. Error | Standardized Coefficients Beta | t | Sig. | 95,0% Confidence Interval for B Lower Bound | Upper Bound | Correlations Zero-order | Partial | Part | Collinearity Statistics Tolerance | VIF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | (Constant) | 3.972 | .139 | | 28.675 | .000 | 3.700 | 4.243 | | | | | |
| | Education What is their education? | .031 | .015 | .029 | 2.066 | .039 | .002 | .061 | .042 | .031 | .028 | .944 | 1.060 |
| | Health How do they rate their health? | .698 | .028 | .360 | 25.177 | .000 | .643 | .752 | .311 | .349 | .346 | .924 | 1.082 |
| | Age How old are they? | .018 | .001 | .210 | 14.554 | .000 | .016 | .021 | .113 | .211 | .200 | .905 | 1.105 |
| 2 | (Constant) | 3.971 | .139 | | 28.650 | .000 | 3.700 | 4.243 | | | | | |
| | Education What is their education? | .031 | .015 | .029 | 2.052 | .040 | .001 | .061 | .042 | .030 | .028 | .936 | 1.068 |
| | Health How do they rate their health? | .698 | .028 | .360 | 25.171 | .000 | .643 | .752 | .311 | .349 | .346 | .924 | 1.082 |
| | Age How old are they? | .018 | .001 | .210 | 14.550 | .000 | .016 | .021 | .113 | .210 | .200 | .905 | 1.105 |
| | Participated In how many activities did they participate? | .001 | .019 | .001 | .054 | .957 | -.037 | .039 | .006 | .001 | .001 | .989 | 1.011 |
| 3 | (Constant) | 4.068 | .149 | | 27.307 | .000 | 3.776 | 4.361 | | | | | |
| | Education What is their education? | .022 | .016 | .021 | 1.441 | .150 | -.008 | .053 | .042 | .021 | .020 | .892 | 1.121 |
| | Health How do they rate their health? | .697 | .028 | .360 | 25.148 | .000 | .643 | .752 | .311 | .349 | .346 | .922 | 1.084 |
| | Age How old are they? | .018 | .002 | .203 | 10.680 | .000 | .014 | .021 | .113 | .156 | .147 | .523 | 1.913 |
| | Participated In how many activities did they participate? | .004 | .020 | .003 | .182 | .856 | -.035 | .042 | .006 | .003 | .002 | .987 | 1.013 |
| | UnemployedDum Are they unemployed? | -.156 | .060 | -.038 | -2.587 | .010 | -.275 | -.038 | -.073 | -.038 | -.036 | .880 | 1.136 |
| | RetiredDum Are they retired? | -.010 | .063 | -.003 | -.160 | .873 | -.133 | .113 | .090 | -.002 | -.002 | .542 | 1.846 |
| 4 | (Constant) | 4.078 | .149 | | 27.346 | .000 | 3.786 | 4.371 | | | | | |
| | Education What is their education? | .022 | .016 | .021 | 1.427 | .154 | -.008 | .053 | .042 | .021 | .020 | .890 | 1.124 |
| | Health How do they rate their health? | .697 | .028 | .359 | 25.125 | .000 | .642 | .751 | .311 | .349 | .345 | .922 | 1.084 |
| | Age How old are they? | .017 | .002 | .201 | 10.545 | .000 | .014 | .021 | .113 | .154 | .145 | .520 | 1.922 |
| | Participated In how many activities did they participate? | .006 | .020 | .005 | .325 | .745 | -.033 | .046 | .006 | .005 | .004 | .942 | 1.061 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UnemployedDum Are they unemployed? | -.152 | .061 | -.037 | -2.510 | .012 | -.271 | -.033 | -.073 | -.037 | -.034 | .878 | 1.138 |
| RetiredDum Are they retired? | -.006 | .063 | -.002 | -.094 | .925 | -.129 | .117 | .090 | -.001 | -.001 | .540 | 1.850 |
| interaction1 | -.079 | .049 | -.023 | -1.613 | .107 | -.174 | .017 | -.034 | -.024 | -.022 | .904 | 1.106 |
| interaction2 | -.021 | .050 | -.006 | -.410 | .682 | -.119 | .078 | .001 | -.006 | -.006 | .893 | 1.120 |

a. Dependent Variable: Satisfied How satisfied are they with their life?

Because there was no significant relation between the main concepts, the decision was made to do the regression analysis again, but without the respondents who did not participate in any activity.

```
***Do every analysis again without respondents who did not participate in any
activity.

***Transform variable so that respondent who did not participate in any activity
are missing.
RECODE participated (0=SYSMIS) (ELSE=Copy) INTO participant.
VARIABLE LABELS  participant 'Participated in activities'.
EXECUTE.
```

```
***Dummy for missing (1) and not missing (0).
COMPUTE m1=0.
IF MISSING(nomem_encr) m1=1.
COMPUTE m2=0.
IF MISSING(age) m2=1.
COMPUTE m3=0.
IF MISSING(occupation) m3=1.
COMPUTE m4=0.
IF MISSING(education) m4=1.
COMPUTE m5=0.
IF MISSING(health) m5=1.
COMPUTE m6=0.
IF MISSING(satisfied) m6=1.
COMPUTE m7=0.
IF MISSING(participant) m7=1.
EXECUTE.

***How many missing scores does everyone have?.
COMPUTE miss = m1+m2+m3+m4+m5+m6+m7.
EXECUTE.
FREQUENCIES VARIABLES=miss
  /ORDER=ANALYSIS.
```

**miss**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | .00 | 1380 | 30.2 | 30.2 | 30.2 |
| | 1.00 | 3192 | 69.8 | 69.8 | 100.0 |
| | Total | 4572 | 100.0 | 100.0 | |

```
***New dataset without missing data.
DATASET COPY  SecondAnalysisAUG.
DATASET ACTIVATE  SecondAnalysisAUG.
FILTER OFF.
USE ALL.
SELECT IF (miss=0).
EXECUTE.
DATASET ACTIVATE  SecondAnalysisAUG.
```

I recoded the occupation variable again, so that it became two dummy variables, unemployed and retired with employed as reference group.

```
***Recode occupation into dummy variables
(unemployed= 1=unemployed, 0=employed or retired;
retired= 1=retired, 0=employed or unemployed).
RECODE occupation (2=1) (ELSE=0) INTO
unemployeddum.
EXECUTE.
```

Then, I calculated the bivariate statistics.

```
***Bivariate statistics.
***Correlations between continuous variables.
CORRELATIONS
  /VARIABLES=satisfied participant education
health age
  /PRINT=TWOTAIL NOSIG
```

**Correlations**

| | | Satisfied How satisfied are they with their life? | Participant Participated in activities | Education What is their education? | Health How do they rate their health? | Age How old are they? |
|---|---|---|---|---|---|---|
| Satisfied How satisfied are they with their life? | Pearson Correlation | 1 | -.078** | .032 | .301** | .128** |
| | Sig. (2-tailed) | | .004 | .236 | .000 | .000 |
| | N | 1380 | 1380 | 1380 | 1380 | 1380 |
| Participant Participated in activities | Pearson Correlation | -.078** | 1 | .036 | -.034 | -.080** |
| | Sig. (2-tailed) | .004 | | .178 | .203 | .003 |
| | N | 1380 | 1380 | 1380 | 1380 | 1380 |
| Education What is their education? | Pearson Correlation | .032 | .036 | 1 | .142** | -.174** |
| | Sig. (2-tailed) | .236 | .178 | | .000 | .000 |
| | N | 1380 | 1380 | 1380 | 1380 | 1380 |
| Health How do they rate their health? | Pearson Correlation | .301** | -.034 | .142** | 1 | -.254** |
| | Sig. (2-tailed) | .000 | .203 | .000 | | .000 |
| | N | 1380 | 1380 | 1380 | 1380 | 1380 |
| Age How old are they? | Pearson Correlation | .128** | -.080** | -.174** | -.254** | 1 |
| | Sig. (2-tailed) | .000 | .003 | .000 | .000 | |
| | N | 1380 | 1380 | 1380 | 1380 | 1380 |

**. Correlation is significant at the 0.01 level (2-tailed).

```
***Crosstabs for binary variables.
CROSSTABS
  /TABLES=unemployeddum BY
retireddum
  /FORMAT=AVALUE TABLES
  /STATISTICS=CHISQ PHI
  /CELLS=COUNT
```

**Chi-Square Tests**

| | Value | df | Asymptotic Significance (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
|---|---|---|---|---|---|
| Pearson Chi-Square | 108.727a | 1 | .000 | | |
| Continuity Correctionb | 107.061 | 1 | .000 | | |
| Likelihood Ratio | 170.254 | 1 | .000 | | |
| Fisher's Exact Test | | | | .000 | .000 |
| Linear-by-Linear Association | 108.648 | 1 | .000 | | |
| N of Valid Cases | 1380 | | | | |

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 65.00.
b. Computed only for a 2x2 table

**Symmetric Measures**

| | | Value | Approximate Significance |
|---|---|---|---|
| Nominal by Nominal | Phi | -.281 | .000 |
| | Cramer's V | .281 | .000 |
| N of Valid Cases | | 1380 | |

```
***T-test for categorical and continuous variables.
T-TEST GROUPS=unemployeddum(1 0)
  /MISSING=ANALYSIS
  /VARIABLES=satisfied participant education age health
  /CRITERIA=CI(.95).

 T-TEST GROUPS=retireddum(1 0)
  /MISSING=ANALYSIS
  /VARIABLES=satisfied participant education age health
  /CRITERIA=CI(.95).
```

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| Satisfied How satisfied are they with their life? | Equal variances assumed | 13.162 | .000 | -4.293 | 1378 | .000 | -.437 | .102 | -.637 | -.238 |
| | Equal variances not assumed | | | -3.683 | 289.306 | .000 | -.437 | .119 | -.671 | -.204 |
| Participant Participated in activities | Equal variances assumed | 3.112 | .078 | 2.593 | 1378 | .010 | .250 | .096 | .061 | .438 |
| | Equal variances not assumed | | | 2.258 | 292.323 | .025 | .250 | .111 | .032 | .467 |
| Education What is their education? | Equal variances assumed | 9.918 | .002 | -6.144 | 1378 | .000 | -.606 | .099 | -.800 | -.413 |
| | Equal variances not assumed | | | -5.743 | 308.270 | .000 | -.606 | .106 | -.814 | -.398 |
| Age How old are they? | Equal variances assumed | 64.722 | .000 | -10.581 | 1378 | .000 | -13.273 | 1.254 | -15.734 | -10.812 |
| | Equal variances not assumed | | | -9.044 | 288.589 | .000 | -13.273 | 1.468 | -16.162 | -10.384 |
| Health How do they rate their health? | Equal variances assumed | 4.644 | .031 | 1.465 | 1378 | .143 | .083 | .057 | -.028 | .195 |
| | Equal variances not assumed | | | 1.421 | 318.019 | .156 | .083 | .059 | -.032 | .199 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| Satisfied How satisfied are | Equal variances assumed | 5.669 | .017 | 3.359 | 1378 | .001 | .284 | .085 | .118 | .450 |

| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
|---|---|---|---|---|---|---|---|---|---|---|
| they with their life? | Equal variances not assumed | | | 3.566 | 811.984 | .000 | .284 | .080 | .128 | .440 |
| Participant Participated in activities | Equal variances assumed | 13.542 | .000 | -2.196 | 1378 | .028 | -.175 | .080 | -.331 | -.019 |
| | Equal variances not assumed | | | -2.565 | 1022.637 | .010 | -.175 | .068 | -.309 | -.041 |
| Education What is their education? | Equal variances assumed | .924 | .337 | -4.127 | 1378 | .000 | -.339 | .082 | -.501 | -.178 |
| | Equal variances not assumed | | | -4.041 | 682.737 | .000 | -.339 | .084 | -.504 | -.175 |
| Age How old are they? | Equal variances assumed | 395.021 | .000 | 32.043 | 1378 | .000 | 26.188 | .817 | 24.585 | 27.791 |
| | Equal variances not assumed | | | 45.129 | 1374.357 | .000 | 26.188 | .580 | 25.050 | 27.326 |
| Health How do they rate their health? | Equal variances assumed | 68.799 | .000 | -5.647 | 1378 | .000 | -.263 | .047 | -.355 | -.172 |
| | Equal variances not assumed | | | -6.128 | 854.465 | .000 | -.263 | .043 | -.348 | -.179 |

```
***New variables computed for the interaction variables.
***Calculate the mean to be able to center the variables.
FREQUENCIES VARIABLES= unemployeddum retireddum
participant
  /STATISTICS=MEAN
  /HISTOGRAM NORMAL
```

**Statistics**

| | | UnemployedDum Are they unemployed? | RetiredDum Are they retired? | Participant Participated in activities |
|---|---|---|---|---|
| N | Valid | 1380 | 1380 | 1380 |
| | Missing | 0 | 0 | 0 |
| Mean | | .1667 | .2826 | 1.7051 |

```
***Center variables that are part of the interaction variables.
COMPUTE partic_c=participant - 1.7051.
EXECUTE.
COMPUTE unemployed_c=unemployeddum - 0.1667.
EXECUTE.
COMPUTE retired_c=retireddum - 0.2826.
EXECUTE.

***Make the interaction variables.
COMPUTE interaction1=partic_c * unemployed_c.
EXECUTE.
COMPUTE interaction2=partic_c * retired_c.
EXECUTE.
```

Now I have all the knowledge and variables needed for the additional regression analysis.

```
***Regression analysis.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) BCOV R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT satisfied
  /METHOD=ENTER education health age
  /METHOD=ENTER participant
  /METHOD=ENTER unemployeddum retireddum
  /METHOD=ENTER interaction1 interaction2
  /PARTIALPLOT ALL
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /CASEWISE PLOT(ZRESID) OUTLIERS(3)
  /SAVE PRED ZPRED ADJPRED SEPRED COOK LEVER RESID ZRESID SRESID DRESID SDRESID
DFBETA SDBETA DFFIT
    SDFIT COVRATIO.
```

**Model Summary[e]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change | |
| 1 | .368[a] | .136 | .134 | 1.321 | .136 | 71.961 | 3 | 1376 | .000 | |
| 2 | .371[b] | .138 | .135 | 1.320 | .002 | 3.798 | 1 | 1375 | .052 | |
| 3 | .377[c] | .142 | .139 | 1.317 | .005 | 3.605 | 2 | 1373 | .027 | |
| 4 | .378[d] | .143 | .138 | 1.318 | .001 | .607 | 2 | 1371 | .545 | 1.998 |

a. Predictors: (Constant), Age How old are they?, Education What is their education?, Health How do they rate their health?
b. Predictors: (Constant), Age How old are they?, Education What is their education?, Health How do they rate their health?, Participant Participated in activities
c. Predictors: (Constant), Age How old are they?, Education What is their education?, Health How do they rate their health?, Participant Participated in activities, UnemployedDum Are they unemployed?, RetiredDum Are they retired?
d. Predictors: (Constant), Age How old are they?, Education What is their education?, Health How do they rate their health?, Participant Participated in activities, UnemployedDum Are they unemployed?, RetiredDum Are they retired?, interaction1, interaction2
e. Dependent Variable: Satisfied How satisfied are they with their life?

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 376.846 | 3 | 125.615 | 71.961 | .000[b] |
| | Residual | 2401.962 | 1376 | 1.746 | | |
| | Total | 2778.808 | 1379 | | | |
| 2 | Regression | 383.462 | 4 | 95.866 | 55.030 | .000[c] |
| | Residual | 2395.346 | 1375 | 1.742 | | |
| | Total | 2778.808 | 1379 | | | |
| 3 | Regression | 395.976 | 6 | 65.996 | 38.027 | .000[d] |
| | Residual | 2382.832 | 1373 | 1.735 | | |
| | Total | 2778.808 | 1379 | | | |
| 4 | Regression | 398.085 | 8 | 49.761 | 28.656 | .000[e] |
| | Residual | 2380.723 | 1371 | 1.736 | | |
| | Total | 2778.808 | 1379 | | | |

a. Dependent Variable: Satisfied How satisfied are they with their life?
b. Predictors: (Constant), Age How old are they?, Education What is their education?, Health How do they rate their health?
c. Predictors: (Constant), Age How old are they?, Education What is their education?, Health How do they rate their health?, Participant Participated in activities
d. Predictors: (Constant), Age How old are they?, Education What is their education?, Health How do they rate their health?, Participant Participated in activities, UnemployedDum Are they unemployed?, RetiredDum Are they retired?
e. Predictors: (Constant), Age How old are they?, Education What is their education?, Health How do they rate their health?, Participant Participated in activities, UnemployedDum Are they unemployed?, RetiredDum Are they retired?, interaction1, interaction2

**Coefficients[a]**

| Model | Unstandardized Coefficients B | Std. Error | Standardized Coefficients Beta | t | Sig. | 95.0% Confidence Interval for B Lower Bound | Upper Bound | Correlations Zero-order | Partial | Part | Collinearity Statistics Tolerance | VIF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1  (Constant) | 4.307 | .237 | | 18.164 | .000 | 3.842 | 4.772 | | | | | |
| Education What is their education? | .021 | .026 | .020 | .791 | .429 | -.031 | .072 | .032 | .021 | .020 | .960 | 1.042 |
| Health How do they rate their health? | .637 | .047 | .354 | 13.599 | .000 | .545 | .729 | .301 | .344 | .341 | .926 | 1.080 |
| Age How old are they? | .017 | .002 | .221 | 8.458 | .000 | .013 | .021 | .128 | .222 | .212 | .916 | 1.091 |
| 2  (Constant) | 4.426 | .245 | | 18.094 | .000 | 3.946 | 4.905 | | | | | |
| Education What is their education? | .022 | .026 | .022 | .847 | .397 | -.029 | .074 | .032 | .023 | .021 | .959 | 1.043 |
| Health How do they rate their health? | .632 | .047 | .351 | 13.473 | .000 | .540 | .724 | .301 | .341 | .337 | .923 | 1.084 |
| Age How old are they? | .017 | .002 | .217 | 8.265 | .000 | .013 | .021 | .128 | .218 | .207 | .909 | 1.100 |
| Participant Participated in activities | -.052 | .027 | -.049 | -1.949 | .052 | -.105 | .000 | -.078 | -.052 | -.049 | .990 | 1.011 |
| 3  (Constant) | 4.607 | .261 | | 17.625 | .000 | 4.094 | 5.120 | | | | | |
| Education What is their education? | .006 | .027 | .006 | .225 | .822 | -.047 | .059 | .032 | .006 | .006 | .911 | 1.098 |
| Health How do they rate their health? | .631 | .047 | .351 | 13.485 | .000 | .540 | .723 | .301 | .342 | .337 | .922 | 1.084 |
| Age How old are they? | .016 | .003 | .202 | 5.874 | .000 | .011 | .021 | .128 | .157 | .147 | .527 | 1.898 |
| Participant Participated in activities | -.048 | .027 | -.045 | -1.801 | .072 | -.101 | .004 | -.078 | -.049 | -.045 | .986 | 1.014 |
| UnemployedDum Are they unemployed? | -.276 | .103 | -.072 | -2.685 | .007 | -.477 | -.074 | -.115 | -.072 | -.067 | .859 | 1.165 |
| RetiredDum Are they retired? | -.037 | .105 | -.012 | -.348 | .728 | -.243 | .170 | .090 | -.009 | -.009 | .561 | 1.782 |
| 4  (Constant) | 4.614 | .262 | | 17.642 | .000 | 4.101 | 5.128 | | | | | |
| Education What is their education? | .007 | .027 | .006 | .246 | .806 | -.046 | .059 | .032 | .007 | .006 | .905 | 1.105 |
| Health How do they rate their health? | .630 | .047 | .350 | 13.457 | .000 | .538 | .722 | .301 | .342 | .336 | .922 | 1.085 |
| Age How old are they? | .016 | .003 | .201 | 5.818 | .000 | .010 | .021 | .128 | .155 | .145 | .525 | 1.905 |
| Participant Participated in activities | -.049 | .028 | -.046 | -1.717 | .086 | -.104 | .007 | -.078 | -.046 | -.043 | .879 | 1.138 |
| UnemployedDum Are they unemployed? | -.266 | .103 | -.070 | -2.580 | .010 | -.468 | -.064 | -.115 | -.070 | -.064 | .852 | 1.174 |
| RetiredDum Are they retired? | -.036 | .106 | -.011 | -.338 | .735 | -.243 | .171 | .090 | -.009 | -.008 | .557 | 1.796 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| interaction1 | -.069 | .065 | | -.028 | -1.065 | .287 | -.197 | .058 | -.057 | -.029 | -.027 | .907 | 1.102 |
| interaction2 | -.040 | .075 | | -.014 | -.529 | .597 | -.188 | .108 | .017 | -.014 | -.013 | .835 | 1.197 |

a. Dependent Variable: Satisfied How satisfied are they with their life?

# Appendix C

Appendix C contains a detailed description of the assumptions, outliers, and multicollinearity as stated in the research paper.
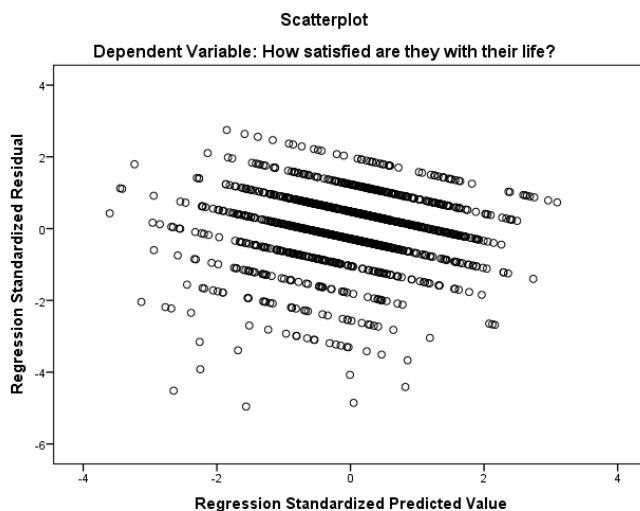
## C1 – Assumptions

There are four assumptions that need to be met when doing a linear regression analysis: 1) the observations are independent to each other, 2) the relation between de independent variables and the dependent variable is linear, 3) the standard deviations of the residuals are constant, and 4) the residuals must be normally distributed. The following syntax was used to test each assumption.

```
***Regression analysis.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) BCOV R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT satisfied
  /METHOD=ENTER education health age
  /METHOD=ENTER participant
  /METHOD=ENTER unemployeddum retireddum
  /METHOD=ENTER interaction1 interaction2
  /PARTIALPLOT ALL
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /CASEWISE PLOT(ZRESID) OUTLIERS(3)
  /SAVE PRED ZPRED ADJPRED SEPRED COOK LEVER RESID ZRESID SRESID DRESID SDRESID
DFBETA SDBETA DFFIT
    SDFIT COVRATIO.
```

The first assumption was not met, as there was more than one person in one household who could answer the questionnaire. Because of this reason the respondents might have influenced each others' answers.

The scatterplot below shows the residuals. The scatterplot shows eleven lines, which makes sense, because respondents could score their life satisfaction from 0 to 10. For each score there is a line of points, every score on life satisfaction is connected to another score on the other variables. This means that the second assumption is also not met.



**Scatterplot**
Dependent Variable: How satisfied are they with their life?

The third assumption can be tested with the scatterplot as well. Most points in the scatterplot have the same distance to the centreline. There are a few points that fall below -3, these points or respondents might be outliers, but I need to look into that more to be able to conclude that from this scatterplot.

Because most points have the same distance to the centreline, I would say that the assumption that the standard deviations of the residuals are constant, is not violated.

The last assumption can be tested with a histogram of the residuals. The histogram shows the residuals are pretty normally distributed. Because there is only one peak, it is not problematic. The P-P-plot of the residuals shows a slight mirrored S-shape which is conform to the histogram. This assumption is not violated. I need to make sure to be strict with the results, thus using a significance value of at least *p<0.05*. This makes sure I will not accept or reject any hypotheses wrongly.
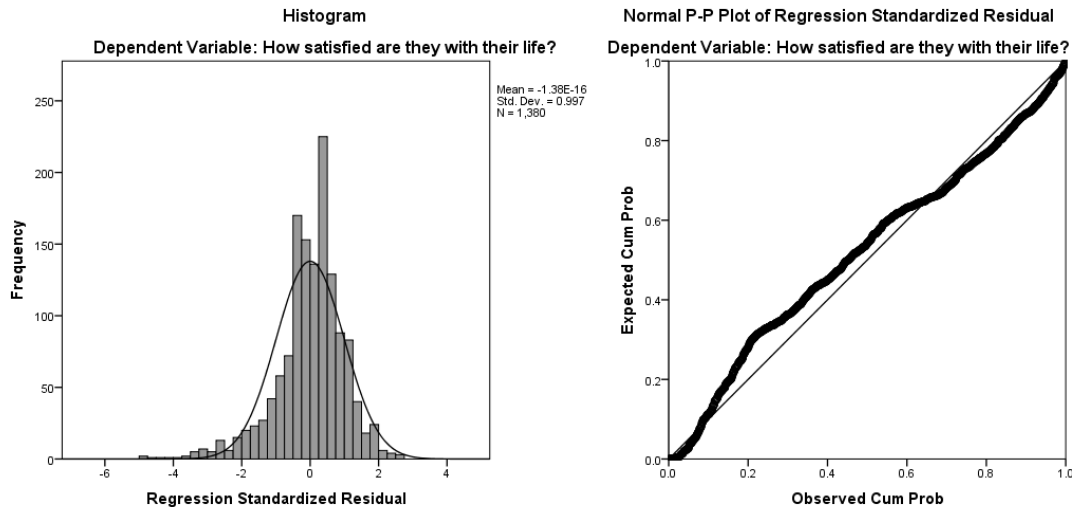


# C2 – Outliers

To find outliers the following syntax was used.

```
***Regression analysis.
REGRESSION
  /DESCRIPTIVES MEAN STDDEV CORR SIG N
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) BCOV R ANOVA COLLIN TOL CHANGE ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT satisfied
  /METHOD=ENTER education health age
  /METHOD=ENTER participant
  /METHOD=ENTER unemployed retired
  /METHOD=ENTER interaction1 interaction2
  /PARTIALPLOT ALL
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS DURBIN HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /CASEWISE PLOT(ZRESID) OUTLIERS(3)
  /SAVE PRED ZPRED ADJPRED SEPRED COOK LEVER RESID ZRESID SRESID DRESID SDRESID
DFBETA SDBETA DFFIT
    SDFIT COVRATIO.
```

For the first analysis the following tables show the outliers.

**Residuals Statistics<sup>a</sup>**

| | Minimum | Maximum | Mean | Std. Deviation | N |
|---|---|---|---|---|---|
| Predicted Value | 5.1037 | 9.1369 | 7.2675 | .56338 | 4572 |
| Std. Predicted Value | -3.841 | 3.318 | .000 | 1.000 | 4572 |
| Standard Error of Predicted Value | .031 | .521 | .057 | .025 | 4572 |
| Adjusted Predicted Value | 5.1190 | 9.1330 | 7.2676 | .56338 | 4572 |
| Residual | -8.22812 | 4.14666 | .00000 | 1.40389 | 4572 |
| Std. Residual | -5.856 | 2.951 | .000 | .999 | 4572 |
| Stud. Residual | -5.862 | 2.955 | .000 | 1.000 | 4572 |
| Deleted Residual | -8.24538 | 4.15735 | -.00010 | 1.40694 | 4572 |

70

| | | | | | |
|---|---|---|---|---|---|
| Stud. Deleted Residual | -5.884 | 2.957 | .000 | 1.001 | 4572 |
| Mahal. Distance | 1.244 | 628.390 | 7.998 | 17.328 | 4572 |
| Cook's Distance | .000 | .031 | .000 | .001 | 4572 |
| Centered Leverage Value | .000 | .137 | .002 | .004 | 4572 |

a. Dependent Variable: Satisfied

**Casewise Diagnostics[a]**

| Case Number | Std. Residual | Satisfied | Predicted Value | Residual |
|---|---|---|---|---|
| 39 | -3.273 | 3.00 | 7.5992 | -4.59922 |
| 56 | -3.584 | 3.00 | 8.0355 | -5.03548 |
| 77 | -4.305 | .00 | 6.0492 | -6.04921 |
| 83 | -3.208 | 2.00 | 6.5083 | -4.50828 |
| 127 | -4.607 | .00 | 6.4735 | -6.47352 |
| 249 | -4.588 | .00 | 6.4464 | -6.44636 |
| 277 | -4.565 | 2.00 | 8.4144 | -6.41445 |
| 301 | -3.038 | 3.00 | 7.2690 | -4.26903 |
| 313 | -3.067 | 2.00 | 6.3100 | -4.30997 |
| 683 | -3.328 | 2.00 | 6.6765 | -4.67645 |
| 703 | -3.380 | 1.00 | 5.7490 | -4.74903 |
| 716 | -3.126 | 3.00 | 7.3923 | -4.39228 |
| 772 | -3.306 | 3.00 | 7.6455 | -4.64546 |
| 804 | -3.981 | 2.00 | 7.5943 | -5.59431 |
| 834 | -3.614 | 2.00 | 7.0780 | -5.07795 |
| 840 | -3.192 | 2.00 | 6.4847 | -4.48474 |
| 903 | -3.335 | 2.00 | 6.6865 | -4.68651 |
| 917 | -3.226 | 2.00 | 6.5327 | -4.53273 |
| 1027 | -5.856 | .00 | 8.2281 | -8.22812 |
| 1039 | -3.040 | 2.00 | 6.2718 | -4.27183 |
| 1097 | -3.024 | 3.00 | 7.2496 | -4.24963 |
| 1105 | -3.159 | 2.00 | 6.4382 | -4.43823 |
| 1141 | -4.201 | .00 | 5.9028 | -5.90281 |
| 1304 | -4.919 | .00 | 6.9117 | -6.91169 |
| 1331 | -3.042 | 2.00 | 6.2742 | -4.27420 |
| 1369 | -3.042 | 3.00 | 7.2746 | -4.27463 |
| 1509 | -4.125 | 1.00 | 6.7955 | -5.79546 |
| 1599 | -4.674 | .00 | 6.5675 | -6.56750 |
| 1602 | -4.276 | 1.00 | 7.0084 | -6.00841 |
| 1709 | -4.074 | .00 | 5.7241 | -5.72407 |
| 1778 | -3.199 | 3.00 | 7.4943 | -4.49428 |
| 1815 | -3.122 | 2.00 | 6.3866 | -4.38660 |
| 1816 | -3.648 | 1.00 | 6.1253 | -5.12532 |
| 1832 | -4.222 | .00 | 5.9327 | -5.93268 |
| 2004 | -3.147 | 2.00 | 6.4214 | -4.42136 |
| 2038 | -3.360 | 2.00 | 6.7213 | -4.72128 |
| 2114 | -3.330 | 3.00 | 7.6786 | -4.67856 |
| 2273 | -3.115 | 3.00 | 7.3775 | -4.37749 |
| 2317 | -3.323 | 3.00 | 7.6688 | -4.66875 |
| 2341 | -4.212 | 2.00 | 7.9187 | -5.91870 |
| 2410 | -3.499 | 3.00 | 7.9161 | -4.91605 |
| 2631 | -4.147 | 1.00 | 6.8270 | -5.82700 |
| 2634 | -4.563 | .00 | 6.4110 | -6.41104 |
| 2681 | -4.863 | .00 | 6.8329 | -6.83291 |
| 2706 | -3.131 | 3.00 | 7.3999 | -4.39992 |
| 2827 | -3.356 | 2.00 | 6.7161 | -4.71612 |
| 2846 | -3.858 | .00 | 5.4210 | -5.42097 |
| 2888 | -3.360 | 2.00 | 6.7210 | -4.72102 |
| 2904 | -3.959 | .00 | 5.5627 | -5.56271 |
| 3075 | -3.591 | 1.00 | 6.0460 | -5.04598 |
| 3087 | -3.182 | 3.00 | 7.4716 | -4.47162 |
| 3277 | -4.483 | 1.00 | 7.2989 | -6.29890 |
| 3280 | -3.067 | 3.00 | 7.3088 | -4.30884 |
| 3282 | -3.664 | 1.00 | 6.1481 | -5.14810 |
| 3297 | -3.070 | 3.00 | 7.3137 | -4.31375 |
| 3389 | -3.835 | 2.00 | 7.3882 | -5.38821 |
| 3495 | -5.092 | .00 | 7.1551 | -7.15513 |
| 3580 | -4.258 | 1.00 | 6.9835 | -5.98345 |
| 3585 | -4.110 | 2.00 | 7.7746 | -5.77458 |
| 3686 | -3.512 | 2.00 | 6.9345 | -4.93453 |
| 3808 | -3.006 | 3.00 | 7.2245 | -4.22446 |
| 3813 | -3.413 | 2.00 | 6.7955 | -4.79546 |
| 3865 | -3.335 | 3.00 | 7.6861 | -4.68614 |
| 3879 | -3.617 | 2.00 | 7.0829 | -5.08285 |
| 3908 | -5.016 | .00 | 7.0481 | -7.04808 |
| 3979 | -3.013 | 4.00 | 8.2330 | -4.23303 |

| | | | | |
|---|---|---|---|---|
| 4205 | -3.984 | 2.00 | 7.5982 | -5.59821 |
| 4300 | -3.459 | 1.00 | 5.8610 | -4.86098 |
| 4424 | -4.035 | .00 | 5.6696 | -5.66955 |
| 4437 | -3.405 | 4.00 | 8.7842 | -4.78416 |

a. Dependent Variable: Satisfied

For the second analysis the follow tables show the residuals.

**Residuals Statistics[a]**

| | Minimum | Maximum | Mean | Std. Deviation | N |
|---|---|---|---|---|---|
| Predicted Value | 5.44 | 9.04 | 7.37 | .537 | 1380 |
| Std. Predicted Value | -3.603 | 3.094 | .000 | 1.000 | 1380 |
| Standard Error of Predicted Value | .052 | .627 | .098 | .043 | 1380 |
| Adjusted Predicted Value | 5.42 | 9.02 | 7.37 | .538 | 1380 |
| Residual | -6.534 | 3.622 | .000 | 1.314 | 1380 |
| Std. Residual | -4.958 | 2.749 | .000 | .997 | 1380 |
| Stud. Residual | -4.973 | 2.762 | .000 | 1.001 | 1380 |
| Deleted Residual | -6.574 | 3.658 | .000 | 1.324 | 1380 |
| Stud. Deleted Residual | -5.017 | 2.769 | .000 | 1.002 | 1380 |
| Mahal. Distance | 1.119 | 311.148 | 7.994 | 15.078 | 1380 |
| Cook's Distance | .000 | .048 | .001 | .003 | 1380 |
| Centered Leverage Value | .001 | .226 | .006 | .011 | 1380 |

a. Dependent Variable: Satisfied How satisfied are they with their life?

**Casewise Diagnostics[a]**

| Case Number | Std. Residual | Satisfied How satisfied are they with their life? | Predicted Value | Residual |
|---|---|---|---|---|
| 88 | -4.958 | 0 | 6.53 | -6.534 |
| 103 | -3.307 | 3 | 7.36 | -4.358 |
| 170 | -3.055 | 3 | 7.03 | -4.025 |
| 175 | -3.191 | 3 | 7.21 | -4.205 |
| 315 | -3.391 | 2 | 6.47 | -4.468 |
| 402 | -3.157 | 2 | 6.16 | -4.160 |
| 419 | -3.230 | 3 | 7.26 | -4.256 |
| 525 | -3.095 | 3 | 7.08 | -4.079 |
| 539 | -3.509 | 3 | 7.62 | -4.624 |
| 577 | -3.259 | 3 | 7.29 | -4.295 |
| 687 | -3.418 | 3 | 7.50 | -4.504 |
| 730 | -3.667 | 3 | 7.83 | -4.833 |
| 990 | -4.856 | 1 | 7.40 | -6.399 |
| 991 | -3.920 | 1 | 6.17 | -5.165 |
| 1029 | -4.075 | 2 | 7.37 | -5.369 |
| 1078 | -3.100 | 3 | 7.09 | -4.085 |
| 1090 | -4.412 | 2 | 7.81 | -5.815 |
| 1157 | -3.297 | 3 | 7.34 | -4.345 |
| 1261 | -3.045 | 4 | 8.01 | -4.012 |
| 1340 | -4.516 | 0 | 5.95 | -5.951 |

a. Dependent Variable: Satisfied How satisfied are they with their life?

The cases above have a score on life satisfaction that does not match their predicted score and are therefore seen as outliers. But these outliers will not be taken out of the analysis, because they do not have much influence on the fit of the model. It was established that the model is not a good fit for people who score low on life satisfaction.

# C3 – Multicollinearity

Multicollinearity occurs when independent variables are highly correlated with another variable in a regression model. This means that these variables explain the same variance in the dependent variable. Multicollinearity can be found using the VIF-score of the complete model, when the score of VIF is 1, it means there is no correlation between the variables and a VIF-score higher than 5 means there is high multicollinearity between the given variable and the other variables. In this research the two highest VIF-scores are 1.80 and 1.91. These scores are respectively for the variables retired and age. These two variables are strongly associated, because older people are often the only people that are retired. Since the scores are not higher than 5, the choice was made to continue using these

variables to answer the research question. The other variables are not strongly associated to each other, this means they all explain their own portion of the variance in life satisfaction.

**Coefficients[a]**

| Model | Unstandardized Coefficients B | Std. Error | Standardized Coefficients Beta | t | Sig. | 95.0% Confidence Interval for B Lower Bound | Upper Bound | Correlations Zero-order | Partial | Part | Collinearity Statistics Tolerance | VIF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 (Constant) | 4.307 | .237 | | 18.164 | .000 | 3.842 | 4.772 | | | | | |
| Education What is their education? | .021 | .026 | .020 | .791 | .429 | -.031 | .072 | .032 | .021 | .020 | .960 | 1.042 |
| Health How do they rate their health? | .637 | .047 | .354 | 13.599 | .000 | .545 | .729 | .301 | .344 | .341 | .926 | 1.080 |
| Age How old are they? | .017 | .002 | .221 | 8.458 | .000 | .013 | .021 | .128 | .222 | .212 | .916 | 1.091 |
| 2 (Constant) | 4.426 | .245 | | 18.094 | .000 | 3.946 | 4.905 | | | | | |
| Education What is their education? | .022 | .026 | .022 | .847 | .397 | -.029 | .074 | .032 | .023 | .021 | .959 | 1.043 |
| Health How do they rate their health? | .632 | .047 | .351 | 13.473 | .000 | .540 | .724 | .301 | .341 | .337 | .923 | 1.084 |
| Age How old are they? | .017 | .002 | .217 | 8.265 | .000 | .013 | .021 | .128 | .218 | .207 | .909 | 1.100 |
| Participant Participated in activities | -.052 | .027 | -.049 | -1.949 | .052 | -.105 | .000 | -.078 | -.052 | -.049 | .990 | 1.011 |
| 3 (Constant) | 4.607 | .261 | | 17.625 | .000 | 4.094 | 5.120 | | | | | |
| Education What is their education? | .006 | .027 | .006 | .225 | .822 | -.047 | .059 | .032 | .006 | .006 | .911 | 1.098 |
| Health How do they rate their health? | .631 | .047 | .351 | 13.485 | .000 | .540 | .723 | .301 | .342 | .337 | .922 | 1.084 |
| Age How old are they? | .016 | .003 | .202 | 5.874 | .000 | .011 | .021 | .128 | .157 | .147 | .527 | 1.898 |
| Participant Participated in activities | -.048 | .027 | -.045 | -1.801 | .072 | -.101 | .004 | -.078 | -.049 | -.045 | .986 | 1.014 |
| UnemployedDum Are they unemployed? | -.276 | .103 | -.072 | -2.685 | .007 | -.477 | -.074 | -.115 | -.072 | -.067 | .859 | 1.165 |
| RetiredDum Are they retired? | -.037 | .105 | -.012 | -.348 | .728 | -.243 | .170 | .090 | -.009 | -.009 | .561 | 1.782 |
| 4 (Constant) | 4.614 | .262 | | 17.642 | .000 | 4.101 | 5.128 | | | | | |
| Education What is their education? | .007 | .027 | .006 | .246 | .806 | -.046 | .059 | .032 | .007 | .006 | .905 | 1.105 |
| Health How do they rate their health? | .630 | .047 | .350 | 13.457 | .000 | .538 | .722 | .301 | .342 | .336 | .922 | 1.085 |
| Age How old are they? | .016 | .003 | .201 | 5.818 | .000 | .010 | .021 | .128 | .155 | .145 | .525 | 1.905 |
| Participant Participated in activities | -.049 | .028 | -.046 | -1.717 | .086 | -.104 | .007 | -.078 | -.046 | -.043 | .879 | 1.138 |
| UnemployedDum Are they unemployed? | -.266 | .103 | -.070 | -2.580 | .010 | -.468 | -.064 | -.115 | -.070 | -.064 | .852 | 1.174 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RetiredDum Are they retired? | -.036 | .106 | -.011 | -.338 | .735 | -.243 | .171 | .090 | -.009 | -.008 | .557 | 1.796 |
| interaction1 | -.069 | .065 | -.028 | -1.065 | .287 | -.197 | .058 | -.057 | -.029 | -.027 | .907 | 1.102 |
| interaction2 | -.040 | .075 | -.014 | -.529 | .597 | -.188 | .108 | .017 | -.014 | -.013 | .835 | 1.197 |

a. Dependent Variable: Satisfied How satisfied are they with their life?