

Park visitors' awareness of nature conservation and willingness to pay

A consultancy report for National Park the Utrechtse Heuvelrug



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Executive summary

Relevance

Nature conservation is important due to the intrinsic value of nature, which leads to the preservation of precious species, nature's aesthetics, and the delicate interdependencies within ecosystems for their own sake. Nature conservation is also important because of nature's instrumental value of providing benefits to humanity in the form of ecosystem services. Despite the importance of nature conservation, *Nationaal Park de Utrechtse Heuvelrug's* (NPUH) current funding through government subsidies are insufficient to compensate the costs of nature management and conservation. As such, voluntary contributions can be part of the solution to diversifying the park's income.

Study design

This study focused on the impact of public awareness of NPUH's nature conservation costs and Ecosystem Services (ES) on park visitors' willingness to pay. Visitors' awareness and willingness to contribute were measured before and after providing relevant information on nature conservation costs and ES through on-site and online surveys.

Main findings

This study indicated that there was a significant increase in the willingness to pay for nature conservation among park visitors after awareness of the park's nature conservation costs and benefits of ES were raised. 35% of the respondents were willing to donate more after they were provided with the relevant information on the costs of nature management and ES. 60% of the respondents did not change their intended donation amount, and 5% decreased their donation amount after hearing the costs of nature management. Furthermore, the findings showed that the respondents expressed that they would be more willing to donate if it were more transparent and clearer how donations directly contribute to biodiversity-promoting activities (e.g., conserving and expanding nature connectivity, suppressing invasive species, biodiversity research, etc.). This corresponds to the current lack of public awareness of NPUH's biodiversity-promoting activities.

Recommendations

Transparency through communicating information on conservation efforts and costs to the public

The current lack of public awareness of NPUH's activities indicates that the park's revenue can increase by improving public awareness of the costs of nature conservation efforts through enhanced transparency. This can be accomplished by including more information on NPUH's nature conservation efforts on the webpage for donations (which is currently lacking), on newsletters or through other means of public communication. This allows the park to communicate to the public of the reasons voluntary donations are necessary and how they directly contribute to nature conservation and management.

Improve the process of donating

Due to the range of preferences for donation frequency, we recommend a plural donation system where visitors can choose to donate per visit, monthly or yearly. Furthermore, as the findings suggest respondents were willing to donate more if they receive certain benefits in return, for example guided excursions. With this in mind, we recommend NPUH to waive the participation fees for such activities for subscribers. This in turn would reaffirm visitor-NPUH relationship thus ensuring more stable cashflow.

Measure the level of awareness

To assess whether these strategies of communication and donation also contribute to increased awareness, we would recommend doing a yearly survey amongst visitors. In order to see if the strategies were effective, targets of awareness can be set. For example, 25% of the current respondents showed awareness of biodiversity measures. This could be aimed to be improved to 50% by next year and 75% a year from now. If these recommendations are taken to heart, we foresee that visitors' willingness to pay, and in turn realized donations, will increase and the nature of the NPUH will thrive.

Managementsamenvatting

Relevantie onderwerp

Natuurbehoud is belangrijk vanwege de intrinsieke waarde van natuur (i.e. de waarde van natuur voor zichzelf, buiten het belang van mensen), maar ook vanwege de instrumentele waarde van de natuur vanwege de voordelen die de natuur aan mensen biedt, de zogenaamde ecosysteemdiensten. Ondanks het belang van natuurbehoud, ontvangt Nationaal Park de Utrechtse Heuvelrug (NPUH) onvoldoende financiering vanuit overheidssubsidies of intern gegenereerde fondsen om de kosten van natuurbeheer en natuurbehoud te compenseren. Daarom blijven vrijwillige contributies een belangrijke bron van inkomsten voor NPUH.

Onderzoeksontwerp

Deze studie richtte zich op de impact van het publieke bewustzijn van de natuurbeschermingskosten van NPUH en ecosysteemdiensten op de betalingsbereidheid van parkbezoekers. Het bewustzijn en de bereidheid van bezoekers om bij te dragen werden gemeten voor en na het verstrekken van relevante informatie over de kosten van natuurbehoud en ecosysteemdiensten door middel van *on-site* (ter plekke) en online enquêtes.

Belangrijkste bevindingen

Uit dit onderzoek bleek dat er een significante toename was in de betalingsbereidheid voor natuurbehoud onder parkbezoekers nadat ze bewust waren gemaakt van de kosten en baten van natuurbehoud binnen het park. 35% van de respondenten was bereid meer te doneren nadat ze de relevante informatie over de kosten van natuurbeheer en ES hadden gekregen. 60% van de respondenten veranderde het beoogde donatiebedrag niet en 5% verlaagde het donatiebedrag na het horen van de kosten van natuurbeheer. Verder gaven bezoekers aan dat zij meer bereid zouden zijn om te doneren als het transparanter en duidelijker zou zijn hoe donaties direct bijdragen aan het behouden en bevorderen van de biodiversiteit (bijvoorbeeld behoud en uitbreiding van de natuurconnectiviteit, bestrijden van invasieve exoten, biodiversiteitsonderzoek, enz.). Dit komt overeen met het feit dat slechts onder een kwart van de respondenten een van deze activiteiten noemde die NPUH uitvoert ten behoeve van de biodiversiteit.

Advies

Transparant het publiek informeren over acties voor natuurbehoud en bijgaande kosten

Het huidige gebrek aan publieke bewustzijn van de activiteiten die NPUH uitvoert ter bevordering van de biodiversiteit geeft aan dat er veel kan worden gewonnen op dit gebied. Dit kan door het publiek, op een transparante manier, beter bewust te maken van de bijgaande kosten van natuurbescherming. Dit kan bijvoorbeeld door meer informatie te verschaffen over welke inspanning NPUH uitvoert ten behoeve van natuurbescherming op webpagina van NPUH voor donaties (wat tot nu toe nog gebrekkig is), in nieuwsbrieven of via andere publieke communicatiemiddelen. Communicatie is essentieel om het publiek te wijzen op waarom vrijwillige donaties nodig zijn en hoe deze donaties direct bijdragen aan het algemeen welzijn van natuurbehoud.

Het proces van doneren verbeteren

Vanwege het grote verschil in voorkeur van de donatietype, raden we aan om een meervoudig donatie systeem te hanteren, waarin de bezoekers kunnen kiezen om per bezoek, maandelijks of jaarlijks te doneren. Bovendien, zoals de resultaten laten zien, zijn de respondenten bereid om meer te doneren als er bepaalde voordelen aan verbonden zijn, zoals bijvoorbeeld excursies. Met dit in ons achterhoofd, raden we het NPUH aan om kosten voor deelname aan bepaalde activiteiten te laten vervallen voor vaste donateurs. Dit zal op zijn beurt de relatie tussen de donateur en het NPUH versterken en zal zo voor een stabielere cashflow zorgen.

Het niveau van bewustzijn meten

Om te beoordelen of deze communicatie- en donatiestrategieën ook bijdragen aan meer bewustzijn, raden we aan om jaarlijks een enquête onder bezoekers te houden. Om te zien of de strategieën effectief waren,

kunnen bewustmakingsdoelen worden gesteld. Zo toonde 25% van de huidige respondenten zich bewust van maatregelen op het gebied van biodiversiteit. Dit zou kunnen worden verbeterd tot 50% tegen volgend jaar en 75% over een jaar. Als deze aanbevelingen ter harte worden genomen, verwachten we dat de betalingsbereidheid van bezoekers, en daarmee gerealiseerde donaties, zal toenemen en dat de natuur van de NPUH zal floreren.

Ecosystem Services

Processes and products nature provide to humans like water purification, raw materials, air quality regulation, or recreational activities in nature

Costs of Nature

Only about half of the nature management costs are covered by state funding. Additional funding is needed, but visiting the park is free at the moment

Area of 20.000 ha

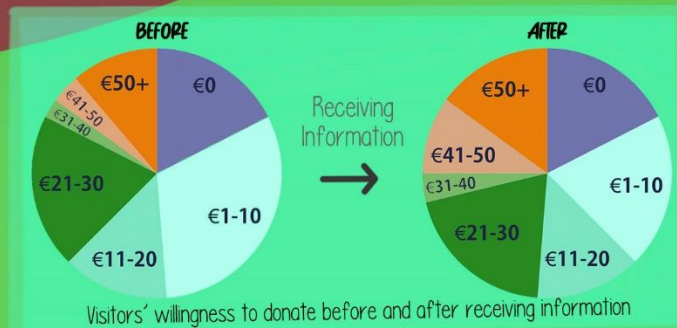
€2.5m

Awareness increases willingness to pay

The services nature provides and the costs to maintain nature are not widely known by visitors. Receiving this information makes people's voluntary donation significantly higher

Recommendations to the National Park

Integrate information provision about the costs of nature and how it is used (transparency) into their daily communication strategy



Ecosysteem Diensten

Processen en producten die de natuur aan mensen verzorgt zoals waterzuivering, ruwe materialen, lucht zuivering, of recreatie

Kosten van de Natuur

Slechts de helft van de natuur management kosten worden gedekt door overheid subsidies. Meer inkomsten bronnen zijn nodig, maar het park bezoeken is momenteel nog gratis

Gebied van 20.000 ha

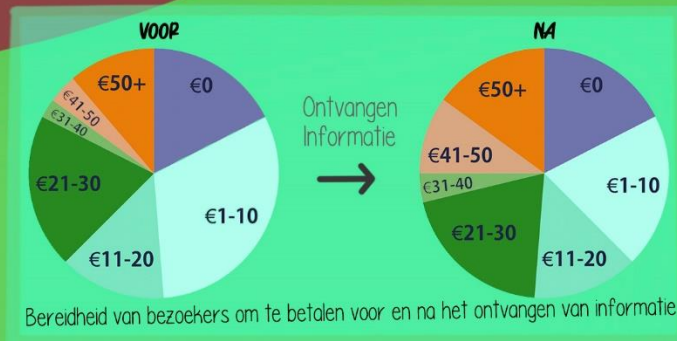
€2.5m

Bewustzijn Vergroot Bereidheid om te Betalen

De diensten die de natuur verzorgt en kosten die gemaakt worden voor onderhoud zijn niet algemeen bekend bij bezoekers. Het ontvangen van deze informatie zorgt voor hogere vrijwillige donaties van bezoekers

Advies voor het Nationaal Park

Integreer informatieverstrekking over de kosten van de natuur en hoe het geld gebruikt wordt (transparantie) in de dagelijkse communicatiestrategie



1. Introduction

The history of National Park Utrechtse Heuvelrug (NPUH)

Certain parts of the world have unique nature and landscapes, and they need to be conserved or protected to prevent the loss of these places. One of the ways this is done is through developing national parks. There are 21 National parks in the Netherlands and National Park Utrechtse Heuvelrug (NPUH) is one of the biggest. NPUH was appointed as National Park in 2003 and has seen a significant expansion in 2013. Its borders currently encompass an area of about 20,000 hectares (Provincie Utrecht, 2017). NPUH works with various stakeholders within these borders to keep the ecological and culturally significant regions protected and maintained. This is done by focusing on the six ambitions stated by the NPUH: protection and maintenance of natural and cultural landscape, increase the accessibility and experience of visitors, effective and efficient management and enforcement of laws, strengthening the brand of NPUH, creating a growing economic basis for natural landscapes and cultural heritage, and strengthening the unique values of NPUH (Nationaal Park Heuvelrug, 2018).

The current state of NPUH

To realize the six ambitions stated in the collaboration agenda of 2018, the park needs income. Currently, the park's income consists of funds from the Dutch government and subsidies from the European Union. However, this only covers about 30% of all the costs generated by NPUH. Especially cultural history and heritage is structurally under-funded (Provincie Utrecht, 2017). To compensate for the insufficient income from governmental subsidies to cover costs, NPUH is finding new income streams. Some ongoing examples are donations, selling vignettes for mountain biking and horseback riding, and connecting local products to the NPUH brand and earning shares. Despite the existing income streams, NPUH is still seeking more diversification to pay for maintenance and conservation of the park. One of the rational ways to create an income stream is by adopting a payment for ecosystem services scheme, as will be defined in theory and concepts (section 2.1.1). This concept will first have to be introduced to park visitors to potentially increase their willingness to pay as awareness and transparency can increase people's willingness to pay (UNEP, 1995; Cullen et al., 2005). However, it remains unclear to what extent these findings are applicable to the NPUH. Our research investigates the willingness to pay in the context of NPUH. Especially, the park visitor's awareness of ecosystem services and the costs associated with the management of the area, and how these factors affect the visitors' willingness to pay for the services the NPUH provides. We also create recommendations on how the newly produced information should be considered in the future strategic measures.

Methodology

To research visitors' perspectives on the value of nature and their awareness of nature conservation costs, we conducted an onsite survey in two locations in NPUH and an online survey. For the onsite surveys, we visited a parking place in Heidestein and the pyramid of Austerlitz on the weekend of 27th and 28th of November 2021. Here, we followed the questions from the questionnaire and asked follow-up questions or had brief discussions with the park visitors prompted by the survey questions. For the online survey, we reached respondents through the social media channels of NPUH. The questionnaire was divided into four different sections. The first section concerned the demographics of the respondents, such as their age and gender and their park visits. The second section concerned their values towards the nature of NPUH. We then provided information about the costs of nature conservation and the subsidies the NPUH receives currently, after which we repeated the questions from section two to see changes in their willingness to pay. The survey was filled in by 80 individuals. The survey was a mix of closed and open questions. The survey and their answers can be found in Appendix A.

In SPSS we looked at the significance of the change in WTP before and after providing information (question 6 and 11) and the change in type of donation (question 7 and 12). We also looked to see if there

were correlations between the number of times visited (question 4) and the WTP after information provision (question 11) and the number of times visited (question 4) and the type of donation (question 12). For the significance of the change in WTP a Wilcoxon matched pairs test was used (data was not normally distributed as was proven by Shapiro-Wilk test of normality), with a significance threshold of $P = 0.05$. For the correlations we checked for normality first and used a Spearman R test with a significance threshold of $P = 0.01$.

2. Theory & Concepts

This section discusses relevant theories and concepts regarding the relationship between public awareness of nature conservation costs and Ecosystem Services (ES), and the public's willingness to pay (WTP) for nature conservation. First, we introduce Payment for Ecosystem Services (PES) schemes as a means to increase the financial independence of nature conservation efforts. Subsequently, we will discuss the predicting factors for the public's WTP for nature conservation. Lastly, we discuss how awareness is vital in increasing public support and the public's WTP for nature conservation.

2.1 Concept definitions

2.1.1 Payment for Ecosystem Services (PES) & Willingness To Pay (WTP)

To mitigate adverse environmental problems generated by humans, a conservation paradigm called payments for ecosystem services was invented (Atmodjo, Lamers & Mol, 2017). Wunder defines PES as "voluntary transactions where a service provider is paid by or on behalf of service beneficiaries for land, coastal, or marine management practices that are expected to result in continued or improved service provision" (2005). The services, also known as ecosystem services (ES), entail ecosystem processes, functions, organizations, or structures used by human beings for their wellbeing (Atmodjo, Lamers & Mol, 2017). For instance, ecosystem services can be water, raw materials, air quality regulation, or tourism activities in nature. PES stresses the importance of paying for these services by the beneficiary (humans) as sustaining those costs money (Cullen et al., 2005). In the context of NPUH, the park is yet to adopt the PES scheme as the park visitors do not pay for ES. Instead, the park's nature management and conservation funds are acquired from the Dutch government's subsidies and private businesses, which is insufficient.

Willingness to Pay (WTP) is a relevant concept for the PES scheme (Tsi et al, 2008), since the scheme is based on voluntary transactions between the ES users and providers (Fripp, 2014). WTP refers to how much people are willing to pay for ecosystem services (UNEP, 1995). As such, to acquire sufficient nature conservation and management funds through the PES scheme, it is vital to explore park visitors WTP. Furthermore, gaining a sufficient amount of funds can also lead to financial independence of the park.

2.1.2 Predicting factors influencing WTP

There are numerous predicting factors in demographics that can significantly influence WTP. For instance, income, age, and social involvement are positively related to WTP for local forests (Jo et al., 2021; Bhandari & Heshmati, 2010). Similarly, more progressive political orientations of individuals were also associated with relatively higher WTP for local forests than moderate or conservative political orientations. Moreover, previous studies have shown that international visitors were willing to pay more for entrance fees, which formed the basis for a dual pricing system where international visitors pay a higher price than local visitors (Lee et al., 2021). The dual pricing system aligns with the wish of NPUH to prevent more visitors from nearby countries visiting the park to decrease human disturbance.

A study conducted by Obeng and Aguilar revealed that the public's awareness of possible adverse consequences to their well-being caused by environmental degradation is one of the strongest predictors

of WTP (Obeng & Aguilar, 2018). Furthermore, payment types also seem to predict the WTP, as multiple studies have shown that people appear to be willing to pay more in the form of donations, as opposed to taxes, because taxes are mandatory while donations are voluntary (Jo et al., 2021; Menges & Traub, 2009).

2.1.3 Awareness creation

Various recreational activities in protected areas or sites promoted through ecotourism and nature-based tourism are effective means of generating funds for nature conservation and management. Although generating funds through recreational activities is possible, Ruiz et al. (2019) states that the increase in tourism activities can threaten nature conservation in the protected area. This correlation makes it necessary for the management of various protected areas to consider more sustainable ways of generating funds for nature conservation.

In response, studies have shown that awareness creation is one of the numerous mechanisms that can ensure for people to recognize the need to contribute, mostly in monetary value, for nature conservation (Opacak & Wang, 2019; Lundberg et al., 2019). Furthermore, the public support for the PES scheme is based on the awareness that paying for ES will benefit the payers as the funds will be used to protect the forest, which leads to sustaining the supply of ES (Gross-Camp et al., 2012). A study conducted by Bolund & Hunhammar suggests that raising such awareness of ES can enormously enhance the public's pro-environmental behavior hence increasing their WTP (1999). Furthermore, the public's pro-environmental beliefs and their understanding of the need for payment for ES to sustain can enhance the public's support for the PES scheme (Gross-Camp et al., 2012).

Incidentally, a study conducted by White & Lovett has revealed that visitors and users of protected areas are mostly ready to contribute or make additional donations towards nature conservation (1999). With the visitors' readiness to contribute towards nature conservation and the positive effect awareness creation has on the public's WTP and public support for the PES scheme, we consider that to implement the PES scheme at NPUH effectively, the park visitors should be made aware of the ecosystem services the forests provide, the importance of PES scheme to maintain access to ES, and how collected funds through the PES scheme will be spent.

2.2 Analytical framework

The chart below illustrates causal relationships between two methods of increasing WTP and its predicting factors. Since increasing park activities can adversely impact nature and NPUH does not wish to increase park visitors, our study selects increasing awareness as a method to examine its effectiveness in increasing park visitors' WTP.

WTP flow chart

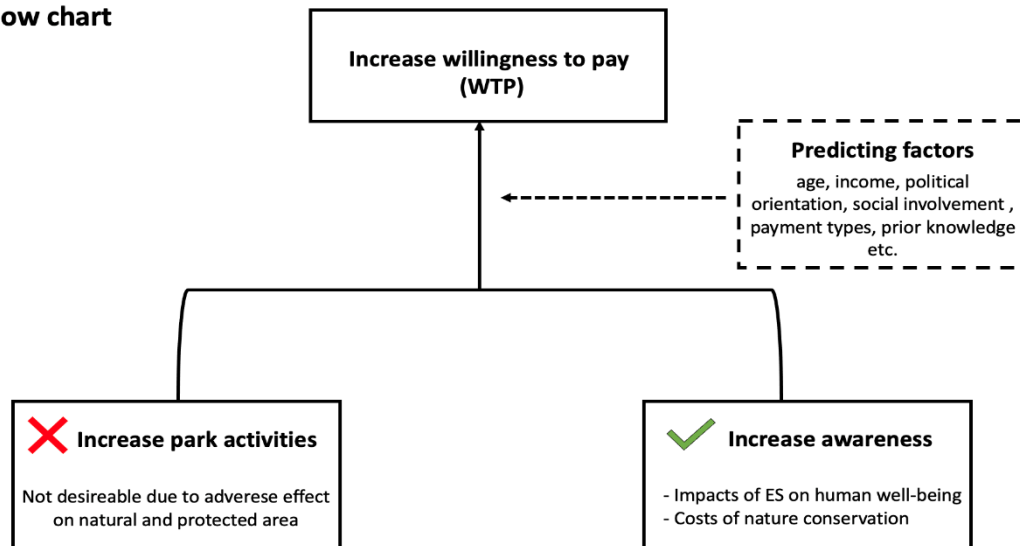


Figure 1: Analytical framework outlining the relationship between awareness of nature conservation costs and ES benefits to WTP (Willingness to Pay) and predicting factors of WTP.

3. Findings

This section will first outline the demographic information of the survey respondents. Then the responses will be analyzed and the reasons to donate or not will be discussed.

3.1 Demographics

Over one third (35%) of the respondents were under 30 years old, with 16% being 19- to 24-year-olds and 19% 25- to 29-year-olds (Appendix A). The high number of respondents under 30 might be due to convenience sampling since the survey was distributed through the social media of the national park and of the group members to acquire more responses. Other age groups are fairly equally distributed, ranging from 4% to 11%. About half of the respondents were male and half were female. Most of the respondents (19%) lived in or next to the NPUH. Surprisingly, the second biggest group of respondents traveled more than 40-kilometer distances to reach the NPUH. Other distances between less than 5km to 26km were somewhat equally distributed with percentages ranging from 9% to 16%. The total percentage of visitors traveling between 26 and 40 km only accounted for 6% of the respondents. Furthermore, about half of the respondents are irregular visitors of NPUH; 51% reported to visit the park less than once a month. About 15% visit every day, more than once a week, and once a month. A small group visit once a week or once every two weeks. Most visitors (88%) spent between 1 to 4 hours in the park per visit. Interestingly, 5% of the respondent reported to spend over 8 hours in the park per visit. All the demographic data can be seen visually in appendix A.

3.2 Data analysis

Generally speaking, the willingness to pay a voluntary donation to the park per year became higher after information was given about the costs and benefits of the park. The absolute differences in willingness to pay before and after do not seem remarkably high, as can be seen in figure 2. When analyzing the data however, we found the positive increase in WTP before and after information was given highly significant

($P < 0.001$). On average, the voluntary donation before the information was given was 19 euros before and increased to an average of 24 euros after receiving information. We can say that providing information to respondents increased their overall WTP with one payment segment or 5 euros on average. Of the 80 respondents, 28 or 35% increased their WTP. There were also 4 respondents (5%) who lowered their WTP (see figure 3). However, 3 of those 4 lowered their WTP from 50 euros or more to 46-50 euros, so they still had a generally high willingness to donate.

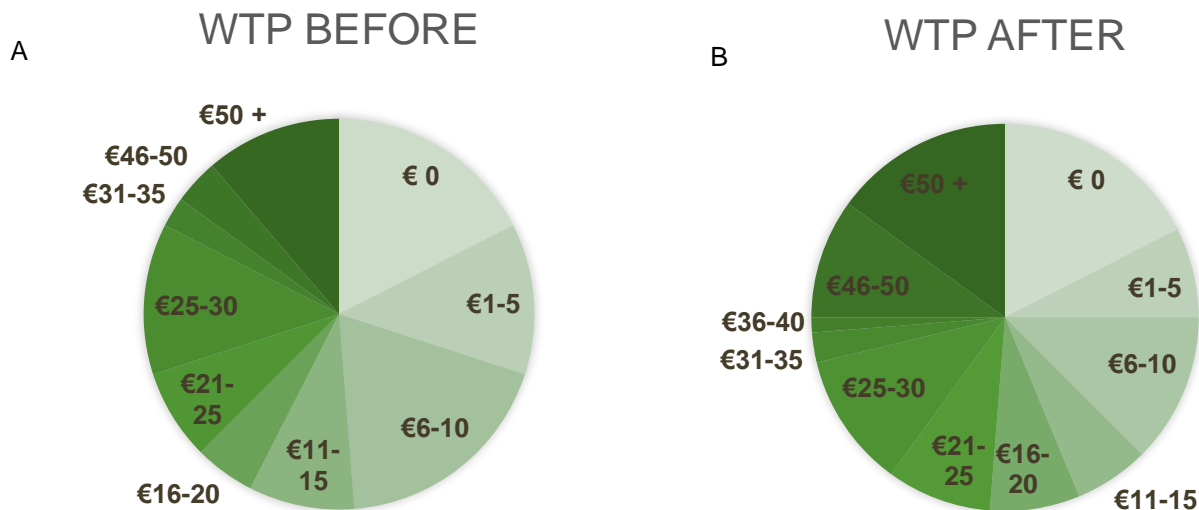


Figure 2. (a) willingness to pay (WTP), i.e., amount the respondents were willing to donate before information about costs and funds of nature conservation was given, and (b) after information was given.

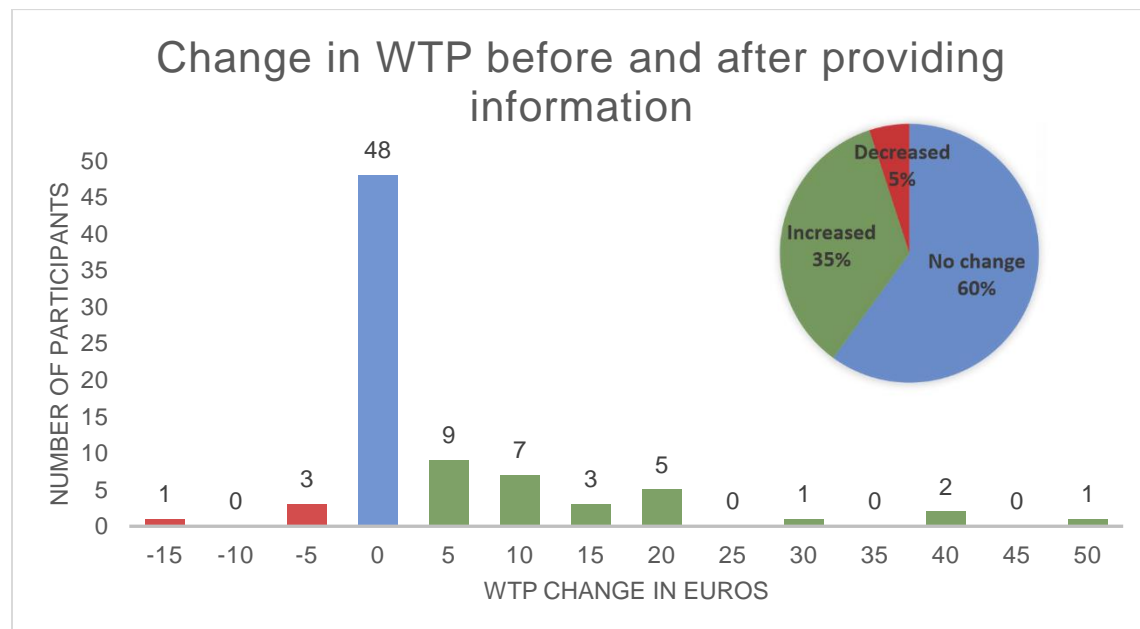


Figure 3: Change in WTP amounts before and after information was provided per individual. Also shows the percentage of respondents who showed an increase, decrease or no change in WTP.

Overall, a substantial portion of the respondents (44% before and 50% after), indicated a preference for donating yearly (see figure C1 in the appendix). The second largest group would like to donate per visit. There was no meaningful change in the type of donation before and after providing information. Therefore, we can say that change in payment type is not influenced by providing information. There was no correlation found between the number of times the respondents visited the park and their preferred type of donation ($P=0.350$). There was a correlation between the times visited per month and the WTP ($P=0.009$), but with a weak correlation coefficient of -0.292 .

3.3 Changes in WTP

3.3.1 Increases in amount of donation

Based on our open-ended question on what would make the park visitors increase the amount of their donation to NPUH, the following were the most prominent factors in order: transparency, activities and more usage of the park. In terms of transparency, the park visitors would like to know how the money is going to be spent and the kinds of contributions it is making. The following are some of the quotes from the respondents regarding transparency:

- "If I were certain the money would not be kept for themselves"
- "If it was clear the money was spent on a biodiversity campaign or research"
- "If I got more of a feeling for NPUH or got a better sense of what NPUH does. So far, they are somewhat invisible to me"

The second most prominent factor that would make the park visitors increase the willingness to pay was "activities". The park visitors mentioned their wishes for NPUH to organize nature tours or excursions so that participants can donate through their participation fees. One participant mentioned that the organization of tours in nature would be an effective way to introduce ES to people. The following are some of the quotes from the respondents regarding activities:

- "Special activities like walks with guides for donators to get more info and create a bond with the area"
- "A subscription for excursions"
- "If there were more excursions like natuurmonumenten does with midsummer night [nature excursions through national parks on the shortest night of the year]. Or if once in a while you could go looking for wildlife with a park ranger. I am not sure if NPUH does that too but in that way, you could get people enthusiastic about nature and you could easily ask 10 euros per person for that"

The third most prominent factor that would make the park visitors increase the willingness to pay was "usage of park", pointing the frequency of park visitation. The visitors mentioned that if they were to use the park more often, they would increase their WTP. The following are some of the quotes which indicate this inclination:

- "When I make 'use' of it more often. Users should contribute to conservation and maintenance"
- "If I would come there more often, if it was clear what the money would be spent on, what the use of it is, what it would contribute"

Two respondents reported that they already pay for having a mountain bike vignette but were willing to pay more for their vignette. They noted that they regard the current price of 7.50 euros per year as "ridiculously low" and that a higher fee would be more reasonable. Furthermore, two other respondents, that do not use mountain bikes, lamented about the adverse effects of mountain bike use for nature, and so proposed that the influx of mountain bike users must be restrained somehow.

Lastly, three respondents specifically mentioned that they would like to see parking fees to reduce visitor pressure.

3.3.2 Unwillingness to donate

There were two groups of respondents, those who are willing and those who are unwilling to donate. Those who are unwilling to donate chose either €0 as an amount to pay or 'never' when asked for their preferred donation type. This means they are unwilling to directly pay something for the management of the park. The prominent reasons for their unwillingness to donate were:

- Belief that government should finance nature conservation
- Nature should be free, inclusive, and publicly accessible
- Shares of taxes are already allocated towards nature conservation
- Low income
- Already participating in nature conservation volunteer activities
- Already donating to other nature-related institutions.

The respondents that would prefer to be involved in maintaining the park themselves by doing voluntary work, pointed to the need for more intrinsic motivation for nature conservation resulting from a certain sense of involvement and co-responsibility for nature, instead of only contributing in monetary terms so that park managers take over this responsibility. Others that did not want to contribute to NPUH argued that they were already donating to other nature-related institutions or that they did not have sufficient income. Another reason for visitors' unwillingness to donate was their belief that only the individuals that negatively harm nature should pay, based on the polluter pays principle. The following is a quote by a respondent who expressed this belief:

"Nature should not have to be conserved if people were more careful. The recreational pressure on UH is too high (dog poop, trampled paths, crowded bike paths). Also, peat and trees are drying out because of drinking water extraction and Sourcy that extracts too much water. The government should have people paying a lot more for drinking water. People water their gardens and have big swimming pools etc. Sourcy and other groundwater extractors should pay more and get a maximum."

The respondent thinks that activities by the park visitors are negatively impacting nature, however, the respondent is unaware that for the respondent to access ES, NPUH needs to maintain nature financially. In other words, people are not willing to pay for nature conservation because they believe none of their activities negatively impact nature, and those who must pay are those who cause harm to nature. This finding indicates that there are park visitors who lack in understanding of ES that nature provides to humanity.

3.4 Current awareness of nature management

To assess visitors' current awareness levels of nature management and the costs of nature conservation, we also asked what they thought the money gained through donations would be spent on. Most respondents mentioned maintenance as the main expense, such as keeping forest accessible, maintaining the paths, thinning trees, collecting garbage and installing signs for visitors. Only 19 out of 80 respondents mentioned specific measures that benefit biodiversity, such as conserving plant and animal species, monitoring biodiversity and research, enhancing nature connectivity, suppressing invasive species or other ways of conserving, and expanding nature in general. Lastly, only one respondent mentioned combatting the oak processionary, a caterpillar species that causes considerable damage to oak trees and can cause skin irritation and asthma in humans. This could signify that there exists a lack of awareness of how the national park is involved in combatting this issue as well.

4. Conclusions and Discussion

The survey findings show that the WTP before and after information was given had a significant increase. This proves that increased awareness of the role of the NPUH helps with increase of WTP, as was suggested by the literature of 'theory and concepts' (section 2.1.2). Other factors such as distance to the park, time spent in the park and donation frequency show no significant effect on the WTP. Therefore, they do not carry weight when making recommendations.

Based on the answers to the open questions, people would like to know what their donation money will be spent on. Transparency, activities and "usage of park" are the key factors that were mentioned most often when asked what was needed to increase the visitors' WTP. Out of these three factors, especially transparency was mentioned the most. Of the respondents that answered that question, 20% mentioned their WTP would increase if it were clear what donations are spent on and what direct contributions that could make to the national park.

However, only 25% of respondents exhibited knowledge on specific measures that promote biodiversity that donations could be used for. Instead, most people address more straight-forward maintenance, for example paths, benches, or trash cans, rather than activities necessary for Dutch nature. This low percentage shows that there is still room for improvement to raise awareness of both the content and the costs of biodiversity and nature conservation. Providing information about activities done to improve biodiversity or specific projects that are carried out can help increase the awareness of visitors and therefore increases the WTP. This relates to the aforementioned transparency that visitors wish to receive about how the money is being spent on biodiversity promoting activities for example.

Additionally, we can conclude that respondents would be willing to donate more, or donate at all, if they saw the direct impact of their donations. For example, some respondents state they would be willing to pay more if there were areas without dogs or mountain bikers to not disturb their bird-watching activities. Even though restricting certain areas with a higher natural value might not be feasible, visitors and recreationists might increase their donation efforts if they feel they got something in return. This "something" could be either material or immaterial.

However, there were also people who were unwilling to donate, even after receiving further information on nature conservation costs and benefits. They mentioned reasons such as low income, or they regarded nature conservation as a responsibility of the government since nature should be publicly accessible. Another reason was that they volunteer for or donate to other nature organizations, and they regard voluntary efforts as a better way to contribute based on intrinsic motivation. Some respondents also did not think nature should be managed at all and should be left 'natural' and 'wild', so they did not see any reasons to donate.

5. Recommendations

As concluded in section 4, awareness of the national park's conservation efforts and transparency about how the voluntary donations are spent are major factors for the WTP to increase. In this section, the recommendations to implement this awareness and to improve the donation system are discussed.

Firstly, visitors should be made aware of what the NPUH does, regardless of their willingness to donate. This should be done by giving information on which specific maintenance activities, conservation efforts, and improvement actions the NPUH facilitates. It can still be important to highlight projects carried out by contractors and not by the NPUH themselves, to show where money is spent. This can be visualized by showing figures or pictures of a specific site before and after a restoration project, or of the restoration and maintenance of diverse types of paths. This can give people an indication of what kind of impact their donation has on the park. It is also important to explain why certain activities are done, for example in a

brief description of 100 to 200 words why a certain maintenance or improvement project is necessary. This is crucial because what is deemed by the NPUH as ordinary, or common knowledge might be completely unknown to the visitors. As discussed in the findings and conclusions (section 3.4 and 4), the average knowledge visitors have about biodiversity and nature conservation still leaves something to be desired. At the same time, the descriptions in this report can function as a description of what happens with the donations, to contribute to better transparency.

Secondly, the communication of this information could be done through the already existing social media channels like LinkedIn and Facebook. To increase the exposure of the information, the posts can mention the NPUH's stakeholders and collaborators and ask them to share it on their social media and website as well. As a second possibility for communication, we recommend a newsletter to update visitors about specific projects their donations are used for to enhance awareness and transparency.

Thirdly, we advise to make the process of donating easier. Currently, the webpage where people can contribute to the park only includes the bank details of the NPUH, which leaves a lot of the steps up to the potential donor. We recommend creating a subscription form on the website that can easily be found and navigated, to give visitors who want to donate more frequently the option to do so. This lowers the threshold of starting to donate, subscriptions might have better donation retention rates. The following are recommended components of this donation form or subscription:

- Choice in frequencies of donating (once, monthly, or yearly)
- Choice in amount of donation (increments of 5 euros)
- Option to subscribe to a newsletter update on what their donation is used for
- Choice for donors on which type of project their donation is spent (for example: nature, infrastructure, culture, and history)
- Different tiers of donations with different benefits (such as free excursion, free hiking maps, get their name put on a bench)

Lastly, to assess whether these strategies of communication and donation also contribute to increased awareness, we would recommend doing a yearly survey amongst visitors. This could include comparable questions as the survey used for this report (appendix A) about what the respondents think the costs of nature are, what money is spent on, what they would like their donations to be spent on, and what ecosystem services are. In order to see if the strategies were effective, targets of awareness can be set. For example, 25% of the current respondents showed awareness of biodiversity measures. This could be aimed to be improved to 50% by next year and 75% a year from now.

If these recommendations are taken to heart, we foresee that visitors' willingness to pay, and in turn realized donations, will increase and the nature of the NPUH will thrive.

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Appendices

Appendix A. Questionnaire

Utrechtse Heuvelrug Enquête // Questionnaire

Onderzoek over de waarde van de Nederlandse natuur // *Research about the value of Dutch nature*

Toestemming // *Consent*

Nederlands

Wij zijn een groep studenten van WUR die onderzoek doen namens Nationaal Park Utrechtse Heuvelrug. Dit onderzoek gaat over het bewustzijn van de waarde van de Nederlandse natuur en erfgoed landschappen. Het invullen van deze vragenlijst duurt ongeveer 5-10 minuten. Deelname aan dit onderzoek is volledig vrijwillig en kan ten alle tijden worden ingetrokken. We vragen niet om persoons- of contactgegevens waarmee we uw identiteit kunnen achterhalen.

English

We are a group of students from WUR who are carrying out research for National Park Utrechtse Heuvelrug. We are looking at the awareness of value of Dutch natural and cultural landscapes. Filling out this questionnaire will take approximately 5-10 minutes. Participation in this study is entirely voluntary and you can withdraw at any time. All your answers in this study will remain confidential. We will not ask for any personally identifiable information.

Ik heb het begrepen en ga akkoord. // *I have understood it and I agree.*

Ja // *Yes*

Nee // *No*

I. Persoonlijke gegevens // *Personal information*

1. Wat is uw leeftijd? // *What is your age?*

2. Wat is uw gender? // *What is your gender?*

Man // *Male*

Vrouw // *Female*

Zeg ik liever niet // *Prefer not to say*

Anders // *Other*

3. Hoe ver moet u reizen om het Nationaal Park de Utrechtse Heuvelrug (NPUH) te bezoeken? // *How far do you have to travel to visit the National Park Utrechtse Heuvelrug (NPUH)?*

Ik woon in het of direct naast NPUH // *I live in or next to NPUH.*

16-20 km

21-25 km

Minder dan 5 km // *Less than 5 km*

26-30 km

6-10 km

31-35 km

11-15 km

36-40 km

Meer dan 40 km // *More than 40 km*

4. Hoe vaak bezoekt u NPUH gemiddeld ? // *How often do you visit NPUH on average?*

Iedere dag // *Every day*

Meer dan één keer per week // *More than once a week*

Eén keer per week // *Once a week*

Eén keer per twee weken // *Once every two weeks*

Eén keer per maand // *Once a month*

Minder dan één keer per maand // *Less than once a month*

5. Hoeveel tijd brengt u gemiddeld per bezoek door in NPUH? // *On average, how much time do you spend in NPUH per visit?*

Minder dan 1 uur // *Less than 1 hour*

1 uur // *hour*

6 uur // *hours*

2 uur // *hours*

7 uur // *hours*

3 uur // *hours*

8 uur // *hours*

4 uur // *hours*

Meer dan 8 uur // *Over 8 hours*

5 uur // *hours*

Weet ik niet // *I do not know*

II. Natuurbehoud // *Nature conservation*

De volgende vragen gaan over uw kijk op de waarde van de natuur in NPUH. // *The following questions relate to your perception of the nature value of NPUH.*

6. Hoeveel geld per JAAR zou u bereid zijn te betalen voor het onderhoud van de natuur in NPUH? // *How much would you be willing to pay for maintenance of nature per YEAR in NPUH?*

LET OP: Dit is geen entreegeld maar een vrijwillige donatie. // *NOTE: this is not an entrance fee, but a voluntary donation.*

€0

€25-30

€1-5

€31-35

€6-10

€36-40

€11-15

€41-45

€16-20

€46-50

€21-25

Meer dan €50 // *More than €50*

7. Als u bereid bent om te doneren, hoe zou u dit het liefste doen? // *If you are willing to pay, how would you want to donate?*

LET OP: Dit is onafhankelijk van het bedrag bij vraag 6. // *NOTE: This is independent of the amount answered in question 6.*

Per bezoek aan het park // *Per visitation of the park*

Eén keer per maand // *Once a month*

Elke 3 maanden // *Every 3 months*

Eén keer per jaar // *Once a year*

Nooit // *Never*

8. Als u €0 heeft gekozen bij vraag 6 en/of 'nooit' heeft gekozen bij vraag 7, kunt u aangeven waarom? // *If you chose €0 in question 6 and/or 'never' in question 7, could you explain why?*

9. Als u zou doneren, waar denk u dat NPUH dat geld aan zou uitgeven? // *If you were to donate money, what do you think NPUH would spend it on?*

Dit mag een kort antwoord zijn, noem het eerste wat in u opkomt. // *This can be a short answer, think of the first thing that pops into your head.*

10. Van welke van de volgende diensten die de natuur aan mensen kan verstrekken, heeft u wel eens gehoord? // Which of the following services that nature can provide for humans have you heard about before? Tick all that apply.

Watervoorziening // *Provisioning of water*

Voedselvoorziening // *Provisioning of food*

Verstrekken van hout // *Provisioning timber*

Het reguleren van het klimaat // *Regulating the climate*

Voortplanting en bestuiving // *Reproduction and pollination*

Recreatie // *Recreation*

Natuurschoon en ontspanning // *Aesthetics and relaxation*

Ondersteunende diensten zoals koolstofkringloop // *Supporting services like carbon cycling*

Ik kende nog geen van deze diensten // *I had not heard about any of these services before*

Anders // *Other...*

III. Informatie // Information

Nederlands

NPUH bestaat uit ongeveer 10.000 hectare aan land. De gemiddelde kosten voor natuur- en landschapsbeheer bedragen € 126,- per hectare, wat in totaal op circa € 2,3 miljoen neerkomt. Hieronder valt het maaien, ploegen en het plaggen van de heide (verwijderen van de voedselrijke toplaag om vergrassing en verbossing te voorkomen). De geschatte kosten voor monitoring van bijv. flora, broedvogels en dagvlinders zijn circa € 0,2 miljoen. Jaarlijks kost het dus €2,5 miljoen om het landschap en de natuur te onderhouden en beheren.

De Utrechtse Heuvelrug ontvangt jaarlijks €1,4 miljoen aan structurele beheersubsidies van de overheid. Maar een belangrijk deel van de kosten voor onderhoud en beheer worden dus niet gedekt door de subsidies dus wordt er gezocht naar andere inkomstenbronnen.

Ecosysteemdiensten zijn de diverse voordelen die u kunt halen uit de natuurlijke omgeving, zoals:

- het verstrekken van schoon drinkwater zoals NPUH doet voor een groot deel van de gemeente Utrechtse Heuvelrug
- een goede omgeving bieden voor recreatie zoals paardrijden of mountainbiken

Betalingen voor ecosysteemdiensten worden gedaan wanneer de gebruikers van een ecosysteemdienst een betaling doen aan de aanbieders van die dienst om direct te compenseren voor de potentiële gevolgen voor de natuur.

English

NPUH consists of approximately 10,000 hectares of land. The average costs for nature and landscape management is €126 per hectare, which means around €2.3 million in total. This management includes mowing, ploughing and sodding the heathlands (removing the nutrient-rich top layer to prevent succession to grasslands or forests). The estimated yearly costs for monitoring for example flora, breeding birds and butterflies are €0.2 million. This brings the total costs to approximately € 2.5 million.

The Utrechtse Heuvelrug receives €1.4 million in state funding every year. An important part of the costs are not covered by these subsidies so there is a need for other sources of income.

The term “ecosystem services” refers to the diverse benefits that are derived from the natural environment. Such as:

- providing clean drinking water like NPUH does for a large part of the province Utrechtse Heuvelrug*
- providing a good environment for exercise and leisure activities like horsebackriding and mountainbiking*

Payments for ecosystem services (PES) occur when the users of an ecosystem service make payments to the providers of that service, meaning that you compensate directly for the potential direct effects on nature.

IV. Natuurbehoud deel 2 // Nature conservation part 2

Met deze informatie, hoe zou u de volgende vragen beantwoorden? // *With this information, how would you answer the following questions?*

11. Nu u meer weet over de inkomsten en uitgaven van NPUH, hoeveel geld zou u bereid zijn te betalen voor natuuronderhoud in NPUH per JAAR? // *Now that you know more about the subsidies and expenses of NPUH, how much would you be willing to pay for nature conservation of NPUH per YEAR?*

€0	€25-30
€1-5	€31-35
€6-10	€36-40
€11-15	€41-45
€16-20	€46-50
€21-25	Meer dan €50 // <i>More than €50</i>

12. Als u bereid bent om te doneren, hoe zou u dit het liefste doen? // *If you are willing to pay, how would you want to donate?*

LET OP: Dit is onafhankelijk van het bedrag bij vraag 11. // *NOTE: This is independent of the amount answered in question 11.*

Per bezoek aan het park // *Per visitation of the park*

Eén keer per maand // *Once a month*

Elke 3 maanden // *Every 3 months*

Eén keer per jaar // *Once a year*

Nooit // *Never*

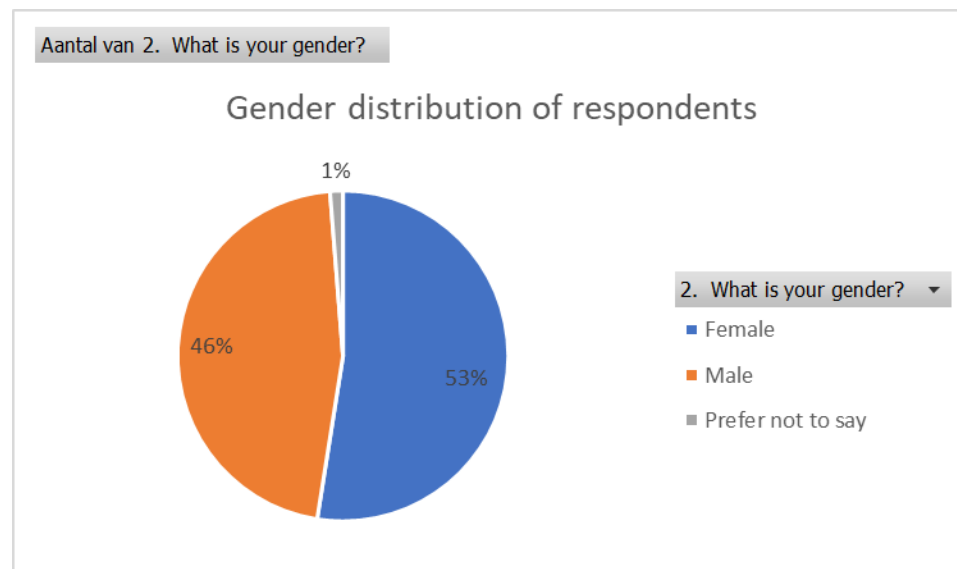
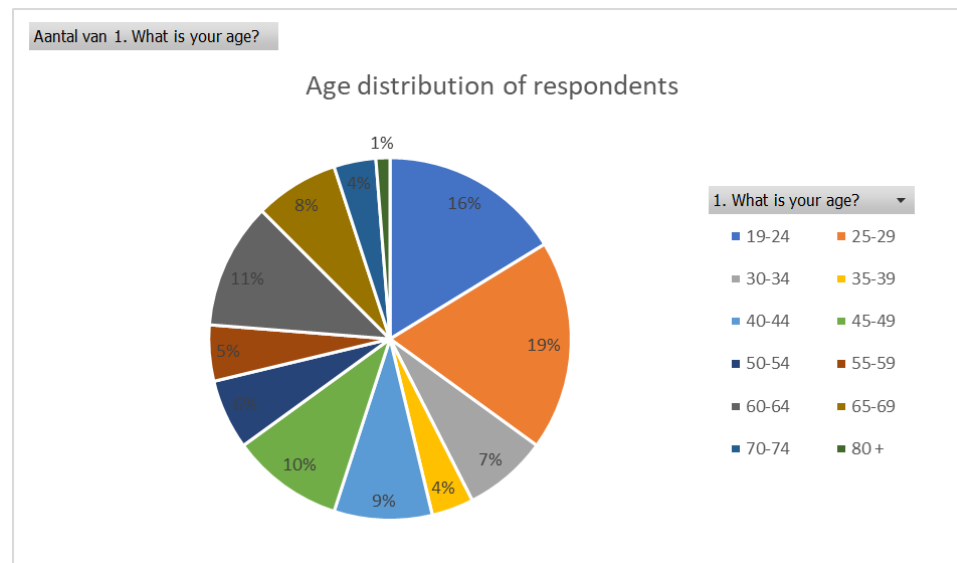
13. Als u €0 heeft gekozen bij vraag 11 en/of 'nooit' heeft gekozen bij vraag 12, kunt u aangeven waarom? // If you chose €0 in question 11 and/or 'never' in question 12, could you explain why?

14. Waardoor zou u meer doneren aan het Nationale Park Utrechtse Heuvelrug? // What would make you donate more to the National Park Utrechtse Heuvelrug?

Heeft u nog overige vragen of opmerkingen? // *Do you have any last questions or remarks?*

Appendix B. Demographics of questionnaire results

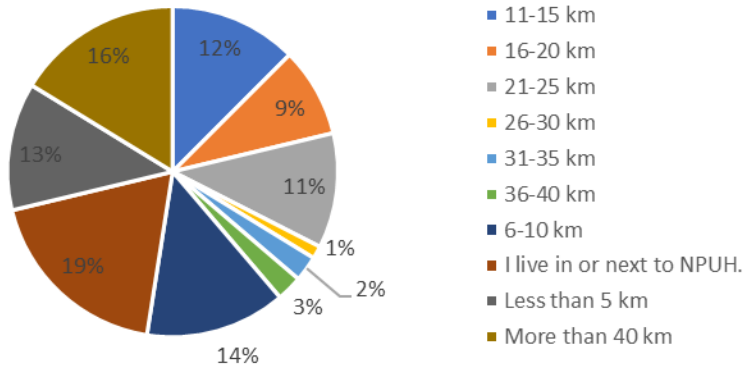
Graphic visualization of the demographic data of the respondents to the questionnaire



Aantal van 3. How far do you have to travel to visit the National Park Utrechtse Heuvelrug (NPUH)?

Distance traveled to the park

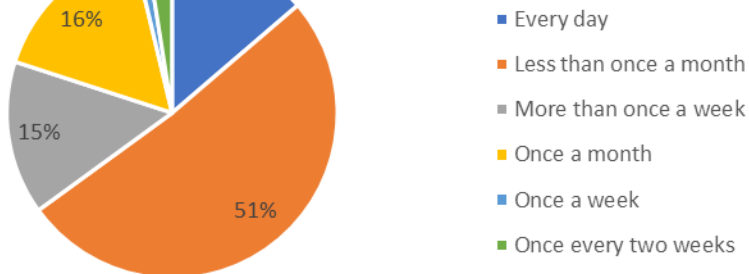
3. How far do you have to...

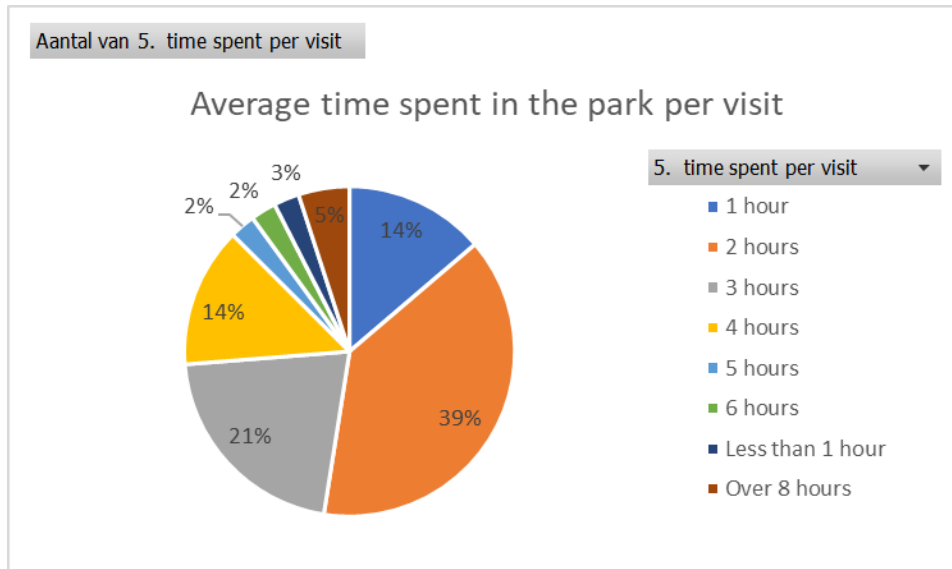


Aantal van 4. How often do you visit NPUH on average?

Average number of visits to the park

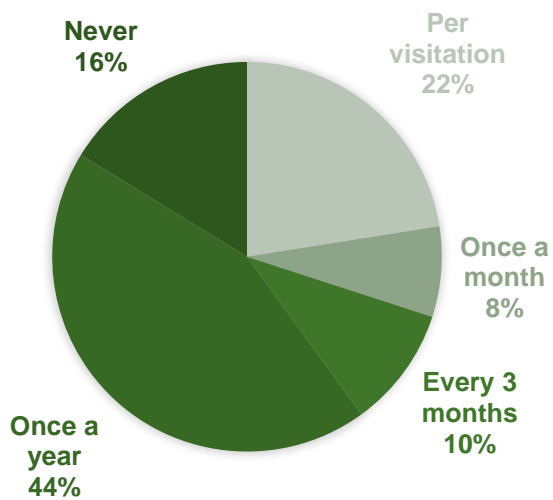
4. How often do you visit...





Appendix C. Questionnaire results

DONATION TYPE BEFORE



DONATION TYPE AFTER

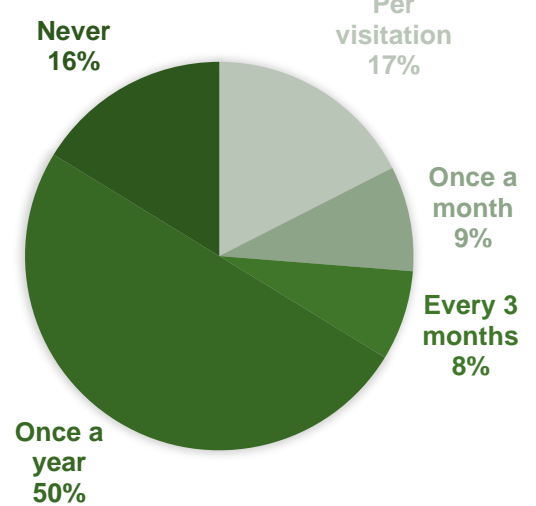


Figure C1. Preferred donation types before and after information was provided.