



LIFE4FIR – Project LIFE18 NAT/IT/000164

“Decisive in situ and ex situ conservation strategies to secure the critically endangered Sicilian fir, *Abies nebrodensis*”

**“Report on the Socio-economic impact of the LIFE4FIR project”
Action D1.**

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Consiglio Nazionale delle Ricerche 

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REPUBBLICA ITALIANA

REGIONE SICILIANA
ASSESSORATO REGIONALE
DELL'AGRICOLTURA, DELLO SVILUPPO RURALE
E DELLA PESCA MEDITERRANEA


Parco delle Madonie


UNIVERSITÀ
DEGLI STUDI
DI PALERMO
SAAF
DIPARTIMENTO
SCIENZE
AGRARIE
ALIMENTARI
FORESTALI

UNIVERSIDAD DE SEVILLA

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Introduction

This report includes an overview of the socio-economic impact of the LIFE4FIR project.

In the first part of this Deliverable, we have defined a general overview of the LIFE4FIR socio-economic impact.

In the second part of this Deliverable, we have defined the questionnaire, the statistical analysis and result comments and conclusions implemented on 500 visitors and local people interested to the A. nebrodensis site in the Madonie Regional Park.

At the end of this Deliverable, we have defined a list of main conclusions.

1. LIFE4FIR socio-economic impact analyses

The implementation of the actions planned in LIFE4FIR leads to improve the conservation status of *A. nebrodensis* and produces positive socio-economic benefits and an improved perception and visibility of ecosystem services of the Madonie area, including genetic resources, cultural services (scientific, educational, leisure and aesthetic), social and economic benefits concerning the proper and sustainable management of the territory and tourism.

The project activities include actions aimed at raising environmental awareness of public institutions, with particular reference to natural historical museums, schools of all levels, and Universities that are sensitized on the aims of the project, the environmental, cultural and evolutionary value of the preservation of threatened tree species and biodiversity, the importance of the ecosystems in which *A. nebrodensis* grows. Educational visits at the headquarter of the Park, at the Polizzi Generosa Municipality, which hosts the cryobank and the seedbank, as well as at the site of the natural population of *A. nebrodensis* are promoted.

We have reached around 2.000 people through the dissemination activities of LIFE4FIR on conservation of ecosystems and biodiversity. In particular, 180 people have received professional training and skills training. Through a school-job alternation, 150 students have been trained on forest and naturalistic activities. Thirty (30) people from social cooperatives have received formation of skilled green jobs.

In particular, students were also involved through paths of alternation between school and work: with 4 local (Madonie area) high school – such as Agricultural technical Institute and the EPM – a schoolwork alternation convention was established, in order to train at least 150 students during the whole course of the project. Students have received a comprehensive training about environmental aspects related to biological and forest activities of the project, but also relatively to the promotion, enhancement and reception of tourists.

In addition to specific training related to the scientific field, training was provided regarding also the tourist reception: that could indirectly improve the local working environment, with an increase in the possibility of finding work for students.

During the LIFE4FIR project has been implemented also the collaboration with 3 social cooperatives that manage young people at risk of social exclusion, unemployed or disabled people. After the project end, they will take advantage of the training courses reserved to them on the activities, especially those of the nursery, related to the project: the activities, in addition to personal benefits deriving from

the therapeutic and rehabilitative nature of them, will promote skilled green jobs for people that, otherwise, would find it difficult to enter workplaces.

Tourism association and local tourism cooperatives specialized in the eco-tourism sector were involved as stakeholders of the LIFE4FIR project, in order to boost interest for the Madonie Regional Park thanks to the LIFE4FIR activities for nature and biodiversity conservation and to enhance visits of national and international tourists. Tourism experience was also enhanced by the improvement of the networks of information points and visitors' centers: thanks to them LIFE4FIR activities, objectives and goals were promoted, publications and gadgets from the LIFE4FIR and Madonie Regional Park were disseminated and the sale of locally produced selected quality handmade goods were boosted.

During the project, the Ente Parco delle Madonie (EPM) in collaboration with the Italian Alpine Club (CAI) have collaborated for the improvement of the hiking trail network, in order to realize after the project end an appropriate and functional signposting aimed also at the safe use and at the naturalistic interpretation of the natural areas, with particular reference to that of *A. nebrodensis*: the new trail signs will be relevant for the social enjoyment both from the point of view of hiking and of the enhancement of the protected area, through the promotion of an increasingly interactive approach for visitors who love the natural environment and are worried about its protection.

During the project particularly important was the education of young people to a more active relationship with the territory, discovering its attractions, even with the use of specific signs and panels aimed at the interpretation of the landscape. The works were performed in compliance with the objectives of environmental and nature protection that the Park Authority has inherently in its institutional nature, also using web GIS tools for the use of data through applications normally already supplied with the phones.

Tourism improvement in the Madonie area guarantees consequent benefits for the local economy (farmhouses, the so called 'masserie' and 'bagli', hotels, restaurants, coffee shops, etc.). During the project we have defined an increment in Park visits of around 100 tourists and we expect to have an increasing of around of 2000 more tourists per year after the project end thanks to the implementation of the LIFE4FIR project.

During the project, it has been set up a specific establishment of working relationships with professional tour guides and for the rent of tour buses, in order to offer a real and concrete opportunity to disseminate the project results and updates and to promote the Madonie Park. Moreover, being *A. nebrodensis* the symbol of the Madonie, local potters and craftsmen were involved for the preparation of objects showing the Madonie fir and reporting the LIFE4FIR logo. In the "Book and Gift Shop"

managed by the EPM in Palermo, tourists and visitors had and will have the opportunity to purchase publications and gadgets from the Parco delle Madonie, together with a selection of quality handmade products produced on the Madonie and the possibility of promoting them.

In addition, the involvement of local workers, local hunters and shepherds associations has been specifically envisaged, in order to produce also an awareness-growth indirect result (i.e. to increase the awareness of the threatened *Abies nebrodensis* and biodiversity conservation) for that part of local population that generally is difficultly reached by a proper scientific and technical information. Local operators were also preferred for purchasing the materials required by the project actions according to the Green Procurement rules.

Specific research carried out suggested that because ecosystem services provide benefits to humans, there are personal and social motivations that incentivise people to engage (or not) in behaviours that protect those services. Therefore, the way people perceive the benefits of ecosystems drives their behaviour, with important ramifications for ecosystem sustainability, especially when human actions and behaviours are strong drivers of ecosystem deterioration. In other words, another socioeconomic benefit of this project is the enhancement of the local community's positive perception of forests as valuable sources of economic and cultural capital. This in turn can modify their awareness and behaviours towards forests, promoting short term goals – such as forest fire reduction – and long-term goals of environmental sustainability, adaptation to climate change as vital carbon sinks and conservation of biodiversity. These perceptions were evaluated during the project through stakeholder interviews.

In order to analyse the perception of socio-economic impact and Ecosystem Services by people and stakeholders, Certema with the support of all the project partners, has designed, distributed and implemented a statistical analysis and has defined comments and conclusions in relation of the following specific questionnaires:

Questionnaire to 500 visitors and local people interested to the *A. nebrodensis* site in the Madonie Regional Park.

2. LIFE4FIR people socio-economic questionnaire

In order to analyse the perception of socio-economic impact and Ecosystem Services by people, Certema with the support of all the project partners, has designed, distributed and implemented a statistical analysis of the following specific questionnaire:

1. Questionnaire to 500 visitors and local people interested to the *A. nebrodensis* site in the Madonie Regional Park,

Questionnaire

Life4fir

LIFE18 NAT/IT/000164

*“Innovative strategies for the in situ and ex situ conservation of
FIR”*

As part of the Life4fir project, a survey was launched to collect information on visitors to the Madonie Park and in particular to the *Abies nebrodensis* natural area and to evaluate the perception of economic, environmental and biodiversity issues.

Information pursuant to Legislative Decree no. 196/2003 and art. 13 GDPR 679/16 on “Protection of persons or other subjects with respect to the processing of personal data”

Data controller: IPSP-CNR Purpose of processing: Statistical analysis Data controller: IPSP-CNR

The data collected will be made anonymous and disseminated only in the form of statistical tables.

Section A. SOCIAL INFORMATION

1. Sex:

- Male*
- Female*

2. Age:

- 15-19
- 20-29
- 30-39
- 40-49
- 50-59
- More than 60*

3. Study level:

- Up to middle school*
- Upper secondary education diploma*
- Degree or higher qualification*

4. Occupation:

- Student*
- Employee*
- Entrepreneur*
- Unemployee*
- Retired*
- Other*

5. Site:

Section B. VISITOR INFORMATION

6. Arrival type:

- Alone*
- With friends*
- With an organized group*
- With family*
- Other*

7. Duration:

- 1 day.
- several days with overnight stay nearby
- several days with overnight stay in another place

8. Days

9. Stay type?

- hotel
- bed and breakfast
- apartment
- camping
- friend house
- other

10. Daily cost

- 0 - 30 € 31 - 60 € 61 - 90 € more than 90 €

| 11. Cost type | Spesa media giornaliera a persona |
|------------------------|--|
| Food and drink | _ _ _ _ € <input type="checkbox"/> no expense |
| Typical local products | _ _ _ _ € <input type="checkbox"/> no expense |
| Technical products | _ _ _ _ € <input type="checkbox"/> no expense |
| parking | _ _ _ _ € <input type="checkbox"/> no expense |
| other | _ _ _ _ € <input type="checkbox"/> no expense |

12. Arrival way?

- car
- camper
- moto
- bicycle
- public transport
- other

13. First time visit?

- Yes

no

14. Visit quality?

unsatisfactory discreet good optimal

15. Association participation?

- Hiking associatio
- Sport association
- Environmental association
- Altre

Section C

ENVIRONMENTAL TOPIC KNOWLEDGE

16. Biodiversity knowledge?

1. *Yes*
2. *Yes, but I do know what it is*
3. *No*

17. Protected area knowledge?

1. *Yes*
2. *Yes, but I do know where*
3. *No*

18. Natura 2000 network knowledge?

1. *Yes*
2. *Yes, but I do know what it is*
3. *No*

19. Natura 2000 network

1. *A National system of protected areas*
2. *National Park*
3. *A European system of protected areas*
4. *A set of natural oases*

20. Natura 2000 network objectives

1. *incentivize companies to reduce their environmental impact*
2. *Increase commitment to sustainable agriculture*
3. *ensure a satisfactory state of conservation of protected habitats and species*
4. *ensure rigorous protection of habitats and species by prohibiting any anthropic activity*
5. *other*

21. SIC/ZPS/ZSC knowledge?

1. *Yes*
2. *Yes, but I do know what it is*
3. *No*

22. Environmental methodology used?

1. *increase in separate waste collection*
2. *renewable energy production*
3. *changes in the choice of means of transport*
4. *reduction of energy consumption*
5. *reduction of plastic consumption*

6. *participation in events aimed at protecting the environment*
7. *other*

23. Main environmental topic

1. *waste reduction*
2. *correct waste disposal*
3. *preserve animal and plant species*
4. *guarantee natural and local production*
5. *ensure clean agricultural production*
6. *protect natural areas*
7. *stimulate the use of electric vehicles and bicycles for mobility*
8. *other*

Section D. LIFE4FIR PROJECT KNOWLEDGE

24. LIFE4FIR knowledge:

- Yes*

- No*

25. Way for LIFE4FIR knowledge?

- Social*
- Web*
- Newspaper*
- Word of mouth*
- other*

26. Interest?

- Hiking*
- Environmental theme*
- Technical-scientific interest*
- Recreational interest*
- Entrepreneurial opportunities*
- Opportunity for relationships*
- other*

27. LIFE Programme knowledge?

- Yes*
- No*

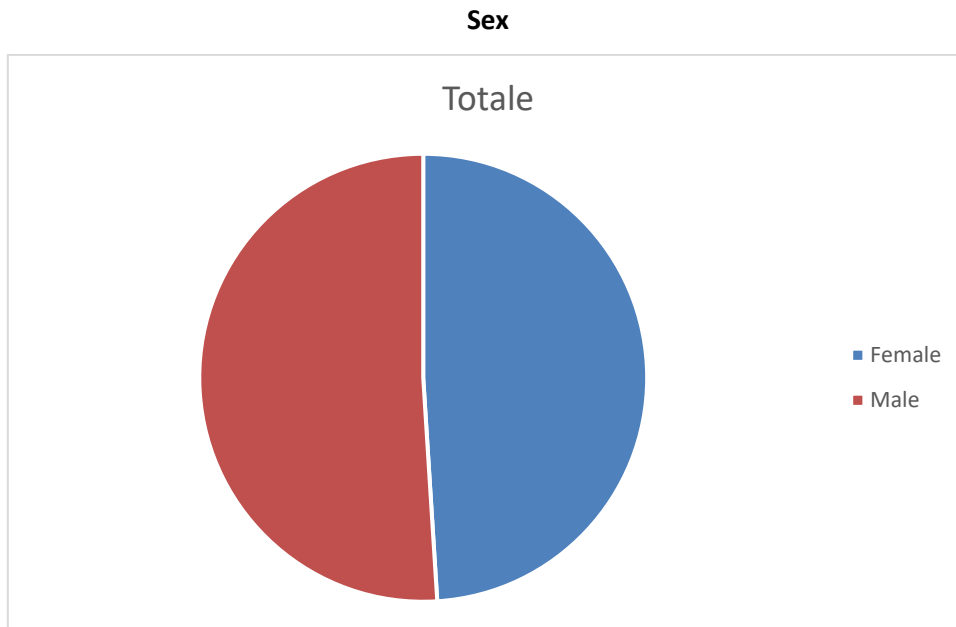
28. LIFE4FIR importance?

- In no way*
- little*
- enough*
- a lot*

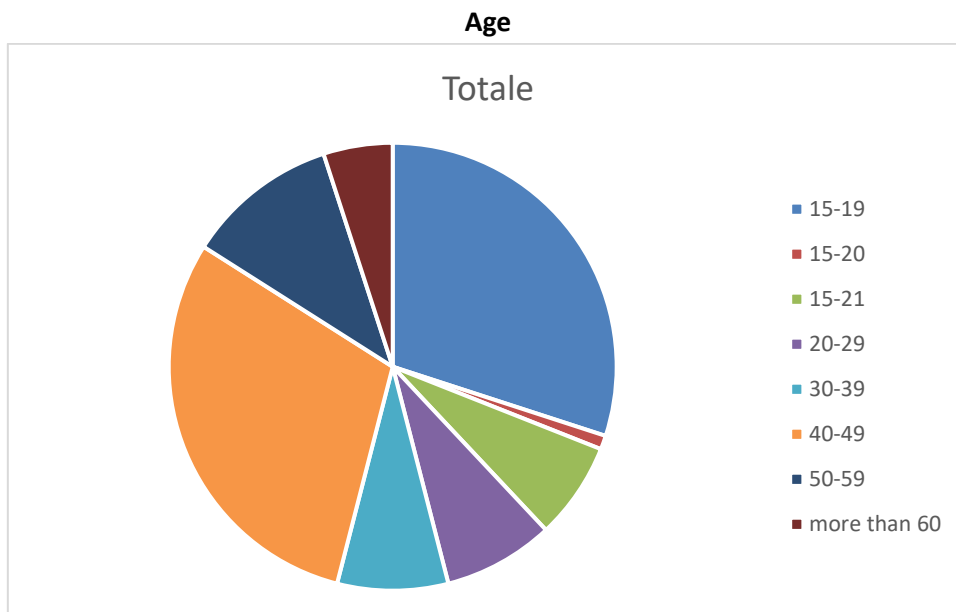
3. People questionnaire answer statistical graphs

3.1 Statistical graphs from single answer

Answer n.1

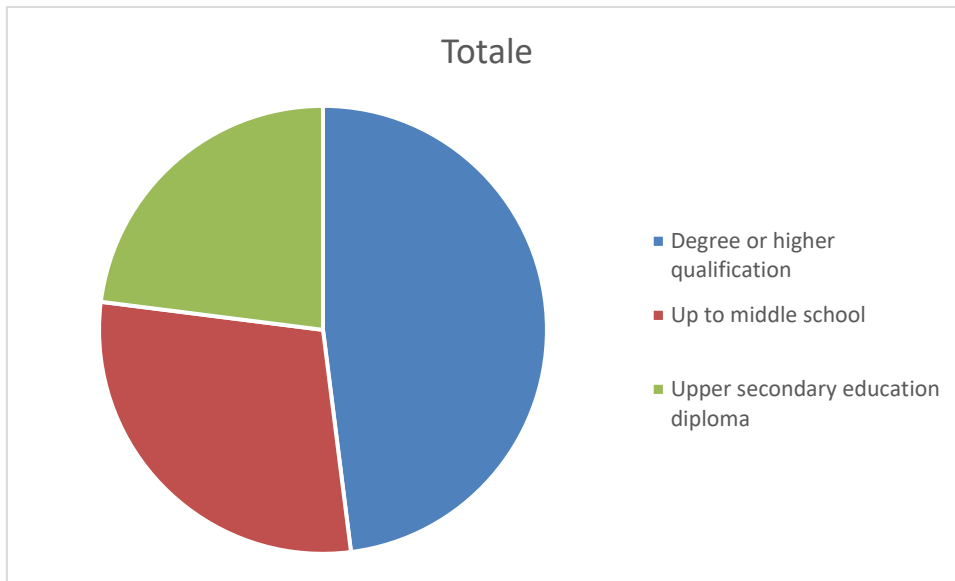


Answer n.2



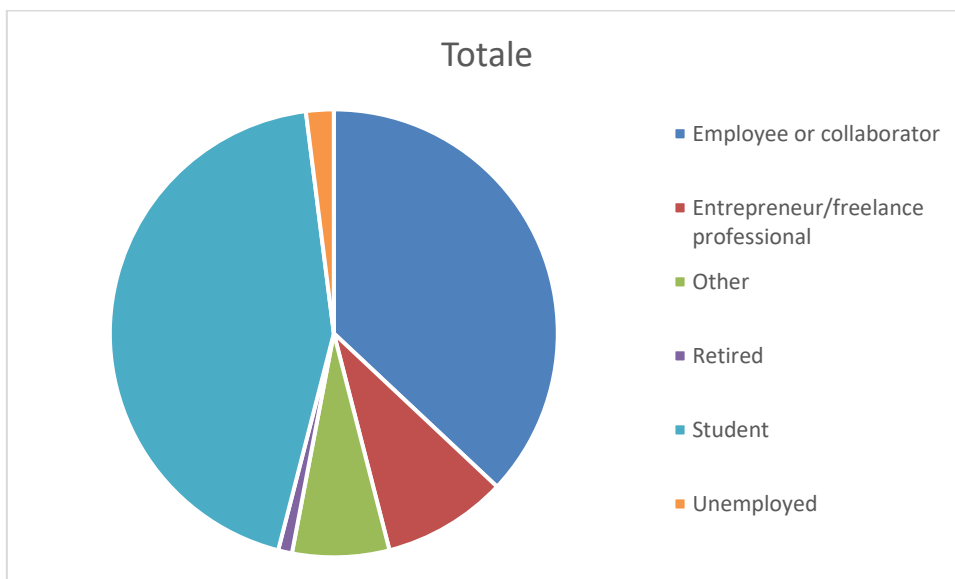
Answer n.3

Education level

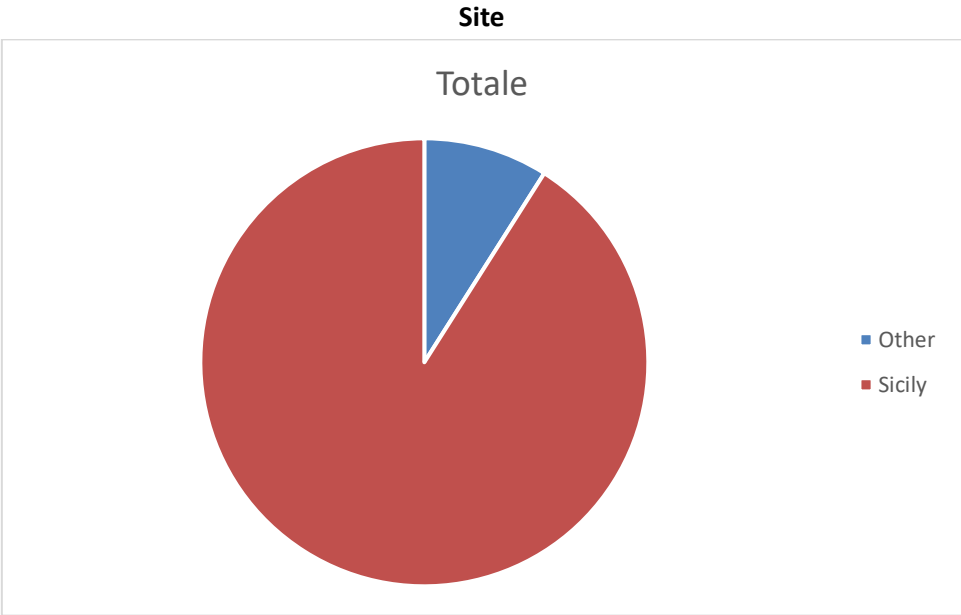


Answer n.4

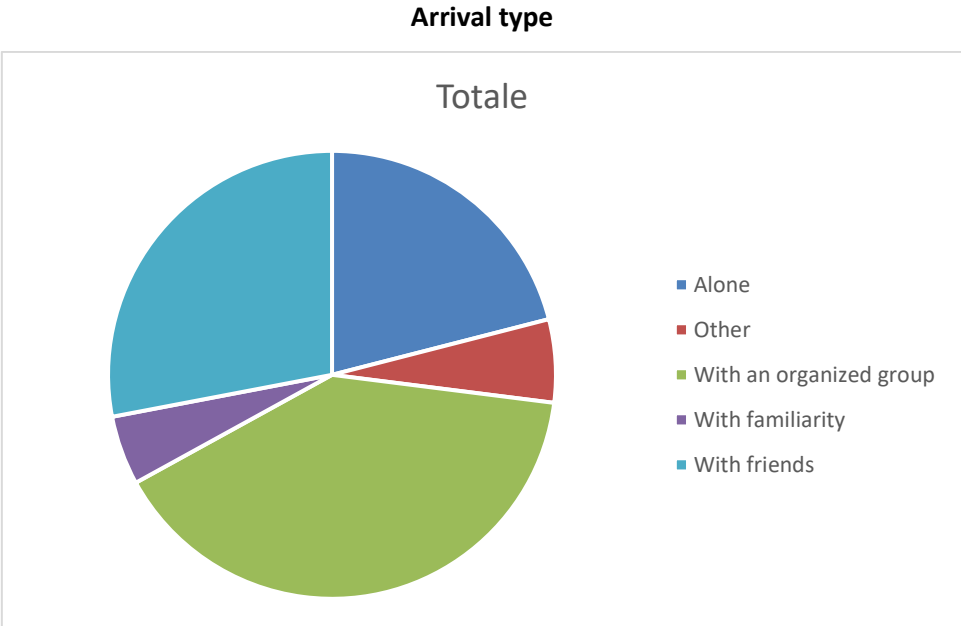
Occupation



Answer n.5

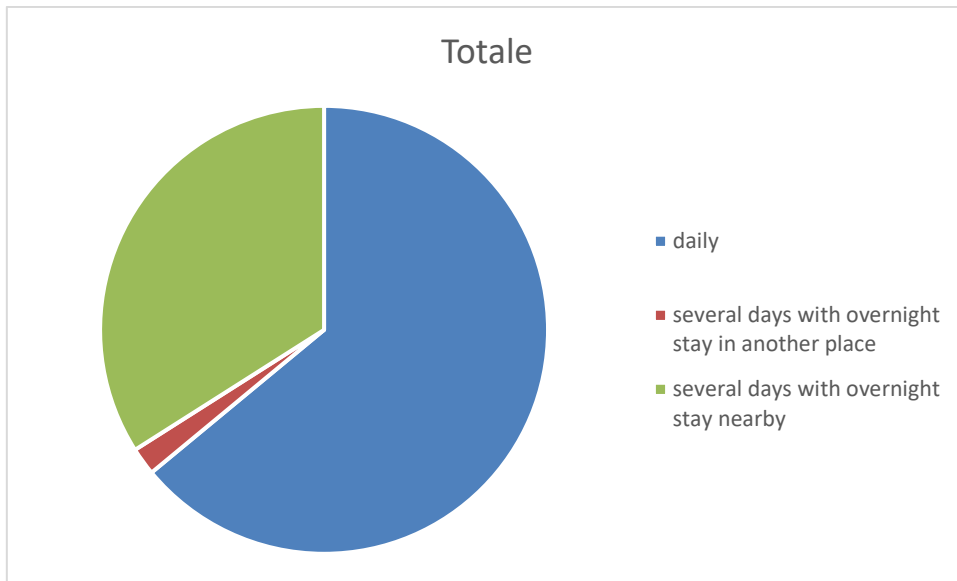


Answer n.6



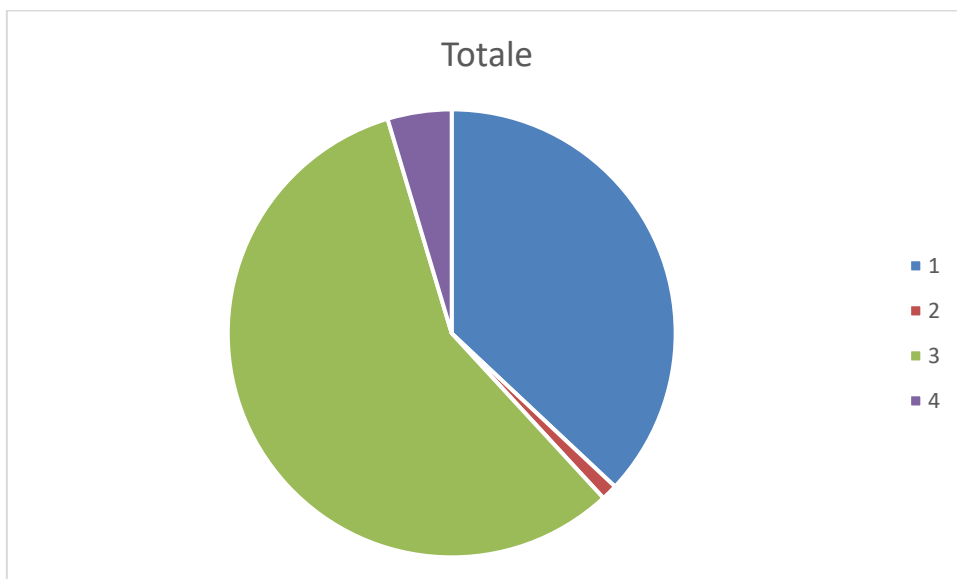
Answer n.7

Duration



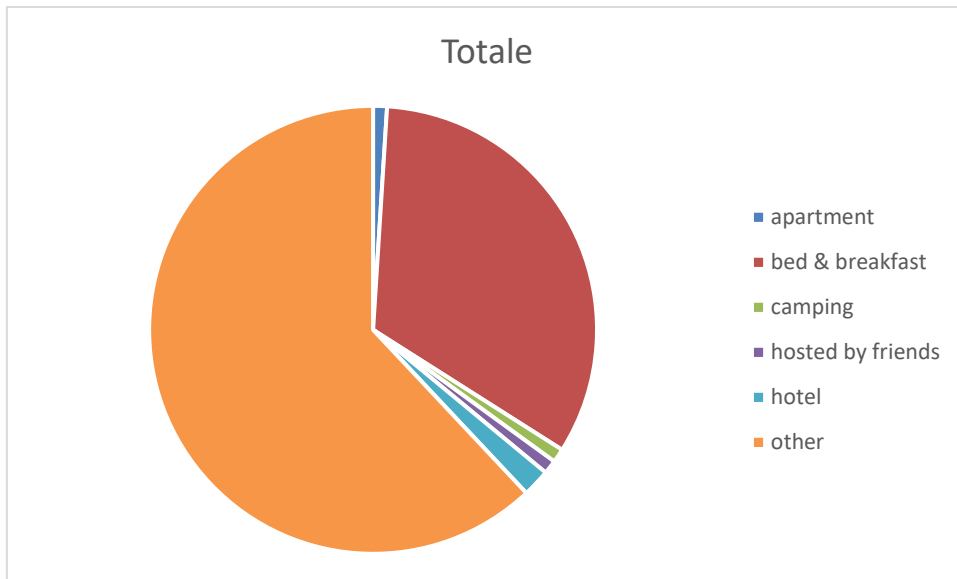
Answer n.8

Day numbers



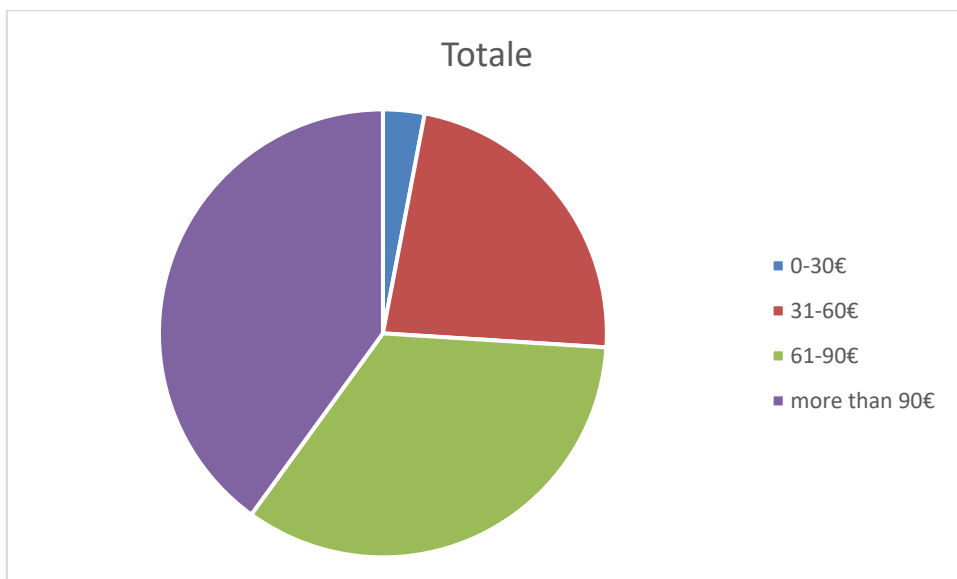
Answer n.9

Stay type



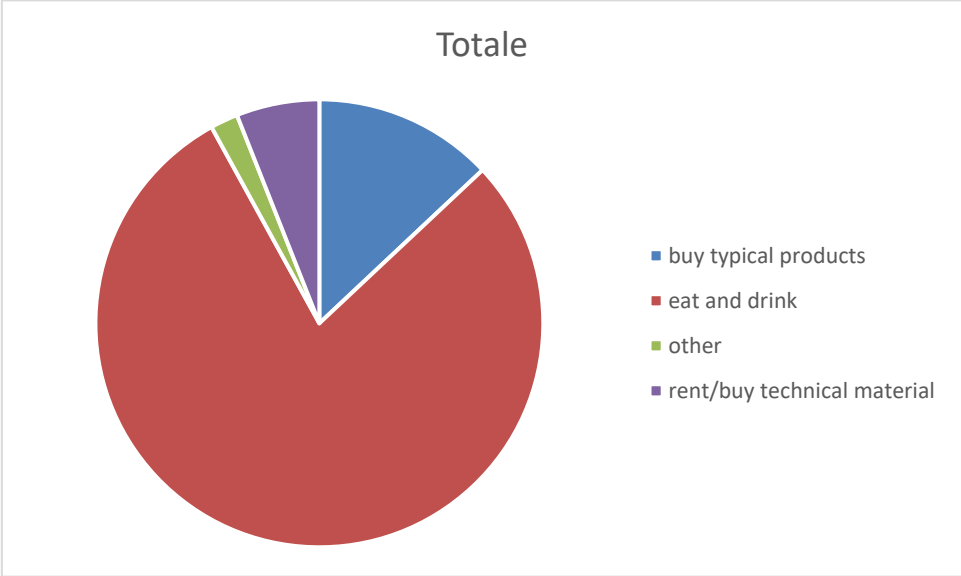
Answer n.10

Cost



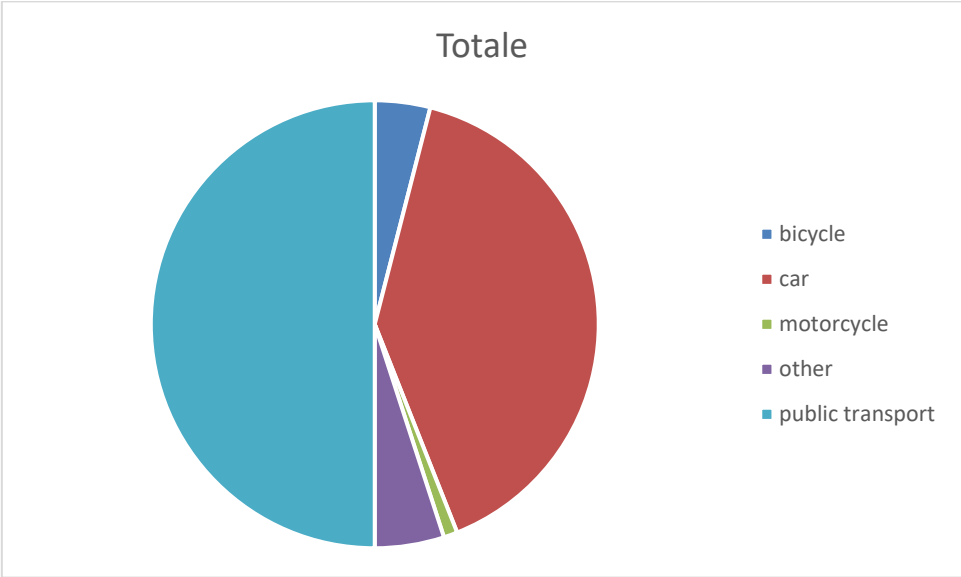
Answer n.11

Cost type



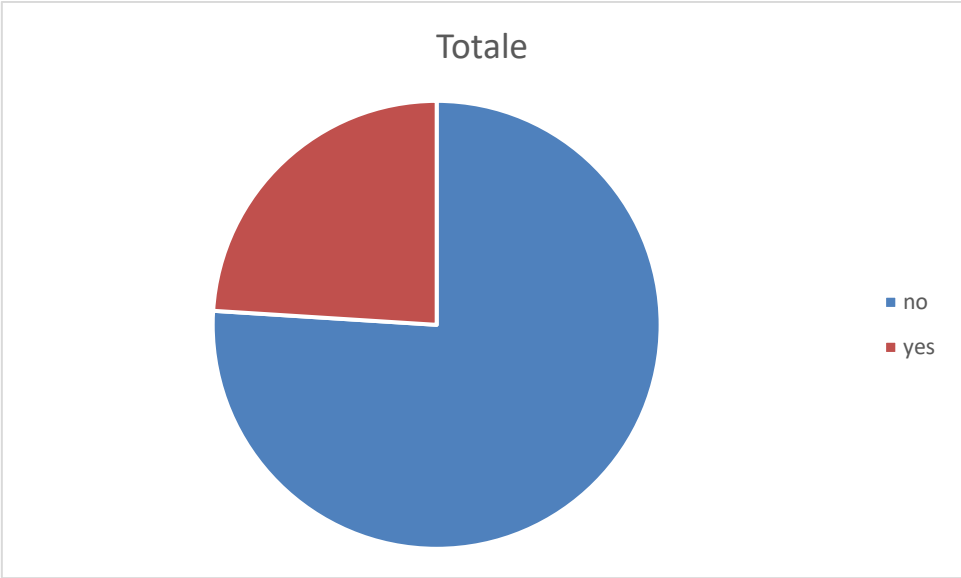
Answer n.12

Arrival way



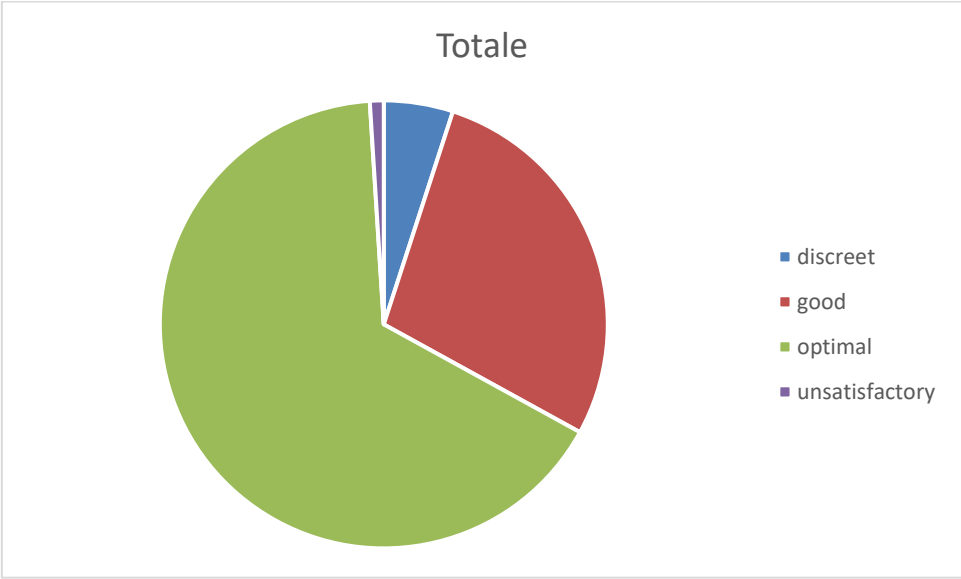
Answer n.13

First time visit



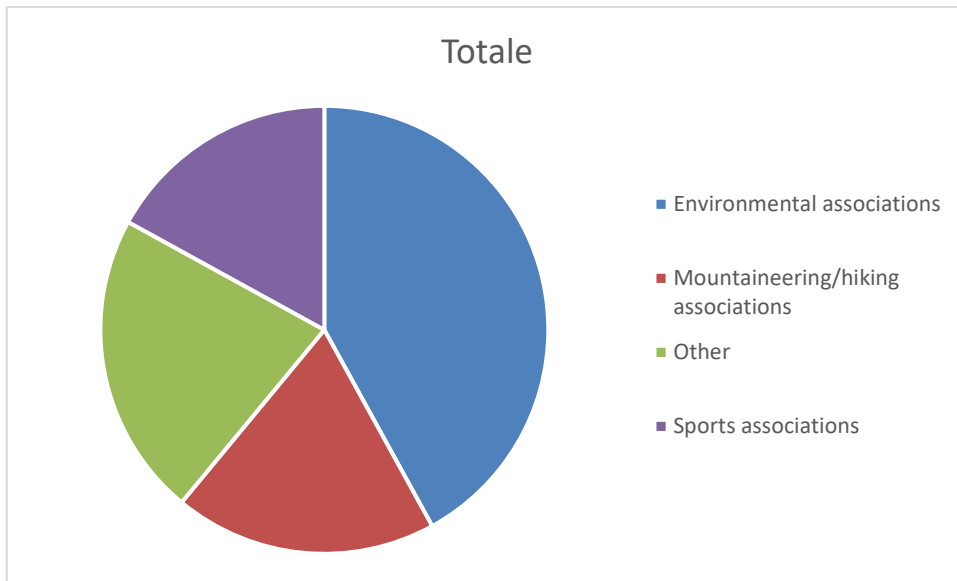
Answer n.14

Visit quality



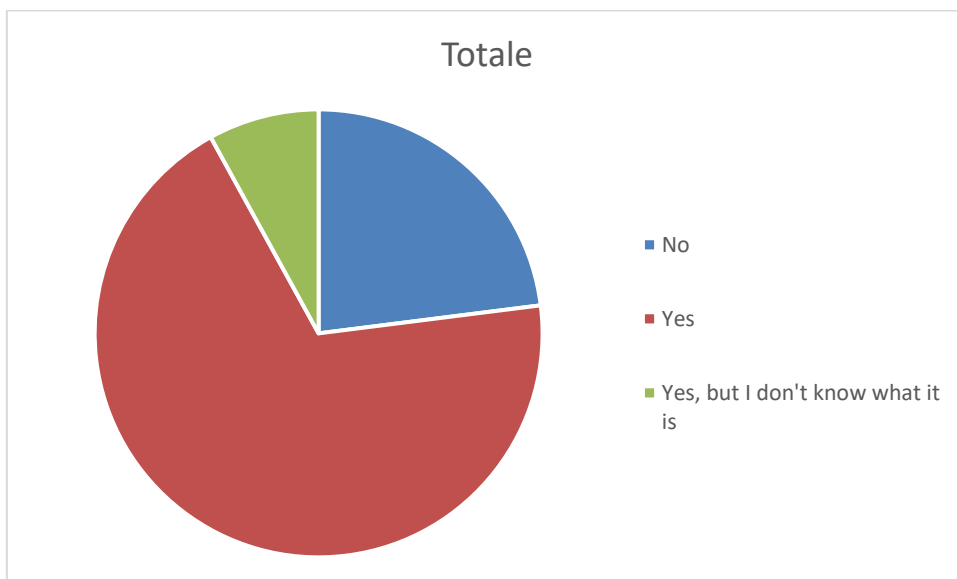
Answer n.15

Association participation



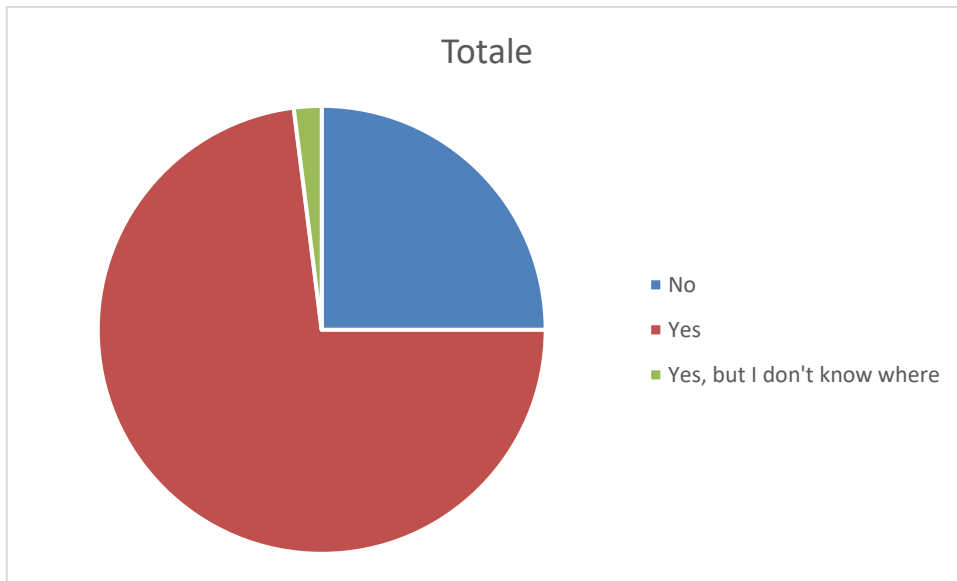
Answer n.16

Biodiversity knowledge



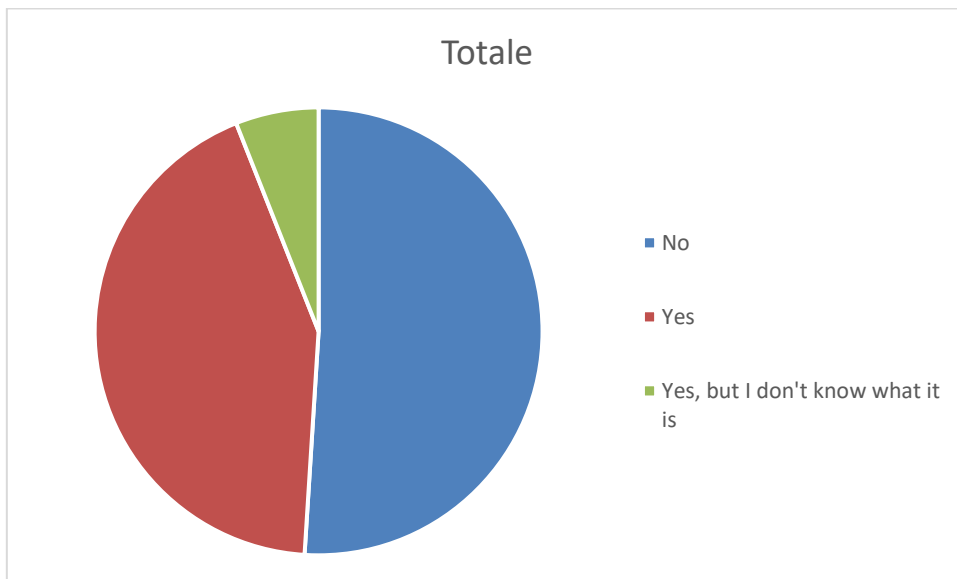
Answer n.17

Protected area knowledge



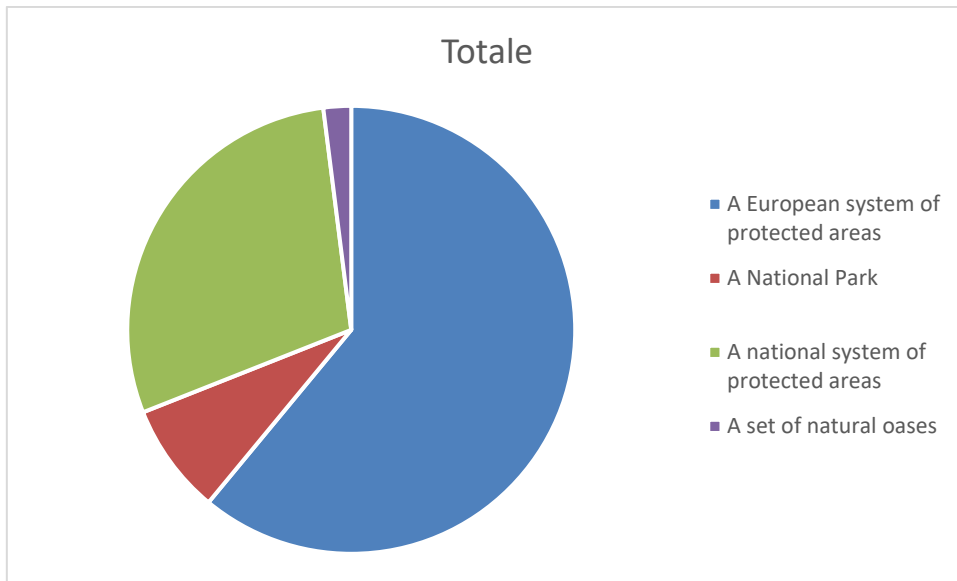
Answer n.18

Natura 2000 knowledge



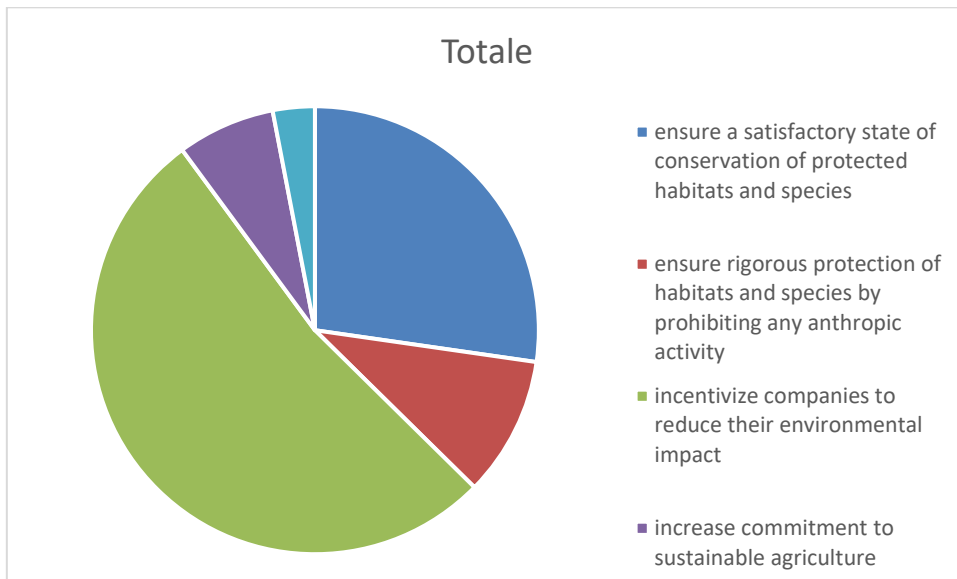
Answer n.19

Natura 2000 network



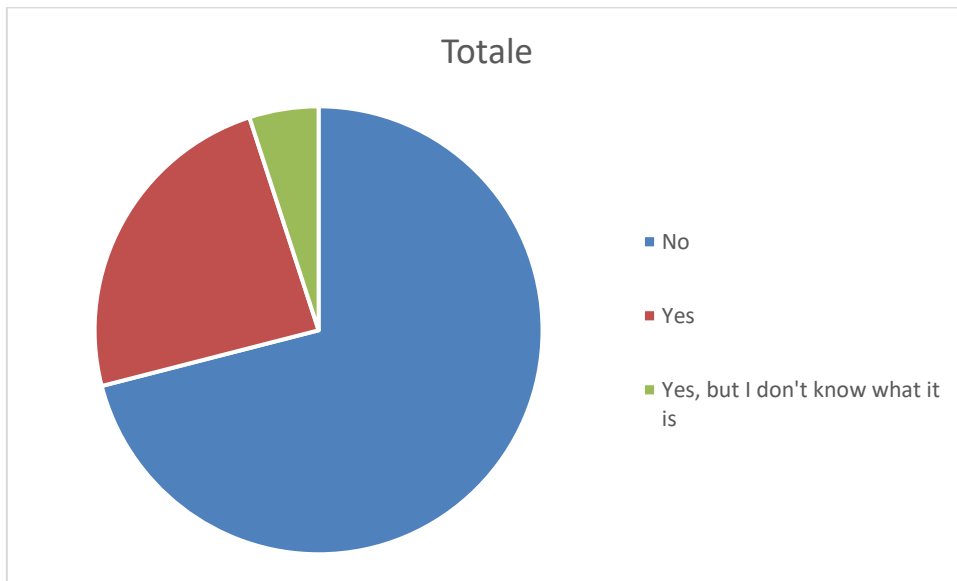
Answer n.20

Natura 2000 network objectives



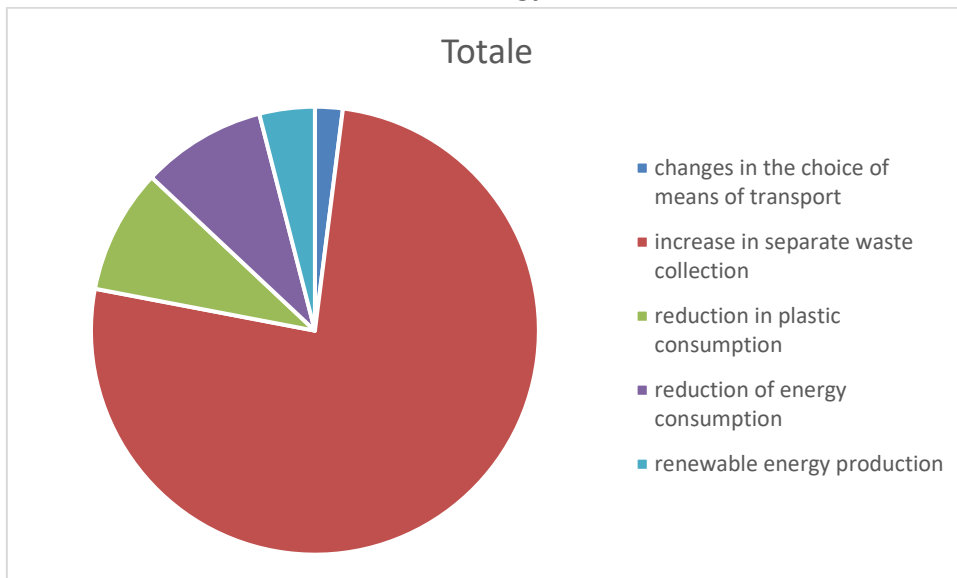
Answer n.21

SIC/ZPS/ZSC knowledge



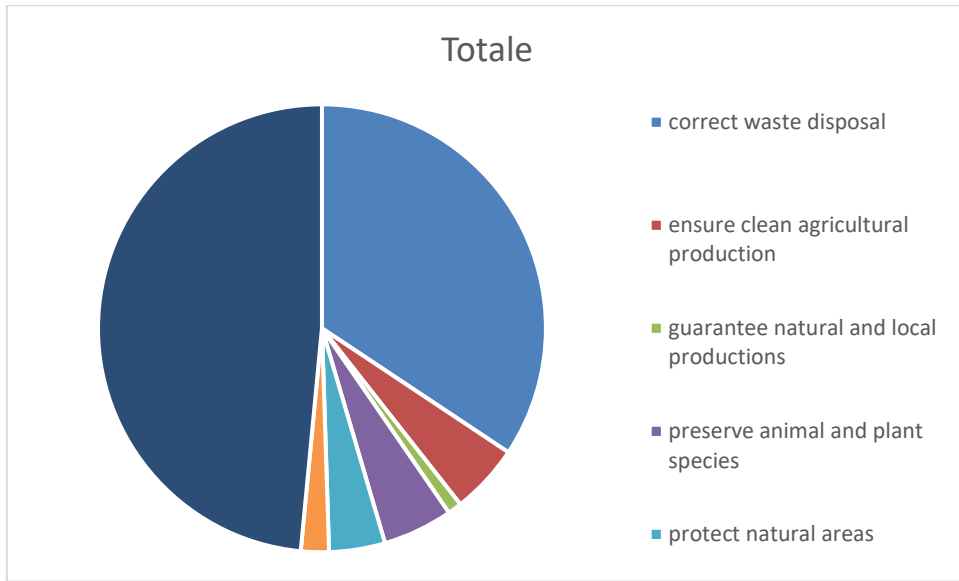
Answer n.22

methodology use



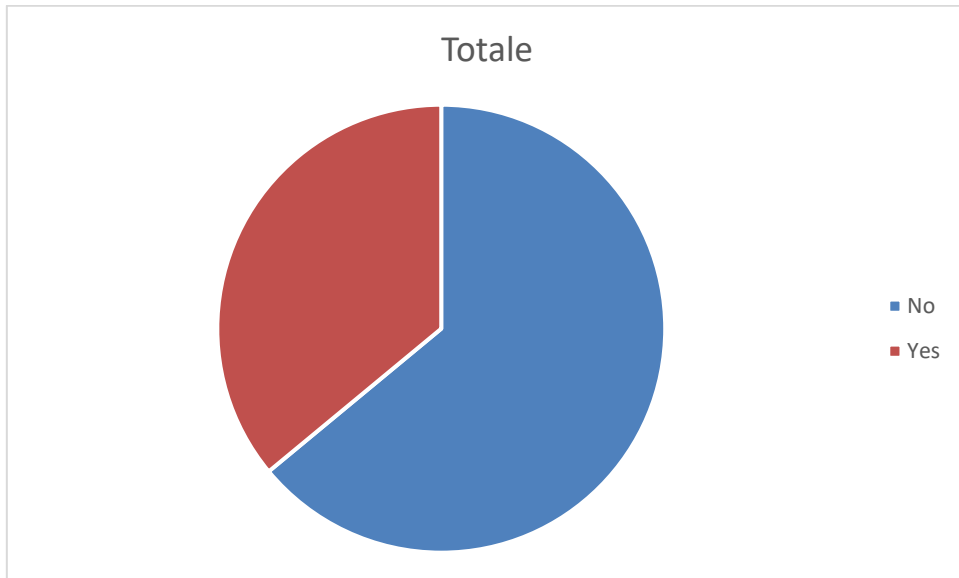
Answer n.23

main environmental topic



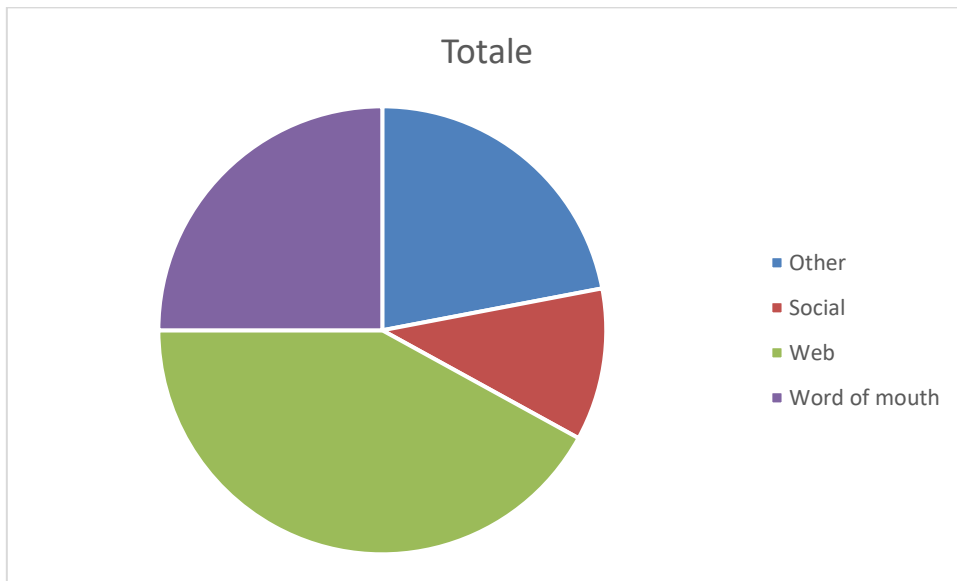
Answer n.24

LIFE4FIR project knowledge



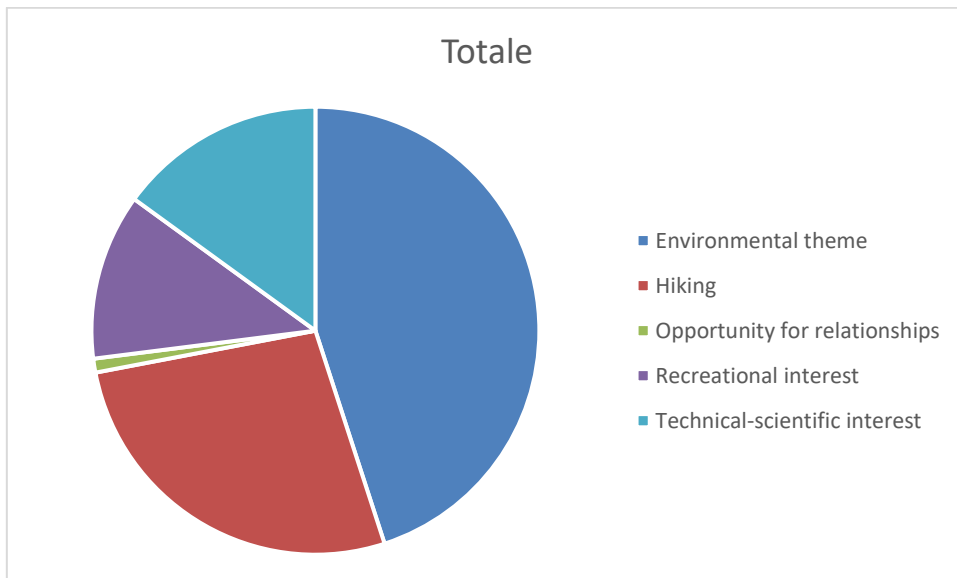
Answer n.25

Way for LIFE4FIR knoweldge



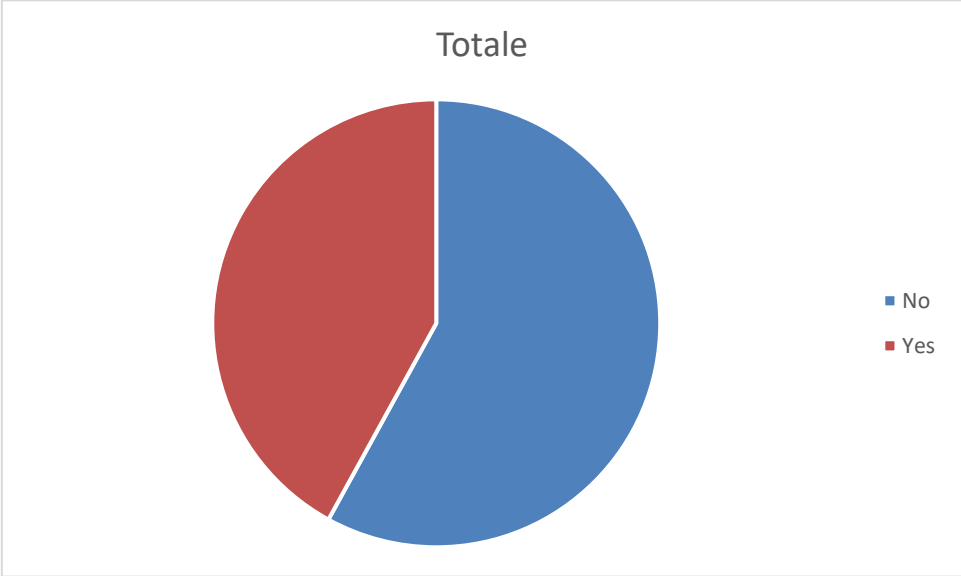
Answer n.26

Interest



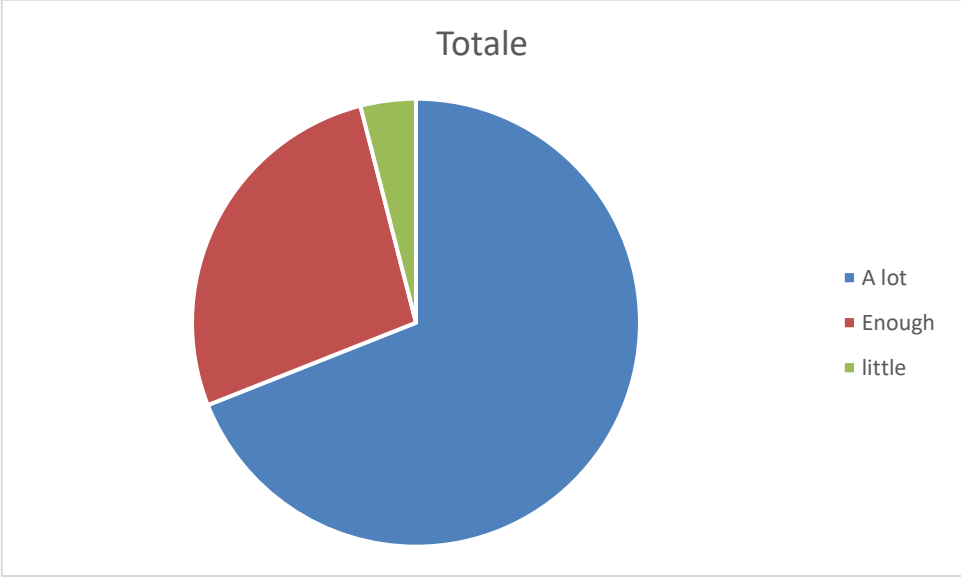
Answer n.27

LIFE programme knowledge



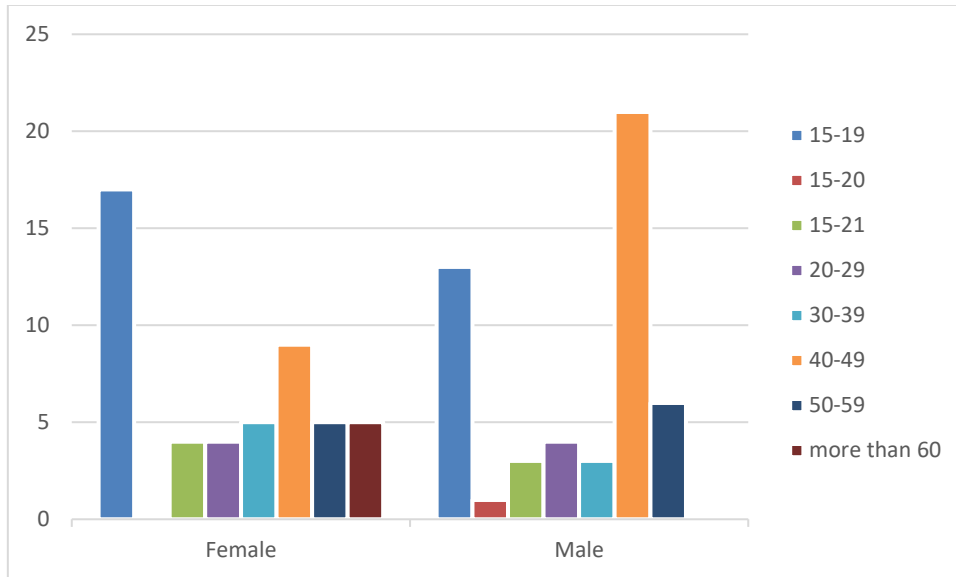
Answer n.28

LIFE4FIR importance

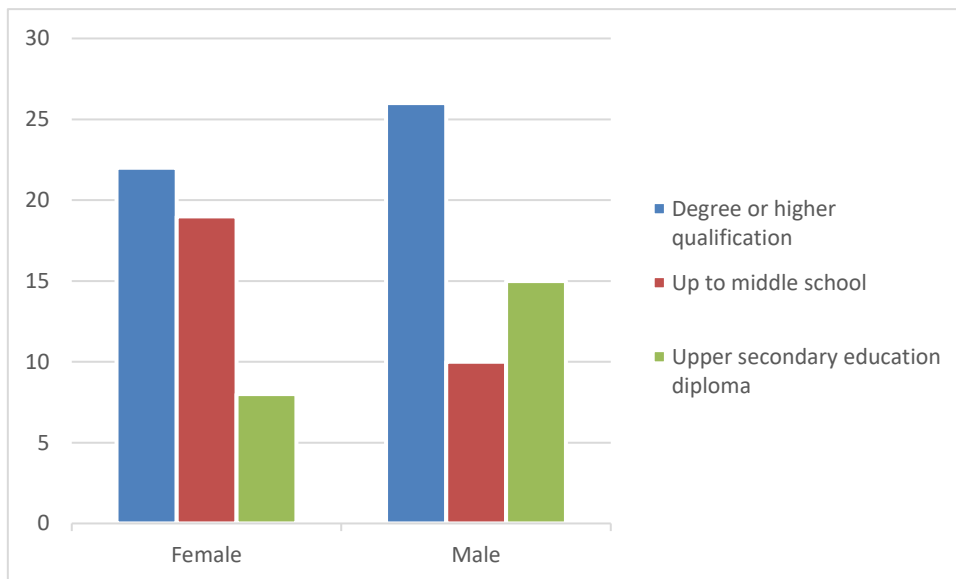


3.2 Statistical graphs from different answers

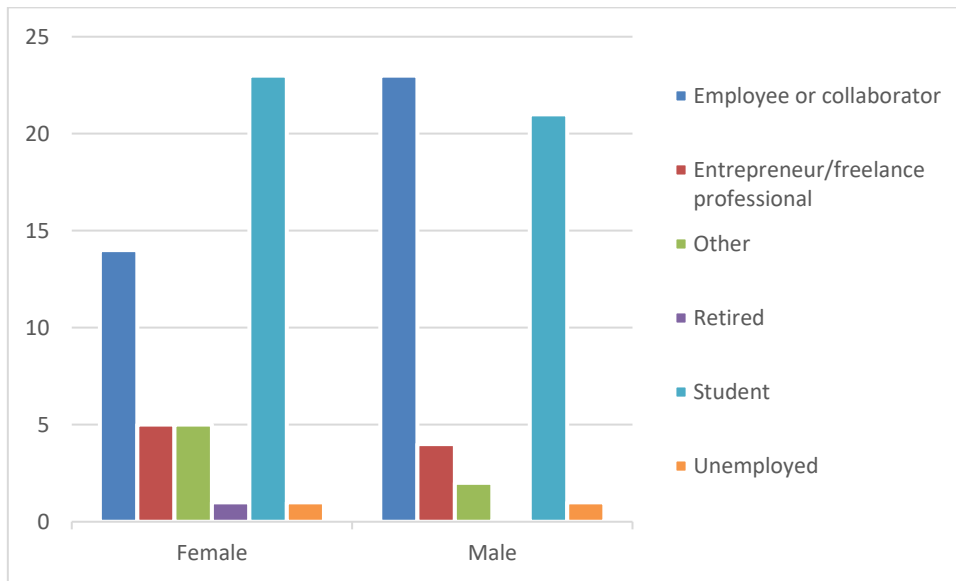
Correlation between sex and age



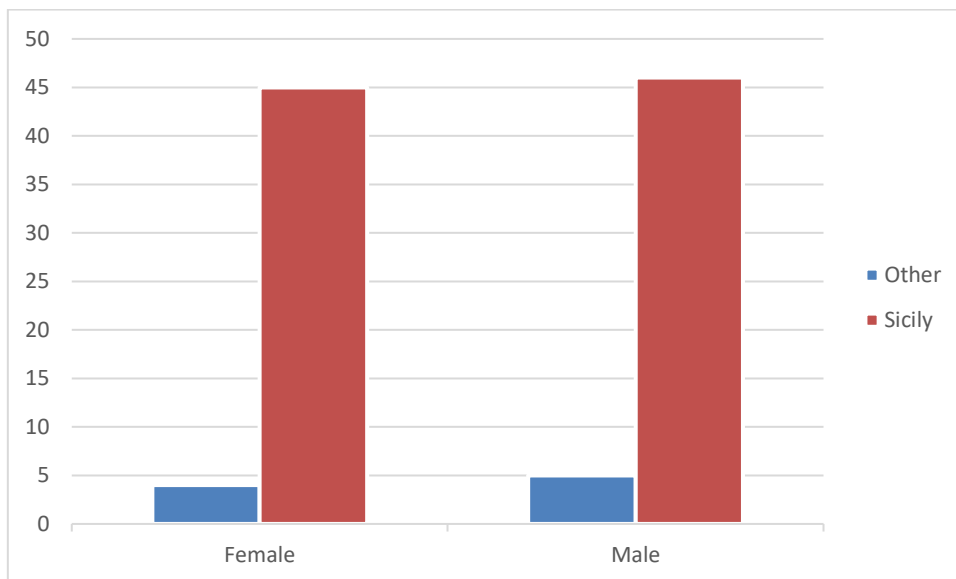
Correlation between sex and education level



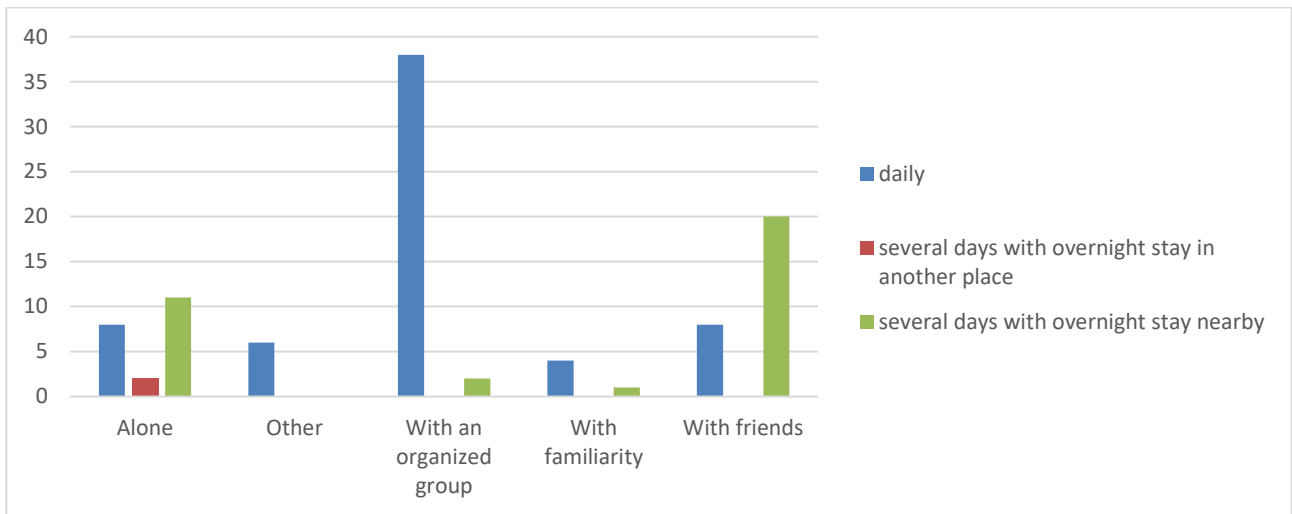
Correlation between sex and education level



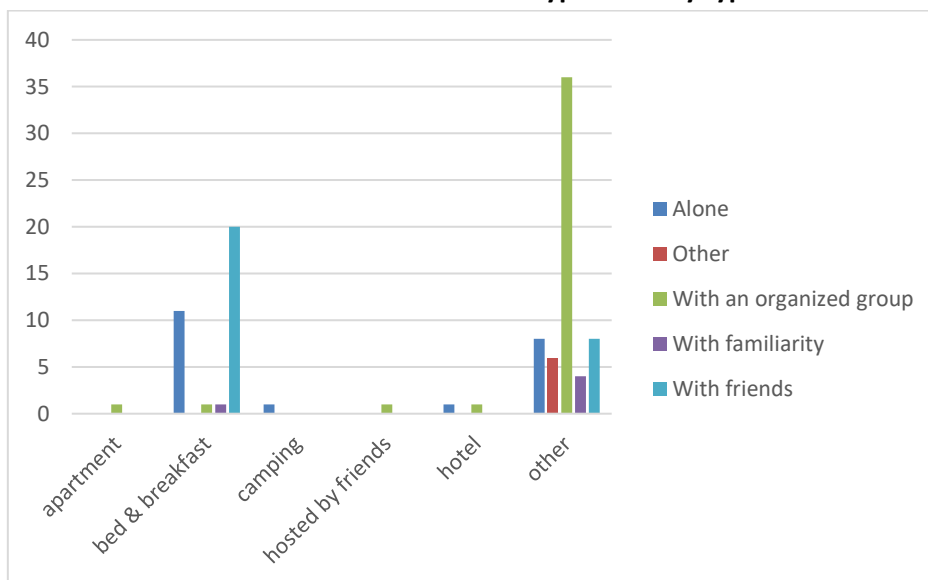
Correlation between sex and site



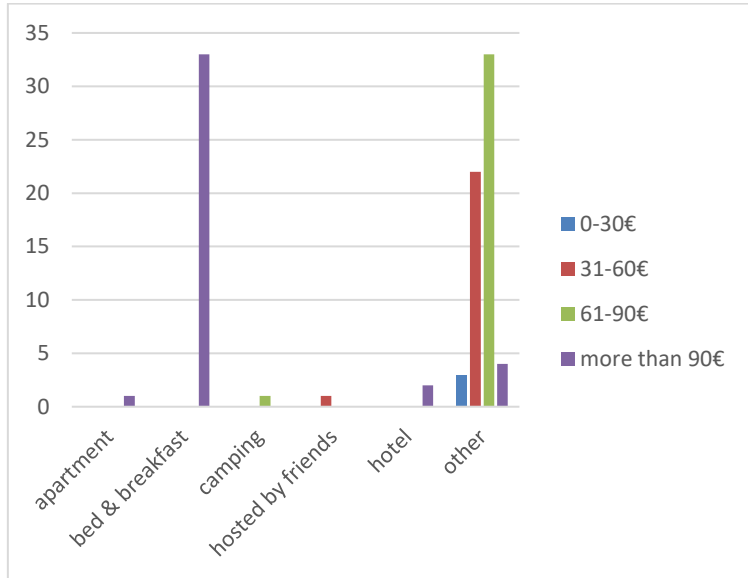
Correlation between arrival type and duration



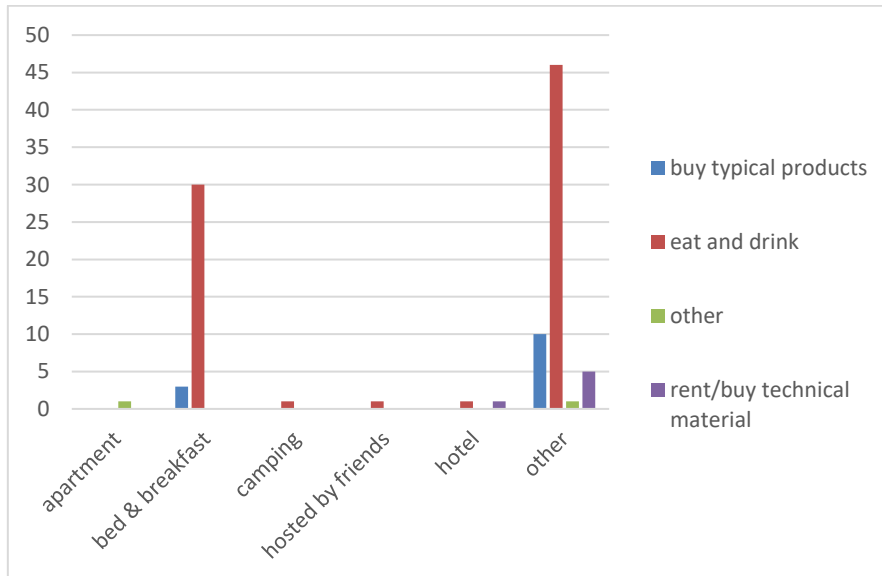
Correlation between arrival type and stay type



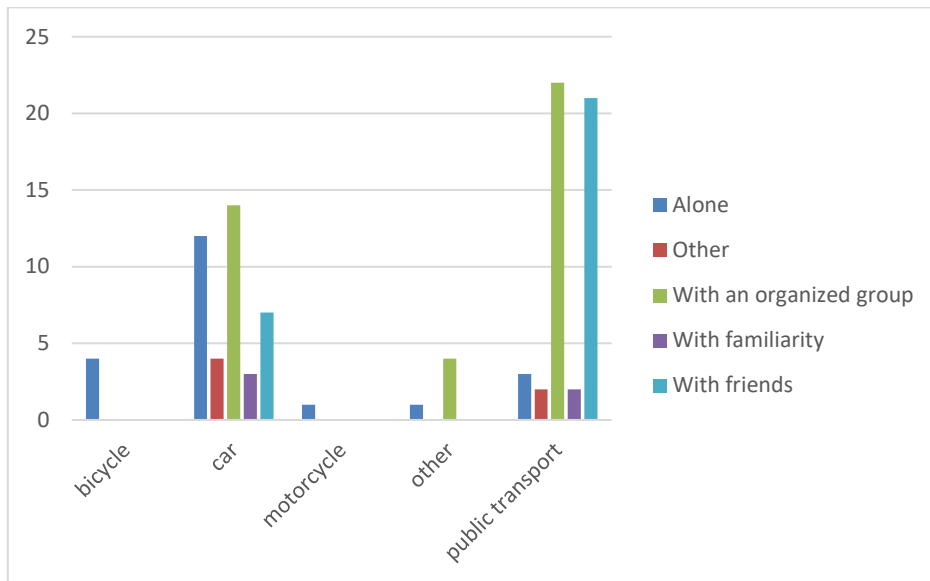
Correlation between stay type and cost



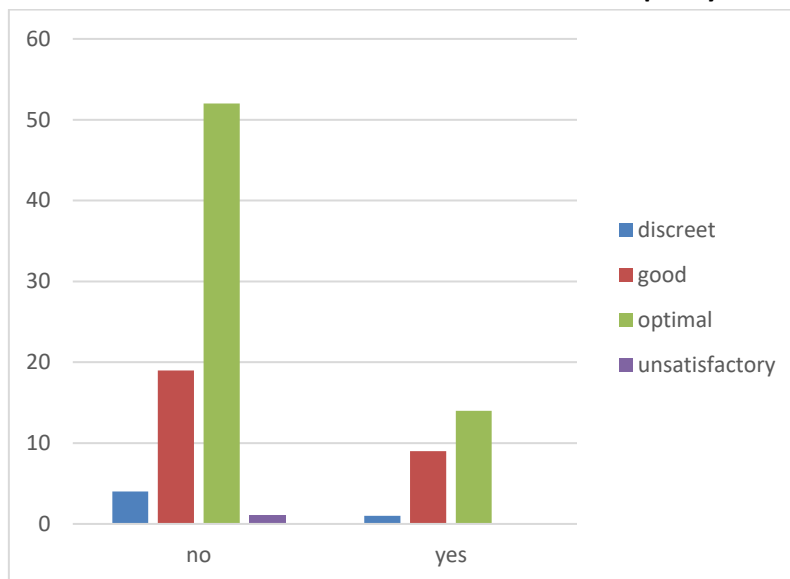
Correlation between stay type and cost type



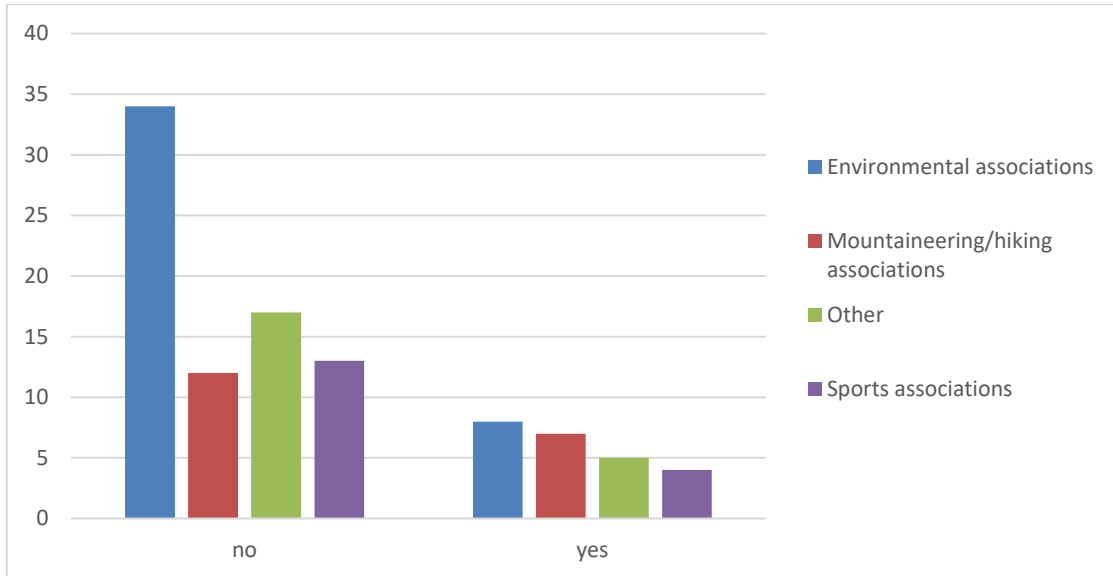
Correlation between arrival type and arrival way



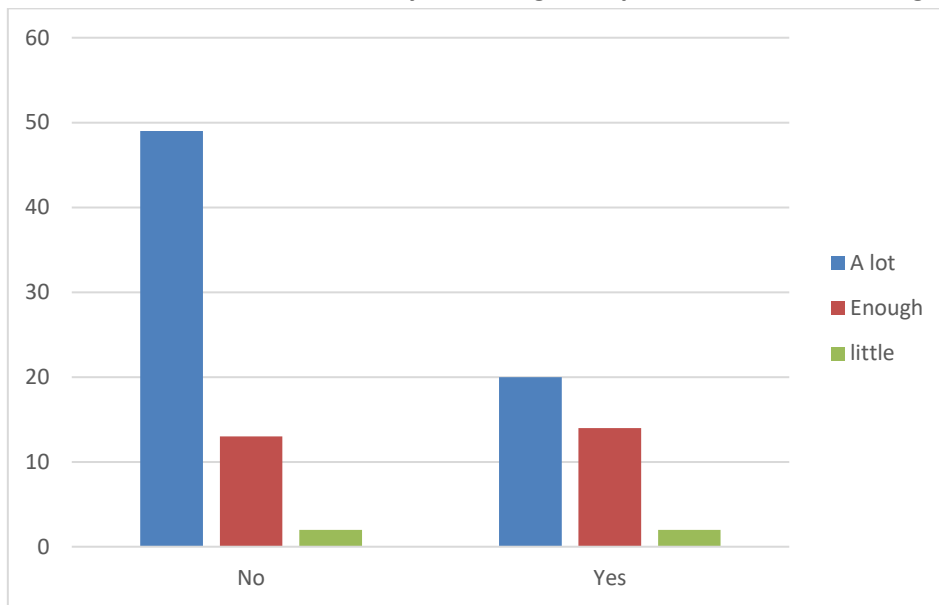
Correlation between first time visit and visit quality



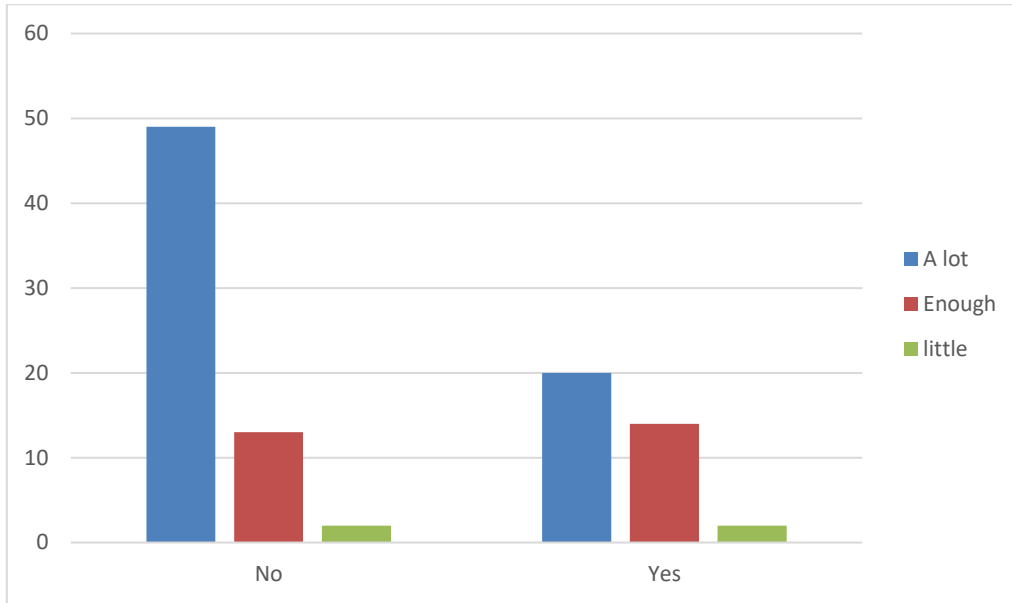
Correlation between first time visit and association participation



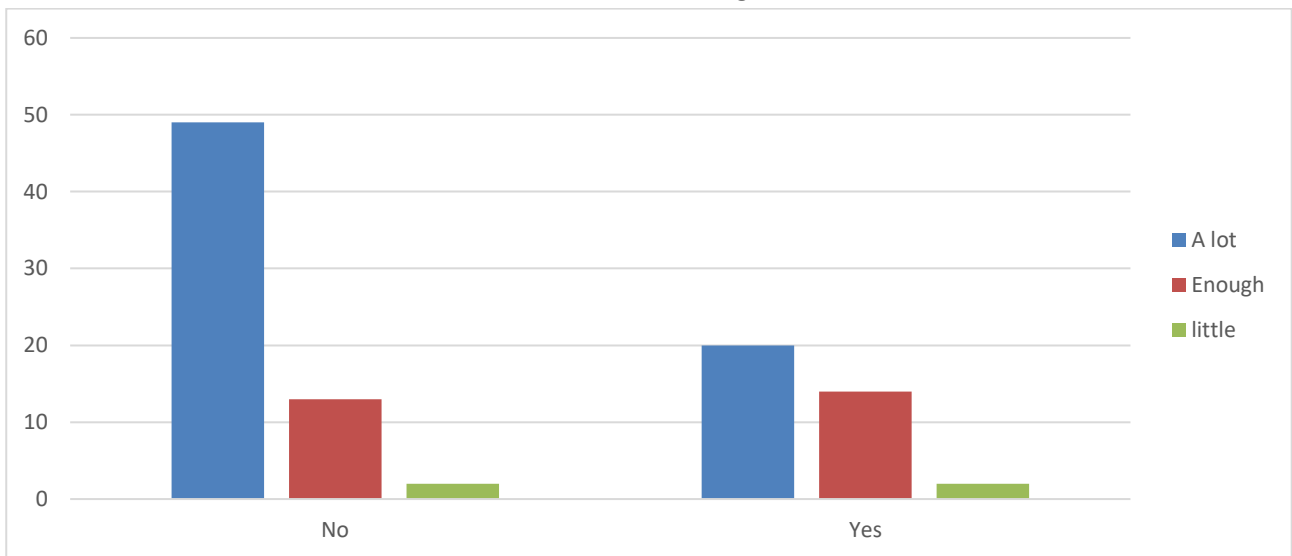
Correlation between biodiversity knowledge and protected area knowledge



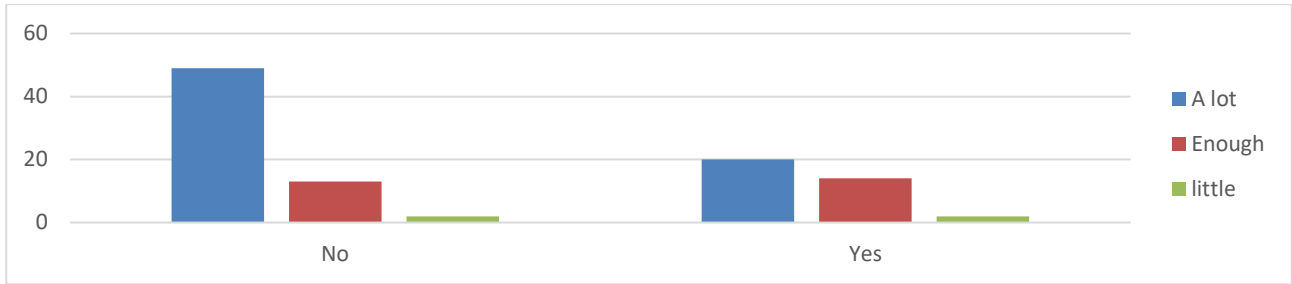
Correlation between biodiversity knowledge and Natura 2000 knowledge



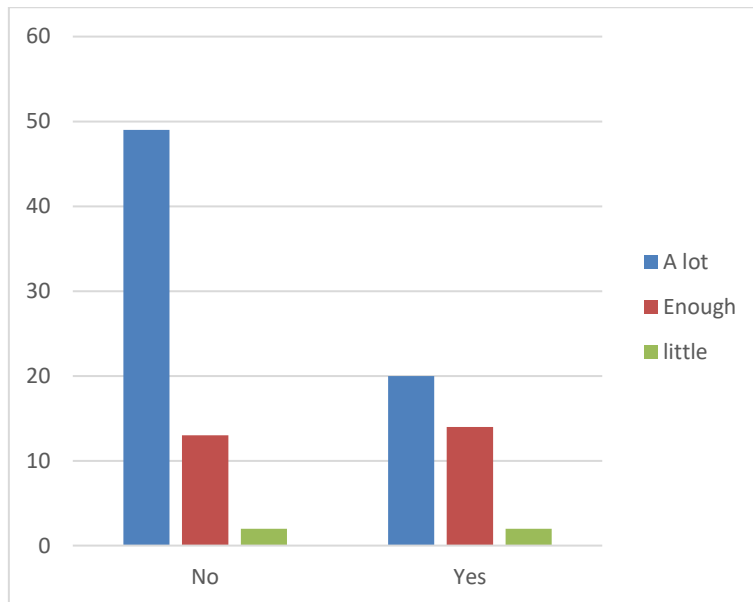
Correlation between Natura 2000 knowledge and Natura 2000 network



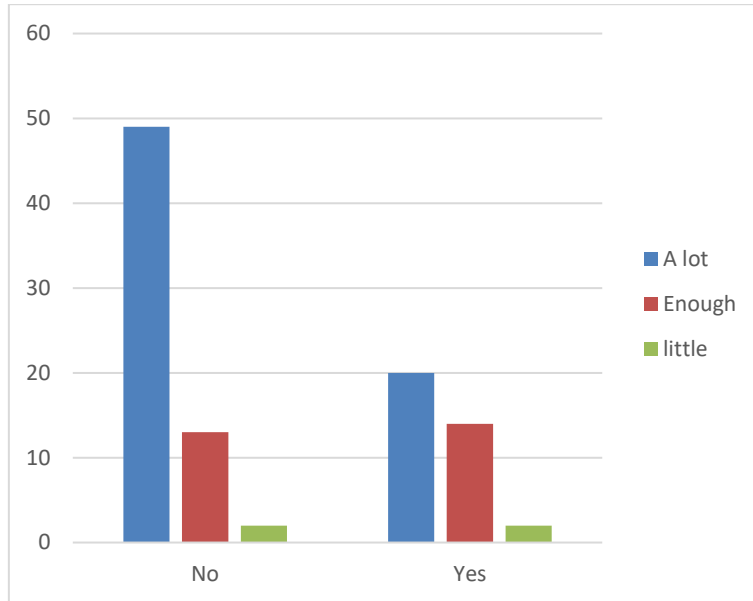
Correlation between Natura 2000 knowledge and Natura 2000 objectives



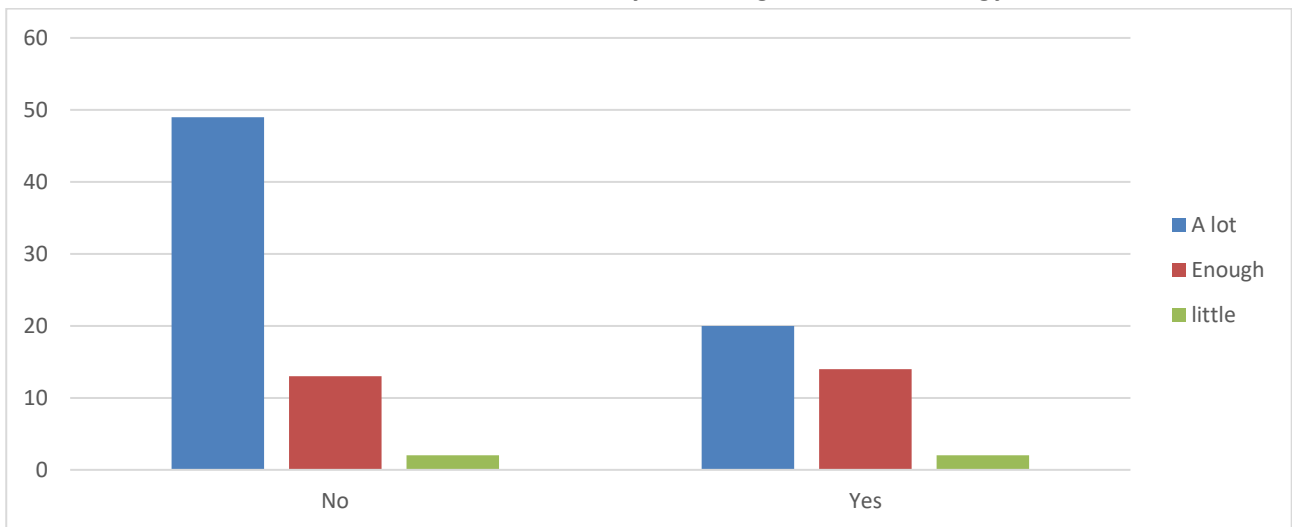
Correlation between biodiversity knowledge and SIC/ZPS/ZSC knowledge



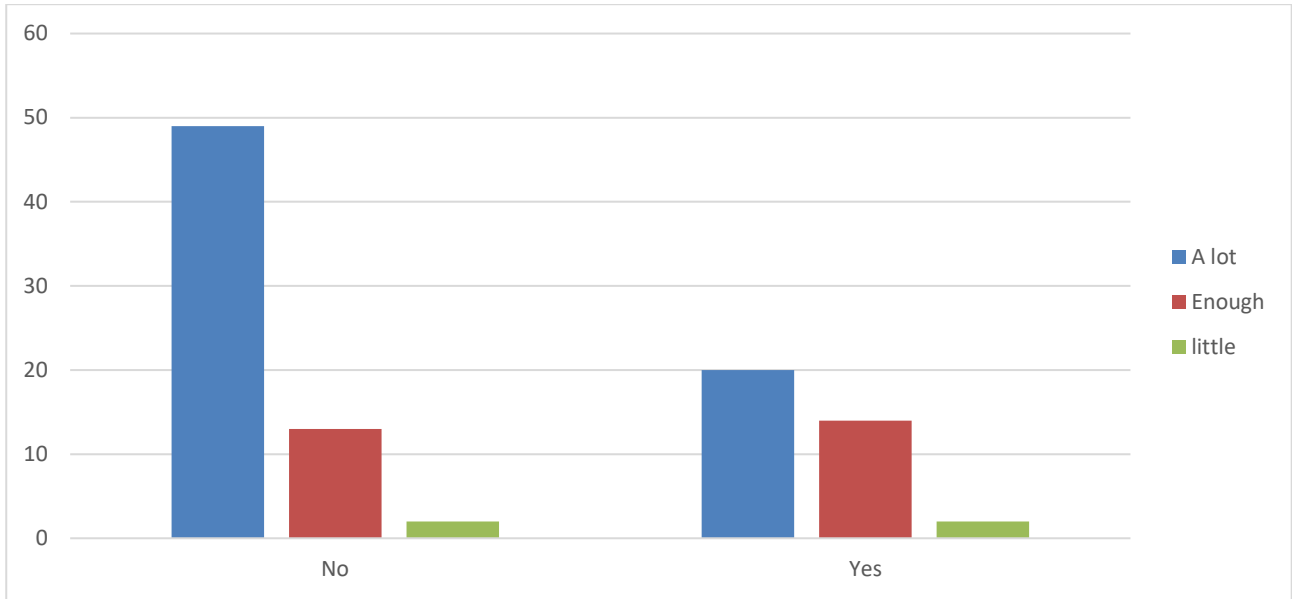
Correlation between Natura 2000 knowledge and SIC/ZPS/ZSC knowledge



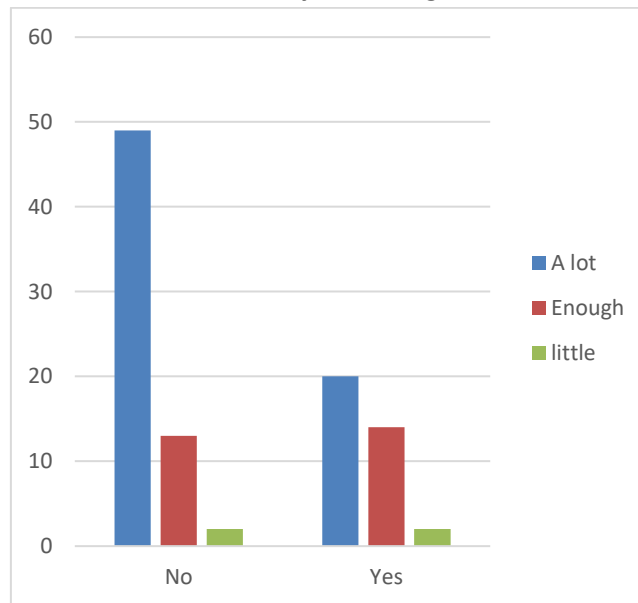
Correlation between biodiversity knowledge and methodology use



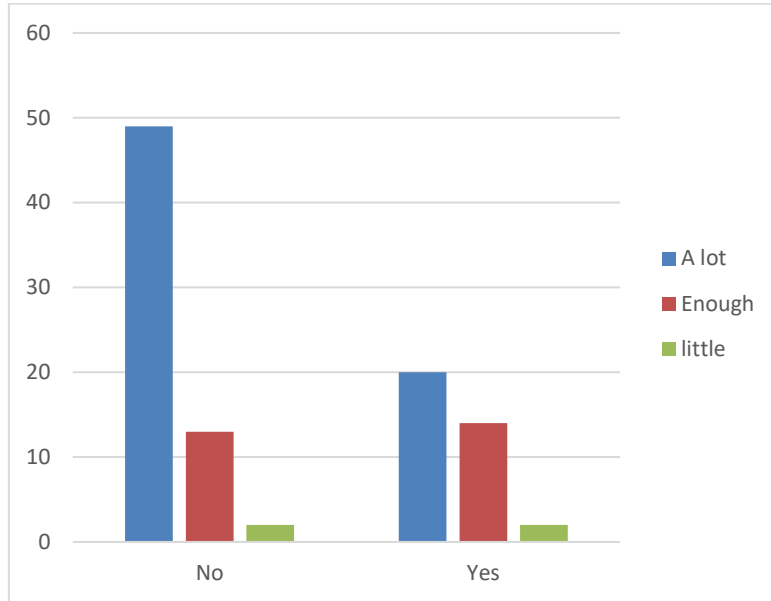
Correlation between biodiversity knowledge and main environmental topic



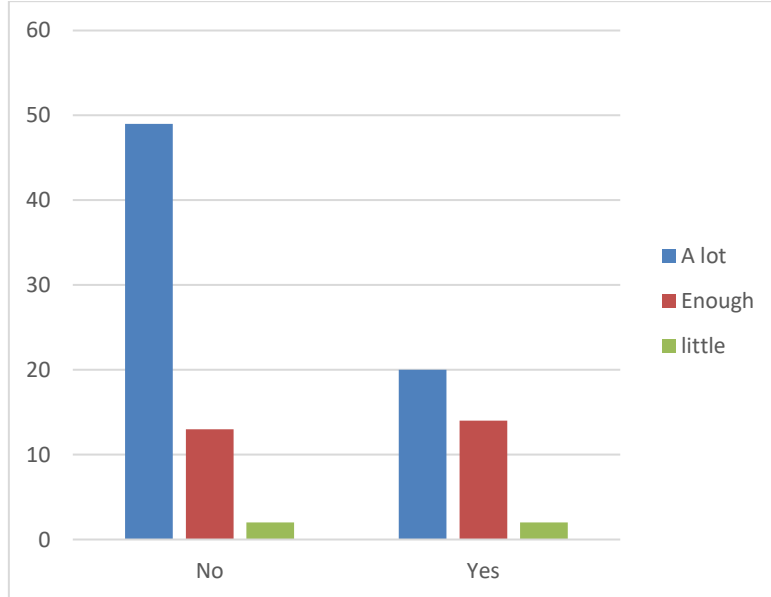
Correlation between biodiversity knowledge and LIFE4FIR knowledge



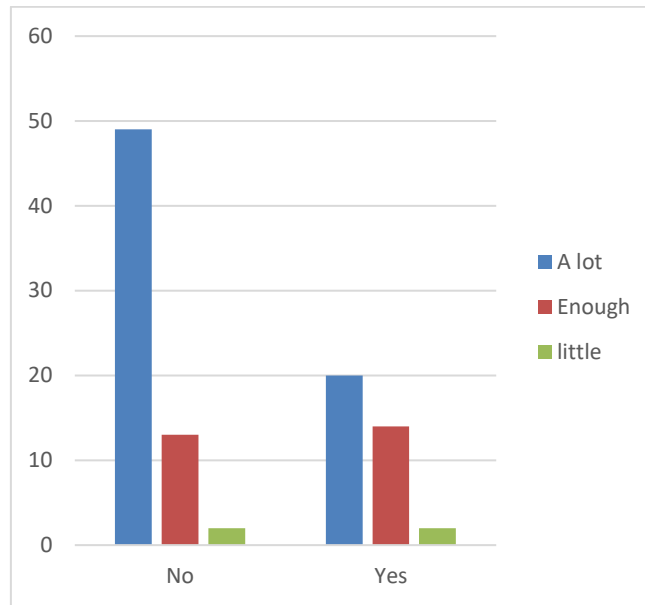
Correlation between LIFE4FIR knowledge and environmental interests



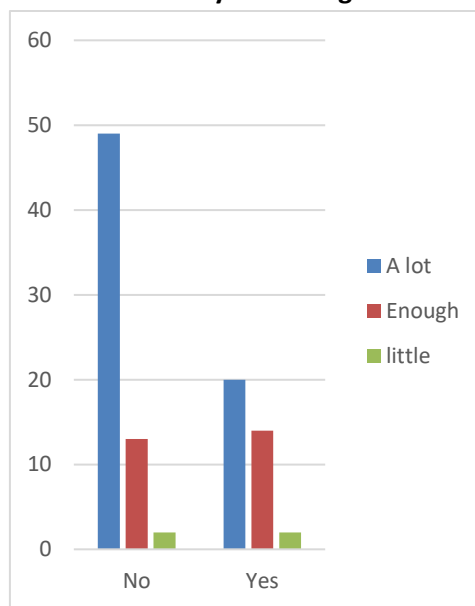
Correlation between biodiversity knowledge and environmental interests



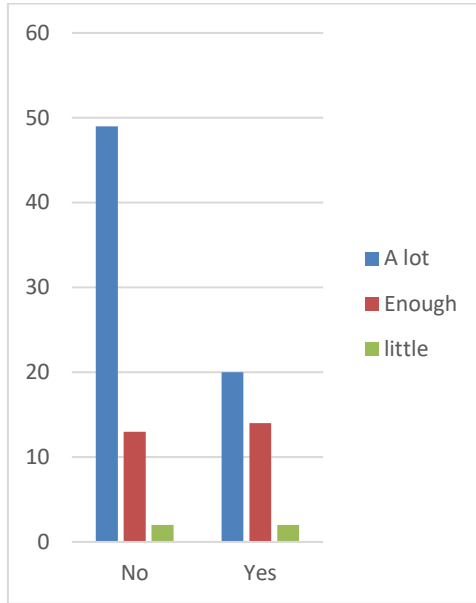
Correlation between biodiversity knowledge and LIFE programme knowledge



Correlation between biodiversity knowledge and LIFE4FIR importance



Correlation between LIFE4FIR knowledge and LIFE4FIR importance



4. People questionnaire result conclusions

The main conclusions from the questionnaire, filled in by 500 visitors and local people interested to the A. nebrodensis site in the Madonie Regional Park, result statistical analysis were:

- Specific conclusions related to social information:
 - The questionnaires were filled in by almost equal percentage by male and female persons
 - The questionnaires were mostly filled in by persons of age between 40-49
 - The questionnaires were mostly filled in by persons with degree or higher qualification
 - The questionnaires were mostly filled in by persons who are employed
 - The questionnaires were mostly filled in by persons who live in Sicily
- Specific conclusions related to the visit in the Madonie Regional Park:
 - Persons prefer to go in an organized group
 - Persons usually spend 1 day in the Madonie Regional Park
 - Persons mostly spend money for food and drink
 - Persons usually spend daily more than € 90.00
 - Persons mostly use public transport for going to the Madonie Regional Park
 - Persons usually go more times to the Madonie Regional Park
 - Persons evaluated as very good the visit in the Madonie Regional Park
 - Persons visiting the the Madonie Regional Park usually are part of Environmental Associations
- Specific conclusions related to the Environmental topic knowledge:
 - Persons mostly know the biodiversity topic
 - Persons mostly know the protected area topic
 - Persons mostly do not know the Natura 2000 topic
 - Persons mostly do not know the Natura 2000 network
 - Persons mostly do not know the Natura 2000 network objectives
 - Persons mostly do not know the SIC/ZPS/ZSC topic
 - Persons mostly respect environmental topic using a separate waste collection
 - Persons mostly associates the environmental topics with the correct waste disposal collection
- Specific conclusions related to the LIFE4FIR project knowledge and EU environmental topics:

- Persons mostly did not know the LIFE4FIR project before the questionnaire
- Persons, who knew the LIFE4FIR project, knew it through the web information
- Persons mostly have interest on environmental themes
- Persons mostly did not know the LIFE programme before the questionnaire
- Persons think that the LIFE4FIR project is very important

Main social-economic general conclusions:

- Persons interviewed were mostly Sicilian, between 40-49, with degree, employed and equally male and female;
- Persons prefer to visit the Madonie Regional Park in an organized group by using the public transport;
- Persons for visiting the Madonie Regional Park usually spend daily more than € 90.00 mainly for food and drink;
- Persons who visited the Madonie Regional Park are usually part of an Association and knew it through the web information;
- Persons pay attention and retain very important environmental topics;
- Persons do not know EU environmental topics as Natura 2000 and SIC/ZPS/ZSC topics;
- Persons do not know EU tools for helping environmental topics;
- Persons retain LIFE4FIR very important;
- From a social point of view thanks to the LIFE4FIR project persons have increased the knowledge on EU environmental topics, Natura 2000 and SIC/ZPS/ZSC topics and LIFE programme;
- From a social point of view thanks to the LIFE4FIR project persons will increase the participation at Environmental Associations interested to visit Natura 200 areas
- From a social point of view thanks to the LIFE4FIR project persons have more appreciated the local environmental topics and will pay more attention to the respect of environmental procedures;
- From an economic point of view thanks to the LIFE4FIR project, persons will increase the visits and the number of days in the Madonie Regional Park;
- From an economic point of view thanks to the LIFE4FIR project persons will spend more money for staying in the Madonie Regional Park: in particular calculating an average of € 100 per day, an average of 2 days for staying and an average of 400 persons per year, we can

aproximately calculate an economic project impact of around € 80.000 per year (excluding specificic school and educational visits);

- From an economic and social point of view thanks to the LIFE4FIR project persons will increase the stay, live and opening of new commercial activities in the area of the Madonie Regional Park;
- From an economic and social point of view, it will very important to disseminate any initiative of the Madonie Regional Park through any type of social media.