

Human psychoacoustic perception of noise in offices in administrative buildings – case study : questionnaire of noise in offices

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Context

The psychoacoustic perception of noise by human subjects is quite subjective. This has been demonstrated, at national level, by carrying out researches, studies and analyzes based on psychoacoustic investigation methods, i.e. by completing noise-related **psychoacoustic questionnaires** for buildings with different destinations, where the population it's involved in professional and educational activities.

A questionnaire entitled "**Questionnaire on building acoustics administrative offices – Are you bothered by noise at work?**" was developed in order to determine the psychoacoustics perception of noise by people working in office buildings, in rooms that may have entirely intellectual activity or offices for working with the public, banks, courts, mayors, prefectures, etc.

These studies were carried out starting from the fact that in the field of *Building Acoustics* it is necessary to apply the principles of human psychoacoustic perception, for a judicious design and realization, - considering also a psychoacoustic point of view -, for the buildings in which people perform different types of professional activities which needs specific acoustic comfort.

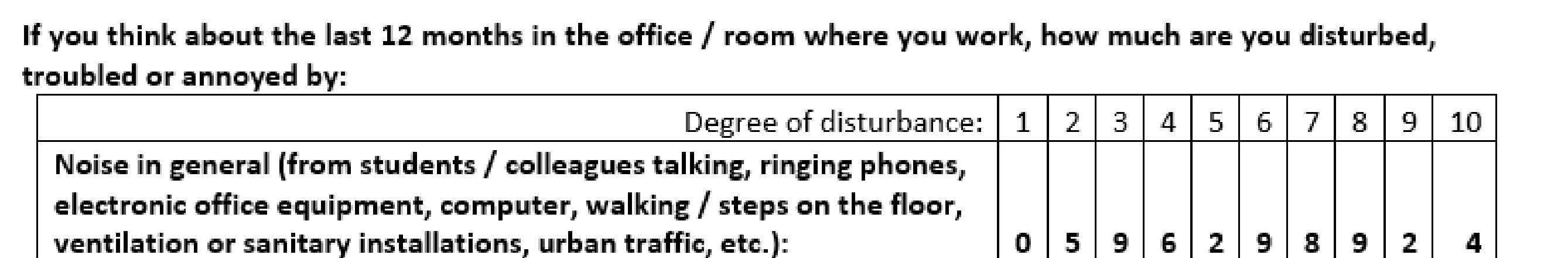
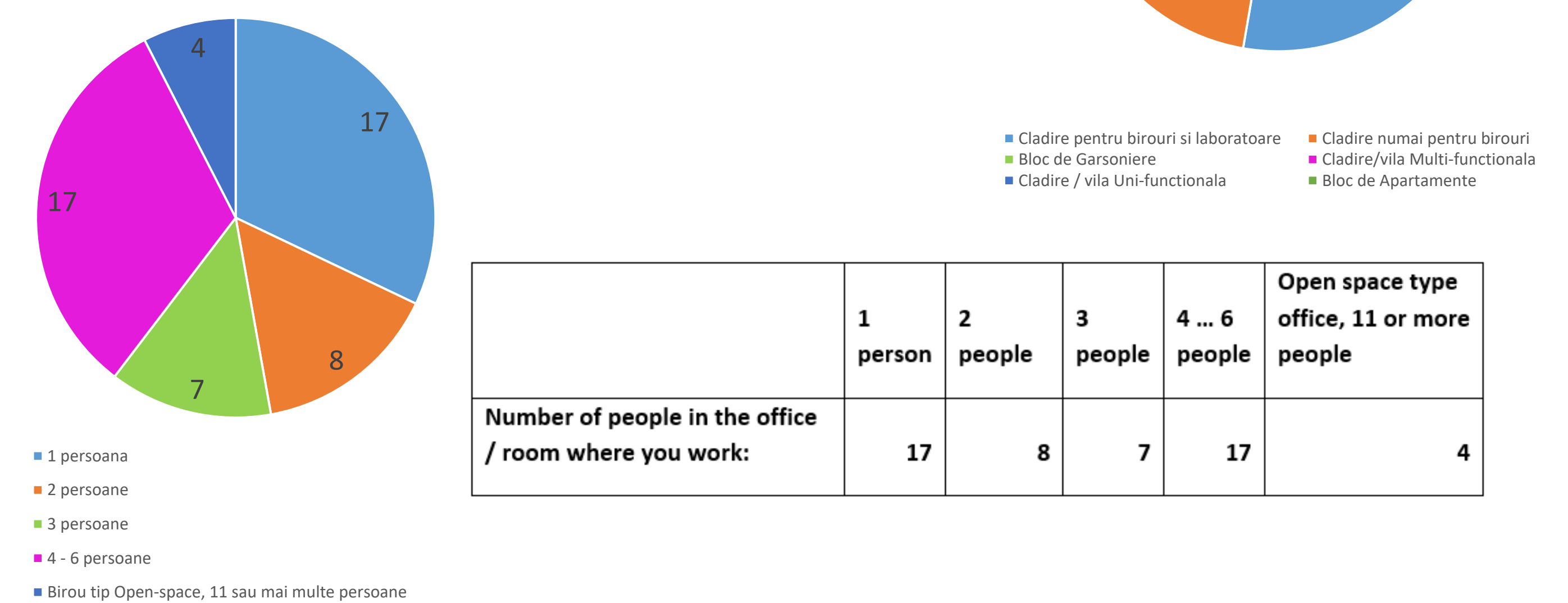
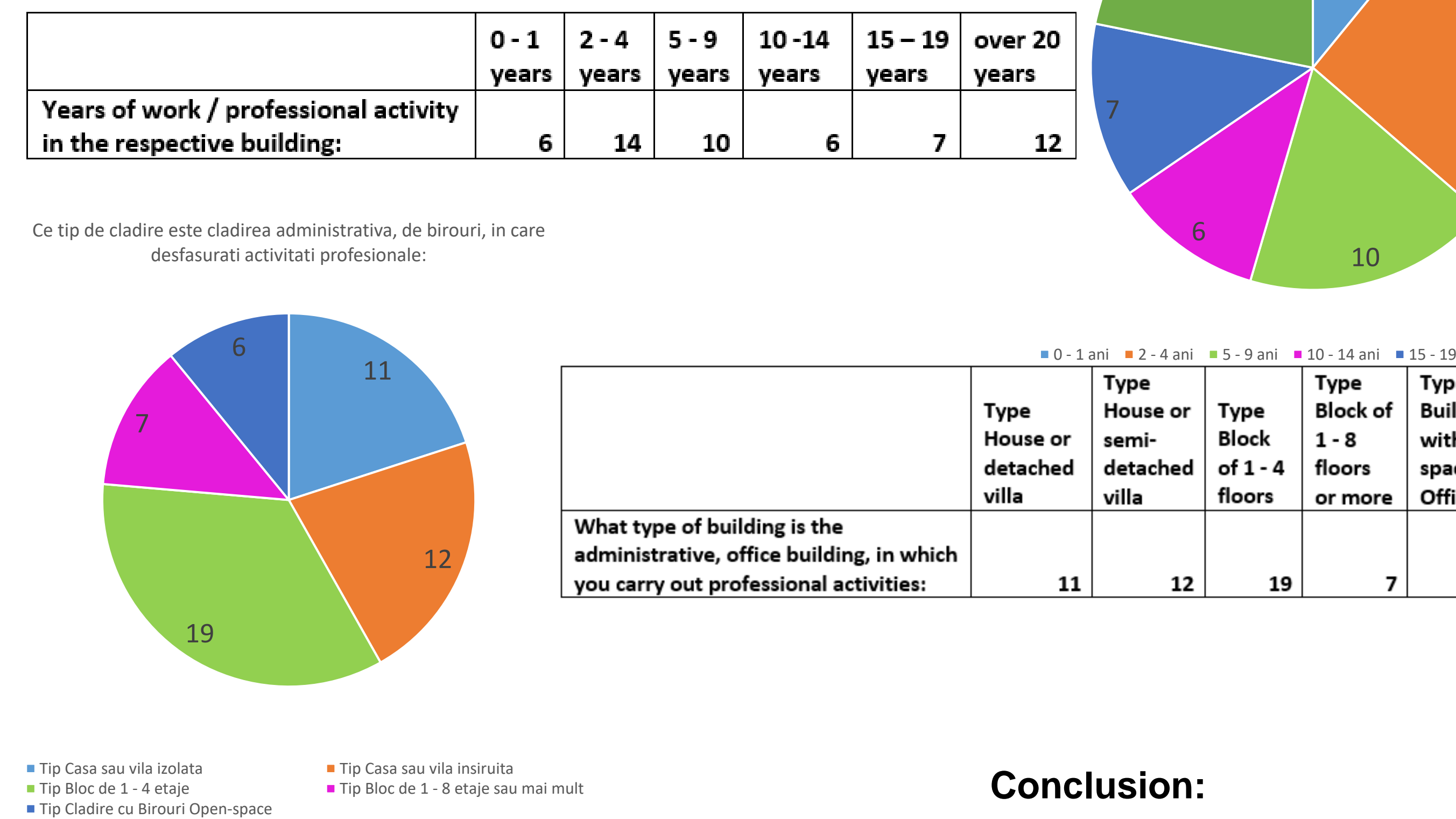
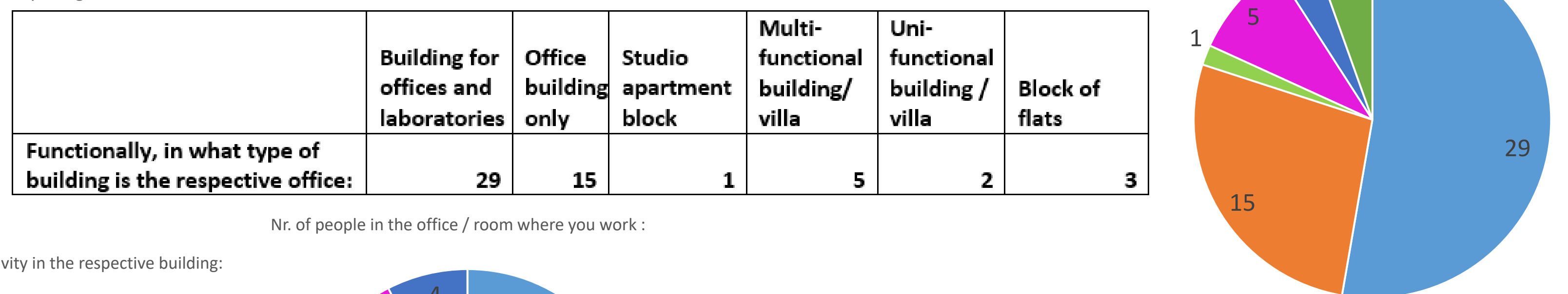
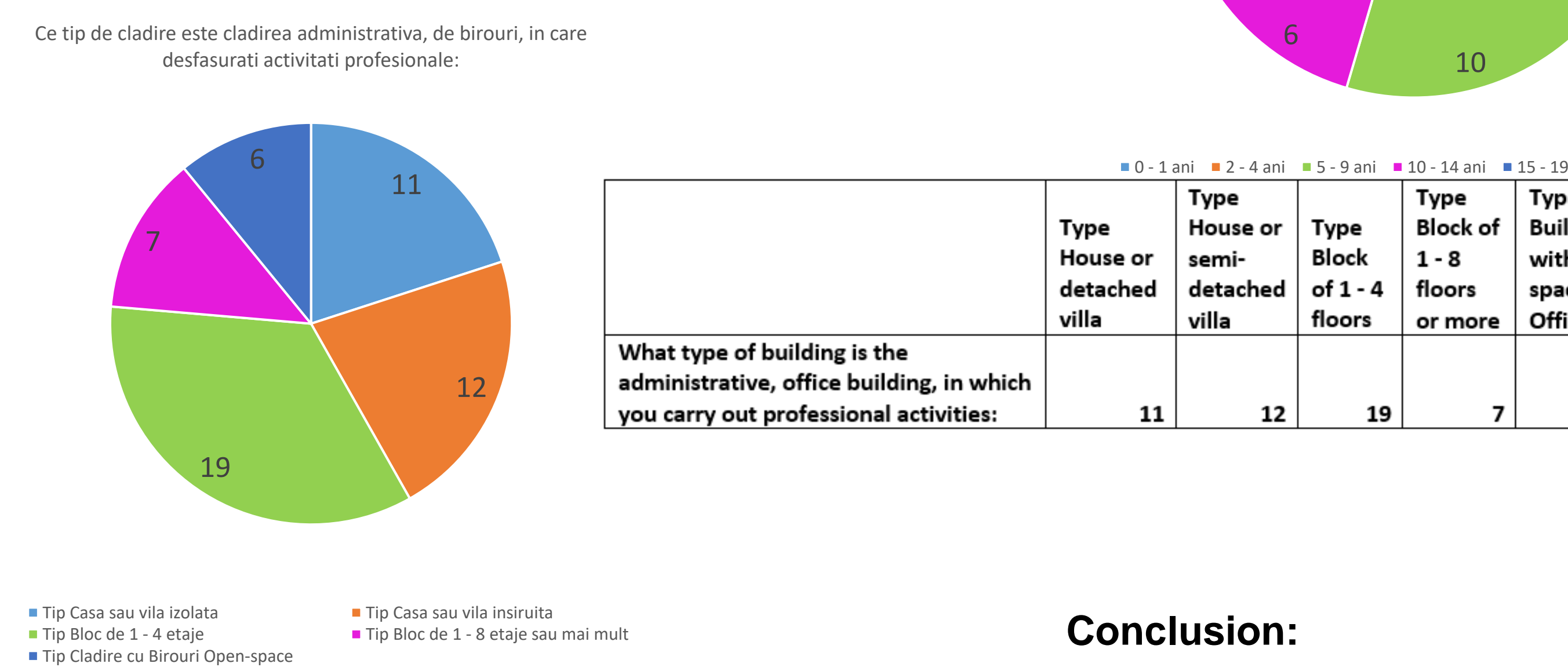
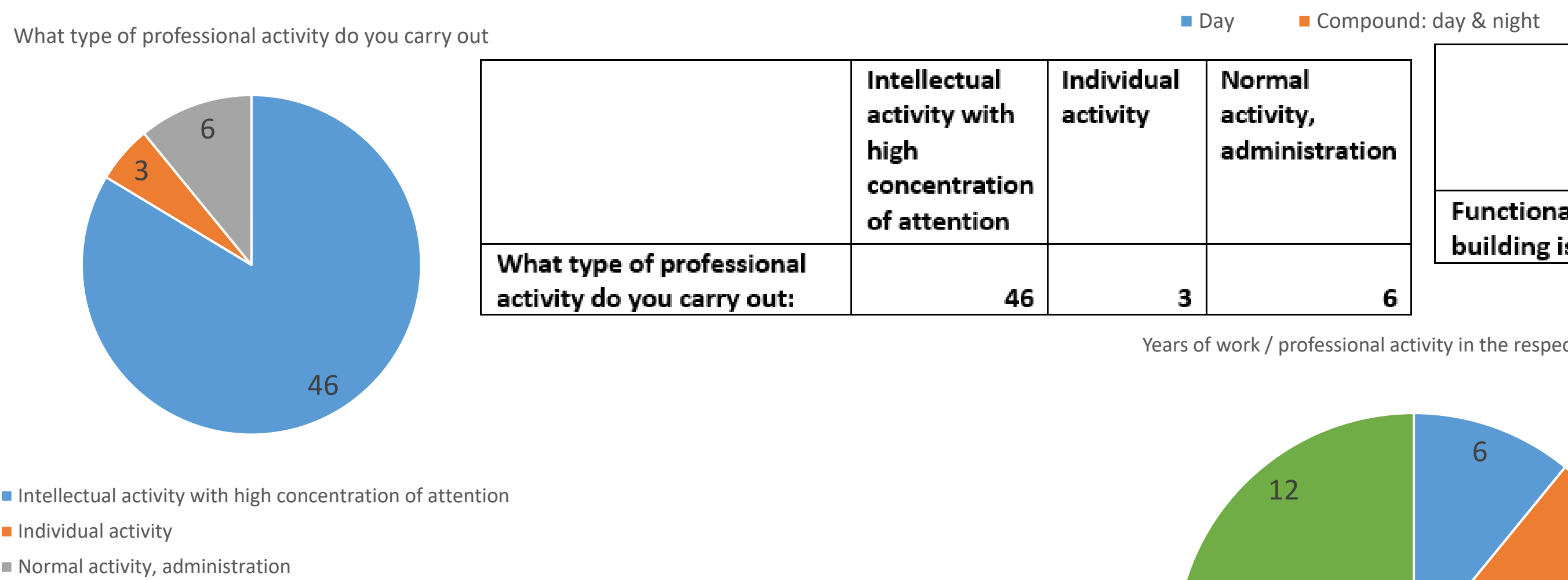
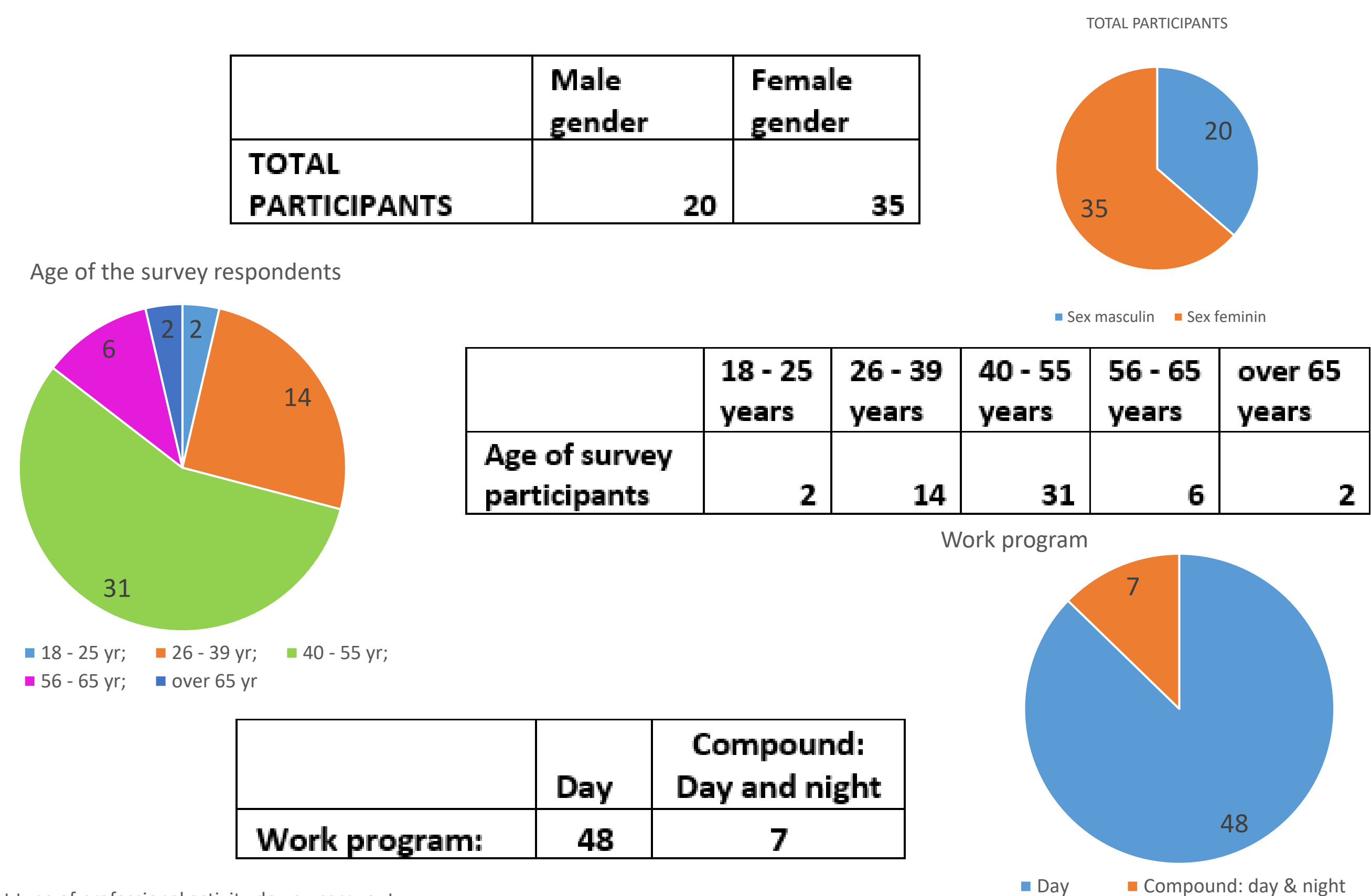
Materials and methods

The questionnaire contains information and questions, for example: name of the research institute; the identity and personal data of the person answering the questionnaire, for example:

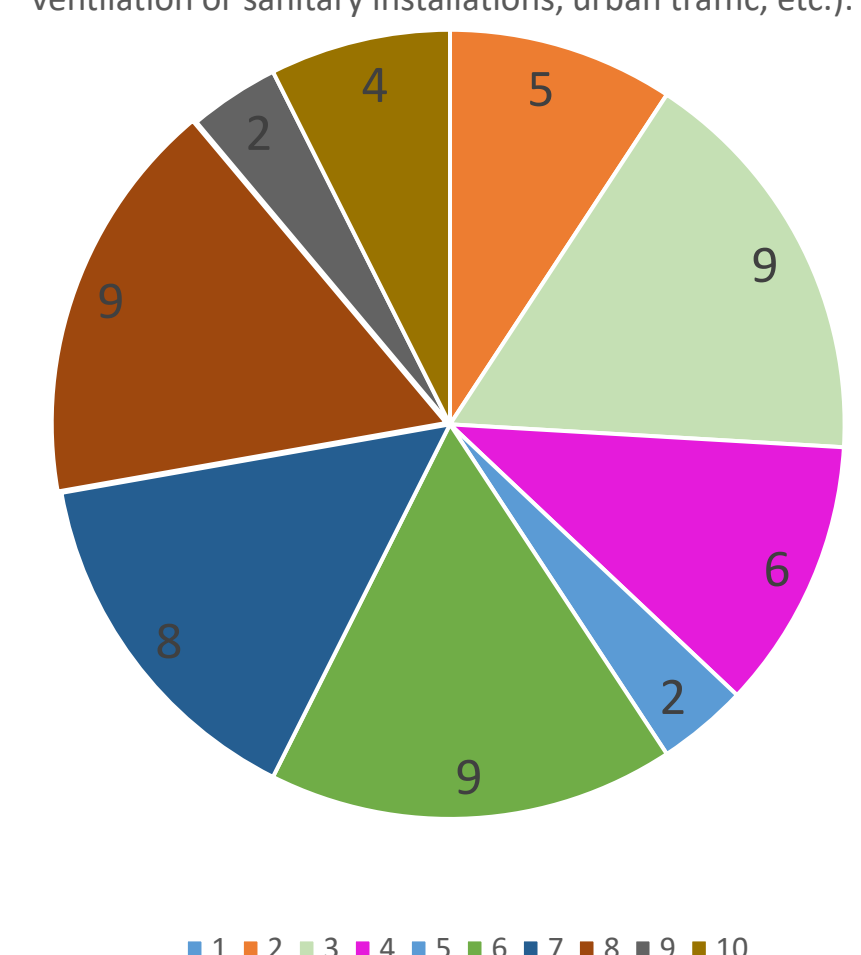
- name, sex, age, work schedule,
- what kind of building is the administrative building office, where you perform business: Block of flats with 1-4 floors; Block of flats with 1-8 floors or more; Detached house or villa; Open-space Office Building; Coupled house or villa (duplex); Country house or villa.
- Functionally, in what type of building is the respective office: Block of flats with single room apartment; Block of flats; Office building only; Uni-functional (unique activity) building / villa; Multi-functional Building / Villa; Building for offices and laboratories.
- No. of people in the office / room where you work;
- Information about the building: In what city is the building, In what type of urban area, In what year the building was built, What type of building is the administrative building office in which you carry out professional activities: Central administrative building, for the Government, ministries, etc. , Building for Corporate Offices, Bank Building, Local Administrative Building, City Hall, Police, Taxes, etc. , Building / villa for offices with the public: law court, court, prefecture, Office building and laboratories;
- On which floor is the office / room where you work;
- Is there a traffic area next to the building? If Yes, what kind of traffic; distance to neighboring buildings; Was the building been thermally rehabilitated in recent years? What materials are made of walls, floors, etc.

The psychoacoustic questionnaire has been disseminated both through *offline implementation*, through on paper printed questionnaire, and through implementation by publishing it in the *online environment*.

The results obtained from 55 respondents (20 men and 35 women) of the psychoacoustic questionnaire, were analyzed and synthesized as shown below, numerologically in the tables and by the colored graphic circular representations.



Noise in general (from students / colleagues talking, rising phones, electronic office equipment, computer, walking / steps on the floor, ventilation or sanitary installations, urban traffic, etc.):



Conclusion:

- it is a known fact that the psychoacoustic perception of noise by human subjects is very subjective; this was also confirmed by conducting some analyzes of existing legislation at the international level, where it was shown that there are a series of standards that describe how much noise people can be exposed to in their professional environment, but there is also a problem not addressed in these standards , namely that they do not take into account the type of noise source to which people are exposed.
- the human audible range is included in the range of frequencies between 16 Hz and 20,000 Hz. The human ear has a certain specific physiological structure, so that the mechanism for achieving hearing is original and explains the fact that a person only hears on a certain range of frequencies, and specific to the frequencies has a certain way of hearing noise levels with equal level of strength.

Acknowledgments:

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