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3 Numeracy
in Practice

Results of math anxiety survey in Poland

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Some info about the survey

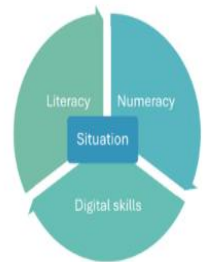
- The survey was conducted in April and half of May 2023.
- The aim of the survey was to investigate the level of negative feelings (anxiety, fear) that accompany the Polish adults in everyday situations related to the use of mathematical skills.

NUMERACY is

the ability of an individual to cope independently and adequately in situations in which numbers, tables, information graphics, and other numerical information play a role.

21st century skills

Numeracy, together with literacy and digital skills, forms an important triangle of basic skills for adults to cope with in today's society both at home and at work (Tout et al., 2017). Numeracy is the ability of an individual to cope independently and adequately in situations in which numbers, tables, information graphics, and other numerical information play a role (e.g., Hoogland & Meeder, 2007). Numeracy skills enable individuals to solve problems and make critical decisions related to quantitative data. Examples include managing budgets, cooking and shopping, medication use, planning and commuting, reading the newspaper, and so on.



the need for numeracy

Many European citizens lack the necessary numeracy competencies to participate autonomously and effectively in our technologized and number-drenched society. The results of the last PIAAC survey (OECD, 2012, 2013, 2016; PIAAC Numeracy Expert Group, 2009) show that a quarter of the participating countries score below level 2 of the 6-point scale. This results in citizens being overlooked for certain jobs, and dealing with the abundance of number-related issues in daily life and work. This gives rise to serious cause for concern for the future economic development of Europe. This is an even more pressing issue since the amount of numerical data that needs to be interpreted and used is rapidly

The questionnaire consisted of two parts (part A and part B)

- **Part A** contains 10 closed questions, and was inspired by a similar study published in THE NEW YORK TIMES (issue of 24.08.2015).

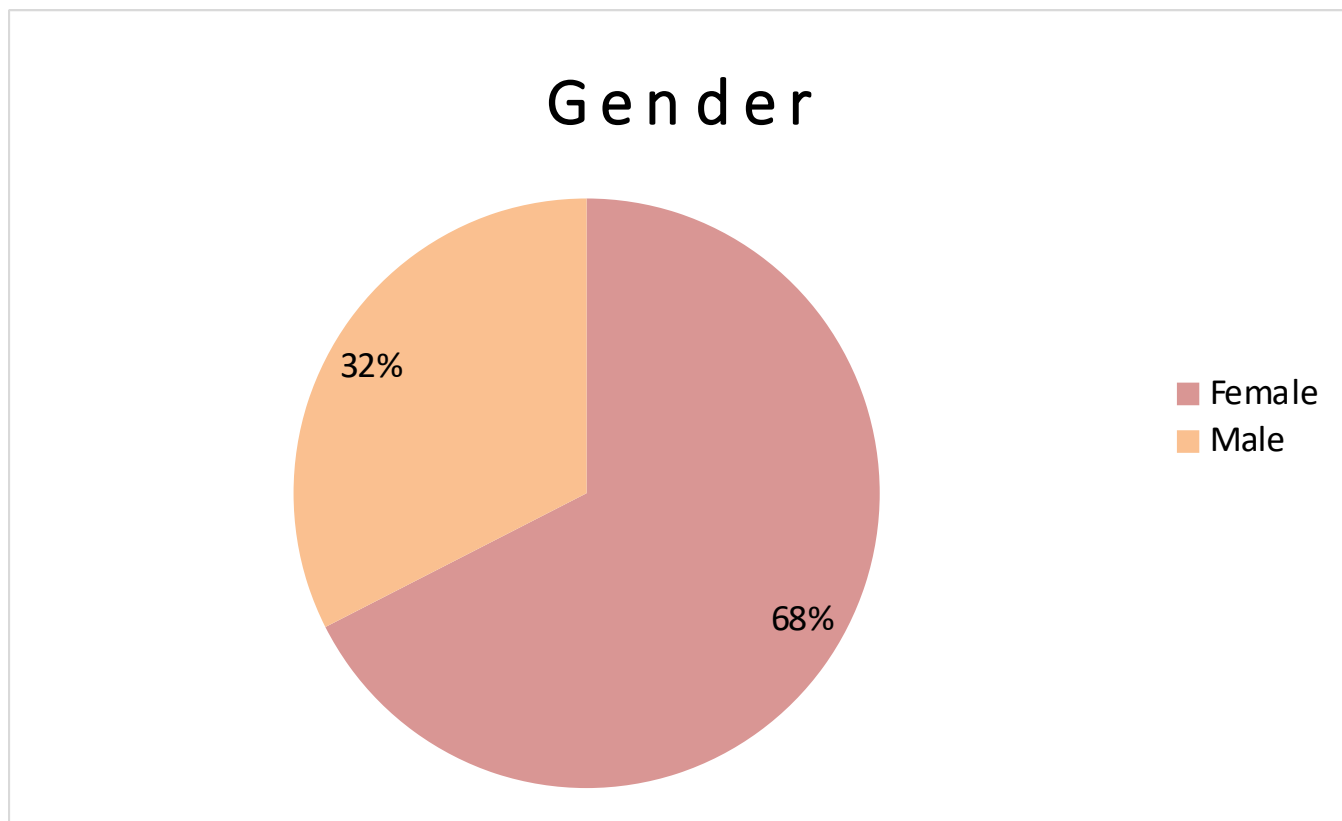
The aim of the first part is **to determine the anxiety related to everyday situations** with mathematical backgrounds.

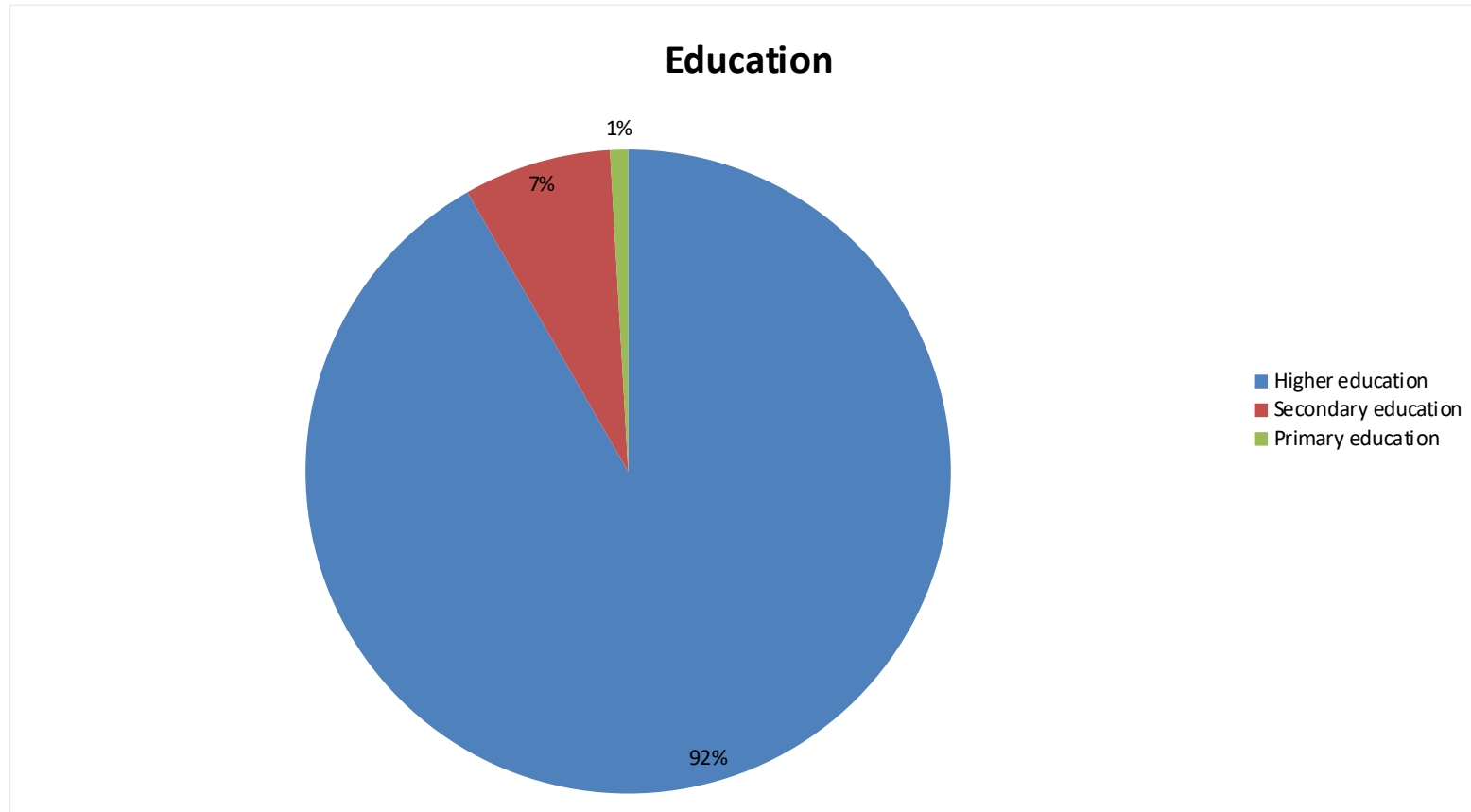
- **Part B** contains 12 questions (7 closed and 5 open ones).

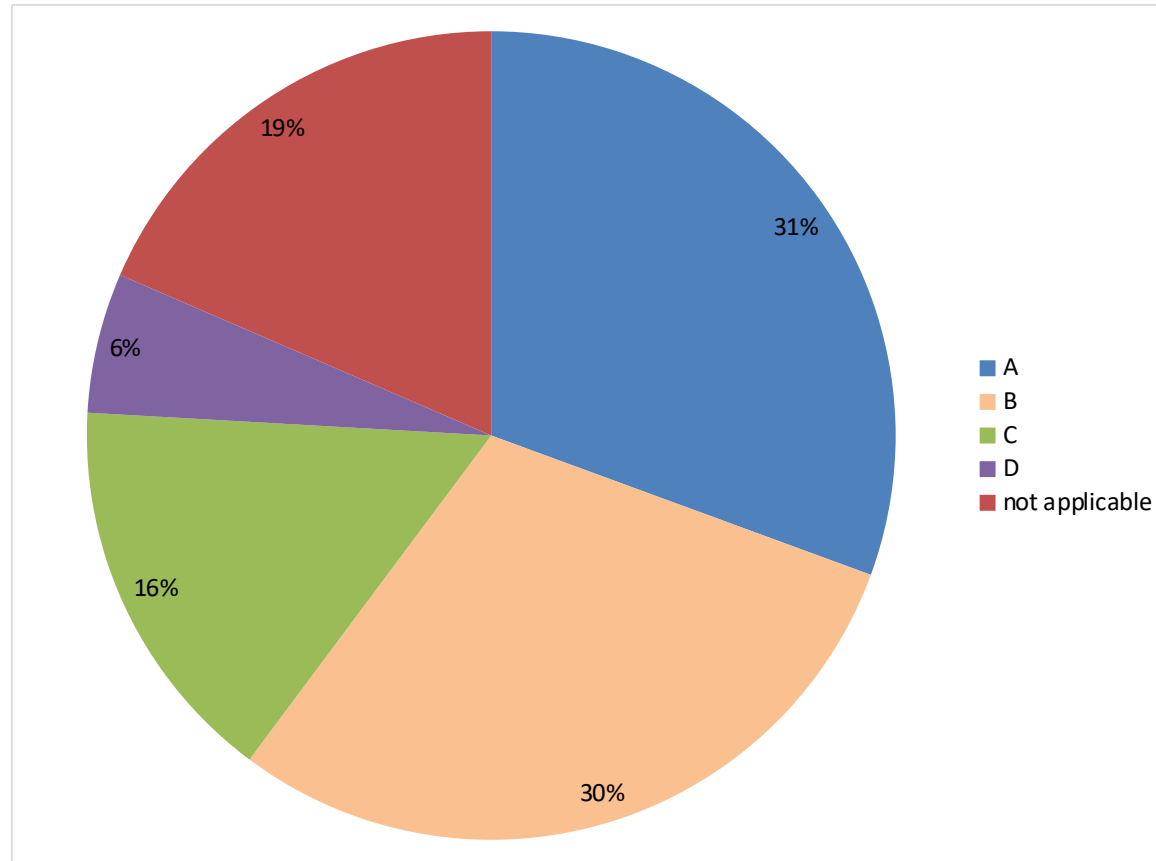
It is focused on **discovering the types of behaviour toward people** who lacks of mathematical skills.

Who has carried out the survey?

108 Polish citizens







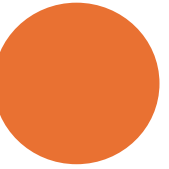


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PART A – PRACTICAL USAGE OF MATHEMATICS IN EVERYDAY LIFE

Six questions were to examine the practical usage of mathematics skills – how responders deal with the estimation of simple arithmetic operations (questions: 1, 2, 3, 4, 6, 7).



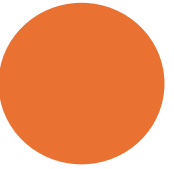
Thus they were asked to assess their level of anxiety when:

- they are given a set of arithmetic problems involving fractions
- they are to figure out the tax on a purchase
- they are to figure out the cost of products in the supermarket checkout line
- they are to split the check in the restaurant with friends
- they are to calculate the amount of money they save when buying something on sale
- they are to figure out how much they would earn working 17 days (150 EUR/day)

- The answers for the above questions were varied but still positive – since the majority of respondents **do not feel anxious in facing those situations** (here the percentage of the answers “Not anxious at all” and “A bit anxious” were from 74,1% to 87%).
- Question 5 was to examine the ability to interpret the data from graphs, tables shown on the news. And here 82,4% responders **feel good when facing such an activity**.



Question 8: learning a new math skill



Here appeared the **largest number of answers indicating the anxiety – 23,2%.**



Similar values appeared for the answers to questions no 9 and 10 where responders declared to **feel fear when they are in the position to open the math workbook** (19,5%) or **explain somebody a math problem** (20,3%).



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PART B – Additional information

- Part B is focused on **discovering the types of behaviour toward people who lacks mathematical skills.**
- In 5 open questions responders had the possibility to describe the everyday **situations** related to maths skills and the **feedback** they received.

Do you recall how you were referred to by people in whose presence your deficiencies in mathematical skills appeared?

– What did they hear?

- *She's a humanist.*
- *You should have been able to do it a long time ago.*
- *You don't know anything, I'm not going to let you take the baccalaureate exam.*
- *But you must know maths! You'll need it for your job!*
- *How can you not know the multiplication tables!*
- *It's so simple. It's impossible for you not to understand.*
- *Why are you crying! You have to memorise the multiplication table.*
- *I haven't met one so stupid yet.*
- *You don't know how to count anything. After all, it's easy.*

Do you recall how you were referred to by people in **whose presence your deficiencies in mathematical skills appeared?** – How did they feel?

- *Humiliation*
- *At the school stage some pupils were able to **discourage** further development. Adults also.*
- *Complete **disapproval**, I have great difficulty in concentrating. Over many years of learning, I have not been able to understand and maintain my attention to assimilate maths material. (Despite great desire and many years of tutoring). No teacher was willing to help. I was repeatedly told by the teachers that **I was useless** and would not pass my exams. (I did not take the exam for health reasons).*
- *They tried to **embarass** me.*

Do you think your mathematical deficiencies affect your career choices?

- 25% answered Yes.
- *If I were better at maths, I would do something else.*
- *I cannot undertake tasks of a strictly financial or analytical nature.*
- *My career choices would be different if the level of my mathematical skills were higher.*
- *Yes, I would choose a technical professional field.*
- *I choose a job in which I do not have to make calculations, possibly assisted by a comp. program or calculator.*

Once a person has become frightened of math, she or he begins to fear all manner of computations, any quantitative data, and words like „proportion”, „percentage”, „variance”, „curve”, „exponential”.

- Shelia Tobias



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Thank you!

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