



SIMONA CERRATO | 31 MARCH 2023

SCIENTIFIC COMMUNICATION TECHNIQUES: INCLUSION AND DIVERSITY

**CAN SCIENCE BE A TOOL FOR
SOCIAL INCLUSION?**

80%

ref. Department of Culture Media and Sport's Taking Part survey, 2017

920%

ARE THEY ALL SO HARD TO REACH?

OR ARE WE HARD TO REACH?

**WHAT ARE THE FACTORS THAT CAN
PREVENT PEOPLE TO ACCESS SCIENCE?**

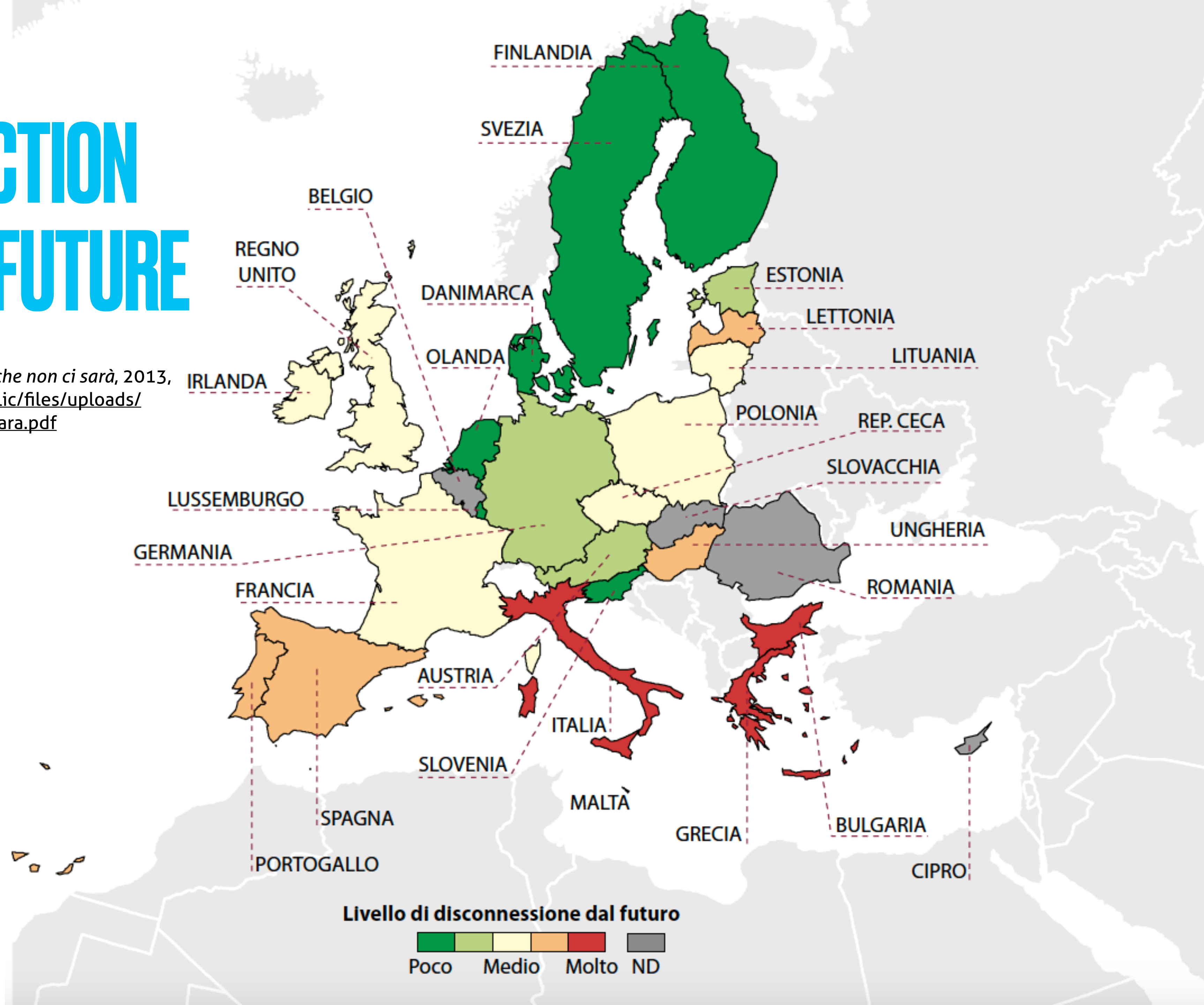
POVERTY
SOCIAL CONDITIONS
WAR AND CRIMINALITY
DISABILITY
RACE AND ETHNICITY
GENDER
...

LET'S HAVE A LOOK AT...

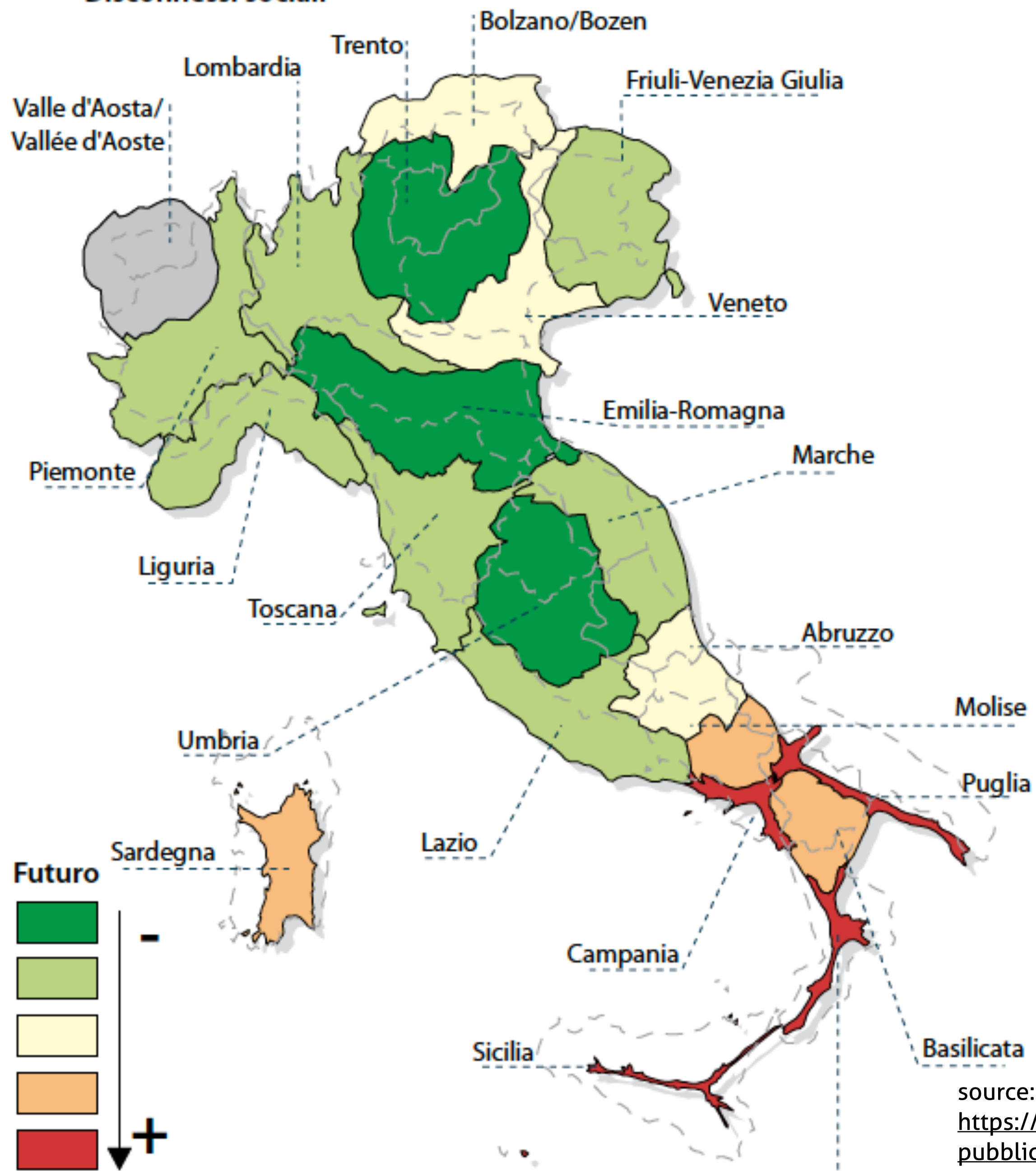
POVERTY
SOCIAL CONDITIONS
WAR AND CRIMINALITY

DISCONNECTION FROM THE FUTURE

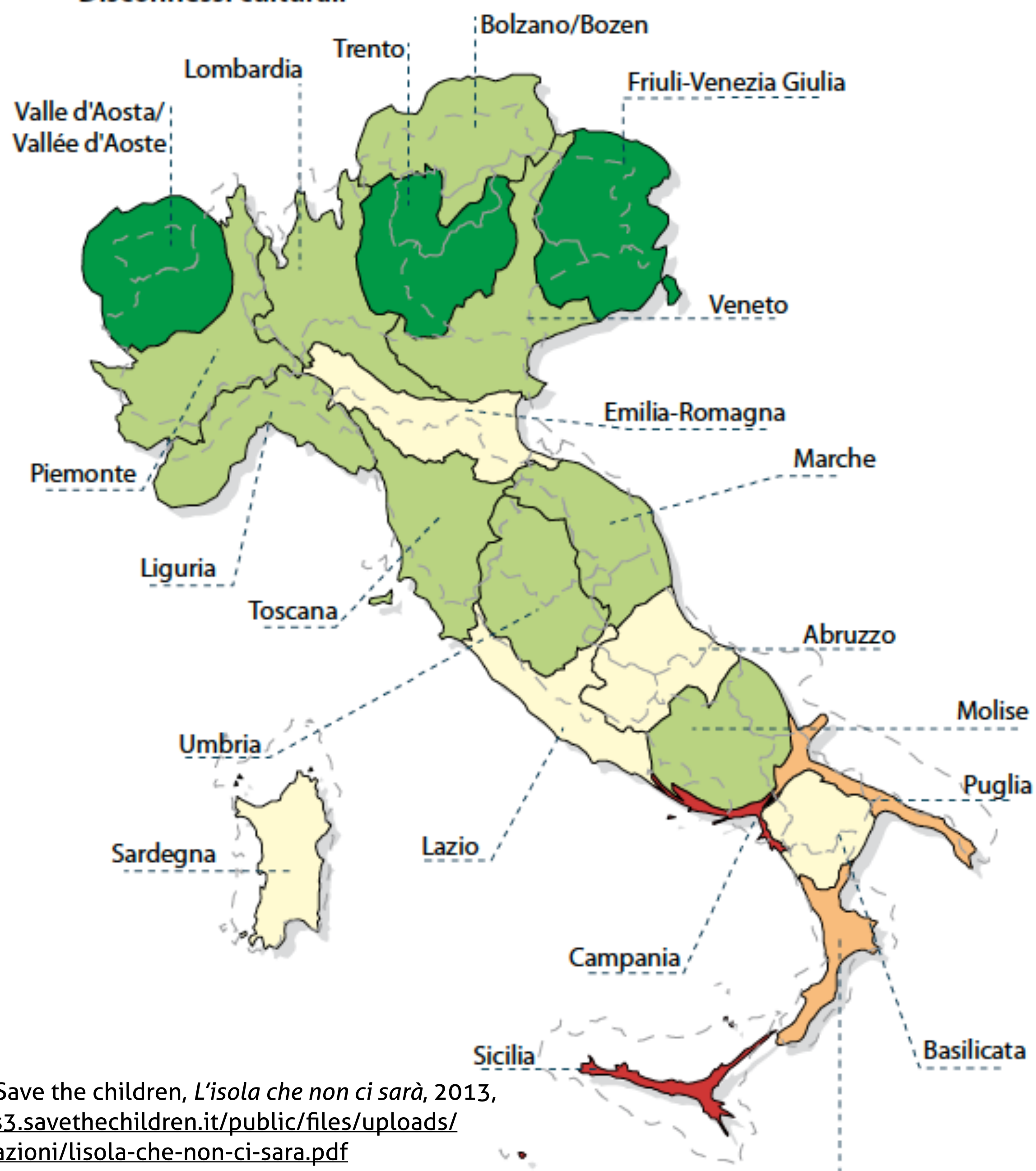
source: Save the children, *L'isola che non ci sarà*, 2013,
<https://s3.savethechildren.it/public/files/uploads/pubblicazioni/lisola-che-non-ci-sara.pdf>



Disconnessi sociali



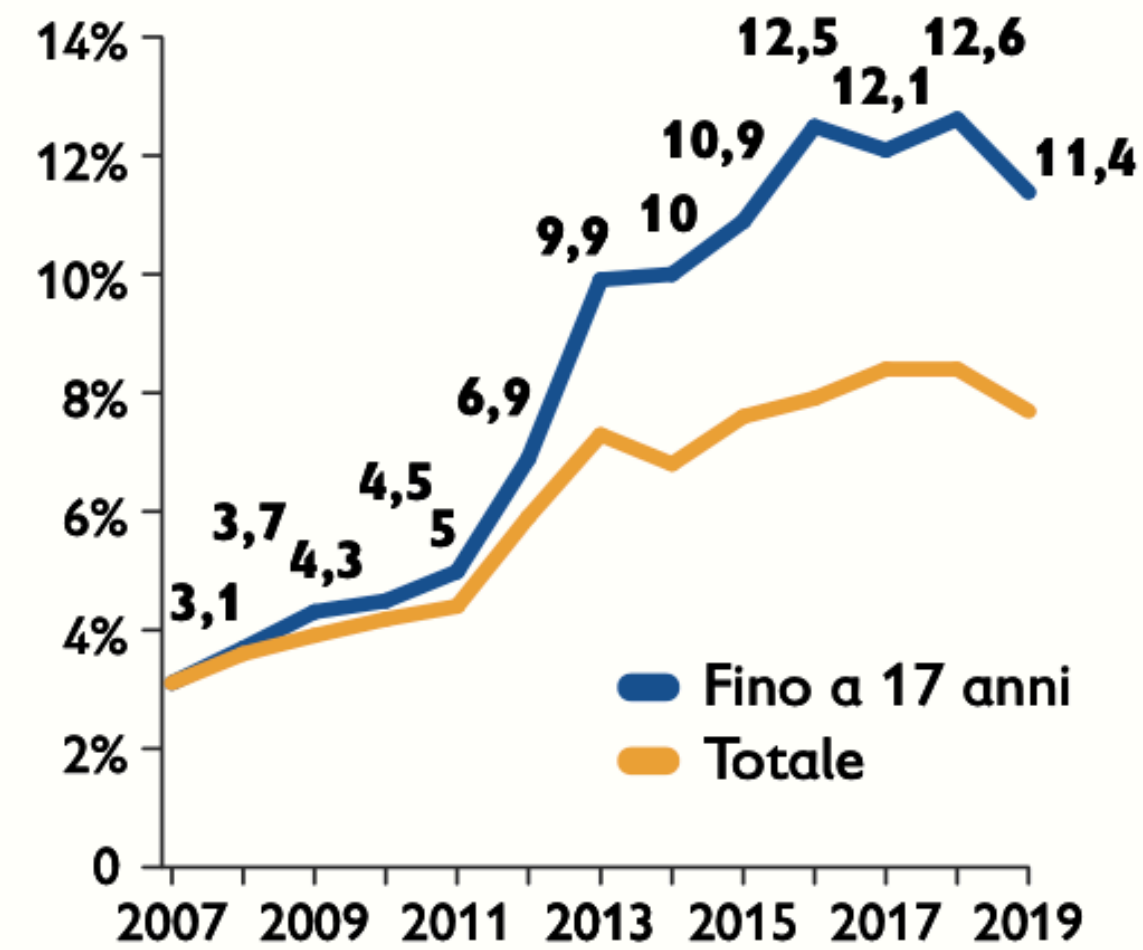
Disconnessi culturali



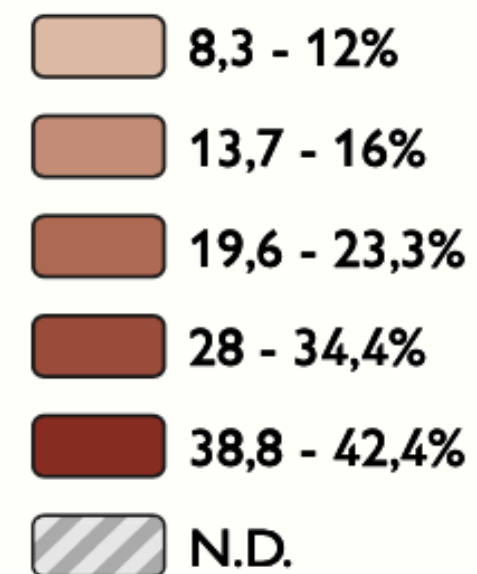
source: Save the children, *L'isola che non ci sarà*, 2013, <https://s3.savethechildren.it/public/files/uploads/publicazioni/lisola-che-non-ci-sara.pdf>

POVERTY

Incidenza povertà assoluta per fasce d'età
Anni 2007-2019



0-17enni in povertà relativa (%)



MINORI IN POVERTÀ RELATIVA

2008	2019
1.268.000	2.185.000

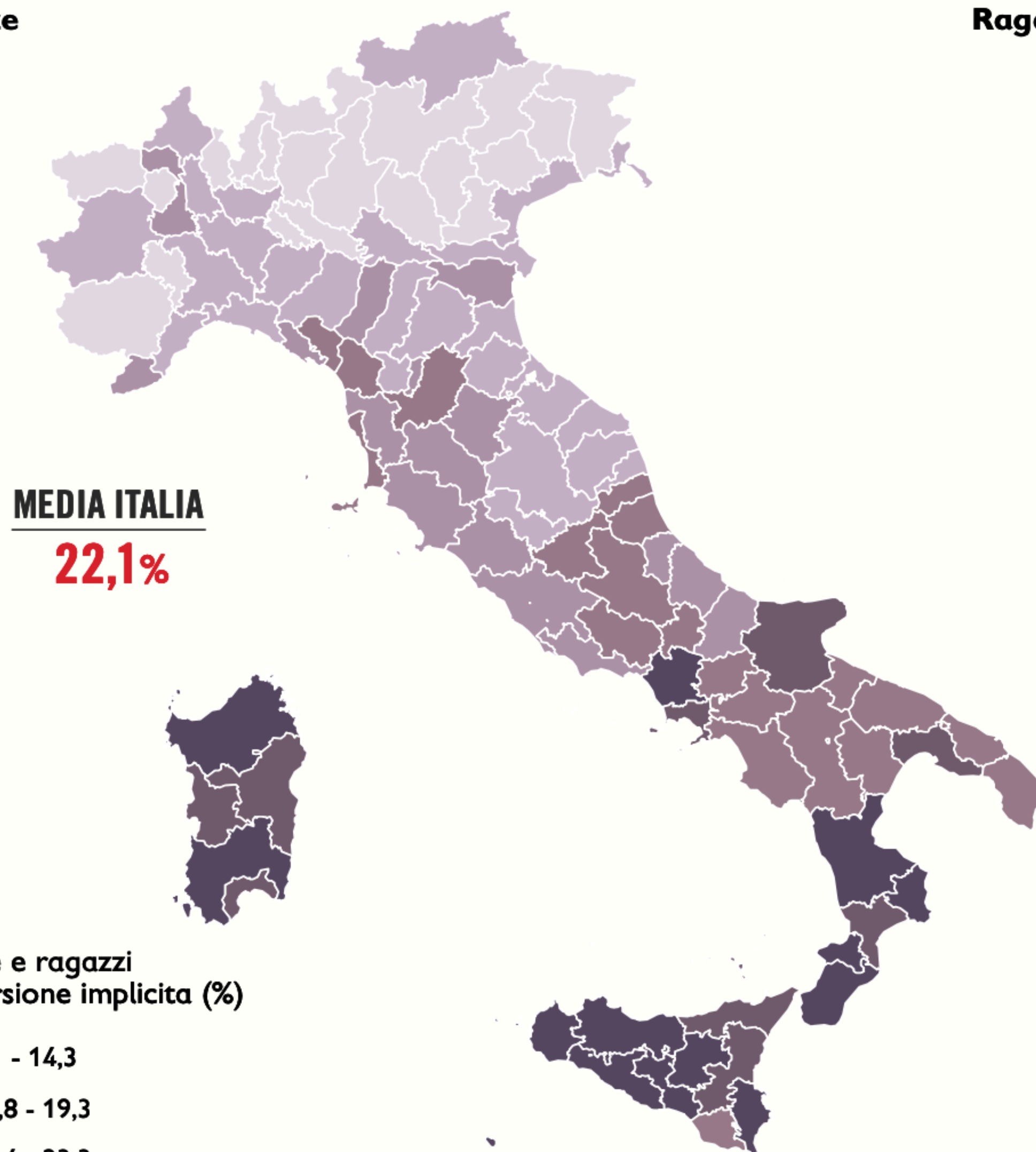
MINORI IN POVERTÀ ASSOLUTA

2008	2019
375.000	1.137.000

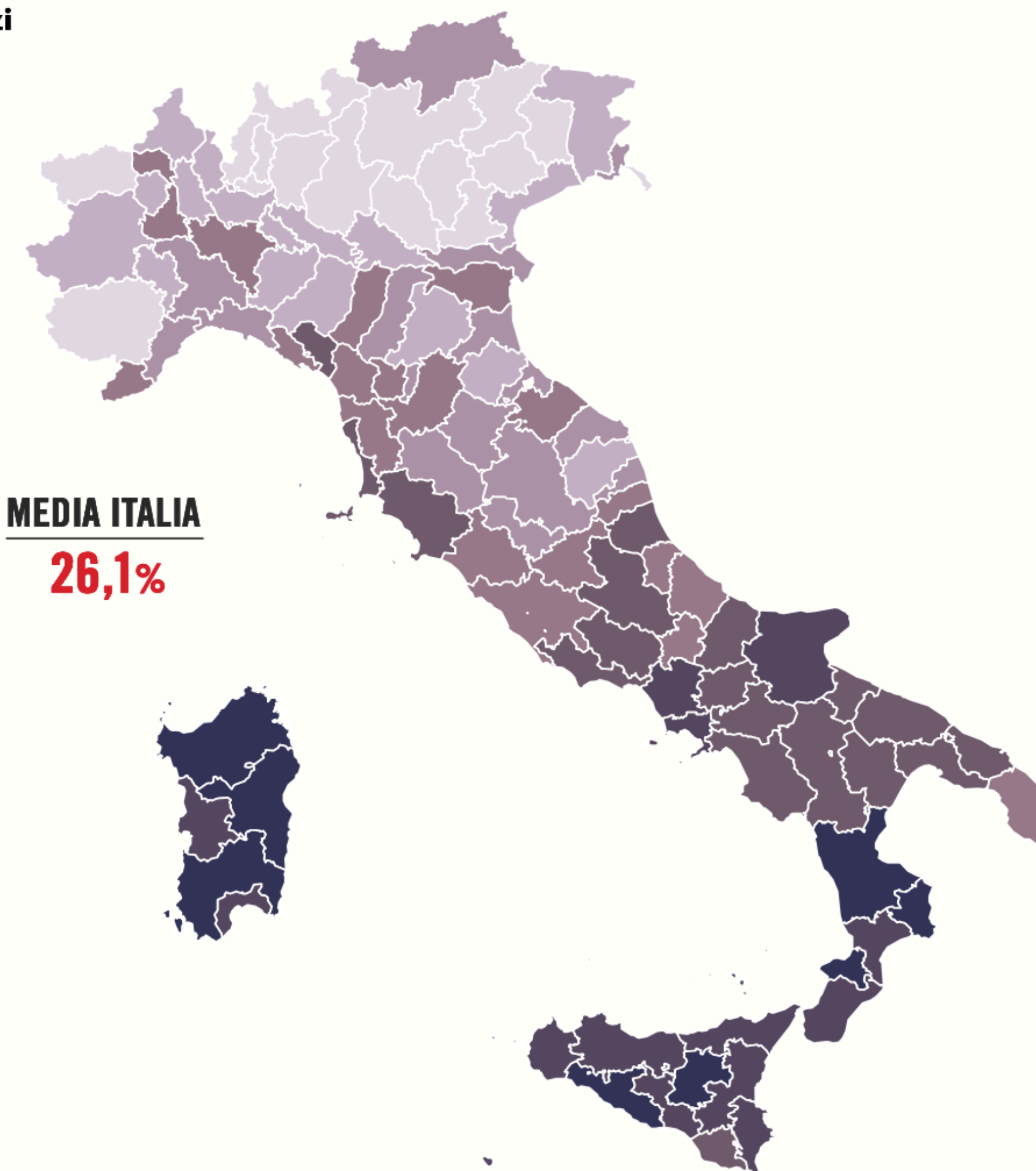
source: Save the children, Con gli occhi delle bambine, Atlante dell'infanzia a rischio, 2020, https://s3.savethechildren.it/public/files/uploads/pubblicazioni/con-gli-occhi-delle-bambine_0.pdf

SCHOOL DROP OUT

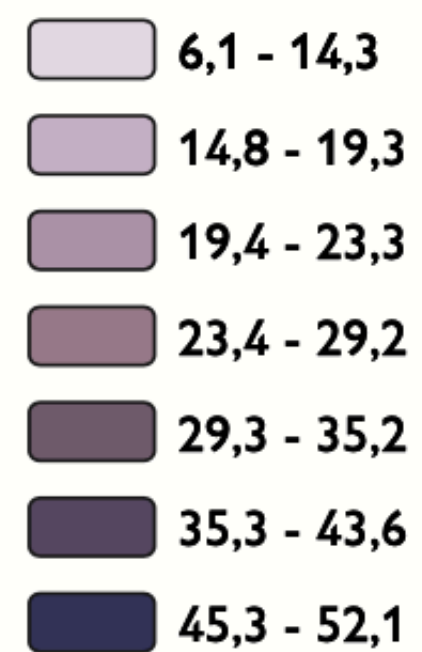
Ragazze



Ragazzi



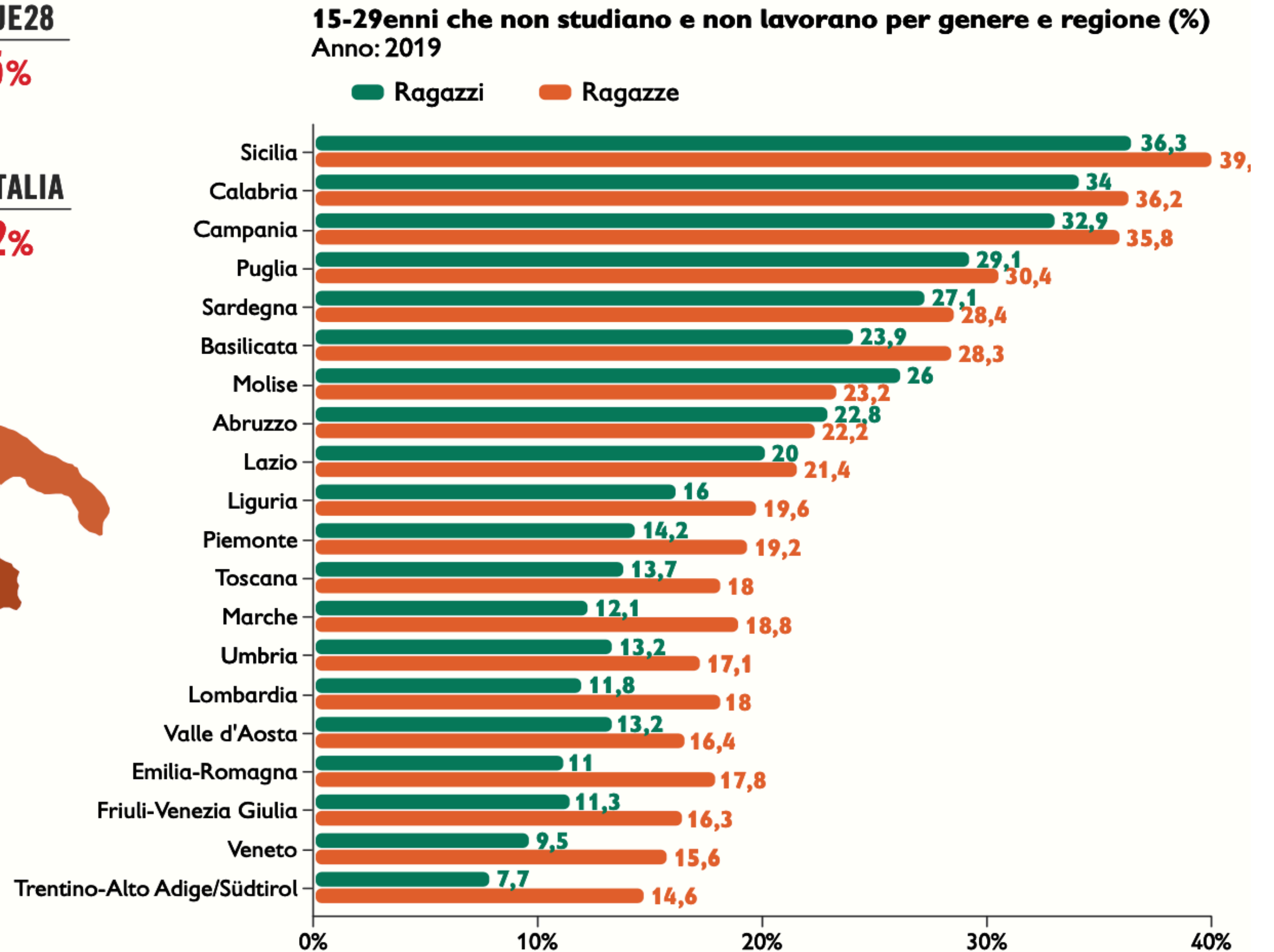
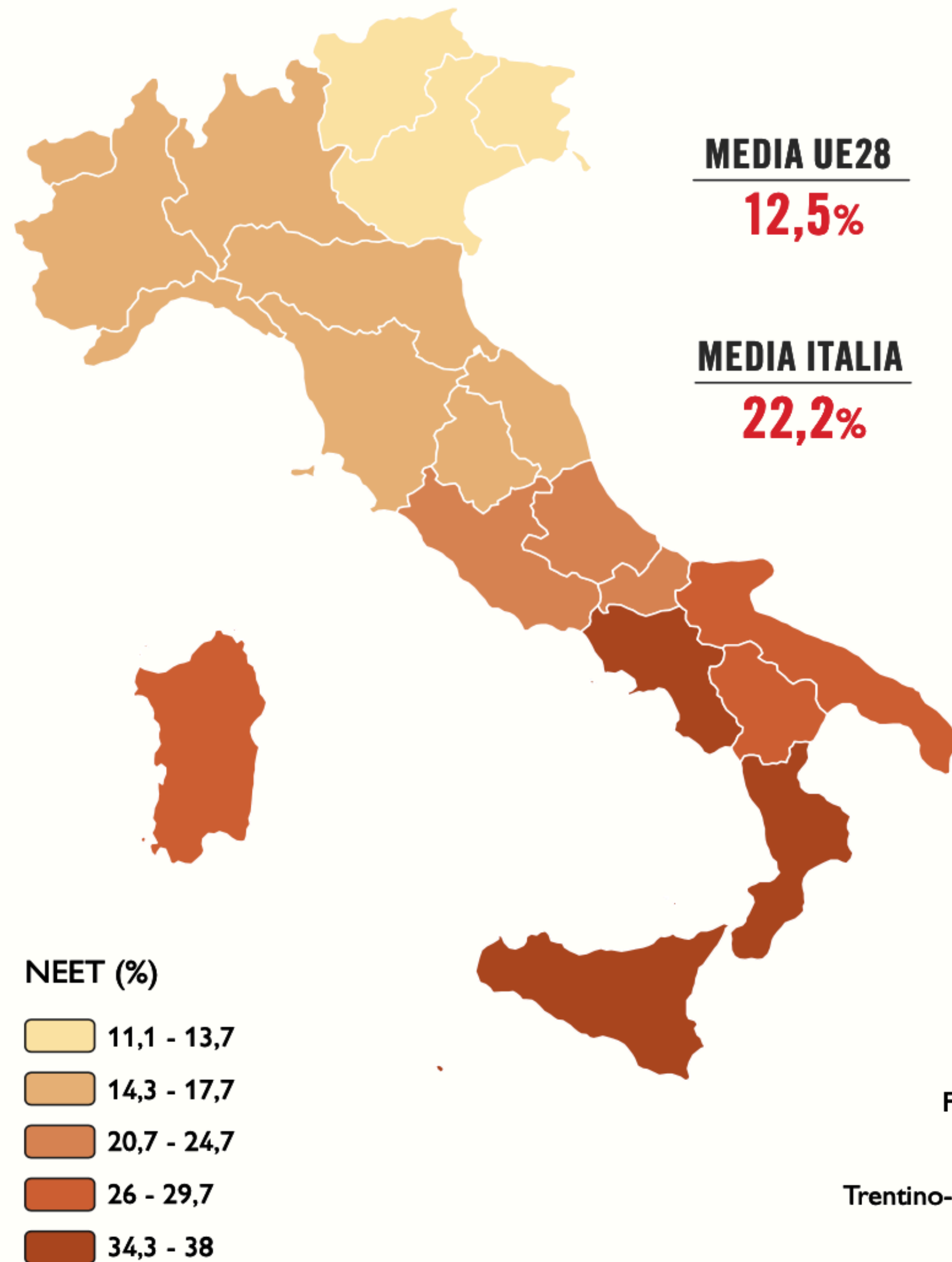
Ragazze e ragazzi
in dispersione implicita (%)



source: Save the children, Con gli occhi delle bambine, Atlante dell'infanzia a rischio, 2020, https://s3.savethechildren.it/public/files/uploads/pubblicazioni/con-gli-occhi-delle-bambine_0.pdf

NEET (NOT IN EMPLOYMENT EDUCATION, TRAINING)

source: Save the children, Con gli occhi delle bambine, Atlante dell'infanzia a rischio, 2020, https://s3.savethechildren.it/public/files/uploads/pubblicazioni/con-gli-occhi-delle-bambine_0.pdf



GENDER

258

The gender gap in science: How long until women are equally represented?

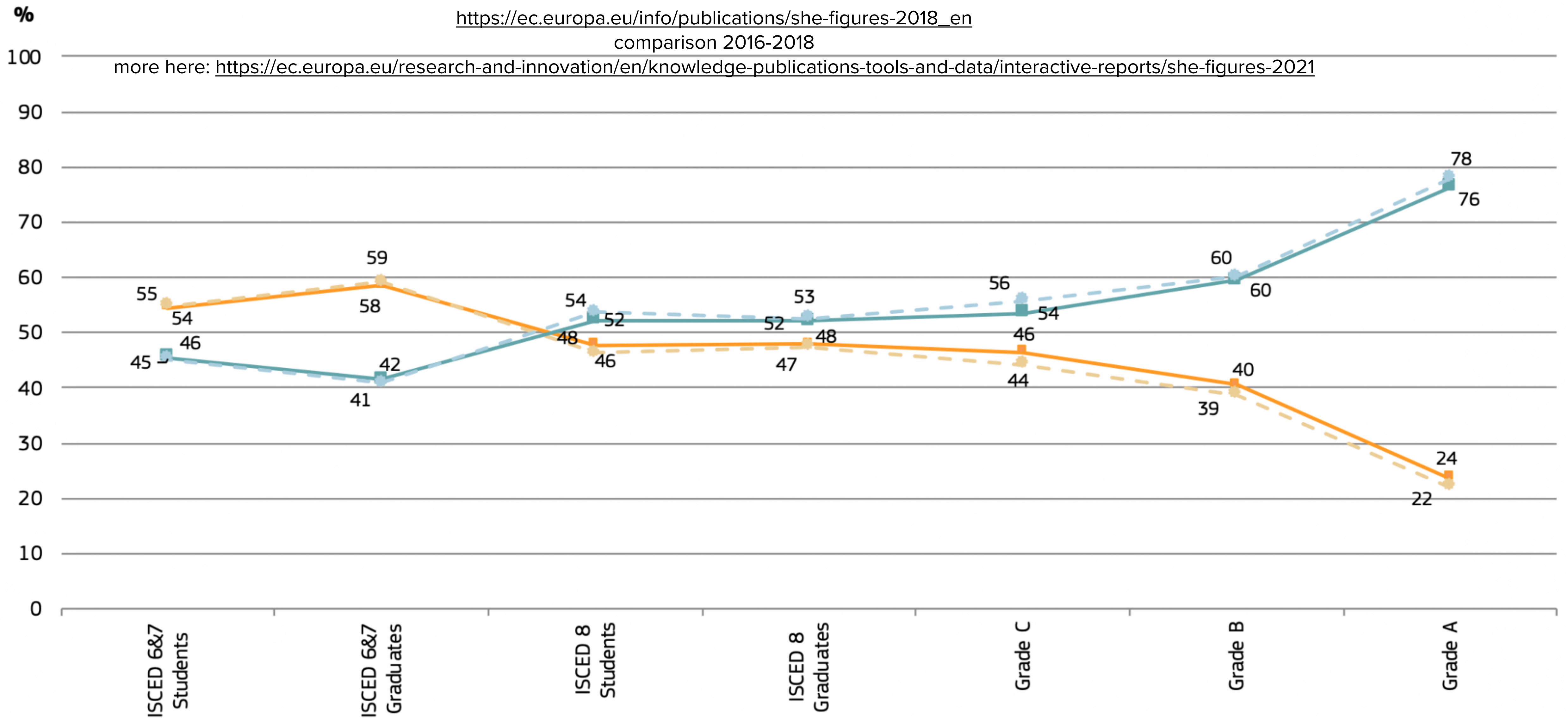
<https://doi.org/10.1371/journal.pbio.2004956>

15 million authors, 36 millions papers, 6000 journals, 15 years, 100 countries

SHE FIGURES 2018

https://ec.europa.eu/info/publications/she-figures-2018_en
comparison 2016-2018

more here: <https://ec.europa.eu/research-and-innovation/en/knowledge-publications-tools-and-data/interactive-reports/she-figures-2021>



CAN WE DO SOMETHING?

CAN WE DO SOMETHING?

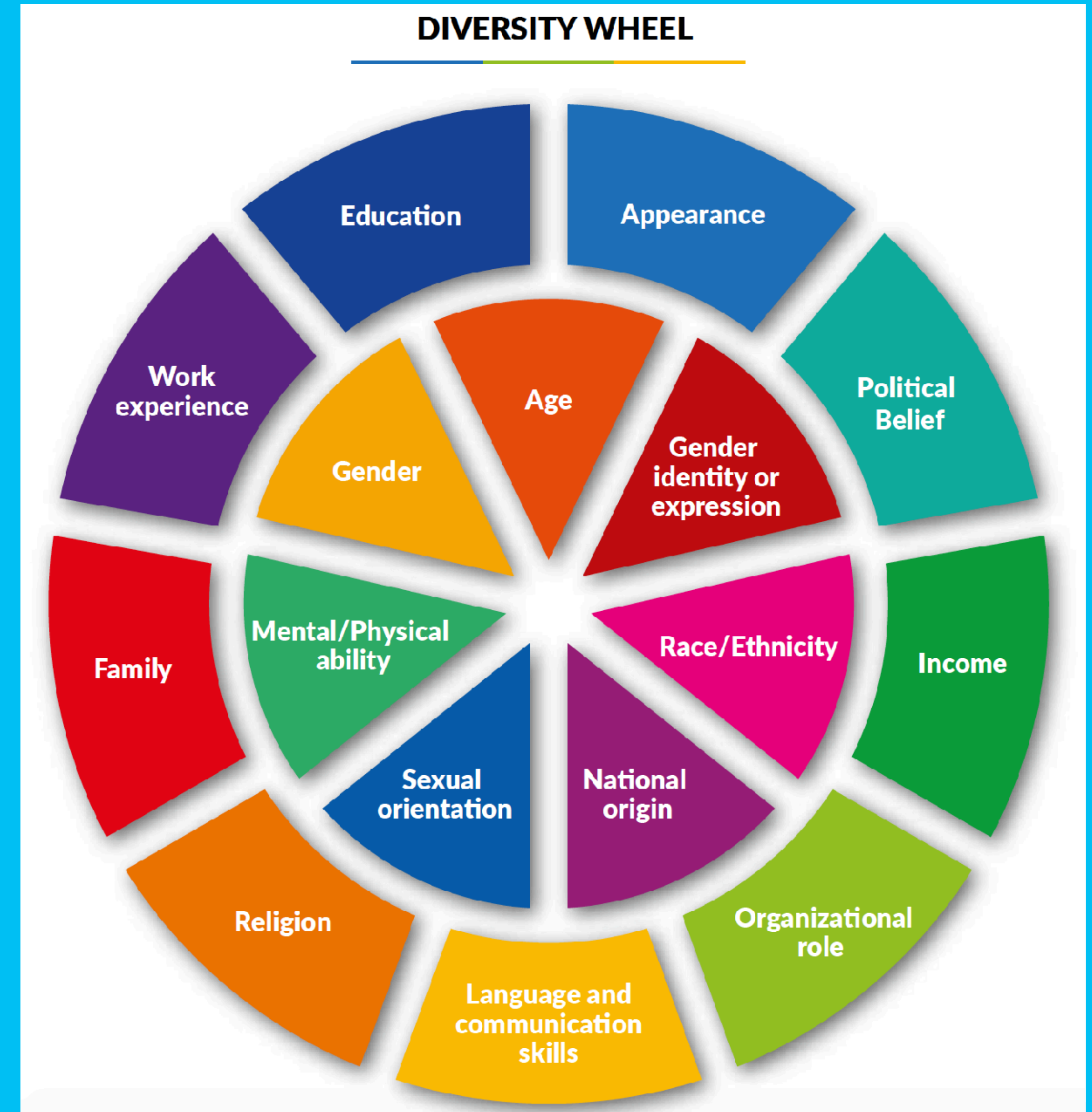
1 → OBSERVE

2 → MEASURE

3 → ACT

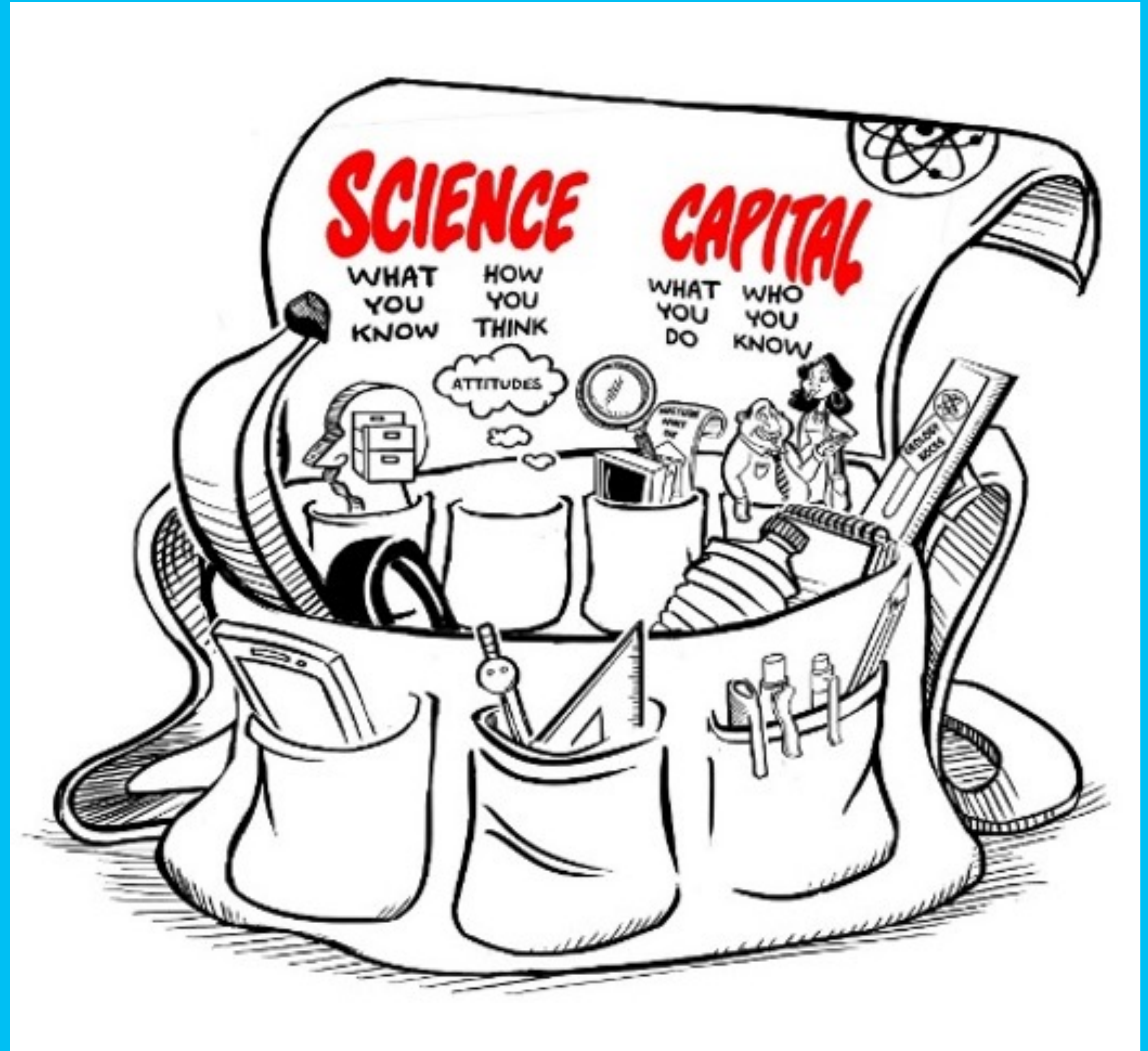
1 → OBSERVE

- how would you describe yourself?



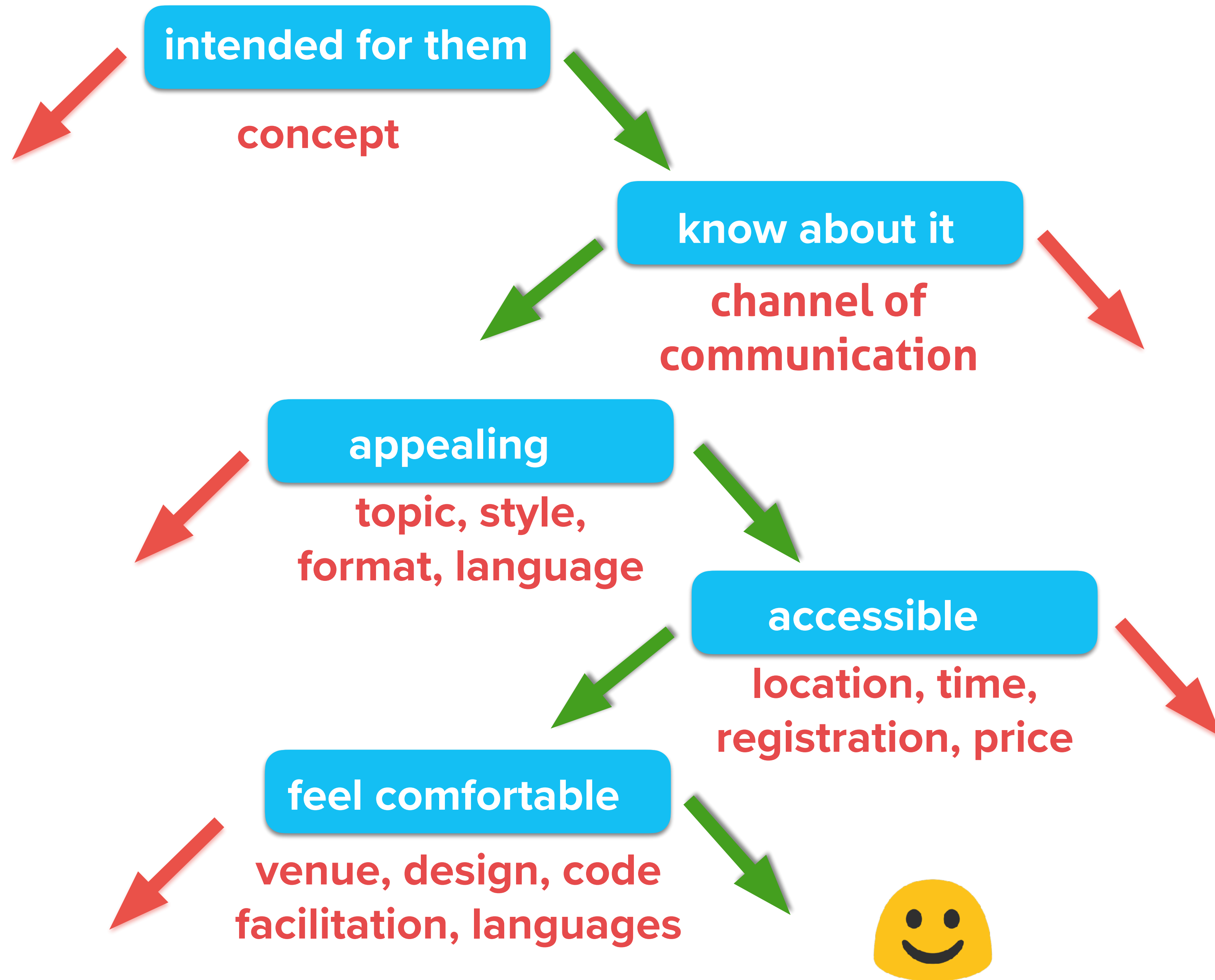
2 → MEASURE

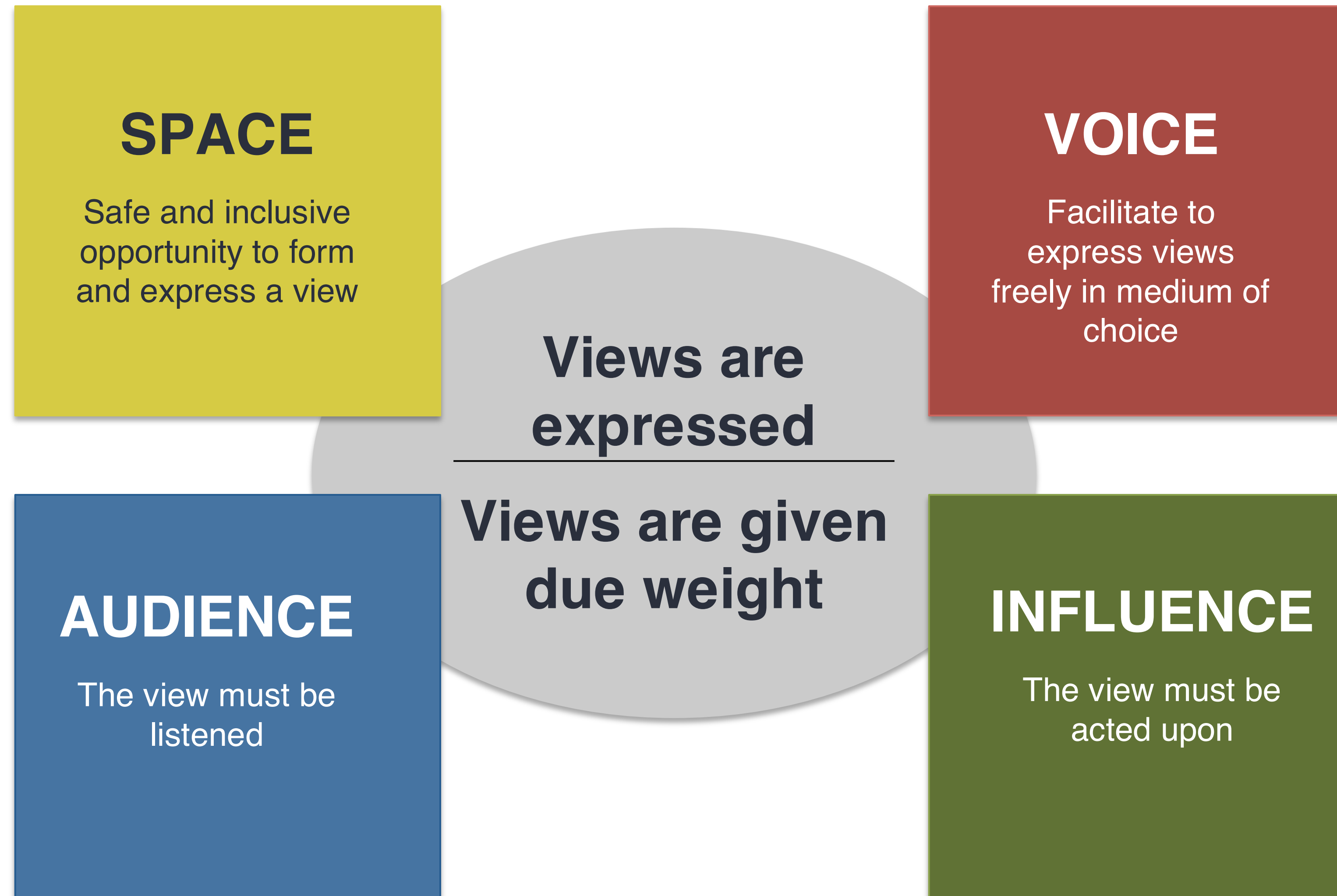
- Science literacy (“what you know”)
- Attitudes and values (“how you think”)
- Out of school behaviors (“what you do”)
- Science at home (“who you know”)





3 → ACT





EXAMPLES

INCLUSION

CODING LABS

- A series of workshops to produce games
- Mentors in a Coder Dojo event @ SISSA



RESULTS OF THE CODING LAB

- Knowledge: programming and logical thinking
- Attitudes: trust toward science, higher education, adults, learning
- Experience: new environment, new challenges
- Social context: new relationships, responsibility towards the others
- Identity: I am not so stupid... I can do it!

Simona Cerrato, Francesca Rizzato, Lucia Tealdi and Elena Canel

A coding lab to increase science capital of school dropout teenagers

https://jcom.sissa.it/archive/17/04/JCOM_1704_2018_N03

KNOWLEDGE°ROOMS IN VIENNA



ASTRONOMY ON A CAMEL

Manthan Educational Program India

<https://mepsindia.org/projects/special-programmes/100-hours-of-astronomy/>



[HTTP://PISEA.EA.GR/](http://pisea.ea.gr/)

PISEA

- Promoting Intercultural Science Education in Adults

**SCIENCE ENGAGEMENT -
INCLUSION - INTERCULTURAL DIALOGUE**

**KEY COMPETENCES FOR SCIENCE
EDUCATORS, FACILITATORS, AND
SCIENCE ENGAGEMENT INSTITUTIONS**



[HTTP://PISEA.EA.GR/](http://pisea.ea.gr/)

PISEA

- **Promoting Intercultural Science Education in Adults**

**SCIENCE ENGAGEMENT –
INCLUSION – INTERCULTURAL DIALOGUE**

**Key competences and training resources for Intercultural Training
of Science Educators and Explainers**



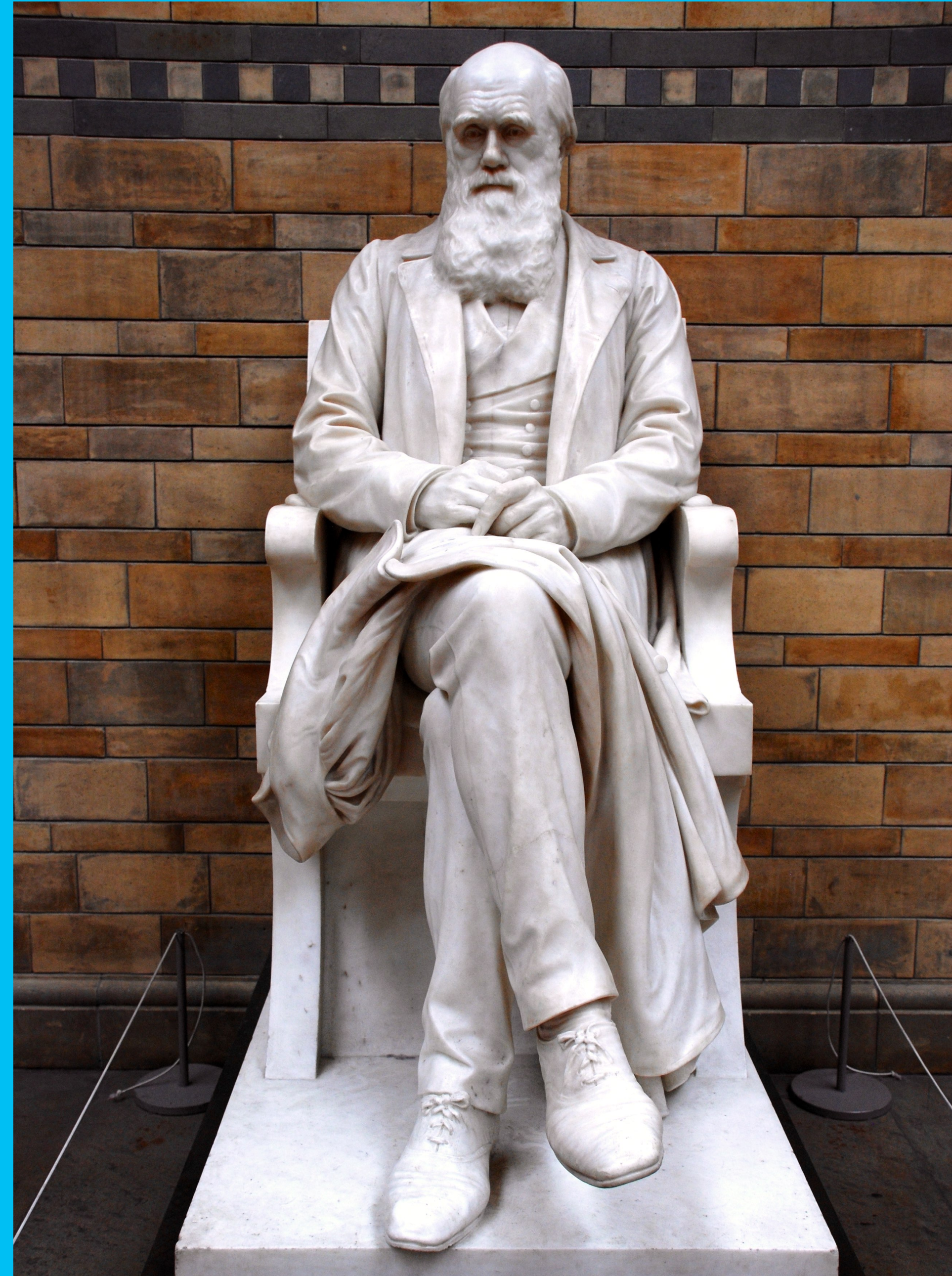
WOMEN

TAKE A TEST

DAURMITH (@DAURMITH)

CHARLES DARWIN

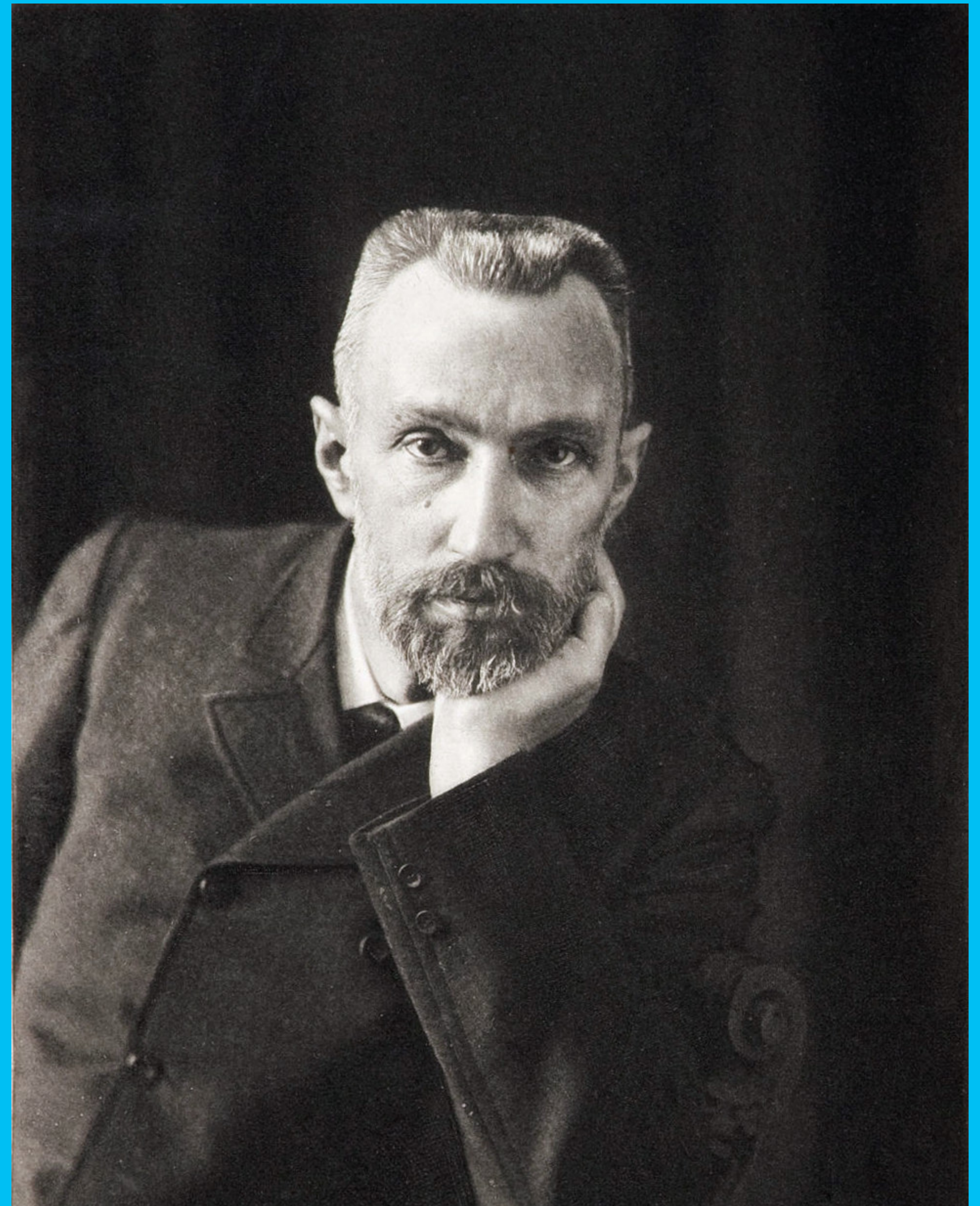
“A devout husband and father, Darwin balanced his family duties with the study of the specimens he brought from his travels.”



DAURMITH (@DAURMITH)

PIERRE CURIE

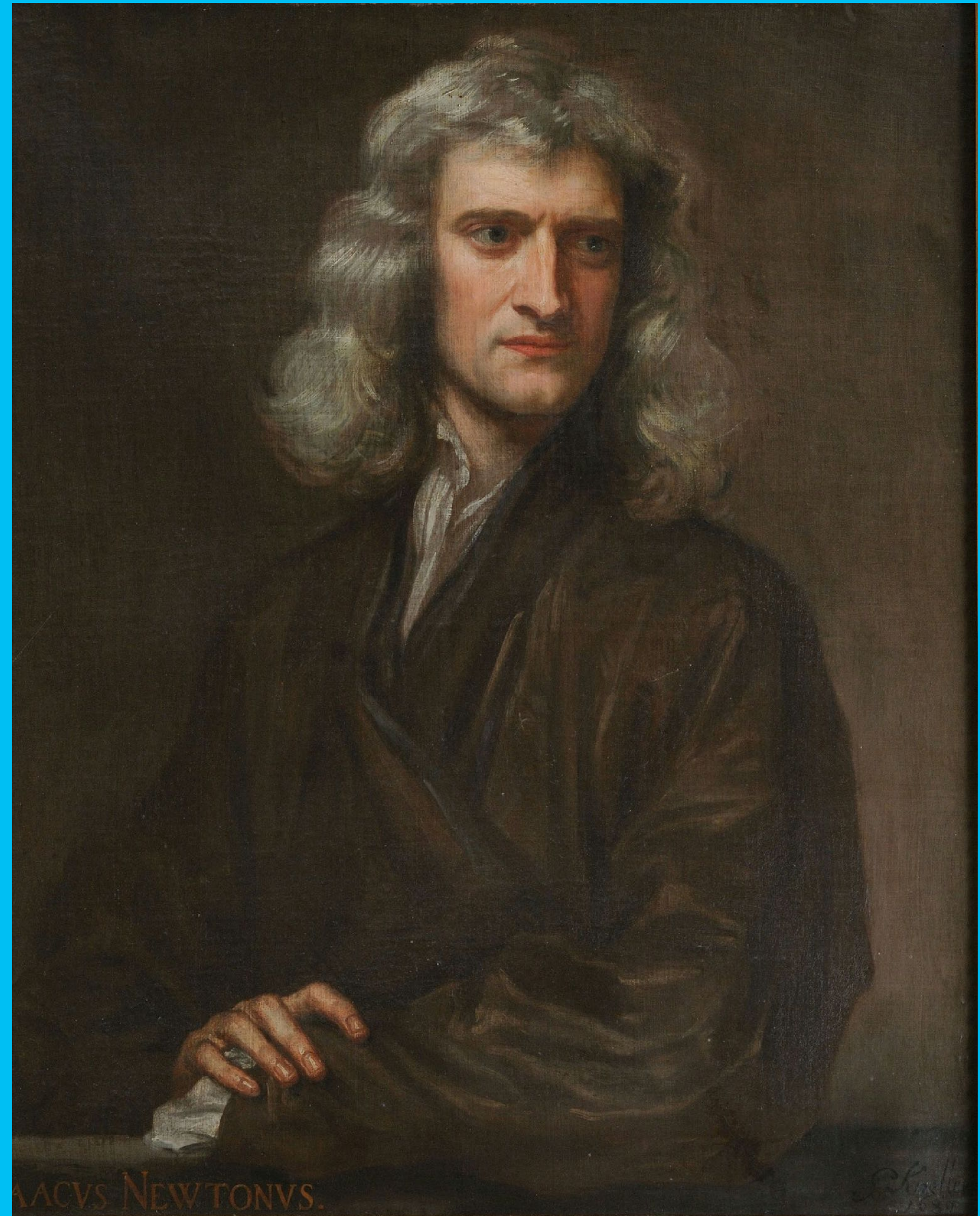
“Pierre Curie, married and proud father of two, found time for love and family during his short scientific career.”



DAURMITH (@DAURMITH)

ISAAC NEWTON

“No one could imagine that behind Newton’s large eyes and frail appearance hid one of the most prodigious brains in the world.”

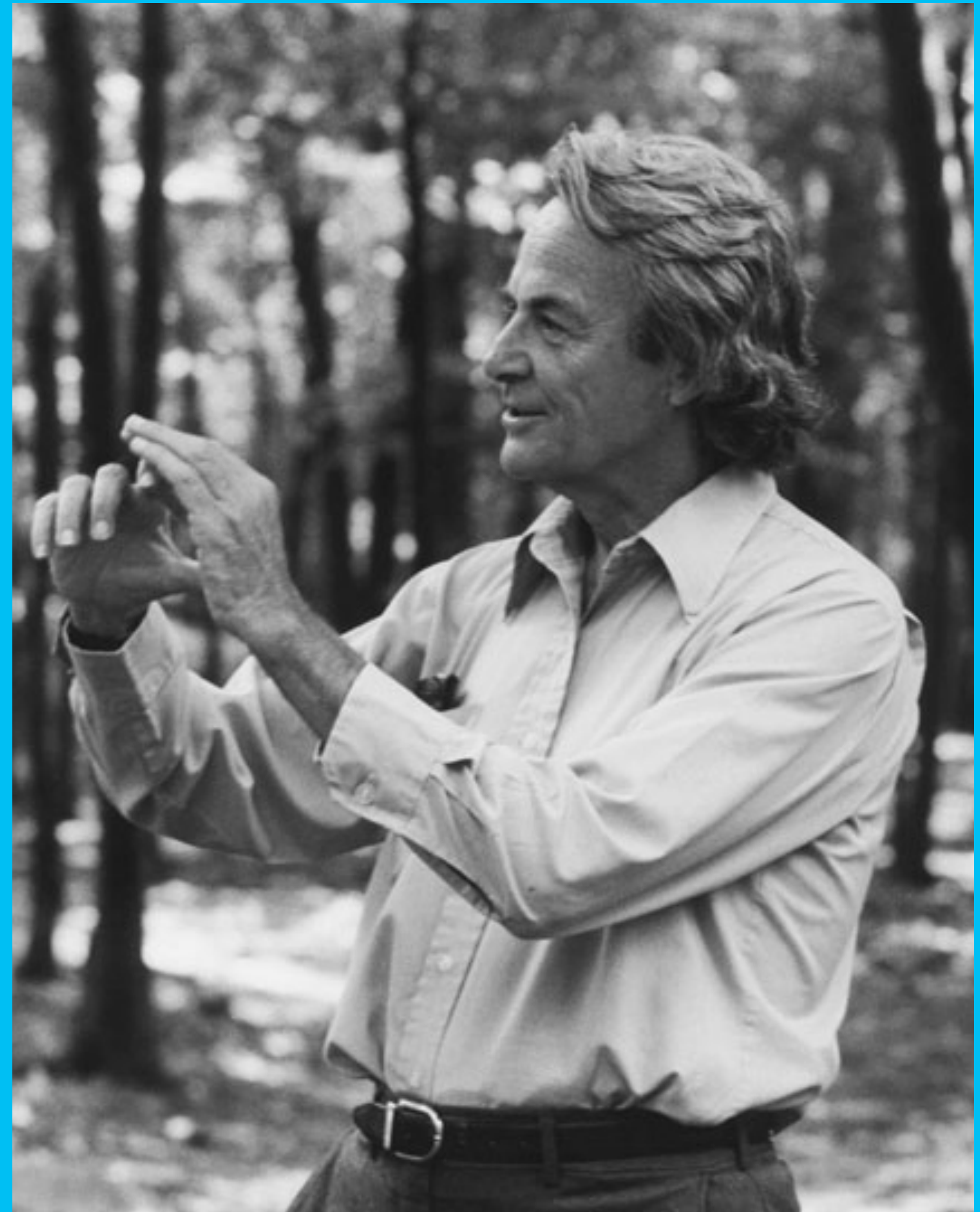


Godfrey Kneller, Portrait of Sir Isaac Newton (1642-1727),
1689, Isaac Newton Institute

DAURMITH (@DAURMITH)

RICHARD FEYNMANN

“Sassy and carefree Feynmann challenged social mores as he worked on his research. He broke hearts all over USA.”

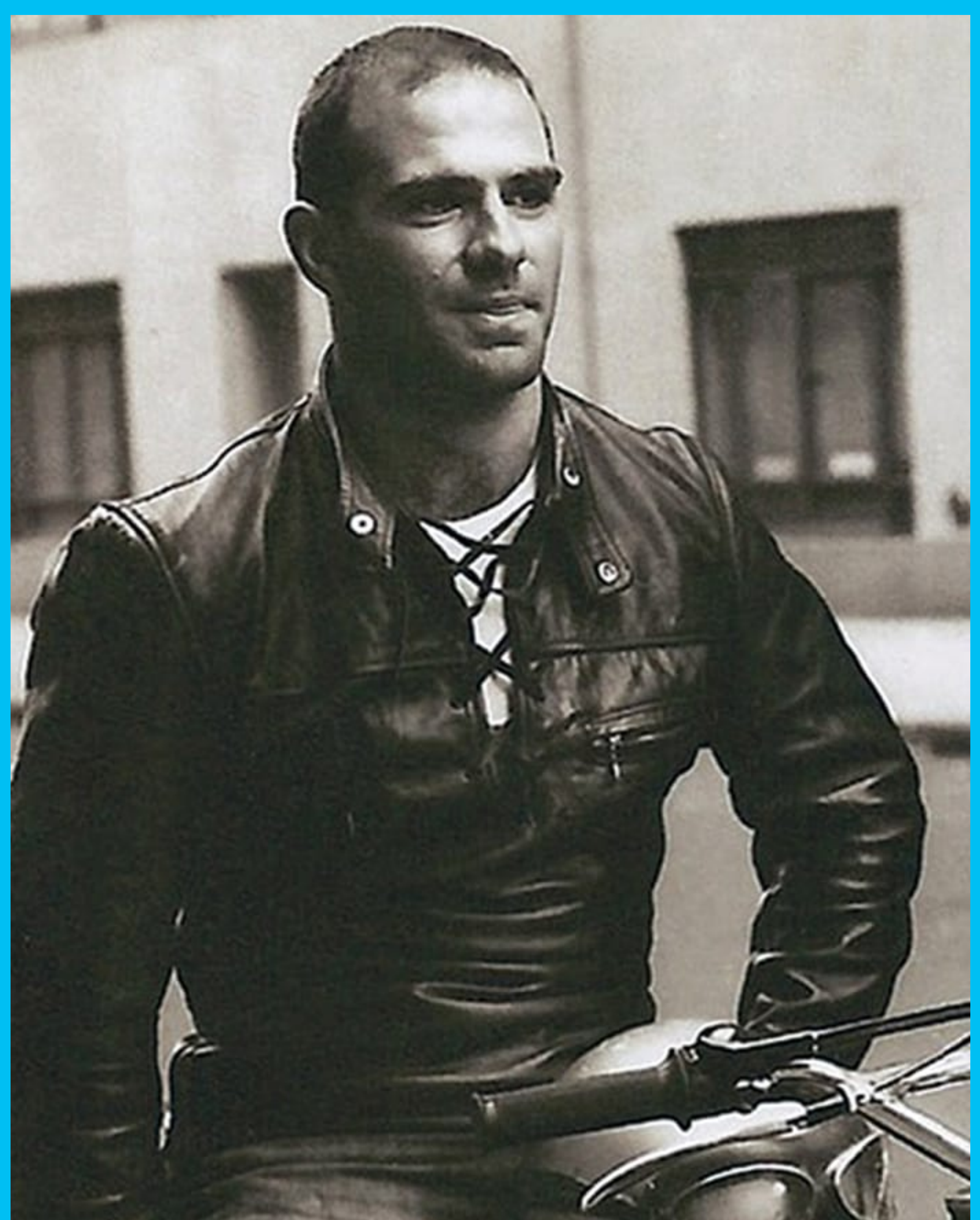


Richard Feynman, in 1984 in the woods of the Robert Treat Paine Estate in Waltham, MA, USA
(credits: Tamiko Thiel 1984)

DAURMITH (@DAURMITH)

OLIVER SACKS

“He had the body of an athlete and the face of a movie star. But Oliver Sacks chose science over glamour.”



DAURMITH (@DAURMITH)

ERWIN SCHRÖDINGER

“His dour personality made everyone think he’d never marry. Even so, Schrödinger got a wife and a Nobel Prize.”



MORE SERIOUSLY...

IN YOUR ACTIVITY

- **create a welcoming environment**
- **avoid stereotypes of female and male identities**
- **ensure diversity**
- **involve a variety of personalities and origins**
- **encourage everybody to participate and set high expectations for all**
- **avoid stereotypical task distribution**
- **ensure a variety of learning approaches**
- **choosing images, avoid stereotyped roles**
- **use a gender neutral language**
- **reflect on your way of interacting**

GENDER SENSITIVE LANGUAGE

- ensure that women and men are represented
- do not stereotype roles and vocations (doctors are male, nurses are female)
- do not use expression as “have balls” or similar taken from the sexual sphere
- avoid compound with “man” and replace with “person” or “human”
- avoid feminine nouns or adjectives diminishing meaning (girlish, cute, sweet, pretty, etc.)
- use alternatively he or she (his and her) to indicate a generic person or the plural
- promote gener equity through titles, labels and names (Ms without reference to the marital status)
- pay attention to the selection of images

GENDER NEUTRAL LANGUAGE

Gender-biased noun	Gender inclusive noun
Actor/actress	Performer
Average/common man	Average person, ordinary person, typical worker
Businessman/businesswoman	Businessperson, entrepreneur, manager
Cameraman/camerawoman	Camera operator, cameraperson
Chairman/chairwoman	Chairperson, coordinator, head
Cleaning lady /maid	Cleaner, housekeeper, housecleaner
Councilman/councilwoman	Councilmember
Craftsman	Artisan, craftsperson, crafter
Dear Sir	Dear Sir or Madam, To whom it may concern
Fatherland	Native land
Fireman	Firefighter
Forefather/foremother	Ancestor, ascendant, progenitor
Founding fathers	Founders, founding leaders, pioneers
Housewife/househusband	Homemaker
Layman	Layperson

Mailman/postman/postwoman	Letter carrier, mail carrier, postal worker
Man/woman	Individual, someone, person
Man in the street	Average person, ordinary person
Manhood/womanhood	Adulthood, maturity
Man-hours	Staff hours, work hours
Mankind	Humankind, humanity, people, human beings
Man-made	Artificial, synthetic
Middleman	Go-between, liaison
Policeman/policewoman	Police officer
Salesman/saleswoman	Salesperson, sales representative
Showgirl	Performer
Spokesman	Representative, spokesperson
Statesman	Diplomat, official
Steward/stewardess	Flight attendant
To man	To cover, to operate, to run, to staff

EMPOWERMENT



FOR A FAIR SELECTION
EVERYBODY HAS TO TAKE
THE SAME EXAM: PLEASE
CLIMB THAT TREE

