How many Researchers are there in the World

… and why we should care

NBER Investments in Early Career Scientists: Data and Research Gaps

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Is it

14 million

full-time equivalent researchers

97 million

people who do R&D as a primary or secondary job activity

Most innovation indicators are based on firm-level data

Rather than trying to measure the success of innovative outcomes, though, it is crucial to focus instead on whether the process is being engaged. If teams working on innovation are doing the right kinds of activities, then it is important to trust that results will follow.

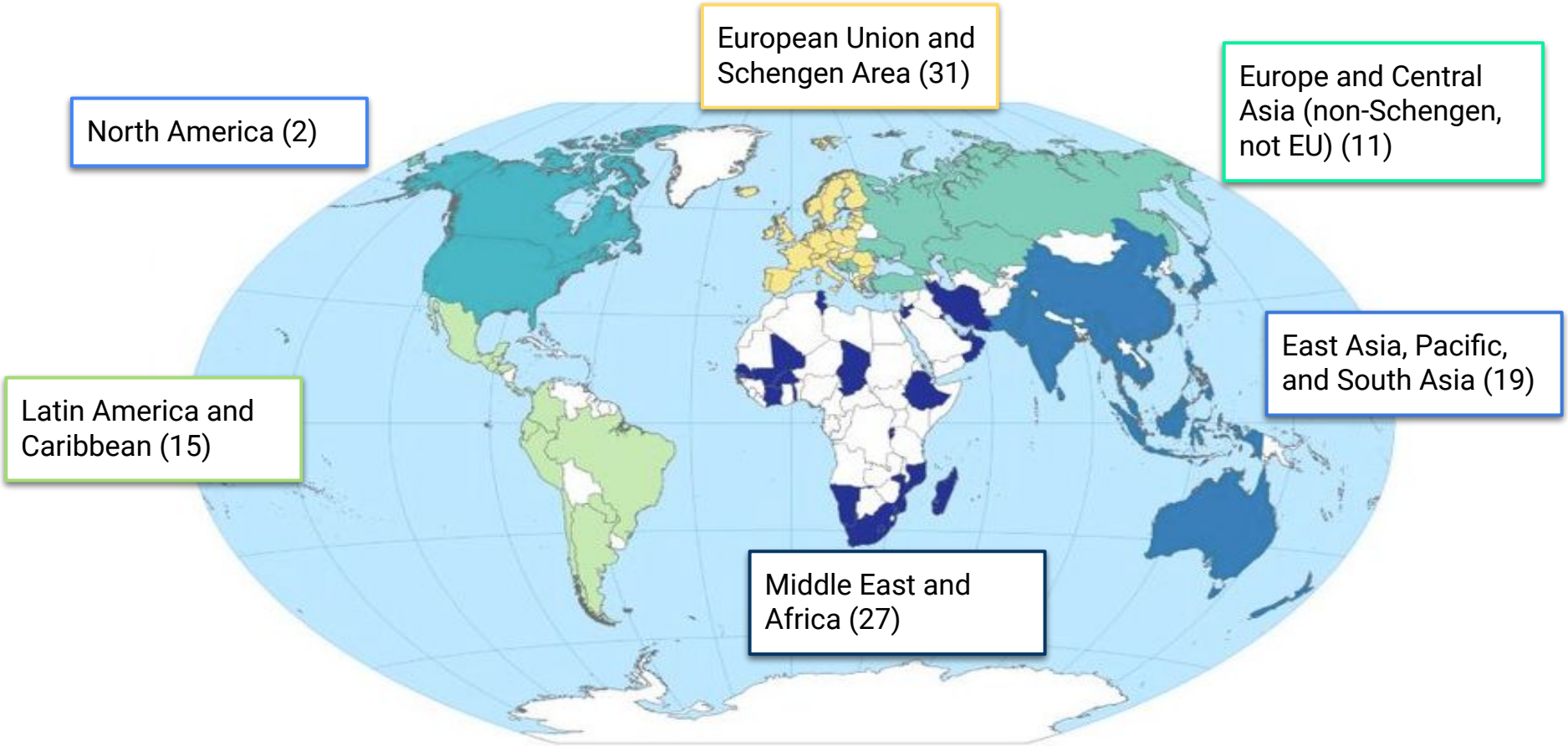
--A Markham, Inc. 2017

Research Intensity →

Researcher Density

STEP 1 : Scope and Principles

- Global scope for data coverage
- Comparability between countries
- Open data



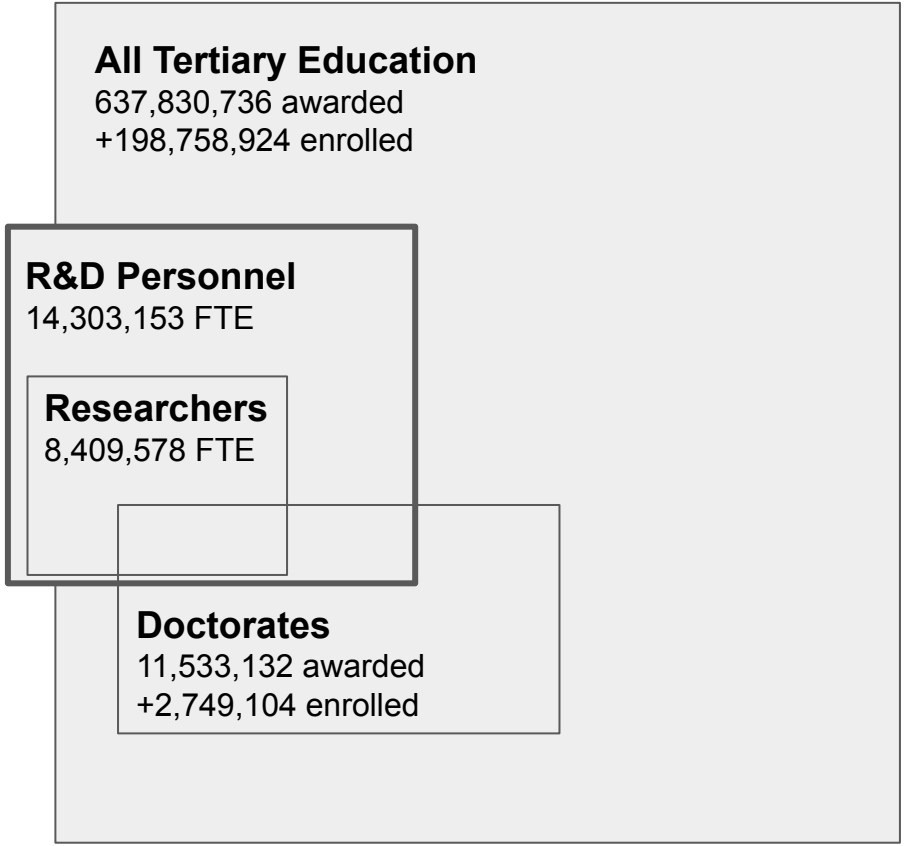
Dataset: 105 countries that had GERD, tertiary education, and researcher variable coverage during 2014-2018

- R&D is defined (Frascati Manual, 2015) to "**comprise creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge."** R&D includes basic and applied research and experimental development.

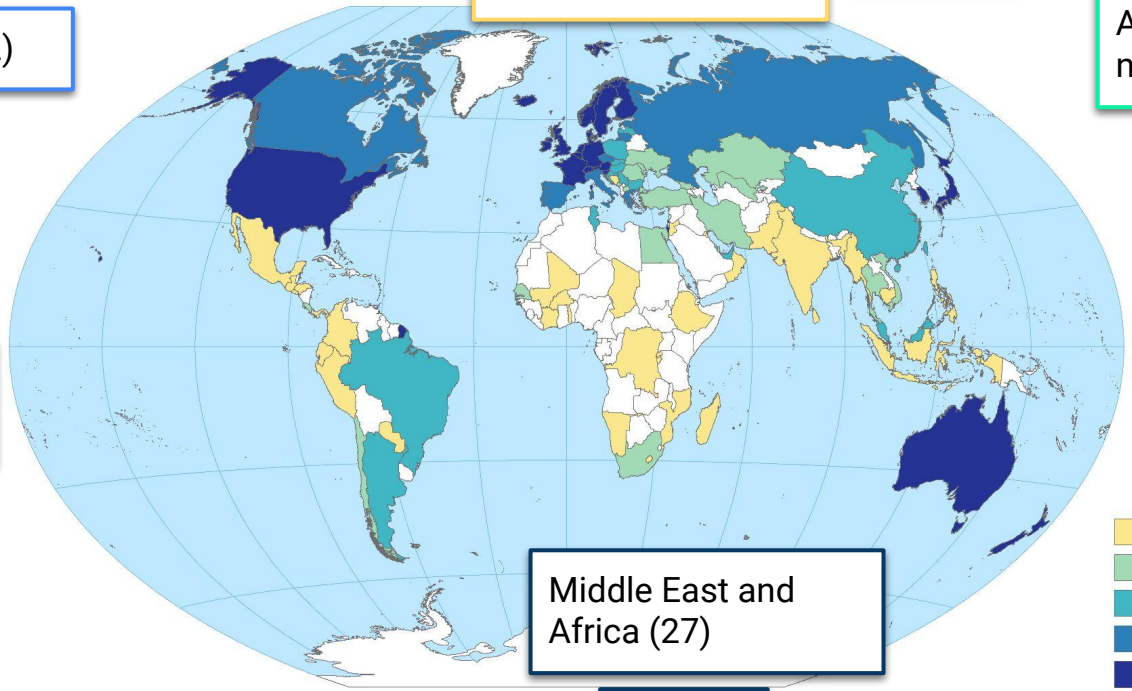
- R&D personnel include **all persons engaged directly in R&D, whether directly employed or external contributors, as well as those providing direct services for the R&D activities such as R&D managers, administrators, technicians and clerical staff.** R&D personnel perform scientific and technical work for an R&D project (setting up and carrying out experiments or surveys, building prototypes, etc.); plan and manage R&D projects; prepare interim and final reports for R&D projects; provide internal services for R&D projects (e.g. dedicated computing or library and documentation work), and provide support for the administration of the financial and personnel aspects of R&D projects.

- R&D personnel **excludes individuals undertaking indirect support or ancillary activities in R&D-performing units**, such as specific services to R&D provided by central computer departments and libraries, services by central finance and personnel departments dealing with R&D projects and R&D personnel, and the provision of services for security, cleaning, maintenance, canteens, etc., to R&D-performing units.

STEP 2: Count Person-Years



14m R&D personnel FTEs in the world (*UNESCO*)



European Union and Schengen Area (31)

3.13m

North America (2)

2.40m

Europe and Central Asia (non-Schengen, not EU) (11)

1.08m

East Asia, Pacific, and South Asia (19)

6.58m

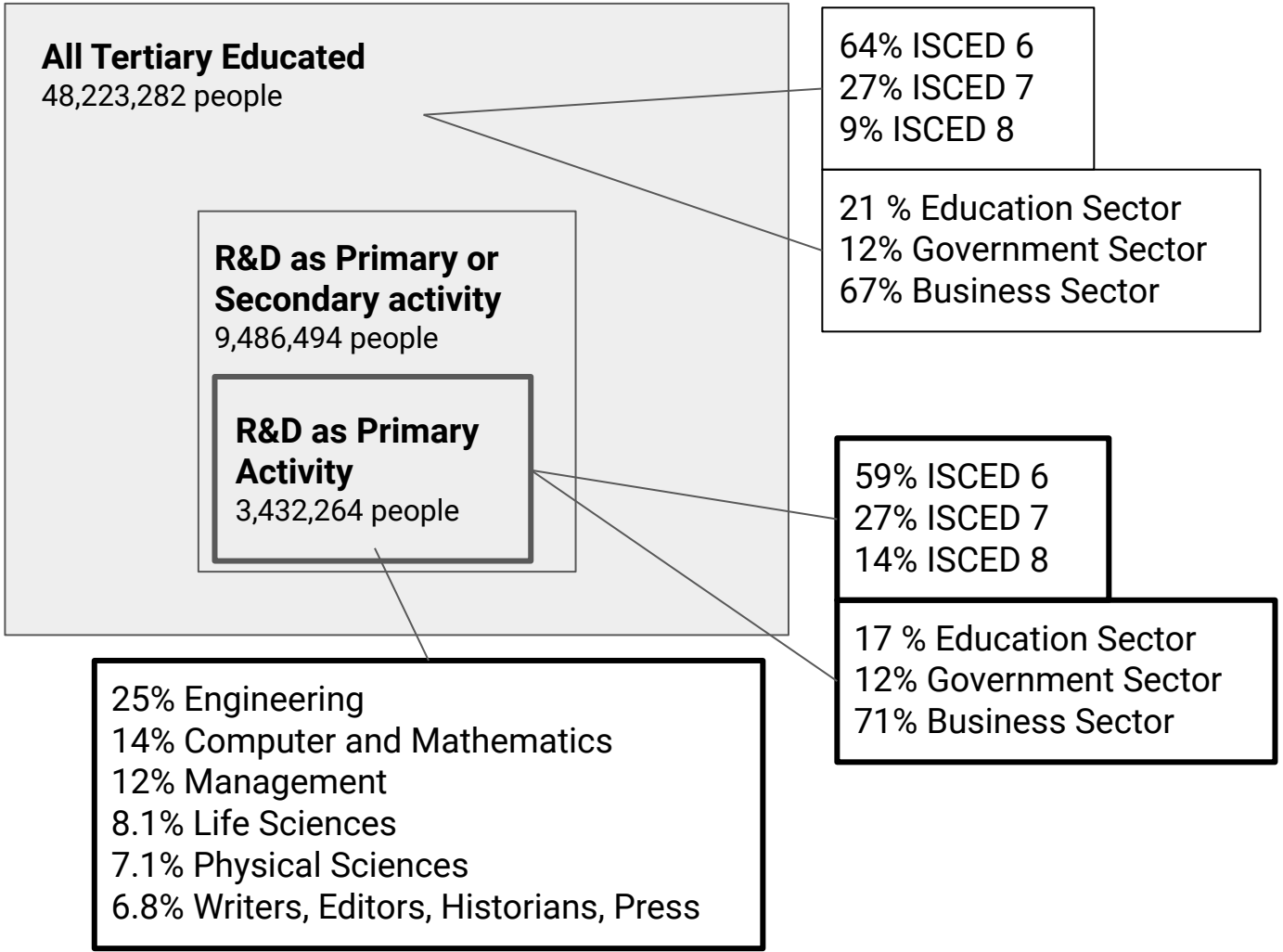
Latin America and Caribbean (15)

0.590m

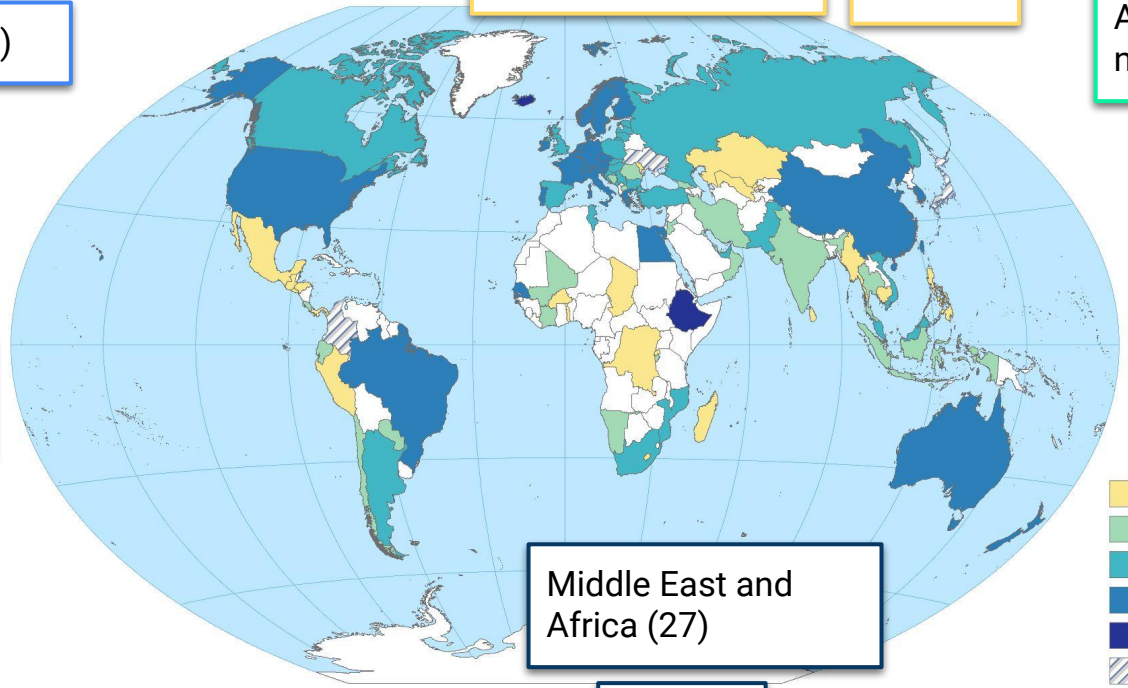
Middle East and Africa (27)

0.522m

STEP 3: Count Individuals



35m (*97m*) R&D personnel in the world



European Union and Schengen Area (31)

5.72m
15.8m

North America (2)

4.27m
11.8m

Europe and Central Asia (non-Schengen, not EU) (11)

2.58m
7.13m

East Asia, Pacific, and South Asia (19)

17.4m
48.0m

Latin America and Caribbean (15)

2.94m
8.12m

Middle East and Africa (27)

2.17m
5.99m

In summary

- Researcher density is a meaningful measure of innovation capacity
- It shows the number of people who are actively engaged in research, who can be recruited into innovative projects as needed to solve tough problems
- The issue is not measuring innovation as an end in itself, but rather the ability to engage in innovative processes as a means to solve problems as they arise.