

Trust in science

Muscat Global Knowledge Dialogue

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حوار المعرفة العالمي مسقط
Muscat Global Knowledge Dialogue



وزارة التعليم العالي
و البحث العلمي والابتكار
Ministry of Higher Education
Research & Innovation



#MuscatISC    

Trust in science matters



Trust in science matters

Trust in scientists in times of pandemic: Panel evidence from 12 countries

Yann Algan^{a,1}, Daniel Cohen^b, Eva Davoine^c, Martial Foucault^d , and Stefanie Stantcheva^e

Trust in science matters

Trust in science is a strong predictor of whether people follow COVID-19 guidelines (distancing, masking, willingness to vaccinate, etc.)

Trust in scientists in times of pandemic: Panel evidence from 12 countries

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Trust in science matters

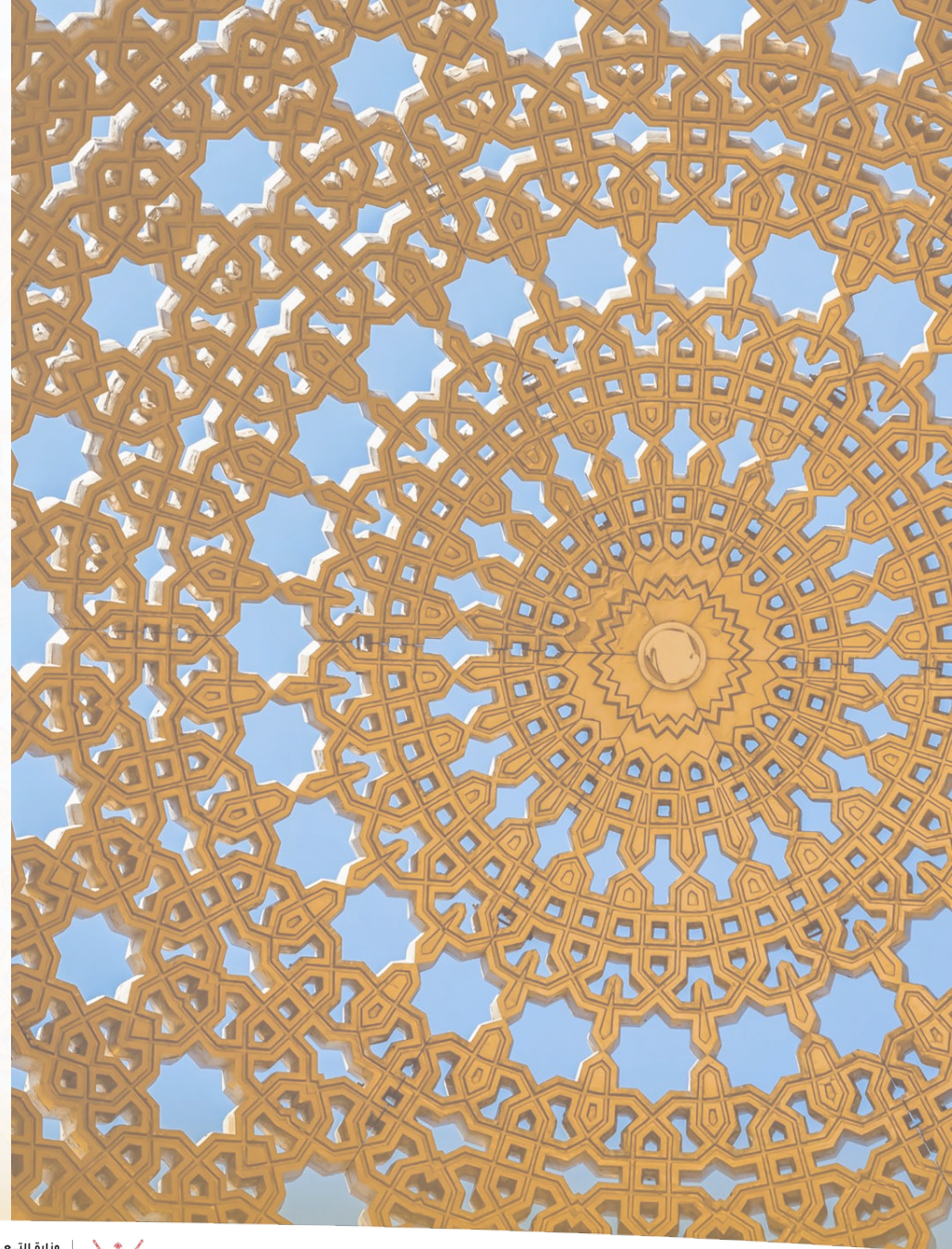
Trust in science is a strong predictor of whether people follow COVID-19 guidelines (distancing, masking, willingness to vaccinate, etc.)

By contrast, trust in government or trust in others are poor predictors

Trust in scientists in times of pandemic: Panel evidence from 12 countries

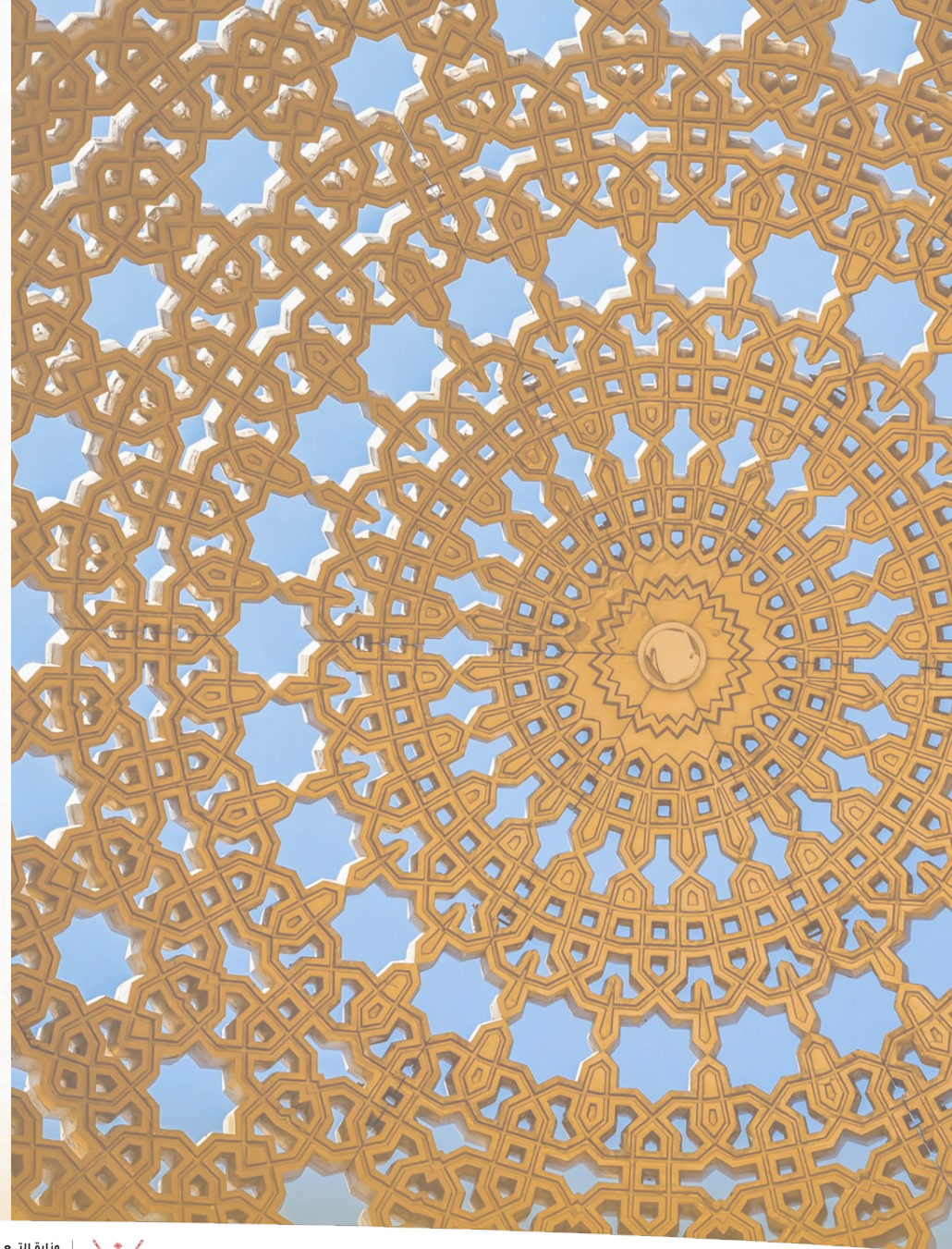
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**People
tend to
trust
science**



**People
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trust
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Global
Monitor**



**People
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Monitor**

Trust Level

■ High

■ Medium

■ Low

■ Don't know/
refused



People tend to trust science

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World



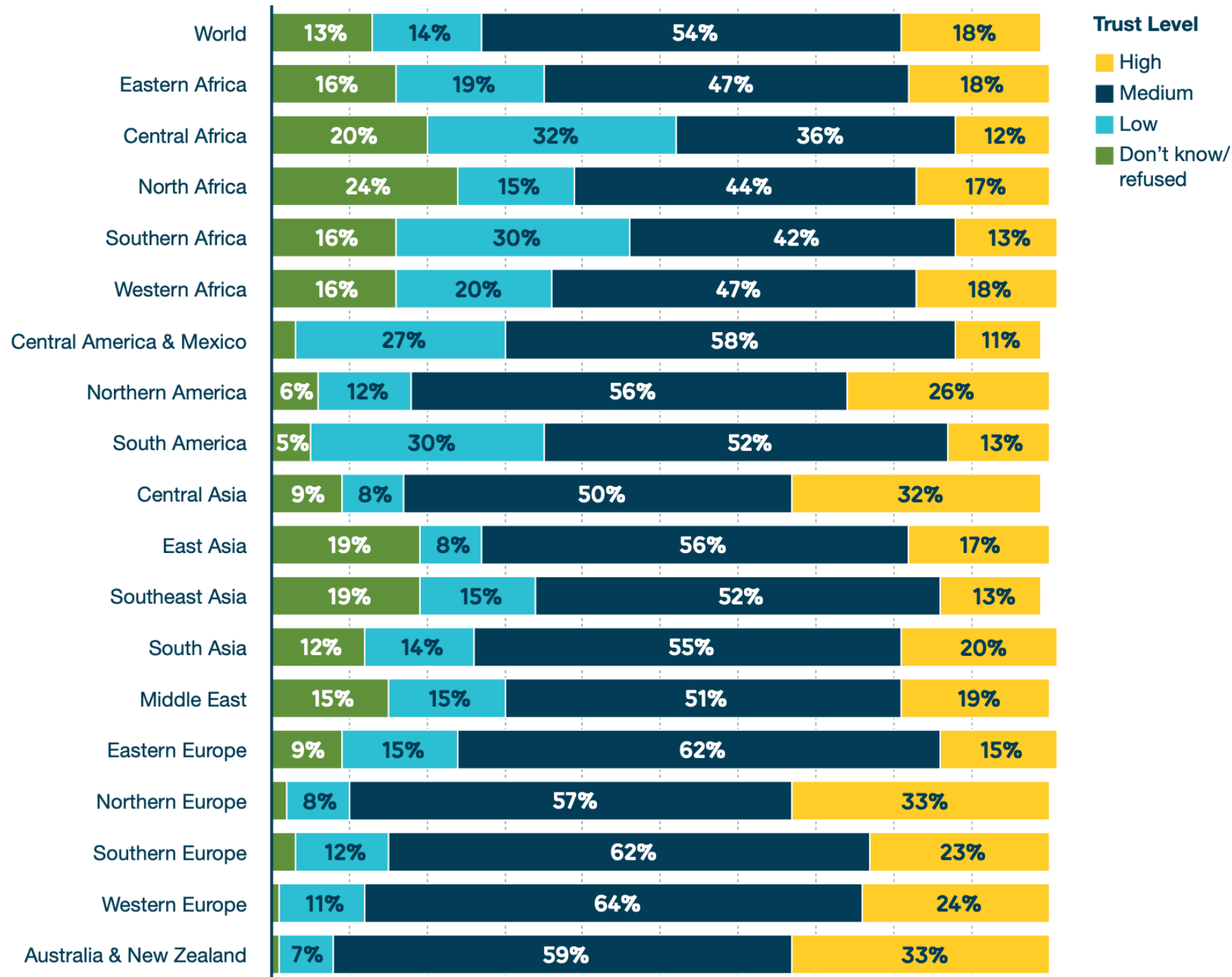
Trust Level

- High
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People tend to trust science

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Monitor



People tend to trust science

Trust in scientists and their role in society across 68 countries

Viktoria Cologna ^{1,2,3}, Niels G. Mede ⁴, John Besley ⁵, Cameron Brick ^{6,7}, Marina Joubert ⁸, Edward W. Maibach ⁹, Sabina Mihelj ¹⁰, Naomi Oreskes ¹, Mike S. Schäfer ², Sander van der Linden ¹¹, Nor Izzatina Abdul Aziz ¹², Suleiman Abdulsalam ¹³, Nurulaini Abu Shamsi ¹⁴, Balazs Aczel ¹⁵, Indro Adinugroho ^{16,17}, Eleonora Alabrese ¹⁸, Alaa Aldoh ⁶, Mark Alfano ¹⁹, Innocent Mbulli Ali ²⁰, Mohammed Alsobay ²¹, Marlene Altenmüller ^{22,23}, R. Michael Alvarez ²⁴, Richard Amoako ²⁵, Tabitha Amollo ²⁶, Patrick Ansah ²⁵, Denisa Aprilawati ²⁷, Flavio Azevedo ^{28,29}, Ani Bajrami ³⁰, Ronita Bardhan ³¹, Keagile Bati ³², Eri Bertsou ³³, Cornelia Betsch ³⁴, Apurav Yash Bhatiya ³⁵, Rahul Bhui ^{21,36}, Olga Białobrzaska ³⁷, Michał Bilewicz ³⁸, Ayoub Bouguettaya ³⁹, Katherine Breeden ⁴⁰, Amélie Bret ⁴¹, Ondrej Buchel ⁴², Pablo Cabrera-Álvarez ⁴³, Federica Cagnoli ⁴⁴, André Calero Valdez ⁴⁵, Timothy Callaghan ⁴⁶, Rizza Kaye Cases ⁴⁷, Sami Çoksan ^{48,49}, Gabriela Czarnek ⁵⁰, Steven De Peuter ⁵¹, Ramit Debnath ^{24,52}, Sylvain Delouvé ⁵³, Lucia Di Stefano ⁴⁴, Celia Díaz-Catalán ^{43,54}, Kimberly C. Doell ⁵⁵, Simone Dohle ⁵⁶, Karen M. Douglas ⁵⁷, Charlotte Dries ⁵⁸, Dmitrii Dubrov ⁵⁹, Małgorzata Dżimińska ⁶⁰, Ullrich K. H. Ecker ⁶¹, Christian T. Elbaek ⁶², Mahmoud Elsherif ³⁹, Benjamin Enke ⁶³, Tom W. Etienne ⁶⁴, Matthew Facciani ⁶⁵, Antoinette Fage-Butler ⁶⁶, Md. Zaki Faisal ⁶⁷, Xiaoli Fan ⁶⁸, Christina Farhart ⁶⁹, Christoph Feldhaus ⁷⁰, Marinus Ferreira ¹⁹, Stefan Feuerriegel ⁷¹, Helen Fischer ⁷², Jana Freundt ⁷³, Malte Friese ⁷⁴, Simon Fuglsang ⁷⁵, Albina Gallyamova ⁵⁹, Patricia Garrido-Vásquez ⁷⁶, Mauricio E. Garrido Vásquez ⁷⁶, Winfred Gatua ⁷⁷, Oliver Genschow ⁷⁸, Omid Ghasemi ^{79,80}, Theofilos Gkinopoulos ⁵⁰, Jamie L. Gloor ⁸¹, Ellen Goddard ⁶⁸, Mario Gollwitzer ²², Claudia González-Brambila ⁸², Hazel Gordon ¹⁶, Dmitry Grigoryev ⁵⁹, Gina M. Grimshaw ⁸³, Lars Guenther ⁸⁴, Håvard Haarstad ^{85,86}, Dana Harari ⁸⁷, Lelia N. Hawkins ⁸⁸, Przemysław Hensel ⁸⁹, Alma Cristal Hernández-Mondragón ⁹⁰, Atar Herziger ⁸⁷, Guanxiong Huang ⁹¹, Markus Huff ^{72,92}, Mairéad Hurley ⁹³, Nygmet Ibadildin ⁹⁴, Maho Ishibashi ⁹⁵, Mohammad Tarikul Islam ⁹⁶, Younes Jeddi ¹³, Tao Jin ⁹⁷, Charlotte A. Jones ⁹⁸, Sebastian Jungkunz ^{99,100}, Dominika Jurgiel ¹⁰¹, Zhangir Kabdulkair ⁹⁴, Jo-Ju Kao ¹⁰², Sarah Kavassalis ⁹⁸, John R. Kerr ¹⁰³, Mariana Kitsa ¹⁰⁴, Tereza Klabíková Rábová ¹⁰⁵, Olivier Klein ¹⁰⁶, Hoyoun Koh ¹⁰⁷, Aki Koivula ¹⁰⁸, Lilian Kojan ⁴⁵, Elizaveta Komyaginskaya ⁵⁹, Laura König ^{109,110}, Lina Koppel ¹¹¹, Kochav Koren Nobre Cavalcante ¹¹², Alexandra Kosachenko ¹¹³, John Kotcher ⁹, Laura S. Kranz ⁸³, Pradeep Krishnan ³³, Silje Kristiansen ^{86,114}, André Krouwel ¹¹⁵, Toon Kuppens ¹¹⁶, Eleni A. Kyza ¹¹⁷, Claus Lamm ⁵⁵, Anthony Lantian ¹¹⁸, Aleksandra Lazić ¹¹⁹, Oscar Lecuona ¹²⁰, Jean-Baptiste Légal ¹¹⁸, Zoe Leviston ¹²¹, Neil Levy ^{19,122}, Amanda M. Lindkvist ¹¹¹, Grégoire Lits ¹²³, Andreas Löschel ¹⁷⁰, Alberto López Ortega ¹¹⁵, Carlos Lopez-Villavicencio ¹²⁴, Nigel Mantou Lou ¹²⁵, Chloe H. Lucas ⁹⁸, Kristin Lunz-Trujillo ^{126,127}, Mathew D. Marques ¹²⁸, Sabrina J. Mayer ⁹⁹, Ryan McKay ¹²⁹, Hugo Mercier ¹³⁰, Julia Metag ¹³, Taciano L. Milfont ¹³², Joanne M. Miller ¹³³, Panagiotis Mitkidis ⁶², Fredy Monge-Rodríguez ¹²⁴, Matt Motta ⁴⁶, Irvna Mudra ¹⁰⁴, Zaria Muršič ¹³⁴, Jennifer Namutebi ¹³⁵, Ervn J. Newman ¹²¹, Jonas P. Nitschke ⁵⁵, Ntui-Njock Vincent Ntui ¹³⁶, Myrto Pantazi ¹⁰⁶, owski ³⁷, erina Petkanopoulou ¹⁴⁷, 05, Ekaterina Pronizius ⁵⁵, fleisch ¹⁰², osephe Roche ⁹³, 54, Ricardo R. Santos ^{154,155}, n Sheria Nfundiko ^{162,163}, Emily Shuckburgh ⁵², Johan Six ³, Nevin Solak ¹⁶⁴, Leonhard Späth ³, Bram Spruyt ¹⁶⁵, Olivier Standaert ¹²³, Samantha K. Stanley ^{79,80,121}, Gert Storms ⁵¹, Noel Strahm ⁴, Stylianos Syropoulos ¹⁶⁶, Barnabas Szasz ¹⁵, Ewa Szumowska ⁵⁰, Mikihito Tanaka ¹⁶⁷, Claudia Teran-Escobar ^{118,153}, Boryana Todorova ⁵⁵, Abdoul Kafid Toko ¹³, Renata Tokrri ¹⁶⁸, Daniel Toribio-Florez ⁵⁷, Manos Tsakiris ^{129,169}, Michael Tyralla ¹⁷⁰, Özden Melis Uluğ ¹⁷¹, Ijeoma Chinwe Uzoma ¹⁷², Jochem van Noord ^{116,165}, Christiana Varda ^{117,173}, Steven Verheyen ¹⁷⁴, Iris Vilares ⁹⁷, Madalina Vlasceanu ¹⁷⁵, Andreas von Bubnoff ¹⁷⁶, Iain Walker ^{121,177}, Izabela Warwas ⁶⁰, Marcel Weber ⁷⁴, Tim Weninger ⁶⁵, Mareike Westfal ⁷⁸, Florian Wintterlin ¹³¹, Adrian Dominik Wojcik ¹⁷⁸, Ziqian Xia ¹⁷⁹, Jinliang Xie ¹⁸⁰, Ewa Zegler-Poleska ¹⁴⁸, Amber Zenklusen ³³ & Rolf A. Zwaan ¹⁷⁴

People tend to trust science



Fig. 1 | Weighted means for trust in scientists across countries and regions (1 = very low, 3 = neither high nor low, 5 = very high). Total $n = 69,527$. Country n s range between 312 and 8,014 (see Supplementary Information for a detailed overview). The vertical line denotes the weighted grand mean. The horizontal lines indicate means \pm standard errors. Country-level standard errors range between 0.008 and 0.133.

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**Trust in
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increasing
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**Trust in
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Percentage of people who answered 'a lot'.

In general, would you say that you trust science a lot, some, not much, or not at all?

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Trust in science is increasing (on the whole)

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■ 2018
■ 2020

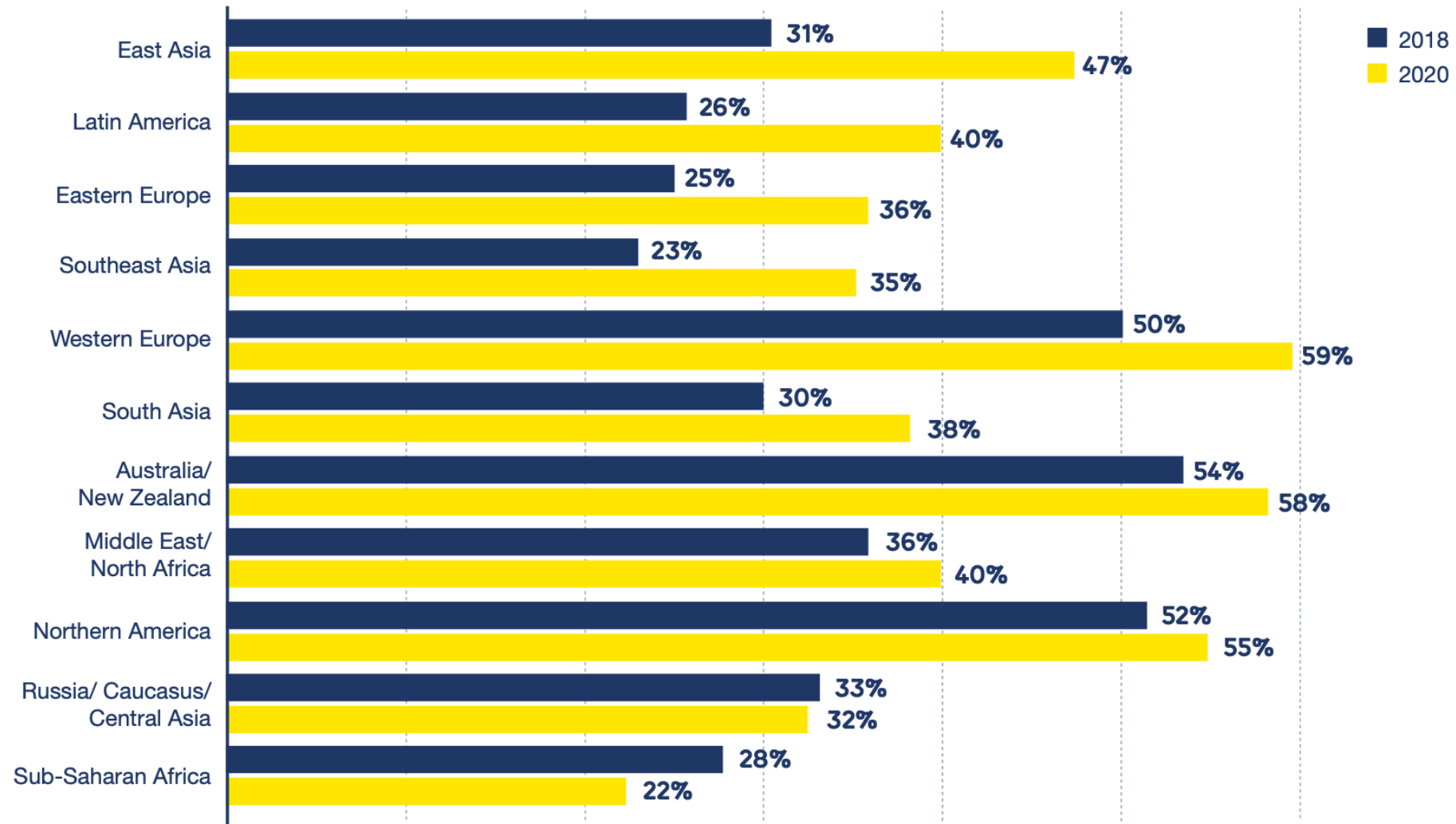
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Trust in science is increasing (on the whole)

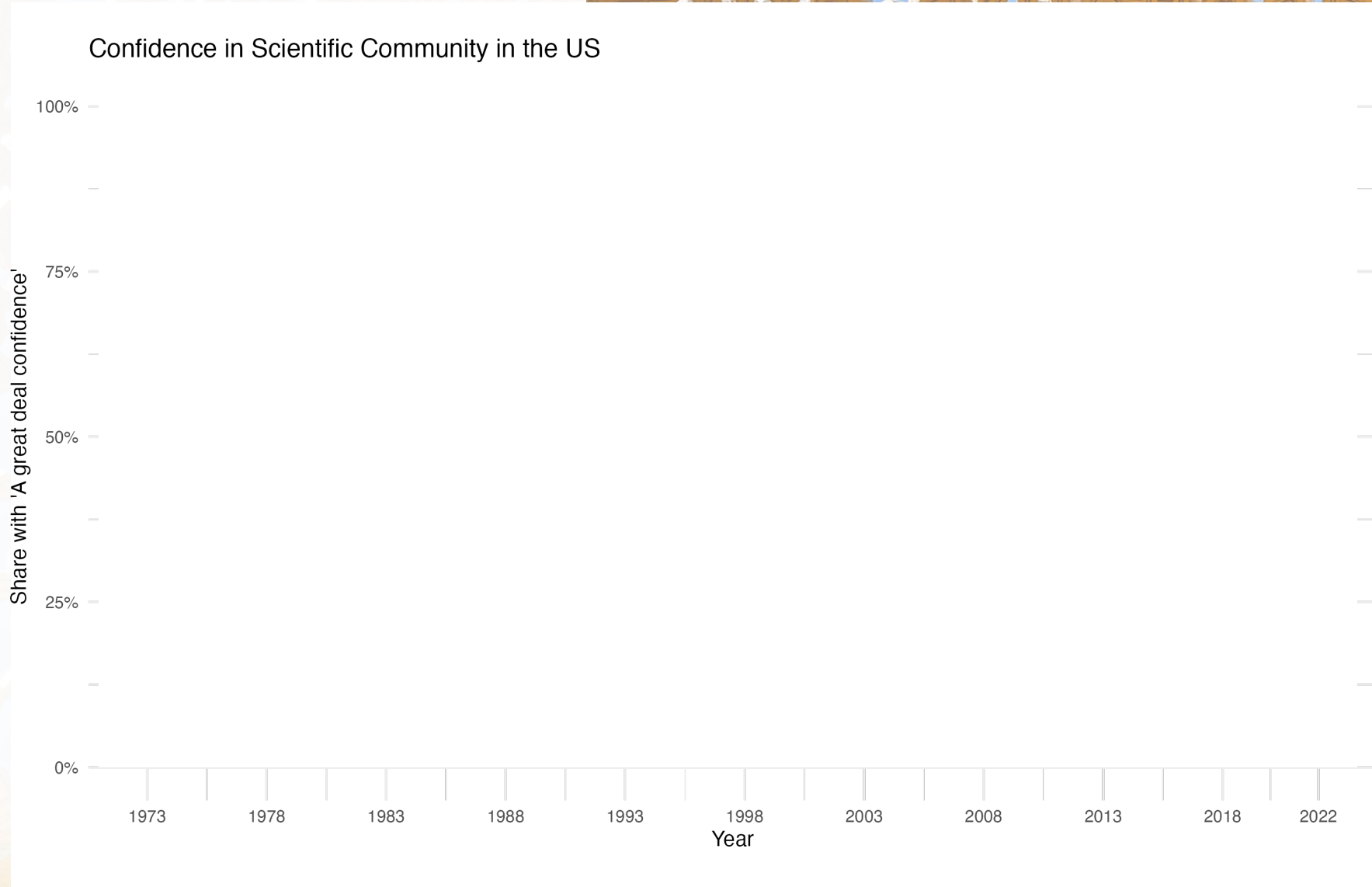
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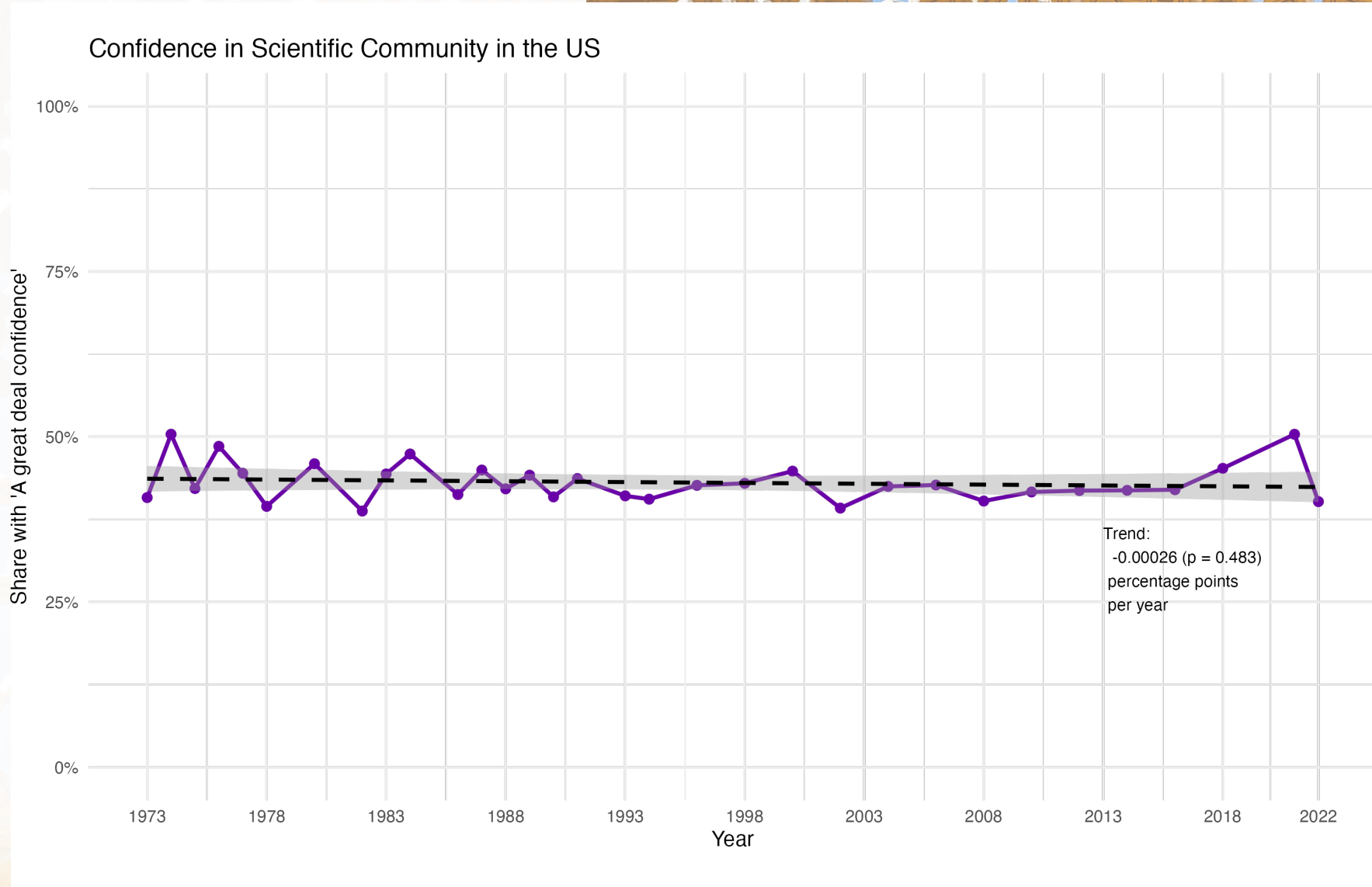


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Trust in science is increasing (on the whole)



Trust in science is increasing (on the whole)



Trust in basic science is quasi absolute



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Quasi-universal acceptance of basic science in the US

Jan Pfänder¹, Lou Kerzreho¹, & Hugo Mercier¹

¹ Institut Jean Nicod, Département d'études cognitives, ENS, EHESS, PSL University, CNRS, France

Trust in basic science is quasi absolute

Ask (US) participants 10 questions such as:

Are electrons smaller, larger, or the same size as atoms?

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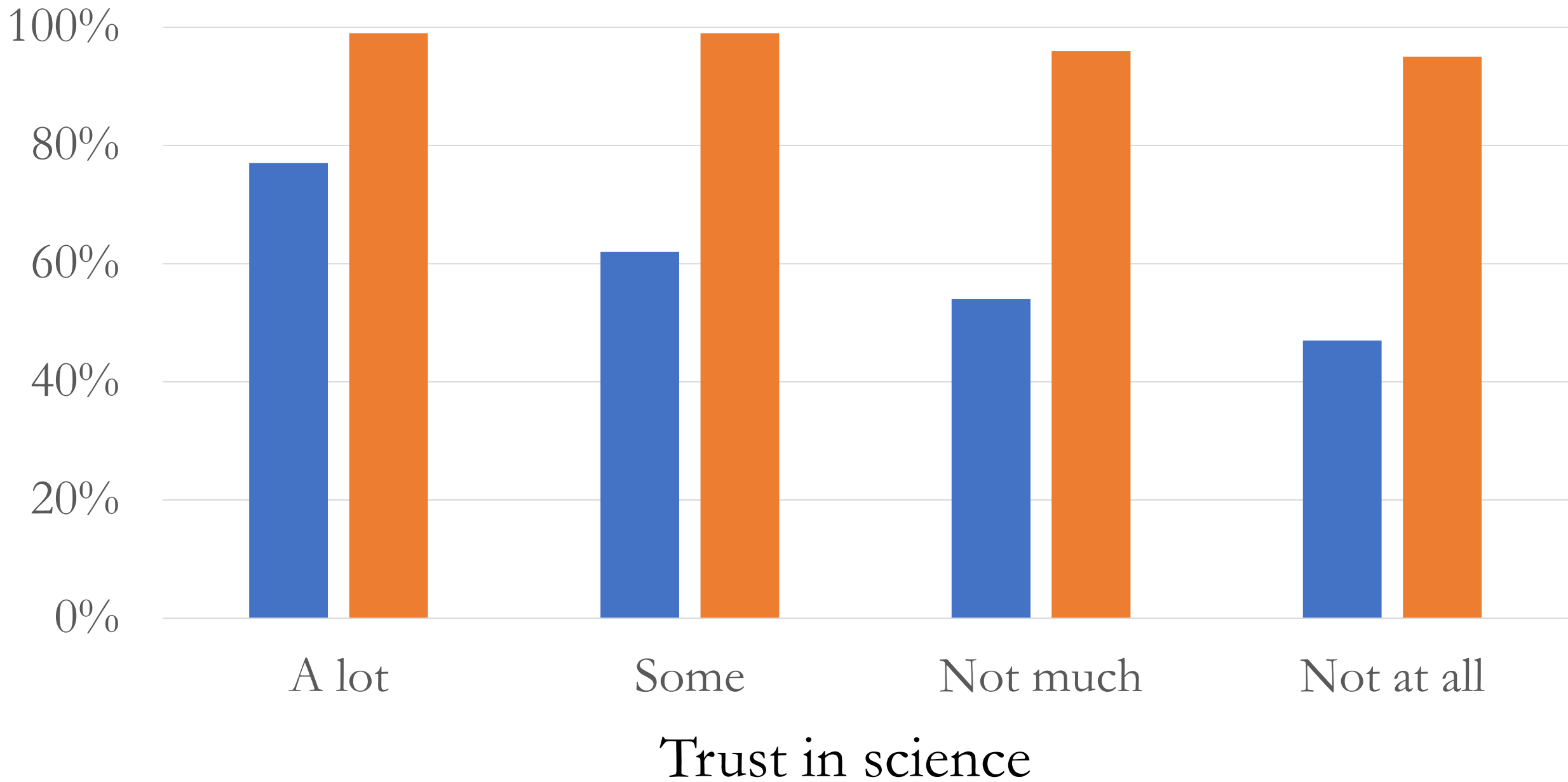
After they've answered, we tell them what the scientifically consensual answer is, provide a short explanation, and links to sources

Quasi-universal acceptance of basic science in the US

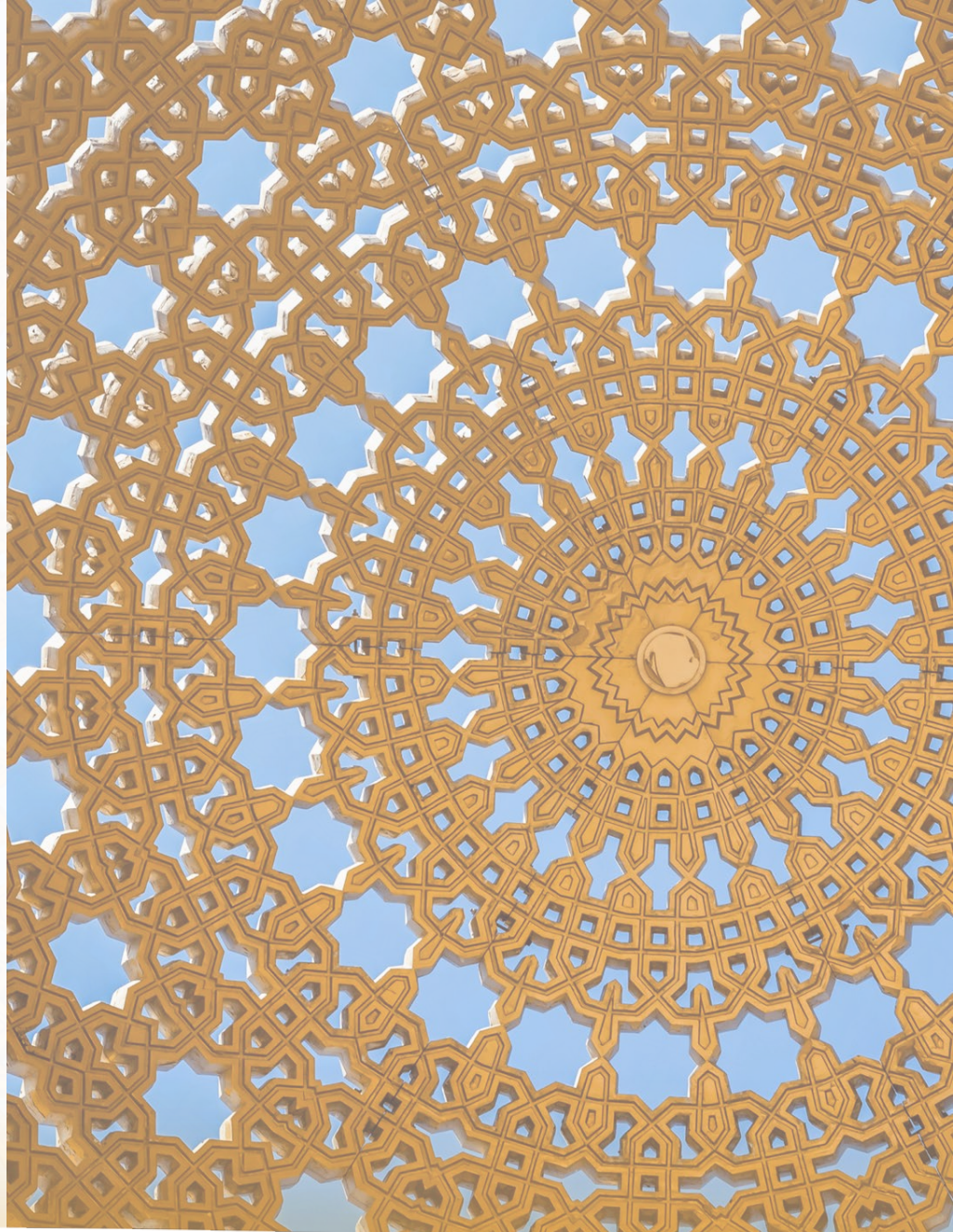
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■ Knowledge ■ Consensus acceptance

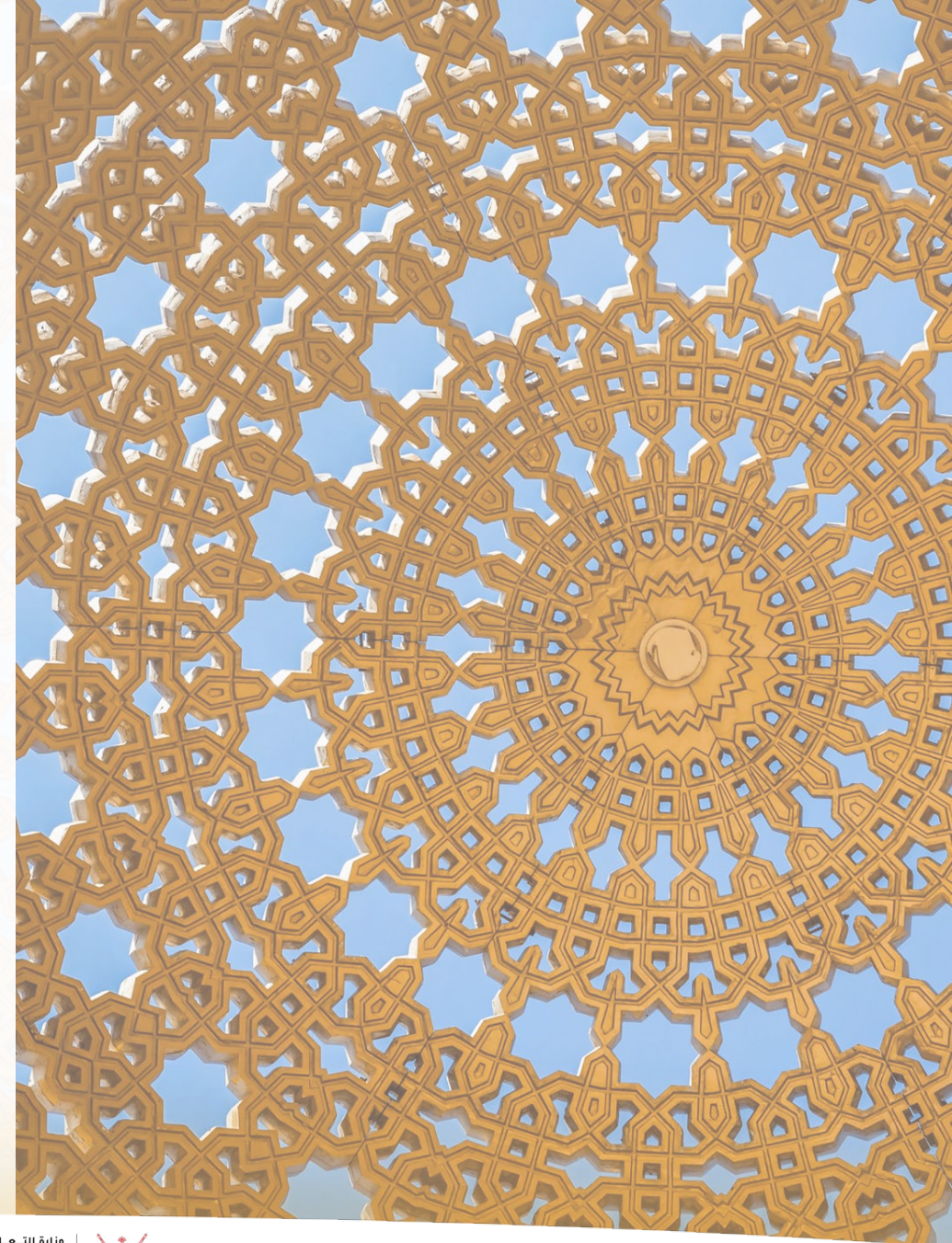


Why do people trust science?



Why do people trust science?

It's not because they are currently knowledgeable about science



Why do people trust science?

It's not because they are currently knowledgeable about science

Because they're not



Rational impression account



Rational impression account

When people are exposed to science, they are impressed



Rational impression account

When people are exposed to science, they are impressed

- by the quality of the explanations, arguments, experiments, etc.



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Rational impression account

When people are exposed to science, they are impressed

- by the quality of the explanations, arguments, experiments, etc.
- by the fact that scientists manage to agree on things that are so difficult to know

They then forget what they've learnt, but retain an impression of competence

Rational impression account

We provided participants impressive information about a science



Rational impression account

We provided participants impressive information about a science
Archaeologists can tell the age at which someone dead for thousands of years was weaned



Rational impression account

We provided participants impressive information about a science

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After being provided with a series of such pieces of information, participants trusted archaeologists more

Rational impression account

We provided participants impressive information about a science

Archaeologists can tell the age at which someone dead for thousands of years was weaned

After being provided with a series of such pieces of information, participants trusted archaeologists more

But they quickly forgot most of the information

Rational impression account

People should trust science more the more they are exposed to it

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People should trust science more the more they are exposed to it

The main channel of exposure to science is science education



Rational impression account

People should trust science more the more they are exposed to it

The main channel of exposure to science is science education

The main determinant of trust in science is science education

Rational impression account

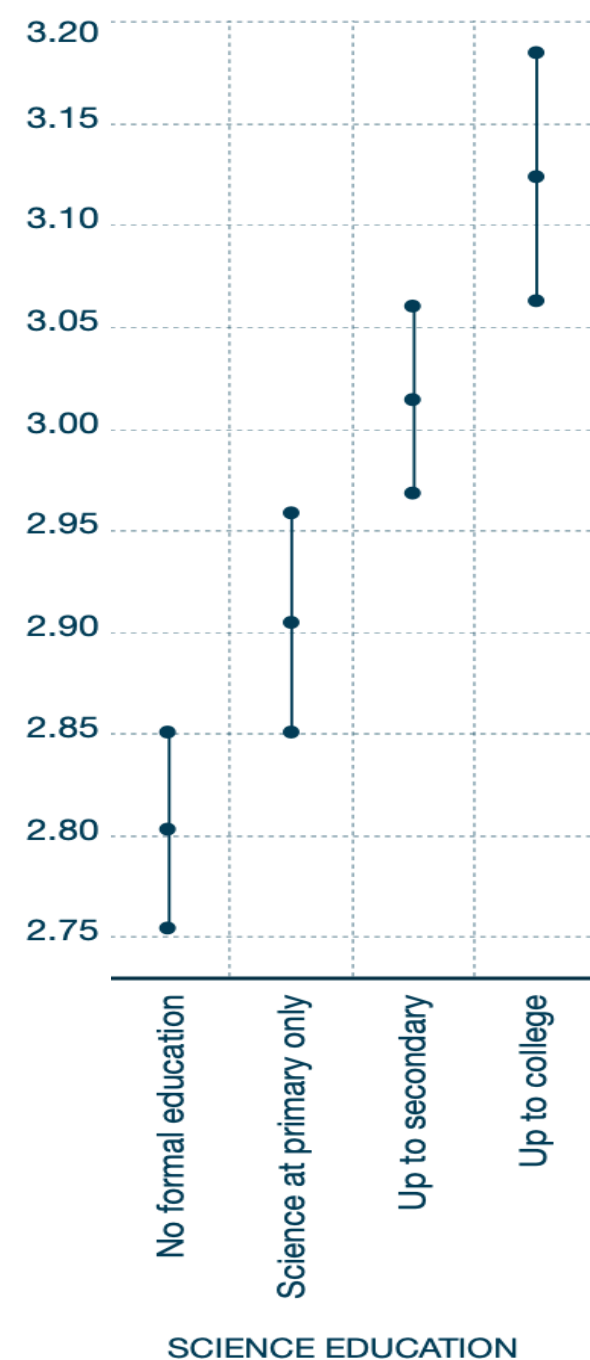
People should trust science more the more they are exposed to it

The main channel of exposure to science is science education

The main determinant of trust in science is science education

Wellcome
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Monitor

WELLCOME GLOBAL MONITOR TRUST IN SCIENTISTS INDEX

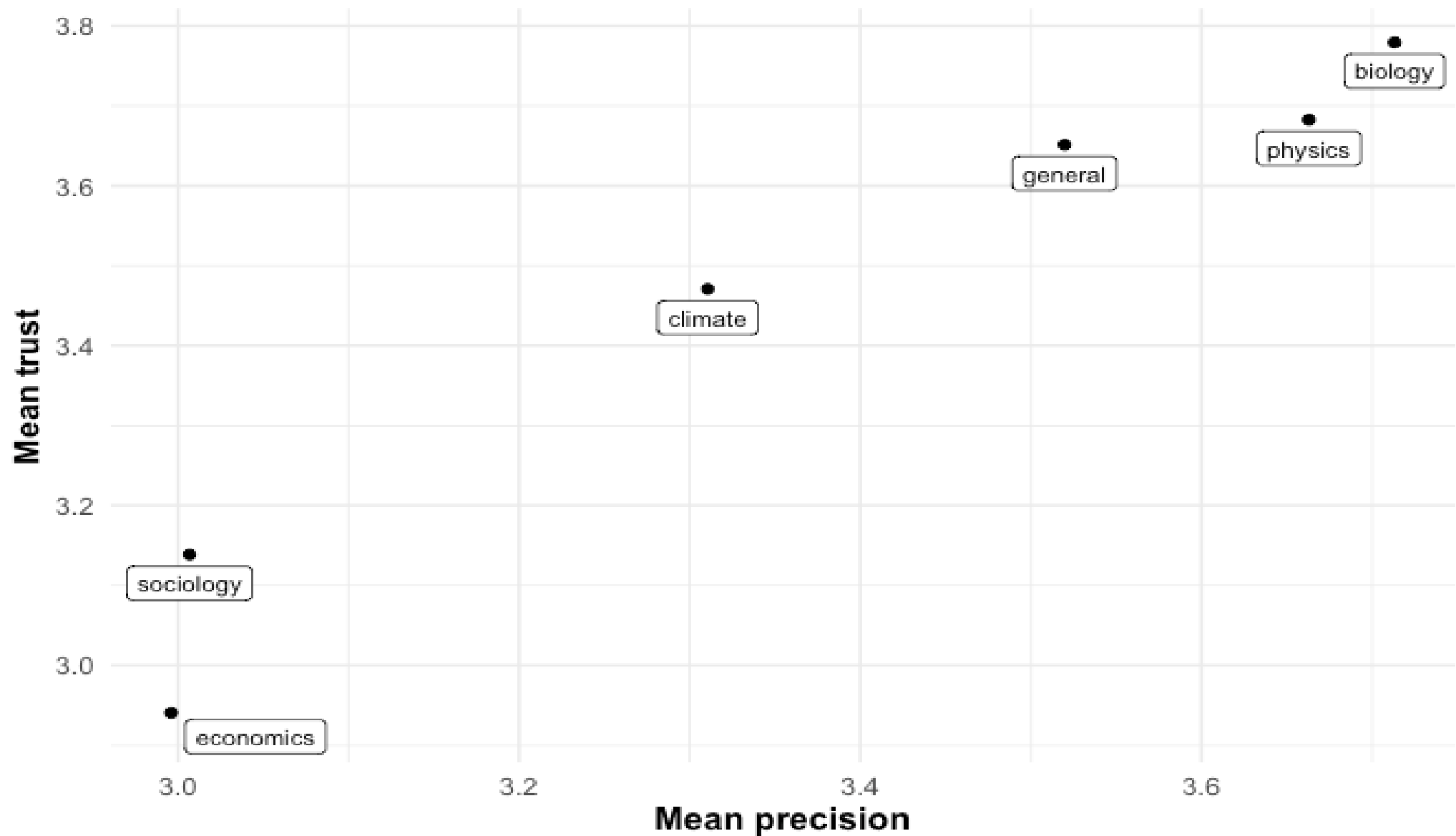


Rational impression account

Some sciences are more impressive than others



Trust and precision across disciplines



2000 representative French participants

How can we increase trust in science?



How can we increase trust in science?

Increase exposure to science



How can we increase trust in science?

Science education

Science communication



Increase exposure to science



How can we increase trust in science?

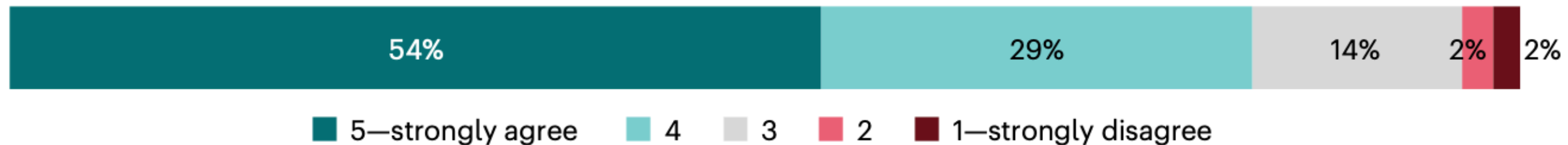
Science education

Science communication



Increase exposure to science

Scientists should communicate about science with the general public.



How can we increase trust in science?

Science education

Science communication



Increase exposure to science

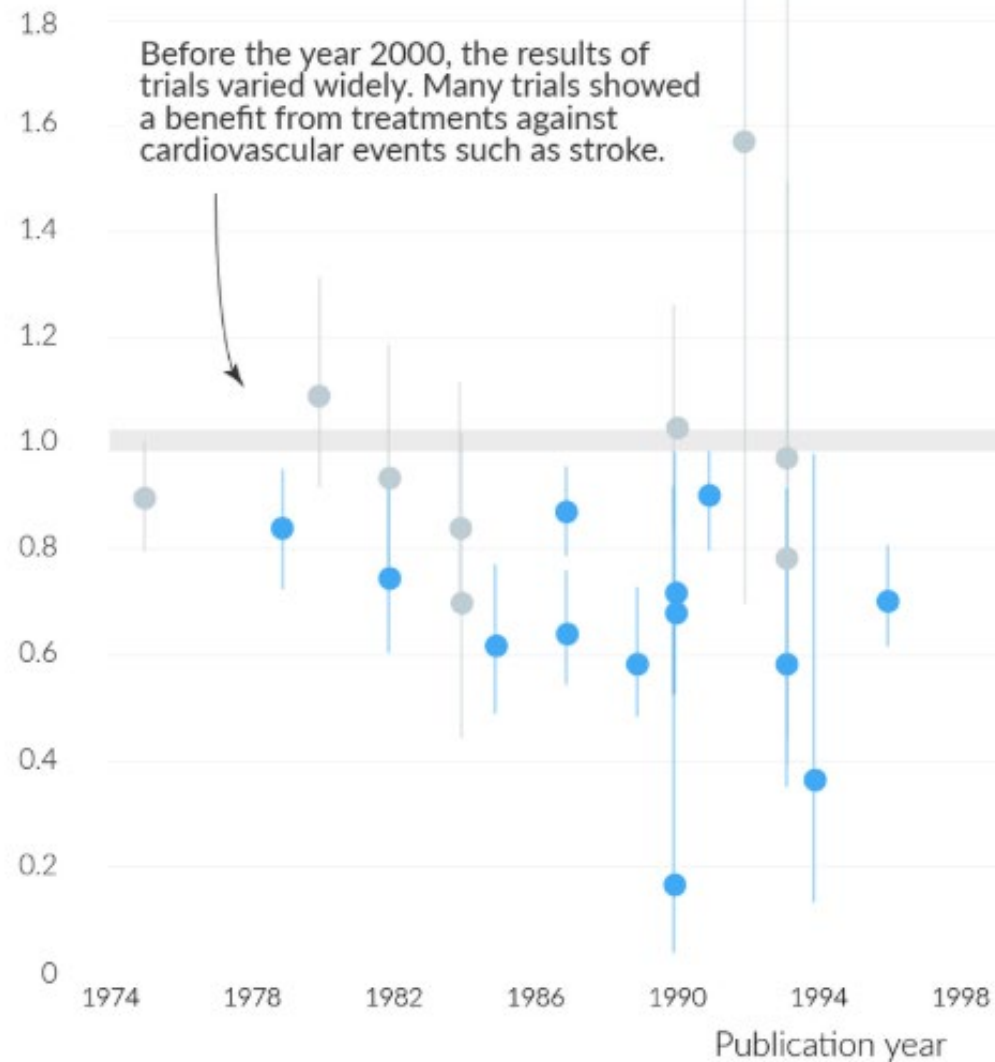
Make (yet) better science!



Results of trials before and after registration was required

Shown are results of clinical trials funded by the National Heart, Lung and Blood Institute (NHLBI), which adopted registration requirements set by the Food and Drug Administration (FDA) Modernization Act of 1997.

Relative risk of outcome from treatment tested



Note: Relative risks and 95% confidence intervals are shown for treatments against cardiovascular outcomes.

Data source: Kaplan and Irvin (2015). Likelihood of null effects of large NHLBI clinical trials has increased over time. PLOS ONE.

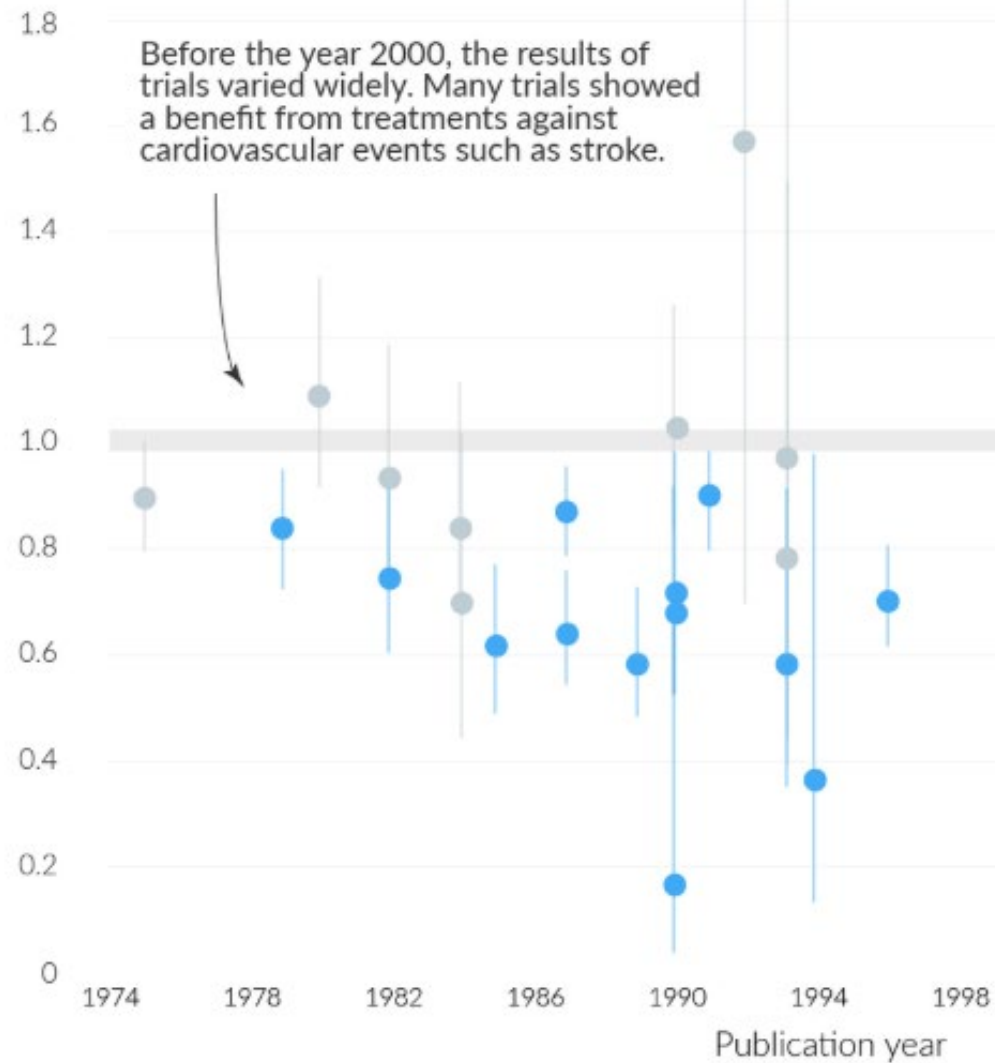
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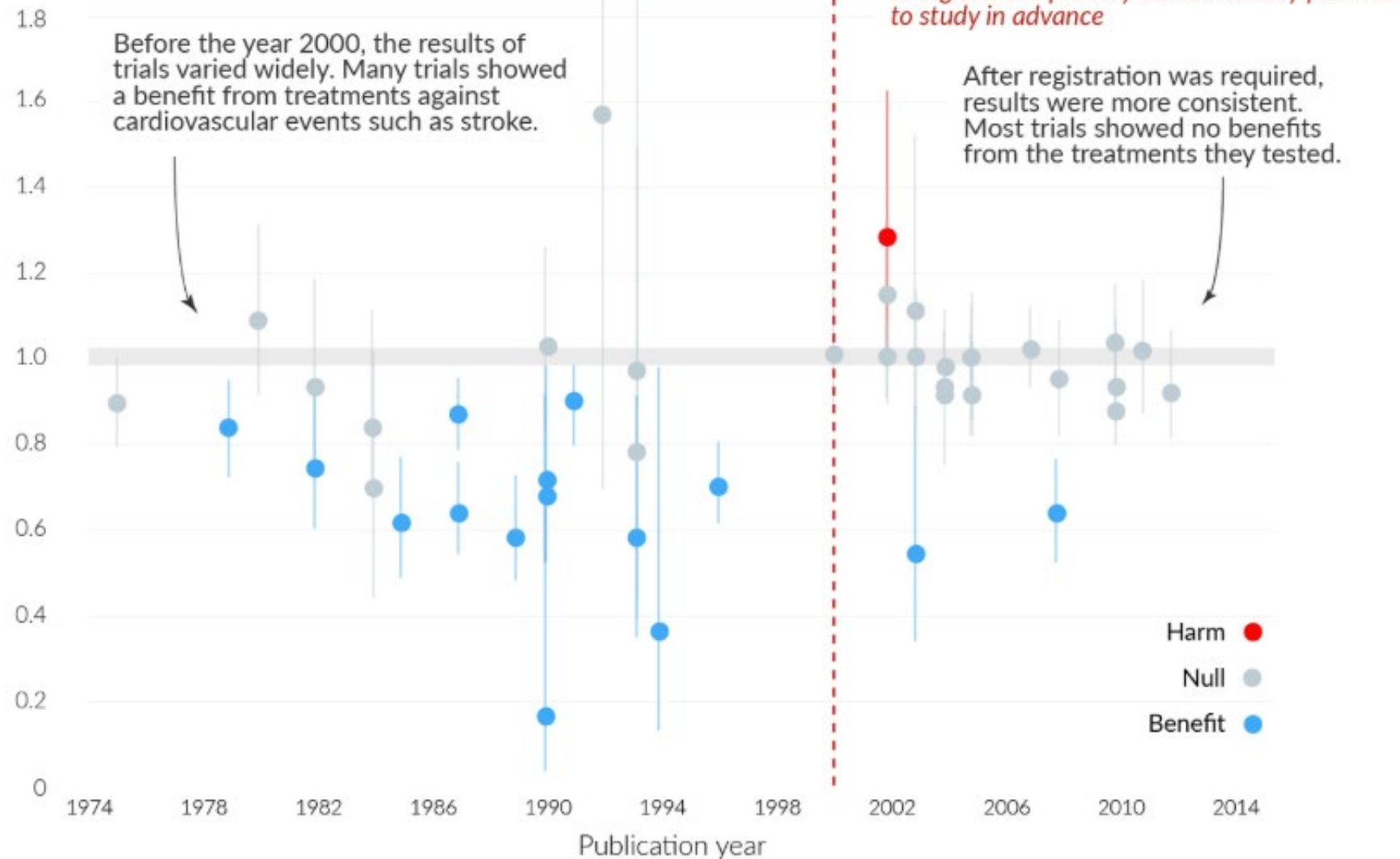
From 2000 onwards, sponsors of clinical trials for serious diseases were required by the FDA to register the primary outcomes they planned to study in advance

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Conclusion

People broadly trust science



Conclusion

People broadly trust science

They do so rationally



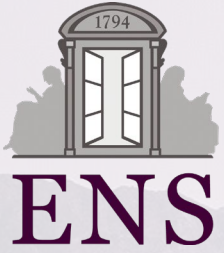
Conclusion

People broadly trust science

They do so rationally

The more impressive the science, the more trust it receives





PSL 




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International
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وزارة التعليم العالي
و البحث العلمي والابتكار
Ministry of Higher Education
Research & Innovation



anr 

Institut | Nicod

Thank you!

hugo.mercier@gmail.com



Jan Pfänder