Peer Review Survey 2009: Full Report

Peer Review Survey 2009

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Introduction

In 2008 1.3 million learned articles were published in peer reviewed journals. Although playing a pivotal role, it is only since the second world war that peer review has been formalised across the scholarly literature. Peer review today is fundamental to the integration of new research findings, enabling other researchers to analyse or use findings and, in turn, society at large to sift research claims.

Peer review is considered "to validate or authenticate scientific work, or guarantee its integrity"(Rennie 2003). In its most basic form it is the evaluation of an author's manuscript by identified reviewers, who make recommendations to the journal's editor as to whether or not a manuscript should be accepted as is, revised prior to publication or rejected. Reviewers' generally address quality, originality, and importance. They are also encouraged to make suggestions for improvement.

Each year peer review grows in line with the expansion of the global research literature, and with it has come a corresponding expansion of concerns : Can the peer reviewing effort be sustained? Can the system be truly globalised and its integrity maintained? Others claim that is has never been tested (Jefferson, 2002). Some observers say that peer review will be able to keep pace, following uptake of electronic technologies – from online processes to programmes that help identify plagiarism; others have suggested that alternative metrics will play a greater role.

What does it do for science and what does the scientific community want it to do? Should and can peer review detect fraud and misconduct? Should reviewers remain anonymous? This report takes a closer look at peer review and attempts to answer these and other questions. This study is one of the largest ever international surveys of authors and reviewers (over 4,000).

As a science education charity, Sense About Science[2] sees peer review as vital to the transparency of scientific reasoning. The Peer Review Survey 2009 was developed by Sense About Science in consultation with editors and publishers and administered with a grant from Elsevier, who also provided support writing this report.

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Approach to study

- The Peer Review Survey was an electronic survey conducted between 28th July 2009 and 11th August 2009;
- 40,000 researchers were randomly selected from the ISI author database, which contains published researchers from over 10,000 journals.
- Altogether 4,037 researchers completed our survey. This represents a response rate of 10%, with a margin of error ± 1.5% at 95% confidence levels .
- Reviewers, who are defined as anyone who had completed one or more reviews in the previous 12 months, answered a subset of questions aimed specifically at reviewers (3,597 - a subset of the base) the error margin for this group was ± 1.6% at 95% confidence levels.
- The effects of rounding means that some of the % figures within the charts may be slightly different to the overall % total found at the sides of the charts.
- In this analysis we have examined all the variables by geography, subject and age. We have used a Z test of proportion to compare differences between the overall score and the subgroup. A tick ✓ next to a value indicates that the subgroup has a score significantly different to the sample as a whole (95% confidence)
- This study builds on a previous survey conducted in 2007 and reported in 2008 for the PRC: 'Peer Review in Scholarly Journals: perspective of the scholarly community. An international study' Ware, M. and Monkman, M. repeating some of the questions for comparison, and developed emerging questions about future improvements, public awareness and new pressures on the system.

Summary (1)

Researchers want to improve, not replace peer review:

- Most (69%) researchers are satisfied with the current system of peer review (64% in 2007), but only a third (32%) think that the current system is the best that can be achieved (see 8).
- Most (84%) believe that without peer review there would be no control in scientific communication (similar to figure from 2007) and only one in five researchers (19%) believe that peer review is unsustainable because there are too few willing reviewers *(see 10)*
- Almost all researchers (91%) believe that their last paper was improved as a result of peer review *(see 57)* and the biggest area of improvement was in the discussion.
- 73% of reviewers (a sub-group in the study) believe that technological advances have made it easier to do a more thorough job reviewing now than 5 years ago *(see 53)* Whilst the majority of respondents enjoy reviewing and will continue to review (86%) *(see 31),* many think that more could be done to support reviewers; 56% believe there is a lack of guidance on how to review while 68% agree that formal training would improve the quality of reviews. Over the course of a year, on average, a reviewer turns down two papers *(see 48)* .
- Just 15% of respondents felt that 'formal' peer review could be replaced by usage statistics *(see 22).*

Detecting plagiarism and fraud might be a noble aim, but is not practical:

- The vast majority of authors and reviewers think peer review should detect plagiarism(81%) or fraud (79%), but only a small amount (38% and 33%) think it is capable of this *(see 13).* It is the practicalities involved that make it difficult; researchers point out that examining all raw data would mean peer review grinds to a halt. When asked how peer review can be improved, very few mention fraud, indicating that it is neither widespread nor a pressing issue in the minds of researchers.

Summary (2)

High expectations:

- Instead 93% of researchers think that peer review should improve papers, determine their originality (92%) and importance (84%) (see 13).
- 69% of authors reported that on their most recent published paper, it took up to 6 months for the paper to be accepted. Just over half (54%) were happy with this speed *(see* 64).
- 61% of reviewers have rejected an invitation to review an article in the last year, citing lack of expertise as the main reason – this suggests that journals could better identify suitable reviewers *(see* 34)

Reviewers want anonymity:

- More than half (58%) of the researchers say they would be less likely to review if their signed report was published alongside the paper reviewed. Similarly, 51% would be discouraged from reviewing if their name was disclosed just to the author and 46% would be discouraged if their name was published alongside the paper as a reviewer *(see* 37).
- Over three quarters (76%) favour double-blind peer review believing it is the most effective form of peer review, but some researchers questioned whether an author's identity can be truly anonymised *(see 24).*

Understanding of peer review:

- As might be expected researchers agree that peer review is well understood by the scientific community. However, this level of understanding is in sharp contrast to the research community's perception of the public's awareness of peer review: just 30% believe the public understands the term *(see* 10).

Summary (3)

Papers aren't recognising previous work:

- Most researchers (81%) think peer review should ensure previous research is acknowledged. However, just over half think it currently does (54%) and or is capable of doing this (57%) *(see* 13). This reflects current discussions in the research community that there is a need for new studies to be set in the context of existing evidence.

Playing an active role in the community came top of reasons to review:

- It is seemingly an unrewarding job with a few fringe benefits, so why do it? Reviewers indicate it is mainly because they believe they are playing an active role in the community (90%), and quite simply, many just enjoy just being able to improve papers (85%) *(see* 34). Only 16% of respondents said they agree to review because they feel it will increase their chances of having future papers accepted.

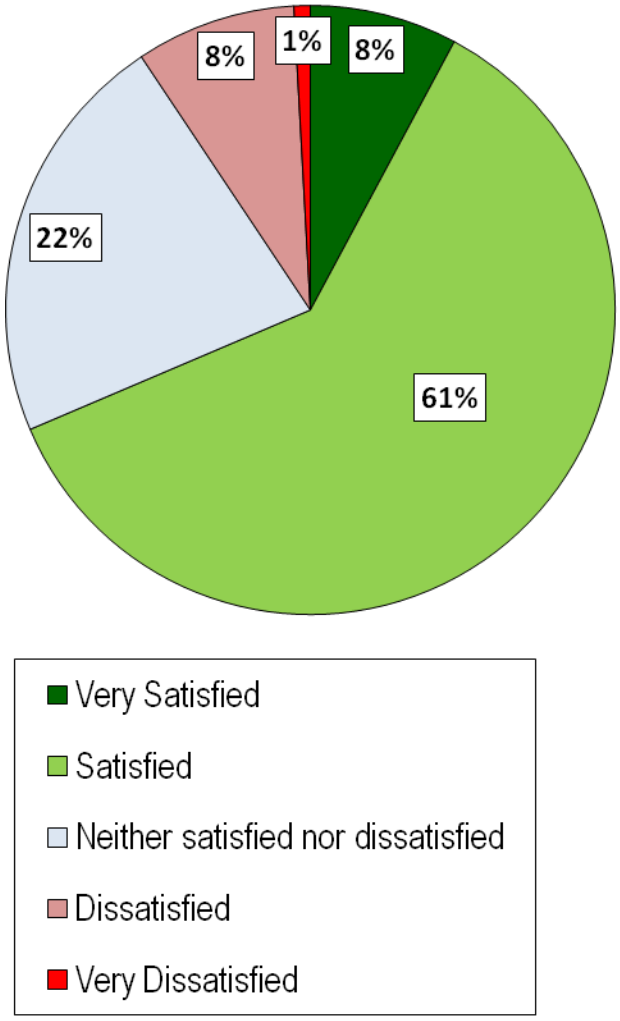
Reviewers divided over incentives:

- Just over half (51%) of reviewers thought receiving a payment in kind (e.g. subscription, waiver of their own publishing costs etc.) would make them more likely to review. A large minority (41%) wanted payment for reviewing, but this drops to just 2.5% if the author had to cover the cost. Acknowledgement in the journal was the most popular of the remaining options, with 40% stating this would make them much more or more likely to review *(see* 37).

Overall satisfaction with peer review

Question: Overall, how satisfied are you with the peer review system used by scholarly journals?

(n=4037)



The respondents at the start of the survey were asked what their overall satisfaction level was with peer review. Most were satisfied, moreover satisfaction has increased since the 2007 survey.

69% in 2009 are very satisfied or satisfied, compared to 65% in 2007.

Few (9%) in 2009 were dissatisfied or very dissatisfied.

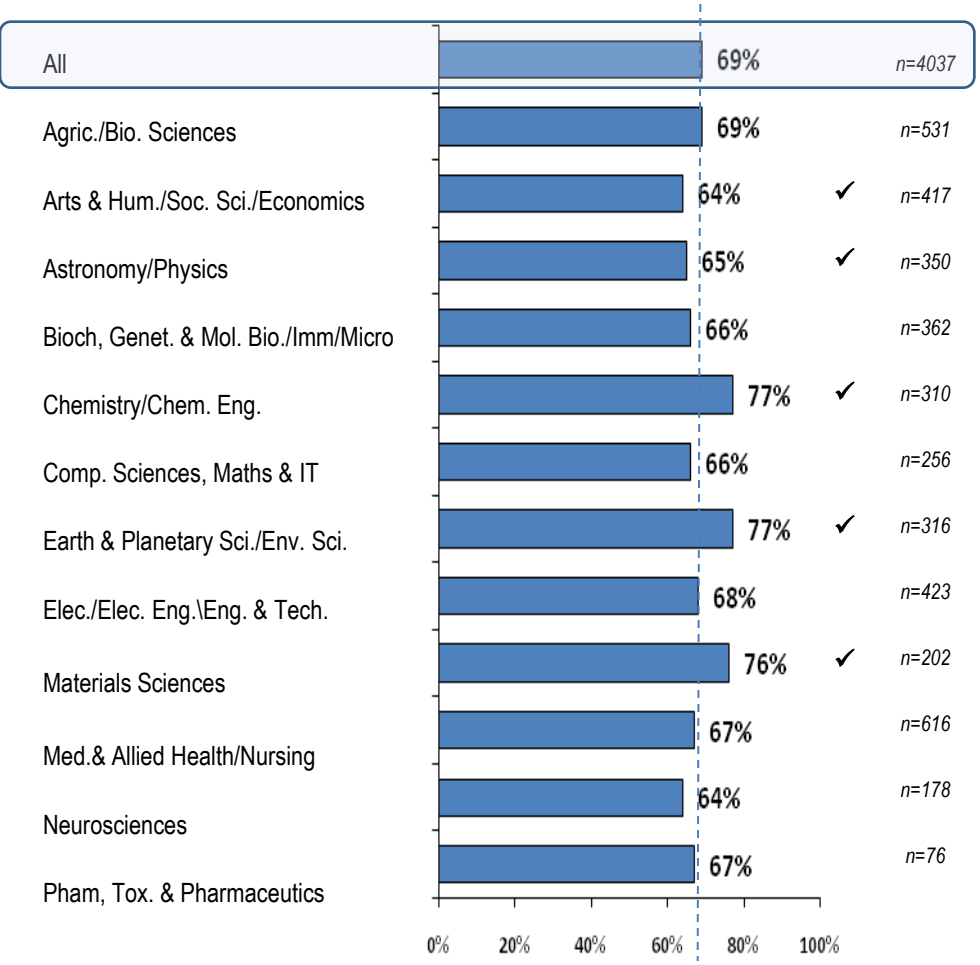
However, when you examine this picture through the prism of demographic variables, differences start to emerge. Those in Chemistry (77%), Material Sciences (76%), Earth and Planetary Sciences (77%) are most satisfied with the current peer review system. Physicists (65%) and those in the Social Sciences (64%) are less satisfied.

There were also differences by region, those in Asia (75%) and Africa (82%) are more satisfied with the system, while it is slightly less in Europe (65%) and North America (65%).

Overall satisfaction breakdown

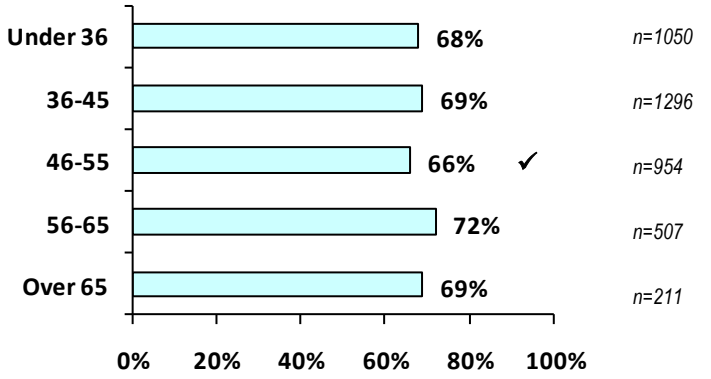
% Agree

Subject



✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

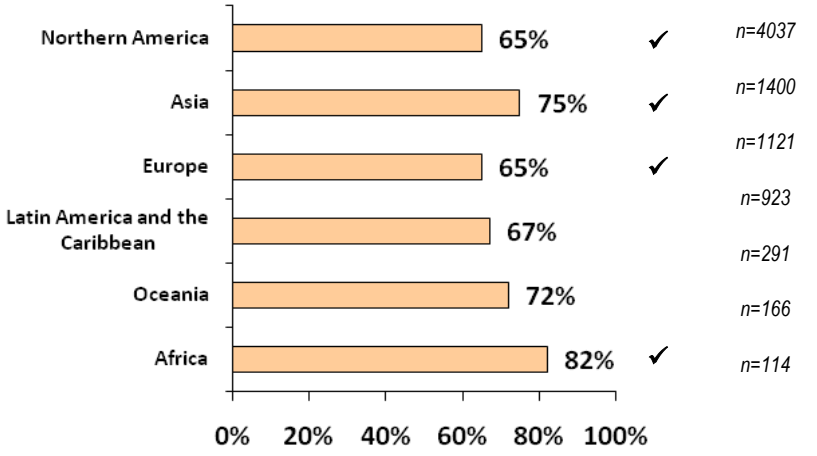
Age



Developing countries: 75%

Developed countries: 65%

Region



General attitudes towards peer review peer review

Question: Please indicate the extent to which you agree with the following statements

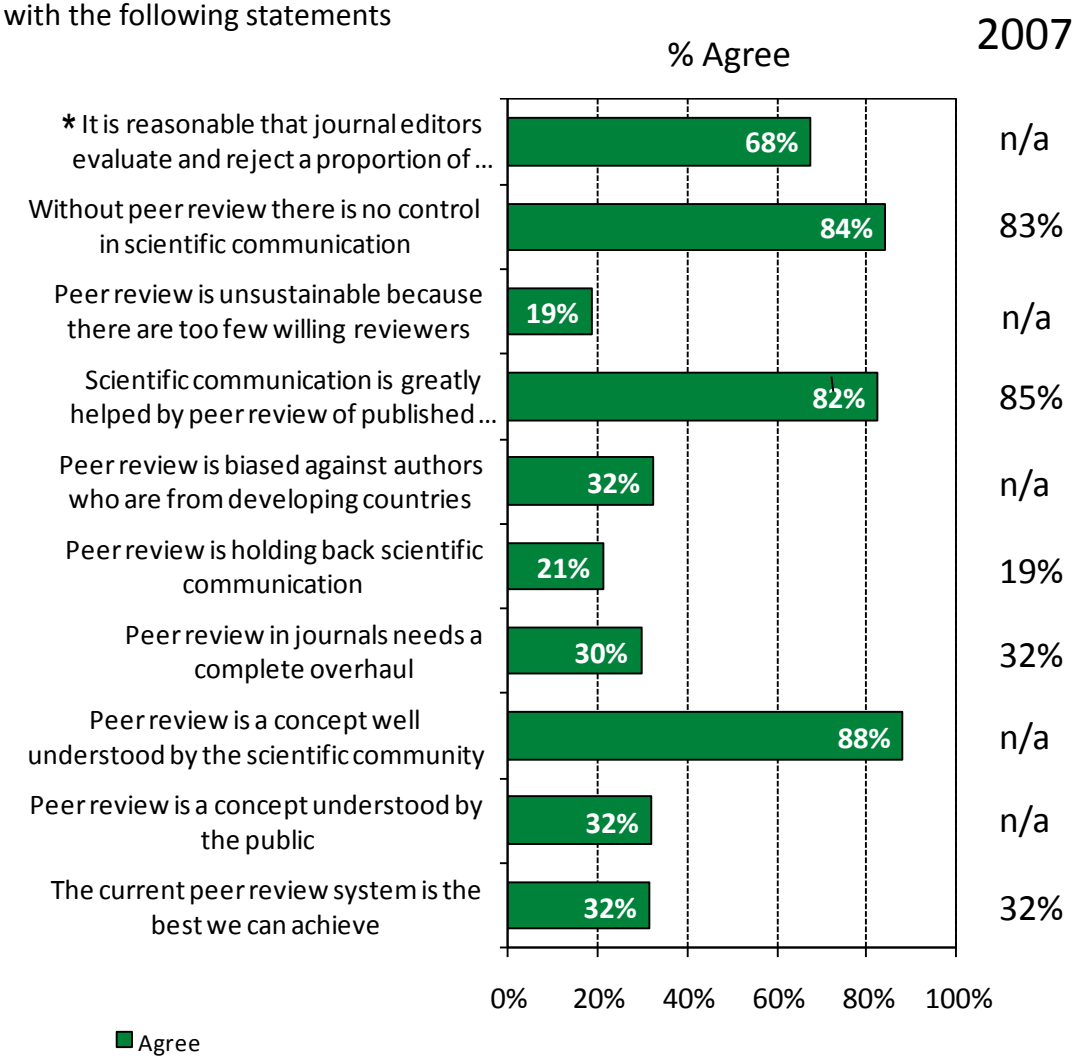
While satisfaction levels with peer review are generally high , only a third (32%) think that the current system is the best that can be achieved. This remains unchanged since 2007.

But most (**84%) believe that without peer review there would be no control in scientific communication** (similar to 2007 score) . This is higher in the life sciences, it is lower among social scientists and physicists, which reflects the lower levels of overall satisfaction.

The **majority (82%) believe that scientific communication is greatly helped by peer review**, this a little higher in both North America (84%) and Asia (86%), but lower in Europe (76%) (*see detailed findings 87*)

Few, about a fifth, (19%) believe that peer review is unsustainable because there are too few willing reviewers. This is a little higher among computer scientists (25%), it is also higher n Asia (24%) and Africa (30%) (*see detailed findings 87*)

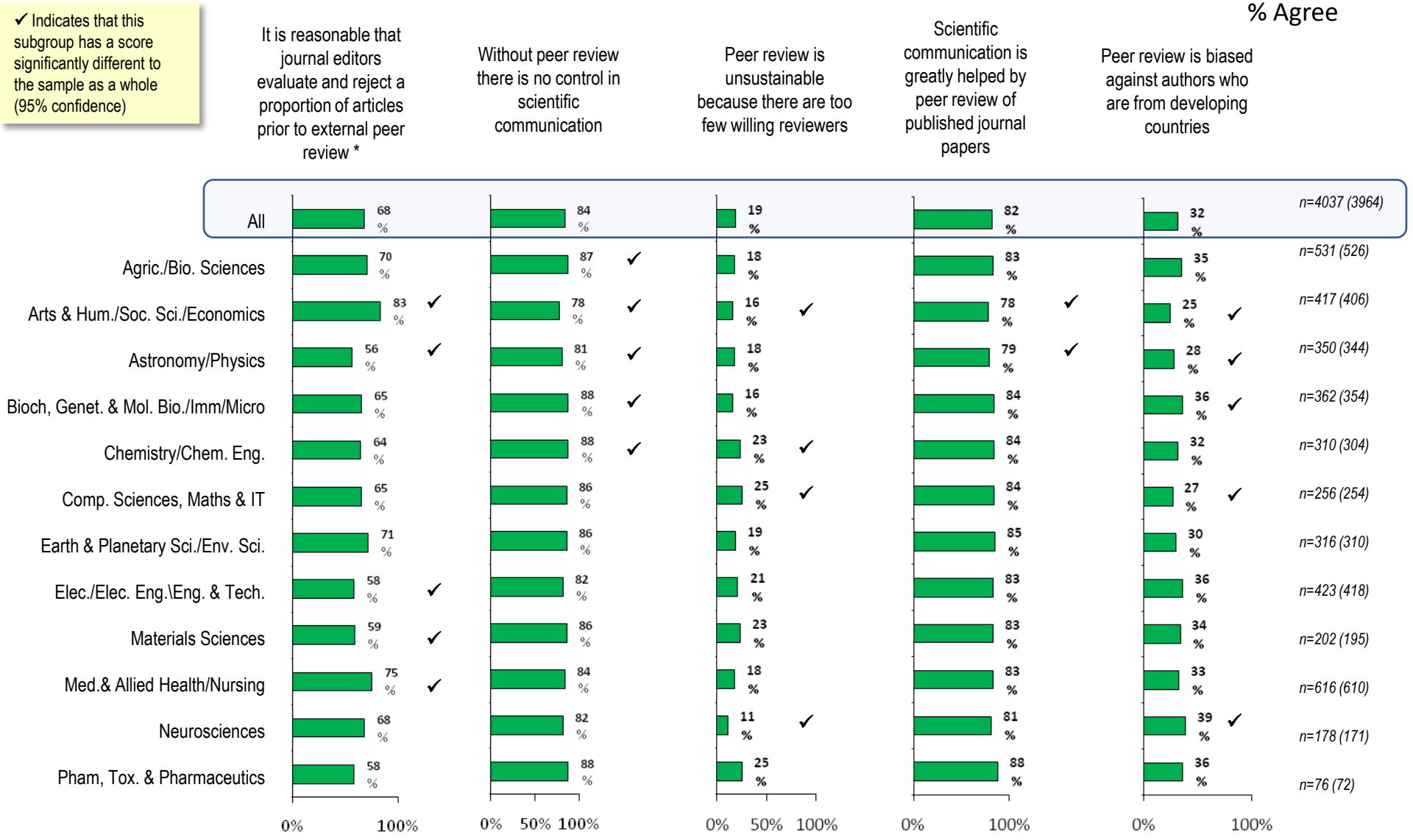
32% believe that peer review is biased against developing countries , this figure is a lot higher for researchers based in Latin America (66%). It is also high in Asia and Africa (both 41% respectively - *see detailed findings 87*).



* n=3964 (added after pilot stage so number is slightly lower)

General attitudes towards peer review peer review split by subject (1)

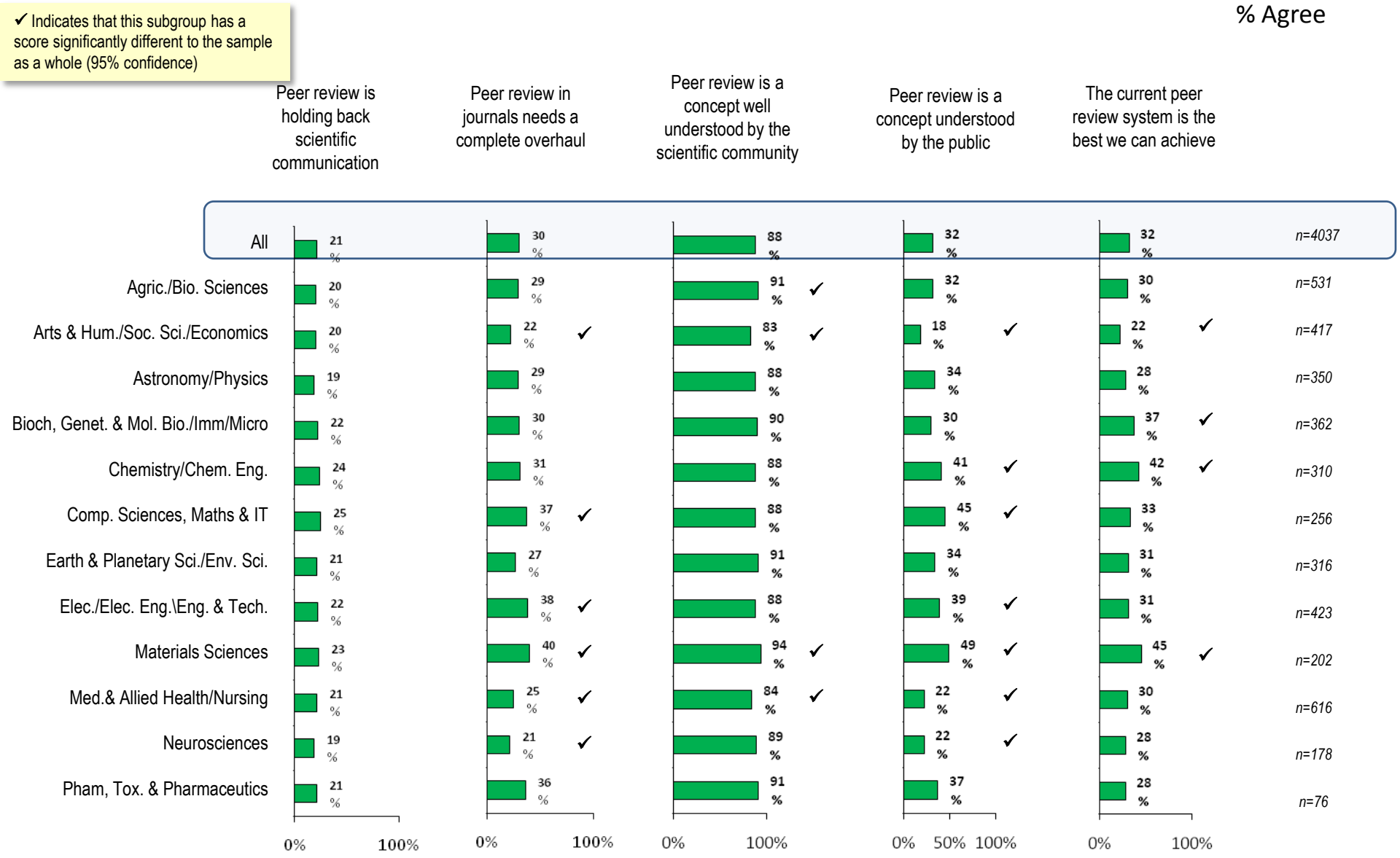
✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)



*This statement was added after pilot stage. Counts given in brackets.

General attitudes towards peer review peer review by subject (2)

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)



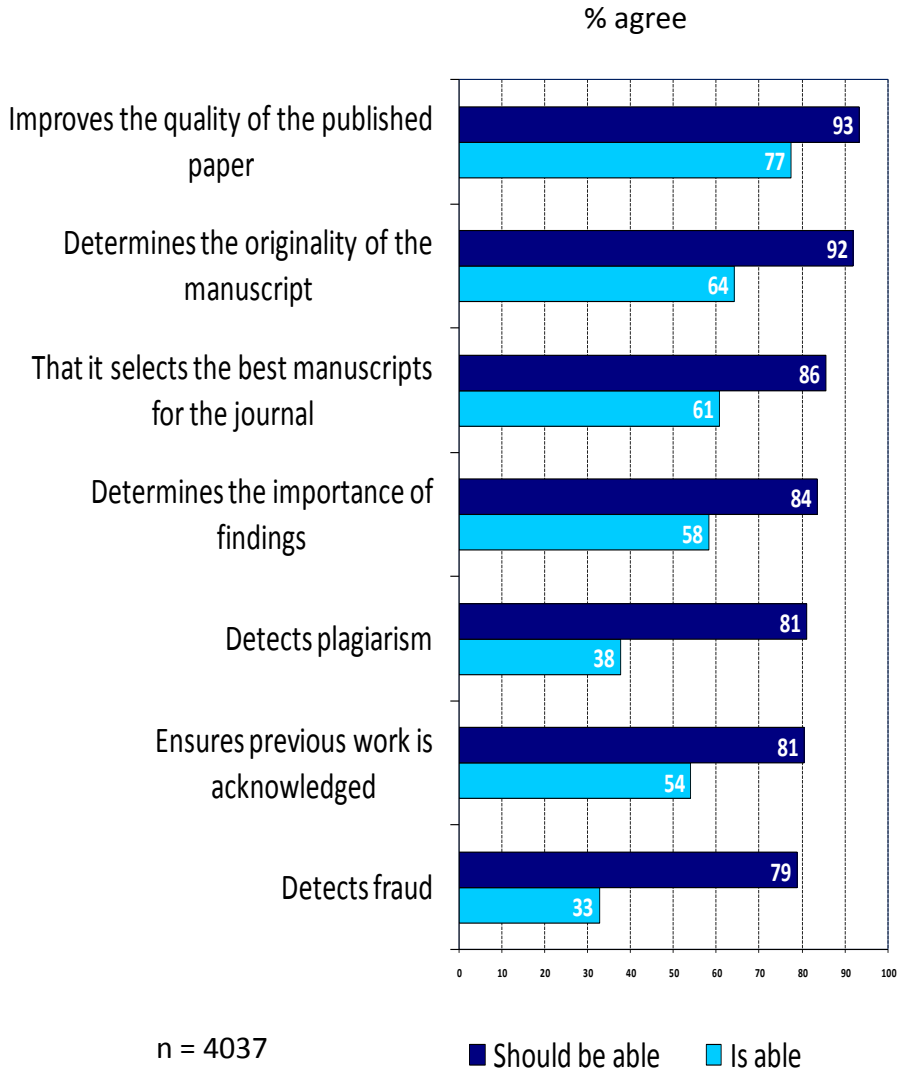
Purpose of peer review

Questions: To what extent do you agree or disagree that the following objectives **should be** the purpose of peer review
To what extent do you agree or disagree that peer review is currently **able to** do the following?

Researchers believe the key purpose of peer review is to improve the quality of the paper (93%) and most believe it is able to this. The majority believe that peer review should determine the originality of the manuscript, but performs less well in terms of its ability to deliver on this objective.

It is widely believed that peer review should act as a filter and select only the best manuscripts for publication. Many believe it should be able to detect fraud (79%) and plagiarised work (81%), but few have expectation that it is able to do this. Comments from researchers suggest this is because reviewers are not in a position to detect fraud, this would require access to the raw data or re-doing the experiment.

Responses from those in Astronomy and Physics are most consistently divergent from the overall average, they tend to have lower levels of agreement on the various statements. Notably for 'improves the quality of manuscripts', 'it selects the best manuscripts', and 'determines the importance of findings'. Given the pre-eminence of ArXiv, it is not too surprising agreement levels are lower.



n = 4037

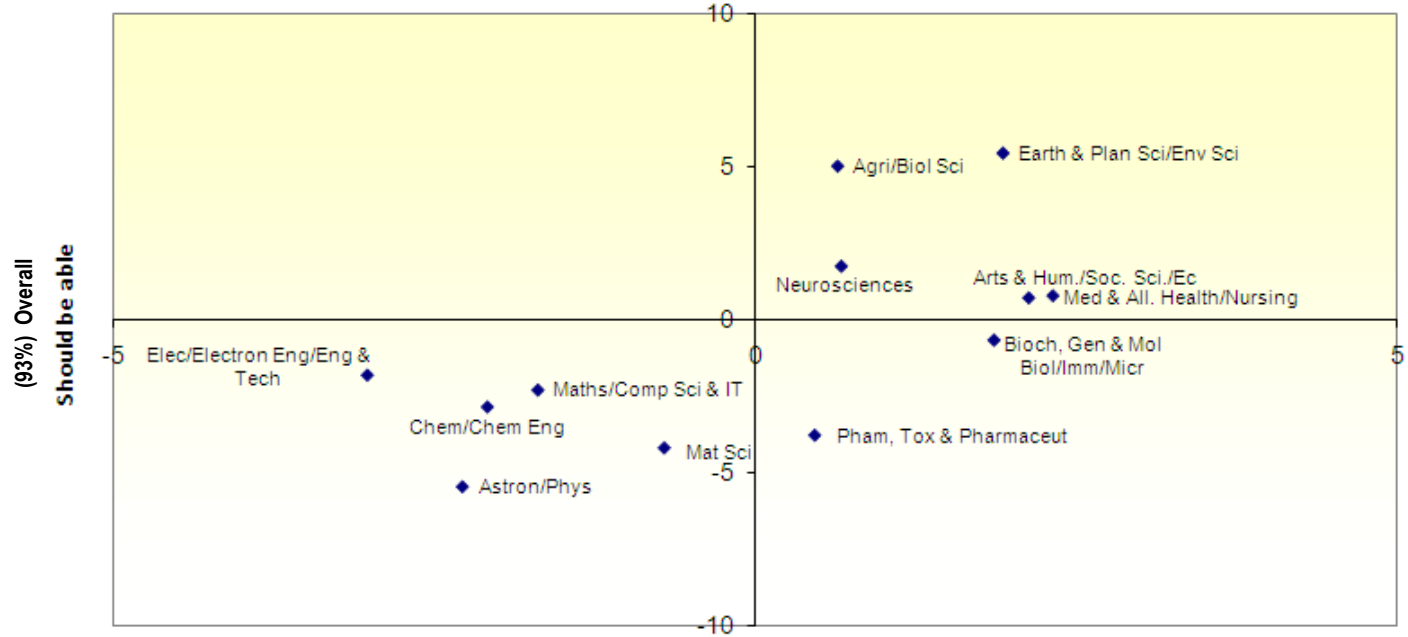
Purpose of peer review – Improves the quality of the published paper

Should be able

Most agreement

Least agreement

Data points represent difference from the mean percentage agree score.



Is Able

Least agreement

Most agreement

Astronomy & Physics respondents show the least agreement for peer review being able to and should be able to improve the quality of papers. Medical respondents have the highest level of agreement that peer review is able to improve the quality of papers. Arts & Humanities/Social Sciences/Economics respondents have the second highest expectation of peer review in this aspect.

n=4037

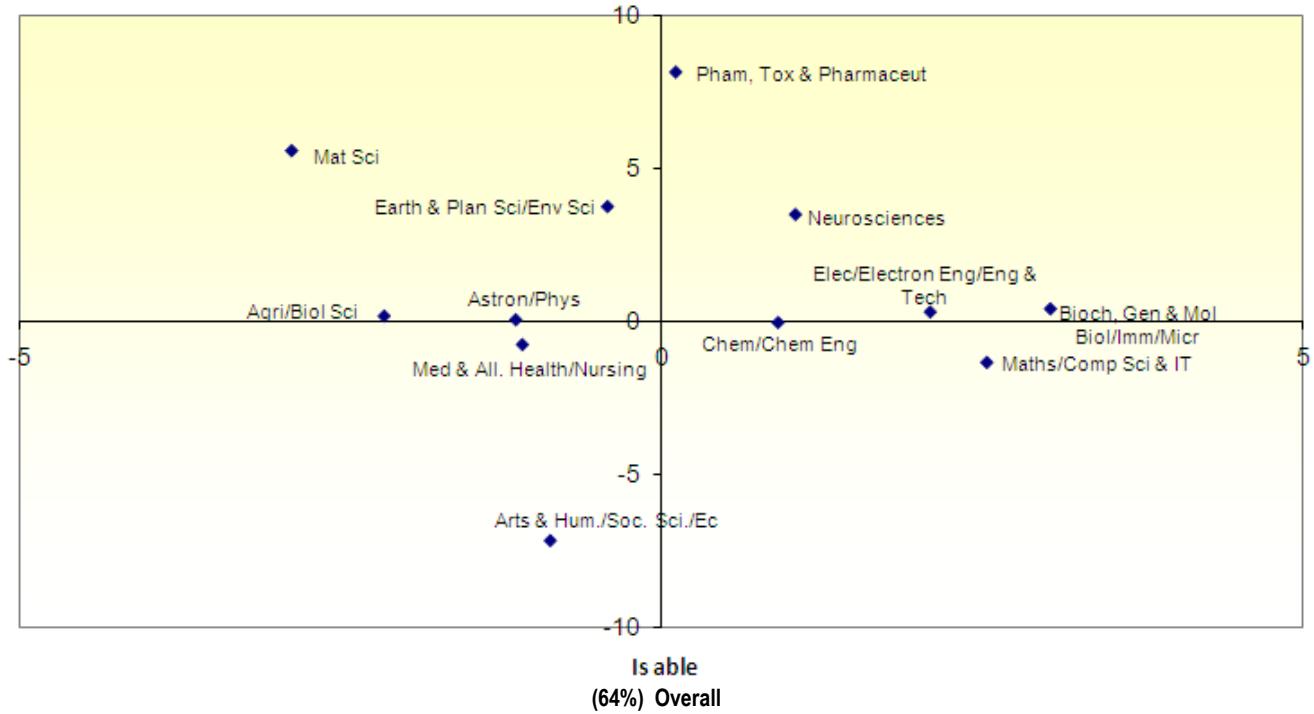
Purpose of peer review – Determines the originality of the manuscript

Should be able

Most agreement

Least agreement

Data points represent difference from the mean percentage agree score.



Is Able

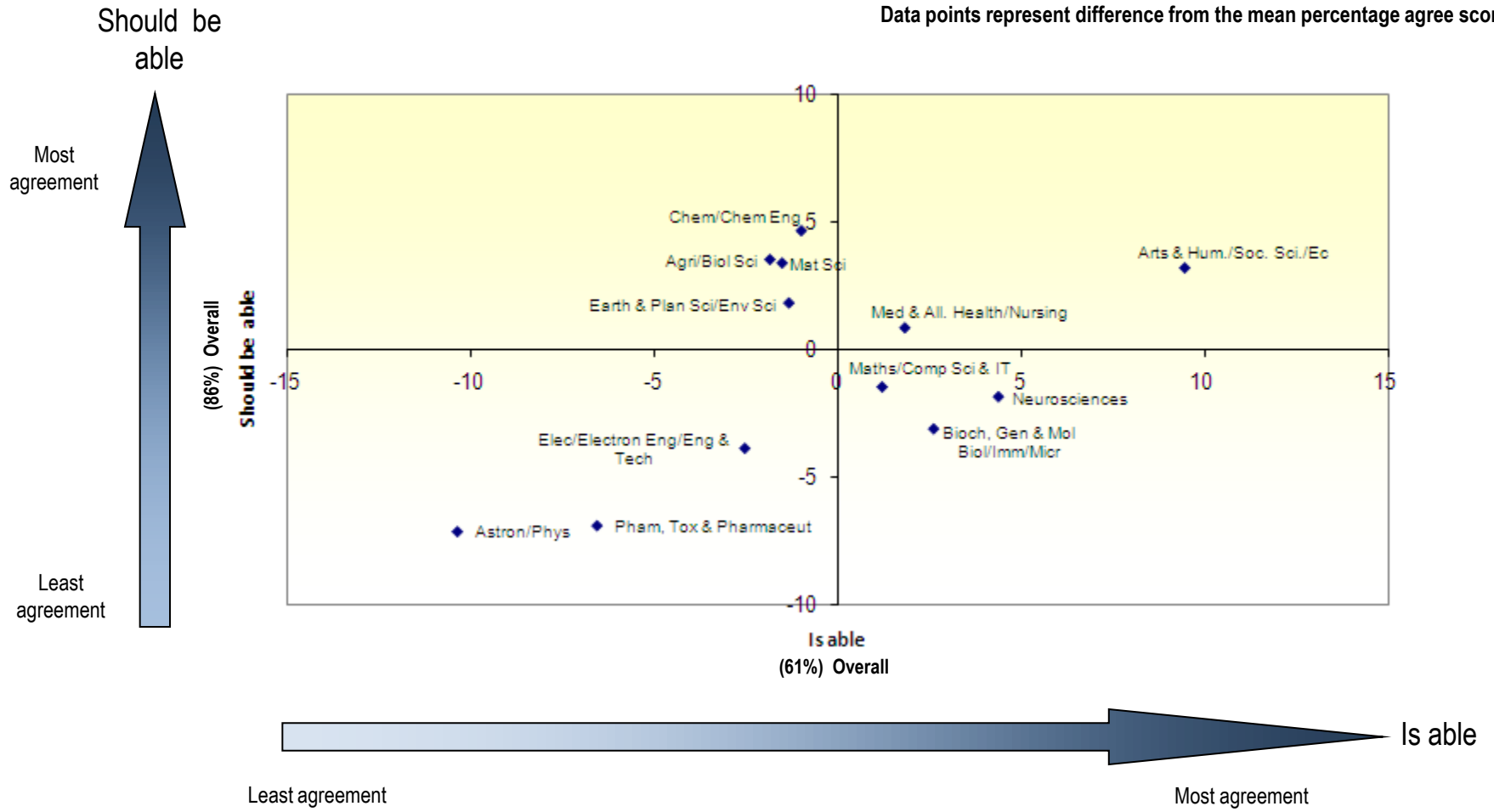
Least agreement

Most agreement

Biochemistry, Genetics, Molecular Biology, Immunology and Microbiology respondents have the strongest level of agreement that peer review is able to determine originality. Arts & Humanities/Social Sciences/Economics show the least agreement. Agriculture and Biological Science respondents have the least expectations that peer review should be able to determine originality.

n=4037

Purpose of peer review – That it selects the best manuscripts for the journal



Astronomy & Physics respondents have the lowest percentage who agree that peer review should or is able to select the best manuscripts. Chemistry respondents feel more strongly that selecting the best manuscripts should be the objective of. peer review Arts & Humanities/Social Sciences/Economics respondents have the highest level of agreement that peer review is able to perform this purpose.

n=4037

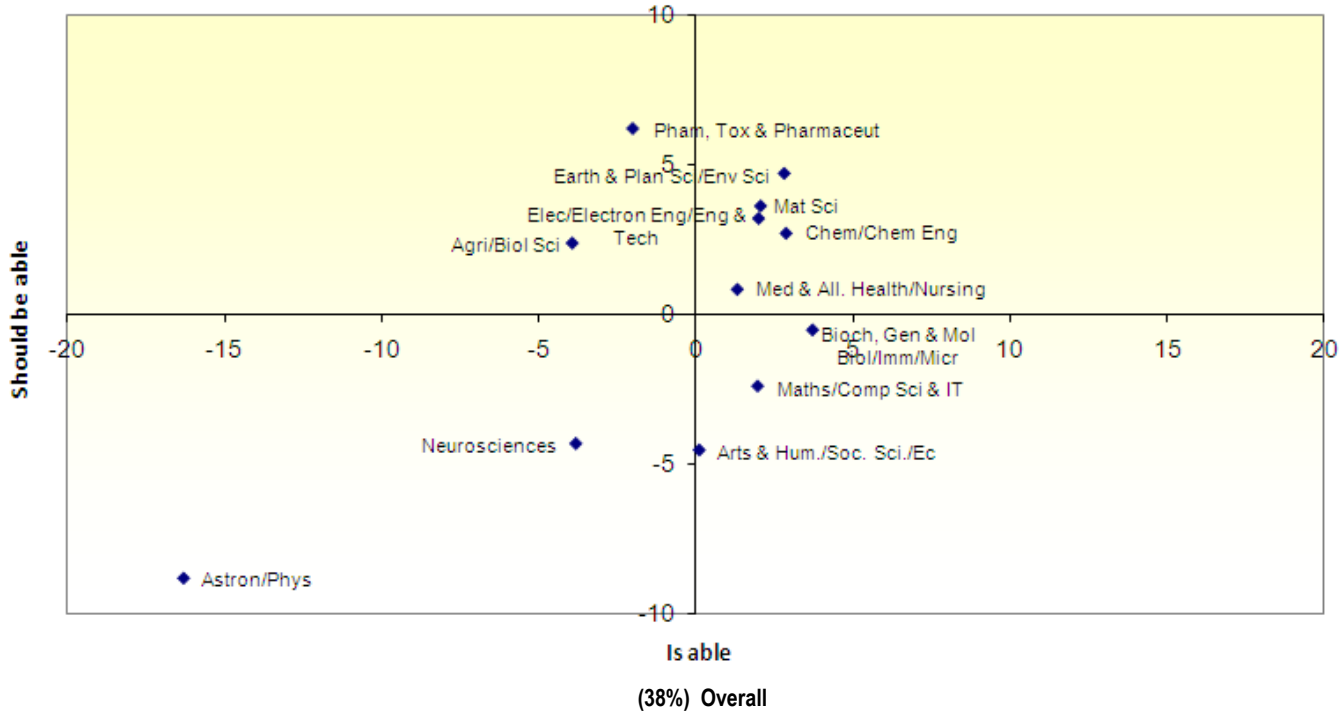
Purpose of peer review – Determines the importance of findings

Should be able

Most agreement

Least agreement

Data points represent difference from the mean percentage agree score.



Is able

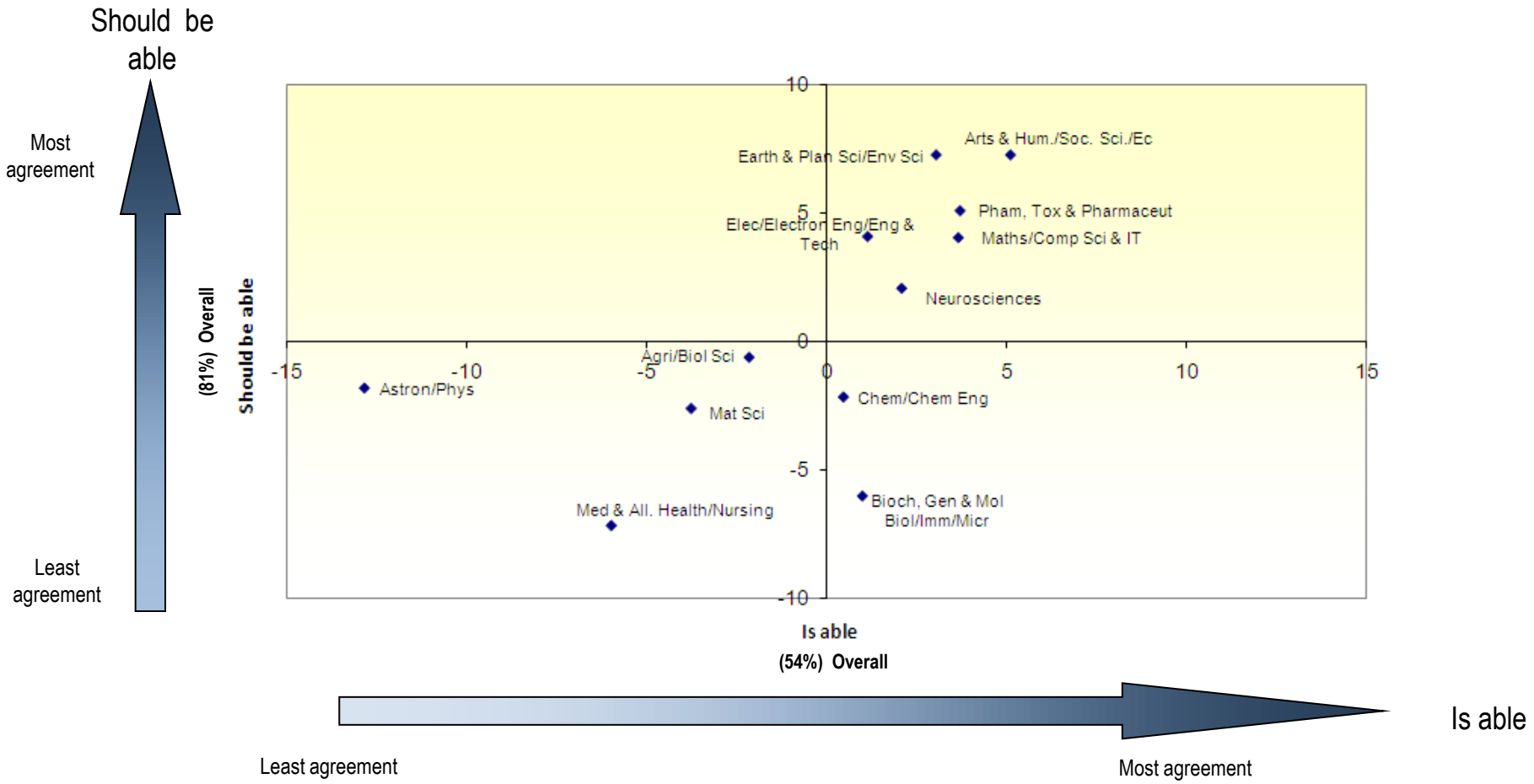
Least agreement

Most agreement

Astronomy & Physics respondents are least likely to believe peer review should be able or is able to determine the importance of findings. Pharmacology, Toxicology & Pharmaceutics are most likely to believe this should be the objective of peer review.

Purpose of peer review – Ensures previous work is acknowledged

Data points represent difference from the mean percentage agree score.

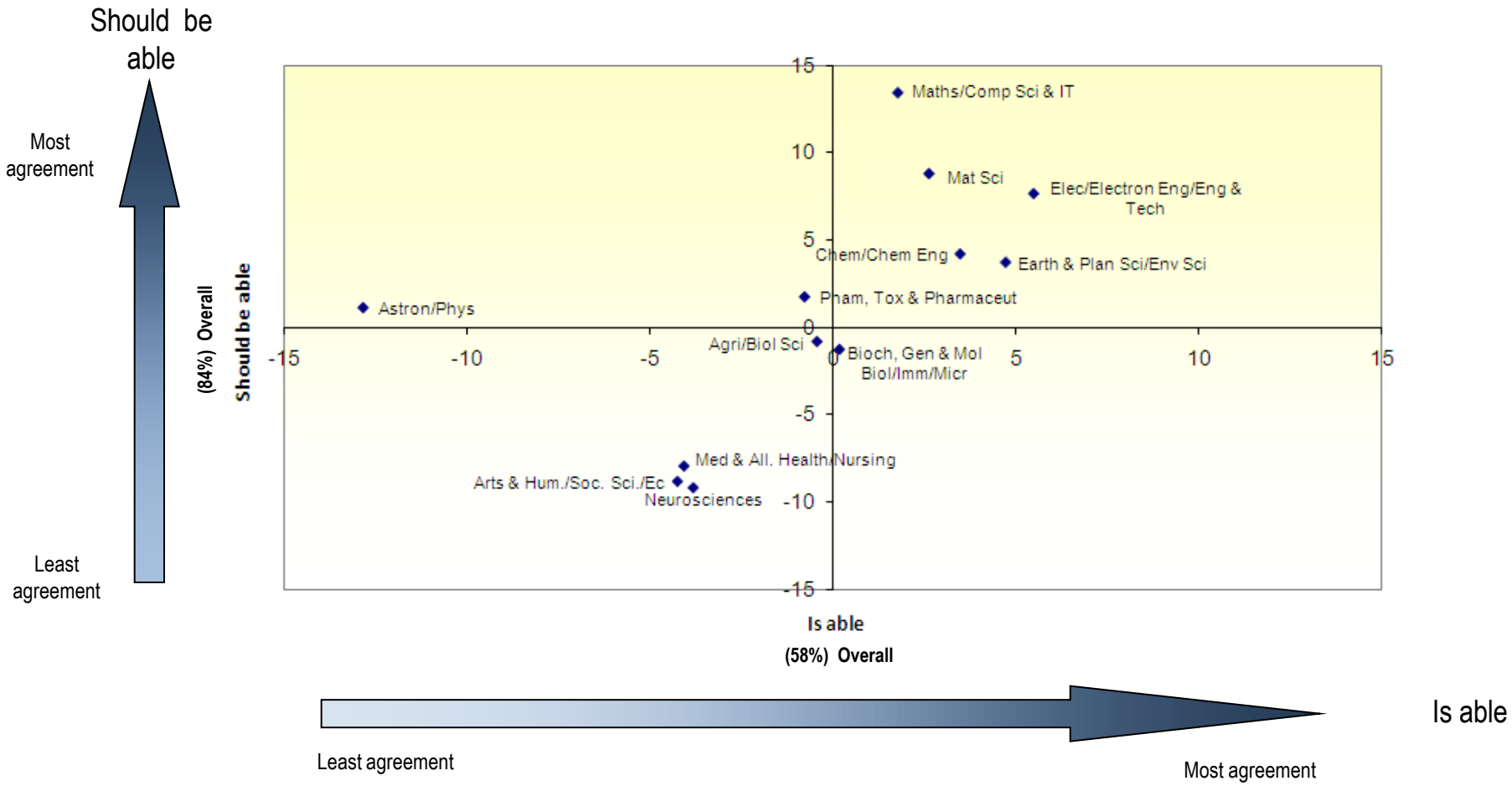


Medicine & Allied Health/Nursing respondents have the lowest expectation that peer review is able to ensure that previous work is acknowledged, and give the second lowest agreement that peer review currently fulfils the objective. Electrical & Electronic Engineering/Engineering & Technology respondents show the strongest agreement on "currently fulfils" .

n=4037

Purpose of peer review – Detects plagiarism

Data points represent difference from the mean percentage agree score.



Those in maths Computer Science and IT are most likely to believe that peer review should be able to detect plagiarism. While respondents in the Neurosciences have the least expectation in this area.

n=4037

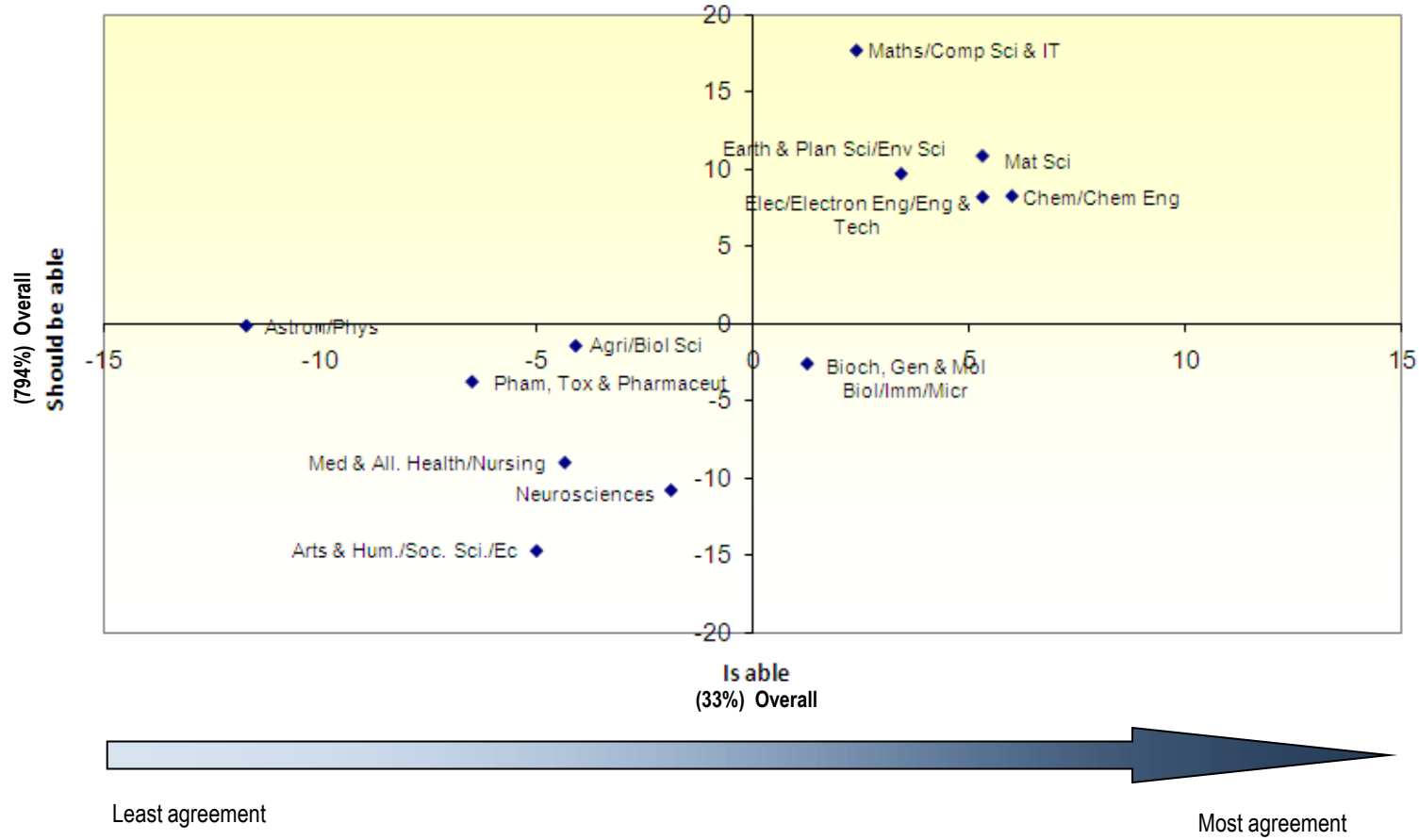
Purpose of peer review – Detects fraud

Should be able

Most agreement

Least agreement

Data points represent difference from the mean percentage agree score.



Is able

Least agreement

Most agreement

n=4037

Biochemistry, Genetics & Molecular Biology/Immunology/Microbiology respondents are the only group who display a higher than average rating for "should be able" and a below average rating for "currently fulfils". This suggests that detecting fraud is an area that these respondents would like to see improve within peer review

Purpose of peer review

Voice of the Researcher

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Researchers were given the opportunity to give their thoughts about the purpose of peer review, and how it might be improved. The quotes below are indicative of the comments made:

Topics/suggestions include:

- Peer review should focus on ensuring sound reliable science, as opposed to just 'novel' (important) science is published
- Peer review should not be expected to detect fraud, otherwise the system would come to a stop
- Protect the ideas presented by authors through the peer review process
- Plagiarism detection software should be made more widely available

Less emphasis on the perceived importance of the findings, and more emphasis on making information available to a wide audience (provided the information is presented in a quality manner). *Aged 26-35 in Biological Sciences from the United States*

I suspect some cases in which reviewers published ideas ..from papers they had reviewed, without acknowledging the source of the idea. *Aged 46-55 in Biological Sciences from the United States*

Reviewer should not be expected to detect fraud or plagiarism, his scope is limited to evaluation of the work quality and novelty *Aged 46-55 in Biochemistry from India*

..Using peer review to check for fraud is a complete waste of time,….The single concrete step that could be taken in my field is more open standards for editors to follow: about acceptable use of statistics; about what constitutes "novelty" or "interest"…. *Aged 36-45 in Social Sciences from the United Kingdom*

…the importance of a single paper is often disclosed several years after its publication. I think that peer-review should concentrate on the quality on reliability of the research and should be conducted only by expert scientists, not by professional editors. *Aged 36-45 in Neurosciences from Switzerland*

Many journals, but not all, offer the use of citation searching databases for a period including and after the review period. I find this very useful for checking originality and ensuring that the same author is not publishing multiple versions of the work in different journals. *Aged 56-65 in Microbiology from New Zealand*

I think the system works very well considering the time constraints on reviewers. Although plagiarism is a problem, it's not reasonable to expect reviewers to be able to detect it on a routine basis, unless they happen to be aware of another very similar paper in the field. Similarly it would be very difficult for reviewers to detect fraud since they do not have access to primary data. If reviewers were expected to sift through primary data to detect fraud, this would take so much time that the entire process would grind to a halt and probably people would simply start declining requests for review. *Aged 46-55 in Medicine and Allied Health from the United States*

…need to be vigilant about whether the papers get plagiarised in the future (as has happened to me. *Aged 56-65 in Pharmacology, Toxicology & Therapeutics from Canada*

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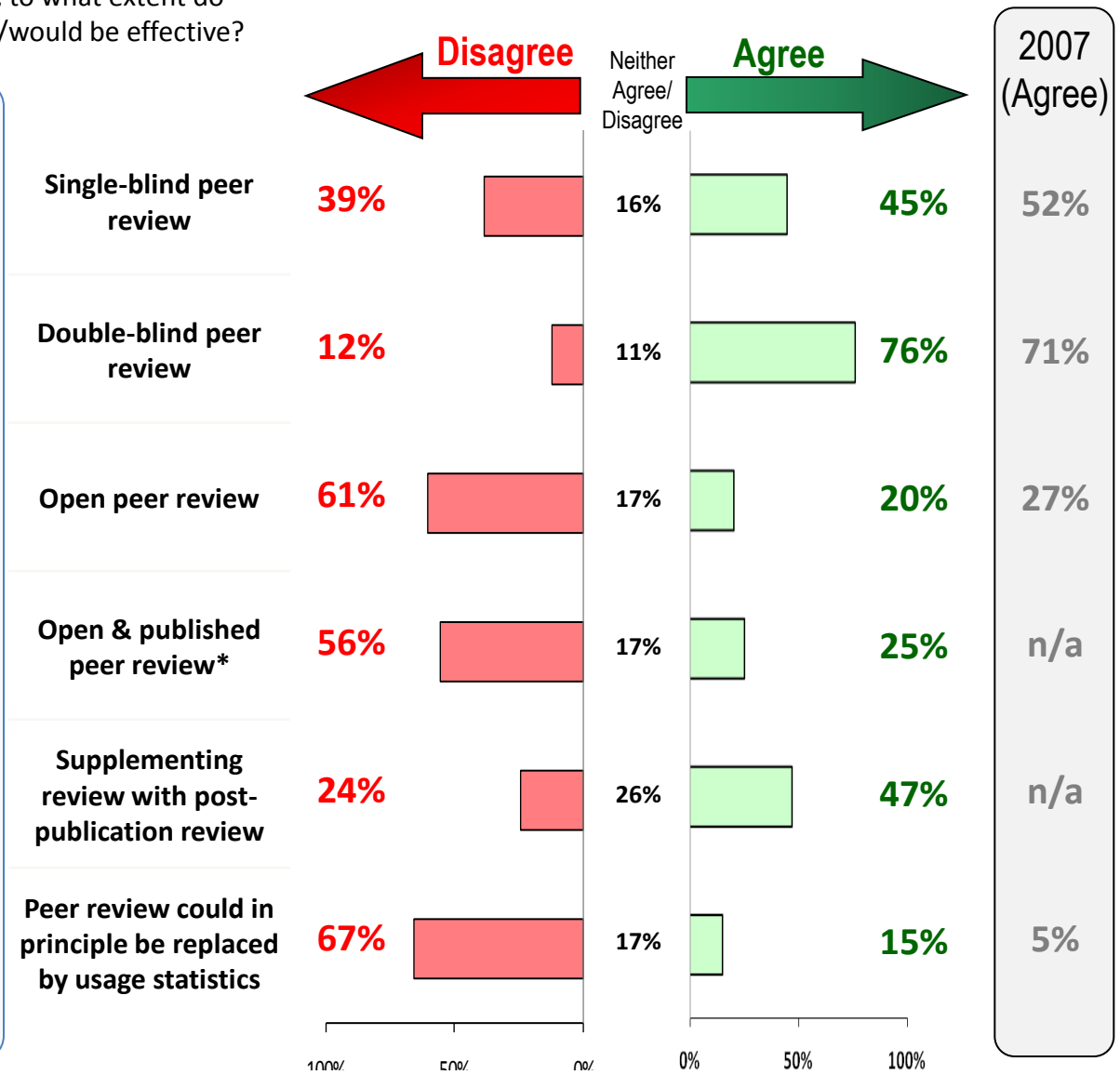
Forms of review thought effective

Question: For research papers published in your field, to what extent do you agree that the following types of peer review are/would be effective?

Double-blind peer review is considered to be the most effective form of peer review and particularly effective in the Arts and Humanities (87%). Supporting comments from researchers indicate they believe the approach eliminates bias, and allows the manuscript to be judged purely on merit. Others, who disagree, feel that you can never truly hide the identity of the author – citations, subject or style will give the author away. Previously published research has failed to show the benefits of double blind (van Rooyen, 1998, Justice A.C. et al).

Open peer review in its various formats is perceived as being less effective (most disagree it is effective). This echoes the experience of Nature in 2006, which trialled open peer review. It was generally considered not to be successful: only a small proportion of authors chose to participate.

The idea of replacing peer review with usage statistics is rejected by 67% of researchers, but many (47%) think that supplementing pre-publication peer review with some form of post-publication evaluation would improve scientific communication.



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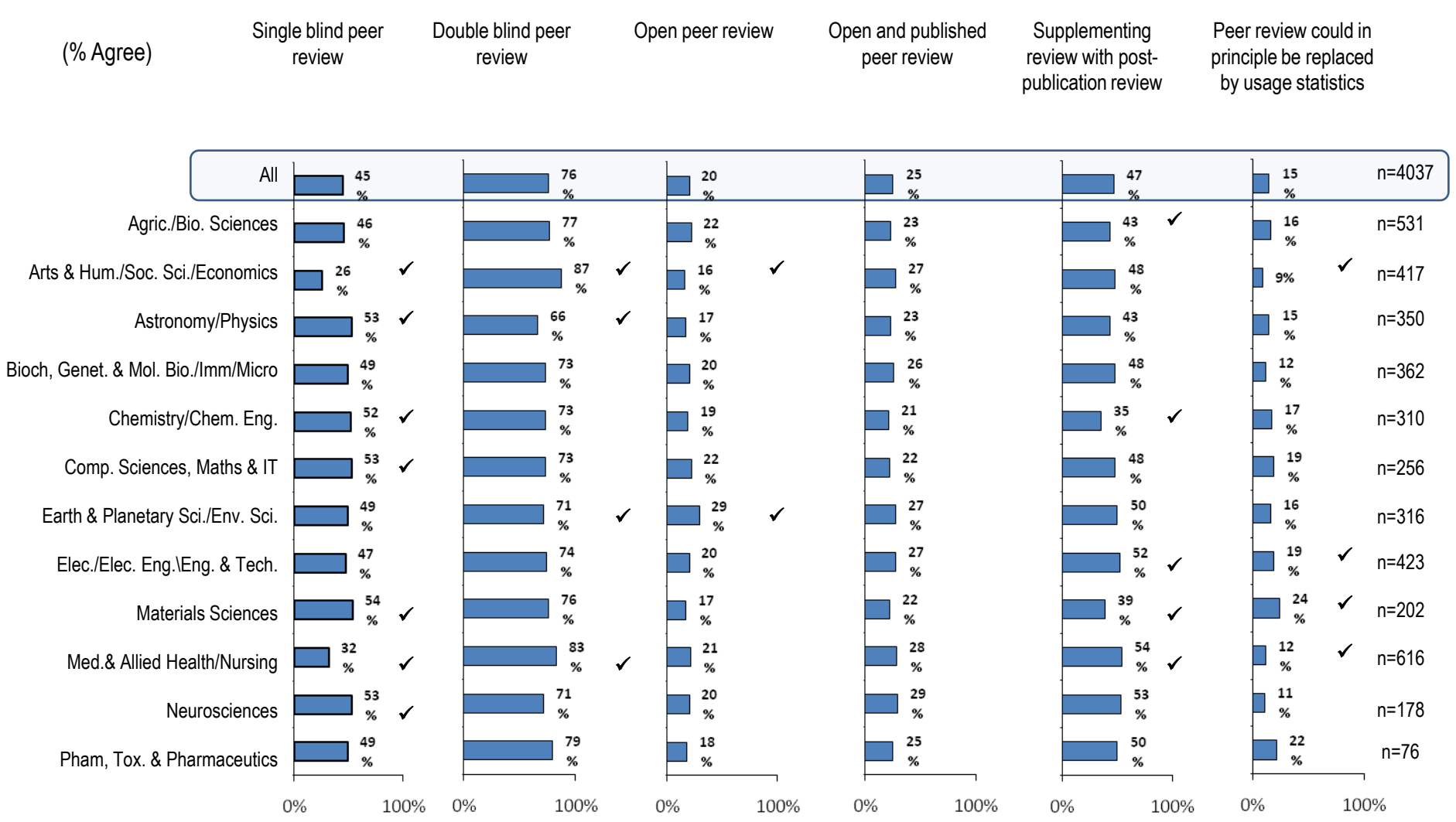
* This is where the authors and reviewers are known to each other and additionally the reviewers' signed reports are openly published alongside the paper

Forms of review thought effective by subject



✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

Voice of the Researcher

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Why is double blind peer review……

Effective (Agree)

Because it eliminates bias, encourages forthright opinion and allows the reviewer to focus on the quality of the manuscript

Academic integrity and publication ethics can be achieved by double-blind review as the reviewing process will be solely focusing on material submitted and research findings. *Aged 26-35 in Computer Science/IT from Malaysia*

Allows freedom to be honest. *Aged 36-45 in Medicine & Allied Health from Australia*

Acceptance or rejection should be completely dependent upon the quality of the work, not the authors. Reviewers are human and inherently subject to bias. by minimizing those parameters that contribute to bias, we increase the likelihood of an objective review. *Aged 56-65 in Biochemistry from the United States*

It is clear in our discipline (poli sci) that when double-blind was implemented in 1969 that the authors who were published changed, with many supposedly high quality scholars no longer able to get their work in print. *Aged26-35 in Social Sciences from the United States*

I am convinced that reviewers are deeply biased by knowing who the authors are. On the other hand if authors knew who the reviewers were they would hate one another rest of their lives. And many would not dare to openly criticise strong people in the field. *Aged 36-45 in Immunology from Sweden*

The bias against authors of developing countries can be controlled *Aged 46-55 in Biological Sciences from India*

Not effective (Disagree)

You can never truly hide the identity of the author – citations, subject or style will give the author away. Others feel knowing the author is important for better understanding the paper or helps identify plagiarism

Because the authors of a manuscript almost always will be known to the reviewers, simply based on the citation pattern. For this to work, we would need to write our articles in a very different way than we do today. *Aged 56-65 in Biological Sciences from the United States*

Awareness of the background and provenance of the paper (by the reviewer) is essential to understanding its significance. *Aged over 65 in Earth & Planetary Sciences from the United Kingdom*

Accountability. We must foster a scientific community always willing to stand behind what they say and support decisions based on evidence only. The only argument that I see as valid FOR hidden reviews is if one researcher is afraid of speaking out or unduly given authority beyond evidence.... *Aged 26-35 in Biological Sciences from New Zealand*

The authors should be known to better detect "autoplagiarism" *Aged 26-35 in Engineering & Technology from Canada*

Because If I have an opinion it is a constructive opinion and I do not mind that the author knows who I am. So: why I should not know who I am giving my opinion? *Aged 56-65 in Environmental Sciences from Venezuela*

Why is single blind...

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Effective (Agree)

Because it encourages forthright opinion and allows reviewer to focus on the quality of the manuscript without fear of reprisal, and for some it would simply put them of reviewing

A reviewer has to be able to assess whether a research group is known with certain research/ laboratory procedures and types of research. This knowledge gives more background to assess the validity of certain claims made. *Aged 26-35 in Medicine & Allied Health from the Netherlands*

A junior referee may freely review the paper of a powerful author or his working group without being afraid to experience disadvantages in his own career. *Aged 46-55 in Medicine from Germany*

In 80% of cases I do not know personally the authors…however, it is better for me if they do not know, that I was one of their reviewers. *Aged 46-55 in Environmental Sciences from Hungary*

I'm not sure I would volunteer as easily, or be as honest, if the authors knew who I was. If I didn't like the article but knew the people, it would probably bias me. *Aged 36-45 in Electrical & Electronic Engineering from the USA*

Scientists are emotional people too and a negative review in which the reviewer is known could and can bias the author against the reviewer's submissions if asked to review them. I've seen this happen and seen collegial relations destroyed when authors know who wrote a negative review. *Aged 56-65 in Biological Sciences from the USA*

It's because I trust journal editors to choose competent reviewers to my article. *A senior researcher/middle manager aged 36-45 in Earth & Planetary Sciences from Russia*

Not effective (Disagree)

It allows bias against less prestigious institutes and developing countries, too much respect/credibility is given to established authors, it allows competitors to delay research behind the cloak of review

Basically because this is the type of peer review in which many kinds of bias are most prone to occur, including bias against papers produced in less prestigious institutes (or geographic regions), against young or rather unknown researchers, or against an author to whom a reviewer is unsympathetic for various reasons (including non-scientific ones). *Aged 36-45 in Microbiology from Brazil*

I believe that a reviewer should have the courtesy to identify him/herself if he/she thinks the paper is not suitable for publication. In my experience, highly competitive colleagues often hold back publication by completing either late or unjustified reviews. This could be overcome if the reviewer had to identify him/herself. *Aged 26-35 in Neuroscience from the United Kingdom*

Based on my experience, the reviewers are evaluating the work based on the authors names. That is, I have noticed some weak works were published for known persons. *Aged 46-55 in Mathematics from Jordan*

Invites pandering and corruption of the process - becomes a venue for revenge and favors - terrible idea! *Aged 36-45 in Social Sciences from the USA*

I obtained good results when the reviewer let me know who she was and I was able to contact her regarding some comments in the discussion section that were easy to discuss by email. *Aged under 36 in Biological Sciences from Costa Rica*

Why is Open Peer Review…

contents page

Effective (Agree)

Because it ensures that reviewers are honest , more thoughtful and less likely to be vitriolic in their evaluation

Anonymous reviewers are too often cowards, who take inappropriate and unsubstantiated pot-shots. Making reviewers sign their reviews keeps them honest….. *Aged 36-45 in Biological Sciences from the United States*

We generally give more thought to documents we sign. The author and reviewer engage in scientific debate. *Aged over 65 in Earth & Planetary Sciences in the United States*

It would be nice to know who the reviewers was so that you are sure that that person was qualified to review your paper. *Aged 26-35 in Microbiology from Denmark*

I (and also other people from the laboratory where I work) have several bad experiences with two specific reviewers (we work in the field ..where the scientific community is quite small,…) that systematically try to kill any article form our laboratory - they even lie. I think that the open peer review can help a lot in the situations like ours. *Aged 36-45 in Biological Sciences from the Czech Republic*

Many reviewers are hypocritical, they would not say openly what they write under the umbrella of anonymity. *Aged 46-55 in Physics from Canada*

Not effective (Disagree)

It encourages reviewers to be less critical, will likely put off younger reviewers, gives the author the opportunity to influence the reviewer, encourages dispute between reviewers and authors

A completely open process would inhibit reviewers from being completely honest about a paper, especially when it is of poor quality. It could especially inhibit junior reviewers who might worry about angering a senior researcher in the field. *Aged 36-45 in Social Sciences from the United States*

Authors may contact the reviewers in advance to influence his/her judgment regarding the paper submitted for publication. *Aged 46-55 in Medicine & Allied Health from Ireland*

Because all the idea of blind peer review is to avoid black-mailing and retaliations. Finding a job in my field is hard as it is, there is no need to increase possible resentment. *Aged 26-35 in Physics from the United States*

Because a system like this supposes a very mature attitude from both parties, and that's not the common situation. *Aged 36-45 in Agriculture from Uruguay*

Because I know very few scientists that would accept to serve as referees under these conditions. *Aged 36-45 in Physics from Croatia*

To avoid time-consuming disputes. *Aged 46-55 in Chemical Engineering from Canada*

Why Open & published peer review is...

contents page

Effective (Agree)

In addition to ensuring that reviewers are honest , more thoughtful and less likely to be vitriolic in their response, publishing names and reports helps the reader decide on the quality of the work, it encourages dialogue

Because it would put much more pressure on the reviewers to be fair and thorough. Reviewers would be held responsible publicly for the articles that they reviewed: real accountability is what is missing from the current system. *Aged 26-35 in Medicine & Allied Health from Canada*

Because this would preclude review reports based on personal prejudice, which sometimes is the case, particularly if newer research challenges previous "accepted" opinions. If the reviewer knew that his/her report would be published, a more science based approach is more likely. *Aged over 65 in Medicine & Allied Health from Norway*

Readers have additional information at hand helping them decide the importance of the paper. *Aged 26-35 in Physics from the United States*

I believe this kind of transparency keeps everybody honest. *Aged 36-45 in Immunology from Canada*

First, because when authors and reviewers are aware of each others it would reduce personal biases to reject papers based on prejudice such as authors being from an underdeveloped country ... Second. It opens a road for authors and reviewers to openly discuss disagreements. Third. The publication of papers and reviewers' opinions might prove heuristic for the scientific community, enabling to raise ideas from both sides opinions. *Aged 46-55 in Biological Sciences from Mexico*

The transparency will eventually lead to reviewers conducting themselves professionally and will eventually eliminate bias. *Aged 36-45 in Medicine & Allied Health from Uganda*

Not effective (Disagree)

Some cultures might be more adversely affected by having their reports made public, likely due to the nature of hierarchies in those societies, other believe that the reports will simply mean more material will need to be read.

Because in this case, it will be difficult for him/her to critically give comments to the author in some culture. *Aged 36-45 in Economics from China*

Because it will invariably affect what the reviewer writes, and may influence the decision. *Aged 46-55 in Electrical & Electronic Engineering from the United Kingdom*

I believe this will lead to a style of writing which is more defensive, and therefore inhibit authors from expressing themselves. The aim of a paper should be to convey scientific content, and not to guard against comments which might be added in the publication process. *Aged 26-35 in Engineering & Technology from Australia*

I don't think publishing the reviewer's report is going to help advance the scientific cause. It will add to material to be read. *Aged 26-35 in Medicine & Allied Health from India*

Because people may be reluctant to identify a poor piece of work if it were from a leader in the field. *Aged 36-45 in Neuroscience from the United Kingdom*

Because manuscripts are revised in response to the review and the review of the revised manuscript is often minimal. The reviews will take up a lot of space in journals. *Aged 56-65 in Neuroscience from the United States*

I am wondering that the relationship between the authors and reviewers may be affected. *Aged 46-55 in Medicine & Allied Health from Japan*

Voice of the Researcher

Why supplementing review with post-publication review is…

Effective (Agree)

It encourages dialogue, broadens the scope of the comments beyond two or so reviewers. Allows subsequent short-comings to be linked directly to the article.

A typical peer-reviewed paper is read by a handful of people prior to publication. this sample may be biased, and/or someone may simply be having a bad day. post-publication review would add an additional round of checks and balances -- the authors would get credit for the publication, but errors would not be allowed to live on. *Aged 26-35 in Social Sciences from Hong Kong*

Because I'd like to hear feedback from people who might have constructive criticism of my work. *Aged 26-35 in Earth & Planetary Sciences from Australia*

Formative feedback is a vital part of the learning process. The more views there are about a piece of work, the more the authors, and others, can learn. *Aged 46-55 in Biochemistry from the United Kingdom*

I often read papers with methodological flaws but there is no simple way of responding to them.. Aged *46-55 in Medicine & Allied Health from Bahrain*

Currently, relying on only 2-3 reviewers for a publication very small, but understandable given reviewing demands. However, this is really just more of a preliminary screening procedure to get published; papers are of course additionally evaluated by the rest of the academic community. Allowing further feedback on the paper in a public forum will help others evaluate the true merit of the paper over time. *Aged 26-35 in Social Sciences from the United States*

Errors and ambiguities often escape the review process. Traditionally, such shortcomings are identified in subsequent publications, but it would be good to have these errata associated with the source of the original publication. *Aged 36-45 in Computer Science/IT from Canada*

Not effective (Disagree)

Researchers worry about a lack of editorial control, worry that it would lead to endless debate, others prefer thjs type of discussion to take place at conferences

1) there is no quality control on online readers 2) there is no editor functioning as moderator 3) detailed discussion will confuse non-specialist readers. *Aged 36-45 in Biochemistry from Germany*

Because such judgments are too difficult to control, editorially, and lead to silly battles over things past. But people will still attempt to score points, and claim its a right to do so. …Its not a recipe for progress. *Aged 56-65 in Social Sciences from Australia*

Citation indexes accomplish the same thing, we do not need to select for a group of reviewers to do a post-hoc review. *Aged 46-55 in Agriculture from the United States*

An unnecessary process in any already tedious review process. Authors may submit papers in response to published articles. *Aged 46-55 in Social Sciences from the United States*

I think this would downgrade the scientific community to a level often seen in the 'popular media' (e.g. hotel reviews etc.) and would not be constructive overall. *Aged 46-55 in Materials Science from the United Kingdom*

In my opinion, this would generate a mess - an endless sequence of comments and responses. *Aged 56-65 in Earth & Planetary Sciences from the Czech Republic*

Research journals were invented for publishing new results, not for discussion between different groups and individuals, the latter may be a subject of conferences. *Aged 46-55 in Materials Science from Denmark*

Why replacing peer review with usage statistics is....

contents page

Effective (Agree)

Researchers believe usage statistics, would be faster, likely to be more objective, better suited to deal with the large volumes of papers, would not preclude 'negative' results papers that are equally valid.

In this age, a good paper will be found and used by many. The peer review process is very painful and often ineffective because reviewers frequently do not offer useful feedback and/or are ill qualified to review the material they are given. *Aged 36-45 in Engineering & Technology from the United States*

Sometimes statistics can more objective than the reviewer. *A female senior researcher/middle manager aged 36-45 in Microbiology from Turkey*

This mechanism would be a validation …of the results. It will be necessary in a near future due to the big volume of submitted. *Aged 46-55 in Biochemistry from Colombia*

All data are potentially informative but only if they are in the public domain. Peer review helps identify important developments but should not be used to exclude negative or data that is only partially flawed. A good paper that has not been subject to formal peer review will ultimately be assessed critically by many others if cited and discussed. *Aged 56-65 in Biological Sciences from the United Kingdom*

Electronic version of journals are the only ones to continue in future. hence these statistics points are more reliable. *Aged 36-45 in Medicine & Allied Health from India*

Not effective (Disagree)

Researchers are concerned about a delay in meaningful statistics, that papers are not improved, that science will become a popularity contest. Moreover in a world of usage statistics there will be not be allowance for subject differences in respect to download behaviour

1. Many more readers would have to spend time identifying errors or boring, non-innovative papers to finally reach the conclusion that a paper is worthless, rather than having 2-3 referees doing the job 2. Usage statistics or citation data only become meaningful after 2-3 years. In the meantime, especially young scientists could be mislead by flawed or otherwise poor papers. .. 3. Reviews do not only serve to rate the quality of papers but also to improve it. This would not be the case with the above suggestion. *Aged 36-45 in Environmental Sciences from Switzerland*

"Fashionable" topics usually get more downloaded or citations. That does not necessary mean a paper is good or bad. Also number of citations across different topics cannot be compared. *Aged 36-45 in Physics from India*

A popular paper does not make a good scientific paper. The tabloids sell more newspapers than the broadsheets, does this mean they contain better journalism? Also, there is so much information to read that there needs to be some check on what is correct and what is not so we do not waste our time reading papers that are fundamentally flawed. *Aged 26-35 in Electrical and Electronic Engineering from Australia*

(1) Download stats cannot account for the same person downloading the paper many times. (2) Availability for download varies widely among journals and countries (3) Citation data is great but generally has a lag time as many papers once in press take up to a year or more to be released. *Aged 26-35 in Biological Sciences in the United States*

A bad paper, especially a hilariously bad one, would attract a lot of traffic, and yet it would still be bad. *Aged 46-55 in Arts & Humanities from the United Kingdom*

Reviewers' attitudes & experience

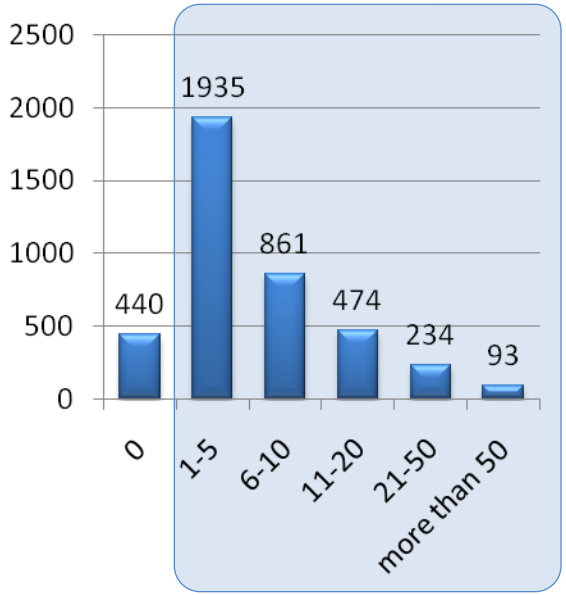
Commitment to peer review

Most active authors are also active reviewers, and 89% of authors have reviewed in the last 12 months. The vast majority (86%) of which enjoy reviewing and will continue to review in the future. This is higher in medicine (90%) and a little lower in the Arts and Humanities, but lowest in Astronomy and Physics (77%).

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

Number of article reviewed over the last 12 months

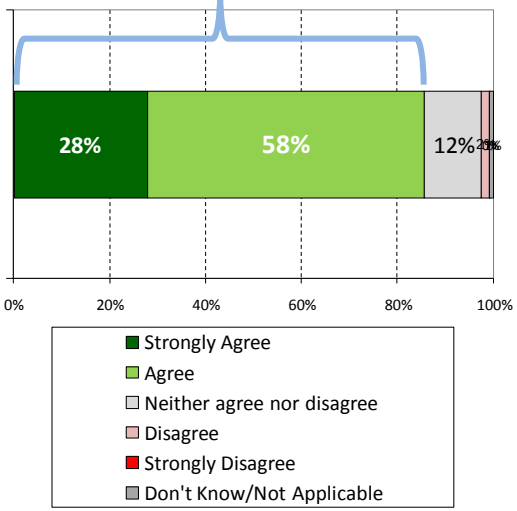
(n=4037)

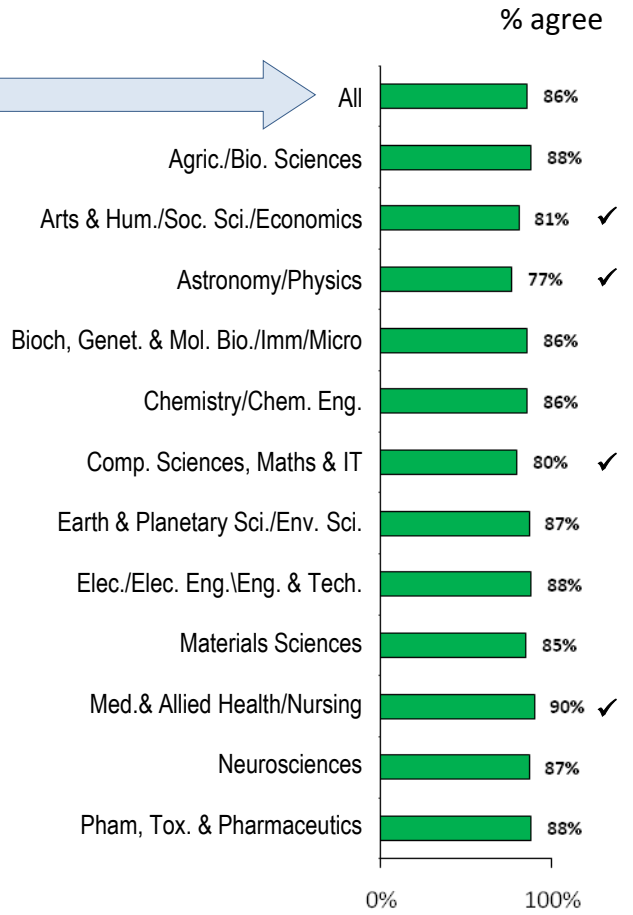


n=3,597

Question: Please indicate the extent to which you agree with the following:

I enjoy reviewing and will continue to review





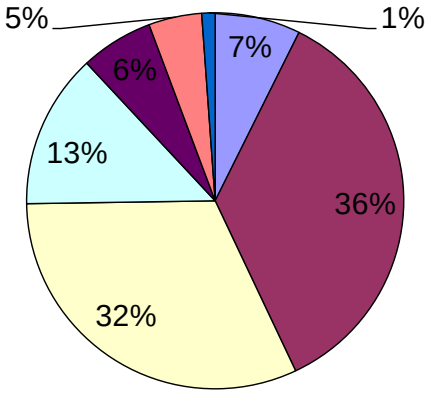
N.B. An active reviewer in this study is anyone who has completed more than one review in the previous 12 months

Maximum number of reviews per annum

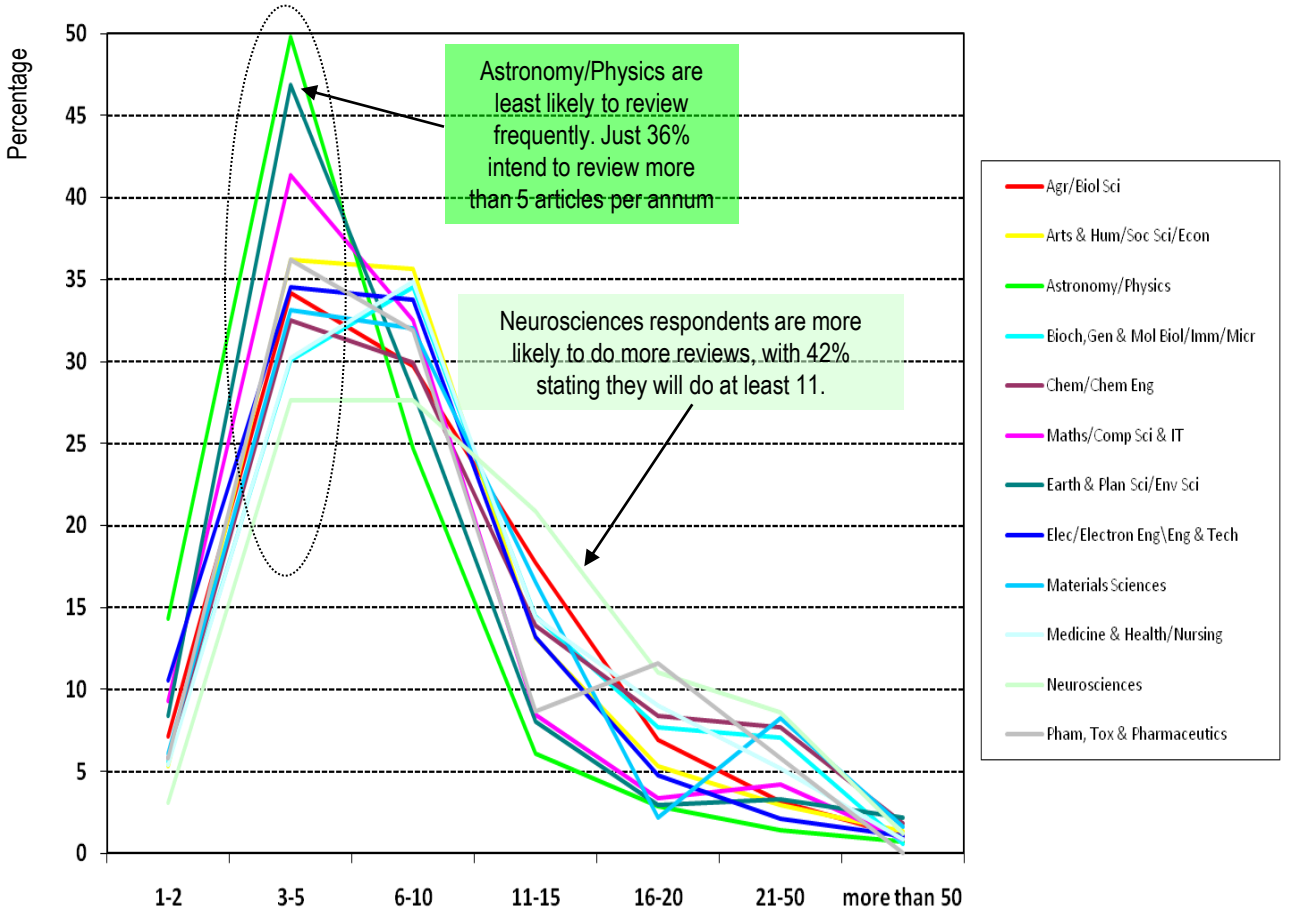
Respondents were asked to state the maximum number of papers they would be prepared to review in a year

Most reviewers are prepared to do 3 to 5 reviews per annum (36%). A further 32% can manage 6-10 each year.

There is some differences by subject with those in Neurosciences prepared to do most reviews, while those in Astronomy and Physics least likely to review 6 or more manuscripts.



For most subjects, the modal response was 3-5 reviews per year.

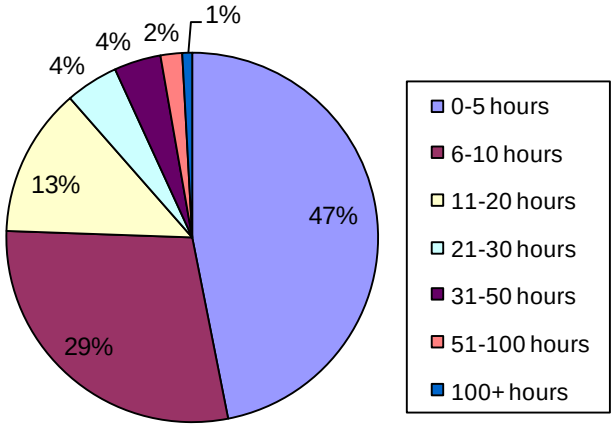


n=3,597

Time taken to review

Reviewers spend on average 6 hours reviewing an article, and will most often complete the review with a 4 week period (86%). The vast majority (92%) claim to frequently submit their reviews on time with 57% claiming to always return their reviews on time . Just 11 respondents admit to never returning their reviews on time.

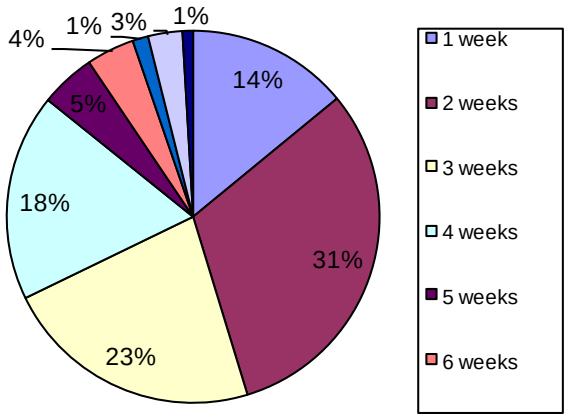
No. of hours spent on last review



Modal time spent = 4 hours

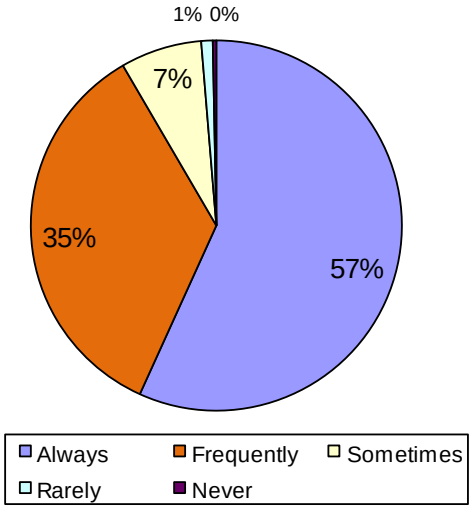
Median time spent = 6 hours

Time between acceptance of invitation to review and delivery of report



86% returned their last review within one month

Do you submit your reviews on time?



n=3597

Reasons for Reviewing

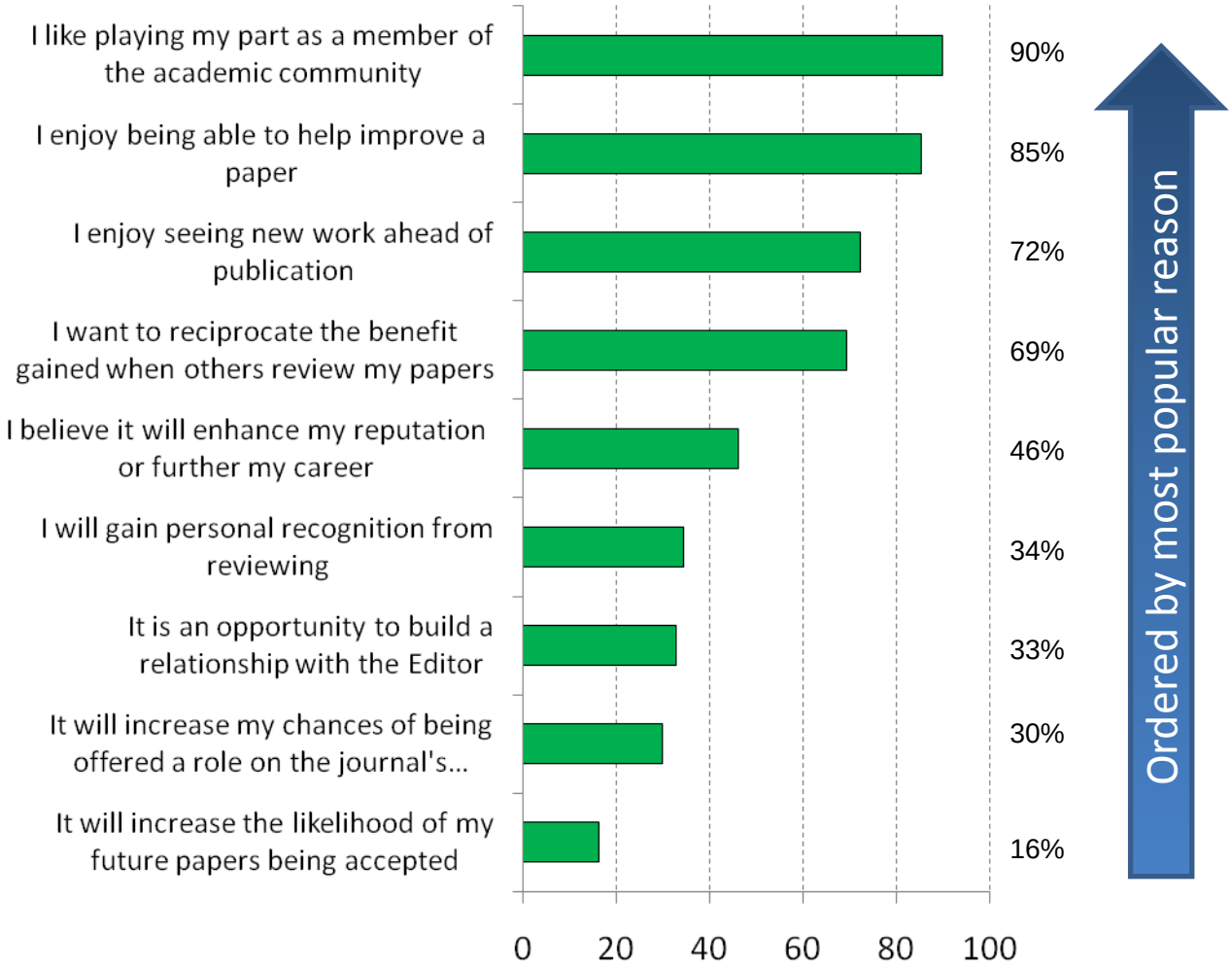
Question: Please indicate the extent to which you agree that the following reasons describe why you review

Reviewing is generally an unrecognised activity, so why do they do it ? Reviewers indicate it is because they like playing an active role in the community (90%), this is more keenly felt in the Arts and Humanities.

Most enjoy just being able to improve papers (85%) and many like seeing a paper in advance of publication (72%), this is lower in Physics, likely due to the wide availability of articles via pre-print servers.

Reasons tend to be ordered by their altruistic nature, with reasons that deliver personal benefit being much lower down the scale.

Few, just 16% of respondents say they agree to review because they feel it will increase their chances of having future papers accepted.



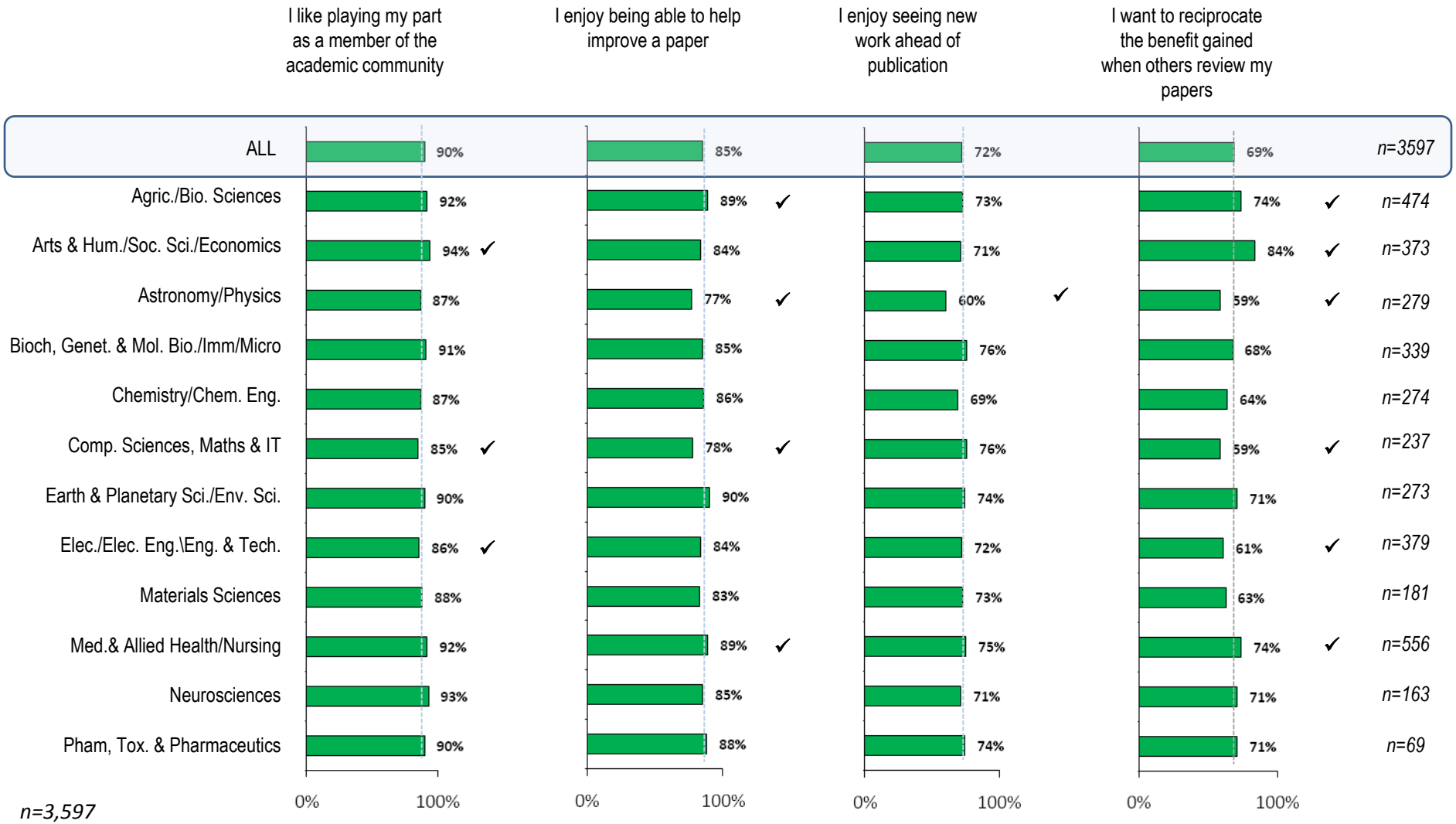
n=3,597

Reasons for reviewing - by subject (1)

% Agree

Ordered by most popular reason (% agree)

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)



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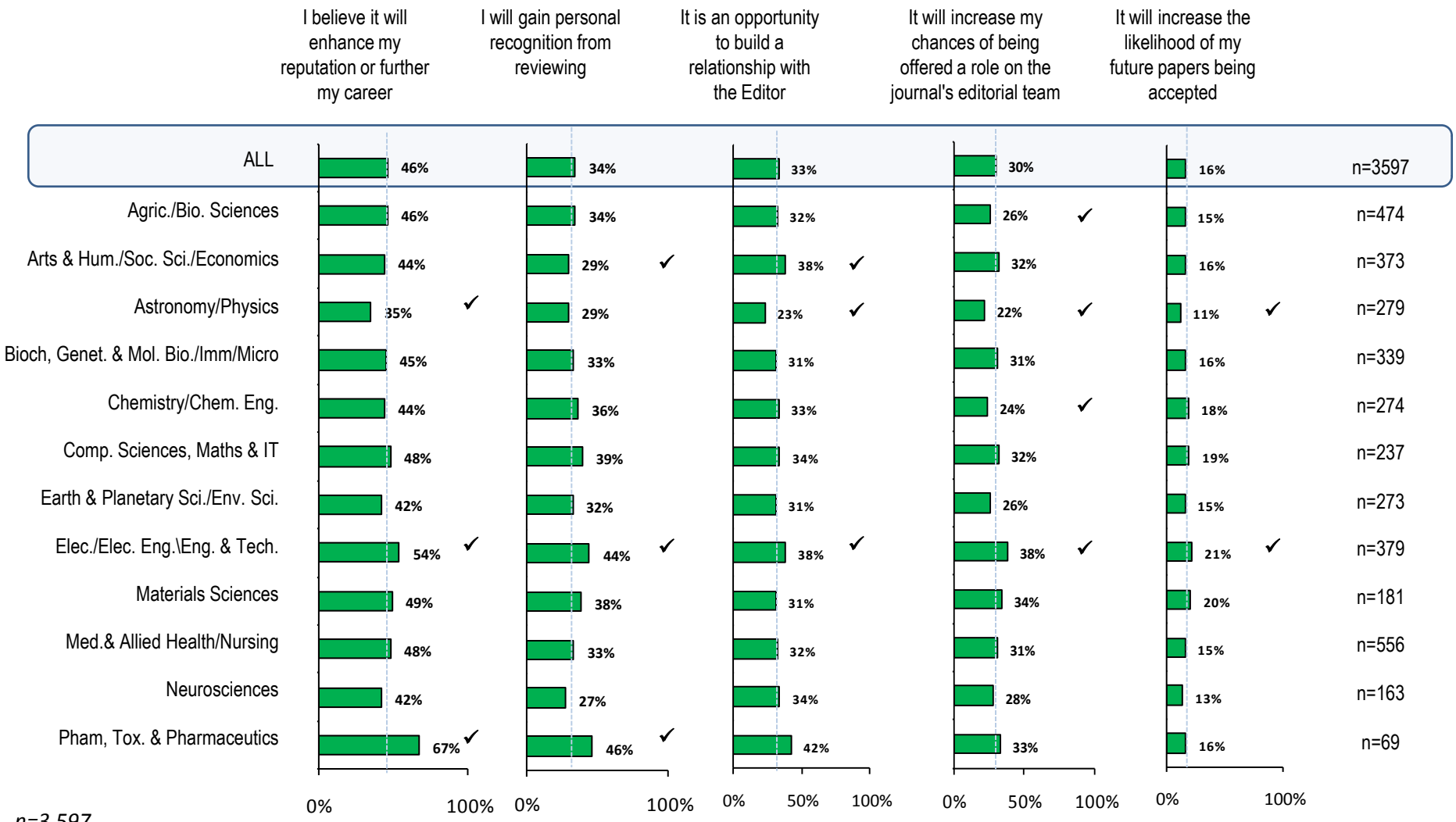
Reasons for reviewing - by subject (2)

% Agree

Ordered by most popular reason (% agree)

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)



n=3,597

Incentives to peer review

Which of the following would make you more or less likely to review for a journal

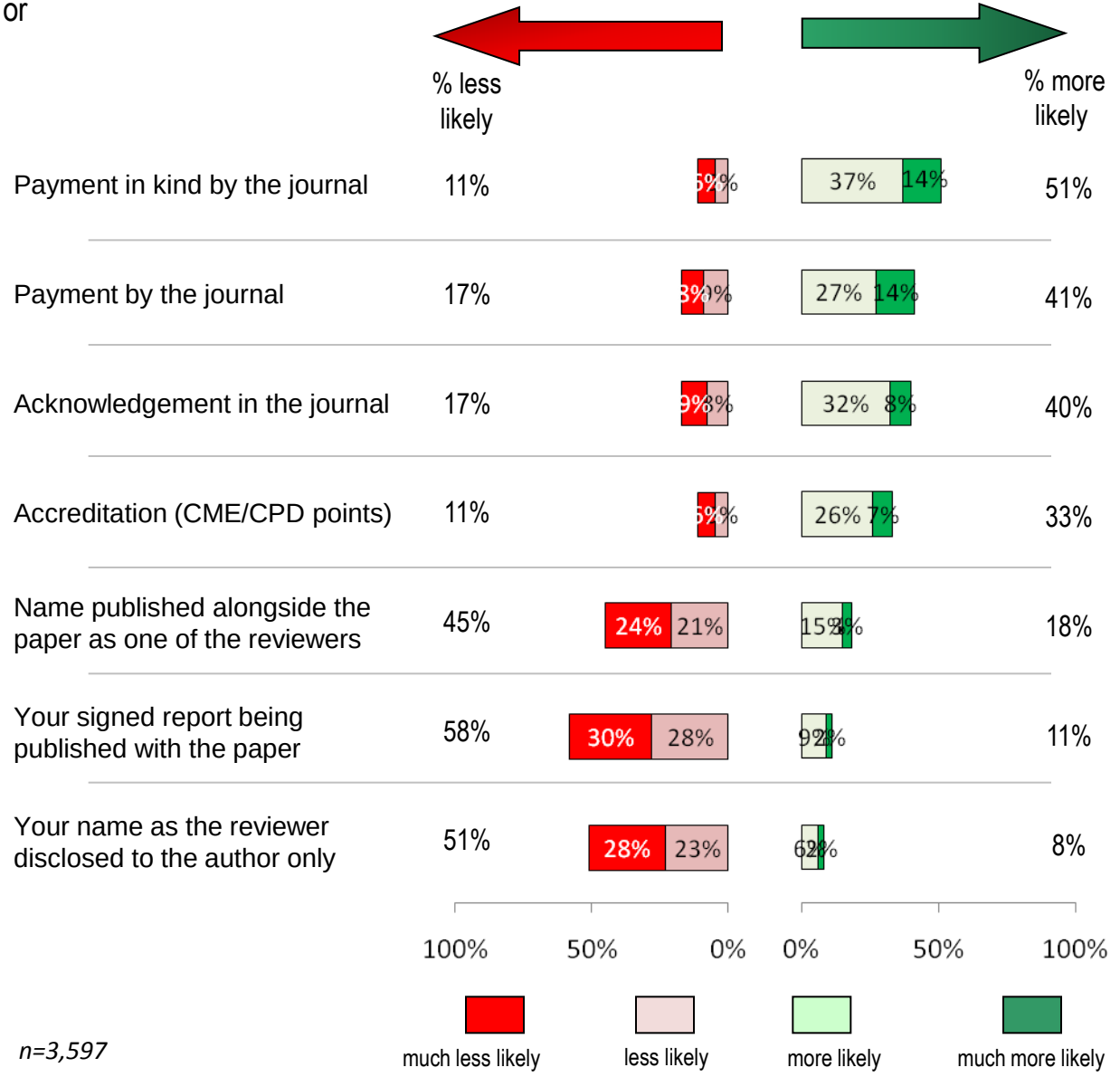
Reviewing can be time consuming and unrewarding. What would make a reviewer more likely to review?

Just over half (51%) of reviewers thought receiving a payment in kind (e.g. subscription, waiver of their own publishing costs etc.) would make them more likely to review.

A large minority (41%) wanted payment for reviewing, especially in the Arts and Humanities (58%). However, across all subjects those wanting payment drops to just 6.5% if the author had to cover the cost.

Acknowledgement in the journal was the most popular of the remaining options, with 40% stating this would make them much more or more likely to review. However, accreditation acts as much stronger incentive for those in medicine

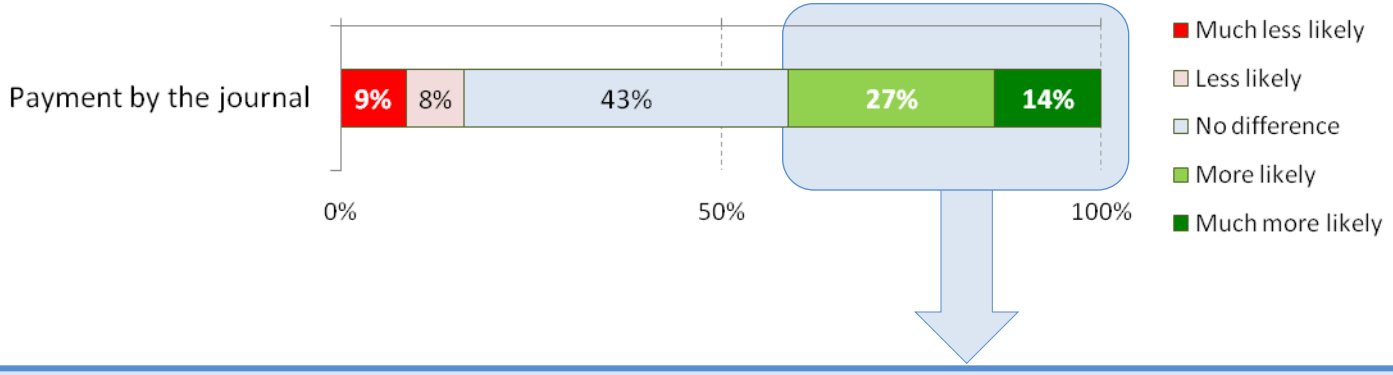
Increasing the transparency of the peer review process puts off most reviewers, with the signed peer review report most off-putting (58%).



n=3,597

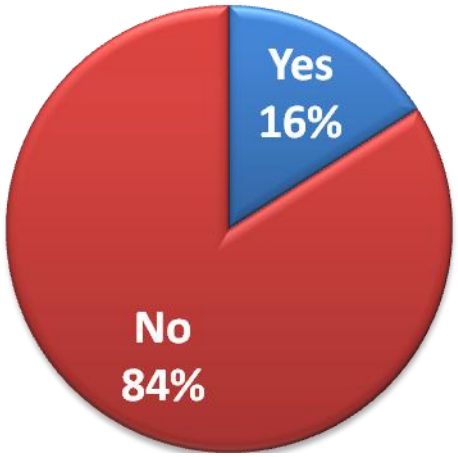
Would you still want payment if the following was true?

Question: [Respondents who answered “much more likely” or “more likely” when asked whether payment by the journal would make them more or less likely to review were asked the questions below:]
Would you still want payment if the following was true?

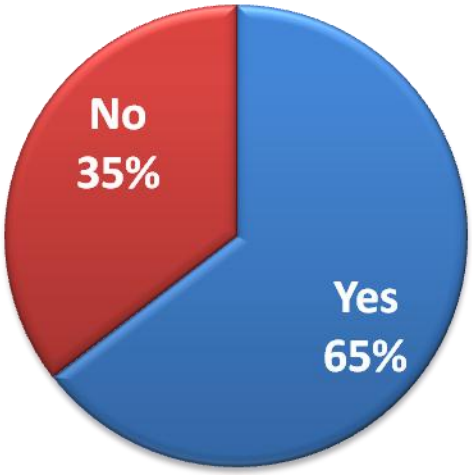


n=1481

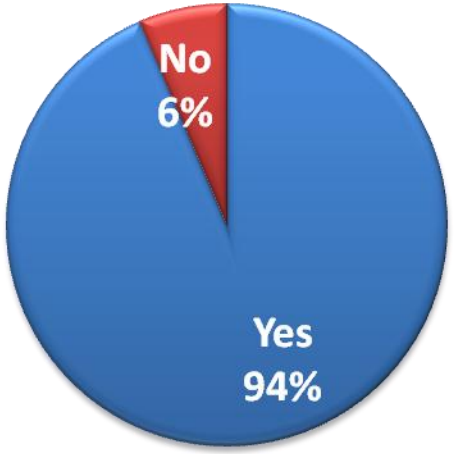
Author pays the fee



Funding body pays the fee

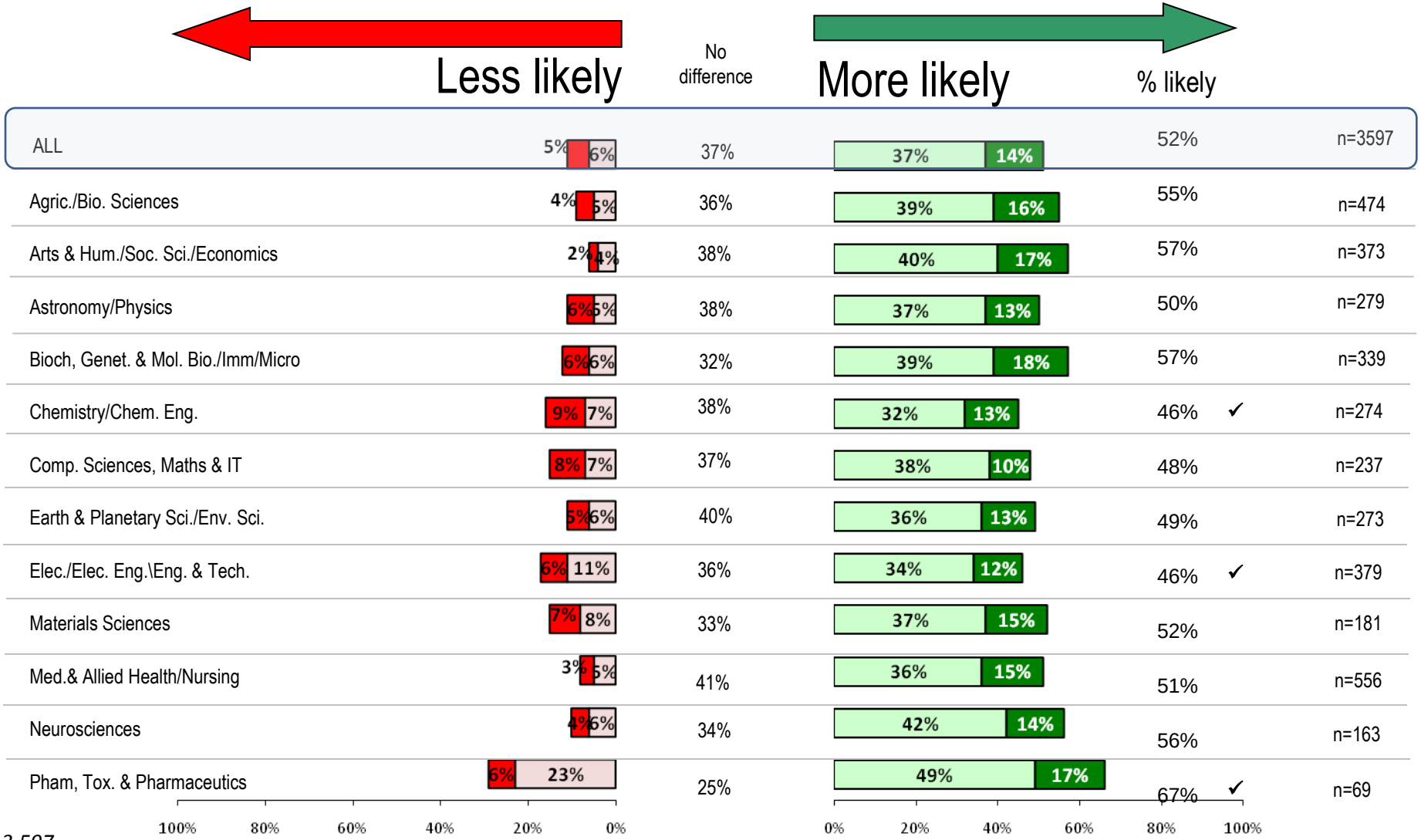


Publisher/Society covers the cost



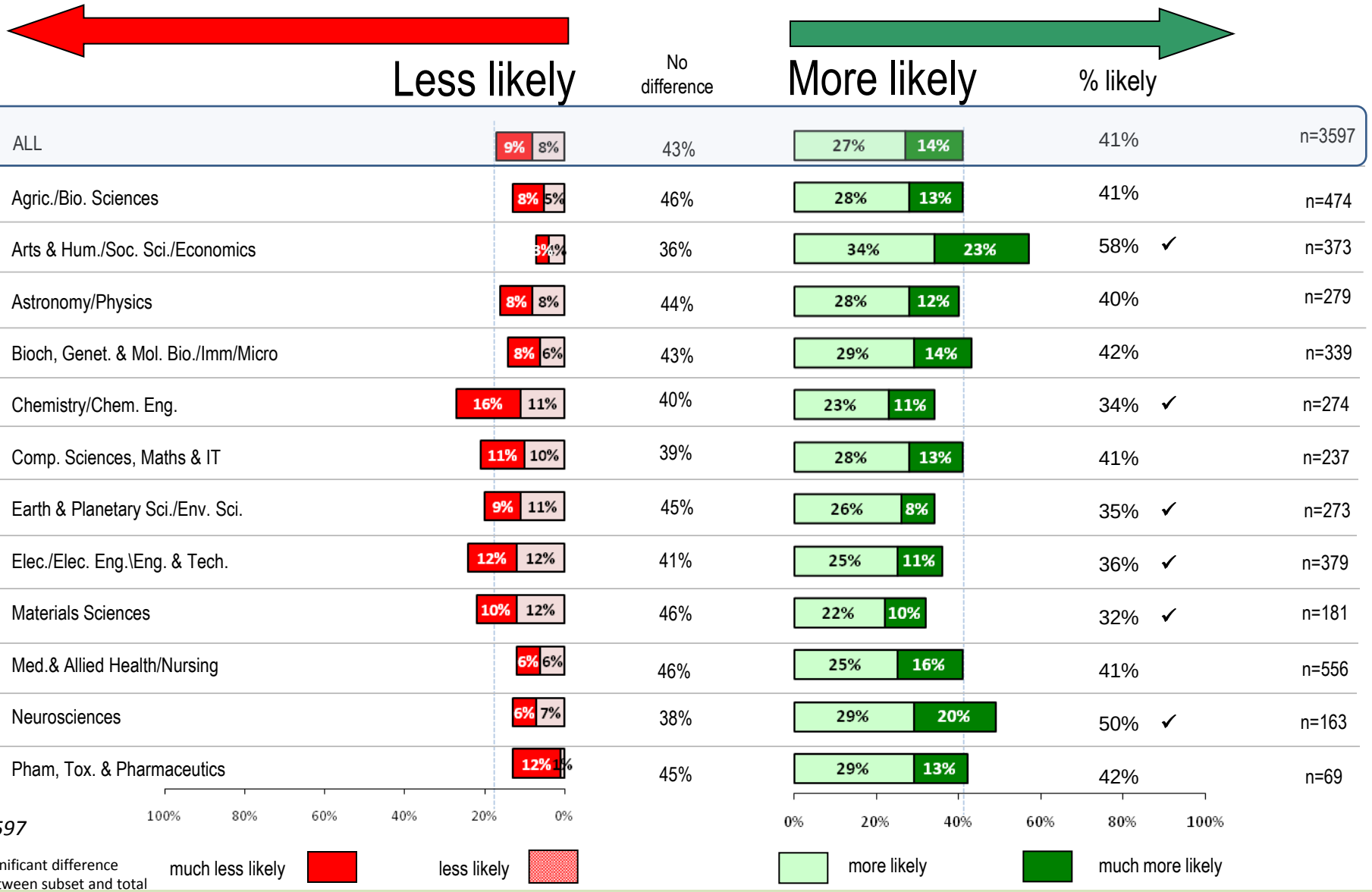
Incentives to review split by subject

Please say which of the following would make you more or less likely to review for a journal: **Payment in kind by the journal**



Incentives to review split by subject

Please say which of the following would make you more or less likely to review for a journal: **Payment by the journal**



Incentives to review split by subject

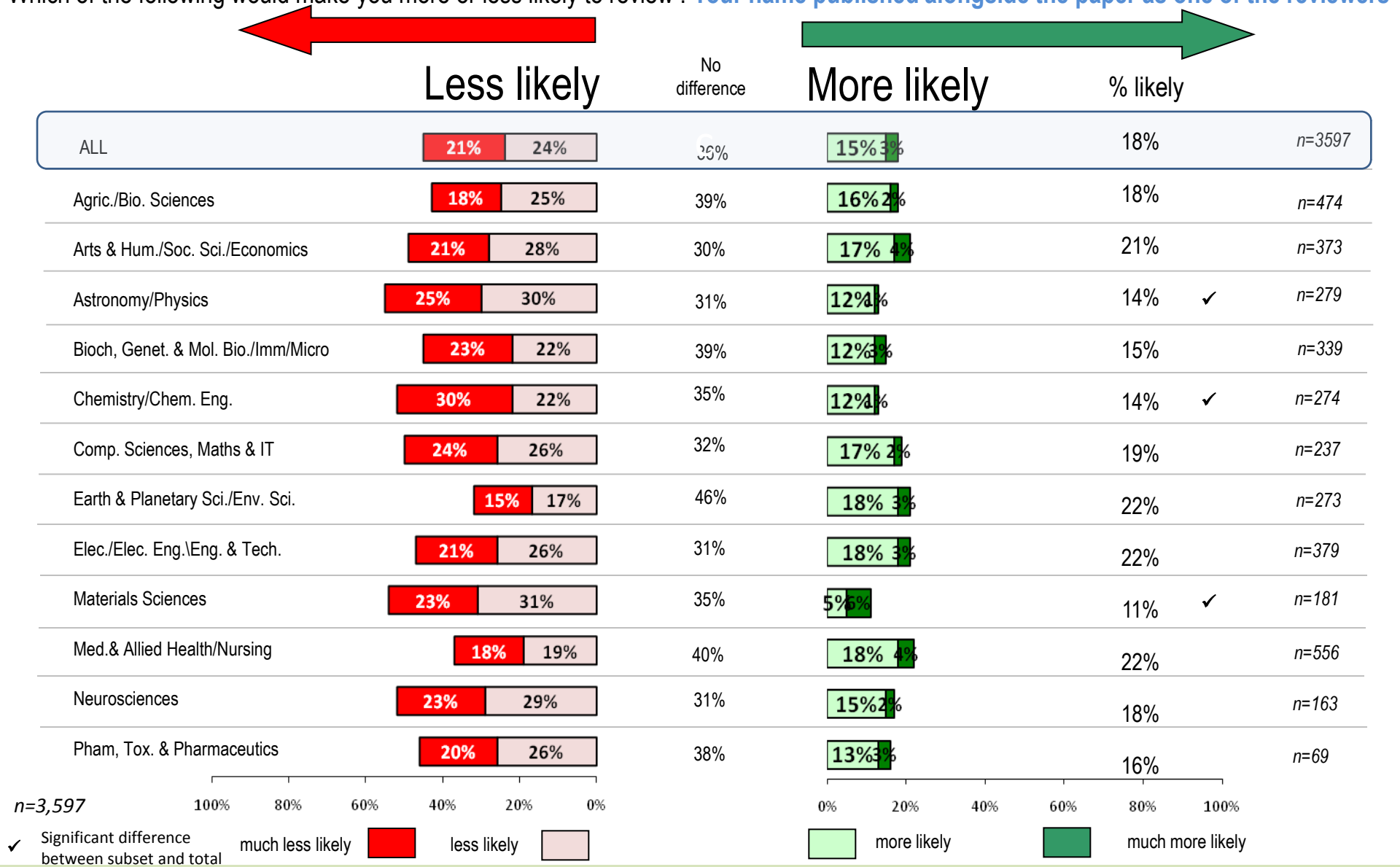
Please say which of the following would make you more or less likely to review for a journal: **Acknowledgement in the journal**

Incentives to review split by subject

Please say which of the following would make you more or less likely to review for a journal: **Accreditation (CME/CPD points)**

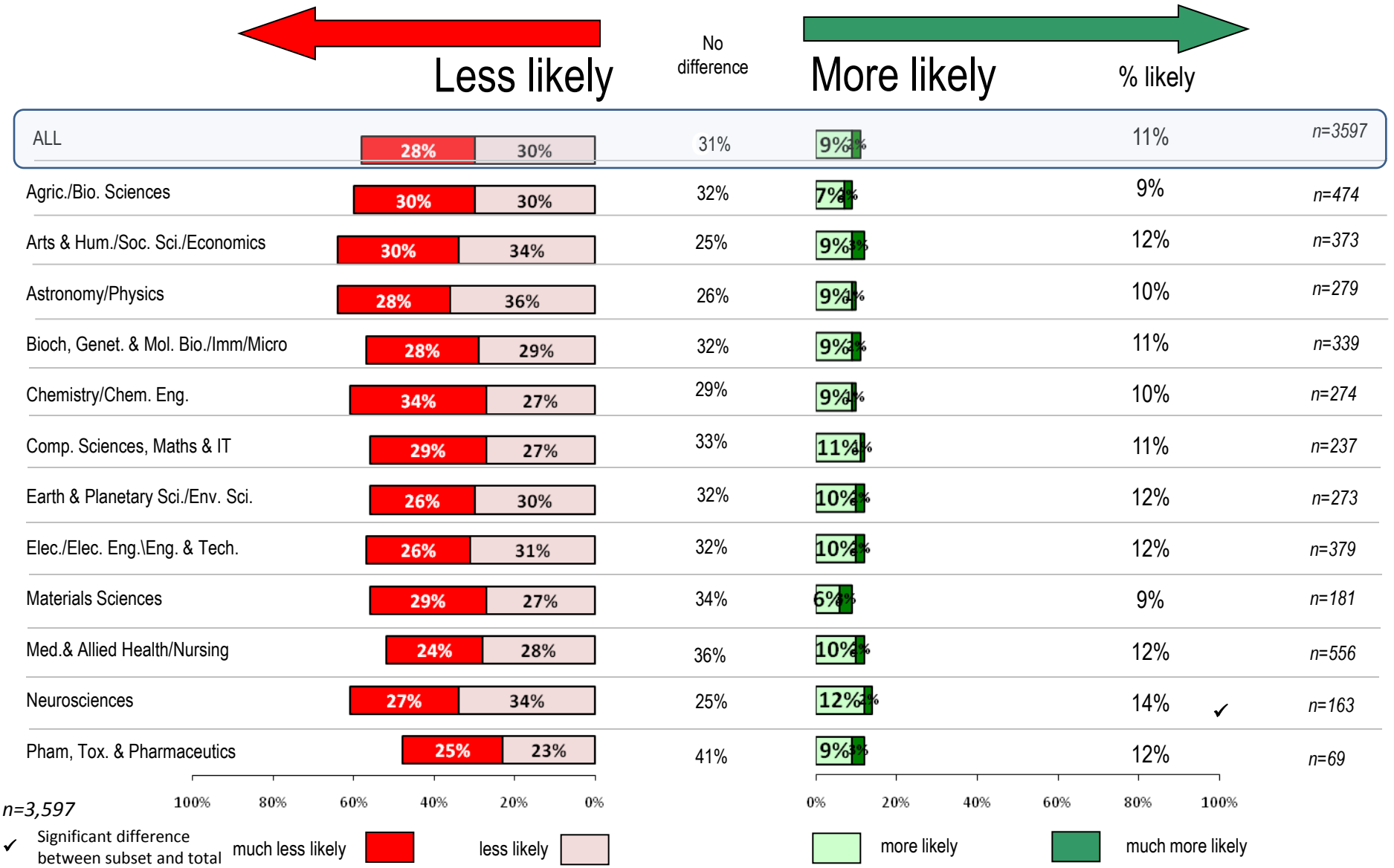
Incentives to review split by subject

Which of the following would make you more or less likely to review : **Your name published alongside the paper as one of the reviewers**



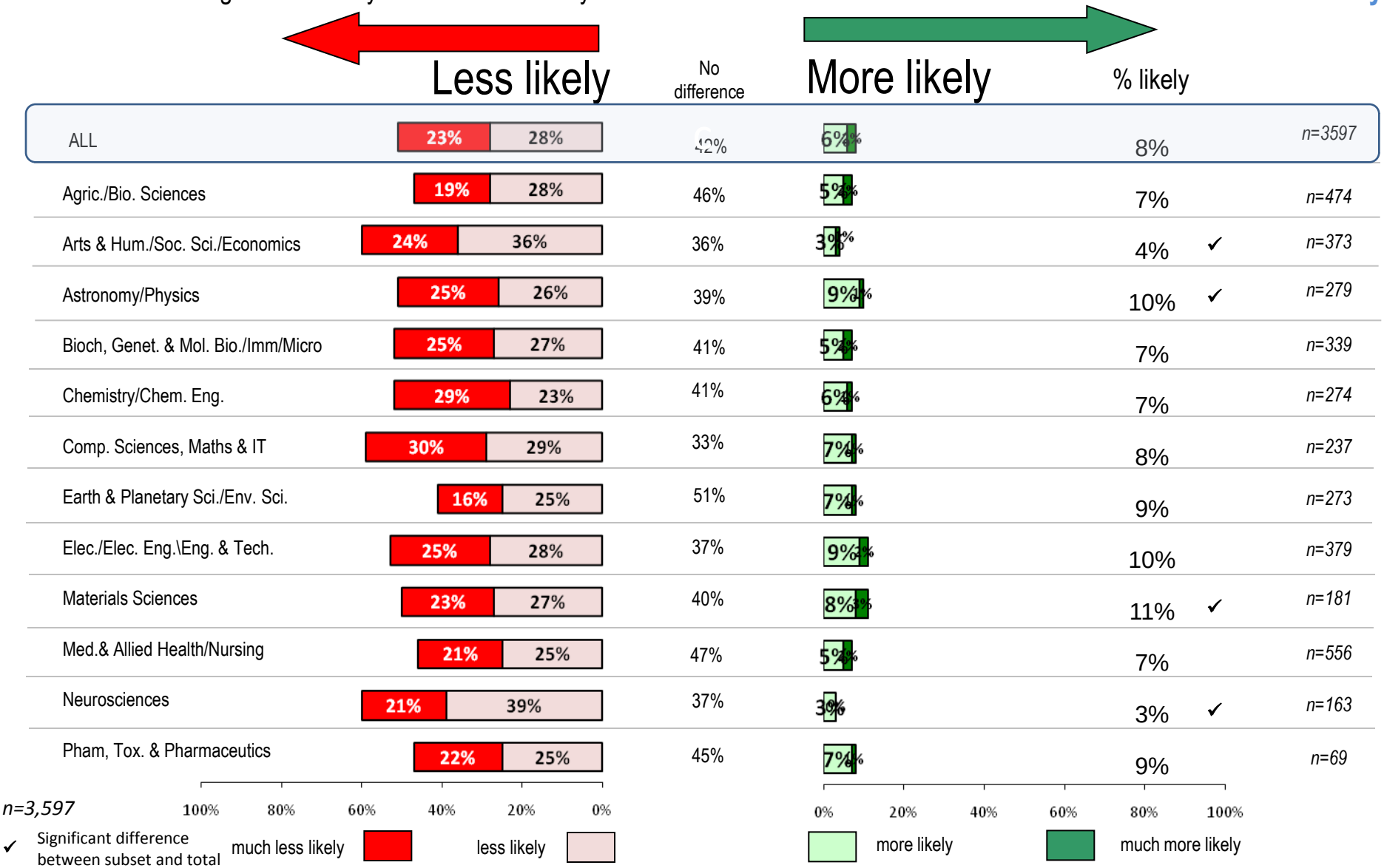
Incentives to review split by subject

Which of the following would make you more or less likely to review : **Your signed report being published with the paper**



Incentives to review split by subject

Which of the following would make you more or less likely to review : **Your name as the reviewer disclosed to the author only**



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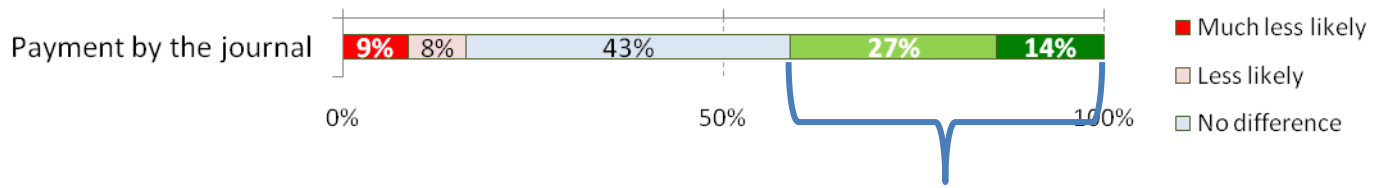
✓ Significant difference between subset and total

Would you still want payment if the following was true?



n=1481

	Author pays the fee	Funding body pays the fee	Publisher/Society covers the cost	
ALL	16%	65%	94%	n=1481
Agri/Biol Sciences	16%	66%	93%	n=194
Arts& Hum./Soc. Sci./Econ	17%	76%	94%	n=215
Astronomy/Physics	12%	61%	89%	n=111
Biochem, Gen & Mol Biol /Immun/Microb	18%	62%	90%	n=143
Chemistry/Chem. Eng	14%	55%	90%	n=93
Maths/Comp. Sci & I.T.	11%	66%	99%	n=96
Earth & Planetary/Env. Sciences	17%	62%	95%	n=95
Elec & Electron. Eng/Eng & Tech.	15%	64%	92%	n=136
Materials Science	21%	71%	95%	n=58
Medicine & Allied Health/Nursing	17%	64%	95%	n=230
Neurosciences	12%	58%	99%	n=81
Pharm./Tox/Pharmaceutics	7%	45%	93%	n=29

Percentage answering “Yes”

contents page

What would incentivise reviewers

While payment for reviewing is attractive to a number of reviewers, some reviewers are concerned that payment might interfere with the objectivity of the peer review process. Payment in kind is mentioned most frequently by reviewers, waiving of publication fees, membership charges, or access to A&I services. Others simply want their articles to be reviewed with the same speed in which they conduct their own reviews.

Give small advantages if review is given on time like access to Scopus, or as proposed here free colour page for the next article accepted in this journal... this could motivate reviewers. But I definitively would not want money or more scientific recognition. Reviewing is part of our job and our reputation should come from the quality of our scientific work. *Aged 26-35 in Biological Sciences from Germany*

I really like the payment in kind idea mentioned in a previous question. Waiving publication costs, or something like that, seems like a nice way to compensate reviewers for their very hard work. *Aged 36-45 in Biological Sciences from the United States*

Certificate by the journal (for author's CV). *Aged 26-35 in Biological Sciences from Slovenia*

Reviewers are very busy. They are volunteers. So the review process is #10th on the to-do list. They need encouragement to speed up the process. Reviewers with fast processing time and high quality reviews should be rewarded by the journal. Mouse pads and key chains are bad awards. Discounted/free publications are awards that will attract more reviewers and help them to speed up the process. *Aged 36-45 in Materials Science from the United States*

Incentives not in cash but for example free membership to a learned society, free access to articles in a journal that requires permission may be given as a token of appreciation of the review work done. *Aged 56-65 in Mathematics from Malaysia*

Offering some kind of reward to the reviewers in the response time of their own papers….I am not asking for my papers to be accepted, only to be reviewed in reasonable time. Also, receiving a hard copy of the journal where I am reviewing, or a discount on the membership fees, or discount on products (books, online access), would be great. *Aged 26-35 in Electrical & Electronic Engineering from Brazil*

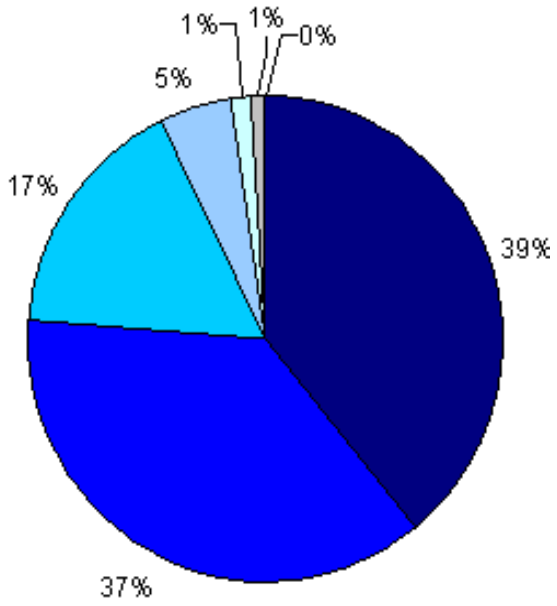
Training/guidance of reviewers Publisher offer access to journals/sources not available by normal academic library system. *Aged 36-45 in Computer Science/IT from Cyprus*

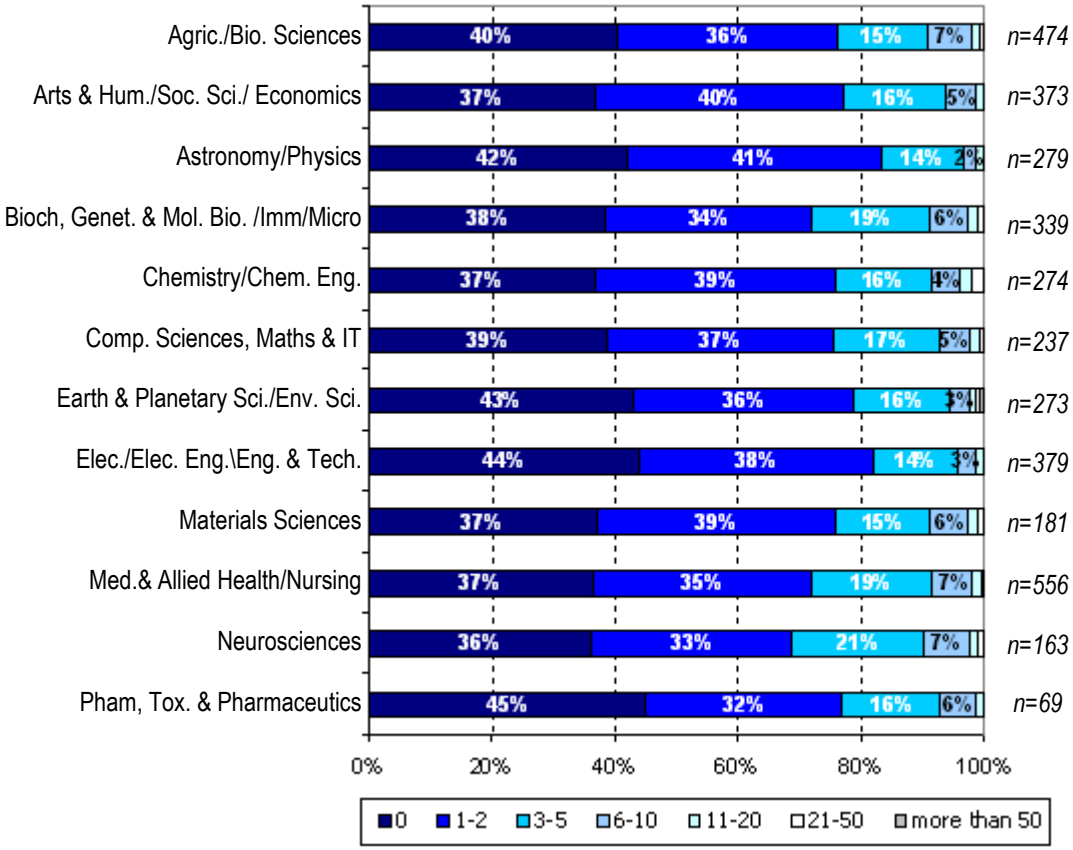
Remuneration would be a BIG help. Review represents a huge amount of effort and pulls us away from our own research. I have the impression that many of the big shots take advantage of the review process, flooding journals with their papers, and not reviewing nearly the same number as they submit. Essentially I am furthering their careers at the expense of my own, and I have grown weary of this. This is why I have refused to review more papers lately. It is a thankless task. And insult is added to injury when I see a paper that is published without ANY changes to the paper, despite all the time that I devoted to writing careful criticisms. *Aged 36-45 in Biochemistry from the United States*

How often do reviewers decline to review?

Question: During the last 12 months, how many times have you declined an invitation to review? *(percentage in italics equals percentage of respondents who have declined at least one invitation to review)*

Mean number of rejected papers is 2 per annum





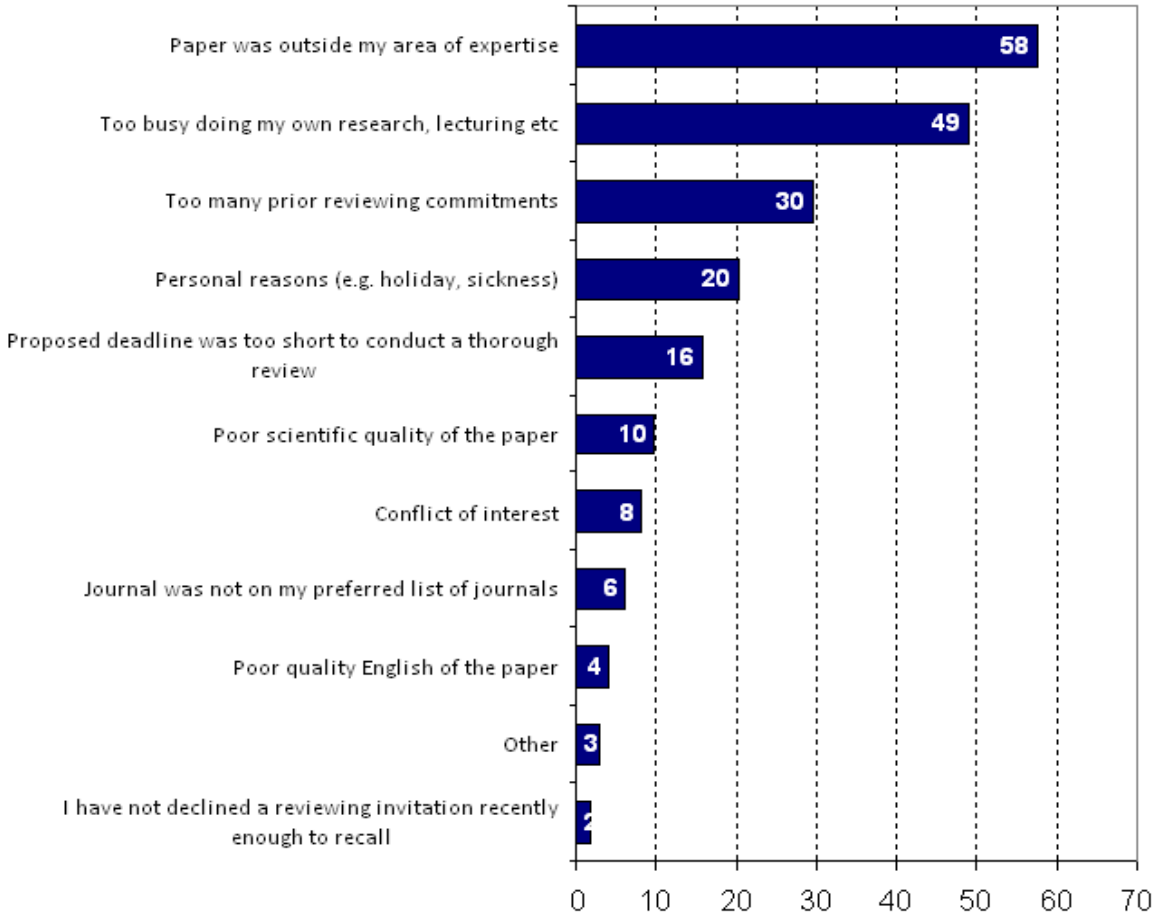
% of respondents who have declined at least one invitation to review	
ALL = 61%	
59%	
63%	
58%	
62%	
63%	
61%	
57%	
56%	✓
63%	
63%	
64%	
55%	

n = 3597

Why reviewers decline to review

Question: Thinking of the last time you declined an invitation to review, what were the main reasons for declining: (Select up to a maximum of three reasons)

% agree



Poor matching of articles to reviewer's expertise is the main reason for invitations to review being declined. This is particularly high in the material sciences (82%).

Those in medicine are more likely to decline because they are too busy (58%) rather than because they have been mismatched (47%).

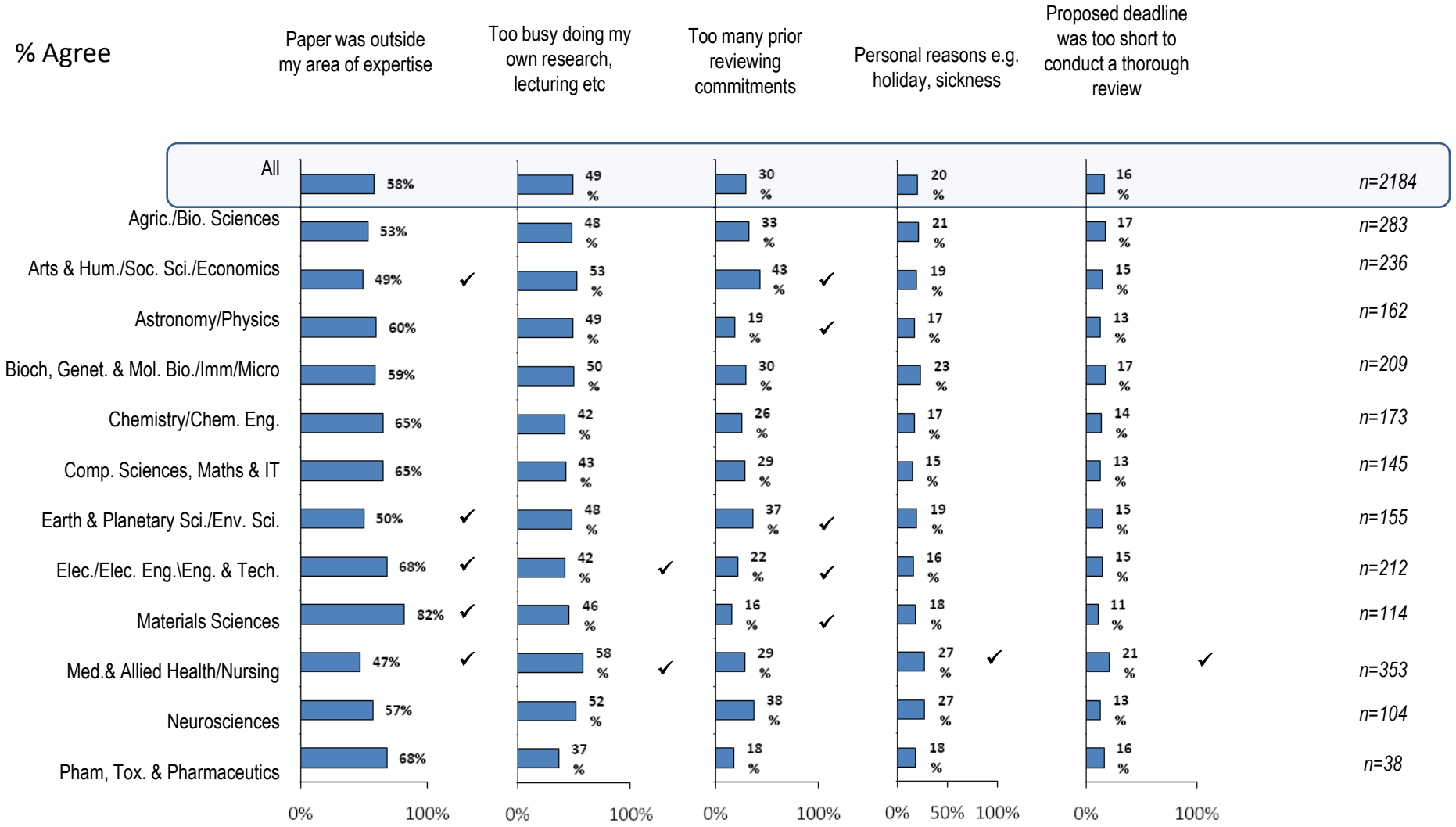
It is rare for a reviewer to turn down a request to review because of the poor quality of the research article they have been asked to review (4%)

n=3597

Why reviewers decline to review split by subject

Respondents were asked if they had declined an invitation to review within the last 12 months. Those who had declined at least one review were asked to select the main reasons for doing so (a maximum of three reasons could be selected).

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)



Why reviewers decline to review split by subject

Respondents were asked if they had declined an invitation to review within the last 12 months. Those who had declined at least one review were asked to select the main reasons for doing so (a maximum of three reasons could be selected).

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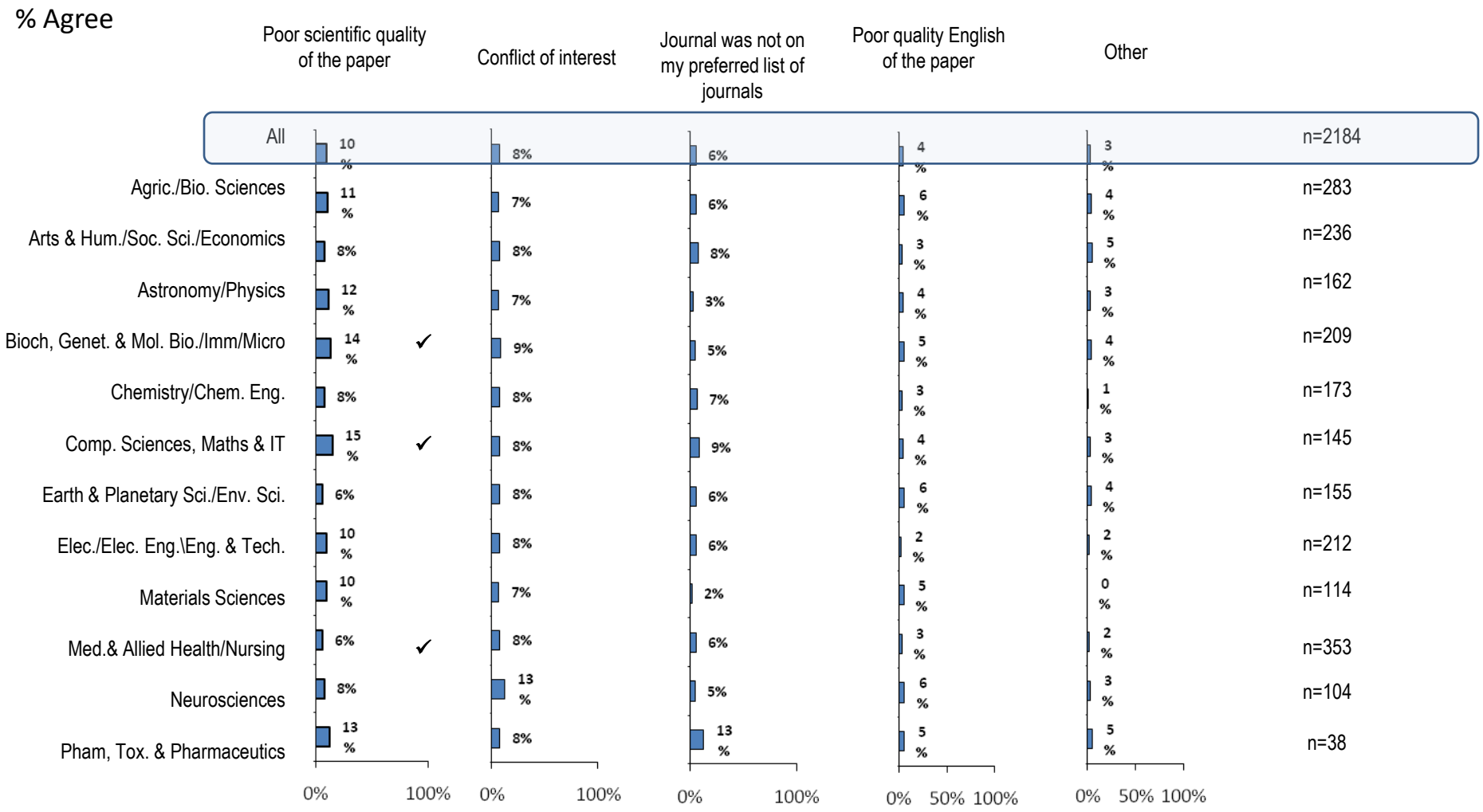


Voice of the Reviewer

contents page

Reasons for Declining to Review

It is the ad hoc reviewing that is problematic - I am on the editorial board of 4 journals and an editor for another- when editors randomly send articles with short review horizons to me in areas outside my expertise, I am almost always going to decline. therefore, journals should build up their stable of ad hoc and. or review board members to they have large pool of people who are familiar with the journal mission, time frame and review process of this journal. *A female Head of Dept/Senior Manager aged Over 65 in Social Sciences from the United States*

Spread the wealth. The editors act as if you are only reviewing for them. In the last year, I have reviewed for 8 different journals. Some of these send a review each month. I am overwhelmed *A male head of dept/senior manager aged 46-55 in Medicine & Allied Health from the United States*

Many journals need to refresh their review formats, which I find to be quite limited. I also find that, because I complete reviews on time and rarely turn down an invitation to review, some journals send me more and more manuscripts, which can make me feel that they are taking advantage of me. So editors should be careful about respecting the time of reviewers, including those who are prompt with their reviews. *A male (position listed as other) aged 36-45 in Social Sciences from the United States*

As a condition of publication, the authors of each paper should be required to provide peer review for at least two others (in total), preferably more. When I complain to editors about the number of requests for peer review that I receive, they tend to reply that they send so many requests because they get so many refusals, and that the people who write the most papers are often the worst offenders. -No wonder; reviewing other people's papers takes a lot of work if done properly, and that would cut into their own busy publishing schedule! Make them do a couple of reviews before they are allowed to publish again! If I decline an "invitation" to review, citing my own busy schedule, I get pressure from the editor. In response to that, I have been delaying completion of the reviews until I receive at least the first "review overdue" notice from the editor. This is not good for the authors, but limits the frequency of reviews I have to do. *A male senior researcher/middle manager aged 36-45 in Chemistry from Canada*

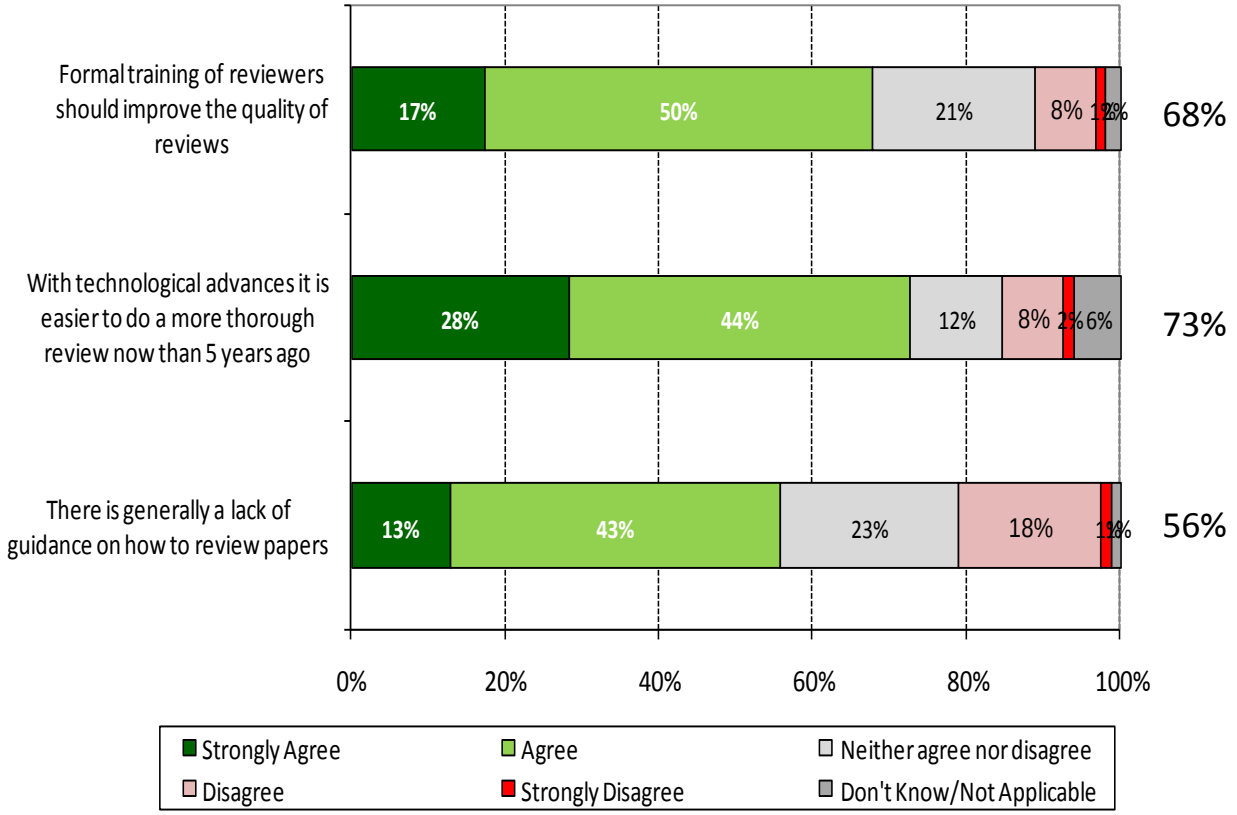
Improving peer review

There is a perceived general lack of guidance on how to review papers, and most believe that reviewers would benefit from formal training. However, surprisingly few reviewers actually train younger colleagues as part of the review process itself, just 3.2%. Peer review is normally confidential, but editors often will allow others to review when permission is sought.

Question: The last paper you agreed to review was:

% agree

Question: Please indicate the extent to which you agree with the following:

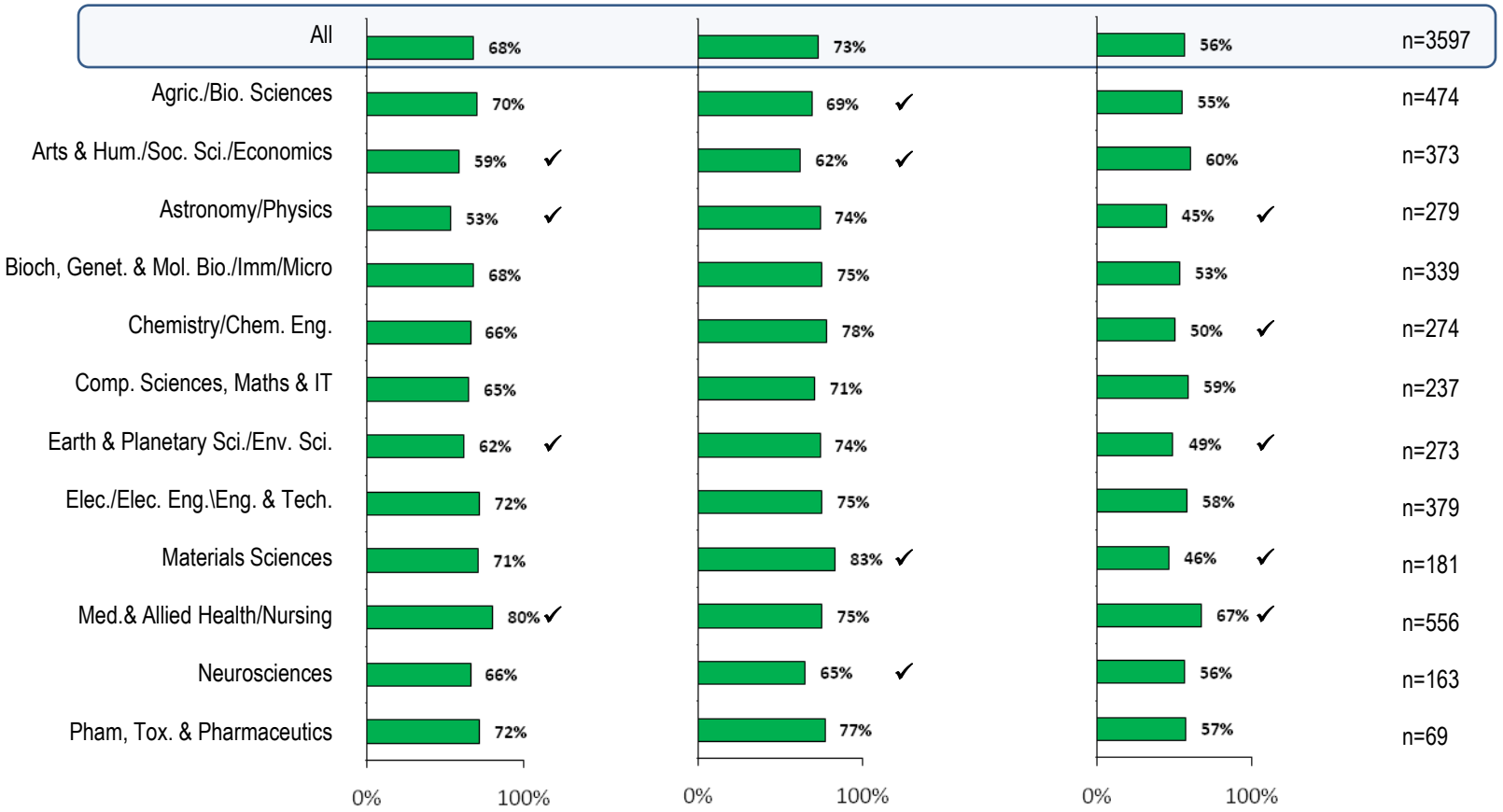


n=3,597

Improving peer review split by subject

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

% Agree



Voice of the Reviewer

Improving peer review

contents page

Reviewers suggest clearer guidelines, and formal training specifically workshops

More information/guidance on what the journal is looking for. Peer review is one of those things that is sprung on young scientists often without much preparation/guidance. *Aged 36-45 in Biological Sciences from the US*

I do like the idea of some sort of formal training, although it is difficult to see how that can be effected. As reviews are supposed to anonymous and private, it is not ethical to bring students into the process, despite their need to learn how to do it. *Aged 26-35 in Astronomy from the United States*

They should be invited for special workshops for improving quality of reviewing and to ensure uniformity at least once in two years *Aged 46-55 in Physics from India*

With training and something like a "manual" which would include both technical and ethical aspects. *Aged 46-55 in Immunology from Mexico*

The recent move to electronic-based mechanisms of peer-review have made things vastly easier than even five years ago. Perhaps some more stringent guidelines from editors in terms of what they expect in the review would be helpful. *Biological Sciences from the US*

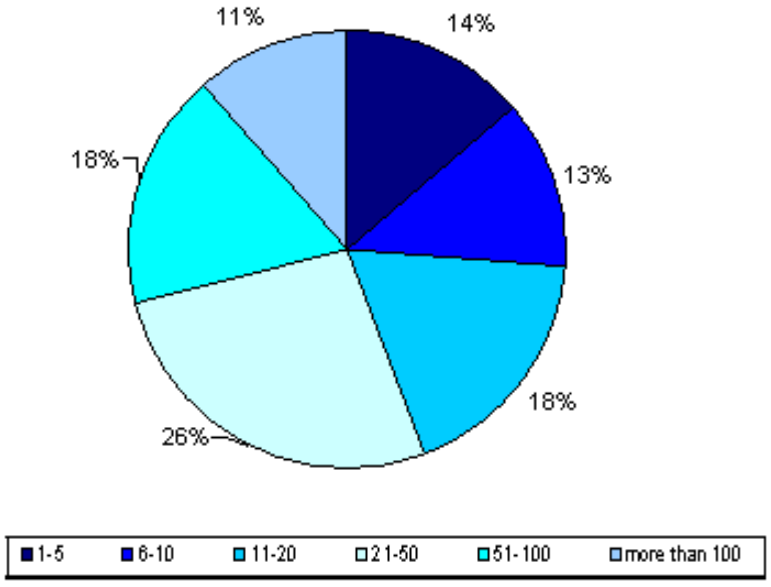
Clear guidelines on what a journal is looking for in their review. In many ways, it would be useful to see a sample paper + review to give an indication of what an A grade review should look like. This might help raise the general quality, since currently I suspect that many people write reviews to the standard that their own papers have been reviewed. Journals should specify clearly what sort of papers they prefer to publish. I've frequently been asked to referee for journals that I've never published in and am only vaguely familiar as a coherent journal (since in this wonderful internet age I read papers not journals). Online forum for discussion of the paper might be useful e.g. cosmocoffee (in principle - although that doesn't happen much). Since the referee is trying to make as informed a judgement on the paper as possible, being aware of possible issues with the paper that others have noticed could be useful. There's of course the danger of groupthink...*Aged 26-35 in Astronomy from the United States*

Authors' experiences of peer review

Authors' experiences of peer review

A relatively high proportion of authors (78%) had their most recent paper rejected by their first choice journal. Prior to publication most had to revise their article, and the vast majority (91%) believed that the review process improved the quality of their paper.

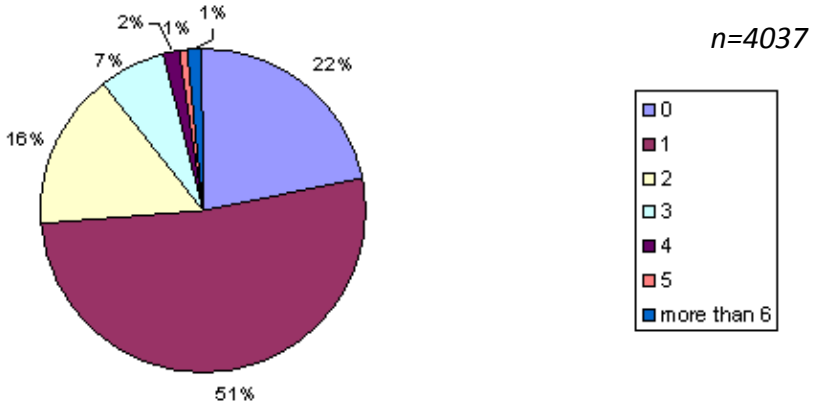
No. of articles published in career to date



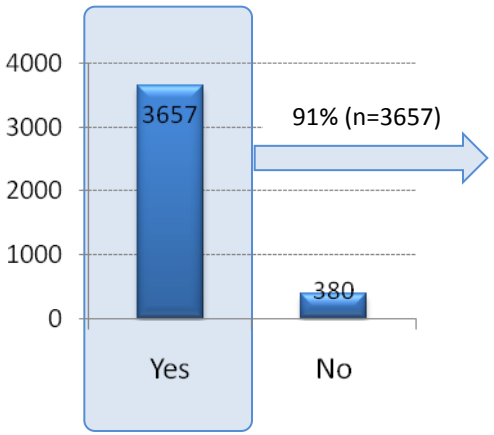
n=4037

Respondents were asked to consider the last peer-reviewed paper they had accepted for publication

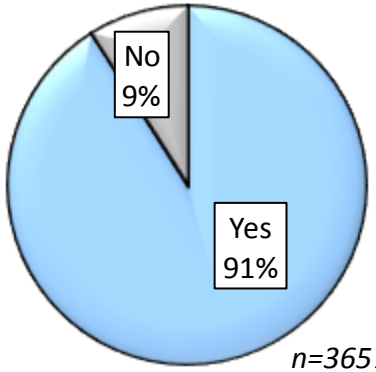
How many journals (if any) rejected your last paper before it was accepted?



Did you have to revise the paper? *n=4037*



If yes, do you think the review process improved the quality of the paper?



n=3657

Authors' experiences of peer review split by subject

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

Respondents were asked to consider the last peer-reviewed paper that they had accepted for publication

How peer review improved articles

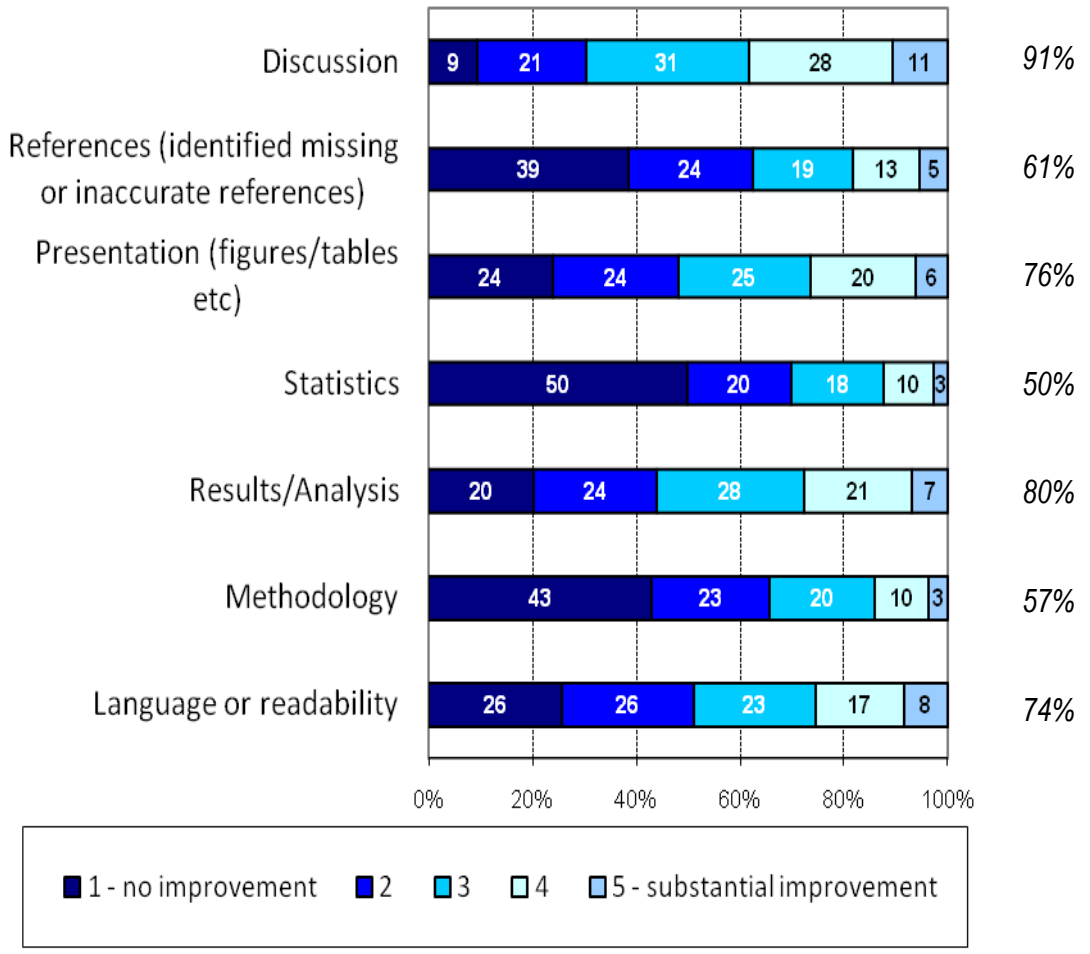
Question: Respondents who agreed that peer review had improved their most recent paper were asked which aspects were improved and to what extent?

The biggest area of improvement was in discussion, 91% felt that it had been improved to some extent, with 11% specifying a substantial improvement. However, this fell to just 83% in the Mathematics/Computer Science and IT area.

Only 50% saw an improvement to their paper's statistics (although the 50% who saw no improvement is likely to include those whose papers did not contain any statistical analysis).

Materials Science respondents had the highest percentage of improvement in 5 of the 7 aspects.

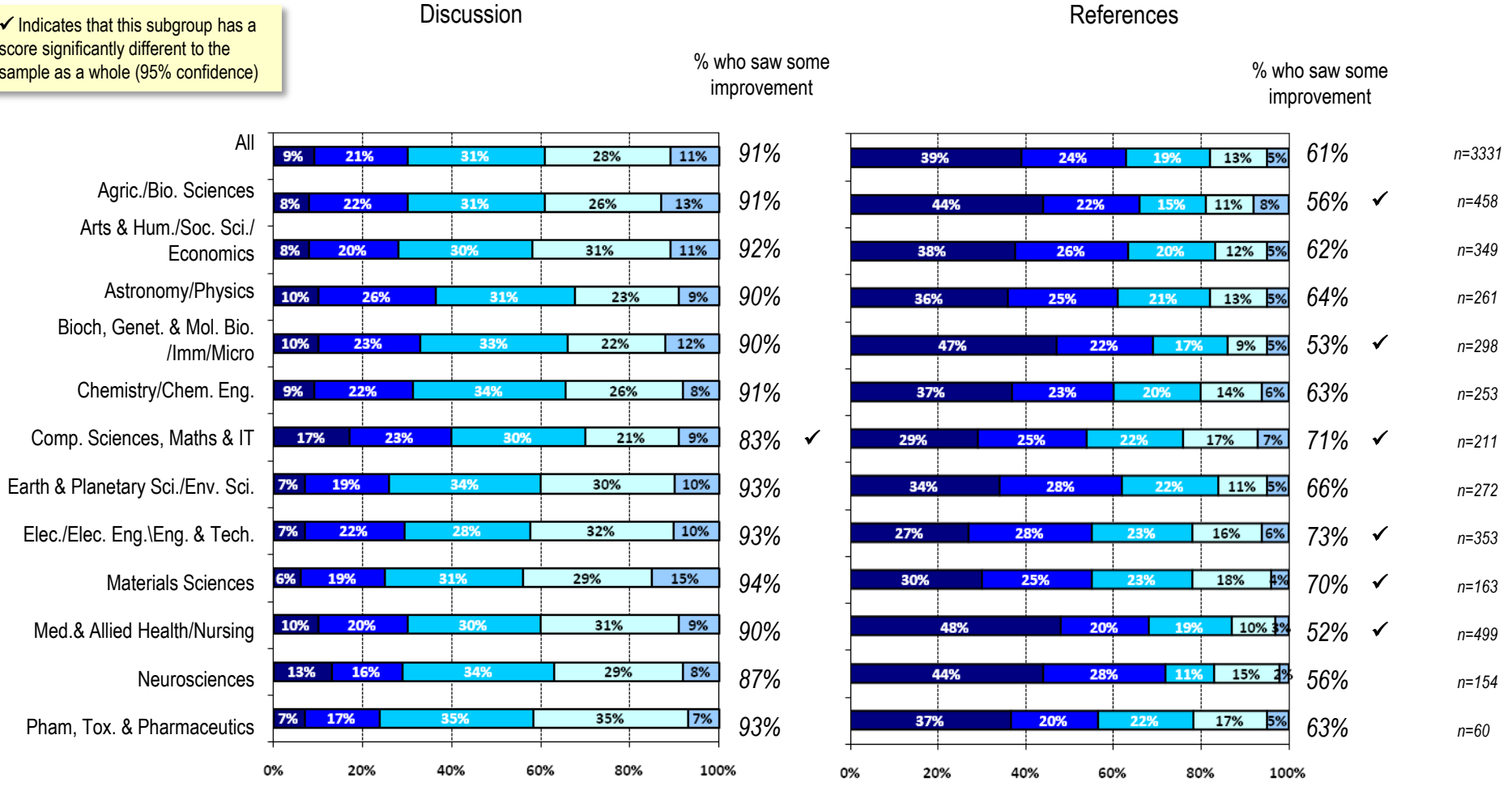
Least convinced that peer review improved their paper were Astronomy/ Physics respondents, who had the lowest percentage of improvement in three aspects.



n=3331

Aspects of improvement split by subject

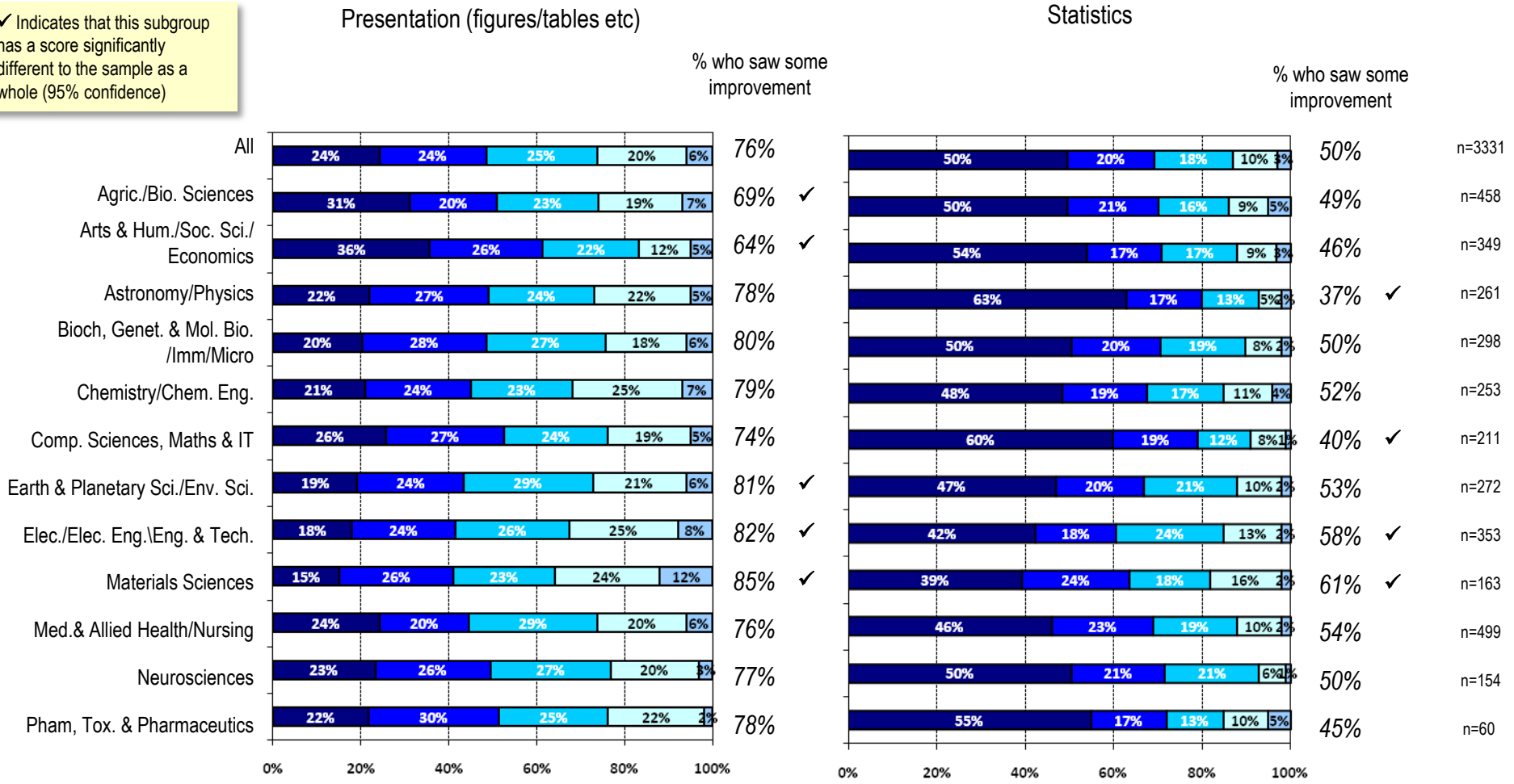
✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)



n=3331

Aspects of improvement split by subject

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

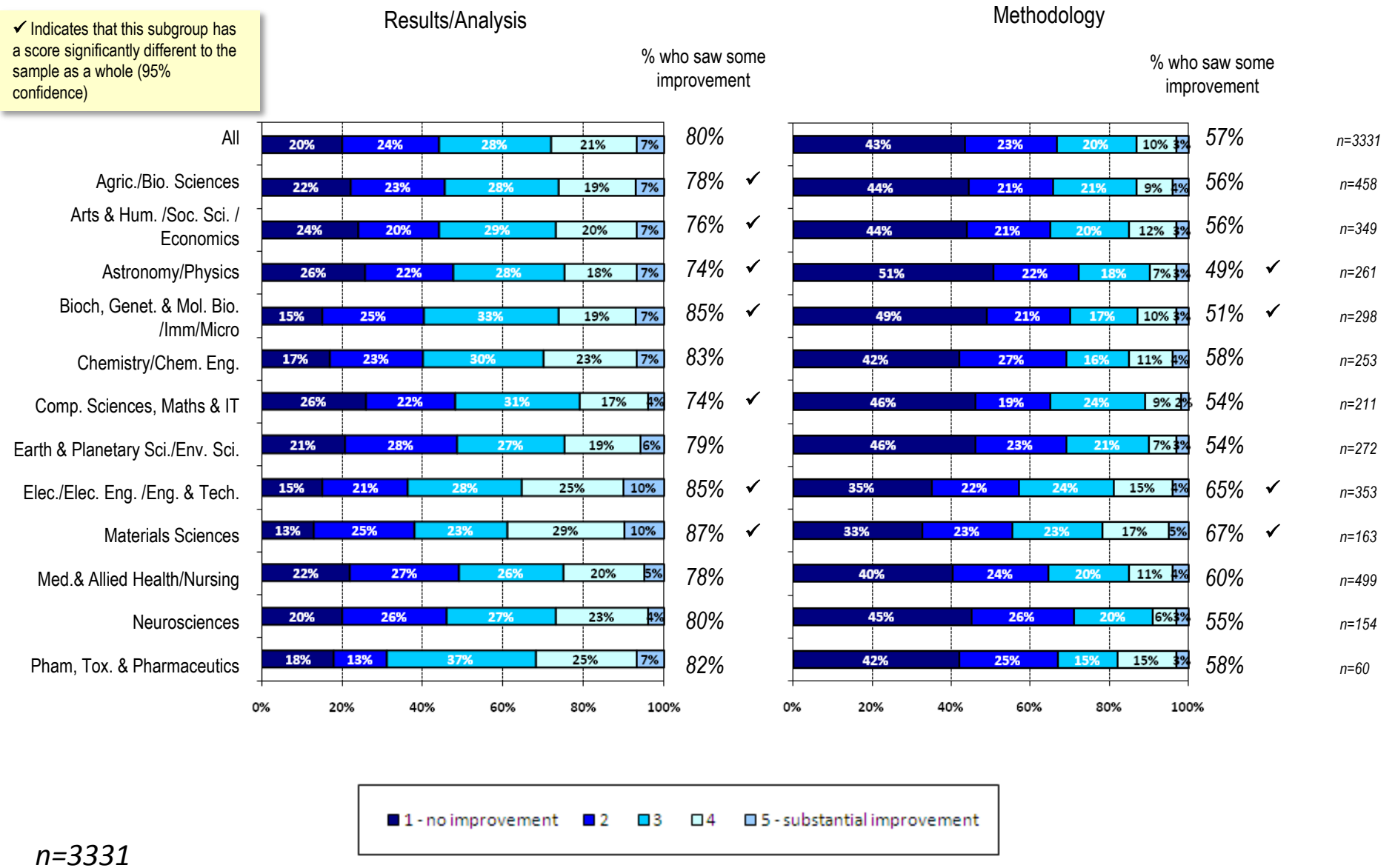


It seems to be reasonable to have an experienced statistician linked to the journal. It can protect authors from some "difficult" questions of reviewers, who could be experts in their field, but not in statistics.
Aged 56-65 in Medicine & Allied Health from Russia

n=3331

Aspects of improvement split by subject

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

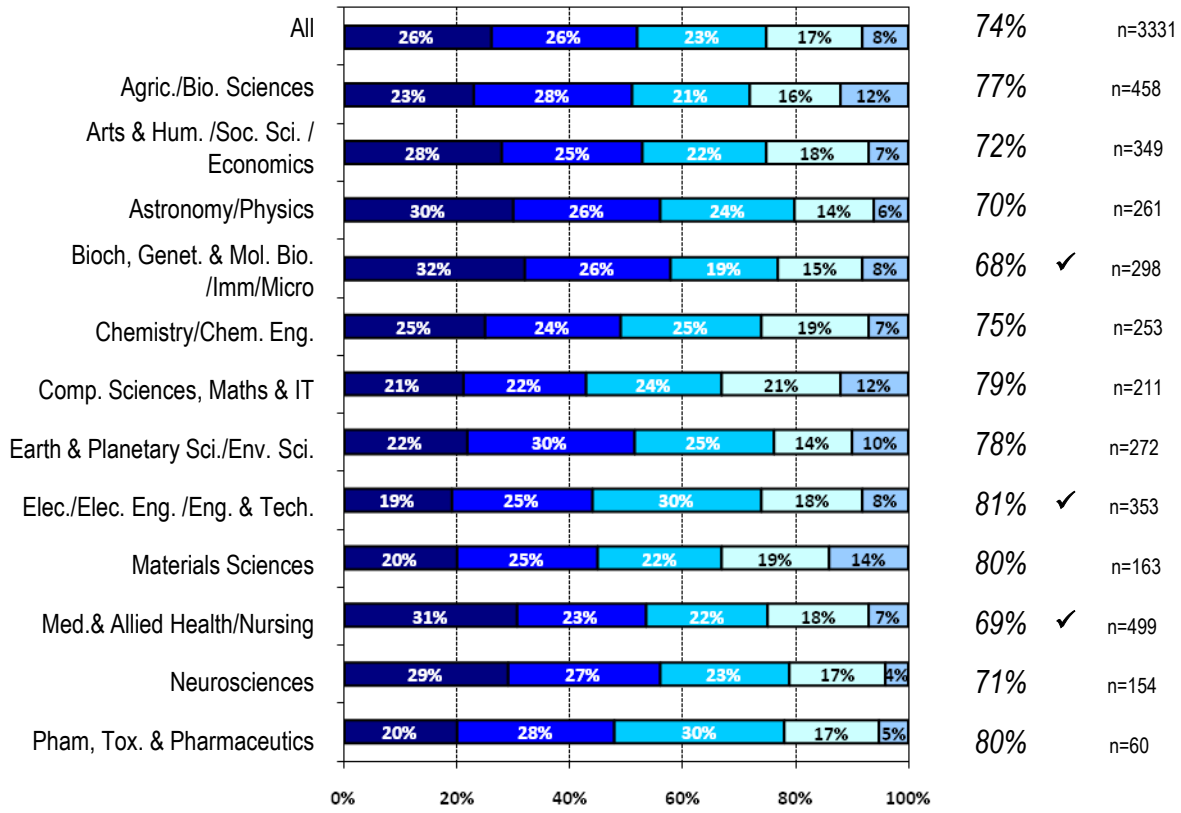


n=3331

Aspects of improvement split by subject

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

Language or Readability



Editing English language errors feels like a waste of time, when the focus should be on assessing the quality of the research itself. Better language support should be offered to those authors who do not have English as a first language. My heart just sinks when I receive a poorly written paper, and this definitely affects my opinion of the paper as a whole - it really shouldn't be this way. *A female researcher/staff member aged 36-45 in Earth and Planetary Sciences from South Africa*

Authors benefit from both big picture comments about the paper (significance, interpretation, context) and fine detail (statistics, consistency, presentation, tables and figures). Some reviewers are better at one task than the other, hence a good editor ought select reviewers who between them can cover all the important aspects of the paper. A clear rejection is more helpful than an ambiguous invitation to resubmit. *A male head of dept/senior researcher aged 46-55 in Medicine & Allied Health from Australia*

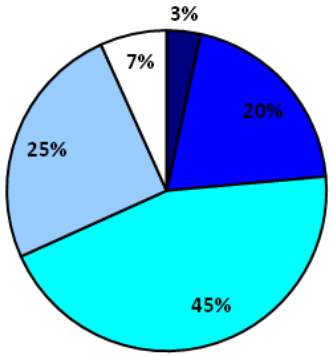
n=3331

Length & perception of peer review

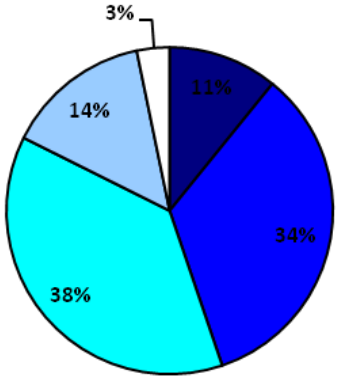
For most authors (68%) it took up to 2 months to receive a first decision on their paper. Approximately 58% were satisfied with the speed of first decision. Most authors (69%) had their final decision within 6 months, 54% were happy with the length of time it took to receive their final decision.

Approximately, how long did the peer review process take:

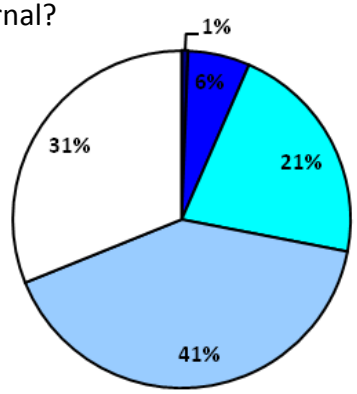
From submission to first decision?



For any revision stages you undertook?



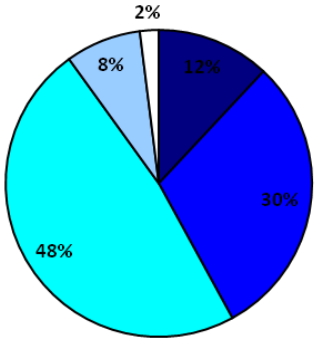
From submission to final acceptance by the journal?

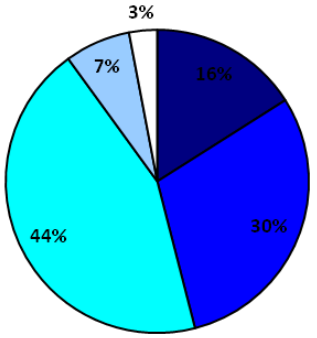


1 week or less | 2-3 weeks | 1 to 2 months | 3 to 6 months | more than 6 months

n=3146

How did you feel about the reviewing time:





Very slow | Slow | Acceptable | Fast | Very fast

n=3146

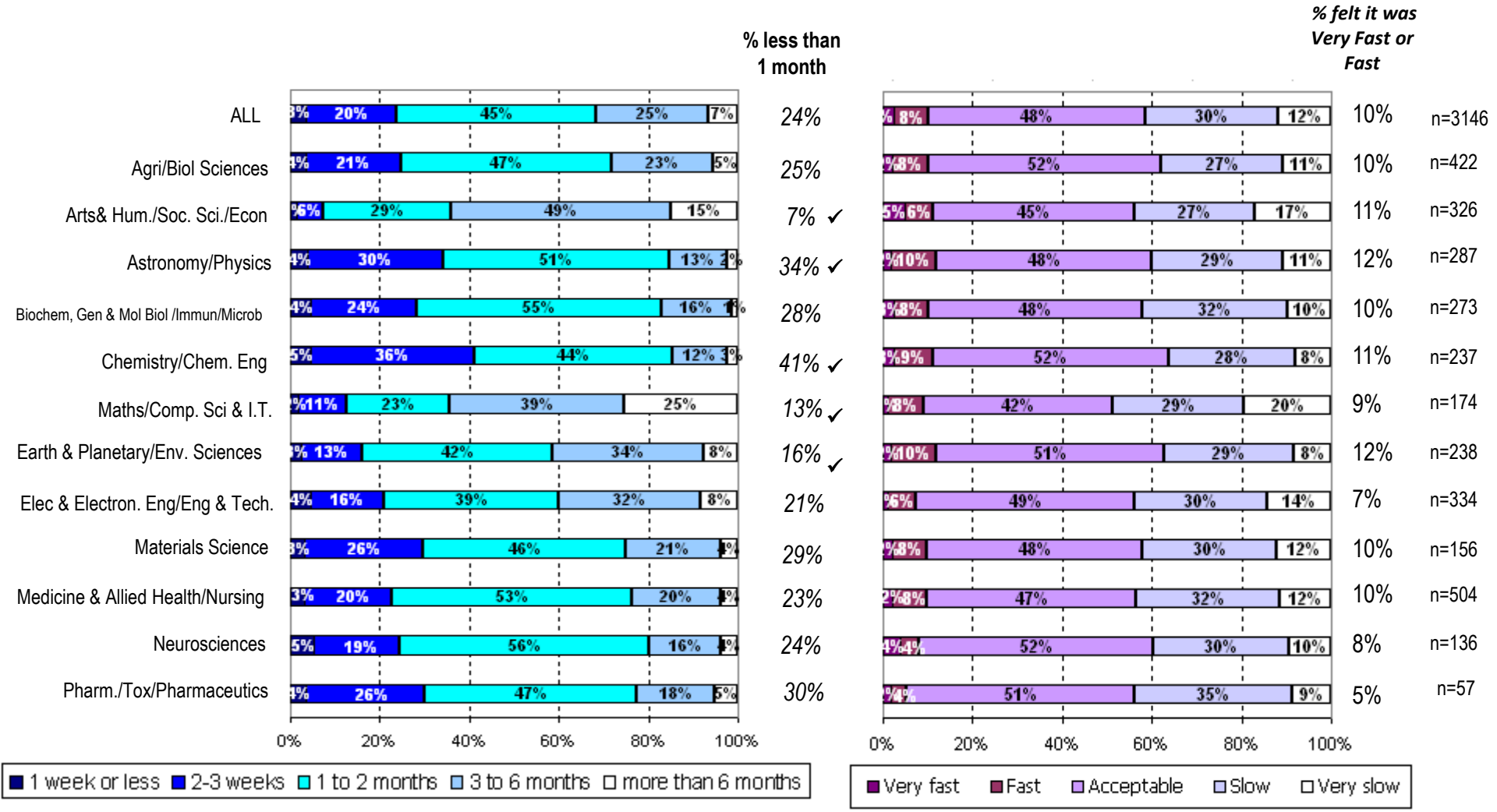
Length of peer review split by subject

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

From submission to first decision

Question: Approximately, how long did the peer review process take:

Question :How did you feel about the reviewing time:

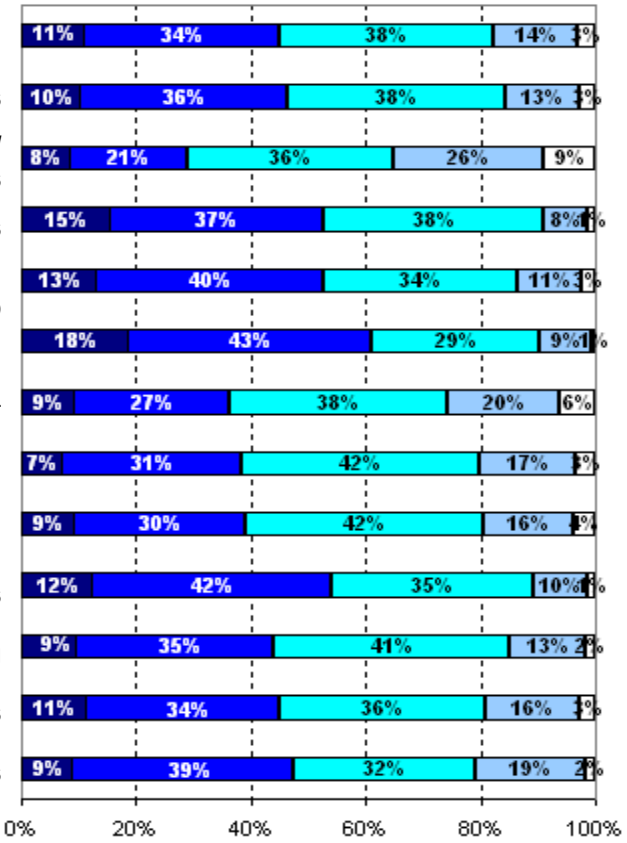


Length of peer review split by subject

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

For any revision stages you undertook?

Question: Approximately, how long did the peer review process take:



Mathematics/ Computer Sciences and IT and Arts & Humanities/Social Sciences/Economics had the largest proportion of articles taking 3 months or more to reach first decision (64%). These two subject areas had the highest proportions of respondents stating that the time taken was very slow (20% for Maths, 17% for Arts).

When looking at time taken to final decision, Arts & Humanities/Social Sciences/Economics had the largest proportion of articles taking 6 months or more (58%) and again had the joint highest proportion of "very slow" ratings (22%)

Chemistry/Chemical Engineering has the highest proportion of respondents receiving a first decision in under a month (41%). Chemistry/Chemical Engineering also had the highest proportion of articles reaching final decision in under three months (44%). Just 8% of Chemistry/Chemical Engineering authors felt that time to final decision was very slow.

Arts & Humanities/Social Sciences/Economics had the greatest proportion of articles taking more than 6 months to revise.

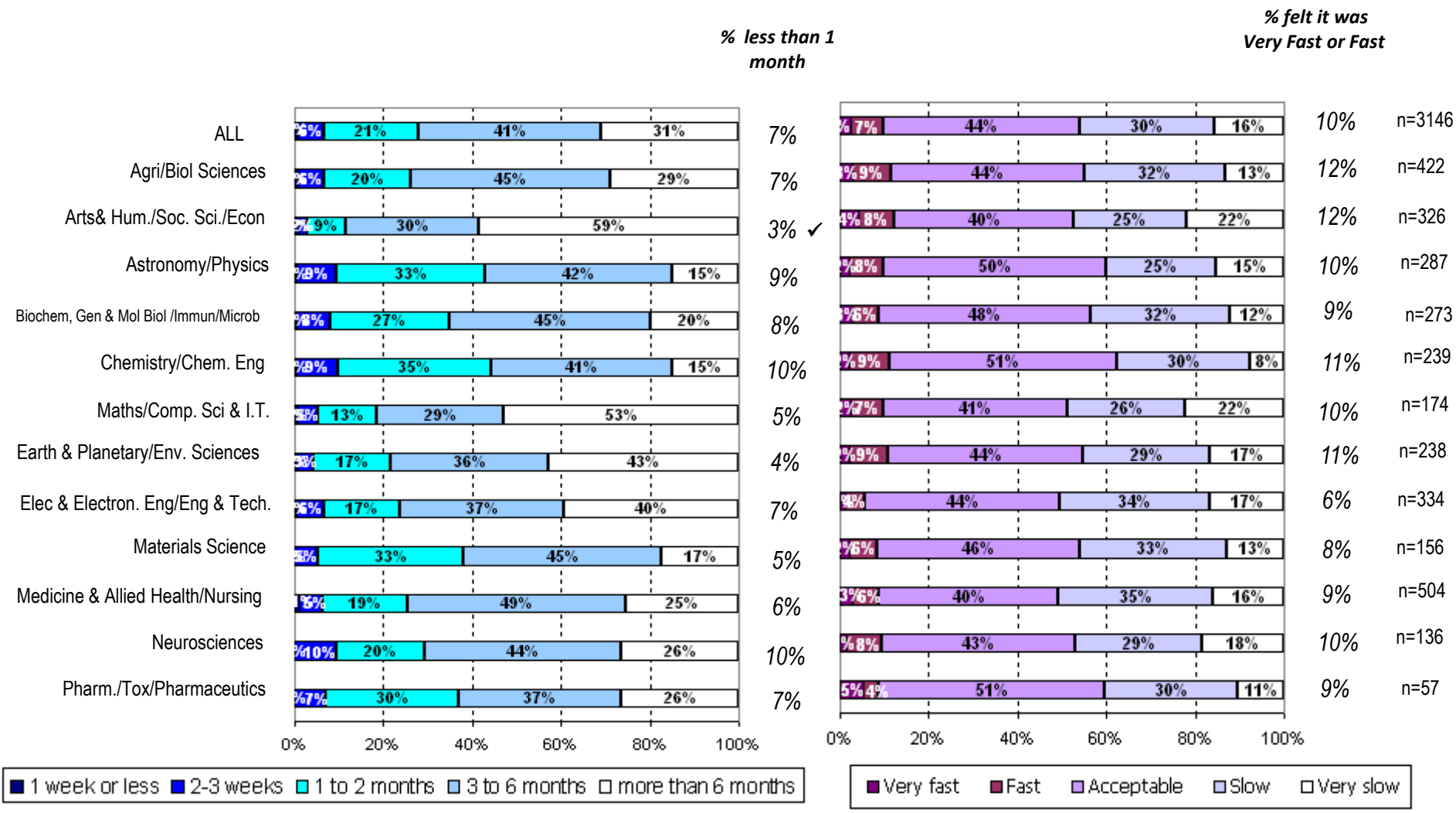
Length of peer review split by subject

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

From submission to final acceptance

Approximately, how long did the peer review process take:

How did you feel about the reviewing time:



Length of peer review - Verbatims

Print Journals, if they are to maintain their position as the vehicle of professional scholarly communication, must improve the lag between submission and publication. On the journals for which I review, I am generally given three to six weeks. Asking reviewers and editors to be timely and avoiding publication backlogs caused by accepting more manuscripts than can be published would go a long way to improving this problem. *A male head of dept/senior manager aged 56-65 in Social Sciences from the United States*

Unfortunately is hard to strike a balance between the time you actually have, and would like to have, to review a paper and the time given to complete the review. We all like to fast, unbiased and comprehensive review of our work. However is increasingly difficult to do so when you have to write papers, oversee students, find funding, teach, etc. etc. A recognition of some kind may help to prioritize reviewing over some other activities. Opening the reviewing process with a "real time" on-line based system (like a chat room) where people can discuss the paper may be a way to increase the quality of the process and to ease some of the work load ascribed to a single reviewer. *A male senior researcher/middle manager aged 26-35 in Electrical & Electronic Engineering from the United States*

Increased turn around would be nice, but this would limit helpful reviews. *A male (position listed as other) aged 36-45 in Biological Sciences from the United States*

Provide easy access to articles relevant to the one being reviewed - sometimes I have to wait for interlibrary loan of article that I would like to look at for review. Making pdfs of relevant recent articles available may decrease time of review. *A female researcher/staff member aged 46-55 in Medicine & Allied Health from the United States*

Offering a two or three fold publishing road: 1) Fast publishing with no (or just positive comment) 2) Offering a unique second round with minor modification and-or critical referee comment added at the paper end, offering a fast final feedback (2-3 weeks) 3) Offering a fast publication without any acceptable modification, embedded by a referee negative records that may be a) cautelative. b) aggressive, c) Total disagreement, Any Negative remarks may overshadows the paper but let open the free press to wide ideas. Negative remarks may be even offensive to some authors, but it offer they a wider forum of discussion anyway. Or just let them free to withdraw their article. Author may soon decide to accept the mark but to reach the wider scientific arena. The referee may keep his name hidden for most cases, but not in radical negative reply *A male senior researcher/middle manager aged 56-65 in Physics from Italy*

I see that the time for review is on the survey's collective mind. this is a good point. We could all do better in getting our reviews in on time, but I think a slow review is likely to be a better review. I sometimes sit on a review -- but am often thinking about the review during that time. I think my weakest reviews are reviews that, for some reason, I do fast. *A male senior researcher/middle manager aged 56-65 in Biochemistry from the United States*

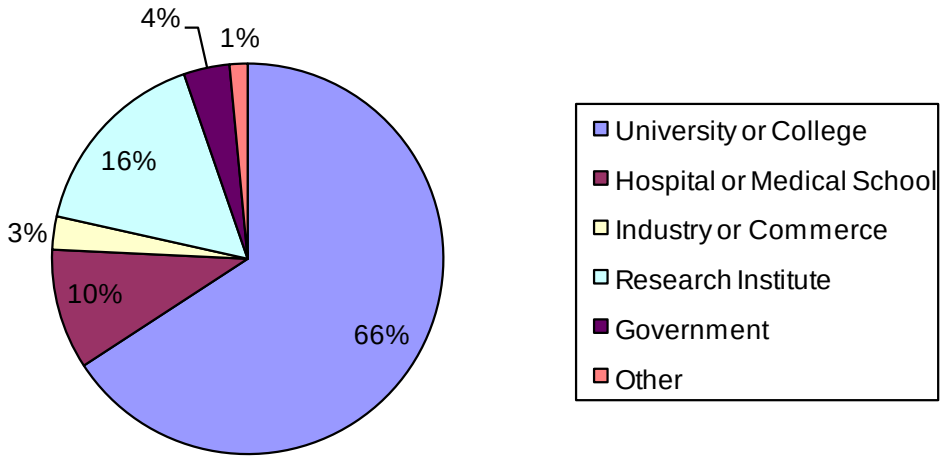
I think that the time now required to complete a reviewing process is, in average, much too long. A shortening of the whole process would be very beneficial for authors. *A male researcher/staff member aged 46-55 in Biochemistry from Mexico*

1. Faster peer-review process: Although my experience with my last journal paper (GRL) was very good in terms of speed, some of the journals are incredibly slow. Several top journals in my field have a typical lead time of 1 year from initial submission to final review. In my view, this seems to be causing a shift toward authors publishing shorter papers in journals that are well known for a speedy peer review process. I think this is somewhat concerning because these papers tend to give a 'snapshot' of work but lack details that would otherwise be found in longer papers. *A male researcher/staff member aged 26-35 in Earth & Planetary Sciences from the United States*

The fact that reviewing takes time, and maybe long time is inevitable if we want to have high-quality papers and sound results. The research ecosystem must take this fact into account and not to encourage to publish dozens of bad papers (with false results, known results, bad written, insignificant, ...). *A male researcher/staff member aged 26-35 in Computer Science/IT from France*

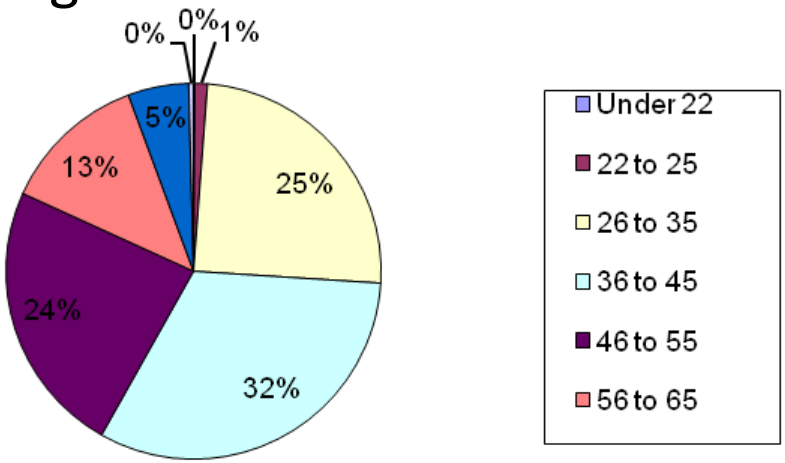
Demography

Organisation

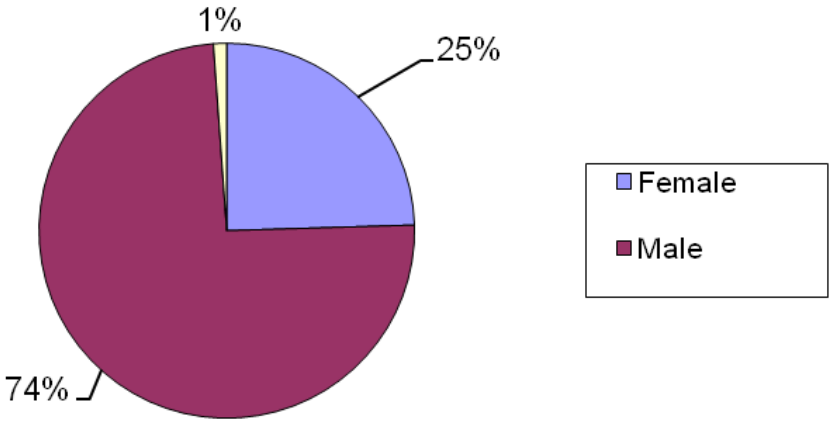


Age

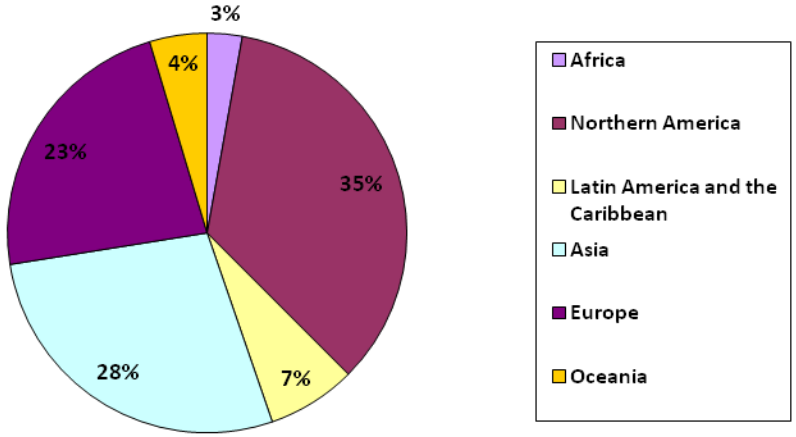
n=4037



Gender

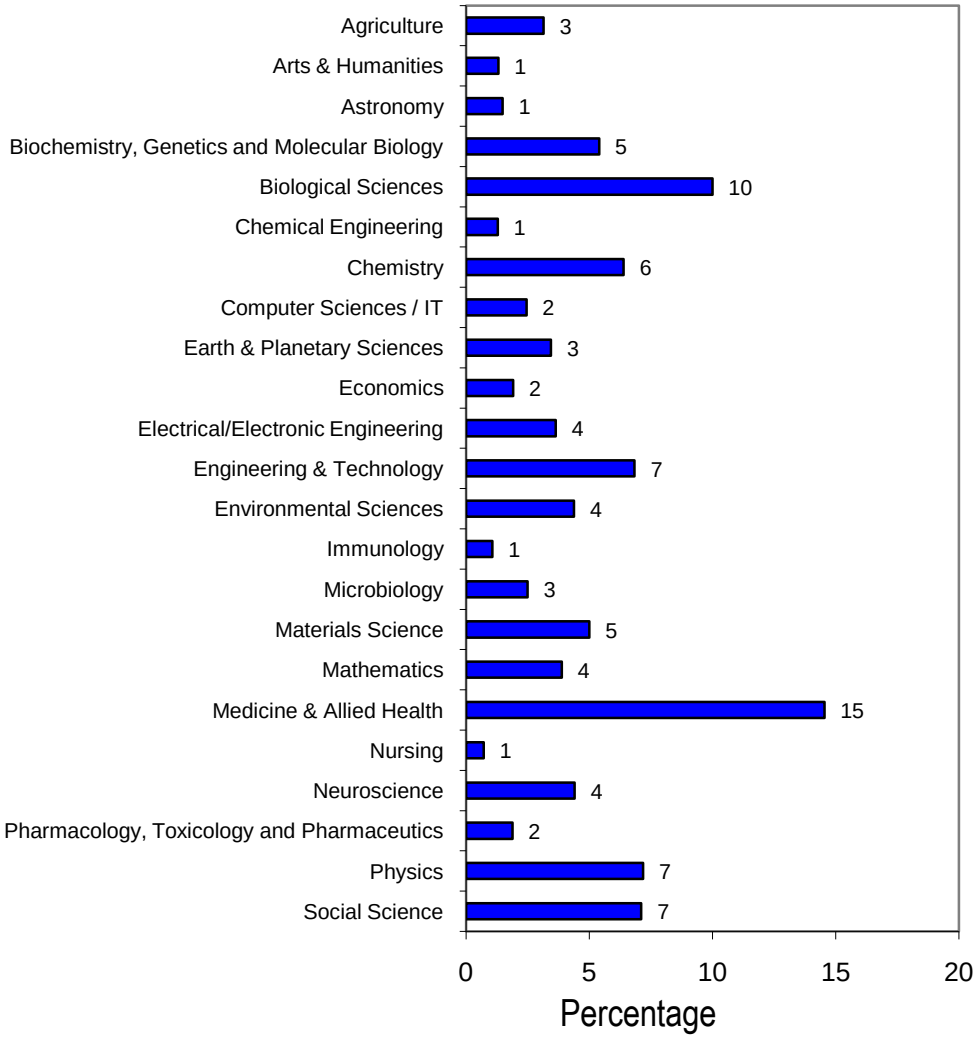


Region

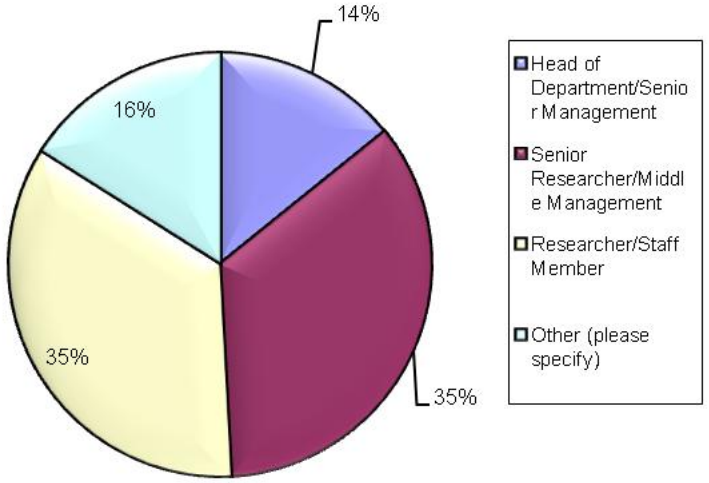


Demography

Question: Which of the following best describes your field of research?



Position



Notes and bibliography

Notes:

Sense About Science is a UK registered charity (No. 1101114) to equip people to make sense of science and evidence. It has previously published 'Peer Review and the Acceptance of New Scientific Ideas: a working party report' 2004; and it is the publisher of the public guide to peer review, 'I Don't Know What to Believe'. In 2008, Sense About Science established the online education resource about scientific publishing and peer review, for schools www. senseaboutscience.net.

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Detailed findings

Subject Overviews

Subject Overview – Agricultural and Biological Sciences

Agricultural and Biological Sciences respondents showed a tendency to conduct reviews for altruistic reasons.

"I enjoy being able to help improve a paper" 89% (average 85%)

"I want to reciprocate the benefit gained when others review my papers" 74% (average 69%)

"It will increase my chances of being offered a role on the journal's editorial team" 26% (average 30%)

There is also evidence of a belief in the importance of peer review

"Without peer review there is no control in scientific communication" 87% (average 84%)

"Do you think the peer review process improved the quality of the paper?" 94% (average 91%)

Despite the high rating for improvement of the paper via peer review, when asked which aspects had improved, none of the aspects had a significantly higher score than the average. Two aspects scored below the average:

References 56% (average 61%)

Presentation 69% (average76%)

How could peer review be improved?

In my limited experience as an author, I have found the peer review process invaluable and good safety net. I am happy with the process. *A female (position listed as other) aged 56-65 from New Zealand*

Honestly, I have been quite lucky with peer reviewers and more often than not I believe the final manuscript looks better than the originally submitted to publication. Of course, I don't always agree with the reviewers, but I think they normally improve the quality of the paper. *A female senior researcher/middle manager aged 36-45 from Brazil*

Reviewers should concentrate on the concepts and ideas presented on the paper. Other aspects (citations, writing, etc) should be done by other specialized persons *A male researcher/staff member aged 46-55 from Argentina*

An initial triage to remove poor submissions would help ensure the manuscripts received are worth the time to review in detail. *A male researcher/staff member aged 26-35 from the United States*

I think the paper should be reviewed by an expert in the field who has no personal stake in what the author is saying. Too many reviewers have too much to lose if they approve a manuscript that contradicts their own work. There is a definite bias. Also, peer reviewers should demand that authors cite others working in the field, who may have published work that conflicts with the paper under review. Authors have too much of a tendency to: (a) cite almost exclusively their own work; (b) cite the work of their friends and colleagues, who endorse their own work; and (c) omit significant work done by others in the field. *A male (position listed as other) aged Over 65 from the United States*

Subject Overview – Arts & Humanities/Social Sciences/Economics

Just 64% of respondents agree that they are satisfied with the peer review system used by scholarly journal (average 69%) and are the least satisfied of the subject groups. This is supported by significantly below average scores for "Without peer review there is no control in scientific communication" 78% (average 84%) and "Scientific communication is greatly helped by peer review of published journal papers" 78% (average 82%). Conversely, only 22% agree that "Peer review in journals needs a complete overhaul", significantly below the average of 30%. Only 81% agreed that they enjoyed reviewing and would continue to do so.

Double blind review is by far the preferred option – 87% agreed it was an effective method (average 76%). Just 26% agreed that single blind review was effective, 19% below average.

55% of respondents in this subject area took less than 5 hours to complete their last review (the highest proportion across the subject areas). Despite this, they are the subject group most likely to want payment for review. This is partially explained by the number of reviews conducted – this subject area has the highest tally for completing 6-10 reviews in the last 12 months.

Looking at the objectives of peer review, there are lower levels of agreement than average that peer review currently fulfils determining originality, determining importance of findings, detecting plagiarism and detecting fraud.

How could peer review be improved?

Journal editors should be more specific about their own policies with respect to reviews, including information about percentage of papers accepted and the extent of feedback they wish to return to the author. *A head of dept/senior manager aged over 65 from the United States*

Double blinding the process OR making it completely open. Single blinding actually seems to be detrimental. *A female (position listed as other) aged 36-45 from Egypt*

I hate the confusing software some publishers use (cost-effective for them, a bloody nuisance for me), and I strongly prefer a personal contact with editors. If editors aren't willing to discuss things with reviewers, what purpose do they serve? *A male (position listed as other) aged over 65 from France*

Turning down unqualified papers by editor reduce the load on reviewers and thus help improve quality of review process. Authors should sign a statement regarding plagiarism and fraud when submitting articles to journals that deter them from further dishonest attempts. These two points weed out irrelevant, poor, and dishonest papers. Reviewers should get some guidelines or perhaps an example (case study) about a submitted paper that went through a review process and how the final outcome (article) was. *A male senior researcher/middle manager aged 36-45 from the United Arab Emirates*

Subject Overview – Astronomy/Physics

The Physics/Astronomy group gives consistently below average scores to many of the questions covered in this survey. Their attitude to peer review appears quite distinct to the other subject groupings. When asked their reasons for reviewing, the percentage agree scores were below average in all nine statements; significantly so for 7 of the 9. It is therefore unsurprising that this group review less frequently – only 36% stated they would review more than 5 papers in a year.

Only 45% feel there is a lack of guidance on how to review papers (average 56%), which explains why only 53% feel that formal training would improve review quality (average 68%). Just 77% enjoy reviewing and will continue to do so – the lowest score across the groups (average 86%).

Whilst double blind review had the highest rating across the options for effectiveness (66%), this is significantly below the average (76%). There was strong support for single blind review (53% - average 45%).

Astronomy/Physics respondents see the main purpose of peer review as detecting fraud and plagiarism. They are the subject group least likely to feel that peer review is able to select the best manuscripts, improve the paper and determine the importance of findings and the least likely to believe it currently fulfils these objectives

How could peer review be improved?

I'm sick of staying up at night reading these papers that come at me non-stop, but it's got to be done. I don't know anything to suggest, really. *A male head of dept/senior manager aged 46-55 from the United States*

Better guarantees that fundamentally flawed papers don't wind up just being published elsewhere. *A male researcher/staff member aged 36-45 from the United States*

Realistically, it's hard. One large problem is that many reviewers are unwilling to let go of their dogmas. I'm not sure how objective reviewers could be found. Perhaps a rating systems for reviewers. Some journals have already started giving awards to top-rated reviewers. *A female researcher/staff member aged 26-35 from Germany*

Recognition from my employer (head of school, university) that it is a serious duty, it must be done properly and it takes much time, so it should be considered in workload matters. Universities are keen that staff have "esteem indicators", and being chosen as a reviewer is such an indicator, but are not willing to pay the price. They behave as if reviewing papers is a personal hobby to be done in staff's free time. *A male senior researcher/middle manager aged 56-65 from the United Kingdom*

Subject Overview – Biochemistry, Genetics & Molecular Biology/Immunology/Microbiology

Respondents in this subject area feel peer review brings the most improvement to the results/analysis section of papers (85% - average 80%). However, they see less benefit in areas such as language/readability (68% - average 74%) and methodology (51% - average 57%)

When asked about the objectives of peer review, respondents gave the highest rating for peer review's ability to determine originality, however they scored it only slightly above average for currently fulfilling this. A high rating is also given when asked if peer review is able to improve the quality of papers, but is rated below average for currently fulfilling. They do not feel that peer review currently fulfils the objective of ensuring previous work is acknowledged – this subject group gives the lowest score for this attribute. However, they give an above average rating that it is able to do so. This implies that they feel peer review is failing on this objective. Detecting fraud and plagiarism are also given below average ratings for being currently fulfilled.

This subject area sees a higher than average number of review declinations due to poor scientific quality (15% - average 10%)

How could peer review be improved?

The most important problems of the process is that the best reviewers often are competitors and that scientific review gives little merit. *A male senior researcher/middle manager aged 36-45 from Norway*

The choice of reviewers is sometimes not adequate, but it is due to the constant increase of reviewing we have to do these last years. *A male senior researcher/middle manager aged 36-45 from France*

The reviewer should make considerable effort to improve the article. Although in principle the reviewing time should be as short as possible the quality of the review is far more important. Special attention has to be paid to plagiarism. Fraud is much more difficult to detect. *A male senior researcher/middle manager aged over 65 from the Netherlands*

I think it is fine for authors most of the time. BUT I don't try to publish in elite journals. It is brutal there. Editors and reviewers ask for another year or more worth of work. So, I don't bother. As a reviewer, I say no more to requests from journals...it is a long term relationship now with a paper and I know I will often see a paper over and over again. After the first time, I don't want to see it again but I agree to re-review because I too am an author and know what it is like. *A female senior researcher/middle manager aged 46-55 from the United States*

Subject Overview – Chemistry/Chemical Engineering

Chemistry/Chemical Engineering respondents are amongst the busiest as reviewers – 32% will conduct at least 11 reviews in a year (second only to Neuroscience). Despite this, they are the group with the highest percentage of people less likely to review in return for payment by the journal (26% - average 16%)

They are among the most satisfied with peer review system (77% - average 69%), with a higher than average proportion believing that without peer review, there is no control in scientific communication (88% - average 84%). 42% agree that the current peer review system is the best we can hope to achieve (average 32%).

This group give the lowest effectiveness rating for supplementing peer review with post publication review. Just 35% feel this is effective compared to the average of 47%

Chemistry/Chemical Engineering has the highest percentage of respondents receiving a first decision in under a month (41%) and also the highest proportion receiving a final decision in under 3 months (44%)

How could peer review be improved?

It could be faster! Also, the more thorough reports are the most helpful, so more feedback. The journal I often publish in asks reviewers to rate papers in e.g. the top 5% and so on, rate there relevance etc., but as an author you never see that feedback - it would be helpful. *A female researcher/staff member aged 26-35 from South Africa*

Editors should handle reviewer opinions with much more care, they should exert a quality control over peer review *A male senior research/middle manager aged 26-35 from Hungary*

The editors must guard against referees who use throwaway phrases such as "not novel", "need more work/data", "no new insight", etc. without full justification. Most papers are well refereed but there are also many instances where shoddy work and not very high quality work are published in well respected journals. *A male researcher/staff member aged 46-55 from the United Kingdom*

I think I do a thorough work when I've had the chance to review a manuscript, to the point that I've redone graphs and tables as alternatives for the authors to consider. If every reviewer would take the time to do the same I think the reviewing process, and the quality of the manuscripts will improve significantly. Unfortunately, not only is that rarely the case, but also it will delay even more the time between the submission of a manuscript and the journal's decision, or even final publication. *A male researcher/staff member aged 26-35 from Venezuela*

Subject Overview – Mathematics/Computer Science & IT

Reasons for reviewing show less inclination for the altruistic statements. Scores are significantly below the average for:
"I enjoy being able to help improve a paper" 78% (average 85%)
"I want to reciprocate the benefit gained when others review my paper" 59% (average 69%)
"I like playing my part as a member of the academic community" 85% (average 90%)
A larger than average proportion feel that peer review is unsustainable (25%, average 19%). This may in part be due to a below average amount of people agreeing that "I enjoy reviewing and will continue to do so" 80% - average 86%
Maths/Computer Science respondents show the strongest level of agreement across the subject groups that peer review currently fulfils the objectives of detecting fraud and plagiarism.
This area is one of the slowest for speed of review. 25% of respondents had to wait more than 6 months for a first decision, rising to 53% for final acceptance.

How could peer review be improved?

1. Providing citation and impact factor statistics regarding cited papers. 2. Monetary motivation may work for researchers in research institutions. 3. Subscriptions and fee waivers may work for individual researchers. 4. Developing an impact factor for reviewers. *A male researcher/staff member aged 26-35 from Australia*

Better training during graduate education. In my experience, this is a learned skill and I could have had a better understanding of how to properly review a paper coming out of graduate school. *A male senior researcher/middle manager aged 36-45 from the United States*

Although my last paper received a very fast peer-review, my usual experience is that peer-review is very slow and can even take several years! This not only implies that some papers are already outdated at publication date but also makes it almost impossible to get quick feedback and publication. This particularly disadvantages researchers who have only a limited time to qualify for their next career stage. *A male head of dept/senior manager aged 36-45 from Germany*

Authors also should take their responsibility and submit decent written papers. I do not mean that results are often wrong, but papers are often written too rapidly, and contain language mistakes and typos, or are badly structured. This makes it harder to review. In general, taking more time to write a paper, improves its quality. But of course, especially young scientists, are under increasing pressure to publish a lot. This is causing most problems, and this cannot be solved by any, even perfect, peer reviewing system. *A male researcher/staff member aged 26-35 from Belgium*

Subject Overview – Earth & Planetary/Environmental Sciences

Respondents in this subject have the highest level of agreement when asked if the peer review process improved their article. 95% agreed that it had (average 91%). This belief is also reflected when asked about the objectives of peer review. When asked if peer review currently fulfilled the objective of improving the quality of the paper, this subject group had the highest level of agreement. The improvements seen in the papers may in part be due to the time spent on the review - only 29% of respondents put 5 hours or less into their last review (average 47%).

There is an above average level of satisfaction with the peer review system (77% - average 69%).

29% feel that open peer review is an effective method – the highest rating across the subject areas (average 20%).

Only 16% of respondents received a first decision within a month, significantly below the average of 24%. However, 12% considered this to be "very fast" or "fast" – above the average of 10% (although not significantly so).

How could peer review be improved?

Selection of appropriate and unbiased reviewers by the Editor. Often in a subject such as Earth Sciences, International reviewers are not aware of work done locally and much previous work is misquoted and often not quoted. Editors should include reviewers who are aware of work done. Also sometimes editors select reviewers who work in a particular field and whose papers/concepts are questioned in the manuscript. This causes biased reviews. *A male head of dept/senior manager aged 46-55 in India*

By professional peer review being recognised as an important activity by Universities and Research Institutes. Presently researches often receive some form of credit for their own publications, whereas peer review does not. Therefore reviews can be rushed and poorly researched. *A male senior researcher/middle manager aged 46-55 from China*

In my opinion the only way to improve the peer review is by selecting competent and sincere reviewers. In the present reviewing system any new idea from an author (especially when contradicts the results from so called well-established scientists) is very strongly criticised or mostly rejected right away. This is even worse when the author is not so well established. One way to reduce this problem is to adopt either a double-blind review system or double-open review system. *A male senior researcher/middle manager aged 56-65 from Brazil*

By finding a way to acknowledge the hard work of reviewers. My experience is that PhD students or young PhDs do the best reviews and then when they run out of time during their career because of the high pressure to publish themselves, their motivation is destroyed by the current science system. *A male senior researcher/middle manager aged 36-45 from Canada*

Subject Overview – Electrical & Electronic Engineering/Engineering & Technology

There is evidence of strong personal motivation when looking at reasons for reviewing.
"It will increase the likelihood of my future papers being accepted" 21% (average 16%)
"It is an opportunity to build a relationship with the Editor" 38% (average 33%)
"I will gain personal recognition from reviewing" 44% (average 34%)
"I believe it will enhance my reputation or further my career" 54% (average 46%)
However there is less motivation for altruistic reasons.
"I want to reciprocate the benefit gained when others review my papers" 61% (average 69%)
"I like playing my part as a member of the academic community" 86% (average 90%)

38% feel that peer review needs a complete overhaul (average 30%). Respondents have a higher than average agreement that usage statistics could replace peer review (19% - average 15%) and supplementing review with post publication review is effective (52% - average 47%)

How could peer review be improved?

It is essential to avoid discriminatory treatment. My last paper was first rejected as methodologically inadequate in a journal that published a very similar work in a few weeks. I suffered from rejection from editors that considered the work out of the scope of journal that published similar work from other (and generally well-known) authors. Editors always ignore complaints. It would be helpful to establish mechanisms to ensure ethical behaviour from editors. Moreover, in some journals editors are secret, this being a practice that facilitates fraud. *A male senior researcher/middle manager aged 46-55 from Spain*

Only review those that I am interested and well written ones. This can be achieved by someone at the editorial board doing the screening and sending to the right persons for review. Personally, I think there are too many journals and too many articles. I prefer to have much few journal and a longer review cycle so that virtually all articles published are really worthy. *A male head of dept/senior manager aged 46-55 from the United States*

Divide the review process in phases. In particular have a first, preliminary phase, in which is determined whether the paper meets requirements for review (e.g., it is written decently, within the scope of journal, etc). If not, give immediate feedback (no need to wait months). *A male researcher/staff member aged 46-55 from Canada*

Online systems are easiest that allow download of papers and upload of reviews. Some editors go overboard sending emails with 5-10 attachments that are difficult to manage, and some editors use too many reviewers (6-10) for every paper. Some editors put too much credibility in the hands of uninformed reviewers. *A male head of dept/senior researcher aged 36-45 from the United States*

Subject Overview – Materials Science

Materials Science respondents are more satisfied with peer review than average (76% - average 69%) and have the highest percentage agree across the subject groups that the current system is the best that can be achieved (45% - average 32%). However, 40% feel that the system needs a complete overhaul (average 30%).

82% declined an invitation to review because the paper was outside the area of their expertise (average 58%).

With regard to the objectives of review, respondents in Materials Science had the highest level of agreement that peer review selects the best manuscripts. However they had the least agreement that peer review is able to determine originality and gave a below average rating for currently fulfilling the objective of improving the quality of the paper.

85% of respondents whose last paper was revised felt the presentation of the paper was improved (average 76%). This was highest improvement percentage for presentation across the subject areas

How could peer review be improved?

The peer review process is not the main problem - the key is that academics are pressured to publish too much. Science might well be better served if less, but higher quality / more complete works were published. This would reduce the workload for everyone, and quality and clarity of communication would probably improve. *A male senior researcher/middle manager aged 36-45 from the United Kingdom*

I would like the professional societies in conjunction with journals to offer reviewing workshops during conferences and make available examples of good and bad reviews. Right now, I am improving my reviews primarily by reflection and comparison with the reviews that I receive for my submitted articles. However, that is a slow process that could be helped with a more formal way to get feedback on my reviews. *A female researcher/staff member aged 26-35 from the United States*

With better online services. Just as an example, if you review a paper for an Elsevier periodical you get free access to Scopus which is really helpful since you can track very easily the references of the paper. I think that in general an improvement of the process have to go together with the development of internet. *A male senior researcher/middle manager aged 26-35 from Germany*

By having access to some of the primary references indicated by authors. *A male researcher/staff member aged 46-55 from Costa Rica*

Subject Overview – Medicine and Allied Health/Nursing

Accreditation (CME/CPD points) as an incentive for reviewing has more support in this subject group than any other. 44% would be more likely to conduct reviews with this an incentive. Acknowledgement in the journal is also a popular option (48% would be more likely to review).

65% of respondents spent between 0 and 5 hours conducting their last review – this is a reflection on the type of paper published in this area.

90% of respondents enjoy reviewing and will continue to do so, despite 67% feeling that there is a lack of guidance on how to conduct reviews.

Medicine/Nursing respondents have a below average opinion of peer review's ability to detect plagiarism, fraud and ensure that previous work is acknowledged, but also are less likely to expect the peer review system to succeed in these objectives

How could peer review be improved?

A number of reviews are at the fringe of my expertise. I often feel that I am being sent manuscripts because I am willing to review, and not because of my expertise A score sheet with more structure similar to what is asked for grant reviews, asking about specific components of the manuscript, rather than a open ended comments section would speed things along. *A male senior researcher/middle manager aged 46-55 from the United States*

More education about what content is required in a review. More feedback about the outcomes of the review process and access to the comments of other reviewers. Feedback from the journal as to whether they found the review helpful and how it could have been improved. Less reviews of papers that should have been rejected at the Editorial level, if the Editor had only read through it and seen all the faults, rather that just look at the abstracts, which are often misleading. *A female researcher/staff member aged 26-35 from Australia*

I believe papers are frequently misquoted/referenced in papers being reviewed. It is impossible to personally identify these problems, but frequently the building blocks for a new paper/treatment plan, etc. are based on very faulty prior literature. I believe the new manuscripts being reviewed and accepted for publication would be much more valuable if a system could be developed to alert the reviewer to methodological problems in the referenced literature. *A male head of dept/senior manager aged 46-55 from the United States*

Remove the myth that you need to know someone with influence to be able to publish
A male head of dept/senior manager aged 36-45 from South Africa

Subject Overview – Neurosciences

Only 31% of Neuroscience respondents are prepared to review a maximum of 5 papers per year – the lowest across the subject groups. However, 55% say their last review took less than 5 hours – possibly explaining why they are able to fit more in than other subject areas. The high level of reviews completed annually is also likely to contribute to the larger than average number of respondents who would be incentivised by payment (49% - average 41%)

Just 11% feel that peer review is unsustainable due to the number of willing reviewers (average 19%), again this may be partially explained by the larger number of reviews completed per person.

39% feel there is bias to authors from developing countries (average 32%). This is the highest across the subject groups, however just 21% feel peer review needs a complete overhaul (average 30%).

There is strong support for single blind peer review (53% believe it to be effective) but double blind peer review is rated most effective of the options (71%)

How could peer review be improved?

Double blinding, or the name of the reviewers should be published with the article. Also, the holding period proposed by nature, such that slow reviewers have the articles held for publication. Likewise, all people who publish should have to review. *A male researcher/staff member aged 26-35 from New Zealand*

I believe the only thing that could be improved is if editors took more leadership in making accept/reject decisions. Rather than slavishly follow the recommendations of the reviewers, the editors should take it upon themselves to make a decision if two reviewers disagree, rather than sending the paper to another reviewer for yet another opinion. *A female senior researcher/middle manager aged 36-45 from the United States*

A well defined rebuttal/appeal mechanism for responding to hostile reviews would be very valuable. A mechanism for authors to rate their reviewers would also be appreciated. My manuscripts have often been significantly improved by thoughtful reviews. Journals should seek out and support reviewers that contribute to the quality of the submitted work. *A male head of dept/senior manager aged 46-55 in the United States*

There is a "reviewer burn-out"; too many frequent requests for reviewing, conflicting with my own research and teaching commitments. *A male head of dept/senior manager aged over 65 from Australia*

Subject Overview – Pharmacology, Toxicology & Therapeutics

46% of Pharmacology, Toxicology and Therapeutics respondents agreed that they chose to review in order to gain recognition (average 34%). This was the highest percentage agree across the subject areas.

Similarly, 67% agreed that they reviewed in order to enhance their reputation or further their career (average 46%).

Pharmacology, Toxicology and Therapeutics respondents showed the least agreement that peer review is able to detect fraud, although scored only slightly below average for peer review's ability to detect plagiarism

How could peer review be improved?

The major flaw of the current peer review process is the desire of the reviewers to see their own work acknowledged in the references. This creates artificial citations. I can't think of a good way to solve the problem other than the journal enforcing that reviewers should receive no citations in the work they are reviewing. *A male head of dept/senior manager aged 36-45 from the United States*

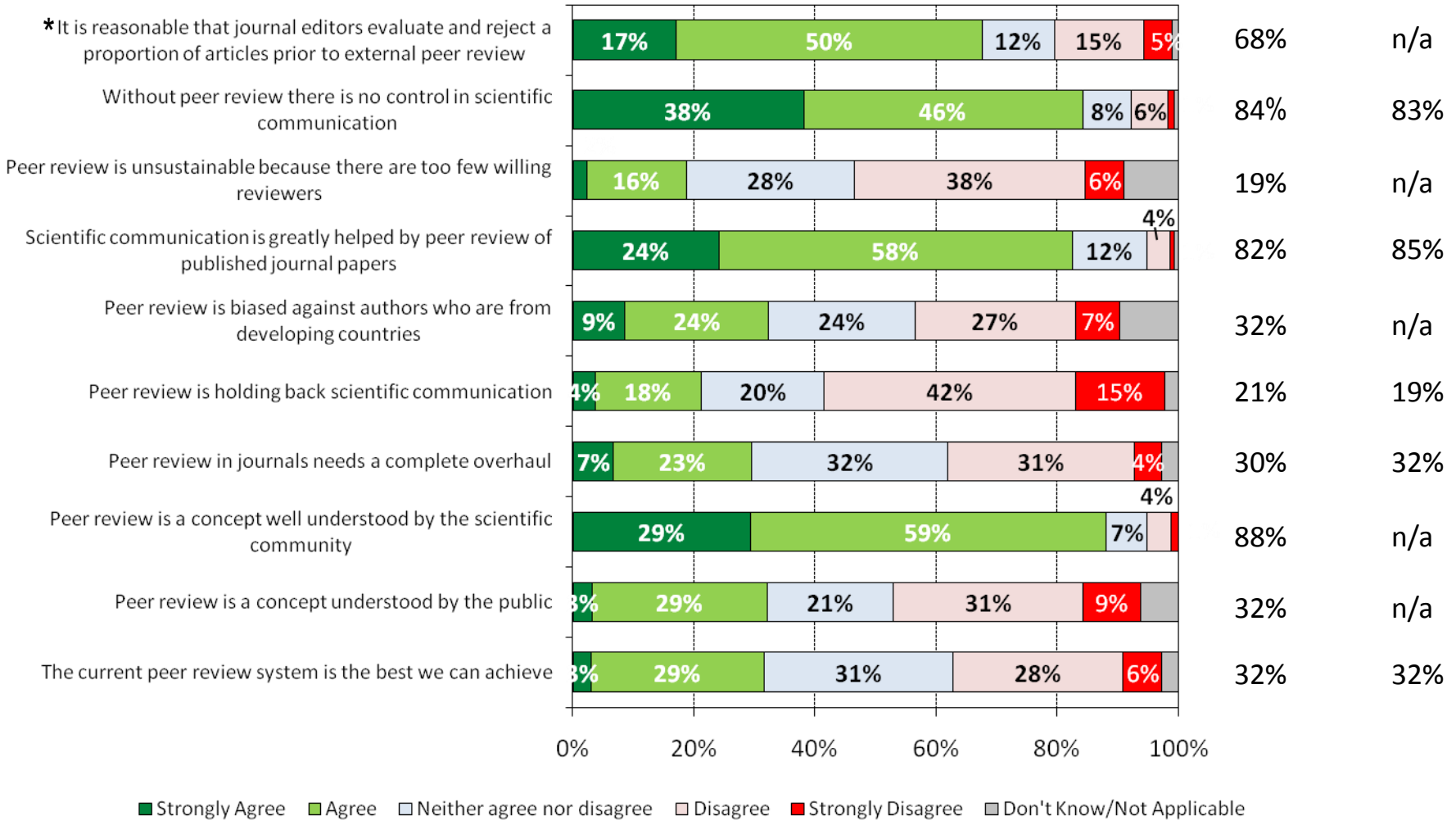
Papers should be vetted for plagiarism using existing databases prior to entering the review process. It really is not the job of the reviewer to identify instances of plagiarism, it the reviewer should be able to trust that the work is indeed novel. *A male senior researcher/middle manager aged 36-45 from the United States*

As soon as the editors are sure the article is out of scope, it should be returned instead of initiating review and wait for reviewers to declare the article out of scope. *A male senior researcher/middle manager aged 36-45 from Nigeria*

There should be a policy that new experiments are only asked for if essential to support the conclusions of the work, not just to "improve" the paper (or delay publication). *A male senior researcher/middle manager aged 46-55 from Germany*

General attitudes towards peer review

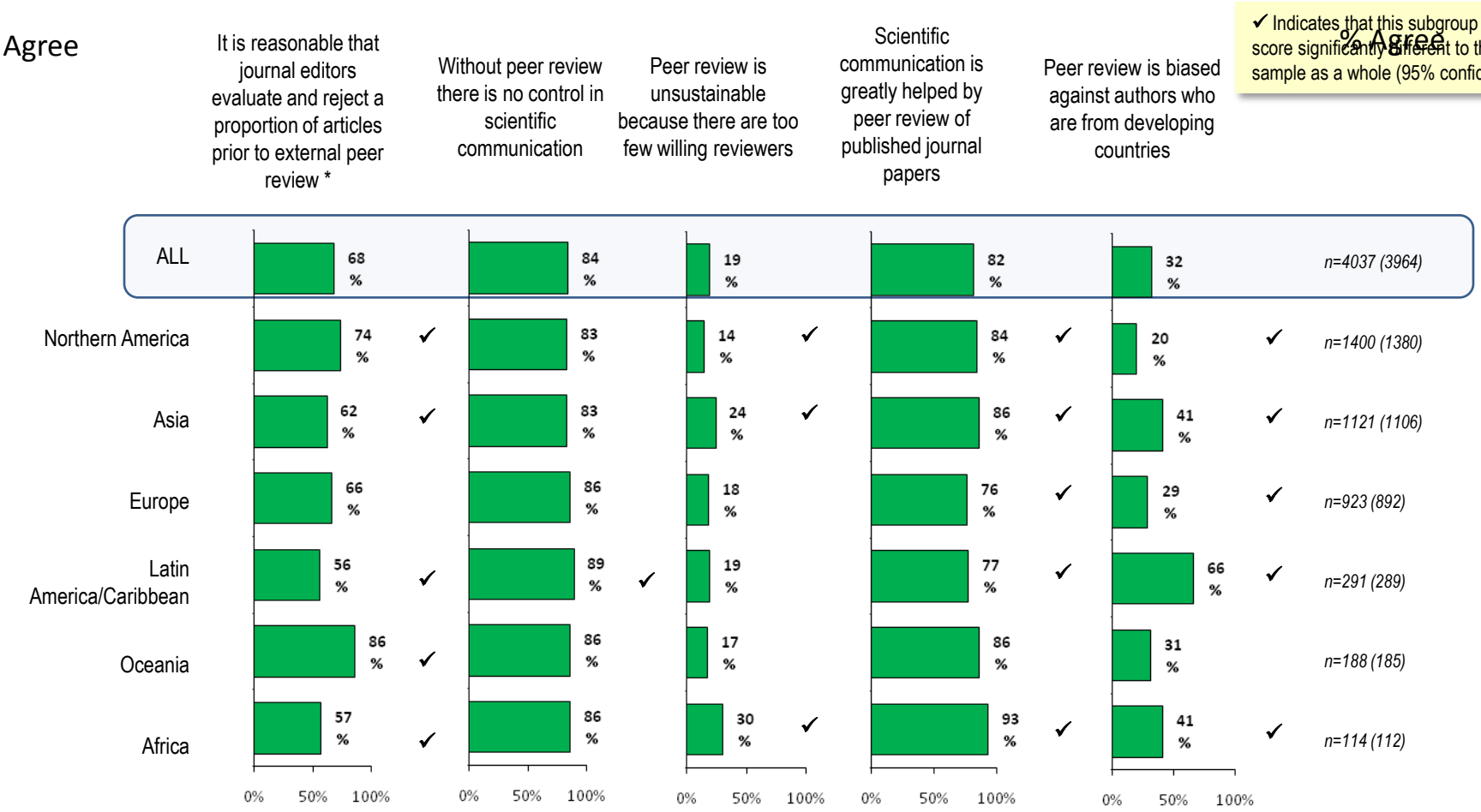
Question: Please indicate the extent to which you agree with the following statements



* n=3964 (added after pilot stage so number is slightly lower)

n=4,037

General attitudes towards peer review peer review split by region (1)



72% of respondents from developed countries agree that it is reasonable that journal editors evaluate and reject articles prior to peer review. Only 59% of respondents from developing countries agree

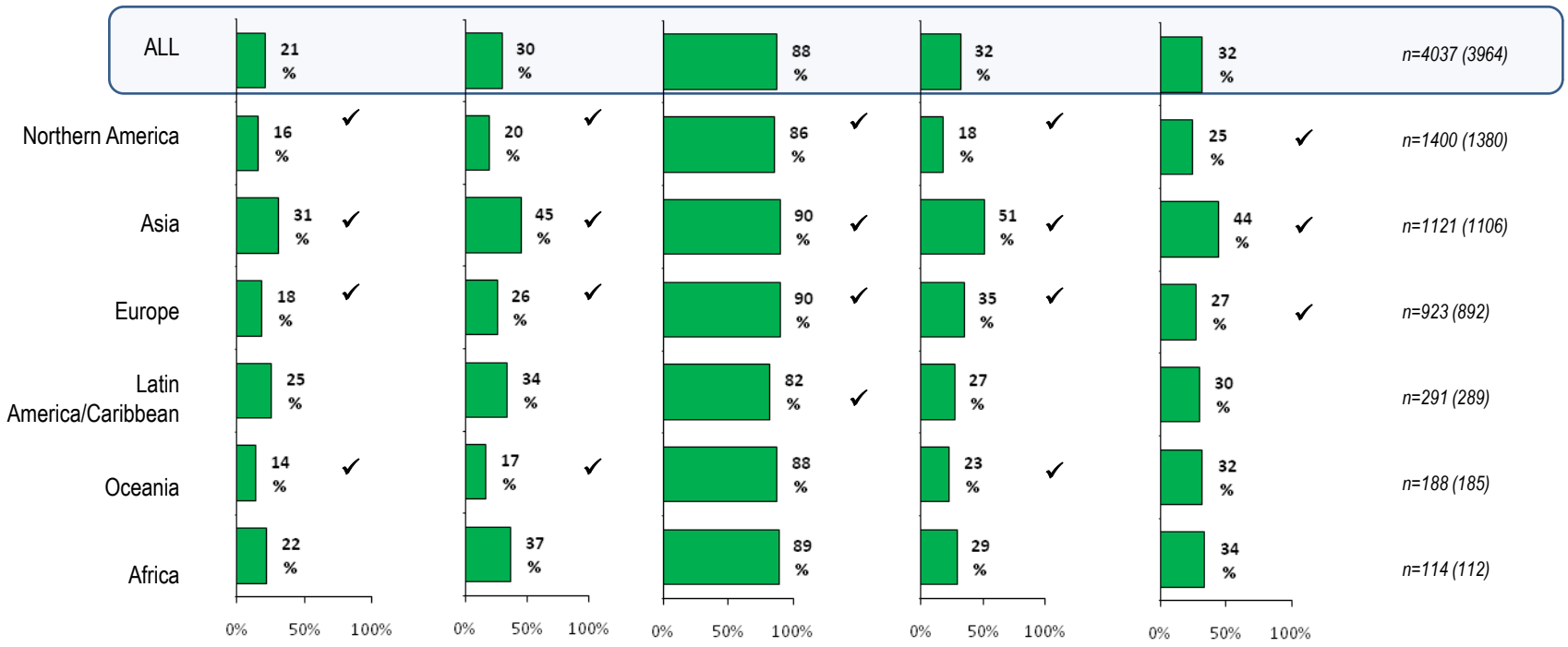
46% of respondents from developing countries feel there is bias compared to 25% of respondents from developed countries

*This statement was added after pilot stage. Counts given in brackets. Region classification taken from UN Statistics Division – Standard Country and Area Code Classifications

General attitudes towards peer review peer review split by region (2)

% Agree

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

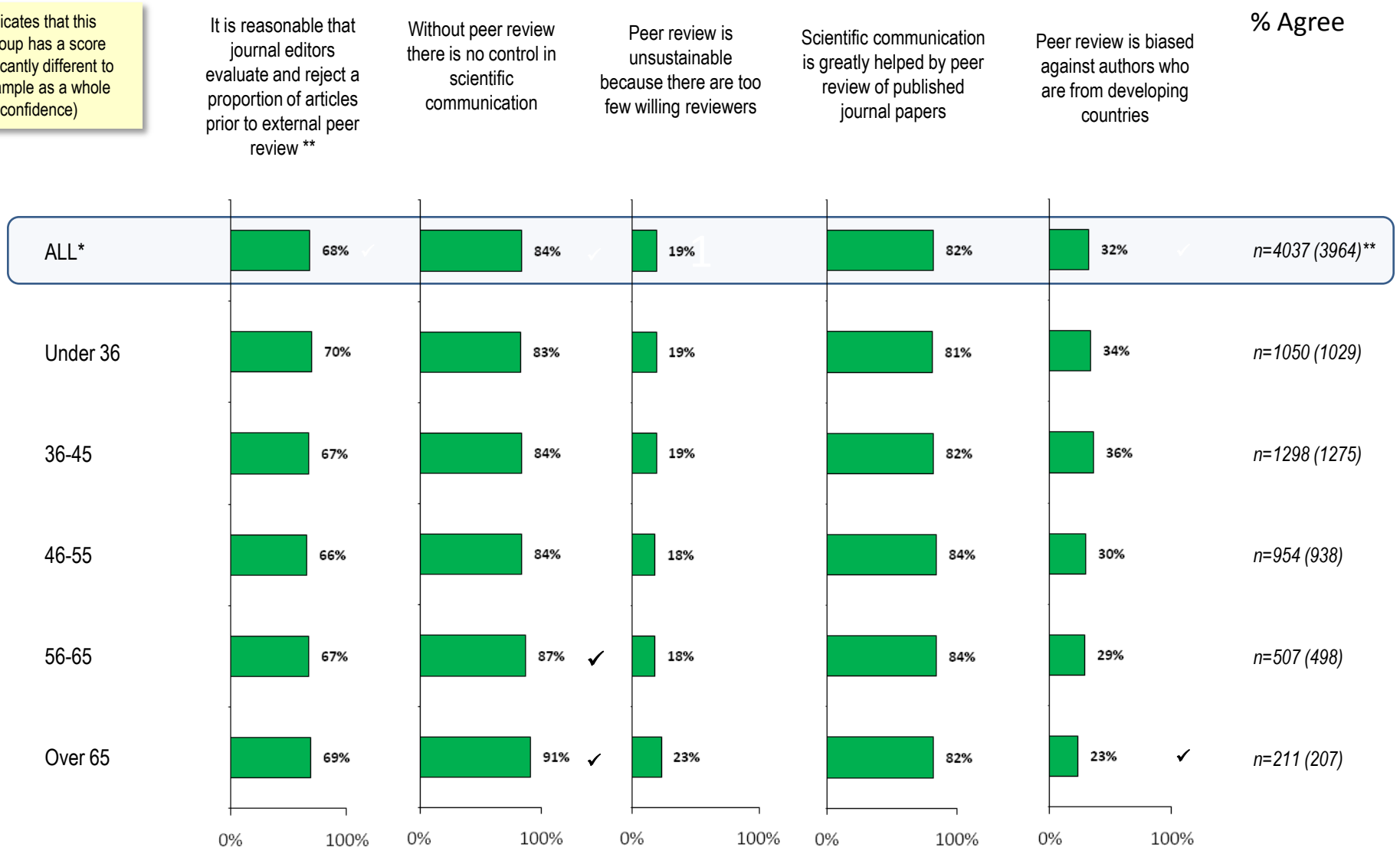


A greater proportion of respondents from developing countries would like to see an overhaul of peer review (41%) than from developed countries (24%) but conversely, 41% believe the current system is the best we can achieve (just 26% of developed country respondents agree with this)

*This statement was added after pilot stage. Counts given in brackets. Region classification taken from UN Statistics Division – Standard Country and Area Code Classifications

General attitudes towards peer review peer review split by age

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

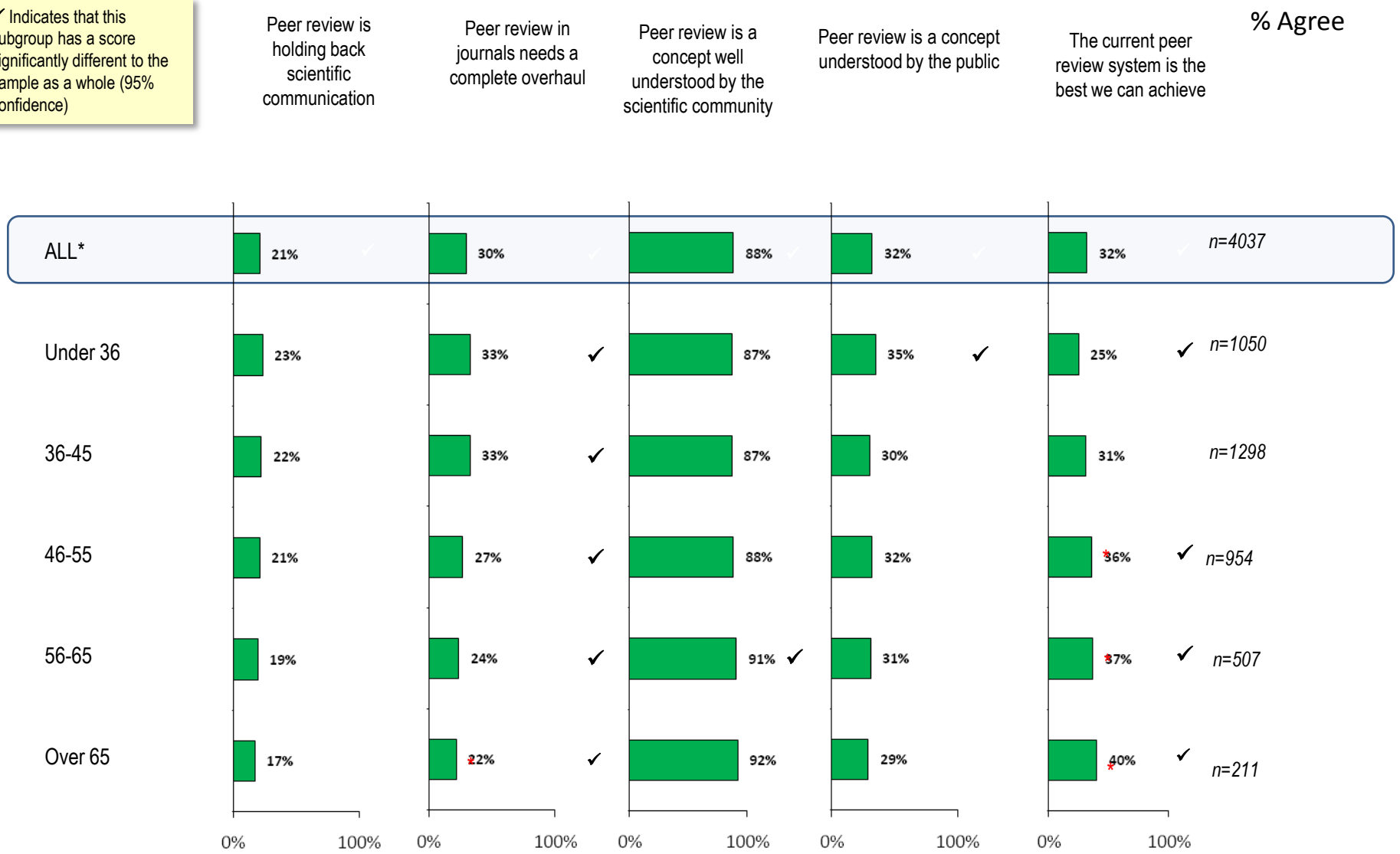


*17 respondents elected not to disclose their age group. These responses are included in the "ALL" category, but not listed separately

**This statement was added after pilot stage. Counts given in brackets.

General attitudes towards peer review peer review split by age

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)



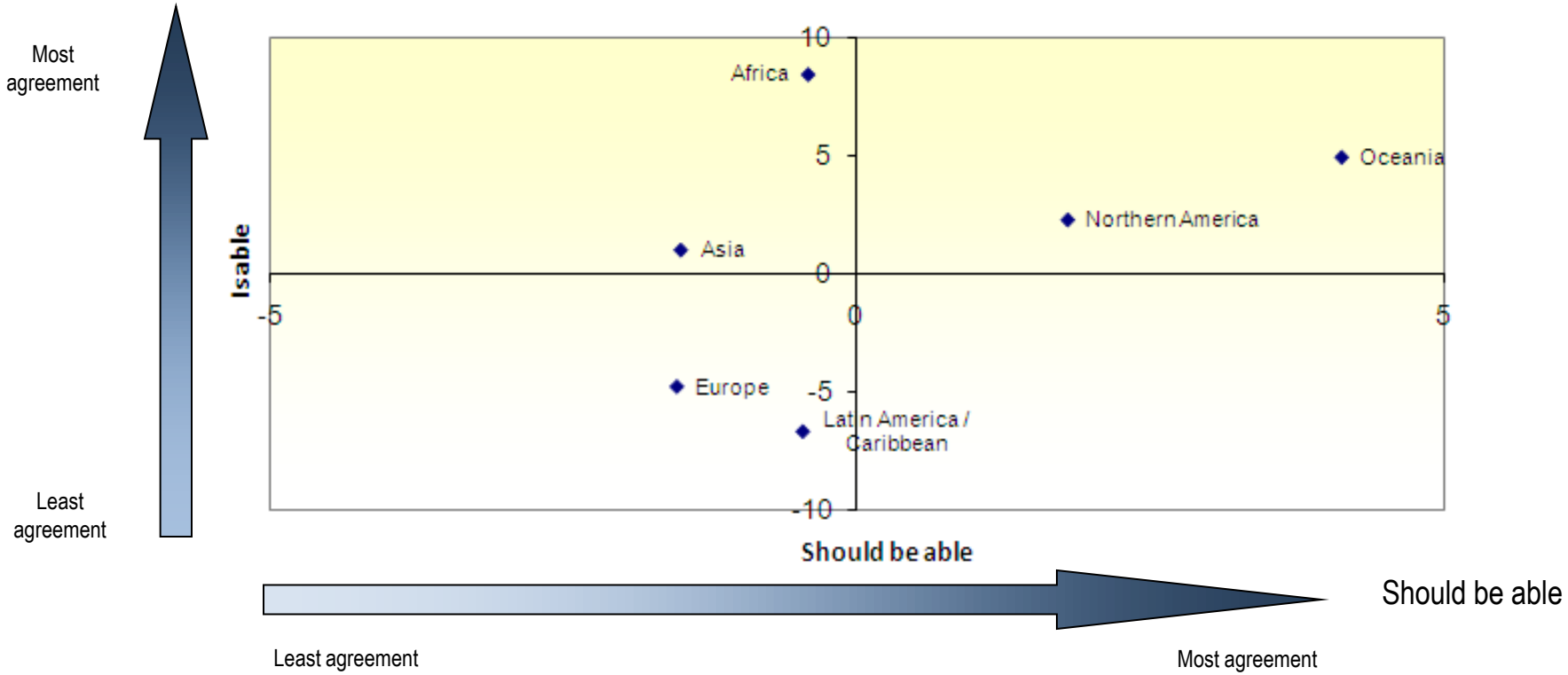
*17 respondents elected not to disclose their age group. These responses are included in the "ALL" category, but not listed separately

Purpose of peer review – Improves the quality of the published paper

…by region

Is able

Data points represent difference from the mean percentage agree score.



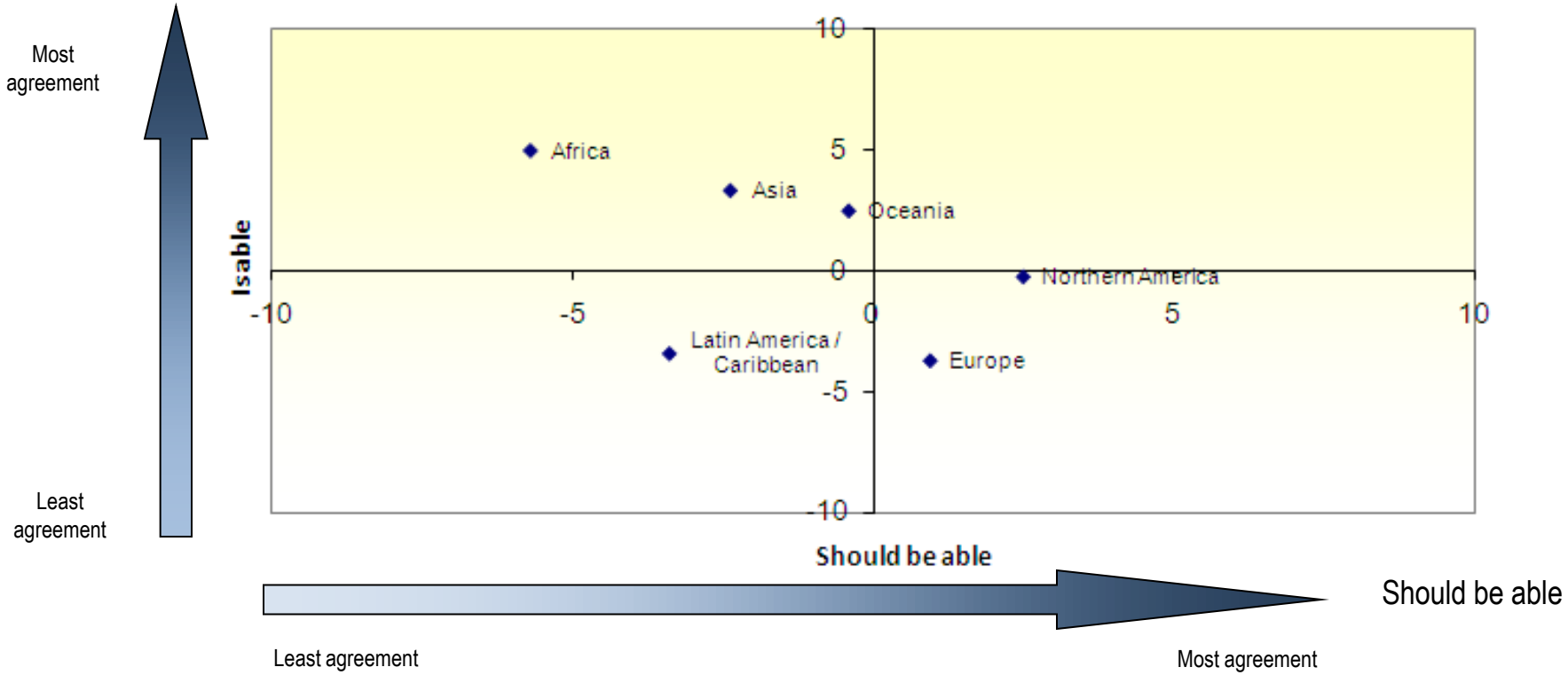
Oceania respondents show strongest agreement that peer review should be able to improve the quality of papers. Latin American/Caribbean respondents are least likely to agree that peer review currently fulfils this.

Purpose of peer review – That it selects the best manuscripts for the journal

…by region

Is able

Data points represent difference from the mean percentage agree score.



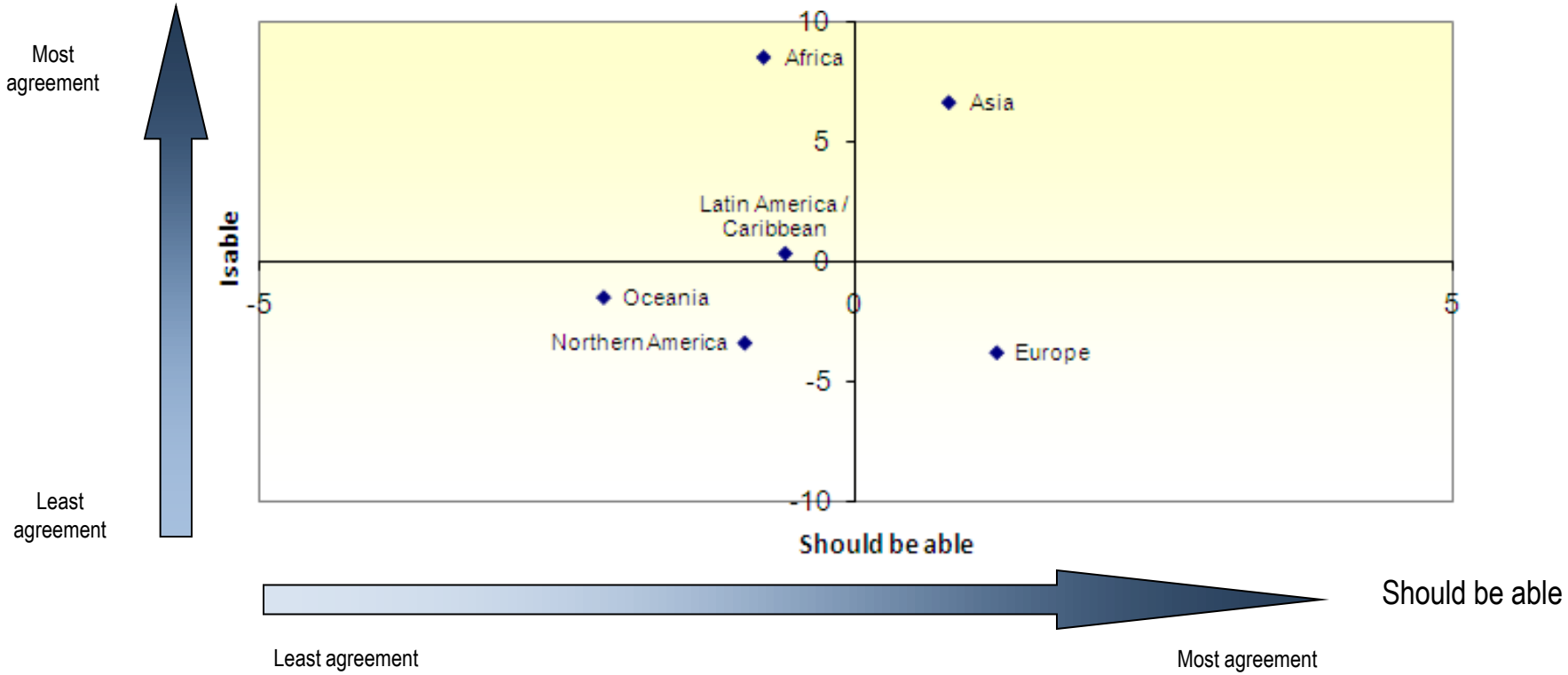
African respondents have the highest level of agreement that peer review currently fulfils the objective of selecting the best manuscripts, but have the lowest level of agreement that this should be a purpose of peer review. Northern American respondents show the strongest level of agreement that peer review should be able to achieve the objective of selecting the best manuscripts.

Purpose of peer review – Determines the originality of the manuscript

…by region

Is able

Data points represent difference from the mean percentage agree score.



European respondents have the strongest agreement that peer review should be able to determine originality, but the lowest level of agreement that it currently does this. Oceania respondents showed least agreement that this should be a purpose of peer review.

Purpose of peer review - Determines the importance of findings

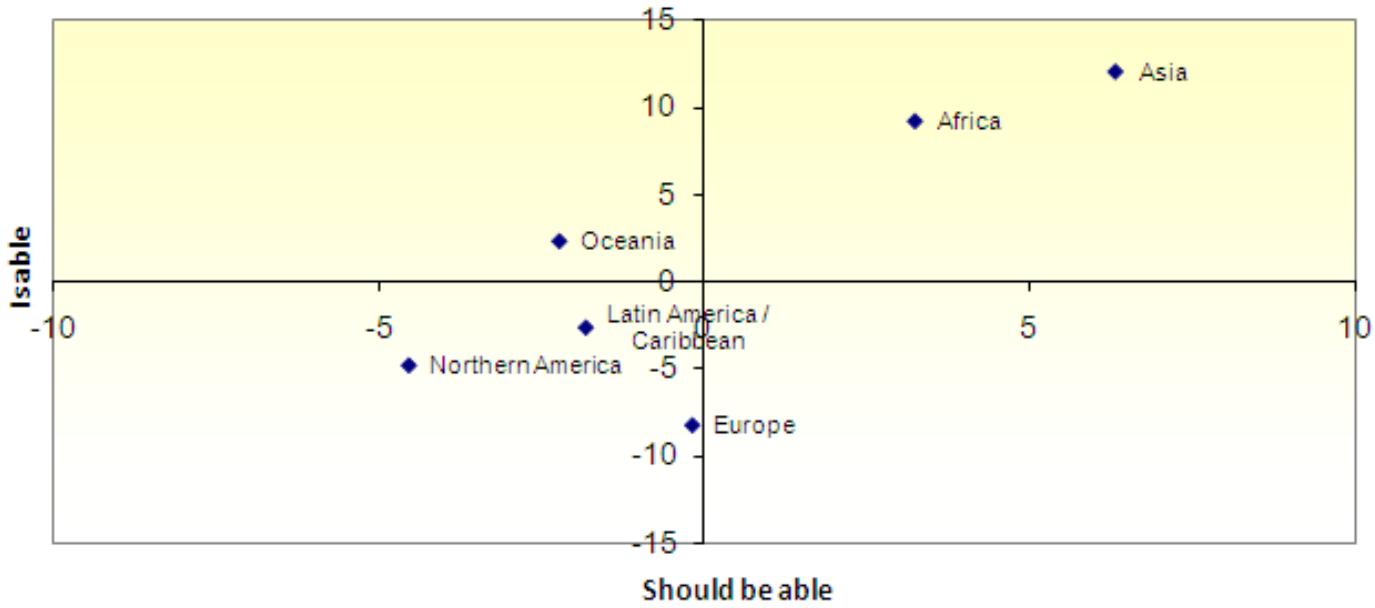
...by region

Is able

Most agreement

Least agreement

Data points represent difference from the mean percentage agree score.



Should be able

Least agreement

Most agreement

Asia respondents feel most strongly that peer review should be able to determine the importance of findings and also show the strongest agreement that it currently fulfils this objective. European respondents are the least likely to agree that this is currently fulfilled.

Purpose of peer review – Detects plagiarism

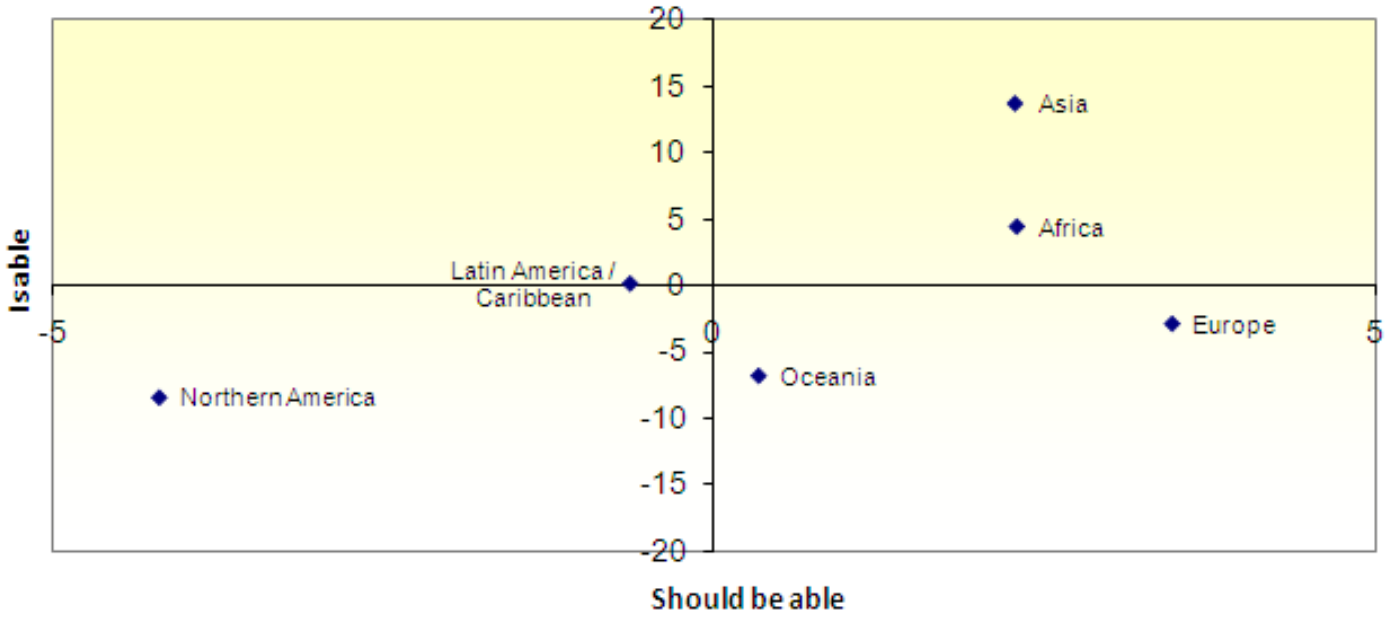
…by region

Is able

Most agreement

Least agreement

Data points represent difference from the mean percentage agree score.



Should be able

Least agreement

Most agreement

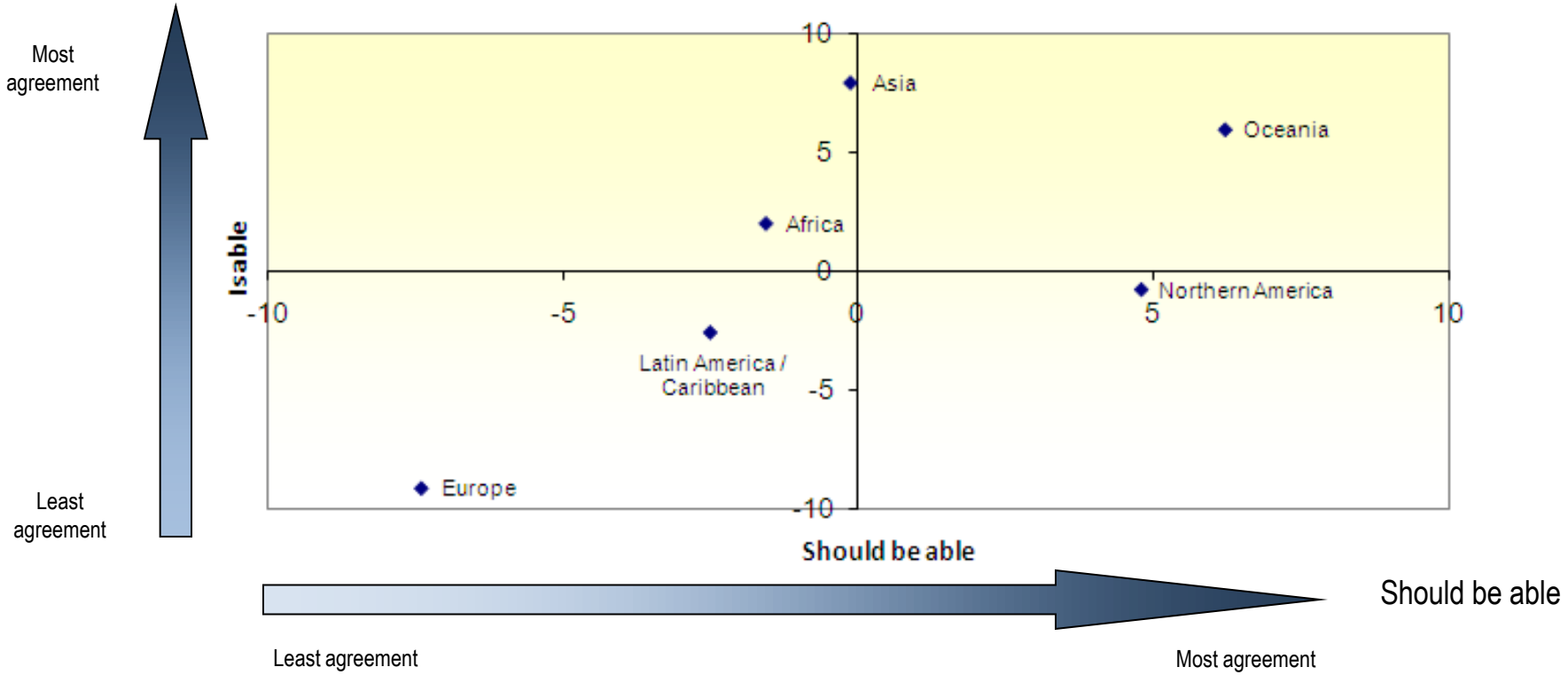
Northern American respondents are least likely to believe peer review currently fulfils its objective to detect plagiarism and have the lowest percentage agree when asked if it should be able to fulfil this objective.

Purpose of peer review – Ensures previous work is acknowledged

…by region

Is able

Data points represent difference from the mean percentage agree score.



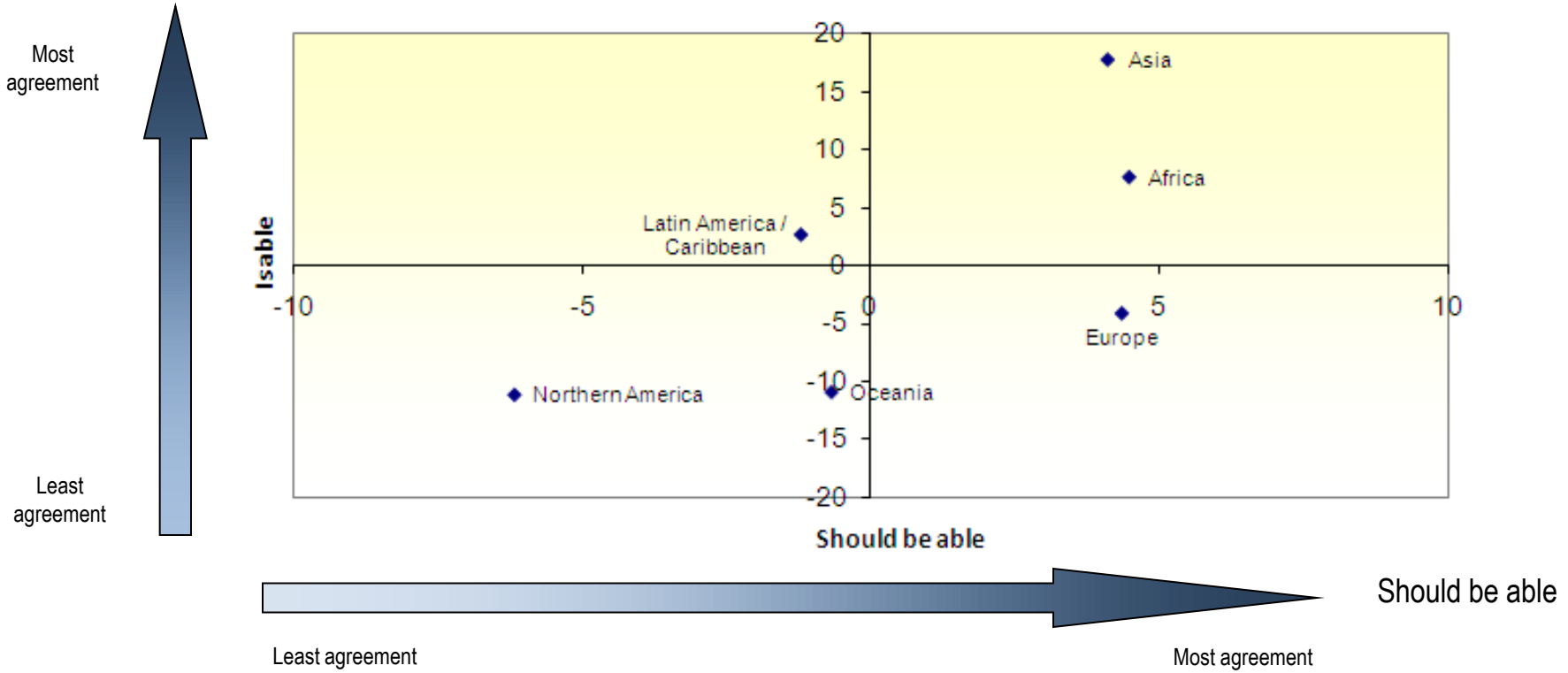
Asia respondents feel most strongly that peer review currently ensures previous work is acknowledged. Oceania respondents show strongest agreement that peer review should be able to fulfil this objective.

Purpose of peer review – Detects fraud

…by region

Is able

Data points represent difference from the mean percentage agree score.

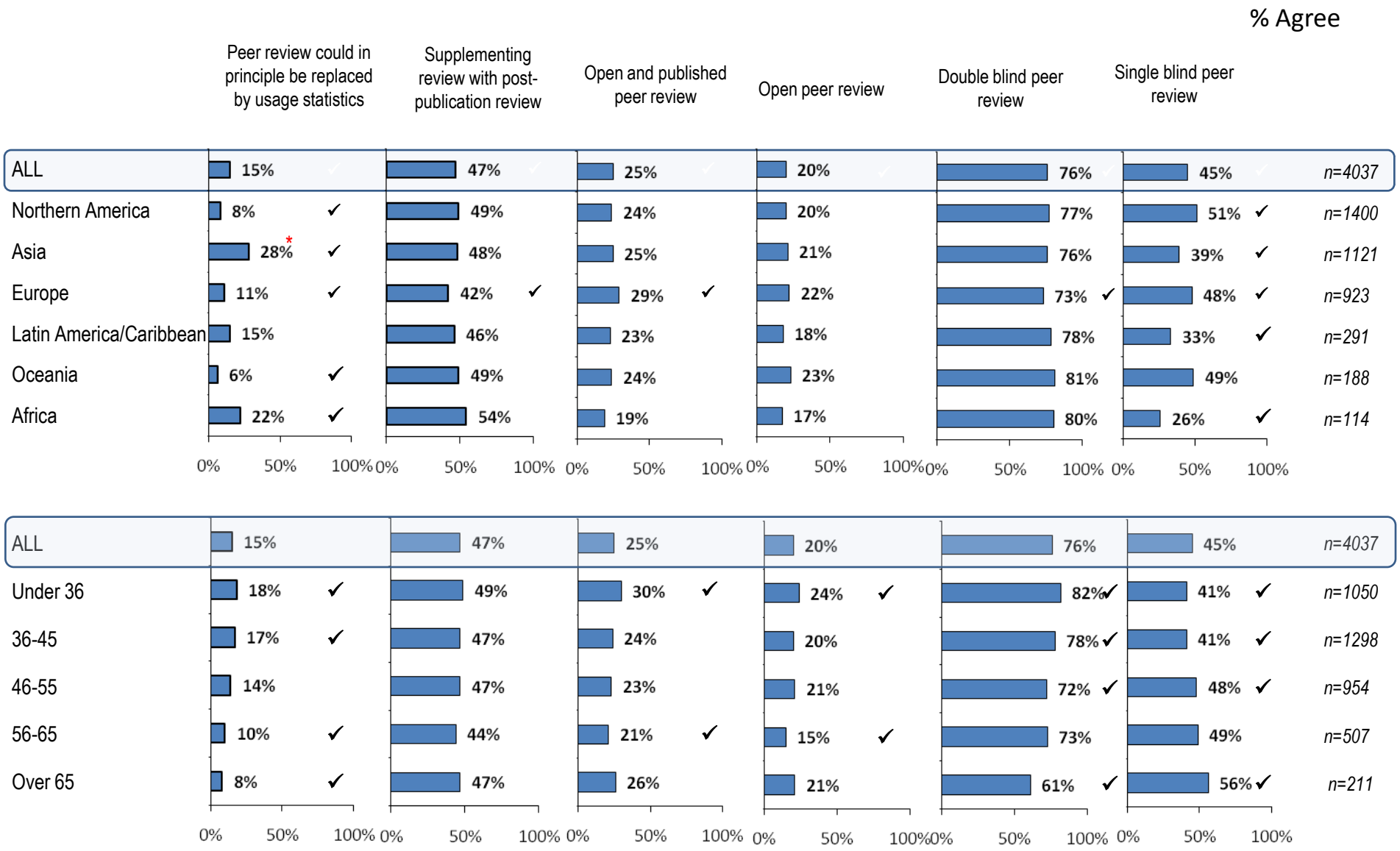


Northern American respondents are least likely to expect peer review to detect fraud. Asia respondents are most likely to agree that detecting fraud is currently fulfiled.

Data points represent difference from the mean percentage agree score.

Types of peer review by region and age

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

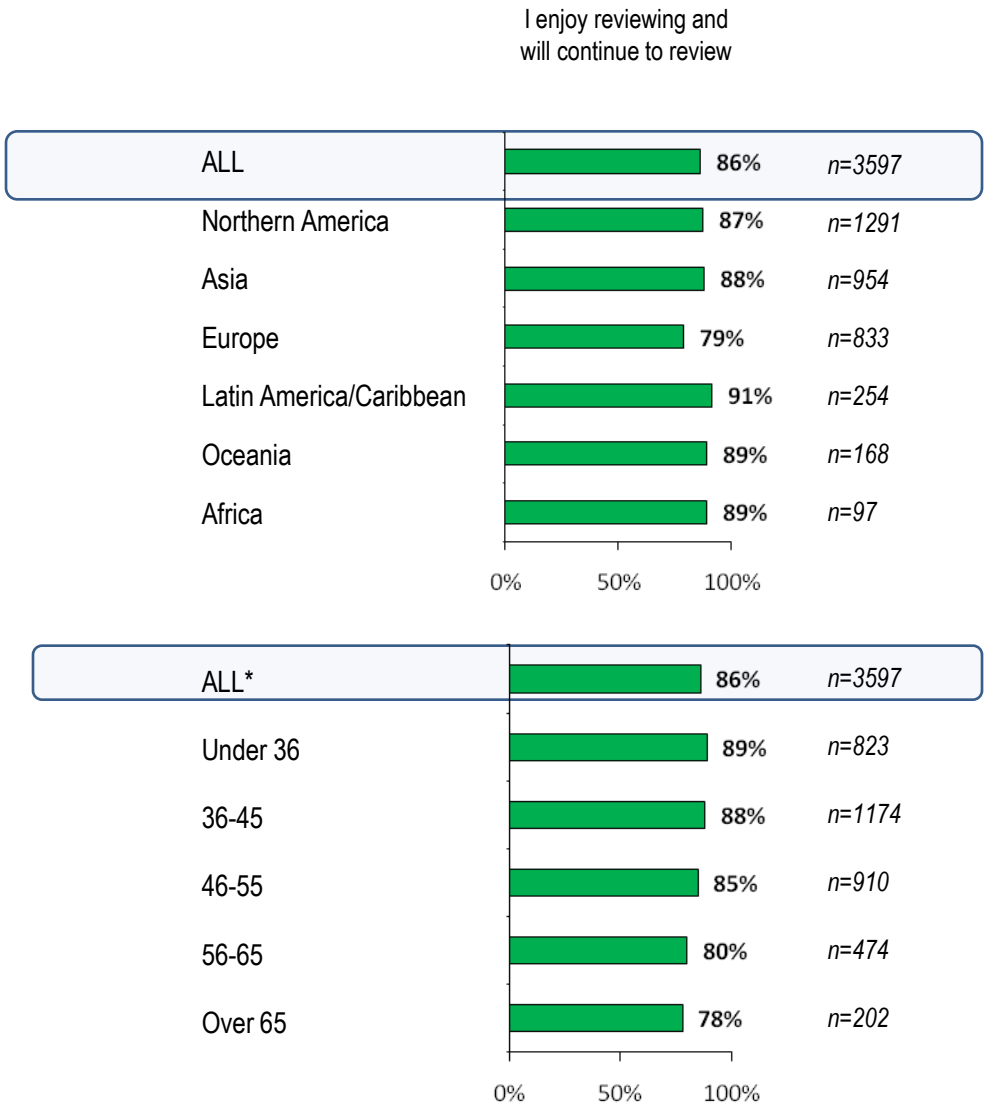


Detailed findings – reviewers' attitudes & experience

Commitment to peer review split by region and age

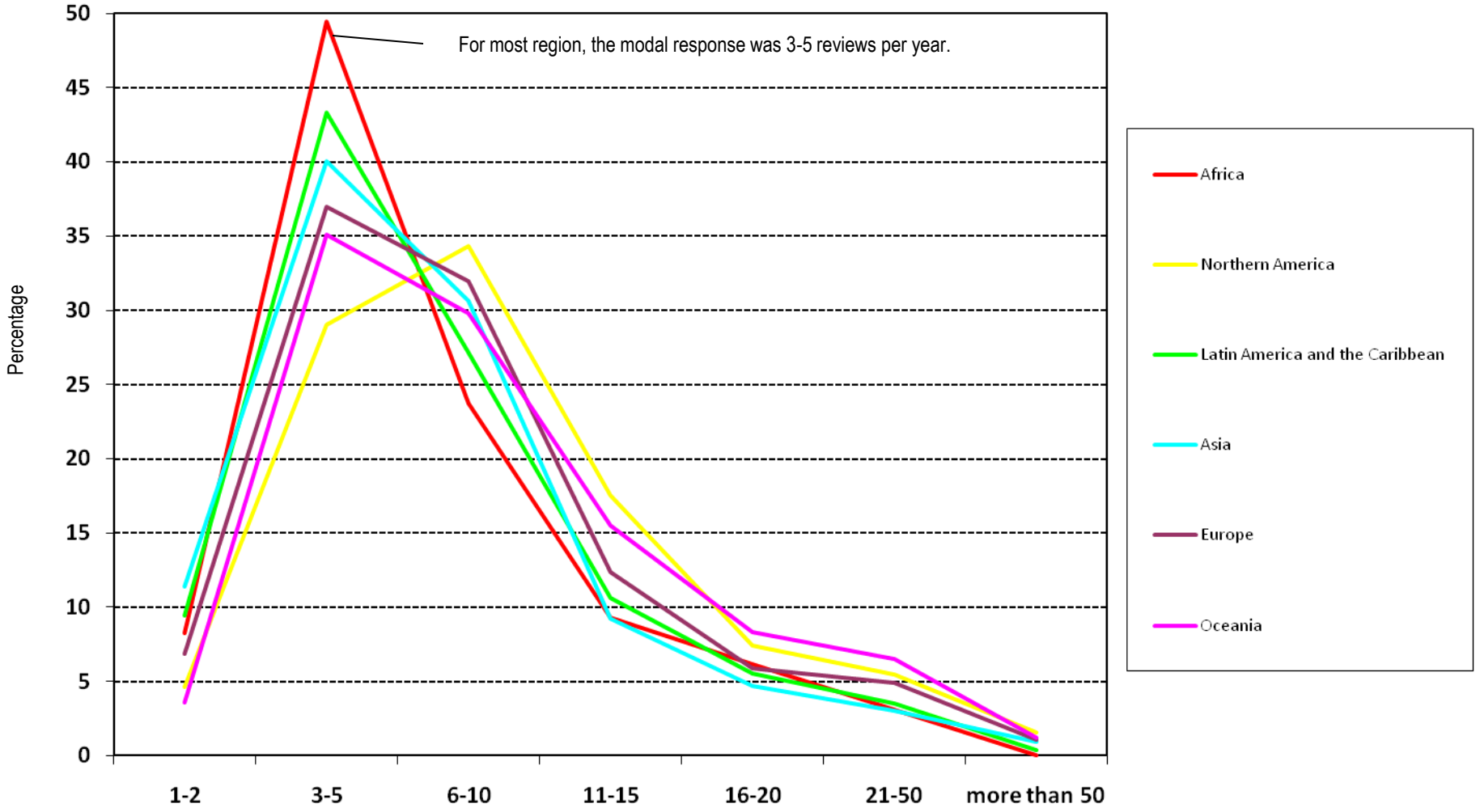
✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

% Agree



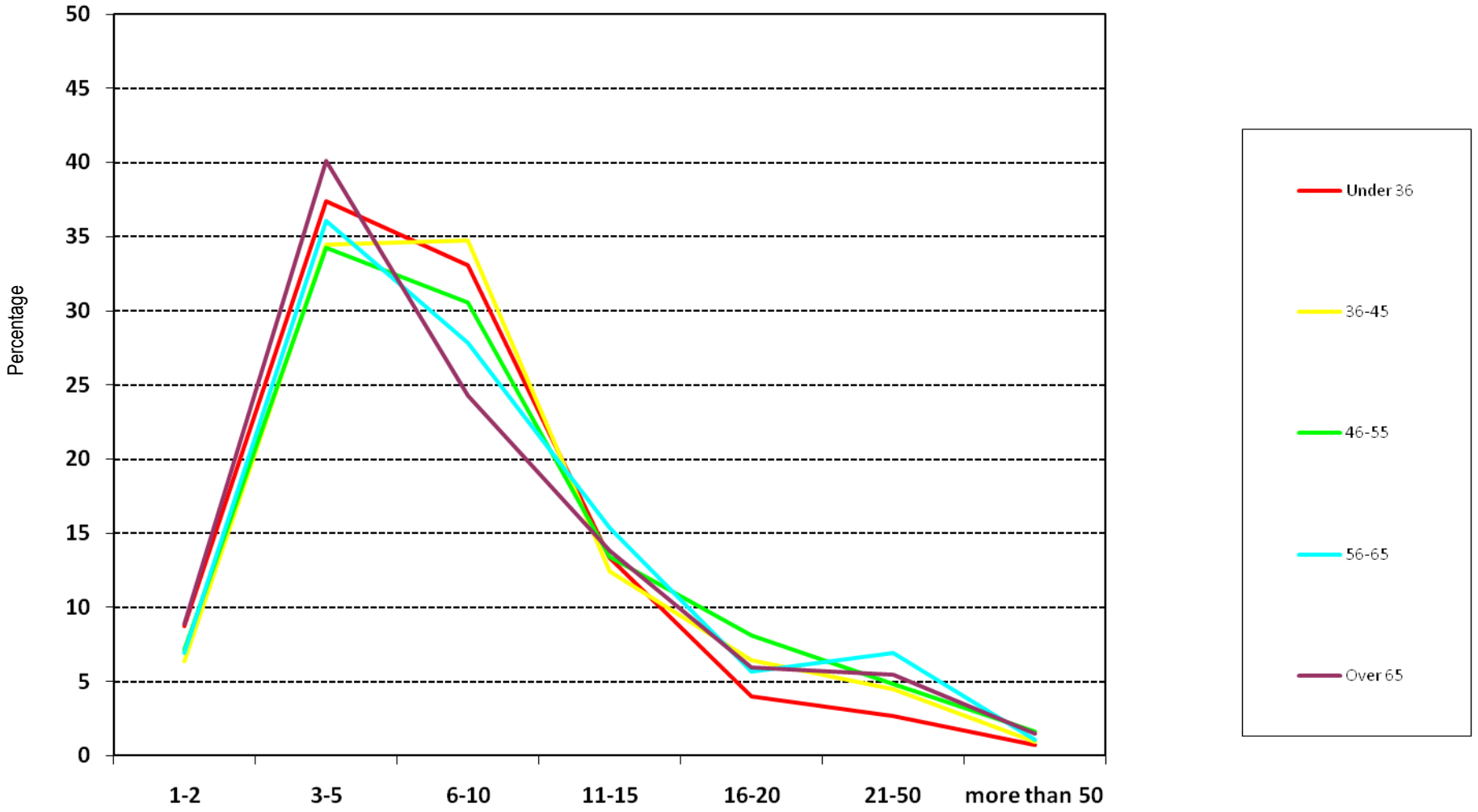
Predicted number of reviews

Respondents were asked to state the maximum number of papers they would be prepared to review in a year

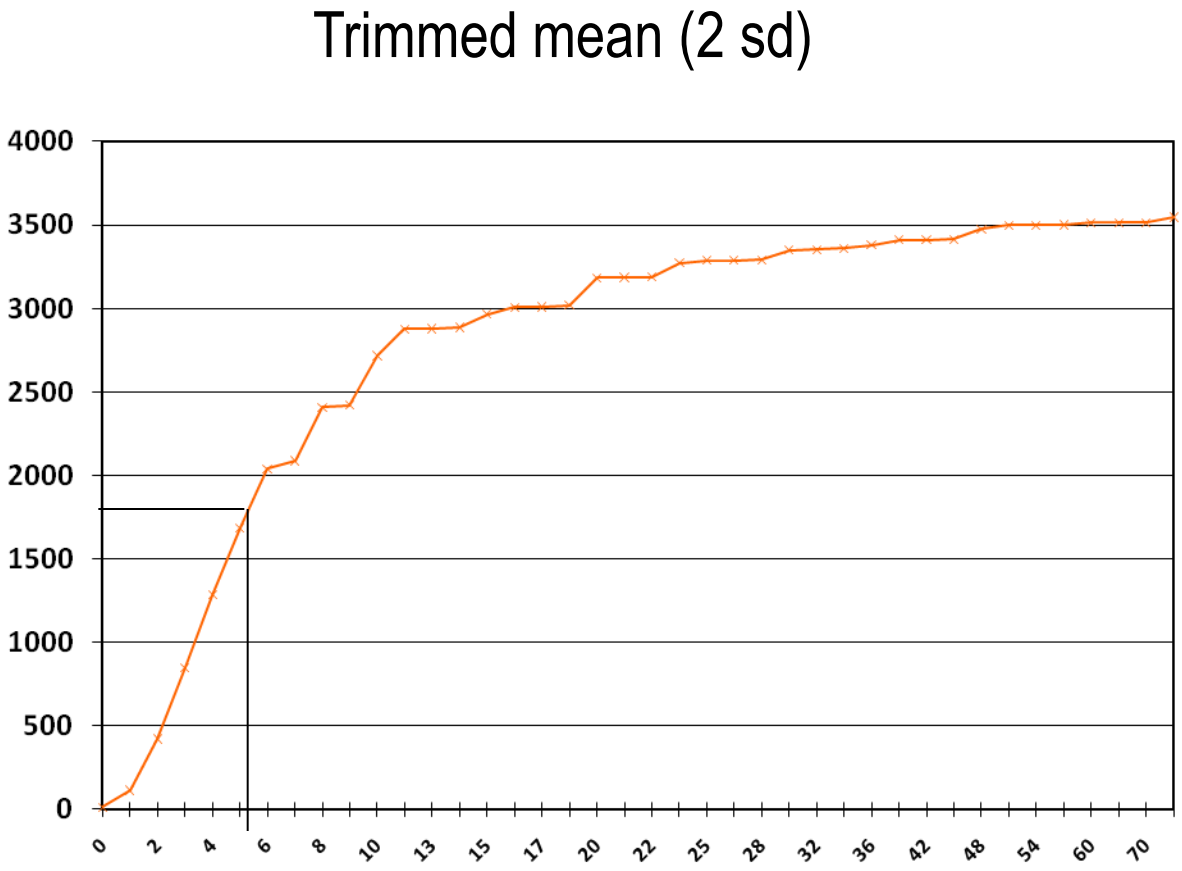


Predicted number of reviews

Respondents were asked to state the maximum number of papers they would be prepared to review in a year

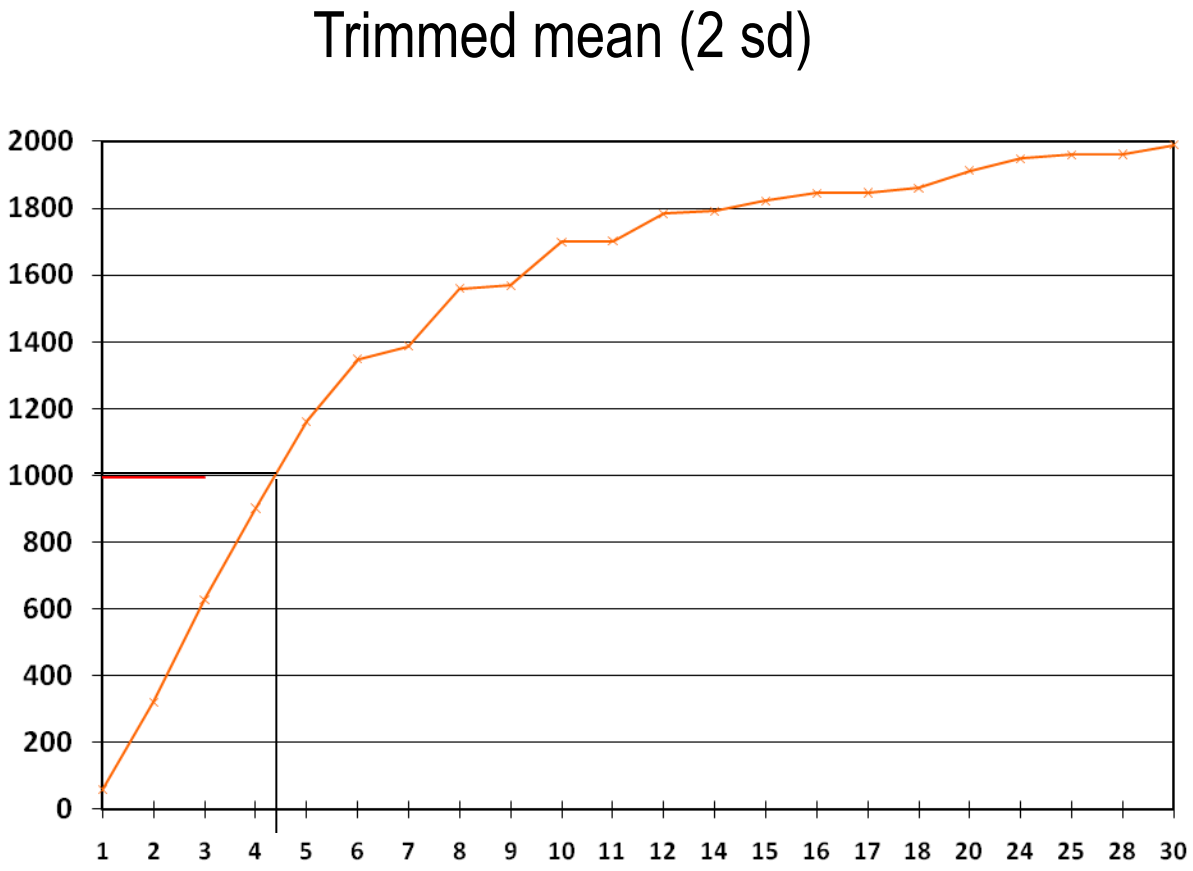


2009 study – reviewer perspective



The median time taken to complete a review is 6 hours

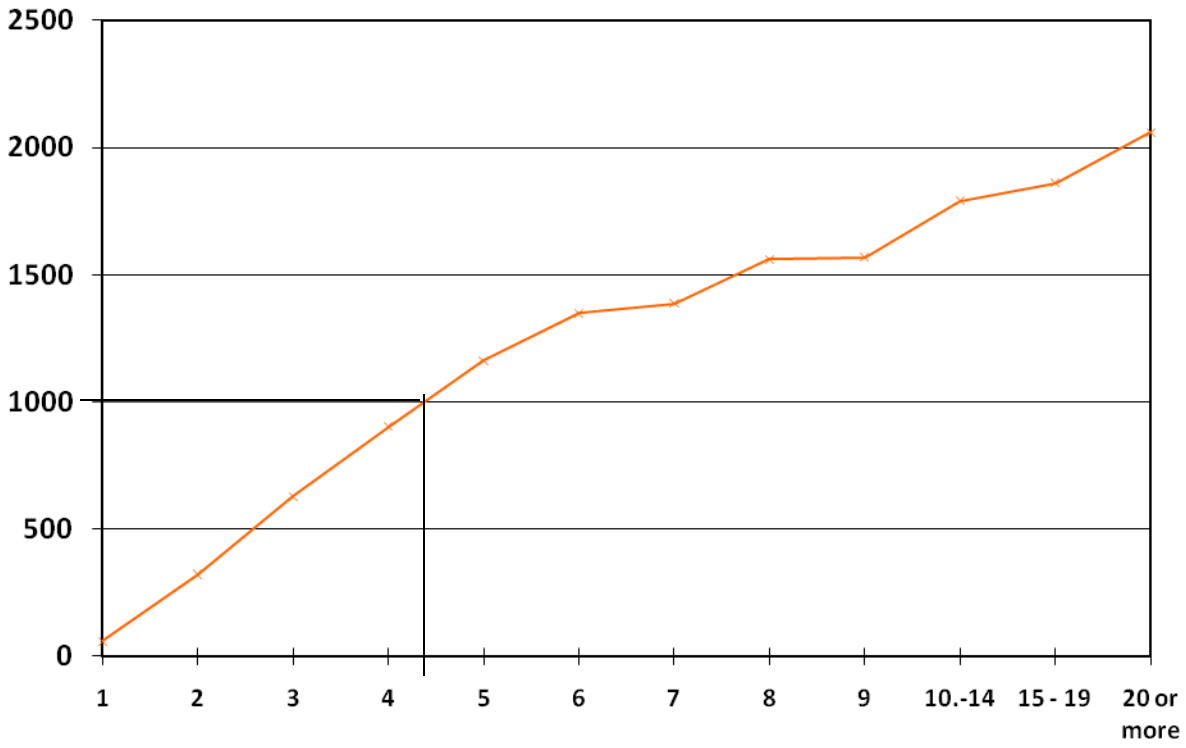
2007 study – Reviewer perspective



The median time taken to complete a review is 5 hours

2007 study – Reviewer perspective

Using groupings from 2007 study

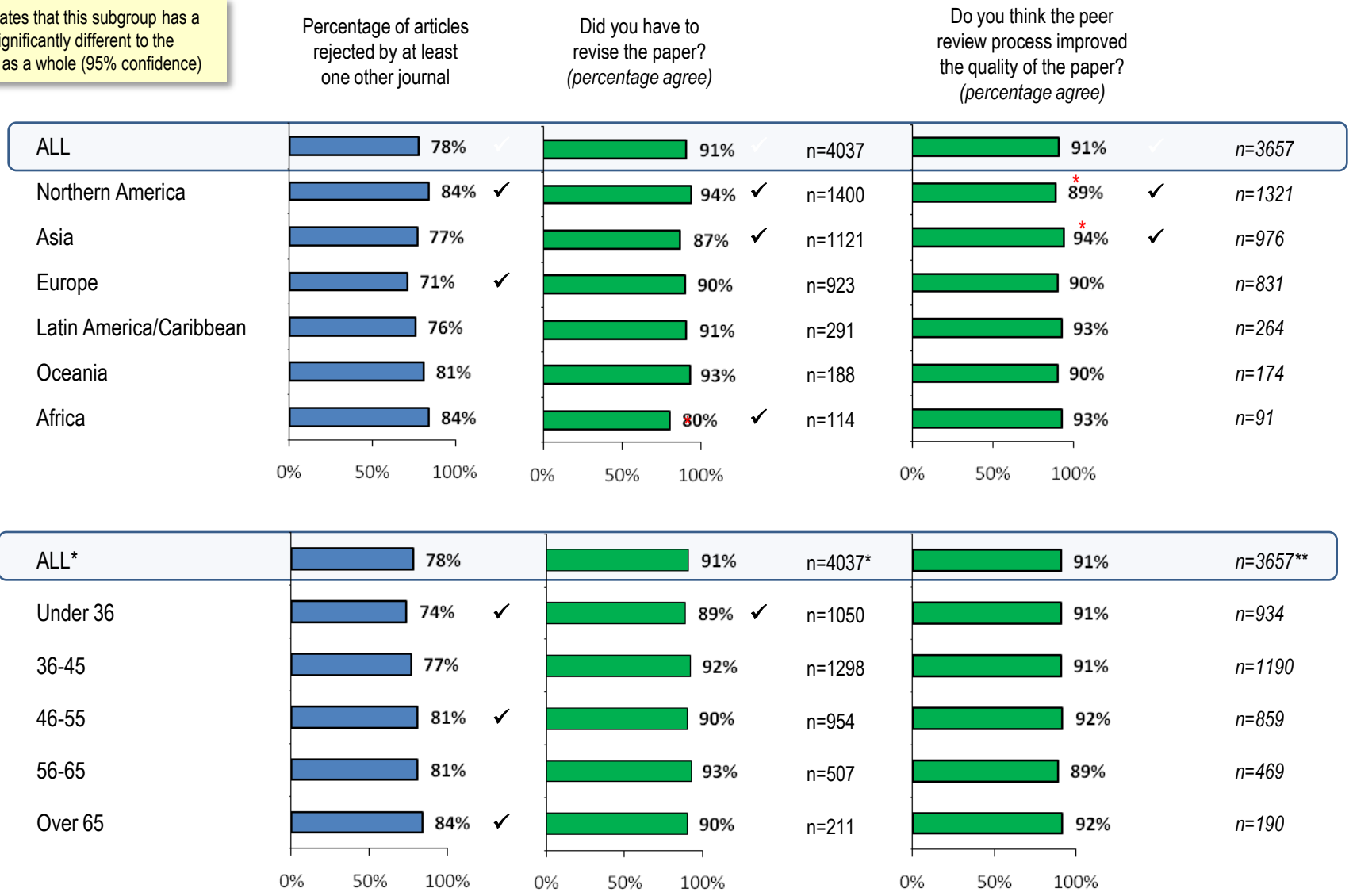


The median time taken to complete a review is 5 hours

Experience of peer review split by region and age

Respondents were asked to consider the last peer-reviewed paper that they had accepted for publication

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

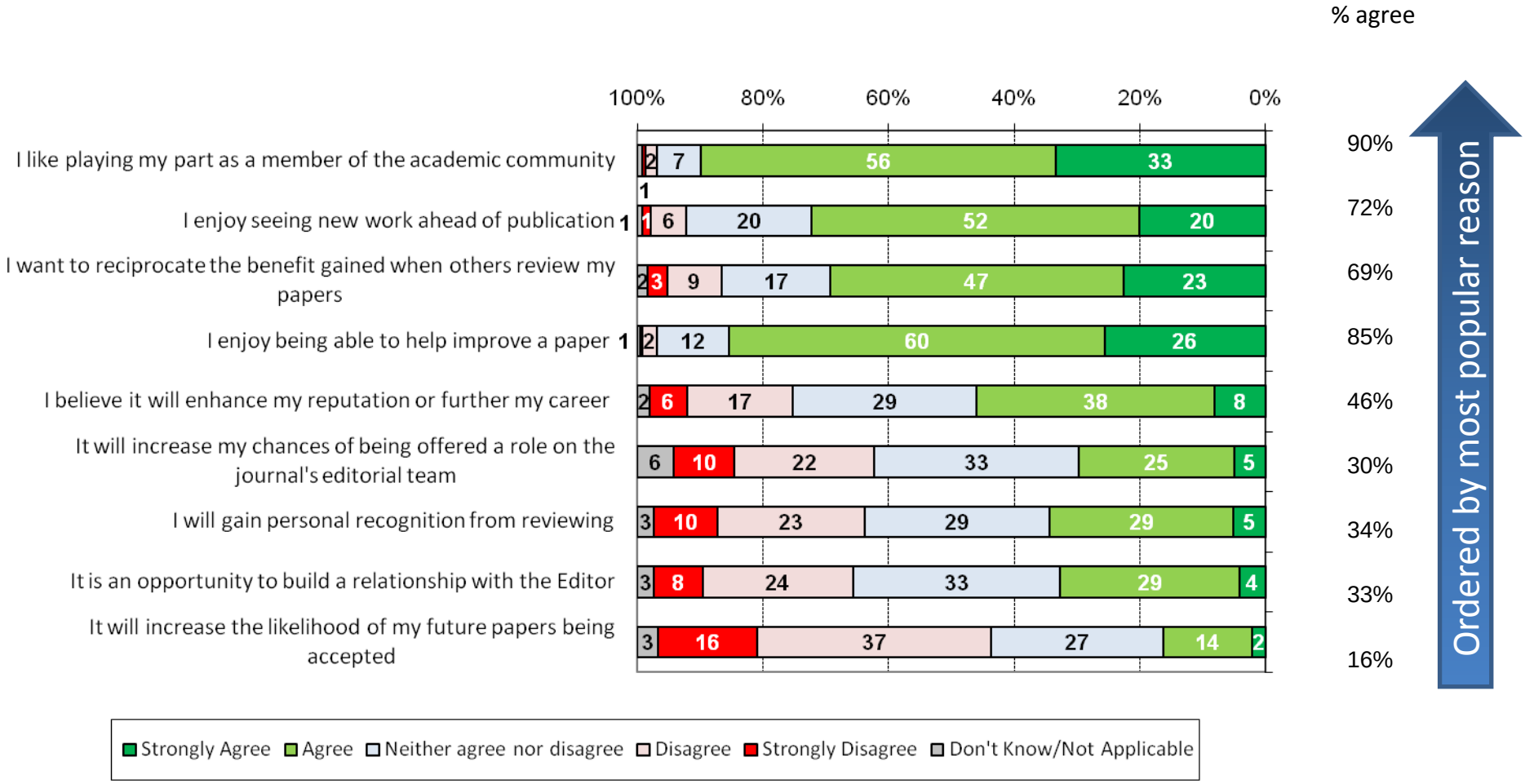


*17 respondents elected not to disclose their age group. These responses are included in the "ALL" category, but not listed separately

**15 after filtering

Reasons for Reviewing

Question: Please indicate the extent to which you agree that the following reasons describe why you review

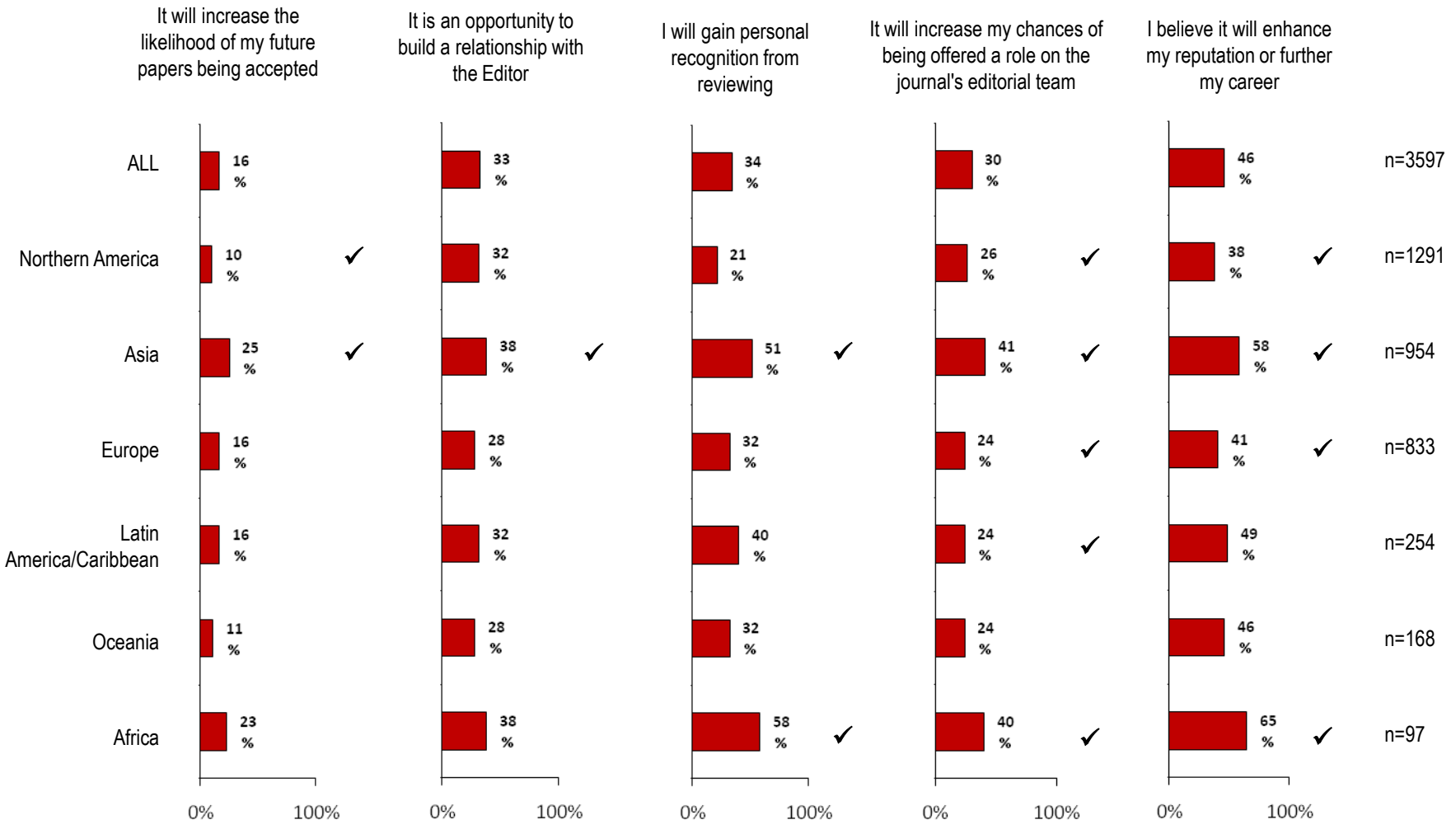


n=3,597

Reasons for reviewing split by region

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

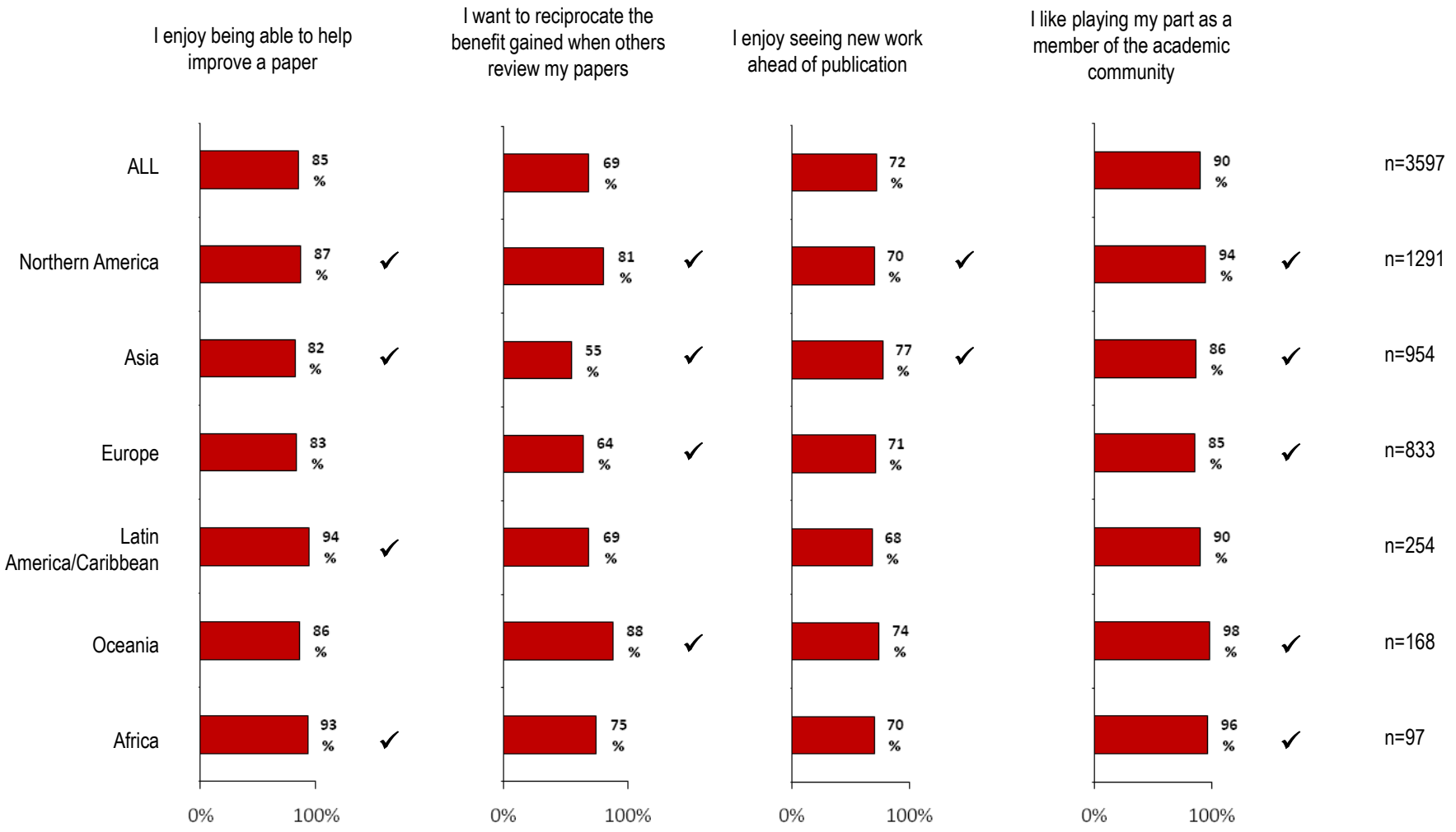
% Agree



Reasons for reviewing split by region

% Agree

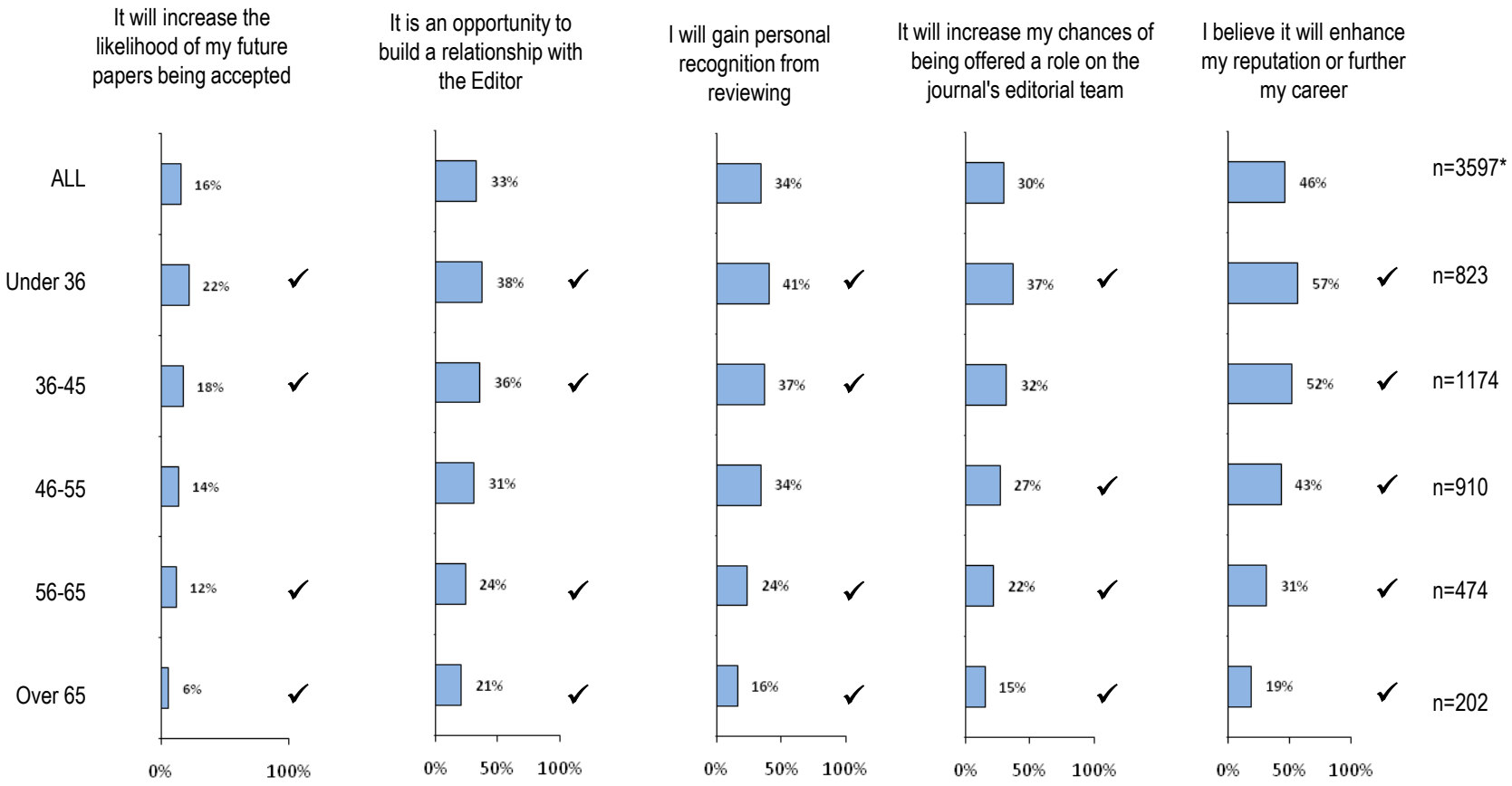
✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)



Reasons for reviewing split by age

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

% Agree

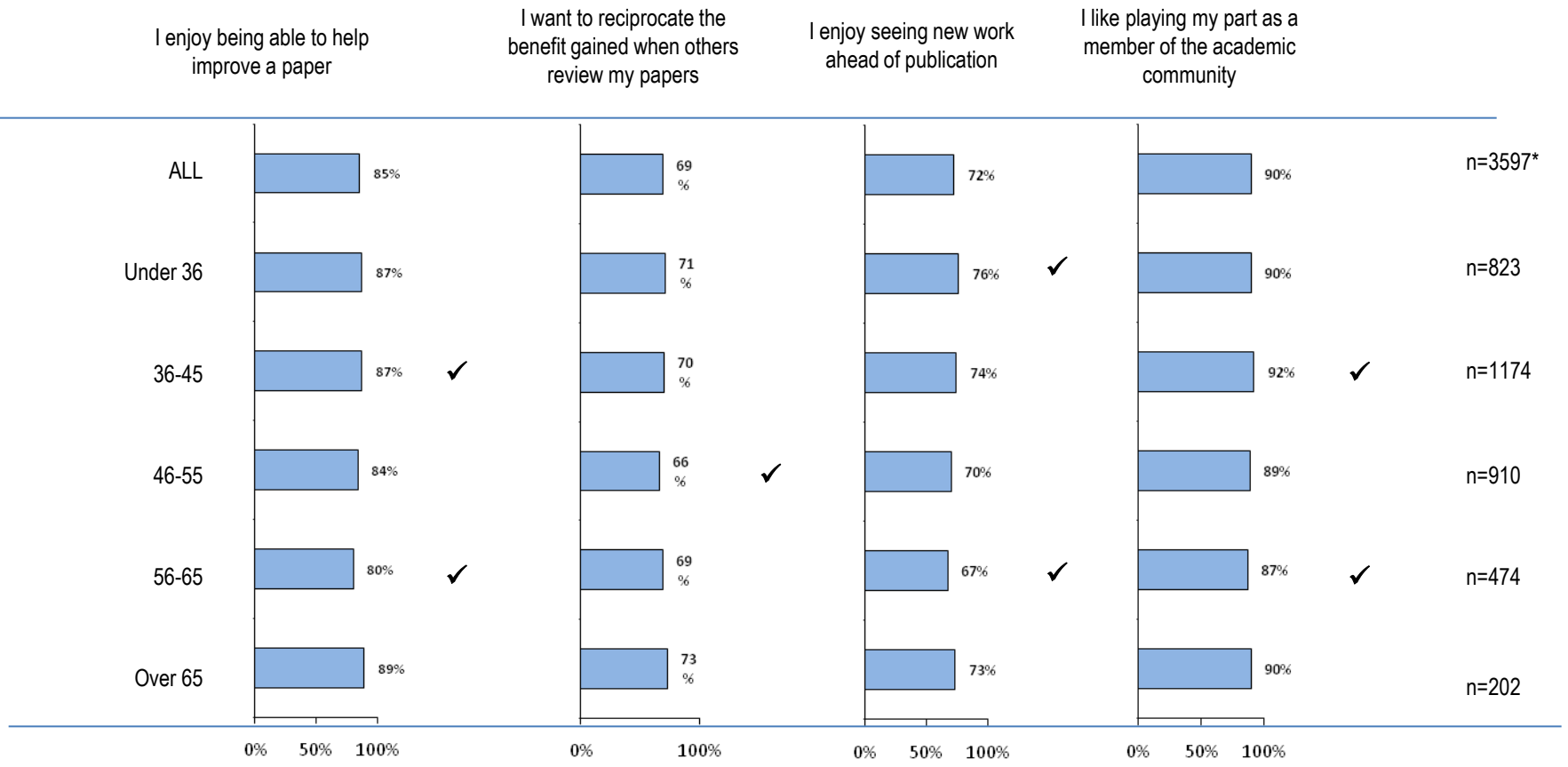


*14 respondents elected not to disclose their age group. These responses are included in the "ALL" category, but not listed separately

Reasons for reviewing split by age

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

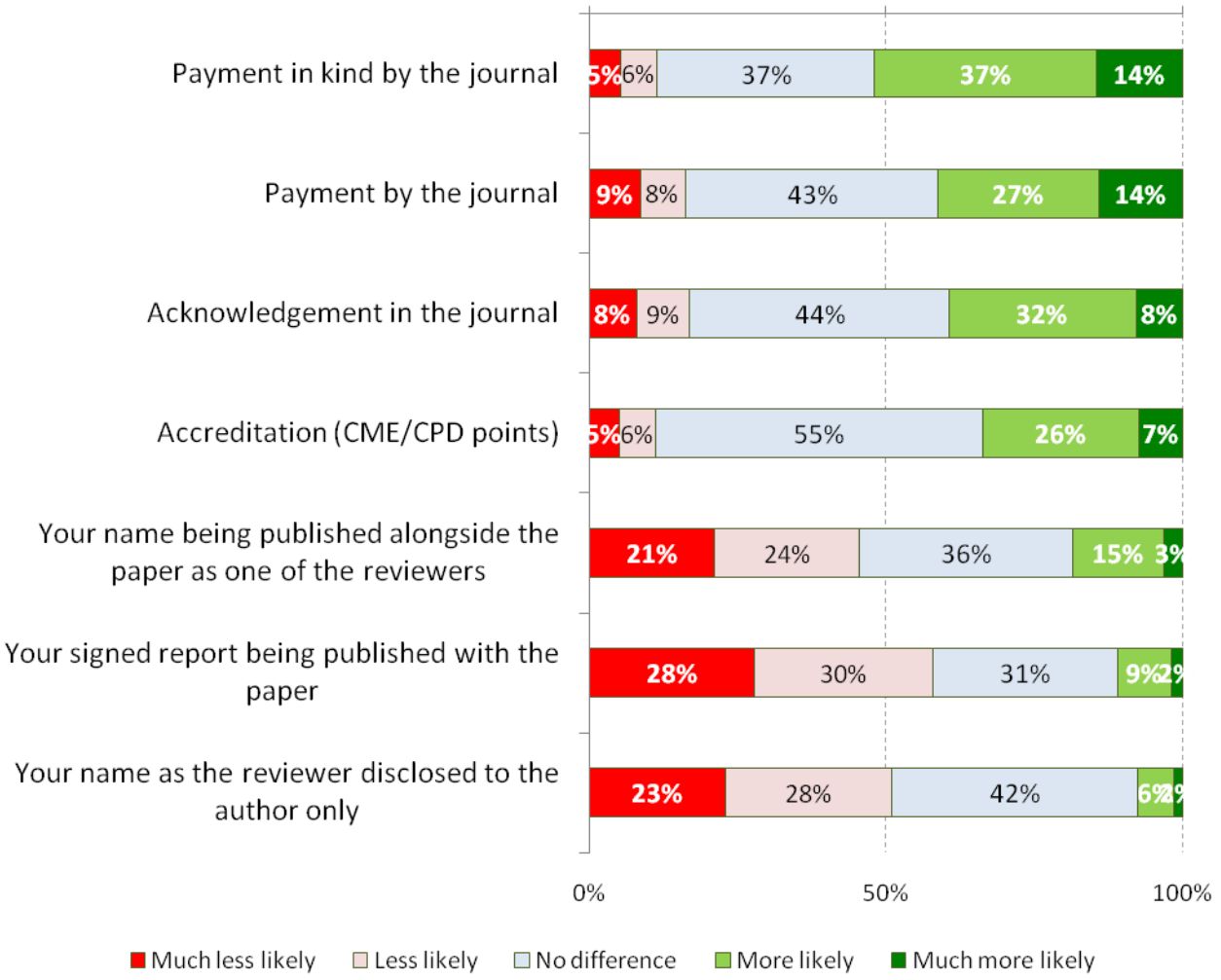
% Agree



*14 respondents elected not to disclose their age group. These responses are included in the "ALL" category, but not listed separately

Incentives to review

Question: Please say whether the following would make you more or less likely to review for a journal

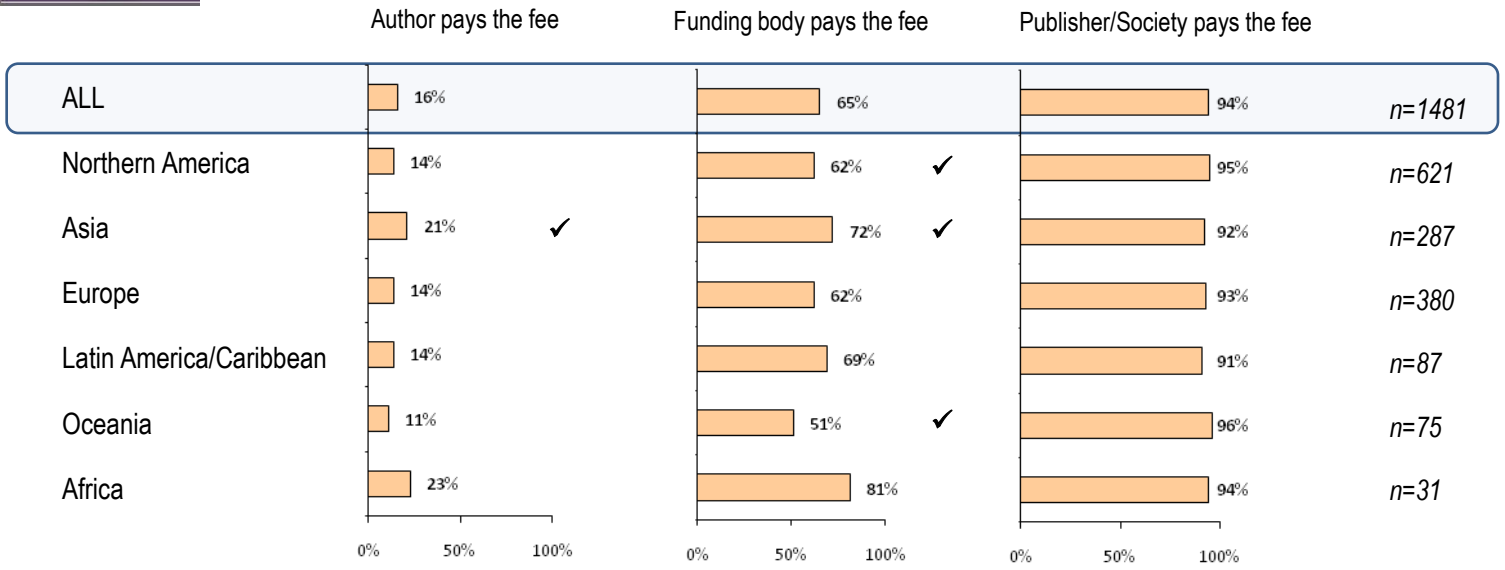


	% less likely	% more likely
Payment in kind by the journal	11%	51%
Payment by the journal	15%	41%
Acknowledgement in the journal	17%	40%
Accreditation (CME/CPD points)	11%	33%
Your name being published alongside the paper as one of the reviewers	45%	18%
Your signed report being published with the paper	58%	11%
Your name as the reviewer disclosed to the author only	51%	8%

Ordered by most likely

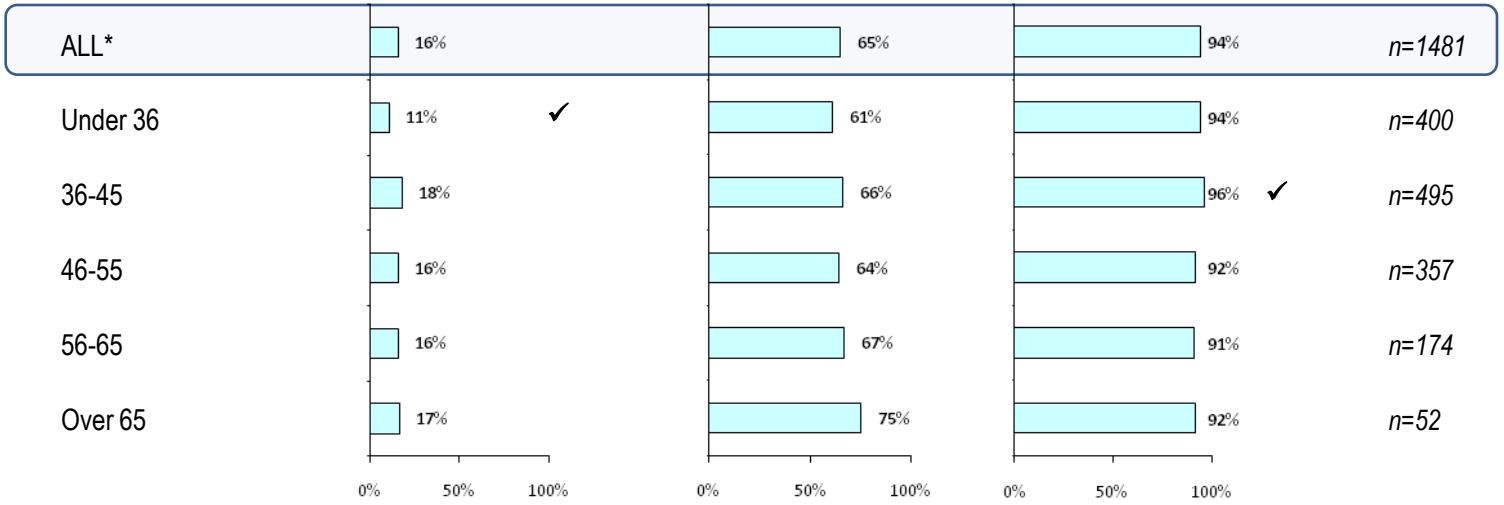
n=3,597

Payment for peer review split by region and age



✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

Northern America had the highest proportion of respondents more or much more likely to review for payment (48%). Europe was second highest with 46%. Asia had the lowest (30%)

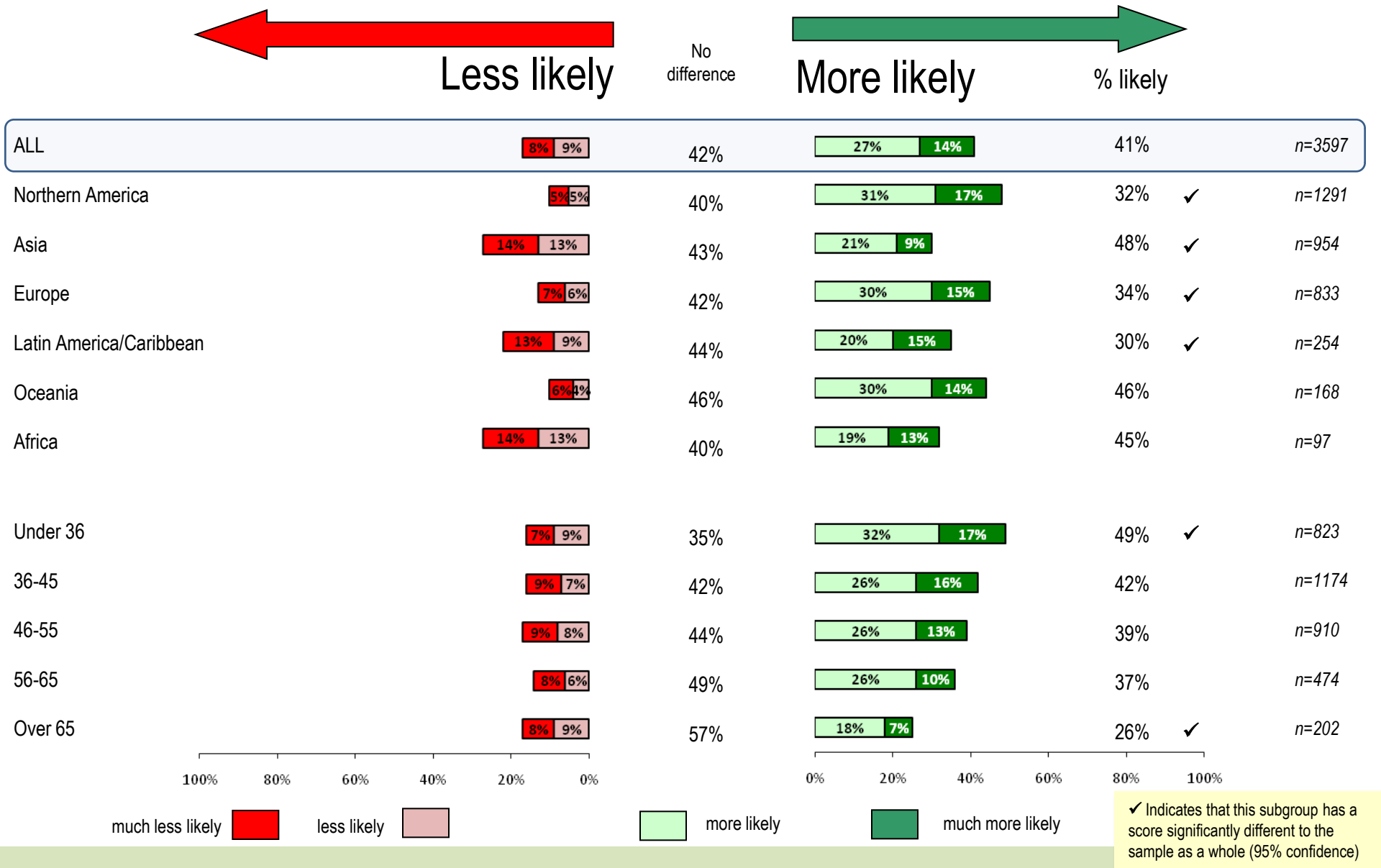


Interest in payment for peer review declines with age. 48% of Under 36's were more or much more likely to review for payment. This decreases for each successive age group, ending with 26% for the Over 65's

*3 of the 14 respondents who elected not to disclose their age group stated they would be more likely to review for payment. These responses are included in the "ALL" category, but not listed separately

Incentives to review split by region and age

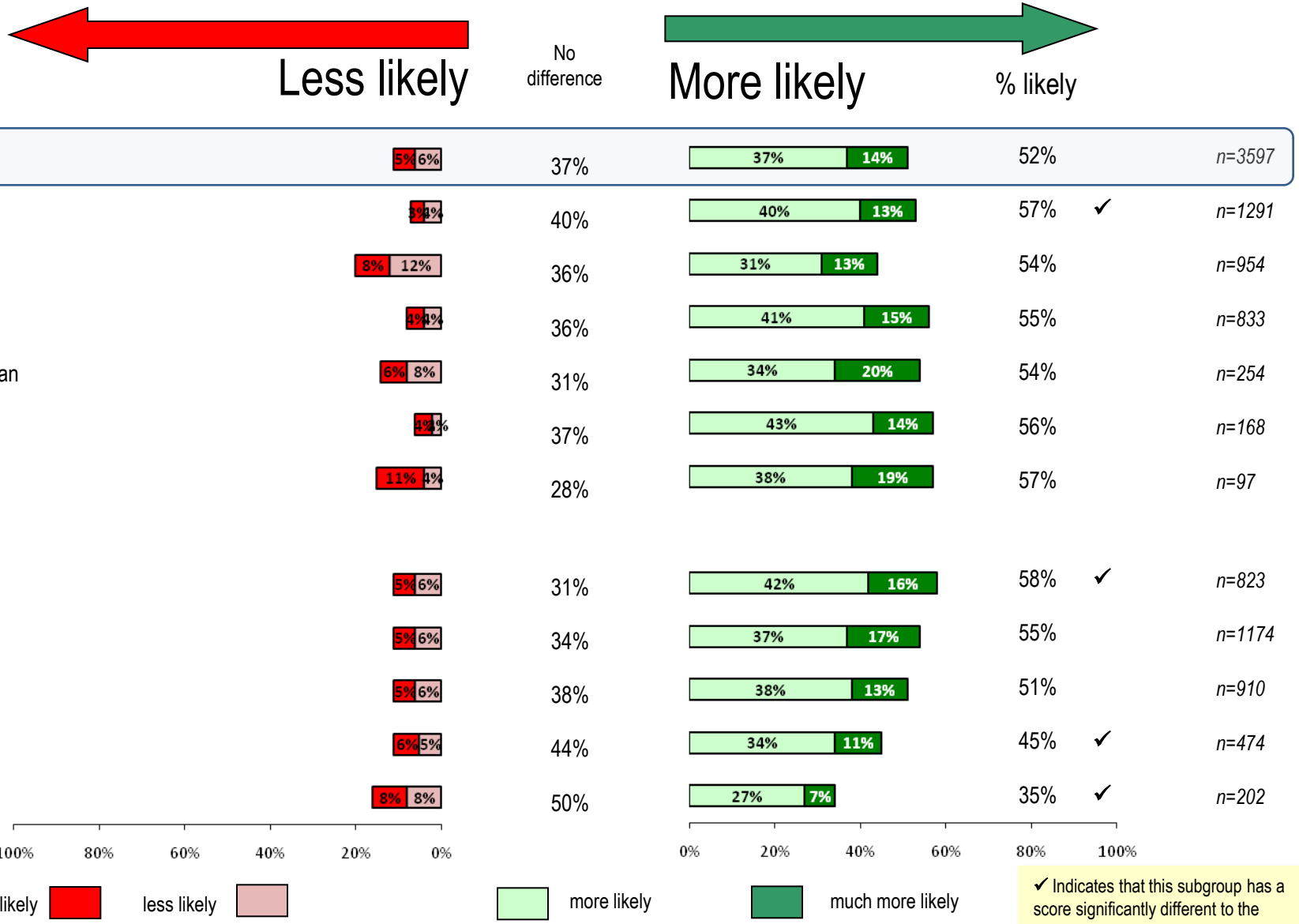
Please say which of the following would make you more or less likely to review for a journal: **Payment by the journal**



✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

Incentives to review split by region and age

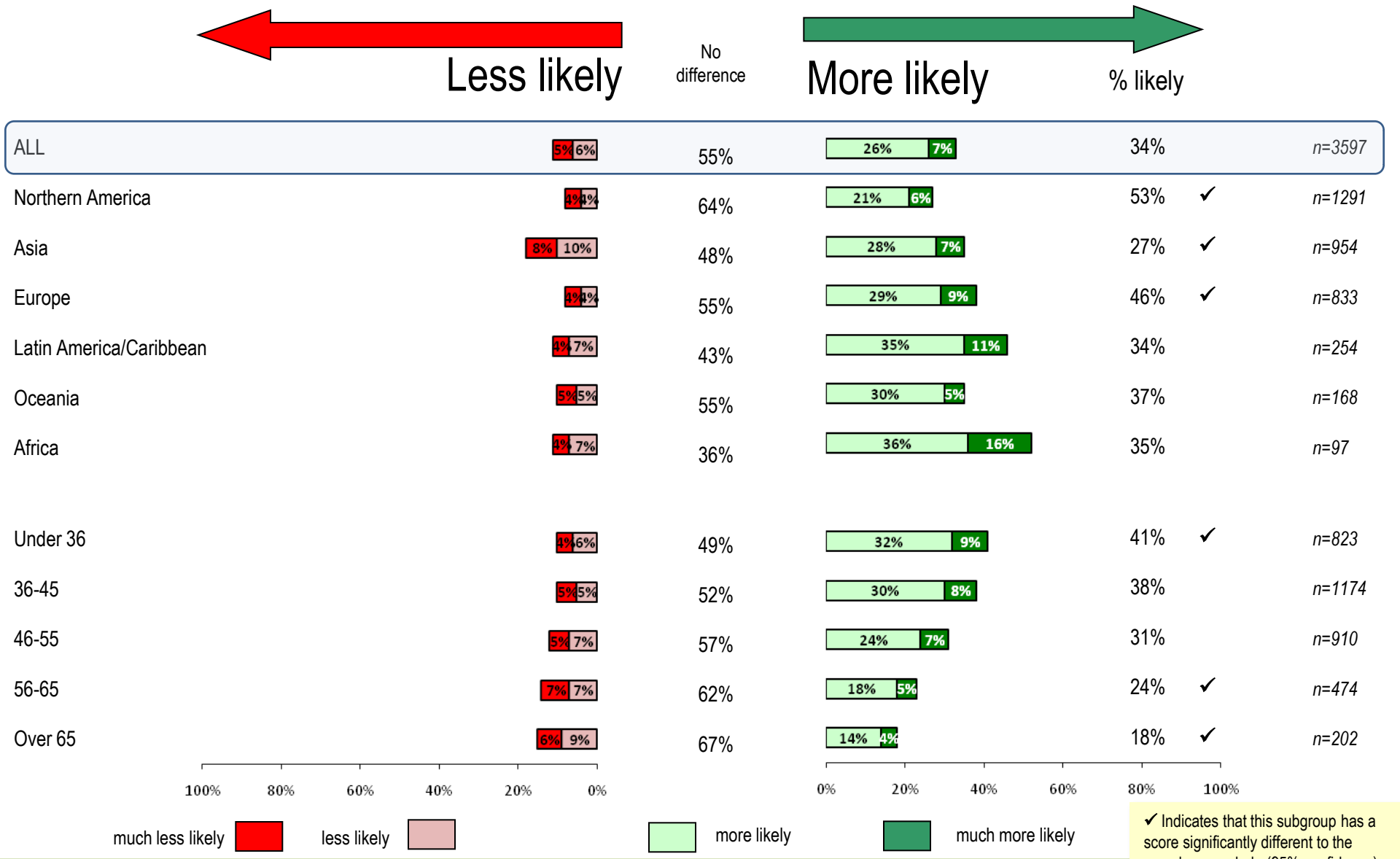
Please say which of the following would make you more or less likely to review for a journal: **Payment in kind by the journal**



✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

Incentives to review split by region and age

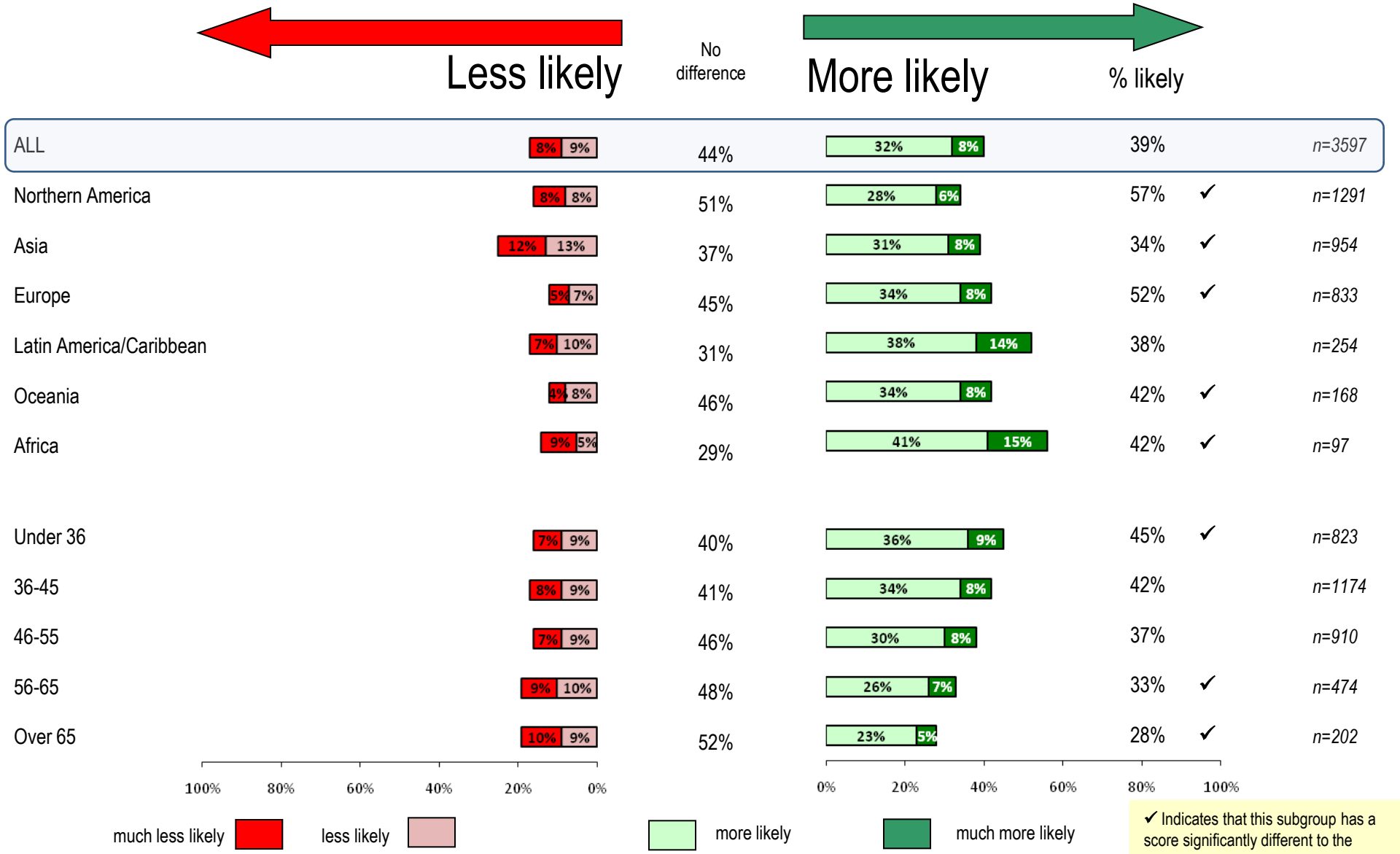
Please say which of the following would make you more or less likely to review for a journal: **Accreditation (CME/CMD points)**



✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

Incentives to review split by region and age

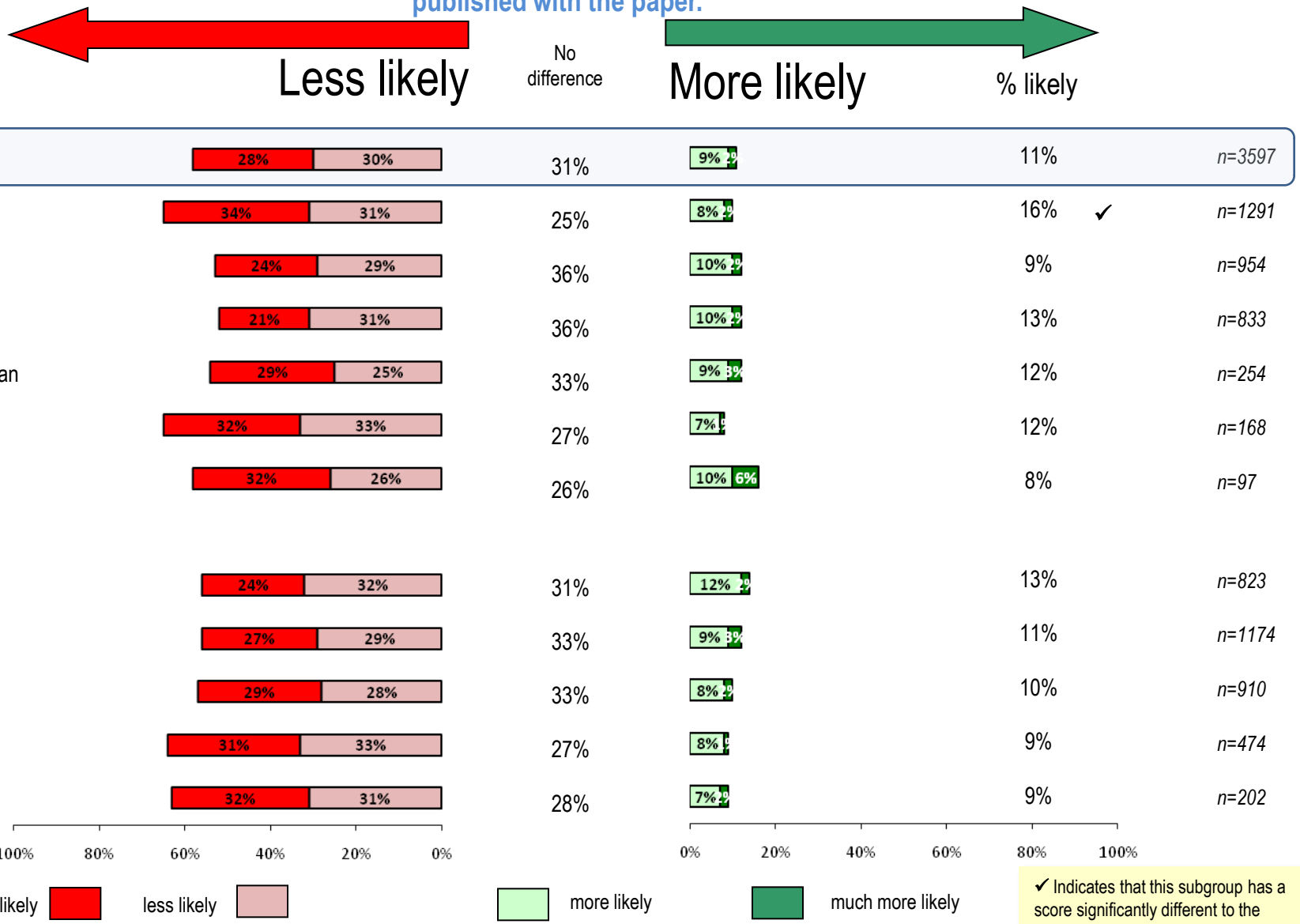
Please say which of the following would make you more or less likely to review for a journal: **Acknowledgement in the journal**



✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

Incentives to review split by region and age

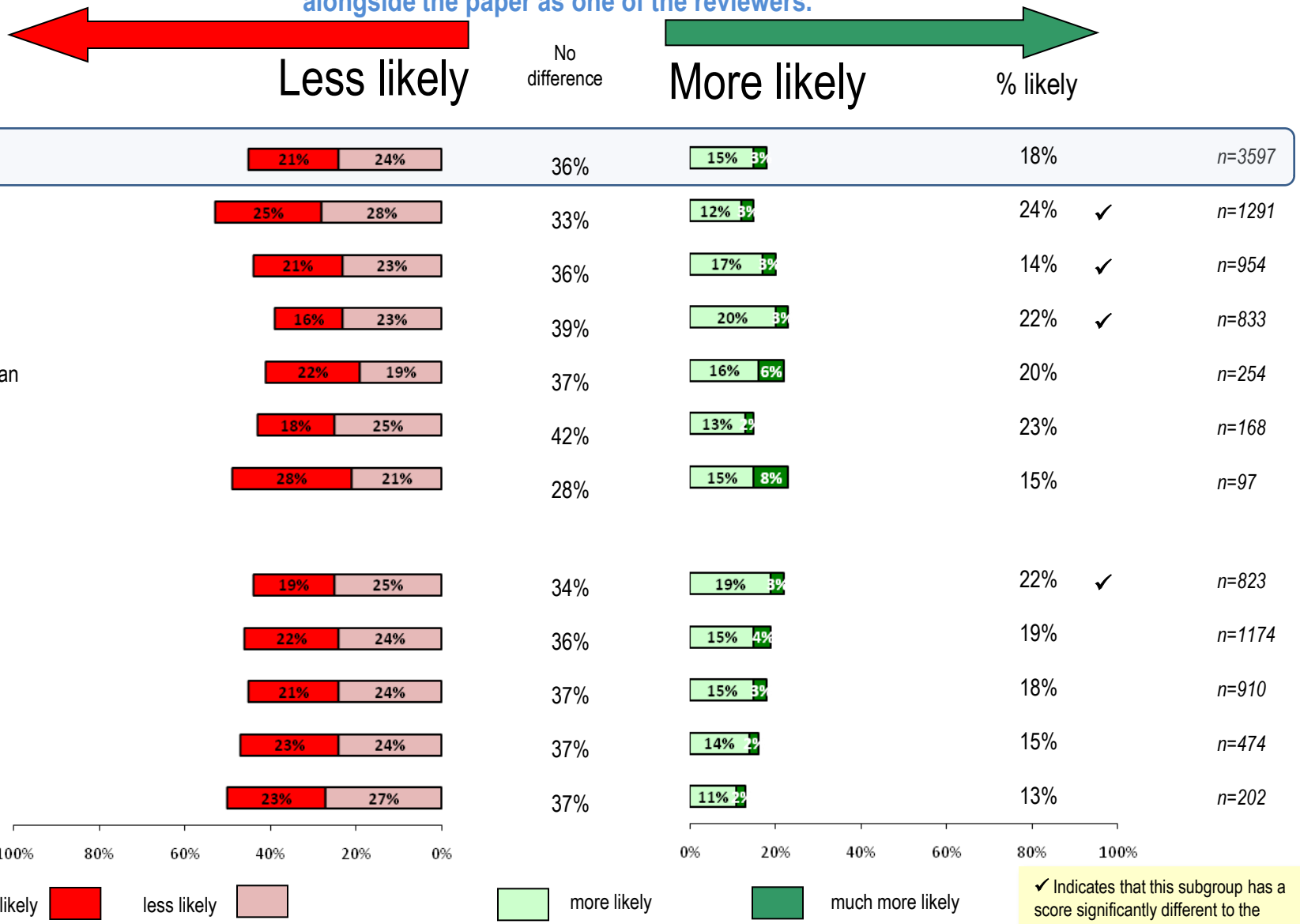
Please say which of the following would make you more or less likely to review for a journal: **Your signed report being published with the paper.**



✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

Incentives to review split by region and age

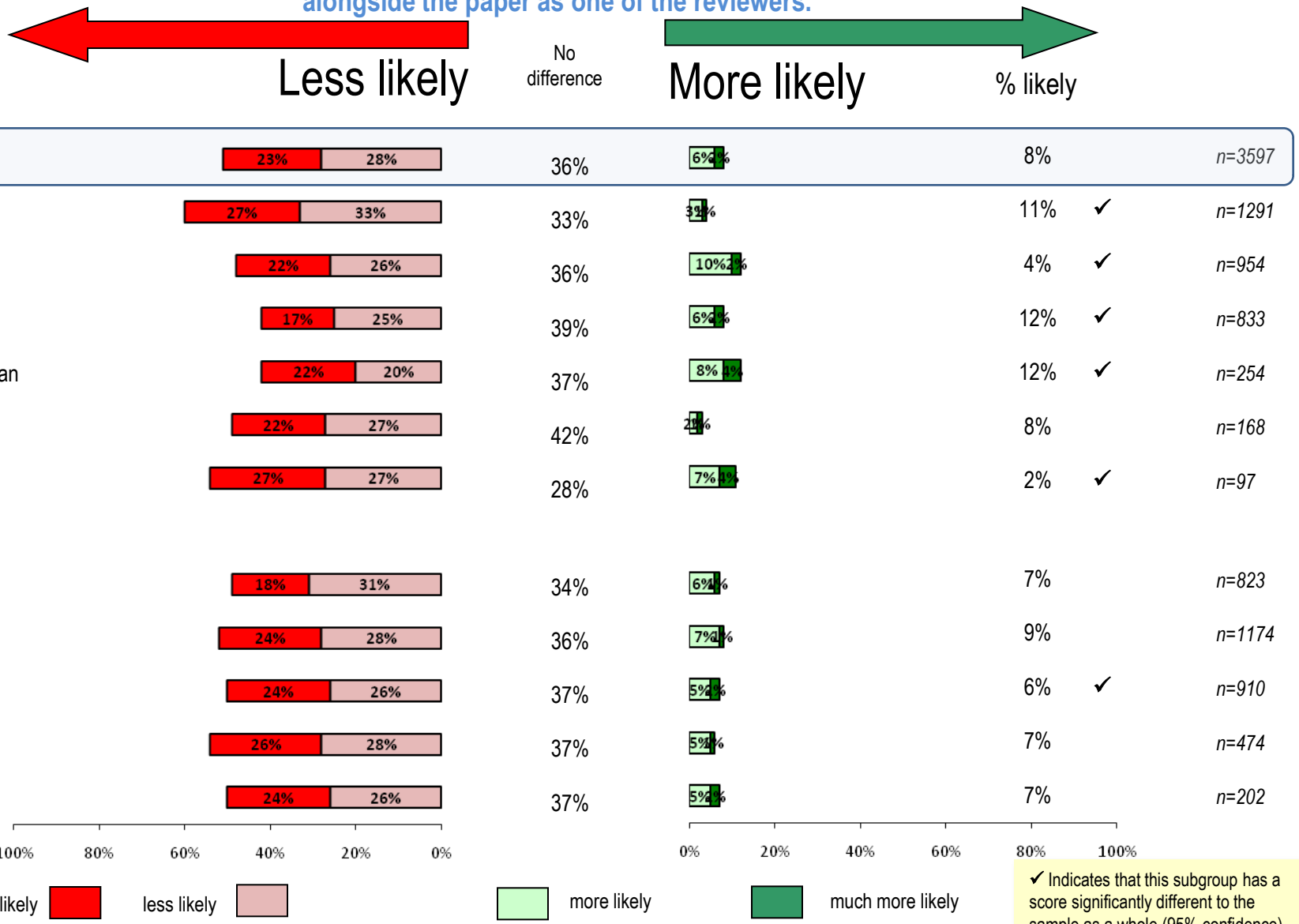
Please say which of the following would make you more or less likely to review for a journal: **Your name being published alongside the paper as one of the reviewers.**



✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

Incentives to review split by region and age

Please say which of the following would make you more or less likely to review for a journal: **Your name being published alongside the paper as one of the reviewers.**



✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

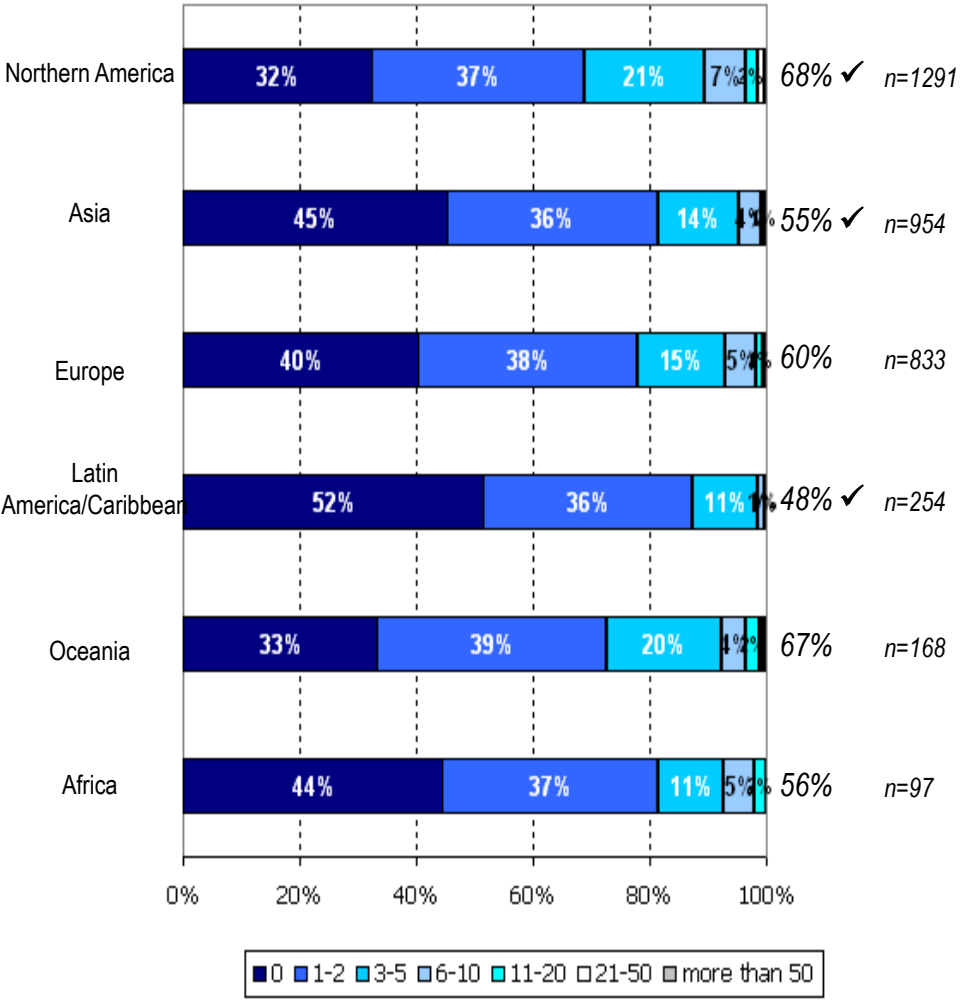
Declined to review

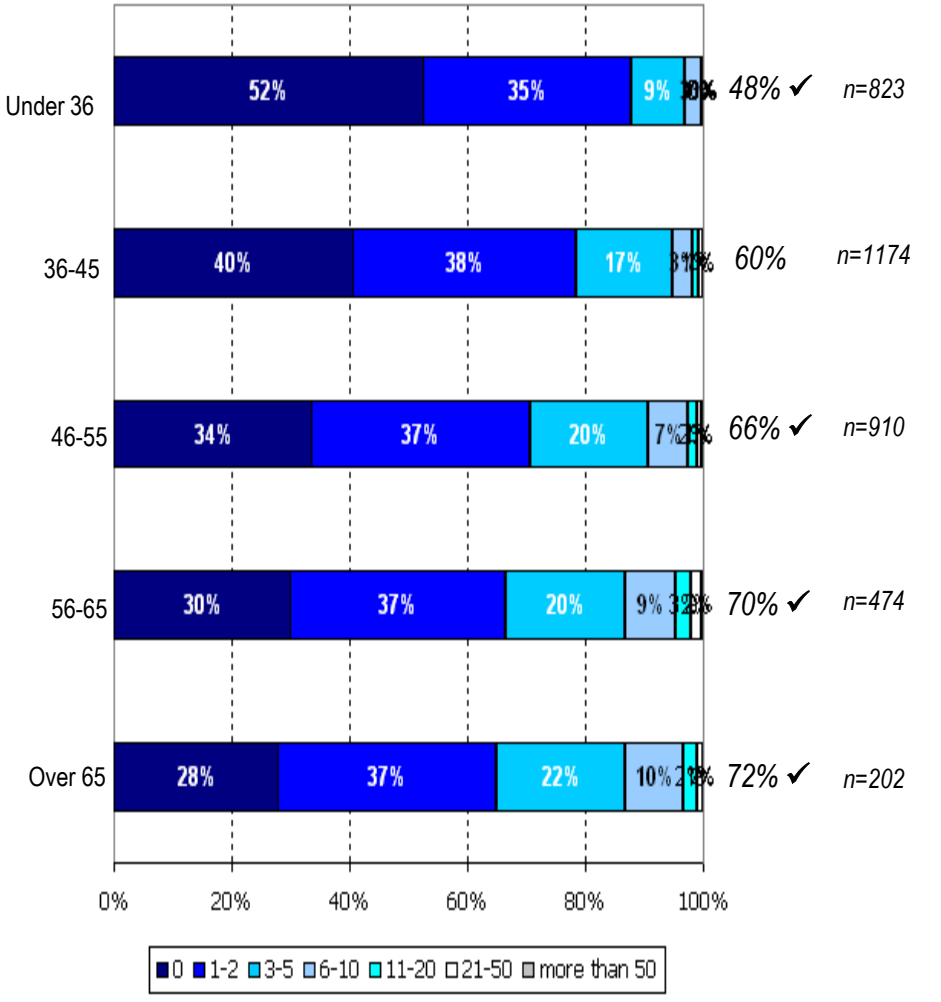
✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

Question: During the last 12 months, how many times have you declined an invitation to review?

(percentage in italics equals percentage of respondents who have declined at least one invitation to review)

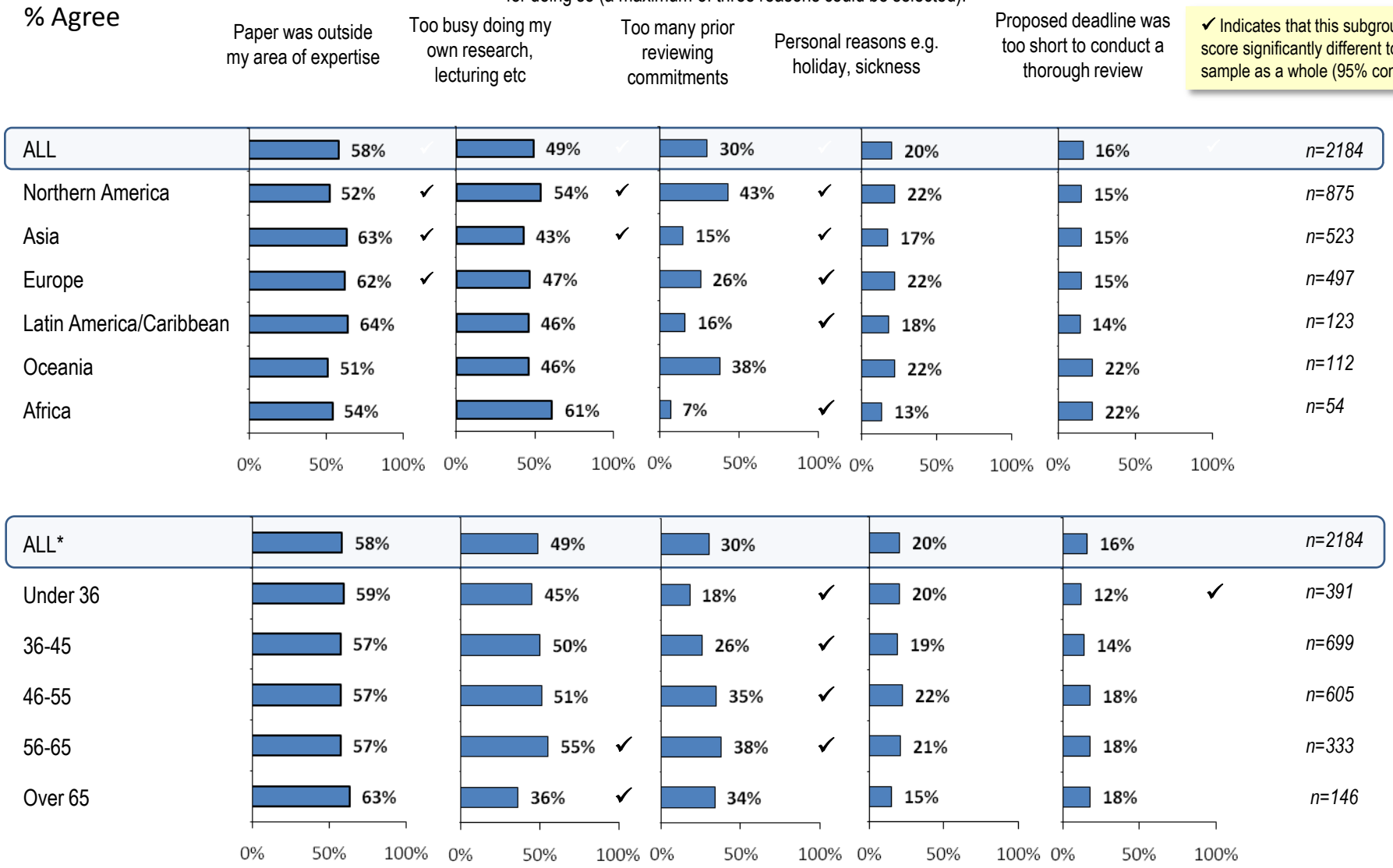
ALL = 61% n=3597





Reasons for declining to peer review split by region and age

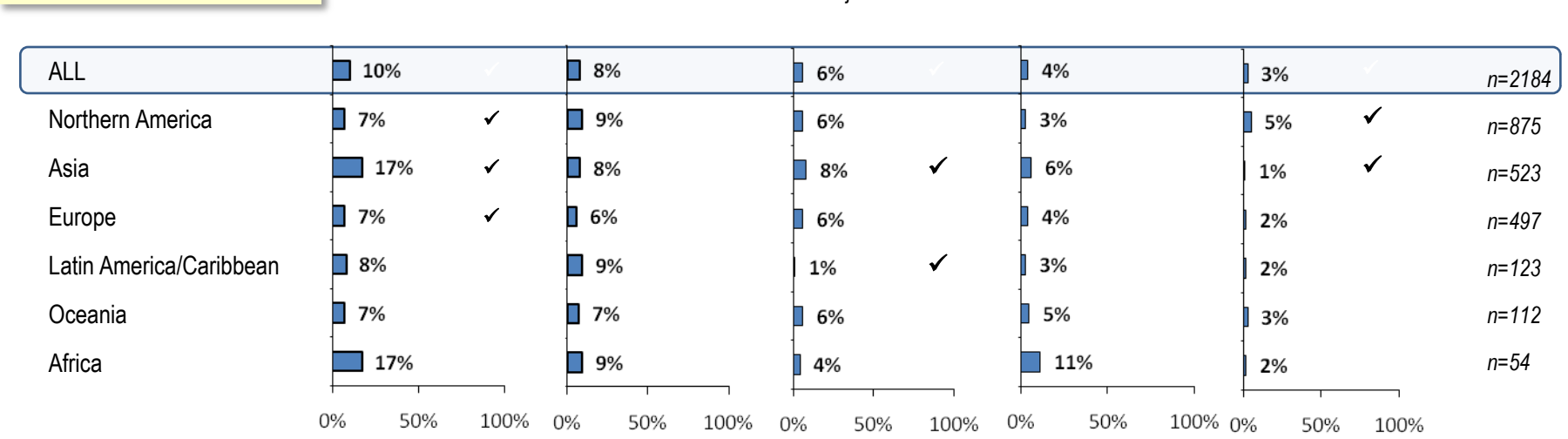
Respondents were asked if they had declined an invitation to review within the last 12 months. Those who had declined at least one review were asked to select the main reasons for doing so (a maximum of three reasons could be selected).

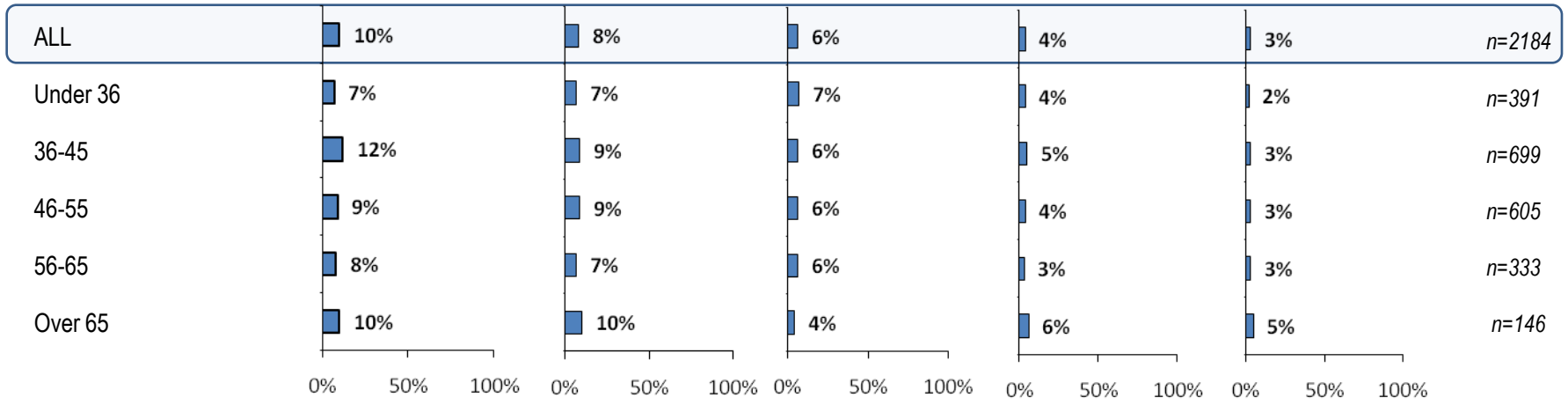


Reasons for declining to peer review split by region and age

Respondents were asked if they had declined an invitation to review within the last 12 months. Those who had declined at least one review were asked to select the main reasons for doing so (a maximum of three reasons could be selected).

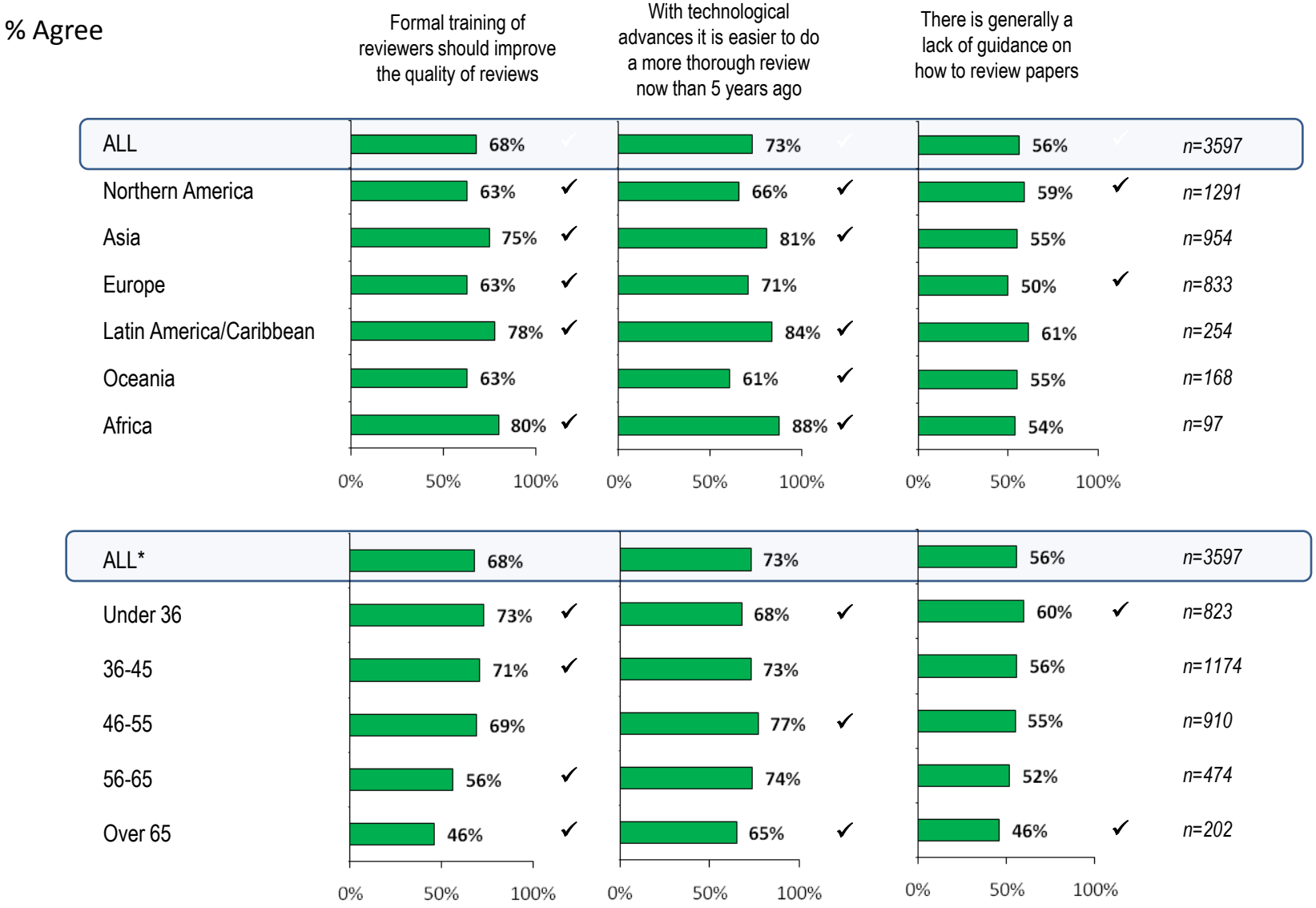
✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)





Improving peer review split by region and age

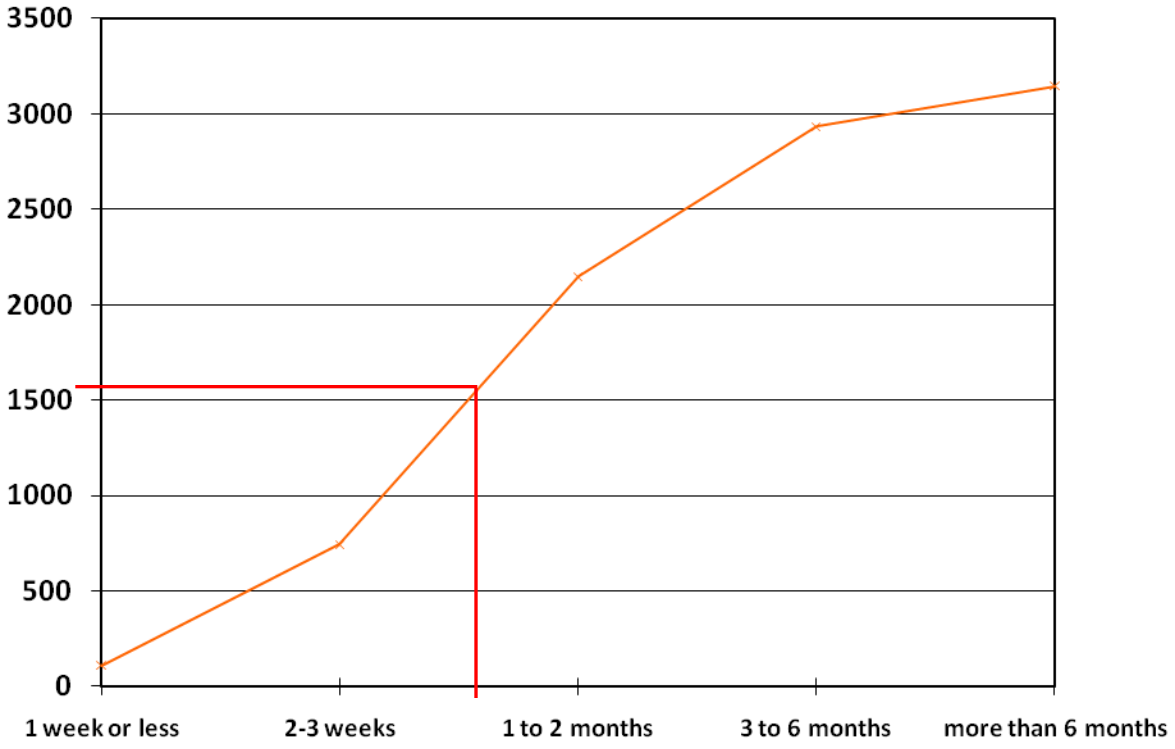
✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)



Detailed findings – authors' experiences of peer review

Authors' perspective – time taken to first decision

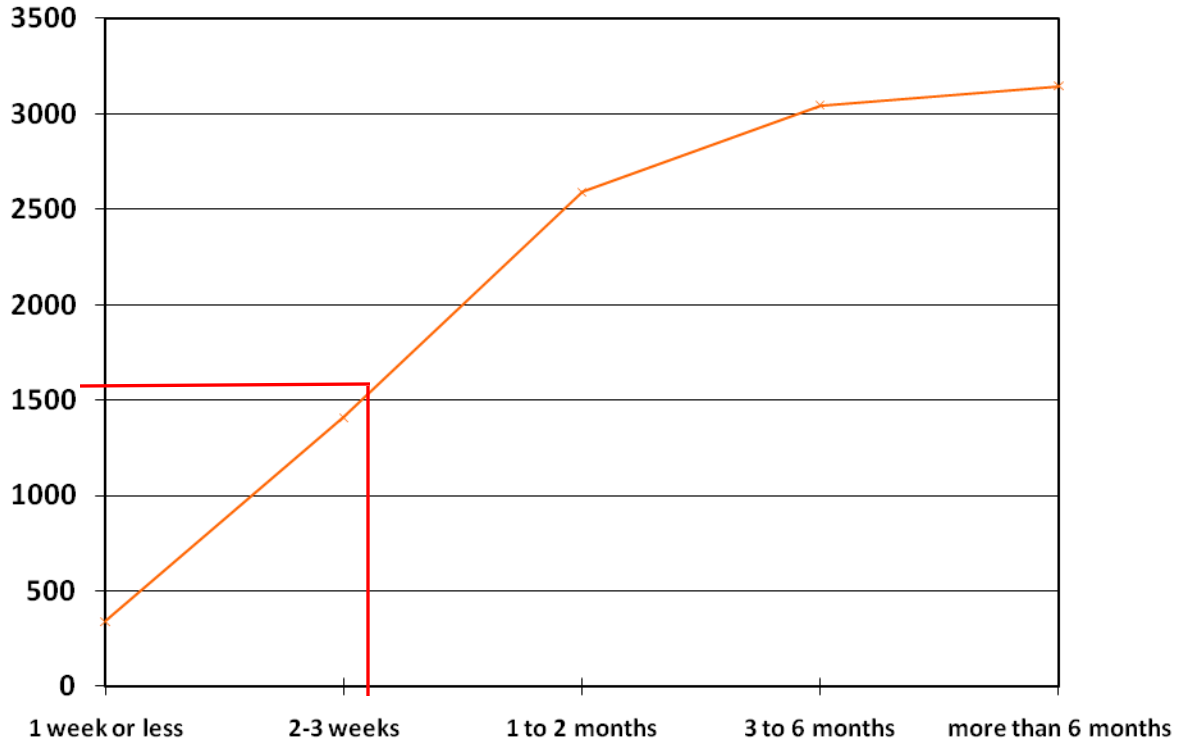
Approximately how long did the peer review process take from submission to first decision?



The median time taken from submission to first decision is 1-2 months

Authors' perspective – time taken for revision to be reviewed

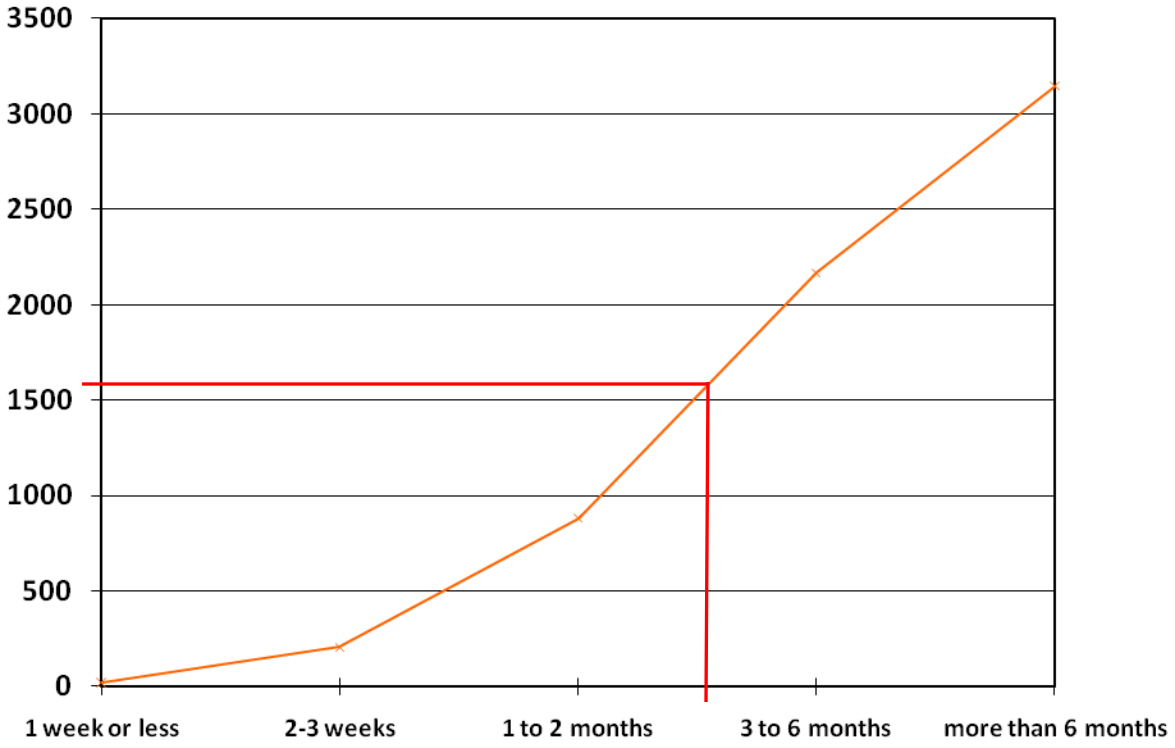
Approximately how long did the peer review process take for any revision stages you undertook?



The median time taken for revision stages is 1-2 months

Authors' perspective – time taken for peer review

Approximately how long did the peer review process take from submission to final acceptance by the journal?



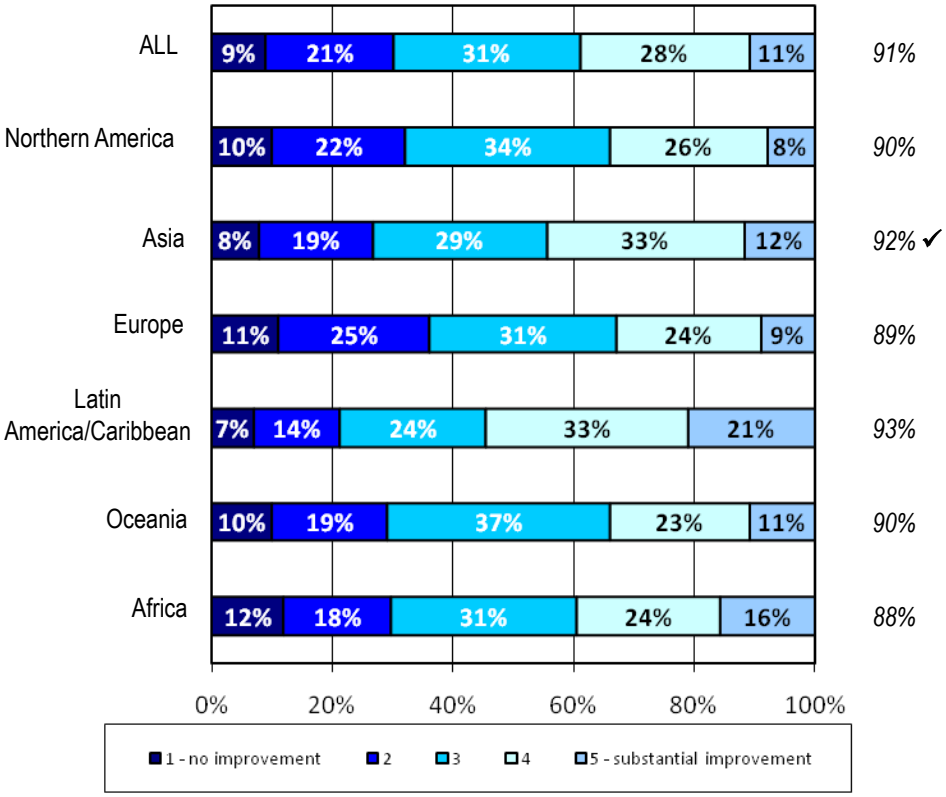
The median time taken from submission to final acceptance by the journal is 3-6 months

Aspects of improvement split by region

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

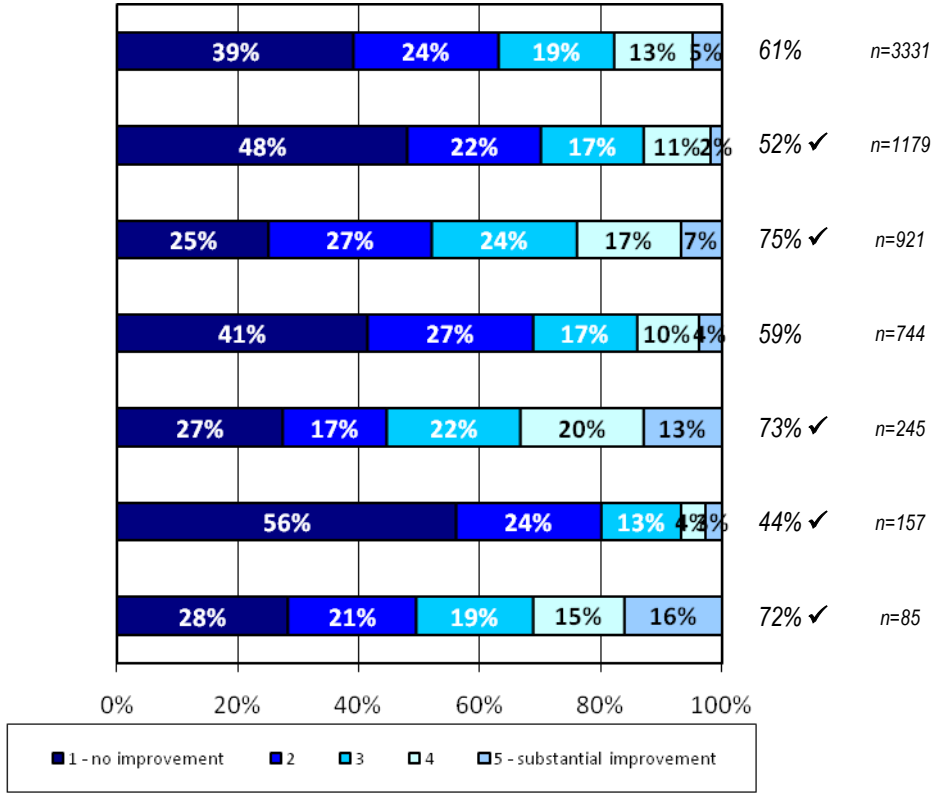
Discussion

(percentage in italics equals percentage of respondents who saw some level of improvement)



References

(percentage in italics equals percentage of respondents who saw some level of improvement)

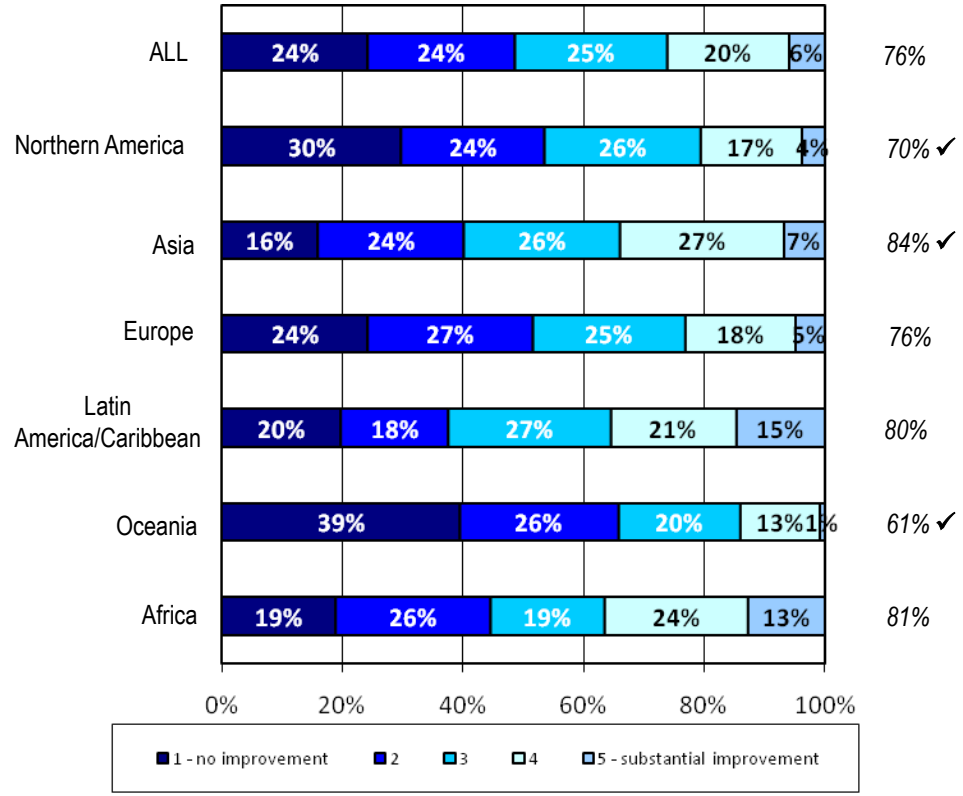


Aspects of improvement split by region

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

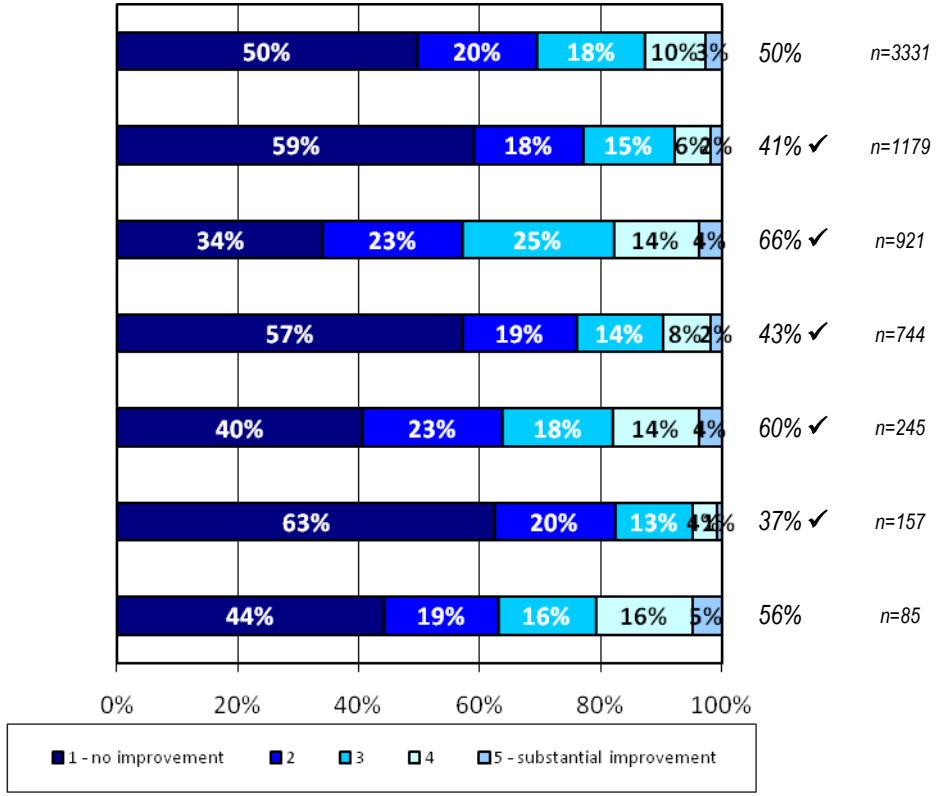
Presentation

(percentage in italics equals percentage of respondents who saw some level of improvement)



Statistics

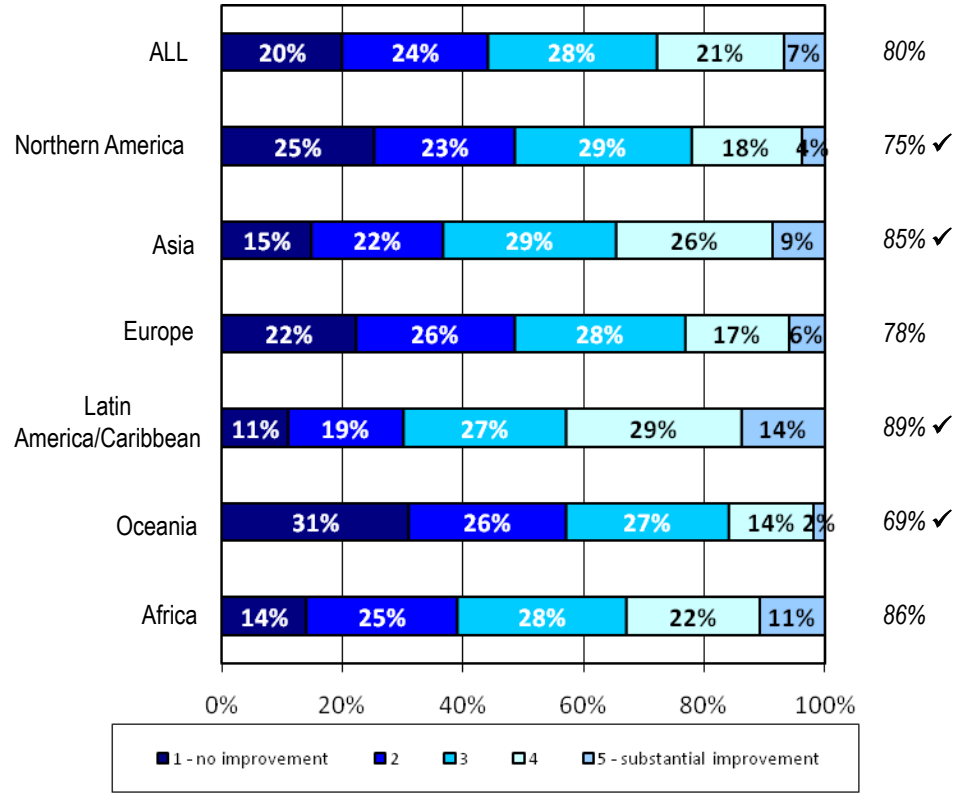
(percentage in italics equals percentage of respondents who saw some level of improvement)



Aspects of improvement split by region

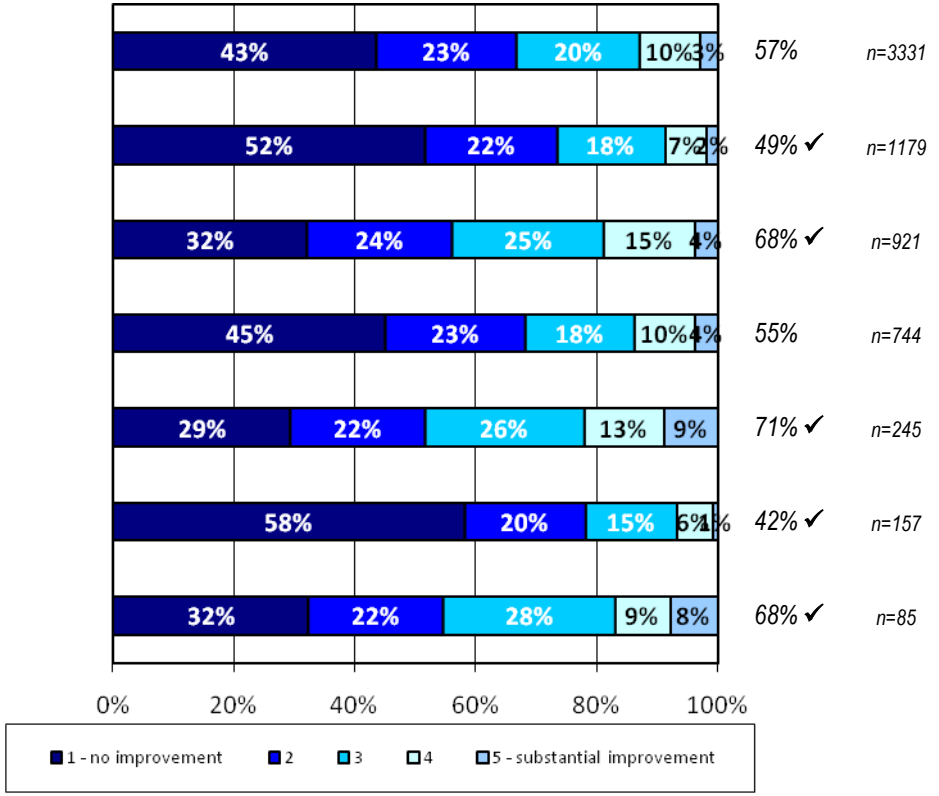
Results/Analysis

(percentage in italics equals percentage of respondents who saw some level of improvement)



Methodology

(percentage in italics equals percentage of respondents who saw some level of improvement)

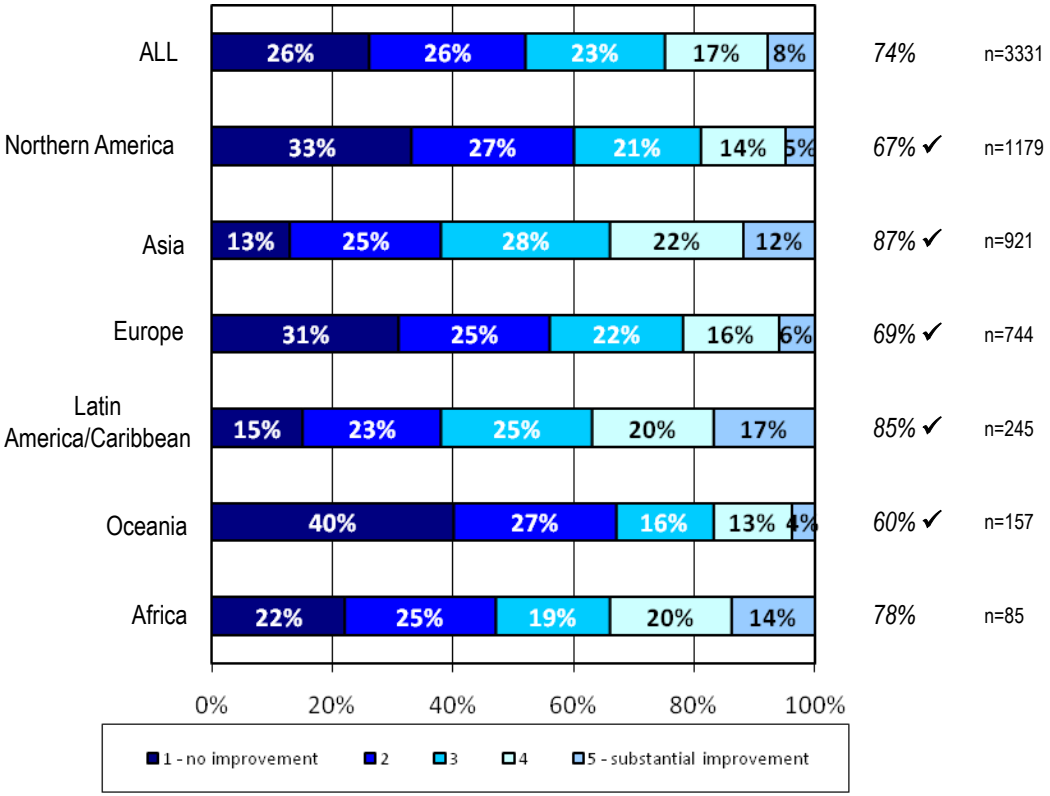


✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

Aspects of improvement split by region

Language/Readability

(percentage in italics equals percentage of respondents who saw some level of improvement)

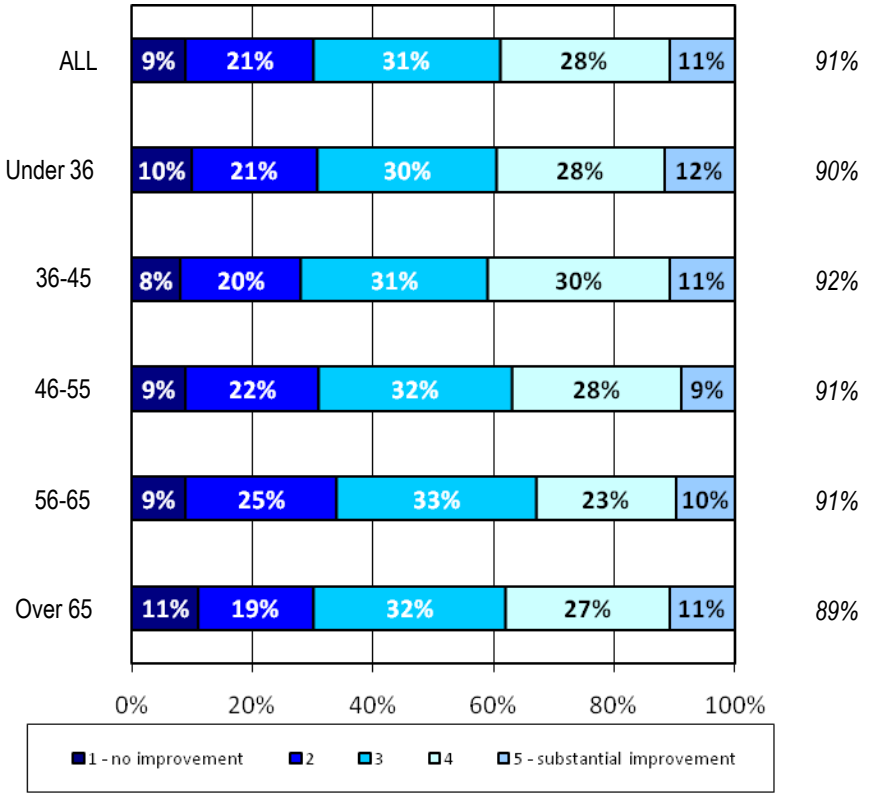


✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

Aspects of improvement split by age

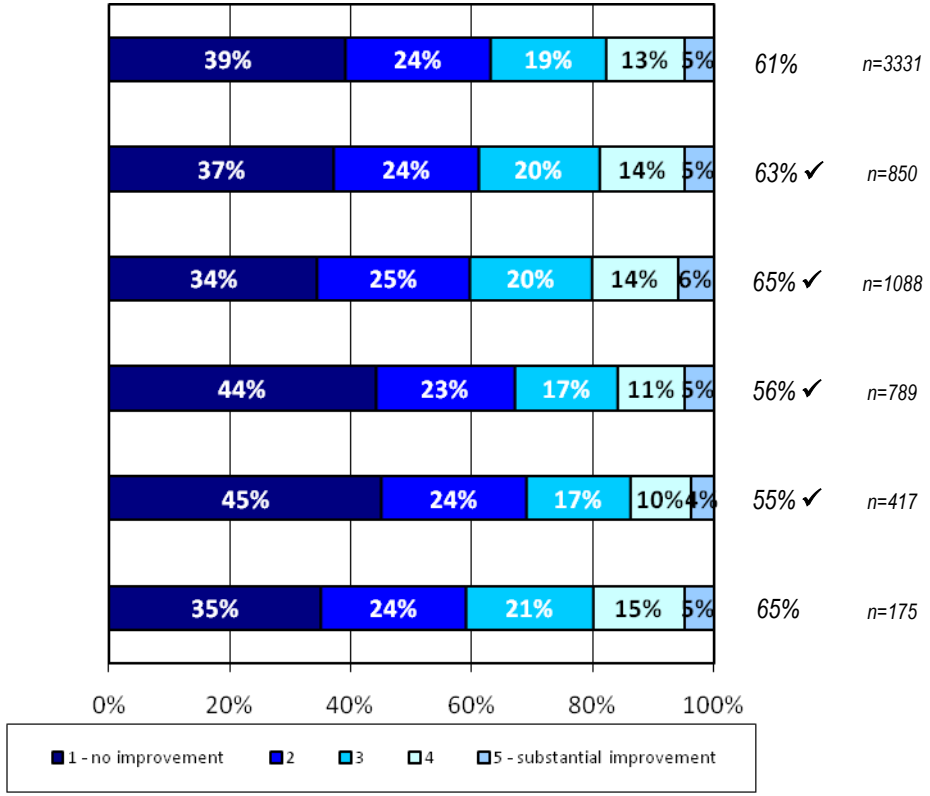
Discussion

(percentage in italics equals percentage of respondents who saw some level of improvement)



References

(percentage in italics equals percentage of respondents who saw some level of improvement)



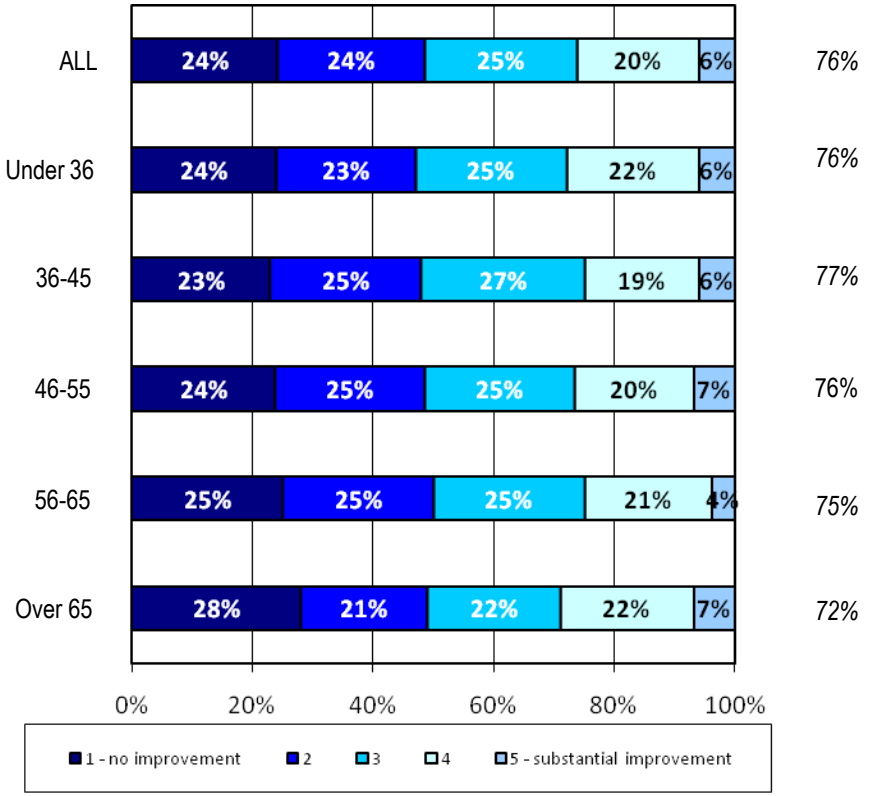
12 respondents chose not to specify their age. Their responses are included in the "ALL" category but not listed individually

✓ Indicates that this subgroup has a score significantly different to the sample as a whole (95% confidence)

Aspects of improvement split by age

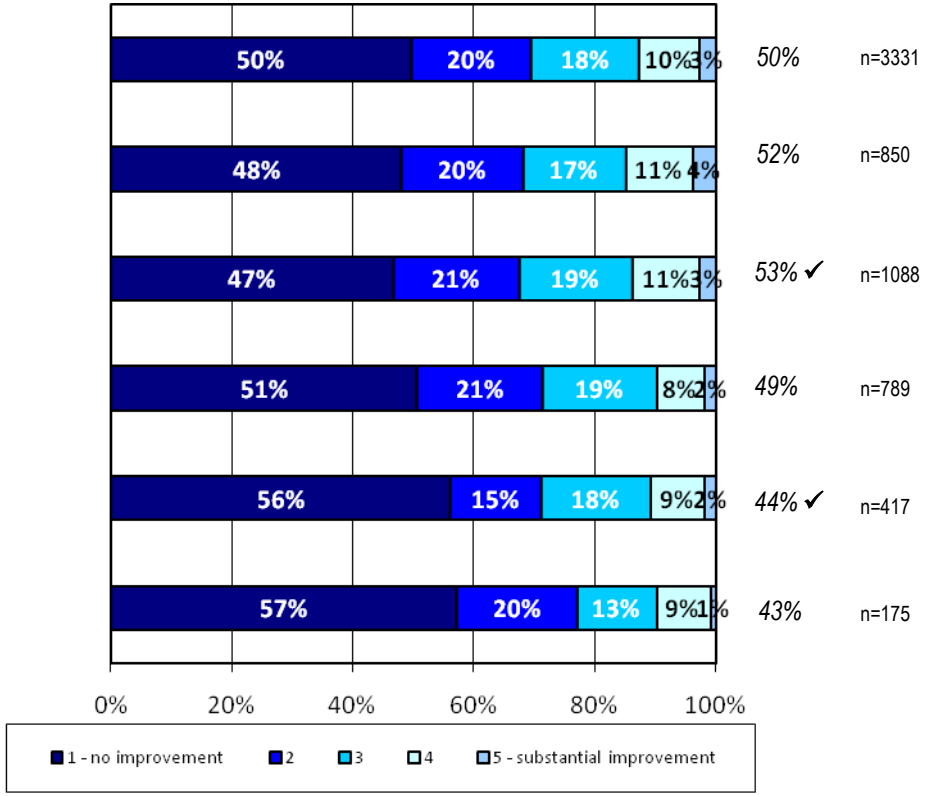
Presentation

(percentage in italics equals percentage of respondents who saw some level of improvement)



Statistics

(percentage in italics equals percentage of respondents who saw some level of improvement)



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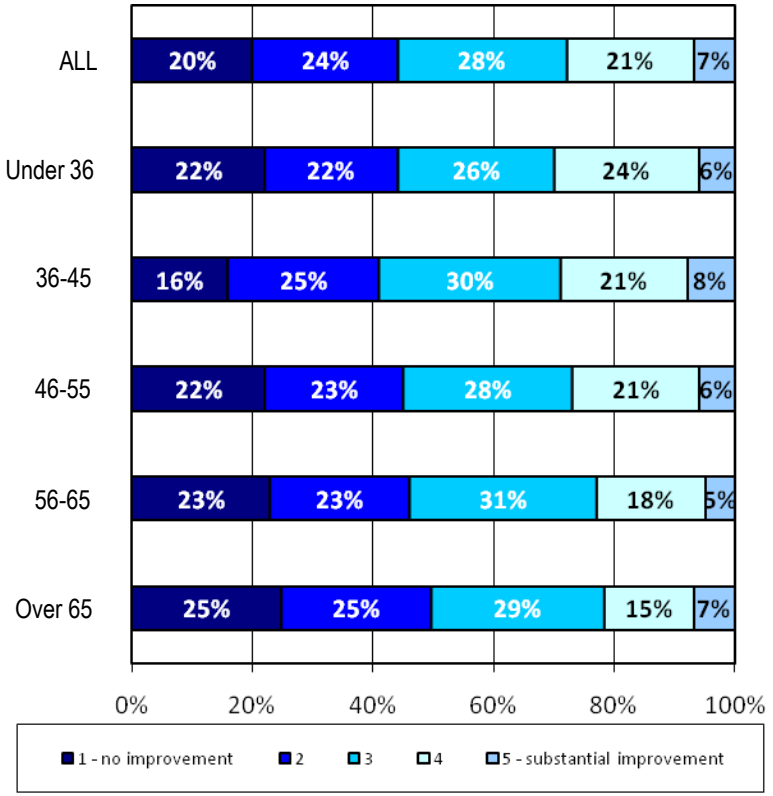
Aspects of improvement split by age

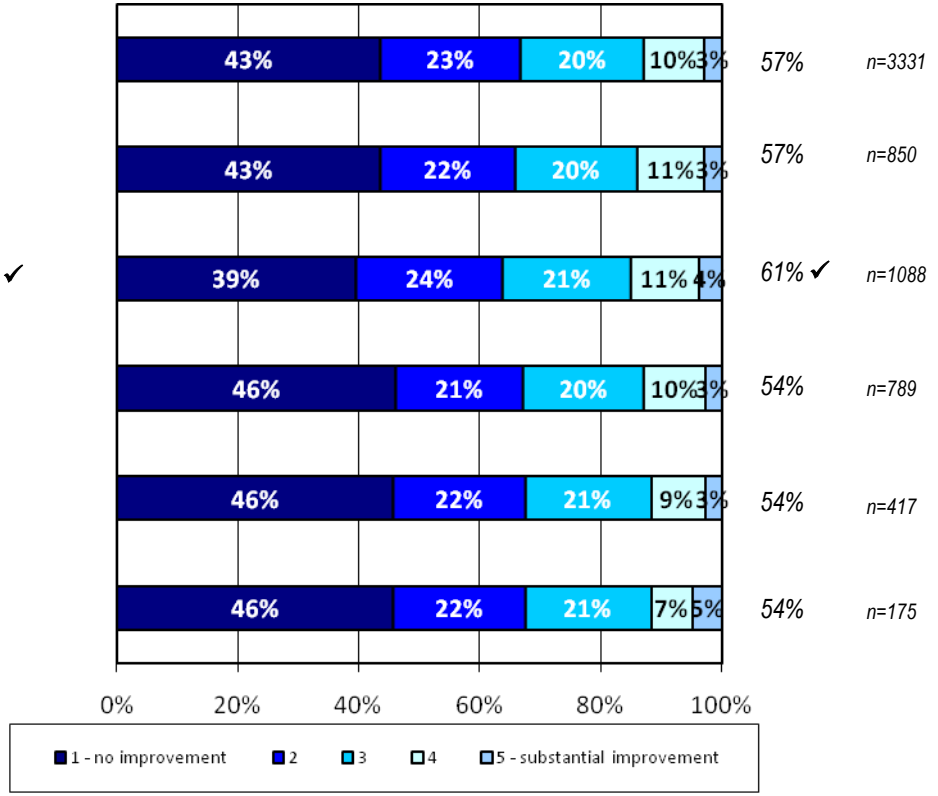
Results/Analysis

(percentage in italics equals percentage of respondents who saw some level of improvement)



Methodology

(percentage in italics equals percentage of respondents who saw some level of improvement)



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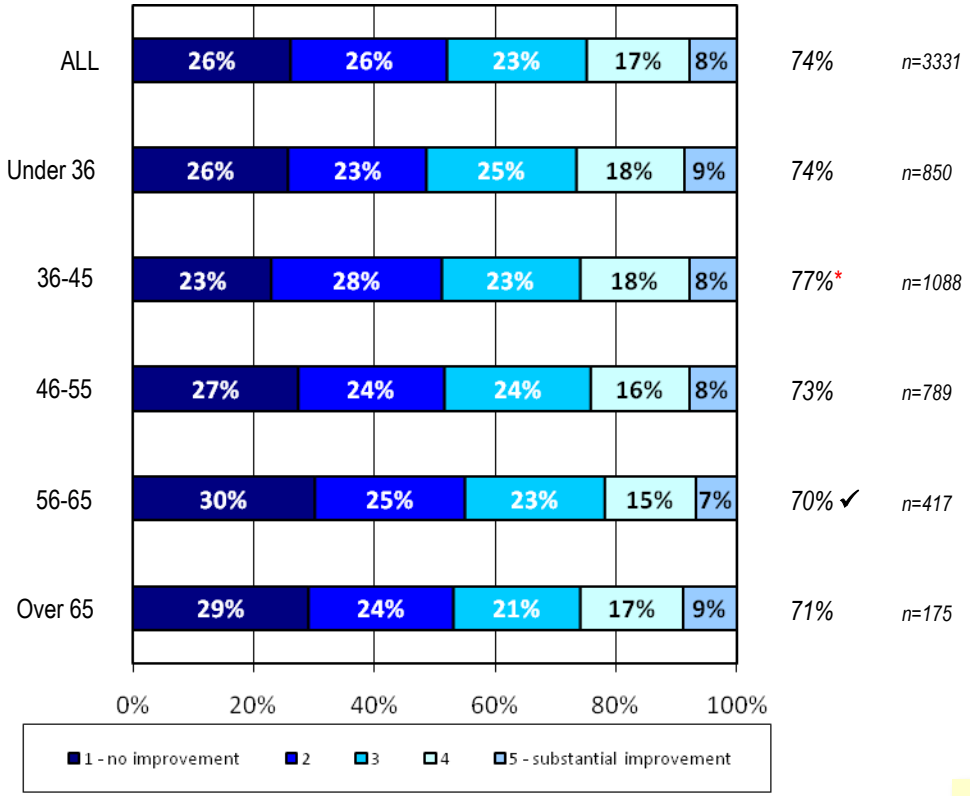
Aspects of improvement split by age

Language/Readability

(percentage in italics equals percentage of respondents who saw some level of improvement)



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