

Enhancing Peer Review

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Council of Councils
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National Institutes of Health
U.S. Department of Health and Human Services



NIH Peer Review

- **Analysis of TR01 Review**
- **Enhancing Peer Review**
- **Review of ARRA Applications**

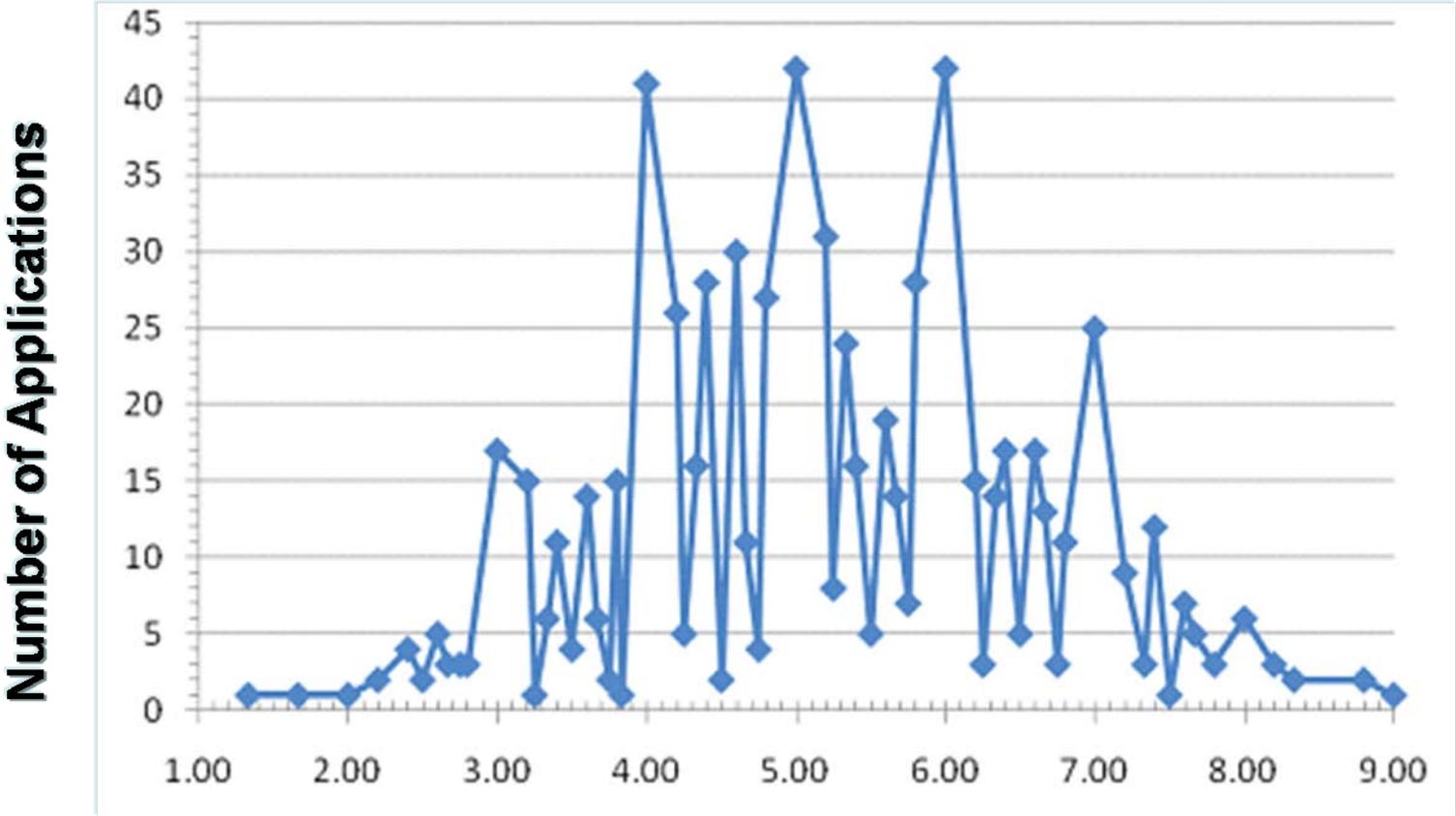


Review Highly Transformative Research

- **OD Transformative RO1 (T-RO1)**
 - Awards once a year, funding for 5 years
 - 8-page application
 - 740 submitted, 720 reviewed
 - 42 funded (\$ 32 million)
- **Editorial Board Review**
 - Initial scoring based on innovation and potential science transformation by a small study section of distinguished, broad-science reviewers (**the editors**)
 - Specific science reviewed by appropriate reviewers (**subject experts-the editorial board**)
 - Final ranking by the **editors**

Scoring

720 TR01 Applications, 1-9 Scale





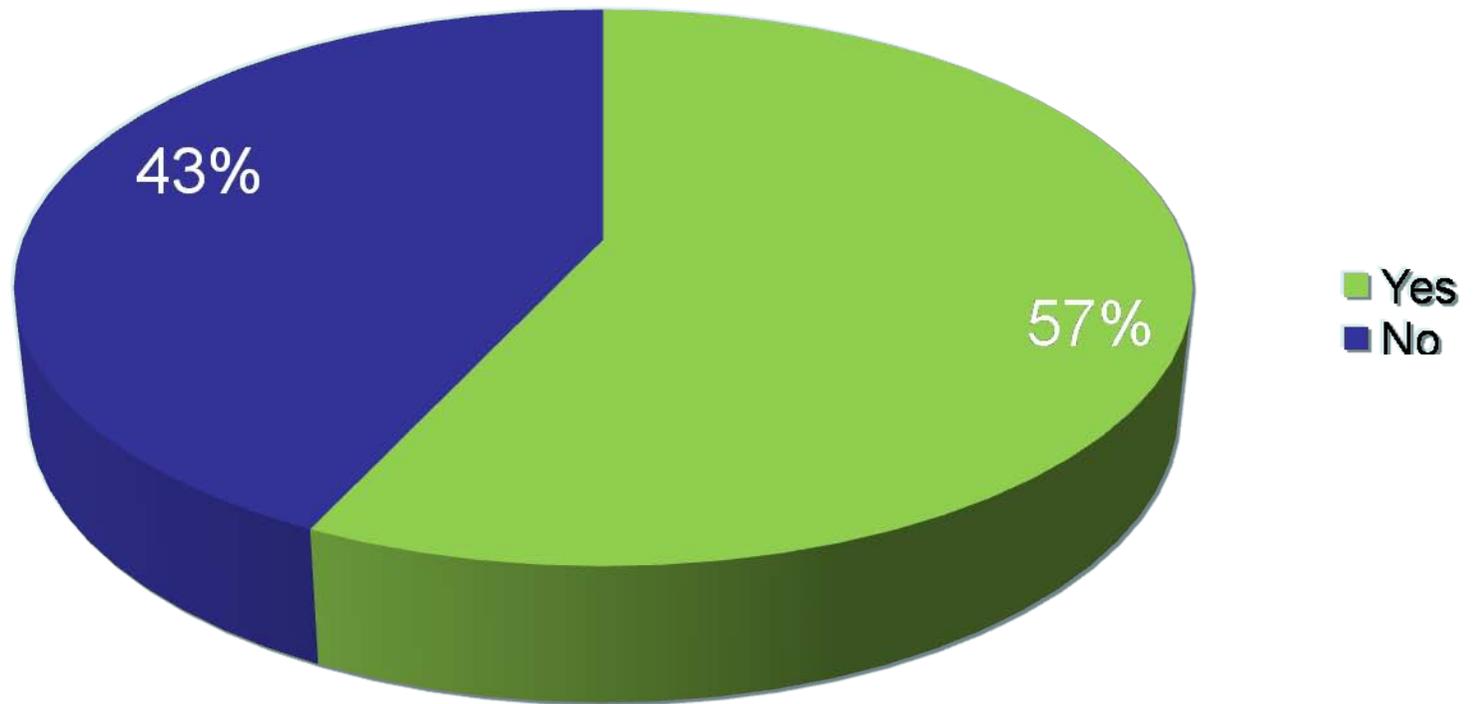
John Bowers





The Editors

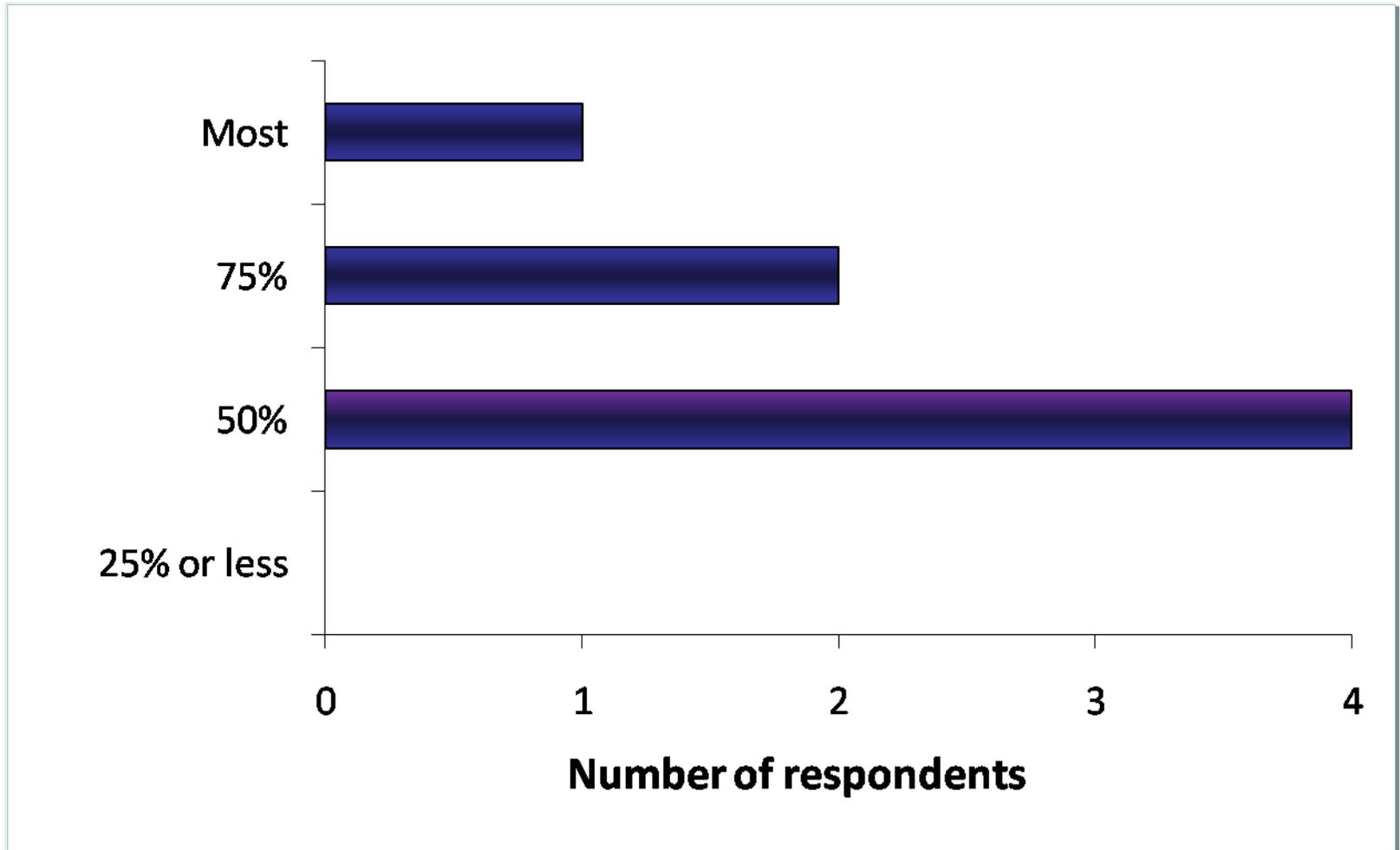
Percentage of Stage One reviewers who thought it reasonable to review about 300 applications for Stage One of three stage review process





The Editors

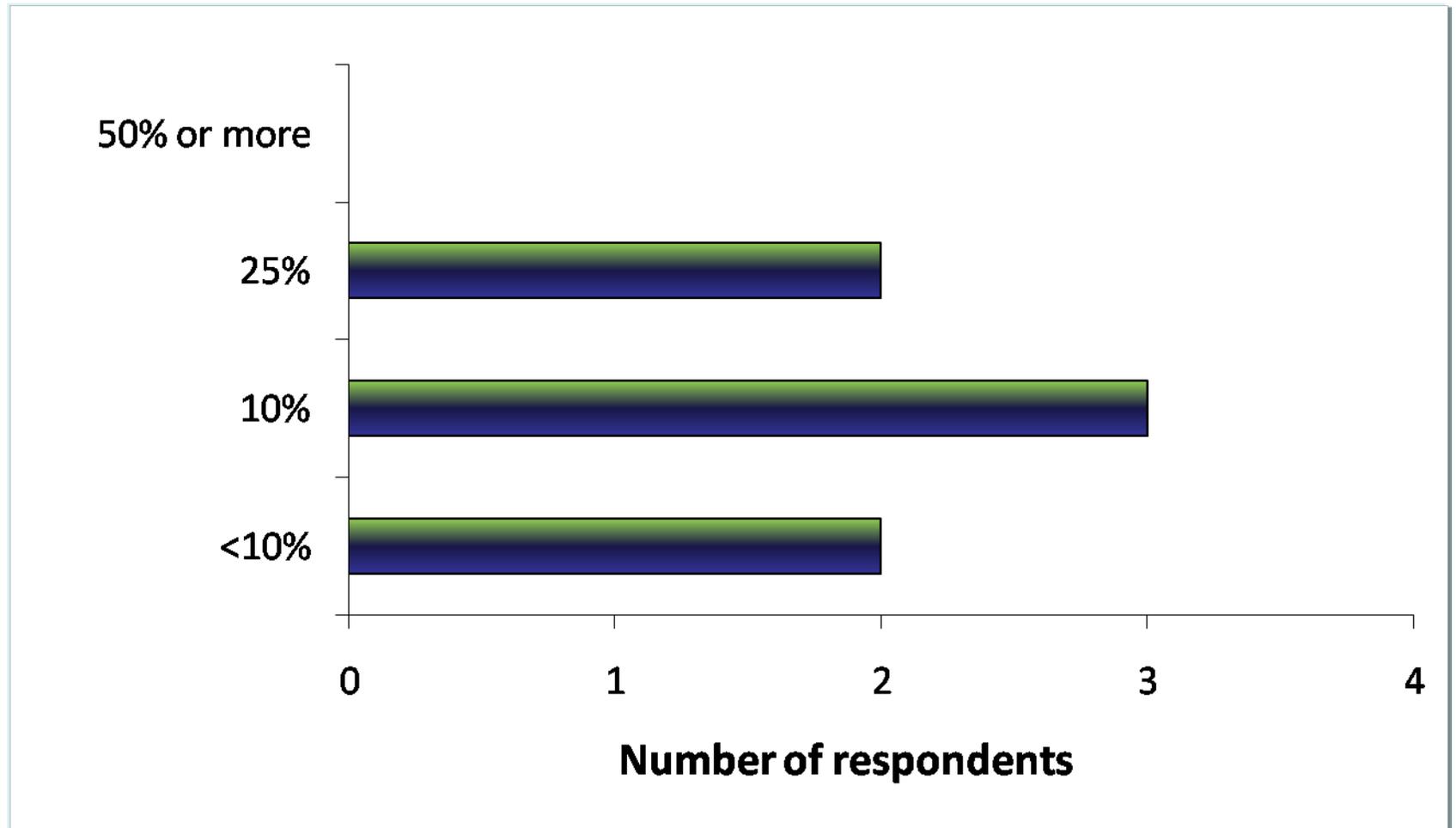
Of applications reviewed, what percentage understood the goals of the Transformative R01 RFA?





The Editors

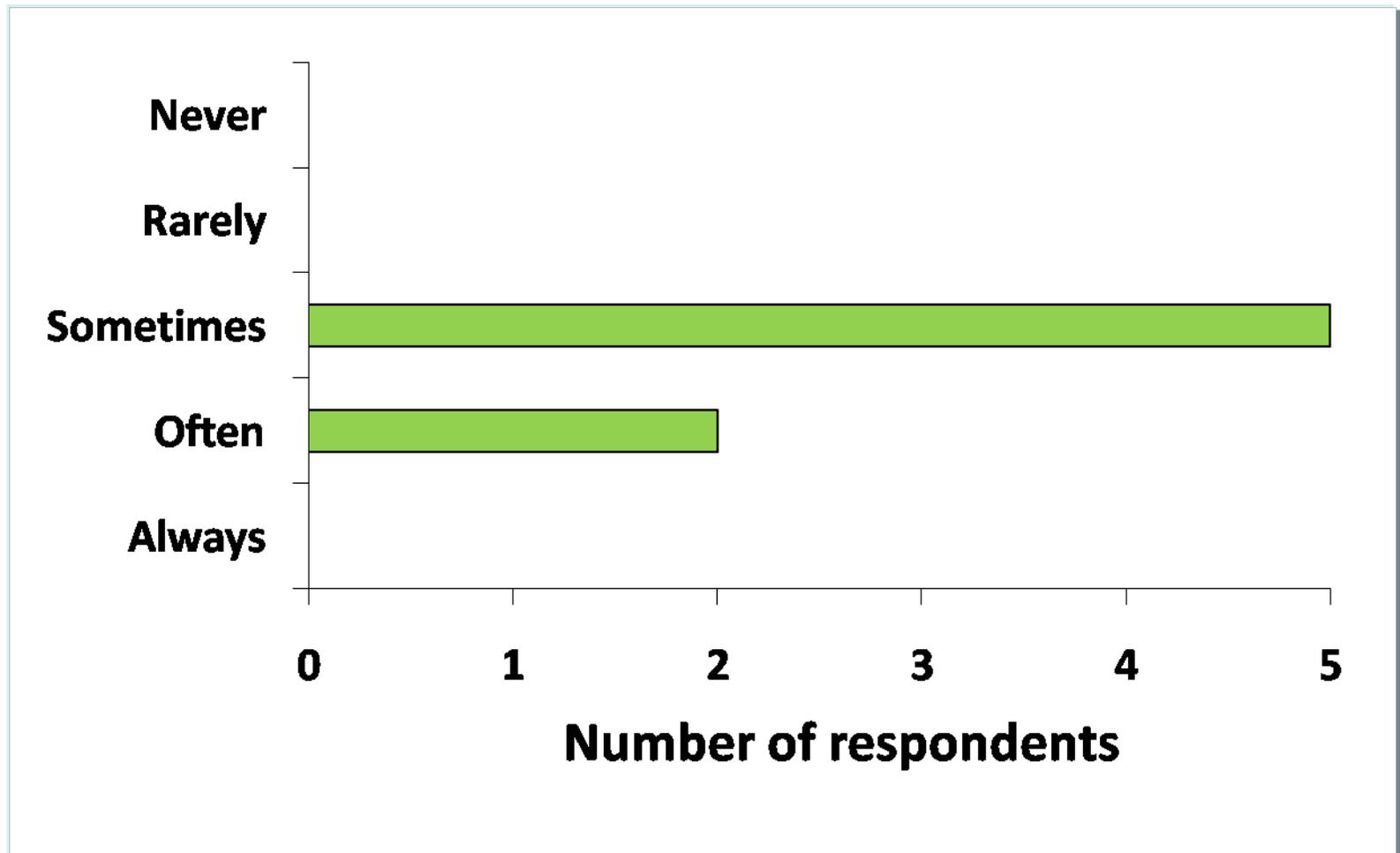
Percentage of applications capable of transforming science - Did we get what we hoped for?





The Editors

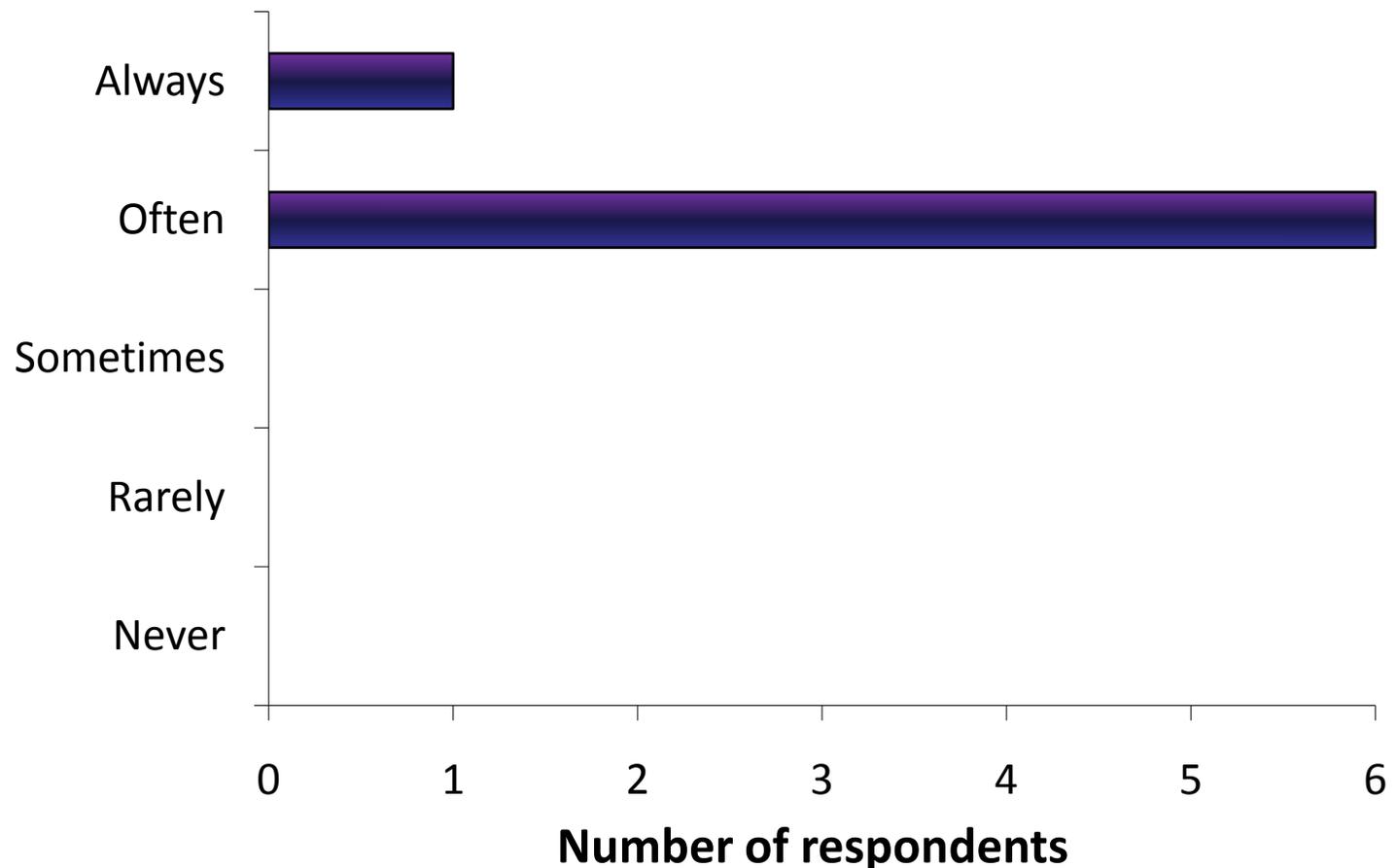
How often did Stage 2 reviewer comments dramatically change reviewer initial assessments?





The Editors

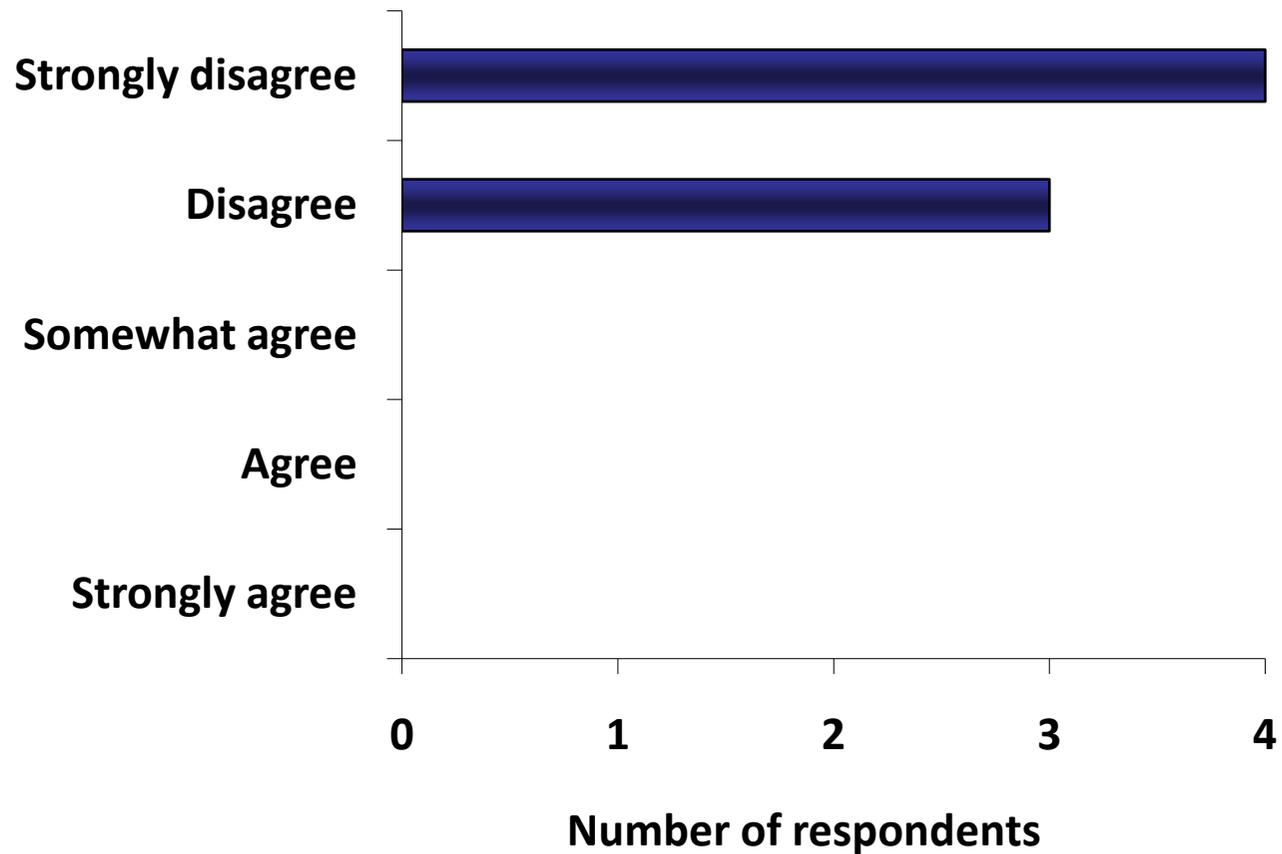
How often did Stage 2 reviewers appear to have the appropriate expertise to evaluate technical aspects of the applications?





The Editors

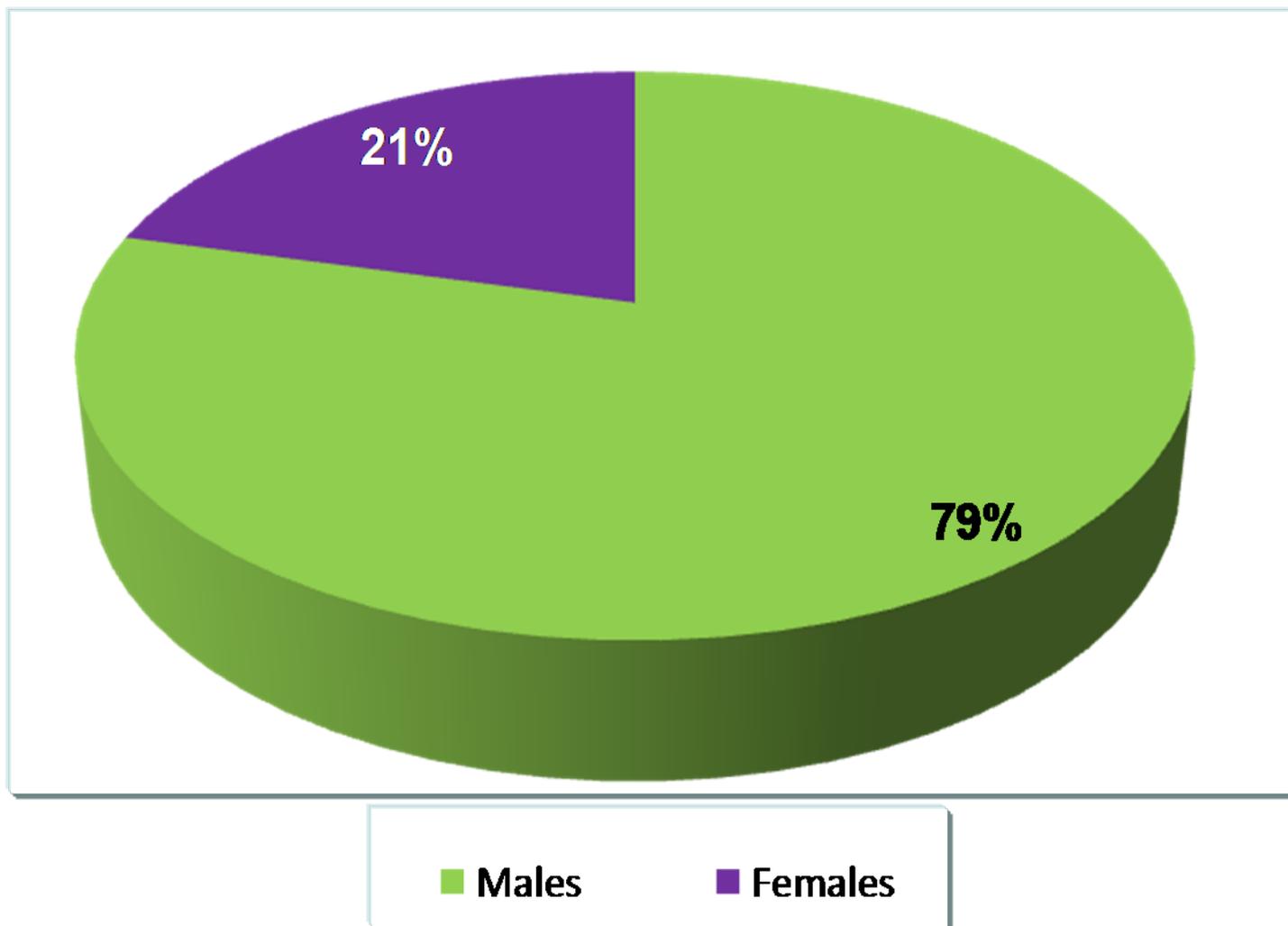
Should future announcements have specific areas of science highlighted?





Applicants

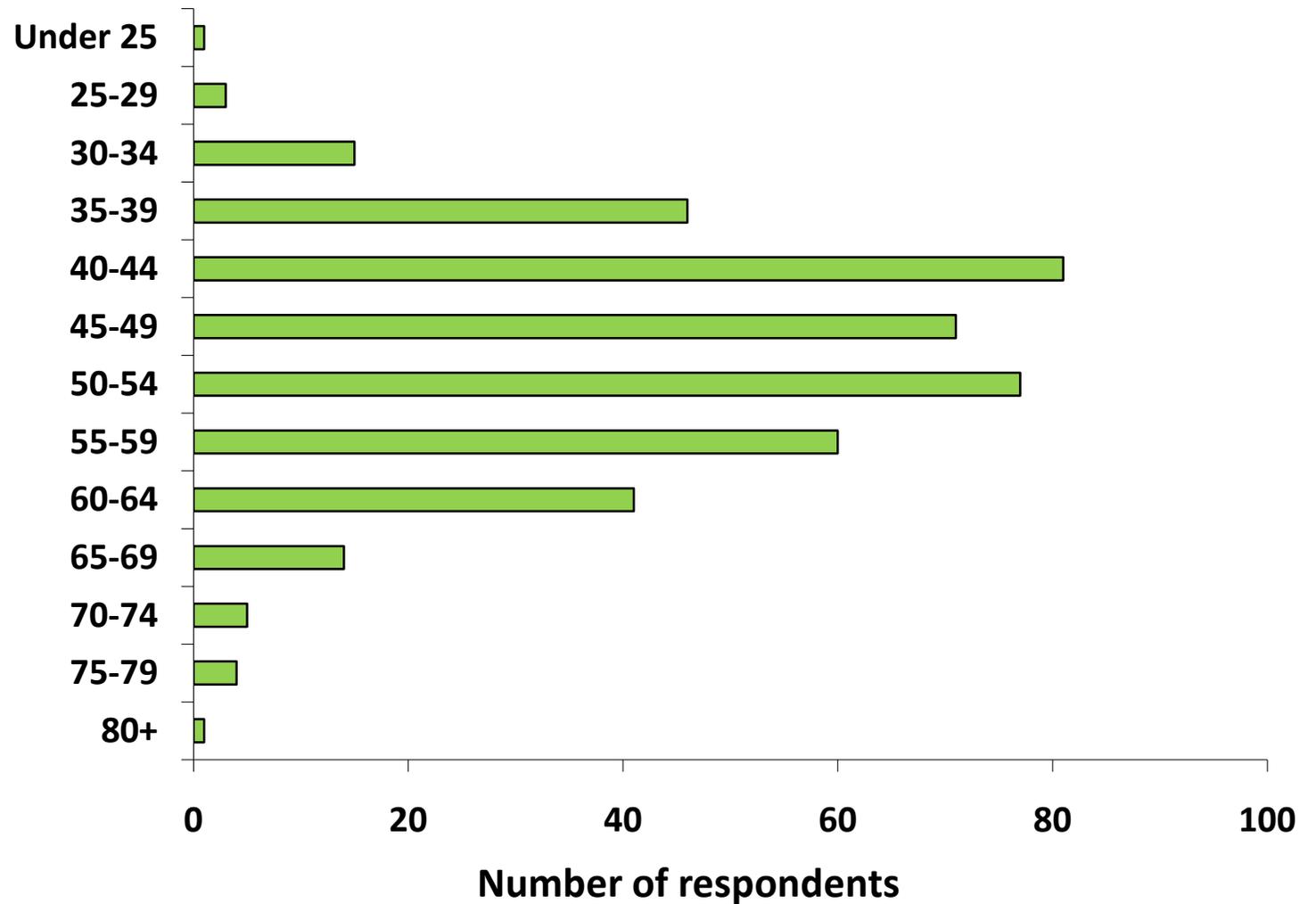
Transformative R01 Applicants by Gender





Applicants

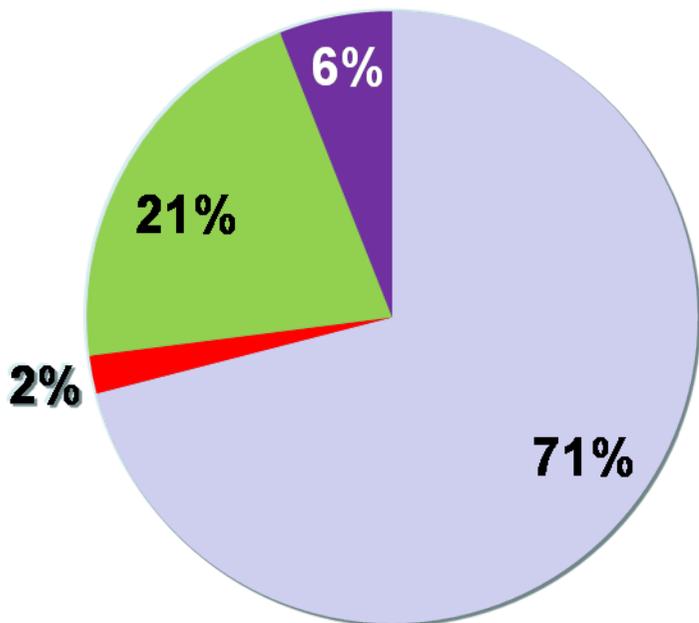
Age Distribution of T-R01 Applicants





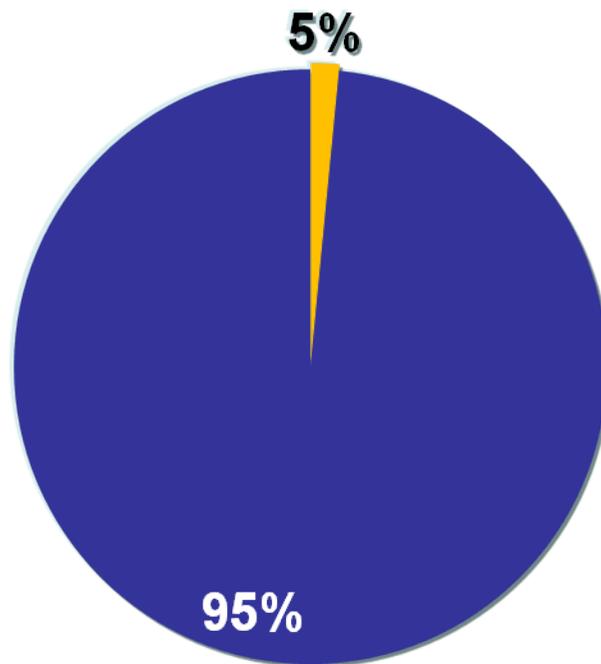
Applicants: Race and Ethnicity

Race



- White
- African American/Black
- Asian
- Other/Unknown

Ethnicity

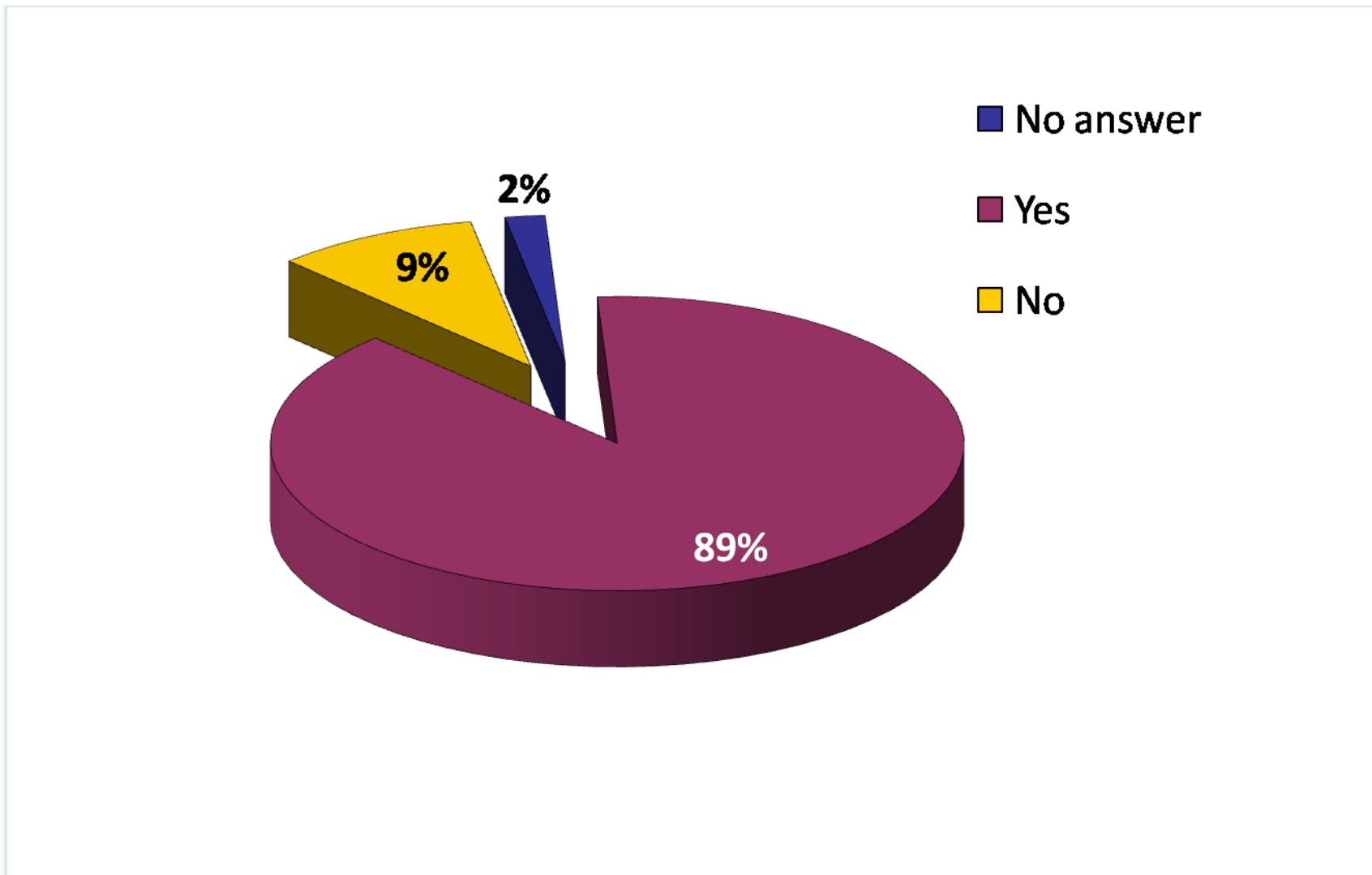


- Hispanic
- Non-Hispanic



Applicants

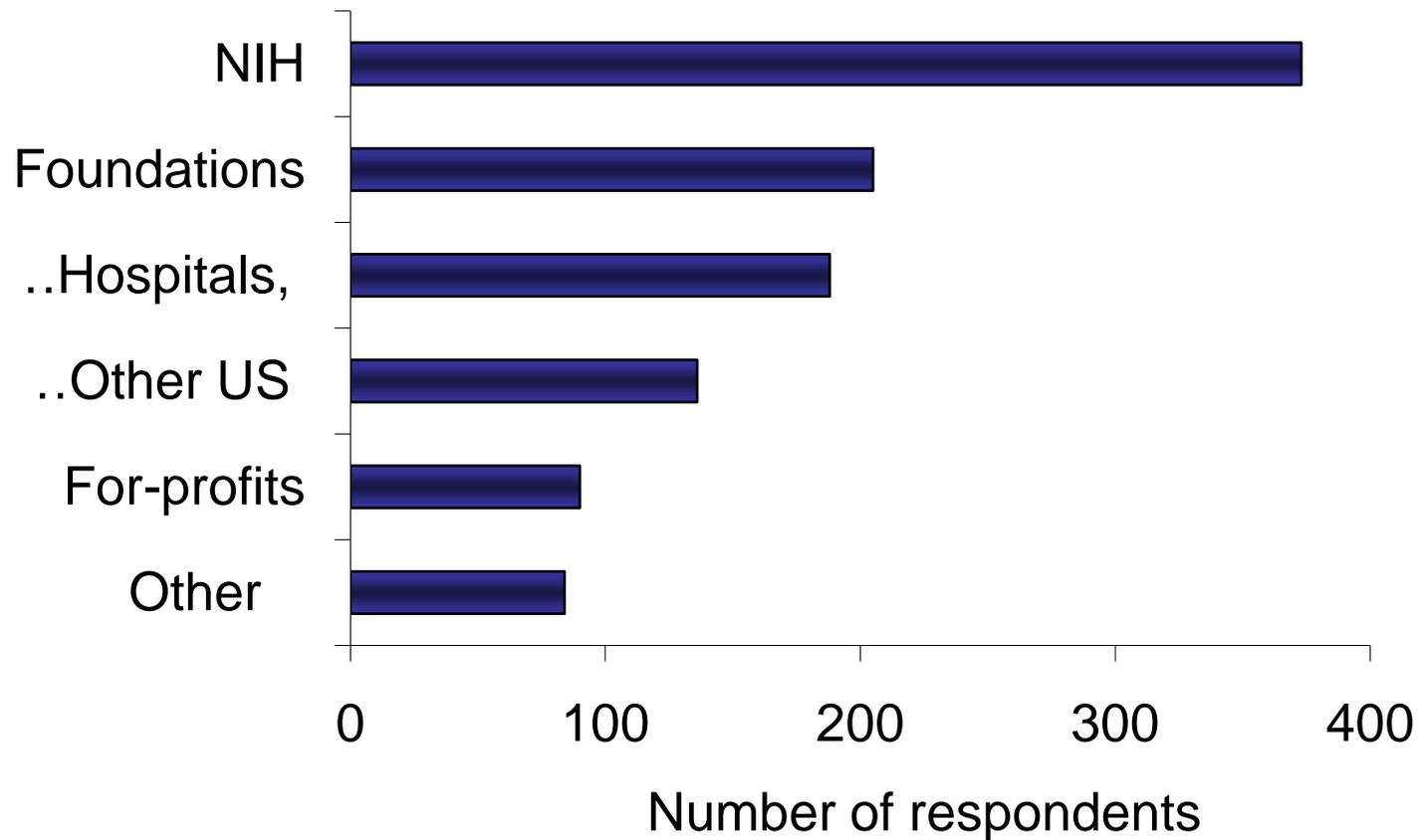
Percentage of NIH Experienced TR01 Applicants





Applicants

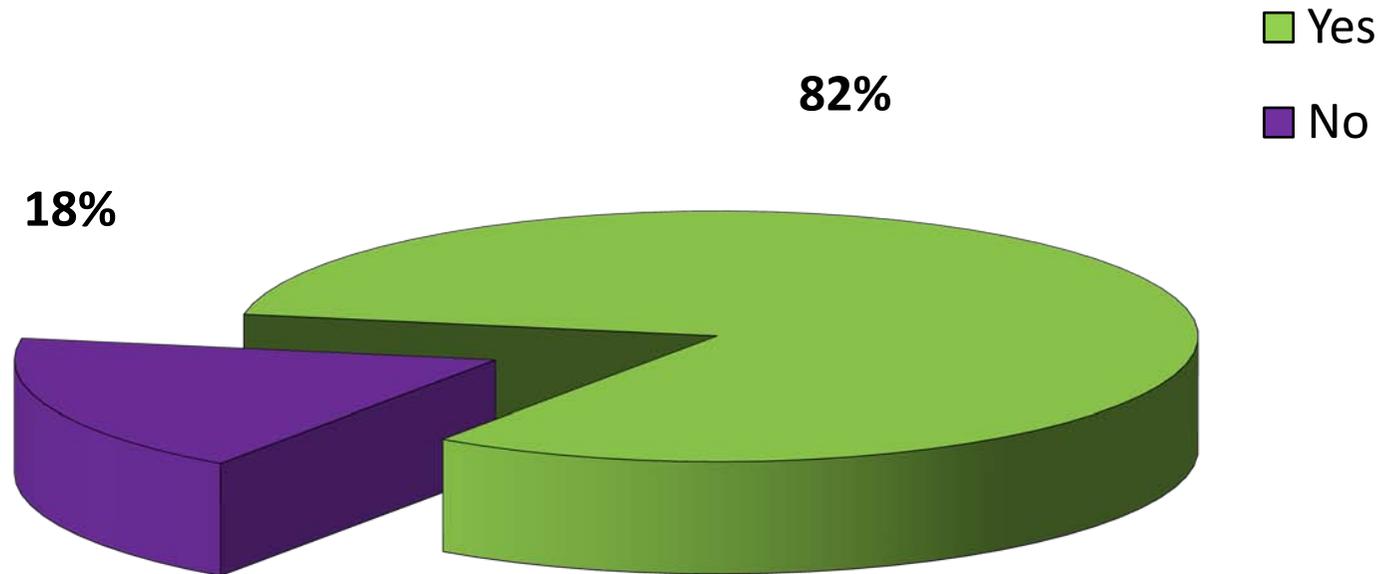
Percentage of Applicants with $\geq 50\%$ of their Funding (past 5 years) by Source





Applicants

Percentage of Applicants Claiming Proposed Project is Significant Departure from Previous Research Direction





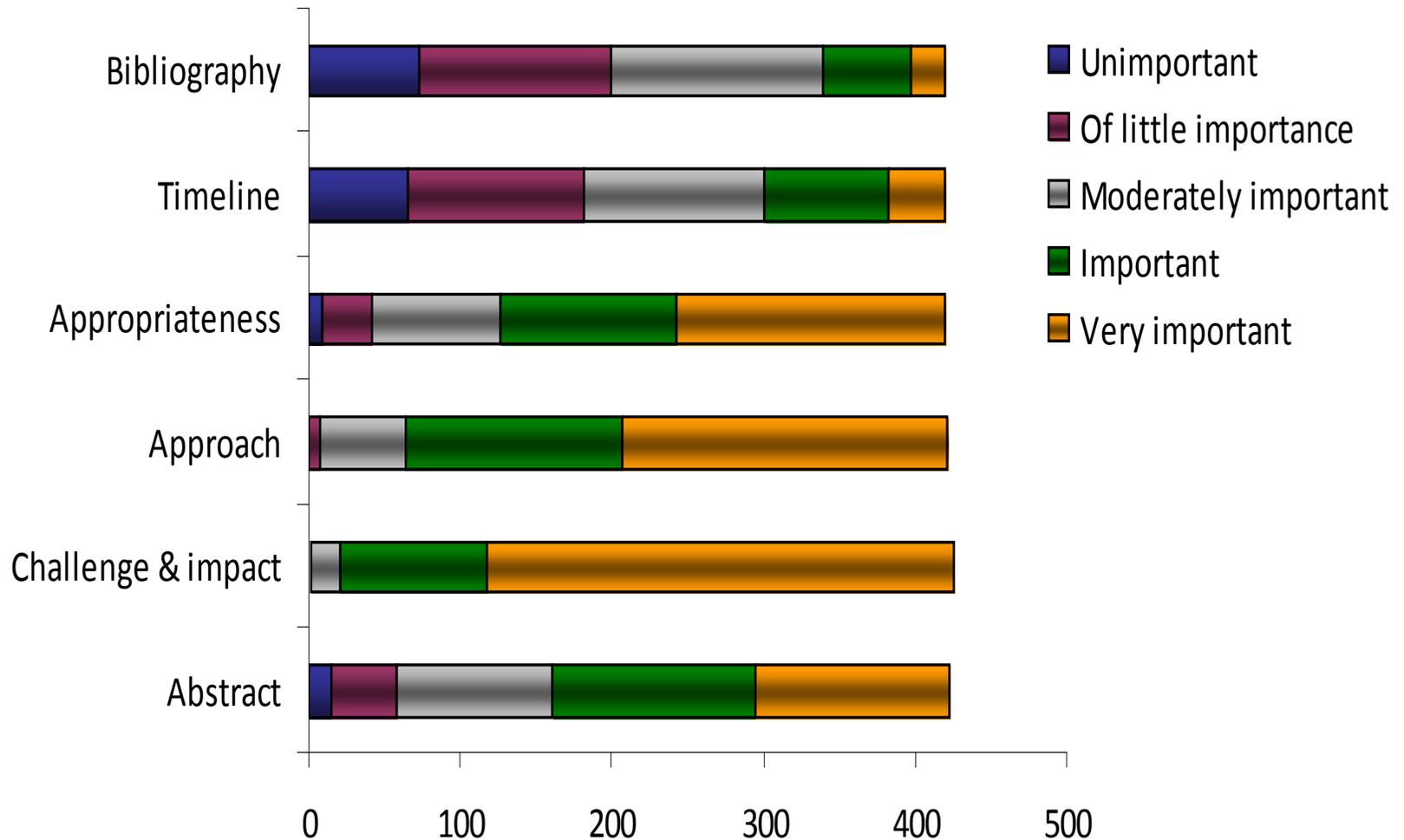
Applicants

Research Area	% of Applicants
Behavioral and/or Social Science	10.2%
Clinical and/or Translational Research	28.1%
Instrumentation and/or Engineering	5.8%
Molecular, Cellular, and/or Chemical Biology	38.1%
Pathogenesis and/or epidemiology	3.7%
Physiological and/or Integrative Systems	9.1%
Quantitative and/or Mathematical Biology	3.7%



Applicants

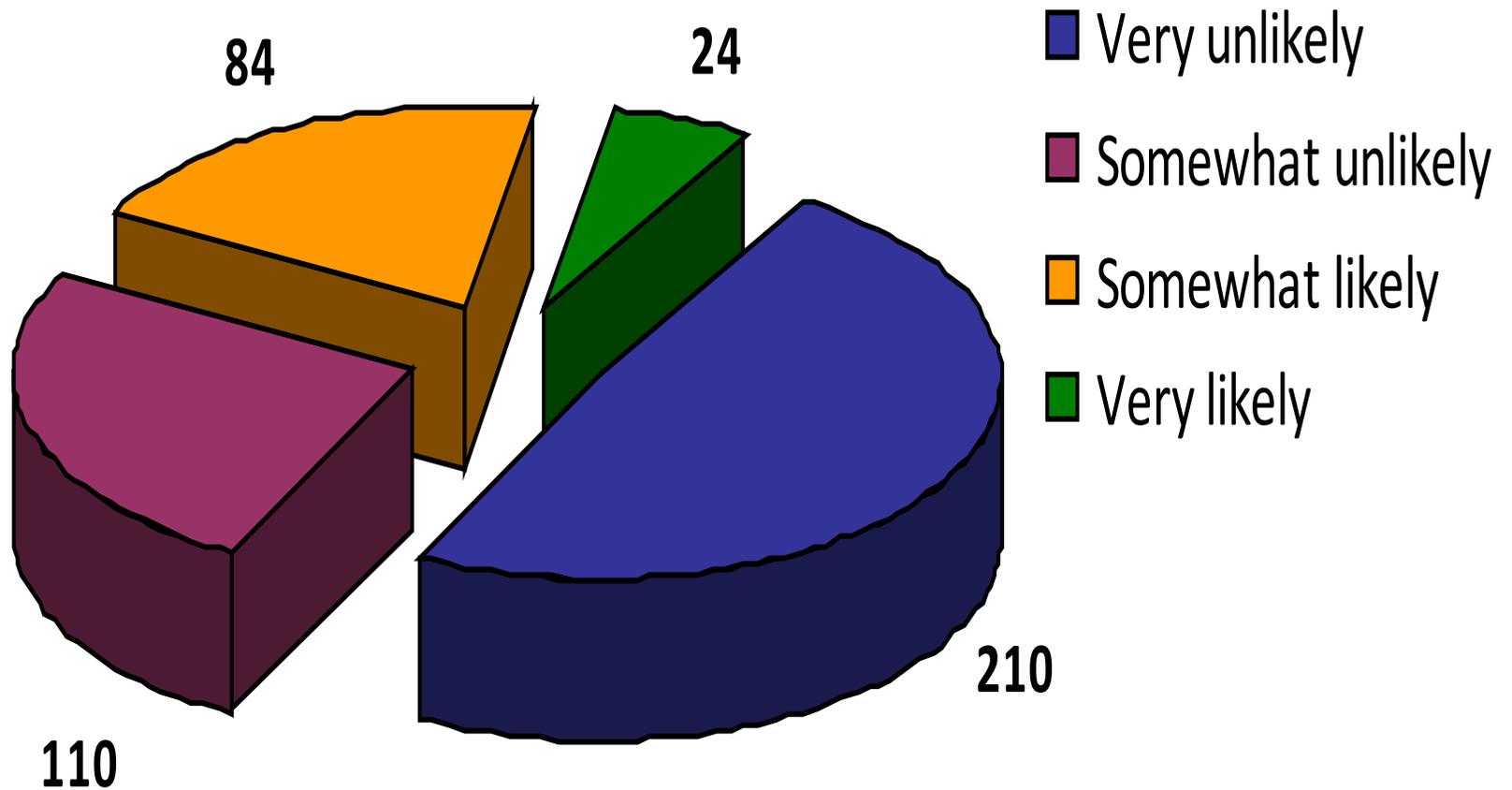
Communication of Concept's Novelty, Innovation, and Impact





Applicants

Possibility of Receiving Funding From other Sources





Enhancing Peer Review



Corporate NIH: Enhancing Peer Review

- **The Charge from Dr. Zerhouni:**

*“Fund the best science, by the best scientists,
with the least administrative burden...”*

Two advisory committees to the NIH Director

<http://enhancing-peer-review.nih.gov>



The Process





Improve Quality and Transparency of the Peer Review Process

Changes occurred at the last meetings (July 2009):

- Scores 1-9
- Assigned reviewers score each criterion
- Shorter summary statement, with boxes for each criterion
- Clustering new investigators
- Scores of individual criteria given to all applicants
- Discussed applications receive additional overall impact score

Changes occurring in 2010:

- Shorter application (12 pages for R01) designed to match scoring criteria



A. Enhanced Review Criteria

- **Overall Impact:**

- Assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s)

- **New Core Criteria Order:**

- Significance
- Investigator(s)
- Innovation
- Approach
- Environment

How is it going?



B. Template-Based Critiques

- The objective is to write evaluative statements and to avoid summarizing the application
- Comments should be in the form of bullet points or if necessary short narratives

1. Significance	Please limit text to ¼ page
Strengths <ul style="list-style-type: none">•••	
Weaknesses <ul style="list-style-type: none">•••	

How is it going?



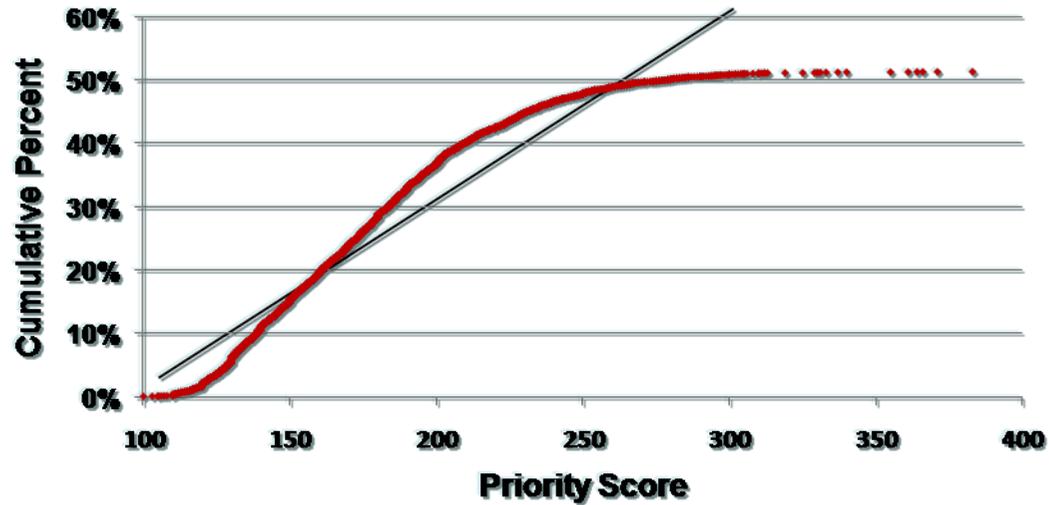
C. Scoring

Impact	Score	Descriptor
High Impact	1	Exceptional
	2	Outstanding
	3	Excellent
Moderate Impact	4	Very Good
	5	Good
	6	Satisfactory
Low Impact	7	Fair
	8	Marginal
	9	Poor

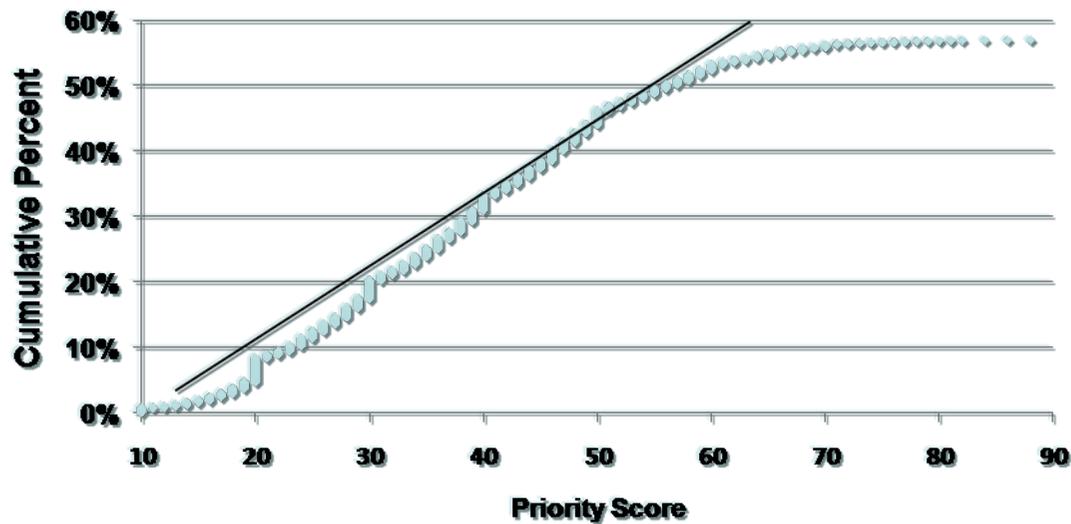
How is it going?

C. Scoring

Priority Scores of R01 and R21 Reviewed by CSR



June 2008



June 2009



D. Order of Review

Why?

- **Concern of variation of scores during different times of the meeting.**

- The original plan was to recalibrate scores at the end of the meeting

Solution:

- Recalibrate dynamically by discussing in order of average preliminary scores from assigned reviewers.

Requirement:

- Reviewers must participate in entire meeting

How is it going?



E. Enhancing Peer Review Training

- **CSR and NIH Review Staff**

- 6 face to face training sessions, January 2009
- 6 face to face training sessions, April 2009
- Continuous updating

- **Chairs**

- 27 half a day sessions for 400 chairs in 11 cities

- **Reviewers**

- Training material (Power Point, interactive training, frequently asked questions, mock study section video, etc, in April-May 2009)
- Senior CSR staff at the first two meeting using the new system

HOW IS IT GOING?



American Recovery and Reinvestment Act



CSR Peer Review: 2008

- 77,000 applications received
- 16,000 reviewers
- 1,600 review meetings
- 240 Scientific Review Officers



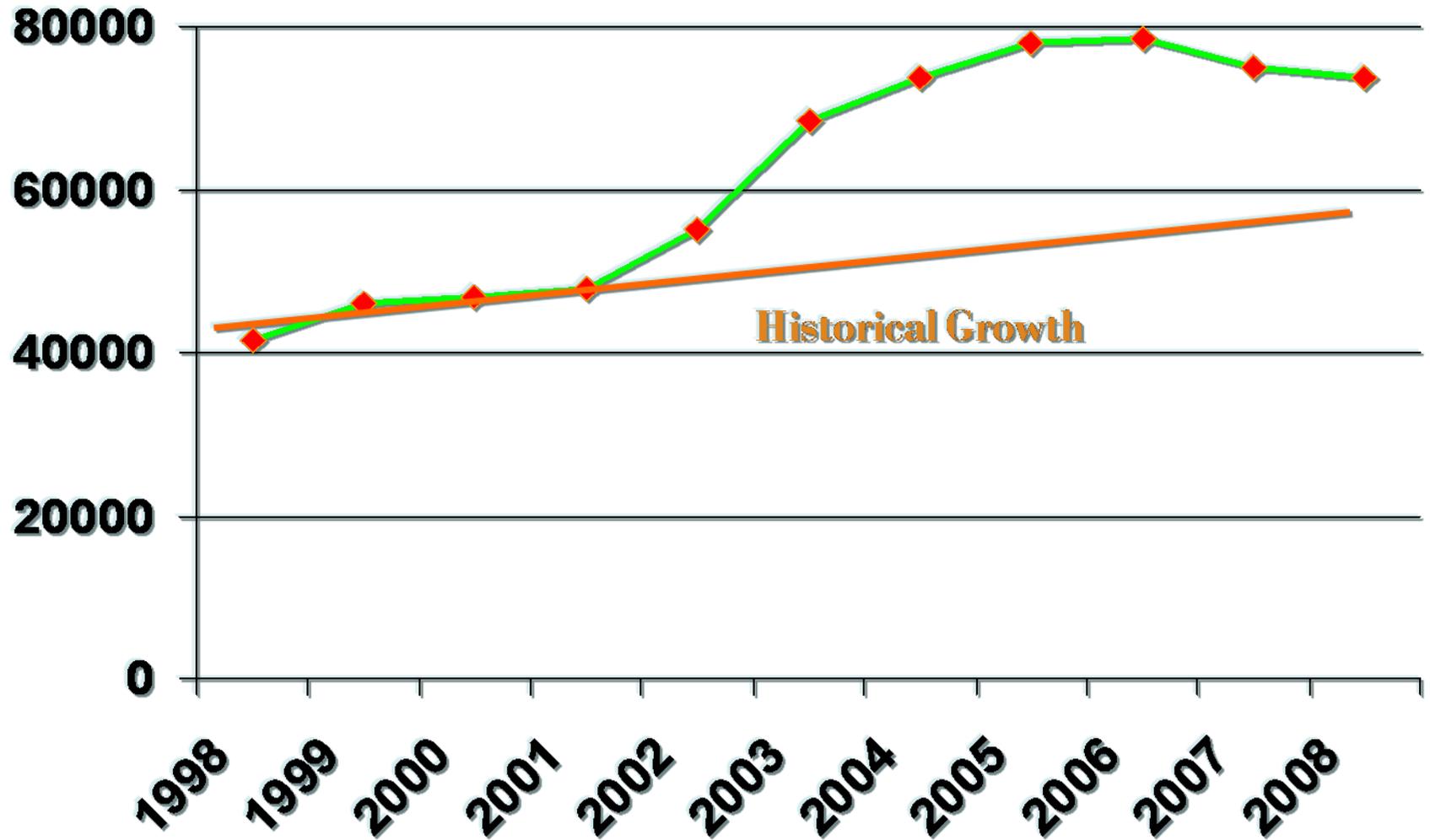
CSR Peer Review: 2009

115,000

- ~~77,000~~ applications received
- ~~16,000~~ reviewers **38,000**
- ~~1,600~~ review meetings **1,800**
- 240 Scientific Review Officers



Number of Applications

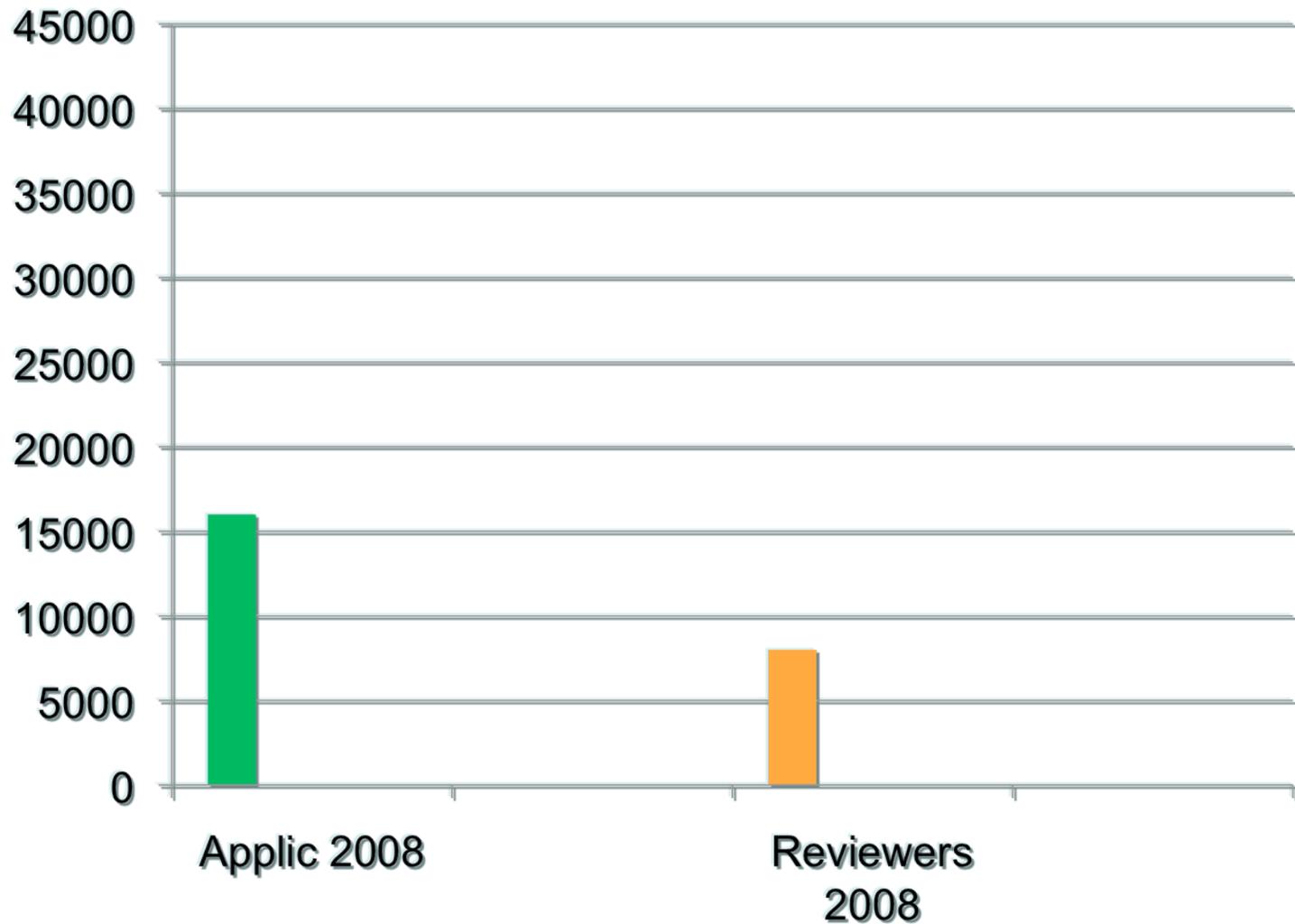




Applications Received for Review by CSR (May-July 2009)

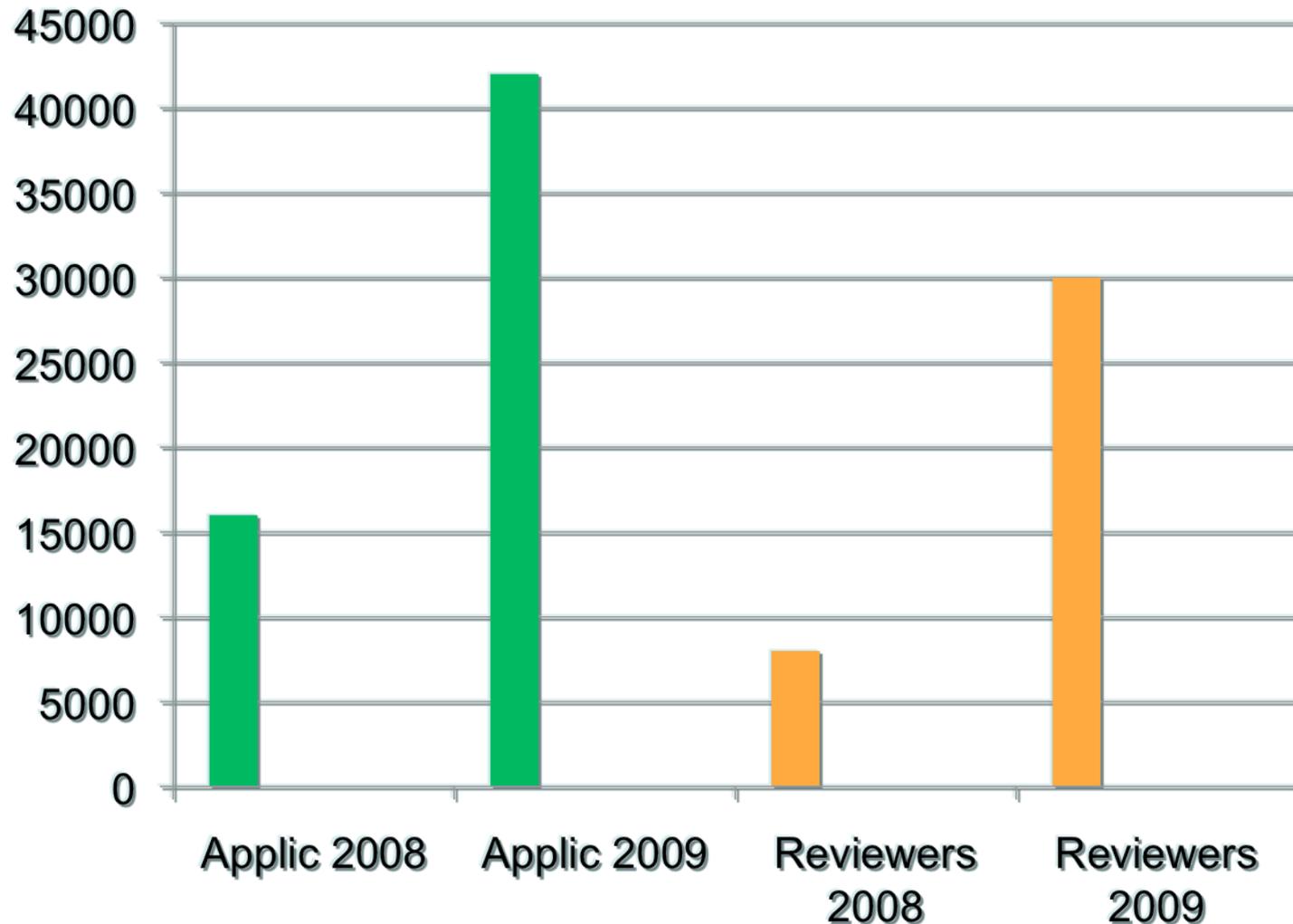


Applications Reviewed and Reviewers Used by CSR in May-July 2008 and 2009





Applications Reviewed and Reviewers Used by CSR in June 2008 and 2009





The Way We Did It

To achieve great things, three things are needed:
a plan, great people and not quite enough time

adapted from Leonard Bernstein

This is CSR



September 2009



Looking at the Future

