GYA surveys

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Intro - explain the difference between applied, use inspired and fundamental research..... insert photo of Pasteur's quadrant - likely in the Intro chapter of the overall report.

Methods In addition to the official data presented in earlier chapters, we also developed and ran a quantitative online survey to query Canadian researchers about their perceptions of, and experiences with, funding for fundamental research. The survey first gathered basic information from each respondent about gender, discipline, career stage and the year their PhD was obtained, before moving on to detailed information about the types of research they conduct (fundamental, use-inspired, applied), their grant success rates, the extent of external partnerships in their research, and how each of these factors have changed over time. In addition, the survey asked respondents how important they perceive fundamental research is to the Canadian federal government, and future prospects for fundamental research in Canada. An important aim of the survey was to provide an understanding researcher's personal experiences and outlook on the research funding landscape in Canada.

The online survey was open from the end of May through early August 2016. To disseminate the survey to Canadian researchers, we gathered email addresses from university websites for as many faculty members as possible and emailed them directly. The survey also was shared broadly on social media, through the Global Young Academy network, on scientific list serves, and through personal connections.

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### -- Note: We defined 'Canadian' respondents as those who reported 'Canada' as their country of work A
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Results In total, 1283 Canadian researchers completed the online survey. Of these, almost three quarters were male (74%) and one quarter were female (25%); a very small proportion either did not input their gender or selected other. Almost all of the survey respondents (94%) were either senior academics (66%), defined as those researchers with more than ten years experience applying for research grants since completion of their PhD, or early career academics (29%) (Figure 1). <! — Female 318 / 1283; Male 946/1283 ECR: 367 / 1283; Non-academic ECR: 7; Non-academic >10yrs: 15; Post-doc: 48; Senior: 841 (65.5%); 5 no responses; Engineering 163 (12.7%); Inter 70 (5.48%); Med/Life Sci 251(19.65%); Natural 377 (29.5%); Other 3; Phys 382 (29.9%); Social 37. For some unknown reason this totals 1277; –>

Sixty per cent of responses came from either the natural or physical sciences (Figure 2). The remaining responses were spread amongst the medical and life sciences (20%), engineering (13%), interdisciplinary research (5%), and social sciences and humanities (3%).

Research Type SOMEHOW HAVE TO MAKE SENSE OF THE RESPONSES AND PLOT FOR THE % OF RESEARCH IN THE THREE CATEGORIES. Almost one third of researchers reported that the types of research they conduct has shifted over the past ten years (Figure 3). By far, the most reported reason for this change was funding (Figure 4). This suggests..... However, opinions about these changes were varible, with one quarter of respondents viewing them as slightly negative, one quarter slightly positive and one quarter very positive (Figure X).

External Partnerships The extent to which research is conducted with partners outside of academia, including in industry and non-governmental sectors, may also be considered as an indicator of use-inspired or applied research. Almost all respondents reported that their current research is conducted with some external partners, with X% reporting some partnership and X and Y% reporting strong or exclusive partnerships, respectively. In contrast, X% of researchers said that in the past they had no external partners in their research, whereas that number today was much lower.....

Again, the predominate reason given was funding related (Figure X).

However, very few researchers viewed this change as being very negative. Most researchers regarded it as either slightly negative or slightly positive, and X% viewed it as very positive.

Research Grants [STILL TO COME]

The majority of respondents believe that it is now either mandatory or very important to suggest practical applications of their research in order for their grant applications to be successful. This has shifted over time, with researchers reporting that between 2006 and 2010 it was only somewhat important to do so (Figure X).

Similarly..... including partners from for-profit or non-governmental sectors in grants to be successful (Figure X).

Perspectives on the State of Fundamental Research in Canada Over half of Canadian researchers who responded said that fundamental research is either very important or somewhat important to our government. Differences by career stage, discipline,ggender....

At the same time, almost three-quarters of respondents said that applied research became a higher priority for our government over the past decade.

Summarize finding on how they think availabiltiy of research funding will change over the next five years:

Summary statistics

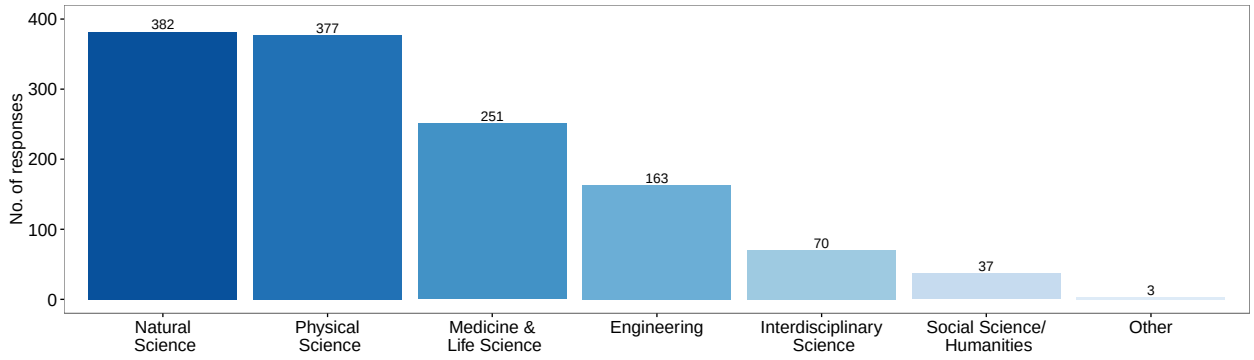

Figure 1: Survey responses by field of research

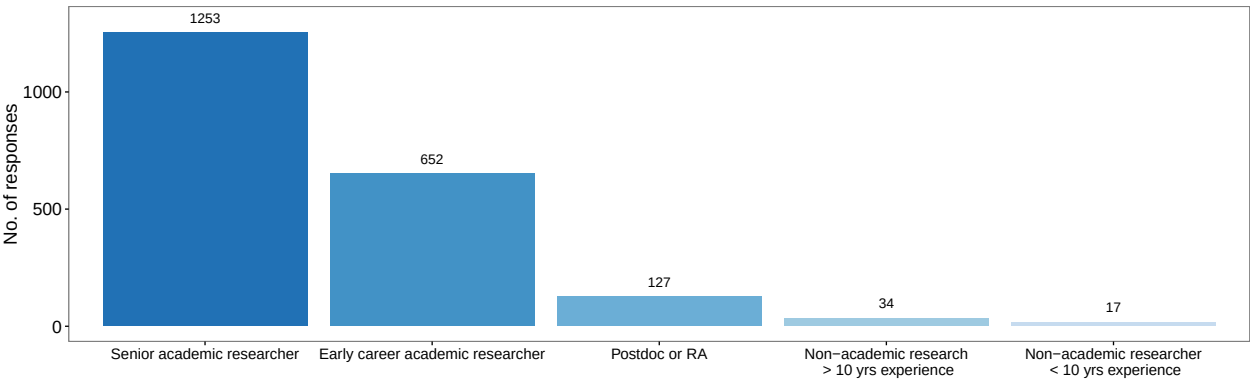

Figure 2: Survey responses by participant group

GYA surveys: Canada

Part 1 - Type of Research Conducted

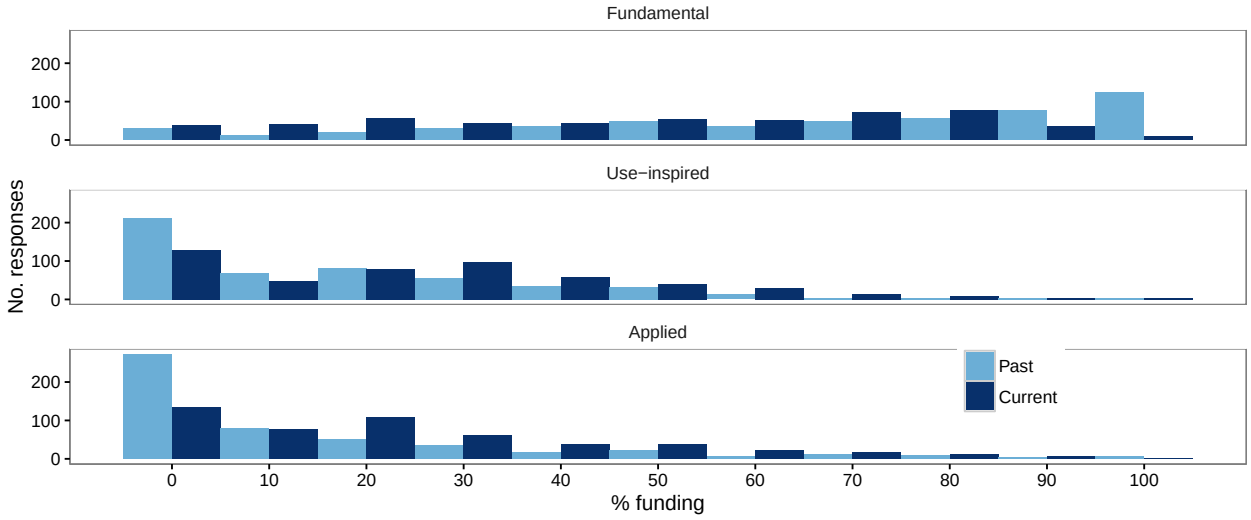

Figure 3: Funding allocation to fundamental, use-inspired and applied research categories. Reseachers were questioned about the percentage of funding allocated to Fundamental, Use-inspired or Applied research in the past and in their current research.

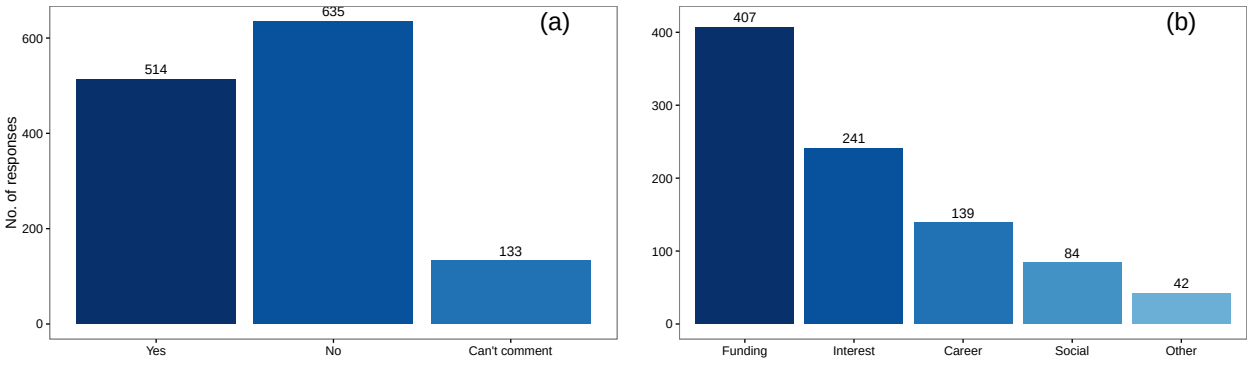

Figure 4: Reason for change in research over past 10 years. Researchers were asked if their funding proportions had changed in the past ten years (a), and what the main reason for a change in their research category (b).

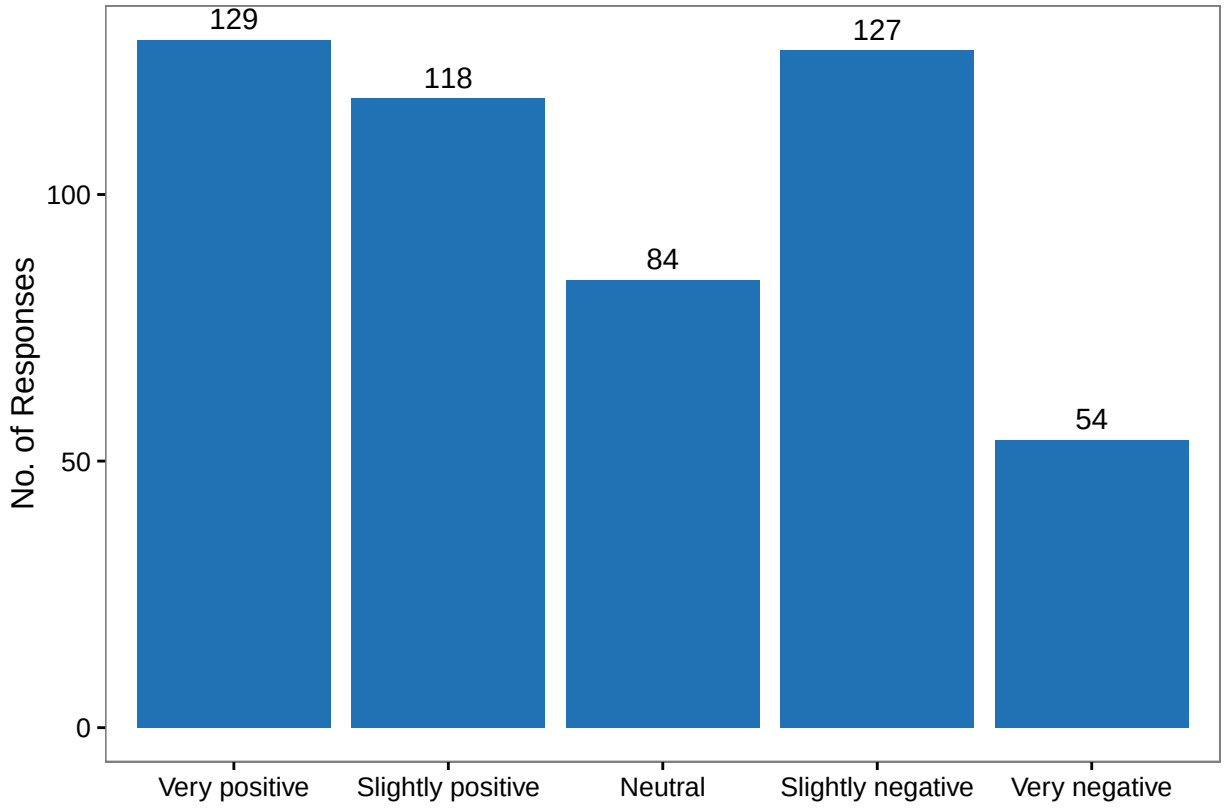

Figure 5: Opinion of change in research over past 10 years. Researchers were asked how they viewed the change in research type.

Part 2 - External Partnerships

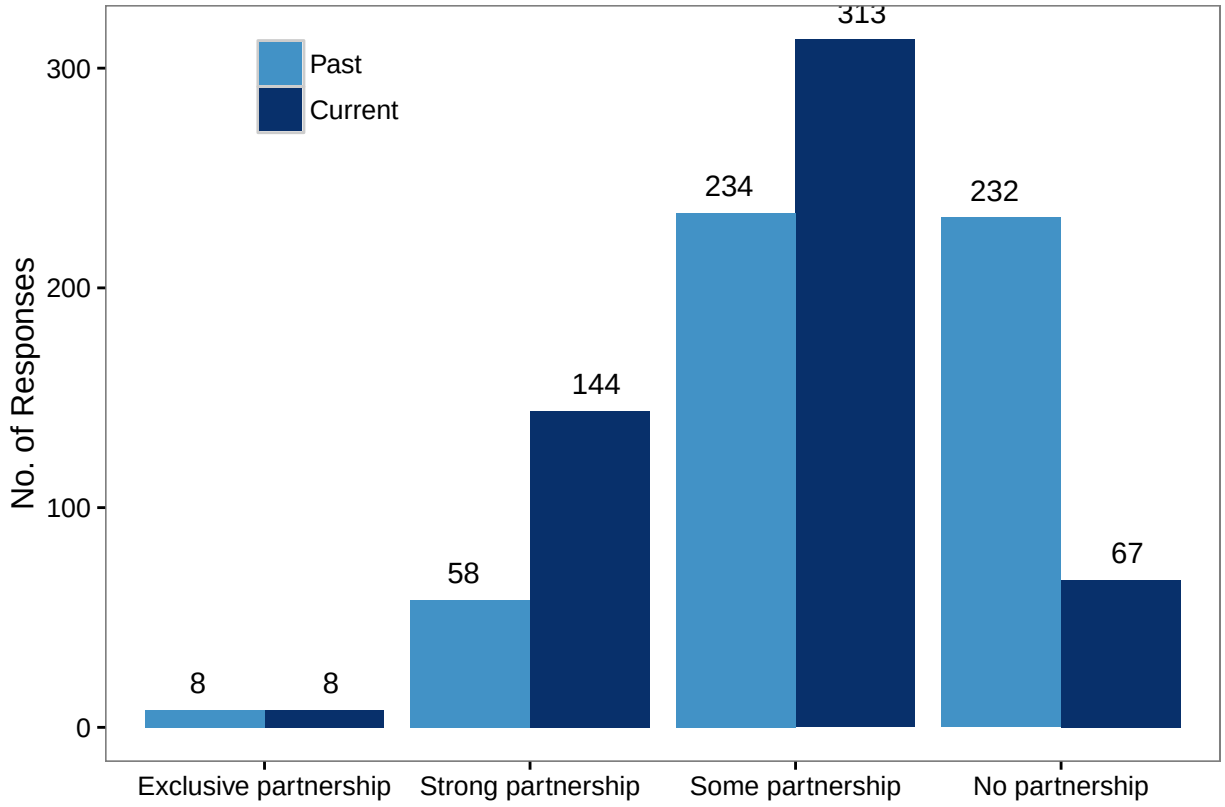

Figure 6: Current vs past level of partnership outside of academia. Researchers indicated the level of partnership that their research had outside of academia, for 10 years ago (past) and for their current research (current).

Part 3 - Grant Application History

Part 4 - Funding Trends

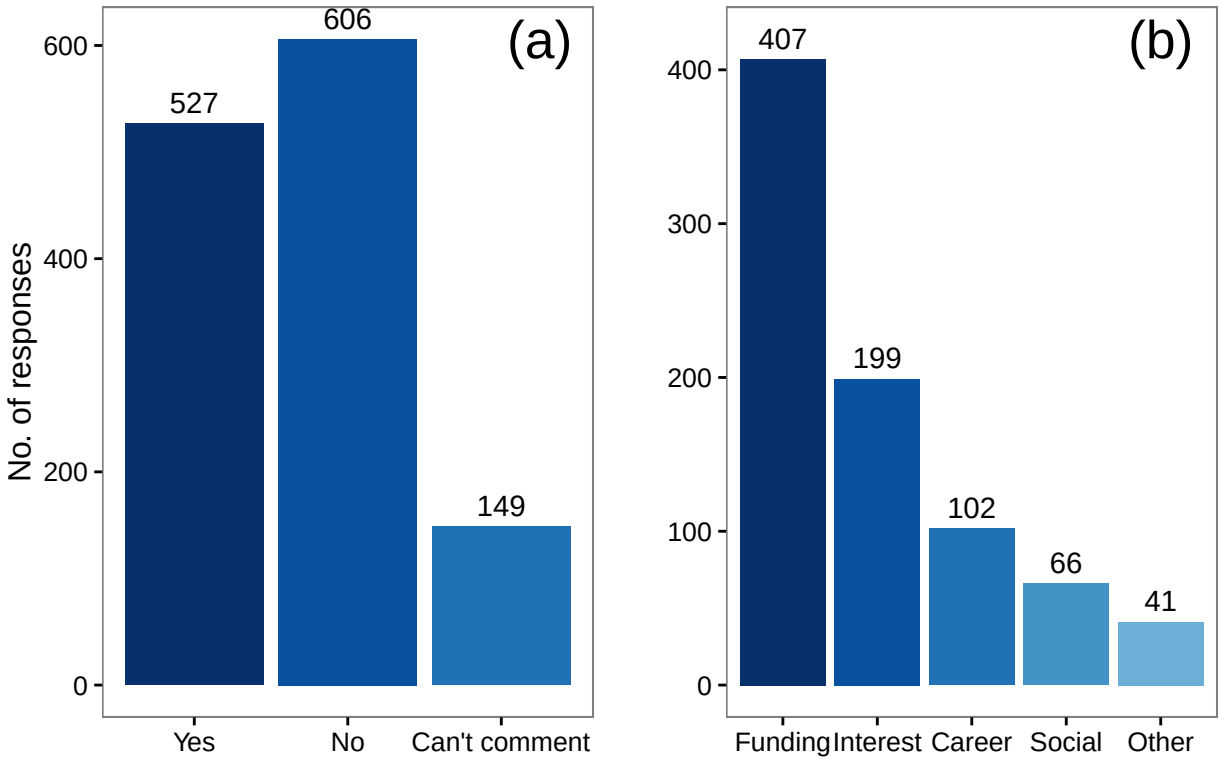

Figure 7: Reasons for change in external partnerships over the past 10 years. Researchers were asked if their level of external partnerships outside of academia, with for-profit or non-governmental sectors, had changed over the past ten years (a) and what the reason for that change was (b).

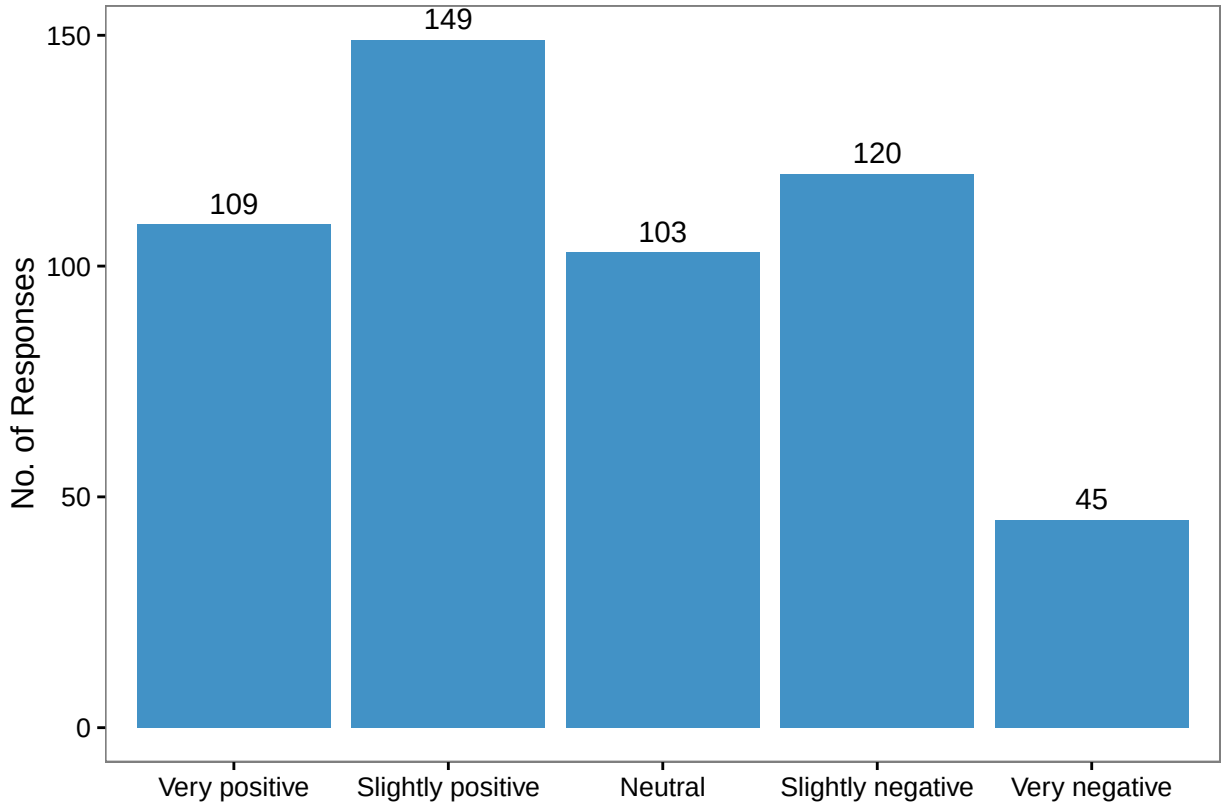

Figure 8: View of change in external partnerships. Researchers were asked how they viewed the change in the level of partnership with external groups.

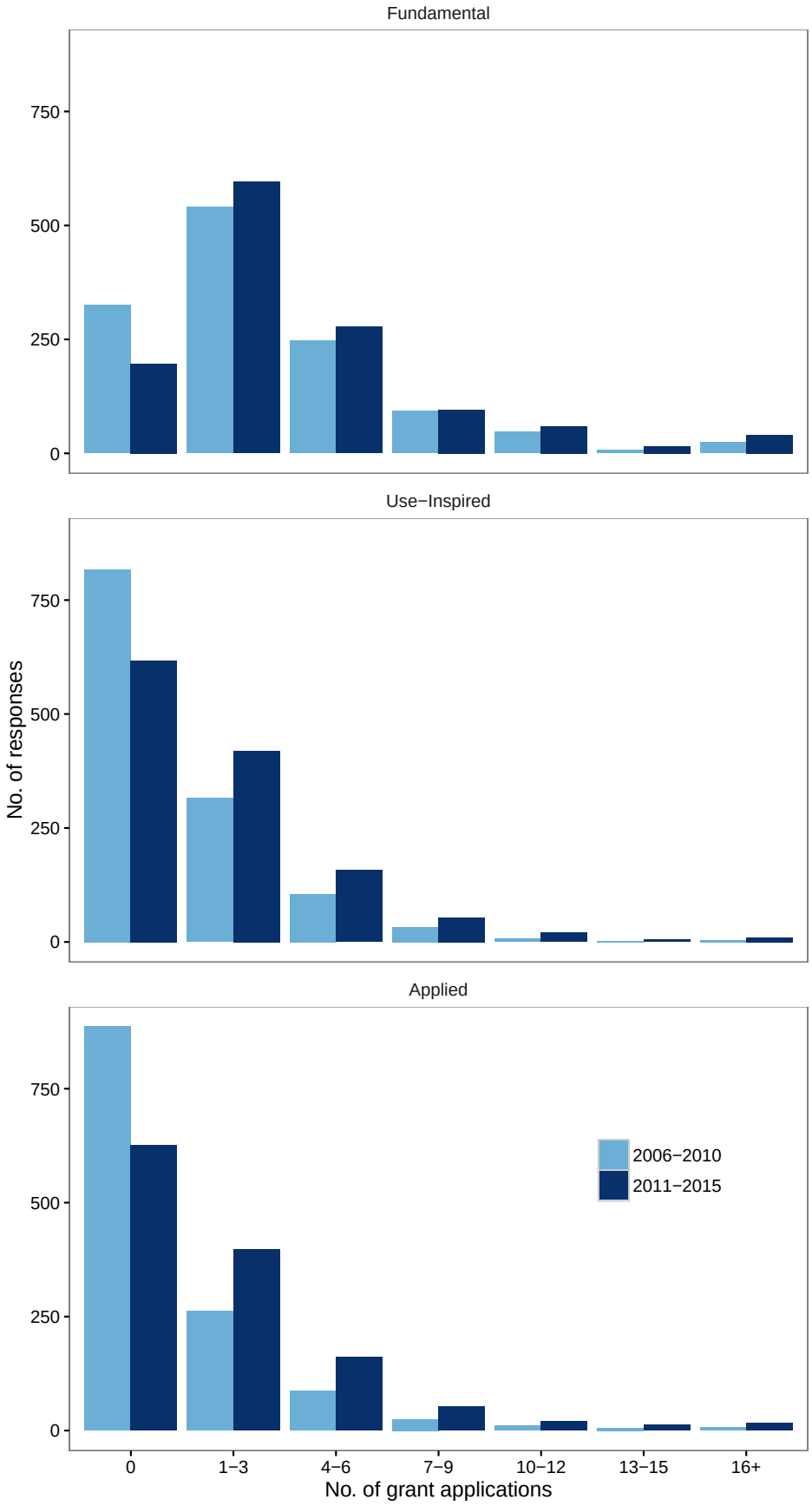

Figure 9: Number of research grant applications by research category in 2006-2010 and 2011-2015.

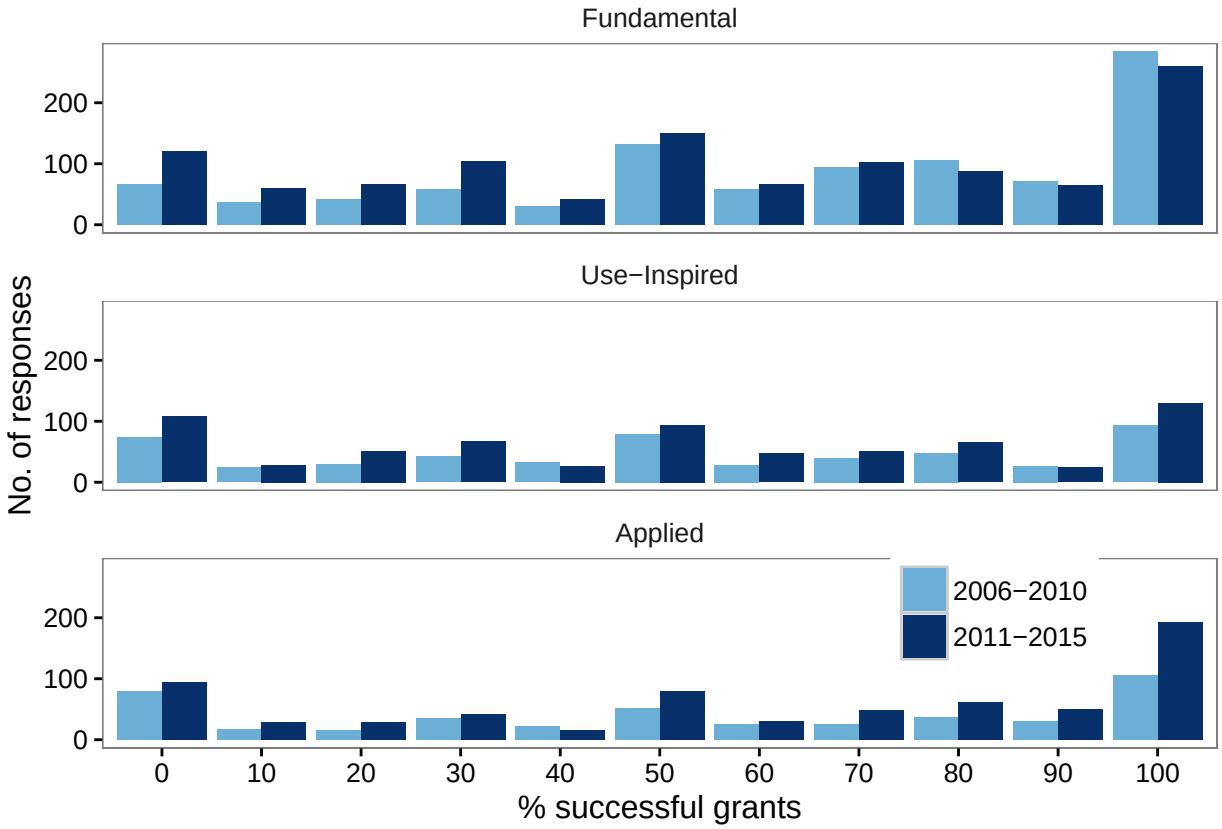

Figure 10: Research grant application success over the past 10 years. Researchers were asked to estimate the percentage of their research grant applications that were successful, in 2006-2010 and in 2011-2015.

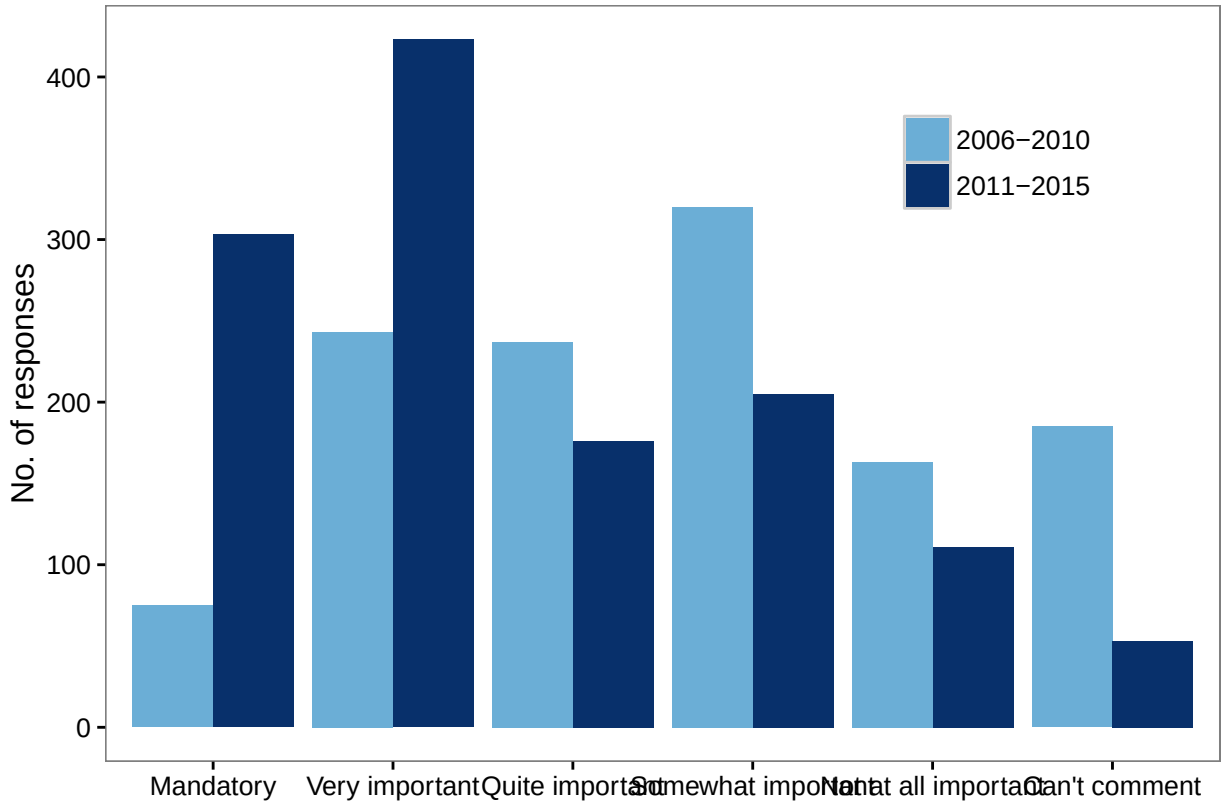

Figure 11: Importance of practical application of research over the past 10 years. Researchers were asked how important it was to suggest practical applications of their research to ensure that the grant was successful, in 2006-2010 and in 2011-2015.

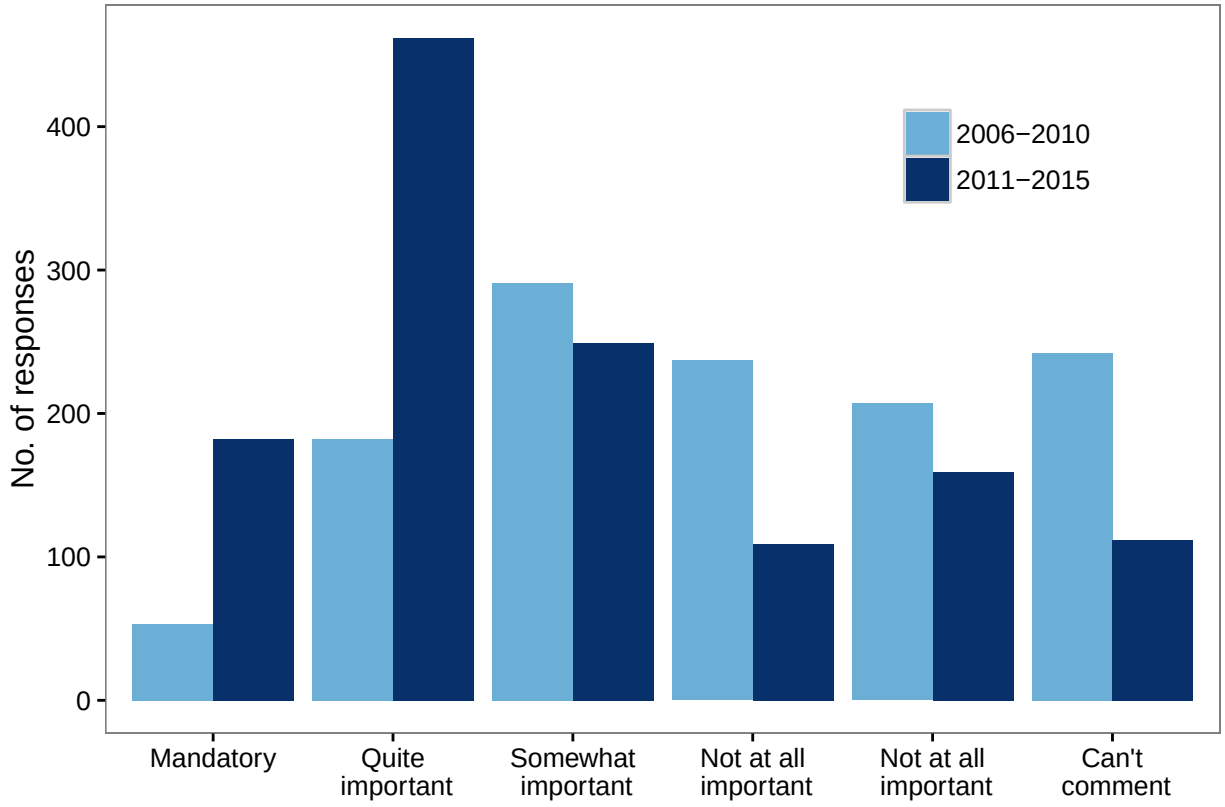

Figure 12: Importance of including partners from for-profit or non-governmental sectors in grant success. Researchers were asked how important it was to include external partnerships in their research to ensure that the grant was successful, in 2006-2010 and in 2011-2015.

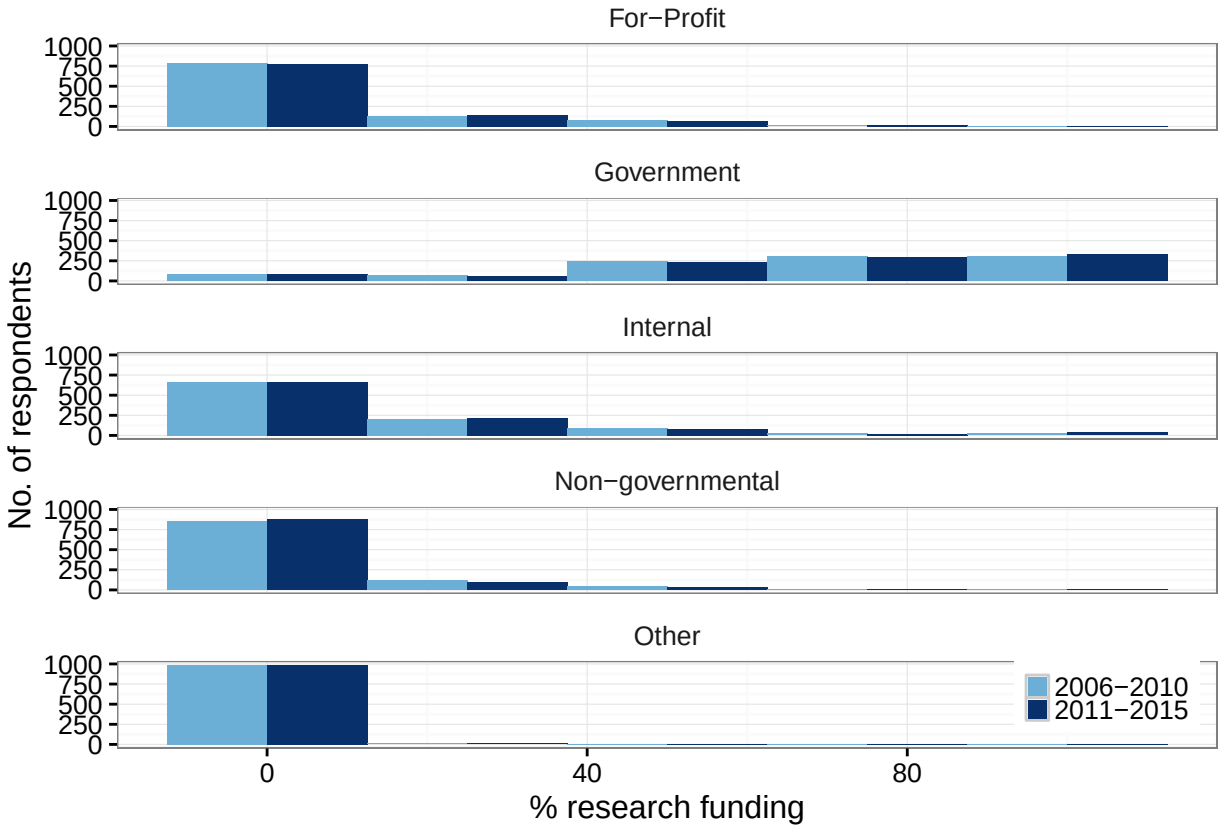

Figure 13: Distribution of research funding over the past 10 years. Researchers were asked to estimate the distribution of their research funding sources in 2006-2010 and 2011-2015.

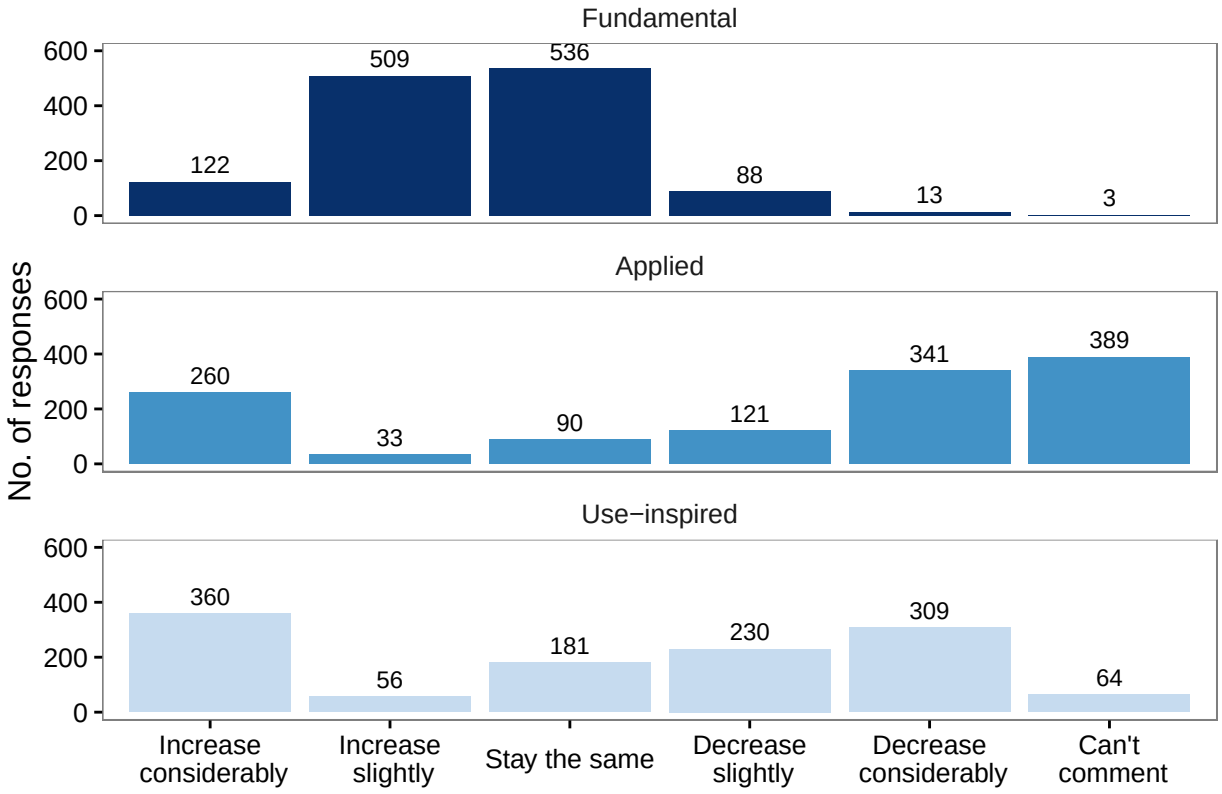

Figure 14: Change in grant success rates over the past 10 years. Researchers were asked if they thought that grant sucecss rates have changed in the past 10 years, for each research category.

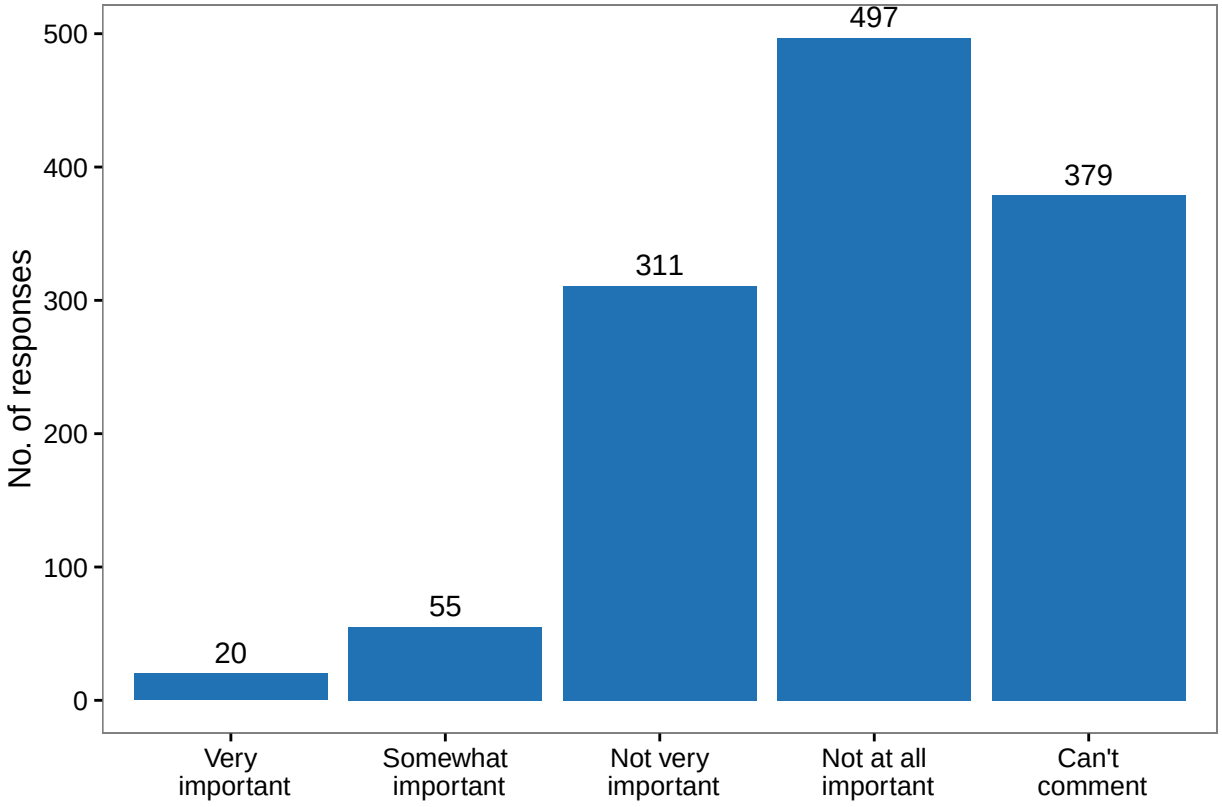

Figure 15: Perceived importance of fundamental research to Canadian government. Researchers were asked how important they thought fundamental research was to the Canadian government. Responses were/were not significantly different between genders.

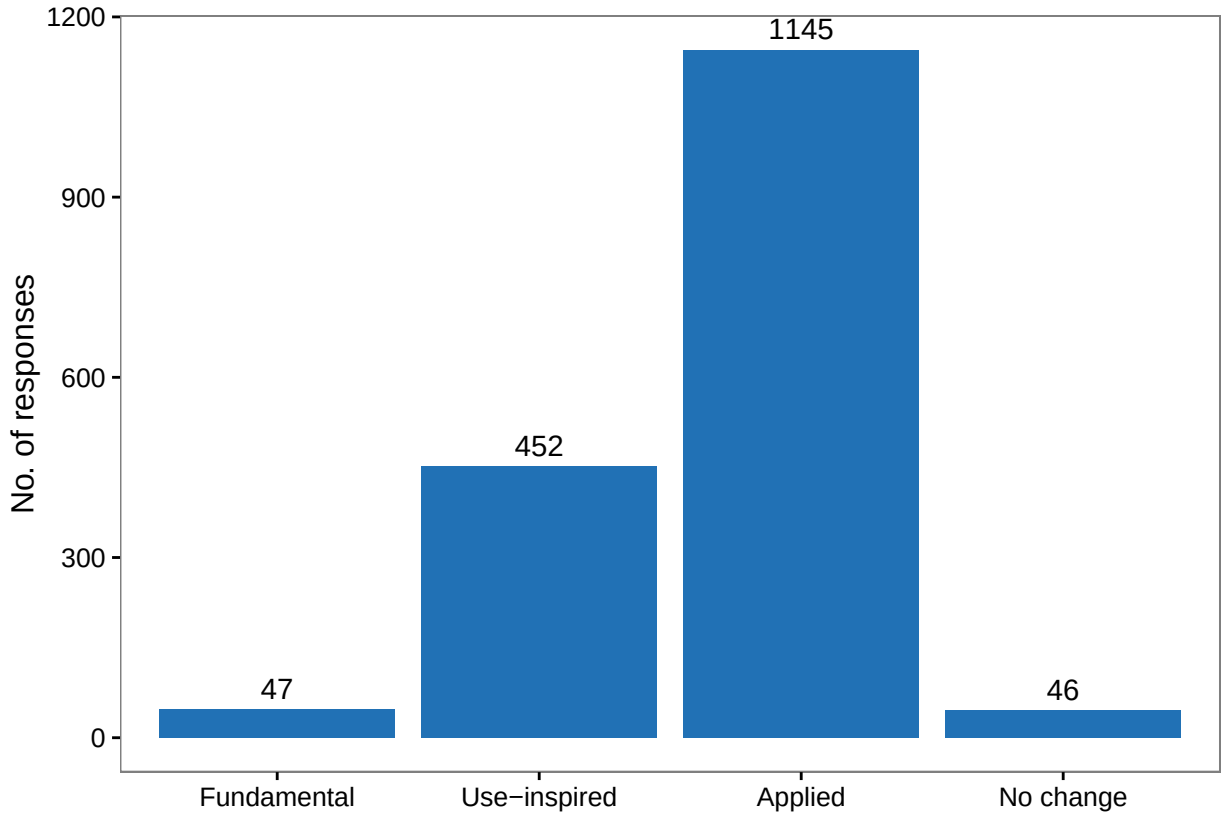

Figure 16: Perceived change in research priority by Canadian government. Researchers were asked whether any types of research had become higher priority for the Canadian government. Responses were/were not significantly different between genders.

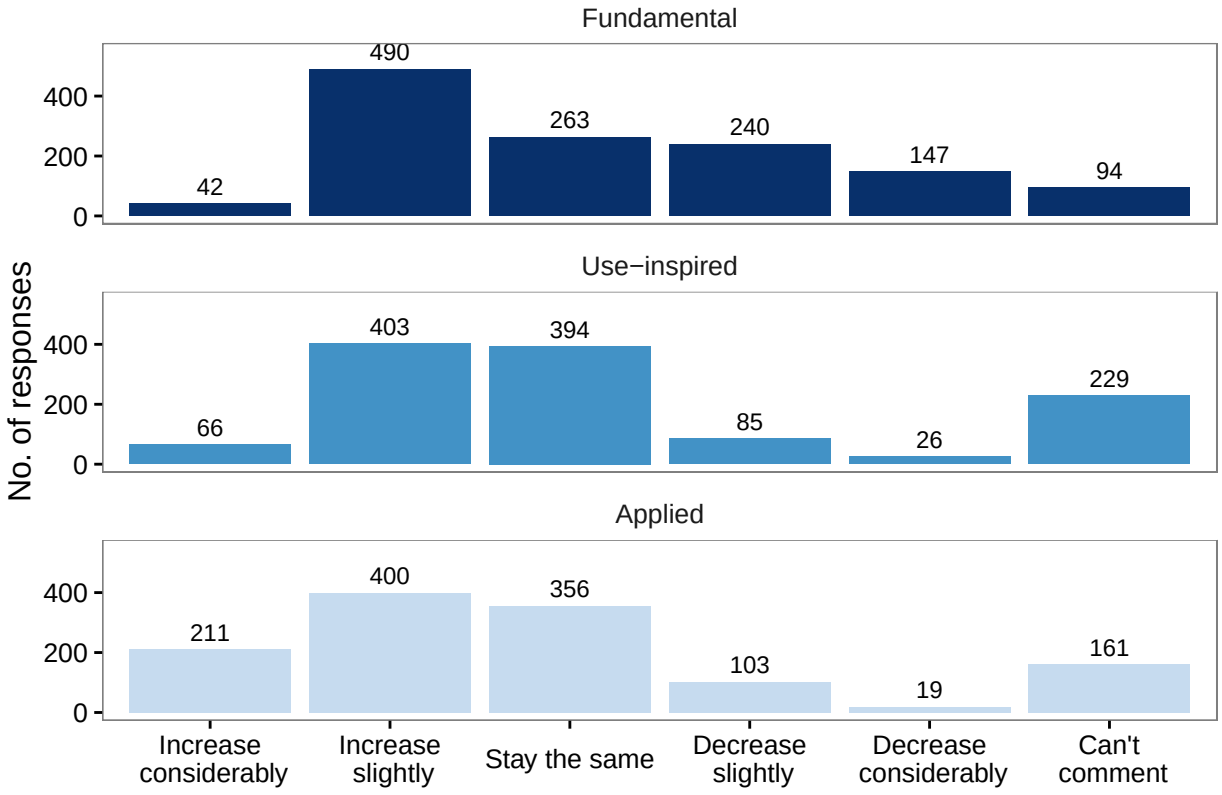

Figure 17: Anticipated change in research funding in next five years in Canada. Researchers were asked whether the availability of research funding would change in the next five years, for each research category. Responses were/were not significantly different between genders.

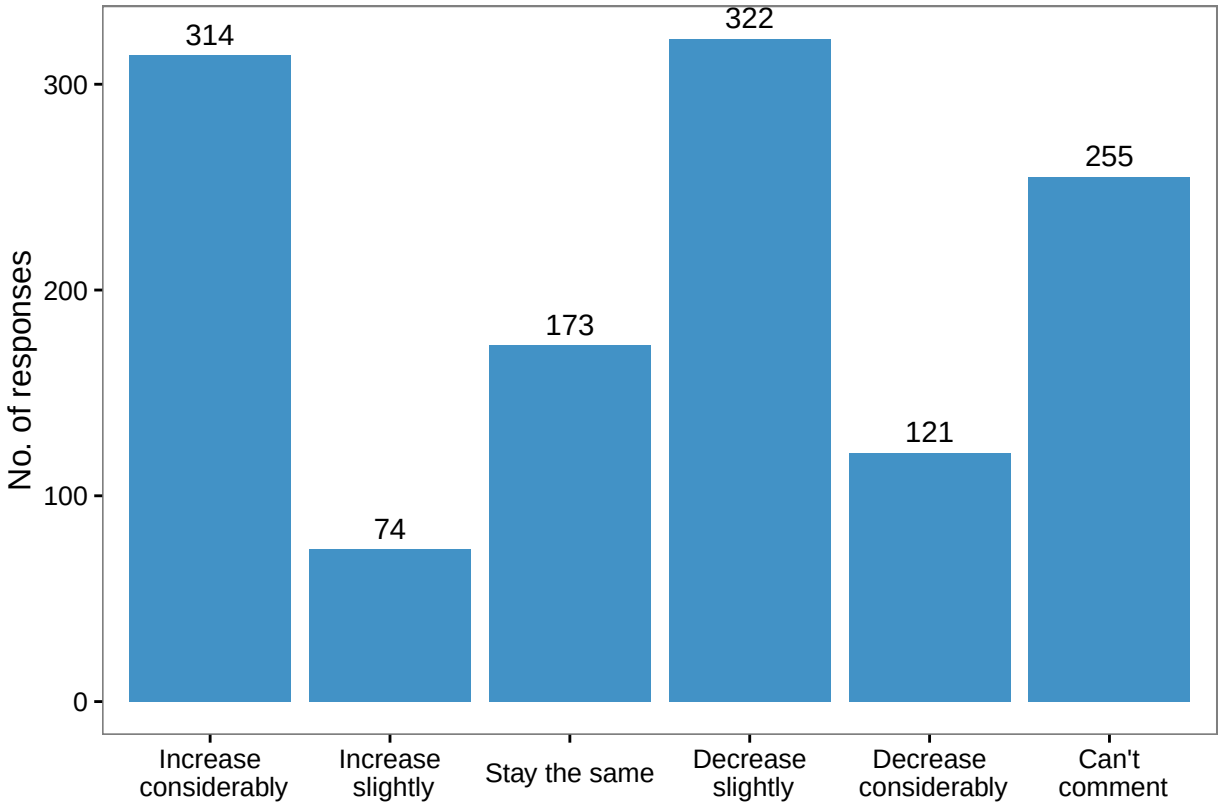

Figure 18: Effect of change in research funding on research careers of next generation in Canada. Researchers were asked if they though that changes in funding availability would influence the likelihood of the next generation pursuing careers in research. Responses were/were not significantly different between genders.