

DESCRIBE, EXPLAIN OR SOLVE PROBLEMS?

An analysis of the purpose
and function of research in
research applications

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Forte –Swedish Research Council for Health, Working life and Welfare

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Foreword

The Research Council for Health, Working Life and Welfare, Forte, is a governmental research funder under the Ministry of Health and Social Affairs. Forte's mission is to finance both basic and challenge-driven research and promote knowledge development in areas relating to health, working life and welfare. The research that Forte funds must maintain high scientific quality but also be relevant to society and contribute to impact. To get there, research is needed that both contributes with knowledge about the extent and the spread of the problems as well as the underlying mechanisms and possible ways to influence them.

Forte has not previously analysed the extent to which our research funding meets this three-part mission and what the distribution looks like between different types of research. Forte has therefore carried out an analysis of applications in Forte's annual call for project grants from 2022. The analysis has been based on a classification of applications based on the type of research, that is, what applicants want to achieve with the research they are seeking funding for. The classification was based on three categories: 1) descriptive; research mainly aimed at describing conditions and trends, 2) analytical and mechanistic; research aimed at analysing and explaining correlations and identifying the mechanisms behind them, 3) problem-solving; research that has a stated ambition to contribute to identifying and evaluating solutions to the social problems being studied.

The analysis forms a basis for strategic discussions and choosing paths going forward, concerning how Forte best can fulfil the tasks regarding societal relevance and impact. The analysis can also be seen as an input into the more general research policy discussion about what types of research are needed and how these can be stimulated.

The initiative for the analysis was taken by Forte's Secretary General Olle Lundberg. The analysis was carried out by a project group with employees from Forte. Project manager was Stella Jacobson. The classification work was planned and carried out by Stella Jacobson, Isabelle Carnlöf, Olle Lundberg, and Inger Jonsson. Peter Carlsson processed and compiled the data. The report was written by Stella Jacobson, Olle Lundberg and Peter Carlsson.

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Background

Forte's areas, health, working life and welfare, are knowledge and policy areas which are essential to people's daily lives and, at the same time, constitute key parts of Swedish welfare. Many of society's challenges are also found in these areas. The research that Forte funds must therefore be of high scientific quality, be relevant for society and be useful for making a difference to society and people's lives.

Forte is instructed by the Swedish Government, to allocate funds for research in the areas for which we are responsible. However, our research funding should not only be based on an assessment of the scientific quality of the applications we receive but also on their relevance and benefit to society. In order to be able to evaluate to what extent our research funding meets this three-part mission while also creating a basis for strategic choices in the future, we need to develop and discuss relevant ways to capture what type of research we are funding.

Research is often discussed using terms which are not automatically and clearly linked to the quality of the research, its relevance or benefit. One type of classification is based on who initiates the research and why (for example curiosity-driven or challenge-driven research), while in other contexts research is grouped according to its design or method (such as experimental or qualitative research). In order to obtain a basis for the assessment of the results of Forte's work, there is reason to instead try to identify categories of research based on its purpose and function. To meet and respond to society and the different sectors' knowledge requirements and challenges, research needs to be characterised by breadth and include research which covers all the topics in our mission. In addition, the research we support also needs to be able to help advance the knowledge-related positions both scientifically and from a wider societal perspective.

One way to try to capture this is to focus on the type of research, in other words, what it is you want to achieve with the research for which you are seeking funding. A more functional description of the research that Forte funds would be to try to differentiate between 1) *descriptive*; research whose primary purpose is to describe conditions and trends, 2) *analytical and mechanistic*; research whose purpose is to analyse and explain correlations and identify the mechanisms behind these, and 3) *problem-solving*; research which has a stated ambition to try to identify and evaluate solutions to the societal problems studied.

To some extent, these categories are in sequential order – a good picture of prevailing conditions is a prerequisite for analysing correlations and mechanisms, which, in turn, is normally a prerequisite for being able to identify different solutions. However, the categories are not mutually exclusive but often overlap and can, in principle, be part of one and the same research application. Indeed, we do not attach any importance to the concepts, but rather see them as descriptive typology. On the contrary, we believe that all three types of research are needed for Forte to be able to fulfil our mission, and that the empirical question we seek to answer is about mapping the distribution between these three categories. On this basis, an informed discussion can be held as to whether the current distribution is optimal and how it could potentially change if this was considered necessary.

Forte has not previously analysed to what extent we fund the above-mentioned categories of research. To get a better picture of the scope and distribution between these three types of research, classification and analysis of applications in Forte's annual call for project grants from 2022 were carried out. The call was selected to analyse the distribution between descriptive, explanatory and problem-solving research in a call without specific requirements for a certain type of research.

Issues

1. What is the distribution between descriptive, explanatory and problem-solving research in the applications that were received as part of the annual call for project grants in 2022?
2. What is the distribution of the type of research in each of Forte's main areas as well as research topic?
3. What is the distribution among rejected applications compared to granted applications?
4. What conclusions can we draw from the results? Are any types of research over- or underrepresented and in which areas?

Method

In total, 770 applications were received in Forte's annual call for project grants in 2022, of which 751 were processed¹. All granted applications (73) and a random selection of rejected applications (101) evenly distributed across the call's review panels, were classified according to the type of research.

The applications were randomly distributed between two reading pairs. Each person in the reading pair classified the applications individually and then compared the classifications. Those applications which had been given different classifications were discussed to reach consensus, firstly among the reading pair but in some cases also with the other reading pair. In order to test and adjust the categories and the process, both pairs read and classified a selection of applications (20 of the rejected applications, which were then excluded from the selection) before commencing the classification work.

The classifications were made based on three categories of research (see Table 1): descriptive, analytical and mechanistic (hereinafter referred to as explanatory research for short) and problem-solving research. The applications were assigned a main category (1) and one or two sub-categories (2 and 3) if relevant:

- 1=main category, i.e. the primary focus of the research project
- 2=sub-category, partial focus of the research project
- 3=sub-category, more limited part of the focus of the research project

¹ Five applications were withdrawn by the applicants and 14 were rejected for formal reasons.

The presentation of the results is stratified based on whether the application has been granted, but weighted results are also presented. Since the probability of selection differs between granted and rejected applications, the group of granted applications in the weighted analyses has been weighted with the same probability of selection (0.1490) as the rejected applications to give a fair picture of the entire population of applications. All data presented in the results section is based on the main category in which the application was classified, unless otherwise stated.

The classifications were based on the current application’s described work plan, questions, methodology and the type of results that the research project would generate. The classifications did not consider the possible contribution of the project in the longer term, which depends on more research studies or specific activities that were not part of the current project. For example, research projects that would only produce descriptive results were classified as descriptive even if the project’s aim in the application was presented in such a way that it would provide solutions to a societal problem.

<p>Descriptive research</p>	<p>“How does it look?”</p> <p>Describes conditions and trends, scope, frequency, distribution, how something has developed. Provides an understanding of the scope and severity of different conditions.</p>
<p>Analytical and mechanistic research (explanatory)</p>	<p>“Why does it look like that?”</p> <p>Analyses and explains correlations and mechanisms, how the problem occurred, how the process works, the factors/conditions and (causal) relationships which constitute the mechanisms behind the observed problem. Provides an understanding of how a phenomenon/problem occurs and therefore ideas for how interventions could be designed.</p>
<p>Problem-solving research</p>	<p>“How can the problem be counteracted/restricted/remedied?”</p> <p>What interventions can be designed, how can they be implemented and to what extent do they work as intended? Provides an understanding of <i>how</i> you can solve or handle a problem and if it works.</p>

Table 1. Description of the three types of research on which the classification is based.

Results

In a first step, overall results are presented where the granted applications are weighted to give an accurate picture of the whole population of applications. Afterwards, the focus is more on the differences between granted and rejected applications (stratified analysis), unless otherwise specified.

Descriptive research dominated in the applications

The majority of the 174 applications classified consisted of research with descriptive research as the main category (67 percent, Diagram 1). Primarily explanatory research constituted 18 percent of research applications and problem-solving research made up 15 percent.

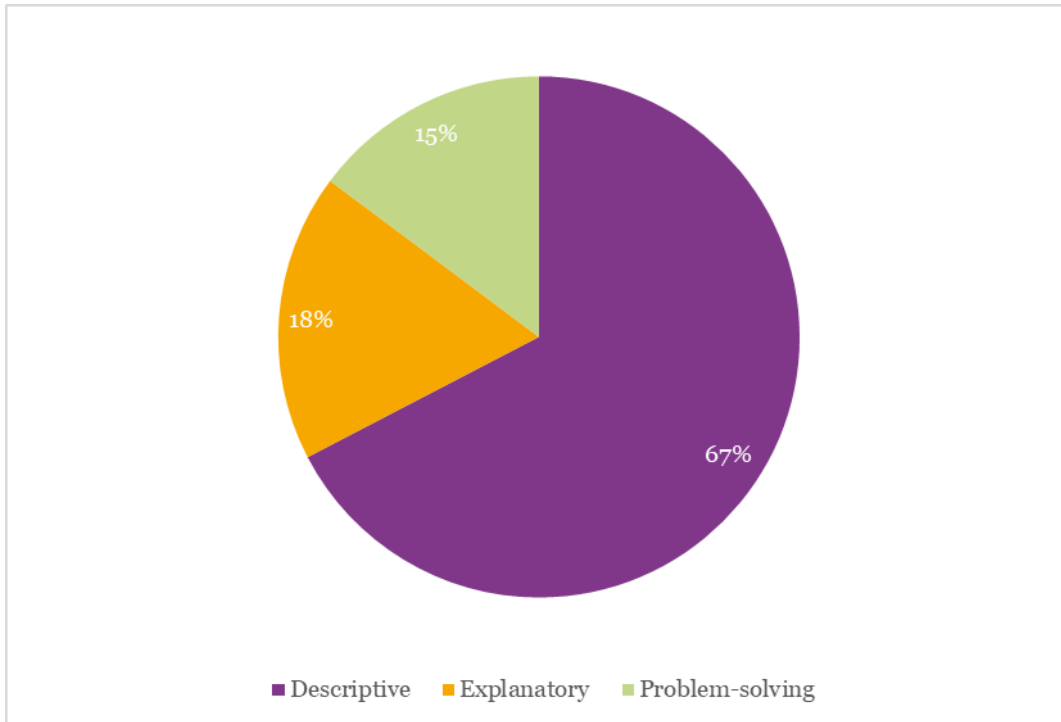


Diagram 1. The percentage of applications with descriptive, explanatory or problem-solving research as a main category. The data is based on the total number of applications in the analysis, both granted and rejected.

An analysis of all combinations of main and sub-categories showed that the research applications which were purely descriptive were the most common type (40 percent, Appendix 1, Diagram 1), followed by applications which had main focus on descriptive research and partial focus on explanatory research (close to 20 percent). Next came applications with a purely problem-solving focus (10 percent) and a purely explanatory focus (seven percent). The remaining 23 percent of the applications consisted of applications with various combinations of the three types of research. Among these groups, explanatory research was somewhat more common as the main focus, while problem-solving research was more often a partial focus. Only approximately three percent of the applications had a combination of all three types of research.

Different types of research differ between research areas

The researchers themselves classify their research projects based on several subject categories. They indicate, among other things, which of Forte’s areas the application applies to, and the research topic based on Statistics Sweden’s Standard for Swedish classification of research topics.

Most applications included in the analysis were described as social science research (51 percent) or medical and health science research (46 percent)². The distribution between different types of research differed markedly between these two subject areas. Most of the social sciences projects were descriptive (83 percent), while only three percent were problem-solving (Diagram 2). However, within the medical and health science projects, the percentage of problem-solving research was 28 percent, while descriptive research accounted for 48 percent. The percentage of explanatory research was 14 percent and 23 percent in social sciences and medicine and health science, respectively.

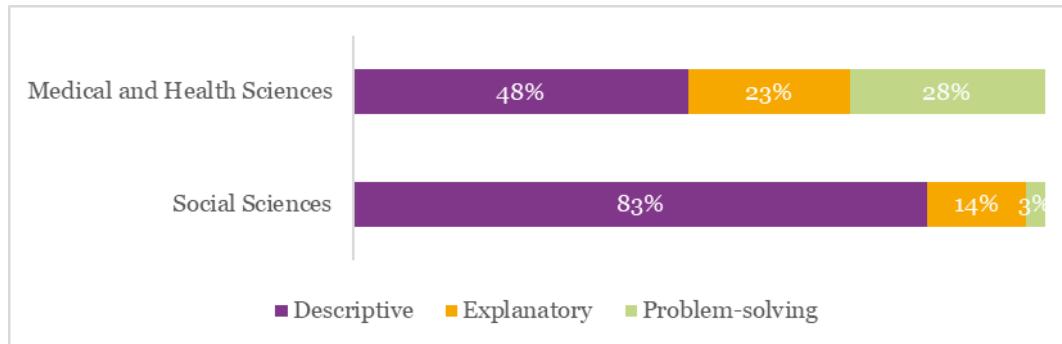


Diagram 2. The percentage of descriptive, explanatory and problem-solving research within medical and health sciences as well as social sciences. The data is based on the total number of applications in the analysis, both granted and rejected.

There were similar differences between Forte’s main subjects; health, working life and welfare. Among the applications that were indicated as belonging to the health area, 29 percent were problem-solving research (Diagram 3). The corresponding share in working life was 12 percent and three percent in welfare.

On the other hand, descriptive research dominated within the areas of working life and welfare (82 and 76 percent respectively), while the corresponding share in the health area was 45 percent.

Explanatory research constituted a smaller proportion of the applications in all three areas. Within the field of working life, only six percent of applications were directed at explanatory research, while the corresponding proportion in welfare was somewhat higher, at 21 percent. The field of health had the largest share of explanatory research, with 26 percent of applications.

² Other subject areas were humanities and arts, as well as science.

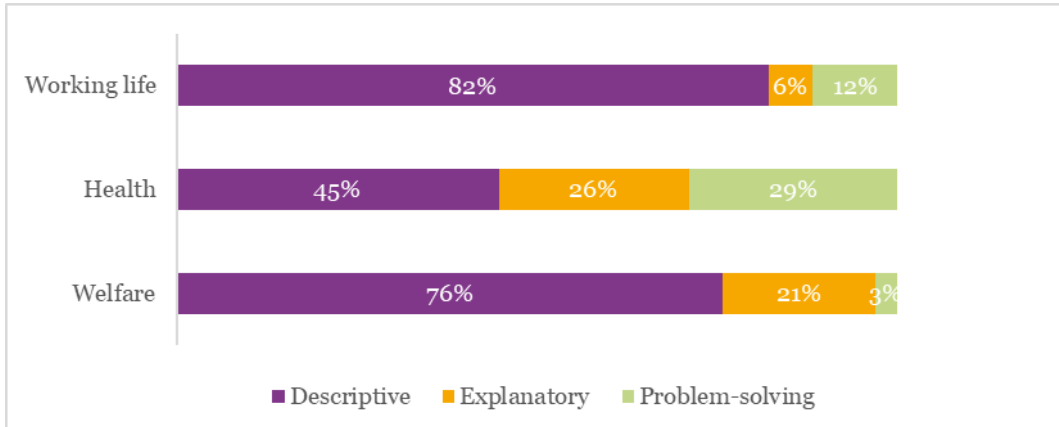


Diagram 3. The percentage of descriptive, explanatory and problem-solving research in Forte's main areas; health, working life and welfare. The data is based on the total number of applications in the analysis, both granted and rejected.

The review process had some levelling effect

Research applications with a main focus on descriptive research was somewhat less successful in the competition for funding compared to explanatory and problem-solving research (Diagram 4). A lower percentage of the granted applications were descriptive than among the rejected applications (49 and 69 percent respectively). The reverse was seen for explanatory and problem-solving applications. Almost 30 percent of granted applications were explanatory compared to 17 percent of rejected applications, while 23 percent of granted applications were problem-solving compared to 14 percent of rejected applications.

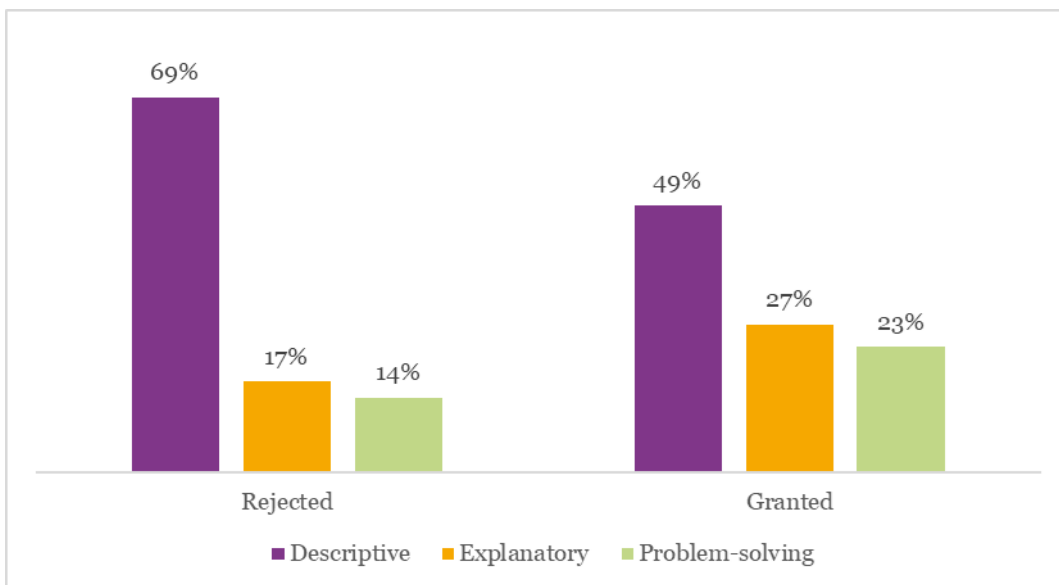


Diagram 4. The differences between rejected and granted applications in the categories descriptive, explanatory and problem-solving research.

The fact that descriptive research was less successful in the competition applies to all of Forte's areas, but it is most evident in working life (Diagram 5). 54 percent of granted applications in working life were descriptive compared to 85 percent of rejected applications. However, in working life, it was explanatory research that performed well: 35 percent of granted applications were explanatory research compared to three percent of rejected applications.

In the areas of health and welfare, problem-solving and explanatory research applications had a small advantage, while descriptive applications were slightly less successful.

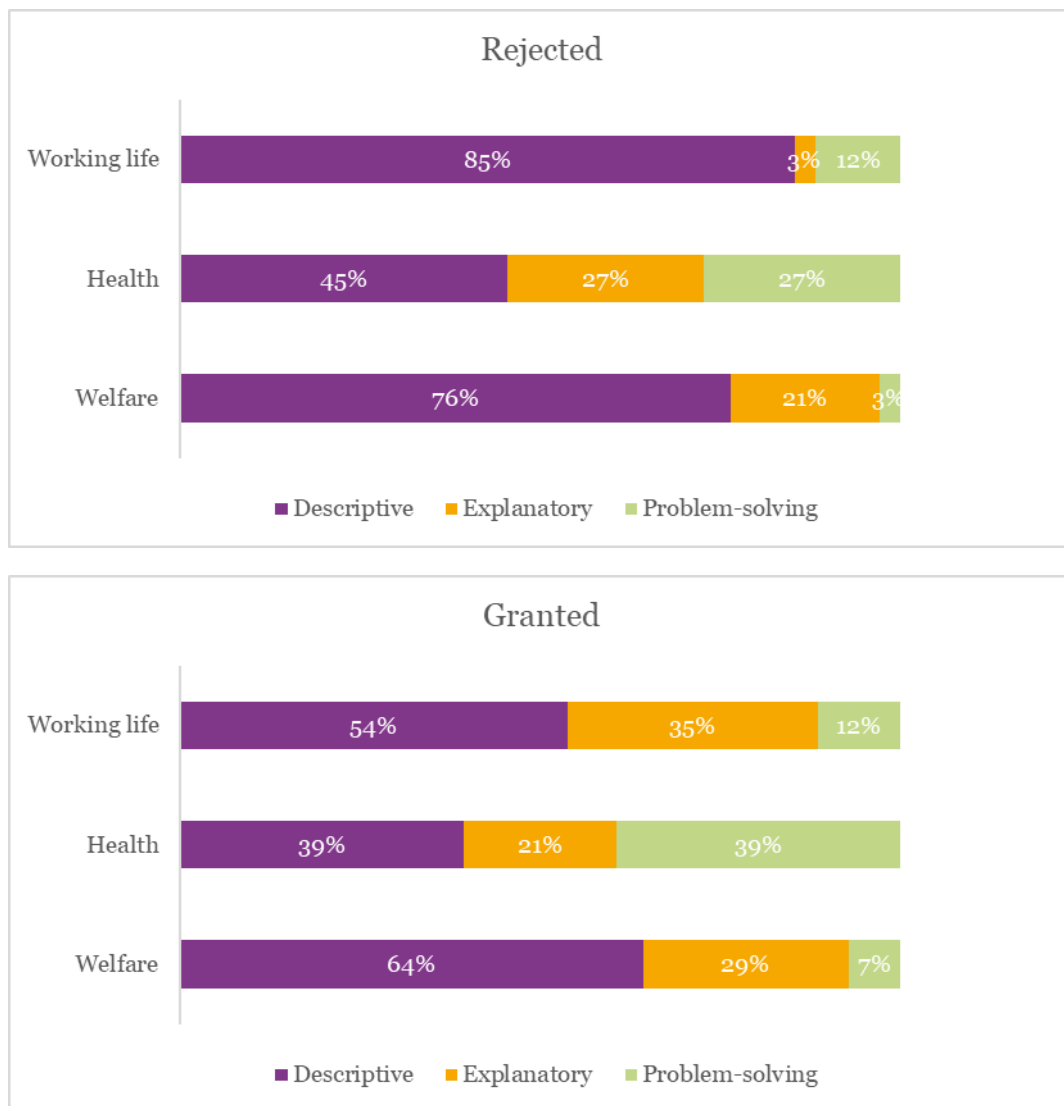


Diagram 5. The differences between rejected and granted applications in the categories descriptive, explanatory and problem-solving research, distributed among Forte's areas; health, working life and welfare.

Some differences between women and men

Of the 174 applications that were classified, there were small differences between the type of applications, depending on whether the main applicant was a man or a woman (Diagram 6, weighted data).

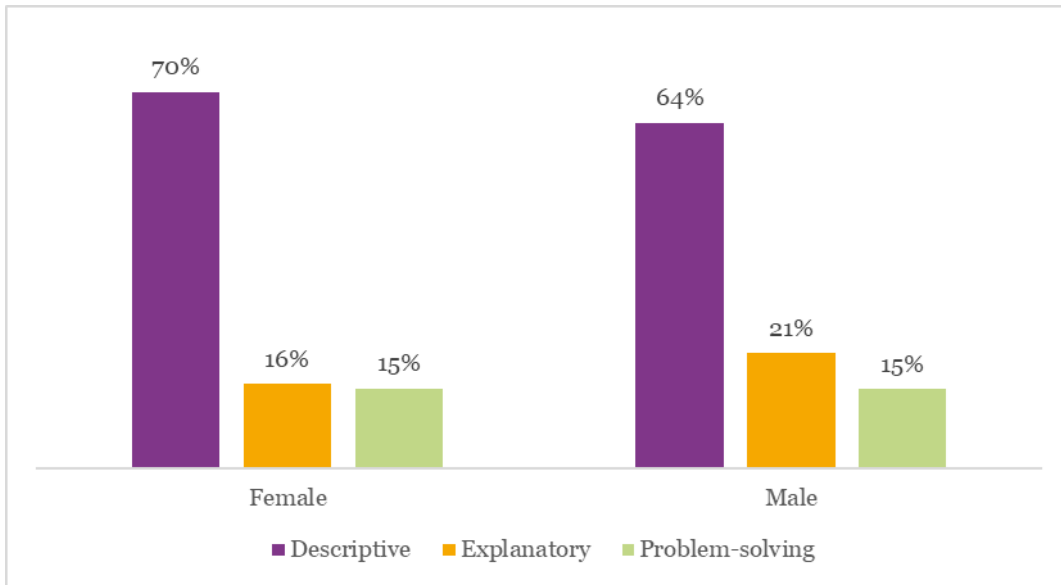


Diagram 6. Proportion of applications based on research categories for men and women as the main applicants. The data is based on the total number of applications in the analysis, both granted and rejected, weighted for probability of selection.

Among men who were granted funding, the distribution between the three types of research was significantly more even compared to the total number of applications from men, while the levelling effect of the review process was significantly more modest among the women who received funding (Diagram 7). We are not able to comment on whether this reflects a real difference between the sexes in terms of the applications' contents, layout and quality, for example if women's applications with a descriptive approach are more unique or relevant.

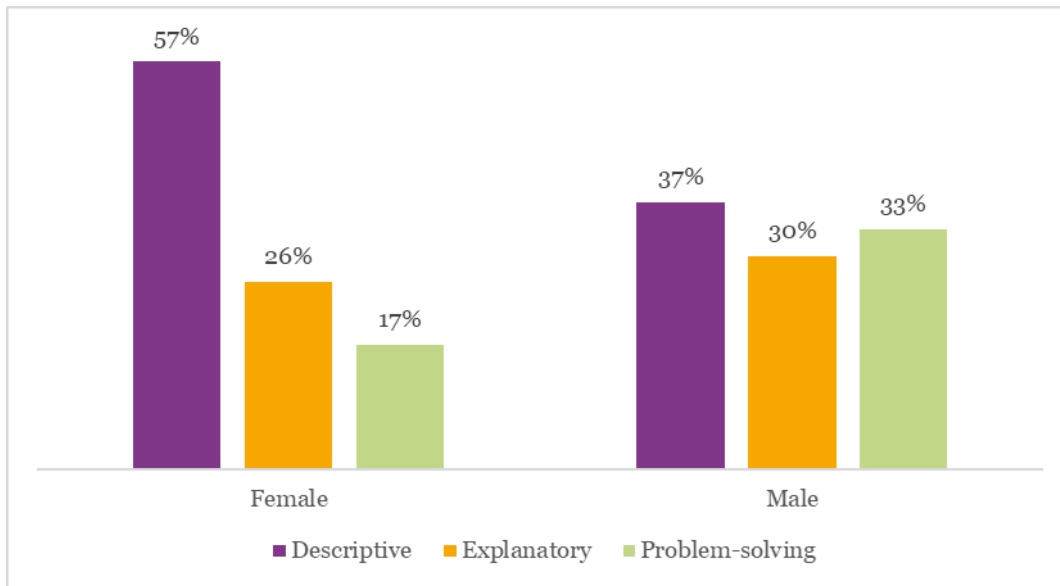


Diagram 7. Proportion of granted applications based on research categories for men and women as the main applicants.

Some differences between academic age

The distribution between the different types of research points to a certain shift towards explanatory and problem-solving research in step with increasing academic age (Diagram 8, weighted data)³.

Descriptive research was somewhat more common among doctors (77 percent) compared to docents/associate professors (60 percent) and professors (58 percent). Explanatory research made up 26 percent among docents/associate professors and 22 percent among professors, while only eight percent of doctoral research was of this type. Problem-solving and explanatory research was somewhat more common among professors (21 percent compared to 14 percent among docents/associate professors and 15 percent among doctors).

The proportion of problem-solving and explanatory projects are higher among granted applications. This applies to all career ages but is particularly clear among doctors (Appendix 1, Diagram 3).

³ Ten applications lacked information on academic title and have therefore been excluded from the analysis of academic age.

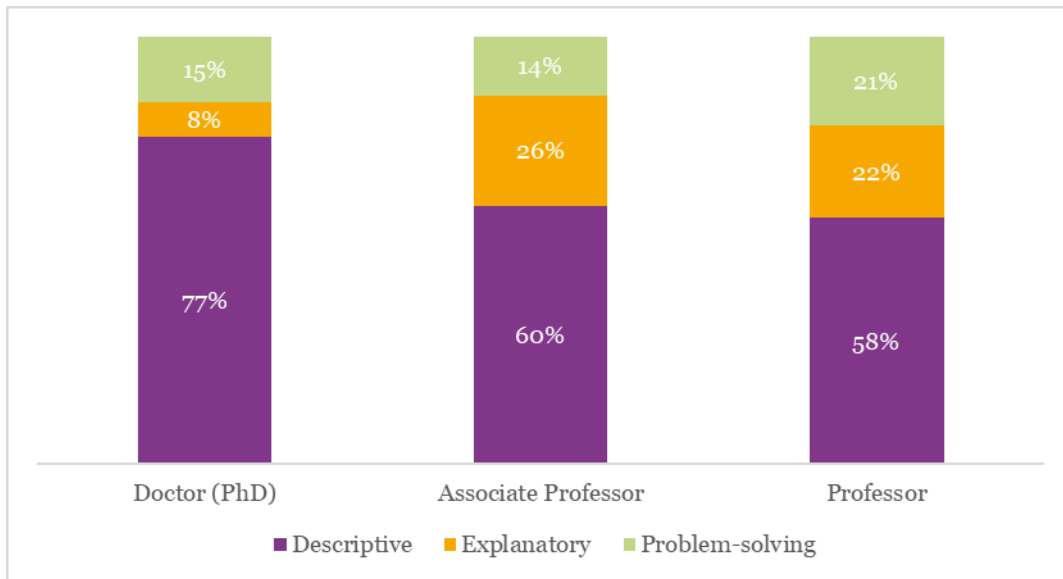


Diagram 8. Distribution of the different research types for each length of career group. The data is based on the total number of applications in the analysis, both granted and rejected, weighted for probability of selection. In the distribution for all applications classified, descriptive research accounted for 67 percent, 18 percent was explanatory research and 15 percent was problem-solving research.

Summarising discussion

The purpose of this analysis has been to examine the possibilities of analysing applications to Forte based on the main purpose of the research task for which funding is sought. The point of this is that research’s possibilities for contributing to dealing with societal challenges requires it to provide knowledge of the scope and prevalence of the problems, as well as of the underlying mechanisms and possible ways to influence them. In a strategic discussion about how Forte can best fulfil our tasks regarding relevance and benefit to society, data on what type of research we are funding therefore becomes an important basis.

There are certain limitations in the analysis which should be pointed out. The selection was limited to 174 applications to obtain a manageable amount. The classification was also limited to the annual call for project grants in 2022. We cannot know how representative the selection is and if the results would differ for the same call in other years. Furthermore, the three categories make up a rather rough classification and some research applications were difficult to place. For example, projects that would identify problems, develop and test instruments, method development or retrospective evaluation. Differences between the project’s intentions and what the project would actually lead to also made the work of classification more difficult in some cases. An application could appear to be problem-solving in the description and the project’s aim, while the research questions and method only provided descriptive data. It was therefore important to discern the project’s actual output rather than the ambitions expressed in the application. It was also not always easy to distinguish the categories (especially regarding descriptive and explanatory research) or the levels, i.e. which category was the

main category or sub-category. Finally, we have not carried out any statistical analyses, so we cannot comment on whether the differences we see are statistically significant. For example, this applies to small differences between men and women, as well as academic age and type of research. Although we cannot draw clear conclusions from the analysis given the above-mentioned limitations, we still see certain patterns and results which can form the basis for internal discussions, and which may be supplemented with more data in future analyses.

The analysis showed that descriptive research dominated among the research applications included in the classification (67 percent). Although there are several different combinations of approaches, 40 percent are purely descriptive projects, and a further 20 percent have a main focus on descriptive research but with analytical elements.

However, there were major differences between social science and health science research, where problem-solving research was mainly found among the health science research applications (Diagram 2). This was a somewhat expected result regarding the research traditions which exist in these areas, where social science research has an observatory and critical review perspective rather than problem-solving, while therapy research and intervention studies are common in health science research. However, there can be differences within these subject areas. The applications for Forte's annual call for project grants are reviewed by nine review panels with different focuses, three in each main area. There was a larger proportion of problem-solving research projects, for example in the groups "Social care and social work" and "Work and work-related health", than in the other welfare and working life groups (Appendix 1, Diagram 2). Conversely, the review panel "Public health" had a lower proportion of problem-solving projects than the remaining health groups. This can probably be explained by the different review panel's orientation and whether their focus is at an overall societal level or if they are more concerned with group or individual level. Applications which come to the review groups with a higher percentage of problem-solving applications are more often closer to actual activities in social services and healthcare, where interventions are handled by different professions and new types of efforts or treatments can be introduced and studied.

A wide range of research types are needed to meet Forte's aim that research must be of high scientific quality, be socially relevant and be useful for making a difference to society and people's lives. Describing and studying correlations is an important starting point and something which needs to be done continuously in social research. Such studies are needed to establish social regularities,⁴ which can be studied more analytically but also fulfil an important function as the basis for social debate and knowledge-building. If the main component of research within an area only aims to contribute to debate and general knowledge of the state of things, there is an obvious risk that the scientific basis for finding solutions to different social problems will be lacking. When the conditions and relationships are well described and the need for action is identified, in the first instance more research is needed about the mechanisms and processes that cause the problems. If these mechanisms and processes are also known, perhaps research is primarily required

⁴ Goldthorpe JH. *Sociology as a Population Science*. Cambridge University Press; 2015.

on different ways to influence these mechanisms with the aim of finding solutions to the problems. If research stops at describing the world, different proposals for solutions will not be scientifically based either.

We do not know what the optimal distribution between the different research types looks like, and it probably varies between Forte's different areas and research questions, where newer and more un-investigated questions and problems require more descriptive and analytical research. However, since the analysis shows a marked predominance of descriptive projects, it is difficult to believe that the current distribution is optimal. Instead, we believe that it should be possible to shift the emphasis somewhat in favour of analytical and problem-solving projects, especially in the areas of social science. To a certain extent, the review process seems to contribute to this since the applications which focussed mainly on descriptive research fared slightly worse in the competition compared to explanatory and problem-solving research (Diagram 5). We have not had the opportunity to investigate the reason for this more closely. For example, if the quality is generally lower for descriptive research projects, or if our instructions and information about Forte's mission to the review panels affect the selection.

To the extent that Forte wants to change the balance between different types of research, different types of measures can be discussed. Firstly, the results indicate that the review process contributes to the fact that the funded projects are more balanced. This could be strengthened further through clearer instructions and assessment criteria.

Forte could also encourage and stimulate more analytical and problem-solving approaches in applications to a greater extent. For example, Forte views the collaboration between research and the surrounding society as an important means of increasing the connection of societal needs to research, and collaboration is also an important part of problem-solving approaches. Forte already works to stimulate and increase the element of collaboration in research, among other things by developing and clarifying our assessment criteria and offering special types of grants for collaborative activities. Another way to stimulate collaboration is to create meeting spaces and dialogue between researchers and societal stakeholders, for example to shape the focus on needs-based investments.

More analytical and problem-solving approaches can also be stimulated through needs-led initiatives and calls for proposals. These are based on society's and different groups and stakeholders' needs and challenges, often focussing on how the challenges can be handled and solved to improve the functioning of society, governance and people's lives and conditions. The motivation for steering research to certain areas or challenges is to strengthen, build or stimulate research which for different reasons would not otherwise have attracted researchers or where it is difficult to get funding, but where there is great need for more scientific knowledge or certain types of research, such as more solution-oriented research.

Our analysis indicates that Forte's annual thematically broad call for project grants primarily attracts applications of a descriptive nature, which raises the question of whether more targeted calls result in a different distribution between different types of research. No systematic analysis of this has been done, but in a follow-up of the targeted

call “Preventive and health-promoting interventions within the target areas of the public health policy 2023”, the external contractor classified the 11 granted applications based on Forte’s model. The conclusion was that five of the applications were mainly descriptive and the remaining four were problem-solving. The contractor believed that, in most cases, the granted applications built on the research groups’ previous knowledge and skills in different areas, which had been adapted to the current call. The results indicate that even targeted efforts can have a high proportion of descriptive research, despite the call text stating that only problem-solving research is required. One conclusion that was drawn by the contractor is that long-term investment may be required if researchers need to adopt new approaches, traditions and therefore need to develop knowledge and skills for themselves and the research area.

Influencing the distribution between types of research in the annual call for project grants is difficult because the very idea is that the call should be broad and as open as possible to different types of research. One possibility could be to review and possibly adjust the description of the call’s thematic descriptions of the various review panels, so that it is clear that Forte is requesting all types of research. At the same time, the choice of research type is, of course, not only the result of the focus and descriptions of the calls for proposals. For example, traditions in different research areas and institutions have an impact on what is perceived as interesting and how research questions are formulated.

Through this analysis, we hope to be able to help achieve Forte’s mission of funding research of high scientific quality which is also relevant for society and has potential for impact. At the same time, we believe that the analysis can also be seen as a contribution to the more general research policy discussion. Firstly, we believe that the type of functional classification that we tried to apply in this study forms the basis for a more constructive discussion of which types of research are required and how they can be stimulated. Secondly, our analysis shows that closer to 70 percent of the applications received by Forte were focused on descriptive research. This result cannot be said to be in line with the general notion that the most innovative and creative research is achieved when the researchers themselves can freely choose their direction and approach. However, the result is in line with research which has pointed out that creativity becomes greater when there are certain restrictions⁵. Although descriptive research can also be creative, we believe that our study provides a basis for a more nuanced research policy discussion of the relationships between the focus of calls for proposals and the type and quality of the funded research.

⁵ Acar O, Tarakci M, van Knippenberg D. 2019. Creativity and Innovation Under Constraints: A Cross-Disciplinary Integrative Review. *Journal of Management* Vol. 45 No. 1, 96–121.

Appendix 1.

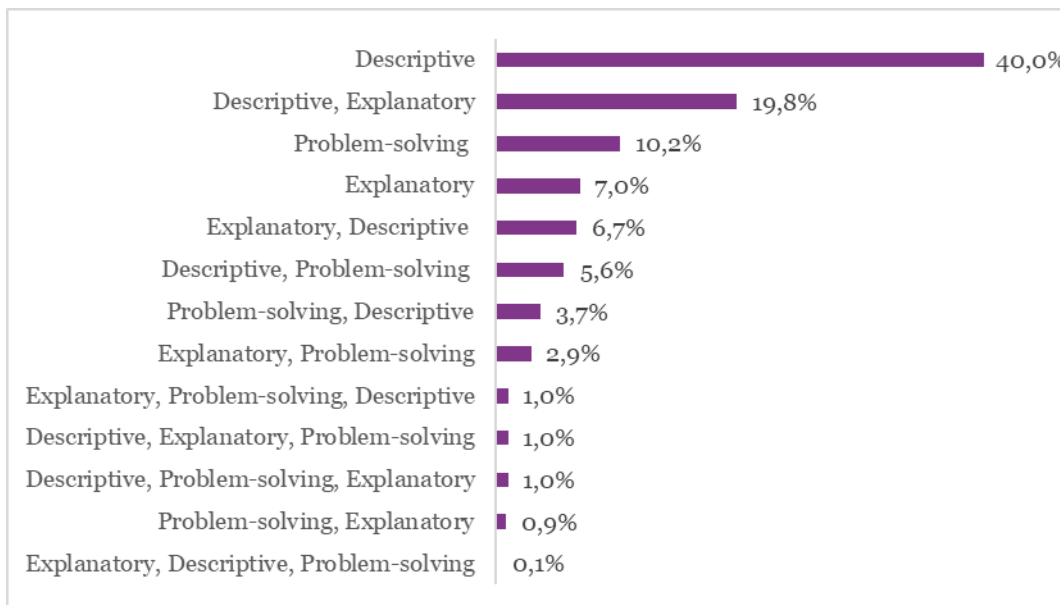


Diagram 1. The percentage of applications distributed across both the main and sub-categories, weighted for probability of selection. The type of research written first in each combination group constitutes the main category, the rest are subcategories in descending order.

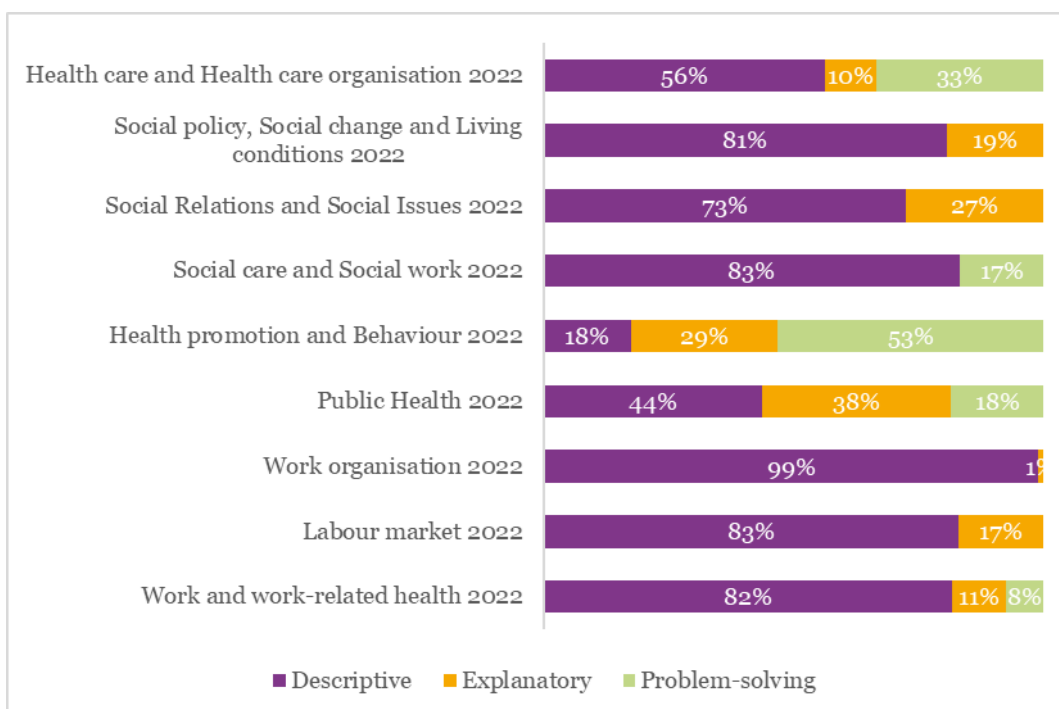


Diagram 2. The percentage of descriptive, explanatory and problem-solving research in Forte's review panels in the annual call for project grants. The data is based on the total number of applications in the analysis, both granted and rejected, weighted for probability of selection.

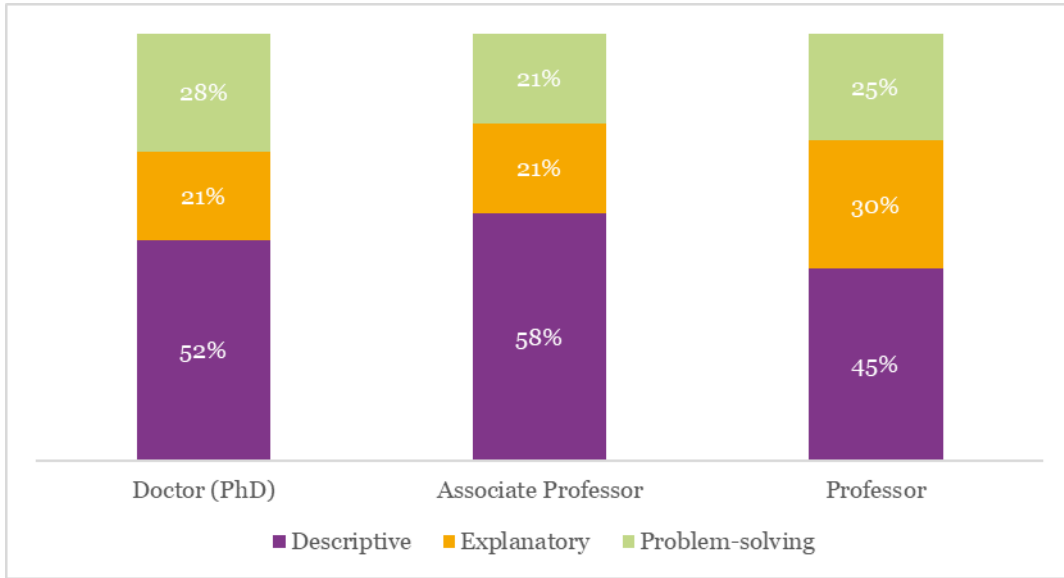


Diagram 3. Proportion of granted applications based on research category within each career age group.



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