

## Quantifying the Project Narrative

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If you want to earn a reviewer's question mark next to your proposal, fill your narrative with adjectives, adverbs, and superlatives in place of quantified descriptions. The excessive use of adverb/verb combinations, such as claiming a proposed project "**will dramatically increase**" [take your pick: wind turbine efficiency, battery storage capacity, women entering doctoral STEM fields, technology innovation, success of students in algebra II, etc.], or claiming your project will "**significantly reduce**" [take your pick: footprint storage of solar thermal power systems, impact of oil drilling on sensitive coastal ecosystems, student attrition in Calculus I, risk of Type II diabetes, obesity, and cardiovascular disease, etc.], is a common but correctable reason why some proposals fail to capture reviewers' interest.

As Mark Twain observed: "*Clothes make the man. Naked people have little or no influence on society.*" The same might be said of adverb/verb combinations not clothed in quantitative modifiers. In this case, as Mark Twain likely knew, these "numerically naked" *adverb/verb combinations will have little or no influence on reviewers*. Numbers matter. Numbers are the basis of comparative claims that inform program officers and reviewers alike and allow them to better judge the relative worthiness of your proposal.

Using the above example again, but with the verb properly clothed rather than numerically naked, would result in the following: claiming a proposed project "**will increase**" [take your pick: wind turbine efficiency **by 18%**, battery storage capacity **by 40%**, women entering doctoral STEM fields **by 30%**, technology innovation **by 18 months**, success of students in algebra II **to 100%**, etc.] or perhaps your project "**will reduce**" [take your pick: **by 52%** the footprint storage of solar thermal power systems, **to near zero** the impact of oil drilling on sensitive coastal ecosystems, **by 75%** student attrition in Calculus I, **by 24%** risk of Type II diabetes, obesity, and cardiovascular disease, etc.]. The absence of the adverbs "dramatically" and "significantly" is not noticed in the second example because they are not needed.

The old adage about a picture being worth a thousand words applies to the judicious use of quantitative information or data in the project narrative. You don't want to overwhelm reviewers with a cascade of quantitative information, **but neither do you want to leave them frustrated by its absence**. The successful proposal relies on knowing the difference between sufficient and excessive quantitative information to ensure the wise use of allocated space and an appropriately balanced project narrative. For example, knowing how much background information-- technical detail, preliminary data, etc.--will satisfy your readers is a key factor in writing a well-balanced proposal narrative. Finding this level is not always an easy task, but it is an important part of writing a well-crafted project narrative.

In this regard, too much quantification can be as problematic as too little. So it is important to be mindful of reviewers' reluctance to sift through extensive quantitative data to determine the merit of your proposed project. That is not their job. It is the job of the author, however, to explain the significance of any data used in a narrative in the most economical way possible. A blizzard of quantitative data is likely to give reviewers a "brain freeze," along with

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heartburn. Proposals are about ideas, and data need to be judiciously selected to support the merit of the ideas described in the narrative. ***But data in and of themselves are not ideas.*** You don't want, to paraphrase H. L. Mencken, an army of quantitative data marching across the page in search of an idea. Rather, your narrative needs to explain and illuminate the significant patterns in the data you present rather than pass that task onto reviewers.

Moreover, the amount of quantitative information or data required in a proposal varies greatly and is often a function of the specific solicitation and the author's ability to find the Goldilocks' Solution of not too much and not too little—but just right. In some cases, the data required in a proposal are specified in great detail by the sponsor, so much so that finding it in the appropriate format becomes a major challenge. This is often the case in various kinds of institutional transformation proposals, e.g., an NSF AGEP or ADVANCE, where extensive student data or institutional data may be required. In other cases, the research itself dictates the data that need to be incorporated into the project description. However, in most cases, the use of quantitative information is left entirely to the proposal's author. In the absence of agency guidelines describing a standard for sufficient quantitative information, the overreliance on adjectives, adverbs, and superlatives can become problematic and work against the proposal's merits.

This often becomes the case when descriptions of the goals, objectives, and anticipated outcomes of the proposed research are described in glowing but general terms (e.g., *novel*, *groundbreaking*, *frontiers of new knowledge*, etc.) insufficiently supported by quantitative information that allows program officers and reviewers to judge the impact of the proposed research, particularly in terms of its relative importance to the field. In many cases, a "unit of change" will be associated with your proposed research that translates your goals and objectives to outcomes. That "unit of change" begs for quantification rather than gushing adverbs and superlatives. As Sergeant Joe Friday always explained when interviewing witnesses to a crime in the old "Dragnet" series, "All we want are the facts."

That is an important point to keep in mind. You do not want the program officer and the reviewers of your proposal to ruminate on the difference it would have made had you provided judiciously selected quantitative information to validate the impact and value-added benefits of your proposed project. Moreover, quantitative information plays a key role in evaluating the success of your research over time. It provides a way of answering the question, "How can the success of this project be measured?"

In thinking about the benefits of quantitative information in your research narrative, recall the Heilmeyer Catechism. George Heilmeyer directed DARPA in the 1970s. He had a set of questions he expected every proposal to answer:

1. What is the problem, why is it hard?
2. How is it solved today?
3. What is the new technical idea; why can we succeed now?
4. What is the impact if successful?
5. How will the program be organized?
6. How will intermediate results be generated?
7. How will you measure progress?
8. What will it cost?

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It is likely that the answers to each of these questions would benefit from well-selected, succinct, and illuminating quantitative information. Such information will better enable reviewers to more accurately judge the merit of your proposed research and ***hence be more likely to fund it.***