Did 32% Waterfall Surprise You?

THE ARTICLE “Choice of Software Development Methodologies: Do Organizational, Project, and Team Characteristics Matter?” (Sept./Oct., pp. 86–94) presented a survey of industrial practices. Comments on Twitter indicated that some people were surprised by the high percentage (32 percent) for waterfall practices. I was not! No number in the survey would have surprised me, because any number might come out of an online survey with convenience sampling (that is, a survey answered by those people who happen to be at hand).

You can’t interpret these survey data as if they were representative of the global population of software projects. For example, 41.8 percent of the respondents were project managers. Of course, their ideal world-view is waterfall, which perhaps is their project management model. But ask the 0.7 percent of developers, what’s their view?

Surveys with convenience sampling can be useful for understanding relationships between categories of respondents, such as company size classes, and some parts of the article followed this approach. However, using nonrepresentative samples to make conclusions about practices of the general population is just misleading. We should refrain from publishing such questionable research, or at least put up red warning banners saying, “These numbers are not representative of any real population.”

For an in-depth analysis of the sampling issue in surveys, see “A Critical Examination of Recent Industrial Surveys on Agile Method Usage,” by Stavros Stavru (J. Systems and Software, Aug. 2014, pp. 87–97).

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The authors respond: We respectfully disagree with the characterization of our study and its results as questionable research. We gathered our data through a survey link on the Project Management Institute website and an email request sent to randomly chosen project managers and team members—hardly convenience sampling.

Do online surveys have limitations such as self-selection and nonresponse bias? Yes. But dismissing the insights of 153 practitioners as nonrepresentative of “any real population” (because they might challenge personal opinions and entrenched beliefs) is presumptuous. Our article is transparent about the data collection methodology, confines the profiling to our respondents and their projects, and avoids making inferential leaps or overreaching generalizations.

We conducted our study in the spirit and tradition of making incremental contributions to our cumulative knowledge of software development. We welcome additional empirical research that extends, contrasts, or even contradicts our findings. After all, confirmation bias is unbecoming of a true scientist.

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We welcome your letters.
Send them to Editor Dennis Taylor at dtaylor@computer.org. Include your full name, title, affiliation, and email address. Letters are edited for clarity and space.