

## PUBLIC COMMENT, CITY OF BEND CITYWIDE TRANSPORTATION ADVISORY COMMITTEE

To: City of Bend Citywide Transportation Advisory Committee  
Attn: Susanna Julber, Karen Swirsky, and Eric King  
From: Steve Porter and Michelle Porter, Residents of Bend  
Date: June 12, 2019

### Public Comment:

### *Survey Response Bias & Statistical Validity*

Dear Bend Citywide Transportation Advisory Committee:

On June 6, 2019, we submitted to CTAC a public comment entitled "Bias in 'The Bend Transportation - Community Survey'." In it we describe several instances of methodological failure on the part of the referenced survey pertaining especially to its use of leading, loaded, and biasing questions and prompts; reliance on a flawed rating scale; and provision of false information to respondents. We affirm these observations and now extend our comments to incorporate information subsequently received from the City of Bend.

Following submission of our public comment we were advised by the City that:

- 1) the survey we critiqued ("Online Survey") is not intended to be statistically valid;
- 2) the Online Survey contains questions similar to those provided in a separately conducted telephone survey ("Phone Survey") that is statistically valid; and
- 3) the consulting firm responsible for execution of both surveys administered additional interviews with stakeholders and will present results of these three investigations to CTAC on June 18.

In the interest of assisting CTAC's examination of the survey and interview results, we address these points. To summarize, CTAC should recognize that *statistical validity* of a survey does not protect that survey's framing and questions from generating *response bias*. These two concepts are entirely separate, and a statistically valid survey can still be biased. Given that the Phone Survey contains questions, prompts, and/or other contents similar to those found in the Online Survey, our core criticisms of bias in the Online Survey can be reasonably extended to the Phone Survey. Accordingly, the Phone Survey's results may be regarded as prone to bias and subject to skepticism. The stakeholder interviews may be reasonably inferred to also suffer from flaws leading to response bias, and themes arising from these interviews should likewise be viewed skeptically. We elaborate on these points below and suggest approaches for CTAC to investigate the Phone Survey and stakeholder interviews for bias:

1. Response bias and statistical validity are two entirely separate and distinct concepts, with one having no bearing on the other. Just because a survey is statistically valid does not mean the survey is absent of response bias.
2. Response bias relates to whether a survey accurately measures what it purports to measure or whether the survey's design or administration prejudices its results. It pertains to the extent of non-neutrality in the survey's questions, prompts, and framing. If a survey's contents are non-neutral, they generate systematic distortions in respondents' answers that render the survey findings unusable. Many factors can introduce response bias into a survey, including those outlined in our earlier comment.
3. Statistical validity is a simple function of sample size. Statistical validity is achieved whenever a sample size is sufficiently large for the survey to yield meaningful inferences about the population under study. If it is calculated that sample size must be 1,000 to confer statistical validity at a given level of confidence, then the survey must simply elicit responses from 1,000 randomly selected people to indicate that findings of the survey can be generalized to the full population. This is all "statistical validity" of a survey indicates: Information supplied by a *subset* of the population is mathematically generalizable to the *entire* population.<sup>1</sup>
4. The mere fact that a sample size is sufficiently large does not somehow protect the questions and prompts comprising the survey from being leading, loaded, or otherwise poorly conceived. That is, sample size has no impact on whether survey respondents' answers are systematically distorted by the framing or language of the survey's questions and, accordingly, whether response bias is present in the results. Sample size cannot remedy failures of survey question language or framing; systematic bias can afflict samples of any size.
5. Since, according to the City, the Phone Survey was conducted using preamble wording, questions, prompts, and/or other contents similar to those contained in the Online Survey, core observations regarding response bias outlined in our earlier public comment also apply to the Phone Survey. Even if some differences between the two surveys' contents were to exist, they would unlikely be adequate to remedy the Phone Survey of all the Online Survey's deficiencies. Due to the pervasiveness of biasing evident in the Online Survey, virtually any amount of similarity between the Online Survey and Phone Survey ensures some biasing elements are contained in the Phone Survey. In fact, significant similarity between the two surveys is logical since they are parallel lines of the same study; marked differences between them would be nonsensical because large contrasts would inhibit meaningful linkage of the two lines of inquiry.

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<sup>1</sup> For completeness, we note that statistical approaches to measure some other types of survey question "validity" and "reliability" exist. These assess certain characteristics of response consistency. But they cannot be used to assert that facially leading or loaded questions and non-neutral framing do not generate systematic bias in responses. Indeed, many survey respondents, when presented with a similarly biasing question, will answer with a similarly biased response. Just because responses are *consistent* or *replicable* does not mean they are *unbiased*. This is the heart of the problem with response bias of the type found in the surveys addressed here. The proper method for investigating such bias is logical assessment, not mathematics. We also note that one type of bias sometimes referred to as "response bias," but more appropriately called "selection bias," can be addressed through proper sampling. This type of bias arises when a survey's sample is not randomly selected, leading to an unrepresentative set of respondents comprising the sample. We do not address this type of bias here due to lack of information about sampling in this case.

6. To the extent stakeholder interviews were conducted using wording, questions, prompts, and/or other contents similar to those contained in the Online Survey, core observations regarding response bias outlined in our earlier public comment also apply to the results of these interviews. While it is true that interviews are methodologically distinct from sample-based surveys, interview research nonetheless typically depends upon questions, prompts, provision of information, and, at times, quantitative ranking scales in order to elicit and organize responses. Therefore, although format differences between the Online Survey and stakeholder interviews exist, it is likely that similarities in their framing and usage of wording, questions, and prompts also exist as means of logically connecting the two lines of study. Because of this, and because of the pervasiveness of problems in the Online Survey, the possibility of pronounced bias in stakeholder interviews cannot be disregarded.
7. For the foregoing reasons, we recommend that members of CTAC review the questions, prompts, other language, and rating scales from the Phone Survey and stakeholder interviews for instances of bias. To the extent *any* such bias is found in the Phone Survey, its *entire* set of results must be dismissed as fundamentally unsound. Bias, once introduced anywhere in a survey, cannot be assumed to be compartmentalized to that section of the survey; rather, the complete set of survey results must be viewed as polluted. There are many reasons for this, including the fact that respondents can seek to generate “internal consistency” in their answers; bias generated in one part of a survey can readily infect other parts.
8. To the extent *any* bias is found in connection with stakeholder interviews, *all* themes emerging from those interviews should likewise be dismissed.
9. We finally reiterate that statistical validity and response bias are two completely separate concepts. “Statistical validity” does not connote logical soundness or cogency of the type implied by everyday use of the word “valid.” It simply applies to satisfaction of mathematical requirements for sample size. Just because a survey is “statistically valid” does not mean its results should automatically be considered “valid” in any other sense. Response bias stems from non-neutral survey design or administration that systematically influences response patterns and generates misrepresentative findings. Results derived from non-neutral surveys can be *statistically valid* but can never be *generally valid or dependable*.

Thank you for your consideration.



Steve Porter



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## ABOUT THE AUTHORS

### Steve Porter

Steve is a recognized authority on economic analysis and valuation. He has provided expert testimony in high-stakes commercial litigation on topics including economics, valuation, statistics, econometrics, market definition, consumer choice, business strategy, and pricing, among others. He has consulted with Fortune 500 corporations on intellectual property licensing, asset transactions, and valuation issues, and he has conducted economic impact analyses, including work performed on behalf of the Los Angeles Superior Court. His articles have published in the *Journal of Legal Economics*, *les Nouvelles*, the *Patent, Trademark & Copyright Journal*, the *Journal of the Patent and Trademark Office Society*, and *Intellectual Asset Management*, among others. He also is co-author of *IP Strategy, Valuation, and Damages* (LexisNexis), a treatise on intellectual property economics. Some of his work has been cited as authoritative in filings submitted to the Supreme Court and the Federal Trade Commission, and he has been quoted by and featured in the editorials section of the *Wall Street Journal*. He has been an invited speaker before the Chicago Bar Association, the Attorney General's Office of the State of Arizona, and various law firms and corporations, where he has lectured on topics ranging from economic analysis and valuation to econometrics and game theory. He is a recipient of the William J. McKinstry Award in economics, the *Wall Street Journal Scholar Award*, the Micromics Economic Research Award, and the IE Fund Leadership Scholar Award. He served as a teaching assistant in economics at the Dolibois European Center in Luxembourg, an ad hoc referee for the *Journal of Forensic Economics*, and as Co-Chair and an Executive Committee Member of Young Professionals Advisory Council at the Farmer School of Business. He graduated *summa cum laude* and with University Honors from Miami University in Oxford, Ohio, completing dual majors in economics and marketing. He received his MBA, with honors conferred by the Dean and Board of Academic Affairs, from IE Business School in Madrid, Spain, graduating 5th in a class of more than 400. He holds the Series 65 securities license.

### Michelle Porter

Michelle is an expert in valuation, economic analysis, and quantitative methods. She has been engaged by Fortune 500 companies, SMEs, U.S. and international government entities, and leading law firms to provide expertise in high-stakes commercial litigations, negotiations, and asset transactions. Her consulting work has encompassed advisory roles in industries including pharmaceuticals, medical devices, banking, telecommunications, consumer goods, software, and transportation technologies, among many others. Michelle is co-author of the book entitled *IP Strategy, Valuation, and Damages* (LexisNexis). Her articles have appeared in *les Nouvelles*, *Intellectual Asset Management*, *Intellectual Property Magazine*, *Smart Business*, *Los Angeles Daily Journal*, *The Recorder*, and *China Intellectual Property*, and she has been quoted by *Forbes*. Michelle has spoken before such groups as the Intellectual Property Law Committee of the Chicago Bar Association, Google, and Motorola Mobility. Her work has been recognized with the Accenture International Consulting Competition Top Honors Award, the IE Women Leaders Scholarship Award, the *les Nouvelles* Best Article Award, and the Micromics Economic Research Award. In addition, Michelle has served as an advisor to the Forte Foundation's MBALaunch for Women, President of the IE Business School Southern California Alumni Association, Co-Chair and Executive Committee Member of Young Professionals Advisory Council at the Farmer School of Business, and an instructor in microeconomics. Michelle graduated *cum laude* from Miami University in Oxford, Ohio, majoring in economics. She received her MBA from IE Business School in Madrid, Spain.