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Curbing Optimism Bias and Strategic Misrepresentation in Planning: Reference Class Forecasting in Practice

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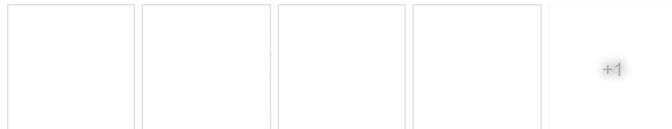
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Abstract and Figures

The American Planning Association recently endorsed a new forecasting method called reference class forecasting, which is based on theories of planning and decision-making that won the 2002 Nobel prize in economics. This paper details the method and describes the first instance of reference class forecasting in planning practice. First, the paper documents that inaccurate projections of costs, demand, and other impacts of plans are a major problem in planning. Second, the paper explains inaccuracy in terms of optimism bias and strategic misrepresentation. Third, the theoretical basis is presented for reference class forecasting, which achieves accuracy in projections by basing them on actual performance in a reference class of comparable actions and thereby bypassing both optimism bias and strategic misrepresentation. Fourth, the paper presents the first case of practical reference class forecasting, which concerns cost projections for planning of large transportation infrastructure investments in the UK, including the Edinburgh Tram and London's £15 billion Crossrail project. Finally, potentials for and barriers to reference class forecasting are assessed.



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Curbing Optimism Bias and Strategic

Misrepresentation in Planning: Reference Class Forecasting in Practice

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(Received May 2006; accepted August 2006)

ABSTRACT *The American Planning Association recently endorsed a new forecasting method called reference class forecasting, which is based on theories of planning and decision-making that won the 2002 Nobel prize in economics. This paper details the method and describes the first instance of reference class forecasting in planning practice. First, the paper documents that inaccurate projections of costs, demand, and other impacts of plans are a major problem in planning. Second, the paper explains inaccuracy in terms of optimism bias and strategic misrepresentation. Third, the theoretical basis is presented for reference class forecasting, which achieves accuracy in projections by basing them on actual performance in a reference class of comparable actions and thereby bypassing both optimism bias and strategic misrepresentation. Fourth, the paper presents the first case of practical reference class forecasting, which concerns cost projections for planning of large transportation infrastructure investments in the UK, including the Edinburgh Tram and London's £15 billion Crossrail project. Finally, potentials for and barriers to reference class forecasting are assessed.*

Introduction

In April 2005, based on a study of inaccuracy in demand forecasts for public works projects by Flyvbjerg *et al.* (2005), the American Planning Association (APA) endorsed a new forecasting method called "reference class forecasting". The new method achieves accuracy in projections by basing them on actual performance in a reference class of comparable actions. APA made the recommendation that planners employ reference class forecasting and never rely solely on conventional forecasting techniques when making forecasts:

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... As summarized in Table 3, there are several approaches that may potentially reduce the negative effects of biases during performance evaluation. Reference Class Forecasting (RCF) is a method for improving the accuracy of predictions by basing estimates on actual outcomes from comparable past projects, rather than relying solely on subjective evaluations (Flyvbjerg 2007). RCF follows three main steps: (i) Identify a reference class (a group of similar past projects), (ii) Establish a statistical distribution of outcomes by gathering data on the performance of alternatives, and (iii) Compare the alternatives to this reference distribution to make forecasts. ...

... Present bias • Discounting future outcomes and using condensed values in performance evaluation (Mishan and Quah 2020) • Adopting Reference Class Forecasting (Batselier and Vanhoucke 2016; Flyvbjerg 2007) • Prompting reflections and considering full performance history (Isler et al. 2020; Yelbuz et al. 2022) • Using visual tools to show long-term performance trends (Eberhard 2023; Wall et al. 2021) Projection bias • Adopting Reference Class Forecasting (Batselier and Vanhoucke 2016; Flyvbjerg 2007) • Prompting reflections and considering full performance history (Isler et al. 2020; Yelbuz et al. 2022) Recency bias • Discounting future outcomes and using condensed values in performance evaluation (Mishan and Quah 2020) • Adopting Reference Class Forecasting (Batselier and Vanhoucke 2016; Flyvbjerg 2007) • Using visual tools to show long-term performance trends (Eberhard 2023; Wall et al. 2021) Impact bias • Using visual tools to show long-term performance trends (Eberhard 2023; Wall et al. 2021) • Prompting reflections and considering full performance history (Isler et al. 2020; Yelbuz et al. 2022) Duration neglect • Using visual tools to show long-term performance trends (Eberhard 2023; Wall et al. 2021) • Prompting reflections and considering full performance history (Isler et al. 2020; Yelbuz et al. 2022) Planning fallacy • Adopting Reference Class Forecasting (Batselier and Vanhoucke 2016; Flyvbjerg 2007) • Using visual tools to show long-term performance trends (Eberhard 2023; Wall et al. 2021) their evaluations with data (Criado-Perez et al. 2024; Yelbuz et al. 2022). These suggestions primarily relate to Assumption 4 in the DU model, which posits that decision-makers can rationally evaluate performance over time. ...

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... Despite the benefits of the SUMP, research into the evaluation of logical fallacies is lacking. Especially, although outcome-oriented biases such as cost overruns or optimistic projections have long been debated in planning literature (Flyvbjerg 2007a (Flyvbjerg , 2007b, the structural logic within the planning text itself has received little attention. ...

... Applying these psychological concepts to large-scale public projects shows that the causes of such errors extend beyond cognitive bias to include political and governance factors Flyvbjerg (2007a Flyvbjerg (, 2007b. Directly linked the planning fallacy in major transport projects to 'optimism bias and strategic misrepresentation.' ...

... A literature review indicates a persistent gap between plan formulation and realworld outcomes, attributing this discrepancy to multi-layered logical fallacies within the planning process. The origins of these fallacies are shown to be diverse, ranging from fundamental limitations of the planning act itself (Gross 1967;Mintzberg 1994) to specific cognitive biases such as the 'planning fallacy' Ross 2002, 2010), and political motives including 'strategic misrepresentation' (Flyvbjerg 2007a (Flyvbjerg , 2007b. Such logical leaps, or non-sequiturs, can have practical consequences, such as inefficient resource allocation and project failure. ...

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... Planning research has long noted that forecasts and demand projections are not presented neutrally but may incorporate wishful thinking or strategic distortion. Wachs [4] discussed the manipulability of figures in planning; Flyvbjerg [5] addressed optimism bias and strategic misrepresentation; and Siemiatycki [6] examined the manageability of optimism bias in large-scale infrastructure delivery. Concerning population forecasts, Tayman and Swanson [7] summarised their utility and limitations, whilst Nishimura [8] argued that delays in revising population and growth projections downward during a phase of demographic decline may heighten policy vulnerability. ...

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... It is linked to procurement preparation, funding eligibility, program indicators, public-service delivery, administrative approvals, and institutional accountability. This is consistent with project-management and infrastructure literature showing that time and cost deviations are recurrent in major public projects and that early planning is exposed to optimism bias, strategic misrepresentation, planning fallacy, and base-rate neglect [22,39,40,50, 51]

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● Bent Flyvbjerg · ● Mette K Skamris · ● Søren Buhl

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