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TECHNICAL REPORT

Value of Reliability of Travellers on the Paris Suburban Railway Network

Technical Report on the Data Analysis

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Prepared for the Syndicat des Transports d'Ile de France

RAND EUROPE

The research described in this report was prepared for the Syndicat des Transports d'Ilse de France.

Published 2006 by the RAND Corporation
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Summary

This technical report presents the estimation results of the models that have been calibrated to obtain the key coefficients needed to determine the values-of-reliability. These estimation results are needed for the development of a robust method to appraise *a-priori* the monetary benefits of different possible measures to improve regularity of the Paris suburban train network. More specifically the use of this methodology is to guide decisions concerning specific projects aiming to make the radial rail lines operate more in line with their published timetables.

The models have been estimated using a large-scale Stated Preference (SP) data set that was collected specifically for this project. In the SP experiment the respondents had to choose between different service alternatives. Each alternative was described by the travel time, the frequency of short delays (delays between 5 and 15 minutes), the frequency of long delays (delays of more than 15 minutes), the comfort level and the level of information on delays. Each respondent had to make 18 choices between two service alternatives. One choice was added as a check question to examine whether the respondent had understood the SP experiment and was using "common sense" when answering the questions.

More than 2000 travellers were recruited to participate in the SP experiment. Each recruited person received a paper questionnaire with the choice pairs. Their choices were recorded during a telephone interview. From those recruited, about 1300 successful interviews were conducted. Of these, about 30 were excluded from the analysis. This was done either because their reported travel time was outside the agreed upon range, or there was some uncertainty whether the recruited person and the person making the choices were the same person, or they did not really trade between the alternatives (this is: they always choose the left alternative, or vice versa). 1273 respondents were remaining. At a later stage it was decided that the 134 respondents who failed to give the "logical" answer to the check question were excluded.

All estimated coefficients in the final model had intuitive signs and sizes. It was discovered that the extra disutility corresponding to each step in the level of delays decreases as the number of delays increases. The disutility of the first delayed train out of 20 is high, but the extra disutility of the 8th delayed train is much less. Furthermore, the analysis showed that the value of time for people commuting or travelling for education purposes is higher than for people travelling for other purposes. In addition, people travelling for travail/etudes purpose dislike short delays slightly more than people travelling for other purposes. On lines with a high regularity, having a seat is mainly valued for longer trip lengths; on lines with a bad regularity, having a seat is always valued highly, disregarding

the length of the travel. Finally, we found that information about the cause of a delay is always valued highly for journeys towards Paris, but for journeys from Paris this information is more valued if the perceived number of short delays is higher.

The model that has been developed here will be used in the application that is part of the next phase of the project and a separate report covering the entire project will follow.