Beside the simulations, we have conducted an online survey, targeting the drivers and aiming to test their tendency to go through shortcut rather than the main road at different daytimes. To avoid inaccurate results, the survey was delivered only to 73 drivers in Giza and Cairo, and they were given a detailed description of the road specifications and its status in each situation before answering the questions; moreover, we have phrased the survey questions carefully to avoid potential bias — confirmation bias for example. Also, it's to be mentioned that the whole survey was in Arabic due to location restrictions. The results were unsurprising and didn't really differ from the theoretical analysis we have done before; even more, the results are kind of confirming our thoughts. For the first situation, with no impedance in the main road at all, most of respondents answered that they extremely don't prefer the shortcut; the mean portability is 0.19, and the mode is 0. For the second situation and the most complicated one with low impedance and close arriving time for both roads, responses varied from 0 to 1; in fact, that is what we define as an equilibrium. In this case, there's no significant advantage for a road over another, so that some of drivers would prefer to go through the shortcut, and some other will not. Consequently, neither of the roads is overloaded or reaching the critical density. The mean is 0.53. Finally, for the last situation, with high impedance in the main road, most of drivers preferred the shortcut over the main road, and the mean was 0.88 while the mode is 1. Survey results (scaled from 0 to 5) are shown below:

Fig. 1: Responses to the first situation (no impedance)

Fig. 2: Responses to the second situation (low impedance)

Fig. 3: Responses to the third situation (high impedance)