Countdown timers are devices that indicate the remaining red or green phase time durations of traffic lights. Different designs have evolved over the years for indication of the time left before the next phase change. In most cases, numbers are displayed counting down the remaining seconds to zero. Another design option is an elapsing circle of LED lights. Bicycle countdown timers can help reducing red light violations [Wiersma, 2006]. Satisfaction surveys indicate that presence of a countdown timer makes waiting at an intersection more comfortable. Furthermore, 70 % of respondents believe that they improve bicycle traffic safety [Lambers, M.G.F., 2009, QUOTED IN AKKERMANN, 2010]. In Germany, countdown timers for bicyclists are not implemented yet. A bicycle simulator study was conducted with the scope of this Master’s Thesis to test the effect of countdown timers on traffic safety and efficiency. Furthermore, two different designs of countdown timers (presented in Figure 1) are tested and evaluated within a survey conducted with the test participants after the simulator experiment.

The data from the simulator study allow indication of possible trends regarding the effects of countdown timers on red light violations. More red light violations occurred on intersections with higher indicated remaining red phase times, and on intersections with narrower crossing street widths. Comparing red light negations on intersections with “seconds timer” and “circle timer” and without timer, most red light crossings occurred on intersections with the “seconds timer” and least on the intersections with the “circle timer”. Required start-up times were lower on intersections with both timer types than on intersections without timers. Survey indicates higher compliance of the “seconds timer” than the “circle timer” and that people find the additional provided information helpful regarding speed adaption and start-up quicker. Countdown timers on intersections in Munich are welcomed by high share of test persons (compare Figure 3). However, to fully evaluate the indicated trends, further research is proposed after further improvement of the bicycle simulator.