This paper examines the glance behaviour of drivers while interacting with two different driver-vehicle interface concepts for an Adaptive Cruise Control (ACC) system. With the integrated concept, the speed and following distance controls were located on the steering wheel whereas with the divided concept the speed control was moved to the dashboard. A virtual Head-Up Display (HUD) was used to show the ACC settings and current speed. Twelve subjects (19 to 53 years old) drove a rural road course in a fixed-base driving simulator while being verbally instructed to adjust the speed and/or following distance of the ACC system. Dividing the controls between the steering wheel and dashboard caused significantly larger mean and maximum glance times and a lower glance frequency to the displays and controls. The percent glance time "off-road" furthermore increased significantly during task completion. Other significant results were observed between the task type and task length.