This paper defines the measure of importance for a node (intersection) in a transportation network, based on its topology and traffic demand. Consequentially the measure is used in order to define and solve the sensor placement problem that maximises the information gain regarding agents’ routing choices by sensing the most uncertain areas in the system. It is demonstrated that utilising the strategy for placing the sensors described in this work makes the performance robust against short and long term variations of traffic patterns. Finally, a method for finding the optimal number of sensors to be installed in a city is proposed. It models and maximises the trade-off between cost, performance, robustness and reliability of the sensor placement problem solution.