CLAIMS

[Claim 1]

A transit range evaluation device comprising:

an acquisition unit configured to acquire vehicle identification information for identifying a vehicle from an identification information reading device disposed in individual detection areas of a main road to be monitored, the detection areas being partitioned at connection points connecting the main road and branch roads;

a detection information recording unit configured to record detection information in a detection information storage unit, wherein vehicle identification information, a detection time of the vehicle identification information, and the detection area in which the vehicle identification information is detected, are associated with the detection information; and

a range specification unit configured to specify a transit range on the main road, the transit range being a range in which the vehicle indicated by the vehicle identification information traveled and being the range from a point where the vehicle has entered the main road to a point where the vehicle has exited from the main road, based on the detection information recorded in the detection information storage unit.

[Claim 2]

A transit range evaluation device according to claim 1, wherein

in a case where a vehicle identification information is not acquired again before a predetermined amount of time passes after a time in which the vehicle identification information has been last acquired, the range specification unit is configured to specify, out of the connection points, one adjacent a downstream side of the detection area in which the vehicle identification information has been last acquired, as an exit side end of the transit range of the vehicle indicated by the vehicle identification information.

[Claim 3]

A transit range evaluation device according to claim 1 or 2, wherein

in a case where a vehicle identification information is not acquired within a predetermined amount of time after a time in which the vehicle identification information has been acquired, the range specification unit is configured to specify, out of the connection points, one adjacent an upstream side of the detection area in which the vehicle identification information has been acquired, as an entry side end of the transit range of the vehicle indicated by the vehicle identification information.

[Claim 4]

A transit range evaluation device according to any one of claims 1 to 3, wherein

in a case where a first detection area in which a vehicle identification information is

acquired and a second detection area in which the vehicle identification information has been detected immediately prior to a detection of the vehicle identification information in the first detection area are not adjacent to each other, the range specification unit is configured to specify, out of the connection points, one adjacent the upstream side of the first detection area as an entry side end of a first transit range of the vehicle indicated by the vehicle identification information, and to specify, out of the connection points, one adjacent the downstream side of the second detection area as an exit side end of a second transit range of the vehicle indicated by the vehicle identification information.

[Claim 5]

A transit range evaluation device according to any one of claims 1 to 4, further comprising an auxiliary acquisition unit configured to acquire vehicle identification information from an identification information reading device disposed in the branch road,

wherein, in a case where a vehicle identification information is acquired by the auxiliary acquisition unit, the range specification unit is configured to specify the connection point connected to the branch road in which the vehicle identification information is acquired, as an end of the transit range of the vehicle indicated by the vehicle identification information.

[Claim 6]

A transit range evaluation device according to any one of claims 1 to 5, further comprising a reception unit configured to receive, from a mobile terminal possessed by a user, transit information that is information relating to travel on the main road by a vehicle used by the user,

wherein the range specification unit is configured to specify the transit range based on transit information received by the reception unit and the detection information recorded in the detection information storage unit.

[Claim 7]

A transit range evaluation device according to claim 6, wherein the transit information includes information indicating the detection area or the branch road traveled by a vehicle used by the user.

[Claim 8]

A transit range evaluation device according to claim 6 or 7, wherein

the transit information includes information indicating that a vehicle used by the user exited from the main road, and

the range specification unit is configured to specify the transit range based on the

detection information recorded in the detection information storage unit, the detection information being recorded prior to a time of reception of the transit information indicating an exit from the main road.

[Claim 9]

A transit range evaluation device according to any one of claims 1 to 8, further comprising a toll calculation unit configured to calculate a toll to be charged to the vehicle based on the transit range specified by the range specification unit.

[Claim 10]

A transit range evaluation device according to any one of claims 1 to 9, wherein

the acquisition unit configured to acquire the vehicle identification information from a plurality of the identification information reading devices provided in each of the detection areas.

[Claim 11]

A transit range evaluation system comprising:

an identification information reading device disposed in individual detection areas of a main road to be monitored, the detection areas being partitioned at connection points connecting the main road and branch roads; and

a transit range evaluation device according to any one of claims 1 to 10.

[Claim 12]

A transit range evaluation method comprising steps of:

acquiring vehicle identification information for identifying a vehicle from an identification information reading device disposed in individual detection areas of a main road to be monitored, the detection areas being partitioned at connection points connecting the main road and branch roads;

recording detection information in a detection information storage unit, wherein vehicle identification information, a detection time of the vehicle identification information, and the detection area in which the vehicle identification information is detected, are associated with the detection information; and

specifying transit range on the main road, the transit range being a range in which the vehicle indicated by the vehicle identification information traveled and being the range from a point where the vehicle has entered the main road to a point where the vehicle has exited from the main road, based on the detection information recorded in the detection information storage unit.

[Claim 13]

A program to cause a computer to function as:

an acquisition unit configured to acquire vehicle identification information for identifying a vehicle from an identification information reading device disposed in individual detection areas of a main road to be monitored, the detection areas being partitioned at connection points connecting the main road and branch roads;

a detection information recording unit configured to record detection information in a detection information storage unit, wherein vehicle identification information, a detection time of the vehicle identification information, and the detection area in which the vehicle identification information is detected, are associated with the detection information; and

a range specification unit configured to specify transit range on the main road, the transit range being a range in which the vehicle indicated by the vehicle identification information traveled and being the range from a point where the vehicle has entered the main road to a point where the vehicle has exited from the main road, based on the detection information recorded in the detection information storage unit.