

1. INTRODUCTION

The Household Interview Survey (HIS) data provided by Opus contains information on trip legs. This technical note describes the process that will be applied to convert trip leg data to trip data.

A **trip** is defined as a one-way travel movement from an origin to a destination for a single purpose, but perhaps by multiple modes.

A **trip leg** is defined as a one-way travel movement from an origin to a destination for a single purpose, by a single mode.

Using these definitions, a trip to work that involves a walk to a bus stop, followed by travelling on the bus to another bus stop then walking to the office, would be three trip legs (walk-bus-walk) and one trip (home to work).

2. CONVERSION PROCESS

The trip leg purpose classifications used in the HIS are presented in **Table 1** below. The table also presents the percentage of trip legs in the database that have been classified in each category.

Trip Purpose Classifications (Note 1)		Table 1
Code	Description	Percentage of Trip Legs
1	Home	32.3
2	Work – Main Job	17.1
3	Work – Other Job	0.4
4	Work – Employers Bus.	0.6
5	Education	5.9
6	Shopping	11.1
7	Social Welfare	0.1
8	Personal Business/Services	3.8
9	Medical/Dental	0.9
10	Social Visits/Entertainment	5.7
11	Recreational	4.4
12	Change Mode	3.0
13	Accompanied Someone	11.2
14	Left Country	0.0
15	Other	0.2
16	Picking someone up	3.3

To construct a trip database, trip legs with the purpose change mode need to be combined into an overall trip. **Table 1** shows that these change mode trip legs make up approximately 3% of the database, this equates to some 580 trip legs.

A process has been undertaken in Access to inspect each line of the database (which represents one trip leg) and check whether the destination of the trip leg was change mode.

If so, the next line/trip leg will be inspected and joined as part of the overall trip until a purpose other than change mode is found and the destination of the last trip leg will be recorded as the destination of the overall trip.

Once the trip leg information has been converted to trips, a main mode must be assigned to the overall trip. **Table 2** presents a summary of modes used for trip legs that have change mode as the purpose (before any adjustments were made to convert trip legs to trips).

Modes Used for Change Mode Trip Legs (Note 1)		Table 2
Code	Description	Percentage of Trip Legs in Database
0	Walk	43.2
1	Vehicle Driver	8.4
2	Vehicle Passenger	12.3
3	Bicycle	0.3
4	Train	0
5	Bus	25.2
6	Ferry	0.3
7	Plane	0
8	Taxi	0
9	Other	0
10	Mobility Scooter	0
11	School Bus	10.1

Table 2 shows that there are no change mode trip legs made by plane. This is because an adjustment was made during the cleaning of the database where any change mode trip leg involving a plane at an airport was converted to become a separate trip, starting or ending at the airport.

It is also noted that there are no change mode trip legs using travel by train. Nor are there any trip legs by train in the entire database, reflecting the general lack of passenger rail in the study area.

When converting trip legs to trips, there are two possible methodologies for selecting the main mode. The priority mode approach uses a hierarchy of modes where modes that are considered to be of the most interest to the model are given the highest priority. The highest priority mode from the joined trip legs is assigned as the main mode.

Table 3 presents the travel modes that were used in the HIS and the priority that has been assigned to them (a low number represents high priority).

Trip Mode Classifications and Priorities (Note 1)		Table 3
<i>Code</i>	<i>Description</i>	<i>Priority</i>
0	Walk	9
1	Vehicle Driver	7
2	Vehicle Passenger	8
3	Bicycle	9
4	Train	2
5	Bus	5
6	Ferry	3
7	Plane	1
8	Taxi	6
9	Other	11
10	Mobility Scooter	10
11	School Bus	4

If a trip has only one mode, that will be adopted as the main mode. If the trip has multiple modes, the highest priority mode will be adopted as the main mode.

Alternatively, the duration approach looks at the time spent travelling by each mode and assigns the main mode as the mode with the longest duration.

To compare these two approaches, each was applied to the change mode trip legs in the database. The results are shown in **Table 4**.

Trip Mode Classifications and Priorities (Note 1)		Table 4
<i>Mode</i>	<i>Priority Approach (Trip Legs)</i>	<i>Duration Approach (Trip Legs)</i>
Walk	5	66
Vehicle Driver	106	87
Vehicle Passenger	50	35
Bicycle	0	1
Train	0	0
Bus	299	279
Ferry	4	1
Plane	0	0
Taxi	0	0
Other	0	0
Mobility Scooter	0	0
School Bus	119	114

Table 4 shows that when the duration approach is used the main effect is to have more walking trips represented at the expense of vehicle driver, vehicle passenger, bus and school bus trips.

Although walking trips will be represented in the model, they are not considered a strategic mode, therefore it is considered that the information on vehicle and bus trips is more valuable at this stage. Therefore the priority mode approach will be adopted to convert trip legs to trips.

Note 1 – All table data is indicative as the HIS database was still being cleaned at the time of writing this file note.