PlanSelect

Version 5.0.10

Revision History

April 2012 - Created by Volpe Center

The **PlanSelect** program is used to:

1. Create a set of selection files that can be used as input to the Router;

2. Select plans based on traveler ID, time of day, activity location, parking lot, transit stop, transit route, V/C ratio, travel time ratio, coordinates, vehicle types, subarea polygon, and path node sequence; and

3. Use link delay information to select plans where the plan duration and the current travel time for the plan path are significantly different.

Syntax is PlanSelect [-flag] [control\_file]

The control\_file is the file name of an ASCII file that contains the control strings expected by the program. The control\_file is optional. If a file name is not provided, the program will prompt the user to enter a file name. The flag parameters are also optional. Any combination of the following flag parameters can be included on the command line:

Optional Flags:

-Q[uiet] = execute without screen messages

-H[elp] = show program syntax and control keys

-C[ontrol] = create/update a default control file

-K[eyCheck] = list unrecognized control file keys

-P[ause] = pause before exiting

-N[oPause] = never pause before exiting

-D[etail] = execute with detailed status messages

-X[ML] = write an XML file with control keys

The program automatically creates a printout file based on the control file name. If the filename includes an extension (e.g., “.ctl”), the extension is replaced with “.prn”. The printout file will be created in the current working directory and will overwrite an existing file with the same name.

# Version 5 Features

* PlanSelect is now multi-threaded
* An option for writing an output plan file (sorted the same way as the input plan file) is now available.
* The VC ratio and time ratio selection criteria now require a link delay file.
* DELETION\_FILE, DELETION\_FORMAT, DELETE\_HOUSEHOLDS, DELETE\_MODES, and DELETE\_TRAVELER\_TYPES keys were activated to delete selected trips from the input plan file.
* Additional selection criteria (such as origin and destination zones) are now available

# Control Key List

The list of control file keys appears in the tables below:

* Req / Opt indicates whether the key is **req**uired or **opt**ional
* The types include **Text**, Input **File**name, **New** file, **Bool**ean, **Path** (to a file), **Time**, **Int**eger, **Dec**imal, and **List** of items
* The Default is the default value, used if the key does not appear in the control file.
* I/O/P indicates Input, Output or Parameter.

For a more detailed description of the Parameter control keys, refer to the Parameter Reference. For a more detailed description of the Input or Output control keys, refer to the File Reference. These two documents also provide the possible values or range of values allowed for each control key listed below. For instance, files can usually be output to numerous formats beyond TAB\_DELIMITED for additional post-processing / file manipulation actions.

## Configuration Keys

| **Control File Keys:** | **Req/Opt** | **Type** | **Default** | **I/O/P** |
| --- | --- | --- | --- | --- |
| TITLE | Opt | Text |  | P |
| REPORT\_FILE | Opt | File |  | O |
| REPORT\_FLAG | Opt | Bool | FALSE | P |
| PROJECT\_DIRECTORY | Opt | Path |  | P |
| DEFAULT\_FILE\_FORMAT | Opt | Text | TAB\_DELIMITED | P |
| TIME\_OF\_DAY\_FORMAT | Opt | Text | DAY\_TIME | P |
| MODEL\_START\_TIME | Opt | Time | 0:00 | P |
| MODEL\_END\_TIME | Opt | Time | 24:00:00 | P |
| MODEL\_TIME\_INCREMENT | Opt | Time | 15 minutes | P |
| UNITS\_OF\_MEASURE | Opt | Text | METRIC | P |
| RANDOM\_NUMBER\_SEED | Opt | Int | 0 | P |
| MAX\_WARNING\_MESSAGES | Opt | Int | 100000 | P |
| MAX\_WARNING\_EXIT\_FLAG | Opt | Bool | TRUE | P |
| MAX\_PROBLEM\_COUNT | Opt | Int | 0 | P |
| NUMBER\_OF\_THREADS | Opt | Int | 1 | P |

## System File Keys

| **Control File Keys:** | **Req/Opt** | **Type** | **Default** | **I/O/P** |
| --- | --- | --- | --- | --- |
| PLAN\_FILE | Req | File |  | I |
| PLAN\_FORMAT | Opt | Text | TAB\_DELIMITED | P |
| NEW\_SELECTION\_FILE | Req | New |  | O |
| NEW\_SELECTION\_FORMAT | Opt | Text | TAB\_DELIMITED | P |
| NODE\_FILE | Opt | File |  | I |
| NODE\_FORMAT | Opt | Text | TAB\_DELIMITED | P |
| LINK\_FILE | Opt | File |  | I |
| LINK\_FORMAT | Opt | Text | TAB\_DELIMITED | P |
| LANE\_USE\_FILE | Opt | File |  | I |
| LANE\_USE\_FORMAT | Opt | Text | TAB\_DELIMITED | P |
| CONNECTION\_FILE | Opt | File |  | I |
| CONNECTION\_FORMAT | Opt | Text | TAB\_DELIMITED | P |
| LOCATION\_FILE | Opt | File |  | I |
| LOCATION\_FORMAT | Opt | Text | TAB\_DELIMITED | P |
| VEHICLE\_TYPE\_FILE | Opt | File |  | I |
| VEHICLE\_TYPE\_FORMAT | Opt | Text | TAB\_DELIMITED | P |
| LINK\_DELAY\_FILE | Opt | File |  | I |
| LINK\_DELAY\_FORMAT | Opt | Text | TAB\_DELIMITED | P |
| NEW\_PLAN\_FILE | Opt | New |  | O |
| NEW\_PLAN\_FORMAT | Opt | Text | TAB\_DELIMITED | P |

## Data Service Keys

| **Control File Keys:** | **Req/Opt** | **Type** | **Default** | **I/O/P** |
| --- | --- | --- | --- | --- |
| DAILY\_WRAP\_FLAG | Opt | Bool | FALSE | P |
| SUMMARY\_TIME\_RANGES | Opt | Text | ALL | P |
| SUMMARY\_TIME\_INCREMENT | Opt | Time | 15 minutes | P |

## Control Keys

| **Control File Keys:** | **Req/Opt** | **Type** | **Default** | **I/O/P** |
| --- | --- | --- | --- | --- |
| SELECT\_HOUSEHOLDS | Opt | List | ALL | P |
| SELECT\_MODES | Opt | List | ALL | P |
| SELECT\_PURPOSES | Opt | List | ALL | P |
| SELECT\_START\_TIMES | Opt | List | ALL | P |
| SELECT\_END\_TIMES | Opt | List | ALL | P |
| SELECT\_ORIGINS | Opt | List | ALL | P |
| SELECT\_DESTINATIONS | Opt | List | ALL | P |
| SELECT\_TRAVELER\_TYPES | Opt | List | ALL | P |
| SELECT\_FACILITY\_TYPES | Opt | List | ALL | P |
| SELECT\_LINKS\_\* | Opt | List | ALL | P |
| SELECT\_NODES\_\* | Opt | List | ALL | P |
| SELECT\_ORIGIN\_ZONES | Opt | List | ALL | P |
| SELECT\_DESTINATION\_ZONES | Opt | List | ALL | P |
| SELECT\_SUBAREA\_POLYGON | Opt | File |  | I |
| PERCENT\_TIME\_DIFFERENCE | Opt | Dec | 0.0 percent | P |
| MINIMUM\_TIME\_DIFFERENCE | Opt | Time | 1 minutes | P |
| MAXIMUM\_TIME\_DIFFERENCE | Opt | Time | 60 minutes | P |
| SELECTION\_PERCENTAGE | Opt | Dec | 100.0 percent | P |
| MAXIMUM\_PERCENT\_SELECTED | Opt | Dec | 100.0 percent | P |
| DELETION\_FILE | Opt | File |  | I |
| DELETION\_FORMAT | Opt | Text | TAB\_DELIMITED | P |
| DELETE\_HOUSEHOLDS | Opt | List | NONE | P |
| DELETE\_MODES | Opt | List | NONE | P |
| DELETE\_TRAVELER\_TYPES | Opt | List | NONE | P |
| SELECT\_PARKING\_LOTS | Opt | List | ALL | P |
| SELECT\_VC\_RATIOS | Opt | Dec | 0 | P |
| SELECT\_TIME\_RATIOS | Opt | Dec | 0 | P |

#### Notes

Each '\_FILE' key has a corresponding '\_FORMAT' key. The following file formats can be used for input and ouput files:

TEXT, BINARY, FIXED\_COLUMN, COMMA\_DELIMITED, SPACE\_DELIMITED, TAB\_DELIMITED, CSV\_DELIMITED, DBASE, SQLITE3, VERSION3

# Control Key Changes in PlanSelect Version 5

A number of network keys have changed from V4 to V5. Refer to the File Reference and Parameter Reference documents for additional details. Some specific examples include the following control key and file name changes (V4 🡪 V5):

* NET\_NODE\_TABLE -> NODE\_FILE
* NET\_LINK\_TABLE -> LINK\_FILE
* NET\_ACTIVITY\_LOCATION\_TABLE -> ACTIVITY\_FILE
* NET\_LANE\_CONNECTIVITY\_TABLE -> CONNECTION\_FILE
* NET\_LANE\_USE\_TABLE -> LANE\_USE\_FILE
* NEW\_HOUSEHOLD\_LIST -> NEW\_SELECTION\_FILE
* VEHICLE\_TYPE -> VEHICLE\_TYPE\_CODE
* SELECT\_TRAVELERS -> SELECT\_HOUSEHOLDS
* SELECT\_TRAVEL\_MODES -> SELECT\_MODES

The following keys, used in version 4, are not used in version 5:

NET\_DIRECTORY

TRAVELER\_SCALING\_FACTOR

NODE\_LIST\_PATHS

PARKING\_TABLE

POPULATION\_FILE

NEW\_HOUSEHOLD\_RECORD\_FILE

SELECT\_COORDINATES

SELECT\_OD\_COORDINATES

EXCLUDE\_OD\_COORDINATES

SELECT\_TRANSIT\_MODES

SELECT\_TRANSIT\_ROUTES

SELECT\_TRANSIT\_STOPS

New keys in version 5 include

SELECT\_ORIGINS

SELECT\_DESTINATIONS

SELECT\_ORIGIN\_ZONES

SELECT\_DESTINATION\_ZONES

SELECT\_START\_TIMES

SELECT\_END\_TIMES

MAX\_PROBLEM\_COUNT

MODEL\_START\_TIME

MODEL\_END\_TIME

MODEL\_TIME\_INCREMENT

NEW\_PLAN\_FILE

NEW\_PLAN\_FORMAT

NUMBER\_OF\_THREADS

DELETION\_FILE

DELETION\_FORMAT

DELETE\_HOUSEHOLDS

DELETE\_MODES

DELETE\_TRAVELER\_TYPES

SUMMARY\_TIME\_INCREMENT

SUMMARY\_TIME\_RANGES

TIME\_OF\_DAY\_FORMAT

UNITS\_OF\_MEASURE

# Examples

## PlanSelect Control File Using Select\_VC\_Ratios

### TITLE Select Travelers to Re-Route in 2 Tiny

### DEFAULT\_FILE\_FORMAT TAB\_DELIMITED

### PROJECT\_DIRECTORY ../

### PLAN\_FILE demand/1.Trip.Plans.\*

### LINK\_DELAY\_FILE results/1.Trip.LinkDelay

### ## NEW\_HOUSEHOLD\_LIST NULL

### NEW\_SELECTION\_FILE demand/2.HH\_List.\*

### NODE\_FILE network/Node.txt

### LINK\_FILE network/Link.txt

### PARKING\_FILE network/Parking.txt

### CONNECTION\_FILE network/Connection.txt

### SELECT\_VC\_RATIOS 1.5

### ## PERCENT\_TIME\_DIFFERENCE 100.0 //---- percent ----

### #SELECT\_TIME\_RATIOS 2 //---- travel time ratio ----

### #MINIMUM\_TIME\_DIFFERENCE 1 //---- minutes ----

### #MAXIMUM\_TIME\_DIFFERENCE 60 //---- minutes ----

### SELECTION\_PERCENTAGE 50.0 //---- percent ----

### MAXIMUM\_PERCENT\_SELECTED 10.0 //---- percent ----

### RANDOM\_NUMBER\_SEED 355

### Resulting .prn file from the above control file

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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| PlanSelect - Version 5.0.10 |

| Copyright 2012 by TRANSIMS Open-Source |

| Mon Apr 23 09:12:09 2012 |

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\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Control File = 2.PlanSelect.ctl

Report File = 2.PlanSelect.prn (Create)

Select Travelers to Re-Route in 2 Tiny

Project Directory = ../

Default File Format = TAB\_DELIMITED

Time of Day Format = HOUR\_CLOCK

Model Start Time = 0:00

Model End Time = 27:00

Units of Measure = METRIC

Random Number Seed = 355

Number of Threads = 1

Input System Network Files:

Node File = ../network/Node.txt

Link File = ../network/Link.txt

Connection File = ../network/Connection.txt

Input System Demand Files:

Link Delay File = ../results/1.Trip.LinkDelay

Plan File = ../demand/1.Trip.Plans.\* (2 partitions)

Output System Demand Files:

New Selection File = ../demand/2.HH\_List.\*

Data Service Controls:

Number of Time Periods = 108

Select Service Controls:

Selection Percentage = 50.00 percent

Maximum Percent Selected = 10.00 percent

PlanSelect Control Keys:

Select Vc Ratios = 1.5

Number of Node File Records = 23

Number of Link File Records = 24

Number of Directional Links = 37

Number of Connection File Records = 49

Number of Link Delay File Records = 3348

Number of Link Direction Records = 3348

Number of Link Connection Records = 0

Number of Summary Time Periods = 108

Percent of Link Periods with Travel Time Data = 83.8%

Percent of Time Periods with Link Delay Data = 89.8%

Number of Plan File Partitions = 2

Number of Plan File Records = 1014578

Number of Plan File Households = 96830

Number of Plan File Persons = 96830

Number of Plan File Tours = 96831

Number of Plan File Trips = 96837

Total Number of Trips = 96837

Number of Trips Selected = 6559 (6.8%)

Number of Trips Written = 3298 (3.4%)

New Selection File Records = 3298 (2 files)

Mon Apr 23 09:12:16 2012 -- Process Complete (0:00:07)

## PlanSelect Control File Using Percent Time Difference

TITLE Select Travelers to Re-Route in 2 Tiny

DEFAULT\_FILE\_FORMAT TAB\_DELIMITED

PROJECT\_DIRECTORY ../

PLAN\_FILE demand/1.Trip.Plans.\*

LINK\_DELAY\_FILE results/1.Trip.LinkDelay

NEW\_SELECTION\_FILE demand/2.HH\_List.\*

NODE\_FILE network/Node.txt

LINK\_FILE network/Link.txt

PARKING\_FILE network/Parking.txt

CONNECTION\_FILE network/Connection.txt

PERCENT\_TIME\_DIFFERENCE 20.0 //---- percent ----

MINIMUM\_TIME\_DIFFERENCE 1 //---- minutes ----

MAXIMUM\_TIME\_DIFFERENCE 10 //---- minutes ----

SELECTION\_PERCENTAGE 50.0 //---- percent ----

MAXIMUM\_PERCENT\_SELECTED 10.0 //---- percent ----

RANDOM\_NUMBER\_SEED 255

The Travel Time Difference criteria are defined with three control keys PERCENT\_TIME\_DIFFERENCE, MINIMUM\_TIME\_DIFFERENCE, and MAXIMUM\_TIME\_DIFFERENCE. These keys are only considered if the link delay file is provided. The link delay file provides the time period travel for each link. The program then reads the node list for each plan leg between parking lots. The appropriate travel time for the link at the time of day the plan arrives at that link is added to the total travel time for the path. This time is subtracted from the plan duration to calculate the travel time difference. If this difference is less than the MINIMUM\_TIME\_DIFFERENCE, the plan is not selected. If this difference is greater than or equal to the MAXIMUM\_TIME\_DIFFERENCE, the plan is selected. If the difference is greater than or equal to the MINIMUM\_TIME\_DIFFERENCE and less than the MAXIMUM\_TIME\_DIFFERENCE, the PERCENT\_TIME\_DIFFERENCE is used. The percent difference is based in the plan duration. If the percent difference is greater than or equal to the PERCENT\_TIME\_DIFFERENCE key, the plan is selected.

The program generates a list of all of the selected households and calculates the total number of households in each plan file. If the SELECTION\_PERCENTAGE and/or the MAXIMUM\_PERCENT\_SELECTED keys are specified, the program takes a random sample of the selected households to output to the household ID file. The SELECTION\_PERCENTAGE define the percentage of the selected households that will be written to the household ID file. If the resulting number of households divided by the total number of households in the plan file is greater than MAXIMUM\_PERCENT\_SELECTED, the selection percentage is reduced to MAXIMUM\_PERCENT\_SELECTED.

### Resulting .prn file from the above control file

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| PlanSelect - Version 5.0.10 |

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| Fri May 04 11:40:14 2012 |

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Control File = 2.PlanSelect.ctl

Report File = 2.PlanSelect.prn (Create)

Select Travelers to Re-Route in 2 Tiny

Project Directory = ../

Default File Format = TAB\_DELIMITED

Time of Day Format = HOUR\_CLOCK

Model Start Time = 0:00

Model End Time = 27:00

Units of Measure = METRIC

Random Number Seed = 255

Number of Threads = 1

Input System Network Files:

Node File = ../network/Node.txt

Link File = ../network/Link.txt

Connection File = ../network/Connection.txt

Input System Demand Files:

Link Delay File = ../results/1.Trip.LinkDelay

Plan File = ../demand/1.Trip.Plans.\* (2 partitions)

Output System Demand Files:

New Selection File = ../demand/2.HH\_List.\*

Data Service Controls:

Number of Time Periods = 108

Select Service Controls:

Percent Time Difference = 20.00 percent

Minimum Time Difference = 1.00 minutes

Maximum Time Difference = 5.00 minutes

Selection Percentage = 50.00 percent

Maximum Percent Selected = 10.00 percent

PlanSelect Control Keys:

Number of Node File Records = 23

Number of Link File Records = 24

Number of Directional Links = 37

Number of Connection File Records = 49

Number of Link Delay File Records = 3348

Number of Link Direction Records = 3348

Number of Link Connection Records = 0

Number of Summary Time Periods = 108

Percent of Link Periods with Travel Time Data = 83.8%

Percent of Time Periods with Link Delay Data = 89.8%

Percent of Connection Periods with Travel Time Data = 0.0%

Percent of Time Periods with Connection Delay Data = 0.0%

Number of Plan File Partitions = 2

Number of Plan File Records = 1014341

Number of Plan File Households = 96819

Number of Plan File Persons = 96819

Number of Plan File Tours = 96819

Number of Plan File Trips = 96819

Total Number of Trips = 96819

Number of Trips Selected = 3821 (3.9%)

Number of Trips Written = 1900 (2.0%)

New Selection File Records = 1900 (2 files)

Fri May 04 11:40:28 2012 -- Process Complete (0:00:14)

## PlanSelect Control File Using Link Sequence

TITLE Select Travelers to Re-Route in 2 Tiny

DEFAULT\_FILE\_FORMAT TAB\_DELIMITED

PROJECT\_DIRECTORY ../

PLAN\_FILE demand/1.Trip.Plans.\*

LINK\_DELAY\_FILE results/1.Trip.LinkDelay

NEW\_SELECTION\_FILE demand/2.HH\_List.\*

NODE\_FILE network/Node.txt

LINK\_FILE network/Link.txt

CONNECTION\_FILE network/Connection.txt

SELECT\_LINKS\_1 -4, 7

RANDOM\_NUMBER\_SEED 355

NEW\_PLAN\_FILE demand/2.PlanSelectOutput.\*

If one or more Link Sequences are provided, the path must travel through all of the links in the sequence in order (a minus sign means that the link is traversed in the B->A direction). If one of the links is not included on the path or the links are not traversed in the order listed, the path is not selected. For example, if the selection criterion is:

SELECT\_LINKS\_1 -4, 7

the path must first travel through link 4 in the B->A direction, then travel through link 7 in the A->B direction, before it is selected.

### Resulting .prn file from the above control file

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| PlanSelect - Version 5.0.10 |

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| Tue Apr 24 14:07:18 2012 |

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Control File = 2.PlanSelect.ctl

Report File = 2.PlanSelect.prn (Create)

Select Travelers to Re-Route in 2 Tiny

Project Directory = ../

Default File Format = TAB\_DELIMITED

Time of Day Format = HOUR\_CLOCK

Model Start Time = 0:00

Model End Time = 27:00

Units of Measure = METRIC

Random Number Seed = 355

Number of Threads = 1

Input System Network Files:

Node File = ../network/Node.txt

Link File = ../network/Link.txt

Connection File = ../network/Connection.txt

Input System Demand Files:

Link Delay File = ../results/1.Trip.LinkDelay

Plan File = ../demand/1.Trip.Plans.\* (2 partitions)

Output System Demand Files:

New Selection File = ../demand/2.HH\_List.\*

New Plan File = ../demand/2.PlanSelectOutput.\*

Data Service Controls:

Number of Time Periods = 108

Select Service Controls:

Select Links = -4, 7

PlanSelect Control Keys:

Number of Node File Records = 23

Number of Link File Records = 24

Number of Directional Links = 37

Number of Connection File Records = 49

Number of Link Delay File Records = 3348

Number of Link Direction Records = 3348

Number of Link Connection Records = 0

Number of Summary Time Periods = 108

Percent of Link Periods with Travel Time Data = 83.8%

Percent of Time Periods with Link Delay Data = 89.8%

Number of Plan File Partitions = 2

Number of Plan File Records = 1014578

Number of Plan File Households = 96830

Number of Plan File Persons = 96830

Number of Plan File Tours = 96831

Number of Plan File Trips = 96837

Total Number of Trips = 96837

Number of Trips Selected = 935 (1.0%)

Number of Trips Written = 935 (1.0%)

Number of New Plan File Partitions = 2

Number of New Plan File Records = 8994

Number of New Plan File Households = 935

Number of New Plan File Persons = 935

Number of New Plan File Tours = 935

Number of New Plan File Trips = 935

New Selection File Records = 935 (2 files)

Tue Apr 24 14:07:31 2012 -- Process Complete (0:00:13)