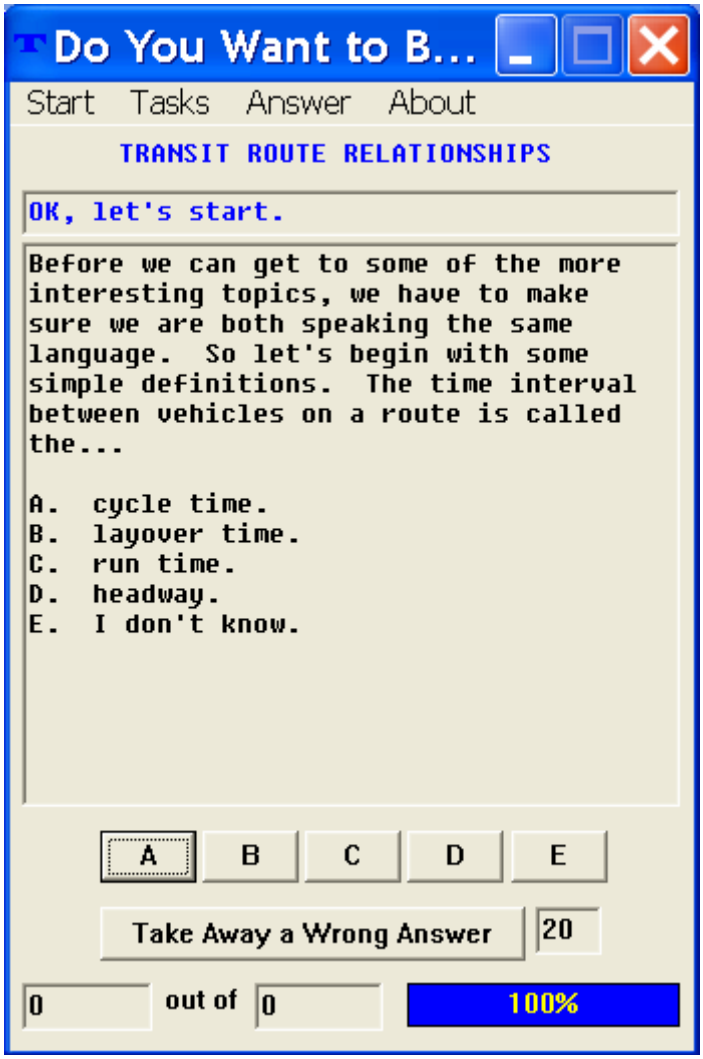
TRANSIT ROUTE PLANNING CAI COURSE

Alan Horowitz
Edward Beimborn
John Corbin
Helen Johnson

Center for Urban Transportation Studies
University of Wisconsin--Milwaukee

Revised January 1997



GENERAL INSTRUCTIONS

The course can be successfully run from a floppy drive. If desired, all the files may be copied to a directory (folder) on your hard drive.

Initiate the course by double-clicking the "T" icon in Windows Explorer

or by double-clicking the name Caitran.exe in the File Manager (Windows 3.1). Alternatively, enter a:\Caitran.exe on the Run dialog box from either the Start Menu (Windows 95) or the Program Manager (Windows 3.1). Once initiated, chose a module by first selecting File Open from the course's main menu.

Additional instructions are included within the modules.

EXHIBIT A

SOME TIME DEFINITIONS

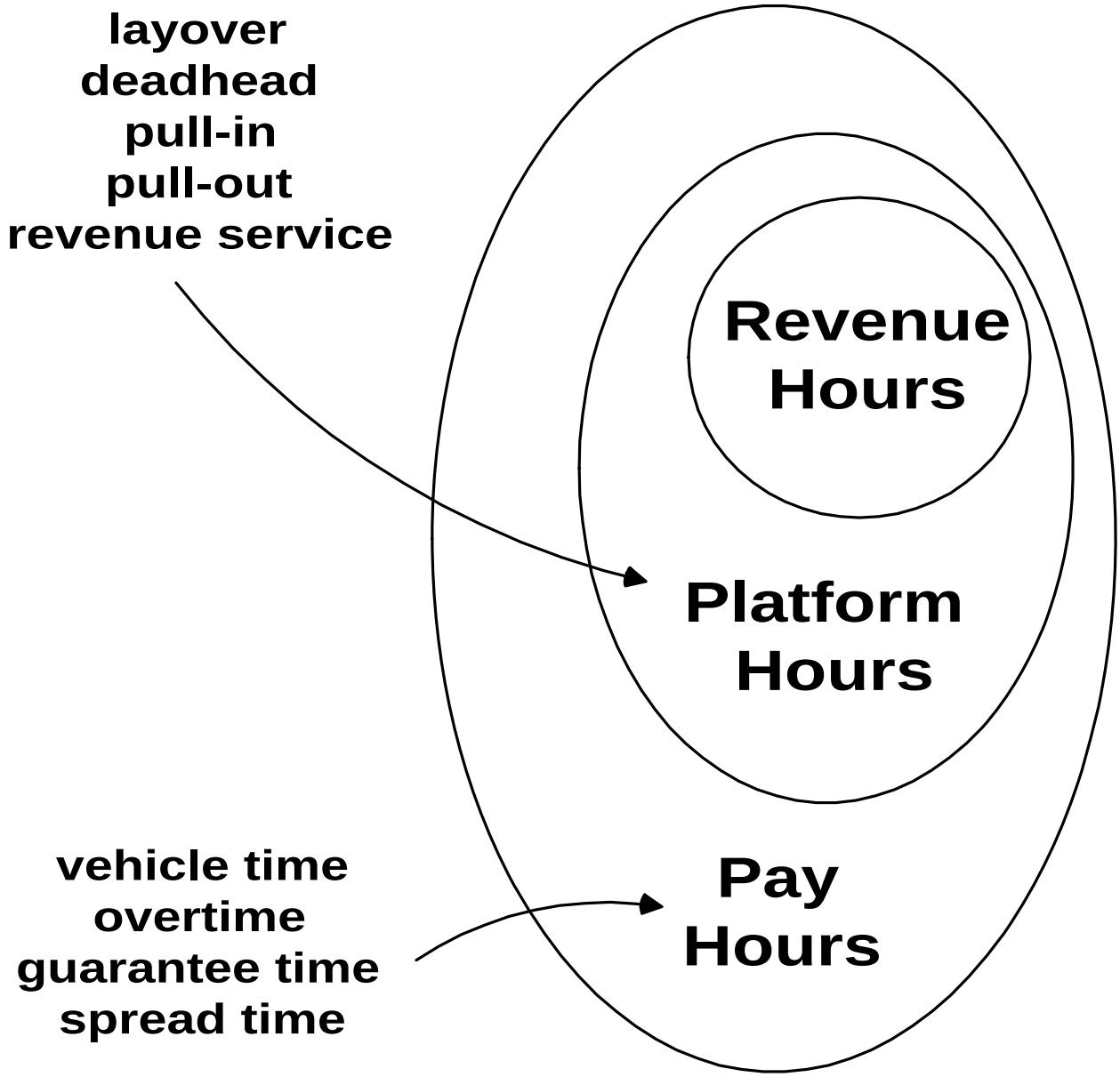


EXHIBIT B

CYCLE AND ROUND-TRIP TIME RELATIONSHIPS

RT = Round-trip time (minutes)
CT = Cycle time (minutes)
A = Layover as a fraction of round-trip time
LT = Layover time (minutes)

LT = RT x A

A = CT / RT - 1

RT = CT / (1 + A)

CT = RT x (1 + A)

EXHIBIT C

INTERESTING RELATIONSHIPS

CT = Cycle time (minutes)
L = Length of route (route)
S = Average bus speed (miles per hour)
LT = Layover time (minutes)
PDH = Peak demand headway (minutes)
PPD = Peak point demand (riders)
LF = Maximum load factor
SC = Seating capacity (riders)
VC = Total vehicle capacity (riders)
NV = Number of vehicles
RC = Route capacity (riders)

NV = CT / H

CT = (120 x L/S) + LT

PDH = 60 x LF x SC / PPD

RC = 60 x VC x NV / CT

EXHIBIT D

PERCEIVED TRAVEL TIMES

ACTIVITY	
Time riding while sitting	**x 1.0 minutes per actual minute**
Time riding while standing	**x 3.0 minutes per actual minute**
Time walking	**x 1.3 minutes per actual minute**
Time waiting	**x 1.9 minutes per actual minute**
Time transferring	**x 1.6 minutes per actual minute**
Initial wait	**+ 8.0 minutes penalty in addition to wait time**
Each transfer (regular)	**+ 24. 0 minutes penalty in addition to transfer time**
Each transfer (timed)	**+ 10.0 minutes penalty in addition to transfer time**

EXHIBIT E

RUNNING TIME FORMULA

Bus time = automobile time
+ number of stops x (5/12)
+ number of riders / 12

Note: Only count places where the bus actually stops.

Exhibits for Module 3

EXHIBIT A

COMMON FARE ELASTICITIES

FARE CHANGE	
FARE INCREASE	-0.34
FARE DECREASE	-0.37
CITY SIZE	
POPULATION GREATER THAN 1 MILLION	-0.24
POPULATION 500,000 TO 1 MILLION	-0.30
POPULATION LESS THAN 500,000	-0.35
TRANSIT MODE	
BUS	-0.35
RAPID RAIL	-0.17
TIME PERIOD	
PEAK	-0.17
OFF-PEAK	-0.40
INCOME GROUP	
LESS THAN $5,000 PER YEAR	-0.19
$5,000 TO $14,999 PER YEAR	-0.25
MORE THAN $15,000 PER YEAR	-0.28
AGE GROUP	
1 - 16 YEARS	-0.32
17-24 YEARS	-0.27
25-44 YEARS	-0.18
45-64 YEARS	-0.15
MORE THAN 65 YEARS	-0.14
TRIP PURPOSE	
WORK	-0.10
SCHOOL	-0.19
SHOPPING	-0.23

EXHIBIT B

ELASTICITY DEFINITIONS

SYMBOLS:

	CURRENT	FUTURE
FARE	F1	F2
RIDERSHIP	R1	R2

POINT ELASTICITY, E:

$$E = \{(R2 - R1)/R1\} / \{(F2 - F1/F1\}$$

ARC ELASTICITY, A:

$$A = \{(R2 - R1)/((R1+R2)/2)\} / \{(F2 - F1)/((F1+F2)/2)\}$$

EXHIBIT C

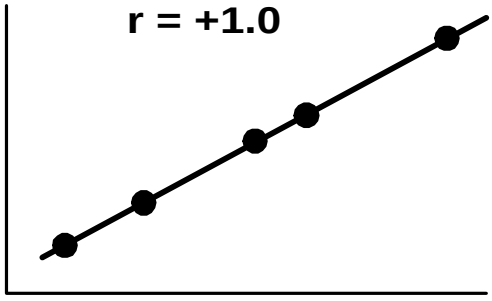
REGRESSION ANALYSIS

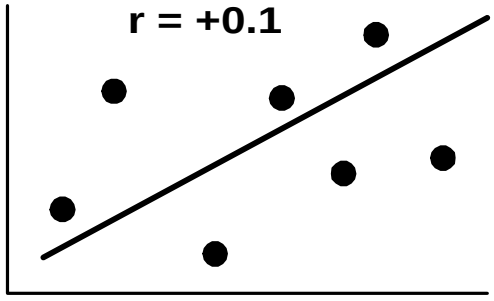
VERTICAL AXIS IS THE Y-AXIS; HORIZONTAL AXIS IS THE X-AXIS

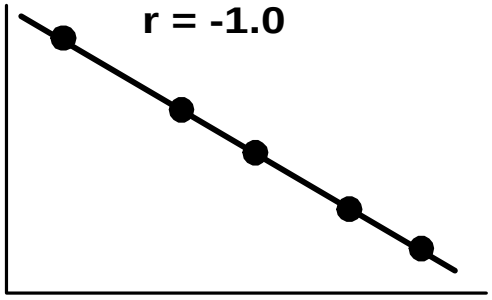
Y = F(X) (Y IS A FUNCTION OF X)

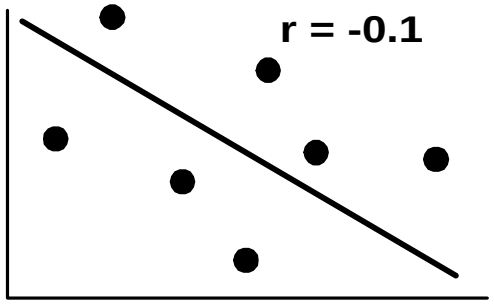
THAT IS, THE VALUE OF Y DEPENDS ON THE VALUE OF X
(● IS A DATA POINT, GRAPHED LINES REPRESENT TESTED EQUATIONS)

PEARSON CORRELATION COEFFICIENT, r:









R-SQUARE, R^2