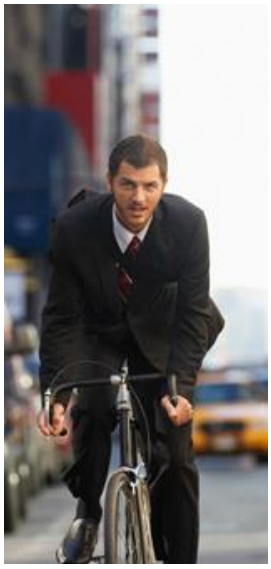
NHTS

Derived Variables

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VEHICLE Variables

ANNMILES

Description: Self-reported annualized mile estimate

Logic:
```
IF VEHOWNED = (-7,-8) OR VEHMILES = (-7,-8,-77,-88) OR ESTMILES = (-7,-8,-77,-88) THEN -1
IF VEHOWNED = 1 THEN VEHMILES
IF VEHOWNED = 2 THEN ROUND((12 * ESTMILES) / OWNUNIT)
```

HYBRID

Description: Hybrid vehicle

Logic:
```
IF FUEL = 3 THEN 1
IF FUEL != 3 THEN 2
```

VEHAGE

Description: Age of vehicle, based on model year

Logic:
```
IF VEHYEAR = (-8,-7) THEN VEHYEAR
IF VEHYEAR = (2016,2017,2018) THEN 1
ELSE 2017-VEHYEAR
```

PERSON Variables

AWAYHOME

Description: Reason respondent did not start their travel day with a home-based activity

Logic:
```
IF TDTRPNUM = 1 AND O_WHYTO = (1,2) THEN -1
IF TDTRPNUM = 1 AND O_WHYTO != (1,2) THEN O_WHYTO
```

AWAYHOME17

Description: Reason respondent was not at their home location at the start of their travel day

Logic:
```
IF TDTRPNUM = 1 AND LOCNO = 100 THEN -1
IF TDTRPNUM = 1 AND LOCNO != 100 THEN O_WHYTO
```

CNTTDTR

Description: Count of person trips on travel day

Logic:
```
COUNT(TDTRPNUM)
```

DIARY

Description: Travel Diary completion status

Logic: IF DIARYHAV = 1 AND DIARYCMP = 1 THEN 1
ELSE 2

DRIVER

Description: Driver status, derived

Logic: IF R_AGE > 0 AND R_AGE < 15 THEN 2
IF AGERANGE = (1,2) THEN 2
IF DRVR = 1 THEN 1
IF COUNT(TDTRPNUM WHERE WHODROVE = PERSONID) > 0 THEN 1
IF COUNT(TDTRPNUM WHERE WHODROVE = PERSONID) = 0 THEN 2

FRSTHM

Description: Travel day began with a home-based activity

Logic: IF O_WHYTO = (-9,-8,-7) THEN O_WHYTO
IF COUNT(TDTRPNUM) = 0 AND SAMEPLC != 9 THEN 1
IF COUNT(TDTRPNUM) != 0 AND O_WHYTO = (1,2) THEN 1
ELSE 2

FRSTHM17

Description: Travel day began at home location

Logic: IF LOCNO = 100 WHERE TDTRPNUM = 1 THEN 1
IF LOCNO != 100 WHERE TDTRPNUM = 1 THEN 2

GCDWORK

Description: Minimum geodesic (Great Circle) distance between home location and work location in meters, using WGS84 coordinate system

Logic: [HOME_LOCATION] = (LONGITUDE, LATITUDE) WHERE LOCATION.LOCTYPE = 1
[WORK_LOCATION] = (LONGITUDE, LATITUDE) WHERE PERSON.PERSONID = LOCATION.PERSONID AND LOCATION.LOCTYPE = 2
https://geographiclib.sourceforge.io/html/C/geodesic_8h.html#a19bc3d000428010ad9d8509174e672c9

OUTOFTWN

Description: Away from home for entire travel day

Logic: IF COUNT(TDTRPNUM WHERE LOCNO = 100) = 0 THEN 1
ELSE 2

R_RACE

Description: Race

Logic: IF COUNT (RACE_*) > 1 THEN 6
IF COUNT (RACE_*) = 1 THEN RACE

USEPUBTR

Description: Public Transit Usage on Travel Date, derived

Logic: IF COUNT(TRPTRANS17) WHERE TRPTRANS17 = (11,15,16) > 0 THEN 1
ELSE 2

WKSTFIPS

Description: The state FIPS code for the respondent's geocoded work address. The state FIPS codes were identified using United States Census Bureau 2016 TIGER/Line Shapefiles.

Logic: NA

WORKER

Description: Worker status

Logic:
```
IF (R_AGE >= 0 AND < 16 OR AGERANGE = (1,2) THEN -1
IF (PRMACT = (-8,-7) AND PAYPROF = (-8,-7)) OR (PRMACT IS NULL AND (R_AGE >
15 OR AGERANGE = (3,4,5,6))) THEN -9
IF PRMACT = (1,2) OR PAYPROF = 1 THEN 1
ELSE 2
```

HOUSEHOLD Variables

CDIVMSAR

Description: Grouping of household by combination of census division, MSA status, and presence of a subway system when population greater than 1 million

Logic: CENSUS_D & MSACAT

CENSUS_D

Description: 2010 Census division classification for the respondent's home address

Logic: [DIVISIONS] = http://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf

```
IF HHSTATE = ("ME","NH","VT","CT","MA","RI") THEN 1
IF HHSTATE = ("NY","NJ","PA") THEN 2
IF HHSTATE = ("IL","IN","MI","OH","WI") THEN 3
IF HHSTATE = ("IA","KS","MO","MN","ND","NE","SD") THEN 4
IF HHSTATE = ("DC","DE","FL","GA","MD","NC","SC","WV","VA") THEN 5
IF HHSTATE = ("AL","KY","MS","TN") THEN 6
IF HHSTATE = ("AR","LA","OK","TX") THEN 7
IF HHSTATE = ("AZ","CO","ID","MT","NM","NV","UT","WY") THEN 8
IF HHSTATE = ("AK","CA","HI","OR","WA") THEN 9
```

CENSUS_R

Description: Census region classification for home address

Logic: [REGIONS] = http://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf

```
IF CENSUS_D = (1,2) THEN 1
IF CENSUS_D = (3,4) THEN 2
```

```
IF CENSUS_D = (5,6,7) THEN 3
IF CENSUS_D = (8,9) THEN 4
```

CNTTDHH

Description: Count of household trips on travel day

Logic: COUNT(TDTRPNUM)

DRVRCNT

Description: Number of drivers in household

Logic: COUNT(WHERE DRIVER = 1)

FLAG100

Description: Whether all household members completed interview

Logic:
```
IF RESP_CNT = HHSIZE THEN 1
IF RESP_CNT < HHSIZE THEN 2
```

GASPRICE

Description: Price of gasoline, in cents, on respondent's travel day

Logic:
```
PADD_REGION =
IF HHSTATE = ("CT","ME","MA","NH","RI","VT") THEN "PADD1A"
IF HHSTATE = ("DE","DC","MD","NJ","NY","PA") THEN "PADD1B"
IF HHSTATE = ("FL","GA","NC","SC","VA","WV") THEN "PADD1C"
IF HHSTATE =
("IL","IN","IA","KS","KY","MI","MN","MO","NE","ND","SD","OH","OK","TN","WI")
THEN "PADD2"
IF HHSTATE = ("AL","AR","LA","MS","NM","TX") THEN "PADD3"
IF HHSTATE = ("CO","ID","MT","UT","WY") THEN "PADD4"
IF HHSTATE = ("AK","AZ","CA","HI","NV","OR","WA") THEN "PADD5"
```

HBHTNRNT

Description: Category of the percent of renter-occupied housing in the census block group of the household's home location.

Logic:
```
IF [PROPORTION RENTER OCCUPIED] >= 0 AND [PROPORTION RENTER OCCUPIED]
< 0.05 THEN 0
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.15 THEN 5
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.25 THEN 20
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.35 THEN 30
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.45 THEN 40
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.55 THEN 50
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.65 THEN 60
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.75 THEN 70
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.85 THEN 80
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.95 THEN 90
ELSE IF [PROPORTION RENTER OCCUPIED] <= 1.00 THEN 95
ELSE -9
```

HBHTNRNT17

Description: Percent of renter-occupied housing in the census block group of the household's home location.

Logic: [RENTER OCCUPIED] / [TOTAL OCCUPIED HOUSING UNITS] GROUP BY [BLOCK GROUP]

2014 ACS Summary File Variables
(https://api.census.gov/data/2014/acs5/variables.html):
[RENTER OCCUPIED] = B25003_003E
[TOTAL OCCUPIED HOUSING UNITS] = B25003_001E
[HOUSING UNITS] = B25001_001E
[TOTAL POPULATION] = B01003_001E
[EMPLOYED IN CIVILIAN LABOR FORCE] = B23025_004E

Extracted from United States Census Bureau 2014 TIGER/Line Shapefiles:
[BLOCK GROUP] = [BLOCK GROUP] WHERE LOCNO=100
[TRACT] = [TRACT] WHERE LOCNO=100
[LANDAREA] = [LAND AREA OF CENSUS GEOGRAPHY] WHERE LOCNO=100

HBPPOPDN

Description: Category of population density (persons per square mile) in the census block group of the household's home location.

Logic:
```
IF [PERSONS PER SQ MILE] >= 0 AND [PERSONS PER SQ MILE] < 100 THEN 50
ELSE IF [PERSONS PER SQ MILE] < 500 THEN 300
ELSE IF [PERSONS PER SQ MILE] < 1,000 THEN 750
ELSE IF [PERSONS PER SQ MILE] < 2,000 THEN 1,500
ELSE IF [PERSONS PER SQ MILE] < 4,000 THEN 3,000
ELSE IF [PERSONS PER SQ MILE] < 1,000 THEN 7,000
ELSE IF [PERSONS PER SQ MILE] < 25,000 THEN 17,000
ELSE IF [PERSONS PER SQ MILE] >= 25,000 and [PERSONS PER SQ MILE] <
999,999 THEN 3,0000
ELSE -9
```

HBPPOPDN17

Description: Population density (persons per square mile) in the census block group of the household's home location.

Logic: [TOTAL POPULATION] / [LANDAREA] GROUP BY [BLOCK GROUP]

See HBHTNRNT17 for Claritas details.

HBRESDN

Description: Category of housing units per square mile in the census block group of the household's home location.

Logic:
```
IF [HOUSING UNITS PER SQ MILE] >= 0 AND [HOUSING UNITS PER SQ MILE] < 100
THEN 50
ELSE IF [HOUSING UNITS PER SQ MILE] < 500 THEN 300
ELSE IF [HOUSING UNITS PER SQ MILE] < 1,000 THEN 750
ELSE IF [HOUSING UNITS PER SQ MILE] < 2,000 THEN 1,500
ELSE IF [HOUSING UNITS PER SQ MILE] < 4,000 THEN 3,000
ELSE IF [HOUSING UNITS PER SQ MILE] < 1,000 THEN 7,000
ELSE IF [HOUSING UNITS PER SQ MILE] < 25,000 THEN 17,000
ELSE IF [HOUSING UNITS PER SQ MILE] >= 25,000 and [HOUSING UNITS PER SQ
MILE] < 999,999 THEN 3,0000
ELSE -9
```

HBRESDN17

Description: Housing units per square mile in the census block group of the household's home location.

Logic: [HOUSING UNITS] / [LANDAREA] GROUP BY [BLOCK GROUP]

See HBHTNRNT17 for Claritas details.

HH_CBSA

Description: Core Based Statistical Area (CBSA) FIPS code for the respondent's home address

Logic: CBSA based on the household's home geocode and TIGER/Line® Shapefile geometries.
Source: https://www.census.gov/cgi-bin/geo/shapefiles/index.php?year=2014&layergroup=Core+Based+Statistical+Areas

HH_HISP

Description: Hispanic status of household respondent

Logic: R_HISP WHERE PERSONID = 1

HH_RACE

Description: Race of household respondent

Logic: R_RACE WHERE PERSONID = 1

HHRELATD

Description: At least two household persons are related

Logic: IF COUNT(R_RELAT) WHERE R_RELAT = (2,3,4,5,6) > 0 THEN 1
ELSE 2

HHRESP

Description: Person identifier of household respondent

Logic: SELECTPERSON1

HHSIZE

Description: Count of household members

Logic: COUNT(PERSONID)

HHSTATE

Description: Household state

Logic: STATE WHERE LOCNO = 100

HHSTFIPS

Description: State FIPS for household address

Logic: STATEFIPS WHERE LOCNO = 100

HHVEHCNT

Description: Count of household vehicles

Logic: COUNT(VEHID WHERE VEHTYPE = 1,2,3,4,5,6,7)

HTEEMPDN

Description: Category of workers per square mile in the census tract of the household's home location.

Logic:
```
IF [WORKERS PER SQ MILE] >= 0 AND [WORKERS PER SQ MILE] < 49 THEN 25
ELSE IF [WORKERS PER SQ MILE] < 100 THEN 75
ELSE IF [WORKERS PER SQ MILE] < 250 THEN 750
ELSE IF [WORKERS PER SQ MILE] < 500 THEN 1,500
ELSE IF [WORKERS PER SQ MILE] < 1,000 THEN 3,000
ELSE IF [WORKERS PER SQ MILE] < 2,000 THEN 7,000
ELSE IF [WORKERS PER SQ MILE] < 4,000 THEN 17,000
ELSE IF [WORKERS PER SQ MILE] >= 25,000 and [WORKERS PER SQ MILE] <
999,999 THEN 3,0000
ELSE -9
```

HTEEMPDN17

Description: Workers per square mile in the census tract of the household's home location.

Logic: [EMPLOYED IN CIVILIAN LABOR FORCE] / [LANDAREA] GROUP BY [TRACT]

See HBHTNRNT17 for Claritas details.

HTHTNRNT

Description: Category of the percent of renter-occupied housing in the census tract of the household's home location.

Logic:
```
IF [PROPORTION RENTER OCCUPIED] >= 0 AND [PROPORTION RENTER OCCUPIED]
< 0.05 THEN 0
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.15 then 5
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.25 then 20
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.35 then 30
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.45 then 40
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.55 then 50
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.65 then 60
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.75 then 70
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.85 then 80
ELSE IF [PROPORTION RENTER OCCUPIED] < 0.95 then 90
ELSE IF [PROPORTION RENTER OCCUPIED] <= 1.00 then 95
ELSE -9
```

HTHTNRNT17

Description: Percent of renter-occupied housing in the census tract of the household's home location.

Logic: [RENTER OCCUPIED] / [TOTAL OCCUPIED HOUSING UNITS] GROUP BY [TRACT]

See HBHTNRNT17 for Claritas details.

HTPPOPDN

Description: Category of population density (persons per square mile) in the census tract of the household's home location.

Logic:
```
IF [PERSONS PER SQ MILE] >= 0 AND [PERSONS PER SQ MILE] < 100 THEN 50
ELSE IF [PERSONS PER SQ MILE] < 500 THEN 300
ELSE IF [PERSONS PER SQ MILE] < 1,000 THEN 750
ELSE IF [PERSONS PER SQ MILE] < 2,000 THEN 1,500
ELSE IF [PERSONS PER SQ MILE] < 4,000 THEN 3,000
ELSE IF [PERSONS PER SQ MILE] < 1,000 THEN 7,000
ELSE IF [PERSONS PER SQ MILE] < 25,000 THEN 17,000
ELSE IF [PERSONS PER SQ MILE] >= 25,000 and [PERSONS PER SQ MILE] <
999,999 THEN 3,0000
ELSE -9
```

HTPPOPDN17

Description: Population density (persons per square mile) in the census tract of the household's home location.

Logic: [TOTAL POPULATION] / [LANDAREA] GROUP BY [TRACT]

See HBHTNRNT17 for Claritas details.

HTRESDN

Description: Category of housing units per square mile in the census tract of the household's home location.

Logic:
```
IF [HOUSING UNITS PER SQ MILE] >= 0 AND [HOUSING UNITS PER SQ MILE] < 100
THEN 50
IF [HOUSING UNITS PER SQ MILE] < 500 THEN 300
IF [HOUSING UNITS PER SQ MILE] < 1,000 THEN 750
IF [HOUSING UNITS PER SQ MILE] < 2,000 THEN 1,500
IF [HOUSING UNITS PER SQ MILE] < 4,000 THEN 3,000
IF [HOUSING UNITS PER SQ MILE] < 1,000 THEN 7,000
IF [HOUSING UNITS PER SQ MILE] < 25,000 THEN 17,000
IF [HOUSING UNITS PER SQ MILE] >= 25,000 and [HOUSING UNITS PER SQ MILE]
< 999,999 THEN 3,0000
ELSE -9
```

HTRESDN17

Description: Housing units per square mile in the census tract of the household's home location.

Logic: [HOUSING UNITS] / [LANDAREA] GROUP BY [TRACT]

See HBHTNRNT17 for Claritas details.

LD_DIST

Description: Road network distance, in miles, between respondent's home location and geographical center of most frequently visited long distance city. Network distance and city's geographical center sourced using Google Distance Matrix API.

Logic: [HOME LOCATION] = WHERE LOCTYPE = 1

```
[LONG DISTANCE CITY] = [LD_CITY]
```

LIF_CYC

Description: Life Cycle classification for the household, derived by attributes pertaining to age, relationship, and work status.

Logic:

```
IMPUTED_AGE =
IF AGE IS MISSING OR AGE = (-7,-8) THEN
IF AAGE IS MISSING OR AAGE = (-7,-8) THEN 41
IF AAGE = 1 THEN 2
IF AAGE = 2 THEN 10
IF AAGE = 3 THEN 16
IF AAGE = 4 THEN 41
IF AAGE = 5 THEN 70
IF AAGE = 6 THEN 77
ELSE AGE

ADULT_CHILD_STATUS =
IF IMPUTED_AGE < 18 THEN "CHILD"
IF IMPUTED_AGE > 21 THEN "ADULT"
IF IMPUTED_AGE BETWEEN 18 AND 21 THEN
IF R_RELAT = 3 THEN "CHILD"
IF R_RELAT = (1,5,6) AND [ANY OTHER HH MEMBER] R_RELAT = 4 THEN "CHILD"
IF R_RELAT = (1,5,6) AND != [ANY OTHER HH MEMBER] R_RELAT = 4 THEN
"ADULT"
IF R_RELAT = 8 AND [ANY OTHER HH MEMBER] (R_RELAT = (2,7) AND
IMPUTED_AGE > 21) THEN "CHILD"
IF R_RELAT = 8 AND != [ANY OTHER HH MEMBER] (R_RELAT = (2,7) AND
IMPUTED_AGE > 21) THEN "ADULT"
IF R_RELAT = (-7,-8) AND [ANY OTHER HH MEMBER] R_RELAT = 4 THEN "CHILD"
IF R_RELAT = (-7,-8) AND != [ANY OTHER HH MEMBER] R_RELAT = 4
IF R_RELAT = (2,7) THEN "ADULT"

HOUSEHOLD_ADULT_COUNT = COUNT (WHERE ADULT_CHILD_STATUS = "ADULT")
HOUSEHOLD_CHILD_COUNT = COUNT (WHERE ADULT_CHILD_STATUS = "CHILD")
HOUSEHOLD_RETIRED_COUNT = COUNT (WHERE PRMACT = 6 OR ((PRMACT IS
MISSING OR PRMACT = (-7,-8)) AND AGE >= 65))
MIN_AGE = MINIMUM (AGE)

LIF_CYC =
IF HOUSEHOLD_ADULT_COUNT = 1 AND HOUSEHOLD_CHILD_COUNT = 0 AND
HOUSEHOLD_RETIRED_COUNT = 0 THEN 1
IF HOUSEHOLD_ADULT_COUNT >= 2 AND HOUSEHOLD_CHILD_COUNT = 0 AND
HOUSEHOLD_RETIRED_COUNT = 0 THEN 2
IF HOUSEHOLD_ADULT_COUNT = 1 AND HOUSEHOLD_CHILD_COUNT >= 1 AND
MIN_AGE BETWEEN 0 AND 5 THEN 3
IF HOUSEHOLD_ADULT_COUNT >= 2 AND HOUSEHOLD_CHILD_COUNT >= 1 AND
MIN_AGE BETWEEN 0 AND 5 THEN 4
IF HOUSEHOLD_ADULT_COUNT = 1 AND HOUSEHOLD_CHILD_COUNT >= 1 AND
MIN_AGE BETWEEN 6 AND 15 THEN 5
IF HOUSEHOLD_ADULT_COUNT >= 2 AND HOUSEHOLD_CHILD_COUNT >= 1 AND
MIN_AGE BETWEEN 6 AND 15 THEN 6
IF HOUSEHOLD_ADULT_COUNT = 1 AND HOUSEHOLD_CHILD_COUNT >= 1 AND
MIN_AGE BETWEEN 16 AND 21 THEN 7
IF HOUSEHOLD_ADULT_COUNT >= 2 AND HOUSEHOLD_CHILD_COUNT >= 1 AND
MIN_AGE BETWEEN 16 AND 21 THEN 8
IF HOUSEHOLD_ADULT_COUNT = 1 AND HOUSEHOLD_CHILD_COUNT = 0 AND
HOUSEHOLD_RETIRED_COUNT = 1 THEN 9
```

```
IF HOUSEHOLD_ADULT_COUNT >= 2 AND HOUSEHOLD_CHILD_COUNT = 0 AND
HOUSEHOLD_RETIRED_COUNT >= 1 THEN 10
```

MSACAT

Description: Metropolitan Statistical Area (MSA) category for the household's home address, based on household's home geocode and TIGER/Line Shapefiles.

Logic:
```
IF MSASIZE = (4,5) THEN
IF RAIL = 1 THEN 1
IF RAIL = 2 THEN 2
IF MSASIZE = (1,2,3) THEN 3
IF CBSA IS MISSING THEN 4
```

MSASIZE

Description: Population size category of the Metropolitan Statistical Area (MSA), from the 2010-2014 five-year American Community Survey (ACS) API.

Logic:
```
IF [POPULATION OF MSA] < 250,000 THEN "01"
IF [POPULATION OF MSA] >= 250,000 AND <= 499,999 THEN "02"
IF [POPULATION OF MSA] >= 500,000 AND <= 999,999 THEN "03"
IF [POPULATION OF MSA] >= 1,000,000 AND <= 2,999,999 THEN "04"
IF [POPULATION OF MSA] >= 3,000,000 THEN "05"
IF MSA IS MISSING THEN "06"
```

NUMADLT

Description: Count of adult household members at least 18 years old

Logic:
```
[PERSON_IS_18_OVER] =
IF R_AGE >= 18 THEN TRUE
IF AGERANGE = (4,5,6) THEN TRUE

COUNT(WHERE PERSON_IS_18_OVER = TRUE)
```

RAIL

Description: MSA heavy rail status for household

Logic:
```
IF CBSA =
("12060","12580","14460","39300","16980","17460","31080","37100","40140","33100","3
5300","14860","37980","41860","41940","47900","35620") THEN "01"
ELSE "02"
```

RESP_CNT

Description: Count of responding persons per household

Logic: HHSIZE

SCRESP

Description: Person identifier of mail screener respondent, always 1 to roster self first

Logic: 1

SPONSCHG

Description: Flag indicating SPONSOR variable changed during retrieval

Logic: [COUNTY_FIPS] = CNTYFIPS WHERE LOCNO = 100

```
IF SAMPAREA = 1 AND HHSTFIPS != '04') THEN 1
IF SAMPAREA = 2 AND HHSTFIPS != '06') THEN 1
IF SAMPAREA = 3 AND (HHSTFIPS != '19' OR (HHSTFIPS = '19' AND [COUNTY_FIPS]
!= ('049','153','181'))) THEN 1
IF SAMPAREA = 4 AND HHSTFIPS != '13') THEN 1
IF SAMPAREA = 5 AND (HHSTFIPS != '40' OR (HHSTFIPS = '40' AND [COUNTY_FIPS]
!= ('037','113','131','143','145'))) THEN 1
IF SAMPAREA = 6 AND (HHSTFIPS != '19' OR (HHSTFIPS = '19' AND [COUNTY_FIPS]
!= ('013','037','023','075','019','017'))) THEN 1
IF SAMPAREA = 7 AND HHSTFIPS != '24') THEN 1
IF SAMPAREA = 8 AND HHSTFIPS != '37') THEN 1
IF SAMPAREA = 9 AND HHSTFIPS != '48') THEN 1
IF SAMPAREA = 10 AND HHSTFIPS != '36') THEN 1
IF SAMPAREA = 11 AND HHSTFIPS != '45') THEN 1
IF SAMPAREA = 13 AND HHSTFIPS != '55') THEN 1
ELSE 2
```

TDAYDATE

Description: Date of travel day (YYYYMM)

Logic: EXTRACT(YYYYMM FROM TDAYDAT2)

TRAVDAY

Description: Travel day - day of week

Logic: [DAY OF WEEK] = EXTRACT(DAY OF WEEK FROM TDAYDAT2)

```
IF [DAY OF WEEK] = SUNDAY THEN 1
IF [DAY OF WEEK] = MONDAY THEN 2
IF [DAY OF WEEK] = TUESDAY THEN 3
IF [DAY OF WEEK] = WEDNESDAY THEN 4
IF [DAY OF WEEK] = THURSDAY THEN 5
IF [DAY OF WEEK] = FRIDAY THEN 6
IF [DAY OF WEEK] = SATURDAY THEN 7
```

URBAN

Description: Household's urban area classification, based on home address and 2014 TIGER/Line Shapefile

Logic:

```
IF [URBAN AREA TYPE] = "URBANIZED AREA" THEN "01"
IF [URBAN AREA TYPE] = "URBAN CLUSTER" THEN "02"
IF [GEOMETRY] SURROUNDED BY ([GEOMETRY] WHERE [URBAN AREA TYPE] =
"URBANIZED AREA") THEN "03"
ELSE "04"
```

URBANSIZE

Description: Urban area size where home address is located

Logic:
```
IF [POPULATION OF URBAN AREA] BETWEEN 50,000 AND 199,999 THEN 1
IF [POPULATION OF URBAN AREA] BETWEEN 200,000 AND 499,999 THEN 2
IF [POPULATION OF URBAN AREA] BETWEEN 500,000 AND 999,999 THEN 3
IF [POPULATION OF URBAN AREA] >= 1,000,000 THEN
IF RAIL = "01" THEN 4
IF RAIL = "02" THEN 5
ELSE 6
```

URBRUR

Description: Household in urban/rural area

Logic:
```
IF URBAN = (01,02) THEN 1
ELSE 2
```

WEBUSE17

Description: Frequency of internet use

Logic:
```
MINIMUM (
PC WHERE PC != (-7,-8),
SPHONE WHERE SPHONE != (-7,-8),
TAB WHERE TAB != (-7,-8),
ODEVICE WHERE ODEVICE != (-7,-8)
)
```

WRKCOUNT

Description: Number of workers in household

Logic:
```
COUNT (WHERE WORKER = 1)
```

YOUNGCHILD

Description: Count of persons with an age between 0 and 4 in household

Logic:
```
[PERSON_IS_0_TO_4] =
IF R_AGE = (0,1,2,3,4) THEN TRUE
IF AGERANGE = (1) THEN TRUE

COUNT(WHERE PERSON_IS_0_TO_4 = TRUE)
```

TRIP Variables

DRVR_FLG

Description: Respondent drove on trip

Logic:
```
IF PERSONID = WHODROVE AND TRPTRANS17 = (3,4,5,6,7,8,9,18) THEN 1
IF PERSONID != WHODROVE AND TRPTRANS17 = (3,4,5,6,7,8,9,18) THEN 2
IF TRPTRANS17 != (3,4,5,6,7,8,9,18) THEN -1
```

DWELTIME

Description: Time at destination

Logic: DEPTIME - ENDTIME

ENDTIME

Description: Trip End Time (HHMM)

Logic: Trip end time in military format.

HHMEMDRV

Description: Household member drove on trip

Logic:
```
IF TRPTRANS17 != (3,4,5,6,7,8,9,18) THEN -1
IF WHODROVE != 97 AND TRPTRANS17 = (3,4,5,6,7,8,9,18) THEN 1
IF WHODROVE = 97 AND TRPTRANS17 = (3,4,5,6,7,8,9,18) THEN 2
```

HH_ONTD

Description: Number of household members on trip including respondent

Logic: TRPHHACC + 1

LOOP_TRIP

Description: Trip origin and destination at identical location

Logic:
```
IF LOCNO = O_LOCNO THEN 1
ELSE 2
```

NONHHCNT

Description: Number of non-household members on trip

Logic: TRPACCMP - TRPHHACC

NUMONTRP

Description: Number of people on trip including respondent

Logic: TRPACCMP + 1

PSGR_FLG

Description: Respondent was passenger on trip

Logic:
```
IF WHODROVE != PERSONID AND TRPTRANS17 = (3,4,5,6,7,8,9,18) THEN 1
IF WHODROVE = PERSONID AND TRPTRANS17 = (3,4,5,6,7,8,9,18) THEN 2
IF TRPTRANS17 != (3,4,5,6,7,8,9,18) THEN -1
```

PUBTRANS

Description: Public transportation used on trip

Logic:
```
IF TRPTRANS17 = (11,15,16) THEN 1
ELSE 2
```

STRTTIME

Description: Trip Start Time (HHMM)

Logic: Trip start time in military format

TDTRPNUM

Description: Incrementing travel day trip number, starting at 1 for each person in the file

Logic:
```
FOR EACH (HOUSEID, PERSONID) ORDERED BY STRTTIME (
ROW NUMBER
)
```

TDWKND

Description: Weekend trip

Logic:
```
IF [TRAVDAY] = (1,7) OR ([TRAVDAY] = (6) AND STRTTIME >= 1800) THEN 1
ELSE 2
```

TRIPPURP

Description: Generalized purpose of trip, home-based and non-home based

Logic:
```
IF WHYFROM = -9 OR WHYTO = -9 THEN -9
IF WHYFROM = (1,2) AND WHYTO = (3,4) THEN HBW
IF WHYFROM = (3,4) AND WHYTO = (1,2) THEN HBW
IF WHYFROM = (1,2) AND WHYTO = (11,12,13) THEN HBSHP
IF WHYFROM = (11,12,13) AND WHYTO = (1,2) THEN HBSHP
IF WHYFROM = (1,2) AND WHYTO = (15,16,17) THEN HBSOC
IF WHYFROM = (15,16,17) AND WHYTO = (1,2) THEN HBSOC
IF WHYFROM = (1,2) AND WHYTO != (3,4,8,11,12,13,15,16,17) THEN HBO
IF WHYFROM != (3,4,8,11,12,13,15,16,17) AND WHYTO = (1,2) THEN HBO
ELSE NHB
```

TRPHHACC

Description: Count of Household Members on Trip

Logic:
```
COUNT(ONTD_P* = 1)
```

TRPMILES

Description: Trip distance in miles, derived from route geometry returned by Google Maps API, or from reported loop-trip distance

Logic:
```
[START_LOCATION] = (LONGITUDE, LATITUDE) WHERE TRIP.O_LOCNO =
LOCATION.LOCNO
[END_LOCATION] = (LONGITUDE, LATITUDE) WHERE TRIP.LOCNO =
LOCATION.LOCNO
[GOOGLE_ROUTE_DISTANCE] = ([START_LOCATION] -> [END_LOCATION])

IF LOCNO != O_LOCNO THEN [GOOGLE_ROUTE_DISTANCE]
IF TRPTRANS17 IN (1,2,3,4,5,6,7,8,9,18) AND WKBK_UNIT = (1,2) THEN
IF WKBK_UNIT = 1 THEN WKBK_DIST * 0.1111
IF WKBK_UNIT = 2 THEN WKBK_DIST
ELSE [GOOGLE_ROUTE_DISTANCE]
```

TRPMILES17

Description: Trip distance in miles, derived from route geometry returned by Google Maps API

Logic:

```
[START_LOCATION] = (LONGITUDE, LATITUDE) WHERE TRIP.O_LOCNO =
LOCATION.LOCNO
[END_LOCATION] = (LONGITUDE, LATITUDE) WHERE TRIP.LOCNO =
LOCATION.LOCNO
[GOOGLE_ROUTE_DISTANCE] = ([START_LOCATION] -> [END_LOCATION])

IF LOCNO = O_LOCNO THEN 0
ELSE [GOOGLE_ROUTE_DISTANCE]
```

TRPTRANS

Description: Trip Mode, derived

Logic:

```
[VEHICLE TYPE] = VEHICLE.VEHTYPE WHERE VEHICLE.VEHID = TRIP.VEHID

IF [VEHICLE TYPE] = 1 THEN 3
IF [VEHICLE TYPE] = 2 THEN 5
IF [VEHICLE TYPE] = 3 THEN 4
IF [VEHICLE TYPE] = 4 THEN 6
IF [VEHICLE TYPE] = 5 THEN 6
IF [VEHICLE TYPE] = 6 THEN 9
IF [VEHICLE TYPE] = 7 THEN 8
ELSE TRPTRANS17
```

TRVLCMIN

Description: Trip Duration in Minutes

Logic:

```
[WKBK_DISTANCE] =
IF WKBK_UNIT = 2 THEN WKBK_DIST
IF WKBK_UNIT = 1 THEN WKBK_DIST * 0.111111

[SPEED] = TRPMILES/EXTRACT(MINUTES FROM ENDTIME - STRTTIME)*60
[WKBK_SPEED] = [WKBK_DISTANCE]/EXTRACT(MINUTES FROM ENDTIME -
STRTTIME)*60

[ORIGIN LOCATION NAME] = LOCNAME WHERE TRIP.O_LOCNO = LOCATION.LOCNO
[DESTINATION LOCATION NAME] = LOCNAME WHERE TRIP.LOCNO =
LOCATION.LOCNO
[ORIGIN LOCATION COUNTRY] = COUNTRY WHERE TRIP.O_LOCNO =
LOCATION.LOCNO
[DESINATION LOCATION COUNTRY] = COUNTRY WHERE TRIP.LOCNO =
LOCATION.LOCNO

[AIRPORT TRAVEL] =
IF [ORIGIN LOCATION NAME] OR [DESTINATION LOCATION NAME] LIKE
('airport','terminal') THEN 1
IF [ORIGIN LOCATION NAME] OR [DESTINATION LOCATION NAME] LIKE
('airport','terminal') THEN 1
IF [ORIGIN LOCATION COUNTRY] OR [DESTINATION LOCATION COUNTRY] NOT LIKE
('USA','United States') THEN 1
ELSE 0

IF STRTTIME > ENDTIME THEN -9
IF O_LOCNO = LOCNO AND [WKBK_DISTANCE] > 10 AND [WKBK_SPEED] > 20 AND
```

```
TRPTRANS = 1 THEN -9
IF O_LOCNO = LOCNO AND [WKBK_DISTANCE] > 10 AND [WKBK_SPEED] > 40 AND
TRPTRANS = 2 THEN -9
IF O_LOCNO = LOCNO AND [WKBK_DISTANCE] > 10 AND [WKBK_SPEED] > 160
AND TRPTRANS IN (3,4,5,6,7,8,9,18) THEN -9
IF O_LOCNO != LOCNO AND TRPMILES > 10 AND [SPEED] > 20 AND TRPTRANS = 1
THEN -9
IF O_LOCNO != LOCNO AND TRPMILES > 10 AND [SPEED] > 40 AND TRPTRANS = 2
THEN -9
IF O_LOCNO != LOCNO AND TRPMILES > 10 AND [SPEED] > 160 AND TRPTRANS IN
(3,4,5,6,7,8,9,18) THEN -9
IF O_LOCNO != LOCNO AND TRPMILES > 10 AND [SPEED] > 1200 AND TRPTRANS =
19 AND [AIRPORT TRAVEL] = 1 THEN -9
ELSE EXTRACT(MINUTES FROM ENDTIME - STRTTIME)
```

VMT_MILE

Description: Trip distance in miles for personally driven vehicle trips, derived from route geometry returned by Google Maps API

Logic:
```
IF TRPTRANS17 = (3,4,5,6,7,8,9,18) AND VEHTYPE = (1,2,3,4,5,6,7) AND
DRVR_FLG = 1 THEN TRPMILES
ELSE -1
```

VMT_MILE17

Description: Trip distance in miles for personally driven vehicle trips, derived from route geometry returned by Google Maps API, or from reported loop-trip distance

Logic:
```
IF TRPTRANS17 = (3,4,5,6,7,8,9,18) AND VEHTYPE = (1,2,3,4,5,6,7) AND
DRVR_FLG = 1 THEN TRPMILES17
ELSE -1
```

WHYFROM

Description: Trip Origin Purpose

Logic:
```
WHYTO WHERE TDTRPNUM = TDTRPNUM - 1
```

WHYTRP1S

Description: Trip purpose summary

Logic:
```
IF WHYTO = (1,2) THEN 01
IF WHYTO = (3,4) THEN 10
IF WHYTO = (8,9,10,19) THEN 20
IF WHYTO = 18 THEN 30
IF WHYTO = (11,12,14) THEN 40
IF WHYTO = (15,16,17) THEN 50
IF WHYTO = 6 THEN 70
IF WHYTO = 13 THEN 80
ELSE 97
```

WHYTRP90

Description: Travel day trip purpose consistent with 1990 NPTS design.

Logic:
```
[HOME TOUR WINDOW] = MINIMUM(TDTRPNUM) WHERE WHYTO IN (1, 2) BETWEEN
```

```
MAXIMUM(TDTRPNUM) WHERE WHYTO IN (1, 2)
[WORK TOUR WINDOW] = MINIMUM(TDTRPNUM) WHERE WHYTO IN (3) BETWEEN
MAXIMUM(TDTRPNUM) WHERE WHYTO IN (3)

[WHYTRP90 STEP ONE] =
IF WHYTO IN (1,2) AND [HOME TOUR WINDOW] = 0 THEN O_WHYTO
IF WHYTO IN (1,2) AND [HOME TOUR WINDOW] >= 1 THEN WHYTO WHERE
DWELLTIME = MAXIMUM(DWELLTIME) OF [HOME TOUR WINDOW]
IF WHYTO IN (3) AND [WORK TOUR WINDOW] = 0 THEN WHYTO
IF WHYTO IN (3) AND [WORK TOUR WINDOW] >= 1 THEN WHYTO WHERE
DWELLTIME = MAXIMUM(DWELLTIME) OF [WORK TOUR WINDOW]
ELSE WHYTO

WHYTRP90 =
IF [WHYTRP90 STEP ONE] = (3) THEN 1
IF [WHYTRP90 STEP ONE] = (4) THEN 2
IF [WHYTRP90 STEP ONE] = (11) THEN 3
IF [WHYTRP90 STEP ONE] = (5,6,10,12,14) THEN 4
IF [WHYTRP90 STEP ONE] = (13) AND IN [WORK TOUR WINDOW] THEN 4
IF [WHYTRP90 STEP ONE] = (8,9,19) THEN 5
IF [WHYTRP90 STEP ONE] = (10,18) THEN 6
IF [WHYTRP90 STEP ONE] = (17) THEN 8
IF [WHYTRP90 STEP ONE] = (15,16) THEN 10
IF [WHYTRP90 STEP ONE] = (13) AND IN [HOME TOUR WINDOW] THEN 10
IF [WHYTRP90 STEP ONE] = (97) THEN 11
IF [WHYTRP90 STEP ONE] = (-8,-7) THEN 99
ELSE 11
```