auto-ownership

suzanne

2024-03-20

## Load in Packages

IF YOU need to download some packages on github: travelSurveyTools, psrcelmer, and psrcplot. For this use the syntax: library(devtools) devtools::install\_github(‘rsgInc/travelSurveyTools’) devtools::install\_github(‘psrc/psrcelmer’) devtools::install\_github(‘psrc/psrcplot’)

## Debugging travelSurveyTools

travelSurveyTools still has many cryptic error messages usually related to data or codebook formatting and naming. You may need to debug to find where or why the problem exists.

You can use: devtools::load\_all(‘C:/GitHub/travelSurveyTools/R’) and then browser() and put breakpoints in the code to find the problem.

## Read in data items from Elmer

The travelSurveyTools package expects everything to be a data.table, so run setDT all over the place.

household<- get\_query(sql= "select household\_id, survey\_year, vehicle\_count, hhincome\_detailed, hh\_weight   
 from HHSurvey.v\_households\_labels")  
  
setDT(household)

## Read in Codebook

## Set IDs as characters

I guess for joining?, functionalize convert all ids to charcets

household[, hh\_id := as.character(household\_id)]  
  
  
  
household <- household%>%mutate(survey\_year=as.character(survey\_year))

## Make a new variable

If your variable is going to be a transformation of existing data in the codebook- for example grouping- you need to add the new variable and its new values to the internal to code, working codebook.

## Adding a new variable to the codebook

make a function with bunch of default #to do make this easier

variable\_list<-rbind(  
 variable\_list,  
 data.table(  
 variable = c("vehicle\_count\_simple"),  
 is\_checkbox = c(0),  
 hh = c(1),  
 person = c(0),  
 day = c(0),  
 trip = c(0),  
 vehicle = c(0),  
 location = c(0),  
 description = c("vehicle\_count\_simple"),  
 logic = c("vehicle\_count\_simple"),  
 data\_type = c("integer/categorical"),  
 shared\_name = c("vehicle\_count\_simple")  
 )  
 )

# Add associated values

group\_labels<-get\_grouped\_labels(group\_id='group\_1', group\_name='vehicle\_count\_simple')  
value\_labels<-add\_values\_code(group\_name='vehicle\_count\_simple')  
household<-grp\_to\_tbl(tbl=household, ungrouped\_name='vehicle\_count', grouped\_name='vehicle\_count\_simple')

The package expects the data to be in a list of data.tables.

household <- household%>%filter(survey\_year=='2023')  
  
hts\_data = list(hh = household)

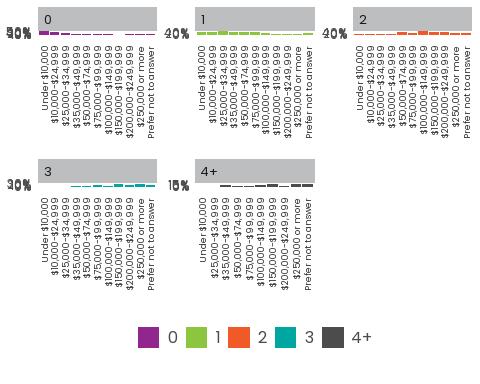
#some how a duplicate snuck into the variable list not sure how  
variable\_list<-variable\_list%>%distinct(variable, .keep\_all=TRUE)

##summarize data

vehicle\_summary = summarize\_weighted(hts\_data= hts\_data,  
 summarize\_var = 'vehicle\_count\_simple',  
 summarize\_by = 'hhincome\_detailed',  
 id\_cols='household\_id',  
 wt\_cols='hh\_weight',  
 wtname='hh\_weight'  
 )

## Warning in hts\_validate\_variable\_list(variables\_dt, data): Variable(s) do not  
## have a location specified: accuracy, age, analyst\_merged, analyst\_split,  
## analyst\_split\_loop, arrival\_time\_hour, arrival\_time\_minute,  
## arrival\_time\_second, arrive\_date, arrive\_dow, attend\_school\_1, attend\_school\_2,  
## attend\_school\_3, attend\_school\_998, attend\_school\_999, bearing, bike\_freq,  
## carshare\_freq, change\_vehicles, collect\_time, commute\_dur, commute\_freq,  
## commute\_subsidy\_1, commute\_subsidy\_2, commute\_subsidy\_3, commute\_subsidy\_4,  
## commute\_subsidy\_5, commute\_subsidy\_6, commute\_subsidy\_7, commute\_subsidy\_996,  
## commute\_subsidy\_998, commute\_subsidy\_use\_1, commute\_subsidy\_use\_2,  
## commute\_subsidy\_use\_3, commute\_subsidy\_use\_4, commute\_subsidy\_use\_5,  
## commute\_subsidy\_use\_6, commute\_subsidy\_use\_7, commute\_subsidy\_use\_996,  
## copied\_trip, d\_bg, d\_in\_region, d\_puma10, day\_id, day\_iscomplete, day\_weight,  
## daynum, days\_first\_trip, days\_last\_trip, deliver\_elsewhere, deliver\_food,  
## deliver\_grocery, deliver\_none, deliver\_office, deliver\_other, deliver\_package,  
## deliver\_work, depart\_date, depart\_dow, depart\_time\_hour, depart\_time\_minute,  
## depart\_time\_second, dest\_lat, dest\_lng, dest\_purpose, dest\_purpose\_cat,  
## dest\_purpose\_other, disability\_person, distance\_meters, distance\_miles, driver,  
## duration\_minutes, duration\_seconds, dwell\_mins, education, employment,  
## ethnicity\_1, ethnicity\_2, ethnicity\_3, ethnicity\_4, ethnicity\_997,  
## ethnicity\_999, ethnicity\_other, ev\_typical\_charge\_1, ev\_typical\_charge\_2,  
## ev\_typical\_charge\_3, ev\_typical\_charge\_4, ev\_typical\_charge\_5,  
## ev\_typical\_charge\_6, ev\_typical\_charge\_997, flag\_teleport, fuel, gender,  
## has\_access, has\_egress, hh\_day\_iscomplete, hhmember1, hhmember10, hhmember11,  
## hhmember12, hhmember2, hhmember3, hhmember4, hhmember5, hhmember6, hhmember7,  
## hhmember8, hhmember9, home\_in\_region, hours\_work, industry, industry\_other,  
## is\_access, is\_egress, is\_participant, is\_transit, jobs\_count, lat, license,  
## loc\_end, loc\_start, lon, make, mobility\_aides, mode\_1, mode\_2, mode\_3, mode\_4,  
## mode\_acc, mode\_egr, mode\_other\_specify, mode\_simple, mode\_type, model,  
## model\_other, no\_school\_closed, no\_school\_dont\_know, no\_school\_no\_answer,  
## no\_school\_online\_home, no\_school\_online\_other, no\_school\_other, no\_school\_sick,  
## no\_school\_vacation, notravel\_delivery, notravel\_housework, notravel\_kidsbreak,  
## notravel\_kidshomeschool, notravel\_madetrips, notravel\_not\_sure,  
## notravel\_notransport, notravel\_other, notravel\_sick, notravel\_telecommute,  
## notravel\_vacation, notravel\_weather, num\_complete\_trip\_surveys, o\_bg,  
## o\_in\_region, o\_puma10, office\_available, origin\_lat, origin\_lng,  
## origin\_purpose, origin\_purpose\_cat, participate, pernum, person\_id,  
## person\_is\_complete, person\_weight, proxy, proxy\_complete, proxy\_parent,  
## race\_afam, race\_aiak, race\_asian, race\_hapi, race\_noanswer, race\_other,  
## race\_other\_specify, race\_white, race\_category, relationship, remote\_class\_freq,  
## school\_bg, school\_freq, school\_in\_region, school\_loc\_lat, school\_loc\_lng,  
## school\_mode\_typical, school\_puma10, schooltype, second\_home,  
## second\_home\_in\_region, second\_home\_lat, second\_home\_lon, sexuality, share\_1,  
## share\_2, share\_3, share\_4, share\_5, share\_996, smartphone\_type, speed,  
## speed\_flag, speed\_mph, student, summary\_complete, surveyable, svy\_complete,  
## taxi\_cost\_int, taxi\_cost\_known, telecommute\_freq, telework\_time, tnc\_freq,  
## toll\_transponder, transit\_freq, transit\_pass, travel\_date, travel\_day,  
## travel\_dow, travelers\_hh, travelers\_nonhh, travelers\_total, trip\_weight,  
## tripid, tripnum, trips\_yesno, user\_added, user\_merged, user\_split, vehicleused,  
## vehid, vehnum, walk\_freq, work\_bg, work\_in\_region, work\_lat, work\_lng,  
## work\_mode, work\_puma10, workplace, year

var\_val\_labels<-value\_labels%>%filter(variable=='hhincome\_detailed')  
vehs<-vehicle\_summary$summary$wtd%>%  
 left\_join(var\_val\_labels, join\_by(hhincome\_detailed==label))%>%  
 arrange(val\_order)%>%mutate(hhincome\_detailed=factor(hhincome\_detailed, unique(hhincome\_detailed)))  
  
static\_facet\_column\_chart(vehs, x='hhincome\_detailed', y='prop', fill='vehicle\_count\_simple', facet='vehicle\_count\_simple')



vehs

## hhincome\_detailed vehicle\_count\_simple count prop prop\_se  
## <fctr> <char> <int> <num> <num>  
## 1: Under $10,000 0 63 0.503313303 0.100214427  
## 2: Under $10,000 1 46 0.429535273 0.099481712  
## 3: Under $10,000 2 5 0.058640222 0.042583626  
## 4: Under $10,000 3 2 0.001292559 0.001110223  
## 5: Under $10,000 4+ 1 0.007218644 0.007311943  
## 6: $10,000-$24,999 0 122 0.492858655 0.077914171  
## 7: $10,000-$24,999 1 86 0.423706321 0.076126502  
## 8: $10,000-$24,999 2 19 0.076245595 0.048089702  
## 9: $10,000-$24,999 3 7 0.007189430 0.004525053  
## 10: $25,000-$34,999 0 50 0.280903711 0.069494022  
## 11: $25,000-$34,999 1 96 0.540507800 0.087204459  
## 12: $25,000-$34,999 2 18 0.162347083 0.072098332  
## 13: $25,000-$34,999 3 2 0.011521590 0.009856850  
## 14: $25,000-$34,999 4+ 3 0.004719816 0.003291358  
## 15: $35,000-$49,999 0 66 0.172898730 0.047123423  
## 16: $35,000-$49,999 1 146 0.496496792 0.072228433  
## 17: $35,000-$49,999 2 41 0.168988730 0.059657134  
## 18: $35,000-$49,999 3 9 0.091830931 0.048285222  
## 19: $35,000-$49,999 4+ 3 0.069784817 0.046623517  
## 20: $50,000-$74,999 0 72 0.051426053 0.016708311  
## 21: $50,000-$74,999 1 248 0.415471593 0.055367709  
## 22: $50,000-$74,999 2 112 0.391878446 0.056549965  
## 23: $50,000-$74,999 3 26 0.106514293 0.037502473  
## 24: $50,000-$74,999 4+ 9 0.034709615 0.018005242  
## 25: $75,000-$99,999 0 43 0.038471230 0.014026359  
## 26: $75,000-$99,999 1 202 0.458956961 0.057224190  
## 27: $75,000-$99,999 2 107 0.307475003 0.053731983  
## 28: $75,000-$99,999 3 23 0.141044766 0.045249425  
## 29: $75,000-$99,999 4+ 14 0.054052039 0.022759043  
## 30: $100,000-$149,999 0 60 0.032311834 0.011928719  
## 31: $100,000-$149,999 1 275 0.203484888 0.033153274  
## 32: $100,000-$149,999 2 213 0.551062053 0.048802989  
## 33: $100,000-$149,999 3 55 0.120219523 0.031921675  
## 34: $100,000-$149,999 4+ 26 0.092921701 0.034164162  
## 35: $150,000-$199,999 0 24 0.016554922 0.007171033  
## 36: $150,000-$199,999 1 129 0.101657572 0.026202687  
## 37: $150,000-$199,999 2 150 0.449484030 0.065690890  
## 38: $150,000-$199,999 3 44 0.303964937 0.065946774  
## 39: $150,000-$199,999 4+ 16 0.128338538 0.048627835  
## 40: $200,000-$249,999 0 22 0.080998540 0.036925874  
## 41: $200,000-$249,999 1 91 0.166125351 0.038167593  
## 42: $200,000-$249,999 2 96 0.512041381 0.071877628  
## 43: $200,000-$249,999 3 23 0.208031563 0.066959288  
## 44: $200,000-$249,999 4+ 7 0.032803165 0.019161592  
## 45: $250,000 or more 0 22 0.042695351 0.018781511  
## 46: $250,000 or more 1 126 0.183338648 0.042290014  
## 47: $250,000 or more 2 122 0.345905311 0.062492400  
## 48: $250,000 or more 3 36 0.260478238 0.061394106  
## 49: $250,000 or more 4+ 16 0.167582451 0.053732561  
## 50: Prefer not to answer 0 45 0.050817720 0.019410639  
## 51: Prefer not to answer 1 174 0.252159126 0.044552180  
## 52: Prefer not to answer 2 168 0.364177981 0.051761537  
## 53: Prefer not to answer 3 44 0.195380343 0.046122415  
## 54: Prefer not to answer 4+ 25 0.137464830 0.041135292  
## hhincome\_detailed vehicle\_count\_simple count prop prop\_se  
## est est\_se variable value val\_order group\_1\_title  
## <num> <num> <char> <num> <int> <char>  
## 1: 24952.07385 7106.28562 hhincome\_detailed 1 1395 <NA>  
## 2: 21294.48153 6570.55949 hhincome\_detailed 1 1395 <NA>  
## 3: 2907.12591 2159.13860 hhincome\_detailed 1 1395 <NA>  
## 4: 64.07941 53.57889 hhincome\_detailed 1 1395 <NA>  
## 5: 357.86881 357.86881 hhincome\_detailed 1 1395 <NA>  
## 6: 48694.96913 10911.65866 hhincome\_detailed 2 1396 <NA>  
## 7: 41862.64358 9566.63507 hhincome\_detailed 2 1396 <NA>  
## 8: 7533.14737 4999.62229 hhincome\_detailed 2 1396 <NA>  
## 9: 710.32343 436.15822 hhincome\_detailed 2 1396 <NA>  
## 10: 17108.98271 4450.14020 hhincome\_detailed 3 1397 <NA>  
## 11: 32920.67077 8488.17177 hhincome\_detailed 3 1397 <NA>  
## 12: 9888.06242 4896.58445 hhincome\_detailed 3 1397 <NA>  
## 13: 701.74470 594.08770 hhincome\_detailed 3 1397 <NA>  
## 14: 287.46950 194.74182 hhincome\_detailed 3 1397 <NA>  
## 15: 19155.26073 5462.18906 hhincome\_detailed 4 1398 <NA>  
## 16: 55006.33516 10440.33814 hhincome\_detailed 4 1398 <NA>  
## 17: 18722.07615 7403.93911 hhincome\_detailed 4 1398 <NA>  
## 18: 10173.84814 5689.95308 hhincome\_detailed 4 1398 <NA>  
## 19: 7731.38335 5435.07162 hhincome\_detailed 4 1398 <NA>  
## 20: 10972.20898 3522.25268 hhincome\_detailed 5 1399 <NA>  
## 21: 88644.58556 15016.37984 hhincome\_detailed 5 1399 <NA>  
## 22: 83610.77635 15983.83811 hhincome\_detailed 5 1399 <NA>  
## 23: 22725.77833 8530.67345 hhincome\_detailed 5 1399 <NA>  
## 24: 7405.60730 3884.01802 hhincome\_detailed 5 1399 <NA>  
## 25: 7421.17185 2669.06411 hhincome\_detailed 6 1400 <NA>  
## 26: 88533.65170 14648.77577 hhincome\_detailed 6 1400 <NA>  
## 27: 59312.50011 12520.02451 hhincome\_detailed 6 1400 <NA>  
## 28: 27207.79784 9603.92181 hhincome\_detailed 6 1400 <NA>  
## 29: 10426.73893 4467.94317 hhincome\_detailed 6 1400 <NA>  
## 30: 8639.83632 3172.70040 hhincome\_detailed 7 1401 <NA>  
## 31: 54409.66610 9071.13227 hhincome\_detailed 7 1401 <NA>  
## 32: 147348.05424 20765.38777 hhincome\_detailed 7 1401 <NA>  
## 33: 32145.40492 9064.58008 hhincome\_detailed 7 1401 <NA>  
## 34: 24846.26147 9737.76091 hhincome\_detailed 7 1401 <NA>  
## 35: 2625.69740 1099.89974 hhincome\_detailed 8 1402 <NA>  
## 36: 16123.42369 3978.86741 hhincome\_detailed 8 1402 <NA>  
## 37: 71290.52250 13511.30039 hhincome\_detailed 8 1402 <NA>  
## 38: 48210.43181 13170.26961 hhincome\_detailed 8 1402 <NA>  
## 39: 20355.16470 8369.25222 hhincome\_detailed 8 1402 <NA>  
## 40: 10542.56007 4978.06649 hhincome\_detailed 9 1403 <NA>  
## 41: 21622.44535 4721.93073 hhincome\_detailed 9 1403 <NA>  
## 42: 66645.97966 13890.20249 hhincome\_detailed 9 1403 <NA>  
## 43: 27076.84933 10188.80873 hhincome\_detailed 9 1403 <NA>  
## 44: 4269.57503 2499.38444 hhincome\_detailed 9 1403 <NA>  
## 45: 7106.20153 3117.22295 hhincome\_detailed 10 1404 <NA>  
## 46: 30514.83010 7251.88864 hhincome\_detailed 10 1404 <NA>  
## 47: 57572.37717 12823.72572 hhincome\_detailed 10 1404 <NA>  
## 48: 43353.92046 12235.78656 hhincome\_detailed 10 1404 <NA>  
## 49: 27892.37333 9994.33436 hhincome\_detailed 10 1404 <NA>  
## 50: 12231.00737 4721.59959 hhincome\_detailed 11 1405 <NA>  
## 51: 60690.64358 11977.60857 hhincome\_detailed 11 1405 <NA>  
## 52: 87651.77935 15369.88682 hhincome\_detailed 11 1405 <NA>  
## 53: 47024.90440 12606.55677 hhincome\_detailed 11 1405 <NA>  
## 54: 33085.57239 10821.88165 hhincome\_detailed 11 1405 <NA>  
## est est\_se variable value val\_order group\_1\_title  
## group\_1\_value group\_2\_title group\_2\_value group\_3\_title group\_3\_value  
## <char> <char> <char> <char> <char>  
## 1: <NA> <NA> <NA> <NA> <NA>  
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## 52: <NA> <NA> <NA> <NA> <NA>  
## 53: <NA> <NA> <NA> <NA> <NA>  
## 54: <NA> <NA> <NA> <NA> <NA>  
## group\_1\_value group\_2\_title group\_2\_value group\_3\_title group\_3\_value

write.csv(vehs, "vehicle\_count\_income.csv")