

Personal Transportation in Rural Alaska

Results from two questionnaires

Tobias Schwörer
UAA Institute of Social and Economic Research
with assistance from
Roderick Phillip, Kongiganak

2013 Alaska Rural Energy Conference
Anchorage May 1st



Alaska
Housing
FINANCE CORPORATION

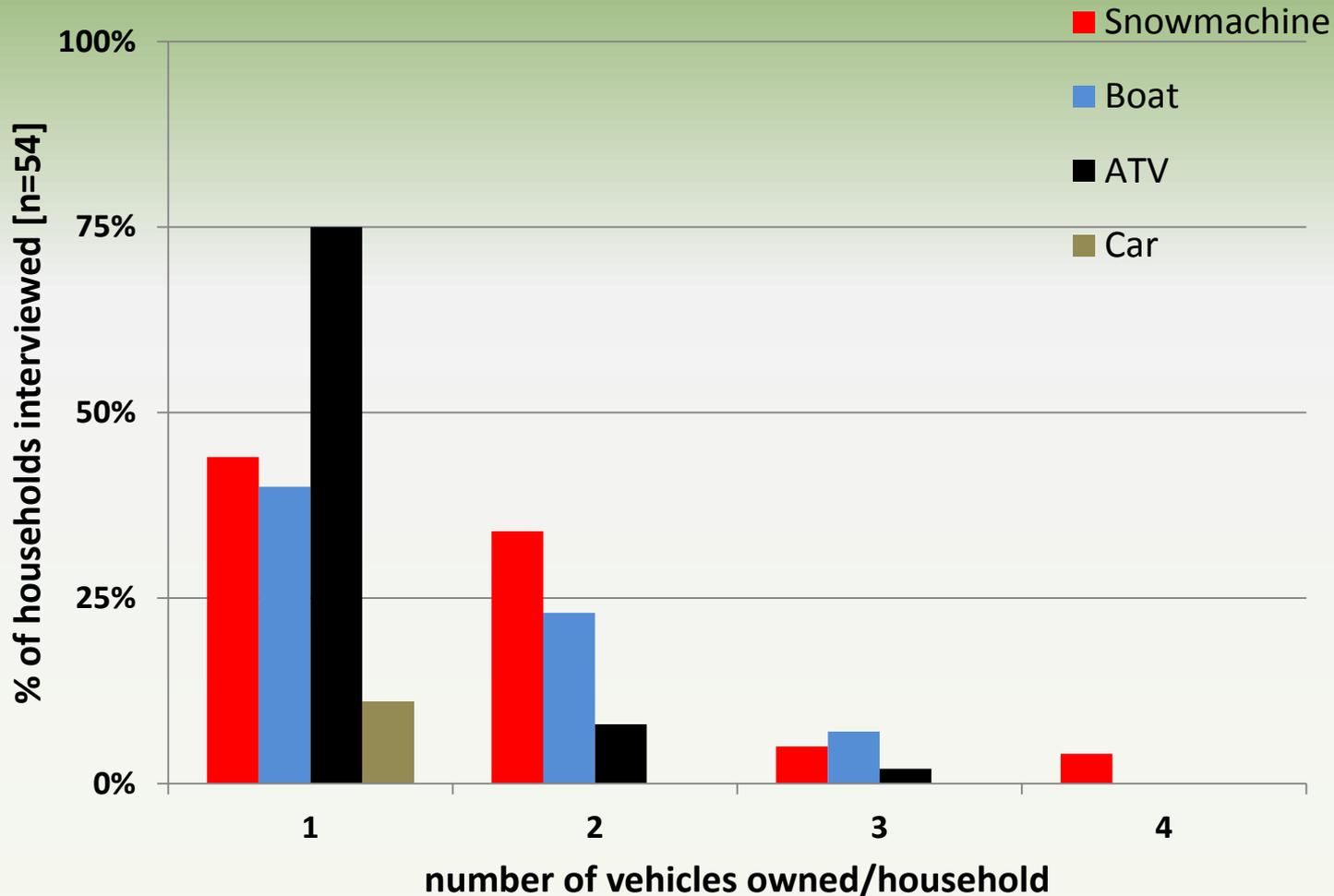
Research Questions

- Fuel amount
 - How much of total energy use is transportation?
 - Potential for displacement of fossil fuel?
- Vehicle inventory
 - How many (different) vehicles/household?
 - What are the vehicles used for?
 - How old?
- Energy Efficiency
 - Potential for improvement?
- Cost of Subsistence
 - Persistent data gap - frequent need for analysis



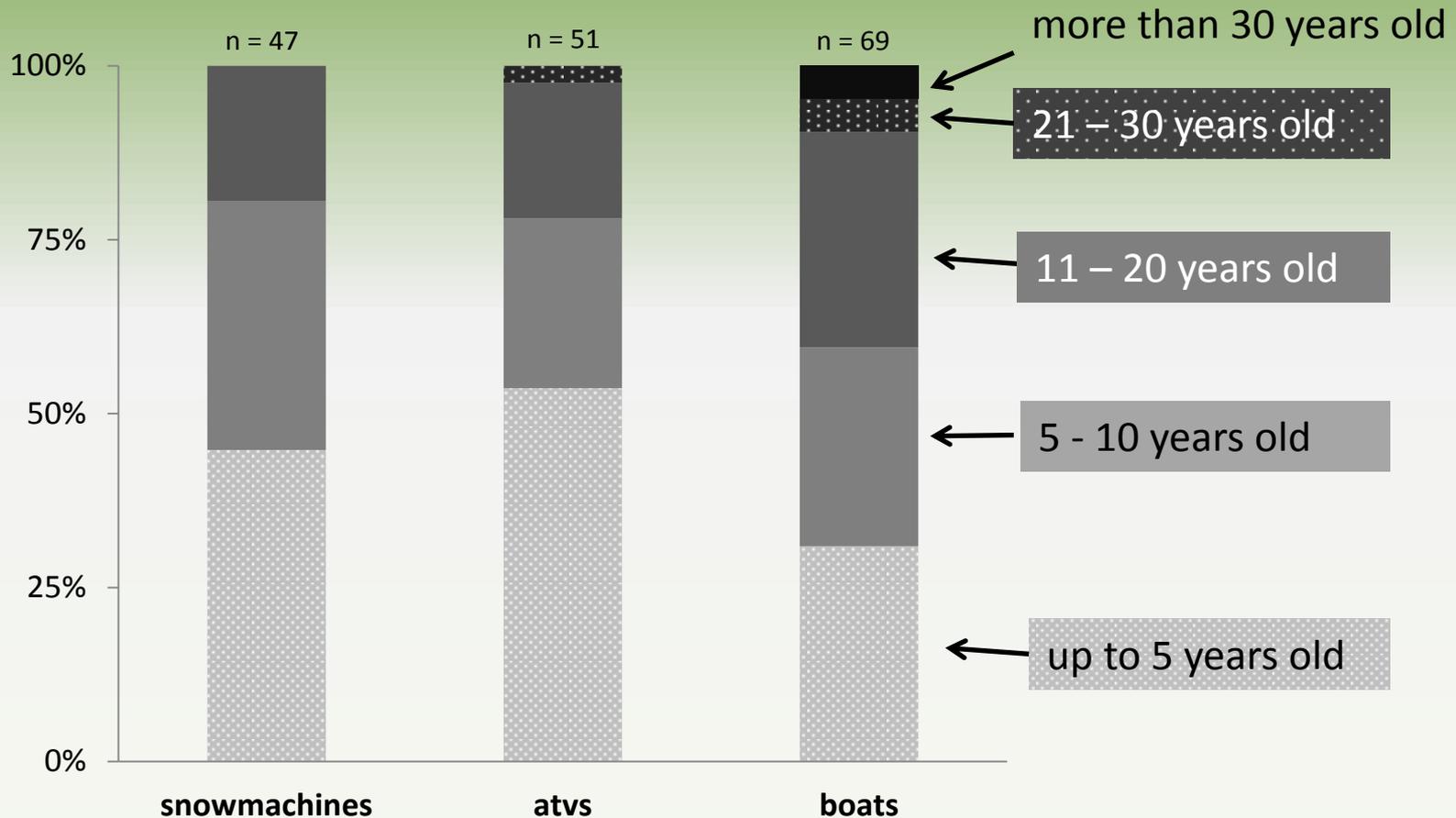
“Most own just 1 ATV, likely more than 1 snowmachine and more than 1 boat”

Norton Sound, 2010



“Snowmachines & ATVs are newest – boat engines are oldest”

Norton Sound



One-way distance to subsistence location & **annual subsistence related mileage**

per household in Norton Sound



23 miles average
128 miles max

774 miles average
3,969 miles max



10 miles average
85 miles max

416 miles average
3,474 miles max

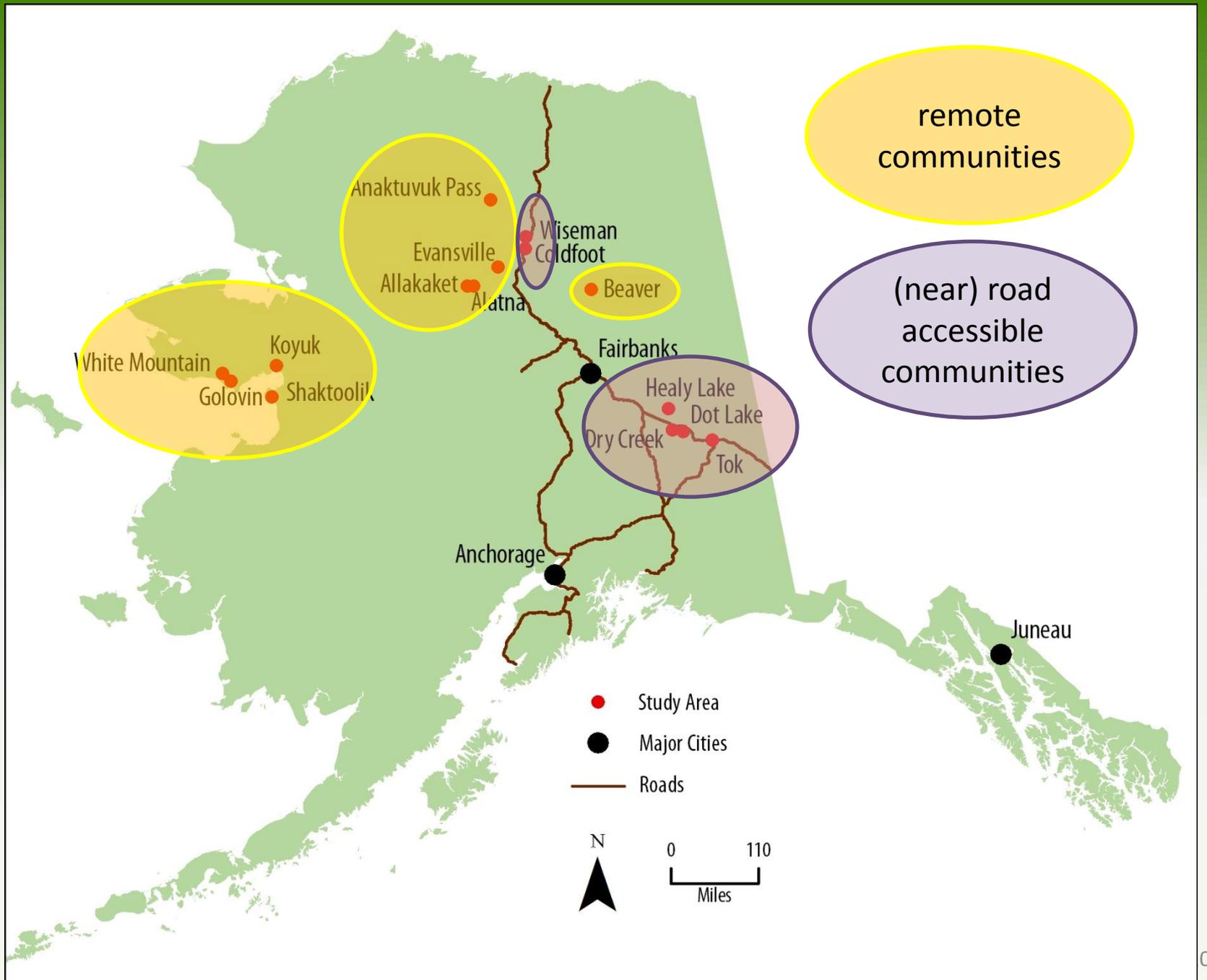


6 miles average
18 miles max

172 miles average
576 miles max

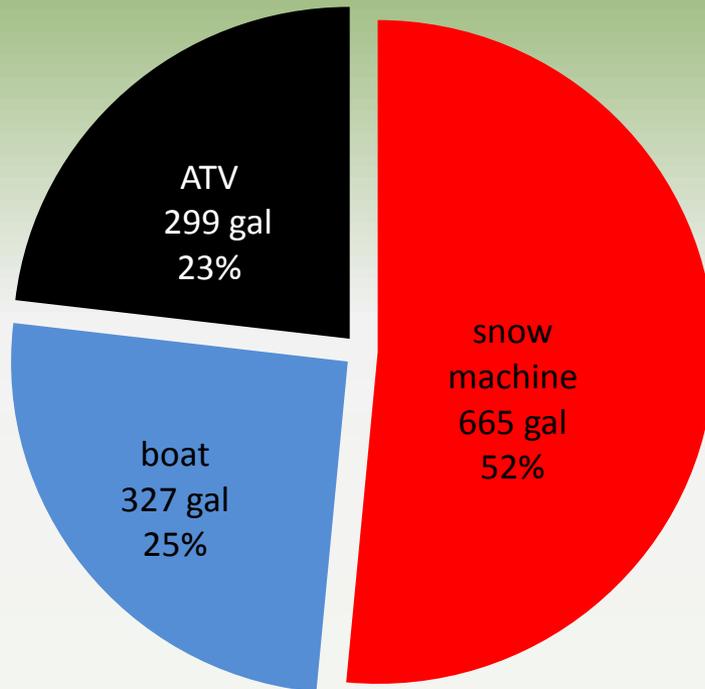






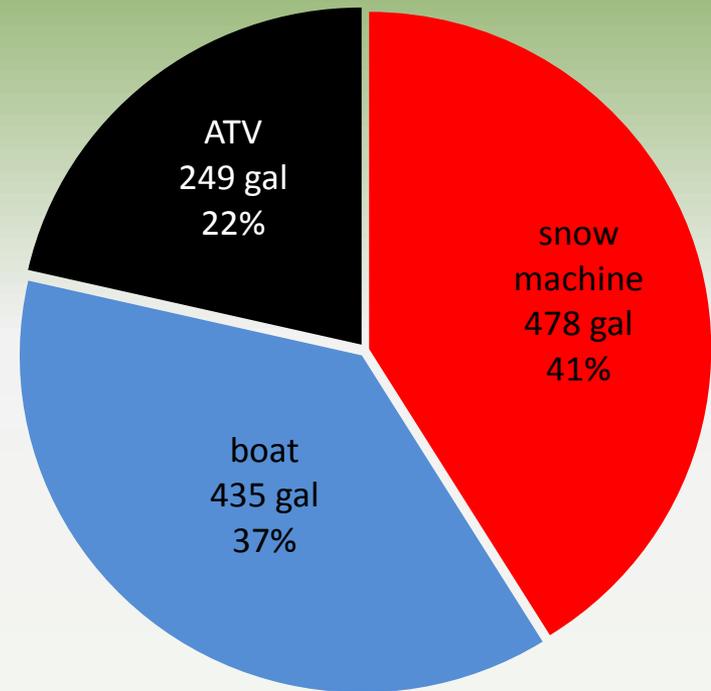
Average annual gasoline consumption/ hh by vehicle in remote rural Alaska

Norton Sound



1,291 gallons/year

Interior



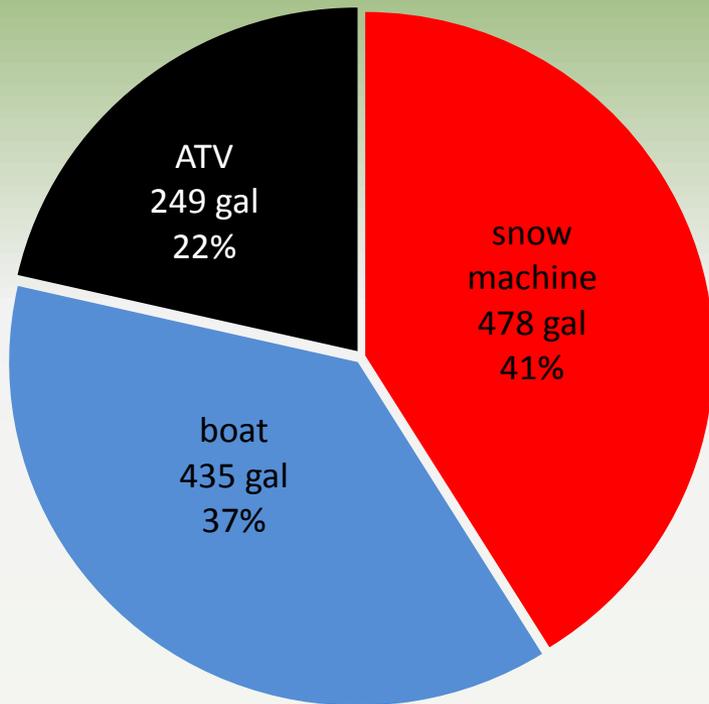
1,162 gallons/year

The average household in Norton Sound burns 886 gallons of stove oil and 4 cords of wood.
The average hh size in Norton Sound equals 4 persons.

Average annual gasoline consumption/ hh by vehicle

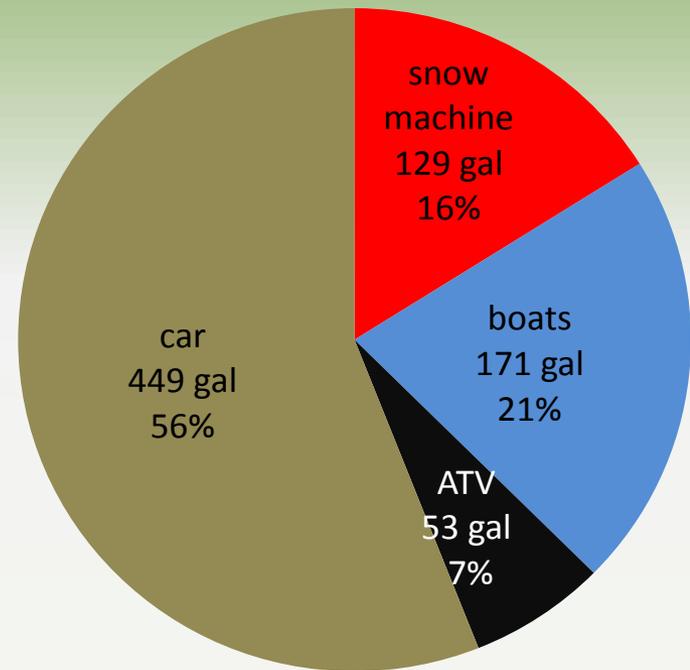
Interior, 2011

remote



1,162 gallons

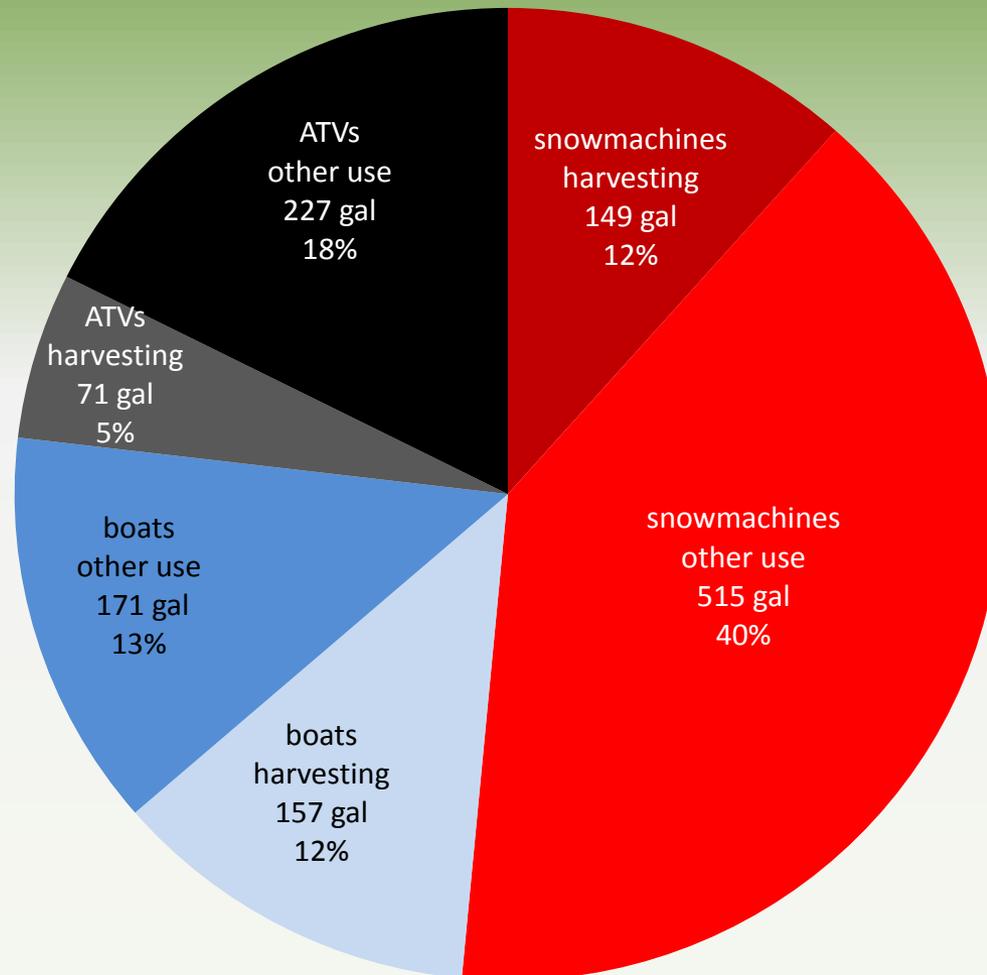
(near) road accessible



802 gallons/year

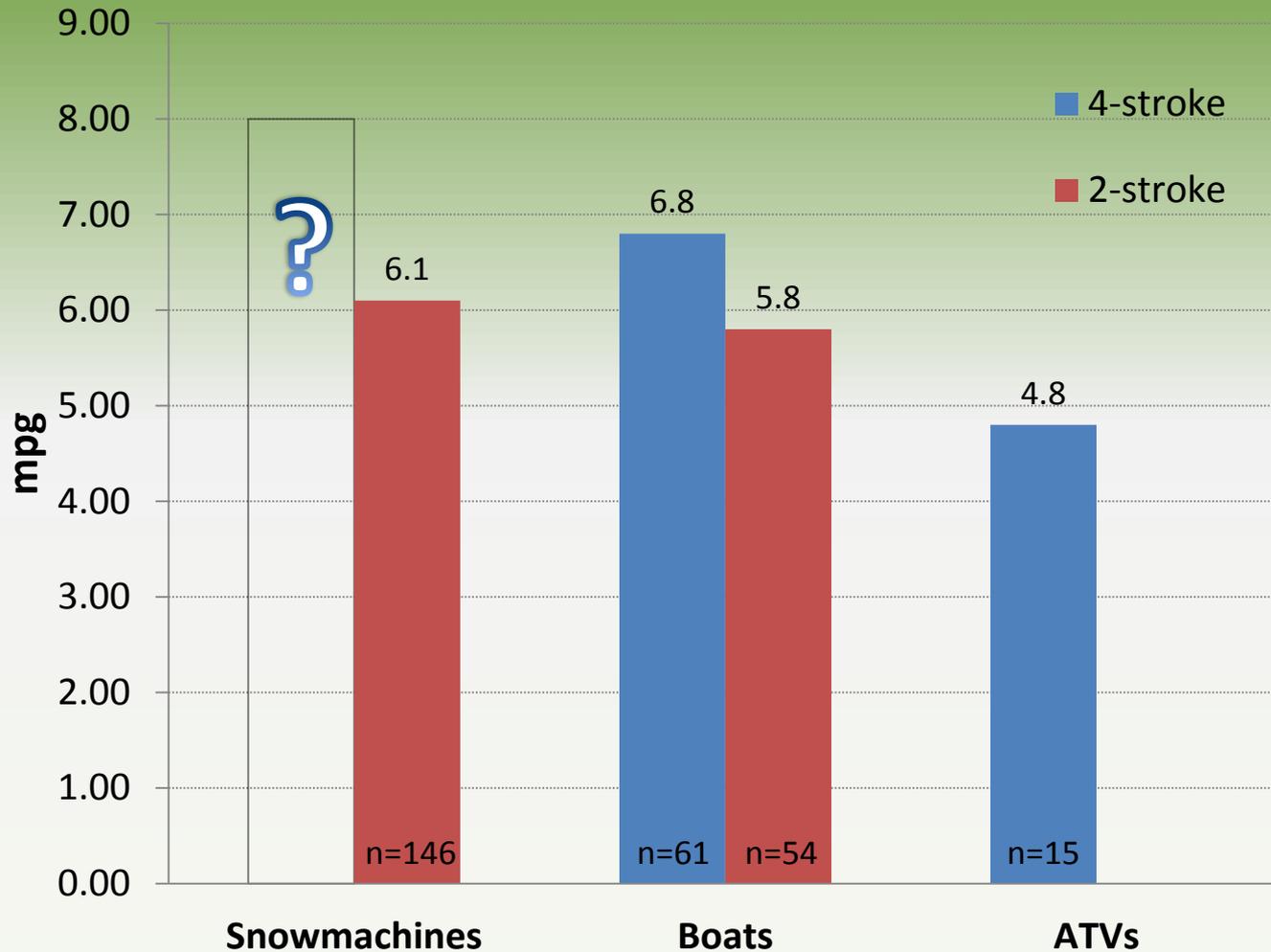
Average annual gasoline consumption/ hh by vehicle for subsistence harvesting and other uses

Norton Sound , 2010

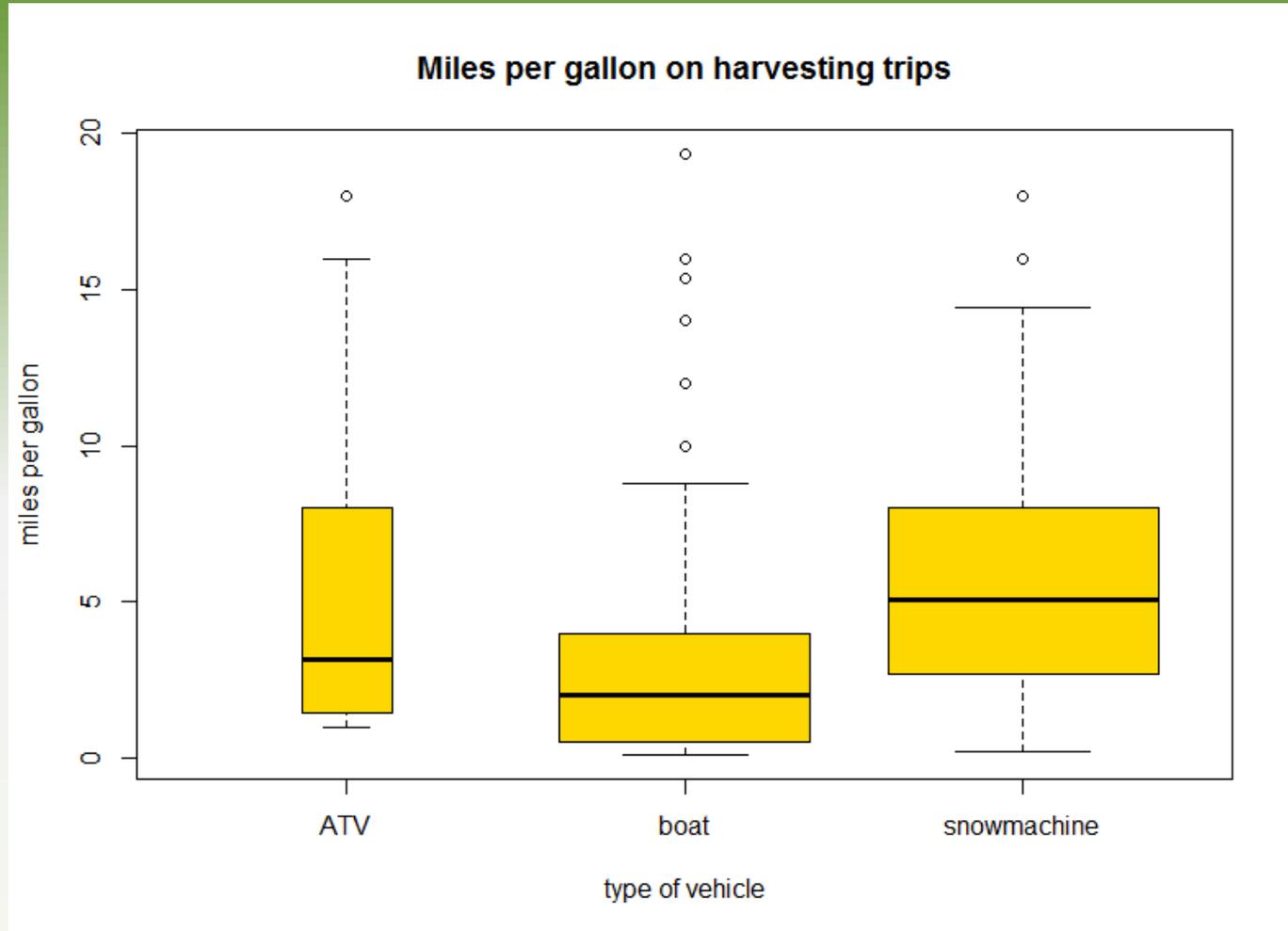


Mean miles per gallon on subsistence trips

Norton Sound



“The mean mpg measure shown previously may not tell us much.
Efficiency depends on hunting success , weather, etc.”



Note, bars in bold show median of mpg on hunting trips in Norton Sound, 2010.

2 stroke vs. 4 stroke snowmachines

2-stroke:

- lower up front cost
- 12-18 oil changes/wi plus oil for mixture

4-stroke:

- expensive parts
- only 3 oil changes/winter
- No need for gas mixture



Skidoo Tundra 4-stroke



Conclusions

- Consumption varies among households and location
- Snowmachines (long haul)
 - limited durability
 - efficiency potential
- Boats (mid distance)
 - longer useful life of engines
 - mostly 4-stroke
- ATVs (within village)
 - most suitable for integration of renewables
- More research needed
 - new 2-stroke and 4-stroke snowmachines and their efficiency
 - data collection in other locations in Alaska, SW and SE
 - cost of subsistence,



electric ATV on St. Paul Island, TDX

