

Residential Wood Burning in Minnesota

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Agenda

Background

2020 Survey

Result

Emissions

Key findings

Background

- Survey done since the 1960s
- Informs policy
- Manage forests
- Emission inventory
- Wood-burning trends

2020 Survey

Start Here ▶ In the last year, have you burned wood at your primary or secondary residence in Minnesota (indoors or outdoors) or at a campground?

- NO.** Please return the survey with this box checked. You do not need to answer any other questions.
- YES.** Please continue.



**Residential Wood
Fuel Survey**



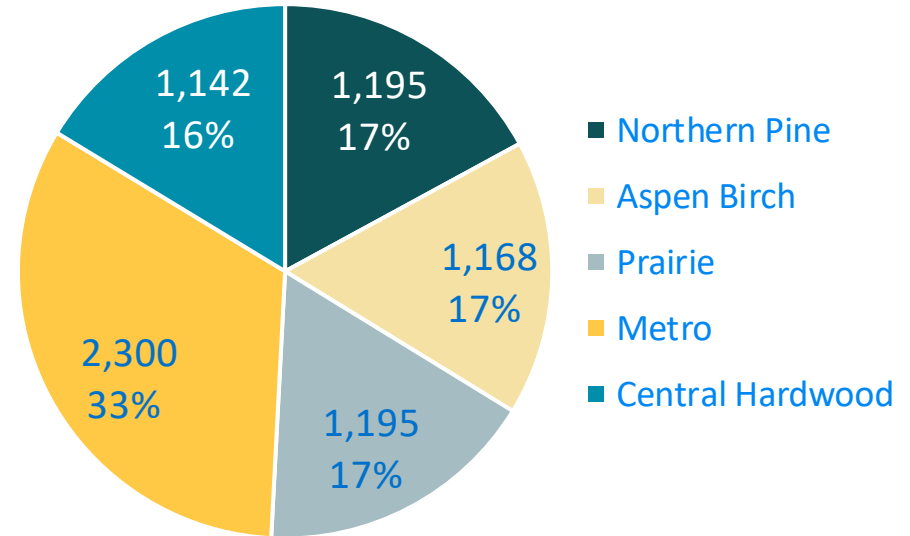
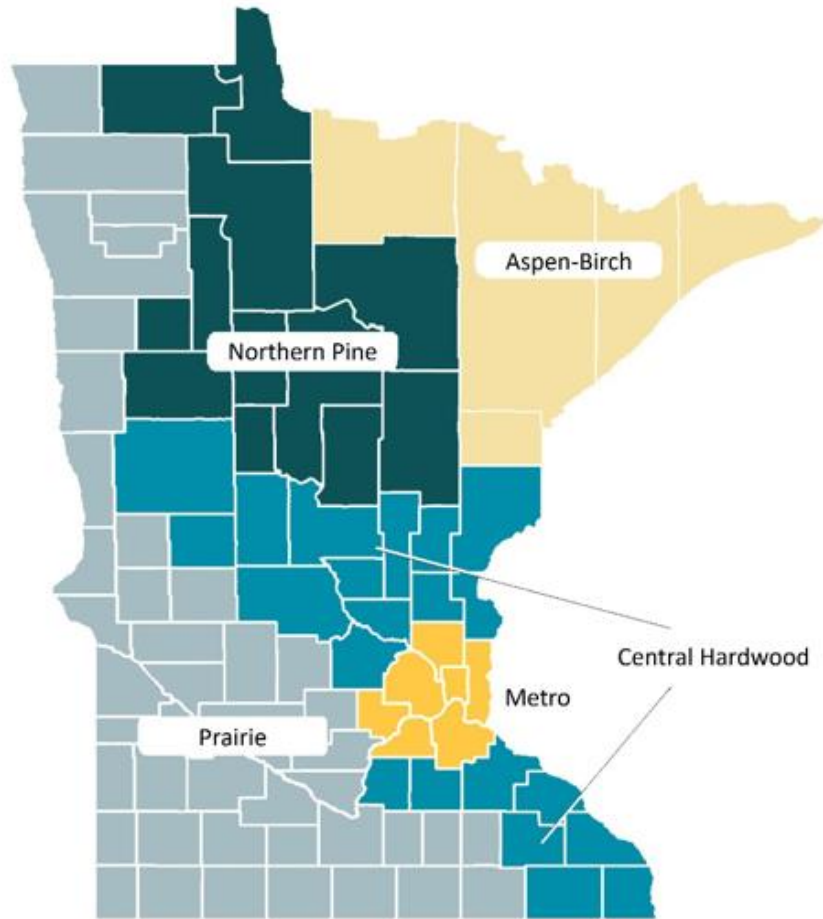
Conducted by the Minnesota Pollution Control Agency in partnership with the Department of Natural Resources and the US Forest Service

- Design
- Sample selection
- Survey administration
- Mailings and response rates

2020 Survey Cont.

- 7000 random addresses
- Only paper surveys
 - Invitation letter and a survey
 - Reminder postcard
 - Final survey packet
- Simplified questions about wood burning equipment

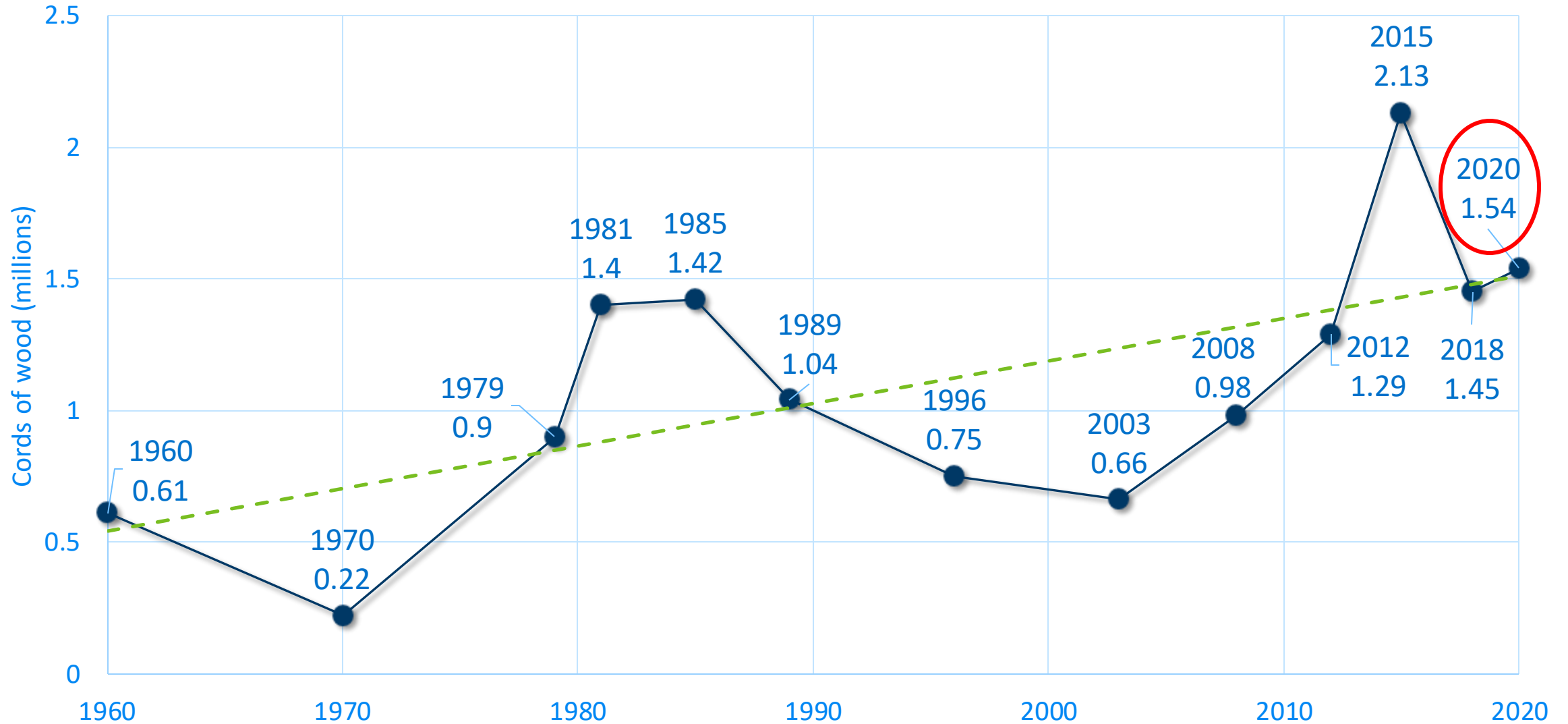
Survey regions



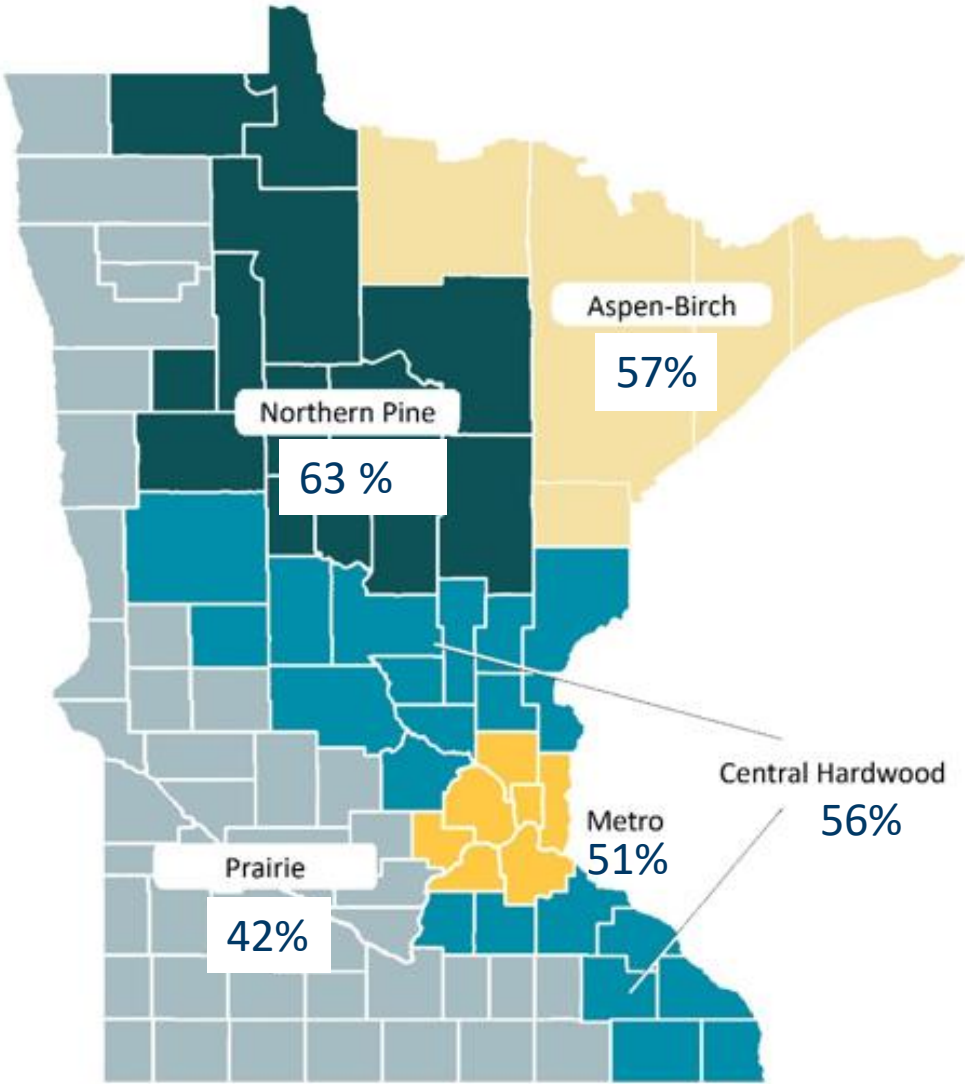
Response rate per region

	Northern Pine	Aspen-Birch	Prairie	Metro Area	Central Hardwood	Statewide
Number of occupied housing units	125,315	112,841	315,677	1,187,423	444,347	2,185,603
Number of addresses in sample	1,195	1,168	1,195	2,300	1,142	7,000
Number returned as undeliverable	21	21	0	49	32	168
Number of refusals	1	0	0	0	0	1
Total completed	263	248	233	477	239	1,460
Response rate	23.0%	21.3%	19.5%	20.4%	20.3%	21.4%

Volume of wood consumed over survey years

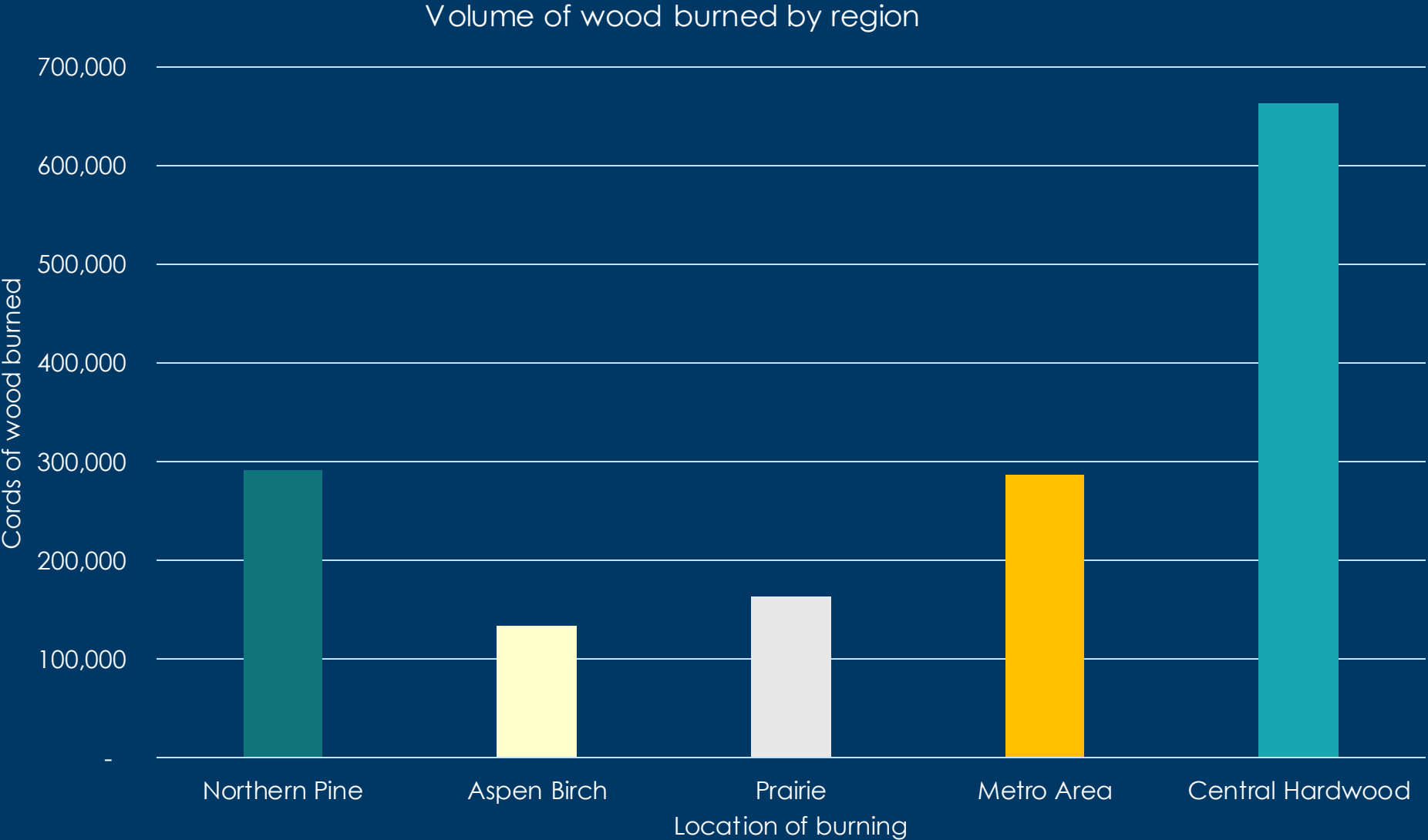


Percentage of households burning by region

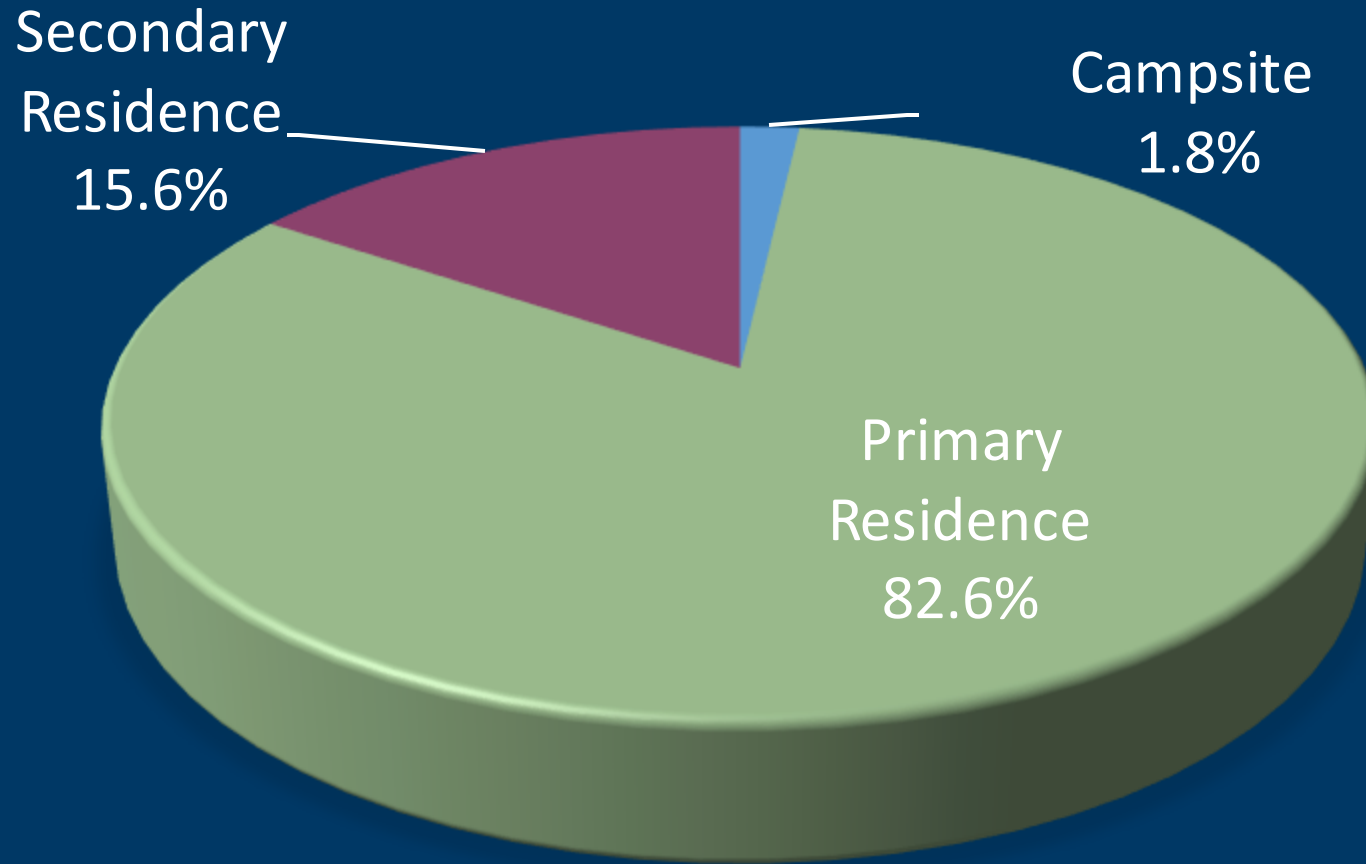


Statewide burning rate **53%**

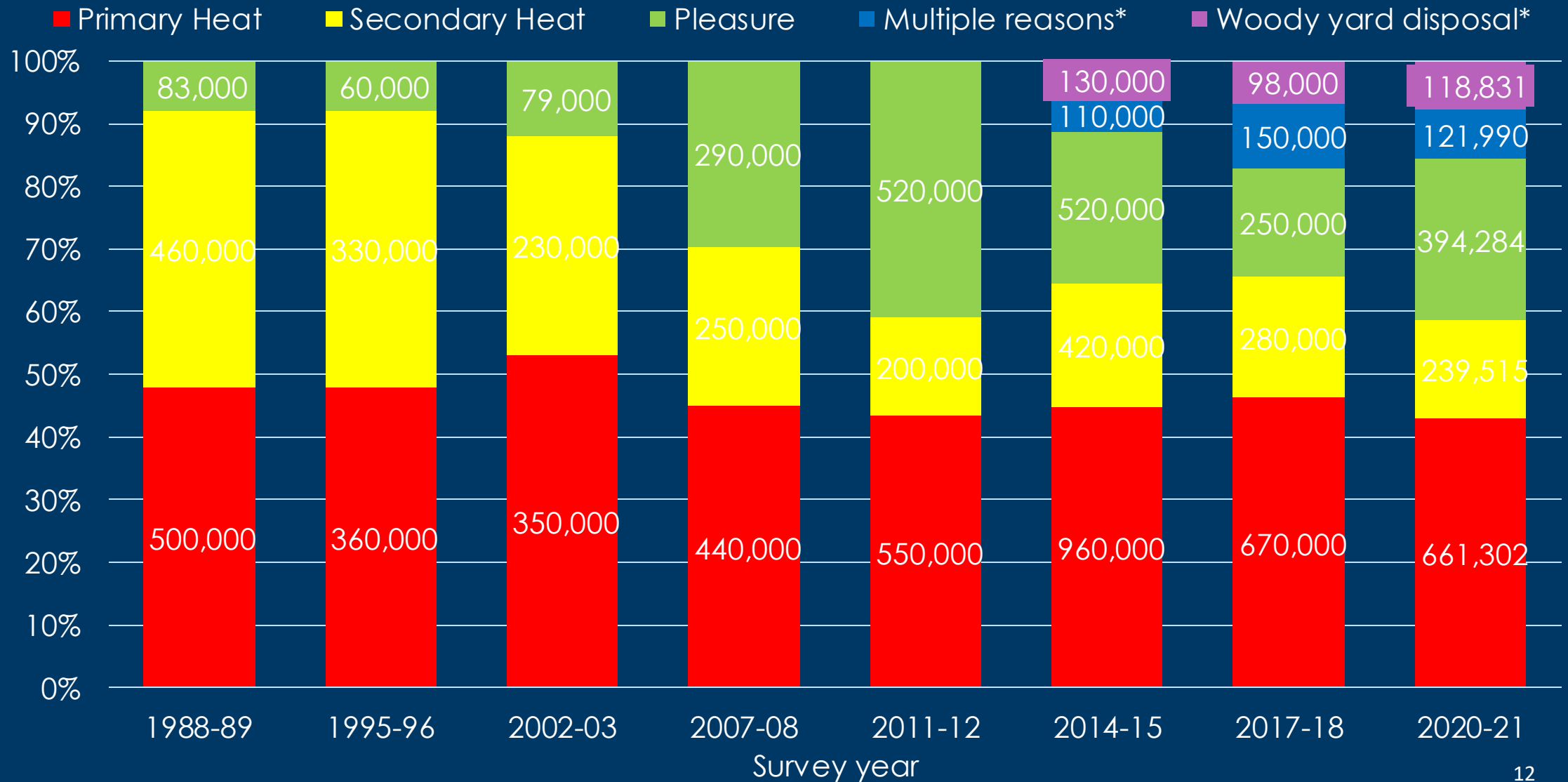
Volume of wood burned by region



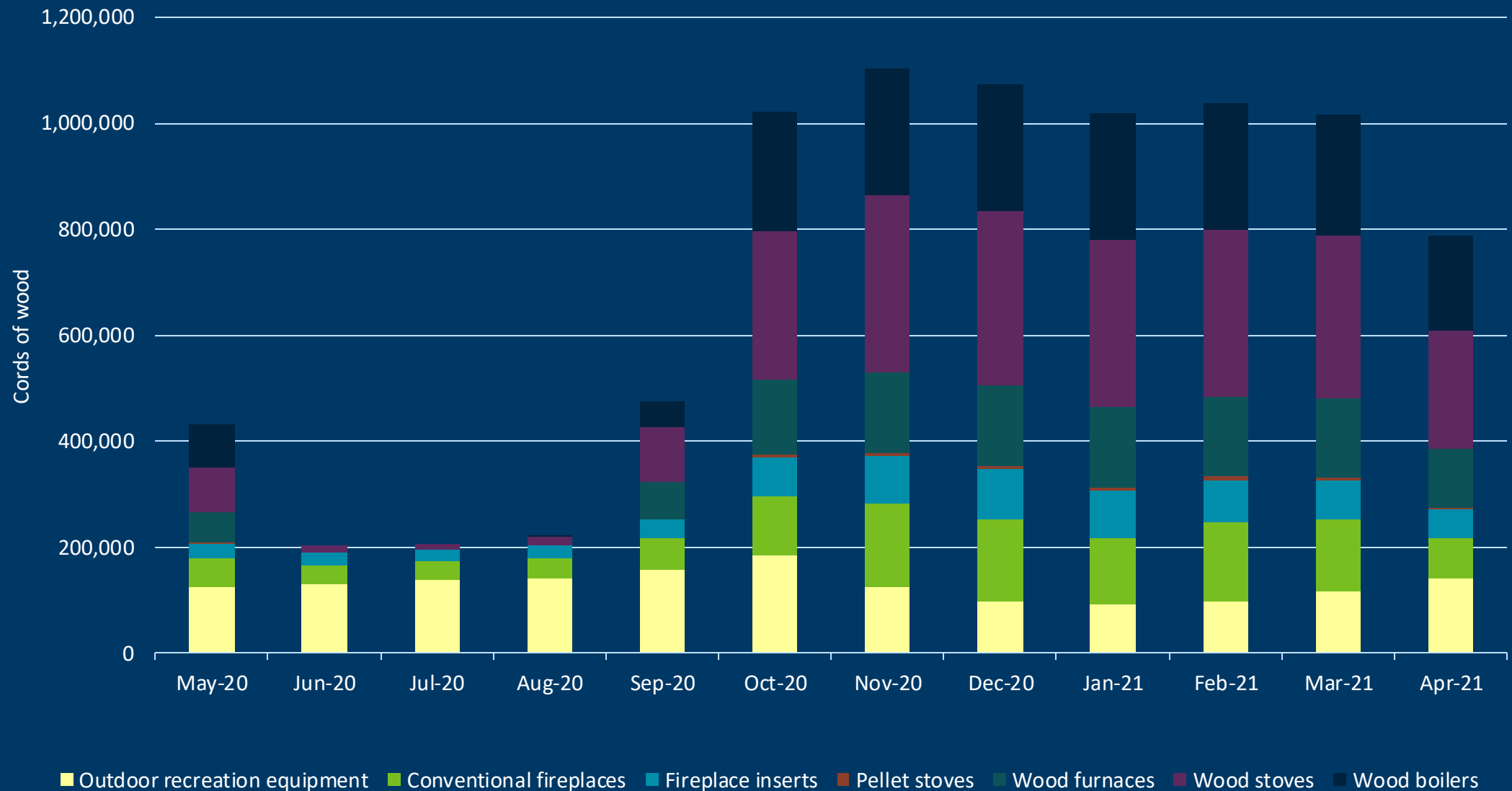
Wood burned by property type



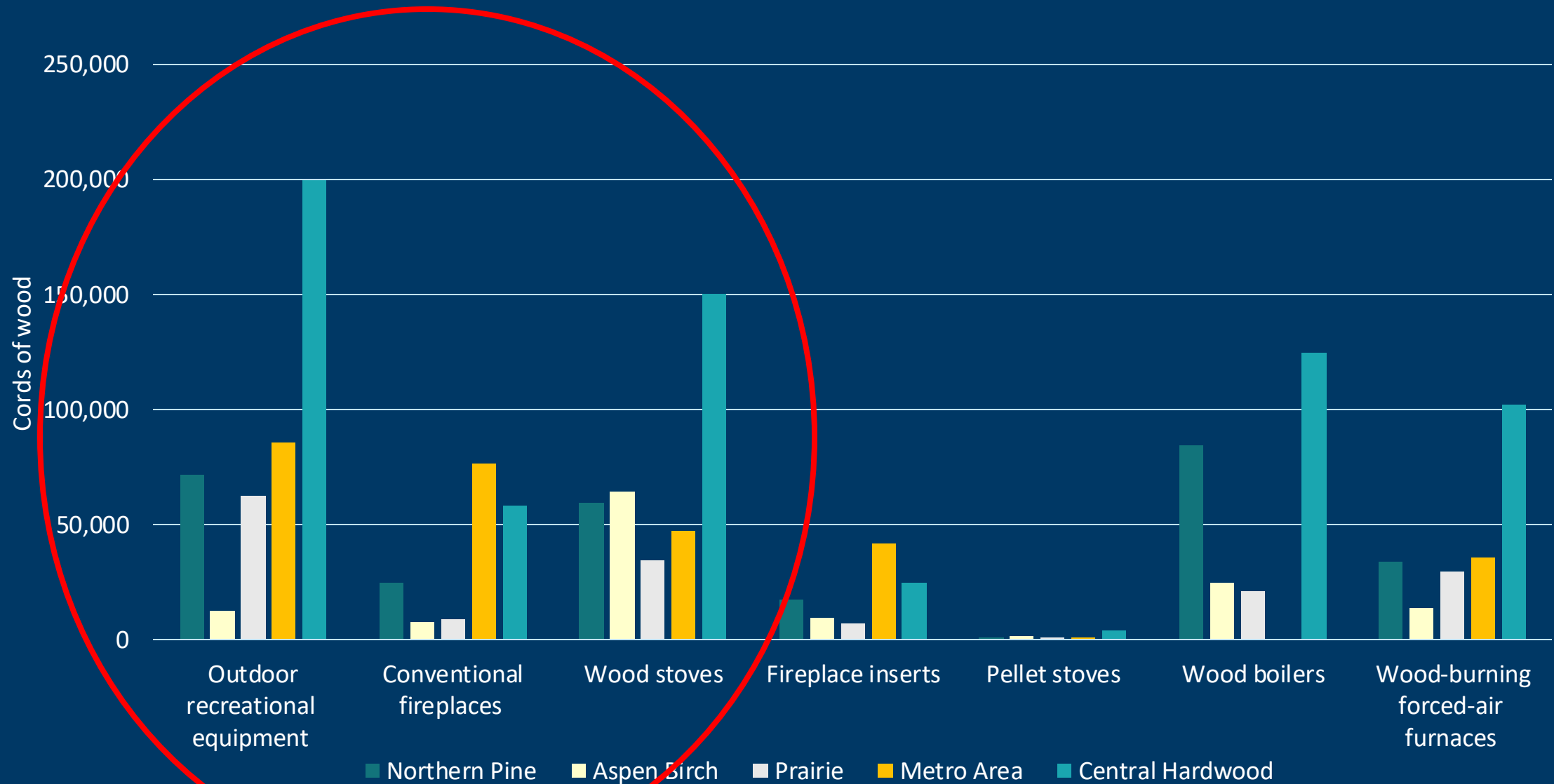
Wood burned by reason for burning over time, as percent of total wood burned



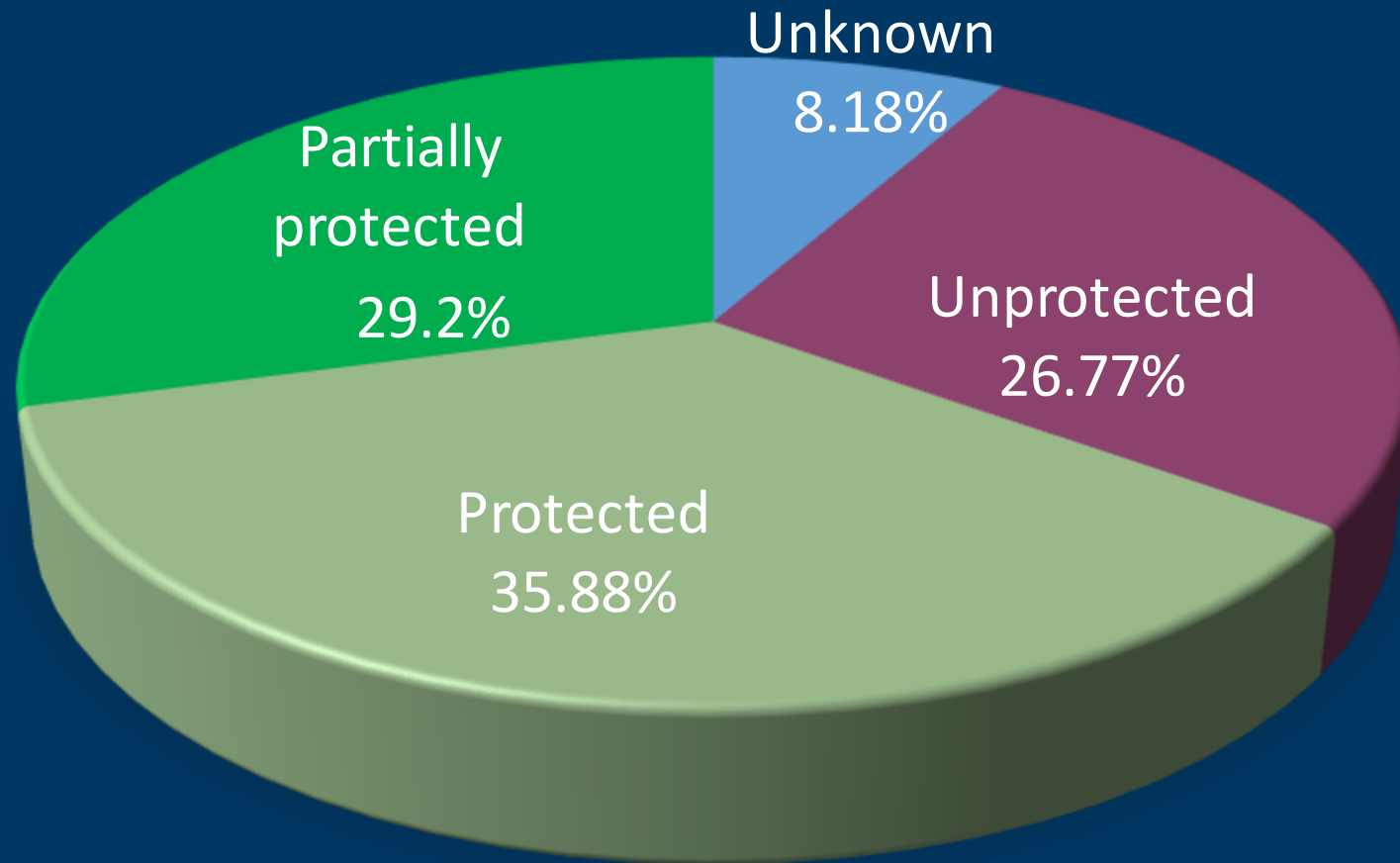
Volume of wood burned each month by equipment type



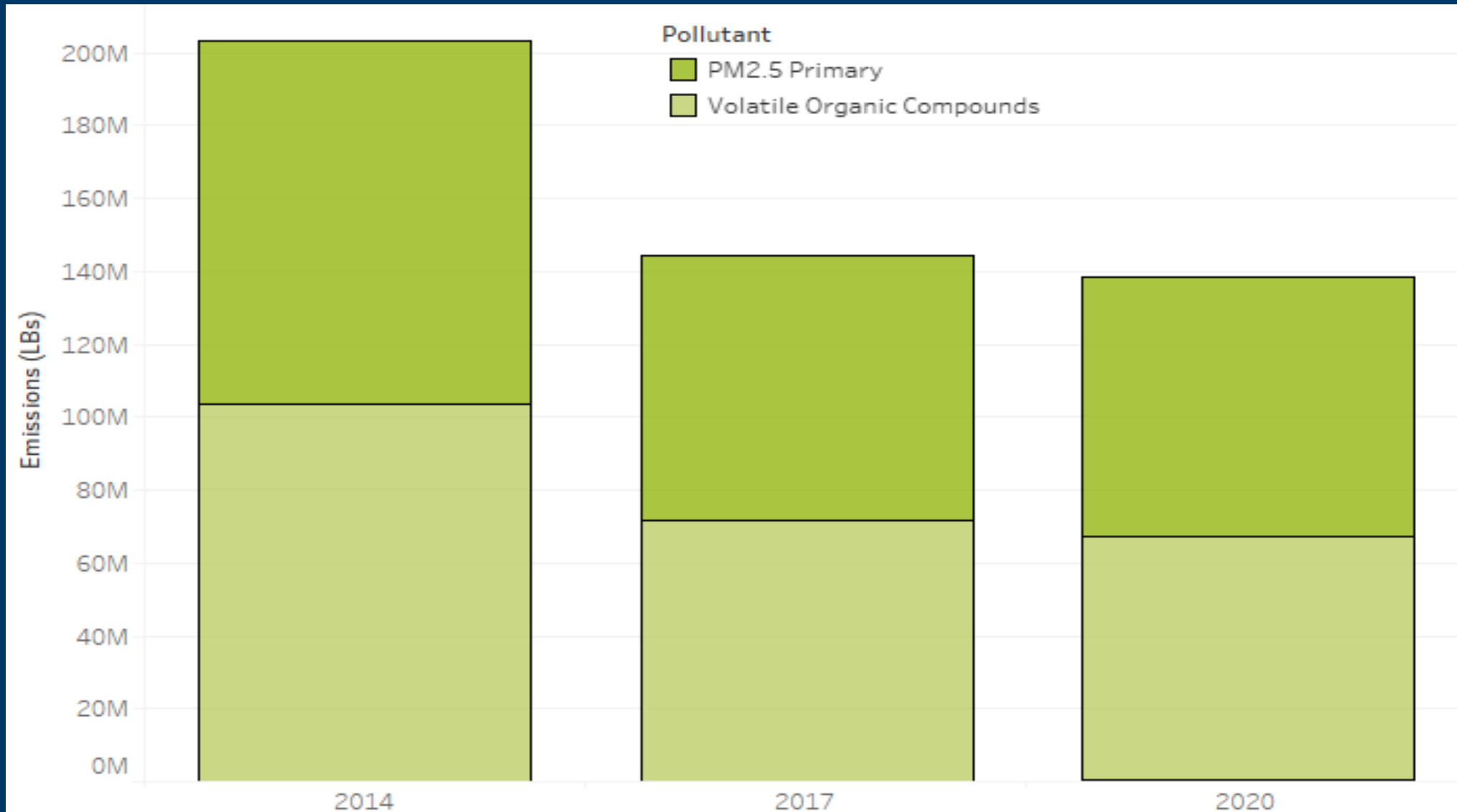
Estimated volume of wood burned by equipment type by location



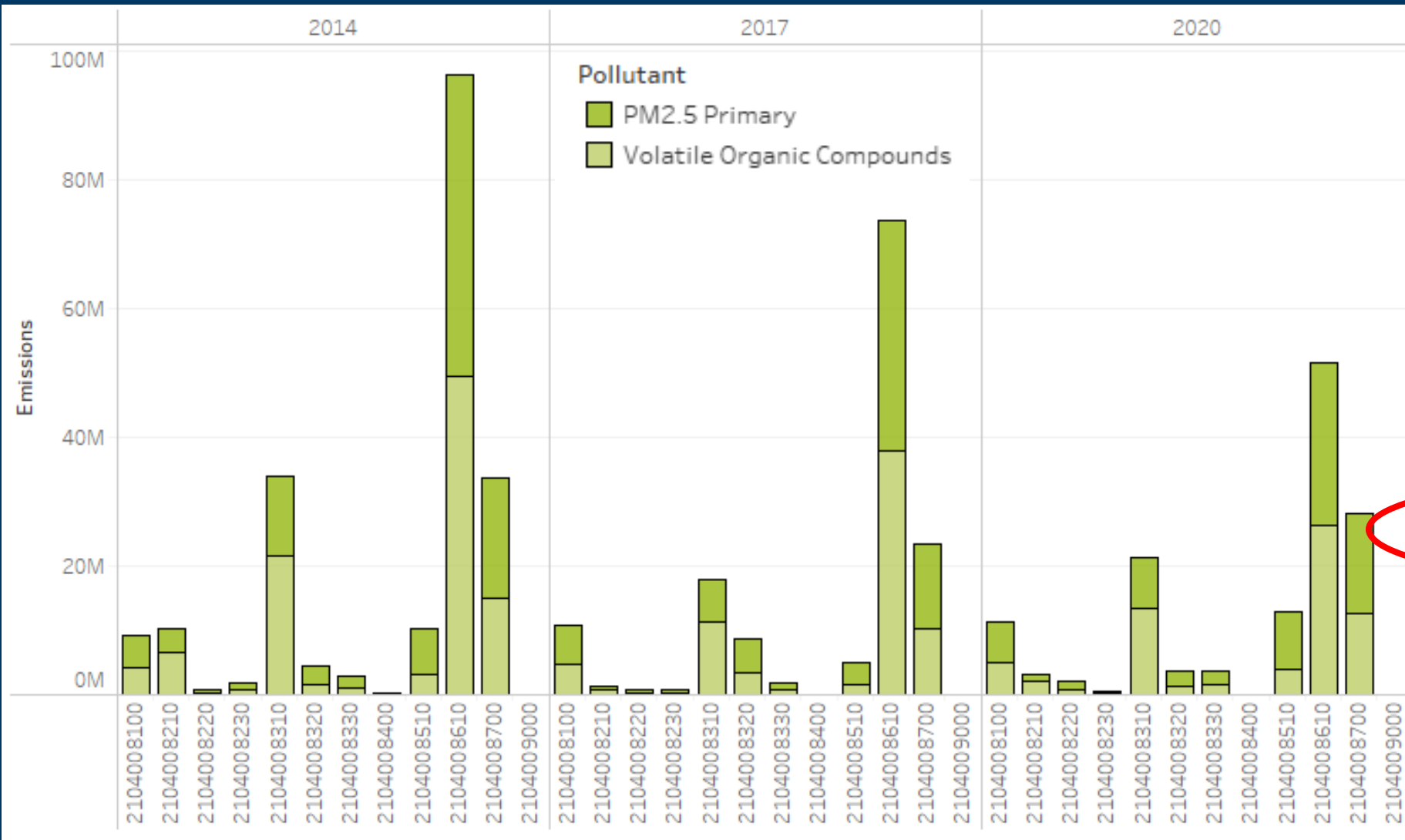
Storage conditions of burned wood



Minnesota statewide emissions

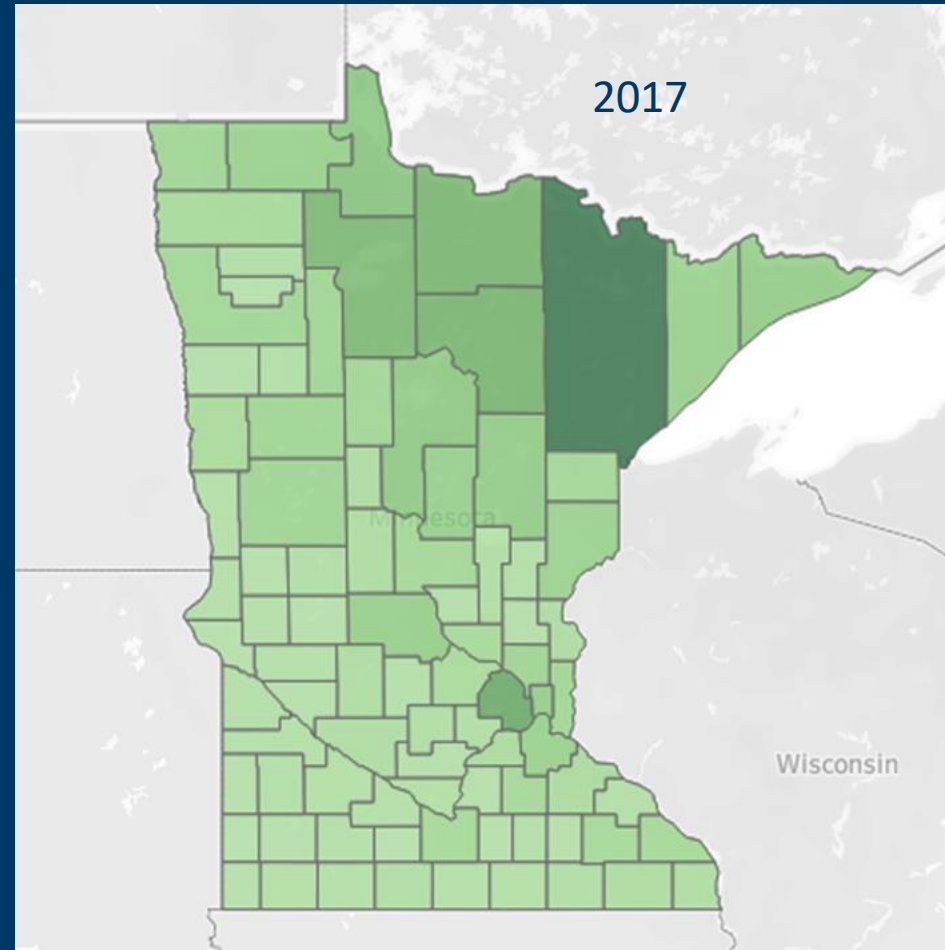
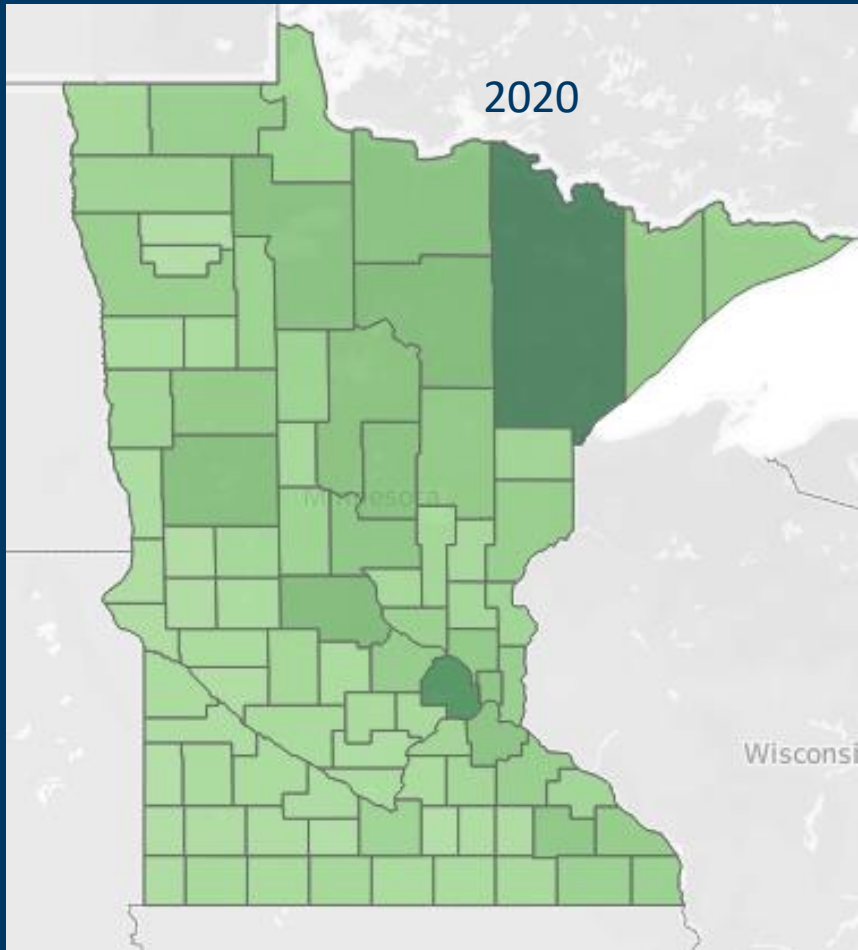


Minnesota statewide emissions by SCC

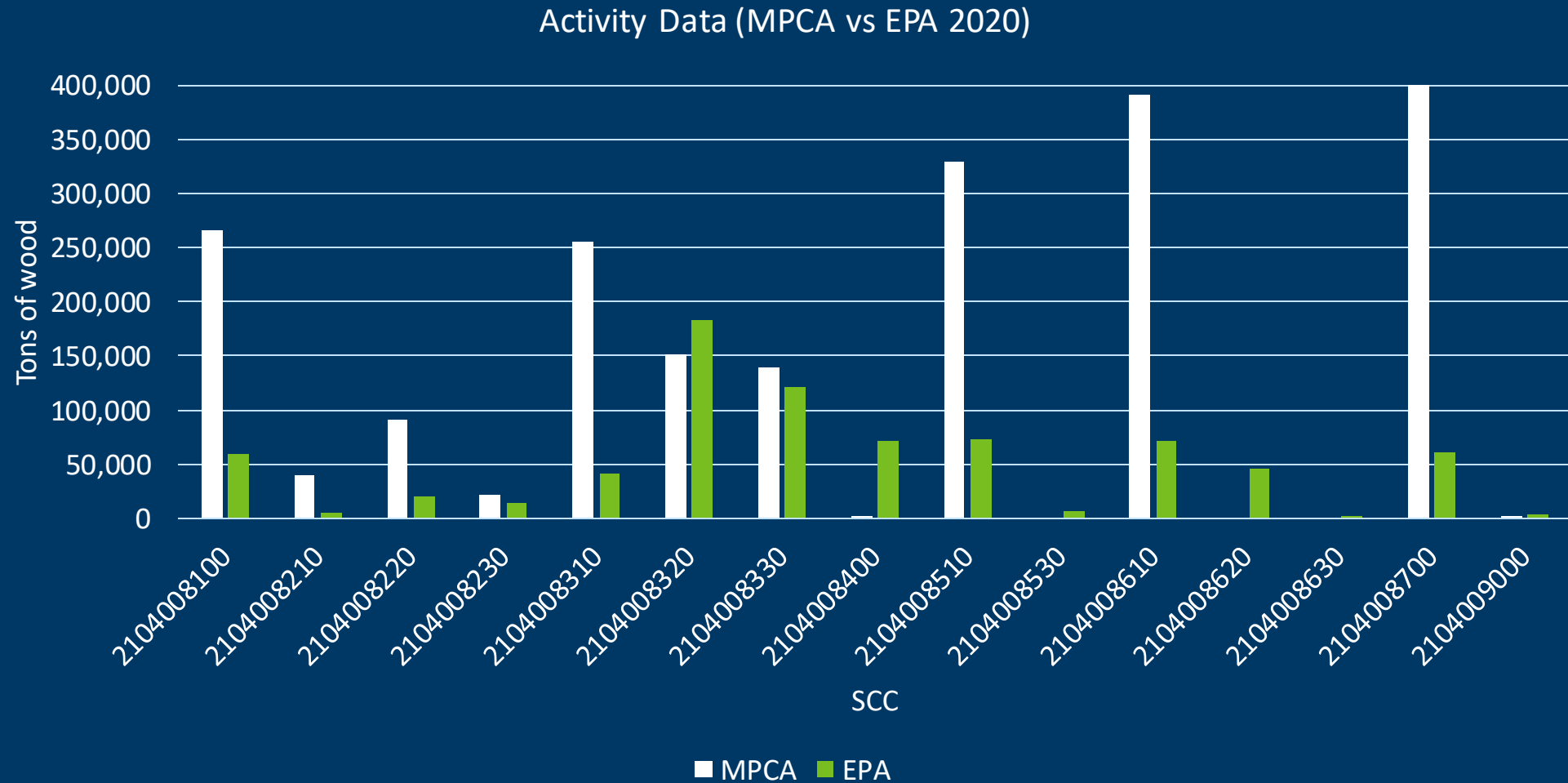


SCC	Short Description
2104008100	Residential Heating: Fireplaces (cordwood)
2104008210	Residential Heating: Inserts non-EPA certified
2104008220	Residential Heating: Inserts EPA certified non-cat
2104008230	Residential Heating: Inserts EPA certified cat
2104008310	Res. Heating: freestanding WS non certified
2104008320	Res. Heating: freestanding WS EPA cert. non-cat
2104008330	Res. Heating: freestanding WS EPA certified cat
2104008400	Residential Heating: Wood pellet stoves
2104008510	Residential Heating: Wood furnace indoor
2104008610	Residential Heating: Wood Hydronic heater: outdoor
2104008700	Res. Heating: Outdoor woodburning device, NEC
2104009000	Residential Heating: Firelog

Statewide PM2.5 and VOC emissions



2020 Activity data (MPCA vs EPA wagon wheel)



Key findings

- Wood burning has increased since 2017
- 53% of all MN households burn wood
- Most wood used for primary heat
- There was a significant increase in outdoor wood burning
- Decrease in wood burning in outdoor boilers
- Emissions are very similar to 2017

Thank you!

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