The NEAR Program

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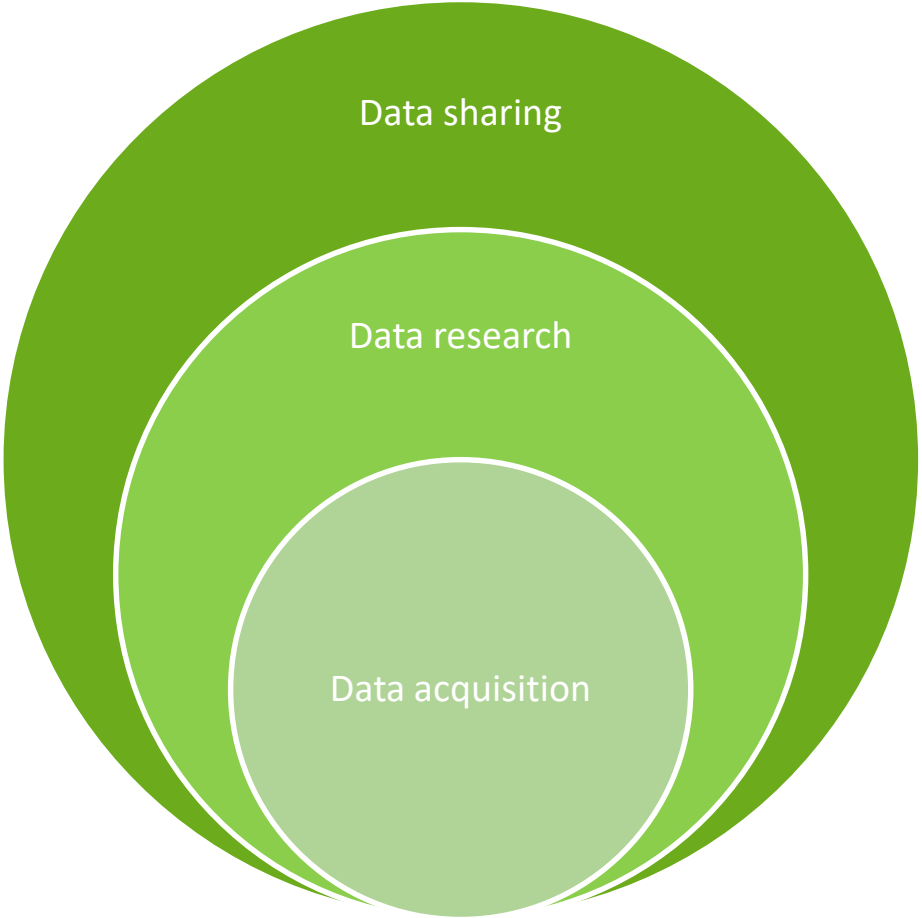
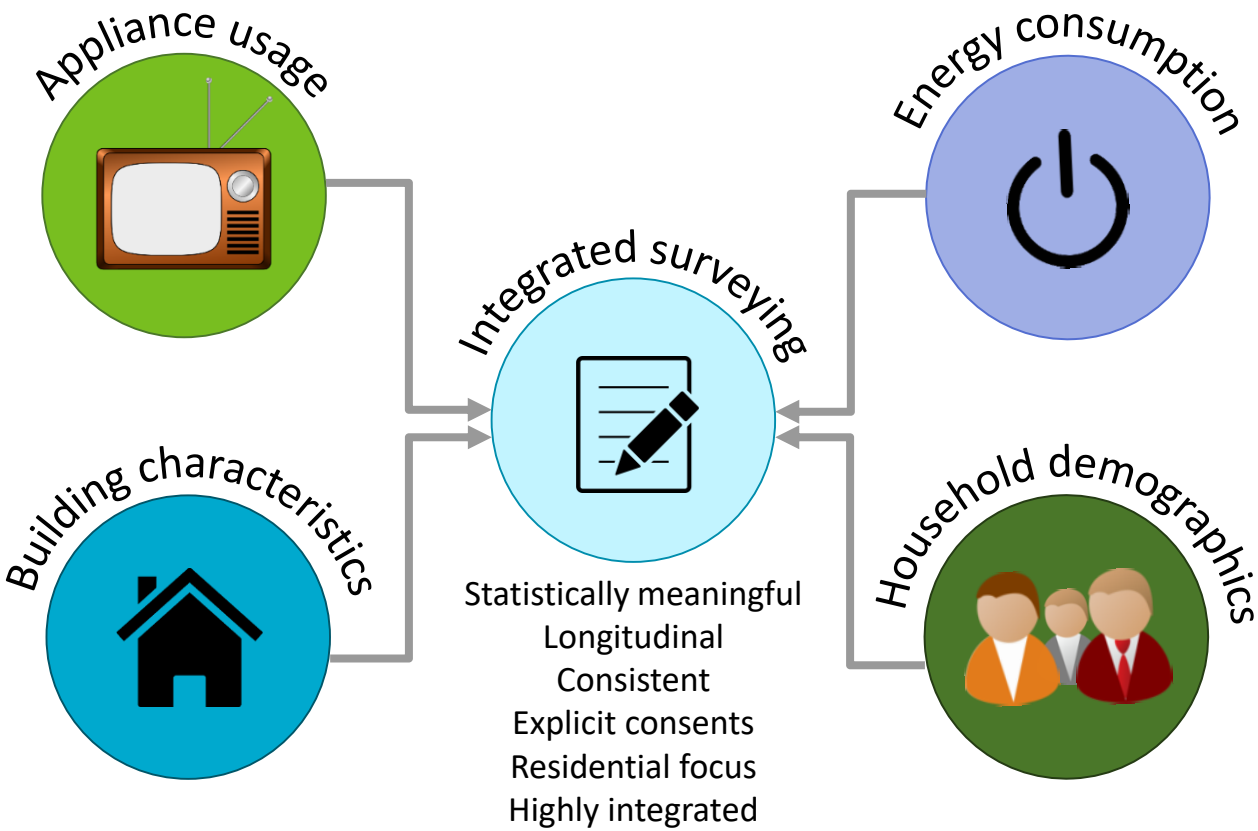
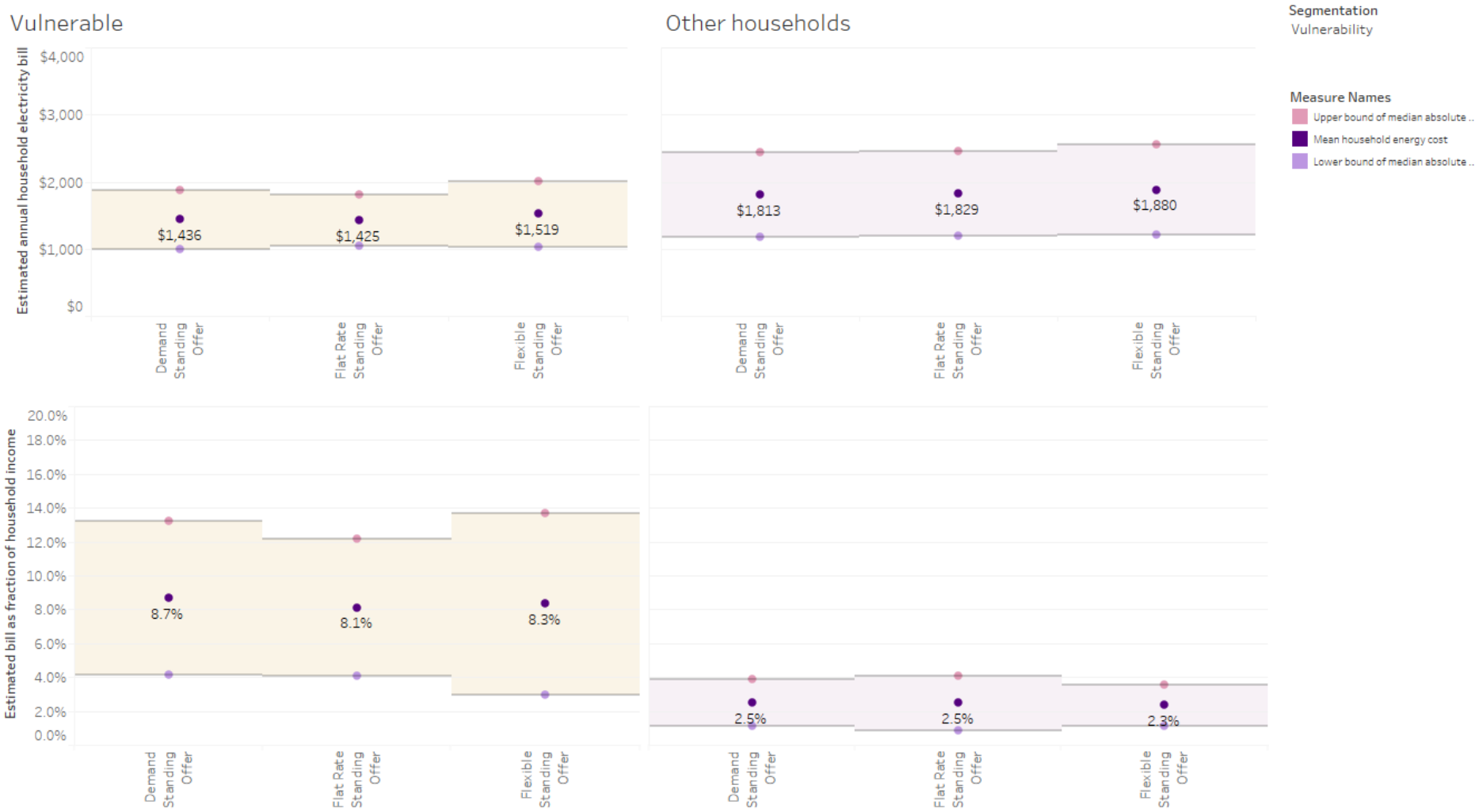
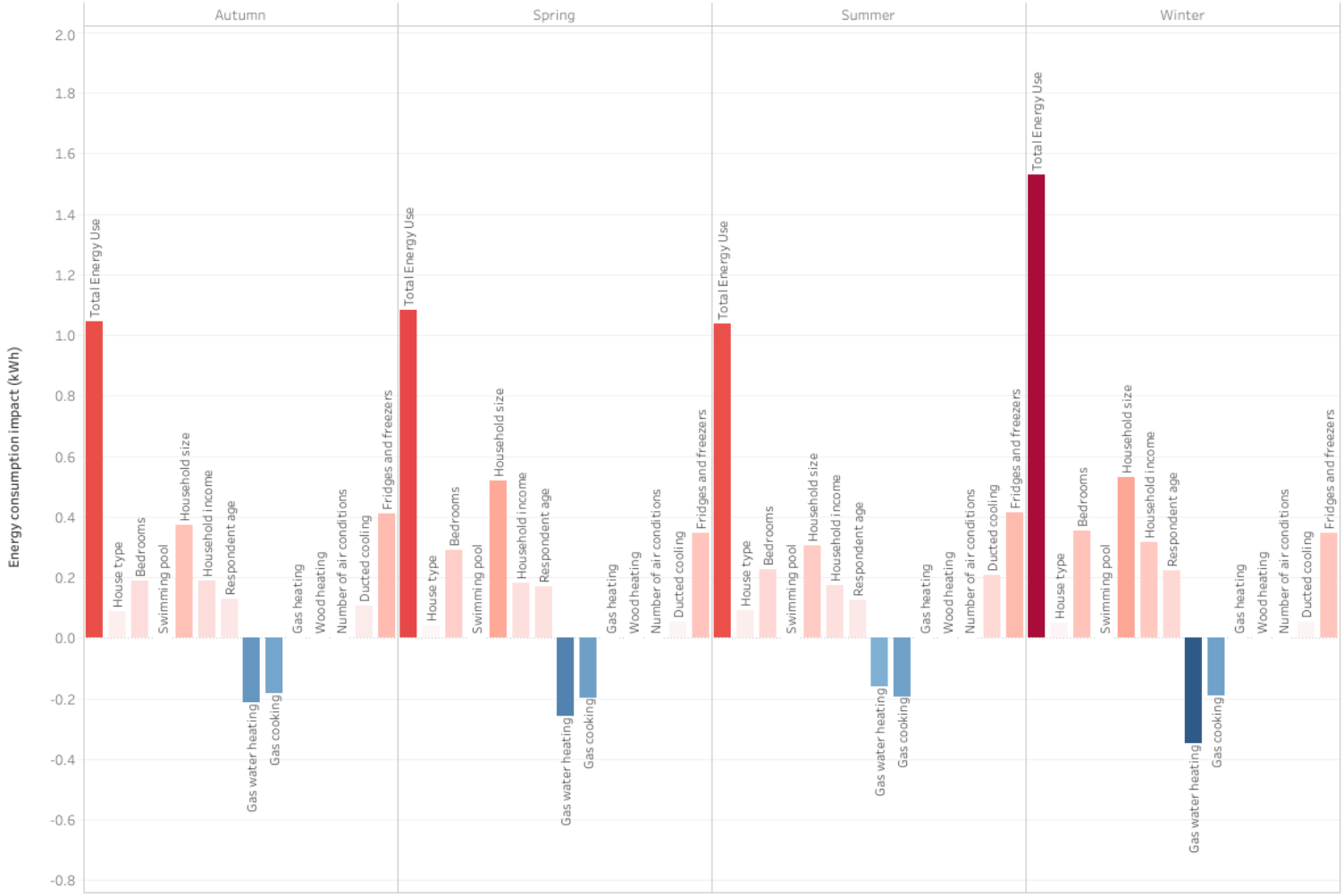

Data sharing
Data research
Data acquisition


Appliance usage
Energy consumption
Integrated surveying
Building characteristics
Household demographics
Statistically meaningful
Longitudinal
Consistent
Explicit consents
Residential focus
Highly integrated


Vulnerable
Other households
Segmentation
Vulnerability
Measure Names
Upper bound of median absolute ..
Mean household energy cost
Lower bound of median absolute ..
Estimated annual household electricity bill
$4,000
$3,000
$2,000
$1,000
$0
$1,436
$1,425
$1,519
$1,813
$1,829
$1,880
Demand Standing Offer
Flat Rate Standing Offer
Flexible Standing Offer
Estimated bill as fraction of household income
20.0%
18.0%
16.0%
14.0%
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
8.7%
8.1%
8.3%
2.5%
2.5%
2.3%

Predictors of energy consumption



Analysis period
Seasonal

House type
Separate house

Bedrooms
3

Swimming pool
No

Household size
3

Household income
$52,000 – $77,999 per year

Respondent age
30

Gas water heating
Yes

Gas cooking
Yes

Gas heating
No

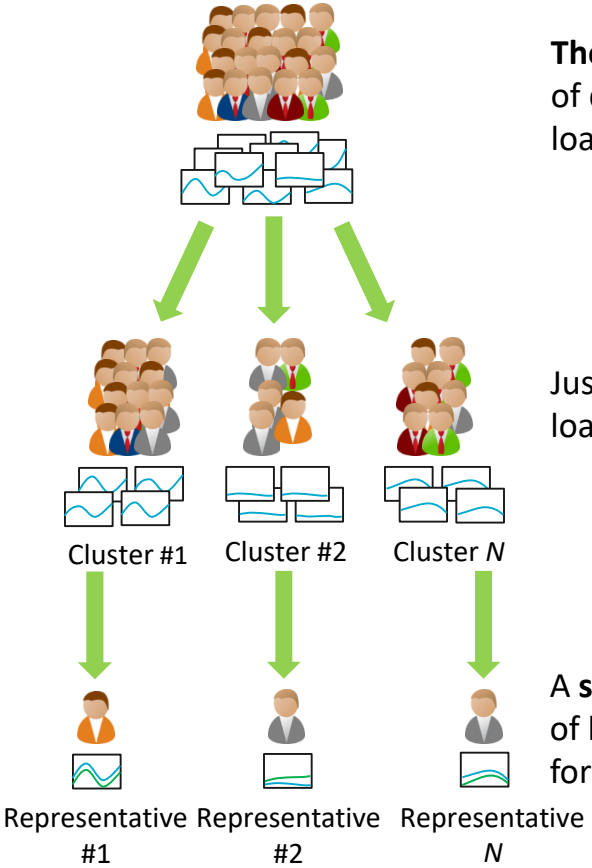
Wood heating
No

Number of air conditioners
0

Ducted cooling
Yes

Fridges and freezers
2

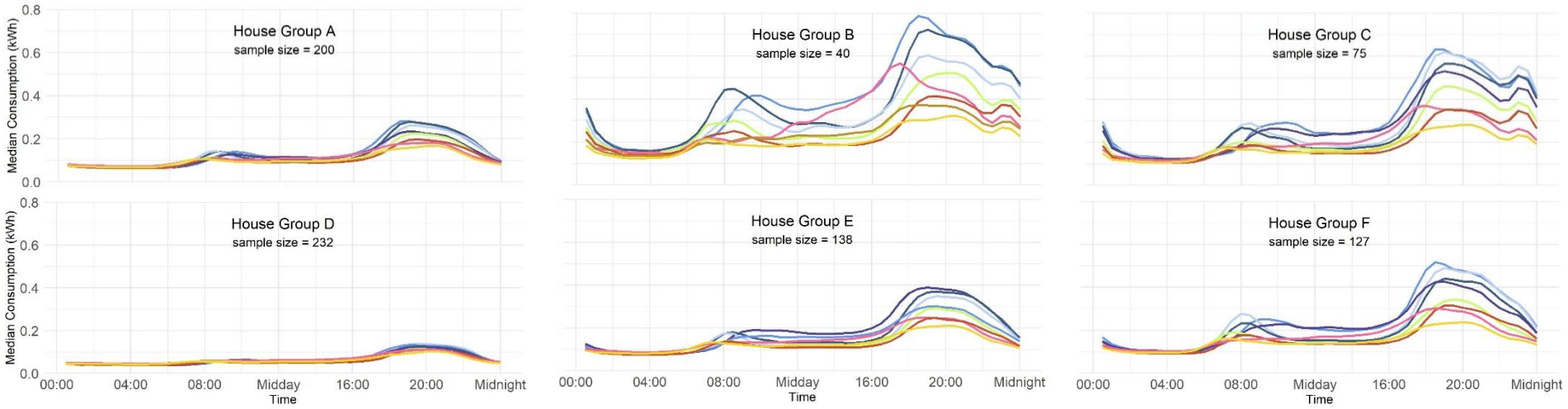
Autumn	1.04 kWh
Spring	1.08 kWh
Summer	1.04 kWh
Winter	1.53 kWh

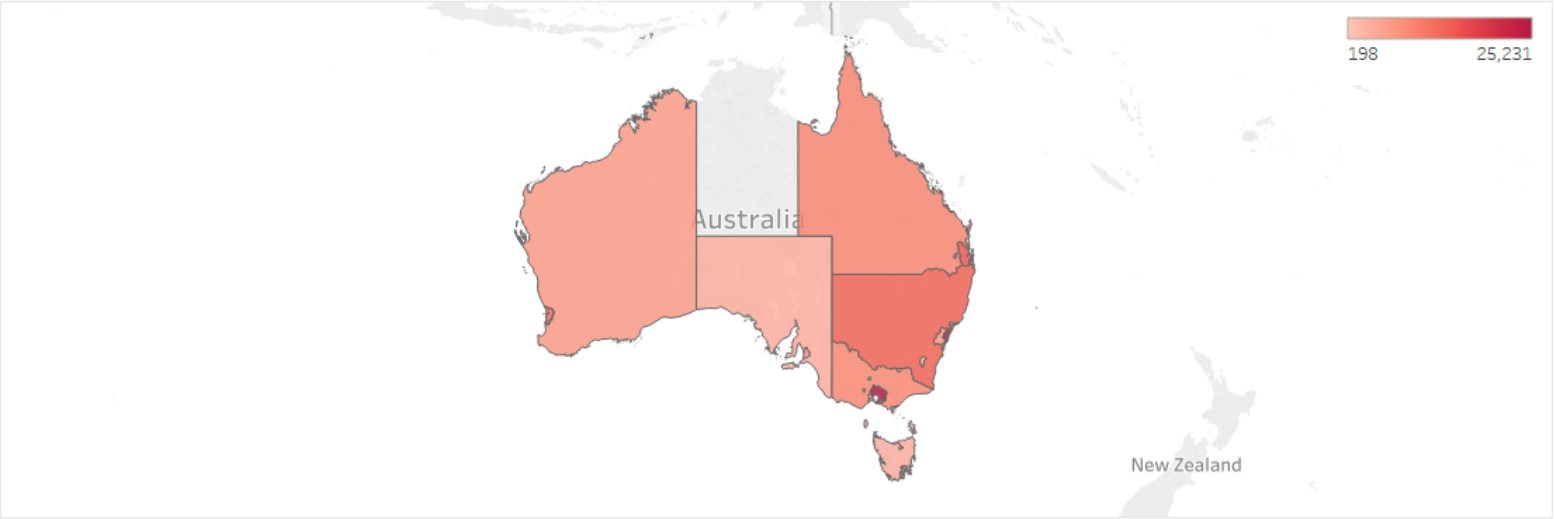


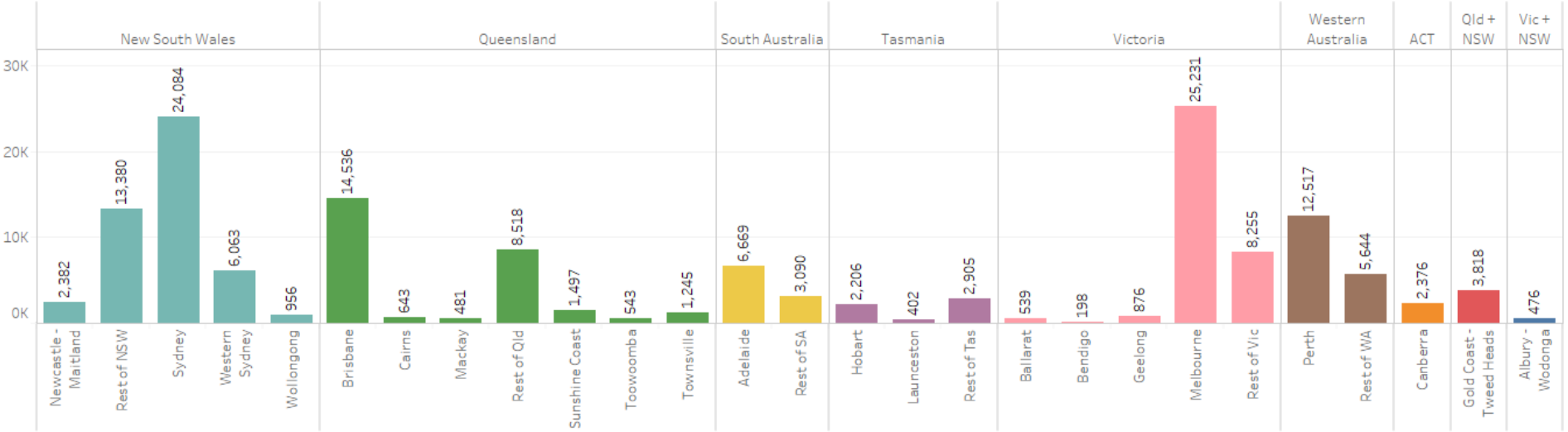
Thousands (potentially millions) of different customers with load data

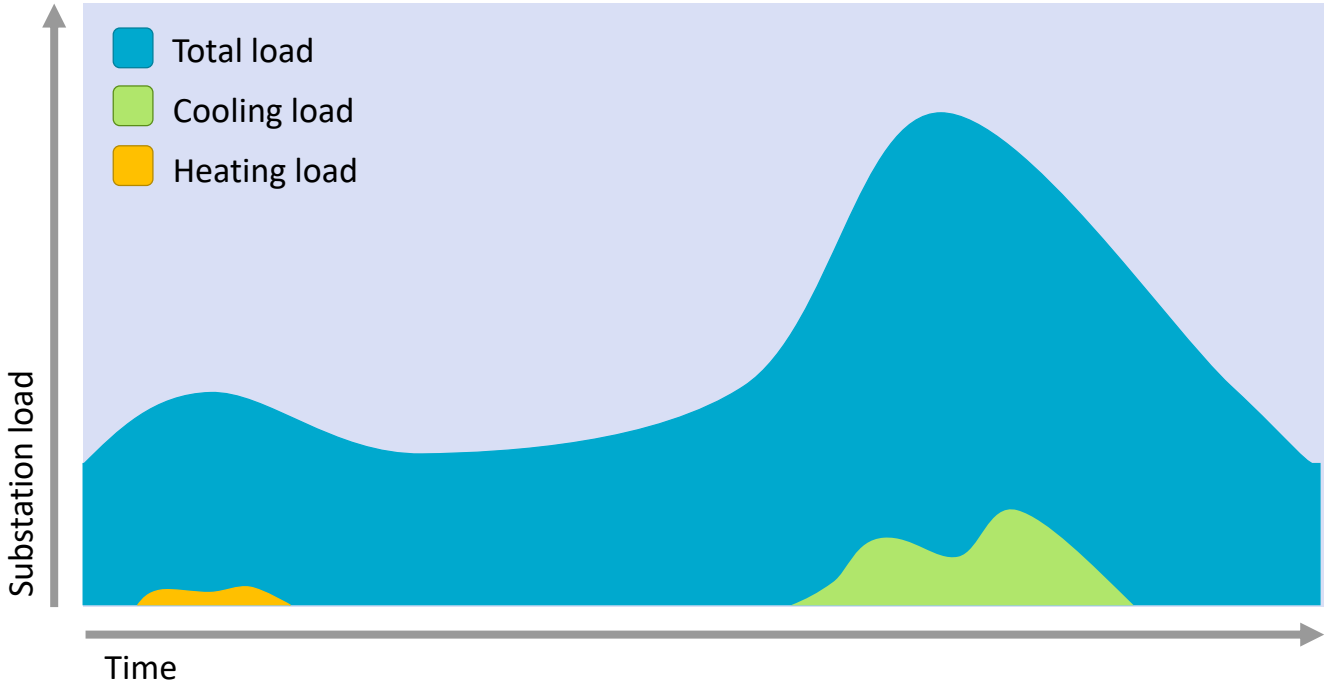
Just a **few** groups of distinct load behaviours

A **single** representation of behaviour across the year for each group


House Group A
sample size = 200
House Group B
sample size = 40
House Group C
sample size = 75
House Group D
sample size = 232
House Group E
sample size = 138
House Group F
sample size = 127
Median Consumption (kWh)
0.0
0.2
0.4
0.6
0.8
00:00
04:00
08:00
Midday
16:00
20:00
Midnight
Time


Variable of interest
Total electricity consumption (GWh)
198
25,231
Australia
New Zealand


New South Wales
Queensland
South Australia
Tasmania
Victoria
Western Australia
ACT
Qld + NSW
Vic + NSW
30K
20K
10K
0K
2,382
13,380
24,084
6,063
956
14,536
643
481
8,518
1,497
543
1,245
6,669
3,090
2,206
402
2,905
539
198
876
25,231
8,255
12,517
5,644
2,376
3,818
476
Newcastle - Maitland
Rest of NSW
Sydney
Western Sydney
Wollongong
Brisbane
Cairns
Mackay
Rest of Qld
Sunshine Coast
Toowoomba
Townsville
Adelaide
Rest of SA
Hobart
Launceston
Rest of Tas
Ballarat
Bendigo
Geelong
Melbourne
Rest of Vic
Perth
Rest of WA
Canberra
Gold Coast - Tweed Heads
Albury - Wodonga


Total load
Cooling load
Heating load
Substation load
Time

Thank you

Energy
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