

# Workshop 2e:

How big data analysis might improve service

Speakers: Paul Flowers (M3)

Chaired by: Stephanie Lloyd-Foxe  
Room: Oxford Room



Setting the standard for maintaining assets  
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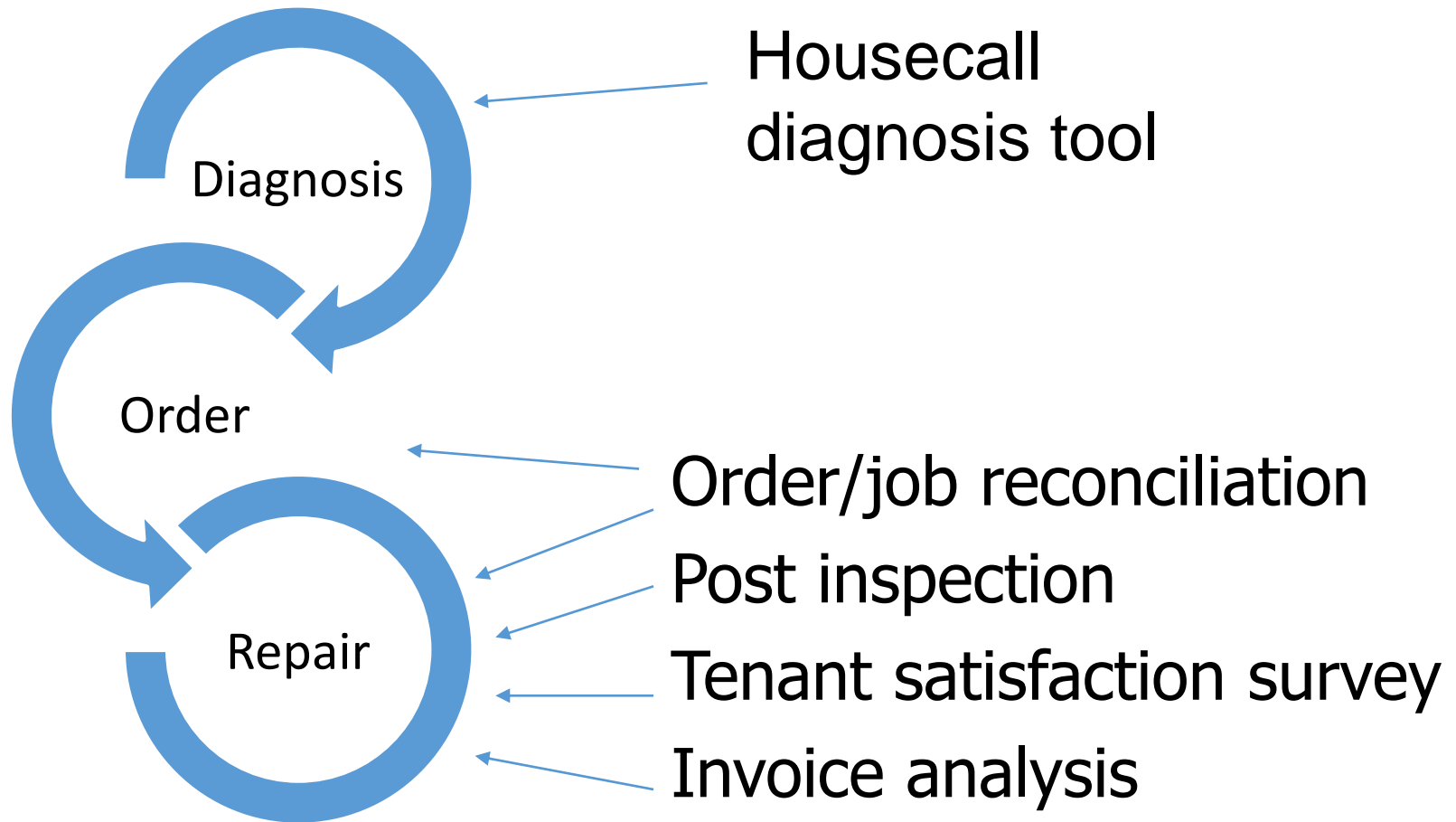
# How big data analysis might improve service

*Paul Flowers*



- What are the most commonly raised repairs
  - across large, medium and small housing associations?
  - Raised – not carried out
- What is the seasonal variation in repairs raised?
- What are most commonly typed words?
  - In tenant's own words, not SOR codes

# Repair reporting flow



# What is Housecall?

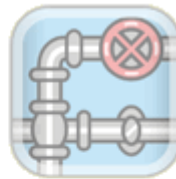
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- Online repair reporting
- Tenants diagnose repairs themselves
- 179 organisations using it
- M3 hosts system and database
  - Every client gets a dashboard of their data
  - We anonymously look across all clients
  - Over ten years of data available

Main Menu
Plumbing
Doors and Windows
Kitchens and Sinks
Heating and Electrics
External
Roofs Chimneys and Drains
Communal Facilities
Walls Floors and Stairs
Doctor Damp

## Start Here:



Plumbing



Doors and Windows



Kitchens and Sinks



Heating and Electrics



External



Roofs Chimneys and Drains



Communal Facilities



Walls Floors and Stairs

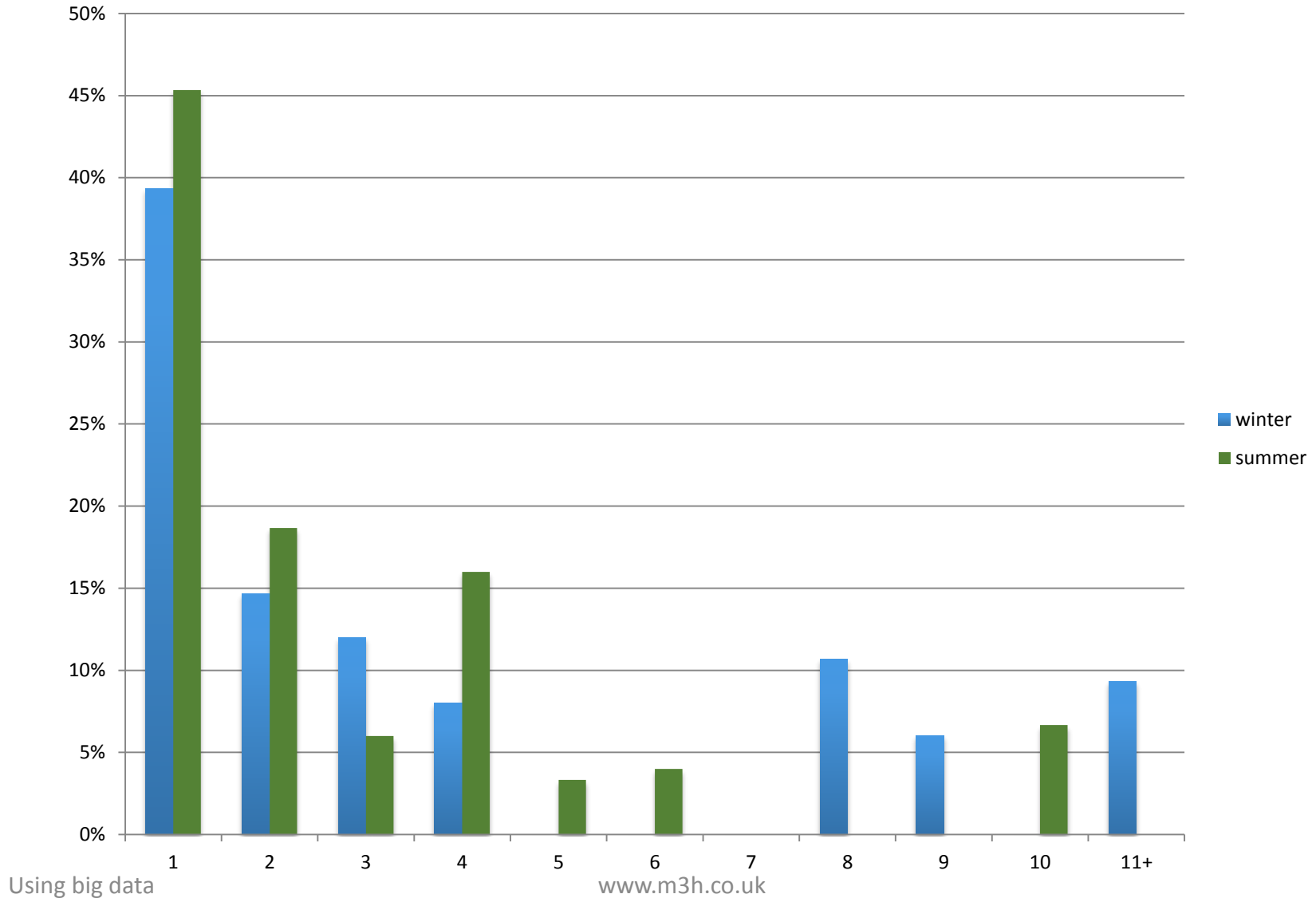


Doctor Damp



- October 2013 – February 2015
  - Two winters to balance 'freak' weather
- 228,000 repairs from 170,000 reports
  - People report more than one problem at once

# How many repairs reported each time?

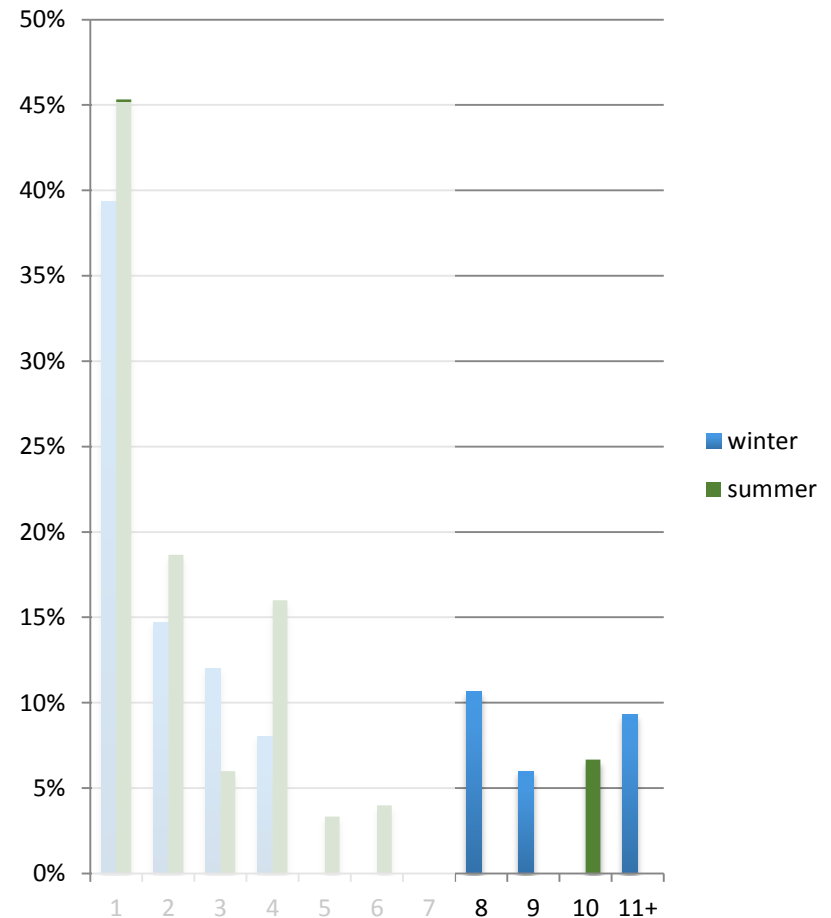




# Reasons for large number of repairs



- 10, 9 and 8 reports relating to a new tenancy
- A single 14 + report listing everything wrong with the kitchen



- Comparison and trends over absolute numbers
  - 5000 repairs sampled by trade, out of 228k
    - Best way to handle big data – take subsets
  - % difference between trades or months
- Sensible cross checking
  - Two days from two weeks in each month
  - 100 free text comments checked manually
  - 500 free text comments by word frequency
- More graphs than time to show here



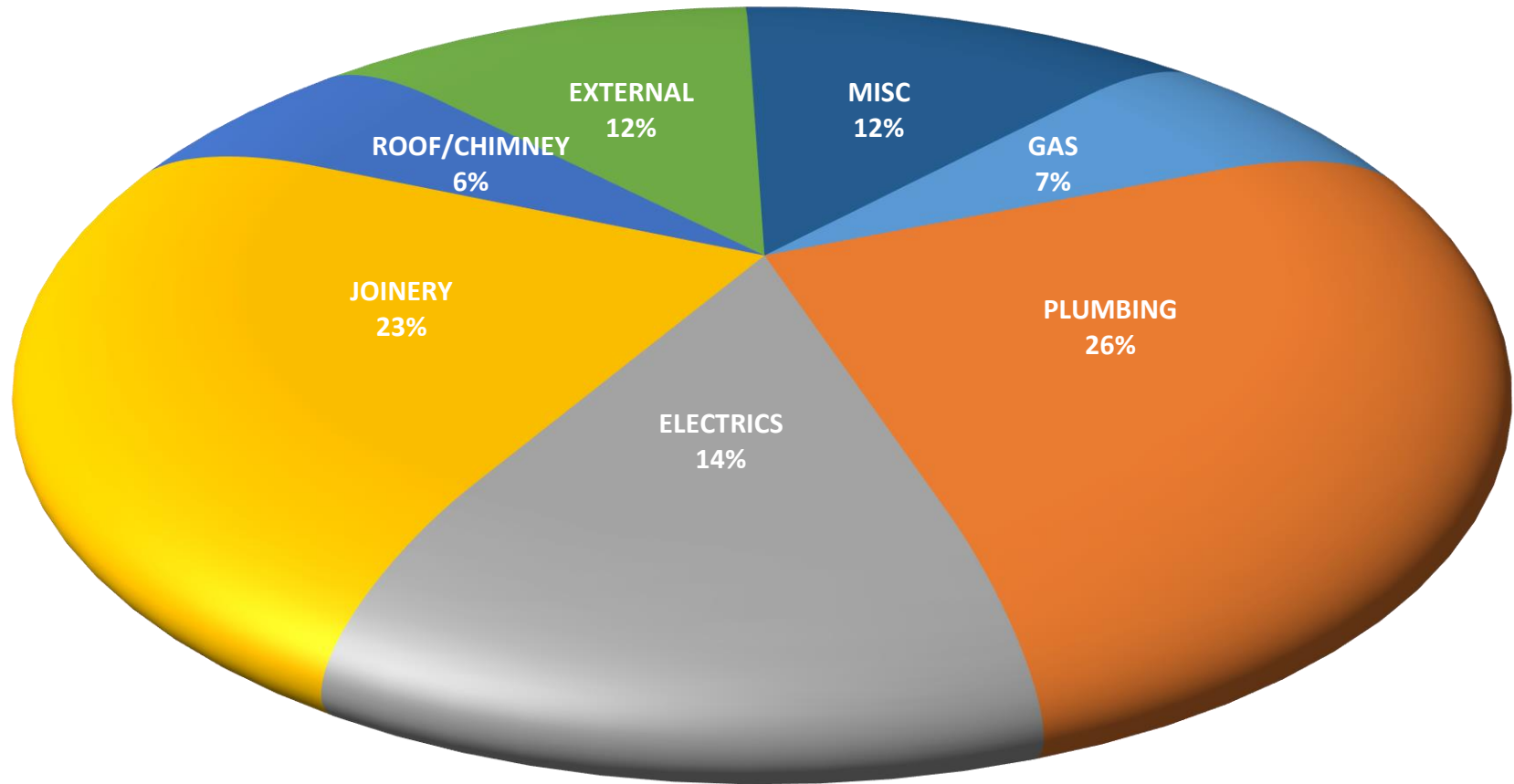
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# Most commonly reported repairs

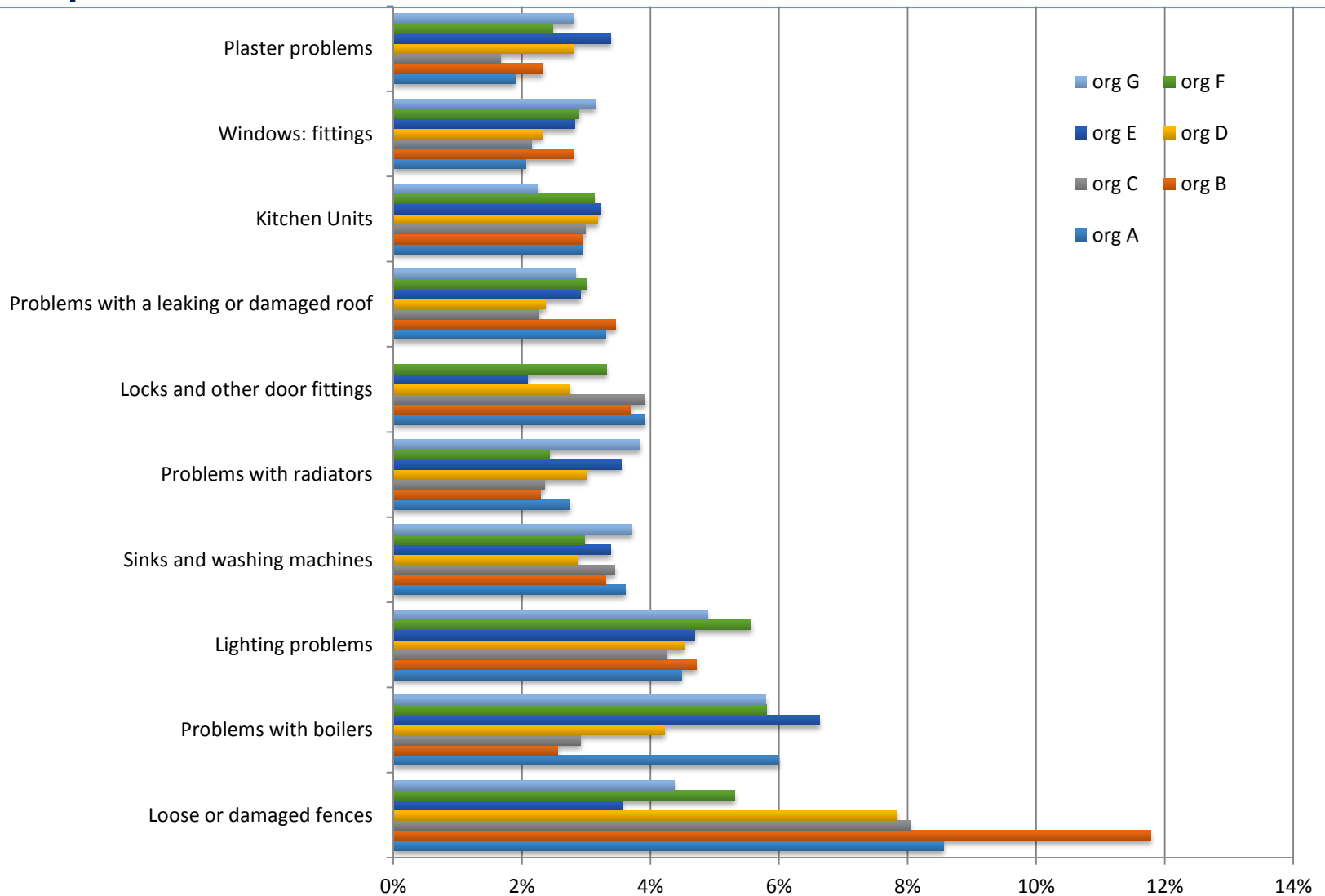
# Problem areas



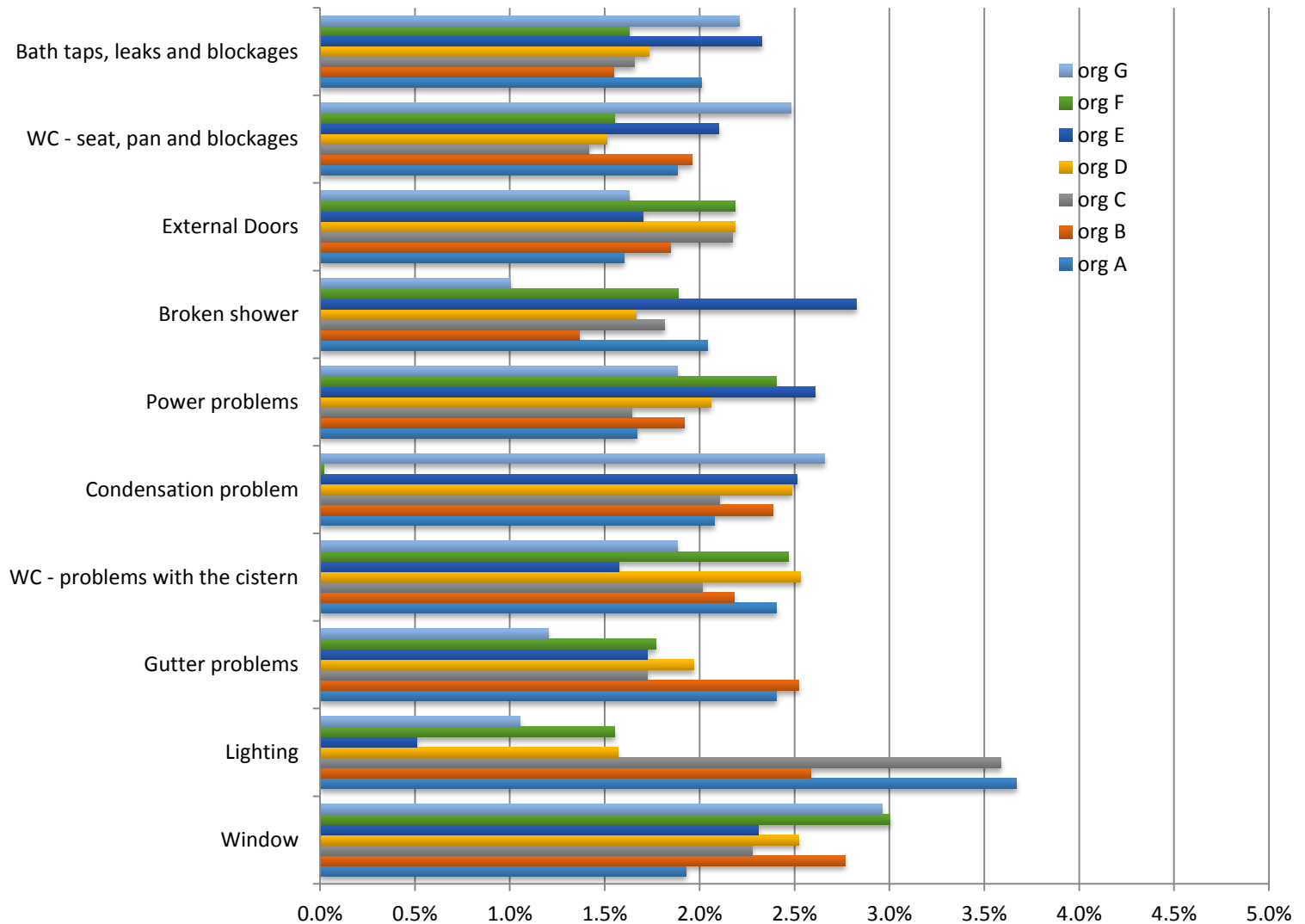
■ GAS ■ PLUMBING ■ ELECTRICS ■ JOINERY ■ ROOF/CHIMNEY ■ EXTERNAL ■ MISC



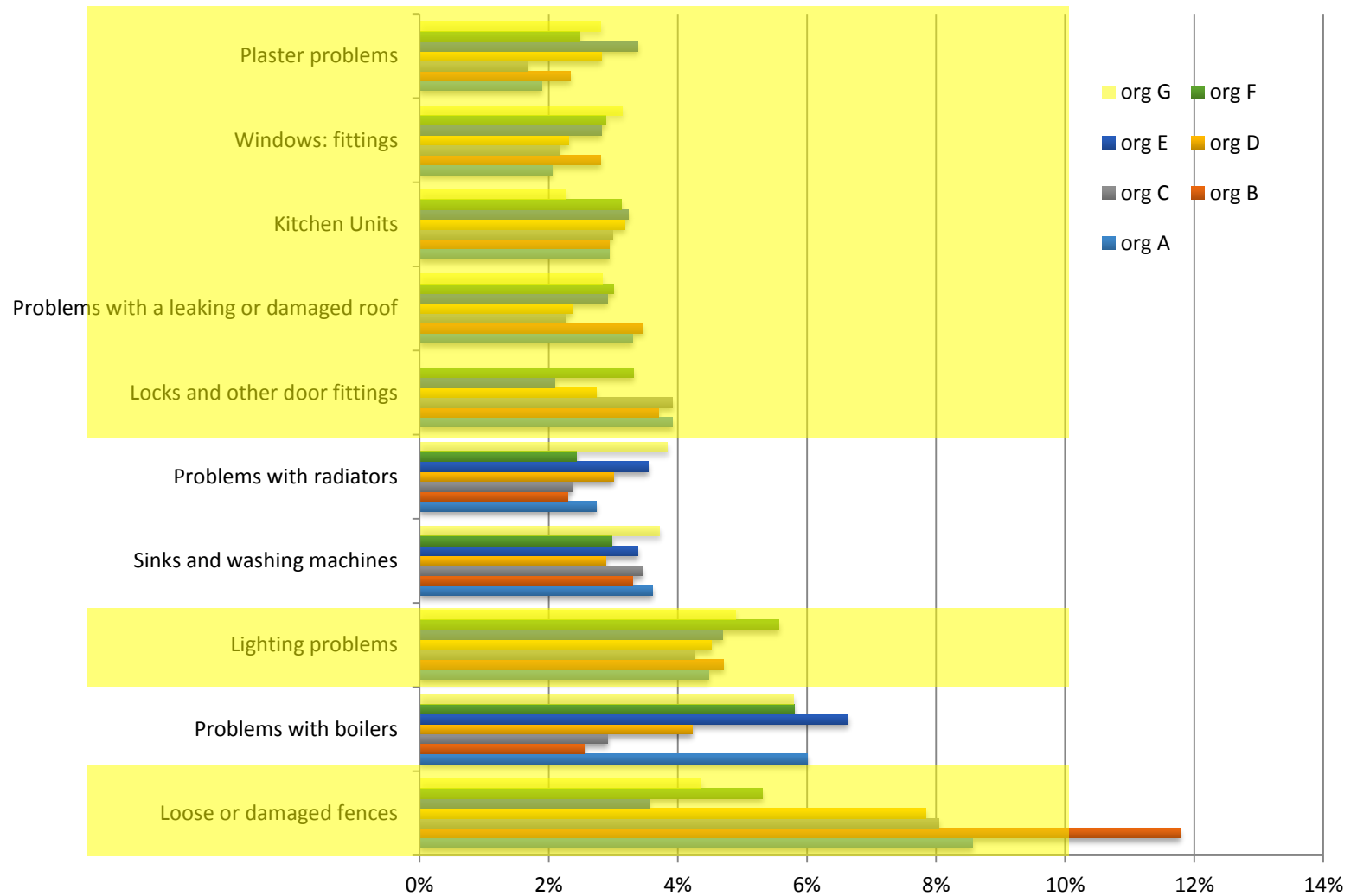
# Top 10 repairs - variation between HAs – sample of 7



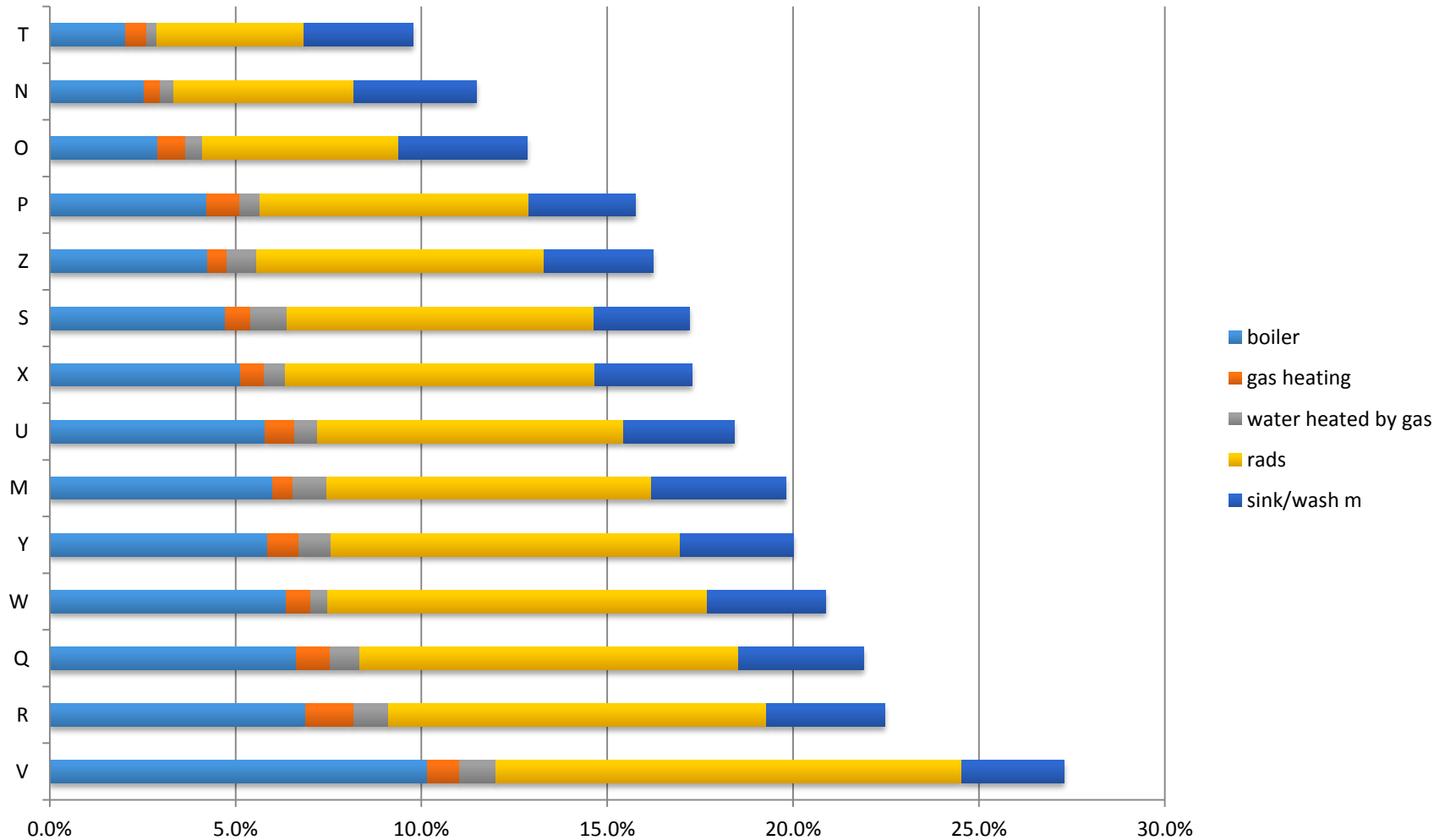
# Next 10 problem areas – sample of 7



# Top 10 problem areas by user

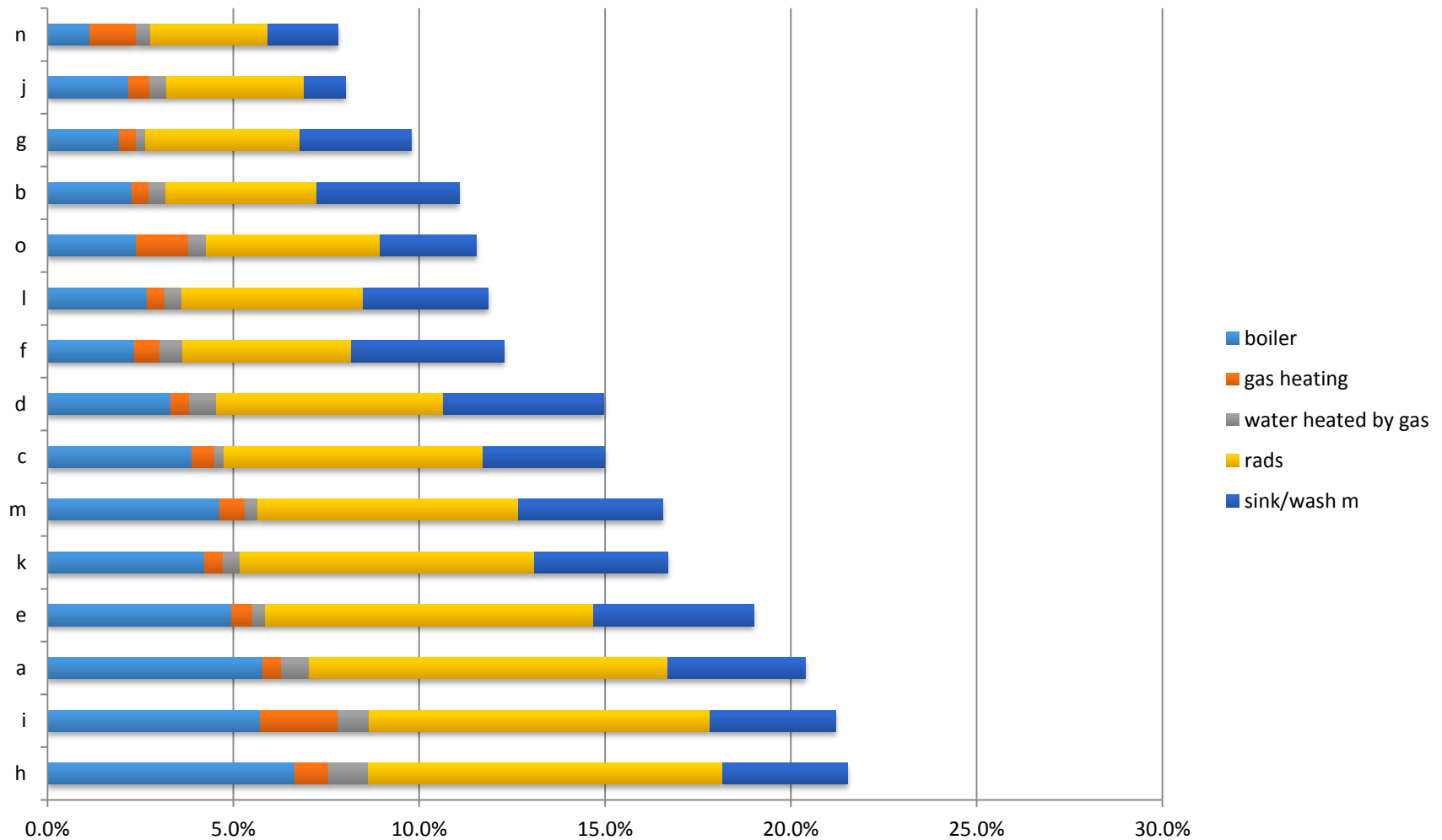


# All plumbing – 14 large users

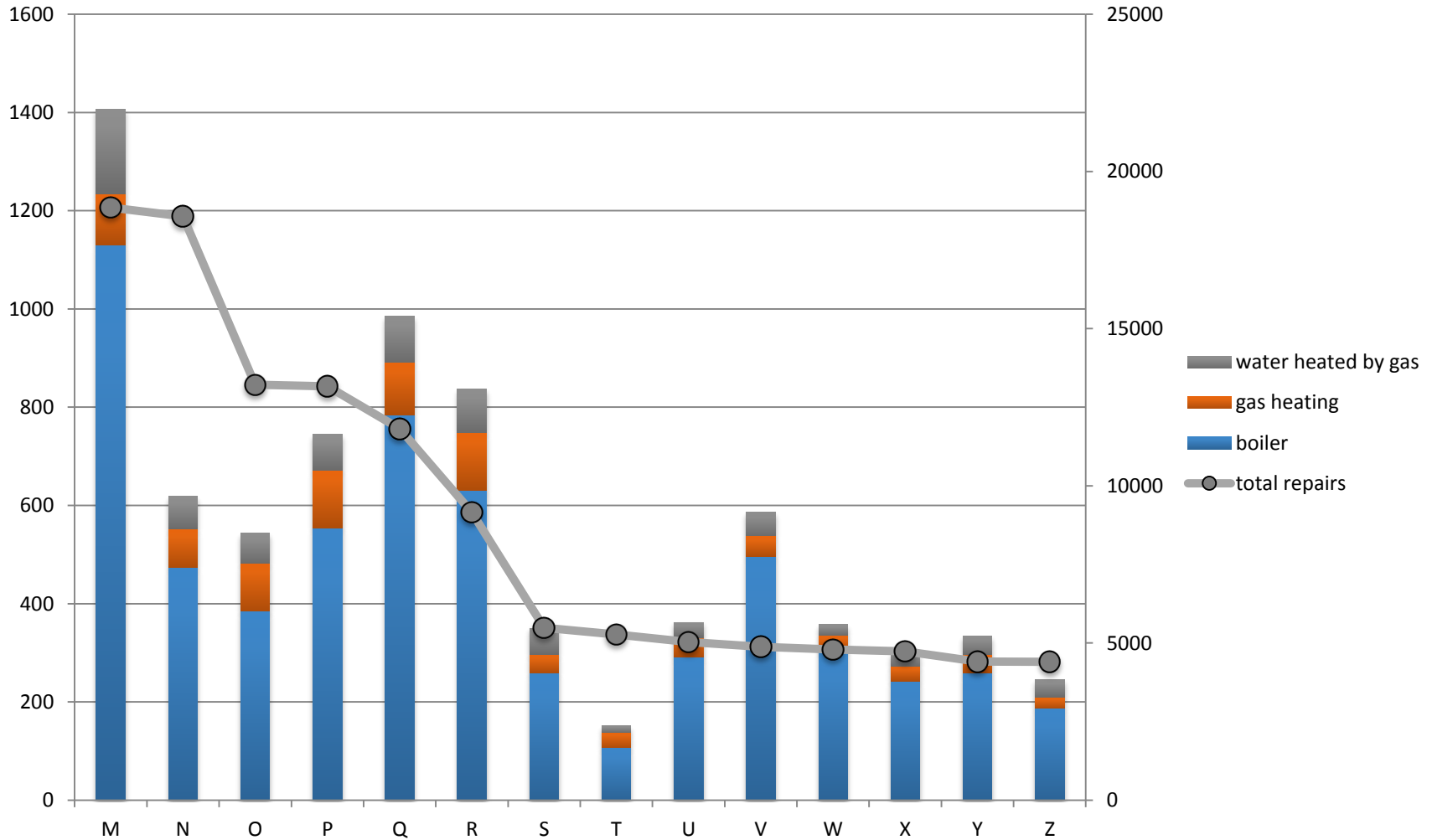




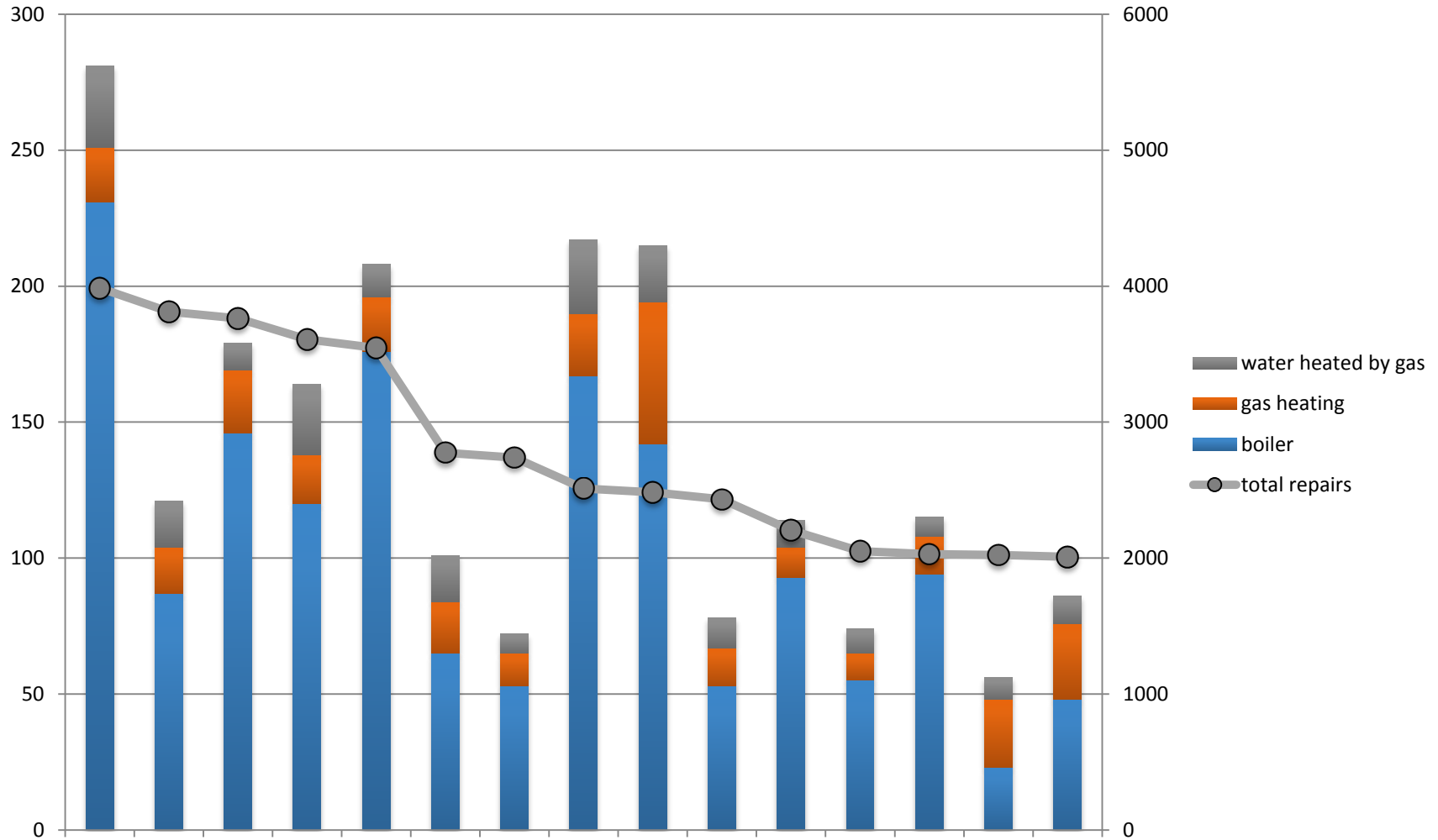
# All plumbing – 14 medium users



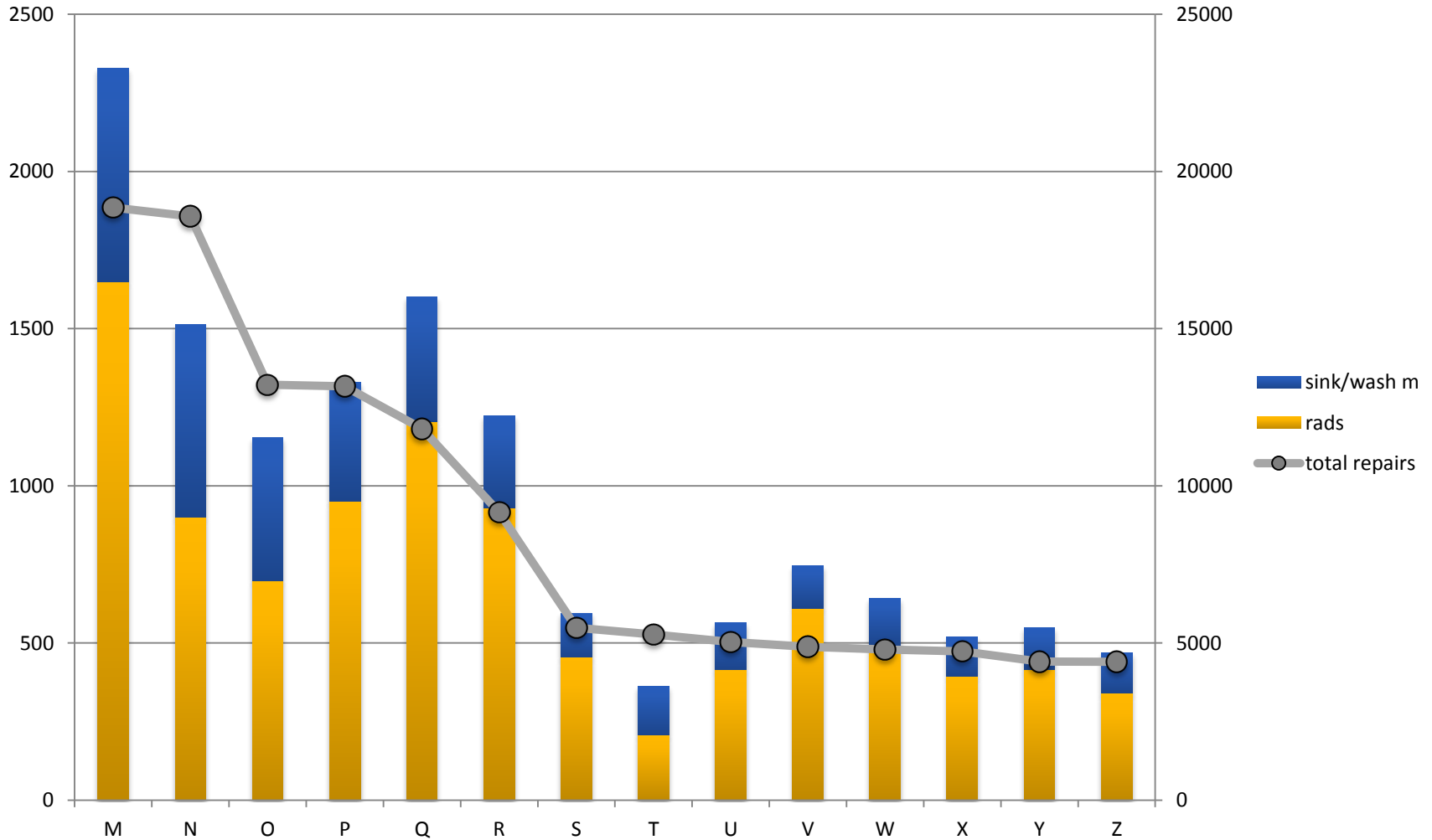
# Boilers vs heating – larger users



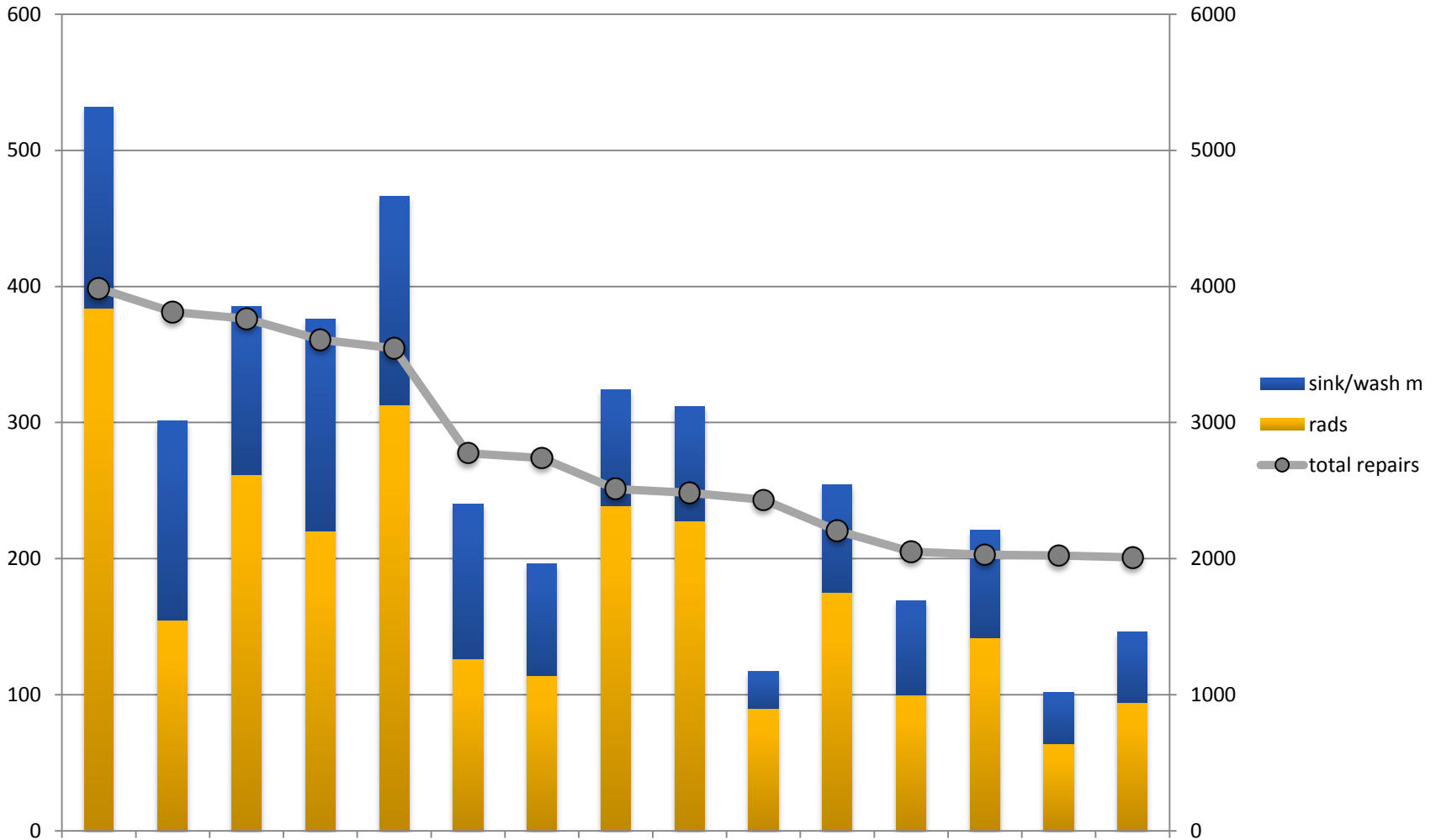
# Boilers vs heating – medium users



# Sinks, rads and washing machines

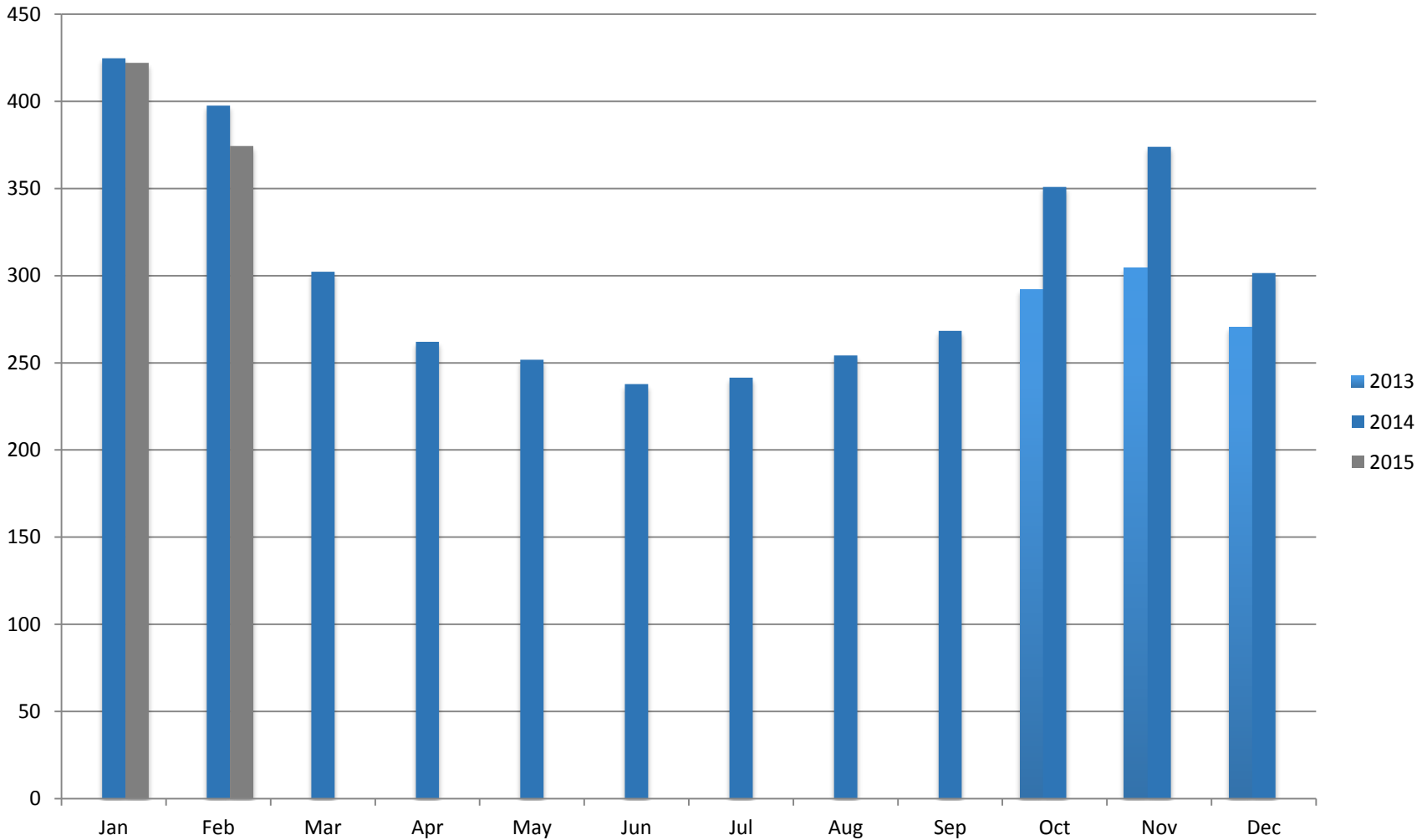


# Medium users – sinks, rads and washing machines

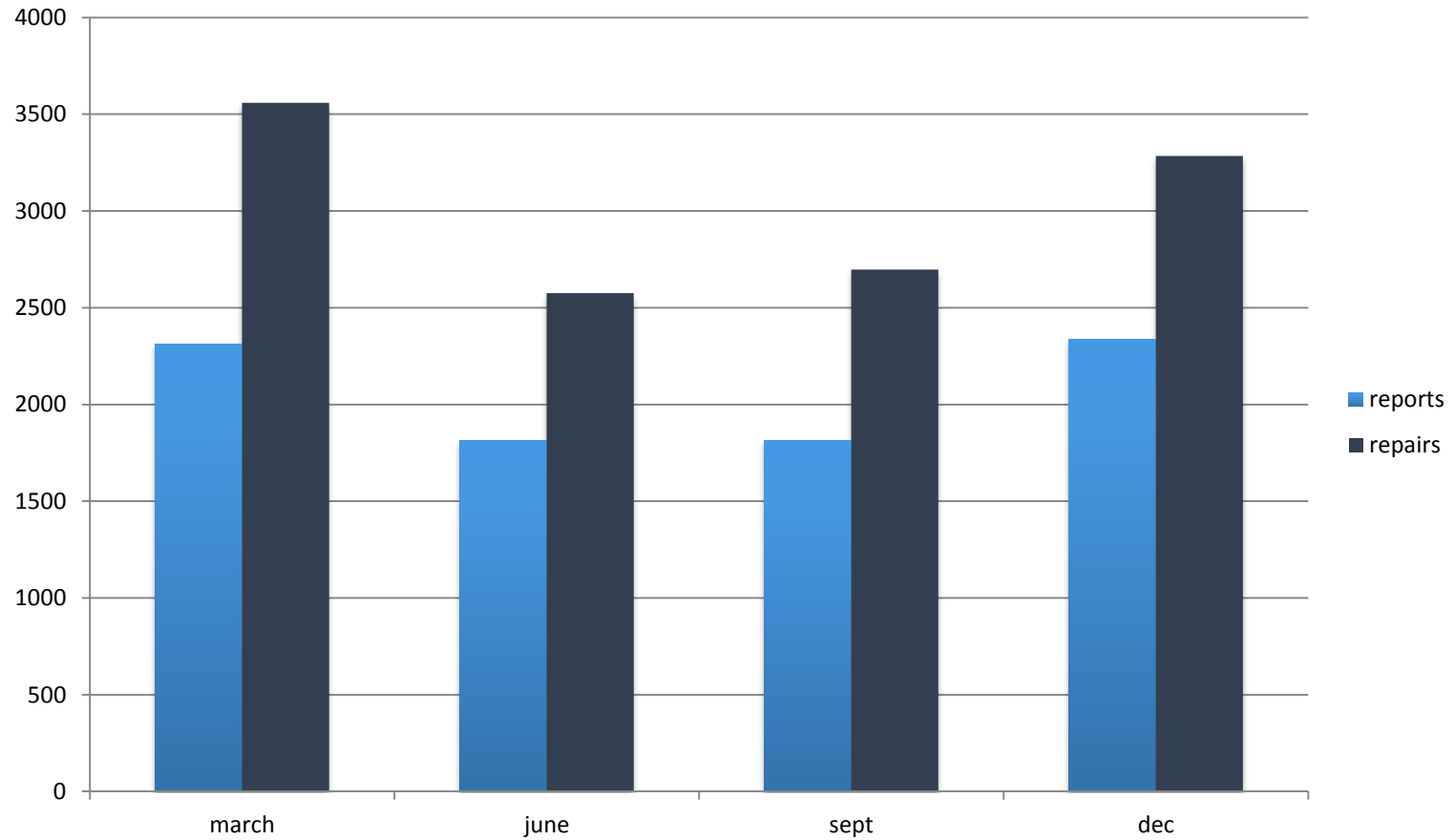


# Seasonal variations

# Seasonal variations – average reports per day

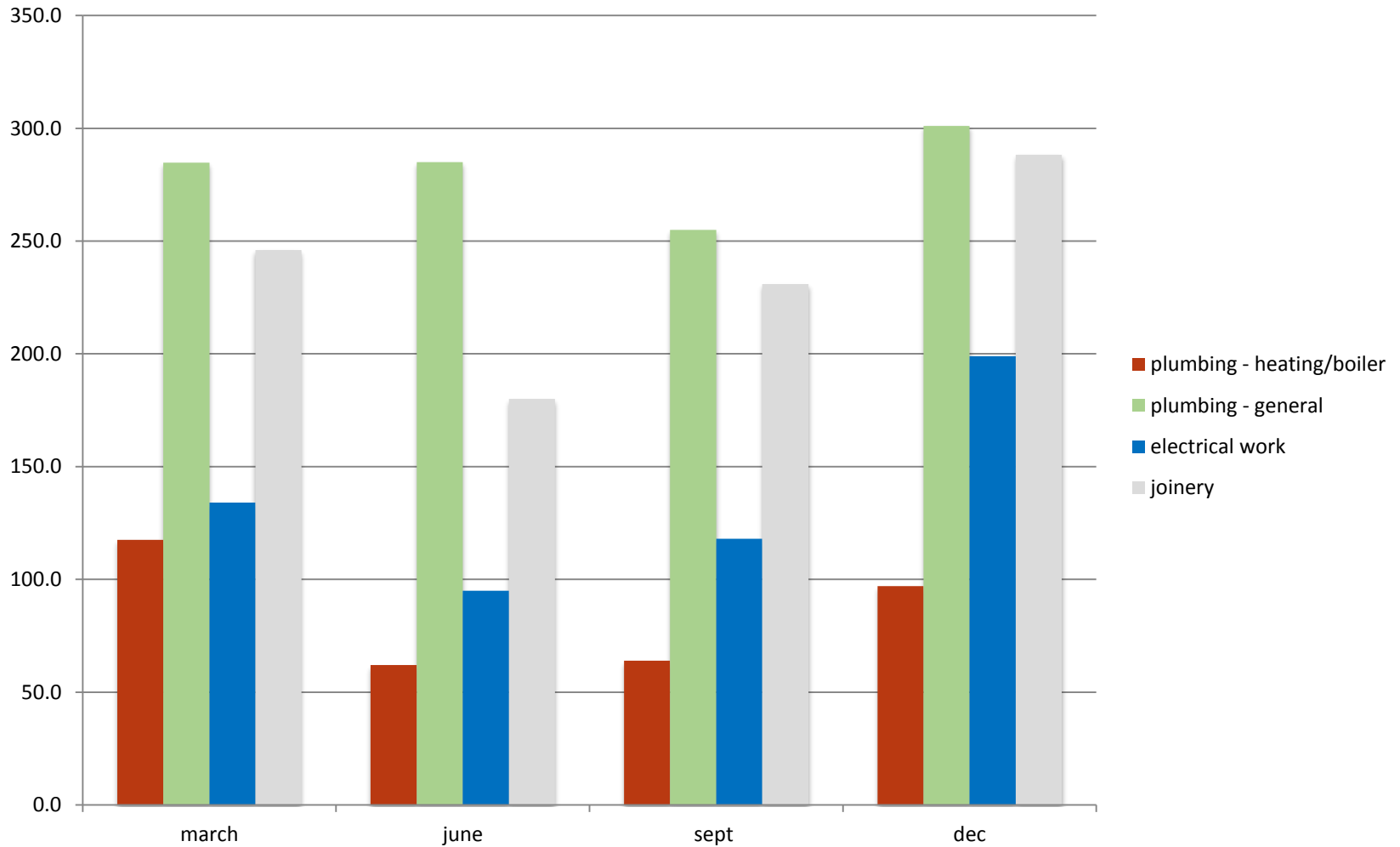


# Quarterly reports/repairs

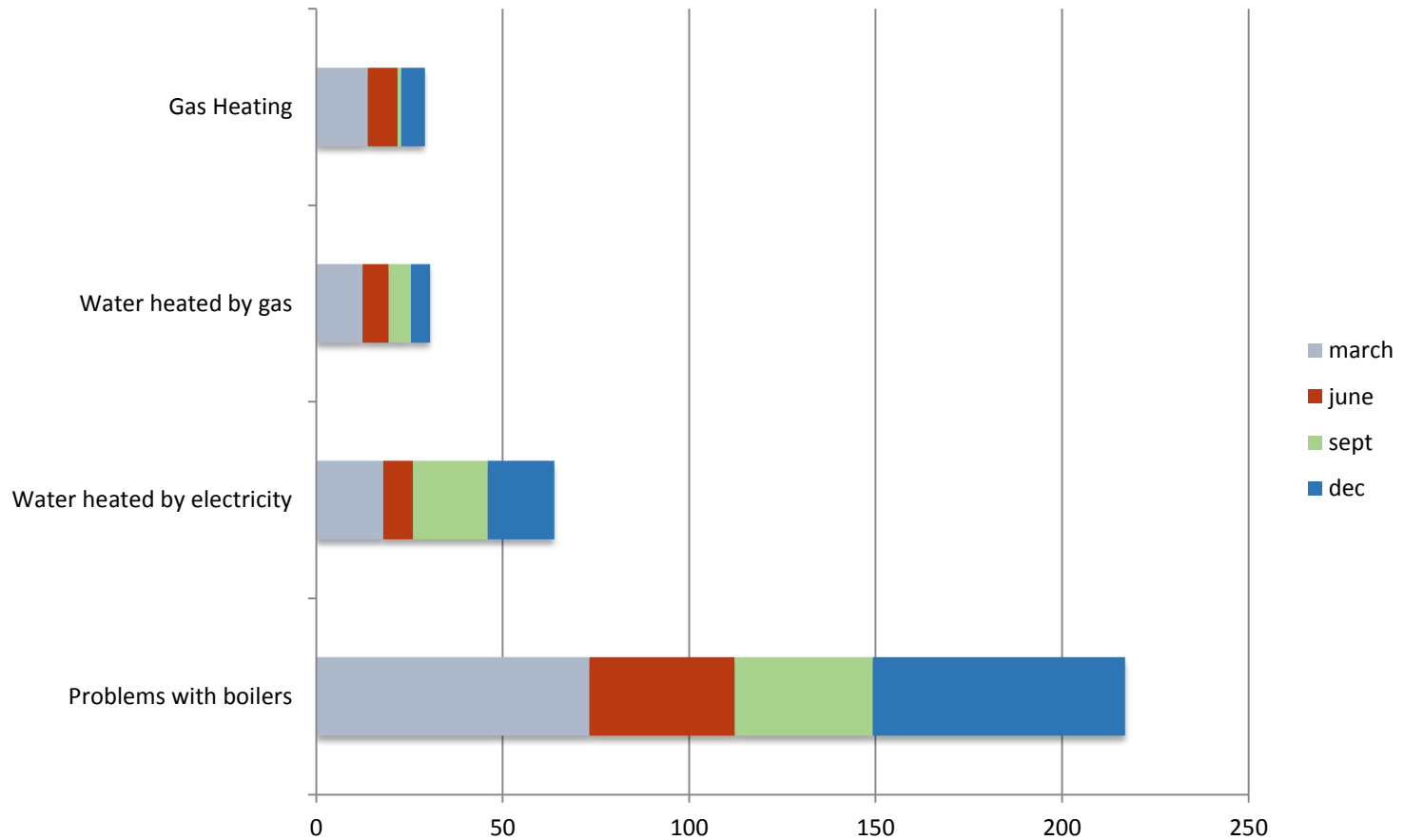




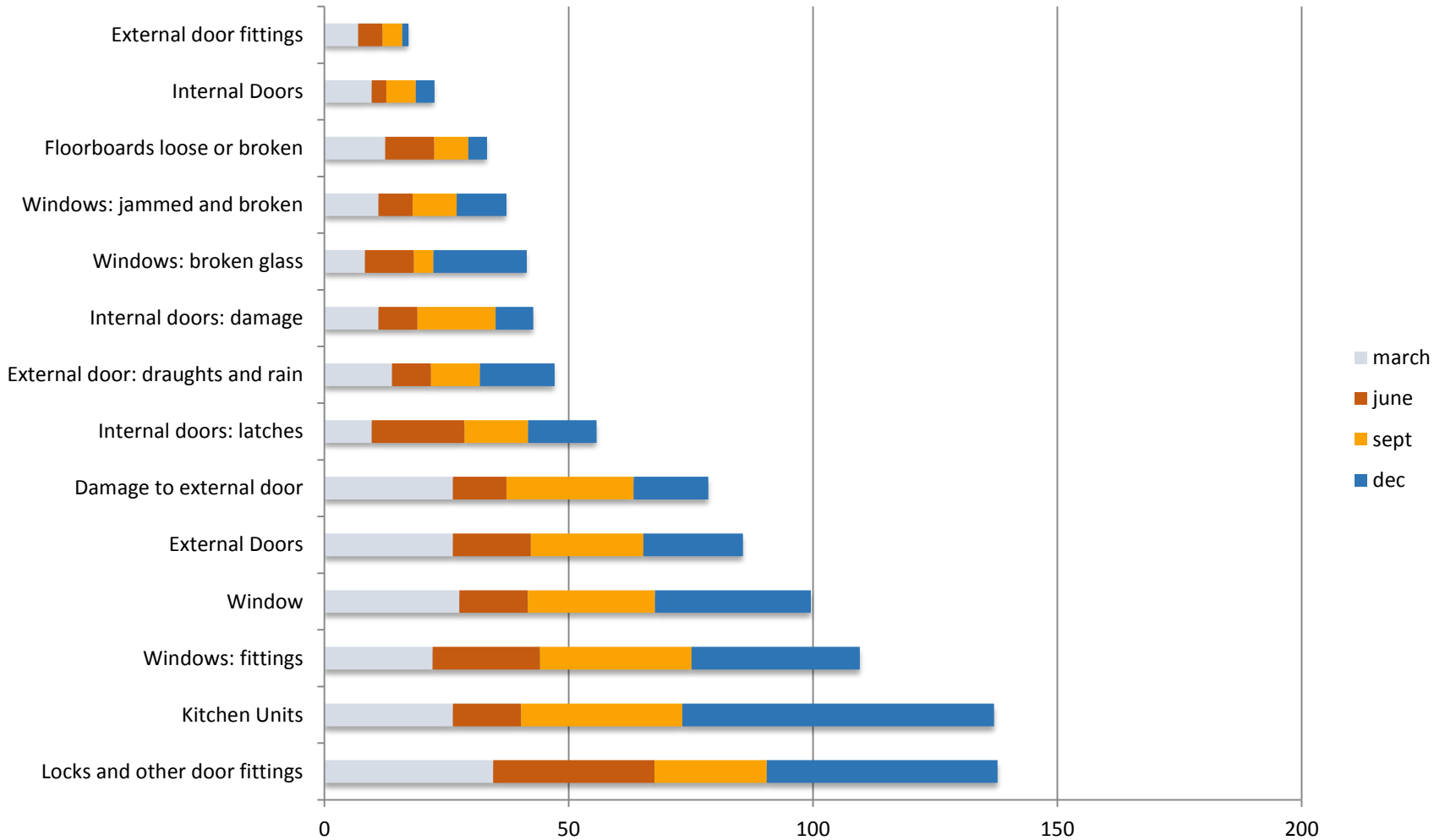
# Quarterly repairs by trade



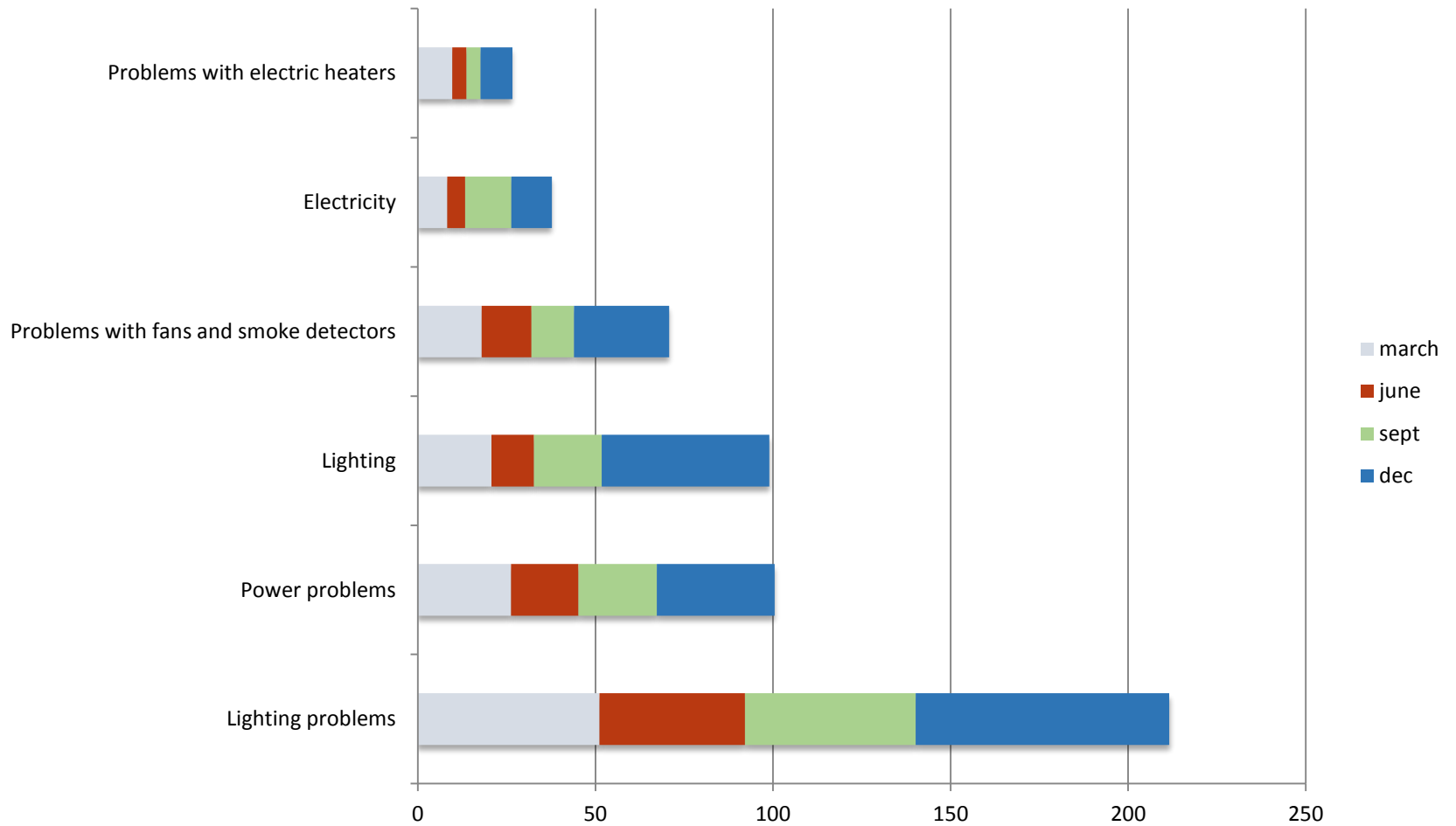
# Quarterly – plumbing heaters/boilers



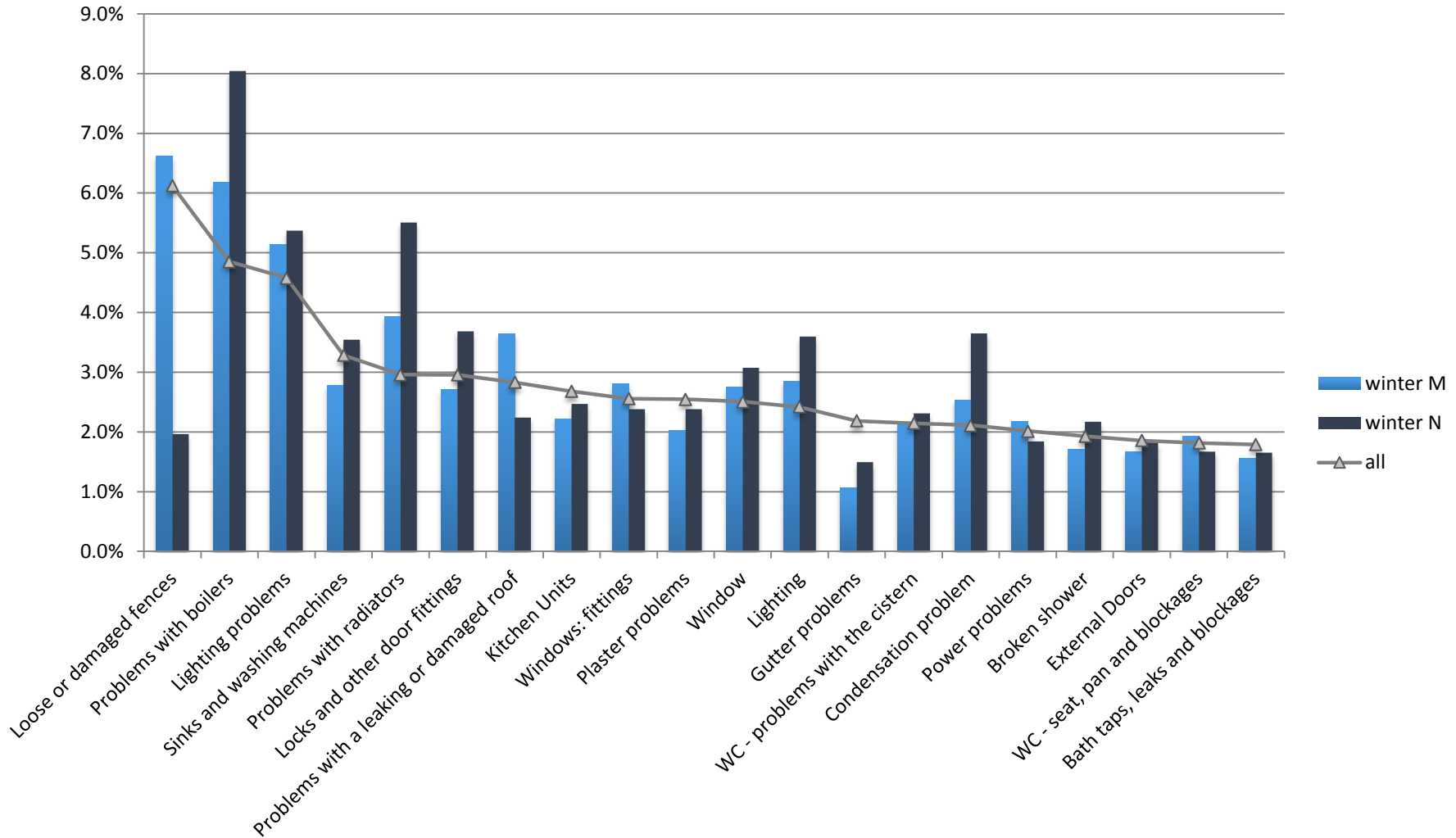
# Quarterly - joinery



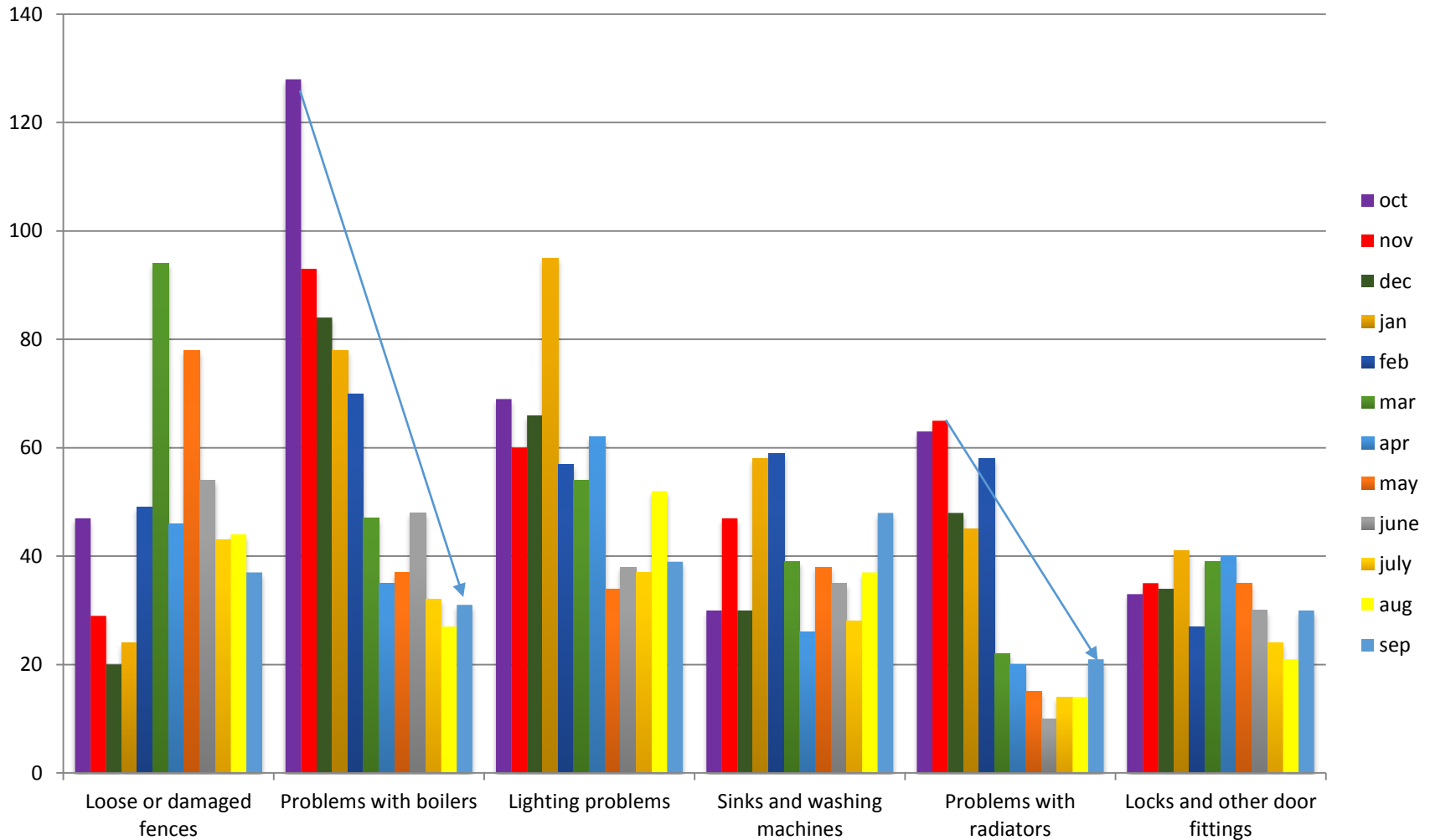
# Quarterly – electrical work



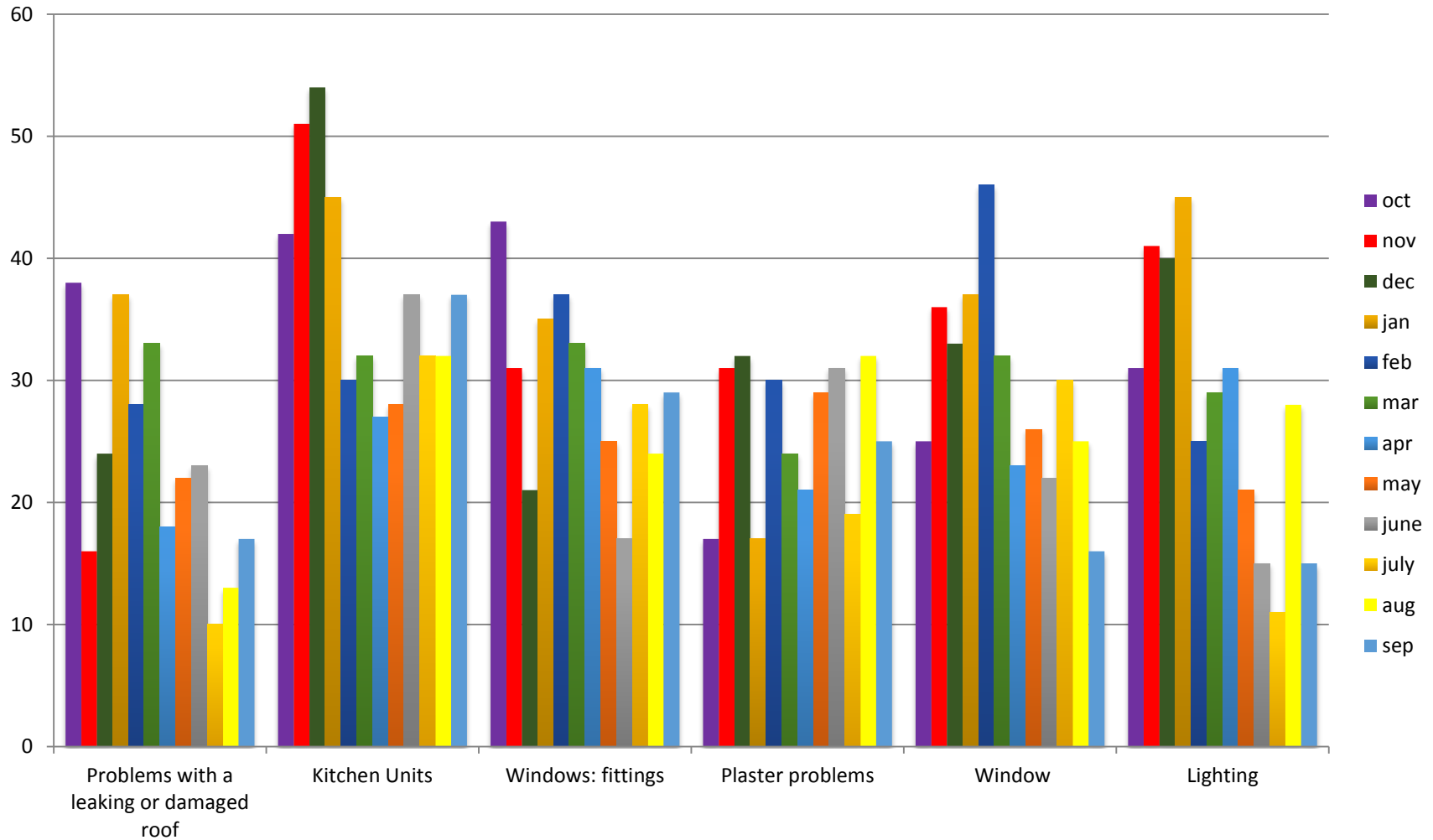
# Check for exceptional weather



# Monthly breakdown – top six problems



# Monthly breakdown – next six





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# Free text comment analysis



# Comment analysis – 100 electrical

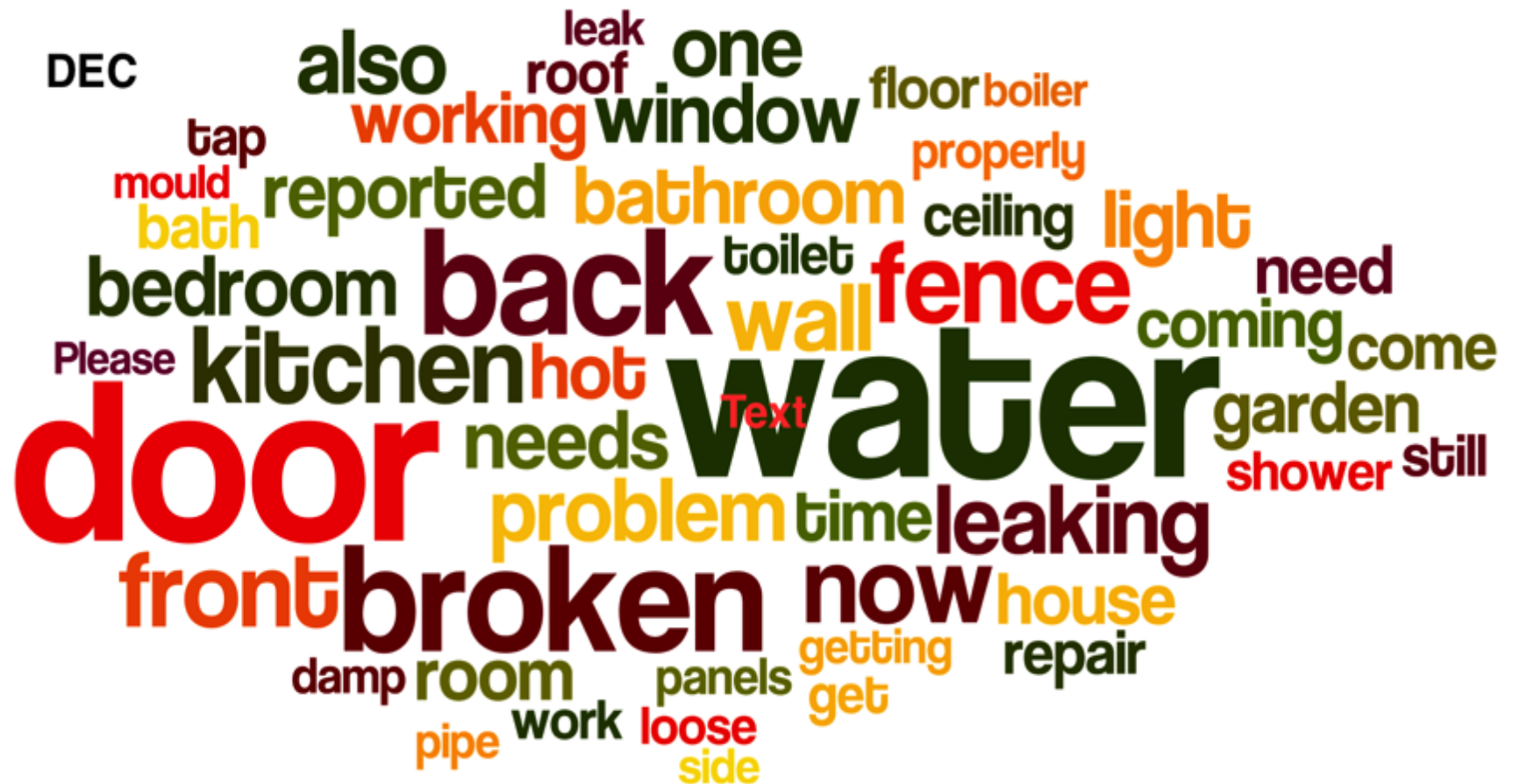


Blank	4%
Problem	43%
Problem with Solution suggested	3%
Flag (indicated concern/risk or vulnerable tenant)	15%
Flag Urgent	7%
Complaint about previous repair	6%
Complaint - previous not resolved	7%
Repeat (identical report)	15%













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# Conclusion

# What does all this tell us?



- Data itself not enough
  - Fencing = big storm
- Data analysis can pose the right questions
  - What is going on with boilers?
  - Are all doors terrible?
  - Why do more kitchen units break in December? Are people just indoors more?
- What would your interpretation be?
  - How would you analyse your own data?





- Most commonly reported repairs
  - Boilers - follow-up survey of gas servicing contracts, boiler type, linked to repair reporting – there must be best practice
- Seasonal variation
  - Best time to service a boiler is September?
  - Or ask all to check heating in summer?
- Free text analysis – cuts across SORs
  - Every call-out for a multi-trade / joiner should include door easing

