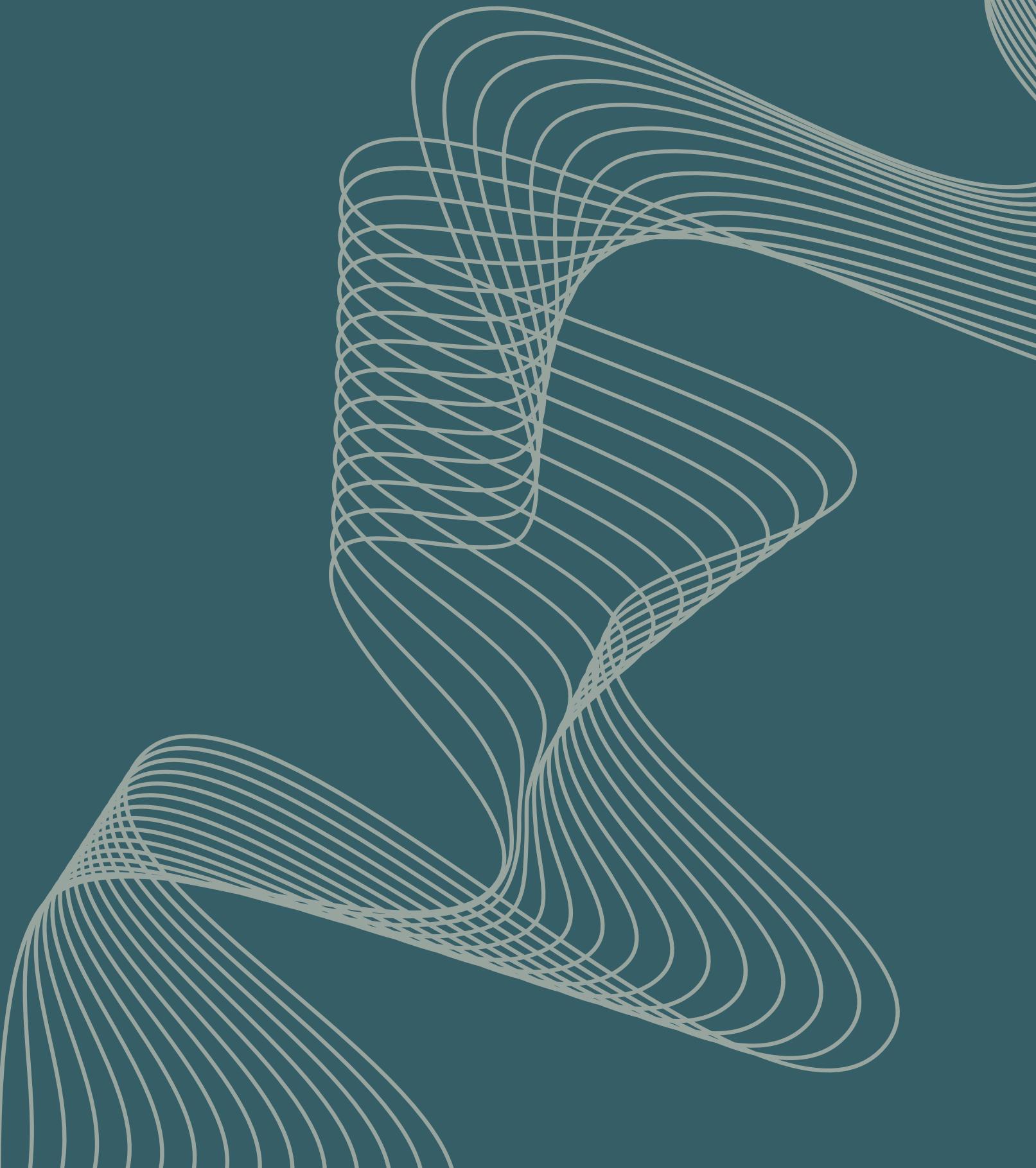


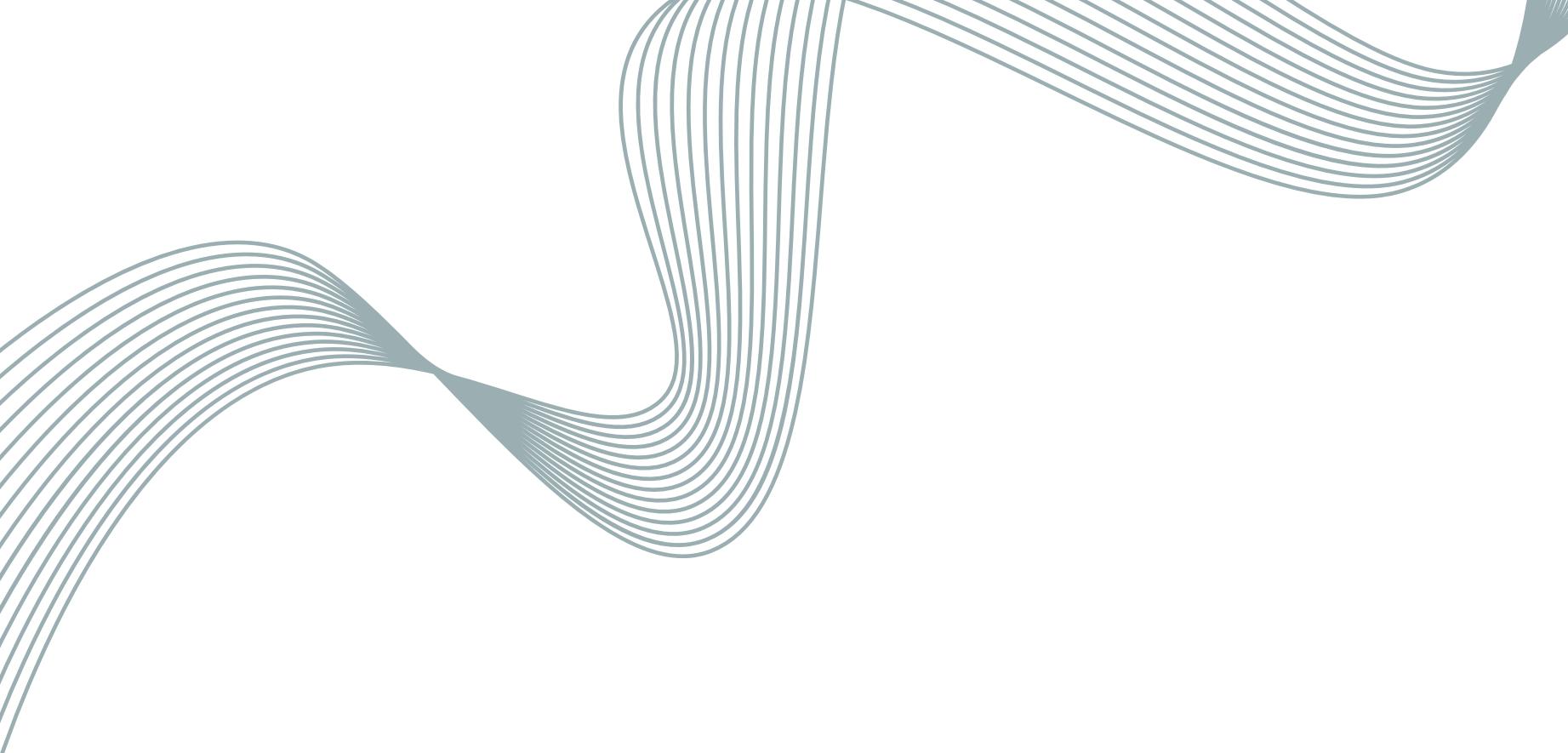
THUAS Data Sciences

# Team IMP

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# Introduction



What is our project?

Data imputation  
Writing guidelines

What is Factory Zero?

Factory Zero is a Dutch company  
creating green building management  
solutions



What have we  
worked on so far?



# Research

- 01 Existing articles and researches about imputation for time series data

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- 02 Finding out which imputation methods are best suited for our project

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- 03 Looking into FactoryZero building management data for info on gaps

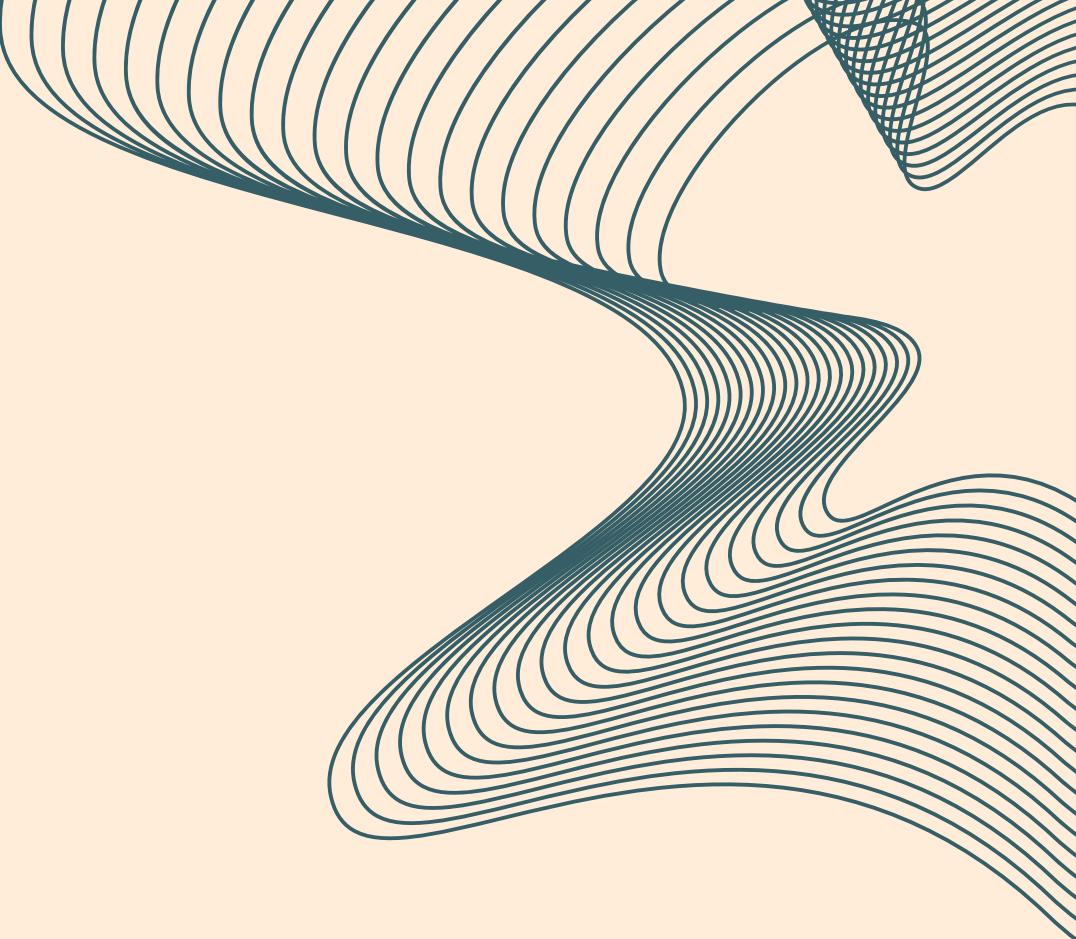
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- 04 Creating classifications of the FactoryZero data

# Research proposal

“Which imputation techniques should be applied for data imputation in building energy time series data?”

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- 01 What imputation methods are known for imputing time series data?
  - 02 What field classifications and correlations does the factory zero data possess?
  - 03 Which imputation techniques are best suited for the categorized gap sizes?
  - 04 Which imputation techniques are best suited for the classified types of data?



# Getting ready for imputation

- 01 Find the best suited house data for training

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- 02 Visualize data (find correlations ?)

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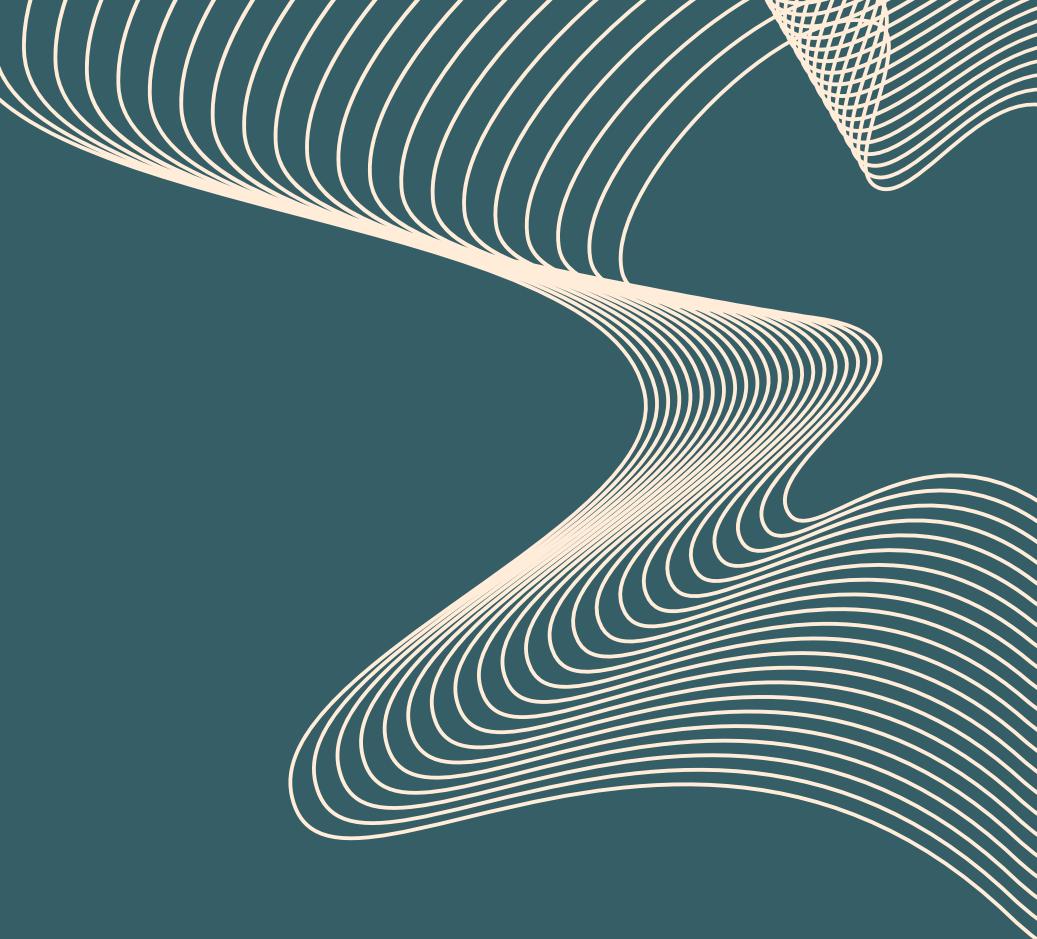
- 03 Classify KNMI and houses data fields by type

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- 04 Create gaps in clean KNMI data

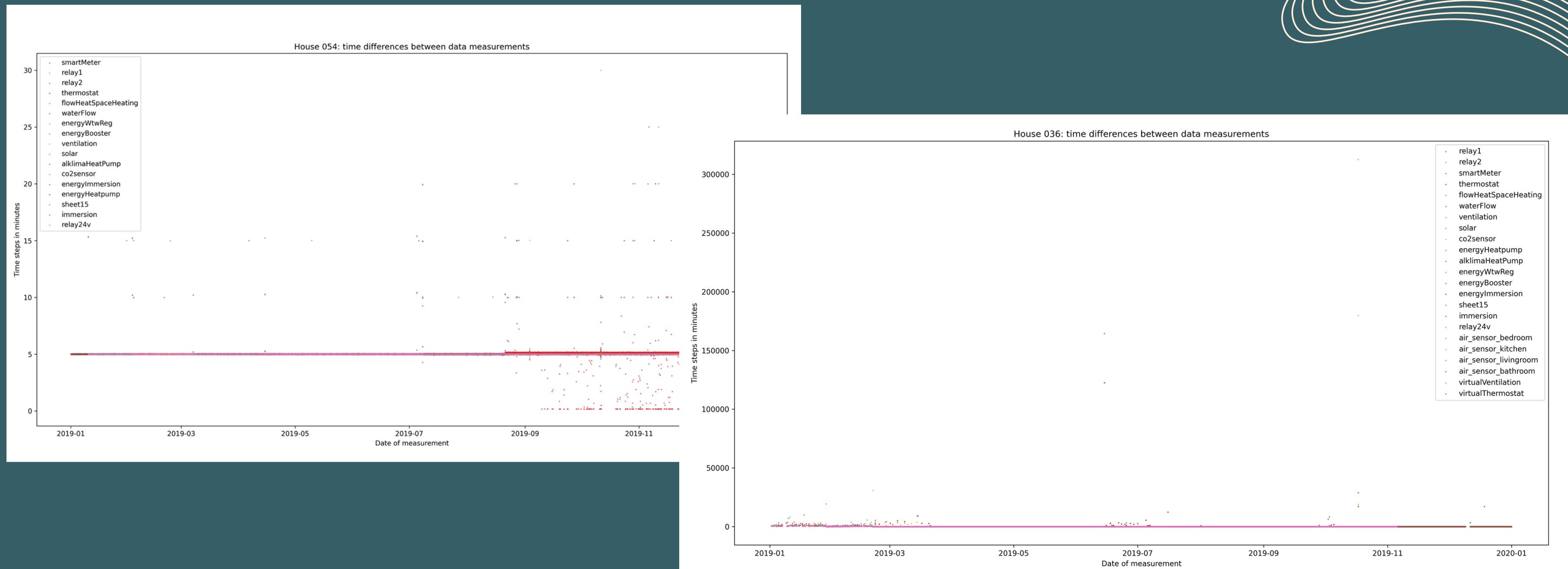
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- 05 Determine which imputation methods to use



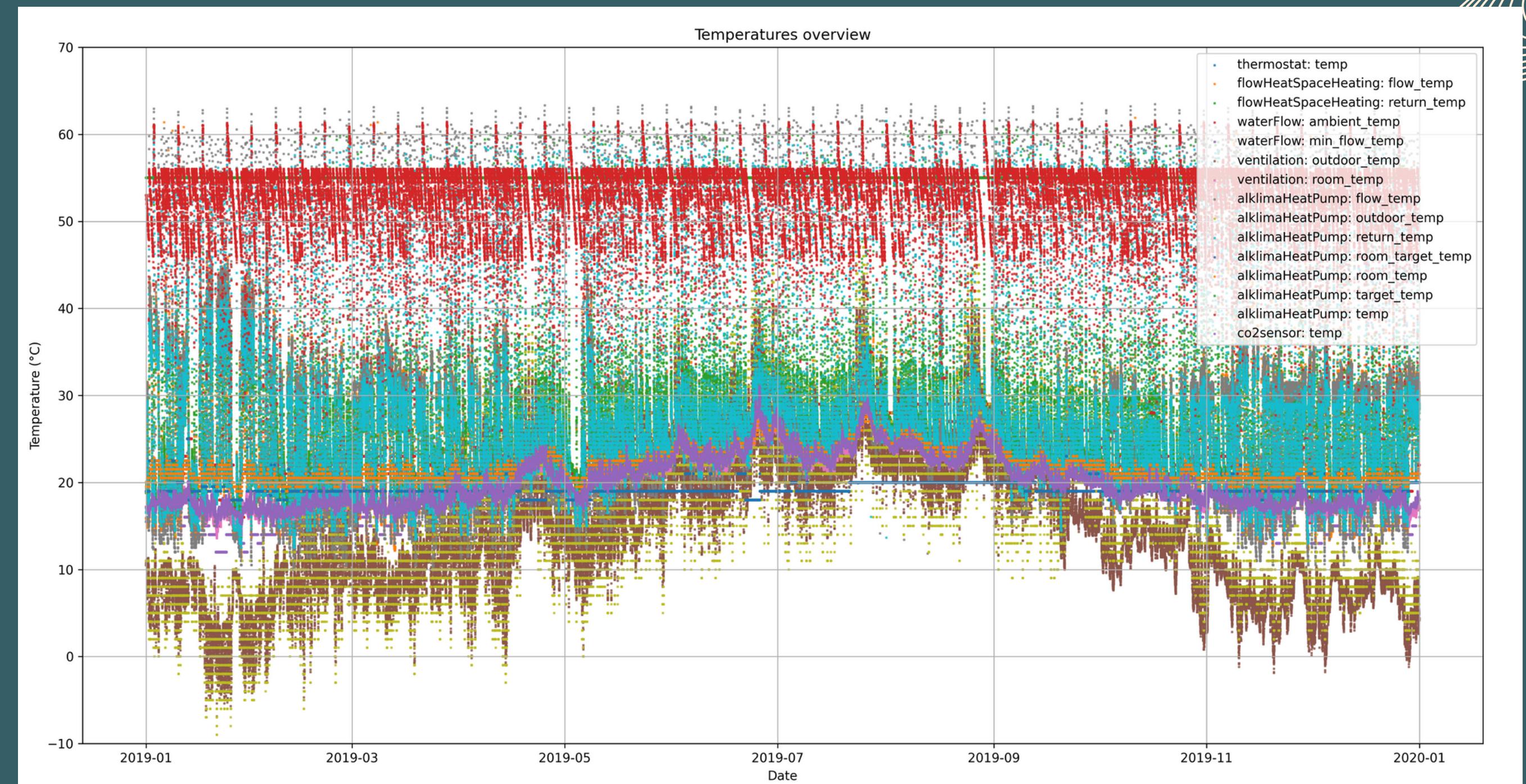
# Getting ready for imputation

Find the best-suited house data for training



# Getting ready for imputation

Visualize data (find correlations ?)



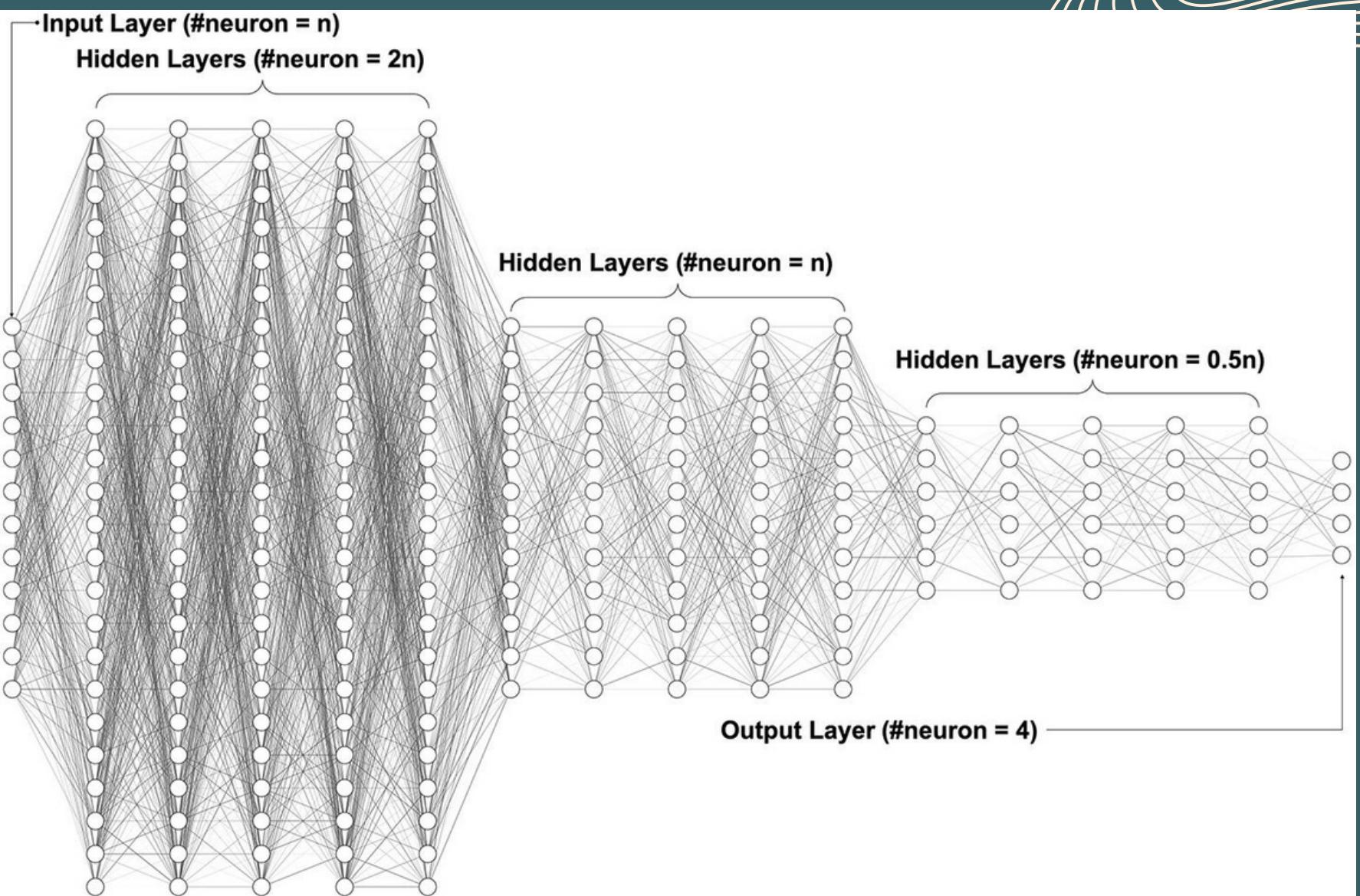
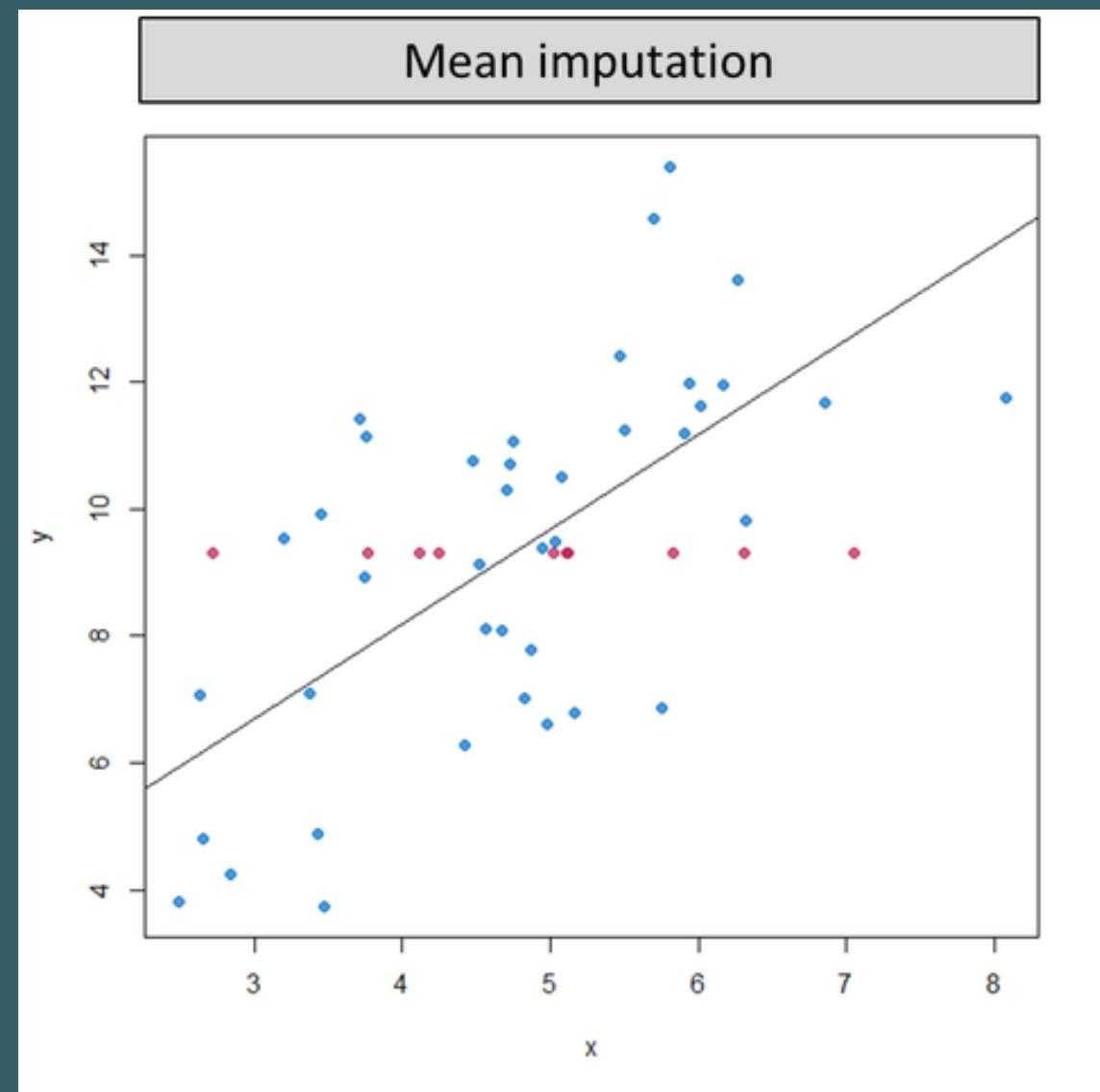
# Getting ready for imputation

Classify KNMI and houses data fields by type

	A	B	C	D
1	sheet	column	unit	type
2	waterFlow	ambient_temp	°C	interval
3	waterFlow	min_flow_temp	°C	interval
4	waterFlow	volume_out	m3	ratio
5				
6	flowHeatSpaceHeating	flow_temp	°C	interval
7	flowHeatSpaceHeating	return_temp	°C	interval
8	flowHeatSpaceHeating	total_energyGJ	GJ	ratio
9	flowHeatSpaceHeating	volume_out	m3	ratio
10				
11	energyHeatpump	power	W	ratio
12	energyHeatpump	total_energy_in	kWh	ratio
13				
14	relay1	status	bool	nominal
15				
16	relay2	status	bool	nominal
17				
18	smartMeter	energy_in_low	kWh	ratio

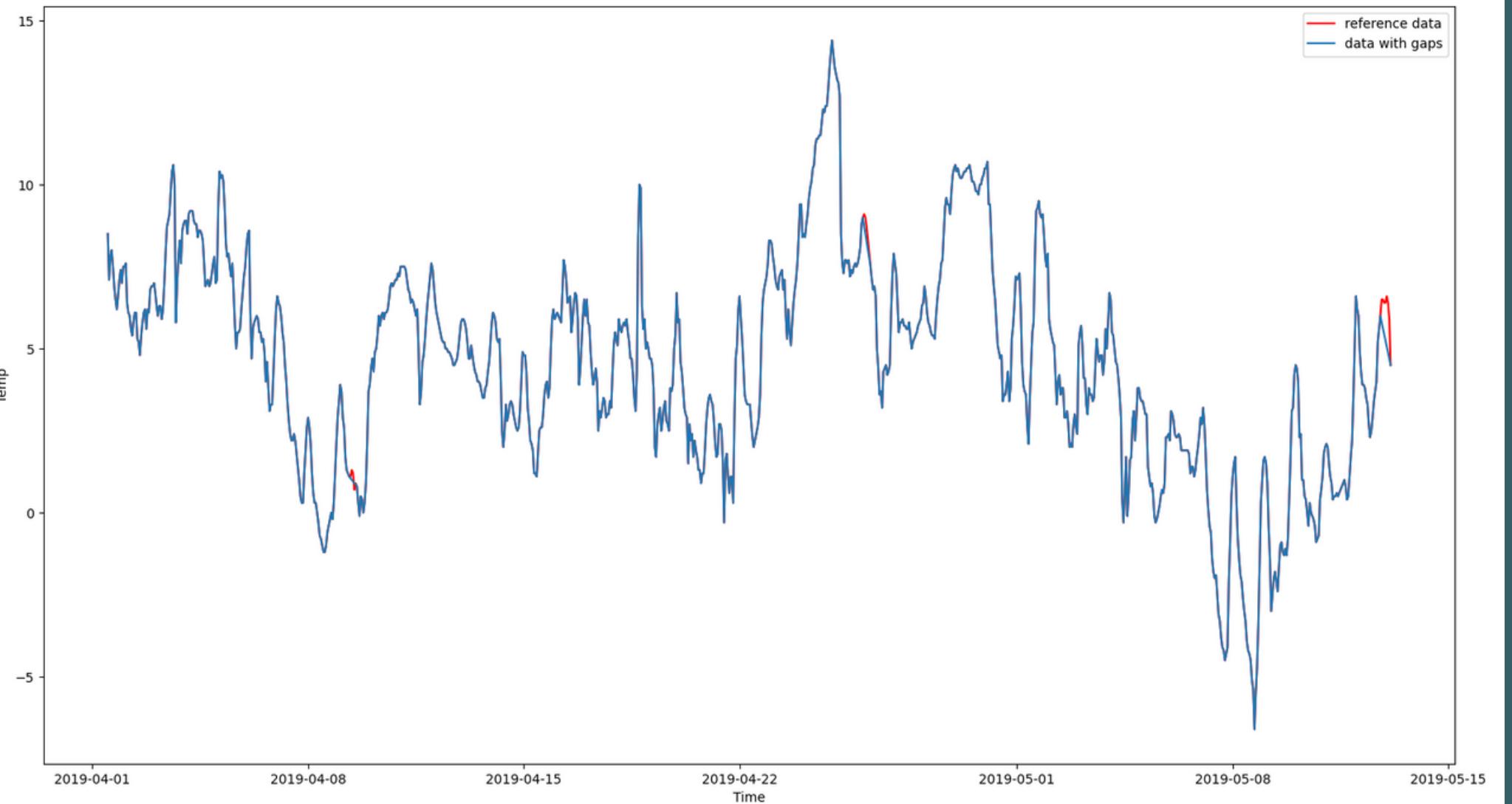
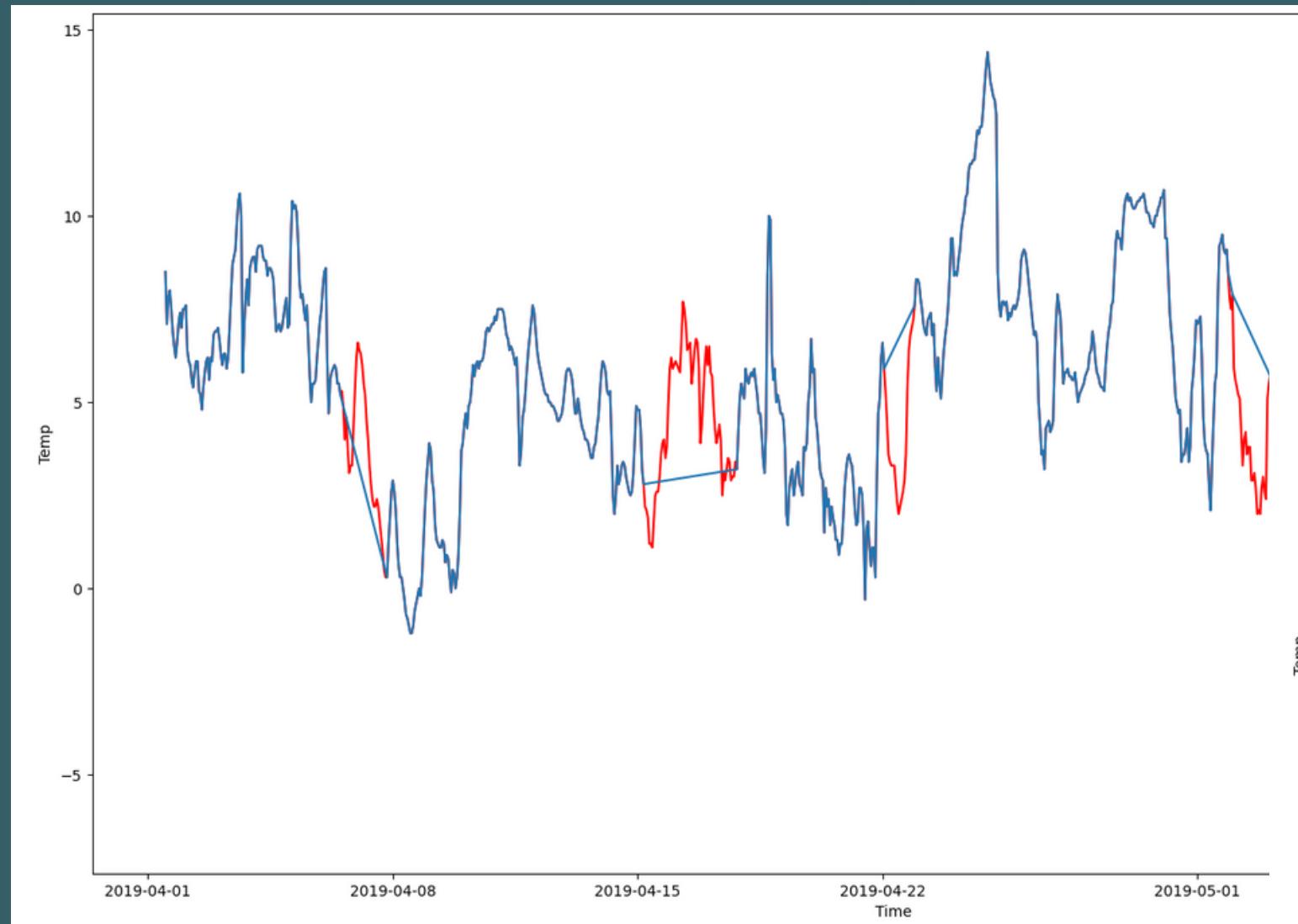
# Getting ready for imputation

Determine which imputation methods to use

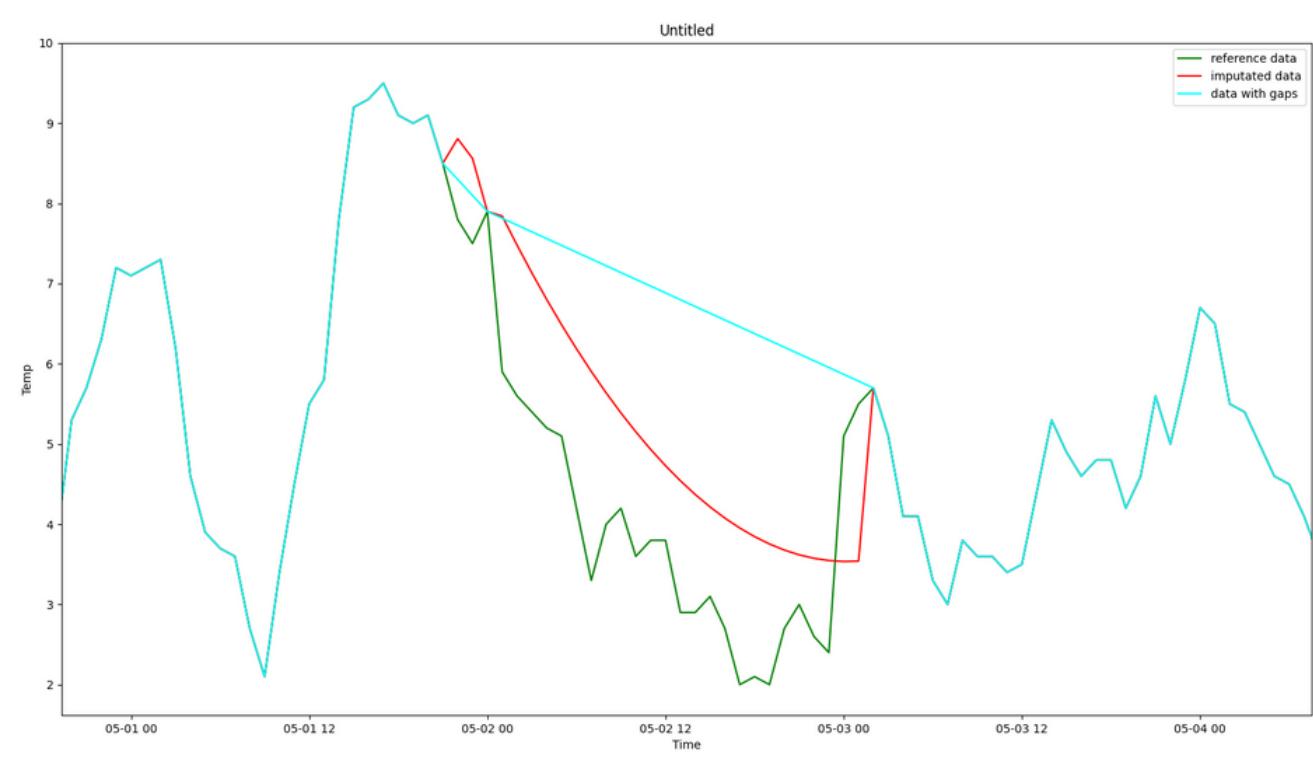
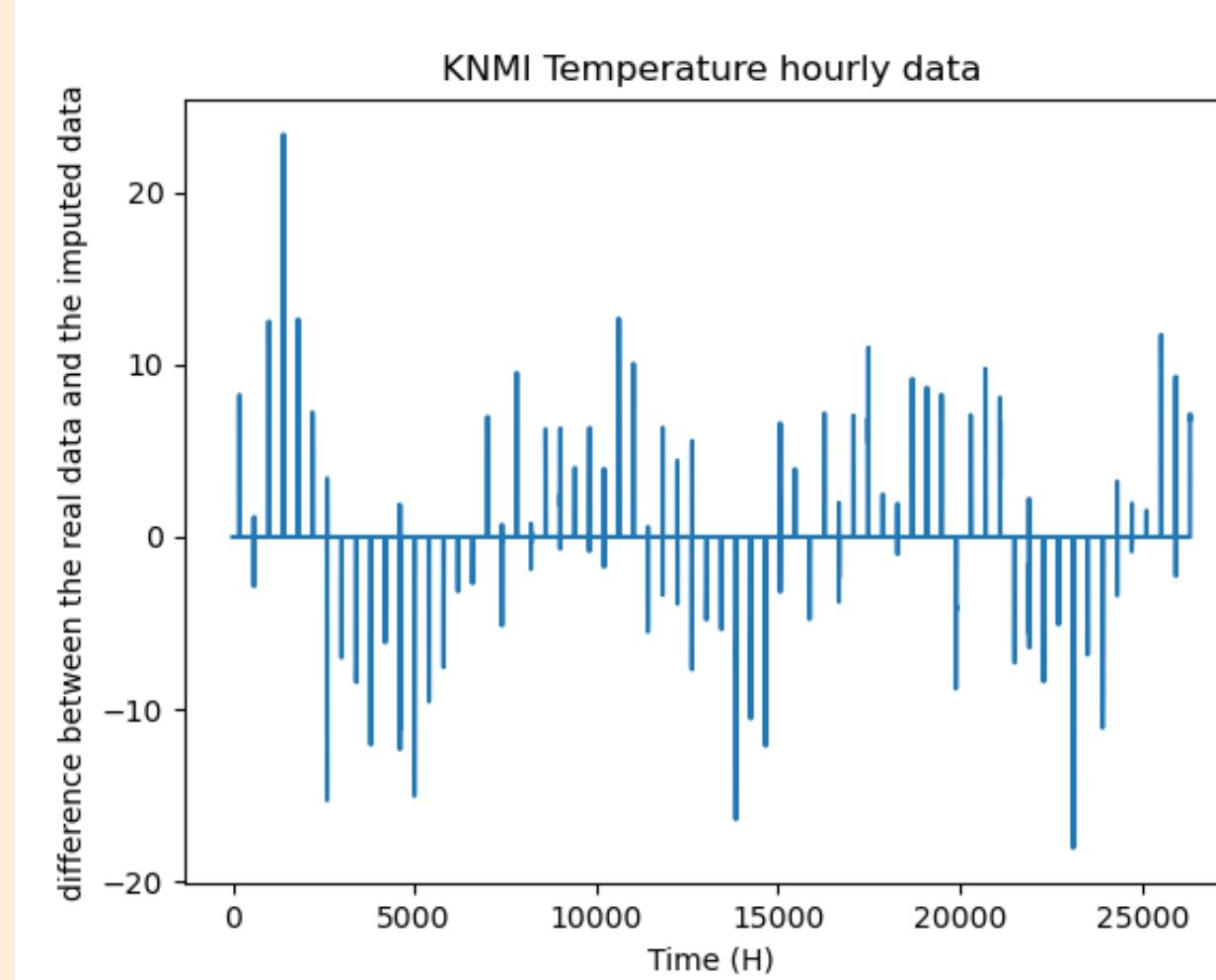


# Getting ready for imputation

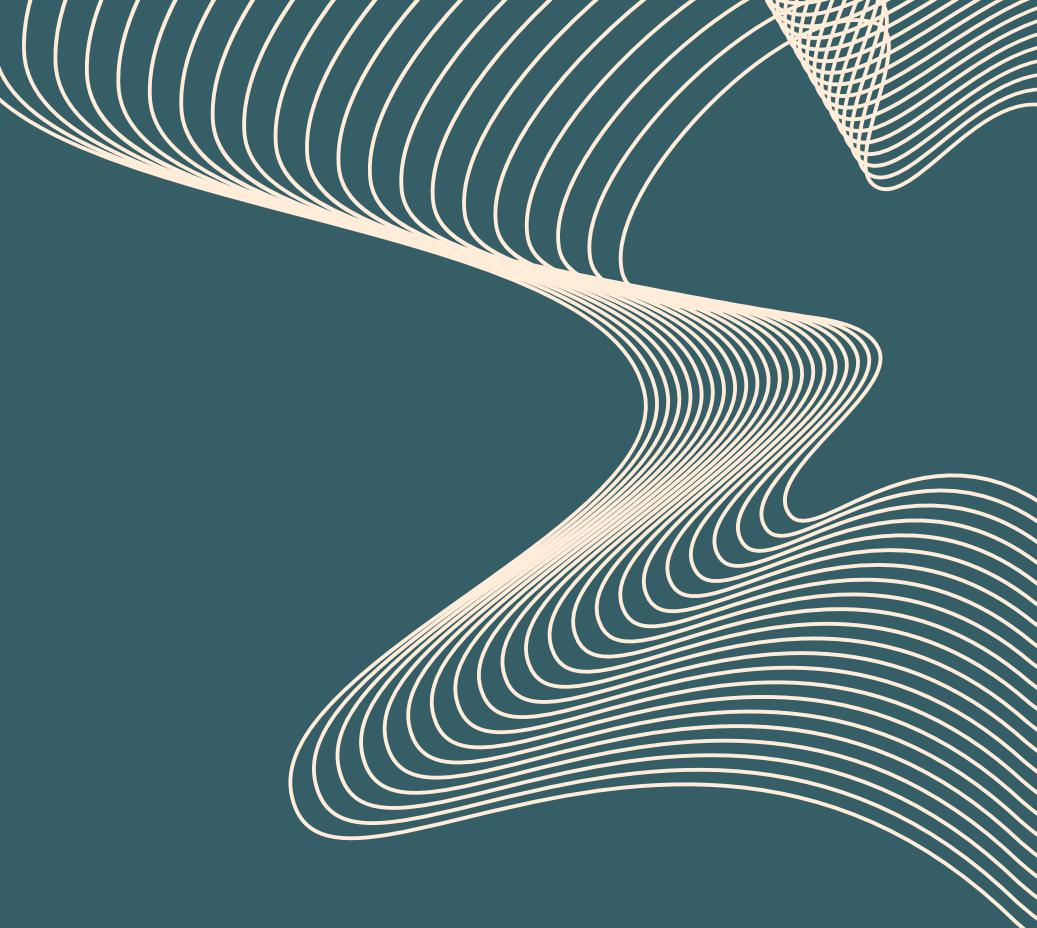
Create gaps in clean data



# Imputation



# What we will do next

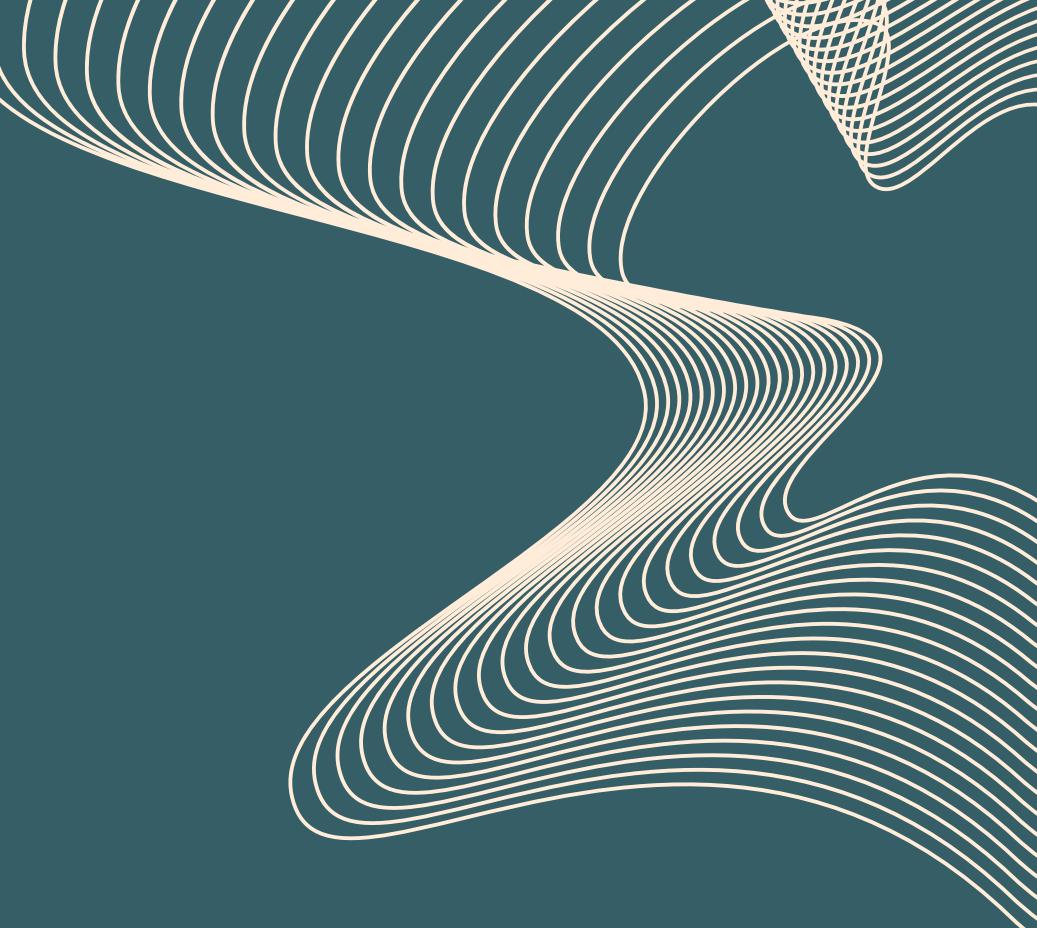
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- 01 Finish the research proposal based on feedback

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  - 02 Continue research & experiments with different imputation methods

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  - 03 Imputation on different gap sizes, starting with small ones



# Thank you!

Questions ?

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