Hand picking similar behaving group of customers to check clustering results

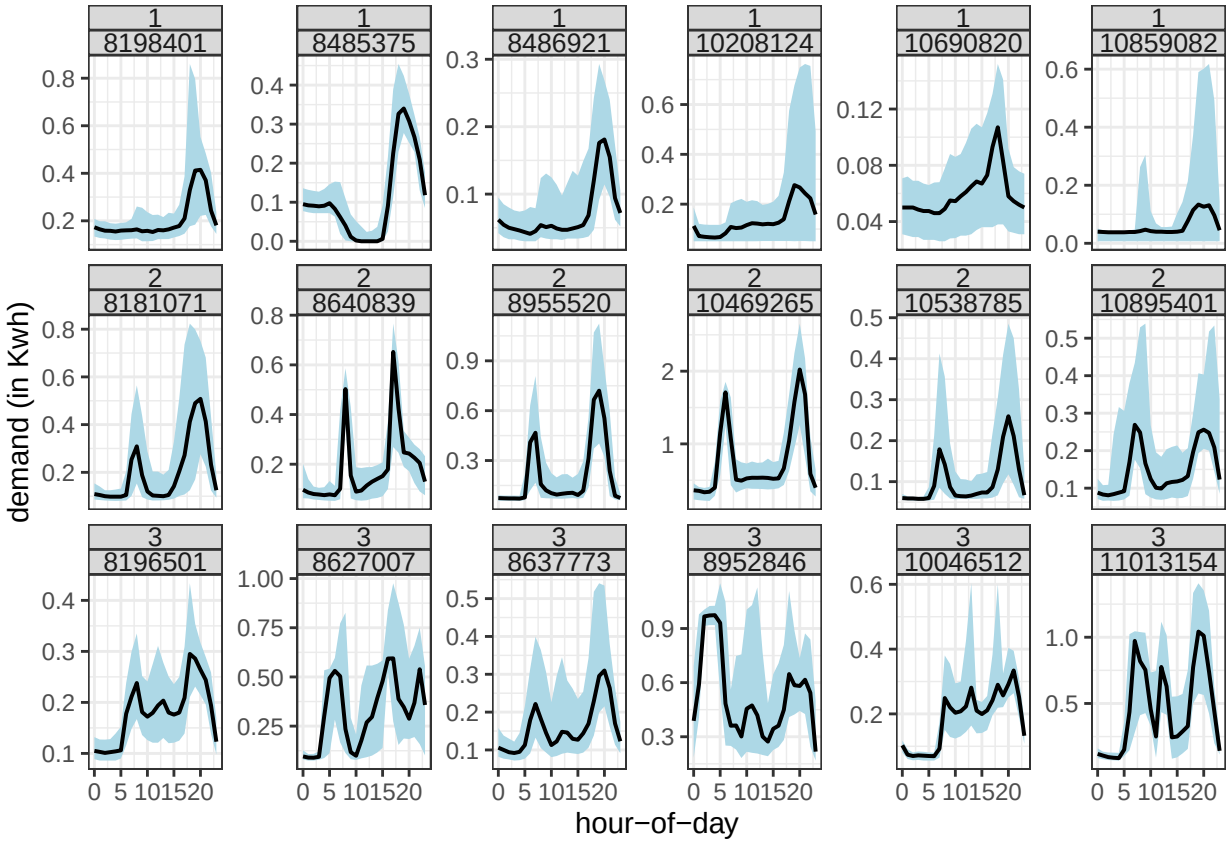


Figure 1: Median (black) and quartile deviation (blue region) of hourly demand drawn for few customers showing similar behaviors. Roughly speaking, Design 1 has one evening peak, Design 2 has two peaks and Design 3 has three peaks in a day. Each of design 1, 2 and 3 have six similar behaving customers resulting to 18 time series. We want our clustering results to group each of the designs together.

```
##            Reference
## Prediction 1 2 3
##          1 5 2 1
##          2 1 3 1
##          3 0 1 4
```

Table 1: Actual and predicted allocation of designs to customers

customer_id	design	pred_design	hour_day	day_month
10859082	1	1	17.1	4.5
10690820	1	1	16.4	4.9

customer_id	design	pred_design	hour_day	day_month
8486921	1	1	10.1	5.7
10208124	1	1	16.5	9.7
8198401	1	1	5.8	10.1
8637773	3	1	0.5	10.6
10538785	2	1	13.8	13.4
8181071	2	1	24.3	14.3
8196501	3	2	10.9	25.4
10895401	2	2	8.1	27.0
8955520	2	2	8.7	30.6
8485375	1	2	5.9	31.5
8640839	2	2	3.2	36.5
8627007	3	3	6.1	45.1
10469265	2	3	4.5	47.7
11013154	3	3	12.4	48.0
10046512	3	3	6.4	49.0
8952846	3	3	0.0	52.7

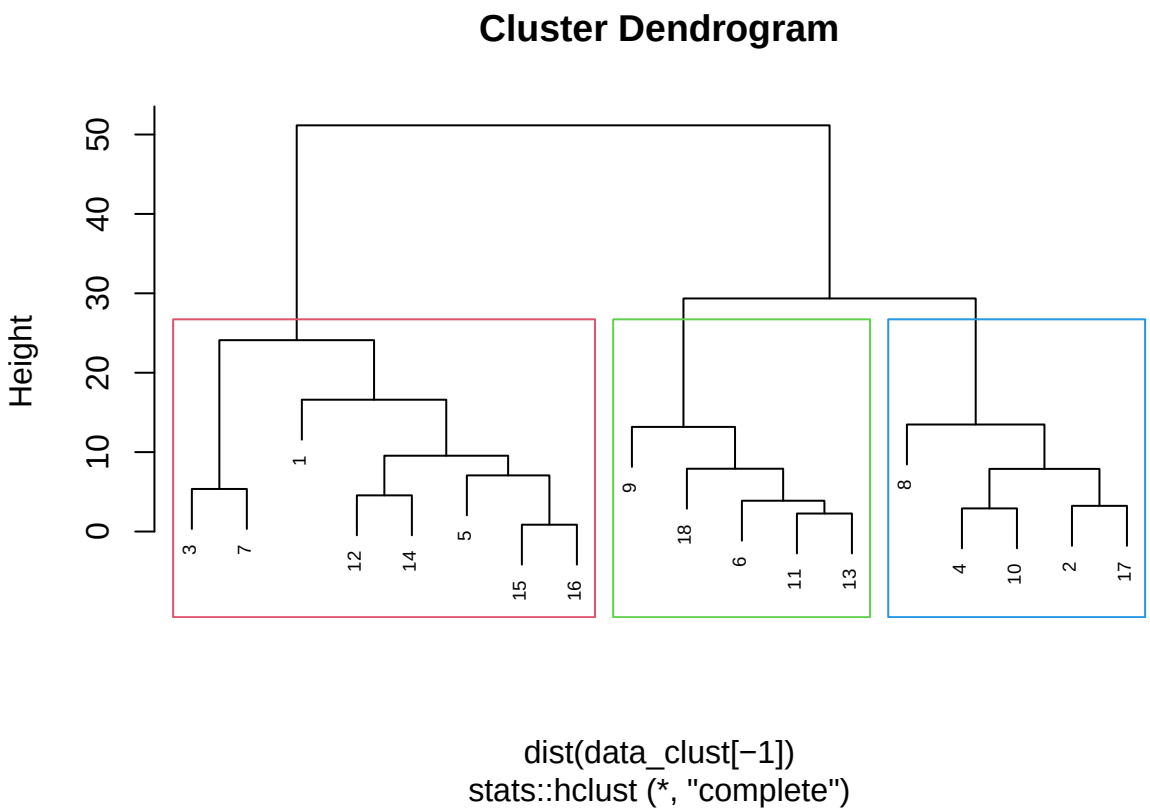


Figure 2: Dendogram from clustering 18 time series into three clusters.

##—-cluster-characterization

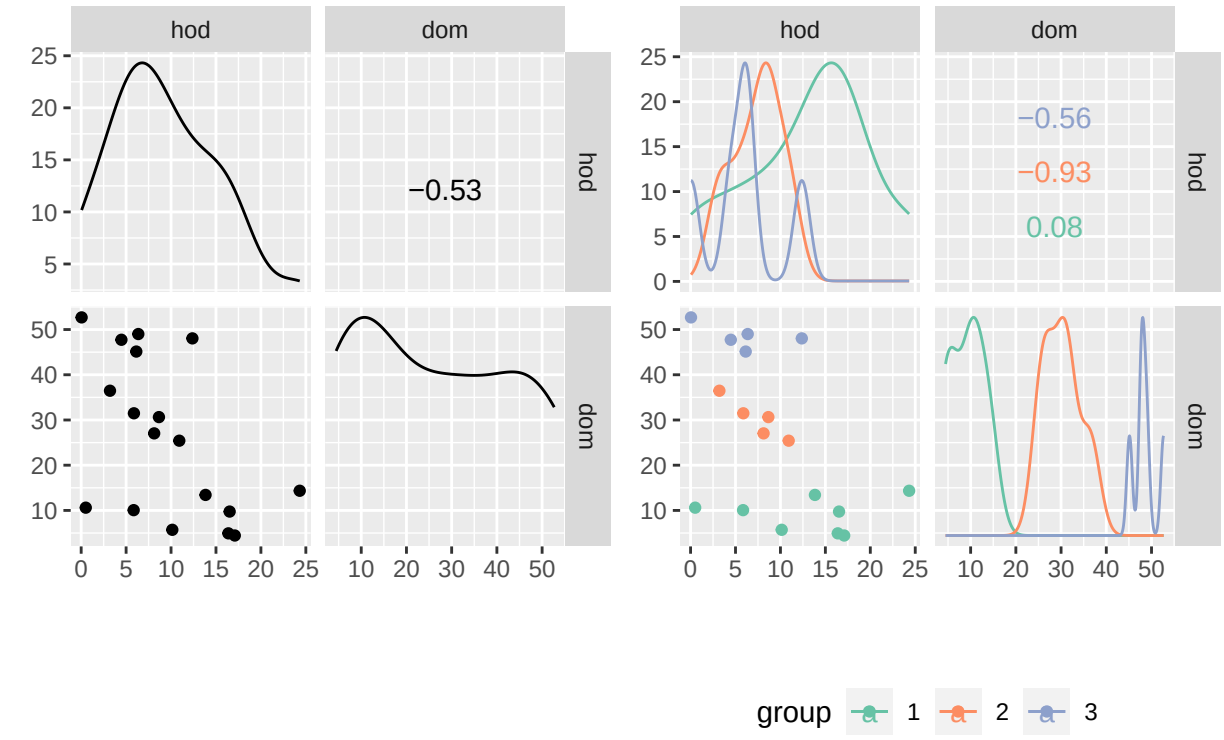
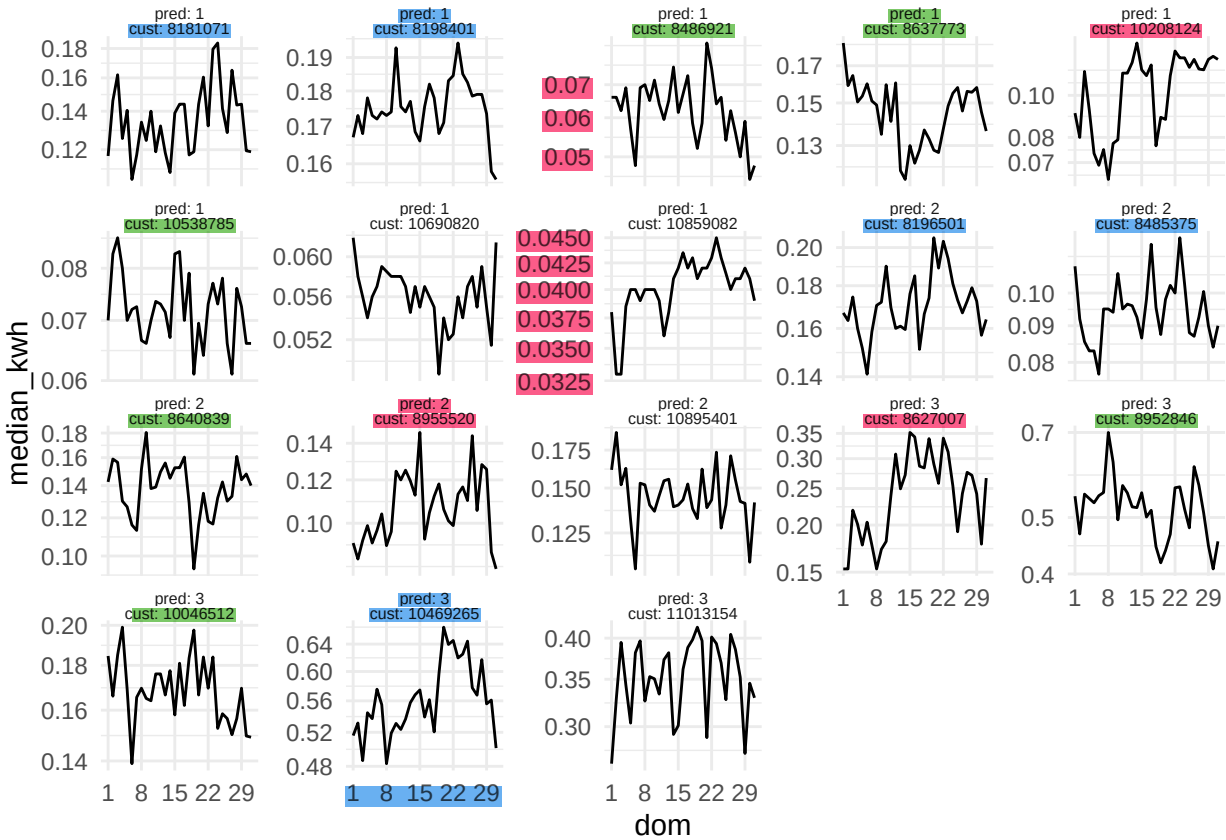


Figure 3: Pairs plot show that dom is the variable that is responsible for this clustering. The green colored cluster correspond to lowest value of dom, the orange colored and blue colored one correspond to middle range and high range of dom.



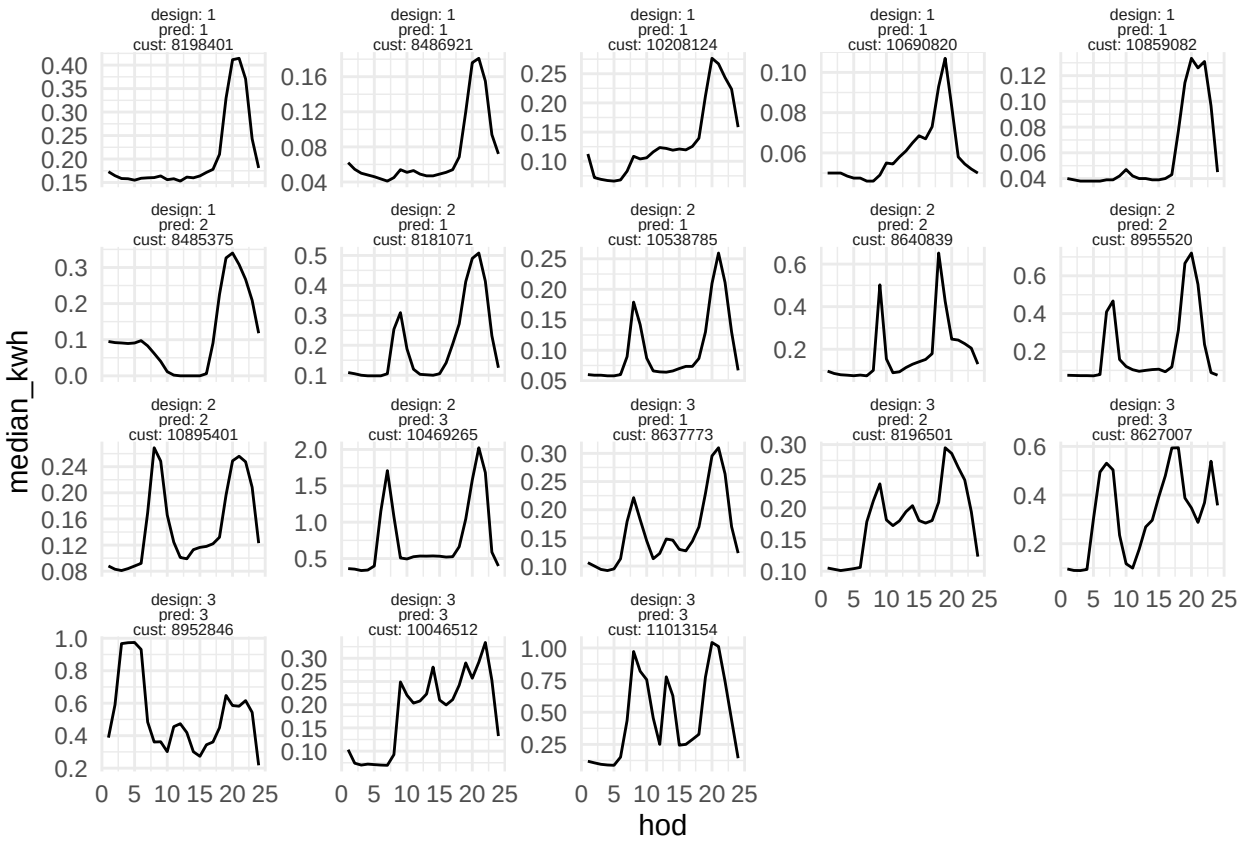
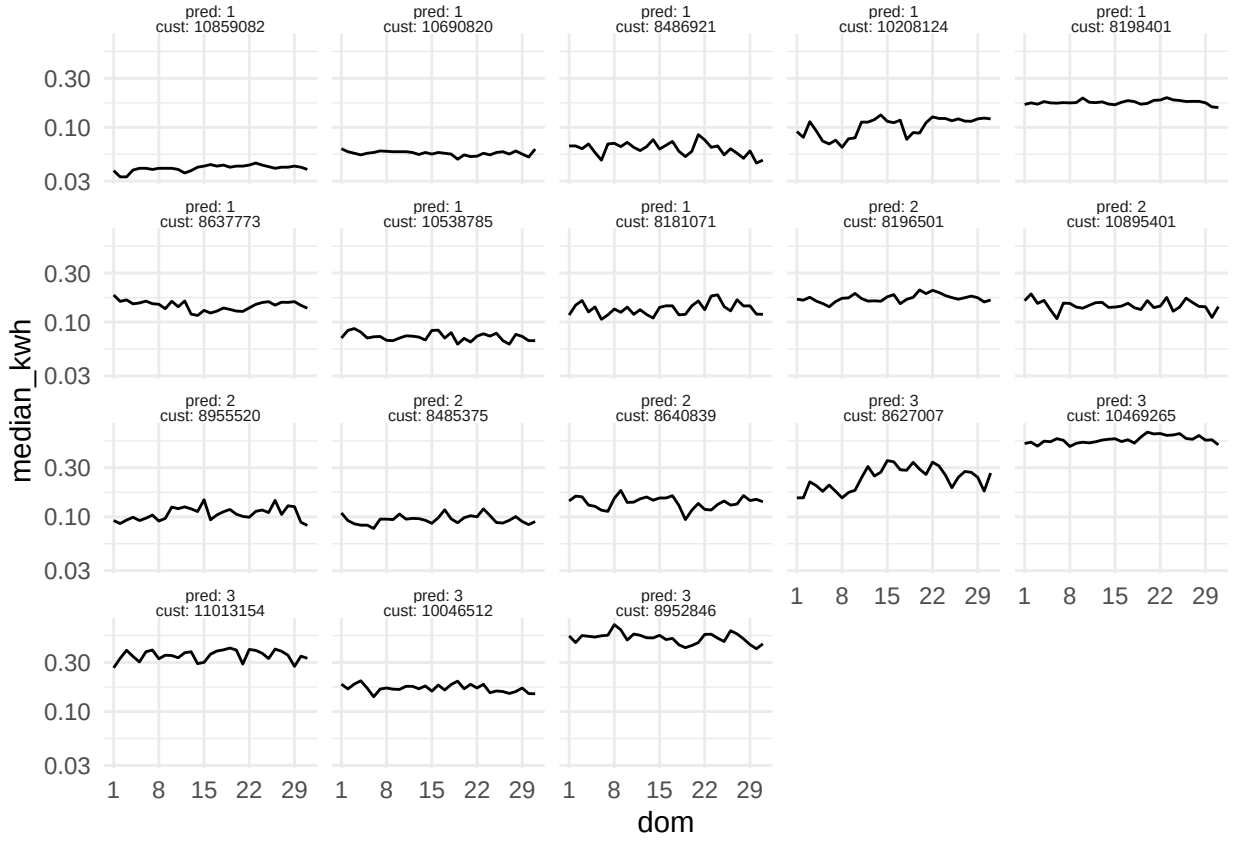
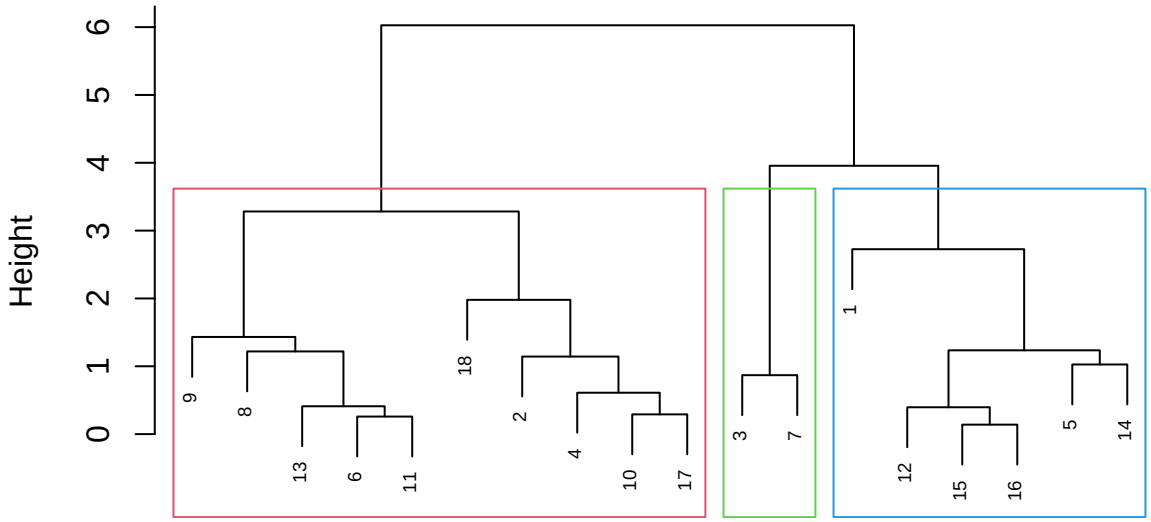


Figure 4: First facet label indicate actual design, second denote predicted design, third denote customer_id.





dist(data_clust[−1], method = "manhattan")
stats::hclust (*, "complete")

customer_id	design	pred_design_scale	pred_design	hour_day	day_month	hod_scaled	dom_scaled
8198401	1	3	1	5.8	10.1	-0.6	-0.9
8485375	1	2	2	5.9	31.5	-0.6	0.3
8486921	1	1	1	10.1	5.7	0.1	-1.2
10208124	1	1	1	16.5	9.7	1.1	-0.9
10690820	1	1	1	16.4	4.9	1.1	-1.2
10859082	1	1	1	17.1	4.5	1.2	-1.2
8181071	2	1	1	24.3	14.3	2.3	-0.7
8640839	2	2	2	3.2	36.5	-1.0	0.6
8955520	2	2	2	8.7	30.6	-0.1	0.3
10469265	2	2	3	4.5	47.7	-0.8	1.3
10538785	2	1	1	13.8	13.4	0.7	-0.7
10895401	2	2	2	8.1	27.0	-0.2	0.1
8196501	3	2	2	10.9	25.4	0.2	0.0
8627007	3	2	3	6.1	45.1	-0.5	1.1
8637773	3	3	1	0.5	10.6	-1.4	-0.9
8952846	3	2	3	0.0	52.7	-1.5	1.5
10046512	3	2	3	6.4	49.0	-0.5	1.3
11013154	3	2	3	12.4	48.0	0.5	1.3