

MATH 5345 / Regression Analysis: Final Report

Dr. Sun

Gabriela Lara and Joshua Mitchell

Contents

Abstract	2
Introduction	2
Models and Analysis Results	2
Conclusion and Discussion	2
References	2

List of Tables

1	First full model (i.e. with all regressors).	3
2	Correlations of the first untransformed model	6
3	This table shows some data	6
4	This table shows some data	6
5	This table shows some data	7
6	This table shows some data	7
7	This table shows some data	8
8	This table shows some data	10
9	This table shows some dataaaaaaa	10
10	This table shows some dataaaaaa	10

List of Figures

1	TOC Define Me	4
2	TOC Define Me	5
3	TOC Define Me	6
4	TOC Define Me	7
5	TOC Define Me	8
6	TOC Define Me	9

Abstract

Introduction

Models and Analysis Results

Conclusion and Discussion

References

	mpg_c	cylnum_mvd	displ_c	hp_c	wgt_c	acc_c	modelyr_mvd
mpg_c	1.00	-0.78	-0.80	-0.78	-0.83	0.42	0.58
cylnum_mvd	-0.78	1.00	0.95	0.84	0.90	-0.50	-0.34
displ_c	-0.80	0.95	1.00	0.90	0.93	-0.54	-0.37
hp_c	-0.78	0.84	0.90	1.00	0.86	-0.69	-0.42
wgt_c	-0.83	0.90	0.93	0.86	1.00	-0.42	-0.31
acc_c	0.42	-0.50	-0.54	-0.69	-0.42	1.00	0.29
modelyr_mvd	0.58	-0.34	-0.37	-0.42	-0.31	0.29	1.00

Table 1: First full model (i.e. with all regressors).

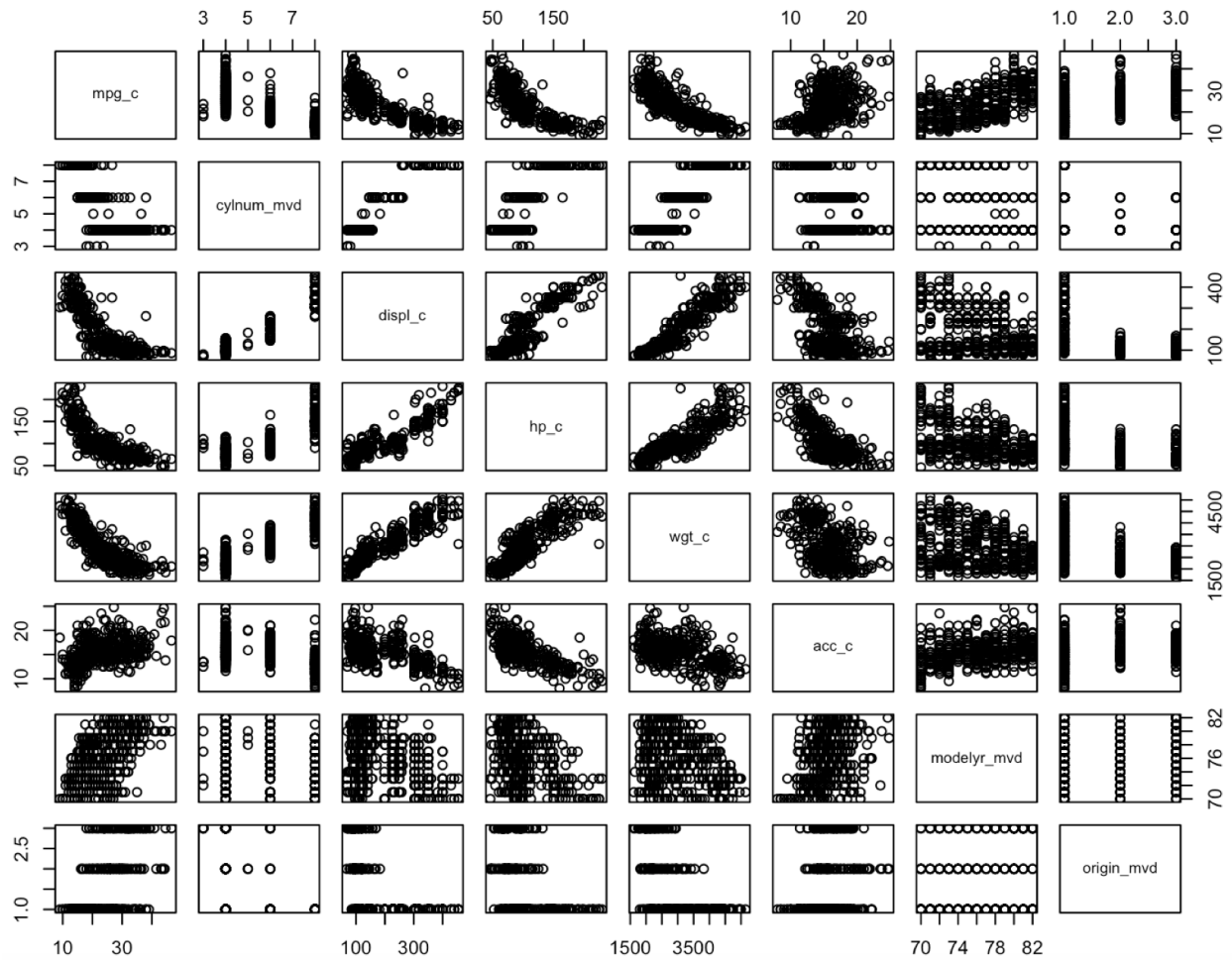


Figure 1: Description define me

FINAL MODEL:

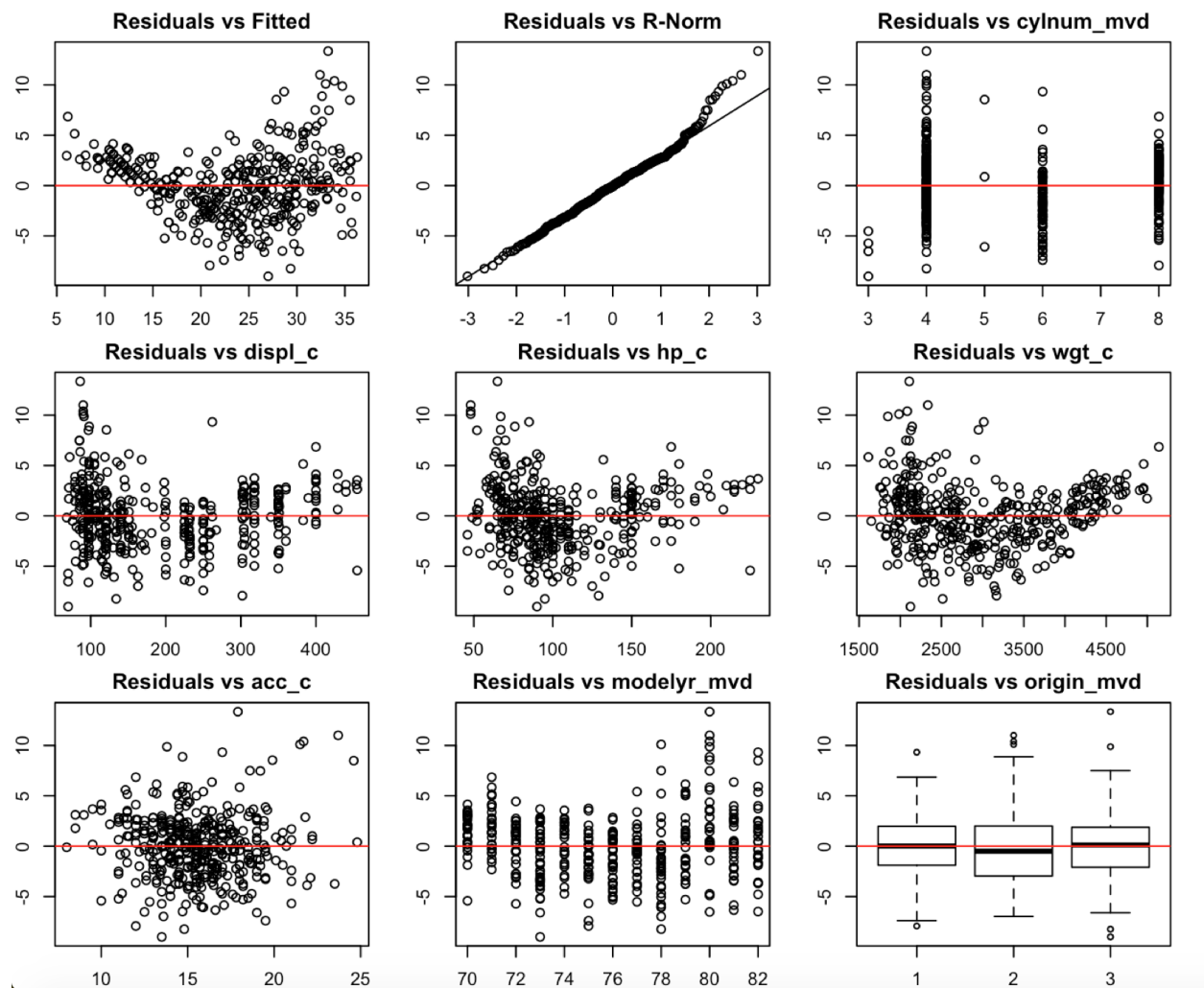


Figure 2: Description define me

	GVIF	Df	$GVIF^{1/(2 \cdot Df)}$
wgt_c	11.07	1.00	3.33
modelyr_mv	1.30	1.00	1.14
origin_mv	2.09	2.00	1.20
hp_c	9.98	1.00	3.16
displ_c	22.87	1.00	4.78
cylnum_mv	10.74	1.00	3.28
acc_c	2.62	1.00	1.62

Table 2: Correlations of the first untransformed model

	Regressor	F_Statistic	P_Value	Significance
1	Displacement	9.89	0.00	**
2	Weight	104.63	0.00	***
3	HP	1.61	0.21	none
4	Cylinder Num	2.53	0.11	none

Table 3: This table shows some data

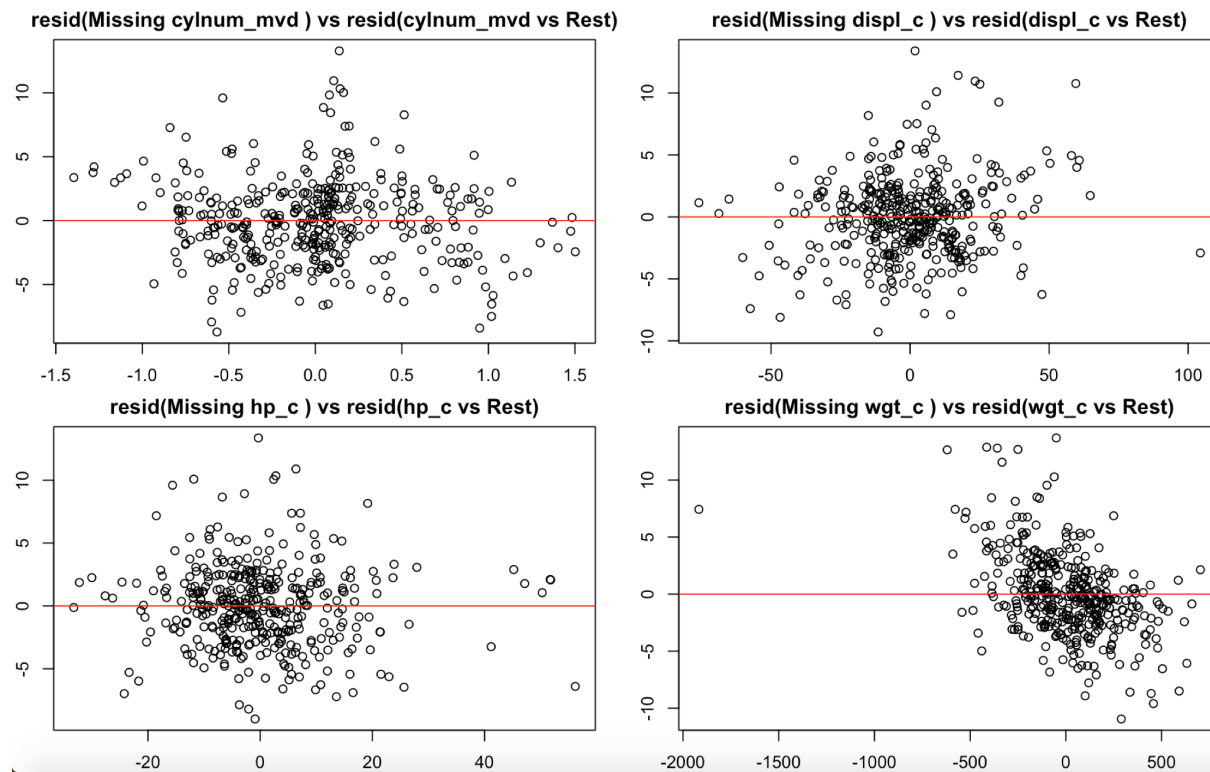


Figure 3: Description define me

	Regressor	F_Statistic	P_Value	Significance
1	Displacement	8.39	0.00	**
2	Weight	126.68	0.00	***
3	HP	9.10	0.00	**
4	Cylinder Num	6.35	0.01	*

Table 4: This table shows some data

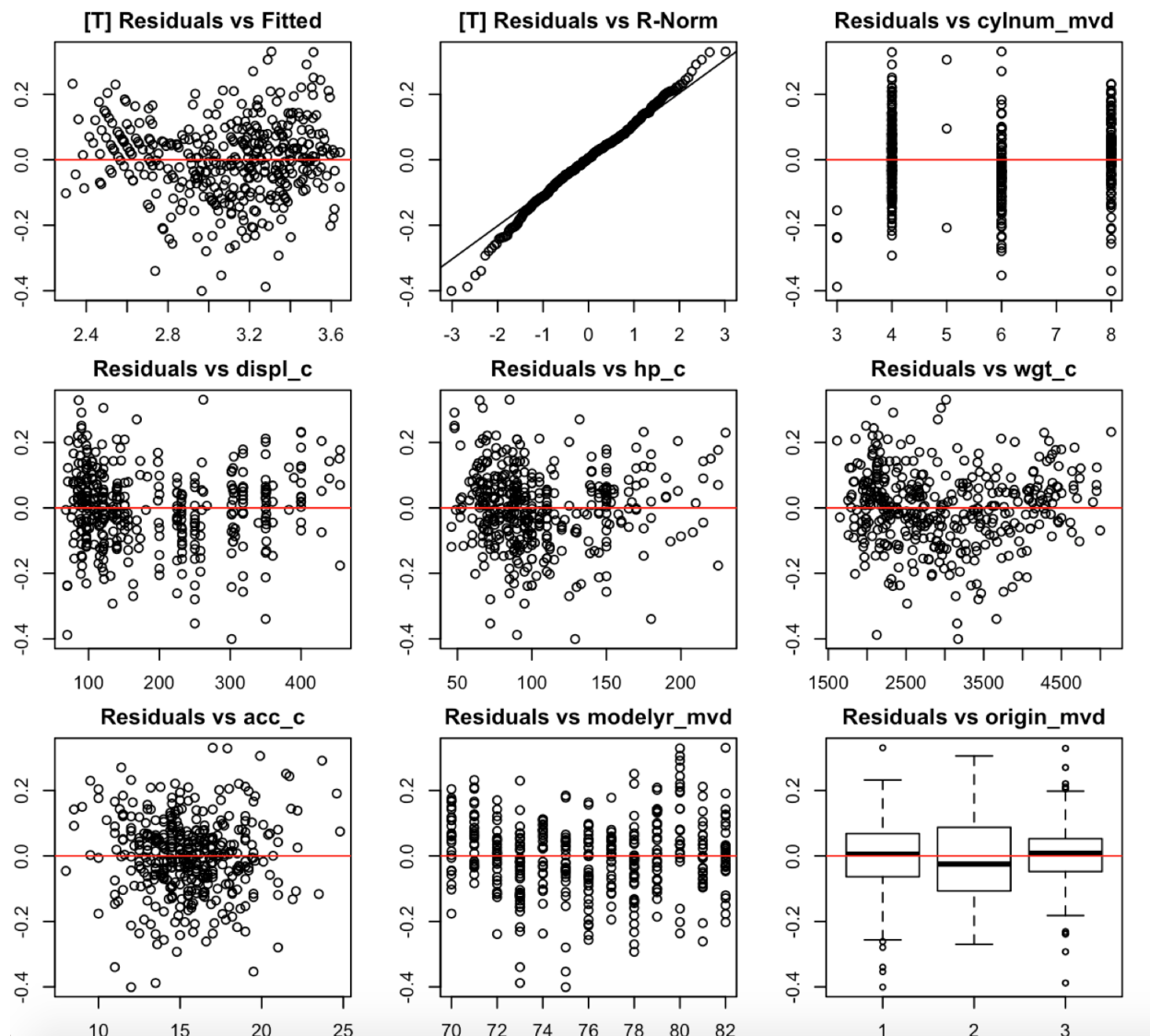


Figure 4: Description define me

	Model	R_Sq	AR_Sq	MS_res
1	Interaction	0.88	0.87	7.90
2	Transformed + Interaction	0.90	0.90	0.01

Table 5: This table shows some data

	Selection_Method	Num_Regressors	R_Sq	Adj_R_Sq	MS_res
1	Forward	6.00	0.89	0.89	0.01
2	Backward	16.00	0.90	0.90	0.01
3	Stepwise	6.00	0.89	0.89	0.01

Table 6: This table shows some data

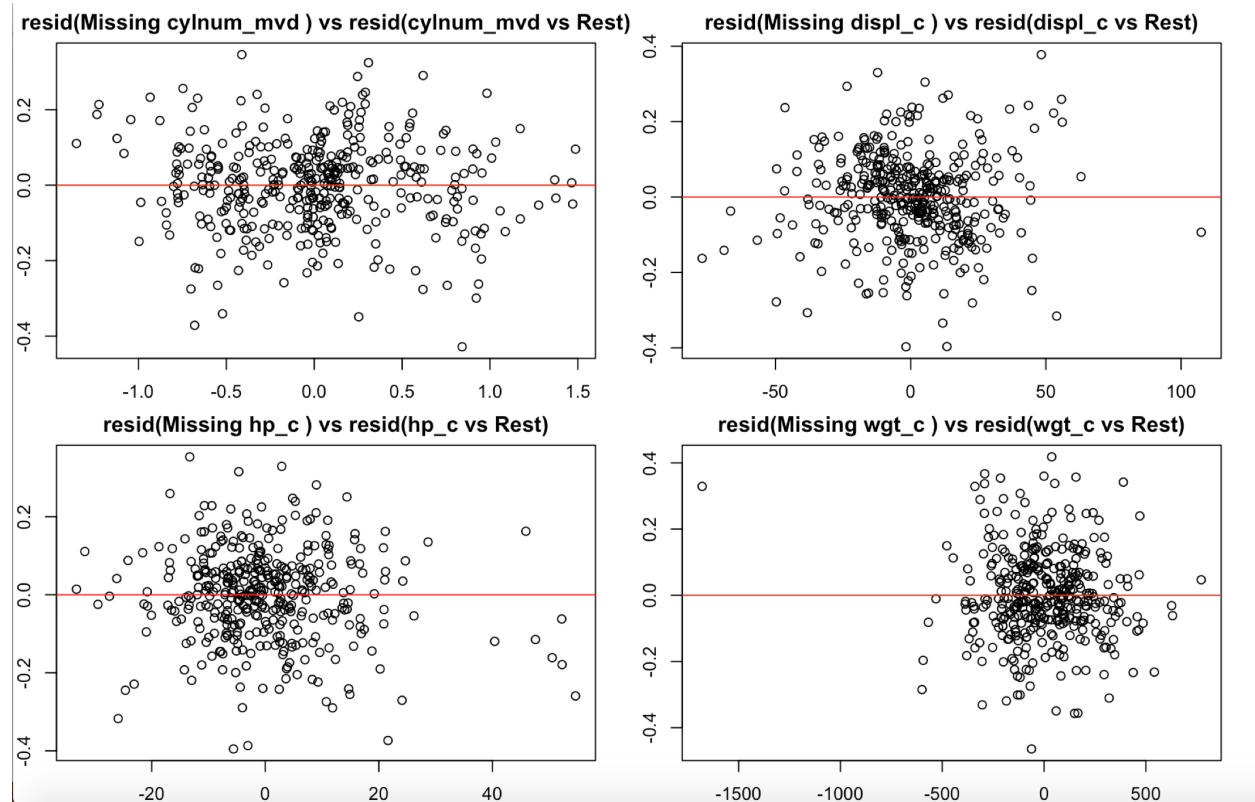


Figure 5: Description define me

	GVIF	Df	$\text{GVIF}^{1/(2 \cdot \text{Df})}$
wgt_c	13.83	1.00	3.72
modelyr_mv	1.27	1.00	1.13
origin_mv	1.74	2.00	1.15
hp_c	37.47	1.00	6.12
acc_c	2.61	1.00	1.62
wgt_c:hp_c	58.06	1.00	7.62

Table 7: This table shows some data

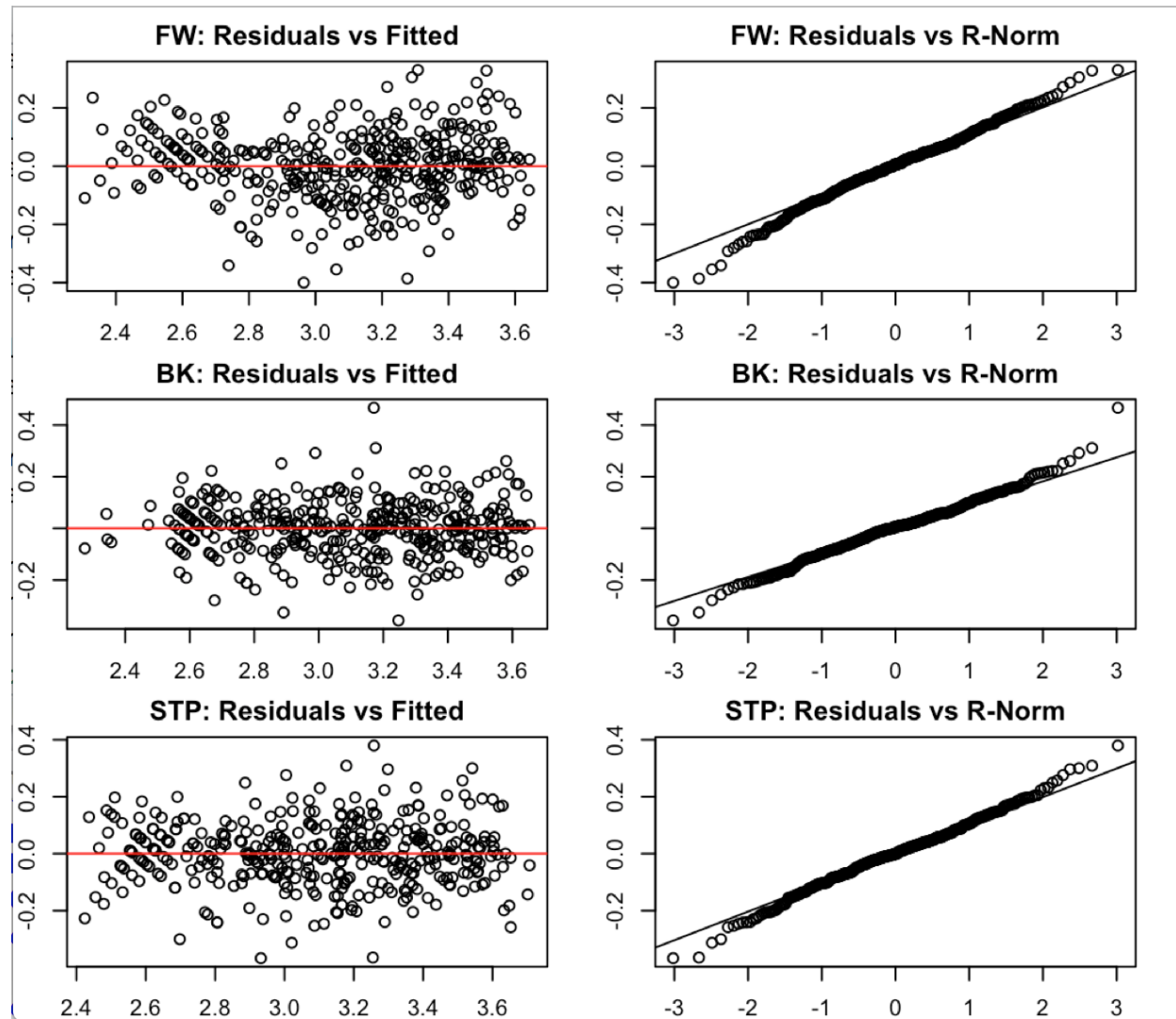


Figure 6: Description define me

	GVIF	Df	GVIF ^{1/(2*Df)}
wgt_c	3110.02	1.00	55.77
modelyr_mvd	1.44	1.00	1.20
origin_mvd	3.01	2.00	1.32
hp_c	2806.06	1.00	52.97
displ_c	10568.29	1.00	102.80
cylnum_mvd	975.92	1.00	31.24
acc_c	3.64	1.00	1.91
wgt_c:hp_c	27058.36	1.00	164.49
hp_c:displ_c	39680.75	1.00	199.20
wgt_c:displ_c	11724.72	1.00	108.28
wgt_c:cylnum_mvd	9069.37	1.00	95.23
hp_c:cylnum_mvd	9125.25	1.00	95.53
displ_c:cylnum_mvd	19861.83	1.00	140.93
wgt_c:hp_c:cylnum_mvd	41867.56	1.00	204.62
wgt_c:displ_c:cylnum_mvd	15077.88	1.00	122.79
hp_c:displ_c:cylnum_mvd	44842.29	1.00	211.76

Table 8: This table shows some data

	Model	Num_Infl_Pnts	Percent_Infl_Pnts	Common_Infl_Pnts
1	Forward	20.00	5.12%	14.00
2	Backward	36.00	9.21%	14.00

Table 9: This table shows some dataaaaaaa

	Model	R_Sq	AR_Sq	MS_res
1	Forward w/o Infl	0.91	0.91	0.01
2	Backward w/o Infl	0.90	0.90	0.01

Table 10: This table shows some dataaaaaa

	Estimate	Std. Error	t value	Pr(> t)	Significance
(Intercept)	2.1373	0.1735	12.32	0.0000	***
wgt_c	-0.0004	0.0000	-14.76	0.0000	***
modelyr_mvd	0.0309	0.0018	17.59	0.0000	***
origin_mvd2	0.0558	0.0177	3.14	0.0018	**
origin_mvd3	0.0455	0.0180	2.52	0.0121	*
hp_c	-0.0064	0.0009	-7.06	0.0000	***
acc_c	-0.0053	0.0034	-1.59	0.1118	
wgt_c:hp_c	0.0000	0.0000	6.71	0.0000	***