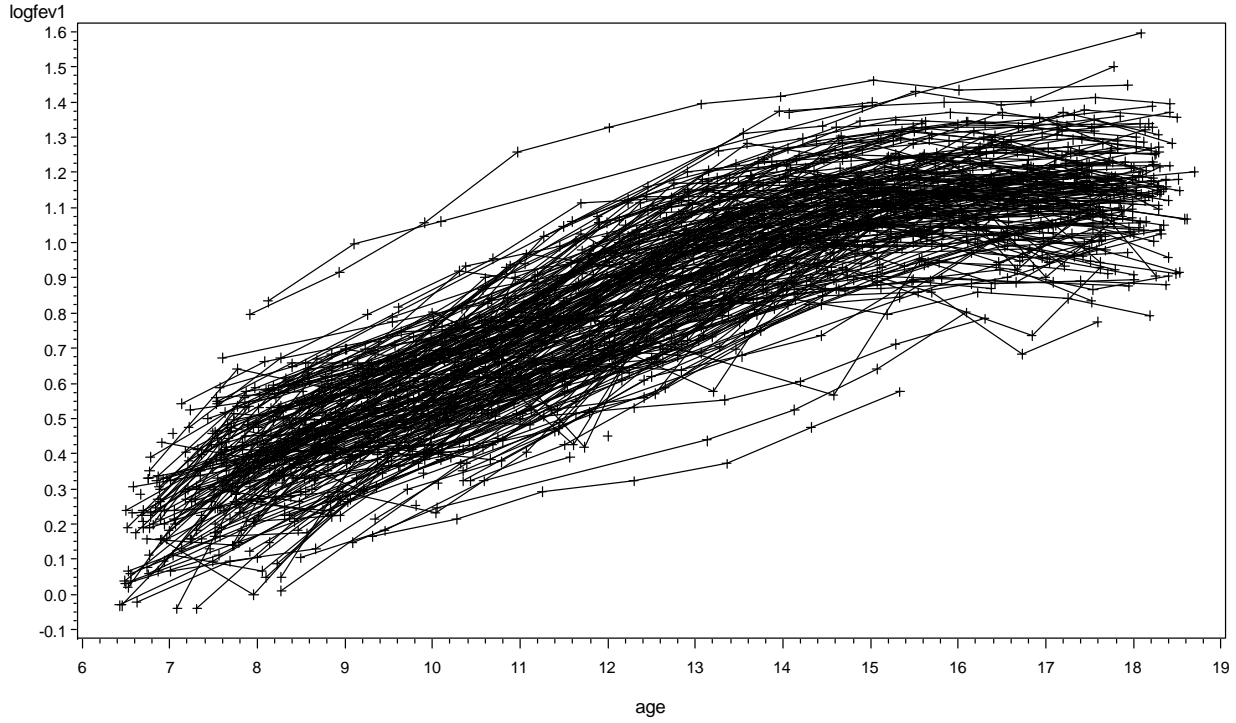
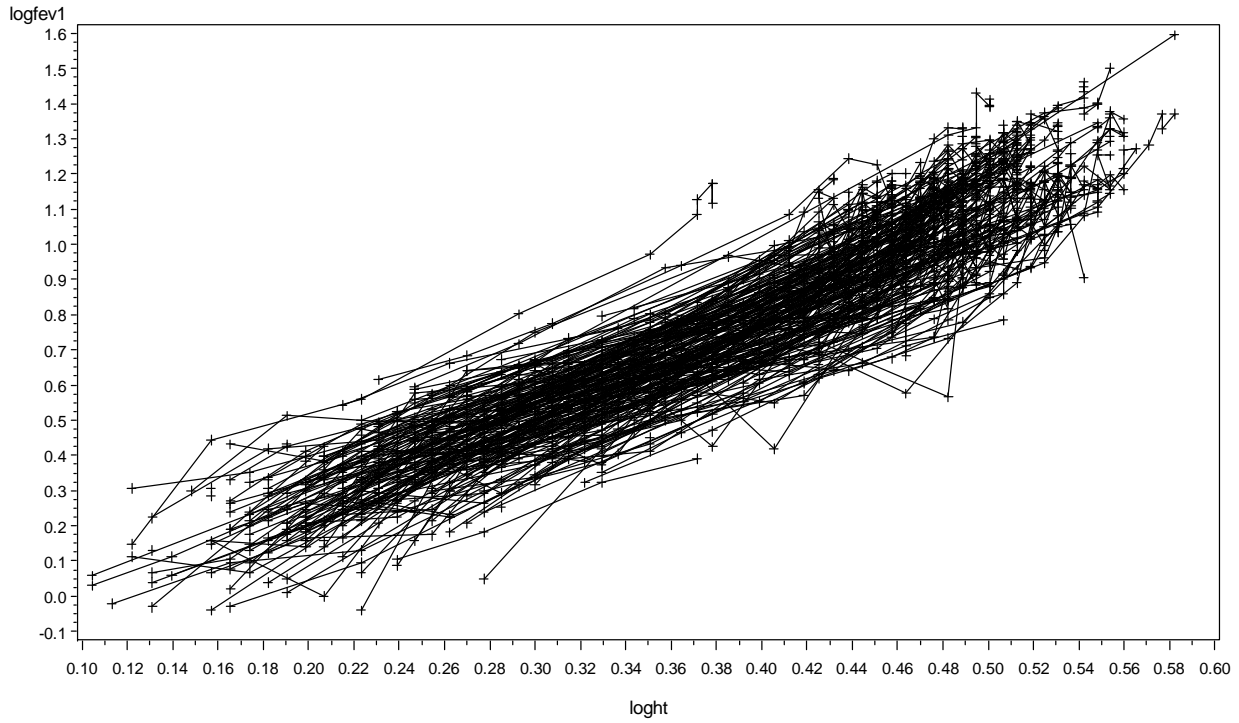


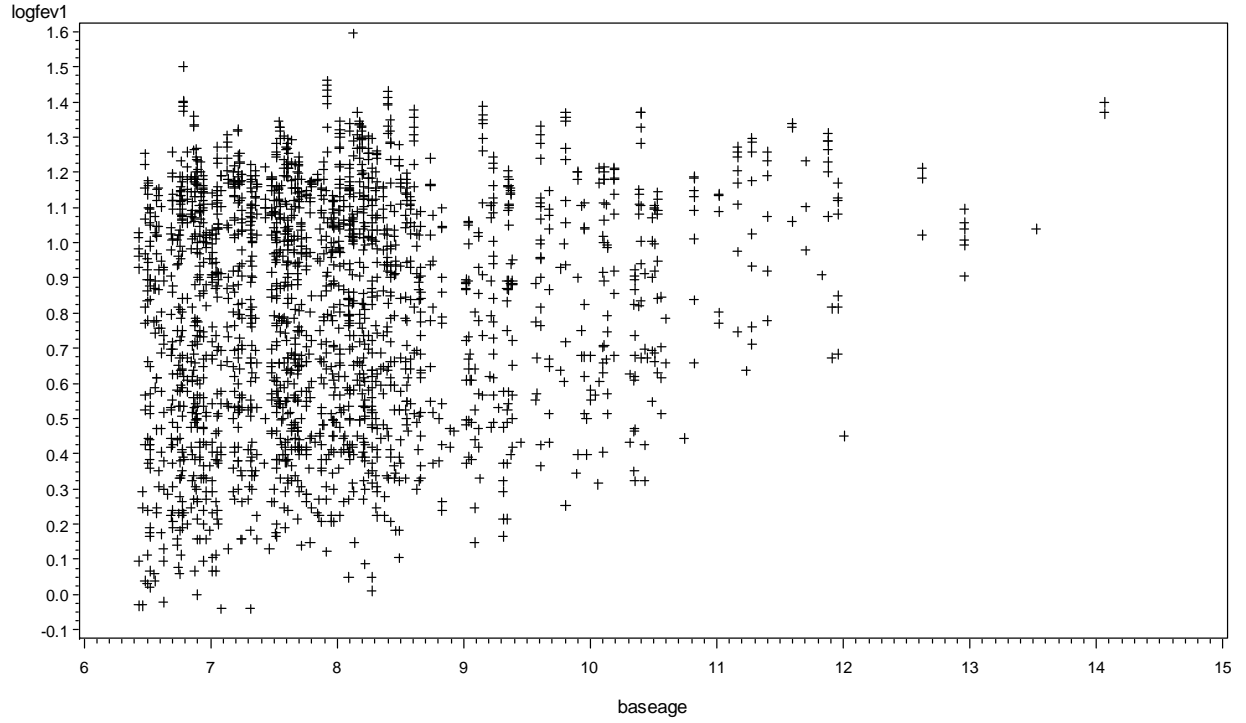
## Subject-specific observed profiles of log(fev1) vs age



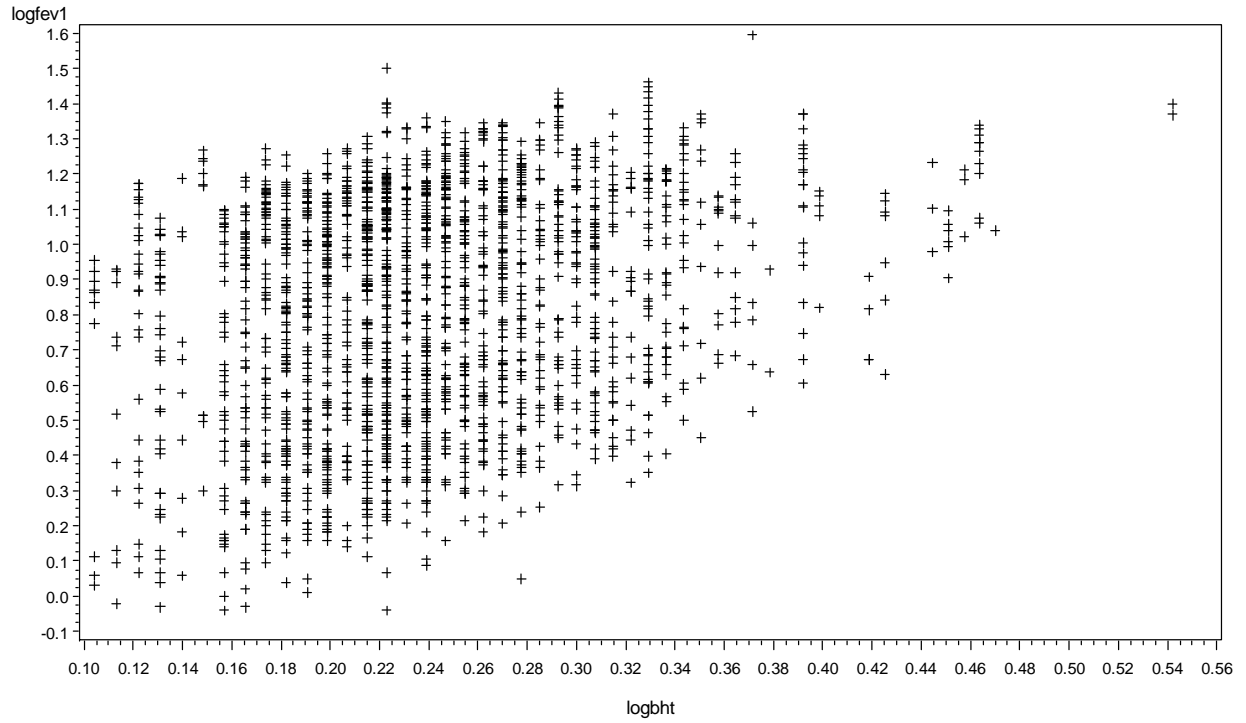
## Subject-specific observed profiles of log(fev1) vs log(ht)



## log(fev1) vs baseline age



## log(fev1) vs log(baseline ht)



Data from subject 35, who has data at all integer ages 7,8,...,18

1

Obs	id	ht	age	baseht	baseage	logfev1	loght	logbht
239	35	1.14	7.0171	1.14	7.0171	0.06766	0.13103	0.13103
240	35	1.18	7.9945	1.14	7.0171	0.10436	0.16551	0.13103
241	35	1.23	8.9829	1.14	7.0171	0.29267	0.20701	0.13103
242	35	1.30	10.0370	1.14	7.0171	0.23111	0.26236	0.13103
243	35	1.36	11.0773	1.14	7.0171	0.40547	0.30748	0.13103
244	35	1.44	12.0876	1.14	7.0171	0.66783	0.36464	0.13103
245	35	1.52	13.0623	1.14	7.0171	0.76081	0.41871	0.13103
246	35	1.55	14.1547	1.14	7.0171	0.94001	0.43825	0.13103
247	35	1.56	15.0773	1.14	7.0171	0.88789	0.44469	0.13103
248	35	1.56	16.1478	1.14	7.0171	0.97078	0.44469	0.13103
249	35	1.56	17.0103	1.14	7.0171	0.95551	0.44469	0.13103
250	35	1.57	18.0068	1.14	7.0171	0.90826	0.45108	0.13103

Obs	logfevht	age2	age3	logage	baseage2
239	-0.06337	49.240	345.52	1.94835	49.2397
240	-0.06115	63.912	510.94	2.07875	49.2397
241	0.08566	80.692	724.85	2.19532	49.2397
242	-0.03125	100.741	1011.14	2.30628	49.2397
243	0.09799	122.707	1359.26	2.40490	49.2397
244	0.30319	146.110	1766.12	2.49218	49.2397
245	0.34210	170.624	2228.74	2.56973	49.2397
246	0.50176	200.356	2835.97	2.65005	49.2397
247	0.44320	227.325	3427.45	2.71319	49.2397
248	0.52609	260.751	4210.56	2.78178	49.2397
249	0.51082	289.350	4921.94	2.83382	49.2397
250	0.45718	324.245	5838.61	2.89075	49.2397

The Mixed Procedure

Model Information

Data Set	WORK.FEV
Dependent Variable	logfev1
Covariance Structure	Unstructured
Subject Effect	id
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Containment

Class Level Information

Class	Levels	Values
id	299	not printed

Dimensions

Covariance Parameters	4
Columns in X	5
Columns in Z Per Subject	2
Subjects	299
Max Obs Per Subject	12

Number of Observations

Number of Observations Read	1993
Number of Observations Used	1993
Number of Observations Not Used	0

Iteration History

Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-2961.45030802	
1	2	-4567.61910964	0.00006041
2	1	-4567.88023186	0.00000041
3	1	-4567.88194328	0.00000000

Convergence criteria met.

The Mixed Procedure

Estimated G Matrix

Row	Effect	id	Col1	Col2
1	Intercept	1	0.01221	-0.00043
2	age	1	-0.00043	0.000050

Estimated G Correlation Matrix

Row	Effect	id	Col1	Col2
1	Intercept	1	1.0000	-0.5531
2	age	1	-0.5531	1.0000

Estimated V Matrix for id 1

Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7
1	0.01213	0.008536	0.008573	0.008609	0.008643	0.008716	0.008748
2	0.008536	0.01226	0.008722	0.008811	0.008895	0.009076	0.009156
3	0.008573	0.008722	0.01250	0.009014	0.009149	0.009440	0.009567
4	0.008609	0.008811	0.009014	0.01284	0.009391	0.009785	0.009957
5	0.008643	0.008895	0.009149	0.009391	0.01325	0.01011	0.01033
6	0.008716	0.009076	0.009440	0.009785	0.01011	0.01445	0.01113
7	0.008748	0.009156	0.009567	0.009957	0.01033	0.01113	0.01510

Estimated V Correlation Matrix for id 35

Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8	Col9
1	1.0000	0.7001	0.6939	0.6843	0.6719	0.6574	0.6414	0.6216	0.6037
2	0.7001	1.0000	0.6985	0.6930	0.6847	0.6740	0.6615	0.6455	0.6305
3	0.6939	0.6985	1.0000	0.6992	0.6950	0.6882	0.6793	0.6671	0.6552
4	0.6843	0.6930	0.6992	1.0000	0.7028	0.7002	0.6953	0.6872	0.6786
5	0.6719	0.6847	0.6950	0.7028	1.0000	0.7089	0.7078	0.7038	0.6984

Estimated V Correlation  
 Matrix for id 35

Row	Col10	Col11	Col12
1	0.5819	0.5640	0.5429
2	0.6119	0.5963	0.5778
3	0.6400	0.6269	0.6110
4	0.6670	0.6565	0.6436
5	0.6903	0.6826	0.6725

The Mixed Procedure

Estimated V Correlation Matrix for id 35

Row	Col1	Col2	Col3	Col4	Col5	Col6	Col7	Col8	Col9
6	0.6574	0.6740	0.6882	0.7002	0.7089	1.0000	0.7168	0.7167	0.7145
7	0.6414	0.6615	0.6793	0.6953	0.7078	0.7168	1.0000	0.7263	0.7270
8	0.6216	0.6455	0.6671	0.6872	0.7038	0.7167	0.7263	1.0000	0.7377
9	0.6037	0.6305	0.6552	0.6786	0.6984	0.7145	0.7270	0.7377	1.0000
10	0.5819	0.6119	0.6400	0.6670	0.6903	0.7098	0.7255	0.7397	0.7490
11	0.5640	0.5963	0.6269	0.6565	0.6826	0.7046	0.7228	0.7396	0.7511
12	0.5429	0.5778	0.6110	0.6436	0.6725	0.6973	0.7182	0.7379	0.7517

Estimated V Correlation  
 Matrix for id 35

Row	Col10	Col11	Col12
6	0.7098	0.7046	0.6973
7	0.7255	0.7228	0.7182
8	0.7397	0.7396	0.7379
9	0.7490	0.7511	0.7517
10	1.0000	0.7614	0.7646
11	0.7614	1.0000	0.7728
12	0.7646	0.7728	1.0000

Covariance Parameter Estimates

Cov Parm	Subject	Estimate
UN(1,1)	id	0.01221
UN(2,1)	id	-0.00043
UN(2,2)	id	0.000050
Residual		0.003629

Fit Statistics

-2 Res Log Likelihood	-4567.9
AIC (smaller is better)	-4559.9
AICC (smaller is better)	-4559.9
BIC (smaller is better)	-4545.1

Null Model Likelihood Ratio Test

DF	Chi-Square	Pr > ChiSq
3	1606.43	<.0001

The Mixed Procedure

Solution for Fixed Effects

Effect	Estimate	Standard Error	DF	t Value	Pr >  t
Intercept	-0.2883	0.03872	297	-7.45	<.0001
age	0.02353	0.001395	251	16.86	<.0001
loght	2.2372	0.04354	1440	51.39	<.0001
baseage	-0.01651	0.007458	1440	-2.21	0.0270
logbht	0.2182	0.1455	1440	1.50	0.1340

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	Chi-Square	F Value	Pr > ChiSq	Pr > F
age	1	251	284.34	284.34	<.0001	<.0001
loght	1	1440	2640.50	2640.50	<.0001	<.0001
baseage	1	1440	4.90	4.90	0.0269	0.0270
logbht	1	1440	2.25	2.25	0.1337	0.1340

The Mixed Procedure

Convergence criteria met.

Covariance Parameter Estimates

Cov Parm	Subject	Estimate
UN(1,1)	id	0.01330
UN(2,1)	id	-0.01855
UN(2,2)	id	0.06849
Residual		0.003533

Fit Statistics

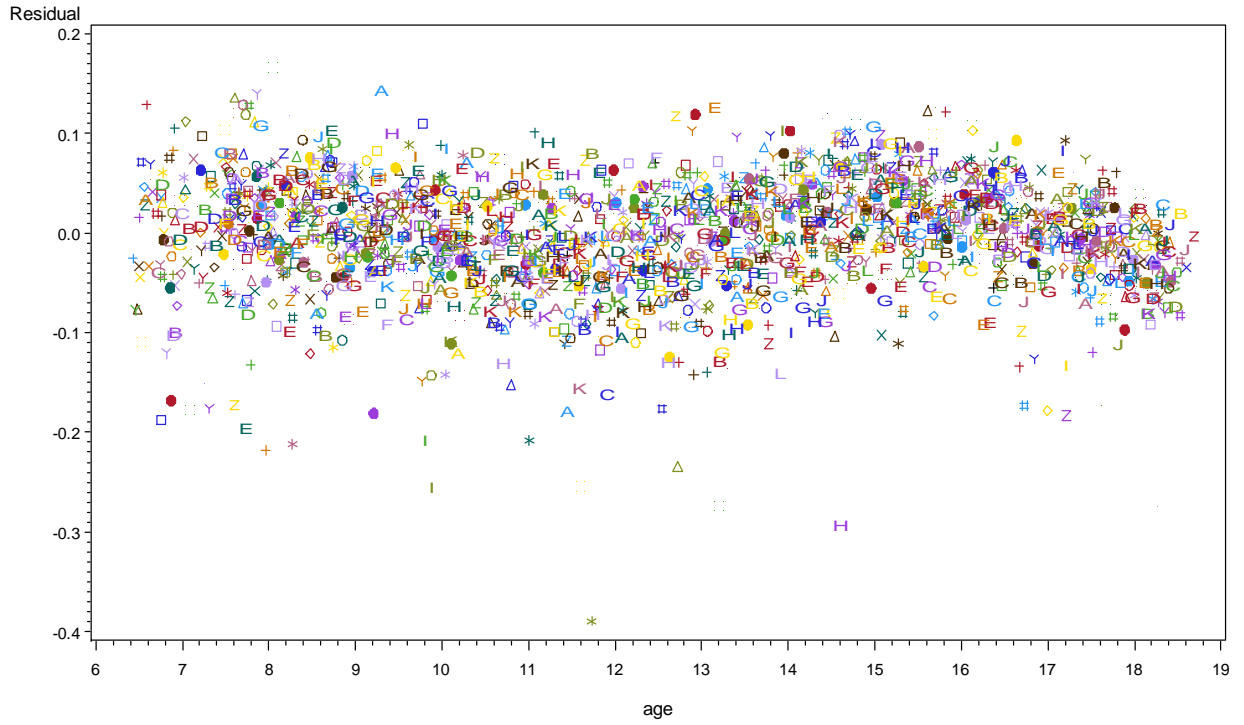
-2 Res Log Likelihood	-4589.5
AIC (smaller is better)	-4581.5
AICC (smaller is better)	-4581.5
BIC (smaller is better)	-4566.7

Solution for Fixed Effects

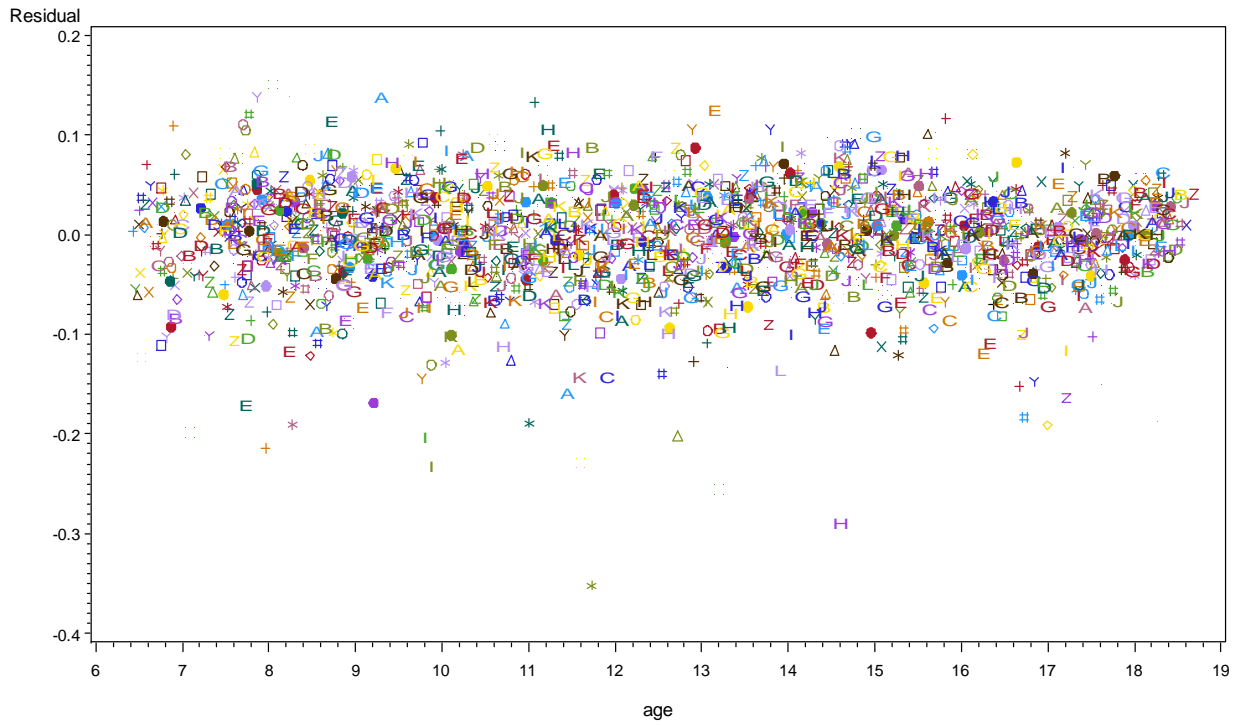
Effect	Estimate	Standard Error	DF	t Value	Pr >  t
Intercept	-0.2846	0.03901	297	-7.30	<.0001
age	0.02327	0.001247	1440	18.65	<.0001
loght	2.2523	0.04613	251	48.82	<.0001
baseage	-0.01630	0.007439	1440	-2.19	0.0286
logbht	0.1808	0.1455	1440	1.24	0.2142



## Residuals from Model 1 vs age



## Residuals from model 3 vs age



The Mixed Procedure

Convergence criteria met.

Covariance Parameter Estimates

Cov Parm	Subject	Estimate
UN(1,1)	id	0.09734
UN(2,1)	id	-0.01492
UN(2,2)	id	0.002508
UN(3,1)	id	0.000530
UN(3,2)	id	-0.00009
UN(3,3)	id	3.306E-6
Residual		0.002986

Fit Statistics

-2 Log Likelihood	-4797.8
AIC (smaller is better)	-4767.8
AICC (smaller is better)	-4767.6
BIC (smaller is better)	-4712.3

Solution for Fixed Effects

Effect	Estimate	Standard Error	DF	t Value	Pr >  t
Intercept	-2.1670	0.3389	297	-6.39	<.0001
age	0.7432	0.1157	251	6.42	<.0001
loght	2.2809	0.1021	1210	22.34	<.0001
baseage	-0.01017	0.008341	1210	-1.22	0.2229
logbht	0.1336	0.1659	1210	0.81	0.4209
age2	-0.1005	0.01474	227	-6.81	<.0001
age*age2	0.005934	0.000798	1210	7.44	<.0001
age2*age2	-0.00013	0.000016	227	-8.05	<.0001

## The Mixed Procedure

Convergence criteria met but final hessian is not positive definite.

## Covariance Parameter Estimates

Cov Parm	Subject	Estimate
UN(1,1)	id	0.008830
Variance		0
SP(GAU)		1.0000
Residual		0.003855

## Fit Statistics

-2 Log Likelihood	-4655.6
AIC (smaller is better)	-4633.6
AICC (smaller is better)	-4633.5
BIC (smaller is better)	-4592.9

## Solution for Fixed Effects

Effect	Estimate	Standard Error	DF	t Value	Pr >  t
Intercept	-1.8082	0.3405	297	-5.31	<.0001
age	0.6201	0.1170	1688	5.30	<.0001
loght	2.1445	0.08887	1688	24.13	<.0001
baseage	-0.01742	0.008017	1688	-2.17	0.0299
logbht	0.3528	0.1589	1688	2.22	0.0265
age2	-0.08407	0.01492	1688	-5.63	<.0001
age*age2	0.005043	0.000811	1688	6.22	<.0001
age2*age2	-0.00011	0.000016	1688	-6.79	<.0001

## The Mixed Procedure

Convergence criteria met but final hessian is not positive definite.

## Covariance Parameter Estimates

Cov Parm	Subject	Estimate
UN(1,1)	id	0.008830
Variance		0
SP(EXP)		1.0000
Residual		0.003855

## Fit Statistics

-2 Log Likelihood	-4655.6
AIC (smaller is better)	-4633.6
AICC (smaller is better)	-4633.5
BIC (smaller is better)	-4592.9

## Solution for Fixed Effects

Effect	Estimate	Standard Error	DF	t Value	Pr >  t
Intercept	-1.8082	0.3405	297	-5.31	<.0001
age	0.6201	0.1170	1688	5.30	<.0001
loght	2.1445	0.08887	1688	24.13	<.0001
baseage	-0.01742	0.008017	1688	-2.17	0.0299
logbht	0.3528	0.1589	1688	2.22	0.0265
age2	-0.08407	0.01492	1688	-5.63	<.0001
age*age2	0.005043	0.000811	1688	6.22	<.0001
age2*age2	-0.00011	0.000016	1688	-6.79	<.0001

## The Mixed Procedure

Convergence criteria met but final hessian is not positive definite.

## Covariance Parameter Estimates

Cov Parm	Subject	Estimate
UN(1,1)	id	0.09752
UN(2,1)	id	-0.01495
UN(2,2)	id	0.002513
UN(3,1)	id	0.000531
UN(3,2)	id	-0.00009
UN(3,3)	id	3.313E-6
SP(GAU)		1.0000
Residual		0.002986

## Fit Statistics

-2 Log Likelihood	-4797.8
AIC (smaller is better)	-4765.8
AICC (smaller is better)	-4765.5
BIC (smaller is better)	-4706.6

## Solution for Fixed Effects

Effect	Estimate	Standard Error	DF	t Value	Pr >  t
Intercept	-2.1670	0.3389	297	-6.39	<.0001
age	0.7432	0.1157	251	6.42	<.0001
loght	2.2808	0.1021	1210	22.34	<.0001
baseage	-0.01018	0.008341	1210	-1.22	0.2227
logbht	0.1337	0.1659	1210	0.81	0.4205
age2	-0.1005	0.01474	227	-6.81	<.0001
age*age2	0.005934	0.000798	1210	7.44	<.0001
age2*age2	-0.00013	0.000016	227	-8.05	<.0001