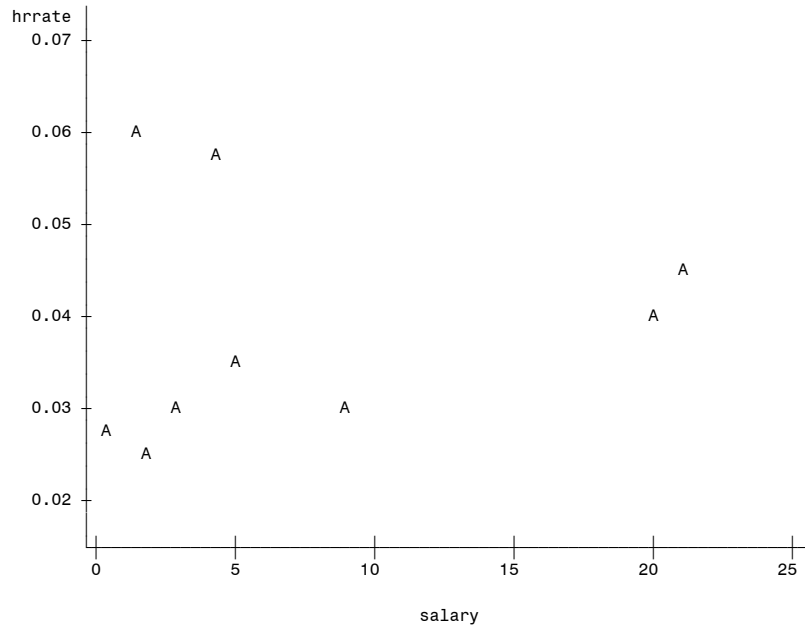


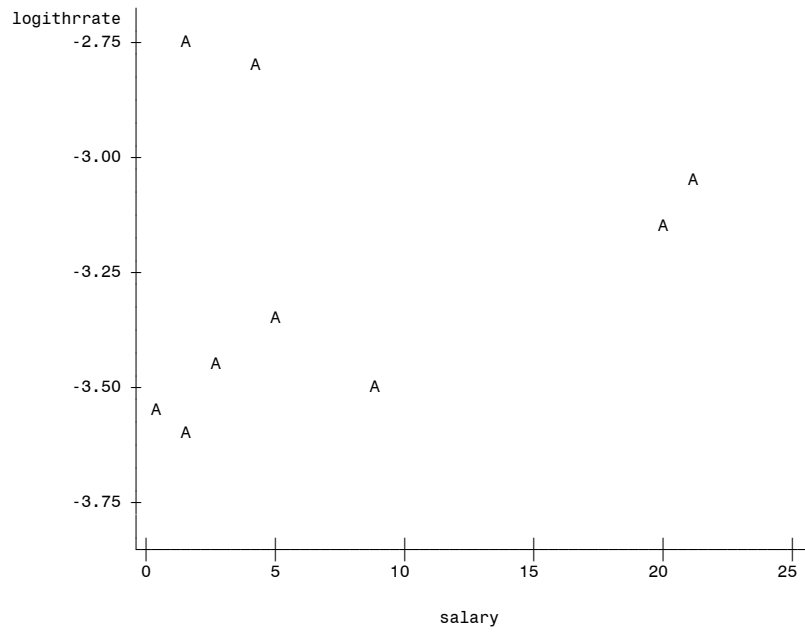
# The SAS System

Obs	fname	lname	team	ab	hr	salary	hrrate	logithrrate
1	Justin	Morneau	COL	502	17	5.00	0.033865	-3.35094
2	Matt	Adams	STL	527	15	0.53	0.028463	-3.53027
3	Freddie	Freeman	ATL	607	18	8.80	0.029654	-3.48805
4	Anthony	Rizzo	CHC	524	32	1.50	0.061069	-2.73274
5	Adrian	Gonzalez	LAD	591	27	21.00	0.045685	-3.03922
6	Yonder	Alonso	SDP	267	7	1.65	0.026217	-3.61477
7	Lucas	Duda	NYM	514	30	4.20	0.058366	-2.78089
8	Garrett	Jones	MIA	496	15	2.75	0.030242	-3.46782
9	Ryan	Howard	PHI	569	23	20.00	0.040422	-3.16712

Plot of hrrate\*salary. Legend: A = 1 obs, B = 2 obs, etc.



Plot of logithrrate\*salary. Legend: A = 1 obs, B = 2 obs, etc.



The GENMOD Procedure

Model Information	
Data Set	WORK.FIRSTBASE
Distribution	Binomial
Link Function	Logit
Response Variable (Events)	hr
Response Variable (Trials)	ab

Number of Observations Read	9
Number of Observations Used	9
Number of Events	184
Number of Trials	4597

Response Profile		
Ordered Value	Binary Outcome	Total Frequency
1	Event	184
2	Nonevent	4413

Criteria For Assessing Goodness Of Fit			
Criterion	DF	Value	Value/DF
Deviance	8	16.9292	2.1161
Scaled Deviance	8	16.9292	2.1161
Pearson Chi-Square	8	17.6227	2.2028
Scaled Pearson X2	8	17.6227	2.2028
Log Likelihood		-772.4206	
Full Log Likelihood		-29.7907	
AIC (smaller is better)		61.5814	
AICC (smaller is better)		62.1529	
BIC (smaller is better)		61.7787	

Algorithm converged.

Analysis Of Maximum Likelihood Parameter Estimates							
Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi-Square	Pr > ChiSq
Intercept	1	-3.1774	0.0752	-3.3248	-3.0299	1783.26	<.0001
Scale	0	1.0000	0.0000	1.0000	1.0000		

Note: The scale parameter was held fixed.

Obs	fname	lname	team	ab	hr	salary	hrrate	logithrrate	pred
1	Justin	Morneau	COL	502	17	5.00	0.033865	-3.35094	0.040026
2	Matt	Adams	STL	527	15	0.53	0.028463	-3.53027	0.040026
3	Freddie	Freeman	ATL	607	18	8.80	0.029654	-3.48805	0.040026
4	Anthony	Rizzo	CHC	524	32	1.50	0.061069	-2.73274	0.040026
5	Adrian	Gonzalez	LAD	591	27	21.00	0.045685	-3.03922	0.040026
6	Yonder	Alonso	SDP	267	7	1.65	0.026217	-3.61477	0.040026
7	Lucas	Duda	NYM	514	30	4.20	0.058366	-2.78089	0.040026
8	Garrett	Jones	MIA	496	15	2.75	0.030242	-3.46782	0.040026
9	Ryan	Howard	PHI	569	23	20.00	0.040422	-3.16712	0.040026

Obs	fname	lname	team	ab	hr	salary	hrrate	logithrrate	pred	loglike	deviance
1	Justin	Morneau	COL	502	17	5.00	0.033865	-3.35094	0.040026	-74.522	0.52247
2	Matt	Adams	STL	527	15	0.53	0.028463	-3.53027	0.040026	-69.188	2.03282
3	Freddie	Freeman	ATL	607	18	8.80	0.029654	-3.48805	0.040026	-81.988	1.86187
4	Anthony	Rizzo	CHC	524	32	1.50	0.061069	-2.73274	0.040026	-123.081	5.22876
5	Adrian	Gonzalez	LAD	591	27	21.00	0.045685	-3.03922	0.040026	-109.931	0.47180
6	Yonder	Alonso	SDP	267	7	1.65	0.026217	-3.61477	0.040026	-33.148	1.50311
7	Lucas	Duda	NYM	514	30	4.20	0.058366	-2.78089	0.040026	-116.318	3.95993
8	Garrett	Jones	MIA	496	15	2.75	0.030242	-3.46782	0.040026	-67.922	1.34612
9	Ryan	Howard	PHI	569	23	20.00	0.040422	-3.16712	0.040026	-96.323	0.00231

Obs	devagain	Minus2llsaturated	Minus2llmodel
1	0.52247	148.521	149.043
2	2.03282	136.343	138.376
3	1.86187	162.115	163.976
4	5.22876	240.933	246.162
5	0.47180	219.390	219.862
6	1.50311	64.794	66.297
7	3.95993	228.675	232.635
8	1.34612	134.497	135.844
9	0.00231	192.643	192.646

## The MEANS Procedure

Variable	Sum
loglike	-772.4205728
deviance	16.9291904
Minus2llsaturated	1527.91
Minus2llmodel	1544.84

The GENMOD Procedure

Model Information	
Data Set	WORK.FIRSTBASE
Distribution	Binomial
Link Function	Logit
Response Variable (Events)	hr
Response Variable (Trials)	ab

Number of Observations Read	9
Number of Observations Used	9
Number of Events	184
Number of Trials	4597

Response Profile		
Ordered Value	Binary Outcome	Total Frequency
1	Event	184
2	Nonevent	4413

Criteria For Assessing Goodness Of Fit			
Criterion	DF	Value	Value/DF
Deviance	7	16.7958	2.3994
Scaled Deviance	7	16.7958	2.3994
Pearson Chi-Square	7	17.7600	2.5371
Scaled Pearson X2	7	17.7600	2.5371
Log Likelihood		-772.3539	
Full Log Likelihood		-29.7240	
AIC (smaller is better)		63.4480	
AICC (smaller is better)		65.4480	
BIC (smaller is better)		63.8425	

Algorithm converged.

Analysis Of Maximum Likelihood Parameter Estimates							
Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi-Square	Pr > ChiSq
Intercept	1	-3.2061	0.1094	-3.4205	-2.9917	859.24	<.0001
salary	1	0.0036	0.0097	-0.0155	0.0226	0.13	0.7140
Scale	0	1.0000	0.0000	1.0000	1.0000		



The GENMOD Procedure

**Note:** The scale parameter was held fixed.

LR Statistics For Type 3 Analysis			
Source	DF	Chi-Square	Pr > ChiSq
salary	1	0.13	0.7149

Obs	fname	lname	team	ab	hr	salary	hrrate	logithrrate	pred
1	Justin	Morneau	COL	502	17	5.00	0.033865	-3.35094	0.039608
2	Matt	Adams	STL	527	15	0.53	0.028463	-3.53027	0.039007
3	Freddie	Freeman	ATL	607	18	8.80	0.029654	-3.48805	0.040126
4	Anthony	Rizzo	CHC	524	32	1.50	0.061069	-2.73274	0.039136
5	Adrian	Gonzalez	LAD	591	27	21.00	0.045685	-3.03922	0.041832
6	Yonder	Alonso	SDP	267	7	1.65	0.026217	-3.61477	0.039157
7	Lucas	Duda	NYM	514	30	4.20	0.058366	-2.78089	0.039500
8	Garrett	Jones	MIA	496	15	2.75	0.030242	-3.46782	0.039304
9	Ryan	Howard	PHI	569	23	20.00	0.040422	-3.16712	0.041690

Obs	fname	lname	team	ab	hr	salary	hrrate	logithrrate	pred	loglike	deviance
1	Justin	Morneau	COL	502	17	5.00	0.033865	-3.35094	0.039608	-74.489	0.45707
2	Matt	Adams	STL	527	15	0.53	0.028463	-3.53027	0.039007	-69.032	1.71997
3	Freddie	Freeman	ATL	607	18	8.80	0.029654	-3.48805	0.040126	-82.005	1.89457
4	Anthony	Rizzo	CHC	524	32	1.50	0.061069	-2.73274	0.039136	-123.344	5.75585
5	Adrian	Gonzalez	LAD	591	27	21.00	0.045685	-3.03922	0.041832	-109.801	0.21274
6	Yonder	Alonso	SDP	267	7	1.65	0.026217	-3.61477	0.039157	-33.067	1.33980
7	Lucas	Duda	NYM	514	30	4.20	0.058366	-2.78089	0.039500	-116.450	4.22369
8	Garrett	Jones	MIA	496	15	2.75	0.030242	-3.46782	0.039304	-67.833	1.16896
9	Ryan	Howard	PHI	569	23	20.00	0.040422	-3.16712	0.041690	-96.333	0.02313

Obs	devagain	Minus2llsaturated	Minus2llmodel
1	0.45707	148.521	148.978
2	1.71997	136.343	138.063
3	1.89457	162.115	164.009
4	5.75585	240.933	246.689
5	0.21274	219.390	219.603
6	1.33980	64.794	66.133
7	4.22369	228.675	232.899
8	1.16896	134.497	135.666
9	0.02313	192.643	192.666

The MEANS Procedure

Variable	Sum
loglike	-772.3538679
deviance	16.7957805
Minus2llsaturated	1527.91
Minus2llmodel	1544.71