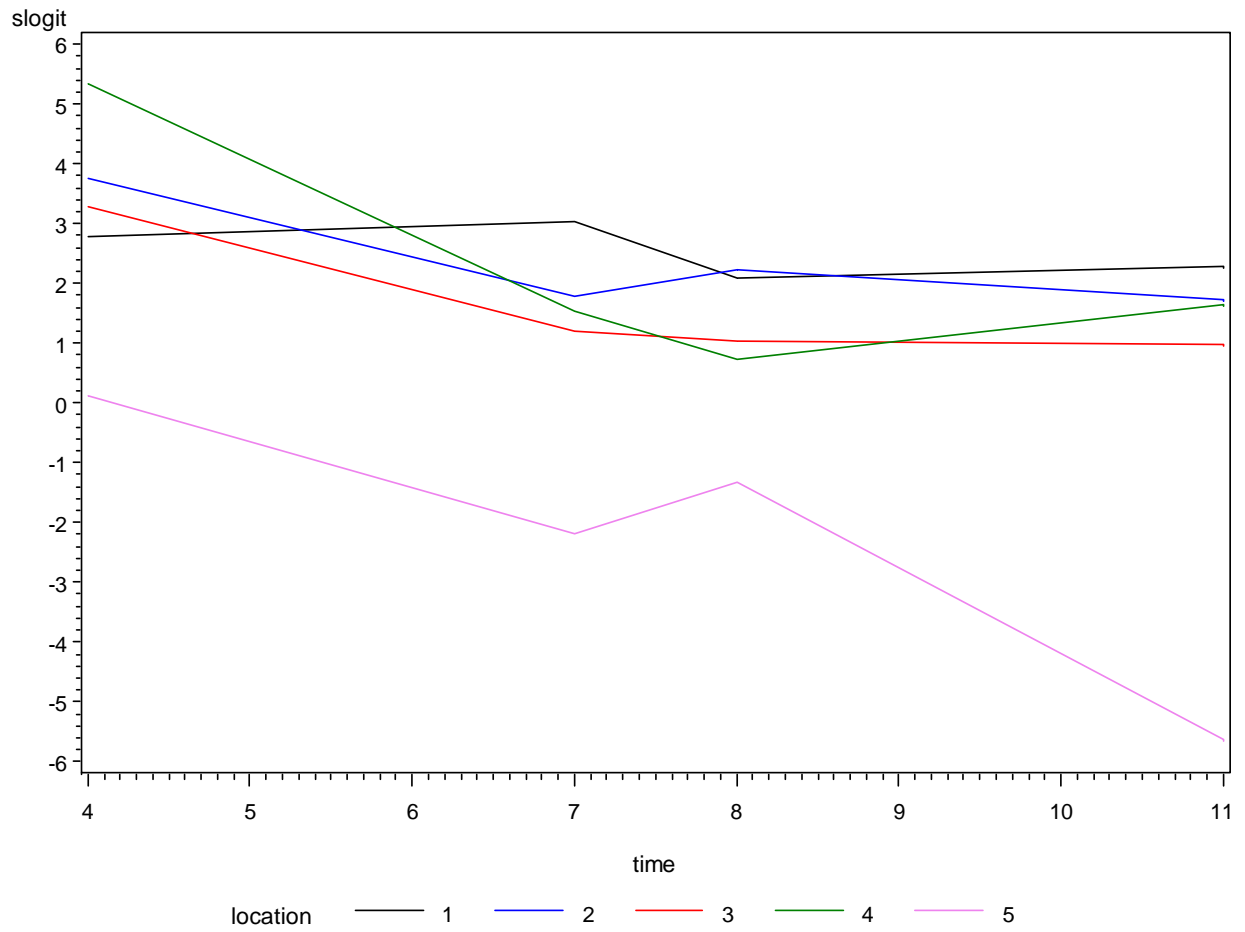


# Plot of sample logits over time by location



## The LOGISTIC Procedure

## Model Information

Data Set	WORK.TROUT
Response Variable (Events)	s
Response Variable (Trials)	m
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	20
Number of Observations Used	20
Sum of Frequencies Read	2226
Sum of Frequencies Used	2226

## Response Profile

Ordered Value	Binary Outcome	Total Frequency
1	Event	1627
2	Nonevent	599

## Class Level Information

Class	Value	Design Variables			
location	1	1.000	0	0	0
	2	0	1.000	0	0
	3	0	0	1.000	0
	4	0	0	0	1.000
	5	-1.000	-1.000	-1.000	-1.000
time	4	-1.400	1.000	-0.200	
	7	-0.200	-1.000	1.400	
	8	0.200	-1.000	-1.400	
	11	1.400	1.000	0.200	

## Model Convergence Status

Convergence criterion (GCONV=1E-8) satisfied.

## Deviance and Pearson Goodness-of-Fit Statistics

Criterion	Value	DF	Value/DF	Pr > ChiSq
Deviance	64.4951	12	5.3746	<.0001
Pearson	63.9639	12	5.3303	<.0001

## The LOGISTIC Procedure

Number of events/trials observations: 20

## Model Fit Statistics

Criterion	Intercept Only	Intercept and Covariates
AIC	2594.641	1651.667
SC	2600.349	1697.331
-2 Log L	2592.641	1635.667

Testing Global Null Hypothesis: BETA=0

Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	956.9736	7	<.0001
Score	932.3972	7	<.0001
Wald	480.0891	7	<.0001

## Type 3 Analysis of Effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
location	4	479.8496	<.0001
time	3	116.5055	<.0001

## Analysis of Maximum Likelihood Estimates

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	1.4547	0.0727	400.1237	<.0001
location 1	1	1.4447	0.1600	81.5192	<.0001
location 2	1	1.0279	0.1429	51.7422	<.0001
location 3	1	0.2026	0.1131	3.2076	0.0733
location 4	1	0.4938	0.1245	15.7454	<.0001
time OPOLY1	1	-0.8653	0.0826	109.7097	<.0001
time OPOLY2	1	0.5115	0.0725	49.7426	<.0001
time OPOLY3	1	-0.0681	0.0624	1.1898	0.2754

## The LOGISTIC Procedure

## Odds Ratio Estimates

Effect	Point Estimate	95% Wald Confidence Limits	
location 1 vs 5	100.868	61.769	164.716
location 2 vs 5	66.489	42.220	104.707
location 3 vs 5	29.129	19.630	43.224
location 4 vs 5	38.976	25.669	59.181

## Association of Predicted Probabilities and Observed Responses

Percent Concordant	84.7	Somers' D	0.722
Percent Discordant	12.5	Gamma	0.743
Percent Tied	2.8	Tau-a	0.284
Pairs	974573	c	0.861

## The LOGISTIC Procedure

## Model Information

Data Set	WORK.TROUT
Response Variable (Events)	s
Response Variable (Trials)	m
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	20
Number of Observations Used	20
Sum of Frequencies Read	2226
Sum of Frequencies Used	2226

## Response Profile

Ordered Value	Binary Outcome	Total Frequency
1	Event	1627
2	Nonevent	599

## Class Level Information

Class	Value	Design Variables			
location	1	1.000	0	0	0
	2	0	1.000	0	0
	3	0	0	1.000	0
	4	0	0	0	1.000
	5	-1.000	-1.000	-1.000	-1.000
time	4	-1.400	1.000	-0.200	
	7	-0.200	-1.000	1.400	
	8	0.200	-1.000	-1.400	
	11	1.400	1.000	0.200	

## Model Convergence Status

Convergence criterion (GCONV=1E-8) satisfied.

## Deviance and Pearson Goodness-of-Fit Statistics

Criterion	Value	DF	Value/DF	Pr > ChiSq
Deviance	64.4951	12	5.3746	<.0001
Pearson	63.9639	12	5.3303	<.0001

## The LOGISTIC Procedure

Number of events/trials observations: 20

NOTE: The covariance matrix has been multiplied by the heterogeneity factor  
(Pearson Chi-Square / DF) 5.33032.

## Model Fit Statistics

Criterion	Intercept Only	Intercept and Covariates
AIC	488.395	322.861
SC	494.103	368.525
-2 Log L	486.395	306.861

## Testing Global Null Hypothesis: BETA=0

Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	179.5339	7	<.0001
Score	174.9233	7	<.0001
Wald	90.0676	7	<.0001

## Type 3 Analysis of Effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
location	4	90.0227	<.0001
time	3	21.8571	<.0001

## Analysis of Maximum Likelihood Estimates

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	1.4547	0.1679	75.0656	<.0001
location 1	1	1.4447	0.3694	15.2935	<.0001
location 2	1	1.0279	0.3299	9.7072	0.0018
location 3	1	0.2026	0.2612	0.6018	0.4379
location 4	1	0.4938	0.2873	2.9539	0.0857
time OPOLY1	1	-0.8653	0.1907	20.5822	<.0001
time OPOLY2	1	0.5115	0.1674	9.3320	0.0023
time OPOLY3	1	-0.0681	0.1441	0.2232	0.6366

## The LOGISTIC Procedure

## Odds Ratio Estimates

Effect	Point Estimate	95% Wald Confidence Limits	
location 1 vs 5	100.868	32.511	312.951
location 2 vs 5	66.489	23.302	189.713
location 3 vs 5	29.129	11.711	72.452
location 4 vs 5	38.976	14.860	102.228

## Association of Predicted Probabilities and Observed Responses

Percent Concordant	84.7	Somers' D	0.722
Percent Discordant	12.5	Gamma	0.743
Percent Tied	2.8	Tau-a	0.284
Pairs	974573	c	0.861

The LOGISTIC Procedure

Model Information

Data Set WORK.TROUT  
 Response Variable (Events) s  
 Response Variable (Trials) m  
 Weight Variable  $1 / ( 1 + 0.038148 * (m - 1) )$   
 Model binary logit  
 Optimization Technique Fisher's scoring

Number of Observations Read 20  
 Number of Observations Used 20  
 Sum of Frequencies Read 2226  
 Sum of Frequencies Used 2226  
 Sum of Weights Read 425.8068  
 Sum of Weights Used 425.8068

Response Profile

Ordered Value	Binary Outcome	Total Frequency	Total Weight
1	Event	1627	312.43835
2	Nonevent	599	113.36842

Class Level Information

Class	Value	Design Variables			
location	1	1.000	0	0	0
	2	0	1.000	0	0
	3	0	0	1.000	0
	4	0	0	0	1.000
	5	-1.000	-1.000	-1.000	-1.000
time	4	-1.400	1.000	-0.200	
	7	-0.200	-1.000	1.400	
	8	0.200	-1.000	-1.400	
	11	1.400	1.000	0.200	

Model Convergence Status

Convergence criterion (GCONV=1E-8) satisfied.



The LOGISTIC Procedure

Deviance and Pearson Goodness-of-Fit Statistics

Criterion	Value	DF	Value/DF	Pr > ChiSq
Deviance	12.4001	12	1.0333	0.4141
Pearson	11.9971	12	0.9998	0.4459

Number of events/trials observations: 20

NOTE: Since the Williams method was used to accommodate overdispersion, the Pearson chi-squared statistic and the deviance can no longer be used to assess the goodness of fit of the model.

Model Fit Statistics

Criterion	Intercept Only	Intercept and Covariates
AIC	495.499	331.712
SC	501.207	377.376
-2 Log L	493.499	315.712

Testing Global Null Hypothesis: BETA=0

Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	177.7868	7	<.0001
Score	173.6671	7	<.0001
Wald	93.4187	7	<.0001

Type 3 Analysis of Effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
location	4	93.3670	<.0001
time	3	22.7931	<.0001

The LOGISTIC Procedure

Analysis of Maximum Likelihood Estimates

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	1.4472	0.1614	80.3849	<.0001
location 1	1	1.4021	0.3644	14.8026	0.0001
location 2	1	1.0252	0.3239	10.0169	0.0016
location 3	1	0.1922	0.2645	0.5281	0.4674
location 4	1	0.4459	0.2801	2.5343	0.1114
time OPOLY1	1	-0.8338	0.1828	20.7990	<.0001
time OPOLY2	1	0.4876	0.1599	9.2996	0.0023
time OPOLY3	1	-0.0686	0.1387	0.2445	0.6209

Odds Ratio Estimates

Effect	Point Estimate	95% Wald Confidence Limits	
location 1 vs 5	87.145	29.163	260.406
location 2 vs 5	59.782	21.802	163.926
location 3 vs 5	25.990	10.705	63.099
location 4 vs 5	33.496	13.362	83.965

Association of Predicted Probabilities and Observed Responses

Percent Concordant	84.6	Somers' D	0.720
Percent Discordant	12.6	Gamma	0.741
Percent Tied	2.8	Tau-a	0.283
Pairs	974573	c	0.860

The LOGISTIC Procedure

Model Information

Data Set WORK.TROUT  
 Response Variable (Events) s  
 Response Variable (Trials) m  
 Weight Variable  $1 / ( 1 + 0.038148 * (m - 1) )$   
 Model binary logit  
 Optimization Technique Fisher's scoring

Number of Observations Read 20  
 Number of Observations Used 20  
 Sum of Frequencies Read 2226  
 Sum of Frequencies Used 2226  
 Sum of Weights Read 425.8039  
 Sum of Weights Used 425.8039

Response Profile

Ordered Value	Binary Outcome	Total Frequency	Total Weight
1	Event	1627	312.43626
2	Nonevent	599	113.36766

Class Level Information

Class	Value	Design Variables			
location	1	1	0	0	0
	2	0	1	0	0
	3	0	0	1	0
	4	0	0	0	1
	5	-1	-1	-1	-1

Model Convergence Status

Convergence criterion (GCONV=1E-8) satisfied.

Deviance and Pearson Goodness-of-Fit Statistics

Criterion	Value	DF	Value/DF	Pr > ChiSq
Deviance	43.8117	15	2.9208	0.0001
Pearson	37.0947	15	2.4730	0.0012

The LOGISTIC Procedure

Number of events/trials observations: 20

NOTE: Since the Williams method was used to accommodate overdispersion, the Pearson chi-squared statistic and the deviance can no longer be used to assess the goodness of fit of the model.

Model Fit Statistics

Criterion	Intercept	Intercept
	Only	and Covariates
AIC	495.496	357.122
SC	501.204	385.662
-2 Log L	493.496	347.122

Testing Global Null Hypothesis: BETA=0

Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	146.3739	4	<.0001
Score	156.9779	4	<.0001
Wald	107.9922	4	<.0001

Type 3 Analysis of Effects

Effect	DF	Wald	
		Chi-Square	Pr > ChiSq
location	4	107.9922	<.0001

Analysis of Maximum Likelihood Estimates

Parameter	DF	Estimate	Standard Error	Wald	
				Chi-Square	Pr > ChiSq
Intercept	1	1.2782	0.1467	75.9344	<.0001
location 1	1	1.2718	0.3570	12.6936	0.0004
location 2	1	0.9124	0.3156	8.3571	0.0038
location 3	1	0.1144	0.2544	0.2023	0.6528
location 4	1	0.3512	0.2704	1.6859	0.1941

QL fit of simpler logistic RCBD model holding Williams parameter 12  
fixed at the value estimated from the more complex model

The LOGISTIC Procedure

Odds Ratio Estimates

Effect	Point Estimate	95% Wald Confidence Limits	
location 1 vs 5	50.476	18.955	134.417
location 2 vs 5	35.239	14.559	85.294
location 3 vs 5	15.866	7.518	33.484
location 4 vs 5	20.104	9.195	43.952

Association of Predicted Probabilities and Observed Responses

Percent Concordant	75.4	Somers' D	0.634
Percent Discordant	12.0	Gamma	0.725
Percent Tied	12.5	Tau-a	0.250
Pairs	974573	c	0.817

QL fit of simpler logistic RCBD model holding Williams parameter 13  
 fixed at the value estimated from the more complex model  
 Alternative but equivalent implementation

The LOGISTIC Procedure

Model Information

Data Set	WORK.TROUT2
Response Variable (Events)	s
Response Variable (Trials)	m
Weight Variable	wt
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	20
Number of Observations Used	20
Sum of Frequencies Read	2226
Sum of Frequencies Used	2226
Sum of Weights Read	425.8039
Sum of Weights Used	425.8039

Response Profile

Ordered Value	Binary Outcome	Total Frequency	Total Weight
1	Event	1627	312.43626
2	Nonevent	599	113.36766

Class Level Information

Class	Value	Design Variables			
location	1	1	0	0	0
	2	0	1	0	0
	3	0	0	1	0
	4	0	0	0	1
	5	-1	-1	-1	-1

Model Convergence Status

Convergence criterion (GCONV=1E-8) satisfied.

Deviance and Pearson Goodness-of-Fit Statistics

Criterion	Value	DF	Value/DF	Pr > ChiSq
Deviance	43.8117	15	2.9208	0.0001
Pearson	37.0947	15	2.4730	0.0012

QL fit of simpler logistic RCBD model holding Williams parameter fixed at the value estimated from the more complex model  
 Alternative but equivalent implementation

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The LOGISTIC Procedure

Number of events/trials observations: 20

Model Fit Statistics

Criterion	Intercept Only	Intercept and Covariates
AIC	495.496	357.122
SC	501.204	385.662
-2 Log L	493.496	347.122

Testing Global Null Hypothesis: BETA=0

Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	146.3739	4	<.0001
Score	156.9779	4	<.0001
Wald	107.9922	4	<.0001

Type 3 Analysis of Effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
location	4	107.9922	<.0001

Analysis of Maximum Likelihood Estimates

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	1.2782	0.1467	75.9344	<.0001
location 1	1	1.2718	0.3570	12.6936	0.0004
location 2	1	0.9124	0.3156	8.3571	0.0038
location 3	1	0.1144	0.2544	0.2023	0.6528
location 4	1	0.3512	0.2704	1.6859	0.1941

QL fit of simpler logistic RCBD model holding Williams parameter fixed at the value estimated from the more complex model  
 Alternative but equivalent implementation

The LOGISTIC Procedure

Odds Ratio Estimates

Effect	Point Estimate	95% Wald Confidence Limits	
location 1 vs 5	50.476	18.955	134.417
location 2 vs 5	35.239	14.559	85.294
location 3 vs 5	15.866	7.518	33.484
location 4 vs 5	20.104	9.195	43.952

Association of Predicted Probabilities and Observed Responses

Percent Concordant	75.4	Somers' D	0.634
Percent Discordant	12.0	Gamma	0.725
Percent Tied	12.5	Tau-a	0.250
Pairs	974573	c	0.817