Full model - with ALL significant interactions

The LOGISTIC Procedure

Model Information

Data Set	WORK.TIMESINCEVAX	
Response Variable	breakthrough	breakthrough
Number of Response Levels	2	
Model	binary logit	
Optimization Technique	Fisher's scoring	

Number of Observations Read	3084648
Number of Observations Used	3084648

Response Profile

Ordered Value	breakthrough	Total Frequency
1	1	29677
2	0	3054971

Probability modeled is breakthrough=1.

Class Level Information

Class	Value	Design Variables	
gender_code	F	1	0
	M	0	1
	U	0	0
vaccination_code	Janssen	1	0
	Moderna	0	1
	Pfizer	0	0

Model Convergence Status

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

Model Fit Statistics

Criterion	Intercept Only	Intercept and Covariates
AIC	334698.88	6460.731
SC	334711.82	6680.744
-2 Log L	334696.88	6426.731

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Testing Global Null Hypothesis: BETA=0

Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	328270.152	16	<.0001
Score	1688017.59	16	<.0001
Wald	2525.1543	16	<.0001

Joint Tests

Effect	DF	Wald Chi-Square	Pr > ChiSq
gender_code	2	5.8906	0.0526
vaccination_code	2	38.5012	<.0001
followup_time	1	1443.9560	<.0001
time_since_vax	1	1462.9245	<.0001
age	1	49.4451	<.0001
age*age	1	14.0620	0.0002
followup_*time_since	1	398.5053	<.0001
time_since_vax*age	1	48.5389	<.0001
time_sinc*vaccinatio	2	10.3344	0.0057
followup_*vaccinatio	2	9.0920	0.0106
follow*time_s*vaccin	2	34.8436	<.0001

NOTE: Under full-rank parameterizations, Type 3 effect tests are replaced by joint tests. The joint test for an effect is a test that all the parameters associated with that effect are zero. Such joint tests might not be equivalent to Type 3 effect tests under GLM parameterization.

Analysis of Maximum Likelihood Estimates

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-22.3296	1.3870	259.1721	<.0001

gender_code	F	1	-0.5998	0.5710	1.1034	0.2935
gender_code	M	1	-0.8203	0.5742	2.0410	0.1531
vaccination_code	Janssen	1	3.3775	1.6418	4.2322	0.0397
vaccination_code	Moderna	1	-14.6169	2.8347	26.5879	<.0001
followup_time		1	-6.2478	0.1644	1443.9560	<.0001
time_since_vax		1	197.9	5.1730	1462.9245	<.0001
age		1	0.1288	0.0183	49.4451	<.0001
age*age		1	-0.00063	0.000168	14.0620	0.0002
followup_*time_since		1	-0.0291	0.00146	398.5053	<.0001
time_since_vax*age		1	-0.0135	0.00193	48.5389	<.0001
time_sinc*vaccinatio	Janssen	1	40.9238	18.6750	4.8021	0.0284
time_sinc*vaccinatio	Moderna	1	27.8487	10.6208	6.8754	0.0087
followup_*vaccinatio	Janssen	1	-1.3935	0.5958	5.4706	0.0193
followup_*vaccinatio	Moderna	1	-0.7189	0.3259	4.8653	0.0274
follow*time_s*vaccin	Janssen	1	0.00651	0.00302	4.6530	0.0310
follow*time_s*vaccin	Moderna	1	-0.0190	0.00379	25.0522	<.0001

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Association of Predicted Probabilities and Observed Responses

Percent Concordant	99.7	Somers' D	0.994
Percent Discordant	0.3	Gamma	0.994
Percent Tied	0.0	Tau-a	0.019
Pairs	90662374367	c	0.997

Odds Ratio Estimates and Profile-Likelihood Confidence Intervals

Effect	Unit	Estimate	95% Confidence Limits	
gender_code F vs U	1.0000	0.549	0.211	2.100
gender_code M vs U	1.0000	0.440	0.168	1.692