The CONTENTS Procedure

Data Set Name	WORK.MMWRALLDATA	**Observations**	55529
Member Type	DATA	**Variables**	40
Engine	V9	**Indexes**	0
Created	07/14/2025 15:22:47	**Observation Length**	1928
Last Modified	07/14/2025 15:22:47	**Deleted Observations**	0
Protection		**Compressed**	NO
Data Set Type		**Sorted**	NO
Label			
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		

Engine/Host Dependent Information	
Data Set Page Size	131072
Number of Data Set Pages	829
First Data Page	1
Max Obs per Page	67
Obs in First Data Page	64
Number of Data Set Repairs	0
Filename	/saswork/SAS_work2BC400018218_odaws01-usw2.oda.sas.com/SAS_work7AA400018218_odaws01-usw2.oda.sas.com/mmwralldata.sas7bdat
Release Created	9.0401M8
Host Created	Linux
Inode Number	1610779443
Access Permission	rw-r--r--
Owner Name	cralvarezhdz0
File Size	104MB
File Size (bytes)	108789760

The CONTENTS Procedure

Variables in Creation Order					
#	Variable	Type	Len	Format	Informat
1	VAERS_ID	Num	8	BEST12.	BEST32.
2	RECVDATE	Num	8	MMDDYY10.	MMDDYY10.
3	STATE	Char	2	$2.	$2.
4	AGE_YRS	Num	8	BEST12.	BEST32.
5	CAGE_YR	Num	8	BEST12.	BEST32.
6	CAGE_MO	Num	8	BEST12.	BEST32.
7	SEX	Char	1	$1.	$1.
8	DIED	Char	1	$1.	$1.
9	DATEDIED	Char	1	$1.	$1.
10	L_THREAT	Char	1	$1.	$1.
11	ER_VISIT	Char	1	$1.	$1.
12	ER_ED_VISIT	Char	1	$1.	$1.
13	OFC_VISIT	Char	1	$1.	$1.
14	HOSPITAL	Char	1	$1.	$1.
15	HOSPDAYS	Char	1	$1.	$1.
16	X_STAY	Char	1	$1.	$1.
17	DISABLE	Char	1	$1.	$1.
18	RECOVD	Char	1	$1.	$1.
19	VAX_DATE	Num	8	MMDDYY10.	MMDDYY10.
20	ONSET_DATE	Num	8	MMDDYY10.	MMDDYY10.
21	NUMDAYS	Num	8	BEST12.	BEST32.
22	BIRTH_DEFECT	Char	1	$1.	$1.
23	SYMPTOM_TEXT	Char	1506	$1506.	$1506.
24	OTHER_MEDS	Char	37	$37.	$37.
25	CUR_ILL	Char	44	$44.	$44.
26	HISTORY	Char	27	$27.	$27.
27	PRIOR_VAX	Char	1	$1.	$1.
28	ALLERGIES	Char	1	$1.	$1.
29	VAX_TYPE	Char	4	$4.	$4.
30	VAX_MANU	Char	20	$20.	$20.
31	VAX_NAME	Char	47	$47.	$47.
32	VAX_LOT	Char	8	$8.	$8.
33	VAX_ROUTE	Char	3	$3.	$3.
34	VAX_SITE	Char	2	$2.	$2.
35	VAX_DOSE_SERIES	Char	3	$3.	$3.
36	SYMPTOM1	Char	45	$45.	$45.
37	SYMPTOM2	Char	31	$31.	$31.
38	SYMPTOM3	Char	23	$23.	$23.
39	SYMPTOM4	Char	31	$31.	$31.
40	SYMPTOM5	Char	10	$10.	$10.

Age Distribution of MMR/MMRV VAERS Reports (2014-2024)

The UNIVARIATE Procedure
Variable: Age

Moments			
N	39470	**Sum Weights**	39470
Mean	9.98482392	**Sum Observations**	394101
Std Deviation	14.9283304	**Variance**	222.855049
Skewness	2.06718508	**Kurtosis**	3.4864679
Uncorrected SS	12730895	**Corrected SS**	8795865.91
Coeff Variation	149.510202	**Std Error Mean**	0.07514112

Basic Statistical Measures			
Location		**Variability**	
Mean	9.984824	**Std Deviation**	14.92833
Median	4.000000	**Variance**	222.85505
Mode	1.000000	**Range**	115.00000
		Interquartile Range	9.00000

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	132.881	**Pr > |t|**	<.0001
Sign	**M**	19416.5	**Pr >= |M|**	<.0001
Signed Rank	**S**	3.7701E8	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	115
99%	61
95%	47
90%	35
75% Q3	10
50% Median	4
25% Q1	1
10%	1
5%	1
1%	0
0% Min	0

Extreme Observations			
Lowest		**Highest**	
Value	**Obs**	**Value**	**Obs**
0	55522	81	47860
0	55504	83	55391
0	55503	85	51175
0	55469	91	52479
0	55447	115	39068

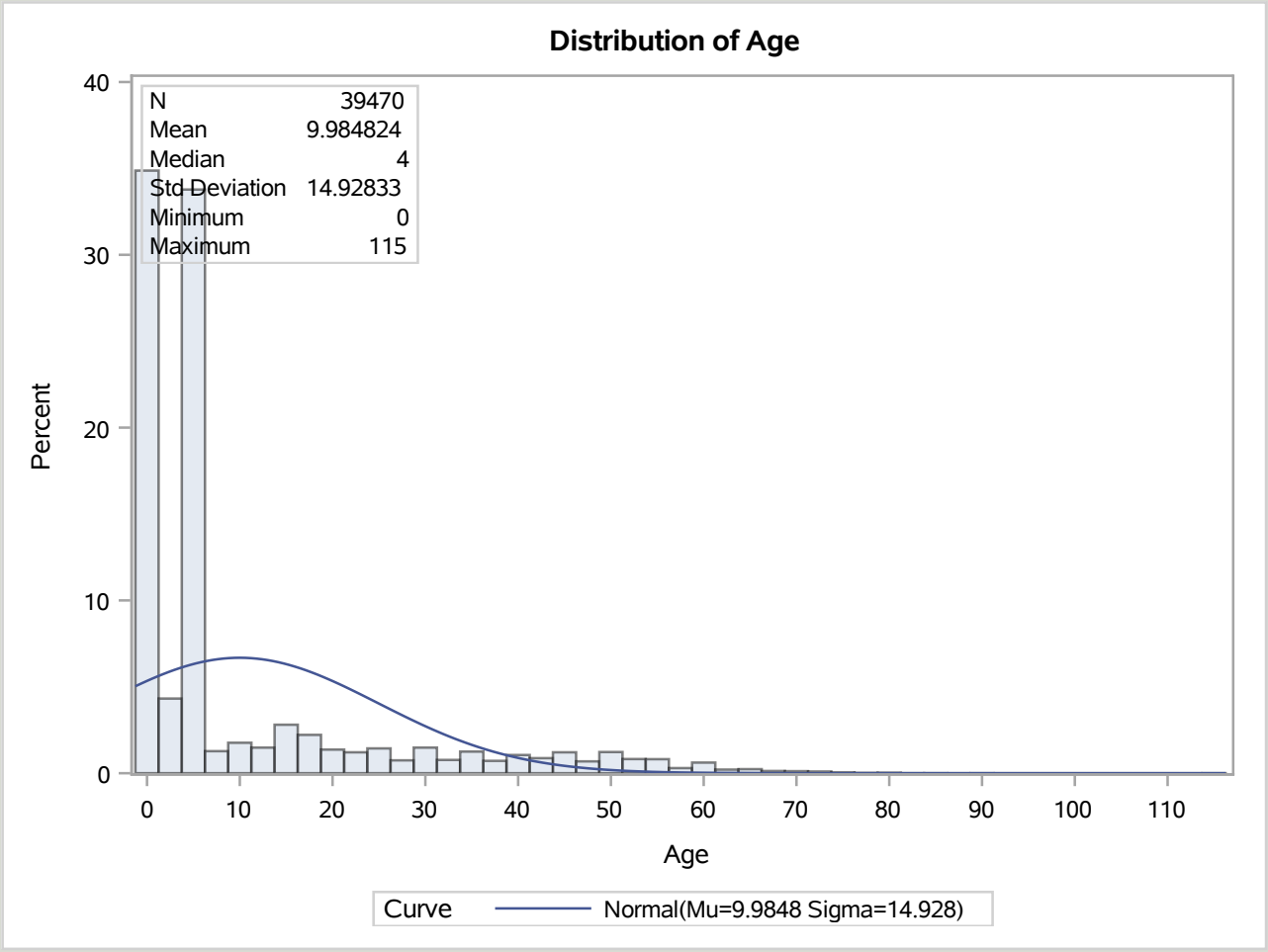
Age Distribution of MMR/MMRV VAERS Reports (2014-2024)

The UNIVARIATE Procedure
Variable: Age

Missing Values			
		Percent Of	
Missing Value	Count	All Obs	Missing Obs
.	16059	28.92	100.00

Age Distribution of MMR/MMRV VAERS Reports (2014-2024)

The UNIVARIATE Procedure



Age Distribution of MMR/MMRV VAERS Reports (2014-2024)

The UNIVARIATE Procedure
Fitted Normal Distribution for Age

Parameters for Normal Distribution		
Parameter	**Symbol**	**Estimate**
Mean	Mu	9.984824
Std Dev	Sigma	14.92833

Goodness-of-Fit Tests for Normal Distribution				
Test	**Statistic**		**p Value**	
Kolmogorov-Smirnov	**D**	0.34365	**Pr > D**	<0.010
Cramer-von Mises	**W-Sq**	1123.02291	**Pr > W-Sq**	<0.005
Anderson-Darling	**A-Sq**	5733.15465	**Pr > A-Sq**	<0.005

Quantiles for Normal Distribution		
	Quantile	
Percent	**Observed**	**Estimated**
1.0	0.0000	-24.74367
5.0	1.0000	-14.57009
10.0	1.0000	-9.14660
25.0	1.0000	-0.08418
50.0	4.0000	9.98482
75.0	10.0000	20.05383
90.0	35.0000	29.11625
95.0	47.0000	34.53974
99.0	61.0000	44.71331

Frequency of MMR/MMRV Reports by Sex, Seriousness, and Year

The FREQ Procedure

SEX	Frequency	Percent
F	19889	35.82
M	18241	32.85
U	17399	31.33

seriousness	Frequency	Percent
0	45539	82.01
1	9990	17.99

year_group	Frequency	Percent
2014	4860	8.75
2015	6306	11.36
2016	6023	10.85
2017	11714	21.10
2018	4390	7.91
2019	5488	9.88
2020	3038	5.47
2021	3104	5.59
2022	3417	6.15
2023	3517	6.33
2024	3672	6.61

Missing Data Check

The FREQ Procedure

Age	Frequency	Percent	Cumulative Frequency	Cumulative Percent
.	16059	28.92	16059	28.92
0	637	1.15	16696	30.07
1	13128	23.64	29824	53.71
2	1040	1.87	30864	55.58
3	665	1.20	31529	56.78
4	9670	17.41	41199	74.19
5	2997	5.40	44196	79.59
6	665	1.20	44861	80.79
7	273	0.49	45134	81.28
8	231	0.42	45365	81.70
9	208	0.37	45573	82.07
10	198	0.36	45771	82.43
11	290	0.52	46061	82.95
12	296	0.53	46357	83.48
13	289	0.52	46646	84.00
14	342	0.62	46988	84.62
15	328	0.59	47316	85.21
16	438	0.79	47754	86.00
17	480	0.86	48234	86.86
18	396	0.71	48630	87.58
19	162	0.29	48792	87.87
20	202	0.36	48994	88.23
21	176	0.32	49170	88.55
22	286	0.52	49456	89.06
23	192	0.35	49648	89.41
24	143	0.26	49791	89.67
25	239	0.43	50030	90.10
26	185	0.33	50215	90.43
27	141	0.25	50356	90.68
28	153	0.28	50509	90.96
29	211	0.38	50720	91.34
30	192	0.35	50912	91.69
31	182	0.33	51094	92.01
32	133	0.24	51227	92.25
33	170	0.31	51397	92.56
34	179	0.32	51576	92.88
35	158	0.28	51734	93.17
36	157	0.28	51891	93.45
37	147	0.26	52038	93.71
38	135	0.24	52173	93.96
39	130	0.23	52303	94.19
40	163	0.29	52466	94.48
41	123	0.22	52589	94.71
42	178	0.32	52767	95.03
43	166	0.30	52933	95.32
44	155	0.28	53088	95.60
45	208	0.37	53296	95.98
46	115	0.21	53411	96.19
47	145	0.26	53556	96.45
48	126	0.23	53682	96.67

Missing Data Check

The FREQ Procedure

Age	Frequency	Percent	Cumulative Frequency	Cumulative Percent
49	108	0.19	53790	96.87
50	184	0.33	53974	97.20
51	192	0.35	54166	97.55
52	157	0.28	54323	97.83
53	167	0.30	54490	98.13
54	121	0.22	54611	98.35
55	85	0.15	54696	98.50
56	115	0.21	54811	98.71
57	60	0.11	54871	98.82
58	57	0.10	54928	98.92
59	128	0.23	55056	99.15
60	49	0.09	55105	99.24
61	66	0.12	55171	99.36
62	43	0.08	55214	99.43
63	40	0.07	55254	99.50
64	34	0.06	55288	99.57
65	26	0.05	55314	99.61
66	33	0.06	55347	99.67
67	30	0.05	55377	99.73
68	21	0.04	55398	99.76
69	18	0.03	55416	99.80
70	17	0.03	55433	99.83
71	12	0.02	55445	99.85
72	28	0.05	55473	99.90
73	11	0.02	55484	99.92
74	8	0.01	55492	99.93
75	4	0.01	55496	99.94
76	9	0.02	55505	99.96
77	3	0.01	55508	99.96
78	5	0.01	55513	99.97
80	11	0.02	55524	99.99
81	1	0.00	55525	99.99
83	1	0.00	55526	99.99
85	1	0.00	55527	100.00
91	1	0.00	55528	100.00
115	1	0.00	55529	100.00

SEX	Frequency	Percent	Cumulative Frequency	Cumulative Percent
F	19889	35.82	19889	35.82
M	18241	32.85	38130	68.67
U	17399	31.33	55529	100.00

seriousness	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	45539	82.01	45539	82.01
1	9990	17.99	55529	100.00

Serious vs Non-Serious MMR/MMRV Adverse Events by Age Group

The FREQ Procedure

Frequency Percent	Table of seriousness by Age_group						
	Age_group						
seriousness	1-4 years	18-64 years	5-17 years	65+ years	<1 year	Missing	Total
0	17874 32.19	5488 9.88	5804 10.45	190 0.34	519 0.93	15664 28.21	45539 82.01
1	6629 11.94	1566 2.82	1231 2.22	51 0.09	118 0.21	395 0.71	9990 17.99
Total	24503 44.13	7054 12.70	7035 12.67	241 0.43	637 1.15	16059 28.92	55529 100.00

Statistics for Table of seriousness by Age_group

Statistic	DF	Value	Prob
Chi-Square	5	4077.2874	<.0001
Likelihood Ratio Chi-Square	5	5166.7732	<.0001
Mantel-Haenszel Chi-Square	1	4012.8076	<.0001
Phi Coefficient		0.2710	
Contingency Coefficient		0.2615	
Cramer's V		0.2710	

Sample Size = 55529

Serious vs Non-Serious MMR/MMRV Adverse Events by Sex

The FREQ Procedure

Frequency Percent	Table of seriousness by SEX				
		SEX			
	seriousness	F	M	U	Total
	0	15205 27.38	13135 23.65	17199 30.97	45539 82.01
	1	4684 8.44	5106 9.20	200 0.36	9990 17.99
	Total	19889 35.82	18241 32.85	17399 31.33	55529 100.00

Statistics for Table of seriousness by SEX

Statistic	DF	Value	Prob
Chi-Square	2	4998.1006	<.0001
Likelihood Ratio Chi-Square	2	6810.1849	<.0001
Mantel-Haenszel Chi-Square	1	2969.7909	<.0001
Phi Coefficient		0.3000	
Contingency Coefficient		0.2874	
Cramer's V		0.3000	

Sample Size = 55529

Trend in Serious vs Non-Serious MMR/MMRV Events by Year

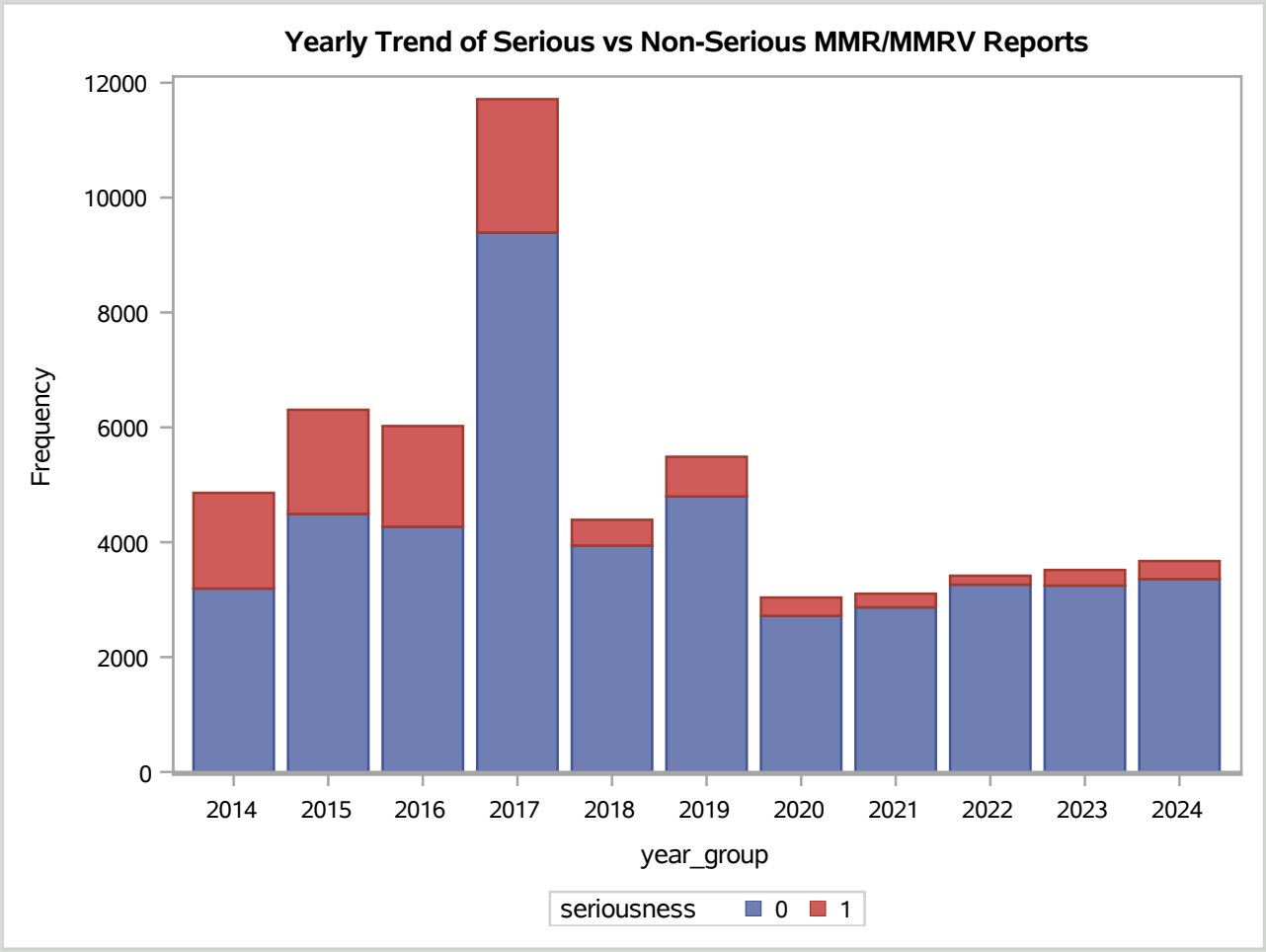
The FREQ Procedure

Frequency Percent	Table of year_group by seriousness		
	seriousness		
year_group	0	1	Total
2014	3194 5.75	1666 3.00	4860 8.75
2015	4492 8.09	1814 3.27	6306 11.36
2016	4270 7.69	1753 3.16	6023 10.85
2017	9392 16.91	2322 4.18	11714 21.10
2018	3942 7.10	448 0.81	4390 7.91
2019	4798 8.64	690 1.24	5488 9.88
2020	2719 4.90	319 0.57	3038 5.47
2021	2867 5.16	237 0.43	3104 5.59
2022	3262 5.87	155 0.28	3417 6.15
2023	3246 5.85	271 0.49	3517 6.33
2024	3357 6.05	315 0.57	3672 6.61
Total	45539 82.01	9990 17.99	55529 100.00

Statistics for Table of year_group by seriousness

Statistic	DF	Value	Prob
Chi-Square	10	3423.8091	<.0001
Likelihood Ratio Chi-Square	10	3507.9183	<.0001
Mantel-Haenszel Chi-Square	1	2798.7697	<.0001
Phi Coefficient		0.2483	
Contingency Coefficient		0.2410	
Cramer's V		0.2483	

Sample Size = 55529


Yearly Trend of Serious vs Non-Serious MMR/MMRV Reports
Frequency
12000
10000
8000
6000
4000
2000
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
year_group
seriousness
0
1

Count of Top 10 Reported Symptoms

symptom	count
Pyrexia	5611
Rash	4134
Injection site erythema	4134
Injection site swelling	2666
Erythema	1909
Urticaria	1847
Injection site warmth	1461
Injection site pain	1408
Vomiting	1264
Rash erythematous	1133

Logistic Regression: Predictors of Serious Adverse Events (MMR/MMRV)

The LOGISTIC Procedure

Model Information	
Data Set	WORK.VAERS_ANALYSIS
Response Variable	seriousness
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	55529
Number of Observations Used	55529

Response Profile		
Ordered Value	**seriousness**	**Total Frequency**
1	0	45539
2	1	9990

Probability modeled is seriousness=1.

Class Level Information						
Class	**Value**	**Design Variables**				
SEX	**F**	1	0			
	M	0	1			
	U	0	0			
Age_group	**1-4 years**	1	0	0	0	0
	18-64 years	0	1	0	0	0
	5-17 years	0	0	1	0	0
	65+ years	0	0	0	1	0
	<1 year	0	0	0	0	0
	Missing	0	0	0	0	1

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

Model Fit Statistics		
Criterion	**Intercept Only**	**Intercept and Covariates**
AIC	52338.184	44870.372
SC	52347.109	44941.769
-2 Log L	52336.184	44854.372

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	7481.8117	7	<.0001
Score	5540.8450	7	<.0001
Wald	2769.7117	7	<.0001

Logistic Regression: Predictors of Serious Adverse Events (MMR/MMRV)

The LOGISTIC Procedure

Type 3 Analysis of Effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
SEX	2	1283.7874	<.0001
Age_group	5	598.4361	<.0001

Analysis of Maximum Likelihood Estimates

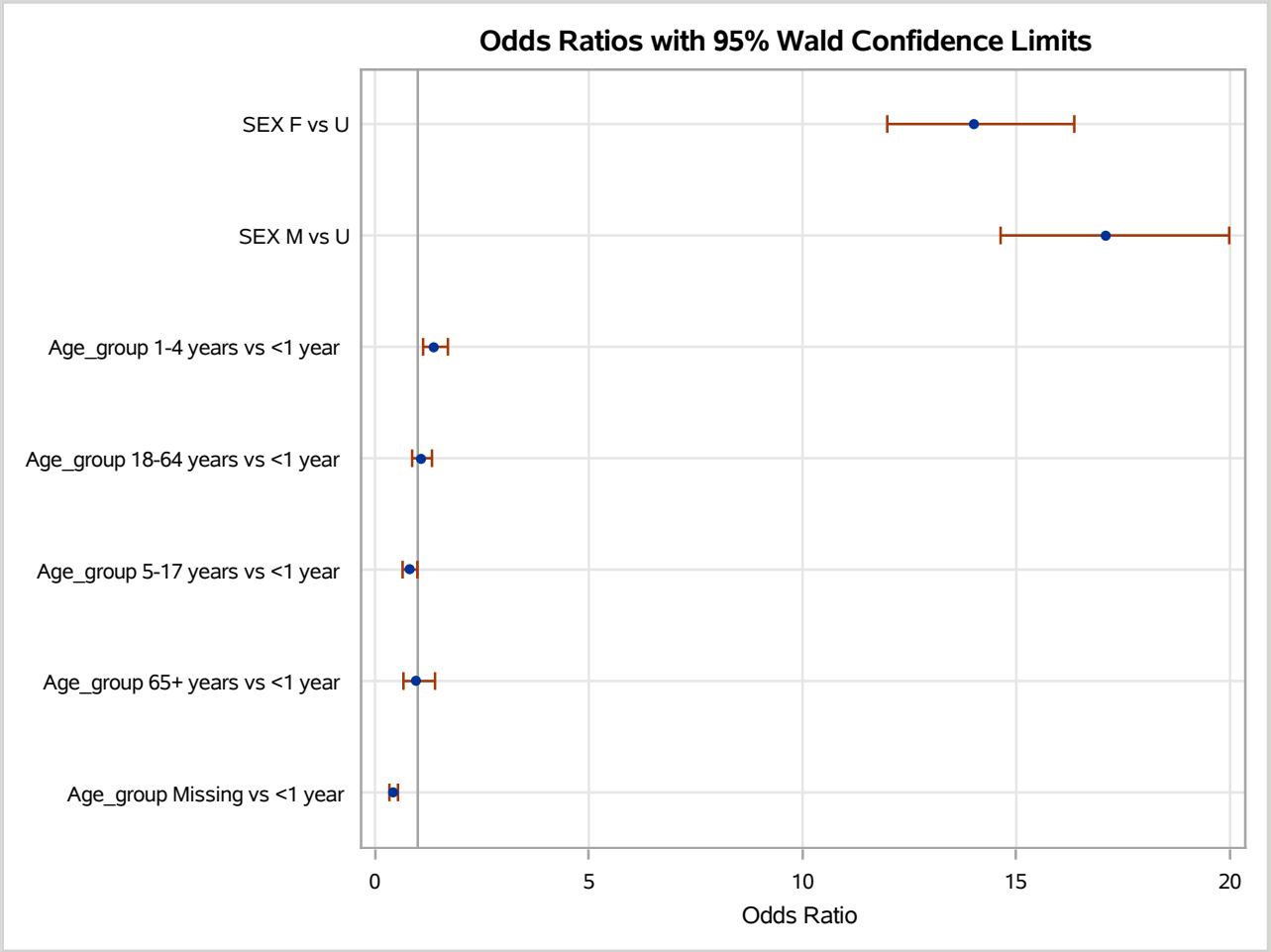
Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept		1	-3.9354	0.1297	921.0378	<.0001
SEX	F	1	2.6390	0.0794	1105.0013	<.0001
SEX	M	1	2.8390	0.0795	1276.1328	<.0001
Age_group	1-4 years	1	0.3254	0.1060	9.4301	0.0021
Age_group	18-64 years	1	0.0729	0.1091	0.4465	0.5040
Age_group	5-17 years	1	-0.2236	0.1097	4.1576	0.0414
Age_group	65+ years	1	-0.0347	0.1903	0.0332	0.8555
Age_group	Missing	1	-0.8552	0.1194	51.3256	<.0001

Odds Ratio Estimates

Effect	Point Estimate	95% Wald Confidence Limits	
SEX F vs U	13.999	11.982	16.356
SEX M vs U	17.099	14.632	19.981
Age_group 1-4 years vs <1 year	1.385	1.125	1.704
Age_group 18-64 years vs <1 year	1.076	0.869	1.332
Age_group 5-17 years vs <1 year	0.800	0.645	0.991
Age_group 65+ years vs <1 year	0.966	0.665	1.403
Age_group Missing vs <1 year	0.425	0.337	0.537

Logistic Regression: Predictors of Serious Adverse Events (MMR/MMRV)

The LOGISTIC Procedure



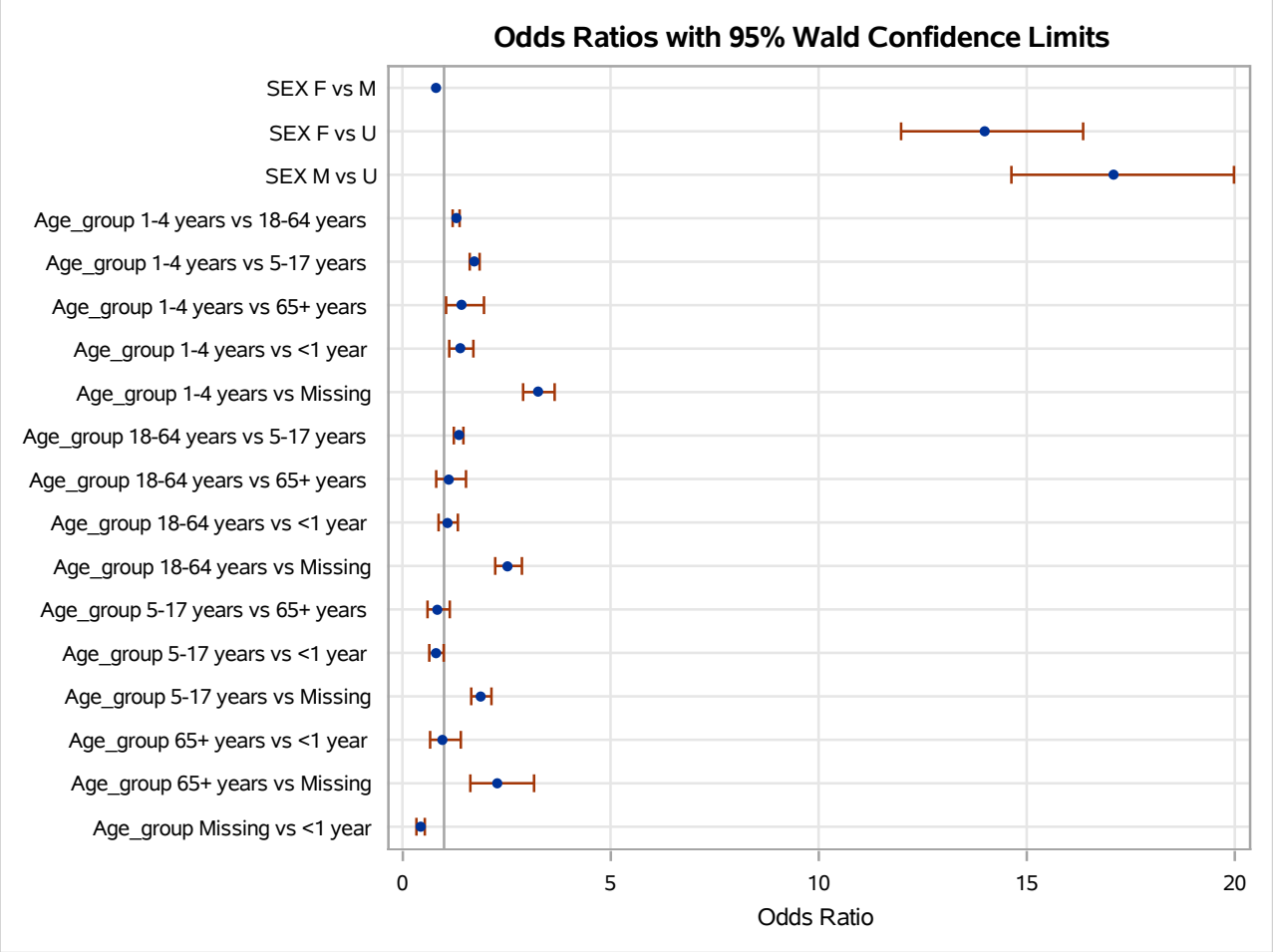
Association of Predicted Probabilities and Observed Responses			
Percent Concordant	66.1	**Somers' D**	0.455
Percent Discordant	20.7	**Gamma**	0.524
Percent Tied	13.2	**Tau-a**	0.134
Pairs	454934610	**c**	0.727

Odds Ratio Estimates and Wald Confidence Intervals			
Odds Ratio	**Estimate**	**95% Confidence Limits**	
SEX F vs M	0.819	0.781	0.858
SEX F vs U	13.999	11.982	16.356
SEX M vs U	17.099	14.632	19.981
Age_group 1-4 years vs 18-64 years	1.287	1.207	1.373
Age_group 1-4 years vs 5-17 years	1.731	1.617	1.854
Age_group 1-4 years vs 65+ years	1.433	1.049	1.959
Age_group 1-4 years vs <1 year	1.385	1.125	1.704
Age_group 1-4 years vs Missing	3.256	2.899	3.657
Age_group 18-64 years vs 5-17 years	1.345	1.235	1.465
Age_group 18-64 years vs 65+ years	1.114	0.812	1.528
Age_group 18-64 years vs <1 year	1.076	0.869	1.332
Age_group 18-64 years vs Missing	2.530	2.229	2.870
Age_group 5-17 years vs 65+ years	0.828	0.603	1.137
Age_group 5-17 years vs <1 year	0.800	0.645	0.991

Logistic Regression: Predictors of Serious Adverse Events (MMR/MMRV)

The LOGISTIC Procedure

Odds Ratio Estimates and Wald Confidence Intervals			
Odds Ratio	**Estimate**	**95% Confidence Limits**	
Age_group 5-17 years vs Missing	1.881	1.654	2.139
Age_group 65+ years vs <1 year	0.966	0.665	1.403
Age_group 65+ years vs Missing	2.272	1.632	3.163
Age_group Missing vs <1 year	0.425	0.337	0.537



Logistic Regression: Predictors of Serious Adverse Events (MMR/MMRV)

The LOGISTIC Procedure

Model Information	
Data Set	WORK.VAERS_ANALYSIS
Response Variable	seriousness
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	55529
Number of Observations Used	55529

Response Profile		
Ordered Value	**seriousness**	**Total Frequency**
1	1	9990
2	0	45539

Probability modeled is seriousness=1.

Class Level Information						
Class	**Value**	**Design Variables**				
SEX	**F**	0	0			
	M	1	0			
	U	0	1			
Age_group	**1-4 years**	1	0	0	0	0
	18-64 years	0	1	0	0	0
	5-17 years	0	0	1	0	0
	65+ years	0	0	0	1	0
	<1 year	0	0	0	0	0
	Missing	0	0	0	0	1

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

Model Fit Statistics		
Criterion	**Intercept Only**	**Intercept and Covariates**
AIC	52338.184	44870.372
SC	52347.109	44941.769
-2 Log L	52336.184	44854.372

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	7481.8117	7	<.0001
Score	5540.8450	7	<.0001
Wald	2769.7117	7	<.0001

Logistic Regression: Predictors of Serious Adverse Events (MMR/MMRV)

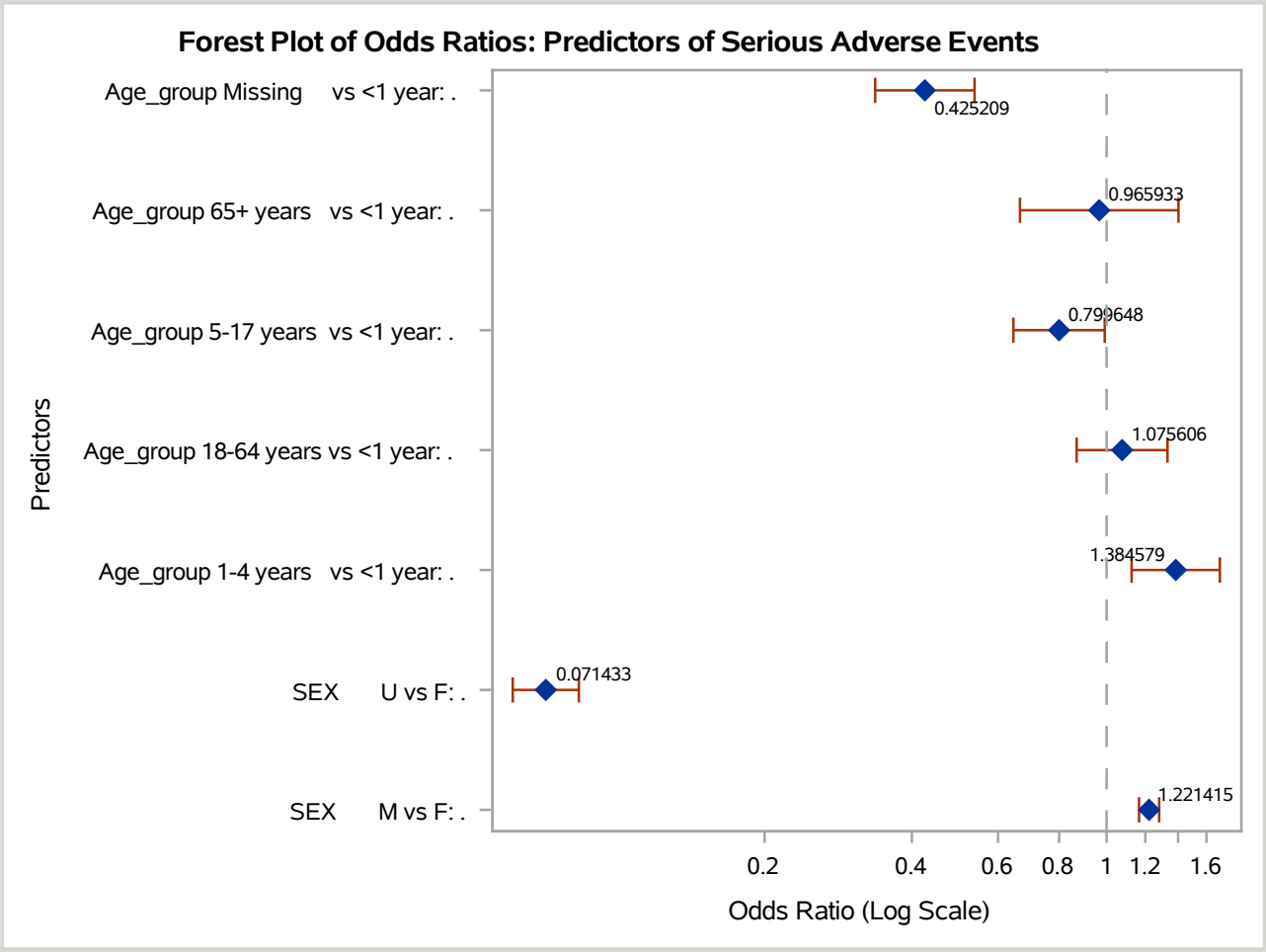
The LOGISTIC Procedure

Type 3 Analysis of Effects			
Effect	**DF**	**Wald Chi-Square**	**Pr > ChiSq**
SEX	2	1283.7874	<.0001
Age_group	5	598.4361	<.0001

Analysis of Maximum Likelihood Estimates						
Parameter		**DF**	**Estimate**	**Standard Error**	**Wald Chi-Square**	**Pr > ChiSq**
Intercept		1	-1.2964	0.1059	149.9681	<.0001
SEX	**M**	1	0.2000	0.0241	68.6261	<.0001
SEX	**U**	1	-2.6390	0.0794	1105.0013	<.0001
Age_group	**1-4 years**	1	0.3254	0.1060	9.4301	0.0021
Age_group	**18-64 years**	1	0.0729	0.1091	0.4465	0.5040
Age_group	**5-17 years**	1	-0.2236	0.1097	4.1576	0.0414
Age_group	**65+ years**	1	-0.0347	0.1903	0.0332	0.8555
Age_group	**Missing**	1	-0.8552	0.1194	51.3256	<.0001

Odds Ratio Estimates			
Effect	**Point Estimate**	**95% Wald Confidence Limits**	
SEX M vs F	1.221	1.165	1.281
SEX U vs F	0.071	0.061	0.083
Age_group 1-4 years vs <1 year	1.385	1.125	1.704
Age_group 18-64 years vs <1 year	1.076	0.869	1.332
Age_group 5-17 years vs <1 year	0.800	0.645	0.991
Age_group 65+ years vs <1 year	0.966	0.665	1.403
Age_group Missing vs <1 year	0.425	0.337	0.537

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	66.1	**Somers' D**	0.455
Percent Discordant	20.7	**Gamma**	0.524
Percent Tied	13.2	**Tau-a**	0.134
Pairs	454934610	**c**	0.727


Forest Plot of Odds Ratios: Predictors of Serious Adverse Events
Age_group Missing vs <1 year: .
Age_group 65+ years vs <1 year: .
Age_group 5-17 years vs <1 year: .
Age_group 18-64 years vs <1 year: .
Age_group 1-4 years vs <1 year: .
SEX U vs F: .
SEX M vs F: .
0.425209
0.965933
0.799648
1.075606
1.384579
0.071433
1.221415
Predictors
0.2
0.4
0.6
0.8
1
1.2
1.6
Odds Ratio (Log Scale)