

1. Fourteen subjects participated in an experiment to compare 2 methods of relieving stress. Seven subjects were assigned randomly to one method, the remaining subjects were assigned to the other method. Reduction in stress ( $\Delta S$ ) was measured for each subject. Define the explanatory variable and assign it a symbol. [1]

**Method in two categories (method 1 or 2) = Meth**

Write a general linear model to examine whether the 2 methods differ in effectiveness. [3]

$$\Delta S = \beta_o + \beta_{Meth} Meth + error$$

$$14 - 1 = 1 + 12$$

Beneath each term in the model show the df. [3]

2. The following table shows the observed or projected number of people alive at ages 20 through 60, from a cohort of 100,000 people born in decades from 1920 to the present (data from Stats Canada, updated 12 July 2007).

Decade of Birth	Number alive at each age, out of 100,000				
	age 20	age 30	age 40	age 50	age 60
1920-29	83669	80437	76798	71788	63328
1930-39	87886	85337	82125	77390	68643
1940-49	91758	89885	87480	83094	74187
1950-59	94831	93626	91977	88312	79731
1960-69	96306	95221	93779	90422	82321
1970-79	97343	96275	94931	91756	84250
1980-89	98341	97498	96457	94093	87987
1990-99	98835	98111	97065	95005	89963
2000-04	99034	98440	97597	95768	91367

What proportion of people born in 1967 are alive today? 93.8% [1]

What are the odds of reaching age 40, for this cohort ? 15.07:1 [1]

Given your birth year, what are the odds of reaching age 40 ? table next page [1]

3. Complete the following ANOVA table, for the regression of log Odds (of reaching age 40) against birth decade. [2]

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	6.143939	6.143939	547.669	6.6E-08
Residual	7	0.078528	0.011218		
Total	8	6.222468			

Tables with percents and odds 6a

Decade of Birth	Number alive at each age, out of 100,000					% reaching	Odds of reaching		midpoint
	age 20	age 30	age 40	age 50	age 60	age 60	age 60	InOdds	
1920-29	83669	80437	76798	71788	63328	0.63328	1.726876	0.546314	1925
1930-39	87886	85337	82125	77390	68643	0.68643	2.189081	0.783482	1935
1940-49	91758	89885	87480	83094	74187	0.74187	2.874017	1.055711	1945
1950-59	94831	93626	91977	88312	79731	0.79731	3.933643	1.369566	1955
1960-69	96306	95221	93779	90422	82321	0.82321	4.656429	1.538249	1965
1970-79	97343	96275	94931	91756	84250	0.8425	5.349206	1.676948	1975
1980-89	98341	97498	96457	94093	87987	0.87987	7.324315	1.9912	1985
1990-99	98835	98111	97065	95005	89963	0.89963	8.963136	2.19312	1995
2000-04	99034	98440	97597	95768	91367	0.91367	10.58346	2.359292	2002

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	3.113903	3.113903	1341.691	2.94E-09
Residual	7	0.016246	0.002321		
Total	8	3.13015			

Tables with percents and odds 6b

Decade of Birth	Number alive at each age, out of 100,000					% reaching	Odds of reaching		midpoint
	age 20	age 30	age 40	age 50	age 60	age40	age40	InOdds	
1920-29	83669	80437	76798	71788	63328	0.76798	3.309973	1.19694	1925
1930-39	87886	85337	82125	77390	68643	0.82125	4.594406	1.524839	1935
1940-49	91758	89885	87480	83094	74187	0.8748	6.98722	1.944083	1945
1950-59	94831	93626	91977	88312	79731	0.91977	11.46417	2.439226	1955
1960-69	96306	95221	93779	90422	82321	0.93779	15.07459	2.71301	1965
1970-79	97343	96275	94931	91756	84250	0.94931	18.72776	2.930007	1975
1980-89	98341	97498	96457	94093	87987	0.96457	27.22467	3.304123	1985
1990-99	98835	98111	97065	95005	89963	0.97065	33.07155	3.498673	1995
2000-04	99034	98440	97597	95768	91367	0.97597	40.61465	3.704129	2002

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	6.143939	6.143939	547.669	6.6E-08
Residual	7	0.078528	0.011218		
Total	8	6.222468			