CHILD HEALTH AND DEVELOPMENT STUDY

5. Describing Data

5.1 Descriptive Statistics of Predictor and Response Variables
5.2 Correlation Matrix

5.1 SPSS has produced the following summary statistics for the nine independent variables and the response variable BWT (birth weight):

MEASURES OF	STATISTICS	RESPONSE	PREDICTORS	
		BWT	GESTWKS	MNOCIG
CENTER	MEAN	7.5165	39.771	7.431
	MEDIAN	7.6000	40.000	0.000
SPREAD	STANDARD DEV.	1.0923	1.875	11.272
	STD ERROR	0.0419	0.072	0.432
	VARIANCE	1.1932	3.517	127.059
	MINIMUM	3.3000	29.000	0.000
	MAXIMUM	11.4000	48.000	50.000
	RANGE	8.1000	19.000	50.000
SHAPE	SKEWNESS	-0.0261	-0.219	1.507
	ST. ERROR SKEW	0.0937	0.094	0.094
	KURTOSIS	0.4155	3.012	1.609
	ST. ERROR KURT	0.1872	0.187	0.187
COUNT		680	680	680

MEASURES OF	STATISTICS	PREDICTORS		
		MHEIGHT	MAGE	MPPWT
CENTER	MEAN	64.434	25.857	126.896
	MEDIAN	64.000	25.000	125.000
SPREAD	STANDARD DEV.	2.483	5.463	17.878
	STD ERROR	0.095	0.210	0.686
	VARIANCE	6.166	29.849	319.611
	MINIMUM	57.000	15.000	85.000
	MAXIMUM	71.000	42.000	246.000
	RANGE	14.000	27.000	161.000
SHAPE	SKEWNESS	-0.119	0.670	1.343
	ST. ERROR SKEW	0.094	0.094	0.094
	KURTOSIS	-0.037	-0.156	4.999
	ST. ERROR KURT	0.187	0.187	0.187
COUNT		680	680	680

MEASURES OF	STATISTICS	PREDICTORS			
		FNOCIG	FAGE	FEDYRS	FHEIG
CENTER	MEAN	14.438	28.800	13.379	70.619
	MEDIAN	12.000	28.000	14.000	71.000
SPREAD	STANDARD DEV.	14.170	6.133	2.203	2.638
	STD ERROR	0.543	0.235	0.084	0.101
	VARIANCE	200.797	37.615	4.851	6.961
	MINIMUM	0.000	18.000	6.000	62.000
	MAXIMUM	50.000	52.000	16.000	79.000
	RANGE	50.000	34.000	10.000	17.000
SHAPE	SKEWNESS	0.633	0.767	-0.305	-0.085
	ST. ERROR SKEW	0.094	0.094	0.094	0.094
	KURTOSIS	-0.466	0.305	-0.621	-0.1360
	ST. ERROR KURT	0.187	0.187	0.187	0.187
COUNT		680	680	680	680

Mean infant birth weight was 7.5 pounds, the lowest value was 3.3 pounds, and the heighest value of 11.4 pounds. The birth weigh exhibits relatively small spread compared to other variables, the standard deviation is 1.09 pounds.

5.2 Examining the array of all possible pairwise correlation coefficients is the first step in attempting to understand the multivariable relationships among these nine variables. The correlation matrix for the variables in the study is displayed below:

	BW	**GES**	**MNO**	**MAG**	**MHE**	**MPP**	**FNO**	**FAG**	**FHEI**	**FED**
BWT	**1**	**.426**	**-.179**	**.0013**	**.2025**	**.2216**	**-.023**	**.017**	**.154**	**.033**
GES	**.426**	**1**	**-.071**	**.003**	**.048**	**.052**	**-.003**	**.042**	**.024**	**.035**
MNO	**-.179**	**-.071**	**1**	**.045**	**.026**	**-.026**	**.262**	**.028**	**.011**	**.024**
MAG	**.001**	**.003**	**.045**	**1**	**.018**	**.116**	**.017**	**.817**	**-.071**	**.241**
MHE	**.202**	**.048**	**.026**	**.018**	**1**	**.494**	**-.015**	**.018**	**.303**	**.108**
MPP	**.222**	**.052**	**-.026**	**.116**	**.494**	**1**	**-.028**	**.124**	**.166**	**.001**
FNO	**-.023**	**-.003**	**.262**	**.017**	**-.015**	**-.028**	**1**	**.040**	**.014**	**-.182**
FAG	**.017**	**.042**	**.028**	**.817**	**.018**	**.124**	**.040**	**1**	**-.134**	**.220**
FHEI	**.154**	**.0240**	**.0108**	**-.071**	**.303**	**.166**	**.014**	**-.134**	**1**	**.108**
FED	**.033**	**.035**	**.024**	**.241**	**.108**	**.001**	**-.182**	**.220**	**.108**	**1**

The heighest correlation (r=0.817) is, not surprisingly, between age of mother (MAGE) and age of father (FAGE). The first row of the table shows that the maternal variables are stronger correlated to infant birth weight (BWT) than the paternal variables. The second column of the table indicates that length of gestation (GESTWKS) is essentially uncorrelated with the parental variables (the correlation $|r| < 0.071$) and is strongly correlated with birth weight (r=0.426).

There is a negative moderate correlation between number of cigarettes smoked per day by the mother (MNOCIG) and birth weight (r=-.179). However, there is a very weak negative correlation between infant birth weight and the number of cigarettes smoked by father (FNOCIG, r=-.023). There is a very weak negative correlation between number of cigarettes smoked and gestation time (r=-.071).

A number of variables show rather expected associations-variables related to adult size. Mother's pre-pregnancy weight (MPPWT), mother's height (MHEIGHT), and father's height (FHEIGHT) are all moderately correlated with each other (the correlation coefficient $r > 0.166$. Also maternal (MNOCIG) and paternal (FNOCIG) smoking habits are correlated (r=0.262).

It is important to keep in mind that correlation coefficients only indicate pairwise linear associations when typically more complicated relationships exist.