

Multiple Regression Examples
Vartanian: SW 131

1. Model 1: Dependent variable = AFDC income
Independent Variable = Big City Resident (vs. non-big city resident)

N=2,214-- Examining Female Heads of Household Only

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.063 ^a	.004	.004	1015.9422

a. Predictors: (Constant), BIGCIT

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.9E+08	1	1.9E+08	182.801	.000 ^a
	Residual	4.7E+10	45918	1032139		
	Total	4.8E+10	45919			

a. Predictors: (Constant), BIGCIT

b. Dependent Variable: AFDCINC

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	191.789	5.358		35.792	.000
	BIGCIT	155.459	11.498	.063	13.520	.000

a. Dependent Variable: AFDCINC

2. Model 2 -- Dependent variable = AFDC income

Independent variables = Big City resident (Dummy variable) and # of children (interval scale variable).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.457 ^a	.209	.209	905.4132

a. Predictors: (Constant), KIDS, BIGCIT

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-36.226	5.213		-6.949	.000
	BIGCIT	149.515	10.247	.061	14.591	.000
	KIDS	483.732	4.435	.453	109.069	.000

a. Dependent Variable: AFDCINC

3. Model 3 -- DV= AFDC income

IV = Big City (dummy), Number of Kids (interval), Education of the Head (interval).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.455 ^a	.207	.207	892.6303

a. Predictors: (Constant), EDHD, KIDS, BIGCIT

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	213.452	17.674		12.077	.000
	BIGCIT	147.916	10.214	.061	14.482	.000
	KIDS	470.377	4.437	.445	106.013	.000
	EDHD	-20.272	1.396	-.061	-14.526	.000

a. Dependent Variable: AFDCINC

4. Model 4 -- DV= AFDC income

IV = Big City (dummy), Number of Kids (interval), Education of the Head (interval), Years of Work Experience for the Head (interval), Health of the Head is Poor (dummy).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.463 ^a	.214	.214	900.2485

a. Predictors: (Constant), YRSWRKHD, BIGCIT, EDHD, KIDS, HDHLTHPR

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	362.084	21.020		17.225	.000
	BIGCIT	160.128	10.625	.064	15.070	.000
	KIDS	456.783	4.761	.427	95.942	.000
	EDHD	-24.699	1.536	-.071	-16.080	.000
	HDHLTHPR	-35.544	17.226	-.009	-2.063	.039
	YRSWRKHD	-5.096	.332	-.068	-15.343	.000

a. Dependent Variable: AFDCINC

5. Model 5 -- DV= AFDC income

IV = Big City (dummy), Number of Kids (interval), Education of the Head (interval), Years of Work Experience for the Head (interval), whether the head is catholic (dummy variable), whether the head is disabled (dummy), amount of alimony paid to the head (interval).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.480 ^a	.231	.231	892.6578

a. Predictors: (Constant), ALIMONY, MAXWELF, DISABHD, YRSWRKHD, CATHHD, EDHD, BIGCIT, KIDS

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	105.288	22.248		4.733	.000
	BIGCIT	85.824	10.865	.034	7.899	.000
	KIDS	468.986	4.736	.437	99.023	.000
	EDHD	-29.523	1.506	-.085	-19.599	.000
	YRSWRKHD	-5.537	.330	-.074	-16.770	.000
	CATHHD	-68.387	10.916	-.027	-6.265	.000
	DISABHD	-1.052	22.480	.000	-.047	.963
	MAXWELF	.748	.026	.129	28.839	.000
	ALIMONY	-1.68E-02	.002	-.031	-7.418	.000

a. Dependent Variable: AFDCINC

6. Model 6 -- DV= AFDC income

IV = Big City (dummy), Number of Kids (interval), Education of the Head (interval), Years of Work Experience for the Head (interval), whether the head is catholic (dummy variable), whether the head is disabled (dummy), amount of alimony paid to the head (interval), the county unemployment rate.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.481 ^a	.231	.231	892.5028

a. Predictors: (Constant), UNCY, YRSWRKHD, ALIMONY, DISABHD, CATHHD, BIGCIT, EDHD, KIDS, MAXWELF

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.0E+10	9	1.1E+09	1434.814	.000 ^a
	Residual	3.4E+10	42990	796561.3		
	Total	4.5E+10	42999			

a. Predictors: (Constant), UNCY, YRSWRKHD, ALIMONY, DISABHD, CATHHD, BIGCIT, EDHD, KIDS, MAXWELF

b. Dependent Variable: AFDCINC

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	48.968	26.342		1.859	.063
	BIGCIT	82.900	10.888	.033	7.614	.000
	KIDS	468.482	4.737	.437	98.899	.000
	EDHD	-28.735	1.519	-.083	-18.918	.000
	YRSWRKHD	-5.532	.330	-.074	-16.758	.000
	CATHHD	-69.692	10.919	-.027	-6.383	.000
	DISABHD	.601	22.480	.000	.027	.979
	MAXWELF	.731	.026	.126	27.831	.000
	ALIMONY	-1.67E-02	.002	-.031	-7.376	.000
	UNCY	8.143	2.040	.017	3.991	.000

a. Dependent Variable: AFDCINC

1. Model 1 -- Dependent Variable = Income

Independent Variable = Head of Household is a Female (dummy) (vs. male headed households).

N=7,583

Regression

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	HDFEM ^a	.	Enter

a. All requested variables entered.

b. Dependent Variable: INCOME

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.269 ^a	.073	.073	43026.38

a. Predictors: (Constant), HDFEM

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.1E+13	1	2.1E+13	11082.629	.000 ^a
	Residual	2.6E+14	141658	1.9E+09		
	Total	2.8E+14	141659			

a. Predictors: (Constant), HDFEM

b. Dependent Variable: INCOME

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	48191.605	141.054		341.653	.000
	HDFEM	-25348.4	240.785	-.269	-105.274	.000

a. Dependent Variable: INCOME

1.5 DV =income

IV = Whether or not the Head Grew Up Poor (Dummy).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.107 ^a	.012	.012	44419.90

a. Predictors: (Constant), GUPOOR

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	42845.449	144.025		297.486	.000
	GUPOOR	-10205.5	251.279	-.107	-40.614	.000

a. Dependent Variable: INCOME

2. Model 2 -- Dependent Variable = Income

Independent Variables = Head of Household is a Female (dummy) (vs. male headed households), Education of the Head (interval).

Regression

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	HDFEM ^a , EDHD	.	Enter

a. All requested variables entered.

b. Dependent Variable: INCOME

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.414 ^a	.172	.172	40803.81

a. Predictors: (Constant), HDFEM, EDHD

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.8E+13	2	2.4E+13	14436.147	.000 ^a
	Residual	2.3E+14	139415	1.7E+09		
	Total	2.8E+14	139417			

a. Predictors: (Constant), HDFEM, EDHD

b. Dependent Variable: INCOME

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-15272.9	513.625		-29.736	.000
	EDHD	4924.907	38.359	.316	128.389	.000
	HDFEM	-21445.9	232.807	-.227	-92.119	.000

a. Dependent Variable: INCOME

3. Model 3 -- Dependent Variable = Income

Independent Variables = Head of Household is a Female (dummy) (vs. male headed households), Education of the Head (interval), County Unemployment Rate (interval).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.415 ^a	.172	.172	40633.34

a. Predictors: (Constant), UNCY, HDFEM, EDHD

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-12925.3	647.444		-19.964	.000
	HDFEM	-21347.5	232.537	-.227	-91.803	.000
	EDHD	4896.156	38.628	.315	126.752	.000
	UNCY	-300.372	50.011	-.015	-6.006	.000

a. Dependent Variable: INCOME

4. Model 4 -- Dependent Variable = Income

Independent Variables = Head of Household is a Female (dummy) (vs. male headed households), Education of the Head (interval), County Unemployment Rate (interval), Whether the Head Grew Up Poor (Dummy).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.415 ^a	.172	.172	40633.48

a. Predictors: (Constant), GUPOOR, UNCY, HDFEM, EDHD

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-12878.4	678.929		-18.969	.000
	HDFEM	-21345.1	232.763	-.227	-91.703	.000
	EDHD	4893.662	40.127	.315	121.953	.000
	UNCY	-300.054	50.031	-.015	-5.997	.000
	GUPOOR	-55.643	242.371	-.001	-.230	.818

a. Dependent Variable: INCOME

5. Model 5 -- Dependent Variable = Income

Independent Variables = Head of Household is a Female (dummy) (vs. male headed households), Education of the Head (interval), County Unemployment Rate (interval), Whether the Head Grew Up Poor (Dummy), Race of African American (dummy).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.421 ^a	.177	.177	40518.75

a. Predictors: (Constant), AFRAM, UNCY, GUPOOR, HDFEM, EDHD

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-11337.0	679.239		-16.691	.000
	GUPOOR	735.602	243.328	.008	3.023	.003
	UNCY	-254.962	49.915	-.013	-5.108	.000
	EDHD	4799.666	40.154	.309	119.531	.000
	HDFEM	-20279.0	235.198	-.215	-86.221	.000
	AFRAM	-9015.903	321.499	-.071	-28.043	.000

a. Dependent Variable: INCOME

6. Model 6 -- Dependent Variable = Income

Independent Variables = Head of Household is a Female (dummy) (vs. male headed households), Education of the Head (interval), County Unemployment Rate (interval), Whether the Head Grew Up Poor (Dummy), Race of African American (dummy), Big City Resident (dummy).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.425 ^a	.180	.180	40438.75

a. Predictors: (Constant), BIGCIT, GUPOOR, UNCY, HDFEM, AFRAM, EDHD

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-10783.8	678.309		-15.898	.000
	GUPOOR	965.659	243.046	.010	3.973	.000
	UNCY	-377.440	50.090	-.019	-7.535	.000
	EDHD	4747.826	40.136	.306	118.294	.000
	HDFEM	-20690.3	235.388	-.220	-87.899	.000
	AFRAM	-10178.3	324.673	-.080	-31.350	.000
	BIGCIT	7017.057	299.322	.058	23.443	.000

a. Dependent Variable: INCOME

7. Model 7 -- Dependent Variable = Income

Independent Variables = Head of Household is a Female (dummy) (vs. male headed households), Education of the Head (interval), County Unemployment Rate (interval), Whether the Head Grew Up Poor (Dummy), Race of African American (dummy), Big City Resident (dummy), Disabled (dummy).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.425 ^a	.181	.181	40432.58

a. Predictors: (Constant), DISABHD, BIGCIT, GUPOOR, UNCY, HDFEM, AFRAM, EDHD

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-10270.3	682.687		-15.044	.000
	GUPOOR	1005.154	243.083	.011	4.135	.000
	UNCY	-378.336	50.083	-.019	-7.554	.000
	EDHD	4713.925	40.460	.303	116.510	.000
	HDFEM	-20647.6	235.442	-.219	-87.697	.000
	AFRAM	-10025.2	325.457	-.078	-30.803	.000
	BIGCIT	6975.764	299.343	.058	23.304	.000
	DISABHD	-4438.002	674.919	-.016	-6.576	.000

a. Dependent Variable: INCOME

Dummy Variable

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.204 ^a	.041	.041	536.6520

a. Predictors: (Constant), WHITE

Examples

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	369.529	15.436		23.940	.000
	WHITE	-304.740	16.836	-.204	-18.101	.000

a. Dependent Variable: FOODSTMP

Regression

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	BIGCIT ^a	.	Enter

a. All requested variables entered.

b. Dependent Variable: FOODSTMP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.045 ^a	.002	.002	547.5768

a. Predictors: (Constant), BIGCIT

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4562275	1	4562275	15.216	.000 ^a
	Residual	2.3E+09	7581	299840.3		
	Total	2.3E+09	7582			

a. Predictors: (Constant), BIGCIT

b. Dependent Variable: FOODSTMP

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	102.425	6.885		14.876	.000
	BIGCIT	65.935	16.903	.045	3.901	.000

a. Dependent Variable: FOODSTMP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.038 ^a	.001	.001	547.7273

a. Predictors: (Constant), DIVORCE

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3312971	1	3312971	11.043	.001 ^a
	Residual	2.3E+09	7581	300005.1		
	Total	2.3E+09	7582			

a. Predictors: (Constant), DIVORCE

b. Dependent Variable: FOODSTMP

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	104.971	6.778		15.487	.000
	DIVORCE	60.447	18.190	.038	3.323	.001

a. Dependent Variable: FOODSTMP

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.068 ^a	.005	.004	546.9329

a. Predictors: (Constant), NORE, NC, SOUTH

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.1E+07	3	3500961	11.704	.000 ^a
	Residual	2.3E+09	7579	299135.7		
	Total	2.3E+09	7582			

a. Predictors: (Constant), NORE, NC, SOUTH

b. Dependent Variable: FOODSTMP

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	59.937	14.986		3.999	.000
	SOUTH	96.934	18.525	.083	5.233	.000
	NC	60.742	19.129	.050	3.175	.002
	NORE	19.889	20.253	.015	.982	.326

a. Dependent Variable: FOODSTMP