```
. use "/Users/gokarndhaliwal/Downloads/Demographics (1).dta", clear

. reg br furate
```

Source	SS	df	MS	Number of obs	=	41
				F(1, 39)	=	2.39
Model	2.40552479	1	2.40552479	Prob > F	=	0.1300
Residual	39.2183776	39	1.00559943	R-squared	=	0.0578
				Adj R-squared	=	0.0336
Total	41.6239024	40	1.04059756	Root MSE	=	1.0028

br	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
furate	.1702982	.1101077	1.55	0.130	-.0524156	.3930121
_cons	14.0173	.7250284	19.33	0.000	12.55079	15.48381

Since 0.130 > 0.05, the female unemployment rate does not have a statistically significant effect on the birth rate at the 5% significance level.

```
. reg br furate marriage
```

Source	SS	df	MS	Number of obs	=	41
				F(2, 38)	=	21.63
Model	22.1582544	2	11.0791272	Prob > F	=	0.0000
Residual	19.4656481	38	.512253896	R-squared	=	0.5323
				Adj R-squared	=	0.5077
Total	41.6239024	40	1.04059756	Root MSE	=	.71572

br	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
furate	-.0730273	.0878139	-0.83	0.411	-.2507972	.1047426
marriage	.6298902	.1014364	6.21	0.000	.4245429	.8352375
_cons	9.755991	.8594722	11.35	0.000	8.01608	11.4959

```
.
```

Since 0.411 > 0.05, the female unemployment rate does not have a statistically significant effect on the birth rate at the 5% significance level.

```
. reg br furate marriage divorce
```

Source	SS	df	MS	Number of obs	=	41
				F(3, 37)	=	16.19
Model	23.6290516	3	7.87635054	Prob > F	=	0.0000
Residual	17.9948508	37	.48634732	R-squared	=	0.5677
				Adj R-squared	=	0.5326
Total	41.6239024	40	1.04059756	Root MSE	=	.69739

br	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
furate	-.0227441	.0903181	-0.25	0.803	-.2057458	.1602577
marriage	.7688322	.1270925	6.05	0.000	.5113183	1.026346
divorce	-.5032072	.2893635	-1.74	0.090	-1.089513	.0830989
_cons	10.36791	.9083787	11.41	0.000	8.527361	12.20846

The p-value for furate is 0.803. Since 0.803 > 0.05, the female unemployment rate does not have a statistically significant effect on the birth rate at the 5% significance level.

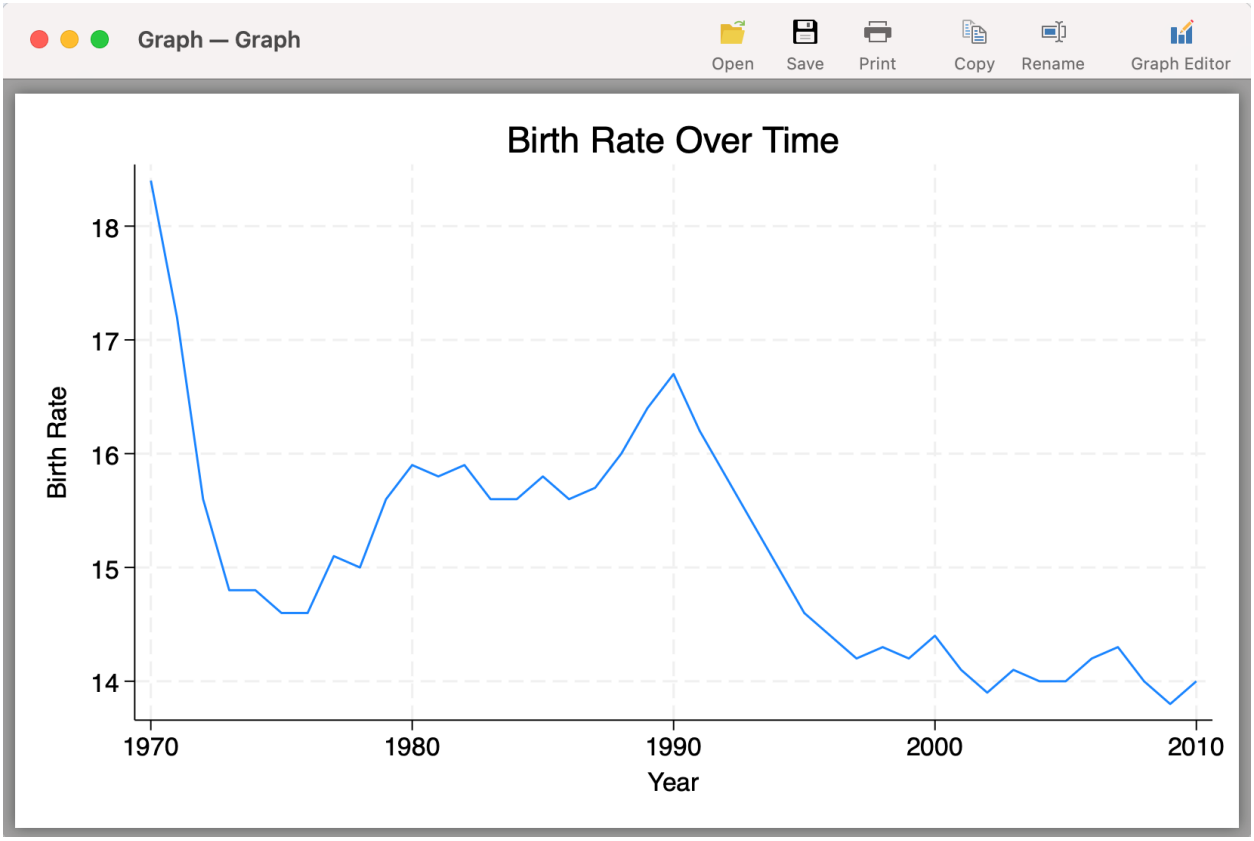
```
. reg br furate marriage divorce urban
```

Source	SS	df	MS	Number of obs	=	41
				F(4, 36)	=	12.71
Model	24.3646492	4	6.09116231	Prob > F	=	0.0000
Residual	17.2592532	36	.479423701	R-squared	=	0.5854
				Adj R-squared	=	0.5393
Total	41.6239024	40	1.04059756	Root MSE	=	.6924

br	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
furate	-.0520293	.0927372	-0.56	0.578	-.240109	.1360504
marriage	.1321053	.5292963	0.25	0.804	-.9413574	1.205568
divorce	-.6401967	.3078473	-2.08	0.045	-1.26454	-.0158533
urban	-.2982774	.2408019	-1.24	0.223	-.7866463	.1900915
_cons	39.89107	23.85136	1.67	0.103	-8.481725	88.26386

The p-value for furate is 0.578. Since 0.578 > 0.05, the female unemployment rate does not have a statistically significant effect on the birth rate at the 5% significance level.

```
. twoway line br year, title("Birth Rate Over Time") xtitle("Year") ytitle("Birth Rate")
```




```
. gen d75 = 0

. replace d75 = 1 if year >= 1976
(37 real changes made)

. reg br furate marriage divorce urban d75
```

Source	SS	df	MS	Number of obs	=	41
				F(5, 35)	=	17.12
Model	29.5448583	5	5.90897165	Prob > F	=	0.0000
Residual	12.0790442	35	.345115548	R-squared	=	0.7098
				Adj R-squared	=	0.6683
Total	41.6239024	40	1.04059756	Root MSE	=	.58747

br	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
furate	.0276102	.081323	0.34	0.736	-.1374842	.1927047
marriage	.2095282	.449522	0.47	0.644	-.70305	1.122106
divorce	-2.26463	.4939854	-4.58	0.000	-3.267474	-1.261787
urban	-.5920663	.2179254	-2.72	0.010	-1.034478	-.1496543
d75	2.142192	.552926	3.87	0.000	1.019693	3.264692
_cons	66.49937	21.37018	3.11	0.004	23.1156	109.8832

The coefficient for d75 is 2.142192. The p-value for d75 is 0.000.

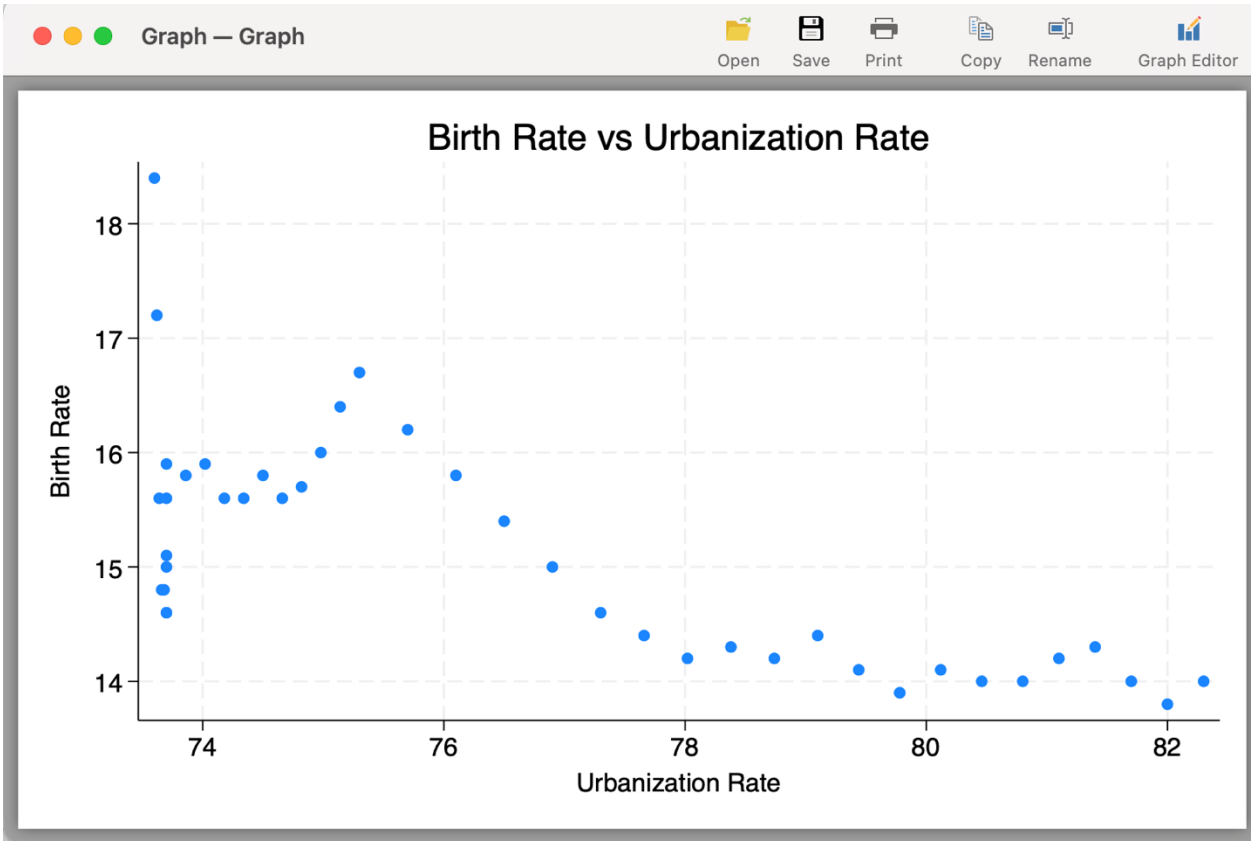
Since 0.000 < 0.05, the dummy variable d75 is statistically significant at the 5% significance level.

Part G

For the last regression, the p-value for furate is 0.736. Since 0.736 > 0.05, the female unemployment rate does not have a statistically significant effect on the birth rate at the 5% significance level.

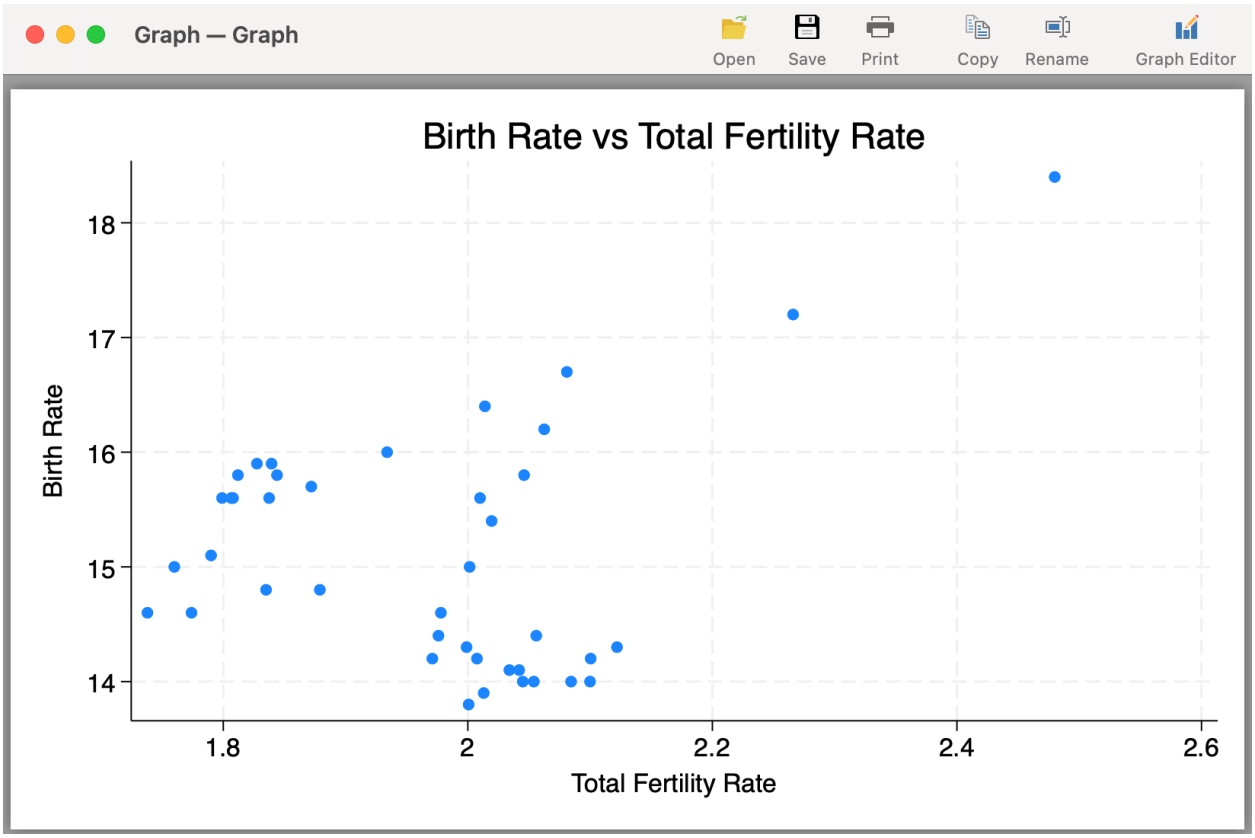
QUESTION 2

```
twoway scatter br urban, title("Birth Rate vs Urbanization Rate") xtitle("Urbanization Rate") ytitle("Birth Rate")
```



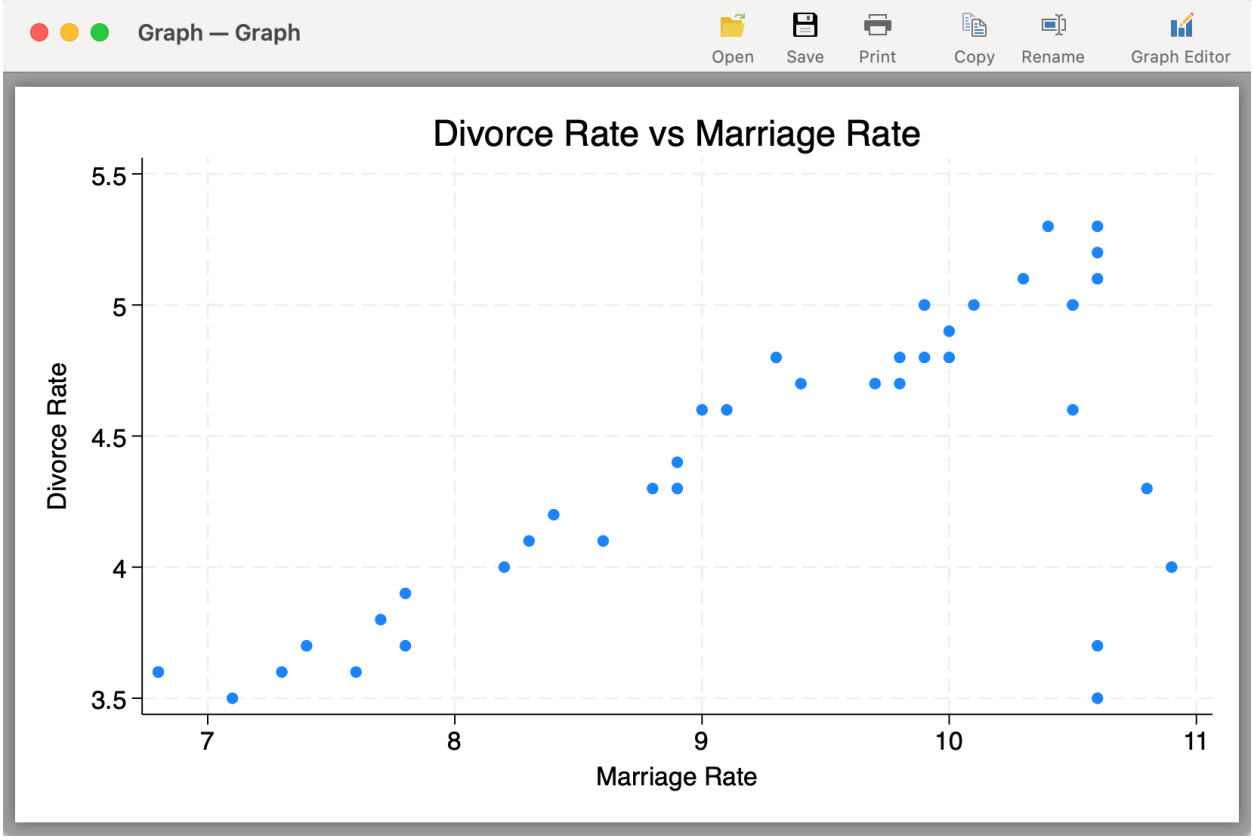
The scatterplot shows a negative relationship between birth rate and urbanization rate. As the urbanization rate increases, the birth rate tends to decrease. This suggests that more urbanized areas/years are associated with lower birth rates.

```
. twoway scatter br tfr, title("Birth Rate vs Total Fertility Rate") xtitle("Total Fertility Rate") ytitle("Birth Rate
> ")
```



The scatterplot shows a generally positive relationship between birth rate and total fertility rate. As the total fertility rate increases, the birth rate tends to increase. However, the relationship is not perfectly straight because some points are spread out.

```
. twoway scatter divorce marriage, title("Divorce Rate vs Marriage Rate") xtitle("Marriage Rate") ytitle("Divorce Rate
> ")
```



The scatterplot shows a generally positive relationship between marriage rate and divorce rate. As the marriage rate increases, the divorce rate tends to increase. However, there are a few points at higher marriage rates where the divorce rate is lower, so the relationship is not perfect.

```
. reg divorce marriage
```

Source	SS	df	MS	Number of obs	=	41
				F(1, 39)	=	40.21
Model	6.67216517	1	6.67216517	Prob > F	=	0.0000
Residual	6.47173727	39	.165941981	R-squared	=	0.5076
				Adj R-squared	=	0.4950
Total	13.1439024	40	.328597561	Root MSE	=	.40736

divorce	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
marriage	.3276192	.0516671	6.34	0.000	.2231126	.4321258
_cons	1.382117	.482074	2.87	0.007	.4070302	2.357204

The regression shows a positive and statistically significant relationship between marriage rate and divorce rate. This means that higher marriage rates are associated with higher divorce rates. However, we should be careful saying it “raises” divorce rate because this regression shows association, not necessarily causation.

```
reg divorce marriage, level(99)
```

Source	SS	df	MS	Number of obs	=	41
				F(1, 39)	=	40.21
Model	6.67216517	1	6.67216517	Prob > F	=	0.0000
Residual	6.47173727	39	.165941981	R-squared	=	0.5076
				Adj R-squared	=	0.4950
Total	13.1439024	40	.328597561	Root MSE	=	.40736

divorce	Coefficient	Std. err.	t	P>|t|	[99% conf.	interval]
marriage	.3276192	.0516671	6.34	0.000	.1877092	.4675292
_cons	1.382117	.482074	2.87	0.007	.0767023	2.687531

At alpha = 0.01, the regression shows a positive and statistically significant relationship between marriage rate and divorce rate. We can say that higher marriage rates are associated with higher divorce rates, but we should be careful saying it directly “raises” divorce rate because this regression shows association, not guaranteed causation.