

1.(a) Mandatory purchase of insurance will reduce adverse selection as good risks will be included in the pool.

(b) Mandatory provision of insurance will increase adverse selection as high risks have to be covered.

(c) A common price regardless of individual's health risk will increase adverse selection as low risk people are less likely to purchase as premium is high compared to their expected expenses.

2.(a) Given the posted price of 800, car buyers now think that X is uniform on (600, 800)

$E[X] = 700$ as uniform on (600, 800) has mean 700.

$E[U(X)] = E[1.5 \times X] = 1.5 \times E[X] = 1.5 \times 700 = 1,050$. Since this exceeds the price of \$800, buy the car.

(b) Only those with (known) loss in excess of \$15,000 will buy insurance.

The expected loss of those insured will be \$17,500 (= the mean of uniform on 15,000 to 20,000).

The insurance company will make an expected loss of \$4,500 (\$2,500 + \$2,000 administration costs) per policy.

(c) Adverse selection in an insurance market arises if different individuals have different expected losses and are able to reasonably estimate these expected losses, but insurance companies do not have this information.

3.(a) Higher deductibles will lead to lower total costs as demand will decrease given higher net price to consumer.

(b) Price controls will lower costs due to lower price of medical services and perhaps some services not provided at the lower reimbursement rate. (Additionally, it may discourage innovation, lowering costs in the future. Going the other way, price controls can lead to over-servicing and up-coding by providers to maintain income).

(c) Total costs will initially increase, as the currently uninsured now face a lower net price of health care. In the long run this may be mitigated, if health improvement leads to less need for health care.

4.(a) Straightforward. Several variables including various dummies for age.

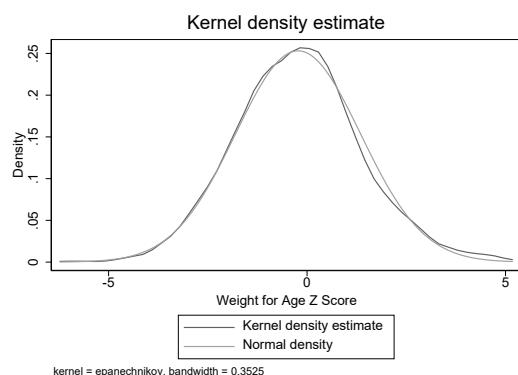
All variables are available for all observations.

(b) The mean is near 0 but the standard deviation is surprisingly much larger than 1.

. summarize waz

Variable	Obs	Mean	Std. dev.	Min	Max
waz	848	-.2263561	1.576006	-5.88	4.83

(c) From **kdensity waz**, **normal** the variable **waz** appears to be approximately normal.



(d) There are 54 communities.

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5.(a) We obtain A = -.53246231 B = .20747059 C = -.40719231 D = -.07027397

(b) Regression of **waz** on **high** in 1993 gives difference of -0.125 and is statistically insignificant at 5% since $p = 0.431 > 0.05$ or $t = -0.79$ is low.

. regress waz high if year==93, vce(robust)

Linear regression				Number of obs	=	459	
				F(1, 457)	=	0.62	
				Prob > F	=	0.4312	
				R-squared	=	0.0013	
				Root MSE	=	1.6922	
	waz	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]	
	high	-.12527	.1590047	-0.79	0.431	-.437741	.187201
	_cons	-.4071923	.1057676	-3.85	0.000	-.6150435	-.1993411

Alternatively, ttest gives similar results (same difference, stand. error .1590164 slightly different.)

. ttest waz if year==93, by(high) unequal

(c), (d) We obtain a differences in differences estimate of .65829669. This is a large effect as it is a 0.415 (= .65829669/1.587312) standard deviation change in weight for age.

	Treatment = High	Treatment = Low	Difference over treatment
Year==93	A = -.53246231	C = -.40719231	A – C = -.125270
Year==98	B = .20747059	D = -.07027397	B – D = .27774456
Change over time	B-A = .7399329	D - C = .33691834	(B-D) – (A-C) = .40301456 Or (B-A) – (D-C) = .40301456

6.(a)-(c) We get the same difference-in-difference estimate of .40301456.

This is statistically insignificant at 5% since $p = 0.059 > 0.05$.

Note also that the coefficient of post equals D-C (the change over time for the low treatment) and the coefficient of high equals A-C (the difference across treatments in 1993)

. * Implement as regression

Linear regression				Number of obs	=	848	
				F(3, 844)	=	9.20	
				Prob > F	=	0.0000	
				R-squared	=	0.0306	
				Root MSE	=	1.5544	
	waz	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]	
	post	.3369183	.1392186	2.42	0.016	.063663	.6101737
	high	-.12527	.1590334	-0.79	0.431	-.4374174	.1868774
	postXhigh	.4030146	.2128122	1.89	0.059	-.0146887	.8207178
	cons	-.4071923	.1057867	-3.85	0.000	-.6148283	-.1995563

(d)-(e) Again the difference-in-differences estimate is statistically insignificant at 5% as $p = 0.0101 > 0.05$. As expected the cluster-robust standard error is larger.

. regress waz post high postXhigh, vce(cluster idcommunity)

		(Std. err. adjusted for 54 clusters in idcommunity)				
		Robust				
post	.3369183	.1268614	2.66	0.010	.0824667	.59137
high	-.12527	.2134642	-0.59	0.560	-.553425	.302885
postXhigh	.4030146	.2411428	1.67	0.101	-.0806567	.8866858
_cons	-.4071923	.1189238	-3.42	0.001	-.6457233	-.1686613