Road Congestion Tax Example

Trip Time (minutes) = $12.0 + 0.001\ (\text{Volume} - 400) + 0.000015\ (\text{Volume} - 400)^2$

(A)	(B)	(C)	(A) * (C) (D)	$0.10*(D) (E)	$2 + $0.10(B) (F)	(E) + (F) (G)	(H)
Traffic Volume	Trip Time	Increase in Travel Time Per Driver	Increase in Total Travel Time	External Trip Cost	Private Trip Cost	Social Trip Cost	Marginal Benefit-Demand
200	12.0	0	0	0	3.20	3.20	31.10
400	12.0	0	0	0	3.20	3.20	27.44
600	12.8	0.007	4.2	0.42	3.28	3.70	23.78
800	14.8	0.013	10.4	1.04	3.48	4.52	20.12
1000	18.0	0.019	19.0	1.90	3.80	5.70	16.46
1200	22.4	0.025	30.0	3.00	4.24	7.24	12.80
1400	28.0	0.031	43.4	4.34	4.80	9.14	9.14
1600	34.8	0.037	59.2	5.92	5.48	11.40	5.48
1800	42.8	0.043	77.4	7.74	6.28	14.02	1.82
2000	52.0	0.049	98.0	9.80	7.20	17.00	-1.84
			↑ Congestion Externality	↑ Value of Congestion Externality			

Col. A – Vehicle Per Lane Per Hour
Col. B – Minutes
Col. C – Minutes
Col. D – Minutes
Col. E – Dollars
Col. F – Dollars
Col. G – Dollars
Col. H – Dollars

Assumption:
10 mile commute
Time cost = 10 cents/minute
Money cost = 20 cents/mile

Private Market Eq.	Private Trip Cost = Marginal Benefit 1600
Social Opt.	Social Trip Cost = Marginal Benefit 1400
Congestion Tax	Social Trip Cost – Private Trip Cost at 1400 = 9.14 – 4.80 = 4.34
	External Trip Cost at 1400 = $4.34