Chapter 1. The Nature of Econometrics and Economic Data

1 Exercise C1. **Use the data in WAGE1 for this exercise.**

Table 1: Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
prate	1,534	87.363	16.717	3.000	78.025	100.000	100.000
mrate	1,534	0.732	0.780	0.010	0.300	0.830	4.910
totpart	1,534	1,354.231	4,629.265	50	156.2	749.5	58,811
totelg	1,534	1,628.535	5,370.719	51	176	890.5	70,429
age	1,534	13.181	9.171	4	7	18	51
totemp	1,534	3,568.495	11,217.940	58	261	1,804	144,387
sole	1,534	0.488	0.500	0	0	1	1
ltotemp	1,534	6.686	1.453	4.060	5.565	7.498	11.880

2 Exercise C2. Use the data in BWGHT to answer this question.

Table 2: Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
faminc	1,388	29.027	18.739	0.500	14.500	37.500	65.000
cigtax	1,388	19.553	7.796	2.000	15.000	26.000	38.000
cigprice	1,388	130.559	10.244	103.800	122.800	137.000	152.500
bwght	1,388	118.700	20.354	23	107	132	271
fatheduc	1,192	13.186	2.746	1.000	12.000	16.000	18.000
motheduc	1,387	12.936	2.377	2.000	12.000	14.000	18.000
parity	1,388	1.633	0.894	1	1	2	6
male	1,388	0.521	0.500	0	0	1	1
white	1,388	0.785	0.411	0	1	1	1
cigs	1,388	2.087	5.973	0	0	0	50
lbwght	1,388	4.760	0.191	3.135	4.673	4.883	5.602
bwghtlbs	1,388	7.419	1.272	1.438	6.688	8.250	16.938
packs	1,388	0.104	0.299	0	0	0	2
lfaminc	1,388	3.071	0.918	−0.693	2.674	3.624	4.174

Table 3: Descriptive Statistics

Smoker Sample

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
abuse	974	1.000	0.000	1	1	1	1
status	974	2.787	0.581	1	3	3	3
unemrate	974	5.516	1.507	3	4.3	6.4	11
age	974	39.418	9.713	25	31	46	59
educ	974	13.003	2.775	0	12	15	19
married	974	0.776	0.417	0	1	1	1
famsize	974	2.429	1.526	1	1	3	10
white	974	0.869	0.338	0	1	1	1
beertax	974	0.417	0.430	0.045	0.145	0.446	2.370
cigtax	974	18.356	7.103	2	13	23	38
ethanol	974	2.085	0.390	1.035	1.836	2.408	4.017
mothalc	974	0.063	0.242	0	0	0	1
fathalc	974	0.227	0.419	0	0	0	1
livealc	974	0.256	0.436	0	0	1	1
inwf	974	0.915	0.279	0	1	1	1
employ	974	0.873	0.333	0	1	1	1

Non-smoker Sample

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
abuse	8,848	0.000	0.000	0	0	0	0
status	8,848	2.833	0.524	1	3	3	3
unemrate	8,848	5.575	1.505	3	4.3	6.7	11
age	8,848	39.149	9.629	25	31	46	59
educ	8,848	13.343	2.910	0	12	16	19
married	8,848	0.821	0.383	0	1	1	1
famsize	8,848	2.776	1.520	1	1	4	13
white	8,848	0.851	0.356	0	1	1	1
beertax	8,848	0.427	0.445	0.045	0.145	0.446	2.370
cigtax	8,848	17.920	7.271	2	13	23	38
ethanol	8,848	2.030	0.375	1.035	1.798	2.390	4.017
mothalc	8,848	0.038	0.191	0	0	0	1
fathalc	8,848	0.146	0.353	0	0	0	1
livealc	8,848	0.181	0.385	0	0	0	1
inwf	8,848	0.932	0.252	0	1	1	1
employ	8,848	0.901	0.299	0	1	1	1

3 Exercise C3. The data in MEAP01 are for the state of Michigan in the year 2001. Use these data to answer the following questions.

Table 4: Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
dcode	1,823	53,028.270	23,907.060	1,010	33,901.5	77,010	83,070
bcode	1,823	3,394.557	2,442.929	1	1,385.5	5,084.5	8,838
math4	1,823	71.909	19.954	0.000	61.600	87.000	100.000
read4	1,823	60.062	19.147	0.000	48.900	73.900	100.000
lunch	1,823	39.252	26.417	0.000	16.615	59.065	100.000
enroll	1,823	401.936	169.826	62	287	484	1,496
expend	1,823	2,036,984.000	864,936.100	275,985	1,474,465	2,407,636.0	7,665,998
exppp	1,823	5,194.865	1,091.890	1,206.882	4,501.542	5,767.142	11,957.640
lenroll	1,823	5.911	0.420	4.127	5.659	6.182	7.311
lexpend	1,823	14.444	0.412	12.528	14.204	14.694	15.852
lexppp	1,823	8.533	0.215	7.096	8.412	8.660	9.389

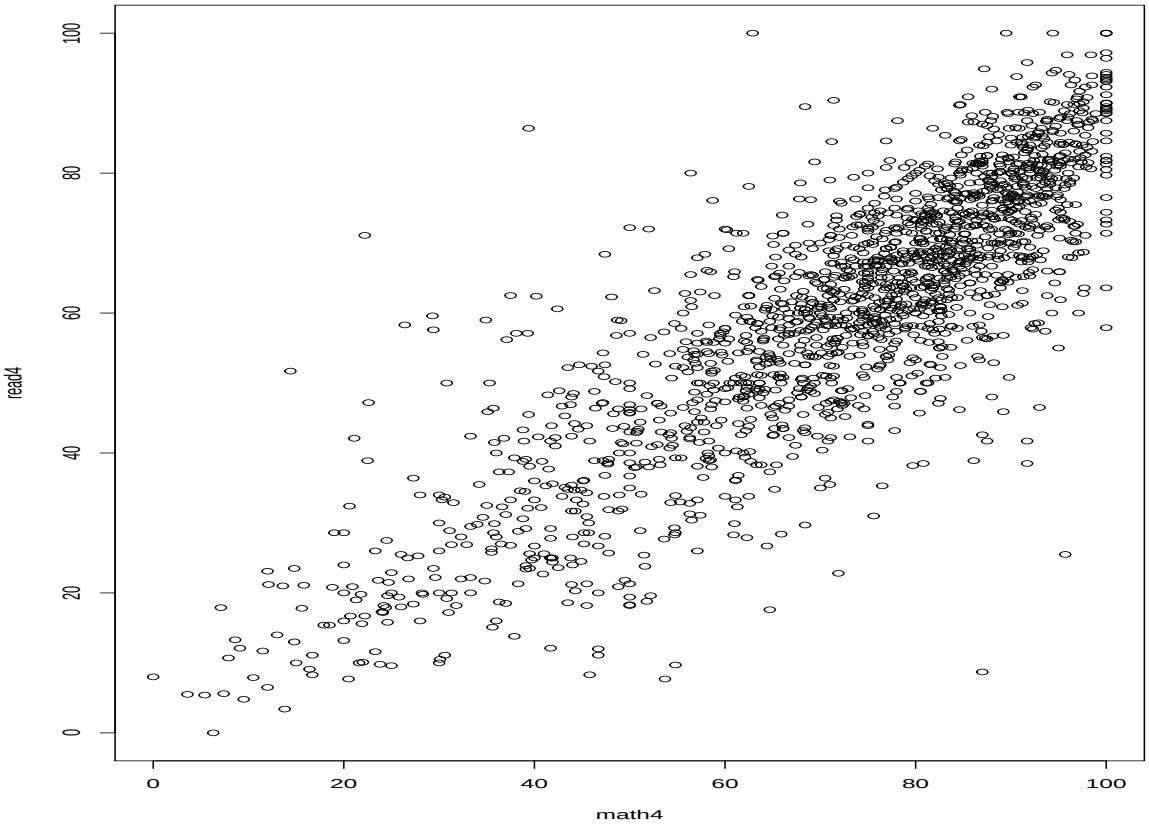

Figure 1: Scatter Plot: Math and Reading Test Pass Rates

Table 5: Descriptive Statistics

Math Pass Rate : 100%

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
dcode	38	52,828.820	20,235.510	5,010	41,095	63,232.5	82,390
bcode	38	3,418.132	1,924.735	329	2,076.2	4,748.8	7,446
math4	38	100.000	0.000	100	100	100	100
read4	38	86.266	9.802	58	81.4	93.3	100
lunch	38	34.029	26.865	0.710	7.682	51.965	89.330
enroll	38	284.895	123.227	121	179.2	370.5	587
expend	38	1,678,373.000	676,213.700	684,995	1,140,956.0	2,201,116.0	2,959,542
exppp	38	6,022.626	1,019.272	4,047.824	5,447.684	6,642.264	8,220.950
lenroll	38	5.561	0.437	4.796	5.189	5.915	6.375
lexpend	38	14.251	0.421	13.437	13.947	14.604	14.901
lexppp	38	8.690	0.166	8.306	8.603	8.801	9.014

Math Pass Rate : 50%

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
dcode	17	64,092.710	25,696.720	7,020	63,030	82,010	82,941
bcode	17	3,573.235	2,993.443	33	1,366	5,784	8,741
math4	17	50.000	0.000	50	50	50	50
read4	17	40.212	14.647	18.200	35.000	46.900	72.200
lunch	17	54.774	27.046	3.440	42.000	80.270	93.860
enroll	17	375.882	147.338	94	277	483	650
expend	17	1,822,202.000	943,257.000	275,985	991,466	2,175,571	3,807,298
exppp	17	4,764.343	1,453.243	2,052.725	3,733.068	5,740.293	7,307.674
lenroll	17	5.832	0.499	4.543	5.624	6.180	6.477
lexpend	17	14.253	0.651	12.528	13.807	14.593	15.152
lexppp	17	8.421	0.330	7.627	8.225	8.655	8.897

Table 6: Correlation Matrix

	math4	read4
math4	1	0.843
read4	0.843	1

4 Exercise C4. **The data in JTRAIN2 come from a job training experiment conducted for low-income men during 1976-1977; see Lalonde (1986).**

Table 7: Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
train	445	0.416	0.493	0	0	1	1
age	445	25.371	7.100	17	20	28	55
educ	445	10.196	1.792	3	9	11	16
black	445	0.834	0.373	0	1	1	1
hisp	445	0.088	0.283	0	0	0	1
married	445	0.169	0.375	0	0	0	1
nodegree	445	0.782	0.413	0	1	1	1
mosinex	445	18.124	5.312	5	14	23	24
re74	445	2.102	5.364	0	0	0.8	40
re75	445	1.377	3.151	0	0	1.2	25
re78	445	5.301	6.631	0.000	0.000	8.125	60.308
unem74	445	0.733	0.443	0	0	1	1
unem75	445	0.649	0.478	0	0	1	1
unem78	445	0.308	0.462	0	0	1	1
agesq	445	693.978	429.782	289	400	784	3,025
mostrn	445	7.688	9.656	0	0	15	24

Table 8: Descriptive Statistics

Trainee Samples

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
train	185	1.000	0.000	1	1	1	1
age	185	25.816	7.155	17	20	29	48
educ	185	10.346	2.011	4	9	12	16
black	185	0.843	0.365	0	1	1	1
hisp	185	0.059	0.237	0	0	0	1
married	185	0.189	0.393	0	0	0	1
nodegree	185	0.708	0.456	0	0	1	1
mosinex	185	18.492	4.911	6	14	22	24
re74	185	2.096	4.887	0	0	1.3	35
re75	185	1.532	3.219	0	0	1.8	25
re78	185	6.349	7.867	0.000	0.485	9.643	60.308
unem74	185	0.708	0.456	0	0	1	1
unem75	185	0.600	0.491	0	0	1	1
unem78	185	0.243	0.430	0	0	0	1
agesq	185	717.395	431.252	289	400	841	2,304
mostrn	185	18.492	4.911	6	14	22	24

Non-trainees Sample

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
train	260	0.000	0.000	0	0	0	0
age	260	25.054	7.058	17	19	28	55
educ	260	10.088	1.614	3	9	11	14
black	260	0.827	0.379	0	1	1	1
hisp	260	0.108	0.311	0	0	0	1
married	260	0.154	0.361	0	0	0	1
nodegree	260	0.835	0.372	0	1	1	1
mosinex	260	17.862	5.574	5	14	23	24
re74	260	2.107	5.688	0	0	0.1	40
re75	260	1.267	3.103	0	0	0.7	23
re78	260	4.555	5.484	0	0	7.3	39
unem74	260	0.750	0.434	0	0.8	1	1
unem75	260	0.685	0.466	0	0	1	1
unem78	260	0.354	0.479	0	0	1	1
agesq	260	677.315	428.784	289	361	784	3,025
mostrn	260	0.000	0.000	0	0	0	0

5 Exercise C5. **The data in FERTIL2 were collected on women living in the Republic of Botswana in 1988. The variable *children* refers to the number of living children. The variable *electric* is a binary indicator equal to one if the woman's home has electricity, and zero if not.**

Table 9: Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
mnthborn	4,361	6.331	3.323	1	3	9	12
yearborn	4,361	60.434	8.683	38	55	68	73
age	4,361	27.405	8.685	15	20	33	49
electric	4,358	0.140	0.347	0.000	0.000	0.000	1.000
radio	4,359	0.702	0.458	0.000	0.000	1.000	1.000
tv	4,359	0.093	0.290	0.000	0.000	0.000	1.000
bicycle	4,358	0.276	0.447	0.000	0.000	1.000	1.000
educ	4,361	5.856	3.927	0	3	8	20
ceb	4,361	2.442	2.407	0	1	4	13
agefbrth	3,273	19.011	3.092	10.000	17.000	20.000	38.000
children	4,361	2.268	2.222	0	0	4	13
knowmeth	4,354	0.963	0.188	0.000	1.000	1.000	1.000
usemeth	4,290	0.578	0.494	0.000	0.000	1.000	1.000
monthfm	2,079	6.270	3.620	1.000	3.000	9.000	12.000
yearfm	2,079	76.912	7.760	50.000	72.000	83.000	88.000
agefm	2,079	20.686	5.002	10.000	17.000	23.000	46.000
idlnchld	4,241	4.616	2.219	0.000	3.000	6.000	20.000
heduc	1,956	5.145	4.803	0.000	0.000	8.000	20.000
agesq	4,361	826.460	526.923	225	400	1,089	2,401
urban	4,361	0.517	0.500	0	0	1	1
urb_educ	4,361	3.469	4.294	0	0	7	20
spirit	4,361	0.422	0.494	0	0	1	1
protest	4,361	0.228	0.419	0	0	0	1
catholic	4,361	0.102	0.303	0	0	0	1
frsthalf	4,361	0.540	0.498	0	0	1	1
educ0	4,361	0.208	0.406	0	0	0	1
evermarr	4,361	0.477	0.500	0	0	1	1

Table 10: Descriptive Statistics

With Electricity Sample

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
mnthborn	611	6.768	3.305	1	4	9	12
yearborn	611	59.440	8.599	38	54	66	73
age	611	28.370	8.617	15	21	34	49
electric	611	1.000	0.000	1	1	1	1
radio	611	0.849	0.358	0	1	1	1
tv	611	0.476	0.500	0	0	1	1
bicycle	609	0.360	0.480	0.000	0.000	1.000	1.000
educ	611	8.763	3.999	0	7	12	20
ceb	611	2.003	1.916	0	0	3	10
agefbrth	457	20.162	3.574	11.000	17.000	22.000	35.000
children	611	1.899	1.803	0	0	3	9
knowmeth	611	0.985	0.121	0	1	1	1
usemeth	605	0.724	0.447	0.000	0.000	1.000	1.000
monthfm	340	6.056	3.631	1.000	3.000	9.000	12.000
yearfm	340	76.641	7.346	56.000	72.000	83.000	88.000
agefm	340	21.006	4.590	11.000	18.000	24.000	46.000
idlnchld	600	3.913	1.776	0.000	3.000	4.000	20.000

Without Electricity Sample

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
mnthborn	3,747	6.262	3.321	1	3	9	12
yearborn	3,747	60.596	8.687	38	55	68	73
age	3,747	27.247	8.688	15	20	33	49
electric	3,747	0.000	0.000	0	0	0	0
radio	3,746	0.678	0.467	0.000	0.000	1.000	1.000
tv	3,747	0.030	0.172	0	0	0	1
bicycle	3,747	0.262	0.440	0	0	1	1
educ	3,747	5.382	3.705	0	2	7	17
ceb	3,747	2.513	2.470	0	1	4	13
agefbrth	2,813	18.825	2.967	10.000	17.000	20.000	38.000
children	3,747	2.328	2.277	0	0	4	13
knowmeth	3,740	0.960	0.196	0.000	1.000	1.000	1.000
usemeth	3,682	0.554	0.497	0.000	0.000	1.000	1.000
monthfm	1,736	6.313	3.615	1.000	3.000	9.000	12.000
yearfm	1,736	76.961	7.838	50.000	72.000	84.000	88.000
agefm	1,736	20.626	5.082	10.000	17.000	23.000	46.000
idlnchld	3,639	4.732	2.264	0.000	4.000	6.000	20.000

6 Exercise C6. Use the data in COUNTYMURDERS to answer this question. Use only the year 1996. The variable *murders* is the number of murders reported in the county. The variable *execs* is the number of executions that took place of people sentenced to death in the given county. Most states in the United States have the death penalty, but several do not.

Table 11: Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
arrests	36,845	6.782	50.129	0.000	0.000	3.000	2,391.000
countyid	37,349	32,921.930	15,528.350	1,001	20,105	48,049	56,045
density	37,349	252.241	1,663.768	0.050	17.682	106.600	54,058.770
popul	37,349	89,343.540	271,854.500	85	13,144	66,480	9,127,751
perc1019	37,349	15.583	1.973	7.080	14.320	16.730	30.485
perc2029	37,349	14.585	3.696	5.617	12.302	16.200	40.520
percblack	37,349	7.823	13.287	0.000	0.200	8.740	86.279
percmale	37,349	43.351	3.718	35.150	40.900	45.870	78.040
rpcincmaint	37,346	165.451	97.489	5.490	96.250	209.880	1,306.496
rpcpersinc	37,346	11,272.290	2,680.747	3,477.760	9,598.403	12,425.630	41,094.220
rpcunemins	37,346	70.558	52.909	0.000	35.200	89.958	642.730
year	37,349	1,988.000	4.899	1,980	1,984	1,992	1,996
murders	37,349	7.287	47.218	0	0	3	1,944
murdrate	37,349	0.508	0.851	0.000	0.000	0.735	39.841
arrestrate	36,845	0.511	1.233	0.000	0.000	0.702	148.658
statefips	37,349	32.822	15.504	1	20	48	56
countyfips	37,349	100.352	107.943	1	33	127	840
execs	37,349	0.007	0.112	0	0	0	7
lpopul	37,349	10.347	1.327	4.443	9.484	11.105	16.027
execrate	37,349	0.001	0.029	0	0	0	2

Table 12: Correlation Matrix

	murders	execs
murders	1	0.156
execs	0.156	1

7 Exercise C7. The data set in ALCOHOL contains information on a sample of men in the United States. Two key variables are self-reported employment status and alcohol abuse (along with many other variables). The variables *employ* and *abuse* are both binary, or indicator, variables: they take on only the values zero and one.

Table 13: Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
abuse	9,822	0.099	0.299	0	0	0	1
status	9,822	2.829	0.530	1	3	3	3
unemrate	9,822	5.569	1.505	3	4.3	6.7	11
age	9,822	39.176	9.638	25	31	46	59
educ	9,822	13.310	2.899	0	12	16	19
married	9,822	0.816	0.387	0	1	1	1
famsize	9,822	2.741	1.524	1	1	4	13
white	9,822	0.853	0.354	0	1	1	1
exhealth	9,822	0.416	0.493	0	0	1	1
vghealth	9,822	0.302	0.459	0	0	1	1
goodhealth	9,822	0.205	0.404	0	0	0	1
fairhealth	9,822	0.053	0.225	0	0	0	1
northeast	9,822	0.203	0.402	0	0	0	1
midwest	9,822	0.266	0.442	0	0	1	1
south	9,822	0.318	0.466	0	0	1	1
centcity	9,822	0.333	0.471	0	0	1	1
outercity	9,822	0.435	0.496	0	0	1	1
qrt1	9,822	0.255	0.436	0	0	1	1
qrt2	9,822	0.253	0.435	0	0	1	1
qrt3	9,822	0.243	0.429	0	0	0	1
beertax	9,822	0.426	0.444	0.045	0.145	0.446	2.370
cigtax	9,822	17.963	7.255	2	13	23	38
ethanol	9,822	2.036	0.377	1.035	1.798	2.390	4.017
mothalc	9,822	0.040	0.197	0	0	0	1
fathalc	9,822	0.154	0.361	0	0	0	1
livealc	9,822	0.188	0.391	0	0	0	1
inwf	9,822	0.930	0.255	0	1	1	1
employ	9,822	0.898	0.302	0	1	1	1
agesq	9,822	1,627.612	797.412	625	961	2,116	3,481
beertaxsq	9,822	0.378	0.892	0.002	0.021	0.199	5.617
cigtaxsq	9,822	375.312	274.573	4	169	529	1,444
ethanolsq	9,822	4.286	1.704	1.071	3.231	5.714	16.134
educsq	9,822	185.548	74.360	0	144	256	361

Table 14: Descriptive Statistics

Alcohol Abuse Sample

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
abuse	974	1.000	0.000	1	1	1	1
status	974	2.787	0.581	1	3	3	3
unemrate	974	5.516	1.507	3	4.3	6.4	11
age	974	39.418	9.713	25	31	46	59
educ	974	13.003	2.775	0	12	15	19
married	974	0.776	0.417	0	1	1	1
famsize	974	2.429	1.526	1	1	3	10
white	974	0.869	0.338	0	1	1	1
exhealth	974	0.353	0.478	0	0	1	1
vghealth	974	0.318	0.466	0	0	1	1
goodhealth	974	0.234	0.424	0	0	0	1
fairhealth	974	0.066	0.248	0	0	0	1
beertax	974	0.417	0.430	0.045	0.145	0.446	2.370
cigtax	974	18.356	7.103	2	13	23	38
ethanol	974	2.085	0.390	1.035	1.836	2.408	4.017
mothalc	974	0.063	0.242	0	0	0	1
fathalc	974	0.227	0.419	0	0	0	1
livealc	974	0.256	0.436	0	0	1	1
inwf	974	0.915	0.279	0	1	1	1
employ	974	0.873	0.333	0	1	1	1

Non-alcohol Abuse Sample

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
abuse	8,848	0.000	0.000	0	0	0	0
status	8,848	2.833	0.524	1	3	3	3
unemrate	8,848	5.575	1.505	3	4.3	6.7	11
age	8,848	39.149	9.629	25	31	46	59
educ	8,848	13.343	2.910	0	12	16	19
married	8,848	0.821	0.383	0	1	1	1
famsize	8,848	2.776	1.520	1	1	4	13
white	8,848	0.851	0.356	0	1	1	1
exhealth	8,848	0.423	0.494	0	0	1	1
vghealth	8,848	0.300	0.458	0	0	1	1
goodhealth	8,848	0.202	0.402	0	0	0	1
fairhealth	8,848	0.052	0.222	0	0	0	1
beertax	8,848	0.427	0.445	0.045	0.145	0.446	2.370
cigtax	8,848	17.920	7.271	2	13	23	38
ethanol	8,848	2.030	0.375	1.035	1.798	2.390	4.017
mothalc	8,848	0.038	0.191	0	0	0	1
fathalc	8,848	0.146	0.353	0	0	0	1
livealc	8,848	0.181	0.385	0	0	0	1
inwf	8,848	0.932	0.252	0	1	1	1
employ	8,848	0.901	0.299	0	1	1	1