Notes:
1. Unicode is supported; see help unicode_advice.

```
 1 . use "C:\Users\u1266283\Downloads\ca6b.dta"

 2 . log using "M:\Master\Methods Econometrics I\Log-file CA6b.smcl"
-------------------------------------------------------------------------------
      name:  <unnamed>
       log:  M:\Master\Methods Econometrics I\Log-file CA6b.smcl
  log type:  smcl
 opened on:   7 Oct 2017, 14:11:12

 3 . do "C:\Users\u1266283\AppData\Local\Temp\STD00000000.tmp"

 4 . * Computer Asssignment 6b
 5 .
 6 . use "C:\Users\u1266283\Downloads\ca6b.dta", clear

 7 . xtset route week
       panel variable:  route (unbalanced)
        time variable:  week, 1 to 52, but with gaps
                delta:  1 unit

 8 .
 9 . * First
10 . reg residual_weight i.treatment##c.sorting i.week i.route, cluster(route)
note: 513.route omitted because of collinearity

Linear regression                               Number of obs     =      3,340
                                                F(52, 64)         =          .
                                                Prob > F          =          .
                                                R-squared         =     0.6969
                                                Root MSE          =     .93823

                                   (Std. Err. adjusted for 65 clusters in route)
------------------------------------------------------------------------------
             |               Robust
residual_wei |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   1.treatment |  -.0989032   .4392877    -0.23   0.823    -.9764813    .7786749
       sorting |   .0636891   .0050957    12.50   0.000     .0535093    .0738688
               |
treatment#c.s~g |
             1 |  -.0156784   .0071413    -2.20   0.032    -.0299448    -.001412
               |
          week |
             2 |  -.2166118   .1354263    -1.60   0.115    -.4871569    .0539333
             3 |  -.3043042    .129918    -2.34   0.022    -.5638452   -.0447631
             4 |  -.0283859   .1529629    -0.19   0.853    -.3339645    .2771926
             5 |   .0242739   .1622879     0.15   0.882    -.2999334    .3484812
             6 |  -.1770766   .1605659    -1.10   0.274    -.4978438    .1436906
```

7	-.310458	.1721763	-1.80	0.076	-.6544196	.0335036
8	.2102509	.1247598	1.69	0.097	-.0389855	.4594873
9	-.0627657	.1429286	-0.44	0.662	-.3482985	.2227671
10	-.2289196	.1619611	-1.41	0.162	-.5524742	.094635
11	-.5201101	.1759793	-2.96	0.004	-.8716692	-.168551
12	-.523187	.1639535	-3.19	0.002	-.8507219	-.1956522
13	-1.010879	.2065284	-4.89	0.000	-1.423467	-.5982915
14	-.7263743	.1515421	-4.79	0.000	-1.029114	-.4236342
15	-.6567254	.1537837	-4.27	0.000	-.9639436	-.3495072
16	-1.356645	.2221265	-6.11	0.000	-1.800393	-.9128959
17	-.3338301	.2017957	-1.65	0.103	-.7369633	.0693032
18	.9626169	.1789476	5.38	0.000	.605128	1.320106
19	-.5564898	.1543261	-3.61	0.001	-.8647916	-.2481879
20	-.9917067	.1499899	-6.61	0.000	-1.291346	-.6920674
21	-1.273276	.1385675	-9.19	0.000	-1.550096	-.9964552
22	-1.22049	.1499966	-8.14	0.000	-1.520142	-.9208371
23	-.8962424	.1676484	-5.35	0.000	-1.231159	-.5613262
24	-1.531012	.1671013	-9.16	0.000	-1.864835	-1.197188
25	-.7002424	.1438654	-4.87	0.000	-.9876466	-.4128381
26	-.6836951	.1515029	-4.51	0.000	-.986357	-.3810332
27	.2975357	.1702023	1.75	0.085	-.0424824	.6375538
28	-.3861566	.1678999	-2.30	0.025	-.7215753	-.0507379
29	-.706772	.1457547	-4.85	0.000	-.9979505	-.4155935
30	-1.095273	.1641909	-6.67	0.000	-1.423282	-.7672641
31	-.5758686	.2864145	-2.01	0.049	-1.148047	-.0036899
32	.9324472	.2051409	4.55	0.000	.522631	1.342263
33	-.0134268	.1654309	-0.08	0.936	-.3439132	.3170595
34	-1.766246	.2609041	-6.77	0.000	-2.287462	-1.24503
35	.1484254	.2233931	0.66	0.509	-.2978537	.5947045
36	-.0306515	.1980557	-0.15	0.877	-.4263132	.3650103
37	-.2700361	.1627684	-1.66	0.102	-.5952033	.0551311
38	-1.180291	.2705267	-4.36	0.000	-1.72073	-.6398516
39	.060002	.2141401	0.28	0.780	-.367792	.4877959
40	-.2871694	.1507355	-1.91	0.061	-.5882981	.0139593
41	-.5622464	.1473759	-3.82	0.000	-.8566636	-.2678293
42	-.5745595	.1701079	-3.38	0.001	-.9143891	-.23473
43	-.2034826	.1588363	-1.28	0.205	-.5207946	.1138294
44	-.504362	.1556025	-3.24	0.002	-.8152137	-.1935104
45	-.3153358	.1747621	-1.80	0.076	-.6644632	.0337917
46	-.536165	.15762	-3.40	0.001	-.8510471	-.2212829
47	-1.366252	.1585178	-8.62	0.000	-1.682928	-1.049576
48	-1.153636	.1753291	-6.58	0.000	-1.503897	-.8033763
49	-1.216406	.1492807	-8.15	0.000	-1.514628	-.9181833
50	-1.484713	.1616093	-9.19	0.000	-1.807565	-1.161862
51	-.9043879	.1894976	-4.77	0.000	-1.282953	-.5258229
52	-.1317252	.1869627	-0.70	0.484	-.5052261	.2417758
route						
102	-.0858635	.0422455	-2.03	0.046	-.1702586	-.0014684
103	-2.152287	.0288336	-74.65	0.000	-2.209889	-2.094686
104	2.461553	.0239303	102.86	0.000	2.413747	2.509359
105	-.2112652	.0324648	-6.51	0.000	-.2761212	-.1464093
106	1.381107	.0463103	29.82	0.000	1.288591	1.473622
107	-.3133413	.0174496	-17.96	0.000	-.348201	-.2784817
108	1.936837	.0416011	46.56	0.000	1.853729	2.019945
109	-.9909962	.0199107	-49.77	0.000	-1.030772	-.95122
110	.8631143	.0438131	19.70	0.000	.7755875	.9506411
111	1.065929	.0350872	30.38	0.000	.9958339	1.136023
112	1.158513	.0163977	70.65	0.000	1.125755	1.191271
113	1.248999	.0228122	54.75	0.000	1.203426	1.294571
201	1.029839	.0139251	73.96	0.000	1.002021	1.057658
202	.232375	.0272546	8.53	0.000	.1779277	.2868222
203	1.388236	.0439253	31.60	0.000	1.300485	1.475987
204	.5254793	.0378132	13.90	0.000	.4499388	.6010199
205	.8322548	.0490359	16.97	0.000	.7342943	.9302154
206	-.496078	.0191143	-25.95	0.000	-.5342632	-.4578928
207	1.709724	.0482857	35.41	0.000	1.613263	1.806186

208	-1.039059	.0407154	-25.52	0.000	-1.120397	-.9577202
209	.5636402	.0376776	14.96	0.000	.4883705	.6389099
210	1.89897	.0293845	64.62	0.000	1.840268	1.957673
211	-.9179611	.0263837	-34.79	0.000	-.9706686	-.8652536
212	-1.795245	.0237279	-75.66	0.000	-1.842647	-1.747843
213	.7791741	.0325764	23.92	0.000	.7140953	.8442529
301	.9917637	.0091946	107.86	0.000	.9733954	1.010132
302	1.946743	.0307979	63.21	0.000	1.885218	2.008269
303	1.942169	.035492	54.72	0.000	1.871266	2.013073
304	2.014915	.0382052	52.74	0.000	1.938591	2.091239
305	1.432766	.0442563	32.37	0.000	1.344354	1.521178
306	2.75265	.0431798	63.75	0.000	2.666389	2.838912
307	2.351272	.019952	117.85	0.000	2.311414	2.391131
308	2.490368	.0286509	86.92	0.000	2.433131	2.547605
309	1.897478	.0119384	158.94	0.000	1.873628	1.921327
310	1.652261	.0236377	69.90	0.000	1.605039	1.699483
311	.6050729	.0166471	36.35	0.000	.5718163	.6383294
312	1.443243	.0206312	69.95	0.000	1.402028	1.484459
313	.0145123	.0331966	0.44	0.663	-.0518055	.08083
401	.9188142	.0103727	88.58	0.000	.8980924	.939536
402	-.0224883	.0439858	-0.51	0.611	-.1103599	.0653834
403	.649032	.0276457	23.48	0.000	.5938034	.7042606
404	-1.407749	.020995	-67.05	0.000	-1.449692	-1.365807
405	.4413003	.0523524	8.43	0.000	.3367143	.5458862
406	-.3713865	.0294401	-12.61	0.000	-.4301998	-.3125731
407	.5716259	.0273279	20.92	0.000	.5170323	.6262196
408	.1604793	.0378132	4.24	0.000	.0849388	.2360199
409	.5377596	.0272546	19.73	0.000	.4833123	.5922069
410	.9426204	.0111425	84.60	0.000	.9203608	.9648801
411	.0835189	.0336593	2.48	0.016	.0162767	.1507611
412	-.8500019	.0341067	-24.92	0.000	-.9181378	-.7818661
413	1.055234	.0429198	24.59	0.000	.969492	1.140976
501	-.5887482	.0132506	-44.43	0.000	-.6152193	-.5622772
502	-1.985886	.0272738	-72.81	0.000	-2.040372	-1.931401
503	.7134397	.0404739	17.63	0.000	.6325839	.7942955
504	.9814208	.0302796	32.41	0.000	.9209304	1.041911
505	.2103041	.038254	5.50	0.000	.1338829	.2867254
506	.4338051	.0192365	22.55	0.000	.3953757	.4722345
507	1.010869	.0564116	17.92	0.000	.8981741	1.123564
508	.7845883	.0157901	49.69	0.000	.753044	.8161326
509	.0415982	.0216966	1.92	0.060	-.0017458	.0849422
510	.6204881	.0395542	15.69	0.000	.5414694	.6995068
511	.6660399	.0377089	17.66	0.000	.5907077	.7413722
512	1.133823	.0348416	32.54	0.000	1.064219	1.203427
513	0	(omitted)				
_cons	5.974249	.3303624	18.08	0.000	5.314274	6.634223

11 . margins, eydx(treatment)

Average marginal effects Number of obs = **3,340**
Model VCE : **Robust**

Expression : **Linear prediction, predict()**
ey/dx w.r.t. : **1.treatment**

	ey/dx	Delta-method Std. Err.	t	P>|t|	[95% Conf.	Interval]
1.treatment	-.1126958	.0077243	-14.59	0.000	-.128127	-.0972647

Note: ey/dx for factor levels is the discrete change from the base level.

```
12 .
13 . * Second
14 . margins, over(sorting) dydx(treatment)

Average marginal effects                        Number of obs     =      3,340
Model VCE    : Robust

Expression   : Linear prediction, predict()
dy/dx w.r.t. : 1.treatment
over         : sorting
```

	dy/dx	Delta-method Std. Err.	t	P>|t|	[95% Conf.	Interval]
1.treatment						
sorting						
43	-.7730748	.1447158	-5.34	0.000	-1.062178	-.4839718
44	-.7887532	.138513	-5.69	0.000	-1.065465	-.5120417
45	-.8044316	.1324048	-6.08	0.000	-1.068941	-.5399226
47	-.8357885	.1205297	-6.93	0.000	-1.076574	-.5950028
48	-.8514669	.114798	-7.42	0.000	-1.080802	-.6221316
49	-.8671453	.1092325	-7.94	0.000	-1.085362	-.6489283
51	-.8985021	.0987121	-9.10	0.000	-1.095702	-.7013021
52	-.9141805	.0938255	-9.74	0.000	-1.101619	-.7267425
53	-.9298589	.0892434	-10.42	0.000	-1.108143	-.7515747
54	-.9455373	.0850149	-11.12	0.000	-1.115374	-.7757005
55	-.9612157	.0811954	-11.84	0.000	-1.123422	-.7990094
57	-.9925726	.0750265	-13.23	0.000	-1.142455	-.84269
58	-1.008251	.0728018	-13.85	0.000	-1.153689	-.8628126
59	-1.023929	.0712266	-14.38	0.000	-1.166221	-.8816378
60	-1.039608	.0703446	-14.78	0.000	-1.180137	-.8990783
61	-1.055286	.0701818	-15.04	0.000	-1.19549	-.9150819
62	-1.070965	.0707432	-15.14	0.000	-1.21229	-.9296388
63	-1.086643	.072012	-15.09	0.000	-1.230503	-.9427826
64	-1.102321	.0739516	-14.91	0.000	-1.250057	-.9545862
65	-1.118	.076511	-14.61	0.000	-1.270848	-.9651515
66	-1.133678	.0796307	-14.24	0.000	-1.292759	-.9745977
67	-1.149357	.0832475	-13.81	0.000	-1.315663	-.9830507
68	-1.165035	.0872997	-13.35	0.000	-1.339436	-.9906339
69	-1.180713	.0917297	-12.87	0.000	-1.363965	-.9974624
73	-1.243427	.1122794	-11.07	0.000	-1.467731	-1.019123

```
Note: dy/dx for factor levels is the discrete change from the base level.

15 . marginsplot

  Variables that uniquely identify margins: sorting

16 .
17 . * Third
18 . gen low=(sorting<57)

19 . gen medium1=(sorting>=57&sorting<=61)
```

```
20 . gen medium2=(sorting>61&sorting<=64)

21 . gen high=(sorting>64)

22 . gen treatment_low=treatment*low

23 . gen treatment_medium1=treatment*medium1

24 . gen treatment_medium2=treatment*medium2

25 . gen treatment_high=treatment*high

26 . xtreg residual_weight treatment_low treatment_medium1 treatment_medium2 treatment_high i.week, f

Fixed-effects (within) regression               Number of obs      =       3,340
Group variable: route                           Number of groups   =          65

R-sq:                                           Obs per group:
     within  = 0.4363                                         min =          47
     between = 0.0205                                         avg =        51.4
     overall = 0.2433                                         max =          52

                                                F(55,64)           =      331.87
corr(u_i, Xb)  = -0.0041                        Prob > F           =      0.0000

                                        (Std. Err. adjusted for 65 clusters in route)
```

residual_weight	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
treatment_low	-.7712423	.1070076	-7.21	0.000	-.9850144	-.5574701
treatment_medium1	-1.228429	.1094536	-11.22	0.000	-1.447088	-1.009771
treatment_medium2	-1.017307	.1053559	-9.66	0.000	-1.227779	-.8068341
treatment_high	-1.062527	.0913482	-11.63	0.000	-1.245016	-.8800383
week						
2	-.2174076	.1340479	-1.62	0.110	-.4851991	.0503839
3	-.3051	.1287197	-2.37	0.021	-.5622471	-.0479528
4	-.0296409	.1514318	-0.20	0.845	-.3321608	.272879
5	.022763	.1607474	0.14	0.888	-.2983669	.3438929
6	-.1761365	.1590593	-1.11	0.272	-.4938941	.141621
7	-.3112538	.1704972	-1.83	0.073	-.6518612	.0293536
8	.2113352	.1234187	1.71	0.092	-.035222	.4578923
9	-.0635615	.1414857	-0.45	0.655	-.3462117	.2190887
10	-.2297154	.1604525	-1.43	0.157	-.5502562	.0908254
11	-.5243192	.1744597	-3.01	0.004	-.8728426	-.1757958
12	-.5273961	.1627121	-3.24	0.002	-.8524508	-.2023413
13	-1.015088	.2046198	-4.96	0.000	-1.423864	-.6063133
14	-.730008	.1505402	-4.85	0.000	-1.030747	-.4292694
15	-.6619315	.1520188	-4.35	0.000	-.965624	-.358239
16	-1.359717	.2199961	-6.18	0.000	-1.79921	-.9202247
17	-.3358127	.2003033	-1.68	0.099	-.7359645	.0643391
18	.9614326	.1770617	5.43	0.000	.6077111	1.315154
19	-.5573476	.1529004	-3.65	0.001	-.8628012	-.251894
20	-.9928523	.1490083	-6.66	0.000	-1.290531	-.6951739
21	-1.274405	.1368598	-9.31	0.000	-1.547814	-1.000996
22	-1.221348	.1488084	-8.21	0.000	-1.518627	-.9240687
23	-.8930231	.1653569	-5.40	0.000	-1.223361	-.5626849
24	-1.527792	.1654152	-9.24	0.000	-1.858247	-1.197338
25	-.6970231	.141437	-4.93	0.000	-.979576	-.4144701
26	-.6799337	.1493829	-4.55	0.000	-.9783603	-.3815071
27	.3012971	.1675587	1.80	0.077	-.0334398	.636034
28	-.3823952	.1661021	-2.30	0.025	-.7142222	-.0505682
29	-.7030106	.1440093	-4.88	0.000	-.9907022	-.415319
30	-1.094413	.1623445	-6.74	0.000	-1.418734	-.7700925
31	-.5730799	.2838882	-2.02	0.048	-1.140212	-.0059479
32	.9340677	.2030926	4.60	0.000	.5283435	1.339792

33	-.0125668	.1632873	-0.08	0.939	-.3387707	.313637
34	-1.768026	.2585498	-6.84	0.000	-2.284539	-1.251514
35	.14966	.221817	0.67	0.502	-.2934703	.5927904
36	-.0294169	.1967298	-0.15	0.882	-.4224298	.363596
37	-.2688015	.1614603	-1.66	0.101	-.5913555	.0537525
38	-1.187285	.2686437	-4.42	0.000	-1.723963	-.6506077
39	.0558756	.2124533	0.26	0.793	-.3685486	.4802997
40	-.2918424	.1501049	-1.94	0.056	-.5917114	.0080267
41	-.5669194	.1468571	-3.86	0.000	-.8603002	-.2735386
42	-.5763357	.1684848	-3.42	0.001	-.9129228	-.2397486
43	-.2052588	.1574545	-1.30	0.197	-.5198102	.1092927
44	-.5053984	.154226	-3.28	0.002	-.8135002	-.1972966
45	-.3162407	.1729904	-1.83	0.072	-.6618287	.0293473
46	-.5394052	.1558327	-3.46	0.001	-.8507168	-.2280936
47	-1.368028	.1569918	-8.71	0.000	-1.681655	-1.054401
48	-1.155413	.1735672	-6.66	0.000	-1.502153	-.8086722
49	-1.218182	.1477321	-8.25	0.000	-1.513311	-.9230531
50	-1.48649	.1599455	-9.29	0.000	-1.806018	-1.166962
51	-.9051964	.1878535	-4.82	0.000	-1.280477	-.5299158
52	-.1318723	.1851213	-0.71	0.479	-.5016946	.23795
_cons	10.39473	.1251296	83.07	0.000	10.14475	10.6447
sigma_u	1.1438288					
sigma_e	.93666454					
rho	.59859697	(fraction of variance due to u_i)				

```
27 .
28 . gen coeff=.
   (3,376 missing values generated)

29 . replace coeff=_b[treatment_low] if sorting==49
   (52 real changes made)

30 . replace coeff=_b[treatment_medium1] if sorting==59
   (260 real changes made)

31 . replace coeff=_b[treatment_medium2] if sorting==63
   (155 real changes made)

32 . replace coeff=_b[treatment_high] if sorting==66
   (208 real changes made)

33 . sort sorting

34 . graph twoway (scatter coeff sorting) (line coeff sorting)

35 .
   end of do-file

36 .
```