(R)
Statistics/Data Analysis

User: Mark R. Beissinger
Project: The Revolutionary City

```
      name:  <unnamed>
       log:  C:\Users\mbeissin\Desktop\Stata files for book\Logfiles\chapter6.log
  log type:  text
 opened on:  25 Jan 2022, 22:13:53

 1 . * ================================================================================
 2 . * STATISTICAL RESULTS APPEARING IN CHAPTER 6
 3 . * STATA Do file for Chapter 6
 4 . * Results reported in Chapter 6
 5 . * Author: Mark R. Beissinger
 6 . * Date:  January 2022
 7 . * Princeton, NJ
 8 . * ================================================================================
 9 . * BEFORE RUNNING, YOU MUST SET THE DEFAULT PATH FOR WHERE THE DATA
10 . *   FILES RESIDE
11 . * ================================================================================
12 . * Before running, you must download the following packages for STATA:
13 . *   firthlogit from http://fmwww.bc.edu/RePEc/bocode/f
14 . * ================================================================================
15 . * The following datafiles are used for this chapter:
16 . *   Data on revolutionary episodes--revolutionaryeps.dta
17 . *   Data set of urban civic revolt locations--urbancivicspaces.dta
18 . *   Data set on population of capital cities, 1900-2014--capitalpopulations.dta
19 . * ================================================================================
20 . * Output produced:  Logfiles\chapter6.log
21 . *                                 Logfiles\figure6_1.pdf
22 . *   --All output from this chapter has been combined into a single file and can
23 . *               be found in a pdf file (chapter6.pdf) in the "Outputfiles" folder
24 . * ================================================================================
25 .
26 . * ============================================================
27 . * DEMONSTRATIONS VS. OTHER TACTICAL FORMS IN URBAN REVOLTS
28 . * ============================================================
29 . clear

30 . use revolutionaryeps.dta

31 . logit success strikes demonstrations riots armed startyear if urbandum==1, or

Iteration 0:   log likelihood = -124.05444
Iteration 1:   log likelihood = -109.46646
Iteration 2:   log likelihood = -109.28227
Iteration 3:   log likelihood = -109.28146
Iteration 4:   log likelihood = -109.28146

Logistic regression                             Number of obs     =        180
                                                LR chi2(5)        =      29.55
                                                Prob > chi2       =     0.0000
Log likelihood = -109.28146                     Pseudo R2         =     0.1191

------------------------------------------------------------------------------
     success | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     strikes |   1.752496   .6425338     1.53   0.126      .854227    3.595348
demonstrations |   8.571434   4.612093     3.99   0.000     2.985667    24.60739
       riots |   .7043604   .2351419    -1.05   0.294     .3661272    1.355058
       armed |   1.367888    .509012     0.84   0.400     .6596373    2.836584
   startyear |     1.0026   .0061249     0.43   0.671     .9906668    1.014676
       _cons |   .0007011   .0084596    -0.60   0.547     3.76e-14    1.31e+07
------------------------------------------------------------------------------

32 . margins, atmeans at(strikes=0 demonstration=1 riots=0 armed=0)

Adjusted predictions                            Number of obs     =        180
Model VCE    : OIM

Expression   : Pr(success), predict()
at           : strikes         =           0
               demonstrat~s    =           1
               riots           =           0
               armed           =           0
               startyear       =    1968.472 (mean)

------------------------------------------------------------------------------
             |            Delta-method
             |     Margin   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       _cons |    .499103   .0869134     5.74   0.000     .3287558    .6694502
------------------------------------------------------------------------------

33 . margins, atmeans at(strikes=1 demonstration=0 riots=0 armed=0)

Adjusted predictions                            Number of obs     =        180
Model VCE    : OIM

Expression   : Pr(success), predict()
at           : strikes         =           1
               demonstrat~s    =           0
               riots           =           0
               armed           =           0
               startyear       =    1968.472 (mean)

------------------------------------------------------------------------------
             |            Delta-method
             |     Margin   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        cons |   .1692458   .0865073     1.96   0.050    -.0003054     .338797
------------------------------------------------------------------------------
```

```
34 . margins, atmeans at(strikes=1 demonstration=0 riots=1 armed=1)

Adjusted predictions                            Number of obs     =        180
Model VCE    : OIM

Expression   : Pr(success), predict()
at           : strikes         =           1
               demonstrat~s    =           0
               riots           =           1
               armed           =           1
               startyear       =    1968.472 (mean)

------------------------------------------------------------------------------
             |            Delta-method
             |     Margin   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       _cons |   .1640799   .0842534     1.95   0.051    -.0010537    .3292135
------------------------------------------------------------------------------

35 . * Controlling for participation
36 . logit success strikes demonstrations riots  armed startyear lnparticnum if urbandum==1, or

Iteration 0:   log likelihood = -109.07246
Iteration 1:   log likelihood = -97.176813
Iteration 2:   log likelihood = -97.040146
Iteration 3:   log likelihood = -97.039769
Iteration 4:   log likelihood = -97.039769

Logistic regression                             Number of obs     =        159
                                                LR chi2(6)        =      24.07
                                                Prob > chi2       =     0.0005
Log likelihood = -97.039769                     Pseudo R2         =     0.1103

------------------------------------------------------------------------------
       success | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------+--------------------------------------------------------------
       strikes |   1.600053   .6252677     1.20   0.229     .7438791    3.441648
demonstrations |   3.537497   2.057164     2.17   0.030     1.131608     11.0585
         riots |   .7414276   .2646736    -0.84   0.402     .3683055    1.492551
         armed |   1.340376   .5520802     0.71   0.477     .5979014    3.004854
     startyear |   1.008539   .0068384     1.25   0.210     .9952247    1.022031
    lnparticnum |    1.28457   .1413566     2.28   0.023     1.035357     1.59377
         _cons |   6.69e-10   9.05e-09    -1.56   0.118     2.03e-21    220.5788
------------------------------------------------------------------------------

37 . * In rural revolutions
38 . logit success demonstrations riots landseizures c.startyear##c.startyear if urbandum==0, or

Iteration 0:   log likelihood = -92.509634
Iteration 1:   log likelihood = -86.935366
Iteration 2:   log likelihood = -86.618454
Iteration 3:   log likelihood = -86.617122
Iteration 4:   log likelihood = -86.617122

Logistic regression                             Number of obs     =        165
                                                LR chi2(5)        =      11.79
                                                Prob > chi2       =     0.0379
Log likelihood = -86.617122                     Pseudo R2         =     0.0637

------------------------------------------------------------------------------
             success | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------------+--------------------------------------------------------
      demonstrations |   2.057846   1.341908     1.11   0.268     .5732577    7.387135
               riots |   1.835451   1.738874     0.64   0.522     .2866351    11.75321
        landseizures |   1.611877   1.190476     0.65   0.518     .3790216    6.854879
           startyear |   5.800117   4.888309     2.09   0.037     1.111856    30.25695
                     |
c.startyear#c.start~r |   .9995542    .000215    -2.07   0.038      .999133    .9999756
                     |
               _cons |          0          0    -2.10   0.036            0    8.34e-51
------------------------------------------------------------------------------

39 .
40 . * ====================================================================
41 . * ROLE OF LAND SEIZURES IN RURAL REVOLUTIONS IN MAGNIFYING PARTICIPATION
42 . * ====================================================================
43 . glm particnum landseizures lndeaths startyear if startyear>1899 & urbandum==0, family(gamma) link(log) vce(robus
   > t)

Iteration 0:   log pseudolikelihood = -1692.9528
Iteration 1:   log pseudolikelihood =  -1676.902
Iteration 2:   log pseudolikelihood = -1675.6345
Iteration 3:   log pseudolikelihood = -1675.6258
Iteration 4:   log pseudolikelihood = -1675.6258

Generalized linear models                       No. of obs      =        148
Optimization     : ML                           Residual df     =        144
                                                Scale parameter =    2.02605
Deviance         =   183.622069                 (1/df) Deviance =   1.275153
Pearson          =  291.7511503                 (1/df) Pearson  =    2.02605

Variance function: V(u) = u^2                   [Gamma]
Link function    : g(u) = ln(u)                 [Log]

                                                AIC             =   22.69765
Log pseudolikelihood = -1675.625817             BIC             =  -535.9765
```

```
------------------------------------------------------------------------------
             |               Robust
   particnum |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
landseizures |       1.633   .6111235     2.67   0.008      .4352199     2.83078
    lndeaths |    .3163745   .0529149     5.98   0.000      .2126632     .4200859
   startyear |   -.0098668   .0032872    -3.00   0.003     -.0163095    -.0034241
       _cons |    26.52084   6.525615     4.06   0.000      13.73087     39.31081
------------------------------------------------------------------------------

44 . margins, atmeans at(landseizures=(0 1))

Adjusted predictions                            Number of obs     =        148
Model VCE    : Robust

Expression   : Predicted mean particnum, predict()

1._at        : landseizures    =           0
               lndeaths        =    9.646049 (mean)
               startyear       =     1960.02 (mean)

2._at        : landseizures    =           1
               lndeaths        =    9.646049 (mean)
               startyear       =     1960.02 (mean)

------------------------------------------------------------------------------
             |            Delta-method
             |     Margin   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          at |
           1 |   27820.43   3286.764     8.46   0.000     21378.49    34262.37
           2 |   142418.6   85108.04     1.67   0.094    -24390.11    309227.3
------------------------------------------------------------------------------

45 .
46 . * ================================================
47 . * ROLE OF SYMBOLIC SPACES IN URBAN CIVIC REVOLTS
48 . * ================================================
49 . clear

50 . use urbancivicspaces.dta

51 . ttest particnum, by( natrelsymbols)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
       0 |      17    214529.4    88461.53    364736.2    26999.35    402059.5
       1 |      37    553783.8    105696.9    642928.9    339420.6    768146.9
---------+--------------------------------------------------------------------
combined |      54    446981.5    80072.51    588410.3    286376.4    607586.6
---------+--------------------------------------------------------------------
    diff |           -339254.4    167576.9               -675522.1   -2986.637
------------------------------------------------------------------------------
    diff = mean(0) - mean(1)                                      t =  -2.0245
Ho: diff = 0                                     degrees of freedom =       52

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0240         Pr(|T| > |t|) = 0.0481          Pr(T > t) = 0.9760

52 .
53 . * ========================================================================
54 . * RELATIONSHIP BETWEEN USE OF SQUARES AND SUCCESS IN URBAN CIVIC REVOLTS
55 . * ========================================================================
56 . tab rallysquare success, col chi

+-------------------+
| Key               |
|-------------------|
|     frequency     |
| column percentage |
+-------------------+

  Involved |
     major |  Opposition came to
rallies in |        power?
   squares |         0          1 |     Total
-----------+----------------------+----------
         0 |         4          9 |        13
           |     20.00      26.47 |     24.07
-----------+----------------------+----------
         1 |        16         25 |        41
           |     80.00      73.53 |     75.93
-----------+----------------------+----------
     Total |        20         34 |        54
           |    100.00     100.00 |    100.00

          Pearson chi2(1) =   0.2884   Pr = 0.591
```

```
57 .
58 . * ================================================
59 . * DISTANCE OF URBAN CIVIC REVOLTS FROM SEAT OF GOVT
60 . * ================================================
61 . sum distance, detail

      Distance of coordinating point from seat of govt
-------------------------------------------------------------
      Percentiles      Smallest
 1%            0              0
 5%            0              0
10%            0              0       Obs                  54
25%     .4661755              0       Sum of Wgt.          54

50%     1.978969                      Mean           17.36105
                       Largest       Std. Dev.      105.2786
75%     4.330577       13.33045
90%     9.807342        15.1268       Variance       11083.58
95%      15.1268       15.19437       Skewness        7.12759
99%       776.15         776.15       Kurtosis       51.87645

62 .
63 . * ============================================================================
64 . * FIGURE 6.1: DISTANCE OF URBAN CIVIC REVOLTS FROM SEAT OF GOVT, BY OUTCOME
65 . * ============================================================================
66 . graph box newdistance, over(success)

67 . graph export Logfiles\figure6_1.pdf, replace
(file Logfiles\figure6_1.pdf written in PDF format)

68 .
69 . * ================================================
70 . * T-TEST OF EFFECT OF DISTANCE SEAT OF GOVT ON OUTCOME
71 . * ================================================
72 . ttest newdistance , by(success)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
       0 |      20    4.739959    1.261237    5.640422     2.10016    7.379758
       1 |      34    2.545511    .6135846    3.577782    1.297164    3.793858
---------+--------------------------------------------------------------------
combined |      54    3.358269    .6164332     4.52984    2.121861    4.594678
---------+--------------------------------------------------------------------
    diff |            2.194448    1.252284               -.3184434    4.707339
------------------------------------------------------------------------------
    diff = mean(0) - mean(1)                                      t =   1.7524
Ho: diff = 0                                     degrees of freedom =       52

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.9572         Pr(|T| > |t|) = 0.0856          Pr(T > t) = 0.0428

73 .
74 . * ============================================================================
75 . * PROBABILITY OF OPPOSITION VICTORY IF WITHIN 3/4 KILOMETER OF SEAT OF GOVT
76 . * ============================================================================
77 . logit success veryclose lnpartic, or nolog

Logistic regression                             Number of obs     =         54
                                                LR chi2(2)        =      11.67
                                                Prob > chi2       =     0.0029
Log likelihood = -29.757033                     Pseudo R2         =     0.1640

------------------------------------------------------------------------------
     success | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   veryclose |   4.529672   3.080137     2.22   0.026     1.194695    17.17419
    lnpartic |   1.916882   .4943577     2.52   0.012     1.156307    3.177734
       _cons |   .0003579   .0011398    -2.49   0.013     6.96e-07    .1840147
------------------------------------------------------------------------------

78 . margins, atmeans at(veryclose=(0 1))

Adjusted predictions                            Number of obs     =         54
Model VCE    : OIM

Expression   : Pr(success), predict()

1. at        : veryclose       =           0
               lnpartic        =    12.21851 (mean)

2._at        : veryclose       =           1
               lnpartic        =    12.21851 (mean)

------------------------------------------------------------------------------
             |            Delta-method
             |     Margin   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         _at |
          1  |   .5038073   .0982624     5.13   0.000     .3112165     .696398
          2  |   .8214025    .081024    10.14   0.000     .6625984    .9802066
------------------------------------------------------------------------------
```

```
79 . * Further controls
80 . firthlogit success veryclose lnpartic c.newpolitymin1##c.newpolitymin1 lnoill newmilexpsold10tile newgdppcthl ne
   > wincumbpowerdur

   initial:       penalized log likelihood = -11.536805
   rescale:       penalized log likelihood = -11.536805
   Iteration 0:   penalized log likelihood = -11.536805
   Iteration 1:   penalized log likelihood =  1.9229477  (not concave)
   Iteration 2:   penalized log likelihood =  2.3615416  (not concave)
   Iteration 3:   penalized log likelihood =   2.406643  (not concave)
   Iteration 4:   penalized log likelihood =  2.4925638
   Iteration 5:   penalized log likelihood =  2.7562104  (not concave)
   Iteration 6:   penalized log likelihood =  2.8270428  (not concave)
   Iteration 7:   penalized log likelihood =  2.8396039
   Iteration 8:   penalized log likelihood =  2.8520085  (not concave)
   Iteration 9:   penalized log likelihood =  2.9008369  (not concave)
   Iteration 10:  penalized log likelihood =  2.9247795  (not concave)
   Iteration 11:  penalized log likelihood =  2.9465353
   Iteration 12:  penalized log likelihood =   3.030048  (not concave)
   Iteration 13:  penalized log likelihood =  3.0510674  (not concave)
   Iteration 14:  penalized log likelihood =   3.056185
   Iteration 15:  penalized log likelihood =  3.2929021  (not concave)
   Iteration 16:  penalized log likelihood =  3.2972363
   Iteration 17:  penalized log likelihood =  3.3282653  (not concave)
   Iteration 18:  penalized log likelihood =  3.3363071
   Iteration 19:  penalized log likelihood =  3.3390151  (not concave)
   Iteration 20:  penalized log likelihood =  3.3396419
   Iteration 21:  penalized log likelihood =  3.3494973
   Iteration 22:  penalized log likelihood =  3.3496247
   Iteration 23:  penalized log likelihood =  3.3496247

                                                 Number of obs     =         50
                                                 Wald chi2(8)      =       9.00
   Penalized log likelihood =  3.3496247         Prob > chi2       =     0.3427

   ------------------------------------------------------------------------------
                        success |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
   -----------------------------+------------------------------------------------
                     veryclose |   2.778612   1.402945     1.98   0.048     .0288907    5.528332
                       lnpartic |   1.232513   .5301483     2.32   0.020     .1934416    2.271585
                  newpolitymin1 |  -.1364096   .0958273    -1.42   0.155    -.3242277    .0514085
                                |
   c.newpolitymin1#c.newpolitymin1 |  -.0555974     .02915    -1.91   0.056    -.1127303    .0015355
                                |
                         lnoill |  -.3672495   .1682674    -2.18   0.029    -.6970475   -.0374515
            newmilexpsold10tile |   .5817355   .3031533     1.92   0.055    -.0124341    1.175905
                    newgdppcthl |  -.4893041   .2127537    -2.30   0.021    -.9062937   -.0723144
              newincumbpowerdur |   -.042447   .0495592    -0.86   0.392    -.1395812    .0546871
                          _cons |  -13.35179   5.846416    -2.28   0.022    -24.81056   -1.893031
   ------------------------------------------------------------------------------

81 .
82 . * ================================================
83 . * RELATIONSHIP OF PROTEST OUTSIDE CAPITAL AND SUCCESS
84 . * ================================================
85 . tab keyinother success, col chi

   +--------------------+
   | Key                |
   |--------------------|
   |     frequency      |
   | column percentage  |
   +--------------------+

   Key events |
     occurred |  Opposition came to
     in other |        power?
       cities |         0          1 |     Total
   -----------+----------------------+----------
            0 |        12          3 |        15
              |     60.00       8.82 |     27.78
   -----------+----------------------+----------
            1 |         8         31 |        39
              |     40.00      91.18 |     72.22
   -----------+----------------------+----------
        Total |        20         34 |        54
              |    100.00     100.00 |    100.00

              Pearson chi2(1) =  16.4395   Pr = 0.000

86 .
87 . * ============================================================================
88 . * DATA FOR FIGURE 6.2:  CONCENTRATION OF POPULATIONS AROUND CAPITAL CITIES
89 . * ============================================================================
90 . clear

91 . use capitalpopulations.dta

92 . table year , c( mean capperc semean capperc) replace
```

Year	mean(capperc)	sem(capperc)
1900	6.58712	.7957903
1901	6.58273	.795761
1902	6.61672	.7889279
1903	6.65555	.7833344
1904	6.69906	.7790454
1905	6.73581	.7694811
1906	6.87008	.7779392
1907	6.86546	.760694
1908	6.90338	.7578807
1909	6.92231	.7522704
1910	6.9682	.7369813
1911	6.9635	.7498
1912	7.0073	.7520484
1913	7.05212	.75652
1914	7.00036	.7386864
1915	7.17102	.7708603
1916	7.19336	.7660974
1917	7.20912	.7601197
1918	7.23766	.7577354
1919	7.2181	.7381988
1920	7.18377	.7269167
1921	7.3083	.7233708
1922	7.37929	.7198451
1923	7.39317	.712715
1924	7.39838	.7143752
1925	7.45444	.7139815
1926	7.30459	.6999279
1927	7.33361	.6960205
1928	7.30605	.6959132
1929	7.38381	.6958028
1930	7.46408	.696675
1931	7.33263	.6828979
1932	7.47066	.6923008
1933	7.61954	.7030906
1934	7.75026	.7129241
1935	7.87454	.7243933
1936	8.00408	.7335835
1937	8.13875	.744998
1938	8.20771	.7535436
1939	8.31529	.7608243
1940	8.43399	.7744224
1941	8.56444	.7729207
1942	8.72869	.786218
1943	8.89216	.7987826
1944	9.04098	.8112971
1945	9.20791	.8250737
1946	9.39915	.8371363
1947	9.57699	.8491343
1948	9.77549	.8665425
1949	9.95869	.8771753
1950	9.75781	.8620117
1951	9.89388	.8606892
1952	10.0456	.8659089
1953	10.2032	.872366
1954	10.3687	.8813104
1955	10.5568	.8876024
1956	10.7342	.8999038
1957	10.9142	.9119786
1958	11.1232	.9256628
1959	11.309	.9337971
1960	11.4845	.9416586
1961	11.5922	.9405058
1962	11.7067	.9292297
1963	11.8256	.9213496
1964	11.8886	.9115081
1965	12.0371	.907215
1966	12.2032	.9084904
1967	12.3684	.9089029
1968	12.5691	.9164597
1969	12.7946	.9264078
1970	12.8122	.9284249
1971	13.0332	.9326064
1972	13.2322	.9289494
1973	13.4385	.9279646
1974	13.6062	.9241056
1975	13.6418	.9246249
1976	13.8092	.9288763
1977	13.9829	.9299579
1978	14.1207	.9281571
1979	14.2632	.9310257
1980	14.418	.933912
1981	14.5693	.9377643
1982	14.6748	.9417764
1983	14.6328	.9372209
1984	14.7133	.9330426
1985	14.811	.9307839
1986	14.9052	.9270555
1987	14.9839	.9214527
1988	15.0808	.9189064
1989	15.1671	.9194004
1990	15.3737	.9361398
1991	15.4795	.9662982
1992	15.3935	.9314533
1993	15.3784	.919266
1994	15.3825	.9122294
1995	15.3821	.9062214
1996	15.5399	.9214403
1997	15.5321	.9135283

```
     1998 |       15.5106       .9086018
     1999 |       15.5474       .9058896
     2000 |       15.6309       .9081395
     2001 |       15.7313       .9126087
     2002 |       15.8909       .9210472
     2003 |       15.9988       .9286486
     2004 |       16.0932       .9358383
     2005 |       16.0844       .9374236
     2006 |       16.1415        .937663
     2007 |       16.1612       .9414387
     2008 |       16.2468       .9468728
     2009 |       16.3935       .9629145
     2010 |       16.4698       .9660709
     2011 |       16.5673       .9757501
     2012 |       16.7482       .9961383
     2013 |       16.9165       1.005405
     2014 |          17.1       1.016938
  ----------------------------------------

93 . rename table1 mean

94 . rename table2 semean

95 . generate ul= mean + (1.96 * semean)

96 . generate ll= mean - (1.96 * semean)

97 . list year mean ul ll, clean noobs

      year      mean         ul         ll
      1900   6.58712   8.146869   5.027371
      1901   6.58273   8.142426   5.023043
      1902   6.61672   8.163017    5.07042
      1903   6.65555   8.190882   5.120211
      1904   6.69906   8.225991   5.172133
      1905   6.73581   8.243997   5.227631
      1906   6.87008   8.394838   5.345316
      1907   6.86546   8.356421   5.374501
      1908   6.90338   8.388831   5.417938
      1909   6.92231   8.396757   5.447857
      1910    6.9682   8.412679   5.523712
      1911    6.9635   8.433112   5.493896
      1912    7.0073   8.481315   5.533285
      1913   7.05212   8.534896   5.569338
      1914   7.00036    8.44819   5.552539
      1915   7.17102   8.681908   5.660136
      1916   7.19336   8.694908   5.691807
      1917   7.20912   8.698958   5.719289
      1918   7.23766   8.722826   5.752503
      1919    7.2181   8.664971   5.771232
      1920   7.18377   8.608525   5.759011
      1921    7.3083   8.726105   5.890491
      1922   7.37929   8.790187   5.968394
      1923   7.39317   8.790091   5.996247
      1924   7.39838   8.798555   5.998205
      1925   7.45444   8.853841   6.055033
      1926   7.30459   8.676448   5.932731
      1927   7.33361   8.697805   5.969405
      1928   7.30605   8.670045   5.942065
      1929   7.38381   8.747583   6.020036
      1930   7.46408   8.829565   6.098599
      1931   7.33263   8.671111   5.994152
      1932   7.47066   8.827567   6.113748
      1933   7.61954   8.997597   6.241482
      1934   7.75026   9.147594   6.352932
      1935   7.87454   9.294351   6.454729
      1936   8.00408   9.441902   6.566255
      1937   8.13875   9.598947   6.678554
      1938   8.20771   9.684658   6.730767
      1939   8.31529    9.80651   6.824079
      1940   8.43399   9.951855   6.916119
      1941   8.56444   10.07937    7.04952
      1942   8.72869   10.26968   7.187706
      1943   8.89216   10.45777   7.326543
      1944   9.04098   10.63112   7.450838
      1945   9.20791   10.82505   7.590764
      1946   9.39915   11.03994   7.758363
      1947   9.57699    11.2413    7.91269
      1948   9.77549   11.47391   8.077066
      1949   9.95869   11.67796   8.239429
      1950   9.75781   11.44736    8.06827
      1951   9.89388   11.58083   8.206924
      1952   10.0456   11.74274   8.348381
      1953   10.2032   11.91309   8.493413
      1954   10.3687   12.09612   8.641381
      1955   10.5568   12.29653   8.817131
      1956   10.7342   12.49803   8.970412
      1957   10.9142   12.70164   9.126683
      1958   11.1232   12.93753   9.308931
      1959    11.309   13.13925   9.478764
      1960   11.4845   13.33012   9.638822
      1961   11.5922   13.43556   9.748782
      1962   11.7067     13.528   9.885418
      1963   11.8256   13.63144   10.01974
      1964   11.8886   13.67514   10.10202
      1965   12.0371   13.81524   10.25896
      1966   12.2032   13.98385   10.42257
      1967   12.3684   14.14984   10.58695
      1968   12.5691    14.3654   10.77287
      1969   12.7946   14.61033   10.97881
      1970   12.8122   14.63187   10.99245
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    1971   13.0332   14.86112    11.2053
    1972   13.2322    15.0529   11.41142
    1973   13.4385   15.25733   11.61971
    1974   13.6062   15.41742   11.79493
    1975   13.6418   15.45405   11.82953
    1976   13.8092   15.62979    11.9886
    1977   13.9829   15.80564    12.1602
    1978   14.1207   15.93987    12.3015
    1979   14.2632   16.08798   12.43836
    1980    14.418   16.24842   12.58748
    1981   14.5693   16.40734    12.7313
    1982   14.6748   16.52073   12.82896
    1983   14.6328   16.46975   12.79584
    1984   14.7133   16.54206   12.88453
    1985    14.811   16.63533   12.98666
    1986   14.9052   16.72218   13.08813
    1987   14.9839    16.7899    13.1778
    1988   15.0808   16.88186   13.27975
    1989   15.1671   16.96917   13.36512
    1990   15.3737   17.20858   13.53892
    1991   15.4795   17.37344   13.58556
    1992   15.3935   17.21913   13.56783
    1993   15.3784   17.18015   13.57662
    1994   15.3825   17.17045   13.59451
    1995   15.3821   17.15831   13.60592
    1996   15.5399   17.34596   13.73392
    1997   15.5321   17.32257   13.74154
    1998   15.5106   17.29142    13.7297
    1999   15.5474   17.32294   13.77185
    2000   15.6309   17.41088   13.85098
    2001   15.7313   17.52002   13.94259
    2002   15.8909   17.69618   14.08568
    2003   15.9988   17.81891   14.17861
    2004   16.0932   17.92747   14.25899
    2005   16.0844   17.92176   14.24706
    2006   16.1415   17.97931   14.30367
    2007   16.1612    18.0064   14.31596
    2008   16.2468   18.10264    14.3909
    2009   16.3935   18.28085   14.50623
    2010   16.4698   18.36331   14.57631
    2011   16.5673   18.47974    14.6548
    2012   16.7482   18.70063   14.79577
    2013   16.9165   18.88705   14.94587
    2014      17.1    19.0932    15.1068

 98 . * Data were then loaded into MS Excel to produce figure
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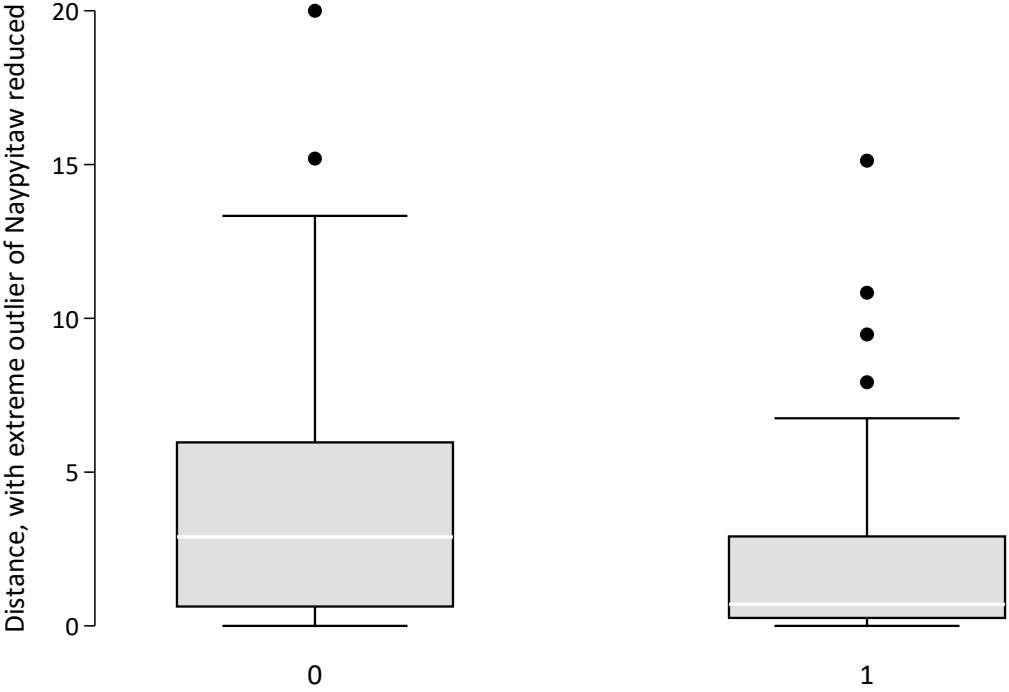
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15
10
5
0
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