Endogeneity in the Environmental Kuznets Curve:
An Instrumental Variables Approach

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APPENDIX B: Figures

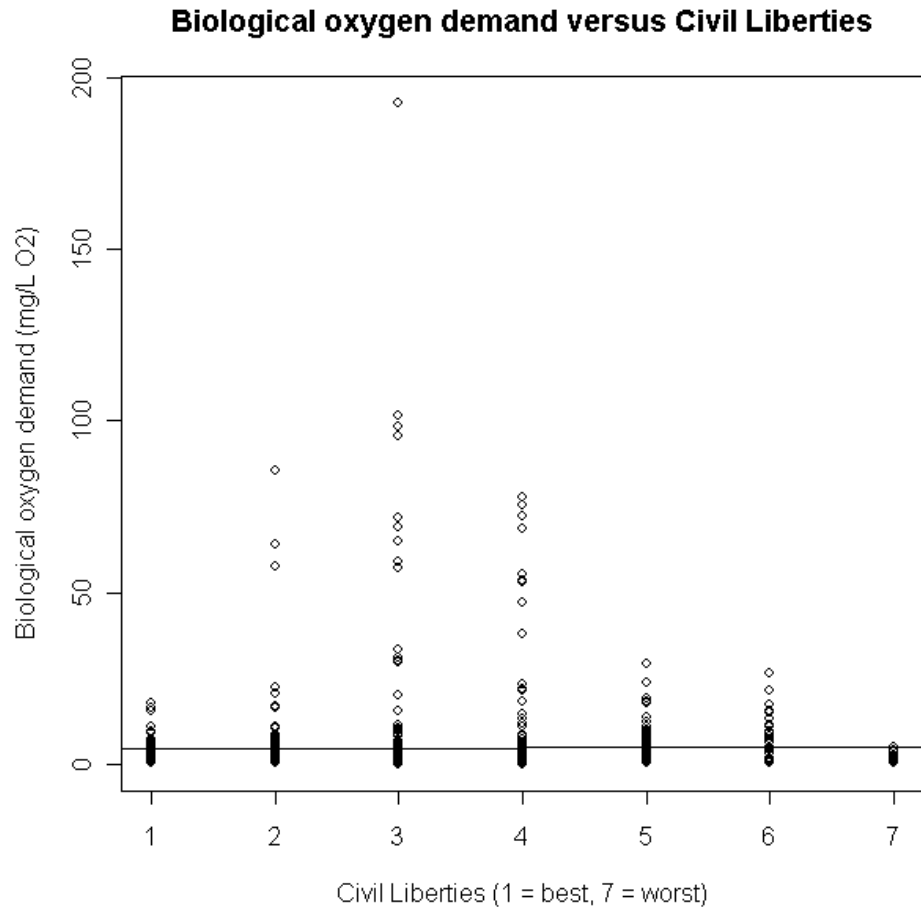FIGURE 1.1: BIOLOGICAL OXYGEN DEMAND VERSUS CIVIL LIBERTIES:

Biological oxygen demand versus Civil Liberties

Figure 1.1a

```
          Estimate Std. Error t value Pr(>|t|)
(Intercept)  4.45337    0.82805    5.378 9.15e-08 ***
data$cl      0.04929    0.23234    0.212    0.832
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 11.09 on 1125 degrees of freedom
Multiple R-Squared: 4.001e-05,     Adjusted R-squared: -
0.0008488
F-statistic: 0.04501 on 1 and 1125 DF,  p-value: 0.832
```
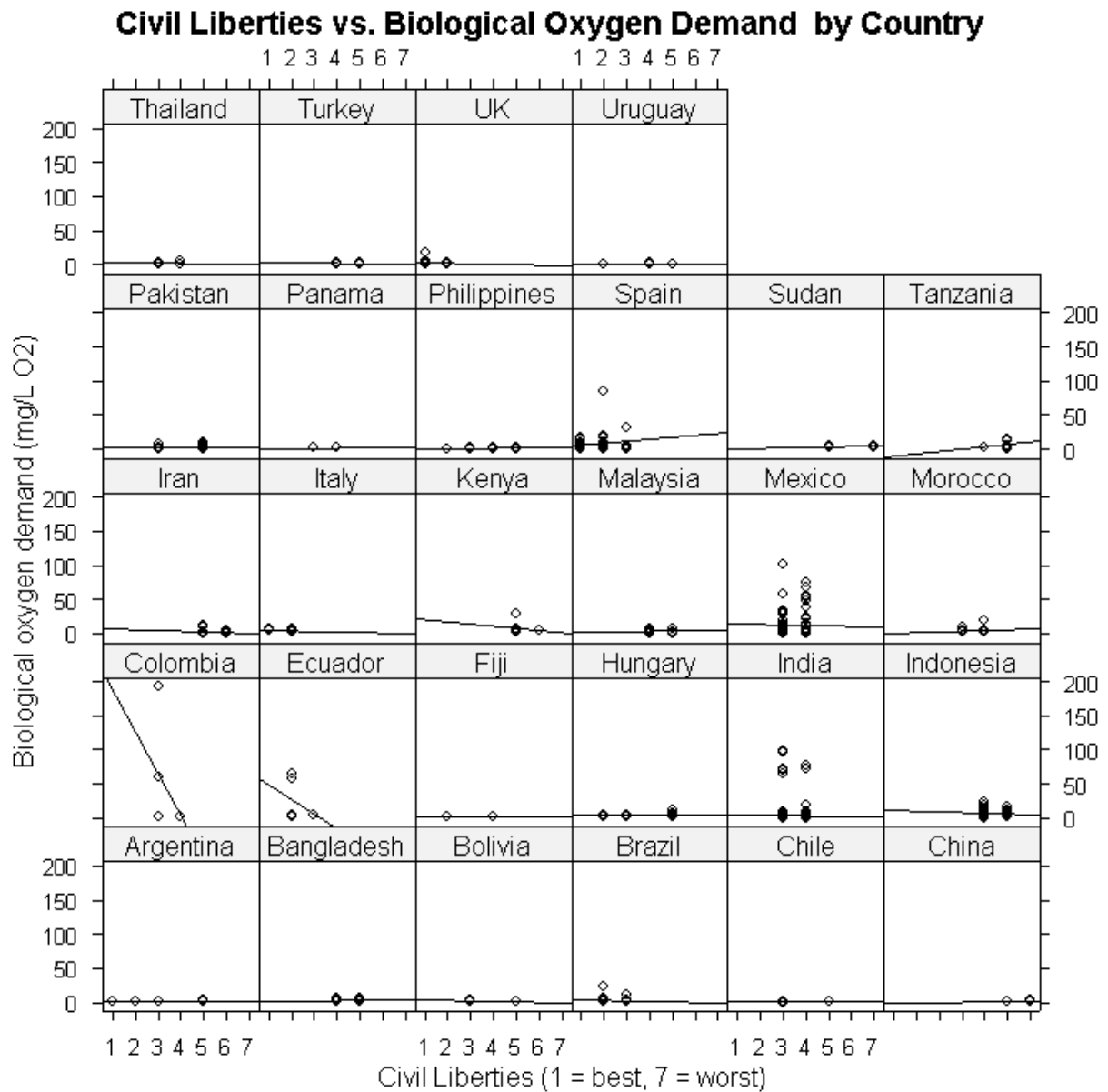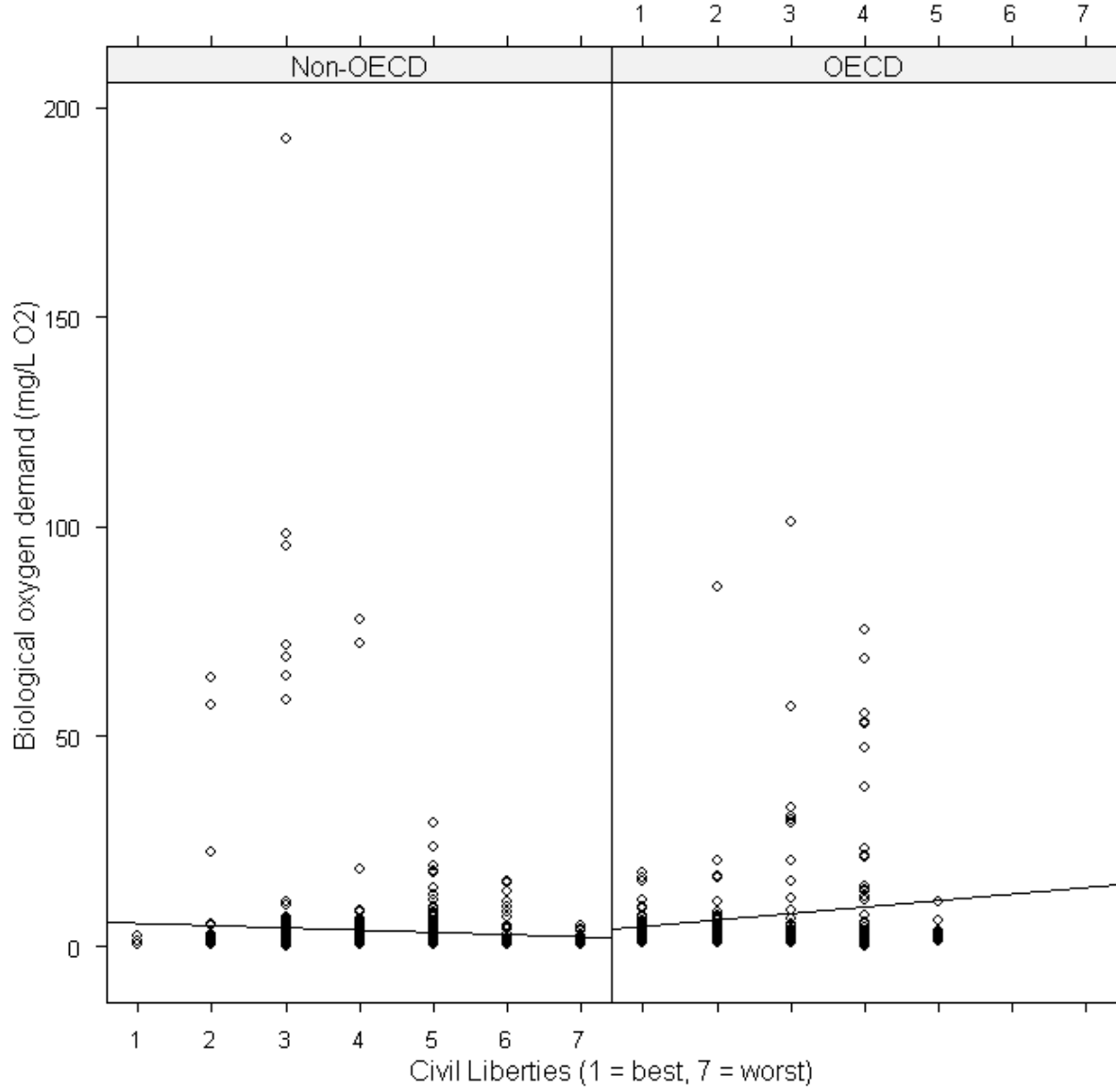
Civil Liberties vs. Biological Oxygen Demand by Country

Biological oxygen demand (mg/L O2)

Civil Liberties (1 = best, 7 = worst)

Figure 1.1b

Civil Liberties vs. Biological Oxygen Demand by Development Level

Figure 1.1c

Civil Liberties vs. Biological Oxygen Demand by Year
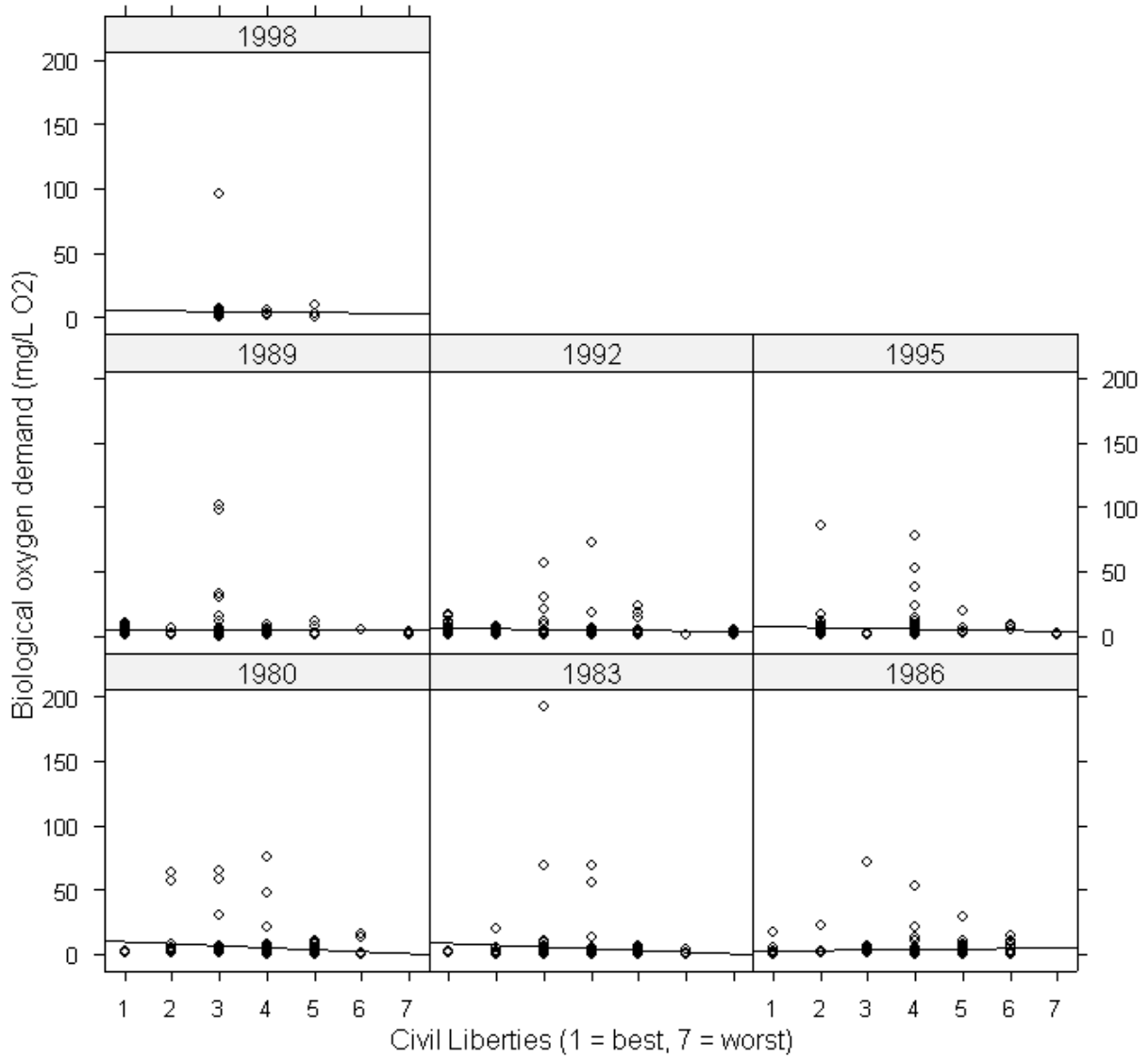
Biological oxygen demand (mg/L O2)

Civil Liberties (1 = best, 7 = worst)

Figure 1.1d

FIGURE 1.2: BIOLOGICAL OXYGEN DEMAND VERSUS POLITICAL RIGHTS

Biological oxygen demand versus Political Rights
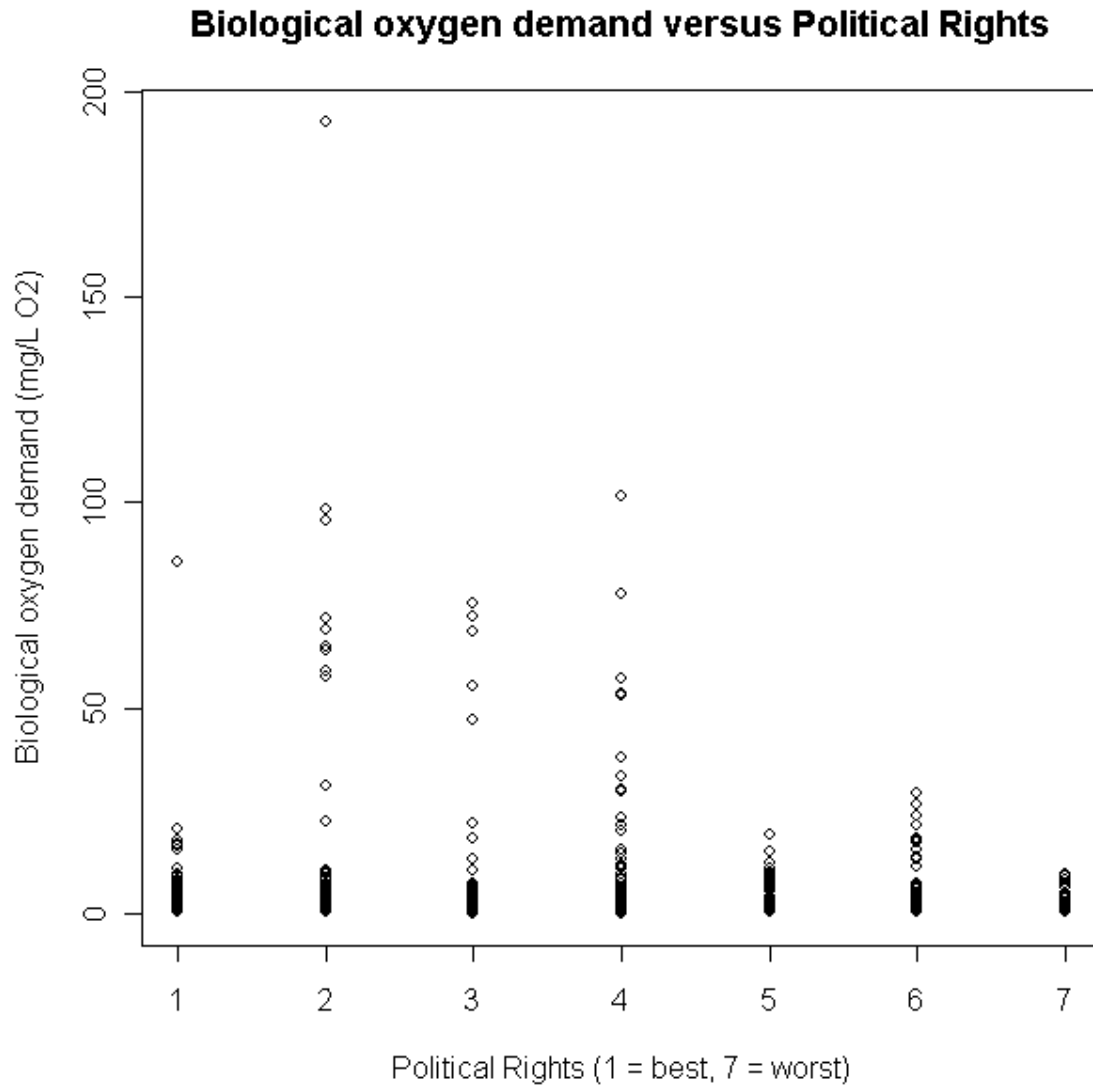
Figure 1.2a

```
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  4.47965    0.63968   7.003 4.30e-12 ***
data$pr      0.04692    0.19065   0.246    0.806
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 11.09 on 1125 degrees of freedom
Multiple R-Squared: 5.384e-05,     Adjusted R-squared: -0.000835
F-statistic: 0.06057 on 1 and 1125 DF,  p-value: 0.8056
```
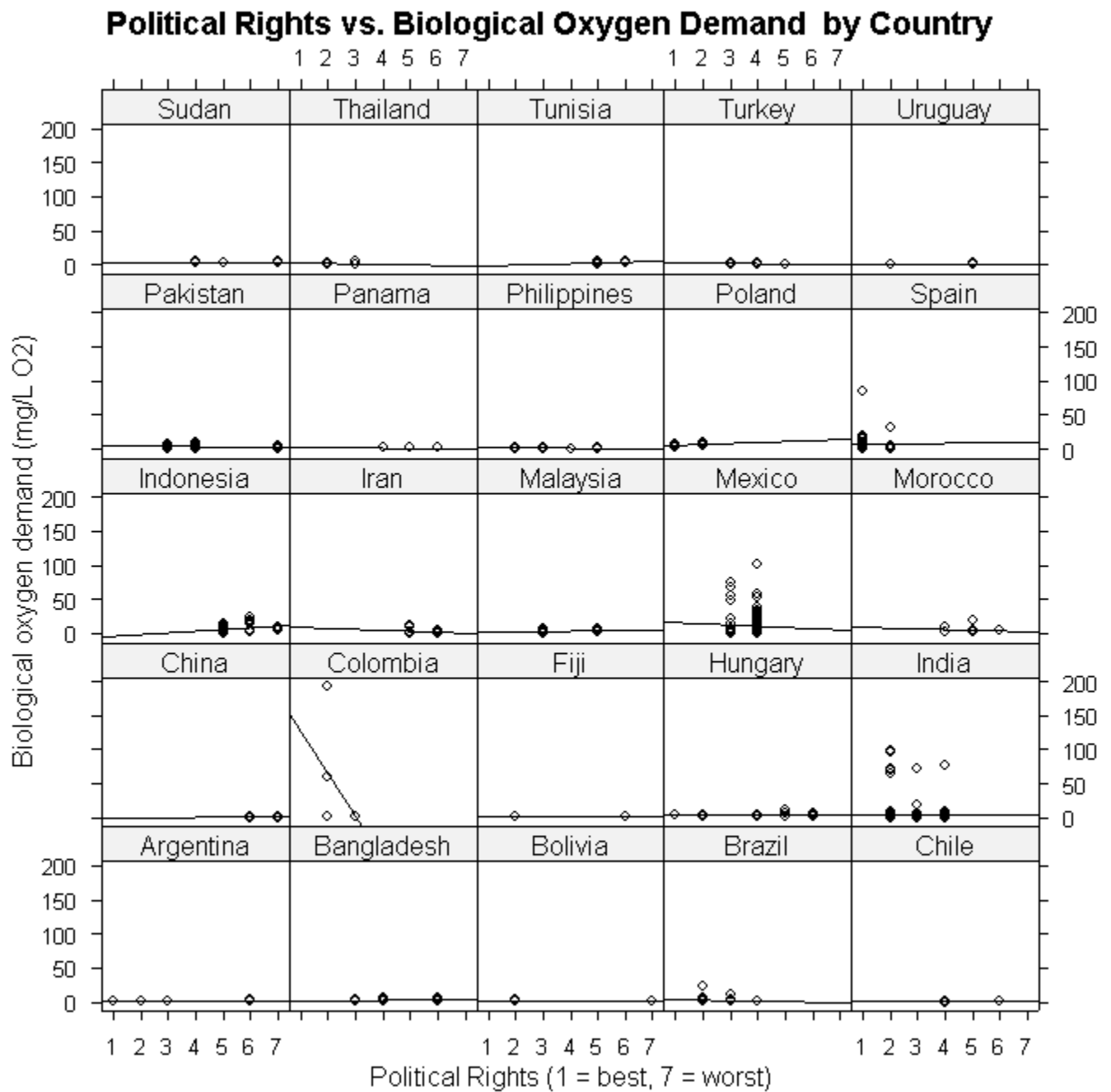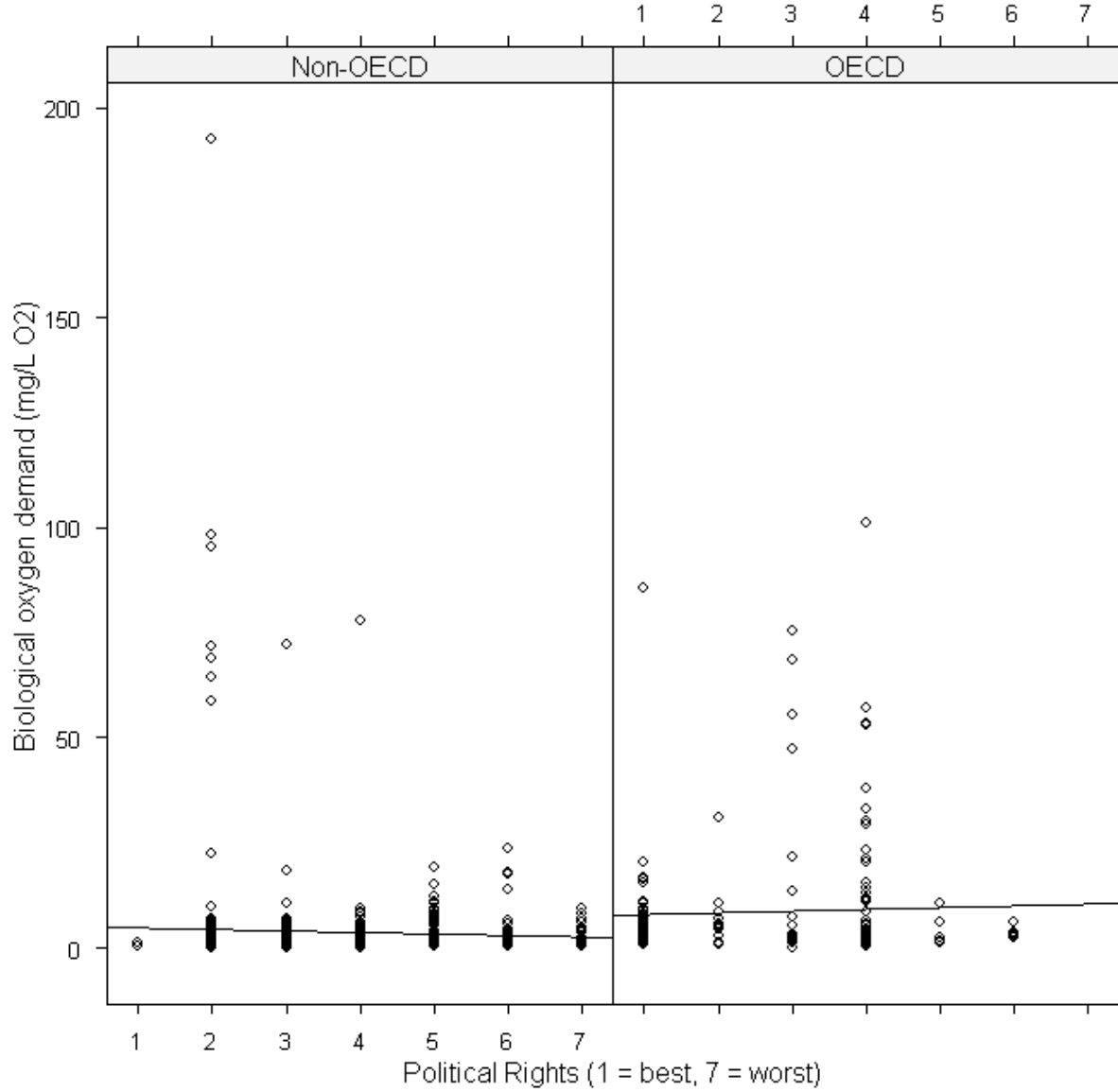
Political Rights vs. Biological Oxygen Demand by Country

Figure 1.2b

Figure 1.2c

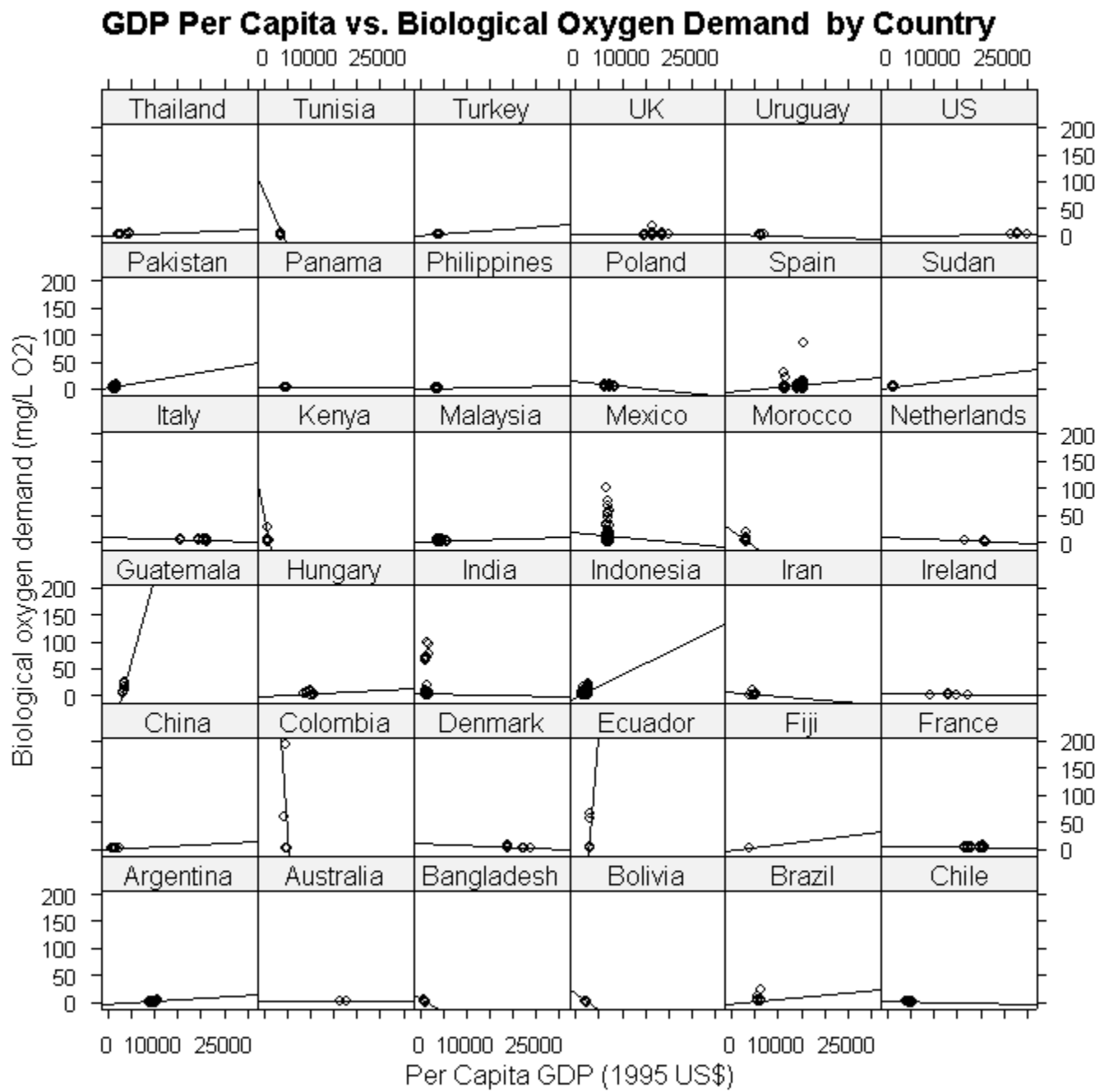**Political Rights vs. Biological Oxygen Demand by Year**

Biological oxygen demand (mg/L O2)

Political Rights (1 = best, 7 = worst)
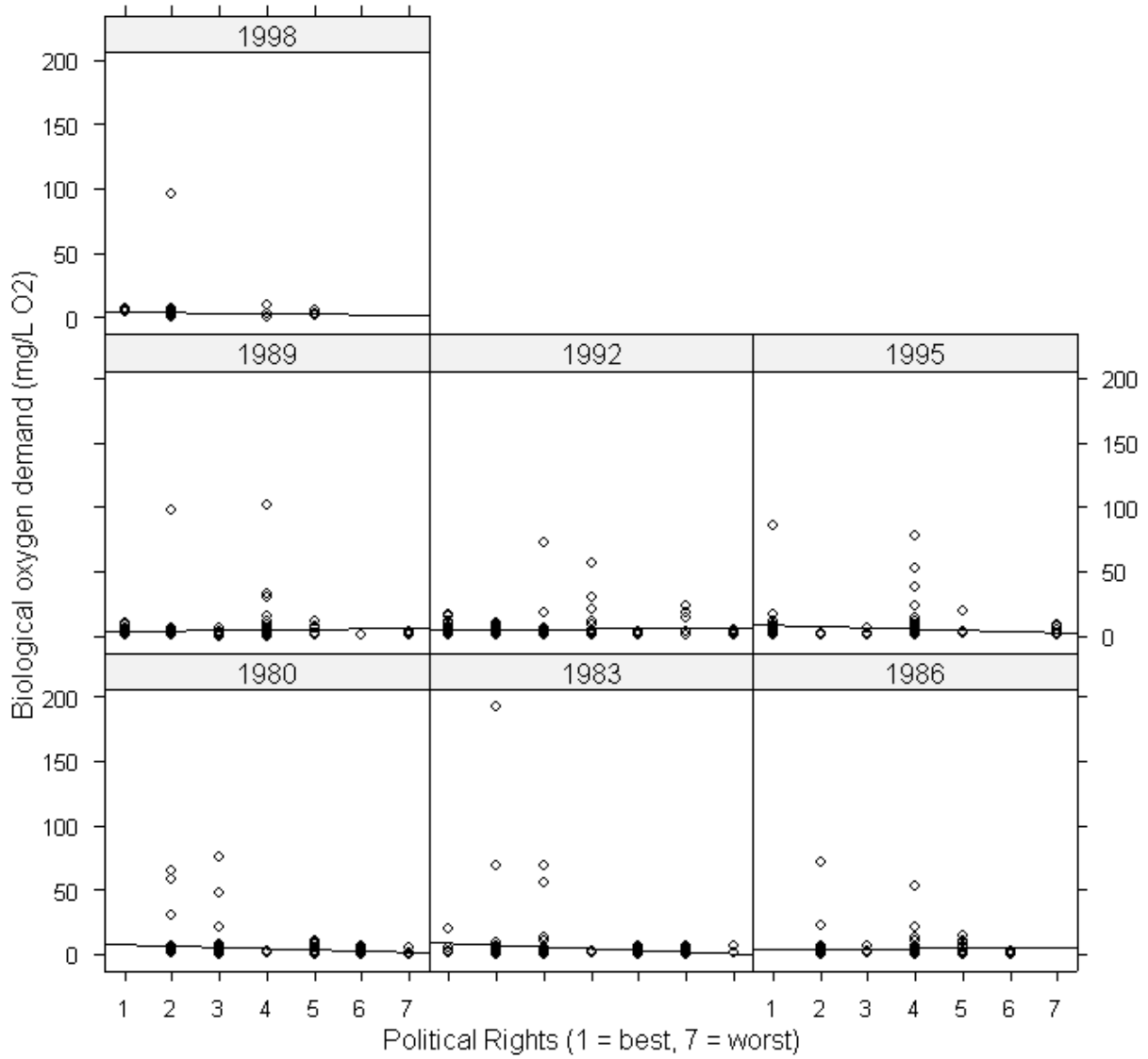
Figure 1.2d

FIGURE 1.3: BIOLOGICAL OXYGEN DEMAND VERSUS PER CAPITA GDP

Biological oxygen demand versus per capita GDP (1995 US$)
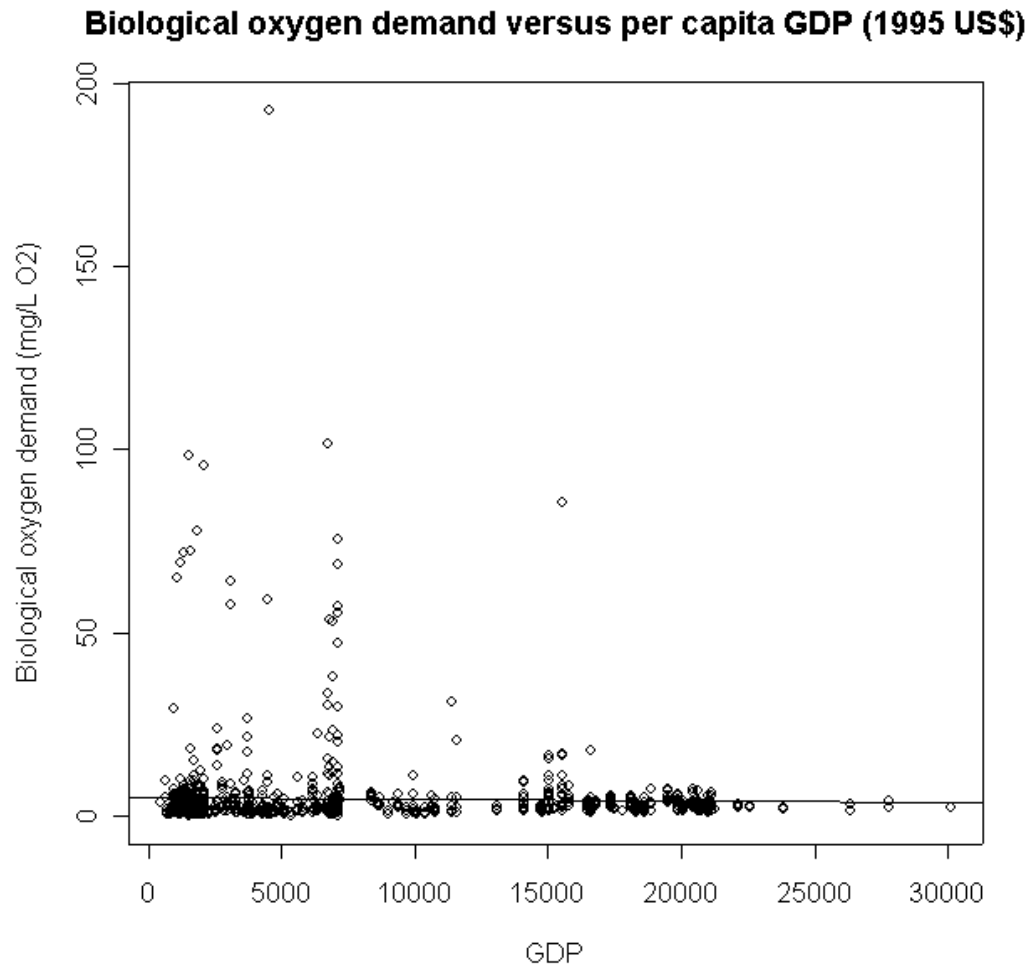
Figure 1.3a

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)  4.910e+00  4.739e-01  10.362    <2e-16 ***
data$gdp    -4.283e-05  4.712e-05  -0.909     0.364
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 11.1 on 1120 degrees of freedom
Multiple R-Squared: 0.0007369,    Adjusted R-squared: -
0.0001553
F-statistic: 0.826 on 1 and 1120 DF,  p-value: 0.3636
```

GDP Per Capita vs. Biological Oxygen Demand by Country

Figure 1.3b

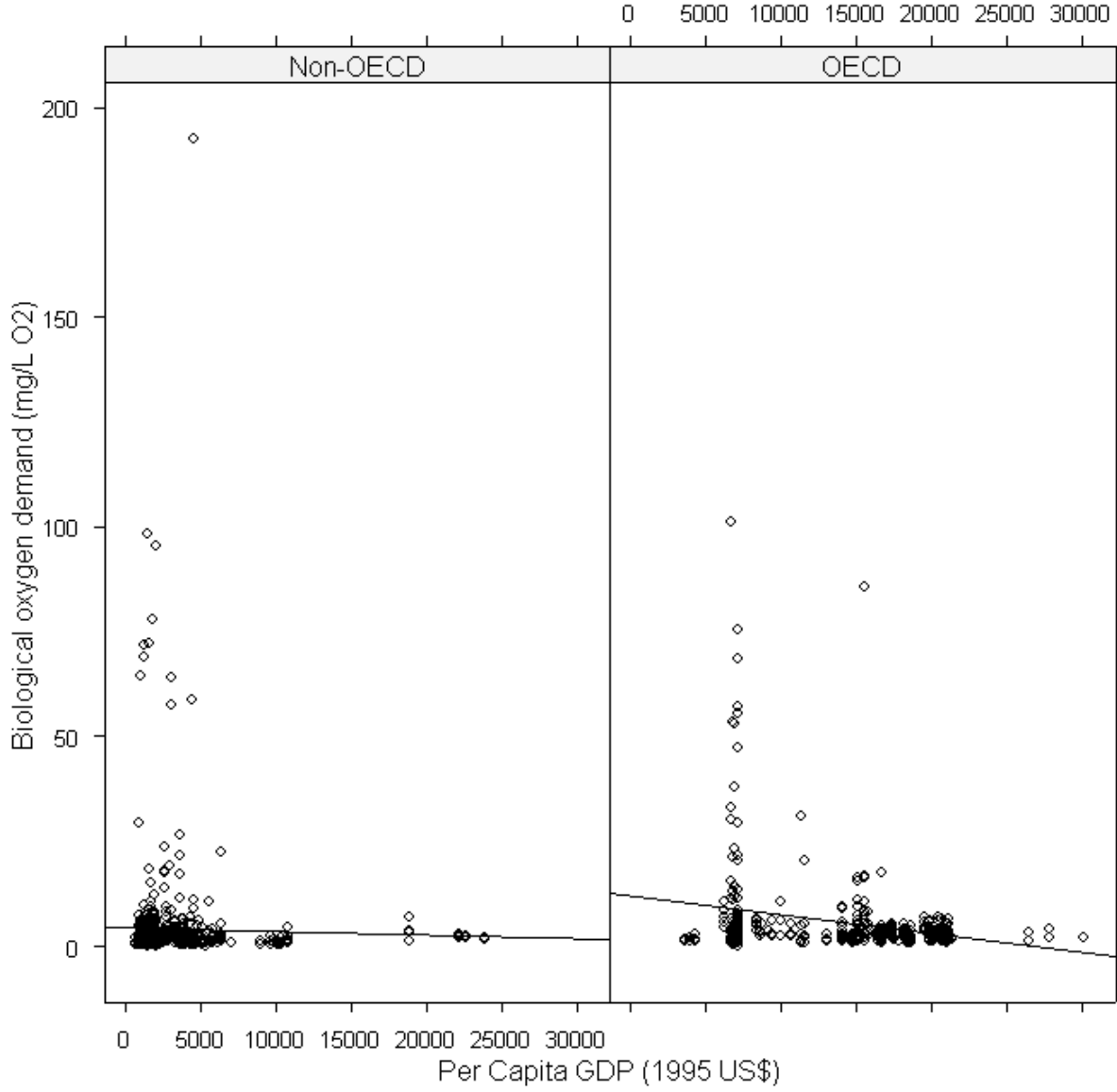GDP Per Capita vs. Biological Oxygen Demand by Development Level

Figure 1.3c
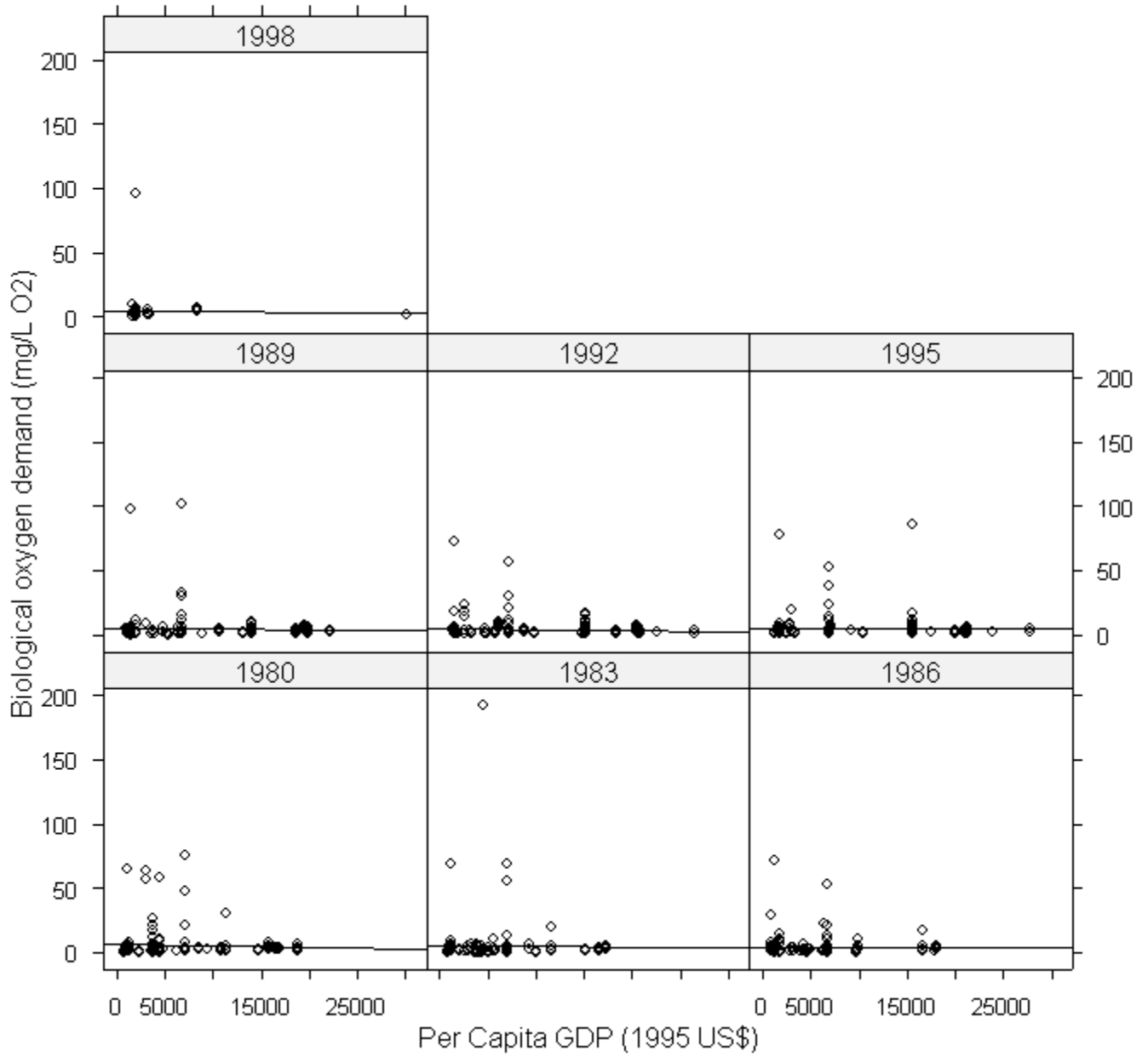
GDP Per Capita vs. Biological Oxygen Demand by Year

Figure 1.3d

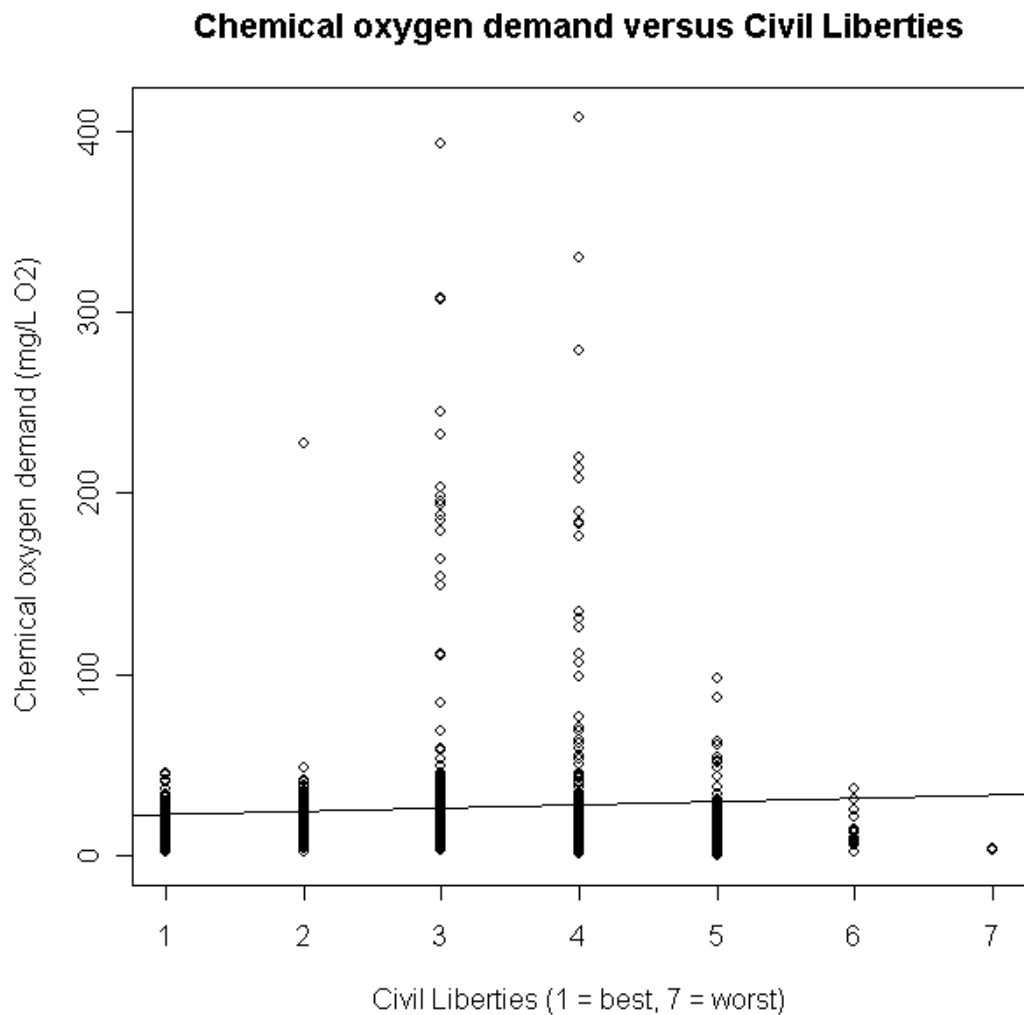FIGURE 2.1: CHEMICAL OXYGEN DEMAND VERSUS CIVIL LIBERTIES

Chemical oxygen demand versus Civil Liberties

Figure 2.1a

```
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   21.248      3.503   6.065 1.95e-09 ***
data$cl        1.690      1.047   1.614    0.107
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 40.34 on 887 degrees of freedom
Multiple R-Squared: 0.002927, Adjusted R-squared: 0.001803
F-statistic: 2.604 on 1 and 887 DF,  p-value: 0.1069
```
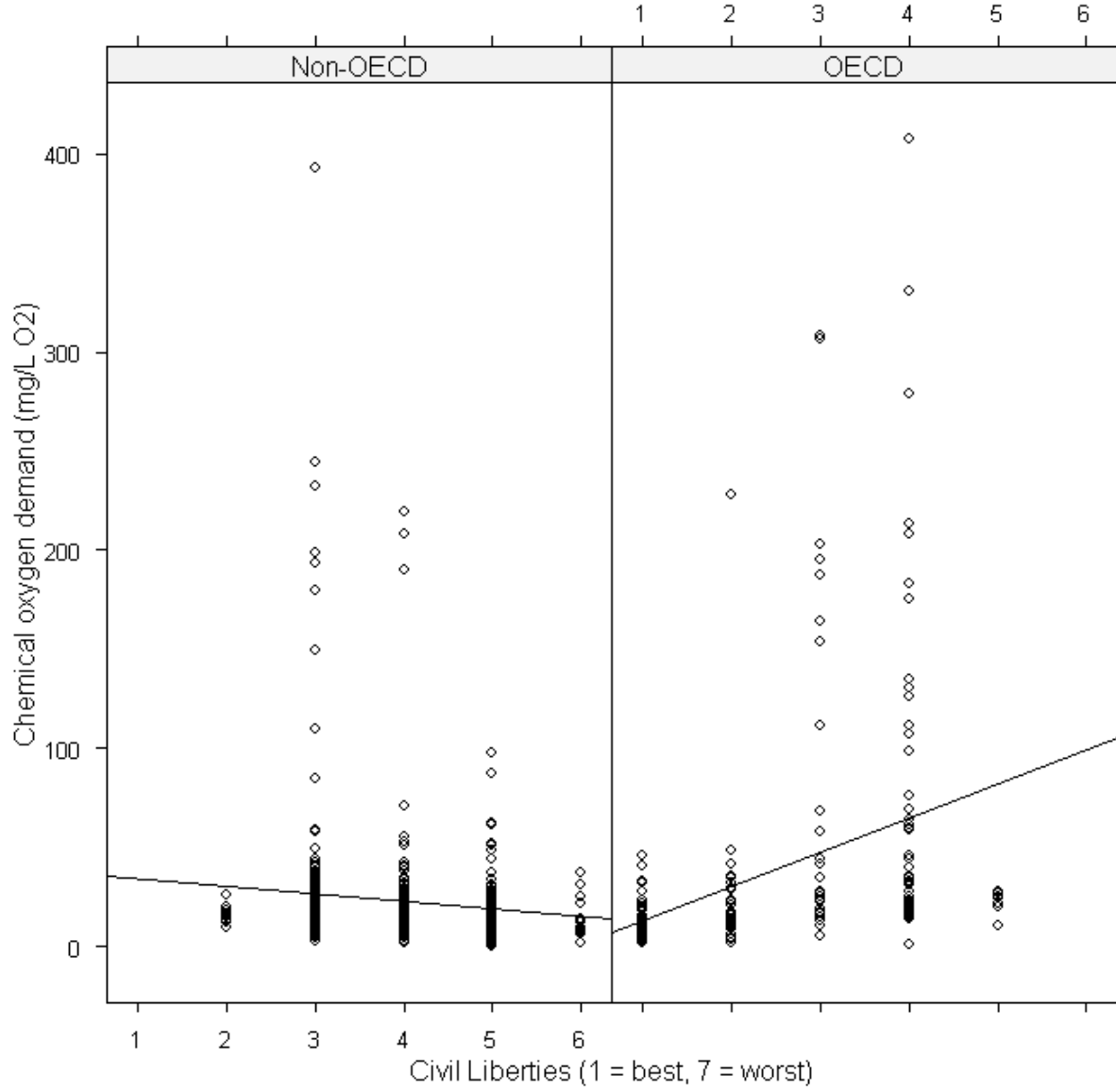
Figure 2.1b

Figure 2.1c

Civil Liberties vs. Chemical Oxygen Demand by Year
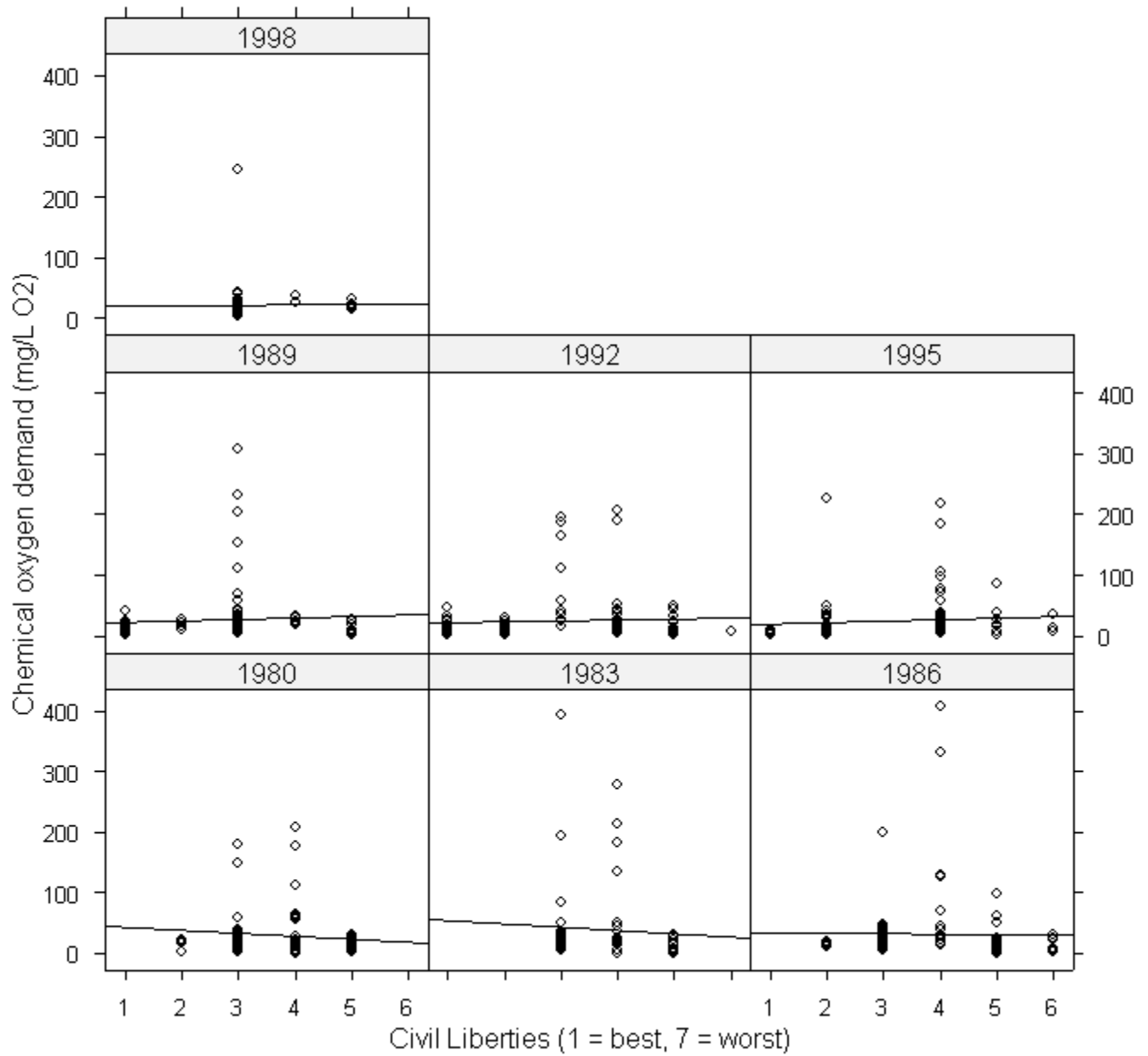
Figure 2.1d
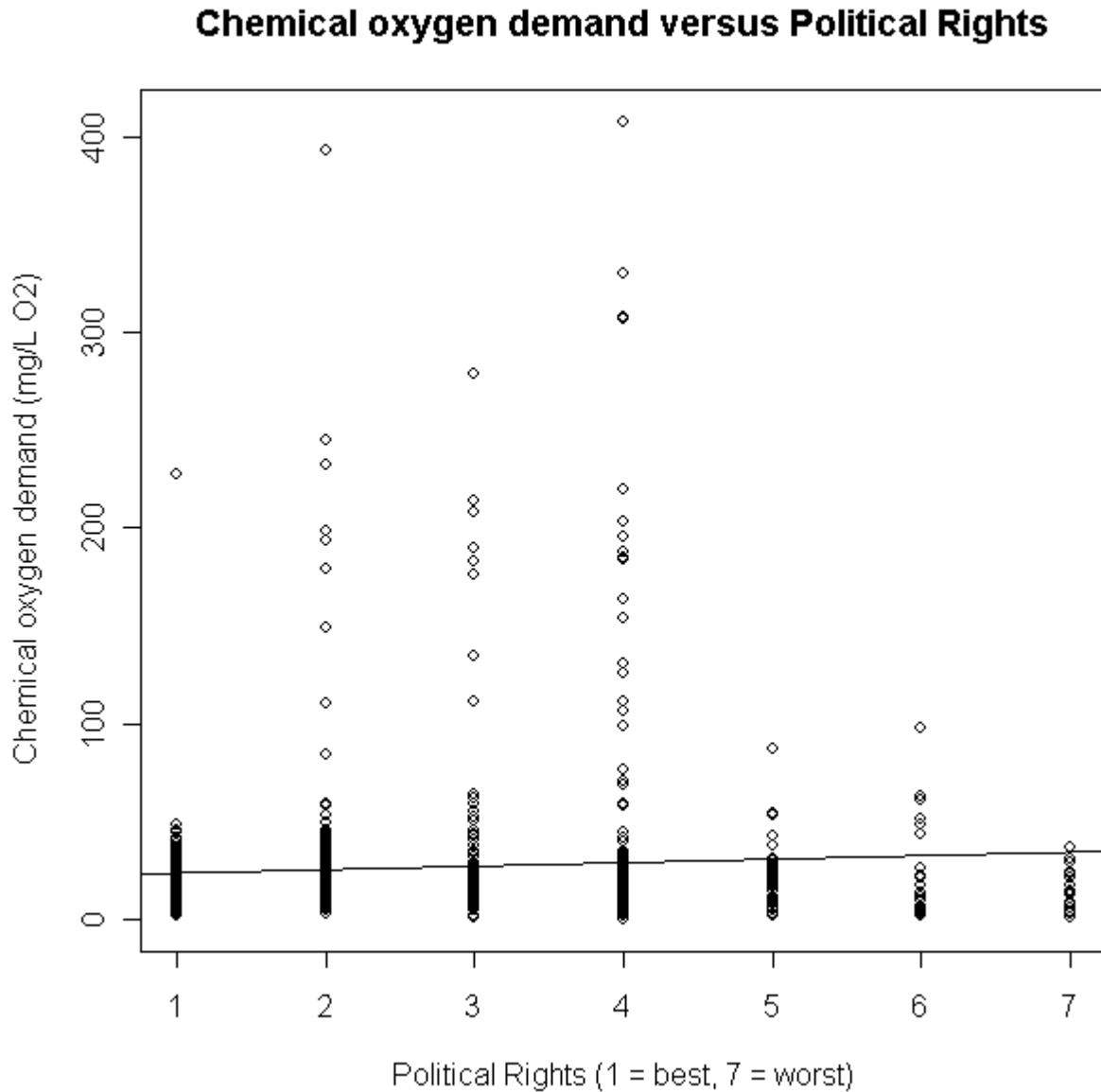
FIGURE 2.2: CHEMICAL OXYGEN DEMAND VERSUS POLITICAL RIGHTS

Chemical oxygen demand versus Political Rights

Figure 2.2a

```
 (Intercept)   21.9407      2.6211    8.371    <2e-16 ***
data$pr         1.7372      0.8627    2.014    0.0444 *
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 40.31 on 887 degrees of freedom
Multiple R-Squared: 0.00455,  Adjusted R-squared: 0.003428
F-statistic: 4.055 on 1 and 887 DF,  p-value: 0.04435
```

Political Rights vs. Chemical Oxygen Demand by Country
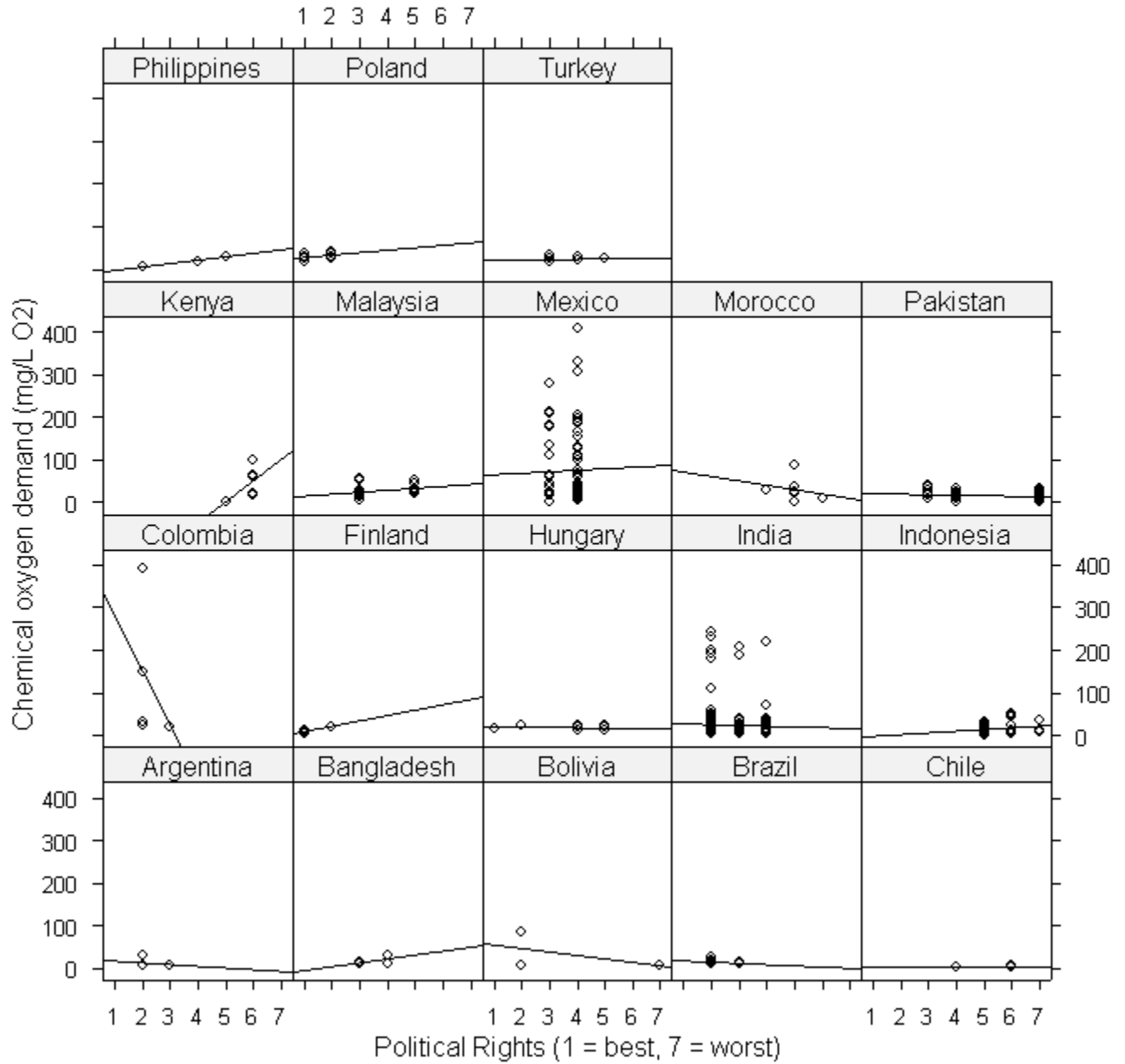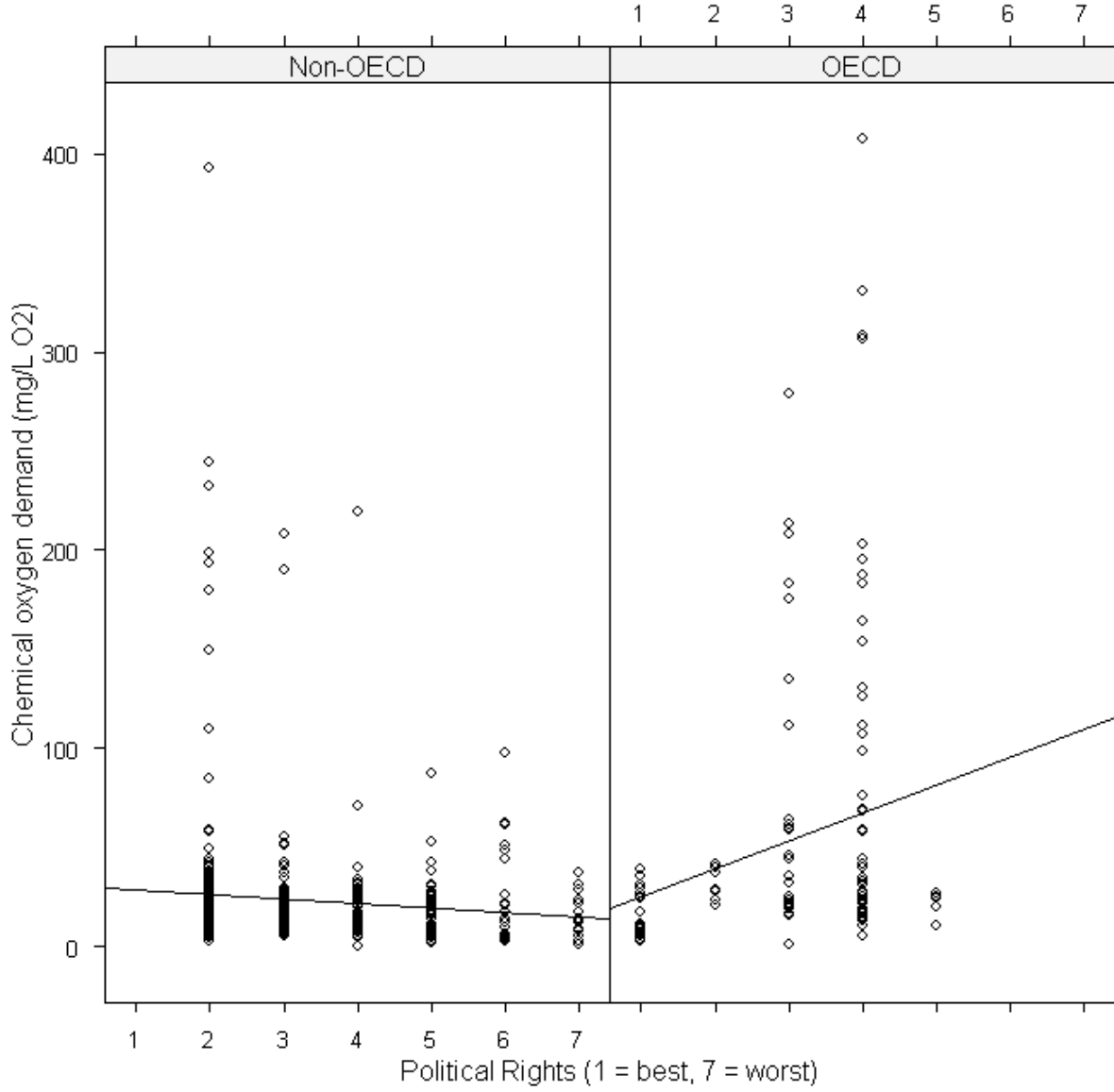

Figure 2.2b

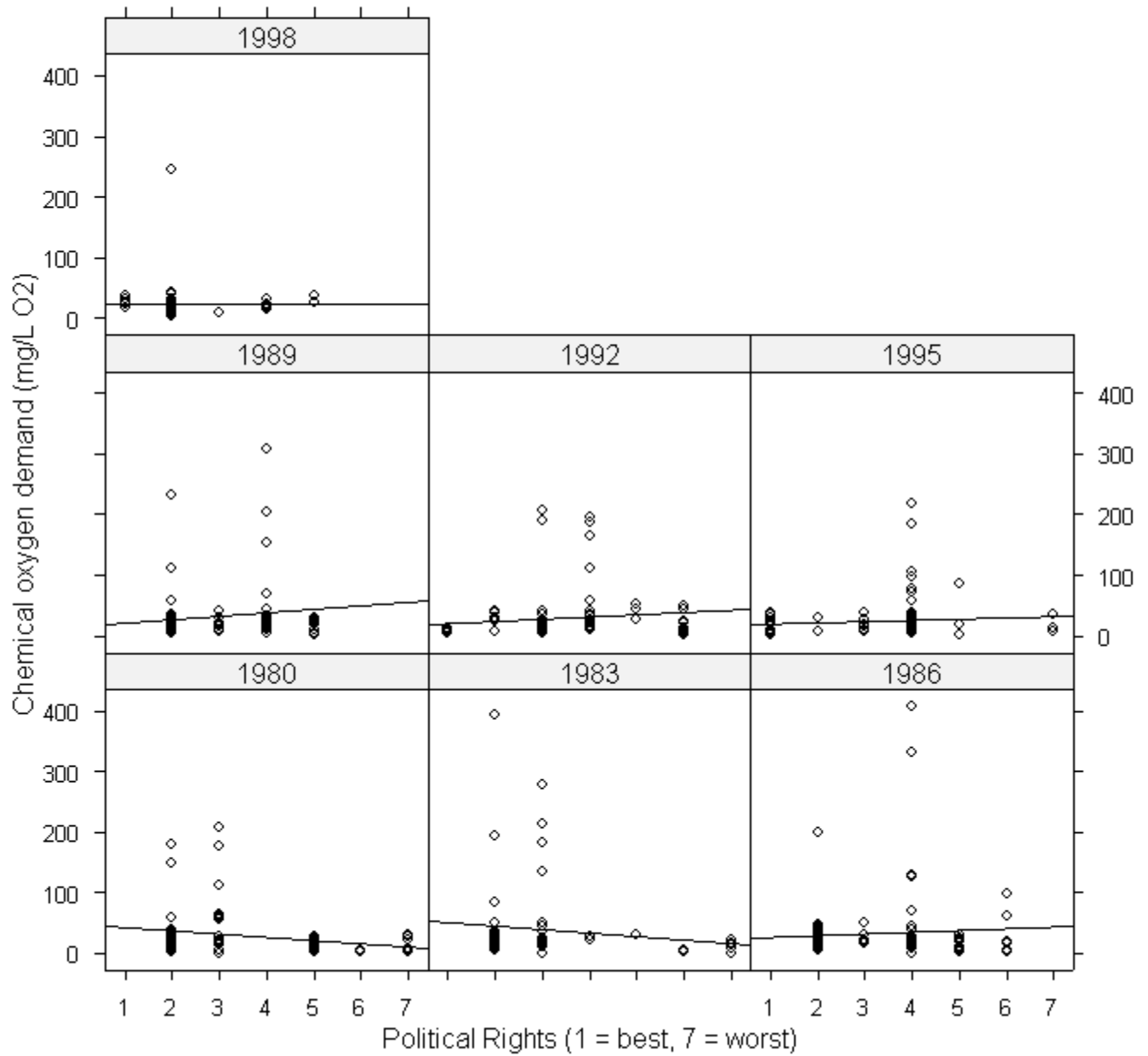Figure 2.2c

Political Rights vs. Chemical Oxygen Demand by Year

Figure 2.2d

FIGURE 2.3: CHEMICAL OXYGEN DEMAND VERSUS PER CAPITA GDP

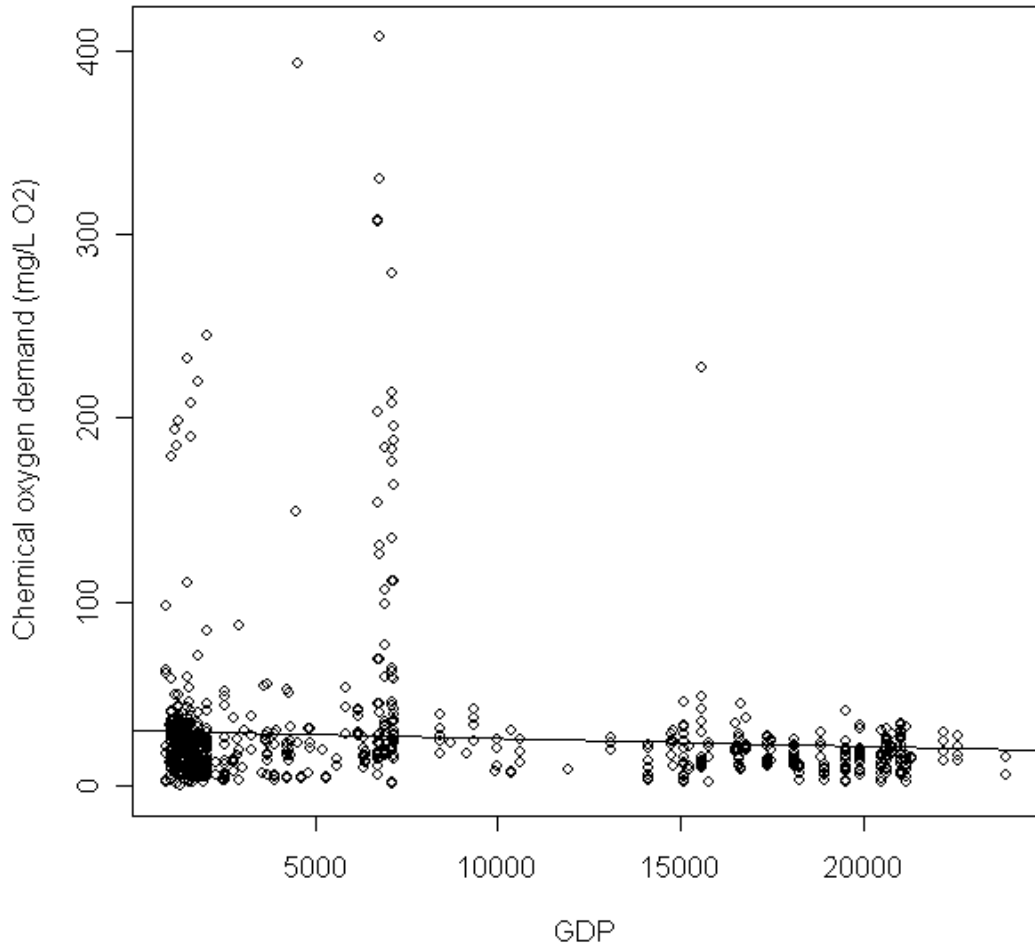**Chemical oxygen demand versus per capita GDP (1995 US$)**

Figure 2.3a

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept) 29.8442071  1.9279640  15.480   <2e-16 ***
data$gdp    -0.0004416  0.0001850  -2.387   0.0172 *
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 40.33 on 883 degrees of freedom
Multiple R-Squared: 0.006412, Adjusted R-squared: 0.005286
F-statistic: 5.698 on 1 and 883 DF,  p-value: 0.01719

[1] "coef.vec:  886.929653966824"   "coef.vec:  -
0.432628405197114"
```

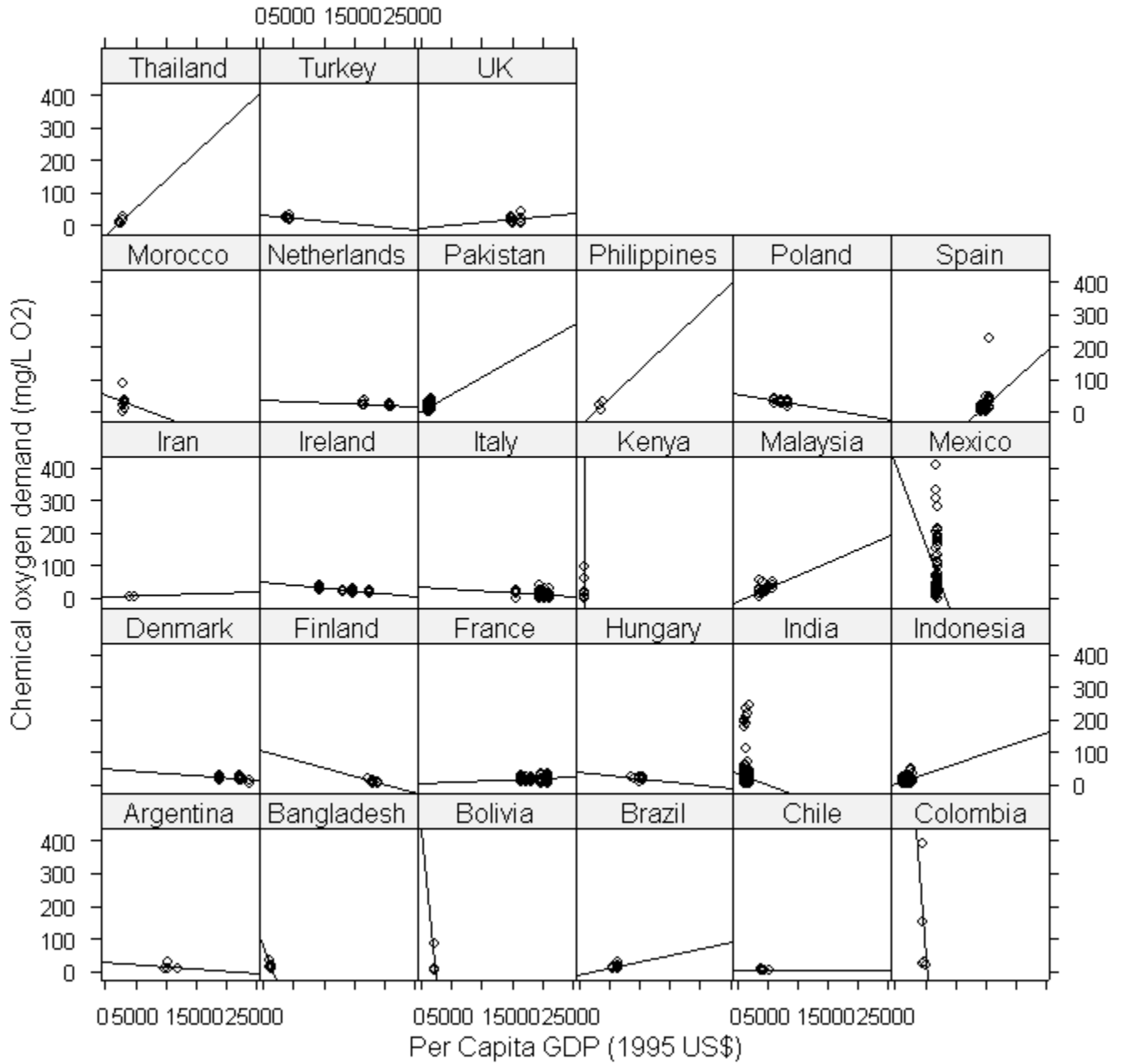# GDP Per Capita vs. Chemical Oxygen Demand by Country

Figure 2.3b

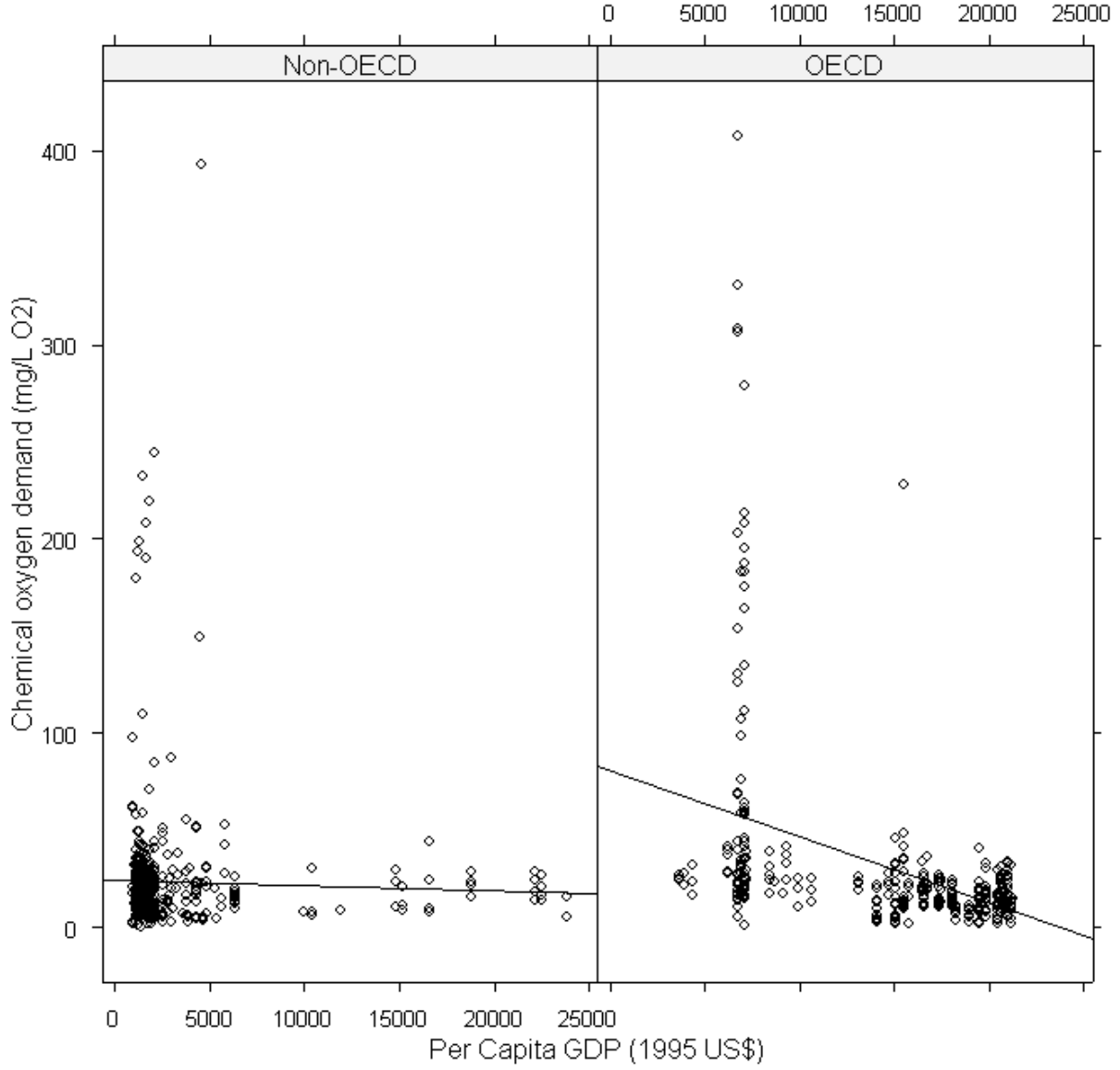**GDP Per Capita vs. Chemical Oxygen Demand by Development Level**

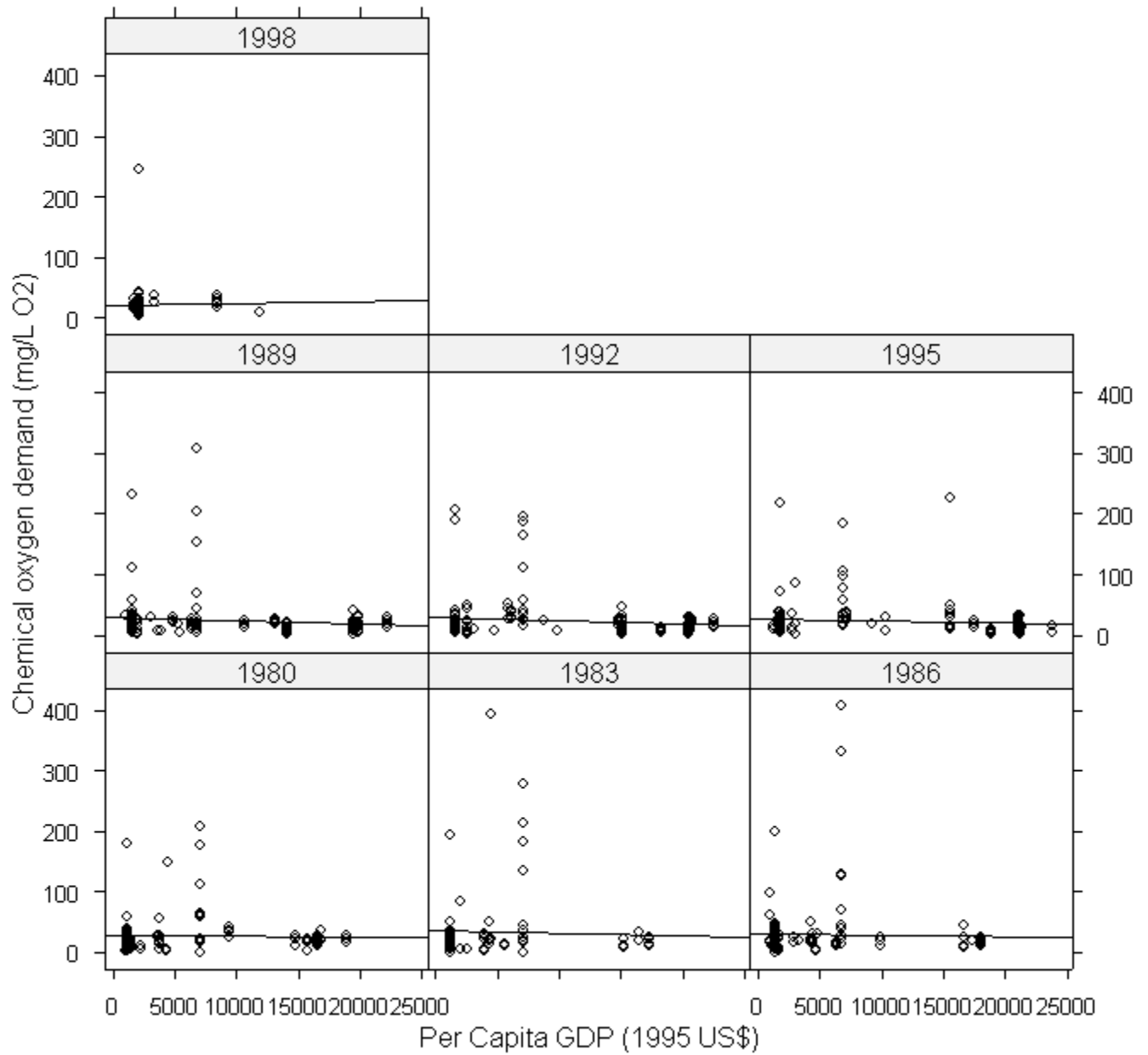Figure 2.3c

GDP Per Capita vs. Chemical Oxygen Demand by Year

Figure 2.3d

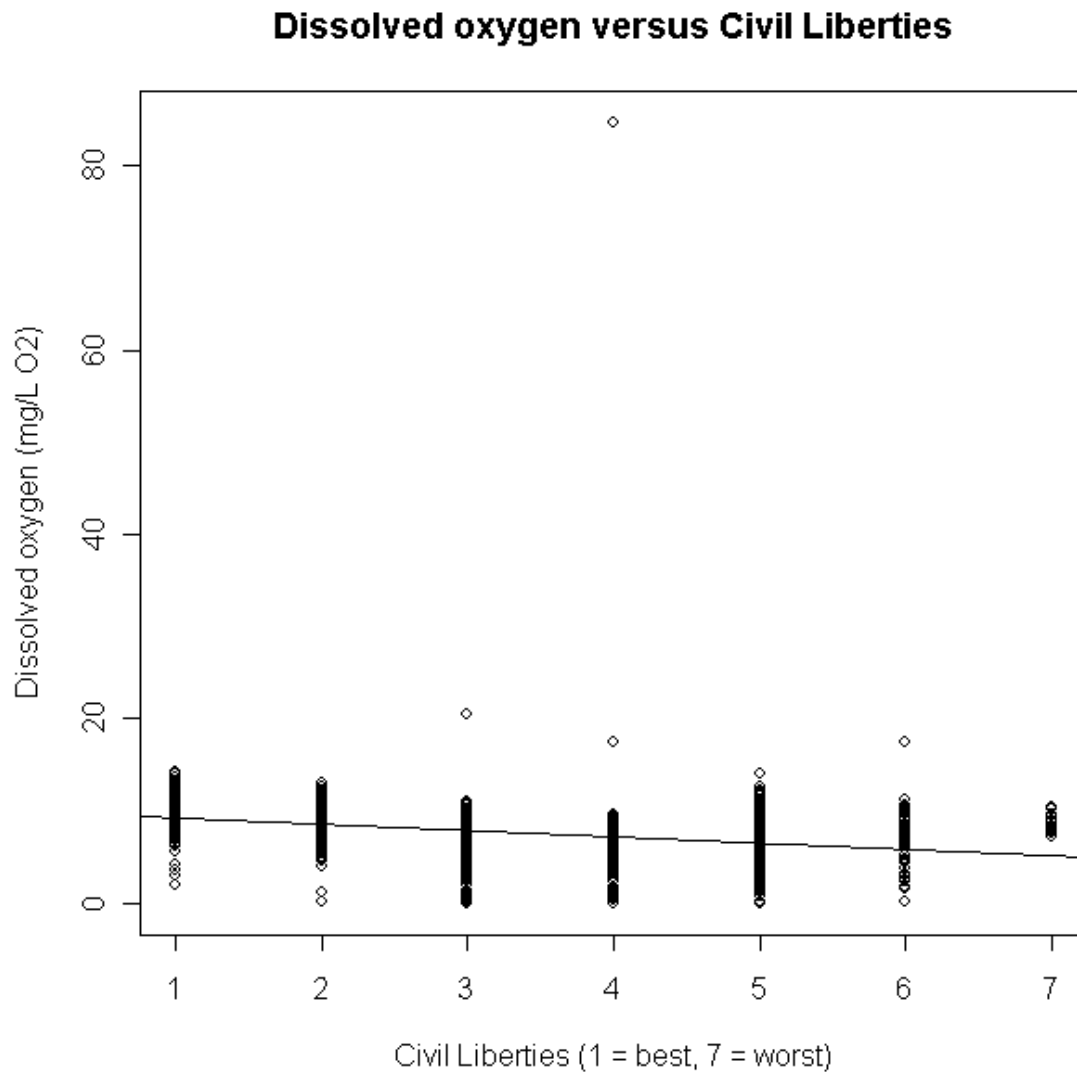FIGURE 3.1: DISSOLVED OXYGEN VERSUS CIVIL LIBERTIES

Dissolved oxygen versus Civil Liberties

Figure 3.1a

```
Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  9.91307    0.19334   51.27   <2e-16 ***
data$cl     -0.68768    0.05503  -12.50   <2e-16 ***
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 3.148 on 1404 degrees of freedom
Multiple R-Squared: 0.1001,   Adjusted R-squared: 0.09946
F-statistic: 156.2 on 1 and 1404 DF,  p-value: < 2.2e-16
```
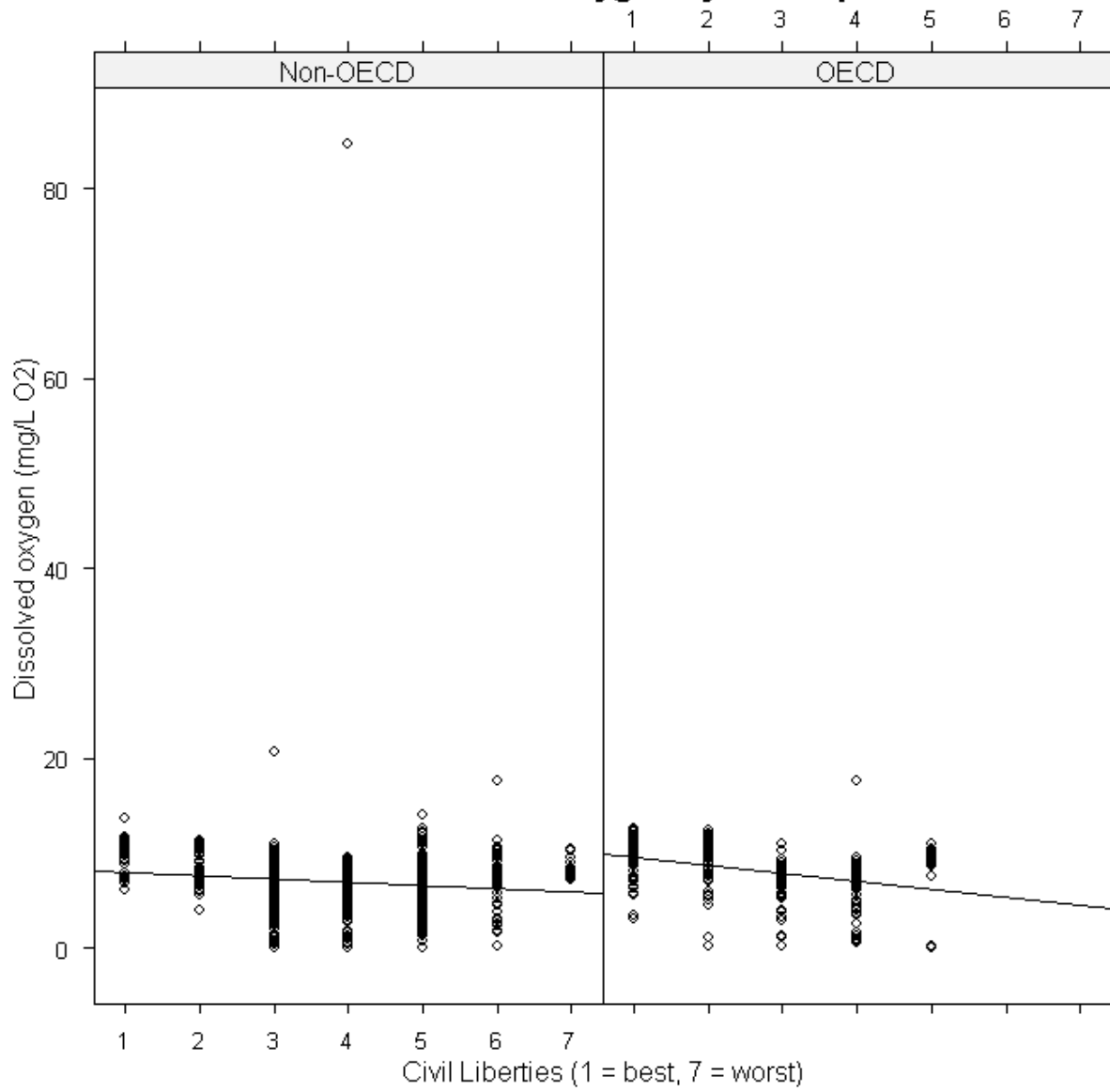
Figure 3.1b

Figure 3.1c

Civil Liberties vs. Dissolved Oxygen by Year

Figure 3.1d

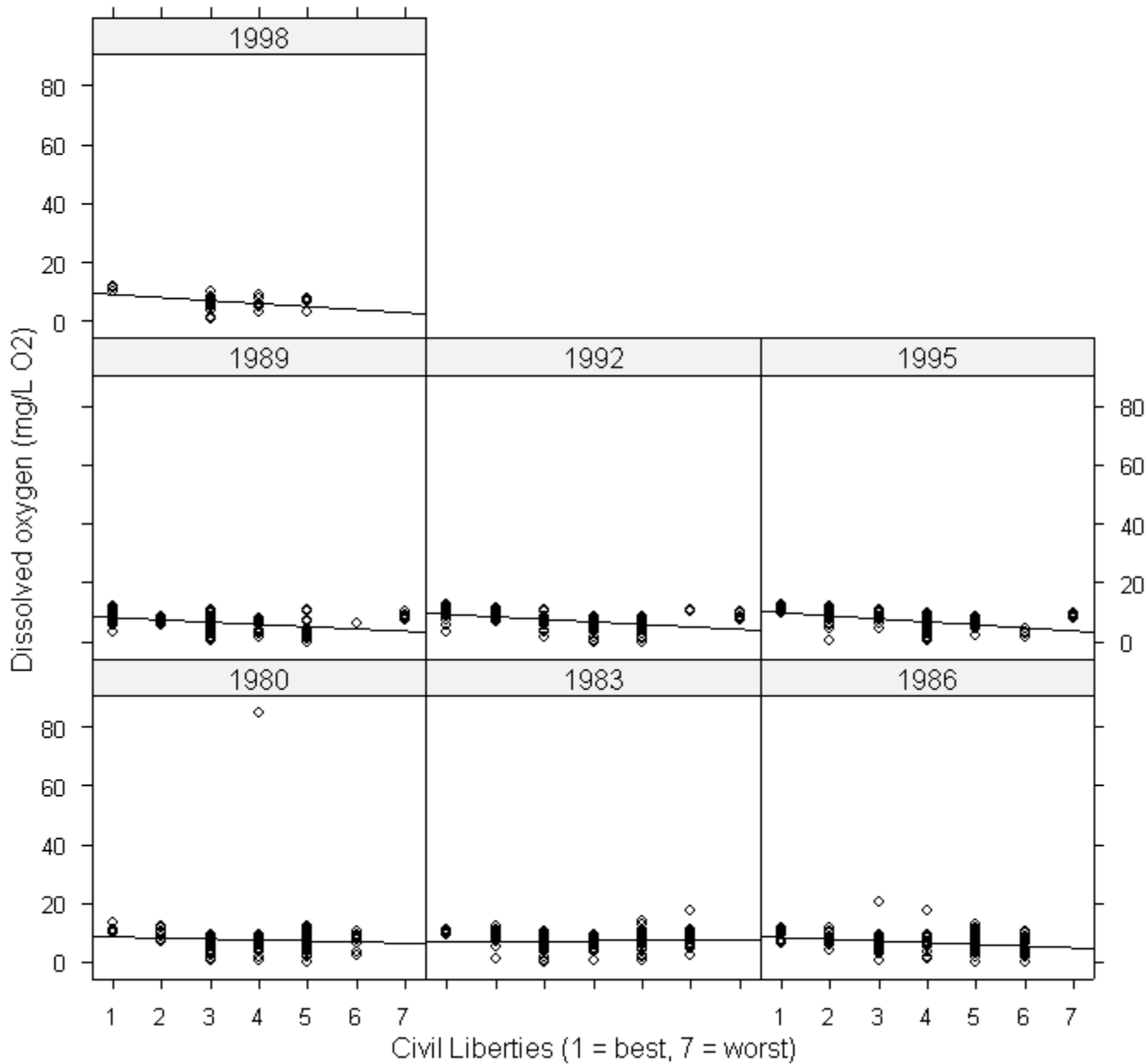FIGURE 3.2: DISSOLVED OXYGEN VERSUS POLITICAL RIGHTS

Dissolved oxygen versus Political Rights
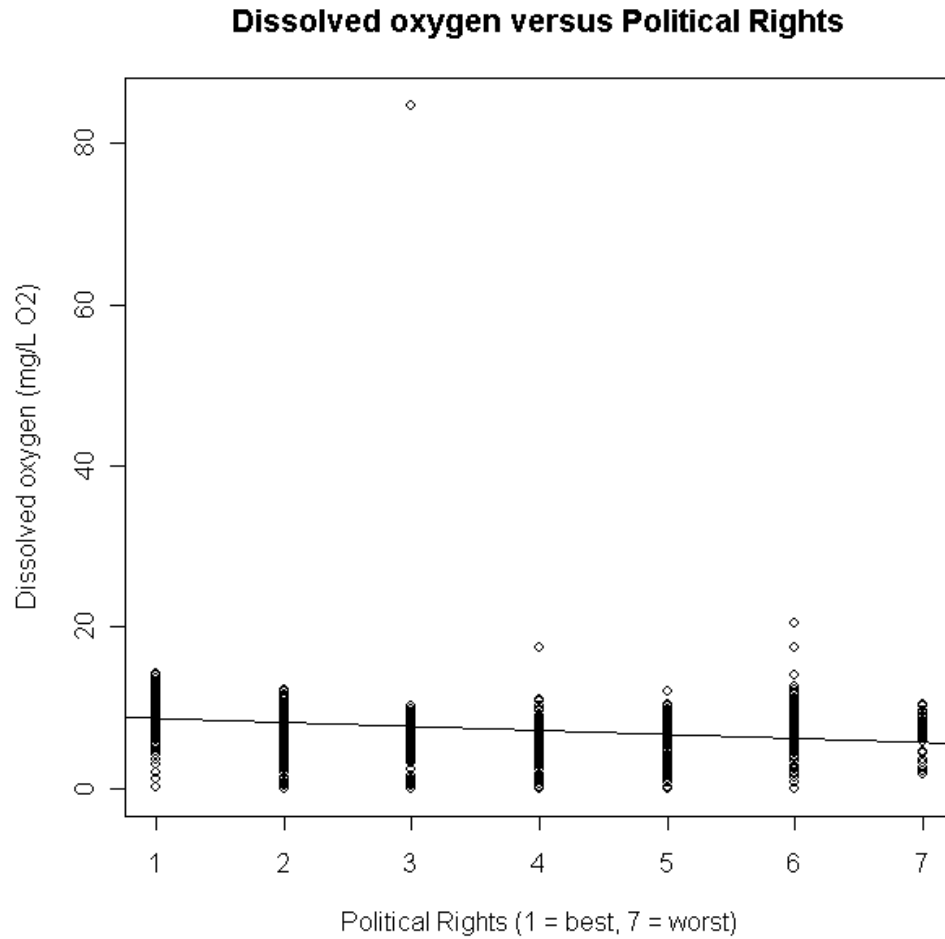

Figure 3.2a

```
          Estimate Std. Error t value Pr(>|t|)
(Intercept)  9.15101     0.16014    57.14    <2e-16 ***
data$pr     -0.49780     0.04771   -10.44    <2e-16 ***
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 3.197 on 1404 degrees of freedom
Multiple R-Squared: 0.07197,  Adjusted R-squared: 0.07131 F-
statistic: 108.9 on 1 and 1404 DF,  p-value:<2.2e1
```
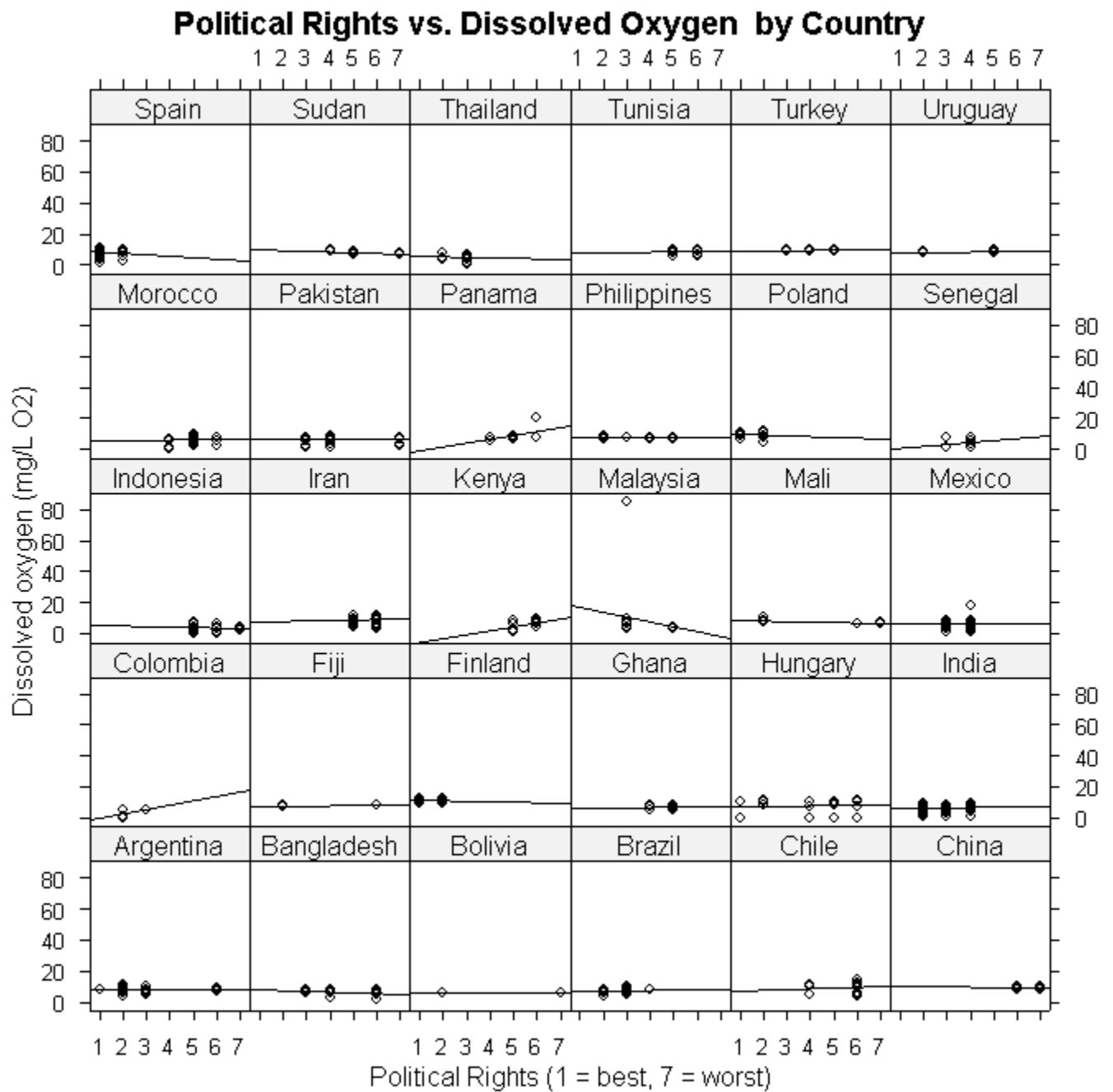
Political Rights vs. Dissolved Oxygen by Country

Figure 3.2b

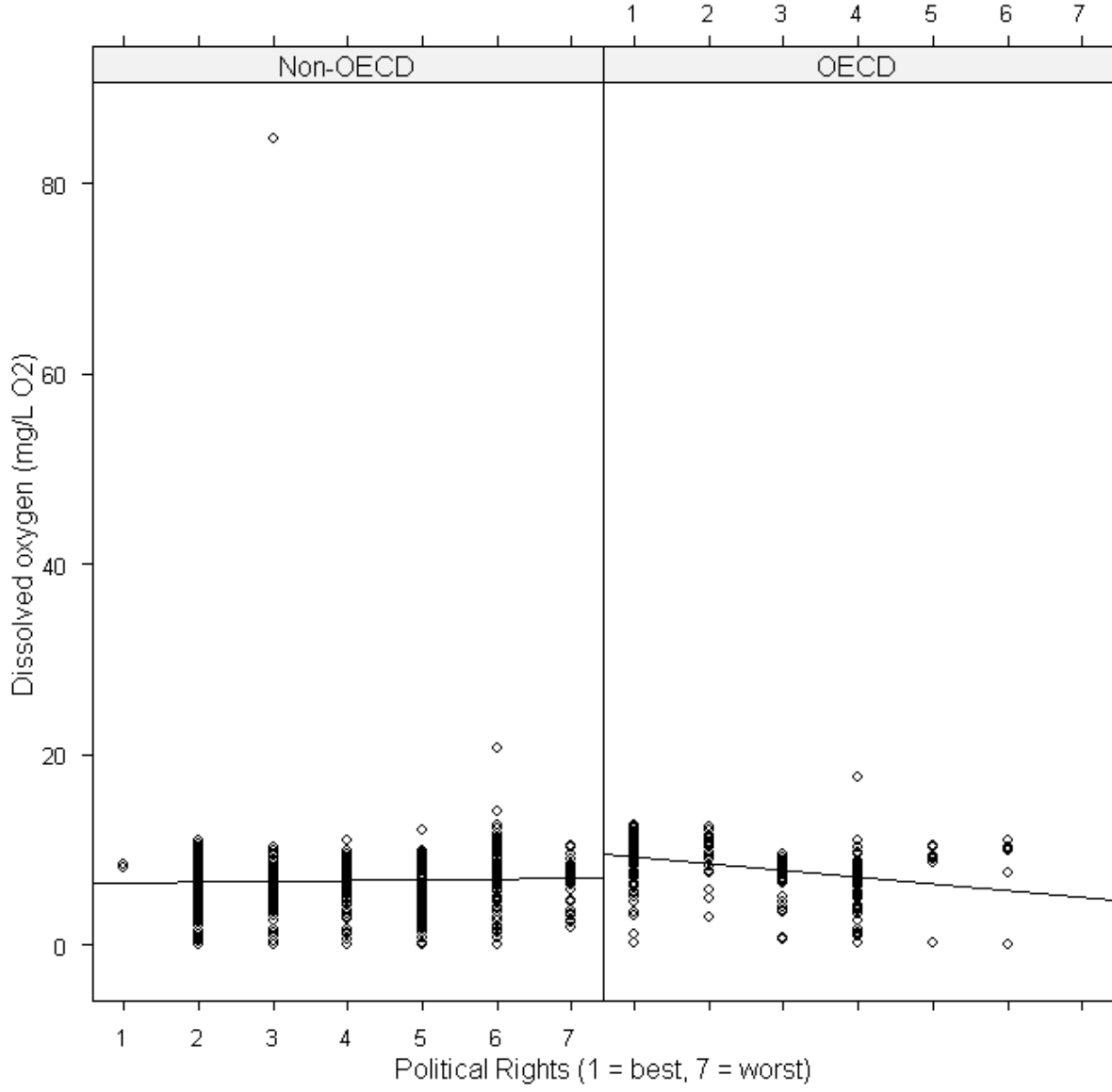**Figure 3.2c**

Political Rights vs. Dissolved Oxygen by Year

Figure 3.2d

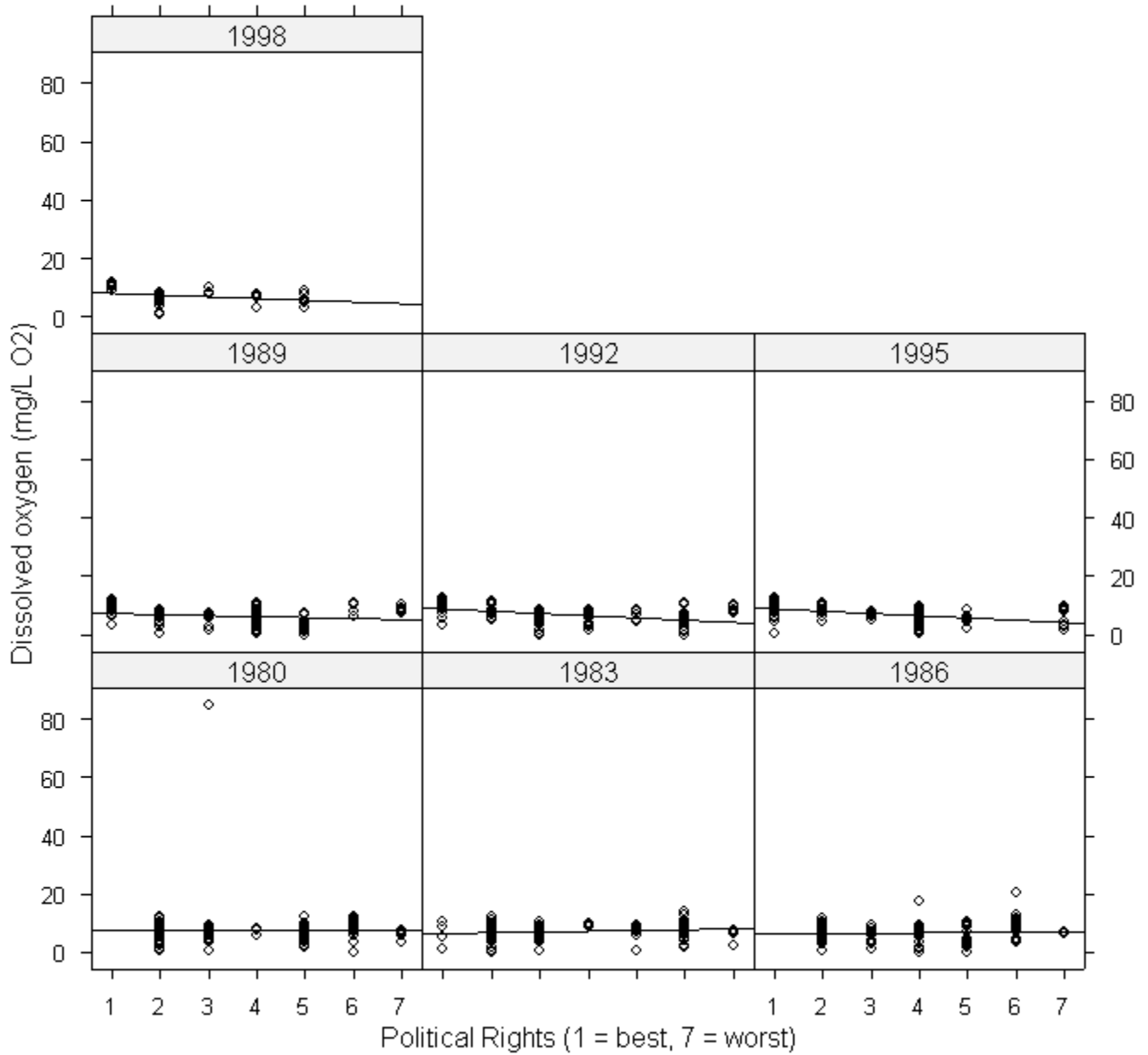FIGURE 3.3: DISSOLVED OXYGEN VERSUS PER CAPITA GDP

Dissolved oxygen versus per capita GDP (1995 US$)
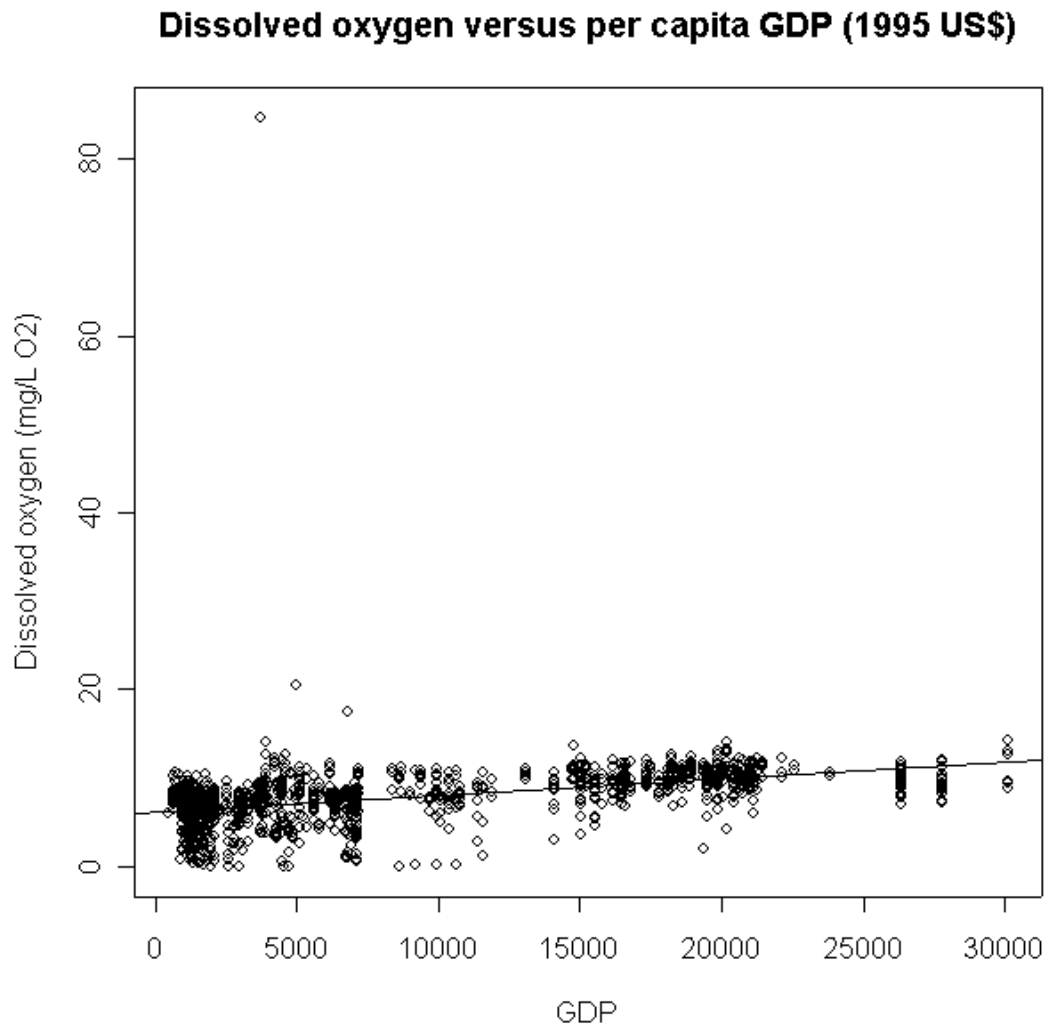

Figure 3.3a

```
             Estimate Std. Error t value Pr(>|t|)
(Intercept) 6.2282329  0.1166342    53.40   <2e-16 ***
data$gdp    0.0001841  0.0000103    17.87   <2e-16 ***
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 2.993 on 1388 degrees of freedom
Multiple R-Squared: 0.1871,   Adjusted R-squared: 0.1865
F-statistic: 319.5 on 1 and 1388 DF,  p-value: < 2.2e-16
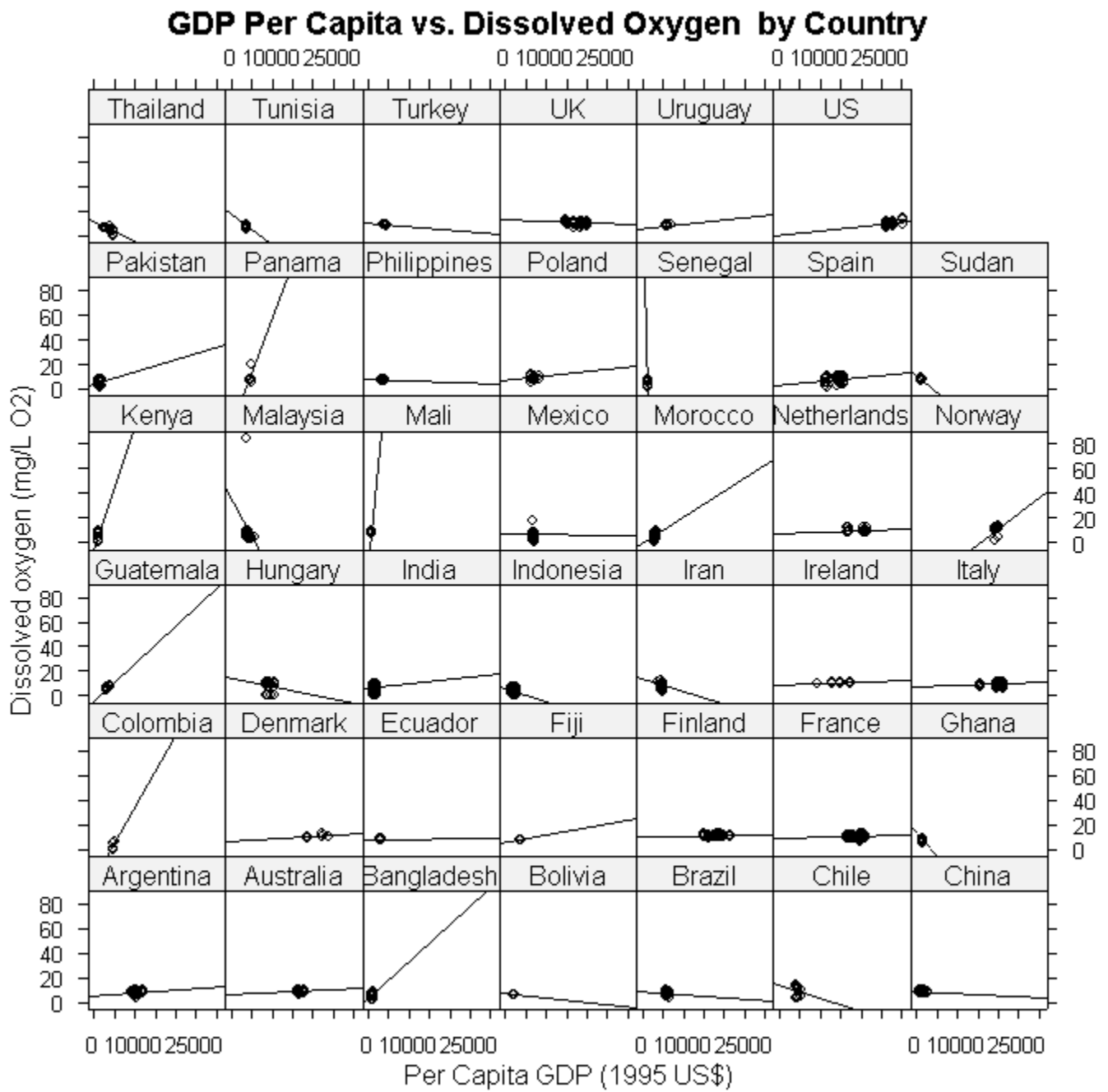```
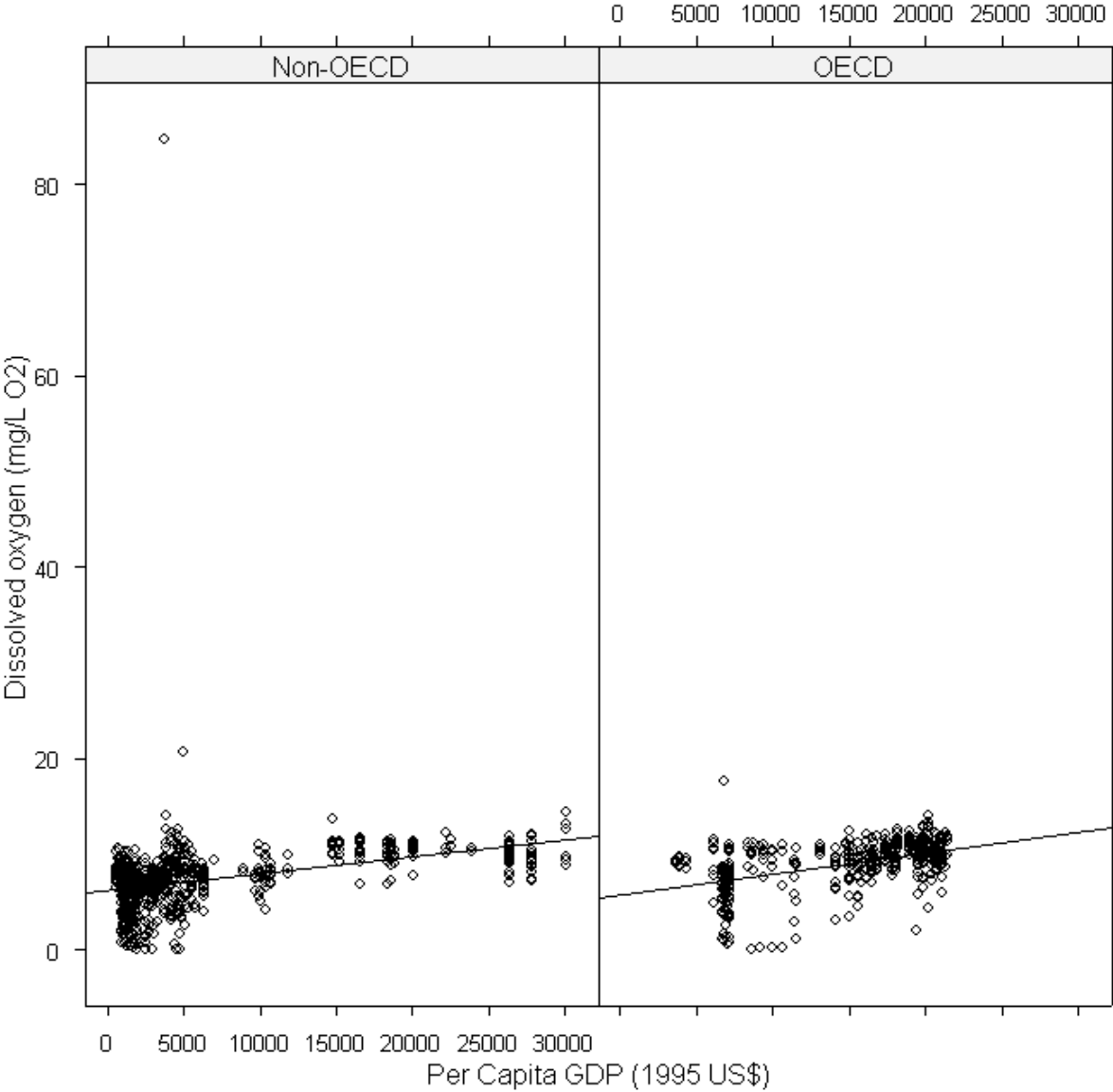
GDP Per Capita vs. Dissolved Oxygen by Country

Figure 3.3b

GDP Per Capita vs. Dissolved Oxygen by Development Level
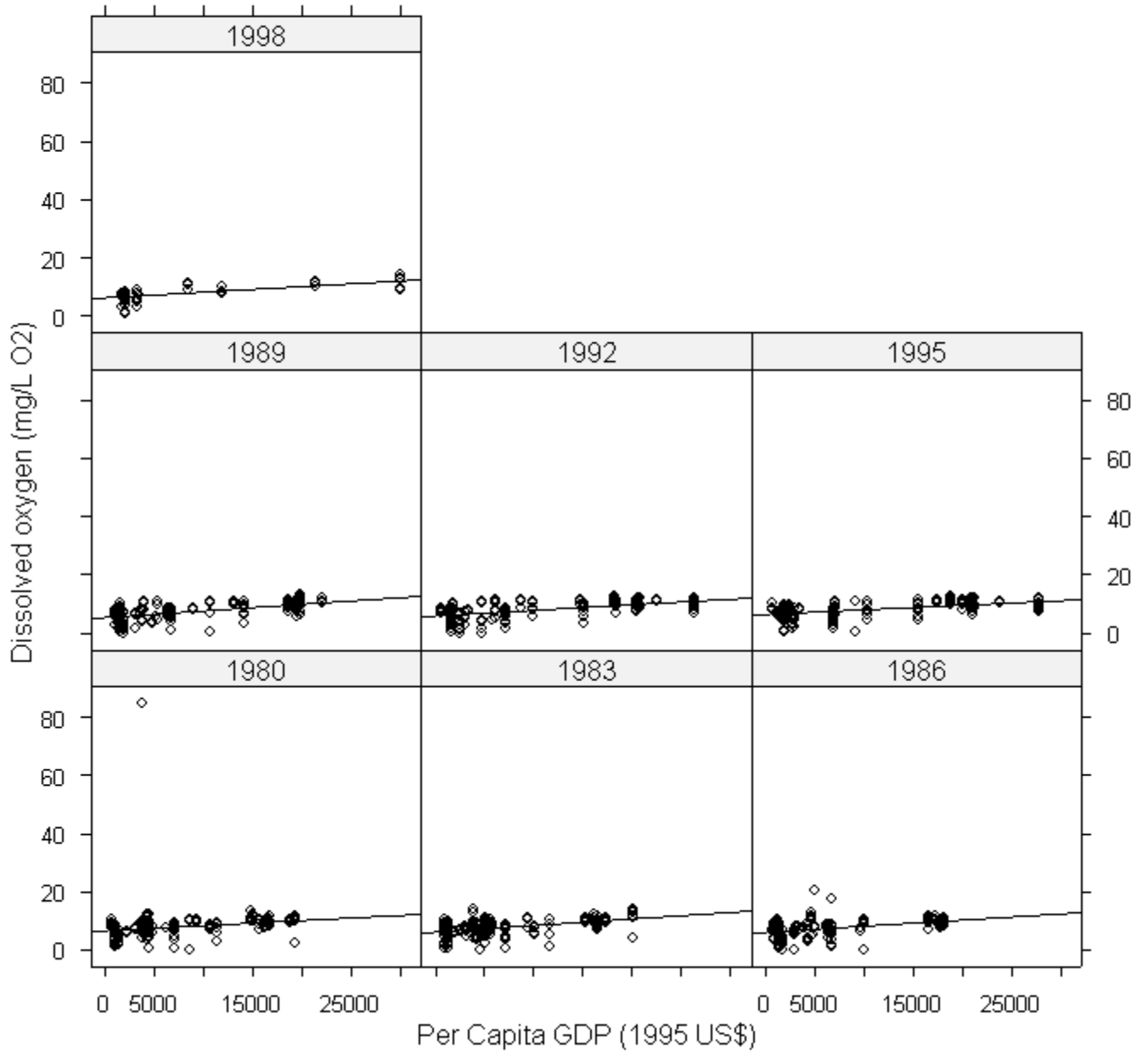
Figure 3.3c

GDP Per Capita vs. Dissolved Oxygen by Year
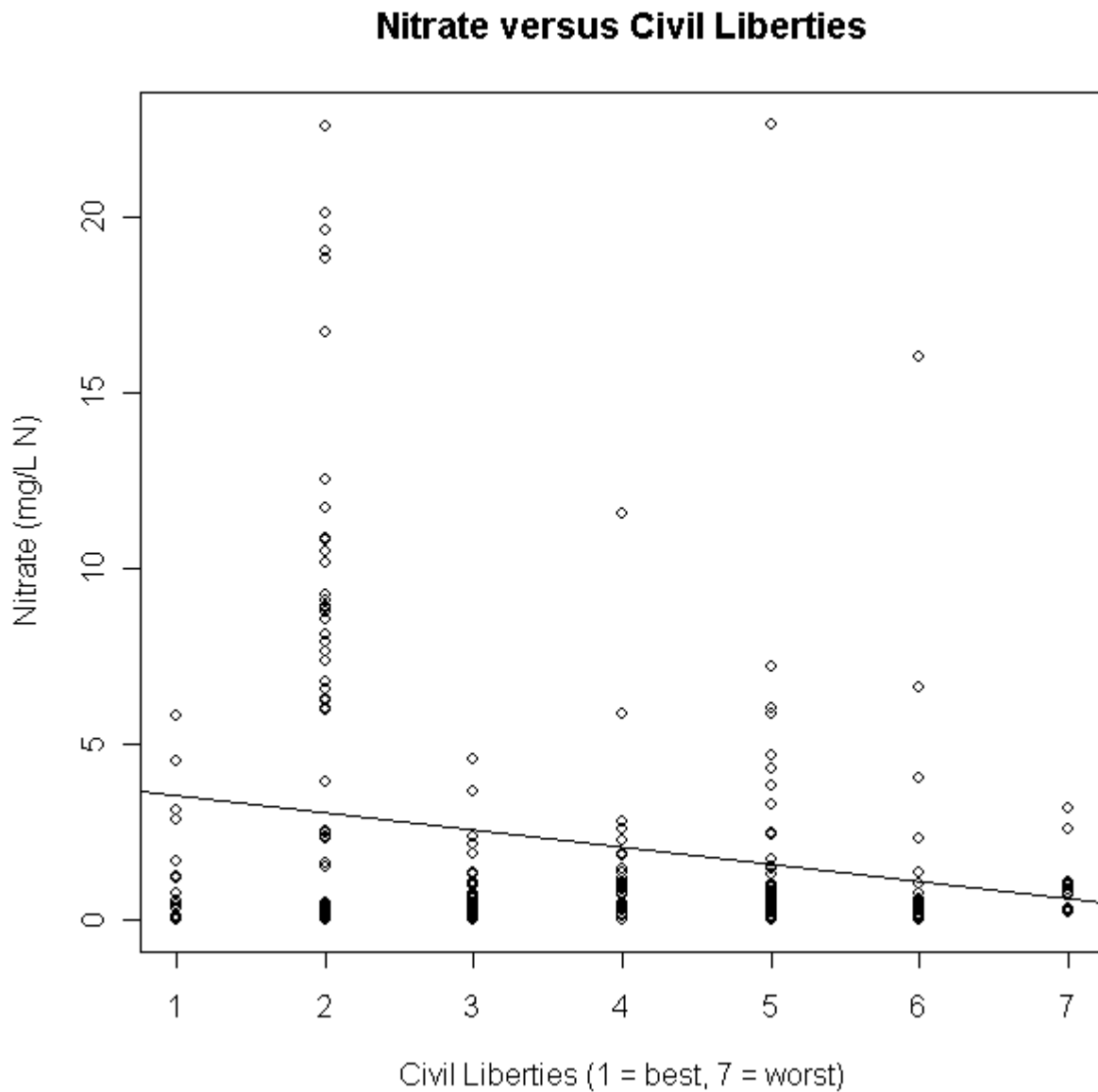
Figure 3.3d

FIGURE 4.1: NITRATE VERSUS CIVIL LIBERTIES



**Nitrate versus Civil Liberties**

**Figure 4.1a**

|            | Estimate | Std. Error | t value | Pr(>|t|) |
|------------|----------|------------|---------|----------|
| (Intercept)| 55311    | 35589      | 1.554   | 0.131    |
| data$cl    | -5887    | 10798      | -0.545  | 0.586    |

Residual standard error: 314500 on 633 degrees of freedom
Multiple R-Squared: 0.0004694,     Adjusted R-squared: -0.00111
F-statistic: 0.2973 on 1 and 633 DF,  p-value: 0.5858

**Civil Liberties vs. Nitrate by Country**
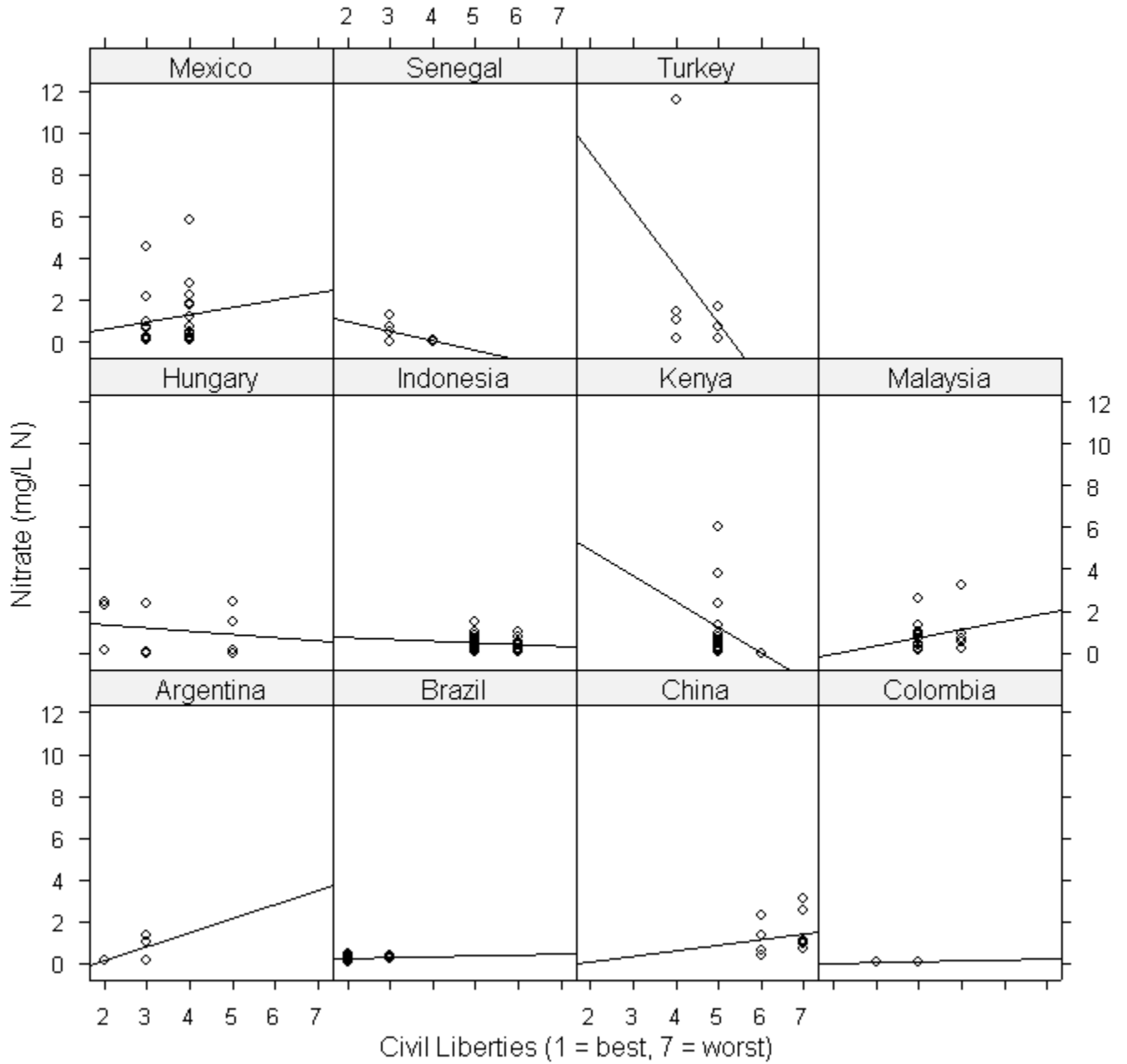
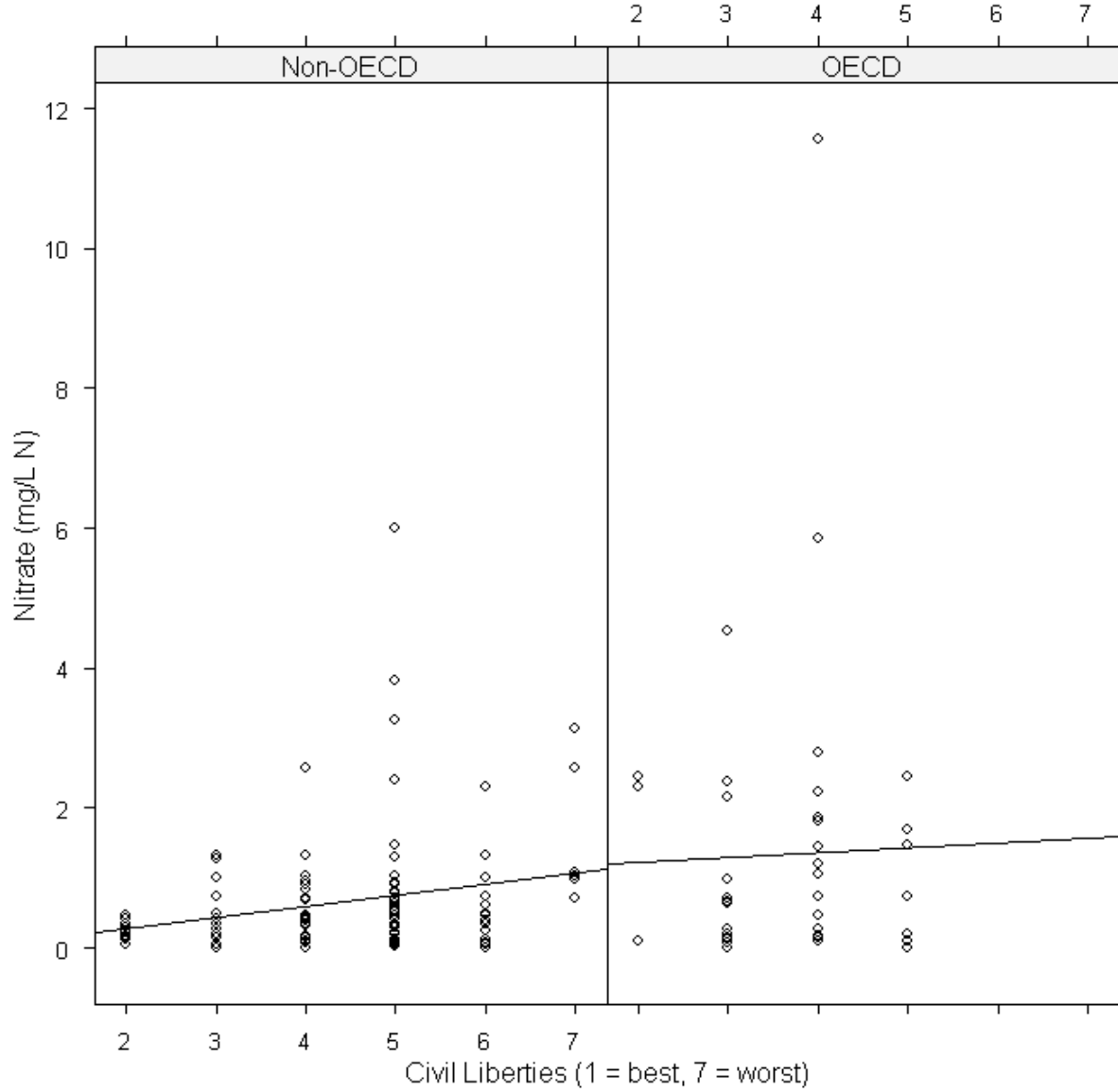Figure 4.1b

**Civil Liberties vs. Nitrate by Development Level**
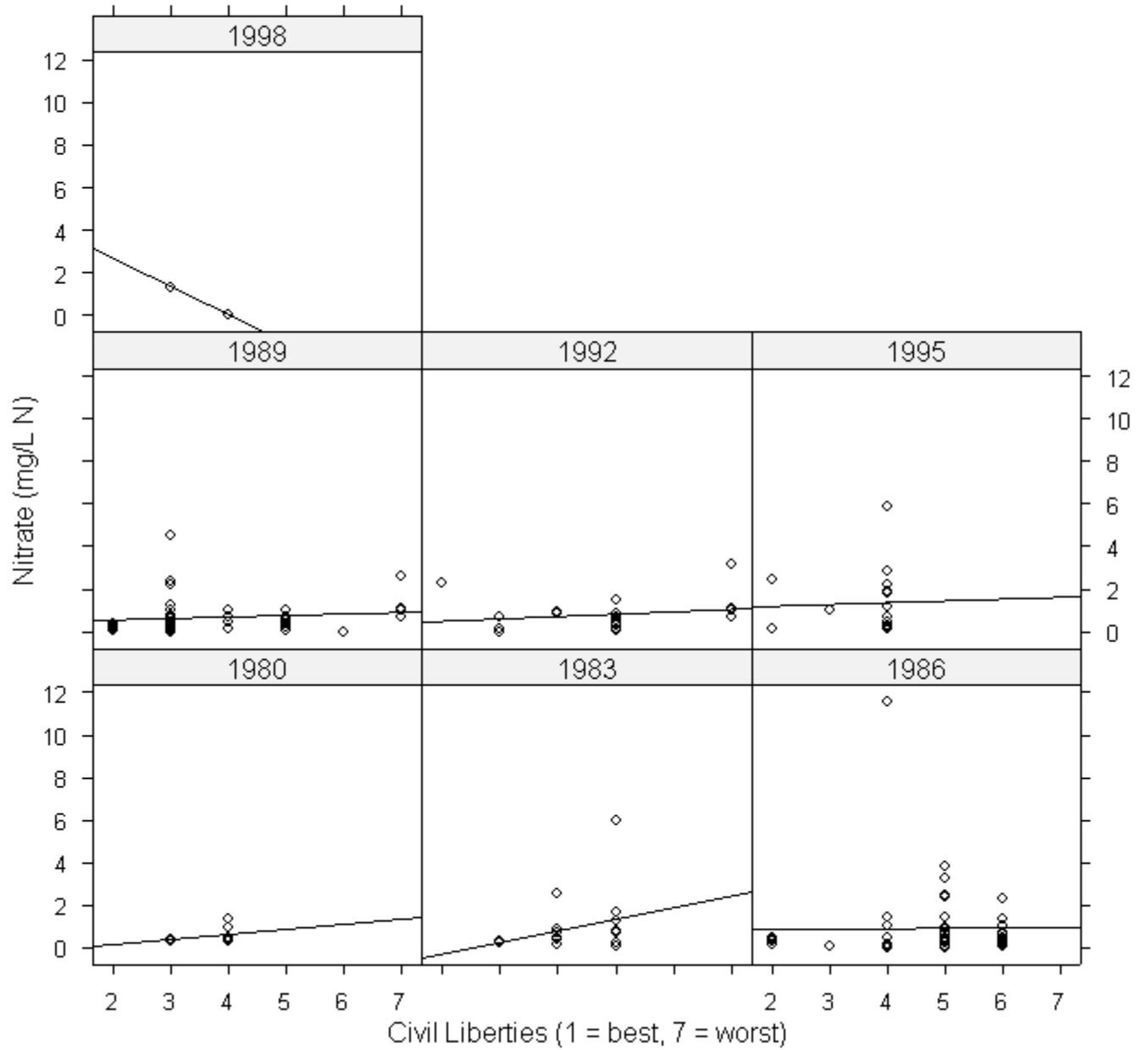
Figure 4.1c

# Civil Liberties vs. Nitrate by Year


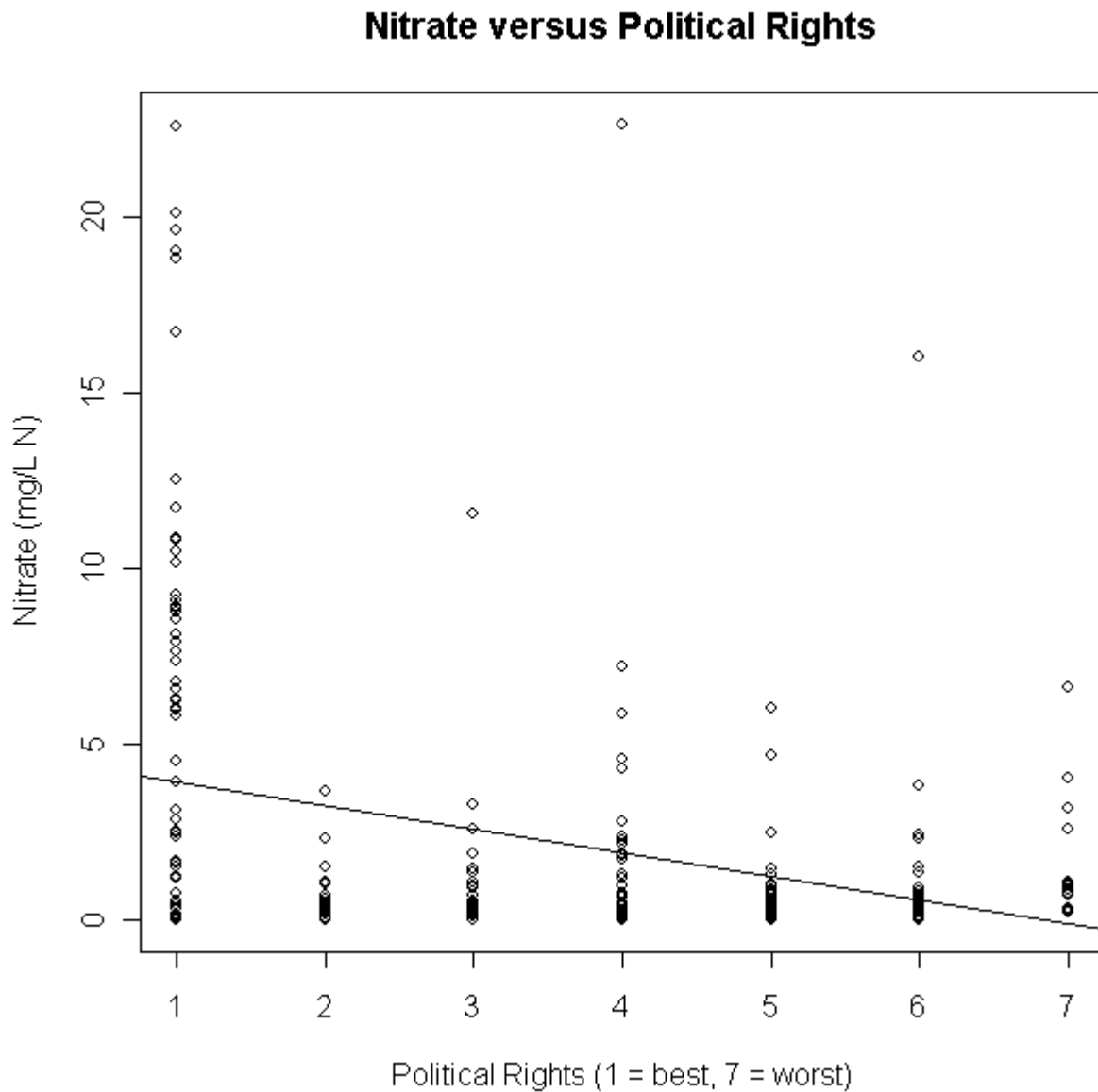
Figure 4.1d

FIGURE 4.2: NITRATE VERSUS POLITICAL RIGHTS

**Nitrate versus Political Rights**



**Figure 4.2a**

```
          Estimate Std. Error t value Pr(>|t|)
(Intercept)    4.5603       0.5094    8.953  < 2e-16 ***
data$pr       -0.6712       0.1294   -5.185 4.46e-07 ***
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 3.896 on 249 degrees of freedom
Multiple R-Squared: 0.09746,  Adjusted R-squared: 0.09384
F-statistic: 26.89 on 1 and 249 DF,  p-value: 4.462e-07
```

Political Rights vs. Nitrate by Country
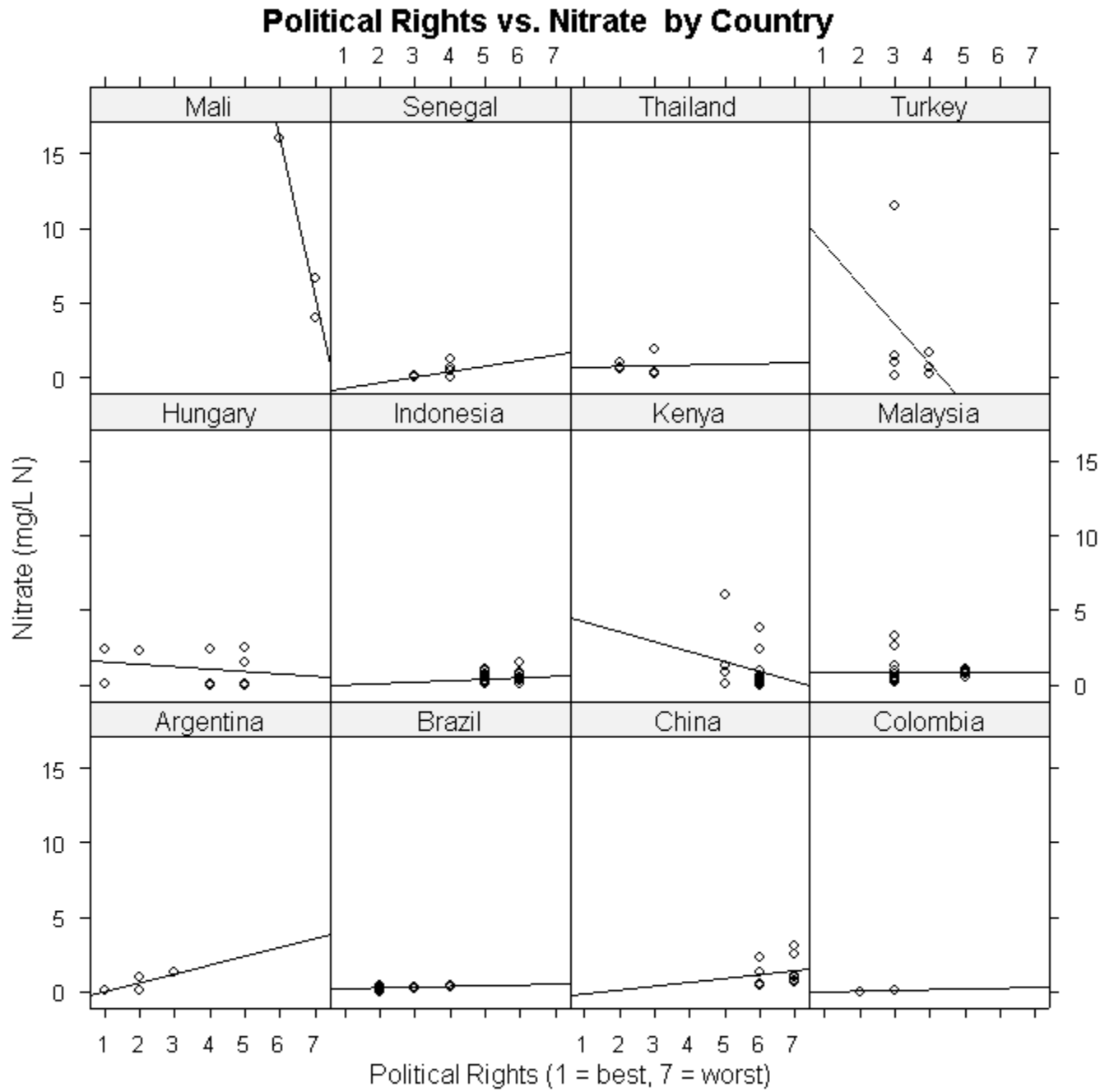
Figure 4b
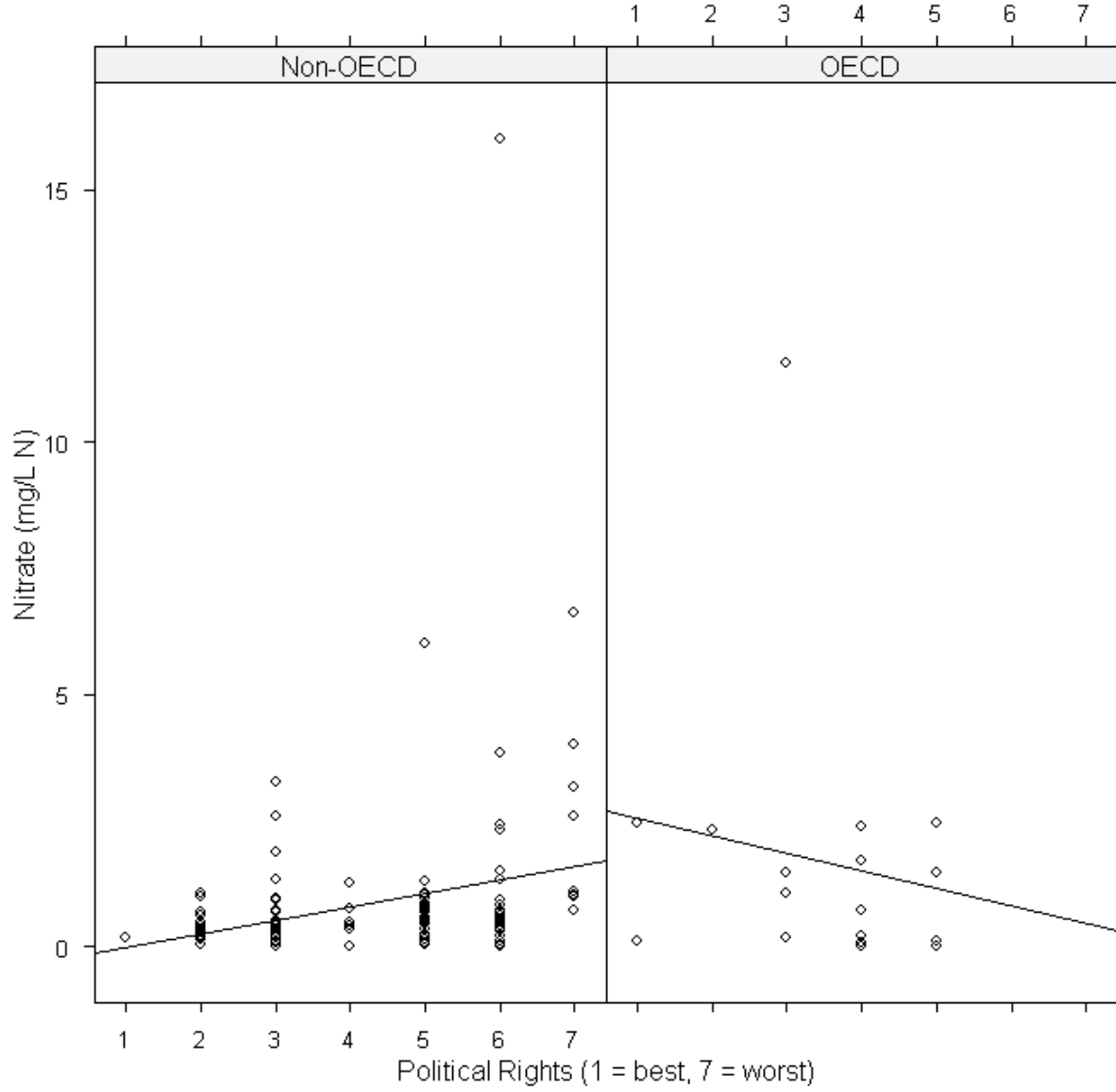
Political Rights vs. Nitrate by Development Level
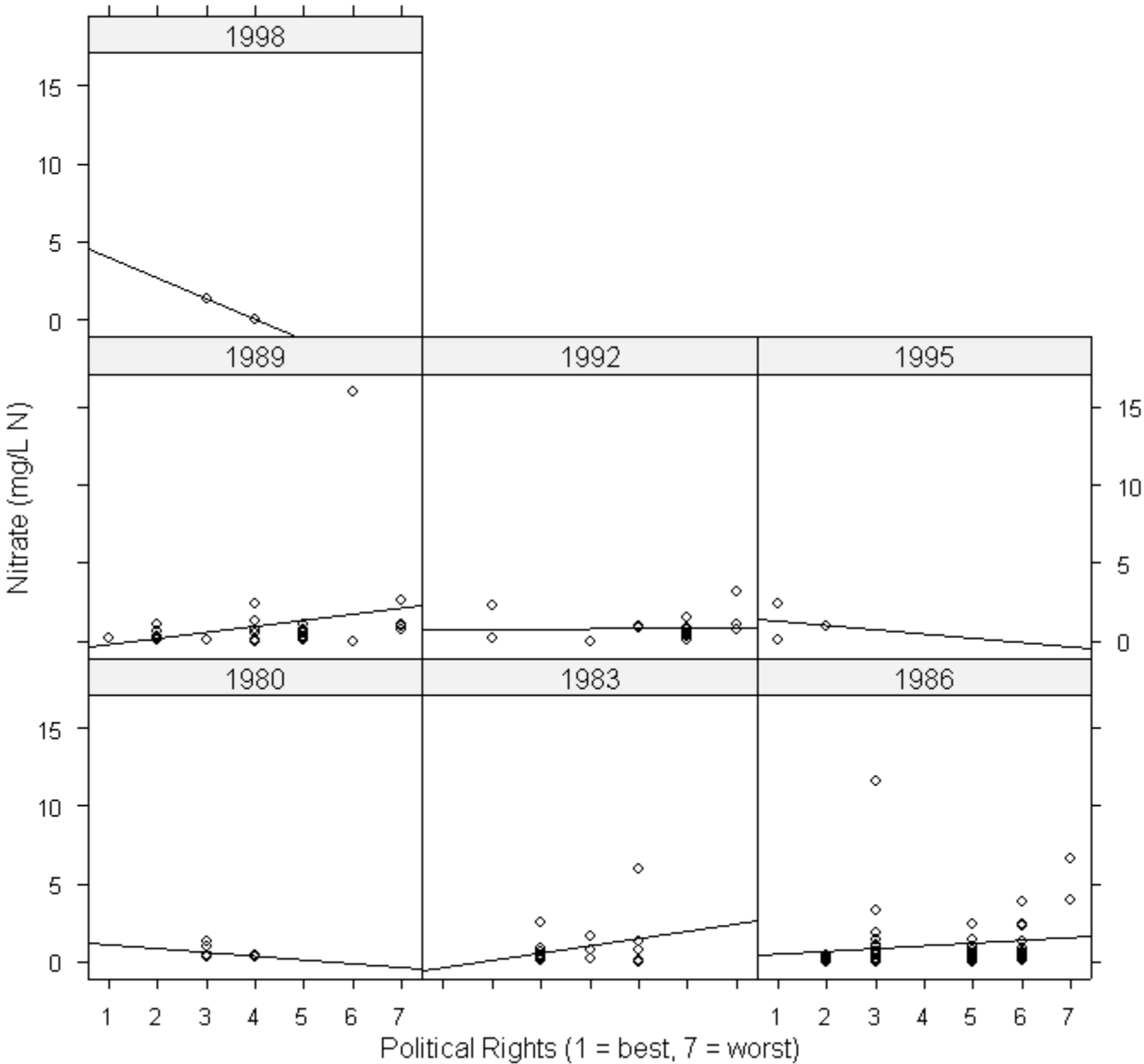
Figure 4.2c

Political Rights vs. Nitrate by Year

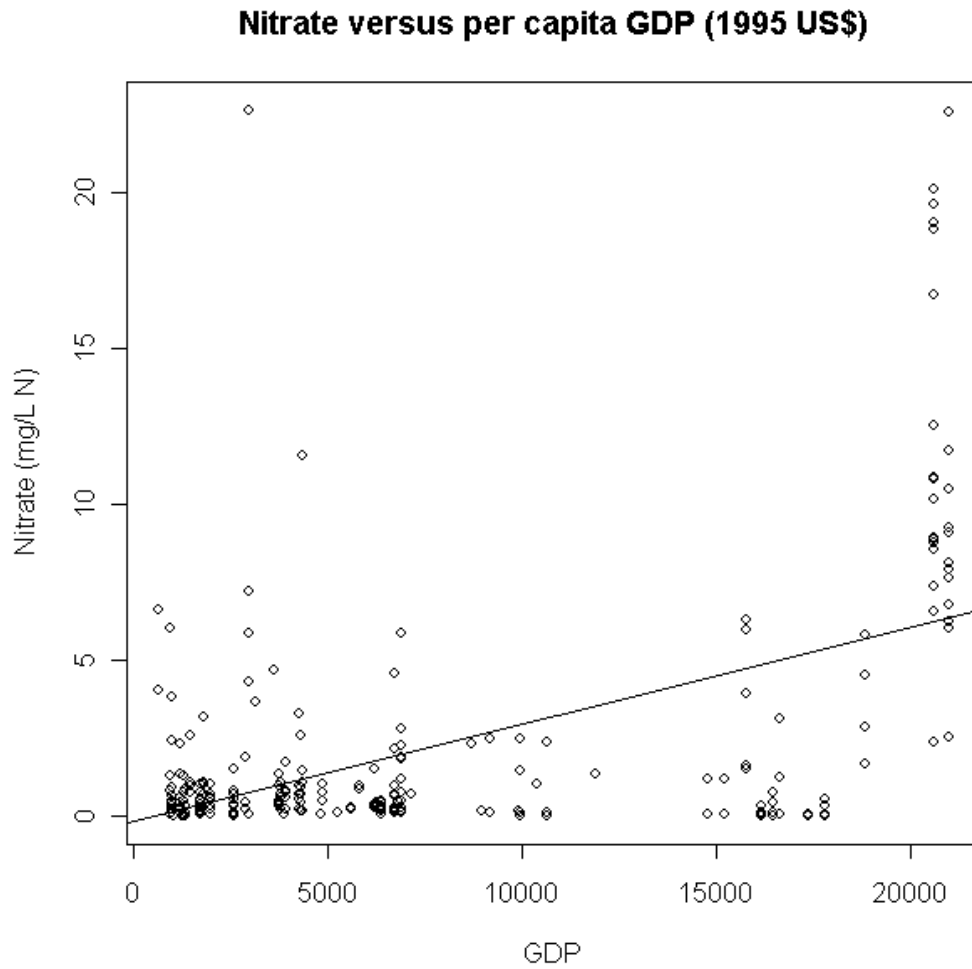Figure 4.2d

FIGURE 4.3: NITRATE VERSUS PER CAPITA GDP

Nitrate versus per capita GDP (1995 US$)

Figure 4.3a

```
              Estimate Std. Error t value Pr(>|t|)
(Intercept) -1.922e-01  3.288e-01  -0.585    0.559
data$gdp     3.104e-04  3.221e-05   9.637   <2e-16 ***
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 3.425 on 248 degrees of freedom
Multiple R-Squared: 0.2725,   Adjusted R-squared: 0.2695 F-
statistic: 92.87 on 1 and 248 DF,  p-value: < 2.2e-16
```
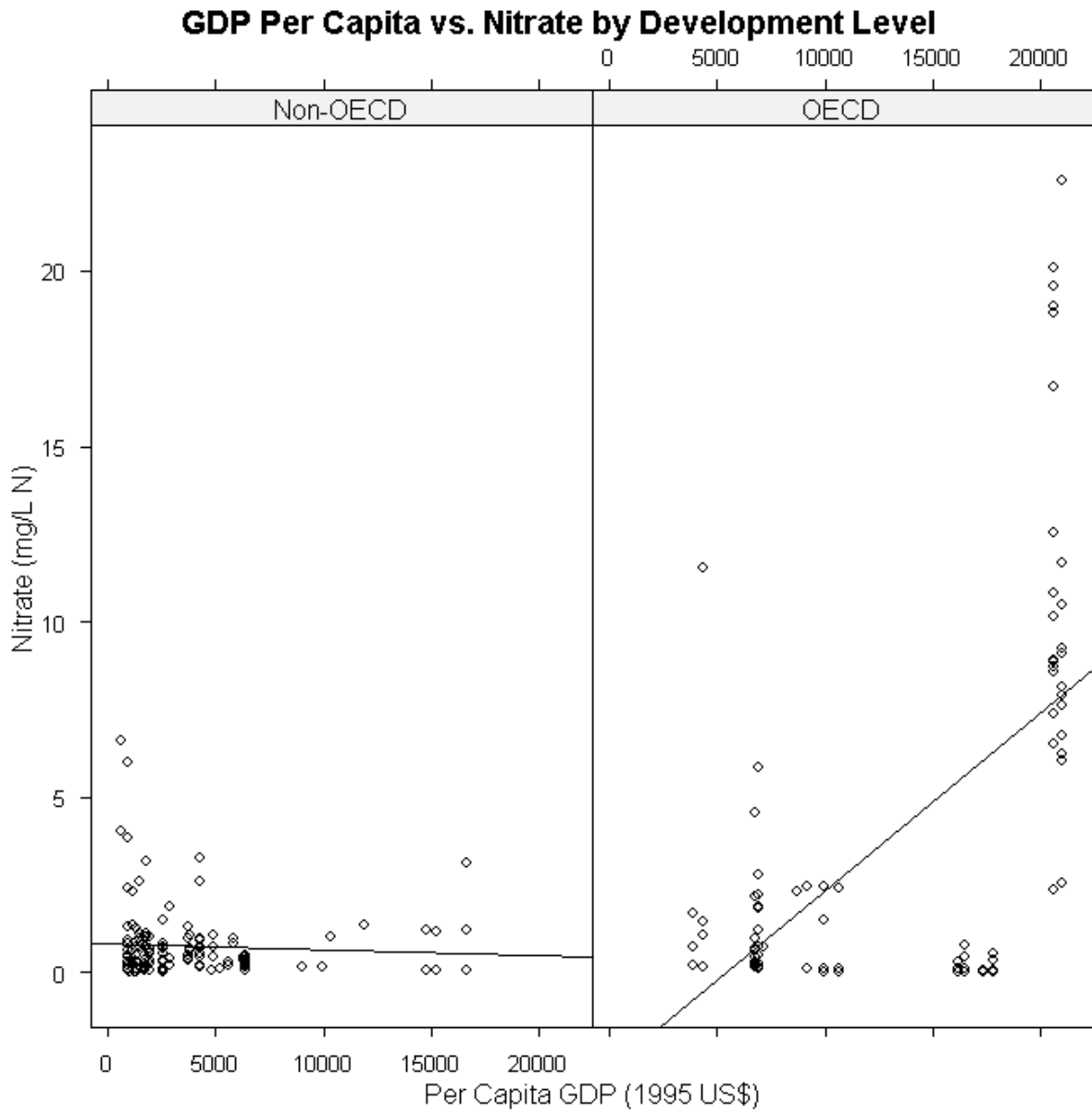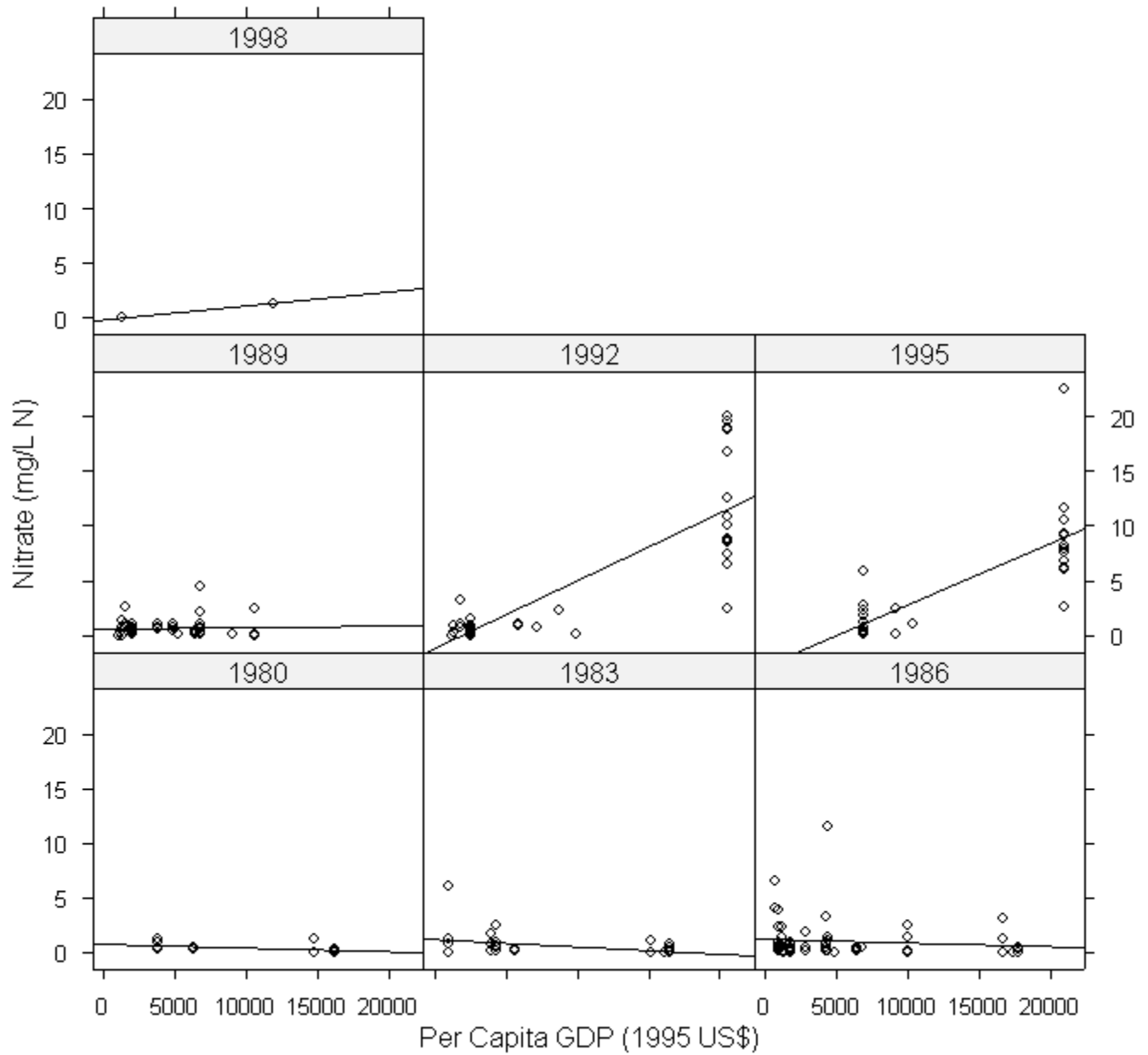
GDP Per Capita vs. Nitrate by Country

Figure 4.3b

GDP Per Capita vs. Nitrate by Development Level
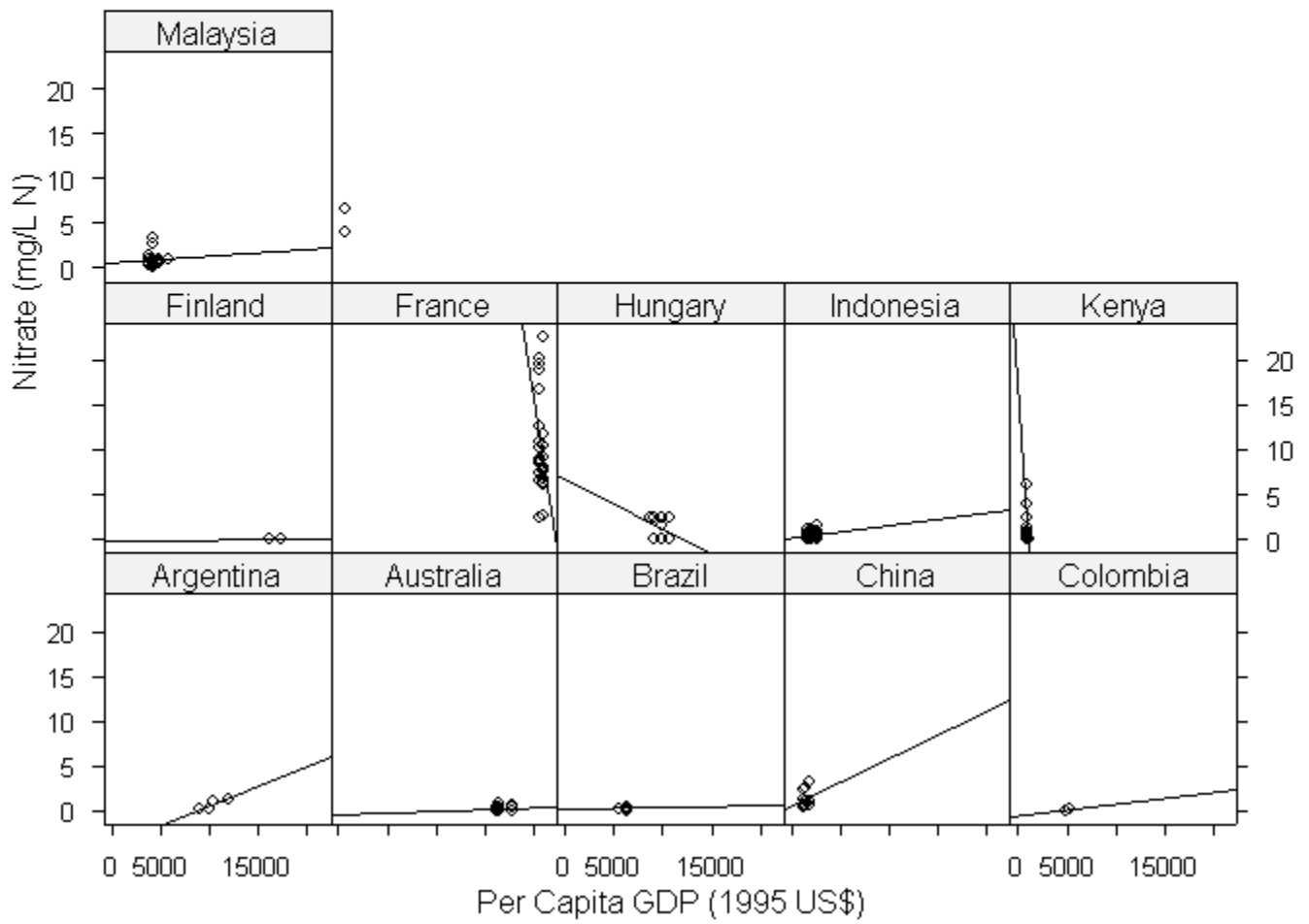
Figure 4.3c

GDP Per Capita vs. Nitrate by Year

Figure 4.3d

FIGURE 5.1: TOTAL ARSENIC VERSUS CIVIL LIBERTIES

Total arsenic versus Civil Liberties
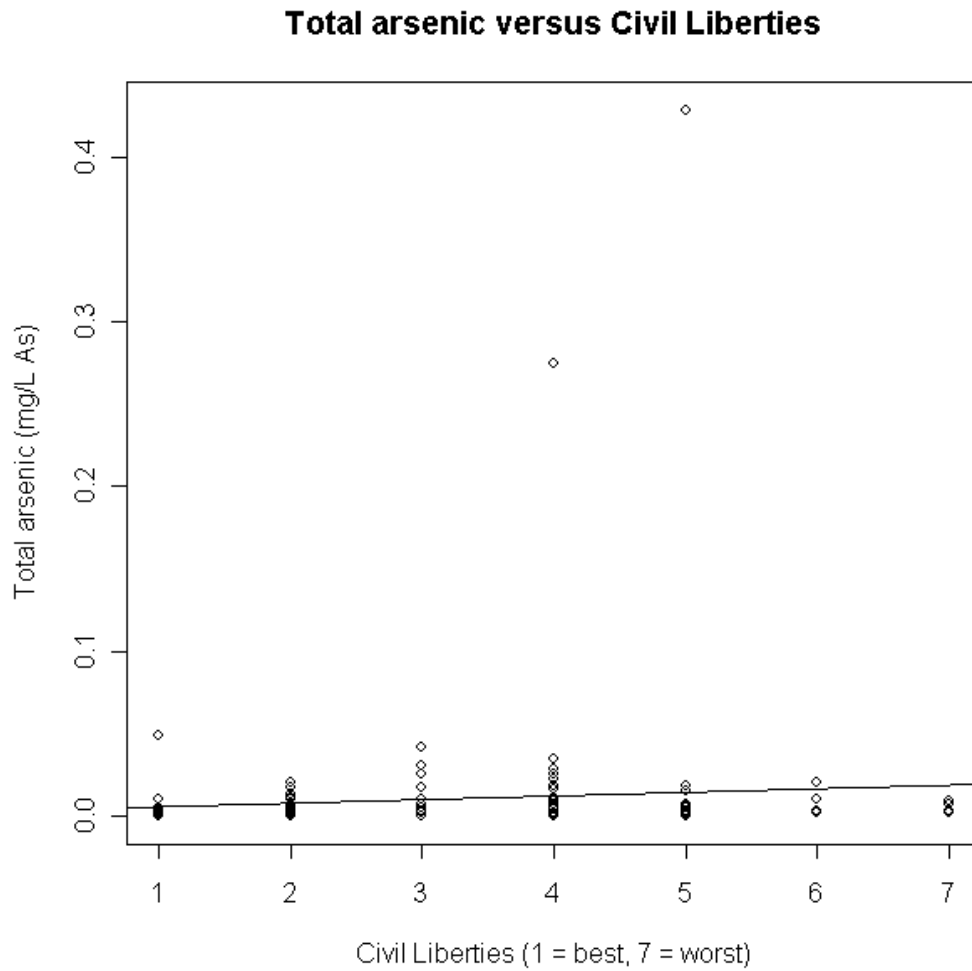
Figure 5.1a

```
          Estimate Std. Error t value Pr(>|t|)
(Intercept) 0.002904   0.005149   0.564     0.573
data$cl     0.002248   0.001554   1.447     0.150
```

Residual standard error: 0.03522 on 207 degrees of freedom
Multiple R-Squared: 0.01001, Adjusted R-squared: 0.005225
F-statistic: 2.092 on 1 and 207 DF, p-value: 0.1495

Civil Liberties vs. Total Arsenic by Country

Total arsenic (mg/L As)

Civil Liberties (1 = best, 7 = worst)
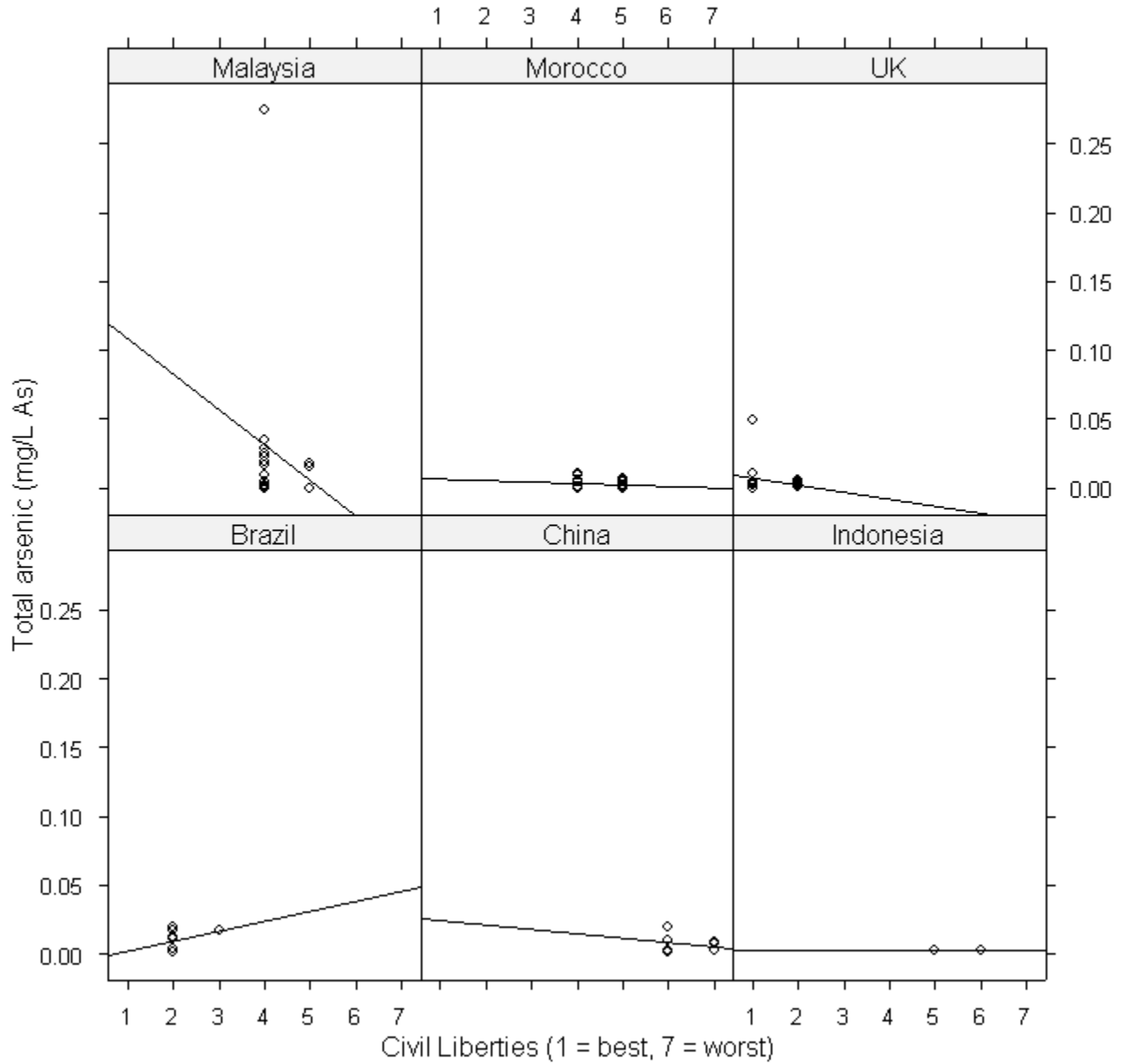
Figure 5.1b

Civil Liberties vs. Total Arsenic by Development Level

Figure 5.1c
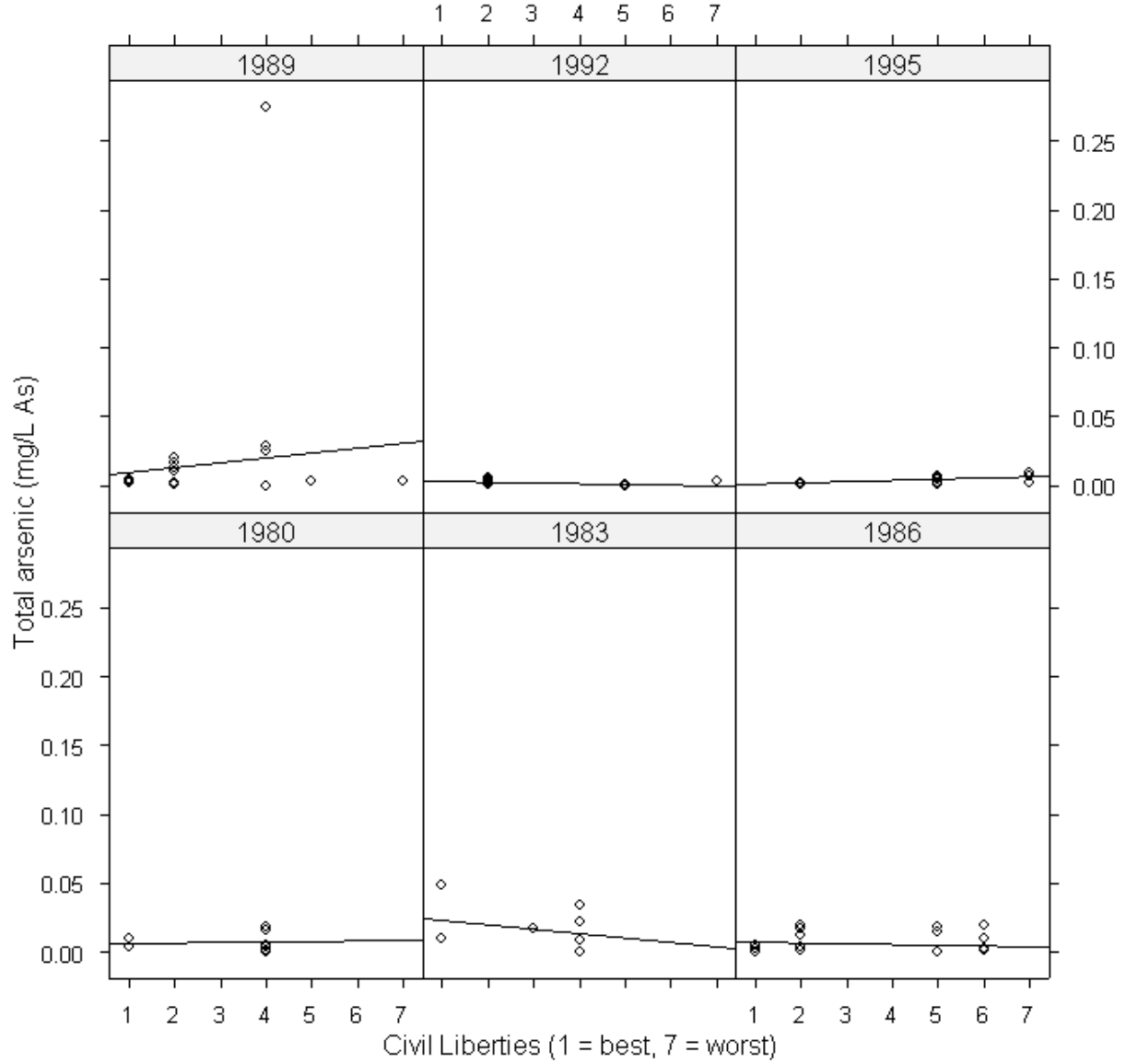
Figure 5.1d

FIGURE 5.2: TOTAL ARSENIC VERSUS POLITICAL RIGHTS

Total arsenic versus Political Rights

Political Rights (1 = best, 7 = worst)
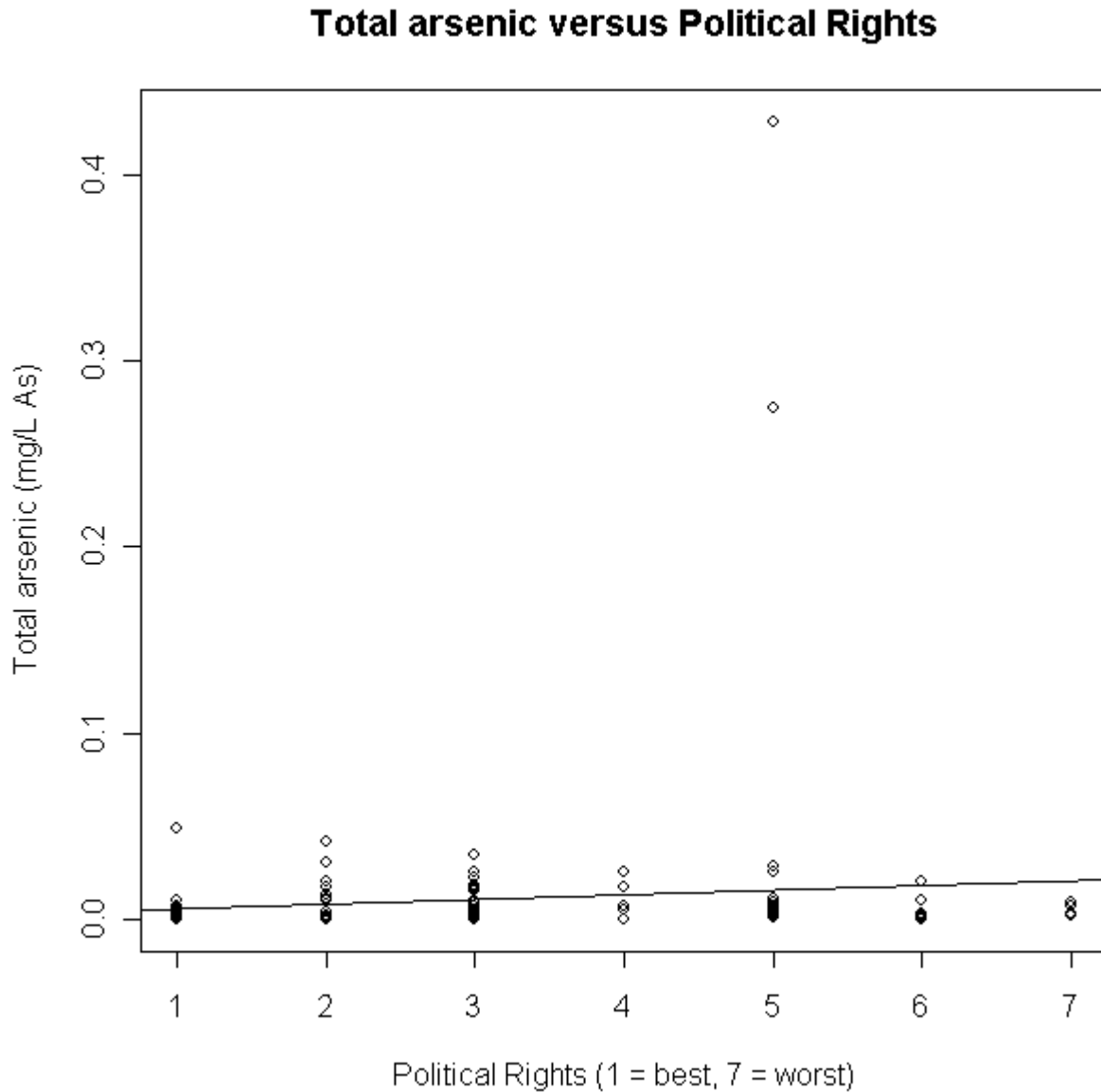
Figure 5.2a

```
          Estimate Std. Error t value Pr(>|t|)
(Intercept) 0.003122   0.004124    0.757   0.4499
data$pr     0.002545   0.001338    1.902   0.0585 .
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 0.03509 on 207 degrees of freedom
Multiple R-Squared: 0.01718,  Adjusted R-squared: 0.01243
F-statistic: 3.619 on 1 and 207 DF,  p-value: 0.05851
```
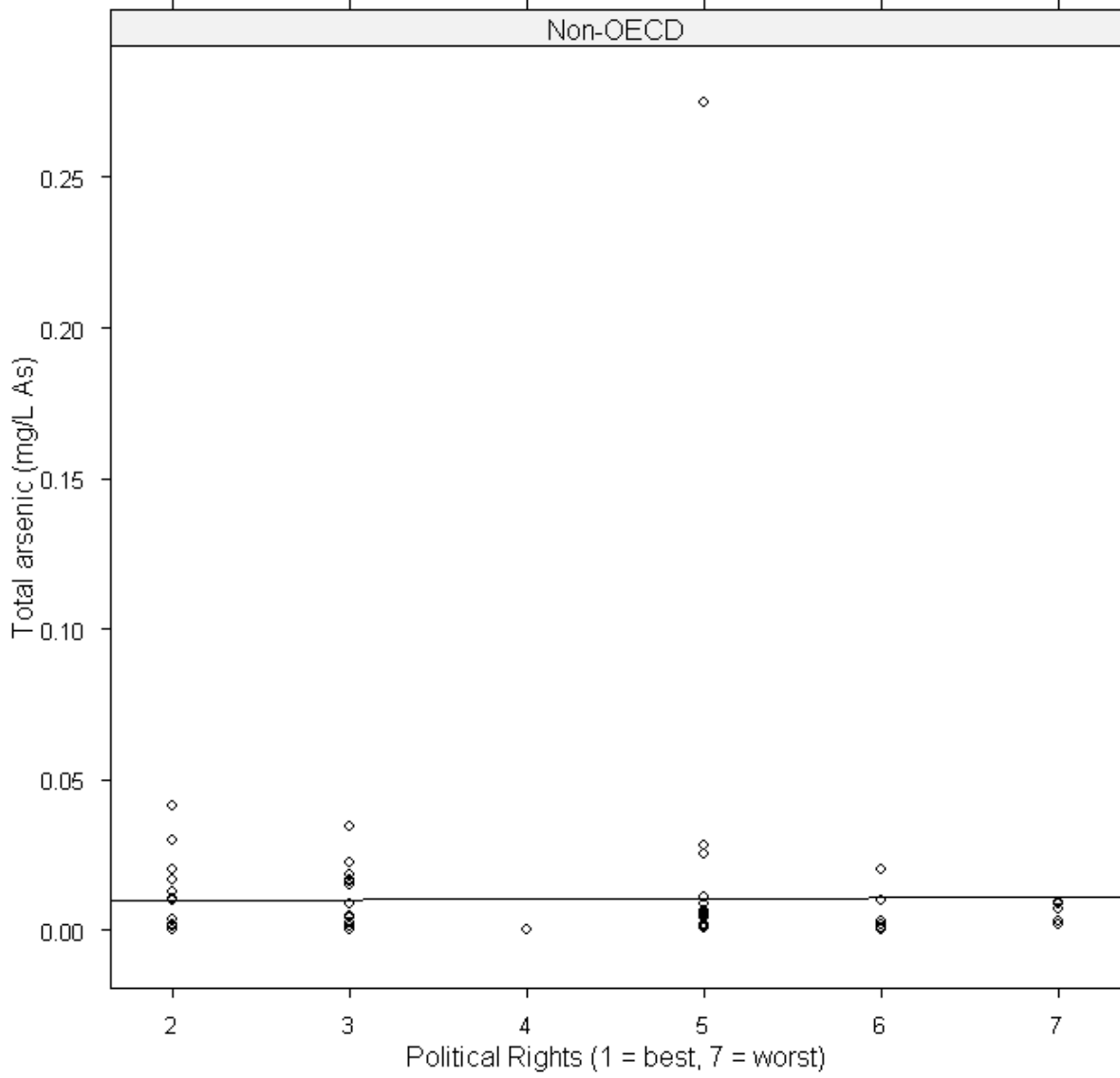
Political Rights vs. Total Arsenic by Country
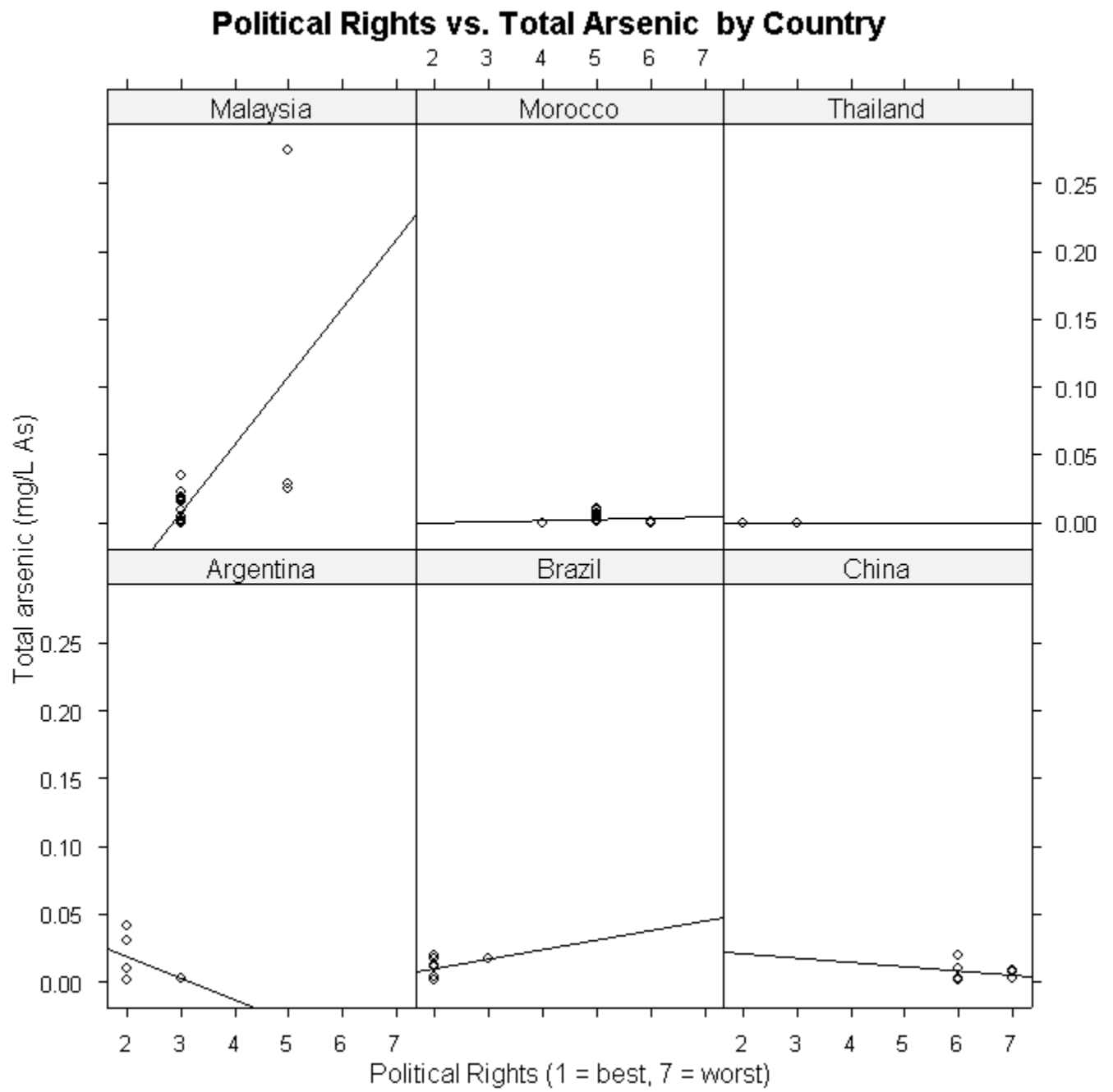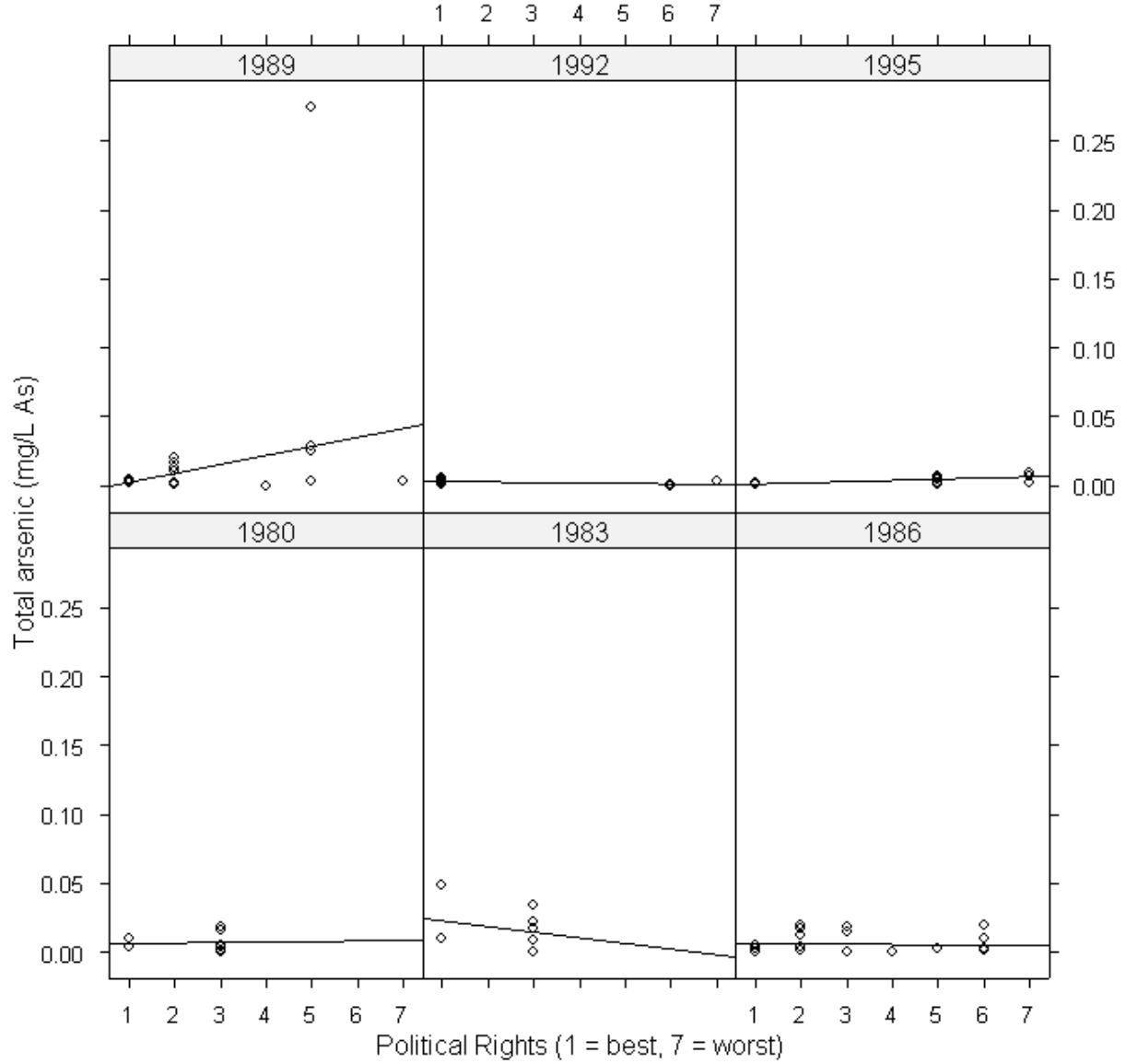

Figure 5.2b

Political Rights vs. Total Arsenic by Development Level

Figure 5.2c

Figure 5.2d

FIGURE 5.3: TOTAL ARSENIC VERSUS PER CAPITA GDP

Total arsenic versus per capita GDP (1995 US$)
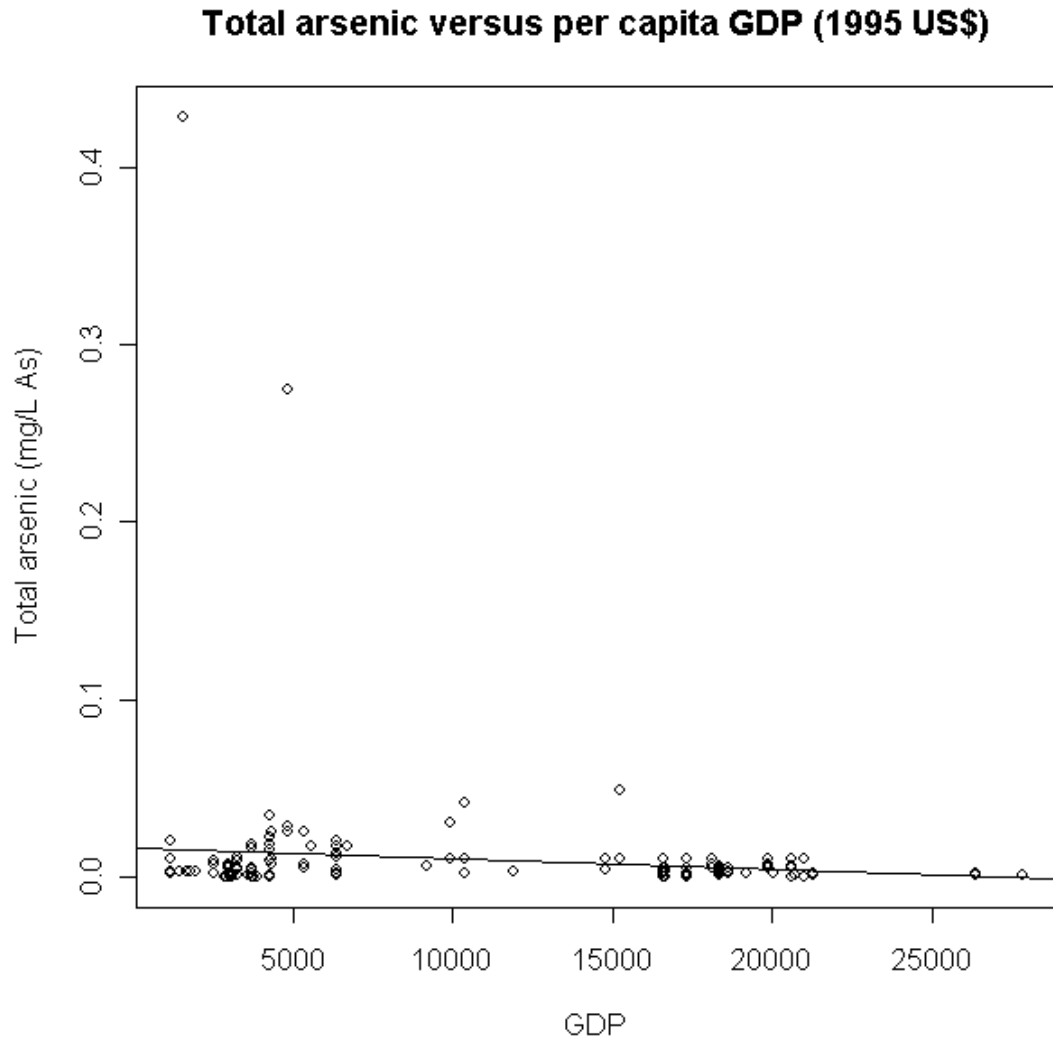
Figure 5.3a

```
              Estimate Std. Error t value Pr(>|t|)
(Intercept)  1.626e-02  4.340e-03    3.747 0.000232 ***
data$gdp    -5.995e-07  3.174e-07   -1.889 0.060281 .
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 0.0351 on 207 degrees of freedom
Multiple R-Squared: 0.01695,  Adjusted R-squared: 0.0122
F-statistic: 3.569 on 1 and 207 DF,  p-value: 0.06028
```

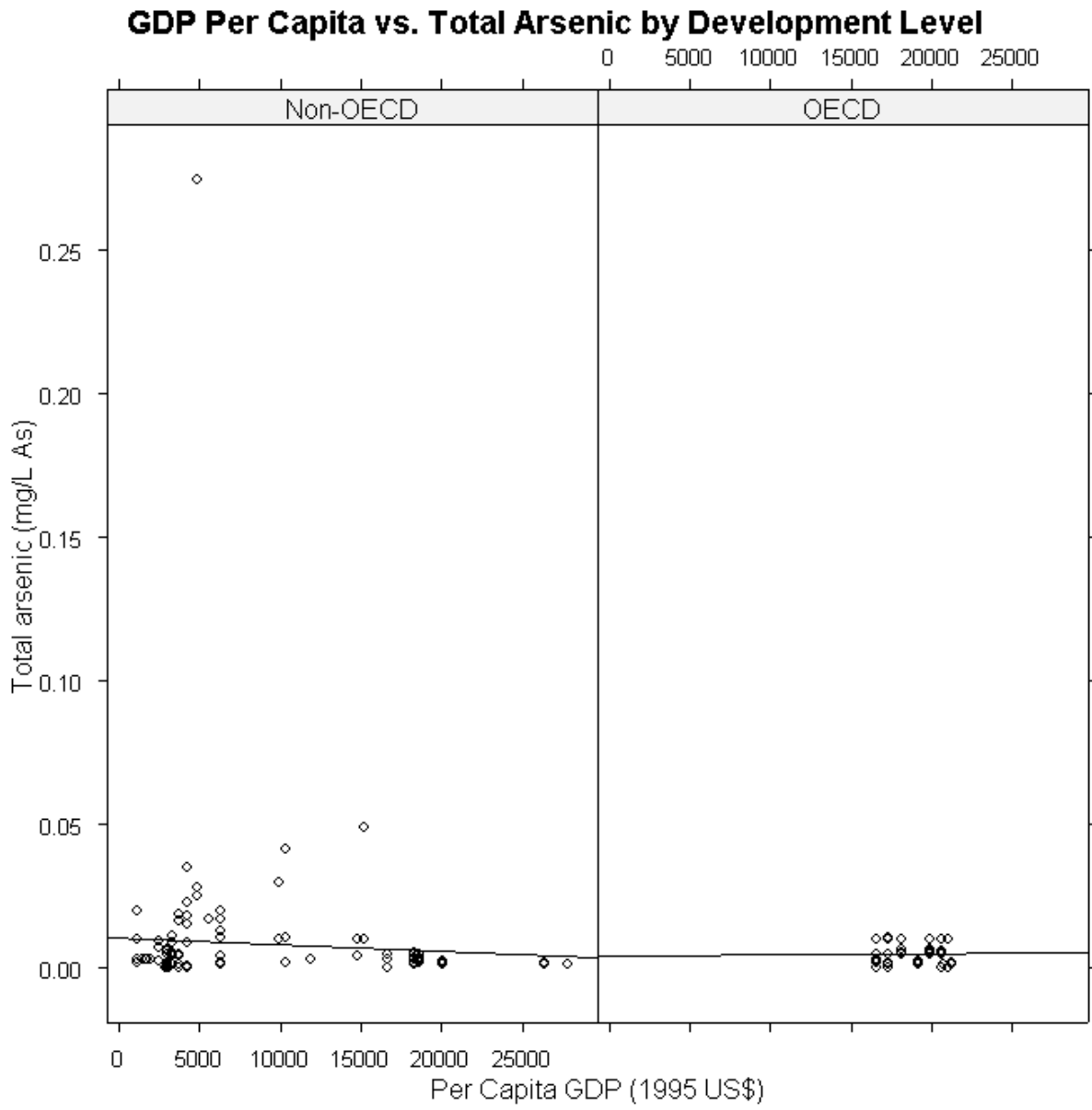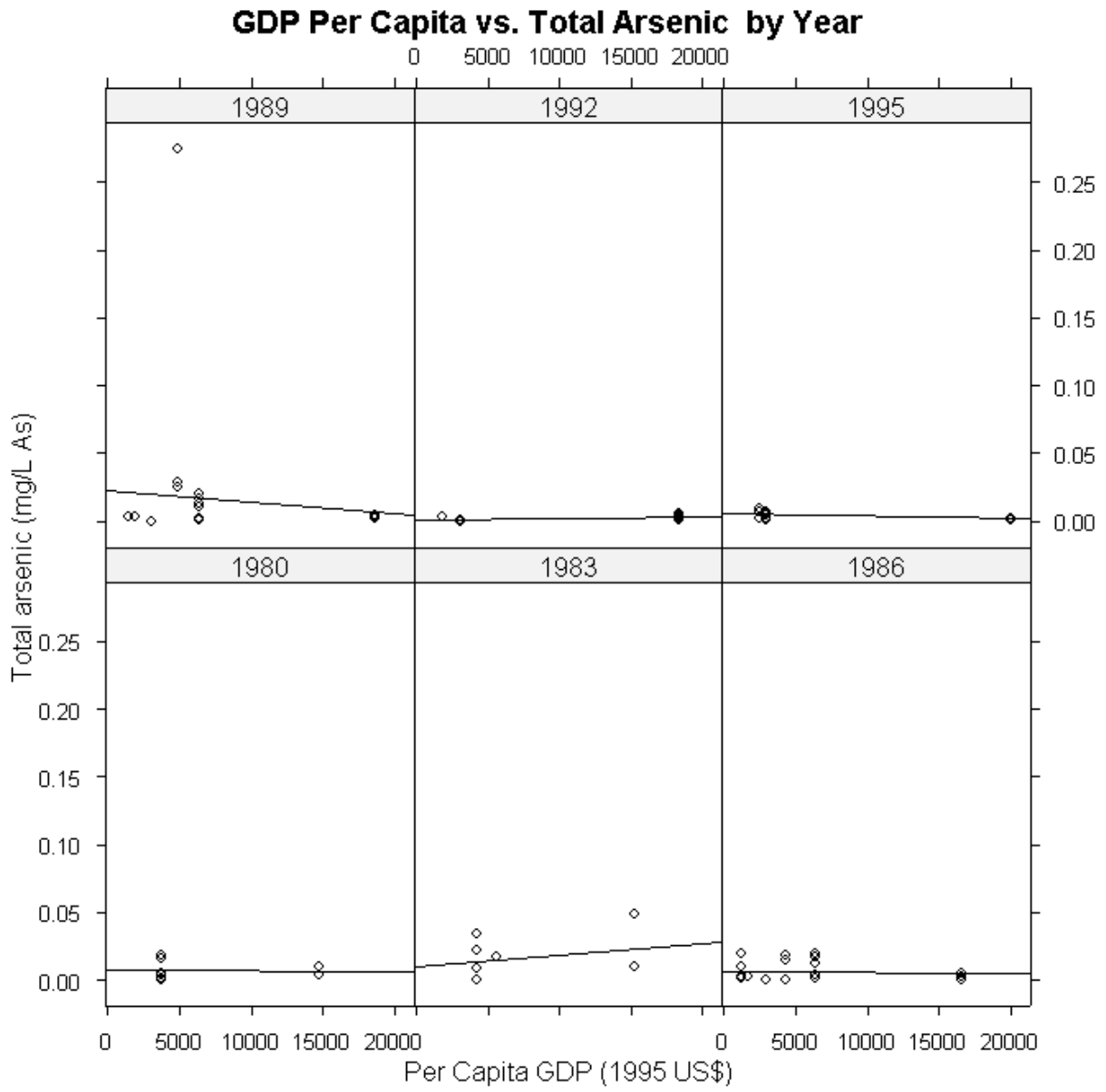# GDP Per Capita vs. Total Arsenic by Country

Figure 5.3b

GDP Per Capita vs. Total Arsenic by Development Level

Figure 5.3c

GDP Per Capita vs. Total Arsenic by Year
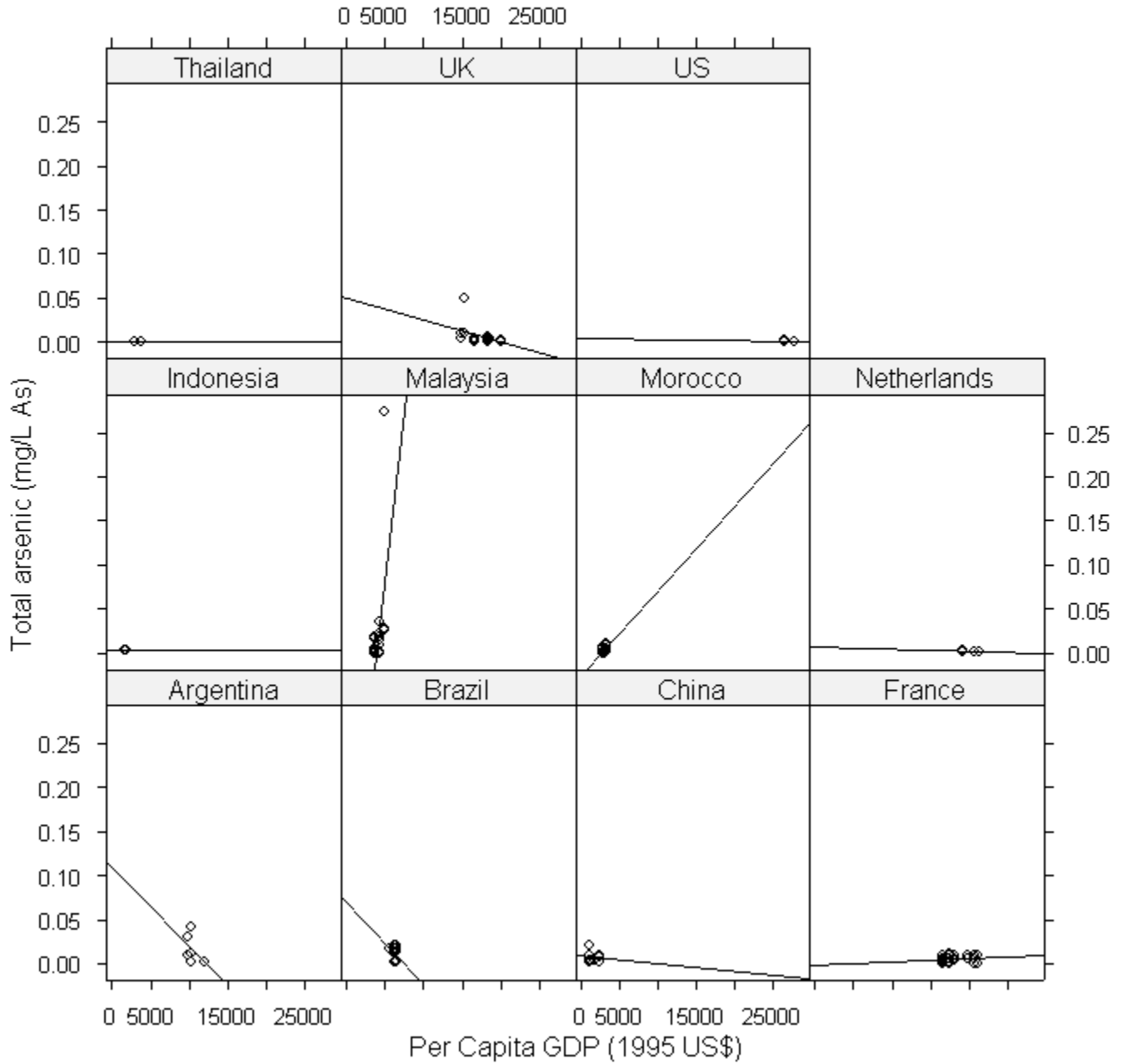
Figure 5.3d

FIGURE 6.1: TOTAL CADMIUM VERSUS CIVIL LIBERTIES

Total cadmium versus Civil Liberties
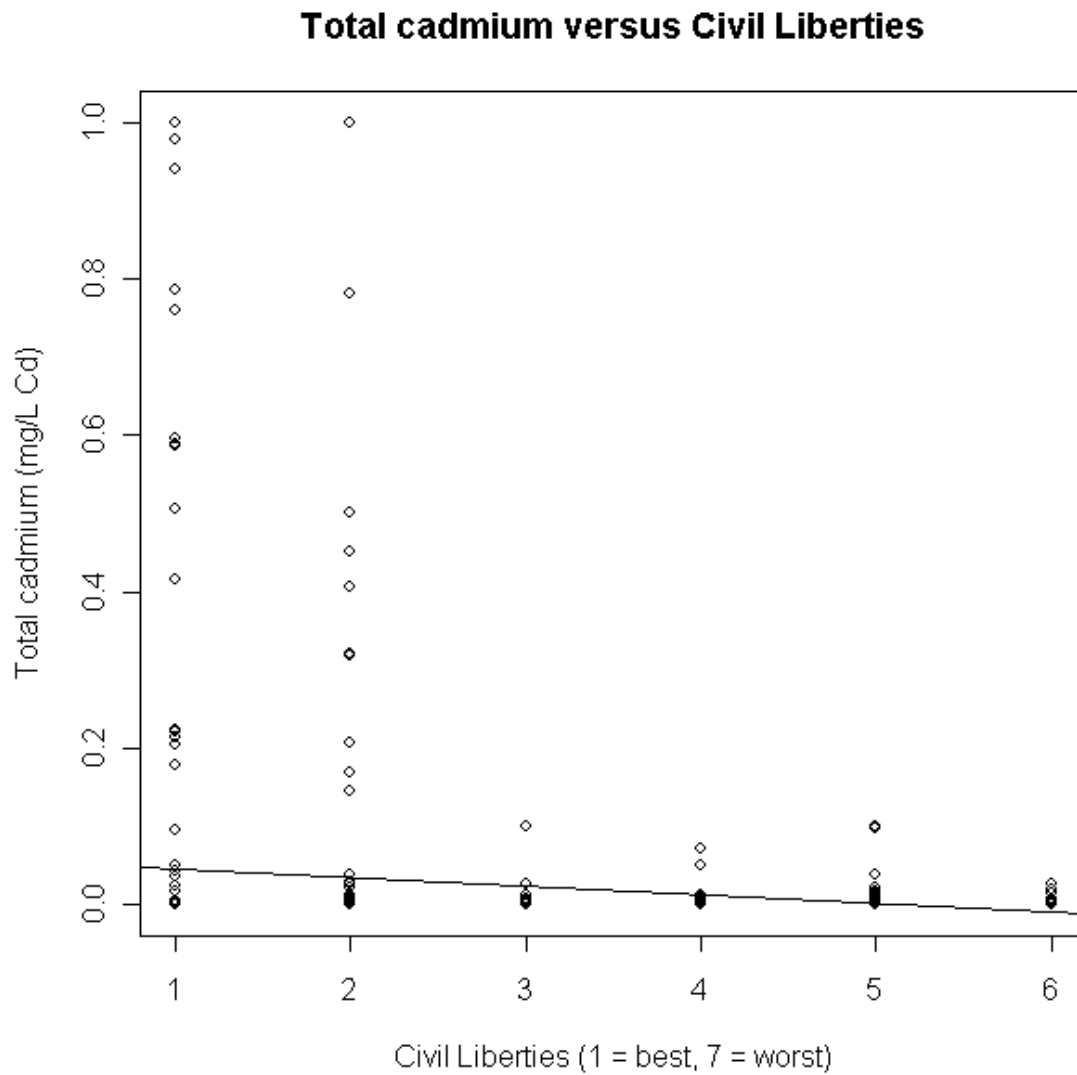
Figure 6.1a

```
          Estimate Std. Error t value Pr(>|t|)
(Intercept)  0.056169   0.011223   5.005 7.87e-07 ***
data$cl     -0.011024   0.004083  -2.700  0.00718 **
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 0.1278 on 479 degrees of freedom
Multiple R-Squared: 0.01499,  Adjusted R-squared: 0.01293
F-statistic:  7.29 on 1 and 479 DF,  p-value: 0.007181
```

Figure 6.1b

Civil Liberties versus Total Cadmium by Development Level
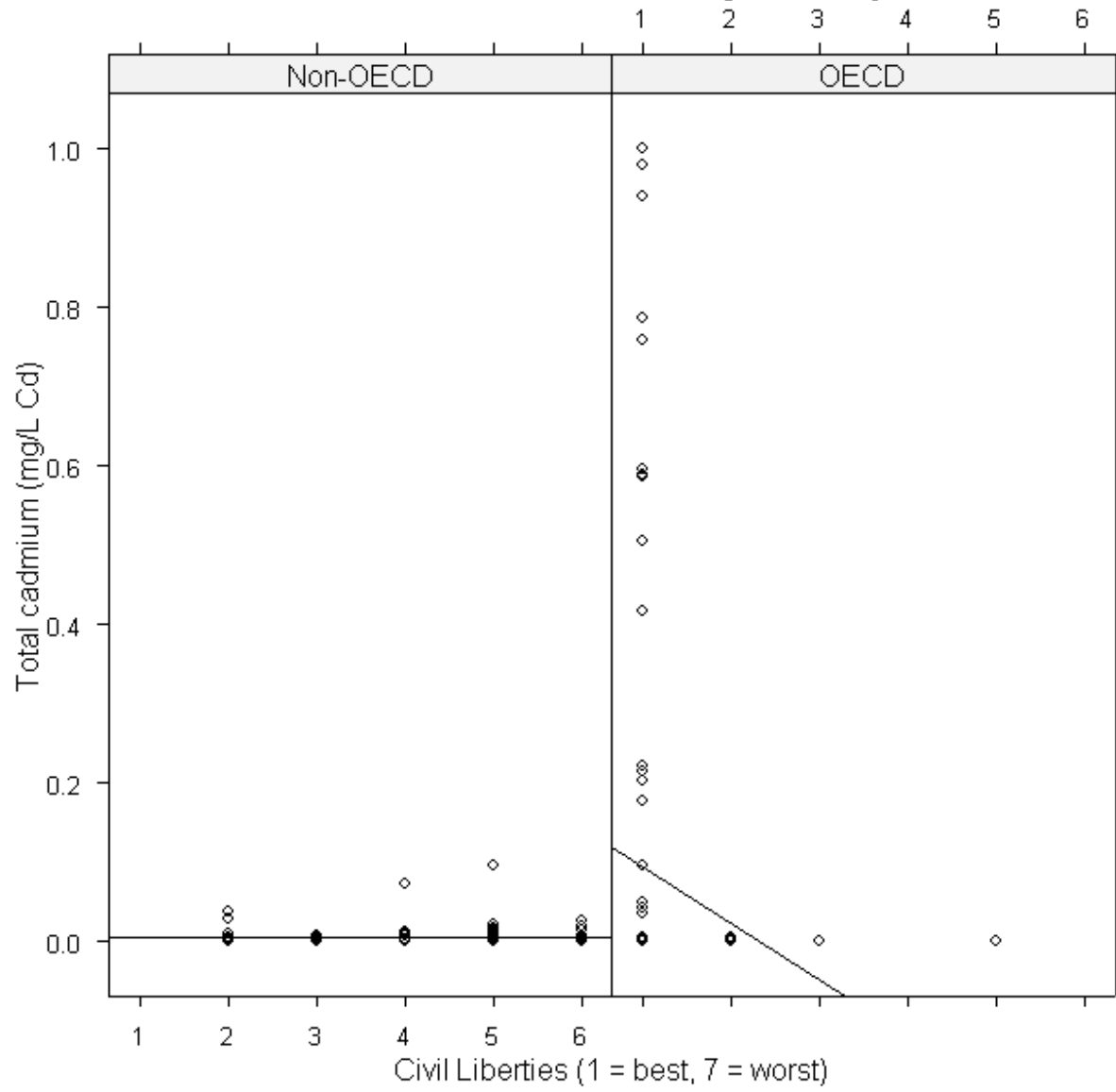
Figure 6.1c

Civil Liberties vs. Total Cadmium by Year

Figure 6.1d

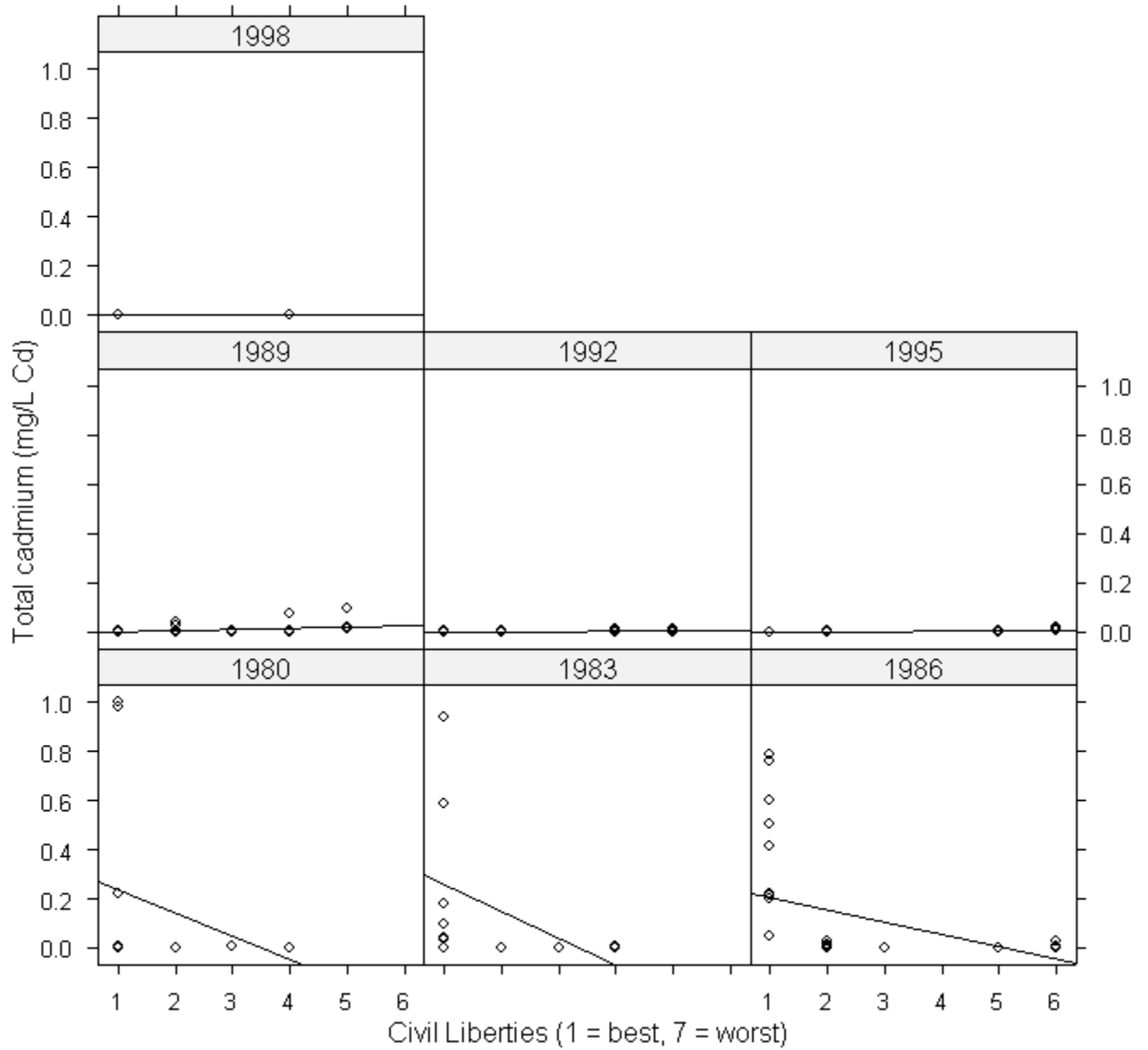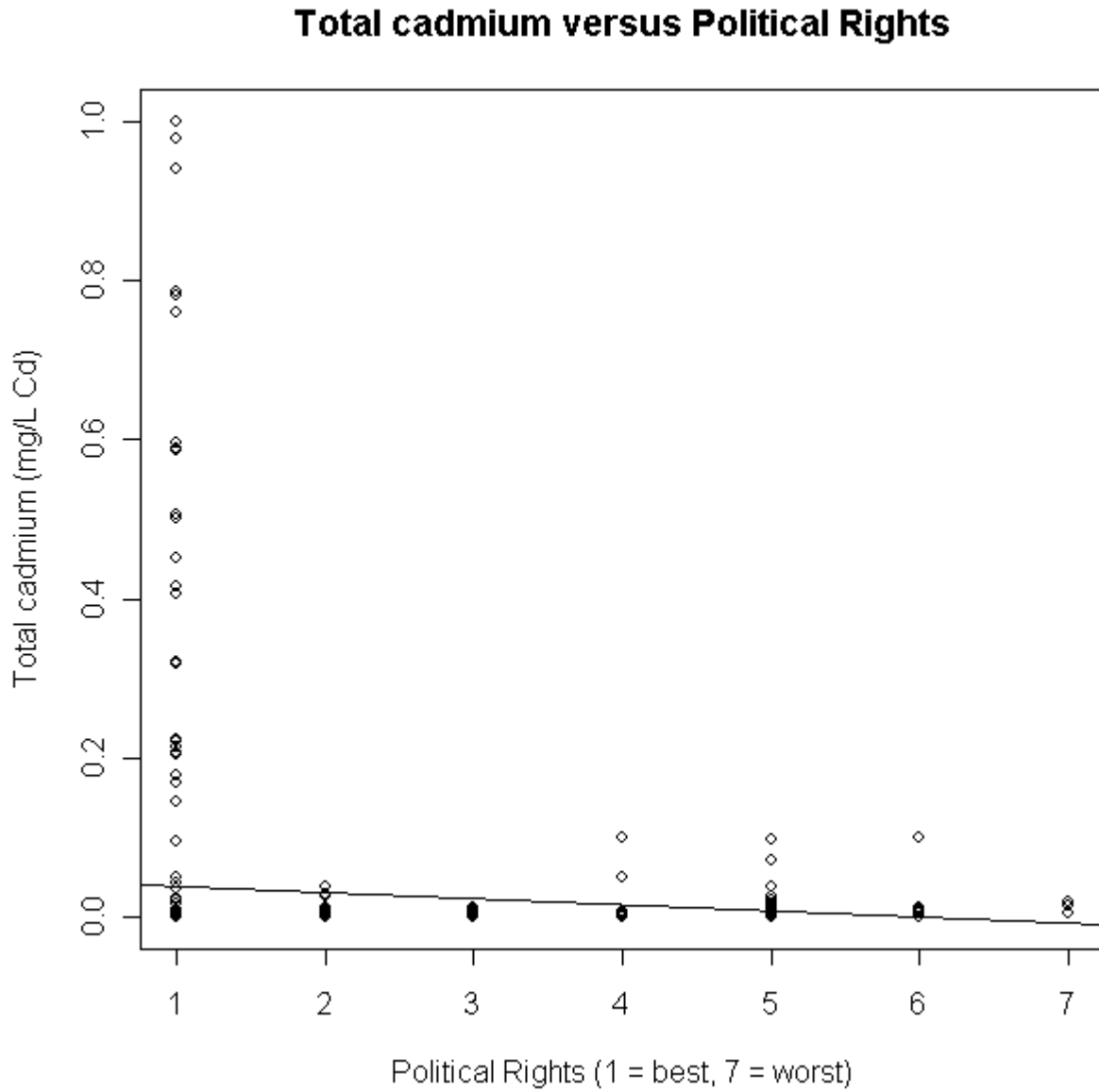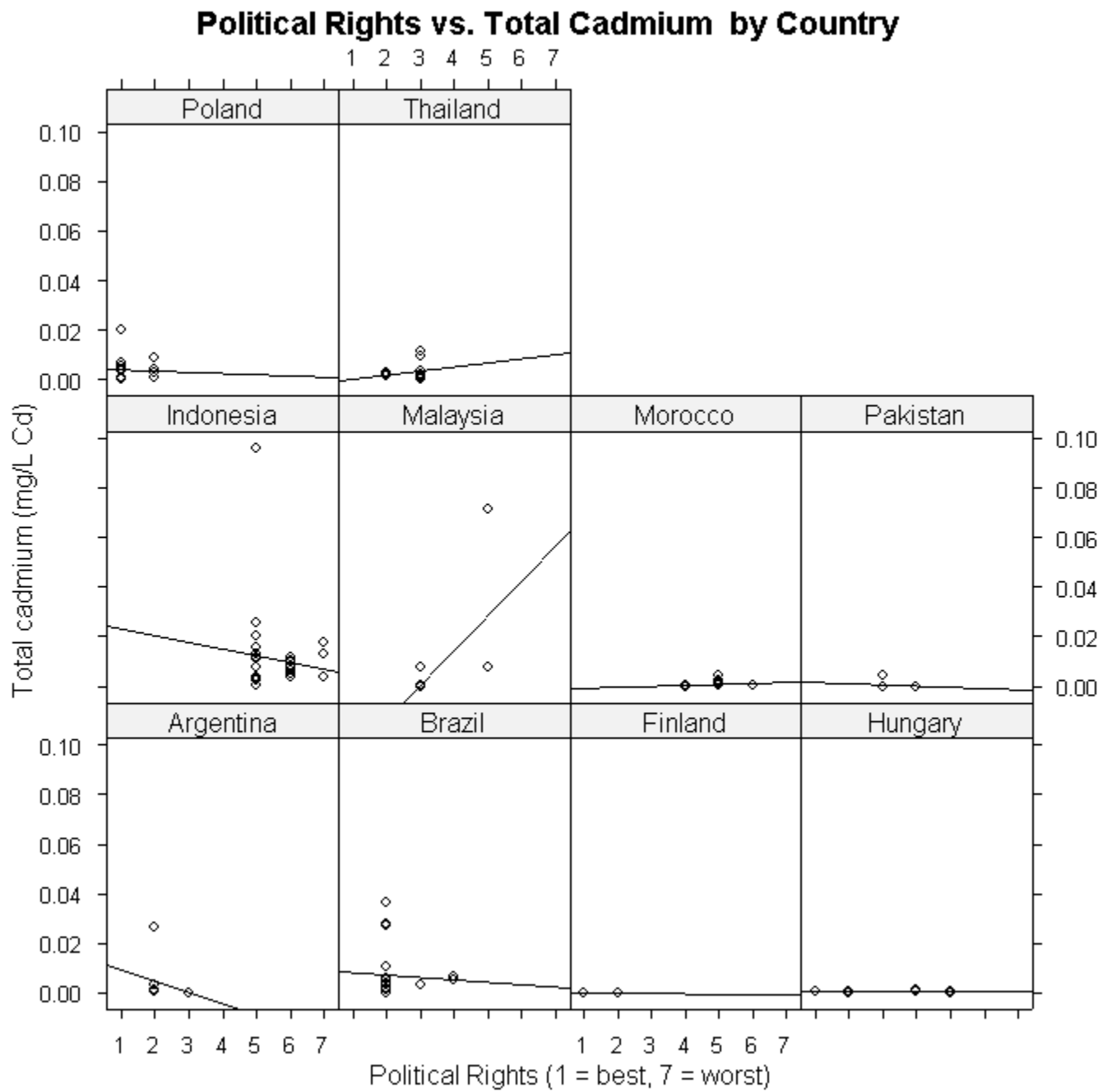**Total cadmium versus Political Rights**

Figure 6.2a

```
          Estimate Std. Error t value Pr(>|t|)
(Intercept)  0.045442   0.009282    4.896 1.34e-06 ***
data$pr     -0.007747   0.003682   -2.104   0.0359 *
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 0.1282 on 479 degrees of freedom
Multiple R-Squared: 0.009155, Adjusted R-squared: 0.007086
F-statistic: 4.426 on 1 and 479 DF,  p-value: 0.03593
```
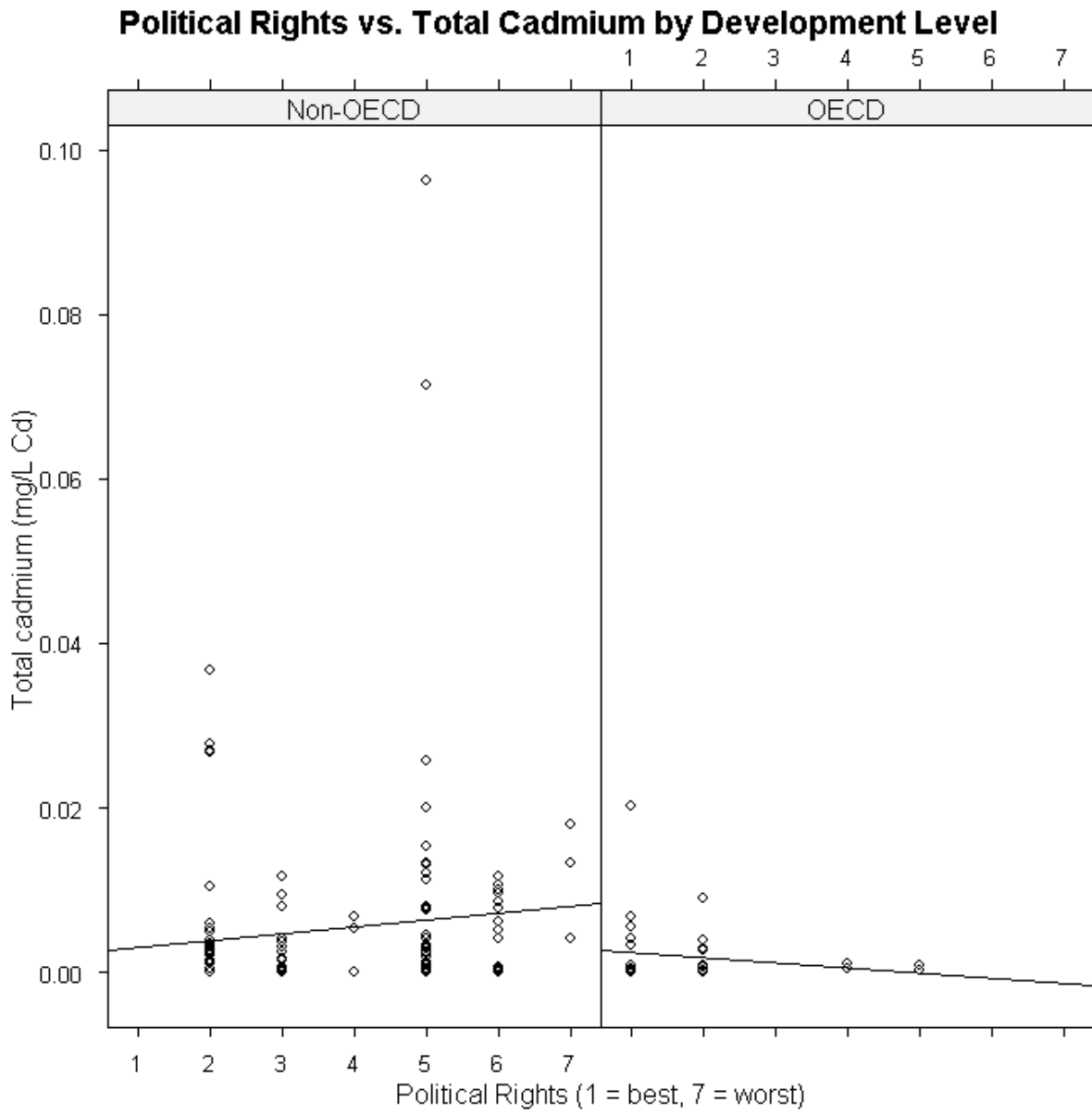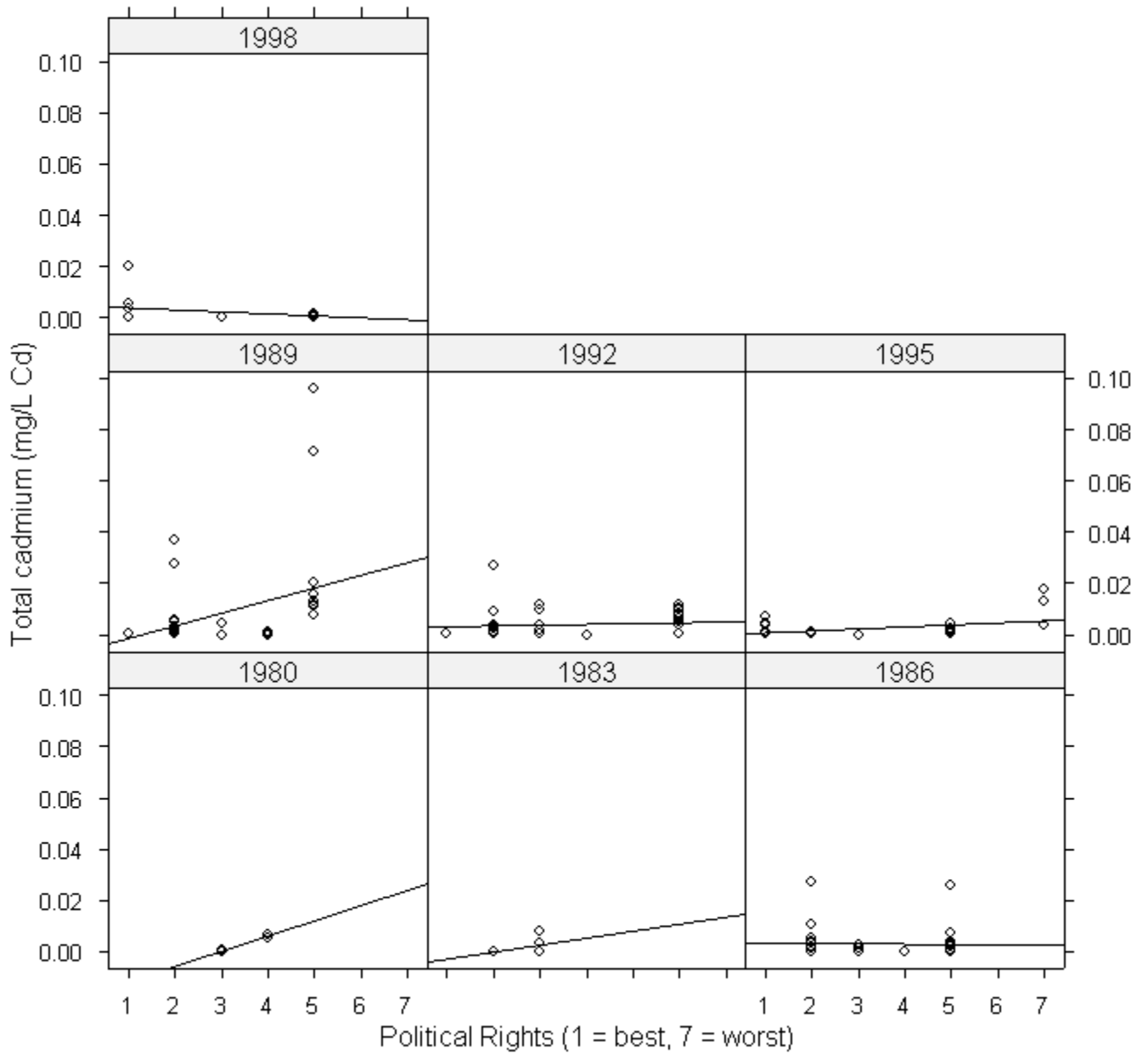
Political Rights vs. Total Cadmium by Country

Figure 6.2b

Figure 6.2c

Political Rights vs. Total Cadmium by Year

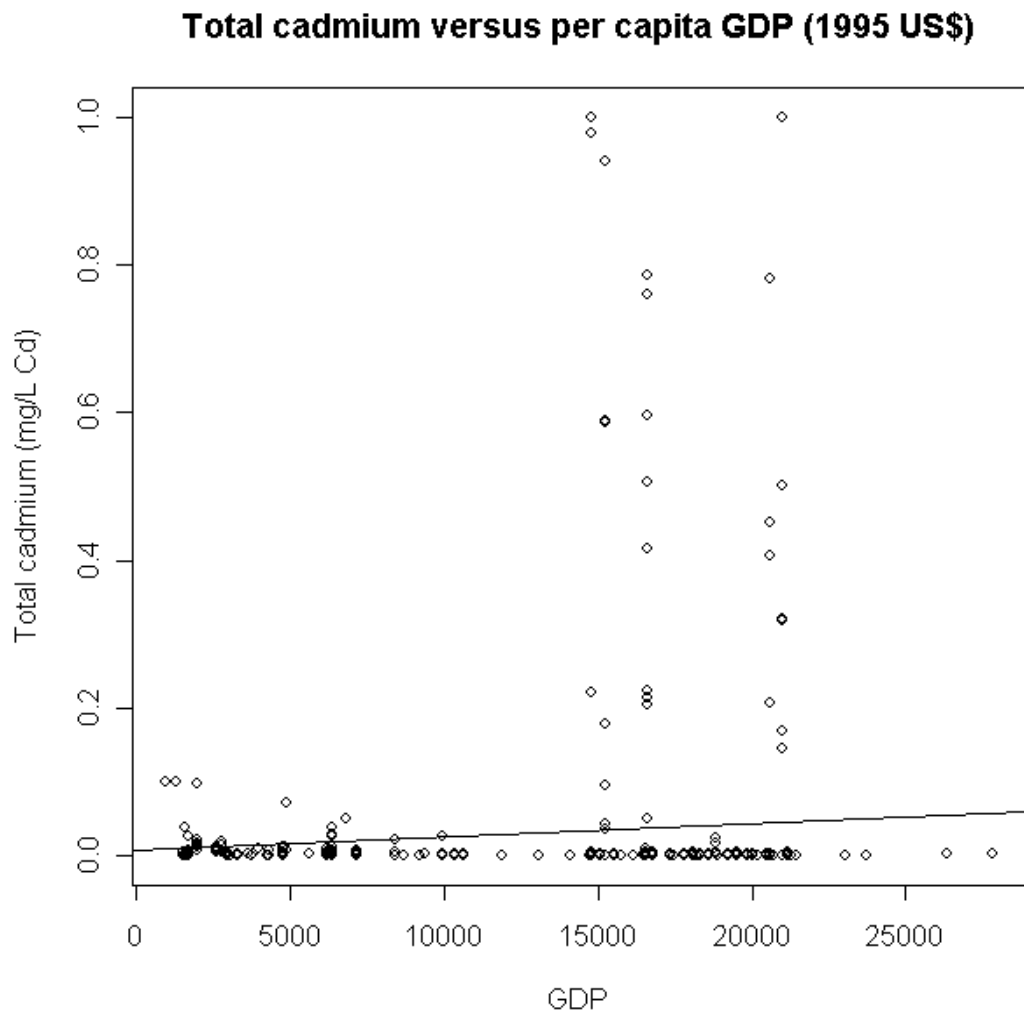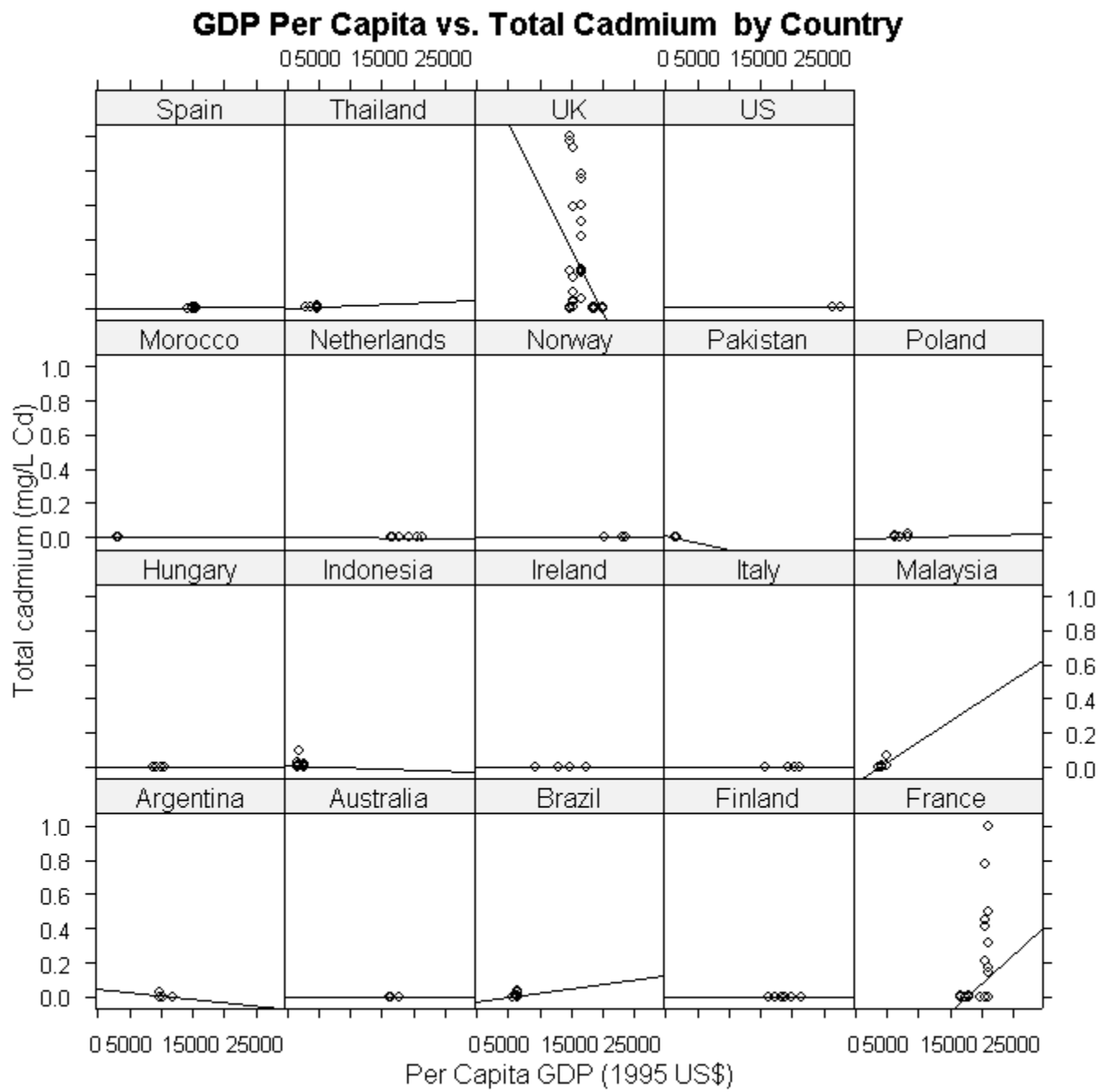Figure 6.2d

FIGURE 6.3: TOTAL CADMIUM VERSUS PER CAPITA GDP

Total cadmium versus per capita GDP (1995 US$)

Figure 6.3a

```
             Estimate  Std. Error  t value  Pr(>|t|)
(Intercept)  6.418e-03  1.234e-02   0.520    0.6034
data$gdp     1.800e-06  8.206e-07   2.193    0.0288 *
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 0.1281 on 479 degrees of freedom
Multiple R-Squared: 0.009944, Adjusted R-squared: 0.007877
F-statistic: 4.811 on 1 and 479 DF,  p-value: 0.02876
```

GDP Per Capita vs. Total Cadmium by Country

Figure 6.3b

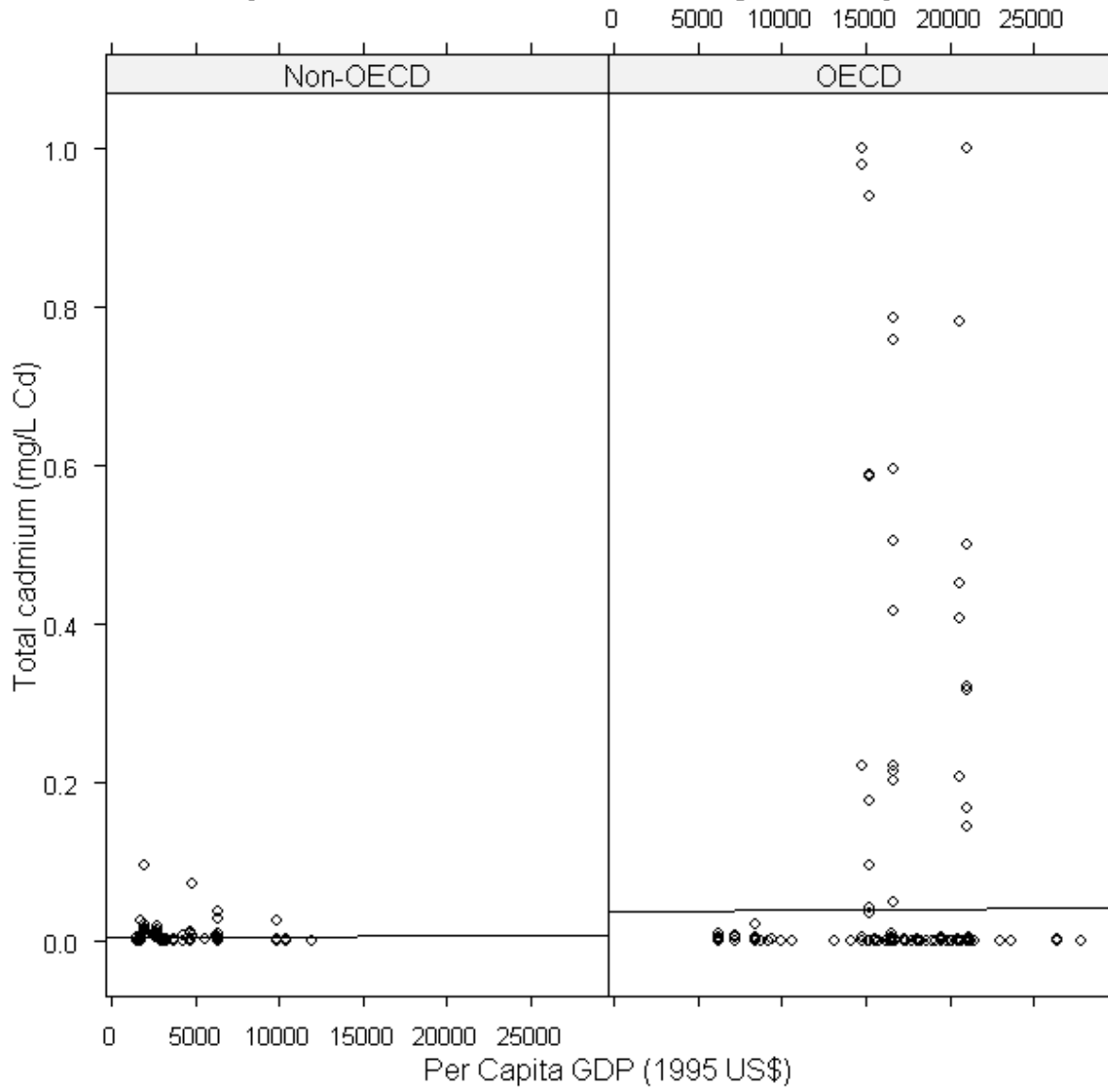**GDP Per Capita versus Total Cadmium by Development Level**

Figure 6.3c

GDP Per Capita vs. Total Cadmium by Year

Figure 6.3d
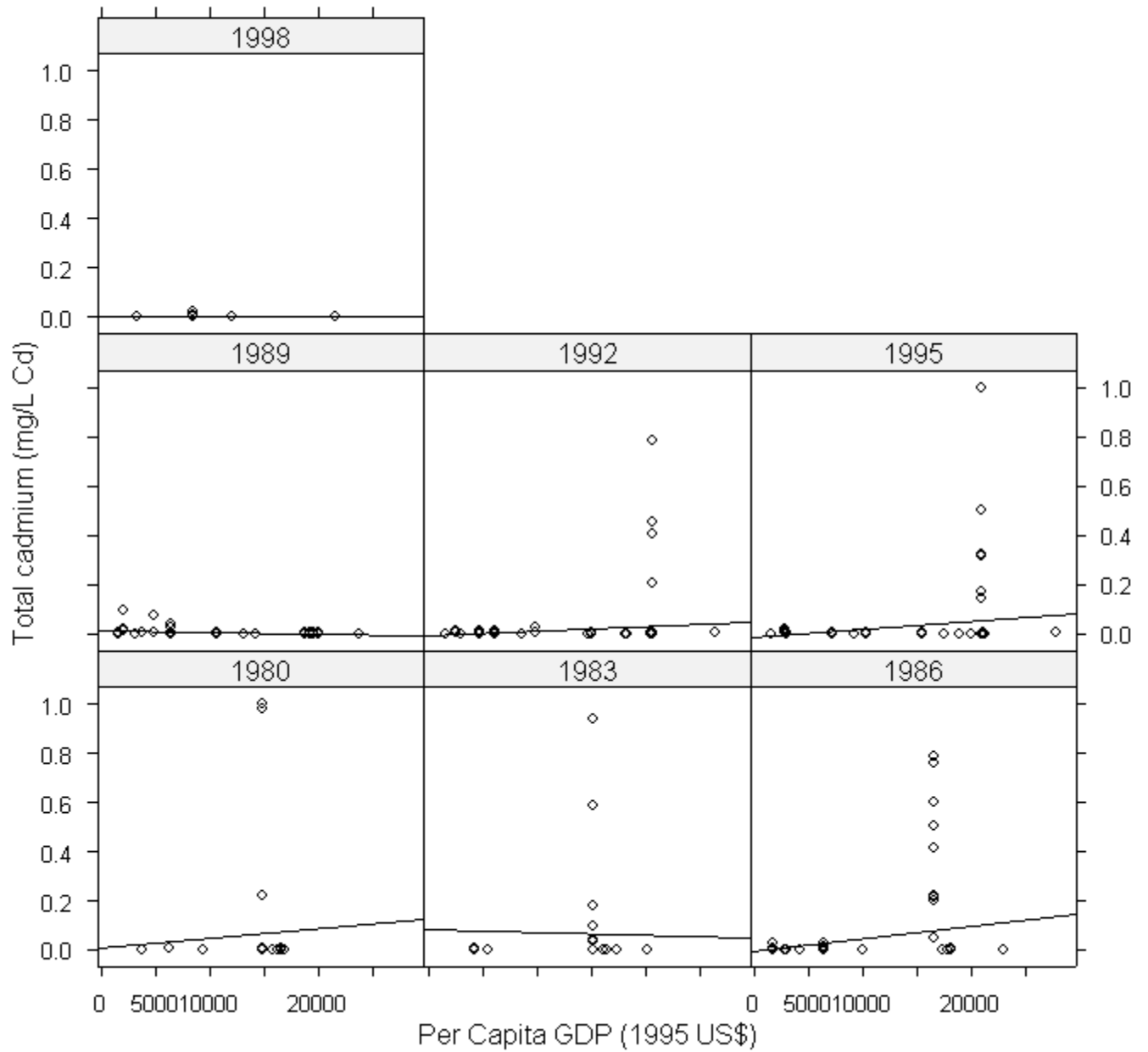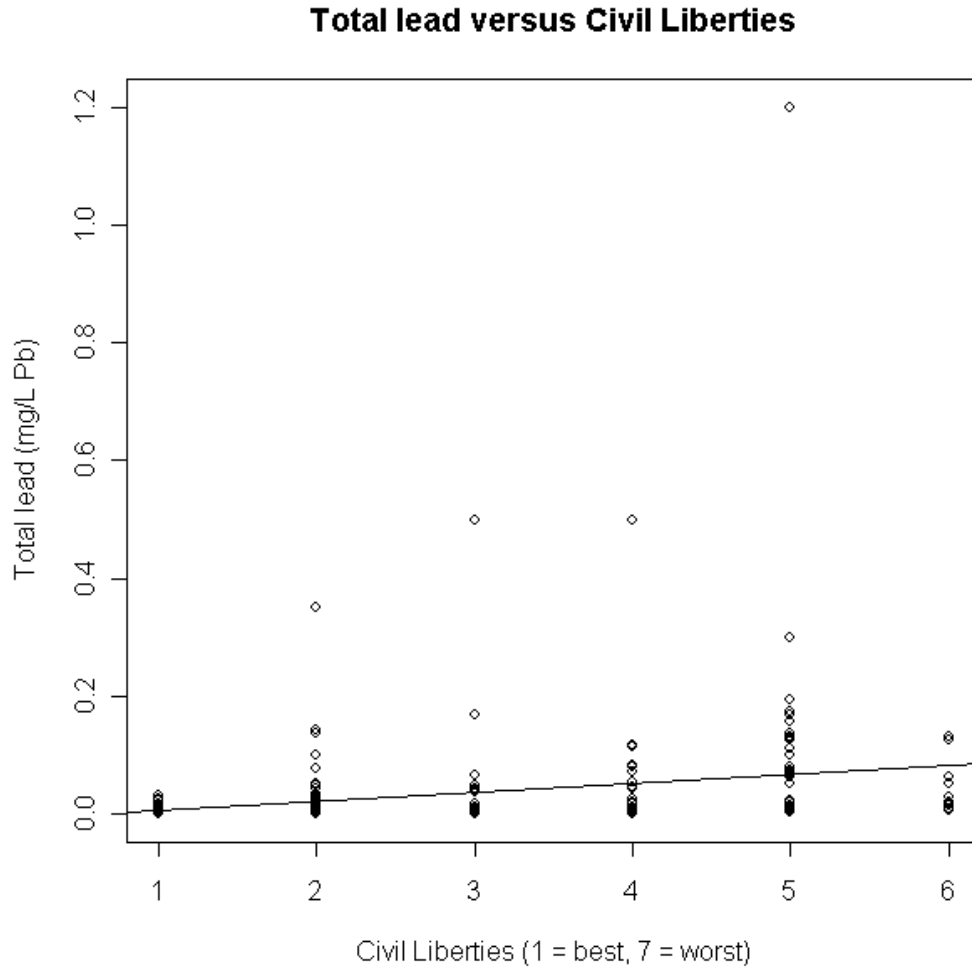
FIGURE 7.1: TOTAL LEAD VERSUS CIVIL LIBERTIES

Total lead versus Civil Liberties

Figure 7.1a

```
          Estimate  Std. Error  t value  Pr(>|t|)
(Intercept) -0.010410    0.008523   -1.221     0.223
data$cl      0.015322    0.002864    5.351  1.6e-07 ***
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 0.08055 on 345 degrees of freedom
Multiple R-Squared: 0.07662,  Adjusted R-squared: 0.07395
F-statistic: 28.63 on 1 and 345 DF,  p-value: 1.601e-07
```

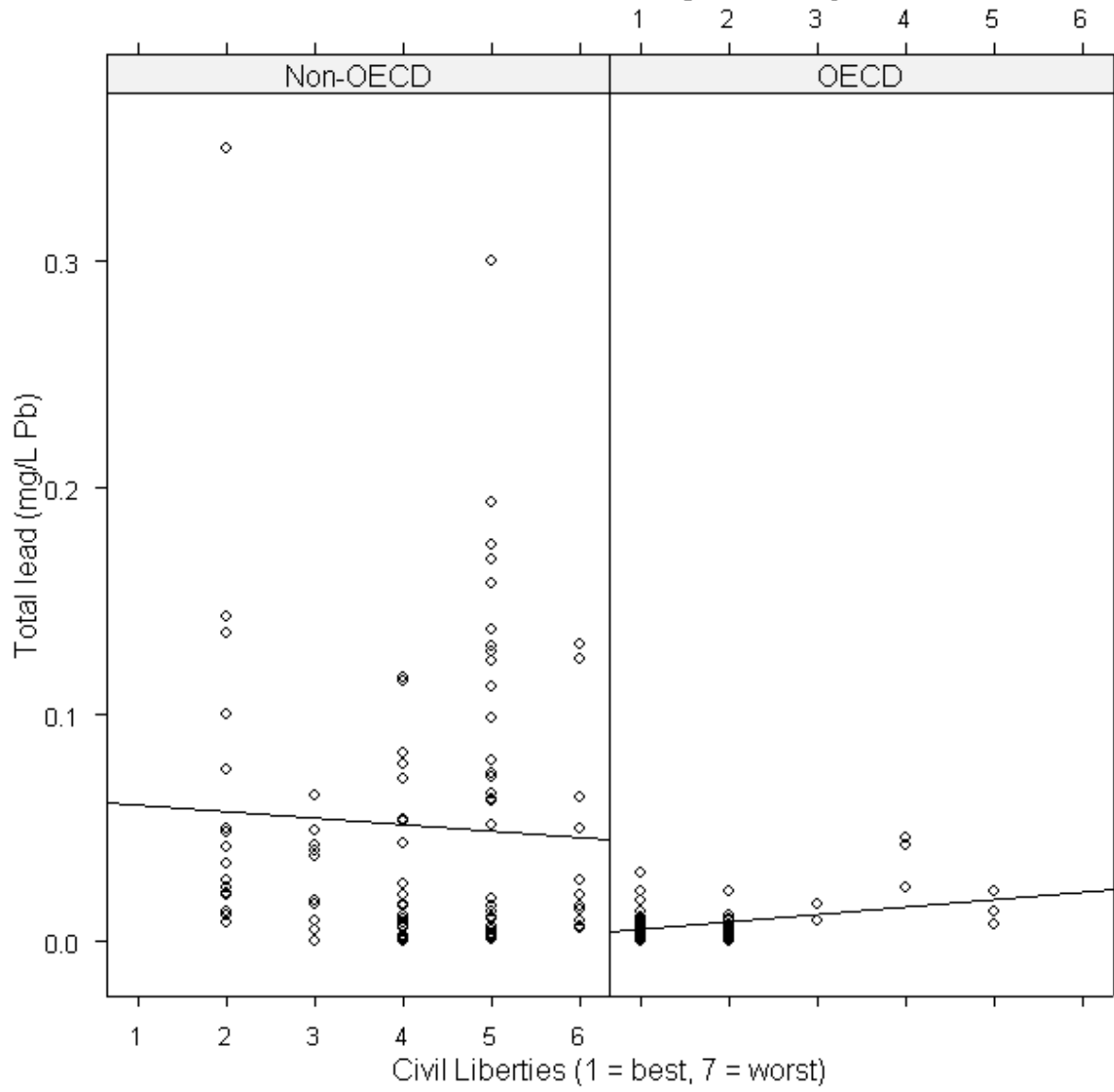# Civil Liberties vs. Total Lead by Country

Figure 7.1b

Figure 7.1c
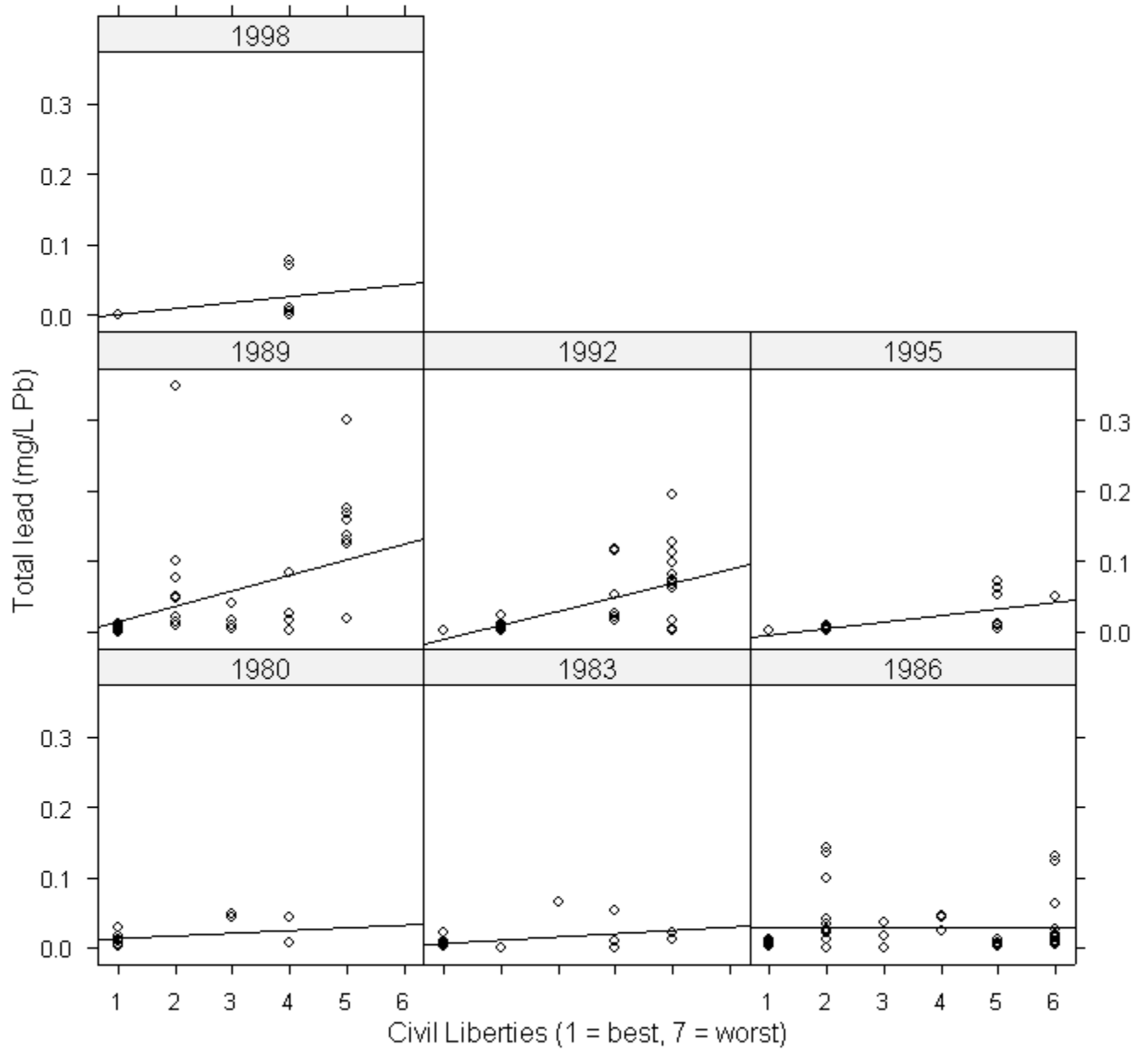
Civil Liberties vs. Total Lead by Year

Figure 7.1d

Total lead versus Political Rights
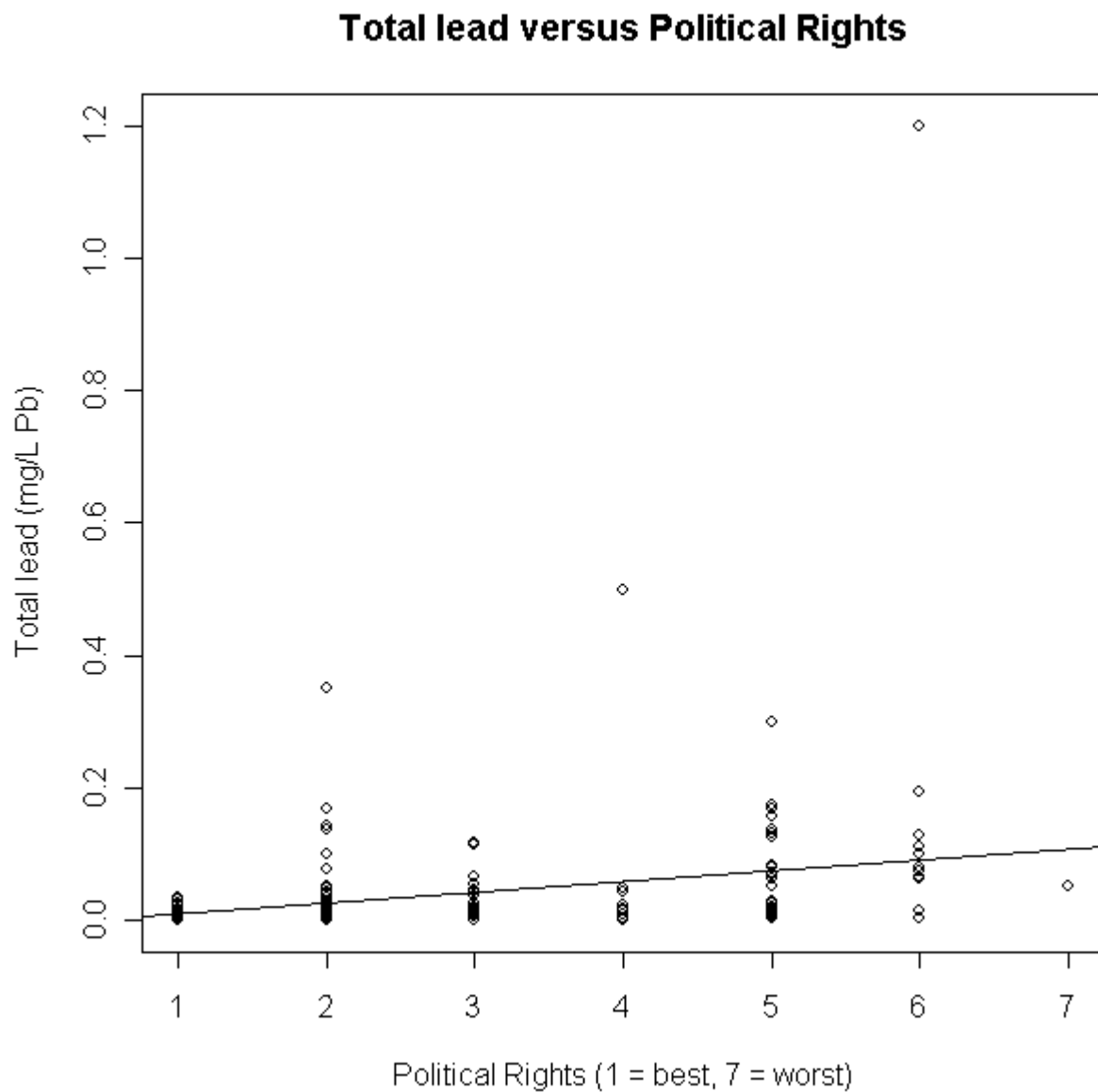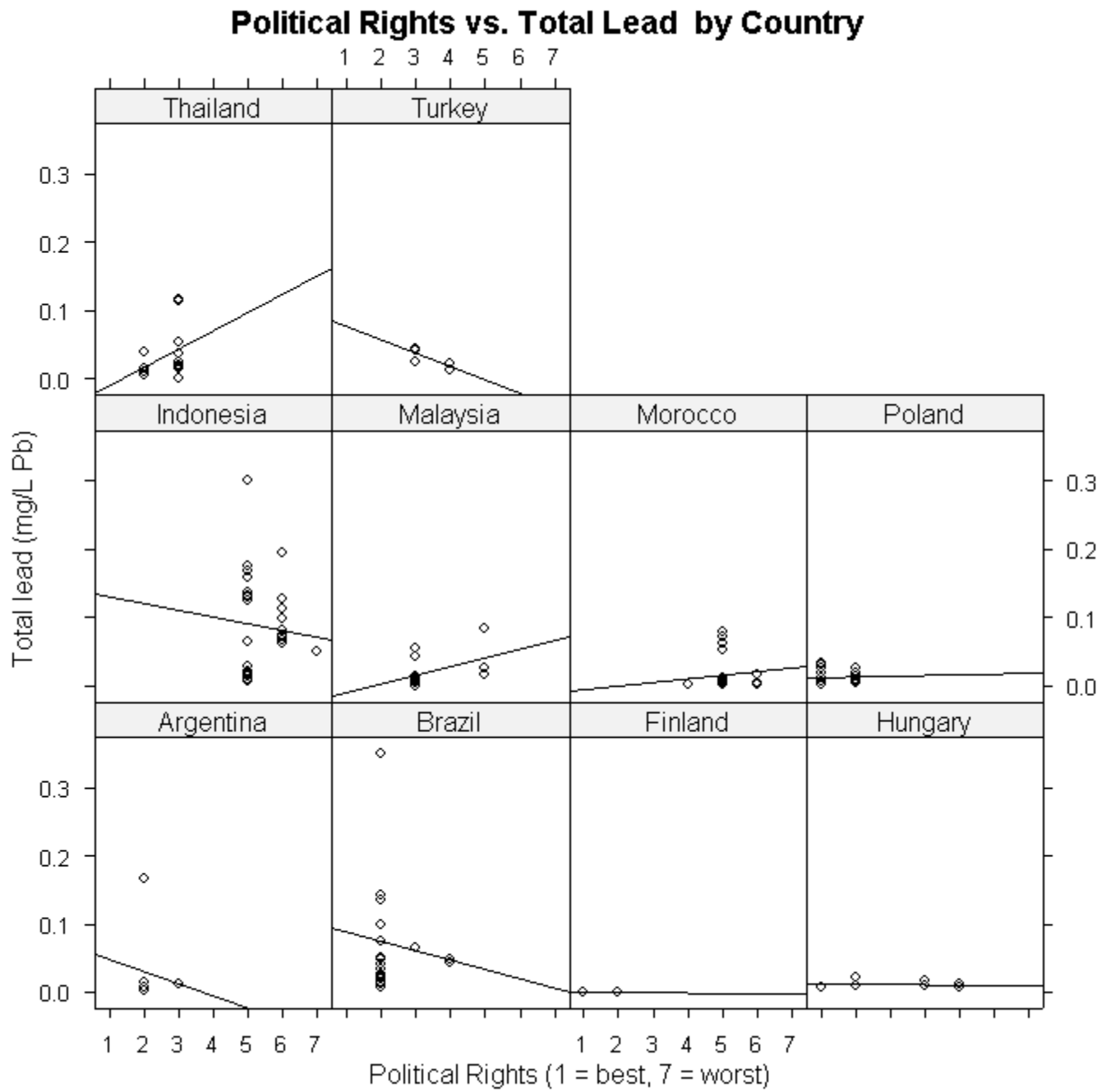
Figure 7.2a

```
             Estimate Std. Error t value Pr(>|t|)
(Intercept) -0.008145    0.006976   -1.168     0.244
data$pr      0.016517    0.002473    6.680  9.6e-11 ***
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 0.07888 on 345 degrees of freedom
Multiple R-Squared: 0.1145,   Adjusted R-squared: 0.112
F-statistic: 44.62 on 1 and 345 DF,  p-value: 9.6e-11
```
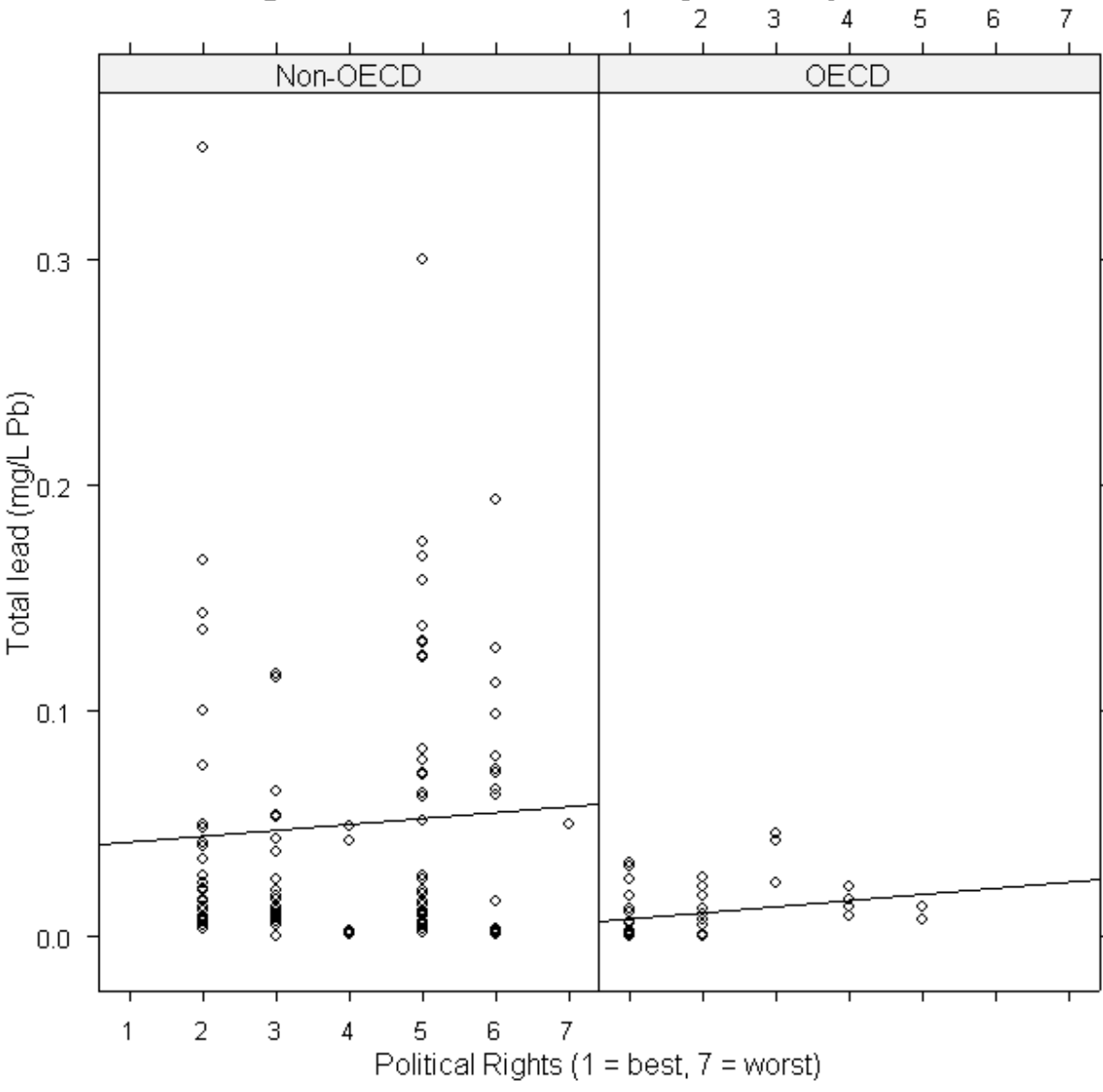
Political Rights vs. Total Lead by Country

Figure 7.2b

Figure 7.2c

Political Rights vs. Total Lead by Year

Figure 7.2d

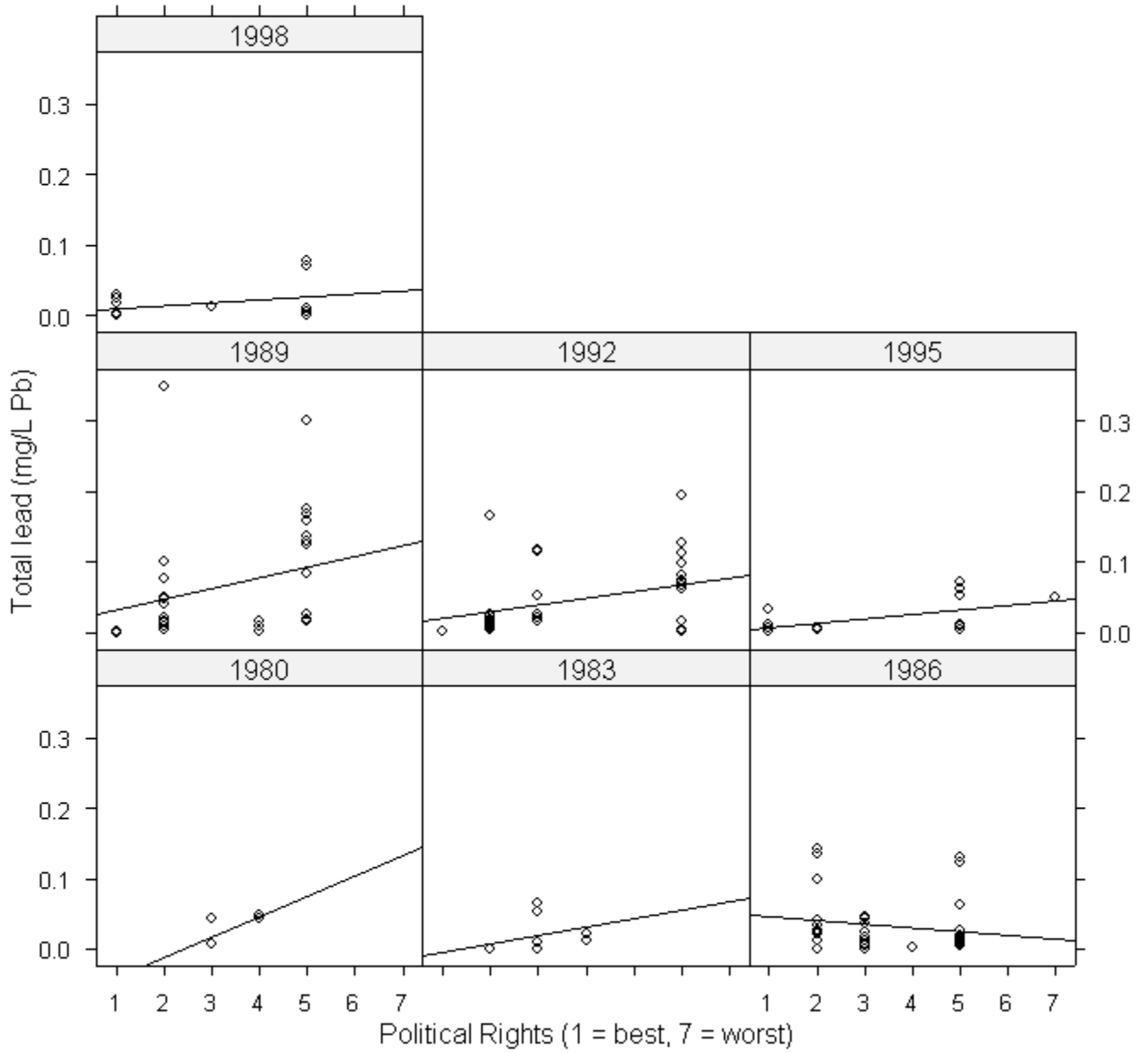FIGURE 7.3: TOTAL LEAD VERSUS PER CAPITA GDP

Total lead versus per capita GDP (1995 US$)
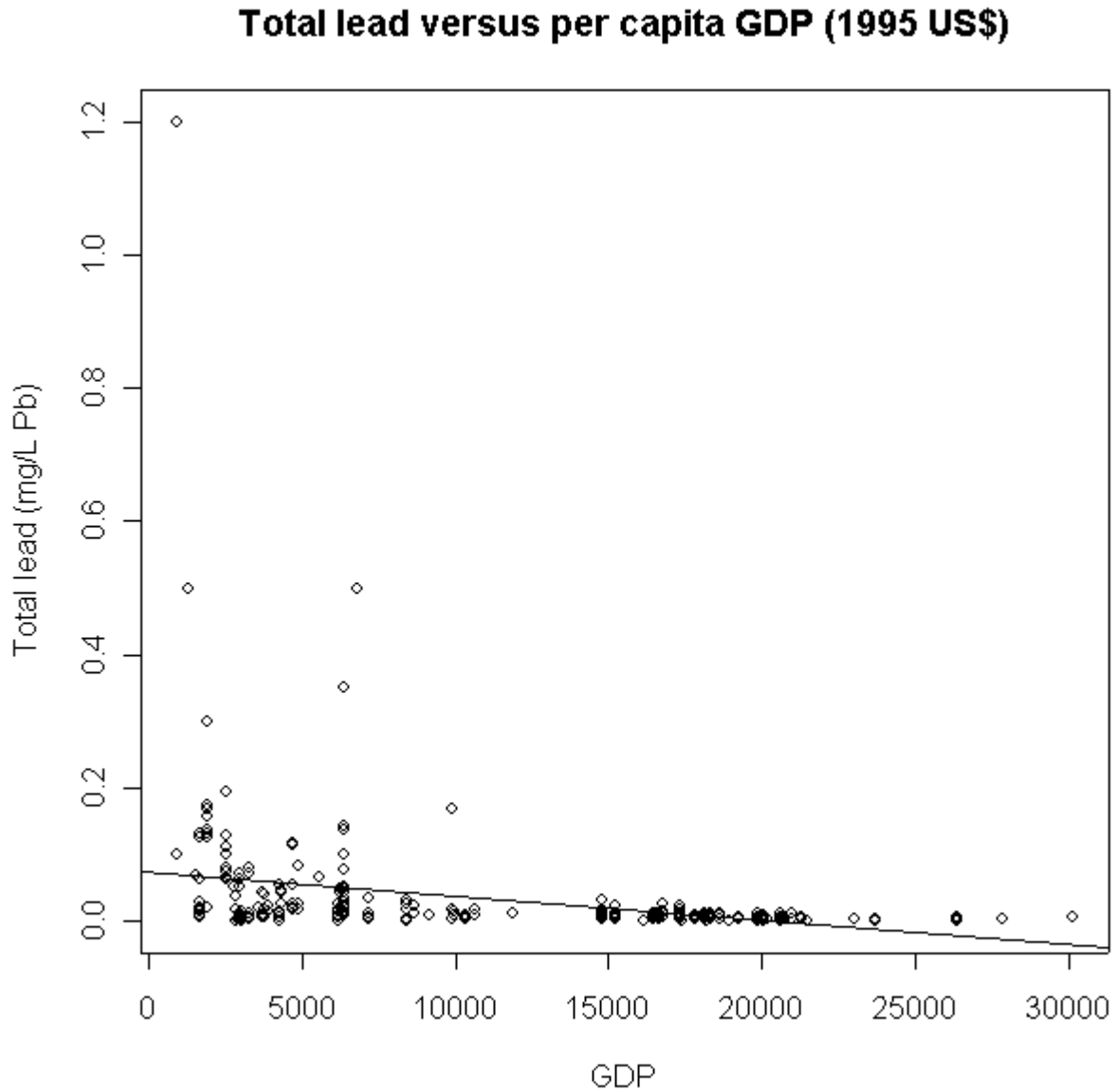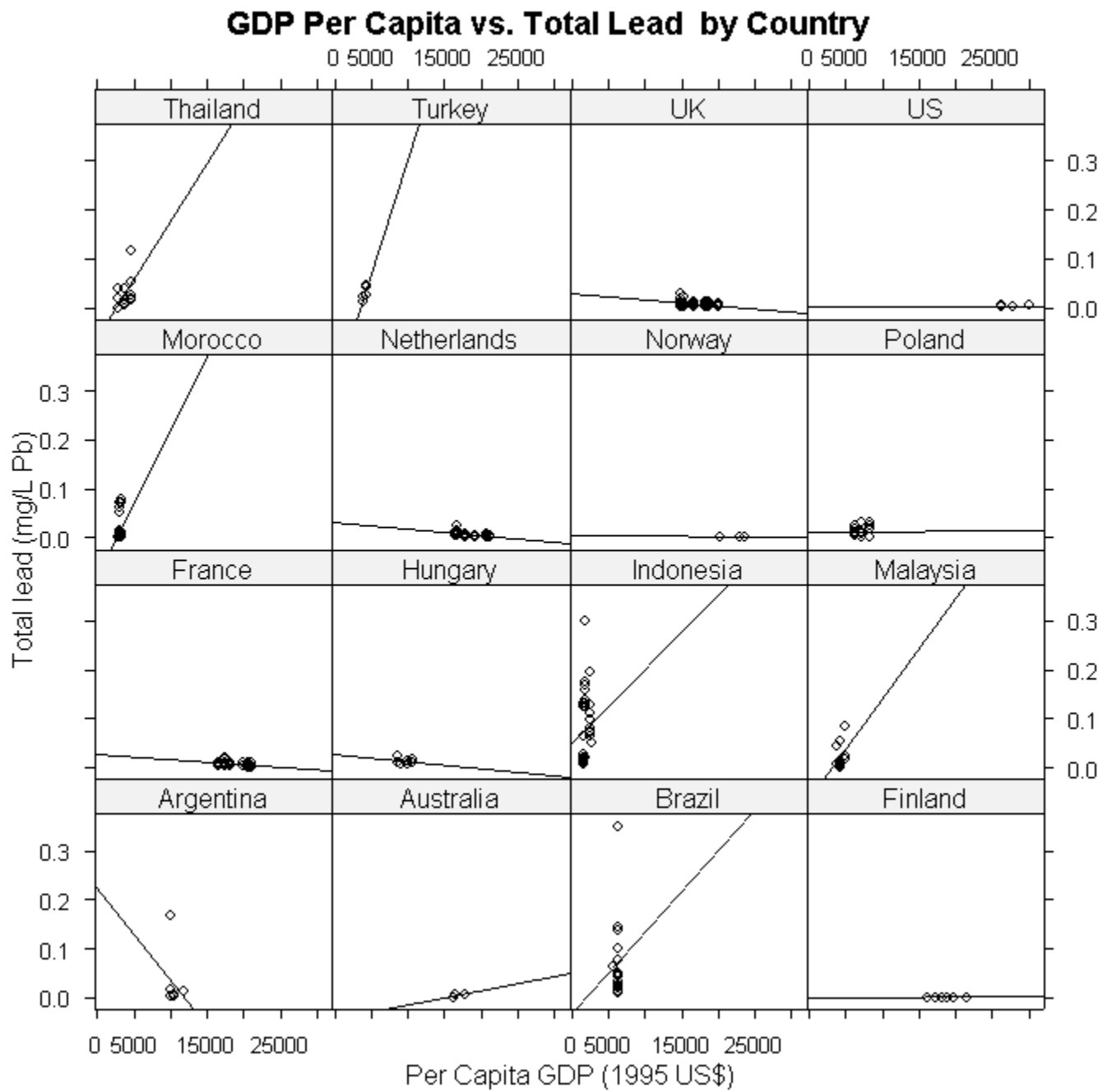
Figure 7.3a

```
              Estimate Std. Error t value Pr(>|t|)
(Intercept)  7.307e-02  8.175e-03    8.938  < 2e-16 ***
data$gdp    -3.637e-06  5.744e-07   -6.332 7.53e-10 ***
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 0.07934 on 345 degrees of freedom
Multiple R-Squared: 0.1041,   Adjusted R-squared: 0.1015
F-statistic:  40.1 on 1 and 345 DF,  p-value: 7.532e-10
```

GDP Per Capita vs. Total Lead by Country

Figure 7.3b

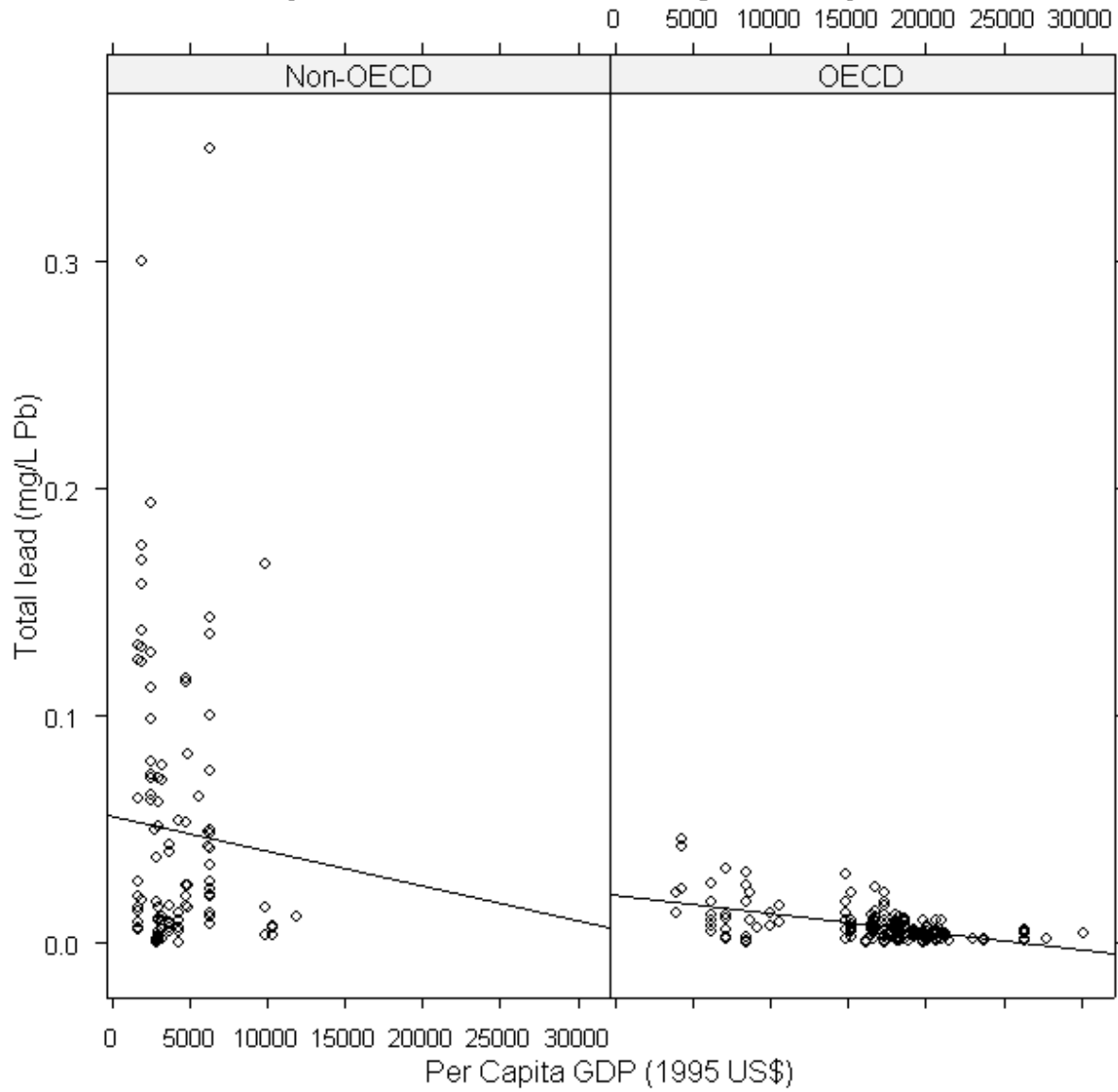**GDP Per Capita versus Total Lead by Development Level**

Figure 7.3c

GDP Per Capita vs. Total Lead by Year
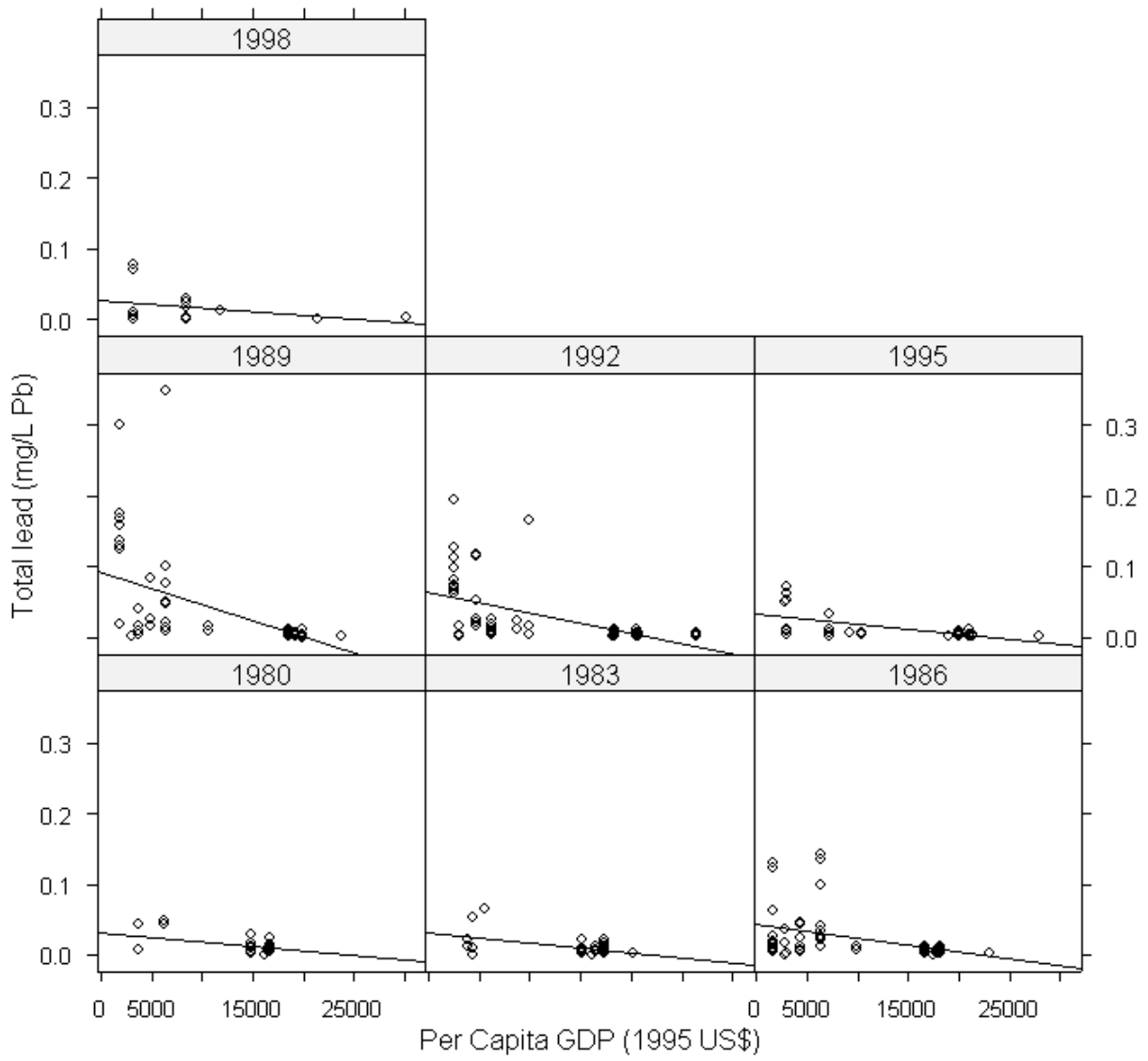
Figure 7.3d

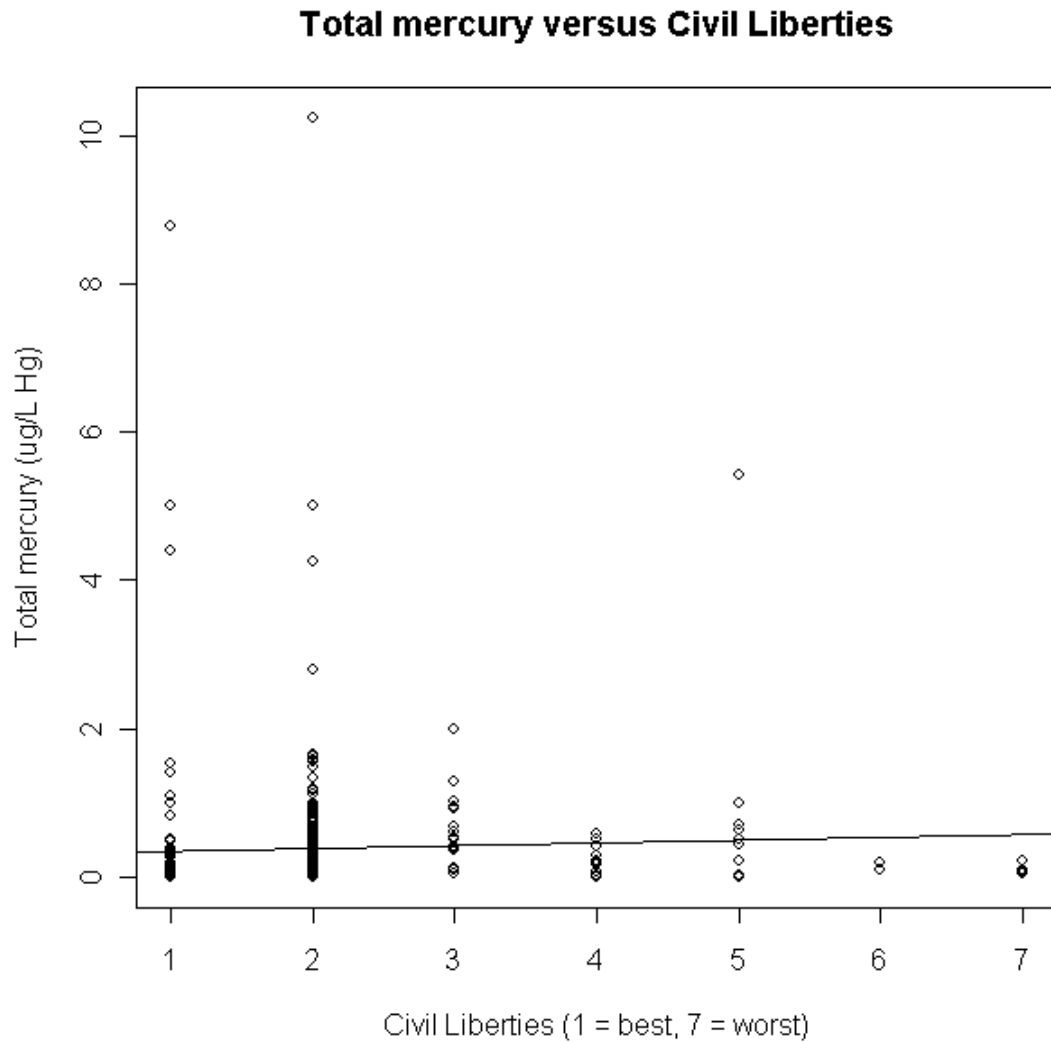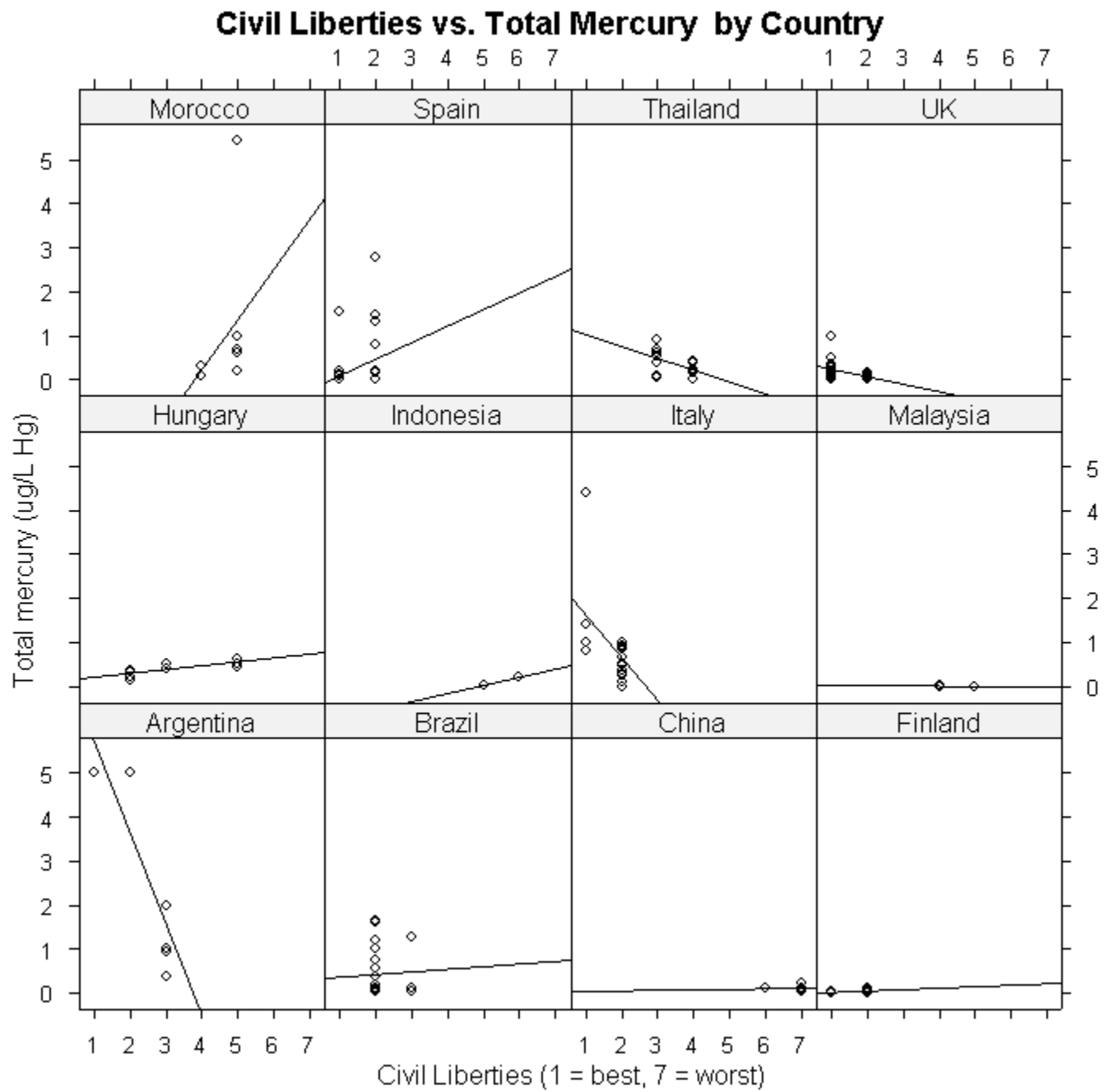FIGURE 8.1: TOTAL MERCURY VERSUS CIVIL LIBERTIES

Total mercury versus Civil Liberties

Figure 8.1a

```
          Estimate Std. Error t value Pr(>|t|)
(Intercept)  0.29835    0.08838   3.376 0.000806 ***
data$cl      0.03746    0.03779   0.991 0.322165
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 0.9012 on 415 degrees of freedom
Multiple R-Squared: 0.002362, Adjusted R-squared: -4.212e-05
F-statistic: 0.9825 on 1 and 415 DF,  p-value: 0.3222
```
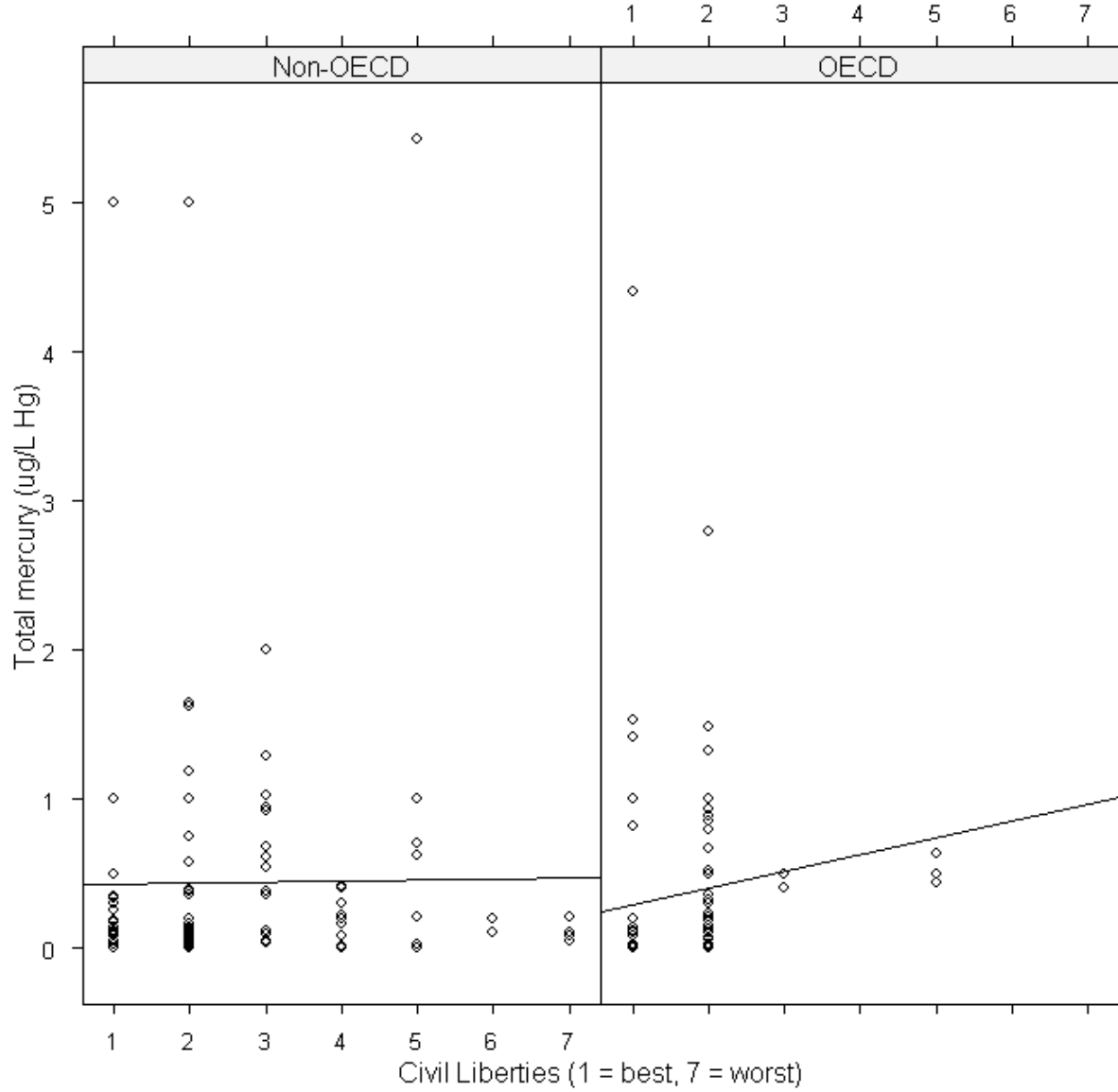
Civil Liberties vs. Total Mercury by Country

Figure 8.1b

Figure 8.1c

Civil Liberties vs. Total Mercury by Year
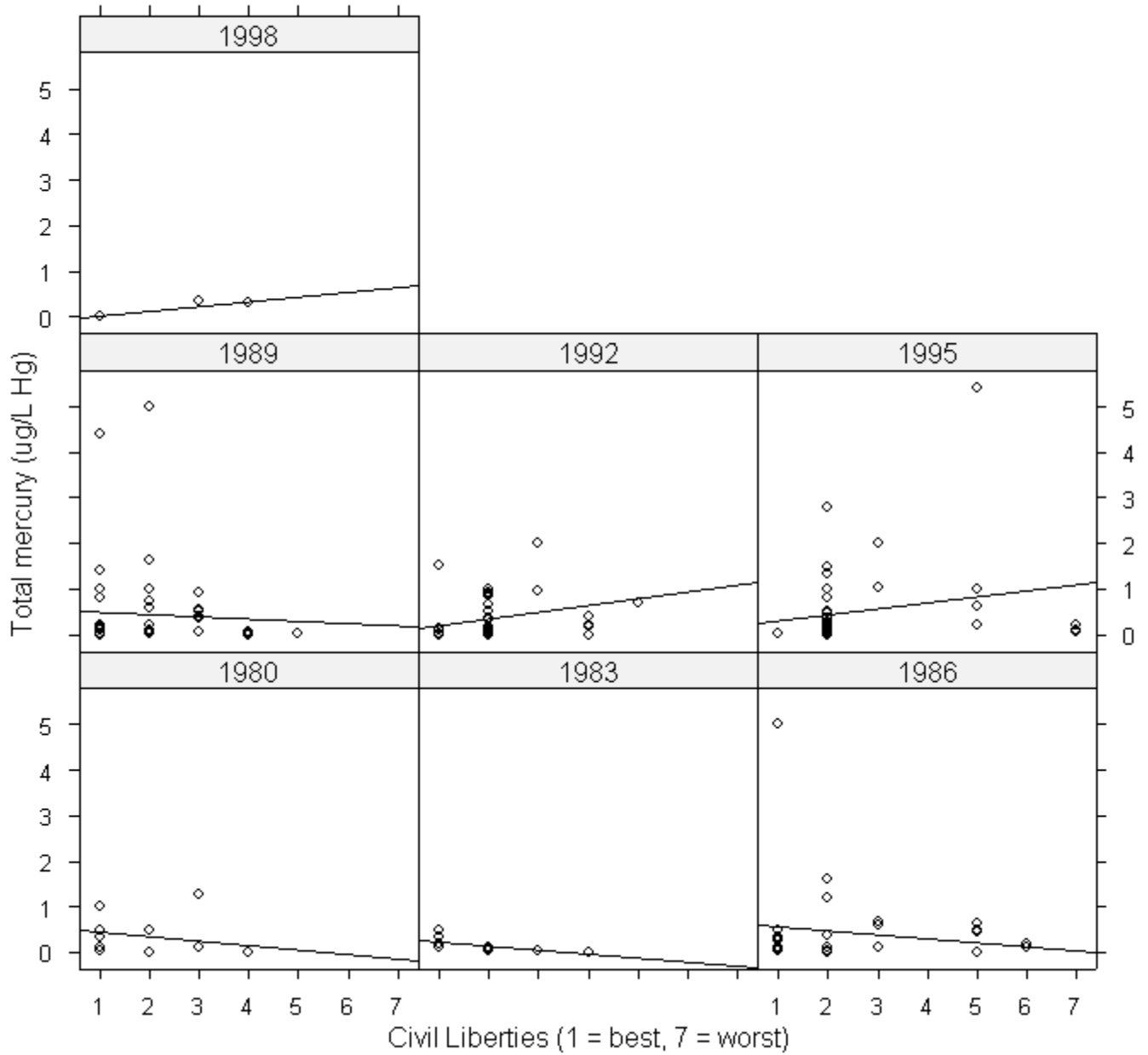
Figure 8.1d

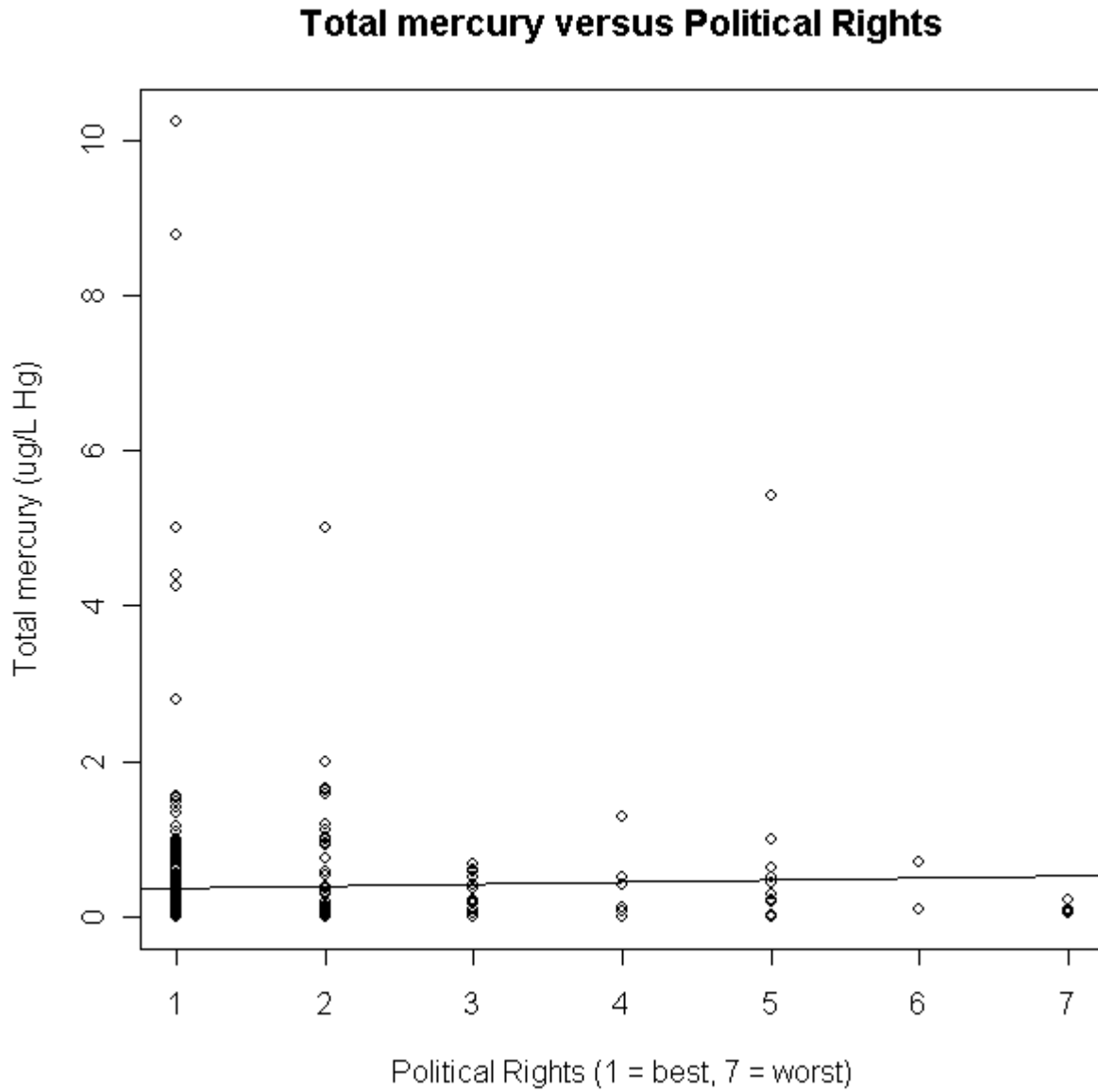FIGURE 8.2: TOTAL MERCURY VERSUS POLITICAL RIGHTS

Total mercury versus Political Rights

Figure 8.2a

```
          Estimate Std. Error t value Pr(>|t|)
(Intercept)  0.33240    0.07313   4.545  7.2e-06 ***
data$pr      0.02648    0.03689   0.718    0.473
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 0.9017 on 415 degrees of freedom
Multiple R-Squared: 0.00124,  Adjusted R-squared: -0.001166
F-statistic: 0.5154 on 1 and 415 DF,  p-value: 0.4732
```
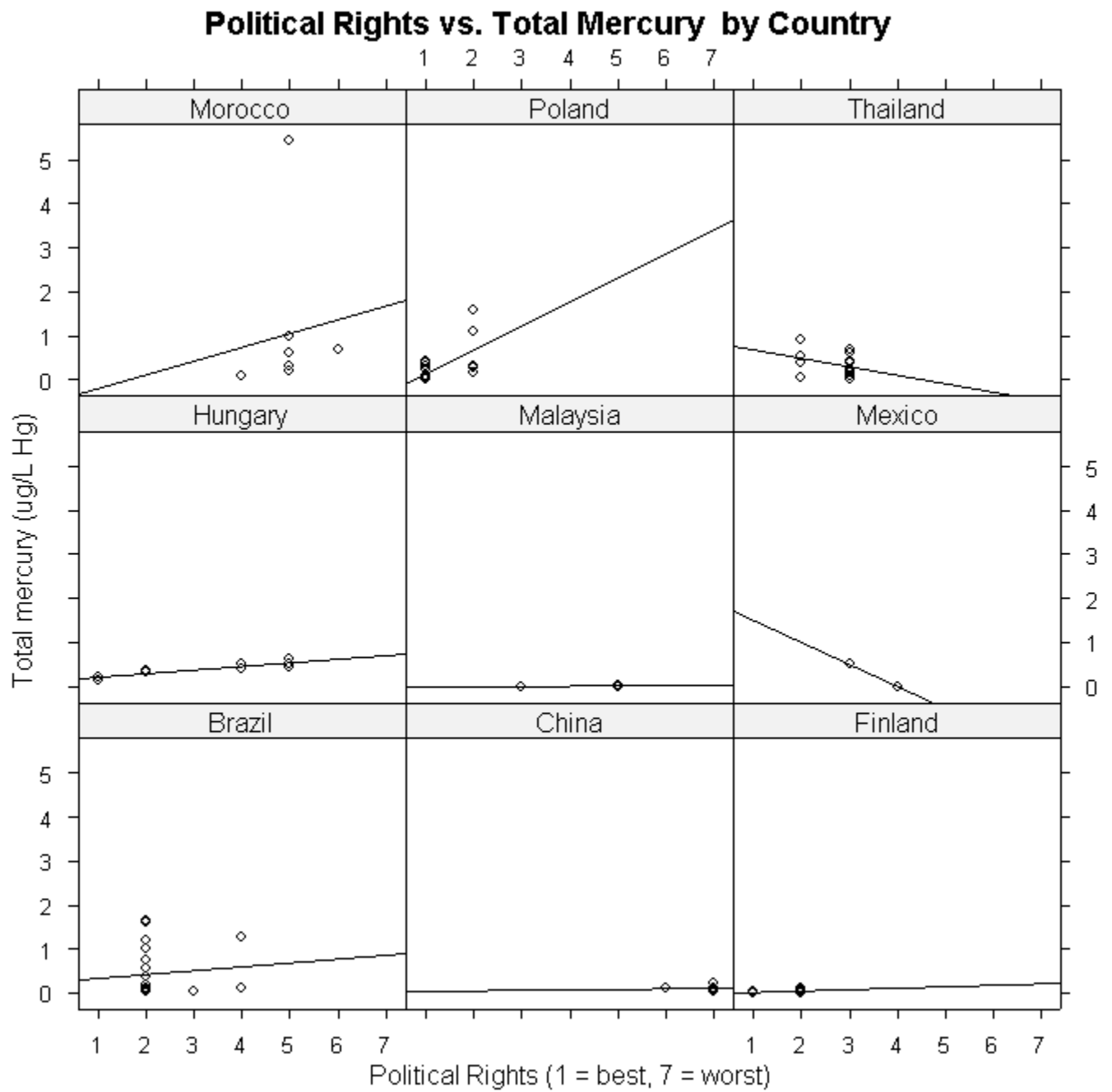
Figure 8.2b

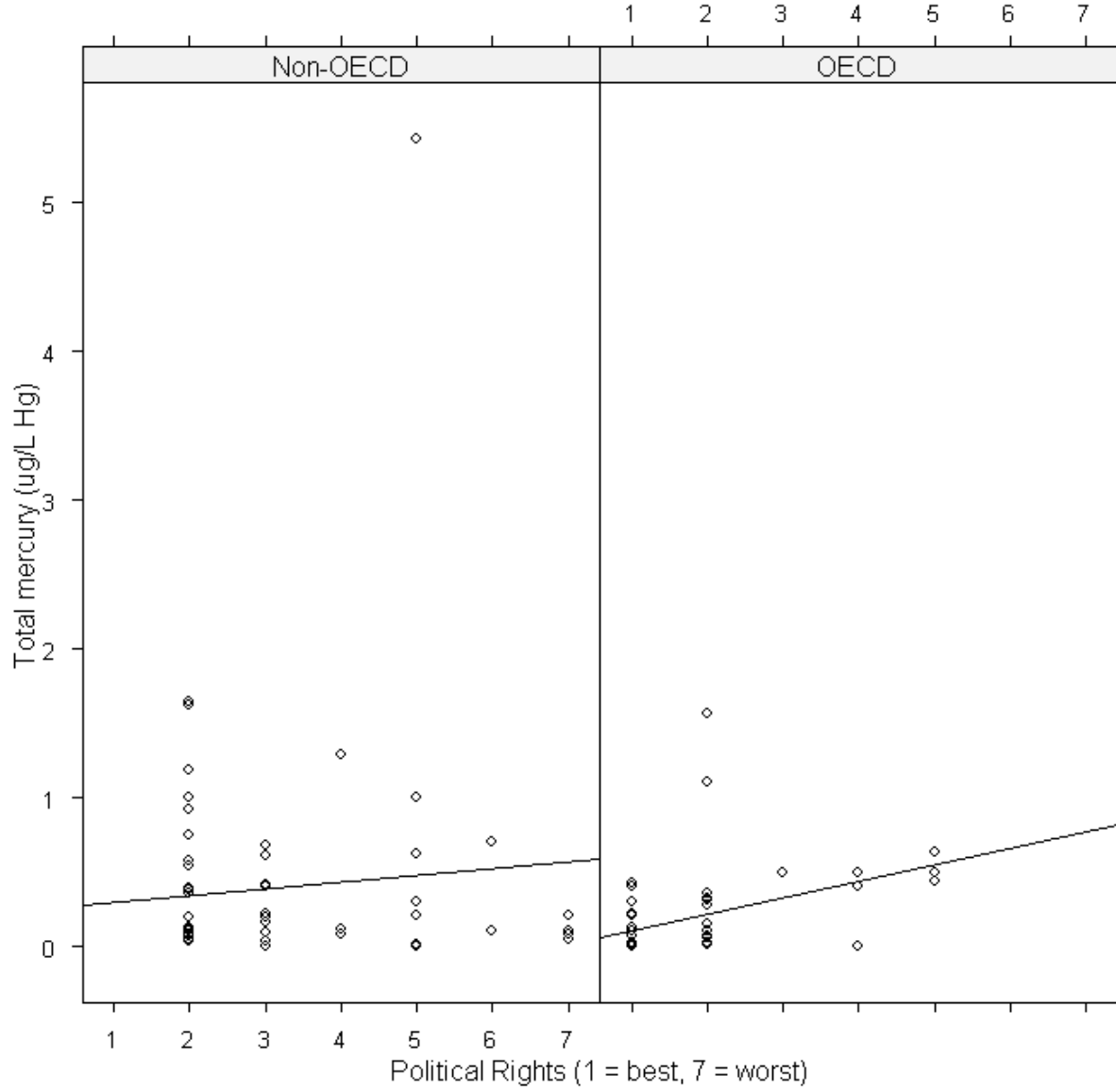**Political Rights vs. Total Mercury by Development Level**

Figure 8.2c
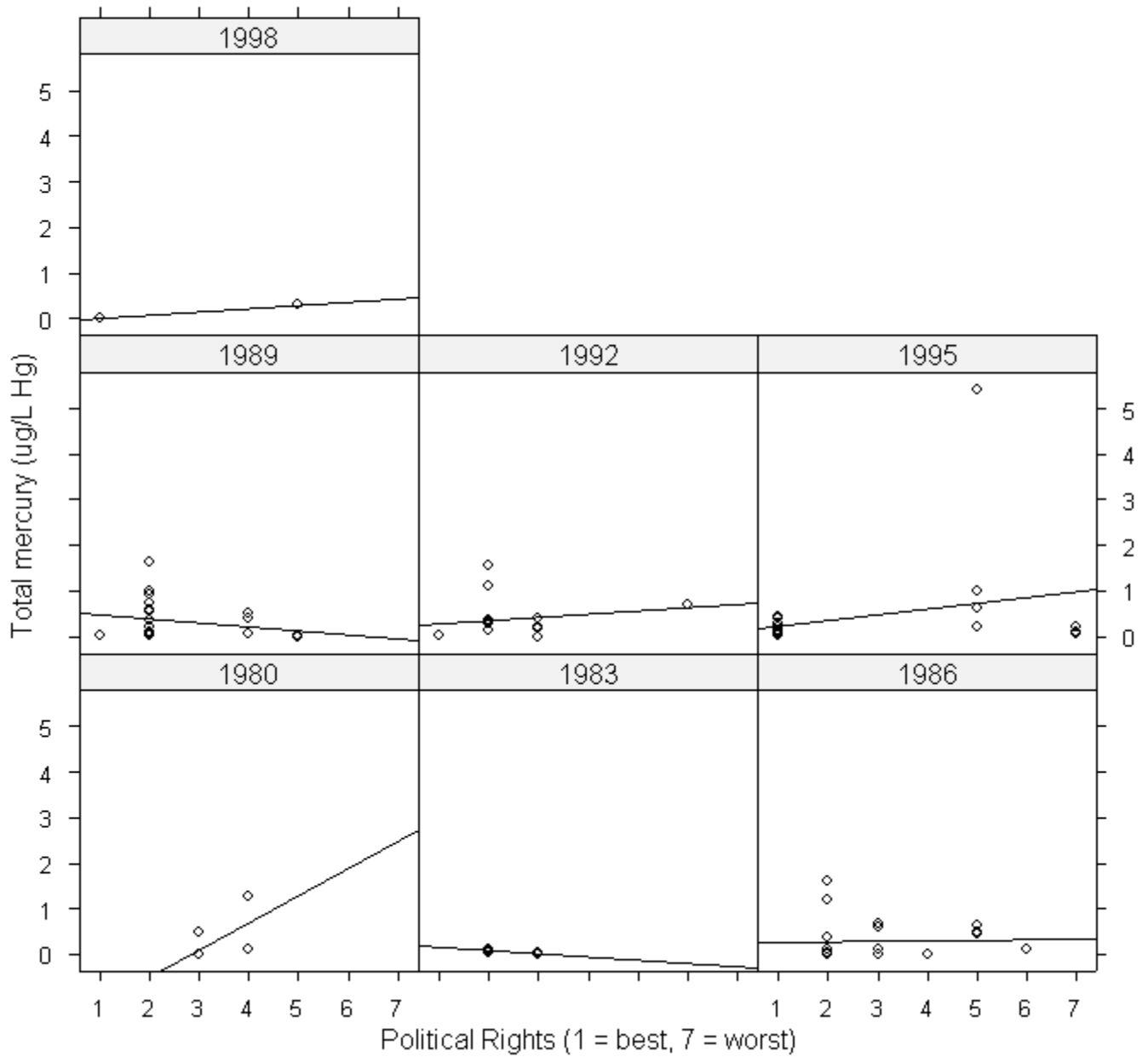
Political Rights vs. Total Mercury by Year
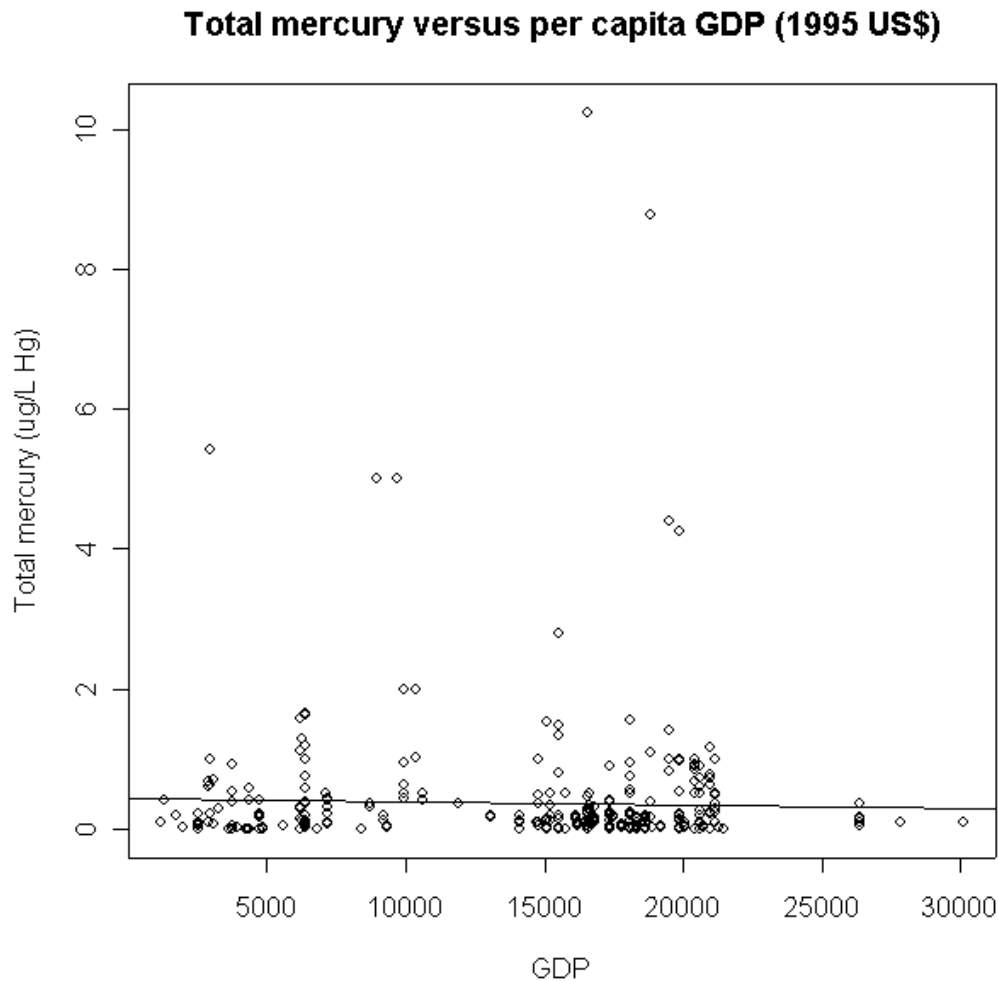

Figure 8.2d

Total mercury versus per capita GDP (1995 US$)

Figure 8.3a

```
               Estimate Std. Error t value Pr(>|t|)
(Intercept)   4.463e-01  1.126e-01    3.962 8.74e-05 ***
data$gdp     -4.927e-06  7.089e-06   -0.695    0.487
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 0.9017 on 415 degrees of freedom
Multiple R-Squared: 0.001162, Adjusted R-squared: -0.001244
F-statistic: 0.483 on 1 and 415 DF,  p-value: 0.4875
```
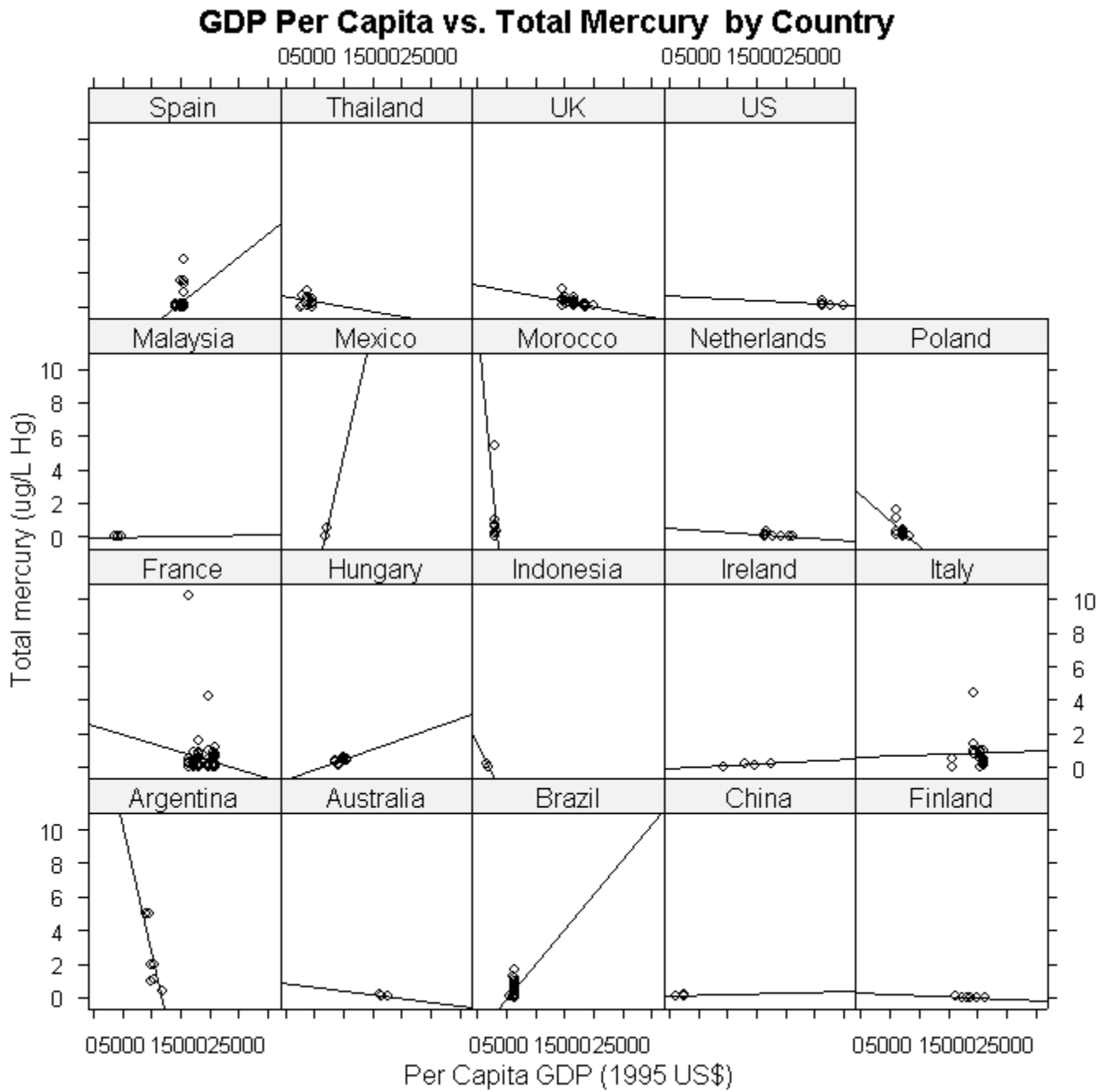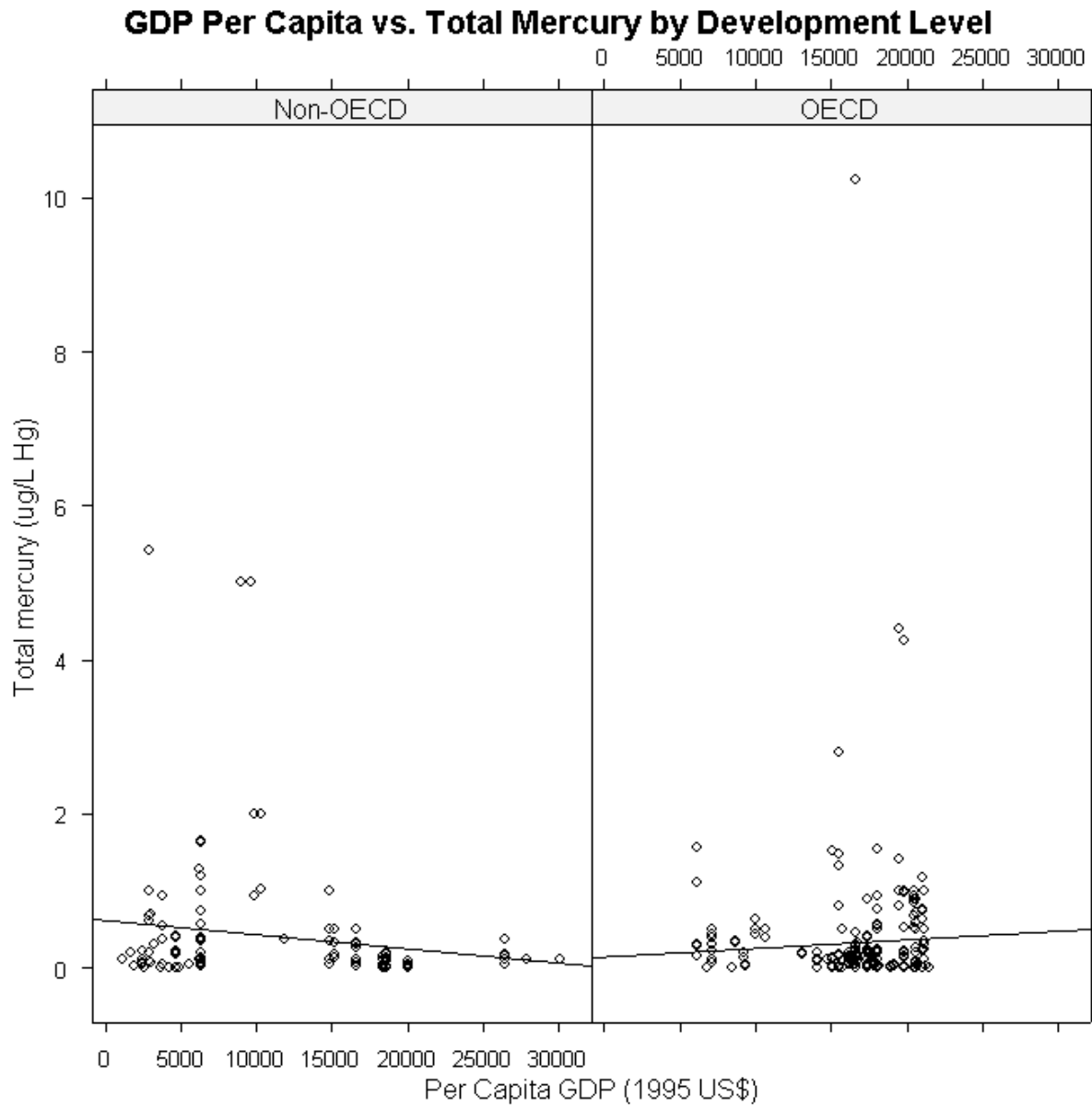
GDP Per Capita vs. Total Mercury by Country

Figure 8.3b

GDP Per Capita vs. Total Mercury by Development Level

Figure 8.3c

GDP Per Capita vs. Total Mercury by Year

Figure 8.3d

FIGURE 9.1: TOTAL NICKEL VERSUS CIVIL LIBERTIES
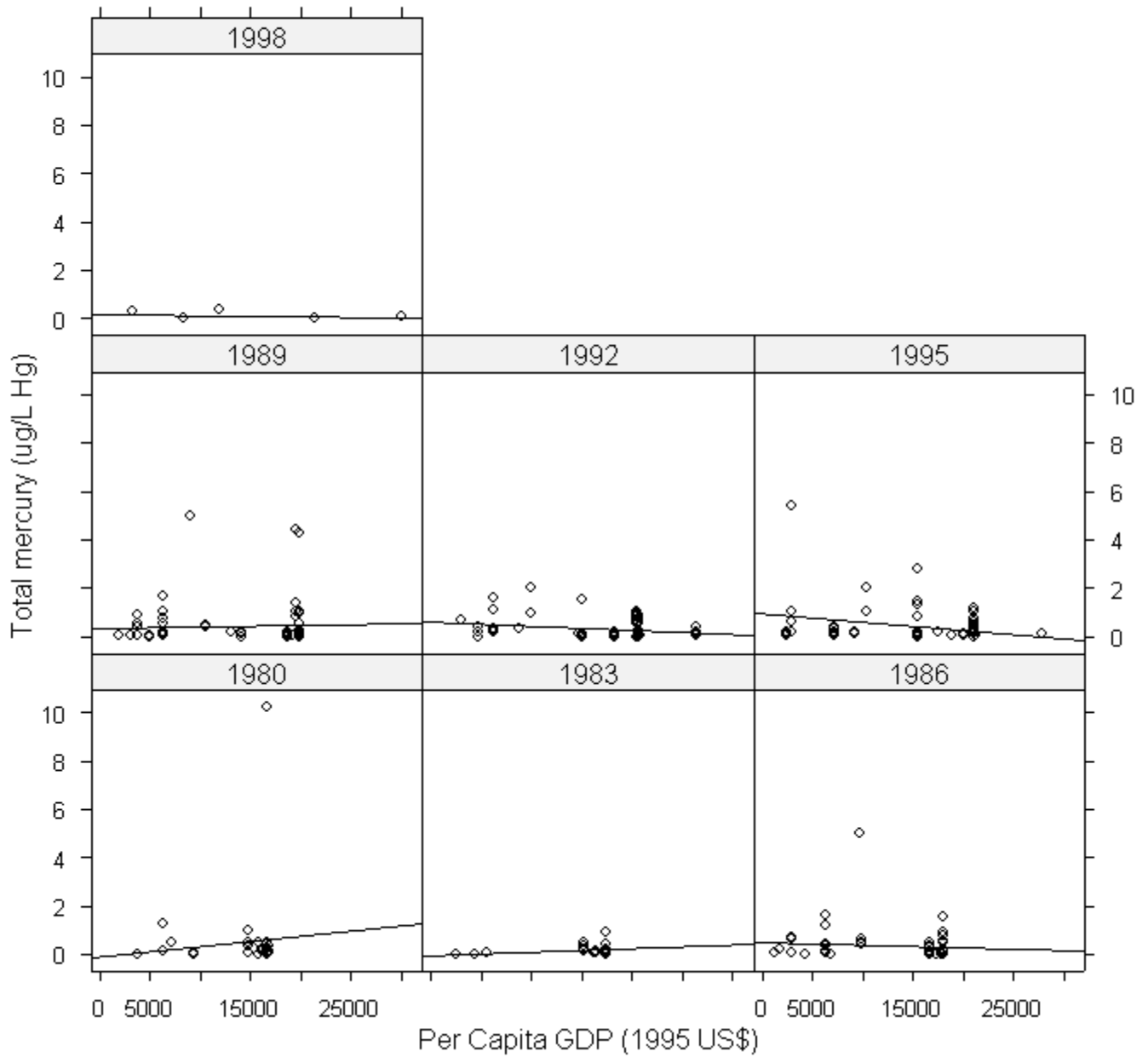

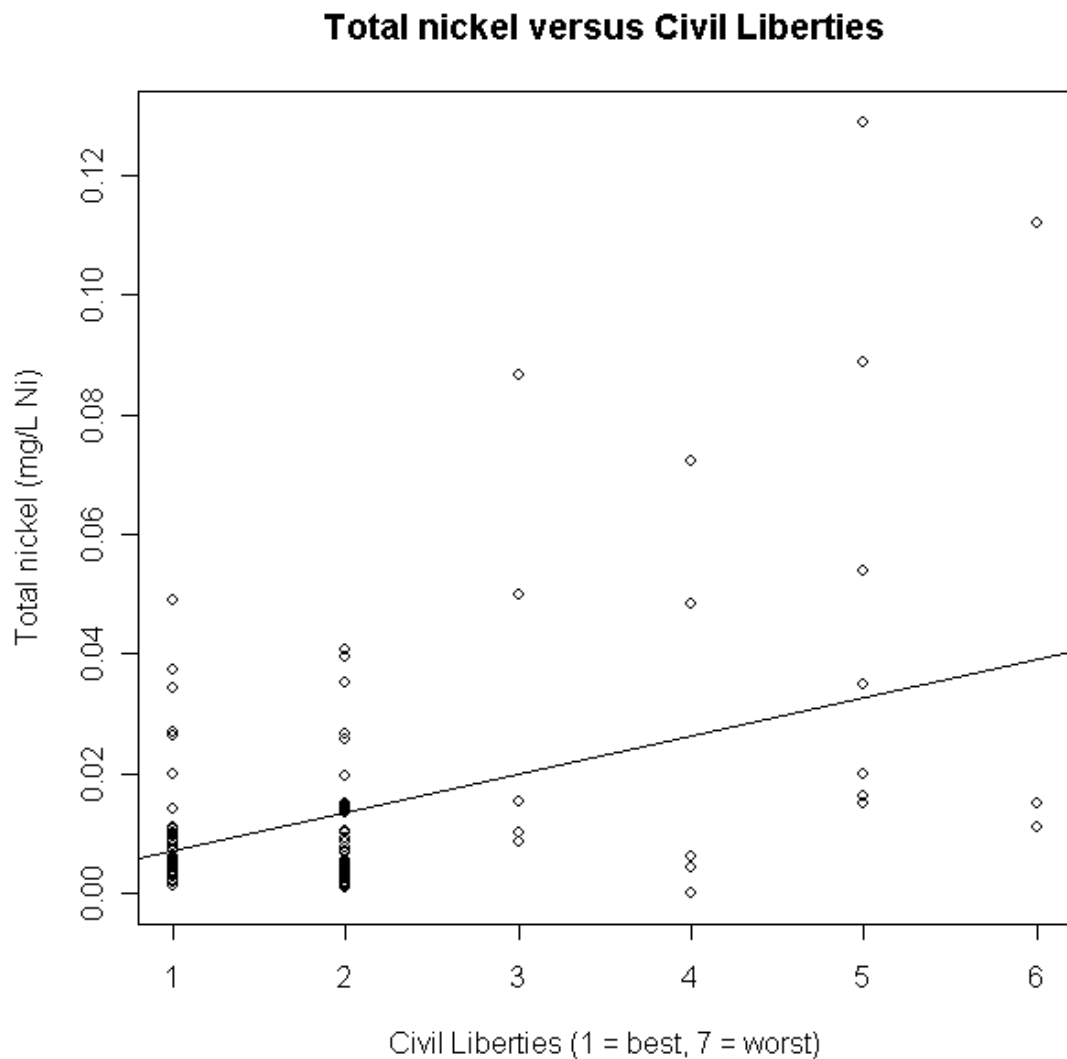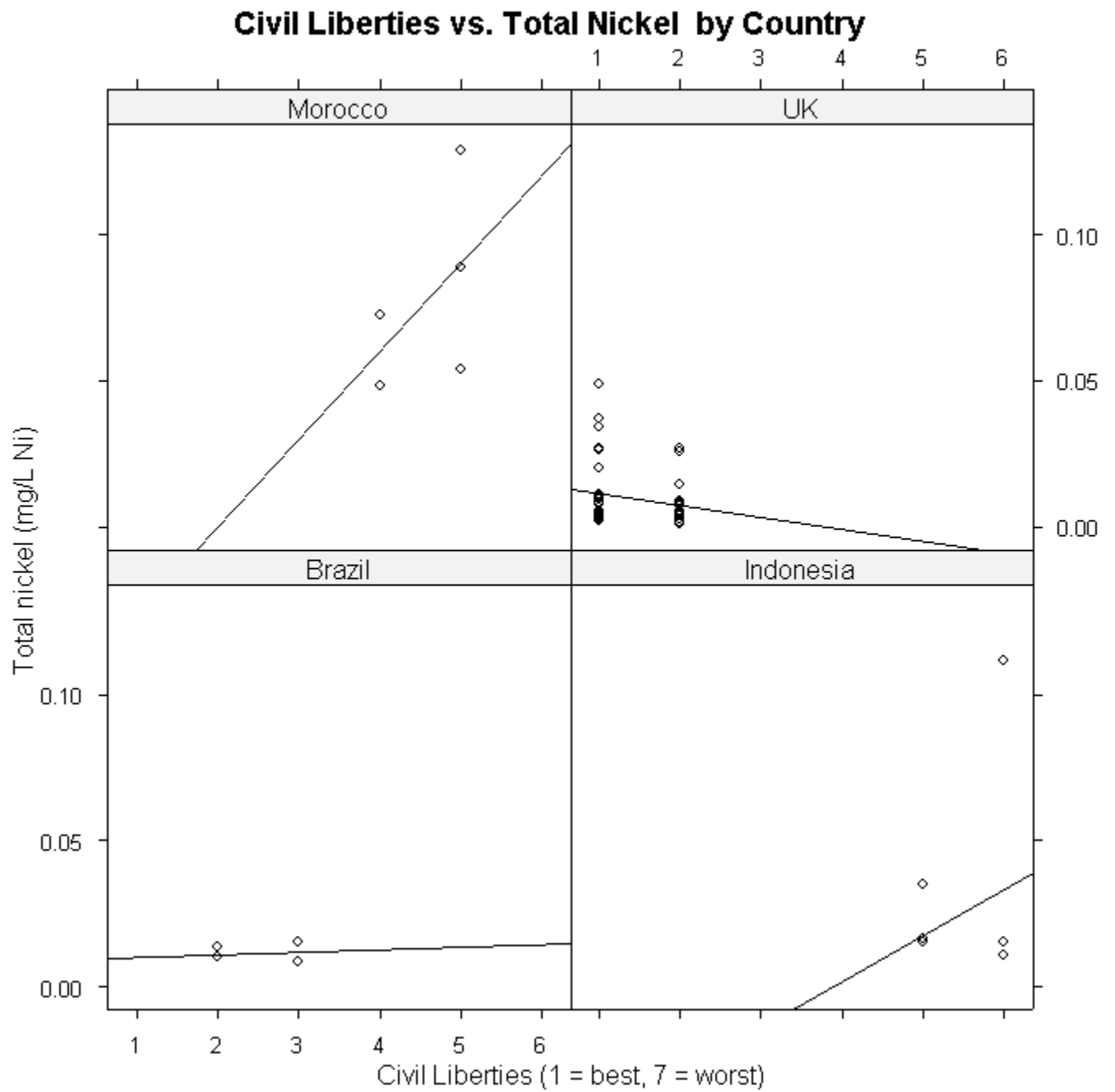**Total nickel versus Civil Liberties**

Figure 9.1a

```
              Estimate Std. Error t value Pr(>|t|)
(Intercept) 0.0007747  0.0028108   0.276    0.783
data$cl     0.0063823  0.0011054   5.774 5.48e-08 ***
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 0.01815 on 129 degrees of freedom
Multiple R-Squared: 0.2053,   Adjusted R-squared: 0.1992
F-statistic: 33.33 on 1 and 129 DF,  p-value: 5.484e-08
```

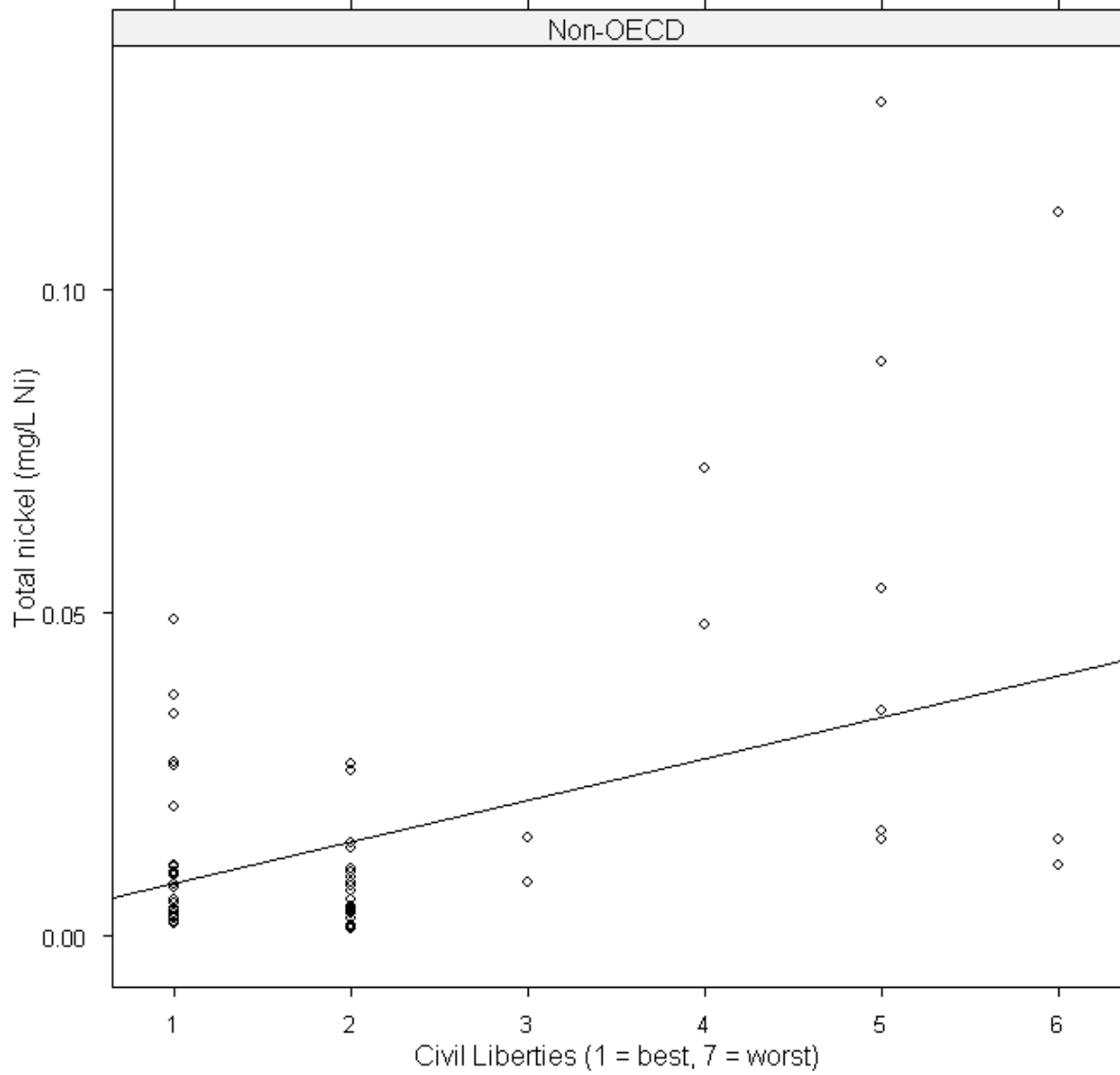Civil Liberties vs. Total Nickel by Country

Figure 9.1b
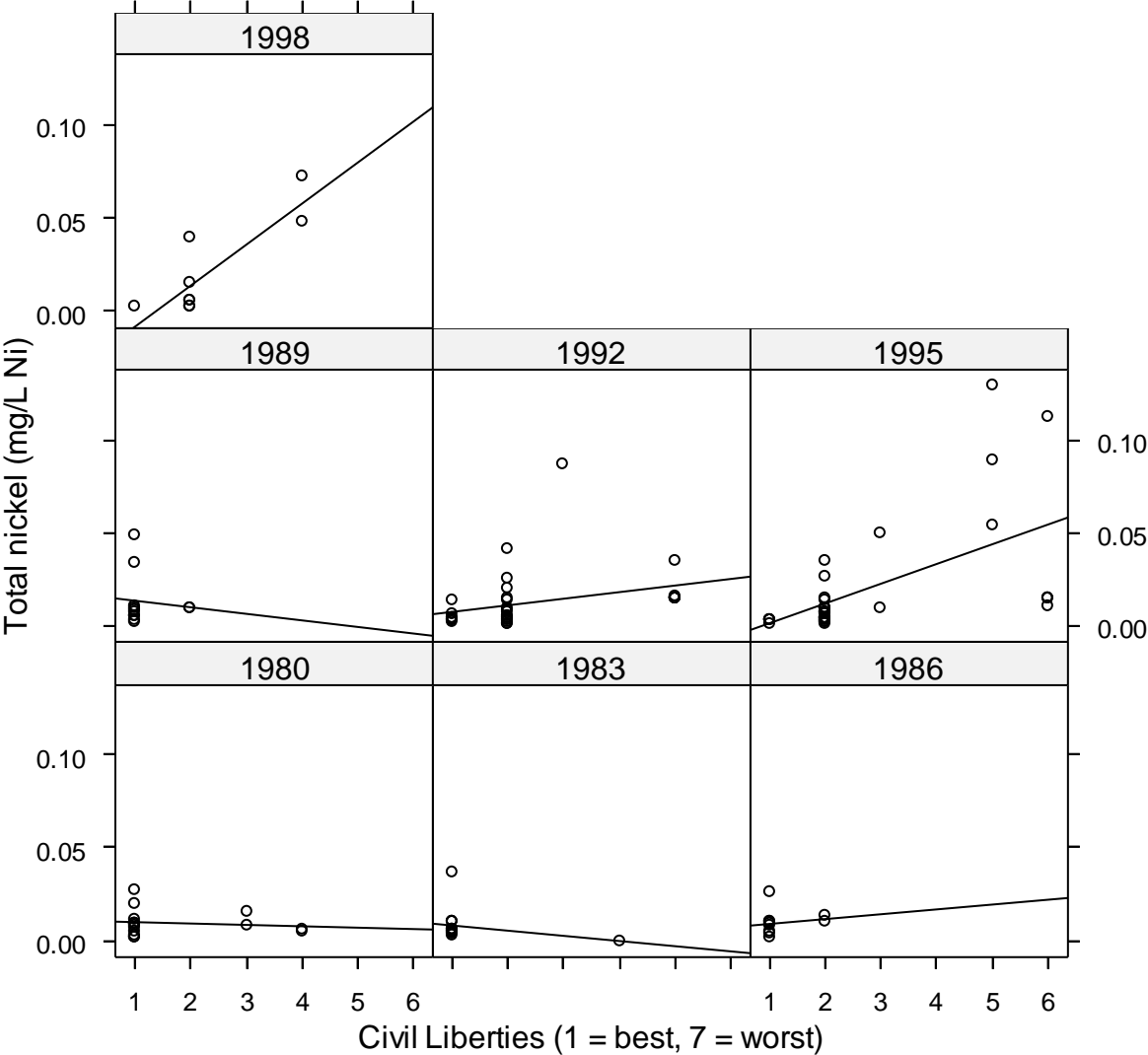
Figure 9.1c

Civil Liberties vs. Total Nickel by Year

Figure 9.1d

Total nickel versus Political Rights
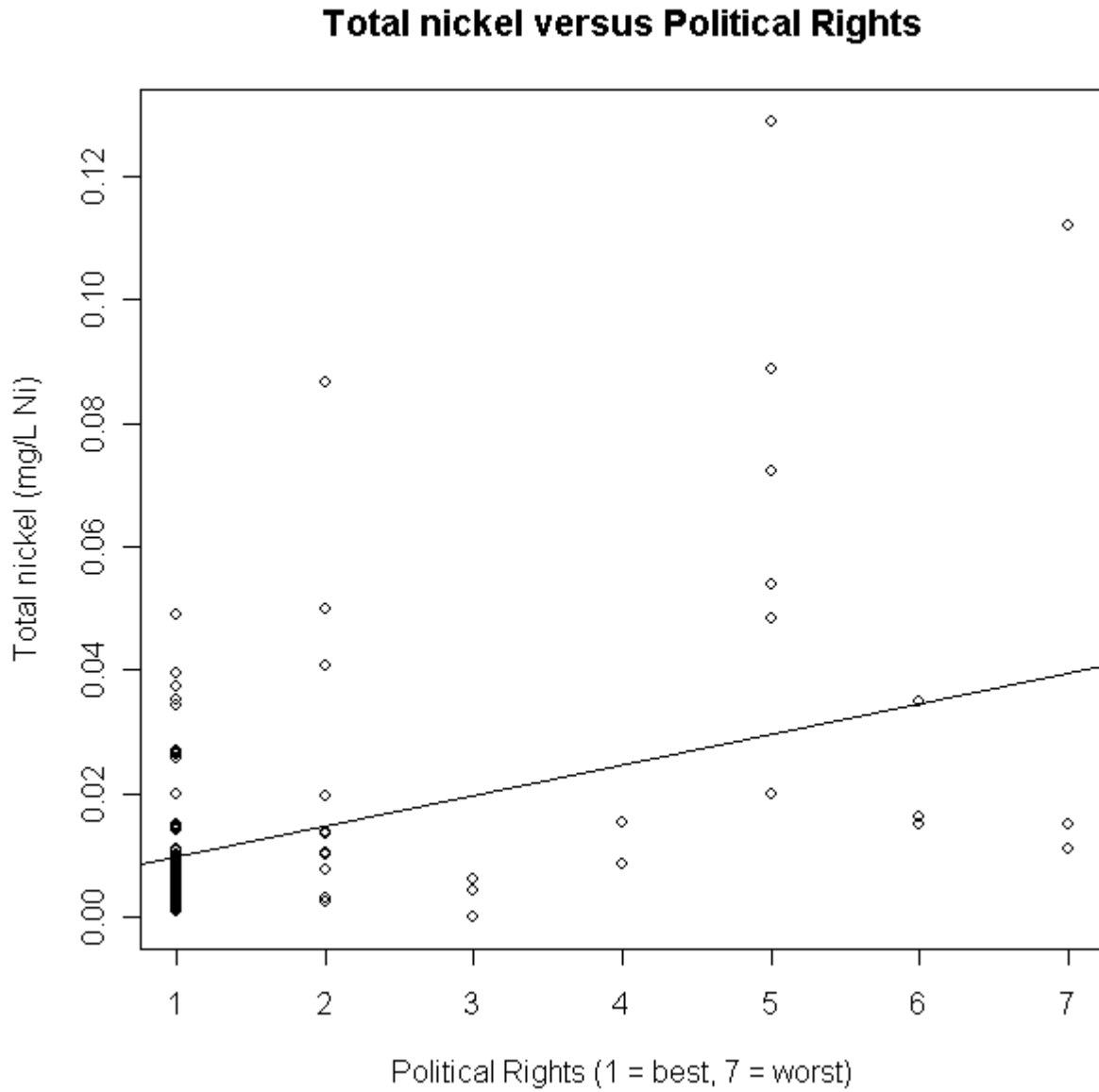
Figure 9.2a

```
            Estimate Std. Error t value Pr(>|t|)
(Intercept) 0.004672   0.002354   1.985   0.0493 *
data$pr     0.004979   0.000904   5.507 1.90e-07 ***
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 0.01832 on 129 degrees of freedom
Multiple R-Squared: 0.1904,   Adjusted R-squared: 0.1841
F-statistic: 30.33 on 1 and 129 DF,  p-value: 1.896e-07
```

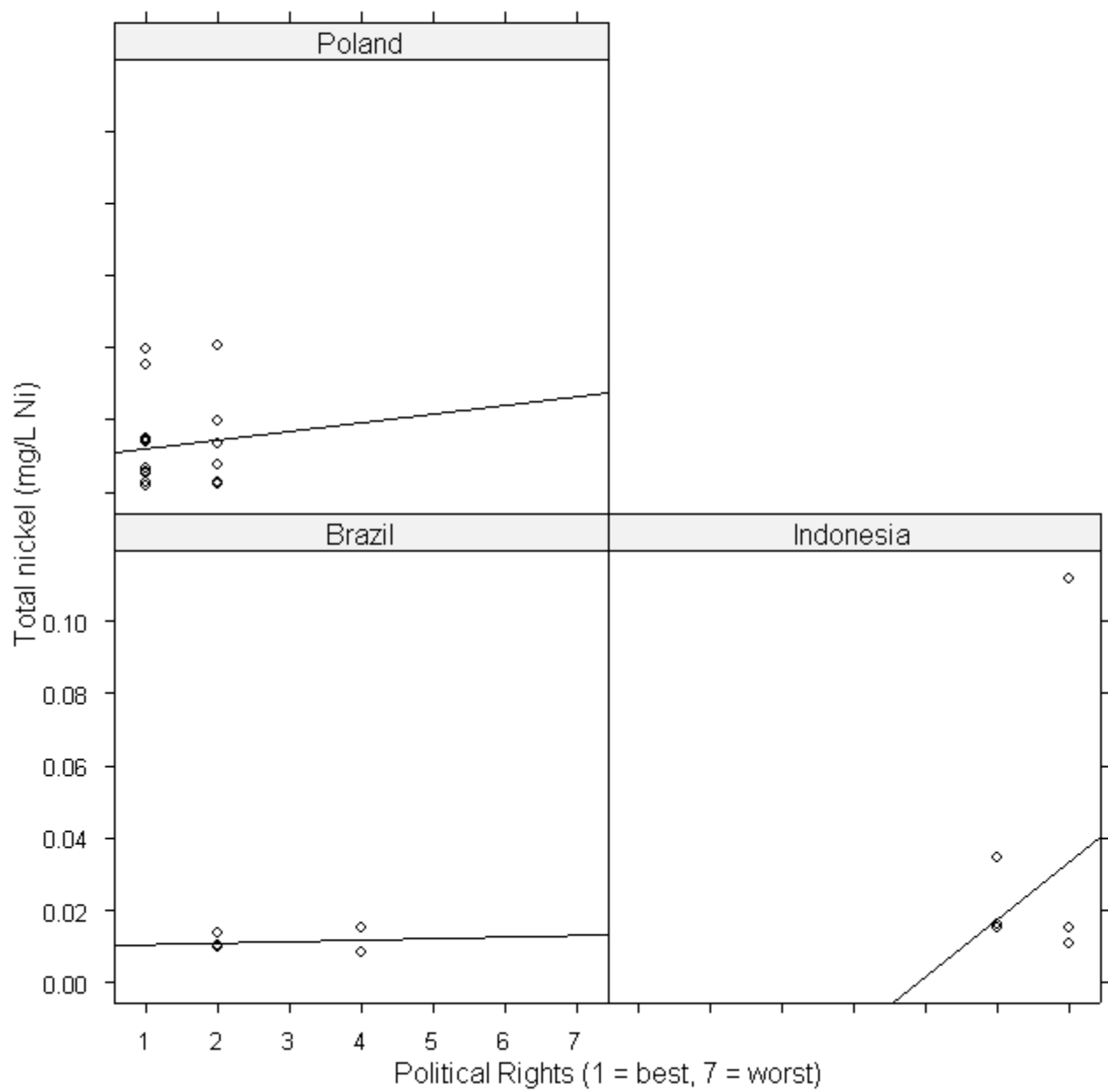# Political Rights vs. Total Nickel by Country

Figure 9.2b

Figure 9.2c
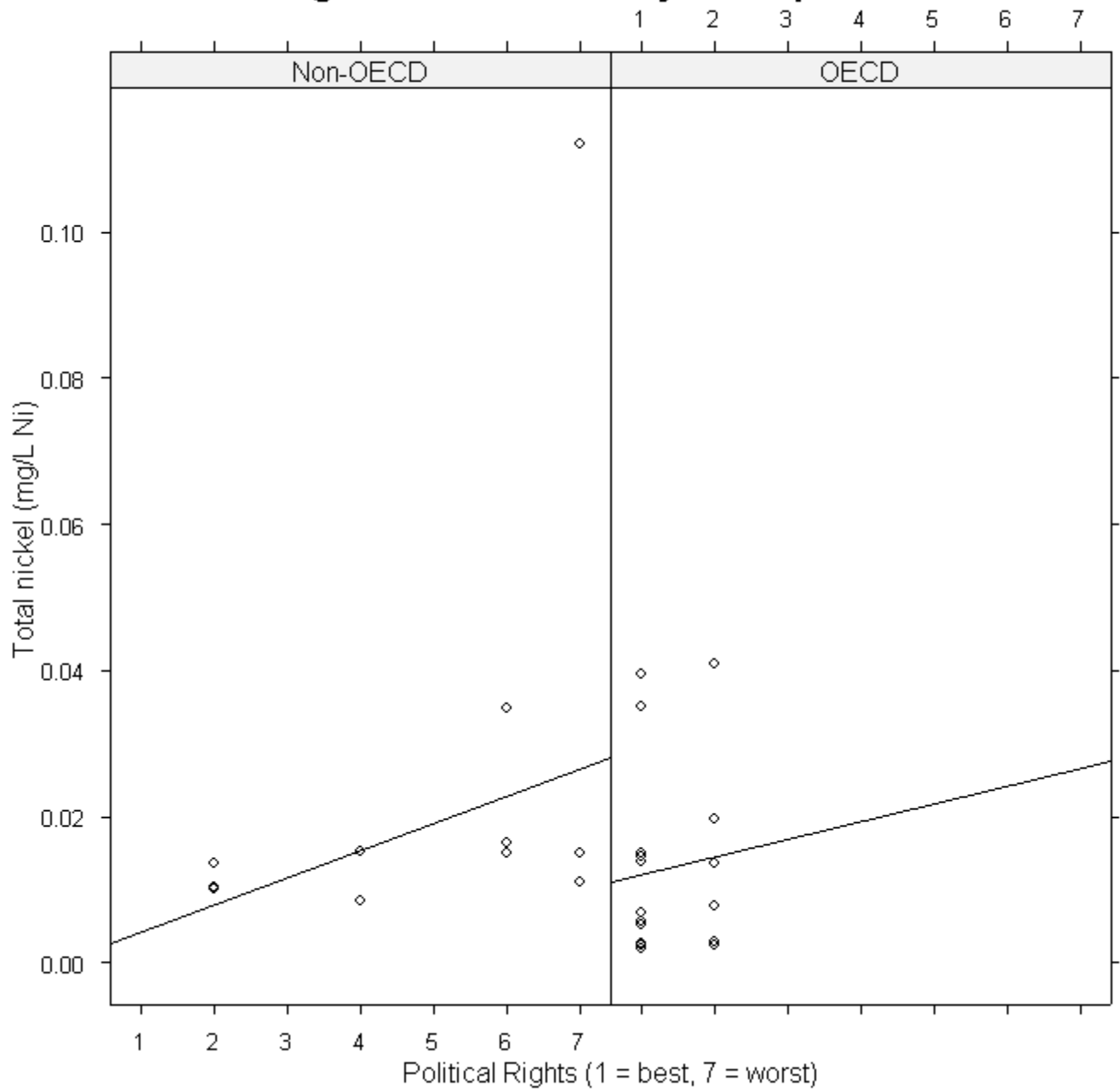
Political Rights vs. Total Nickel by Year

Total nickel (mg/L Ni)

Political Rights (1 = best, 7 = worst)
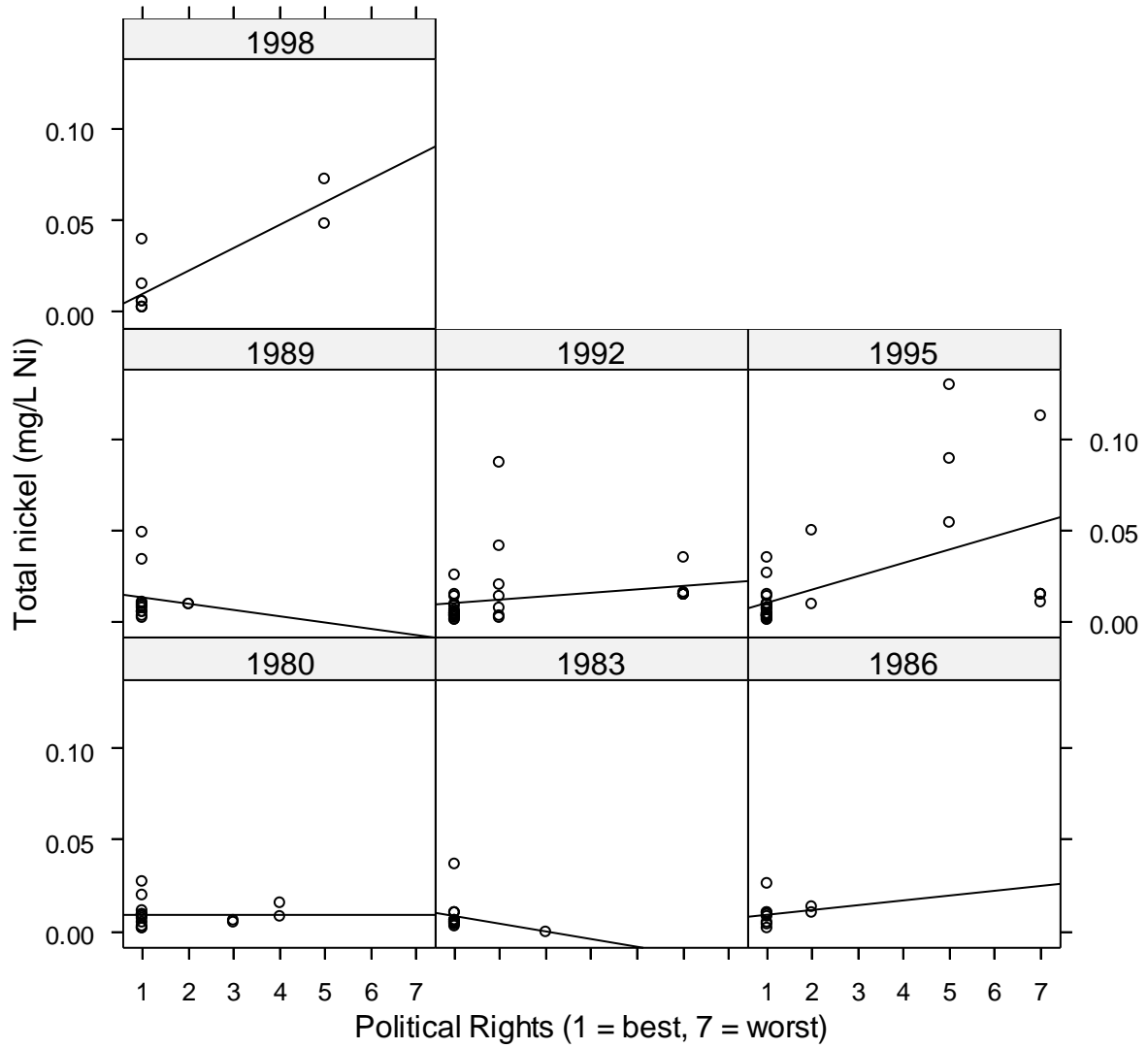
Figure 9.2d

FIGURE 9.3: TOTAL NICKEL VERSUS PER CAPITA GDP

Total nickel versus per capita GDP (1995 US$)
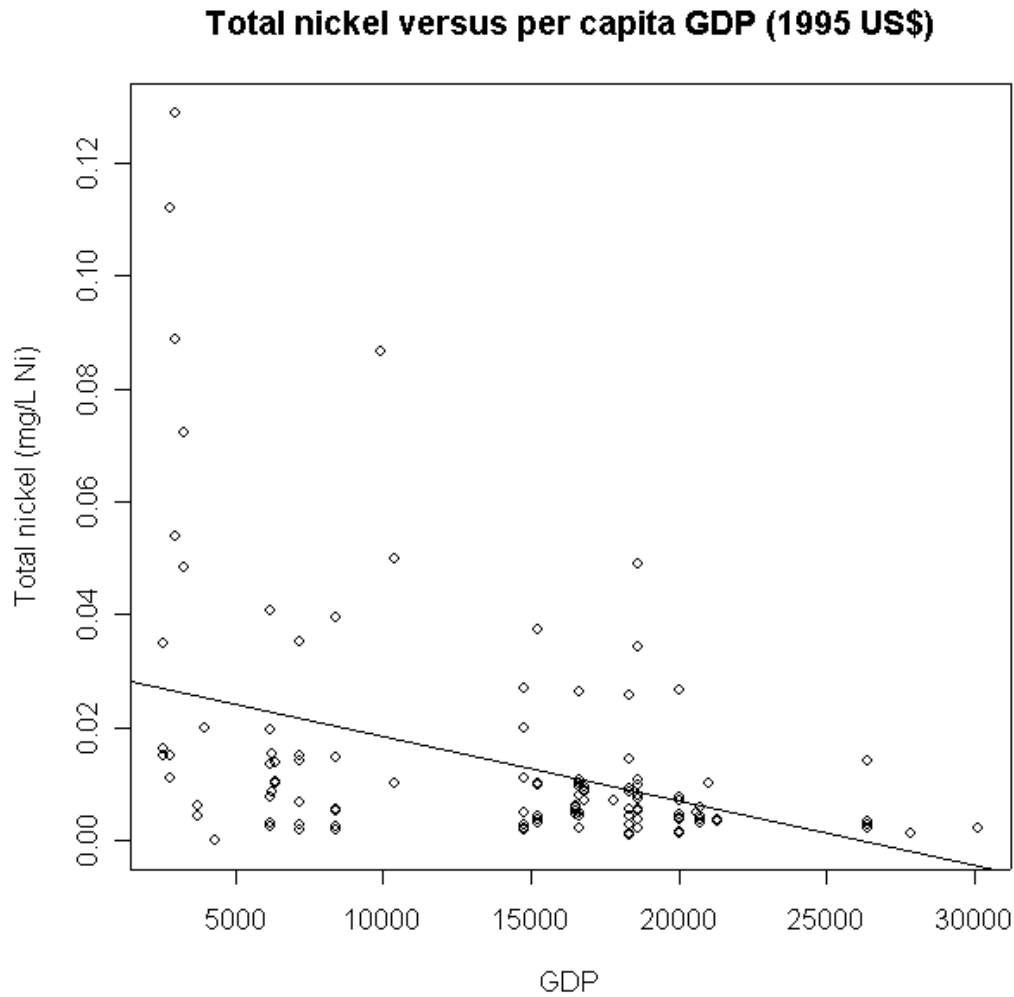
Figure 9.3a

```
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  2.995e-02  3.568e-03    8.396 7.15e-14 ***
data$gdp    -1.152e-06  2.317e-07   -4.972 2.06e-06 ***
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 0.01866 on 129 degrees of freedom
Multiple R-Squared: 0.1608,   Adjusted R-squared: 0.1543
F-statistic: 24.73 on 1 and 129 DF,  p-value: 2.064e-06
```
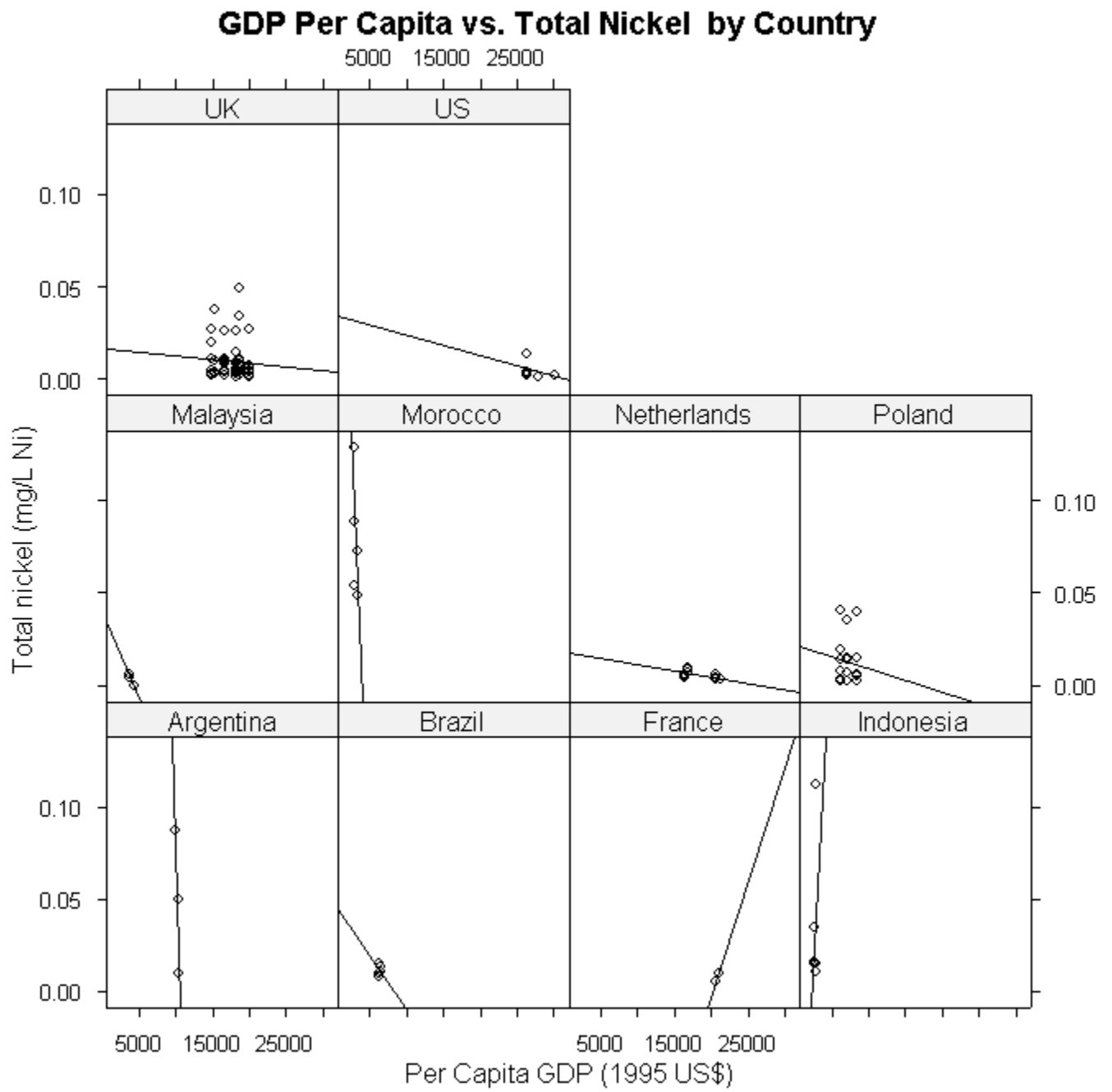
GDP Per Capita vs. Total Nickel by Country

Figure 9.3b

GDP Per Capita versus Total Nickel by Development Level

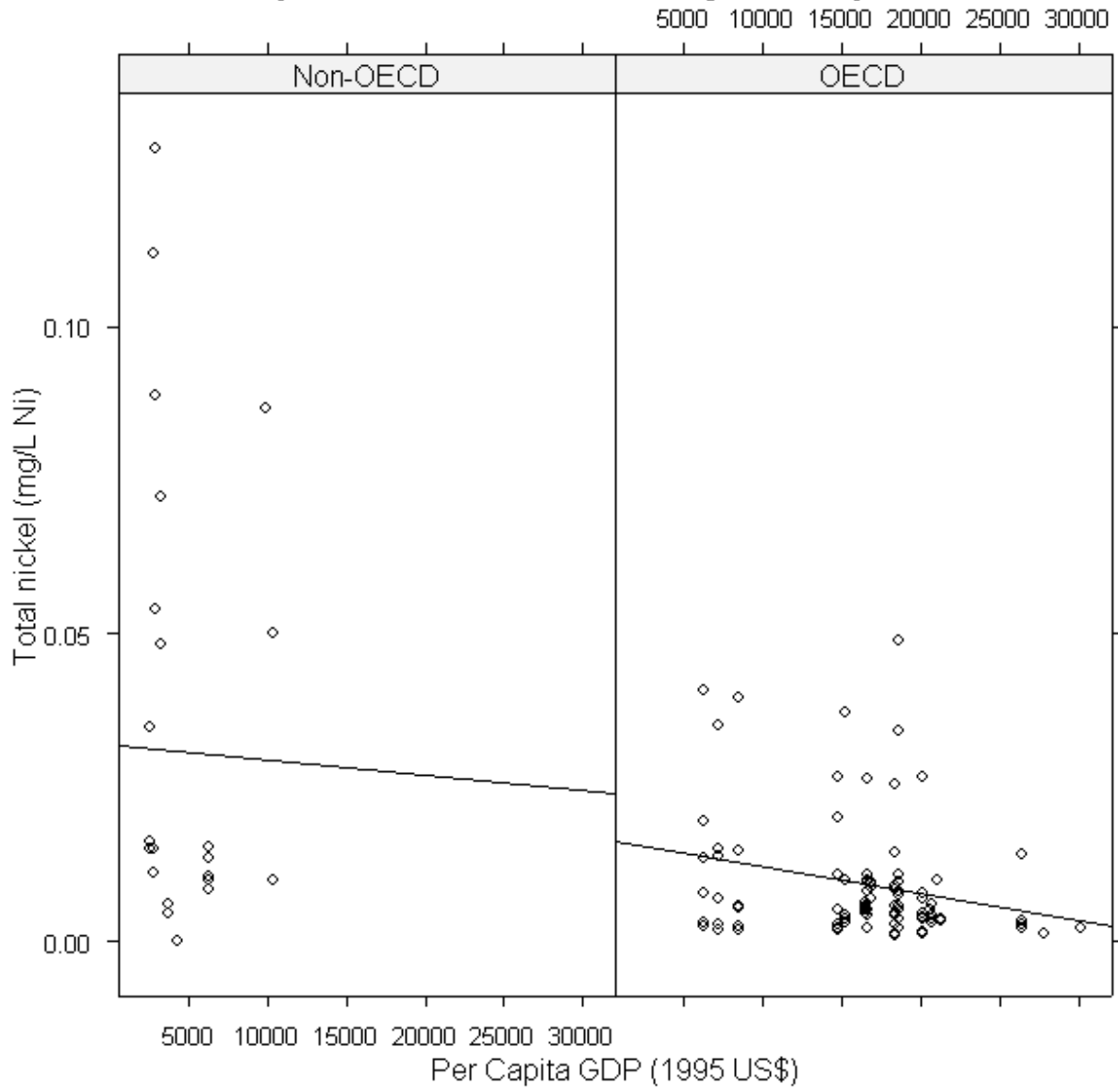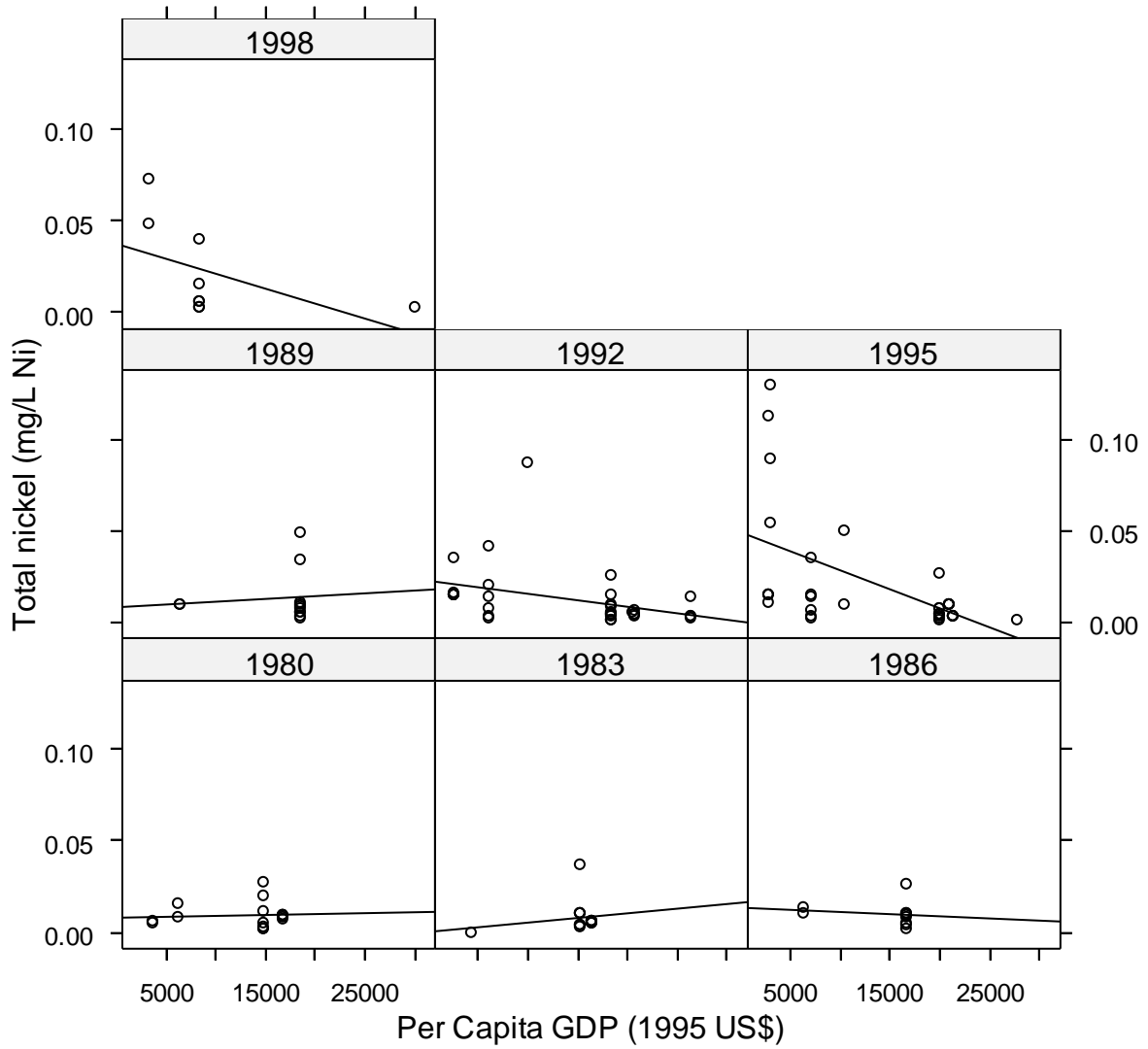Figure 9.3c

GDP Per Capita vs. Total Nickel by Year
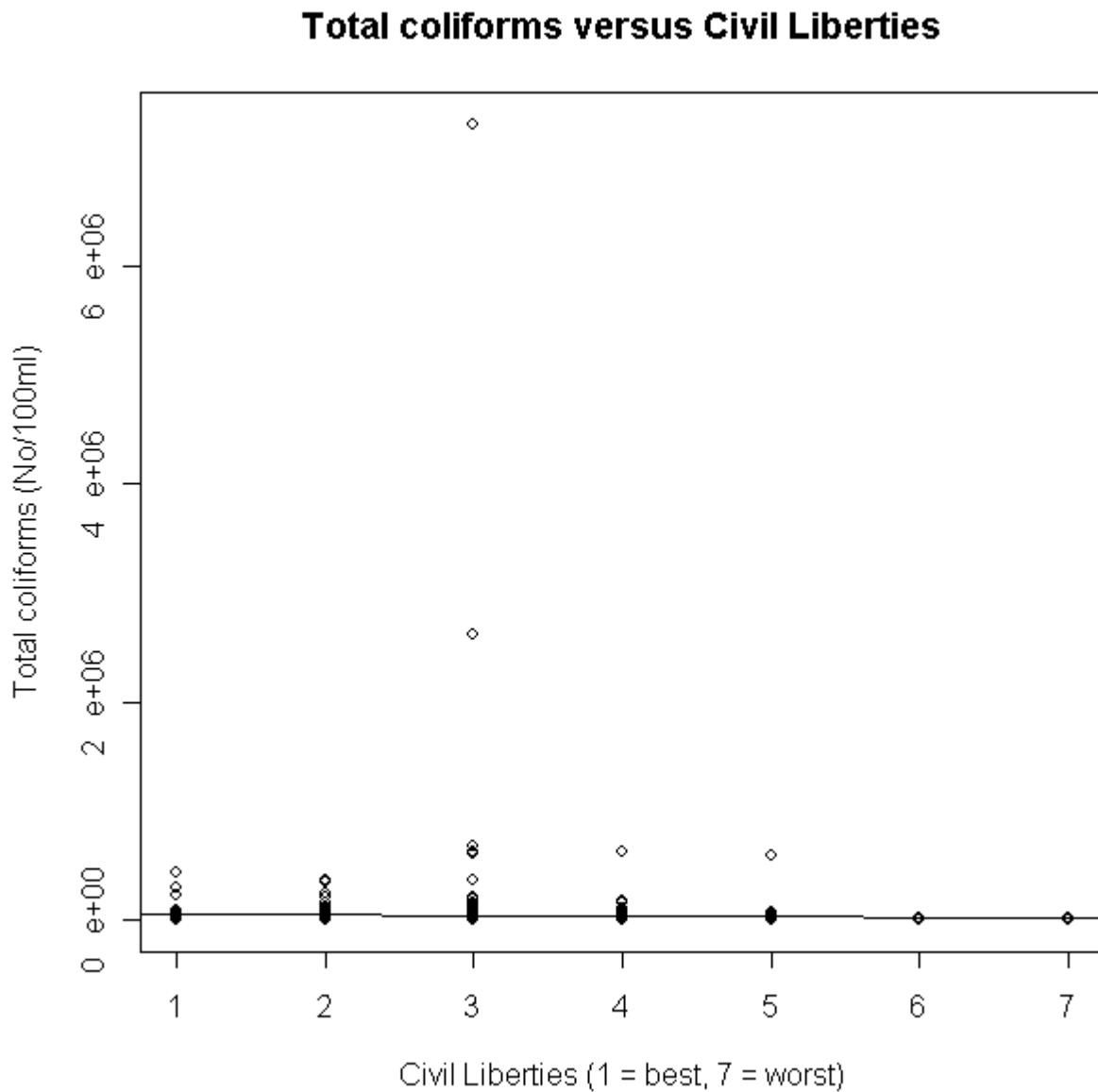

Figure 9.3d

Total coliforms versus Civil Liberties

Figure 10.1a

```
          Estimate Std. Error t value Pr(>|t|)
(Intercept)    55311        35589   1.554    0.121
data$cl        -5887        10798  -0.545    0.586

Residual standard error: 314500 on 633 degrees of freedom
Multiple R-Squared: 0.0004694,     Adjusted R-squared: -0.00111
F-statistic: 0.2973 on 1 and 633 DF,  p-value: 0.5858
```
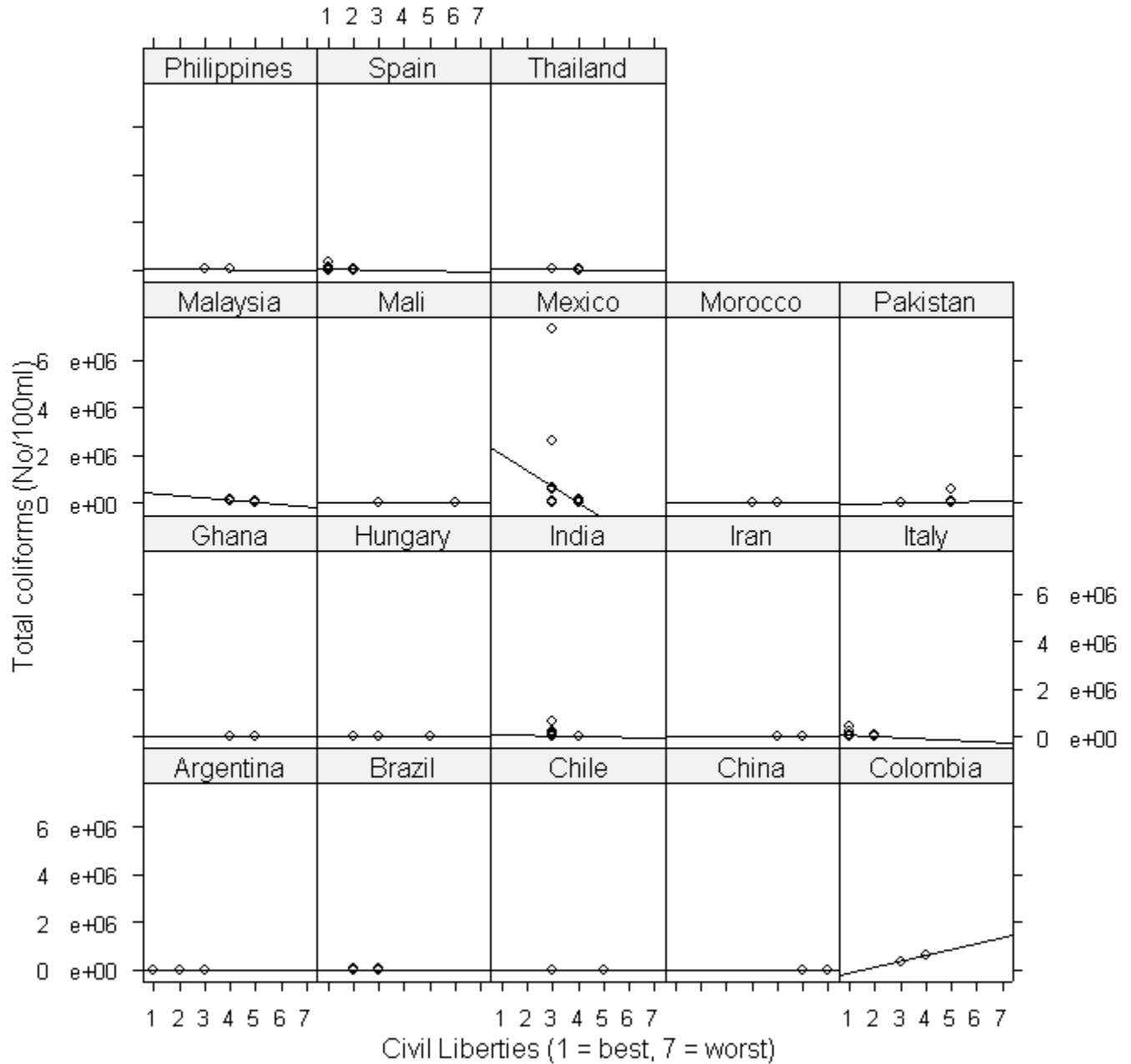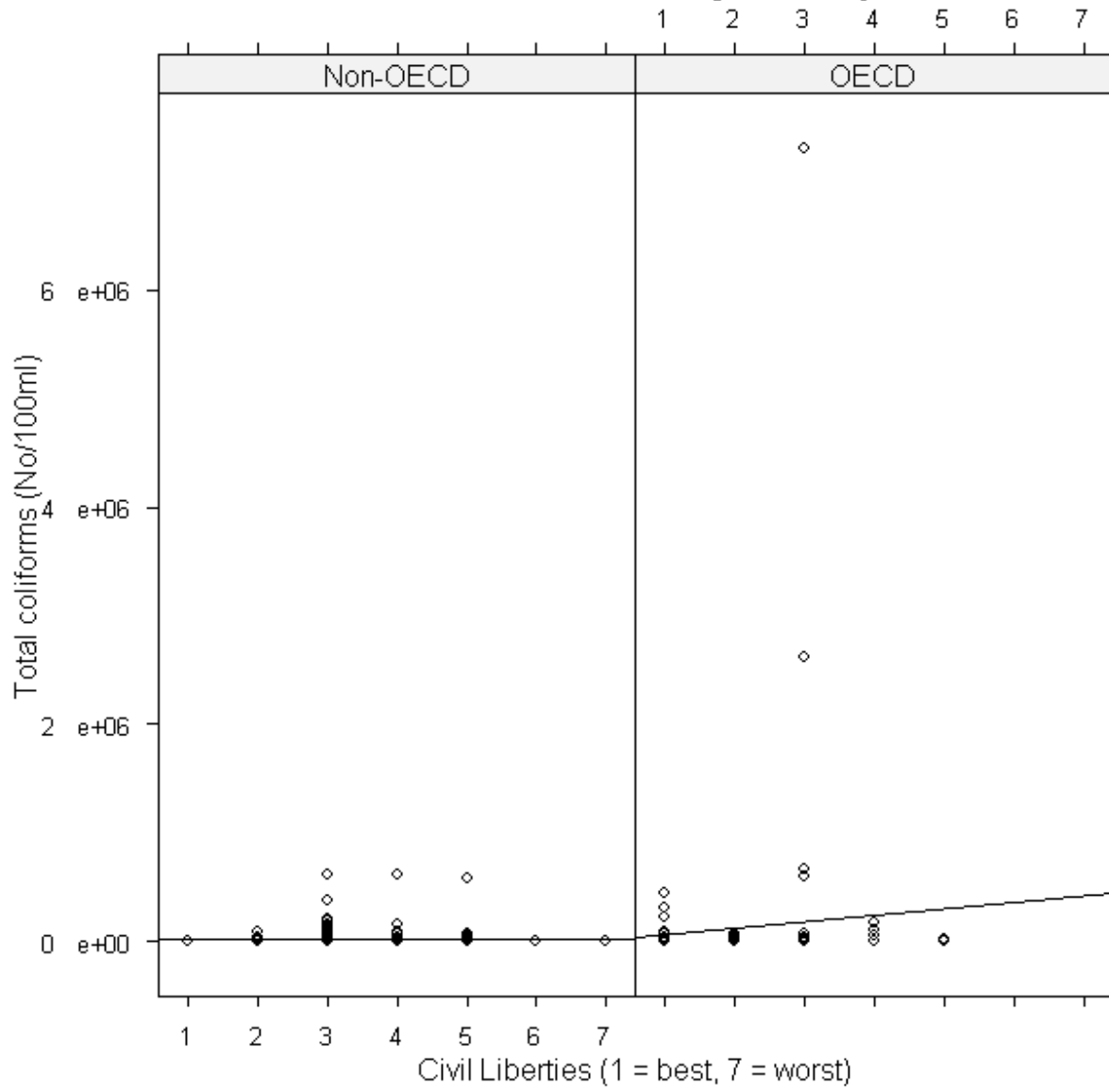
Civil Liberties vs. Total Coliform by Country

Figure 10.1b

Figure 10.1c

Civil Liberties vs. Total Coliform by Year
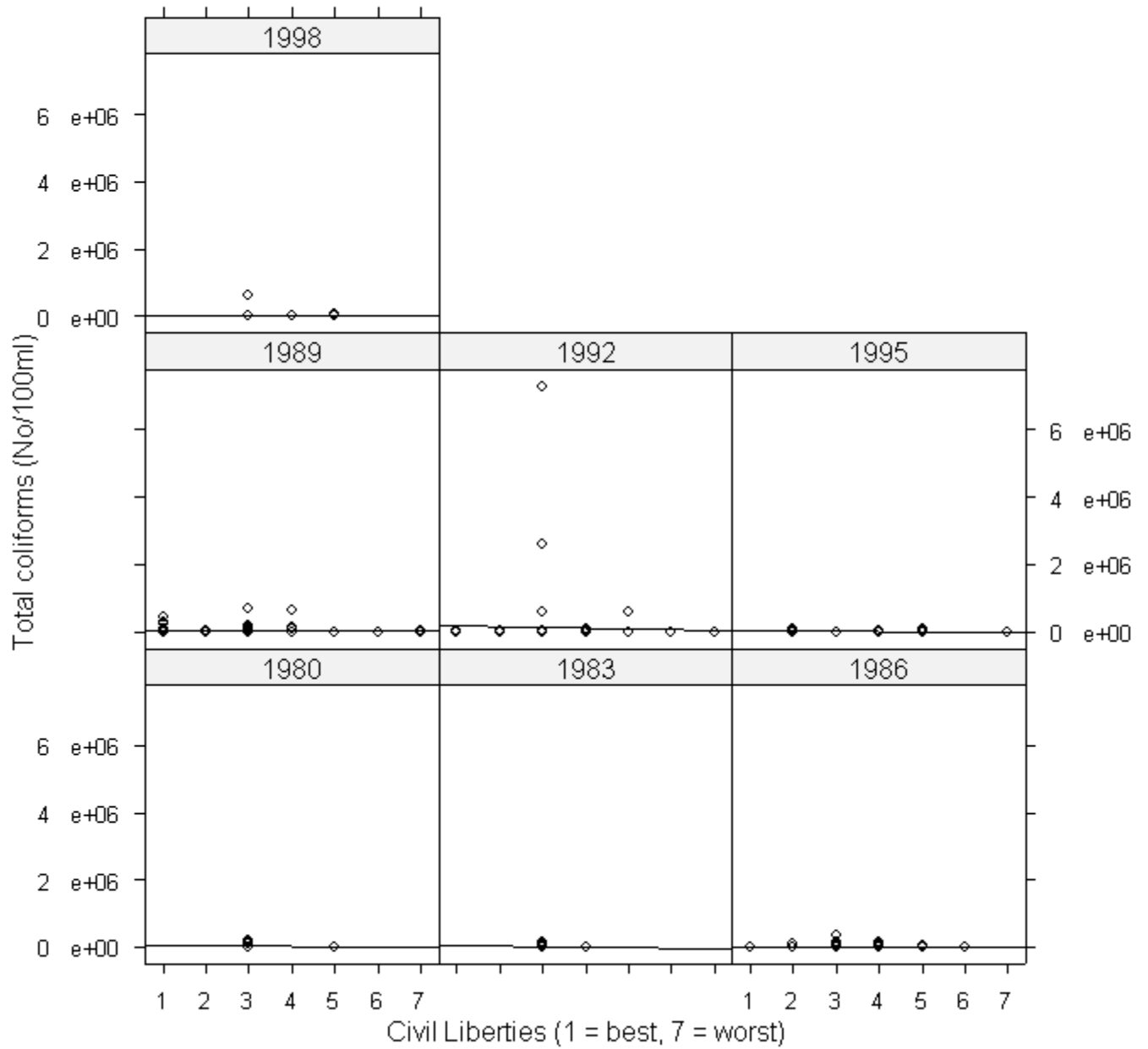
Figure 10.1d

FIGURE 10.2: TOTAL COLIFORMS VERSUS POLITICAL RIGHTS

Total coliforms versus Political Rights
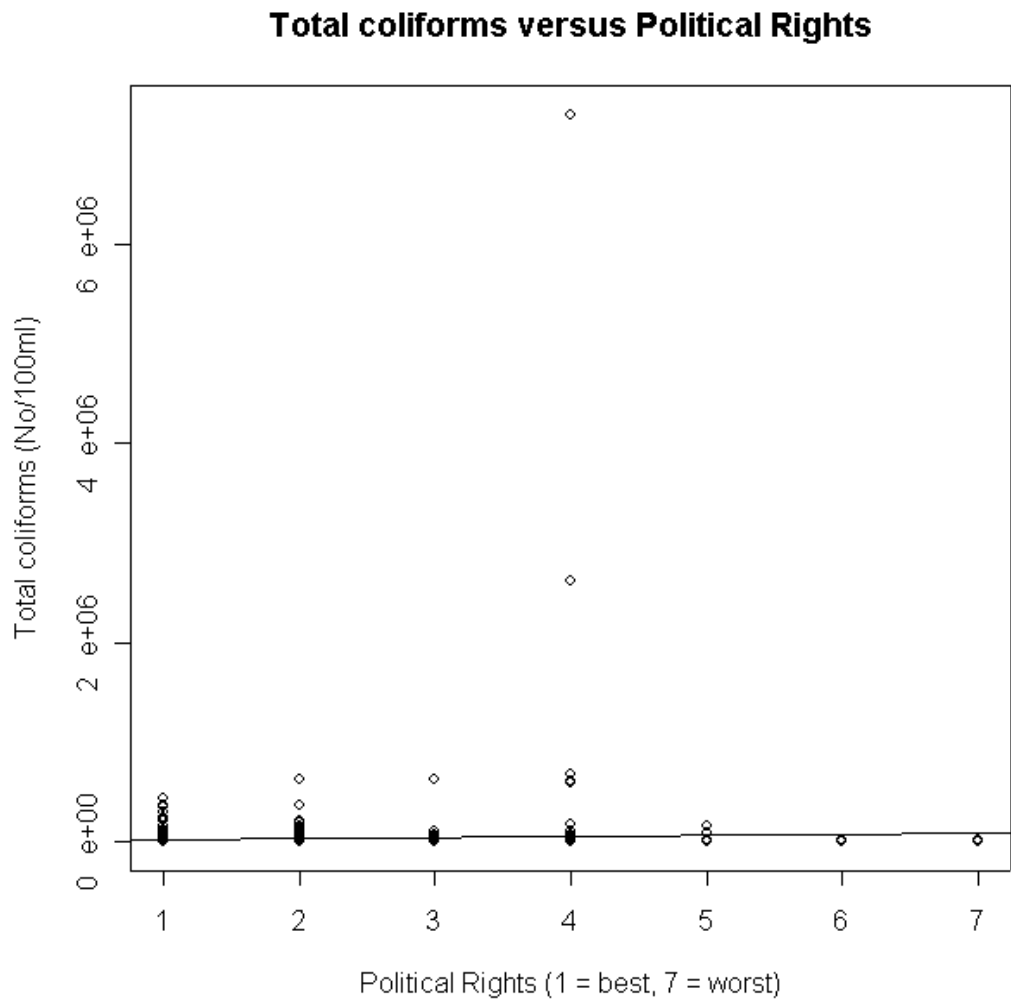

Figure 10.2a

```
            Estimate Std. Error t value Pr(>|t|)
(Intercept)    15552      25993   0.598    0.550
data$pr         8546       9028   0.947    0.344

Residual standard error: 314300 on 633 degrees of freedom
Multiple R-Squared: 0.001414, Adjusted R-squared: -0.0001638
F-statistic: 0.8961 on 1 and 633 DF,  p-value: 0.3442
```
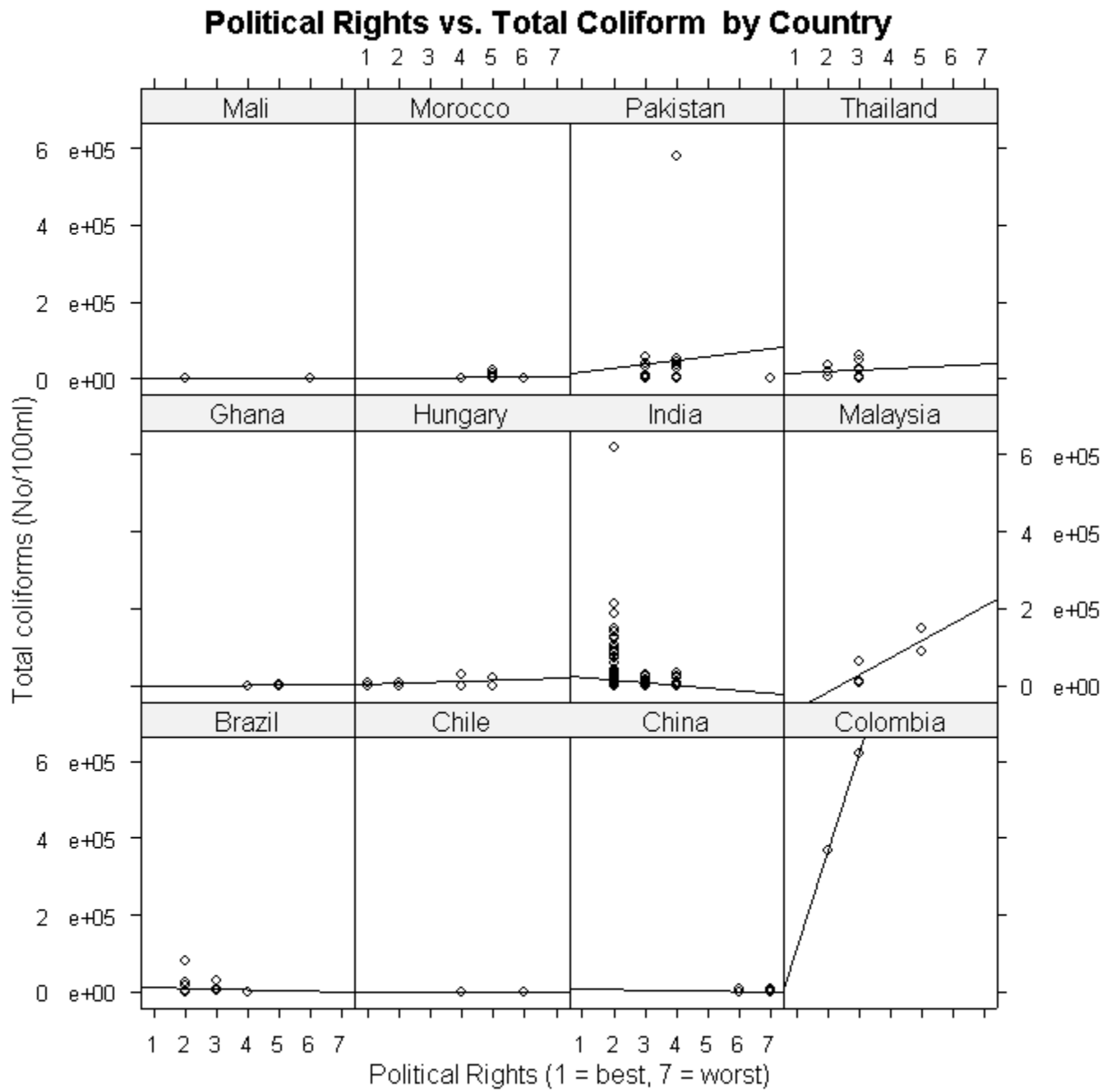
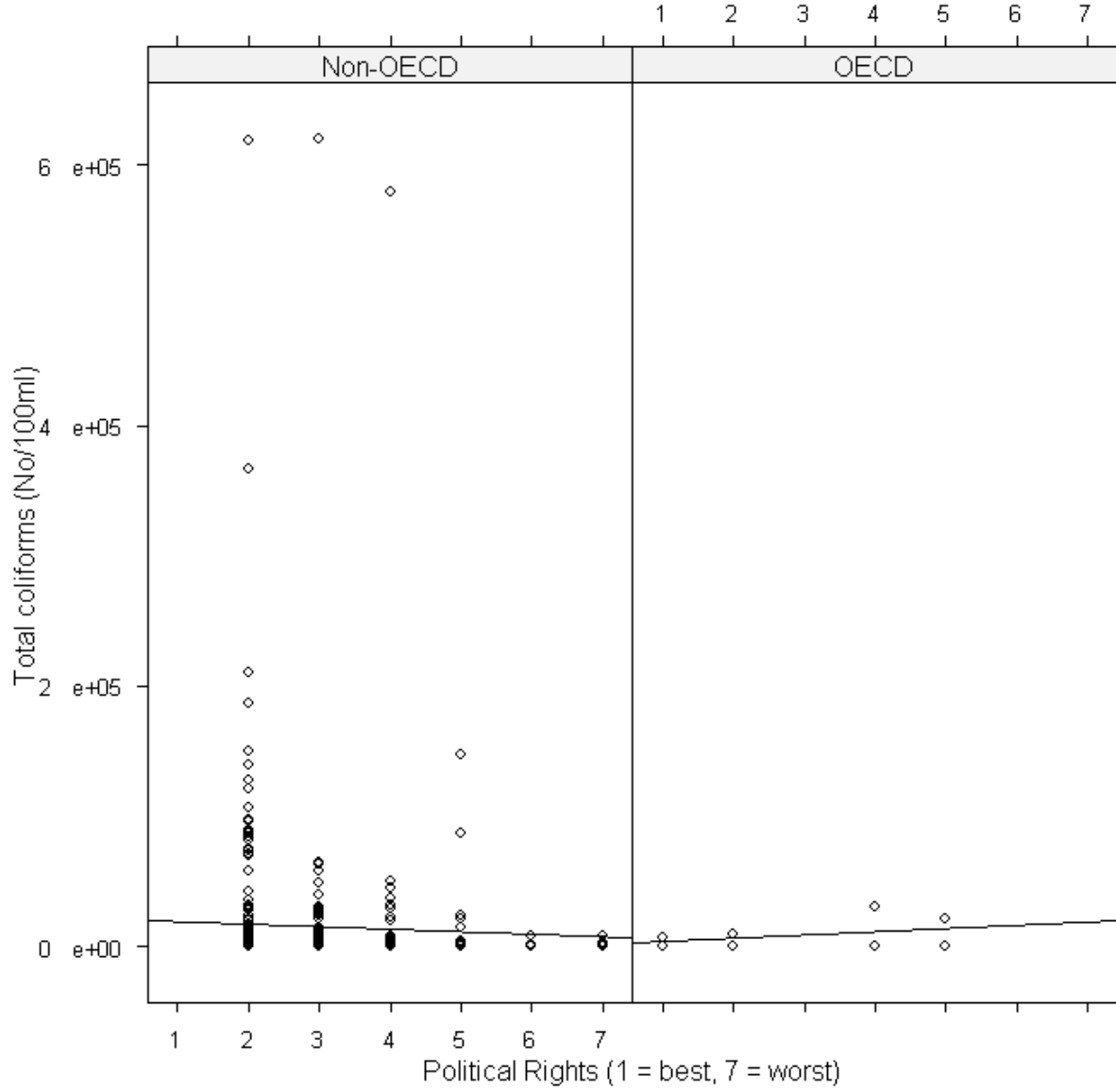**Political Rights vs. Total Coliform by Country**

Figure 10.2b

Figure 10.2c

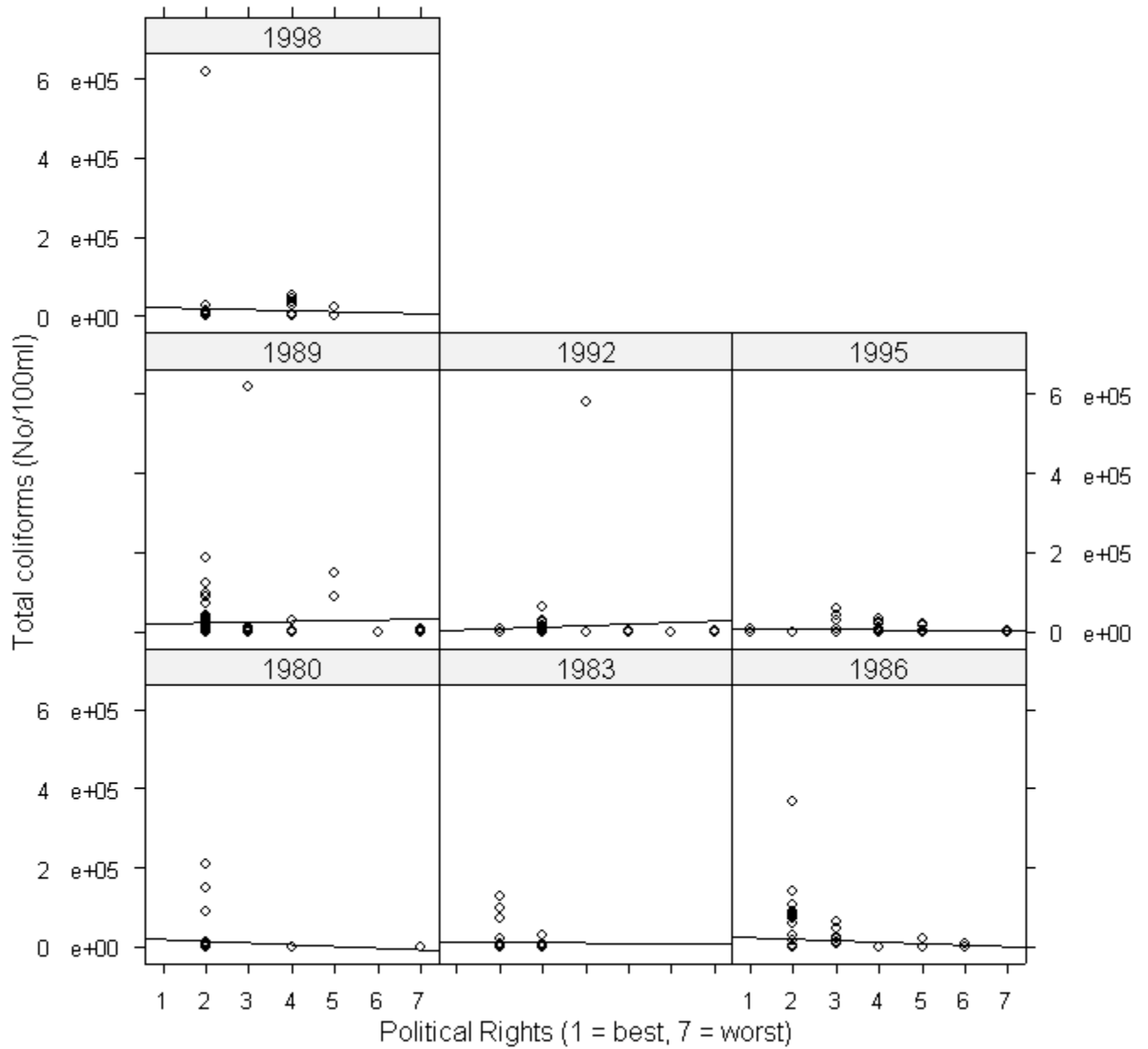# Political Rights vs. Total Coliform by Year

Figure 10.2d

Total coliforms versus per capita GDP (1995 US$)
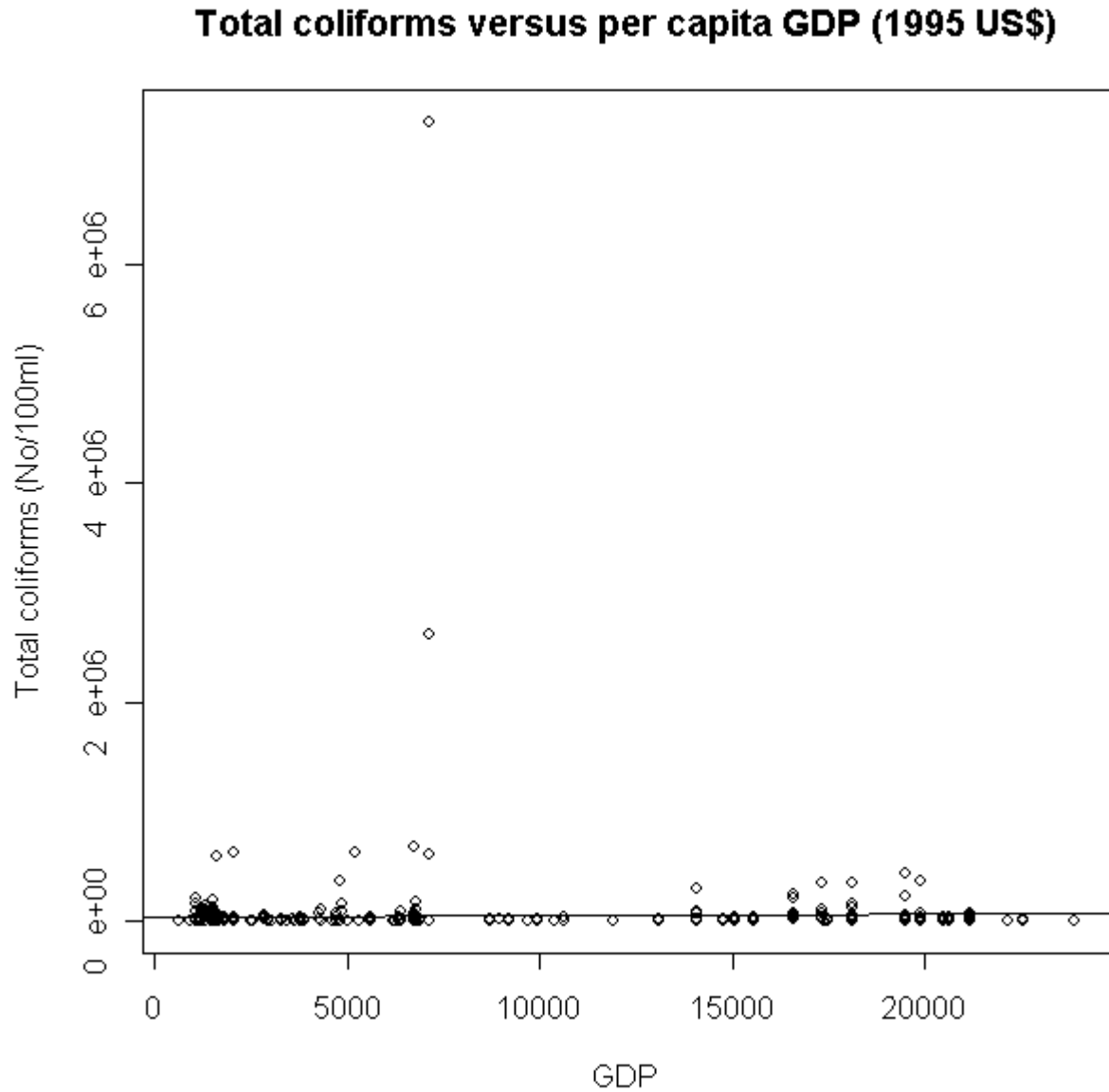
Figure 10.3a—(Colombia, Mexico are outliers)

```
             Estimate Std. Error t value Pr(>|t|)
(Intercept) 26260.040  16813.342   1.562     0.119
data$gdp        1.814      1.853   0.979     0.328

Residual standard error: 314800 on 631 degrees of freedom
Multiple R-Squared: 0.001517, Adjusted R-squared: -6.515e-05
F-statistic: 0.9588 on 1 and 631 DF,  p-value: 0.3279
```
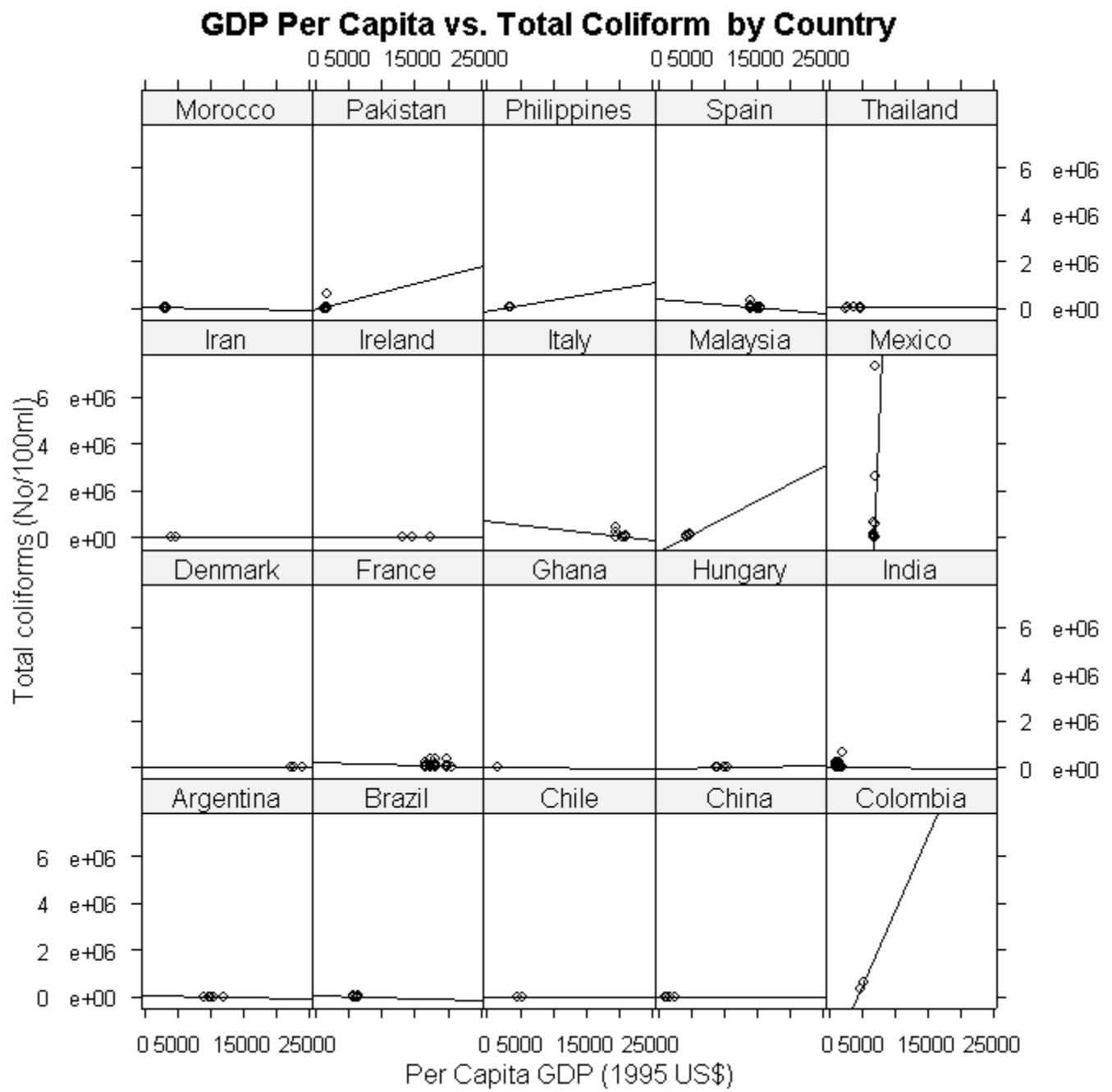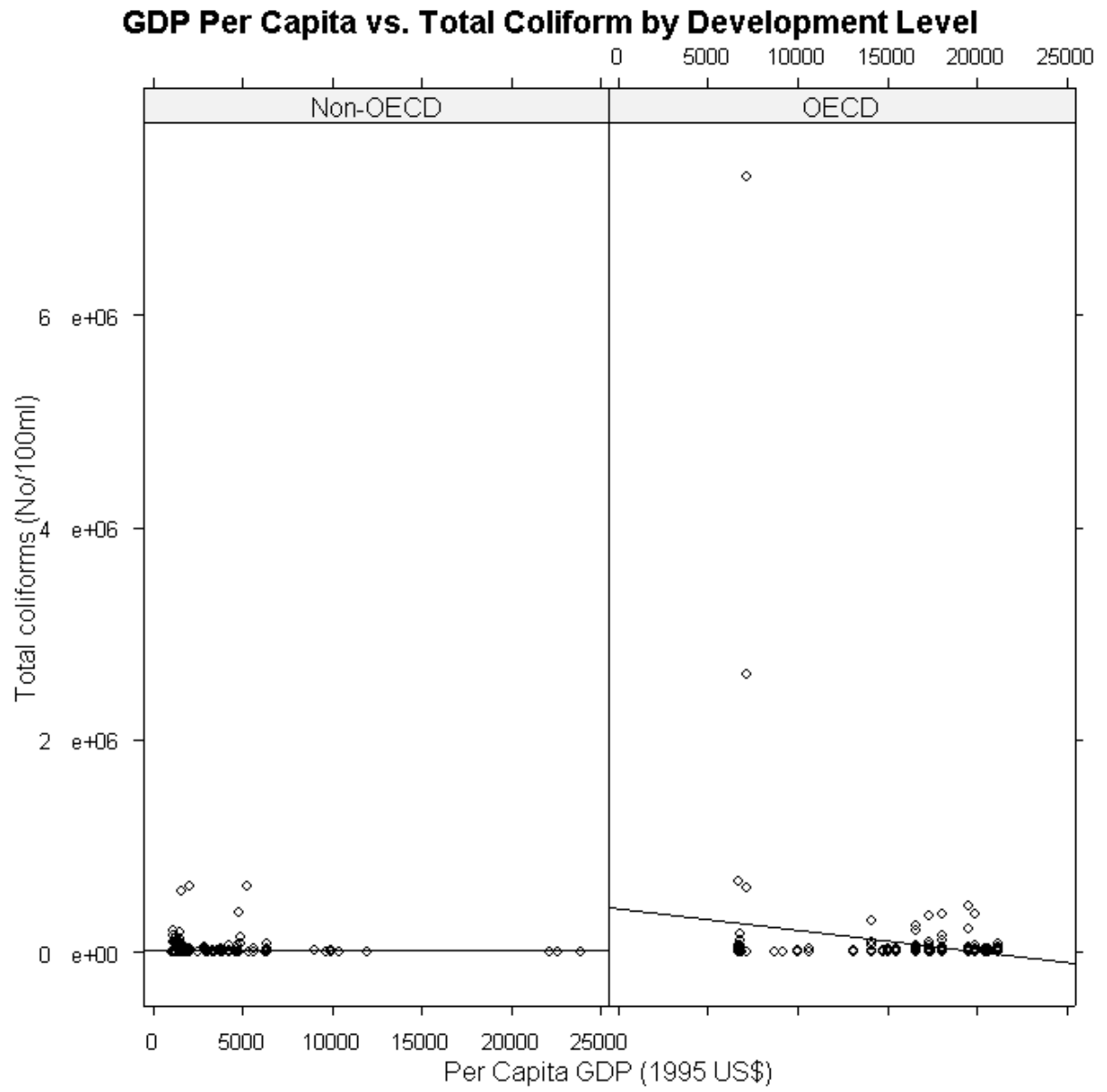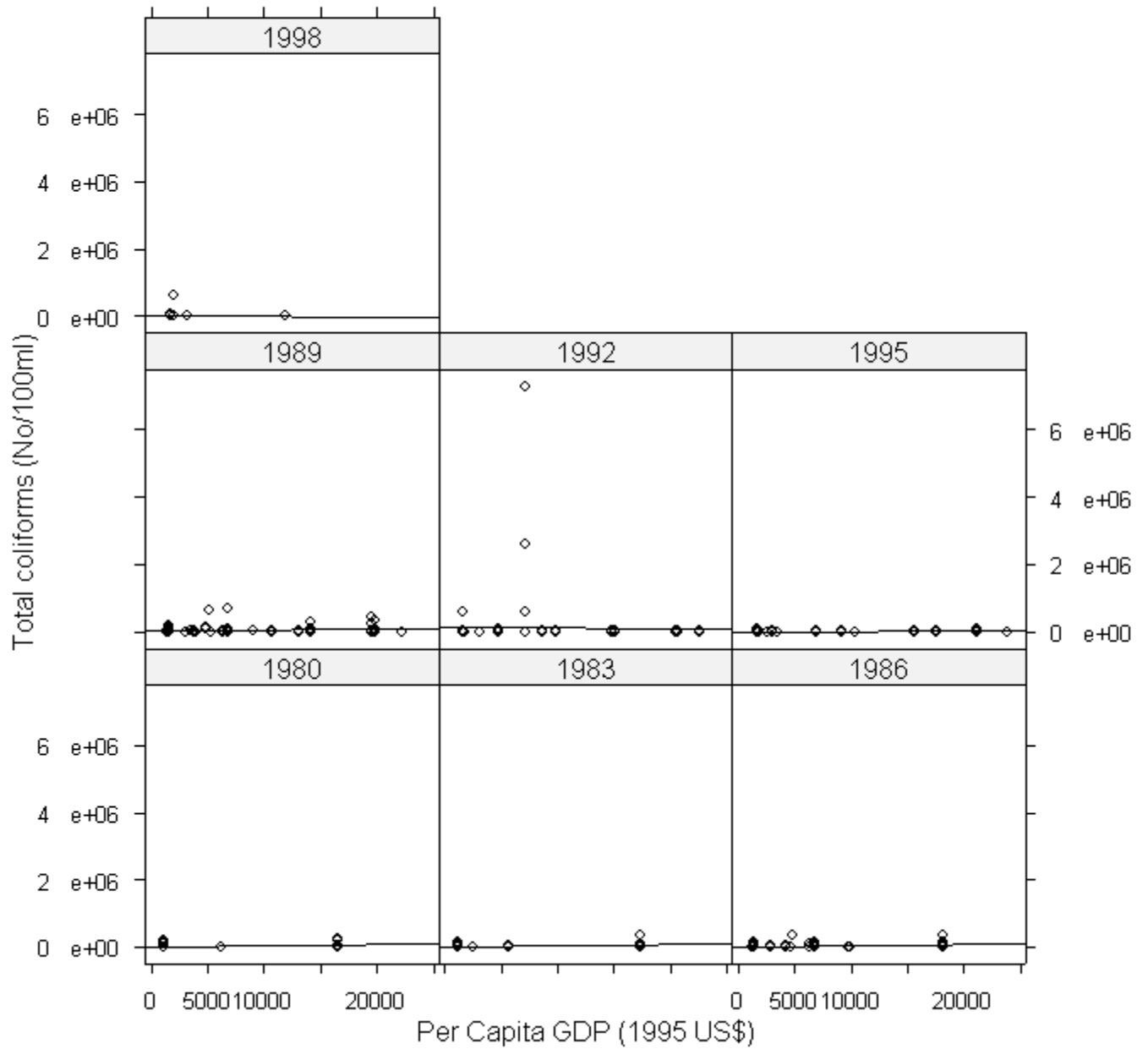
Figure 10.3b

GDP Per Capita vs. Total Coliform by Development Level

Figure 10.3c

GDP Per Capita vs. Total Coliform by Year

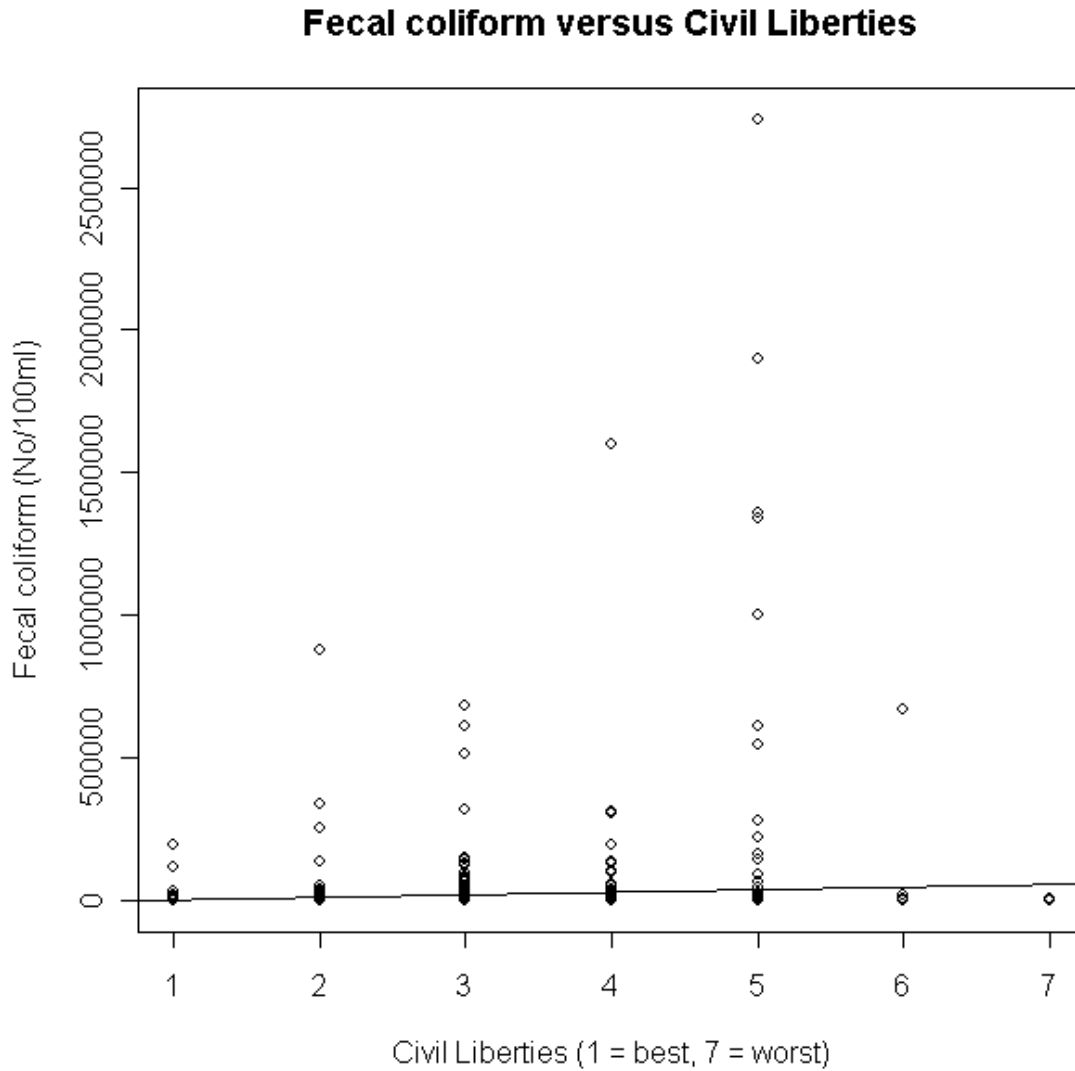Figure 10.3d

FIGURE 11.1: FECAL COLIFORM VERSUS CIVIL LIBERTIES

Fecal coliform versus Civil Liberties

Figure 11.1a

```
            Estimate Std.  Error t value Pr(>|t|)
(Intercept)    -4530          10760  -0.421  0.67387
data$cl         8614           3060   2.815  0.00497 **
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 145400 on 1029 degrees of freedom
Multiple R-Squared: 0.007643, Adjusted R-squared: 0.006679
F-statistic: 7.926 on 1 and 1029 DF,  p-value: 0.004967
```

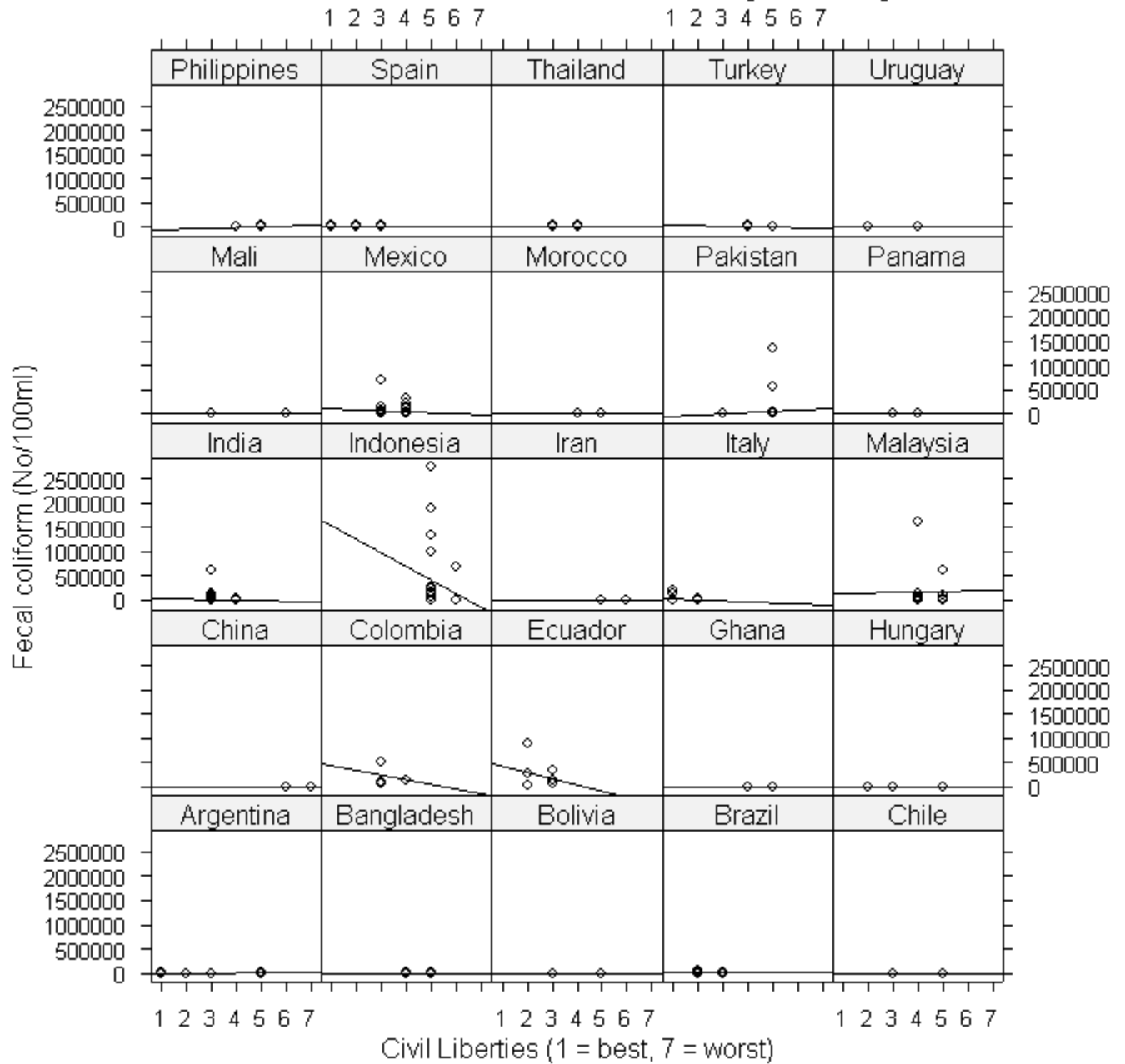# Civil Liberties vs. Fecal Coliform by Country

Figure 11.1b

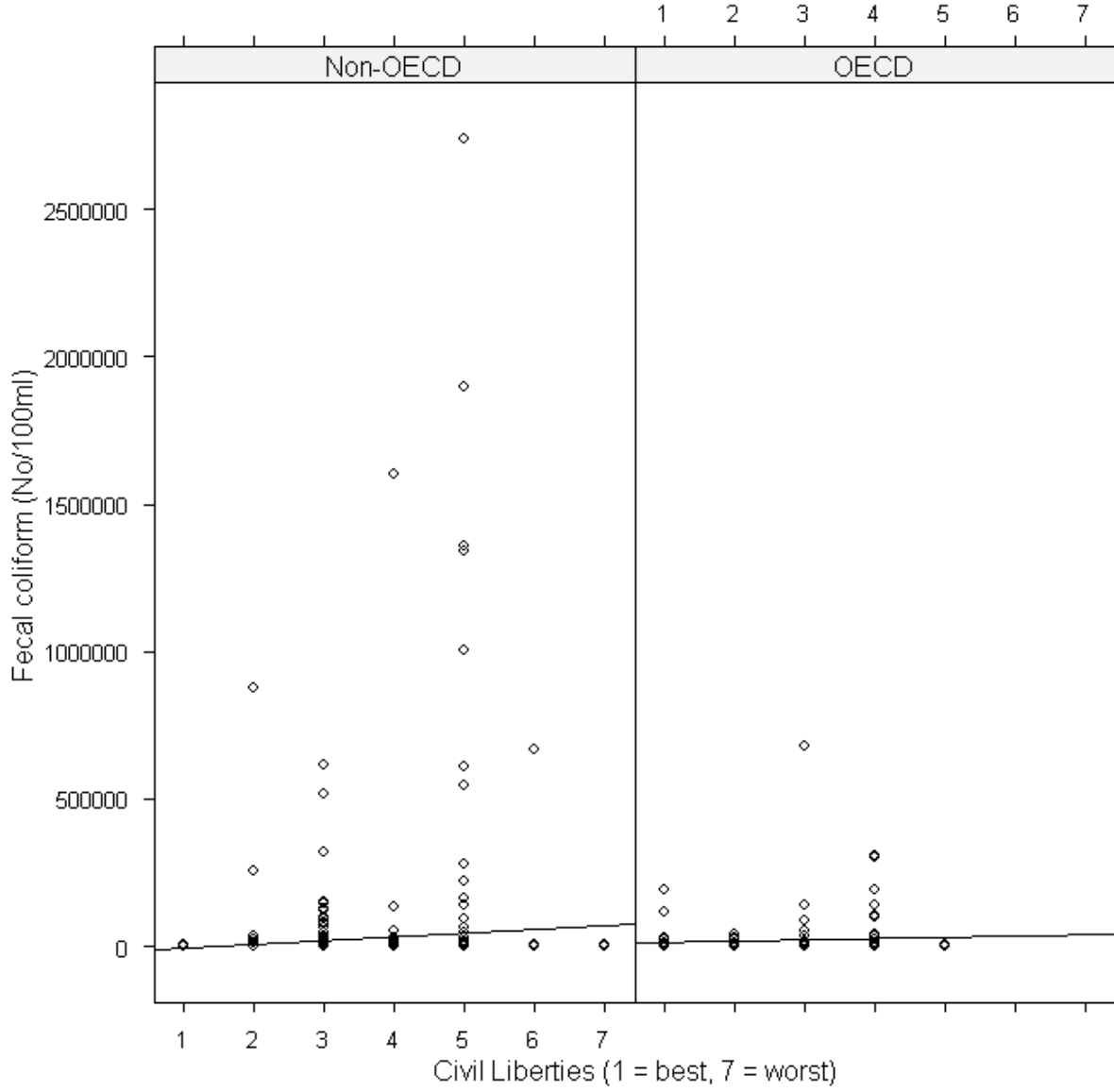Figure 11.1c

Civil Liberties vs. Fecal Coliform by Year
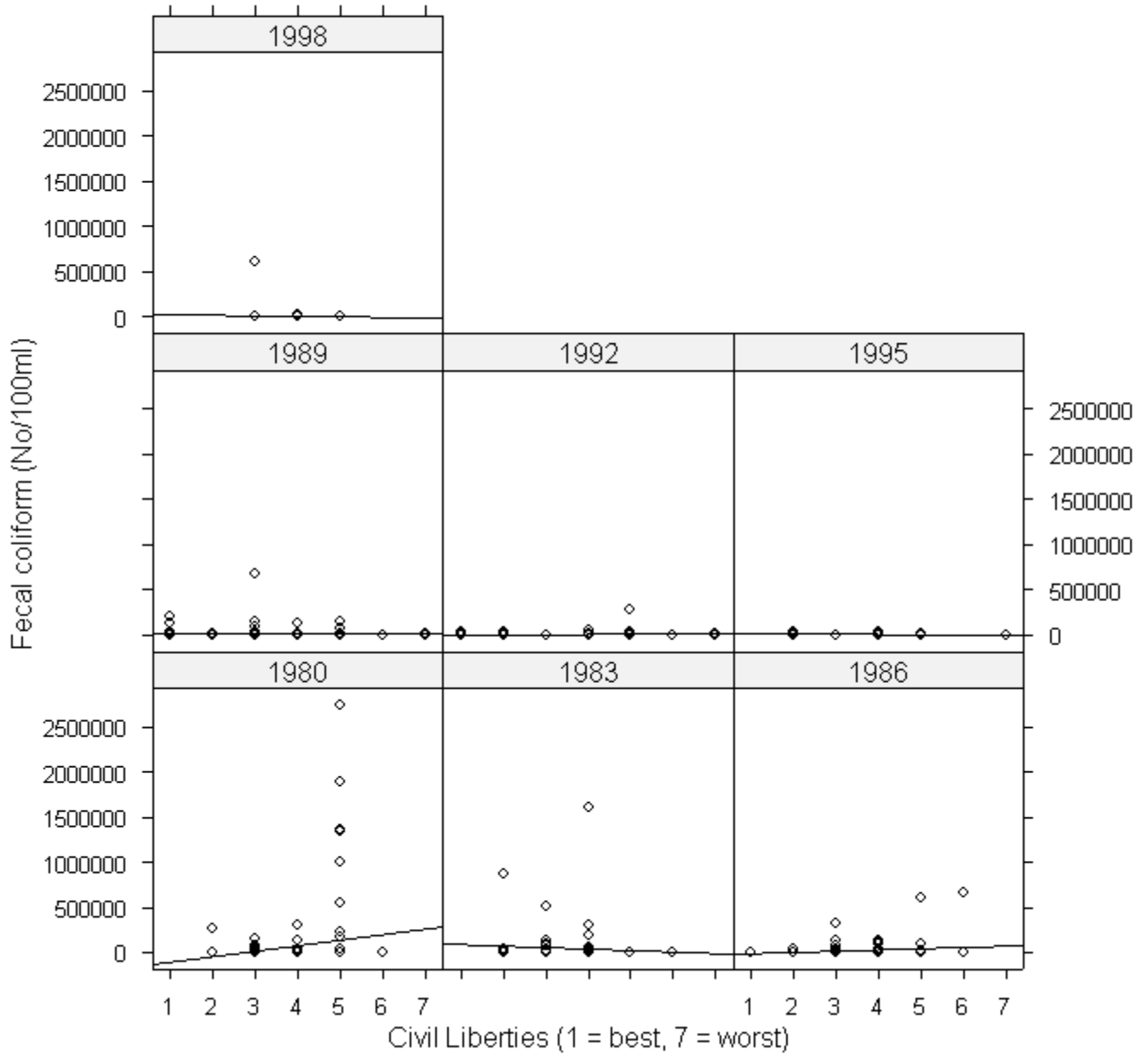
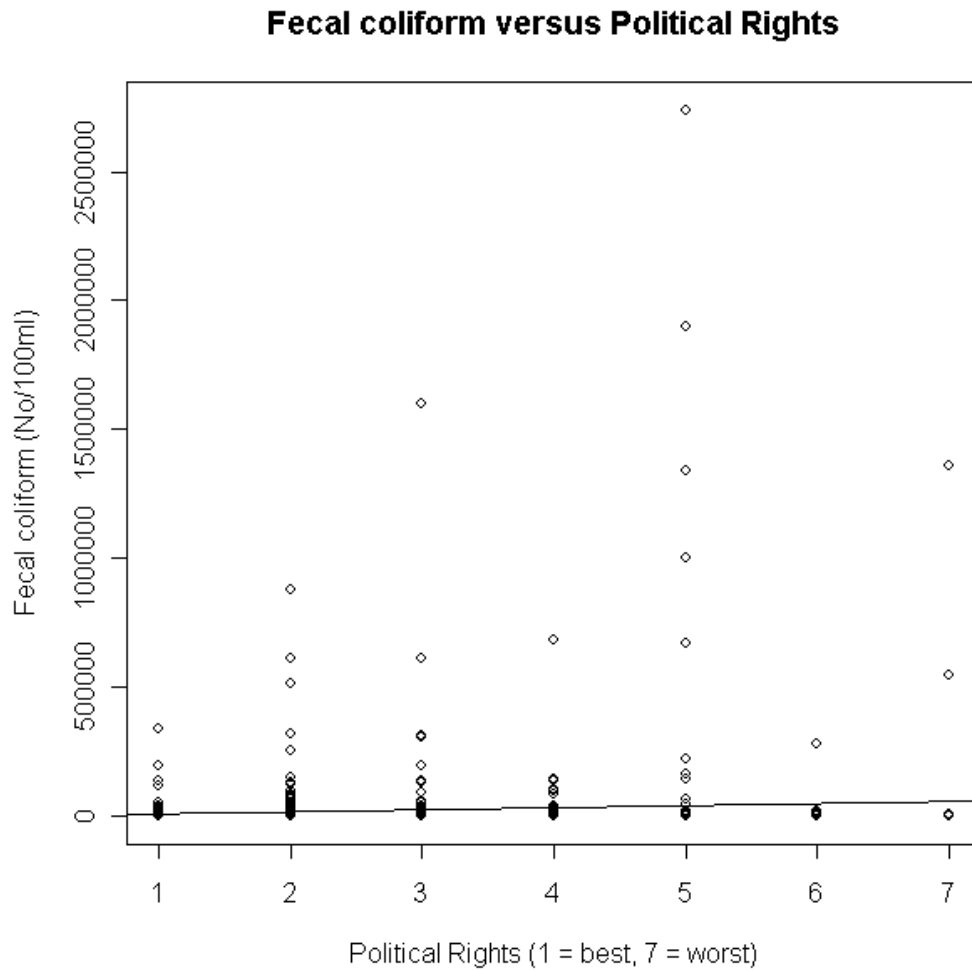Figure 11.1d

FIGURE 11.2: FECAL COLIFORM VERSUS POLITICAL RIGHTS

Fecal coliform versus Political Rights

Figure 11.2a

```
              Estimate Std. Error t value Pr(>|t|)
(Intercept)      2302         8709   0.264  0.79162
data$pr          7295         2628   2.775  0.00561 **
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 145400 on 1029 degrees of freedom
Multiple R-Squared: 0.007431, Adjusted R-squared: 0.006466
F-statistic: 7.703 on 1 and 1029 DF,  p-value: 0.005612
```
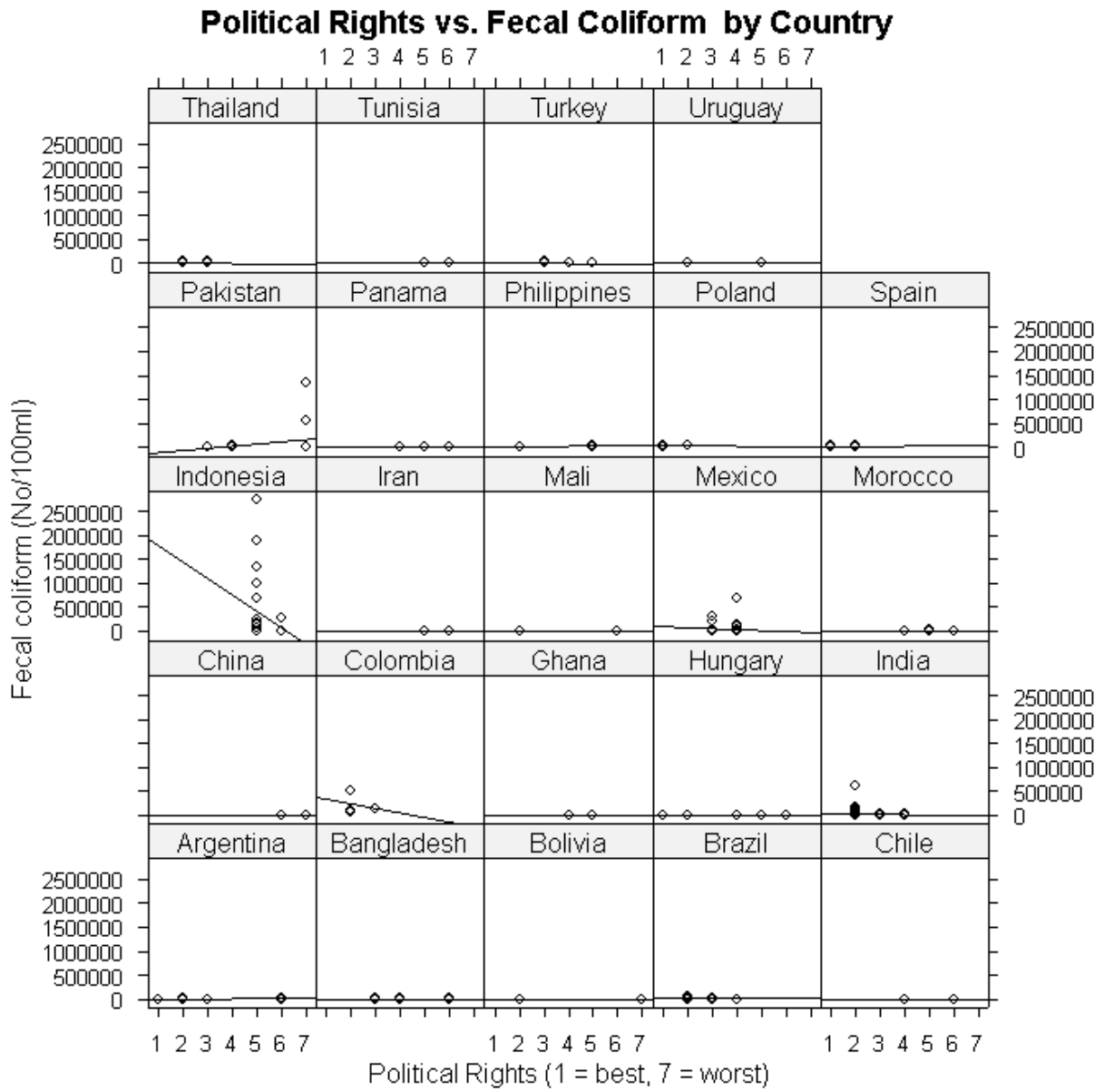
Political Rights vs. Fecal Coliform by Country

Figure 11.2b
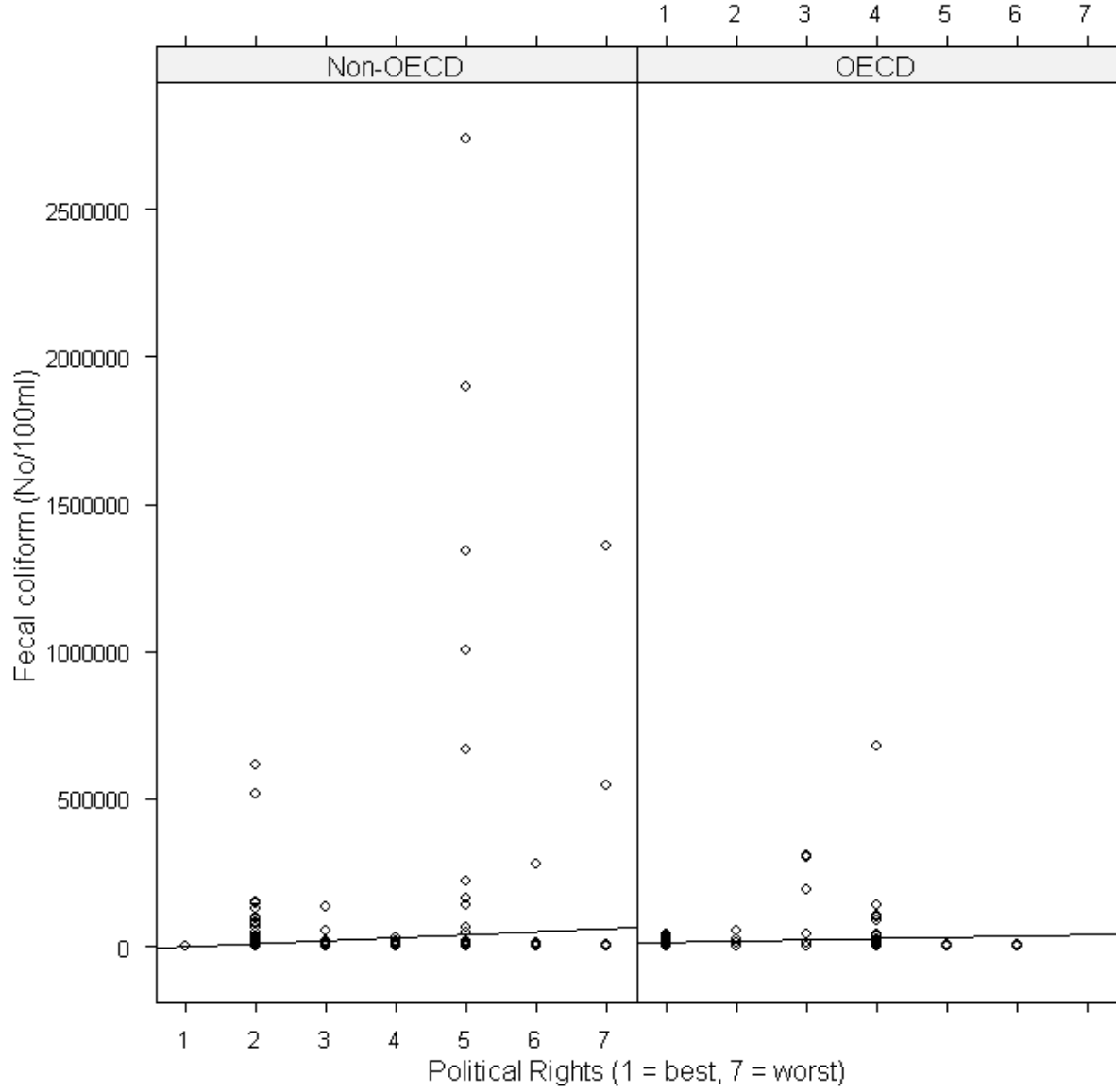
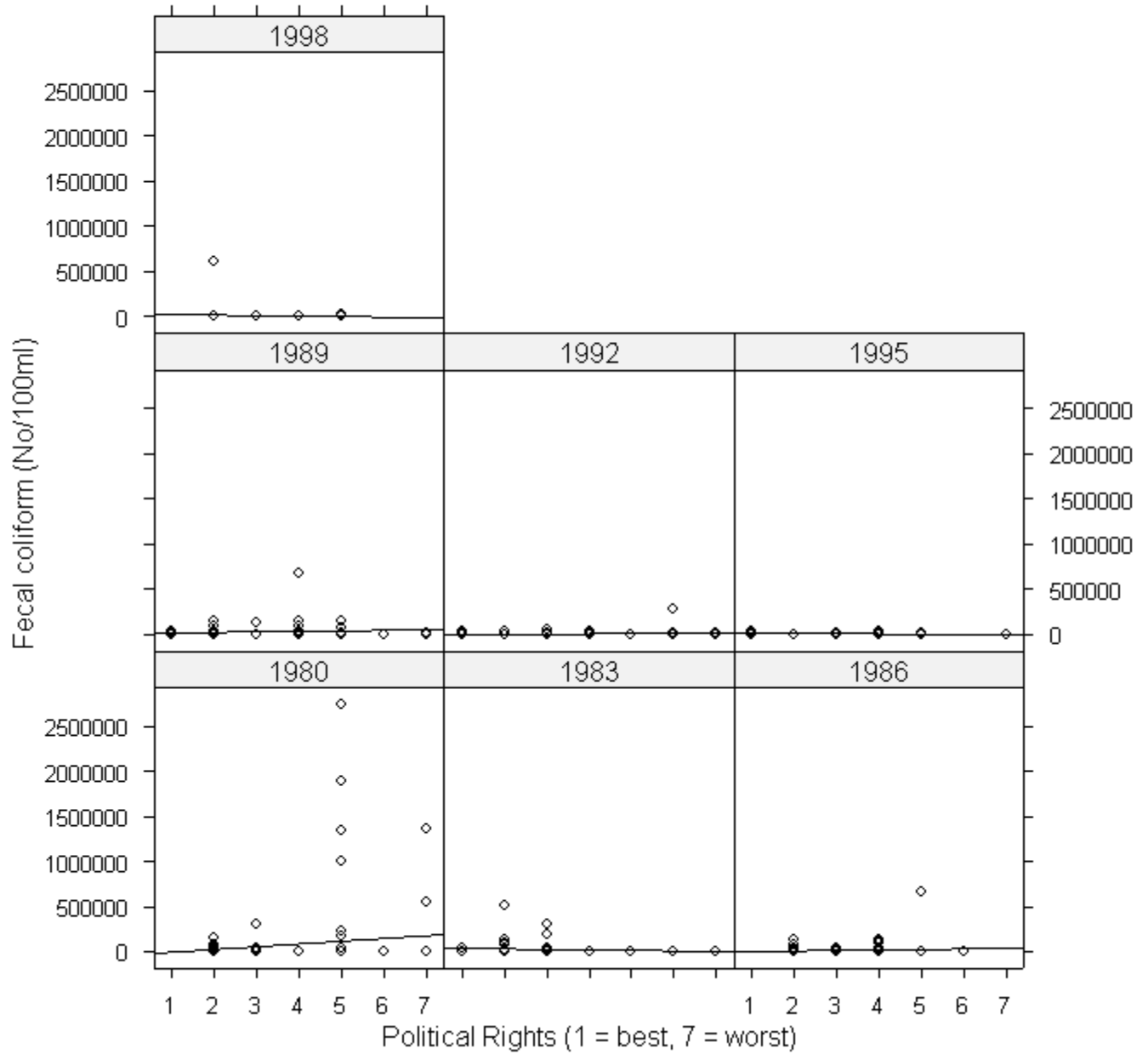Figure 11.2c

Political Rights vs. Fecal Coliform by Year

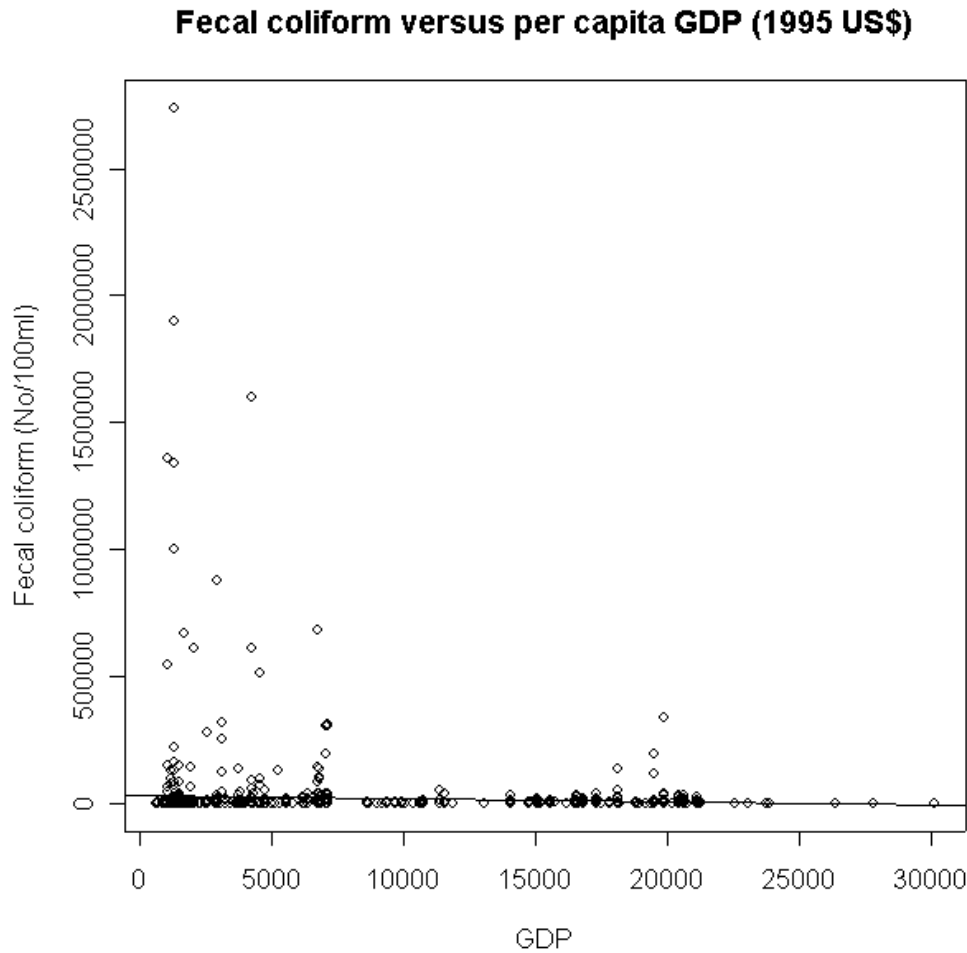Figure 11.2d

FIGURE 11.3: FECAL COLIFORM VERSUS PER CAPITA GDP

Fecal coliform versus per capita GDP (1995 US$)

Figure 11.3a

Coefficients:

```
                Estimate Std. Error t value Pr(>|t|)
(Intercept) 33240.7371   6433.3546    5.267 2.86e-07 ***
data$gdp        -1.3256      0.5927   -2.236   0.0255 *
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 146100 on 1022 degrees of freedom
Multiple R-Squared: 0.00487,  Adjusted R-squared: 0.003896
F-statistic: 5.002 on 1 and 1022 DF,  p-value: 0.02554
F-statistic: 14.84 on 1 and 1029 DF,  p-value: 0.0001245
```

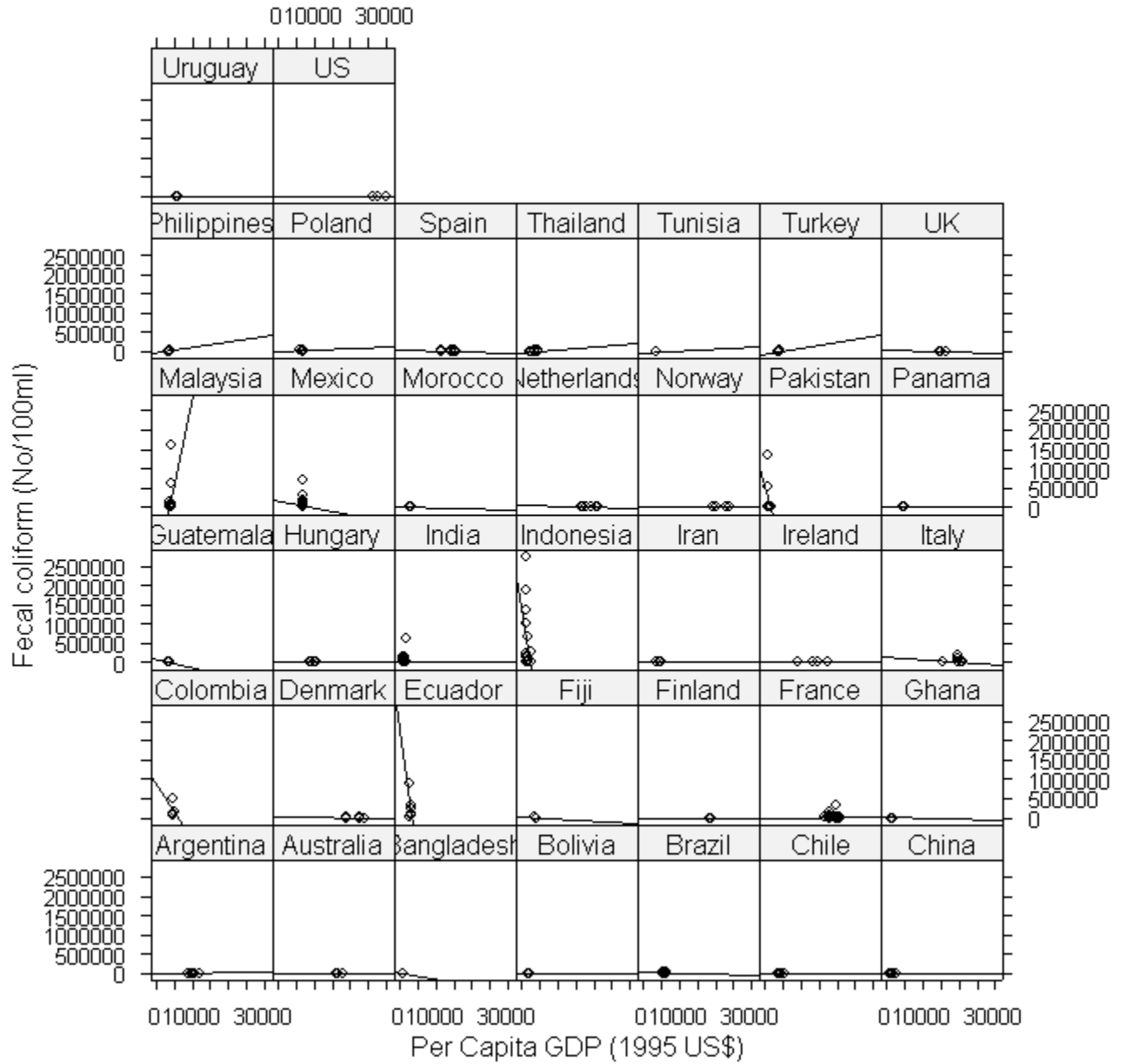# GDP Per Capita vs. Fecal Coliform by Country

Figure 5.3b

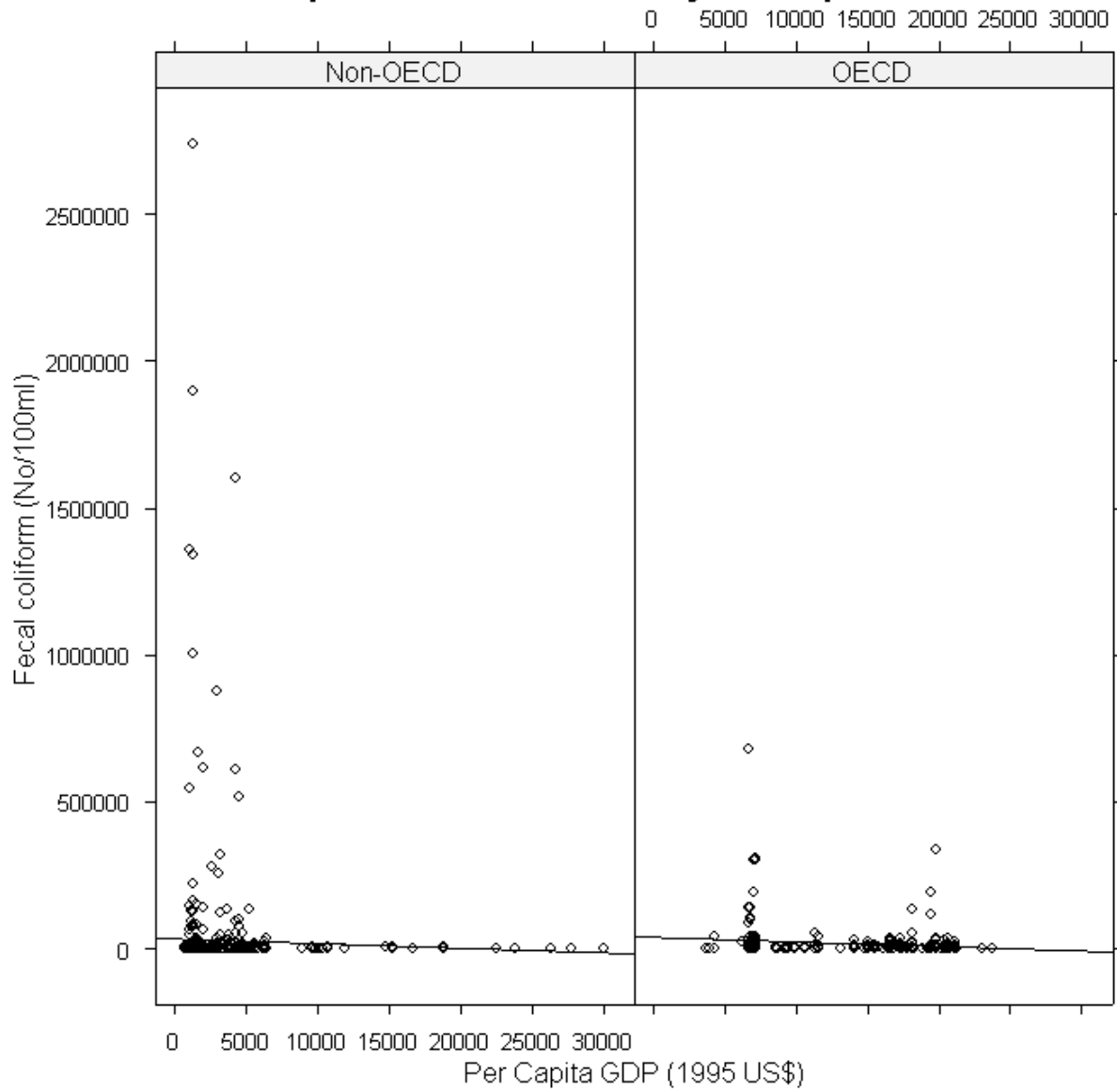GDP Per Capita vs. Fecal Coliform by Development Level

Figure 11.3c

Figure 11.3d