# Uber Polynomial Regression Analysis

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```
suppressWarnings(suppressPackageStartupMessages({
library(plm)
}))

## Load data file
vs <- read.csv("Vehicle_Sales.csv", header = T)

attach(vs)

head(vs)
```

```
##   city_id year_month year month totreg_nonbusiness monthid   lnSales
## 1      49     201001 2010     1              21934       1  9.995839
## 2      49     201002 2010     2              18646       2  9.833441
## 3      49     201003 2010     3              22723       3 10.031177
## 4      49     201004 2010     4              32555       4 10.390717
## 5      49     201005 2010     5              24491       5 10.106102
## 6      49     201006 2010     6              17798       6  9.786898
##   lndidi lnuber lnyidao lnshenzhou Uber platform_soft ln_populationcity
## 1      0     NA       0          0    0             0          7.039336
## 2      0     NA       0          0    0             0          7.039336
## 3      0     NA       0          0    0             0          7.039336
## 4      0     NA       0          0    0             0          7.039336
## 5      0     NA       0          0    0             0          7.039336
## 6      0     NA       0          0    0             0          7.039336
##   ln_populationdensitycity ln_employedcity ln_unemployedcity
## 1                 6.847167        5.109636          11.11842
## 2                 6.847167        5.109636          11.11842
## 3                 6.847167        5.109636          11.11842
## 4                 6.847167        5.109636          11.11842
## 5                 6.847167        5.109636          11.11842
## 6                 6.847167        5.109636          11.11842
##   ln_wageofstaffandworkercity ln_highwaypassengertraffic
## 1                    10.43987                   11.40841
## 2                    10.43987                   11.40841
## 3                    10.43987                   11.40841
## 4                    10.43987                   11.40841
## 5                    10.43987                   11.40841
## 6                    10.43987                   11.40841
##   ln_aviationpassengertraffic ln_grpcity ln_grppercapitacity
## 1                    7.023581   17.62275            10.46926
## 2                    7.023581   17.62275            10.46926
## 3                    7.023581   17.62275            10.46926
## 4                    7.023581   17.62275            10.46926
## 5                    7.023581   17.62275            10.46926
## 6                    7.023581   17.62275            10.46926
##   ln_mobilesubscriberscity ln_internetsubscriberscity ln_roadarea ln_buses
## 1                 7.279319                   4.820282    8.746716   8.9297
## 2                 7.279319                   4.820282    8.746716   8.9297
```

```
## 3                 7.279319                   4.820282    8.746716   8.9297
## 4                 7.279319                   4.820282    8.746716   8.9297
## 5                 7.279319                   4.820282    8.746716   8.9297
## 6                 7.279319                   4.820282    8.746716   8.9297
##   ln_buspassengervolume ln_taxis ln_busesper1000 ln_roadareapercapita
## 1               11.6941 9.545383         2.74084             2.570319
## 2               11.6941 9.545383         2.74084             2.570319
## 3               11.6941 9.545383         2.74084             2.570319
## 4               11.6941 9.545383         2.74084             2.570319
## 5               11.6941 9.545383         2.74084             2.570319
## 6               11.6941 9.545383         2.74084             2.570319
##   ln_metro_length ln_gas90
## 1               0 1.943049
## 2               0 1.943049
## 3               0 1.943049
## 4               0 1.964311
## 5               0 1.800058
## 6               0 1.788421
```

```
#log dependent variables logs as percentage change, rather than just values

reg1 <- lm(lnSales ~ Uber)
summary(reg1)
```

```
##
## Call:
## lm(formula = lnSales ~ Uber)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.63397 -0.35652  0.00911  0.34944  1.61053
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  9.37333    0.01671  561.06   <2e-16 ***
## Uber         0.61000    0.05358   11.38   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.504 on 1006 degrees of freedom
## Multiple R-squared:  0.1141, Adjusted R-squared:  0.1133
## F-statistic: 129.6 on 1 and 1006 DF,  p-value: < 2.2e-16
```

```
## we see there's a relationship, but it's just not plausible
## as time increases, Uber increases. As time increases, vehicles sales change
## (don't know if it's up or down)

reg2 <- lm(lnSales ~ Uber + monthid)
summary(reg2)
```

```
##
## Call:
## lm(formula = lnSales ~ Uber + monthid)
```

```
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.44612 -0.29364  0.01177  0.31981  1.37544
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 9.0477690  0.0314775 287.436  < 2e-16 ***
## Uber        0.2659055  0.0578893   4.593 4.92e-06 ***
## monthid     0.0098361  0.0008252  11.919  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.472 on 1005 degrees of freedom
## Multiple R-squared:  0.2239, Adjusted R-squared:  0.2223
## F-statistic: 144.9 on 2 and 1005 DF,  p-value: < 2.2e-16
```

```
#however, month should not be treated as an interval number. Let's factor it

reg3 <- lm(lnSales ~ Uber + as.factor(monthid))
summary(reg3)
```

```
##
## Call:
## lm(formula = lnSales ~ Uber + as.factor(monthid))
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -1.4285 -0.2515 -0.0071  0.2663  1.2683
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)           9.174604   0.115690  79.304  < 2e-16 ***
## Uber                  0.727651   0.084202   8.642  < 2e-16 ***
## as.factor(monthid)2  -0.466171   0.163610  -2.849 0.004478 **
## as.factor(monthid)3  -0.191012   0.163610  -1.167 0.243312
## as.factor(monthid)4  -0.052159   0.163610  -0.319 0.749949
## as.factor(monthid)5  -0.132683   0.163610  -0.811 0.417589
## as.factor(monthid)6  -0.190413   0.163610  -1.164 0.244793
## as.factor(monthid)7  -0.133859   0.163610  -0.818 0.413473
## as.factor(monthid)8  -0.021723   0.163610  -0.133 0.894400
## as.factor(monthid)9   0.061801   0.163610   0.378 0.705713
## as.factor(monthid)10 -0.045113   0.163610  -0.276 0.782814
## as.factor(monthid)11  0.175948   0.163610   1.075 0.282467
## as.factor(monthid)12  0.460506   0.163610   2.815 0.004985 **
## as.factor(monthid)13  0.275395   0.163610   1.683 0.092662 .
## as.factor(monthid)14 -0.613474   0.163610  -3.750 0.000188 ***
## as.factor(monthid)15  0.058986   0.163610   0.361 0.718532
## as.factor(monthid)16 -0.028863   0.163610  -0.176 0.860008
## as.factor(monthid)17 -0.040804   0.163610  -0.249 0.803108
## as.factor(monthid)18 -0.081668   0.163610  -0.499 0.617780
## as.factor(monthid)19 -0.056989   0.163610  -0.348 0.727675
## as.factor(monthid)20  0.094874   0.163610   0.580 0.562137
## as.factor(monthid)21  0.400037   0.163610   2.445 0.014666 *
```

```
## as.factor(monthid)22 -0.126700   0.163610  -0.774 0.438886
## as.factor(monthid)23  0.099947   0.163610   0.611 0.541423
## as.factor(monthid)24  0.258517   0.163610   1.580 0.114426
## as.factor(monthid)25  0.286111   0.163610   1.749 0.080664 .
## as.factor(monthid)26 -0.058705   0.163610  -0.359 0.719819
## as.factor(monthid)27  0.068922   0.163610   0.421 0.673662
## as.factor(monthid)28 -0.028805   0.163610  -0.176 0.860284
## as.factor(monthid)29  0.139701   0.163610   0.854 0.393398
## as.factor(monthid)30 -0.016031   0.163610  -0.098 0.921968
## as.factor(monthid)31  0.133130   0.163610   0.814 0.416021
## as.factor(monthid)32  0.182722   0.163610   1.117 0.264359
## as.factor(monthid)33  0.377848   0.163610   2.309 0.021136 *
## as.factor(monthid)34  0.198531   0.163610   1.213 0.225268
## as.factor(monthid)35  0.313495   0.163610   1.916 0.055655 .
## as.factor(monthid)36  0.335701   0.163610   2.052 0.040464 *
## as.factor(monthid)37  0.734878   0.163610   4.492 7.95e-06 ***
## as.factor(monthid)38 -0.140460   0.163610  -0.859 0.390832
## as.factor(monthid)39  0.129389   0.163610   0.791 0.429240
## as.factor(monthid)40  0.205101   0.163610   1.254 0.210302
## as.factor(monthid)41  0.298771   0.163610   1.826 0.068151 .
## as.factor(monthid)42  0.071582   0.163610   0.438 0.661836
## as.factor(monthid)43  0.304931   0.163610   1.864 0.062668 .
## as.factor(monthid)44  0.278476   0.163610   1.702 0.089075 .
## as.factor(monthid)45  0.510234   0.163610   3.119 0.001873 **
## as.factor(monthid)46  0.371851   0.163610   2.273 0.023265 *
## as.factor(monthid)47  0.466817   0.163610   2.853 0.004423 **
## as.factor(monthid)48  0.510632   0.163610   3.121 0.001857 **
## as.factor(monthid)49  0.917871   0.163610   5.610 2.66e-08 ***
## as.factor(monthid)50 -0.027273   0.163610  -0.167 0.867647
## as.factor(monthid)51  0.343969   0.163610   2.102 0.035788 *
## as.factor(monthid)52  0.584557   0.163610   3.573 0.000371 ***
## as.factor(monthid)53  0.574234   0.163610   3.510 0.000470 ***
## as.factor(monthid)54  0.421506   0.163610   2.576 0.010139 *
## as.factor(monthid)55  0.524941   0.163610   3.208 0.001380 **
## as.factor(monthid)56  0.368120   0.163610   2.250 0.024682 *
## as.factor(monthid)57  0.757932   0.163610   4.633 4.12e-06 ***
## as.factor(monthid)58  0.489296   0.163720   2.989 0.002876 **
## as.factor(monthid)59  0.380642   0.164051   2.320 0.020541 *
## as.factor(monthid)60  0.537143   0.164051   3.274 0.001098 **
## as.factor(monthid)61  0.859302   0.164051   5.238 2.01e-07 ***
## as.factor(monthid)62  0.412152   0.164051   2.512 0.012161 *
## as.factor(monthid)63  0.282371   0.164602   1.715 0.086589 .
## as.factor(monthid)64  0.402434   0.164602   2.445 0.014673 *
## as.factor(monthid)65  0.252010   0.165369   1.524 0.127866
## as.factor(monthid)66  0.067651   0.168940   0.400 0.688920
## as.factor(monthid)67 -0.002776   0.170538  -0.016 0.987016
## as.factor(monthid)68 -0.026542   0.172332  -0.154 0.877629
## as.factor(monthid)69  0.004530   0.181332   0.025 0.980075
## as.factor(monthid)70 -0.107645   0.184006  -0.585 0.558683
## as.factor(monthid)71 -0.063062   0.184006  -0.343 0.731889
## as.factor(monthid)72  0.152433   0.184006   0.828 0.407648
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

```
## Residual standard error: 0.4329 on 935 degrees of freedom
## Multiple R-squared:  0.3926, Adjusted R-squared:  0.3458
## F-statistic: 8.393 on 72 and 935 DF,  p-value: < 2.2e-16
```

```
#doesn't take regional behavior into account


reg4 <- plm(lnSales ~ Uber + as.factor(monthid), index = c("city_id", "monthid"),
            model = "within", data = vs)
summary(reg4)
```

```
## Oneway (individual) effect Within Model
##
## Call:
## plm(formula = lnSales ~ Uber + as.factor(monthid), data = vs,
##     model = "within", index = c("city_id", "monthid"))
##
## Balanced Panel: n = 14, T = 72, N = 1008
##
## Residuals:
##        Min.     1st Qu.      Median     3rd Qu.        Max.
## -0.89286712 -0.09451561  0.00017141  0.09252461  0.53054039
##
## Coefficients:
##                        Estimate Std. Error t-value  Pr(>|t|)
## Uber                   0.192209   0.034110  5.6349 2.327e-08 ***
## as.factor(monthid)2   -0.466171   0.063066 -7.3918 3.248e-13 ***
## as.factor(monthid)3   -0.191012   0.063066 -3.0288  0.002524 **
## as.factor(monthid)4   -0.052159   0.063066 -0.8271  0.408420
## as.factor(monthid)5   -0.132683   0.063066 -2.1039  0.035660 *
## as.factor(monthid)6   -0.190413   0.063066 -3.0193  0.002604 **
## as.factor(monthid)7   -0.133859   0.063066 -2.1225  0.034059 *
## as.factor(monthid)8   -0.021723   0.063066 -0.3445  0.730583
## as.factor(monthid)9    0.061801   0.063066  0.9799  0.327370
## as.factor(monthid)10  -0.045113   0.063066 -0.7153  0.474588
## as.factor(monthid)11   0.175948   0.063066  2.7899  0.005381 **
## as.factor(monthid)12   0.460506   0.063066  7.3020 6.126e-13 ***
## as.factor(monthid)13   0.275395   0.063066  4.3668 1.404e-05 ***
## as.factor(monthid)14  -0.613474   0.063066 -9.7275 < 2.2e-16 ***
## as.factor(monthid)15   0.058986   0.063066  0.9353  0.349873
## as.factor(monthid)16  -0.028863   0.063066 -0.4577  0.647305
## as.factor(monthid)17  -0.040804   0.063066 -0.6470  0.517790
## as.factor(monthid)18  -0.081668   0.063066 -1.2950  0.195655
## as.factor(monthid)19  -0.056989   0.063066 -0.9036  0.366420
## as.factor(monthid)20   0.094874   0.063066  1.5044  0.132832
## as.factor(monthid)21   0.400037   0.063066  6.3432 3.522e-10 ***
## as.factor(monthid)22  -0.126700   0.063066 -2.0090  0.044826 *
## as.factor(monthid)23   0.099947   0.063066  1.5848  0.113354
## as.factor(monthid)24   0.258517   0.063066  4.0992 4.512e-05 ***
## as.factor(monthid)25   0.286111   0.063066  4.5367 6.469e-06 ***
## as.factor(monthid)26  -0.058705   0.063066 -0.9308  0.352177
## as.factor(monthid)27   0.068922   0.063066  1.0929  0.274740
## as.factor(monthid)28  -0.028805   0.063066 -0.4568  0.647958
## as.factor(monthid)29   0.139701   0.063066  2.2152  0.026993 *
```

```
## as.factor(monthid)30 -0.016031   0.063066 -0.2542  0.799405
## as.factor(monthid)31  0.133130   0.063066  2.1110  0.035044 *
## as.factor(monthid)32  0.182722   0.063066  2.8973  0.003853 **
## as.factor(monthid)33  0.377848   0.063066  5.9913 2.982e-09 ***
## as.factor(monthid)34  0.198531   0.063066  3.1480  0.001697 **
## as.factor(monthid)35  0.313495   0.063066  4.9709 7.944e-07 ***
## as.factor(monthid)36  0.335701   0.063066  5.3230 1.282e-07 ***
## as.factor(monthid)37  0.734878   0.063066 11.6525 < 2.2e-16 ***
## as.factor(monthid)38 -0.140460   0.063066 -2.2272  0.026175 *
## as.factor(monthid)39  0.129389   0.063066  2.0516  0.040487 *
## as.factor(monthid)40  0.205101   0.063066  3.2522  0.001187 **
## as.factor(monthid)41  0.298771   0.063066  4.7374 2.505e-06 ***
## as.factor(monthid)42  0.071582   0.063066  1.1350  0.256653
## as.factor(monthid)43  0.304931   0.063066  4.8351 1.559e-06 ***
## as.factor(monthid)44  0.278476   0.063066  4.4156 1.126e-05 ***
## as.factor(monthid)45  0.510234   0.063066  8.0905 1.865e-15 ***
## as.factor(monthid)46  0.371851   0.063066  5.8962 5.215e-09 ***
## as.factor(monthid)47  0.466817   0.063066  7.4020 3.020e-13 ***
## as.factor(monthid)48  0.510632   0.063066  8.0968 1.777e-15 ***
## as.factor(monthid)49  0.917871   0.063066 14.5541 < 2.2e-16 ***
## as.factor(monthid)50 -0.027273   0.063066 -0.4324  0.665516
## as.factor(monthid)51  0.343969   0.063066  5.4541 6.323e-08 ***
## as.factor(monthid)52  0.584557   0.063066  9.2690 < 2.2e-16 ***
## as.factor(monthid)53  0.574234   0.063066  9.1053 < 2.2e-16 ***
## as.factor(monthid)54  0.421506   0.063066  6.6836 4.032e-11 ***
## as.factor(monthid)55  0.524941   0.063066  8.3237 3.054e-16 ***
## as.factor(monthid)56  0.368120   0.063066  5.8371 7.354e-09 ***
## as.factor(monthid)57  0.757932   0.063066 12.0181 < 2.2e-16 ***
## as.factor(monthid)58  0.527542   0.063113  8.3587 2.319e-16 ***
## as.factor(monthid)59  0.457133   0.063254  7.2270 1.035e-12 ***
## as.factor(monthid)60  0.613635   0.063254  9.7011 < 2.2e-16 ***
## as.factor(monthid)61  0.935794   0.063254 14.7942 < 2.2e-16 ***
## as.factor(monthid)62  0.488644   0.063254  7.7251 2.910e-14 ***
## as.factor(monthid)63  0.397108   0.063488  6.2548 6.082e-10 ***
## as.factor(monthid)64  0.517171   0.063488  8.1460 1.217e-15 ***
## as.factor(monthid)65  0.404993   0.063815  6.3464 3.452e-10 ***
## as.factor(monthid)66  0.335372   0.065331  5.1334 3.471e-07 ***
## as.factor(monthid)67  0.303191   0.066009  4.5932 4.972e-06 ***
## as.factor(monthid)68  0.317671   0.066769  4.7577 2.272e-06 ***
## as.factor(monthid)69  0.501726   0.070573  7.1093 2.336e-12 ***
## as.factor(monthid)70  0.427797   0.071700  5.9665 3.452e-09 ***
## as.factor(monthid)71  0.472381   0.071700  6.5883 7.468e-11 ***
## as.factor(monthid)72  0.687875   0.071700  9.5939 < 2.2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Total Sum of Squares:    125.8
## Residual Sum of Squares: 25.67
## R-Squared:      0.79594
## Adj. R-Squared: 0.77713
## F-statistic: 49.9495 on 72 and 922 DF, p-value: < 2.22e-16
```

```
reg5 <- plm(lnSales ~ Uber + as.factor(monthid) + lndidi + lnyidao + lnshenzhou +
              ln_highwaypassengertraffic + ln_aviationpassengertraffic  +
```

```
              ln_grpcity    +
              ln_grppercapitacity + ln_mobilesubscriberscity +
              ln_internetsubscriberscity +  ln_roadarea
            + ln_buses  + ln_buspassengervolume + ln_taxis  +
              ln_busesper1000   + ln_roadareapercapita
            + ln_populationcity + ln_populationdensitycity  + ln_employedcity   +
              ln_unemployedcity + ln_wageofstaffandworkercity,
            index = c("city_id", "monthid"), model = "within", data = vs)

summary(reg5)
```

```
## Oneway (individual) effect Within Model
##
## Call:
## plm(formula = lnSales ~ Uber + as.factor(monthid) + lndidi +
##     lnyidao + lnshenzhou + ln_highwaypassengertraffic + ln_aviationpassengertraffic +
##     ln_grpcity + ln_grppercapitacity + ln_mobilesubscriberscity +
##     ln_internetsubscriberscity + ln_roadarea + ln_buses + ln_buspassengervolume +
##     ln_taxis + ln_busesper1000 + ln_roadareapercapita + ln_populationcity +
##     ln_populationdensitycity + ln_employedcity + ln_unemployedcity +
##     ln_wageofstaffandworkercity, data = vs, model = "within",
##     index = c("city_id", "monthid"))
##
## Balanced Panel: n = 14, T = 72, N = 1008
##
## Residuals:
##       Min.    1st Qu.     Median    3rd Qu.       Max.
## -0.9984984 -0.0836922 -0.0015737  0.0808009  0.5897798
##
## Coefficients:
##                              Estimate Std. Error  t-value  Pr(>|t|)
## Uber                        0.0939926  0.0364247   2.5805 0.0100238 *
## as.factor(monthid)2        -0.4661706  0.0591072  -7.8869 8.931e-15 ***
## as.factor(monthid)3        -0.1910119  0.0591072  -3.2316 0.0012755 **
## as.factor(monthid)4        -0.0521589  0.0591072  -0.8824 0.3777703
## as.factor(monthid)5        -0.1326827  0.0591072  -2.2448 0.0250238 *
## as.factor(monthid)6        -0.1904127  0.0591072  -3.2215 0.0013210 **
## as.factor(monthid)7        -0.1338594  0.0591072  -2.2647 0.0237683 *
## as.factor(monthid)8        -0.0217233  0.0591072  -0.3675 0.7133141
## as.factor(monthid)9         0.0618012  0.0591072   1.0456 0.2960356
## as.factor(monthid)10       -0.0451127  0.0591072  -0.7632 0.4455221
## as.factor(monthid)11        0.1759482  0.0591072   2.9768 0.0029909 **
## as.factor(monthid)12        0.4605056  0.0591072   7.7910 1.825e-14 ***
## as.factor(monthid)13       -0.0009472  0.0675748  -0.0140 0.9888194
## as.factor(monthid)14       -0.8898165  0.0675748 -13.1679 < 2.2e-16 ***
## as.factor(monthid)15       -0.2173560  0.0675748  -3.2165 0.0013437 **
## as.factor(monthid)16       -0.3052049  0.0675748  -4.5166 7.120e-06 ***
## as.factor(monthid)17       -0.3171461  0.0675748  -4.6933 3.106e-06 ***
## as.factor(monthid)18       -0.3580106  0.0675748  -5.2980 1.472e-07 ***
## as.factor(monthid)19       -0.3333314  0.0675748  -4.9328 9.650e-07 ***
## as.factor(monthid)20       -0.1814685  0.0675748  -2.6854 0.0073763 **
## as.factor(monthid)21        0.1236947  0.0675748   1.8305 0.0675070 .
## as.factor(monthid)22       -0.4030427  0.0675748  -5.9644 3.523e-09 ***
```

```
## as.factor(monthid)23        -0.2417678  0.0803180  -3.0101 0.0026841 **
## as.factor(monthid)24        -0.0892002  0.0828174  -1.0771 0.2817364
## as.factor(monthid)25        -0.3460613  0.0998157  -3.4670 0.0005512 ***
## as.factor(monthid)26        -0.6836135  0.0973504  -7.0222 4.297e-12 ***
## as.factor(monthid)27        -0.5545310  0.0968847  -5.7236 1.419e-08 ***
## as.factor(monthid)28        -0.6599716  0.0994605  -6.6355 5.572e-11 ***
## as.factor(monthid)29        -0.4878281  0.0982129  -4.9670 8.130e-07 ***
## as.factor(monthid)30        -0.6372464  0.0961880  -6.6250 5.963e-11 ***
## as.factor(monthid)31        -0.4981006  0.0994832  -5.0069 6.653e-07 ***
## as.factor(monthid)32        -0.4482706  0.0993998  -4.5098 7.346e-06 ***
## as.factor(monthid)33        -0.2540370  0.0997137  -2.5477 0.0110096 *
## as.factor(monthid)34        -0.4370518  0.1010510  -4.3251 1.695e-05 ***
## as.factor(monthid)35        -0.3173041  0.0993321  -3.1944 0.0014500 **
## as.factor(monthid)36        -0.2855007  0.0961836  -2.9683 0.0030738 **
## as.factor(monthid)37        -0.0862482  0.1125144  -0.7666 0.4435482
## as.factor(monthid)38        -0.9823590  0.1283387  -7.6544 4.988e-14 ***
## as.factor(monthid)39        -0.7352458  0.1655880  -4.4402 1.010e-05 ***
## as.factor(monthid)40        -0.6716007  0.1879557  -3.5732 0.0003713 ***
## as.factor(monthid)41        -0.5934969  0.2025980  -2.9294 0.0034814 **
## as.factor(monthid)42        -0.8193453  0.2050173  -3.9965 6.954e-05 ***
## as.factor(monthid)43        -0.5887068  0.2072505  -2.8406 0.0046049 **
## as.factor(monthid)44        -0.6147408  0.2089663  -2.9418 0.0033464 **
## as.factor(monthid)45        -0.3842513  0.2083700  -1.8441 0.0654990 .
## as.factor(monthid)46        -0.5213149  0.2087991  -2.4967 0.0127118 *
## as.factor(monthid)47        -0.4256590  0.2124686  -2.0034 0.0454334 *
## as.factor(monthid)48        -0.3916449  0.2177953  -1.7982 0.0724757 .
## as.factor(monthid)49        -0.1765776  0.2345414  -0.7529 0.4517285
## as.factor(monthid)50        -1.1223675  0.2501770  -4.4863 8.183e-06 ***
## as.factor(monthid)51        -0.7506985  0.2487029  -3.0185 0.0026121 **
## as.factor(monthid)52        -0.5076356  0.2341635  -2.1679 0.0304297 *
## as.factor(monthid)53        -0.5177776  0.2313171  -2.2384 0.0254390 *
## as.factor(monthid)54        -0.6678057  0.2278629  -2.9307 0.0034669 **
## as.factor(monthid)55        -0.5665830  0.2291761  -2.4723 0.0136097 *
## as.factor(monthid)56        -0.7258611  0.2301851  -3.1534 0.0016673 **
## as.factor(monthid)57        -0.3354864  0.2307142  -1.4541 0.1462605
## as.factor(monthid)58        -0.5604078  0.2320681  -2.4148 0.0159401 *
## as.factor(monthid)59        -0.6253399  0.2334296  -2.6789 0.0075204 **
## as.factor(monthid)60        -0.4742272  0.2412953  -1.9653 0.0496814 *
## as.factor(monthid)61        -0.5770582  0.3889419  -1.4837 0.1382480
## as.factor(monthid)62        -1.0278904  0.3943757  -2.6064 0.0093016 **
## as.factor(monthid)63        -1.1271364  0.4062131  -2.7747 0.0056387 **
## as.factor(monthid)64        -1.0109430  0.4105037  -2.4627 0.0139758 *
## as.factor(monthid)65        -1.1267184  0.4147259  -2.7168 0.0067183 **
## as.factor(monthid)66        -1.1801473  0.4174823  -2.8268 0.0048052 **
## as.factor(monthid)67        -1.2189658  0.4286819  -2.8435 0.0045626 **
## as.factor(monthid)68        -1.1956623  0.4265937  -2.8028 0.0051745 **
## as.factor(monthid)69        -0.9732750  0.4160078  -2.3396 0.0195238 *
## as.factor(monthid)70        -1.0318123  0.4099340  -2.5170 0.0120076 *
## as.factor(monthid)71        -0.9840160  0.4054763  -2.4268 0.0154270 *
## as.factor(monthid)72        -0.7701735  0.4043584  -1.9047 0.0571395 .
## lndidi                       0.0061951  0.0217853   0.2844 0.7761906
## lnyidao                      0.0129125  0.0095566   1.3512 0.1769835
## lnshenzhou                   0.0405590  0.0466919   0.8687 0.3852681
## ln_highwaypassengertraffic  -0.0087120  0.0220301  -0.3955 0.6925978
```

```
## ln_aviationpassengertraffic -0.0187754  0.0252707  -0.7430 0.4576925
## ln_grpcity                   0.8993881  0.1613878   5.5728 3.310e-08 ***
## ln_grppercapitacity          0.1103599  0.0651488   1.6940 0.0906168 .
## ln_mobilesubscriberscity     0.4381458  0.0978730   4.4767 8.552e-06 ***
## ln_internetsubscriberscity   0.0536145  0.0230535   2.3257 0.0202580 *
## ln_roadarea                 -3.4869207  1.3987437  -2.4929 0.0128490 *
## ln_buses                     3.5686769  1.4275764   2.4998 0.0126025 *
## ln_buspassengervolume        0.1075851  0.0713163   1.5086 0.1317608
## ln_taxis                     0.0965000  0.0896606   1.0763 0.2820890
## ln_busesper1000             -3.7118140  1.5630831  -2.3747 0.0177727 *
## ln_roadareapercapita         3.9729554  1.5395293   2.5806 0.0100190 *
## ln_populationcity            3.5187902  1.5111994   2.3285 0.0201071 *
## ln_populationdensitycity    -2.8631000  1.3494369  -2.1217 0.0341351 *
## ln_employedcity              0.0437285  0.0360742   1.2122 0.2257595
## ln_unemployedcity           -0.0694190  0.0471090  -1.4736 0.1409432
## ln_wageofstaffandworkercity  0.0357507  0.0307163   1.1639 0.2447720
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Total Sum of Squares:    125.8
## Residual Sum of Squares: 22.059
## R-Squared:      0.82465
## Adj. R-Squared: 0.80423
## F-statistic: 46.1074 on 92 and 902 DF, p-value: < 2.22e-16
```