# Va7892

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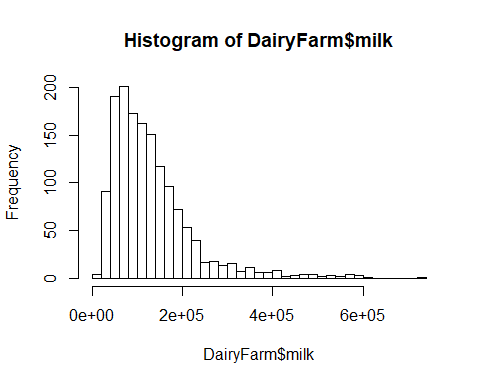
# Task 1: Import the Dataset and Background Information

library(readxl)  
DairyFarm<-read\_excel("C:/Users/Surabhi/Desktop/Assignment 3/DairyFarm.xlsx")

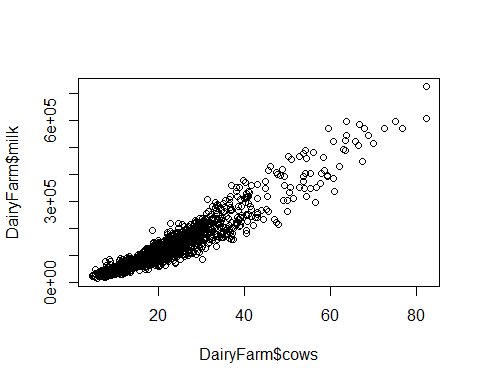
# Task 2: Understand the Logarithm

* Yes, the histogram is skewed to the right
* the benefit of logarithm transformation or scaling is to smooth the data and to get rid of the skewness towards large or small values.
* with the logarithm plot, we can easily see the log transformation has reduce or remove the skewness and now the data is close to normal distribution.

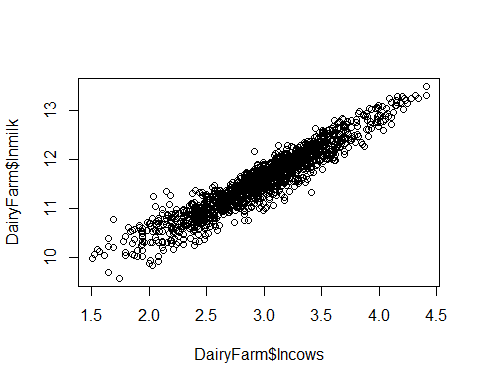
hist(DairyFarm$milk, breaks=50)



plot(DairyFarm$milk~DairyFarm$cows)



DairyFarm$lnmilk=log(DairyFarm$milk)  
DairyFarm$lncows=log(DairyFarm$cows)  
plot(DairyFarm$lnmilk~DairyFarm$lncows)



# Task 3: Understand Panel Data

- The cross section in this data is the 247 farms in the data.

- We won't get accurate insights because there will be bias due to omitted or unobservable variables without fixed-effects.

# Task 4:

* Adjusted R-squared = 0.9855 and R-Squared = 0.988. The R-squared tells us how much variation of the dependent variable is explained by a model.
* The model explains 98.8% of the variability of the response data around its mean
* 1% increase in number of cows lead to 0.638% increase in milk.

fit1<-lm(DairyFarm$logmilk~DairyFarm$logcows+DairyFarm$logland+DairyFarm$loglabor+DairyFarm$logfeed+factor(DairyFarm$year)+factor(DairyFarm$farm), data=DairyFarm)  
  
summary(fit1)

##   
## Call:  
## lm(formula = DairyFarm$logmilk ~ DairyFarm$logcows + DairyFarm$logland +   
## DairyFarm$loglabor + DairyFarm$logfeed + factor(DairyFarm$year) +   
## factor(DairyFarm$farm), data = DairyFarm)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -0.42337 -0.03868 -0.00132 0.04155 0.34339   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 6.2579330 0.1210914 51.679 < 2e-16 \*\*\*  
## DairyFarm$logcows 0.6379665 0.0237984 26.807 < 2e-16 \*\*\*  
## DairyFarm$logland 0.0412789 0.0154445 2.673 0.007624 \*\*   
## DairyFarm$loglabor 0.0281677 0.0221731 1.270 0.204199   
## DairyFarm$logfeed 0.3081655 0.0132256 23.301 < 2e-16 \*\*\*  
## factor(DairyFarm$year)94 0.0329149 0.0071309 4.616 4.33e-06 \*\*\*  
## factor(DairyFarm$year)95 0.0613654 0.0074861 8.197 6.14e-16 \*\*\*  
## factor(DairyFarm$year)96 0.0719467 0.0080094 8.983 < 2e-16 \*\*\*  
## factor(DairyFarm$year)97 0.0752989 0.0084324 8.930 < 2e-16 \*\*\*  
## factor(DairyFarm$year)98 0.0939990 0.0089243 10.533 < 2e-16 \*\*\*  
## factor(DairyFarm$farm)2 0.0803359 0.0451620 1.779 0.075514 .   
## factor(DairyFarm$farm)3 -0.0391581 0.0457572 -0.856 0.392287   
## factor(DairyFarm$farm)4 0.1931763 0.0526424 3.670 0.000253 \*\*\*  
## factor(DairyFarm$farm)5 0.0562684 0.0456358 1.233 0.217816   
## factor(DairyFarm$farm)6 0.1090394 0.0455016 2.396 0.016707 \*   
## factor(DairyFarm$farm)7 0.0426203 0.0464263 0.918 0.358790   
## factor(DairyFarm$farm)8 0.0871587 0.0467088 1.866 0.062280 .   
## factor(DairyFarm$farm)9 0.1782987 0.0555083 3.212 0.001352 \*\*   
## factor(DairyFarm$farm)10 0.2102527 0.0473641 4.439 9.85e-06 \*\*\*  
## factor(DairyFarm$farm)11 0.1548688 0.0456203 3.395 0.000709 \*\*\*  
## factor(DairyFarm$farm)12 0.1310469 0.0470342 2.786 0.005415 \*\*   
## factor(DairyFarm$farm)13 0.1852673 0.0480897 3.853 0.000123 \*\*\*  
## factor(DairyFarm$farm)14 0.0627133 0.0470785 1.332 0.183075   
## factor(DairyFarm$farm)15 -0.2773488 0.0470191 -5.899 4.74e-09 \*\*\*  
## factor(DairyFarm$farm)16 0.0819467 0.0472215 1.735 0.082927 .   
## factor(DairyFarm$farm)17 -0.2081021 0.0450643 -4.618 4.28e-06 \*\*\*  
## factor(DairyFarm$farm)18 -0.0246311 0.0474783 -0.519 0.604004   
## factor(DairyFarm$farm)19 -0.1254033 0.0486601 -2.577 0.010079 \*   
## factor(DairyFarm$farm)20 -0.0689395 0.0456612 -1.510 0.131351   
## factor(DairyFarm$farm)21 0.1323197 0.0461753 2.866 0.004233 \*\*   
## factor(DairyFarm$farm)22 0.0622328 0.0458488 1.357 0.174920   
## factor(DairyFarm$farm)23 -0.1434467 0.0460846 -3.113 0.001897 \*\*   
## factor(DairyFarm$farm)24 0.1024665 0.0500325 2.048 0.040773 \*   
## factor(DairyFarm$farm)25 -0.0242301 0.0455998 -0.531 0.595262   
## factor(DairyFarm$farm)26 0.1198132 0.0512871 2.336 0.019645 \*   
## factor(DairyFarm$farm)27 -0.0871523 0.0499374 -1.745 0.081195 .   
## factor(DairyFarm$farm)28 -0.1064434 0.0448024 -2.376 0.017662 \*   
## factor(DairyFarm$farm)29 -0.0335777 0.0453312 -0.741 0.459005   
## factor(DairyFarm$farm)30 0.1522009 0.0452483 3.364 0.000793 \*\*\*  
## factor(DairyFarm$farm)31 0.2910286 0.0484033 6.013 2.41e-09 \*\*\*  
## factor(DairyFarm$farm)32 0.1997737 0.0469555 4.255 2.25e-05 \*\*\*  
## factor(DairyFarm$farm)33 0.2144512 0.0485914 4.413 1.11e-05 \*\*\*  
## factor(DairyFarm$farm)34 -0.0533020 0.0469421 -1.135 0.256394   
## factor(DairyFarm$farm)35 -0.0395061 0.0468580 -0.843 0.399337   
## factor(DairyFarm$farm)36 0.1016182 0.0450726 2.255 0.024338 \*   
## factor(DairyFarm$farm)37 -0.0270767 0.0458549 -0.590 0.554973   
## factor(DairyFarm$farm)38 0.1455480 0.0504614 2.884 0.003991 \*\*   
## factor(DairyFarm$farm)39 0.0419081 0.0462820 0.905 0.365382   
## factor(DairyFarm$farm)40 -0.0237485 0.0449778 -0.528 0.597591   
## factor(DairyFarm$farm)41 -0.1371842 0.0450342 -3.046 0.002367 \*\*   
## factor(DairyFarm$farm)42 0.0463470 0.0464467 0.998 0.318547   
## factor(DairyFarm$farm)43 -0.0249551 0.0453914 -0.550 0.582573   
## factor(DairyFarm$farm)44 -0.1919944 0.0449402 -4.272 2.09e-05 \*\*\*  
## factor(DairyFarm$farm)45 0.0690649 0.0478986 1.442 0.149586   
## factor(DairyFarm$farm)46 -0.0758995 0.0464971 -1.632 0.102863   
## factor(DairyFarm$farm)47 0.0352797 0.0453658 0.778 0.436912   
## factor(DairyFarm$farm)48 0.0667738 0.0458797 1.455 0.145811   
## factor(DairyFarm$farm)49 -0.1418988 0.0484396 -2.929 0.003459 \*\*   
## factor(DairyFarm$farm)50 -0.1168139 0.0485403 -2.407 0.016252 \*   
## factor(DairyFarm$farm)51 -0.1311478 0.0448297 -2.925 0.003503 \*\*   
## factor(DairyFarm$farm)52 0.0167016 0.0457624 0.365 0.715201   
## factor(DairyFarm$farm)53 -0.0520518 0.0448856 -1.160 0.246416   
## factor(DairyFarm$farm)54 -0.0508990 0.0474019 -1.074 0.283135   
## factor(DairyFarm$farm)55 -0.0672164 0.0450258 -1.493 0.135736   
## factor(DairyFarm$farm)56 -0.1702252 0.0477619 -3.564 0.000379 \*\*\*  
## factor(DairyFarm$farm)57 -0.0173901 0.0500419 -0.348 0.728268   
## factor(DairyFarm$farm)58 0.0343959 0.0450731 0.763 0.445543   
## factor(DairyFarm$farm)59 -0.1964141 0.0454935 -4.317 1.71e-05 \*\*\*  
## factor(DairyFarm$farm)60 -0.0733434 0.0474374 -1.546 0.122337   
## factor(DairyFarm$farm)61 0.0174021 0.0496029 0.351 0.725778   
## factor(DairyFarm$farm)62 -0.0465943 0.0459050 -1.015 0.310298   
## factor(DairyFarm$farm)63 0.2354408 0.0495017 4.756 2.21e-06 \*\*\*  
## factor(DairyFarm$farm)64 -0.1209559 0.0467000 -2.590 0.009710 \*\*   
## factor(DairyFarm$farm)65 -0.1945245 0.0472122 -4.120 4.04e-05 \*\*\*  
## factor(DairyFarm$farm)66 -0.2197360 0.0454735 -4.832 1.52e-06 \*\*\*  
## factor(DairyFarm$farm)67 -0.0827171 0.0452747 -1.827 0.067942 .   
## factor(DairyFarm$farm)68 -0.0312078 0.0458983 -0.680 0.496675   
## factor(DairyFarm$farm)69 -0.2675216 0.0469944 -5.693 1.56e-08 \*\*\*  
## factor(DairyFarm$farm)70 -0.0315541 0.0459964 -0.686 0.492835   
## factor(DairyFarm$farm)71 0.0437905 0.0478437 0.915 0.360223   
## factor(DairyFarm$farm)72 -0.1187511 0.0458749 -2.589 0.009751 \*\*   
## factor(DairyFarm$farm)73 0.0749173 0.0457736 1.637 0.101952   
## factor(DairyFarm$farm)74 -0.0909252 0.0448126 -2.029 0.042673 \*   
## factor(DairyFarm$farm)75 0.0356084 0.0457855 0.778 0.436883   
## factor(DairyFarm$farm)76 0.0868747 0.0467534 1.858 0.063388 .   
## factor(DairyFarm$farm)77 -0.0199214 0.0463613 -0.430 0.667490   
## factor(DairyFarm$farm)78 0.0133612 0.0459053 0.291 0.771054   
## factor(DairyFarm$farm)79 -0.0487812 0.0465978 -1.047 0.295372   
## factor(DairyFarm$farm)80 0.0917161 0.0527544 1.739 0.082365 .   
## factor(DairyFarm$farm)81 0.1571602 0.0490206 3.206 0.001381 \*\*   
## factor(DairyFarm$farm)82 -0.0285863 0.0459039 -0.623 0.533570   
## factor(DairyFarm$farm)83 -0.1731438 0.0462714 -3.742 0.000191 \*\*\*  
## factor(DairyFarm$farm)84 -0.0047559 0.0453166 -0.105 0.916434   
## factor(DairyFarm$farm)85 -0.0377594 0.0476885 -0.792 0.428635   
## factor(DairyFarm$farm)86 0.1059805 0.0509012 2.082 0.037542 \*   
## factor(DairyFarm$farm)87 0.2655202 0.0455191 5.833 6.95e-09 \*\*\*  
## factor(DairyFarm$farm)88 0.1936134 0.0472974 4.094 4.53e-05 \*\*\*  
## factor(DairyFarm$farm)89 0.0072228 0.0453764 0.159 0.873557   
## factor(DairyFarm$farm)90 -0.0786312 0.0474091 -1.659 0.097459 .   
## factor(DairyFarm$farm)91 0.0340990 0.0473869 0.720 0.471917   
## factor(DairyFarm$farm)92 -0.0346920 0.0460338 -0.754 0.451222   
## factor(DairyFarm$farm)93 0.0425893 0.0465078 0.916 0.359981   
## factor(DairyFarm$farm)94 0.1453983 0.0459390 3.165 0.001589 \*\*   
## factor(DairyFarm$farm)95 -0.1980956 0.0463378 -4.275 2.06e-05 \*\*\*  
## factor(DairyFarm$farm)96 0.0380116 0.0468921 0.811 0.417742   
## factor(DairyFarm$farm)97 0.0446350 0.0463668 0.963 0.335913   
## factor(DairyFarm$farm)98 0.0133176 0.0462561 0.288 0.773465   
## factor(DairyFarm$farm)99 -0.0769851 0.0450479 -1.709 0.087711 .   
## factor(DairyFarm$farm)100 0.0748881 0.0450327 1.663 0.096574 .   
## factor(DairyFarm$farm)101 0.1515941 0.0454103 3.338 0.000868 \*\*\*  
## factor(DairyFarm$farm)102 0.0416089 0.0474717 0.876 0.380930   
## factor(DairyFarm$farm)103 0.1083680 0.0498619 2.173 0.029944 \*   
## factor(DairyFarm$farm)104 -0.0226460 0.0456109 -0.497 0.619628   
## factor(DairyFarm$farm)105 -0.3545031 0.0462306 -7.668 3.54e-14 \*\*\*  
## factor(DairyFarm$farm)106 -0.0821299 0.0460332 -1.784 0.074647 .   
## factor(DairyFarm$farm)107 0.0912236 0.0491805 1.855 0.063854 .   
## factor(DairyFarm$farm)108 0.1269608 0.0463066 2.742 0.006200 \*\*   
## factor(DairyFarm$farm)109 -0.0680831 0.0538531 -1.264 0.206385   
## factor(DairyFarm$farm)110 0.0606061 0.0484117 1.252 0.210849   
## factor(DairyFarm$farm)111 -0.0236861 0.0470471 -0.503 0.614735   
## factor(DairyFarm$farm)112 -0.1600216 0.0497233 -3.218 0.001324 \*\*   
## factor(DairyFarm$farm)113 0.0915006 0.0470552 1.945 0.052059 .   
## factor(DairyFarm$farm)114 0.0624044 0.0451100 1.383 0.166799   
## factor(DairyFarm$farm)115 -0.0218267 0.0497278 -0.439 0.660794   
## factor(DairyFarm$farm)116 -0.0165156 0.0454345 -0.364 0.716291   
## factor(DairyFarm$farm)117 -0.1121585 0.0455497 -2.462 0.013940 \*   
## factor(DairyFarm$farm)118 -0.1957436 0.0481421 -4.066 5.09e-05 \*\*\*  
## factor(DairyFarm$farm)119 -0.1709017 0.0477288 -3.581 0.000356 \*\*\*  
## factor(DairyFarm$farm)120 -0.2045520 0.0487951 -4.192 2.96e-05 \*\*\*  
## factor(DairyFarm$farm)121 0.1285787 0.0467765 2.749 0.006069 \*\*   
## factor(DairyFarm$farm)122 -0.0395709 0.0471024 -0.840 0.401014   
## factor(DairyFarm$farm)123 -0.0665008 0.0469098 -1.418 0.156552   
## factor(DairyFarm$farm)124 -0.1392224 0.0471649 -2.952 0.003219 \*\*   
## factor(DairyFarm$farm)125 -0.0027403 0.0487089 -0.056 0.955145   
## factor(DairyFarm$farm)126 -0.1374416 0.0482913 -2.846 0.004500 \*\*   
## factor(DairyFarm$farm)127 -0.1008112 0.0454674 -2.217 0.026791 \*   
## factor(DairyFarm$farm)128 -0.1724384 0.0486980 -3.541 0.000414 \*\*\*  
## factor(DairyFarm$farm)129 0.1123393 0.0474468 2.368 0.018054 \*   
## factor(DairyFarm$farm)130 -0.0823697 0.0451672 -1.824 0.068446 .   
## factor(DairyFarm$farm)131 0.0522592 0.0451356 1.158 0.247159   
## factor(DairyFarm$farm)132 0.0832206 0.0450450 1.847 0.064916 .   
## factor(DairyFarm$farm)133 -0.1183059 0.0489980 -2.415 0.015902 \*   
## factor(DairyFarm$farm)134 0.0294670 0.0449637 0.655 0.512365   
## factor(DairyFarm$farm)135 0.0721987 0.0476061 1.517 0.129629   
## factor(DairyFarm$farm)136 0.1156694 0.0488404 2.368 0.018024 \*   
## factor(DairyFarm$farm)137 -0.0303011 0.0477432 -0.635 0.525762   
## factor(DairyFarm$farm)138 -0.0232677 0.0483470 -0.481 0.630415   
## factor(DairyFarm$farm)139 0.0981603 0.0472970 2.075 0.038158 \*   
## factor(DairyFarm$farm)140 -0.1224861 0.0478455 -2.560 0.010585 \*   
## factor(DairyFarm$farm)141 -0.2803228 0.0470494 -5.958 3.33e-09 \*\*\*  
## factor(DairyFarm$farm)142 0.0063277 0.0474370 0.133 0.893905   
## factor(DairyFarm$farm)143 -0.2163647 0.0520679 -4.155 3.47e-05 \*\*\*  
## factor(DairyFarm$farm)144 0.0309475 0.0471023 0.657 0.511287   
## factor(DairyFarm$farm)145 -0.1091903 0.0482358 -2.264 0.023768 \*   
## factor(DairyFarm$farm)146 0.0198564 0.0501319 0.396 0.692113   
## factor(DairyFarm$farm)147 -0.0454796 0.0483446 -0.941 0.347025   
## factor(DairyFarm$farm)148 -0.2328970 0.0471126 -4.943 8.74e-07 \*\*\*  
## factor(DairyFarm$farm)149 0.1489105 0.0476139 3.127 0.001805 \*\*   
## factor(DairyFarm$farm)150 -0.0562691 0.0504569 -1.115 0.264988   
## factor(DairyFarm$farm)151 -0.2032446 0.0507804 -4.002 6.65e-05 \*\*\*  
## factor(DairyFarm$farm)152 -0.1188976 0.0449425 -2.646 0.008260 \*\*   
## factor(DairyFarm$farm)153 -0.2155027 0.0480247 -4.487 7.89e-06 \*\*\*  
## factor(DairyFarm$farm)154 -0.0151283 0.0458780 -0.330 0.741645   
## factor(DairyFarm$farm)155 0.0928900 0.0448208 2.072 0.038430 \*   
## factor(DairyFarm$farm)156 0.1237545 0.0523524 2.364 0.018240 \*   
## factor(DairyFarm$farm)157 -0.4181665 0.0474765 -8.808 < 2e-16 \*\*\*  
## factor(DairyFarm$farm)158 0.0713081 0.0459128 1.553 0.120652   
## factor(DairyFarm$farm)159 -0.1221918 0.0482711 -2.531 0.011486 \*   
## factor(DairyFarm$farm)160 -0.4031202 0.0474187 -8.501 < 2e-16 \*\*\*  
## factor(DairyFarm$farm)161 0.0142940 0.0472135 0.303 0.762130   
## factor(DairyFarm$farm)162 -0.0435637 0.0477427 -0.912 0.361702   
## factor(DairyFarm$farm)163 -0.1424131 0.0472292 -3.015 0.002620 \*\*   
## factor(DairyFarm$farm)164 -0.1591211 0.0497825 -3.196 0.001427 \*\*   
## factor(DairyFarm$farm)165 -0.0260921 0.0493362 -0.529 0.596996   
## factor(DairyFarm$farm)166 0.2479376 0.0467986 5.298 1.39e-07 \*\*\*  
## factor(DairyFarm$farm)167 -0.3696240 0.0465759 -7.936 4.68e-15 \*\*\*  
## factor(DairyFarm$farm)168 -0.0228727 0.0485659 -0.471 0.637752   
## factor(DairyFarm$farm)169 -0.0897766 0.0467198 -1.922 0.054888 .   
## factor(DairyFarm$farm)170 -0.2044785 0.0462267 -4.423 1.06e-05 \*\*\*  
## factor(DairyFarm$farm)171 -0.4774181 0.0485385 -9.836 < 2e-16 \*\*\*  
## factor(DairyFarm$farm)172 -0.4052424 0.0504951 -8.025 2.35e-15 \*\*\*  
## factor(DairyFarm$farm)173 -0.3249090 0.0460229 -7.060 2.79e-12 \*\*\*  
## factor(DairyFarm$farm)174 -0.0315147 0.0482930 -0.653 0.514154   
## factor(DairyFarm$farm)175 -0.0326425 0.0459070 -0.711 0.477184   
## factor(DairyFarm$farm)176 -0.1725709 0.0469817 -3.673 0.000250 \*\*\*  
## factor(DairyFarm$farm)177 0.2164825 0.0502874 4.305 1.80e-05 \*\*\*  
## factor(DairyFarm$farm)178 0.0193900 0.0465717 0.416 0.677229   
## factor(DairyFarm$farm)179 0.0091694 0.0459362 0.200 0.841818   
## factor(DairyFarm$farm)180 0.0419099 0.0491222 0.853 0.393729   
## factor(DairyFarm$farm)181 -0.2045321 0.0499550 -4.094 4.51e-05 \*\*\*  
## factor(DairyFarm$farm)182 -0.0347987 0.0510876 -0.681 0.495901   
## factor(DairyFarm$farm)183 -0.0458603 0.0472047 -0.972 0.331482   
## factor(DairyFarm$farm)184 -0.1254545 0.0493303 -2.543 0.011108 \*   
## factor(DairyFarm$farm)185 -0.0510564 0.0488862 -1.044 0.296510   
## factor(DairyFarm$farm)186 -0.0297453 0.0480555 -0.619 0.536045   
## factor(DairyFarm$farm)187 -0.1306189 0.0462983 -2.821 0.004861 \*\*   
## factor(DairyFarm$farm)188 0.0098245 0.0484913 0.203 0.839478   
## factor(DairyFarm$farm)189 0.0695034 0.0493393 1.409 0.159183   
## factor(DairyFarm$farm)190 0.0012700 0.0494534 0.026 0.979517   
## factor(DairyFarm$farm)191 0.1022572 0.0481848 2.122 0.034022 \*   
## factor(DairyFarm$farm)192 -0.0836480 0.0481665 -1.737 0.082702 .   
## factor(DairyFarm$farm)193 0.1110887 0.0456456 2.434 0.015086 \*   
## factor(DairyFarm$farm)194 -0.1899103 0.0458867 -4.139 3.73e-05 \*\*\*  
## factor(DairyFarm$farm)195 -0.3572431 0.0472069 -7.568 7.44e-14 \*\*\*  
## factor(DairyFarm$farm)196 0.1303444 0.0479163 2.720 0.006615 \*\*   
## factor(DairyFarm$farm)197 -0.0274432 0.0459105 -0.598 0.550114   
## factor(DairyFarm$farm)198 -0.2552325 0.0512163 -4.983 7.14e-07 \*\*\*  
## factor(DairyFarm$farm)199 -0.3217658 0.0468360 -6.870 1.02e-11 \*\*\*  
## factor(DairyFarm$farm)200 0.2354338 0.0478791 4.917 9.97e-07 \*\*\*  
## factor(DairyFarm$farm)201 0.0477119 0.0462811 1.031 0.302784   
## factor(DairyFarm$farm)202 -0.0527108 0.0483352 -1.091 0.275696   
## factor(DairyFarm$farm)203 -0.0268072 0.0456073 -0.588 0.556787   
## factor(DairyFarm$farm)204 -0.0635495 0.0457775 -1.388 0.165321   
## factor(DairyFarm$farm)205 -0.1094872 0.0463308 -2.363 0.018275 \*   
## factor(DairyFarm$farm)206 0.1670784 0.0457884 3.649 0.000274 \*\*\*  
## factor(DairyFarm$farm)207 -0.1078824 0.0506047 -2.132 0.033216 \*   
## factor(DairyFarm$farm)208 0.0307683 0.0492503 0.625 0.532263   
## factor(DairyFarm$farm)209 -0.3607298 0.0468985 -7.692 2.97e-14 \*\*\*  
## factor(DairyFarm$farm)210 -0.0099363 0.0472089 -0.210 0.833332   
## factor(DairyFarm$farm)211 -0.2792857 0.0465935 -5.994 2.69e-09 \*\*\*  
## factor(DairyFarm$farm)212 -0.0296177 0.0479601 -0.618 0.536988   
## factor(DairyFarm$farm)213 -0.1609419 0.0502954 -3.200 0.001410 \*\*   
## factor(DairyFarm$farm)214 -0.1012662 0.0462200 -2.191 0.028642 \*   
## factor(DairyFarm$farm)215 -0.0960306 0.0492843 -1.949 0.051583 .   
## factor(DairyFarm$farm)216 -0.5355524 0.0513515 -10.429 < 2e-16 \*\*\*  
## factor(DairyFarm$farm)217 -0.1684349 0.0467825 -3.600 0.000330 \*\*\*  
## factor(DairyFarm$farm)218 -0.0074829 0.0451829 -0.166 0.868489   
## factor(DairyFarm$farm)219 0.1015544 0.0464435 2.187 0.028959 \*   
## factor(DairyFarm$farm)220 -0.1081869 0.0492163 -2.198 0.028122 \*   
## factor(DairyFarm$farm)221 -0.0366437 0.0496003 -0.739 0.460182   
## factor(DairyFarm$farm)222 0.0019923 0.0517007 0.039 0.969267   
## factor(DairyFarm$farm)223 -0.0573511 0.0467213 -1.228 0.219864   
## factor(DairyFarm$farm)224 -0.0702705 0.0489505 -1.436 0.151388   
## factor(DairyFarm$farm)225 -0.0555625 0.0458134 -1.213 0.225440   
## factor(DairyFarm$farm)226 -0.2550010 0.0548279 -4.651 3.66e-06 \*\*\*  
## factor(DairyFarm$farm)227 -0.3494243 0.0528949 -6.606 5.87e-11 \*\*\*  
## factor(DairyFarm$farm)228 -0.1752900 0.0492780 -3.557 0.000389 \*\*\*  
## factor(DairyFarm$farm)229 0.0778217 0.0488574 1.593 0.111455   
## factor(DairyFarm$farm)230 -0.0692898 0.0500569 -1.384 0.166543   
## factor(DairyFarm$farm)231 0.0320909 0.0511484 0.627 0.530509   
## factor(DairyFarm$farm)232 -0.1025401 0.0509449 -2.013 0.044358 \*   
## factor(DairyFarm$farm)233 -0.1747524 0.0477453 -3.660 0.000263 \*\*\*  
## factor(DairyFarm$farm)234 0.1230154 0.0542336 2.268 0.023487 \*   
## factor(DairyFarm$farm)235 -0.0932001 0.0451277 -2.065 0.039109 \*   
## factor(DairyFarm$farm)236 0.0959771 0.0484661 1.980 0.047894 \*   
## factor(DairyFarm$farm)237 -0.2177669 0.0487344 -4.468 8.61e-06 \*\*\*  
## factor(DairyFarm$farm)238 -0.2309230 0.0500691 -4.612 4.40e-06 \*\*\*  
## factor(DairyFarm$farm)239 0.0004195 0.0514510 0.008 0.993497   
## factor(DairyFarm$farm)240 -0.0714653 0.0481263 -1.485 0.137813   
## factor(DairyFarm$farm)241 -0.3325521 0.0513199 -6.480 1.33e-10 \*\*\*  
## factor(DairyFarm$farm)242 -0.3183716 0.0496399 -6.414 2.02e-10 \*\*\*  
## factor(DairyFarm$farm)243 -0.2422685 0.0477635 -5.072 4.54e-07 \*\*\*  
## factor(DairyFarm$farm)244 -0.1467514 0.0502086 -2.923 0.003532 \*\*   
## factor(DairyFarm$farm)245 -0.2797329 0.0482070 -5.803 8.30e-09 \*\*\*  
## factor(DairyFarm$farm)246 -0.3714690 0.0498020 -7.459 1.65e-13 \*\*\*  
## factor(DairyFarm$farm)247 -0.0331484 0.0500376 -0.662 0.507795   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 0.07758 on 1226 degrees of freedom  
## Multiple R-squared: 0.988, Adjusted R-squared: 0.9855   
## F-statistic: 394.7 on 255 and 1226 DF, p-value: < 2.2e-16