REPORT SERIES WITH DLOOKR

Exploratory Data Analysis Report

Author:
dlookr package

Version:
0.4.0

June 27, 2021

Contents

Chapter 1

Introduction

The EDA Report provides exploratory data analysis information on objects that inherit data.frame and data.frame.

1.1 Information of Dataset

The dataset that generated the EDA Report is an 'data.frame' object. It consists of 28,534 observations and 21 variables.

1.2 Information of Variables

Table 1.1: Information of Variables

variables	types	missing_count	missing_percent	unique_count	unique_rate
idcode	numeric	0	0.00	4711	0.165
year	numeric	0	0.00	15	0.001
birth_yr	numeric	0	0.00	14	0.000
age	numeric	24	0.08	34	0.001
race	numeric	0	0.00	3	0.000
msp	numeric	16	0.06	3	0.000
nev_mar	numeric	16	0.06	3	0.000
grade	numeric	2	0.01	20	0.001
collgrad	numeric	0	0.00	2	0.000
not_smsa	numeric	8	0.03	3	0.000
c_city	numeric	8	0.03	3	0.000
south	numeric	8	0.03	3	0.000
ind_code	numeric	341	1.20	13	0.000
occ_code	numeric	121	0.42	14	0.000
union	numeric	9296	32.58	3	0.000
wks_ue	numeric	5704	19.99	62	0.002
ttl_exp	numeric	0	0.00	4744	0.166
tenure	numeric	433	1.52	271	0.009
hours	numeric	67	0.23	86	0.003
wks_work	numeric	703	2.46	106	0.004
ln_wage	numeric	0	0.00	8173	0.286

The target variable of the data is 'NULL', and the data type of the variable is NULL(You did not specify a target variable).

1.3 About EDA Report

EDA reports provide information and visualization results that support the EDA process. In particular, it provides a variety of information to understand the relationship between the target variable and the rest of the variables of interest.

Chapter 2

Univariate Analysis

2.1 Descriptive Statistics

edaData
21 Variables 28534 Observations

---

idcode : NLS id Format:%8.0g

n	missing	distinct	Info	Mean	Gmd	.05	.10	.25	.50	.75	.90	.95
28534	0	4711	1	2601	1717	259.7	518.0	1327.0	2606.0	3881.0	4656.0	4889.0

```
lowest :    1    2    3    4    5, highest: 5155 5156 5157 5158 5159
```

---

year : interview year Format:%8.0g

n	missing	distinct	Info	Mean	Gmd	.05	.10	.25	.50	.75	.90	.95
28534	0	15	0.995	77.96	7.339	69	70	72	78	83	87	88

```
lowest : 68 69 70 71 72, highest: 82 83 85 87 88
```

Value	68	69	70	71	72	73	75	77	78	80	82	83	85	87
Frequency	1375	1232	1686	1851	1693	1981	2141	2171	1964	1847	2085	1987	2085	2164
Proportion	0.048	0.043	0.059	0.065	0.059	0.069	0.075	0.076	0.069	0.065	0.073	0.070	0.073	0.076

Value	88
Frequency	2272
Proportion	0.080

---

birth_yr : birth year Format:%8.0g

n	missing	distinct	Info	Mean	Gmd	.05	.10	.25	.50	.75	.90	.95
28534	0	14	0.991	48.09	3.455	43	44	46	48	51	52	53

```
lowest : 41 42 43 44 45, highest: 50 51 52 53 54
```

Value	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Frequency	26	574	1522	2095	2311	2707	3040	3017	3095	2718	2765	2722	1935	7
Proportion	0.001	0.020	0.053	0.073	0.081	0.095	0.107	0.106	0.108	0.095	0.097	0.095	0.068	0.000

---

age : age in current year Format:%8.0g

n	missing	distinct	Info	Mean	Gmd	.05	.10	.25	.50	.75	.90	.95
28510	24	33	0.998	29.05	7.682	19	21	23	28	34	38	41

```
lowest : 14 15 16 17 18, highest: 42 43 44 45 46
```

---

race : 1=white, 2=black, 3=other Format:%8.0g

n	missing	distinct	Info	Mean	Gmd
28534	0	3	0.624	1.303	0.4351

Value	1	2	3
Frequency	20180	8051	303
Proportion	0.707	0.282	0.011

---

msp : 1 if married, spouse present Format:%8.0g

n	missing	distinct	Info	Sum	Mean	Gmd
28518	16	2	0.718	17194	0.6029	0.4788

---

nev_mar : 1 if never yet married Format:%8.0g

n	missing	distinct	Info	Sum	Mean	Gmd
28518	16	2	0.531	6550	0.2297	0.3539

---

grade : current grade completed Format:%8.0g

n	missing	distinct	Info	Mean	Gmd	.05	.10	.25	.50	.75	.90	.95
28532	2	19	0.874	12.53	2.374	9	10	12	12	14	16	17

```
lowest :  0  1  2  3  4, highest: 14 15 16 17 18

Value          0     1     2     3     4     5     6     7     8     9    10    11    12    13
Frequency     21     6     4     2    36    41   161   262   671   889  1518  1781 14252  1734
Proportion 0.001 0.000 0.000 0.000 0.001 0.001 0.006 0.009 0.024 0.031 0.053 0.062 0.500 0.061

Value         14    15    16    17    18
Frequency   1751   950  2681   851   921
Proportion 0.061 0.033 0.094 0.030 0.032
```

---

collgrad : 1 if college graduate Format:%8.0g

n	missing	distinct	Info	Sum	Mean	Gmd
28534	0	2	0.419	4795	0.168	0.2796

---

not_smsa : 1 if not SMSA Format:%8.0g

n	missing	distinct	Info	Sum	Mean	Gmd
28526	8	2	0.608	8057	0.2824	0.4054

---

c_city : 1 if central city Format:%8.0g

n	missing	distinct	Info	Sum	Mean	Gmd
28526	8	2	0.689	10190	0.3572	0.4592

---

south : 1 if south Format:%8.0g

n	missing	distinct	Info	Sum	Mean	Gmd
28526	8	2	0.725	11683	0.4096	0.4837

---

ind_code : industry of employment Format:%8.0g

n	missing	distinct	Info	Mean	Gmd	.05	.10	.25	.50	.75	.90	.95
28193	341	12	0.957	7.693	3.355	4	4	5	7	11	11	12

```
lowest :  1  2  3  4  5, highest:  8  9 10 11 12

Value          1     2     3     4     5     6     7     8     9    10    11    12
Frequency    241    52   252  5845  1420  4952  2427   849  1712   215  8480  1748
Proportion 0.009 0.002 0.009 0.207 0.050 0.176 0.086 0.030 0.061 0.008 0.301 0.062
```

---

occ_code : occupation Format:%8.0g

n	missing	distinct	Info	Mean	Gmd	.05	.10	.25	.50	.75	.90	.95
28413	121	13	0.934	4.778	3.225	1	1	3	3	6	8	13

```
lowest :  1  2  3  4  5, highest:  9 10 11 12 13

Value          1     2     3     4     5     6     7     8     9    10    11    12    13
Frequency   3008  1494 10974  1323   438  4309   571  4300     6   144   194     7  1645
Proportion 0.106 0.053 0.386 0.047 0.015 0.152 0.020 0.151 0.000 0.005 0.007 0.000 0.058
```

---

union : 1 if union Format:%8.0g

n	missing	distinct	Info	Sum	Mean	Gmd
19238	9296	2	0.538	4510	0.2344	0.359

---

wks_ue : weeks unemployed last year Format:%8.0g

n	missing	distinct	Info	Mean	Gmd	.05	.10	.25	.50	.75	.90	.95
22830	5704	61	0.558	2.548	4.537	0	0	0	0	0	8	17

```
lowest :  0  1  2  3  4, highest: 56 62 73 75 76
```

---

ttl_exp : total work experience Format:%9.0g

```
      n  missing distinct     Info     Mean      Gmd      .05      .10      .25      .50
  28534        0     4744        1    6.215    5.147   0.6667   1.0385   2.4615   5.0577
    .75      .90      .95
 9.1282  13.2801  15.3269

lowest :  0.00000000  0.01923077  0.03846154  0.05769231  0.05769231
highest: 26.53846169 26.84615135 27.19230461 27.46153831 28.88461494
```

---

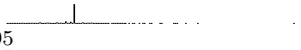
tenure : job tenure, in years Format:%9.0g

```
      n  missing distinct     Info     Mean      Gmd      .05      .10      .25      .50
  28101      433      270        1    3.124    3.638  0.08333  0.16667  0.50000  1.66667
    .75      .90      .95
4.16667  8.41667 11.41667

lowest :  0.00000000  0.08333334  0.16666667  0.25000000  0.33333334
highest: 23.08333397 23.33333397 24.50000000 24.75000000 25.91666603
```

---

hours : usual hours worked Format:%8.0g



n	missing	distinct	Info	Mean	Gmd	.05	.10	.25	.50	.75	.90	.95
28467	67	85	0.842	36.56	9.175	15	20	35	40	40	44	48

```
lowest :   1   2   3   4   5, highest:  99 100 105 112 168
```

---

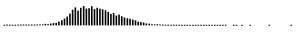
wks_work : weeks worked last year Format:%8.0g

n	missing	distinct	Info	Mean	Gmd	.05	.10	.25	.50	.75	.90	.95
27831	703	105	0.996	53.99	32.48	6	14	36	52	72	98	104

```
lowest :   0   1   2   3   4, highest: 100 101 102 103 104
```

---

ln_wage : ln(wage/GNP deflator) Format:%9.0g



n	missing	distinct	Info	Mean	Gmd	.05	.10	.25	.50	.75	.90	.95
28534	0	8173	1	1.675	0.5237	0.9928	1.1661	1.3615	1.6405	1.9641	2.2757	2.4562

```
lowest : 0.000000000 0.004487075 0.004939650 0.008032188 0.017654561
highest: 4.349081993 4.349225998 4.499809742 4.828313828 5.263916016
```

2.2 Normality Test of Numerical Variables

2.2.1 Statistics and Visualization of (Sample) Data

idcode

* normality test : Shapiro-Wilk normality test
- statistic : 0.9545, p-value : 7.00376E-37

Table 2.1: skewness and kurtosis : idcode

type	skewness	kurtosis
original	0.0211	1.8027
log transformation	-2.0141	8.8438
sqrt transformation	-0.5553	2.3932

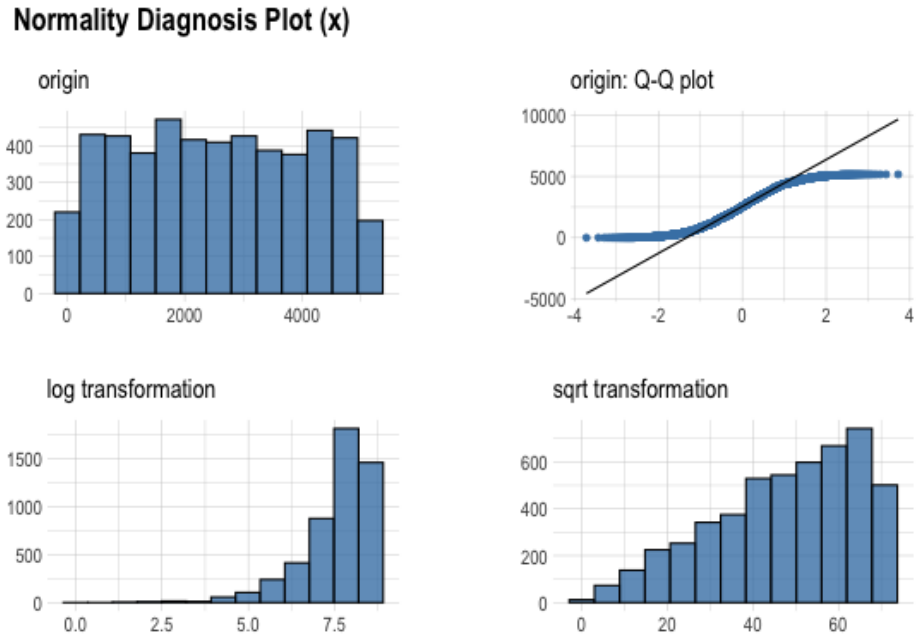


Figure 2.1: idcode

year

* normality test : Shapiro-Wilk normality test
- statistic : 0.92956, p-value : 1.69937E-43

Table 2.2: skewness and kurtosis : year

type	skewness	kurtosis
original	0.0861	1.6811
log transformation	0.0028	1.6772
sqrt transformation	0.0445	1.6772

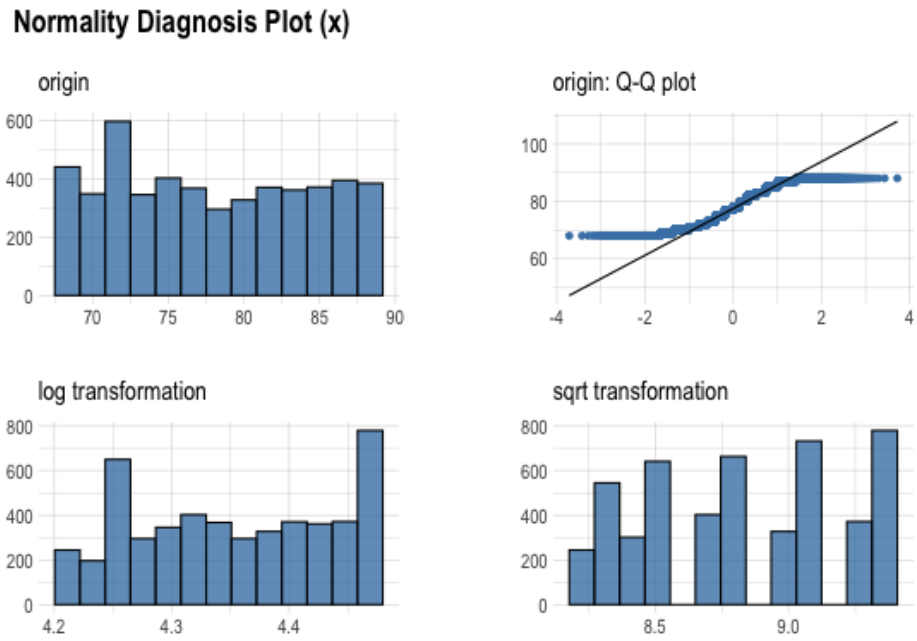


Figure 2.2: year

birth_yr

* normality test : Shapiro-Wilk normality test
- statistic : 0.96138, p-value : 1.50839E-34

Table 2.3: skewness and kurtosis : birth_yr

type	skewness	kurtosis
original	-0.1355	2.0386
log transformation	-0.2335	2.0971
sqrt transformation	-0.1843	2.0649

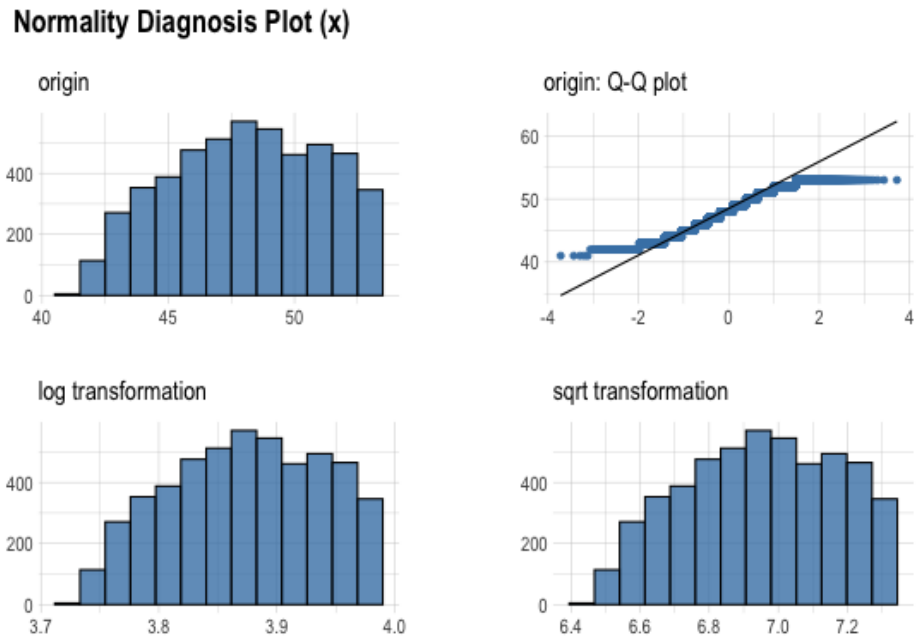


Figure 2.3: birth_yr

age

* normality test : Shapiro-Wilk normality test
- statistic : 0.96678, p-value : 1.79236E-32

Table 2.4: skewness and kurtosis : age

type	skewness	kurtosis
original	0.2967	2.1119
log transformation	-0.0580	2.0289
sqrt transformation	0.1207	2.0286

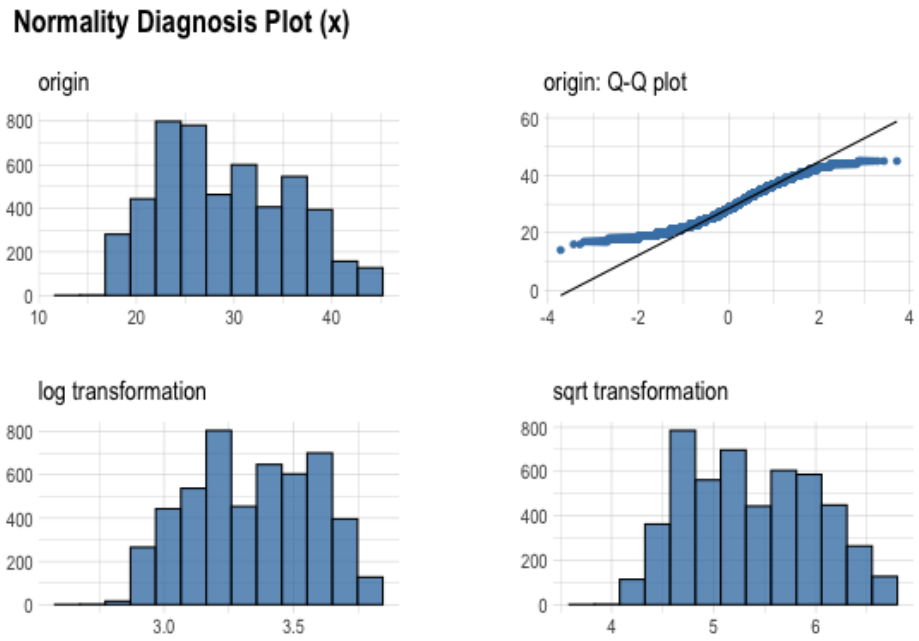


Figure 2.4: age

race

* normality test : Shapiro-Wilk normality test
- statistic : 0.59315, p-value : 9.36997E-76

Table 2.5: skewness and kurtosis : race

type	skewness	kurtosis
original	1.1037	2.8206
log transformation	0.9673	2.0860
sqrt transformation	1.0167	2.3362

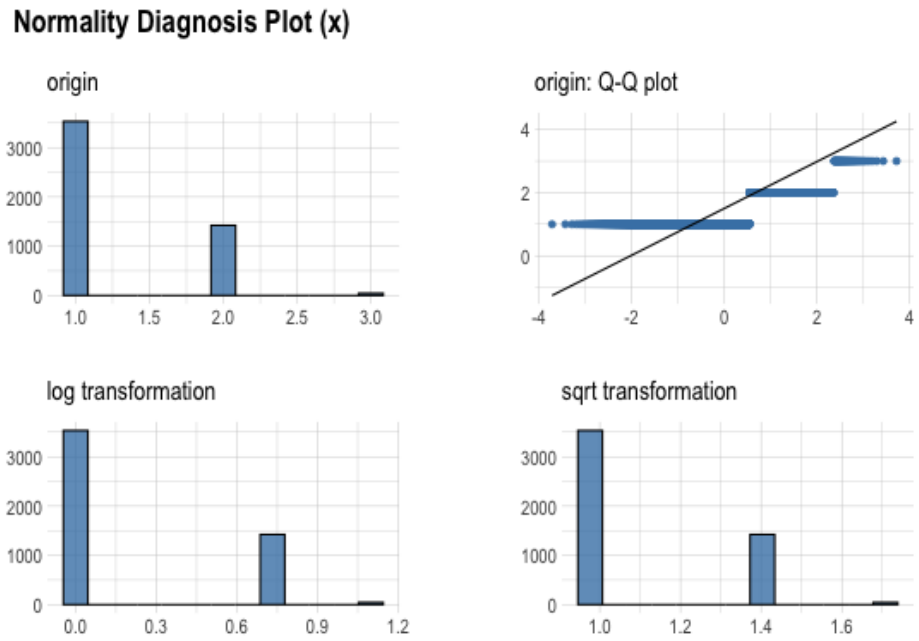


Figure 2.5: race

msp

* normality test : Shapiro-Wilk normality test
- statistic : 0.62268, p-value : 3.51767E-74

Table 2.6: skewness and kurtosis : msp

type	skewness	kurtosis
original	-0.3972	1.1578
log+1 transformation	-0.3972	1.1578
sqrt transformation	-0.3972	1.1578

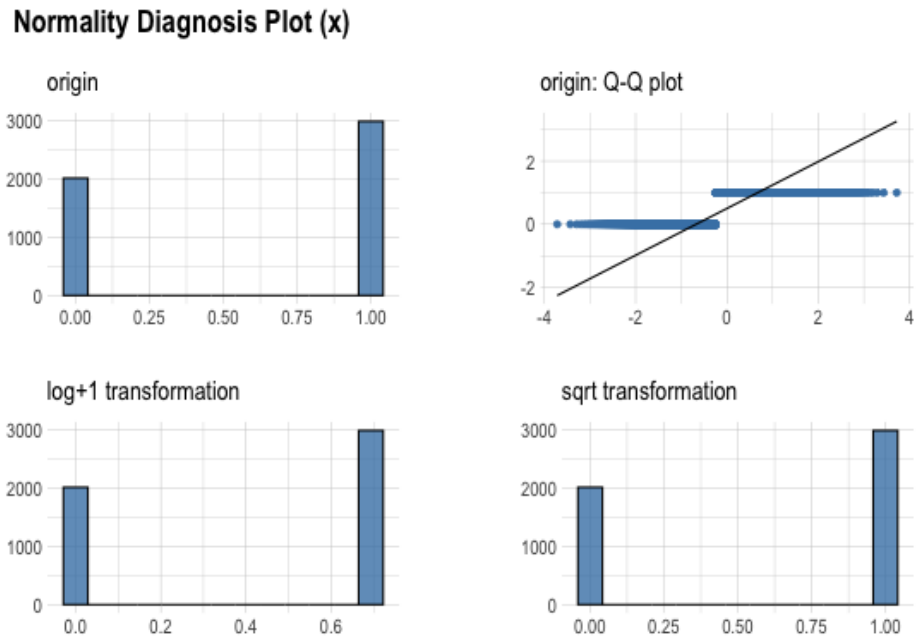


Figure 2.6: msp

nev_mar

* normality test : Shapiro-Wilk normality test
- statistic : 0.52268, p-value : 3.78214E-79

Table 2.7: skewness and kurtosis : nev_mar

type	skewness	kurtosis
original	1.2685	2.6091
log+1 transformation	1.2685	2.6091
sqrt transformation	1.2685	2.6091

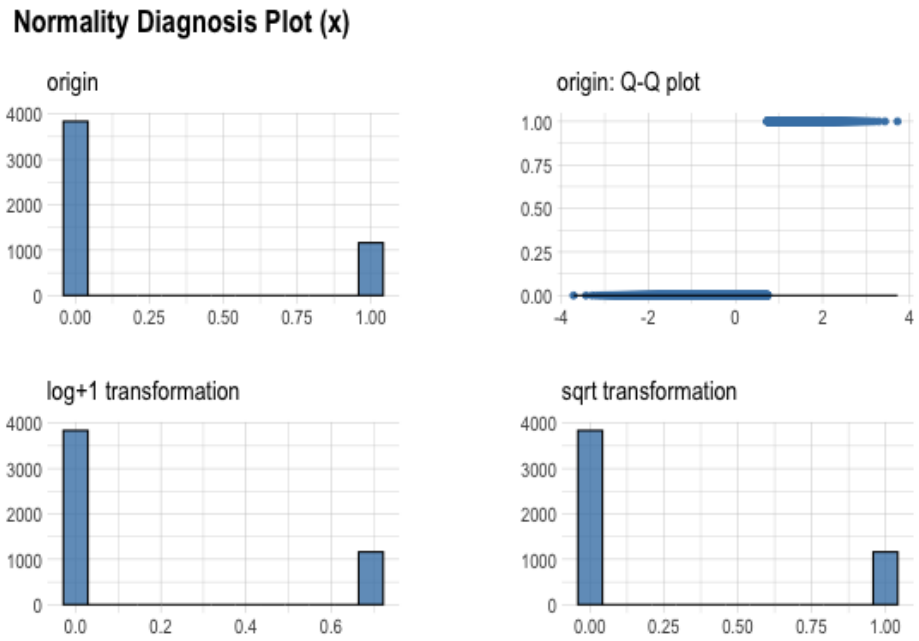


Figure 2.7: nev_mar

grade

* normality test : Shapiro-Wilk normality test
- statistic : 0.88698, p-value : 2.7212E-51

Table 2.8: skewness and kurtosis : grade

type	skewness	kurtosis
original	0.0359	4.6296
log+1 transformation	-3.3136	40.1782
sqrt transformation	-1.4510	16.2916

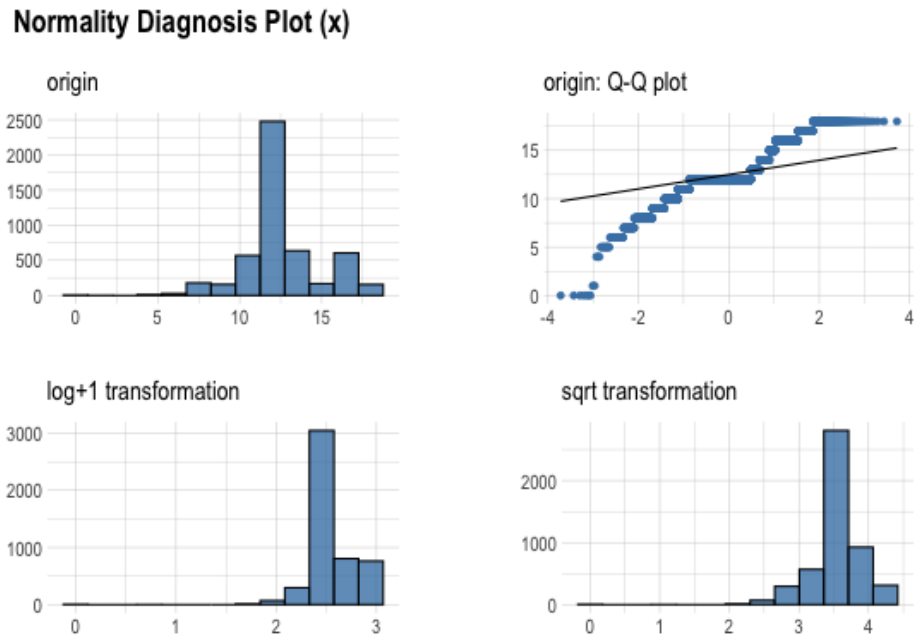


Figure 2.8: grade

collgrad

* normality test : Shapiro-Wilk normality test
- statistic : 0.45329, p-value : 4.30968E-82

Table 2.9: skewness and kurtosis : collgrad

type	skewness	kurtosis
original	1.7608	4.1005
log+1 transformation	1.7608	4.1005
sqrt transformation	1.7608	4.1005

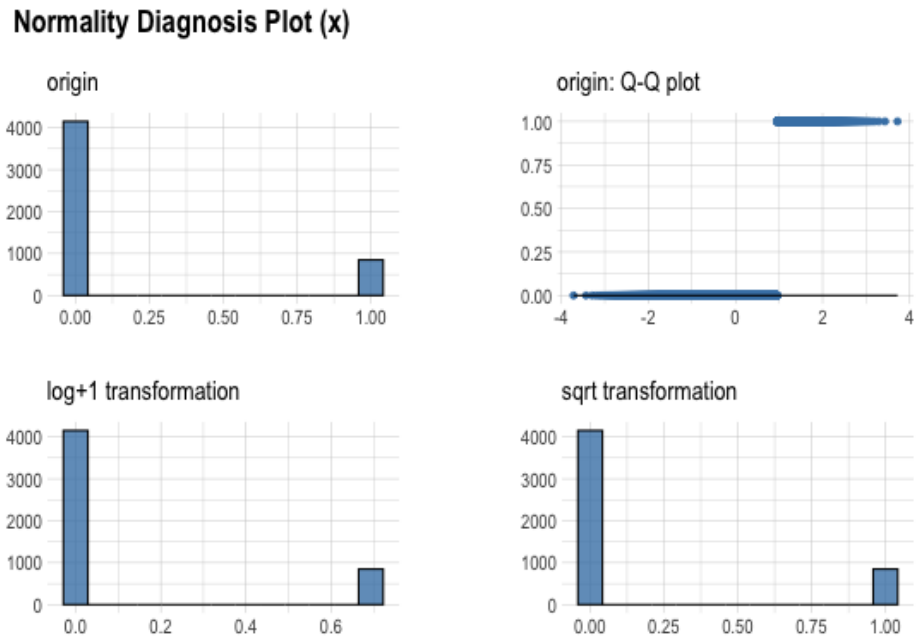


Figure 2.9: collgrad

not_smsa

* normality test : Shapiro-Wilk normality test
- statistic : 0.55931, p-value : 1.92108E-77

Table 2.10: skewness and kurtosis : not_smsa

type	skewness	kurtosis
original	1.0011	2.0022
log+1 transformation	1.0011	2.0022
sqrt transformation	1.0011	2.0022

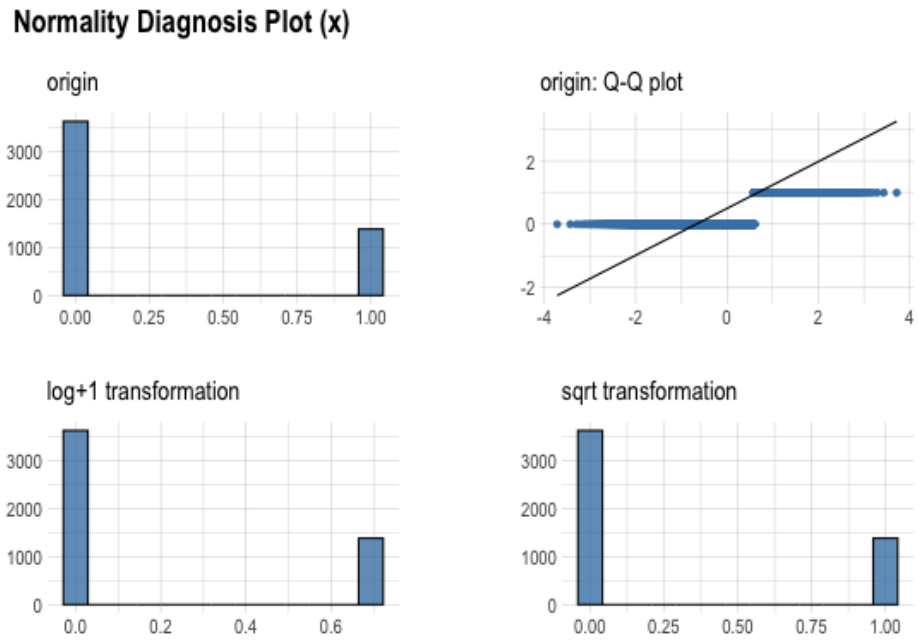


Figure 2.10: not_smsa

c_city

* normality test : Shapiro-Wilk normality test
- statistic : 0.60315, p-value : 3.11413E-75

Table 2.11: skewness and kurtosis : c_city

type	skewness	kurtosis
original	0.628	1.3944
log+1 transformation	0.628	1.3944
sqrt transformation	0.628	1.3944

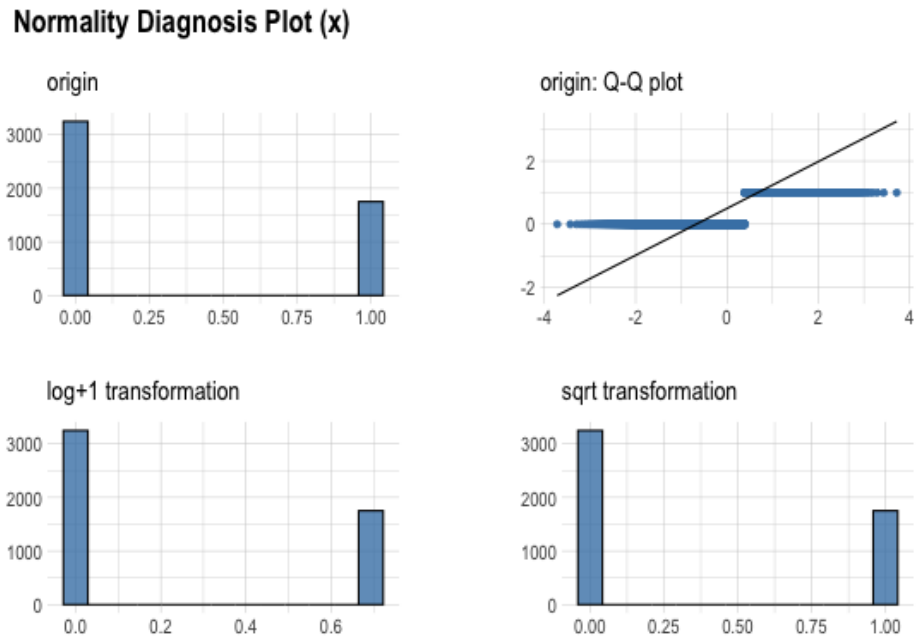


Figure 2.11: c_city

south

* normality test : Shapiro-Wilk normality test
- statistic : 0.62046, p-value : 2.65418E-74

Table 2.12: skewness and kurtosis : south

type	skewness	kurtosis
original	0.4287	1.1838
log+1 transformation	0.4287	1.1838
sqrt transformation	0.4287	1.1838

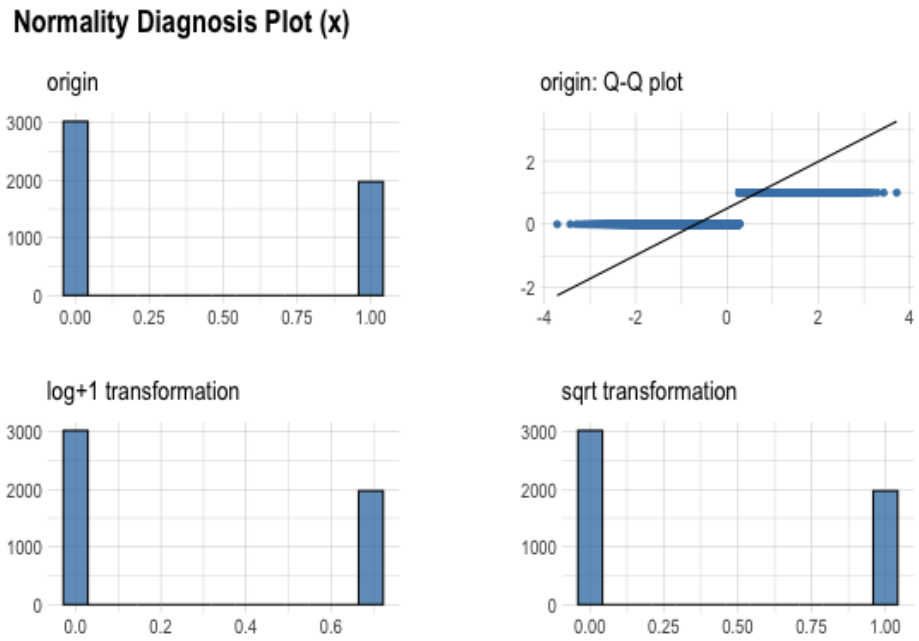


Figure 2.12: south

ind_code

* normality test : Shapiro-Wilk normality test
- statistic : 0.87059, p-value : 1.20015E-53

Table 2.13: skewness and kurtosis : ind_code

type	skewness	kurtosis
original	0.0115	1.5383
log transformation	-0.8029	4.1750
sqrt transformation	-0.2467	2.0111

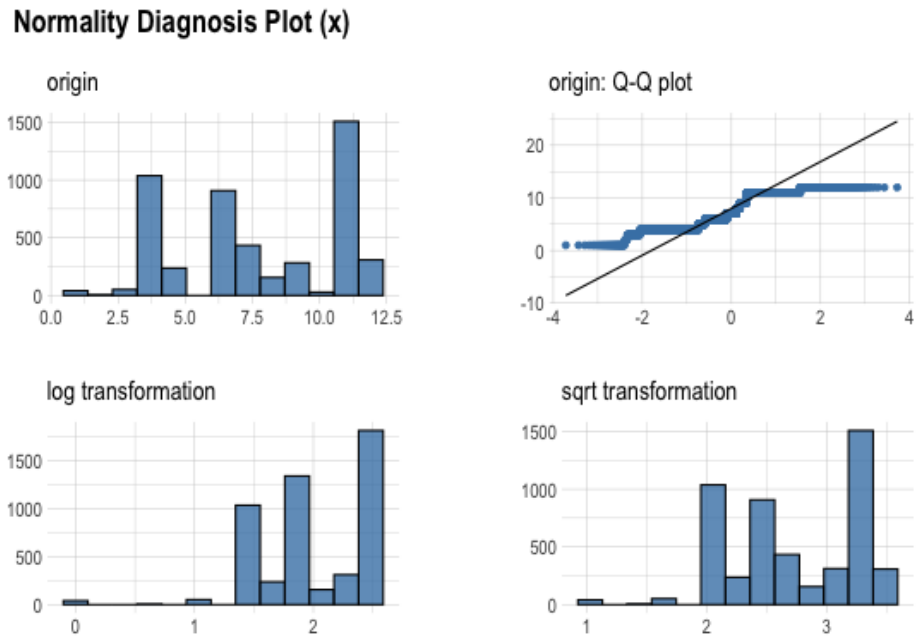


Figure 2.13: ind_code

occ_code

* normality test : Shapiro-Wilk normality test
- statistic : 0.85265, p-value : 5.89244E-56

Table 2.14: skewness and kurtosis : occ_code

type	skewness	kurtosis
original	1.0755	3.6496
log transformation	-0.3125	2.7051
sqrt transformation	0.4398	2.6299

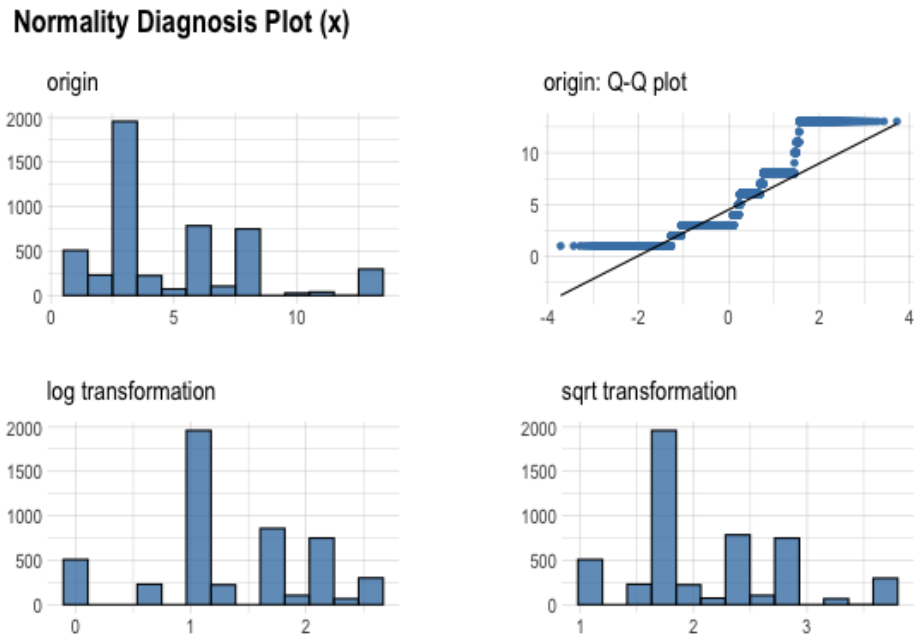


Figure 2.14: occ_code

union

* normality test : Shapiro-Wilk normality test
- statistic : 0.52638, p-value : 5.5578E-79

Table 2.15: skewness and kurtosis : union

type	skewness	kurtosis
original	1.2422	2.5429
log+1 transformation	1.2422	2.5429
sqrt transformation	1.2422	2.5429

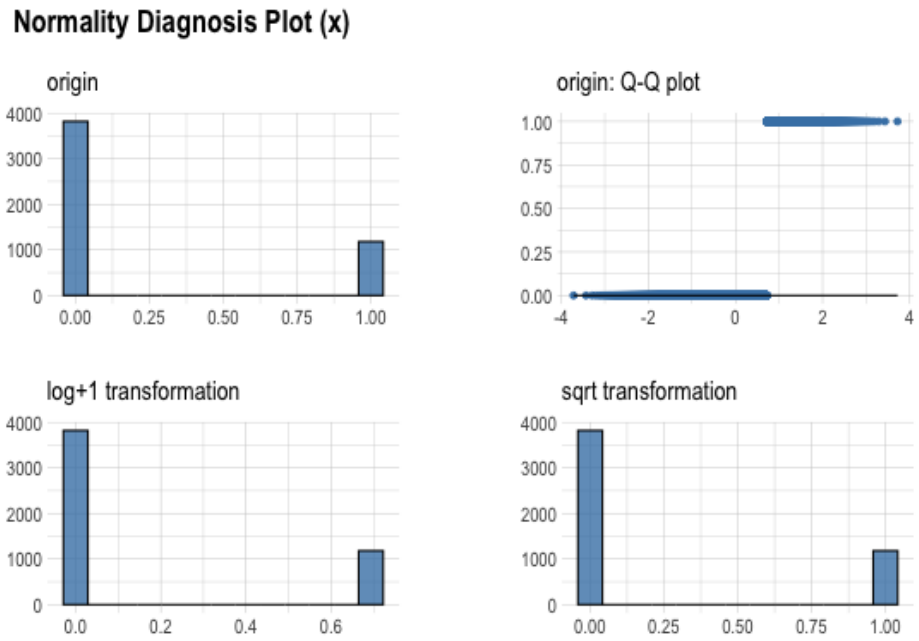


Figure 2.15: union

wks_ue

* normality test : Shapiro-Wilk normality test
- statistic : 0.39166, p-value : 1.90242E-84

Table 2.16: skewness and kurtosis : wks_ue

type	skewness	kurtosis
original	4.1024	21.8688
log+1 transformation	2.0073	5.8579
sqrt transformation	2.4163	8.4302

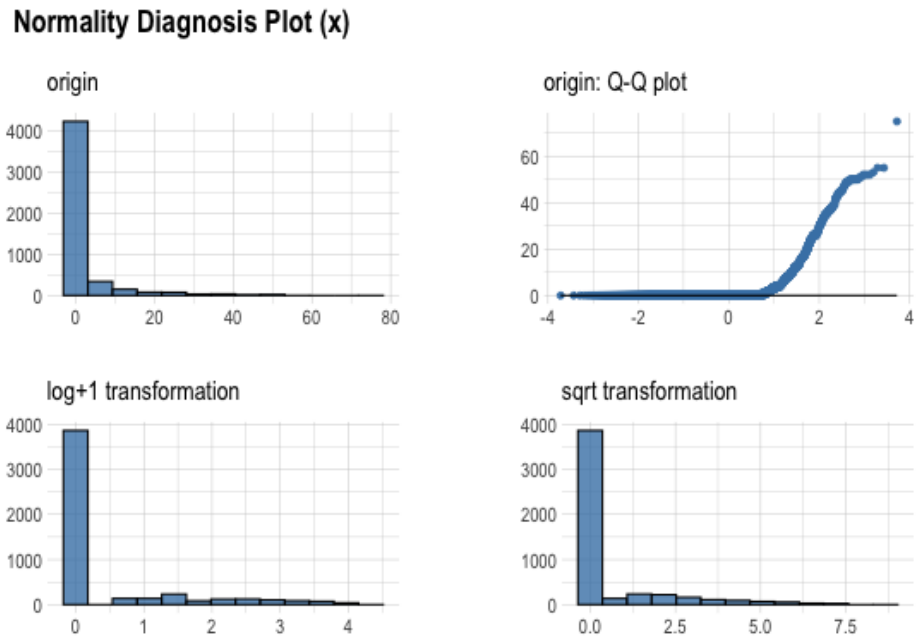


Figure 2.16: wks_ue

ttl_exp

* normality test : Shapiro-Wilk normality test
- statistic : 0.93107, p-value : 3.72259E-43

Table 2.17: skewness and kurtosis : ttl_exp

type	skewness	kurtosis
original	0.7856	2.8590
log+1 transformation	-0.3351	2.2957
sqrt transformation	0.0862	2.2235

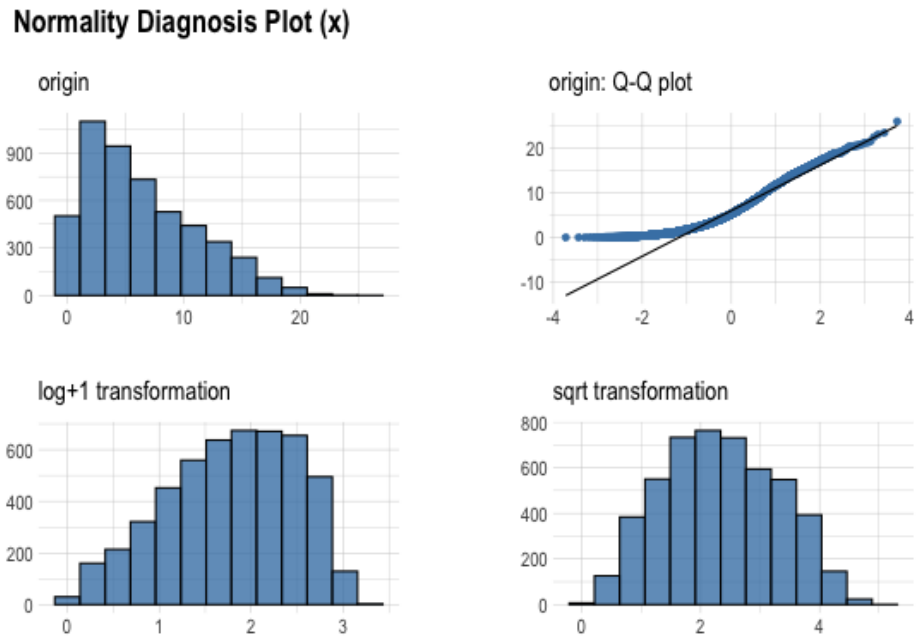


Figure 2.17: ttl_exp

tenure

* normality test : Shapiro-Wilk normality test
- statistic : 0.77264, p-value : 4.90602E-64

Table 2.18: skewness and kurtosis : tenure

type	skewness	kurtosis
original	1.9095	6.7989
log+1 transformation	0.4753	2.2737
sqrt transformation	0.7454	3.0457

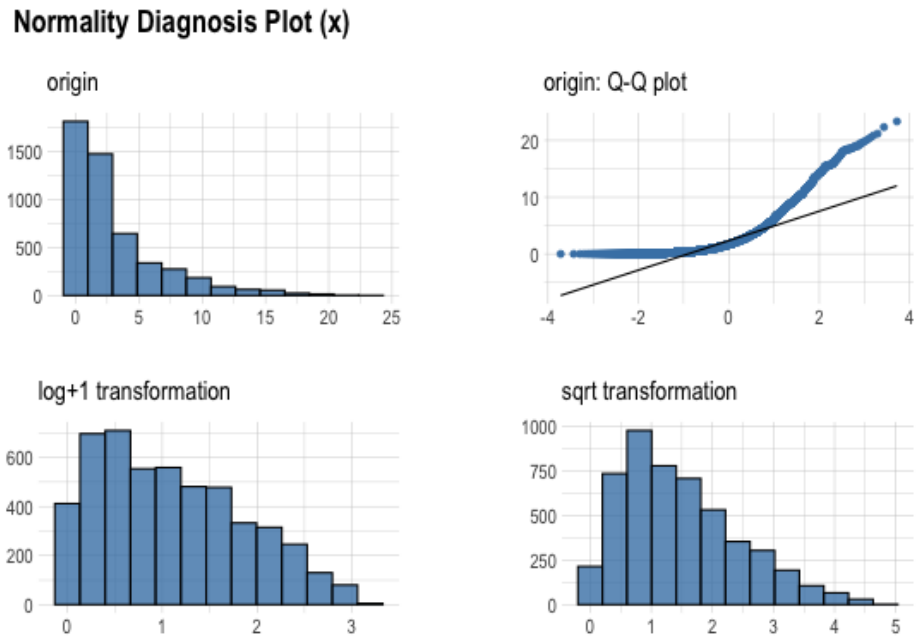


Figure 2.18: tenure

hours

* normality test : Shapiro-Wilk normality test
- statistic : 0.78429, p-value : 5.02255E-63

Table 2.19: skewness and kurtosis : hours

type	skewness	kurtosis
original	-1.1004	5.9984
log transformation	-3.1512	16.0274
sqrt transformation	-1.9624	7.9324

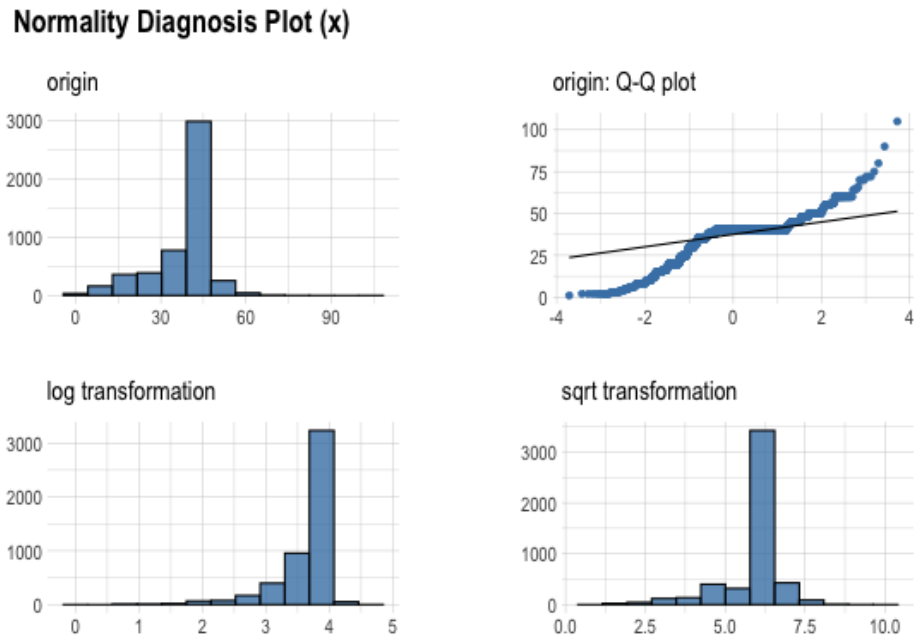


Figure 2.19: hours

wks_work

* normality test : Shapiro-Wilk normality test
- statistic : 0.93662, p-value : 7.59964E-42

Table 2.20: skewness and kurtosis : wks_work

type	skewness	kurtosis
original	0.1480	2.2816
log+1 transformation	-2.1178	8.1617
sqrt transformation	-0.8181	3.5927

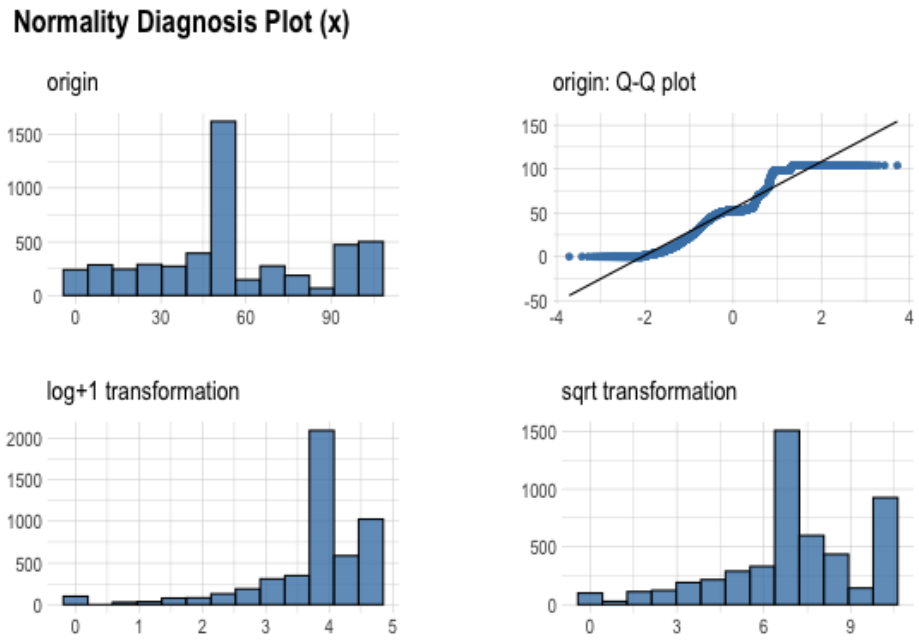


Figure 2.20: wks_work

ln_wage

* normality test : Shapiro-Wilk normality test
- statistic : 0.979, p-value : 1.43545E-26

Table 2.21: skewness and kurtosis : ln_wage

type	skewness	kurtosis
original	0.3335	4.6917
log transformation	-4.3874	44.4624
sqrt transformation	-0.8163	7.2028

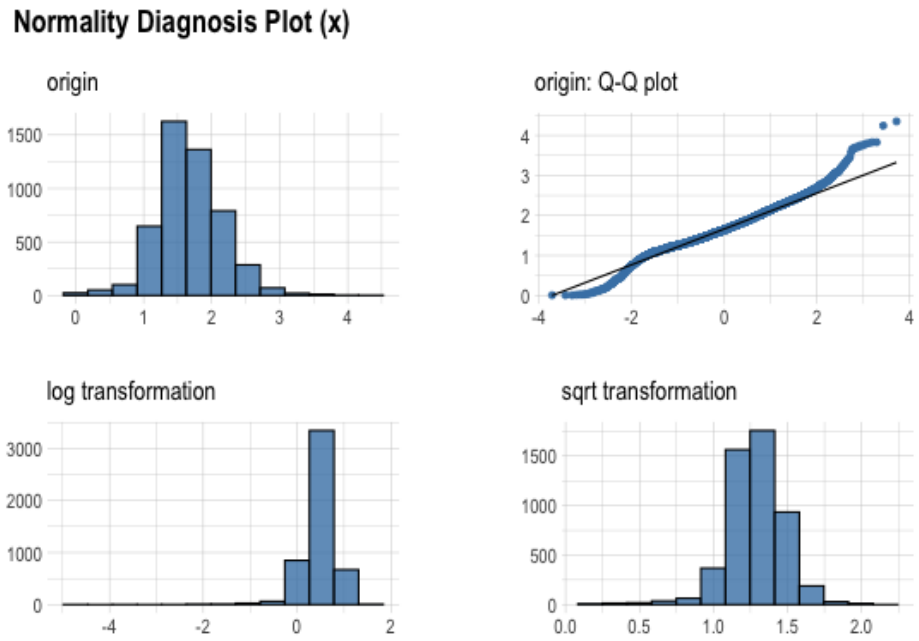


Figure 2.21: ln_wage

Chapter 3

Relationship Between Variables

3.1 Correlation Coefficient

3.1.1 Correlation Coefficient by Variable Combination

Table 3.1: The correlation coefficients (0.5 or more)

Variable1	Variable2	Correlation Coefficient
age	year	0.895
ttl_exp	year	0.777
collgrad	grade	0.757
ttl_exp	age	0.756
tenure	ttl_exp	0.674
nev_mar	msp	-0.673
wks_work	ttl_exp	0.630
wks_work	year	0.565
wks_work	age	0.525

3.1.2 Correlation Plot of Numerical Variables

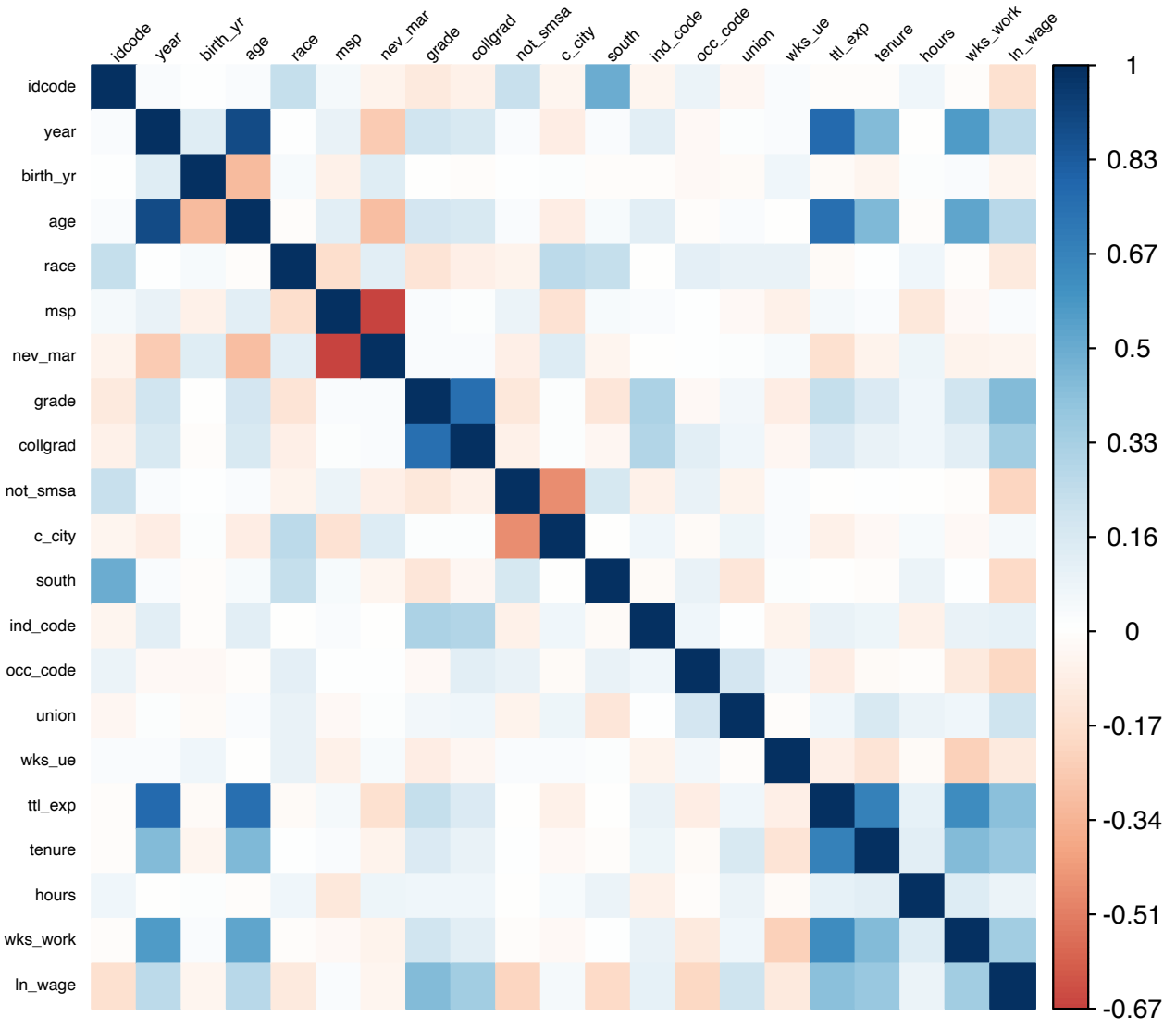


Figure 3.1: The correlation coefficient of numerical variables

Chapter 4

Target based Analysis

4.1 Grouped Descriptive Statistics

4.1.1 Grouped Numerical Variables

There is no target variable.

4.1.2 Grouped Categorical Variables

There is no target variable.

4.2 Grouped Relationship Between Variables

4.2.1 Grouped Correlation Coefficient

There is no target variable.

4.2.2 Grouped Correlation Plot of Numerical Variables

There is no target variable.