지역사회 인구비율특성이 음주운전 사고에 미치는 영향

#서울시를 중심으로

3팀
박미림 배성은 신윤혜 유수현

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01
연구배경 및 필요성

“음주운전에 대한 사회적 경제적 피해 심각”

- 지속적인 단속과 함께 음주운전의 위험성에 대한 인식을 높여 보다 안전한 운전 문화 조성이 필요

02

선행 연구 조사

보고서명 정영실. (2004). 음주운전의 실태에 관한 연구 [A Study on Drink Driving]. 한국형사정책연구원.

연구내용 자가운전자를 대상으로 하여 음주운전의 실태에 대해 파악

향을 미치는 요인에 대하여 알아 보았다. 음주운전에 영향을 미칠 수 있는 요인들을 크게 사회인구학적 특성, 운전특성, 음주특성, 일반 심리적 특성, 음주운전에 대한 태도, 억제요인, 음주운전 접촉정도로 구분하여 각각이 음주운전에 미치는 영향을 파악해 보았다. 여기서의 회귀분석을 통하여 각 특성이 음주운전에 미치는 영향을 파악해 보고, 앞에서 구분한 특성들이 음주운전에 미치는 상대적 영향력을 살펴 보고자 한다. 그리고 나서 이러한 요인들을 통합해서 전체 변수들이 음주운전에 미치는 영향을 알아 보

연구결과

았다. 먼저 모형1은 조사대상자의 사회인구학적 특성이 음주운전에 미치는 영향을 분석한 것이다. 모형1의 설명력은 6%였으며, 성별, 가구월소득이 음주운전에 유의미한 영향을 미치는 것으로 나타났다. 즉 여성보다는 남성이, 가구월소득이 높을수록 음주운전을 많이 하는 것이다. 두 변수 중에서

<표4-24> 사회인구학적 특성별 음주운전 법적 처벌 필요성에 대한 의견

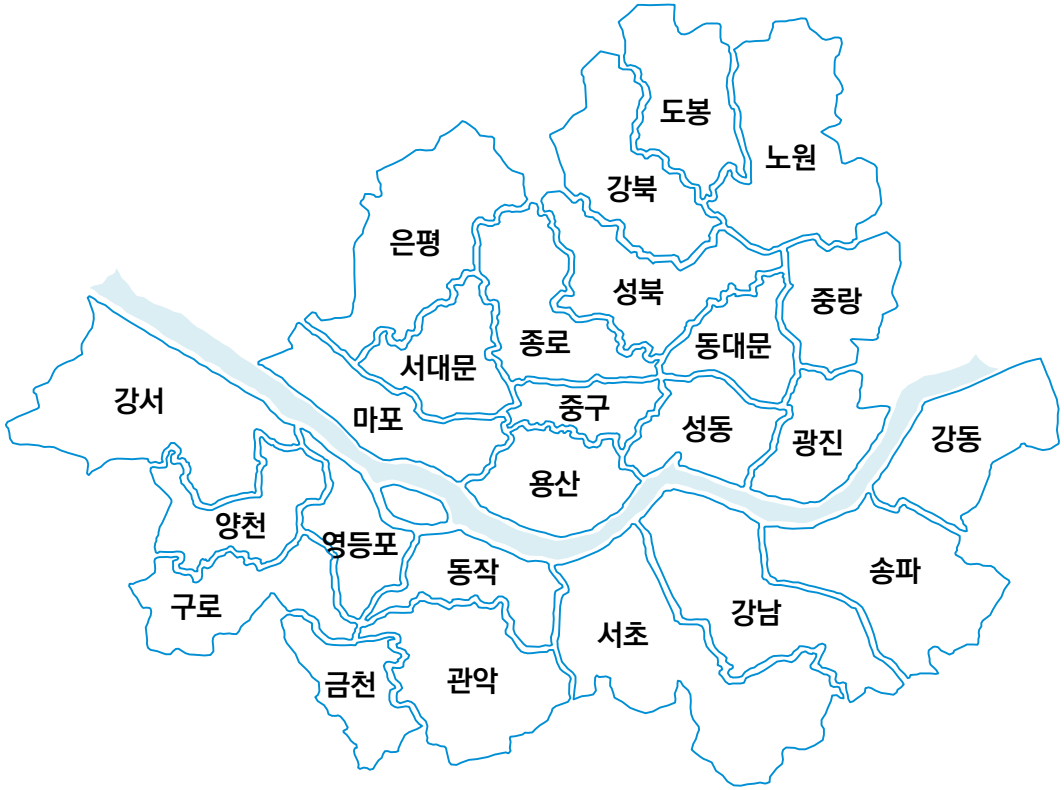
	법적 처벌 필요	법적 처벌 불필요	계	X^2
성별				.06
남자	603(85.8)	100(14.2)	703(100.0)	
여자	259(85.2)	45(14.8)	304(100.0)	
연령				.10
20대	125(86.2)	20(13.8)	145(100.0)	
30대	300(85.5)	51(14.5)	351(100.0)	
40대	289(85.8)	48(14.2)	337(100.0)	
50대이상	148(85.1)	26(14.9)	174(100.0)	
교육수준				.00
고졸이하	353(85.7)	59(14.3)	412(100.0)	
대졸이상	508(85.7)	85(14.3)	593(100.0)	
직업				5.79
전문/기술직	60(88.2)	8(11.8)	68(100.0)	
행정/관리직	43(84.3)	8(15.7)	51(100.0)	
사무직	294(88.6)	38(11.4)	332(100.0)	
판매/서비스직	275(84.9)	49(15.1)	324(100.0)	
생산직	58(85.3)	10(14.7)	68(100.0)	
미취업	127(80.9)	30(19.1)	157(100.0)	
본인월소득				14.62**
소득없음	104(77.6)	30(22.4)	134(100.0)	
100만원이하	69(90.8)	7(9.2)	76(100.0)	
200만원이하	306(89.7)	35(10.3)	341(100.0)	
300만원이하	250(85.3)	43(14.7)	293(100.0)	
301만원이상	128(82.6)	27(17.4)	155(100.0)	

** p<0.01.

03
연구목적

서울시의 사회인구적 특성을 파악하여 지역별 음주운전 분석

서울특별시 25개 구



사회인구적 특성

인구

일자리

노동

04
데이터 소개

변수 정의

독립변수

종속변수

2011~2021 : 11년치의 25개 지역구별 데이터셋 (공통 시계열 데이터)

사회인구학

독립변수	변수명	설명	데이터 출처
성비	GENDER_RATE	남성인구/ 여성인구	국가통계포털
고령인율	ELDERLY_RATE	65세이상인구수 / 전체인구수	
외국인율	FOREIGNER_RATE	외국인인구수 / 전체인구수	
혼인율	MARRIAGE_RATE	혼인인구수 / 전체인구수	
이혼율	DIVORCE_RATE	이혼인구수 / 전체인구수	

고용

독립변수	변수명	설명	데이터 출처
이직률	JOB_SWITCHING_RATE	이직자수/ 전체종사자	고용노동통계
입직률	JOB_ENTRY_RATE	입직자수/ 전체종사자	

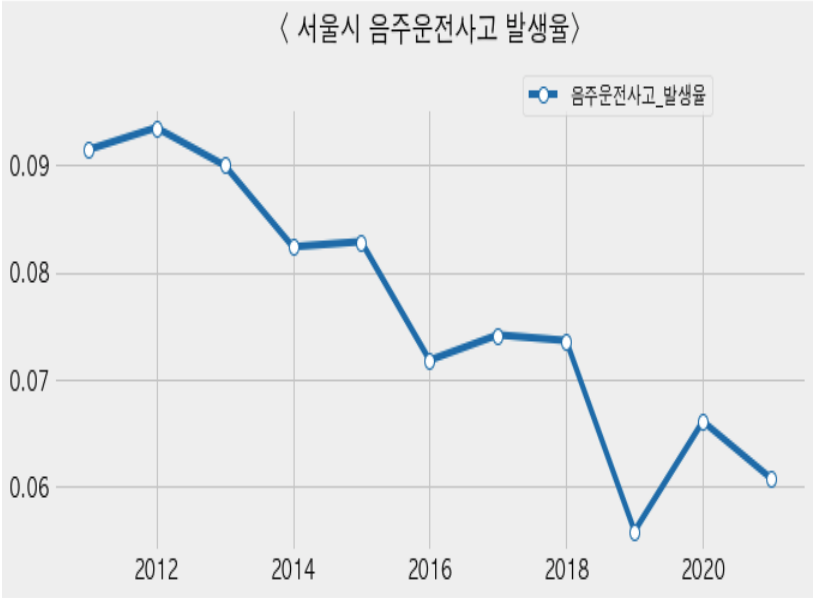
서울특별시 구별 음주사고비율

A	B	D
SGG	DATE	음주사고발생률(건)
서울특별시	2015	0.08287531501
종로구	2015	0.04809052334
중구	2015	0.04260089686
용산구	2015	0.08905013193
성동구	2015	0.0717196414
광진구	2015	0.1198380567
동대문구	2015	0.06858513189
중랑구	2015	0.05458768873
성북구	2015	0.06011904762

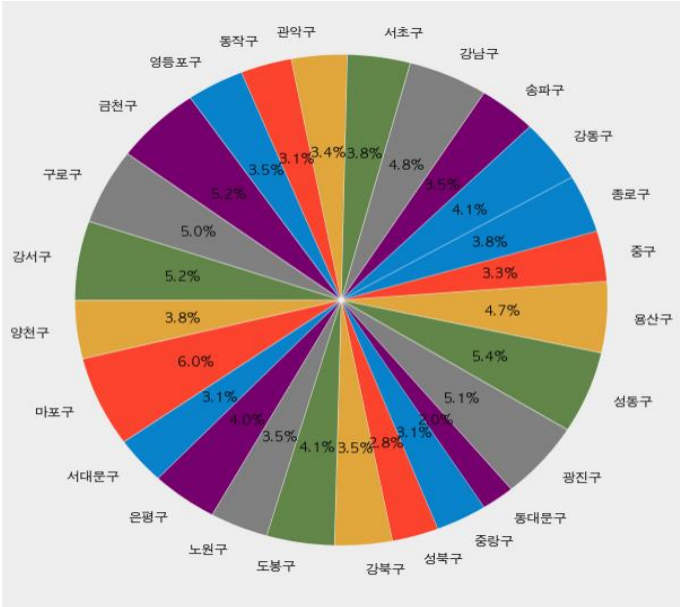
데이터 출처: 국가통계포털

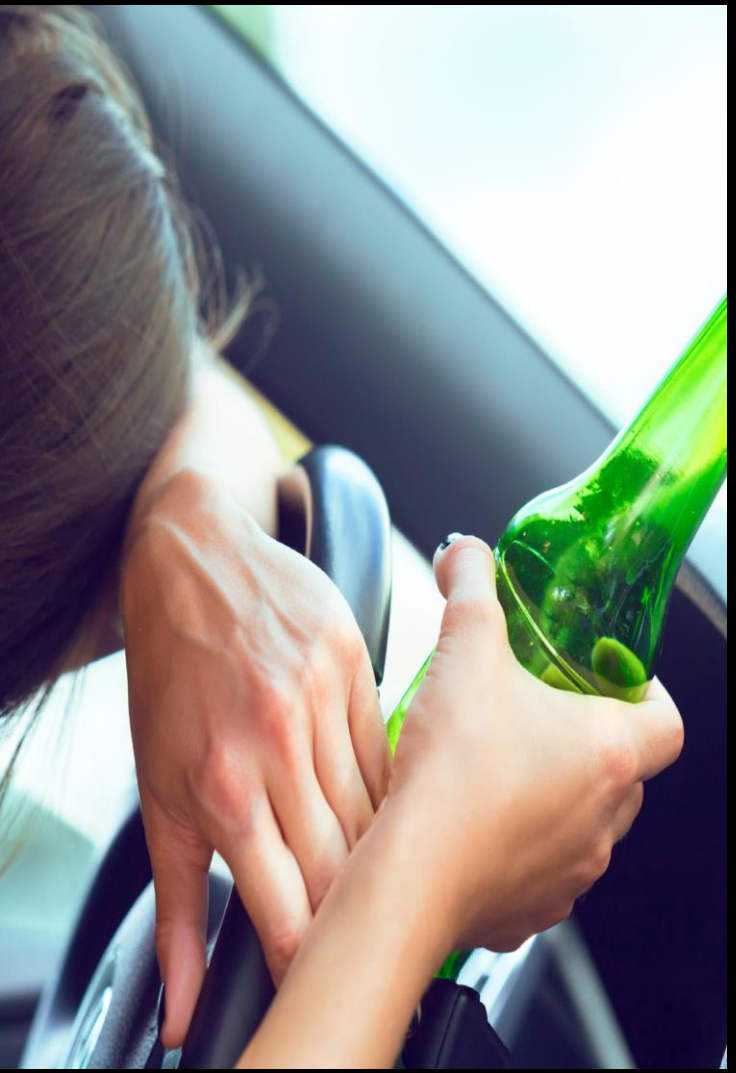
분석데이터 Summary

서울시 음주운전사고 발생율



서울시 사고 유형별 음주 교통사고 발생 비율





05
데이터 분석

데이터 분석 과정

1. 독립변수 분석

2. 회귀 분석

다중공선성 확인

강한 상관 관계

```
Variables Excluded: FOREIGNER_RATE, ELDERLY_RATE, JOB_SWITCHING_RATE, JOB_ENTRY_RATE, MARRIAGE_RATE, DIVORCE_RATE
    FOREIGNER_RATE       ELDERLY_RATE JOB_SWITCHING_RATE     JOB_ENTRY_RATE      MARRIAGE_RATE       DIVORCE_RATE
          1.064904           1.058947           3.934237           3.927705         118.073584         118.423300

Variables Excluded: GENDER_RATE, ELDERLY_RATE, JOB_SWITCHING_RATE, JOB_ENTRY_RATE, MARRIAGE_RATE, DIVORCE_RATE
       GENDER_RATE       ELDERLY_RATE JOB_SWITCHING_RATE     JOB_ENTRY_RATE      MARRIAGE_RATE       DIVORCE_RATE
          1.086631           1.107970           3.935968           3.890805         118.980465         119.341352

Variables Excluded: GENDER_RATE, FOREIGNER_RATE, JOB_SWITCHING_RATE, JOB_ENTRY_RATE, MARRIAGE_RATE, DIVORCE_RATE
       GENDER_RATE     FOREIGNER_RATE JOB_SWITCHING_RATE     JOB_ENTRY_RATE      MARRIAGE_RATE       DIVORCE_RATE
          1.428570           1.464819           3.935215           3.958943         119.515683         119.899892

Variables Excluded: GENDER_RATE, FOREIGNER_RATE, ELDERLY_RATE, JOB_ENTRY_RATE, MARRIAGE_RATE, DIVORCE_RATE
   GENDER_RATE FOREIGNER_RATE   ELDERLY_RATE JOB_ENTRY_RATE  MARRIAGE_RATE   DIVORCE_RATE
      1.607560       1.576111       1.191922       1.173451     118.336267     118.643664

Variables Excluded: GENDER_RATE, FOREIGNER_RATE, ELDERLY_RATE, JOB_SWITCHING_RATE, MARRIAGE_RATE, DIVORCE_RATE
       GENDER_RATE     FOREIGNER_RATE       ELDERLY_RATE JOB_SWITCHING_RATE      MARRIAGE_RATE       DIVORCE_RATE
          1.595039           1.548462           1.191748           1.166247         119.623940         120.049025

Variables Excluded: GENDER_RATE, FOREIGNER_RATE, ELDERLY_RATE, JOB_SWITCHING_RATE, JOB_ENTRY_RATE, DIVORCE_RATE
       GENDER_RATE     FOREIGNER_RATE       ELDERLY_RATE JOB_SWITCHING_RATE      JOB_ENTRY_RATE       DIVORCE_RATE
          1.586464           1.566685           1.190351           3.891244                1.011634

Variables Excluded: GENDER_RATE, FOREIGNER_RATE, ELDERLY_RATE, JOB_SWITCHING_RATE, JOB_ENTRY_RATE, MARRIAGE_RATE
       GENDER_RATE     FOREIGNER_RATE       ELDERLY_RATE JOB_SWITCHING_RATE      JOB_ENTRY_RATE      MARRIAGE_RATE
          1.585371           1.565717           1.189830           3.887152                1.007951
```

“DIVORCE_RATE”(이혼율) 변수 제거

시계열 데이터에 대한 Co-integration 테스트

```
######################
# Johansen-Procedure #
######################

Test type: maximal eigenvalue statistic (lambda max) , without linear trend and constant in cointegration

Eigenvalues (lambda):
[1] 3.866977e-01 3.532863e-01 2.414062e-01 2.024864e-01 1.178070e-01 5.759025e-02 1.644244e-02 7.737489e-19

Values of teststatistic and critical values of test:

           test 10pct  5pct  1pct
r <= 6 |   4.71  7.52  9.24 12.97
r <= 5 |  16.85 13.75 15.67 20.20
r <= 4 |  35.60 19.77 22.00 26.81
r <= 3 |  64.26 25.56 28.14 33.24
r <= 2 |  78.47 31.66 34.40 39.79
r <= 1 | 123.78 37.45 40.30 46.82
r = 0  | 138.85 43.25 46.45 51.91
```

시계열 데이터에 대한 Co-integration 테스트

Eigenvectors, normalised to first column:
(These are the cointegration relations)

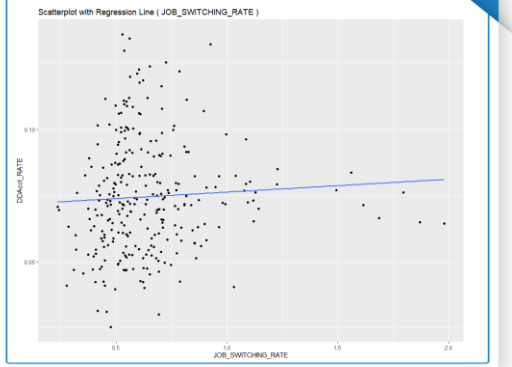
	DDAcct_RATE.l1	GENDER_RATE.l1	FOREIGNER_RATE.l1	ELDERLY_RATE.l1	JOB_SWITCHING_RATE.l1	JOB_ENTRY_RATE.l1	MARRIAGE_RATE.l1	constant
DDAcct_RATE.l1	1.00000000	1.00000000	1.00000000	1.0000000	1.000000000	1.00000000	1.000000000	1.00000000
GENDER_RATE.l1	-0.09679263	0.25655349	-0.24635511	0.6355281	0.260506549	-2.34865917	0.706202041	4.88647649
FOREIGNER_RATE.l1	-0.45788839	-0.32303754	0.04175732	-1.6203789	-0.402806892	2.17218793	4.518500747	-18.74403896
ELDERLY_RATE.l1	3.66501621	-1.11150612	1.46056823	3.1370297	0.501275393	-1.03856390	0.910523916	8.05677747
JOB_SWITCHING_RATE.l1	-0.04468066	2.02076929	0.08384904	0.1134989	-0.009702241	-0.02491014	-0.005347257	0.55300073
JOB_ENTRY_RATE.l1	0.19461808	-2.08415005	0.02580718	-0.5809763	-0.004595669	0.01180577	0.055417241	-0.52954670
MARRIAGE_RATE.l1	-7.59580724	-2.07473839	0.59269682	0.6397646	-0.016042924	-0.04995511	0.133679230	-0.78164364
constant	-0.46781749	-0.03977767	-0.11195313	-0.7486982	-0.371292694	2.27595620	-1.041400098	-0.08112654

Weights W:
(This is the loading matrix)

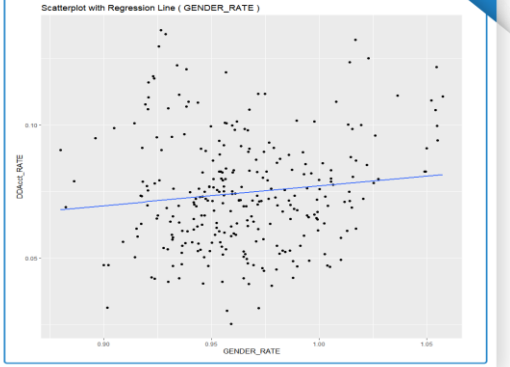
	DDAcct_RATE.l1	GENDER_RATE.l1	FOREIGNER_RATE.l1	ELDERLY_RATE.l1	JOB_SWITCHING_RATE.l1	JOB_ENTRY_RATE.l1	MARRIAGE_RATE.l1	constant
DDAcct_RATE.d	0.021469681	-0.0001953726	0.09435897	0.013921728	-0.229655029	-0.019806685	-0.004056951	-4.436350e-19
GENDER_RATE.d	0.022740885	-0.0015565643	0.14808967	0.006287706	-0.046766108	0.037071564	-0.005768924	-5.344627e-18
FOREIGNER_RATE.d	0.001680434	-0.0016773666	0.02338510	-0.005730765	0.089006835	-0.004265799	-0.005533034	8.530383e-19
ELDERLY_RATE.d	-0.043525756	0.0048103364	-0.24611167	-0.022153092	0.008880181	-0.001122258	-0.001506285	4.778834e-18
JOB_SWITCHING_RATE.d	0.190021818	-0.3946618914	-0.76873493	0.740999443	-0.335797273	0.122744454	0.014974622	2.110018e-17
JOB_ENTRY_RATE.d	0.113091335	0.0761021368	-0.54737466	0.800478990	-0.088056338	0.108205513	0.002493757	-8.745767e-18
MARRIAGE_RATE.d	0.119019086	0.0168071530	-0.19572367	-0.012464913	-0.034157773	0.004494739	0.003004507	1.796231e-18

각 독립변수에 대한 산점도와 회귀선 그리기

이직률



성비



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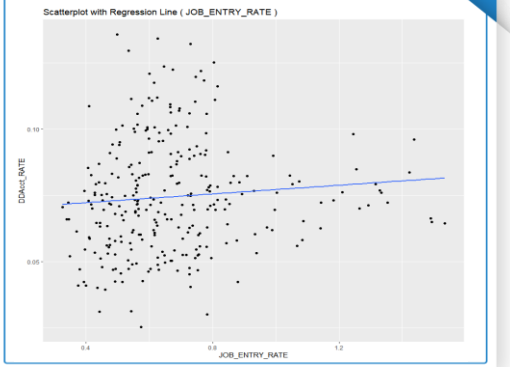
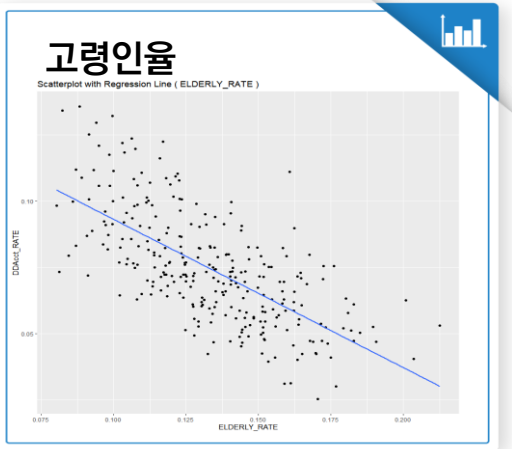
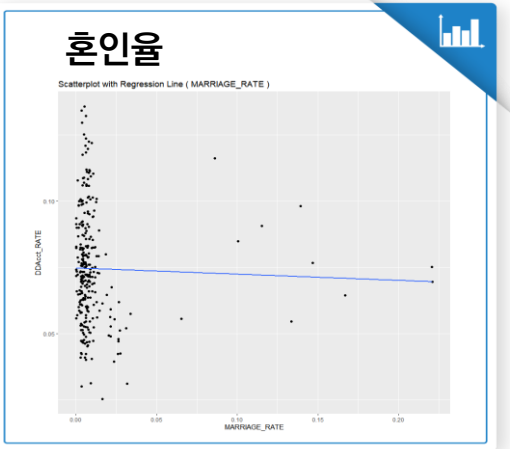


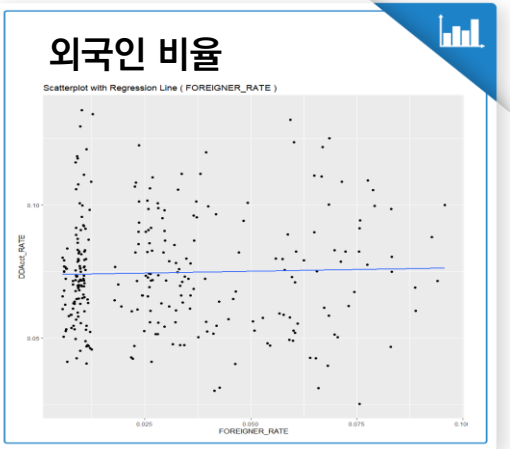
고령인율



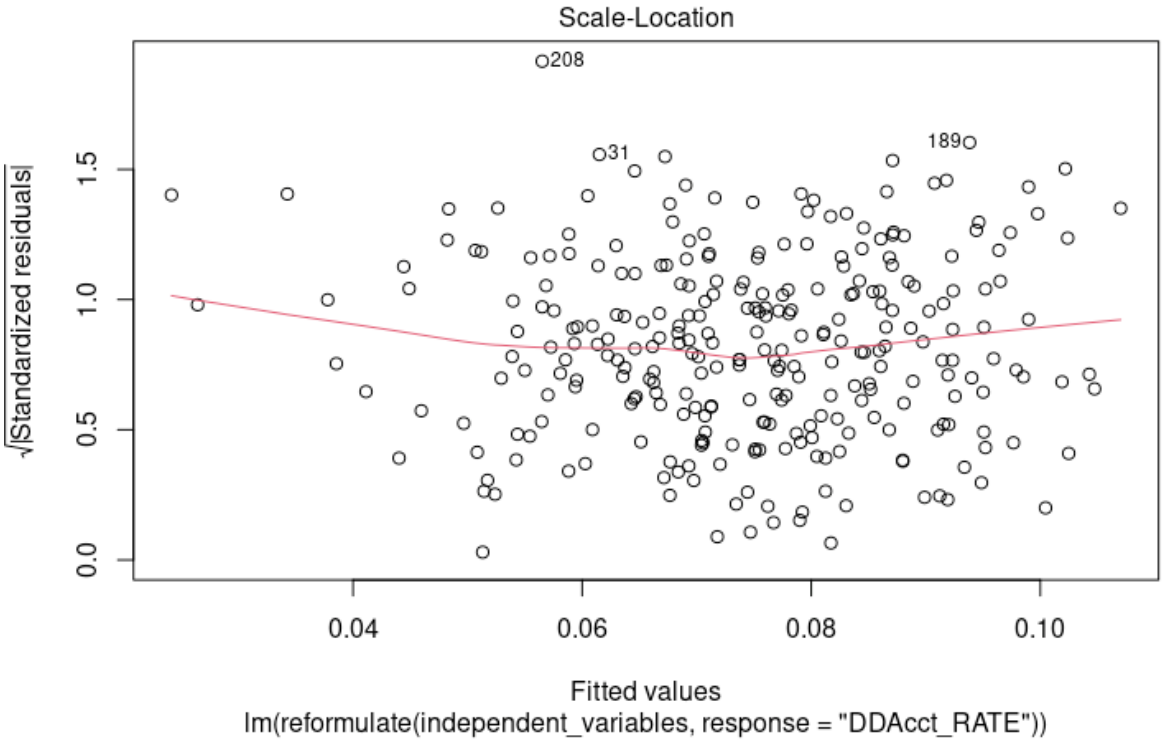
혼인율



외국인 비율



회귀분석 - 잔차의 등분산성 평가



회귀분석 - 지역구별 회귀분석 모델확인

서울특별시

```
Region: 서울특별시
Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
 1.442e-03 -1.597e-03  8.855e-04 -4.324e-03  4.295e-03 -9.292e-04  1.023e-03  8.829e-04 -2.954e-03  1.287e-03 -1.243e-05
Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)       -5.70498    2.51464  -2.269   0.0859 .
GENDER_RATE        5.55100    2.36734   2.345   0.0790 .
FOREIGNER_RATE     1.96769    1.75089   1.124   0.3240
ELDERLY_RATE       2.80776    1.44651   1.941   0.1242
JOB_SWITCHING_RATE 0.09002    0.04445   2.025   0.1128
JOB_ENTRY_RATE    -0.05382    0.05019  -1.072   0.3439
MARRIAGE_RATE      2.07778    2.73165   0.761   0.4892
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.003729 on 4 degrees of freedom
Multiple R-squared:  0.9651,   Adjusted R-squared:  0.9128
F-statistic: 18.46 on 6 and 4 DF,  p-value: 0.006958
```

p-value가 0.07

r-squared는 0.9

회귀분석 - 지역구별 회귀분석 모델확인

송파구

```
Call:
lm(formula = reformulate(independent_variables,
response = "DDAcct_RATE"),     data = subset_data)
Residuals:
         1          2          3          4          5
 5.767e-04 -7.533e-04  6.380e-04  1.283e-03  1.321e-04
         6          7          8          9         10
-2.471e-03 -1.318e-03  2.128e-03 -3.111e-06 -1.357e-03
        11
 1.145e-03

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)       -0.245148   0.858868  -0.285   0.7895
GENDER_RATE        0.497737   0.860228   0.579   0.5939
FOREIGNER_RATE    -6.540546   1.462820  -4.471   0.0111 *
ELDERLY_RATE      -0.837607   0.354816  -2.361   0.0776 .
JOB_SWITCHING_RATE 0.010607   0.023573   0.450   0.6760
JOB_ENTRY_RATE     0.005693   0.012304   0.463   0.6676
MARRIAGE_RATE     -0.082560   0.056120  -1.471   0.2152
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.00215 on 4 degrees of freedom
Multiple R-squared:  0.9943, Adjusted R-squared:  0.9858
F-statistic: 116.9 on 6 and 4 DF,  p-value: 0.0001915
```

외국인

관악구

```
Call:
lm(formula = reformulate(independent_variables,
response = "DDAcct_RATE"),
    data = subset_data)
Residuals:
         1          2          3          4          5
 1.486e-03 -2.199e-03 -4.186e-05 -1.361e-03  7.278e-03
         6          7          8          9         10
-7.282e-03  5.664e-03 -2.508e-03 -3.377e-03  2.345e-03
        11
-3.599e-06

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)        4.01343    1.48687   2.699   0.0541 .
GENDER_RATE       -3.46863    1.26690  -2.738   0.0520 .
FOREIGNER_RATE    -3.17559    4.16920  -0.762   0.4887
ELDERLY_RATE      -2.28622    0.85133  -2.685   0.0549 .
JOB_SWITCHING_RATE -0.06519   0.06879  -0.948   0.3970
JOB_ENTRY_RATE     0.03310    0.03769   0.878   0.4294
MARRIAGE_RATE      0.12568    0.09782   1.285   0.2682
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.006522 on 4 degrees of freedom
Multiple R-squared:  0.8971, Adjusted R-squared:  0.7428
F-statistic: 5.813 on 6 and 4 DF,  p-value: 0.05513
```

성비

고령자

회귀분석 - 지역구별 회귀분석 모델확인

영등포구

```
Call:
lm(formula = reformulate(independent_variables,
response = "DDAcct_RATE"),    data = subset_data)
Residuals:
         1          2          3          4          5
-0.0007873 -0.0022036  0.0011871  0.0085387 -0.0003673
         6          7          8          9         10
-0.0085140 -0.0010826  0.0077382 -0.0075253  0.0007886
        11
 0.0022275
 Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)        -0.41549    1.03192  -0.403   0.7078
GENDER_RATE         0.59714    1.01549   0.588   0.5881
FOREIGNER_RATE     -0.52971    0.72762  -0.728   0.5069
ELDERLY_RATE       -1.00728    0.31491  -3.199   0.0329 *
JOB_SWITCHING_RATE  0.07861    0.04376   1.797   0.1468
JOB_ENTRY_RATE      0.02742    0.05967   0.459   0.6698
MARRIAGE_RATE      -0.56080    2.17390  -0.258   0.8092
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.008302 on 4 degrees of freedom
Multiple R-squared:  0.9129,  Adjusted R-squared:  0.7822
F-statistic: 6.985 on 6 and 4 DF,  p-value: 0.04042
```

고령자

서대문구

```
Call:
lm(formula = reformulate(independent_variables,
response = "DDAcct_RATE"),      data = subset_data)
Residuals:
         1          2          3          4          5
 1.123e-05  1.078e-04 -5.222e-03  5.635e-03 -5.105e-03
         6          7          8          9         10
7.031e-03  1.524e-03 -2.277e-03 -1.882e-03 -8.726e-04
        11
1.049e-03
Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)        -0.91119    0.74046  -1.231   0.2859
GENDER_RATE         1.02237    0.65998   1.549   0.1963
FOREIGNER_RATE      0.18504    1.07333   0.172   0.8715
ELDERLY_RATE        0.03319    0.67772   0.049   0.9633
JOB_SWITCHING_RATE  0.07342    0.02445   3.003   0.0398 *
JOB_ENTRY_RATE     -0.03150    0.01895  -1.662   0.1718
MARRIAGE_RATE      -0.42176    0.71537  -0.590   0.5872
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
Residual standard error: 0.006071 on 4 degrees of freedom
Multiple R-squared:  0.9528,  Adjusted R-squared:  0.882
F-statistic: 13.46 on 6 and 4 DF,  p-value: 0.01254
```

이직률

회귀분석 - 지역구별 회귀분석 모델확인

광진구

```
Call:
lm(formula = reformulate(independent_variables, response =
"DDAcct_RATE"),
    data = subset_data)
Residuals:
        1         2         3         4         5         6
  7         8         9        10        11
 0.002008 -0.005836 -0.004735 -0.003003  0.012869  0.007019 -
0.003074  0.008003 -0.023648  0.012715 -0.002318

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)        -9.40374   10.28655  -0.914    0.412
GENDER_RATE         9.00642    9.70706   0.928    0.406
FOREIGNER_RATE      3.14317    5.00778   0.628    0.564
ELDERLY_RATE        8.08365    9.42178   0.858    0.439
JOB_SWITCHING_RATE -0.06582    0.11299  -0.583    0.591
JOB_ENTRY_RATE     -0.10291    0.18381  -0.560    0.605
MARRIAGE_RATE       1.96596    3.68308   0.534    0.622

Residual standard error: 0.01646 on 4 degrees of freedom
Multiple R-squared:  0.6537, Adjusted R-squared:  0.1342
F-statistic: 1.258 on 6 and 4 DF,  p-value: 0.4305
```

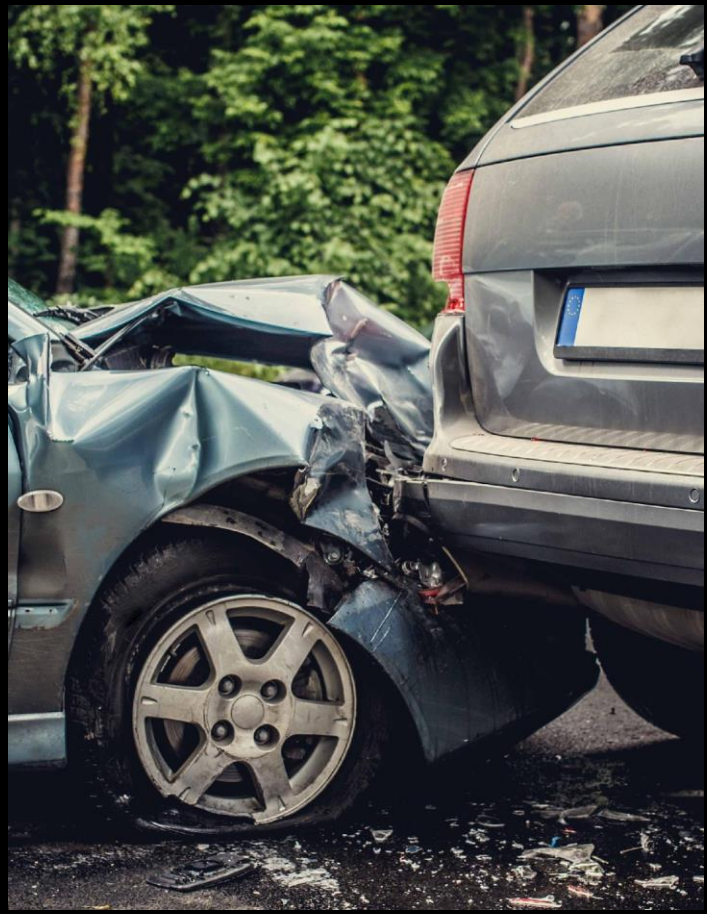
은평구

```
all:
lm(formula = reformulate(independent_variables, response =
"DDAcct_RATE"),
    data = subset_data)
Residuals:
         1          2          3          4          5          6
          7          8          9         10         11
-0.0043826  0.0012997  0.0037849 -0.0090551  0.0082971  0.0051470
-0.0041158  0.0009259 -0.0020158  0.0047542 -0.0046395

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)        1.99737    4.01640   0.497    0.645
GENDER_RATE       -1.93147    3.90096  -0.495    0.646
FOREIGNER_RATE    12.00741   19.65208   0.611    0.574
ELDERLY_RATE      -1.40956    2.97677  -0.474    0.661
JOB_SWITCHING_RATE  0.02020    0.03297   0.613    0.573
JOB_ENTRY_RATE     -0.02057    0.05319  -0.387    0.719
MARRIAGE_RATE      -0.76350    2.81990  -0.271    0.800

Residual standard error: 0.008345 on 4 degrees of freedom
Multiple R-squared:  0.2153, Adjusted R-squared:  -0.9619
F-statistic: 0.1829 on 6 and 4 DF,  p-value: 0.9665
```

06
결론 및 시사점



데이터 분석 결과

외국인 비율

음주운전 사고 비율에 유의미한 영향을 주는 지역 : **송파구 , 용산구**

외국인 유동성이 많은 지역& 외국인 거주자가 많은 지역에서 **음주운전 단속 실시**

고령인구 비율

음주운전 사고 비율에 유의미한 영향을 주는 지역 : **송파구, 영등포구, 강남구, 관악구**

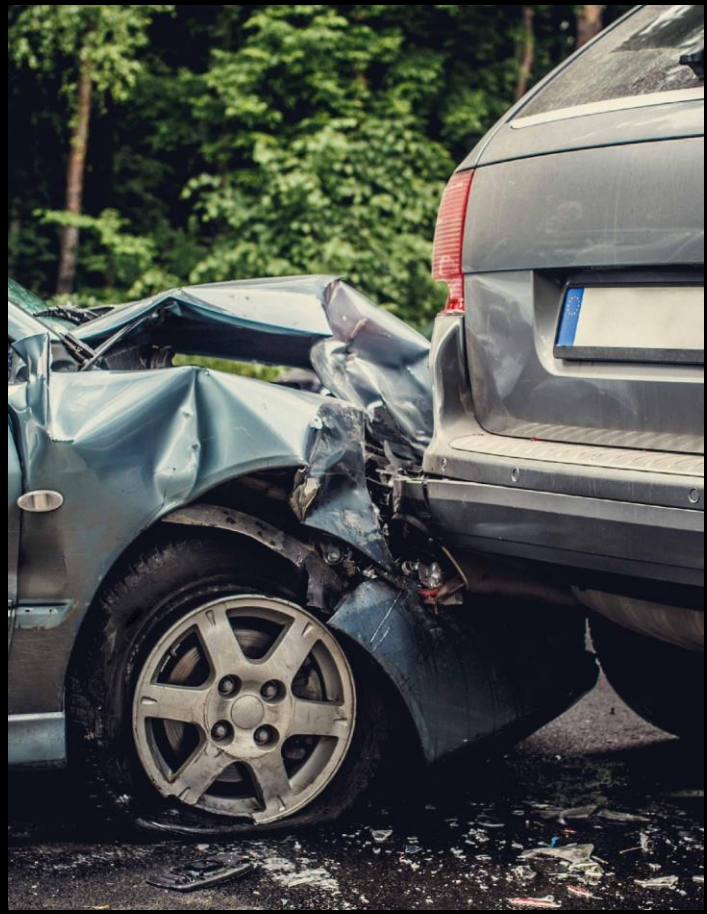
고령자들을 대상으로 음주사고 **예방 교육 기획** 및 진행

이직률

음주운전 사고 비율에 유의미한 영향을 주는 지역 : **서대문구, 강남구, 용산구**

고용안정을 위한 **일자리 창출** 제도 운영 & 취업을 위한 기술 **교육 제도** 운영

07
분석 한계점



데이터 분석 한계점

데이터 부족

- 지역구 별 시계열 데이터 셋 구성 시, 독립변수의 시계열 데이터가 부족

다양한 독립변수

- 지역구 별 특성 파악을 목표로 하다보니 더욱 다양한 독립변수를 고려할 수 없었음

데이터 모수추가

- 시계열 데이터셋의 특성을 고려하여 이상치 제거 또는 분석데이터 추가를 원활히 하기 어려웠음

Appendix 1
분석 데이터 셋

분석 데이터 셋

SGG	DATE	DDAcct_RATE	GENDER_RATE	FOREIGNER_RATE	ELDERLY_RATE	JOB_SWITCHING_RATE	JOB_ENTRY_RATE	MARRIAGE_RATE	DIVORCE_RATE
서울특별시	2011	0.091468691	0.978987956	0.026507835	0.099672099	0.81668	0.8488	0.000383046	7.35128E-05
서울특별시	2012	0.093536457	0.976698548	0.02366385	0.106392423	0.80928	0.75032	0.000338427	9.01132E-05
서울특별시	2013	0.090012424	0.974275824	0.023527985	0.112357607	0.70132	0.74192	0.000448015	0.000100404
서울특별시	2014	0.082393607	0.971188158	0.02568664	0.117807517	0.60544	0.66708	0.000343986	6.97231E-05
서울특별시	2015	0.082875315	0.967510244	0.026702274	0.123098574	0.50936	0.58732	0.000238416	5.78802E-05
서울특별시	2016	0.071780014	0.963573075	0.026797283	0.127486254	0.52952	0.56208	0.000385043	7.43822E-05
서울특별시	2017	0.074148867	0.959574949	0.026386579	0.134832866	0.5842	0.6038	0.000439623	7.62501E-05
서울특별시	2018	0.073617734	0.955649011	0.028258219	0.140914068	0.59452	0.6138	0.000561913	9.69192E-05
서울특별시	2019	0.055784808	0.950220114	0.028156676	0.148364252	0.54392	0.607	0.000374389	7.33195E-05
서울특별시	2020	0.066057286	0.945423418	0.024479956	0.158240044	0.7056	0.65556	0.00048138	9.75675E-05
서울특별시	2021	0.06071418	0.941749085	0.023271197	0.164894366	0.69196	0.76004	0.003801551	0.00153728
종로구	2011	0.052779733	0.986507972	0.05093592	0.129292804	0.375	0.491	0.021694407	0.007654197
종로구	2012	0.064774381	0.986758614	0.045862499	0.137847391	0.71	0.433	0.019122369	0.005353801
종로구	2013	0.067503925	0.98293092	0.046447485	0.142952456	0.416	0.513	0.022291457	0.006040496
종로구	2014	0.056316591	0.970609618	0.050506822	0.1483997	0.464	0.475	0.021385717	0.007402748
종로구	2015	0.048090523	0.966863167	0.05393659	0.151945404	0.436	0.451	0.026486064	0.008155193
종로구	2016	0.059276366	0.96031477	0.056724843	0.154957325	0.448	0.41	0.021584467	0.005928781
종로구	2017	0.058823529	0.951653339	0.057757051	0.159396555	0.434	0.411	0.014562545	0.004754744
종로구	2018	0.055555556	0.943793967	0.061100683	0.164035185	0.445	0.471	0.02413112	0.006753524
종로구	2019	0.042365402	0.934982189	0.065355318	0.170007846	0.408	0.393	0.02599633	0.006190191
종로구	2020	0.052048726	0.936142231	0.060454351	0.179293819	0.4	0.348	0.031334122	0.007295781
종로구	2021	0.057840617	0.931949801	0.059210997	0.180884199	0.44	0.491	0.003108155	0.001326493
중구	2011	0.049432198	1.010038336	0.059152204	0.127847592	0.511	0.559	0.020442617	0.006880134
중구	2012	0.057613169	1.010236277	0.052887996	0.134048733	0.487	0.512	0.03377673	0.009502368

Appendix 2
회귀 분석 결과(전체)

```
Region: 서울특별시

Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10
11
 1.442e-03 -1.597e-03  8.855e-04 -4.324e-03  4.295e-03 -9.292e-04  1.023e-03  8.829e-04 -2.954e-03  1.287e-03 -
1.243e-05

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)        -5.70498    2.51464  -2.269   0.0859 .
GENDER_RATE         5.55100    2.36734   2.345   0.0790 .
FOREIGNER_RATE      1.96769    1.75089   1.124   0.3240
ELDERLY_RATE        2.80776    1.44651   1.941   0.1242
JOB_SWITCHING_RATE  0.09002    0.04445   2.025   0.1128
JOB_ENTRY_RATE     -0.05382    0.05019  -1.072   0.3439
MARRIAGE_RATE       2.07778    2.73165   0.761   0.4892
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.003729 on 4 degrees of freedom
Multiple R-squared:  0.9651,            Adjusted R-squared:  0.9128
F-statistic: 18.46 on 6 and 4 DF,  p-value: 0.006958
```

```
Region: 종로구

Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7
8          9         10         11
-2.355e-03 -4.599e-04  5.148e-03 -3.995e-03 -6.448e-03  5.699e-03  2.720e-03
5.553e-03 -3.443e-03  6.242e-05 -2.481e-03

Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)         0.531211   2.469389   0.215    0.840
GENDER_RATE        -0.371463   2.108809  -0.176    0.869
FOREIGNER_RATE     -1.694378   3.321137  -0.510    0.637
ELDERLY_RATE       -0.107063   1.645704  -0.065    0.951
JOB_SWITCHING_RATE  0.003665   0.033683   0.109    0.919
JOB_ENTRY_RATE     -0.012053   0.074353  -0.162    0.879
MARRIAGE_RATE      -0.227392   0.477869  -0.476    0.659

Residual standard error: 0.006681 on 4 degrees of freedom
Multiple R-squared:  0.6473,            Adjusted R-squared:  0.1182
F-statistic: 1.223 on 6 and 4 DF,  p-value: 0.4418
```

```
Region: 중구

Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
-0.0019041 -0.0018874  0.0083866 -0.0022778 -0.0029754 -0.0003764 -0.0091919  0.0188622 -0.0108462 -0.0007815  0.0029918

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)        -0.88660    2.08230  -0.426    0.692
GENDER_RATE         0.75860    1.76658   0.429    0.690
FOREIGNER_RATE      0.19338    2.05299   0.094    0.929
ELDERLY_RATE        0.58969    1.64040   0.359    0.737
JOB_SWITCHING_RATE  0.08110    0.09550   0.849    0.444
JOB_ENTRY_RATE      0.05059    0.09345   0.541    0.617
MARRIAGE_RATE       0.74192    0.83147   0.892    0.423

Residual standard error: 0.01284 on 4 degrees of freedom
Multiple R-squared:  0.4328,            Adjusted R-squared:  -0.418
F-statistic: 0.5087 on 6 and 4 DF,  p-value: 0.781
```

Region: 용산구

```
Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
 0.0034432 -0.0027026 -0.0016362  0.0011924 -0.0014312 -0.0025254  0.0031168  0.0030693 -0.0049898  0.0020690  0.0003944

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)        -1.93124    1.31797  -1.465   0.2167
GENDER_RATE         2.15275    1.31264   1.640   0.1763
FOREIGNER_RATE     -2.25821    1.05798  -2.134   0.0997 .
ELDERLY_RATE        0.76608    0.85742   0.893   0.4221
JOB_SWITCHING_RATE -0.08917    0.03286  -2.714   0.0533 .
JOB_ENTRY_RATE      0.05226    0.03975   1.315   0.2589
MARRIAGE_RATE      -0.10386    0.61952  -0.168   0.8750
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.004476 on 4 degrees of freedom
Multiple R-squared:  0.9342,            Adjusted R-squared:  0.8355
F-statistic: 9.464 on 6 and 4 DF,  p-value: 0.02376
```

Region: 성동구

```
Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
-0.0042403  0.0059283 -0.0096324  0.0142778 -0.0094070  0.0043204 -0.0016807  0.0057255 -0.0051241 -0.0010551  0.0008875

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)        -0.295203   1.226411  -0.241    0.822
GENDER_RATE         0.518707   1.038835   0.499    0.644
FOREIGNER_RATE     -4.655914   3.109846  -1.497    0.209
ELDERLY_RATE        0.139931   1.697508   0.082    0.938
JOB_SWITCHING_RATE -0.012374   0.058522  -0.211    0.843
JOB_ENTRY_RATE     -0.009691   0.051631  -0.188    0.860
MARRIAGE_RATE      -2.091197   1.978085  -1.057    0.350

Residual standard error: 0.01141 on 4 degrees of freedom
Multiple R-squared:  0.7183,            Adjusted R-squared:  0.2957
F-statistic:   1.7 on 6 and 4 DF,  p-value: 0.3162
```

```
Region: 광진구

Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
        1         2         3         4         5         6         7         8         9        10        11
 0.002008 -0.005836 -0.004735 -0.003003  0.012869  0.007019 -0.003074  0.008003 -0.023648  0.012715 -0.002318

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)        -9.40374   10.28655  -0.914    0.412
GENDER_RATE         9.00642    9.70706   0.928    0.406
FOREIGNER_RATE      3.14317    5.00778   0.628    0.564
ELDERLY_RATE        8.08365    9.42178   0.858    0.439
JOB_SWITCHING_RATE -0.06582    0.11299  -0.583    0.591
JOB_ENTRY_RATE     -0.10291    0.18381  -0.560    0.605
MARRIAGE_RATE       1.96596    3.68308   0.534    0.622

Residual standard error: 0.01646 on 4 degrees of freedom
Multiple R-squared:  0.6537,            Adjusted R-squared:  0.1342
F-statistic: 1.258 on 6 and 4 DF,  p-value: 0.4305
```

```
Region: 동대문구

Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
       1         2         3         4         5         6         7         8         9        10        11
-0.001719  0.009731 -0.009543 -0.001557  0.004050 -0.004065  0.002667  0.002958 -0.003604  0.002542 -0.001461

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)        0.21716    2.26631   0.096    0.928
GENDER_RATE       -0.06652    2.05516  -0.032    0.976
FOREIGNER_RATE    -0.77264    1.38725  -0.557    0.607
ELDERLY_RATE      -0.59677    1.51914  -0.393    0.714
JOB_SWITCHING_RATE 0.03128    0.02547   1.228    0.287
JOB_ENTRY_RATE    -0.01586    0.02216  -0.716    0.514
MARRIAGE_RATE      1.85663    2.04027   0.910    0.414

Residual standard error: 0.008086 on 4 degrees of freedom
Multiple R-squared:  0.8624,            Adjusted R-squared:  0.656
F-statistic: 4.178 on 6 and 4 DF,  p-value: 0.09384
```

```
Region: 중랑구

Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
 7.617e-05 -2.254e-03  2.528e-04  5.641e-03  3.146e-03 -6.852e-03 -1.263e-03  1.047e-03 -7.168e-04 -2.926e-04  1.215e-03

Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)         0.352463   1.950589   0.181    0.865
GENDER_RATE        -0.280981   1.883980  -0.149    0.889
FOREIGNER_RATE     -0.035338   5.245072  -0.007    0.995
ELDERLY_RATE       -0.231578   0.819721  -0.283    0.792
JOB_SWITCHING_RATE -0.000977   0.012478  -0.078    0.941
JOB_ENTRY_RATE      0.015517   0.018400   0.843    0.447
MARRIAGE_RATE      -0.030374   0.085557  -0.355    0.741

Residual standard error: 0.004964 on 4 degrees of freedom
Multiple R-squared:  0.8705,            Adjusted R-squared:  0.6762
F-statistic:  4.48 on 6 and 4 DF,  p-value: 0.08412
```

Region: 성북구

```
Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
 2.860e-03 -3.203e-03 -2.567e-06 -1.369e-03 -1.726e-04  4.917e-03 -4.966e-03  7.044e-03 -7.691e-03  8.162e-04  1.768e-03

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)        -1.55144    2.03823  -0.761    0.489
GENDER_RATE         1.56612    1.89048   0.828    0.454
FOREIGNER_RATE      1.05824    1.57207   0.673    0.538
ELDERLY_RATE        0.74979    1.61009   0.466    0.666
JOB_SWITCHING_RATE  0.01040    0.02828   0.368    0.732
JOB_ENTRY_RATE     -0.01476    0.02522  -0.586    0.590
MARRIAGE_RATE       0.05770    0.08121   0.711    0.517

Residual standard error: 0.00674 on 4 degrees of freedom
Multiple R-squared:  0.8721,            Adjusted R-squared:  0.6803
F-statistic: 4.547 on 6 and 4 DF,  p-value: 0.08218
```

Region: 강북구

```
Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
-0.0003822  0.0025275  0.0001130 -0.0072313  0.0002689  0.0043322  0.0008739  0.0052539 -0.0061485 -0.0024158  0.0028083

Coefficients:
                     Estimate Std. Error t value Pr(>|t|)
(Intercept)          0.487196   1.646405   0.296    0.782
GENDER_RATE         -0.249614   1.570314  -0.159    0.881
FOREIGNER_RATE     -10.254955   6.830476  -1.501    0.208
ELDERLY_RATE        -0.381608   0.557500  -0.684    0.531
JOB_SWITCHING_RATE  -0.016149   0.016754  -0.964    0.390
JOB_ENTRY_RATE       0.002823   0.022564   0.125    0.906
MARRIAGE_RATE       -0.023156   0.038895  -0.595    0.584

Residual standard error: 0.006276 on 4 degrees of freedom
Multiple R-squared:  0.9024,            Adjusted R-squared:  0.7559
F-statistic: 6.162 on 6 and 4 DF,  p-value: 0.05001
```

```
Region: 도봉구

Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
-3.877e-03  5.036e-03  2.586e-03 -3.546e-03  4.284e-03 -8.030e-03 -2.313e-05  5.464e-03 -1.083e-03 -8.233e-04  1.275e-05

Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)         0.081339   3.448208   0.024    0.982
GENDER_RATE         0.034048   3.379126   0.010    0.992
FOREIGNER_RATE    -10.349998  11.327167  -0.914    0.413
ELDERLY_RATE       -0.064392   1.337783  -0.048    0.964
JOB_SWITCHING_RATE  0.006716   0.029830   0.225    0.833
JOB_ENTRY_RATE      0.019656   0.029337   0.670    0.540
MARRIAGE_RATE       0.098437   0.047691   2.064    0.108

Residual standard error: 0.006599 on 4 degrees of freedom
Multiple R-squared:  0.8994,            Adjusted R-squared:  0.7484
F-statistic: 5.958 on 6 and 4 DF,  p-value: 0.05292
```

Region: 노원구

```
Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
 1.556e-03  3.786e-04 -1.557e-04 -7.440e-03  2.108e-03  8.353e-04  5.633e-03 -2.087e-03  5.936e-05 -4.934e-04 -3.937e-04

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)        -0.088760   3.583063  -0.025    0.981
GENDER_RATE         0.198307   3.593320   0.055    0.959
FOREIGNER_RATE      3.894921   4.109899   0.948    0.397
ELDERLY_RATE       -0.394958   1.506325  -0.262    0.806
JOB_SWITCHING_RATE -0.012371   0.017893  -0.691    0.527
JOB_ENTRY_RATE      0.008745   0.019131   0.457    0.671
MARRIAGE_RATE      -0.106696   0.057058  -1.870    0.135

Residual standard error: 0.004989 on 4 degrees of freedom
Multiple R-squared:  0.898,             Adjusted R-squared:  0.7451
F-statistic: 5.872 on 6 and 4 DF,  p-value: 0.05422
```

Region: 은평구

```
Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
-0.0043826  0.0012997  0.0037849 -0.0090551  0.0082971  0.0051470 -0.0041158  0.0009259 -0.0020158  0.0047542 -0.0046395

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)         1.99737    4.01640   0.497    0.645
GENDER_RATE        -1.93147    3.90096  -0.495    0.646
FOREIGNER_RATE     12.00741   19.65208   0.611    0.574
ELDERLY_RATE       -1.40956    2.97677  -0.474    0.661
JOB_SWITCHING_RATE  0.02020    0.03297   0.613    0.573
JOB_ENTRY_RATE     -0.02057    0.05319  -0.387    0.719
MARRIAGE_RATE      -0.76350    2.81990  -0.271    0.800

Residual standard error: 0.008345 on 4 degrees of freedom
Multiple R-squared:  0.2153,            Adjusted R-squared:  -0.9619
F-statistic: 0.1829 on 6 and 4 DF,  p-value: 0.9665
```

```
Region: 서대문구

Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
 1.123e-05  1.078e-04 -5.222e-03  5.635e-03 -5.105e-03  7.031e-03  1.524e-03 -2.277e-03 -1.882e-03 -8.726e-04  1.049e-03

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)        -0.91119    0.74046  -1.231   0.2859
GENDER_RATE         1.02237    0.65998   1.549   0.1963
FOREIGNER_RATE      0.18504    1.07333   0.172   0.8715
ELDERLY_RATE        0.03319    0.67772   0.049   0.9633
JOB_SWITCHING_RATE  0.07342    0.02445   3.003   0.0398 *
JOB_ENTRY_RATE     -0.03150    0.01895  -1.662   0.1718
MARRIAGE_RATE      -0.42176    0.71537  -0.590   0.5872
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.006071 on 4 degrees of freedom
Multiple R-squared:  0.9528,            Adjusted R-squared:  0.882
F-statistic: 13.46 on 6 and 4 DF,  p-value: 0.01254
```

```
Region: 마포구

Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10
11
-0.0042909 -0.0014947  0.0108615 -0.0099671  0.0035360  0.0001992  0.0008081  0.0090279 -0.0047756 -0.0066909
0.0027864

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)        -1.01275    1.26867  -0.798    0.469
GENDER_RATE         1.05731    1.10742   0.955    0.394
FOREIGNER_RATE      1.23664    2.09544   0.590    0.587
ELDERLY_RATE        0.89436    1.98556   0.450    0.676
JOB_SWITCHING_RATE -0.02289    0.03873  -0.591    0.586
JOB_ENTRY_RATE      0.03919    0.06713   0.584    0.591
MARRIAGE_RATE      -1.20576    1.42167  -0.848    0.444

Residual standard error: 0.0101 on 4 degrees of freedom
Multiple R-squared:  0.8198,            Adjusted R-squared:  0.5496
F-statistic: 3.034 on 6 and 4 DF,  p-value: 0.1511
```

```
Region: 양천구

Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10
11
 8.803e-05 -2.890e-03 -4.347e-03  7.052e-03  5.462e-03 -8.407e-03  5.676e-03  2.492e-03 -3.687e-03 -4.346e-03  2.908e-
03

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)        -6.28944    5.24955  -1.198    0.297
GENDER_RATE         6.28196    5.01890   1.252    0.279
FOREIGNER_RATE     -2.21973    9.87084  -0.225    0.833
ELDERLY_RATE        2.47415    2.60773   0.949    0.396
JOB_SWITCHING_RATE -0.03364    0.03632  -0.926    0.407
JOB_ENTRY_RATE     -0.01245    0.04525  -0.275    0.797
MARRIAGE_RATE       0.91076    2.10628   0.432    0.688

Residual standard error: 0.008013 on 4 degrees of freedom
Multiple R-squared:  0.8832,            Adjusted R-squared:  0.708
F-statistic:  5.04 on 6 and 4 DF,  p-value: 0.06968
```

```
Region: 강서구

Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
 0.0051522 -0.0025798 -0.0010681  0.0026827  0.0006746 -0.0056738 -0.0026550  0.0044549 -0.0035760 -0.0035934  0.0061817

Coefficients:
                     Estimate Std. Error t value Pr(>|t|)
(Intercept)        -10.033406   5.132342  -1.955   0.1223
GENDER_RATE          9.755570   4.851641   2.011   0.1147
FOREIGNER_RATE       8.055280  15.445719   0.522   0.6295
ELDERLY_RATE         6.230162   3.234410   1.926   0.1264
JOB_SWITCHING_RATE   0.013592   0.030533   0.445   0.6792
JOB_ENTRY_RATE       0.009508   0.030550   0.311   0.7712
MARRIAGE_RATE       -5.443494   2.141602  -2.542   0.0639 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.006422 on 4 degrees of freedom
Multiple R-squared:  0.8119,            Adjusted R-squared:  0.5298
F-statistic: 2.878 on 6 and 4 DF,  p-value: 0.1628
```

Region: 구로구

```
Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
 0.0042135 -0.0029791  0.0046360 -0.0093645  0.0067100 -0.0008054 -0.0066818  0.0006020 -0.0026865  0.0113538 -0.0049979

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)        -0.23485    1.99605  -0.118    0.912
GENDER_RATE         0.47622    1.96557   0.242    0.820
FOREIGNER_RATE     -1.33540    1.27382  -1.048    0.354
ELDERLY_RATE       -0.42023    0.81560  -0.515    0.634
JOB_SWITCHING_RATE  0.04804    0.04371   1.099    0.333
JOB_ENTRY_RATE     -0.02637    0.03602  -0.732    0.505
MARRIAGE_RATE      -2.97248    2.48848  -1.194    0.298

Residual standard error: 0.009844 on 4 degrees of freedom
Multiple R-squared:  0.9251,            Adjusted R-squared:  0.8128
F-statistic: 8.234 on 6 and 4 DF,  p-value: 0.03039
```

Region: 금천구

```
Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
-2.249e-03 -3.585e-03  5.657e-03 -2.731e-03  1.383e-02 -1.422e-03 -1.033e-02  5.332e-05 -8.663e-03  1.808e-02 -8.633e-03

Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)         0.443768   1.782765   0.249    0.816
GENDER_RATE        -0.260847   1.688707  -0.154    0.885
FOREIGNER_RATE     -0.721288   1.154451  -0.625    0.566
ELDERLY_RATE       -0.567716   0.472366  -1.202    0.296
JOB_SWITCHING_RATE  0.041548   0.068342   0.608    0.576
JOB_ENTRY_RATE      0.007462   0.103015   0.072    0.946
MARRIAGE_RATE       2.535070   3.813513   0.665    0.543

Residual standard error: 0.01444 on 4 degrees of freedom
Multiple R-squared:  0.5735,            Adjusted R-squared:  -0.0663
F-statistic: 0.8964 on 6 and 4 DF,  p-value: 0.5701
```

Region: 영등포구

```
Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
-0.0007873 -0.0022036  0.0011871  0.0085387 -0.0003673 -0.0085140 -0.0010826  0.0077382 -0.0075253  0.0007886  0.0022275

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)        -0.41549    1.03192  -0.403   0.7078
GENDER_RATE         0.59714    1.01549   0.588   0.5881
FOREIGNER_RATE     -0.52971    0.72762  -0.728   0.5069
ELDERLY_RATE       -1.00728    0.31491  -3.199   0.0329 *
JOB_SWITCHING_RATE  0.07861    0.04376   1.797   0.1468
JOB_ENTRY_RATE      0.02742    0.05967   0.459   0.6698
MARRIAGE_RATE      -0.56080    2.17390  -0.258   0.8092
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.008302 on 4 degrees of freedom
Multiple R-squared:  0.9129,            Adjusted R-squared:  0.7822
F-statistic: 6.985 on 6 and 4 DF,  p-value: 0.04042
```

Region: 동작구

```
Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
 3.851e-05 -1.713e-03  2.674e-03 -1.491e-02  2.026e-02 -8.779e-03  9.817e-03 -4.342e-03 -5.850e-03  8.109e-03 -5.304e-03

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)         2.470686   2.129737   1.160    0.311
GENDER_RATE        -2.105792   1.977681  -1.065    0.347
FOREIGNER_RATE     -3.224891   2.003619  -1.610    0.183
ELDERLY_RATE       -2.300117   1.534553  -1.499    0.208
JOB_SWITCHING_RATE  0.004660   0.083162   0.056    0.958
JOB_ENTRY_RATE      0.004746   0.058986   0.080    0.940
MARRIAGE_RATE      -0.038892   0.185898  -0.209    0.845

Residual standard error: 0.01552 on 4 degrees of freedom
Multiple R-squared:  0.7584,            Adjusted R-squared:  0.396
F-statistic: 2.093 on 6 and 4 DF,  p-value: 0.2476
```

Region: 관악구

```
Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10
11
 1.486e-03 -2.199e-03 -4.186e-05 -1.361e-03  7.278e-03 -7.282e-03  5.664e-03 -2.508e-03 -3.377e-03  2.345e-03 -3.599e-
06

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)         4.01343    1.48687   2.699   0.0541 .
GENDER_RATE        -3.46863    1.26690  -2.738   0.0520 .
FOREIGNER_RATE     -3.17559    4.16920  -0.762   0.4887
ELDERLY_RATE       -2.28622    0.85133  -2.685   0.0549 .
JOB_SWITCHING_RATE -0.06519    0.06879  -0.948   0.3970
JOB_ENTRY_RATE      0.03310    0.03769   0.878   0.4294
MARRIAGE_RATE       0.12568    0.09782   1.285   0.2682
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.006522 on 4 degrees of freedom
Multiple R-squared:  0.8971,            Adjusted R-squared:  0.7428
F-statistic: 5.813 on 6 and 4 DF,  p-value: 0.05513
```

```
Region: 강남구

Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
-1.197e-03  1.495e-03  1.398e-03 -6.293e-03  2.603e-03 -2.947e-04  5.035e-05  8.714e-03 -3.718e-03 -3.256e-03  4.985e-04

Coefficients:
                  Estimate Std. Error t value Pr(>|t|)
(Intercept)        -2.20602    2.72991  -0.808    0.464
GENDER_RATE         2.60552    2.93381   0.888    0.425
FOREIGNER_RATE     -3.18800    3.68213  -0.866    0.435
ELDERLY_RATE       -0.80465    0.43860  -1.835    0.140
JOB_SWITCHING_RATE  0.08266    0.04631   1.785    0.149
JOB_ENTRY_RATE     -0.02906    0.03279  -0.886    0.426
MARRIAGE_RATE       0.11362    0.10871   1.045    0.355

Residual standard error: 0.006178 on 4 degrees of freedom
Multiple R-squared:  0.9659,            Adjusted R-squared:  0.9147
F-statistic: 18.87 on 6 and 4 DF,  p-value: 0.00667
```

```
Region: 서초구

Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
-0.0041913  0.0021927  0.0103244 -0.0075946 -0.0003894 -0.0074387  0.0068988  0.0016849 -0.0000268  0.0018844 -0.0033443

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)        -3.332254   1.239946  -2.687   0.0548 .
GENDER_RATE         3.653047   1.316144   2.776   0.0500 .
FOREIGNER_RATE     -2.527506   6.497418  -0.389   0.7171
ELDERLY_RATE        0.173577   0.605036   0.287   0.7884
JOB_SWITCHING_RATE  0.049579   0.045452   1.091   0.3367
JOB_ENTRY_RATE      0.008894   0.079879   0.111   0.9167
MARRIAGE_RATE       0.022781   0.107128   0.213   0.8420
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.008765 on 4 degrees of freedom
Multiple R-squared:  0.9355,            Adjusted R-squared:  0.8388
F-statistic: 9.671 on 6 and 4 DF,  p-value: 0.02286
```

```
Region: 송파구

Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
 5.767e-04 -7.533e-04  6.380e-04  1.283e-03  1.321e-04 -2.471e-03 -1.318e-03  2.128e-03 -3.111e-06 -1.357e-03  1.145e-03

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)        -0.245148   0.858868  -0.285   0.7895
GENDER_RATE         0.497737   0.860228   0.579   0.5939
FOREIGNER_RATE     -6.540546   1.462820  -4.471   0.0111 *
ELDERLY_RATE       -0.837607   0.354816  -2.361   0.0776 .
JOB_SWITCHING_RATE  0.010607   0.023573   0.450   0.6760
JOB_ENTRY_RATE      0.005693   0.012304   0.463   0.6676
MARRIAGE_RATE      -0.082560   0.056120  -1.471   0.2152
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.00215 on 4 degrees of freedom
Multiple R-squared:  0.9943,            Adjusted R-squared:  0.9858
F-statistic: 116.9 on 6 and 4 DF,  p-value: 0.0001915
```

Region: 강동구

```
Call:
lm(formula = reformulate(independent_variables, response = "DDAcct_RATE"),
    data = subset_data)

Residuals:
         1          2          3          4          5          6          7          8          9         10         11
 3.186e-03 -5.198e-03 -3.161e-03 -3.148e-05  6.732e-03  4.086e-03 -1.534e-03 -2.153e-03 -5.306e-03  5.905e-04  2.789e-03

Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)         -1.50564    1.52298  -0.989    0.379
GENDER_RATE          1.68663    1.55923   1.082    0.340
FOREIGNER_RATE     -12.96330   15.64652  -0.829    0.454
ELDERLY_RATE         0.02952    0.56206   0.053    0.961
JOB_SWITCHING_RATE  -0.01874    0.04920  -0.381    0.723
JOB_ENTRY_RATE       0.09118    0.07602   1.199    0.297
MARRIAGE_RATE       -2.48860    3.47582  -0.716    0.514

Residual standard error: 0.006173 on 4 degrees of freedom
Multiple R-squared:  0.8963,            Adjusted R-squared:  0.7408
F-statistic: 5.764 on 6 and 4 DF,  p-value: 0.05591
```