통계청 자료를 통해 알아보는 한국의 임금결정 모델 분석 요약 보고서

3팀장 김홍식 작성

Dependent Variable: WAGE
Method: Least Squares
Date: 12/08/23 Time: 16:02
Sample: 1 56
Included observations: 56

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2134.503	134.3738	15.88482	0.0000
EXPERIENCE	151.2981	21.67754	6.979486	0.0000
EDU_H	214.0969	187.6510	1.140931	0.2601
EDU_C	302.2348	178.6996	1.691301	0.0979
EDU_U	582.4437	164.8521	3.533129	0.0010
FEMALE	-475.0615	99.40667	-4.778970	0.0000
EXPERIENCE*EDU_H	22.53390	30.19102	0.746377	0.4594
EXPERIENCE*EDU_C	48.85992	27.80772	1.757063	0.0859
EXPERIENCE*EDU_U	152.9967	26.14749	5.851294	0.0000
EXPERIENCE*EDU_H*FEMALE	-38.66143	30.33287	-1.274572	0.2092
EXPERIENCE*EDU_C*FEMALE	-60.22418	26.22982	-2.296020	0.0265
EXPERIENCE*EDU_U*FEMALE	-90.04064	21.41142	-4.205263	0.0001

R-squared	0.964599	Mean dependent var	3206.875
Adjusted R-squared	0.955749	S.D. dependent var	1070.437
S.E. of regression	225.1769	Akaike info criterion	13.85906
Sum squared resid	2231004.	Schwarz criterion	14.29306
Log likelihood	-376.0536	Hannan-Quinn criter.	14.02732
F-statistic	108.9912	Durbin-Watson stat	0.869700
Prob(F-statistic)	0.000000		

데이터, 기타자료 QR코드

변수 설명

유의수준***, 단위:천 원, 2019년 자료. 원자료 QR코드 참고

WAGE(종속변수) = 월임금총액
EXPERIENCE*** = 평균 근속년수 1년 당 +151.298
FEMALE*** = 여성일 경우 -475.061
EDU_H = 고졸일 경우 +214.096
EDU_C* = 전문대 졸일 경우 +302.234
EDU_U*** = 4년제 이상 대졸일 경우 +582.443
EXPERIENCE*EDU_H = 고졸일 경우 근속년수 1년당 +22.533
EXPERIENCE*EDU_C* = 전문대 졸일 경우 근속년수 1년당 +48.859
EXPERIENCE*EDU_U*** = 4년제 이상 대졸일 경우 근속년수 1년당 +152.996
EXPERIENCE*EDU_H*FEMALE = 고졸 여성일 경우 근속년수 1년당 -38.661
EXPERIENCE*EDU_C*FEMALE** = 전문대졸 여성일 경우 근속년수 1년당 -60.224
EXPERIENCE*EDU_H*FEMALE*** = 4년제 이상 대졸일 경우 근속년수 1년당 -90.040

모델 식 정리

exper = 평균 근속년수, 아랫 줄 숫자 괄호 : 표준오차, 유의수준***, 단위:천 원

중졸 이하 남자 = 2134.503***+ 151.298***·exper
(134.373) (21.677)

고졸 남자 = 2134.503*** + 151.298***·exper + 214.096 + 22.533·exper
(134.373) (21.677) (187.651) (30.191)

전문대졸 남자 = 2134.503*** + 151.298***·exper + 302.234* + 48.859*·exper
(134.373) (21.677) (178.699) (27.807)

대졸이상 남자 = 2134.503*** + 151.298***·exper + 582.443*** + 152.996***·exper
(134.373) (21.677). (164.852) (26.147)

중졸 이하 여자 = 2134.503*** - 475.061*** + 151.298***·exper
(134.373) (99.406) (21.677)

고졸 여자 = 2134.503*** - 475.061*** + 151.298***·exper + 214.096 + 22.533·exper − 38.661·exper
(134.373) (99.406) (21.677) (187.651) (30.191) (30.332)

전문대졸 여자 = 2134.503*** - 475.061*** + 151.298***·exper + 302.234* + 48.859**·exper − 60.224**·exper
(134.373) (99.406) (21.677) (178.699) (27.807) (26.229)

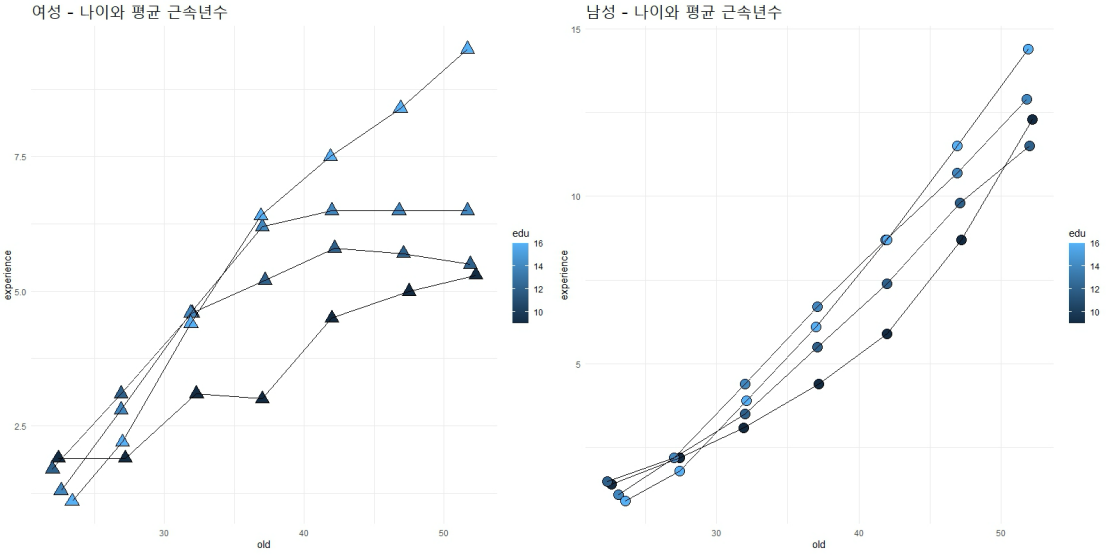
대졸이상 여자 = 2134.503*** - 475.061*** + 151.298***·exper + 582.443*** + 152.996***·exper − 90.040***·exper
(134.373) (99.406) (21.677) (164.852) (26.147) (21.411)

ex)평균 근속년수(exper)가 10일 경우 대졸이상 남녀 임금 추정
대졸이상 남자 = 2716.946 + 304.294·exper = 5759.886 = 월 575만원
대졸이상 여자 = 2241.885 + 214.254·exper = 4384.425 = 월 438만원

같은 학력(대졸 이상), 평균 근속년수를 가정했을 때 월임금총액에서 약 140만원가량 차이가 발생함

변수간 관계 참고자료

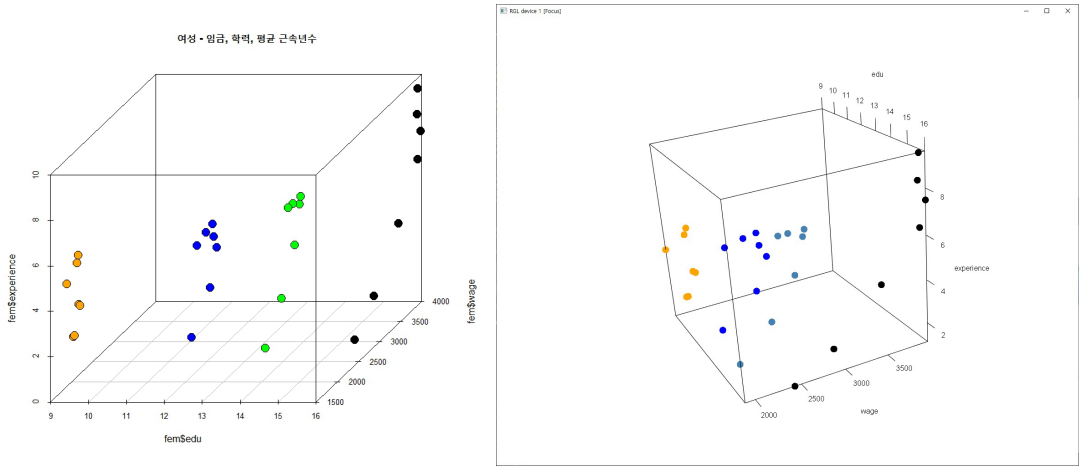
나이와 평균 근속년수(왼쪽 여성, 오른쪽 남성)



여자의 나이와 평균 근속년수의 상관관계 : 0.8308

남자의 나이와 평균 근속년수의 상관관계 : 0.9708

여성의 경우 나이와 평균 근속년수에서 남자에 비해 상관관계가 낮음. 특히 남성의 경우 평균 근속년수가 10~15년 사이에 분포하는 반면 여성의 경우 대졸 미만은 평균 근속년수가 7.5년 부근에서 끊기는 경력단절이 나타남을 알 수 있음. 대졸 여성의 경우 또한 평균 근속년수가 10년으로 남성 대졸자에 비해 5년 가량 낮다.



여성의 임금, 학력, 평균 근속년수 3차원 그래프

가로축 : 학력. 왼쪽부터 색깔별로 중졸이하, 고졸, 전문대졸, 4년제 이상 대졸(검은색)

세로축 : 임금

높이축 : 평균 근속년수

위 3차원 그래프를 볼 때 여성의 경우 중졸이하, 고졸, 전문대졸에서 꺾이는 구간이 존재함. 나이와 평균 근속년수의 상관관계가 왜곡되어 있어 나타나는 것으로 보임(이외의 변수간 관계 그래프는 QR코드의 최종발표PDF 참고)

업종별 분석

3(사무 종사자)의 대졸자를 제외하고 유의미한 업종별 분석 결과 유의미한 분석이 불가능함

1: 관리자 2: 전문가 및 관련 종사자 3: 사무 종사자

4: 서비스 종사자 5: 판매 종사자 6: 농림어업 숙련 종사자

7: 기능원 및 관련 기능 종사자 8: 장치, 기계조작 및 조립종사자 9: 단순노무 종사자

Dependent Variable: WAGE
Method: Least Squares
Date: 12/08/23 Time: 16:32
Sample (adjusted): 4 56
Included observations: 43 after adjustments

1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3824.094	1340.388	2.852975	0.0076
EXPERIENCE	380.5534	88.85052	4.283075	0.0002
EDU_H	-2321.750	1694.290	-1.370338	0.1804
EDU_C	-1302.997	1605.405	-0.811631	0.4232
EDU_U	-63.33838	1474.933	-0.042943	0.9660
FEMALE	-628.7761	915.0043	-0.687184	0.4971
EXPERIENCE*EDU_H	75.72438	140.1735	0.540219	0.5929
EXPERIENCE*EDU_C	-23.39812	138.5706	-0.168853	0.8670
EXPERIENCE*EDU_U	73.96714	123.2150	0.600309	0.5527
EXPERIENCE*EDU_H*FEMALE	-71.96208	102.2563	-0.703742	0.4868
EXPERIENCE*EDU_C*FEMALE	-11.67728	126.7997	-0.092092	0.9272
EXPERIENCE*EDU_U*FEMALE	-19.37617	118.9706	-0.162865	0.8717

R-squared	0.774851	Mean dependent var	6174.698
Adjusted R-squared	0.694959	S.D. dependent var	2665.001
S.E. of regression	1471.893	Akaike info criterion	17.65741
Sum squared resid	67160536	Schwarz criterion	18.14891
Log likelihood	-367.6344	Hannan-Quinn criter.	17.83866
F-statistic	9.698781	Durbin-Watson stat	2.139567
Prob(F-statistic)	0.000000		

Dependent Variable: WAGE
Method: Least Squares
Date: 12/08/23 Time: 16:37
Sample: 1 56
Included observations: 56

2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3463.392	420.1561	8.243108	0.0000
EXPERIENCE	124.4099	66.62285	1.867376	0.0685
EDU_H	-818.8529	624.2335	-1.311774	0.1964
EDU_C	-815.7389	600.0577	-1.359434	0.1809
EDU_U	-310.1306	555.5223	-0.558269	0.5795
FEMALE	-1086.261	365.5161	-2.971855	0.0048
EXPERIENCE*EDU_H	85.73605	90.86301	0.943575	0.3505
EXPERIENCE*EDU_C	74.84718	93.93595	0.796789	0.4299
EXPERIENCE*EDU_U	173.1487	87.86204	1.970688	0.0551
EXPERIENCE*EDU_H*FEMALE	-6.616197	118.1069	-0.056019	0.9556
EXPERIENCE*EDU_C*FEMALE	8.137517	104.1137	0.078160	0.9381
EXPERIENCE*EDU_U*FEMALE	-44.23412	84.52872	-0.523303	0.6034

R-squared	0.709257	Mean dependent var	3528.518
Adjusted R-squared	0.636572	S.D. dependent var	1369.071
S.E. of regression	825.3446	Akaike info criterion	16.45689
Sum squared resid	29972526	Schwarz criterion	16.89089
Log likelihood	-448.7929	Hannan-Quinn criter.	16.62515
F-statistic	9.757868	Durbin-Watson stat	1.416369
Prob(F-statistic)	0.000000		

Dependent Variable: WAGE
Method: Least Squares
Date: 12/08/23 Time: 16:39
Sample: 1 56
Included observations: 56

3

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2435.388	149.8673	16.25030	0.0000
EXPERIENCE	174.7164	17.26508	10.11964	0.0000
EDU_H	-188.7829	210.9380	-0.894969	0.3757
EDU_C	-155.4396	212.4692	-0.731586	0.4683
EDU_U	173.4927	198.3431	0.874710	0.3865
FEMALE	-446.4398	122.2127	-3.652973	0.0007
EXPERIENCE*EDU_H	36.39699	26.97307	1.349383	0.1841
EXPERIENCE*EDU_C	41.81435	26.76901	1.562043	0.1254
EXPERIENCE*EDU_U	112.0363	25.22943	4.440699	0.0001
EXPERIENCE*EDU_H*FEMALE	-40.61532	27.50732	-1.476528	0.1469
EXPERIENCE*EDU_C*FEMALE	-38.15267	28.19274	-1.353280	0.1829
EXPERIENCE*EDU_U*FEMALE	-66.06867	23.78728	-2.777479	0.0080

R-squared	0.945135	Mean dependent var	3512.768
Adjusted R-squared	0.931419	S.D. dependent var	1125.291
S.E. of regression	294.6911	Akaike info criterion	14.39714
Sum squared resid	3821085.	Schwarz criterion	14.83115
Log likelihood	-391.1200	Hannan-Quinn criter.	14.56540
F-statistic	68.90645	Durbin-Watson stat	1.479218
Prob(F-statistic)	0.000000		

Dependent Variable: WAGE
Method: Least Squares
Date: 12/08/23 Time: 16:40
Sample: 1 56
Included observations: 56

4

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2093.169	173.7901	12.04424	0.0000
EXPERIENCE	115.1688	54.07271	2.129887	0.0389
EDU_H	-124.3096	247.7061	-0.501843	0.6183
EDU_C	100.3902	221.9188	0.452374	0.6532
EDU_U	61.23434	225.4081	0.271660	0.7872
FEMALE	-472.3352	119.2047	-3.962386	0.0003
EXPERIENCE*EDU_H	66.82887	70.22649	0.951619	0.3465
EXPERIENCE*EDU_C	47.70425	57.82286	0.825007	0.4138
EXPERIENCE*EDU_U	67.52448	59.64156	1.132172	0.2637
EXPERIENCE*EDU_H*FEMALE	-20.63406	70.12254	-0.294257	0.7699
EXPERIENCE*EDU_C*FEMALE	-17.74000	40.15810	-0.441754	0.6608
EXPERIENCE*EDU_U*FEMALE	44.38379	41.43844	1.071078	0.2900

R-squared	0.868378	Mean dependent var	2504.393
Adjusted R-squared	0.835473	S.D. dependent var	659.2801
S.E. of regression	267.4169	Akaike info criterion	14.20290
Sum squared resid	3146519.	Schwarz criterion	14.63691
Log likelihood	-385.6813	Hannan-Quinn criter.	14.37117
F-statistic	26.39011	Durbin-Watson stat	1.012174
Prob(F-statistic)	0.000000		

Dependent Variable: WAGE
Method: Least Squares
Date: 12/08/23 Time: 16:41
Sample (adjusted): 2 56
Included observations: 55 after adjustments

5

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2920.767	184.4603	15.83412	0.0000
EXPERIENCE	41.44361	29.69458	1.395662	0.1700
EDU_H	-646.5834	271.8517	-2.378441	0.0219
EDU_C	-479.6410	264.9129	-1.810561	0.0772
EDU_U	-324.0089	264.7710	-1.223732	0.2277
FEMALE	-797.8822	160.1821	-4.981096	0.0000
EXPERIENCE*EDU_H	137.1694	46.66370	2.939530	0.0053
EXPERIENCE*EDU_C	140.1265	40.84199	3.430943	0.0013
EXPERIENCE*EDU_U	218.9786	42.94764	5.098734	0.0000
EXPERIENCE*EDU_H*FEMALE	-3.917561	57.85447	-0.067714	0.9463
EXPERIENCE*EDU_C*FEMALE	-10.31417	46.18916	-0.223303	0.8244
EXPERIENCE*EDU_U*FEMALE	-25.35944	44.66604	-0.567757	0.5732

R-squared	0.881194	Mean dependent var	2980.727
Adjusted R-squared	0.850802	S.D. dependent var	947.3703
S.E. of regression	365.9328	Akaike info criterion	14.83301
Sum squared resid	5757994.	Schwarz criterion	15.27097
Log likelihood	-395.9077	Hannan-Quinn criter.	15.00237
F-statistic	28.99409	Durbin-Watson stat	1.602749
Prob(F-statistic)	0.000000		

Dependent Variable: WAGE
Method: Least Squares
Date: 12/08/23 Time: 16:42
Sample: 1 56
Included observations: 56

6

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1980.951	135.0880	14.66416	0.0000
EXPERIENCE	134.7790	29.00455	4.646821	0.0000
EDU_H	-43.34218	169.0874	-0.256330	0.7989
EDU_C	273.7036	167.5088	1.633966	0.1094
EDU_U	69.65042	162.6854	0.428130	0.6706
FEMALE	-365.5760	78.22061	-4.673653	0.0000
EXPERIENCE*EDU_H	50.49903	40.35338	1.251420	0.2174
EXPERIENCE*EDU_C	14.65035	37.04778	0.395445	0.6944
EXPERIENCE*EDU_U	49.49605	41.56602	1.190782	0.2401
EXPERIENCE*EDU_H*FEMALE	-47.13564	34.79846	-1.354532	0.1825
EXPERIENCE*EDU_C*FEMALE	-196.7419	44.93690	-4.378181	0.0001
EXPERIENCE*EDU_U*FEMALE	-196.6991	40.94535	-4.803942	0.0000

R-squared	0.917533	Mean dependent var	2287.393
Adjusted R-squared	0.896916	S.D. dependent var	527.3220
S.E. of regression	169.3057	Akaike info criterion	13.28870
Sum squared resid	1261235.	Schwarz criterion	13.72270
Log likelihood	-360.0836	Hannan-Quinn criter.	13.45696
F-statistic	44.50411	Durbin-Watson stat	1.518480
Prob(F-statistic)	0.000000		

Dependent Variable: WAGE
Method: Least Squares
Date: 12/08/23 Time: 16:43
Sample: 1 56
Included observations: 56

7

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2050.998	158.3676	12.95087	0.0000
EXPERIENCE	172.0255	25.34914	6.786246	0.0000
EDU_H	417.7324	235.6902	1.772379	0.0833
EDU_C	589.3185	209.8103	2.808815	0.0074
EDU_U	675.0495	201.6353	3.347874	0.0017
FEMALE	-646.1470	128.1457	-5.042283	0.0000
EXPERIENCE*EDU_H	-21.77812	40.75844	-0.534322	0.5958
EXPERIENCE*EDU_C	-19.44628	34.44260	-0.564600	0.5752
EXPERIENCE*EDU_U	-13.49346	33.24347	-0.405898	0.6868
EXPERIENCE*EDU_H*FEMALE	-40.60021	53.41537	-0.760085	0.4513
EXPERIENCE*EDU_C*FEMALE	-40.87226	36.59293	-1.116944	0.2701
EXPERIENCE*EDU_U*FEMALE	33.62303	33.80411	0.994643	0.3253

R-squared	0.902216	Mean dependent var	2872.661
Adjusted R-squared	0.877770	S.D. dependent var	798.1128
S.E. of regression	279.0318	Akaike info criterion	14.28794
Sum squared resid	3425785.	Schwarz criterion	14.72194
Log likelihood	-388.0623	Hannan-Quinn criter.	14.45620
F-statistic	36.90639	Durbin-Watson stat	1.272873
Prob(F-statistic)	0.000000		

Dependent Variable: WAGE
Method: Least Squares
Date: 12/08/23 Time: 16:44
Sample: 1 56
Included observations: 56

8

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2315.284	268.8323	8.612371	0.0000
EXPERIENCE	93.44950	36.99679	2.525882	0.0152
EDU_H	341.3622	403.5034	0.845996	0.4021
EDU_C	465.2478	393.7220	1.181666	0.2437
EDU_U	933.7236	359.7194	2.595700	0.0128
FEMALE	-349.7093	208.3216	-1.678699	0.1003
EXPERIENCE*EDU_H	36.58507	57.81850	0.632757	0.5302
EXPERIENCE*EDU_C	65.80162	54.96057	1.197251	0.2376
EXPERIENCE*EDU_U	20.05170	56.26050	0.356408	0.7232
EXPERIENCE*EDU_H*FEMALE	-11.97433	52.43461	-0.228367	0.8204
EXPERIENCE*EDU_C*FEMALE	-10.95583	49.00702	-0.223556	0.8241
EXPERIENCE*EDU_U*FEMALE	-22.07640	49.48977	-0.446080	0.6577

R-squared	0.679148	Mean dependent var	3280.304
Adjusted R-squared	0.598935	S.D. dependent var	731.9476
S.E. of regression	463.5400	Akaike info criterion	15.30307
Sum squared resid	9454250.	Schwarz criterion	15.73708
Log likelihood	-416.4860	Hannan-Quinn criter.	15.47133
F-statistic	8.466817	Durbin-Watson stat	0.793624
Prob(F-statistic)	0.000000		

Dependent Variable: WAGE
Method: Least Squares
Date: 12/08/23 Time: 16:45
Sample: 1 56
Included observations: 56

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Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1980.951	135.0880	14.66416	0.0000
EXPERIENCE	134.7790	29.00455	4.646821	0.0000
EDU_H	-43.34218	169.0874	-0.256330	0.7989
EDU_C	273.7036	167.5088	1.633966	0.1094
EDU_U	69.65042	162.6854	0.428130	0.6706
FEMALE	-365.5760	78.22061	-4.673653	0.0000
EXPERIENCE*EDU_H	50.49903	40.35338	1.251420	0.2174
EXPERIENCE*EDU_C	14.65035	37.04778	0.395445	0.6944
EXPERIENCE*EDU_U	49.49605	41.56602	1.190782	0.2401
EXPERIENCE*EDU_H*FEMALE	-47.13564	34.79846	-1.354532	0.1825
EXPERIENCE*EDU_C*FEMALE	-196.7419	44.93690	-4.378181	0.0001
EXPERIENCE*EDU_U*FEMALE	-196.6991	40.94535	-4.803942	0.0000

R-squared	0.917533	Mean dependent var	2287.393
Adjusted R-squared	0.896916	S.D. dependent var	527.3220
S.E. of regression	169.3057	Akaike info criterion	13.28870
Sum squared resid	1261235.	Schwarz criterion	13.72270
Log likelihood	-360.0836	Hannan-Quinn criter.	13.45696
F-statistic	44.50411	Durbin-Watson stat	1.518480
Prob(F-statistic)	0.000000		

결론

1. 2019년 기준, 우리나라는 학력에 의한 임금 차이가 크다
2. 여성은 4년제 대학을 졸업하는 게 효용이 크다
3. 여성은 남성에 비해 경력에서 왜곡이 발생한다
4. 여성은 남성에 비해 평균적으로 임금이 적다. 이는 모든 연령, 경력, 학력에서 동일하게 나타난다.