Individual Research Paper: Women in Workforce (Gender Pay Gap)

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ISQA 8750: Storytelling with Data

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1. Introduction

This project is about the how women and men are involved in different occupations across the United States and how big is the wage gap between Men and Women. What causes the Wage gap? To start with, the Gender Gap is the difference between the wages of women and men who are working in the same occupation. It is observed that women make 82% of what men earn. Not only in USA, the wage gap is experienced all around the world: in New-York a 78% of Salary Gap is present. Based on the current trend it will approximately take around 6 to 7 decades to close the gap.

By preforming a clear analysis on the gap, one can tell how well a nation is developed than any other. Companies which are trying to reduce the gap are getting a good appreciation in the society and some companies are trying to reduce the gap and publicize it to increase the company's reputation in the society. Knowing this, many companies are trying to hire more female workers. The analysis on the gap can also make many national wide organizations to concentrate on taking special care on women, especially in their education which in turn can reduce the gap.

2. Overview of Data Set

This dataset is provide by the Bureau of Labor Statistics which shows the comprising data for 535 different fields in all different Occupations. The Data consists of the information related to the

incomes of the working American Citizens and the incomes are categorized into Female and Male weekly salaries. The following attributes are the columns in the available dataset.

Occupation: Job title as given from BLS.

All_workers: Total Number of workers in an Occupation.

All_weekly: Median weekly salary including male and female workers (USD).

M_workers: Total Number of male workers in an Occupation.

M_weekly: Median weekly salary for male workers in an Occupation (USD).

F_workers: Total Number of female workers in an Occupation.

F_weekly: Median weekly salary for female workers in an Occupation (USD).

Abc inc_occ_gender.csv Occupation	# inc_occ_gender.csv All workers	# inc_occ_gender.csv All weekly	# inc_occ_gender.csv M workers	# inc_occ_gender.csv M weekly	# inc_occ_gender.csv F workers	# inc_occ_gender.csv F weekly
ALL OCCUPATIONS	109,080	809	60,746	895	48,334	726
MANAGEMENT	12,480	1351	7,332	1,486	5,147	1,139
Chief executives	1,046	2041	763	2,251	283	1,836
General and operatio...	823	1260	621	1,347	202	1,002
Marketing and sales ...	948	1462	570	1,603	378	1,258
Administrative servic...	170	1191	96	1,451	73	981
Computer and inform...	636	1728	466	1,817	169	1,563
Financial managers	1,124	1408	551	1,732	573	1,130
Human resources ma...	254	1365	68	1,495	186	1,274
Purchasing managers	193	1348	109	1,404	84	1,226
Transportation, stora...	276	966	224	1,006	52	749

3.   Literature Review

The gender pay gap portrays the stark differences between men's pay and women's pay as a percentage of men's pay. For example, if gender pay gap is 15% which means women on average

earns 15% less than men. Gender pay gaps can be positive or negative, in which a negative gender gap implies that women earns more than men on average and vice versa. Gender pay gaps play an important criterion when understanding and analyzing equal pay within the organization as well as nationally. The gender pay gaps can be used for wide range of comparisons, varies from single economy wide figures. There are various theories explaining gender pay gap e.g human capital model, which explains females expects to spend less time in market, job search and therefore do not expect comparable equal pay as compared to males in the market. The other factor is occupational segregation in the market since most of the women expected to work part-time than most men in most of the occupations. The above factors suggest that clear and real differences can be made by governments, institutions, and organizations to address the gender gap pay. There are many opportunities such as flexible working opportunities, transparent pay structure, career development opportunities and equally number of women workforces in top level management who plays in critical decision making within the organization are all positively connected with reducing the gender pay gap. Figure 1 Show the total number of male and female workers who are working.
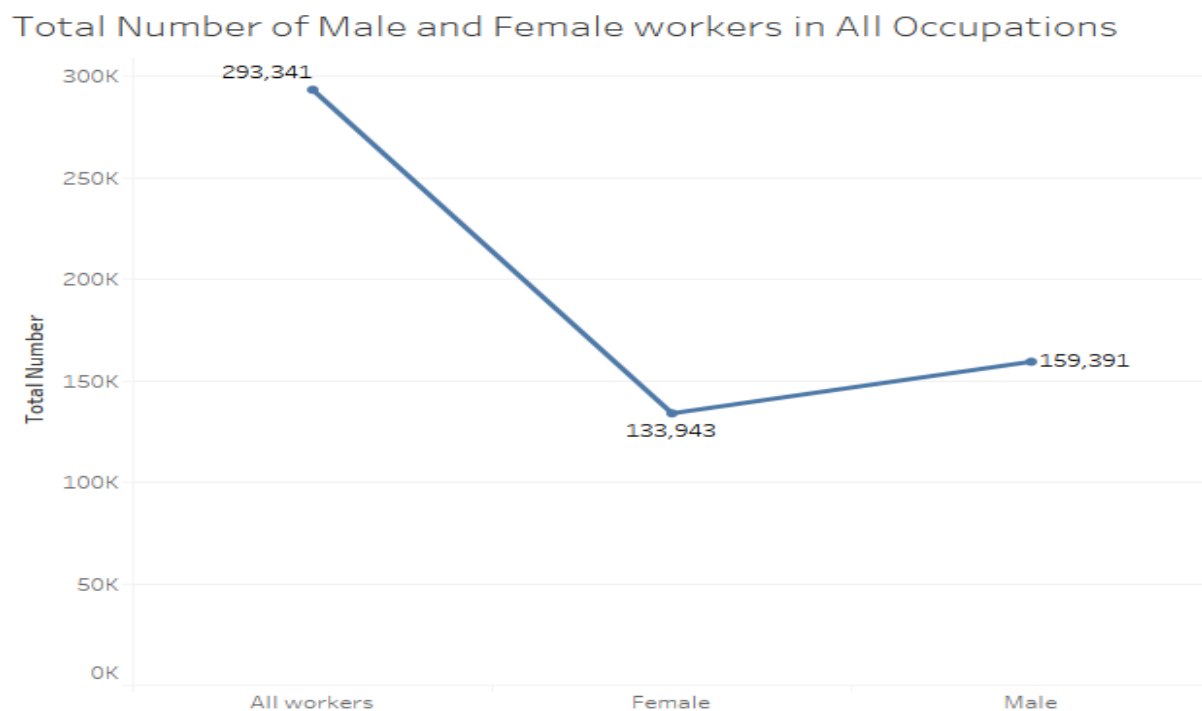
Figure 1: Total Number of Female and Male workers

Exploring the data, visualization is created on the total number of workers, working in different occupations. The figure 2, bar graph shows how many men and women were working in each different occupation. It is observed that there are more female workers in the Office occupation when compared to men.

Figure 2 : Total Number of Male and Female Workers in Different Occupations

The salary difference between Male and Female is shown as a visualization below(figure 3). Where it is observed that males have the weekly average wage always greater than the females

in all different occupations. The Highest weekly average salary paid for the males is in Legal occupation.

Weekly Average Salary for Female and Male for different Occupations

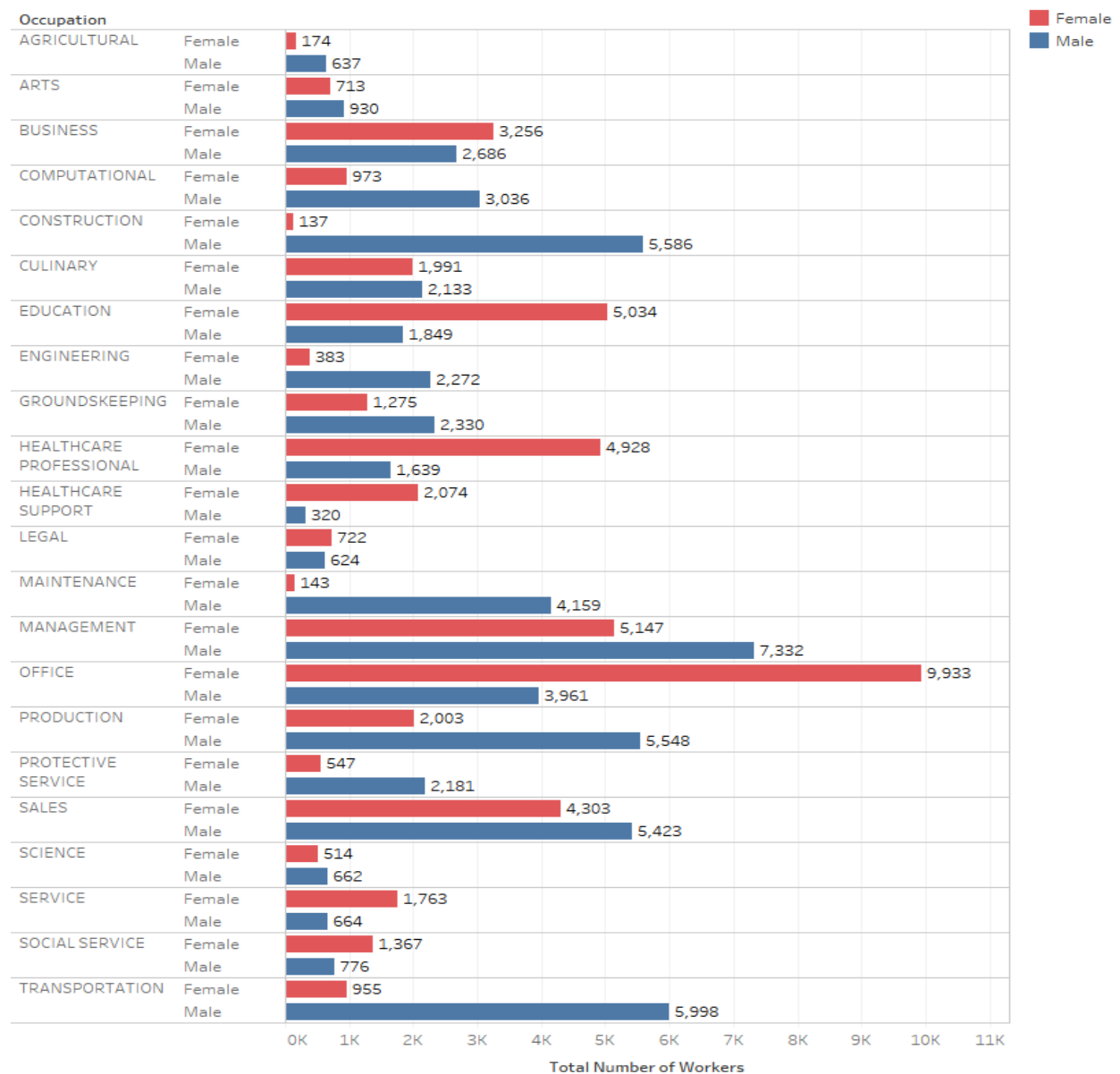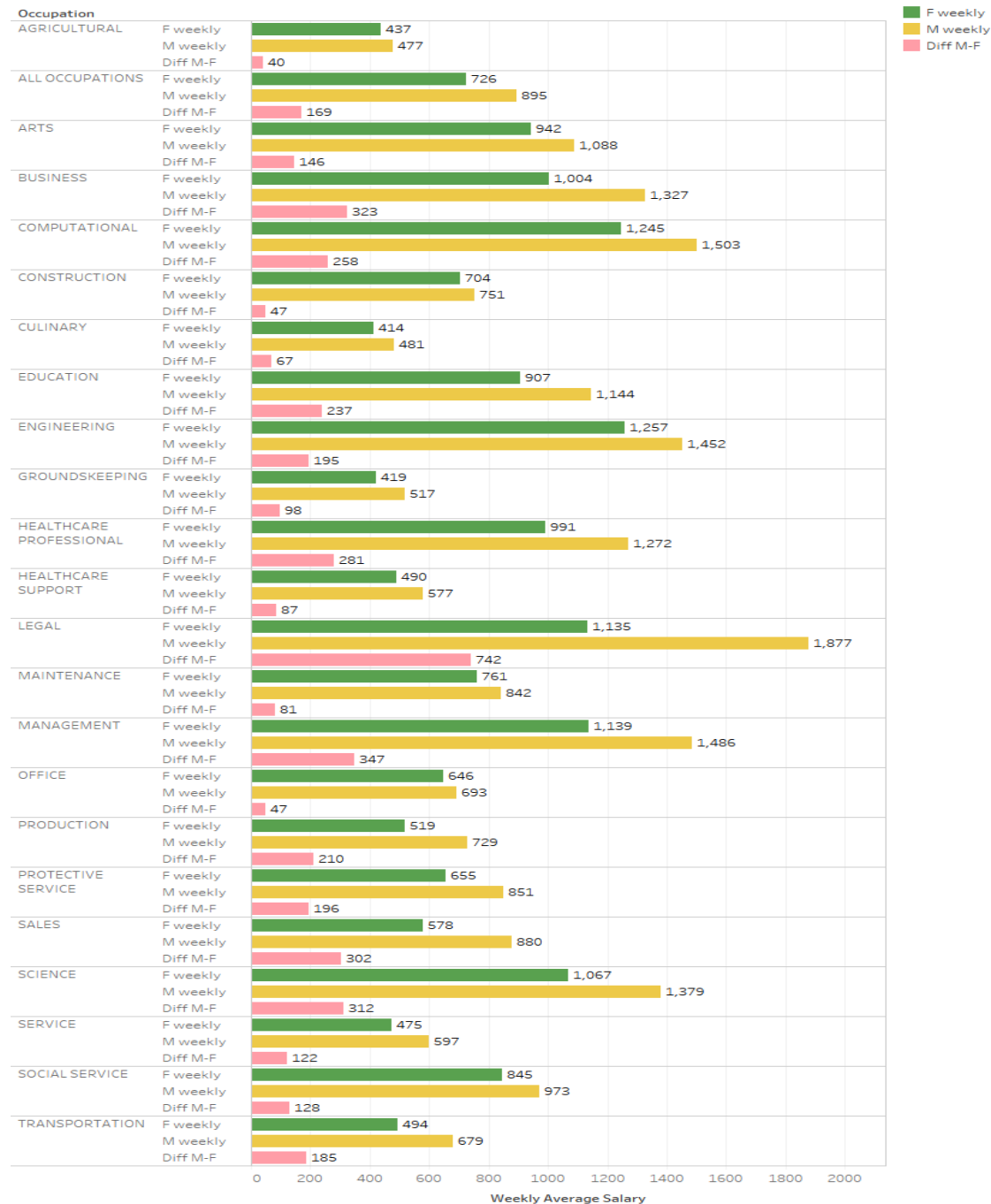| Occupation		F weekly	M weekly	Diff M-F

Occupation			
AGRICULTURAL	F weekly	437	
	M weekly	477	
	Diff M-F	40	
ALL OCCUPATIONS	F weekly	726	
	M weekly	895	
	Diff M-F	169	
ARTS	F weekly	942	
	M weekly	1,088	
	Diff M-F	146	
BUSINESS	F weekly	1,004	
	M weekly	1,327	
	Diff M-F	323	
COMPUTATIONAL	F weekly	1,245	
	M weekly	1,503	
	Diff M-F	258	
CONSTRUCTION	F weekly	704	
	M weekly	751	
	Diff M-F	47	
CULINARY	F weekly	414	
	M weekly	481	
	Diff M-F	67	
EDUCATION	F weekly	907	
	M weekly	1,144	
	Diff M-F	237	
ENGINEERING	F weekly	1,257	
	M weekly	1,452	
	Diff M-F	195	
GROUNDSKEEPING	F weekly	419	
	M weekly	517	
	Diff M-F	98	
HEALTHCARE PROFESSIONAL	F weekly	991	
	M weekly	1,272	
	Diff M-F	281	
HEALTHCARE SUPPORT	F weekly	490	
	M weekly	577	
	Diff M-F	87	
LEGAL	F weekly	1,135	
	M weekly	1,877	
	Diff M-F	742	
MAINTENANCE	F weekly	761	
	M weekly	842	
	Diff M-F	81	
MANAGEMENT	F weekly	1,139	
	M weekly	1,486	
	Diff M-F	347	
OFFICE	F weekly	646	
	M weekly	693	
	Diff M-F	47	
PRODUCTION	F weekly	519	
	M weekly	729	
	Diff M-F	210	
PROTECTIVE SERVICE	F weekly	655	
	M weekly	851	
	Diff M-F	196	
SALES	F weekly	578	
	M weekly	880	
	Diff M-F	302	
SCIENCE	F weekly	1,067	
	M weekly	1,379	
	Diff M-F	312	
SERVICE	F weekly	475	
	M weekly	597	
	Diff M-F	122	
SOCIAL SERVICE	F weekly	845	
	M weekly	973	
	Diff M-F	128	
TRANSPORTATION	F weekly	494	
	M weekly	679	
	Diff M-F	185	

Weekly Average Salary

Figure 3: Weekly Average Salary for Male and Female in different Occupations

F_weekly: Weekly Average salary of Female workers in an occupation

M_weekly: Weekly Average Salary of Male workers in an occupation

Diff M-F: Weekly Average Salary difference between Male and Female((M_weekly)-(F_weekly))

4. Research Questions

Below are the Research questions that this paper focus on

1. What is the salary difference for the male and Female in different Occupations?
2. What are the different occupations that provide the equal ratio of salary for both Female and Male?
3. What are the occupations that have the huge wage ratio difference?
4. What are the highly paid fields for Women?
5. What are the fields that women have the small share?

Hypothesis:

The Hypothesis Testing would be

H0: Incomes for women can be less than or equal to men.

Ha: Incomes for women can be higher than men.

5. References

- *Blau, Francine D., and Lawrence M. Kahn(2017). "The Gender Wage Gap: Extent, Trends, and Explanations." Journal of Economic Literature, vol. 55, no. 3, Sept. 2017, pp. 789–865. DOI.org (Crossref), doi:10.1257/jel.20160995*
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