

## An analysis of schooling and sex through the National Household Income and Expenditure Survey in Mexico, 2012

## Un análisis de la escolaridad y el sexo a través de la Encuesta Nacional de Ingreso y Gasto de los Hogares en México, 2012

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### Abstract

The role of education, punctuated by Mendez (2009), is explained as a universal right that everyone should have and as an instrument or means of social development that would ensure freedom and democracy. Education is essential for countries to achieve higher levels of development mechanism. In addition, it must be a key to obtaining knowledge and help train men seeking welfare (General Education Act) factor.

**Analysis, Education, Sex, National Household Income and Expenditure Survey in Mexico**

### Resumen

El papel de la educación, puntualizada por Méndez (2009), es explicado como un derecho universal que todo individuo debe tener y como un instrumento o medio del desarrollo social que permita garantizar la libertad y la democracia. La educación es un mecanismo primordial para que los países alcancen niveles de desarrollo más elevados. Además, ésta debe ser un factor clave para la obtención de conocimientos y que ayude a formar hombres que busquen el bienestar social (Ley General de Educación).

**Análisis, Escolaridad, Sexo, Encuesta Nacional de Ingreso y Gasto de los Hogares en México**

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## Introduction

The Mexican educational system has expanded significantly during the last 50 years (Latapí, 2002). New schools have been built and more teachers have been hired. The Mexican Constitution establishes that education is a right of every citizen, in fact, the Mexican educational system has increased its efforts so that each and every child in the country can enter school. Nowadays, compulsory basic education is made up of kindergarten, primary and secondary school, that is, the minimum level of studies offered by the Mexican government already reaches 12 school years. Unfortunately, although access to education, at least at the basic level, has been almost universal, unfortunately there is a huge differential by gender, social status and geographic location (urban or rural), among other factors. From the above it can be established that education is generally seen as a key catalyst for the general individual, the community or national development. The theory of human capital, developed by Schultz (1961) and Becker (1975), analyzes schooling in the form of expenditure and at the same time in the form of investment that makes individuals more productive and allows a higher expected salary.

Authors such as De Gregorio and Lee, (2000) and Checchi, (2001) independently show that a higher level of education accompanied by a more equitable distribution are factors that achieve a more equitable distribution of income, while Castello and Domenéch (2001) reveal in their study that educational inequality has a negative effect on the economic growth of nations and both Ram (1990) and Thomas and others (2000 and 2002) demonstrate the existence of an inverted “U” curve of education.

Within Mexico, there are fewer studies between the relationship between schooling and income distribution; However, the most outstanding are the Brachos (1994) who link the relationship between the average years of schooling and their inequality, concluding the existence of an inverted “U” curve for education; The one by Martínez (2002) that performs an analysis of the behavior that inequality in education has had, from 1960 to 2000, for the 32 states, (in the case of Aguascalientes, the study is used for its municipalities considering only the year 2000) and concludes that although there has been a considerable decrease in educational inequality, it has not been enough to reduce income inequality.

Another author documented (Barceinas (2004), for the Mexican case, that schooling reduces income inequality, but leaves open to debate whether this effect may be due to exogenous causes, for example the economic growth of a country.

He concludes that the best The effect of reducing the concentration of income is the distribution of education. For this, the objective of this work is to analyze in a purely descriptive way the variables of household income and expenditure according to schooling and sex, both at the household level and by state.

## Methodology

For the analysis of the information, the database of the National Household Income and Expenditure Survey for the year 2012, published by the National Institute of Statistics and Geography (INEGI), was considered.

The base contains 9002 observations of individuals of members of the households that allows to work at the individual level and by federal entity since they have a representative sample. Only male and female heads of households over 12 years of age were cared for.

The variables with which they were worked were:

- Age
- Sex
- Quarterly current income
- Quarterly monetary expenditure

The classification of current monetary expenses, according to the ENIGH, are:

- Saving.
- Spending on food, beverages and tobacco.
- Dress and footwear.
- Housing and fuels.
- Articles and services of the house.
- Health care.
- Transport and communication.
- Education and recreation.
- Personal care.
- Expense transfer
- Credit card payment

For the variable education, it was based on the following classification:

- Without schooling
- Complete primary
- Incomplete secondary
- Complete secondary
- Incomplete high school
- Complete high school
- University
- Postgraduate

### Important characteristics of the survey

A brief relevance of the most important data available in the ENIGH database (2012) is presented below. Table 1 shows that nuclear-type households are the most representative, that is, households made up of a father and mother and children.

Kind of Home			
	Frequency	Percentage	Accumulated
Sole proprietorship	1,041	11.56	11.56
Nuclear	5,713	63.46	75.03
Extended	2,110	23.44	98.47
Compound	96	1.07	99.53
Co-resident	42	0.47	100.00

**Table 1** Household distribution

Table 2 shows the composition of the socioeconomic strata according to households. It is observed that the lower middle stratum has the highest percentage, with a value close to 50% of all households.

Stratum Socioeconomic			
	Frequency	Percentage	Accumulated
Low	2,623	29.14	29.14
Medium low	4,391	48.78	77.92
Medium high	1,475	16.39	94.30
High or tall	513	5.70	100.00

**Table 2** Households according to socioeconomic status

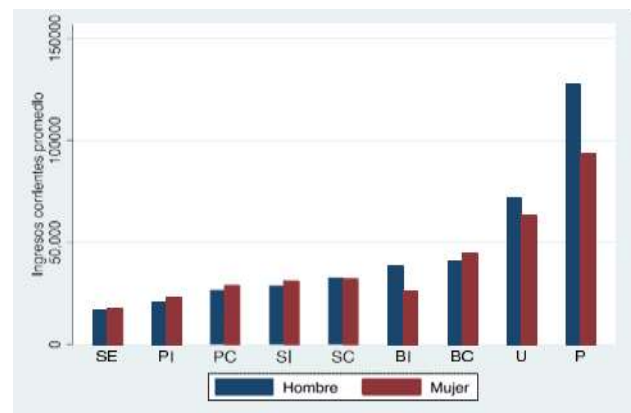
Table 3 represents the schooling of the heads of household. As can be seen, the bosses with the highest representation are those who have completed secondary school followed by incomplete primary school.

	Frequency	Percentage	Accumulated
Without	965	10.72	10.72
Scholarship	1,940	21.55	32.27
Primary	1,611	17.90	50.17
Incomplete	326	3.62	53.79
Primary	2,021	22.45	76.24
Complete	262	2.91	79.15
Secondary	785	8.72	87.87
Incomplete	954	10.60	98.47
Secondary	138	1.53	100.00

**Table 3** Education of the head of the household

### Results

In this section, the most outstanding results of the survey are presented by crossing variables. The average age of the heads of household is 48 years old while that of the heads of households is 53 years old, they represent 25% of the total. The average size of household members is 4 people with a value of 21%. Figure 1 represents the average current income level by level of education and sex. The results show that a higher degree of schooling has a higher income, however, at the university and postgraduate level, women earn less.



**Figure 1** Average income by level of education and sex

Table 4 shows the results by state by sex and its gap, it is observed that the state with the greatest inequality between men and women is Nuevo León, while Jalisco is the state with the greatest gap in favor of women.

Federal entity	Men	Woman	Gap
Aguascalientes	\$36,999	\$25,919	\$11,081
Baja California	\$54,105	\$38,300	\$15,804
Baja California Sur	\$47,461	\$44,217	\$3,244
Campeche	\$36,288	\$35,666	\$621
Coahuila	\$33,093	\$30,158	\$2,935
Colima	\$38,004	\$34,623	\$3,381
Chiapas	\$18,443	\$15,868	\$2,575
Chihuahua	\$30,702	\$25,716	\$4,986
federal District	\$68,239	\$51,991	\$16,249
Durango	\$27,832	\$22,398	\$5,434
Guanajuato	\$32,412	\$28,362	\$4,051
Warrior	\$20,495	\$16,188	\$4,306
gentleman	\$26,509	\$27,468	-\$959
Jalisco	\$39,439	\$43,832	-\$4,394
Mexico	\$35,247	\$29,192	\$6,055
Michoacan	\$26,129	\$28,745	-\$2,616
Morelos	\$32,317	\$29,321	\$2,996
Nayarit	\$29,671	\$30,963	-\$1,292
New Lion	\$56,512	\$37,485	\$19,027
Oaxaca	\$18,402	\$16,737	\$1,665
Puebla	\$25,437	\$19,065	\$6,371
Queretaro	\$45,041	\$45,734	-\$692
Quintana Roo	\$43,512	\$35,524	\$7,988
San Luis Potosi	\$26,879	\$26,051	\$828
Sinaloa	\$32,683	\$31,863	\$820
Sonora	\$44,146	\$38,899	\$5,246
Tabasco	\$31,354	\$33,221	-\$1,867
Tamaulipas	\$35,938	\$35,399	\$539
Tlaxcala	\$27,050	\$28,465	-\$1,415
Veracruz	\$26,115	\$24,578	\$1,537
Yucatan	\$29,044	\$32,035	-\$2,992
Zacatecas	\$26,767	\$19,064	\$7,704

Table 4 Average income by state and sex

Figure 2 represents the average quarterly monetary expenditure by level of education and sex; the figure is very similar to quarterly monetary income.

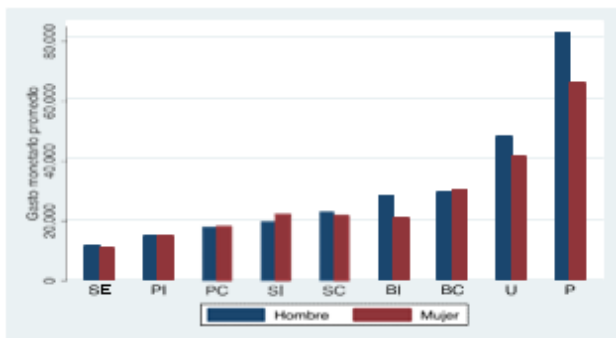


Figure 2 Quarterly monetary expenditure by schooling and sex

The different types of spending by level of education and sex are shown below. Figure 3 presents the average level of spending on education and recreation by level of education and sex. Spending on education and recreation is focused on spending on education, recreation, tourist packages, care, accessories, and other expenses. According to figure 3, men with university and postgraduate levels have the highest spending value.

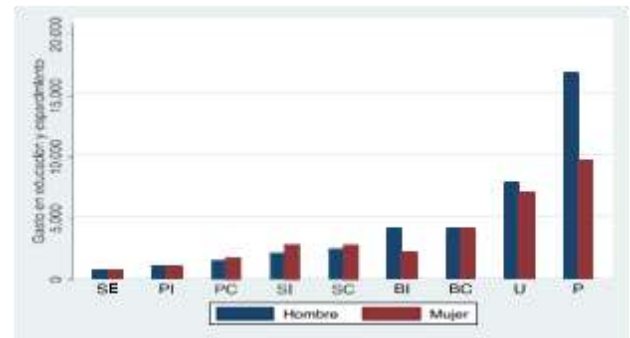


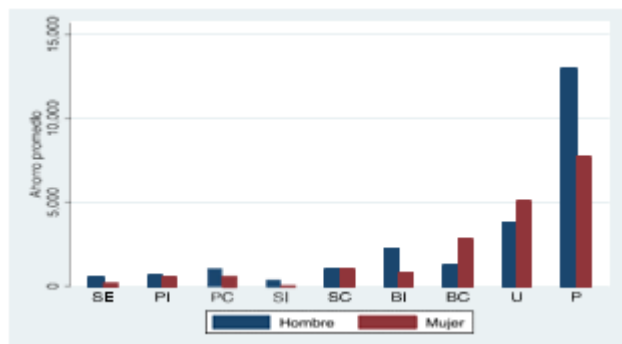
Figure 3 Expenditure on education and leisure by educational level and sex

Table 5 presents the average current spending by state and sex, the Federal District is the one with the highest spending for both men and women while Sinaloa is the state with the lowest spending in terms of men, while Puebla is for the women.

Federal entity	Men	Woman
Aguascalientes	8922.37	5340.28
Baja California	10772.78	8499.21
Baja California Sur	9001.44	8096.62
Campeche	8613.92	8060.13
Coahuila	7756.83	6212.66
Colima	9807.03	9342.82
Chiapas	5027.22	5361.49
Chihuahua	7950.53	6503.13
federal District	13595.80	10911.94
Durango	7421.87	5707.25
Guanajuato	8705.88	7955.13
Warrior	6867.71	5498.57
gentleman	6694.93	5745.31
Jalisco	9541.90	7002.49
Mexico	9290.37	7134.62
Michoacan	7832.33	7089.05
Morelos	9097.16	8455.61
Nayarit	8564.41	7578.39
New Lion	10695.24	7280.48
Oaxaca	6270.49	5683.45
Puebla	7070.10	4781.89
Queretaro	8174.70	7302.81
Quintana Roo	10231.42	8283.46
San Luis Potosi	7186.39	5526.43
Sinaloa	5745.93	5596.68
Sonora	9272.69	7721.03
Tabasco	8321.07	8030.66
Tamaulipas	8132.63	7338.07
Tlaxcala	7665.99	6488.93
Veracruz	7299.55	6010.20
Yucatan	9178.87	8950.16
Zacatecas	6290.06	5398.05

Table 5 Average spending on food, beverages, and tobacco

Figure 4 shows the average level of savings by level of education and sex, as can be seen, the highest levels of education, in women, tend to have a higher level of savings, however men do not have the same regularity of savings, somehow the level of education does not determine the level of savings of people.



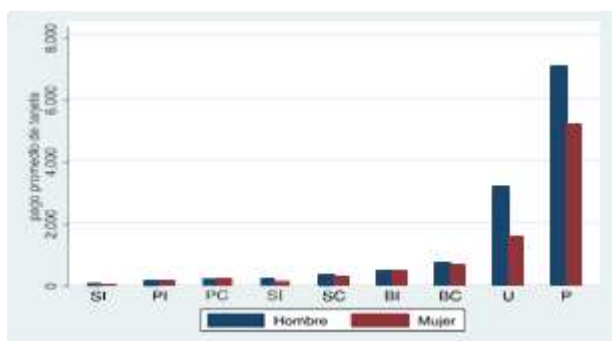
**Figure 4** Average level of savings by schooling and sex

Table 6 represents the average level of savings by state. It can be seen that households in the state of Oaxaca save the least, however households in the state of Mexico save the most. In fact, the savings ratio is 41 times more between the state of Mexico and Oaxaca.

Condition	Saving	Condition	Saving
Oaxaca	\$86.68	Baja California	\$1,206.67
Chiapas	\$94.64	Yucatán	\$1,254.82
Aguascalientes	\$286.17	Campeche	\$1,506.15
Hidalgo	\$308.84	Colima	\$1,532.79
Michoacán	\$414.07	Baja California	\$1,649.16
Tlaxcala	\$422.76	Quintana Roo	\$1,779.15
Tabasco	\$445.47	Zacatecas	\$1,800.64
Sinaloa	\$484.40	Jalisco	\$1,810.24
San Luis Potosí	\$490.89	Guanajuato	\$1,875.90
Guerrero	\$545.38	Tamaulipas	\$1,877.93
Durango	\$747.76	Morelos	\$2,530.78
Coahuila	\$821.33	Querétaro	\$2,658.56
Chihuahua	\$929.57	Distrito Federal	\$3,017.66
Puebla	\$1,116.93	Nayarit	\$3,225.04
Nuevo León	\$1,117.41	Sonora	\$3,510.95
Veracruz	\$1,176.49	México	\$3,670.94

**Table 6**

Figure 5 shows the average credit card payment by level of education and sex, as can be seen, the level of payment is higher for both men and women with a university degree or higher. This may be due to the fact that professionals have better jobs, a higher salary level, they can have greater credit facilities and borrow more..



**Figure 5** Average payment of credit cards by level of education and sex

## Conclusions

Education is key so that any nation, state or municipality can develop from an economic, social and cultural sphere. Once society has achieved a minimum acceptable level of education then equity with equal opportunities can be applied. As has been observed, Rawls established that if there is an inequality in initial conditions then we must apply a theory of social justice that seeks not only equality but also equal opportunities to really achieve justice in those who have the least.

This document also concludes four important points:

- A higher level of schooling generates better income, however the gender more
- that sex plays a counteracting role towards women.
- In most cases there is a gap in income by federal entities
- salary between men and women and they begin to reduce and are even usually higher in certain states in favor of women, however it is not enough to counteract this wage discrimination.
- Savings levels are not determined by the level of education, in fact Expensive (2014) shows in his thesis that schooling is not the key to saving people, but there are other factors that have a significant effect such as financial culture.
- The income levels of people together with their education, in both sexes, influences
- for access to obtain a credit card.

Finally, studying the distribution of income and expenditure of households only on the side of schooling leaves open to the possibility of analyzing more factors that influence the determination of these.

## References

Attanasio, Orazio y Székely, Miguel., (1999) “Ahorro de los hogares y distribución del ingreso en México”, *Economía Mexicana Nueva Época*, vol. VIII, núm 2, segundo semestre de 1999.

Barceinas, Fernando; (2003), “Educación y distribución del ingreso en México”, SITEAL, Buenos Aires.

Becker, Gary, 1975, *Human Capital, A Theoretical and Empirical Analysis, with Special Reference to Education*, Columbia University Press, New York, 1975.

Bracho, Teresa, (1994), "Distribución y desigualdad educativa en México 1990", CIDE, Cuadernos de Trabajo, Estudios Políticos, 16.

Caro, Senyasen, (2014), *Cultura Financiera en México: un análisis a través del ingreso, educación y sexo*. Tesis de Licenciatura, Facultad de Economía Internacional de la Universidad Autónoma de Puebla.

Castello, Amparo; R. Domenéch; (2001), "Human Capital Inequality and Economic Growth: Some New Evidence", *The Economic Journal*, Volume 112, Issue 478, pages: C187-C200.

Checchi, Daniel, (2001), "Education, Inequality and Income Distribution", *Distributional Analysis Research Programme, Discussion Paper*, No DARP. 52. May 2001.

Centro de Estudios de las Finanzas Públicas, (2008), "Distribución del ingreso y desigualdad en México: un análisis sobre la ENIGH 2000-2006", Cámara de Diputados Honorable Congreso de la Unión, CEFP/009/2008.

De Gregorio, José and Lee, "Education and Income Distribution: New Evidence from Cross-Country Data" *Development Discussion Papers*, No 714.

Latapí, Pablo, *Un Siglo de Educación en México*, Fondo de Cultura Económica, 2002.

Ley General de la Educación, Nueva Ley publicada en el Diario Oficial de la Federación el 13 de julio de 1993.

Martínez, Javier y Fernández, Amilcar (2013), "Indicadores de Desigualdad Educativa y sus implicaciones: Caso Chihuahua", *Investigación Multidisciplinaria*, Instituto Tecnológico de Estudios Superiores de Monterrey, Edición ICM 2013.

Martínez Rizo, Felipe; (2002), "Nueva Visita al País de la Desigualdad. La distribución de la escolaridad en México, 1970-2000" *Revista Mexicana de Investigación Educativa*, Vol. 7, Núm 16, pp. 415-443.

Méndez, Eugenia, (2009), "La educación básica en México, Desigualdad en las oportunidades educativas", *ETHOS EDUCATIVO*, 45, Mayo-Agosto, 2009.

Obregón, Javier; (2013), "Análisis de la Encuesta Nacional de Ingreso y Gasto de los Hogares 2012" *Fundación Rafael Preciado Hernández, A.C.*

OCDE, "Human Capital Investment, An International Comparison", *Centre For Educational Research and Innovation*, 1994.

Panorama Social de América Latina, (2014), *Naciones Unidas, Comisión Económica para América Latina (CEPAL)*.

Ram, Rati; (1990), "Educational Expansion and Schooling Inequality: International Evidence and Some Implications" *The Review of Economics and Statistics*, Vol.72, No. 2, (May, 1990), 266-274.

Reimers, Fernando, (2000), "Educación, desigualdad y opciones de política en América Latina en el siglo XXI, *Revista Iberoamericana de Educación*, Número 23, Mayo-Agosto 2000.

Rawls, J. (1979). *A Theory of Justice*, Cambridge: Harvard University Press.

Thomas, V, Wang and Fan; (2000), "Measuring Education Inequality: Gini Coefficients of Education", *World Bank Institute*, September 27.

Secretaría de Desarrollo Social (2013) "Indicadores Básicos del Sector de Desarrollo Social" *Subsecretaría de Prospectiva, Planeación y Evaluación. Dirección General de Análisis y Prospectiva*, Marzo, 2013.

Shultz, T,P, (1961), "Investment in Human Capital", *American Economic Review*, Vol. 51:1, March 1961