

THE LONG FELT BUT UNMET NEED FOR DIVERSITY IN PATENT LAW

APRIL J. LOPEZ*

INTRODUCTION

Intellectual property and patent law in particular value innovation and strive to protect it by granting the inventor certain rights. There are several reports that indicate diversity as a key driver of innovation¹ and a critical component for novel ideas.² If there is a correlation between diversity and innovation, how is a field that values innovation almost completely devoid of diversity?

Underrepresentation of Hispanics³ in patent law careers can stem from a double "filter" effect in which minorities and Hispanics in particular are underrepresented in law in general as well as in fields of science, technology, engineering, and mathematics ("STEM").⁴ However, there are deeper underlying problems that allows this double filter effect to occur in the first place.

The remainder of this essay describes (1) the problems allowing for this double filter effect to take place and (2) problems that arise after penetrating both filters and (3) possible solutions to this problem.

CONTEXT

The requirements to become a patent law attorney include a 4-year undergraduate STEM degree and a Doctor of Jurisprudence (J.D.) in addition to passing the patent bar and a state licensing exam.⁵ The double filter effect mentioned above is the result of underrepresentation of Hispanics in

*Juris Doctorate Candidate, South Texas College of Law Houston, 2020.

¹ FORBES INSIGHTS, GLOBAL DIVERSITY AND INCLUSION FOSTERING INNOVATION THROUGH A DIVERSE WORK FORCE, https://images.forbes.com/forbesinsights/StudyPDFs/Innovation_Through_Diversity.pdf, [https://perma.cc/5VBM-MRDD] (last visited June 7, 2020).

² Sylvia Ann Hewlett, Melinda Marshall & Laura Sherbin, *How Diversity Can Drive Innovation*, HARV. BUS. REV. (Dec. 2013), <https://hbr.org/2013/12/how-diversity-can-drive-innovation>, [https://perma.cc/3ZBE-5FLV].

³ Throughout this essay, I use the term "Hispanic" to mean "of, relating to, or being a person of Latin American descent and especially of Mexican, Cuban, or Puerto Rican origin living in the U.S." MERRIAM-WEBSTER DICTIONARY, <https://www.merriam-webster.com/dictionary/Hispanic> [https://perma.cc/7MTP-4FSH]; *see also, e.g.*, THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE, (2020), <https://ahdictionary.com/word/search.html?q=Hispanic> [https://perma.cc/C5PR-6GVS] (defining "Hispanic" as "a U.S. citizen or resident of Latin-American or Spanish descent"). I also intend to include within my use of the term "Hispanic" persons identifying as Latinos, Latinas, or Latinxs (last visited Mar. 25, 2019).

⁴ Ted Field, *Increasing the Presence of Hispanics in Patent Law*, S. TEX. HOUS. HISP. J.L. & POL'Y, 2019, <http://www.stcl.edu/about-us/publications/hispanic-journal-2019/> [https://perma.cc/UC5T-BEXT].

⁵ U.S. PATENT & TRADEMARK OFF., OFF. OF ENROLLMENT & DISCIPLINE, GENERAL REQUIREMENTS BULLETIN FOR ADMISSION TO THE EXAMINATION FOR REGISTRATION TO PRACTICE IN PATENT CASES BEFORE THE UNITED STATES

STEM and in law. Statistics issued by the American Bar Association (ABA) state that Hispanics make up 5% of active attorneys in the United States with an average number of Hispanic attorneys who primarily practiced Intellectual Property (IP) law per law firm in the United States being only 0.7 in 2016.⁶ In the 2015-2016 year 1.8 million bachelor's degrees were awarded with 18% being in STEM fields.⁷ That is about 324,000 STEM degrees overall with only 15% of it being awarded to Hispanics. However, this underrepresentation is the cause of deeper underlying problems that allow for this double filter effect to occur.

UNDERLYING PROBLEMS

A. Hispanics in Underserved Communities

As previously stated one of the requirements to become a patent attorney is a bachelor's degree in STEM. However, it is difficult for Hispanics to meet these requirements when you consider they face issues such as lack of resources and the need for adequate funding for schools in levels K-12. Some well-known reviewers have found that school resources are systematically related to student achievement and that those relations are large [and] educationally important.⁸ It is difficult to succeed in higher levels of education without having a proper foundation to build on. Although there have been significant developments in this area in the last 10 years, Latinos remain underrepresented and underserved across virtually all post-secondary education sectors.⁹

There is a long-standing notion that education is the key to success and the idea of equal opportunity in education would provide a leveled playing field. Equality of opportunity in education is one in which everyone has a fair and equal access to a good quality education regardless of social background, race, gender or religion, and where people achieve success in education according to their

PATENT AND TRADEMARK OFFICE. 3-7 (Feb. 2020), https://www.uspto.gov/sites/default/files/documents/OED_GRB.pdf, [https://perma.cc/3SPM-BK47]. An applicant does not have to have a STEM degree per se but must have a minimum number of hours in STEM courses. However, a bachelor's degree is still required for law school admission. The bulletin lists the various ways aside from the traditional STEM degree in which you can sit for the patent bar.

⁶ Field, *supra* note 4.

⁷ *Id.*

⁸ Rob Greenwald, Larry V. Hedges & Richard D. Laine, *The Effect of School Resources on Student Achievement*, 66 REV. EDUC. RES. 361, 379-81 (1996).

⁹ Ricardo Azziz, *The State of Latinos in U.S. Higher Education*, HUFFINGTON POST, (updated Dec. 6, 2017), https://www.huffpost.com/entry/the-state-of-latinos-in-higher-education_b_7595590, [https://perma.cc/9248-VTYW].

efforts and ability, free of any form of discrimination.¹⁰ Yet there exists large inequalities in school district funding. Funding differences in the United States generate huge disparities in the quality of school buildings, facilities, curriculum, equipment for instruction, teacher experience and qualifications, class sizes, presence of auxiliary professionals, and other resources.¹¹

In Texas, school districts are currently funded by two main sources: their local property taxes and the state. State revenue is intended to address the inherent inequality that arises from funding based on local property taxes, yet it has steadily declined.¹² The unequal distribution of school funding adversely affects the quality of education Hispanics receive placing them on an unequal playing field. Hispanics and other minorities are more likely to come from high poverty areas¹³ which in Texas were found to receive about 11% less state and local funding per student than wealthier, low-poverty districts.¹⁴ A striking example can be found in the Edgewood Independent School District, which was previously part of *San Antonio Independent School District v. Rodriguez* law suit, demanding an equitable system to finance public schools.¹⁵ Edgewood Independent School District serves a predominately Mexican American population.¹⁶ A recent analysis of the district shows that Edgewood receives about \$5,000 less per pupil in education funding than Alamo Heights, a wealthier neighboring school district.¹⁷ Edgewood also lags behind on academic measures, and many of its students score below grade level.¹⁸

¹⁰ Rupert Maclean, *Equality of Opportunity in Education*, JOHN P KEEVES AND RYO WATANABE INTERNATIONAL HANDBOOK OF EDUCATIONAL RESEARCH IN THE ASIA-PACIFIC REGION 143, 143 (2003).

¹¹ Bruce J. Biddle & David C. Berliner, *A Research Synthesis / Unequal School Funding in the United States*, 59 EDUC. LEADERSHIP, May 2002, at 48. <http://www.ascd.org/publications/educational-leadership/may02/vol59/num08/Unequal-School-Funding-in-the-United-States.aspx#:~:text=A%20Research%20Synthesis%20%2F%20Unequal%20School%20Funding%20in%20the%20Unit ed%20States&text=Nearly%20half%20of%20the%20funding,for%20Education%20Statistics%2C%202000a>, [https://perma.cc/3ZQP-H53S].

¹² David DeMatthews & David S. Knight, *Texas Needs to Fund its Public Schools Differently*, UT NEWS, (Oct. 9, 2018), <https://news.utexas.edu/2018/10/09/texas-needs-to-fund-its-public-schools-differently/#:~:text=Texas%20public%20schools%20receive%20both,based%20on%20local%20property%20taxes>, [https://perma.cc/J58H-M9KS].

¹³ Milenko Martinovich, *Significant racial and ethnic disparities still exist, According to Stanford Report*, STANFORD NEWS, (June 16, 2017), <https://news.stanford.edu/press-releases/2017/06/16/report-finds-sighnic-disparities/> [https://perma.cc/R9N9-8DUD].

¹⁴ DeMatthews, *supra* note 12.

¹⁵ *San Antonio Independent School District v. Rodriguez*, 411 U.S. 959 (1973); Carmel Martin et al., *A Quality Approach to School Funding*, Center for American Progress, (Nov. 13, 2018), <https://www.americanprogress.org/issues/education-k-12/reports/2018/11/13/460397/quality-approach-school-funding/> [https://perma.cc/SY86-2RBU].

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ *Id.*

Another problem that stems from lack of equal funding includes the lack of sufficient resources and proper programs needed specifically for Hispanic communities. Language barriers still exist and pose significant setbacks for Latino students. One of the most cited barriers to postsecondary success among Latino students are the lack of educational programs that provide academic support to students with limited English proficiency skills.¹⁹ According to census data, approximately 80 percent of all English Language Learners (ELLs) in the U.S. are Hispanic.²⁰ If students are struggling in primary and secondary education levels to adequately understand and communicate with teachers and peers then it is safe to say their basic foundation for post-secondary education is inadequate more so for the rigorous curriculum needed to obtain the STEM degree or the necessary pre-requisites to be a patent attorney.

B. First-Generation Students

All students encounter challenges on the way to higher education. However, first-generation students tend to face unique challenges that negatively impact their success in higher education. As federally defined first-generation students are those whose parents did not complete a four-year college degree.²¹ Data from the Department of Education in 2012 classified 61% of Latino students as first-generation.²² First-generation college students were found to be less likely than their continuing-generation peers to persist through the first couple years of college.²³ Statistics show that one-third of first-generation students drop out of college after three years, compared to 14% of their peers whose parents had earned a degree.²⁴

¹⁹ Marcela Cuellar, *Understanding Latinx: College Student Diversity and Why it Matters*, HIGHER EDUC. TODAY (Jan. 29, 2018), <https://www.higheredtoday.org/2018/01/29/understanding-latinx-college-student-diversity-matters/> [https://perma.cc/6V69-37MQ].

²⁰ Nat'l Educ. Assoc., *Hispanics: Education Issues*, , <http://www.nea.org/home/HispanicsEducation%20Issues.htm> [https://perma.cc/LG92-NHS9] (last visited June 7, 2020).

²¹ Center for First-Generation Student Success, *Defining First-Generation*, Nov. 20, 2017, <https://firstgen.naspa.org/blog/defining-first-generation> [https://perma.cc/Y7E4-KB4Y].

²² Postsecondary National Policy Inst., *First-Generation Students in Higher Education*, FACTSHEETS (updated Aug. 2018), <https://pnpi.org/first-generation-students/> [https://perma.cc/TQ53-QR3].

²³ Education Department Releases Racial Data on First-Generation College Students, J. BLACKS HIGH. EDUC. (Oct. 4, 2017), <https://www.jbhe.com/2017/10/education-department-releases-racial-data-on-first-generation-college-students/> [https://perma.cc/UZ9A-T52W].

²⁴ Grace Bird, *The Impact of Parents' Education Levels*, INSIDE HIGHER ED, (Feb. 8, 2018), <https://www.insidehighered.com/news/2018/02/08/students-postsecondary-education-arcs-affected-parents-college-backgrounds-study#:~:text=A%20person's%20parental%20education%20levels,of%20college%2C%20the%20study%20found.&text=One%2Dthird%20of%20first%2Dgeneration,parents%20had%20earned%20a%20degree> [https://perma.cc/5THW-ZTQ4].

One critical disadvantage for first-generation students is the lack of guidance and first-hand experience. As one factor in a student's success in their first year of college, often termed as "the hidden curriculum" is navigating higher education bureaucracy and practicing good study skills.²⁵ The transition to college can be difficult and calls for effective support as noted by one first-generation student "I have learned many things by trial and error, something others do not have to go through. I had no one to tell me what it was like, what to expect, or what to watch out for."²⁶

C. Financial burdens

Another contributing factor are the financial burdens students assume to obtain both a STEM degree and a J.D. The overview below examines the current costs of tuition for a bachelor's degree and J.D. in Texas public schools. Note that most of the general overview of costs provided by the following institutions do not include incidental fees such as late fees, drop and add fees, installment handling charges, laboratory fees, property deposit fees, orientation fees, parking decals and more. Furthermore, the listed costs do not include textbooks, general school supplies, transportation costs, and other examination costs (i.e. admission exams such as the SAT and LSAT, Multistate Professional Responsibility Exam (MPRE), State bar exam or Uniform bar exam, Patent bar exam, and their corresponding preparatory courses). Additionally, the typical number of hours needed to obtain a four-year bachelor's degree is 120, but this number may vary depending on the degree obtained. Part of the overview below contains a general cost for a 12-hour semester which is considered full-time but falls short of the 120 hour requirement over a four-year time period. Lastly, the overall tuition cost is slightly higher for certain STEM degrees. In my research I have seen a higher cost for an Engineering degree than for a hard science degree such Biology.

²⁵ EAB, *90% of low-income, first-generation college students don't graduate on time*, (Apr. 29, 2019), <https://eab.com/insights/daily-briefing/student-success/90-of-low-income-first-generation-college-students-dont-graduate-on-time/> [https://perma.cc/897M-N8L7].

²⁶ Alexis Contreras, *Addressing Barriers Confronting First-Generation College Students from Hispanic Families*, <http://smhp.psych.ucla.edu/pdfdocs/firstgen.pdf> [https://perma.cc/92CJ-RPGP] (last visited June 7, 2020).

Academic Year 2020 Tuition Calculator

Please Tell Us Your Plans

What is your residency status? Resident ▾

Which college do you plan to attend? Natural Sciences & Mathematics ▾

Taking classes on campus/off campus? On-Campus ▾

Career Level? undergrad ▾

Is this your first year as an undergraduate? Yes ▾

How many hours do you plan to attend? 12 ▾

Calculate

Estimated Costs Per Semester

Tuition and Consolidated Fees	\$4380.00
Mandatory Fee - Student Service Fee	\$260.00
Mandatory Fee - University Center Fee	\$135.00
Mandatory Fee - Recreation and Wellness Center	\$106.00
TOTAL:	\$4881.00

You Might Qualify For A Fixed Tuition Rate

	1st Year	2nd Year	3rd Year	4th Year	Total
Variable:	\$10950.00	\$11190.90	\$11437.10	\$11688.72	\$45266.72
Fixed:	\$11333.60	\$11333.60	\$11333.60	\$11333.60	\$45334.40

Figure 1. University of Houston Tuition Cost for Undergraduate degree in STEM.²⁷

²⁷ These results were generated using the University of Houston Tuition & Fees generator for Academic Year 2020, <https://uh.edu/financial/graduate/tuition-fees/>.

2019-2020 Timeline of Important Dates | 2020-2021 Timeline of Important Dates

Academic Year 2020 Tuition Calculator

Please Tell Us Your Plans

What is your residency status?	Resident
Which college do you plan to attend?	Law
Taking classes on campus/off campus?	On-Campus
Career Level?	JD
How many hours do you plan to attend?	15

Calculate

Estimated Costs Per Semester

Tuition and Consolidated Fees	\$15570.30
Mandatory Fee - Student Service Fee	\$260.00
Mandatory Fee - University Center Fee	\$135.00
Mandatory Fee - Recreation and Wellness Center	\$106.00
TOTAL:	\$16071.30

Figure 2. University of Houston Tuition Cost Per Law School Semester.²⁸

²⁸ University of Houston Tuition and Fees Academic Year 2020, <https://uh.edu/financial/graduate/tuition-fees/>

Fall 2019 Spring 2020

The University of Texas at Austin
Undergraduate Traditional Flat Rate Tuition
By College and Hours Enrolled
Academic Year 2019-2020, Per Semester

	Hours	Architecture	Business	Communication	Education	Engineering	Fine Arts	Geosciences	Liberal Arts	Nat. Sciences	Nursing	Social Work	UG Studies
Texas Resident	1	1,639	1,782	1,604	1,608	1,695	1,663	1,673	1,551	1,610	1,720	1,624	1,629
	2	2,021	2,197	1,977	1,980	2,090	2,047	2,062	1,913	1,984	2,119	2,001	2,007
	3	2,401	2,611	2,350	2,353	2,484	2,434	2,450	2,274	2,357	2,519	2,382	2,388
	4	2,782	3,024	2,722	2,725	2,877	2,820	2,839	2,634	2,732	2,919	2,757	2,764
	5	3,164	3,438	3,097	3,101	3,272	3,207	3,228	2,995	3,106	3,319	3,135	3,144
	6	3,543	3,854	3,468	3,473	3,665	3,593	3,617	3,354	3,479	3,718	3,513	3,524
	7	3,926	4,268	3,842	3,847	4,061	3,978	4,007	3,715	3,855	4,119	3,891	3,902
	8	4,361	4,742	4,268	4,274	4,510	4,421	4,451	4,127	4,281	4,576	4,322	4,334
	9	4,361	4,742	4,268	4,274	4,510	4,421	4,451	4,127	4,281	4,576	4,322	4,334
	10	4,361	4,742	4,268	4,274	4,510	4,421	4,451	4,127	4,281	4,576	4,322	4,334
	11	4,361	4,742	4,268	4,274	4,510	4,421	4,451	4,127	4,281	4,576	4,322	4,334
	12+	5,451	5,926	5,334	5,342	5,637	5,524	5,562	5,157	5,351	5,718	5,402	5,417
Nonresident	1	5,899	6,317	5,670	5,679	5,967	5,877	5,988	5,512	5,687	6,197	5,790	5,777
	2	7,275	7,790	6,989	7,004	7,357	7,245	7,381	6,796	7,013	7,642	7,139	7,122
	3	8,650	9,263	8,313	8,327	8,750	8,615	8,778	8,082	8,336	9,087	8,489	8,469
	4	10,024	10,734	9,633	9,652	10,138	9,983	10,173	9,365	9,667	10,529	9,837	9,815
	5	11,401	12,207	10,957	10,974	11,530	11,354	11,569	10,650	10,992	11,974	11,187	11,162
	6	12,774	13,678	12,275	12,297	12,920	12,722	12,963	11,934	12,318	13,420	12,537	12,506
	7	14,149	15,152	13,597	13,622	14,313	14,094	14,360	13,218	13,643	14,863	13,886	13,853
	8	15,721	16,833	15,106	15,137	15,901	15,656	15,956	14,687	15,156	16,514	15,428	15,393
	9	15,721	16,833	15,106	15,137	15,901	15,656	15,956	14,687	15,156	16,514	15,428	15,393
	10	15,721	16,833	15,106	15,137	15,901	15,656	15,956	14,687	15,156	16,514	15,428	15,393
	11	15,721	16,833	15,106	15,137	15,901	15,656	15,956	14,687	15,156	16,514	15,428	15,393
	12+	19,650	21,041	18,883	18,920	19,874	19,570	19,941	18,358	18,944	20,642	19,284	19,239

Figure 3. University of Texas Tuition Costs for Undergraduate degree in STEM.²⁹

²⁹ University of Texas Traditional Tuition for 2019-2020 year, <https://utexas.app.box.com/v/ug-tuition-19-20-long>

Fall 2019 Spring 2020

The University of Texas at Austin
Law School Tuition
By Residency Classification and Hours Enrolled
Academic Year 2019-2020, Per Semester

	Hours	Resident Group 1	Resident Group 2	Resident Group 3	Resident Group 4
		1st Enrolled in Law Spring 2008 or earlier	1st Enrolled in Law after Spring 2008 and before Summer 2010	1st Enrolled in Law after Spring 2010 and before Summer 2011	1st Enrolled in Law Summer 2011 and Later
Texas Resident					
	1	3,088	3,625	3,769	3,839
	2	3,789	4,450	4,627	4,712
	3	4,350	5,107	5,308	5,408
	4	5,470	6,422	6,676	6,802
	5	6,593	7,741	8,047	8,199
	6	7,712	9,057	9,415	9,592
	7	8,692	10,207	10,611	10,811
	8	9,675	11,360	11,811	12,031
	9	10,654	12,511	13,005	13,251
	10	11,357	13,333	13,862	14,124
	11	12,058	14,158	14,718	14,993
	12	12,757	14,980	15,571	15,864
	13	13,318	15,639	16,258	16,562
	14	14,017	16,460	17,113	17,434
	15	14,715	17,280	17,964	18,301
	16	15,273	17,935	18,646	18,995

	Hours	CONTINUING NONRESIDENT	INTERMEDIATE NONRESIDENT	NEW NONRESIDENT
		1st entered Spring 2004 or earlier AND enrolled in Law prior to Summer 2008	1st entered after Spring 2004 AND enrolled in Law prior to Summer 2008	1st Enrolled in Law after Spring 2008
Nonresident				
	1	5,044	5,164	5,700
	2	6,190	6,338	6,993
	3	7,106	7,276	8,028
	4	8,937	9,151	10,099
	5	10,772	11,028	12,171
	6	12,603	12,904	14,240
	7	14,206	14,545	16,051
	8	15,811	16,187	17,862
	9	17,411	17,828	19,675
	10	18,559	19,001	20,969
	11	19,703	20,174	22,263
	12	20,848	21,346	23,557
	13	21,764	22,285	24,592
	14	22,909	23,456	25,887
	15	24,051	24,624	27,177
	16	24,965	25,561	28,209

Figure 4. University of Texas Tuition Costs for Law School in the 2019-2020 year.³⁰

³⁰ University of Texas Tuition Costs for Law School in the 2019-2020 year, <https://utexas.app.box.com/v/law-19-20-long>

No. of Semester Hours	Resident Statutory Tuition	Non-Resident/Foreign Statutory Tuition	Designated Tuition (Traditional Plan)	Designated Tuition (Fixed Plan)	Student Service Fee	Athletic Fee	Library Service Fee	Add'l School Fees	Total Resident Charges (Traditional Plan + Fees)	Total Resident Charges (Fixed Rate Plan + Fees)	Total Non-Resident/Foreign Charges (Traditional Plan + Fees)	Total Non-Resident/Foreign Charges (Fixed Rate Plan + Fees)
18	900.00	8,496.00	3,562.38	4,302.00	198.00	150.00	150.00	370.00	5,330.38	6,070.00	12,926.38	13,666.00
17	850.00	8,024.00	3,364.47	4,063.00	198.00	150.00	150.00	370.00	5,082.47	5,781.00	12,256.47	12,955.00
16	800.00	7,552.00	3,166.56	3,824.00	198.00	150.00	150.00	370.00	4,834.56	5,492.00	11,586.56	12,244.00
15	750.00	7,080.00	2,968.65	3,585.00	198.00	150.00	150.00	370.00	4,586.65	5,203.00	10,916.65	11,533.00
14	700.00	6,608.00	2,770.74	3,346.00	198.00	140.00	140.00	370.00	4,318.74	4,894.00	10,226.74	10,802.00
13	650.00	6,136.00	2,572.83	3,107.00	198.00	130.00	130.00	370.00	4,050.83	4,585.00	9,536.83	10,071.00
12	600.00	5,664.00	2,374.92	2,868.00	198.00	120.00	120.00	370.00	3,782.92	4,276.00	8,846.92	9,340.00
11	550.00	5,192.00	2,177.01	2,629.00	181.50	110.00	110.00	370.00	3,498.51	3,950.50	8,140.51	8,592.50
10	500.00	4,720.00	1,979.10	2,390.00	165.00	100.00	100.00	370.00	3,214.10	3,625.00	7,434.10	7,845.00
9	450.00	4,248.00	1,781.19	2,151.00	148.50	90.00	90.00	370.00	2,929.69	3,299.50	6,727.69	7,097.50
8	400.00	3,776.00	1,583.28	1,912.00	132.00	80.00	80.00	370.00	2,645.28	2,974.00	6,021.28	6,350.00
7	350.00	3,304.00	1,385.37	1,673.00	115.50	70.00	70.00	370.00	2,360.87	2,648.50	5,314.87	5,602.50
6	300.00	2,832.00	1,187.46	1,434.00	99.00	60.00	60.00	370.00	2,076.46	2,323.00	4,608.46	4,855.00
5	250.00	2,360.00	989.55	1,195.00	82.50	50.00	50.00	370.00	1,792.05	1,997.50	3,902.05	4,107.50
4	200.00	1,888.00	791.64	956.00	66.00	40.00	40.00	370.00	1,507.64	1,672.00	3,195.64	3,360.00
3	150.00	1,416.00	593.73	717.00	49.50	30.00	30.00	370.00	1,223.23	1,346.50	2,489.23	2,612.50
2	100.00	944.00	395.82	478.00	33.00	20.00	20.00	370.00	938.82	1,021.00	1,782.82	1,865.00
1	100.00	472.00	197.91	239.00	16.50	10.00	10.00	370.00	704.41	745.50	1,076.41	1,117.50

Figure 5. Texas Southern University Tuition Costs for an Undergraduate degree.³¹

Law Tuition and Registration Fees

No. of Semester Hours	Resident Tuition	Non-Resident/Foreign Tuition	Designated Tuition	Differential Designated Tuition	Non-Resident/Foreign Differential Designated Tuition	Student Service Fee	Athletic Fee	Library Service Fee	Add'l School Fees	Total Resident Charges	Total Non-Resident/Foreign Charges
18	4,320.00	8,496.00	3,562.38	3,267.00	3,537.00	198.00	150.00	150.00	420.00	12,067.38	16,513.38
17	4,080.00	8,024.00	3,364.47	3,085.50	3,340.50	198.00	150.00	150.00	420.00	11,447.97	15,646.97
16	3,840.00	7,552.00	3,166.56	2,904.00	3,144.00	198.00	150.00	150.00	420.00	10,828.56	14,780.56
15	3,600.00	7,080.00	2,968.65	2,722.50	2,947.50	198.00	150.00	150.00	420.00	10,209.15	13,914.15
14	3,360.00	6,608.00	2,770.74	2,541.00	2,751.00	198.00	140.00	140.00	420.00	9,569.74	13,027.74
13	3,120.00	6,136.00	2,572.83	2,359.50	2,554.50	198.00	130.00	130.00	420.00	8,930.33	12,141.33
12	2,880.00	5,664.00	2,374.92	2,178.00	2,358.00	198.00	120.00	120.00	420.00	8,290.92	11,254.92
11	2,640.00	5,192.00	2,177.01	1,996.50	2,161.50	181.50	110.00	110.00	420.00	7,635.01	10,352.01
10	2,400.00	4,720.00	1,979.10	1,815.00	1,965.00	165.00	100.00	100.00	420.00	6,979.10	9,449.10
9	2,160.00	4,248.00	1,781.19	1,633.50	1,768.50	148.50	90.00	90.00	420.00	6,323.19	8,546.19
8	1,920.00	3,776.00	1,583.28	1,452.00	1,572.00	132.00	80.00	80.00	420.00	5,667.28	7,643.28
7	1,680.00	3,304.00	1,385.37	1,270.50	1,375.50	115.50	70.00	70.00	420.00	5,011.37	6,740.37
6	1,440.00	2,832.00	1,187.46	1,089.00	1,179.00	99.00	60.00	60.00	420.00	4,355.46	5,837.46
5	1,200.00	2,360.00	989.55	907.50	982.50	82.50	50.00	50.00	420.00	3,699.55	4,934.55
4	960.00	1,888.00	791.64	726.00	786.00	66.00	40.00	40.00	420.00	3,043.64	4,031.64
3	720.00	1,416.00	593.73	544.50	589.50	49.50	30.00	30.00	420.00	2,387.73	3,128.73
2	480.00	944.00	395.82	363.00	393.00	33.00	20.00	20.00	420.00	1,731.82	2,225.82
1	240.00	472.00	197.91	181.50	196.50	16.50	10.00	10.00	420.00	1,075.91	1,322.91

Figure 6. Texas Southern University Tuition Costs for Law School.³²

³¹ Texas Southern University Undergraduate Tuition Costs for the 2019-2020 year, <http://www.tsu.edu/about/administration/finance/departments/business-affairs/student-accounting/tuition-and-fees.html>

³² Texas Southern University Law School Tuition Costs for the 2019-2020 year, <http://www.tsu.edu/about/administration/finance/departments/business-affairs/student-accounting/tuition-and-fees.html>

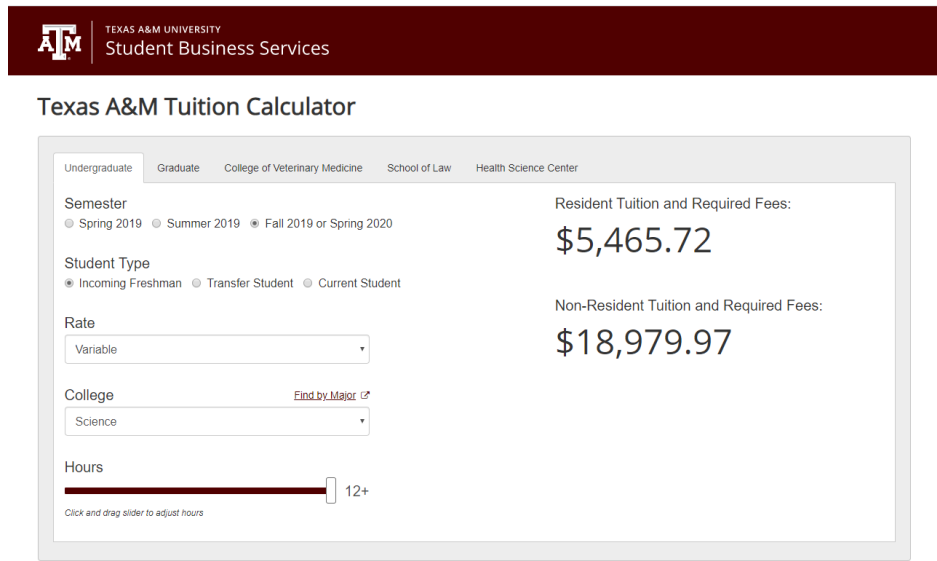


Figure 6. Texas A&M Tuition Costs Per Undergraduate Semester.³³

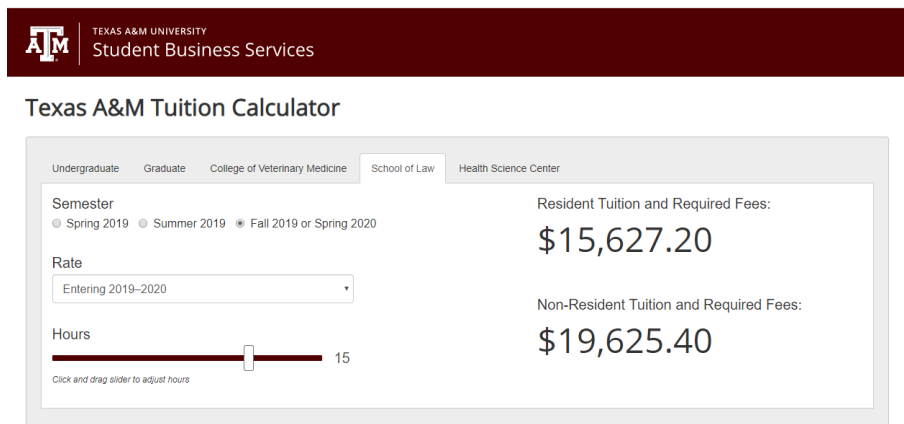


Figure 7. Texas A&M Tuition Costs Per Law School Semester.³⁴

As previously mentioned, Hispanics are more likely to come from high poverty areas. As tuition rates increased dramatically throughout the years, Hispanics of low-income background do not have sufficient expected family contribution, and grant monies generally do not cover a substantial

³³ Texas A&M tuition cost per semester for 2019-2020 year, <https://tuition.tamu.edu/>

³⁴ Texas A&M tuition cost per law school semester for 2019-2020 year, <https://tuition.tamu.edu/>

portion of their tuition. As college tuition rose there were cutbacks on funding higher education. Moreover, rising college costs negatively impact college enrollment decisions of low-income and minority students in particular.³⁵ Previous findings suggest that a \$150 net cost increase results in a 1.6 percentage point reduction in enrollment among low-income and minority students disproportionately.³⁶

Furthermore, there were shifts in financial aid policy as more institutions continue to move from ‘need-based’ aid and toward ‘merit-based’ aid.³⁷ Need-based aid is determined solely on the assets and income of the prospective student and his or her family.³⁸ In other words, need-based aid is directed to those with a low-income background. Victims of the hidden curriculum may be unaware that even if they qualify for need-based aid there is no guarantee that it will be awarded on a first-come, first-served basis.³⁹ Research suggests this shift has done little to improve college enrollment rates among low-income and minority students given that merit-based aid is awarded disproportionately to students from higher-income families.⁴⁰

In order to increase the presence of Hispanics in patent law and address the underrepresentation of Hispanics in both STEM and law (i.e. the double filter effect) there must be changes in the K-12 education system. Students need to be provided with a proper foundation to succeed in higher levels of education. This foundation not only includes proper subject matter skills but also college preparation and awareness of the intricacies of bureaucratic systems like financial aid. Furthermore, there needs to be an increase in funding for need-based students to help accommodate for the ever-rising costs of tuition.

D. Post filter issues

Another major problem contributing to underrepresentation in patent law occurs after meeting the qualifications to become a patent attorney. There seems to be an unspoken rule that not many are

³⁵ William Elliot & Terri Friedland, “*You Pay your Share, We’ll Pay Our Share*”: *The College Cost Burden and the Role of Race, Income, and College Assets*, (Ctr. for Social Development, Working Papers No. 12-09, 2012), https://openscholarship.wustl.edu/cgi/viewcontent.cgi?article=1060&context=cso_research [<https://perma.cc/CX62-QGF4>].

³⁶ *Id.*

³⁷ *Id.*

³⁸ *Id.*

³⁹ Anna Helhoski, *What is Need-Based Financial Aid? Need-based financial includes grants, scholarships, work-study and subsidized student loans.*, NERDWALLET.COM (Mar. 18, 2019), <https://www.nerdwallet.com/blog/loans/student-loans/need-and-merit-based-financial-aid/> [<https://perma.cc/CW2R-5T2T>].

⁴⁰ Elliot, *supra* note 35.

aware of in the industry. Law firms and particularly big law tend to prefer candidates with more than just a Bachelor's in STEM and a J.D. (i.e. an additional M.A. and or PhD). A PhD is not required but it is desirable.⁴¹ This practice whether done as a marketing strategy to entice clients or not further hinders the entry of Hispanics into the field of patent law since there is already a difficulty meeting the basic requirements. Law firms are putting language in their job descriptions that call for the following requirements:⁴²

“Candidates should have a Ph.D., and significant graduate level experience. Candidates with broad training in the biological sciences are sought, with expertise in plant biology, biochemistry, genetics, chemistry, microbiomes, quantitative genetics, process and reactor design, separate technologies, thermodynamics and kinetics.”⁴³

Below are other illustrative job postings with similar language.

Requirements

- Minimum Ph.D. in Chemical or Biological sciences. Patent Bar (and any State Bar for an associate) are required.
- Must have at least 3 years of solid US patent preparation and prosecution experience in life sciences.

Relevant Terms: patent, IP, intellectual property, attorney, lawyer, counsel, associate, work from home, virtual office, home office, telework, telecommute, remote, biological, biologics, biology, molecular biology, biotechnology, biotech, biochemistry, PCR, DNA, life sciences, immunology, proteins, antibodies, medical, pharmaceuticals, drugs, organic chemistry, medicinal chemistry, biochemistry, law firm jobs, salaries, salary, pay, compensation, agency, agencies, job, legal search firm, law firm recruiting, recruiter, recruitment, top recruiters, best headhunters, headhunter, list, hiring trends, positions, openings, postings online, patent attorney, patent counsel, patent lawyer, patent associate, patent agent, patents, patent law, patent drafting, patent writing, patent prosecution, patent claims, patent opinions, PTAB, Patent Trial and Appeal Board, USPTO, PTO, EPO, Texas Attorney, Houston, TX

Illustration 1. Job Posting Showing Preference for Advance STEM degree.⁴⁴

Requirements:

- At least 2 years of solid patent preparation and prosecution experience.
- Must have a state bar and be licensed to practice before the USPTO.
- A minimum of B.S. chemistry, biochemistry, chemical engineering, or petroleum engineering, with a preference for someone with an M.S or PhD. Prior applicable research or engineering experience would also be valued.

Illustration 2. Job Posting Showing Preference for Advance STEM degree.⁴⁵

⁴¹ The Chronicle of Higher Education, <https://www.chronicle.com/blogs/onhiring/from-ph-d-to-patent-lawyer/38833>

⁴² The firm and source of this job posting has been redacted or omitted to avoid disclosure.

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ *Id.*

We have particular experience across our key industry sectors: financial institutions; energy; infrastructure, mining and commodities; transport; technology and innovation; and life sciences and healthcare. Many of our IP lawyers and patent and trademark agents have advanced scientific degrees to complement their practical experience, combining deep industry and technical knowledge with broad legal understanding.

Illustration 3. Law Firm Advertising Their IP Lawyers Having Advance STEM Degrees.⁴⁶

POSSIBLE SOLUTIONS

Having identified underlying causes that inhibit the growth of Hispanics in law, in general, and patent law in particular, we must shift the focus to solving this problem. In order to tackle the problem, it is necessary to consider the causes. I see three major causes: (1) Hispanic communities underserved in education; (2) financial burdens; and (3) tacit hiring practices of the employers of patent lawyers.

1. Underserved in Education

Across the board, Hispanics as a community, are underserved. From lack of guidance, underfunding schools in low-income communities that predominantly include Hispanics, to not properly tailoring the curriculum to the needs of the community. For more Hispanics to ultimately practice patent law, there needs to be more Hispanics entering and finishing college in the first place. There are three parts to this broad issue, lack of guidance, failure to tailor programs to the community needs, and an unequal distribution of funding.

a. Lack of Guidance

Hispanics may receive emotional encouragement from their families, but they do not have people who can tell them the intricacies of how the university system works, of how it all fits together.⁴⁷ Mentor-based programs could help with this particular issue. A 2011 study that looked at more than 13,000 college-student records found that students who took part in mentoring and coaching services were 10 to 15% more likely to advance to another year of college.⁴⁸ There are some programs that

⁴⁶ *Id.*

⁴⁷ Geri C. Tucker, *Peers Providing Support to Vulnerable First-generation Students*, FIRSTGEN FELLOWS, (2014), <http://firstgenfellows.org/peers-providing-support-to-vulnerable-first-generation-students/> [https://perma.cc/7GJZ-HS4C].

⁴⁸ Eric P. Bettinger & Rachel Baker, *The Effects of Student Coaching: An Evaluation of a Randomized Experiment in Student Advising*, 36 EDUC. EVALUATION & POL'Y ANALYSIS 3, 14 (2014).

offer peer-based support.⁴⁹ However, it would be beneficial if colleges and universities provided professional support. The University of Houston Law Center currently holds a pipeline program in an effort to diversify law school applications.⁵⁰ These efforts need to be expanded not just by other Universities but at the high school level to support college applications, SAT/ACT preparatory courses, and financial aid/scholarship applications. A combination of peer-based and professional based support will help first generation students not only go to college but stay and finish.

b. Tailoring programs to community needs

Another major gap to address is the lack of programs needed for English as a second language (ESL) students. These students need more personalized help and guidance to not fall behind. However, there has been a recent shift to “inclusion” of ESL students to all regular paced English classes because of insufficient funding. For example, California is among several states requiring all public schools to instruct solely in English by implementing the “full inclusion” classroom approach.⁵¹ This approach, titled Proposition 227, provides ESL students with \$50 million each year for additional English tutoring support; however, these students are forced to engage in fluent English classes, even if they have never been exposed to the language before.⁵² Studies have shown that ESL students adopt fluency more rapidly when engaging in specialized language support programs. Without English language instruction and support, they are unable to work to their potential and many of these students struggle academically in school.⁵³ Moreover, the lack of proper support affects ESL students in other ways; low self-esteem typically follows as a result of students struggling academically.⁵⁴ One solution, perhaps, is to step away from the inclusion approach and vary English classroom instruction depending on the proficiency and skills of the individual ESL student. Provide two different methods of instruction in this case; one where a student is taught in a specialized class through bilingual or dual

⁴⁹Mikhail Zinshteyn, *How to Help First-Generation Students Succeed*, THE ATLANTIC, (Mar. 13, 2016) <https://www.theatlantic.com/education/archive/2016/03/how-to-help-first-generation-students-succeed/473502/> [https://perma.cc/9SRM-V32A].

⁵⁰ UHLC Pre-Law Pipeline Program, <https://www.law.uh.edu/pipeline/about.asp>, [https://perma.cc/8HWM-QCEM] (last visited June 7, 2020).

⁵¹ Grace Chen, *Inclusion or Exclusion? The ESL Debate*, PUB. SCH. REV. (updated Oct. 07, 2019), <https://www.publicschoolreview.com/blog/inclusion-or-exclusion-the-esl-education-debate> [https://perma.cc/X84V-DCY6]; see also *California Proposition 227, The “English in Public Schools” initiative (1998)*, BALLOTEDIA, [https://ballotpedia.org/California Proposition 227, the %22English in Public Schools%22 Initiative \(1998\)](https://ballotpedia.org/California Proposition 227, the %22English in Public Schools%22 Initiative (1998)) [https://perma.cc/ZH3Y-T67R] (last visited June 7, 2020).

⁵² *Id.*

⁵³ Amy Nelson, *The Effect of ESL Instruction on Student Achievement*, (2003) (unpublished Masters Theses, Grand Valley State University) <https://scholarworks.gvsu.edu/cgi/viewcontent.cgi?article=1606&context=theses> [https://perma.cc/89LC-M6Z3].

⁵⁴ *Id.*

language methods and another where the student is placed in the specialized class for half the day and the other half included in a regular English paced classroom. In other words, gradually include the ESL student into a full time English instructed classroom depending on their developing proficiency and skills.

c. Unequal distribution of funding

An unequal distribution of funding leads to an unequal quality of education. Underfunding of schools affects the physical facilities, number of teachers hired, teacher salary, equipment etc. Legislation toward fiscal equity for disadvantage schools could ensure equity in services and opportunity within each school. Title I of the Elementary and Secondary Education Act, as amended by the Every Student Succeeds Act (ESSA)⁵⁵ contains a school funding comparability provision requiring school districts to use state and local funds to provide comparable services to needy Title I schools and less needy, non-Title I schools.⁵⁶

A Title I school usually has a large concentration of low-income students, and these schools receive federal funds to help assist with meeting student's educational goals. However, the comparability provision within Title I is flawed and addressing these flaws can help bridge the gap in education for disadvantage low-income students which tend to be Hispanic or other minorities. With Every Student Succeeds Act and other governing regulations school districts can exclude teacher salary differences and include paraprofessionals in staff-student ratios.⁵⁷ Eliminating teacher salary differences essentially eliminates a proxy for teacher quality and ultimately these omissions render the comparable services meaningless as student-staff ratio compared to student-certified staff ratios allow paraprofessionals to be counted as full teachers.⁵⁸ Students in high-poverty schools are disproportionately served by low-paid teachers, making the actual per-pupil-expenditures much lower in those schools. Studies over five districts showed that four of the five urban districts spent less on schools in the highest poverty quartile than those in the lowest poverty quartile.⁵⁹ The disparities range

⁵⁵ Elementary and Secondary Education Act, Pub. L. No. 89-10, Apr. 11, 1965, 79 Stat. 27 (1965) *amended by* 20 U.S.C. §§ 6301-7981 (2018).

⁵⁶ *Education Policy: Comparability of Services*, NEW AMERICA, <https://www.newamerica.org/education-policy/topics/school-funding-and-resources/school-funding/federal-funding/title-i/fiscal-requirements/comparability-services/> (last visited June 7, 2020).

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ *Id.*

from 10-23% of the school's budget with the main difference in these budgets being teacher salary.⁶⁰ A solution here would be to provide as much numerical data as possible (i.e. data points that include teacher salary and data points that do not as well as both student-staff ratio and student-certified staff ratio). This would do away the apparent Title I loophole as studies have indicated teacher salary being one of the main factors causing discrepancies within districts.

2. Financial Burden

With tuition prices increasing 125% faster than inflation at community colleges and 213% faster than inflation at four-year public universities post-secondary education has become unaffordable for many.⁶¹ Possible solutions to this problem include: tuition capping and freezing, legislative initiatives and policy changes, an increase in scholarships, and the creation of a foundation to serve and support particularly those students seeking to enter the field of patent law.

a. Tuition capping and freezing

In an effort to make college more affordable States can limit how much colleges and universities can increase tuition. These policies can take the form of capping or freezing tuition costs. There are currently 14 States that cap or freeze tuition for at least one post-secondary sector while a few other states are considering it in current legislative sessions.⁶² Chapter 1009 of Florida's statutes titled Educational Scholarships, Fees, and Financial Assistance has served to set in tuition rates since July of 2014 and have not been raised since.⁶³ The Idaho State Board of Education capped tuition increases at varying percentages among public colleges and universities within the State with the highest percentage being 3.5%.⁶⁴ The State of Maine has implemented measures to make college affordable by freezing tuition costs in community colleges.⁶⁵ It helps the financial burden students assume at the

⁶⁰ *Id.*

⁶¹ EDUCATION COMMISSION OF THE STATES POLICY SNAPSHOT: POSTSECONDARY TUITION CAPPING AND FREEZING, (Nov. 2018), <http://www.ecs.org/wp-content/uploads/Postsecondary-Tuition-Capping-and-Freezing.pdf> [https://perma.cc/3UQB-2H44].

⁶² *Id.*

⁶³ FLA. STAT. ANN. §§ 1009.01-1009.988 (West 2018 & Supp. 2020).

⁶⁴ Press Release, Idaho State Board of Education, *Board Approves Tuition and Fee Increases at Idaho's Four-Year Institutions*, (Apr. 17, 2019), <https://boardofed.idaho.gov/resources/board-approves-tuition-and-fee-increases-at-idahos-four-year-institutions/> [https://perma.cc/HPA6-KAQL]

⁶⁵ Press Release, Maine's Community Colleges, *MCCS announces tuition freeze for 2017/2018*, (Aug. 18, 2017), https://www.mccs.me.edu/press_release/mccs-announces-tuition-freeze-20172018/ [https://perma.cc/Z433-BNEJ].

start of their post-secondary education by maintaining tuition costs as opposed to increasing them year by year.

b. Legislative initiatives and policy changes

As previously mentioned there has been a greater shift in financial aid distribution to a merit-based form at the expense of need-based distribution. However, studies suggest that need-based aid grant eligibility improves students' likelihood to not only enroll in college but stay in college and earn a bachelor's degree.⁶⁶ Strong evidence suggest that need-based aid not only increases enrollment of students from low social-economic background but also increases the probability of bachelor's attainment within six years.⁶⁷ Therefore, the distribution of aid should be allocated equally at the very minimum as opposed to shifting toward a more merit-based approach. This policy change would be beneficial in enabling more of those who qualify for need-based grants an opportunity to improve their social-economic background.

Another possible solution to the financial burdens is a legislative bill to reduce or eliminate the interest rate on student loans. The current average student loan interest rate for undergraduates is 4.53% while graduate student loans range between 6-7% on average.⁶⁸ Interest rates on federal student loans are currently set by Congress and are not differentiated by individual borrowers, meaning an individual's risk of default is not taken into account.⁶⁹ Since there is no risk-based assessment lowering the interest rate across the board would be beneficial for every student borrower. This lessens the financial burden if one were to take out a student loan as more would be paid toward the principal and it would take less time to pay off. Furthermore, it would allow borrowers to retain the benefits and protections provided under federal student loans such as income-based repayment plans.

⁶⁶ Lauren Ingeno, *Beyond Enrollment*, INSIDE HIGHER ED (Aug. 22, 2013), <https://www.insidehighered.com/news/2013/08/22/study-shows-need-based-aid-eligibility-positively-affects-student-outcomes> [https://perma.cc/WZ2S-WBM3].

⁶⁷ Benjamin L. Castleman and Bridget Terry Long, *Looking Beyond Enrollment: The Causal Effect of Need-Based Grants on College Access, Persistence, and Graduation*, NBER Working Paper 19306 (August 2013), <https://www.nber.org/papers/w19306.pdf>, [https://perma.cc/Z2KZ-L3R8].

⁶⁸ Kim Dancy and Alexander Holt, *In the Interest of Few: The Regressive Benefits of Federal Student Loan Refinancing*, New America Policy Paper (June 20, 2017), <https://www.newamerica.org/education-policy/policy-papers/interest-of-few/>, [https://perma.cc/78KB-UGQ9].

⁶⁹ *Id.*

c. Creating a foundation and increasing scholarships

One of my personal goals is to start a foundation to help tackle the existing problems outlined above. A foundation will help build a structure in supporting an increase of Hispanics in law and particularly patent law. Since private foundations tend to have broad latitude in pursuing any activities so long as they advance a charitable purpose, I would place the focus on individual grants, scholarships, or awards. Aside from an increase in monetary aid for those in need I hope to extend guidance and resources by linking recipients with other programs tailored to their needs.

3. Hiring Practices

Few businesses today intentionally discriminate in employment based on race, sex, religion or other protected classes. However, discriminatory employment practices can exist even if not intentional.⁷⁰ A firm or company may think that any stated criterion for a job is legal unless it is explicitly discriminatory based on one of the Equal Employment Opportunity protected classes.⁷¹ Adverse impacts happen when certain practices or policies have a disproportionately negative effect on a protected group, even though the adverse impact may be unintentional.⁷² With that said, taking into consideration the minimum requirements to be a patent attorney and still preferring additional requirements tends to adversely impact Hispanics and causes a lack of diversity within the field of patent law. In recommending a solution to this practice I urge looking beyond the resume. Having more than the minimum requirements does not equate to a good employee or being a good fit for a company.

CONCLUSION

Although there are deep underlying problems affecting the presence of Hispanics in law, in general, and patent law, in particular, there are also various possible solutions to help increase this presence. Efforts to help lessen the financial burden and level the educational playing field should ultimately succeed in diversifying law and particularly patent law by providing the necessary foundation to succeed in higher education. These issues resonate on a deeper level for me personally, as I have dealt with some of them coming from a humble background and being the first woman in my family

⁷⁰ SOC'Y FOR HUM. RESOURCE MGMT., *Avoiding Adverse Impact In Employment Practices*, SHRM.ORG, <https://www.shrm.org/resourcesandtools/tools-and-samples/toolkits/pages/avoidingadverseimpact.aspx> (last visited June 7, 2020).

⁷¹ 42 U.S.C. § 2000e-2 (a) (2012).

⁷² *Supra* note 70.

to receive a bachelor's degree and now my J.D. I particularly know some of the hardships and difficulties that come with the lack of guidance and lack of financial means. However, I hope to be able to extend a helping hand to those that come behind me.