

CHAIR

Mark K. Dickson
San Mateo, CA

CHAIR-ELECT

George W. Jordan III
Houston, TX

VICE-CHAIR

June Besek
New York, NY

SECRETARY

Adriana S. Luedke
Bethesda, MD

FINANCIAL OFFICER

Willard Jones II
Bethlehem, PA

REVENUE OFFICER

Susan E. McGahan
Bedminster, NJ

CLE OFFICER

David Postolski
Summit, NJ

MEMBERSHIP OFFICER

Kevin Greenleaf
Lovettsville, VA

PUBLICATIONS OFFICER

Stephen E. Gillen
Cincinnati, OH

**SECTION DELEGATES TO
THE HOUSE OF DELEGATES**

Susan B. Montgomery (2019)
Boston, MA

Joseph M. Potenza (2020)
Washington, DC

William L. LaFuze (2021)
Houston, TX

IMMEDIATE PAST CHAIR

Scott F. Partridge
Houston, TX

COUNCIL MEMBERS

Scott M. Alter (2019)

Janet Fries (2019)

Barbara J. Gislason (2019)

Heath W. Hoglund (2019)

Elizabeth Chien-Hale (2020)

Sharon A. Israel (2020)

Chris Katopis (2020)

Christina N. Scelsi (2020)

James R. Davis II (2021)

Jonathan R. Sick (2021)

Joshua L. Simmons (2021)

Francine D. Ward (2021)

Steven P. Caltrider (2022)

Thad Chaloehtiarana (2022)

Christina D. Frangiosa (2022)

Mary E. Rasenberger (2022)

Young Lawyer Council Member

Jameson Ma (2019)

SECTION STAFF

Michael G. Winkler
Director

Carey Farley
Programming / Events

Amy Mandel
Communications / Publications

Kira M. Alvarez
Legislative Consultant

Washington, DC
kira.alvarez@americanbar.org

AMERICAN BAR ASSOCIATION

June 28, 2019

Dr. Andrew A. Toole
Chief Economist
U.S. Patent and Trademark Office
Mail Stop OPIA
P.O. Box 1450
Alexandria, Virginia 22313-1450

Section of Intellectual Property Law

321 N. Clark Street

Chicago, IL 60654-7598

(312) 988-6254

E-mail: iplaw@americanbar.org

www.americanbar.org/iplaw

Via email: successact@uspto.gov

**Re: Request for Comments and Notice of Public Hearings on the Report
Required by the Study of Underrepresented Classes Chasing
Engineering and Science (“SUCCESS”) Act of 2018 – Initial Assignee
Data**

Dear Dr. Toole:

On behalf of the American Bar Association Section of Intellectual Property Law (the “ABA-IPL Section”), I am pleased to submit the enclosed supplemental comments to our letter of today’s date (“Letter”) in response to the “Request for Comments and Notice of Public Hearings on the Report Required by the Study of Underrepresented Classes Chasing Engineering and Science (“SUCCESS”) Act of 2018” (the “Request”) of the United States Patent and Trademark Office (the “USPTO”), published at 84 Fed. Reg. 17,809 (April 26, 2019). The views expressed herein are presented on behalf of the Section. They have not been approved by the House of Delegates or the Board of Governors of the American Bar Association and, accordingly, should not be construed as representing the position of the Association.

The comments here express the Section’s opinion on the importance of initial assignee data. Inquiry No. 5 in the Request asks “Should the USPTO collect demographic information on patent inventors at the time of patent application?” The ABA-IPL Section believes that the collection of demographic data should not stop with the inventors. That is, demographic data should also be collected on the initial assignees of patent applications and patents.

The SUCCESS Act expresses the concern of Congress in closing “the gap in the number of patents applied for *and obtained by* women and minorities.” The person applying for the patent—whether a woman, a veteran, or a member of a minority group—is not necessarily the person who “obtains” the patent. By the time the patent is issued, ownership may well have been assigned (by virtue of contractual obligations or otherwise) to an entity with which the inventor is affiliated, whether as an employee, contractor, owner, or otherwise. If the patent is not assigned as of the time of issuance, it will often be assigned shortly thereafter. In either case, this initial assignee is often (if not most often) the person or entity that actually realizes the benefits of the patent, not the inventor. Collecting demographic information only about the inventor at the time of application says nothing about the demographic characteristics of the business that likely will enjoy the benefits of the patent that ultimately issues.

Moreover, the SUCCESS Act specifically asks for information regarding the “benefits of increasing the number of patents applied for and obtained by women and minorities *and small businesses owned by women and minorities ...*” Demographic information about inventors sheds little light on whether a patent is obtained by small businesses owned by women and minorities. For the information that the SUCCESS Act seeks, demographic data about the initial assignee needs to be gathered. The USPTO, for example, might ask questions inquiring whether more than a threshold minimum percentage of the voting interests, profits interests, or both in the initial assignee is owned by a woman, a veteran, or a member of one of the named minority groups.

A key thrust of the SUCCESS Act is participation by women, veterans, and minorities in the entrepreneurial process. But has a woman, veteran, or minority group member really become part of the entrepreneurial process by being named as an inventor when the inventor is one of 10,000 engineers in a large technology company, for example? Such an individual is not necessarily an entrepreneur. As our initial Letter points out (at page 8) “ownership of a patent or a patent portfolio provides a point of differentiation and a competitive edge to any business ...”; “can open the door to growth, investment, and business development ...”; “adds value to investors and may increase the opportunity for small business owners for a strong exit strategy should they decide to sell the business ...”; and “create the potential for women, minority, or veteran business owners to increase his or her financial stability and financial wealth.” The entrepreneurship benefits of obtaining patents accrue to the business owners, not necessarily the inventor. The SUCCESS Act’s core concerns of entrepreneurship (and the social and economic benefits therefrom) can most effectively be addressed by coupling the demographic data for inventors collected at the time of patent application with initial assignee demographic data. When there is a rise in both the number of inventors who are veterans, women, or members of minority groups and the number of initial assignees that

are owned at least in part by women, veterans, and minorities, then—and perhaps only then—will there be a solid indication that the underrepresented classes are being increasingly included in the entrepreneurial process.

None of this is to say that gathering demographic data about inventors or that increasing inclusiveness among the ranks of inventors is not important. But to encourage an increased focus on inclusiveness in inventorship, the Section urges the USPTO to focus on initial assignee data. The Section would like to see publicly available statistics on how many patents were issued or assigned to initial assignees where the inventors were women, veterans, or minorities. That statistic would both encourage companies (perhaps with USPTO-sponsored public recognition) to increase the hiring of potential inventors from among women, veterans, and minorities and perhaps incentivize companies that consistently fail to show an increase in the number of inventors who are women, veterans, or minorities to change course. In either case, it is hoped that the availability of such data, even if it does not directly encourage increases in the number of women, veteran, and minority inventors, will furnish the USPTO and Congress with important data that may be used to sculpt other regulatory or legislative measures to increase inclusiveness in the invention and patenting process by the underrepresented classes.

Very truly yours,

A handwritten signature in blue ink that reads "Mark K. Dickson". The signature is written in a cursive, flowing style.

Mark K. Dickson
Chair, ABA Section of Intellectual Property Law

CHAIR

Mark K. Dickson
San Mateo, CA

CHAIR-ELECT

George W. Jordan III
Houston, TX

VICE-CHAIR

June Besek
New York, NY

SECRETARY

Adriana S. Luedke
Bethesda, MD

FINANCIAL OFFICER

Willard Jones II
Bethlehem, PA

REVENUE OFFICER

Susan E. McGahan
Bedminster, NJ

CLE OFFICER

David Postolski
Summit, NJ

MEMBERSHIP OFFICER

Kevin Greenleaf
Lovettsville, VA

PUBLICATIONS OFFICER

Stephen E. Gillen
Cincinnati, OH

**SECTION DELEGATES TO
THE HOUSE OF DELEGATES**

Susan B. Montgomery (2019)
Boston, MA

Joseph M. Potenza (2020)
Washington, DC

William L. LaFuze (2021)
Houston, TX

IMMEDIATE PAST CHAIR

Scott F. Partridge
Houston, TX

COUNCIL MEMBERS

Scott M. Alter (2019)

Janet Fries (2019)

Barbara J. Gislason (2019)

Heath W. Hoglund (2019)

Elizabeth Chien-Hale (2020)

Sharon A. Israel (2020)

Chris Katopis (2020)

Christina N. Scelsi (2020)

James R. Davis II (2021)

Jonathan R. Sick (2021)

Joshua L. Simmons (2021)

Francine D. Ward (2021)

Steven P. Caltrider (2022)

Thad Chaloehtiarana (2022)

Christina D. Frangiosa (2022)

Mary E. Rasenberger (2022)

Young Lawyer Council Member

Jameson Ma (2019)

SECTION STAFF

Michael G. Winkler
Director

Carey Farley
Programming / Events

Amy Mandel
Communications / Publications

Kira M. Alvarez
Legislative Consultant

Washington, DC
kira.alvarez@americanbar.org

AMERICAN BAR ASSOCIATION

June 28, 2019

Dr. Andrew A. Toole, Chief Economist
Mail Stop OPIA
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, Virginia 22313-1450

Via email: successact@uspto.gov

**Re: Request for Comments and Notice of Public Hearings on the
Report Required by the Study of Underrepresented Classes
Chasing Engineering and Science (“SUCCESS”) Act of 2018**

Dear Dr. Toole:

I write on behalf of the American Bar Association Section of Intellectual Property Law (“Section”). The purpose of this letter is to provide comments on the “Request for Comments and Notice of Public Hearings on the Report Required by the Study of Underrepresented Classes Chasing Engineering and Science (“SUCCESS”) Act of 2018” in response to the request of the United States Patent and Trademark Office (the “Office” or the “USPTO”). 84 Fed. Reg. 17,809 (April 26, 2019). The views expressed herein are presented on behalf of the Section of Intellectual Property Law. They have not been approved by the House of Delegates or the Board of Governors of the American Bar Association and, accordingly, should not be construed as representing the position of the Association.

The Section appreciates the USPTO’s dedication to increasing the participation of women, minorities, and veterans in entrepreneurship activities and the patent system, and the opportunity to comment on the study required by the SUCCESS Act. The Section supports the goal of increasing participation rates of women, minorities, and veterans in these critical activities.

While the Section responds to specifically enumerated questions in more detail below, the Section summarizes its high-level comments as follows.

First, the Section believes there is significant value to increasing the participation of women, minorities, and veterans in the patent system and entrepreneurial activities, both for the individuals, their communities, and the U.S. economy at large. The Section believes both the Federal Government and specifically the USPTO should take steps to remove barriers and increase these groups' participation rates.

Second, to aid in improving participation rates, the Section believes the USPTO should collect additional inventor demographic information at the time patent applications are filed. To date, much of this information does not exist, or is otherwise incredibly difficult to access or approximate. But the Section notes an important caveat to its suggestion: the USPTO should take steps to limit the use of the demographic information during patent prosecution, as the Section is concerned about the risk of implicit bias against applicants from these groups should an Examiner have this information.

Finally, the Section believes the USPTO should take all actions within its control to increase the participation of women, minorities, and veterans in the patent system. These steps could include, for example, anonymizing inventor demographic information during prosecution; implicit bias training for examiners; and additional hiring of female, minority, and veteran patent examiners. In addition, the USPTO should work with various bar groups and associations to ensure women, minority, and veteran inventors have access to assistance with the high costs of patenting.

1. What public data are available to identify the number of patents applied for and obtained by women, minorities, and veterans?

The Section finds several sources that identify the number of patents applied for and obtained by women. The Section highlights some sources below; however, the references provided are not an exhaustive list of those available.

a) Data Relating to Patents Applied for and Obtained by Women

The National Women's Business Council (NWBC), coupled with Delixus, Inc., undertook an extensive review of patents granted by the USPTO from 1975-2010.¹ Using data from the U.S. Census Bureau and the U.S. Social Security Administration (U.S. SSA), NWBC cross-referenced the first names of inventors on granted patents against the

¹ *Intellectual Property and Women Entrepreneurs, Quantitative Analysis*, National Women's Business Council (2012), <https://www.nwbc.gov/2012/01/09/more-patents-granted-to-women-in-recent-years/#more-2095>.

10,000 most common American names amongst women.² They found that only 18.8% of all patents filed domestically “had at least one woman inventor” named on the patent.³ (Gender Patenting Gap p. 8). This data was further broken down to show what percentage of patents list 1) a woman as the primary inventor, and 2) a woman as a non-primary inventor.⁴

Researchers associated with The National Center for Women & Information Technology and 1790 Analytics, LLC conducted a study to find the percentage of U.S. invented information technology (“IT”) patents⁵ that listed at least one female inventor on the patent.⁶ The researchers used similar cross-referencing analytics as the previous study, to identify the gender of applicants based on their names.⁷ However, they utilized a pool of 4,000+ names gathered by the U.S. SSA.⁸ Furthermore, the researchers also presented findings using “fractional attribution,” a method that “accounts for multiple inventors” on a patent. For example, in a team of three inventors—where only one inventor is a woman—the data count would increase by 0.39, not 1.⁹

Finally, a recent study used a different methodology to find how many U.S. patents listed at least one female inventor. The USPTO collaborated with researchers and PatentView to analyze characteristics of patents.¹⁰ Instead of using data from U.S. administrative agencies, the researchers used IBM’s Global Name Recognition system (IBM-GNR).¹¹ The researchers also leveraged WIPO’s worldwide gender-name dictionary to gather a broader list of names.¹² This created a diverse pool of names for the researchers to cross-reference with named inventors on granted patents.

It is essential to note the limitations of the data referenced herein. The *Equity in Innovation: Women Inventors and Patents* study used many of the aforementioned

² *Id.*

³ Jessica Milli, Ph.D., et. al, *The Gender Patenting Gap*, at 1 (2016) (citing *id.*).

⁴ *Id.* at 2.

⁵ The IT field includes Communications and Telecommunications, Computer Hardware, Computer Peripherals, Computer Software, and Semiconductors/Solid-state Devices.

⁶ Catherine Ashcraft, Ph.D., & Anthony Breitzman, *Who Invents It? Women’s Participation in Information Technology Patenting*, at 3 (2012).

⁷ *See id.* at 6.

⁸ *Id.*

⁹ *See id.* at 8.

¹⁰ *Progress and Potential: A profile of women inventors on U.S. patents*, USPTO: OFF. OF THE CHIEF ECONOMIST IP DATA HIGHLIGHTS, at 14 (2019).

¹¹ *Id.*

¹² *Id.*

sources to compile a list of data relating to women and their patenting activity.¹³ In the appendix, the article outlines the different methodologies used to find that data. More importantly, the research highlights the drawbacks in each method, one of which is that the number of women-held patents may be misleading or overestimated. For instance, in a five-person team, there may only be one woman listed—but the patent is considered a women-held patent, regardless of her contribution.¹⁴ However, some methodologies either only consider patents where the primary inventor is a woman, or use a method of fractional attribution to remedy these limitations.¹⁵

b) Data Relating to Patents Applied for and Obtained by Minorities

The Section found fewer data sources available to the public for determining the number of patents applied for and obtained by minorities. In a 2016 study, researchers established a “detailed portrait of individuals who are driving technological innovation in the United States.”¹⁶ In the study, patent data was one of the criteria harnessed to measure this innovation.¹⁷ Specifically, the researchers focused on triadic patents (filed in the U.S., Europe, and Japan) instead of USPTO patents—to eliminate frivolous patents that contribute less to innovation.¹⁸ This study is limited, since it surveyed 900+ people, “who have made meaningful, marketable contributions to technology-intensive industries as award-winning innovators *and* international patent applicants.”¹⁹ It was found that 35.5% of innovators were immigrants, and 8% of innovators were U.S.-born minorities.²⁰ One limitation of this study should be noted: there is no delineation of which percentage of immigrants are also considered minorities.

Another study, titled *The Idea Gap in Pink and Black*, outlined patenting activity amongst women and African Americans. The researchers found that between 1990 and 1999, African American inventors obtained between 3.7 and 4.5 patents per million patents granted by the USPTO.²¹ To reach this conclusion, researchers cross-reference

¹³ Jessica Milli, et al., *Equity in Innovation: Women Inventors and Patents*, (at “About this Report”) (2016).

¹⁴ *Id.* at 34.

¹⁵ *Id.*

¹⁶ *The Demographics of Innovation in the United States*, INFO. TECH. & INNOVATION FOUND., at 1 (2019).

¹⁷ *Id.*

¹⁸ *Id.* at 14.

¹⁹ *Id.* at 1.

²⁰ *Id.*

²¹ Lisa D. Cook & Chaleampong Kongcharoen, *The Idea Gap in Pink and Black*, at 5 (2010).

inventors’ names to two distinct data sets. These data sets were the African American Inventors data set and the U.S. Census Bureau’s common names by race.²²

c) Data Relating to Patents Applied for and Obtained by Veterans

The Section is not aware of any public data available to identify the number of patents applied for and obtained by veterans. The Section notes, however, that some data relating to the number of patents *owned* by veteran-owned businesses is publicly available. The U.S. Small Business Administration’s Office of Advocacy tracks and publishes a Report on Veteran-Owned Businesses and Their Owners.²³ The most recent such report was published in 2017, using data year 2012 information.

The Report on Veteran-Owned Businesses and Their Owners uses information from the U.S. Census Bureau’s Survey of Business Owners (“SBO”). The SBO is a sample survey, rather than a complete census, and therefore there are limitations to the data. In addition to the SBO, the Report relies on additional Census data and administrative records from other government agencies.

The Report contains a wide variety of information on veteran-owned small businesses. In particular, the Report includes data on the types of intellectual property owned by veteran-owned businesses (and, for comparison, all businesses). Respondents to the SBO can report on one or more of four different types of intellectual property: copyrights, trademarks, granted patents, and pending patents. A table showing the SBO results is below²⁴:

Table 32: Businesses by type of intellectual property owned – 2012

Type of intellectual property owned	All firms				Firms with employees				Firms without employees			
	All	%	Veteran-owned	%	All	%	Veteran-owned	%	All	%	Veteran-owned	%
All firms	27,626,360		2,521,682		5,424,458		442,485		22,201,902		2,079,197	
Total reporting	17,312,715	100	1,511,639	100	3,716,822	100	322,400	100	13,595,893	100	1,189,239	100
Copyright	556,930	3.2	43,598	2.9	144,424	3.9	11,212	3.5	412,506	3.0	32,386	2.7
Trademark	454,646	2.6	33,936	2.2	223,833	6.0	15,992	5.0	230,814	1.7	17,944	1.5
Patent (granted)	94,532	0.5	9,244	0.6	48,123	1.3	4,279	1.3	46,409	0.3	4,965	0.4
Patent (pending)	67,886	0.4	5,000	0.3	32,497	0.9	2,154	0.7	35,389	0.3	2,846	0.2
None of the above	16,395,395	94.7	1,439,852	95.3	3,396,005	91.4	297,848	92.4	12,999,390	95.6	1,142,004	96.0
Item not reported	210,871		21,280		28,618		3,303		182,253		17,976	

Source: SBA Office of Advocacy. Source data from the U.S. Census Bureau, 2012 Survey of Business Owners, business characteristics release (February 2016). Percentages are for respondent firms only. Detail does not add to totals as respondents could select more than one type of intellectual property option. For information on methodology, definitions, and relative standard errors, see <http://www.census.gov/library/publications/2012/econ/2012-sbo.html>.

²² *Id.* at 6.

²³ *See generally*, Joseph Sobota, Office of Advocacy, U.S. Small Business Administration, *Veteran-Owned Businesses and Their Owners* (2017).

²⁴ *Id.* at 63.

While this information may be useful to the USPTO, some of its limitations should also be noted. In particular, it only contains data for patents owned by veteran-owned businesses. It contains no data for patents applied for by otherwise-employed veterans. Moreover, that a veteran-owned business owns a patent does not, of course, mean that it was the original applicant and owner of the patent, or that the veteran-business owner is an inventor of the patent.

In addition to the above data relating to businesses owned by veterans, the Section notes that the U.S. Small Business Administration Office of Advocacy collects and publishes information on women and minority-owned businesses.²⁵

2. What public data are available to assess the social and private benefits that result from increasing the number of patents applied for and obtained by women, minorities, and veterans, as well as small businesses owned by these groups?

The Section has found public data that reference the social and private benefits that result from increasing the numbers of patents applied for and obtained by women, minorities, and veterans, as well as small businesses owned by these groups. The Section highlights certain of this data below, while in no way suggesting that this is the only data.

The *Equality of Opportunity Project* recently analyzed the lives of more than one million inventors in the United States by using a “deidentified database” to link “patent records to tax and school district records.”²⁶ An individual is designated an inventor if she files a patent application that has, “the most substantial scientific impact, as measured by future citations.”²⁷ The study shows the disparities along socioeconomic, racial, and gender lines. Interestingly, the study goes on to highlight which policies may increase innovation among the aforementioned groups and how this will in turn benefit society.²⁸

This Section did not find direct data that shows how patents obtained from women, minorities, and veterans can benefit the small business owned by these groups. However, as referenced in *Equity in Innovation: Women Inventors and Patents*,²⁹

²⁵ E.g., *Women’s Business Ownership: Data from the 2012 Survey of Business Owners*, SBA Office of Advocacy, Issue Brief Number 13 (May 31, 2017); *Small Business Owner Facts, Minority-Owned Businesses in the United States*, SBA Office of Advocacy (Data source: 2012 Survey of Business Owners, U.S. Census Bureau).

²⁶ Alex Bell, et al., *Who Becomes an Inventor in America? The Importance of Exposure to Innovation*, at 1.

²⁷ *Id.*

²⁸ *See id.* at 5.

²⁹ *See infra* note 37-38.

innovation by these groups—with support from the patent system—can benefit diverse societies around the globe. It would follow that these patents would have a higher commercialization rate—since the patents solve previously untapped issues. Thus, patented technology from these groups will have a significant impact on economic growth in the United States and other countries.

3. What social and private benefits would you identify as resulting from increasing the number of patents applied for and obtained by women, minorities, and veterans?

The Section believes several social and private benefits result from increasing the numbers of patents applied for and obtained by women, minorities, and veterans. The Section highlights certain of these benefits below, while in no way suggesting that these are the only benefits.

Concerning the *Equality of Opportunity Project*, the researchers conclude that, “[i]f women, minorities, and children from low-income families were to invent at the same rate as white men from high-income (top 20%) families, the rate of innovation in America would quadruple.”³⁰ The study also found that children who are exposed to innovation are more likely to become inventors themselves.³¹ Thus, the more women and/or minority caregivers innovate, the more likely their children will contribute to innovation and patenting activity in the future.

The Section agrees with the various assertions made in *Equity in Innovation: Women Inventors and Patents* that highlight the challenges the global community will face in the coming years.³² The study suggests that these challenges can be overcome by technology harnessed from a diverse pool of innovators that “match the diversity of the societies those technologies should benefit.”³³ Since women, minorities, and veterans “experience the world differently,” they can take a multi-faceted approach in problem-solving.³⁴ As the study suggests, one way that innovation and problem-solving are measured is through “patenting behavior.”³⁵ However, as shown in Question 1, these groups still lag in patenting behavior at the USPTO. This leaves a “vast reserve of untapped potential” in technology that could help alleviate challenges in the coming years.³⁶ Thus, increasing the number of patents applied for and obtained by women,

³⁰ Bell, *Who Becomes an Inventor in America?*, *supra* note 26, at 5.

³¹ *Id.* at 3.

³² Milli, et al., *Equity in Innovation: Women Inventors and Patents*, *supra* note 13, at 1.

³³ *Id.*

³⁴ *Id.*

³⁵ *Id.*

³⁶ *Id.*

minorities, and veterans would fill in these reserves and benefit the parts of society that have been underrepresented in previous years.

Furthermore, research indicates that men-only patent applicant teams have low citation counts, while “mixed-sex teams tend to produce the most successful patents as determined by the number of patent citations.”³⁷ Therefore, it is likely that a team with more women would “produce more patents of higher quality.”³⁸ This would also contribute positively to the patenting system in the U.S. by promoting competitive innovation, which, in turn, contributes to a robust economy.

4. What social and private benefits to small businesses owned by women, minorities, and veterans would you identify as resulting from increasing the number of patents applied for and obtained by those businesses?

The Section believes there are numerous social and private benefits to small businesses owned by women, minorities, and veterans that would result from increasing the number of patents applied for and obtained by those businesses. The Section highlights certain of these benefits below, while in no way suggesting that these are the only benefits.

First, from a business perspective, ownership of a patent or a patent portfolio provides a point of differentiation and a competitive edge to any business. In particular, with present-day fast-paced innovation in areas of technology, patent ownership by women, minority and veteran business owners can open the door to growth, investment, and business development. Venture capital or other forms of financing are a source of financial support and growth for small businesses, especially in the startup environment. Patent ownership provides proof to potential investors that a company considers its product or process important enough to protect and register. In addition, small business patent ownership adds value to investors and may increase the opportunity for small business owners for a strong exit strategy should they decide to sell the business. Intellectual property provides a competitive edge which business owners and investors highly value.

Second, from a personal perspective, ownership of a patent or a patent portfolio creates the potential for women, minority, or veteran business owners to increase his or her financial stability and financial wealth. Having financial stability creates the opportunity for small business owners to invest in their business, hire employees, invest in property, invest in child education, and invest in philanthropic ventures. The additional income from a small business’s ownership and capitalization of a patent or patent

³⁷ *Id.* at 3 (citing Ashcraft, *supra* note 6, at 15).

³⁸ Milli, et al., *Equity in Innovation: Women Inventors and Patents*, *supra* note 13, at 3

portfolio has the potential of impacting the owner of the small business, as well as future generations.

Third, with more financial stability and increased business success, neighborhoods with slow or stagnant economic development can attract private investment and infrastructure improvements, which in turn increase the establishment of other businesses in the same geographic areas. Therefore, increasing patent registration and ownership by women, minorities, and veterans has significant social and private effects.

5. Should the USPTO collect demographic information on patent inventors at the time of patent application, and why?

Currently, the USPTO collects only limited information on patent inventors: the inventor's full name and city/state or country of residency.³⁹ The USPTO does not collect gender information, racial/ethnic information, or an inventor's prior service in the US Armed Forces.

The Section believes the USPTO should collect this information (and perhaps more) at the time a patent application is filed. As the USPTO itself notes, the absence of this information makes it difficult to track these groups' participation in patenting.⁴⁰ For example, the USPTO's recent report on women in patenting attempted to estimate the data based on assigning gender to inventor names. But, the report noted that the chosen method has limited success in mitigating certain challenges.⁴¹ Collecting this information directly from applicants at the time of filing should improve data accuracy and ease of analysis. The Section notes that others in the field also have recommended such data collection.⁴²

The Section notes, however, a significant concern with collecting this data if not properly managed: the risk of bias during patent prosecution (implicit or otherwise). The recent Yale Management Study published in *Nature Biotechnology* documented increased challenges to inventors with female-sounding names not present for gender-

³⁹ USPTO, Progress and Potential, *supra* note 10, at 13.

⁴⁰ *Id.* at 13-14.

⁴¹ *Id.* at n. 33 (This approach to gender classification has been used in other patenting studies. For example, the USPTO Progress and Potential study references a 2015 study by Sugmior et al., as well as a worldwide analysis by the UK Intellectual Property Office (UKIPO).).

⁴² Milli, et al., *The Gender Patenting Gap*, *supra* note 3, at 7; Milli et al., *Equity in Innovation: Women Inventors and Patents*, *supra* note 13, at 34.

ambiguous names.⁴³ In addition, research in other contexts indicates discrimination against persons with “African-American-appearing” or “ethnic-sounding” names.⁴⁴ The Section is concerned that such disparities or discrimination could be amplified if demographic information is collected and made available to examiners during prosecution. However, the Section believes this risk can be managed appropriately by, for example, limiting the demographic information to which patent examiners have access. With proper management, the benefits of collecting this information should outweigh the potential risks.

6. To what extent, if at all, do educational and professional circumstances affect the ability of women, minorities, and veterans to apply for and obtain patents or to pursue entrepreneurial activities?

The Section believes that educational and professional factors play a considerable role in the ability of women, minorities, and veterans to apply for and obtain patents and pursue entrepreneurial activities. As discussed above, very few data sources are available to the public for determining the number of patents applied for and obtained by minorities. Therefore, a majority of research is focused on educational and professional disparities between men and women.

Education in Science, Technology, Engineering, and Mathematics (STEM) is often the foundational knowledge crucial to inventing and patenting. However, in a report by the Institute of Women’s Policy Research, women were found to be critically underrepresented in the patenting field.⁴⁵ And, despite gains for women inventors in the

⁴³ Jensen et al., *Gender differences in obtaining and maintaining patent rights*, 36 NATURE BIOTECHNOLOGY 4 (2018).

⁴⁴ Marianne Bertrand & Sendhil Millainathan, *Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination*, 94 THE AM. ECON. REV. 991, 991 (2004) (“white [-sounding] names receive 50 percent more callbacks for interviews” than African-American-sounding names); Lincoln Quillian, et al., *Meta-analysis of field experiments shows no change in racial discrimination in hiring over time*, 114 PROC. OF THE NAT’L ACAD. OF SCI. OF THE U.S., 10870, 10870 (2017) (“we observe no change in the level of hiring discrimination against African Americans over the past 25 years...”); Nicolas Jacquemet & Constantine Yannelis, *Indiscriminate discrimination: A correspondence test from ethnic homophily in the Chicago Labor Market*, at 1 (2012) (“[r]esumes with Anglo-Saxon names generate nearly one-third more callbacks than identical resumes with non-Anglo-Saxon ones, either African American or Foreign”) (emphasis added).

⁴⁵ *Equity in Innovation: Women Inventors and Patents*, supra note 13, at 3.

patent arena, which between 1977 and 2010 more than quintupled, many issued patents are in classes “typically associated with women such as jewelry and apparel.”⁴⁶

Unsurprisingly, research has shown an increase in the number of women graduates in STEM fields is tied to an increase in women’s patenting activity.⁴⁷ However the most important factor tied to the underrepresentation of female patent owners is women’s underrepresentation in patent-intensive fields of study such as electrical and mechanical engineering.⁴⁸ For African Americans, the share of doctoral degrees earned in science in engineering between 1970 and 2005 grew from less than 0.01 percent to four percent.⁴⁹ In science and engineering fields, men and women’s educational backgrounds are instructive. Men are most likely to earn patent intensive engineering degrees, while women are more concentrated in the life sciences – a relatively low patenting activity area. In fact, in a 2010 report, “only 19.1 percent of engineering degrees, 20.9 percent of computer science, and 38.7 percent of degrees in the physical sciences were awarded to women, whereas 58.3 percent of degrees in the biological sciences were held by women.”⁵⁰

In addition to educational factors, professional circumstances affect the ability of women, minorities, and veterans to apply for and obtain patents. The workplace environment of women scientists, as well as an often disproportionate share of family work, poses significant obstacles.⁵¹ Sexism, gender discrimination, and unfriendly family leave policies contribute to high rates of attrition of women and minorities in STEM fields.⁵² Additionally, women’s perceptions that coworkers harbor negative stereotypes about them has been found to lower the quality of women’s work, a phenomenon known as “stereotype threat.”⁵³ And women are three times as likely to report that plans for childbearing are “extremely important” in planning careers, a decision that significantly impacts career advancement.⁵⁴ For minorities, the bias of a name can affect professional employability. A field study from the National Bureau of Economic Research found that job applicants with white names needed to send 10 resumes to get a callback, but a black candidate needed to send 15 resumes.⁵⁵ Without being offered a position, or remaining

⁴⁶ *Id.*

⁴⁷ *Id.* at 8.

⁴⁸ Jennifer Hunt, et al., *Why are Women Underrepresented Amongst Patentees*, 42 RES. POL’Y 831, 840 (2013).

⁴⁹ Cook, *The Idea Gap in Pink and Black*, *supra* note 21, at 2.

⁵⁰ Milli, et al., *The Gender Patenting Gap*, *supra* note 3, at 4.

⁵¹ Milli, et al., *Equity in Innovation: Women Inventors and Patents*, *supra* note 12, at 2.

⁵² *Id.*

⁵³ *Id.* at 21.

⁵⁴ *Id.*

⁵⁵ Marianne Bertrand & Sendhil Millainathan, *Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination*, 94 THE

active in STEM fields, women and minorities are less likely to have the resources to innovate, apply for, and obtain patents.

7. To what extent, if at all, do socioeconomic factors facilitate or hinder the ability of women, minorities, and veterans to apply for and obtain patents or to pursue entrepreneurial activities?

The Section believes that socioeconomic factors also play a role in these groups obtaining patents and pursuing entrepreneurial activities, with the common denominator being where they live. As reported by the Office of the Chief Economist, patent activity in the U.S. is heavily concentrated in geographical clusters associated with technology specialties.⁵⁶ Specifically, women inventor rates are higher in technology-intensive states, where women have a greater opportunity to innovate while working for an employer. During a period from 2012-2016, women inventors took shares of 15 percent (New York), 15 percent (Massachusetts), and 14 percent (California).⁵⁷ Because inventorship is closely tied to employment, states with fewer women in the labor force had lower women inventorship activity.

8. What entities or institutions, if any, should or should not play an active role in promoting the participation of women, minorities, and veterans in the patent system and entrepreneurial activities?

The Section believes that a variety of entities and institutions should play an active role in promoting the participation of women, minorities, and veterans in the patent system and entrepreneurial activities. In particular, the Section believes the USPTO has a vital role to play. The USPTO serves as the gatekeeper for the U.S. patent system, and as such has a unique power and responsibility to ensure the system operates fairly for all, particularly for historically underrepresented groups.

Bar associations, including women, minority, and veteran bar associations should also be included in this discourse and in developing plans to educate and increase the participation of these groups in patent ownership. These bar associations bring to the table the legal expertise and the much-needed connections within their respective communities. They, with the support of the USPTO, can educate small businesses owned by women, minorities, and veterans on the benefits of patent registration such as the legal protection of their intellectual property as well as the potential for licensing and investment opportunities. Most of these bar associations have committees or members

AM. ECON. REV. 991, 991 (2004) (“white [-sounding] names receive 50 percent more callbacks for interviews” than African-American-sounding names”).

⁵⁶ USPTO, *Progress and Potential*, *supra* note 10, at 6.

⁵⁷ *Id.* at 7.

who specialize in patent prosecution. For instance, the Hispanic National Bar Association (“HNBA”) has an Intellectual Property Law Section that is very active within its respective communities. Identifying either committees or individuals within these bar associations to include in these discussions can facilitate the inclusion of the voices of the diverse communities this study seeks to support.

9. What public policies, if any, should the Federal Government explore in order to promote the participation of women, minorities, and veterans in the patent system and entrepreneurial activities? Are there any public policies that the Federal Government should not explore?

The Section recognizes that several issues contribute to the low rates of participation of women, minorities, and veterans in the patent system. Such issues include, *inter alia*, pipeline issues that call for sustained and increased measures to encourage and support underrepresented communities in the pursuit of STEM education and STEM careers; bias faced by these communities in seeking employment and advancement in STEM fields; and resource constraints. The costs typically associated with filing patents, such as engaging legal counsel to assist with a patent application, pose barriers for women and communities of color – groups that, on average, earn less than white men.⁵⁸

Regarding pipeline issues, in December of 2018, the National Science & Technology Council’s Committee on STEM Education released a Report, “Chartering a Course for Success: America’s Strategy for Stem Education” that presents the Federal Government’s five-year strategic plan for STEM education. The Report focuses heavily on workforce preparation via Federal partnerships with schools and the private sector to strengthen and expand school and summer programs and apprenticeships. One of the stated goals is to increase diversity, equity, and inclusion in STEM. The Report emphasizes the need to develop standard metrics to allow documentation and tracking of the participation of underserved communities in Federal programs that promote STEM education and careers. The Report also requires Federal agencies to collaborate to develop a more specific implementation plan.

For years, numerous Federal agencies have sponsored programs aimed at increasing the participation of women and minorities in STEM education. The Section concurs with the conclusion of the Committee’s Report that there is a need to track the participation in these programs and develop standard metrics across Federal agencies to allow efficient assessment of the efficacy of these programs and to allow insights to be made more rapidly regarding areas in which improvements are needed.

⁵⁸ See, e.g., Milli, et al., *The Gender Patenting Gap*, *supra* note 3.

The Section also believes that the Federal Government should identify ways that existing programs and partnerships can be strengthened and expanded, through increased funding and additional outreach to underserved communities. Fundamentally, to increase the number of patents obtained by women, minorities, and veterans, these communities must have opportunities to take advantage of STEM education and gain exposure to STEM careers. STEM education must be promoted consistently starting in the early years of an individual's education, and Federal programs, including Federal internship and apprenticeship programs and public-private partnerships that aim to bring more women, minorities, and veterans into STEM careers need to be strengthened and expanded.

As mentioned above, with proper management, the Section believes that the collection of demographic information at the patent application stage will aid efforts to track and improve these groups' participation levels in the patent system. But because research indicates that female applicants may experience bias in the application process,⁵⁹ the demographic information collected should not be available to patent examiners while the application is under review. The USPTO should consider implementing a pilot program to assess the results of a "blind" application process such as the one suggested by the authors of the cited study above. In that pilot, only applicants' initials are provided to examiners, and follow-up with applicants is also conducted blindly, such as via an agency portal that excludes information that could identify the gender of the applicant.

To try to combat bias faced by women, minority, and veteran inventors in the private sector workplace, the Federal Government should consider how best to provide incentives for the private sector to increase the rates that women, minorities, and veterans seek patents. For example, the government could convene a public-private task force or advisory committee including key industry leaders, some of whom are already taking action to combat the patent gap (Google and 3M,⁶⁰ for example). This task force would: provide insights, discuss challenges and lessons learned, and make recommendations for what is likely to work to close the patent gap in the private sector. Additionally, it would identify specific metrics and goals for companies to aim to achieve to increase the use of the patent system by women, minority, and veteran employees. The Federal Government

⁵⁹ See, e.g., *Gender differences in obtaining and maintaining patent rights*, 36 NATURE BIOTECHNOLOGY 307-309 (2018).

⁶⁰ E.g., Cardozo/ Google Project for Patent Diversity, <https://cardozogooglepatentdiversityproject.org/about>, (last visited June 7, 2009); Jim Spencer, *3M plays big role in U.S. effort to bolster ranks of women inventors*, Star Tribune (Apr. 20, 2019, 8:08 AM), <http://www.startribune.com/3m-plays-big-role-in-u-s-effort-to-bolster-ranks-of-women-inventors/508852112/>.

should also consider providing opportunities for public recognition and awards for companies that excel in achieving identified goals.

On the issue of cost barriers to patenting for female, minority, and veteran inventors, the Section notes that the USPTO has established a Pro Se Assistance Program, a pilot program to help those who seek patents without the assistance of an agent or attorney.⁶¹ The USPTO has also developed a Patent Pro Bono Program for independent inventors and small businesses, as required by the America Invents Act of 2012.⁶² The Patent Pro Bono Program uses regional networks to refer those seeking pro bono assistance to voluntary lawyers in their geographical area. Eligibility for this program is based largely on inventors' gross household income.

The Federal Government should consider ways to promote the availability of these programs specifically to women, minorities, and veterans, such as outreach initiatives with relevant organizations that promote women in STEM education and STEM careers; historically black colleges and universities (HBCUs); and professional veterans' organizations. It should ensure that demographic information is collected and reviewed pertaining to patent applications that enter the system via the regional networks; assess the extent to which these programs are bringing women, minorities, and veterans into the patent system; and consider ways to increase targeted support for any regional programs that are underperforming.

While networks of volunteer patent attorneys help to alleviate the problem of the high cost of patenting, it should not be overlooked that programs such as the Patent Pro Bono Program will only be successful if there is a consistent supply of patent lawyers with the ability and willingness to volunteer their time to the Program. Data indicates that while the demand for patent attorneys remains strong, the number of attorneys sitting for the patent bar exam has declined steadily over the past several years.⁶³ A shortage of patent lawyers will result in increased costs for obtaining legal assistance with patent applications, and fewer resources available for pro bono engagements to assist underrepresented communities. Consequently, it will also impede innovation for all inventors, including those from underrepresented communities.

⁶¹ USPTO, *Pro Se Assistance Program*, <https://www.uspto.gov/patents-getting-started/using-legal-services/pro-se-assistance-program>.

⁶² USPTO, *Patent Pro Bono Program for independent inventors and small businesses*, <https://www.uspto.gov/patents-getting-started/using-legal-services/pro-bono/patent-pro-bono-program>

⁶³ See, e.g., *Where Have All the Patent Lawyers Gone? Long Time Passing . . .*, 97 J. PAT. & TRADEMARK OFF. SOC'Y 193 (2015).

Some studies have suggested that the United States has unduly restrictive standards for individuals to enter the patent bar which may have only minimal impact on improving patent quality.⁶⁴ The USPTO should consider evaluating this matter further to understand whether expanding the patent bar would ultimately facilitate increased innovation and greater use of the patent system by individual inventors and small businesses, including traditionally underrepresented communities.

10. What action could USPTO take to address the participation of women, minorities, and veterans in the patent system and entrepreneurial activities?

The Section believes the USPTO should take several steps to increase the participation of women, minorities, and veterans in the patent system and entrepreneurial activities. First, as discussed above, the Section believes the USPTO should collect inventor demographic information at the time a patent application is filed. With proper maintenance, this demographic information could assist the USPTO in tracking and improving these groups' participation rates.

Second, the USPTO should implement internal policies to address and eliminate implicit or unconscious bias amongst its patent examiners and staff. The Section is concerned by the results of the Yale Management Study that showed a statistically significant decrease in the likelihood of patent issuance for inventors with female-sounding names, as well as decreased claim scope (after claim amendment) for claims that do issue. The Section is in favor of steps to address this disparity including, for example, the use of inventor initials in lieu of full names or other methods of semi-anonymizing inventor information during patent prosecution. The USPTO should also consider other methods for combatting implicit bias, such as implicit bias training for examiners and other USPTO staff. The USPTO should also support increased hiring rates for women, minorities, and veterans as patent examiners.

Finally, the USPTO should consider offering or facilitating assistance with patent application costs for women, minorities, and veterans, particularly for those applicants who are self-employed or whose patent prosecution efforts are not being managed by a large company. Further, the USPTO should consider prioritizing Patent Connect applications from women, minorities and veterans to ensure pro bono legal assistance for qualified applicants. The significant combined costs of patenting (including attorney fees;

⁶⁴ See, e.g. *In Pursuit of Patent Quality (And Reflection of Reification)*, 20 Marq. Intellectual Prop. L. Rev. 79 (2016); see also *Razing the Patent Bar*, 59 ARIZ. L. REV. 383 (2017) (noting, for example, that many members of the U.S. Patent Bar ultimately work on matters that are minimally related to the members' technical backgrounds that allowed them to sit for the patent bar exam, and advocating for expanding the patent bar).

filing fees; drawing fees; etc.) can be particularly burdensome for women and minorities, who earn less and have less access to capital than other groups, such as white men.⁶⁵ As such, the Section believes USPTO efforts to decrease the cost barrier to patenting for these groups is a worthwhile endeavor. One possibility in that regard is to partner with other organizations that provide patent pro bono programs such as Texas Accountants and Lawyers for the Arts (TALA).

11. Are there policies, programs, or other targeted activities shown to be effective at recruiting and retaining women, minorities, and veterans in innovative and entrepreneurial activities? Are there policies, programs, or other targeted activities that have proved ineffective?

The Section notes several sources that identify targeted activities effective at recruiting and retaining women, minorities, and veterans in innovative and entrepreneurial activities. Panorama, a Seattle-based think tank, together with The Boston Consulting Group, conducted qualitative and quantitative research on more than 250 U.S. companies and published a report on their findings.⁶⁶ *Why Paid Family Leave is Good Business* details the positive impact when technology companies increasing paid family leave, namely its effect on attrition rates of female employees.⁶⁷ For example, Google's increase in paid maternity leave from 12 to 18 weeks reduced the rate of turnover after maternity leave by 50%.⁶⁸ Accenture saw a 40% decrease in female attrition following the birth or adoption of a child when it increased leave; and when Aetna increased its maternity leave policy, the "percentage of women returning to work jumped from 77% to 91%."⁶⁹ In addition to attrition rates, paid family leave was found to be a significant factor in attracting talent, with 77% of workers with benefits reporting paid leave as a differentiating factor for choice of employer.⁷⁰ This report led to the creation of the Paid Leave Project to continue research on the effects of paid family leave on the U.S.'s most influential companies.⁷¹

In addition to increased paid family leave, a further review of studies indicates that retention of minority students in STEM fields was best achieved through the use of

⁶⁵ See Milli, et al., *The Gender Patenting Gap*, *supra* note 3.

⁶⁶ Trish Stroman, et al., *Why Paid Family Leave is Good Business* (2017).

⁶⁷ *Id.* at 13.

⁶⁸ *Id.* at 14.

⁶⁹ *Id.*

⁷⁰ *Id.* at 15.

⁷¹ *Emerging Business Trends in Paid Family Medical Leave*, PANORAMA: THE PAID LEAVE PROJECT (2018)


mentorship programs.⁷² As discussed above, retention in innovative and entrepreneurial fields is greatly impacted by the pipeline of students in pursuit of STEM educations. As such, to increase retention of minority inventors, it is critical to foster mentorship opportunities not only in the academic arena, but in the workforce as well.

With respect to recruiting and retaining veterans in innovative and entrepreneurial studies, the Institute for Veterans and Military Families and VetAdvisor conducted a research project to explore the reasons why veterans leave their initial civilian jobs.⁷³ The report analyzed 1,248 responses, and found that nine out of ten respondents identified the opportunity to use military skills and abilities as the most important aspect of civilian employment.⁷⁴

* * *

The Section thanks the Office for the opportunity to submit these comments. We would be pleased to further discuss these comments with the Office and others as appropriate.

Very truly yours,



Mark K. Dickson
Chair, ABA Section of Intellectual Property Law

⁷² Audrey Meador, *Examining Recruitment and Retention factors for Minority STEM Majors Through Stereotype Threat Lens*, 118 SCH. SCI. & MATHEMATICS (2018)

⁷³ Rosalinda Maury et al., *Veteran Job Retention Survey Summary*, SYRACUSE U. INST. FOR VETERANS AND MIL. FAMILIES

⁷⁴ *Id.* at 3.