Copyright Registrations: Who, What, When, Where, and Why

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The registration records at the U.S. Copyright Office provide a valuable lens on the use and performance of the copyright system, but have not yet been studied systematically. Using an original data set containing all 2.3 million registrations from 2008 to 2012, we provide a snapshot of current patterns of registration. We describe who is registering what, where, when, and why. Our main findings include the types of work being registered, how the registrations of individuals and firms differ, when works are being registered relative to their date of creation and date of publication, the age distribution of authors in different creative fields, and the geographic distribution and concentration of registration claimants.

The registration data collected and reported are superior to those relied upon in prior literature and should therefore prove useful to lawmakers and scholars wishing to measure the effect of copyright law on creativity or otherwise reform our copyright law.

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I. Introduction

Our copyright system should, under Congress's constitutional mandate, "promote the Progress of Science and useful Arts" by securing rights to authors in their creative writings.[1] But how might one measure, or at least get a sense of, the system's actual operation and performance? For example, who are the main users of the system? What "writings" are they creating? And, more generally, how well does the system promote creativity in the arts?

These and similar questions are hard, but a natural place to start looking for answers to them seems to be the records of the United States Copyright Office. Indeed, in the analogous case of patent law, researchers have long regarded patents as a measure of inventive activity.[2] Yet in the case of copyright law, registration records have received virtually no attention. The analysis of copyright registrations is timely, as policy makers and regulators in both the United States and the European Union are considering major overhauls of their copyright laws, wishing to adapt them for the digital age.[3] Having a good idea of how the registration system works should be a necessary prerequisite to assessing the desirability of its performance and to improving it.

The United States is unique in having an operating and widely used public registry of copyright claims.[4] The number of registrations it attracts

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1. U.S. CONST. art. I, § 8, cl. 8.

2. For early and pioneering work in the field, see, e.g., JACOB SCHMOOKLER, INVENTION AND ECONOMIC GROWTH (1966); F.M. Scherer, *Firm Size, Market Structure, Opportunity, and the Output of Patented Innovations*, 55 AM. ECON. REV. 1097 (1965).

3. Congress has started holding hearings on copyright reform. *See A Case Study for Consensus Building: The Copyright Principles Project: Hearing Before the Subcomm. on Courts, Intellectual Prop., & the Internet of the H. Comm. on the Judiciary*, 113th Cong. 1 (2013) (statement of Rep. Howard Coble, Chairman, Subcomm. on Courts, Intellectual Prop., & the Internet) (stating that the hearing is "an initial step in this Subcommittee's effort to undertake a comprehensive review of our Nation's copyright laws"). The European Commission recently ended a two-month public consultation in which it solicited reactions to eighty questions on particular issues of copyright law. *See Public Consultation on the Review of the EU Copyright Rules*, EUROPEAN COMMISSION, http://ec.europa.eu/internal_market/consultations/2013/copyright-rules/docs/consultation-document_en.pdf (last updated Apr. 10, 2014) (explaining that the consultation is aimed towards "ensuring that the EU copyright regulatory framework stays fit for purpose in the digital environment").

4. *See* Jonathan N. Osder et al., *Maximizing Copyright Protection at Minimal Cost – Why Foreign Companies Should Register with the U.S. Copyright Office*, DONAHUE GALLAGHER WOODS LLP (2012), *available at* https://web.archive.org/web/20130928012809/

annually outweighs the number of those in all other major countries with public registries combined.[5] While registration is no longer a precondition for the validity of copyrights,[6] Congress has still sought to encourage it by extending several legal advantages to those who register. Further, the volume of registrations in the United States has followed a steady upward trend, even while registration has become permissive.[7] Thus, as a factual matter, many industry and individual copyright owners continue to register their works.[8] Registrations in the United States today therefore provide as good a window into the use and performance of our copyright system as they ever did.

Studying the United States' registration practice is valuable for assessing the desirability and performance of registration itself. The Copyright Office is currently considering reforming the registration formality, and the European Commission—in its most recent public consultation call—is wondering whether establishing a registry might actually be a good idea.[9] At the same time, the private market is not sitting still: against the general backdrop of no requirement to register and no public registry in many countries, numerous private copyright registries have entered the market.[10] Studying registration patterns in the world's greatest public registry may enable policy makers in other parts of the world to draw inferences about likely patterns of creativity in other potential registries. It may also help them to design their own registration system by giving them one example, which they may follow or improve upon.

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http://www.donahue.com/article/maximizing-copyright-protection-at-minimal-cost-why-foreign-companies-should-register-with-the-u-s-copyright-office (accessed by searching for article in the Internet Archive index) (emphasizing the different rights that public registration entails in the United States compared to other Berne Convention countries); s*ee also Response from 80 Member States to Questionnaire as at July 1, 2010*, WORLD INTELLECTUAL PROP. ORG., http://www.wipo.int/copyright/en/registration/replies_survey_copyright_registration.html (providing questionnaire answers from several member states about their copyright-registration systems).

5. *See* World Intellectual Prop. Org., Standing Comm. on Copyright and Related Rights, Survey of National Legislation on Voluntary Registration Systems for Copyright and Related Rights, Annex II, at 1 chart, SCCR/13/2 (Nov. 9, 2005) (showing that the United States had 2,844,127 copyright registrations between 1998 and 2002 while Argentina had the next highest number of registrations with only 282,488).

6. *See infra* Part II(A).

7. *See* WILLIAM M. LANDES & RICHARD A. POSNER, THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW 245 (2003) (finding a "growth rate of copyright registrations of about 1 to 2 percent per year").

8. *See* 2011 U.S. COPYRIGHT OFFICE ANN. REP. REG. COPYRIGHT 43 [hereinafter 2011 COPYRIGHT OFFICE REPORT] (showing consistent increases in the number of copyright registrations since 1869).

9. *See Public Consultation on the Review of EU Copyright Rules*, *supra* note 3, at 14.

10. *See infra* note 44 and accompanying text.

In this Article, we introduce a copyright-registrations database and provide descriptive statistics of the information available in it. We have constructed an original data set containing over 2.3 million records that comprise all copyright registrations from 2008 to 2012. We extracted these records from the Catalog of the Copyright Office online. Using these data, we examine who is registering copyrights, the characteristics of registered works, and the timing and geography of copyright registration.

A primary contribution of our Article is in extracting and analyzing the detailed information available inside individual copyright registrations.

We first review *why* people register. We put forth the reasons for why the state might be interested in having copyrights registered, and why private parties might wish to register their copyrights in general and in particular under our current copyright law. We show that while registration is formally permissive, there currently exist strong reasons to register copyrights voluntarily. This is evidenced by a widespread registration practice: registration rates in the United States have grown over time, starting from an era when registration was a mandatory prerequisite for protection to our present times. Registration rates can thus serve as a proxy for the level of financially induced authorship.

We then discuss *what* is registered, describing what types of works copyright owners are registering across types of works by published status. We then address *who* registers, focusing on whether copyrights are registered by individuals or entities. Next, we turn to *when*, describing the timing of registration along the creative process and the age distribution of authors according to the type of work registered. Finally, we show *where* works are registered, describing the geography of expressive creativity.

We find that firms claim the large majority of copyright registrations for motion pictures, serials, and computer files, while music (especially when coupled with sound recordings) and dramatic works are claimed primarily by individuals. Text is claimed almost equally by individuals and firms. We also find that firms tend to register published works whereas individuals tend to register unpublished works. Moreover, types of works that are mainly registered by firms are also geographically concentrated, with many registrations coming from relatively few states. Types of works that are mainly registered by individuals are relatively geographically dispersed.

While our focus in this Article is descriptive, we note several implications that our study has for copyright law and scholarship.[11] We suggest that lawmakers considering copyright law reform should find our

11. *See infra* Part V.

data helpful.[12] We also note that our data, extracted from individual registration records, are superior to registration data taken from the annual reports of the Copyright Office and relied upon in prior literature.[13]

II. Why Register? Legal and Market Reasons for Registration

A. Legal Reasons[14]

Registering a work involves recording the work's ownership and other statutorily required information with the Copyright Office[15] and "deposit[ing] . . . copies of the work with the Library of Congress."[16] The registration requirement became more lenient over time. Historically, "registration prior to publication was a . . . prerequisite for protection."[17] The Copyright Act of 1909 relaxed this requirement. It "made publication with notice the sole [prerequisite] for protection."[18] "Registration (and . . . deposit) was still demanded after publication, but noncompliance would not void the copyright."[19] Finally, the Copyright Act of 1976 dropped the requirement to register, making registration completely voluntary.[20] At present, in other words, copyright protection attaches at the moment one fixes her work in a physical object (such as putting text on paper, painting

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12. *See infra* subpart V(A).

13. *See infra* subpart V(C).

14. This subpart is adapted from Dotan Oliar & Nicholas Matich, *Copyright Pre-registration: Evidence and Lessons from the First Seven Years, 2005–2012*, 55 ARIZ. L. REV. 1074, 1080–81 (2013).

15. *See also* 17 U.S.C. § 409 (2012) (listing the information that must be included in an application for registration).

16. Oliar & Matich, *supra* note 14, at 1080. For the current version of this registration formality, see 17 U.S.C. § 407.

17. Oliar & Matich, *supra* note 14, at 1080; s*ee also* Act of Mar. 3, 1891, ch. 565, § 3, 26 Stat. 1106, 1107–08 (amending the copyright statute to require that individuals seeking copyright protection register their work "on or before the day of publication").

18. Oliar & Matich, *supra* note 14, at 1080; *see also* Act of Mar. 4, 1909, ch. 320, § 9, 35 Stat. 1075, 1077.

19. Oliar & Matich, *supra* note 14, at 1080. *See also* § 12, 35 Stat. at 1078 (requiring that copies of the work and "a claim of copyright" be deposited in the copyright office after the publication of notice); STAFF OF SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS, S. COMM. ON THE JUDICIARY, 86TH CONG., STUDY NO. 17: THE REGISTRATION OF COPYRIGHT 31 (Comm. Print 1960) (prepared by Benjamin Kaplan) [hereinafter REGISTRATION STUDY] (suggesting "claim of copyright" to mean application for registration). Registration was still a prerequisite in certain instances, such as renewing a copyright, protecting certain unpublished works, and filing an infringement action. *See* §§ 11–12, 23, 35 Stat. at 1078, 1080. Furthermore, refusing to comply with express registration demands made by the Register of Copyright voided the claimant's copyright. *See* § 13, 35 Stat. at 1098; *see also* REGISTRATION STUDY *supra*, at 17–19 (discussing the terms of the Copyright Act of 1909).

20. Act of Oct. 19, 1976, Pub. L. No. 94-553, § 408, 90 Stat. 2541, 2580 (codified as amended at 17 U.S.C. § 408 (2012)).

on canvas, etc.), and the validity of the copyright does not depend on its registration with the Copyright Office.

While relaxing the duty to register and then making it voluntary, Congress still sought to encourage registration by providing several benefits to those who do. First, registration is still required prior to bringing an infringement action over a U.S. work.[21] Second, statutory damages and attorney's fees are "available as remedies only for works that had been registered prior to their infringement."[22] Third, prompt registration—within five years of publication—creates a prima facie evidentiary presumption respecting the validity of the copyrights and the facts stated in the certificate of registration.[23] Fourth, "a certificate of registration can be recorded with U.S. Customs and Border Protection to prevent the importation of infringing copies."[24] Lastly, starting in 2005, certain authors can preregister their claims as a way to curb prerelease infringement.[25]

B. Market-Based Reasons: A Registry Can Facilitate Trade and Enhance Incentives to Create

21. The Copyright Act of 1909 "made registration a general prerequisite for bringing an infringement action." Oliar & Matich, *supra* note 14, at 1080; *see also* § 12, 35 Stat. at 1078 ("No action or proceeding shall be maintained for infringement of copyright in any work until the provisions of this Act with respect to the deposit of copies and registration of such work shall have been complied with."). This requirement now applies only to U.S. works. 17 U.S.C. § 411(a) (2012). "The Berne Convention Implementation Act of 1988 limited the duty to register prior to suit only to the case of U.S. works." Oliar & Matich, *supra* note 14, at 1081; *see also* Berne Convention Implementation Act of 1988, Pub. L. No. 100-568, § 9(b)(1), 102 Stat. 2853, 2859 (1988) (codified as amended at 17 U.S.C. § 411 (2012)); Berne Convention for the Protection of Literary and Artistic Works art. 5(2), *opened for signature* July 24, 1971, S. TREATY DOC. NO. 99-27 (entered into force Mar. 1, 1989) ("The enjoyment and the exercise of these rights shall not be subject to any formality; such enjoyment and such exercise shall be independent of the existence of protection in the country of origin of the work.").

22. Oliar & Matich, *supra* note 14, at 1081; *see also* Act of Oct. 19, 1976, Pub. L. No. 94-553, § 412, 90 Stat. 2541, 2583 (codified as amended at 17 U.S.C. § 412 (2012)). Congress sought to encourage registration to counteract any potential reduction to registrations from a permissive registrations approach. *See* H.R. REP. NO. 94-1476, at 158 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5774 ("Copyright registration for published works, which is useful and important to users and the public at large, would no longer be compulsory, and should therefore be induced in some practical way.").

23. 17 U.S.C. § 410(c). The Copyright Act of 1909 attached a broader evidentiary presumption, that allowed any registration certificate to "be admitted in any court as prima facie evidence . . . ." § 55, 35 Stat. at 1086.

24. Oliar & Matich, *supra* note 14, at 1081; *see also* 19 C.F.R. §§ 133.31–.37 (2013) (establishing the process for recording a copyright registration with U.S. Customs and Border Protection).

25. *See* 17 U.S.C. § 408(f) (2012) (codifying the preregistration of copyrights). We do not include preregistrations in this Article. To learn of the statistical characteristics of preregistrations, see Oliar & Matich, *supra* note 14, at 1090–94.

Even in the absence of a duty to register, or centrally provided incentives to register, creators have reasons to register their works. First, registration can reduce transaction costs. Copyright owners profit from their works not only by using them[26] but often also by selling or licensing them.[27] For transactions to take place, a potential buyer or licensee would have to know the identity and contact information of the copyright owner.[28] If getting this information is costly, fewer transactions are made. While in many cases these costs might be low (e.g., a named author who still retains the copyrights and is easy to locate), in many other cases they might be high. A work's author is not necessarily the copyright owner, as ownership may have been transferred (such as to a publisher) or sold, and works may have several owners.[29] Even if the author retained her copyrights, she may have died—note that a copyright would last seventy years after her death[30]—and her heirs may not be easily known or found.

Registration can also reduce the risk of unintended infringement. Copyright infringement is a strict liability tort and may be found even if a user was sure he was clearing the rights from the rightful owner.[31] This risk may cause licensees to invest excessively in search and verification of ownership. A registry could alleviate this risk by tending to prove facts regarding ownership or by being combined with laws protecting from liability those who licensed from the registered owner in good faith.

There are additional transactional benefits to registration. Entities that own copyrights may be the target in a merger or an acquisition, for example. As part of that deal, they often need to assure acquirers of the validity of the copyrights. Registration tends to reduce the costs of the accompanying due diligence—for example, through the presumption of validity pertaining to the certificate of registration.[32] Registration of a script, for example, may help a film producer find and convince investors by, among other things, facilitating the taking of a security interest in the

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26. *See* 17 U.S.C. § 106 (listing the exclusive rights granted to copyright owners).

27. *E.g.*, *id.* § 201(d) ("The ownership of a copyright may be transferred in whole or in part . . . .").

28. *See id.* § 204(a) (stating that a transfer of copyright ownership is not valid without a signed writing from the owner or the owner's agent).

29. *See id.* § 201(a) ("The authors of a joint work are coowners of copyright in the work.").

30. *Id.* § 302(a).

31. *See, e.g.*, Harrisongs Music, Ltd. v. ABCKO Indus., Inc., 722 F.2d 988, 998–99 (1983) (stating that copying without intent to infringe still constitutes infringement and that "copyright infringement can be subconscious").

32. *See* 17 U.S.C. § 410(c) (explaining how copyright registration may constitute prima facie evidence of validity); *cf.* Clarisa Long, *Patent Signals*, 69 U. CHI. L. REV. 625, 647 (2002) (discussing how a patent communicates information to the public at a low cost).

copyright.[33] A firm interested in raising capital or in going public can use its portfolio of registered works as a way to credibly signal its creative potential to outsiders.[34] The ability to easily engage in these and similar transactions increases the return on creativity and thus translates into a greater incentive to create.

Additionally, the registration certificate signals to third parties that the Copyright Office examined the claim and determined that the copyright is valid.[35] If done prior to five years from first publication, registration constitutes prima facie evidence in litigation of the validity of the copyright and of the facts stated therein—most importantly, those regarding ownership.[36] On top of the positive inference from a registration, the lack of competing claims in the registry serves as a further assurance to transacting parties.

Moreover, third-party transferees who acquire an interest in a copyrighted work, such as buyers or licensees, can record documents pertaining to the transfer of copyrights in the Copyright Office. Such recordation gives all persons constructive notice of the facts stated in the recorded document[37] and helps a transferee perfect her claim against an unrecorded conflicting transfer.[38] A condition precedent to the recordation of transfers providing constructive notice, however, is that the underlying work had been registered.[39]

Registrations are an important component of extremely efficient public and private mechanisms for the clearance of predetermined fees for predetermined uses of copyrights. For example, to guarantee the receipt of certain compulsory license payments due under the Copyright Act, copyright owners should make sure that their copyrights are registered and that their addresses are updated in the records of the Copyright Office.[40] But this is true of other, nongovernmental registries as well: parties who wish to receive digital-performance royalties in a streamlined way must

33. *Cf.* Long, *supra* note 32, at 647 ("Even if patents conferred no protection, firms might find it desirable to obtain them as a means of credibly advertising their inventions.").

34. *Cf. id.* at 627–28 (explaining that firms may use patent portfolios to inexpensively and credibly convey information to outsiders).

35. *See* 17 U.S.C. § 410(a) (explaining that the Register of Copyrights must examine a claim to ensure that statutory copyright requirements have been met before issuing a registration certificate).

36. *See supra* note 23 and accompanying text.

37. 17 U.S.C. § 205(c).

38. *Id.* § 205(d).

39. *Id.* § 205(c)(2).

40. *See id.* § 115(c)(1) (providing that a copyright owner must be "identified in the registration or other public records of the Copyright Office" in order to be entitled to royalties under a license).

register with SoundExchange,[41] and parties who wish to be easily reached and paid for the public performance of their songs need to register with a performance-rights organization, such as the American Society of Composers, Authors, and Publishers (ASCAP).[42]

This last point serves to show that nothing mandates that registries be run by the government. We have seen above that although in the United States there is a governmental registry, private parties have created their own registries for specific purposes—such as the routine clearance of certain rights. The powerful reasons that make people register with the Copyright Office today in the absence of a general duty to register and participate with private registries exist abroad as well. In the United Kingdom (and other European countries), there is no governmental registry of copyrights.[43] Still, there are various private registries for the routine clearance of use permissions that parallel the functioning of ASCAP and SoundExchange.[44] In addition, there seems to be a flurry of privately run registries that offer registration and deposit services that are similar to those offered by the U.S. Copyright Office, highlighting the associated evidentiary benefits.[45]

These legal and extra-legal benefits of registration explain the substantial copyright-registration practice in the United States, which has

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41. *About Digital Royalties*, SOUNDEXCHANGE, http://www.soundexchange.com/artist-copyright-owner/digital-royalties/ ("You must be registered with SoundExchange in order to receive royalties from us; otherwise we won't know where to send your money!"). SoundExchange, it should be noted, was designated by the government to administer statutory licenses. *See, e.g.*, 37 C.F.R. § 380.4(b) (2013) ("SoundExchange, Inc. is designated as the Collective to receive statements of account and royalty payments from Licensees . . . and to distribute such royalty payments to each Copyright Owner and Performer.").

42. *ASCAP Payment System: Registering Your Works with ASCAP*, ASCAP, http://www.ascap.com/members/payment/registering.aspx ("The first step to getting paid is making sure your music is registered at ASCAP. After all, we can't pay you for the performance of a work if we don't know you are the writer or publisher!").

43. *Automatic Right*, INTELL. PROP. OFF., http://www.ipo.gov.uk/types/copy/c-about/c-auto.htm ("There is no official registration system for copyright in the United Kingdom (UK) and most other parts of the world. There are no forms to fill in and no fees to pay to get copyright protection.").

44. *See, e.g.*, *How Do I Begin to Earn PPL Royalties?*, PPL, http://www.ppluk.com/I-Make-Music/Why-Should-I-Become-A-Member/How-do-I-begin-to-earn-PPL-royalties/ ("The PPL Repertoire Database holds data for millions of recordings, including where the Music was recorded, who owns the rights and who has performed on it.").

45. *See, e.g.*, *The Copyright Registration Service*, THE UK COPYRIGHT SERVICE, http://www.copyrightservice.co.uk/register/registration_centre ("Copyright registration with the UK Copyright Service is the fast, effective and low cost way to protect your work from infringement and misuse, by ensuring you always have the best evidence of ownership to protect your work and your rights."); *see also About Us*, COPYRIGHTDEPOSIT.COM, http://www.copyrightdeposit.com/aboutus.htm ("We are offering a permanent record of your creative work as well as a secure storage of your copyrighted material."); INT'L COPYRIGHT REGISTRATION SERVICE, http://www.copyrighthouse.co.uk/.

grown gradually over time since the days in which registration was a precondition for protection, even while registration has become formally permissive.

III. Data

The data for this Article consist of all U.S. copyright registrations 2008–2012, extracted from the Catalog of the Copyright Office. The Catalog contains information about approximately 20 million records for works and documents registered since 1978.[46] However, the Copyright Office's database does not offer a bulk data download, instead only allowing users to find records by entering individual search terms.[47] To gather the data for this Article, we created a program which systematically downloaded all registrations from 2008 to 2012, for a total count of 2,316,167 copyright registrations.[48] Many of the tables below show fewer observations; this is because some of the registrations are missing data.

When one uses the search feature of the Copyright Office online database, the records are returned in this form:

Figure 1: Example of Registration Record

Type of Work:	Music
Registration Number / Date:	PAu003712569 / 2012-07-03
Application Title:	A Song.
Title:	A Song.
Description:	Print material.
Copyright Claimant:	Jane Doe. Address: 20 Elm Lane, Santa Barbara, CA 93108.
Date of Creation:	2008
Nation of First Publication:	United States
Authorship on Application:	Jane Doe. Authorship: Music, Lyrics. Domicile: United States; Citizenship: United States

46. *About the Catalog*, U.S. COPYRIGHT OFF., http://copyright.gov/records/about.html (last modified Sept. 25, 2007).

47. *Database Name: Copyright Catalog (1978 to Present)*, U.S. COPYRIGHT OFF., http://cocatalog.loc.gov/cgi-bin/Pwebrecon.cgi.

48. We begin in 2008 because registrant address data is missing from many or most observations in earlier years.

Rights and Permissions:	Jane Doe, 20 Elm Lane, Santa Barbara, CA 93108, (805) 555-1050, janedoe@aol.com
Names:	Doe, Jane

The data appendix contains the details of how we constructed the data set and variables reported in the analysis below.

IV. Results

Our empirical results are divided into four main parts: *What?*, *Who?*, *When?*, and *Where?* The first subpart describes the characteristics of copyright registrations, and in particular, what types of works are being registered. The next subpart details who is registering; specifically, whether they are individuals or firms. For registrations by individuals, we also describe the number of authors (and the number of claimants) per registration. The third subpart describes when copyrights are being registered, relative to when they were created and when they were published. For registrations by individuals, we also describe the age distribution of authors at the time of creation. The last subpart describes the geographic distribution of copyright registrations.

A. What Is Being Registered?

There are two variables in a copyright registration record that indicate the nature of the work being claimed: the "Type of Work" and the "Class of Work." The Type of Work is more descriptive and is determined by the aspect of a work being claimed. It is recorded in the first line of the registration record.[49] The Class of Work is an administrative classification determined by the application form that the registrant uses[50] and is indicated by the two letters that begin the registration number.[51] Our analysis focuses on the more informative Type of Work.

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49. *See supra* Figure 1.

50. *See* 37 C.F.R. § 202.3(b)(1) (2013).

51. *See id.* § 202.3(b)(1)(i)–(v) (matching each category of work with a designated prefix). The Class of Work that covers group registrations of Serials (Class SE) works differently. While this class determines the regulations and forms applicable for group registrations, once registered each individual serial in the group is assigned with its own TX number. *See infra* note 56. Because of the manner in which these group registrations are indexed in the electronic database, we do not capture them in our study. *See infra* note 56. Renewal registrations are also assigned copyright numbers; these begin RE. *See, e.g.*, THE CATCHER IN THE RYE BY JEROME DAVID SALINGER, Registration No. RE0000018341 (Jan. 22, 1979) (denoting that the registered work is a "[r]enewal registration").

The federal regulations governing copyright registrations describe what Types of Work belong in each class.[52] The form that the individual files to register the copyright depends on the Class of Work.[53] With the advent of online registration, this has become more complicated. When one registers online, at the beginning of the process one must choose a category for the work being registered and that category determines the contents of the online form.[54] There are more categories available for online registration than there are Classes of Work, but each online category corresponds to a specific class.[55] The options available for online registration, and their corresponding classes, are as follows: "Literary Work" (class TX), "Work of the Visual Arts" (class VA), "Sound Recording" (class SR), "Work of the Performing Arts (includes music, lyrics, screenplays, etc.)" (class PA), "Motion Picture /| Audio Visual Work" (class PA), and "Single Serial Issue" (class TX).[56]

Once an application is submitted, the Copyright Office assigns a Type of Work to each registration based on the aspect of the work being claimed.[57] There are more Types of Work that appear in registration records than there are number of classes. While a Type of Work can correspond to different Classes of Work—"Music" is the most prominent example—generally each Type of Work is associated with a single class.

Table 1: Classes of Work and Corresponding Types of Work[58]

52. *See* 37 C.F.R. § 202.3(b)(1) (referring to categories of works as "classes").

53. Paper registration forms are available online. *U.S. Copyright Office Forms*, U.S. COPYRIGHT OFF., http://www.copyright.gov/forms/ (last modified May 2, 2014) (describing the physical registration form).

54. To register a claim online, a claimant must first open a free account with the Copyright Office. *See Welcome to the eCO (electronic Copyright Office) Tutorial*, U.S. COPYRIGHT OFF., http://www.copyright.gov/eco/eco-tutorial.pdf (showing a sample online form with Music not listed as a separate category).

55. *Compare id.* (showing eight example categories of Types of Works), *with* 37 C.F.R. § 202.3(b)(i)–(v) (listing five Classes of Works).

56. *Welcome to the eCO (electronic Copyright Office) Tutorial*, *supra* note 54 (showing a screenshot of the Type of Work selection page). Within copyright regulations, Serials are referred to as being in class SE. 37 C.F.R. § 202.3(b)(1)(v). However, single Serials are registered in class TX. 6A FEDERAL PROCEDURAL FORMS § 17:12, at 195 (Jared L. Kronenberg ed., 2010). The different class is a reflection of the fact that there is a different application form used for registering multiple Serials in one registration, a form that is unavailable for electronic application.

57. The Public Information Office of the Copyright Office confirmed by email that this was their practice. E-mail from JS, Public Information Office, U.S. Copyright Office, to K. Ross Powell (Jan. 24, 2014) (on file with authors).

58. There are other, much rarer possibilities. For example, there is a registration in class VA and Type of Work Serial. CORROSION, Registration No. VA0001822051 (Apr. 13, 2012). Our study also reports some statistics on mask works. Copyright regulations do not refer to a class for

Class of Work	Corresponding Types of Work
Class TX: Nondramatic literary works	Computer File, Serial, Text
Class PA: Works of the performing arts	Dramatic Work and Music; or Choreography, Kit, Motion Picture, Music
Class VA: Works of the visual arts	Map, Visual Material
Class SR: Sound Recordings	Music, Sound Recording, Sound Recording and Music, Sound Recording and Text

Since the assignment of Types of Work to sound recordings is particularly complex, we provide an example. Consider a musician that both composes and records a song. The Copyright Office has special rules for the registration of claims in sound recordings; if this artist wanted to record her authorship in both the sound recording and the musical composition, she would have to register the work in class SR.[59] The Type of Work listed in the registration record would be "Sound Recording and Music." If she wanted to register only a musical composition, she should register with class PA and the Type of Work assigned would be "Music." If she later records the song, she can register this recording in class SR and the Type of Work assigned will be "Sound Recording."[60]

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mask works, but like a class, mask works have a unique registration form and copyright number prefix (MW). *See generally* 37 C.F.R. § 211.

59. 37 C.F.R. § 202.3(b)(2)(ii)(C); *see also Help: Type of Work*, U.S. COPYRIGHT OFF., http://www.copyright.gov/eco/help-type.html (last modified July 26, 2011) ("For any registration that includes a claim in sound recording, select Sound Recording as the Type of Work, whether or not the sound recording is predominant.").

60. The following commercial example is typical: the musical album, *The 20/20 Experience (Deluxe Version)* by Justin Timberlake, was registered by Sony Music Entertainment in class SR. THE 20/20 EXPERIENCE (DELUXE EDITION) / BY JUSTIN TIMBERLAKE (#88765-47851-2), Registration No. SR0000717770 (Apr. 1, 2013). The Type of Work listed in the copyright registration record is Sound Recording. *Id.* Because Sony Music Entertainment only held the rights to the album recording and not the songs, it was only registering the recording. *See Help: Type of Work*, *supra* note 59 ("To register both the sound recording and the underlying work on a single application, the copyright claimant must own all rights in both works."). The authors and licensees of the musical compositions for the individual songs on the album, such as Mr. Timberlake, registered the individual compositions in class PA. *E.g.*, PUSHER LOVE GIRL, Registration No. PA0001843849 (Apr. 26, 2013). The Type of Work listed in the copyright records for these individual musical compositions is Music. *Id.*

However, there are also works in class SR that record the Type of Work as Music.[61] When a registrant applies under class SR, the application asks her to specify what part of the recording she authored.[62] In these cases, the registrant checked the box for Music, but not for Sound Recording.[63]

As this example illustrates, no matter what form an applicant uses in registration, the Copyright Office takes care to match the Type of Work assigned to a registration to the component of the work being claimed.

Table 2 and 3 below show, by Type of Work, the number and percentage of registrations and the percentage of registrations published. The types with the most registrations are Text, Visual Material, Music, Sound Recording and Music, Serial, and Motion Picture. A work is considered published if the work has been distributed to the public by sale, transfer, lease, rental, or loan, or has been offered to be distributed to the public.[64] The percentage of works that are published varies widely across type, from 100% in Mask Work and 99.7% in Serial to only 5.7% in Dramatic Work. The next subpart will show that much of the variation in publication status is explained by the registrant being a firm, rather than an individual.

Table 2: Registrations by Type of Work

Type of Work	Number of Registrations	Percentage of All Registrations
Computer File	33,657	1.5%
Dramatic Work	96,858	4.2%
Kit	687	0.0%

61. *See, e.g.*, APPLES AND SYNTHESIZERS, Registration No. SR0000387319 (June 29, 2006) (showing a registration number with an SR prefix and listing Type of Work as Music).

62. *See Form SR*, U.S. COPYRIGHT OFF., http://www.copyright.gov/forms/formsr.pdf (instructing applicants to "mak[e] clear the nature of each author's contribution" to the recording).

63. The Public Information Office of the Copyright Office confirmed by email that this was their practice. E-mail from JS, *supra* note 57 (explaining that how the claimant describes their authorship determines the registration's administrative class). While there are numerous examples of works that are included in class SR and list Music as the Type of Work, copyright regulations do not appear to permit registrations in class SR that do not make a claim on the sound recording. *See* 37 C.F.R. § 202.3(b)(1)(iv). Nevertheless, the Copyright Office still accepts these registrations. *See* E-mail from JS, *supra* note 57 ("But that is not to say that other types of works, such as text and music, cannot be registered under class SR.").

64. 17 U.S.C. § 101 (2012); U.S. COPYRIGHT OFFICE, CIRCULAR NO. 1: COPYRIGHT BASICS 3–4 (2012), *available at* http://www.copyright.gov/circs/circ01.pdf.

Map	1,969	0.1%
Mask Work	1,026	0.0%
Motion Picture	166,439	7.2%
Music	294,082	12.7%
Serial	170,655	7.4%
Sound Recording	92,183	4.0%
Sound Recording and Music	194,866	8.4%
Sound Recording and Text	2,817	0.1%
Text	890,657	38.5%
Visual Material	370,271	16.0%
Total:	**2,316,167**	**100.0%**

Table 3: Publications by Type of Work

Type of Work	Percentage Published
Computer File	71.8%
Dramatic Work	5.7%
Kit	96.5%
Map	94.7%
Mask Work	100.0%
Motion Picture	81.7%
Music	28.1%
Serial	99.7%
Sound Recording	55.1%
Sound Recording and Music	20.1%
Sound Recording and Text	75.0%
Text	73.1%
Visual Material	57.3%
All:	**59.5%**

B. Who Is Registering?

Table 4 below presents, for each Type of Work, the percentage of registrations claimed by firms and the percentage claimed by individuals. As for firms, we include works produced by firms, works commissioned by firms as works made for hire, and works that were transferred to firms. In total, firms and individuals register works in close to equal rates (51.9% by firms and 48.1% by individuals). However, as Table 4 shows, these percentages vary across Types of Work. Computer File, Kit, Map, Mask Work, Motion Picture, and Serial are predominately registered by firms. Nearly two thirds of Sound Recording, Text, and Visual Material are registered by firms. Dramatic Work, Music, and Sound Recording and Music are predominately registered by individuals. The remainder, Sound Recording and Text, are relatively evenly split between individuals and firms. These percentages are consistent with notions of how accessible markets are to individuals. It is probably relatively difficult for an

individual to become a supplier of motion pictures or serials, for example, and we see relatively few individuals registering these types of works. These data fit with the observation that the production of multicomponent works is generally organized by firms, and that individual contributions to motion pictures can be commissioned by firms (who are the authors) as "works made for hire."[65]

Table 4: Registrations Claimed by Individuals and Firms

Type of Work	Number of Registrations	Percentage of Registrations Claimed	
		Individuals	Firms
Computer File	33,657	13.4%	86.6%
Dramatic Work	96,858	82.9%	17.1%
Kit	687	5.5%	94.5%
Map	1,969	7.0%	93.0%
Mask Work	1,026	2.1%	97.9%
Motion Picture	166,439	10.5%	89.5%
Music	294,082	70.4%	29.6%
Serial	170,655	1.5%	98.5%
Sound Recording	92,183	46.5%	53.5%
Sound Recording and Music	194,866	86.3%	13.7%
Sound Recording and Text	2,817	38.1%	61.9%
Text	890,657	52.0%	48.0%
Visual Material	370,271	34.1%	65.9%
Total:	**2,316,167**	**48.1%**	**51.9%**

Next, we look at how publication status differs between works claimed by individuals and works claimed by firms. This gives evidence about the differential behavior of individuals and firms. Additionally, it may provide suggestive evidence of the economic value of works registered by individuals and firms. Assuming the more valuable works are more likely to be commercialized and offered to the public, published works will on average be of higher quality and further along in their product development.

Table 5 below shows the publication status of works claimed by individuals and those claimed by firms. For example, of all Computer File registrations claimed by individuals, 42.4% are published, while of all Computer File registrations claimed by firms, 76.4% are published. As the

65. *See* 17 U.S.C. § 101 (defining a "work made for hire"); *see also id.* § 201(b) (stating that "the employer or other person for whom the work was prepared is considered the author").

Table shows, individuals tend to register unpublished works, while firms tend to register published works. This could mean that firms register works of higher market value, that individuals tend to register works earlier in their product cycle than firms, or some combination of the two.[66] It may be that both register at the end of the creative phase, but whereas production by firms is commonly followed by pre-planned commercial publication and distribution, individuals are more likely to still be looking for publication and distribution opportunities at the time they register their works. Additionally, individuals may register works before taking them to potential publishers as a means of establishing their rights over the work and deterring appropriation by the threat of enhanced remedies. In any case, claimants often take advantage of the statutory route, allowing them to register within three months after publication and have the effective registration date be considered as the date of publication for purposes of statutory damages and attorney's fees.[67]

Table 5: Publication Status by Individuals and Firms

Type of Work	Percentage of Registrations Published	
	Individual	Firm
Computer File	42.4%	76.4%
Dramatic Work	4.7%	10.5%
Kit	76.3%	97.7%
Map	59.9%	97.3%
Mask Work	100.0%	100.0%
Motion Picture	44.9%	86.0%
Music	11.2%	68.2%
Serial	95.6%	99.8%
Sound Recording	21.6%	84.2%
Sound Recording and Music	16.2%	44.5%
Sound Recording and Text	52.9%	88.6%
Text	56.1%	91.5%
Visual Material	34.1%	69.3%
Total:	**34.1%**	**83.0%**

66. We would like to infer something about a work's market value from whether it is published or unpublished, but currently, we have little evidence for this assumption.

67. *See* 17 U.S.C. § 412(2) (giving applicants a three-month period in which to register after the initial publication of a registered work).

Finally, Table 6 below shows the distribution of registrations by number of authors and number of claimants. The majority of registered works have a single author and a single claimant.

Table 6: Registrations by Number of Authors and Claimants

Number of Authors	Percentage of Registrations	Number of Claimants	Percentage of Registrations
1	87.9%	1	93.0%
2	11.2%	2	6.0%
3+	0.8%	3+	1.0%
Registrations:	2,169,203	**Registrations:**	2,181,440

C. When Are Works Registered?

This subpart provides evidence about when works are registered, relative to the date of creation and the date of publication. Generally, works are registered within one year of creation and within one year of publication.

Table 7 below shows the number of years between a work's creation and its subsequent registration. Almost 85% of registrations occur within two years of creation. Also, less than 5% of works are registered more than five years after they were created. While registration is often a good proxy for the date of creation, note that 15% of works are registered more than two years after they were created.

It is likely that the gap between creation and registration is slightly overstated. The copyright registration typically records only the year the work was created, not the day,[68] which leads to some works being assigned a one year gap between creation and registration when the gap was only a couple months. For example, if a work was created in December 2010 and registered in January 2011, it would be recorded as a one-year gap between creation and registration since only the year of creation is recorded. Almost 50% of the 554,965 works registered one year after creation were works registered in January, February, or March.

68. *See id.* § 409(7) (requiring the year the work was created in an application for copyright registration); *id.* § 410(a) (providing that issued registration certificates must contain information submitted in the application).

Table 7: Years between Creation and Registration

Time between Creation and Registration	Number of Registrations	Percentage of Registrations
0–1 Year	1,248,471	58.5%
1–2 Years	554,773	26.0%
2–3 Years	123,198	5.8%
3–4 Years	56,836	2.7%
4–5 Years	34,038	1.6%
5–10 Years	75,683	3.5%
11–20 Years	27,837	1.3%
21+ Years	13,692	0.6%
Total:	**2,134,528**	**100.0%**

Table 8 below refers to registrations of published works and shows the gap between the publication of a work and its registration. Registration is timely, with 54.6% registering a work within three months of publication and an additional 25.2% registering within one year. Note that registration within three months of publication makes statutory damages and attorney's fees available as remedies against infringements that commenced prior to the registration (but after the publication).[69] Also, over 95% of registered works were registered within five years of publication. Note that registration within five years of publication endows the certificate of registration with a presumption of validity.[70] The majority of registrants thus conform to the standards of prompt registration encouraged by the Copyright Act. "Published after Registered" marks the few works that were registered as published, but report a date of publication after the date of registration.

69. *See supra* note 22 and accompanying text.

70. *See supra* note 23 and accompanying text.

Table 8: Time between Publication and Registration

Time between Publication and Registration	Number of Registrations	Percentage of Registrations
Published after Registered	2,270	0.2%
Less than 3 Months	656,752	54.6%
Less than 1 Year	303,189	25.2%
1–2 Years	102,301	8.5%
2–3 Years	44,747	3.7%
3–4 Years	25,554	2.1%
4–5 Years	16,619	1.4%
5–10 Years	34,363	2.9%
11+	17,987	1.5%
Total:	**1,203,782**	**100.0%**

Figure 2 below shows the average registrations (2008–2012) by Type of Work and by month; there are no evident seasonal trends in the number of copyright registrations.

Figure 2: Mean Monthly Registrations by Type of Work

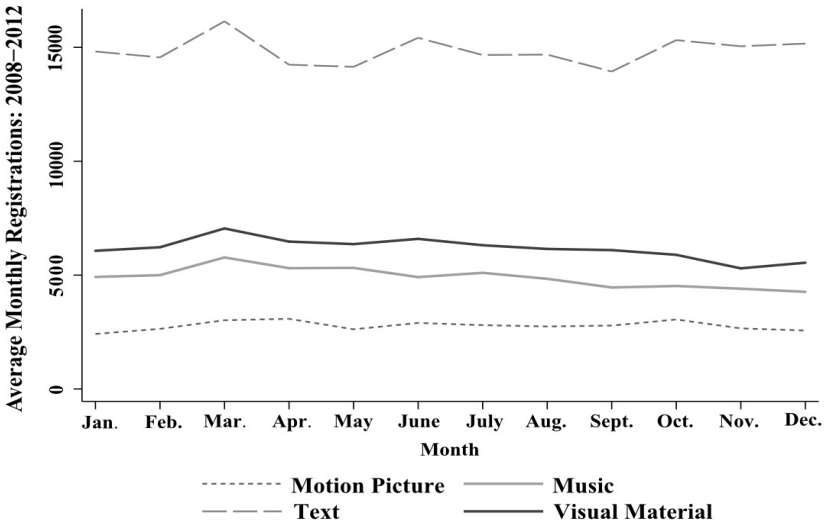


Figure 3 below shows a histogram of the author's age at the time the registered work was created. As the figure suggests, the mass of registrants create between the ages of 20 and 60, and productivity seems to be largely at the same level in this age range. But a different picture emerges when one breaks down the numbers by Type of Work.

Figure 3: Number of Registrations by Age

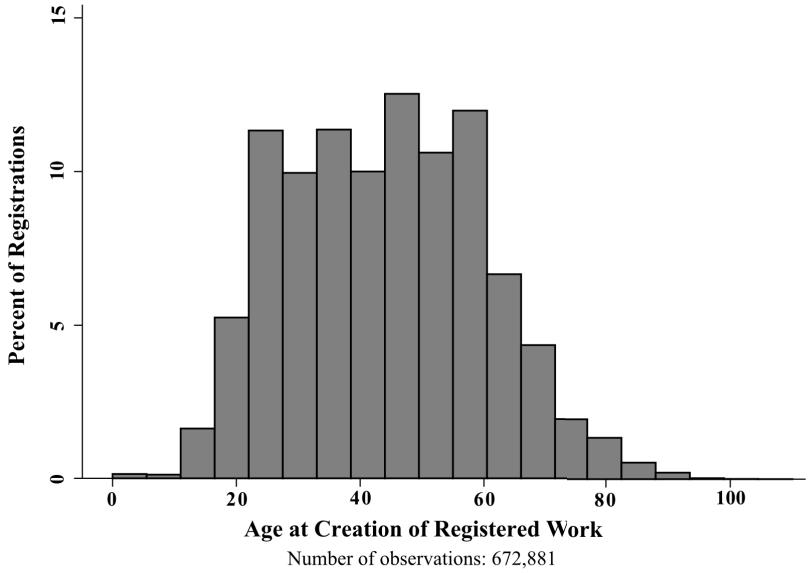


Figure 4 below shows the age distributions for different Types of Work (in the top panel) and for published and unpublished Texts (in the bottom panel).

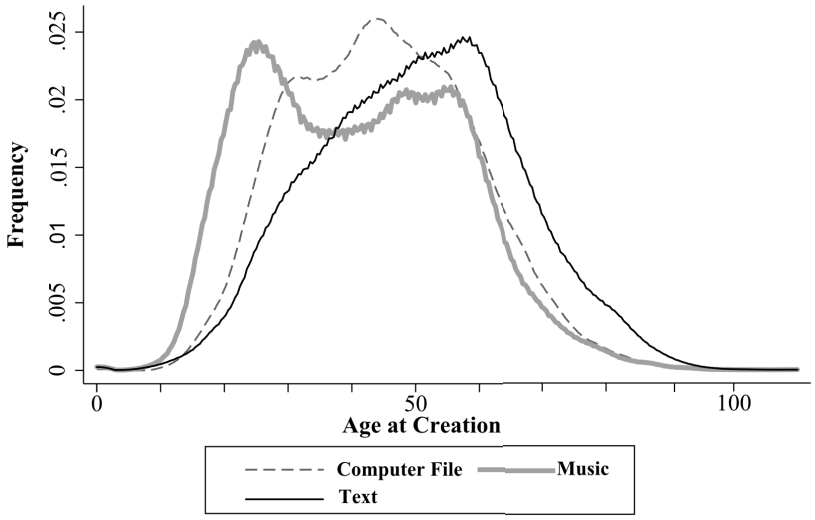
As the top panel in Figure 4 shows, different areas of creativity are characterized by different age distribution of the authors. Whereas Music shows a bimodal distribution in which the greater mass consists of authors in their early- and mid-20s, the greatest mass of authors of computer software consists of authors in their early- and mid-40s, whereas the greatest mass of the authors of literary works consists of authors in their late-50s.

The statistic concerning computer software may seem surprising, as software, according to popular belief, is often created by the younger generation. There may be sevearl ways to reconcile our data with such perception. First, it may be that the perception is inaccurate. Second, it may be that the perception is generally true, but that the younger generation

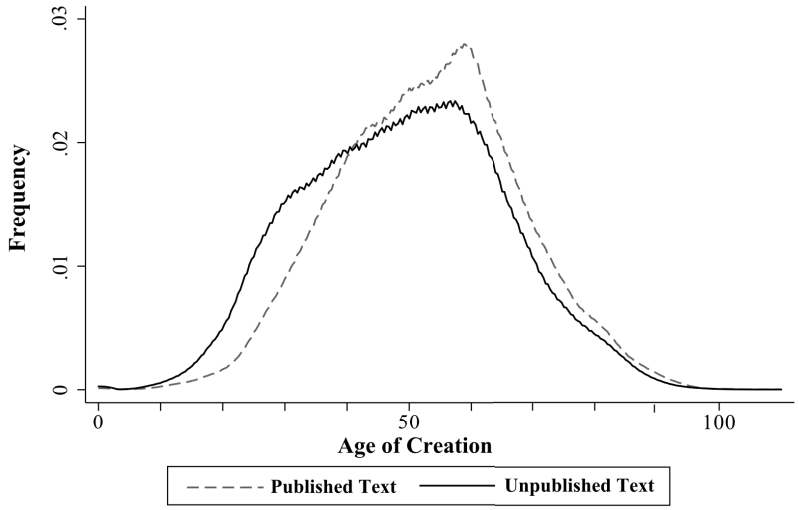
does not tend to register its works. Lastly, the perception may be true, but it could be that the younger generation tends to create works for hire within corporations or startups, whereas our statistics represent age distributions conditional on the fact that the work was created by the individual. It may be that software registrations by individuals tend to be driven by self-employed, experienced freelancers, for example.

The second panel in Figure 4 examines the age distribution of the authors of literary works according to their published status. It shows that authors of published works are generally older than the authors of unpublished works. This phenomenon may suggest that older, more experienced authors know their way in the market better or are more established, than younger, less experienced authors.

Figure 4: Age Distributions of Registrations



Distribution of works claimed by individuals.
Number of observations: 3,000 (Computer File), 134,525 (Music), 172,593 (Text)



Distribution of text works claimed by individuals.
Number of observations: 51,515 (Published), 121,078 (Unpublished)

D. Where Are Works Registered?

This subpart focuses on the geography of registration, using the 2,027,018 registrations with zip code information. Tables 9 below shows the Urbanized Areas with the most registrations and the most registrations per capita. "Urbanized Areas" are delineated by the U.S. Census Bureau and "consist of densely developed territor[ies] that contain 50,000 or more people."[71] Some of these results are driven by single firms. For example, the Charlotte, NC/SC Urbanized Area's presence at the top of the *Computer File* list is largely driven by a large number of IBM's registrations listing Charlotte, North Carolina as the address.

71. *Geographic Terms and Concepts - Urban and Rural*, U.S. CENSUS BUREAU, http://www.census.gov/geo/reference/gtc/gtc_urbanrural.html#ua (last modified Dec. 6, 2012). Urbanized areas listing multiple states (e.g., Charlotte, NC/SC) are given these names by the Census Bureau.

Table 9: Urbanized Areas with Most Total Registrations

Rank	Total Registrations				
	Computer Files	**Motion Pictures**	**Music**	**Visual Material**	**Text**
1	Charlotte, NC/SC	Los Angeles/ Long Beach/ Anaheim, CA	Los Angeles/ Long Beach/ Anaheim, CA	Los Angeles/ Long Beach/ Anaheim, CA	New York/ Newark, NY/NJ/CT
2	New York/ Newark, NY/NJ/CT	New York/ Newark, NY/NJ/CT	New York/ Newark, NY/NJ/CT	New York/ Newark, NY/NJ/CT	Los Angeles/ Long Beach/ Anaheim, CA
3	Los Angeles/ Long Beach/ Anaheim, CA	San Francisco/ Oakland, CA	Nashville-Davidson, TN	Miami, FL	Washington, DC/VA/MD
4	San Francisco/ Oakland, CA	Miami, FL	Miami, FL	Chicago, IL/IN	Chicago, IL/IN
5	Chicago, IL/IN	San Diego, CA	Atlanta, GA	San Francisco/ Oakland, CA	Philadelphia, PA/NJ/DE/ MD
6	Washington, DC/VA/MD	Atlanta, GA	Chicago, IL/IN	Seattle, WA	Boston, MA/NH/RI
7	Detroit, MI	Virginia Beach, VA	Washington, DC/VA/MD	Atlanta, GA	Miami, FL
8	San Jose, CA	Las Vegas/ Henderson, NV	Philadelphia, PA/NJ/ DE/MD	Philadelphia, PA/NJ/ DE/MD	Atlanta, GA
9	Seattle, WA	Dallas/ Fort Worth/ Arlington, TX	Dallas/ Fort Worth/ Arlington, TX	San Diego, CA	Baltimore, MD
10	Boston, MA/NH/RI	Boston, MA/NH/RI	Houston, TX	Boston, MA/NH/RI	San Francisco/ Oakland, CA

While Table 9 shows the cities with the most registrations, it does not portray how the registration of copyrights is distributed across the country. The remainder of this subpart provides a measure of the geographic concentration of copyright registrations: Lorenz curves.

Lorenz curves are typically used to represent income or wealth inequality,[72] but they can be used to assess any type of inequality or degree of concentration. We use Lorenz curves to graphically represent the geographic concentration of copyright registrations, how this differs by Type of Work, and whether the registration is claimed by an individual or firm. The question we are asking is whether each geographic area produces the same number of registrations, or whether registrations are concentrated in a few high-producing areas. Motion Pictures, Visual Material, and Computer Files are concentrated in relatively few places. Sound Recording and Music, Music, Dramatic Work, and Text are relatively dispersed across the country. Across all Types of Work, individual registrations are less concentrated than firm registrations.

Our geographic unit of analysis for the Lorenz curves is the Census Public Use Microdata Areas (PUMAs), which are delineated by the Census Bureau and contain at least 100,000 people.[73] Using the Missouri Census Data Center's 2000 MABLE/GEOCORR engine,[74] we match zip codes to PUMAs. The advantage of using the PUMA is that the number of people in each PUMA is much more homogeneous than the number of people per zip code.[75] Therefore, the bottom 10% of PUMAs roughly corresponds to 10% of the population.

72. *See* Joseph L. Gastwirth, *The Estimation of the Lorenz Curve and Gini Index*, 54 REV. ECON. & STAT. 306, 306 (1972) ("Most of the measures of income inequality are derived from the Lorenz curve . . . .").

73. *Public Use Microdata Areas (PUMAs)*, U.S. CENSUS BUREAU, http://www.census.gov/geo/reference/puma.html (last modified Jan. 23, 2014).

74. *MABLE/Geocorr*12*: Geographic Correspondence Engine*, MO. CENSUS DATA CENTER, http://mcdc.missouri.edu/websas/geocorr2k.html (last modified Nov. 19, 2013).

75. *Compare Zip Code Statistics*, U.S. CENSUS BUREAU, http://www.census.gov/epcd/ www/zipstats.html ("ZIP codes are defined at the convenience of the U.S. Postal Service and may change from time to time."), *with Final Public Use Microdata Area (PUMA) Criteria and Guidelines for the 2010 Census and the American Community Survey*, U.S. CENSUS BUREAU 1, http://www.census.gov/geo/reference/pdfs/puma/2010_puma_guidelines.pdf (stating that each PUMA must meet a minimum population of 100,000).

Figure 5: Lorenz Curves by Type of Work

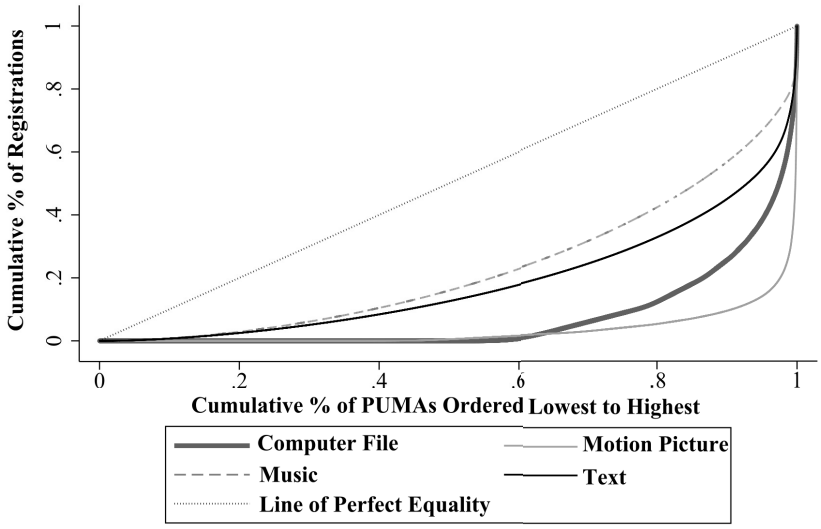


Figure 5 shows the Lorenz curves for four types of works. The curves show the concentration of copyright registrations across PUMAs. For example, the Computer File curve shows that the bottom 80% of PUMAs produce approximately 10% of Computer File copyright registrations, or equivalently, that the top 20% of PUMAs produce 90% of Computer File registrations. The more bent a curve is, the more unequal the production of copyright registrations is across PUMAs. If each PUMA registered the same number of works, the Lorenz curve would be straight, upward sloping, and equal to the "line of perfect equality."

Figure 5 shows that Music is the least concentrated geographically, followed by Text, Computer Files, and then Motion Pictures. For Motion Pictures, 90% of registrations can be traced to only 5% of the PUMAs.

A numerical measure of the concentration of copyright registrations can be calculated as the area between the line of perfect equality and the Lorenz curve, divided by the total area below the line of perfect equality. This measure, known as the Gini coefficient, takes a value between 0 and 1, with the coefficient equal to 0 if there is perfect equality in copyright registrations across PUMAs, and the coefficient close to 1 if per capita

registrations are highly concentrated in a small number of PUMAs.[76] Table 10 shows the Gini coefficients for the different types of works. The most concentrated Type of Work is Motion Picture, followed by Visual Material, Sound Recording, and Computer File. Sound Recording and Music, Music, Dramatic Works, and Texts are relatively dispersed. Additionally, it shows the Gini coefficients for only those works registered by firms and only those registered by individuals. Across all Types of Works, works registered by individuals are less concentrated than works registered by firms.

Table 10: Gini Coefficients by Type of Work and Claimant Type

Type of Work	Gini Coefficient		
	All	Individuals	Firms
Computer File	0.698	0.401	0.725
Dramatic Work	0.613	0.596	0.66
Motion Picture	0.897	0.575	0.922
Music	0.537	0.443	0.836
Sound Recording	0.72	0.516	0.876
Sound Recording and Music	0.494	0.482	0.606
Sound Recording and Text	0.676	0.486	0.766
Text	0.631	0.438	0.849
Visual Material	0.725	0.572	0.841
Total:	**0.666**	**0.501**	**0.787**

Table 11 shows the nation where the work was first published, for works first published outside the United States. Of all works, 95.64% are first published within the United States and 4.34% are published outside the United States. All nations with less than 100 registrations during our time period of 2008–2012 are classified as "Other." The most common nations of first publication, other than the United States, are the United Kingdom (leading by a big margin), Canada, Germany, China, South Korea, and Japan.

76. *See Measuring Inequality*, WORLD BANK, http://go.worldbank.org/3SLYUTVY00 ("The coefficient varies between 0, which reflects complete equality and 1, which indicates complete inequality (on person has all the income or consumption, all others have none).").

Table 11: Nation of First Publication (outside of U.S.)

Nation	Percentage	Nation	Percentage
Argentina	0.330%	Italy	1.792%
Australia	2.566%	Japan	5.605%
Austria	0.237%	South Korea	5.999%
Belgium	0.326%	Mexico	2.455%
Brazil	0.618%	Netherlands	1.037%
Canada	8.104%	Norway	0.218%
China	6.575%	Puerto Rico	1.007%
Colombia	0.411%	Russia	0.672%
Denmark	0.204%	Singapore	0.437%
England	2.453%	Spain	1.450%
Finland	0.300%	Sweden	0.522%
France	3.748%	Switzerland	0.515%
Germany	6.755%	Taiwan	0.807%
Hong Kong	1.215%	Thailand	0.387%
India	1.279%	United Kingdom	36.856%
Ireland	0.307%	Vietnam	0.191%
Israel	0.402%	Other	4.220%
Total Registrations Outside United States:		**54,008**	

V. Implications

Our main purpose in this Article is to describe the information latent in individual copyright registrations. We reserve policy and normative analysis to future work, after we gather data for additional years. In this Part we wish to merely suggest ways in which our findings and data set shed light on existing literature and could serve to inform lawmaking.

A. Use of Registration Data in Copyright Lawmaking

Most agree that the fundamental goal of copyright law is to strike a balance between incentivizing authors to create, on the one hand, and disseminating creative works widely to the public, on the other. The difficulty is that providing greater incentives to create is done by way of allowing authors greater control over content (e.g., by extending the duration of copyrights or the set of exclusive rights under authors' control),

which harms the social interest in disseminating creative works widely.[77] Lawmakers' difficult task is to find the optimal balance between promoting incentives and access.[78]

Registration records provide valuable information to lawmakers wishing to strike this balance optimally. At a minimum, registration records can be looked at in order to examine the degree to which various copyright reforms were associated with enhanced incentives to create among registrants and whether additional reforms are needed.

Take, for example, the doctrine on copyright duration, a topic which Congress has revisited repeatedly over the years. At the founding, authors could enjoy up to twenty-eight years of copyright protection.[79] The maximal term was extended to forty-two years in 1831 and then to fifty-six years in 1909.[80] In 1976 Congress set the basic term for individual authors at life plus fifty years[81] and extended it again in the Copyright Term Extension Act of 1998 (CTEA) to life plus seventy years.[82] Were these extensions warranted, and are additional ones needed?

For policy makers wishing to strike an optimal incentive–access tradeoff, it should be apparent that any extension increases the incentive to create, but at decreasing rates. Because of discounting to present value, the longer copyright protection already is, the smaller the added incentive effect of extending it by a set number of years. Can one determine, as a theoretical matter, what is the optimal term? While many have argued against the wisdom of the last extension (and the one before it)[83] based on the fact that it adds a negligible incentive, a few countered, arguing that the theoretical argument against the extension is not conclusive.[84] Where

77. Eldred v. Ashcroft, 537 U.S. 186, 245–48 (2003) (Breyer, J., dissenting) (arguing that the author's copyright monopoly must be limited to ensure the work can be disseminated in the future).

78. *See* William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325, 326 (1989) ("Striking the correct balance between access and incentives is the central problem in copyright law.").

79. Act of May 31, 1790, ch. 15, § 1, 1 Stat. 124, 124; *Eldred*, 537 U.S. at 194 (2003).

80. Act of Mar. 4, 1909, ch. 320, §§ 23–24, 35 Stat. 1075, 1081; Act of Feb. 3, 1831, ch. 16, §§ 1–2, 4 Stat. 436, 436–37; *Eldred*, 537 U.S. at 194.

81. Act of Oct. 19, 1976, Pub. L. No. 94-553, § 302, 90 Stat. 2541, 2572 (1976) (codified as amended at 17 U.S.C. § 302 (2012)); *Eldred*, 537 U.S. at 194–95.

82. Sonny Bono Copyright Term Extension Act, Pub. L. No. 105-298, § 102, 112 Stat. 2827, 2827–28 (codified as amended at 17 U.S.C. §§ 301–304); *Eldred*, 537 U.S. at 195–96.

83. *See, e.g.*, Stephen Breyer, *The Uneasy Case for Copyright in Books: A Study of Copyright in Books, Photocopies, and Computer Programs*, 84 HARV. L. REV. 281, 323–29 (1970) (arguing against extending the copyright term as a part of the then-forthcoming Copyright Act of 1976).

84. *Compare Eldred*, 537 U.S. 186 app. at 267–69 (2003) (Breyer, J., dissenting) (concluding, based on present-value calculation, that the incentive effect of CTEA's extension is negligible), *and* Brief of George A. Akerlof et al. as Amici Curiae Supporting Petitioners at 3, Eldred v. Ashcroft, 537 U.S. 186 (2003) (No. 01-618) ("[I]t is highly unlikely that the economic benefits

theoretical arguments can be made on both sides of the debate, data on the actual effects of copyright reforms can help lawmakers determine which is more plausible. In the same way, other copyright reforms—such as to the set of exclusive rights, exemptions, and remedies—can be assessed and reformed.[85]

Our data can further inform lawmakers' duration determination. Since the founding, a basic feature of our copyright laws has been that the duration provided was generally uniform across different types of creative works, applying, in effect, a one-size-fits-all rule.[86] But this turns out not to be the case in practice. As Figure 4 above shows, authors of different genres tend to create at different ages: authors of music tend to be younger than authors of computer programs, who tend to be younger than authors of literary works. Our data reveal that copyright law gives different effective protection to different types of works. Congress then may wish to consider whether this is desirable or not, and these data can be the basis for setting different durations for different subject matters, if that were deemed desirable.

B. Inference for the Unregistered Iceberg

The statistics we report here reflect registration patterns at the Copyright Office, rather than the world of creativity writ large. The population of copyrighted works is greater than registered ones. To enjoy copyright protection, a work does not need to be registered.[87] Rather, it need only be fixed in a physical object and contain a minimal amount of creativity.[88] Thus, the snapshot we take of creative patterns relates to registered works, not to everything that is created in society. Every day, millions of emails, tweets, and messages are sent; blog posts and online articles are posted; still photos and videos are taken with cameras and cellphones; the vast majority of all of these are likely copyright protected. Yet, the vast majority of these are not registered, be it because many are not created for profit, or because the cost and trouble of registration outweighs the creator's expected benefit. What does it mean for our statistics?

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from copyright extension under the CTEA outweigh the additional costs."), *with* Stan J. Liebowitz & Stephen Margolis, Se*venteen Famous Economists Weigh in on Copyright: The Role of Theory, Empirics, and Network Effects*, 18 HARV. J.L. & TECH. 435, 439–40 (2005) (suggesting that even a small enhancement in incentives to create can tip potential authors' decisions to become authors and thus increase the supply of creative works).

85. A few scholars have done that, but as we shall explain, they relied on problematic data. *See infra* subpart V(C).

86. *See supra* notes 79–82.

87. *See supra* subpart II(A).

88. Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 345 (1991).

There is no doubt that many creative works would still be created without the benefits of copyright protection. Many create for non-pecuniary reasons, such as curiosity, an inner need to create or be heard, the desire to achieve fame or better the world. Many who create for pecuniary reasons would still create in a no-copyright world, using alternative appropriation mechanisms such as secrecy, contracts, and technological measures that prevent copying. Even before the birth of copyright, people wrote stories, composed music, made paintings and sculptures, and designed architecture, importantly through patronage. What the copyright system does, however, is mainly provide a market entitlement to creators that would allow them to exclude non-payers from accessing their works,[89] and thus enhances financially motivated creators' ability to appropriate the returns. Financially motivated creators are expected to use the copyright system if the additional benefits that it secures to them above and beyond all other background incentives outweighs their private cost of using it. Registration records thus likely provide a proxy for the types of creators who, and works that, benefit the most financially from the copyright system.

C. Prior Literature's Use of Problematic Data

While this Article is the first to gather and analyze data from individual registration records, we are not the first to study registrations at the Copyright Office. Importantly, two prior studies examined aggregate copyright registrations counts.[90] However, the data they use suffer from important shortcomings.

Landes and Posner and Ku, Sun, and Fan took the number of registrations to be a proxy for the overall level of creativity.[91] They examined whether several changes to copyright law were associated with a statistically significant increase in registrations.[92] As data, both studies use registration counts from the annual reports of the Copyright Office.[93] Each year, the Copyright Office reports the overall number of registrations that

89. *See* 17 U.S.C. § 106 (2012) (listing the exclusive rights of copyright owners).

90. *See generally* LANDES & POSNER, *supra* note 7; Raymond Shih Ray Ku, Jiayang Sun & Yiying Fan, *Does Copyright Law Promote Creativity? An Empirical Analysis of Copyright's Bounty*, 62 VAND. L. REV. 1669 (2009).

91. *See* LANDES & POSNER, *supra* note 7, at 234 (stating that registrations function as a proxy for "the number of copyrighted works"); Ku, Sun & Fan, *supra* note 90, at 1689 (describing how the authors used copyright registrations "as a proxy for new works created").

92. LANDES & POSNER, *supra* note 7, at 246 tbl.8.1; Ku, Sun & Fan, *supra* note 90, at 1689–92.

93. Ku, Sun & Fan, *supra* note 90, at 1689; *see also* LANDES & POSNER, *supra* note 7, at 234 & n.35.

year, as well as registration counts by, for example, category of work and published or unpublished status.[94]

A limitation of the annual reports as a data source stems from the fact that they are written in order to let readers know what the Copyright Office has done in the fiscal year to which the report pertains. As far as registrations are concerned, the numbers reported reflect the number of claims that the Copyright Office had successfully processed rather than the number of applications it received. While in some cases the numbers are congruent, in other cases they may diverge substantially.

For example, implementation of a re-engineering program at the Copyright Office in 2008 resulted in a larger than normal backlog of claims in process.[95] The average registration processing time that was as short as 71 days in 2007, changed to 163 days in 2008, 309 days in 2009, 277 in 2010, and 94 days in 2011.[96] Whereas the Copyright Office successfully processed an average of about 555,000 claims per year in the preceding five years, it processed only about 233,000 in 2008 and 382,000 in 2009.[97] Then, reducing the backlog, the Copyright Office processed 636,000 claims in 2010 and 670,000 in 2011.[98]

These fluctuations in processing time may have affected some of the results of both studies. For example, Landes and Posner express surprise that the coefficient on the dummy variable for the Copyright Act of 1976 came out negative and significant, as they expected that the Act—which allowed for the registration of unpublished works—would increase the number of registrations.[99] As they note, the negative coefficient was affected by a substantial drop in the number of registrations in 1978, and becomes positive and significant if one were to treat 1979 (rather than 1978) as the first effective year of the 1976 Act.[100] Indeed, the low number of registrations reported in the annual report for 1978 does not reflect a drop in applications, but rather the creation of a backlog at the Copyright Office caused by slower processing times because of the need to adapt to the new Copyright Act.[101] As this example illustrates, these studies' methodology

94. *See, e.g.*, 2011 COPYRIGHT OFFICE REPORT, *supra* note 8.

95. *Id.* at 43 n.5.

96. *Id.* at 21 fig.

97. *Id.* at 43 tbl.

98. *Id.*

99. LANDES & POSNER, *supra* note 7, at 247.

100. *Id.*

101. *See* 1978 LIBR. CONGRESS ANN. REP. 80 ("[T]he Copyright Office . . . could not have foreseen the extraordinary crush of work that immediately confronted its staff from the beginning of revision implementation in January 1978. The unfamiliarity of the public with the new law and the new application forms combined to create a backlog of cases . . . .").

may find no effect, or even a negative effect, associated with a law that actually increased incentives to create.

A better statistic for measuring copyright law reforms' effect on incentives to create would seem to be the *Date of Registration* field, which is the date on which a complete application was submitted to the Copyright Office.[102]

An alternative, and perhaps better, proxy for levels of creativity might be the date of creation rather than the date on which the application was submitted to the Copyright Office. Registration comes at a point after the decision to create has already been made. In the case of registration of published works, the creative process has been completed. If the question is what effect copyright law has on the decision to create, the relevant statistic is the date of creation, information that is available, with some limitations, in the Copyright Office Catalog.[103] As we show in Table 6 above, nearly 60% of works are registered the year they are created, and 25% more within the following year; the remaining 15% of works are registered two or more years later. Such differences show that the date of registration is an imperfect, but reasonably good proxy for the date of creation. Though date of creation may seem superior, date of registration has the following advantages: (1) the date of registration is recorded, while in most cases creation only records the year; (2) registration is determined by the Copyright Office, while date of creation is self-reported by registrants; and (3) every registration date is recorded, while some are missing the date of creation. While aggregate statistics on the dates of the application and creation were not easily available to previous researchers, they are readily available in our data set.

D. The Complex Relation Between Registration Counts and the Number of the Underlying Works

A complexity that needs be acknowledged in studies that involve registration is that there is no simple one-to-one relationship between the number of registrations and the number of works registered therein. In some cases, copyright regulations allow what might be considered multiple works to be registered with one application (resulting in one registration record) as long as the works are published together and have the same

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102. *See* 37 C.F.R. § 202.4 (2013) (establishing the effective date of registration as the day on which the completed application is received by the Copyright Office); U.S. COPYRIGHT OFFICE, CIRCULAR NO. 1: COPYRIGHT BASICS, *supra* note 64, at 10 (same).

103. The data are self-reported and so not available for every work. *See supra* note 54 and accompanying text. Only the year of creation is recorded, not the day or month. *See supra* note 68 and accompanying text.

copyright claimant.[104] Musical albums are commonly registered this way.[105] However, because there may, or may not,[106] be multiple claimants to the contents of a single album, and because the contents of an album are sometimes released separately, different musical albums can result in different numbers of registrations (even if they have the same number of songs).

Other regulations allow photographs to be registered as a group as long as all of them are published in a single calendar year: a single registration could relate to one photograph or thousands.[107] Similarly, serials and newspapers may be registered individually or in groups consisting of no more than three months of publications within one calendar year for Serials[108] or one month for Newspapers.[109]

Other complexities arise when content producers chose to register separately contents contained in a larger work. A registration of a motion picture would cover all the images, words, and sounds contained in the film.[110] However, a studio may choose to separately register the various contents of a film, for example its screenplay or score. It may also register individual fictional character designs separately.[111] Counting registrations also gives equal weight both to marketing materials and to the works they promote. For instance, movie studios often register film trailers and posters.[112] As a result, different films may result in different numbers and kinds of registrations of their underlying contents.

The complexities in the data do not mean that they are uninformative. If, for example, the average number of registrations per work is constant over time, the existence of between-work variation would not be a great

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104. 37 C.F.R. § 202.3(b)(4)(i).

105. *See supra* note 60.

106. If a single person owned both the sound recording and all the musical compositions in an album, she could register the entire creative contents of the album with one registration. 37 C.F.R. § 202.3(b)(4)(i).

107. *See* 37 C.F.R. § 202.3(b)(10) (describing group registration of published photographs).

108. *See id.* § 202.3(b)(6).

109. *See id.* § 202.3(b)(9).

110. *See* U.S. COPYRIGHT OFFICE, CIRCULAR NO. 45: COPYRIGHT REGISTRATION FOR MOTION PICTURES, INCLUDING VIDEO RECORDINGS 1 (2014).

111. For instance, prior to the release of their animated movies, Disney and its subsidiary Pixar register as unpublished visual material the model sheets—drawings—of the characters in the films. *See* Oliar & Matich, *supra* note 14, at 1098 n.138 (identifying this as a general practice of Disney and speculating that Disney does this to provide copyright protection prior to release without having to register and deposit the work). The movie *Brave*, for example—a Pixar film—resulted in over 20 such registrations. *See, e.g.*, BRAVE - ANGUS MODEL SHEET (4), Registration No. VAu001093274 (Feb. 23, 2012); BRAVE - AERIDA MODEL SHEET (7), Registration No. VAu001089648 (Dec. 5, 2011).

112. *See, e.g.*, SKYFALL: DOMESTIC TRAILER #1, Registration No. PA0001797690 (June 8, 2012); SKYFALL: TEASER POSTER #1, Registration No. VA0001817318 (June 1, 2012).

cause for concern. Further, the fact that more valuable works result, on average, in a greater number of registrations per work may be a good thing: by giving more weight (in terms of registration counts) to more valuable and successful works, it can act as a better proxy for the level of creative output.

VI. Conclusion

This paper provides the first look at patterns of copyright registrations in the United States by using data from individual registration records. It describes who is registering (firms or individuals), what is being registered (by category of work and published status), when works are registered (as compared to their creation and publication dates, and when in the lives of the authors), and where registered works were created. We show substantial variation in the data across types of authors and types of creative works. Comparatively, whereas firms tend to cluster geographically and register published works, audiovisual works, serials, and computer files, individuals tend to create at geographically dispersed locations, and register unpublished, musical and dramatic works.

We have shown that our data, extracted from individual registration records, are more informative for policy analysis than those previously relied upon, which were extracted from the annual reports of the Copyright Office. We hope that our methodology, data set, and analysis will help advance scholarly, policy, and legislative work wishing to use registration data as a way to assess the effects of past copyright laws on creativity and to reform the law going forward.

Appendix: Data

The data for this study were gathered from the U.S. Copyright Office's online, searchable database of copyright registrations.[113] We use a program which systematically downloads registrations 2008–2012. We drop Preregistrations and Recorded Documents, and also any work that does not have a Registration Number or Date of Registration.[114] Our final data set consists of 2,316,167 registrations.[115] When, in the tables above, there are fewer observations, it is because some registrations are missing entries for certain fields. The remainder of the data appendix details how we create variables from the text available in the copyright registration records.

The variables "Type of Work," "Registration Date," "Date of Creation," and "Date of Publication" are explicitly recorded in copyright registrations.[116] Type of Work indicates whether the registered work is Music, a Motion Picture, Text, or one of a number of other categories, as discussed in the text above.[117] "Published" indicates whether the work has been distributed to the public by sale, transfer, lease, rental, or loan, or has

113. *Database Name: Copyright Catalog (1978 to Present)*, *supra* note 47.

114. For a discussion on preregistration, see generally Oliar & Matich, *supra* note 14.

115. There are small differences between the number of registrations in our sample and the number of registrations resulting from a search of the online database. Some of the discrepancy may have resulted from limitations imposed by the website for days with more than 10,000 registrations or from our dropping of Preregistrations and Recorded Documents. Some of the difference is explained by the lack of CSN Group Serial Registrations in our sample. CSN registrations aggregate serial registrations over a year of publication. While the serials are assigned individual registration numbers and effective dates of registration, the Catalog does not index the individual registrations by date. Because our program collects registrations by date, we did not collect data on the CSN registrations. The CSN registration program has been discontinued, though there are CSN registrations in every year of our sample. *See generally CDS Announcement: Changes to Copyright Serial Registrations*, LIBR. OF CONGRESS, http://www.loc.gov/cds/notices/copyright091204.pdf. Finally, our data were downloaded during January and February 2014. The Catalog is constantly changing as the Copyright Office makes corrections or adds delayed registrations. Consequently, if this download were done at a different date, the numbers would be slightly different. However, the differences would almost certainty have little to no effect on our findings (We thank Robert Brauneis for drawing our attention to these final two points). Ultimately, our average deviation from the number in the online Catalog is less than 0.5% of the mean registrations in a day.

116. *See supra* Figure 1; *see also* 17 U.S.C. § 410(d) (2012) (defining the effective date of registration as that on which the claimant completed all registration prerequisites, including a valid application, deposit, and fee).

117. *See generally Help: Type of Work*, *supra* note 59 (describing the Type of Work that may be registered with the Copyright Office). The Copyright Office also administers the preregistration of copyrighted works and the registration of vessel hulls, but these registrations are not analyzed in this Article. Preregistrations are analyzed in Oliar & Matich, *supra* note 14. Vessel-hull and integrated-circuit design registrations are relatively few in number (a few tens or hundreds a year, respectively) and are not at the core of copyright protection.

been offered to be distributed to the public.[118] Date of Publication and Date of Creation are the dates when the work was published and created, respectively.[119]

We constructed the variables "Firm," "Individual," "Number of Authors," "Number of Claimants," "Age at Creation," and "Location" by systematically searching through the text of the copyright registrations.

> *Firm/Individual:* The Firm variable signifies whether the registration is claimed by a firm or an individual. Our goal is to distinguish between authors and people or firms to whom the copyright has been transferred. Whether the claimant is an individual or firm is not requested by the Copyright Office at the time of registration, but is discernible in most cases by looking at the name of the copyright claimant. We search through the text of the "Copyright Claimant" field and assign a copyright registration to a firm if the Copyright Claimant field contains any of the following phrases in any form: "inc," "llc," "corp," "publish," "Music," "ltc," "llp," "transfer," "company," "ltd," "association," "co.," and "dba." "Transfer" is included as a keyword because it indicates anyone who has purchased a copyrighted work from another. Additionally, we assign a registration to a firm if the "Authorship on Application" field contains "employer," as it would in "employer for hire." A registration is marked as being claimed by an Individual if it is not marked as a Firm. We will misclassify any firm that does not have one of the keywords in its name, but these seem to be rare.
>
> *Number of Authors/Number of Claimants:* The number of authors is determined by counting the occurrences of "Authorship" in the Authorship on Application field. Each author is listed separately after "Authorship." Occasionally, one author will list himself multiple times, in which case we over count the number of authors. The number of claimants is determined by counting the occurrences of "Address" in the Copyright Claimant field. Each claimant lists an address.
>
> *Age at Creation:* Year of birth is extracted from the "Names" field (for the registrants who report it). Age of Creation is the difference between the Date of Creation and the year of birth.
>
> *Location:* The address (zip code) of the copyright claimant is extracted from the Copyright Claimant field visible in Figure 1.[120]

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118. *See supra* note 64 and accompanying text.

119. 17 U.S.C. § 409.

120. The claimant may be either the author of the work or "[a] person or organization that has obtained ownership of all rights under the copyright initially belonging to the author." 37 C.F.R. § 202.3(a)(3) (2013); *Privacy: Copyright Public Records*, U.S. COPYRIGHT OFF., http://www.copyright.gov/help/faq/faq-privacy.html (last modified Nov. 10, 2010).

> For registrations in our sample, 88% have a zip code. In the few cases where multiple addresses are present (e.g., in a case of multiple claimants), we take the address listed last. We link zip codes to Zip Code Tabulation Areas (ZCTAs)[121] using the Missouri Census Data Center's MABLE/GEOCORR engine[122] to generate a weighted mapping to match zip codes to Census ZCTAs. For Table 8, these zip codes are then matched to Urbanized Areas from the U.S. Census.[123] For the Lorenz curves and Gini coefficients in Figure 5 and Table 6, the zip codes from the copyright registration are matched to Census Public Use Microdata Areas, again using the MABLE/GEOCORR engine. A small percentage of observations cannot be matched to either ZCTAs or PUMAs using the recorded zip code.

121. United States Postal Service (USPS) zip codes are delineated to meet the operational requirements of the USPS, and consequently change more frequently than every ten years. ZCTAs are created by the Census Bureau to be a more stable version of USPS zip codes. *ZIP Code™ Tabulation Areas (ZCTAs™) Frequently Asked Questions*, U.S. CENSUS BUREAU, https://www.census.gov/geo/reference/zctafaq.html (last modified Dec. 11, 2013).

122. *See Master Area Geographic Glossary of Terms: 2012 Edition*, MO. CENSUS DATA CENTER, http://mcdc.missouri.edu/websas/maggot12.shtml (last modified Nov. 19, 2013) (describing special Census Bureau-created geography units containing at least 100,000 people).

123. *2010 Census Urban and Rural Classification and Urban Area Criteria*, U.S. CENSUS BUREAU, http://www.census.gov/geo/reference/ua/urban-rural-2010.html (last modified July 22, 2013).