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Copyright Law in the Digital Age

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Kyle T. Boran
Maxwell E. French
Daniel C. Kraft

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Professor Kent J Rissmiller, Major Advisor

Abstract

This project studied the history of copyright law in the United States and the changes over time, particularly with respect to technological progress. An analysis of public opinion on file sharing and copyright in general was then conducted using a survey of college students as well as an analysis of some Internet content. With the results of these studies and research, we pinpointed some areas of contention where public policy could be improved and proceeded to make some recommendations.

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1 Introduction

Advances in technology over the last few decades have brought new means of information sharing (both ethical and not) which were never before thought possible. The digital age has also brought new types of media and new meaning to older forms. This media offers great educational opportunity to the general public while also significantly altering the specific needs of the creators of the slew of intellectual property that is now so freely accessible. Obviously, a change in the copyright laws of the 18th century is called for but it is important to make sure that these changes uphold the original motives as set forth by our forefathers. The Constitution grants Congress the power to grant authors and inventors the exclusive rights to their works for "limited times" in order to "promote the progress of Science and the Useful Arts". The objective of this project is to study the origins of copyright law and its original motives as compared to current law, and analyze the public opinion concerning the protections and liberties afforded by this law, in order to suggest policy changes and determine the direction in which copyright law shall evolve.

Analysis of the current state of copyright law and the direction in which it shall evolve requires that the law be viewed from many different perspectives. It is necessary to follow the law from its birth through its most recent developments. It is also necessary to study the pertinent reactions to these developments. This is achieved through both literary research of the topic of copyright law through the ages and through the use of several analysis tools on the current public opinion (namely a simple survey and content analysis of Internet blogs). When these methods are used in conjunction with each other they allow the formulation of educated suggestions for necessary reform and projections of what is to come for copyright law in the future.

2 Background Information

The copyright law of today has been over two centuries in the making. Congress and the Supreme Court have struggled with issues such as foreign policy, types of media covered and copyright term (and extension term), along with the more abstract ideas of what exactly a copyright holder holds and what consumers own when they purchase a piece of copyrighted material. The Copyright Act of 1790 can be assumed to stay within the confines of the motives laid out in the Constitution as it was drafted by many of the same hands that wrote the Constitution. There have been many revisions and amendments since, most of which seem to favor the copyright holder over the general public, but the Copyright Act of 1976 seems to mark a turning point in the direction of copyright law. This act was followed by the Copyright Term Extension Act (CTEA) and the Digital Millennium Copyright Act (DMCA) both in 1998. While the amendments and revisions before the Act of 1976 allowed copyright law to increasingly favor copyright holders over the general public, the changes in law including and after the Act of 1976 made huge leaps in this direction.

Copyright law in the United States dates back to the Constitution where our forefathers granted Congress the power to "promote the progress of science and the useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries" (U.S. Constitution. Art.I, Sec.8.) This phrase, and mainly the term "limited times," has left a good deal of room for interpretation and Congress's own interpretation has caused much controversy as the promotion of progress of science and the useful arts is two sided. On the one hand, it is important to provide incentive for the creation of new intellectual properties. Not only does this incentive need to spark new ideas, research, and developments but it also needs to support the great minds behind new intellectual property to insure that they can afford to spend the time, energy, and resources on their work. On the other hand, however, the limitations

of the copyright law need to be kept in check to allow education of the general public and hopefully, in turn, to allow more great minds to step forth building on the discoveries before them. With these points in mind, it can be said that, while the copyright holders benefit more directly from copyright restrictions, as long as they are kept in check the ultimate beneficiaries are the general public.

The original copyright law "The Copyright Act of 1790", which can be assumed to be a reasonable representation of the motives set forth in the Constitution as it was drafted only 3 years after the Constitution, defines "limited times" as 14 years after obtaining the copyright with an option, after the end of this term, to extend the copyright for another 14 years. The original law only covered charts, maps and books printed in the U.S. by U.S. citizens (exclusively). Should copyright infringement occur, the law required the forfeit of all infringing material to the copyright owner (for destruction) along with a fifty-cent fine for each copy. The copyright owner also had the right to sue within one year after the cause of action (Pickle, 2004). This law was soon amended in 1802 to add prints to its coverage. The amendment also required that a copyright notice be placed on copyrighted works, increased the fine to $1, and increased the statute of limitations to 2 years (Pickle, 2004).

The first general revision, which came in 1831, extended copyrights to cover musical compositions and also extended the initial copyright term to 28 years (with the option for a 14 year renewal). Another important change was the addition of an allowance for transfer of copyright (to a widow or child upon the decease of the original author) (Pickle, 2004). This change marked a move toward thinking of copyright as an asset over a protection. It would also be embellished in the Copyright Act of 1976.

In 1870 the second general revision was drafted and enacted. To accommodate changing technology photographs and negatives were added to the scope of the law's protection. The interpretation of "the useful arts" was also broadened to cover paintings, drawings, statues, models or designs, and dramatic compositions. Translations of books were also brought under coverage of copyright law (LOC, 2006a).

This law was amended in 1874, 1891, and 1905 adding many changes. The pictures, engravings, prints etc. that were covered by copyright were restricted to only those which pertained to the fine arts. Authors were also granted the exclusive right to dramatize their works. One of the biggest changes, however, was the introduction of a "friendly" foreign copyright policy (though it was not yet reasonable) (Pickle, 2004). Previous revisions of the law had specifically remarked that United States copyright law extended solely to current citizens and residents of the United States (Library of Congress [LOC], 2006a). By the 1905 Amendment to the U.S. Copyright Law, the copyrights of foreign publications which abided by the registration rules of the United States law would be recognized as long as the foreign work was not in English and its country of origin reciprocated the same rights to American citizens (Pickle, 2004).

The third general revision (adopted in 1909) offered the last change in copyright law until the act of 1976. Over the past two revisions Congress had struggled with the idea of derivations of work, finally deciding that derivative works should not be made without the author's permission. The author was also given the exclusive right to convert dramatizations to novels and vice versa. However, compilations, abridgements, adaptations, arrangements, dramatizations, translations, or other versions of work already in the public domain were to be considered new, copyrightable works. The initial copyright period was kept at 28 years, but the

renewal term was doubled to 28 years. The statute of limitations was also extended to 3 years, giving the copyright holder more room to act on copyright infringements (Pickle, 2004).

Modern copyright law is largely rooted in the Copyright Act of 1976. Many technological changes had taken place since the 1909 Act. Forms of media such as television, radio, and movies had not yet existed then. The period had also seen the advent of new copying technology like the photocopier which made reproduction of paper based media much easier. Thus, the new act was designed to take into account issues raised by these technologies. The length of copyright protection was also increased greatly. Under previous law, copyrights could be registered for 28 years and were renewable for another 28 year term. Under the new law, it was extended to "a term consisting of the life of the author and 50 years after the author's death." (17 U.S.C. 302) Some works, such as anonymous works or works for hire, received a 75 year term. The Act also made copyright an automatic protection. In the past, it was necessary to register and publish a work if copyright protection was to be received. Fair use was also formally written into the law in this Act. This allows for certain uses of copyrighted work which are not copyright infringement, including "criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research" (17 U.S.C. 107). This addition codified the doctrine that had already been developed from past court cases. Title 17 U.S. Code Section 107 details certain factors for judging whether a use qualifies as fair use, including:

> (1) the purpose and character of the use, including whether such use is of a commercial nature or is for non-profit educational purposes;
>
> (2) the nature of the copyrighted work;
>
> (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and

(4) the effect of the use upon the potential market for or value of the copyrighted work. (17 U.S.C. 107)

Another example of works considered to qualify under fair use is parodies (*Campbell v. Acuff-Rose Music*, 510 U.S. 569 (1994)). Parodies can be made for profit and still qualify under fair use. Thus, it is often not easy to determine whether a particular use of copyrighted material qualifies as fair use.

While much of the 1976 act remains in force, a number of amendments have been made in the succeeding years. One of the most important is the Digital Millennium Copyright Act, or DMCA. Passed in 1998, this implements several international treaties and was mostly designed to update copyright law to deal with new technology. One important provision forbids the circumvention of technological measures that are designed to prevent copying of information. It also contains provisions designed to help Internet Service Providers deal with copyright issues by shielding them from liability if they follow certain procedures for responding to the actions of users on their network. Under section 512 of the DMCA, ISP's are not liable for copyright infringement by the transmission of, routing of, or provision of connections for materials as long as the transmission is initiated by someone other than the ISP, the connections are carried out through an "automatic technical process," the ISP doesn't select the recipients of the material (except as an automatic response to a request by someone other than the ISP), no copy of the material in question is maintained on any of the ISP's servers for longer than the time required for transmission and the material is only accessible to anticipated recipients during this time and last, but not least, the material is not altered through the transmission process (Dogan, 2006).

Another significant change in copyright law was the Copyright Term Extension Act of 1998. This essentially extended the copyright term of all current and future works by 20 years. A later court case, *Eldred v. Ashcroft,* challenged the Constitutionality of this Act. Ultimately the law was upheld, and current copyright law provides either 95 years of protection for anonymous works or works for hire, and life of the author plus 70 years for other works.

Penalties for infringement of copyrighted works have also been modified over the years. The 1997 No Electronic Theft (NET) Act was notable for adding criminal penalties even when no profit is made by an act of copyright infringement. Maximum criminal penalties are up to 5 years imprisonment and up to $250,000 fines. The act also raised the civil statutory damages amount to $750-30,000 per work infringed or $150,000 per infringement in cases of willful infringement. (18 U.S.C. § 2319)

A number of court cases have challenged and shaped the form of copyright law and its interactions with technology. One significant case was *Sony Corp. of America v. Universal City Studios, Inc.* (464 U.S. 417 (1984)), often simply known as the "Betamax case." Technology companies and media companies found themselves at odds over the potential uses of the new video recording technologies, including Sony's Betamax video cassette recorders. This would allow television shows and movies to be copied and recorded for later viewing, an action that many of the media companies considered to violate their copyrights. They attempted to block the video recording technology that enabled this behavior. However, the Court found that video cassette recorders had significant non-infringing uses. Further, recording of television shows for later viewing was found to be time-shifting rather than infringement and was permitted under the fair use doctrine. This set a precedent that would become important as later technology would enable even easier reproduction of copyrighted materials.

Copyright holders and technology have continued to clash over the years. Many in the music industry were concerned about the introduction of audio cassettes. The Audio Home Recording Act of 1992 was one step toward regulation of digital media technology. It required certain digital audio recording equipment to use a copyright management system known as the Serial Copy Management System (SCMS). Circumventing this digital rights management system was also made illegal, providing a precursor to the anti-circumvention provisions of the Digital Millennium Copyright Act. The Act also imposed a royalty on blank media to be paid to the recording industry. While this set many interesting precedents, much of the act no longer applies to newer technology. A lawsuit was filed by the recording industry against Rio, makers of one of the personal first MP3 players. The court found that the provisions of the act did not apply to MP3 players (Clampet 1999). Most of the blank recordable media sold today is also not considered to qualify under the Act.

Sharing of copyrighted materials using the Internet was becoming a contentious issue by the 1990s. Works could be copied without limit in perfect digital form. Compressed digital music in the form of MP3s was being shared by a growing segment of the population. Napster would eventually become the central hub of such activity. Copyright holders wanted to put a stop to this and sued Napster. This case was considered to be different from the Sony Betamax case because of contrasts in the technology. Sony could not control the potentially infringing actions of its users, while Napster had central control over their system. Napster thus had a duty to stop its users from infringing copyrights, and its failure to do so constituted contributory infringement (*A&M RECORDS, Inc. v. NAPSTER, INC.*, 239 F.3d 1004 (9th Cir. 2001)).

Another important case examining Internet file sharing technology was *MGM Studios, Inc. v. Grokster, Ltd* (545 U.S. 913 (2005)). Grokster was a file sharing program similar to

Napster. Grokster also enabled trading of video and other files in addition to music. Grokster would also be found liable for the infringing actions of its users. However, the Supreme Court still did not alter the existing case law provided by Betamax. The Court held "that one who distributes a device with the object of promoting its use to infringe copyright, as shown by clear expression or other affirmative steps taken to foster infringement, is liable for the resulting acts of infringement by third parties." (545 U.S. 913 (2005)) Thus, the case was distinguished from Napster in that it was acknowledged that Grokster could not directly control the actions of their users. However, they were still liable because they had actively encouraged their users to violate copyrights.

In recent years, some changes have been proposed to copyright law. One example is the Public Domain Enhancement Act. This would create a small tax on works that remain under copyright protection for longer than 50 years. Abandoned works would thus be placed in the public domain earlier. The bill was introduced as H.R. 2408 in the 109th Congress, but failed to leave committee. It has not yet been reintroduced in the 110th Congress.

The implications of the DMCA, CTEA, and other recent acts have been discussed at length since their inception. Corporations tend to think that the law as it stands is necessary to protect their interests. There is also a voiced concern among certain academic and legal professionals that the current environment is stifling to creativity, since people do not have a clear idea of what is within the bounds of the law or the interpretation of the courts. Determining the best policy really requires a good understanding of the opinions and standards of the public at large. This is because there is such a wide range of opinions on the issue, and they all need to be taken into consideration. For the question of public opinion, we would really focus on two

questions, how does the public feel about copyright law in its current form, and what does it think should be legal and illegal?

Copyright law has changed drastically since its origins. The Copyright Act of 1790, in accordance with the Constitution's stipulation of "limited times" called for a copyright term of 14 years with a chance for a 14 year renewal at the end of the original term. Over the years, this was gradually increased to a 28 year term with a 28 year renewal where it sat until the Copyright Act of 1976 and then the CTEA when it was extended to the life of the author plus 70 years.

Even the treatment of copyright infringement (as far as the extent of the law is concerned) has been extended from a simple civil matter (the forfeit of all infringing copies, a fine, and the possibility of suit by the original author) to a criminal act, the penalty for which is up to 5 years in prison (or 10 for a second offense) along with a fine. It is important to note, however, that most copyright infringement never meets treatment as a criminal matter. Even the RIAA crackdowns on music piracy are remaining limited to fines and suits to individuals, and a push toward the use of anti-piracy tools by ISP's (Read, 2007).

Although the immediate return of copyright law is to grant authors the exclusive right to their works the true reasoning behind it is to "promote the progress of science and the useful arts." This means that copyright law is in place to allow the "great minds" of the world to blossom and provide the general public with important developments and findings. The general public, therefore, will not only reap the benefits of these new developments, but will also find more opportunity to reach new developments themselves.

With these recent changes in copyright law the idea of a "copyright" seems to have evolved from a simple protection to do just that (promote the progress of science and the useful arts) to an object which can be sold or traded and will remain protected far beyond the lifetime of

any of the public that witnessed its creation (with dire consequences for infringement). It certainly seems as though the copyright law could be improved upon but deciding this and making suggestions for its improvement are no easy tasks. First it is necessary to decide exactly what a consumer has when he or she holds a piece of copyrighted material in his or her hands and also what a copyright holder owns. Then an analysis of the law, from its origins to its present state can help show whether a copyright holder owns a monopoly on certain information or merely a means by which society can pay them back for their contributions.

Furthermore, the importance of perfectly upholding the founding fathers intentions must be decided. This analysis brings up the question: Should a median be sought, in which the potential progress from both of these groups (current copyright holders and the general public) is maximized? Or are the needs of one of these groups more important to the progress of science and the useful arts? Of course, all of this needs to be considered with the limited scope of Congress's power in mind. Though times have changed, serious consideration is required to decide whether the steps taken by Congress in changing copyright law were within the scope of its power and were in line with the fore-fathers' intentions. Furthermore, it certainly stands to reason that there may be a more beneficial compromise (to both the creators of intellectual property and the general public).

3 Public Opinion

In order to reasonably assess the current state of copyright law and the direction in which it should evolve it is necessary to analyze the current public opinion on the law. It is beyond the scope of this project to complete a full analysis of public opinion; however, using some available analysis tools, it is possible to make some generalizations. The most reasonable methods to do this are a simple survey and content analysis of Internet sources. There are limitations to the results that can be obtained from the smaller and less diverse participant pool inherent in the limits of the study itself, as well as limits to the confidence in the results that can be obtained. That said, however, the results obtained from these studies can give otherwise inaccessible insight into public opinion and offer very useful answers to many of the questions that theses studies hope to address.

3.1 Research Questions

There are a number of research questions that we hope to address through this project. As the focus is on the current state of copyright law, and this can only be truly assessed through the eyes of the public, the majority of these questions relate to the public opinion and behavior. Through research, we hoped to find reasonably based conclusions concerning how effective, efficient and fair current copyright law is. We also hoped to assess how well current copyright law serves the best interest of the general public, both directly (in the opinion of the public) and indirectly (in accordance with its original goals, as laid forth in the constitution, “to promote the progress of science and the useful arts”). As previously conducted studies concerning the public opinion on this matter have proven sparse at best (or possibly even non-existent) it is not reasonable, within the scope of this project, to expect to answer questions that can be extrapolated to speak for the general public as a whole with great confidence. It is reasonable,

however, to assess certain demographics and still come to useful conclusions.

As college students are commonly targeted as being frequent file sharers, it is beneficial to focus on this group, their practices concerning digital media, and their feelings toward the state of copyright law with respect to digital media. Though there are not really any other groups to compare to, there is interest in seeing just how much file sharing college students really do. For these reasons it is of great interest to know not only how much file sharing these students do but also whether or not they regularly purchase music or other media. It is also of interest to see how much of an effect current lawsuits and other crackdown efforts have had on this group's file sharing behaviors and opinions. With all of this in mind it also becomes very important to know how well these students understand copyright law, including some fairly ambiguous aspects such as fair use rights, and how knowledgeable they are about copyright law as a whole and about recent efforts to thwart file sharing and piracy. As WPI is a very technically oriented school and its students spend a relatively large amount of time using computers and the Internet it is safe to assume that this populace will be a good place to start to try to find answers to these questions. It is also desirable to find answers to similar questions and issues regarding a more general populace, to whatever extent possible.

Ultimately, it is important to find out how the public reacts to copyright law, attempts to slow or stop file sharing and new technologies to impede copying and sharing of hard copies of digital media. It is just as important to also see how much of the public truly "breaks" copyright laws, and how many of these people know that they are indeed breaking laws.

3.2 Research Methods

There is a lack of available material concerning public opinion with respect to copyright law. Because of this, in order to answer the questions outlined above, research studies will need to be conducted. It is desirable to study the most diverse demographic possible, while still retrieving enough information to make important distinctions between the different groups included. It was decided, however, that a study of the WPI student populace and a preliminary analysis of Internet forums would be the most reasonable and complete analysis within the time restraints of the project.

By conducting a survey of WPI students (the available public) it is reasonable to extract a series of useful generalizations of this public. As outlined in the section on "Limitations of Research" these generalizations need to be viewed with caution and used with an understanding of the limitations of their scope. However, they can be incredibly useful for gaining an understanding of the public's reception of copyright law, the effect of the law, and some suggestions for positive changes in the law.

Once a survey is conducted it can be analyzed using a number of statistics and database organization programs such as SPSS or Microsoft Access. The survey questions can be grouped into a number of correlations to see if the sample size for the data relevant to the correlation is large enough and, in some cases, has a distribution close enough to that of the group that it was taken from to make, and to see if there are any interesting findings behind the proposed correlation.

As a survey would only focus on the WPI student community, it is important to also do some kind of analysis of the public outside of WPI. This is achieved through content analysis of Internet blogs, or individual online responses to articles and posted copyright developments in comment sections and forums. There are a few types of free software that facilitate such a study

by searching for key words or repeated words in a series of individual responses. This allows access to a much larger sample size.

Both of these methods, even combined, still only offer access to a limited portion of the general public. The WPI community could be said, within reason, to be more computer oriented and spend more time on computers than the general public. Those who respond on Internet blogs are generally limited to people with stronger opinions and, due to the anonymity of the posts, the demographic of these groups is unknown. Keeping these limitations in mind, however, it is possible to make some generalizations with reasonable confidence.

3.2.1 Survey

3.2.1.A Questions to be Answered

The survey was distributed to help us determine answers to questions about the public that we were not able to get through normal research. Though we had hoped to find the results of similar surveys in our background research, in the end we were not able to get the information we were looking for.

The three things that we focused on in our survey are questions of public opinion, behavior, and knowledge. Most importantly, we are looking to determine how the public feels about the current state of the law. This includes their ethical standards with respect to copyright infringement, their perception of the spirit of the law, and how effective or appropriate they feel measures of enforcement are. This is really the heart of the survey for us, as the responses to these questions will help us shape a more agreeable copyright policy. Secondly, we want to determine the actual behavior of our population with respect to legal and illegal acquisition of digital media. That is, we want to know how common illegal file sharing is, or the volume of

illegal material possessed by the population, and we want to compare this to the amount of media that is legally purchased.

We also thought it important to get some idea of how educated our population was about copyright law. In addition to being useful information by itself, this will give us a context in which to interpret the other responses. If it turns out that there is a lack of understanding in the population about what is legal or illegal, or what the ramifications of infringement are, this will have a very profound effect on our conclusions. Many questions were considered in order to gleam information on these three subjects (public opinion, behavior and knowledge). These included questions probing file sharing software use, "quiz" style questions concerning copyright law, questions allowing the participant to suggest changes or penalties for infringement and a number of questions to attempt to classify the participants. In the end, most of these categories were included in the survey. However, as survey length was considered an important factor in sparking interest in participation (i.e. the longer the survey the harder it would be to find willing participants), the questions to be used as classification parameters were reduced to a handful of what were deemed the most important and useful categorizations.

There were a few questions in the body of the survey that served a dual purpose, both as classifying parameters and useful data, such as number's 1 and 2, which asked the participant how much time was spent viewing digital media on the computer as compared to total time spent on the computer. The main classification parameters, however, were focused in the header.

The information that was deemed useful for these questions included age, gender, occupation and relation to intellectual property, for example "creators" (musicians, authors, etc.) or consumers. As it was decided that the survey should only involve WPI students, questions on occupation and age were left out (occupation for all participants was "student" and age was

"college-age"). A differentiation between class years was considered but in the end it was decided that the main point of class years was actually better represented by residency (on-campus versus off-campus). It was also decided that there was no need to probe for relation to intellectual property because the participant pool would be comprised solely of WPI students.

3.2.1.B Methods for Analysis

It is desirable, when conducting a survey such as that used in this study, to make participant selection as random as possible. The ideal case is, of course, not possible. There are many errors in selection that are caused by many things. Permission was obtained from WPI's Institutional Review Board (IRB) and all respectively concerned parties to solicit participants for the survey in on-campus academic buildings such as the Campus Center, and the department buildings. Permission was also granted to speak at the end of classes (with the professor's permission) and ask the students in the class to participate. One Social Sciences class was solicited for participation. This added greatly to the diversity of the data as the social sciences at WPI are mostly interdisciplinary and are required for all students. This means that such a class offers a more random selection of students as majors vary greatly throughout the class. As is always the case with such studies, however, the participant pool was mainly limited to those who had a strong enough opinion about the subject matter to take the time to fill out the survey.

The same was the case for selection in the Campus Center and other academic buildings, although, as students were approached individually or in smaller groups here rather than the large group of the class, there may have been more interest from those who would otherwise not have taken the survey. The researchers themselves, however, inherently limit the randomness of this selection process as the groups solicited for participation in the survey are often those who the investigators feel more comfortable approaching, though conscious efforts were made to

solicit all students present in order to keep this error as low as possible. The researchers also limit the randomness of the selection as the students solicited are only those who happen to be in the academic buildings at the same time that the survey was being conducted.

Once the survey data was collected, in order to make it useful, it needed to be processed using some sort of database/statistical analysis tool. Two main software programs were considered for these purposes: Microsoft Office Access and Statistical Package for the Social Sciences (SPSS). Due to the higher functionality of SPSS, it was used for the majority of the data processing.

Once the data had been successfully entered into a Microsoft Excel spreadsheet it was imported into an Access Database. The first steps of analysis were to do overall counts of the responses to each question. Statistics of the WPI populace were then compiled, with the help of WPI's "Student Fact Book" and Residential Services. This allowed the counts for the header questions (gender, residency, and major) to be compared to the overall student population. This not only gave ideas of how closely the percentages of the breakdown of the survey participant pool for each grouping coincided with the overall percentages attending WPI but also, with a statistical t-test, (as explained under *Limitations of Findings*) allowed for an assessment of the confidence that the participant pool was an accurate representation of the whole WPI populace.

To enter the survey data uniformly, a standard was adopted for the entry of each question's respective choices. Questions with more than one choice such as Question 11, which offers a list of possible choices, any number of which can be circled, were broken down into their individual parts (i.e. 11a, 11b, etc.) and a 'T' (for true) was used for answers that were circled and an "F' (for false) was used for answers that were not circled.

Once the question counts were conducted, the data could be broken down into several

different groupings of questions that would give better insight into the relationships between certain groups and certain answers, and the relationships between certain questions themselves.

3.2.1.B i Survey Correlations

The final selection of questions chosen to comprise the survey were included not only with the intention that they would offer important public opinion data directly, but were also selected in such a way that many important correlations could be made between questions to give more specific data. There were many proposed correlations which were predicted to return valuable results (not only between individual pairs of questions but also between larger groups of questions).

The first questions on the survey (the header) probed the participant for information such as residency (on or off campus), gender, and major. These were intended explicitly to be used for correlations with all of the other questions. For example, it was anticipated that there might be stronger feelings toward copyright law for Interactive Media and Game Development (IMGD) majors whose job security will soon depend on the copyright of their created materials, or there might be less use of programs that are banned by WPI on-campus. The gender field was considered less likely to yield such a result, and was mainly included to check the demographic of the participant pool against that of the WPI community, but correlations relating file sharing trends to gender were still considered a possibility.

Some other correlations that were of interest when designing the survey were the average percentages of pirated media, the amount of pirated media (Question 13) versus the total amount on the participants computer (Question 5), and the possible relationship between larger media collections and this percentage. There was also interest to see a correlation between the affect that recent lawsuits and current penalties concerning copyright infringement (Questions 10 and

18) have on how appropriate the participant thinks the penalties are (Question 15) and how this relates to how aware the participant is of the current penalties (Question 14) or vice versa. Similarly, we desired to view the correlation between the amount of pirated media (Question 13) and the amount of media that was purchased in the last year (Question 7). This data comparison would allow for a generalization on the effectiveness of recent crackdowns and of current copyright law in general.

Another important relation was predicted to occur between the hours spent viewing digital media (Question 2), the total hours spend on the computer (Question 1), and the size of the participants media collection including hard-drive space and CDs and DVDs (Questions 5 and 6, respectively) versus the number and types of file sharing software programs that the participant has used (Question 3). This analysis should be compared to the similar analysis of residency versus software used (to ensure that the trends viewed are in fact dependent on residency and not just the small sample size) but would also allow a comparison of the programs most used by WPI students and the programs which are the most closely focused on by WPI and local ISPs for restricted access.

One of the more obvious question correlations, and one that is very important in an analysis of the current state of copyright law, assuming that there is enough data to confidently support a trend, is the relationship between the participants presumed knowledge of copyright law (Question 17) and their "score" on the fair use quiz (Questions 19 and 20). A trend here could prove integral to an argument for or against the current state of copyright law and its effectiveness. If it turns out that the public does not even know which practices are legal and which are considered copyright infringement, then it can be said that the law is not making an impression on the community.

Due to the large number of majors at WPI, the following correlation would probably have to be analyzed with less confidence than most (as there is not enough data identifying individual trends), but there is a presumed difference between the thoughts on copying protected material (Questions 11 and 12) and the amount of the participant's media collection which is pirated (Question 13) and the participant's major. For example, it might be found that majors predisposed to the creation of intellectual property are less likely to promote copyright infringement.

3.2.1.B ii Programs and Data Ordering

Once the individual surveys had all been entered into a Microsoft Excel Spreadsheet, this spreadsheet was converted into both Microsoft Access and SPSS databases. Access did not require much alteration of the data for complete processing, however did not offer the same level of functionality as SPSS. Once the data had been prepared to be processed in SPSS, this program was used almost exclusively.

While Access allowed for reasonable processing of count queries and simple pivot tables, this processing was easier and more useful once the data was formatted for SPSS.

In SPSS, in order to process the String variables (questions which did not offer numeric answers) correctly missing data needed to be ignored. This was achieved by leaving these areas blank in the data and counting a single white space as a discreet missing value under the variable parameters. For numeric variables, values out of range of data entries were used as the missing values. This way when the questions were analyzed, surveys in which the participant had not filled out the pertinent information were ignored.

In some cases, specifically the case of the "Fair Use Quiz" (Question 19), numeric answers were needed to analyze variables with string inputs. To allow the needed analysis, the

required variables were recoded into new copies with numeric representations of the input data. In the case of the "Fair Use Quiz" correct answers were given the value 1 ("Yes" for questions 20a and 20b, "No" for questions 20c and 20d), incorrect answers were given a value of -1 and "Maybe" or blank answers were given a value of 0. Once these new variables were recoded, new variables were created to hold expressions for the test score sums.

Three main types of data ordering and processing were used in SPSS. "Frequency" descriptives were used to form general counts of variables to analyze sample sizes both for use on their own and to analyze the relevance of seeming correlations. Descriptives were also used to analyze numeric variables such as test scores and averages of money spent on music. Ultimately however, the most commonly used, and ultimately most useful, analysis tool in SPSS was the "Crosstabulation" descriptive. Much like the pivot table in Access, this allowed clean and intuitive analysis of dependencies of up to three variables with accompanying bar charts, percentages and Chi^2 and Symmetric Measures tests. This allowed the processing of many data correlations and produced many interesting results.

3.2.1.C Data

3.2.1.C i View on Infringement Compared to Knowledge of Law

The correlation between a participant's view on copyright infringement and knowledge of the law goes a great distance toward describing the current state of copyright law with respect to public opinion. In order to determine this relationship from the data, two main series of tests were conducted. The first compared the participant's concern for the legal penalties of unauthorized file sharing (Question 18), change in behavior due to current lawsuits with respect to file sharing (Question 10), rating of how appropriate current file sharing penalties are (Question 15), and finally the participant's rated awareness of these penalties (Question 14). The

second series of tests created a grading system for the "Fair Use Quiz" (Question 20) and compared average grades with the participant's assumed knowledge of fair use (Question 19).

The first series of tests was conducted in two steps, comparing three variables each. These two steps compared awareness of penalties and rating of appropriateness with concern for penalties (first step) and behavior change due to lawsuits (second step). The Case Processing Summaries below (Figures 1 and 2) show the number of valid cases for each analysis. Crosstabulations of the results can be viewed in Figures 2 and 3 , below.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Behavior change because of lawsuits (1-5, 1=not at all) * How appropriate are current file sharing penalties (1-5, 1=not very) * Aware of penalties for unauthorized file sharing	85	94.4%	5	5.6%	90	100.0%

Figure 1: Case Processing Summary: Behavior Change Because of Lawsuits, Appropriateness and Awareness of Penalties

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Concern for current legal penalties for file sharing (1-5, 1=not very concerned) * How appropriate are current file sharing penalties (1-5, 1=not very) * Aware of penalties for unauthorized file sharing	85	94.4%	5	5.6%	90	100.0%

Figure 2: Case Processing Summary: Concern For Current Penalties, Appropriateness and Awareness of Penalties

Concern for current legal penalties for file sharing (1-5, 1=not very concerned) * How appropriate are current file sharing penalties (1-5, 1=not very) * Aware of penalties for unauthorized file sharing Crosstabulation

Count

Aware of penalties for unauthorized file sharing			How appropriate are current file sharing penalties (1-5, 1=not very)						Total
			I'm not sure	1	2	3	4	5	
I'm not sure	Concern for current legal penalties for file sharing (1-5, 1=not very concerned)	1	4	0	0	0			4
		2	1	0	2	1			4
		3	2	1	1	0			4
		4	0	1	0	0			1
	Total		7	2	3	1			13
No	Concern for current legal penalties for file sharing (1-5, 1=not very concerned)	1	1			0			1
		2	2			1			3
		3	1			0			1
	Total		4			1			5
Yes	Concern for current legal penalties for file sharing (1-5, 1=not very concerned)		1	1	0	0	0	0	2
		1	2	11	3	2	0	1	19
		2	2	6	4	2	2	0	16
		3	3	2	7	5	3	0	20
		4	1	4	2	1	0	0	8
		5	0	0	0	0	1	1	2
	Total		9	24	16	10	6	2	67

Figure 3: Concern For Current Penalties v. Appropriateness and Awareness of Penalties

Behavior change because of lawsuits (1-5, 1=not at all) * How appropriate are current file sharing penalties (1-5, 1=not very) * Aware of penalties for unauthorized file sharing Crosstabulation

Count

Aware of penalties for unauthorized file sharing			How appropriate are current file sharing penalties (1-5, 1=not very)						Total
			I'm not sure	1	2	3	4	5	
I'm not sure	Behavior change because of lawsuits (1-5, 1=not at all)	1	3	0	0	0			3
		2	2	0	2	1			5
		3	1	2	1	0			4
		4	1	0	0	0			1
	Total		7	2	3	1			13
No	Behavior change because of lawsuits (1-5, 1=not at all)	1	3			1			4
		2	1			0			1
	Total		4			1			5
Yes	Behavior change because of lawsuits (1-5, 1=not at all)	1	4	13	3	4	0	1	25
		2	4	5	5	5	2	0	21
		3	0	2	6	1	2	0	11
		4	0	2	2	0	1	0	5
		5	1	2	0	0	1	1	5
	Total		9	24	16	10	6	2	67

Figure 4: Behavior Change Due to Lawsuits,

A total of 85 valid cases were compared for the first step and 83 for the second step. With regards to the first step, of the 83 total cases 13 were unsure of both how appropriate current file sharing penalties were and how aware they were of the penalties. Another 5 cases were unaware of the penalties. Of the 67 cases aware of the penalties still only 8 found the current penalties appropriate (an answer of 4 or 5). 10 participants who answered that they were aware of the current penalties found them to be moderately appropriate (an answer of 3), 24 found them to be barely appropriate (an answer of 2) and 9 found them to be "not very" appropriate (an answer of 1). For all cases, behavior changes due to lawsuits were rare.

For the second step, the results were very similar showing that, across the board there was relatively little concern for the current file sharing penalties.

The second series of tests analyzed the participants' actual knowledge of copyright law (Question 20) as compared to their assumed knowledge (Question 19). Interestingly, for many cases, even those who answered that they had not heard of the term "fair use" still took the quiz. Given a weight of 1 for correct answers, -1 for incorrect answers and 0 for all other answers (a possible maximum score of 4 and minimum score of 0) the average scores are given in Figure 5 , below.

"Quiz" Scores with respect to Q19

	N	Minimum	Maximum	Mean	Std. Deviation
Test total for those who answered Yes to 19	31	-4.00	4.00	1.8387	1.55127
Test total for those who answered No to 19	26	-1.00	4.00	.9615	1.21592
Test total for those who answered Sounds Familiar to 19	27	.00	4.00	1.1111	1.12090
Test total	85	-4.00	4.00	1.3176	1.36462
Valid N (listwise)	0				

Figure 5: Fair Use Quiz Test Averages

The average scores for all cases are below 50%. Those who thought that they knew what "Fair Use" was (answered "Yes" to question 19) had an average score almost twice as high as those who didn't know what "Fair Use" was and those who thought it sounded familiar. The overall mean, 1.3176 or 33%, along with the mean score of those who answered "Yes" to Question 19, 1.8387 or about 46%, suggests that public knowledge of copyright law is generally lacking.

3.2.1.C ii Response to Digital Rights Management

Digital Rights Management (DRM) is one of the digital media industry's (RIAA, MPAA, etc.) many tools against file sharing. It also seems to be making a recent rise on their priority lists. Consequently it is pertinent to analyze the public opinion on this DRM and to see how effective it really is for the industries.

This analysis was begun by simply asking the participants if they would pay more for music without DRM. The frequency descriptive of the response to this question can be seen in Figure 6, below.

Would pay more for music w/o DRM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	14	15.6	15.7	15.7
	Never	13	14.4	14.6	30.3
	Sometimes	24	26.7	27.0	57.3
	What is DRM?	38	42.2	42.7	100.0
	Total	89	98.9	100.0	
Missing		1	1.1		
Total		90	100.0		

Figure 6: Would Pay More For Music Without DRM

This question on its own showed that much (43%) of the participant pool did not know what DRM was. It also showed that, although there was about equal positive response (those who said that they would pay more for music without DRM), there was some type of opposition to paying

more for music without DRM. The nature of this opposition, however, was not revealed from this particular test and the test was otherwise inconclusive.

The individual frequency descriptives of the next two parts of question 9 asked the participants if they tend to buy music when it is not available online (see Figure 7) and whether or not the participants habitually purchase music even when it is available for free online (see Figure 8).

Buy music when cannot obtain for free online

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	17	18.9	19.1	19.1
	Never	22	24.4	24.7	43.8
	Sometimes	50	55.6	56.2	100.0
	Total	89	98.9	100.0	
Missing		1	1.1		
Total		90	100.0		

Figure 7: Buy Music When Cannot Obtain it For Free Online

Purchase Musiceven when it is available for free online

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	10	11.1	11.2	11.2
	Never	29	32.2	32.6	43.8
	Sometimes	50	55.6	56.2	100.0
	Total	89	98.9	100.0	
Missing		1	1.1		
Total		90	100.0		

Figure 8: Purchase Music Even When if is Available Free Online

Question 9d, on the other hand, did lend some useful results on its own. The frequency descriptive of this question (see Figure 9) showed that of 90 valid cases, 63 (70%) answered that sampling free music online had led them to purchase from that artist, suggesting the possibility that free music sampling may be a significant source of revenue for the music industry.

Sampling free music online has led to purchase from that artist

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	27	30.0	30.0	30.0
	Yes	63	70.0	70.0	100.0
	Total	90	100.0	100.0	

Figure 9: Sampling Music Online Has Led to Purchase From That Artist

The remaining parts of question 9 were, again, of little to no use on their own. The participants were asked if they regularly purchased music downloads (see Figure 10) and then if they regularly purchased CD's (see Figure 11). Though for both questions the dominant response was no. Though less people answered "yes" to regularly purchasing CDs than to regularly purchasing music downloads, a larger number answered "maybe" to regularly purchasing CDs suggesting that despite the popularity and availability of downloaded music, this hard-copy media is still popular.

Regularly purchase music downloads

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	10	11.1	11.1	11.1
	No	60	66.7	66.7	77.8
	Yes	20	22.2	22.2	100.0
	Total	90	100.0	100.0	

Figure 10: Regularly Purchase Music Downloads

Regularly purchase music CDs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	20	22.2	22.2	22.2
	No	53	58.9	58.9	81.1
	Yes	17	18.9	18.9	100.0
	Total	90	100.0	100.0	

Figure 11: Regularly Purchase Music CDs

The responses to question 9 were able to be seen with more importance when they were crosstabulated with each other. The comparison of the willingness to pay more for music without DRM with the tendency to buy music when it could not be obtained online (Figure 12) and with the tendency to purchase music even when it is available online (Figure 13) showed that the few who would not pay more for music without DRM would not have purchased the media anyway.

Would pay more for music w/o DRM * Buy music when cannot obtain for free online Crosstabulation

Count

		Buy music when cannot obtain for free online			
		Always	Never	Sometimes	Total
Would pay more for music w/o DRM	Always	4	2	8	14
	Never	1	4	8	13
	Sometimes	4	7	12	23
	What is DRM?	8	9	21	38
Total		17	22	49	88

Figure 12: Would Pay More For Music Without DRM v. Buy Music When Cannot Obtain For Free Online

Would pay more for music w/o DRM * Purchase music even when it is available for free online Crosstabulation

Count

		Purchase Musiceven when it is available for free online			
		Always	Never	Sometimes	Total
Would pay more for music w/o DRM	Always	4	2	8	14
	Never	1	7	5	13
	Sometimes	3	5	16	24
	What is DRM?	2	15	20	37
Total		10	29	49	88

Figure 13: Would Pay More For Music Without DRM v. Purchase Music Even When it is Available For Free

This correlation was then upheld by the similar comparisons of the willingness to pay more for music without DRM and the tendency to purchase music downloads (Figure 14) and music CDs

(Figure 15) in general. This data upholds the suggestion that the seeming opposition to paying more for music without DRM (see Figure 6) does not pertain to DRM but to paying for music in general.

Would pay more for music w/o DRM * Regularly purchase music downloads Crosstabulation

Count

		Regularly purchase music downloads			
		Maybe	No	Yes	Total
Would pay more for music w/o DRM	Always	2	10	2	14
	Never	0	13	0	13
	Sometimes	3	12	9	24
	What is DRM?	5	25	8	38
Total		10	60	19	89

Figure 14: Would Pay More For Music Without DRM v. Regularly Purchase Music Downloads

Would pay more for music w/o DRM * Regularly purchase music CDs Crosstabulation

Count

		Regularly purchase music CDs			
		Maybe	No	Yes	Total
Would pay more for music w/o DRM	Always	2	7	5	14
	Never	4	9	0	13
	Sometimes	4	16	4	24
	What is DRM?	10	21	7	38
Total		20	53	16	89

Figure 15: Would Pay More For Music Without DRM v. Regularly Pruchase Music CDs

These data tables describe a lack of knowledge about DRM, as 43% of the valid cases expressed that they did not know what DRM was. Of those who did know about DRM there was a relatively even spread between those who would pay more for music without DRM (15.7%) and those who would not (14.4%). More over, it can be seen in the crosstabulations between "would pay more for DRM" and both "buy music when cannot obtain for free online" and "purchase music

even when it is available for free online" that only 7.7% (in both cases) of those who said that they would not pay more for music without DRM would actually purchase music in the other cases. Similarly, in the crosstabulations between "would pay more for music without DRM" and "regularly purchase music downloads" and "regularly purchase music CD's", it was found that 100% of the participants who would not pay more for music without DRM did not regularly purchase music downloads and 69.2% did not regularly purchase music CD's. This builds a strong case against Digital Rights Management as the study suggests that DRM might not save the music industry from losing money and may even do more harm to the music industry than help.

3.2.1.C iii Residence and Related Software Use

When comparing software programs used with residency, not much can be taken from the individual program uses themselves. Individual crosstabulations were done for each of the 5 software programs listed as choices for Question 3: DC++, Bit Torrent, iTunes, Kazaa and Limewire. As can be seen in the Case Processing Summary, below, 78 valid cases were considered for each test. There was not enough information to usefully analyze the alternate programs that the participants supplied in the open-ended "others" choice.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Residence * Have Used DC++	78	86.7%	12	13.3%	90	100.0%
Residence * Have Used Bit Torrent	78	86.7%	12	13.3%	90	100.0%
Residence * Have Used iTunes	78	86.7%	12	13.3%	90	100.0%
Residence * Have Used Kazaa	78	86.7%	12	13.3%	90	100.0%
Residence * Have Used Limewire	78	86.7%	12	13.3%	90	100.0%

Figure 16: Case Processing Summary: Residence, Software

As can be seen in the "Residence*Have Used DC++ Crosstabulation", below, DC++ was used much more on campus than off. This was expected due to the types of servers that are set up on-campus. The same can not be said of Bit Torrent or Kazaa, which was also expected as these programs are blocked by WPI.

Residence * Have Used DC++ Crosstabulation

			Have Used DC++		
			False	True	Total
Residence	Off-Campus	Count	11	23	34
		% of Total	14.1%	29.5%	43.6%
	On-Campus	Count	6	38	44
		% of Total	7.7%	48.7%	56.4%
Total		Count	17	61	78
		% of Total	21.8%	78.2%	100.0%

Figure 17: Residence v. DC++

Residence * Have Used Bit Torrent Crosstabulation

			Have Used Bit Torrent		
			False	True	Total
Residence	Off-Campus	Count	12	22	34
		% of Total	15.4%	28.2%	43.6%
	On-Campus	Count	28	16	44
		% of Total	35.9%	20.5%	56.4%
Total		Count	40	38	78
		% of Total	51.3%	48.7%	100.0%

Figure 18: Residence v. BitTorrent

The "Residence*Have Used iTunes Crosstabulation" shows that iTunes was used relatively evenly between the two residence types. As iTunes is geared more toward music organization and purchase (it is not a free-download file sharing software) this result was also expected.

Residence * Have Used iTunes Crosstabulation

			Have Used iTunes		
			False	True	Total
Residence	Off-Campus	Count	8	26	34
		% of Total	10.3%	33.3%	43.6%
	On-Campus	Count	18	26	44
		% of Total	23.1%	33.3%	56.4%
Total		Count	26	52	78
		% of Total	33.3%	66.7%	100.0%

Figure 19: Residence v. iTunes

The "Residence*Have Used Kazaa Crosstabulation" produced unexpected results at first, as it is blocked on-campus yet used evenly between on and off campus participants. When these cases were individually compared in the data table, however, it was reiteratively found that users who had experience with Limewire had stopped using the program because of viruses and other mal effects on the user's computer. This could suggest that overall use of Limewire was governed more by software insufficiency than by ISP restrictions.

Residence * Have Used Kazaa Crosstabulation

			Have Used Kazaa		
			False	True	Total
Residence	Off-Campus	Count	13	21	34
		% of Total	16.7%	26.9%	43.6%
	On-Campus	Count	25	19	44
		% of Total	32.1%	24.4%	56.4%
Total		Count	38	40	78
		% of Total	48.7%	51.3%	100.0%

Figure 20: Residence v. Kazaa

Residence * Have Used Limewire Crosstabulation

			Have Used Limewire		
			False	True	Total
Residence	Off-Campus	Count	11	23	34
		% of Total	14.1%	29.5%	43.6%
	On-Campus	Count	15	29	44
		% of Total	19.2%	37.2%	56.4%
Total		Count	26	52	78
		% of Total	33.3%	66.7%	100.0%

Figure 21: Residence v. Limewire

This data (along with the data obtained from Question 3g: the open-ended "other's" field) became more useful, however, when recoded to compare on and off campus software use with programs that were restricted on-campus. The software programs blocked by WPI that were observed in this study included eDonkey, Emule, Bearshare, Limewire, Morpheus, Kazaa, Soulsearch, Napster, WinMx, Ares and Bit Torrent (WPI NetOps, 2008). Those not blocked (at the time of the survey) included DC++, iTunes, Azureus, Bitcomet, mIRC, Osnet, FTPSealers, and Friends. When the number of instances of use of blocked software programs used on-campus (22.9%) was compared to that of use of unblocked software programs used on-campus (34%), and then compared to both the use of blocked and unblocked software programs used off-campus (21.9% and 21.2%, respectively), it was found that there was no apparent differentiation between overall software use and residency. Though this may not be the most sound correlation (or lack thereof) achieved by the data, it still suggests that the attempts made by the university to thwart illegal file sharing attempts are having little effect, or at the very least are having no greater effect than the similar attempts made by neighborhood ISP's.

3.2.1.C iv Money Spent on Music Compared to Amount Pirated

In order to effectively compare the participants' estimated money spent on music (Question 7) in the last year to the amount of pirated media in the participants' collection (Question 13), the non-discreet monetary values entered for question 7 had to be grouped into reasonable ranges. As values over $100 were vastly varied, all values above $100 were grouped together. The remaining values were broken up into $25 increments. Not surprisingly, comparing 87 valid cases, for the most part the following correlation holds true: the less money spent on digital media, the larger the percentage of pirated digital media. This suggests that those who tend to use illegal file sharing to acquire their music often don't purchase music, and vice-versa. The group that claimed to have spent over $100, however, shows very different results. Of those who spent the most on music in the last year 42.1% estimated that half of their music collection was pirated, 31.6% estimated that most of their music collection was pirated and 21.1% estimated that at least some of their music collection was pirated. It should also be noted that out of the 87 valid cases only one participant claimed to have no pirated media.

Money Spent On Music in the Last Year * Amount Pirated Crosstabulation

Count

		Amount Pirated					
		None	Some	Half	Most	I don't know	Total
Money Spent On Music in the Last Year	<24	0	5	4	24	3	36
	25-49	0	6	4	7	0	17
	50-74	0	4	3	5	1	13
	75-100	0	0	2	0	0	2
	>100	1	4	8	6	0	19
Total		1	19	21	42	4	87

Figure 22: Money Spent on Music v. Amount Pirated

The total estimated size of the participant's digital media collection was also compared to the amount pirated. In the "Digital Media on Hard Drive (Gb)*Amount pirated" crosstabulation

there seemed to be a slightly higher percentage of pirated media among those with larger overall media collections, however, no strong correlation was observed.

Digital Media on Hard Drive (Gb) * Amount Pirated Crosstabulation

Count

		Amount Pirated				
		Some	Half	Most	I don't know	Total
Digital Media on Hard Drive (Gb)	<10	4	3	4	1	12
	10-30	8	8	7	1	24
	30-80	4	2	11	0	17
	>80	3	7	21	2	33
Total		19	20	43	4	86

Figure 23: Digital Media on Hard Drive v. Amount Pirated

Performing a crosstabulation of the participants' "Amount Pirated" versus whether or not they would pay for their illegal downloads if they could not be obtained for free shows that only about 18.4% would always pay for the music if file sharing were not an option. Moreover, 25.3% would never pay for it and 56.3% would only pay for it sometimes. This suggests that illegal file sharing may not actually cut into the revenues of the music business with as great an effect as is usually expected.

Buy music when cannot obtain for free online * Amount Pirated Crosstabulation

			Amount Pirated					
			None	Some	Half	Most	I don't know	Total
Buy music when cannot obtain for free online	Always	Count	0	3	7	6	0	16
		% of Total	.0%	3.4%	8.0%	6.9%	.0%	18.4%
	Never	Count	0	4	3	12	3	22
		% of Total	.0%	4.6%	3.4%	13.8%	3.4%	25.3%
	Sometimes	Count	1	12	11	24	1	49
		% of Total	1.1%	13.8%	12.6%	27.6%	1.1%	56.3%
Total		Count	1	19	21	42	4	87
		% of Total	1.1%	21.8%	24.1%	48.3%	4.6%	100.0%

Figure 24: Buy Music When Cannot Obtain For Free v. Amount Pirated

3.2.2 Content Analysis

3.2.2.A Questions to be Answered

While the survey portion of this project had gathered opinions from a portion of the college age population, there are also questions as to the opinions of the public at large. The web provides a large body of writing and opinions on the subject of copyright and intellectual property. As with the survey, web content will have its own biases that may not represent the entire public. However, the web does represent a larger sample group than the college age population at WPI.

So, what kind of information can one find when looking at information about file sharing? Using content analysis methods, we attempted to find what pages were most closely connected together. This provided a glimpse into what opinions exist on the web and what kind of path a typical web surfer might take when using the Internet.

3.2.2.B Methods for Analysis

We picked one site as the root of the analysis. Using a web text analysis system called JANE16, we then extracted the keywords and a summary of this page. These keywords were then run through the Google search engine to find the next most popular page of the same topic. This process was repeated through a number of iterations.

3.2.2.C Data

3.2.2.C i Analysis 1: RIAA.com

First Iteration: http://www.riaa.com

Retrieved subject:

"sales" "music" "rights" "industry" "members" "music sales" "music industry"

Alternative:

"last" "news" "secretary" "album" "songs" "industry" "rights" "members" "music" "sales"

Auto-extracted summary:

1 recording industry

2 Its members are the record companies that comprise the most vibrant national music industry in the world

3 In support of this mission the RIAA works to protect intellectual property rights worldwide and the First Amendment rights of artists; conducts consumer industry and technical research; and.....

Second Iteration: http://www.iht.com/articles/2008/01/24/technology/music.php

Retrieved subject:

"compact" "discs" "kennedy" "file-sharing" "$2" "karaoke" "federation"

Alternative:

"according" "federation" "karaoke" "compact" "file-sharing" "kennedy" "$2" "discs"

Auto-extracted summary:

1 but digital sales have yet to make up for the shortfall in sales of compact discs and overall sales of recorded music fell about 10 percent last year to $17.6 billion the federation estimated

2 the record companies lost a previous round of court battles against baidu but took hope from a recent verdict against another service provider yahoo china which was found guilty of copyright.....

3 under an agreement implemented late last year karaoke bars have agreed to recognize so-called audiovisual rights to music videos and to collect a fee for every karaoke room they operate

Third Iteration: http://www.reuters.com/article/entertainmentNews/idUSL2660566120080126

Retrieved subject:

"emi" "committed" "margin" "cds" "vivendi" "levy" "gloom"

Alternative:

"itunes" "store" "songs" "cds" "emi" "committed" "margin" "levy"

Auto-extracted summary:

1 vivendi chief says music industry gloom overdone sat jan 26 2008 11:09am est by kate holton cannes france (reuters) - vivendi chief executive jean-bernard levy has no plans to spin off the music.....

2 'i hope that after the shake up (at emi) there will be a strong set of major companies that will help the music industry to grow.' universal is the world's largest music company with artists such.....

3 we had in '03 a 3 percent operating margin business and we have today a 12 percent operating margin business

Fourth Iteration: http://www.p2pnet.net/story/14789

Retrieved subject:

"suing" "emi" "margin" "bosses" "levy" "cartel" "vivendi"

Alternative:

"job" "bosses" "levy" "suing" "emi" "margin"

Auto-extracted summary:

1 vivendi boss levy misinforms midem p2pnet news | music:- vivendi boss jean-bernard levy reckons there'll be a viable market for physical products like cds for years to come and that the.....

2 i hope that after the shake up (at emi) there will be a strong set of major companies that will help the music industry

to grow.” this kind of thing goes down well with corporatue bosses but the.....

3 however to the contrary in america vivendi and the other members of the cartel are currently trying to sledge-hammer students into becoming compliant consumers and what goes down in america is.....

Fifth Iteration: http://www.futureofmusicbook.com/

Retrieved subject:

"blur" "collaborative" "telcos" "hippy" "p2p" "isps" "radiohead"

Alternative:

"isps" "p2p"

Auto-extracted summary:

1 It seems that the majority of downloads were through illegal P2P download services like BitTorrent and LimeWire even though the album was available for nothing through the official band site

2 The BBC has spent a fortune on their iPlayer project and the ISPs are now threatening to throttle this traffic if the BBC doesn’t “share costs of iPlayer traffic.” All this shows what the ISPs.....

3 I suggest we shift the focus of moral pressure away from the individual P2P file thief and on to the multi billion dollar industries that benefit from these countless tiny crimes — The ISPs the.....

3.2.2.C ii Summary of Analysis 1

Starting with the home page of the Recording Industry Association of America, the system then found a news article in the International Herald Tribune entitled "Music industry steps up search for digital revenue" which discusses the industry's attempts to sell music online and the efforts to shut down unauthorized sharing. The third iteration found another news article entitled "Vivendi chief says music industry gloom overdone" which downplays the idea that selling physical media going away and the music industry is failing. The next result is a blog posting entitled "Vivendi boss Levy misinforms Midem". This discusses the content of the same speech as the last news article, but proceeds to criticize the music industry and its approach to digital media. The final iteration takes us to the website of a music college faculty member who wrote a book about the direction of digital music.

3.2.2.D Conclusion of Content Analysis

This simple content analysis method provided an interesting view of the interconnected nature of web based content. The diversity of opinion on the Internet provides a large body of text from which to derive public opinion, even if this data sample would likely suffer from certain biases. With a larger data set and additional software capabilities, more useful results could be obtained. However, the utilized technique was unsuccessful in yielding significant insight into public opinion.

4 Conclusions

4.1 Research Results

4.1.1 Important Findings

The results of the survey provide some interesting data about the habits and opinions of the college age population. We found that the survey group spent a significant amount of time using computers and digital media, with 3-6 hours being the most frequently selected answer in both categories. Many students have used a variety of software for sharing files. Users often switched software in response to technical problems or to restrictions imposed by external ISP systems such as the WPI network. Many students have a significant amount of digital media, with around 37% having more than 80 gigabytes. The most frequent number of CDs and DVDs in someone's collection was between 10 and 30. On average, students spent about $70 on music during the last year, with the median being $30. Downloaded music accounted for an average of $24 of this total. However, the most frequent response for downloaded music was $0. This shows that while downloaded music makes up a portion of music sales, physical CDs appear to still be a fairly popular medium.

Many students, about 43% of respondents, were simply unaware of Digital Rights Management technology . The majority of the remainder might pay more for music that does not use the technology. The majority of students would only sometimes buy music when they could not get it for free online. A similar percentage of students would only sometimes purchase music that they knew they could get for free. Such a large number of “maybe” responses shows that such free download versus buy decisions may be determined by some other factors. Free online sampling of music led 70% of the respondents to buy music from an artist. This suggests that online sampling of music is an effective strategy for increasing music sales. The majorityof the respondents do not

regularly buy music CDs or downloads. However, they were somewhat more likely to purchase CDs than music downloads. Over 93% of the respondents had never used a music subscription service. Such services would thus appear to have very little popularity.

The first main result of the survey analysis showed a strong lack of knowledge of the specifics of copyright law. Participants who answered that they thought that they knew what "Fair Use" was proved, in the end, to return "Fair Use" test scores very close to the scores of those who had answered that they did not know or were unsure (46% versus 23% and 28%, respectively).

The data also showed that there was a general public disagreement with the current law and its associated penalties. Those who were aware of the current penalties seemed to feel, in general, that they were inappropriate. When these responses were compared with the open ended suggestions for more appropriate penalties it was often suggested that small fines be implemented (for example fines close to the value of the illegally copied media itself). Not only does this suggest strong disagreement with the larger fines and civil settlements that are currently being pursued by, for example, the RIAA but it also suggests a volition to revert back to penalties more similar to those originally called for by the Copyright Act of 1790: fines just large enough to repair damages to the copyright holder, and destruction of the infringing materials (or, perhaps more pertinent in current times, deletion of the illegally copied files). The analysis of behavior changes because of possible penalties and attitude toward these penalties describes a strong lack of reverence for the ramifications of file sharing.

As there have recently been strides toward using Digital Rights Management as a means to stifle illegal file sharing, the results of the public opinion toward DRM has also brought forth some interesting points. For the most part, those who were familiar with DRM showed that it had little effect on their file sharing habits. In fact, many were more prone to pay higher prices for media that did not contain DRM. Those who would not pay more for media without DRM tended to be

people who would not have paid for the media in the first place, even if it was available to them for free.

The data has also shown that the ability to sample music for free online may lead to a significant portion of the music industries revenues. Though the analysis can not be done with the data from this survey, it is also considered a possibility that similar relationships could be true for other digital media industries as well.

Another, less intuitive but still very important, relationship shown by the data is the relationship between software use and ISP attempts at blocking certain software programs. A quick search of file sharing programs on the Internet shows a slew of new clones of well known (and often blocked) programs. The survey leads to the idea that as soon as a file sharing program is blocked, users move on to a new program and, overall, illegal file sharing continues unimpeded. This approach to stopping file sharing seems futile and ineffective, that is not to say, of course, that illegal file sharing should simply be overlooked, but it may be useful to pursue new methods for controlling file sharing.

4.1.2 Limitations of Findings

The discussed methods of research offer great potential for insight into many aspects of the public opinion on copyright law. As is always the case with such research, however, it is important to understand how the data were obtained and the extent to which it can actually be viewed as the general or average view. Without proper consideration of the parameters of the research, the data itself holds no merit and cannot be reasonably expanded to any justifiable generalization.

The most general limitations on the findings of the research act with respect to the breadth of the participant pool. The limitations imposed by this parameter are two-fold. If the participants in the study do not comprise a sufficient representation of the general public (or more generally represent a smaller group than that to be analyzed) the data can not be generalized to create a maxim representative of that group. On a smaller scale, however, this parameter can also be limiting. Considering representative groups smaller than that comprised by the study participants requires that the study data be compartmentalized leaving less information to be used to make generalizations.

Regardless of these limitations, it is still important to try to make these generalizations, as long as they are approached with caution. In the case of "The Survey For File Sharing", before beginning the actual question process the participants are probed for "classifying" information such as residence, major, and gender. When the survey was created, it was anticipated that there may be correlations between the subcategories of some of these groups. For example, IMGD (Interactive Media and Game Development) majors might be more sensitive to the unauthorized distribution of intellectual property, as their chosen profession suggests that someday they will be the creators of such property. It could turn out, however, that not enough IMGD majors can be accessed for such a finding to be well founded. It may, instead, turn out that more definitive statements can be made about the difference in views between on-campus and off-campus students (possible as a result of

the increased efficacy of the watchful eye of the institution over that of the general neighborhood ISP's).

Much in the same way, it can be expected from the imposed restrictions of the participant pool (as laid out in the study protocol) that a broader generalization will not be able to be sufficiently proven. As the survey is only intended to examine the views and beliefs of WPI students, the data will not be able to be expanded to create generalizations over all age groups, and will be limited, for the most part, to participants who probably have more contact with the material at hand (file sharing) than the general public. That is not to say that hypotheses extending the findings of this study can not be constructed to encompass a more wide-spread public (especially when used in conjunction with the results of other pertinent studies), but rather that any hypotheses made beyond the limitations of study data need to be used with reserve and caution (and in most cases will not be as resolute as those made within the confines of the participant pool for the study).

When trying to establish findings from study data it is also important to realize the limitations of the use of multiple choice answers (which was used for the majority of "The Survey for File Sharing"). The use of multiple choice answers will usually make it easier for both the participant and the investigator. This option helps the participant answer the question without having to try to define their own scales to quantify answers and can also help direct their answers. Multiple choice answers also help to ensure that the participant understands the questions (as the possible answers can be checked against the presumed understanding). Unfortunately, this can also be viewed as a shortcoming of this questioning method. The use of predefined multiple choice answers can tend to "lead" the participant to choose a certain answer (it should be noted that the question itself can often have a similar and often more profound effect) or to force the participant to choose an answer that may not be a perfect representation of the truth.

Another large shortcoming of the multiple choice method is a lack of precision. A good example of this is brought up in "The Survey for File Sharing". The first question "How many hours would you say you spend per day on the computer?" offers the following answer choices: a) Less than 3 b) 3-6 c) 6-10 d) More than 10. Data collected through questions like this must be analyzed carefully as the nature of the question forces participants to choose a single block of time, even when the real answer might be on the border between two of the choices. For example 6 hours and 10 hours will be treated as equivalent answers even though they are 4 hours apart, and 5 hours and 6 hours will be treated as different answers even though they are only 1 hour apart. The effect of this parameter is more apparent on a question like Question 1 (used in the example above) but it is still present for most, if not all, multiple choice questions (even when "scapegoat" answers like "I don't know" or "Other" are provided). When the survey was created Question 1 was intended merely as a broader classification to get a slightly better idea of how deeply exposed the participants were to computer's and file sharing and was not intended to be used independently toward any substantial conclusions.

One important consideration in our analysis was whether or not our sample is an accurate representation of the WPI student population. To some degree, we can determine this by comparing some of the items used to identify our participants with the official statistics provided by the school. We looked at both gender and residency, running a t-test with a 95% confidence interval to determine if our samples were significantly biased in one area. We would have liked to run a similar comparison with degree majors, but population was too small for us to get any meaningful results from such an analysis. A t-test is a way to determine how likely an outcome is by measuring how many standard deviations away it is from the mean value. In this case, the mean and standard deviations were calculated from derivations of the binomial probability distribution. Of the 90 participants in the survey, 81 provided their gender and 78 provided their residency.

Because our sample sizes for both gender and residency were sufficiently large, we were able to approximate a Gaussian distribution for the probable results of each, and determine the standard deviation limit for our confidence interval. At 95%, we considered any result more than 1.96 standard deviations away from the mean as statistically significant.

We determined that there was no significant bias in the number of males and females, however, there was significant bias in the number of on-campus and off-campus residency, with more on-campus participants than there should have been. This may have been because most of the surveys were distributed at an on-campus location, though we don't have any evidence that the facility was used more by on-campus students.

A research study such as a survey can be a very useful tool and can offer great insight with respect to such information as public opinion. The data collected through such a survey can lead the investigators to important conclusions. These conclusions will hopefully act as a basis for suggestions for change in the current copyright law to better fit it to the modern world. Doing so will hopefully allow the law to reach a more satisfactory compromise between the creators of intellectual property (hoping to reap great returns from their creations) and the general public (hoping to have all of the latest technology and discoveries ready at their fingertips and unimpeded by restrictions such as Digital Rights Management). By the same token, however, it is important to recognize that data collected through such a study can not be coerced to create such conclusions and must be used with caution and clear understanding of its limitations.

4.2 Suggested Policy Changes

4.2.1 Areas In Need of Change

First and foremost, the survey analysis makes it readily apparent that current methods to quell illegal file sharing are, for the most part, ineffective. There seems to be a multidirectional codependency between a general lack of knowledge and understanding of the law itself and of the consequences of copyright infringement, the lack of motivation to pay for digital media, the sheer size of the file sharing public and the ease with which new programs can be made to replace those blocked by ISPs.

This, logically, suggests that a different approach needs to be taken toward file sharing both from the perspective of the industries that are affected by it and, possibly the law itself. The current approach is to try to stop file sharing in its tracks. The data, however, suggests that file sharing may not be as much of a financial affliction as is normally predicted. In fact, when viewed in the right light, the wide spread advertisement available through the seemingly infinite peer-to-peer networks and media sharing "tools" (such as YouTube or Google Video) may have the potential to be used to the industries advantage. Music purchasing websites and programs (such as Amazon Music and iTunes Music Store, respectively) already offer short previews of songs that are being considered for purchase. It could be suggested, within reason, that music videos and other intellectual property posted on sites such as YouTube could be treated as artist advertisement.

Digital Rights Management is another supposed tool against illegal file sharing which should be revisited. This study shows that those who would buy media with DRM would usually have paid more to have media with the DRM removed. Those who would not pay more for the media without DRM, in general, would not have purchased the media in the first place (even if it had not been available for free download).

The lack of reverence for the current penalties and possible ramifications of illegal file sharing along with seeming animosity toward these penalties and ramifications is also of great concern. It is suggested from the general lack of knowledge and misinformation concerning copyright infringement and its associated consequences that more standard penalties should be considered. Currently most copyright infringement cases end in civil disputes of vastly varying end results. Standardization of these results along with clarification of the law itself seems to be a necessary action.

The current penalties are also, arguably, straying from the original purpose of copyright law. Most cases of infringement are treated as civil matters, pursued through lawsuits or large monetary settlements rather than fines and imprisonment. The original copyright law also had provisions for such measures to be taken, but focused more on destruction of the infringing materials and specific fines meant to repay direct losses. Currently, the usual method for handling infringement cases lends toward making an example of a select few through large monetary settlements. It can certainly be argued that modern times no longer allow these cases to be treated similarly to those of the 19th century. Copyright infringement has become quite commonplace and the public's attitude toward the impact that this has on the creators of intellectual property seems to have become much more complacent. One view is that copyright violation is no longer taken as seriously as it needs to be. Furthermore, it may not be feasible or practical to treat every case of infringement individually, and it may be necessary to use scare tactics to stop the majority of infringement cases. Keeping in mind, however, the true purpose of copyright law, "to promote the progress of science and the useful arts," it becomes apparent that current treatment of infringement is often not in the true spirit of copyright law.

The data also suggests from all of the above findings and from the huge breadth of the file sharing community that digital media industries might need to rethink the worth of their products.

Industry seems quick to turn to file sharing as the sole explanation for currently low revenues (in the realm of digital media), however, this view may need to be reconsidered as there seems to be resistance to the purchase of digital media which seems to be independent of illegal file sharing rather than enabled by it.

4.2.2 Possible methods for change

The results of this survey show that current law is somewhat at odds with the opinions of the sample population. One clear example of this is the responses two questions eleven and twelve of the survey. While most considered giving a copied CD/DVD to a friend to be illegal, many still considered it to be ethical. The numbers change significantly when the CD/DVD is sold rather than given away. Far fewer people considered the selling situation to be legal or ethical. They also considered it to be far less common. This suggests that the survey group would support making a distinction between “personal” and “commercial” copyright infringement. While the law has and continues to make some distinctions of this sort, in some cases the penalties are the same no matter the circumstance of the infringement.

Another possible method of change is to alter the scheme by which copyright infringement is handled legally. Currently, various criminal and civil statutes exist that provide make unauthorized file sharing and other copyright infringements illegal. In most cases, lawsuits against file sharers have been handled though civil law mechanisms. Question sixteen provided some insight into the thoughts of the population about how the situation could be handled. Many people suggested fines as an appropriate penalty. One idea is to provide a different judicial method for handling such cases. Speeding tickets and traffic court provide something of a basis for such an idea.

Digital Rights Management provides another area of possible policy change. The results of the survey demonstrate that there may be more demand for music that does not use it. Survey

results also suggest that more money is still being spent on physical CDs than on online music. However, the survey group also appears to be somewhat technically savvy in that they spend much time on computers systems and most have used various file sharing software. Therefore, it is likely that many people in this demographic actually convert their CDs into compressed files such as MP3s for use on computer systems and portable media players. If the media companies were to release the music in an unencumbered format such as MP3, consumers may be more willing to forgo the intermediate step of buying the media themselves and doing the conversion.

4.2.3 Projections For the Future

The current outlook on the copyright situation indicates that lawmakers are more interested in containing the possibility of infringement and enforcing penalties rather than changing the law itself, or the way in which it is enforced. One recent example is The College Opportunity and Affordability Act, an extension to the Higher Education Act designed to award funding to college campuses that combat file sharing. Whether or not this is an effective method for handling the problem, it is a bit short sighted, and will most likely not solve some of the larger problems in the long run. In the end, it is most likely that industry will have to reach some compromise with consumers over file sharing. It is quite possible that strict enforcement will actually be detrimental to media sales, as it closes off an avenue for advertisement and sampling. There is evidence in our survey that free distribution of media does lead to some purchases, though we can't tell if this is wholly beneficial.

While our survey sample was by no means an accurate sample of American citizens, it does provide some insight into the college age demographic. Eventually, the college age generation will grow into power, taking with them the values they grew up with. When that happens, will they be more in favor of wide distribution of copyrighted material, or will they uphold the copyright

standards of today? There is much indication from our survey that sharing copyrighted material is not even an ethical concern among our population. Twice as many people marked “Ethical” than “Unethical” in the hypothetical situation of giving a friend a burned CD, even though this is technically illegal. Half our respondents indicated that most of their digital media was pirated. It seems that the ability to obtain copyrighted works for free has become a standard. Though it is possible that the standards among this generation for file sharing will change, it is interesting to think what will happen if it does not.

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Appendix

A.1 General Acronyms

CMI - Copyright Management Information
CTEA - Copyright Term Extension Act
DMCA- Digital Millennium Copyright Act
DRM - Digital Rights Management
ISP - Internet Service Provider
MPAA- Motion Picture Association of America
NET - No Electronic Theft Act
RIAA - Recording Industry Association of America
SCMS - Serial Copyright Management System

A.2 Major Codes

AE - Aerospace Engineering
AM - Applied Mathematics
BC - Biochemical Engineering
BME - Bio-Medical Engineering
CE - Civil and Environmental Engineering
CHE - Chemical Engineering
CS - Computer Science
ECE - Electrical and Computer Engineering
EPD - Environmental Policy and Development
EV - Environmental Engineering
IMGD - Interactive Media and Game Development
IS - International Studies
MA - Mathematics
ME - Mechanical Engineering
MGE - Management Engineering
MIS - Management Information Systems
PH - Physics
RBE - Robotics Engineering
STP - Society Technology and Policy

A.3 Definitions

Residence – As used throughout this study, "Residence" refers to a student's primary dwelling during the school year. "On-Campus" is meant to solely include the WPI residence halls. All Greek houses are considered "Off-Campus" in this study.

Copyright Infringement – Unauthorized use of Copyrighted material, violating "Fair-Use"

A.4 WPI Facts: Overall Student Demographic Distributions

Engineering	# of Students	%	Abbr.
Aerospace	100	3.354579	AE
Biomedical	182	6.105334	BME
Civil	222	7.447165	CE
Chemical	179	6.004696	CHE
Electrical & Computer	317	10.63402	ECE
Environmental	17	0.570278	EV
Industrial	33	1.107011	IE
Mechanical	591	19.82556	ME
Manufacturing	11	0.369004	MFE
Robotics	19	0.63737	RBE
Undeclared/Engineering	164	5.50151	
Sciences			
Biology & Biotechnology	221	7.41362	BIO/BBT
Biochemistry	87	2.918484	BC
Chemistry	55	1.845018	CH
Computer Science	253	8.487085	CS
Math	99	3.321033	MA
Physics	83	2.784301	PH
Undeclared/Science	8	0.268366	
Other			
Econ/Soc Sci Tech	25	0.838645	ECON
Humanities & Arts	7	0.234821	HU
Interactive Media & Game	134	4.495136	IGSD
Interdisciplinary	6	0.201275	ID
Management	99	3.321033	MG
Psychological Science	6	0.201275	PSY
Undeclared			
Undeclared	63	2.113385	
Total Undergraduates	**2981**	**100**	
GENDER:			
Female	771	26%	
Male	2210	74%	
RESIDENCE:			
On M	937		
On F	284		
On Tot:	**1221**	**41%**	
Off M	1273		
Off F	487		
Off Tot:	**1760**	**59%**	

A.5 Survey on File Sharing

This is a student affiliated survey and does not reflect the interests or opinions of WPI. By returning this survey you acknowledge that you have been informed about and consent to be a participant in this study. Make sure that your questions are answered to your satisfaction before beginning. Please do not put any contact information on this survey.

Residence (circle one): On-Campus / Off-Campus
Major:
Gender:

1. How many hours would you say you spend per day on a computer?
   a) Less than 3 b) 3-6 c)6-10 d) More than 10

2. How many hours would you say you spend per day viewing/using digital media (music, video)?
   a) Less than 1 b) 1-3 c) 3-6 d) 6-10 e) More than 10

3. Which of the following file sharing software, if any, have you used?
   a) DC++ b) Bit Torrent c) iTunes d) Kazaa e) Limewire
   f) Other(s): _____

4. If you once used a particular type of software, why did you stop?

5. About how many gigabytes of your personal hard drive space is devoted to digital media?
   a) Less than 10 b) 10-30 c) 30-80 d) More than 80

6. How many CDs and DVDs do you own?
   a) Less than 10 b) 10-30 c) 30-80 d) More than 80

7. How much have you spent on music in the last year? $_____

8. How much have you spent on downloaded music in the last year? $_____

9. Consider the following music purchasing situations:

I would pay more for music that does not use Digital Rights Management	❒ Always	❒ Sometimes	❒ Never ❒ What is Digital Rights Management?
I buy music when I cannot obtain it for free online	❒ Always	❒ Sometimes	❒ Never
I purchase music even when I know that it is available for free online	❒ Always	❒ Sometimes	❒ Never
Sampling music for free online has led me to purchase music from that artist	❒ Yes	❒ No	
I regularly purchase music downloads	❒ Yes	❒ No	❒ Maybe
I regularly purchase music CDs	❒ Yes	❒ No	❒ Maybe
I have used an online monthly subscription service for music	❒ Yes	❒ No	❒ Still do

10. How much have the lawsuits against file sharers caused you to change your behavior with respect to file sharing?
    (Not at all) 1 2 3 4 5 (Very much)

11. Making a copy of a CD/DVD and giving it to a friend is: (circle all that apply)
    Ethical Legal Common I'm not sure It depends
    Unethical Illegal Uncommon

12. Making a copy of a CD/DVD and selling it to a friend is: (circle all that apply)
    Ethical Legal Common I'm not sure It depends
    Unethical Illegal Uncommon

13. For your current collection of digital media, how much would you say is pirated?
    a) None b) Some c) About half d) Most e) I don't know

14. Are you aware of the possible penalties for unauthorized file sharing?
    Yes No I'm not sure

15. How appropriate do you feel the current penalties for unauthorized file sharing are?
    (Not very) 1 2 3 4 5 (Very) I'm not sure

16. What kinds of penalties do you think are appropriate for unauthorized file sharing?

17. How knowledgeable would you say you are about current copyright law?
    (Not very) 1 2 3 4 5 (Very)

18. How much do the possible legal penalties for file sharing concern you?
    (Not concerned) 1 2 3 4 5 (Very concerned)

19. Do you know what "Fair Use" is in the context of copyright law?
    Yes No Sounds familiar

20. Are the following practices considered Fair Use?

Taping a television program to watch later	❒Yes	❒ No	❒ Maybe
Showing a taped program to your friends in a private home	❒Yes	❒ No	❒ Maybe
Taping a television show to be shown in a classroom for educational purposes	❒Yes	❒ No	❒ Maybe
Allowing your friends to copy one of your CDs onto their computer/MP3 player	❒Yes	❒ No	❒ Maybe