INNOVATION PHILADELPHIA
FOR PROFIT CREATIVE ECONOMY ECONOMIC IMPACT STUDY 2007
PHASE I: QUANTITATIVE FINDINGS

Background Research and Findings for *Creative Footprint: The Economic Impact of the Philadelphia Region's For-Profit Creative Economy*

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1.1 Innovation Philadelphia and the For-Profit Creative Economy

In recent years, the creative economy has emerged as the key focal point in discussions surrounding the future of the U.S. economy. As noted in August of 2005 by Business Week magazine, "The Knowledge Economy as we know it is being eclipsed by something new – call it the Creativity Economy."[2]

As knowledge based service industries are increasingly being outsourced to Asia and other foreign markets, American cities have been forced to explore new arenas of economic activity in order to survive in what *New York Times* columnist Thomas Friedman has called the "flat" world. It is no longer enough to simply be the "smartest." Rather, as Harold G. McGraw III, Chairman, President, and CEO of The McGraw Hill Companies has noted, "Creativity is essential because it is at the heart of innovation, and innovation is the growth driver and, therefore, a business imperative."[3] Thus, Americans are discovering that future economic success will require a new set of skills – creativity, imagination, and innovation.

In 2002, Innovation Philadelphia began studying Philadelphia's creative economy as part of its effort to find innovative pathways to economic growth. A preliminary estimate revealed that the combined activities of the non-profit and for-profit creative economy sectors generated approximately $44 billion in the region. Then, in October 2006, Innovation Philadelphia's Board of Directors approved a new strategic plan, *Innovation Matters*, which further refined Innovation Philadelphia's priorities and goals. This plan harnesses the spirit of innovation that has been fundamental to Innovation Philadelphia since its inception and develops a dynamic and forward-thinking economic development strategy that includes at its core "the mission of establishing the Philadelphia creative economy as a global hub for creative services and talent."[4]

Recognizing that the ability to innovate is a critical component for building the private sector and regional competitive advantage, Innovation Philadelphia's new strategy builds off of Philadelphia's long history of leading innovation, generating new and progressive ideas, and turning these ideas into reality. It includes the following three integrated initiatives, all part of a comprehensive approach to driving economic growth in the Region:[5]

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[1] For the purposes of this analysis, the term "Philadelphia Region" shall refer to the 11-county region consisting of Bucks, Chester, Delaware, Montgomery, and Philadelphia counties in Pennsylvania; Burlington, Camden, Gloucester, Mercer, and Salem counties in New Jersey; and New Castle County in Delaware

[2] "Get Creative! How to Build Innovative Companies." *Business Week,* (August 2005).

[3] www.innovationphiladelphia.com

[4] "Innovation Matters – Innovation Philadelphia Strategic Plan" Innovation Philadelphia (2006) www.innovationphiladelphia.com.

[5] www.innovationphiladelphia.com

- Cultivating the for-profit creative economy - develop business resources, entrepreneurial assistance, and marketing, networking, and educational initiatives to make Philadelphia's for-profit creative economy a leading source of jobs and wealth in the Philadelphia Region.

- Attracting and retaining young professionals - create initiatives to facilitate career and network development; link young professionals to employment opportunities; and showcase Philadelphia to young professionals as a place to live, work and play. Young professionals are critical to fuel economic growth and fill the pipeline with innovative thinkers who will become future entrepreneurs and business and civic leaders in Philadelphia.

- Fostering entrepreneurism and new ideas - provide entrepreneurs with resources to collaborate with other creative minds to generate, foster, and develop creative new ideas. Through programs and funding opportunities such as the Greater Philadelphia Entrepreneurs' Resource Guide, networking and business events, and interactive discussions such as Innovation Forum focus groups, new ideas can be generated and entrepreneurs can collaborate to impact the economic growth of Philadelphia.

While divergent definitions of the creative economy abound in the economic development sphere, Innovation Philadelphia has chosen to focus solely on the for-profit and technology driven side of this diverse sector of the economy. In making this distinction, Innovation Philadelphia has adopted a definition of the for-profit creative economy that includes "wealth and job creation arising from those occupations and industries that produce goods and provide business-to-business creative services that generate technical innovation, drive design, and cultivate change."[6] Innovation Philadelphia has identified the following key industry sectors that it considers the cornerstone of this for-profit, technology-driven creative economy:[7,8]

- Architecture
- Communications
- Design and Merchandising
- Digital Media
- Engineering
- Fashion Design
- Graphic Arts
- Information Technology
- Interior and Industrial Design
- Marketing
- Music, Film, and Video Production
- Multimedia Design
- Photography
- Planning
- Product Design
- Software Development

[6] Source: Kelly Lee, *Executive Vice President*, Innovation Philadelphia

[7] Ongoing use of the term "for-profit creative economy" shall refer to the 16 for-profit creative sectors identified here.

[8] www.innovationphiladelphia.com

In addition to their technology-driven nature, many of the industries selected above share another common feature. Namely, in addition to being considered industry sectors, they represent occupational fields which produce professionals employed by businesses across all sectors of the regional economy.[9] For example, just as information technology industries make up a key component of the overall for-profit creative economy, information technology professionals are employed throughout the entire economy within industries ranging from the life-sciences, to energy production, to financial and business services.

With proactive investments, Innovation Philadelphia envisions the for-profit creative economy becoming a key anchor of Philadelphia's economic landscape, thrusting Philadelphia to the forefront of the creative economy movement. One such investment identified in the *Innovation Matters* strategic plan involved conducting a comprehensive economic impact analysis of the for-profit technology-driven creative economy for the purpose of projecting growth potential and its importance in the Philadelphia Region. As such, Econsult Corporation was retained by Innovation Philadelphia to produce this analysis with the following outcomes in mind:

- An accurate measurement of the size, scope, and economic impact of the Philadelphia Region's for-profit creative economy.
- Exploration of specific contributions made by minority populations, entrepreneurs and self-employed professionals, and Philadelphia Region colleges and universities to the for-profit creative economy.
- Confirmation that the for-profit creative economy is an important and significant economic generator in Philadelphia that is primed for further growth and a smart priority for the investment of the Philadelphia Region and Innovation Philadelphia's resources.
- Public and government acknowledgement of the value of Philadelphia's for-profit creative economy and the need for commitment of additional public resources to support for-profit creative industries in the region.
- Development and distribution of a research document that assesses the strengths, weaknesses, and opportunities for growth within Philadelphia's for-profit creative economy.

In carrying out this charge, Econsult has employed Innovation Philadelphia's refined definition of the for-profit creative economy and a range of economic models and analytic techniques to reach a new estimated total annual economic impact of $60 billion dollars. This activity supports 766,000 jobs and generates $1.22 billion in annual state and local taxes. These figures demonstrate the significant role of the for-profit creative economy in the Philadelphia Region, a cluster of industries that in one-to-one comparisons prove

[9] Throughout this report, ongoing use of the term "for-profit creative economy industries" shall refer to *industries* falling within the 16 for-profit creative sectors identified on the previous page, while ongoing use of the term "creative occupation employment" shall refer to specific *occupations* also falling within the realm of the 16 for-profit creative economy sectors found on the previous page. See Appendix A for all industry and occupation classification codes employed in the analysis of for-profit creative economy industries and occupations.

to be as important as both the life sciences industries,[10] which generate a total annual economic impact of $15.5 billion,[11] as well as the financial industries, which generate over $50 billion annually.[12,13] Additional analysis reported throughout this study will further illustrate this impact, as well as offer a more comprehensive and multi-faceted view of the regional for-profit creative economy.

This report serves as a foundation and guide to the development of a comprehensive economic development strategy that will both attract more creative entrepreneurs and businesses to the Philadelphia Region as well as grow the existing for-profit creative businesses and enterprises already within the region. These findings will ultimately be communicated to a wide range of important stakeholders, including local, regional, and statewide economic development institutions and organizations. Furthermore, they will be incorporated in promotions, collateral materials, and media outreach as a means of conveying the importance, magnitude, and potential of the creative industries in the Philadelphia Region's for-profit creative economy.

[10] "Life Sciences" includes core life sciences industries of Pharmaceuticals, Medical Devices, Biotechnology, and R& D in the Life Sciences, according to the Milken Institute's 2005 study entitled, "The Greater Philadelphia Life Sciences Cluster."

[11] "The Greater Philadelphia Life Sciences Cluster" Milken Institute (2005). Online at www.selectgreaterphiladelphia.com.

[12] Select Greater Philadelphia (2007).

[13] Note that specific research techniques used to derive these figures may vary from source to source.

1.2 Creative Economy Initiatives Currently Pursued by Innovation Philadelphia[14]

Overview

When considering the state of the for-profit creative economy in the Philadelphia Region, it is important to note that Innovation Philadelphia currently supports a wide range of initiatives and programs aimed at cultivating the for-profit creative economy in the Philadelphia Region. These activities range from developing resources for for-profit creative economy businesses, to offering entrepreneurial assistance to creative economy startups and self-employed professionals, to engaging in marketing, networking, and educational initiatives to make Philadelphia's for-profit creative economy a leading source of jobs and wealth in the Philadelphia Region.

Common among all of these activities and initiatives are their roles as pieces of a much broader for-profit creative economy economic development agenda. This agenda, and the activities carried out in its pursuit, are in turn guided by sound principles and approaches to economic development. Included below, we have cataloged and described specific examples of the programming currently carried out by Innovation Philadelphia in its efforts to grow and strengthen the regional for-profit creative economy.

Innovation Philadelphia Programming and Initiatives

Creative Economy Investment Fund

- A strong for-profit creative economy is vital to the economic growth of the Greater Philadelphia Region. Innovation Philadelphia has created the Creative Economy Investment Fund (CEIF) to support the growth of the Region's for-profit creative economy businesses by providing pre-seed and early-stage investments that range from $25,000 to $150,000. Innovation Philadelphia also works with applicants to identify other investment funds for those creative economy businesses that qualify for the CEIF and are seeking larger investments.

Business Resources

- The Greater Philadelphia Entrepreneurs' Resource Guide is a comprehensive listing of organizations and associations dedicated to helping small business owners and entrepreneurs grow their businesses. The guide provides many of the necessary contacts and information to help entrepreneurs identify resources, secure funding, and promote their products and services to regional businesses. Given the entrepreneurial nature of many for-profit creative economy industries, the Guide serves as a valuable resource in expanding the regional for-profit creative economy.

[14] All information on Innovation Philadelphia programming and initiatives cited in this section was provided by Innovation Philadelphia staff or was taken from the Innovation Philadelphia website at www.innovationphiladelphia.com.

- In an effort to assist for-profit creative economy companies across the region in identifying new business opportunities, Innovation Philadelphia also provides a comprehensive list of Requests for Proposals (RFPs) that businesses may access free of charge. This online RFP Directory can serve as an important instrument in connecting for-profit creative economy businesses and the clients they serve throughout the Philadelphia Region.

- Innovation Philadelphia links members of the for-profit creative economy to regional resources such as the Philly Creative Guide, the region's most complete directory of creative professionals, firms and resources. The Philly Creative Guide is a valuable resource for all professionals whose livelihood is centered in the creative sectors—including individuals, firms and organizations. It is highly regarded as the place to turn for fostering relationships within one of the most vibrant creative communities in the U.S.

Creative Economy Leadership Council

- The Creative Economy Leadership Council is comprised of leaders from the Philadelphia Region's diverse range of non-profit and for-profit creative industries, who are focused on developing a strategy to increase collaboration, share best practices, exchange ideas and explore ways to grow the region's creative economy. The Philadelphia Region's creative economy generates billions of dollars in annual revenue, with the potential for considerable economic growth. With proactive, organized support, the for-profit creative economy could position the Philadelphia Region at the forefront of an economic development movement receiving worldwide attention.

Events and Programming

- Innovation Philadelphia is committed to providing the most comprehensive calendar of creative, young professional and entrepreneurial programs, events and forums throughout the Philadelphia Region. In particular, Innovation Philadelphia hosts and co-sponsors networking engagements, educational workshops and seminars, boot-camps, and career fairs. Furthermore, by organizing, hosting, and/or participating in regional, national, and international conferences, Innovation Philadelphia is able to showcase the Philadelphia Region’s for-profit creative economy and the wide range of activities they are engaged in to promote and grow this important economic sector.

Marketing and Promotion

- Innovation Philadelphia, through its website, e-newsletter, and public relations activities, highlights and showcases for-profit creative businesses and entrepreneurs.

1. 3 Report Outline

Econsult's economic analysis of the for-profit creative economy will address the research outcomes identified by Innovation Philadelphia in their *Innovation Matters* strategic plan and discussed previously in Section 1.1. More specifically, the report will include the following components:

- Section 2 provides an overview of the methodology and research techniques employed in this study, along with more detailed explanations of the research parameters that have been used to guide Econsult's research.

- Section 3 presents a quantitative analysis of the Philadelphia Region's for-profit creative economy industries, including (1) economic and tax impacts on the region, (2) overall employment and wage contributions of for-profit creative economy industry sectors and total number of establishments, (3) the relative competitive advantage of the Philadelphia Region as compared to the nation as a whole, (4) the extent of the self-employed and entrepreneurial component of creative industries, and (5) the extent to which minority populations participate in creative economy industries.

- Section 4 provides an analysis of for-profit creative economy occupational employment within the Philadelphia Region. Here we examine the economic impact of employment within creative occupations, analyze the economic conditions that have contributed to the growth of these occupations, and look at the contributions made by regional colleges and universities to the creative occupation labor force.

- Section 5 continues the quantitative analysis conducted in Sections 3 and 4 by presenting comparative data on selected peer regions throughout the country. Included here are comparisons of for-profit creative economy industry employment, entrepreneurial activity and competitive advantage among for-profit creative economy industries, and the extent of occupational employment within creative occupations.

- Section 6 begins by summarizing and offering highlights of the current analysis. Then, based on findings presented in Sections 3, 4 and 5, we provide a series of recommendations that can be implemented by Innovation Philadelphia and other regional stakeholders as they move forward with efforts at promoting and growing the regional for-profit creative economy. Finally, we conclude Section 6 by offering an assessment of the status and prospects for future growth of the for-profit creative economy.

2.0 METHODOLOGY

2.1 Defining, measuring, and categorizing the For-Profit Creative Economy

In seeking to define and then quantify the economic impact of the for-profit creative economy in the Philadelphia Region, three key issues arise.

- First, we must establish what exactly is meant by the term creative economy. While this may seem to be a fairly straightforward task, in reality there are a wide range of interpretations of this sector that each carry with them different implications for measurement and analysis.

- Secondly, once a definition has been determined, it is then necessary to decide how and what to measure accurately to quantify its impact. Namely, since the for-profit creative economy is manifested both in specific industries throughout the economy as well as in individual occupations carried out across all industry sectors, we must examine each of these components as distinct and separate entities.

- Finally, having defined the for-profit creative economy and established the appropriate units of analysis, it is necessary to properly categorize the for-profit creative economy industry sectors, such that available economic data can be appropriately sorted and combined for analysis, as well as to sort individual industry and occupation codes into these industry sector categories. Note that as for-profit creative economy activities tend to be inter-disciplinary and innovative in nature, quantification via existing industry classifications is difficult and, at times, imprecise, to the extent that industries of interest are not easily sorted into long-standing categories.

In the following section, these issues will be explored in further detail to offer readers the appropriate context with which to understand the findings of this analysis.

Defining the For-Profit Creative Economy

We start by establishing a precise definition of the for-profit creative economy. Frequently, the term "creative economy" has been used to refer to industries relating primarily to the arts and culture and the non-profit organizations that tend to dominate these industry sectors. Consequently, past studies examining the impact of the Philadelphia Region's creative economy have tended to focus heavily on this non-profit component not accounting for for-profit contributors to the creative economy.[15]

[15] For example, in 2007, the Greater Philadelphia Cultural Alliance released "Arts, Culture & Economic Prosperity in Greater Philadelphia," a report that measured the economic impact of the non-profit arts and culture sectors.

There are also those technology driven industries which, despite being characterized by innovation and creativity, are more heavily steeped in the pure sciences, such as nanotechnology and biotechnology. As is the case with non-profit arts and culture industries, Innovation Philadelphia has deliberately chosen to exclude these industries from this analysis based on the fact that these sectors have previously received considerable individualized focus as economic drivers for the region.[16]

Innovation Philadelphia has chosen to focus on the "for-profit applied creative industries that are driven by technology." More specifically, this includes those technology-driven industries in which creativity, ingenuity, and innovation on the part of the individual worker are key factors to success. Creative sectors selected for this study by Innovation Philadelphia and identified as fulfilling these qualities include the following:

- Architecture
- Communications
- Design and Merchandising
- Digital Media
- Engineering
- Fashion Design
- Graphic Arts
- Information Technology
- Interior and Industrial Design
- Marketing
- Music, Film, and Video Production
- Multimedia Design
- Photography
- Planning
- Product Design
- Software Development

With a solid definition for the for-profit creative economy established, we now move to our second issue for consideration, determining how and what mechanisms to study in order to measure and quantify its impact. As noted above, the for-profit creative economy is simultaneously comprised of both specific industry sectors as well as individual occupations that extend across virtually all sectors of the regional economy.

Interestingly, these two factors allow us to measure very distinct aspects of the economy. By measuring creative economy industries, we are able to capture all employment that falls under the umbrella of the specific sectors outlined above, inclusive of any positions that may be unrelated to "creative" activity. Yet, because industries are the unit of analysis, this type of measurement ends up overlooking those individuals who work in "creative" professions, but outside of the "creative" industry sectors.

[16] For example, in 2005 the Milken Institute released a report entitled "The Greater Philadelphia Life Sciences Cluster" which examined the region's life sciences industries, including biotechnology, while the Commonwealth of Pennsylvania released a report in 2007 on nanoscale research.

Conversely, by measuring creative economy occupations, we benefit from capturing all employees who perform "creative" functions, regardless of the specific industry in which they are employed. However, in this case, since the units of analysis are individual occupations, we fail to capture the wide array of peripheral, "non-creative" jobs that ultimately contribute to the operation of any creative business.

A review of studies similar to the current analysis reveals no definitive answer to handling this dilemma. To illustrate, a recent study conducted by the State of Hawaii's Department of Business, Economic Development, and Tourism employed state-level data from the Hawaii Department of Labor and Industrial Relations (DLIR) along with Federal Bureau of Economic Analysis data to conduct a combined measurement of industry and occupational employment. In this case, the availability of an "Occupations-by-Industry Matrix" from DLIR enabled researchers to first measure employment by occupation, then measure employment by industry, and finally to eliminate any overlapping jobs by removing those creative occupations that fell within creative industries.[17]

However, another recent study that was conducted on behalf of the Iowa Department of Cultural Affairs opted for a different approach. In this case, the authors' adopted a "dual focus" that examined industry and occupational employment as two distinct factors. This study then employed the U.S. Bureau of Labor Statistics' Occupational Employment Matrix to examine the occupational makeup of identified "Creative" industries and determine the extent to which "creative" occupations occupy these industries. Here, necessary reliance on federal economic data limited researchers' ability to combine data components and present a single combined total for creative economy employment.[18]

After exploring multiple approaches for presenting employment figures within the Philadelphia Region's for-profit creative economy, Econsult has adopted a strategy similar to that employed in the Iowa study described above. Ultimately, because the present study has also had to rely primarily on Federal economic data in the absence of any state-level data similar to Hawaii's DLIR "Occupations by Industry Matrix," any attempts to combine industry and occupational employment data would have resulted in inaccuracies in measurement. Consequently, the employment data included herein is presented as two distinct measures:

1. For-Profit Creative Economy Industry Activity

2. For-Profit Creative Economy Occupational Employment

These measurements serve to provide a comprehensive view of the Philadelphia Region's for-profit creative economy in which each unit of analysis serves a unique and important function. Notably, industry data provides the means through which to gauge the total economic impact of the for-profit creative economy, including employment among both businesses and the self-employed. Alternately, analysis of occupations offers the opportunity to show the extent to which creative occupations cut across all sectors of

[17] "The Creative Economy in Hawaii." Hawaii Department of Business, Economic Development & Tourism (April 2007).

[18] Eathington, Liesi and Dave Swensen. "The Creative Economy in Iowa." Department of Economics, Iowa State University (February 2003).

the regional economy, as well as to highlight the fact that virtually all industries contain some creative component.

Categorization of For-Profit Creative Economy Industries / Occupations

Having established both the definition of the for-profit creative economy and the means through which this sector will be quantified and measured, an additional point of consideration relates to the categorization of Innovation Philadelphia's specified for-profit creative economy industry sectors. Because the occupations and industries that comprise Innovation Philadelphia's creative sectors are frequently ahead of older government industry classifications and tend to cut across multiple industries, Econsult ultimately combined and/or slightly altered some of these original industry categories to accommodate the economic data used in this analysis. Consequently, analysis components included in the remainder of this report are based on the following adapted industry categories and definitions (see Figure 2.1.1).[19]

[19] See Appendix A for a complete list of for-profit creative economy industry and occupation codes included in this analysis.

Figure 2.1.1 – Adjusted Creative Economy Industry Categories and Descriptions

Adjusted Industry Category	Industry/Occupation Description
Architecture, Engineering, and Planning	All industries/occupations falling within the fields of architecture, engineering, and planning
Communications and Marketing	All industries/occupations relating to fields such journalism, advertising, public relations, broadcasting, publishing, promotion, marketing, and consulting
Digital Media and Programming	All industries/occupations involving the technical production and distribution/delivery of digital media products and services
Fashion Design	All industries/occupations directly related to the design, development, and production of clothing, as well as models and other professionals supporting and/or dependent upon the fashion industry
Graphic and Visual Arts and Multimedia Design	All industries/occupations relating to the creation, production, and distribution/sale of visual and graphic arts and multimedia products, including artists, printers, illustrators, and designers
Information Technology	All industries/occupations involving the servicing, producing, and distributing computer, network, and telecom equipment and services
Interior and Industrial Design	All industries/occupations related to commercial, industrial, and interior design services, as well as production of materials used in these industries/occupations
Music, Film, & Video Production	All industries/occupations surrounding the artistic creation, production, delivery, and distribution of music, film, and video products
Photography	All industries/occupations involving photographic services, production, and delivery/distribution
Product Design and Merchandising	All industries/occupations relating to the design, production, and display of products, packaging materials and exhibits
Software Development	All industries/occupations impacting computer system and software production and service

Source: Econsult Corporation (2007)

2.2 Defining Geographic Research Parameters

Immediate Research Area

Through this study, Innovation Philadelphia seeks to determine the economic impact of the for-profit creative economy on the 11-county Philadelphia Region. The 11-county, tri-state region includes the following 11 counties from within Pennsylvania, New Jersey, and Delaware (see Figure 2.2.1):

- PA: Bucks, Chester, Delaware, Montgomery, and Philadelphia
- NJ: Burlington, Camden, Gloucester, Mercer, and Salem
- DE: New Castle

Figure 2.2.1: 11-County Greater Philadelphia Region Map

Apart from this definition, Federal economic data aggregates the Philadelphia Region using several different parameters. One such example is the "Philadelphia PA NJ Primary Metropolitan Statistical Area (PMSA)," which includes the Pennsylvania counties listed above, but excludes Mercer County, NJ and New Castle County, DE. Another example is the "Philadelphia-Camden-Wilmington, PA-NJ-DE-MD Metropolitan Statistical Area (MSA)," which also includes all of the above Pennsylvania counties, but excludes Mercer County, NJ and includes Cecil County, MD.[20]

Recognizing this discrepancy, Econsult has collected data at the county level wherever possible and then manually re-aggregated it to find Philadelphia Regional totals. However, in certain instances where data was only available down to a PMSA or MSA level, Econsult has used these parameters in place of the 11-county region and noted accordingly as such.

Comparison Research Areas

As an additional means of gauging the extent to which the for-profit creative economy has impacted the Philadelphia Region, Innovation Philadelphia has selected a series of peer regions to serve as a basis of comparison. Included in this group are the following:

- Austin, Texas
- Boston, Massachusetts
- Denver, Colorado
- Phoenix, Arizona
- Seattle, Washington
- Tampa, Florida

These regions have all engaged in sustained efforts to expand their own creative economy sector, and in some cases have undertaken similar examinations of their own Creative Economies. Additionally, these regions have been selected based on their appearance in various reports and publications focusing on the role of the creative economy in the U.S. today.

For each of the regions mentioned above, Econsult has conducted quantitative data comparisons of industry activity, occupational employment and other factors studied in the Philadelphia Region. Going forward, Econsult will continue to examine these regions more closely through the context of a best practices analysis, the findings of which will be included in a "Phase II," qualitative analysis report. In particular, through this best practices analysis, Econsult will provide a more comprehensive understanding of programs and policies that have been successful or, in some cases, not successful, at growing regional creative economies.

[20] The MSA designation has largely replaced the PMSA since the late 1990's.

2.3 Quantitative Research Tools and Models

The varied nature of Innovation Philadelphia's research objectives concerning the role and impact of Philadelphia's for-profit creative economy ultimately necessitated an equally diverse selection of both data sources and research techniques and models. These tools and techniques are described in brief below, with extended explanations included in the Appendices.

Data Sources

Several data sources have served as the foundation for measuring the breadth, depth, and overall economic impact of the for-profit creative economy (see Figure 2.3.1). In particular, these sources have provided data inputs needed to quantify the total size of the for-profit creative economy in terms of number of firms, total revenue generated, purchasing impact, employment, and earnings in both the Philadelphia Region and in selected peer city regions.[21]

Figure 2.3.1 – Data Sources Used in This Report

Data Source	Description	Use in Analysis
U.S. Census County Business Patterns	Employment, Wage, and Establishment data for American Businesses by North American Industry Classification System (NAICS) industry categories	• Measurement of employment, wages, and establishments in creative economy industry sector businesses • Input for Economic and Tax Impact Analyses
U.S. Census Non-Employer Statistics	Employment and Wage data for Self-Employed individuals by NAICS industry categories	• Measurement of self-employed employment and wages in creative economy industry sectors • Input for Economic and Tax Impact Analyses
Bureau of Labor Statistics Occupation Employment Statistics	Employment and wage data for creative economy occupations classified by Standard Occupational Classification (SOC) codes	• Measurement of employees in creative economy occupations across all industries in economy. • Input for Economic and Tax Impact Analyses

[21] Complete descriptions of all data components included in Appendix B.

Data Source	Description	Use in Analysis
U.S. Census Survey of Business Owners	Data on number of minority and female owned firms classified by NAICS industry codes	• Measurement of extent of minority and female participation in creative economy industry sectors
National Center for Education Statistics Integrated Postsecondary Education Data System	Data from all primary postsecondary education providers in the country, including enrollment, program completions, graduation rates, faculty, staff, finances, institutional prices, and student financial aid	• Used to measure number of degrees conferred in creative economy-related programs at postsecondary institutions throughout the Greater Philadelphia Region

Source: Econsult Corporation (2007)

Industry Activity Analysis

Using the U.S. Census Bureau's County Business Pattern and Non-employer Statistics data, Econsult was able to measure industry establishments, employment and wages within the Philadelphia Region and employment and wages within the identified comparison cities. In turn, by applying wage to output ratios established by the U.S. Census Bureau to each of the creative industries, we were also able to estimate total industry expenditures.[22]

Economic Impact Model

As noted above, data collected from the U.S. Census Bureau have served as the building blocks for establishing the direct expenditures, employment, and earnings of the Philadelphia Region's for-profit creative economy industries. Econsult then estimated the total economic impact of activities within the for-profit creative economy industries by using the U.S. Department of Commerce's Regional Input-Output Modeling System (RIMS II).[23]

Tax Impact Model

Along with the economic impact of the for-profit creative economy, this study has also estimated the tax impact to the region based on this scale of economic activity. More specifically, Econsult has constructed a

[22] See Appendix A.1 for complete list of NAICS for-profit creative economy industry codes used.

[23] See Appendix C.1 for detailed explanation of economic impact model.

model that takes the output from the RIMS II model and generates detailed estimates of the increases in state and local tax collections that have arisen from regional activity. The Econsult tax model combines the RIMS II output with U.S. Census Bureau County Business Patterns data to produce estimates of the distribution of additional employment and earnings by county.[24]

Location Quotient Competitive Analysis

In addition to the economic and tax impact analyses described above, Econsult has employed an analytical tool known as a location quotient in order to establish the Philadelphia Region's competitive advantage in a given industry as compared to nationwide averages. Using the total industry employment described above, the location quotient is constructed to reveal if a region has a share of an industry that is "above average," guided by the assumption that a higher than average presence in a region of a particular type of industry indicates that the region exhibits a competitive advantage in that activity.[25]

Minority Participation Analysis

Minority participation in the for-profit creative economy was evaluated using data from the U.S. Census Bureau's Survey of Business Owners (SBO). This data was also used to measure female firm ownership, given that while women may not represent a numeric minority in the region, they, like other racial and ethnic minority groups, remain underrepresented in owner and executive positions throughout the economy. Note that SBO data provides minority and female *firm ownership* and not total employment, and that because of sampling inaccuracies, this data was used to determine *proportions* of ownership only.[26]

Occupational Employment Analysis

Occupational Employment and Wage data was gathered using Bureau of Labor Statistics Occupation Employment Statistics. With this data, Econsult has measured the direct economic impact of all creative occupations within the for-profit creative economy sectors identified by Innovation Philadelphia.[27]

[24] See Appendix C.2 for detailed explanation of tax impact model.

[25] See Appendix D.1 for detailed explanation of location quotient analysis.

[26] See Appendix B for detailed explanation of Survey of Business Owners data analysis.

[27] See Appendix A.2 for a complete list of for-profit creative economy occupation codes used.

Shift-Share Analysis

The shift-share analysis allows us to attribute the change in employment in Philadelphia's creative occupations that is due to changing competitiveness. Briefly, shift-share "decomposes" changes in employment into three different causes: (1) national economic growth, (2) changes in the mix of industries in a region, and (3) changes in competitiveness of a specific region. It is this third component that we examine closely for evidence of local advantages or disadvantages in competitiveness. For the present analysis, changes in employment in the identified creative occupations have been analyzed, and using shift-share techniques the components of employment change due to changing competitiveness are identified.[28]

University Contribution

Contributions of regional colleges and universities to the for-profit creative economy were established using the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS). Through this database, Econsult was able to identify all degrees conferred within majors and programs aligned with the for-profit creative economy occupation sectors identified by Innovation Philadelphia.[29]

[28] See Appendix D.2 for detailed explanation of Shift-Share Analysis.

[29] See Appendix B for detailed explanation of National Center for Education Statistics IPEDS data analysis.

2.4 Ongoing Research: Qualitative Analysis

Overview

The current "Phase I" report has placed a particular focus on developing a quantitative view of the Philadelphia Region's for-profit creative economy. As previously noted, this has entailed the use of a variety of analytic tools and economic models, all of which have helped to provide an understanding of the overall size, extent, and defining characteristics of the region's for-profit creative economy. Furthermore, the quantitative approach used herein has enabled a comparative analysis between the Philadelphia Region and a number of peer regions also engaged in activities to grow and promote their creative economy sectors.

However, in order to augment these results and provide a more comprehensive view of the regional for-profit creative economy, Econsult has already begun and will continue to engage in additional, ongoing qualitative research activities. These activities, which include interviews, surveys, literature reviews and a best practices analysis, will ultimately serve as the basis for a "Phase II" follow up report to the current analysis. Note however, that findings from the initial stages of our qualitative research, particularly literature reviews and interviews, have helped to inform the introductory and conclusion components of the present study.

Interviews and Surveys

Going forward, interviews with economic development agencies, industry associations, universities, and others will prove integral in providing a more comprehensive picture of the for-profit creative economy in the Philadelphia Region. In particular, they will help to explain what economic data alone cannot. Namely, while data produced through economic and tax models may provide answers to the more straightforward questions of "what" is happening in the region, "where" it is taking place, and "when" those changes occurred, the anecdotal evidence gained through the interview process will be critical in explaining the more open-ended and complex questions of "why" we are seeing what we are, "how" we can make additional gains going forward, and "who" are the key players and institutions that must be involved in that process. Furthermore, interviews will provide a broader understanding of key strengths, weaknesses, and opportunities for growth in the region.

As a supplement to these interviews, Econsult will also work with Innovation Philadelphia to construct and distribute a survey instrument that will be delivered to creative economy industry organizations and other key stakeholder groups throughout the Philadelphia Region. Survey questions will focus on topics such as the size and character of organization membership, as well as the extent to which creative economy businesses are satisfied with the business environment of the Philadelphia Region.

Literature Review and Best Practices Analysis

The ultimate objectives of these stages of future analysis will be to identify those for-profit creative economy industry sectors with the greatest growth potential for future investment, as well as to uncover successful initiatives and policies currently being implemented in the Philadelphia Region and in other peer cities. Already, Econsult has collected substantial background material on both the Philadelphia Region's for-profit creative economy, as well the creative economy efforts of the identified peer regions.

Going forward, Econsult will expand upon our literature review and best practices research, and we will ultimately use our findings to hone and sharpen the set of recommendations included in this quantitative analysis. More specifically, in order to facilitate Innovation Philadelphia's objective of deciding how to allocate its resources and invest its assets in industries with the greatest growth potential, each peer city will be analyzed in terms of institutional drivers, initiatives, and targeted industry sectors.

3.0 PHILADELPHIA REGION CREATIVE INDUSTRY ANALYSIS

3.1 Economic and Tax Impacts of For-Profit Creative Economy Industries

Economic Impact of Creative Economy Industries

Using the Regional Input-Output Modeling System (RIMS II) economic impact model maintained by the U.S. Department of Commerce's Bureau of Economic Analysis, Econsult has determined the economic impact of for-profit creative economy industry employment within the Philadelphia Region. To recall, the analysis of the industry dimension of the for-profit creative economy has enabled us to capture the impact of all employment within the various creative industry sectors identified by Innovation Philadelphia, regardless of specific occupation. Note that economic impact figures are based on industry employment both within businesses and among the self-employed.

We find that in 2005, creative industry employment within the Philadelphia Region generated a **total economic impact of almost $59 billion** in total output (spending). This output includes **$32.5 billion in total earnings** and supports a total of **766,000 jobs** (see Figure 3.1.1).[30]

Figure 3.1.1 – Economic Impact of the For-Profit Creative Economy Industries in the Philadelphia Region

Economic Impact 11 County Greater Philadelphia Region (2005)	Direct Expenditures	Indirect and Induced Impact	Total Impact
Total Output ($Billions)	$25.1	$33.8	$58.9
Total Earnings ($Billions)	$17.0	$15.5	$32.5
Total Employment (000's)	306	460	766

Source: Econsult Corporation (2007)
Note: Total Output includes Total Earnings; Total Employment includes full and part time jobs.

[30] Note that direct output, or spending, was derived from direct earnings based on Bureau of Economic Analysis industry averages for proportions of wages to output across the different industry sectors.

In order to derive these total economic impacts, Econsult first established the direct impacts associated with the for-profit creative economy industries in the Philadelphia Region. In this case, direct output (spending) by creative industries, including both businesses and the self-employed, amounted to $25.1 billion, supporting 306,000 direct jobs and $17.0 billion in direct earnings.

Having estimated the direct expenditures of creative industries, Econsult then employed the RIMS II economic impact model to derive estimated indirect and induced impacts of industry spending. To explain further, direct spending by creative industries results in purchasing of goods and services by other firms in the region, causing these firms to increase production and in turn increase spending among their own suppliers. The sum of this inter-industry activity is known as the "indirect" expenditures. Furthermore, wages of industry employees are invariably spent on various products and services within the region, creating an additional round of "induced" expenditures. By applying regional multipliers to direct spending figures through the RIMS II model, Econsult estimated the indirect and induced impacts generated through direct creative industry spending to be $33.8 billion in indirect and induced output, $15.5 billion in indirect and induced earnings, and 460,000 indirect and induced jobs.

Tax Impact of Creative Economy Industries

While the RIMS II model provides estimates of the economic impact of the for-profit creative economy on the regional economy, it does not estimate the tax impact of the resultant economic activity on state and local governments. Econsult has constructed a model that takes the output from the RIMS II model and generates detailed estimates of the state and local tax collections that are generated as a result of for-profit creative economy activity. These revenues are in fact a part of the total economic impact of the creative economy that is often ignored in conventional economic impact analyses.

Based on Econsult's tax impact model, in 2005 the for-profit creative economy industries in the Philadelphia Region generated approximately $370 million in local tax revenue for the City of Philadelphia and other municipalities in Pennsylvania, with a majority ultimately going towards wage tax revenue for the City of Philadelphia, to the tune of $320 million (see Figure 3.1.2).[31]

Yet, apart from the local tax generation described above, the for-profit creative industry activity also generated considerable state level tax revenue, amounting to $850 million in combined state tax revenue for Pennsylvania, New Jersey and Delaware. Broken down on a state by state basis, for-profit creative economy industry activity produced the greatest statewide revenue in Pennsylvania, where $630 million in tax revenue from personal income, corporate net income, and sales and use taxes accounted for

[31] Note that personal income tax and sales tax are levied at the state level only in New Jersey and Delaware – consequently, totals for local tax revenue include data for Pennsylvania only. Furthermore, due to the inherently regional nature of the Econsult tax impact model, data is generated as aggregated impact revenue estimates for the 11-county Philadelphia region as a whole and not by individual counties.

75 percent of the $850 million total for all states with counties in the Philadelphia Region (see Figure 3.1.3).[32]

Taking these figures together, we see that the **total annual combined local and state tax impact of for-profit creative industry activity amounted to $1.22 billion in 2005** (see Figure 3.1.2). Going forward, given the considerable growth and high average annual wages that characterize this portion of the economy, it is reasonable to expect annual tax generation from for-profit creative economy industry sectors to outpace revenues generated by the overall regional economy.

Figure 3.1.2 - Annual Tax Impacts of Creative Industries in the Philadelphia Region (2005)

Local Taxes ($ Billions)	Total
Wage Tax - Philadelphia	$ 0.32
Earned Income Tax -All Other Counties	$ 0.04
Sales and Use Tax	$ 0.01
Subtotal – Local Taxes	$ 0.37

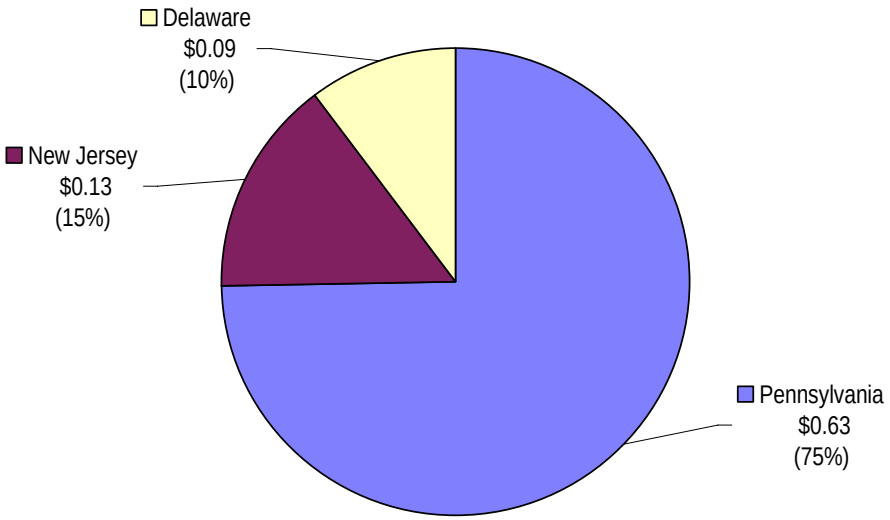
State Taxes ($ Billions)	Total
Pennsylvania	$ 0.63
New Jersey	$ 0.13
Delaware	$ 0.09
Subtotal – State Taxes	$ 0.85

TOTAL LOCAL & STATE TAXES	$ 1.22

Source: Econsult Corporation (2007)

[32] Individual state impacts for Pennsylvania, New Jersey, and Delaware were estimated based on proportions of workers from each county in the 11-county Philadelphia region, with 75 percent coming from Pennsylvania, 15 percent coming from New Jersey, and 10 percent coming from Delaware. See Appendix E for state by state breakdown of specific tax categories and rates factored into this analysis.

Figure 3.1.3 – State by State Breakdown of State-Level Tax Impacts ($ Billions)



Source: Econsult Corporation (2007)

3.2 For-Profit Creative Economy Industry Characteristics

Overview

The economic and tax impacts described above in Section 3.1 were generated using employment and wage statistics collected from Federal economic data sources. First, the U.S. Census Bureau's County Business Pattern data was used to determine employment and establishment numbers from within the for-profit creative economy industry sectors identified previously within this report.[33] Additionally, self-employment data from the U.S. Census Bureau's Non-Employer Statistics was used to measure the entrepreneurial and self-employed components of the for-profit creative economy. These data sets were then combined to find totals for industry establishments, employment and wages.

For-Profit Creative Economy Industries: Direct Employment, Earnings, and Output

Recall from Figure 3.1.1 in Section 3.1 that total employment for 2005 within the for-profit creative economy industries in the Philadelphia Region amounted to 306,000 and generated $17 billion in total earnings. These earnings comprised roughly two-thirds of total direct industry spending of more than $25 billion, a figure that ultimately represents the direct output of these industries into the regional economy.

By comparing these for-profit creative economy industries with other industry sectors, we see the significant contribution of the for-profit creative economy to the regional economy. For example, for-profit creative economy industries accounted for 10 percent of all regional employment and 12 percent of all regional earnings. These industries also paid over 25 percent more in average annual salaries than non-creative industries, at $55,000 versus $43,300 (see Figure 3.2.1).

Figure 3.2.1 – Creative vs. Non-Creative Industry Employment in the Philadelphia Region (2005)

Creative Economy-Philadelphia Region (2005)	Employment (000's)	Earnings ($Billions)	Average Wage ($000's)	Percent of Total Employment	Percent of Total Earnings
Creative Economy	306	$17.0	$55.6	10.0%	12.2%
Non-Creative Economy	2,747	$121.8	$44.3	90.0%	87.8%
Total Economy	3,053	$138.8	$45.4	100%	100%

Source: U.S. Census Bureau's County Business Patterns and Non-Employer Statistics (2005)

[33] Establishment data from the U.S. Census County Business Patterns is for firms with more than one employee only.

For-Profit Creative Economy Establishments

In order to gain additional perspective on for-profit creative industry presence within the Philadelphia Regional economy, it is also helpful to look at the number of for-profit creative economy establishments, both in terms of firms with employees, as well as sole proprietorships, represented by the number of self-employed in each sector. From Figure 3.2.2, we can see that the Philadelphia Region is home to over 19,000 for-profit creative industry firms *with employees*, as well as roughly 36,500 self-employed individuals within the for-profit creative economy industries. Based on these figures and the employment data presented above, we find that the 19,000-plus for-profit creative economy firms *with employees* in the Philadelphia region employ almost 270,000 individual workers.

Figure 3.2.2. - For-Profit Creative Economy Industry Establishments in Philadelphia Region (2005)

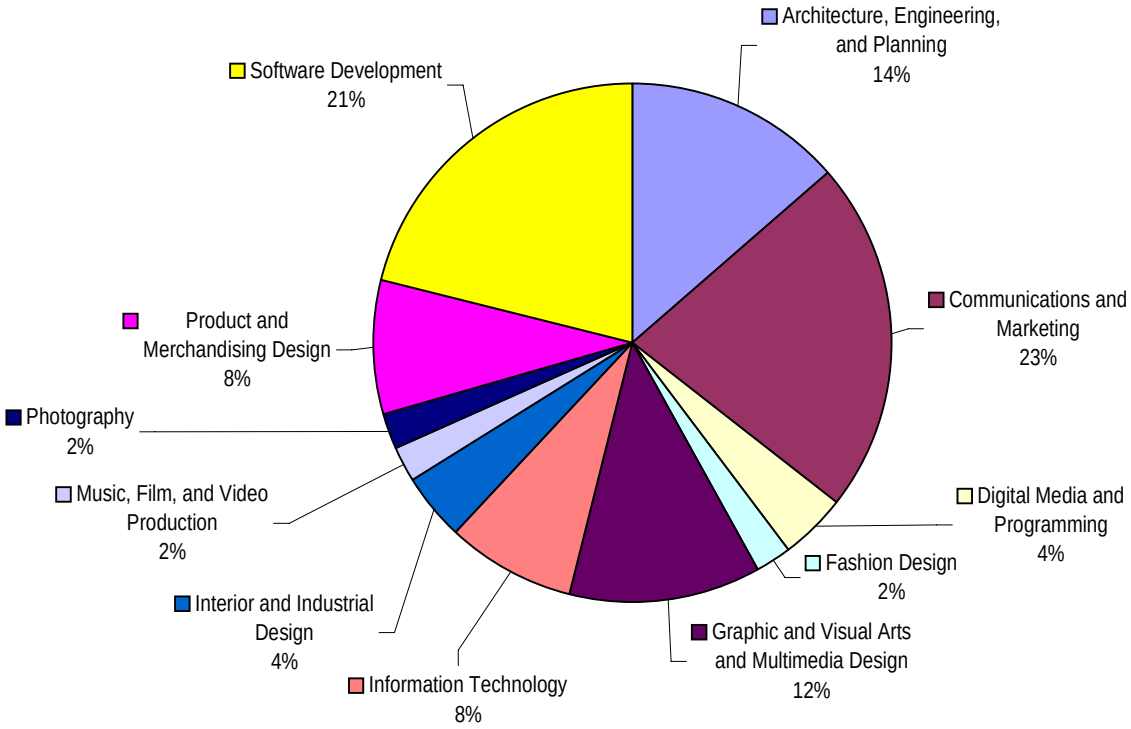
Creative Economy Firms with Employees	Total Self-Employed Firms	Total Creative Economy Firms
19,240	36,478	55,718

Source: U.S. Census Bureau's County Business Patterns and Non-Employer Statistics (2005)

Industry by Industry Analysis

Additional insights into the for-profit creative economy are provided through an industry-by-industry breakdown for the Philadelphia Region. As seen in Figure 3.2.3, Communications and Marketing comprised almost one-quarter of all creative industry employment, with Software Development following closely behind at 21 percent. Other key industry sectors included Architecture, Engineering, and Planning at 14 percent and Graphic and Visual Arts and Multimedia Design at 12 percent.

Figure 3.2.3 – Creative Economy by Creative Industry Sector – Philadelphia Region (2005)



Source: U.S. Census Bureau's County Business Patterns and Non-Employer Statistics (2005)

As previously noted, jobs within for-profit creative industry sectors tend to pay quite well as a bloc. We find particularly high average annual wages within industries such as Software Development ($77,500), Architecture, Engineering, and Planning ($59,300), and Information Technology ($58,200) (see Figure 3.2.4). That these three industries are also well-represented in the Philadelphia Region in terms of total employment bodes well for the region, as it means that it *has been successful in generating and sustaining high-margin, high-value-added work that capitalizes on the innovative and technology-driven nature of the creative economy.*

Figure 3.2.4 – Industry by Industry Breakdown of for-Profit Creative Economy Industry Sectors Philadelphia Region (2005)

2005 Creative Economy- Philadelphia Region	Employment (000's)	Earnings ($Billions)	Average Wage (000's)	Direct Output ($Billions)
Architecture, Engineering, and Planning	41.4	$2.5	$59.3	$3.5
Communications and Marketing	67.3	$3.8	$55.8	$5.4
Digital Media and Programming	12.8	$0.7	$54.6	$1.0
Fashion Design	6.9	$0.2	$32.6	$0.3
Graphic and Visual Arts and Multimedia Design	36.7	$1.2	$33.4	$1.8
Information Technology	24.7	$1.4	$58.2	$2.1
Interior and Industrial Design	12.3	$0.4	$36.4	$0.6
Music, Film, and Video Production	7.0	$0.3	$41.1	$0.4
Photography	6.6	$0.2	$23.4	$0.2
Product and Merchandising Design	25.9	$1.3	$51.6	$2.7
Software Development	64.6	$5.0	$77.5	$7.1
Total Creative Economy	306.2	$17.0	$55.6	$25.1

Source: U.S. Census Bureau's County Business Patterns and Non-Employer Statistics (2005)

Given the knowledge that economic growth strategies should focus on industries, occupations, and businesses that provide high-quality, good paying jobs, we can conclude from this analysis that encouraging the growth of the for-profit creative economy industries are a sound and justified economic development objective for the Philadelphia Region. These industries offer definite economic and tax benefits to the region in the form of increased spending and tax revenue.

When we examine these industries further and ask ourselves why, as a whole, they generate higher than average wages, we find an even more compelling argument for their promotion within the regional economy. As discussed previously in this report, recent advances in many technology and knowledge-based industries have accelerated the commoditization of many heretofore high-end functions, such as

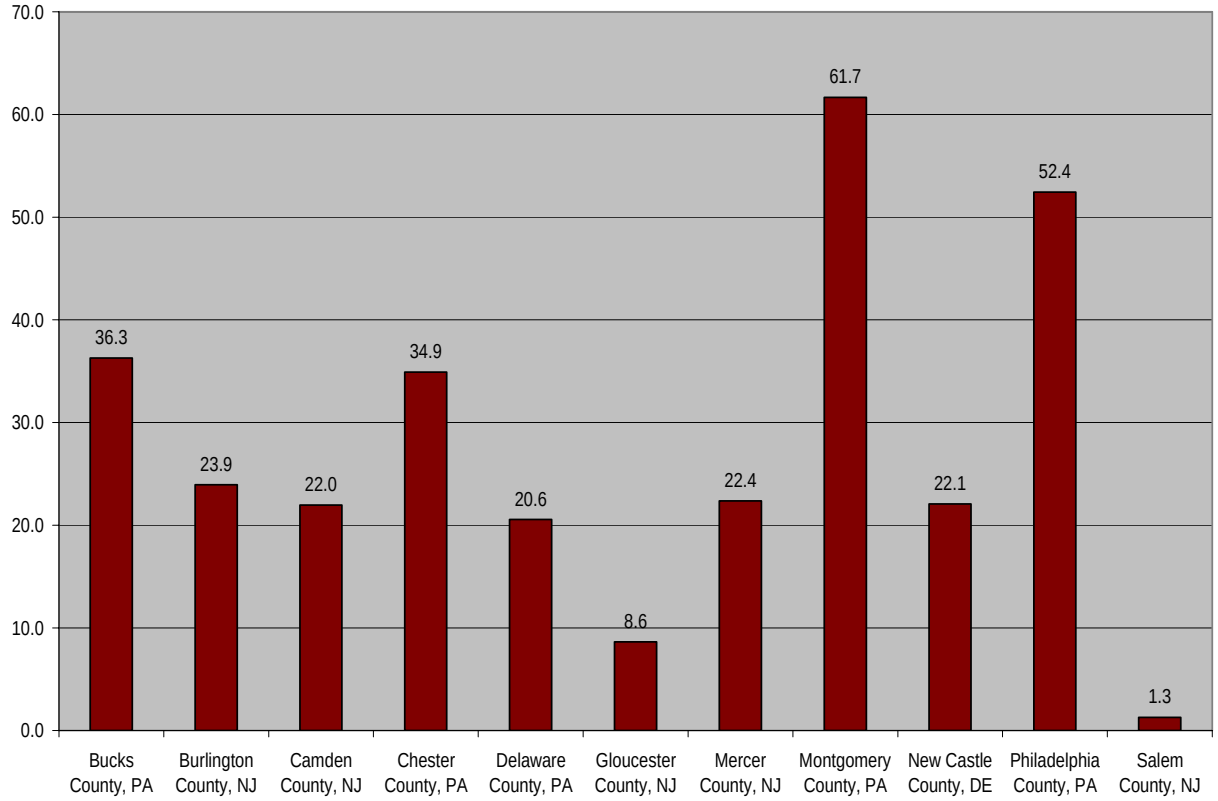
data processing and software coding. The more commoditized a function, the more likely it will pay less and be more easily relocated. On the other hand, by generating and sustaining functions that produce high-margin, high-value-added work, we are able to create higher-paying jobs that are at the same time more difficult to be relocated to another, competing region. *For-profit creative economy industries are inherently high-value-added in nature, to the extent that they are driven by innovation. Thus, generating and sustaining for-profit creative economy industries becomes an important component to a successful regional economic development strategy.*

County by County Analysis

County by County Breakdown of Creative Industry Employment

Examining creative industry employment on a county by county basis, we see additional trends in the levels of for-profit creative economy industry activity. Montgomery County, PA leads the Philadelphia Region with 62,000 employees in for-profit creative economy industries, followed closely by Philadelphia County, which features 52,000 for-profit creative economy industry employees. After Philadelphia, the next highest county in terms of industry employment, Bucks County, comes in at 36,000, trailing Philadelphia by 14,000 employees (Figure 3.2.5). Notable about the significant for-profit creative economy industry employment in Montgomery County is the presence of many large office campuses with major regional employers, as well as the overall size and population density of this county. Furthermore, Montgomery County's close proximity and ease of access to Philadelphia make it an attractive alternative location for large companies seeking office facilities close to the heart of Philadelphia but with conveniences such as free parking and lower office rents.

Figure 3.2.5 - County Comparison of Creative Industry Employment - Philadelphia Region 2005
(Employment in 000's)



Source: U.S. Census Bureau County Business Patterns and Non-Employer Statistics (2005)

In addition to looking at raw industry employment, it is also helpful to study the concentration of creative industry employment, measured by the percent of countywide industry employment falling within for-profit creative economy industry sectors. Notably, while Montgomery and Philadelphia counties ranked 1st and 2nd in terms of total creative industry employment, Montgomery County ranked 4th for creative industry concentration and Philadelphia ranked 8th on this measure (see Figure 3.2.6). In analyzing these figures, it is important to take into consideration the overall size of each county's economy. For example, despite Philadelphia County's eighth place ranking for creative industry concentration, it boasts the largest total employment (including creative industries) of all counties in the region, at 633,400. Montgomery County has the second highest overall industry employment, at approximately 545,000. The fact that creative industry employment only accounts for 8.3 percent and 11.3 percent, respectively, of total industry employment can likely be attributed to the broad economic diversity within both of these counties.

Figure 3.2.6 - County Breakdown of Creative Industry Employment – Philadelphia Region (2005)

County	Creative Industry Employment (000's)	Total Industry Employment (000's)	Percent of Total Employment	Creative Industry Earnings ($Billions)
Bucks County, PA	36.3	302.2	12.0%	$1.7
Burlington County, NJ	23.9	208.3	11.5%	$1.3
Camden County, NJ	22.0	211.0	10.4%	$0.9
Chester County, PA	34.9	259.9	13.4%	$2.2
Delaware County, PA	20.6	251.7	8.2%	$1.6
Gloucester County, NJ	8.6	100.2	8.6%	$0.4
Mercer County, NJ	22.4	207.8	10.8%	$1.3
Montgomery County, PA	61.7	544.7	11.3%	$3.7
New Castle County, DE	22.1	311.9	7.1%	$1.1
Philadelphia County, PA	52.4	633.4	8.3%	$2.8
Salem County, NJ	1.3	22.2	5.8%	$0.03
Total – All Counties	306.2	3,053	10.0%	$17.0

Source: U.S. Census Bureau County Business Patterns and Non-Employer Statistics (2005)

County by County Breakdown of Creative Industry Establishments

Revisiting for-profit creative industry establishment data discussed earlier in section 3.2, we now offer a county by county breakdown of this measure in order to gain an additional view of the regional distribution of for-profit creative economy activity. Here, we again see Montgomery County leading the Philadelphia Region for both the number of firms with employees, at 3,665, as well as the number of self-employed individuals, at 6,326. Falling close behind with number of firms with employees are Philadelphia and Bucks Counties, at roughly 2,700 and 2,600 firms, respectively. In terms of self-employed individuals, however,

Bucks falls roughly 1,500 below Philadelphia's figure of approximately 6,100 (see Figures 3.2.7 and 3.2.8).[34]

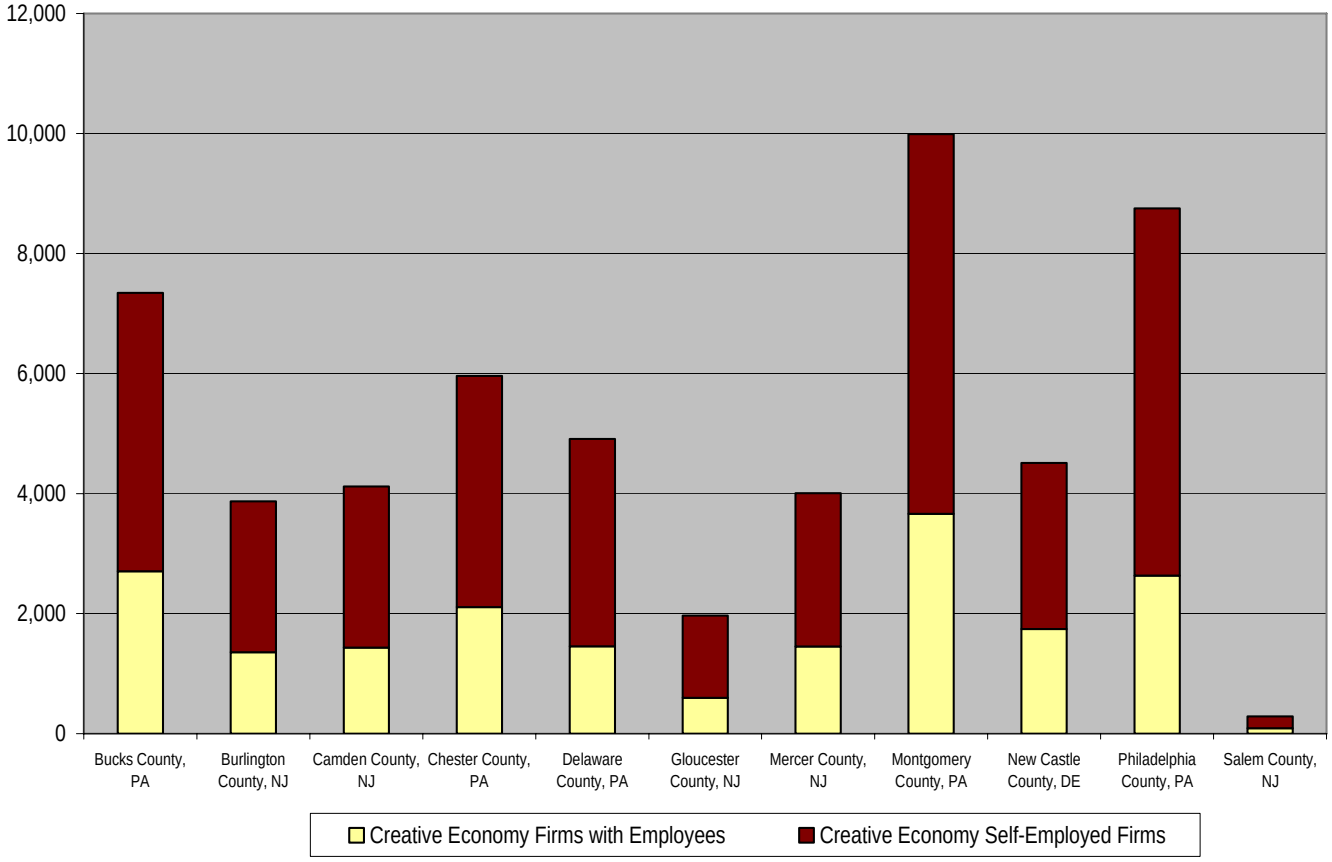
Figure 3.2.7 - For-Profit Creative Economy Firms in the Philadelphia Region by County (2005)

County	Creative Economy Firms with Employees	Total Self-Employed Firms	Total Creative Economy Firms
Bucks County, PA	2,706	4,638	7,344
Burlington County, NJ	1,357	2,512	3,869
Camden County, NJ	1,436	2,682	4,118
Chester County, PA	2,108	3,854	5,962
Delaware County, PA	1,458	3,453	4,911
Gloucester County, NJ	598	1,368	1,966
Mercer County, NJ	1,450	2,557	4,007
Montgomery County, PA	3,665	6,326	9,991
New Castle County, DE	1,742	2,766	4,508
Philadelphia County, PA	2,631	6,123	8,754
Salem County, NJ	89	199	288
TOTAL	19,240	36,478	55,718

Source: Econsult Corporation (2007)

[34] See Appendix F for industry by industry breakdown of establishments within each county in the Philadelphia Region.

Figure 3.2.8 - Total Number of For-Profit Creative Economy Firms in Philadelphia Region by County (2005)



Source: Econsult Corporation (2007)

3.3 Self-Employed / Entrepreneurial Component of Creative Economy Industries

Given the creative and entrepreneurial nature of many for-profit creative industry sectors, a critical factor considered in our analysis of for-profit creative industry employment is the significant number of self-employed, entrepreneurial professionals in these sectors. As was demonstrated in Section 3.2, sole-proprietorships, as represented by the self-employed, represent well over half of all for-profit creative economy establishments in the region. Yet, by isolating this segment of the for-profit creative economy and analyzing it further on an individual basis, we are able to gain even greater insight into this critical, entrepreneurial aspect of the for-profit creative economy.

Namely, self-employed individuals as a whole represent approximately 12 percent of all direct for-profit creative industry employment within the Philadelphia Region, at 36,500. Notable among the various for-profit creative industry sectors are Graphic and Visual Arts and Multimedia Design, where 13,800 self-employed professionals represent almost 40 percent of all sector employment, and Photography, where 6,600 self-employed professionals represent almost 30 percent of all sector employment. Conversely, Interior and Industrial Design, Information Technology, Product and Merchandising Design, and Digital Media and Programming all featured extremely small contingencies of self-employed individuals, with 3 percent or less (see Figure 3.3.1).

These findings provide an understanding of the industries that lend themselves to more self-employment and entrepreneurial activity versus employment via larger corporations. For example, sectors such as Communications and Marketing and Digital Media and Programming include sub-industries of telecommunications, cable production and distribution, publishing, and broadcasting, to name a few, which are generally dominated by large corporations such as Comcast, Verizon, and others. Couple this factor with the significant capital and operating costs of these industries and it is not surprising to see relatively weak representation among the self-employed and entrepreneurial set in these industries.

Conversely, industries such as Graphic and Visual Arts and Multimedia Design or Photography, which both feature high contingencies of self-employed individuals, better lend themselves to working independently. In these cases, the monetary costs of entry into the industry are relatively low, as are the capital and infrastructure needs for running a business. Rather, the greatest barriers to entry (*and* indicators of potential success) in these fields are often the extents of one's own talent and creativity. Thus, it is reasonable and fitting that we find relatively high percentages of self-employment and entrepreneurialism within these industry sectors.

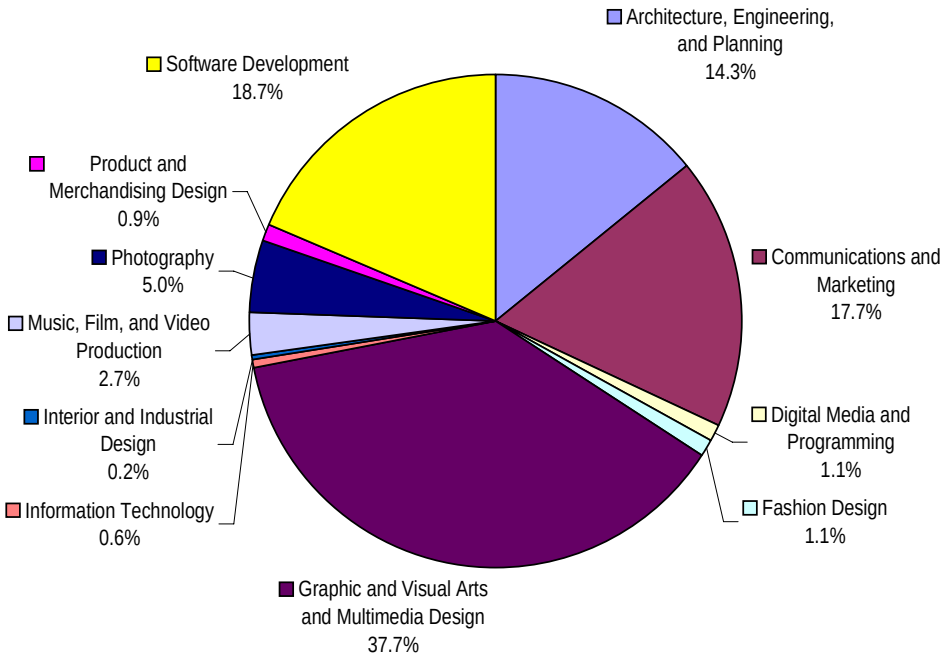
Figure 3.3.1 – Self-Employment within Creative Economy Industry Sectors – Philadelphia Region (2005)

Industry Sector	Creative Industry Self-Employed	Creative Industry Business Employment	Total Creative Industry Employment	Self-Employed Percent of Creative Industry Employment
Architecture, Engineering, and Planning	5,200	36,200	41,400	12.6%
Communications and Marketing	6,500	60,800	67,300	9.6%
Digital Media and Programming	420	12,400	12,820	3.3%
Fashion Design	410	6,500	6,910	6.0%
Graphic and Visual Arts and Multimedia Design	13,800	22,900	36,700	37.6%
Information Technology	210	24,500	24,710	0.9%
Interior and Industrial Design	60	12,200	12,260	0.5%
Music, Film, and Video Production	1,000	6,000	7,000	14.2%
Photography	1,800	4,800	6,600	27.3%
Product and Merchandising Design	320	25,600	25,920	1.2%
Software Development	6,800	57,800	64,600	10.6%
Total – All Industries	36,500	270,000	306,220	11.9%

Source: U.S. Census County Business Patterns and Non-Employer Statistics (2005)

When looking at the self-employed, entrepreneurial component of the creative economy industries as a distinct subset (see Figure 3.3.2), we see that by far, Graphic and Visual Arts and Multimedia Design professionals make up the greatest percentage of self-employed professionals, at 37.7 percent. Following this are Software Development and Communications and Marketing industry professionals, representing close to 18 percent each of all self-employed professionals within the creative industry sectors, as well as Architecture, Engineering, and Planning professionals, at 14.3 percent of all self-employed in the creative industries.

Figure 3.3.2 – Total Self-Employed Creative Industry Employment by Industry Sector – Philadelphia Region (2005)



Source: U.S. Census County Business Patterns and Non-Employer Statistics (2005)

Going forward, this self-employment data can play an important role in shaping policy and programming decisions for Innovation Philadelphia. In particular, Innovation Philadelphia can begin to target those sectors with high concentrations of self-employment when developing and marketing workshops and other events focused on entrepreneurial assistance. Furthermore, high concentrations of self-employment may also serve as a predictor of future sector growth, as it is likely that some portion of these entrepreneurial start-ups may eventually expand into full-fledged businesses.

3.4 Location Quotient Analysis: Competitive Advantage of Philadelphia Region Creative Industries

Analysis of industry employment has been further supplemented through the use of location quotients, which measure the relative competitive advantage of a particular industry within a region's economy. Location quotients help to identify the unusually large regional presence of a particular industry, which may ultimately lead to a competitive advantage in that industry for the local economy. Location quotients of greater than "1" indicate that a region holds a degree of industry specialization and has proportionately more workers than the nation-wide average.

Based on the location quotient analysis presented below (Figure 3.4.1), the Philadelphia Region exhibits a competitive advantage over the nation as a whole when accounting for combined activity across all for-profit creative industry sectors. This is evidenced by a location quotient of 1.04, which signifies that the region's proportion of for-profit creative industry employment is 4 percent higher than the nation's.

When examined on an industry by industry basis, certain industry sectors displayed rather strong competitive advantages, while other sectors revealed a disadvantage for the Philadelphia Region. For example, as compared to the rest of the nation, Philadelphia's Digital Media and Programming industry displays a particularly strong presence, with a location quotient of 1.68 indicating 68 percent higher employment in this sector than the national average. Other areas of considerable strength include Photography (1.50) and Software Development (1.40).

In total, we see that *more than half of all industry clusters studied displayed a regional competitive advantage over the nation as a whole.* Thus, we can conclude that the f*or-profit creative economy industries are a strong sector within the region and therefore warrant ongoing investment and attention* from the public sector.

Figure 3.4.1 – Location Quotient Analysis of Creative Industry Employment
Competitive Advantage of Philadelphia over U.S. (2005)

Industry Sector	Location Quotient 2005
Architecture, Engineering, and Planning	1.09
Communications and Marketing	1.18
Digital Media and Programming	1.68
Fashion Design	0.58
Graphic and Visual Arts and Multimedia Design	1.17
Information Technology	0.93
Interior and Industrial Design	0.56
Music, Film, and Video Production	0.66
Photography	1.50
Product and Merchandising Design	0.66
Software Development	1.40
Total – All Industries	1.04

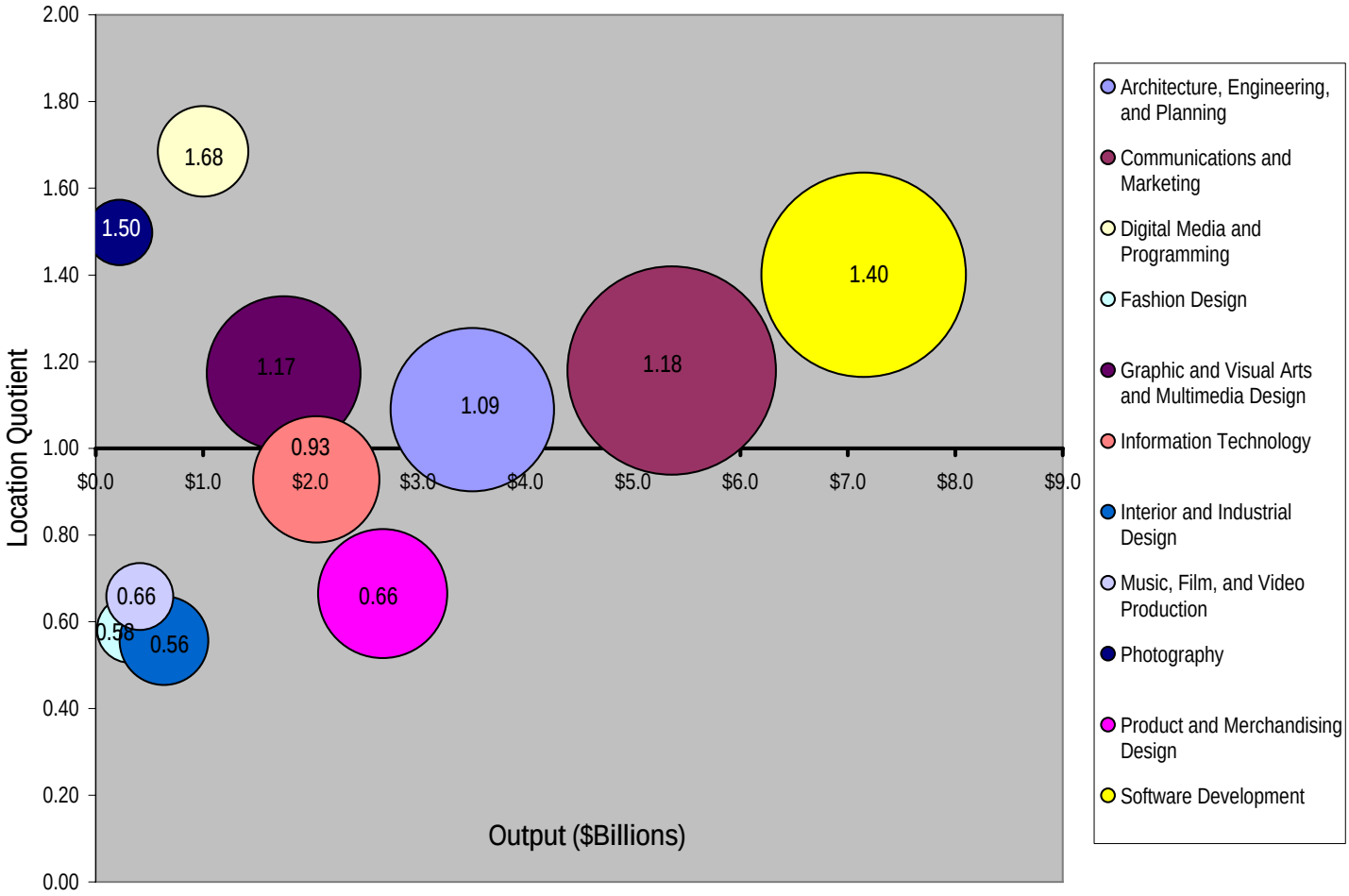
Source: U.S. Census County Business Patterns and Non-Employer Statistics (2005)

Another way to understand location quotients is through the use of a bubble chart (see Figure 3.4.2). This chart enables us to examine the various for-profit creative economy industry sectors in a multidimensional view that includes variables such as direct industry employment, output, and competitive advantage. First, we can gain a sense of the relative employment levels in each industry, as demonstrated through the size of each bubble. Thus, we see that an industry such as Software Development has far higher levels of employment than one such as Photography. Next, we can see the output level of each industry based on its corresponding bubble's placement along the horizontal, x-axis. As would make sense, we find that those industries with higher employment levels and therefore, larger bubbles, tend also to display higher levels of output. Finally, and perhaps most importantly, we can gauge the relative comparative advantage of each industry sector, determined through its location quotient, based on its position along the vertical y-axis. Here, a location quotient value of "1.0" is used as the "0" point on the y-axis (and the point of

intersection with the x-axis), since a location quotient of 1.0 represents the national average for industry employment and is our basis for comparison. Those bubbles falling above the x-axis have location quotients *greater than* 1.0 and demonstrate a competitive advantage for the region as compared to the nation as a whole. On the other hand, those falling below the x-axis have a location quotient of *less than* 1.0 and show a competitive *disadvantage*, with employment levels below the national average.

Examining the results in the bubble chart in Figure 3.4.2, we see that the majority of for-profit creative economy industry sectors fall above the x-axis, and therefore demonstrate a competitive advantage as compared to nationwide employment levels. Furthermore, those sectors with highest employment and output levels – Communications and Marketing and Software Development - *are among those sectors demonstrating a significant competitive advantage.* Conversely, we see that the majority of industry sectors demonstrating a competitive *disadvantage* are also those sectors which fall on the lower spectrum of employment and output for the region.

Figure 3.4.2 – Location Quotient Analysis
Competitive Advantage of Philadelphia Region Creative Industries Over U.S. (2005)



Source: U.S. Census County Business Patterns and Non-Employer Statistics (2005)

3.5 Minority Participation in the Creative Economy

Overview

Given Innovation Philadelphia's commitment to "diversity and profitable inclusion of minority and women in the regional Philadelphia economy,"[35] an important aspect of this analysis has involved deconstructing the overall picture to determine which groups are most represented and in particular, the extent to which minorities and women are represented within creative economy industries. Moreover, to the extent that *for-profit creative economy success requires openness, collaboration, and innovation, it is important to monitor the degree to which such activity has been inclusive of all groups in the region.*

In the current analysis, we have examined creative industry firm ownership among minority and female populations[36] through the U.S. Census's Survey of Business Owners (SBO). This ownership data is ultimately helpful in gauging the *proportion* of minority involvement within the regional for-profit creative economy.

Given the strong minority presence in the region and the extent to which the for-profit creative economy produces high-quality, high-paying jobs that are inherently resistant to the forces of commoditization and outsourcing, it is critical to support the increased participation of minorities throughout this sector. Notably, by offering entrepreneurial assistance programs and helping to promote minority firm ownership, the Philadelphia Region can help to ensure greater participation by minority employees as a whole. In turn, this increased participation serves to ensure financial stability among minority populations and is at the same time critical to the continued competitiveness of the Philadelphia Region's for-profit creative economy.

Minority Firm Participation in the Regional For-Profit Creative Economy

As noted above, the U.S. Census Bureau's Survey of Business Owners has been employed to determine the *proportion* of minority and female owned firms engaged in the regional for-profit creative economy. Noteworthy here is the fact that this data provides only firm ownership and not actual minority or female employment. However, because federal industry and occupational employment data do not measure participation broken down by minority, gender, or ethnic groups, this is the best available means through which to gauge this component of industry participation.

[35] Innovation Philadelphia Core Values – www.innovationphiladelphia.com

[36] For this report, "minorities" include both A) Racial and ethnic groups included in the U.S. Census Bureau's Survey of Business Owners - Blacks/African Americans, Hispanics/Latinos, Asians, Native Hawaiian and Pacific Islander, and American Indians and Alaska Natives, and B) Female business owners, also included in the SBO, who represent a social minority because of their disproportionate level of ownership as compared to their overall presence (ie, population size) in the region.

Among the creative industry firms[37] with more than one employee counted by the Survey of Business Owners, 6 percent are under minority ownership. In addition, we see that roughly 15.6 percent of these firms are under female ownership. Taken together, minority and female owned firms account for 21.5 percent of all creative industry firms in the Philadelphia Region (Figure 3.5.1).

Figure 3.5.1 – Minority and Female Ownership of Creative Industry Firms – Philadelphia MSA (2005)

Minority Ownership – For-Profit Creative Economy Industry Firms	Percent Minority Ownership (Not Including Female Ownership)	Percent Female Ownership	Percent Minority and Female Ownership
Architecture, Engineering, and Planning	7.5%	19.0%	26.5%
Communications and Marketing	6.1%	16.2%	22.3%
Digital Media and Programming	4.3%	10.1%	14.4%
Fashion Design	4.1%	11.5%	15.6%
Graphic and Visual Arts and Multimedia Design	5.1%	13.1%	18.2%
Information Technology	4.3%	10.0%	14.3%
Interior and Industrial Design	4.8%	13.3%	18.1%
Music, Film, and Video Production	4.2%	10.4%	14.6%
Photography	6.6%	17.6%	24.2%
Product and Merchandising Design	3.9%	11.0%	14.9%
Software Development	6.4%	16.8%	23.2%
TOTAL	6.0%	15.6%	21.6%

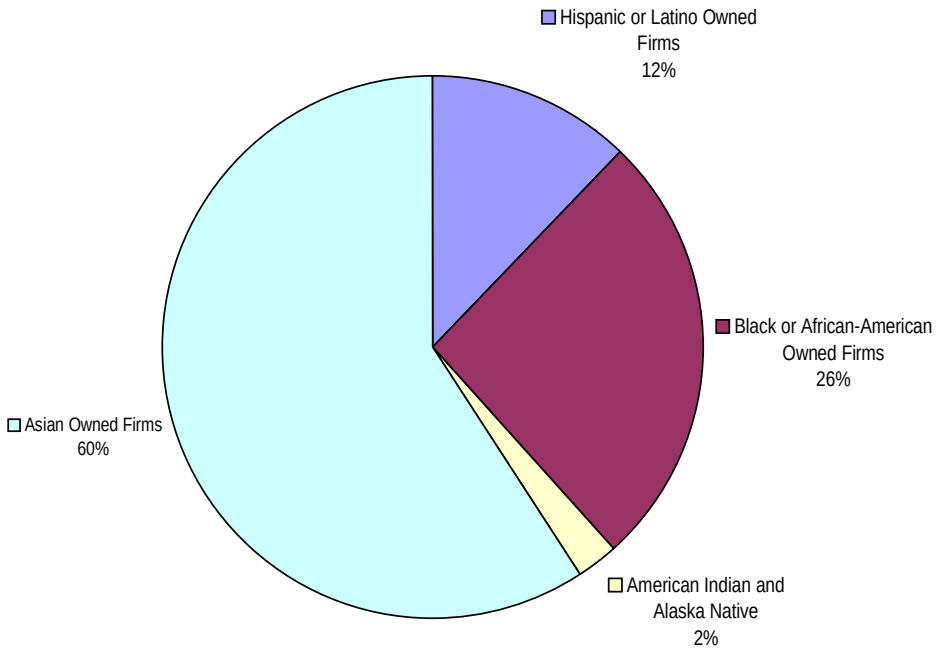
Source: U.S. Census Survey of Business Owners (2002)

[37] Note that SBO data on number of firms is a separate and distinct measure from the County Business Pattern data on number of establishments with employees cited previously in Section 3. We use SBO data here in order to determine the proportion of various minority groups participating in for-profit creative economy industries only.

On an industry by industry basis, minority ownership (not including female ownership) is strongest within the Architecture, Engineering, and Planning industry sector, at 7.5 percent, with the next highest concentrations of minority ownership found in Photography at 6.6 percent, Software Development at 6.4 percent, and Communications and Marketing at 6.1 percent. Interestingly, these same four industries are also strongest in female ownership, at 19 percent, 17.6 percent, 16.8 percent, and 16.2 percent, respectively (see Figure 3.5.1).

Focusing on minority ownership in particular, we see from Figure 3.5.2 that a full 60 percent of firms under minority ownership in the Philadelphia Region are owned by Asians, while Black/African American firm ownership represents 26 percent of all minority ownership, Hispanic or Latino ownership represents 12 percent of all firm ownership, and American Indian and Alaskan Native ownership is quite small, at just 2 percent.

Figure 3.5.2 - Minority Ownership Breakdown of Minority Owned Firms – Philadelphia MSA (2002)



Source: U.S. Census Survey of Business Owners (2002)

Finally, in order to better gauge the Philadelphia Region's performance in terms of minority and female firm ownership among for-profit creative economy industries, it is helpful to compare results for the Philadelphia MSA to those for the U.S. as a whole. As seen in Figure 3.5.3, the Philadelphia Region performs slightly

worse than the nation as a whole, where minority only firm ownership within the for-profit creative economy industry sectors is 9.1 percent, female only firm ownership is 16.9 percent, and combined minority and female firm ownership is 26 percent. Yet, it is important to note that at both the national and regional level, minority and female firm ownership are disproportionate to overall demographic proportions, with all minority populations underrepresented. Thus, while this data indicates a need for attention by regional stakeholders, this is hardly a phenomenon that is unique to the Philadelphia Region.

Figure 3.5.3 – Minority and Female Firm Ownership in U.S. vs. Philadelphia MSA

For-Profit Creative Economy Industry Firms	Percent Minority Ownership (Not Including Female Ownership)	Percent Female Ownership	Percent Minority and Female Ownership
Philadelphia MSA	6.0%	15.6%	21.6%
United States	9.1%	16.9%	26.0%

Source: U.S. Census Survey of Business Owners (2002)

4.0 CREATIVE ECONOMY OCCUPATIONAL EMPLOYMENT

4.1 Occupational Employment Characteristics

Overview

As noted previously in this report, there are ultimately two distinct dimensions through which to examine the for-profit creative economy in the Philadelphia Region. The first of these dimensions – industry employment – has been analyzed within various contexts in earlier sections. Here, we present a quantitative analysis of the second dimension of the for-profit creative economy – occupational employment. While our industry analysis enabled us to examine the economic impacts of all employment within creative industry sectors, regardless of specific occupation, this occupational analysis allows us to capture employment within creative occupations throughout the regional economy, regardless of specific industry sector. In doing so, the results included below serve to highlight the extent to which creative occupations cut across all sectors of the regional economy, as well as the fact that virtually all industries contain some creative component.

Economic Impact of Earnings From Creative Occupational Employment

While the County Business Patterns and Non-Employer Statistics NAICS industry data was used to capture all employment regardless of specific occupation within the creative economy industries, the Bureau of Labor Statistics' Occupational Employment and Wage Estimates data was employed to measure the second dimension of for-profit creative economy economic impacts – creative occupation. Note, however, that while industry employment was based on the 11-County Philadelphia Region, the unavailability of occupational data down to the county level resulted in the use of the Philadelphia MSA as the geographic unit of analysis for this part of the study.

As demonstrated in Figure 4.1.1, **total employment within all creative occupations in the Philadelphia MSA totaled 187,000 in 2005 and generated $11.5 billion in total direct earnings**. These direct earnings in turn produced indirect and induced spending within the regional economy, generating a **total economic impact of $23.6 billion**.

Also worth noting from this stage of analysis is the fact that average annual wages across all creative occupations were $61,600, which is approximately $6,000 higher than average wages across all creative industry employment ($55,600). The most likely explanation for this difference is the fact that industry employment included all occupations within the creative industry sectors, including typically lower-paying support positions. However, in this case, we have only collected data on those individuals employed specifically within creative occupations, which tend to be higher yielding positions.

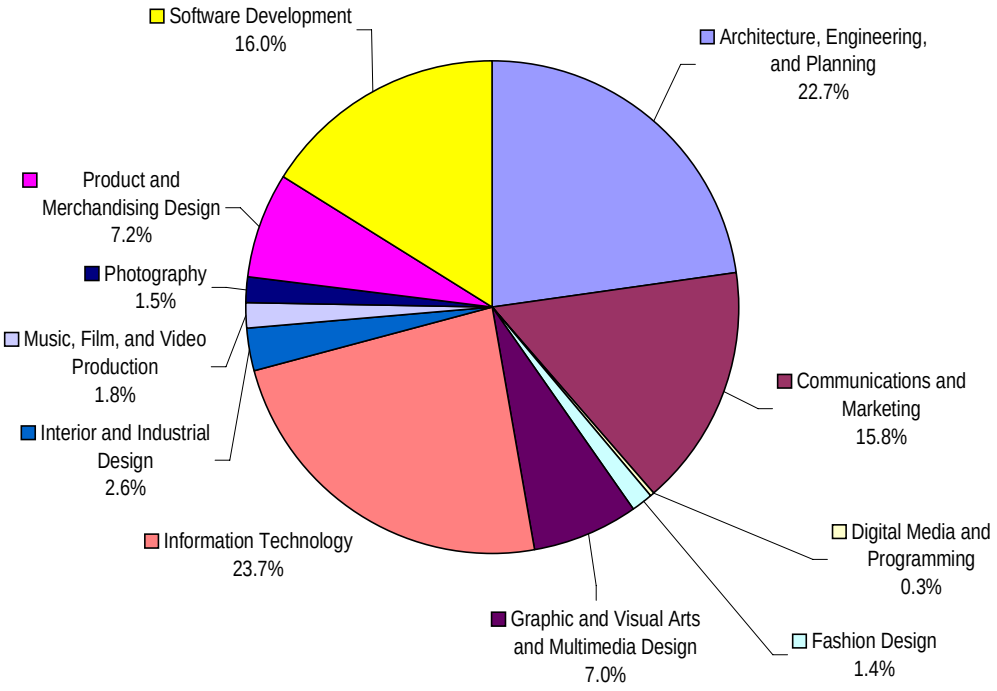
Figure 4.1.1 - Economic Impacts of Creative Occupation Employment – Philadelphia MSA (2005)

Occupation Sector 2005	Creative Occupation Employment (000's)	Creative Occupation Earnings ($Billions)	Creative Occupations Average Annual Wage ($000's)	Total Economic Impact of Earnings ($Billions)
Architecture, Engineering, and Planning	42	$2.8	$66.7	$5.2
Communications and Marketing	30	$1.7	$56.7	$3.3
Digital Media and Programming	0.5	$0.02	$38.9	$0.1
Fashion Design	3	$0.07	$23.9	$0.1
Graphic and Visual Arts and Multimedia Design	13	$0.5	$37.9	$0.9
Information Technology	44	$3.1	$70.6	$5.9
Interior and Industrial Design	5	$0.2	$37.0	$0.4
Music, Film, and Video Production	3	$0.14	$47.6	$0.3
Photography	3	$0.07	$23.3	$0.1
Product and Merchandising Design	13	$0.6	$49.9	$1.2
Software Development	30	$2.2	$74.6	$5.9
Total	187	$11.5	$61.6	$23.6

Source: Bureau of Labor Statistics Occupational Employment Statistics (2005)

In Figure 4.1.2, we see that the occupational sectors with the greatest proportions of total creative occupational employment in the Philadelphia MSA in 2005 were Information Technology at 23.7 percent, Architecture, Engineering, and Planning at 22.7 percent, and Software Development at 16 percent. These same occupational categories also generated the highest average annual wages: $70,600 for Information Technology, $66,700 for Architecture, Engineering, and Planning, and $74,600 for Software Development.

Figure 4.1.2 - Creative Occupation Sector Employment Among all Creative Occupation Employment Philadelphia MSA (2005)



Source: Bureau of Labor Statistics Occupational Employment Statistics (2005)

4.2 Shift Share Analysis of Creative Occupational Changes

The shift-share analysis presented here provides greater insight into the changing creative economy by quantifying the change in employment among the Philadelphia Region's creative economy occupations that is attributable to changing competitiveness on a variety of fronts. Using data showing the change in employment over a span of time, the shift-share analysis then deconstructs this employment shift based on the following three factors:

1. National Growth Share (NGS), or the number of jobs gained or lost as a result of national economic growth

2. Industry Mix Share (IMS), or the number of jobs gained or lost from changes in the region's industrial structure

3. Local Competitiveness Share (LCS), or the number of jobs gained or lost due to changes in the competitiveness of a specific region (in this case, the Philadelphia MSA region)

To illustrate, the employment figures for 2003 and 2005 reveal an increase of 12.4 percent, or 20,700, new employees during this time span. When broken down in the shift share analysis, we see that of this total change, approximately 3,600 new employees can be attributed to national growth within these sectors, while approximately 10,400 new employees resulted from changes in the regional industry mix. 6,700 new employees, or 32 percent, can be attributed to increased competitiveness of the Philadelphia Region (see Figure 4.2.1).

Examining total gains and losses on an industry by industry basis, we see that the largest total gains occurred in Architecture, Engineering, and Planning, and Product and Merchandising Design, which each experienced an increase of almost 26 percent between 2003 and 2005. Following closely behind these occupation sectors were Software Development with a 21 percent increase, Communications and Marketing with an almost 20 percent increase, and Music, Film, and Video Production, with an 18 percent increase. Across all industry sectors, only two experienced a loss during the designated timeframe, and in both of these cases the losses were less than 5 percent.

However, most revealing within the shift-share analysis is the local competitiveness share, which, as noted above shows the change in employment that can be attributed to changes in regional competitiveness. Noteworthy in this case were Software Development and Product and Merchandising Design, where LCS gains were not only the highest, but also made up the largest portion of total gains by a significant margin.

The LCS share is also important to examine when trying to understand why certain industries are experiencing overall losses over a given period of analysis. For example, in the case of the Fashion Design occupations, we saw a net loss of 70 employees in the region between 2003 and 2005 (Figure 4.2.1). However, when this total loss is broken down further through the shift share analysis, we see that in fact, there was a gain of almost 300 employees as a result of increased local competitiveness (LCS), with all losses in this sector ultimately attributable to changing regional industry structure.

Figure 4.2.1 - Shift-Share Analysis of Creative Occupational Employment
Philadelphia MSA, 2003 to 2005

Creative Occupation Sector	Philadelphia, PA MSA						
	Employment 2003	Employment 2005	Change in Employment (2003-2005)	Percent Change in Employment (2003-2005)	National Growth Share (NGS)	Industry Mix Share (IMS)	Local Competitive Share (LCS)
Total Employment	2,340,250	2,700,420	360,170	15.39%			
Architecture, Engineering, and Planning	33,760	42,470	8,710	25.80%	725	4,562	3,422
Communications and Marketing	24,740	29,630	4,890	19.77%	531	2,361	1,997
Digital Media and Programming	430	490	60	13.95%	9	3	48
Fashion Design	2,680	2,610	-70	-2.61%	58	-416	289
Graphic and Visual Arts and Multimedia Design	13,170	13,200	30	0.23%	283	-109	-143
Information Technology	46,640	44,400	-2,240	-4.80%	1,002	2,773	-6,015
Interior and Industrial Design	4,350	4,880	530	12.18%	93	163	273
Music, Film, and Video Production	2,820	3,330	510	18.09%	61	272	177
Photography	2,650	2,880	230	8.68%	57	-74	247
Product and Merchandising Design	10,670	13,420	2,750	25.77%	229	137	2,384
Software Development	24,710	30,010	5,300	21.45%	531	722	4,047
TOTAL	166,620	187,320	20,700	12.40%	3,579	10,395	6,727

Source: Bureau of Labor Statistics Occupation Employment Statistics(2005); Econsult Corporation (2007)

4.3 University Participation

Overview

A strong university presence is a critical component of a thriving for-profit creative economy. As noted by creative economy researcher Richard Florida and his co-authors in their 2006 study, "The University and the Creative Economy", universities play a key role in developing the regional creative economy for their contributions to his "3T's" of economic development – Technology, Talent, and Tolerance.[38]

Exploring these concepts further, we see that first, universities impact technology because of their ability to secure significant research and development funding and their position as "hotbeds of invention and spin-off companies."[39] In the Philadelphia Region, universities frequently serve as the institutional structure through which business incubators and entrepreneurial assistance in the form of U.S. Small Business Administration Small Business Development Centers are operated. These types of facilities are key assets for the region, as they facilitate technology transfer and help to ensure that entrepreneurs within technology-driven for-profit creative sectors have access to the resources and technical assistance that are often the keys to commercial success.

Moving on, universities also contribute to the creative economy with their ability to impart a sense of regional tolerance to new ideas and diversity. By encouraging the free flow of ideas, universities help to cultivate the innovation, creativity, and imagination that are the hallmark of for-profit creative economy industries and occupations.[40] Moreover, individuals coming out of programs and majors aligned with creative industries and occupations are generally more likely to take part in entrepreneurial activity, helping to establish the foundation for future creative enterprises in the region.

Finally, universities are critical to the creative economy because of their direct and indirect impacts on talent. From a direct standpoint, universities play an important role not only in attracting the academic professionals who often drive technology-related research, but also in turning out the graduates who will someday comprise the labor pool for creative economy industries. In this sense, a strong university system with high enrollment in programs oriented toward creative industry sectors is a key component to an equally strong creative labor force down the road. In turn, this direct talent attraction produces an indirect impact of drawing creative economy businesses into the region by providing the environment and labor force these companies generally seek. The result is a type of symbiosis between the academic and business communities where each helps to strengthen and support the other.[41]

Taking these benefits into account, the considerable presence of more than 80 colleges, universities, and other post-secondary institutions in the Philadelphia Region stands as a key strength for the regional for-

[38] Florida, Richard, et. al. "The University and the Creative Economy." www.creativeclasstypepad.com (December 2006)

[39] Ibid.

[40] Ibid.

[41] Ibid.

profit creative economy. In the following analysis, we will explore this university presence further, examining the extent of degrees conferred within creative industry sectors and occupations.

Degrees Conferred in For-Profit Creative Economy Occupation Sectors

First, based on an inventory previously compiled by the Philadelphia Commerce Department's offshoot organization, the Knowledge Industry Partnership, it was established that the Philadelphia Region is home to over 80 different colleges and universities.[42] Using this group of institutions as the research "universe," Econsult then determined through the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS) that there were 55,708 total degrees awarded during the 2005-06 academic year, of which 21 percent, or 11,674, fell within for-profit Creative-Economy occupation related majors and programs (see Figure 4.3.1 and Figure 4.3.2).

These findings reveal some interesting trends in the types of creative economy occupations that seem to be most popular among students. Namely, degrees relating to Communications and Marketing occupations were most prevalent at roughly 4,200 (36.1 percent of creative economy degrees), followed by Architecture, Engineering, and Planning at almost 2,300 (19.4 percent), Information Technology at roughly 1,900 (16.2 percent), and Graphic and Visual Arts and Multimedia Design at approximately 1,300 (11.4 percent).

In looking at these results, it is also important to note that only those degrees in majors and programs that directly match Innovation Philadelphia's creative occupation sectors have been counted within the individual sector categories. However, Econsult counted an additional 4,500 degrees in more generalized majors and programs that could easily lead into creative professions. In particular, majors such as liberal arts and English naturally lend themselves to communications professions, while math and statistics majors can be pathways into professions involving engineering, IT, and software development.

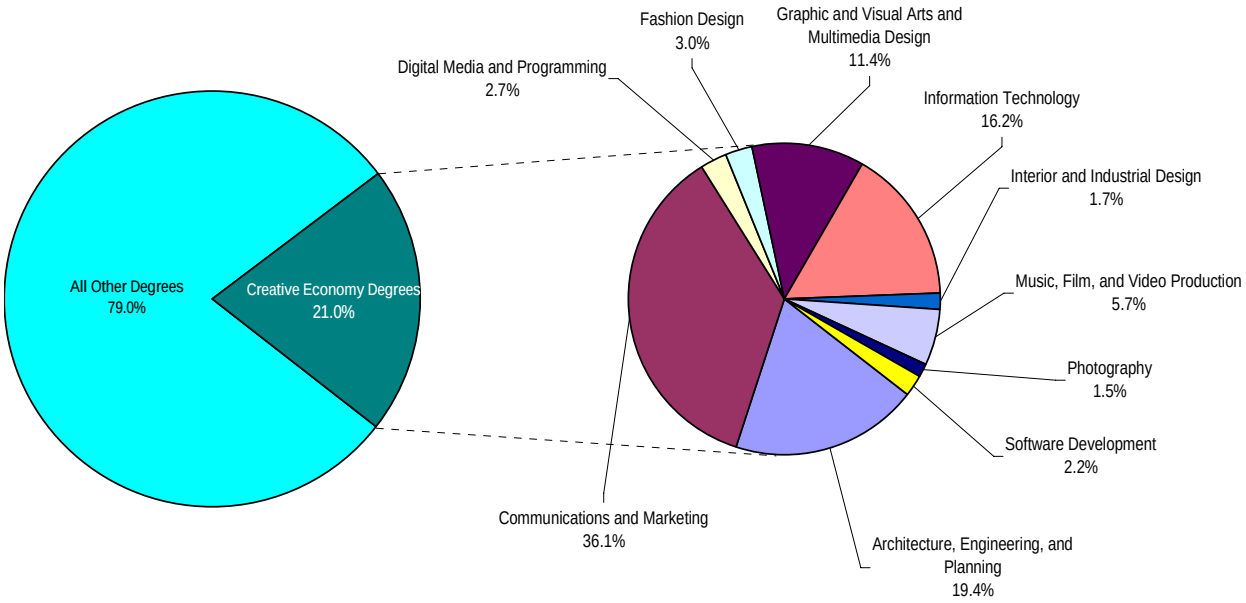
[42] See Appendix G for complete list of Greater Philadelphia colleges and universities.

Figure 4.3.1 - Creative Economy Oriented Degrees Conferred by Greater Philadelphia Region Colleges and Universities 2006

Degree Category	Number of Associates Degrees Awarded	Number of Bachelors Degrees Awarded	Number of Masters Degrees Awarded	All Other Degrees Awarded	Total Degrees Awarded
Architecture, Engineering, and Planning	273	1,356	546	93	2,268
Communications and Marketing	275	3,519	397	18	4,209
Digital Media and Programming	10	285	23	0	318
Fashion Design	55	286	12	0	353
Graphic and Visual Arts and Multimedia Design	94	1,139	82	19	1,334
Information Technology	252	1,128	492	22	1,894
Interior and Industrial Design	25	150	22	0	197
Music, Film, and Video Production	62	527	73	3	665
Photography	80	91	5	0	176
Software Development	110	85	65	0	260
TOTAL – CREATIVE SECTOR DEGREES	1,236	8,566	1,717	155	11,674

Source: National Center for Education Statistics (2006)

Figure 4.3.2 - Creative Sector Degrees vs. All Degrees Conferred by Philadelphia Region Postsecondary Institutions (2006)



Source: National Center for Education Statistics (2006)

Creative Employment within the University System

A final point of discussion relating to university contributions to the for-profit creative economy is the large presence of creative professionals employed as both faculty and staff within postsecondary institutions. On the faculty side, this would include those professors and other instructors teaching subject matter related to for-profit creative economy sectors. On the staff side, this would include professionals working in fields such as marketing, communications, IT, software development, design, and planning, all of whom are involved with the operation of postsecondary institutions.

Given that the majority of academic institutions are technically non-profit organizations, as well as the fact that there is no way to isolate only those faculty members teaching in creative fields, the creative professionals employed by colleges and universities were not included within counts of the economic impacts of creative industry sectors. However, in the case of university staff members holding creative occupations, most have been captured by the creative occupational employment analysis.

5.0 PEER CITY COMPARATIVE ANALYSES AND BEST PRACTICES

5.1 Creative Industry Comparison

Overview

Having established the current state of the for-profit creative economy in the Philadelphia Region, it is important to offer context to these figures by presenting a comparative analysis with a number of peer regions selected by Innovation Philadelphia. Included in this group are Seattle, WA, Austin, TX, Phoenix AZ, Tampa, FL, Denver, CO, and Boston, MA. Like the Philadelphia Region, all of these cities and regions have been engaged in sustained efforts to expand their own creative economy sectors, and in many cases have also undertaken similar examinations as the present study of their own creative economies. Yet, it should be noted that because of the significant variation among these cities in terms of total population size, straight side by side comparisons can be misleading. Thus, in order to gauge the difference between these regions, it is most helpful to consider differences in terms of normalized data such as average wages and proportions of various industry measures.

Creative Industry Characteristics

As noted above, it is difficult to conduct straight side by side comparisons of peer regions due to variations in overall population. Consequently, in order to provide a more telling comparison of industry activity among the peer regions, we have examined the extent to which creative industries contribute to total industry employment in each region. We find that all peer regions are relatively close to one another on this measure, with just a 6 percentage point difference between the highest and lowest regions (see Figure 5.1.1). Philadelphia's for-profit creative economy industry employment as a percent of total employment is on the lower end of this scale, at 10 percent. However, given the relative size and diversity of Philadelphia's regional economy, it still features the second highest creative economy industry employment of all peer regions, at 306,000.

As an additional means of providing an "apples to apples" comparison of peer regions, it is also helpful to examine average wages within industry employment. In particular, average wages are useful in comparing regions for their ability to indicate the relative quality of jobs available within a region's creative industries. As discussed earlier in this report, high-paying jobs are generally desired for their tendency to involve the generation of new ideas and subsequently, to resist commoditization and outsourcing. As such, high average wages in creative industries may also indicate future growth potential for a region.

Compared to all other cities, Philadelphia showed the second highest average wages, at $55,600. Note however, that this is significantly less than the top city on this measure, Seattle, WA, which had average wages of $65,500. Nonetheless, a portion of this variance is likely due to higher cost of living in Seattle as

opposed to the Philadelphia Region, which by comparison to most major cities in the country still enjoys a relatively low cost of living. Interestingly, Boston, MA, which showed highest overall employment and the second highest total wages in creative industry employment, ultimately had the lowest average wages, at $39,000.

Figure 5.1.1 - Comparative Analysis- For Profit Creative Economy Industry Employment and Earnings

Comparison Region	Creative Industry Employment (000's)	Creative Industry Earnings ($Billions)	Average Wage- Creative Industries (000's)	Total Economy Employment 2005 (000's)	Creative Industry % of Total Employment
Philadelphia, PA	306	$17.0	$55.6	3,053	10.0%
Austin, TX	107	$5.8	$54.3	699	15.3%
Boston, MA	360	$14.0	$39.0	3,133	11.5%
Denver, CO	153	$7.7	$50.5	1,199	12.8%
Phoenix, AZ	164	$6.7	$40.7	1,761	9.3%
Seattle, WA	213	$13.9	$65.5	1,402	15.2%
Tampa, FL	124	$5.0	$40.4	1,180	10.5%

Source: U.S Census Bureau County Business Patterns and Non-Employer Statistics (2005)

It is also important to note that as an older region of the country, Philadelphia has faced considerable challenges over the past several decades as a result of the decline of the manufacturing sector that was once its economic mainstay. That Philadelphia has already experienced such significant growth within the burgeoning for-profit creative economy industry sectors is impressive in itself. While newer peer cities such as Phoenix, AZ have been able to build their economies around the technology driven creative industries, Philadelphia has in many ways had to transform itself completely, adapting an aging economic infrastructure to meet the demands of this dynamic and changing economic frontier; *it is a dramatic transformation that, based on these findings, has been largely successful.*

Self-Employed / Entrepreneurial Component of Creative Industries

Examining industry employment data further, we find that in terms of the self-employed component of industry employment, all peer cities are relatively comparable, ranging from 9.5 percent in Seattle to 12 percent in Austin and Phoenix (see Figure 5.1.2). Philadelphia falls among the top half of these cities, at 12 percent. This percentage translates into almost 37,000 self-employed creative industry workers, the second highest amount among all peer regions. This is not particularly surprising, given that Philadelphia also boasts the second highest overall creative industry employment. However, the considerable presence of self-employed and entrepreneurial professionals stands as a benefit to the region, as this may be a predictor of future growth within the creative industries.

Figure 5.1.2 - Comparative Analysis- 2005 Self-Employment and Receipts

2005 Creative Economy	Employment-Businesses with More than One Employee (000's)	Employment-Self-Employed (000's)	Total Employment (000's)	Percent Self-Employed of Creative Economy
Philadelphia, PA	269.6	36.5	306.1	12%
Austin, TX	93.8	12.8	106.6	12%
Boston, MA	320.2	40.3	360.4	11%
Denver, CO	136.7	16.4	153.0	11%
Phoenix, AZ	144.3	19.6	163.9	12%
Seattle, WA	192.5	20.2	212.7	10%
Tampla, FL	110.1	14.1	124.1	11%

Source: U.S Census Bureau County Business Patterns and Non-Employer Statistics (2005)

Location Quotient Analysis – Competitive Advantage of Peer Regions

Conducting location quotient analysis for the peer regions offers an opportunity to gauge their relative competitive advantage (see Figure 5.1.3). In particular, we see that Austin and Seattle are very well represented in terms of creative economy employment, with locations quotients of 1.58 and 1.57, respectively (i.e. 58 percent and 57 percent higher proportions than the national average). This reflects the

heavy concentration of for-profit creative activity in these two cities. For example, the presence of IT giant Microsoft and engineering-heavy firms such as Boeing in the Seattle region would logically contribute to the area's significant advantage over the rest of the country. Moreover, Seattle features a strong for-profit music industry that may help to fuel the arts-oriented component of its for-profit creative economy. Similarly, Austin is home to a wide range of major telecommunications, IT, and software companies, including Dell, Motorola, IBM, and MCI. And, like Seattle, Austin has a significant music industry that is likely a contributing factor in its comparative advantage relative to the nation as a whole.

Figure 5.1.3 - Location Quotient Analysis of Peer Regions – 2005 Competitive Advantage

Comparison Region	Location Quotient (2005)
Philadelphia, PA	1.04
Austin, TX	1.58
Boston, MA	1.19
Denver, CO	1.32
Phoenix, AZ	0.97
Seattle, WA	1.57
Tampa, FL	1.09

Source: U.S Census Bureau County Business Patterns and Non-Employer Statistics (2005)

From these results, we can see that despite Philadelphia's competitive advantage as compared to the rest of the nation, it lags behind all other peer cities in terms of the magnitude of this advantage. From our previous industry-by-industry breakdown for the Philadelphia Region, we know that there are certain for-profit creative industry sectors – namely, Digital Media and Programming (1.68), Photography (1.50), and Software Development (1.40) – where Philadelphia shows a very strong competitive advantage, while there are other sectors where the region is especially weak. Thus, we can see that along with the region's relative strengths come areas in which there is significant room for improvement. Through targeted programming and focusing of the region's resources on those areas falling behind, the Philadelphia Region can begin to fill in these "weak links" and increase its overall competitive advantage.

5.2 Comparative Analysis of Creative Occupations

Creative Occupational Employment

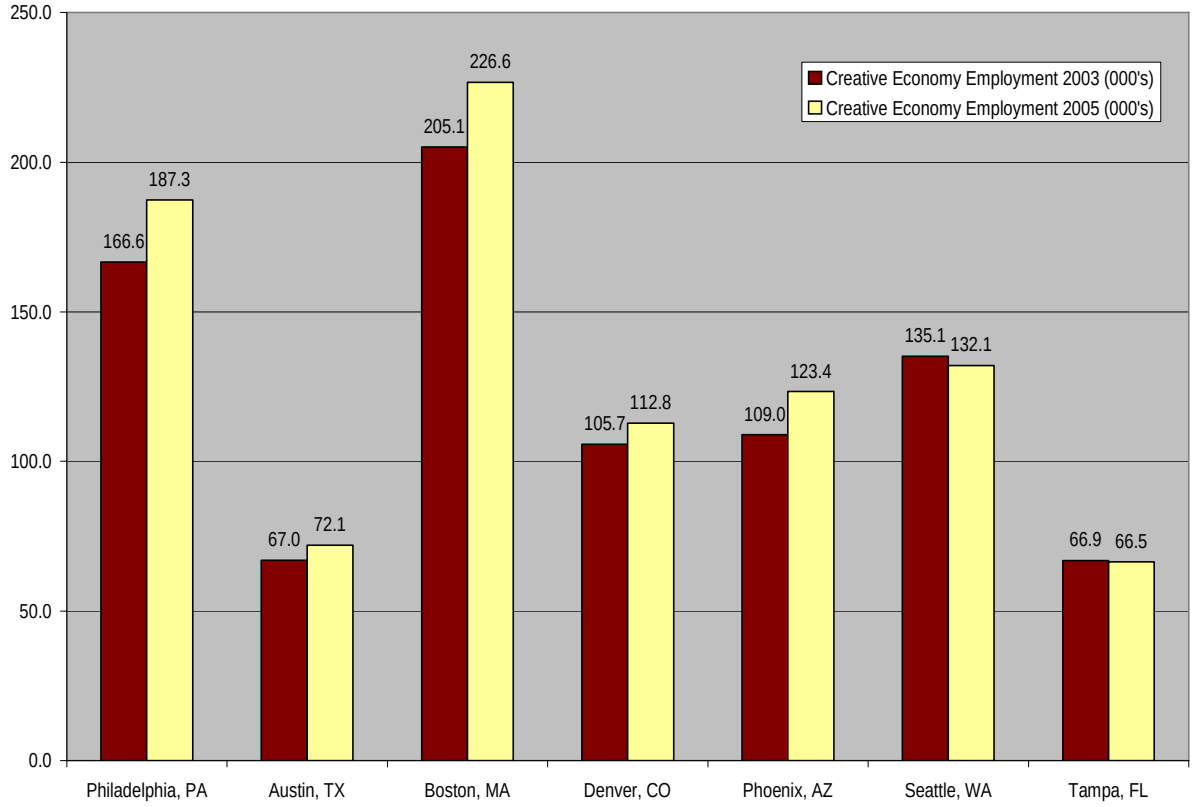
Based on occupational employment data for all peer cities, we see that between 2003 and 2005, Phoenix, AZ experienced the highest growth in employment within creative occupations, at 13.2 percent, followed closely by Philadelphia at 12.4 percent. However, when looking at the change in occupational earnings during this same period, Philadelphia underwent the greatest increase in wages at 19.1 percent, with Phoenix falling slightly behind at 18.4 percent (see Figure 5.2.1 and Figure 5.2.2).

Figure 5.2.1 - Comparative Analysis- Creative Economy Occupation Employment and Earnings

Total Creative Economy Occupations	Employment 2003 (000's)	Employment 2005 (000's)	Earnings 2003 ($Billions)	Earnings 2005 ($Billions)	% Change in Employment (2003-2005)	% Change in Earnings (2003-2005)
Philadelphia, PA	166.6	187.3	$82.8	$98.6	12.4%	19.1%
Austin, TX	67.0	72.1	$32.5	$36.3	7.6%	11.7%
Boston, MA	205.1	226.6	$115.3	$135.3	10.5%	17.3%
Denver, CO	105.7	112.8	$56.4	$59.2	6.7%	4.9%
Phoenix, AZ	109.0	123.4	$48.7	$57.6	13.2%	18.4%
Seattle, WA	135.1	132.1	$76.1	$73.1	-2.3%	-3.9%
Tampla, FL	66.9	66.5	$28.9	$29.6	-0.7%	2.4%

Source: Bureau of Labor Statistics' Occupational Employment Statistics (2005)
NOTE: 2005 data is based on MSA for all cities; 2003 data is based on MSA for Austin and Tampa and PMSA for Boston, Denver, Philadelphia, and Seattle

Figure 5.2.2 - Growth in Creative Occupational Employment – 2003 to 2005



Source: Bureau of Labor Statistics' Occupational Employment Statistics (2005)

6.0 RECOMMENDATIONS AND CONCLUSIONS

6.1 Summary of Results

The analysis presented throughout this report has provided a multi-dimensional quantitative view of the for-profit creative economy in the Philadelphia Region. In particular, we have demonstrated the extent to which the for-profit creative economy contributes to the regional economy, in terms of both activity within for-profit creative economy industries, as well as employment in creative occupations across all industries in the region. From our findings we can conclude that as a whole, the Philadelphia Region's for-profit creative economy:

- Generates high-paying, high value jobs, with average annual wages for for-profit creative economy industry of $55,600 (25 percent higher than non-creative economy industries) and average annual wages for creative economy occupations of $61,000 (45 percent higher than the average for all occupations).

- Is experiencing growth, particularly in terms of individual creative occupations, where there was a 12 percent increase in jobs and a 19 percent increase in earnings between 2003 and 2005.

- Is a significant generator of economic activity and tax revenue for the region, to the tune of a $60 billion total annual economic impact, or 20 percent of Philadelphia's Gross Metropolitan Product for 2005, as well as over $1.2 billion in local and state annual tax revenue generation.

- Is a major source of entrepreneurial activity for the region, with 36,500 self-employed individuals falling within for-profit creative economy industry sectors

- Is at a competitive advantage compared to the nation as a whole, with a location quotient of 1.04 representing 4 percent higher employment within for-profit creative economy industries than the nation as a whole.

- Is doing better than or is on pace with peer regions also engaged in creative economy-related economic development programming, with the highest growth in creative occupation earnings – 19 percent - and the second highest growth in creative occupational employment – 12 percent – among all peer cities examined, as well as the second highest average wages among for-profit creative industries - $55,600 – among all peer cities.

From these findings, we can infer that future measurement and analysis will likely reveal an increasing regional economic impact from the for-profit creative industry sectors. And, recognizing the extent to which creative occupations are found in all sectors of the regional economy, this growth has the potential to significantly and positively impact all industries in the Philadelphia Region.

6.2 RECOMMENDATIONS

This report has demonstrated that the for-profit creative economy serves as a key driver within the regional economy. As such, the following set of recommendations translates the quantitative findings found in this report and Econsult's interpretation of these findings into a series of actionable steps to be taken by a variety of public and private stakeholders in the region. Note, however, that as the leading organization charged with the responsibility of promoting the regional for-profit creative economy, *Innovation Philadelphia's leadership and guidance will ultimately play a key role in determining the extent to which these recommendations are successfully implemented.*

1. Continue to Promote the For-Profit Creative Economy Through a Designated Institutional Driver

The for-profit creative economy contributes significantly to the regional economy in Philadelphia, producing a total annual economic impact of almost $60 billion and generating $1.22 billion in annual tax revenue for 2005.[43] Given that local governments tend to be the key institutional drivers in promoting the growth of any targeted industry sector and the extent of the for-profit creative economy's impact in the Philadelphia Region, the presence of a dedicated institution focused on the for-profit creative economy would help to ensure that growth of the for-profit creative economy holds a priority position within the local policy agenda and receives a degree of attention on par with levels given to the non-profit creative sector and other sectors targeted for growth in the region.

2. Develop Innovative Financing Programs and Resources Targeting Creative Entrepreneurs

Self-employed and entrepreneurial professionals within for-profit creative industries amounted to 36,500, or 11.6 percent of all for-profit creative industry employment in 2005, and in some for-profit creative industry sectors accounted for more than a quarter of all employment. Recognizing the tremendous economic value that these entrepreneurs bring to the for-profit creative economy, we recommend the development of specific financial programs and business resources targeted towards long-term survival and growth of these enterprises. The financial programs may include the development of special loans and/or opportunities for private investors or venture capitalists to fund "creative" start-ups. Business resources may include technical assistance, access to information on existing business development resources, and/or networking opportunities. Since Innovation Philadelphia has made critical steps forward in this area through the creation of the Creative Economy Investment Fund, the Greater Philadelphia Entrepreneurs' Resource Guide, and the hosting of monthly networking events, we recommend expanding these programs further and exploring additional resources.

[43] Includes Wage Tax in Philadelphia, Earned Income Taxes in other PA counties, and Sales Tax for the region.

3. Work with Local and State Government to Establish Creative Financial Incentive Packages to Help Attract Creative Economy Businesses to the Region

Although the for-profit creative economy is currently a major economic generator for the region as compared to selected peer regions, the Philadelphia Region holds a slight competitive advantage to the nation as a whole as compared to these peers in terms of creative industry employment, with a location quotient of 1.04.[44] Through strong advocacy and targeted lobbying efforts, Innovation Philadelphia and other regional for-profit creative economy stakeholder organizations can work to influence decision making at the state level and gain the types of financial incentive packages that stimulate entrepreneurial activity and bring new creative business into the region. Going forward, examples of potential programming could include industry-specific tax incentives, the creation of creative "districts," funding for possible for-profit creative industry "incubators," and increased micro-loan programs to support entrepreneurial enterprises and self-employed creative professionals in the region.

4. Expand Recruitment and Retention Efforts to Bring In-Demand Creative Economy Employees to the Region

In 2006, colleges and universities within the Philadelphia Region conferred almost 60,000 degrees, with nearly 20 percent, or almost 12,000, falling under programs and majors directly related to for-profit creative economy occupations. In order to attract and keep for-profit creative economy businesses in the region, it is critical that a significant portion of the graduates with degrees related to for-profit creative industries and occupations remain in the regional economy to meet the ongoing talent and human capital needs of these companies. While there are regional institutions currently in place focusing on the retention of college graduates, there remains a separate and distinct need to recruit and retain mid-career professionals (25-34 year olds) in order to meet the human capital needs of growing creative economy businesses.

5. Target Key Creative Economy Industries Already Exhibiting Strength in the Region

The quantitative analysis conducted throughout this report has uncovered particular strength within the "Communications and Marketing," "Software Development," "Architecture, Engineering, and Planning," "Graphic and Visual Arts and Multimedia Design," "Product and Merchandising Design," and "Information Technology" for-profit creative industries. Each of these sectors individually employed 25,000 or more workers, and as a group they accounted for 85 percent of for-profit creative industry employment, 89 percent of for-profit creative industry earnings, and 90 percent of for-profit creative industry direct output in 2005. Almost all of these sectors featured average wages of $50,000 or more. Furthermore, shifts in occupational employment among these sectors between 2003 and 2005 show that all occupation sectors but "Graphic and Visual Arts and Multimedia Design" and "Information Technology" experienced growth of roughly 20 percent or more. By building upon the strengths of the for-profit creative economy and focusing

[44] A location quotient of 1.04 indicates that the Philadelphia region is performing 4 percent higher than national levels.

investments on the strongest industries and occupations such as these, economic development resources can be targeted effectively and efficiently. As specific industries are targeted for development, a business incubator approach may be warranted in order to provide start-up facilities, technical assistance, and a collaborative environment to help foster further growth and expansion of these sectors.

6. Brand the City as a Hub of Creative Enterprise

As demonstrated by our research on selected peer regions, there is significant competition in the marketplace in terms of regional for-profit creative economy growth. Thus, in order for Philadelphia to emerge as a leader of the for-profit creative economy, it will need to proactively market itself as such throughout the nation. In particular, through an aggressive national branding campaign, regional organizations such as Innovation Philadelphia, the Greater Philadelphia Tourism Marketing Corporation, the Philadelphia Convention and Visitors Bureau, and Select Greater Philadelphia, as well as creative academic institutions and regional industrial development corporations, can collaborate to market the Philadelphia Region as a hub for creative enterprises.

7. Work with Regional Organizations to Expand Minority- and Female- Owned Businesses within the For-Profit Creative Economy

Given the size of the Philadelphia region's minority population, it is discouraging that just 6 percent of all creative economy firms in Greater Philadelphia were minority owned. While female owned businesses fared slightly better at 15 percent of all creative economy firms, these figures reveal a considerable gap in firm ownership by race and gender and ultimately fall short of national averages of roughly 9 percent minority ownership and 17 percent female ownership among for-profit creative economy industry firms. Regional organizations who focus on minority- and female- owned business development are well positioned to collaborate in order to help expand minority and female business owvership in creative industry sectors.

8. Incorporate a Collaborative Regional Approach to Growing the For-Profit Creative Industries

Just as assets of the for-profit creative economy are dispersed throughout the region, the economic development strategy to foster and grow the creative industries must be a collaborative, regional effort. Though the data clearly demonstrates that the highest levels of for-profit creative industry employment are found within Bucks, Chester, Montgomery, and Philadelphia counties, it is also true that varying concentrations of creative industry employment are found in all counties throughout the Philadelphia region. Collaboration among economic development organizations and across geographic boundaries is essential to grow the for-profit creative economy and establish the Philadelphia region as a regional and national destination for creative businesses and employment.

9. Track and Measure Future For-profit Creative Economy Activity

Having established a baseline measure of the for-profit creative economy's regional impact with the current study, ongoing updates of this analysis are recommended in order to track future growth From a quantitative perspective, this will enable the measurement of specific for-profit creative industry sectors and job growth, and it will determine the impact of current and future policies and initiatives. Furthermore, continual tracking of progress will be helpful as Innovation Philadelphia and other regional stakeholders continue to seek additional resources to support the implementation of the above recommendations and other regional initiatives to grow the for-profit creative economy.

6.3 Concluding Remarks and Next Steps

The quantitative findings in this study demonstrate the significant contributions made by for-profit creative industries and their roles as key assets to the Philadelphia Region. For-profit creative industry businesses in the Philadelphia Region generate a total economic impact of nearly $60 billion in output, 766,000 jobs, and $1.22 billion in state and local taxes. The for-profit creative industry is one of the largest economic generators in the region and has the potential for further growth. With proactive investment and planning, the for-profit creative economy can serve as a key anchor in the region's economic landscape and provide a new identity for the Philadelphia Region.

This analysis also highlights the strong entrepreneurial community found within the Philadelphia Region's for-profit creative economy. Namely, over 65 percent of the 55,718 creative industry firms in the region are represented by self-employed entrepreneurs, with these 36,500 self-employed individuals translating into 12 percent of total direct employment among for-profit creative economy industries. The presence of such a strong entrepreneurial base holds significant promise for the Philadelphia Regional economy, given the extent to which these types of start-up enterprises drive innovation. Providing resources to promote the growth of for-profit creative industry businesses in the region could have a tremendous impact on the region's economic prosperity.

For-profit creative economy industries also generate high-wage jobs. Based on the peer region analysis, Philadelphia either ranks higher or is on pace with peer regions on this and other measures. For example, average annual wages among Philadelphia Region employees in creative occupations have grown 19 percent from 2003-2005, which was the highest wage growth among all peer regions. Furthermore, average annual salaries of those working in the for-profit creative industries ($61,600) are 45 percent higher than those in non-creative industries ($43,000).

Exploring this point further, we note that focusing on for-profit creative industry businesses as part of a regional economic development strategy is important because creative industry jobs are driven by traits such as innovation and creativity and skills that are resistant to commoditization and subsequent outsourcing to foreign markets. Because most creative industry jobs will not become "commodities" that can be easily mined out to the lowest bidder, attracting for-profit creative industry businesses and their high value jobs is critical to the ongoing economic health of the Philadelphia region.

Having completed this initial phase of quantitative analysis of the Philadelphia Region, the next phase of research shall expand upon these findings through a comprehensive qualitative review of the regional for-profit creative economy and its selected peer regions. Already, Econsult has begun to collect this qualitative data, in the form of interviews, surveys, literature reviews, and comparative best practices research. Once completed, Econsult will work with Innovation Philadelphia in response to this additional feedback in order to reshape recommendations included in the current report and adapt their organizational strategy to meet the needs and demands identified through ongoing research.

Ultimately, the current phase of analysis has proved instrumental in establishing a basis for understanding and evaluating the regional for-profit creative economy at both the industry and occupation levels. Clearly, this analysis has revealed a thriving for-profit creative sector that is represented throughout the region and

by a diversity of individual creative industry sectors and occupational categories. Yet, this analysis has also demonstrated that there remain areas in need of focused attention, including weak minority participation and a comparatively weak competitive advantage as compared to selected peer regions.

Based on these various strengths and areas for improvement, Econsult has developed a set of targeted recommendations to guide proactive investments of resources in the regional for-profit creative economy. In the Philadelphia Region, recent history has shown that effective collaboration and cooperation can produce substantial results in the economic sphere. In particular, the Philadelphia Region has seen its life sciences and hospitality industries experience significant growth through collaborative efforts and partnerships among the private, public and government sectors. Now, with similar collaboration among stakeholders throughout the public and private sectors to implement existing regional creative economy initiatives and the recommendations put forth in this report, the region should be able to achieve the same kind of sustainable economic growth experienced by these industry sectors while at the same time addressing directly those areas of the for-profit creative economy in need of attention.

In particular, this approach will enable the region to increase minority participation in for-profit creative economy industries, attract new creative industry businesses and entrepreneurs, and provide the resources needed to help existing businesses grow and expand. In total, these efforts will increase the region's standing as compared to other regions throughout the country, and in turn help to achieve Innovation Philadelphia's mission of "establishing the Philadelphia creative economy as a global hub for creative services and talent."

A.1 NAICS CODES BY INDUSTRY CATEGORY

Included below is a listing of all industry NAICS codes used in the analysis of for-profit Creative Economy Industries. Codes have been sorted according to creative sectors identified by Innovation Philadelphia and later refined for analysis by Econsult.

Architecture, Engineering, and Planning

5413- Architectural, Engineering, and Related Services
8112- Electronic and Precision Equipment Repair and Maintenance

Communications and Marketing

424920- Book, Periodical, and Newspaper Merchant Wholesalers
5111- Newspaper, Periodical, Book, and Directory Publishers
5151- Radio and Television Broadcasting
51911- News Syndicates
51919- All Other Information Services
541613- Marketing Consulting Services
5418- Advertising and Related Services
541910- Marketing Research and Public Opinion Polling
5611- Office Administrative Services
71132- Promoters of Performing Arts, Sports, and Similar Events Without Facilities
7114- Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures

Digital Media and Programming

323115- Digital Printing
5152- Cable and Other Subscription Programming
516- Internet Publishing and Broadcasting
5175- Cable and Other Program Distribution

Fashion Design

313- Textile Mills
315- Apparel Manufacturing
316- Leather and Allied Product Manufacturing
541490- Other Specialized Design Services

Graphic and Visual Arts and Multimedia Design

323110- Commercial Lithographic Printing
323111- Commercial Gravure Printing
323112- Commercial Flexographic Printing
323113- Commercial Screen Printing
323114- Quick Printing
323116- Manifold Business Forms Printing
323117- Books Printing
323118- Blankbook, Looseleaf Binders, and Devices Manufacturing
323119- Other Commercial Printing
323121- Tradebinding and Related Work
323122- Prepass Services
453920- Art dealers
541430-Graphic Design Services
7115- Independent Artists, Writers, and Performers

Information Technology

334111- Electronic Computer Manufacturing
334112- Computer Storage Device Manufacturing
334113- Computer Terminal Manufacturing
334119- Other Computer Peripheral Equipment Manufacturing
5171- Wired Telecommunications Carriers
5172- Wireless Telecommunications Carriers (except Satellite)
5173- Telecommunications Resellers
5174- Satellite Telecommunications
5179- Other Telecommunications
5181- Internet Service Providers and Web Search Portals

Interior and Industrial Design

314- Textile Product Mills
321911- Wood, Window, and Door Manufacturing
321991- Manufactured Home (Mobile Home) Manufacturing
32712- Clay building Material and Refractories Manufacturing
3272- Glass and Glass Product Manufacturing
3371- Household and Institutional Furniture and Kitchen Cabinet Manufacturing
3372- Office Furniture (including Fixtures) Manufacturing
541410- Interior Design Services
541420- Industrial Design Services

Music, Film, and Video Production

334310- Audio and Video Equipment Manufacturing
334611- Software Reproducing
334612- Prerecorded Compact Disc (Except Software), Tape, and Record Reproducing
334613- Magnetic and Optical Recording Media Manufacturing
512- Motion Picture and Sound Recording Industries
71113- Musical Groups and Artists

Photography

333315- Photographic and Photocopying Equipment Manufacturing
423410- Photographic Equipment and Supplies Merchant Wholesalers
54192- Photographic Services

Product and Merchandising Design[1]

311- Food Manufacturing
312- Beverage and Tobacco Product Manufacturing
3211- Sawmills and Wood Preservation
3212- Veneer, Plywood, and Engineered Wood Product Manufacturing
321912- Cut Stock, Resawing Lumber, and Planing
321918- Other Millwork (including Flooring)
321920- Wood Container and Pallet Manufacturing
321992- Prefabricated Wood Building Manufacturing
321999- All Other Miscellaneous Wood Product Manufacturing
322- Paper Manufacturing
324- Petroleum and Coal Products Manufacturing
325- Chemical Manufacturing
326- Plastics and Rubber Product Manufacturing
32711- Pottery, Ceramics, and Plumbing Fixture Manufacturing
3273- Cement and Concrete Product Manufacturing
3274- Lime and Gypsum Manufacturing
331- Primary Metal Manufacturing
332- Fabricated Metal Manufacturing
3331- Agriculture, Construction, and Mining Machinery
3332- Industrial Machinery Manufacturing
333311- Automatic Vending Machine Manufacturing

[1] Included at 13.9% based on the proportion of creative occupations within the manufacturing industry sector from the Bureau of Labor Statistics' National Industry-Occupation Employment Matrix.

333312- Commercial Laundry, Dry-cleaning, and Pressing Machine Manufacturing
333313- Office Machinery Manufacturing
333314- Optical Instrument and Lens Manufacturing
333319- Other Commercial and Service Industry Machinery Manufacturing
3334- Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing
3335- Metalworking Machinery Manufacturing
3336- Engine, Turbine, and Power Transmission Equipment Manufacturing
3339- Other General Purpose Machinery Manufacturing
3342- Communications Equipment Manufacturing
3344- Semiconductor and Other Electronic Component Manufacturing
3345- Navigational, Measuring, Electromedical, and Control Instruments Manufacturing
335- Electrical Equipment, Appliance, and Component Manufacturing
336- Transportation Equipment Manufacturing
3379- Other Furniture Related Product Manufacturing
339- Miscellaneous Manufacturing

Software Development

423430- Computer and Computer Peripheral Equipment and Software Merchant Wholesalers
5112- Software Publishers
5415- Computer Systems Design and Related Services
541618- Other Management Consulting Services

A.2 SOC CODES BY OCCUPATION

Included below are all of the SOC occupation codes used in the analysis of for-profit Creative Economy occupations. All codes are sorted according to the for-profit Creative Economy sectors identified by Innovation Philadelphia and refined by Econsult.

Architecture, Engineering, and Planning

17-1011 Architects, Except Landscape and Naval
17-1012 Landscape Architects
17-1021 Cartographers and Photogrammetrists
17-1022 Surveyors
17-2011 Aerospace Engineers
17-2021 Agricultural Engineers
17-2031 Biomedical Engineers
17-2041 Chemical Engineers
17-2051 Civil Engineers
17-2071 Electrical Engineers
17-2072 Electrical Engineers, Except Computer
17-2081 Environmental Engineers
17-2111 Health and Safety Engineers, Except Mining Safety Engineers and Inspectors
17-2112 Industrial Engineers
17-2121 Marine Engineers and Naval Architects
17-2131 Materials Engineers
17-2141 Mechanical Engineers
17-2151 Mining and Geological Engineers, Including Mining Safety Engineers
17-2161 Nuclear Engineers
17-2171 Petroleum Engineers
17-2199 Engineers, All Other
17-3011 Architectural and Civil Drafters
17-3012 Electrical and Electronics Drafters
17-3013 Mechanical Drafters
17-3019 Drafters, All Others
17-2021 Aerospace Engineering and Operations Technicians
17-3022 Civil Engineering Technicians
17-3023 Electrical and Engineering Technicians
17-3024 Electro-Mechanical Technicians
17-3025 Environmental Engineering Technicians
17-3026 Industrial Engineering Technicians
17-3027 Mechanical Engineering Technicians
17-3029 Engineering Technicians, Except Drafters, All Others
17-3031 Surveying and Mapping Technicians

25-1031 Architecture Teachers, Postsecondary
25-1032 Engineering Teachers, Postsecondary
19-3051 Urban and Regional Planners
41-9031 Sales Engineers

Communications and Marketing

11-2011 Advertising and Promotions Managers
11-2021 Marketing Managers
11-2031 Public Relations Managers
13-1011 Agents and Business Managers of Artists, Performers, and Athletes
19-3021 Market Research Analysts
25-4011 Archivists
25-4012 Curators
25-9011 Audio-Visual Collections Specialists
27-1011 Art Directors
27-3011 Radio and Television Announcers
27-3012 Public Address System and Other Announcers
27-3021 Broadcast News Analysts
27-3022 Reporters and Correspondents
27-3031 Public Relations Specialists
27-3041 Editors
27-3042 Technical Writers
27-3043 Writers and Authors
27-3091 Interpreters and Translators
27-3099 Media and Communication Workers, All Other
41-3011 Advertising Sales Agents
43-9022 Word Processors and Typists
43-9031 Desktop Publishers
43-9081 Proofreaders and Copy Markers

Digital Media and Programming

27-4012 Broadcast Technicians
27-4013 Radio Operators
43-2099 Communications Equipment Operators, All Other

Fashion Design

27-1022 Fashion Designers
41- 9012 Models
51-6021 Pressers, Textile, Garment, and Related Materials
51-6052 Tailors, Dressmakers, and Custom Sewers
51-6061 Textile Bleaching and Dyeing Machine Operators and Tenders
51-6062 Textile Cutting Machine Setters, Operators, and Tenders
51-6063 Textile Knitting and Weaving Machine Setters, Operators, and Tenders
51-6064 Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders
51-6092 Fabric and Apparel Patternmakers

Graphic and Visual Arts and Multimedia Design

27-1012 Craft Artists
27-1013 Fine Artists, Including Painters, Sculptors, and Illustrators
27-1014 Multi-Media Artists and Animators
27-1019 Artists and Related Workers, All Other
27-1023 Floral Designers
27-1024 Graphic Designers
51-5012 Bookbinders
51-5021 Job Printers
51-5022 Prepass Technicians and Workers
51-5023 Printing Machine Operators
51-9071 Jewelers and Precious Stone and Metal Workers

Information Technology

11-3021 Computer and Information Systems Managers
15-1011 Computer and Information Scientists, Research
15-1041 Computer Support Specialists
15-1051 Computer Systems Analysts
15-1061 Database Administrators
15-1071 Network and Computer Systems Administrators
15-1081 Network Systems and Data Communications Analysts
15-1099 Computer Specialists, All Others
17-2061 Computer Hardware Engineers
43-9011 Computer Operators
49-2011 Computer, Automated Teller, and Office Machine Repairers

49-2022 Telecommunications Equipment Installers and Repairers, Except Line Installers

Interior and Industrial Design

27-1021 Commercial and Industrial Designers
27-1025 Interior Designers
49-9093 Fabric Menders, Except Garment
51-6093 Upholsterers
51-6099 Textile, Apparel, and Furnishings Workers, All Other
51-7011 Cabinetmakers and Bench Carpenters
51-7021 Furniture Finishers
51-7031 Model Makers, Wood
51-7032 Patternmakers, Wood

Music, Film, and Video Production

27-2012 Producers and Directors
27-2041 Music Directors and Composers
27-2042 Musicians and Singers
27-4011 Audio and Video Equipment Technicians
27-4014 Sound Engineering Technicians
27-4031 Camera Operators, Television, Video, and Motion Picture
27-4032 Film and Video Editors
27-4099 Media and Communication Equipment Workers, All Other
39-3021 Motion Picture Projectionists
49-9063 Musical Instrument Repairers and Tuners

Photography

27-4021 Photographers
49-9061 Camera and Photographic Equipment Repairers
51-9131 Photographic Process Workers
51-9132 Photographic Processing Machine Operators

Product and Merchandising Design

11-3051 Industrial Production Managers
27-1026 Merchandise Displayers and Window Trimmers
27-1027 Set and Exhibit Designers
27-1029 Designers, All Other
43-5061 Production, Planning, and Expediting Clerks
51-4061 Model Makers, Metal and Plastic
51-4062 Patternmakers, Metal and Plastic
51-4071 Foundry Mold and Coremakers
51-4072 Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic
51-9123 Painting, Coating, and Decorating Workers
51-9194 Etchers and Engravers

Software Development

15-1021 Computer Programmers
15-1031 Computer Software Engineers, Applications
15-1032 Computer Software Engineers, Systems Software

APPENDIX B - CREATIVE ECONOMY DATA AND METHODOLOGY

Economic Impact Data

In order to determine the current economic impact of the Creative Economy in the Philadelphia Region, this study uses the following two data sets, both available from the US Department of Labor's Bureau of Labor Statistics (BLS) website[2]:

- Occupational Employment Statistics (OES): The Occupational Employment Statistics (OES) program estimates the number of people employed in 800 occupations, as well as the wages paid to them. Estimates are available for the nation as a whole, for individual states, and for metropolitan areas. The most recent available OES survey data covers all full-time and part-time wage and salary workers in non-farm industries up to May 12, 2005. This data has been used to determine employment figures by individual "creative economy" occupations.

- County Business Patterns: The U.S. Census County Business Pattern (CPB) data set provides a yearly count of employment and wages sorted by industry. These statistics can be aggregated down to the six-digit North American Industry Classification System (NAICS) industry codes, and they can be examined at the national, state, county, or MSA level. At the national level, the CPB statistics include employment and wage data for nearly every NAICS industry. At the state and county level, the CBP publishes employment and wage data down to the 6-digit NAICS industry level, if disclosure restrictions are met. The most recent available CBP data at the county level (subject to disclosure restrictions, as necessary) is 2005 annual data.

  This data provides a measurement of the total number of employees within each of the designated "Creative Economy" industry sectors. Of particular note here is that NAICS data enables us to capture all employees in the creative economy industries, regardless of whether they fall within traditional Creative Economy occupations (i.e., janitors, human resource managers, etc.).

- InfoUSA: The infoUSA database provides information on businesses of all sizes throughout the United States. The database provides detailed information that can be sorted by zip code, neighborhood, city, metro area, county, or state. InfoUSA provides information about business types, major industry group classifications, number of employees and sales volume, and detailed contact information. InfoUSA obtains information from business directories, quarterly phone calls to all businesses in the database, SEC fillings, and annual reports. This dataset provides valuable detailed information that serves as a supplement to other more generalized datasets that are being used in this study.

[2] See Appendix A for a complete listing of industry and occupation codes used in data analysis

Self-Employment Data

Self-employed persons are not accounted for in the above data statistic sets, and yet, these individuals represent a potentially large contribution to creative industry activity, particularly given the freelance nature of much Creative Economy work. To provide estimates for these figures, several approaches have been employed:

- US Census Non-employer Statistics have been used to determine the number of establishments and the sales/business receipts of businesses without paid employees that are subject to Federal Income Tax. According to the US Census website, non-employers include "self-employed individuals operating unincorporated businesses." This data is available for 2005 and is broken down geographically to the county and MSA area and topically by NAICS industry codes.[3]

- The National Industry-Occupation Employment Matrix from the Bureau of Labor Statistics has been used to find the national averages for the percentage of workers in specific occupations that are self-employed or fall into specific industry sectors. These rates are in turn used to establish multipliers for estimating the percentage of self-employment in the various identified creative economy sectors.[4]

- Interviews with economic development agencies, business organizations, industry associations, and others provide a sense of the size and impact of the self-employed population within the various creative industry sectors.

University Participation Data

- National Center for Education Statistics – Integrated Postsecondary Data System (IPEDS): IPEDS is the central postsecondary data collection run by NCES. Data are collected from all primary providers of postsecondary education in the country for subjects such as enrollment, program completions, graduation rates, faculty, staff, finances, institutional prices, and student financial aid. Programs covered in the IPEDS data sets include formal academic, vocational, or continuing professional education designed primarily for students beyond "compulsory" high school age. This data set will ultimately provide the core quantitative component of Econsult's examination of university participation in the Creative Economy. More specifically, it will be used to measure the number of degrees conferred in programs falling with the Creative Economy industry sectors.

[3] http://www.census.gov/epcd/nonemployer/

[4] http://data.bls.gov/oep/nioem/empiohm.jsp

- Interviews with university officials regarding popularity/extent of participation in degree programs feeding into the creative economy, as well as recommendations for increasing participation levels.

Minority Participation Data

- Survey of Business Owners (SBO): The Survey of Business Owners (SBO) is part of the U.S. Economic Census. The SBO is a consolidation of two prior surveys, the Surveys of Minority- and Women-Owned Business Enterprises (SMOBE/SWOBE), and includes questions from a survey discontinued in 1992 on Characteristics of Business Owners (CBO). The most recent SBO was conducted in 2002. SBO statistics provide information on U.S. business ownership by gender, race, and ethnicity. These statistics are available at the national, state, and sub-state regional levels by 2-digit industry NAICS codes. The SBO provides information on the number of firms, sales and receipts, annual payroll for firms, types of customers and workers, sources and purposes of financing, and owner's age, education level, veteran status, and primary function(s) in the business, which can be sorted by ownership and geography.

  It should be noted that the Survey of Business Owners data presented a unique challenge since it has only been collected at the 2-digit NAICS industry level. Given the broadness of the 2-digit industry categories and the extent to which Creative Economy industries intersected those same 2-digit industries, straightforward measurement at this level would have resulted in (1) overlooking many of the more specific Creative Economy industries that fell within non-Creative Economy 2-digit codes and (2) over-counting by including many non-Creative Economy industries that were counted within the seemingly appropriate 2-digit categories.

  In order to resolve this issue, Econsult used US Economic Census data to determine proportions between the number of firms at the 2-digit level and the number firms at the 3, 4, 5, or 6-digit level. For example, if there were 1,000 firms at the 2-digit level and 100 of them fell into a 4-digit category, Econsult concluded that the 4-digit industry comprised 10% of the total firms in the broader 2-digit industry (Note: Numbers have been made up for explanatory purposes). Once proportions were determined for all of the Creative Economy NAICS industry codes using the Economic Census data, these were then extrapolated to the Survey of Business Owner data for minority-owned firms, following the assumption that relationships between industry sectors would remain relatively stable regardless of the minority status of the business owner. Furthermore, because US Economic Census and Survey of Business Owner data were both based on 2002 figures, Econsult determined the Economic Census to be the most reasonable source of comparison. In order to check the validity of these assumptions, Econsult also purchased directly from the US Census Bureau Survey of Business Owner data at the 3-digit NAICS level.

APPENDIX C: ECONOMIC AND TAX IMPACT MODEL METHODOLOGY

C.1 Economic Impact Analysis

The economic impact estimates presented in this report were derived from the regional Input-Output (I-O) model developed and maintained by the U. S. Department of Commerce, Bureau of Economic Analysis (BEA). This model—the Regional Input-Output Modeling System (RIMS II)—is widely used to estimate the economic impacts of regional projects or programs. The results generated from the RIMS II model are widely recognized as plausible, and defensible, in cases where the input data to the model are accurate and based on reasonable assumptions. This section describes the basic concepts that underlie RIMS II.

An I-O model provides a compact means of summarizing inter-industry relationships within regions. The model itself is essentially an accounting framework, expressed as a matrix or array. For each industry in the region, the model shows the distribution of inputs purchased and outputs sold to all other regional industries. The RIMS II model is based on the BEA National I-O model, which shows the input and output structure for nearly 500 industries, and the BEA regional economic accounts, which are used to adjust the information in the national model to reflect a given regions' industrial structure and inter-industry trading patterns.

The data that drive the I-O model are the planned expenditures associated with the project or program being studied. In the jargon of I-O models, those expenses make up the "direct expenditures", which form one part of the programs' total economic impact on the region. Assuming that the planned project is a new store, the direct expenditures are the sum of all spending needed to construct, equip and operate that facility.

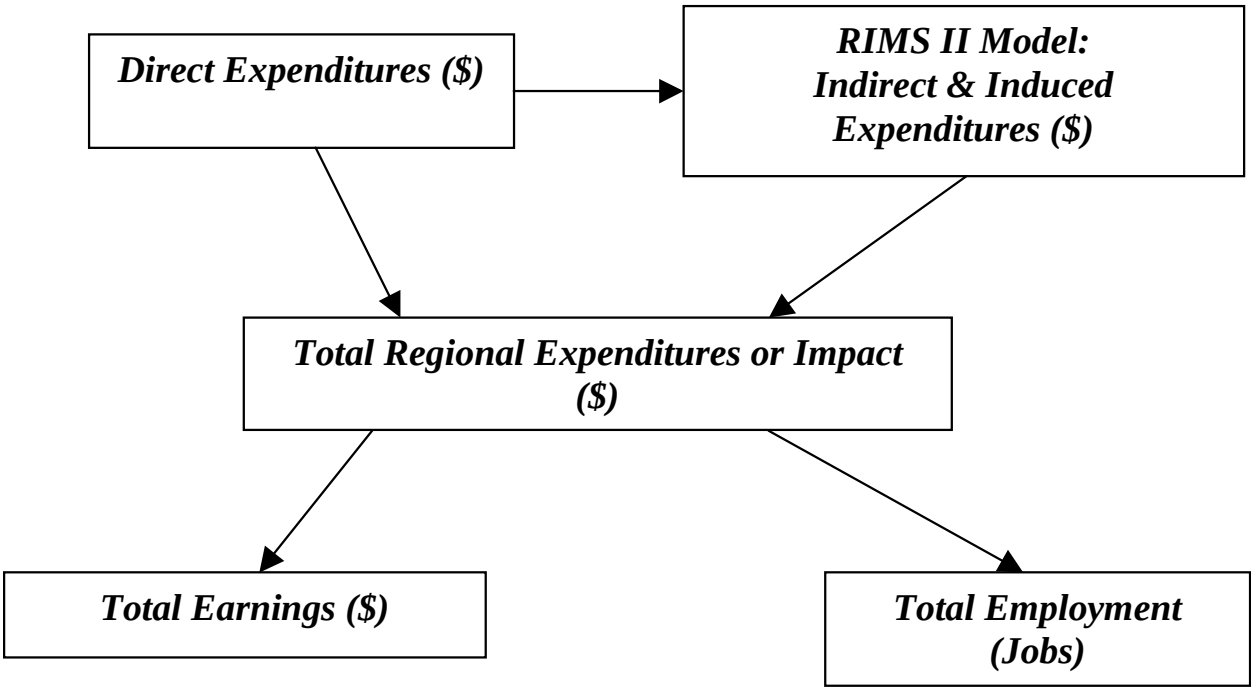
Some of that spending will be to purchase goods and services from other businesses in the region, causing those firms to increase production. In turn, the firms supplying the new store will need to increase purchases from their suppliers, to meet their new orders. The sum of all of this inter-industry spending is the "indirect expenditures" associated with the new store.

All of the economic activity resulting from the new store, whether direct or indirect, will require workers who must be paid. Some of their earnings will be spent at businesses within the region on various goods and services, creating another round of economic activity like that described above. These expenditures equal the "induced expenditures" associated with the new store.

The sum of the direct, indirect and induced expenses represents the total economic impact of the new store on the region. In addition to measuring that impact in dollars as output or expenditures, the RIMS II model produces estimates of the proportion of that spending paid to regional households as wages and salaries. Finally, the RIMS II model generates estimates, by industry, of the number of full- and part-time jobs related to the new store. Both the earnings and employment estimates are useful alternative measures of the regional economic impact of the new project.

The following schematic depicts the flow of data, from inputs to outputs, through the model:

Figure C.1 – Input-Output Model Flow Chart



Source: Econsult Corporation

The overall "success" of the economic impact analysis depends in large part on the initial design of the analysis. For example, if the project involves both construction and operation phases, it is important to separate the total expenditures between the two, and run the RIMS II model for each set of expenditures. The phases occur at different points in time, and have different impacts on the regional economy. Hence, the accuracy of the results depends on recognizing those differences, and treating them appropriately.

C.2 Tax Impact Analysis

The RIMS II model provides estimates of the economic impact of a new project or program on the regional economy. It does not, however, estimate the fiscal impact of the increased economic activity on state and local governments. Econsult has constructed a model that takes the output from the RIMS II model and generates detailed estimates of the increases in state and local tax collections that arise from the new project. Those revenues are in fact a part of the total economic impact of a new project that is often ignored in conventional economic impact analyses.

The RIMS II model provides estimates of direct, indirect, and induced expenditures, earnings, and employment within the defined region. The Econsult fiscal model combines the RIMS II output with U. S. Census Bureau County Business Patterns data to produce estimates of the distribution of additional employment and earnings by county. In addition, the 2000 Census "Journey to Work" data on commuting flows are utilized to estimate income earned by residents of each county within the region, regardless of where they work. The fiscal model can then estimate the increase in earned income taxes by county and for the state as a whole resulting from the new project. For complex cases, like Philadelphia, the model can differentiate between residents and nonresidents and apply the proper wage tax rate. Pennsylvania state business and sales taxes, as well as business taxes in Philadelphia, are estimated based on the most recent data on average sales tax base per employee by major industry, as contained in publications from the Pennsylvania Department of Revenue.

The Econsult fiscal model is flexible, and has been extended to estimate New Jersey and Delaware taxes arising from some new project, as well as Pennsylvania state and local taxes. Those extensions are done on a case-by-case basis, depending upon the analysis being performed.

APPENDIX D - LOCATION QUOTIENTS AND SHIFT-SHARE ANALYSIS

D.1 Identifying a Region's Competitive Advantage

A simplified way to view a region's economy is to divide it into *basic* and *non-basic* industries. The basic industries are those that sell their goods and services outside the region, making up the *export base*. The non-basic industries sell goods and services locally, to either the region's residents or the basic industries themselves. Accordingly, growth in a region occurs through growth in the basic industries, while non-basic industries grow (or shrink) largely in response to the performance of the basic industries. The key to regional growth is therefore increasing sales in export markets, which are any market outside the regional market.

In this way of segmenting regional economies, export industries are those that sell outside the region because they reflect that region's *competitive advantage* – these are the goods or services that the region produces best.

As an example, consider a small, mostly rural, county whose main industry is a coalmine. The mine sells its coal outside the town, bringing in outside revenue. The mine is in this case the basic industry. Other industries in the county are involved in providing goods and services to the mine, such as a local accounting office that does the mine's books, a local law firm which draws up its sales contracts or the local contractors who maintain the mine's facilities. These industries provide a support role to the basic industry and are termed non-basic. Other goods and services are provided to the local population, such as retail (for such needs as food and clothing), personal services (such as dry cleaners or barbers) or health and educational services (mostly doctors and schools). These would also be termed non-basic industries, as their function is, somewhat indirectly, to service the mine's activities by providing goods and services to the local population (which provides the labor force for the mine).

Another example of a basic industry is tourism. Though the industry does not export a good or service outside its region, it does receive payments from people who live outside the region. By its nature, tourism sells to non-residents and can therefore be considered a basic industry.

A common method for estimating the magnitude of basic activity in a regional industry is to derive a *location quotient* using data on employment or earnings. For example, if we want to derive basic activity in the coal mine we've been discussing we would derive the following location quotient:

$$Location\ Quotient = \frac{\frac{E_{ir}}{E_{in}}}{\frac{E_r}{E_n}}$$

The location quotient is measuring the *relative importance* of a particular industry within a region's economy. In the ratio, E_{ir} stands for employment in industry *i* for the region (note "industry *i*" could be any industry- in this case assume it denotes the regional coal industry). E_{in} stands for employment in industry *i* nation-wide, E_r stands for total employment in the region and E_n for total employment in the nation.

The location quotient is constructed to reveal is a region has a share of an industry that is "above average". If the industry has a regional presence that is greater than one typically finds elsewhere, it is assumed to export at least part of its goods or services outside the region. The location quotient helps us to identify the unusually large regional presence of a particular industry. In particular, if the location quotient for industry *i* (in this case the coal industry) is greater than 1, this indicates the region has more than the average share of an industry 's employment, implying that the region has a competitive advantage in this good or service[5].

A useful application of the location quotient is to examine its change over time. Since the greater the location quotient, the greater the relative regional presence of an industry, an increase (or decrease) in the value of the location quotient over time implies an increase (or decrease) in the region's share of that product or service. With respect to tourism, for example, an increasing location quotient implies an increase in the region's relative share of the national tourism market, and a decrease implies the opposite. In other words, the location quotient can be used to measure the region's changing competitive advantage in a particular industry.

[5] Limiting issues include: 1.) productivity (output/labor input) and 2.) occupation classification

D.2. Using Shift-Share Analysis to Identify Changing Competitive Advantage

Shift-share analysis proposes another simple technique to illustrate changing competitive advantage for a region. In essence, shift-share "decomposes" a region's growth into several factors, and in so doing isolates the degree to which regional growth is due to it's own *competitive advantage*. First, shift-share isolates the *national share effect* to determine how much regional growth could be explained by growth in the nation. In times of national expansion, there will always be a tendency for all regions to grow as well, while national recessions tend to dampen the growth of each region.

Second, shift-share isolates the *industry mix effect*, which is how much of a region's growth could be explained by the region's industrial structure. If a region has a high concentration of high-growth industries, there will be a tendency for the region to grow strictly due to the presence of these industries. Conversely, a region with a high concentration of slow-growing industries could be expected to exhibit slower growth due to the concentration of slow-growth industries.

Finally, shift-share isolates the *competitive effect*, which tries to determine the degree to which the region's competitiveness contributed to regional growth. Factors such as a favorable location, an educated workforce, good infrastructure, sound regional economic policies could all be expected to contribute to regional competitiveness.

Suppose that a region has a change in employment between two years (years 1 and 2), and this change in employment is the growth we are interested in analyzing. In particular, we would like to decompose this regional growth into the three effects mentioned previously, namely the national share, industry mix and competitive effects. Since regional growth depends on the three growth effects, one could express regional employment in year 2 strictly as a function of the national share, industry mix and competitive effects in the following way:

$$\textit{Regional Employment (year 2)} = \textit{National Share Effect} + \textit{Industry Mix Effect} + \textit{Competitive Effect}$$

However, in order to achieve the estimate of the three different effects for the region, we first need to calculate those same three effects for each regional industry. In other words, in order to determine the region's national share, industry mix and competitive effects, we first need to calculate these effects at the industry level. To do this, we must first calculate the following numbers for *each* regional industry:

$$\textit{National Share} = NS_i = e_i^1 \cdot \frac{E^2}{E^1}$$

$$Industry\ Mix = IM_i = e_i^1 \cdot \left(\frac{E_i^2}{E_i^1} - \frac{E^2}{E^1} \right)$$

$$Competitive = C_i = e_i^1 \cdot \left(\frac{e_i^2}{e_i^1} - \frac{E_i^2}{E_i^1} \right)$$

Where the notation indicates the following:

e_i = regional employment in industry *i*

E_i = national employment in industry *i*

E = total national employment

The *superscripts* indicate years, with 1 for the first year and 2 for the second year in the analysis. For example, to get the competitive effect for industry *i* in year 2, we multiply regional employment in the industry in year 1 by the difference between the *regional* growth in industry *i* between years 1 and 2 and the *national* growth in industry *i* between year1 and year 2.

Applying shift share to a regional industry's employment allows the decomposition of employment change into three distinct influences. The competitive effect is arguably the most interesting, isolating the *region's competitiveness* in a particular industry, and the effect of that competitiveness on employment. Notice that this measures says nothing about the *causes* of regional competitiveness (or lack of regional competitiveness).

APPENDIX E – TAX CATEGORIES AND RATES FOR STATE LEVEL TAX IMPACT ANALYSIS

Tax Category	Pennsylvania[6]	Delaware[7]	New Jersey[8]
Individual Income Taxes	Personal Income Tax • 2.8% flat rate across all income levels	Personal Income Tax • No tax on the first $2,000 • 2.2% to 5.55% on taxable income between $2,000 and $60,000 • 5.95% on taxable income over $60,000.	New Jersey Gross Income Tax • 1.4% to 6.57% across 5 tax brackets up to $500,000 • 8.97% for earnings over $500,000
Corporate Income Taxes	Corporate Net Income Tax • 9.99% flat rate on net income	Corporate Income Tax • 8.7% flat rate on net income	Corporation Business Tax[9] • 9% flat rate "franchise" tax
Sales and Use Taxes	Sales, Use, and Hotel Occupancy Tax • 6% flat rate	(Delaware does not assess a sales tax on consumers)	Sales and Use Tax • 7% flat rate

[6] PA Department of Revenue http://www.revenue.state.pa.us/ (2007).

[7] Delaware Department of Finance, Division of Revenue http://revenue.delaware.gov/ (2007).

[8] New Jersey Division of Taxation http://www.state.nj.us/treasury/taxation/index.html (2007).

[9] NOTE: The rate reported in the table is the corporation business franchise tax rate. The minimum tax is $500. An Alternative Minimum Assessment based on Gross Receipts applies if greater than corporate franchise tax. Corporations not subject to the franchise tax are subject to a 7.25% income tax. Banking and financial corporations are subject to the franchise tax. Corporations with net income under $100,000 are taxed at 6.5%. The tax on S corporations at 0.67% is eliminated after June 30, 2007. – Source: www.taxadmin.org (2007).

APPENDIX F: COUNTY BY COUNTY INDUSTRY BREAKDOWN OF FOR-PROFIT CREATIVE ECONOMY INDUSTRY ESTABLISHMENTS

Figure F.1 – Bucks, County PA

Bucks County, PA Creative Economy Industry	Firms with Employees	Self-Employed Firms	Total
Architecture, Engineering, and Planning	345	721	1,066
Communications and Marketing	398	918	1,316
Digital Media and Programming	30	48	78
Fashion Design	42	59	101
Graphic and Visual Arts and Multimedia Design	212	1,514	1,726
Information Technology	114	19	133
Interior and Industrial Design	137	16	153
Music, Film, and Video Production	54	83	137
Photography	52	262	314
Product and Merchandising Design	849	55	904
Software Development	473	943	1,416
TOTAL	2,706	4,638	7,344

Figure F.2 – Burlington County, NJ

Burlington County, NJ Creative Economy Industry	Firms with Employees	Self-Employed Firms	Total
Architecture, Engineering, and Planning	225	387	612
Communications and Marketing	174	450	624
Digital Media and Programming	10	25	35
Fashion Design	11	21	32
Graphic and Visual Arts and Multimedia Design	95	777	872
Information Technology	83	28	111
Interior and Industrial Design	50	6	56
Music, Film, and Video Production	24	72	96
Photography	27	132	159
Product and Merchandising Design	322	21	343
Software Development	336	593	929
TOTAL	1,357	2,512	3,869

Figure F.3 – Camden County, NJ

Camden County, NJ Creative Economy Industry	Firms with Employees	Self-Employed Firms	Total
Architecture, Engineering, and Planning	232	379	611
Communications and Marketing	239	508	747
Digital Media and Programming	14	30	44
Fashion Design	20	20	40
Graphic and Visual Arts and Multimedia Design	144	1,012	1,156
Information Technology	75	10	85
Interior and Industrial Design	60	0	60
Music, Film, and Video Production	20	77	97
Photography	43	133	176
Product and Merchandising Design	345	22	367
Software Development	244	491	735
TOTAL	1,436	2,682	4,118

Figure F.4 – Chester County, PA

Chester County, PA Creative Economy Industry	Firms with Employees	Self-Employed Firms	Total
Architecture, Engineering, and Planning	326	620	946
Communications and Marketing	340	798	1,138
Digital Media and Programming	32	42	74
Fashion Design	19	45	64
Graphic and Visual Arts and Multimedia Design	150	1,174	1,324
Information Technology	115	23	138
Interior and Industrial Design	89	7	96
Music, Film, and Video Production	29	91	120
Photography	37	164	201
Product and Merchandising Design	433	41	474
Software Development	538	849	1,387
TOTAL	2,108	3,854	5,962

Figure F.5 – Delaware County, PA

Delaware County, PA Creative Economy Industry	Firms with Employees	Self-Employed Firms	Total
Architecture, Engineering, and Planning	191	547	738
Communications and Marketing	266	679	945
Digital Media and Programming	19	43	62
Fashion Design	17	36	53
Graphic and Visual Arts and Multimedia Design	119	1,251	1,370
Information Technology	88	16	104
Interior and Industrial Design	63	4	67
Music, Film, and Video Production	41	111	152
Photography	43	164	207
Product and Merchandising Design	310	25	335
Software Development	301	577	878
TOTAL	1,458	3,453	4,911

Figure F.6 – Gloucester County, NJ

Gloucester County, NJ Creative Economy Industry	Firms with Employees	Self-Employed Firms	Total
Architecture, Engineering, and Planning	105	241	346
Communications and Marketing	64	236	300
Digital Media and Programming	10	13	23
Fashion Design	8	21	29
Graphic and Visual Arts and Multimedia Design	53	484	537
Information Technology	36	10	46
Interior and Industrial Design	23	3	26
Music, Film, and Video Production	11	42	53
Photography	17	82	99
Product and Merchandising Design	194	12	206
Software Development	77	224	301
TOTAL	598	1,368	1,966

Figure F.7 – Mercer County, NJ

Mercer County, NJ Creative Economy Industry	Firms with Employees	Self-Employed Firms	Total
Architecture, Engineering, and Planning	225	366	591
Communications and Marketing	283	359	642
Digital Media and Programming	19	21	40
Fashion Design	10	26	36
Graphic and Visual Arts and Multimedia Design	106	944	1,050
Information Technology	72	19	91
Interior and Industrial Design	29	0	29
Music, Film, and Video Production	29	57	86
Photography	23	117	140
Product and Merchandising Design	210	12	222
Software Development	444	636	1,080
TOTAL	1,450	2,557	4,007

Figure F.8 – Montgomery County, PA

Montgomery County, PA Creative Economy Industry	Firms with Employees	Self-Employed Firms	Total
Architecture, Engineering, and Planning	509	897	1,406
Communications and Marketing	653	1,155	1,808
Digital Media and Programming	36	71	107
Fashion Design	63	72	135
Graphic and Visual Arts and Multimedia Design	249	2,273	2,522
Information Technology	229	27	256
Interior and Industrial Design	154	10	164
Music, Film, and Video Production	95	203	298
Photography	61	304	365
Product and Merchandising Design	842	55	897
Software Development	774	1,259	2,033
TOTAL	3,665	6,326	9,991

Figure F.9 – New Castle County, DE

New Castle County, DE Creative Economy Industry	Firms with Employees	Self-Employed Firms	Total
Architecture, Engineering, and Planning	259	394	653
Communications and Marketing	316	464	780
Digital Media and Programming	36	32	68
Fashion Design	14	23	37
Graphic and Visual Arts and Multimedia Design	131	998	1,129
Information Technology	111	45	156
Interior and Industrial Design	73	4	77
Music, Film, and Video Production	38	61	99
Photography	35	151	186
Product and Merchandising Design	289	21	310
Software Development	440	573	1,013
TOTAL	1,742	2,766	4,508

Figure F.10 - Philadelphia County, PA

Philadelphia County, PA – Creative Economy Industry	Firms with Employees	Self-Employed Firms	Total
Architecture, Engineering, and Planning	327	611	938
Communications and Marketing	477	846	1,323
Digital Media and Programming	30	88	118
Fashion Design	104	92	196
Graphic and Visual Arts and Multimedia Design	284	3,280	3,564
Information Technology	180	16	196
Interior and Industrial Design	143	15	158
Music, Film, and Video Production	99	201	300
Photography	70	290	360
Product and Merchandising Design	693	31	724
Software Development	224	653	877
TOTAL	2,631	6,123	8,754

Figure F.10 – Salem County, NJ

Salem County, NJ Creative Economy Industry	Firms with Employees	Self-Employed Firms	Total
Architecture, Engineering, and Planning	16	39	55
Communications and Marketing	13	32	45
Digital Media and Programming	0	5	5
Fashion Design	1	0	1
Graphic and Visual Arts and Multimedia Design	2	70	72
Information Technology	7	0	7
Interior and Industrial Design	4	0	4
Music, Film, and Video Production	0	0	0
Photography	4	14	18
Product and Merchandising Design	36	2	38
Software Development	6	37	43
TOTAL	89	199	288

APPENDIX G - COLLEGES AND UNIVERSITIES IN THE GREATER PHILADELPHIA REGION

The following list of colleges and universities served as the universe from which Creative Economy related degrees were measured using the National Center for Educations Statistics IPEDS database. This list was originally compiled by the Knowledge Industry Partnership and can be found on the organizations website at www.kiponline.org.

Research/Doctoral Universities

Private, non-profit:

Drexel University

University Of Pennsylvania

Public, state-related:

Temple University

University of Delaware

Comprehensive Universities

Private, non-profit:

Arcadia University

Cabrini College

Chestnut Hill College

Eastern College

Gwynedd Mercy College

Immaculata University

La Salle University

Philadelphia University

Saint Josephs University

Villanova University

Widener University - Delaware Campus

Widener University - Main Campus

Wilmington College

Public, state:

Cheyney University Of Pennsylvania

Rowan University

Rutgers University-Camden

West Chester University Of Pennsylvania

Public, state-related:

Lincoln University

Liberal Arts Colleges

Private, non-profit:

Bryn Mawr College

Delaware Valley College

Gratz College

Haverford College

Holy Family University

Neumann College

Rosemont College

Swarthmore College

Ursinus College

Public, state:

The Richard Stockton College of New Jersey

Associate of Arts Colleges

Private, non-profit:

DeVry University

Harcum College

Manor Junior College

Peirce College

Pennsylvania Institute Of Technology

Valley Forge Military College

Public, county/local:

Atlantic County College

Bucks County Community College

Burlington County College

Camden County College

Cecil Community College

Community College Of Philadelphia

Cumberland County College

Delaware County Community College

Delaware Technical & Comm. College - Wilmington

Gloucester County College

Montgomery County Community College

Salem Community College

Private, for-profit

Antonelli Institute

Art Institute Of Philadelphia

CHI Institute

CHI Institute - Rets Campus

Churchman Business School

Lansdale School Of Business

Lincoln Technical Institute

PENNCO Tech

Medical Schools/Centers, Other Health Professional Schools

Private, non-profit:

Pennsylvania College Of Optometry

Phila. College Of Osteopathic Medicine

Thomas Jefferson University

University of the Sciences in Philadelphia

Public, state:

University Of Medicine & Dentistry - Camden Campus, Stratford Campus

Other schools

Private, non-profit:

Biblical Theological Seminary

Curtis Institute Of Music

Eastern Baptist Theological Seminary

Goldey-Beacom College

Lutheran Theological Seminary At Philadelphia

Moore College Of Art And Design

Pennsylvania Academy of Fine Arts

Philadelphia College Of Bible

Reconstructionist Rabbinical College

Saint Charles Borromeo Seminary - Overbrook

The University Of The Arts1

Valley Forge Christian College

Westminster Theological Seminary

Public, state-related:

Pennsylvania State University - Great Valley

Not Classified

Public, state:

NJ Institute of Technology - Mt. Laurel Campus

Public, state-related:

Penn State Univ. - Abington College

Penn State Univ. - Delaware County Campus of the Commonwealth College

Private, for-profit:

The Restaurant School