Where in America Are the Tech Firms Going and Why: An Exploratory Analysis of Site Selection Trends in the Information Technology Sector Based on Incentive Packages from 1980 to 2018

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This paper tracks the location trends of information technology (IT) firms in the United States for the last 4 decades to identify commonalities in place-based recruitment subsidy policies and strategies. Utilizing the Good Jobs First Subsidy Tracker database, examined are: a) specific subsidy amounts; b) the type of subsidy, based on the different federal, state, and local options and c) the source of the subsidy funds, be it state, local or federal. Using ArcGIS programming, the analysis maps out the spatial clustering for new location deals of 421 IT facilities from 1981 to 2018. The trends in location choice are used to offer a typology of sub-industry relocation classifications, based on NAICS codes. These relocation flows are then evaluated for job creation outcomes. The findings indicate that fairly remote locations seem to consistently have lower number of jobs created at much higher dollar amounts spent per new job, as compared to metro areas. A clear trend of moving away from Silicon Valley emerges, where most new jobs are created in the Northeast and Canada, as a function of the most generous subsidy packages.

Keywords: incentives, subsidies, corporate welfare, information technology

INTRODUCTION

The American economy is in a changing era of industrialization through the quickly evolving technology and information industries, collectively referred to as the "new economy" (Atkinson, 2004). The Information and Telecommunications Technology sector, generally referred to as the IT sector is growing faster than any other sector, including manufacturing, finance, and professional services. According to the latest numbers from Cyberstate.org, the IT sector accounts for over 10% of America's economic output, employing 11.8 million.[1]

In an effort to attract the IT sector, economic developers design specific to the sector incentive packages of subsidies for the recruitment and retention of new economy firms. This dynamic is much studied and subject to continuous refinement in inquiry. That is the case because the assumption is that tech firms have high value creating job potential and generate positive knowledge spillovers for other local industries (Díez-Vial & Fernández-Olmos, 2015; Isaksson, Simeth, & Seifert, 2016). The most often cited beneficial outcomes of such spillovers include increasing entrepreneurial and innovation rates,

providing procurement options to local suppliers, and attracting human capital. In the context of previous findings on these dynamics, this paper tracks the location trends of the IT sector in the last 4 decades to identify commonalities in attractiveness strategies. Utilizing the Good Jobs First Subsidy Tracker database, we focus on a) subsidy amount; b) type – the 14 different state and local options and 5 federal options and c) source – state, local or federal. Parsing out IT firms from the Subsidy Tracker records for 607,000 deals, we compile a list of 421 deals, based on data availability. Using ArcGIS programming, we offer a typology of sub-industry classifications based on NAICS codes, to map out the job creation outcomes from those deals.

The results indicate the emergence and growth of IT clusters with the following commonalities in terms of subsidies and the associated new jobs created at the municipal level:

1. Most jobs created are in the Northeast US and Canada and they are congruent with the most generous packages
2. Tax credit/rebate is the most common subsidy awarded
3. The sub-industrial growth is strongest in software and data analytics
4. A clear trend of moving away from Silicon Valley emerges in the last decade, with new deals clustering in Boston, Washington, D.C., Denver and the greater Chicago area
5. Subsidies by the state are most prevalent with county-level subsidies coming second, mostly in denser metro areas

The results suggest that, although most IT jobs have been created in the Northeast, the number of jobs created in relation to the dollar amount of the incentive packages are highest in Los Angeles and the greater Chicago area. The fairly remote locations seem to consistently have low number of jobs created at much higher dollar amounts spent per new job, as compared to the metro areas.

PREVIOUS FINDINGS

The economic cycles of fast-paced technology adoption and their impact on urban and regional development around the world have been the focus of analysis in the new economy from across disciplines (Belderbos, Lykogianni, & Veugelers, 2008; Atkinson, 2004; Venables, 2006). Specifically, the creation and growth of technology cluster hubs, best exemplified by Silicon Valley, has been the subject of analysis on the socio-economic characteristics that follow such hubs (Kogut, 2003; Pellow & Park, 2002; Saxenian, 1983, 1990). Today, Silicon Valley is the home to tech market leaders such as Google, Facebook, and Apple. The literature on knowledge-intensive firm clusters, comprising works from economics, political economy, and industrial geography, sums up the reasons for IT clustering as linked to knowledge spillovers that benefit inter-firm relations in close proximity (Belderbos, Lykogianni, & Veugelers, 2008); Díez-Vial & Fernández-Olmos, 2015; Klier & Testa, 2002; Martin, 2010; Simmie & Martin, 2010; Venables, 2006). Innovation in production and operations management, learning, and "co-opetition" – competing while collaborating – are among the main reasons to seek presence in IT clusters, such as Silicon Valley.

Yet, in recent years, analysts have noted a trend of influential tech firms expanding outside Silicon Valley, mainly to mid-sized cities or even rural American areas (Byrnes & Cowan, 2007; Glass, 2011; Gura, 2012; Johnson, 2015; Miller, 2013). In September of 2017, Amazon released a Request for Proposals (RFP) for its second headquarters – Amazon Headquarters 2 (HQ2)[2] – indicating a willingness to consider many municipalities outside of established tech clusters. The RFP promised to create a new "tech campus" that would create 50,000 full time jobs with the average salary being $100,000. Cities all over the United States rushed to respond and make a case for why their city was qualified to house the new Amazon HQ2.

Major large cities, including Boston, San Francisco, Los Angeles, and New York City participated in the submission,[3] along with many mid-sized American cities, such as Detroit, Memphis, Baltimore, and Minneapolis. All RFPs promised Amazon large tax breaks and/or place-based incentive packages in their bids.[4] The body of research on such incentive packages is large, diverse in terms of industrial and community characteristics, and inconclusive in terms of cost and benefits. Since the 1990s, as works on

decreasing spatial costs in production noted that technology is changing the incentives in strategic site selection (Bollinger & Ihlanfeldt, 2003; Hanson & Rohlin, 2011; Holloway & Wheeler, 1991; Venables, 2006), analysts and scholars have studied the trend of diffusion outside of traditional business district hubs. For example, Klier and Testa (2002) find that in the 1990s New York City was slowly losing its high rank as being headquarter dense to smaller metropolitan areas with a population between $1 to $2 million. The authors posit that high-tech companies have been clustering in areas such as Raleigh, San Jose, and Austin. The findings also suggest that the relocation trend resulted in economic and social changes, such as population growth and increasing market competition. In relation, Koven and Koven (2018) compare case studies of well-known American cities that have gone through distinguishable periods of growth, rejuvenation, or decline – Austin, Boston, Minneapolis, and Detroit. Per each, the authors analyze factors that either have tended to contribute to growth or economic health – trade routes, natural resources, human capital, universities / institutions, public officials, and prominent business – or factors that have led to decline – "oppressive" taxes, ethnic intolerance, failure to adpat to new technology, "ossified" political structures. In terms of firm-level analysis of place-based decisions, the authors explain that not only do current economic dynamics matter, but also a city's history is an important factor. Other distinctive factors include transportation costs, labor costs, labor unionization, proximity to markets, suppliers, resources, and other facilities, and quality of life (attracting the worker), as being direct considerations.

These factors are well-outlined in previous works on site selection trends, which examine the importance of geography, quality of life, even social construction and culture (Barkley & Henry, 1997; Bollinger & Ihlanfeldt, 2003; Florida, 2019; Garnsey & McGlade, 2006; Hill, Wial, & Wolman, 2008; Loveman & Gabarro, 1991; Martinez-Fernandez et al. 2012). The paradoxes that emerge from such analysis is in the fact that in the new economy, as distance collaboration increases, outsourcing and out-contracting in production and services rises, and strategic markets change, a community's business attractiveness features can change as a function of policy. The policy being the incentivizing of firms' location choices through industrial recruitment and retention (Faulk, 2002; Hicks & LaFaive, 2011; Hickey, 2013; Pries, 2006; Walker & Greenstreet, 1991). Industrial recruitment has been subject to criticism for creating race-to-the-bottom perverse incentives (Davis et al., 2015; Greenstone & Moretti, 2003; Story, 2012) that erode local tax bases (Barkley & Henry, 1997; Gropp & Kostial, 2000; Mattera et al., 2012).

Industrial recruitment has also been criticized as having a negative impact on the competitiveness of small and emerging firms. Specific to the United States, LeRoy et al. (2015) review 4,200 economic development recruitment "packages," as is the term, of incentives across 14 states in analyzing the difference of awarding packages to small and medium-size enterprises (SMEs). The study finds that 80% to 96% of incentive shares are awarded to large companies, at an estimated average of $3.2 billion each year. LeRoy et al. (2015) is among the first works that provide an in-depth look not only at the economic geography of incentives, but also at the conflicts they may create. The analysis indicates that small business owners posit their operations would specifically benefit from incentives in workforce development, such as training and retention public-private partnership collaborations in subsidizing college-level courses for workers and/or vocational training initiatives. Yet, most incentives are in the form of direct monetary concessions, such as tax breaks, and abatement of utility rates, which just lower the fixed costs of production for firms (Prillaman & Meier, 2014; Sullivan & Green, 1999; Wilson, 1996; Zee, Stotsky, & Ley, 2002). Since those fixed costs are subject to economies of scale, when awarded to large firms, incentives only help larger firms become even more price-competitive in relation to smaller businesses, increasing their ability to crowd-out incoming competitors. The purpose of incentives is to "correct market imperfections" (LeRoy et al., 2015: 3). However, when they are disproportionately awarded to big-businesses, corrections are only made in a portion of the market, if at all.

In a related study from Good Jobs First, a leading equitable[5] economic development think tank in Washington, DC, Tarczynska (2016), offers details of specific well-known technology companies that have taken advantage of subsidies for their data centers, such as Google, Microsoft, Facebook, Amazon Services, and Apple. Specifically, 27 states have programs dedicated to data center incentive packages.

The report describes these companies' data centers relocation announcements as an outcome of successful "bidding wars" (Tarczynska, 2016: 2). The numbers of such bids add up to over $2 billion in subsidies, which on average amount to $1.95 million per each newly created job. In congruence with the findings of LeRoy et al. (2015) that the most generous subsidies go to the large firms, Tarczynska (2016) posits that Apple's data center incentive deals equal an outstanding $6.4 million per newly created job. Analyzing the details of data center deals, subsidizing electricity and water consumption is a common theme, as their costs comprise 70 to 80 percent of data center consumption costs (Tarczynska, 2016: 4). The implication is that labor costs are 20 to 30 percent of average fixed costs. A size effect is also noted at the regional level. Large states, and in them locales least-prone to flooding and/or are seismically stable, specifically California, Texas, and New York have the highest square footage of data centers. Yet, despite size, each has had a minor role in creating employment opportunities, averaging 3-50 jobs (Tarczynska, 2016: 15).

In summary, the logical question is echoed once again: Why are state governments subsidizing big businesses which have the resources to be self-sufficient? Research has shown that it is for amassing political capital (Gordon, Hafer, & Landa, 2007; Francia et al., 2003; Jensen et al., 2014; Jensen, Malesky, &Walsh, 2015; Jensen & Malesky, 2018). The findings indicate that politicians facing electoral pressures tend to be more "generous" in incentive concessions, especially around municipal elections.

At the state level, evidence also suggests incentives to have limited market benefits that can lead to growth in economic development. Specifically, Prillaman and Meier (2014) examine state business taxation between 1977 and 2005, with a focus on factors of economic performance that include income and labor market growth, poverty rate, and rates of entry/exit of new businesses. The findings indicate that state tax incentives have minimal influence on business relocation or site selection. The authors note that despite this fact, state policy makers continue to "enthusiastically" use these techniques. Jensen et al. (2014) explain that the reasons for such "enthusiasm" lie in the political will to show proactivity to address economic decline. The authors find that tax incentives are often given by fiscally struggling states, even when politicians have access to infromation on the ineffectiveness of incentive policies. The main reason is that voters side with the officials who have pushed through incentive deals. This political favoritism stems from hope and promise. Politicians promise that new incentive deals create jobs and voters like that promise. Despite evidence to the contrary, it is the demonstration of political action that is rewarded.

Research continues to analyze the magnitude of this discrepency in terms of concessions and the fulfillment of the promise of new economic growth. Among such works is Greenstone and Moretti (2003) who examine economic impact effects at the county level of a successful "bidder" that "wins" a site selection race. The economic impacts of the location of a new facility to the "winning" county are compared to the plants' county-level impacts of the top two contenders that lost the bid. The results indicate that economic growth patterns remain unchanged, save for a modest increase in labor earnings in the winning county of 1.1% and a 10.2% increase in property values. Discussing the case of BMW's creation of its first production complex in America in Greenville-Spartanburg, South Carolina in 1982, the authors explain that the company prioritized low union density, qualified workers, numerous global firms with presence in the area, as well as a quality transportation infrastructure. BMW also negotiated "special access" to local utilities. Follow-up investigations on what this "special access" entails suggest that it is concessions of local utility providers on payment of water, sewer, and electric rates (Anguelov, 2014; Karayel, 2017). This fact, congruent with the findings of Tarczynska (2016) that up to 80 percent of operating costs in modern data centers are for water and electricity, suggests that utility costs are an important bargaining chip in site-selection negotiations because they can be lowered by local governments. Not much other empirical work is there on this dynamic, mainly due to the fact that most incentive package specifics are not publicly available (Bartik, 2018; Jensen, 2017a,b,c). Furthermore, they are continuously renegotiated (Thomas, 2010).

In summation, investigation of who benefits from "place-based" industrial recruitment policies, as is the emerging phrase, keeps finding little in the context of equitable benefits that accrue to citizens of specific municipalities. Typically, when subsidies are given for economic development purposes, job

creation is the main motivation for buy-in. Kline and Moretti (2014) focus on successful outcomes of subsidies when jobs are created, in addition to the jobs per-se. The authors identify five areas that have been positively affected by placed-based incentives – public goods, agglomerations economies, labor market frictions, credit constraints, and/or pre-existing distortions, meaning monopolistic inefficiencies. Yet, these outcomes as subject to finer cost-benefit queries, which define localized public goods, for example. A park built by a firm for which it gets to claim community-investment credits that it can leverage against its property tax burden, can hardly be considered a public good in the pure sense of the definition. In relation, creating labor market frictions may be good for local business, as it increases competition in the labor pool, but it is because the new facility attracts labor from outside the municipality, leading to the concept of "flooding the labor pool." A flooded labor pool results in lower financial compensation – both in salaries and other benefits for workers – as well as in negative impacts on labor organization (Barnet, 1996). That is the reason why Greenstone and Moretti (2003) specify that lower unionization was essential for BMW's choice to locate in South Carolina.

The issues of equitable job creation as a function on incentives is well reflected in the reports of Good Jobs First.[6] The organization has been tracking the scope and type of incentives of over 607,000 deals throughout the United States since the 1980s. The mission of the organization states that: "given the enormous sums involved, taxpayers and public officials need and deserve better information" as tax payer money and property tax is used for incentive pay-offs in corporate welfare – the other term often used to give a negative connotation to industrial recruitment. Some of the amount estimates defy any reasonable per-job benefit-cost analysis logic. For example, Materra et al. (2013: 13) analyze over $64 billion worth of deals, starting with Volkswagen's expansion in Pennsylvania's in 1970. Comparing the amount of documented jobs created in response to these deals, the average cost per job is $456,000. Some of the well-known companies that have taken advantage of these packages are Exxon Mobil, Boeing, Airbus, Citigroup, GE, Amazon, Apple, Intel, and Samsung.

Despite the criticism, incentives are here to stay. They are politically popular and have become the primary tools of economic development policy (Faulk, 2002). To that effect, empirical efforts are underway to quantify their localized impact in direct costs. This paper adds toward that goal with a spatial approach by mapping out the location and re-location of information technology firms as a function of incentives.

DATA AND METHODS

We employed a contextual descriptive analysis of the site location trends of the information technology sector companies by analyzing documented incentive package deals between the years of 1981 and 2018, utilizing the Good Jobs First Subsidy Tracker data base (Mattera, Tarczynska, & LeRoy, 2013). Parsing out the IT sector specifically, yields a dataset of 421 deals from that time frame. The list is included as Appendix 1. We codify the deals based on received site-based incentive packages from either local or state agencies. We focus on deals as the unit of analysis, rather than company, because many of the companies are listed multiple times, as it is common for firms to acquired multiple packages at varying locations. The deals codified by: a) company name, b) location, c) sub-industry description, d) year the subsidy was awarded, e) the dollar amount of the deal in U.S. dollars, f) the level of government and agency that awarded this package, g) the type of incentive, and h) the number of jobs created.

Polyline data associated with geographical boundaries, known as TIGER/Line ID (TLID) was then coded and added to this information on a county level. Ideally, such analysis would be best conducted on the city/municipal level. However, the TLID codes are tracked per areas that have a population of 2,000 people or more. Not all boundaries of municipalities that supplied incentive packages were available, as some have populations under 2,000 people.

After merging the TLID data with the Subsidy Tracker data, the set was then uploaded into the ArcGIS program – a geographic information system that allows for the analysis of data through the creation of maps. To visually review the trends of technology industry incentive packages, maps were created to compare and represent the following information regarding each incentive:

a) per Location
b) per Year (codified into decades - 1980s, 1990s, 2000s, 2010s)
c) per Subsidy Amount (dot size is proportional to subsidy amount)
d) per Subsidy Source (state or local)
e) per Subsidy Type
f) per Sub-Industry (description or NAICS code)
g) per Jobs Created (dot size proportional to number of jobs created)

There are two major limitations in the analysis. First, as is often the case with incentives packages, specific amount and job numbers per deal are not publicly released (Mattera, Tarczynska, & LeRoy, 2013). For deals where number of jobs created is missing, used instead is "projected number of jobs." This is a very serious limitation because it is at the core of the issue of unfulfilled promises. Future research can focus on the gap between promised and materialized new jobs. The second limitation is with the geographical specifications. Subsidy Tracker compiles deal data on a city or municipal level. The information often has the exact street address of the company receiving the incentive package. However, when translating this information in the ArcGIS program, polyline boundaries were needed to spatially map locations. As previously mentioned, these polylines are usually only given to cities that have populations of over about 2,000 people. Due to some of the data centers and "server farms," as is the emerging phrase, locating in remote, sparsely populated locales, those municipalities could not be bounded by a municipal level polyline. Therefore, we had to aggregate locales from the suburb to the county level.

FINDINGS AND ANALYSIS

The spatial maps are presented below in order of deals made: A) per Location, B) per Decade, C) per Subsidy Amount, D) per Subsidy Source, E) per Subsidy Type, and F) per Sub-Industry

FIGURE 1
SPATIAL MAP A: CLUSTERS OF DEALS PER LOCATION

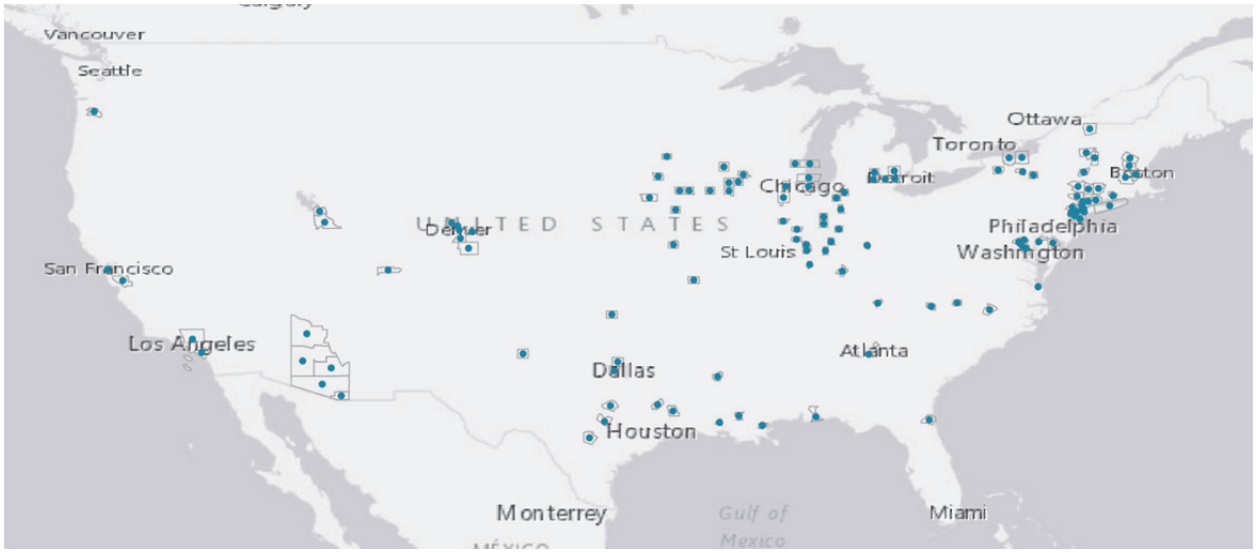


FIGURE 2
SPATIAL MAP B: CLUSTERS OF DEALS PER DECADE

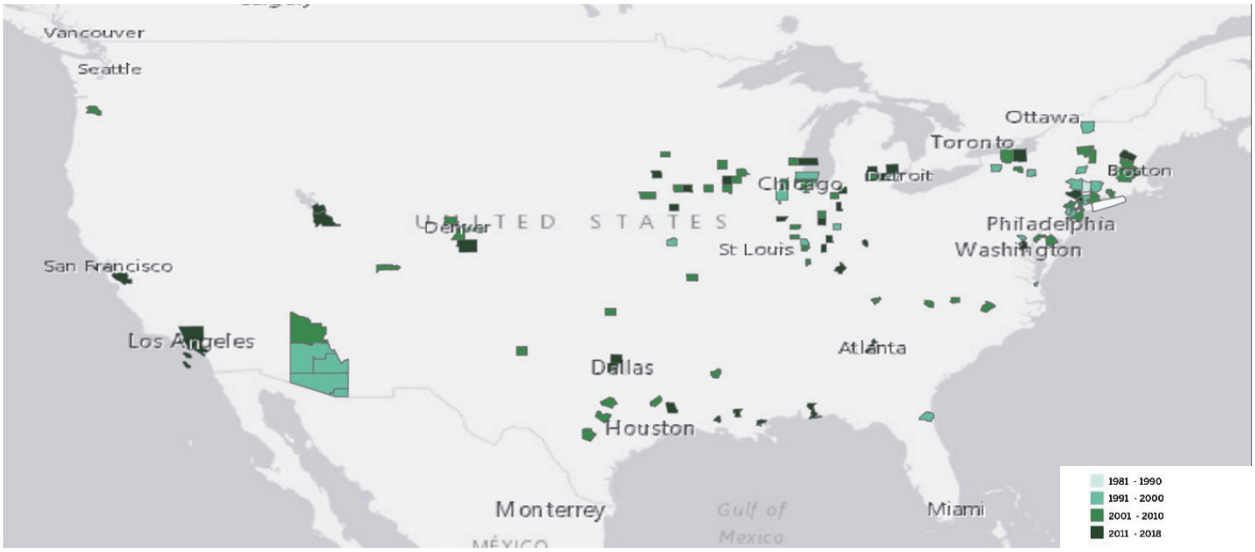


FIGURE 3
SPATIAL MAP C: CLUSTERS OF DEALS PER SUBSIDY AMOUNT

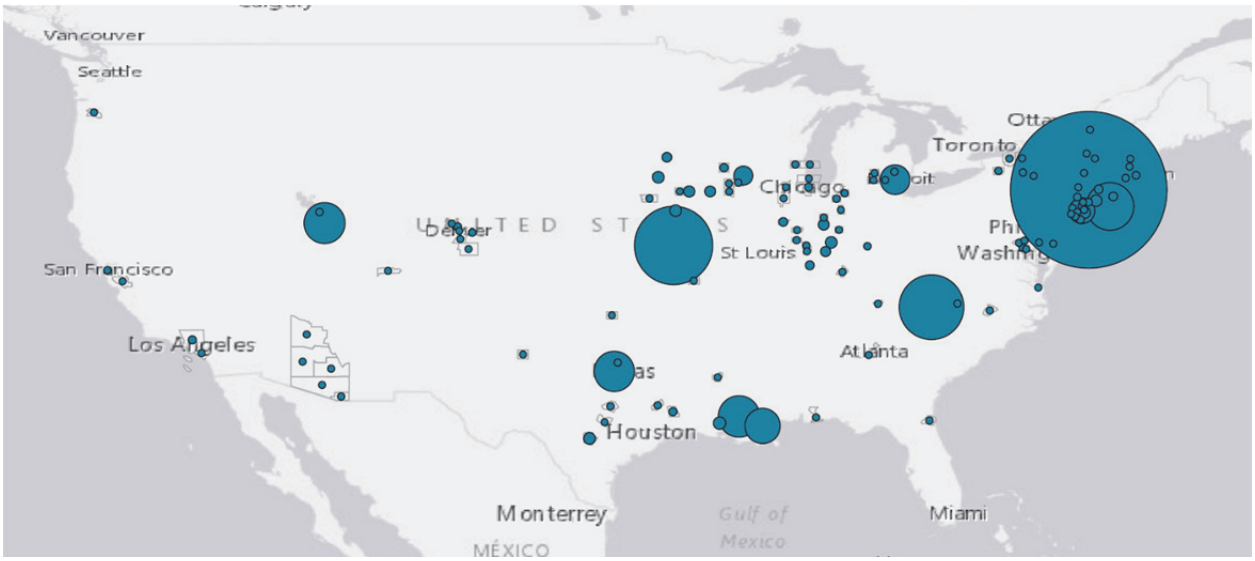


FIGURE 4
SPATIAL MAP D: CLUSTERS OF DEALS PER SUBSIDY SOURCE (LOCAL, STATE, OR FEDERAL)

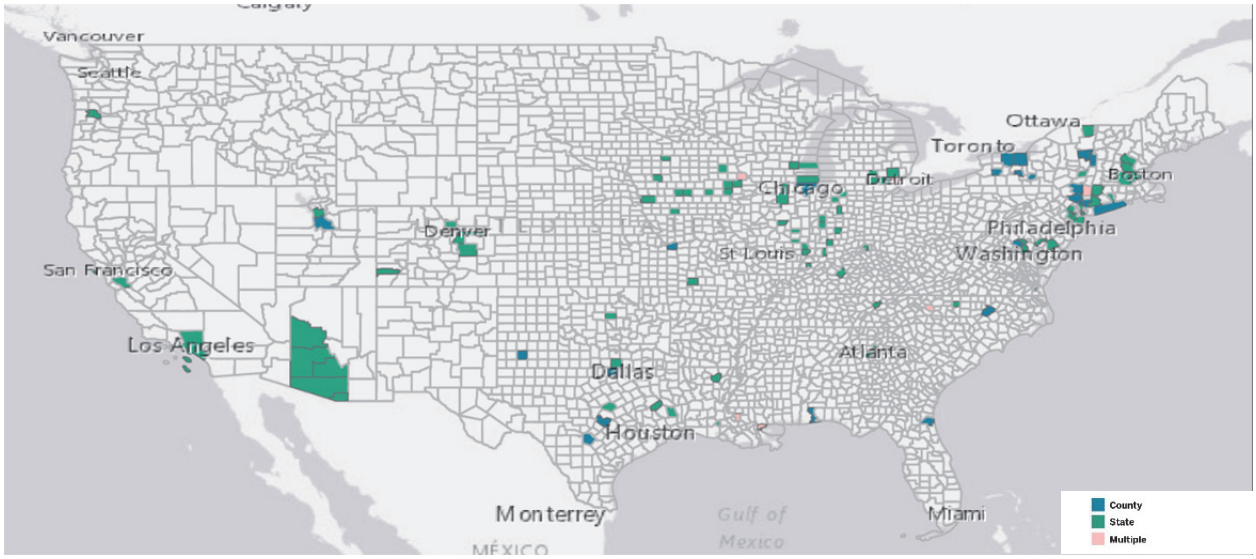


FIGURE 5
SPATIAL MAP E: CLUSTERS OF DEALS PER SUBSIDY TYPE

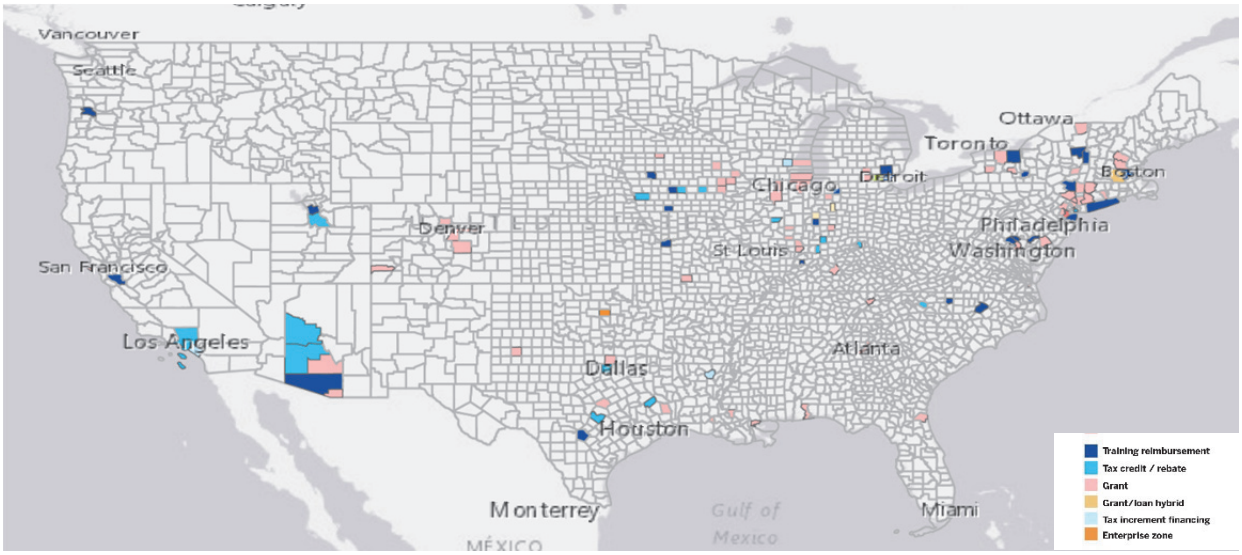


FIGURE 6
SPATIAL MAP F: CLUSTERS OF DEALS PER SUB-INDUSTRY CATEGORY

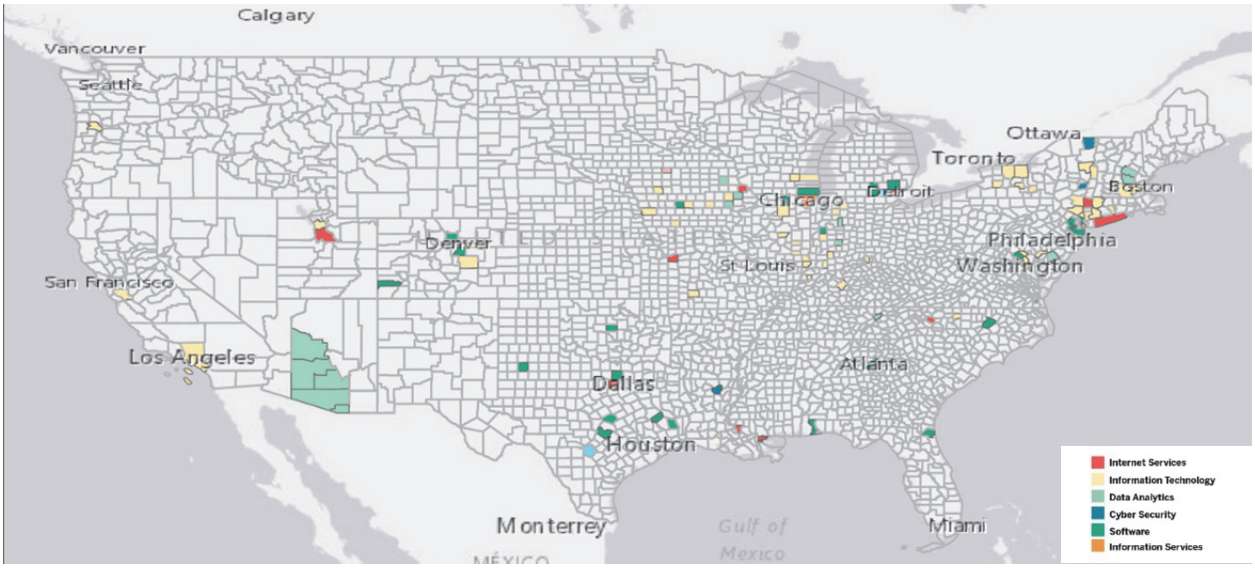
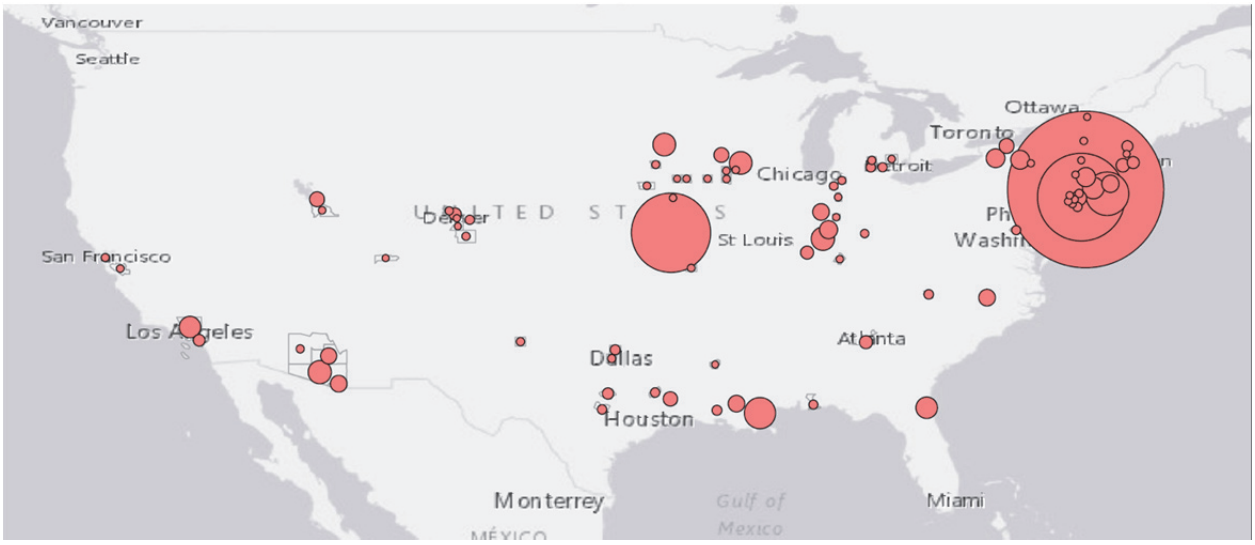


FIGURE 7
SPATIAL MAP G: CLUSTERS OF DEALS PER JOBS CREATED



In relation to the broad research question here of whether geographic patterns of IT clustering are emerging, the following summative points offer supporting evidence to that effect:

1. The quantity of information technology companies awarded subsidy packages substantially increases in 2005 and again in 2012, staying quite consistent the years in-between. Limited data is available from 2016 and on as the subsidy dollar amounts are tracked at end of year based on how much money was given to each company.
2. Florida, New York, Missouri, Iowa, and North Carolina seem to have substantially more subsidy deals in relation to the number of firms that have received incentive packages.
3. Missouri and New York have provided more local subsidy packages, while North Carolina leads in state given subsidies.

4. "Tax credit / rebate" is by far the most common type of subsidy awarded throughout all states.
5. The sub-industry description of "information technology" and "software" are the most common throughout the data.

As seen in spatial maps, the North-East contains a relatively denser proportion of deals in terms of both quantity and vale amounts. From Ottawa, Canada, through the Greater Boston and New York corridor down to the Washington DC area, it is evidence that a large cluster is emerging in the Northeast, as compared to Silicon Valley. A second, more dispersed cluster is evident in the Chicago, St. Lewis, area, reaching out westward into the Dakotas and Minnesota and Wisconsin. Denver, Huston and Dallas are next, followed by Phoenix and Tucson. Overall, around 300 of all 421 deals examined are based on incentive packages from "state" financial support, while 112 codified as supported by "local level" funding. The remaining deals are based on incentive packages from "multiple sources." The most common type of incentive is a "tax credit or rebate." It is defined as a program that combines tax credits and/or rebates with state or local grants (Mattera, Tarczynska, & LeRoy, 2013).

Company sectors labeled as having a sub-industry of "information technology" are the dominant industrial classification, receiving about half of the quantity of all awarded incentives. The awarding agencies vary greatly amongst governor offices, tax commissioners, economic development agencies, job training funds, commerce authorities, or local tax incremental financing (TIF) groups, which are either municipal governments, economic development agencies and/or redevelopment authorities, depending on which governing body oversees local property tax management (Pacewicz, 2012). In this very even mix of awarding bodies, a definite outlier emerges. Although most financing is linked to state and local subsidy sources, a federal source is first on the list here – the Department of Revenue – with 92 appearances in our data set. It must also be noted, that almost all of these incentive deals occurred in the Winston-Salem County of North Carolina. It is beyond the scope of this study to delve into this fact in detail. Further inquiry is warranted because this fact may be evidence of an informal industrial policy at the federal level, something the American government vows to not support.

The spatial analysis here also reveals commonalities in regional features of "attractiveness." We offer the following typology in the context of prior literature that includes studies from around the world, as well as the United States. In the global regional economic development literature, which comes from several disciplines, place-based incentive trends are of much interest. In the context of findings in seminal works from the literature at large, the following list outlines the most-commonly considered priorities in American tech industry site selection:

- Cheap Electricity / Water (Tarczynska, 2016; Koven & Koven, 2018)
- Seismically Stable / Natural Resources (Pendall, Foster, & Cowell, 2010; Rose & Liao, 2005; Tarczynska, 2016)
- Trade Routes / Transporation Costs (Garnsey & McGlade, 2006; Hill, Wial, & Wolman, 2008; Koven & Koven, 2018)
- Degree of Competition / Knowledge Spillover (Belderbos, Lykogianni, & Veugelers, 2008; Klier & Testa, 2002; Kline & Moretti, 2014; Kogut, 2003)
- Network of Firms / Concentrating Resources (Belderbos, Lykogianni, & Veugelers, 2008; Markle & Shackelford, 2014; Martinez-Fernandez et al., 2012)
- Infrastructure and Assets (Aguezzoul, 2014; Martinez-Fernandez et al., 2012)
- Population Skills / Human Capital (Bollinger & Ihlanfeldt, 2003; Garnsey & McGlade, 2006; Loveman & Gabarro, 1991; Martinez-Fernandez et al., 2012)
- Universities / Institutions (Briguglio et al., 2006; Kogut, 2003; Koven & Koven, 2018)
- Quality of Life / Recruiting (Koven & Koven, 2018; Venables, 2006)

In summary, we conclude that there are clear hot spots for technology location selections. There is greater quantity of new location deals on the East coast, from Boston to Washington, D.C., to be followed by the Midwest, *i.e.*, the greater Chicago area and Denver, Colorado. Very little of the same is occurring in the well-known tech hub, Silicon Valley. A detailed analysis on this point is needed because this fact

may indicate not that new enterprise is not forming or locating to the Valley, but rather that monetary incentives are not needed for those deals. The knowledge spillovers of the Silicon Valley cluster may be important enough and local governments would not and do not engage in industrial recruitment competition as they do in other regions of America.

In this competition for deals, new jobs are the ultimate goal of local governments. Therefore, we treat new job creation as a measure of success of place-based incentive policies, based on the number of jobs created in comparison to the dollar amount of the incentive package. From the spatial maps presented here, a first-glance impression would suggest that considerably more jobs are created in the clusters on the East Coast. However, when controlling for the amount of incentive dollars associated with each job, maps C and G indicate that Los Angeles and the greater Chicago area are more successful in capturing incentives-to-new-jobs value.

The results also indicate that the fairly remote, in terms of being away from major cities and other clusters, locales consistently tend to end up creating a lower number of jobs at higher dollar amounts spent per each. This fact could be capturing a factor discussed in professional and trade press but not yet well-addressed by the academy of the emergence of "data and server farms." These facilities, which employ relatively few workers, are attracted to fairly remote areas for direct cost-cutting reasons. The trend is reminiscent of the "rural stage of dispersion" discussed in the literature on the product life cycle (Atkinson, 2004; Klepper, 1996; Vernon, 1979). It follows the innovation stage, which generally occurs in a large metro area, when enterprises scale up production volumes for mass-market supply, and move production facilities to rural areas. Is the same dynamic emerging in modern IT? It might be. Spatial Map B indicates that fairly recent deals – from 2011 to 2018 – still strongly clustered in Silicon Valley and large cities. Furthermore, Map F – offering the sub-industry granulation – indicates that those locales were favorited by "technology" firms in comparison to "software." "Software" is associated with component manufacturing, therefore, within the IT sector it is relatively more labor intensive. Further analysis on incidence and type of company and service and/or production is needed.

The results also show a strong size correlation between the mapped number of newly created jobs and the amount and/or value of incentive packages. Larger incentive packages create more jobs, yet it is unclear if all incentive packages create enough jobs to offset their concessions. The results here do indicate a significant increase in the creation of over 1,000 jobs after deals reach the $7 million incentive package price tag.

Another trend is also evident. We observe cluster forming in a path-dependent manner. The data indicate that, especially in the last decade, technology companies may be moving or setting up new presence away from Silicon Valley to other metropolitan areas such as the Chicago, Denver, Boston, New York and Washington, DC, but mainly when there was an established tech company in the area of at least ten years. This trend has similarities with the concept of "satellite cluster" in Markusen (1996) typology of industrial clusters. Future studies can analyze the knowledge sourcing component in IT entrepreneurship of the relationship between new arrivals and local well-established industrial partners.

CONCLUSION AND IMPLICATIONS

The geo-spatial analysis of site-selection trends of IT firms performed here indicate a trend to geographically "hug" inner metropolitain areas. While this fact is well-reflected in previous research, our results provide a granulation in site selection preferences. We observe that medium size metropolitan areas are preferred by sales centers specializing in data commerce. On the other hand, manufacturing centers, producing IT components are clustering in less population-dense areas. We note a rise in the location of such facilities to rural areas. This fact could be due to advances in communication and production that allow for detaching of manufacturing, sales, and research departments. Future research can focus in such hypothetical detachment in the context of outcontracting. It would help policy makers better understand the needs of companies, as well as their operations. This understanding can better inform incentive design.

As with much prior research, our analysis notes a disproportionate relationship between the generocity of incentives and the jobs they create. The results show that fairly generous incentives packages are given in actual IT industrial clusters. Although the clusters are metro-area specific, the most commonly awarded type of incentives are not municipla but state-funded. This fact could be linked to the large emounts of such packages, which are beyond the funding capacity even of large metro areas. Those metro area "hugging" clusters have grown in the past 40 years mainly on the East Coast, in locales that have historically been manufacturing industrial hubs. The implication is that as these locales are moving into the new, knowledge-intensive economy, they are more aggressively competing for new IT facilities.

Question still remains: Would IT firms choose such locales that are "diverse," in terms of human resources and finance, yet "stable," in terms of infrastructure and economic geography? Or are incentives the new path-dependent state in economic development? Has the process of awarding incentives become a policy? It is imperative to continue analyzing such questions in the context of productivity gains from technology itself. If incentives are justified by their promise to create jobs, when productivity growth is assocaited with fewer jobs, what is the actual justification for incentive-based industrial recruitment competition?

One thing the bid for Amazon's new headquarters showed policy makers is that the firm had specific needs, which at first were not well-outlined in the RFP for incentives. As a result, big and small cities, in strategic hot spots and in declining regions, raced to attract Amazon with incentives. There was a well-covered backlash against the incentives offered, the promises of jobs that were nebulous, and the actual need of incentives per-se when negotiating site selection options with a firm such as Amazon. In the end, the firm chose Arlington, Va after pulling out of New York City because of the political and communal outcry against the generous incentives NYC and the states offered (Stevens, Vielkind, & Honan, 2019).

In Virgiania, when all is finalized, the new facility would cost the state over half a billion dollars in tax breaks, direct cash payments, and, as Wikipedia puts it: "other incentives." This amount is decidedly lower than the estimated $3 billion New York offered. Analysis of why is largely absent, however it merits attention. Why would Amazon settle for a much less generious deal? Was this fact an outcome of the public outcry against coroporate welfare, as the media rightfully portrayed the bidding process with high publicity? When big incentive deals are subject to such high level of public attention, is a checks and balances process occurring that can have price discovery and correction features of incentive amounts? Much of the literature deals with a fundamental question on why municipalities offer very generious incentives in return for benefits that are often sub-par.

There are no clear answers to that question because few analysts can quantify what is too much to offer, especially in the context of non-incentive benefits that firms seek. In the case of Amazon, when the public outcry about incentives reached national political prominance, Amazon skillfully responded with a justification of its final choice of location in Northern Virginia with a reason that was not contingent on specific incentive amounts. The media, at large, reported that reason to be that the DC metro area attracts talent and therefore, offers an uniquely creative labor pool. This labor pool has already helped establish the area as a dynamic IT cluster. Just like the majority of 421 IT firms analyzed here, Amazon chose a municipality on the East Coast, "hugging" a major metro area, where not one, but several major IT firms have established strong presence, including Datatel, Accenture, and IBM, and where incentive packages, while fairly generous, are mainly funded by the state. These are the major trends that our analysis reveals in site-selection redirection of IT companies from Silicon Valley to the East Coast. Amazon's HQ2 choice to expand in Arlington, VA is congruent with the results in this study.

ENDNOTES

1. Estimated values available at: https://www.cyberstates.org
2. Text available at: https://images-na.ssl-images-amazon.com/images/G/01/Anything/test/images/usa/RFP_3._V516043504_.pdf
3. Text available at: https://www.amazon.com/b?ie=UTF8&node=17044620011
4. Spatial map of bidding communities available at: https://reflect.github.io/amazon-hq2-proposals/
5. Equitable in terms of a focus on community benefits, as compared with other think tanks, such as the US Council on Competitiveness, which are primarily focused on the needs of firms
6. Available at: https://www.goodjobsfirst.org/publications

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APPENDIX

LIST OF THE ANALYZED DEALS

subsidy_year	company	location	city	subsidy_amount_adjusted_for_megadeal	subsidy_type	jobs_data	subsidy_source
1989	Computer Associates (now CA Technologies)	NY	Islandia	$176,769,579	MEGADEAL	3000	local
1999	Compuware Corp.	MI	Detroit	$100,000,000	MEGADEAL		multiple
2000	Computer Sciences Corporation (CSC)	KY	Barbourville	$3,296,569	tax credit/rebate	301	state
2000	IBM	NY	East Fishkill	$650,034,747	MEGADEAL	1000	multiple
2002	International Business Machines Corp.	NY	Poughkeepsie	$16,700,000	enterprise zone	11483	state
2003	IBM Corp	NY	Armonk	$3,394,237	tax credit/rebate; property tax abatement	12311	local
2003	Computer Associates/Islandia Centre Associates	NY	Islandia	$627,107	tax credit/rebate; property tax abatement	2518	local
2003	marketRx, a Cognizant Company	NJ	Bridgewater	$183,792	grant	40	state
2003	Intuit, Inc.	AZ	Tucson	$480,619	training reimbursement	1337	state
2003	Pershing Road Development Co., LLC	MO	Kansas City	$294,798,689	MEGADEAL	5846	local
2003	International Business Machines Corp.	NY	Poughkeepsie	$13,550,000	enterprise zone	11398	state
2004	CDW Corporation	IL	Chicago	$729,991	tax credit/rebate		state
2004	IBM Corp	NY	Armonk	$2,500,335	tax credit/rebate; property tax abatement	974	local
2004	Computer Associates/Islandia Centre Associates	NY	Islandia	$580,176	tax credit/rebate; property tax abatement	1400	local
2004	Moldflow	NY	Ithaca	$35,786	tax credit/rebate; property tax abatement	15	local
2004	Medidata Solutions, Inc.	NJ	Edison	$642,010	grant	60	state
2004	International Business Machines Corp.	AZ	Tucson	$99,483	training reimbursement	200	state
2004	MICROS Systems, Inc.	MD	Columbia	$13,753	tax credit/rebate		state
2004	International Business Machines Corp.	NY	Poughkeepsie	$3,500,000	enterprise zone	0	state
2005	FactSet Research Systems Inc.	CT	Norwalk	$7,000,000	tax credit/rebate		state
2005	CDW Corporation	IL	Vernon Hills, Mettawa	$74,884	tax credit/rebate		state
2005	CDW Corporation	IL	Chicago	$882,269	tax credit/rebate		state
2005	IBM Corp	NY	Armonk	$1,673,688	tax credit/rebate; property tax abatement	974	local
2005	Computer Associates Intl., Inc.	NY	Islandia	$685,789	tax credit/rebate; property tax abatement	0	local
2005	Computer Associates/Islandia Centre Associates	NY	Islandia	$537,349	tax credit/rebate; property tax abatement	1400	local
2005	Moldflow	NY	Ithaca	$27,585	tax credit/rebate; property tax abatement	15	local
2005	ADS/Mythics	VA	Virginia Beach	$65,000	grant		local
2005	Google	OR	The Dalles	$360,000,000	MEGADEAL		local
2005	International Business Machines	AZ	Tucson	$700,000	training reimbursement	755	state
2005	Intuit, Inc.	AZ	Tucson	$59,823	training reimbursement	53	state
2005	MICROS Systems, Inc.	MD	Columbia	$11,625	tax credit/rebate		state
2005	Fidelity Information Services, Inc.	NY	Albany	$35,500	enterprise zone	9	state
2005	Fujitsu Transaction Solutions, Inc.	NY	Plattsburgh	$2,600	enterprise zone	0	state
2006	McGraw-Hill Companies, Inc., The	IA	Dubuque	$1,000,000	infrastructure assistance	175	state
2006	CDW Corporation	IL	Vernon Hills, Mettawa	$160,021	tax credit/rebate		state
2006	CDW Corporation	IL	Chicago	$1,050,275	tax credit/rebate		state
2006	CDW Corporation	IL	Vernon Hills	$106,500	grant		state
2006	Computer Sciences Corporation (CSC)	KY	Williamsburg	$2,000,000	tax credit/rebate	179	state
2006	IBM Corp	NY	Armonk	$1,296,693	tax credit/rebate; property tax abatement	10986	local
2006	Moldflow	NY	Ithaca	$25,333	tax credit/rebate; property tax abatement	24	local
2006	International Business Machines Corp.	AZ	Tucson	$1,201,751	training reimbursement	805	state
2006	Google, Inc.	AZ	Tempe	$521,289	training reimbursement	100	state
2006	IBM Global Services	IN	Indianapolis	$97,000	training reimbursement	30	state
2006	Fidelity Global	FL	Jacksonville	$995,000	grant	1200	local
2007	IBM	CO	Boulder	$200,000	grant	100	state
2007	Submittal Exchange, LLC	IA	Adel	$60,000	grant	4	state
2007	Google, Inc.	IA	Council Bluffs	$1,406,250	tax credit/rebate	60	state
2007	CDW Corporation	IL	Vernon Hills, Mettawa	$351,660	tax credit/rebate		state
2007	CDW Corporation	IL	Chicago	$1,415,648	tax credit/rebate		state
2007	DoubleClick Inc.	IL	Chicago	$412,018	tax credit/rebate		state
2007	CDW Corporation	IL	Chicago	$125,000	grant		state
2007	IAC/Interactive Corp.	NY	Brooklyn	$20,906,771	tax credit/rebate		state
2007	IBM Corporation	NY	Armonk	$1,100,300	tax credit/rebate; property tax abatement	974	local
2007	International Business Machines	NY	Rochester	$1,074,700	tax credit/rebate; property tax abatement	650	local
2007	IBM	NY	Warwick	$739,688	tax credit/rebate; property tax abatement	132	local
2007	LeFrois Development LLC - Unisys Corporation	NY	Rochester	$64,966	tax credit/rebate; property tax abatement	274	local
2007	Moldflow	NY	Ithaca	$24,563	tax credit/rebate; property tax abatement	15	local
2007	DST	MO	Kansas City	$312,024	tax increment financing	1484	local
2007	Microsoft Corp.	TX	San Antonio	$20,794,983	property tax abatement		local
2007	CommVault Americas, Inc.	NJ	Oceanport	$3,755,745	grant	180	state
2007	Google	NC	Lenoir	$254,700,000	MEGADEAL	210	multiple
2007	MICROS Systems, Inc.	MD	Columbia	$7,299	tax credit/rebate		state
2008	Trizetto	CO	Denver	$30,000	grant	20	state
2008	Trizetto	CO	Denver	$24,000	grant	12	state
2008	Trizetto	CO	Denver	$20,000	grant	10	state
2008	CDW Corporation	IL	Vernon Hills, Mettawa	$435,368	tax credit/rebate		state
2008	CDW Corporation	IL	Chicago	$1,225,884	tax credit/rebate		state
2008	athenahealth, Inc.	ME	Belfast	$72,856	tax credit/rebate	120	state
2008	Athenahealth	ME	Belfast	$52,255	training reimbursement	159	state
2008	SAS Institute, Inc.	NC	Winston-Salem	$910,597	tax credit/rebate		state
2008	SAS Institute, Inc.	NC	Winston-Salem	$66,750	tax credit/rebate		state
2008	IBM LBPS	NC	Winston-Salem	$13,044,000	grant		state
2008	HCL America, Inc.	NC	Winston-Salem	$6,765,000	grant		state
2008	SAS Institute, Inc.	NC	Winston-Salem	$536,279	tax credit/rebate		state
2008	Red Hat, Inc.	NC	Winston-Salem	$193,500	tax credit/rebate		state
2008	Synopsys, Inc.	NC	Winston-Salem	$21,865	tax credit/rebate		state
2008	TIBCO Software, Inc.	NC	Winston-Salem	$14,366	tax credit/rebate		state
2008	Oracle	UT	West Jordan	$15,124,000	tax credit/rebate	100	state
2008	IBM Corporation	DE	Camden	$50,000	training reimbursement		state
2008	NCS Pearson Inc	IA	Iowa City	$575,320	training reimbursement	50	state
2008	DST	MO	Kansas City	$343,989	tax increment financing		local
2008	DST Realty	MO	Kansas City	$299,030	tax increment financing		local
2008	IBM Corporation	NJ	Englewood Cliffs	$3,498,000	grant	100	state
2008	McGraw-Hill Companies, Inc.	NY	New York	$889,746	tax credit/rebate; property tax abatement	6641	local
2008	IBM	NY	East Fishkill	$138,061,913	MEGADEAL	1000	state
2008	International Business Machines Corp.	AZ	Tucson	$1,500,000	training reimbursement	1090	state
2008	IBM Global Services	IN	Indianapolis	$150,000	training reimbursement	0	state
2008	Micros Systems, Inc.	MD	Columbia	$9,338	tax credit/rebate		state
2008	Fidelity Info Sys	FL	Jacksonville	$1,140,000	grant	800	local
2008	Fidelity Information Services, Inc.	NY	Albany	$85,000	enterprise zone		state
2008	Fujitsu Frontech North America, Inc.	NY	Plattsburgh	$2,000	enterprise zone	2	state
2008	International Business Machines Corp.	NY	Poughkeepsie	$12,872,899	enterprise zone	0	state
2009	Trizetto Group, Inc.	CO	Denver	$153,000	grant	34	state
2009	Trizetto Group, Inc.	CO	Denver	$54,000	grant	12	state
2009	Submittal Exchange, LLC	IA	Adel	$125,000	grant	0	state
2009	IBM Corporation	IA	Dubuque	$11,700,000	infrastructure assistance	1300	state
2009	IBM (City of Dubuque)	IA	Dubuque	$450,000	infrastructure assistance	0	state
2009	CDW Corporation	IL	Vernon Hills, Mettawa	$217,513	tax credit/rebate		state

2009	athenahealth, Inc.	ME	Belfast	$180,552	tax credit/rebate	209	state
2009	SAS Institute, Inc.	NC	Winston-Salem	$274,561	tax credit/rebate		state
2009	Jack Henry & Associates, Inc.	NC	Winston-Salem	$236,940	tax credit/rebate		state
2009	Red Hat, Inc.	NC	Winston-Salem	$342,000	tax credit/rebate		state
2009	IBM	NH	Bedford	$100,000	training reimbursement	12	state
2009	IBM Corporation	NY	Armonk	$1,938,087	tax credit/rebate; property tax abatement	7477	local
2009	International Business Machines	NY	Rochester	$723,680	tax credit/rebate; property tax abatement		local
2009	International Business Machines Corporation	NY	Warwick	$74,933	tax credit/rebate; property tax abatement	0	local
2009	LeFrois Development LLC - Unisys Corporation	NY	Rochester	$56,774	tax credit/rebate; property tax abatement		local
2009	Moldflow	NY	Ithaca	$22,024	tax credit/rebate; property tax abatement	40	local
2009	International Business Machines	IA	Dubuque	$5,351,130	training reimbursement	650	state
2009	NCS Pearson Inc	IA	Iowa City	$754,600	training reimbursement	60	state
2009	ADS/Mythics	VA	Virginia Beach	$75,000	grant		local
2009	Apparatus, Inc.	IN	Indianapolis	$1,300,000	tax credit/rebate	130	state
2009	Electronic Data Systems LLC	IN	West Lafayette	$300,000	training reimbursement	211	state
2009	Micros Systems, Inc.	MD	Columbia	$118,592	tax credit/rebate		state
2009	IBM	IA	Dubuque	$31,000,000	MEGADEAL	1300	multiple
2009	CCH Inc.	IL	Chicago	$5,000,000	tax increment financing		Local
2009	Tyler Technologies, Inc.	TX	Lubbock	$489,000	grant	107	local
2009	Fidelity Information Services, Inc.	NY	Albany	$74,042	enterprise zone	2	state
2009	Fujitsu Frontech North America, Inc.	NY	Plattsburgh	$2,000	enterprise zone		state
2009	International Business Machines Corp.	NY	Poughkeepsie	$17,230,456	enterprise zone	0	state
2010	CSC	KY	Corbin	$400,000	tax credit/rebate	10	state
2010	athenahealth, Inc.	ME	Belfast	$263,277	tax credit/rebate	237	state
2010	Google, Inc.	NC	Winston-Salem	$162,500	tax credit/rebate		state
2010	Jack Henry & Associates, Inc.	NC	Winston-Salem	$13,349	tax credit/rebate		state
2010	Medfusion, Inc.	NC	Winston-Salem	$12,750	tax credit/rebate		state
2010	IBM LBPS	NC	Winston-Salem	$10,372,000	grant		state
2010	Switch, Inc.	TX	San Antonio, Fort Worth	$11,418	cost reimbursement		state
2010	Facebook	TX	Austin	$1,400,000	grant	200	state
2010	MediConnect Global Inc.	UT	Ephraim City	$1,754,800	tax credit/rebate	306	state
2010	International Business Machines	IA	Dubuque	$4,594,517	training reimbursement	520	state
2010	DST Realty	MO	Kansas City	$216,124	tax increment financing	365	local
2010	DST Realty	MO	Kansas City	$375,121	tax increment financing	1484	local
2010	Pershing Road Development Co, LLC	MO	Kansas City	$9,892,934	tax increment financing	4340	local
2010	International Business Machines Corporation	NY	Warwick	$81,854	tax credit/rebate; property tax abatement		local
2010	Moldflow	NY	Ithaca	$19,764	tax credit/rebate; property tax abatement		local
2010	International Business Machines	NY	Rochester	$1,323,574	tax credit/rebate; property tax abatement		local
2010	LeFrois Development LLC - Unisys Corporation	NY	Rochester	$47,976	tax credit/rebate; property tax abatement		local
2010	Science Applications International Corp	TN	Oak Ridge	$800,000	training reimbursement		state
2010	eClinicalWorks	MA	Westborough	$1,560,000	tax credit/rebate	530	state
2010	TriZetto Group, Inc., The	NJ	Union	$793,307	grant	45	state
2010	Apparatus, Inc.	IN	Indianapolis	$100,000	training reimbursement	130	state
2010	Facebook Inc.	TX	Austin	$200,000	grant	200	local
2010	Micros Systems, Inc.	MD	Columbia	$143,689	tax credit/rebate		state
2010	Microsoft	IA	West Des Moines	$65,317,242	MEGADEAL	69	multiple
2010	Fidelity Information Services, Inc.	NY	Albany	$34,000	enterprise zone	0	state
2011	Jack Henry & Associates, Inc.	MO	Springfield	$604,800	tax credit/rebate	60	state
2011	NCS Pearson Inc	IA	Iowa City	$442,500	training reimbursement	50	state
2011	Pershing Road Development Co, LLC	MO	Kansas City	$9,742,976	tax increment financing	4340	local
2011	DST	MO	Kansas City	$306,276	tax increment financing	1484	local
2011	DST Realty	MO	Kansas City	$101,203	tax increment financing	365	local
2011	The TriZetto Group, Inc.	CO	Denver	$4,856,403	tax credit/rebate	553	state
2011	Gartner Inc.	CT	Stamford	$20,000,000	tax credit/rebate	1201	state
2011	Gartner Inc.	CT	Stamford	$5,000,000	grant/loan hybrid program		state
2011	Pearson Inc. and related entities	NJ	Hoboken	$82,548,489	tax credit/rebate		state
2011	Computer Sciences Corporation	NC	Winston-Salem	$4,750,000	tax credit/rebate	380	state
2011	Google, Inc.	NC	Winston-Salem	$121,500	tax credit/rebate	9	state
2011	Computer Sciences Corporation	NC	Winston-Salem	$41,250	tax credit/rebate	55	state
2011	SAS Institute, Inc.	NC	Winston-Salem	$147,750	tax credit/rebate	197	state
2011	SAS Institute, Inc.	NC	Winston-Salem	$624,768	tax credit/rebate		state
2011	Red Hat, Inc. I	NC	Winston-Salem	$6,755,250	grant		state
2011	Red Hat, Inc. II	NC	Winston-Salem	$8,270,250	grant		state
2011	Extreme Networks, Inc.	NC	Winston-Salem	$3,658	tax credit/rebate		state
2011	Sap America, Inc.	NC	Winston-Salem	$24,154	tax credit/rebate		state
2011	Jack Henry Services, Inc.	NC	Winston-Salem	$32,913	tax credit/rebate		state
2011	HP Enterprise Services, LLC	NC	Winston-Salem	$155,894	tax credit/rebate		state
2011	SAS Institute, Inc.	NC	Winston-Salem	$228,842	tax credit/rebate		state
2011	International Business Machines Corporation	NC	Winston-Salem	$12,002,852	tax credit/rebate		state
2011	Red Hat Inc.	MA	Westford	$3,397,500	tax credit/rebate	414	state
2011	Dun & Bradstreet Corporation, The	NJ	Parsippany-Troy Hills	$1,009,125	grant	30	state
2011	Moldflow	NY	Ithaca	$17,705	tax credit/rebate; property tax abatement		local
2011	LeFrois Development LLC - Unisys Corporation	NY	Rochester	$40,528	tax credit/rebate; property tax abatement		local
2011	IBM	NY	Yorktown Heights	$201,916	tax credit/rebate; property tax abatement		local
2011	International Business Machines	NY	Rochester	$808,759	tax credit/rebate; property tax abatement		local
2011	Pearson	NJ	Hoboken	$0	MEGADEAL	650	multiple
2011	PAYCOM PAYROLL LLC	OK	Oklahoma City	$8,584	grant		state
2011	PAYCOM PAYROLL LLC	OK	Oklahoma City	$13,749	grant		state
2011	PAYCOM PAYROLL LLC	OK	Oklahoma City	$27,086	grant		state
2011	PAYCOM PAYROLL LLC	OK	Oklahoma City	$32,319	grant		state
2011	Microsoft Corporation	IA	West Des Moines	$131,242	tax credit/rebate	10	state
2011	Red Hat, Inc.	NC	Raleigh	$1,000,000	grant	800	local
2011	Fidelity Information Services, Inc.	NY	Albany	$32,643	enterprise zone	66	state
2011	Fujitsu Frontech North America, Inc.	NY	Plattsburgh	$3,800	enterprise zone	54.25	state
2012	Emerging Threats Pro LLC	IN	Tippecanoe	$500,000	grant		state
2012	CGI Technologies	TX	Belton	$1,800,000	grant	350	state
2012	IBM	NH	Bedford	$52,500	training reimbursement	250	state
2012	Computer Programs and Systems Inc	LA	Monroe	$30,000	enterprise zone	12	state
2012	Factset Research Systems, Inc.	CT	Norwalk	$2,000,000	grant/loan hybrid program		state
2012	Living Social, Inc.	AZ	Tucson	$100,123	training reimbursement		state
2012	PAYCOM PAYROLL LLC	OK	Oklahoma City	$39,301	grant		state
2012	PAYCOM PAYROLL LLC	OK	Oklahoma City	$55,464	grant		state
2012	PAYCOM PAYROLL LLC	OK	Oklahoma City	$60,785	grant		state
2012	PAYCOM PAYROLL LLC	OK	Oklahoma City	$80,848	grant		state
2012	IHS Inc.	CO	Englewood	$1,625,625	tax credit/rebate	185	state
2012	Citrix Systems, Inc.	NC	Winston-Salem	$8,655,000	grant		state
2012	SAS Institute, Inc.	NC	Winston-Salem	$323,250	tax credit/rebate	431	state
2012	Google, Inc.	NC	Winston-Salem	$737,500	tax credit/rebate	59	state
2012	SAS Institute, Inc.	NC	Winston-Salem	$2,146,922	tax credit/rebate		state
2012	Symitar Systems, Inc.	NC	Winston-Salem	$1,945	tax credit/rebate		state
2012	Extreme Networks, Inc.	NC	Winston-Salem	$5,167	tax credit/rebate		state
2012	Sap America, Inc.	NC	Winston-Salem	$15,296	tax credit/rebate		state
2012	Jack Henry Services, Inc.	NC	Winston-Salem	$20,638	tax credit/rebate		state
2012	Citrix Systems, Inc.	NC	Winston-Salem	$94,509	tax credit/rebate		state
2012	HP Enterprise Services, LLC	NC	Winston-Salem	$113,843	tax credit/rebate		state
2012	Symantec Corporation	NC	Winston-Salem	$219,462	tax credit/rebate		state
2012	SAS Institute, Inc.	NC	Winston-Salem	$233,343	tax credit/rebate		state
2012	International Business Machines Corp.	NC	Winston-Salem	$12,828,223	tax credit/rebate		state
2012	Red Hat, Inc.	NC	Winston-Salem	$127,468	tax credit/rebate		state
2012	Connecture, Inc.	WI	Waukesha	$1,200,000	tax credit/rebate		state
2012	SS&C Technologies, Inc.	IN	Evansville	$8,300,000	tax credit/rebate	500	state

2012	SS&C Technologies, Inc.	IN	Evansville	$200,000	training reimbursement	500	state
2012	Google, Inc.	IA	Council Bluffs	$9,600,000	tax credit/rebate	35	state
2012	Submittal Exchange, LLC	IA	West Des Moines	$150,000	tax credit/rebate	23	state
2012	International Business Machines (IBM)	WV	Rocket Center	$110,364	training reimbursement	292	state
2012	FactSet Research Systems, Inc.	CT	Norwalk	$8,000,000	tax credit/rebate	Jobs to be Retaine	state
2012	HCL America Inc.	MI	Jackson	$875,000	grant/loan hybrid program	200	state
2012	Synopsys, Inc.	OR	Hillsboro	$7,079	tax credit/rebate		state
2012	Moldflow	NY	Ithaca	$17,379	tax credit/rebate; property tax abatement	created: 15; retain	local
2012	LeFrois Development LLC - Unisys Corporation	NY	Rochester	$29,911	tax credit/rebate; property tax abatement	created: 25; retain	local
2012	International Business Machines	NY	Rochester	$465,998	tax credit/rebate; property tax abatement	created: 0; retaine	local
2012	IBM	NY	Yorktown Heights	$540,178	tax credit/rebate; property tax abatement	created: 500; retai	local
2012	IBM - Smart Building Technology	NY	Poughkeepsie	$636,196	tax credit/rebate; property tax abatement	created: 0; retaine	local
2012	IBM Corporation	NY	Poughkeepsie	$1,569,061	tax credit/rebate; property tax abatement	created: 92; retain	local
2012	IBM - EF	NY	Hopewell Junction	$12,662,794	tax credit/rebate; property tax abatement	created: 0; retaine	local
2012	CommVault Americas, Inc.	NJ	Oceanport	$7,206,000	grant	250	state
2012	Submittal Exchange, LLC	IA	West Des Moines	$150,000	grant	23	state
2012	Submittal Exchange, LLC	IA	West Des Moines	$526,806	tax credit/rebate	81	state
2012	Google, Inc.	IA	Council Bluffs	$16,800,000	tax credit/rebate	35	state
2012	Symitar Systems, Inc.	NC	Winston-Salem	$1,945	tax credit/rebate		state
2012	Extreme Networks, Inc.	NC	Winston-Salem	$5,167	tax credit/rebate		state
2012	Sap America, Inc.	NC	Winston-Salem	$15,296	tax credit/rebate		state
2012	Jack Henry Services, Inc.	NC	Winston-Salem	$20,638	tax credit/rebate		state
2012	Citrix Systems, Inc.	NC	Winston-Salem	$94,509	tax credit/rebate		state
2012	HP Enterprise Services, LLC	NC	Winston-Salem	$113,843	tax credit/rebate		state
2012	Symantec Corporation	NC	Winston-Salem	$219,462	tax credit/rebate		state
2012	SAS Institute, Inc.	NC	Winston-Salem	$233,343	tax credit/rebate		state
2012	International Business Machines Corp.	NC	Winston-Salem	$12,828,223	tax credit/rebate		state
2012	CCH Incorporated	IL	Riverwoods And Chicago	$448,664	tax credit/rebate		state
2012	Pershing Road Development Co. LLC	MO	Kansas City	$7,662,013	tax increment financing	140	local
2012	DST Realty	MO	Kansas City	$80,062	tax increment financing	772	local
2012	Fidelity Information Services, Inc.	NY	Albany	$27,928	enterprise zone	66	state
2012	International Business Machines Corp.	NY	Poughkeepsie	$995,000	enterprise zone	9416	state
2013	IBM	LA	Baton Rouge	$75,500,000	MEGADEAL	800	multiple
2013	PAYCOM PAYROLL LLC	OK	Oklahoma City	$78,627	grant		state
2013	PAYCOM PAYROLL LLC	OK	Oklahoma City	$95,593	grant		state
2013	Red Hat Inc.	NC	Raleigh	$1,000,000	grant		local
2013	Angie's List, Inc.	IN	Indianapolis	$13,814,900	tax credit/rebate	1350	state
2013	Angie's List, Inc.	IN	Indianapolis	$200,000	training reimbursement	1350	state
2013	Workday	UT	Salt Lake	$8,370,052	tax credit/rebate	500	state
2013	Instructure, Inc.	UT	Cottonwood Heights	$1,892,969	tax credit/rebate	655	state
2013	Vitesse, LLC	OR	Prineville	$247,355	tax credit/rebate		state
2013	DigitalGlobe	CO	Broomfield	$4,359,406	tax credit/rebate	435	state
2013	SunGard LLC	FL	Jacksonville	$204,000	grant	170	local
2013	Advent Software, Inc	FL	Jacksonville	$270,600	grant	123	local
2013	International Business Machines Corp.	NC	Winston-Salem	$12,727,334	tax credit/rebate		state
2013	SAS Institute, Inc.	NC	Winston-Salem	$254,198	tax credit/rebate		state
2013	HP Enterprise Services, LLC	NC	Winston-Salem	$138,176	tax credit/rebate		state
2013	Citrix Systems, Inc.	NC	Winston-Salem	$113,073	tax credit/rebate		state
2013	Synopsys, Inc.	NC	Winston-Salem	$54,063	tax credit/rebate		state
2013	Perficient, Inc.	NC	Winston-Salem	$28,945	tax credit/rebate		state
2013	Progress Software Corporation	NC	Winston-Salem	$24,002	tax credit/rebate		state
2013	Jack Henry Services, Inc.	NC	Winston-Salem	$18,070	tax credit/rebate		state
2013	SAP America, Inc.	NC	Winston-Salem	$11,044	tax credit/rebate		state
2013	Compuware Corporation	NC	Winston-Salem	$9,891	tax credit/rebate		state
2013	Extreme Networks, Inc.	NC	Winston-Salem	$7,878	tax credit/rebate		state
2013	Symitar Systems, Inc.	NC	Winston-Salem	$1,528	tax credit/rebate		state
2013	Andale, Inc.	NC	Winston-Salem	$544,006	tax credit/rebate		state
2013	Google, Inc.	NC	Winston-Salem	$262,500	tax credit/rebate		state
2013	Jack Henry & Associates, Inc.	NC	Winston-Salem	$58,479	tax credit/rebate		state
2013	Computer Sciences Corporation	NC	Winston-Salem	$50,750	tax credit/rebate		state
2013	Medfusion, Inc.	NC	Winston-Salem	$3,233	tax credit/rebate		state
2013	Symantec Corporation	NC	Winston-Salem	$98,140	tax credit/rebate		state
2013	Red Hat, Inc.	NC	Winston-Salem	$17,986	tax credit/rebate		state
2013	Microsoft Corporation	IA	West Des Moines	$20,000,000	tax credit/rebate	29	state
2013	Siculus, Inc.	IA	Altoona	$18,000,000	tax credit/rebate	31	state
2013	Submittal Exchange, LLC	IA	West Des Moines	$26,806	tax credit/rebate	81	state
2013	Symitar Systems, Inc.	NC	Winston-Salem	$1,528	tax credit/rebate		state
2013	Extreme Networks, Inc.	NC	Winston-Salem	$7,878	tax credit/rebate		state
2013	Compuware Corporation	NC	Winston-Salem	$9,891	tax credit/rebate		state
2013	SAP America, Inc.	NC	Winston-Salem	$11,044	tax credit/rebate		state
2013	Jack Henry Services, Inc.	NC	Winston-Salem	$18,070	tax credit/rebate		state
2013	Progress Software Corporation	NC	Winston-Salem	$24,002	tax credit/rebate		state
2013	Perficient, Inc.	NC	Winston-Salem	$28,945	tax credit/rebate		state
2013	Synopsys, Inc.	NC	Winston-Salem	$54,063	tax credit/rebate		state
2013	Citrix Systems, Inc.	NC	Winston-Salem	$113,073	tax credit/rebate		state
2013	HP Enterprise Services, LLC	NC	Winston-Salem	$138,176	tax credit/rebate		state
2013	SAS Institute, Inc.	NC	Winston-Salem	$254,198	tax credit/rebate		state
2013	International Business Machines Corp.	NC	Winston-Salem	$12,727,334	tax credit/rebate		state
2013	Oracle	TX	Austin	$1,000,000	grant	200	state
2013	Bloomberg Data Center	NY	Orangeburg	$8,256	tax credit/rebate; property tax abatement		local
2013	Moldflow	NY	Ithaca	$13,707	tax credit/rebate; property tax abatement		local
2013	IBM	NY	Yorktown Heights	$243,419	tax credit/rebate; property tax abatement		local
2013	International Business Machines	NY	Rochester	$542,352	tax credit/rebate; property tax abatement		local
2013	IBM Corporation	NY	Poughkeepsie	$1,058,029	tax credit/rebate; property tax abatement		local
2013	IBM - EF	NY	Hopewell Junction	$1,143,088	tax credit/rebate; property tax abatement		local
2013	IBM - Smart Building Technology	NY	Poughkeepsie	$12,691,795	tax credit/rebate; property tax abatement		local
2013	CommVault Systems	NJ	Tinton Falls	$1,350,000	tax credit/rebate	300	state
2013	Barracuda Networks	MI	Ann Arbor	$85,150	property tax abatement	174	state
2013	Barracuda Networks	MI	Ann Arbor	$2,898,000	tax credit/rebate	174	state
2013	International Business Machines Corp.	NY	Poughkeepsie	$26,497,711	enterprise zone	8217	state
2014	Smart, LLC	IN	New Paris	$700,000	tax credit/rebate	90	state
2014	Smart, LLC	IN	New Paris	$200,000	training reimbursement	90	state
2014	Microsoft	IA	West Des Moines	$107,256,000	MEGADEAL	84	multiple
2014	Inovalon, Inc.	MD	Bowie	$48,212	tax credit/rebate		state
2014	Micros Systems, Inc	MD	Columbia	$43,561	tax credit/rebate		state
2014	Synopsys, Inc.	MD	Columbia	$5,802	tax credit/rebate		state
2014	SAP America, Inc.	MD	Rockville	$23,726	tax credit/rebate		state
2014	Oracle	UT	Lehi	$2,829,602	tax credit/rebate	351	state
2014	INTERNATIONAL BUSINESS MACHINE	OK	Washington	$44,824	grant		state
2014	INTERNATIONAL BUSINESS MACHINE	OK	Washington	$41,356	grant		state
2014	INTERNATIONAL BUSINESS MACH #4	OK	Washington	$37,675	grant		state
2014	athenahealth, Inc.	GA	Atlanta	$750,000	grant	500	state
2014	Microsoft Corporation	IA	West Des Moines	$20,256,000	tax credit/rebate	84	state
2014	Emerging Threats Pro, LLC	IN	Indianapolis	$90,000	training reimbursement	46	state
2014	Angie's List, Inc.	IN	Indianapolis	$500,000	training reimbursement	460	state
2014	IBM Corporation	LA	Baton Rouge	$76,693,041	Tax Credit/Rebate	800	state
2014	Computer Sciences Corporation	NC	Winston-Salem	$117,505	tax credit/rebate		state
2014	Jack Henry & Associates, Inc.	NC	Winston-Salem	$43,530	tax credit/rebate		state
2014	Symitar Systems, Inc.	NC	Winston-Salem	$1,464	tax credit/rebate		state
2014	Compuware Corporation	NC	Winston-Salem	$13,831	tax credit/rebate		state
2014	Jack Henry Services, Inc.	NC	Winston-Salem	$20,367	tax credit/rebate		state

2014	Compuware Corporation	NC	Winston-Salem	$13,831	tax credit/rebate		state
2014	Symitar Systems, Inc.	NC	Winston-Salem	$1,464	tax credit/rebate		state
2014	Groupon, Inc	IL	Chicago	$7,324,152	tax credit/rebate		state
2014	HCL America Inc.	MI	Jackson	$95,000	tax credit/rebate	300	state
2014	HCL America Inc.	MI	Jackson	$371,000	tax credit/rebate	300	state
2014	IBM - EF	NY	Hopewell Junction	$14,930,711	tax credit/rebate		local
2014	Bloomberg Data Center	NY	Orangeburg	$9,014,446	tax credit/rebate		local
2014	International Business Machines Corporation	NY	Warwick	$2,889,099	tax credit/rebate		local
2014	IBM - Smart Building Technology	NY	Poughkeepsie	$1,558,052	tax credit/rebate		local
2014	IBM Transfer Agreement	NY	Poughkeepsie	$1,314,645	tax credit/rebate		local
2014	IBM	NY	Yorktown Heights	$540,367	tax credit/rebate		local
2014	International Business Machines	NY	Rochester	$375,648	tax credit/rebate		local
2014	Moldflow	NY	Ithaca	$12,294	tax credit/rebate		local
2014	AthenaHealth, Inc.	TX	Austin	$679,500	tax credit/rebate	607	local
2014	JACK HENRY & ASSOCIATES, INC.	MO	Monett	$321,534	tax credit/rebate		state
2014	International Business Machines Corp.	NY	Poughkeepsie	$28,246,983	enterprise zone	3514	state
2015	Groupon, Inc.	KY	Hebron	$2,000,000	tax credit/rebate	115	state
2015	iPay Technologies, LLC	KY	Elizabethtown	$900,000	tax credit/rebate	40	state
2015	IBM	NH	Bedford	$68,000	training reimbursement	330	state
2015	Insurance Services Office, Inc.	NJ	Jersey City	$17,737,500	tax credit/rebate	New Jobs: ; Retain	state
2015	Medidata Solutions, Inc.	NJ	Woodbridge	$7,500,000	tax credit/rebate	New Jobs: 150; Re	state
2015	SunGard Data Systems Inc.	NJ	Jersey City	$8,043,500	tax credit/rebate	75	state
2015	PAYCOM PAYROLL, LLC	OK	Oklahoma City	$289,174	grant		state
2015	PAYCOM PAYROLL, LLC	OK	Oklahoma City	$274,154	grant		state
2015	PAYCOM PAYROLL, LLC	OK	Oklahoma City	$209,713	grant		state
2015	International Business Machines Corporation	MI	East Lansing	$500,000	grant/loan hybrid program	100	state
2015	Covisint, L.L.C.	MI	Southfield	$1,500,000	grant/loan hybrid program	50	state
2015	Thomson Reuters (tax & Accounting) Inc.	MI	Saline	$2,400,000	grant/loan hybrid program	300	state
2015	International Business Machines Corporation	MI	East Lansing	$9,000	tax credit/rebate	100	state
2015	Covisint, L.L.C.	MI	Southfield	$476,000	tax credit/rebate	50	state
2015	International Business Machines Corporation	MI	East Lansing	$29,000	tax credit/rebate	100	state
2015	Facebook	TX	Fort Worth	$146,700,000	MEGADEAL	100	local
2015	IBM International Business Machines Corp	AZ	Tucson	$433,073	training reimbursement		state
2015	International Business Machines Corporation	CA	San Francisco	$1,500,000	tax credit/rebate	84	state
2015	Quality Systems, Inc.	CA	Irvine And Costa Mesa	$400,000	tax credit/rebate	385	state
2015	Red Hat, Inc.	CA	Mountainview, Los Angel	$170,000	tax credit/rebate	58	state
2015	IBM Corporation	CO	Colorado Springs	$11,334	tax credit/rebate	102	state
2015	DST Realty	MO	Kansas City	$707,746	tax increment financing		local
2015	DST Realty	MO	Kansas City	$333,654	tax increment financing		local
2015	DST Realty	MO	Kansas City	$333,654	tax increment financing		local
2015	McGraw-Hill Companies, Inc.	NY	New York	$184,102	tax credit/rebate		local
2015	Moldflow	NY	Ithaca	$9,233	tax credit/rebate		local
2015	IBM	NY	Yorktown Heights	$222,715	tax credit/rebate		local
2015	International Business Machines	NY	Rochester	$259,587	tax credit/rebate		local
2015	IBM Transfer Agreement	NY	Poughkeepsie	$1,074,472	tax credit/rebate		local
2015	IBM - Smart Building Technology	NY	Poughkeepsie	$1,965,332	tax credit/rebate		local
2015	International Business Machines Corproration	NY	Tuxedo Park	$2,990,984	tax credit/rebate		local
2015	IBM - EF	NY	Hopewell Junction	$3,984,193	tax credit/rebate		local
2015	Bloomberg Data Center	NY	Orangeburg	$7,980,595	tax credit/rebate		local
2015	International Business Machines Corp.	NY	Poughkeepsie	$22,397,159	enterprise zone	3758	state
2016	Living Social	DC	Washington	$2,950,000	tax credit/rebate		state
2016	Snapchat, Inc.	CA	Venice Beach	$5,000,000	tax credit/rebate	1,194	state
2016	Salesforce.com, Inc.	IN	Indianapolis	$17,200,000	tax credit/rebate	800	state
2016	Salesforce.com, Inc.	IN	Indianapolis	$750,000	training reimbursement	800	state
2016	Thomson Reuters	TX	Carrollton	$1,538,000	grant	250	state
2016	Fidelity National Information Services, Inc.	WI	Milwaukee	$850,000	tax credit/rebate		state
2016	Perficient, Inc	LA	Lafayette	$23,979,454	tax credit/rebate	245	state
2016	IBM CREDIT LLC	ME	Southbury	$4,924	property tax abatement		state
2016	TYLER TECHNOLOGIES INC	ME	Plano	$5,264	property tax abatement		state
2016	COMPUTER SCIENCES CORP	ME	Falls Church	$19,143	property tax abatement		state
2016	DST Realty	MO	Kansas City	$123,094	tax increment financing	365	local
2016	DST Realty	MO	Kansas City	$123,094	tax increment financing	365	local
2016	DST Realty, Inc.	MO	Kansas City	$359,463	tax increment financing	450	local
2016	DST Realty, Inc.	MO	Kansas City	$359,463	tax increment financing	450	local
2016	Pershing Road Development Company, LLC	MO	Kansas City	$9,387,992	tax increment financing	6000	local
2016	Pershing Road Development Company, LLC	MO	Kansas City	$7,187,992	tax increment financing	6000	local
2016	Pershing Road Development Company, LLC	MO	Kansas City	$7,187,992	tax increment financing	6000	local
2016	Pershing Road Development Company, LLC	MO	Kansas City	$9,387,992	tax increment financing	6000	local
2016	Citrix	NC	Raleigh	$53,616	grant		local
2016	Red Hat	NC	Raleigh	$86,149	grant		local
2016	Tangoe, Inc.	NJ	Parsippany-Troy Hills	$5,043,810	tax credit/rebate	345	state
2016	Bloomberg Data Center	NY	ORANGEBURG	$7,507,964	tax credit/rebate		local
2016	IBM - Smart Building Technology	NY	POUGHKEEPSIE	$1,918,444	tax credit/rebate		local
2016	International Business Machines Corproration	NY	TUXEDO PARK	$1,753,249	tax credit/rebate		local
2016	IBM Transfer Agreement	NY	POUGHKEEPSIE	$1,365,348	tax credit/rebate		local
2016	International Business Machines	NY	ROCHESTER	$464,325	tax credit/rebate		local
2016	Moldflow	NY	ITHACA	$5,967	tax credit/rebate		local
2016	Jack Henry & Associates, Inc.	IA	Cedar Falls	$309,895	tax credit/rebate	50	state
2016	Microsoft Corporation	IA	West Des Moines	$4,725,000	tax credit/rebate	11	state
2016	Salesforce.com, inc.	IL	Chicago	$2,262,459	tax credit/rebate		state
2017	DXC Technology	LA	New Orleans	$125,000,000	MEGADEAL	2000	multiple
2018	Facebook	UT	Eagle Mountain	$150,000,000	MEGADEAL	50	local
	Electronic Data Systems, Inc.	MD	North Bethesda	$25,000	grant/loan hybrid program	250	local
	Thomson Technology Services Group	MD	Rockville	$80,000	grant/loan hybrid program	450	local
	TIG Global	MD	Bethesda	$50,000	grant/loan hybrid program	182	local