

The Economy of North Adams and the Mohawk Theater Project: Establishing an Economic Baseline

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1 Introduction to the NEA Our Town Initiative

In July 2011 the National Endowment for the Arts (NEA) announced 51 communities to receive Our Town grants in the first round of funding for this new initiative. The grants were to support public/private partnerships created to support the arts while shaping their communities in ways consistent with existing identity and sense of place. Massachusetts Museum of Contemporary Art (MASS MoCA) and the City of North Adams, Massachusetts were among these first recipients.¹

The goal of the Our Town initiative is to support projects “that contribute toward the livability of communities and help transform them into lively, beautiful, and sustainable places with the arts at their core.”² The NEA provides suggestions of what might count as improved livability:

- the quality of life is improved;
- creative activity is encouraged;
- there is a community identity and sense of place; and
- the local economy is revitalized.

At the end of the grant, the expectation is that communities will report the activities in which they engaged during the grant period, as well as provide empirical measurements of the ways in which community livability has improved. It will not be difficult for a community to identify their actions during the grant period. Actions may include community meetings held, laws and regulations changed, and arts events sponsored.

Empirically documenting community change is extremely difficult, however, without appropriate baseline data about the state of the community at the start of the grant period. It is difficult to demonstrate progress toward a goal if the start line was not identified. The purpose of this report is to provide relevant baseline data for the City of North Adams as of the summer of 2012. This baseline will allow North Adams to document in the future both the activities in which they engaged and the state of the community at different points. The baseline data will continue to provide a useful comparison over time.

In the next section we will describe briefly the Mohawk Theater project, which the city of North Adams hopes will contribute not only to the economy of Main Street, but also rebuild community identity and sense of place. Following that is a section that puts the Mohawk Theater project in context with other theater projects in New England. This is a resource that can be used to evaluate the assumptions about the project – assumptions about size, cost, and sustainability.

In the remaining sections we discuss empirical measures of the current state of North Adams:

- the economic impact of the Mohawk Theater project, during both the construction and operation phases;
- current land use patterns in North Adams;
- building use on Main Street;
- measuring vitality on Main Street;
- measuring the regional and national visibility of North Adams; and
- the current socio-economic state of North Adams.

¹ NEA press release, July 12, 2011, available at: <http://www.arts.gov/news/news11/our-town-announcement.html>

² <http://www.arts.gov/grants/apply/OurTown/index.html>

2 The Mohawk Theater Project

The renovation of the Mohawk Theater is one part of the larger plan for North Adams. The Mohawk Theater was designed as a single-screen 1,200 seat movie theater. Its central location on Main Street and the fact that it showed first-run movies from 1938 to the mid-1980s explains its iconic importance to many residents as an indication of the state of the city. The theater closed in 1991 and fell into a state of disrepair. Since 1992 the city of North Adams has supported repairs of the building along with acquiring ownership of adjacent building parcels over which the Mohawk Theater was spread.³

Current plans for the Mohawk Theater project include possible private/public partnerships to renovate and develop the Mohawk and the adjacent Dowlin Building. The Mohawk would be developed as a small performing arts and education center. The Dowlin Building would be developed as residential and retail space concurrent with the theater. The primary scenario at this time estimates renovation costs of the two buildings at \$21 million. Finished square footage of the two buildings is planned at 56,653 square feet. The theater would seat about 1,000 people.⁴ The Dowlin Building would house 60 college students in studio apartments. The ground floor of the Dowlin Building would provide retail space. There would also be space dedicated to set design for performances at the Mohawk Theater.

The project is currently in the planning and feasibility stage. Any plan to use the Mohawk Theater must address the question of sustainability. Priorities in envisioning the project seem to include the following:

- use of the Mohawk Theater that is in keeping with its history and identity as a theater;
- use of the theater that will increase Main Street vitality by attracting both residents and visitors to MASS MoCA more frequently to the downtown area;
- a plan that involves requires the collaboration of the city, private developers, and local cultural and educational organizations to articulate a shared vision of Main Street and the future of North Adams;
- a plan that has acknowledges that at this point in time no single one of those partners can complete the project in a successful, sustainable way without the collaboration of the others.

In the next section we present other New England theater projects as comparison points for the Mohawk Theater project. The purpose is to make the reader aware of these projects, so that further information could be pursued in several directions: cost of renovation; size of theater; number of performances annually; and/or annual budget.

³ Source: http://www.mohawktheater.com/userPage_3_History.htm. The entrance, lobby and marquee are in one building that fronts Main Street, while the main part of the theater with seating is located in the rear parcel. Over time the ownership of these two parcels had become separated. Purchasing these different parts and pieces became a project in its own right for the City of North Adams.

⁴ A secondary scenario has the theater renovated with 450 seats.

3 Comparison of New England Theater Projects

This section discusses briefly ten historic New England theaters that are of interest for the Mohawk Theater Project either for their cost or scale of renovations, or for their current use. Central to these theaters is the relationship between the theaters and their communities. These relationships are often expressed through educational programs. Given the uncertainty at the moment of the final seating capacity of the Mohawk, three of the theaters discussed have a capacity between 300 and 700 – the remainder between 900 and 1,500. The theaters discussed below, with the exception of Rutland’s Paramount Theatre, were found through the League of Historic American Theaters⁵ online site. Rutland’s Paramount Theatre is not a member of LHAT but was brought to our attention as a good comparison project.

Smaller Projects: 300-700 Seats

*Little Theatre of Manchester at Cheney Hall.*⁶ The Little Theatre was built in 1866. Since its \$2.6 million renovation in 1991 it has a seating capacity of 335. Cheney Hall is a relevant case study for the Mohawk project due to the scale and cost of its renovation. The theater appears to prioritize involving a large part of its community and has over its 20 years of operation brought in 700 volunteers and 1,000 non-professional workers. The theater is operated as a 501(c)(3) nonprofit organization. Apart from its four main stage annual productions that involve a minimum of 39 performances, it also produces a 5-week “Rascal Rep Summer” repertory program for young people. The theater is used by other local performance arts groups as well.

*Casino Theatre.*⁷ The 300 seat Casino Theater in Newport, RI, provides an example of how two organizations can share the use of the same venue. The Salve Regina University Theatre Students regularly put on shows as part of their academic requirements. The theater itself focuses more on film and cinema than on performance arts but the SRU students provide performance arts. The 2009, \$4.5 million renovation project seems more in keeping with the Mohawk project than the Paramount Center in Boston, discussed below, which is sometimes mentioned as a possible comparison case.

*Mahaiwe Performing Arts Center.*⁸ The 675 seat Mahaiwe offers a local case study due to its location in Great Barrington. Built in 1904, the theater was entered on the list of the National Register of Historic Places after its 2002-2005, \$9 million renovation by architect Hugh Hardy.⁹ The Mahaiwe was a recipient of support from Save America’s Treasures, and the restoration was certified by the Massachusetts Historical Commission and the National Park Service.

Larger Projects: 850-1500 Seats

*Emerson College’s Paramount Center.*¹⁰ The Paramount showcases a successful combination of “hands on” educational program with world class performance arts and entertainment as well as a residence hall. While the restoration budget was high at \$92 million, it must be kept in mind that the Paramount’s 590 seat main theater is only one among many performance spaces. There is also a 150 seat black box theater and a 170 seat screening room. The Paramount should be looked at for the purpose of learning how education and professional performance arts can be successfully

⁵ <http://www.lhat.org/>

⁶ <http://www.cheneyhall.org/>

⁷ <http://casinotheatre.salvereginablogs.com/>

⁸ <http://www.mahaiwe.org/>

⁹ <http://www.h3hc.com/>

¹⁰ <https://artsemerson.org/Online/default.asp>

combined to the benefit of the community.¹¹ There are limits, however, as to how many useful conclusions can be drawn from the Paramount for adaptation to the Mohawk project, largely due to its central location in a large metropolitan area and the high cost of the renovation.

*The Garde Arts Center.*¹² The Garde Arts Center was established as a 501(c)(3) in 1985 as a step towards saving the Garde theater. The theater was built in 1914 in New London, CT, with a seating capacity of 1,488. The theater was reopened after a \$15.75 million, two year renovation project, completed in 1998. Like other relatively large theater operations, the Garde places emphasis on programs that extend beyond its main stage productions. The Garde Institute of Creativity, for example, offers both after-school and summertime arts classes across a variety of arts disciplines. Over time, the Garde has grown into what it refers to as an “arts block.” In this block of historic buildings, the Garde houses centers for the arts, education, commerce, and community events.

*Zeiterion.*¹³ The Zeiterion Performing Arts Center, located in New Bedford, MA, was built in 1922 and currently seats 1,226 people. While final cost of restoration is not available, the Zeiterion is of interest for the Mohawk project because of its diversity of programming. At its core lies the main stage series that offers between 35 and 40 performances each year across genres. The remaining programs are of significant importance in terms of establishing a strong and healthy relationship between the theater and surrounding communities. The Zeiterion provides 5,000 tickets annually to low income families as a part of their “Arts Access” program that also works with the juvenile court system, Third Eye, Brick by Brick, United Front Homes, and the New Bedford school system. Furthermore, the Zeiterion is an active participant in the downtown revitalization efforts in New Bedford, and has developed marketing partnerships with other arts organizations to market both the Zeiterion and the city regionally. Lastly, the Zeiterion offers curriculum based, subsidized performances to 25,000 regional school children in grades pre-K-12 annually.

*Music Hall.*¹⁴ The original Music Hall in Portsmouth, NH, was built in 1878 and has a seating capacity of 900. After being threatened by demolition in the 1980s, the community helped save the historic theater in 1987. The Music Hall has won awards for its restoration and renovations, but we have no cost estimate for the restoration. The Music Hall estimates a total of 100,000 visitors annually, of which 20,000 are school children. According to the theater, it has an estimated economic impact on the regional economy of \$5.6 million annually. Apart from its main stage performance series, the Music Hall offers regular matinee performances aimed at school children, and has strong partnerships with a large set of local and regional organizations, festivals, museums, and others.

*Capitol Center for the Arts.*¹⁵ The 1,304 seat CCA, located in Concord, NH, originally opened in 1927, but was forced out of business in 1989. In 1995, however, the theater reopened as a 501(c)(3) after raising \$4.2 million and attracting 250 volunteers. The CCA places emphasis on its educational division that attracts over 25,000 school children annually. Apart from performance arts-related topics, its educational programs also focus on issues of importance to the community, such as racism and intolerance. Furthermore, the CCA donates \$10,000 in tickets to organizations serving disadvantaged families.

¹¹ One person living across the street from the Paramount informed one of the authors that following the restoration of the paramount, the theatre district gained “new life” and is evolving into an attractive area of the city to live in (Soderstrom, July 2012).

¹² <http://www.gardearts.org/>

¹³ <http://www.zeiterion.org/>

¹⁴ <http://www.themusichall.org/>

¹⁵ <http://www.ccanh.com/>

*The Flynn Center of Performing Arts.*¹⁶ The Flynn theater in Burlington, VT, was built in 1930 and currently has a seating capacity of 1,453. The Flynn has undergone a series of transformations over the years that ultimately led to the 1982-84 renovations funded by the community. Currently, an estimate of the total cost of renovations is not available to us. However, a series of restoration projects of varying scale in 1999-2000 is estimated to have cost \$8 million. The 501(c)(3) non-profit estimates a total of 200,000 visitors annually to its two performance venues, one of which is a smaller performance space that was built to expand its programming options. It is estimated that 45,000 students and young people attend the Flynn Student Matinee Series each year. The Flynn engages heavily in community development and educational programs. It is a strategic partner in the Integrated Arts Academy at the Burlington Wheeler School in addition to offering classes and summer camps through its Flynn Arts program.

Rutland’s *Paramount Theatre.*¹⁷ The Paramount Theatre in Rutland, VT provides a good comparison with the proposed Mohawk Theater project because it involved not only a theater renovation but also the purchase of the building next door for expansion. The Paramount opened in 1914 with seating in the orchestra, balcony, and six boxes for 1,000 individuals. During the 1930s the Paramount transformed from a playhouse to a venue alternating between live performances and film and finally to a movie theater. The theater closed in 1975 and sat empty for a decade before a group was formed in 1985 to purchase the theater and renovate into a performing arts venue. In 1995 the adjacent Richardson Building was purchased to incorporate larger public space, restrooms, and office space into the project.¹⁸ An architectural firm and construction manager were hired to develop the two buildings under a single plan. Funding for the renovation came from the sources shown in *Table 1:*¹⁹

Table 1: Sources of Funding for Paramount Theatre

Source of Funding	Amount
Federal Grant	\$1,350,000
State Funds	\$200,000
Damian Zamias	\$70,000
Federal Community Development Block Grant	\$325,000
Anonymous Donors	\$100,000
Sale of 650 Seat Plaques	\$162,500
Lyman Orton & Vermont Country Store	\$100,000
Housing and Conservation Board	\$71,500
Rutland City	\$70,000
Preservation Trust of Vermont	\$50,000
Central Vermont Public Service Corp	\$50,000
Total	\$2,549,000

The result is an 850 seat fully restored historic theater with modern amenities that opened in 2000. The theater enjoys the support of 135 volunteers, 25 of whom work on any given show.²⁰

¹⁶ <http://www.flynncenter.org/>

¹⁷ <http://www.paramountvt.org/>

¹⁸ Paul J. Crossman, Jr. 2004. “A history of the Paramount Theatre – Rutland, Vermont 1914-2004.” Rutland Historical Society Quarterly, Vol 34, no. 3, p.9. Available at <http://www.rutlandhistory.com/documents/RHSQVol.34No.32004.pdf>.

¹⁹ Op cit., p10.

²⁰ Ibid.

4 Economic Impact of the Mohawk Theater Project

Construction Phase

The Mohawk Theater project includes two buildings, the Dowlin Building and the Mohawk Theater. *Table 2* presents estimates for the construction phase as provided in the project consultant's report:²¹ The category 'all other costs' includes construction contingency, soft costs, equipment and furnishings, development fee, and miscellaneous.

Table 2: Construction Costs

	Dowlin Bldg	Mohawk Theater	Total Project
Construction Costs	\$6,049,240	\$6,972,670	\$13,021,910
All Other Costs	\$4,075,606	\$3,939,965	\$8,015,571
Total	\$10,124,846	\$10,912,635	\$21,037,481²²

We take the timeframe for the construction phase to be 2 years, which seems a reasonable estimate after examining other theater projects in New England. We assume a two year construction phase, dividing constructions costs in half and assigning one half to each of the two years.²³

$$\$21,037,481 \text{ total cost} / 2 \text{ years} = \$10,518,740 \text{ expenditures per year}$$

Additionally, we must estimate the percent of total space in the two buildings that will be dedicated to residential structures and the percent nonresidential in order to assign construction costs to the proper industrial sectors when calculating impact. *Table 3* presents the gross square footage of the two project buildings, as outlined in the project consultant's report, differentiating residential and nonresidential space.²⁴

Table 3: Gross Square Footage of Project

	Dowlin Bldg	Mohawk Theater	Total	Percent
Residential	40,000 sq ft	0 sq ft	40,000 sq ft	38%
Performing Arts	27,439 sq ft	30,500 sq ft	57,939 sq ft	55%
Commercial	5,561 sq ft	1,500 sq ft	7,061 sq ft	7%
Total	73,000 sq ft	32,000 sq ft	105,000 sq ft	100%

We now have the information we need to estimate the economic impact of the construction phase of the Mohawk theater project. *Table 4* presents the allocation of total estimated construction costs between two years of construction and between residential and non-residential space.

²¹ Summary, p1. We take figures in the consultant's report as 2013 dollars. All impact estimates in our report are presented in 2013 dollars.

²² The report additionally lists purchase prices of \$825,000 for the Dowlin Building and \$330,000 for the Mohawk Theater. We do not include these figures in the impact of the construction phase because the costs of purchase are included in annual expenditures in the form of principal and interest payments.

²³ Since we provide impacts per million dollars spent in Appendix A, it is possible to make other assumptions about the length of the project and still estimate impact. Simply divide the total cost in *Table 2* by the number of years and use that number with the information in Appendix A.

²⁴ Summary, p3.

Table 4: Allocation of Project Costs

	Maintenance/Construction of Residential Structures	Maintenance/Construction of Non-Residential Structures	Total
Year 1	\$3,997,121	\$ 6,521,619	\$10,518,740
Year 2	\$3,997,121	\$ 6,521,619	\$10,518,740
Total	\$7,994,242	\$13,043,238	\$21,037,480

Economic impact consists of three distinct pieces – direct effects that increase economic activity as a result of construction spending; indirect effects that increase economic activity as businesses trade among themselves as part of fulfilling the demands of the construction project; and induced effects that increase economic activity as employees spend increased household income that results from the construction project. The economic impact of the construction phase of the Mohawk Theatre project is presented in *Table 5*.

Table 5: Economic Impact of the Construction Phase

	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Jobs
Year 1	\$10,518,740	\$1,797,382	\$2,985,387	\$15,301,509	111.6
Year 2	\$10,518,740	\$1,797,382	\$2,985,387	\$15,301,509	111.6
Total Project	\$21,037,480	\$3,594,764	\$5,970,774	\$30,603,018	111.6²⁵

We see in *Table 5* that economic activity in North Adams is predicted to increase \$15.3 million during each of the two years of construction of the Mohawk Theater project. Of that increase in economic activity, \$10.5 million is direct impact or expansion due to monies spent in the residential and non-residential construction sectors. There will be a \$1.8 million indirect impact, or increase in economic activity as industries sell additional goods and services to each other as a result of the expansion in the construction sectors. In addition, there will be a \$3.0 million induced impact that represents increased economic activity in North Adams resulting from households having more income to spend. Finally, the construction phase will support 111.6 jobs during each of the two years.

It is possible to examine the economic impact of the construction phase in finer detail. In this case, economic impact is spread over 159 sectors of the local economy. The impact in 27 of these sectors is less than \$500, but the impact in other sectors is significant. *Table 6* presents the impact of the construction phase in the 13 most impacted sectors. We see that the greatest impact occurs in the two sectors where the project monies are actually spent – nonresidential maintenance and construction (Mohawk Theater) and residential maintenance and construction (the Dowlin Building). We see that other sectors with major impacts are real estate, healthcare, food and drink, banks, motor vehicles and wholesale trade.

²⁵ We sum the economic impact of Years 1 and 2 of the construction phase because each year does indeed increase economic activity by \$15 million each year. The 111.6 jobs in Year 2 are the same jobs created in Year 1, so we do not sum the jobs figure.

Table 6: Industrial Sectors Most Impacted by the Construction Phase
(Each year of a two year project)

Industrial Sector	Direct	Indirect	Induced	Total
Nonresidential construction	\$6,521,619	\$20,874	\$17,428	\$6,559,921
Residential construction	\$3,997,121	\$148	\$9,433	\$4,006,703
Imputed rental value	0	0	492,421	492,421
Architectural services	0	420,945	7,908	428,854
Health practitioners	0	0	245,458	245,458
Hospitals	0	0	237,373	237,373
Real estate	0	61,555	166,030	227,585
Food/drinking places	0	28,607	192,428	221,036
Nondepository credit	0	98,021	92,996	191,017
Monetary authorities	0	75,642	104,086	179,729
Retail-motor vehicles and parts	0	72,161	60,908	133,069
Wholesale trade	0	67,146	60,011	127,157
Retail - food and beverages	0	47,538	67,398	114,936

Both the timeframe for the Mohawk Theater project and the expenditures required to complete it are open-ended; therefore we provide *Table A1* of economic impacts *per million dollars expenditure* in Appendix A. We see from the first line in *Table A1* (the 'Total' line) that every \$1 million spent during the construction phase results in \$1 million direct impact, \$170,874 indirect impact due to inter-industry purchases of goods and services, and \$283,816 induced impact resulting from households spending their increased income. The total economic impact per \$1 million of construction phase spending is \$1.45 million. *Table A1* allows for the calculation of economic impact in each sector of the North Adams economy that experiences any impact.

Table 7: State and Local Tax Consequences of Construction Phase
(Each year of two year project)

Tax	Amount
Corporate Dividends	\$1,010
Social Insurance Tax	\$9,442
Indirect Business Tax: Sales Tax	\$91,357
Indirect Business Tax: Property Tax	\$177,990
Indirect Business Tax: Motor Vehicle Licenses	\$2,180
Indirect Business Tax: Other Tax	\$12,550
Indirect Business Tax: State/Local Non-taxes	\$14,789
Corporate Profits Tax	\$33,602
HH Personal Income Tax	\$163,997
HH Personal Tax: Non-taxes (fines/fees)	\$17,864
HH Personal Tax Motor Vehicle License	\$3,808
HH Personal Tax: Property Taxes	\$3,471
HH Personal Tax: Other Tax (Fishing/Hunting)	\$385
Total State & Local Tax	\$532,445

In addition to the increase in economic activity that will result from the construction project, there are also tax benefits during this period. *Table 7* above provides figures for various taxes paid at the state and local level during each year of the construction phase.

The two largest sources of state and local taxes during construction are \$177,990 in business property tax and \$163,997 in personal income tax. For each of the two years of construction, additional state and local taxes are estimated at \$532,445.

Table 8 presents similar data on federal taxes paid as a result of the construction phase. Federal taxes are estimated to be \$93,787 during each year of the two year Mohawk Theater project. The largest categories are corporate profits tax (\$33,171) and personal income tax (\$22,188).

Table 8: Federal Tax Consequences of Construction Phase
(Each year of two year project)

Tax	Amount
Social Insurance Tax	\$22,697
Indirect Business Tax: Excise Taxes	\$7,635
Indirect Business Tax: Custom Duty	\$2,995
Indirect Business Tax: Federal Non-taxes	\$5,101
Corporate Profits Tax	\$33,171
Personal Income Tax	\$22,188
Total	\$93,787

In summary, the construction phase of the Mohawk Theater project will have an economic impact of \$15,301,509 each year of construction and support 111.6 jobs. It will generate \$532,445 in additional state and local taxes and \$93,787 in additional federal taxes.

Annual Expenditures

While the construction phase of the Mohawk Theater project involves millions of dollars, it is a short-term injection of money into the local economy. The city of North Adams hopes, however, that the outcome of the project is a community theater complex that will impact the North Adams positively for years to come. One aspect of that impact is the economic impact that results from annual expenditures of the Mohawk Theater complex, including the Dowlin Building.

In calculating the economic impact of the Mohawk Theater project we work with data in the project consultant's report on the expected annual costs of operating the Mohawk Theater/Dowlin Building complex, not including the costs of mounting specific shows. We break the costs down to those of the project developers and those of the organization running the performing arts space. Of course, we cannot simply assign the costs of the Dowlin Building to the developers and the costs of the performing arts space to the performing arts organization. The developers have annual expenditures related to the upkeep of spaces of both buildings, as shown in *Table 9*. It is estimated that the developers of the project will have annual expenditures of \$786,055. These expenditures consist of costs related to the maintenance and operation of commercial space; set building space; residential space; performing arts space; interest and principal; and taxes.

Table 9: Developers' Annual Expenditures

Source of Expense	Type of Expense	Amount ²⁶
Dowlin Building	Commercial space	\$ 16,683
Dowlin Building	Set building space	\$ 57,276
Dowlin Building	Residential space	\$243,200
Mohawk Theater	Performing Arts space	\$ 37,500
Project	Interest and principal	\$200,271
Project	Interest and principal	\$ 96,575
Project	Taxes	\$134,550
	Total	\$786,055

Similarly the performing arts organization has expenses related to both spaces – expenses such as rent, utilities, staffing, and marketing costs. These annual expenses are shown in *Table 10*. It is estimated that the performing arts center will have annual expenditures of \$580,986. These expenses include rent for the theater; rent for the set building space; utilities and janitorial for the two spaces; staffing and marketing. The estimate does not include costs specific to the production of performances. Those costs will vary greatly depending on the types of performances, the number of performances, and whether performances are put on by the performing arts center or by outside groups.

Table 10: Performing Arts Center Annual Operating Expenditures

Source of Expense	Type of Expense	Amount ²⁷
Mohawk Theater	Rent	\$ 76,250
Dowlin Building	rent for set building space	\$139,736
Mohawk Theater	utilities and janitorial	\$121,000
Dowlin Building	utilities and janitorial	\$ 39,000
Project	Staffing	\$155,000
Project	Marketing	\$ 50,000
	Total	\$580,986

To summarize, annual expenditures of the Mohawk Theater complex -- not including the cost of mounting the shows themselves – are estimated to be \$786,055 related to developers' annual costs of the project and \$580,986 related to the performing arts aspect of the project for a total of \$1,367,041 annually. *Table 11* presents the economic impact of the annual expenditures of the Mohawk Theater complex.

Table 11: Economic Impact of Annual Operating Expenditures

Direct Impact	Indirect Impact	Induced Impact	Total Impact	Jobs
\$1,367,041	\$277,641	\$206,078	\$1,850,760	21.1

The economic impact of the Mohawk Theater complex is estimated to be \$1.85 million annually. Of that, \$1.37 million is the direct impact of its annual budget, which increases economic activity in the real estate and performing arts sectors; \$278 thousand is the increase in economic activity as firms buy goods and services from each other to meet the increased demands of the enlarged real estate and performing arts sectors; and \$206 thousand is the result of households spending increased

²⁶ These figures are from the consultant's report, pp. 5, 11.

²⁷ These figures are from the consultant's report, pp. 12-13.

household income. The annual expenditures of the Mohawk Theater complex will result in 21 new jobs in North Adams.

Table 12 lists the top fourteen sectors of the local economy that would be most impacted by the annual expenditures of the Mohawk Theater Complex. After real estate and performing arts, sectors most impacted independent artists, food and drink establishments, health, and transit sectors.

Table 12: Sectors Most Impacted by the Annual Operating Expenditures of the Mohawk Theater Complex

Industrial Sector	Direct	Indirect	Induced	Total
Real estate	\$786,055	\$32,086	\$11,703	\$829,844
Promoters of performing arts	\$580,986	\$3,867	\$49	\$584,902
Imputed rental value	0	0	\$33,590	\$33,590
Independent artists	0	\$28,199	\$149	\$28,342
Insurance brokers	0	\$23,534	\$573	\$24,107
Food & drinking places	0	\$6166	\$13,299	\$19,465
Nondepository credit	0	\$12,849	\$6,423	\$19,272
Monetary authorities	0	\$10,441	\$7,251	\$17,692
Health practitioners	0	\$24	\$17,052	\$17,076
Hospitals	0	\$28	\$16,525	\$16,553
Transit transportation	0	\$14,893	\$594	\$15,487
Nonfinancial intangible lessors	0	\$13,161	\$520	\$13,681
Power generation	0	\$8,983	\$4,089	\$13,072
Securities & investments	0	\$6,079	\$4,037	\$10,116

The impacts provided in Tables 11 and 12 are based on the estimate that the Mohawk Theater project will have annual expenditures of approximately \$1,367,041. Actual expenditures, of course, are not yet known. It is possible to use Table A2 in Appendix A to calculate economic impact for any scenario. Table A2 presents the economic impact per \$1 million expenditure. Referring to Table A2 we see that each \$1 million in operating expenses increases local economic by \$1.35 million. In addition to the \$1 million direct impact, there is indirect impact of \$203 thousand as firms purchase additional goods and services from other firms, and induced impact of \$151 thousand as households spend their increased income.

In addition to increasing economic activity in North Adams the operation of the Mohawk Theater project will increase tax revenues. Table 13 provides the annual state and local tax consequences of the project.

Table 13: State and Local Tax Consequences of Annual Operating Expenditures

Description	Amount
Dividends paid by Corporations	\$343
Social Insurance Tax	\$759
Indirect Business Tax: Sales Tax	\$30,082
Indirect Business Tax: Property Tax	\$58,610
Indirect Business Tax: Motor Vehicle Licensing	\$718
Indirect Business Tax: Other Taxes	\$4,133
Indirect Business Tax: State/Local Non-taxes (licenses, fines)	\$4,870
Corporate Profits Tax	\$11,394
Personal Tax: Income Tax	\$11,280
Personal Tax: Non Taxes (fees and fines)	\$1,229
Personal Tax: Motor Vehicle Licensing	\$262
Personal Tax: Property Taxes	\$239
Personal Tax: Other Tax (Fishing/Hunting)	\$26
Total	\$123,945

State and local tax intake will increase by approximate \$124,000 annually as a result of the operations of the Mohawk Theater. The greatest increase will come from increased business property tax (\$58,610) and increased sales tax (\$30,082). Federal tax receipts will also increase as a result of the operations of the Mohawk Theater. *Table 14* presents those figures.

Table 14: Federal Consequences of Annual Operating Expenditures

Tax	Amount
Social Insurance Tax	\$31,026
Indirect Business Tax: Excise Taxes	\$10,438
Indirect Business Tax: Custom Duty	\$4,095
Indirect Business Tax: Federal Non-taxes	\$6,973
Corporate Profits Tax	\$45,347
Personal Income Tax	\$30,332
Total	\$128,211

Federal tax receipts will increase by approximately \$128,000 per year as a result of the operations of the Mohawk Theater. The greatest increase will come from corporate profits tax (\$45,347), social insurance tax (\$31,026) and personal income tax (\$30,332).

Beyond the impacts on local income generation and tax revenues, there are likely to be other impacts on North Adams that are related to visitors who come to the city to attend performing arts events held at the Mohawk. This does not include student productions or attendance by persons who reside in the area. These impacts are already accounted for in the analysis presented in the tables above. These impacts would also not include attendance by persons from outside the community at events that would have been held on the main MCLA campus but are moved to the Mohawk because it provides a more appropriate venue for the event. Such displacement of events does not provide a net increase in local economic activity, although attendance could have an impact on street vitality (separately estimated and analyzed below in section 7).

Depending on the final configuration and programming budget for the Mohawk, however, it is possible that the additional performing arts programming that is provided at the theater will result in a net increase in visitors from outside of northern Berkshire county who come to North Adams

and patronize local restaurants, hotels and retail establishments. Because the ideal way to measure the impacts of these visitors will depend on the level and content of programming as well as the locations from which the visitors come, it is premature to provide an analysis of these impacts in this baseline report.

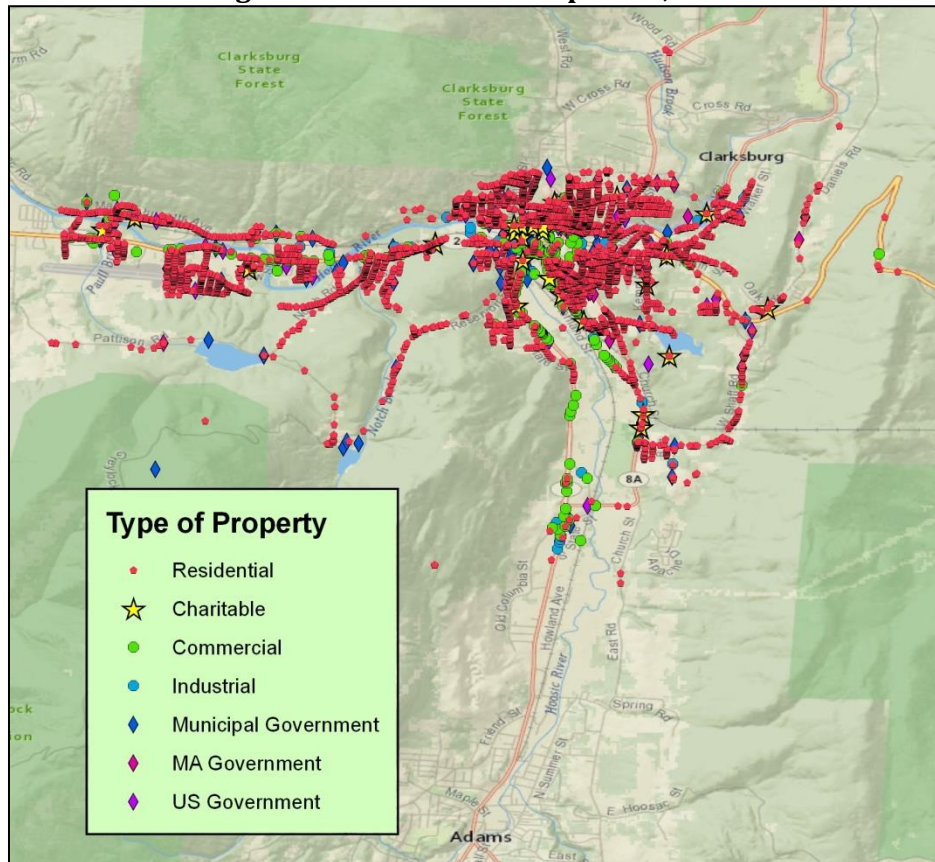
A rough idea of the magnitude of potential visitor impacts can be obtained using online web-applications that have been developed by C³D that are available at the following web site: <http://web.williams.edu/Economics/ArtsEcon/econpages/Colonial/Perfarts/econPerfarts.htm>. The model presented is based on the structure of regional economy during the period 2006-2010 and uses the average behavior and source communities of visitors to Berkshire county cultural destinations during this period. The analysis presented in the model suggests that events that could draw 10,000 visitors to the community (all coming from outside of northern Berkshire county) would provide an addition to local income generation in excess of \$600,000 per year, and support creation of 8 jobs in different sectors of the economy (primarily hotels, restaurants, and retail).

5 Land Use in North Adams

We created a baseline of land-use patterns in the city of North Adams based on current 2012 tax assessor's data. We used data provided to us digitally by the city of North Adams. In the following discussion we examine properties in North Adams divided into categories based on Massachusetts Land Use Codes.²⁸ First we will examine all property in North Adams. Then we will break the property down by land use class into residential; charitable; commercial; industrial; Municipal government; Massachusetts government; and US Government.²⁹

According to 2012 tax assessor's data, there are 5,380 parcels of property in the city of North Adams. Of these, we were able to identify and locate 5,374 properties. Using state land use codes we identified each property as residential; charitable; commercial; industrial; owned by municipal government; owned by Massachusetts government; and owned by US government. *Figure 1* maps the properties in North Adams by property type.

Figure 1: North Adams Properties, 2012



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²⁸ Massachusetts Department of Revenue Division of Local Services. March 2012. "Property Type Classification Codes." <http://www.mass.gov/dor>, downloaded 8/31/2012.

²⁹ The North Adams Comprehensive Plan, dated 03/21/2012, presents "land use by development footprint as interpreted by the state using aerial photography". North Adams Comprehensive Plan at http://northadams-ma.gov/UserFiles/Image/NACP_Existing_Conditions_03212012.pdf. Another method is to use tax assessor data to examine land use by parcel. That is the approach used in this report.

Figure 1 shows the general distribution of land parcels in North Adams. We will look more closely at some of the categories of land use below, but for now we can see the many residential properties (marked in red) and their distribution in the city. Table 15 provides data on the different types of properties in North Adams, by land use. Overall, there are 12,581 acres of land made up of 5,374 properties. Total assessed value of the properties is \$865.5million. Median number of acres per property is 0.24 and median assessed value is \$114,800.

Table 15: North Adams Properties by Land Use Code

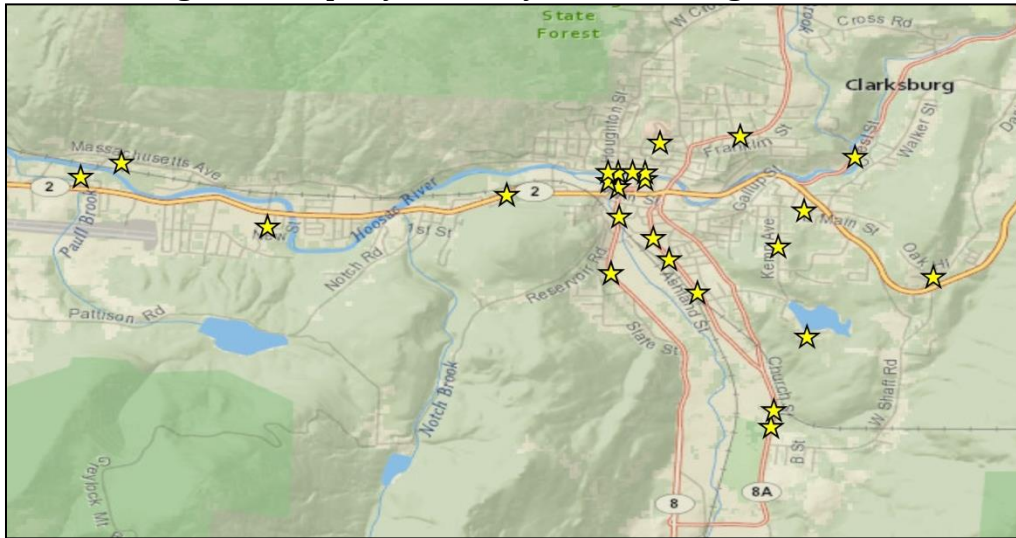
Type of Property	Number of Properties	#Acres	Median #Acres	Assessed Value	Median Assessed Value	Mean Assessed Value
Residential with residence	3,821	2,593	0.23	\$535,705,510	\$124,100	\$118,955
Residential w/o residence	850	3,588	0.24	\$14,964,900	\$5,150	\$19,560
Charitable	33	262	1.21	\$14,379,200	\$81,600	\$435,733
Commercial	289	706	5.61	\$98,274,016	\$144,400	\$340,048
Industrial	77	259	0.75	\$24,706,552	\$57,800	\$320,864
City Government	179	2,168	0.34	\$92,289,400	\$13,400	\$515,583
MA Government	30	1,769	4.60	\$34,760,200	\$218,150	\$1,158,673
US Government	95	1,235	0.72	\$50,407,800	\$95,100	\$530,608
Total	5,374	12,581	0.24	\$865,487,578	\$114,800	\$161,051

Table 15 is informative in its breakdown of land use in North Adams. Let us start by examining residential property, which is so visible in Figure 1. We see that there are 3,821 properties coded as residential and having a residence on them. The median size residential property is 0.23 acres and the median assessed value of these residences is \$124,100.

Of the 850 properties on the assessor’s roles as residential but not having a residential structure, 58 have an ‘improvement’ on them such as a garage; 306 are listed as developable land; 5 as potentially developable land; 480 as undevelopable land; and 1 as residential with no further information. The median size of residential properties without residences is 0.24 acres, but if we are interested in the potential of future residential development in North Adams it is worth noting that of the 306 parcels of land identified as developable, 96 are 1 acre or larger in size.

Turning our attention to properties coded as being for charitable purposes we see that there are only 33 such properties in North Adams. These properties are larger than residential properties, with a median size of 1.21 acres but they have a lower median assessed value, \$81,600. Figure 2 maps the location of the charitable properties.

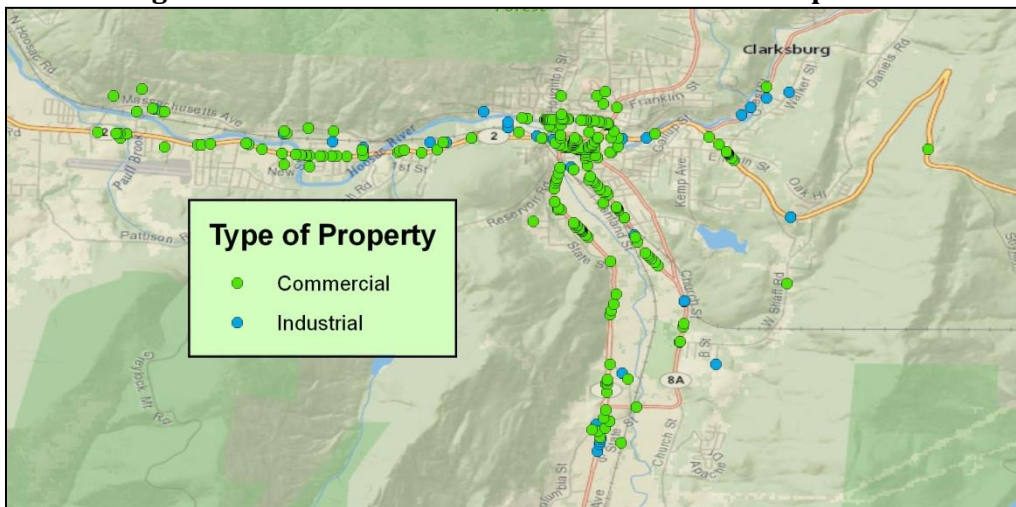
Figure 2: Property Owned by Charitable Organizations



The locations of the properties identified as for charitable purpose are more geographically dispersed than we might have expected. It was perhaps more surprising how few parcels are charitable.³⁰

Turning our attention to commercial and industrial properties, we see in *Table 15* that there are 289 commercial properties and 77 industrial properties in North Adams. It is interesting to note that commercial properties have a higher median number of acres (5.61 vs. 0.75) and a higher median assessed value (\$144,400 vs. \$57,800) than industrial properties. The mean assessed value of commercial properties is much closer to that of industrial properties (\$340,048 vs. \$320,864), although it is still higher. *Figure 3* maps the geographic location of the commercial and industrial properties in North Adams.

Figure 3: Combined Commercial and Industrial Properties



³⁰ Of course, there are more than 33 nonprofit organizations in North Adams. These data are property-based; many nonprofit organizations rent the space in which they are located.

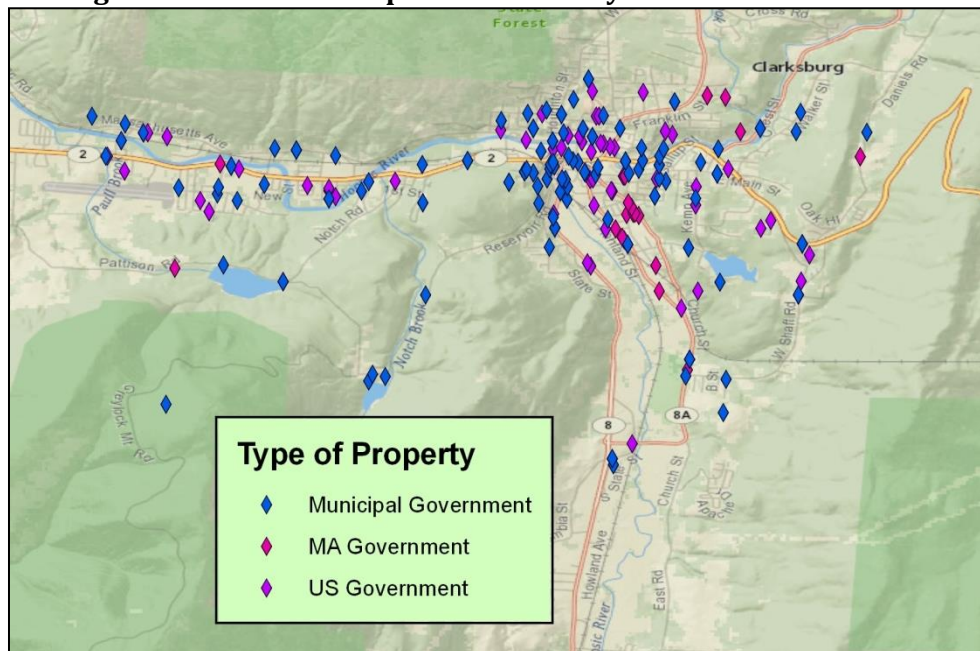
Finally, we examine government owned properties – those owned by the City of North Adams, the Commonwealth of Massachusetts, and the United States government. We reproduce the relevant rows of *Table 15* in *Table 16* below.

Table 16: Government Owned Properties in North Adams, 2012

Type of Property	Number of Properties	#Acres	Median #Acres	Assessed Value	Median Assessed Value	Mean Assessed Value
City Government	179	2,168	0.34	\$92,289,400	\$13,400	\$515,583
MA Government	30	1,769	4.60	\$34,760,200	\$218,150	\$1,158,673
US Government	95	1,235	0.72	\$50,407,800	\$95,100	\$530,608
Total	5,374	12,581	0.24	\$865,487,578	\$114,800	\$161,051

We see in *Table 16* that the City of North Adams owns more parcels of land than the other government entities; that it owns more acres; and that the total assessed value of its land is greater than the Massachusetts or US government. While the City of North Adams has more properties, the median size and assessed value of these properties is smaller than properties owned by the Massachusetts or US government. *Figure 4* maps the location of government owned properties.

Figure 4: Combined Properties Owned by Governmental Entities



We see in *Figure 4* the relatively wide dispersal of city owned properties, especially as compared with state owned properties.

6 Building Use on Main Street

The Mohawk Theater complex, once completed, will increase the visibility of Main Street in North Adams as a destination for food, shops, and the performing arts. In the future it will be useful to compare the businesses on Main Street with a baseline of businesses. *Tables 17* and *18* list current Main Street businesses as of July 2012, as determined by building directories, external signage and input from those familiar with the local market. This list can provide a possible baseline for comparison with future occupants after completion of the Mohawk project.

The list may fail to include some recent occupants who had not yet been listed in building directories, and may include some occupants who had been present but vacated the space but were not removed from building directories nor were known to our contacts. Three occupants are listed who are paying below market rents and should be regarded as temporary tenants. These are marked with an asterisk and their row in the table is shaded.

We have separated the list into north side of Main Street and south side of Main Street because there is a difference in building size, particularly number of stories, between the two sides. The north side consists of older, taller buildings of an historic nature while the south side consists predominantly of single story buildings from the 1960s.

Table 17: Main Street Businesses, July 2012, North Side

Address	Business	Side of Main Street
1	Subway	North
33	Registry of Motor Vehicles (RMV)	North
33	North Adams Artists' Coop Gallery	North
33	Everyday Health	North
37	Berkshire Bank	North
37	Dept of Transitional Assistance (DTA)	North
37	Scarafoni Associates, Real Estate Management	North
41	China Buffet	North
43	Verizon	North
45	Sushi House	North
49	Jarvis Rockwell Gallery*	North
51	Gallery 51 (MCLA Gallery)	North
53	Vacant	North
55	The Hub	North
57	Luma's Muffins and Mug	North
59	Berkshire Emporium and Antiques	North
61	Northern Berkshire Pregnancy Support	North
61	Northern Berkshire Community Coalition	North
61	Snips Salon	North
61	Kushi & Myer	North
61	Habitat for Humanity	North
65	Shima	North
67	The Local	North
69	Apartments (13)	North
71	Edward Jones Investments	North
73	I Got Goodies	North
73	Wall of Sound	North

Address	Business	Side of Main Street
75	Condominium	North
75	Condominium	North
77	Shear Madness Salon	North
81	Eagle Street Music on Main	North
85	Charles Phykitt Insurance Agency	North
85	North Adams Transcript	North
85	The Advocate	North
85	Ad Lib North	North
85	Elder Services of Berkshire County	North
85	Elizabeth Freeman Center Kids Place	North
85	Sarah Morse-Field, Attorney	North
85	Dr John Howland	North
85	MS Resource of the Tri State Area	North
85	Integrative Medicine	North
85	MA Rehabilitation Commission	North
85	Mary Ann's Looking Glass Beauty Salon	North
85	Met Life Financial Services	North
85	North Adams Retirement Board	North
85	Northeast Center for Youth and Family	North
85	Pedercini's Beauty Salon	North
85	Pellegrini Seeley Ryan & Blakesley, Attorneys	North
85	Richard Lionel, Attorney	North
85	Thomas Rumbolt, Attorney	North
85	Richard Taskin, Attorney	North
85	Berkshire North WIC	North
85	Western MA Legal Services	North
85	True North Financial	North
85	Smith, Watson & Company	North
85	Steepleview Realty	North
91	Computer Bug	North
93	Hoosac Bank	North
101	Atef Fine Jeweler	North
103	Vacant (for Sale)	North
105	Press*	North
107	Gallery 107*	North
109	Vacant (owned by City of North Adams)	North
111	Mohawk Theater	North
115	Moulton's Spectacle Shoppe	North
117	Supreme Pizza & Wings	North
131	First Baptist Church	North

* - occupants are temporary, paying below market rate for space.

Table 18: Main Street Businesses, July 2012, South Side

Address	Business	Side of Main Street
10	North Adams City Hall	South
40	Holiday Inn	South
40	Richmond Grille	South
40	Century 21 Hearthstone Realtors	South
40	Farrington Contracting	South
40	Berkshire Menus .com	South
40	James Sisto, Attorney	South
40	Dr John Moresi, DDS	South
40	Longview Associates	South
40	Berkshire School of Tae Kwon Do	South
40	Church of Jesus Christ of Latter Day Saints	South
40	Victoria R Cavalli, MD	South
62	Nail Design	South
66	Greylock Federal Credit Union	South
66	Sleepy's	South
70	Radio Shack	South
74	H&R Block	South
90	TD Bank	South
106	Boxcar Media	South
106	Agency BCM	South
106	iBerkshires.com	South
134	First Congregational Church	South

The list of businesses and organizations in *Tables 17* and *18* will be useful in the future for tracing turnover on Main Street, both of the number of businesses/organizations and of the type.

7 Measuring Street Vitality and its Impacts

A central goal of the Mohawk Theater project and broader Main Street corridor revitalization efforts is to increase the “vitality” of Main Street in North Adams. The goal is to make the center of North Adams an exciting place to visit, to increase the business and prosperity of enterprises located in North Adams and thereby provide income and employment opportunities for the citizens of the community.

In order to assess the impacts of these revitalization efforts, C³D has developed an approach for monitoring and measuring the vitality of Main Street by measuring the flow of persons with “smartphones” (phones running the Android, iPhone IOS, Blackberry or Windows Phone operating system) on Main Street in North Adams. In this section we describe the initial data collection efforts, and present some statistical tests that validate the approach as a method for measuring the vitality of the area.

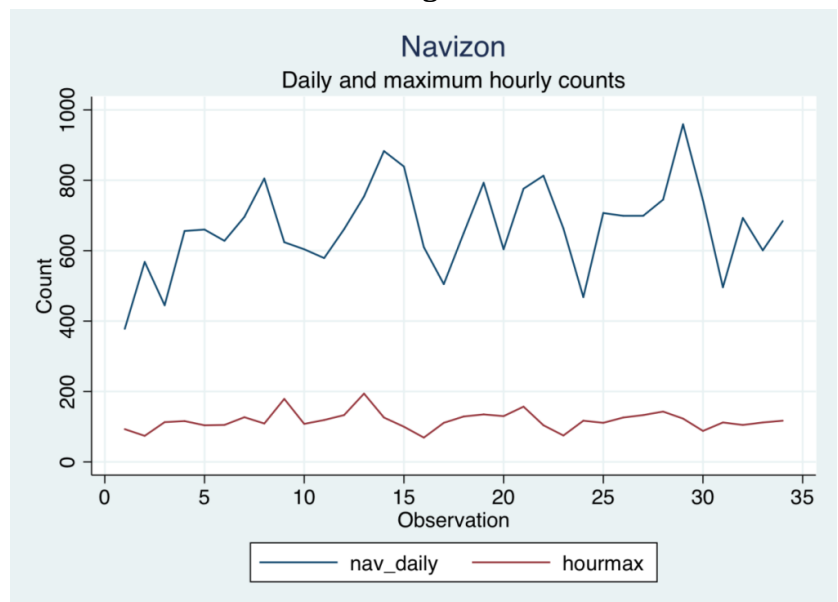
According to the Pew Internet & American Life Project, 46 % of American adults own a smartphone of some kind as of March 1st, 2012. That number is an 11% increase from 2011 and as of 2012, more people own Smartphones than other, simpler mobile phones.³¹ C³D identified a Smartphone-monitoring device made by Navizon, Inc., a firm which specializes in provision of GPS and location-based services and analysis. Special arrangements were made with Navizon to provide a monitoring device and data accumulation service that could be accessed online. The data on the large share of Americans who make use of smartphones and the correspondence between the data reported below make us confident that this provides a useful methodology for measuring and monitoring the level of street vitality.

For future use, however, it is worth noting that the pattern of increasing usage of smartphones means that measurements taken using the same methodology applied in future years will have to adjust for this trend to avoid attributing the increase in smartphone usage with an increase in street vitality. Making such adjustments is relatively straightforward in statistical analysis.

Figure 5

Data

The data used in this analysis were collected by the Navizon smartphone monitor and then transmitted online to Navizon servers. The monitor has been placed in the ground floor of retail store at the corner of Main and Holden Streets. No personal or phone number data are captured or stored. Data such as those provided in Figure 5 can then be viewed online or downloaded using Navizon’s online application Navizon Analytics, found at <http://analytics.navizon.com>. These



³¹ Smith, Aaron, *Nearly half of American adults are smartphone owners*, March 1st 2012. <http://pewinternet.org/reports/2012/smartphone-update-2012.aspx>, accessed 7/27/2012.

data provide counts for the number of unique Smartphones within an estimated 200 yard radius of the Navizon device's location. The counts vary depending on the interval selected on Navizon Analytics, since the interval chosen is the determining factor that decides on the definition of "unique". For example, if a daily count is collected, a single Smartphone that enters and exits the monitored area several times during the course of a day will only be counted once. However, if the interval is set to be counted on an hourly basis, a single phone will be counted as many times as the number of hours it is detected in the monitored area. Due to the nature of the data collected from the galleries participating in the Down Street Art project in North Adams, the present analysis focuses on Navizon's daily counts. Figure 5 shows the distribution of daily total and daily maximum hourly Navizon counts, over a period of 34 days.

The ease and consistency of data collection constitutes a key strength of Navizon's monitoring system. Barring electrical failures, the system operates 24 hours a day, 7 days a week. All that is needed to obtain the data is to log on to the company's analytics website, chose a range of dates for which data are desired, and determine at which interval the data is to be counted. The data can then be viewed online and downloaded into a spreadsheet.

Of course, ease and consistency would be of little value if the data measured were not related to the concept of "vitality" that is of central interest for Main Street redevelopment. Does an increase in the number of persons detected by the Navizon monitor translate into increased persons entering into establishments on Main Street? This must be studied and verified to validate our approach to monitoring Main Street vitality.

We received data from Gallery 51 on Main Street, North Adams that provide a headcount of the number of individuals visiting the galleries Gallery 51, Press, The Artery, Gallery 107, Marshall Street Gallery, and the Jarvis Rockwell gallery in North Adams. Additionally, information is provided on whether a sale was made in any given gallery and the date of the transaction.

In order to measure the effect of the series of public events that take place on or near Main Street, North Adams, we created an indicator variable that was given a value of 0 if no event took place on that day, or a 1 if there was an event listed on the calendar of the City of North Adams official website.³²

Lastly, we collected data from the National Climactic Data Center³³ to get information on the daily maximum temperature reached, as well as the number of millimeters of precipitation in North Adams, MA. We combine these data with the Navizon count data to test the ability of the Navizon counts to predict the number of persons entering one of the Galleries.

Model

To test the validity of our approach, we use regression analysis to estimate the relationship between Navizon's daily counts and the number of people visiting North Adams galleries. We estimate a linear model of the form:

$$Persons = \beta_0 + \beta_1 \cdot NavizonCount + \beta_2 \cdot Rain + \beta_3 \cdot F + \beta_4 \cdot EventIndicator$$

³² http://www.northadams-ma.gov/index.php?nav_id=8

³³ <http://www.ncdc.noaa.gov/cdo-web/>

The approach could be regarded as valid if the estimated parameter β_1 is positive and statistically significant. In this model the parameter β_1 indicates the ratio of persons passing within range of the Navizon monitor with Smartphones relative to the number actually entering the galleries. In addition we estimate a “log-linear” model that expresses the natural logarithm of all gallery counts combined as a function of the natural logarithms of daily Navizon counts, precipitation, and temperature, represented in the following equation:

$$\ln(\text{Persons}) = \beta_0 + \beta_1 \cdot \ln(\text{NavizonCount}) + \beta_2 \cdot \ln(\text{Rain}) + \beta_3 \cdot \ln(^{\circ}\text{F}) + \beta_4 \cdot \text{EventIndicator}$$

In this model a positive sign and statistical significance of the parameter β_1 again implies validity for our monitoring approach. The interpretation of β_1 is slightly different in this model, however. The parameter β_1 indicates the percentage change in persons entering the galleries associated with a 1 percent increase in the daily Navizon count.

In addition to the variables for Navizon count, rainfall and temperature, all of our models make some use of the event indicator variables described above. Originally, each event was given its own dummy variable, but due to the frequency that the events in question occur and the limited amount of data collected so far, we sometimes combine them into one variable that takes the value 1 if an event of some sort took place on that day, and 0 otherwise.

In an attempt to only capture the number of Smartphones in the area during the hours that the galleries are open on a regular basis, we collected data from Navizon on an hourly basis over the period 6/16/12 to 7/29/12. The data were then reorganized and combined to produce a daily “9 am to 5 pm” count. However, due to the nature of Navizon’s definition of “unique,” we saw that the “9 to 5” count inflated the number of Smartphones observed relative to the Navizon counts that were collected on a daily basis.

Lastly, we collected the maximum counts reached within an hour during each day throughout the time period of for which data were available (6/16/12 – 7/19/12). We assigned this count to an explanatory variable that was used both in a separate regression and was included in the main model that estimates the relationship between the number of daily gallery visits to all galleries and the natural logarithm of the variables listed above. It was expected that the second of these two models would see a high level of collinearity between the daily counts and the maximum count reached within an hour between 9am and 5pm during that day. The results of this attempt to compare the behavior of the daily counts relative to hourly maximum counts can be seen below.

Results

The estimates for the linear model are presented in Table 19 below. This regression separates the indicator variables for events into four separate variables, one for each event that took place during the time period considered. The R^2 shows that 99.0% of the variation in the sample can be explained by the model, whereas the adjusted R^2 shows that 98.8% of the variation in the sample can be explained by the model.

The model estimate for β_1 shows that for every 100 persons with Smartphones detected by the Navizon monitors, the number of gallery visitors increases by just over 23 persons. This increase is statistically significant at the 95% confidence level.

Table 19

Galleries	Coefficient	Std. Err.	t	P>t
Navizon Count	0.231	0.069	3.370	0.002
Rainfall	-0.967	0.455	-2.130	0.043
Temperature	-1.092	2.789	-0.390	0.699
Fourth of July	92.258	53.915	1.710	0.099
Food Festival	124.294	43.283	2.870	0.008
Beach Party	-2.483	43.869	-0.060	0.955
Downstreet	2190.178	43.748	50.060	0.000
Constant	-53.423	72.690	-0.730	0.469
Observations: 34				
R ² : 0.990				
Adj. R ² : 0.988				

Table 20 presents estimates of the log-linear model.

Table 20

Galleries	Coefficient	Std. Err.	t	P>t
Navizon Count	2.426	0.930	2.610	0.015
Rainfall	-0.228	0.130	-1.750	0.093
Temperature	-2.108	1.941	-1.090	0.287
Event	1.606	0.704	2.280	0.031
Constant	-4.591	4.933	-0.930	0.361
Observations: 31				
R ² : 0.471				
Adj. R ² : 0.389				

This regression (Table 20) shows that a 1% increase in the number of daily Navizon counts increases the number of gallery visitors by 2.42% and this impact is again statistically significant at the 95% confidence level. Both precipitation and temperature have a negative impact on the number of gallery visitors, but neither is statistically significant at the 95% confidence level. One possible reason why these two variables are not statistically significant is the lack of variation in the weather reported over the time period for which the model was run. It is likely that both maximum daily temperature and precipitation become statistically significant as the data set grows over time with changes in seasons.

The dummy variable covering events in downtown North Adams is statistically significant at the 95% confidence level and shows that on days when an event takes place, the number of gallery visitors increases by 160% on average. The R² indicates that 47.1% of the variation in the sample can be explained by the model. Due to the outliers found in the dataset, in particular the number of

gallery visitors on 6/28/12 when the DownStreet Art kick-off took place, a robust regression was run.

Maximum Hourly Counts

Table 21 shows the results from an analysis that uses maximum hourly counts during each day of the time period of concern. Similar to the other Navizon measures used, the maximum hourly counts are statistically significant at the 95% confidence level, but the variable has a coefficient with a lower magnitude. Another difference seen in this regression is the noticeable drop in R², which may be explained by the relatively small variation in the maximum hourly counts.

Table 21

Galleries	Coefficient	Std. Err.	t	P>t
Hourly Max Count	1.879	0.839	2.240	0.034
Temperature	0.247	2.166	0.110	0.910
Rainfall	-0.037	0.154	-0.240	0.811
Constant	-5.605	8.012	-0.700	0.490
Observations: 31				
R ² : 0.163				
Adjusted R ² : 0.071				

Table 22 displays the analysis that combined the daily Navizon counts with the maximum hourly counts and the remainder of the present model. The results indicate that when combined with the daily Navizon count, the maximum hourly count within that day is no longer statistically significant at the 95% confidence level.

Table 22

Galleries	Coef.	Std. Err.	t	P>t
Navizon Count	2.454	1.035	2.370	0.025
Hourly Max Count	1.361	0.805	1.690	0.103
Rainfall	-0.083	0.144	-0.580	0.569
Temperature	-2.509	2.315	-1.080	0.288
Constant	-9.761	7.608	-1.280	0.211
Observations: 31				
R ² : 0.312				
Adj. R ² : 0.206				

Furthermore, the inclusion of the “event” variable in the “maximum hourly counts” model (Table 23) not only decreases the statistical significance of the maximum hourly count variable, but also changes the impact that the hourly variable has, *ceteris paribus*, on the number of daily gallery visitors from positive to negative.

Table 23

Variable	Coef.	Std. Err.	T	P>t
Navizon Count	2.477	0.925	2.680	0.013
Hourly Max Count	-0.237	0.923	-0.260	0.800
Rainfall	-0.240	0.141	-1.710	0.100
Temperature	-2.114	2.072	-1.020	0.317
Event	1.706	0.619	2.760	0.011
Constant	-3.788	7.132	-0.530	0.600
Observations	31			
R ²	0.473			
Adj R ²	0.367			

When compared to the log-linear model presented in Table 20, the inclusion of the maximum hourly count decreases both the unadjusted and adjusted R².

Individual Gallery Results

Next we ran six separate analyses, one for each gallery for which we had visitor data. The galleries include: Gallery 107; PRESS; The Artery; the Jarvis Rockwell Gallery; the Marshall Street Gallery; and Gallery 51.

Table 24

Variable	Gallery 107	PRESS	Artery	Jarvis Rockwell	Marshall Street	Gallery 51
Navizon Count	3.558	1.160	1.116	3.446**	3.850**	0.770
Rainfall	-0.243	-0.180	-0.114	-0.100	-0.098	-0.089
Temperature	-8.728	-3.794	-2.530	-12.324**	-8.508	-2.905
Constant	9.344	8.436	3.661	22.418	6.061	8.185
Observations:	16	15	15	16	16	30
R ² :	0.394	0.117	0.061	0.514	0.367	0.083
Adj. R ² :	0.243	-0.123	-0.195	0.393	0.209	-0.023

The series of estimates presented in Table 24 show the number of gallery visitors in each gallery as a function of the same variables used in the aggregated model, excluding the indicator variable that captures public events. The tables above show that the daily Navizon counts are only statistically significant at the 95% confidence level for the Jarvis Rockwell and Marshall Street galleries. Due to the small number of data points available for each individual gallery, however, sustainable conclusions cannot be drawn from these regressions.

Out of the total of 34 data points, most galleries except for Gallery 51 were closed between 18 and 19 days during the time period considered. While Gallery 51 was open throughout the time period

considered in the model, the daily Navizon counts were not statistically significant at the 95% confidence level. This may be explained by the nature of the gallery’s relatively steady stream of visitors. In other words, the variance in the sample of daily visitors to Gallery 51 is relatively small.

Similar to the scenario above in the aggregated model, neither maximum temperature nor precipitation was statistically significant at the 95% confidence level in the regressions for the individual galleries. It is expected that the magnitude of the weather related coefficients will change over time with the change of seasons.

Impact of Street Vitality

The analysis presented above is interesting and provides a demonstration that our measure of street vitality is related to the number of persons recorded as entering one of several North Adams galleries. A more central question, however, is whether increasing the vitality of Main Street has a positive economic effect. Does it increase the sales of Main Street merchants? Will increasing the vitality of Main Street increase the economic success of North Adams?

To test this question, we enlisted the cooperation of the owner of a small business located at the heart of North Adams, who provided us with data on the daily dollar sales volume from their store for each day from June 2012 through January 2013. These data were matched with counts from the Navizon monitoring device and other data to model the impact of changes in street vitality on the actual level of sales. In this way we can actually estimate the impact on sales of a change in street vitality.

These data also allow us to undertake further analysis to test the causal relationship between street vitality and store sales.

Finally, the data permit us to demonstrate a methodology of testing for a causal relationship that runs from sales at the store to street vitality. For small merchants, we would generally expect that there would not be a causal relationship between sales activity at the store and the level of street vitality. For larger stores, however, there may be. For the Mohawk Theater itself, this will be a central question that could be evaluated using the methods we present here.

Figure 6

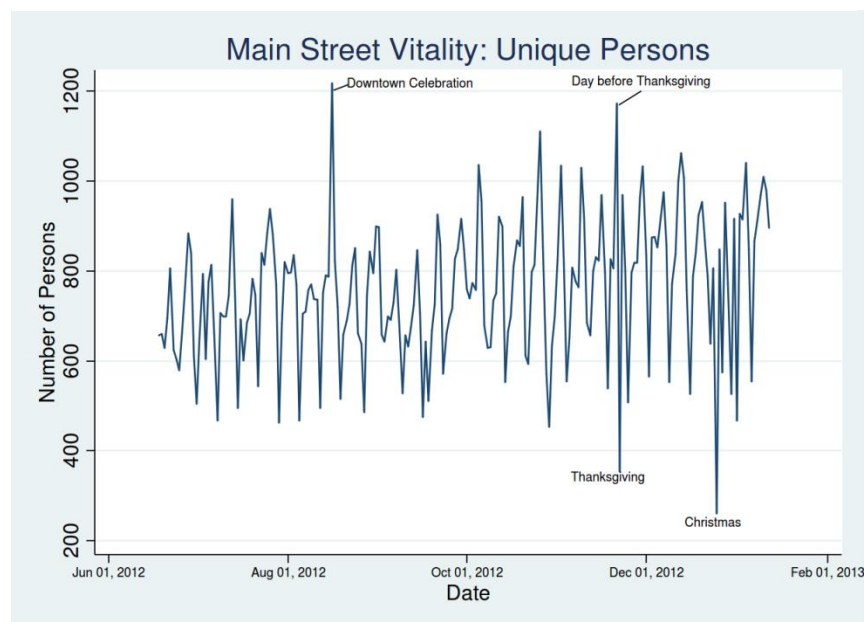
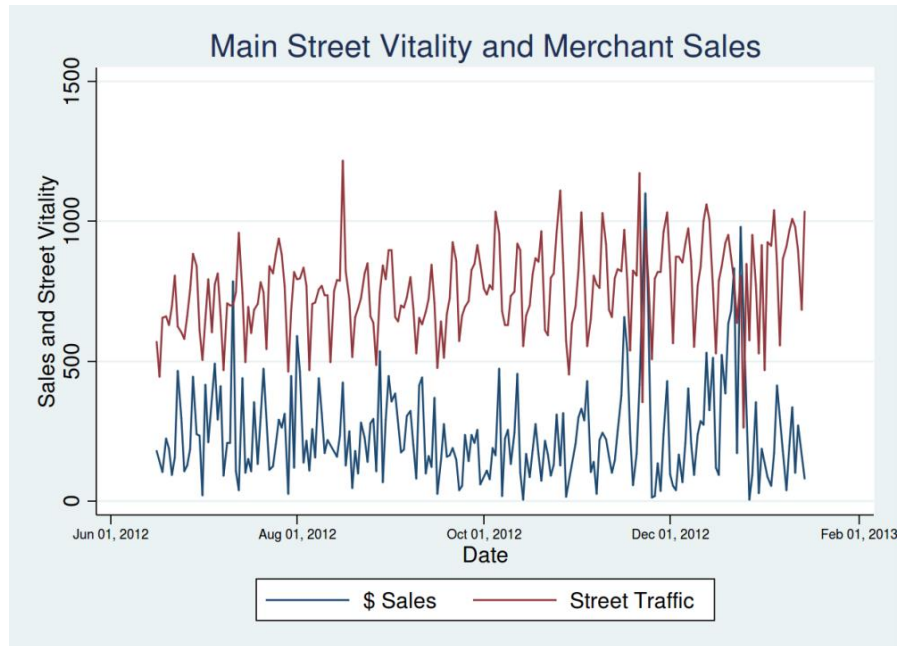


Figure 6 shows the ebb and flow of street vitality over the period during which data were collected, from mid June 2012 until late January, 2013. Days with particularly high or low measured levels of vitality are clearly visible, and the most extreme values are flagged with explanatory notes in the figure. This level of street vitality provides a useful part of the baseline that is the central purpose of this report, and against which comparisons can be made after the Mohawk Theater project is complete.

If we examine the graph showing dollar sales and street vitality together, the day-to-day volatility in the data makes it difficult to tell whether or not there is a relationship. The data are shown in Figure 7 below, and it seems clear that we will need to undertake a more detailed econometric analysis of the relationship to determine the nature and strength of the linkage between street vitality and the economic success of Main Street businesses. For example, at the time of the Downtown celebration in August, there is only a modest spike in sales. By contrast, there is a significant spike in sales in early July that seems unrelated to any clear spike in street vitality.

Figure 7



By contrast, there is a significant spike in sales in early July that seems unrelated to any clear spike in street vitality.

We begin our analysis of the data by estimating the linear relationship between the logarithm of sales and the logarithm of street vitality. We also include variables to capture effects related to the day of the week (compared to Sunday) or the month (compared to January and February).

We have estimated two linear models using two measures of street vitality. The first uses vitality measured by the number of unique persons recorded on the street during the same day, matching that measure of street vitality to the dollar-value of sales during that same day. The second matches the dollar value of sales during a day to the sum of total persons counted on the street during the week prior to the day on which the sales occurred. In either event we estimate a model of the form:

$$\ln(\text{Dollar Sales}) = \beta_0 + \beta_1 \cdot \ln(\text{Street Vitality}) + \beta_i \cdot \text{Month Indicator} + \beta_k \cdot \text{Day Indicator}$$

For the months, we exclude January and February so that the estimated coefficients represent the increase in the stated month relative to January and February. For the days of the week we exclude Sunday, so the estimated coefficients represent the increase in sales relative to Sunday. The results are presented below in Table 25. As noted above, by estimating a model using the logarithm of dollar sales and street vitality the estimated coefficients provide information about the *percentage* impact on sales from a one percent increase in street vitality.

The estimates show that increasing the level of street vitality results in a statistically significant increase in merchant sales. The coefficient using “same day” vitality model indicates that a 1% increase in street vitality is associated with an increase in same day dollar sales by approximately 0.74%. Alternatively, doubling the level of street vitality, as routinely happens during festivals and major events, increases merchant sales by about 74%. While this estimate is statistically significant,

it is “significant at the 90% level” which means that we can 90% confident that the true impact is not zero.

Using the “prior week” measure of vitality shows an even stronger result. A 1% increase in the total vitality during the prior week is associated with a 2.24% increase in merchant sales. This result is statistically significant at the 95% level. Achieving a sustained increase in street vitality for a one week time period is more difficult than a one day burst, so this larger impact is not completely surprising. It also, however, suggests that there may be interesting dynamic relations that exist between street vitality and merchant sales.

Table 25

Variable	Coefficient	Coefficient
Day vitality	0.7426 *	
σ	0.455	
Week vitality		2.2382 **
σ		1.029
June	0.7378 **	1.1095 **
July	0.6454 **	0.8379 **
Aug	0.7049 **	0.8291 ***
Sept	0.5544 *	0.7730 **
Oct	0.2130	0.1705
Nov	0.5236 *	0.6062 **
Dec	0.5738 **	0.5678 **
Mon	0.5815 **	0.7746 ***
Tue	0.7003 ***	0.8921 ***
Wed	0.7137 ***	0.9759 ***
Thu	0.9012 ***	1.2270 ***
Fri	0.9153 ***	1.2291 ***
Sat	1.2012 ***	1.4656 ***
Constant	-1.0145	-15.6106 *
Observations	199	193
F Statistic	4.75 ***	4.89 ***
R^2	0.2655	0.2778
$\overline{R^2}$	0.2096	0.221

*** - significant at 99%, ** - significant at 95%,
* - significant at 90%

Note that the estimates for the month and day effects show important variation across the seasons and across the week. Saturday sales are 120% to 140% greater than Sunday sales. Sales in the summer months are estimated to be between 65% and 111% greater than sales in January and February. These impacts are as we might expect.

We turn next to statistical analysis designed to reveal and test these dynamic relations. This type of analysis can be used over time to test the impact of the Mohawk Theater project relative to the baseline.

A widely-used technique used for such analysis is called *Vector Auto-Regression*. This technique reveals information about the relationship that holds between two or more variables by estimating

the impact that holds between the variable of interest (dollar sales at the merchant) and lagged values of that variable, along with current and lagged values of the other variables.

This technique is ideal for helping us to understand the dynamic structure of these relationships. For example, it seems plausible given the estimates presented above that the level of street vitality today affects the level of merchant sales today. The level of street vitality today might also plausibly affect merchant sales for several days. People are drawn to the street and then reminded of the existence of merchants, or they observe attractive window displays and resolve to return later to do some shopping. This effect might persist for several days.

A more nuanced impact might involve feedback between the merchant sales and street vitality, which feeds back into more merchant sales in the near future. One major merchant on the street might serve to attract customers and thereby raise street vitality, which then feeds back and provides greater merchant sales in the future. In some sense this is just a description of a vital urban center. It is also a primary goal of the Mohawk Theater project.

To explore these ideas, we estimate a vector auto-regression (VAR) using the logarithm of daily merchant sales from a North Adams merchant, the logarithm of daily street vitality, and the logarithm of the recorded dew point temperature, providing a measure of outdoor comfort that was found to fit the data better than rainfall or temperature data used in the previous models, presumably due to the greater variation in temperature and precipitation when our data span several seasons.

The results from the VAR estimates for the logarithm of merchant sales are presented in Table 26.

Table 26

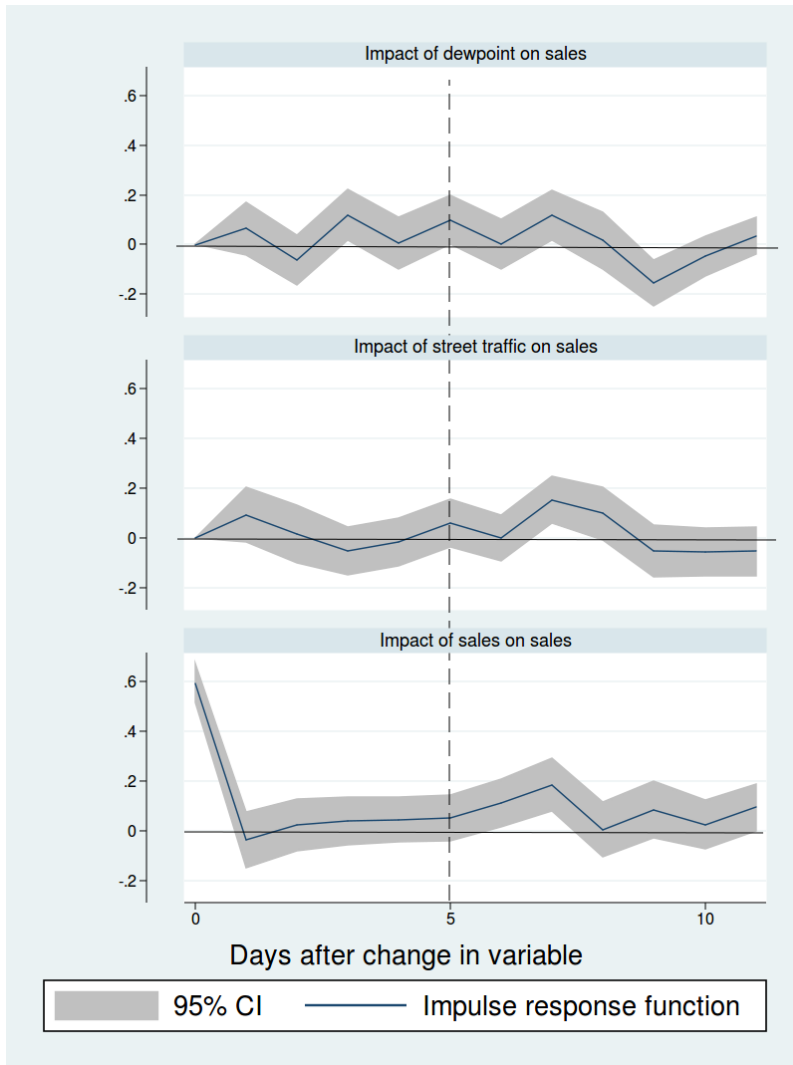
Time	Dewpoint	Street Vitality	Sales
t - 1	0.437	0.938 *	-0.100
t - 2	-0.674	0.087	0.048
t - 3	1.230 ***	-0.596	0.114
t - 4	-0.602	-0.106	0.128 *
t - 5	0.727	0.456	0.101
t - 6	-0.548	0.147	0.210 ***
t - 7	0.972 **	0.892	0.341 ***
t - 8	-0.673	0.093 **	0.090
t - 9	-1.057 ***	-0.767	0.147 *

*** - significant at 99%, ** - significant at 95%,
* - significant at 90%

Table 26 presents only part of the VAR estimates, showing the relationship between current period merchant sales and the lagged values of dewpoint, street vitality, and merchant sales. The table presents asterisks next to each coefficient estimate to indicate a level of statistical significance.

The dewpoint numbers indicate that outdoor comfort is important for daily sales. For example a 1% increase in dewpoint is associated with a 1.23% increase in sales 3 days later. While the weather matters, it averages out to a very modest effect over the 10 day time period. The sum of dewpoint coefficients is a very modest -0.187.

Figure 7



The street vitality impact is larger in aggregate. The main positive impacts of increasing street vitality are felt in sales the next day (where a 1% increase in street vitality is associated with a .94% increase in merchant sales), and then an echo effect about a week later, where a 1% increase in street vitality generates, 8 days later, a .093% increase in merchant sales. The sum of coefficients over the 10 day period is 1.145, suggesting that doubling street vitality will raise merchant sales by nearly 115%, spread out over a 10 day period. This is consistent with the estimates obtained and presented in Table 25, but here we learn more about the dynamic structure of the impact.

Finally, in looking at the impact of sales on future sales, we see a strong weekly structure, with significant impacts of an increase in sales on sales 6 and 7 days later. This is expected in most commercial retail sectors.

A visual summary of the VAR estimates is presented in Figure 7. Here we see the dynamic impact of each variable on sales indicated by the blue line, surrounded by a grey band that indicates the 95% confidence interval. When the grey band is entirely on one side or the other of the horizontal line indicating the value zero, then the impact for that time lag is statistically significant. The functions that are presented are called *impulse-response functions* because they show the response of sales (on the vertical axis) to a unit impulse of each variable over time.

Finally, these VAR estimates permit us to evaluate in a limited way the causal relationships that hold between the variables. If a shock or change in street vitality reliably affects some future values of merchant sales, then in a sense we can say that street vitality “causes” merchant sales to change. Of course, causality can go both ways as suggested in the discussion above. Street vitality can cause merchant sales to change and merchant sales can cause street vitality to change. The tests to evaluate these impacts, and this specific interpretation of causality, are called *Granger Causality* after the economist who developed the techniques.

Table 27 below presents four tests of Granger Causality relationships. The first tests whether changes in street vitality cause changes in merchant sales. The value of the test statistic indicates

that we can easily reject the null hypothesis that there is no such relationship. As expected: increasing street vitality will increase merchant sales.

The second test indicates that we can also easily reject the null hypothesis that there is no causal relationship between outdoor comfort levels and merchant sales. We can also reject (although with somewhat less confidence) the null that outdoor comfort levels have no impact on street vitality.

The final test is interesting. The value of the test statistic indicates that we cannot reject the null hypothesis that the sales of the merchant whose data we have access to have no causal impact on the level of street vitality. As important and centrally located our collaborating merchant is, it does not appear to have a causal impact on the vitality of North Adams Main Street.

Table 27

Causal Relation	χ^2 Test
<i>Street Vitality</i> → <i>Merchant Sales</i>	27.372 ***
<i>Dewpoint</i> → <i>Merchant Sales</i>	35.015 ***
<i>Dewpoint</i> → <i>Street Vitality</i>	16.533 *
<i>Merchant Sales</i> → <i>Street Vitality</i>	13.125

These results suggest a possible test for evaluation of the impact of the Mohawk Theater project once it has been completed. A VAR could be estimated for the relationship between Mohawk event sales or other measure of Mohawk Theater activity and the level of street vitality measured using the Navizon device we have described in this study. Direct statistical tests are available that can evaluate the extent to which the Theater can impact the vitality of Main Street. If merchants can be persuaded to share their sales data, the impact on economic activity can be directly estimated. If not, it can be indirectly estimated using the analysis presented in this section of the baseline report.

Summary

This analysis has investigated whether the Navizon monitoring technology provides a valid approach for measuring the physical, street-level activity on Main Street, North Adams. After having run multiple evaluations, we are confident in the approach. The results indicate that the Navizon counts are statistically significant at the 95% confidence level across all models except for the rejected “9am to 5pm” count, and the maximum hourly count during a day when combined with the present model. We also conclude that among the public events included in the model, the ones that were geographically closer to the Navizon device indicated a larger explanatory impact on the number of daily gallery visitors.

Due to the small amount of data available from North Adams galleries, we are not able to draw sustainable conclusions from the evaluations that related individual galleries’ visitor data against the remaining variables. As more data are made available, however, such conclusions may be possible. The relatively uniform weather pattern during the summer time period considered constitutes an obstacle to accurately estimating the impact of weather related conditions on the number of gallery visitors. However, as time passes and the seasons change, we expect the weather related variables to become statistically significant.

These expectations were confirmed and extended in our analysis of the impacts of street vitality on merchant sales. The analysis indicates that doubling the level of street vitality that we have developed for this study is associated with an increase in merchant sales of approximately 115%,

spread over a 10 day period. In a non-dynamic context, we estimated that doubling the level of street vitality would increase contemporaneous merchant sales by about 74%, and a sustained doubling of street vitality is associated with a 224% increase in merchant sales. These values are consistent with each other and very plausible, given the feedback effects that are apparent in the dynamic behavior estimated with the VAR. An increase in the vitality of North Adams Main Street would have a significant positive impact on the economy of merchants doing business there.

8 Measuring Visibility: Google Insights

In 2006, Google launched an extension of their online and publicly available keyword toolkit named Google Insights for Search³⁴ (GIS). Similar to Google Trends³⁵ yet much more user friendly, Insights for Search (also sometimes called I4S) allows a user to monitor the relative popularity of any given search term over time, as well as within and across geographical regions. It is estimated that as of June 2012, Google holds 84 percent of the global search engine market. Additionally, 78.8 % of the population in the United States uses the Internet on a regular basis.³⁶ These two statistics alone offer a sound motivation as to why enterprises, both public and private, should consider monitoring trends in online search queries. This brief paper discusses the main features of GIS, its strengths and weaknesses, suggest practical applications, and attempts to clarify a few common misunderstandings of GIS. A brief instruction guide at the end outlines an example using GIS based on the city of North Adams, MA.

Google's Insights for Search provides the means necessary to analyze traffic patterns as well as to compare the relative popularity of multiple keywords. Combined with Google's service "Adwords,"³⁷ which gives both global and local monthly averages of the number of searches for specific keywords over the past twelve months, a user can form a rough understanding of the general level of activity for certain keywords. Should a user be interested in attempting to gather absolute data from GIS, s/he needs a known reference point from which reverse engineering can be made to estimate the data for the unknown query. Unfortunately, this process is labor intensive and impossible to complete unless a reliable reference point can be found.

Functions

This section offers a brief description of Google Insights for Search's available functions that can be used in a vast number of combinations to produce query results according to the user's desired scenario.

1. GIS allows the user to simultaneously search for a series of *search terms*. This feature can be used to improve the relevance as well as reliability of the returned results. The simple example of adding the two-letter state code can dramatically improve the results.
2. All searches in GIS can be subjected to a series of *geographical specifications* as desired. In the United States, data can be retrieved nationally, on an individual state level, and on a metropolitan level. Furthermore, if sufficient data exists, GIS returns a map that displays 'density' of searches over the geographical region specified.
3. Google provides a tool with which the user can easily determine specific *time intervals* that the search should limit itself to. Apart from a set of readymade intervals such as "past 7 days," the tool can also be easily customized according to the needs and desires of the query in question.
4. GIS also enables users to limit the reach of the query by including the *filter* option to search for results from the web, images, news, or products.

³⁴ <http://www.google.com/insights/search/>

³⁵ <http://www.google.com/trends/>

³⁶ Netmarketshare.com, URL: www.netmarketshare.com/search-engine-market-share.aspx?qprid=4, collected 2012.7.10.

³⁷ <https://adwords.google.com>

Ultimately, all features above can easily be combined with a few clicks into one single search. For example, suppose a user is interested in the Google search traffic patterns for the summer of 2010 for the term “North Adams,” and that the user is only interested in data from a selection of New England metropolitan areas. To accomplish this, the user simply types in the search term, sets the time frame, and includes the appropriate geographical region. The results are then displayed on a graph.

Results

The results are scaled from 0 to 100, where every query will return at least one point that has been given a score of 100 that represents the highest traffic point for that time period. The remaining data points are then divided by that maximum point and given an appropriate position on the scale. A popular misconception is that GIS gives a likelihood of a given keyword being searched for. This, however, is not the case since every point on the graph relates to a high point that is unknown. Hence, GIS should be thought of as a simple, powerful, and user friendly tool that facilitates overview and understanding of the patterns in Google’s search engine.

Google will display a score of zero when insufficient data is available, but it is important to note that a score of 0 does not necessarily imply that no searches were made for the search term in the given timeframe and geographical area. For example, it may be the case that only a small group of individuals search for a given term on a regular basis. In order to avoid inflation in the index, these individuals are only counted once within a set time range. Alternatively, it may be the case that Google simply rounds off its data to the point where a score of zero is given to a point that in reality is a non-zero decimal score.

It is not required to use the category filter in any of the searches in GIS, but due to Google’s automatic categorization, the categories associated with the search term will be shown. Next to the list of categories, a percentage range in parentheses is shown. The range gives the percentage range for search volume in the given category that the search term occupies. The provision of these categories is very helpful in providing context for the query. Any search that has sufficient data will return a distribution of categories and the percentage ranges associated with them and the search term.

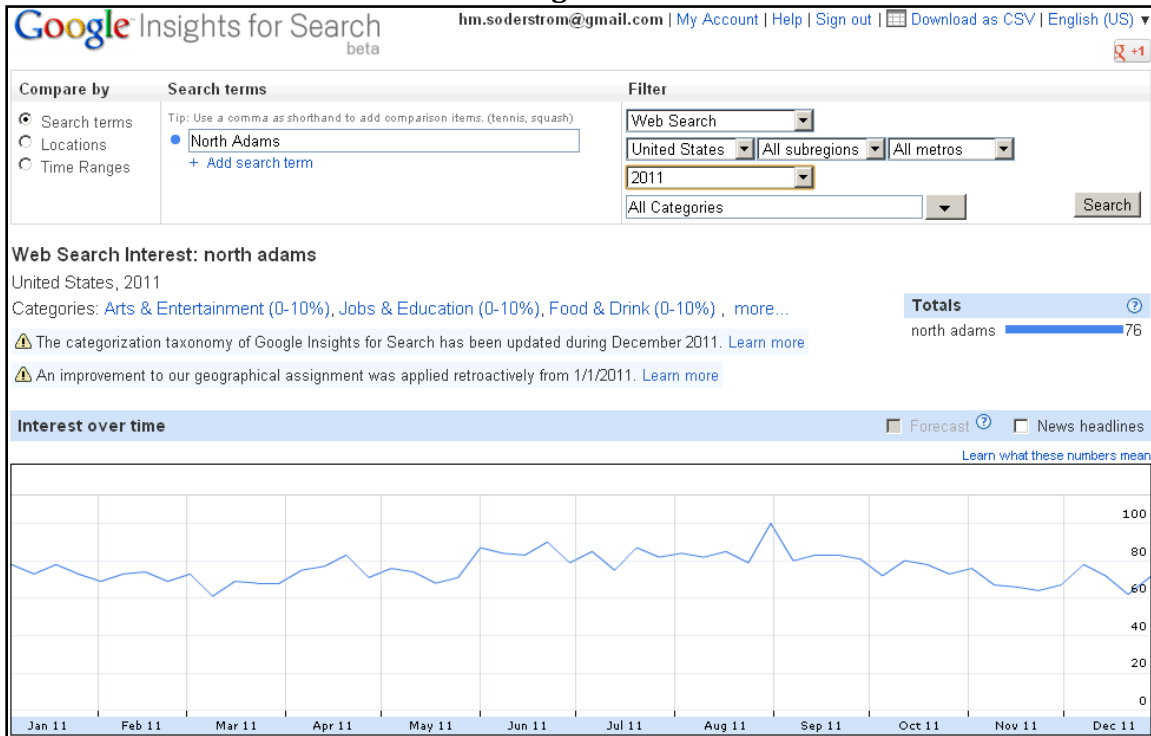
Using Google Insights for Search

The most convenient aspect of GIS is its ease of use – the entire process from search to results is quick and intuitive. Below follows a few quick instructions on how to navigate to GIS, to enter queries and to download results onto an MS Excel sheet.

1. Navigate to <http://www.google.com/insights/search/> or simply search for “Insights for search” in any search engine.
2. In the appropriate fields, choose keyword(s) and parameter(s).
3. Click “Search.”

Figure 8 shows an example of a Google Insights search. Figure 8 also provides the resulting graph associated with a search for the string “North Adams” for 2011 without any specifications on category, but geographically limited to the United States. Accordingly, GIS returns all categories associated with searches in Google’s search engine for the string “North Adams,” e.g. “Jobs & Education (0-10%).” This indicates that the searches for “North Adams” related to jobs and/or education fall in the 0-10% range by query volume for all queries in the “Jobs & Education” category. The analog applies to the remaining categories associated with the search as well. The graph shows a highest point (given a score of 100) for the time period August 28th – September 3rd.

Figure 8

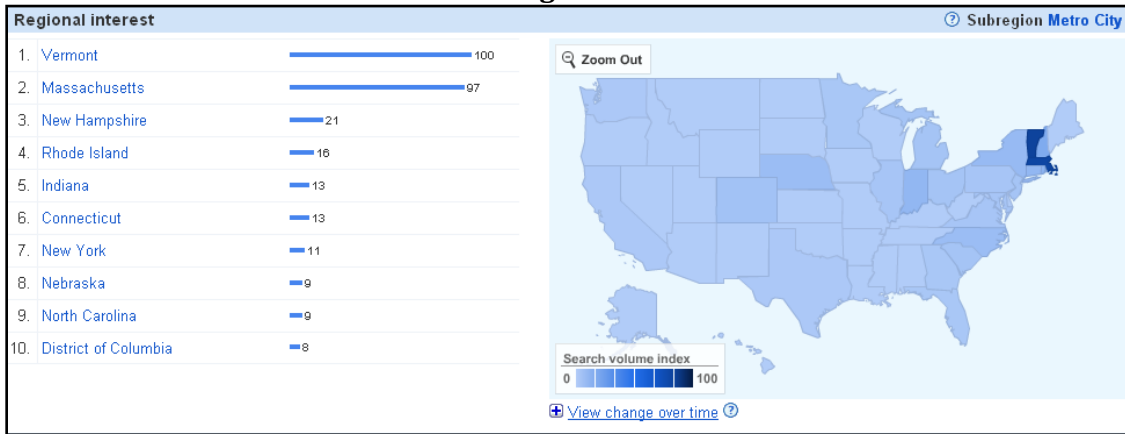


To download the results:

1. Log in to the site using Gmail account information, or create an @gmail.com account in order to download.
2. Click “Download as .CSV.”
3. Choose “Save” or “Open” according to your preferences. The data shown on the website can now easily be read in an Excel sheet.

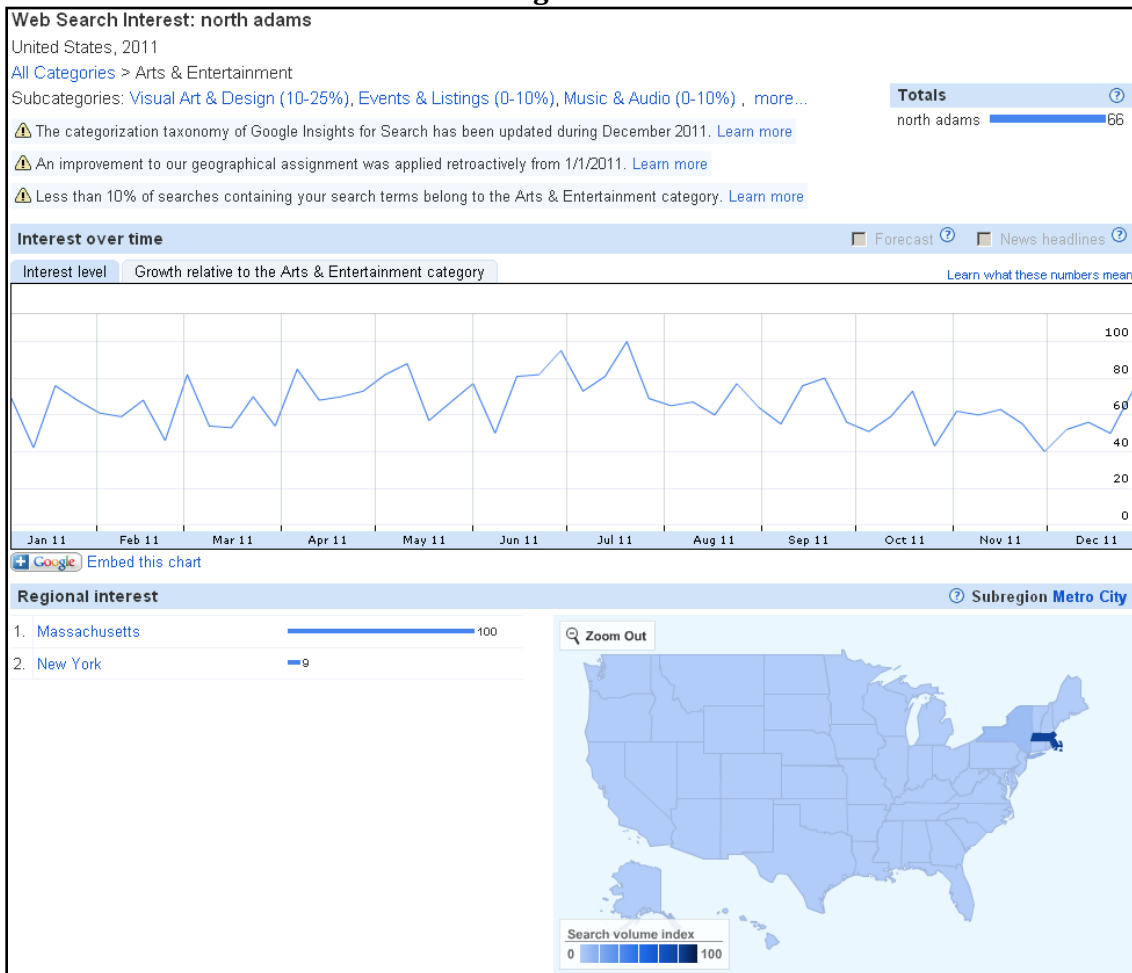
Part of the results of a Google Insights for Search query is a map that displays the geographical distribution for the query. Figure 9 presents the map for the query made in Figure 8 above. Similar to the results displayed in Figure 8, the map shows the region from which the most queries originated and is hence given a score of 100. The remaining states are given scores according to the same normalization and scale procedure as explained in previously. Figure 9 shows a concentration of queries in New England, particularly Vermont and Massachusetts.

Figure 9



As a comparison, Figure 10 shows the graph associated with the same search as used in Figure 8 with the exception that the filter is set exclusively for the “Arts & Entertainment” category.

Figure 10



Comparing Figure 10 with Figure 8, we notice not only a different time period for the highest score, but also a different geographical distribution of query origins. For the “Arts & Entertainment” category, the highest point occurred during July 17th-23rd. The fact that the unrestricted search in Figure 8 showed a peak during the period August 28 to September 3 while the search in Figure 10, which was restricted to Arts and Entertainment searches, peaked during July 17 to 23 may be explained by the 10th anniversary of the “Bang on a Can” festival at MASS MoCA, which took place between July 13 and July 30 of 2011.

Summary

We explored whether Google Insights for Search could be a useful tool for measuring the visibility of North Adams over time. We conclude that it can provide useful information in evaluating change, although it is not as useful as we hoped. Every query produces output standardized with ‘100’ being the maximum point. Thus a comparison of 2012 searches with 2015 searches would not allow us to speak in terms of ‘twice as many’ or going from dozens of searches to hundreds of searches. It would be possible, however, in 2015 to do a query of the period 2012 to 2015 and see where the peak was and what the relative distribution of searches over this period was.

9 Conclusions

This baseline economic report has evaluated many aspects of North Adams Main Street and the proposed Mohawk Theater project. We describe the basic outlines of the proposal, the costs involved and the likely uses for the project and economic activity that would be directly brought to North Adams as a result.

The project is not without precedent. The baseline report identified ten historic theater projects in the region that provide a reasonable set of cases with which the Mohawk Theater project might be compared. This provides an alternative type of baseline for future evaluation of project success.

The baseline report then presents a comprehensive economic evaluation of the potential impact of the project, using currently estimated construction costs and uses. This analysis indicates that the construction phase of the project can be expected to generate a local economic impact in excess of \$30 million over the two year construction period, providing nearly 112 jobs during this period. During the two years of the construction phase more than \$1.2 million in state, local and federal taxes would be generated by this increase in economic activity.

Once construction is complete, ongoing operations at the Mohawk project can be expected to generate nearly \$1.9 million per year in total economic activity, adding more than 21 permanent jobs to the city. Annual federal, state and local tax collections would rise by more than \$250 thousand. The baseline report presents a complete breakdown of the impacts by economic sector, along with tables that permit re-evaluation of the economic impacts if estimated construction costs change or if plans for operating budgets after construction are altered.

The baseline report provides a survey of current land use in North Adams, including the number, value, and locations of different types of properties. For businesses and building occupants on Main Street, who are most likely to be directly affected by the project, the report provides a complete listing for the summer of 2012.

Finally, the baseline report presents two approaches to evaluating the impact of the project on street vitality and on community visibility. For street vitality, the report presents a new approach to measuring street vitality based on counts of the number of unique smart phones that are detected on Main Street. The report presents baseline data for this measure, and demonstrates the relationship between the measure and visitors to North Adams galleries and sales at a North Adams merchant. This analysis shows the impact on merchant sales of increasing street vitality to be significant. Measuring community visibility to outside visitors or investors can be measured with some success using online search counts and measurements available from Google, the online search and media company. Baseline values for this measure of visibility are presented and techniques outlined for routine collection of these data to detect changes as the Mohawk Theater project proceeds to completion and operation.

Appendix A

Table A1: Economic Impact per \$1 million spent during Construction Phase

Sector	Direct	Indirect	Induced	Total
Total	1000000	170874	283816	1454690
Nonres maintenance	620000	1984	1657	623641
Residential maintenance	380000	14	897	380911
Imputed rental value	0	0	46814	46814
Architectural svcs	0	40019	752	40770
Health practitioners	0	0	23335	23335
Hospitals	0	0	22567	22567
Real estate	0	5852	15784	21636
Food/drinking places	0	2720	18294	21013
Nondepository credit	0	9319	8841	18160
Monetary authorities	0	7191	9895	17087
Retail-motor veh, parts	0	6860	5790	12651
Wholesale trade	0	6383	5705	12089
Retail - food and bev	0	4519	6407	10927
Legal services	0	6465	2926	9391
Telecommunications	0	4643	3832	8475
Power generation	0	2821	5555	8377
Nursing/residential care	0	0	7270	7270
Automotive repair	0	4836	2368	7204
Colleges/universities	0	96	7023	7118
Accounting, tax prep	0	5299	1653	6952
Securities, investments	0	1433	5495	6928
Sawmill preservation	0	6418	52	6470
Retail - general mdse	0	2496	3563	6060
Civic, social, prof orgs	0	1600	4167	5766
Retail - Nonstore	0	2020	3569	5589
Retail - building material	0	3505	2075	5580
Retail - health care	0	2310	3214	5524
Medical labs	0	1	4808	4808
Truck transportation	0	3917	871	4788
Retail - misc	0	1744	2582	4326
Oth State/Loc enterprise	0	567	3674	4241
Retail - gas stations	0	1972	2183	4155
Services to buildings	0	2344	1765	4108
Other computer svcs	0	2975	717	3692
Waste management	0	2544	1102	3646

Table A1: Economic Impact per \$1 million spent during Construction Phase

Sector	Direct	Indirect	Induced	Total
Funds, trusts, other	0	42	3220	3262
Printing	0	1412	1278	2690
Hotels, motels, casinos	0	920	1721	2641
Retail - furniture	0	954	1684	2637
Home health care svcs	0	0	2576	2576
Social Advoc/Grantmkg org	0	1	2528	2528
Individual, family svcs	0	0	2464	2464
Nonfinan intang lessors	0	1485	717	2202
Office admin svcs	0	1356	751	2107
Elem/sec schools	0	0	2102	2102
Mailing list publishers	0	1040	950	1990
Religious organizations	0	0	1983	1983
Personal care svcs	0	0	1958	1958
Plastics packaging mfg	0	1433	317	1750
Management svcs	0	794	649	1444
Insurance brokers	0	647	789	1435
Postal service	0	478	881	1359
Cable programming	0	666	679	1345
Rail transportation	0	1105	176	1281
Wood window manufac	0	1206	14	1221
Logging	0	1165	9	1174
Electronic repair	0	858	297	1155
Transit transportation	0	329	812	1142
Sightseeing transport	0	667	444	1111
Other crop farming	0	1050	25	1075
Private households	0	0	1073	1073
Support for businesses	0	579	444	1023
Retail - clothing	0	402	621	1023
Retail - sporting goods	0	382	581	964
Consumer goods rental	0	276	662	938
Child day care svcs	0	0	916	916
Other educational svcs	0	15	872	888
Laundry services	0	61	752	813
Motor vehicle body mfg	0	581	231	812
Soap and cleaning mfg	0	220	548	768
Veterinary services	0	0	743	743
Other recreation indust	0	68	657	725

Table A1: Economic Impact per \$1 million spent during Construction Phase

Sector	Direct	Indirect	Induced	Total
Newspaper publishers	0	330	355	685
Travel reservation svcs	0	329	333	662
Machine shops	0	586	36	622
Death care services	0	0	569	569
Retail - Electronics	0	219	319	537
Surgical appliance mfg	0	12	511	523
Non-poultry processing	0	7	514	521
Museums, historical sites	0	0	505	505
Alkalies/chlorine mfg	0	295	179	474
Independent artists	0	251	206	457
Amusement parks	0	0	447	447
Auto equip rental	0	215	210	425
All other food mfg	0	6	398	404
Other accommodations	0	3	332	334
Community relief svcs	0	0	334	334
Car washes	0	102	221	323
Coating, engraving mfg	0	291	11	302
Other personal svcs	0	16	273	289
Semiconductor mfg	0	176	110	286
Specialized design	0	214	71	285
Motion picture industry	0	56	227	282
Internet publishing	0	108	121	229
Household goods repair	0	161	68	229
Other inorganic mfg	0	147	80	227
Periodical publisher	0	91	128	219
Radio/TV broadcasting	0	109	102	212
Copper rolling & drawing	0	196	12	209
Blown glassware mfg	0	51	140	190
Video/DVD rental	0	0	188	188
Greenhouse production	0	33	155	188
State/Loc electric utils	0	63	123	186
Data processing	0	60	124	184
State/Local transit	0	51	126	178
Spectator sports	0	34	143	176
Other machinery mfg	0	129	37	166
Coated paper mfg	0	140	25	165
Other professional svcs	0	105	54	159
Ceramics/fixture mfg	0	135	20	155

Table A1: Economic Impact per \$1 million spent during Construction Phase

Sector	Direct	Indirect	Induced	Total
Performing arts co	0	13	141	154
Environmental consulting	0	108	39	147
Book publishers	0	11	136	147
Vegetable and melon	0	1	142	142
Warehousing/storage	0	65	73	138
Water & sewage system	0	20	116	136
Fitness / recreation	0	25	107	132
Security services	0	63	57	120
Wiring device mfg	0	111	5	116
Other electronic mfg	0	79	32	111
Fertilizer mfg	0	103	3	106
Nonupholstered mfg	0	3	81	84
Promoters of perform arts	0	10	68	78
Blind and shade mfg	0	18	57	75
Software publishers	0	28	46	75
Computer programming	0	54	20	74
Fruit farming	0	0	72	72
Screw,nut,bolt mfg	0	66	5	71
Support for facilities	0	33	29	62
Water transportation	0	39	21	60
Photographic services	0	21	35	56
Other support svcs	0	32	21	54
Employment services	0	27	19	46
Custom roll forming	0	43	1	44
Coffee and tea mfg	0	1	41	42
Bowling centers	0	0	41	41
Cattle ranching	0	1	40	40
Animal production	0	1	35	36
Candy from cacao beans	0	1	35	36
Poultry production	0	0	35	35
Cutting tool accessory mfg	0	24	8	32
Other leather mfg	0	1	28	29
Other govt enterprises	0	10	18	28
Soft drink/ice mfg	0	1	26	27
Oil & gas extraction	0	9	9	18
Doll,toy,game mfg	0	11	7	18
Heating equip mfg	0	14	3	16
Sanitary paper mfg	0	10	3	14

Table A1: Economic Impact per \$1 million spent during Construction Phase

Sector	Direct	Indirect	Induced	Total
Purchased alum mfg	0	10	0	10
Dairy Production	0	1	10	10
Crown mfg, metal stamp	0	8	2	10
Lighting fixture mfg	0	8	1	9
Broadwoven fabr mills	0	2	6	8
Plastics/rubber mach mfg	0	4	1	5
Computer systems design	0	4	1	5
Metal cutting tool mfg	0	3	1	4
Wineries	0	0	2	2
Motorcycle, bicycle mfg	0	0	2	2

Table A2: Economic Impact per \$1 Million Annual Expenditure

Description	Direct	Indirect	Induced	Total
Total	1,000,000.0	203,097.8	150,748.3	1,353,846.1
Real estate	575,000.0	23,471.3	8,560.8	607,032.0
Promoters of perform arts	425,000.0	2,829.1	35.8	427,864.9
Imputed rental value	0.0	0.0	24,571.0	24,571.0
Independent artists	0.0	20,627.9	109.2	20,737.1
Insurance brokers	0.0	17,215.1	419.3	17,634.4
Food/drinking places	0.0	4,510.5	9,728.6	14,239.1
Nondepository credit	0.0	9,398.9	4,698.7	14,097.5
Monetary authorities	0.0	7,637.8	5,304.2	12,942.0
Health practitioners	0.0	17.3	12,473.8	12,491.1
Hospitals	0.0	20.7	12,087.9	12,108.7
Transit transportation	0.0	10,894.6	434.2	11,328.8
Nonfinan intang lessors	0.0	9,627.3	380.5	10,007.8
Power generation	0.0	6,571.2	2,991.2	9,562.4
Securities, investments	0.0	4,446.5	2,953.4	7,399.9
Civic, social, prof orgs	0.0	4,889.8	2,202.6	7,092.4
Telecommunications	0.0	4,975.9	2,056.1	7,032.0
Printing	0.0	6,319.8	678.9	6,998.7
Services to buildings	0.0	5,595.9	933.5	6,529.4
Legal services	0.0	4,832.5	1,564.0	6,396.5
Nonres maintenance	0.0	5,221.9	883.2	6,105.1
Accounting, tax prep	0.0	4,998.6	881.4	5,880.0
Waste management	0.0	4,724.4	589.9	5,314.3
Mailing list publishers	0.0	4,789.8	504.6	5,294.5
Travel reservation svcs	0.0	4,766.1	175.8	4,941.9
Office admin svcs	0.0	3,857.0	400.2	4,257.1
Management svcs	0.0	3,823.0	345.9	4,168.9
Nursing/residential care	0.0	0.0	3,875.0	3,875.0
Colleges/universities	0.0	13.0	3,691.5	3,704.5
Wholesale trade	0.0	508.7	3,070.3	3,578.9
Retail - food and bev	0.0	55.5	3,379.1	3,434.6
Oth State/Loc enterprise	0.0	1,262.3	1,960.8	3,223.1
Cable programming	0.0	2,830.4	360.6	3,191.1
Architectural svcs	0.0	2,757.0	400.2	3,157.2
Retail-motor veh, parts	0.0	84.2	3,053.8	3,138.0
Medical labs	0.0	400.3	2,564.3	2,964.7
Other educational svcs	0.0	1,751.5	462.1	2,213.6
Hotels, motels, casinos	0.0	1,181.0	904.8	2,085.8
Retail - general mdse	0.0	30.6	1,879.3	1,909.9
Retail - Nonstore	0.0	24.8	1,882.2	1,907.0
Funds, trusts, other	0.0	234.9	1,666.5	1,901.4
Automotive repair	0.0	600.1	1,253.5	1,853.5
Other computer svcs	0.0	1,414.8	381.6	1,796.4
State/Local transit	0.0	1,694.4	67.5	1,761.9
Retail - health care	0.0	28.3	1,695.0	1,723.3
Newspaper publishers	0.0	1,511.9	188.6	1,700.5

Table A2: Economic Impact per \$1 Million Annual Expenditure

Description	Direct	Indirect	Induced	Total
Support for businesses	0.0	1,328.6	236.3	1,564.9
Residential maintenance	0.0	980.7	471.4	1,452.2
Retail - misc	0.0	21.4	1,361.5	1,382.9
Home health care svcs	0.0	0.0	1,371.5	1,371.5
Social Advoc/Grantmkg org	0.0	1.3	1,333.3	1,334.7
Individual, family svcs	0.0	0.0	1,299.7	1,299.7
Postal service	0.0	799.2	467.2	1,266.4
Retail - gas stations	0.0	24.2	1,151.3	1,175.5
Retail - building material	0.0	43.0	1,094.5	1,137.5
Elem/sec schools	0.0	0.0	1,071.8	1,071.8
Religious organizations	0.0	0.0	1,046.0	1,046.0
Personal care svcs	0.0	0.0	1,045.0	1,045.0
Retail - furniture	0.0	11.7	887.8	899.5
Truck transportation	0.0	414.4	459.6	874.0
Sightseeing transport	0.0	550.7	235.2	785.9
Internet publishing	0.0	703.3	64.1	767.4
Laundry services	0.0	186.7	395.0	581.7
Radio/TV broadcasting	0.0	504.1	54.3	558.4
Private households	0.0	0.0	558.0	558.0
Periodical publisher	0.0	421.6	68.1	489.6
Child day care svcs	0.0	0.0	480.6	480.6
Electronic repair	0.0	315.6	157.5	473.0
Other recreation indust	0.0	106.7	346.3	453.0
Consumer goods rental	0.0	103.0	348.7	451.7
Veterinary services	0.0	0.3	391.0	391.4
Performing arts co	0.0	285.2	74.6	359.9
Soap and cleaning mfg	0.0	49.2	292.8	342.0
Retail - clothing	0.0	4.9	327.6	332.5
Auto equip rental	0.0	205.7	111.4	317.2
Other professional svcs	0.0	287.6	28.6	316.2
Death care services	0.0	0.0	312.7	312.7
Retail - sporting goods	0.0	4.7	306.6	311.3
Non-poultry processing	0.0	34.7	276.6	311.3
Surgical appliance mfg	0.0	16.9	275.1	292.0
Motion picture industry	0.0	168.9	120.1	289.0
Spectator sports	0.0	200.9	76.4	277.3
Semiconductor mfg	0.0	217.0	58.8	275.8
Museums, historical sites	0.0	0.0	266.3	266.3
Environmental consulting	0.0	224.1	20.9	244.9
Amusement parks	0.0	7.9	235.6	243.5
Plastics packaging mfg	0.0	74.4	168.8	243.2
Other support svcs	0.0	228.9	11.3	240.2
All other food mfg	0.0	13.7	214.2	227.9
Motor vehicle body mfg	0.0	98.1	122.3	220.3
State/Loc electric utils	0.0	149.9	66.1	216.0
Other crop farming	0.0	181.4	13.3	194.8
Rail transportation	0.0	99.2	93.3	192.5

Table A2: Economic Impact per \$1 Million Annual Expenditure

Description	Direct	Indirect	Induced	Total
Data processing	0.0	121.8	66.2	188.0
Other accommodations	0.0	5.6	173.1	178.8
Community relief svcs	0.0	0.0	176.1	176.1
Specialized design	0.0	136.3	37.7	174.0
Retail - Electronics	0.0	2.7	168.0	170.7
Other personal svcs	0.0	26.5	143.7	170.2
Alkalies/chlorine mfg	0.0	70.0	95.8	165.8
Security services	0.0	132.4	30.0	162.4
Sawmill preservation	0.0	134.7	27.6	162.3
Car washes	0.0	19.1	117.0	136.0
Support for facilities	0.0	98.4	15.3	113.6
Machine shops	0.0	92.9	19.2	112.1
Warehousing/storage	0.0	69.6	38.7	108.4
Photographic services	0.0	86.8	18.7	105.5
Video/DVD rental	0.0	0.0	98.9	98.9
Employment services	0.0	85.2	10.2	95.4
Water & sewage system	0.0	29.0	62.2	91.2
Greenhouse production	0.0	6.2	81.5	87.7
Book publishers	0.0	12.7	72.1	84.8
Fitness / recreation	0.0	26.0	56.9	83.0
Blown glassware mfg	0.0	7.7	73.9	81.6
Household goods repair	0.0	43.5	35.7	79.3
Vegetable and melon	0.0	1.0	76.5	77.5
Other inorganic mfg	0.0	34.2	42.8	77.0
Other machinery mfg	0.0	44.4	19.4	63.7
Computer programming	0.0	43.0	10.7	53.7
Wood window manufac	0.0	41.0	7.6	48.7
Bowling centers	0.0	23.1	21.1	44.1
Software publishers	0.0	19.1	24.5	43.6
Nonupholstered mfg	0.0	0.1	42.2	42.3
Fruit farming	0.0	0.3	38.6	38.8
Soft drink/ice mfg	0.0	24.3	14.0	38.2
Blind and shade mfg	0.0	0.8	29.9	30.6
Logging	0.0	24.6	5.0	29.6
Other electronic mfg	0.0	11.5	17.0	28.5
Coated paper mfg	0.0	11.1	13.5	24.6
Coating, engraving mfg	0.0	18.0	5.9	24.0
Cattle ranching	0.0	2.6	21.3	23.9
Coffee and tea mfg	0.0	1.1	22.3	23.4
Candy from cacao beans	0.0	3.8	19.0	22.9
Ceramics/fixture mfg	0.0	10.0	10.9	20.9
Animal production	0.0	1.2	18.8	20.0
Other leather mfg	0.0	5.0	14.7	19.7
Poultry production	0.0	0.2	18.6	18.8
Other govt enterprises	0.0	7.6	9.7	17.3
Cutting tool accessory mfg	0.0	8.7	4.2	12.9
Water transportation	0.0	1.6	11.1	12.6

Table A2: Economic Impact per \$1 Million Annual Expenditure

Description	Direct	Indirect	Induced	Total
Oil & gas extraction	0.0	6.9	4.9	11.9
Copper rolling & drawing	0.0	4.6	6.5	11.1
Screw,nut,bolt mfg	0.0	5.1	2.9	8.0
Wiring device mfg	0.0	4.7	2.8	7.5
Dairy Production	0.0	1.1	5.1	6.2
Broadwoven fabr mills	0.0	0.5	3.4	3.9
Doll,toy,game mfg	0.0	0.2	3.6	3.8
Custom roll forming	0.0	2.9	0.5	3.4
Fertilizer mfg	0.0	1.8	1.5	3.3
Computer systems design	0.0	2.5	0.7	3.2
Metal cutting tool mfg	0.0	2.1	0.7	2.8
Crown mfg, metal stamping	0.0	1.5	1.2	2.7
Sanitary paper mfg	0.0	0.5	1.9	2.3
Heating equip mfg	0.0	0.3	1.5	1.8
Wineries	0.0	0.0	1.0	1.1
Motorcycle, bicycle mfg	0.0	0.0	0.8	0.9
Lighting fixture mfg	0.0	0.4	0.4	0.8
Purchased alum mfg	0.0	0.5	0.2	0.7
Plastics/rubber mach mfg	0.0	0.3	0.4	0.7