The Economic Impact of the Wadsworth Atheneum Museum of Art

Fred V. Carstensen, Director

Stan McMillen, Manager, Research Projects

Murat Arik, Senior Research Associate

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CONNECTICUT CENTER FOR ECONOMIC ANALYSIS©

University of Connecticut

341 Mansfield Road

Unit 1240

Storrs, CT 06269

Voice: 860-486-0485 Fax: 860-486-0204

http://ccea.uconn.edu

THE ECONOMIC IMPACT OF THE WADSWORTH ATHENEUM MUSEUM OF ART

Executive Summary

The Wadsworth Atheneum Museum of Art is conducting a $120 million comprehensive campaign that includes funding an $80 million building expansion project. The expansion will transform the current structures housing its collections, creating critically needed additional space for both exhibitions and programming, and make the Museum a significantly more inviting venue. This analysis argues that this expansion is an important investment in MetroHartford's long-term prosperity and competitive position, one whose successful completion will play a critical role in shaping the future of Connecticut and its communities.

The Wadsworth Atheneum, America's oldest public art museum, houses collections spanning more than 5,000 years, from ancient Egyptian to contemporary, and presents more than 15 special shows each year. In addition, the Atheneum annually presents more than 450 programs, including gallery talks, tours, theatrical performances, lectures, classes, special events combining art, music, film, and social activities, and Family Sundaes, a series of theater performances and hands-on arts activities for all ages. Clearly, the Atheneum is a dynamic, creative, and important participant in the MetroHartford community.

Museums such as the Atheneum now play three critical roles in their communities:

- **Community Building:** Dynamic art museums are invaluable to their host community and region. Study after study shows that they are central to the quality of life in a region and critical to the attraction and retention of professionals and firms. Recent work by Richard Florida of Carnegie-Mellon demonstrates the value of creative workers, nourished by cultural institutions, to vibrant cities. A recent survey reports that a remarkable 99% of Chief Executive Officers cite the availability of cultural activities in an area as a major consideration when choosing a new location.

Museums' activities are an important component in creating and sustaining the social capital of their region. The Atheneum recognizes the critical role that it has and should play in this arena; the planned expansion will dramatically enhance its capacity to do so.

- **Education:** Museums play an increasingly important role in arts education, in part because of increasing evidence of the developmental benefits of arts education, in part because of deteriorating budgets for public education. Art museums are striving to fill the resulting weaknesses in arts education in public schools. A survey of the nation's art museums revealed that in the last decade, in response to this emerging need, museum spending on education increased 96% and on their libraries by 105%.[1] Seventy six percent of museums (140) in this survey report that they are also responding by planning physical expansions. Because of these responses, "the very notion of the museum is evolving in the process." The best museums are in fact transforming themselves from being merely galleries for art pieces to places that are central to the social and education fabric of their community. The Wadsworth expansion plans respond meaningfully to this imperative.

- **Cultural Tourism:** Museums play a major role in cultural tourism, attracting significant numbers of visitors from other states and countries. Cultural tourism is of special significance, as this type of tourist stays longer and spends more than other types of tourist. For example, in this area, cultural tourists visit multiple sites over several days, such as the Mark Twain House, the New Britain Museum of American Art, and the Wadsworth. The Wadsworth's expansion will thus not only make it a

[1] Association of Art Museum Directors, 2002, Survey on State of the Nation's Art Museums, (New York, NY: Association of Art Museum Directors).

significantly more attractive destination in its own right, but will generate benefits for other cultural institutions in the region.

For the Atheneum to continue to fulfill these functions and, critically, to retain and even strengthen its competitive position, it clearly needs to renovate and expand its facilities. The Wadsworth Atheneum's current operations generate nearly 330 jobs in the area and add $44 million to personal income, increasing the gross product of the regional economy by more than $40 million per year. The planned expansion will add another 216 jobs per year to the state, nearly $12.5 million per year in new personal income, and $1.37 million per year in new state tax revenue. In addition, the expansion project will raise gross regional product another $13 million per year. All of these economic benefits accrue to the state of Connecticut despite the fact that the Wadsworth Atheneum receives only 1.5% of its operating budget from public sources, as compared to a sample average of 20% across the 130 museums surveyed.

However, such quantitative measures understate the true social and economic importance of the Wadsworth Atheneum. As Hartford's premier cultural institution, its successful physical and programmatic expansion is central to the long-term competitiveness and prosperity of central Connecticut.

THE ECONOMIC IMPACT OF
THE WADSWORTH ATHENEUM MUSEUM OF ART

Introduction

Established in 1842, the Wadsworth Atheneum is America's oldest public art museum, preceding the founding of the Metropolitan Museum of Art in New York and the Museum of Fine Arts in Boston by three decades. The Wadsworth's collections span more than 5,000 years, from ancient Egyptian to contemporary. In addition, the Museum presents more than 15 special shows each year. Beyond preserving and presenting national treasures, each year the Wadsworth hosts over 450 programs, from gallery talks, to tours, theatrical performances, lectures and classes, and special events combining art, music, film, and social activities, and Family Sundaes, a series of theater performances and hands-on arts activities for all ages.[2]

These aspects of the Wadsworth Atheneum highlight three important functions of art museums: (1) art preservation, (2) education, and (3) contributing to the creation and maintenance of the social fabric of their communities. Acknowledging the social function of art museums provides a perspective to understand their broader community-wide impacts, which are distinct (though not completely separate) from individual level impacts. A community level focus, in turn, brings forth the often neglected, but increasingly acknowledged, economic impact of art museums on their communities. However, the challenge of quantifying fully the social and educational functions of art museums makes any economic impact analysis incomplete or conservative.

In this study, CCEA seeks to answer the following questions: How should we assess the impact of museums on their communities? What economic and fiscal impacts does the planned expansion of the Wadsworth Atheneum have on the state economy? That is, how much increase in economic output and employment in the state economy will the Atheneum's expansion generate? Is the state contribution to the Wadsworth

[2] For information about the museum, its special exhibitions and permanent collections see http://www.wadsworthatheneum.org.

Museum Expansion a sound investment? Considered as part of "national wealth,"[3] the Atheneum's economic and fiscal impact is important from taxpayers' as well as public policy-makers' perspectives as it strengthens education available to the area population and helps attract and retain businesses in the region.

CCEA develops the answers to these questions using the Connecticut Economic Model from Regional Economic Models, Inc. of Amherst, Massachusetts, (REMI), a dynamic, multi-sector, regional model. The REMI model captures the economy in its present form as a baseline, while the present analysis measures how much the Atheneum's expansion proposal generates in *new* economic activities above this baseline. Realizing the difficulties in capturing both tangible and intangible benefits of the Atheneum to communities and the state, we exercise extreme caution in estimating input (policy) variables to avoid double counting. Because of this approach, our quantitative estimates of economic activities and impact results are conservative. In addition to providing an analysis of the impacts of the planned expansion of the Wadsworth, Appendix II provides an assessment of the impacts of the current activities of the Museum. Appendix I offers a detailed description of the methodologies used both for generating the analysis of the expansion offered below and for the results described in Appendix II.

Section II describes the role of art museums in communities to put this study in context. Section III analyzes three Museum expansion scenarios: Section III:1 treats the economic impact categories and modeling strategies; Section III:2 presents the findings; Section III:3 offers our conclusions and a cost-benefit analysis of the expansion scenarios.

[3] Hillman-Chartrand, Harry. 1990. "Introduction: The Value of economic Reasoning and the Arts." In *Economic Impact of Arts: A Sourcebook,* edited by William T. Pound. (Washington, DC: National Conference of State Legislatures).

Section I. On the Functions of Art Museums and Economic Impact Studies

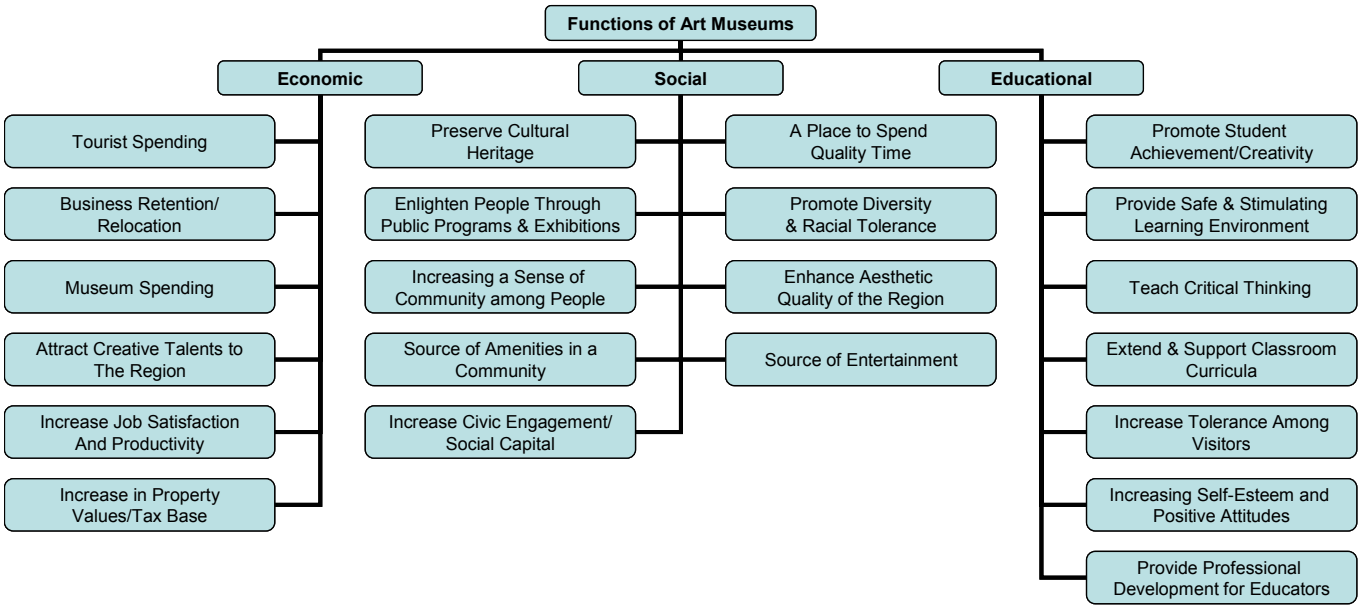
What roles do art museums play in their communities? Who benefits from the presence of art museums in a community? This section addresses these questions, first looking at the role of museums and who benefits from them by surveying the literature, then summarizing economic impact studies of museums.

I:1. Art Museums and Their Communities

Functions of art museums in their communities fall into three broad categories: Economic, Social, and Educational. As these broad categories imply, both individuals and society as a whole are beneficiaries of the positive externalities art museums create in a community. This section focuses on the social and educational functions of an art museum; the next section discusses the economic aspects of museums.

Figure 1 summarizes the three functions of art museums. This figure emphasizes the myriad ways that art museums contribute to individual well-being and societal development. We list educational issues related to cultural awareness and increasing knowledge about art under the social function of museums to reflect the cultural awareness and national unity promoted by learning through art.

Figure 1: FUNCTIONS OF ART MUSEUMS



Note: See Welch, N. and A. Greene, 1995, Schools, Communities, and the Arts: A Research Compendium. Tempe, AZ:Morrison Institute for Public Policy, School of Public Affairs.

The important aspect about these functions is that they link closely to each other. For example, many factors under the social function category are the primary reasons for businesses to remain in or relocate to a region. Thus, as we talk about social and educational functions, we need to refer frequently to the positive spillovers these functions create in the economic arena.

I:1:a. Social Function:

Arts improve the "quality of life" in the community, and attract businesses and people to the region. The Tampa Bay Business Committee for the Arts reported "companies seeking to relocate consistently rank availability of the arts among their top three criteria."[4] Another survey revealed that 99 % of the Chief Executive Officers of companies cite that the availability of cultural activities in an area as an important consideration for choosing a new location.[5] A survey of executives of newly relocated or expanded companies in Mississippi confirmed that art and art education are important factors in relocation decisions. Based on this survey, the authors concluded, "[contrary to the prevailing view] the evidence suggests that communities [in less developed areas] cannot afford *not* to invest in cultural amenities."[6]

Penne and Shanahan confirm this point, arguing that the arts help retain the rich human resource mix of a community because arts improve social infrastructure and enhance the civic quality of a community. As they remind us, in major cities, principal export industries come and go, and what remains is human capital and social infrastructure. Only by giving proper attention to arts-related organizations and activities can this be done.[7]

Art museums are important and necessary for the health of a community. From this perspective, they should be understood as critical to well-being rather than

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[4] Tampa Bay Business Committee for the Arts at http://www.co.pinellas.fl.us/BCC/art/Economic.htm.
[5] Economic Impact of the Cultural Industries on South Carolina at http://www.state.sc.us/arts.
[6] Turnipseed, Jorja Pound, G. M. Oliva, C. A. Campbell, and S. C. Hardin, 1991, A Study of the Perceptions of Business and Community Leaders Regarding the Economic Importance of the Arts and Arts Education in Mississippi. (Jackson, MS: Bureau of Education Research and Evaluation, Mississippi State University).
[7] Penne, R. Leo and James L. Shanahan, 1990, "The Role of the Arts in State and Local Economic Development." In *Economic Impact of Arts: A Sourcebook,* edited by William T. Pound, (Washington, DC: National Conference of State Legislatures). P. 139

considered merely as something that generates economic impact. Art museums help sustain the emotional well-being of people, helping make them more productive and innovative.[8] Moreover, art museums help bind the community together by promoting tolerance and respect among various ethnic groups. A draft policy statement of the International Council of Museums emphasizes this point, that museums are a forum that brings diverse communities together.[9]

Emphasizing this aspect of the influence of the arts, a discussion paper on "Civic Engagement in America" treats arts as an important factor for social capital formation in a community. Arts, the paper argues, are useful in addressing important social issues ranging from education to community healing. Particularly important is the role of arts that bridges "socio-economic, ethnic, generational, and educational differences."[10]

Finally, art museums promote the image of cities as livable places. A vigorous advertising campaign of art museums improves the image of cities in which they are located. In this context, it is important to note that art museums' advertising campaigns and cities' developmental goals converge. Close cooperation in this area between art museums and regional development agencies has significant spillovers to other sectors of the local economy.[11]

I:1:b. Education Function:

The educational function of arts museums is now getting more attention as studies demonstrate that arts education makes a significant difference in the learning process of school-age children. From a broader perspective, some argue that art museums are educational institutions primarily responsible for socializing young people into their culture.[12] Studies have shown that the arts help students achieve educational goals. In

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[8] Seaman, Bruce, 1990, "Arts Impact Studies: A Fashionable Excess." In *Economic Impact of Arts: A Sourcebook,* edited by William T. Pound, (Washington, DC: National Conference of State Legislatures). P. 46.

[9] International Council of Museums, http://www.icom.org

[10] The Saguaro Seminar: Civic Engagement in America, Update on the Seventh Meeting of the Saguaro Seminar : Civic Engagement in America, at http://www.ksg.harvard.edu/saguaro/mtg7.html. Date of access: 06/12/02.

[11] Penne and Shanahan, 1990, pp. 139-45

[12] For detail, see Gassler, Robert Scott and Robin Grace, 1980, "The Economic Functions of Nonprofit

1995, SAT scores for students indicate that those who studied arts scored higher than those who did not. Furthermore, arts education contributes to creative thinking, problem solving, and communication skills.[13] Over the years, many studies have been conducted to analyze the effect of arts exposure on the students' attitudinal behavior, learning, creative thinking, social engagement, tolerance, motivation, communication skills, and self-esteem, among others. The findings of these studies are illuminating as they show the positive relationship between arts exposure and improvements in students' attitudinal and educational progress. It is worth noting the conclusions of a few of these studies. Luftig reported that students who were exposed to arts scored higher on creativity and appreciation tests.[14] Catterall reported significant improvements in students' learning and test scores after they participate in arts education programs. Moreover, participation in such programs was associated with positive attitudes toward achievement and learning.[15] Aschbacher and Herman observed a significant association between schooling effectiveness and the arts. The authors found that students who participated in the Humanitas program—an interdisciplinary curriculum that incorporates arts, literature, and social studies—had higher class attendance, a lower dropout rate, and more positive attitudes toward classes and their academic achievement.[16] Arts even help at-risk preschoolers. Torff evaluated the program success of the Wolf Trap Institute and concluded that arts education programs improved student engagement and increased social participation.[17]

Although research on arts education has identified the close association of arts education with the cognitive development of school age children, Leonhard's nationwide

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Enterprise: The Case of Art Museums." *Journal of Cultural Economics* 4: 19-32. And, Smolensky, Eugene, 1986, "Municipal Financing the U.S. Fine Arts Museum: A Historical Rationale." *Journal of Economic History* 46: 757-768.

[13] In 1995, SAT scores for students who studied the arts more than four years were 59 points higher on the verbal and 44 points higher on the math portion than students with no coursework or experience in the arts (Economic Impact of the Cultural Industry on South Carolina at http://www.state.sc.us/arts/economic.html)

[14] Luftig, Richard L., 1994, The Schooled Mind: Do the Arts Make a Difference? An Empirical Evaluation of the Hamilton Fairfield SPECTRA+ Program, 1992-93. (Oxford, Ohio: Center for Human Development, Learning, and Teaching, Miami University).

[15] Catterall, Jame S., 1995, Different Ways of Knowing: 1991-94 National Longitudinal Study Final Report. (Los Angeles, California: The Galef Institute of Los Angeles).

[16] Aschbacher, Pamela, and Joan Herman, 1991, The Humanitas Program Evaluation, 1990-91, (Los Angeles, California: Center for the Study of Evaluation, UCLA Graduate School of Education).

[17] Torff, Bruce, 1994, Evaluation of Wolf Trap Institute for Early Learning Through the Arts: Annual Reports 1991-92 and 1992-93, (Cambridge, Massachusetts: Harvard Project Zero).

survey demonstrates major deficiencies in time and commitment in arts education in public schools.[18] Furthermore, decreasing federal aid to arts education and funding cuts by towns for arts related activities and education have reduced the effectiveness of the public school system in proving much-needed arts education programs to students. This trend stands in stark contrast to the increasing number of studies highlighting the crucial part arts education plays in educating future generations.

On the positive side, arts museums are stepping in to fill the vacuum in arts education in public schools. In the last decade (1990-2000), a survey of the state of the nation's art museums indicated that museum spending on education increased 96% and on their libraries by 105%.[19] According to this survey, over 70% of reporting art museums indicated they anticipated no change or an increase in their level of public programming. This indicates a sizable fraction of art museums intend to offer more community outreach programs to ground firmly their status in their communities as public educational institutions.

This survey argues that art museums have gradually transformed themselves into full-fledged public institutions through many expanded functions. They are moving away from being an instrument of social status for local elites to public institutions that embrace the community. And, because of these community-wide impacts, an economic impact analysis of art museums needs to acknowledge these not so easily quantifiable features of museums.

I:2. Economic Impact Studies

Cultural tourism is an important part of a growing tourism industry nationally. In terms of spending, cultural tourists spend more than average tourists in the communities they visit. Art museums are central to this cultural tourism, acting as magnets attracting these tourists to their regions. Therefore, an economic impact analysis of art museums needs to consider these trends.[20]

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[18] Leonhard, Charles,1991, The Status of Arts Education in American Public Schools. (Urbana, Illinois: National Arts Education Research Center at the University of Illinois).
[19] Association of Art Museum Directors, 2002, Survey on State of the Nation's Art Museums, (New York, NY: Association of Art Museum Directors).
[20] Summarized from Carstensen, F., et al, 2000.

Many impact studies of art museums are related to out-of-state and in-state visitor behavior, and focus on special exhibitions, rather than operations of museums as a whole. The methodology of these studies is similar, using on-site or off-site surveys to perform visitor segmentation analysis. After visitor segmentation, these studies utilize either visitor expenditure methods or the number of visitor days to perform economic impact analysis. At this juncture, the choice of impact analysis model plays an important role.[21] The exhibition-related impact studies emphasize the role special exhibitions play in attracting out-of-state visitors, and their contribution to the local economy.[22] Even studies analyzing museums' operations simply treat them from a tourism perspective, estimating only the economic impact of non-resident patrons.[23] For example, the Cleveland Museum of Art study estimated that the museum has an economic impact of more than $22.3 million in gross regional product annually on the region's economy.

The Association of Art Museum Directors' 2001 Survey reports that 76% of surveyed art museums (140) have expansion plans on the table. According to Eskin, because of new expansion plans, "the very notion of the museum is evolving in the process." Museums are transforming themselves from being merely galleries for art pieces to places where art and people come together. In this sense, their roles are expanding as museums become more populist and popular.[24]

The Wadsworth Atheneum Museum of Art started a major capital campaign to support an expansion plan that will transform the physical structure and presence of the Museum. The planned expansion will both provide much need additional space and make the Museum a significantly more inviting venue. This expansion will also enlarge the Atheneum's mission of educating people, both through the opportunity to present

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[21] REMI allows both visitor expenditure and visitor days as input (policy) variables, whereas IMPLAN accepts only visitor expenditure by sector.

[22] For some of the recent studies, see Stynes, Daniel J., 2002, Economic Impacts of the Grand Rapids Art Museum on the Local Economy: The Leaded Glass of Frank Lloyd Wright Exhibit, (East Lansing, MI: Michigan State University). Nichols, Jan M., 1999, The Economic Impact of the *Dresses for Humanity* Exhibit on the Omaha Metropolitan Community, at http://www.unomaha.edu/~wwwpa/project/nichols.html. Access Date: 6/12/02. Virginia Museum's *Faberge* and *Egyptian* Exhibitions, at http://www.vmfa.state.va.us. Wadsworth Atheneum's *Peter de Hooch, 1629-1684* and *The Impressionists at Argenteuil* economic impact analyses.

[23] Robey, James E., and J. Kleinhenz, Economic Impact of the Cleveland Museum of Art: A Tourism Perspective, at www.clevelandart.org/downloads/impact.pdf. Access Date: 07/07/02.

[24] Eskin, Blake, 2001, The Incredible Growing Art Museum, (Art News Online at http://www.artnewsonline.com). Access Date: 7/7/02.

more of its permanent collections and special exhibitions and through community-related activities. The new expansion plan is based on three design strategies: (1) a light-filled curved sculptural open space that engages the imagination of visitors, (2) a wide public corridor through the museum that allows public to see the museum without paying for exhibitions, and (3) two large column-free special exhibition galleries to house the big-draw shows.[25]

[25] Daniel, Patrick, June 23, 2002, Museum Deal, (The Hartford Courant).

Section 2: THE ECONOMIC IMPACT OF THE WADSWORTH ATHENEUM MUSEUM OF ART EXPANSION PROPOSAL

The Wadsworth Atheneum Museum of Art has launched a major capital campaign to expand its existing facilities. An estimated $80 million will be spent in the period 2004 through 2006 for the building project. In the course of the expansion process, the Museum will be closed and its collections will be displayed in facilities throughout Connecticut.

The major impetus behind the expansion plans of the Museum is to provide more opportunities to the public to benefit from an important national asset: art. Furthermore, as Table 1 indicates, the Wadsworth Atheneum Museum of Art is lagging behind its peers in terms of attendees, library volumes, volunteerism, internship, and employment. As the Museum improves its facilities, it will address all of these issues, attracting more volunteers and visitors, hosting more external programs, expanding community outreach, supporting more interns, adding employees, and hosting more blockbuster exhibits.

Table 1: Selected Features of The Wadsworth Atheneum Museum of Art and its Peers

	Full-Time Employment	Part-Time (Paid)	Theater Seating	Library Volume	Attendees
Wadsworth Atheneum Museum of Art	93	46	287	32,000	212,331
Baltimore Museum of Art	133	8	not reported	not reported	317,090
Walters Art Gallery	140	4	500	80,000	300,000
Albright-Knox Gallery	53	67	345	30,000	135,524
Cincinnati Art Museum	100	50	not reported	53,000	265,000
Indianapolis Museum of Art	171	32	643	32,000	259,339
Nelson-Atkins Museum of Art	178	225	510	90,000	307,631
Milwaukee Art Museum	72	59	not reported	30,000	380,914
Chrysler Museum	72	36	not reported	80,000	185,000
Joslyn Art Museum	81	25	1000	25,600	248,553
North Carolina Museum of Art	140	8	not reported	34,000	311,355
Seattle Art Museum	143	102	not reported	not reported	505,264
Toledo Museum of Art	112	136	1750	60,000	334,091
Worcester Art Museum	64	157	275	40,000	152,576
Average	111	68	664	48,883	279,619

Source: Official Museum Directory, 2001.

Table 1 makes it clear that in many areas the Wadsworth Atheneum Museum of art is below the average of 13 other peer museums. As we discuss later, we assume that the Museum will improve its standing in terms of attendance and staffing to the level of its peers. The Atheneum has provided data about capital and non-capital expenditures related to its expansion. We calculate projections about the after expansion economic activities by using the Museum's historical data about attendance and operating expenditures. Below, we first discuss the modeling strategies and then report the economic impact of the museum expansion proposal. (See Appendix I for a full discussion of modeling methodologies.)

2.1. Modeling Strategies

We base this expansion study on number of general assumptions. We make further assumptions to calculate net new contribution of each category to the state. Our general assumptions are:

- Not all contributions of the Museum's expansion-related activities are net new to Connecticut. Net new, for example, in visitor estimates, represents a fraction of changes in total attendees.
- We assume that the substitution rate for increases in Museum-related programs after expansion is inversely related to the distance of in-state residents to the Museum. In no scenario, however, is the substitution rate less than fifty percent.
- We assume that at minimum the Museum will increase its attendees to the level of average attendance of its peer museums. This means an average 39% increase in the current level of attendance shortly after completion of the expansion.
- We assume that educational and community services programs will increase after the expansion depending on the scenario.
- We develop three scenarios for the post-expansion period to bracket the economic response that emerges because of the Museum's expansion. We calculate changes in visitor numbers, procurement, and amenity values based on these three scenarios, which are 50% net new, 30% net new, and 10% net new for after-expansion economic activities.

- We assume that visitor-lodging behavior for changes in museum attendees is similar to the visitor segmentation presented in *The Impressionists at Argenteuil* survey.
- We assume that the Museum will spend $69,447,000 during the construction period.
- The State of Connecticut has contributed $15 million for the museum's expansion bonded at a 5.5% fixed payment mortgage rate over the twenty year-period. We incorporate this cost to the State in the analysis of economic and fiscal impacts.

2.1 a. Changes in Employment.

Based on the data, we estimate that between FY2001-2003 and FY2007 projections, the changes in Museum employment will be around 4% Full Time Equivalents (FTE). This figure includes all full-time, part-time, and special payroll employees. Further, we adjust the wage bill (number of FTEs multiplied by the difference between the REMI average wage for this sector and the actual wage paid by the Wadsworth) as the Atheneum pays more than the state averages contained in REMI. The total wage bill adjustment is $42,457.

2.1.b. Changes in Operating Expenditure.

In order to model sectoral changes in operating expenditures, we first calculate average change in expenditures due to the expansion. We then argue that in the most optimistic scenario, fifty percent of these changes are net new to the state. We follow a similar methodology for the other two scenarios. Table 2 reports the total changes in procurement by scenarios at the aggregate level. We also include in this table the amount of interest the Museum pays each year for its bond proceeding for its expansion. An annual amount of $839,590 goes back to bondholders for 30 years.

Table 2: Net New Increase in Operating Expenditures by Scenarios

Scenarios	Operating Expenditures, Except Salary and Benefits	Interest on Debt Service	Total
10% Net New	$118,984	$839,590	$958,574
30% Net New	$356,951	$839,590	$1,196,541
50% Net New	$594,918	$839,590	$1,434,508

In the optimistic scenario, the increase in operating expenditure is about $0.6 million, whereas in the pessimistic one the increase is about $0.12 million.

2.1c. Change in Educational and Community Programs.

We assume that changes in educational and community programs translate into, at minimum, a certain percent increase in free admissions and student visits to the museum depending on the scenarios. In calculating these changes, we used the five-year average of each group of attendees, and then apply the percentages as specified in each scenario. These calculations, then, translate into REMI policy variables as an increase in amenity value of the region. In the optimistic scenario (50% net new), the amenity value increases about $144,130, while the amount is $28,806 in the pessimistic scenario (10% net new).

2.1d. Construction Spending

In the 30 months after the Museum expansion period kicks off, it injects approximately $80 million into the state economy as the hard costs of construction spending. This direct spending alone makes a significant impact on construction jobs and related economic activities in the region. We received a detailed construction spending budget from the Museum, and assign 2-digit REMI industry codes in which specific construction-related spending occurs.

2.1e. Debt Service by Museum and State

According to Museum data, the state contributes $15 million to the Museum for expansion. We assume the state bonds this amount, and repays in 20 years. We use a 5.5% fixed mortgage rate to calculate the annual debt service. We assume that government expenditures decrease by the amount of debt service over 20 years. The total state's debt service will be $1.255 million annually.

Furthermore, as mentioned earlier, the Museum will issue bonds for $25 million at a rate of 5.25% for 30 years to offset some of the cost associated with the its expansion. We model the annual interest payment of $839,590 as an increase in interest income to bond holders.

2.If. Changes in Net New Visitors

The expansion of the Museum will generate additional gallery spaces for special exhibitions, contemporary art and the Museum's permanent collections. Furthermore, the Museum will expand its community outreach programs to make the Atheneum an important part of community education and entertainment, as well as a world-class institution housing precious art works. These efforts will naturally increase traffic to the museum. We estimate that there will be an increase of about 85,000 visitors due to the Museum expansion. As mentioned earlier, not all of these increases in attendance are net new to the state. Historical data from the Museum indicates that growth rate of attendees over the last twenty years is, on average, 2% per year, which means the attendance will continue to grow at its natural growth rate after the expansion period.

In this study, we assume that only 50% of increase in attendance is net new to the state in optimistic scenario; 30% net new in middle scenario; and 10% net new in the pessimistic scenario. We assume that the actual net new attendance figures lie somewhere between 10% and 50% of the change in attendance. Table 3 summarizes our assumptions and the net new calculations for each county and out of state.

Tabel 3: The Wadsworth Atheneum Museum of Art Expansion- Changes in Attendance and Net New Attendance by County

Origin	Total Increase	10% Net New		30% Net New		50% Net New	
		Rate	Total Net New	Rate	Total Net New	Rate	Total Net New
Out of State	18138	30%	5441	70%	12696	100%	18138
Fairfield	3574	5%	179	30%	1072	50%	1787
Hartford	39902	5%	1995	15%	5985	30%	11971
Litchfield	2894	5%	145	30%	868	50%	1447
Middlesex	4678	5%	234	20%	936	40%	1871
New Haven	6752	5%	338	30%	2026	50%	3376
New London	3112	5%	156	30%	934	50%	1556
Tolland	4338	5%	217	20%	868	40%	1735
Windham	1023	5%	51	20%	205	40%	409

Based on the numbers in Table 3, we then perform further visitor segmentation by type of lodging in the Hartford area. We assume that the visitor survey figures in *The Impressionists at Argenteuil* are valid for the net new visitors after the expansion. Table 4 presents the final input (policy) variables for this impact category by scenario.

Table 4: The Wadsworth Atheneum Museum of Art- Visitor Segmentation[1]			
Scenarios	Daytrippers	Hotel/Motel Nights	Nights with Friends and Relatives
10 % Net New	8,055	2,699	998
30 % Net New	23,542	6,402	2,368
50 % Net New	38,907	9,246	3,420
Note: [1]Visitor Segmentation is based on a visitor survey of The Impressionists at Argenteuil Exhibition Attendees in 1999			

2.2. Dynamic Economic Impact Analysis of the Wadsworth's Proposed Expansion

In this section, we present the results from REMI for Connecticut as a whole. We organize this section in the following way: we first present the fiscal impact of each expansion scenario; second, we analyze GSP and personal income. After looking at the employment and population dynamics, we conclude with a discussion of a cost-benefit analysis of federal and state contribution to the expansion of the Wadsworth.

Tables 4, 5, 6, and 7 below show the combined direct and spillover effects from several key variables. The time horizon considered is 2001-2035. The "peak value" of a variable indicates the maximum value of that variable obtained in the study period. The "average value" indicates annual average of that variable over the study period. Finally, the "net present value" of a variable is the present value of future stream of values of that variable discounted at 6.5%. The baseline forecast already contains the Wadsworth, so changes from it measure its impact. Expressed this way, these values are a useful summary of the overall impact.

2.2a. Fiscal Impact

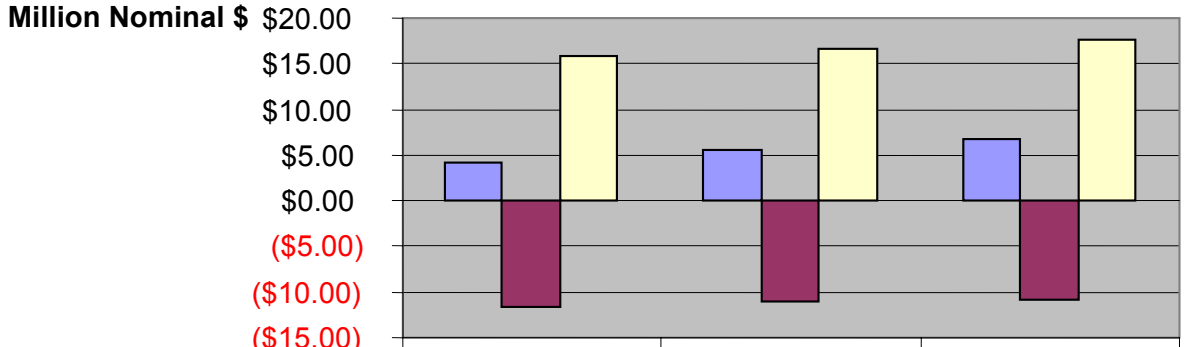
The Atheneum's expansion of its operations and gallery spaces would cause an increase in general economic activity, especially in the construction sector in the near term. In particular, Gross State Product (GSP) and personal income increase resulting in an increase in personal income, sales, use and other taxes in the state.

In addition to these basic changes, the impact of expansion changes government spending. Induced spending is the first component of such spending. As people move into the region and there is more economic activity, the government needs to spend more to maintain the same level of service per person as in the past. This adjustment occurs

endogenously or within the model based on current and projected levels of government spending.

New state tax revenue is dependent on general economic activity. The increase in GSP and personal income (that accompany the expansion of the Museum) generates an increase in new tax collections. New state taxes increase $1.4 million in Connecticut at their peak across the three scenarios because of the large initial construction spending. The average annual increase in new state taxes is $0.29, $0.44, and $0.56 million in the 10% net new, 30% net new, and 50% net new scenarios, respectively. Chart 1 presents the fiscal impact of the Museum's expansion in terms of net present value in state tax revenues and expenditures.

Chart 1: The Wadsworth Atheneum Museum of Art-Gross State Revenues, Expenditures and Net State Revenue

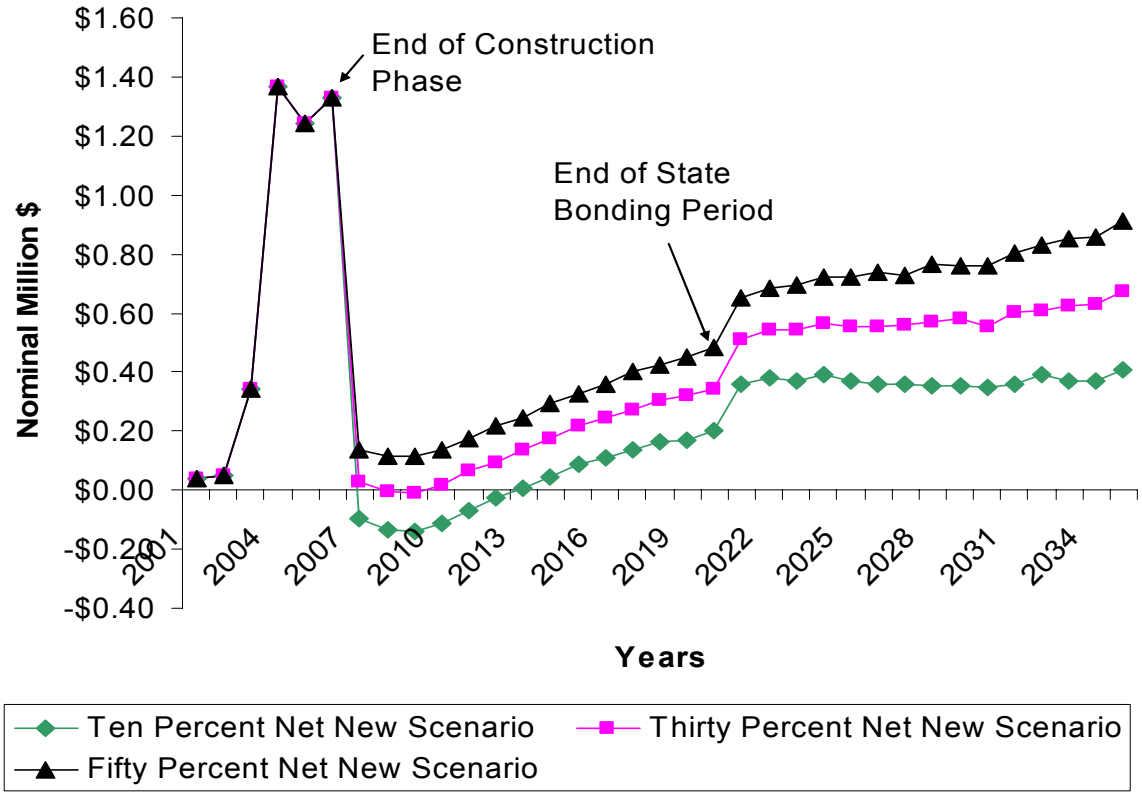


	Ten Percent Net New Scenario	Thirty Percent Net New Scenario	Fifty Percent Net New Scenario
State Revenues at State Average Rates (Million Nominal $)	$4.20	$5.55	$6.76
State Expenditures at State Average Rates (Million Nominal $)	($11.57)	($11.14)	($10.77)
Net State Revenue (Million Nominal $)	$15.77	$16.69	$17.53

According to Chart 1, state revenues increase $4.20 million, $5.55 million, and $6.76 million in net present value terms over the study period of 2001-2035 in the 10%,

30%, and 50% net new scenarios, respectively. The expansion generates $15.77 million, $16.69 million, and $17.53 million net state revenue in present value terms over the study period for each scenario, respectively.

Figure 1: The Wadsworth Atheneum Museum of Art Expansion- Changes in State Revenues



Figures 1 and 2 plot the time-paths of changes in gross and net state revenues during the study period (2001-2035). As is clear from the graphs, state revenues spike during the construction period and then decline to less than zero in the case of the 10% net new scenario and bounce back to positive territory in all scenarios after 2013. The end of the state bonding period jolts the revenue stream to a higher level. As we look at Figure 2, the change in net state revenue is positive for all scenarios across the study period, although it is gradually declining in the 10% case.

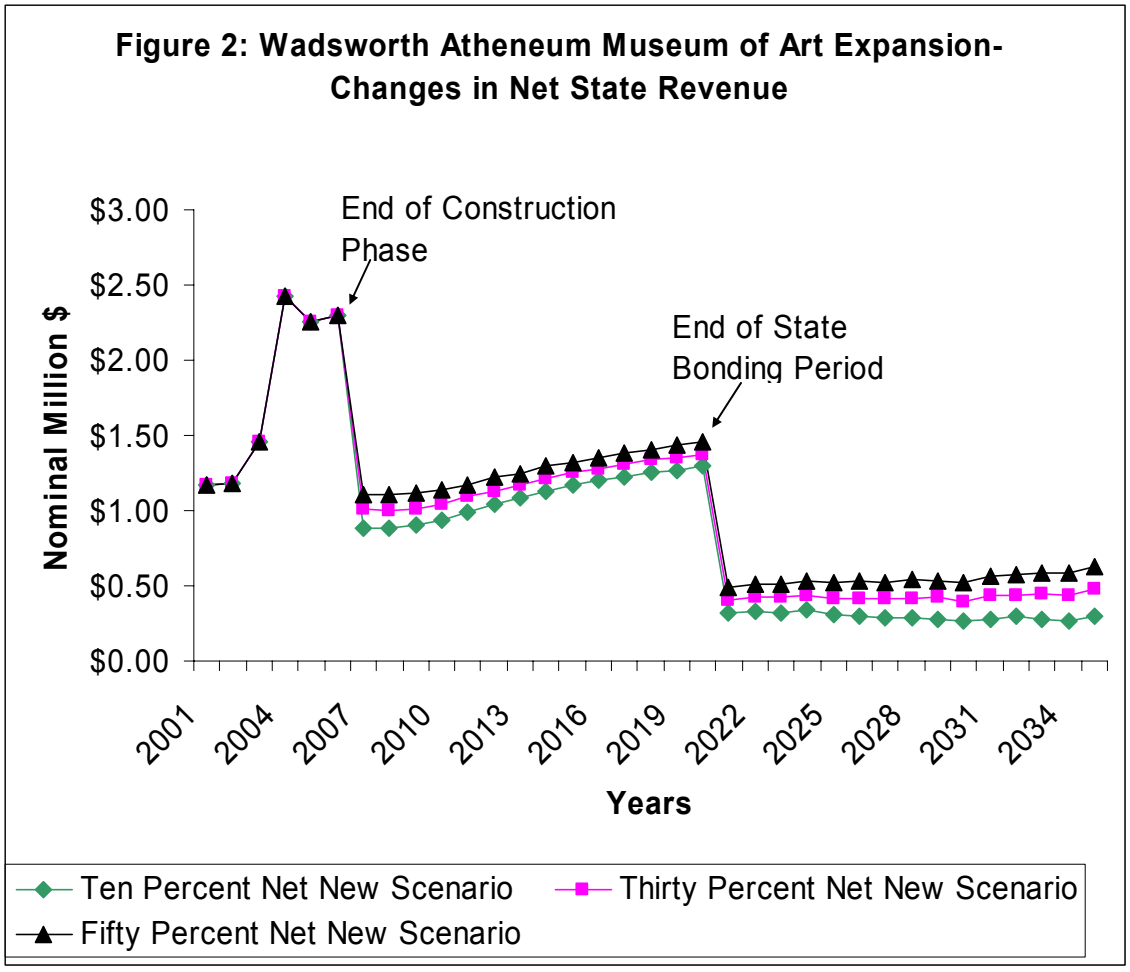


Table 5 presents further details on state revenues for each scenario.

Table 5: The Wadsworth Atheneum Expansion- Fiscal Impact

Variables	Ten Percent Net New			Thirty Percent Net New			Fifty Percent Net New		
	Peak	Average	Net Present Value	Peak	Average	Net Present Value	Peak	Average	Net Present Value
State Revenues at State Average Rates (Million Nominal $)	1.37	0.29	4.20	1.37	0.44	5.55	1.37	0.56	6.76
State Expenditures at State Average Rates (Million Nominal $)	0.11	(0.58)	(11.57)	0.19	(0.53)	(11.14)	0.28	(0.49)	(10.77)
Net State Revenue (Million Nominal $)	2.43	0.87	15.77	2.43	0.96	16.69	2.43	1.05	17.53

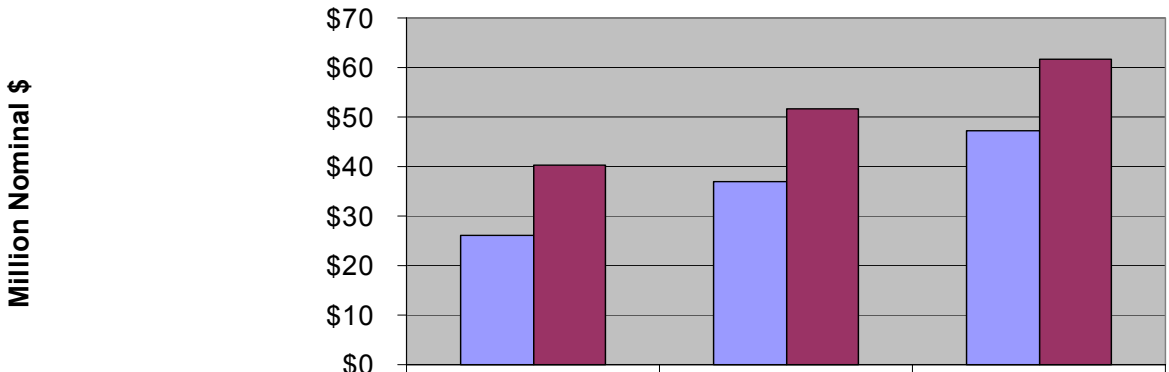
2.2b. Personal Income and Output Impact

We report two crucial economic impact categories in this section: Gross State Product and Personal Income. Gross State Product (GSP) is the nominal dollar value of final goods and services produced over a period of one year in Connecticut using a value-

added approach, where the value added at each stage of the production process aggregates to produce the final value. Calculations exclude intermediate goods to avoid double counting.

The results show a significant contribution of the Museum's expansion in Gross State Product (GSP) to the state economy. As Chart 2 indicates, the change in GSP in net present value terms is $26.13 million, $37.7 million, and $47.21 million in the ten percent, thirty percent and fifty percent net new scenarios, respectively.

Chart 2: The Wadsworth Atheneum Museum of Art- Net Present Value of Changes in Gross State Products and Personal Income

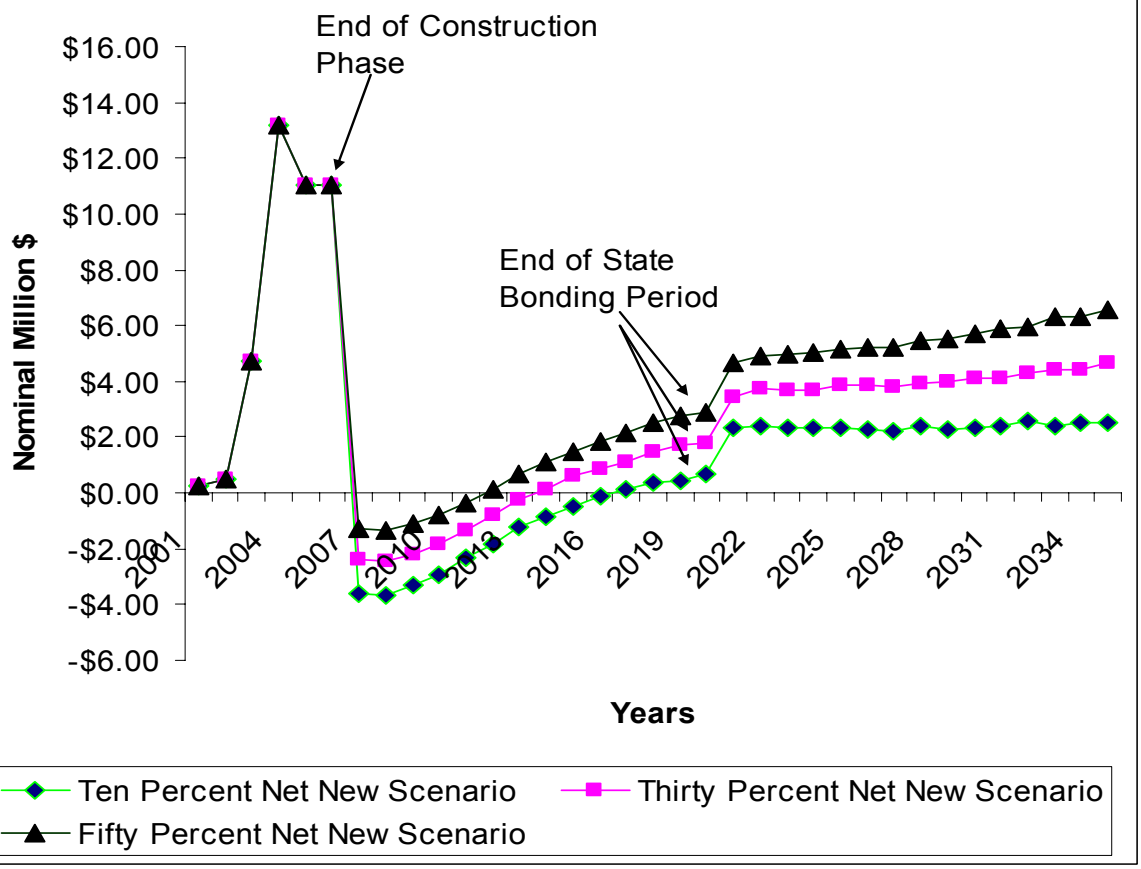


	Ten Percent Net New Scenario	Thirty Percent Net New Scenario	Fifty Percent Net New Scenario
Gross Regional Product (Million Nominal $)	$26.13	$37.07	$47.21
Personal Income (Million Nominal $)	$40.31	$51.57	$61.60

The peak change in GSP is $13.2 million across all scenarios, while the average increase over the study period is $1.7 million, $2.8 million, and $3.8 million in the ten percent, thirty percent and fifty percent scenarios, respectively (See Table 14 below). As Chart 2 indicates, personal income in present value terms increases $40.31 million, $51.57 million, and $61.60 million over the study period of 2001-2035 in the scenarios from pessimistic to optimistic, respectively. In the same period, the average increase in personal income is $2.79 million, $3.99 million, and $5.05 million, respectively for each

scenario. Increased personal income translates into more spending, and state income and sales taxes. Figures 3 and 4 present the time path of changes in personal income and gross regional product over the study period.

Figure 3: The Wadsworth Atheneum Museum of Art Expansion- Changes in Gross State Product



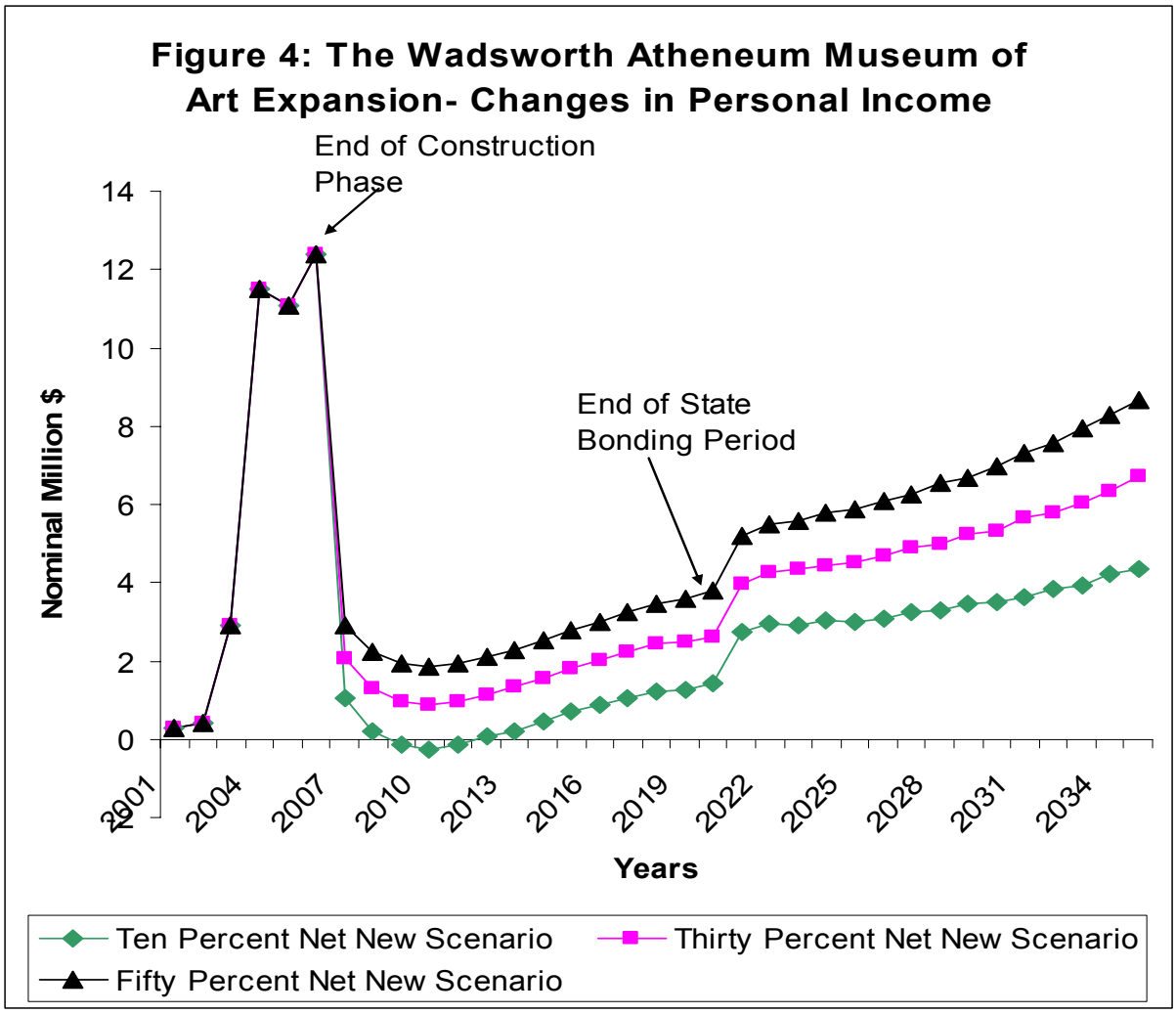
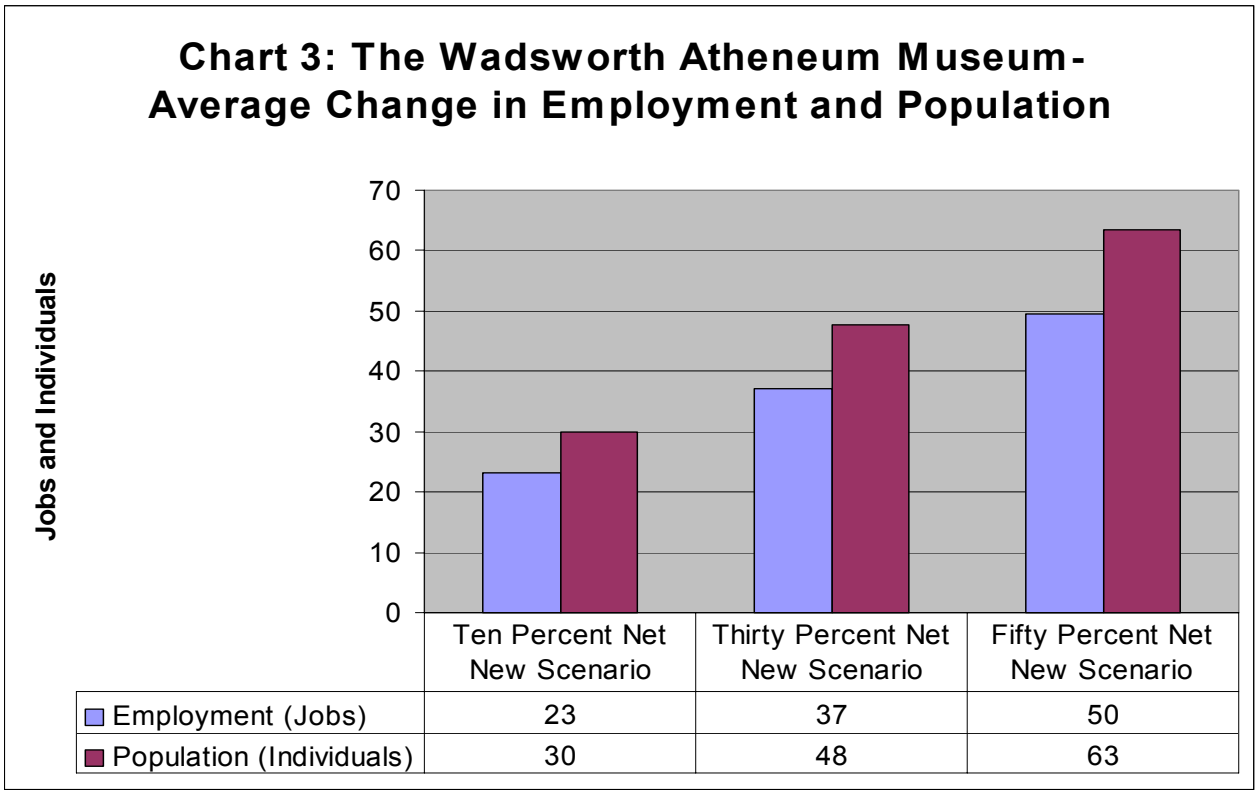


Table 6 presents a detailed summary of the changes in GSP and personal income. We include the peak change, average change, and net present values in output and personal income. The time horizon for these calculations is 2001 (because some architectural and design started then) through 2035.

Table 6: The Wadsworth Atheneum Expansion- Gross State Product and Personal Income Effect									
Variables	Ten Percent Net New			Thirty Percent Net New			Fifty Percent Net New		
	Peak	Average	Net Present Value	Peak	Average	Net Present Value	Peak	Average	Net Present Value
Gross Regional Product (Million Nominal	$13.20	$1.65	$26.13	$13.20	$2.78	$37.07	$13.20	$3.84	$47.21
Real Disposable Personal Income (Millior	$6.20	$1.64	$21.85	$6.20	$2.33	$28.11	$6.20	$2.95	$33.72
Personal Income (Million Nominal $)	$12.39	$2.79	$40.31	$12.39	$3.99	$51.57	$12.41	$5.05	$61.60

2.2c. Employment and Population Impact

In addition to GSP and personal income, the Atheneum expansion creates new employment across the state. The REMI model assumes that changes in employment levels affect wages. These changes in wages affect migration and labor supply, which in turn affect employment levels. Chart 3 presents the total jobs created and population attracted to the region by the expansion of the Museum.



The total statewide employment impact of the Museum expansion is, on average, 23 jobs, 37 jobs, and 50 jobs in the scenarios from pessimistic to optimistic, respectively.

Another impact of the Museum's expansion is on population. The amenity value that the expansion adds to the state – through increases in services such as K-12 art education, public education, fine arts, and other community programs – makes Connecticut relatively more attractive and encourages in-migration. Furthermore, employment opportunities and other economic factors affected by the Museum's expansion attract in-migrants seeking jobs as well. These effects combine to increase new population on average by 30 people, 48 people, and 63 people, respectively, in Connecticut.

Table 7: The Wadsworth Atheneum Expansion- Employment and Population Impact

Variables	Ten Percent Net New			Thirty Percent Net New			Fifty Percent Net New		
	Peak	Average	Net Present Value	Peak	Average	Net Present Value	Peak	Average	Net Present Value
Employment (Jobs)	202	23	NA	202	37	NA	202	50	NA
Private Non-Farm Employment (Jobs)	216	29	NA	216	42	NA	216	53	NA
Population (Individuals)	101	30	NA	101	48	NA	102	63	NA

As Table 7 indicates, the total employment peak value is 202 jobs for each scenario. This is due to the construction effect in the first five years of the expansion campaign that swamps subsequent job creation.

Figures 5 and 6 plot the time paths of total employment and population changes over the study period. From these figures, the employment effect of the construction period is quite visible.

Figure 5: The Wadsworth Atheneum Museum Expansion- Changes in Employment

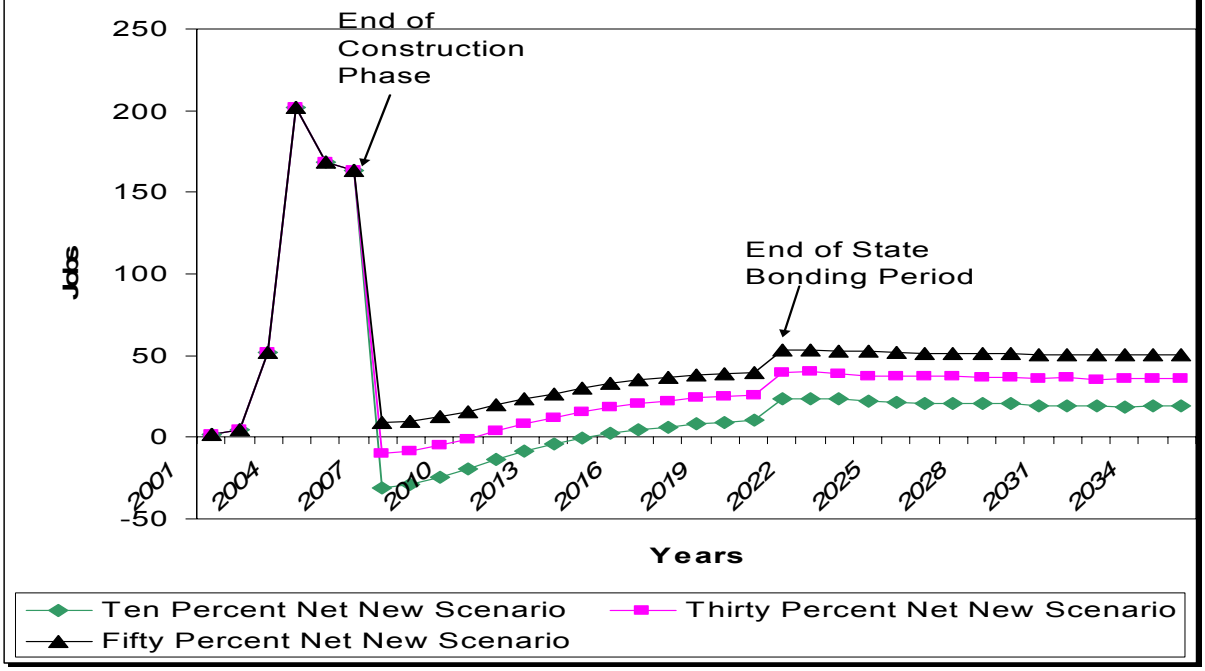
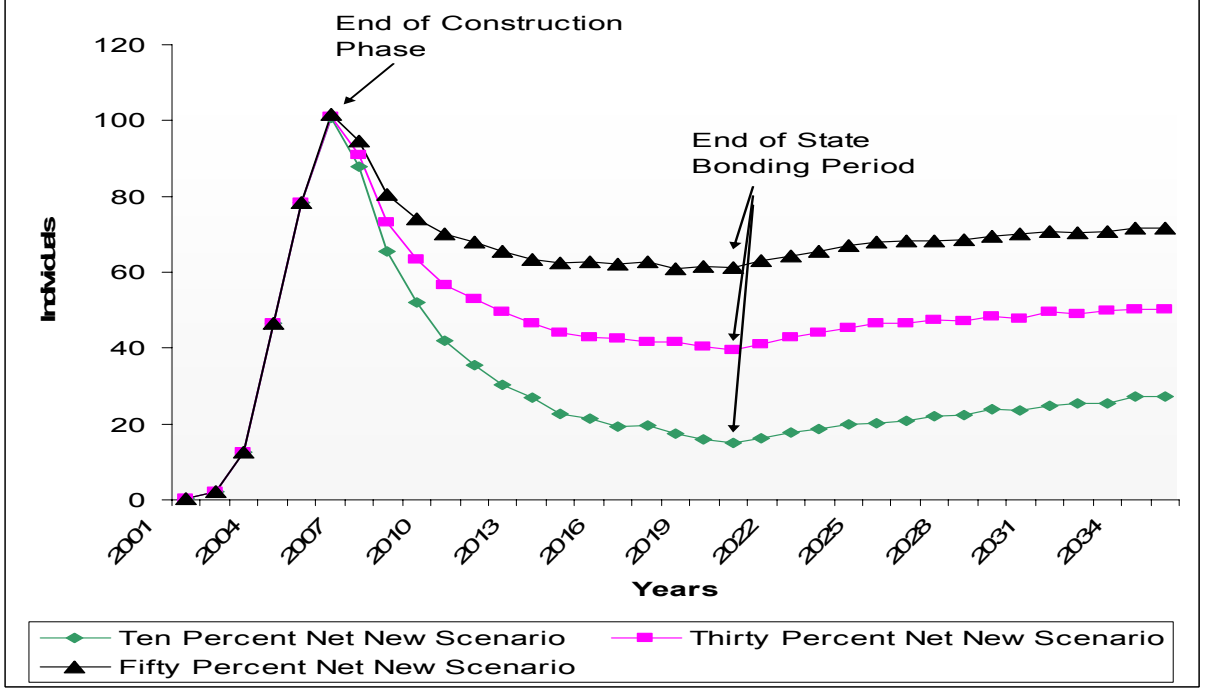


Figure 6: The Wadsworth Atheneum Museum of Art Expansion- Impact on Changes in Population



2.2d. Cost-Benefit Analysis and Summary of Findings

In this section, we detail the benefit-cost ratios based solely on the state and federal contributions relative to the total impact. Connecticut contributes $15 million for the expansion of the Wadsworth. Does Connecticut benefit from channeling state taxpayers' money to the Wadsworth? Table 8 answers this important question.

Table 8: Cost-Benefit Analysis of the State Support for the Museum's Expansion

Categories[1]	10% New	30% New	50% New	State Support ($15,000,000)
Increase in Gross State Product	1.74	2.47	3.15	For every $1 spent for the Wadsworth Atheneum
Increase in Personal Income	2.69	3.44	4.11	For every $1 spent for the Wadsworth Atheneum

Note: [1]All estimates for monetary values are based on net present value of the selected variables.

In terms of Gross State Product (GSP) and personal income, the benefit is substantial. For every dollar spent on the Museum's expansion by the state government, GSP increases at least $1.74 and personal income $2.69. In the optimistic scenario (50%), GSP increases $3.15 and personal income $4.11. This is indeed a significant payback to state investment in the Atheneum's expansion.

The $3 million federal contribution would simply increase the state per dollar impacts above (in Table 8) by a factor of five.

To conclude, the Museum's expansion contributes to Connecticut's economy to a great extent. Considering the economic output, personal income, and employment impacts, we argue that the Atheneum's expansion is an important long-term investment in the region's prosperity. Investing in the Atheneum's expansion is a worthy effort that will shape the future of Connecticut and its local communities. Table 9 summarizes our key findings.

Table 9: The Wadsworth Atheneum Museum of Art Expansion- Economic and Fiscal Impact Summary									
Variables	Ten Percent Net New			Thirty Percent Net New			Fifty Percent Net New		
	Peak	Average	Net Present Value	Peak	Average	Net Present Value	Peak	Average	Net Present Value
Employment (Jobs)	202	23	NA	202	37	NA	202	50	NA
Private Non-Farm Employment (Jobs)	216	29	NA	216	42	NA	216	53	NA
Population (Individuals)	101	30	NA	101	48	NA	102	63	NA
Gross Regional Product (Million Nominal $)	$13.20	$1.65	$26.13	$13.20	$2.78	$37.07	$13.20	$3.84	$47.21
Real Disposable Personal Income (Million Nominal $)	$6.20	$1.64	$21.85	$6.20	$2.33	$28.11	$6.20	$2.95	$33.72
Personal Income (Million Nominal $)	$12.39	$2.79	$40.31	$12.39	$3.99	$51.57	$12.41	$5.05	$61.60
State Revenues at State Average Rates (Million Nominal $)	$1.37	$0.29	$4.20	$1.37	$0.44	$5.55	$1.37	$0.56	$6.76
State Expenditures at State Average Rates (Million Nominal $)	$0.11	($0.58)	($11.57)	$0.19	($0.53)	($11.14)	$0.28	($0.49)	($10.77)
Net State Revenue (Million Nominal $)	$2.43	$0.87	$15.77	$2.43	$0.96	$16.69	$2.43	$1.05	$17.53

Appendix I: Methodology

AI:1: The REMI Model

REMI is a dynamic, multi-sector, regional model developed specifically for the Connecticut Center for Economic Analysis. The REMI model includes all of the major inter-industry linkages among 466 private industries aggregated into 49 major industrial sectors. With the addition of farming and three public sectors (state and local government, civilian federal government, and military), there are a total of 53 sectors represented in the model.

The REMI model is based on a nationwide *input-output* (I/O) model that the U.S. Department of Commerce (DoC) developed and continues to maintain. Modern input-output models are largely the result of groundbreaking research by Nobel laureate Wassily Leontief. Such models focus on the inter-relationships between industries, and provide information about how changes in specific variables—whether economic variable such as employment or prices in a certain industry or other variables like population—affect factor markets, intermediate goods production, and final goods production and consumption.

The REMI Connecticut model takes the U.S. I/O "table" results and scales them according to traditional regional relationships and current conditions, allowing the relationships to adapt dynamically at reasonable rates to changing conditions. Some of the salient structural characteristics of the REMI model are:

- Consumption is determined on an industry-by-industry basis, and is based on real disposable income in Keynesian fashion, i.e., with prices fixed in the short run and GDP (Gross Domestic Product) determined solely by aggregate demand.

- The demand for labor, capital, fuel, and intermediate inputs per unit of output depends on relative prices of inputs. Changes in relative prices cause producers to substitute cheaper inputs for relatively more expensive inputs.

- Supply and demand for labor in a sector determine wages weighted by regional differences. The supply of labor depends on the size of the population and the size of the workforce.

- Migration – which affects population size – depends on real after-tax wages as well as employment opportunities and amenity value in a region relative to other areas.

- Wages and other measures of prices and productivity determine the cost of doing business. Changes in the cost of doing business will affect profits and/or prices in a given industry. When the change in the cost of doing business is specific to a region, it will also affect the share of local and U.S. markets supplied by local firms. Market share and demand determine local output.

- "Imports" and "exports between states are related to relative prices and relative production costs.

- Property income depends only on population and its distribution adjusted for traditional regional differences, *not* on market conditions or building rates relative to business activity.

- Estimates of transfer payments depend on unemployment details of the previous period, and total government expenditures are proportional to population size.

- Federal military and civilian employment is exogenous and maintained at a *fixed* share of the corresponding total U.S. values, unless specifically altered in the analysis.

Because the variables in the REMI model are all related, a change in any one variable affects many others. For example, if wages in a certain sector rise, the relative prices of inputs change and may cause the producer to substitute capital for labor. This changes demand for inputs, which affects employment, wages and other variables in those industries. Changes in employment and wages affect migration and the population level, which in turn affect other employment variables. Such chain-reactions continue throughout the model. Depending on the analysis performed, the nature of the chain of events cascading through the model economy can be as informative for the policymaker as the final aggregate results. Because the model generates such extensive sectoral detail,

it is possible for experienced economists in this field to discern the dominant causal linkages involved in the results. Results reported are the combined direct, indirect and induced effects of the economic activity.

AI:1.a. Counterfactual Modeling Approach for Valuing Current Operations (Not Expansion)

Most economic models, including the REMI model, measure the Connecticut economy in its present form as a baseline. Any changes in the economy either add to or subtract from that baseline depending on the nature of the change. Because the Wadsworth Atheneum Museum of Art already exists in the baseline model, we generate the most accurate measure of the Museum's current impact of its ongoing operations by hypothetically removing the Museum from the economy. Intuitively, the results contained in this report measure the losses to the economy resulting from the disappearance of the Museum. However, it is more appropriate to interpret these results as the positive impact of the Museum's continuing operations by reversing the signs of the economic variables. We assume that there are no exogenous substitute economic activities for the Museum in its absence. We want the instantaneous effect of the disappearance of all activities related to the Museum's operation. Otherwise, we would obtain results for an opportunity cost analysis that invites debate as to the next best alternative.

AI:2. Conceptual Framework

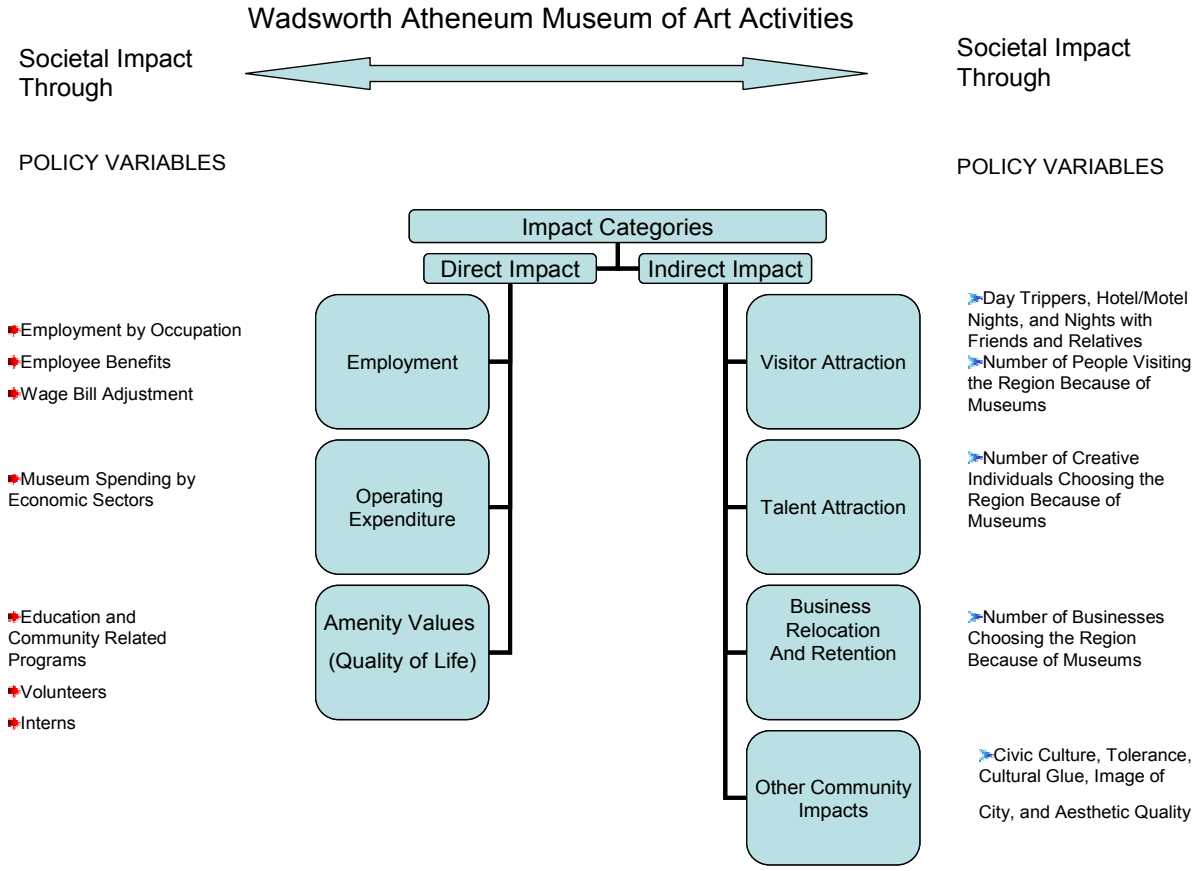
AI:2:.a. Counterfactual

In this analysis, we organize the impact policy variables into two categories:

(1) Direct that denote the museum's ongoing activities in performing functions as highlighted in Figure 1 in the main body of the report, and

(2) Indirect that represents the spillovers that result from the very presence of the museum in a community. Figure A1 presents the framework through which the Museum's activities translate into economic and societal impact. We primarily rely on data that the Wadsworth Atheneum graciously provided.

Figure A1: Conceptual Framework for Economic Impact Analysis of An Art Museum

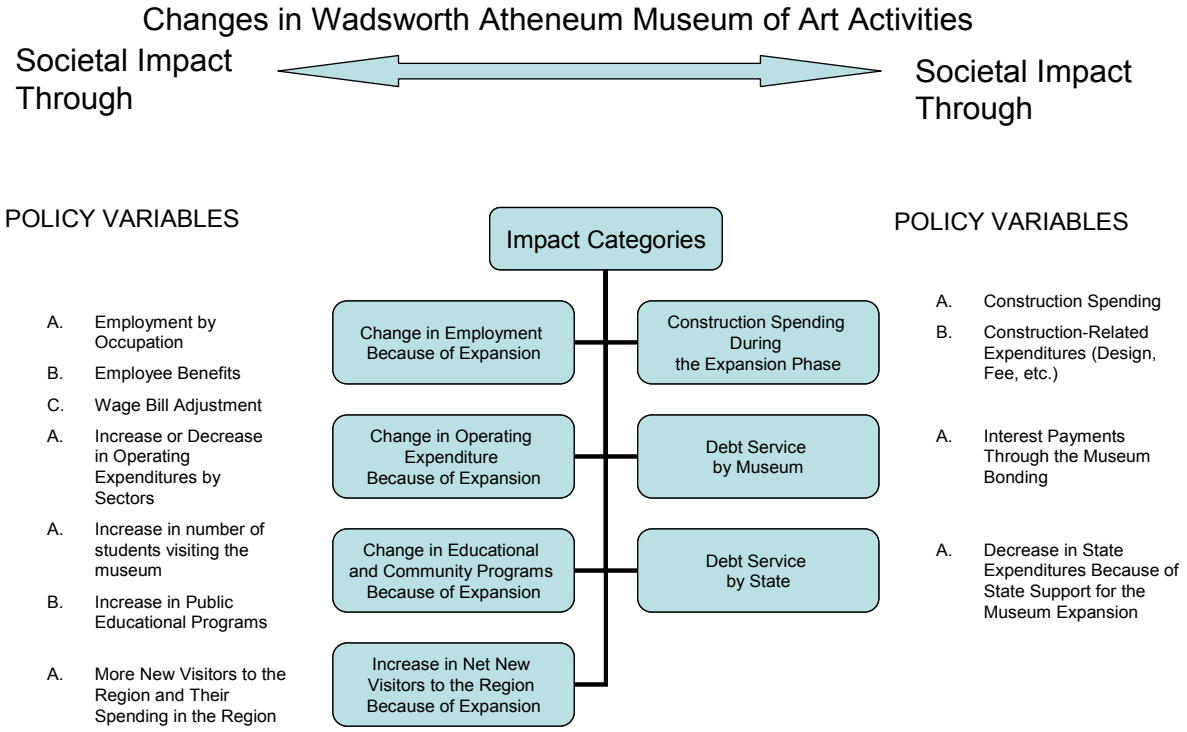


We identify seven broad impact categories presented in Figure A1 and attempt to quantify four of them (employment, procurement, amenity value, and visitor attraction). The difficulty in quantifying the community-related functions of museums and business attraction and relocation decisions led us consider only four categories. This, *per se*, makes the analysis conservative.

AI:2.b. Expansion

When a museum initiates an expansion, there will be changes in associated economic activities in the region. All our estimates—except construction-related ones—are based on future projections and our assumptions derived from the survey of peer level museums nationwide. Figure A2 presents the conceptual framework CCEA used to analyze the economic impact of the Wadsworth Atheneum expansion proposal.

Figure A2: Conceptual Framework for Economic Impact Analysis of An Art Museum's Expansion



In the expansion analysis, we consider the changes in operating expenditure, employment, the net new increase in visitation, and increases in educational programs, as well as construction spending and the state and Museum debt service as major spending categories.

Appendix II: Impact Analysis of the Wadsworth Atheneum Museum of Art Current Operations

A.II.1. Modeling Strategies

We base this study on several general assumptions. In each category, we make further assumptions to calculate net new contribution of each category to the state. Our general assumptions are:

- Not all contributions of Museum-related activities are ***net new*** to Connecticut. Net new, for example, in visitor estimates, represents a small fraction of total attendees.
- We assume that the substitution rate for Museum-related programs is inversely related to the distance of in-state residents to the museum. In no case, however, is the substitution rate less than seventy-five percent. This means that no more than 25% of Museum attendees to all programs are net new from a given Connecticut county.
- We model a certain fraction of in-state residents' attendance to the Museum as recaptured cultural tourists. That is, absent the Museum they would have gone out of state to other cultural venues.
- We assume that the Atheneum's educational and community services programs enhance the quality of life in the region.
- We assume that over ninety percent of the Museum's procurement takes place in Connecticut, and all of its employees reside in Connecticut.
- We assume that visitor's lodging behavior for all Museum attendees is similar to the visitor segmentation presented in *The Impressionists at Argenteuil* survey.

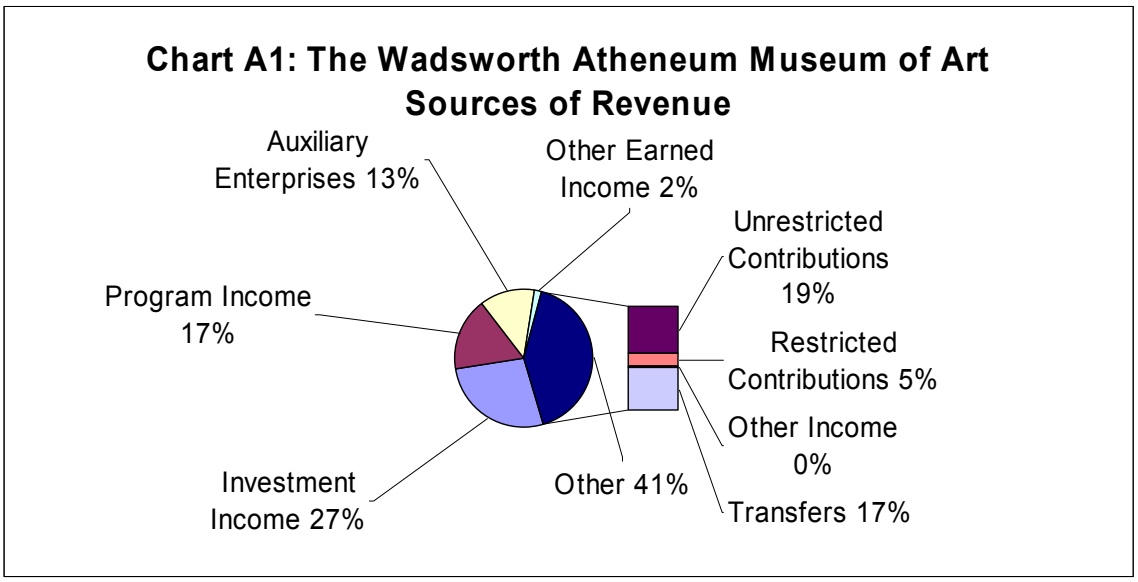
A.II.1a. Employment.

Based on our data, we estimate that on average (FY2001-2003) the Wadsworth Atheneum employs 123 Full Time Equivalents (FTE) residing in Connecticut. This figure includes all full-time, part-time, and special payroll employees. Furthermore, the Atheneum pays on average (FY2000-2002) about $3.9 million in wages and salaries annually to employees residing in Connecticut. In order to capture the total employment

impact, we made a wage bill adjustment as the Atheneum pays more than the state averages contained in REMI. The total wage bill adjustment is $1.04 million.

AII.1b. Operating Expenditure.

Revenues. Chart A1 shows sources of the museum's revenue and their three-year average shares of the total. According to Chart A1, earned income accounts for 59% of the Wadsworth's total revenue.



Twenty seven percent of the Museum's revenue is investment income, its most important source. Nationally, investment income constitutes only five percent of art museums' total revenue stream. Following this is unrestricted gifts and contributions to the Museum by corporations and individuals. Unlike the national average, federal, state, and local contributions to the Atheneum constitute an infinitesimal source of its revenue stream, which amount to 1.5%.[26]

[26] According to Association of Art Museum Directors' survey, on average, about 20% of art museum's revenue is from three sources (federal, state, and local).

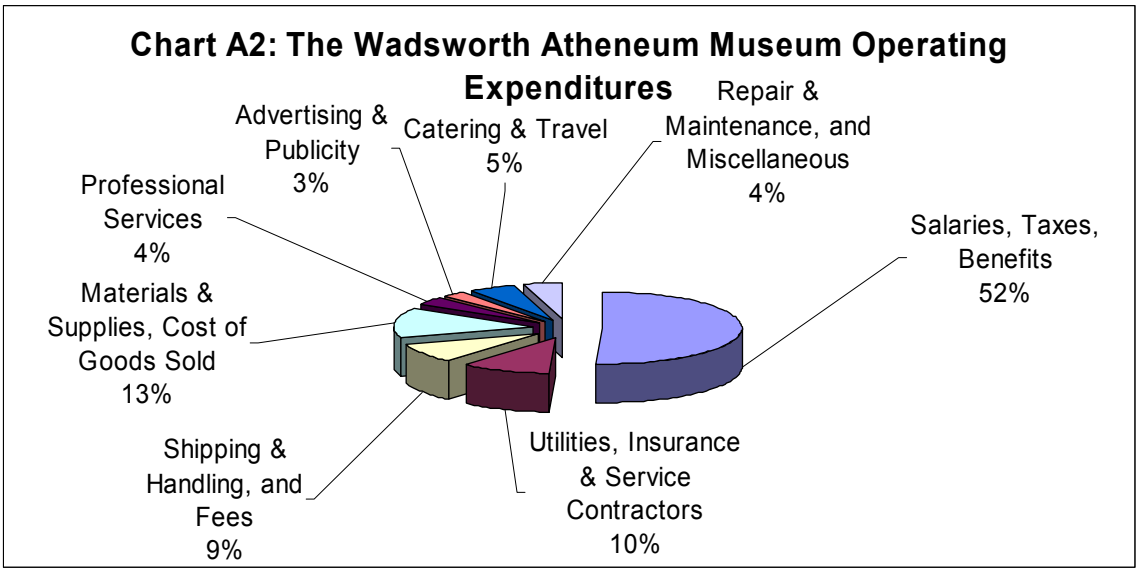


Chart A2 lays out expenditures by major categories. When we look at spending by major categories, salaries account for more than half of total spending with 52%. The next major category is the materials & supplies and cost of goods sold which accounts for 13% of total museum expenditures. A significant amount of Museum expenditure remains in Connecticut.

Model Assumptions. As part of our modeling strategy, we use the Museum operating expenditures to calculate the economic impact as opposed to detailing revenues. This approach allows us to capture the detailed economic impacts of the system via the specific expenditure path rather than the non-specific path of revenues from sources to destinations. Impact results obtained in this way are more accurate and necessarily avoid in any case the use of both revenues and expenditures (double counting). Because we model employment, including both salaries and benefits separately, we do not include employment-related expenses. The Museum provided data on total (capital and non-capital) operating expenditures. We took the three-year average expenditure because of annual fluctuations in expenditure by detailed budget item. Using these data, we estimate the total operating expenditure (less payroll) by sector at the 2-digit SIC level.

AII.1c. Amenity Values (Quality of Life)

The quality of life of a region is an important concern for residents and policy-makers alike. A high quality of life means an increasing local property tax base, participatory citizens, better educational facilities, and a business and visitor attraction magnet. In addition to permanent art collections and special exhibits, the Museum provides many programs and services that enhance the quality of life in the region. These programs and services range from film festivals to workshops for teachers. Because of resource limitations, we are unable to quantify each of these programs and services. Therefore, we *focus on a few selected programs* to present the extent of the Atheneum's contribution to improving the quality of life in Connecticut.

Table AII.1: Wadsworth Atheneum Museum of Art- Community and Educational Programs

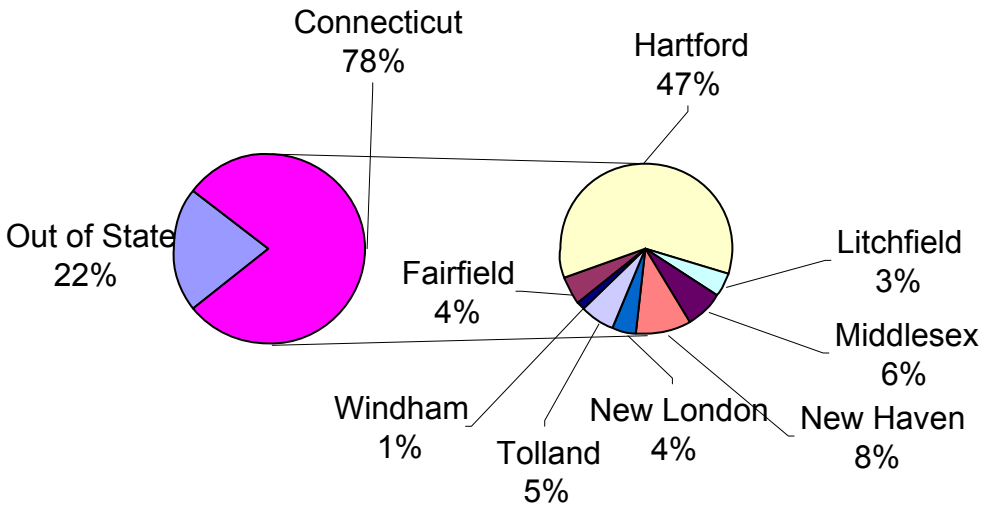
Programs	Students	Adults	Duration/Frequency
Tour programs	20,000	10,000	1 hour
Lectures		1,000	10-20 per year
Gallery Talks		1,000	1 hour per week
Symposia		500	3 lectures in a day or two-day long program
Hand-in-Hand writing program for Hartford Public Schools	180		5 times (public school)
Art Matters	500		8-10 times per year
Children's Studio Work Shops	300		1 per month
Family Sundaes		3,000	8 per year
Film Series and Performance related to Special Exhibitions		8,870	
First Thursdays		3,300	1 per week
Teacher in-services and workshops		200	
Collaboration with Hartford Stage	200		
Hartford Youth Art Renaissance Exhibition	200		Mid-May-Mid-June
Collaboration with Greater Hartford Jewish Film Festival		300	1 per year
Participant in First Night Hartford	1,000	1,000	1 per year
Collaboration with Bushnell Partners Program	1,300		

Table AII.1 presents the summary of the Wadsworth's community and education programs. As is clear from the table, a significant number of students utilize these programs. Furthermore, every year about 400 volunteers and 20 interns work for the Museum without pay. In estimating amenity value, we use the number of public school students' pro-rated attendance fees, pro-rated volunteer hours, and pro-rated intern hours, pro-rated and free adult admission, as well as the cost of transportation for public school students. We are unable to quantify the value of all the programs in Table AII.1. We estimate the total amenity value as $1,700,983 for 2002. This amount does not truly reflect the value of the benefits the Museum's programs and services confer on society.

AII.1d. Visitor Attraction

The Atheneum on average attracts over 200,000 visitors each year. With its world-class permanent collection and special exhibits, the Museum contributes to the economic vitality of the region's economy through visitor expenditures. In calculating the total number of visitors, we use the Atheneum's attendance data by zip code. Furthermore, we use the average days of stay, and the type of accommodation from *The Impressionists at Argenteuil* survey to estimate the number of visitors to the museum. Chart A3 presents museum attendees by place of origin. As the chart indicates, 78% of Museum attendees are from Connecticut, and 47% of the total comes from Hartford County.

Chart A3: Wadsworth Atheneum Museum of Art: Percent of Attendees by Place of Origin



Assumptions. Although about 215,000 people visit the museum annually, not all of them are ***net new*** to the state. We assume that only 32% of all attendees are recaptured (would have gone elsewhere for events) and/or are net new to the state. Table AII.2 presents our visitor assumptions.

Table AII.2: Wadsworth Atheneum Museum of Art- Attendees by Region of Origin, Recapture Rate, and Total Net New to Connecticut			
Origin	Total	Recapture rates[1]	Total Net New
Out of State	46,324		46,324
Fairfield	9,127	25%	2,282
Hartford	101,912	10%	10,191
Litchfield	7,391	25%	1,848
Middlesex	11,948	15%	1,792
New Haven	17,246	15%	2,587
New London	7,948	25%	1,987
Tolland	11,080	15%	1,662
Windham	2,613	15%	392
Note: [1] We assume that recapture rates are higher for visitors coming from counties more than 45 minutes drive			

We estimate that only 69,000 attendees out of 215,000 are net new to Connecticut. We model net new visitors as day-trippers, those staying with family and friends, and those staying in a hotel or motel. Table AII.3 provides visitor segmentation according to the type of lodging during their visits.

Table AII.3: Wadsworth Atheneum Museum of Art- Visitor Segmentation[1]		
Daytrippers	Hotel/Motel Nights	Nights with Friends and Relatives
63,540	22,912	8,474
Note: [1]Visitor Segmentation is based on a visitor survey of *The Impressionists at Argenteuil* Exhibition Attendees in 1999		

Assuming that each day tripper and those staying with friends and relatives spend $60 on average per day, and those staying in a hotel and motel spend $150 per day, total visitor spending amounts to about $7.5 million per year. This figure and net new visitor estimates are minimums.

With regard to the categories such as Talent Attraction, Business Relocation and Retention and Other Community Impacts, we are unable to provide an accurate assessment of these categories. Therefore, we omit these categories from the impact equation.

AII.1e. Model Assumption Summaries for Current Operations

Our assumptions regarding the economic impact categories are conservative. The amenity value of museum is specifically underestimated because of the lack of an extensive survey of the companies whose relocation decision the presence of the Museum affects. Below, we present a summary of all assumptions guiding our study.

- The Atheneum spends $4.5 million (three year average) for goods and services in Connecticut
- 123 employees (FTE) reside in Connecticut
- A wage bill adjustment of $1.04 million higher than state ***aggregate*** average annual income in the non-profit sector than REMI assumes as its baseline
- 69,000 (out of over 200,000) net new visitors are attracted to the museum. This means over $7.5 million net new spending in the region
- $1,700,983 amenity value increases the quality of life in the region

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AII.2. Dynamic Economic Impact Analysis Results of the Atheneum's Current Operations

The Wadsworth Atheneum Museum of Art is an important contributor to Connecticut's economy. To measure the economic impact of museum using the REMI model, we remove it from the baseline economy and analyze how this negatively affects the state economy.

In this section, we report the results from REMI for Connecticut as a whole. We organize this section in the following way: we first present the fiscal impact of the continuing operations of the Museum; second, we analyze output (Gross State Product) and personal income. After looking at the employment and population dynamics, we conclude with a discussion of a cost-benefit analysis of investing in the Museum.

Tables AII.4, AII.5, AII.6, and AII.7 show the combined direct and spillover effects on several key variables. The time horizon considered is 2002-2035. The "peak value" of a variable indicates the maximum value of that variable obtained in the study period. The "long-run impact" of a variable indicates the value of that variable in the terminal year 2035. The "average value" indicates annual average of that variable over the study period. Finally, the "net present value" of a variable is the present value of a

future stream of values of that variable discounted at 6.5%. Expressed this way, these values are a useful summary of the overall impact. The peak values represent values of economic and fiscal variables after the economy has fully adjusted to the loss (counterfactually) or to the ongoing operations of the Museum. As the baseline forecast already contains the Museum, changes from the former measure its impact.

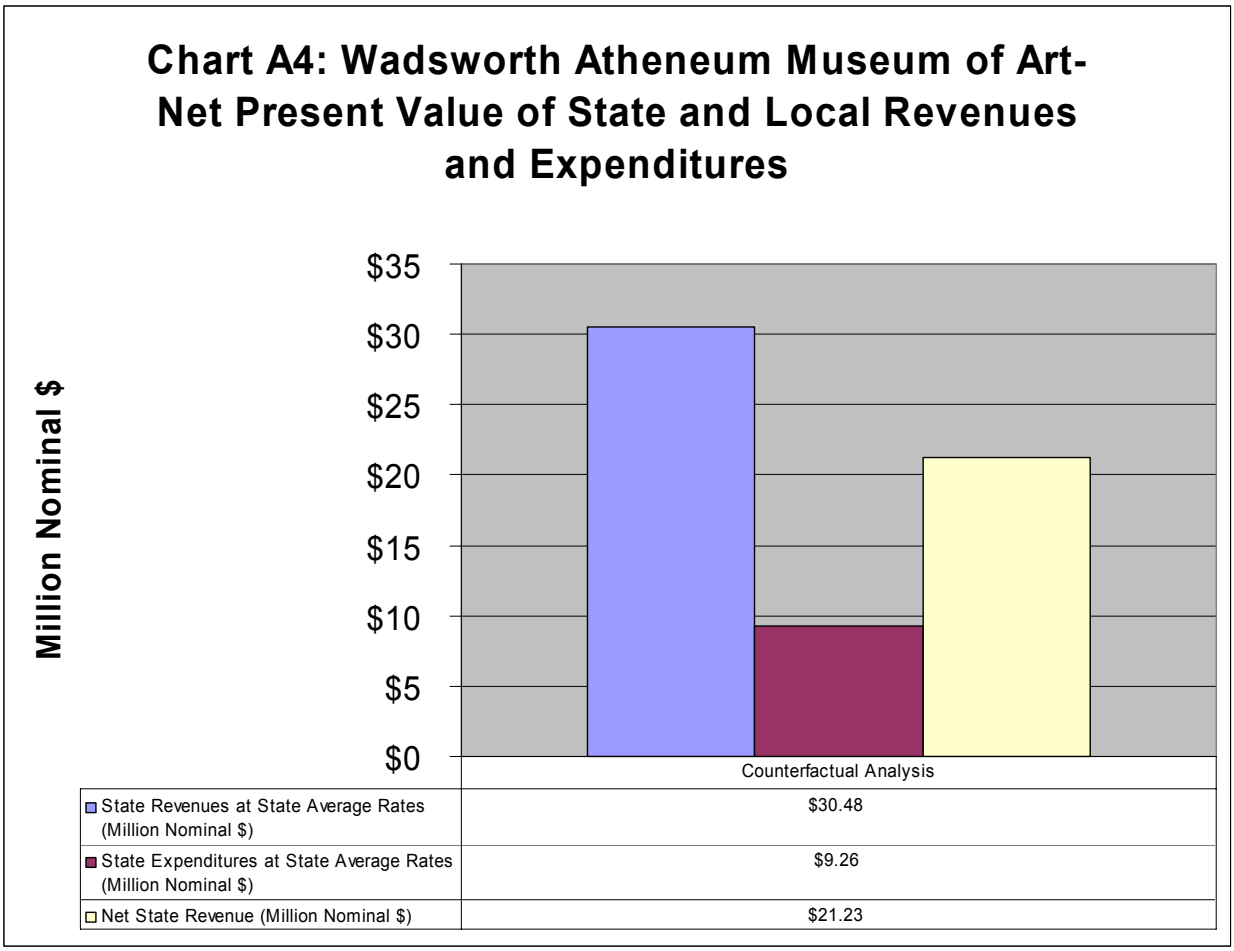
AII.2a. Fiscal Impact of Ongoing Operations

The Atheneum is an ongoing operation that has existed for 160 years. The counterfactual removal of the Museum would cause a decline in general economic activity. In particular, Gross State Product (GSP) and personal income would fall resulting in a decline in income, sales, use and other taxes in Connecticut.

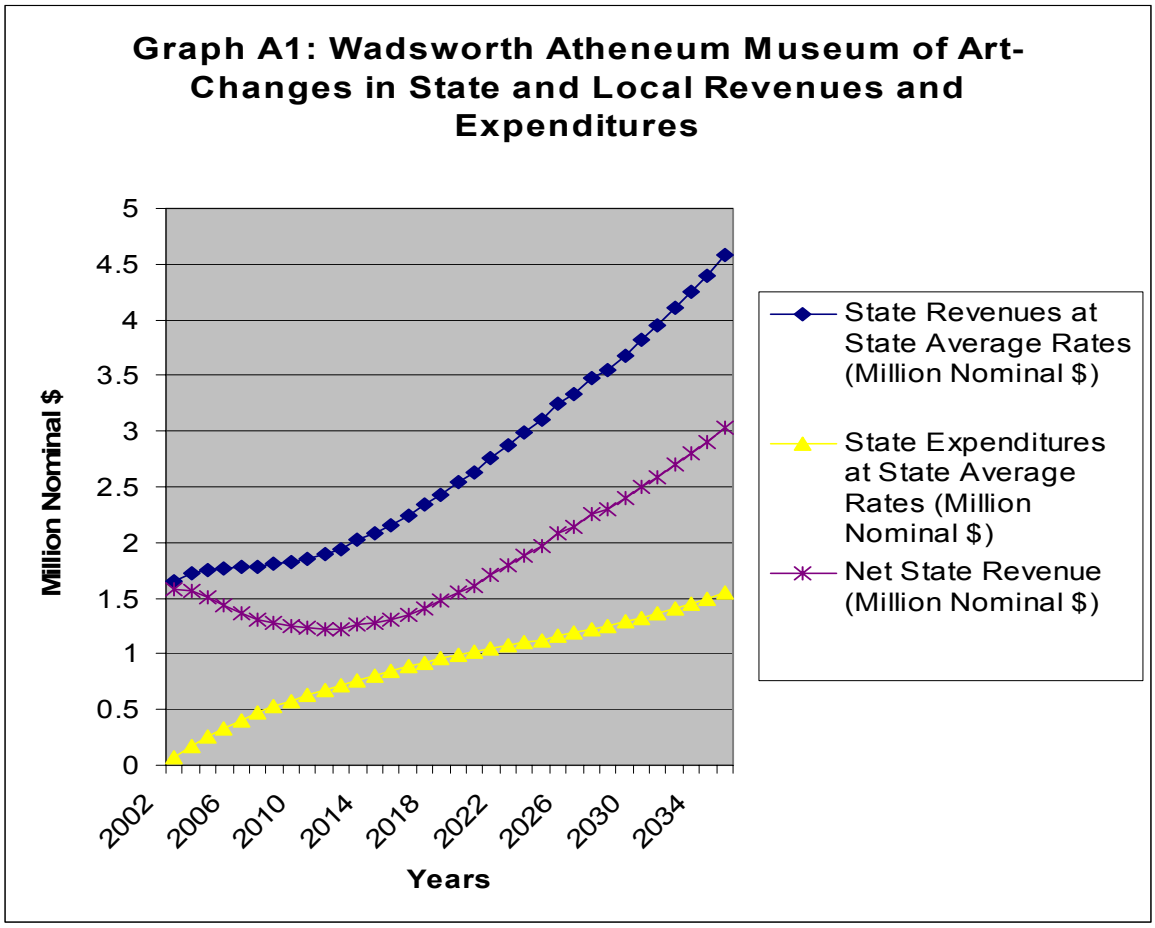
In addition to these basic tax changes, this impact changes government spending. Induced spending is the first component of such spending. As people move into the region and there is more economic activity, the government needs to spend more to maintain the same level of service per person as in the past. This adjustment occurs endogenously, that is, within the model, based on current and projected levels of government spending.

New state tax revenue depends on general economic activity. The increase in GSP and personal income (that accompany the continuing operation of the Wadsworth) generates an increase in tax collections through the channels discussed above across the state. State revenues increase by $5 million in Connecticut at their peak. The average annual increase in state taxes is $3 million. Chart A4 presents the fiscal impact of the Museum in terms of net present value in state tax revenues and expenditures.

According to Chart A4, gross state revenues increase $30.48 million in net present value over the study period of 2002-2035. The continuing operation of the Museum generates $21 million net new state revenue in present value terms over the study period.



Graph A1 presents the time path of annual changes in state revenues and expenditures. Table AII.4 provides a detailed breakdown of fiscal impact of the museum's operation. Table AII.4 reports peak, average, terminal, and net present values of each fiscal variable.



Our fiscal analysis suggests that the state and local economies benefit from the continuing operation of the Museum.

Table All.4: Wadsworth Atheneum Museum of Art-Fiscal Impact

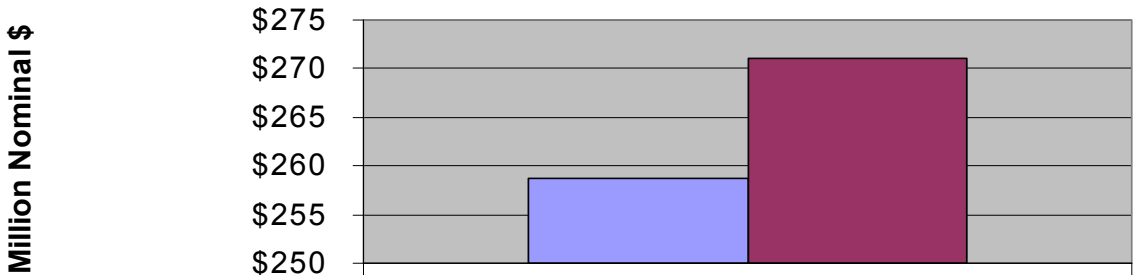
Variables	*Year*	*Peak*	*Long-Run Impact (2035)*	*Average*	*Net Present Value*
State Revenues at State Average Rates (Million Nominal $)	2035	$5	$5	$3	$30
State Expenditures at State Average Rates (Million Nominal $)	2035	$2	$2	$1	$9
Net State Revenue (Million Nominal $)	2035	$3	$3	$2	$21

AII.2b. Personal Income and Output Impact of Ongoing Operations

We report two crucial economic impact categories in this section: Gross State Product and Personal Income. Gross State Product (GSP) is the nominal dollar value of final goods and services produced over a period of one year in Connecticut using a value-added approach, where the value added at each stage of the production process aggregates to produce the final value. Calculations exclude intermediate goods to avoid double counting.

The results show a significant contribution of the Museum in Gross State Product (GSP) of Connecticut. As Chart A5 indicates, the change in GSP in net present value terms is $258.65 million in nominal dollars for Connecticut. The peak change in GSP is $40 million, while the average annual increase over the study period is $23 million (See Table AII.5 below).

Chart A5: Wadsworth Atheneum Museum of Art- Gross State Product and Personal Income (Net Present Value)



	Counterfactual Analysis
Gross Regional Product (Million Nominal $)	$258.65
Personal Income (Million Nominal $)	$270.99

As Chart A5 also shows, personal income in present value terms increases $271 million over the study period of 2002-2035. In the same period, the average increase in personal income is $24 million. The increase in personal income translates into more spending and therefore, more state income and sales taxes.

Figure A2 presents time path of changes in personal income and gross regional product over the study period. Table AII.5 presents a detailed summary of changes in output (GSP referred to here as gross regional product and the region is the state) and personal income. We include the peak change, average change, and net present values in output and personal income as well as the long-run impact values. The time horizon for these calculations is 2002 through 2035.

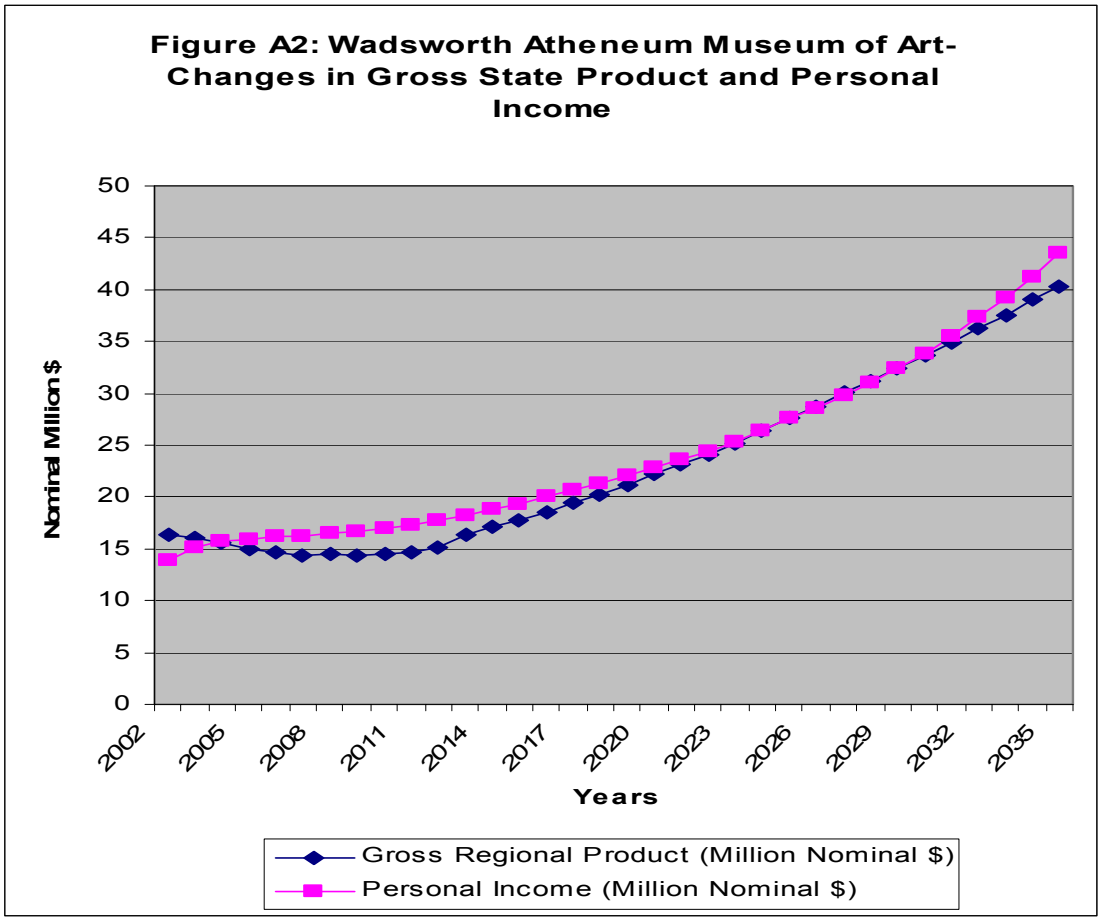
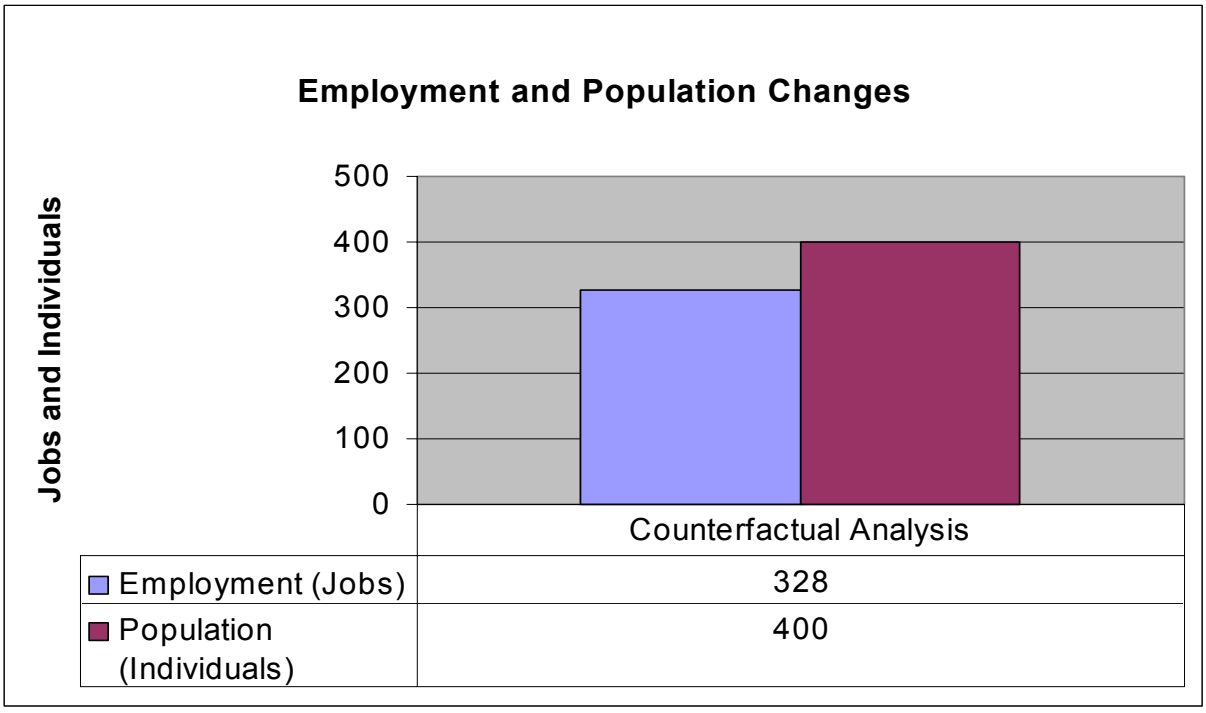


Table AII.5: Wadsworth Atheneum Museum of Art-Gross Regional Product and Personal Income					
Variables	*Year*	*Peak*	*Long-Run Impact (2035)*	*Average*	*Net Present Value*
Gross Regional Product (Million Nominal $)	2035	$40	$40	$23	$259
Real Disposable Personal Income (Million Nominal $)	2035	$27	$27	$14	$156
Personal Income (Million Nominal $)	2035	$43	$43	$24	$271

AII.2c. Employment and Population Impact

In addition to GSP and personal income, the Atheneum creates employment across the state. The REMI model assumes that changes in employment levels affect wages. These changes in wages affect migration and labor supply, which in turn affect employment levels. Chart A6 demonstrates total jobs created and population attracted to the region by the continuing operations of the Museum.



The total statewide employment impact of the Museum's ongoing operations is 328 jobs at its peak. Another impact of the Museum is on population. The amenity value that the Wadsworth adds to Connecticut—through services such as K-12 art education, public education, fine arts, and other community programs—makes Connecticut more attractive and encourages in-migration. Although we believe that our estimate of the non-pecuniary amenity value of the Museum is low, even this amount has a considerable effect on the economy and the population level. Furthermore, employment opportunities and other economic factors affected by the Museum's presence attract in-migrants. These effects combine to increase population by 400 in the state.

Figure A3 plots the time paths of employment and population changes over the study period. Table AII.6 presents total employment, private non-farm employment, and population changes in the state.

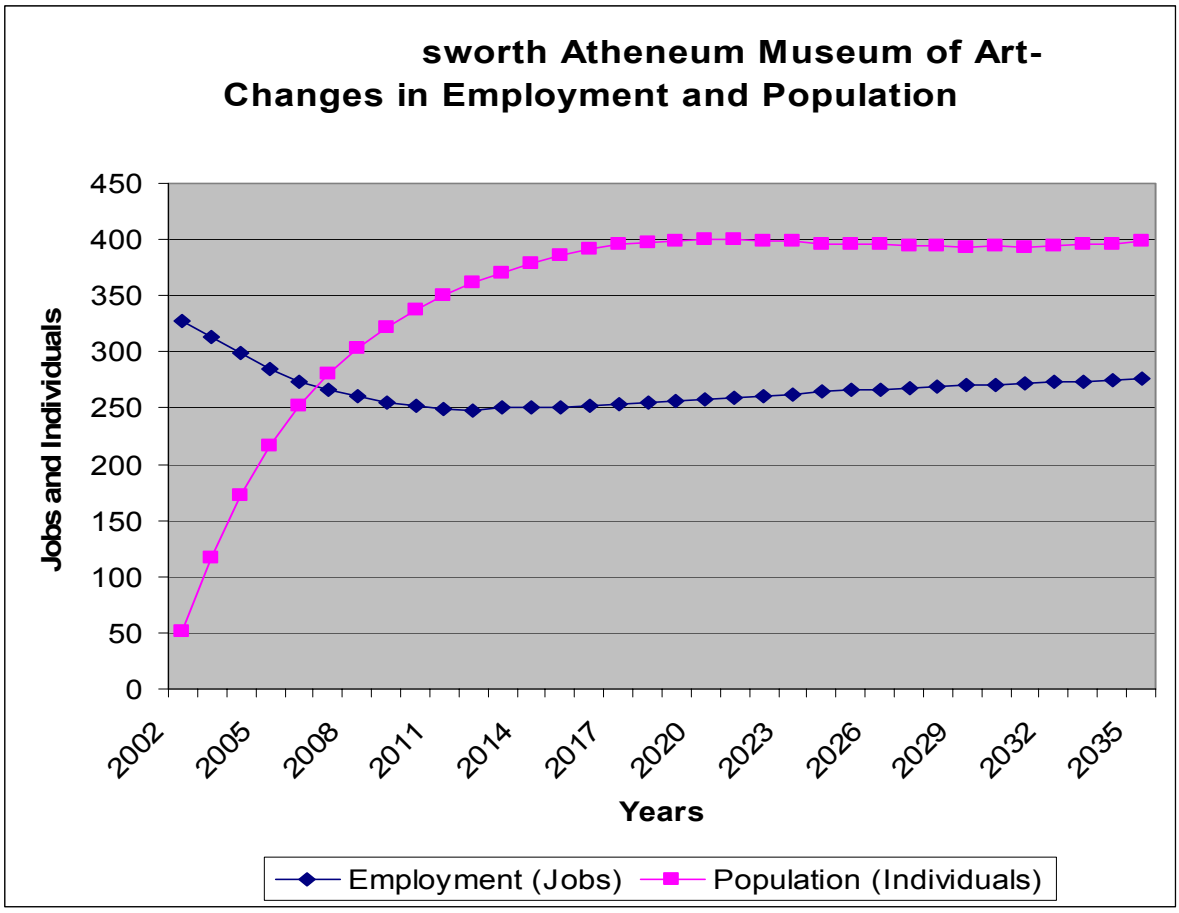


Table AII.6: Wadsworth Atheneum Museum of Art-Employment and Population Impact

Variables	*Year*	*Peak*	*Long-Run Impact (2035)*	*Average*	*Net Present Value*
Employment (Jobs)	2002	328	276	267	NA
Private Non-Farm Employment (Jobs)	2002	324	252	246	NA
Population (Individuals)	2021	400	398	348	NA

To analyze Table AII.6 briefly, we see slight differences between total jobs and private non-farm employment. We assume that this difference represents a change in public sector employment because of the Museum's operation. In the long run, the Museum's ongoing operation creates 16 new public sector jobs in the state. Table AII.6 reports the peak and average changes in jobs and population and their long-run change.

AII.2d. Cost-Benefit Analysis and Summary of Findings

In this section, we detail the benefit-cost ratios based solely on the state's contribution relative to the total impact. From the analysis of the museum's revenue sources, we estimate that on average the state explicitly contributes $120,241 to the Museum. Does Connecticut benefit from channeling taxpayers' money to the Museum? Table AII.7 answers this important question.

Table AII.7: Cost-Benefit Analysis of the State Support for the Museum

Categories[1]	Ratios	State Support ($120,241)
Increase in State Tax Revenue	42	For every $1 spent for the Wadsworth Atheneum
Increase in Gross State Product	333	For every $1 spent for the Wadsworth Atheneum
Increase in Personal Income	358	For every $1 spent for the Wadsworth Atheneum
Job Creation	1	For every $367 spent for the Wadsworth Atheneum

Note: [1]All estimates are based on peak changes in the selected variables.

This public support generates $5 million in peak new tax revenues for Connecticut. This means for every dollar of state contribution to museum, state tax revenues increase about $42.

In terms of Gross State Product (GSP) and personal income, the benefit is significant. For every dollar spent on the Museum by the state and local government, GSP increases $333 and personal income $358. This is indeed a significant payback to state investment in the Museum. The economic benefits extend to job creation: each $367 of state investment in museum creates one job.

To conclude, the Atheneum contributes to Connecticut's economy to a great extent. Considering the economic output, personal income, and employment impacts, we

argue that the Museum is an important asset in the region. Investing in the Museum is a worthy effort that will shape the future of Connecticut and its local communities. Table AII.8 summarizes our key findings.

Table AII.8: Wadsworth Atheneum Museum of Art-Economic and Fiscal Impact Summary Table

Variables	*Year*	*Peak*	*Long-Run Impact (2035)*	*Average*	Net Present Value
Employment (Jobs)	2002	328	276	267	NA
Private Non-Farm Employment (Jobs)	2002	324	252	246	NA
Population (Individuals)	2021	400	398	348	NA
Gross Regional Product (Million Nominal $)	2035	$40.23	$40.23	$23.18	$258.65
Real Disposable Personal Income (Million Nominal $)	2035	$27.42	$27.42	$14.49	$155.89
Personal Income (Million Nominal $)	2035	$43.46	$43.46	$24.15	$270.99
State Revenues at State Average Rates (Million Nominal $)	2035	$4.58	$4.58	$2.72	$30.48
State Expenditures at State Average Rates (Million Nominal $)	2035	$1.55	$1.55	$0.91	$9.26
Net State Revenue (Million Nominal $)	2035	$3.03	$3.03	$1.80	$21.23