

Economic Impact of University of Rochester and its Affiliates

August, 2008

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SUMMARY

As the number one employer in the Rochester region with 18,671 Full Time Equivalent (FTE) employees* and almost 7,300 full-time undergraduate and graduate students, the University of Rochester (UR) is a powerful force in the Rochester economy. UR has helped shape the transition of Rochester's economy in the past decade from one dominated by manufacturing to one with a greater emphasis on education and health services.

In addition, UR has received more than \$1.7 billion in external funding over the past five years. Their future strategic plans have the potential to serve as both a catalyst and a resource for the region's technology-based commercial sectors. University-based research has become increasingly central to the economic vitality of the Rochester region both today and for the future.

This report provides evidence of the economic impact of the University of Rochester on the Rochester Metropolitan Statistical Area (RMSA) – Livingston, Monroe, Ontario, Orleans, and Wayne counties. While there are many ways in which the University contributes to the community which are not measurable, this report provides the figures and statistics for those ways in which the benefits of the University of Rochester can be quantified.

University Profile

During 2007, University of Rochester and its affiliates:

- Purchased goods and services in excess of \$464 million. Of this total, more than \$96 million was spent to purchase goods and services in the RMSA.

* Including full-time, part-time, and time as reported, but not including graduate students.

- Spent an average of \$175 million per year (in 2007 dollars) for capital improvements including building and fixed equipment and movable equipment.
- Provided employment to 21,764 people (full-time, part-time, and time-as-reported) at year-end, December 31, 2007.[†]
- Paid wages of over \$1.09 billion of which more than \$1.06 billion is to employees living in the RMSA and an additional \$17.6 million is to employees living outside the RMSA but still in close proximity to Rochester.[‡]
- Received more than \$1.7 billion in external funding (federal and non-federal agencies) from FY 2003 to FY 2007.
- Provided training (at Strong Memorial Hospital or Highland Hospital) to 45.88% of the active patient care physicians in the RMSA.

The students of UR also contribute to the economic activity of the RMSA in the following ways:

- More than 3,000 students were eating off-campus on a regular basis—spending their money locally in restaurants or shopping at grocery stores.
- More than 3,100 undergraduate and graduate students lived off-campus, contributing their living expenses to the Rochester economy.

During 2007, visitors to UR accounted for:

- Over 18,000 hotel reservations; and
- More than 27,500 hotel night stays.

[†] Employees of University of Rochester include all adjunct faculty, faculty, post doctorates, research and teaching fellows, medical residents, and staff at the University of Rochester. In addition, all employees of Strong Memorial Hospital, Visiting Nurse Service (VNS), Visiting Nurse Signature Care, Highland Hospital, and all three Highlands – Highlands at Pittsford, Highlands at Brighton, and Highlands Living Center are included. CGR will refer to this entire body as University of Rochester employees. We do not include undergraduate students and graduate students in the employee spending part of the report, but rather in the student spending component of the economic impact. Including graduate students, UR provided employment to 23,563 as of 12/31/07.

[‡] Includes employees living in Allegany, Cattaraugus, Cayuga, Chemung, Genesee, Schuyler, Seneca, Tompkins, or Yates counties.

Economic Impact Results

CGR provides economic impact estimates for two scenarios.

- **Local and Traded Sector Combined:** Assumes that every component of UR will provide an economic impact. That is, we assume that if the UR were not here tomorrow, the jobs and purchases would not be provided by anyone else in the community.
- **Traded Sector:** A more conservative estimate of the economic impact. The traded sector can be defined as those aspects of UR that would disappear if UR were not in existence.

The University of Rochester and its affiliates generate:

- More than 28,000 jobs (direct and spillover) in the RMSA for the traded sector; and
- More than 43,000 jobs (direct and spillover) in the RMSA for the local and traded sector.
- Almost \$1.4 billion in wages (direct and spillover) in the RMSA for the traded sector; and
- More than \$1.9 billion in wages (direct and spillover) in the RMSA for the local and traded sector.
- Almost \$91 million in sales tax, personal income tax, and local property taxes to RMSA and NYS in the traded sector; and
- Approximately \$125 million in sales tax, personal income tax, and local property taxes to RMSA and NYS for the local and traded sector economy.

The Results In Perspective

The economic impact of the University of Rochester and its affiliates on the Rochester community is substantial. To put this impact into perspective, University of Rochester's traded sector impact of 28,000 jobs equates to:

- 5.7% of the employment for the entire labor force of the RMSA;[§] and

[§] Source for Labor Force: Local Area Unemployment Statistics (LAUS) – Bureau of Labor Statistics for 2007 RMSA. This is defined as those actively employed or actively looking for work.

- 4.3% of the potential working population for the RMSA.**

If one considers the local and traded sector combined, UR and its affiliates employ or generate employment for over 43,000 people. This equates to:

- 8.7% of the employment for the entire labor force of the RMSA; and
- 6.5% of the potential working population for the RMSA.

The above statistics help to reinforce the results in this report: The University of Rochester is a driving economic force in the Rochester community.

** Working force population is defined by CGR the RMSA population between the ages of 18 and 64. Source of data: US Census Bureau, 2006 American Community Survey.

Acknowledgements

CGR wishes to thank all of the University of Rochester employees who provided data for this study. The report is a team effort between CGR and many employees of UR who helped to provide the necessary data needed to perform the analysis. We thank all those employees who gave generously of their time and answered countless questions regarding data and the specific operations within University of Rochester. In particular, we thank Josh Farrelman, Mark Michaud, and Amy Happ for their time in coordinating data requests, answering questions, and providing feedback on the report.

Staff

Rochelle Ruffer, Ph.D., directed the project, oversaw the data collection process, performed the economic analysis, and wrote the final report.

Scott Sittig, M.P.P., organized and analyzed the data, provided input on methodological concerns, helped to oversee the data collection process, and edited the final report.

This report could not have been accomplished without the hard work of many CGR staff members, including:

Katherine Corley, Research Assistant, who worked diligently at analyzing and summarizing the visitor data;

Hung Dang, Research Assistant, who provided technical assistance in matching the employee zip codes and vendor zip codes to the Rochester MSA;

Kent Gardner, Chief Economist, who provided his expertise to the overall project and advice on methodology;

David Landry, Intern, who assisted with data collection;

Kate McCloskey, Research Assistant, who assisted with data collection;

Kirstin Pryor, Research Associate, who edited and proofed the final draft;

Matt Rubenstein, Intern, who created final tables and helped to edit and proof the final draft;

Sergey Zinger, Research Assistant, who helped with data analysis and calculations; and

Melanie Zilora, Intern, who created charts for the final report.

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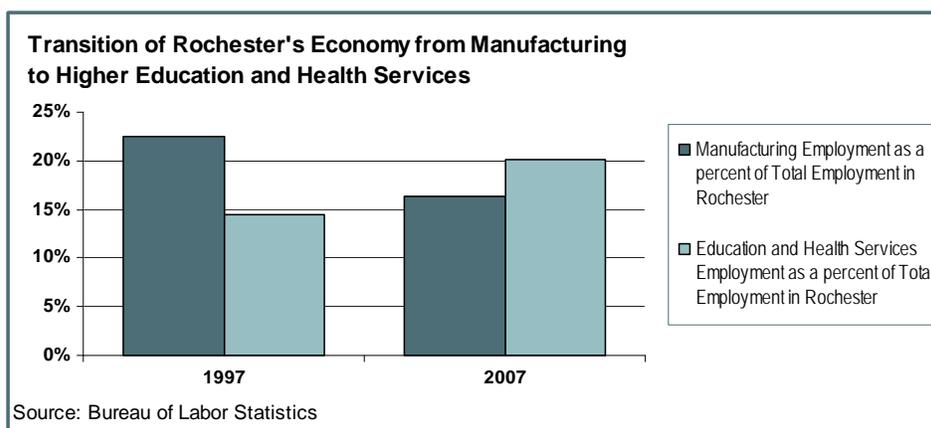
INTRODUCTION

The University of Rochester (UR) is a complex academic institution which includes many top-ranked programs and research centers. Each of these contributes to the Rochester community. The reputation of UR also extends around the globe bringing additional value to the Rochester economy. This large and complex institution is comprised of:

- The River Campus, which includes:
 - The College
 - ◆ Arts & Sciences
 - ◆ Engineering (including the Laboratory for Laser Energetics – LLE);
 - William E. Simon Graduate School of Business Administration;
 - Margaret Warner Graduate School of Education and Human Development; and
 - The Eastman School of Music.
- The University of Rochester Medical Center (URMC), which includes:
 - School of Nursing;
 - School of Medicine and Dentistry;
 - Eastman Dental Center;
 - Strong Memorial Hospital;
 - University of Rochester Medical Faculty Group; and
 - Health Affairs Division.
- Memorial Art Gallery
- University of Rochester affiliates, which include:
 - Visiting Nurse Service (VNS) and Visiting Nurse Signature Care (VNSC);
 - The Highlands – Highlands at Pittsford; Highlands Living Center; and Highlands at Brighton; and
 - Highland Hospital.

- Other affiliates including:
 - Excell Partners; and
 - HTR (High Technology Rochester).

Health care has become a key driver of local and regional economic growth throughout the United States. The increasing sophistication of medical science, rising affluence, and the aging of the population all contribute to the growing significance of the health sector. The Rochester region's employment picture has changed in the past decade and the UR has helped shape that transition. In 1997, the manufacturing sector accounted for more than one-fifth of employment in the Rochester Metropolitan Statistical Area (RMSA).^{*} By 2007, less than 15% of employment is in this sector. Over the past decade, education and health services education rose from 16% to 20% of the Rochester region's employment. Employment is one aspect of the transition from a manufacturing based economy to one where higher education and health care play major roles. UR has been a major contributor to this growth and change.



Another aspect of the transition is the creation of knowledge through research. UR has received more than \$1.7 billion in external funding over the past five years. Their future plans demonstrate this continued commitment to research. For example, University of Rochester Medical Center (URMC) announced a Strategic Plan for 2007-2012 that highlights many areas for growth, including ongoing biomedical research. This research area has the potential to serve as both a catalyst and a resource for the region's technology-based commercial sectors. Research has become

^{*} RMSA is defined as the five-county region of Wayne, Livingston, Monroe, Ontario, and Orleans counties.

increasingly central to the economic vitality of the Rochester region both today and for the future.

Ongoing research activities help to build the reputation of URMC. This causes a larger demand for medical residents, which in turn helps the Rochester economy. The training that occurs at Strong Memorial Hospital and Highland Hospital is critical to the Rochester region. Of the 2,975 active patient care physicians in the RMSA, 45.88% of them have trained at either Strong Memorial Hospital or Highland Hospital.*

Outline of Report

This report provides evidence of the economic impact of the University of Rochester on the Rochester community. While there are many ways in which the University contributes to the community which are not measurable, this report provides the figures and statistics for those ways in which the benefits of the University of Rochester can be quantified. CGR focuses on the RMSA as the level of analysis in determining the economic impact. New York State is the level of analysis for estimation of the fiscal impact.

CGR's report is presented in three parts:

- 1) "*Profile of University of Rochester and its Affiliates*" which provides information about the size of UR's staff and students as well as actual expenditures by UR. These are the categories and "raw data" used to estimate the economic and fiscal impact. This section also includes information about the research productivity of UR in terms of grant activity, patents, and royalty revenues.
- 2) "*Methodology*" which discusses the difference between the traded sector, and the local and traded sector combined. This section provides explanations of terminology as well as the methodological procedures CGR used to estimate the economic impact.
- 3) "*Economic and Fiscal Impact Estimates*" which provides estimates of the economic impact of UR, including purchases, employees, capital spending, student spending, and visitor spending. The impact is estimated both in terms of employment and labor income. CGR also provides estimates of the fiscal impact in terms of sales and income tax revenue generated.

* Source: Annual New York Physician Workforce Profile, 2007 from the Center for Health Workforce Studies.

PROFILE OF UNIVERSITY OF ROCHESTER AND ITS AFFILIATES

An economic impact study estimates the wages and jobs that an institution is responsible for generating as a result of its economic activity. Essentially, it answers the question, “How is the economy larger because of this institution’s activity in the community?” The data on which such an analysis is based are summarized in this section.

University of Rochester Purchases

During fiscal year (FY) 2007^{*}, University of Rochester and its affiliates

- Purchased goods and services in excess of \$464 million.
- Of this total, more than \$96 million was spent to purchase goods and services in the Rochester MSA.

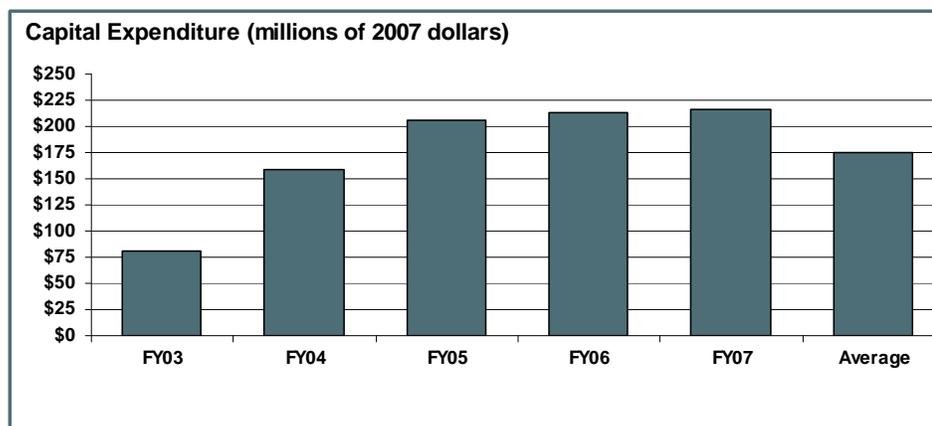
Capital Expenditures

Given the variable nature of capital expenditures, CGR uses an average over a number of years to estimate the economic impact of such expenditures.

During the past five years (FY2003 – FY2007), the University of Rochester:

- Spent an average of \$175 million per year (in 2007 dollars) on capital additions including building, renovation and construction equipment.
- This equates to \$875 million (in 2007 dollars) of capital expenditures over the five year period.

^{*} The fiscal year at UR is defined as July 1 to June 30. Thus, fiscal year 2007 runs from July 1, 2006 to June 30, 2007.



Capital Project Highlights

There are a number of projects that have been completed in the past five years that have been responsible for this wave of capital spending by UR.*

Eastman School of Music: Phase I (\$4.9 million)

In October 2004, the Eastman School of Music completed a renovation of the Eastman Theatre stage. The renovation focused on enhanced acoustics, and also included improvements to stage lighting, the orchestra pit, and various backstage areas.

The second phase of this renovation project begins in July 2008 and is expected to cost over \$40 million. The renovation will focus on reducing the number of seats to allow for wider aisles, the addition of box seats, expansion of the lobby, and improved acoustics. It also involves construction of a new building that includes a recital hall, a rehearsal hall large enough to accommodate large Eastman ensembles and the RPO, teaching studios for Eastman School of Music faculty, and a new recording studio.

Robert B. Goergen Hall for Biomedical Engineering and Optics (\$34.3 million)

On May 17, 2007, Goergen Hall officially opened. This five-story, 101,000-square-foot building is the first home to the Department of Biomedical Engineering, and connects to the Wilmot Building, home of the Optics Institute. The teaching laboratories, high-tech demonstration areas, and gathering spaces of Goergen Hall thus encourage interdisciplinary collaboration as they are easily accessible to biomedical engineers and optics researchers alike. Goergen Hall also houses the

* The expenditures are from FY2003 to FY2007 unless otherwise noted. Amounts are reported at historical cost and not inflated to reflect 2007 dollars.

Center for Institute Ventures, an economic development initiative that seeks ways for the Rochester economy to benefit from UR research. The building is specifically designed to be eco-friendly and energy smart.

Aab Cardiovascular Research Institute (\$26.7 million^{*})

On August 20, 2007, UR dedicated the Aab Cardiovascular Research Institute (CVRI). The new Institute houses 15 cardiovascular research laboratories with the goal of furthering the understanding of heart disease, including research and exploration of new diagnostic approaches. In addition, CVRI provides space for researchers providing analysis of genetic material using state-of-the-art techniques.

James P. Wilmot Cancer Center (\$63.7 million[†])

On May 15, 2008, the James P. Wilmot Cancer Center was officially dedicated. Growth in patient demand was a driving force in the creation of a new four-story, 164,000-square-foot building, which is visited by over 10,000 patients annually. The new Center consolidates all outpatient cancer care and research programs into a single location and allows for many programs, including medical oncology clinical space and radiation oncology to grow in size through expanded space and/or equipment. The new Center also allows for state-of-the-art techniques in various areas—from the use of the new Trilogy radiation system, which can target the size and location of tumors more precisely than previous systems to a team-approach to breast cancer treatment which can drastically reduce delays in diagnosis and treatment.

Omega EP Laser Facility (\$97.4 million[‡])

On May 16, 2008, UR dedicated the new Omega EP (Extended Performance) laser facility at the Robert L. Sproull Center for Ultra High Intensity Laser Research at the Laboratory for Laser Energetics (LLE). The Omega EP comprises a new set of four ultra-high-intensity laser beams that will unleash more than a petawatt—a million billion watts—of power onto a target just a millimeter across. Working in conjunction with LLE's original 60-beam Omega laser, the Omega EP will open the door to a new concept called "fast ignition," which may be able to dramatically increase the energy derived from fusion experiments and provide a

^{*} Expenditures through FY2007 are \$21.9 million. An additional \$4.8 million was spent FY2008 as of 5/31/08.

[†] Expenditures through FY2007 were \$29.8 million. An additional \$33.9 million was spent FY2008 as of 5/31/08.

[‡] Expenditures through FY2007 were \$91.1 million. An additional \$6.3 million was spent FY2008 as of 5/31/08.

possible new avenue toward clean fusion power. If successful, fast ignition could lead to the highest energy densities ever achieved in a laboratory.

Planned Future Capital Expenditures

The URM C Strategic Plan includes the integration of three major capital projects: the Clinical and Translational Sciences Building (CTSB), the Ambulatory Surgery Center (ASC), and Pediatric Replacement and Imaging Sciences Modernization (PRISM). From FY2008 to FY2012, these projects will be associated with an estimated \$318.3 million in consolidated capital expenditures.

Ambulatory Surgery Center (\$13 million)

The 52,000-square-foot ASC is projected to be completed in FY2009. The ASC will provide space for approximately 5,000 outpatient surgeries that can't be accommodated in Strong Memorial's current operating rooms.

Clinical and Translational Sciences Building (\$56.3 million^{*})

The CTSB is scheduled to be completed in FY2010. It will bring together many clinician scientists who previously worked separately, with the goal of increasing the effectiveness of clinical research and clinical education.

Pediatric Replacement and Imaging Sciences Modernization (\$249 million)

PRISM is a six-story, 330,000-square-foot tower which will be built adjacent to Strong Memorial Hospital. This project, which is currently pending approval by the state, will add a proposed 123 new hospital beds to Strong Memorial Hospital as well as various other services, such as two floors dedicated to imaging sciences.

Employees

For the purposes of this report, employees of University of Rochester include all adjunct faculty, faculty, post doctorates, research and teaching fellows, medical residents, and staff at the University of Rochester. In addition, all employees of Strong Memorial Hospital, Visiting Nurse Service (VNS), Visiting Nurse Signature Care, Highland Hospital, and all three Highlands – Highlands at Pittsford, Highlands at Brighton, and

^{*} Current estimate.

Highlands Living Center are included. In expressing the economic impact, CGR will refer to this entire body as University of Rochester employees.*

The table below provides the employee count as of 12/31/07. This includes full-time, part-time and TAR (time as reported which includes per diem, casual, and temporary) individuals and is not a full-time equivalent number. The table does not include graduate students and undergraduate students.†

All Employees of University of Rochester and its Affiliates*	
University of Rochester	17,968
Highland Hospital**	2,753
Highlands at Brighton	322
Visiting Nurse Service	721
Total	21,764
*12/31/07 - data provided by UR and not including graduate students	
**Highlands Living Center and Highlands Pittsford are included in Highland Hospital	

The table below summarizes the full-time equivalent of UR employees reported on December 31, 2007, including graduate students.

Counts by FTE	Full-Time Equivalent of University of Rochester Employees*			Total
	Full-Time	Part-Time	TAR/ Per Diem	
UR Divisions	13,606	1,551	516	15,673
Highland Hospital**	1,589	357	215	2,161
Highlands at Brighton	186	20	28	234
Visiting Nurse Service	453	114	36	603
TOTAL	15,834	2,042	795	18,671
*12/31/07 - data provided by UR and includes graduate students				
**Highlands Living Center and Highlands Pittsford are included in Highland Hospital				

During the 2007 year, UR:

- Paid wages of almost \$1.09 billion, of which more than \$1.06 billion is to employees living in the RMSA.

The geographic distribution of wages for all employees (not including graduate and undergraduate students) is presented in the table below:‡

* We do not include undergraduate students and graduate students in the employee spending part of the report, but rather in the student spending component of the economic impact.

† Including graduate students, UR provided employment to 23,563 as of 12/31/07.

‡ CGR redistributed wages of those employees who were not active at the end of the year (retired, terminated, etc) based on the distribution of the wages of all active employees.

Distribution of Wages by Region	
Rochester MSA	\$1,060,982,906
Rochester Finger-Lakes*	\$17,609,052
Rest of NYS	\$7,372,637
Outside NYS	\$6,076,762
Total	\$1,092,041,358
*Defined as Allegany, Cattaraugus, Cayuga, Chemung, Genesee, Schuyler, Seneca, Tompkins, or Yates counties.	

CGR only includes the wages of those employees living in the RMSA (\$1.06 billion) to estimate the economic impact of UR on the RMSA. However, it is clear that an employee living in nearby Genesee County, for example, may still spend a large portion of their income in the RMSA. Thus, the economic impact estimates presented later in this report may be underestimated as they do not include any expenses of employees living outside the RMSA. In addition, there are a few employees who have a permanent address outside NYS. However, some of them may rent an apartment as well as buy groceries and gas in the RMSA during the week. Due to the case-by-case nature of these situations, CGR chose to only include those wages of employees with an address in the RMSA.*

- In addition, UR provided employment to a total of 5,181 undergraduate and graduate students during the 2007 calendar year for a total of \$34,965,912 in wages.

Students

The students of UR contribute to the economic activity of the Rochester MSA. In particular, during the spring semester, UR:

- Enrolled 7,294 full-time undergraduate and graduate students;
- Provided housing to 4,157 undergraduate and graduate students; and
- Provided meal plans to 4,240 undergraduate and graduate students.

During the fall 2007 semester, UR:

- Enrolled 7,753 full-time undergraduate and graduate students;
- Provided housing to 4,248 undergraduate and graduate students; and

* One exception was in the case of residents, teaching fellows, and post-doctoral students. In these cases, a student with an address outside NYS was treated as living in the RMSA. Often these students are still in training and use the address of their parents as the permanent address.

- Provided meal plans to 4,559 undergraduate and graduate students.

The above statistics imply that during the 2007 calendar year:

- More than 3,000 students (3,054 during spring semester and 3,194 during fall semester) were eating off-campus on a regular basis—spending their money locally to eat in restaurants or shopping at grocery stores.
- More than 3,100 (spring semester) and more than 3,500 (fall semester) undergraduate and graduate students lived off-campus, contributing their living expenses to the Rochester economy.

Visitors

The University of Rochester hosted visitors throughout the year for events such as Meliora weekend, graduation, concerts, recitals, athletic events, and admission visits. The visitors include alumni; prospective students and their families; family and friends of current students; visiting faculty to attend conferences or use research equipment; family and friends of Strong Memorial Hospital patients; musicians; athletic opponents and their fans; and UR fans and families of student athletes. Visitors bring new dollars to the Rochester community. Overall, during 2007, visitors to UR accounted for:

- Over 18,000 hotel reservations; and
- More than 27,500 hotel night stays.

The largest events contributing to the visitor impact are discussed below:

Admission Visits

Prospective students represent a significant pool of visitors. The undergraduate admissions office on River Campus estimates that approximately 12,000 visitors came to visit during 2007. The Eastman admissions office also provided tours to approximately 2,400 people during 2007. Many of these people are from out of town and stay overnight in the Rochester area.

Athletic Events

Athletic events also draw a large number of visitors, composed of the visiting teammates as well as parents and other spectators from out of town coming to watch the game. During the 2007 calendar year, there were 103 home games with about 2,100 visiting teammates from places far enough away to warrant staying in a hotel. In addition, parents of players and fans of the visiting teams come from outside the area.

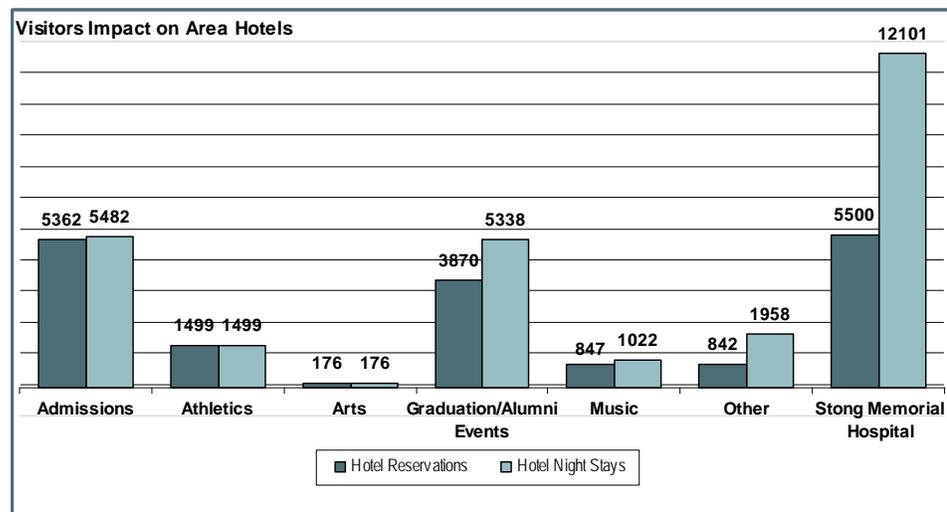
Arts

During 2007, Memorial Art Gallery (MAG) had 81,734 visitors to their exhibits. More than 245,000 people came to MAG for school tours, creative workshops, weddings, corporate events, visits to the gift shop and restaurant, and the annual Clothesline Festival. The Clothesline Festival drew 469 exhibit artists, many of them from outside the Rochester region.

Graduation/Alumni Events

Meliora Weekend (MW) is one of the biggest annual events on campus. It is the combined weekend for Homecoming, Family Weekend, and Reunion. In 2007, MW attendees (specifically alumni, parents, and guests) numbering 2,787 came from outside the Rochester region and occupied approximately 1,468 hotel rooms. The average length of stay was three days. These visitors, and any out-of-town visitors to campus, affect the local economy by spending money at places such as hotels, restaurants, retail establishments, gas stations, car rental agencies, and the airport.

Another major visitor event is graduation weekend. The University awarded 2,402 degrees during May 2007 commencement. The Conference and Events Office at UR estimates five visitors per graduate. Many of these are from out of town and pump out-of-town dollars into the Rochester economy.



Music

The Eastman Theatre drew 186,147 visitors over the 2007 calendar year for attendance to Eastman School of Music concerts, other concerts, Rochester International Jazz Festival (RIJF) Concerts, Rochester Philharmonic concerts and graduation ceremonies. In addition, almost 45,000 people attended concerts at Kilbourn Hall. While it is difficult to

estimate how many of these visitors are from out of town, CGR did consider the musicians for the RIJF as well as family members for the 175 senior recital concerts of Eastman School of Music students.

Other

This category encompasses many visitors for academic conferences. The LLE brought 393 researchers to use the facilities, 236 from the U.S. and 157 from abroad. These researchers typically stay in local hotels for 4 days to perform their research.

Strong Memorial Hospital

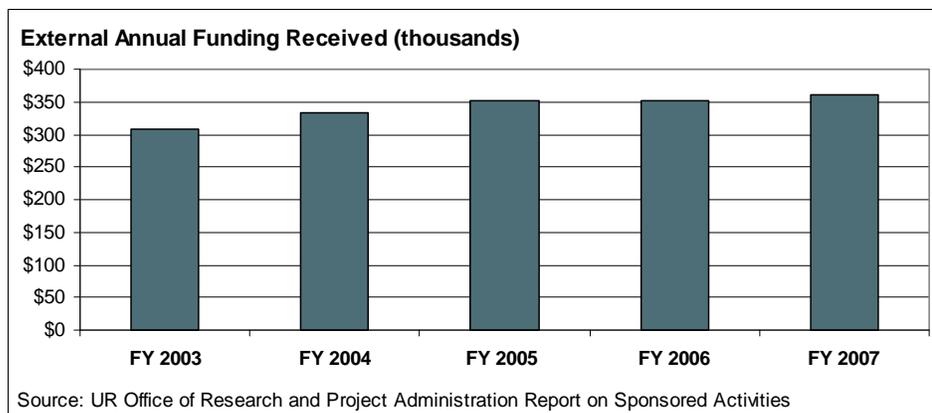
Visitors to patients of Strong Memorial Hospital also make an economic contribution. The Strong Guest Hotel Services processed 5,500 guest reservations for a total 12,101 hotel nights during fiscal year 2007.

Research Funding at University of Rochester

While the University's employment and spending are a critical foundation of the region's economy, of equal importance is the catalytic impact of the institution's research enterprise. Research activities – both basic science and clinical research – are an integral part of University of Rochester. Research has become increasingly central to the economic vitality of the Rochester region both today and for the future. The boundaries of "science" are pushed through research and development. In the case of medical research, the research results in improved health care for our community by bringing advances in health care to the practice of medicine in physician offices and hospitals. Whether it's medical research, the research at the LLE facilities, or the many other ongoing research activities across UR's campus, the advances are impressive and help to create intellectual capacity in the Rochester region.

Grant Activity at UR

UR has received more than \$1.7 billion in external funding (federal and non-federal agencies) over the last five years. Total awards to University of Rochester averaged \$341 million per year (in constant dollars) from FY2003 to FY2007. The graph below shows the annual funding to UR during that period.



Partnerships Generating External Funding

Excell Partners is a regional economic development partnership established in cooperation with UR and NYS to manage a state-supported fund which provides pre-seed and seed stage financing to high-tech start-up companies in the upstate NY region. Since 2005, Excell Partners has managed to secure \$2.3 million in funding, of which \$1.2 million has been distributed to 12 unique companies in the Rochester area.

Patents, Royalties, and Start-Ups

UR's Office of Technology Transfer has experienced outstanding productivity over the past five years. There has been substantial growth in the total invention disclosures, the number of patents issued, and the royalty revenue earned. This strong history of growth and innovation represents a potential pool of intellectual property that can be tapped for economic development purposes.

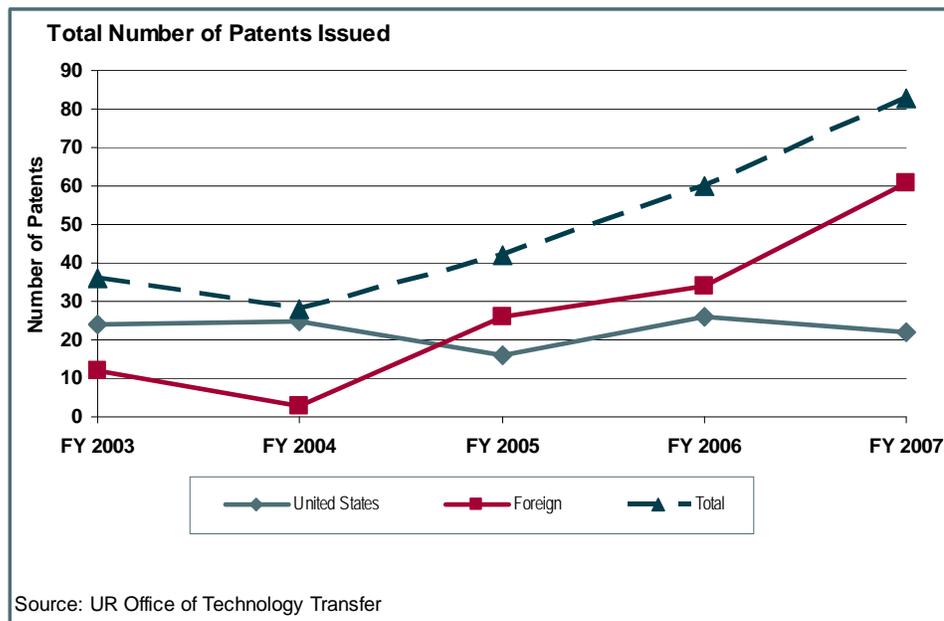
Patents

The total invention disclosures have grown by 26% over the past five years. The growth is really driven by the Medical Center, where they have experienced a 67% invention disclosure growth rate from FY2003 to FY2007.

Invention Disclosures					
	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
LLE	5	4	2	2	5
Engineering	34	28	32	29	30
Arts and Sciences	15	15	9	8	7
URMC	64	93	92	101	107
TOTAL	118	140	135	140	149

The number of patents issued (both U.S. and foreign) has more than doubled over the past five years. The chart on the next page depicts the growth in total issued patents from FY2003 to FY2007. The cutting-edge

research that results in these patents has also produced a number of start-up companies over the past decade.



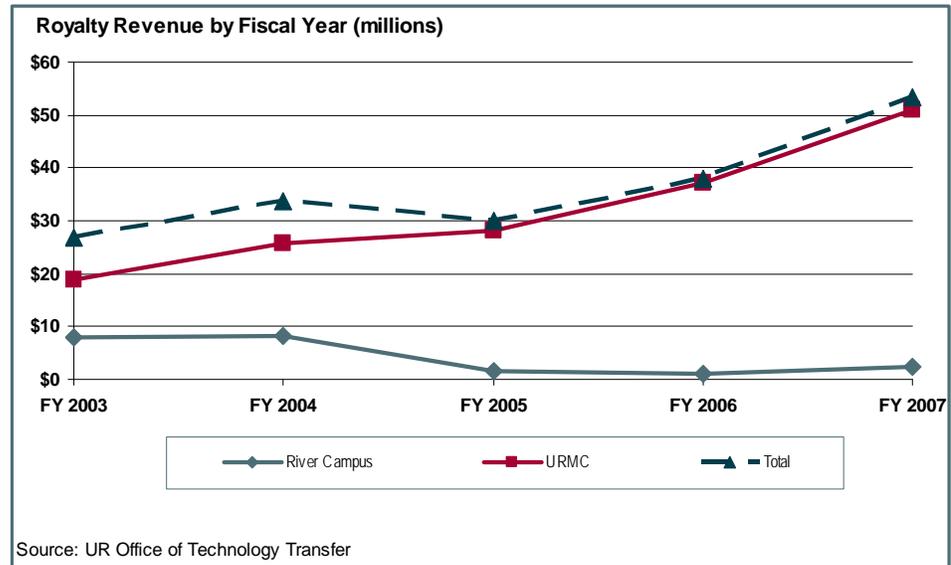
Royalty Revenue

In the past five years, the royalty revenue has doubled for the University of Rochester. According to data from the Association of University Technology Managers (AUTM), the University of Rochester is ranked in the top ten universities in terms of licensing revenues.* Revenue generated from royalty payments is reinvested back into the University to support its core missions, as well as its technology commercialization efforts.

Over the past five years, for every one million dollars in extramural funding, CGR analysis indicates an average of \$105,909 in royalty revenue is generated by UR. According to 2006 AUTM Annual Report, 158 universities reported a total of \$39.2 billion in research expenditures for a total of \$1.25 billion in licensing revenue. These data imply that, on average, each institution receives approximately \$31,855 in royalty revenue per \$1 million in extramural funding.† At more than three times the average for 2006, UR's track record in royalty revenue for the past five years is clearly on the cutting edge in terms of generating royalty revenue from research expenditures.

* Based on 2006 data.

† CGR recognizes the inherent lag between royalty revenue and research expenditures. The calculations provided are to present a steady state number for a point in time.

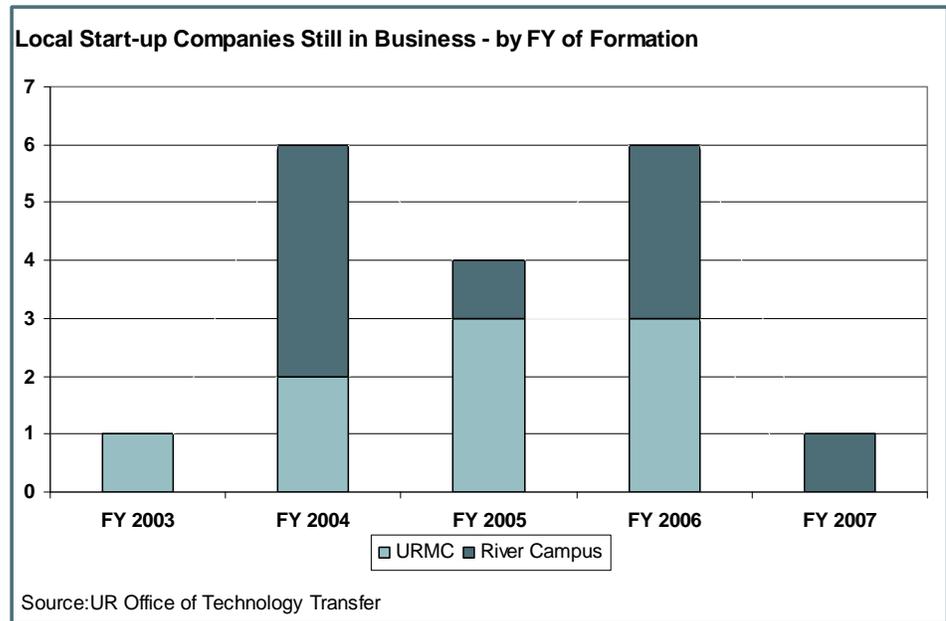


Start-up Companies

One of the more important manifestations of the potential of the University of Rochester to serve as an economic catalyst is the commercial ventures that emerge from its research programs. Because these new companies often remain closely tied to ongoing research and university-based faculty, many remain in the region. With proper support and resources, these companies can form the critical mass necessary to attract outside investment and skilled workers and make the region a hub for technology research and industry.

From FY2003 through FY2007, there have been a total of 33 start-up companies formed as a result of research at University of Rochester, both the River campus and URM. * Of those 33 companies, 18 are still operating in the Rochester area. It is clear that the University of Rochester is a major catalyst for economic growth and has helped Rochester become a technologically adept region.

* CGR only considers those start-up companies that are still in business



Fueling the Innovation Economy

In recent years, the University of Rochester has sought to create an integrated system of technology commercialization services that foster the development of early stage technology companies. Many of these services—such as the funding support provided by Excell Partners discussed in the previous section—serve not only the University but other regional technology companies as well.

Last year, the University of Rochester opened the Rochester BioVenture Center in a converted Wyeth laboratory building in Henrietta. The BioVenture Center is the region's only incubator with the wet lab facilities that are required by early stage life science companies.

In 2007, the University also announced a partnership with High Tech Rochester (HTR). HTR, which is the NYSTAR Regional Technology Development Center for the Finger Lakes region, provides a wide array of business services including market assessment, business plan development, management coaching, capital access, and resource connections. HTR also operates two technology incubators, including the BioVenture Center on behalf of the University. Under the agreement, HTR is now an affiliate of the University of Rochester which will enable the organization to develop stronger ties with the University scientists, technologies and entrepreneurs.

By consolidating these services under one roof, the University of Rochester has placed itself in the vanguard of institutions nationwide in terms of efforts to harness and accelerate the commercialization of university research. These business development services should enable

university technologies to migrate more rapidly to the market, while at the same time serving the needs of the region's most innovative companies.

METHODOLOGY

CGR used IMPLAN, a regional input-output modeling system, for estimating the economic impact. IMPLAN is widely acknowledged as one of the best models of economic activity available. The IMPLAN database, created by MIG, Inc., consists of two major parts: 1) a national-level technology matrix and 2) estimates of sectorial activity for final demand, final payments, industry output and employment for each county in the U.S. along with state and national totals. Data are updated annually. IMPLAN estimates the direct, indirect and induced impacts of economic change through the use of multipliers, and estimates the impact of an increase in demand in a particular sector on 511 different industries/sectors of the local economy.

CGR provides the economic impact in terms of labor income and employment (number of jobs). In addition, we estimate the fiscal impact in terms of sales tax revenue and personal income tax (both to NYS and Rochester MSA). The economic impact is reported in two portions: direct and spillover.

In calculating the economic impact, CGR only includes the wages of those employees living in the RMSA, though we recognize that many employees living just outside of the RMSA (e.g. Leroy in Genesee County) spend much of their wages inside the RMSA. Given the definition of the RMSA and the case-by-case nature of these situations, CGR chose to include only wages for employees who resided in the RMSA.

Direct Impact

The direct economic impact consists of the actual expenditures of University of Rochester in the community—i.e., the institution is directly involved with the transaction. Added to the direct expenditures is the local spending of students and visitors to campus and/or the hospital. Examples of direct expenditures include:

- University of Rochester's payroll expenditures for faculty, physicians, staff, residents, and students;
- University of Rochester's purchases of goods and services from a variety of suppliers; and
- University of Rochester's payment to a construction firm for a capital improvement project (new building).

Spillover Impact

Spillover expenditures result from the subsequent spending of the recipients of the direct expenditures. For example, a vendor company that supplies a product or service to the University of Rochester uses the proceeds of that sale to make an expenditure of its own, typically for both materials and labor. Similarly, employees of the University of Rochester spend their wages, which become income for other businesses in the region. These types of expenditures are categorized as spillover. Specific examples of types of spillover impacts include:

- The firm hired to construct a new building buys materials from local businesses. The local businesses will, in turn, have income to hire workers. Those workers will then spend money in the community. The spending of the businesses affected by the construction, and also the spending of the employees of those businesses, is considered spillover.
- A resident or lab tech purchases dinner in a restaurant, and the restaurant then uses the money to pay suppliers or staff.

“Traded Sector” Impacts: Implications for Clinical Revenue

The goal of any economic impact study is to assess how the economy in question is larger as a consequence of the activity being studied. In layman’s terms the question posed is this: How would the economy be smaller if the activity were to disappear?

In answering this question, economists distinguish between economic activities that bring dollars into a region from those that simply reallocate dollars already “earned” from other regions. A new grocery, for example, will not attract shoppers from another region. Income to support a grocery must be earned some other way. A new grocery will only reallocate spending from another store. When the University of Rochester Medical Center (URMC) enters into a contract to conduct a clinical trial of a new pharmaceutical, however, the community receives dollars that could just as easily have gone to Houston or Cleveland or Rochester, Minnesota.

While this is an important distinction, it is impossible to divide every dollar of revenue flowing to a complex institution like the University of Rochester according to source. For example, strictly speaking, tuition from students who would have attended Nazareth College had they not been accepted at the University of Rochester should be excluded from the impact assessment. We do not have the information available to make this kind of distinction.

One adjustment that CGR has made in this analysis, however, is in health services revenue. Consistent with the many previous studies of the economic impact of URMC, CGR distinguishes between clinical service revenue to Strong or Highland hospitals that would likely be earned in the local economy anyway if these hospitals were to close. Routine surgery—an appendectomy, for example—would be performed in the Rochester area regardless. Yet Strong’s highly regarded (and quite large) liver transplant program is unusual and attracts patients from outside the region. Local residents who receive liver transplants would otherwise travel to another city if Strong did not provide this service.

The traded sector can be defined as those aspects of UR that would disappear if UR were not in existence. There are certain portions on the clinical side of URMC that would still remain in the community if it were to close. The need for routine medical procedures, for example, would be satisfied by other health care providers were these services not available from URMC. Employees related to these types of procedures are considered “local” and are not counted in the economic impact analysis of the traded sector. The “traded sector” is defined as those elements of UR that expand the economy and attract additional income from outside the region.

URMC staff estimate that about one quarter of clinical revenue flowing to Strong Memorial Hospital is highly specialized. This is the component of the clinical service revenue that CGR includes as part of the University’s unique contribution to the Rochester economy.

ECONOMIC AND FISCAL IMPACT ESTIMATES

CGR provides economic impact estimates for two scenarios. The first scenario assumes that every component of UR will provide an economic impact (local and traded sector combined). That is, we assume that if the UR were not here tomorrow, the jobs and purchases would not be provided by anyone else in the community. The second scenario is a more conservative estimate of the economic impact and only considers the impact on the traded sector of UR, as estimated by CGR.

Employment Impacts

The employment impact can be interpreted as the number of jobs—direct and spillover— within the Rochester MSA that are attributed to UR. CGR reports employment impacts in terms of thousands of jobs. As a result of the University of Rochester and its affiliates:

- If one considers the traded sector only, CGR estimates that UR and its affiliates generate more than 28,000 jobs (direct and spillover) in Rochester MSA.

Economic Impact on Rochester: Traded Sector Only			
Employment (thousands of jobs)	Direct	Spillover	Total
Employee Spending	12.3	10.7	23.0
Purchasing	0.9	0.5	1.4
Capital Expenditures	1.7	1.1	2.8
Student Spending	0.6	0.2	0.8
Visitor Spending	0.2	0.0	0.2
Total	15.7	12.5	28.2

- For both the local and traded sector combined, more than 43,000 jobs (direct and spillover) are generated in the Rochester MSA.

Economic Impact on Rochester: Local and Traded Sector Combined			
Employment (thousands of jobs)	Direct	Spillover	Total
Employee Spending	21.8	15.9	37.7
Purchasing	1.2	0.6	1.8
Capital Expenditures	1.7	1.1	2.8
Student Spending	0.6	0.2	0.8
Visitor Spending	0.2	0.0	0.2
Total	25.5	17.8	43.3

Labor Income Impacts

By creating jobs—many well-paid—UR is also responsible for the paychecks of many residents of the Rochester region.

CGR estimates UR helps to generate:

- Almost \$1.4 billion in wages (direct and spillover) to the Rochester region to the traded sector.

Economic Impact on Rochester: Traded Sector Only			
Labor Income (millions of dollars)	Direct	Spillover	Total
Employee Spending	\$714.9	\$435.8	\$1,150.7
Purchasing	\$44.0	\$17.0	\$61.0
Capital Expenditures	\$80.2	\$43.5	\$123.7
Student Spending	\$13.5	\$9.3	\$22.8
Visitor Spending	\$2.7	\$1.6	\$4.3
Total	\$855.3	\$507.2	\$1,362.5

- More than \$1.9 billion in wages (direct and spillover) in the Rochester region to the local and traded sector combined.

Economic Impact on Rochester: Local and Traded Sector Combined			
Labor Income (millions of dollars)	Direct	Spillover	Total
Employee Spending	\$1,061.0	\$647.8	\$1,708.8
Purchasing	\$54.8	\$23.4	\$78.2
Capital Expenditures	\$80.2	\$43.5	\$123.7
Student Spending	\$13.5	\$9.3	\$22.8
Visitor Spending	\$2.7	\$1.6	\$4.3
Total	\$1,212.2	\$725.6	\$1,937.8

Fiscal Impact

CGR's estimates of the fiscal impact of University of Rochester and its affiliates show that when considering the traded sector only, UR helps to generate:

- Almost \$91 million in sales tax, personal income tax, and local property taxes to RMSA and NYS.

University of Rochester Impact on New York State: Traded Sector Only			
Millions of Dollars	Direct	Spillover	Total
NYS and Local Sales Tax	\$25.3	\$15.0	\$40.3
NYS Personal Income Tax	\$35.7	\$13.9	\$49.6
Local Property Tax paid by UR	\$0.8		\$0.8
Total	\$61.8	\$28.9	\$90.7

The labor income of the local and traded sector combined helps to generate:

- Approximately \$125 million in sales tax, personal income tax, and local property taxes to RMSA and NYS.

University of Rochester Impact on New York State: Local and Traded Sector Combined			
Millions of Dollars	Direct	Spillover	Total
NYS and Local Sales Tax	\$35.9	\$21.5	\$57.4
NYS Personal Income Tax	\$46.7	\$19.9	\$66.6
Local Property Tax paid by UR	\$1.3		\$1.3
Total	\$83.9	\$41.4	\$125.3

CONCLUSION

The economic impact of the University of Rochester and its affiliates on the Rochester community is substantial. To put their impact into

perspective, the over 43,000 jobs that the University of Rochester's local and traded sector generates equates to:

- 8.7% of the employment for the entire labor force of the RMSA^{*}; and
- 6.5% of the potential working population for the RMSA.[†]

If one only considers the traded sector, UR and its affiliates still employ or generate employment for over 28,000 people. This equates to:

- 5.7% of the 2007 RMSA labor force; and
- 4.3% of the potential working population for the RMSA.

The above statistics reinforce what the results in this report suggest: The University of Rochester is a driving economic force in the Rochester community.

^{*} Source for Labor Force: Local Area Unemployment Statistics (LAUS) – Bureau of Labor Statistics for 2007 RMSA. This is defined as those actively employed or actively looking for work and does not include discouraged workers, so thus may underestimate the true labor force.

[†] Source of data: US Census Bureau, 2006 American Community Survey. The working force population is defined by CGR as the population living in the RMSA between the ages of 18 and 64. While it is a proxy for the labor force, it most likely overestimates the working population.