



APLU New Metrics Development

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Executive Summary

Background

In 2009, the Commission on Innovation, Competitiveness, and Economic Prosperity (CICEP) of the Association of Public and Land-grant Universities (A·P·L·U) established a high level dialogue among senior administrators of A·P·L·U member institutions and representatives of the national higher education, science, and economic development communities to explore new metrics of university contributions to regional economies. At the same time, the U.S. Department of Commerce's Economic Development Administration (EDA) was exploring the development of new methods and measures for assessing inputs, outputs and outcomes of regional economic development efforts. Similarly, the National Science Foundation's (NSF) National Center for Science and Engineering Statistics (NCSES), the National Institute of Standards and Technology (NIST), the National Academy of Sciences, the National Governors Association, and a number of other federal agencies and state and private sector entities were exploring new ways to measure the value and effectiveness of programs focused on economic revitalization, growth, and regional innovation.

Building on this interest, between 2009 and 2011, a core group of A·P·L·U institutions identified and analyzed potential categories of metrics and individual measures. Twice during that period (February 2010 and October 2011) the results of this process were vetted by selected regional and national stakeholders (federal policy and program administrators, state leaders, regional economic development experts, members of the media, and others) in workshops variously sponsored by NCSES and the U.S. Department of Commerce Economic Development Administration (EDA).

By September of 2011, A·P·L·U's New Metrics initiative had identified 86 indicators and data sources for more detailed examination (See Appendix A). These potential measures of university contributions to regional/local innovation and economic activity spanned seven major categories of activity (19 sub-categories are included later in the body of this report, as well as in Appendix A):

1. Faculty And Staff Economic Engagement
2. Funded Agreements With Industry
3. Knowledge Incubators And Accelerators
4. Student Economic Engagement
5. Workforce Development
6. Technical Assistance
7. Unfunded Agreements With Industry

A smaller, more manageable template of measures was needed for a pilot test of the measures in early- to mid-2012.

Purpose

The purpose of this grant was to develop a more refined set of measures. Funds were employed for the design and implementation of a workshop on October 5, 2011 and subsequent analysis of feedback from the workshop. The analysis resulted in a refined set of measures that would be used during a pilot test of the metrics in early- to mid-2012.

Method

The grant awarded to A·P·L·U funded a facilitator who helped to design and implement a workshop, to be held on October 5, 2011, focused on identifying potential new measures of university contributions to regional economies that would subsequently be field-tested by A·P·L·U member institutions. The workshop used the “world café” model for large group dialogue. In this model, participants move between short rounds of small group discussion. After the rounds of small group discussions, broader ideas and insights are “harvested” through reporting out to and discussion among the larger group.

The October 5, 2011 workshop implemented the world café model (see Appendix B for workshop agenda) by creating small group discussions for each of the seven categories of proposed metrics. Several rounds of small group discussions took place, followed by in-depth discussion in one group assigned to each of the categories (“home” categories). During this discussion, participants brought ideas and input from the previous rounds of small-group discussion to bear on an examination of the proposed measures within the home category, and to development of a set of recommendations about that category. Summary presentations and discussion followed.

After the October 5 workshop, members of the A·P·L·U CICEP New Metrics working group reviewed notes from the day’s events. Based on this group’s analysis of these conversations, the set of 86 measures was refined and narrowed to 56 data elements to be piloted by institutions.

After the work funded by this EDA grant, a pilot test took place between January and September of 2012. Analysis of the input from the pilot test, including a set of focus group discussions on October 10, 2012, was funded by the National Science Foundation (NSF) National Center for Science and Engineering Statistics (NCSES) and the results are included in a report to NSF provided separately to EDA.

Recommendations

Based on analysis of the work undertaken with this EDA grant, as well as follow-on work, A·P·L·U recommends that EDA:

- review the metrics that will be included in the final release version of the A·P·L·U CICEP New Metrics and consider the extent to which these measures align with, or bring additional insights to, the sets of measures that EDA is developing through its own performance metrics initiatives,
- encourage EDA University Centers to adopt the A·P·L·U CICEP New Metrics and lead their host institutions in using them for assessing the university role in regional development,
- work with A·P·L·U to gather feedback on the use of the A·P·L·U CICEP New Metrics, toward developing an understanding of the impact of performance metrics on attainment of regional development goals, and
- work toward shaping federal policy that encourages use of A·P·L·U CICEP New Metrics, EDA performance measures, and other tools and resources for effective university-engaged regional development.

Background

Introduction

In 2009, the Commission on Innovation, Competitiveness, and Economic Prosperity (CICEP) of the Association of Public and Land-grant Universities (A·P·L·U) established a high level dialogue among senior administrators of A·P·L·U member institutions and representatives of the national higher education, science, and economic development communities to explore new metrics of university contributions to regional economies. This dialogue was inspired by a strong sentiment among these communities that the measures of university economic contributions available to date were limited, focusing in particular on intellectual property licensing and related forms of technology transfer. The new measures would extend well beyond conventional technology transfer measures and include a broad set of descriptors of universities' contributions to the development of "innovation ecosystems" in their regions and nationally.

At the same time, the U.S. Department of Commerce's Economic Development Administration (EDA) was exploring the development of new methods and measures for assessing inputs, outputs and outcomes of regional economic development efforts. EDA became interested A·P·L·U's effort as a possible mechanism through which to explore new measures.

Similarly, the National Science Foundation's (NSF) National Center for Science and Engineering Statistics (NCSES), the National Institute of Standards and Technology (NIST), the National Academy of Sciences, the National Governors Association, and a number of other federal agencies and state and private sector entities were exploring new ways to measure the value and effectiveness of programs focused on economic revitalization, growth, and regional innovation.

Building on this interest, between 2009 and 2011, a core group of A·P·L·U institutions identified and analyzed potential categories of metrics and individual measures. Twice during that period (February 2010 and October 2011) the results of this process were vetted by selected regional and national stakeholders (federal policy and program administrators, state leaders, regional economic development experts, members of the media, and others) in workshops variously sponsored by NCSES and the U.S. Department of Commerce Economic Development Administration (EDA).

By September of 2011, A·P·L·U's New Metrics initiative had identified 86 indicators and data sources for more detailed examination (See Appendix A). These potential measures of university contributions to regional/local innovation and economic activity spanned seven major categories and 19 sub-categories of activity:

- 1. Faculty And Staff Economic Engagement**
 - 1.1. Public Instruction and Understanding
 - 1.2. Creative Activities and Research
 - 1.3. Technical or Expert Assistance

2. Funded Agreements With Industry

- 2.1. Sponsored Research
- 2.2. Clinical Trials
- 2.3. Service Contracts
- 2.4. Joint Funding Applications

3. Knowledge Incubators And Accelerators

- 3.1. Graduation (Clients remaining on-site/Clients moving off-site)
- 3.2. Employment of Current Clients/Graduated Clients
- 3.3. Relationships Between the Incubator's Affiliated University and Client/tenant firms

4. Student Economic Engagement

- 4.1. Wages Paid Through External Funding
- 4.2. Internships/Externships/Coop Experiences

5. Workforce Development

- 5.1. For-credit Degree and Certificate-Based Programs and Non-credit Workforce Development Programs (Continuing Education and Certificate Programs)

6. Technical Assistance

- 6.1. Jobs Created
- 6.2. Increased Revenues
- 6.3. Cost Savings
- 6.4. New Investments

7. Unfunded Agreements With Industry

- 7.1. Material Transfer Agreement
- 7.2. Nondisclosure Agreements/Confidential Disclosure Agreement

Once this list was developed, the next objective was to narrow the range and scope of the measures to a smaller, more manageable template of measures. This further refined template would be used as the basis for a pilot test of the measures in early- to mid-2012.

Purpose

The purpose of this grant was to develop a more refined set of measures. The grant provided A·P·L·U with support to design and implement a national workshop held in Washington, DC in October 2011. A·P·L·U contracted with a firm that assisted in the design and facilitation of the workshop, and A·P·L·U coordinated and managed the implementation. The workshop brought together representatives of public universities and regional and national stakeholders to identify potential new measure of university contributions to regional economic growth and development. The funds subsequently were also used to plan for the subsequent pilot project to test the refined measures.

Method

The grant awarded to A·P·L·U funded a facilitator who helped to design and implement a workshop, to be held on October 5, 2011, focused on identifying potential new measures of university contributions to regional economies that would subsequently be field-tested by A·P·L·U member institutions. Additional coordination and management of the workshop included identification of prospective participants in the workshop, representing A·P·L·U member universities and national stakeholder groups such as federal agencies, associations, and think tanks. A list of to 60 participants in the workshop is included in Appendix C.

The workshop used the “world café” model for large group dialogue. In this model, participants move between short rounds of small group discussion. Each round and group is tasked with exploring a particular question and/or topic. Responses build on one another within and between rounds and groups. After the rounds of small group discussions, broader ideas and insights are “harvested” through reporting out to and discussion among the larger group.

The October 5, 2011 workshop implemented the world café model (see Appendix B for workshop agenda) by creating small group discussions for each of the seven categories of proposed metrics. Each group had a “home” category (as listed in Appendix C). Project background information and a welcome were provided by Dana Bostrom, formerly of Portland State University and then chair of the A·P·L·U CICEP Metrics working group, and Jack Wilson, who at the time was president of the University of Massachusetts and chair of CICEP. The workshop facilitator then provided instruction on the mechanics of the world café approach that would be employed for the workshop. This was followed by two and a half hours of six small group discussion rounds (three 30 minute rounds and three 20 minute rounds), with groups moving from one topic table to the next for each round. After the small group discussions and lunch, groups then met for in-depth discussion at their “home” topic table. During this discussion, participants brought ideas and input from the previous rounds of small-group discussion to bear on an examination of the proposed measures within the home category, and to development of a set of recommendations about that category. Groups presented highlights of their in-depth conversations, along with recommendations, during a two-hour presentation period. A final summary discussion with all participants led finally to articulation of next steps.

After the October 5 workshop, members of the A·P·L·U CICEP New Metrics working group reviewed notes from all 36 small group discussions (six rounds times six topics) the seven in-depth “home” topic discussions, the seven category presentations, and summary discussion. Based on this group’s analysis of these conversations, the set of 86 measures was refined and narrowed. The workshop resulted in a set of over 56 data elements to be piloted by institutions.

Postscript

Pilot activities following the workshop focused on testing the feasibility of collecting data on each of these measures, and also gathering input from regional stakeholders relating to the usefulness of the measures. The pilot resulted in recommendations for 14 of the data elements to be included in a final release version of the A·P·L·U metrics, and for an additional 8 of the measures to be considered for potential inclusion. These recommendations were reviewed in a set of focus group discussions on October 10, 2012. Analysis of the pilot activity and the focus group discussions resulted in a final set of 20 measures that would serve as the A·P·L·U CICEP New Metrics. The analysis was funded by the National Science Foundation (NSF) National Center for Science and Engineering Statistics (NCSES), and the report to NSF will be made available to EDA to present the ultimate outcome of the work funded by EDA.

A·P·L·U will carry out its next steps with regard to the New Metrics (next steps are detailed in the NSF NCSES report) beginning in May of 2013.

Outcomes

The workshop was very successful as the participants engaged in a robust and detailed discussion of the various metrics proposed by A·P·L·U. Participants offered many and varied comments about and suggested revisions to the proposed. The feedback from the workshop participants was essential to developing a refined set of metrics for testing. The refined set included only those measures that held some promise of being both feasible to collect and useful to universities and their regional economic development partners. These 56 measures would be useful for consideration by EDA, the university community and other interested parties trying to develop better evaluation mechanisms.

After the October 5, 2011 workshop and subsequent analysis, refined narrowed the set of measures to three major categories and 11 subcategories (the 56 measures included within categories and subcategories appears in Appendix D):

1. Relationships with Industry

- 1.1. material transfer agreements
- 1.2. consortia agreements
- 1.3. sponsored research and development by industry
- 1.4. human clinical trials
- 1.5. service to external clients

2. Developing the Regional and National Workforce

- 2.1. student employment on funded projects
- 2.2. student economic engagement
- 2.3. student entrepreneurship
- 2.4. alumni in the workforce

3. University-based Knowledge Incubation and Acceleration Programs

- 3.1. incubation and acceleration program success
- 3.2. relationships between clients/program participants and host university

The two categories having to do with university-industry connections (Funded Agreements with Industry, and Unfunded Agreements with Industry) were combined into one category named Relationships with Industry. A sub-category within Relationships with Industry, “service to external clients,” included items that had been in the earlier template’s Technical Assistance category, and the “technical or expert assistance” subcategory within the Faculty and Staff Economic Engagement category in the earlier template.

Student Economic Engagement and Workforce Development categories in the initial template were combined into a category called Developing the Regional and National workforce. The subcategories in this new grouping focused on students and alumni, eliminating the subcategory focused on counts of credit-bearing programs.

Knowledge Incubators and Accelerators in the earlier template became University-based Knowledge Incubation and Acceleration Programs. The change in wording was due to the feedback in the workshop that these activities do not always happen in physical places called “incubators” or “accelerators.” The subcategory of “employment of current clients/graduated clients” was eliminated due to the expectation that such data would be very difficult to collect, especially for client firms that had already graduated.

The only one of the original categories that is not reflected in the three major categories that resulted from the workshop feedback analysis is Faculty and Staff Economic Engagement. While one of the subcategories from this original major category—technical or expert assistance—is reflected in the new Relationships with Industry category—the subcategories of “public instruction and understanding” and “creative activities and research” were eliminated entirely. It was clear that data for these subcategories would be very difficult to reflect, or could simply not be quantified easily without losing meaning. It was difficult to eliminate these measures of faculty and staff engagement, but given the feedback from the workshop it was clear that they would complicate the pilot testing of measures and impede work on developing a final set of measures.

Overall, selection of measures for the template to be used in the pilot study was largely based on two criteria. It was clear from the feedback and conversations during the October 5, 2011 workshop that any measures to be implemented would need to be: 1) feasible to collect by universities, and 2) useful to universities and their regional stakeholders in terms of helping to plan and assess regional economic development efforts. Those measures that clearly did not meet one or both of these criteria were eliminated during the development of the refined set of metrics. These criteria would form the basis for the analysis of the pilot test activity as well.

Recommendations

EDA has played a critical role in supporting the development of the A·P·L·U CICEP New Metrics, and we believe that the final product can be an important part of the performance measurement work that EDA is undertaking. We recommend that EDA consider the following next steps based on the A·P·L·U work:

- Review the metrics that will be included in the final release version of the A·P·L·U CICEP New Metrics (available in Appendix E and also in the report to NSF NCSES, provided separately). Consider the extent to which these measures align with, or bring additional insights to, the sets of measures that EDA is developing through its own performance metrics initiatives.
- Encourage EDA University Centers to adopt the A·P·L·U CICEP New Metrics and lead their host institutions in using them for assessing the university role in regional development.
- Work with A·P·L·U to gather feedback on the use of the A·P·L·U CICEP New Metrics, toward developing an understanding of the impact of performance metrics on attainment of regional development goals.
- Working with public research universities and other sectors of U.S. postsecondary education, work toward shaping federal policy that encourages use of A·P·L·U CICEP New Metrics, EDA performance measures, and other tools and resources for effective assessment, planning, implementation, and evaluation of university-engaged regional development.

Appendix A: Pre-October 2011 Proposed Metrics

A. Faculty And Staff Economic Engagement

Rationale for Collecting Data

Traditional definitions of faculty roles (teaching, research and service), existing reporting structures on faculty activities, and current faculty reward systems usually fail to capture the full scope of faculty responsibilities. Yet, as ‘engaged scholars’, faculty make significant contributions that although difficult to both document and assess, impact a broad range of stake holders in our communities. With growing recognition and affirmation of faculty engagement related work as part of legitimate faculty scholarship (in large part due to Boyer’s 1990 taxonomy of scholarship into discovery, integration, application and teaching) and the demands of some funding agencies for faculty to demonstrate the ‘broader impact’ of their work, we are in a better position now to capture the role of faculty engagement and its value to our communities, whether it is in helping address societal problems, participating in economic development initiatives, or contributing to the artistic and cultural life. Faculty engagement as an activity is complex and hence, difficult to both define and measure. As a starting point, listed below are a few metrics that can help begin the work of documenting the full impact that a university has on the economic, social and cultural well-being of the surrounding region.

A1. Public Instruction and Understanding

Definition

This category of engaged instruction includes programs, events, and resources that are developed and maintained through scholarly activity and made accessible to the public. Most of these are considered short-term and learner-directed activities and includes only those programs, events, and resources where faculty and academic staff were significantly involved in the development and design and the content is focused on issues related to local or regional economic growth and development.

Data (for each year of the most recent three year period)

- # of faculty and staff involved in public instruction
- # of students participating in public instructional programs or using resources
- # of distinct instructional programs, events, and resources offered
- % of faculty and staff time spent on public instruction
- amount of funding (state and federal funding; fee revenue) generated through public instructional programs or resources
- geographic distribution of programs, resources/or location of participants accessing programs or resources

Sources

Enrollment rosters and participant reports maintained by university entities that offer public events and promote public understanding; university-wide surveys among faculty and staff; faculty and staff may also note these types of activities in their annual reports.)

A2. Creative Activities and Research

Definition

Activities that generate, develop, share, analyze, test and demonstrate new knowledge to address practical problems experienced by public or practitioner audiences. Such activities may be (a) conducted in collaboration or partnership with external constituents (including clinical practice and/or consulting activities); (b) supported through grants or contracts from external organizations such as federal, state, business, industry, foundation, non-profits, commodity groups, trade associations); (c) community-responsive or community-based research or inquiry that is pursued by faculty through intramural support or as financially unsupported research or inquiry; (d) collaborative and cooperative efforts whereby university and multiple industries resources are pooled for shared results such as membership consortia and resource centers; and/or (e) original creations of literary, fine, performing, or applied arts and other expressions or activities of creative disciplines or fields that are made available to or generated in collaboration with a public (non-university) audience.

Data (for each year of the most recent three year period)

- # of faculty and staff involved in engaged research
- # of faculty and staff who are part of engaged creative and artistic works
- % of faculty participating in engaged creative and artistic works
- # of collaborations and partnerships
- #/% of counties where activities occur
- total amount of sponsored funding for engaged research
- audience composition (e.g., public, government, private sector)

Sources

Faculty and staff annual reports; faculty and staff time and effort surveys; Institutional Research Office; Provost and Deans' offices; Offices for Research, Economic Development, and/or Extension/Engagement; Business/Finance Office re: insurance coverage for external activities; Carnegie Institution Engaged Institution application

A3. Technical or Expert Assistance

Definition

Service rendered to the general public through: speeches and presentations related to economic development to community groups; serving on organization boards (for-profit or non-for-profit); planning/technical assistance/policy analysis to communities, industry, units of government and other organizations involved in economic development; providing expert witness testimony; reviewing potential questions for professional examinations; participation in counseling, crisis or medical clinical centers; etc.

Data format

- number/percent of faculty/staff providing assistance
- number/percent counties served
- number of campus schools/colleges engaged
- types of organizations served
- types of services provided (paid and unpaid)
- total amount of fees collected for paid assistance
- estimated value of unpaid assistance provided

Sources

Faculty and staff annual reports; faculty activity data base; offices related to economic engagement; Conflict of Interest reports; campus-based technical assistance organizations (e.g., SBTDC, MEP, Extension) annual reports

B. Funded Agreements With Industry

Rationale for Collecting Data

Discoveries in the basic sciences provide the foundation for technologies that are subsequently licensed to existing companies or new start-ups. At the same time, industrial experience is an important factor helping to shape scientific research agendas. Gauging the magnitude of these mutually beneficial exchanges between academic researchers and industrial partners requires measurement of multiple dimensions of this interaction. These include:

- Sponsored research activities are the basis for the discovery and generation of new knowledge and inventions at universities. Industry sponsored research activities tangibly measure the value of university expertise to industry, while also reflecting the openness of university research to practical and applied issues arising in industry. Industry sponsored research related to university intellectual property measures the level that industry is interested in and values university intellectual property.
- Clinical trial data helps to describe the relationship between university research and improvements in health care through drug discovery and contributions to the drug development process. In some geographic regions, clinical trials leverage university expertise and assets to provide access to new drugs or devices to otherwise under-served or un-served populations.
- Service contracts reflect the extent to which university expertise or specialized resources help to support industrial activity through the provision of more or less routine testing or analytical services
- Joint funding applications reflect the value to university researchers of industrial partners who can provide substantive resources to advance research projects and bring them closer to commercial application, and value to the company by engaging them in testing, product development and market expansion opportunities.

B1. Sponsored Research

Definition

Sponsored research is research and development activities (including direct and reimbursed indirect costs) from profit-making organizations, whether engaged in production, distribution, research, service, or other activities.

Data (for each year of the most recent three year period)

- total sponsored research expenditures
- industry sponsored research expenditures by industry sector
- industry sponsored research expenditures related to university intellectual property (total and by industry sector)

Sources

Sponsored Programs Office; Technology Transfer Office

B2. Clinical Trials

Definition

Phase I, II or III clinical trials performed under contract with the developer of the specific drug, device or compound, or under a grant or contract from a federal agency for support of a clinical trial. Data should also capture investigator-initiated trials.

Data (for each year of the most recent three year period)

- total funds received by institution listed by type of sponsoring organization
- total number of trials conducted - total number of drugs, devices or compounds tested
- number of current clinical trials underway
- number of drugs developed based on university research
- number of drugs developed with university collaboration

Sources

Sponsored Research Office; Technology Transfer Office; Offices overseeing clinical trials or related university entities; Institutional IRB data; Corporate financial systems; iedison system at NIH; www.clinicaltrials.gov

B3. Service Contracts

Definition

Testing, evaluation or contract research performed under contract that includes a specific deliverable product or result. The activities involved are "routine", protocols are determined by the client, and there is not expected to be any intellectual property generated as a result of the activities.

Data (for each year of the most recent three year period)

- funds received by institution by type of sponsoring organization
- total number of agreements
- total number of companies served
- size of companies served

Sources

University Comptroller

B4. Joint Funding Applications

Definition

Sponsored research where the private sector partner supplies substantive value toward winning an application (more than just a vendor).

Data (for each year of the most recent three year period)

- total number of joint applications by sponsoring organization/program (e.g., SBIR, STTR, PFI, i6)
- number of successful applications sponsoring organization/program
- total dollar value of successful applications by sponsoring organization/program

- total dollar value of all applications by sponsoring organization/program

Sources

Sponsored Programs Office; Departments, including non-academic units

C. Knowledge Incubators And Accelerators

Rationale for Collecting Data

Many universities serve as local or regional centers for the development of new businesses. In some, but not all cases, the business may be based on technologies originating from the university. University support for the development and growth of new businesses may range from highly involved – including programmatic initiatives such as mentoring and business plan support provided by specialist staff - or may feature significantly less programmatic involvement, limited to providing physical space in which emerging businesses may reside, typically located conveniently close to the university. Understanding the variables which lead to successful outcomes regarding company incubation will provide insight into the value of university-provided programmatic support targeted towards company formation, growth and sustainability.

C1. Graduation (Clients remaining on-site/Clients moving off-site)

Definition

On-site: Graduation is accomplished when all the criteria of the business plan or program requirements are met to the satisfaction of the incubator / accelerator program and the company. This may result in a 'level up' within the incubator, an acquisition or merger, or self-sustaining model for the company.

Off-site: Graduation may be defined as occurring when the client firm has met the criteria described above and, either voluntarily or according to the terms of the lease or program contract, has moved out of the facility or ceased participation in the program

Data (for each year of the most recent three year period)

- number of current clients
- number of graduates since program inception
- number of graduated firms still in business or that have been merged or acquired
- number of firms/entities that failed

Sources

Incubator management; Graduates

C2. Employment of Current Clients/Graduated Clients

Definition

Number of paid employees working for clients currently residing at, or receiving services from the incubator

Data (for each year of the most recent three year period)

- number of full time employees (at least 32 hrs/wk)
- number of part time employees (less than 32 hrs/wk)
- number of university students employed
- number of university graduates on permanent employment
- number of university student internships

Sources

Incubator/accelerator clients

C3. Relationships Between the Incubator's Affiliated University and Client/tenant firms

Definition

Contractual arrangements between client companies and the university

Data (for each year of the most recent three year period)

- number of sponsored research agreements in which clients/tenants support research performed by an investigator at the affiliated university
- dollar value of sponsored research agreements
- number of service agreements/fee for service contracts whereby a specific task is performed for a fee by the university at the request of a client/tenant; may also be referred to as testing &/or analysis agreements, in which the university contracts to perform routine work (not research) for client/tenant firms
- dollar value of service, testing or analysis agreements
- number of licenses in place or executed between the university and a client/tenant firm under which the firm may use university-owned intellectual property
- dollar value of licenses

Sources

Office of Sponsored Programs; University or College Purchasing or Business Office; Office of Technology Transfer

D. Student Economic Engagement

Rationale for Collecting Data

In addition to their formal education and training, student participation in research/scholarly projects can contribute to regional innovation and economic growth by contributing to the development of knowledge and workplace skills that will prove invaluable to the student and future employers upon graduation. In addition, students can make important contributions to the enterprises in which they are placed, and to the research teams to which they are assigned. Finally, the ability of students to earn income while participating on externally funded research projects recognizes the value of their contributions and helps to defray the cost of education.

D1. Wages Paid Through External Funding

Definition

Wages paid to students for work funded through external grants and contracts. Since institutions are encouraged to differentiate among funding sources, including federal, industry, industry foundations, private and non-profit foundations, it would be possible to identify students' contributions to research projects through the payments made on externally funded contracts and grants.

Data (for each year of the most recent three year period)

- number of students paid through externally funded grants or contracts
- number of student by type - full-time or part-time; undergraduate/graduate
- total dollars paid to students
- total dollars paid by each type of funding source
- average hourly wage

Sources

Finance Office; Payroll Office; Office of Sponsored Programs

D2. Internships/Externships/Coop Experiences

Definition

Student participation in private sector and public sector organizations focused on activities with direct economic benefit - e.g., production/sale of goods and services, planning and implementation of economic development strategies/initiatives, research.

Data (for each year of the most recent three year period)

- number of students participating in programs
- type of student – full time/part time; undergraduate/graduate
- total dollars paid by sector, if paid
- equivalent wage contribution from service if unpaid

Sources

Office of Academic Affairs; Office of Student Affairs; Career Development Offices;

Service Learning/Community Engagement Program Office(s); Academic Departments

E. Workforce Development

Rationale for Collecting Data

In addition to traditional degree programs, increasing numbers of universities now provide various educational programs that specifically address workforce needs. Such workforce development and skills training may be part of credit and degree-oriented offerings as well as non-credit-bearing continuing education and certificate programs. Delivery formats vary from traditional face-to-face to online or hybrid formats. Since the hallmark of higher education's impact on economic development is the relevance of these programs for job placement, retention, and advancement, measuring the institutional, "student, and community impact aspects of these activities is equally important, although the latter two pose a number of challenges.

For-credit Degree and Certificate-Based Programs and Non-credit Workforce Development Programs (Continuing Education and Certificate Programs)

Definitions

For-credit programs include sector-specific courses and certificate programs that result in academic credit, degree or certification leading to a career, job placement or job promotion.

Non-credit programs include labor-market driven classes and instructional programs that are marketed specifically to serve those who are neither traditional campus degree seekers nor campus staff; they are designed to meet planned learning outcomes targeted to individual professionals or groups of employees from specific public or private industry sectors. In lieu of academic credit, these programs typically provide certificates of completion and/or continuing education credits.

Data (for each year of the most recent three year period; Data elements apply to each category of instruction)

E1. Institutional Impact (by instructional unit)

- number of distinct workforce-related courses and programs offered
- number of "clock hours" or "seat time" offered
- number of students enrolled in workforce-related instructional programs by type of student (undergraduate, graduate and non-traditional)
- geographic distribution of programs and students
- number of custom programs delivered for business and industry or the public sector
- number of training-related student credit hours, CEUs or/certificates awarded
- -number/percent of faculty and staff involved in workforce-related credit or non-credit instruction
- faculty and staff time spent in workforce-related instruction by type (credit or non-credit)
- number of students participating in internship/externships/cooperative experiences
- number/percent of programs with students participating in internships/externships/cooperative experiences
- number/percentage of graduates from workforce-related credit and non-credit programs

E2. Student and Community Impact

- pass rates on career entry examinations

- student post-graduate employment (or further education) in field or industry related to area of study
- student career-change or promotion based on workforce-related instruction
- student job retention based on workforce-related instruction
- proportion of students who participated in internship/externship/cooperative experiences who received job placements at same organization

Sources

Institutional Research Office; Continuing Education and related program offices; Registrar; Units of Instruction; Alumni Office; Employers; Workforce Development Boards or Commissions; Professional Associations; Professional State Boards; Graduate Surveys. Match student SSNs or university ID number with wage records using state-level Unemployment Insurance records (Wagner Peyser data; requires MOU with State government, issues exist related to access, cost, and availability of meaningful information, follow-up surveys conducted by colleges or departments)

F. Technical Assistance

Rationale for Collecting Data

Many universities contribute to regional economies through the engagement of faculty, staff, or students in the form of technical assistance targeted to specific business challenges and opportunities that affect organizations' payroll, capitalization opportunities, and operating bottom line. Technical assistance occurs through traditional extension programs and/or through organizations housed at or affiliated with universities, such as Manufacturing Extension Partnerships (MEPs), Small Business Development Centers (SBDCs), Trade Adjustment Assistance Centers, University Centers, or Industrial Assessment Centers. In addition, many universities have partnerships with the private sector that facilitate student engagement with industry through technical assistance projects. By employing a standard methodology for assessing the impacts associated with its technical assistance contributions, universities and their constituents can more readily measure the value it directly contributes to the region or state.

Sources for All Indicators

It is highly recommended that data be derived from the clients served, rather than through a university approximation. This data can be gathered via a short survey to clients served. These outcomes are the benefits derived by the beneficiary only and do not include any multiplicative effect on the regional economy. Universities are urged to survey their technical assistance clients 6-12 months following the completion of each engagement, and annually for the next 3 years. In addition to requesting specific impact data from clients, it is recommended that a university also request a narrative quote from each client which speaks to the value to the client of the technical assistance it received from the university.

F1. Jobs Created

Definition

Technical assistance can lead to job creation in the client organization. Jobs might be created through improvements to production capacity, creation of new product lines, and expanded markets.

Data (for each year of the most recent three year period)

- number of FTE jobs created
- wages paid for jobs created (company average or median)

F2. Increased Revenues

Definition

Technical assistance can lead to new revenues for the client organization. Increased revenues might result from additional sales as well as through income associated with licenses and royalties.

Data (for each year of the most recent three year period)

- value of increased sales
- dollar increase in licensing and royalty income

F3. Cost Savings

Definition

Technical assistance can lead to cost savings for the client organization. Cost savings might result from improved safety, improved quality, improved production layout or processes, reduction in operating costs, productivity gains, or reductions in material costs.

Data (for each year of the most recent three year period)

- value of cost savings

4. New Investments

Definition

Technical assistance can lead to new investments in the client organization. New investments might take the form of facilities; equipment, technology, and software; new product capitalization; or other business investments. Such investments may come from a source within the client's region or from sources external to the region. Capital investments made in the region often generate tax revenue for the state/regional/local government.

Data (for each year of the most recent three year period)

- value of new investments from regional funding source

G. Unfunded Agreements With Industry

Rationale for Collecting Data

Universities have entered into unfunded agreements with industry partners for decades. These agreements provide a wide variety of support other than funding for academic endeavors and provide mutual benefits to the provider and the university. Similarly, these benefits take a wide variety of forms, such as access to information not available from public sources, permission to use materials to supplement funded research and to promote understanding of the functions and potential of the materials, as well as to test new animal models and help refine other research tools. Information and results obtained by both parties from these agreements often positions them to take further steps or leverage the interaction to secure funding. These exchanges are prime examples of the potential synergy between the academic mission and commercial drive.

G1. Material Transfer Agreement

Definition

A contract that governs the transfer of tangible research materials between two organizations and the recipient intends to use the material for his or her own research or evaluation purposes. The MTA defines the rights of the provider and the recipient with respect to the materials and any derivatives. Biological materials, such as reagents, cell lines, plasmids, and vectors, are the most frequently transferred materials, but MTAs may also be used for other types of materials, such as chemical compounds, engineering prototypes, microelectronic chips, and even some types of software.

Data (for each year of the most recent three year period)

- number of incoming executed agreements
- number of outgoing executed agreements in each year over a three year period

Sources

Office of Technology Transfer/Commercialization; Office of the General Counsel; Agricultural Experiment Station; Dean and Department Offices

G2. Nondisclosure Agreements/Confidential Disclosure Agreement

Definition

An agreement between two or more parties under which the parties agree to restrict dissemination and/or release of information that is considered to be confidential or proprietary to one or more of the parties in the agreement. Also referred to as: Proprietary Information Agreement; Hold in Confidence Agreement; or Confidentiality Agreement.

Data (for each year of the most recent three year period)

- number of executed agreements

Sources

Office of Senior Research Officer; Sponsored Programs Office; Technology Transfer Office; Office of the General Counsel; Dean and Department Offices; Individual Researchers (Institutions rarely delegate signature authority to this level but agreements are signed by researchers at times, nonetheless.)

Appendix B: October 5, 2011 Workshop Agenda

Time	Topic	Purpose
8:00-8:30	Registration and Breakfast	Allow yourself time to get through security, meet and speak with colleagues, and get caffeinated for our work ahead.
8:30-8:45	Welcome and Overview	Dana Bostrom will welcome the group and share a brief overview of our purpose and intention for the day.
8:45-9:00	Context and Background	Jack Wilson will provide the context for this work, sharing how we “got here” and inviting the group to help us get further.
9:00-9:15	The Mechanics	Lisa Nabors will outline the processes for gathering everyone’s best thinking and the locations for small team work.
9:15-9:30	BREAK	
9:30-12:00	World Cafe	Time for each team to visit and comment on all other metrics categories. Traveling together, teams will complete a circuit of 6 metrics categories (not their own) and provide comments, thoughts, and suggestions which will be captured by a dedicated scribe. Each of the first 3 rounds is 30 minutes in length. The last 3 rounds are 20 minutes in length. Teams will have the opportunity to read comments from teams that preceded them and then to add their thinking to the data pool.
12:00-12:15	Collect Box Lunches and adjourn to breakout rooms	Team members will move to their breakout rooms and bring food with them to fuel the process. Each breakout room will have a scribe with a laptop and all the notes generated in the World Café section of the agenda.
12:15-1:50	Individual Team Drill Down	Teams will work on their assigned metrics category. Considering the work product generated and their own thinking, teams will complete a template to present

	BREAK at 1:50	their ideas to the larger group in the next section of the agenda.
2:00-4:00	Metrics Categories Presentations Room 333-335 BREAK at 3:15-3:30	Each team will share their work product with the larger group. This will include their suggested changes, rationale, and any questions they choose to share with the group. Presentations are scheduled to be 15 minutes (or less).
4:00-4:30	Summary Conversation on the Metrics	Highlight movement and progress made; note any outstanding questions; consider any additional work necessary
4:30-5:00	Wrap-up, next steps, adjourn	Final thank you from Jack Wilson and summary comments from Dave Winwood

Appendix C: October 5, 2011 Workshop Participants

Grouped by “Home” Topic Discussion Group

A. Faculty and Staff Economic Engagement

- David Chicoine, South Dakota State University, Co-leader
- Susan Shows, Georgia Research Alliance, Co-leader
- Stefano Bertuzzi, National Institutes of Health
- Maryann Feldman, University of North Carolina, Chapel Hill
- Kathy Hale, National Science Foundation
- Rob Sienkiewicz, U.S. Department of Commerce, National Institute of Standards & Technology
- Mark Skinner, State Science and Technology Institute
- Miron Straf, National Academy of Sciences

B. Funded Agreements with Industry

- Mark Crowell, University of Virginia, Co-leader
- Tony Boccanfuso, University Industry Demonstration Project, Co-leader
- Lynda Carlson, National Science Foundation
- Ann Hammersla, National Institutes of Health
- Shawn Hawkins, St. Jude Children's Research Hospital
- Charles Louis, University of California, Riverside
- Carol Robbins, U.S. Department of Commerce, Bureau of Economic Analysis
- Arjun Sanga, University of Texas Health Science

C. Knowledge Incubators and Accelerators

- Dave Winwood, UAB Research Foundation, Co-leader
- Cathy Renault, Innovation Policyworks, Co-leader
- Bryan Allinson, University of Texas System
- Zoe Ambargis, U.S. Department of Commerce, Bureau of Economic Analysis
- Paul Corson, U.S. Department of Commerce, Economic Development Administration
- John Jankowski, National Science Foundation
- Dahlia Sokolov, House Science and Technology Committee
- Greg Tasse, U.S. Department of Commerce, National Institute of Standards & Technology

D. Student Economic Engagement

- Chitra Rajan, Iowa State University, Co-leader
- Kaye Fealing, National Academy of Sciences, Co-leader
- Karin Fischer, Chronicle of Higher Education
- Matt Hammons, University of Nebraska
- Julia Jester, U.S. House of Representatives, Subcommittee on Technology and Innovation
- Corby Hovis, National Science Foundation
- Mark Milutinovich, American Association for the Advancement of Science
- Toby Smith, Association of American Universities

E. Workforce Development

- Anne Kaplan, Northern Illinois University, Co-leader
- Chris Hayter, New York Academy of Sciences, Co-leader
- Mark Boroush, National Science Foundation
- Rich Dunfee, American Association of State Colleges and Universities
- David Goldston, Natural Resources Defense Council
- Kei Koizumi, White House Office of Science & Technology Policy
- Kenneth Poole, Council on Community and Economic Research
- Luis Proenza, University of Akron
- Mary Jo Waits, National Governors Association

F. Technical Assistance

- Terri Helmlinger-Ratcliff, North Carolina State University, Co-leader
- Gary Anderson, U.S. Department of Commerce, National Institute of Standards & Technology, Co-leader
- Ronda Britt, National Science Foundation
- Hilary Cain, U.S. House of Representatives, Subcommittee on Technology and Innovation
- Susannah Howieson, Science and Technology Policy Institute
- Michael Nichols, University of Missouri System
- Ed Paisley, Center for American Progress
- Andrew Reamer, George Washington University

G. Unfunded Agreements with Industry

- Tim Mulcahy, University of Minnesota, Co-leader
- Dawn Tew, IBM Corporation, Co-leader
- Bob Hardy, Council on Governmental Relations
- Julia Lane, National Science Foundation
- Steve Merrill, National Academy of Sciences
- Marvin Parnes, University of Michigan
- Chris Pece, National Science Foundation
- Saurabh Vishnubhakat, United States Patent and Trademark Office
- Steve Warren, University of Kansas

Appendix D: Metrics Template for 2012 Pilot Project

Refined based on October 5, 2011 workshop

Relationships With Industry

Universities and the Economy

Many discoveries made in the lab provide the foundation for innovations that are subsequently licensed to existing companies or new start-ups. At the same time, industrial need is an important factor helping to shape scientific research agendas. For most academic institutions, industrial research is a small but critical component of the total research enterprise and gauging the magnitude of these mutually beneficial exchanges between academic researchers and industrial partners requires measurement of multiple dimensions of this interaction. These include:

- *Material Transfer Agreements* are contracts that govern the transfer of tangible research materials between two organizations and the recipient intends to use the material for his or her own research or evaluation purposes. The MTA defines the rights of the provider and the recipient with respect to the materials and any derivatives. Biological materials, such as reagents, cell lines, plasmids, and vectors, are the most frequently transferred materials, but MTAs may also be used for other types of materials, such as chemical compounds, engineering prototypes, microelectronic chips, and even some types of software.
- *Consortia agreements* are contracts with multiple parties for the purpose of advancing a research agenda. For the purposes of these metrics, at least one of the parties is from or represents industry. The agreement sets out the terms and conditions for managing the consortia activity, the mechanisms for raising and using funds, access to intellectual property resulting from consortia activity, and membership types and obligations. Consortia's research agendas typically focus on pre-competitive topics. Often, consortia members utilize the relationship developed through consortia activities to create a specific sponsored research project related to the consortia research topic.
- *Sponsored research* activities are the basis for the discovery and generation of new knowledge and inventions at universities. Industry sponsored research activities tangibly measure the value of university expertise to industry, while also reflecting the openness of university research to practical and applied issues arising in industry.
- *Clinical trial* data helps to describe the relationship between university research and improvements in health care through drug discovery and contributions to the drug development process. In some geographic regions, clinical trials leverage university expertise and assets to identify subject populations and otherwise under-served or un-served populations and provide them access to new drugs or devices.
- *Service to external clients* reflects the extent to which university expertise or specialized resources (as well as an institution's willingness) help to support industrial activity through the provision of testing, facilities or analytical services; fee-for-services work (including technical assistance, contractual education and training, and diverse programs provided through agricultural, manufacturing, or educational extension services

1. Material Transfer Agreements

A contract that governs the transfer of tangible research materials between two organizations and the recipient intends to use the material for his or her own research or evaluation purposes.

Data (Institution must indicate fiscal or calendar year)

- number of incoming executed agreements
- number of outgoing executed agreements

Data Set (Institution must indicate fiscal or calendar year)

- Latest year
- Three years prior
- Five years prior

Sources

- Office of Technology Transfer/Commercialization
- Office of the General Counsel
- Agricultural Experiment Station
- Dean and Department Offices
- Office of Sponsored Programs

2. Consortia Agreements

A contract with multiple parties for the purpose of advancing a research agenda. For the purposes of these metrics, at least one of the parties is from or represents industry. . *Note: identify “research expenditures” as defined by the National Science Foundation.*

Data

- number of consortia agreements
- number of participating private sector entities (companies, trade associations, etc.)
- research expenditures made by consortia members at the university

Data Set

- Latest year
- Three years prior
- Five years prior

Sources

- Deans and Department Offices
- Office of Sponsored Programs
- General Counsel's Office
- Agricultural Experiment Station

3. Sponsored Research and Development by Industry

For the purposes of these metrics, sponsored research is defined as research and development activities (including direct and indirect costs) from profit-making organizations, whether engaged in production, distribution, research, service, technical assistance, training or other activities. Data collected in this category should be posted along side existing data collected through other instruments (e.g., NSF HERD Survey; STaR Metrics, AUTM Licensing Survey). *Note: identify "research expenditures" as defined by the National Science Foundation.*

Data

- number of grants, contracts and sub-agreements (including federal- pass-through dollars) from private sector entities (including consortia, trade associations, etc.)
- dollar value of sponsored research expenditures by private sector entities (including consortia, trade associations, etc.)
- number of sponsored research projects by industry sector
- dollar value of sponsored research expenditures by industry sector
- number of unique private sector entities funding research grants and contracts (including consortia, trade associations, etc.)

Data Set

- Latest year
- Three years prior
- Five years prior

Sources

- Office of Technology Transfer/Commercialization
- Office of Sponsored Programs
- Technology Transfer Office

4. Human Clinical Trials

Phase I, II or III clinical trials – regardless of whether investigator initiated or sponsor-initiated performed under contract with the developer of the specific drug, device or compound, or under a grant or contract from a federal agency for support of a clinical trial.

Data

- number of trials conducted during reporting period by Phase
- number of protocols open at institution
- number of current clinical trials underway
- number of subjects participating in clinical trials

Data Set

- Latest year
- Three years prior
- Five years prior

Sources

- Office of Sponsored Programs
- Technology Transfer Office
- Offices overseeing clinical trials or related university entities
- Institutional IRB data
- Corporate financial systems
- *iedison* system at NIH
- www.clinicaltrials.gov

5. Service to External Clients

Testing, evaluation, or technical services provided to external clients (industry, government and joint) that includes a specific deliverable product or result. These services may be provided in university facilities and/or on-site at a client's place of operation. The activities involved are "routine", i.e. not research, but the technical assistance, training, and problem-solving involved in Lean Manufacturing, Six Sigma or other approaches that may be beneficial to the firm, protocols may be determined by the client, and no intellectual property is expected to be generated as a result of the activities. Contractual training may be offered by institutions as a fee-for-service educational function. (Note: some public institutions are prohibited by state law from providing these types of services.)

Data

- dollar value of contracts received by institution by type of sponsoring organization
- number of agreements
- number of organizations served
- number of firms contracting for services
- number of individuals contracting for continuing education in business or economic related specialties

- number of facility use agreements
- number of testing agreements (including location of client, i.e., regional/non-regional (*Note: avoid double-counting with Knowledge Incubation and Acceleration Programs/Relationships Between Clients/Program Participants and Host University*))
- number of companies provided on-site technical services

Data Set

- Latest year
- Three years prior
- Five years prior

Sources

- University Comptroller
- Office of Business Affairs
- Office of Sponsored Programs
- Extension Services

Developing The Regional And National Workforce

Universities and the Economy

University students and alumni have a positive impact on regional innovation and economic growth. Through university employment on funded projects, or placement with employers, students develop knowledge and workplace skills valuable to both them and their employers. Students make important contributions to the enterprises in which they are placed, and to the project teams to which they are assigned, and the income they earn helps defray the cost of their education.

In addition to employing students on funded projects and placing them with business, universities also invest in students by helping them develop entrepreneurial skills, through a variety of academic courses and programs, as well as competitions and other entrepreneurial-related activities. Student entrepreneurs contribute to the economy through businesses they start while still in school, and/or by starting or being involved in new businesses upon graduation.

Students become alumni, many of whom get jobs in the region or state. Universities' contribution of talent to the workforce represents perhaps their most important contribution to economic prosperity.

1. Student Employment on Funded Projects

Wages paid to students for work funded through external grants and contracts. Since institutions are encouraged to differentiate among funding sources, including federal, industry, industry foundations, private and non-profit foundations, it would be possible to identify students' contributions to research projects through the payments made on externally funded contracts and grants.

Data

- number of students paid through externally funded grants or contracts
- dollars paid to students
- average hourly wage

Data Set

- Latest year
- Three years prior
- Five years prior

Sources

- Finance Office
- Payroll Office
- Office of Sponsored Programs

2. Student Economic Engagement

Student participation in private, public, or nonprofit sector organizations for the purpose of developing practical work-based experience in their field of study or a specific profession or occupation.

Data

- number of students participating in internships, externships and work-based learning experiences by type of activity (regardless of whether academic credit is earned)
- number of employers sponsoring/hosting students by industry type
- monetary value of any paid work-based learning experience
- industry in which student participating in work-based learning experience was/is working two years after graduation

Data Set

- Latest year
- Three years prior
- Five years prior

Sources

- Office of Academic Affairs
- Office of Student Affairs
- Career Development Offices
- Service Learning/Community Engagement Program Office(s)
- Academic Departments

3. Student Entrepreneurship

Academic course offerings and programs, and extra-curricular activities, student competitions (e.g., local, regional or virtual competitions for business plans, robotics, etc.), and other initiatives where students have the opportunity to think, plan and act as entrepreneurs.

Data

- number of entrepreneurship courses/programs (credit and non-credit)
- number of students enrolled in entrepreneurship courses/programs
- number entrepreneurship courses/programs requiring a capstone project (e.g., business plan, elevator pitch)
- number of individual student entrepreneurship-related competitions
- number of students participating in competitions and related activities
- number of student start-ups associated with courses, programs, competitions, clubs, or other university-affiliated organizations

Data Set

- Latest year
- Three years prior
- Five years prior

Sources

- Registrar
- Colleges/Schools
- Departments
- Office of Sponsored Programs
- Career Development Office

4. Alumni in the Workforce

Data related to alumni residing in the university's home-state.

(Note: it is understood that compiling meaningful data in this area requires consistent access to wage data across all 50 states, which does not currently exist. The goal of collecting in-state alumni wage data where it currently is available is to demonstrate the methodologies currently in place and the value of this data in the public policy arena as a foundation for uniform access to wage data across the country.)

Data

- number of alumni living in-state
- average wages of alumni living in-state
- average wages of alumni living in-state by industry sector
- average wages of alumni living in-state by CIP (academic) code

Data set

- Latest year
- Three years prior
- Five years prior

Sources

- Alumni Relations Office (Central/School/College)
- Development Office (Central/School/College)
- Career Development Office (Central/School/College)
- State Agencies

Earnings reports are collected from employers on a quarterly basis by State Employment Security Agencies (SESAs) as part of their process of administering the national system of unemployment compensation. This earnings information is submitted by employee Social Security Number and may be matched to records from other institutions, such as postsecondary educational institutions or participants in federal job training programs, to help assess the earnings and employment outcomes of particular education or training interventions. Because earnings are submitted quarterly, earnings progression may be tracked over time. SESA also collects the employer's industry type and ZIP code of the employer's headquarters, which in many cases allows for the identification of training- or education-related placement and a determination of whether alumni are employed within a particular region or in-state. Any data matching using this source must adhere to the highest standards of data confidentiality and secure data transmission. States typically develop detailed agreements describing the terms and conditions under which such data may be used.

University-Based Knowledge Incubation And Acceleration Programs

Universities and the Economy

Many universities serve as local or regional centers for the development of new businesses. In some cases, new businesses are based on technologies originating from the university. University support for the development and growth of new businesses may be highly involved, including programmatic initiatives such as mentoring and business plan support provided by specialist staff. University support might, on the other hand, be limited to providing physical space in which emerging businesses may reside, typically located conveniently close to the university. Metrics related to new business incubation and acceleration will provide insight into the value of university contributions to company formation, growth and sustainability.

1. Incubation and Acceleration Program Success

Incubation and acceleration “clients” or “participants” are entities that have a formal relationship or agreement, including a set of requirements, with the program sponsor or owner of the physical space. Activities to be measured begin when an entity has declared its interest in or intent to make an idea, technology, or discovery into a product, good, or service and offer it on the commercial market. Success of an incubation or acceleration program is measured here based on clients' ability to raise capital, success in commercializing—translating ideas or discoveries into by a new or acquired company, and the clients' success in spurring economic activity, measured here as job creation and access to industry experience for students.

Data

- rate of entry acceptances (ratio of successful applications to total applications)
- rate of client success (ratio of clients successfully completing “requirements” of agreement over total clients)
- rate of companies still active after graduation (ratio of graduates still active over total number of graduates)
- number of full time equivalent employees
- number of students employed (graduate level/research assistants)
- rate of increase in hiring

Data set (Institutions must indicate fiscal or calendar year)

- Latest year
- Three years prior
- Five years prior

Sources

- Incubation/acceleration program management
- Application database
- Current and graduated participants

2. Relationships Between Clients/Program Participants and Host University

Relationships between clients and the university may include: licenses or options to license university-owned intellectual property; memoranda of understanding (MOU); letters of understanding (LOU); client sponsorship of research activities at the university; and contracted services - other than research - using university resources.

Data

- number of sponsored research agreements in which clients/tenants support research performed by an investigator at the affiliated university
- dollar value of sponsored research agreements
- number of service agreements/fee for service contracts whereby a specific task is performed for a fee by the university at the request of a client/tenant; may also be referred to as testing and/or analysis agreements, in which the university contracts to perform routine work (not research) for clients/tenants
- dollar value of service, testing or analysis agreements (*Note: avoid double-counting with Relationships with Industry/Service to External Clients*)
- number of licenses or options to license university-owned intellectual property
- number of MOUs, LOUs

Data set (Institutions must indicate fiscal or calendar year)

- Latest year
- Three years prior
- Five years prior

Sources

- Office of Sponsored Programs
- University or College Purchasing or Business Office
- Office of Technology Transfer

3. Ability to Attract External Investment

This metric is a measure of the amount of financial support (capital) received from all external funding sources in support of client or participant business development activities. Sources of funding may include loans or equity investments from: angel investors, venture capitalists, institutions, private investors, family, and friends. Non-equity funding may include foundation and government (SBIR/STTR) sources.

Data

- number of client/tenants reporting (as a percentage of total)
- dollar value of external investments from all sources
- dollar amount of (equity) capital raised by clients and graduates from investors - angel investors, institutional, venture capitalists, individuals
- dollar amount of funding received from federal, state or foundation sources, such as SBIR, STTR, state or local matching programs or other non-private sources

Data set (Institutions must indicate fiscal or calendar year)

- Latest year
- Three years prior
- Five years prior

Sources

- Incubation/acceleration program management
- Clients
- Graduates
- Office of Sponsored Programs

Appendix E: A·P·L·U CICEP New Metrics

Relationships with Industry: Sponsored Research by Industry

1. Number of grants, contracts and sub-agreements (including federal-pass-through dollars) from private sector entities (including consortia, trade associations, etc.)
2. Dollar value of sponsored research expenditures by private sector entities (including consortia, trade associations, etc.)
3. Number of sponsored research projects by industry sector (Include source/explanation of industry sectors used by institution)
4. Dollar value of sponsored research expenditures by industry sector
5. Number of unique private sector entities funding research grants and contracts (including consortia, trade associations, etc.)

Relationships with Industry: Human Clinical Trials

6. Number of trials conducted during reporting period by phase (capture all possible data, including non-FDA approval protocols; differentiate by phases and/or FDA-approval (or not) to greatest extent possible. Footnote any deviations from template.)
7. Number of subjects participating in clinical trials (active trial participants, only)
8. Dollar value of sponsored research expenditures for/on clinical trials
9. Number of protocols approved during time period
10. Number of trials initiated during time period

Relationships with Industry: Service to External Clients

11. Number of organizations served
12. Number of companies provided on-site technical services

Developing the Regional and National Workforce: Student Employment on Funded Projects

13. Number of students paid through externally funded grants or contracts

Developing the Regional and National Workforce: Student Entrepreneurship

14. Number of entrepreneurship courses/programs (credit and non-credit)
15. Number entrepreneurship courses/programs requiring a capstone project (e.g., business plan, elevator pitch)
16. Number of student start-ups associated with courses, programs, competitions, clubs, or other university-affiliated organizations

Developing the Regional and National Workforce: Alumni in the Workforce

17. Average wages of alumni living in-state

Knowledge Incubation and Acceleration Programs: Incubation and Acceleration Program Success

18. Number of incubator/accelerator full time equivalent employees

Knowledge Incubation and Acceleration Programs: Ability to Attract External Investment

19. Dollar amount of (equity) capital raised by clients and graduates from investors - angel investors, institutional, venture capitalists, individuals (including friends and family)
20. Dollar amount of funding received from federal, state or foundation sources, state or local matching programs or other non-private sources