This study complements an earlier RSA report (RSA 08-007) that compared the number of articles published by OU (and indexed by the Web of Science) with that of other institutions. The report’s authors considered article counts as a measure of academic output. For this report, RSA researchers examine academic impact, i.e. the influence, by virtue of its publications, of an academic institution on the scholarship enterprise. To measure this influence, two metrics were employed – average citations per indexed article, and the H-index.

**FINDINGS**

- OU articles indexed by the Web of Science from Calendar Year 2006 to 2008 (January 1, 2006 to December 31, 2008) were cited an average of 2.46 times. The median citation rate for the cohort of institutions within this study was 2.47.

- For the same period, an academic impact index that measures both the productivity and influence of university scholarship was 28 for OU, comparable to three institutions (Nebraska-Lincoln, Kansas, and South Carolina-Columbia) that are classified as “Very High Research Activity” institutions by the Carnegie Foundation. The average index for the cohort of institutions within this study was 31.21. The median was 28.5.

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1 The underlying unit of analysis for this report is the published, peer-reviewed journal article. The data source, the Web of Science, which is the scholarly information service from Thomson Reuters, does, however, index other media of scholarship, such as book reviews. These other forms are not indexed to the same extent as journal articles.

2 The University of Texas-Austin was not included in this analysis because its total article count for the period being examined is higher than the maximum count allowed by the ISI Web of Knowledge without a subscription to its data service.
Analysis
Many comparisons of research universities examine the level of research activity as a means for assessing overall capability, productivity and capacity. The Carnegie Foundation’s basic classification of research universities has this orientation. Some studies about institutional-level performance center on faculty productivity, not quality, while others concentrate on cost/benefit factors such as research expenditures. In most cases these numbers are not considered on a per capita basis.

This study considers one particular metric for assessing the quality of OU scholarship with that of other institutions. The metric is journal article citation counts and is based on the assumption that the use of an article by other researchers is a measure of overall excellence or utility. Citation count can be influenced by a number of factors, but its availability across disciplines and institutions makes it a practical metric for bibliographic researchers. For citation data, RSA researchers conducted article searches (that yielded article counts) based on institutions and zip codes using the Web of Science, a bibliographic information database administered by Thomson Reuters/ISI Web of Knowledge. The limitations of this methodology are numerous, notably the relative deficiency of other media of scholarship (e.g., refereed conference papers, monographs) relative to journal articles (Toutkoushian, Porter, Danielson, and Hollis, 129). Nevertheless, Web of Science article searches offer a reasonable proxy for overall scholarship by a researcher or university.

Chart 1 illustrates the number of citations associated with indexed items (articles, book reviews, etc) from Calendar Year 2006 to 2008 written or co-written by researchers from OU and a cohort of peer universities. Because the citations are normalized, larger institutions aren’t provided an unfair advantage. Along with the H-index described below, citations per article are provided by the ISI Web of Knowledge citation analytical tool.

The number of citations per OU article, 2.46, is very similar to that of others in close geographic proximity and that are classified as Carnegie I (Very High Research) institutions, e.g., the University of Kansas (Main Campus), University of Missouri-Columbia, and University of Nebraska-Lincoln. In fact, the median rate for the cohort examined was 2.47. For this cohort of institutions and 39 others, the average citations per article was 2.94, but the median was 2.77.

OU publications are cited at a below-average rate, but it is important to note that an average citation rate can be increased by only a few well-cited articles. In addition, a positive correlation exists between a high number of co-authors and high citation counts (Bornmann and Lutz, 100). For this cohort of institutions, papers with several (in many cases, dozens) of researchers often represent the most-cited articles credited to a university (one of its researchers must be a PI or Co-PI) by ISI Web of Knowledge. There were only two cases (Texas Tech University and Mississippi State University) where the most frequently-cited paper credited to a university was written primarily by its own researchers. This fact indicates the importance of multiple-author papers in citation statistics. It may also merit a discussion of how collaborative partnerships are formed and why lower-ranked universities seem to be less involved in multi-investigator projects.

Chart 2 presents the H-index of the same institutions featured in Chart 1. The H-index is a relatively new and actively debated method of measuring the impact of a researcher’s work and consists of the number of articles published by a

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6 The Web of Science database includes three indexes, the Science Citation Index Expanded, the Social Science Citation Index, and the Arts and Humanities Index.

7 Owing to Colorado’s outlier status within the cohort, only the median for the group is shown.

8 The institutions chosen to derive a mean of citations per article are a combination of two sets of universities. One is Big 12 institutions (excluding Texas-Austin) and the others are test institutions for a study this office will produce later this year. The institutions were chosen for varying levels of academic research and development expenditures (obtained from the National Science Foundation’s Academic R & D Expenditures at University and Colleges, Ranked by FY 2006 & R & D Expenditures <http://www.nsf.gov/statistics/nsf08300/pdf/tab27.pdf>) and overall university rankings (from U.S. News and World Report’s America’s Best Colleges 2008 Edition <http://colleges.usnews.rankingsandreviews.com/college/national-search>). Both public and private institutions were selected. Institutions with higher rankings and research expenditures included Wake Forest University and the University of Iowa. Institutions with lower rankings and research expenditures included West Virginia University and New Mexico State University. There are a few institutions higher than OU in one metric (research expenditures or USNWR ranking) and lower than OU in the other. Other test institutions were, in alphabetical order: Arizona State University, Auburn University, Brigham Young University, Brown University, Clemson University, Colorado School of Mines, Colorado State University, Florida State University, George Mason University, Louisiana State University, Oregon State University, Southern Methodist University, State University of New York – Stony Brook, Syracuse University, Tulane University, The University of Alabama (Tuscaloosa), University of Alaska-Fairbanks, University of Arizona, University of Arkansas-Fayetteville, University of California-Santa Barbara, University of California-Santa Cruz, University of Cincinnati, University of Connecticut-Storrs, University of Kentucky, University of Louisville, University of Massachusetts-Amherst, University of Miami (Florida), University of Nevada-Reno, University of New Hampshire, University of Tennessee-Knoxville, University of Tulsa, University of Utah, University of Vermont, Utah State University, and Washington State University.

researcher having the same (or higher) number of citations. The metric indicates both the influence and output of a researcher’s scholarship. The H-index is applied to universities as a whole.10

OU’s H-index is 28 for Calendar Years 2006 to 2008. This number is comparable to the H-indices of the University of Kansas (Main Campus) and the University of South Carolina-Columbia, institutions RSA researchers perceived to be OU peers. The average for the comparative cohort is 31.21, and the median is 28.5. The average for the cohort plus 39 others (the same institutions we analyzed for average citations-per-article) is 31.81, but the median is 30. Although OU ranks below the average within the two cohorts, four of its articles had 28 citations for the period. If only one of the articles gained another citation from 2006 to 2008, OU’s H-index would have jumped to 29. These short-term H-indices are thus limited in their ability to provide a meaningful assessment of scholarly productivity and impact. Extending the analysis period would be possible, though at considerable cost for the data.

This notably limited analysis suggests that OU is slightly below average within the cohort of institutions in citations-per-article and the H-index. Nevertheless, its scholarship is cited as much as or more than that of several Carnegie “Very High” research activity institutions, such as Nebraska and Kansas State, whereas OU-Norman is classified as a “High Research” activity institution. For the H-index, OU-Norman was ranked highest among Carnegie “High Research” institutions within the cohort. Many factors can influence citation counts, but OU’s competitiveness in these metrics is a positive indicator of the relative scholarly value of OU research.

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Raw data provided by the Thomson Reuters/ISI Web of Knowledge

10 The H-index was formulated to gauge the impact of a single researcher. Its application to an institution is imperfect (e.g. a collaborative project among researchers at the same university will be counted once for each researcher). Hence, use of this information should be taken with caution.