Appendix S1: Using Alternative Prestige Measures

There are no perfect measures of academic prestige, and most existing measures have specific drawbacks. In this article, we measure doctoral prestige by estimating a department's eigenvector centrality in hiring networks. To do this, we created a network that linked PhD institutions with hiring institutions, and estimated eigenvector centrality using social network analysis software (UCINET). In particular, we measured centrality as the reciprocal of the average shortest distance between a node and all others. A very central department (one that places a lot of students at other very central departments) will have a shorter "path" to reach all other departments in the network. As such, the smaller the average shortest distance, the higher the eigenvector centrality. We use eigenvector centrality because recent research [1] has demonstrated that this measure is highly correlated with existing survey based prestige measures.

The reason we prefer to use this measure here, instead of any number of existing survey based measures of departmental prestige, is driven by the institutional and disciplinary diversity of our sample, and the significant loss of data if we were to use other measures. Survey based measures of departmental prestige (i.e., measures where prestige values are determined through a survey of academics in the field), such as the 1995 NRC rankings, the current US News and World report rankings or the QS World University Rankings will frequently not cover all institutions, or not cover all fields. As a result, had we used any of these measures, our sample size would be severely impacted, and resulting possible bias in our results. While our measure is survey based and thus subject to any potential biases that are present in our sample, it is important to highlight that our measure correlates highly with existing measures, and, more importantly, that all our results are consistent, regardless of which measure we use.

Also included is an alternative measure of centrality, one which generates discipline specific centrality. In order to confirm these correlations, we also created a correlation matrix (Table S1.1) that is based on our institutional sample (i.e., each observation is an institution).
Table S1.1: Prestige correlations for Institutional Sample:

|                  | QS Academic Reputation | US News Civil Engineering | US News Math | US News Biology | NRC Biochemistry | NRC Biology | NRC Civil Engineering | NRC Match | Survey Overall | Biology Centrality | Biochemistry Centrality | Civil Engineering Centrality | Math Centrality |
|------------------|------------------------|---------------------------|--------------|-----------------|------------------|-------------|-----------------------|-----------|---------------|-------------------|-----------------------|------------------------|------------------|
| QS Academic Reputation | 1.00                   |                           |              |                 |                  |             |                       |           |               |                   |                       |                       |                  |
| US News Civil Engineering | 0.71                   | 1.00                      |              |                 |                  |             |                       |           |               |                   |                       |                       |                  |
| US News Math     | 0.88                   | 0.80                      | 1.00         |                 |                  |             |                       |           |               |                   |                       |                       |                  |
| US News Biology  | 0.81                   | 0.77                      | 0.87         | 1.00            |                  |             |                       |           |               |                   |                       |                       |                  |
| NRC Biochemistry | 0.64                   | 0.61                      | 0.75         | 0.85            | 1.00             |             |                       |           |               |                   |                       |                       |                  |
| NRC Biology      | 0.62                   | 0.53                      | 0.73         | 0.84            | 0.88             | 1.00        |                       |           |               |                   |                       |                       |                  |
| NRC Civil Engineering | 0.81                   | 0.90                      | 0.83         | 0.75            | 0.70             | 0.59        | 1.00                 |           |               |                   |                       |                       |                  |
| NRC Math         | 0.80                   | 0.72                      | 0.95         | 0.82            | 0.74             | 0.72        | 0.81                 | 1.00     |               |                   |                       |                       |                  |
| Survey Overall Centrality | 0.67                   | 0.82                      | 0.73         | 0.65            | 0.56             | 0.53        | 0.76                 | 0.67     | 0.76          |                   |                       |                       |                  |
| Biology Centrality | 0.46                   | 0.59                      | 0.56         | 0.59            | 0.47             | 0.48        | 0.48                 | 0.49     | 0.49          | 0.82              |                       |                       |                  |
| Biochemistry Centrality | 0.60                   | 0.64                      | 0.63         | 0.55            | 0.44             | 0.42        | 0.65                 | 0.55     | 0.55          | 0.80              | 0.60                 |                       |                  |
| Civil Engineering Centrality | 0.38                   | 0.74                      | 0.43         | 0.38            | 0.34             | 0.28        | 0.65                 | 0.39     | 0.72          | 0.49              | 0.49                 | 0.45                 | 1.00             |
| Math Centrality  | 0.50                   | 0.51                      | 0.60         | 0.53            | 0.48             | 0.49        | 0.53                 | 0.57     | 0.73          | 0.59              | 0.53                 | 0.39                 | 0.39             |

One interesting aspect to note is that overall centrality has higher correlations than discipline specific centrality even with discipline specific measures of prestige, pointing to possible halo effects.

All our models have been estimated using alternative prestige measures, and our results are very consistent, if not nearly identical in many cases. Further, all results are consistent with the results presented in Table 1 of the main paper. Table S1.2 contains the results of our logistic regression models regarding mismatch:
Table S1.2. Logit Regression: results with alternative measures of prestige, odds ratios reported

| Discipline Specific Centrality | US News | QS Rankings | 1995 NRC |
|-------------------------------|---------|-------------|----------|
|                               | Odds    | Sig   | SE   | Odds    | Sig   | SE   | Odds    | Sig   | SE   |
| Career Preference/Support     |         |       |      |         |       |      |         |       |      |
| Teaching preference           | 2.302   | ***   | 0.334| 2.553   | ***   | 0.407| 2.924   | ***   | 0.503| 2.384| ***   | 0.377|
| Advisor Sponsorship           | 0.907   | 0.073 | 0.913| 0.938   | 0.092 | 0.938| 0.092   | 0.938 | 0.082|
| Teaching preference*advisor sponsorship | 1.039  | 0.139 | 1.009| 0.961   | 0.155 | 0.983| 0.147   |
| Teaching preference*doctoral prestige | 1.456  | **    | 0.218| 1.72    | ***   | 0.253| 1.93    | **    | 1.85 | 1.592| ***   | 0.232|

| Doctoral Training Background  |         |       |      |         |       |      |         |       |      |
| Doctoral Institution Prestige | 0.712   | ***   | 0.066| 0.608   | ***   | 0.055| 0.795   | **    | 0.074| 0.683| ***   | 0.059|
| Dissertation Award            | 0.425   | ***   | 0.126| 0.441   | **    | 0.142| 0.407   | ***   | 0.142| 0.429| ***   | 0.141|
| Year of PhD                   | 1.002   | 0.006 | 0.997| 0.006   | 1      | 0.006| 1.001   | 0.006 |

| Discipline                      |         |       |      |         |       |      |         |       |      |
| Biochemistry                    | 0.59    | ***   | 0.099| 0.576   | ***   | 0.113| 0.624   | ***   | 0.112|
| Civil Engineering               | 1.002   | 0.184 | 0.853| 0.168   | 0.976 | 0.209| 1.02    | 0.209 |
| Mathematics                     | 0.968   | 0.154 | 1.03  | 0.174   | 1.036 | 0.202| 1.021   | 0.182 |

| x                               |         |       |      |         |       |      |         |       |      |
| Dependent Child at Year of PhD  | 1.047   | 0.154 | 0.859| 0.148   | 0.874 | 0.160| 0.952   | 0.159 |
| Female                         | 1.025   | 0.132 | 0.981| 0.145   | 1.039 | 0.160| 1.078   | 0.152 |
| First Generation College Graduate | 1.118  | 0.158 | 1.067| 0.172   | 1.186 | 0.198| 1.078   | 0.169 |
| African American               | 1.225   | 0.314 | 1.477| 0.403   | 0.857 | 0.301| 1.007   | 0.293 |
| Hispanic                       | 0.849   | 0.241 | 0.881| 0.27    | 0.807 | 0.271| 0.917   | 0.285 |
| Native American                | 0.808   | 0.588 | 0.897| 0.627   | 0.128 | *    | 0.142   | 0.266 |
| Asian                          | 1.003   | 0.145 | 0.864| 0.14    | 0.824 | 0.148| 0.855   | 0.134 |
| Other Race/Ethnicity           | 4.687   | **    | 2.987| 5.254   | **    | 3.717| 5.535   | **    | 3.741| 5.195| ***   | 3.472|
| Constant                       | 0.007   | 0.085 | 119.1| 1571    | 0.0893| 1.211| 0.0883  | 0.896 |

| N                              | 2.555   | 1.921 | 1.884| 2.214   |

| Log Likelihood                | -3066.7164 | -2542.364 | -2178.7627 | -2587.153 |
| Pseudo R2                      | 0.054   | 0.075   | 0.073   | 0.062   |

***p<0.01, **p<0.05, *p<0.1
Below are average marginal effects for full models using each of the different prestige measures mentioned above (1995 NRC rankings, current US News and World Report rankings and QS World University Rankings)[2–4].

Table S1.3 Average marginal effects for prestige variable, alternative specifications

|                     | Research Extensive | Research Intensive | Master’s I & II | Liberal Arts |
|---------------------|-------------------|-------------------|-----------------|--------------|
| **US News and World Report** |                   |                   |                 |              |
| Research Preference | 0.121***          | -0.0518***        | -0.0820***      | 0.0132*      |
| Teaching Preference | 0.0257            | -0.00988          | -0.0446***      | 0.0287***    |
| N                   | 1986              | 1986              | 1986            | 1986         |
| **QS World University Rankings** |                   |                   |                 |              |
| Research Preference | 0.0621***         | -0.0336***        | -0.0545***      | 0.0260***    |
| Teaching Preference | 0.00562           | -0.00424          | -0.0279*        | 0.0265***    |
| N                   | 1956              | 1956              | 1956            | 1956         |
| **1995 NRC rankings** |                   |                   |                 |              |
| Research Preference | 0.0844***         | -0.0348***        | -0.0694***      | 0.0198***    |
| Teaching Preference | 0.0296            | -0.00388          | -0.0430**       | 0.0173**     |
| N                   | 2276              | 2276              | 2276            | 2276         |
| **Discipline Specific Centrality** |                   |                   |                 |              |
| Research Preference | 0.075***          | 0.030**           | 0.051***        | 0.007        |
| Teaching Preference | 0.022             | -0.015            | -0.025          | 0.018**      |
| N                   | 2555              | 2555              | 2555            | 2555         |

As Table S1.3 here shows, there are some minor differences in regards to level of significance for Master’s institutions for those with teaching preferences, but overall the take away point is the same. Also important to note that using any of these alternative measures of prestige would reduce our sample by nearly 400 observations, at a minimum.
It is important to note that for the purposes of checking the consistency of our measures, we use the 1995 NRC Rankings instead of the most recent ones because the most recent ones notably do not include any survey questions regarding program prestige, instead relying on regression models based on quantitative data. As a result, they are less a measure of prestige and more a measure of program quality based on quantitative criteria. The end result is that the recent NRC rankings do not present a single, quantitative score of prestige like its 1995 counterpart did, but instead a range of rankings based on the confidence intervals of the underlying regressions, making it impossible to reduce to a single value. As Baldi [5] and others have discussed, academic prestige is very "sticky," and despite the time gap the 1995 NRC rankings and current US News rankings (which were measured between 2014 and 2016 depending on discipline) are correlated at over the 0.843 level.

Finally, table S1.4 contains the centrality scores, both overall and discipline specific, based on our sample. A few words of caution are necessary when looking at any measure of prestige or centrality. First, while there is a tendency for the public at large to focus on ordinal aspects of prestige measures, it is substantially more useful to focus on the quantitative measures themselves. That is, focusing on ordinal aspects of prestige rankings (e.g., whether an institution should be ranked 2nd or 5th) generally revolves around microscopic differences in whatever measure of prestige that is being used. These can never be resolved satisfactorily in a statistical way. Much more productive is to focus on the magnitude of these differences. For example, it may be impossible nor realistic to resolve who is number 1 or number 2 in the rankings, but most rankings will agree in terms of which institutions are, say, in the top 20 versus which are below rank 50. Second, our own measures may contain a result or two that may seem anomalous. It is not our intention to provide a definitive ranking mechanism. All prestige and centrality measures have their limitations. NRC data last collected information on prestige in 1995. US News and World Report does not report the results of programs with a prestige measure lower than 2, and does not include all disciplines (biochemistry, for example, is grouped with biophysics and structural biology as a subspecialty of biology, and is not ranked in the same way as the other disciplines in our sample). QS World University Rankings do not distinguish between graduate and undergraduate education, nor between disciplines within universities. Our measures here have the major benefit of maximizing our number of data points, but as with any survey data, is subject to a number of limitations. More important to note here, once more, is the fact that regardless of which measure is being used all our results are consistent through all the models.
Table S1.4: Eigenvector Centrality measures by Institution:

| Institution Name                                      | Overall Centrality | Biology Centrality | Biochemistry Centrality | Civil Engineering Centrality | Math Centrality |
|-------------------------------------------------------|--------------------|--------------------|--------------------------|-------------------------------|-----------------|
| University of California - Berkeley                   | 0.016              | 0.021              | 0.021                    | 0.032                         | 0.026           |
| University of California - Davis                      | 0.012              | 0.017              | 0.025                    | 0.015                         | 0.007           |
| Cornell University                                   | 0.011              | 0.011              | 0.018                    | 0.014                         | 0.008           |
| University of Wisconsin - Madison                     | 0.011              | 0.009              | 0.018                    | 0.002                         | 0.022           |
| University of Michigan - Ann Arbor                    | 0.011              | 0.01               | 0.012                    | 0.019                         | 0.007           |
| Stanford University                                  | 0.011              | 0.009              | 0.02                     | 0.022                         | 0.007           |
| Massachusetts Institute of Technology                 | 0.01               | 0.001              | 0.023                    | 0.009                         | 0.016           |
| Yale University                                       | 0.01               | 0.012              | 0.019                    | 0                   | 0.016           |
| University of Texas at Austin                         | 0.009              | 0.008              | 0.008                    | 0.025                         | 0.005           |
| University of California - San Diego                  | 0.009              | 0.012              | 0.02                     | 0.002                         | 0.005           |
| Purdue University                                    | 0.009              | 0.007              | 0.011                    | 0.024                         | 0.007           |
| University of California - Los Angeles                | 0.009              | 0.012              | 0.01                     | 0.009                         | 0.007           |
| University of Washington-Seattle Campus               | 0.009              | 0.014              | 0.007                    | 0.012                         | 0.008           |
| Harvard University                                    | 0.008              | 0.014              | 0.01                     | 0.002                         | 0.008           |
| Michigan State University                             | 0.008              | 0.008              | 0.013                    | 0.008                         | 0.006           |
| University of Illinois at Urbana-Champaign            | 0.008              | 0.006              | 0.009                    | 0.015                         | 0.007           |
| Texas A & M University                                | 0.008              | 0.006              | 0.003                    | 0.023                         | 0.003           |
| Johns Hopkins University                              | 0.007              | 0.006              | 0.011                    | 0.01                          | 0.003           |
| Pennsylvania State University - Penn State Main Campus | 0.007              | 0.004              | 0.013                    | 0.015                         | 0.008           |
| University of Colorado at Boulder                     | 0.007              | 0.006              | 0.017                    | 0.01                          | 0.001           |
| SUNY at Stony Brook                                   | 0.007              | 0.01               | 0.002                    | 0                   | 0.011           |
| Georgia Institute of Technology - Main Campus         | 0.007              | 0.004              | 0.006                    | 0.022                         | 0.002           |
| University of Maryland - College Park                 | 0.006              | 0.005              | 0.013                    | 0.004                         | 0.006           |
| Princeton University                                 | 0.006              | 0.004              | 0.004                    | 0.003                         | 0.01            |
| University of New Mexico-Main Campus                  | 0.006              | 0.008              | 0.005                    | 0.003                         | 0.009           |
| Duke University                                       | 0.006              | 0.015              | 0.005                    | 0.004                         | 0.002           |
| University of Pennsylvania                           | 0.006              | 0.005              | 0.008                    | 0.002                         | 0.005           |
| University of Minnesota - Twin Cities                 | 0.006              | 0.004              | 0.006                    | 0.009                         | 0.014           |
| Northwestern University                               | 0.006              | 0.001              | 0.008                    | 0.017                         | 0.005           |
| The University of Texas at San Antonio                | 0.005              | 0.009              | 0.007                    | 0.006                         | 0.001           |
| Florida International University                     | 0.005              | 0.007              | 0.007                    | 0                   | 0.001           |
| University of Connecticut                            | 0.005              | 0.005              | 0.004                    | 0.006                         | 0.004           |
| The University of Texas at El Paso                    | 0.005              | 0.005              | 0.007                    | 0.007                         | 0.008           |
| California Institute of Technology                   | 0.005              | 0.002              | 0.014                    | 0.008                         | 0.002           |
| University of Virginia                                | 0.005              | 0.005              | 0.004                    | 0.01                          | 0.002           |
| Institution Name                                      | Overall Centrality | Biology Centrality | Biochemistry Centrality | Civil Engineering Centrality | Math Centrality |
|-------------------------------------------------------|--------------------|--------------------|--------------------------|-------------------------------|----------------|
| Iowa State University                                 | 0.005              | 0.004              | 0.003                    | 0.012                         | 0.005          |
| University of Chicago                                 | 0.005              | 0.008              | 0.007                    |                               | 0.005          |
| New Mexico State University                           | 0.005              | 0.007              | 0.005                    | 0.002                         | 0.007          |
| Ohio State University                                 | 0.005              | 0.003              | 0.004                    | 0.006                         | 0.011          |
| University of California - Santa Barbara              | 0.005              | 0.004              | 0.006                    | 0                             | 0.007          |
| University of California - Irvine                     | 0.005              | 0.005              | 0.008                    | 0.007                         | 0.001          |
| University of North Carolina at Chapel Hill           | 0.004              | 0.005              | 0.006                    | 0.001                         | 0.002          |
| University of Iowa                                    | 0.004              | 0.002              | 0.002                    | 0.009                         | 0.005          |
| University of Southern California                     | 0.004              | 0.005              | 0                       | 0.007                         | 0.001          |
| Howard University                                     | 0.004              | 0.003              | 0                       | 0.005                         | 0.007          |
| University of Tennessee                               | 0.004              | 0.004              | 0.005                    | 0.005                         | 0.001          |
| Virginia Polytechnic Institute and State University    | 0.004              | 0.005              | 0.003                    | 0.011                         | 0.001          |
| Arizona State University                              | 0.004              | 0.004              | 0.002                    | 0.007                         | 0.001          |
| Louisiana State University and Agricultural & Mechanical College | 0.004              | 0.005              |                          | 0.009                         | 0.005          |
| University of Massachusetts-Amherst                  | 0.004              | 0.002              | 0.005                    | 0.004                         | 0.003          |
| University of Nebraska - Lincoln                      | 0.004              | 0.001              | 0.005                    | 0.006                         | 0.004          |
| University of Delaware                                 | 0.004              | 0.001              | 0.004                    | 0.008                         | 0.004          |
| Colorado State University                             | 0.004              | 0.002              | 0.008                    | 0.005                         | 0.001          |
| University of Alaska Fairbanks                        | 0.004              | 0.006              | 0.007                    | 0.003                         | 0.001          |
| Brown University                                      | 0.004              | 0.003              | 0.002                    | 0.002                         | 0.01           |
| University of Notre Dame                              | 0.004              | 0.003              | 0.009                    | 0.006                         | 0.002          |
| Wesleyan University                                   | 0.004              | 0.005              | 0.006                    |                               | 0.003          |
| North Dakota State University - Main Campus           | 0.004              | 0.003              | 0.006                    | 0.007                         | 0.003          |
| Columbia University in the City of New York           | 0.004              | 0.002              | 0.007                    | 0.001                         | 0.005          |
| University of Kansas                                  | 0.004              | 0.006              | 0.005                    | 0.007                         | 0.002          |
| Indiana University Bloomington                        | 0.004              | 0.005              | 0.004                    |                               | 0.004          |
| Brigham Young University                              | 0.003              | 0.002              | 0.007                    | 0                             | 0.003          |
| University of California - Riverside                  | 0.003              | 0.002              | 0.009                    |                               | 0.001          |
| Union College                                         | 0.003              | 0.006              | 0.002                    |                               | 0.004          |
| Central Michigan University                           | 0.003              | 0.003              |                          | 0.003                         | 0.006          |
| University of Georgia                                 | 0.003              | 0.008              | 0.001                    | 0                             | 0.002          |
| West Virginia University                              | 0.003              | 0.001              |                          | 0.009                         | 0.003          |
| Missouri University of Science and Technology         | 0.003              | 0.001              |                          | 0                             | 0.013          |
| The University of Texas at Arlington                  | 0.003              | 0.001              |                          | 0.004                         | 0.006          |
| University of Maryland - University College           | 0.003              | 0.001              | 0.004                    | 0.006                         | 0.001          |
| University of Arizona                                 | 0.003              | 0.003              | 0.007                    | 0.002                         | 0.001          |
| The University of Montana                             | 0.003              | 0.001              | 0.01                     |                               | 0              |
| Institution Name                                                                 | Overall Centrality | Biology Centrality | Biochemistry Centrality | Civil Engineering Centrality | Math Centrality |
|---------------------------------------------------------------------------------|--------------------|--------------------|--------------------------|-----------------------------|-----------------|
| Rutgers, The State University of New Jersey - New Brunswick/Piscataway           | 0.003              | 0.001              | 0.002                    | 0.001                       | 0.007           |
| Northern Arizona University                                                     | 0.003              | 0.002              | 0.006                    |                             | 0.002           |
| Michigan Technological University                                               | 0.003              | 0.001              |                          | 0.011                       | 0.001           |
| Rice University                                                                | 0.003              | 0.005              |                          | 0.002                       | 0.002           |
| University of Rochester                                                         | 0.003              | 0.004              |                          |                             | 0.006           |
| Washington University in St Louis                                              | 0.003              | 0.006              | 0.003                    | 0.001                       | 0.001           |
| Lehigh University                                                              | 0.003              | 0.001              | 0.001                    | 0.003                       | 0.003           |
| University of North Carolina at Greensboro                                      | 0.003              | 0.002              | 0.008                    |                             | 0               |
| SUNY at Buffalo                                                                | 0.003              | 0.001              | 0.009                    | 0.001                       | 0.001           |
| University of Nevada - Reno                                                    | 0.003              | 0.002              |                          | 0.002                       | 0.004           |
| University of Utah                                                             | 0.003              | 0.002              | 0.002                    |                             | 0.004           |
| University of Illinois at Chicago                                              | 0.003              | 0.001              |                          | 0.001                       | 0.004           |
| Illinois Institute of Technology                                               | 0.003              | 0.001              |                          | 0.007                       | 0.004           |
| Oregon State University                                                        | 0.003              | 0.003              | 0.004                    | 0.004                       | 0.004           |
| Wake Forest University                                                         | 0.003              | 0.004              |                          |                             | 0.004           |
| New Jersey Institute of Technology                                             | 0.003              |                   |                          | 0.009                       | 0.003           |
| Auburn University Main Campus                                                   | 0.003              | 0.003              | 0.003                    | 0.003                       | 0.001           |
| North Carolina State University                                                | 0.003              | 0.002              | 0.001                    | 0.01                        | 0.001           |
| Dartmouth College                                                              | 0.003              | 0.003              | 0.005                    |                             | 0.003           |
| South Dakota State University                                                  | 0.003              | 0.001              | 0.005                    | 0.004                       | 0               |
| Montana State University - Bozeman                                              | 0.003              | 0.001              |                          | 0.003                       | 0.005           |
| University of Colorado Denver                                                  | 0.003              | 0.001              |                          | 0.006                       | 0.004           |
| Carnegie Mellon University                                                     | 0.003              | 0.001              |                          | 0.007                       | 0.002           |
| University of California - Santa Cruz                                           | 0.002              | 0.006              | 0.004                    |                             | 0.001           |
| Vanderbilt University                                                          | 0.002              | 0.001              | 0.001                    | 0.005                       | 0.002           |
| University of Florida                                                          | 0.002              | 0.003              | 0.001                    |                             | 0.004           |
| Kansas State University                                                        | 0.002              | 0.003              |                          | 0.001                       | 0.001           |
| University of Houston                                                          | 0.002              | 0.001              | 0.002                    |                             | 0.002           |
| University of Hawaii at Manoa                                                   | 0.002              | 0.005              |                          |                             | 0.001           |
| Florida Agricultural and Mechanical University                                   | 0.002              |                   |                          | 0.001                       | 0.003           |
| Jackson State University                                                       | 0.002              | 0.002              | 0.001                    | 0.003                       | 0.002           |
| University of North Carolina at Charlotte                                       | 0.002              | 0.002              |                          | 0.003                       | 0.004           |
| Clarkson University                                                            | 0.002              | 0.001              |                          |                             | 0.006           |
| Bryn Mawr College                                                              | 0.002              | 0.004              |                          |                             | 0.002           |
| University of Kentucky                                                         | 0.002              | 0.002              | 0.001                    | 0.004                       | 0.001           |
| University of Maryland - Baltimore County                                       | 0.002              | 0.001              |                          |                             | 0.002           |
| University of Cincinnati - Main Campus                                          | 0.002              | 0.003              |                          |                             | 0.004           |
| Utah State University                                                          | 0.002              | 0.002              | 0.001                    |                             | 0.002           |
| Institution Name                                | Overall Centrality | Biology Centrality | Biochemistry Centrality | Civil Engineering Centrality | Math Centrality |
|------------------------------------------------|--------------------|--------------------|-------------------------|-----------------------------|-----------------|
| Temple University                              | 0.002              | 0.002              |                         | 0.001                       | 0.002           |
| University of Central Florida                  | 0.002              | 0.001              |                         | 0.01                        | 0.001           |
| George Washington University                   | 0.002              | 0.005              | 0                       | 0.002                       | 0.002           |
| University of Vermont                          | 0.002              | 0.001              | 0.001                   | 0.004                       | 0.003           |
| University of California - San Francisco       | 0.002              | 0.004              | 0.003                   | 0.004                       | 0.001           |
| University of Oregon                           | 0.002              | 0                 | 0.003                   | 0                           | 0.004           |
| Ohio University - Main Campus                  | 0.002              | 0.001              | 0.002                   | 0.001                       | 0.001           |
| North Carolina Central University              | 0.002              | 0.003              | 0.001                   | 0                           | 0.002           |
| University of Cincinnati - Main Campus         | 0.002              | 0.003              | 0                       | 0.004                       | 0.004           |
| University of New Hampshire-Main Campus        | 0.002              | 0.001              | 0                       | 0.005                       | 0.001           |
| Washington State University                    | 0.002              | 0.003              | 0.001                   | 0.002                       | 0               |
| Clark University                               | 0.002              |                    | 0.005                   | 0                           | 0.002           |
| Case Western Reserve University                | 0.002              | 0                 | 0.003                   | 0.002                       | 0.001           |
| University of Pittsburgh - Main Campus         | 0.002              | 0.001              | 0                       | 0.005                       | 0.001           |
| Clemson University                             | 0.002              | 0                 | 0.004                   | 0.005                       | 0               |
| University of Missouri - Columbia              | 0.002              | 0.004              |                         | 0.004                       | 0.003           |
| University of Miami                            | 0.002              | 0.004              | 0.001                   | 0.001                       |                 |
| University of Akron                            | 0.002              | 0.001              |                         | 0.007                       | 0               |
| Tufts University                               | 0.002              | 0.002              | 0.003                   | 0                           | 0.002           |
| Southern Illinois University Carbondale        | 0.002              | 0.002              | 0                       | 0.002                       | 0.002           |
| University of Louisiana at Lafayette           | 0.002              | 0.002              |                         | 0.003                       | 0.002           |
| Bowling Green State University                 | 0.002              | 0.002              | 0.001                   |                             | 0.003           |
| Boston University                              | 0.002              | 0.002              | 0.004                   | 0.002                       | 0.002           |
| Marquette University                           | 0.002              | 0.001              |                         | 0.002                       | 0.003           |
| University of Nevada - Las Vegas               | 0.002              |                    | 0                       | 0.005                       | 0.002           |
| University of South Carolina - Columbia        | 0.002              | 0.001              |                         | 0.003                       | 0.002           |
| Florida State University                       | 0.002              | 0.003              | 0.001                   | 0.001                       | 0.004           |
| University of Wyoming                          | 0.002              | 0.001              | 0                       | 0.002                       | 0.004           |
| University of Oklahoma                         | 0.002              | 0.003              | 0.001                   | 0.001                       | 0.003           |
| Rensselaer Polytechnic Institute               | 0.002              | 0                 | 0.001                   | 0.002                       | 0.001           |
| CUNY City College of New York                  | 0.002              | 0.004              |                         | 0.002                       | 0.003           |
| Wayne State University                         | 0.002              | 0.002              | 0.001                   | 0.001                       | 0.001           |
| University of Wisconsin - Milwaukee            | 0.001              | 0.001              |                         | 0.001                       | 0.001           |
| New Mexico Institute of Mining and Technology  | 0.001              | 0.001              |                         | 0.003                       | 0               |
| University of Missouri - St Louis              | 0.001              | 0.001              | 0                       |                             | 0               |
| Medical College of Wisconsin                   | 0.001              | 0.001              |                         |                             |                 |
| College of William and Mary                    | 0.001              | 0.003              |                         |                             | 0.001           |
| Alabama A & M University                       | 0.001              | 0.002              |                         |                             | 0.002           |
| Institution Name                          | Overall Centrality | Biology Centrality | Biochemistry Centrality | Civil Engineering Centrality | Math Centrality |
|------------------------------------------|--------------------|--------------------|-------------------------|-----------------------------|-----------------|
| University of Louisville                 | 0.001              | 0                  | 0.002                   | 0                           |                 |
| University of Denver                     | 0.001              | 0                  | 0.003                   | 0                           |                 |
| Saint Louis University-Main Campus       | 0.001              | 0                  | 0                       | 0.002                       |                 |
| SUNY at Binghamton                       | 0.001              | 0                  | 0.001                   | 0.002                       |                 |
| Northeastern University                  | 0.001              | 0.001              | 0                       | 0.002                       |                 |
| Indiana University of Pennsylvania       | 0.001              | 0.001              | 0                       | 0.001                       |                 |
| SUNY at Albany                           | 0.001              | 0                  | 0.001                   | 0.001                       | 0.002           |
| Boston College                           | 0.001              | 0.003              | 0.001                   | 0.001                       |                 |
| Western Michigan University              | 0.001              |                    |                         | 0.001                       | 0.005           |
| Brandeis University                     | 0.001              | 0.001              | 0.002                   | 0.001                       |                 |
| Kent State University                    | 0.001              | 0.001              | 0.001                   | 0.001                       |                 |
| Georgia State University                 | 0.001              | 0.001              |                         | 0.002                       |                 |
| Wright State University                  | 0.001              | 0                  | 0                       | 0.002                       |                 |
| Texas A & M University - Kingsville      | 0.001              | 0.002              |                         | 0.002                       | 0               |
| Syracuse University                      | 0.001              | 0.001              |                         | 0.001                       | 0.001           |
| Illinois State University               | 0.001              | 0.001              |                         | 0.001                       |                 |
| Miami University                         | 0.001              | 0.001              |                         |                             | 0.003           |
| Colorado School of Mines                 | 0.001              | 0.002              |                         | 0.001                       |                 |
| Old Dominion University                  | 0.001              | 0                  |                         | 0.001                       |                 |
| University of Arkansas, Fayetteville     | 0.001              | 0.001              | 0.002                   | 0                           |                 |
| Florida Atlantic University              | 0.001              | 0.003              | 0.003                   | 0                           | 0.001           |
| Oklahoma State University                | 0.001              | 0                  | 0.003                   | 0                           | 0.002           |
| University of the Incarnate Word         | 0.001              | 0.001              |                         |                             | 0.001           |
| University of New Orleans                | 0.001              | 0                  | 0.001                   | 0                           | 0.002           |
| Virginia Commonwealth University         | 0.001              | 0.001              | 0.001                   |                             |                 |
| University of South Florida              | 0.001              | 0.002              |                         | 0.003                       | 0.001           |
| University of Toledo                     | 0.001              | 0                  |                         |                             | 0               |
| University of Maine                      | 0.001              | 0.002              | 0.002                   | 0                           | 0               |
| SUNY College of Environmental Science and Forestry | 0.001              | 0.003 |                         | 0                           |                 |
| New York University                      | 0.001              | 0.001              | 0                       | 0.001                       | 0.004           |
| Wichita State University                 | 0.001              | 0.001              |                         | 0                           | 0.001           |
| University of Alabama in Huntsville      | 0.001              | 0.001              |                         | 0.003                       | 0               |
| Hampton University                       | 0.001              | 0.001              |                         |                             | 0.001           |
| University of Texas Southwestern Medical Center at Dallas | 0.001 | 0.001 | 0 | | 0 |
| The University of Texas at Dallas        | 0.001              | 0.002              |                         |                             |                 |
| Mississippi State University             | 0.001              | 0.001              |                         | 0.002                       | 0.002           |
| Texas Tech University                    | 0.001              | 0.002              |                         |                             | 0               |
| Institution Name                                      | Overall Centrality | Biology Centrality | Biochemistry Centrality | Civil Engineering Centrality | Math Centrality |
|------------------------------------------------------|--------------------|--------------------|-------------------------|------------------------------|-----------------|
| Tulane University                                    | 0.001              | 0.001              | 0                       | 0                            | 0.003           |
| University of Mississippi Main Campus                | 0.001              | 0                  | 0.001                   | 0.002                        | 0               |
| Tennessee State University                           | 0.001              | 0.001              | 0                       | 0.002                        | 0               |
| Rockefeller University                               | 0.001              | 0.002              | 0                       | 0                            | 0.002           |
| The University of Alabama                            | 0.001              | 0.001              | 0.001                   | 0.001                        | 0.001           |
| Emory University                                     | 0.001              | 0.004              | 0.001                   | 0.001                        | 0.001           |
| Baylor College of Medicine                           | 0.001              | 0.002              |                         |                              |                 |
| Clark Atlanta University                             | 0.001              | 0.001              | 0                       | 0                            |                 |
| University of North Texas                            | 0.001              | 0.002              |                         |                              |                 |
| University of Northern Colorado                      | 0.001              | 0                  | 0                       | 0.001                        | 0.001           |
| University of South Alabama                          | 0.001              | 0                  |                         | 0.001                        | 0.003           |
| Florida Institute of Technology-Melbourne            | 0.001              | 0.002              |                         | 0.004                        | 0               |
| Baylor University                                    | 0.001              | 0.001              | 0.002                   | 0.001                        | 0.001           |
| University of Arkansas at Little Rock                | 0.001              | 0.001              | 0                       | 0.001                        | 0.001           |
| Louisiana Tech University                            | 0.001              | 0.001              |                         | 0.002                        |                 |
| University of Massachusetts - Lowell                 | 0.001              | 0                  | 0                       | 0.003                        |                 |
| University of Maryland - Eastern Shore               | 0.001              | 0.001              |                         | 0.002                        | 0.001           |
| Stevens Institute of Technology                      | 0.001              |                    |                         | 0.004                        | 0               |
| Georgetown University                                | 0.001              | 0.001              |                         | 0.001                        |                 |
| Texas Woman's University                             | 0.001              | 0.002              |                         |                              |                 |
| College of Medicine, Mayo Clinic                     | 0                  |                    |                         | 0.001                        |                 |
| Southern Methodist College                           | 0                  |                    |                         |                              |                 |
| Claremont Graduate University                        | 0                  |                    |                         | 0.001                        |                 |
| Teachers College at Columbia University               | 0                  | 0                  |                         |                              |                 |
| University of Southern Mississippi                   | 0                  | 0                  |                         |                              |                 |
| University of North Dakota                           | 0                  | 0.002              |                         |                              |                 |
| American University                                  | 0                  |                    |                         |                              |                 |
| Louisiana College                                    | 0                  |                    |                         |                              |                 |
| Thomas Jefferson University                          | 0                  | 0                  |                         |                              |                 |
| Muskingum University                                 | 0                  | 0                  |                         |                              |                 |
| Arkansas State University                            | 0                  | 0.001              |                         |                              |                 |
| The University of Texas Health Science - San Antonio | 0                  | 0.001              |                         |                              |                 |
| CUNY Graduate School and University Center            | 0                  | 0                  |                         |                              |                 |
| Loma Linda University                                | 0                  |                    |                         |                              |                 |
| University of Medicine and Dentistry of New Jersey   | 0                  | 0                  |                         |                              |                 |
| The University of Texas Medical Branch               | 0                  | 0.001              | 0.001                   |                              |                 |
| University of Rhode Island                           | 0                  | 0                  |                         |                              |                 |
| Institution Name                             | Overall Centrality | Biology Centrality | Biochemistry Centrality | Civil Engineering Centrality | Math Centrality |
|---------------------------------------------|--------------------|--------------------|-------------------------|-----------------------------|-----------------|
| Fordham University                          | 0                  | 0                  |                         |                             | 0.001           |
| University of Massachusetts - Boston        | 0                  | 0                  |                         |                             | 0.001           |
| Tennessee Technological University          | 0                  |                    |                         |                             | 0.002           |
| Meharry Medical College                     | 0                  | 0                  |                         |                             |                 |
| Nova Southeastern University                | 0                  |                    |                         |                             |                 |
| Texas A & M University System Health Science Center | 0              | 0.001              |                         |                             |                 |
| Texas Wesleyan University                   | 0                  | 0                  |                         |                             |                 |
| University of Memphis                       | 0                  | 0.001              |                         |                             | 0               |
| University of Alabama at Birmingham         | 0                  | 0.001              | 0.001                   | 0.001                       |                 |
| The University of Texas Health Science Center at Houston | 0            | 0.001              |                         |                             |                 |
| Tuskegee University                         | 0                  | 0                  |                         |                             | 0               |
| Southern University and A & M College       | 0                  | 0                  |                         | 0.002                       | 0               |
| Southern Methodist University               | 0                  | 0                  |                         |                             | 0               |
| Cornell College                             | 0                  |                    |                         |                             | 0.001           |
| University of Puerto Rico - Mayaguez        | 0                  |                    |                         |                             | 0.001           |
| Medical University of South Carolina        | 0                  | 0                  |                         |                             |                 |
| Catholic University of America              | 0                  |                    |                         |                             |                 |
| McNeese State University                    | 0                  | 0                  |                         | 0.001                       | 0               |
| University of Mississippi Medical Center    | 0                  | 0                  |                         |                             |                 |
| Yeshiva University                          | 0                  |                    |                         |                             | 0.001           |
| Oregon Health & Science University          | 0                  | 0.001              |                         | 0.001                       |                 |
| Texas State University - San Marcos         | 0                  |                    |                         |                             | 0               |
| South Dakota School of Mines and Technology | 0                  |                    |                         |                             | 0               |

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