

The Use of Simpson's Diversity Index to Develop a Diverse Community for the Enrichment of Experiential Learning

Abstract

Diversity is a buzz-word in our society, and within an academic institution, it plays the role as a tacit of what an institution is able to offer its students to better themselves and contribute to more knowledgeable citizens. While many programs and institutions promise diversity, some of these entities lack the requisite of diversity through their broad, loose definition. In this study, the Simpson's Diversity Index (SDI) is introduced as a possible quantitative method for eradicating the loose definition of diversity. With that, 103 institutions were randomly sampled from a list of 1500 institutions to create a normal distribution curve. With this, one standard deviation to the right and left of the 50th percentile was used to define diversity. This paper concludes that an SDI between 0-0.416215 indicates low diversity, 0.416216 to 0.569147 indicates low-average diversity, 0.569148 to 0.722079 indicates high-average diversity, and 0.722080 to 1 indicates high diversity.

Introduction

Within the core of many educational institutions, diversity is a commercial tactic. While every institution cannot offer the same kind of diversity, various definitions allow self-endorsement and make the term itself vague. The Western Association of Schools and Colleges defines diversity through the various classes: race, ethnicity, socioeconomic status, gender, disability, national origin, religion, sexual orientation, and age (“Statement on Diversity”)

Diversity within an educational institution is crucial to developing well-rounded individuals through discussions and interactions with individuals of a differing class. Applications of diversity towards Honors communities are even more crucial, as the universal mission of an honors program is to invigorate its students to think at a higher caliber than those outside of the program. With discussions of diversity, different perceptions, ideas, and ways of thinking are promoted.

Josh Packard, a Ph.D.-holding sociology professor at the University of Northern Colorado, finds that white students bring no substance to the classroom, as they only discuss about the white ethnic groups. However, black students tend to discuss their experiences and tie them into the academic content. In doing so, over a majority of “white [students] specifically referenced comments made by minority students in the classroom” (150) when writing in their reflection journals. This shows the profound impact that one comment by a black student can have in a classroom. With the difference in perception discussed in a classroom, white students are more likely to understand the varying viewpoints within our society, which may aid them when making future decisions.

To elaborate on the idea of gaining new insight of a different perspective, heterogeneity within the student population has been proven to benefit students at college institutions because

it increases the integrative complexity of the individual. Having a high integrative complexity mindset is beneficial because it allows for individuals to differentiate and integrate multiple dimensions and perspectives into an answer. It was found that "... racially diverse contacts were significantly and positively correlated to IC [integrative complexity] ... Prolonged contact with racially diverse others may have stronger effects on students' complex thinking than the limited contact..." (Antonio et al. 509). Therefore, having a conversation with a minority for a brief moment would not be as beneficial. Rather, by admitting minority students to live on a college campus, students of the majority population would be more likely to interact with the minority students. With the extended interaction, there would be a higher chance of the student of the majority population possessing a more complex cognition as a result.

In addition, Universities and Colleges need to require students to take interdisciplinary courses each semester that they are enrolled at the institution. By doing so, the institution is actively engaging students, who might not share classes, and encourage continued conversations, that may range from religion to race, throughout students' college careers.

Is the Institution Diverse?

A driving problem is that some institutions promote themselves as having a diverse student population, when in reality it is not. When an institution or a program promotes its diverse student body, but its student demographics look exceptionally clustered within one ethnic group, diversity does not *truly* exist.

Table 1. Comparison of Millikin University and Pacific Union College Demographics

<u>Ethnicity</u>	<u>Millikin</u> <u>University</u> (“Millikin University”)	<u># of Students</u>	<u>Pacific Union</u> <u>College</u> (“Pacific Union College”)	<u># of Students</u>
White	73.2%	1510	25.8%	400
Black	13.7%	283	8.6%	133
Hispanic	6%	124	28%	434
Asian	0.8%	16	19.2%	297
Multiracial	4.1%	85	7.1%	110
American Indian	0.2%	4	0.3%	5
Native Hawaiian/Pacific Islander	0.1%	2		25
Other	3%	39	9.4%	25
Total Students:		2,063		1,550

For many institutions, diversity is defined through a set of different classifications, such as gender, sexual orientation, socio-economic backgrounds, or religion, in a collective manner.

Using this collective manner, it could be asserted that each of the 73% of Caucasian individuals attending Millikin offers diversity in the sense that they come from different backgrounds.

However, it would be illogical to define this as a diverse student body simply because of the idea that no two individuals are alike. By this loose principle, it could be deduced that every institution in the world offers diversity because of the fact that no two individuals have the same

experience, even identical twins. For this reason, in order for institutions or honors programs to be able to advertise that their student body is diverse, a set standard needs to be universally accepted, such that ethnicity, race, religion, or socioeconomic status is used as the sole indicator of diversity.

Simpson’s Diversity Index

“A community dominated by one or two species is considered to be less diverse than one in which several different species have a similar abundance” (“Simpson’s Diversity Index”). To measure species diversity within a community, the Simpson’s Diversity Index is typically used. Notwithstanding, this same concept would be a useful tool to determine diversity within an academic institution or honors program. The diversity index (D) is ranged from 0 to 1, with 1 being infinite diversity.

n = Number of Organisms within a specific class

N = Number of Organisms within all of the classes

Equation 1. Simpson’s Diversity Index

Table 2. Diversity Indices of Millikin University and Pacific Union College

	<u>Millikin University</u>	<u>Pacific Union College</u>
Diversity Index based on Ethnicity	0.44	0.81

As the diversity indices on Table 1 grossly indicate, Pacific Union College is more diverse than Millikin University. Using a quantitative measurement such as this, a set standard can be met for advertisement of the level of diversity.

Methods

Creating a Normal Distribution Curve using Simpson's Diversity Index

1500 universities and colleges were selected and assigned an Institution ID number (IIDN) that is unique to this project (<http://colleges.startclass.com>). Institutions were broken up into increments of 300 using their IIDN. 20 institutions were randomly selected for from each sector (<https://www.random.org/integers/>). In addition, Millikin University, Pacific Union College, and Kettering College were added to the list with the other 100 institutions. Their SDI were calculated.

Using the collection of SDI's, the mean and standard deviation values were configured. The equation of the normal distribution curve was found (Figure 1). One standard deviation to the right and the left of the 50th percentile was determined and used as benchmarks for level of diversity (<http://keisan.casio.com/exec/system/14060745333941>).

Equation 2. Equation for Normal Distribution Curve (Wilson)

Results

Table 3. Equation of Normal Distribution Curve

Average (μ)	0.569148
Standard Deviation (σ)	0.153150
Equation of Normal Distribution Curve	

Of 103 data points (Appendix A), the average was configured to be 0.569148, while the standard deviation was 0.153150 (Table 3). Taking these values, one standard deviation to the right and left of the 50th percentile was determined (Table 4).

Table 4. Calculated Lower and Upper Limit of Simpson’s Diversity Index

<u>Percentile</u>	<u>Simpson’s Diversity Index</u>
15.9%	0.416216
50.0%	0.569148
84.1%	0.722080

Discussion

Table 5. Levels of Diversity Based on Simpson’s Diversity Index

<u>Simpson’s Diversity Index</u>	<u>Diversity Level</u>
0 - 0.416215	Low Diversity
0.416216 - 0.569147	Low-Average Diversity
0.569148 - 0.722079	High-Average Diversity
0.722080 - 1	High Diversity

The meaning of the Simpson’s Diversity Index was separated into four categories: low diversity, low-average diversity, high-average diversity, and high diversity. These labels can be used by programs or institutions to distinguish their levels of diversity from others. One major reason for why this system should implemented, apart from using it to create a diverse program, is because it allows for the characterization of how much diversity a program actually has without overpromising or underpromising. Accreditation agencies enforcing this system will

allow for prospective students to be highly informed about the environment that they are entering for their college career.

Conclusion

To conclude, diversity is a crucial element to educational learning, especially in an Honors program. To heighten the caliber of learning and awareness of the varying perspectives within our society, diversity within an Honors program offers a front-row seat to experiential learning. With that being said, the Simpson's Diversity Index could be a useful method to ensure the cultivation of diversity within the Honors program.

Works Cited

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APPENDIX A. RANDOMLY-SAMPLED INSTITUTIONS AND THEIR SDI.

ID	Institution	Institution ID Number	SDI
1	Harvard University	1	0.713992079
2	Yale Universtiy	3	0.704484882
3	California Institute of Technology	7	0.735212036
4	University of Chicago	9	0.698339373
5	Emory University	40	0.717772058
6	Grinnell College	53	0.631950646
7	Colorado College	87	0.568466761
8	Cooper Union for the Advancement of Science and Art	100	0.767900171
9	SUNY at Binghamton	101	0.658732948
10	Muhlenberg College	128	0.436189973
11	Syracuse University	135	0.660510314
12	Brigham Young University - Provo	153	0.305709134
13	University of Dayton	200	0.432250422
14	Loyola Marymount University	205	0.734018154
15	Yeshiva University	208	0.532295937
16	Bradley University	217	0.577500187
17	Ramapo College of New Jersey	218	0.55125948
18	University of California - Riverside	224	0.74270073
19	The University of Texas at Dallas	228	0.768583302
20	Allegheny College	230	0.425598403
21	University of Missouri - Columbia	307	0.409317555
22	Pacific Lutheran University	326	0.532313922
23	New Mexico Institute of Mining and Technology	353	0.635029362
24	Millikin University	404	0.439920863
25	University of Massachusetts - Lowell	405	0.588380603
26	Towson University	419	0.58919644
27	Augsburg College	427	0.64286401
28	Lipscomb University	431	0.41806533

29	West Chester University of Pennsylvania	434	0.383577111
30	Kettering University	438	0.26141913
31	University of Rhode Island	465	0.494977795
32	William Carey University	476	0.517414494
33	Ouachita Baptist University	486	0.297581486
34	Stevenson University	487	0.597166692
35	Pennsylvania State University - Wilkes-Barre	507	0.233057184
36	CUNY Brooklyn College	509	0.760967709
37	St. Mary's University	510	0.596580574
38	Pennsylvania State University - Mont Alto	554	0.358117027
39	Loras College	562	0.297334591
40	Abilene Christian College	566	0.553725859
41	University of Puget Sound	574	0.435537007
42	King's College - Wilkes - Barre	580	0.391933668
43	Mount St Mary's University	616	0.626855746
44	Oklahoma Christian University	620	0.558533328
45	Bethany Lutheran College	628	0.213924252
46	Baker University	687	0.446091895
47	Lynchburg College	690	0.494627032
48	Newman University	695	0.42956549
49	Carroll University	698	0.307199571
50	Cleveland Institue of Art	707	0.509122136
51	Keene State College	709	0.261693707
52	Laguna College of Art and Design	717	0.687981413
53	University of Illinois - Springfield	752	0.630375867
54	Texas A&M University Commerce	756	0.68789921
55	Merrimack College	791	0.496205073
56	Northern Illinois University	800	0.615606582
57	Hope International University	802	0.742564326
58	California State University - San	823	0.712767715

	Marcos		
59	Menlo College	834	0.797289074
60	Pacific Union College	837	0.797394125
61	Touro College	841	0.629304285
62	University of New Mexico - Main	870	0.678176855
63	Lee University	893	0.42772885
64	Brigham Young University - Idaho	916	0.563816872
65	Rivier University	925	0.5273369
66	Daniel Webster College	935	0.581068168
67	Beacon College	977	0.488039165
68	Fashion Institute of Design & Merchandising - Los Angeles	995	0.769933608
69	Johnson & Wales University - Denver	998	0.650162417
70	Colby-Sawyer College	1001	0.506836733
71	Amberton University	1003	0.671889229
72	Excelsior College	1006	0.598881888
73	Taft University System	1008	0.703770993
74	Roseman University of Health Sciences	1020	0.655162773
75	University of Arizona - South	1044	0.598724451
76	National America University - Wichita	1055	0.598588622
77	South Baylo University	1063	0.616455344
78	University of Phoenix - Colorado	1069	0.702216442
79	Southern Californian University of Health Sciences	1082	0.734821852
80	University of Puerto Rico - Medical Sciences	1085	0.011951167
81	Antioch University - Los Angeles	1100	0.755300474
82	Hondros College	1136	0.554666561
83	University of Western States	1139	0.413879301
84	Brown Mackie College - Dallas	1216	0.675192498
85	Sullivan College of Technology and Design	1222	0.4914224
86	American National University	1234	0.673447952

87	Virginia College - Augusta	1261	0.324401764
88	Bryant & Stratton College - Virginia Beach	1272	0.75348817
89	University of Phoenix - Texas	1274	0.402090662
90	Walden University	1280	0.694067145
91	Grantham University	1281	0.707458358
92	Brown Mackie - Findlay	1342	0.600221773
93	Pensacola State University	1350	0.51315815
94	Green River College	1400	0.715887807
95	Eastwick College-Ramsey	1411	0.705934274
96	Florida State College at Jacksonville	1412	0.678313925
97	Brazosport College	1445	0.599281976
98	Boward College	1452	0.725910851
99	University of Maryland - Baltimore	1482	0.660930429
100	Oklahoma State - Oklahoma City	1498	0.667525945
101	Palm Beach State College	1555	0.727410561
102	Colorado Mountain College	1580	0.535232186
103	Jackson College	1621	0.518549322