Tennessee Board of Regents
Office of the Vice Chancellor for Academic Affairs

Choice Architecture, Academic Foci and Guided Pathways

For students in higher education, the process of navigating institutions from admission to graduation involves large numbers of crucial decisions. Despite the advantages to having a clear direction of study, (see [1]) nationally more than 33 percent of first generation students begin college without identifying a major or program of study, whereas only 13 percent of their peers with college-going parents do so (see [4]). Students select their majors with little information about what is involved in successfully completing the program, and often discover too late that the picture they had of that discipline is very different from the reality (see [2] and [3]). Low-income and minority students express less knowledge of programmatic demands than their peers. Although students may think that they have an interest in a particular area, they have often received little information about whether their academic abilities create a realistic chance of successfully completing that program. What is more, they may associate each discipline with a limited number of careers, and often eliminate disciplines from their list of choices because those jobs are unappealing, without realizing the true variety of career opportunities that lie on the other side of graduation.

Information and choice clearly have a significant impact on a student's ability to navigate through a degree successfully. This greatly raises the stakes on the ways in which the information is presented and how the choices are framed. Schwartz (see [5]) has argued for a 'paradox of choice' - that having too many options can lead to a 'decision paralysis'. Tversky and Kahneman (see [6], [7] and [8]) have carefully analyzed how decisions are made in the face of an abundance of choice. They, and others, have found that when presented with too many choices people fall back on a variety of rules-of-thumb, anecdotal evidence, or rely on cognitive ease and the halo effect. Often, poorer choices are made in situations of an abundance of choice, using these fallback methods, than in situations with more limited choice. In fact the literature on 'choice overload' suggests that too many options can result in several adverse experiences including a depletion of cognitive resources and post-decision feelings of regret (see [5] and [9]). Given the multiplicity of choices entailed in selecting from a college's array of majors or programs, and then satisfying the curricular requirements they require, these adverse experiences may play a significant part in student success, especially for at-risk populations. In fact it seems that a more focused choice structure would be far more effective and preferred (see [10], [11], [5] and [9]).

To explore the initial impact of how students go about choosing their degree program, we carried out a careful analysis of Tennessee Board of Regents (TBR) system-wide data. We chose to examine student persistence over a 3 academic-year period for those who began without a chosen program and see how their choosing might correlate with their persistence. Of the 4470 students in the study 57 percent completed all three years; however that percentage was dramatically affected by their program choice or lack there of during their first year. Only 29 percent of the students who did not select a program during their first year completed all three years, compared to a persistence rate of 95 percent of students who did find a program during their first year. In fact more than half of those students who arrived in our

system not enrolled in a specific program (undecided) dropped out before choosing any particular program.

This system-wide analysis suggested that student success would be enhanced if we were able to enable more students to identify a direction of study as early as possible. That said, the behavioral economics research on the effects of choice-paralysis suggested that we would need to create a modified choice architecture for these students in which they could initially select from a smaller number of possibilities (see [12] and [13]) rather than requiring them to choose a single program from the array of possibilities. Through discussions involving academic leaders and faculty groups across the institutions, we worked together as a system to create nine *academic foci* that would act as a guiding structure for student choice. The criteria for this work was not a restructuring of the colleges and departments, but rather to identify a collection of affinity groups of disciplines that together encompassed all of the programs at all 19 community colleges and universities, whilst intentionally recognizing that a single degree program might readily be found in several foci simultaneously.

We agreed on eight: *Applied Technology*; *Arts, Business; Education; Health Professions; Humanities; Social Sciences; and STEM*; and also retained a ninth exploratory *General Education* focus to create a direction for students who were initially unable to identify with any of those other eight possibilities, or who sought an interdisciplinary option.

As a system we have now implemented these *academic foci* as part of the program choice architecture. Every incoming student began academic year 2015-16 in either a specific program or an academic focus. No student was classified as *undecided* or defaulted into a general degree classification. Each institution
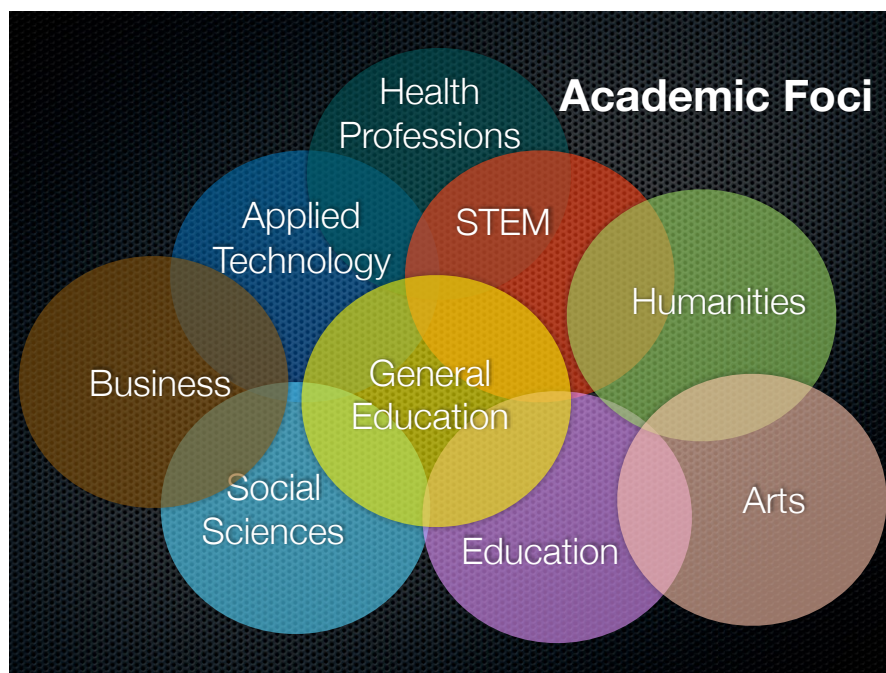
has developed enhanced orientation and advising initiatives to ensure that students were able to make more informed choices about the future possibilities that each of these programmatic pathways opens up. They have also developed first year curricular experiences for each focus area that allow students to take coursework that applies to each of the disciplines within that focus, and also enables the student to refine their choice to a particular program of study.
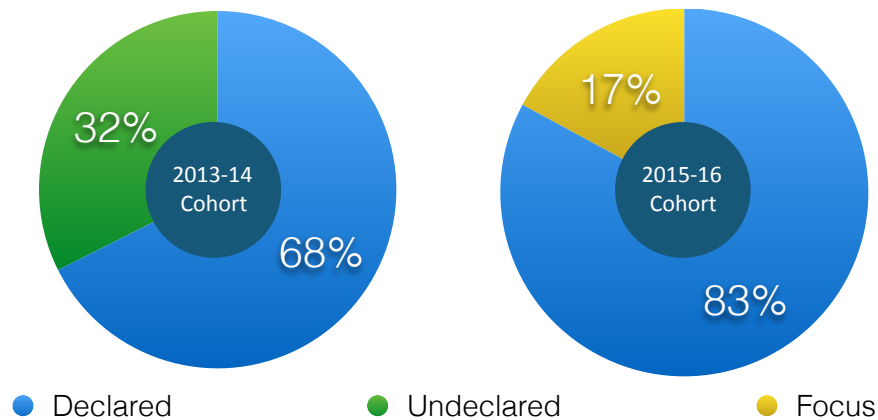
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To analyze the initial student perception of this experience we surveyed the incoming student class with an broad academic mindset instrument. Whilst hopefully the data from the over 6000 replies will provide significant insights into student attitudes toward their college experience, it does provide an initial window into the effectiveness of this new choice architecture. When asked why they had chosen their program, focus or major, overwhelmingly (78 percent) students said that they had chosen an area in which their interests lie. Of the remaining students, they expressed motivations connected with salary, parental suggestion or a role model. However less then 1 percent expressed that their choice had been motivated solely by the requirement to "pick something".

Reasons for *program* or *focus* choice
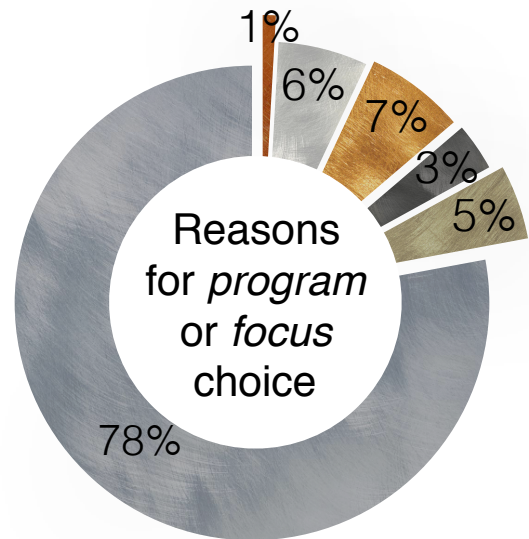
- 🔴 I Had to Pick Something
- ⚪ I have not selected a final major yet
- 🟠 The salary potential is attractive to me
- ⚫ I know someone who majored or works in this field
- 🟤 My parents or an advisor suggested this choice
- 🔵 My interests lie in ths area

The introduction of this new choice architecture, together with the accompanying orientation and advising interventions also had a significant impact on the ability of students to come to a decisions about their program. We had anticipated that the proportion of students who would choose to begin in a focus area rather than a specific program would be close to that which traditionally had been undecided. However, that is not what the Fall semester data showed. In fact in a comparison of the program choices for university students in 2013-14 (before any of this work began) and 2015-16 shows an increase from 68 percent to 83 percent of students choosing a program from the start. Similarly in the community college setting, the proportion of students who chose to begin in either an A.A.S. program or one of the


- 🔵 Declared
- 🟢 Undeclared
- 🟡 Focus

Comparison of Program choice for University Freshmen

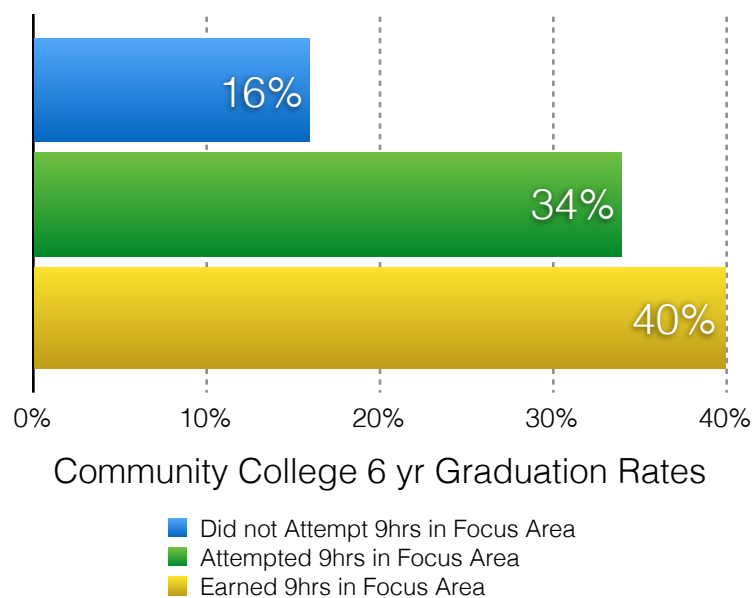Tennessee Board of Regents Technical Brief No. 2 - Tristan Denley

Tennessee Transfer Pathways grew from 70 percent to 77 percent. This analysis shows that the introduction of this new choice architecture has enabled more students to begin with a definitive direction of study.

We were also curious how the introduction of the new choice architecture, together with the accompanying curricular maps, has impacted course taking behaviors and potentially impacted student success. The work of Jenkins and Woo (see [1]) established a clear impact on the success rate of community college students when they earn at least 9 credit hours in their program during their first academic year. We carried out a similar historical analysis on Tennessee Board of Regents students both in the community college and university settings. In our analysis we identified those students who attempted and also those who earned at least 9 hours of credit in courses whose 2-digit CIP codes were in their academic focus area and compared their 6 year graduation rates to those students who did not attempt 9 hours in their focus area. We too found that the graduation rates of those students who earned 9 hours in their focus area were greatly increased. However, we found that much of the increase is already achieved by attempting those 9 hours.
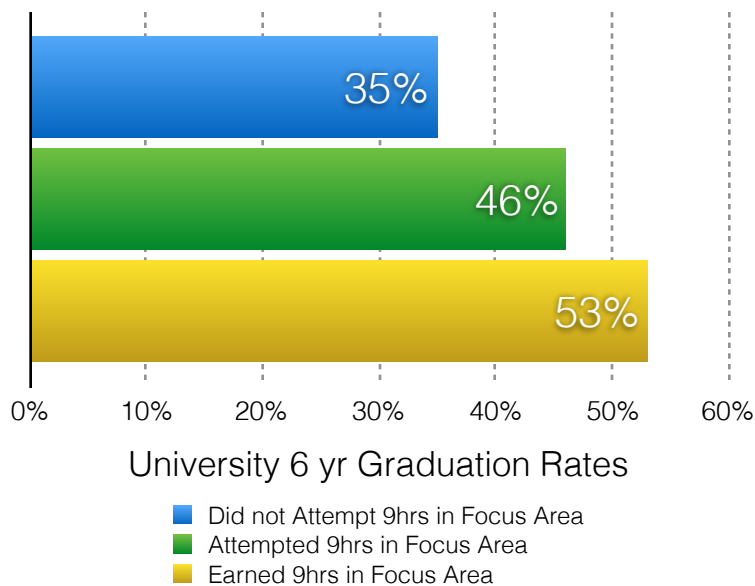
This effect was apparent in both the university and community college settings. In the universities, graduation rates increased from 35 percent for those students who did not attempt 9 hours in their focus to 46 percent for those students who did, and increased further to 53 percent for those students who earned 9 hours in their focus in their first year. In the community colleges the gains were even more striking with graduation rates of 16 percent for those not attempting 9 hours, increasing to 34 percent for those students who did, and increasing further to 40 percent for those students who earned 9 hours in their focus in their first year.

It is perhaps not surprising that those students who earn 9 hours are more successful than their counterparts that do not, since they are by definition students who successfully complete credits. However, the increased graduation rate for those who simply *attempt* focus hours demonstrates the impact that changes in advising patterns can achieve.

These graduation rate differences are even more pronounced for our minority student population. In the

University 6 yr Graduation Rates

- Did not Attempt 9hrs in Focus Area
- Attempted 9hrs in Focus Area
- Earned 9hrs in Focus Area

35%
46%
53%

Community College 6 yr Graduation Rates

- Did not Attempt 9hrs in Focus Area
- Attempted 9hrs in Focus Area
- Earned 9hrs in Focus Area

16%
34%
40%

university sector the graduation rate for minority students who did not attempt 9 hours in their focus area was 30 percent, but this increased to 42 percent for those who did attempt 9 hours and 48 percent for those who successfully earned those hours. In the community colleges the graduation rate for those students who did not attempt the 9 hours in their focus was 7 percent, whereas it was 29 percent for those students who did attempt 9 hours in their focus area and 35 percent for those who earned their hours.

During 2013-14 the Tennessee Board of Regents institutions began to develop default degree-maps for each degree program. These maps were completed and posted during 2014-15. As well as this, faculty teams also created default degree-maps for each of the 56 Tennessee Transfer Pathways(TTP). The TTP degree maps were all constructed along a holistic *harmonius-pathway* design which used a discreet optimization design to ensure that students who change from one pathway to another experience as little credit loss as possible. These paths were also constructed to recommend that the student attempt at least 9 hours of credit in their academic focus area.
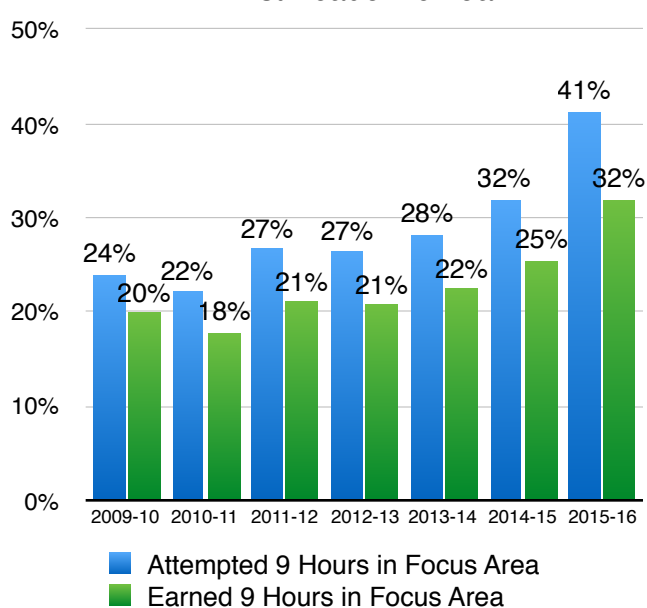
Analysis of the course-taking and earning patterns for these academic years shows that the introduction of default degree pathways and our changes to advising have already begun to increase the proportions of students who are attempting and earning at least 9 hours in their focus. We compared the incoming freshmen students in the 2014-15 and 2015-16 cohorts and compared the proportions who attempted and earned at least 9 hours in their focus area to those in previous cohorts. In the universities the proportion attempting and earning 9 hours remained relatively steady up until 2012-13. But since that point the proportion of students attempting at least 9 hours in their focus has increased by 81 percent and those earning 9 hours increased by 65 percent.

The pattern in the community colleges were similar as might be expected since that was a primary design principle of the Tennessee Transfer Pathway degree-maps. Again the proportions of those attempting or earning at least 9 hours in their focus areas remained fairly static until 2012-13. But with the introduction of the the new default pathways and guided pathway advising, and also the requirement to choose a program or focus area, we have seen a 56 percent increase in students attempting 9 hours in their focus and an increase of 54 percent for those who earned 9 focus hours.
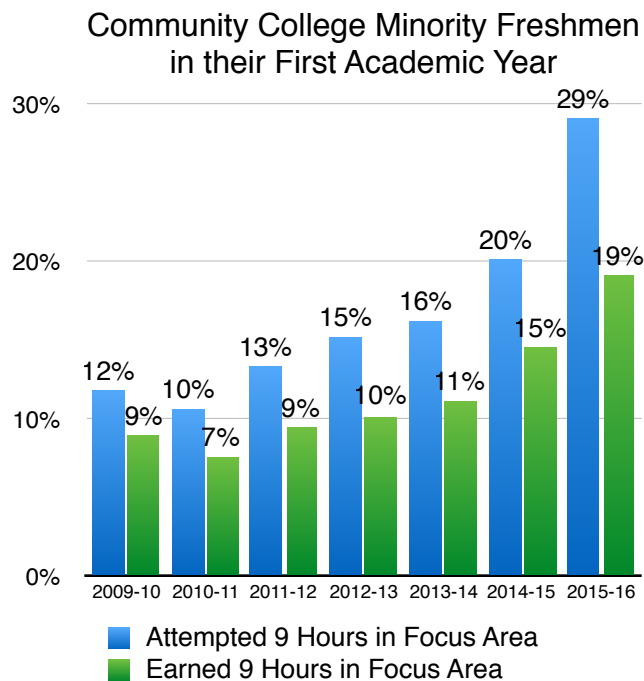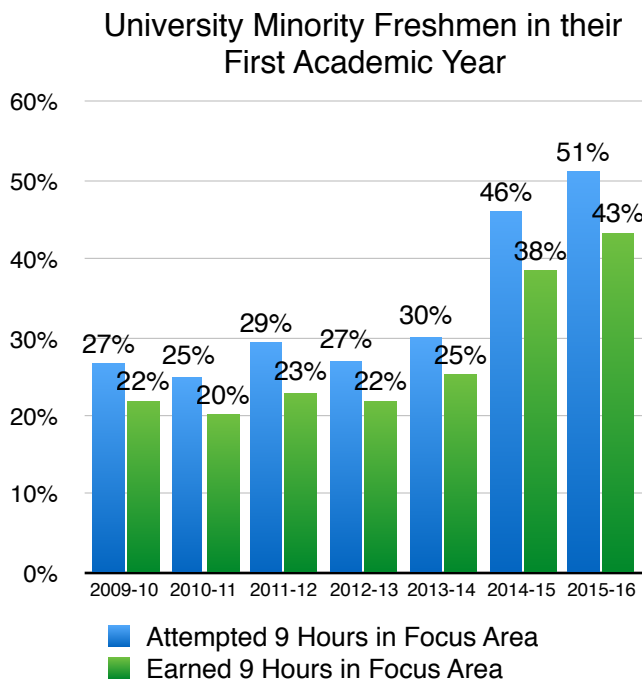
University Freshmen in their First Academic Year

Attempted 9 Hours in Focus Area
Earned 9 Hours in Focus Area
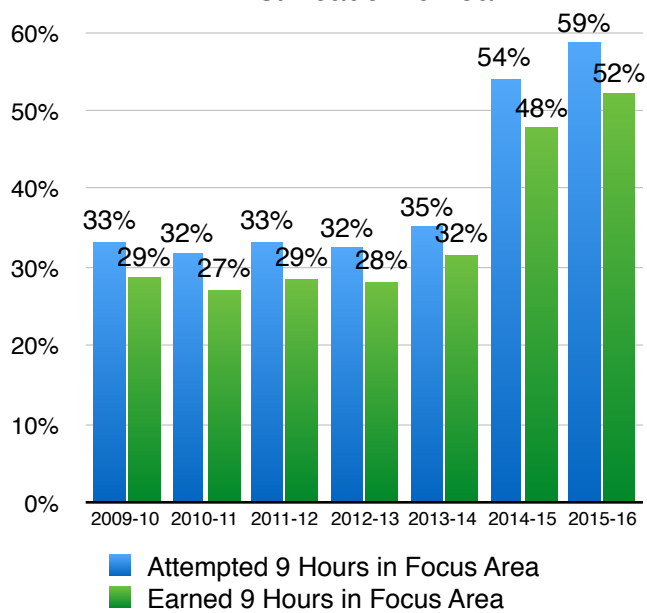
Community College Freshmen in their First Academic Year

Attempted 9 Hours in Focus Area
Earned 9 Hours in Focus Area

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Once again the effect of this transformation was more pronounced for the minority student population
with an essentially doubling of proportions of students attempting and those earning 9 hours in their
focus since 2012-13.

University Minority Freshmen in their First Academic Year

Year	Attempted 9 Hours in Focus Area	Earned 9 Hours in Focus Area
2009-10	27%	22%
2010-11	25%	20%
2011-12	29%	23%
2012-13	27%	22%
2013-14	30%	25%
2014-15	46%	38%
2015-16	51%	43%

Community College Minority Freshmen in their First Academic Year

Year	Attempted 9 Hours in Focus Area	Earned 9 Hours in Focus Area
2009-10	12%	9%
2010-11	10%	7%
2011-12	13%	9%
2012-13	15%	10%
2013-14	16%	11%
2014-15	20%	15%
2015-16	29%	19%

Further time and analysis will be necessary to asses the long term effects of architecting student
program choice in this way. But, this initial data suggests that this year's incoming class began their
studies along a defined pathway that was a conscious choice, and that this combined with guided
pathway work has had an impact on course-taking patterns that will have profound future impact on
graduation rates and student success.

 *For further information concerning this study or other student success initiatives in the Tennessee Board
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References

1. Jenkins, D. & Cho, S-W. (2014). Get With the Program…And Finish It: Building Guided Pathways to Accelerate Student Learning And Success. In B.C. Phillips, & J.E. Horowitz, Eds., New Directions for Community Colleges. (Special Issue: The College Completion Agenda: Practical Approaches for Reaching the Big Goal.) San Francisco, CA: Jossey-Bass. 2013(164): 27-35.
2. Smith, J. and Wertlieb, E. (2005) Do First-Year College Students' Expectations Align with their First-Year Experiences?,NASPA Journal, Vol. 42, no. 2, Winter
3. Kirst, M. W., & Venezia, A. (Eds.). (2004). From high school to college: Improving opportunities for success in postsecondary education. San Francisco, CA: Jossey-Bass.
4. Chen, X. (2005) First Generation Students in Postsecondary Education: A Look at their College Transcripts, National Center for Educational Statistics
5. Schwartz, B. (2005). The Paradox of Choice: why more is less. Harper Perennial.
6. Kahneman, D. (2011) Thinking Fast, Thinking Slow, Farrar, Straus and Giroux

7. Kahneman, D. & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. Econometrica, 47(4): 263–292.
8. Tversky, A. & Kahneman, D. (1974). Judgement under Uncertainty: Heuristics and Biases. Science, New Series, 185(4157): 1124–1131
9. Reed, D. D., DiGennaro Reed, F. D., Chok, J., & Brozyna, G. A. (2011). The 'tyranny of choice': Choice overload as a possible instance of effort discounting. The Psychological Record, 61(4), 547-60.
10. Guided Pathways to Student Success, Public Agenda, 2014
11. UK Review of the provision of information about higher education: Advisory Study and Literature Review, HEFCE, 2014
12. Iyengar, S., Huberman, G. , & Jiang, W. (2004). "How Much Choice Is Too Much? Contributions to 401(k) Retirement Plans,"in Pension Design and Structure: New Lessons from Behavioral Finance, ed. by Olivia S. Mitchell, and Stephen P. Utkus, Oxford University Press.
13. Shah A. M., & Wolford, G. (2007), "Buying Behavior as a Function of Parametric Variation of Number of Choices," Psychological Science, 18 (5), 369–70