A PIPELINE PROBLEM IN HIGHER EDUCATION: REALITY OR “COP OUT?”

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Abstract

This paper uses national data from the American Council on Education (ACE) to study the progress of different ethnic groups through the academic pipeline – stages studied include the bachelors, masters, doctoral, levels, and then progress to the Assistant, Associate, and (full) Professor stages, to full-time administrators and finally to the President stage. Since institutional heads are sometimes called Chancellor, this is referred to in the paper as the CEO stage. Critics of the Higher Education system might claim that the relatively low percentages of minorities in Higher Education represent a failure of our system to provide sufficient minority graduates. However, an opposing point of view states that these low percentages and numbers are simply a reflection of the “pipeline problem.” In other words, since there are low numbers (or percentages) of minorities coming through the system – at each stage, if the “Input” is small, then, even the best processes of creating good products, are doomed to turn out, at best, low quantities of “Output.” The results show that the answer to this question is not a monolithic “Yes” or “No,” but that there is considerable variation for the various ethnic groups at different stages of the academic pipeline. Different ethnic groups need support and assistance to succeed at different stages of the academic pipeline. These imbalances can be corrected only with a substantial commitment of energy and resources from the entire higher education community. Such, then, is the recommendation – that all of these players and partners commit themselves to helping all groups – the majority and each minority population achieve success at all stages of the higher education pipeline.

Keywords: Minorities, Academic pipeline, Progress or success at each stage

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Introduction

Higher Education critics sometimes claim that the relatively low percentages of minorities in Higher Education represent a failure of our system to provide sufficient minority graduates, sufficient numbers of minority participants in the economic progress that results from the holding of degrees, and the relative dearth of minority role models for our young minorities.

However, an opposing point of view states that these low percentages and numbers are simply a reflection of the "pipeline problem." "The Pipeline Problem" in this context is defined as the defense that there are low numbers (or percentages) of minorities coming through the system – at each stage, if the "Input" is small, then, even the best processes of creating good products, are doomed to turn out, at best, low quantities of "Output." In effect, if we look at this as a "production process" (for the creation of bachelors degrees, or any other stage of higher education), it would look like this: INPUT $\rightarrow$ PRODUCTION PROCESS $\rightarrow$ OUTPUT

If the input is very low, then the best of efficiencies in the production process will turn out low numbers of output. Though one might more reasonably call it an Input Problem, this is what is commonly referred to as the Pipeline Problem – and it will be so labeled in this paper.

This paper examines if the process is turning out output for minorities at least the same rate as it does for the majority. We accept that in many cases, it should work better than it does for the majority, to compensate for low input. However, if it does at least as well, there may a reasonable case to be made that the problem of low minority output is more a result of low input (the pipeline problem) rather than a flawed production process.

Literature Review

There is a considerable dearth of literature on this topic, with one notable exception: The American Council on Education (ACE) periodically releases reports entitled Annual Status Report on Minorities in
Higher Education. A good summary of 20 years of such reports is provided in *20 Years of Minorities in Higher Education and the ACE Annual Status Report*, published in July of 1994. The other references to the topic are found, in the main, in media reports, campus publications, and Web publications. The 5-page limitation on this paper are too restrictive to examine the literature thoroughly. The entire 25-page paper may be requested from the author for a more complete treatment.

**Methodology and Analysis**


To address the question about whether the low numbers of minorities in the pipeline fully explain the low output, this analysis examines flows through the pipeline, or “conversion rates.”

Let us just pick one stage of the pipeline for illustration: Conversion of Bachelors degree holders to Masters degree holders. A complaint is that there are insufficient numbers of minorities with Masters degrees. This is true, but where does the problem lie? Is the main source of the problem the dearth of supply of minority Bachelor’s degree holders, or the inefficiency of the Bachelors to Masters pipeline? Obviously, this is not a trivial problem – we need to identify the major source of the problem so that we may attempt to address it. Otherwise, we are distracting ourselves and our resources from the major issue.

If Masters degree programs are doing a good job in graduating those students that enter, then the problem is indeed that of adequate supply of Bachelors degree holders. If Masters degree programs are doing a poor job in graduating those students that enter, then the problem is that, in addition to inadequate supply of Bachelors degree holders, Masters degree programs need to improve their performance and their conversion rates.
The next question is: how do we define doing a “good job” or a “poor job” in moving minorities ahead in the pipeline (or converting them to the next stage), not just for Masters programs but for any stage in the pipeline: Bachelors to Masters, Masters to Doctorates, Doctorates to Assistant Professors, Assistant Professors to Associate, Associate to Full, senior Faculty to administrators, and administrators to Presidents? Clearly, there is no absolute measure (less than 100 percent) that universally defines “success” in this regard. So, as a surrogate measure of success in moving minorities ahead in the pipeline (or conversion to the next stage), this analysis uses conversion rates of the majority (Whites) as the benchmark. If, at any stage of the pipeline, we are moving minorities to the next stage at least at the same rate as that for the majority, then we will know that (while that conversion rate may or may not be a great one), at least that section of the pipeline is not exacerbating the problem.

At any stage of the pipeline, are we at least creating output of minorities at the same rate (relative to input) as we do for the majority? If, for 100 majority members in the input stream, X of them successfully “graduate” to the next higher level, and for every 100 minorities in the input stream, Y minorities successfully “graduate” to the next higher level, how does Y compare with X? How does the “conversion rate” for minorities (an output of Y per 100 in the input stream) compare with that for the majority (an output of X per 100 in the input stream)?

If Y is greater than X, then the shortage of minorities at the next higher stage is probably – in large part – due to a shortage of minorities in the pipeline (or at the previous stage). It would imply that we are doing at least as good a job as we do for the majority in moving people successfully through the pipeline. That would not make the shortage disappear (because of low input numbers), nor would it imply that we are doing the best job we can, but at least we would know that the process of conversion for minorities is working as well as it is for the majority.
However, if $Y$ is less than $X$, then we have a more serious problem. It would not be appropriate to ascribe "blame" for the shortage of minorities at any stage of the academic pipeline solely on the shortage of minorities in the pipeline. Rather, we would need more and better support systems to move them to the next higher stage at a higher rate, so that we do at least as well for minorities as we do for the majority.

So, how does the "conversion rate" for Minorities ($Y$ per 100 in the input stream) compare with that for the majority ($X$ per 100 in the input stream)? One of the most significant (though not unexpected) findings shows that the answer is different for each stage of the higher education pipeline, and is different for each minority considered. While we (higher education) may be doing relatively well for Minority Group A at one stage of the pipeline, we may not be doing well for Minority Group B at that stage of the pipeline, nor may we be doing well for Minority Group A at another stage of the pipeline.

The following computations were done for each ethnic group provided in ACE tables -- White (non-Hispanic), African American, Hispanic, Asian American, and American Indian:

(1) The output of each stage of the pipeline is divided by the output of the previous stage of the pipeline (as a surrogate input measure) to obtain a "conversion ratio." Since we are restricted to using those years provided in the ACE tables, we chose the closest approximation to the appropriate years to be used. (2) Then, we compute a comparison ratio: the conversion rate for each minority relative to that for the majority. For convenience of representation, the conversion rate for the majority is represented as the baseline, and so a positive percentage rate for a minority group implies that the progress of that minority through the pipeline is that better than that of the majority, and a negative percentage rate for a minority group implies that the progress of that minority through the pipeline is that worse than that of the majority. (3) Finally, these results are shown graphically in on the following page.
Results and Conclusions

The graphs show that different ethnic groups need support and assistance to succeed at different stages of the academic pipeline: ranging from African Americans at the earlier stages to Asian Americans at the later stages. These imbalances can be corrected only with a substantial commitment of energy and resources from the entire higher education community – to include national organizations such as AASCU and ACE, Governing Boards and AGB, System heads, national search firms, and higher education partners. Such, then, is the recommendation – that all of these players and partners commit themselves to helping all groups – the majority and each minority population achieve success at all stages of the higher education pipeline.

Graphs Showing Results
The bright blue bars represent any case in which any minority group’s advancement through any stage of the pipeline is not only lower than that of the majority, but at least 10 percent lower than that of all the other minority groups. They point out the most pressing need for intervention and assistance from national bodies such as AGB, AASCU, ACE, and others.