

# Too Much of a Good Thing Can Be Taxing: A Study of SCH Accrual and Student Outcomes



Carmen E. Allen, M.B.A., Maureen G. Croft, Ph.D.

Institutional Analysis & Performance Measurement, University of Houston

---

## Background and Impetus for Study

The University of Houston embarked on a comprehensive study of Semester Credit Hour (SCH) accumulation to better understand patterns of excess SCH accrual and the possible negative impact of excess SCH on student success. The study was designed and conducted in response to three interrelated issues facing the university with respect to SCH:

- 1) Higher than average SCH accrual of UH undergraduates upon graduation as compared to peer institutions in Texas<sup>1</sup>;
- 2) The potential impact of proposed changes that would cap state formula funding at 15 hours beyond what is required for a degree (rather than the current 30 hours beyond what is required for the degree), resulting in the assessment of out-of-state tuition charges for students reaching that cap<sup>2</sup>; and
- 3) The need to better understand whether newly proposed transfer admissions policies should include SCH parameters.

It was hoped that, through this study, the university would better understand how to program plan and intervene in a way that promotes timely graduation with efficient use of available SCH for UH students.

## Chronological Description of the Study and Results

Because this study addressed multiple, interrelated facets of SCH accumulation and would potentially impact multiple policy agendas, several analyses were conducted, each building on findings from previous phases of analysis. Here we describe each analysis and its findings in a chronological fashion.

<sup>1</sup> The most recent THECB Timely Graduation report can be found at:

<http://www.txhighereddata.org/reports/performance/hb1172/BaccTimelyGradFY2012.xls>

<sup>2</sup>Details of THECB recommendations to the 83rd Texas Legislature can be found at:

<http://www.thecb.state.tx.us/>

**Phase 1 Findings: Transfer students accumulate the most SCH**

The first analysis used data from FY2011 graduates to look at differential SCH accumulation among students. The data show that a large proportion of UH students graduate with SCH over the funding cap and that transfer students are at much higher risk of graduating over the cap. For example, 39% of students beginning studies at UH as FTICs and 59% of transfer students graduated with 30+ hours over what was required of their degree in FY2011.

Under the proposed formula funding cap of 15+ hours over what is required for the degree, 69% of students beginning studies at UH as FTICs and 83% of transfer students would be expected to graduate over the cap.

**Phase 2 Findings: Other schools with higher proportions of transfer students (or with more STEM graduates) did not have higher average SCH**

Our findings in Phase 1 led us to hypothesize that other universities with high proportions of transfer students would mirror UH by having higher average SCH at graduation. Since STEM degrees tend to require more credit hours than others, we also suspected that universities with a large proportion of STEM graduates might have higher average SCH at graduation.

Using a dataset containing information about mean SCH accrual, the percentage of graduates who are transfer students, and the percentage of degrees awarded to STEM majors for each Texas public institution of higher education, we tested for covariance between the percent of graduates who were transfer students and/or percent of graduates with STEM degrees and the average SCH of graduates (see **Table 2**). No covariance was detected.<sup>3</sup> The focus of the study then turned to identifying factors at admission that might serve as contributing factors to high SCH accrual upon graduation.

**Table 1:** Excerpt from FY2011 THECB Timely Graduation Report

Institution	Avg. Attempted SCH at Graduation
Texas A&M	137.3
Texas Tech	145.9
UT-Austin	131.3
UH	150.6

**Table 2:** Pearson’s correlation matrix between percent of STEM graduates, percent of transfers and average SCH at graduation - Texas publics

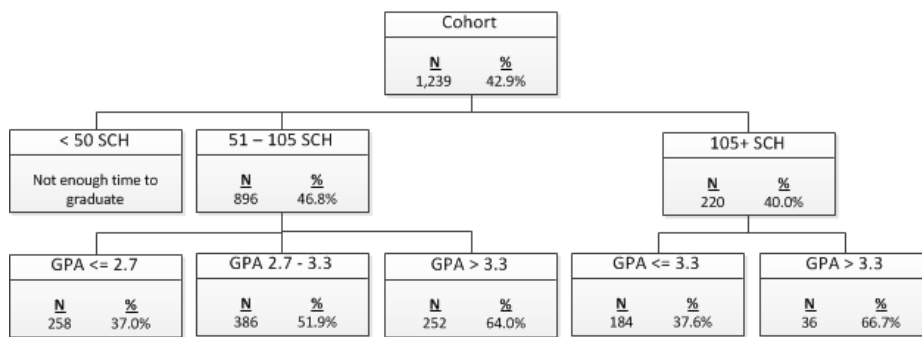
	% STEM Grads	% Transfers	Avg. SCH
% STEM Grads	1.000		
% Transfers	-0.545*	1.000	
Avg. SCH	.004	-.027	1.000

**Note:** \* Correlation is significant at the 0.01 level

<sup>3</sup>Interestingly, there was a significant negative relationship between percent of STEM graduates and percent of transfer students, suggesting that universities with a higher proportion of transfer students grant proportionally fewer STEM degrees (r = -.55, p < .01).

**Table 3:** Fall 2008 Transfer Cohort Graduates' SCH at Transfer and Graduation

	N	SCH Transferred		SCH at Graduation	
		Mean	Difference from Total Mean	Mean	Difference from Total Mean
Blinn College	35	68.7	-15.1	148.3	-6.2
San Jacinto CC	165	86.2	2.5	152.4	-2.1
Wharton County Jr. College	49	71.8	-11.9	142.5	-11.9
HCCS	370	86.3	2.6	152.5	-1.9
Lone Star College	304	87.3	3.6	155.7	1.3
UH-Downtown	40	70.7	-13.1	144.4	-10.0
All Other Transfer Institutions	436	81.8	-1.9	158.7	4.3
All Transfer Institutions	1,399	83.7		154.4	



**Figure 1:** Fall 2008 Transfer Cohort Graduation Rates by Transfer SCH and Transfer GPA

***Phase 3 Findings: No specific feeder colleges contribute to disproportionately high transfer student SCH***

The third analysis used a dataset containing transfer and graduation information for all students who transferred to UH in fall 2008 to test whether a specific feeder community college might be the cause of the excess SCH being transferred to UH, especially if UH accepted a disproportionate number of transfer students from that institution.

**Table 3** shows that the mean transfer SCH is nearly identical between UH’s three largest feeder campuses (between 86 and 87 hours) and not appreciably higher than that from other 2-year and 4-year feeder institutions. With no appreciable difference found between feeder schools, our attention turned to the question of how excess SCH might impact student success.

***Phase 4 Findings: Very high SCH at transfer is associated with lower graduation success***

Linking SCH accrual to graduation outcomes requires a cohort tracking methodology that follows students as they matriculate through the university towards graduation. In essence, the relationship between SCH and graduation is positive; the complexity arises in determining whether excess SCH might have a tipping point where SCH ceases to have a positive relationship with graduation success. Based on the results of exploratory analysis using logistic regression, it appeared that this relationship was more complex in that SCH might interact with transfer GPA.

Using the same dataset that was built for the third analysis, we tested the “tipping point” hypothesis. Since this question required the use of a dichotomous outcome variable (graduated/not graduated), Chi-squared Automatic Interaction Detection (CHAID) modeling was used to help identify whether a tipping point did indeed exist and where that point might be (the interaction).

**Figure 1** displays information about the interaction between transfer SCH and transfer GPA on four-year graduation success at UH. Results indicate that transfer GPA is a very strong predictor of graduation success for transfer students regardless of SCH. SCH does not appear to become especially problematic to graduation outcome until the transfer SCH is greater than 105 credit hours. At that point, the probability of success/failure is maximized, and SCH appears to be a greater predictor of student graduation success than transfer GPA. Specifically, the probability of graduating was diminished for students with transfer GPAs below 2.7 if their transfer SCH was below 105. In addition, the probability of graduating was diminished for students with transfer SCH above 105 in all GPA groups except for the very few with GPAs over 3.3.

## Conclusions

The study found large differences in SCH accrual between graduates who began studies at UH as FTICs and as transfer students with transfer students more likely to have accumulated more SCH and more likely to graduate with SCH over the formula funding cap. However, higher proportions of graduates who began as transfer students did not correspond with higher SCH at other Texas institutions of higher education. Transfer SCH was high with a mean attempted SCH of 80.3, but no feeder institution stood out as especially problematic in terms of student SCH accrual before transfer to UH.

Finally, based on the results of exploratory analysis using logistic regression, the interaction between transfer SCH and GPA was studied using CHAID modeling to determine whether a tipping point could be established where excess SCH accrual can serve to diminish chances of graduation. The probability of graduating was diminished for students with transfer GPAs below 2.7 combined with transfer SCH below 105. The probability of graduating was diminished for students with transfer SCH above 105 in all students except for the very few with very high transfer GPAs.

---

### **Contact Information:**

Carmen E. Allen, M.B.A.  
University of Houston  
(713) 743-0627  
ceallen74@uh.edu

Maureen G. Croft, Ph.D.  
University of Houston  
(832) 842-8703  
mgcroft@uh.edu