Investing in the Future of the Healthcare Workforce

An Analysis of the Business Impact of Select Employee Development Programs at TriHealth in 2013

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Executive Summary

TriHealth is the 4th largest employer in Cincinnati with 11,600 employees working throughout 5 hospitals and 130 other locations throughout greater Cincinnati. As a leading employer, TriHealth hospitals, physicians, and the community work together to help people live better. Consistent with these ideals, TriHealth joined forces with the Health Careers Collaborative of Greater Cincinnati (HCC), a local partnership of healthcare employers, colleges, and community organizations with a mission to develop a pool of workers for the benefit of the community and employers. The partners share a vision that collaboration will make it possible to remove barriers to education and advancement by creating supported career pathways. At TriHealth, incumbent workers can access a career pathway through various opportunities, including: Associate Degree cohorts in nursing and allied health, with tuition billed directly to the employer; and School at Work (SAW®), allowing employees to "remain on the clock" while refreshing basic academic and professional skills. The impact analyses for these programs, as well as two other initiatives (PCA Assessment and CareerCare®), serve as the basis of this report.

The following report provides a detailed analysis of 4 TriHealth programs that support entry level employee career development, as well as a thorough evaluation of their effects on turnover, diversity, and pay change. Data analysis is provided for participating treatment groups as compared to similar control groups for each program.

The HCC program provides participants with resources to pursue Associate Degrees in Nursing, Respiratory Therapy, Surgical Technology, and Medical Lab Technology, with Health Information Technology (HIT) cohorts added in 2014. Employee participants partake in these cohorts at Cincinnati State, an HCC education partner. Degrees are subject to change annually based on need within the TriHealth system. The program saw significantly improved turnover rates and pay increases as compared to control groups of similar job codes and were more diverse as a whole.

The SAW Program was created by an outside vendor, Catalyst Learning® and facilitated by TriHealth. Its goal is to assist in personal growth for basic academic and professional skills in order to advance at TriHealth or pursue additional education. Participants receive their hourly pay while attending weekly two-hour sessions for 6-8 months. The program saw significantly improved turnover rates, diversity profiles, and pay changes as compared to control groups of similar job codes.

The Patient Care Assistant (PCA) section examines a newer assessment option meant to evaluate basic math and reading skills for PCA applicants. The new tool, WorkKeys®, has replaced the previous tool to provide additional assessment of indicators for reliability, performance, etc. of an applicant. The program saw similar turnover rates and a smaller

percent change in pay as compared to a control group. However, the participating group was more diverse.

The CareerCare® Program is a web-based career exploration tool provided by the SAW vendor, Catalyst Learning®. The tool is meant to provide employees with an assessment of career opportunities that align with their interests. The program saw similar turnover rates, a more diverse profile, and identical pay changes as compared to a control group.

The Business Impact Study follows a similar study completed by TriHealth in 2012. Through the Business Impact Study TriHealth has been able to demonstrate favorable results to the individual participants as well as to TriHealth.

Health Careers Collaborative (HCC) Cohorts Analysis

Background

TriHealth selects participants for Associate Degree cohorts at Cincinnati State, an HCC education partner. Employees go through an application process, meeting established criteria, and, if selected, the goal is for the entire group to progress together from start to graduation. There are support resources in place for these participants, over and above pre-paid tuition reimbursement. Thus far, TriHealth has selected participants for Nursing, Respiratory Therapy, Surgical Technology, and Medical Lab Technician, with HIT cohorts added in 2014. These degrees are subject to change based upon need within our healthcare system. The goals of the program are to increase access to healthcare careers by underutilized labor pools, alleviate regional workforce shortages, and increase the diversity of health care workforces in greater Cincinnati.

Methods

- Period of study = February 1, 2009 to December 31, 2013
- TriHealth job codes:
    - *HCC Cohort participants (annual)* – 2007, 2025, 2028, 2483, 2487, 4449, 5436, 5453, 5693, A619, A685, A695, B025, B095, B115, B479, B483, B683, B780, B781, B801, B867, B893, B953, B958
    - *HCC Cohort participants (cumulative)* – 2007, 2025, 2028, 2468, 2476, 2483, 2487, 2954, 4449, 5420, 5423, 5436, 5453, 5693, 5697, A619, A685, A695, B021, B025, B095, B115, B479, B483, B550, B693, B728, B780, B781, B801, B867, B869, B893, B953, B958, B996
- TriHealth job titles of participants:
    - Med Asst I-DMS, Med Asst II, Med Asst Non-Cert, Surgical Tech Non-Cert, Surg Tech Certified, Lead Access Coordinator, Specialty Lead Surg Tech, Lab Co-Op, Clincial Care Asst-DVS, Phlebotomist, Lab Process Tech, PCA/Unit Coordinator, PCA, Unit Coord/Monitor Tech, Physical Therapy Aide-DVS, Env Svcs Tech, Patient Catering Assoc, Evn Svcs Tech II, Office Coordinator, Financial Counselor Rep II, Financial Counselor Rep III, EMR Abstractor, Pharm Tech Cert I, ED Tech, Supply/Distribution Tech, Office Coordinator III, Secretary – DVS, Unit Coordinator, Staffing Coordinator, Access Coordinator, Acct Specialist I, Account Spec II, Unit Asst – Radiology, Access Associate, Sterile Supply Tech II, Referral Ctr Coord
- Indicators Examined:
    - Turnover, attrition, diversity, pay increases

Data Analysis Results

All calculations were determined based on information provided by the Human Resources Information Systems Department. Each section will list notes regarding data collection before the data is listed.

Turnover Rate

Important data collection notes:
- An employee was counted in the "treatment group" if they participated in the cohort for any amount of time.
- The control group consisted of the non-participant employees in the same job codes as the participants.
- The begin count lists the count of employees (treatment or control) active on the start date of the examination period.
- The end count lists the count of employees (treatment or control) active on the end date of the examination period.
- The total count lists the total number of employees examined during the examination period.
- Terminations ("terms") were further sub-classified as voluntary or involuntary.
- Turnover percentage is calculated by dividing the total terminations by the average of the begin and end counts. There are also turnover percentages for the sub-classified turnover totals.
- Attrition indicates how many participants withdrew. **NOTE:** Attrition counts those that withdrew and stayed employed AND those that withdrew and terminated.
- "Grads" show how many have completed the associate's degree program.
- The turnover counts in the cumulative group are over a 4-year period, so in the control group there could have been multiple turnovers for one position, further increasing the turnover percentage.

Associate Degree Cohorts Calculations- ANNUAL Study: Turnover from January 2013 - December 2013

	Begin Count	End Count*	Total Count	Total 1-year Terms	Total 1-year Turnover %	Voluntary Terms	Vol Turnover %	Involuntary Terms	Invol Turnover %	Attrition	Attrition %
Associate Degree Cohorts- Treatment	44	40	44	1	2.38%	1	2.38%	0	0.00%	3	6.82%
Associate Degree Cohorts - Control	3759	3876	4815	585	15.32%	486	12.73%	99	2.59%	N/A	N/A

*Includes employees who withdrew but remain employed

Table 1.

Associate Degree Cohorts Calculations- CUMULATIVE Study: Turnover from February 2009 - December 2013

	Begin Count	End Count*	Total Count	Total 4-year Terms	Total 4-year Turnover %	Voluntary Terms	Vol Turnover %	Involuntary Terms	Invol Turnover %	Attrition	Attrition %	Grads
Associate Degree Cohorts - Treatment	2	40	63	4	19.05%	4	19.05%	0	0.00%	22	34.92%	2
Associate Degree Cohorts - Control	3292	3876	7394	2555	71.29%	2121	59.18%	434	12.11%	N/A	N/A	N/A

*Includes employees who withdrew but remain employed

4/63 (6.3%) of employees who have had exposure to program at any time have termed

Table 2.

(Turnover continued)

Table 1 and Table 2 provide results for Health Careers Collaborative (HCC) cohorts. Table 1 displays findings from the 2013 study (1/1/2013-12/31/2013) and Table 2 displays cumulative findings (2/1/2009-12/31/2013).

The treatment group in Table 1 includes all employees who participated in the HCC program in 2013. The counts include employees that are at any point in the HCC program-whether they just started or are nearing completion. The year began with 44 participants and ended with 40. Three individuals withdrew from the program at some point in 2013; one of those who withdrew later termed. That individual is therefore counted in both the attrition and term counts. The control data includes all non-participants in the same job codes as the participants. **When compared to the control data, the treatment group showed a turnover rate difference of approximately 13%. This decrease from 15.32% to 2.38% reflects a percent change of 84.46%.**

The treatment group in Table 2 includes all employees who have participated in the HCC program at any time since its inception in 2009. The first two participants started the program in February of 2009. Since then, 63 employees in total have participated in the program for any amount of time. Of the 63 employees, 4 termed from TriHealth. This gives an approximate turnover percentage of 19% over a nearly 4-year period. **When compared to the control group, the treatment group had an approximately 52% lower rate. This decrease from 71.29% to 19.05%, reflects a percent change of 73.28%.** 22 employees withdrew from their HCC cohort over the 4-year period, giving an attrition percentage of approximately 35%. 2 employees have graduated from the HCC program. This number reflects that the program typically takes 4+ years to complete.

Diversity Profile

Associate Degree Cohorts- Diversity Profile (Cumulative)				
	Associate Degree Cohorts Treatment	Associate Degree Cohorts Treatment %	Associate Degree Cohorts Control	Associate Degree Cohorts Control %
American / Alaskan Indian	0	0.00%	7	0.09%
Asian	1	1.59%	105	1.42%
Black / African American	15	23.81%	1114	15.07%
Hawaiian / Pacific Islander	0	0.00%	5	0.07%
Hispanic	1	1.59%	57	0.77%
Two or more	0	0.00%	77	1.04%
White / Caucasian	46	73.02%	6029	81.54%
Male	6	9.52%	856	11.58%
Female	57	90.48%	6538	88.42%

Table 3.

Table 3 displays the diversity profile of the HCC cohorts since 2009. The control data is <u>only</u> representative of the non-participant employees in the same job codes as the participants, not the entire TriHealth system. The participants were approximately 27% non-white and 10% male. **As a whole, cohorts have a more diverse ethnicity profile** and a similar gender composition to the control group.

Pay Changes

Associate Degree Cohorts- Percent Change in Pay (Cumulative)		
	Number of Employees	Percent Change in Pay
Associate Degree Cohorts - Treatment	58	+14.08%
Associate Degree Cohorts - Control	2528	+7.81%

Table 4.

Table 4 displays the average pay increases realized by cohort participants since the beginning of the cohort program. **Those that participated received pay increases nearly double that of the control population.** The lower number of employees is due to performance increases being applied on March 1 of the following year and differences in appraisal methods.

School-at-Work (SAW) Program Analysis

Background

SAW is facilitated by TriHealth and the curriculum was purchased from vendor Catalyst Learning®. The program is for frontline workers who wish to improve certain basic academic and professional skills in order to advance at TriHealth and/or pursue additional education. Participants receive their hourly pay while attending weekly two-hour sessions on site with a facilitator for 6-8 months. Those who continue to pursue college or certificate courses after SAW graduation may be eligible for prepaid tuition as well as additional grant dollars on top of the standard tuition reimbursement benefit that can be used towards books and other supplies.

Methods

- Period of study= September 1, 2008-June 30, 2013
- TriHealth job codes:
  - *SAW (annual)* – 2039, 2433, A618, A619, A685, B077, B090, B111, B550, B730, B867
  - *SAW (cumulative)* – 2039, 2346, 2433, 5457, A532, A538, A611, A618, A619, A677, A680, A681, A685, A695, B025, B077, B090, B111, B485, B543, B550, B717, B730
- TriHealth job titles:
  - Bariatric Coordinator, Computer Operator, Access Liaison, OR Assistant, Van Driver-DVS, Catering Specialist, Lead Environmental Services Tech, Facility Supply Tech, Environmental Services Tech, Cook, Food Service Worker, Food Service Tech II, Patient Catering Associate, Environmental Svc Tech II, Financial Counselor Rep II, Maintenance Coordinator, Operations Coordinator, Compliance Support Specialist, Lab Assistant, Logistics Tech, Supply Distribution Tech, Front Office/Health Aide, Secretary, Account Specialist I
- Indicators Examined:
  - Turnover, diversity, pay increases

Data Analysis Results

All calculations were determined based on information provided by the Human Resources Information Systems Department. Each section will list notes regarding data collection before the data is listed.

Turnover Rate

Important data collection notes:
- An employee was counted in the "treatment group" if they participated in the class for any amount of time.
- The control group consisted of the non-participant employees in the same job codes as the participants.
- The begin count lists the count of employees (treatment or control) active on the start date of the examination period.
- The end count lists the count of employees (treatment or control) active on the end date of the examination period.
- The total count lists the total number of employees examined during the examination period.
- Terminations ("Terms") were further sub-classified as voluntary or involuntary.
- Turnover percentage is calculated by dividing the total terminations by the average of the begin and end counts. There are also turnover percentages for the sub-classified turnover totals.
- SAW takes place over an academic year. As such, the date range examined for the annual studies are from September through June. The date range for the cumulative study encompasses the summer months, but participants are not actively taking classes at that time.

SAW Calculations- ANNUAL Study: Turnover from September 2012 -June 2013								
	Begin Count	End Count	Total Count	All Terms	Total Turnover %	Voluntary Terms	Vol Turnover %	Involuntary Terms	Invol Turnover %
SAW - Treatment	16	16	16	0	0.00%	0	0.00%	0	0.00%
SAW - Control	1305	1325	1599	181	13.76%	136	10.34%	45	3.42%
									Table 5.

SAW Calculations- CUMULATIVE Study: Turnover from September 2008 - June 2013								
	Begin Count	End Count	Total Count	All Terms	Total Turnover %	Voluntary Terms	Vol Turnover %	Involuntary Terms	Invol Turnover %
SAW - Treatment	10	44	52	8	29.63%	7	25.93%	1	3.70%
SAW - Control	1362	1325	2465	962	71.60%	724	53.89%	238	17.71%
8/52 (15.4%) of employees who have had exposure to program at any time have termed								*Table 6.*

Tables 5 and 6 display the turnover data for the School at Work (SAW) program. It is first important to note again that the date range reflects the fact that SAW takes place over an academic year. As such, participants are active from September through June.

Table 5 reflects turnover data for the 16 individuals that participated this year. **None of the 16 individuals voluntarily or involuntarily termed. Those in similar job codes had a turnover rate of nearly 14% over the same timeframe.**

Table 6 displays turnover data for SAW participants and control groups since the first SAW group began in September 2008. The program has had an impact on 52 employees, as reflected in the total count of Table 6. However, it is important to note that these participants received the treatment at various times- some participated in 2008 and some participated in 2013. As such, some participants had much longer periods of examination than others did. Regardless, those in the treatment groups had a much smaller turnover percentage than those in the control group. **Of the 52 employees that participated in SAW at some point over the 4 year, 9 month period (9/08-6/13), only 8 (15.4%) termed during that same period. The cumulative turnover decrease from 71.60% to 29.63% reflects a percent change of 58.62%.**

Diversity Profile

	SAW Treatment	SAW Treatment %	SAW Control	SAW Control %
SAW Groups- Diversity Profile (Cumulative)				
American / Alaskan Indian	0	0.00%	7	0.28%
Asian	1	1.92%	32	1.30%
Black / African American	25	46.15%	817	33.14%
Hawaiian / Pacific Islander	0	0.00%	0	0.00%
Hispanic	1	1.92%	15	0.61%
Two or more	0	0.00%	21	0.85%
White / Caucasian	25	50.00%	1573	63.81%
Male	13	25.00%	671	27.22%
Female	39	75.00%	1794	72.78%
				Table 7.

Table 7 presents the diversity profile of the SAW participants. One-quarter of the SAW participants were male, similar to the control group. However, the percentage of non-white races is 13% higher than the control group. **As a whole, the SAW participants are more racially diverse than their counterparts.**

Pay Changes

	Number of Employees	Average Percent Change in Pay from Start of Program through March 2014
SAW Groups- Percent Change in Pay Grade (Cumulative)		
SAW - Treatment	43	+13.23%
SAW - Control	922	+4.81%
		Table 8.

 Table 8 shows the pay increases experienced by the SAW treatment and control groups. Like with the turnover data, a limitation of this chart is that employees were counted for varying amounts of time depending on their participation. **However, those that participated had their pay increase by an average of over 13%, as compared to less than 5% of the non-participants.**

Patient Care Assistant (PCA) Program Analysis

Background

TriHealth has required a pre-screening assessment of basic math and reading skills for PCA applicants, with the exception of student nurse applicants, for over ten years. Prior to 2012, the assessment was the Test for Adult Basic Education (TABE®). The HCC presented another assessment option, WorkKeys®, which includes basic math and reading as well as assessment of certain soft skills which might give a better indication of the reliability, performance, etc. of an applicant. In February of 2012 TriHealth began WorkKeys® assessments--discontinuing TABE®--on all PCA applicants (except student nurses) under consideration for interview and hire.

Methods

- Period of study= March 1 2012-December 31, 2013
- Population studied included all TriHealth PCA's except for student nurses
    - PCA TriHealth job codes include: 5436, 5453
- Indicators Examined:
    - Turnover, diversity, pay increases

Data Analysis Results

All calculations were determined based on information provided by the Human Resources Information Systems Department. Each section will list notes regarding data collection before the data is listed.

Turnover Rate

Important data collection notes:
- An employee was counted in the "treatment group" if they participated in the class for any amount of time.
- The control group consisted of the non-participant employees in the same job codes as the participants.
- The begin count lists the count of employees (treatment or control) active on the start date of the examination period.
- The end count lists the count of employees (treatment or control) active on the end date of the examination period.
- The total count lists the total number of employees examined during the examination period.
- Terminations ("Terms") were further sub-classified as voluntary or involuntary.
- Turnover percentage is calculated by dividing the total terminations by the average of the begin and end counts. There are also turnover percentages for the sub-classified turnover totals.
- Important note: The treatment and control groups in the PCA study are much different than the groups in the other studies. The treatment group includes all PCAs (except student nurses) hired after March 1, 2012, when TriHealth began using the WorkKeys® assessment tool. The control group includes all PCAs (except student nurses) hired before March 1, 2012, when TriHealth used a different assessment. This makes the control group more similar to a "historical control".

PCA Calcuiations- ANNUAL Study: Turnover from September 2013 - December 2013								
	Begin Count	End Count	Total Count	All Terms	Turnover %	Voluntary Terms	Turnover %	Involuntary Terms	Turnover %
PCA - Treatment	3	89	102	13	28.26%	6	13.04%	7	15.22%
PCA - Control	225	158	230	39	20.37%	31	16.19%	8	4.18%
									Table 9.

PCA Calculations- CUMULATIVE Study: Turnover from March 2012 - December 2013								
	Begin Count	End Count	Total Count	All Terms	Turnover %	Voluntary Terms	Turnover %	Involuntary Terms	Turnover %
PCA - Treatment	1	135	172	37	54.41%	25	36.76%	12	17.65%
PCA - Control	332	158	332	98	40.00%	83	33.88%	15	6.12%
Of the 172 who have received the treatment at any point in time, 37 (21.5%) termed								*Table 10.*

Table 9 and Table 10 display PCA turnover over a 1-year and nearly 2-year span, respectively. As mentioned on the previous page, it is important to note that the PCA control is more similar to a "historical control". So, while the groups are being compared over the same time period in each table, every PCA in the control group has been employed longer than the PCAs in the treatment group.

Table 9 shows turnover for the 2013 year. This illustrates PCAs that were hired only in the 2013 year. When compared to the control group, the treatment group had about 3% less voluntary turnover. However, involuntary terms (up 11%) and total turnover (up 8%) both increased when comparing the treatment group to the control.

Table 10 displays turnover since the start of the utilization of the new assessment in March of 2012. In this examination, all turnover percentages are higher for the treatment group. **However, when looking just at the number that have taken the assessment (172) and the number that have termed (37), it indicates that less than 22% of those that have taken the new assessment later termed.** This number differs significantly than what is in the table due to differences in turnover calculation methods.

Diversity Profile

PCA Groups- Diversity Profile (Cumulative)				
	PCA Treatment	PCA Treatment %	PCA Control	PCA Control %
American / Alaskan Indian	0	0.0%	1	0.30%
Asian	3	1.7%	7	2.11%
Black / African American	49	28.2%	54	16.27%
Hawaiian / Pacific Islander	0	0.0%	2	0.60%
Hispanic	3	1.7%	2	0.60%
Two or more	1	0.6%	5	1.51%
White / Caucasian	118	67.8%	261	78.61%
Male	21	12.1%	45	13.55%
Female	153	87.9%	287	86.45%
				Table 11.

Table 11 categorizes the diversity profile of the PCAs. Since the inception of the new assessment, non-white races have increased to be about one-third of the PCA employees. The gender profile has remained about the same.

Pay Changes

PCA Groups- Percent Change in Pay Grade (Cumulative)		
	Number of Employees	Percent Change in Pay
PCA Hires - Treatment	27	+3.49%
PCA Hires - Control	123	+4.84%
		Table 12.

Table 12 displays the pay changes realized by the employees. <u>As expected, those in the treatment experienced less of an increase due to the shorter time of employment.</u> Only employees with full appraisals could have their pay measured. Additional explanation is in the limitations section.

CareerCare Program Analysis

Background

2013 was the first year for CareerCare®, which was facilitated by TriHealth and purchased from SAW vendor, Catalyst Learning®. It is a web-based career exploration tool. Originally, 100 licenses were provided and paid for by the HCC grant. Going forward, it will be determined in each budgeting cycle how many licenses, if any, will be purchased.

Methods

- Period of study= January 1, 2013-December 31, 2013
- TriHealth population studied:
  - Treatment: Those participating employees
  - Control: Anyone employed by TriHealth from January of 2013 to the end of the current study year excluding any prior CareerCare® participants and any employee in the following TriHealth job code families: 6000s, 9000s, Exxxs, and 8000s
    - These job codes are excluded because they are employees that would not reasonably use this program, such as physicians, residents, and top executives.
- Indicators Examined:
  - Turnover, diversity, pay increases

Data Analysis Results

All calculations were determined based on information provided by the Human Resources Information Systems Department. Each section will list notes regarding data collection before the data is listed.

Turnover Rate

Important data collection notes:

- An employee was counted in the "treatment group" if they participated in the class for any amount of time.
- The control group consisted of the non-participant employees in the same job codes as the participants.
- The begin count lists the count of employees (treatment or control) active on the start date of the examination period.
- The end count lists the count of employees (treatment or control) active on the end date of the examination period.
- The total count lists the total number of employees examined during the examination period.
- Terminations ("Terms") were further sub-classified as voluntary or involuntary.
- Turnover percentage is calculated by dividing the total terminations by the average of the begin and end counts. There are also turnover percentages for the sub-classified turnover totals.
- CareerCare® was a 1-year opportunity for employees. As such, it does not have a cumulative study.

CareerCare Calcuations- Turnover from January 2013 - December 2013									
	Begin Count	End Count	Total Count	All Terms	Turnover %	Voluntary Terms	Turnover %	Involuntary Terms	Turnover %
CareerCare - Treatment	100	89	100	11	11.64%	9	9.52%	2	2.12%
CareerCare - Control	9884	10419	11680	1257	12.38%	1059	10.43%	198	1.95%
									Table 13.

Table 13 compares the turnover rate for employees that utilized CareerCare® against those that did not. The turnover rates between the two groups are very similar, with the CareerCare® participants reporting slightly better numbers.

Diversity Profile

Diversity profile of CareerCare Participants				
	CareerCare Treatment	CareerCare Treatment %	CareerCare Control	CareerCare Control %
American / Alaskan Indian	0	0.00%	16	0.14%
Asian	1	1.00%	146	1.25%
Black / African American	35	35.00%	1457	12.47%
Hawaiian / Pacific Islander	0	0.00%	5	0.04%
Hispanic	1	1.00%	68	0.58%
Two or more	0	0.00%	110	0.94%
White / Caucasian	63	63.00%	9878	84.57%
Male	12	12.00%	1689	14.46%
Female	88	88.00%	9991	85.54%
				Table 14.

Table 14 outlines the diversity profile for CareerCare® participants. The gender distribution is similar to the control, but the group was more racially diverse as a whole. The participants are 37% non-white and 12% male.

Pay Changes

CareerCare Group- Percent Change in Pay Grade		
	Number of Employees	Average Percent Change in Pay
CareerCare - Treatment	74	+6.32%
CareerCare - Control	7741	+6.32%
		Table 15.

Table 15 displays the change in pay for CareerCare® participants as compared to the control group. The changes in pay were identical. The lower number of employees is due to performance increases being applied on March 1 of the following year and differences in appraisal methods.

Study Limitations

Due to the nature of the study, there are a number of limitations and considerations that must be taken into account. These are listed below:

- This study is a business impact study and measures the active impact of the programs on current employees. As such, it is much different than a typical scientific study.
- With all groups, there is the possibility of a selection bias. All participants have self-selected into that group because they were attracted to the possible personal outcome. In most cases, individuals that self-select into groups such as these are higher performers, and would be expected to perform better than a control as a result.
- Control groups were formed using the non-participating employees in the same job codes as the participants. However, employees in other job codes could also participate. This was the most feasible option for TriHealth, as it was impossible to determine which job codes would actually express interest in the programs.
- Ideally, the length of time an employee has been employed could be better taken into account in the turnover calculations. A more precise metric, such as "person-months" or "person-years" could provide more precise data. However, due to the amount of data examined and the method of data extraction, this was not a possibility for this study.
- Turnover was calculated by taking the average of the begin and end counts then dividing the number of termed employees by that calculated amount. However, because many studies began with a very small number of participants and grew, the turnover numbers could be artificially inflated. Another statistic, completion rate, was provided for some studies to aid in understanding the retention of employees to the program and to TriHealth.
- Depending on an employee's tenure, they may receive one of two different types of evaluations. If completed, these employee evaluations are not on the same numeric scale and cannot be compared as a result. This created some difficulties in finding pay changes. This was an inevitability for the study.
- Annual pay increases are typically given to employees in March. This usually fell outside of our evaluation range and created some difficulties; the annual increases from the previous year were often applied during our time of study and the annual increase for the study year was often applied after our time of study. As such, pay

data was pulled from the first March following the study. This was slightly outside of our established date range for other metrics.

- The PCA study has limitations in comparing the treatment to the control group. Since the two groups are distinct in when they were hired, they are not "true" comparable groups. The control in the PCA studies act in some ways as more of a historical control.
- The PCA group also could not take into account student nurses due to the fact that they do not take the same assessment as the other PCAs. Since student nurses turnover quickly due to their educational requirements, it artificially inflates turnover numbers.

Conclusion

This report illustrates the business impact of some of TriHealth's employee development programs. Employees participating in these programs were generally found to be more diverse, have lower turnover rates, and experience greater pay raises than non-participants. Through these programs, TriHealth helps employees achieve their personal goals by facilitating their professional growth and development.