The Earnings Outcomes of Post-secondary Co-op Graduates:
Evidence from Tax-linked Administrative Data

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Executive Summary

Post-secondary education (PSE) plays an important role in developing a highly skilled workforce fit for the modern knowledge-based economy. Co-operative (co-op) education tightly aligns with this role of PSE by integrating in-class learning and real-world work experience.

This report provides a more comprehensive view of the earnings outcomes of co-op graduates than previously available, using data from five Ontario PSE institutions. It is based on a novel dataset that linked 14 Canadian PSE institutions' administrative data on graduates to their tax records stored at Statistics Canada. These data contain up to eight years of earnings history following graduation, allowing us to study the pattern of earnings profiles for co-op graduates. The data also allow us to produce results broken down by student characteristics, in particular field of study and gender.

We carry out both descriptive and regression analysis to understand the earnings of co-op graduates and contrast them with those of non co-op graduates. In the descriptive analysis, the mean earnings of co-op and non co-op graduates are compared both at the aggregate level and within student groups broken down by gender and field of study. Then regression analysis is employed to better account for student characteristics while obtaining the difference between co-op and non co-op graduates' labour market performance.

Both descriptive and regression analysis in this report generally find remarkable earnings premiums associated with graduation from co-op programs for both degree and diploma graduates. The estimated values are initially approximately $15,000 and $8,000 among degree and diploma graduates, respectively, when graduates from all fields of study and gender are pooled together. Interestingly, in contrast to some previous studies, the earnings gaps are found not to narrow over the years after graduation. In fact, the regression analysis reveals that they widen especially among degree graduates.

The results also show that there are substantial differences in the earnings gap between co-op and non co-op graduates across different student groups. Among degree graduates, the co-op earnings gaps are particularly pronounced in Business, Mathematic and Engineering, but not in Physical & Life Sciences. Among the diploma graduates, the co-op group are found not to outperform the non co-op group in Business, while Mathematics and Engineering exhibit much larger earnings gaps than the aggregate sample produces.

These results are not meant to be interpreted as the returns to co-op education because identifying the causal effects of co-op education on post-graduation earnings requires more complex analytical techniques or richer data to account for PSE students' decision making processes when choosing co-op education. However, given the generally robust findings of out-performance of co-op graduates over non co-op graduates in the post-graduation labour market, it is fair to conclude that the empirical evidence presented here makes a strong case for promoting co-op education, and encourages further investigations to identify the returns to co-op education as well as the underlying benefits that PSE students acquire from co-op experiences.

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1. Introduction

Post-secondary education (PSE) plays an important role in developing a highly skilled workforce fit for the modern knowledge-based economy. Co-operative (co-op) education tightly aligns with this role of PSE by integrating in-class learning and real-world work experience.

Ontario has a well-established history of co-op education. Indeed, Ipsos Reid (2010) referred to the province as "hot-bed of co-op education" as its survey showed that close to a quarter of Ontario respondents with PSE experiences reported having participated in co-op. This proportion is substantially higher than those of other Canadian regions. Furthermore, the Premier's Highly Skilled Workforce Expert Panel appointed by the Ontario government stressed the role of experiential learning including co-op, and recommended that the province commit to ensuring that every student has at least one experiential learning opportunity (The Government of Ontario, 2016).

Research has shown that generally co-op graduates have positive opinions about their experiences. For example, Sattler and Peters (2013) reported in their survey findings that co-op graduates from Ontario PSE institutions agreed that co-op experience was valuable for giving them a "better understanding of career interests, improved insights into career goals, improved interview and job-seeking skills, enhanced personal maturity, increased confidence about job prospects, improved ability to get along with people, and future job search contacts" (p.96). Schambach and Dirks (2002) also found from their survey of applied computer science students in a US university that they gained similar benefits as found in Sattler and Peters from their internship experience. Haddara and Skanes (2007) summarized the findings from various studies reporting students' satisfactions with their co-op experiences.

To date, actual empirical evidence on how well co-op graduates perform in the labour market compared to non co-op graduates is, however, more mixed. For example, using responses from the class of 2005 in the National Graduate Survey (NGS), Bayard and Greenlee (2009) found that university co-op graduates had almost $5,000 higher median full-time earnings than university non co-op graduates three years after graduation, but found only a very small difference in median annual full-time earnings between college co-op and non co-op programs. Similarly, Ferguson and Wang (2014) found that the median annual full-time earnings did not differ substantially between College co-op and non co-op graduates for the class of 2009-10 in the NGS.

The figures reported in Bayard and Greenlee (2009) and Ferguson and Wang (2014) did not, however, account for differences in fields of study between co-op graduates and non co-op graduates. Typically co-op programs are more common in technical fields such as engineering. Various studies have found graduates from technical fields earn more than non-technical fields.[1]

[1] See, for example, Arcidiacono (2004), Finnie and Frenette (2003), and Lemieux (2014).

To understand co-op graduates' success in the labour market it is therefore important to control for choice in field of study.

Walters and Zarifa (2008) used the class of 2000 of the NGS to study the earnings gains associated with co-op programs while controlling for graduates' field of study. They find that co-op graduates earned substantially more than their non co-op counterparts, with an especially large gap at the university level. These earnings differences varied by gender, with especially large differences for males.

However, the differences in earnings estimated by Walters and Zarifa (2008) represent an average of the earnings differences between co-op and non co-op graduates across different fields of study as their regression specification did not incorporate field-specific dummy variables differentiating co-op graduates from different fields. It is conceivable that benefits may differ among them.

Studies looking into post-graduation earnings of co-op graduates in a particular field are the most readily available for engineering graduates as co-op education is most established in this field. For example, Blair, Millea, and Hammer (2004) found that graduates in engineering who participated in co-op education for at least three semesters earned higher starting salaries than those without co-op education at a statistically significant level using data from Mississippi State University. Gardner and Motschenbacher (1997) also found that engineering graduates from a university in the US Midwest who participated in co-op programs earned a higher starting salary on average than their counterparts with no engineering-related co-op work experience in their undergraduate years. Beyond engineering, the information on earnings outcomes within a particular field is scant.

It is also important to understand earnings at different points in time, i.e., the earnings profile. Whether the earnings differences were narrowing, expanding, or staying at the same level over the period after graduation has significant implications for long-term labour market outcomes. Moreover, as Haddara and Skanes (2007) suggested, certain conflicting findings regarding co-op graduates' earnings might be explained due to the earnings dynamics reflecting non co-op graduates catching up with co-op graduates while transitioning to the labour market. In other words, differences in earnings between co-op and non co-op graduates observed in cross section data depend on when earnings are recorded.

The contribution of this study is to provide a more comprehensive view of the earnings outcomes of co-op graduates using data from five Ontario PSE institutions. It is based on a novel dataset that linked 14 Canadian PSE institutions' administrative data on graduates to their tax records stored at Statistics Canada. These data contain up to eight years of earnings history following graduation, allowing us to study the pattern of earnings profiles for co-op graduates. The data also allow us to produce results broken down by student characteristics, in particular field of study and gender.

We carry out both descriptive and regression analysis to understand the earnings of co-op graduates and contrast them with those of non co-op graduates. In the descriptive analysis, the mean earnings of co-op and non co-op graduates are compared both at the aggregate level and within student groups broken down by gender and field of study. Then regression analysis is

employed to better account for student characteristics while obtaining the difference between co-op and non co-op graduates' labour market performance.

The remainder of this report is organized as follows. Section 2 describes the dataset used in this study. Section 3 presents the results of the descriptive analysis, while Sections 4 and 5 present the results of regression analysis. Section 6 concludes. The figures and tables presenting the main results are given in Appendix A, while supplementary results are given in tables in Appendix B.

2. Analysis Data

2.1 Construction of the Dataset

This analysis builds on a unique dataset created by linking administrative student data from 14 Canadian PSE institutions to tax records held by Statistics Canada. Each participating institution prepared two datasets: one that included individual identifiers (e.g., full name and precise birth date) of students who graduated from their institution over the 2005-2012 period and another that included student and program characteristics such as graduation year, gender, credential type, and classification of instructional program (CIP) code. Statistics Canada used the first dataset to link graduate records to their related set of tax files, and then merged this dataset with the second dataset with the PSE information.[2]

Statistics Canada's tax record data for this study are available from 2006 through 2013. The tax data are highly representative of the adult population as the rate of tax filing in Canada is very high. Upper and middle-income Canadians are required to file and lower-income Canadians have strong financial incentives to file in order to recover part of the income tax and other payroll tax deductions they made throughout the year, or to receive various tax credits. As a result, more than 95 percent of graduating students from all participating institutions could be matched to at least one tax year record.[3]

The analysis includes graduates from five Ontario PSE institutions (three universities and two colleges) which provided a variable identifying co-op graduates and agreed to participate in this project. As stated earlier, the graduates in the analysis dataset graduated in the eight-year period

[2] As a security measure, once the data that included the student identifiers were linked to the tax data at Statistics Canada, they were destroyed there. All (actual) individual student identifiers were also deleted from the fully linked file to be used in the analysis.

[3] The analysis undertaken in this project follows Statistics Canada's disclosure rules. These rules state that the rounded sample size must be at least 20 for the sample mean and median statistics. Furthermore, earnings figures must be rounded to the nearest $100.

from 2005 to 2012. This analysis focuses on graduates from either degree or diploma programs that require education credentials no higher than a secondary school diploma. In other words, first-professional degrees such as medicine, dentistry and law, graduate degrees, and post-graduate diploma programs are excluded.

In what follows, we discuss the key variables for the analysis in more detail.

2.2 Variable Definitions

Earnings

In this study, earnings equal total before-tax earnings, constructed as the sum of three measures of each graduate's yearly income. We combine the earnings from T4 slips with declared net self-employment income and other employment income. The focus on before-tax income ensures that the effects of tax credits and transfer programs, which would disproportionately affect the after-tax income of some graduates, are not included. This measure also ensures that other sources of income such as capital gains are excluded. For example, individuals with children could claim a tax credit that would raise their after-tax income relative to those who do not have children and have the same level of before-tax earnings. All earnings are Consumer Price Index (CPI) adjusted to 2014 dollars.

Co-op Graduate Indicator

This is an indicator variable identifying students who graduated from co-op programs. Note that the variable indicates a student's status at graduation and therefore co-op program participants who left co-op programs were counted as non co-op graduates.

Other Variables

In addition, numeric values of graduates' cumulative GPA at graduation are available for degree graduates. However, the cumulative GPA values are reported under different grading scales across PSE institutions. To resolve these differences, grades are grouped into three groups, each corresponding to A, B, or C, based on each institution's conversion schemes between numeric and letter grades.[4]

The years-since-graduation (YSG) variable equals the difference between the current taxation year which is the source of the earnings measure and graduation year. In order to track each individual's earnings over time, and to capture the effects of labour market experience on earnings, this analysis examines earnings on a cohort-by-cohort basis by year after graduation. As an example: for a student who graduated in 2005 (the 2005 cohort), we observe their earnings

[4] A very small proprotion of graduates had graduating cumulative GPA corresponding to the letter grade of D and are combined into the C group.

at one year after graduation, i.e. in fiscal/tax year 2006, and follow them on a yearly basis for as long as we have earnings information. For this earliest cohort, we have earnings information spanning eight years (until 2013), while for later cohorts we have less information; for example, for the 2006 cohort, we have seven years of earnings information, for the 2012 cohort, we have only one year of earnings information.

2.3 Graduate Characteristics

Table 3.1 provides a summary of basic characteristics of the degree graduates in the analysis data. The analysis data contain approximately 12,000 and 51,000 observations for co-op and non co-op graduates, which ensure a sufficient number of data points for a range of student groups.

As shown, male students are over-represented among co-op degree graduates, accounting for 64% of them. In contrast, they accounted for 40% of non co-op degree graduates.

As shown in the table, Engineering accounted for the largest share of co-op degree graduates, followed by Mathematics. While co-op graduates were concentrated in these two fields and Business, non co-op graduates were more spread out over different disciplines with Business and Social & Behavioural Sciences being the top two fields among them.

Typically, co-op programs require students to maintain certain academic standards. Therefore, they are likely to have higher academic achievement than non co-op graduates overall. Table 3.1 reveals that this was indeed the case in the analysis data. Specifically, 38% of co-op graduates had a graduating cumulative GPA of A, while the corresponding number for non co-op graduates was much lower at 19%. At the opposite end of the GPA distribution, 11% of co-op graduates had a cumulative GPA of C at graduation, much lower than the 21% found for non co-op graduates.

Table 3.2 shows a summary of basic characteristics of the diploma graduates in the analysis data. As is the case with degree graduates, male graduates accounted for a majority of co-op diploma graduates at 59%. In contrast, female graduates were a majority of non co-op graduates at 56%.

Business, Engineering, and Mathematics were the top three fields of study chosen by co-op diploma graduates, together accounting for 90% of their chosen fields of study. In contrast, these fields accounted for just 43% of non co-op diploma graduates.

The rightmost column in Tables 3.1 and 3.2 present the distribution of co-op graduates' characteristics differently by reporting the percentage of graduates in co-op programs by each of the characteristics shown. While 19% of all degree graduates graduated from co-op programs, the corresponding figure was higher at 27% for male degree graduates, and lower at 12% for female graduates, revealing that male students were more likely to graduate from co-op programs.

The proportion of students graduating from co-op program was higher among the STEM fields than the non-STEM fields. Engineering, Mathematics, and Physical & Life Sciences had 52%, 55%, and 22% of degree students graduating from co-op programs, respectively. The

corresponding figures for Business and Social & Behavioural Sciences were substantially lower at 14% and 6%, respectively.

Similarly, the male diploma group had a higher proportion of students graduating from co-op programs than the female diploma group, with a difference of approximately four percentage points. Diploma graduates were also more likely to graduate from co-op programs in the STEM fields. Co-op students accounted for 39%, 18%, and 22% of diploma graduates in Physical & Life Sciences, Engineering, and Mathematics, while they accounted for 13% and 7% in Business and Visual & Performing Arts, respectively.

3. Descriptive Analysis

Figures 3.1.a to 3.4.j in Appendix A present the mean earnings profiles among various groups of graduates formed based on their credential types, gender, and fields of study.[5] Taken together, these graphs show that co-op graduates generally out-performed non co-op graduates in post-graduation earnings by a large margin at any aggregate level of gender and field of study.[6] There were also interesting exceptions. In other words, the mean earnings profiles of co-op and non co-op graduates were roughly the same for certain student groups.

Figures 3.1.a and 3.1.b present the profiles of mean earnings of co-op and non co-op groups of degree and diploma graduates, respectively. Each panel in these figures corresponds to each graduating cohort from 2005 to 2012.

Across the eight observed graduating cohorts, co-op and non co-op graduates had consistent patterns of earnings profiles over the years since graduation. Substantial earnings differences are found between these two student groups at different point in time since graduation. The mean first year earnings of co-op graduates are around $60,000, while the corresponding figure is much lower at approximately $40,000 for non co-op graduates.

Interestingly, the difference in mean earnings widened over years. For example, after eight years since graduation, the mean earnings of co-op and non co-op graduates were close to $100,000, and $70,000, respectively, amounting to a $30,000 gap between them.

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[5] The same set of results is available in a table format in tables S.1.a to S.4.j in Appendix B.

[6] We also conducted the descriptive analysis using median earnings instead of mean earnings. The patterns in median earnings are in line with the findings from the mean earnings profile, showing a substantial earnings gap between co-op and non co-op graduates.

The co-op group also outperformed the non co-op group among diploma graduates regardless of graduating cohorts. The observed gaps in first-year earnings between them were, however, lower than those of degree graduates, ranging approximately from $5,000 to $10,000. However, the earnings gap was again found to widen over the years after graduation.

Figures 3.2.a to 3.2.d present the mean earnings profiles by gender for degree and diploma graduates. As shown in Figures 3.2.c and 3.2d, very different pictures of the earnings profile emerge between male and female diploma graduates. Across the eight graduate cohorts observed, the difference in mean earnings between co-op and non co-op graduates was substantially smaller for female graduates than male graduates. Furthermore, among the 2005, 2006 and 2010 cohorts, female co-op diploma graduates did not always outperform non co-op counterparts. Note that these breakdowns do not control for field of study.

Figures 3.3.a to 3.3.h present the mean earnings profiles broken down by field of study instead of gender. The results are reported for the top five and top three fields of study in terms of the number of graduates for degree and diploma graduates, respectively, on the grounds that they have enough sample sizes. The selected fields for degree graduates are Business, Engineering, Social & Behavioural Sciences, Mathematics, and Physical & Life Sciences. For diploma graduates, we select three fields: Business, Engineering, and Mathematics. As shown in Tables 3.1 and 3.2, these selected fields collectively account for 81% and 91% of co-op degree and diploma graduates, respectively.

Except for diploma graduates in Business shown in Figure 3.3.f, the co-op group generally out-performed the non co-op graduate group. However, the observed differences in co-op earnings premiums differ substantially across different field of study. The earnings differences are particularly large among degree graduates in Business, starting at approximately $20,000 and growing over the years after graduation (Figure 3.3.b).

Figures 3.4.a. to 3.4.j present the mean earnings of degree graduates broken down by gender among the selected fields of study.[7] Among graduates in Physical & Life Sciences, the co-op group of some graduating cohorts had roughly the same earnings outcomes as their non co-op group counterparts when the earnings profile is broken down by gender, indicating a certain portion of the earnings gap between co-op and non co-op graduates might be explained by gender composition (See Figures 3.4.e and 3.4.f). However, the predominant pattern was the outperformance of co-op graduates over non co-op graduates.

[7] Due to small sample size issues, descriptive results broken down by gender within each field of study are not reported for diploma graduates.

4. Regression Analysis

4.1 The Model

Regression analysis provides an alternative means to descriptive analysis to uncover earnings differences between co-op and non co-op graduates. The regression framework also allows for aggregating across observations, resulting in increased precision for estimates of earnings differences between the two groups. It also allows us to graph results so as to isolate each factor of interest one at time.

While the log-earnings regression framework is widely used to study labour market earnings in labour economics, we mainly use the earnings level as the dependent variable, as the results based on the earnings-level specification are more convenient when comparing differences in earnings gap across different student groups as they allows us to compare differences in earnings in absolute dollar terms.

The modelling framework is expressed by the following regression equation:

$$Y = f(Graduating\ Cohort, Coop, YSG, X) + \varepsilon$$

where the dependent variable Y is either the earnings level or log earnings in a given year since graduation. The regression model relates the dependent variable to a set of explanatory variables that account for an individual's graduating cohort and co-op program graduation status as well as years since graduation for given earnings observations. Additional student characteristics, represented by X in the regression equation, may be also accounted for. The final term on the right-hand side of the regression model, ε, is an error term capturing a part of the dependent variable unexplained by the explanatory variables included in the model.

The baseline model is formulated as a linear regression model that includes a set of dummy variables indicating graduates' cohorts and years since graduation.

Furthermore, to capture differences in earnings between co-op and non co-op graduates, the model includes a dummy variable indicating whether a graduate is a co-op graduate. In addition, a term interacting the co-op dummy with years since graduation is included in the model in order to allow differences in earnings between co-op and non co-op graduates to evolve over time.

The objective of this study is to understand the relationship between co-op program graduation status and earnings. To this end, the coefficients on the co-op dummy variable capture difference in initial post-graduation earnings. For example, if the coefficient takes a positive value, initial earnings have a positive relationship with being in a co-op program at graduation. Conversely, if it is negative, earnings have an inverse relationship with being a co-op program at graduation.

Moreover, the interaction term between years since graduation and the co-op dummy captures changes in the relationship between these two variables over the years since graduation. If the coefficient on the interaction term takes a negative value, the earnings difference between co-op and non co-op graduates is expected to narrow over time. If the coefficient is positive, the earnings gap increases.

In the log-earnings specification, the regression coefficient on the co-op dummy multiplied by 100 approximates the initial earnings difference in percentage terms between the co-op and non co-op graduates. The regression coefficient on the interaction term between the co-op dummy and years since graduation multiplied by 100 reflects the change in earnings difference in percentage terms with each year since graduation.

The model described so far does not fully account for differences in student characteristics often associated with an earnings gap that are available in the analysis data, most notably gender and field of study. Therefore an extended regression specification accounting for these characteristics is also estimated.

We employ the least squares method to estimate the regression coefficients. While this estimation method is widely used, least squares estimates should not be interpreted as representing the causal effects of the explanatory variables on the dependent variable without further conditions. In particular, if the error term contains a factor that is correlated with any of the explanatory variables, the least squares estimator provided biased estimates of the causal effects of the explanatory variables on the earnings.

4.2 Estimation Results (Aggregate)

Table 4.1 in Appendix A presents the key coefficient estimates, i.e., those on the co-op graduation dummy and its interaction term with years since graduation.[8] The upper and lower panels of the table present results with the earnings level and log earnings used as the dependent variable, respectively. Within each panel, the first column indicates the credential level. The second column shows whether gender and field of study are controlled for in addition to graduating cohort, years since graduation, and co-op graduation status. The third and fourth columns present estimated coefficients on the co-op dummy and its interaction term with years since graduation.

As shown in the first panel of the table, there is a dramatic difference in the first-year earnings estimated between co-op and non co-op degree graduates. The estimated difference is close to $15,000 when only students' graduating cohorts are controlled for and about $14,250 if their fields of study and gender are also accounted for.

The difference in first year mean earnings between co-op and non co-op diploma graduates is estimated to be either $8,240 or $7,860 depending on whether field of study and gender are controlled for. In line with existing findings from the NGS, degree graduates have larger earnings difference between co-op and non co-op graduates than diploma graduates. Nevertheless, the difference is still substantial and statistically significant for both groups.

[8] The full estimation results are available in Tables S.5.a to S.5.b in Appendix B.

The estimated coefficients on the interaction term between the co-op dummy and years since graduation are all positive, implying that the difference in mean earnings between co-op and non co-op graduates widens over years for both degree and diploma graduates. However, when graduates' gender and fields of study are controlled for, the estimated coefficients on the interaction terms decrease substantially for both credential groups, leading to more moderate expansions of differences in earnings for both degree and diploma graduates.

As shown in the lower panel of Table 4.1, the log-earning regression produces quantitatively large coefficient estimates on the co-op dummy for both degree and diploma graduates, mirroring the results from the earnings level regression. Even with graduates' gender and fields of study controlled for, the coefficient estimates imply that co-op graduates earn more than non co-op graduates in the first year since graduation by 42.2% for degree graduates and by 22.8% for diploma graduates.[9]

When field of study and gender are accounted for in the log-earnings regression specification, the interaction term between the co-op dummy and years since graduation has negative coefficients for both degree and diploma graduates. The estimate is also statistically significant for degree graduates. This indicates that in *relative* terms, the earnings gap between co-op and non co-op graduates do not expand over the years since graduation. This is because the earnings levels of both co-op and non co-op graduates increase more rapidly than the widening of the earnings gap in absolute terms between these two groups.

Based on these coefficient estimates, Figure 4.1 in Appendix A shows the gap in mean earnings levels between co-op and non co-op graduates at different points in time after graduation implied by the parameter estimates. Specifically, we predict the mean earnings of co-op and non co-op groups at given years since graduation from the estimated model, and then take the difference of the predicted mean values. The left-hand side panel shows results for degree graduates, while the right-hand side is for diploma graduates.

As discussed earlier, the difference in mean earnings levels between co-op and non co-op graduates is especially dramatic for degree graduates, starting at approximately $15,000 and growing close to $29,000 after eight years if the compositions of gender and field of study are not controlled for. For diploma graduates, the estimates imply that the earnings difference between these two groups starts at approximately $8,000, and grows close to $14,000 after eight years if field of study and gender are not controlled for. Note these profiles of differences in earnings closely follow those implied by the descriptive analysis.[10]

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[9] Since the magnitudes of the estimates are large enough to make the usual simple interpretation method described above unreliable, the formula $\exp(x)-1$ is used to calculate the earnings gap where x is the coefficient estimate.

[10] See Tables S.1.a and S.1.b for the actual values of differences in mean earnings.

Interestingly, the differences in mean first-year earnings hardly change either for degree or diploma graduates when compositions of gender and field of study are accounted for. However, controlling for these student characteristics does results in much smaller differences in mean earnings after eight years since graduation for both degree and diploma graduates, i.e., approximately $23,000 and $10,000 for degree graduates and diploma graduates, respectively. These changes highlight the importance of accounting for differences in student characteristics between co-op and non co-op graduates. A sizeable portion of the earnings gaps revealed in the descriptive analysis is explained by differences in earnings trajectories across various student groups.

4.3 Estimation Results by Gender and Field of Study

The estimation results presented so far used all observations belonging to a given credential type. Therefore, the estimated earnings gap between co-op and non co-op graduates amounts to some form of average of the co-op earnings gaps of various student groups made up of both gender and different fields of study. However, the descriptive results presented earlier indicated the pattern of co-op earnings difference differed substantially across different student groups.

Therefore we estimate the baseline model separately for student groups formed by gender and selected fields of study to fit the earnings pattern more flexibly. Using the coefficient estimates obtained from the separate regressions, Figures 4.2.a and 4.2.b in Appendix A present the implied mean earnings differences for the five and three selected fields of study for degree and diploma graduates, respectively.[11] These fields correspond to those chosen in the descriptive analysis.

Figure 4.2.a shows quantitatively large earnings premiums for co-op degree graduates for all the five selected fields of study, exceeding more than $10,000 except among male graduates in Physical & Life Sciences. However, the estimated differences in mean first-year earnings vary greatly. They range from approximately $20,000 for both male and female Business graduates and female graduates in Mathematics to below $10,000 for graduates in Physical & Life Sciences. For Business, the mean earnings difference between co-op and non co-op graduates also expand rapidly over the eight years since graduation. The figure shows an increase from $20,000 to over $40,000 for the male graduates, and an increase from $20,000 to $35,000 for female graduates.

Figure 4.2.b displays striking qualitative differences in the implied earnings gap across fields of study for diploma graduates. On the one hand, co-op diploma graduates in Business have roughly the same mean earnings profiles as their non co-op counterparts, as the figure shows that the implied earnings gaps for both gender stay close to zero over the eight years following graduation and these gaps are mostly not statistically significant. On the other hand, diploma co-

[11] The full estimation results for each student group are available in Tables S.6.a to S.6.h in Appendix B.

op graduates in Mathematics and Engineering earn substantially more than their non co-op counterparts, and the sizes of the earnings differences are comparable to many of those found for degree graduates.

5. Extended Analysis

The remainder of the report presents the results of regression analysis carried out under modified specifications or different sample restrictions in order to see how the results presented so far hold up. Specifically, these extensions account for graduates' final cumulative GPA, ages at graduation, and graduating institutions in turn.

5.1 Accounting for Graduating Grades

As shown in Table 3.1, co-op graduates had higher graduating GPAs. A portion of the earnings gap presented so far between co-op and non co-op graduates may therefore be explained by differences in academic achievement, which may reflect some aspect of productive skills that graduates possess when entering the labour market.

To control for the academic performance gap between the two groups, two dummy variables identifying graduates with cumulative GPAs of A and C are added to the baseline model as well as two terms interacting these two dummies with years since graduation.[12] Then the model is estimated for each student group formed by field of study and gender.

Figures 5.1.a and 5.1.b in Appendix A compare the implied earnings gaps obtained from the new regression model with the original estimates.[13] As shown in these figures, accounting for graduating grades generally results in a reduction of the estimated earnings differences between co-op and non co-op graduates. The reduction is particularly large for male business graduates as shown in Figure 5.1.b. Under the new regression results, the implied earnings gap is $6,080 and $10,150 lower, for the first and eighth years since graduation, than those under the original values, respectively, representing decreases to $13,000 and $31,700.

With a moderately large standard error and a slowly decreasing profile over the years since graduation, the implied earnings gap among male degree graduates in Physical and Life Sciences is not statistically significant after six years since graduation. Despite this exception, the estimates overall reveal that co-op graduates outperform non co-op graduates even after their graduating grades are accounted for, although not as much as when graduating grades are not taken into account.

[12] This means that graduates with the cumulative GPA of B form the base group.

[13] The new parameter estimates are available in Tables S.7.a to S.7.e in Appendix B.

5.2 Restricting to Younger Graduates

In addition to education, work experience is counted as a major determinant of earnings. The present analysis data contain a sizeable proportion of graduate observations with graduating ages of 30 years or more, for example. Those graduates likely had previous labour market experience. In the analysis data, the co-op group is younger than the non co-op group among degree graduates, on average, while the opposite is true among diploma graduates. Therefore, mean earnings differences presented so far may be confounded by age differences between these two groups.

To examine the extent to which controlling for these differences in graduating age may affect the estimation results, we estimate the model using only young graduates. Specifically, the sample is restricted to those whose age at graduation was less than or equal to 24 and 23 for degree and diploma graduates, respectively. These values correspond to the median values of the two credential type groups.

Figures 5.2.a and 5.2.b in Appendix A show the results for female and male degree graduates, respectively.[14] As shown in these figures, the age restriction has limited impacts on the implied co-op earnings gaps except for those in Physical & Life Sciences. For this group, the new profiles of the implied earnings gap start at more than $10,000 and grow close to $25,000 among female graduates and to nearly $20,000 among male graduates. That is, the differences in earnings between co-op and non co-op graduates were wider among younger graduates than among all graduates from this field.

Figure 5.2.c in Appendix A shows the results for diploma graduates.[15] Restricting to younger graduates did not generally affect the implied earnings gaps for female graduates in Business, or male graduates in Mathematics and Engineering. Male co-op graduates in Business are now found to have lower mean earnings than their non co-op counterparts in the younger graduates sample.

Together with the original estimates, the lack of co-op premium among male Business diploma graduates appears to be a robust finding. Curiously, this is the only student group where this report did not find an earnings premium for co-op graduation.

The implied earnings gaps were not precisely estimated for female graduates in Mathematics and Computer Science and Engineering with the age restriction due to the modest sample sizes. Thus the results are highly unreliable.

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[14] The parameter estimates are available in Tables S.8.a to S.8.e in Appendix B.

[15] See Tables S.8.f to S.8.h in Appendix B for the parameter estimates.

5.3 Accounting for Graduating Institution

Finally, we consider the extent to which estimation results are affected by differences in earnings profiles across graduating institution. To this end, we add to the baseline model a set of dummy variables identifying graduates' institution and terms interacting them with years since graduation.

Figures 5.3.a and 5.3.b in Appendix A[16] present the implied earnings gaps obtained from the new estimates for degree graduates. The most striking difference is found for male graduates in Business. The new estimates result in a substantially lower predicted earnings gap profile. With lower growth of the earnings gap between co-op and non co-op graduates than originally estimated, the earnings gap predicted at 8 years since graduation is reduced from over $40,000 to just over $20,000.

Accounting for graduation institution also results in notable reductions in the earnings gap for other student groups, namely female graduates in Business and Engineering, male graduates in Social & Behavioural Sciences and Engineering. Despite these changes, the earnings gap between co-op and non co-op graduates remains highly significant both quantitatively and statistically.

Figure 5.3.c in Appendix A presents the new results for diploma graduates.[17] While both the new and original estimates result in quantitatively small differences in earnings between co-op and non co-op graduates in Business, the new estimates imply that the earnings gap remains positive over the eight years since graduation while the original estimates' results imply that the gap declines over time.

In addition, a quantitatively significant difference between the original and new estimates is found for male graduates in Mathematics, with a larger predicted earnings gap between co-op and non co-op graduates based on the new estimates.

In contrast, accounting for graduates' institution hardly changes the earnings gap profiles among male graduates in Business and female graduates in Mathematics and Engineering.

6. Discussion and Concluding Remarks

This report studies the labour market performance of co-op graduates from five Ontario PSE institutions using a unique dataset made possible by linking Canadian PSE institutions' administrative data to tax data held at Statistics Canada. Importantly, the dataset allows for more

[16] See Tables S.9.a to S.9.e in Appendix B for the parameter estimates.

[17] See Table S.9.f to S.9.h for the parameter estimates.

detailed analysis of co-op earnings profiles among graduates in different fields of study over a longer spell after graduation than those available in existing studies.

The study generally finds remarkable earnings premiums associated with graduation from co-op programs for both degree and diploma graduates. The estimated values are initially approximately $15,000 and $8,000 among degree and diploma graduates, respectively, when graduates from all fields of study and gender are pooled together. Interestingly, in contrast to some previous studies, the earnings gaps are found not to narrow over the years after graduation. In fact, the regression analysis reveals that they widen especially among degree graduates.

The results also show that there are substantial differences in the earnings gaps between co-op and non co-op graduates across different student groups. Among degree graduates, the co-op earnings gaps are particularly pronounced in Business, Mathematic and Engineering, but not in Physical & Life Sciences. Among the diploma graduates, the co-op group are found not to outperform the non co-op group in Business, while Mathematics and Engineering exhibit much larger earnings gaps than the aggregate sample produces.

Overall, it is fair to conclude that the findings here make a strong case for promoting co-op education even though opting for co-op education is in general a more costly investment than attending a non co-op program as it takes longer to complete and requires more resources from both students and PSE institutions.

A few remarks and caveats about the limitations of the current study are in order, however. First, the results depend on five selected institutions, and therefore the findings are not necessarily generalizable to the wider PSE graduate population. While the main finding of co-op graduates outperforming non co-op graduates is consistent with existing findings in the literature, the quantitative magnitude of the earnings gap found by this study far exceeds those previously found, and thus may be at least in part due to the selection of PSE institutions included in the analysis.

Second, it is important to recall that the earnings gaps reported here do not have causal interpretations. In other words, the gaps are not solely attributable to differences in co-op graduation status. The gap could result from pre-existing differences in students' ability, motivation, or other factors that are unobservable in the current dataset. Identifying the causal effects of co-op education would require further investigations using more complex analytical techniques such as discontinuity analysis or more detailed data about student characteristics in order to control for such factors. Nevertheless, the present study represents an important step in moving toward future research of this nature.

Third, while this study compares co-op graduates and non co-op graduates, another interesting group is co-op participants, as some participants drop out of their co-op programs before graduation. Just like research on returns to education, studies on returns to co-op experience would require addressing the two-way decision process in and out of co-op programs. How co-op participants perform in the labour market compared to either co-op graduates or non co-op participants is of great interest to examine whether even partial completion of co-op education would make a difference in post-graduation labour market outcomes.

Furthermore it is valuable to refine the present findings by not only identifying the causal effect of co-op education, but also understanding how students benefit from co-op education. For example, co-op education is advocated on the grounds that it enhances professional networks as well as productive skills. Understanding the relative importance of these two possible gains from co-op education would also benefits a wide range of stakeholders including students, institutions, and policy makers. Once better understood, these benefits could become part of the PSE experiences students enjoy regardless of whether or not they choose a co-op program.

That said, the generally robust nature of the earnings premiums associated with co-op graduation is extremely interesting. More studies to investigate the issues above are highly valuable.

7. References

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8. Appendix A

Table 3.1: Graduate Characteristics, Degree Graduates

Category	Distribution within group: Co-op graduates	Distribution within group: Non Co-op graduates	Co-op graduation rate (%)
Number of observations*	11,740	51,340	18.6
Gender (%)			
Female	35.9	60.1	12.0
Male	64.1	39.9	26.8
All	100.0	100.0	
Field of Study (%)			
Engineering	44.0	9.4	51.7
Mathematics	19.3	3.6	54.9
Business	17.5	25.5	13.6
Social & Behavioural Sciences	6.1	22.6	5.8
Physical & Life Sciences	5.2	4.2	21.9
Other Fields	7.9	35.3	
All	100.0	100.0	
Graduating Grades (%)			
A	38.4	19.0	31.6
B	50.2	60.5	16.0
C	11.4	20.5	11.2
All	100.0	100.0	

* These figures are rounded to the nearest 10.

Table 3.2: Graduate Characteristics, Diploma Graduates

Category	Distribution within group: Co-op graduates	Distribution within group: Non Co-op graduates	Co-op graduation rate (%)
Number of observations*	2,270	25,850	8.1
Gender (%)			
Female	41.4	56.0	6.1
Male	58.6	44.0	10.4
All	100.0	100.0	
Field of Study (%)			
Business	38.6	22.7	13.0
Engineering	38.6	15.6	17.6
Mathematics	13.6	4.2	22.0
Physical & Life Sciences	3.9	0.5	39.1
Visual & Performing Arts	3.5	4.2	6.8
Other Fields	1.8	52.8	
All	100.0	100.0	

* These figures are rounded to the nearest 10.

Figure 3.1.a: Mean Earnings of Co-op and Non Co-op Graduates

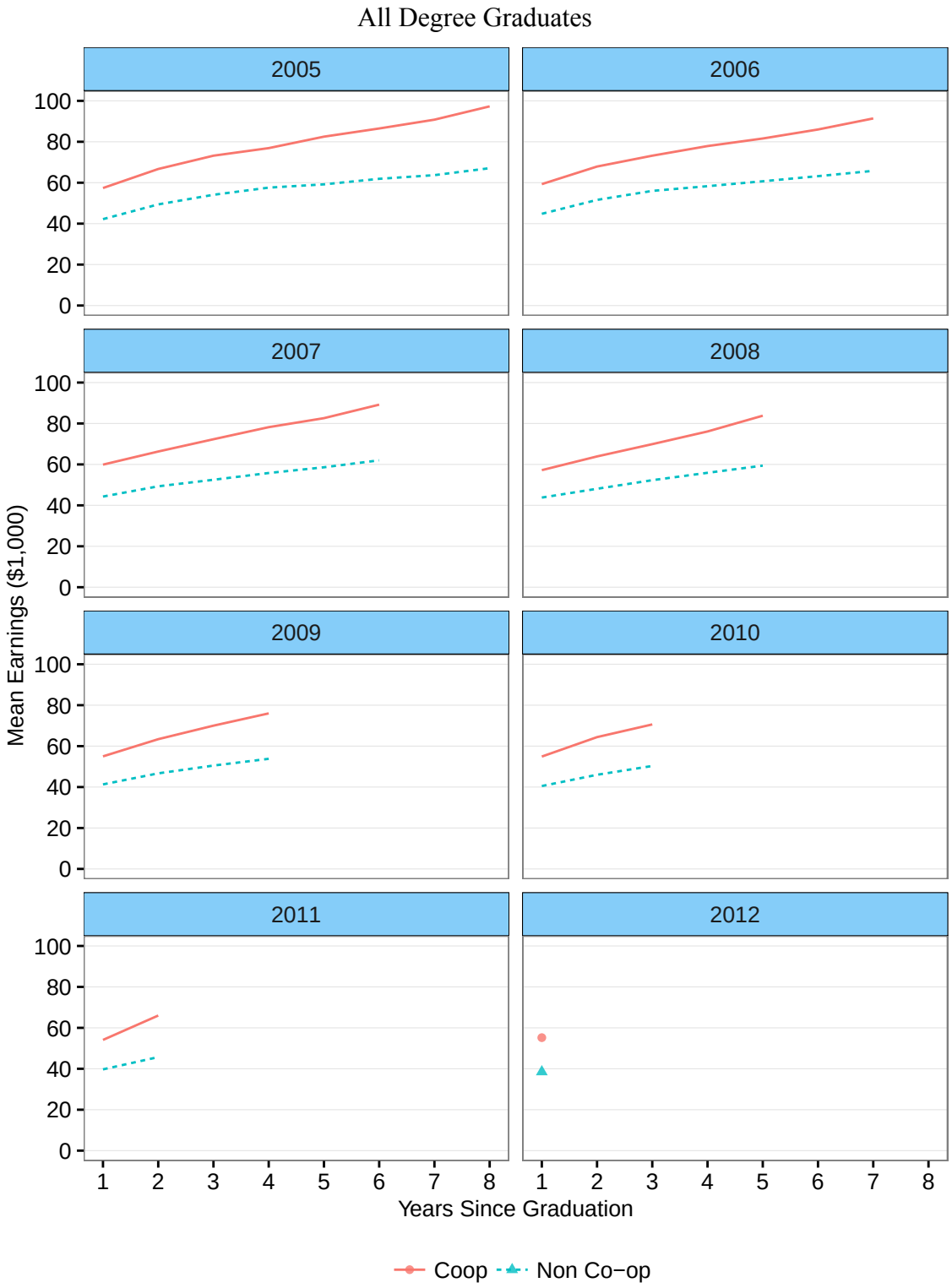


Figure 3.1.b: Mean Earnings of Co-op and Non Co-op Graduates

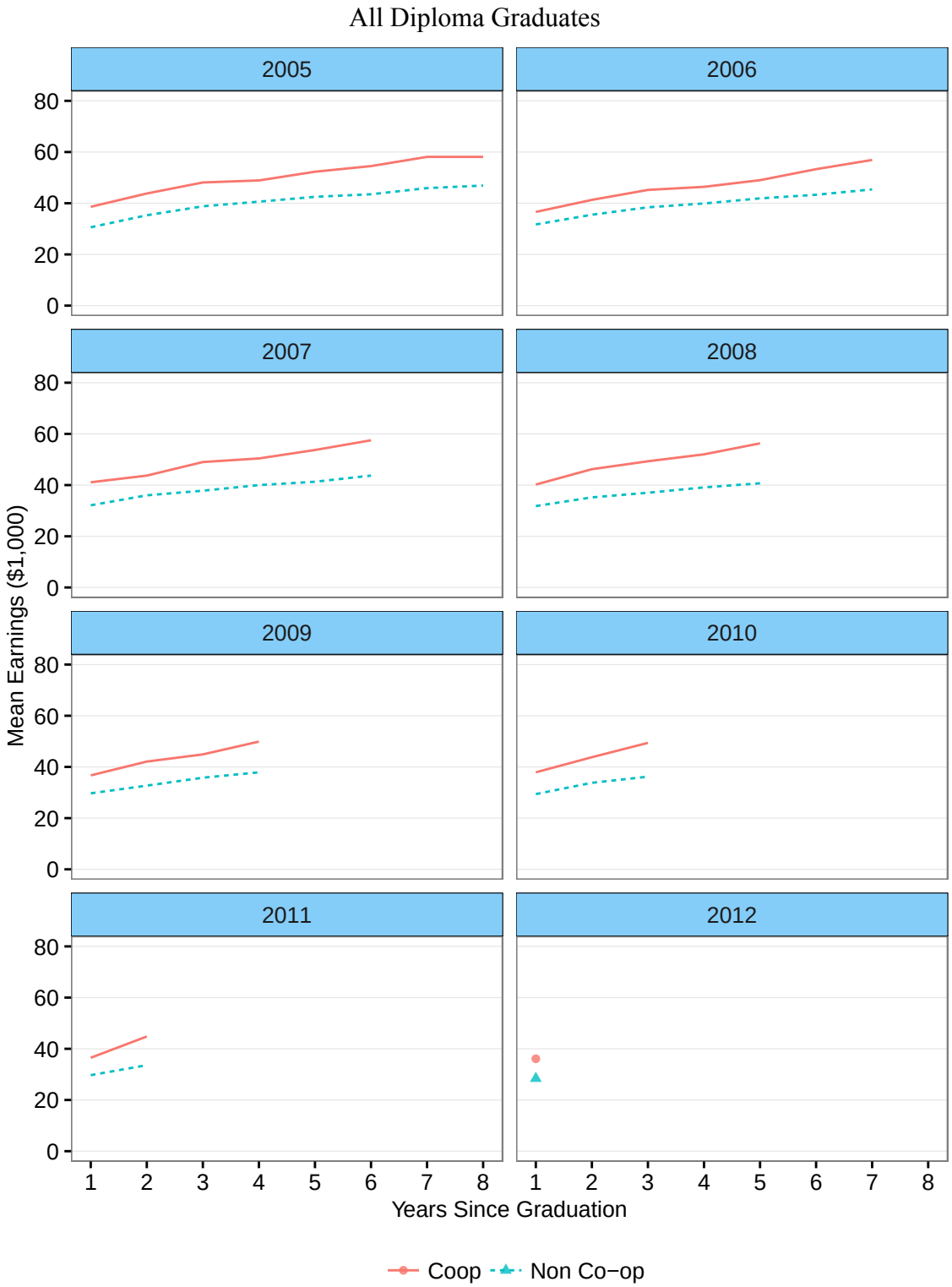


Figure 3.2.a: Mean Earnings of Co-op and Non Co-op Graduates by Gender

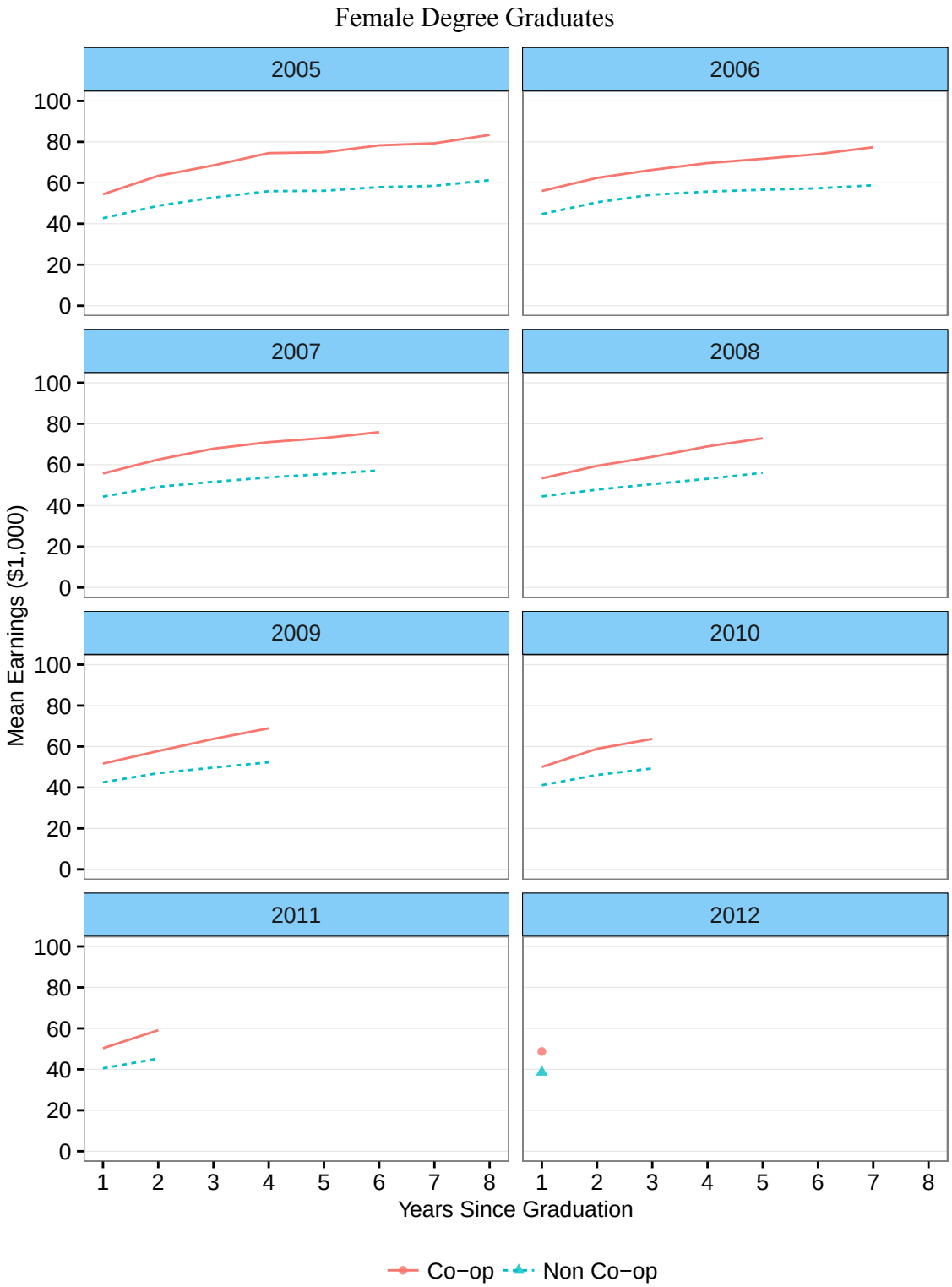


Figure 3.2.b: Mean Earnings of Co-op and Non Co-op Graduates by Gender

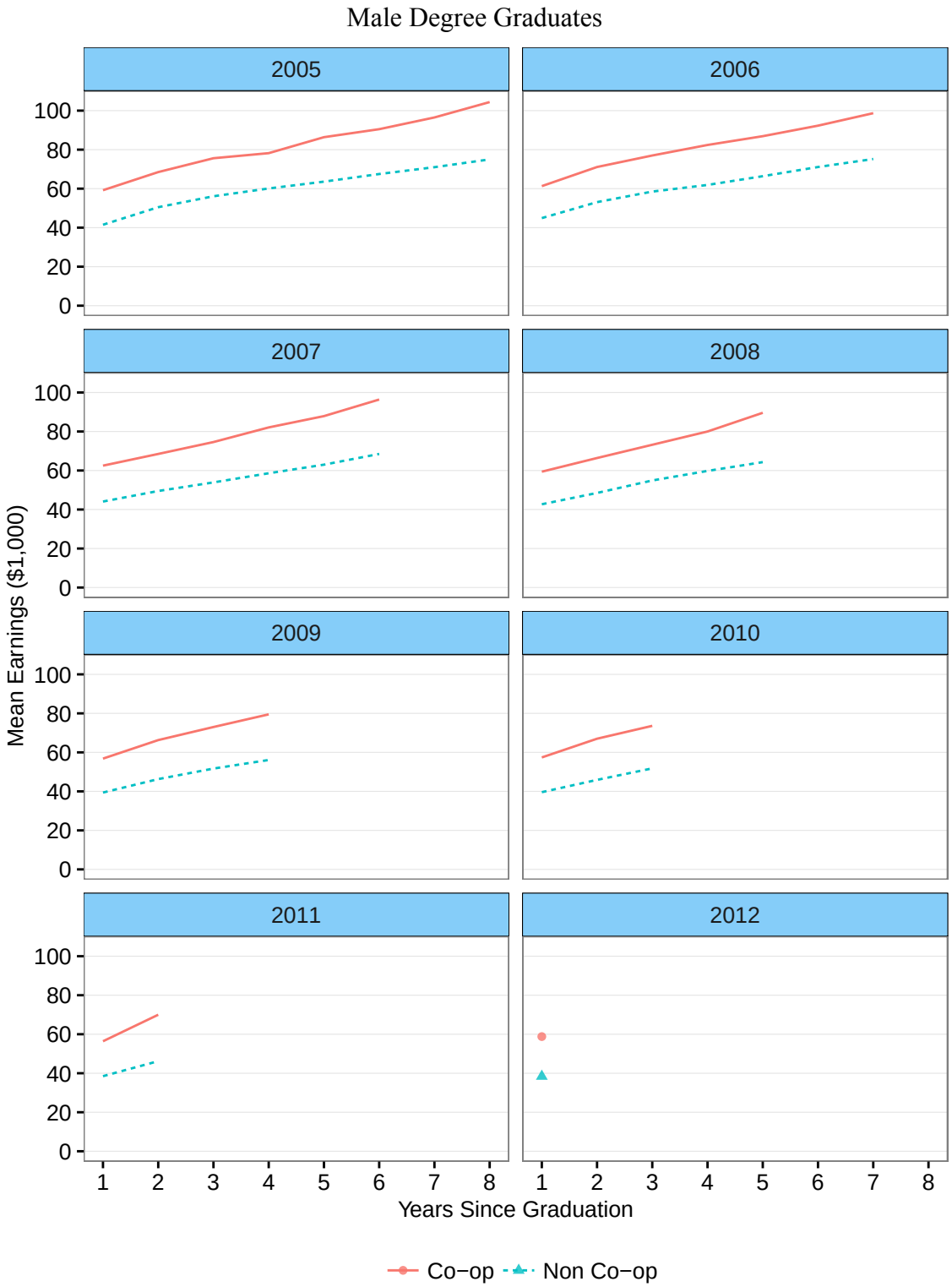


Figure 3.2.c: Mean Earnings of Co-op and Non Co-op Graduates by Gender

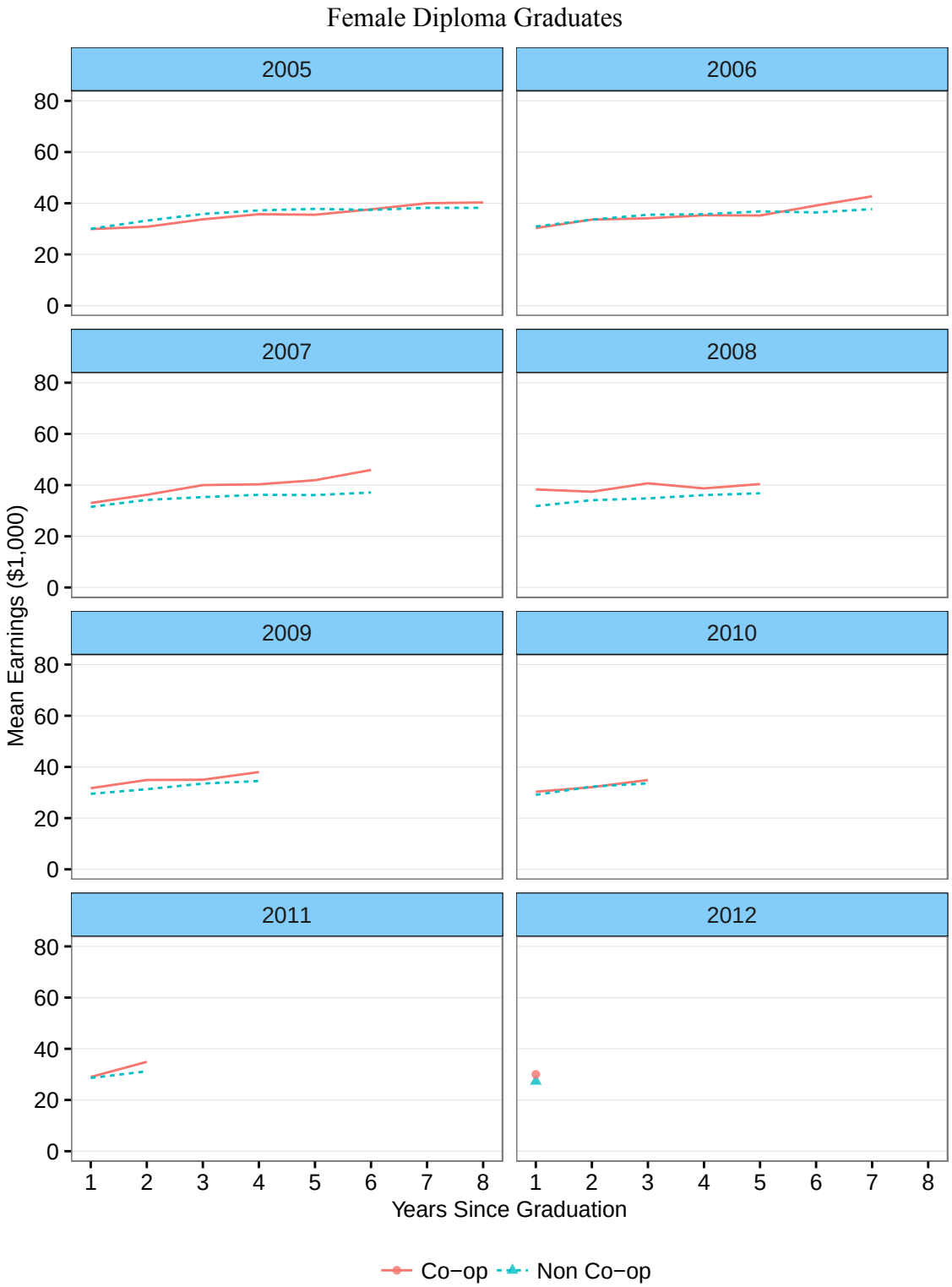


Figure 3.2.d: Mean Earnings of Co-op and Non Co-op Graduates by Gender

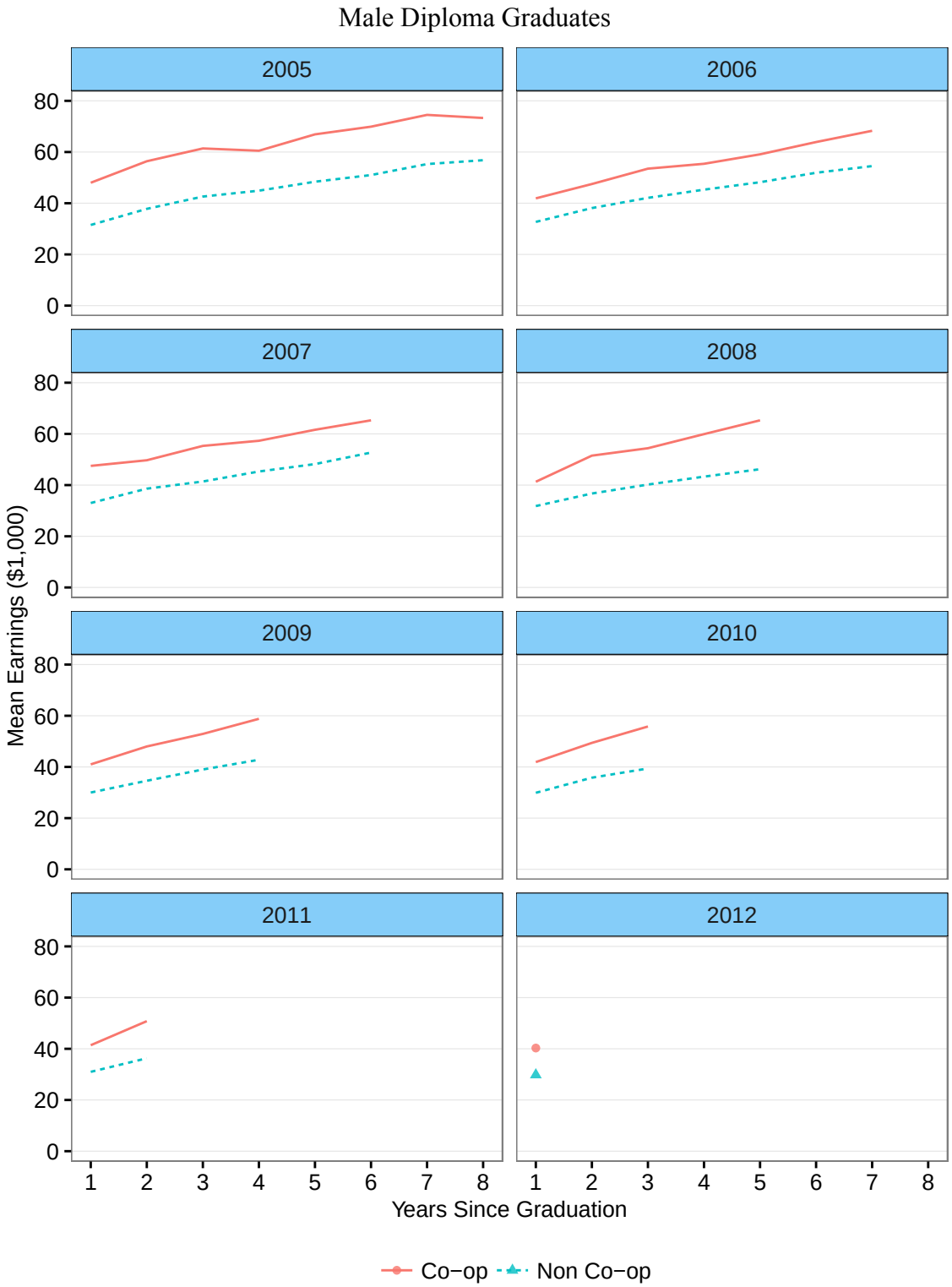


Figure 3.3.a: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

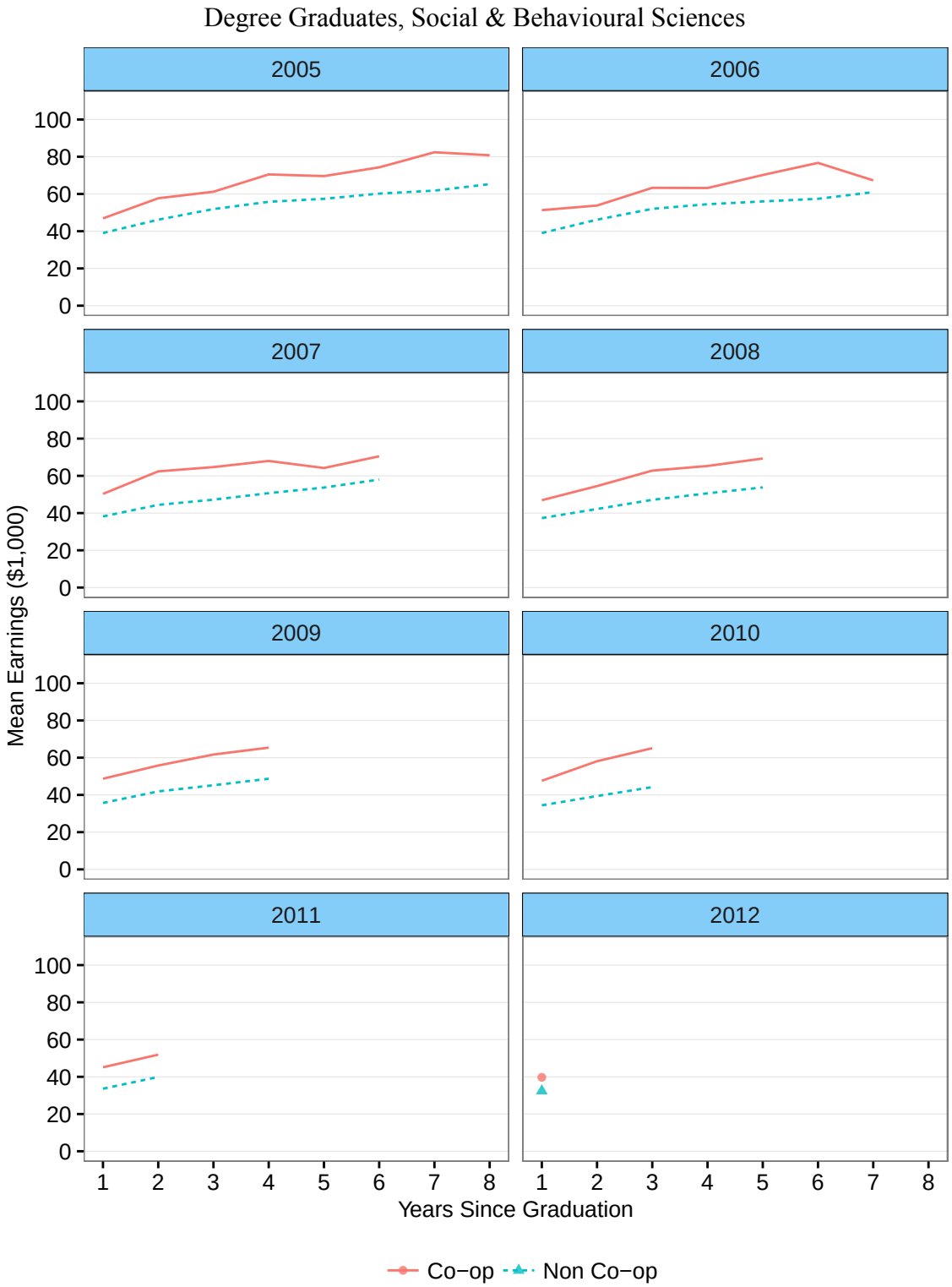


Figure 3.3.b: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

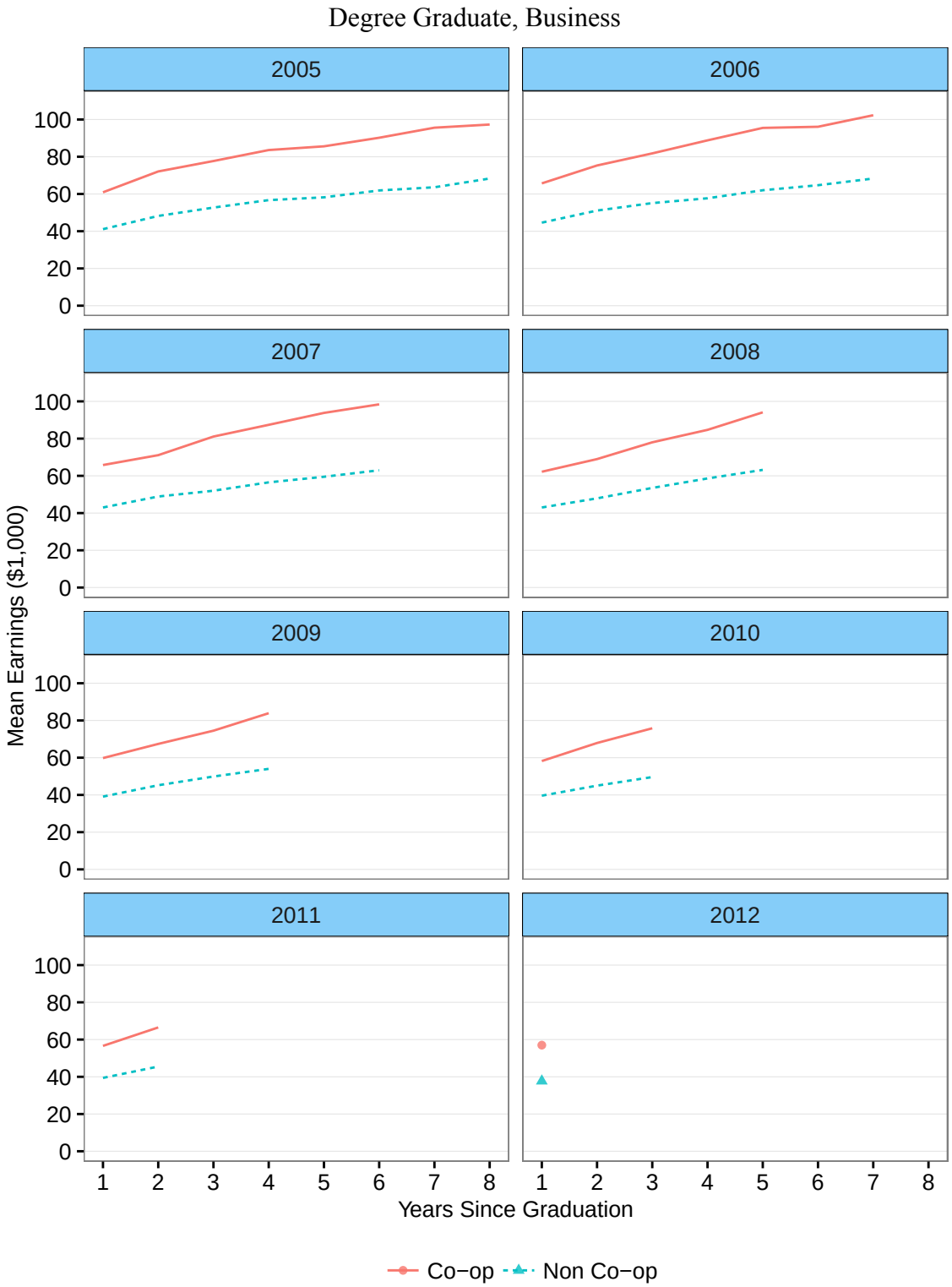


Figure 3.3.c: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

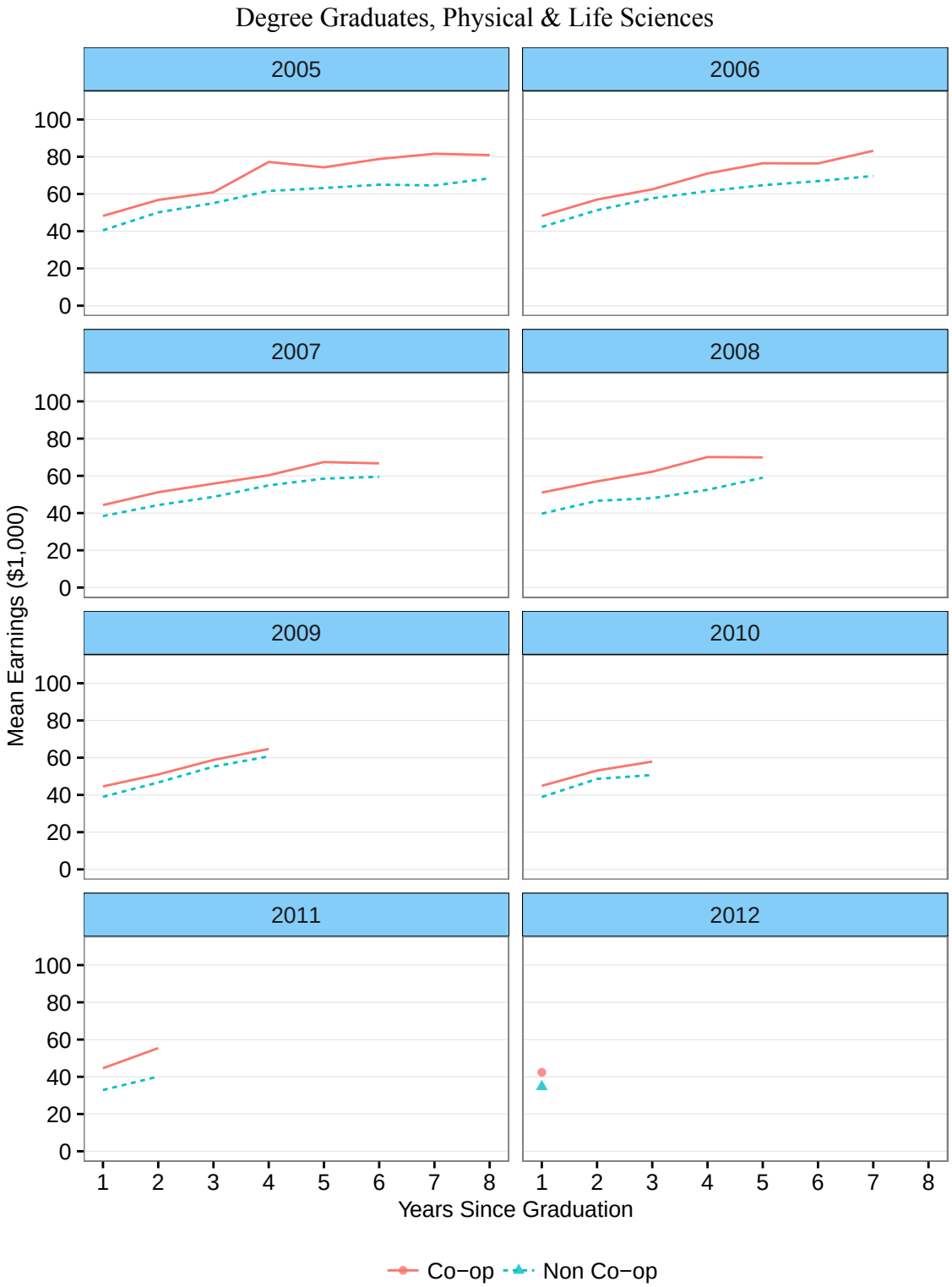


Figure 3.3.d: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

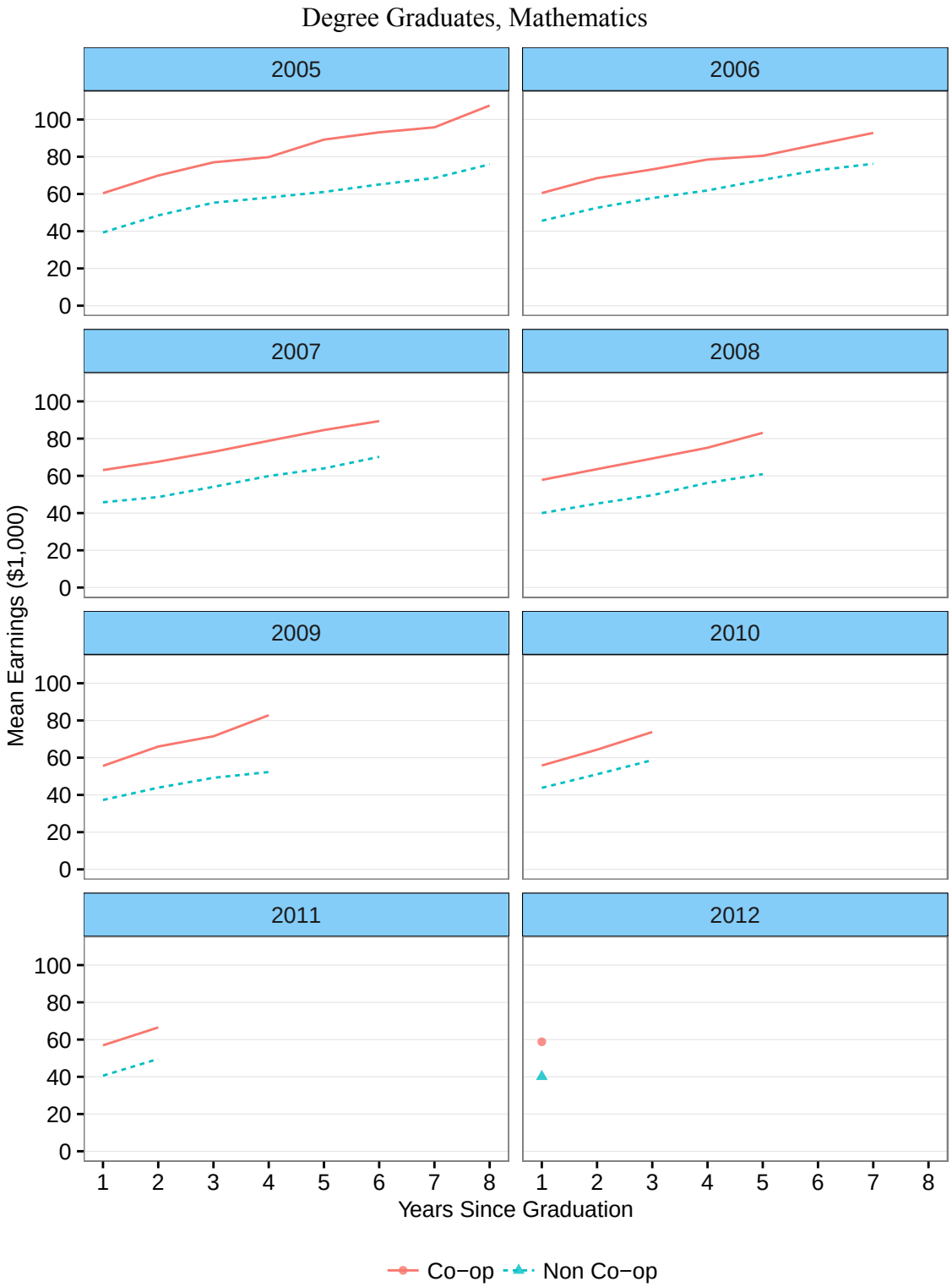


Figure 3.3.e: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

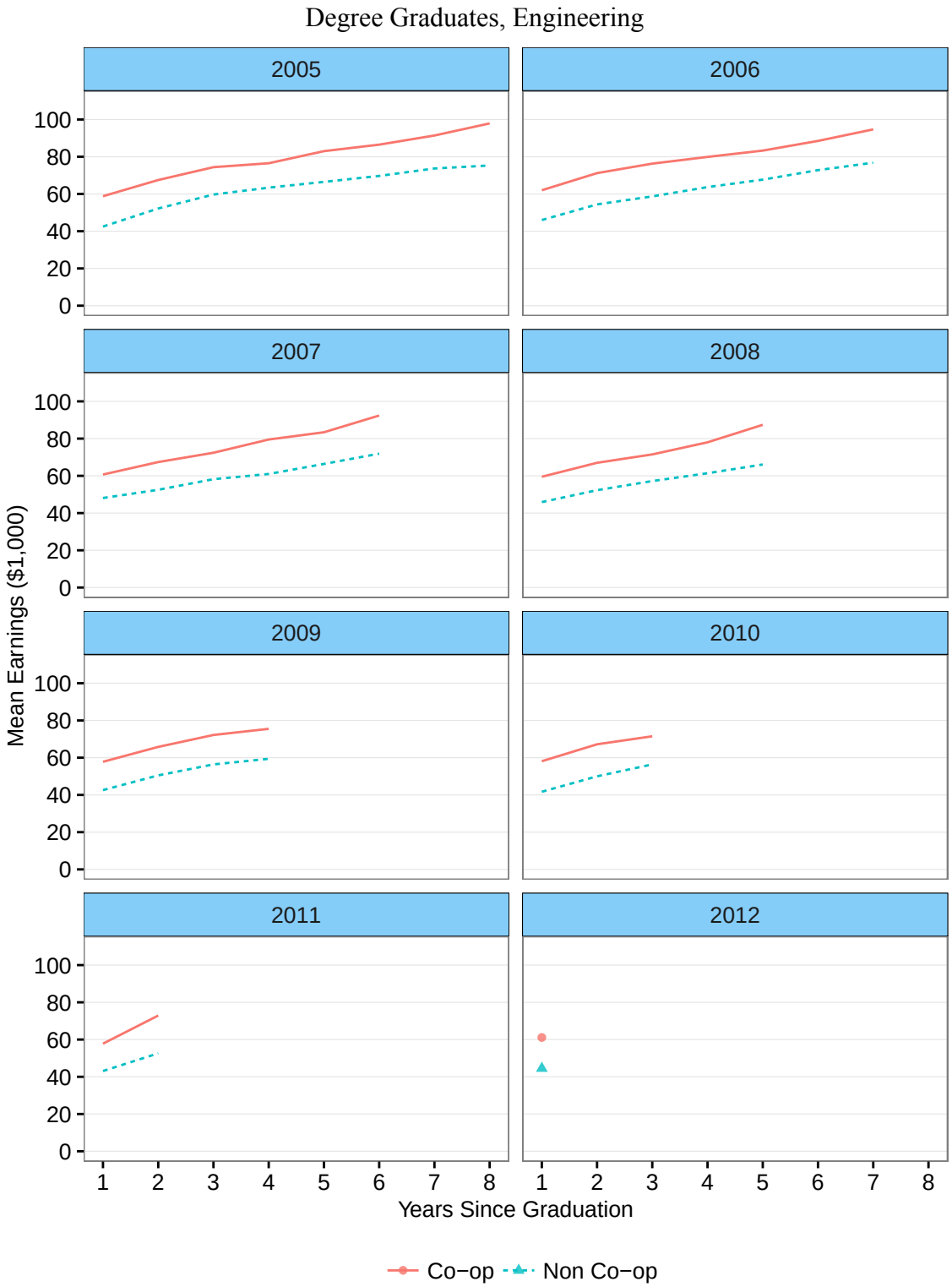


Figure 3.3.f: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

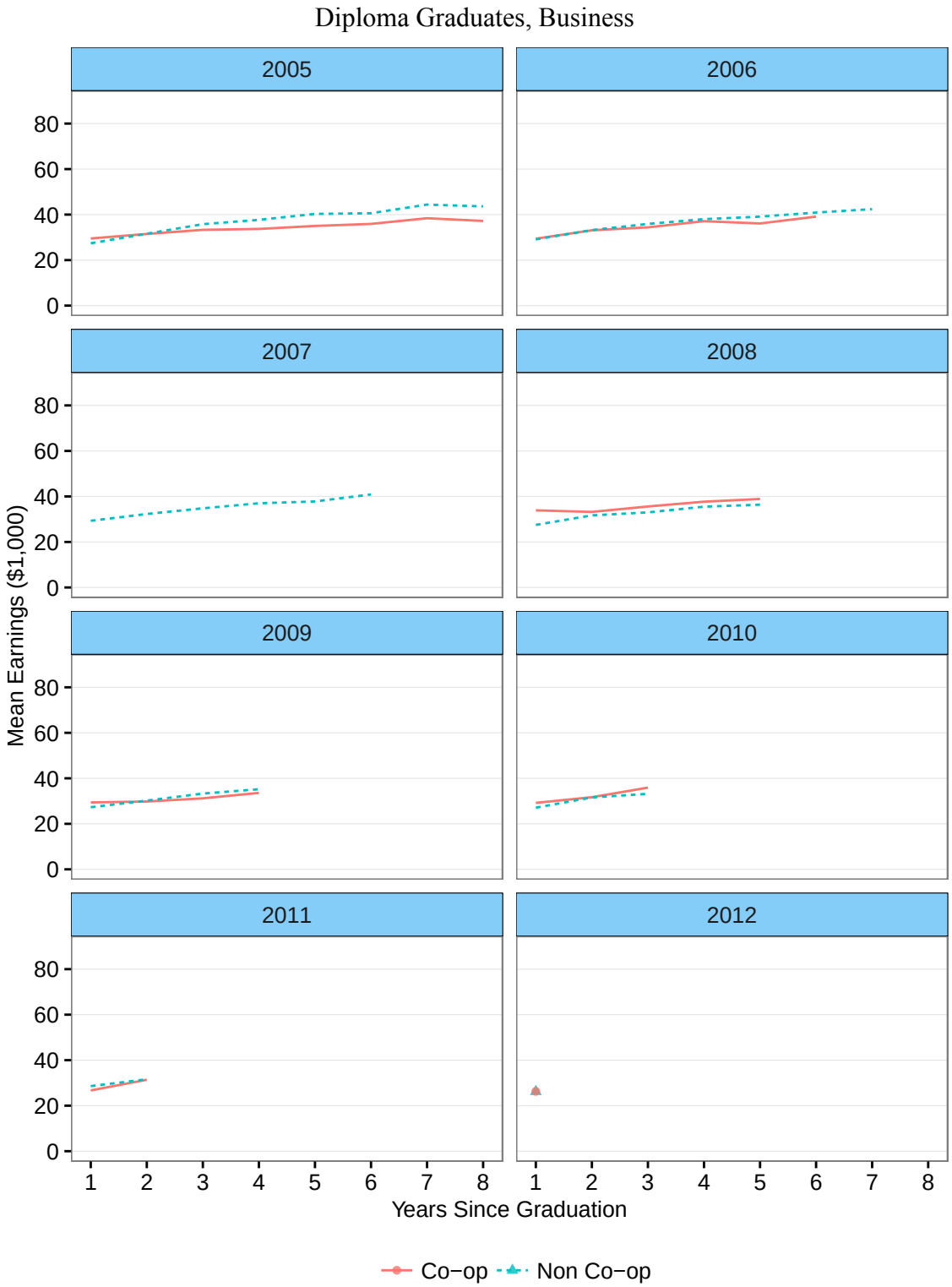


Figure 3.3.g: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

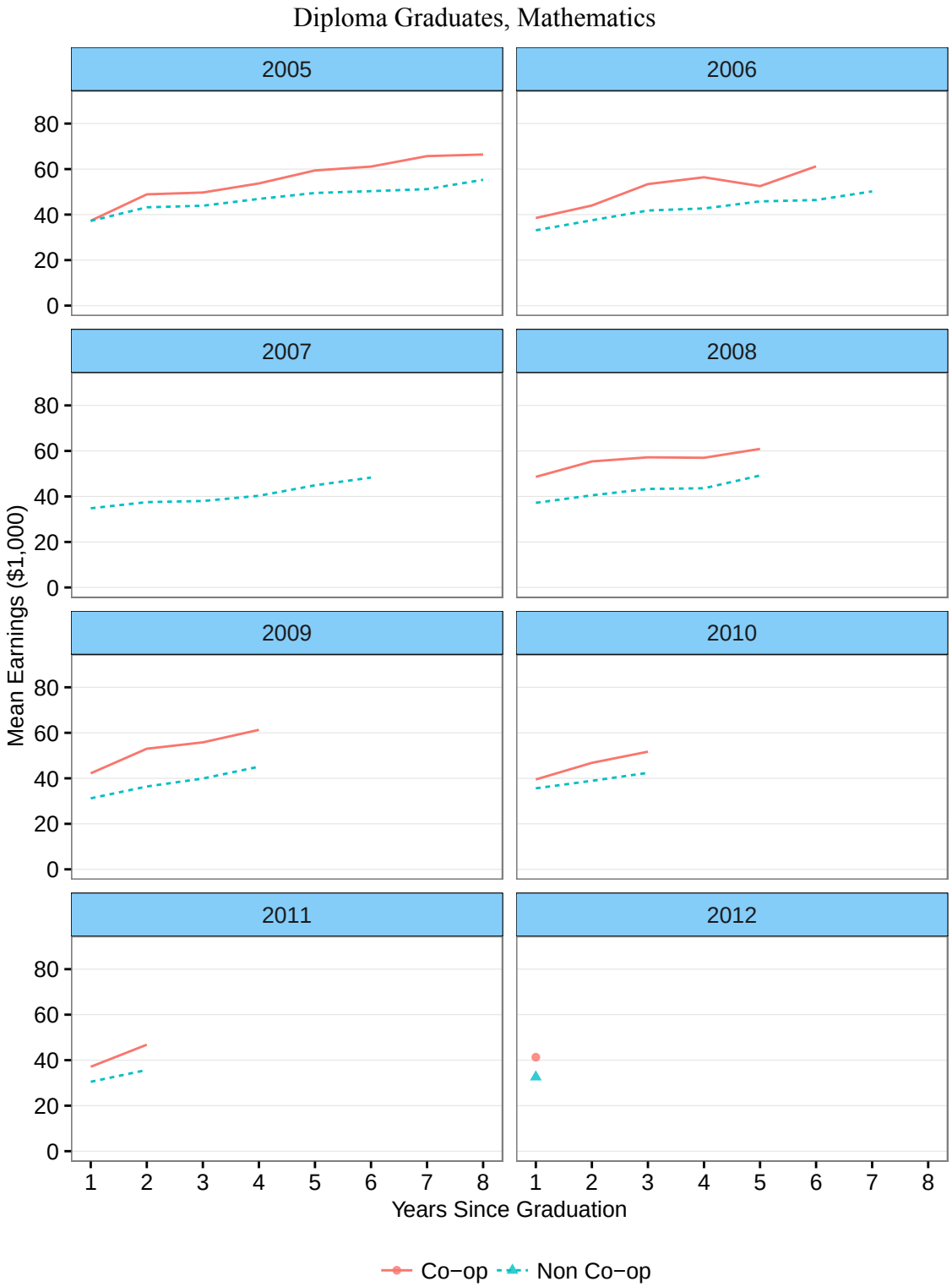


Figure 3.3.h: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

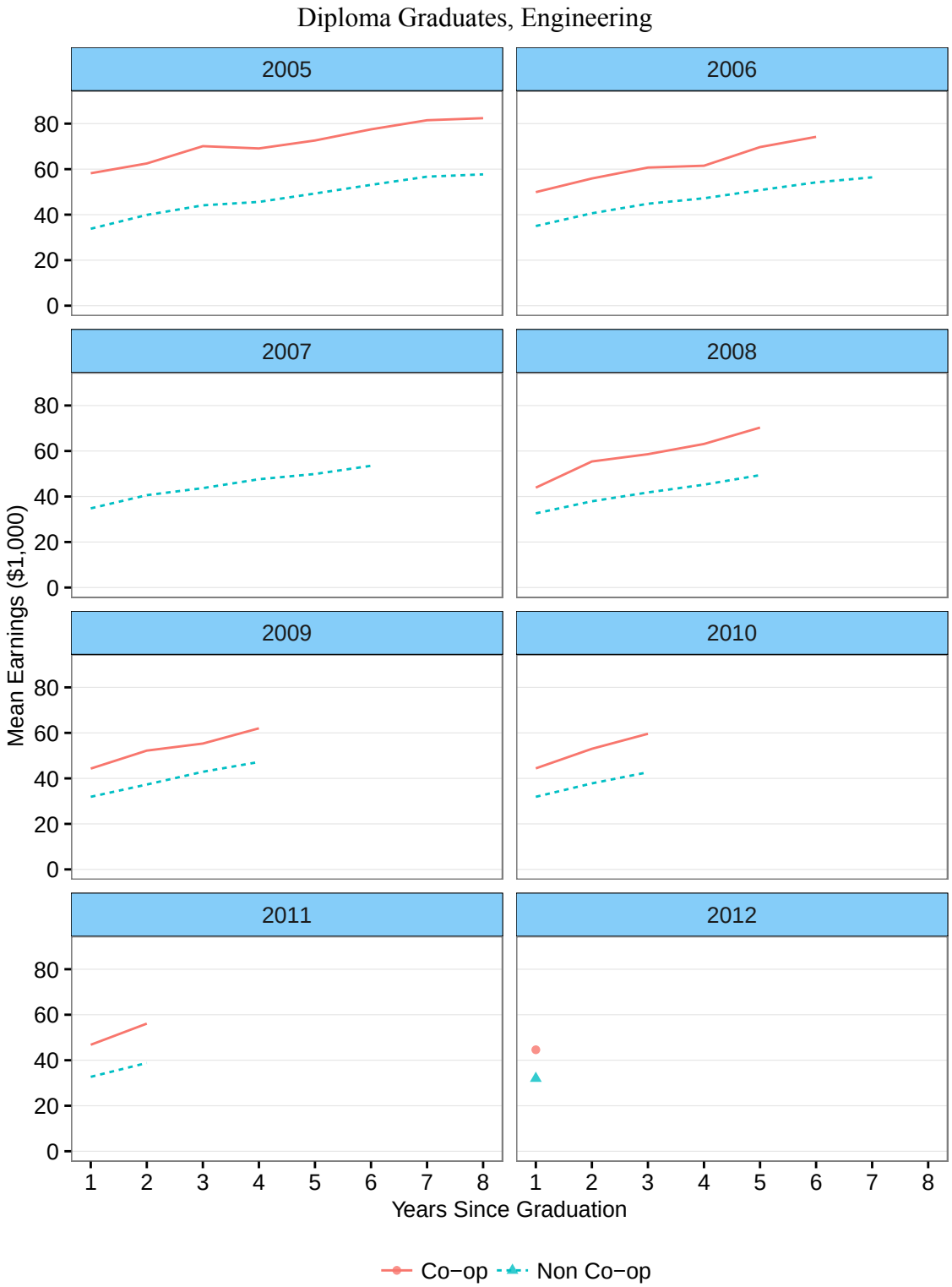


Figure 3.4.a: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

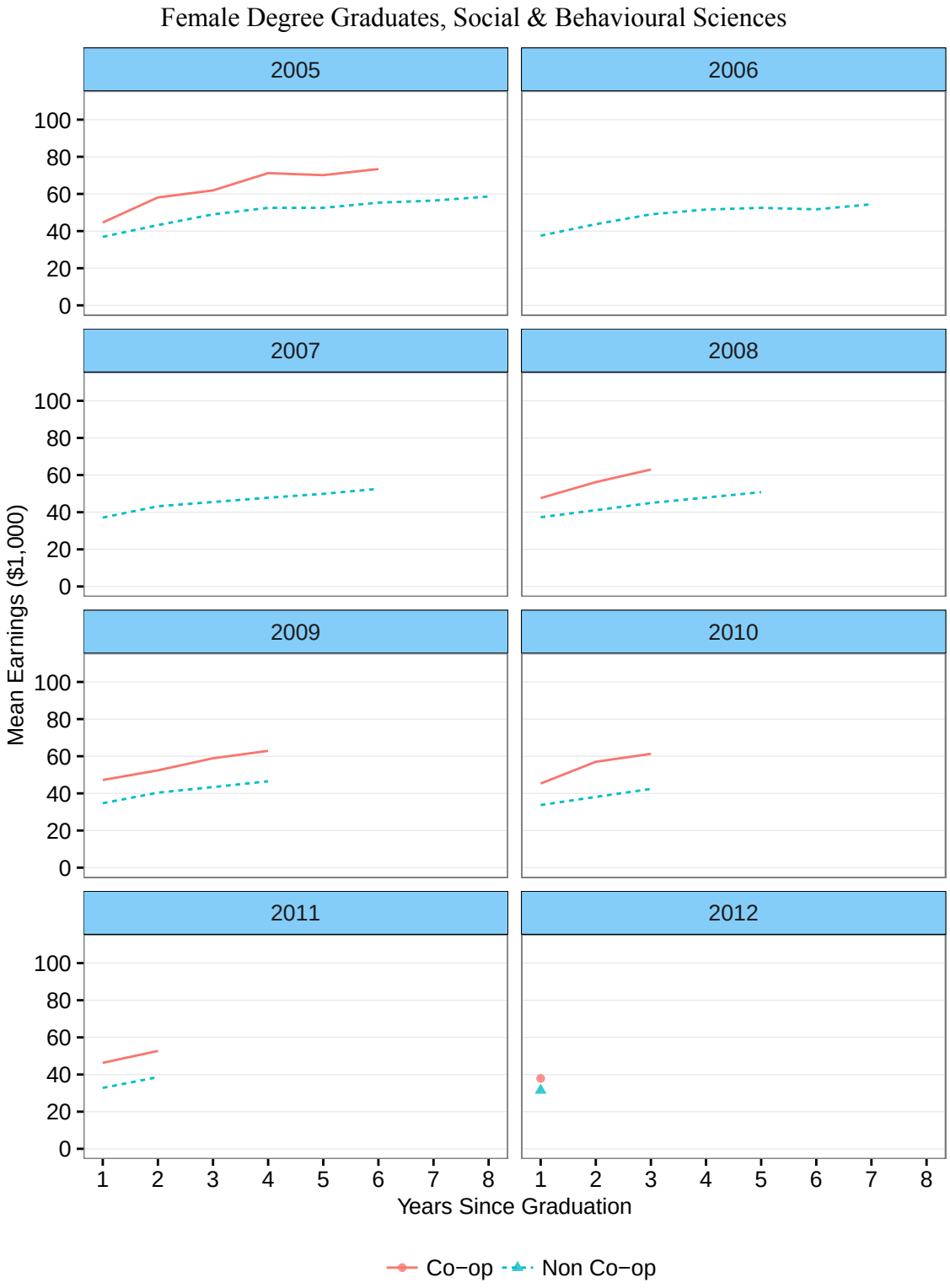


Figure 3.4.b: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

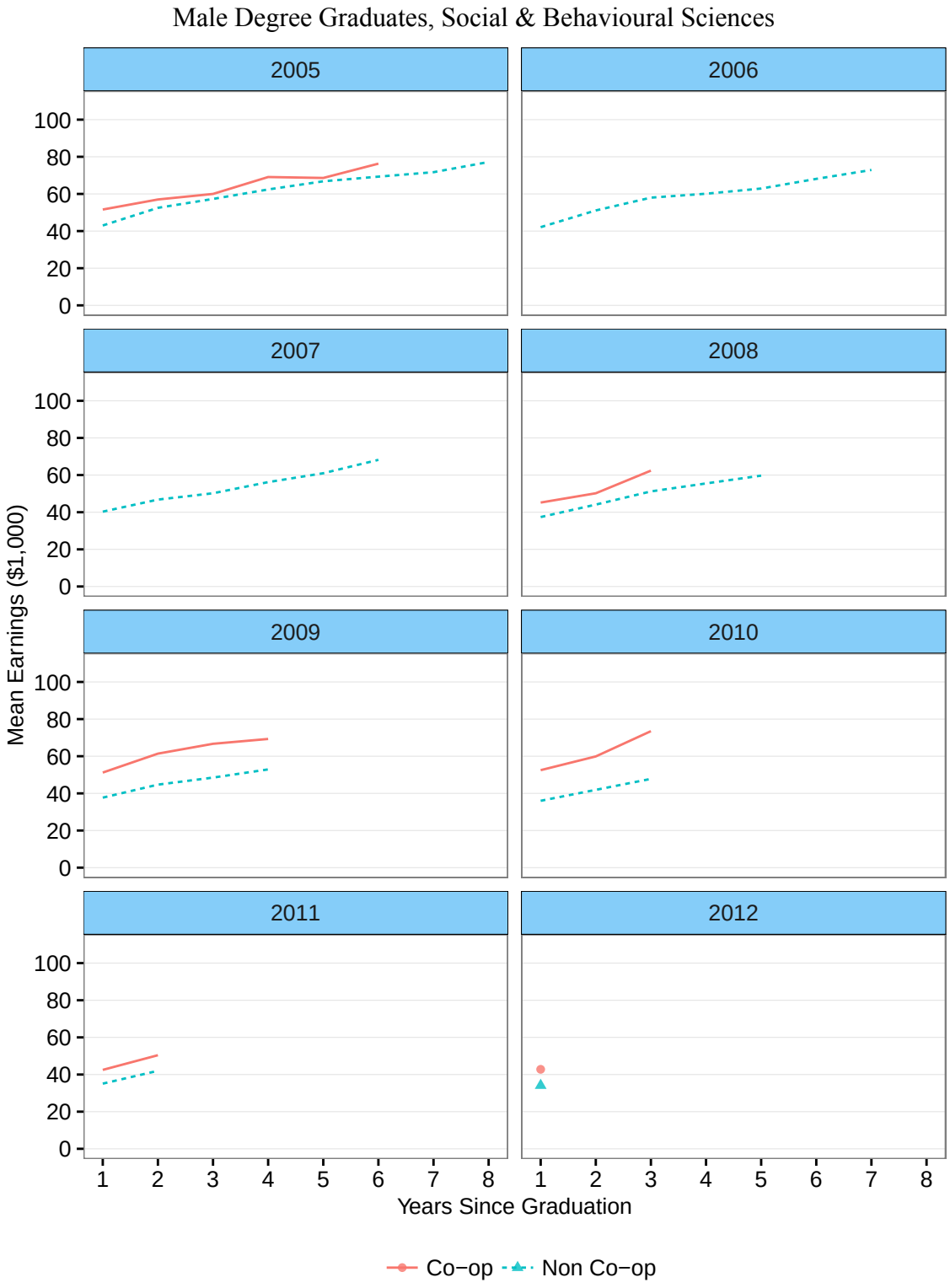


Figure 3.4.c: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

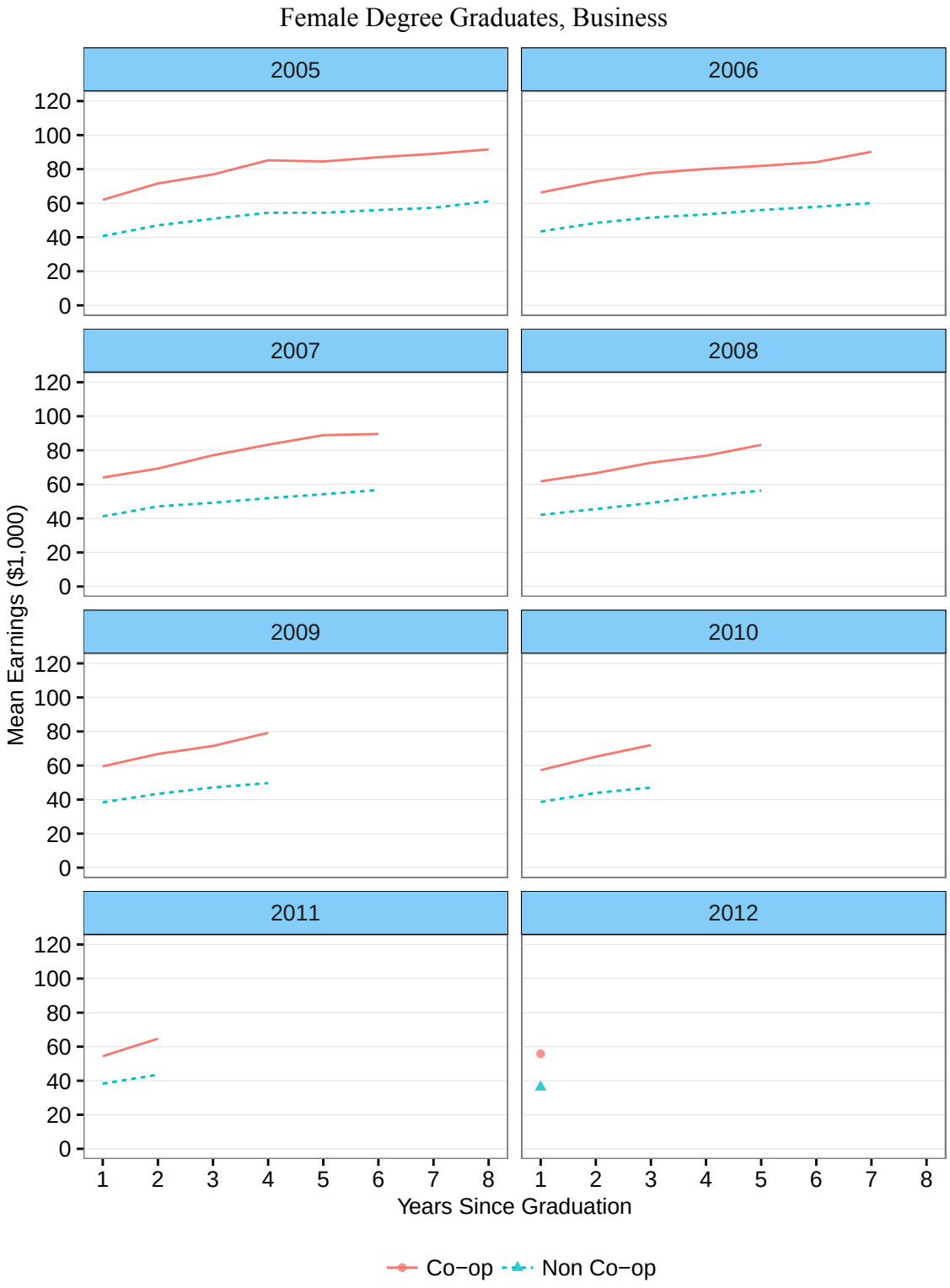


Figure 3.4.d: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

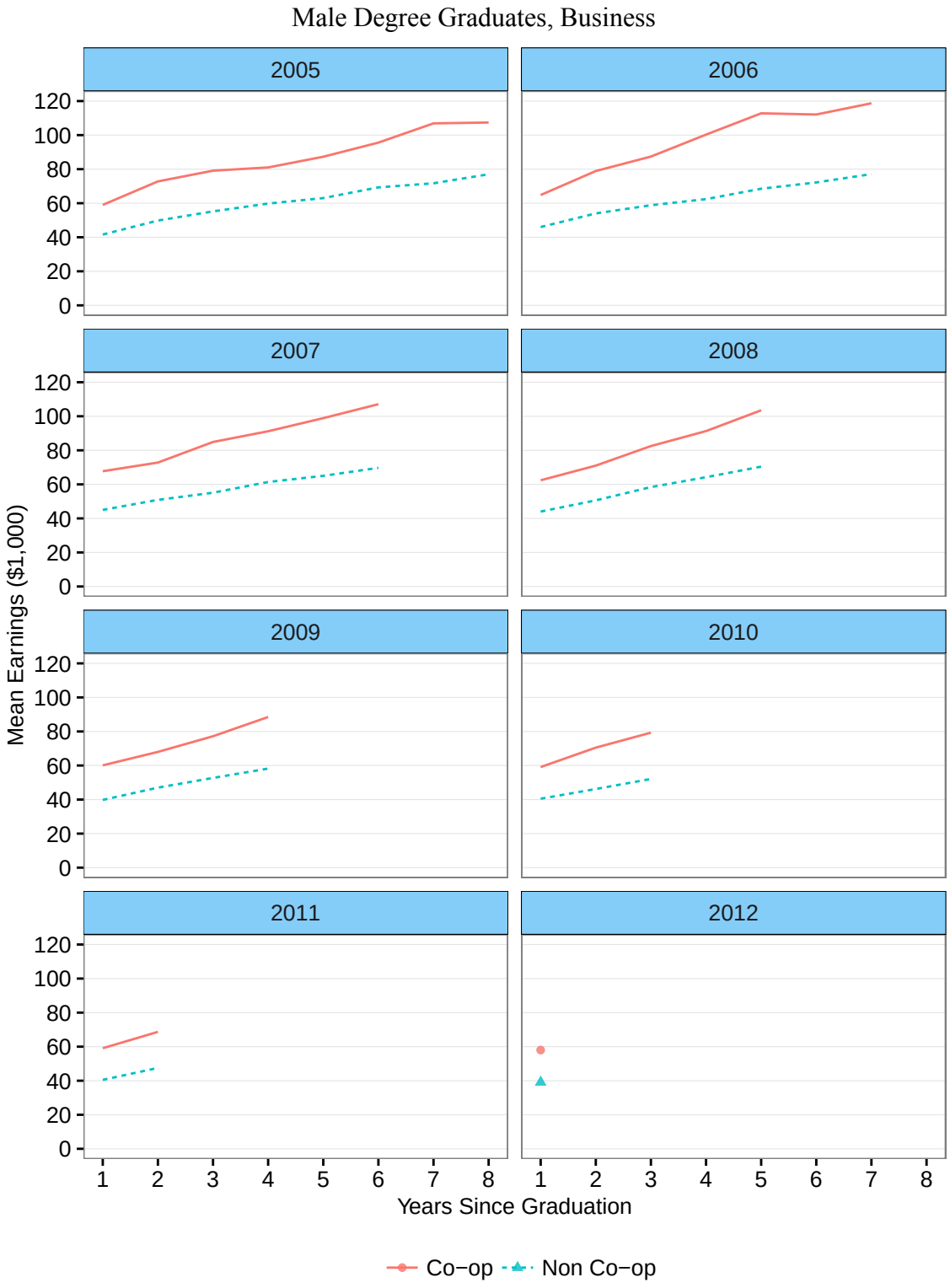


Figure 3.4.e: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

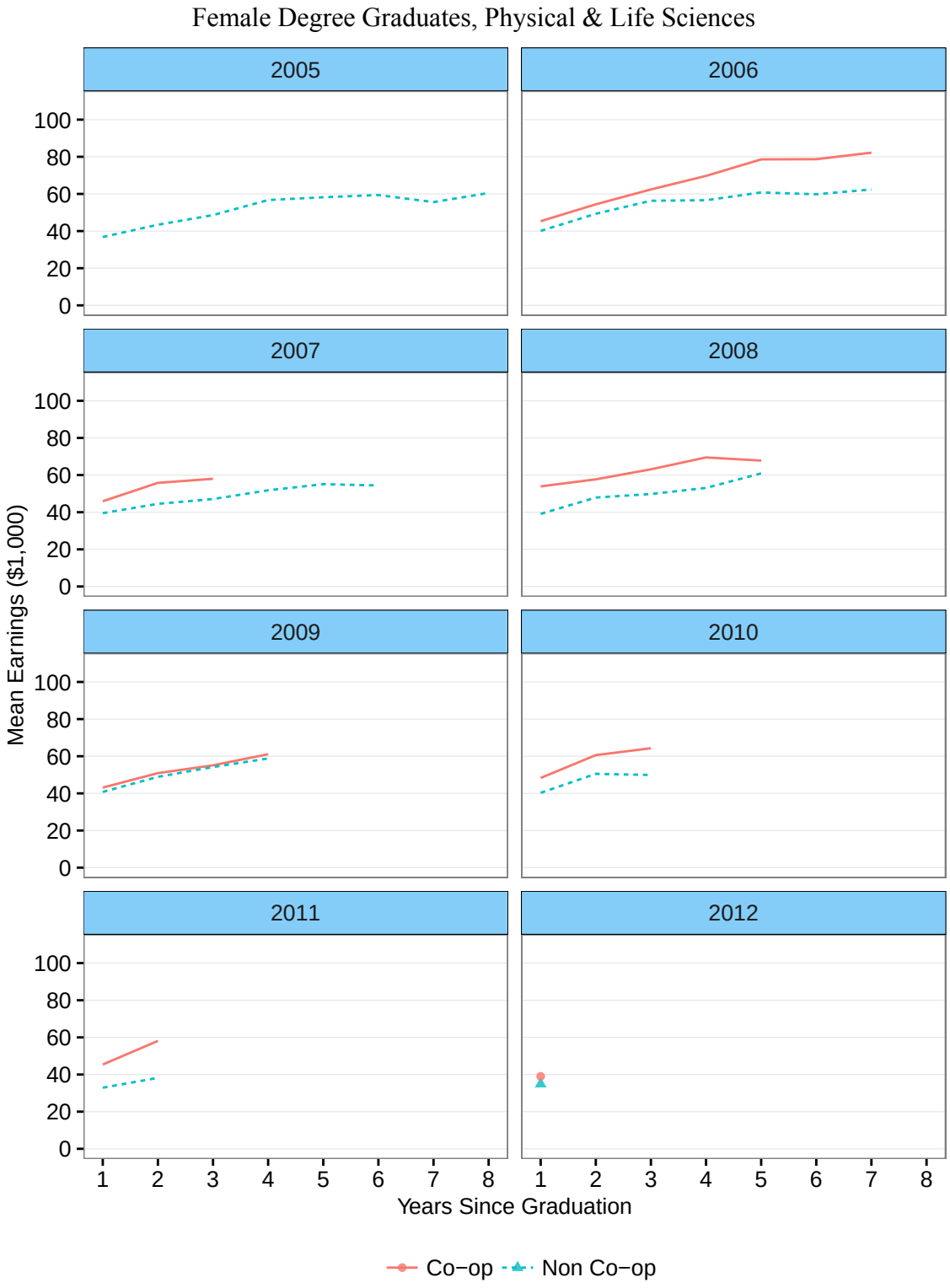


Figure 3.4.f: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

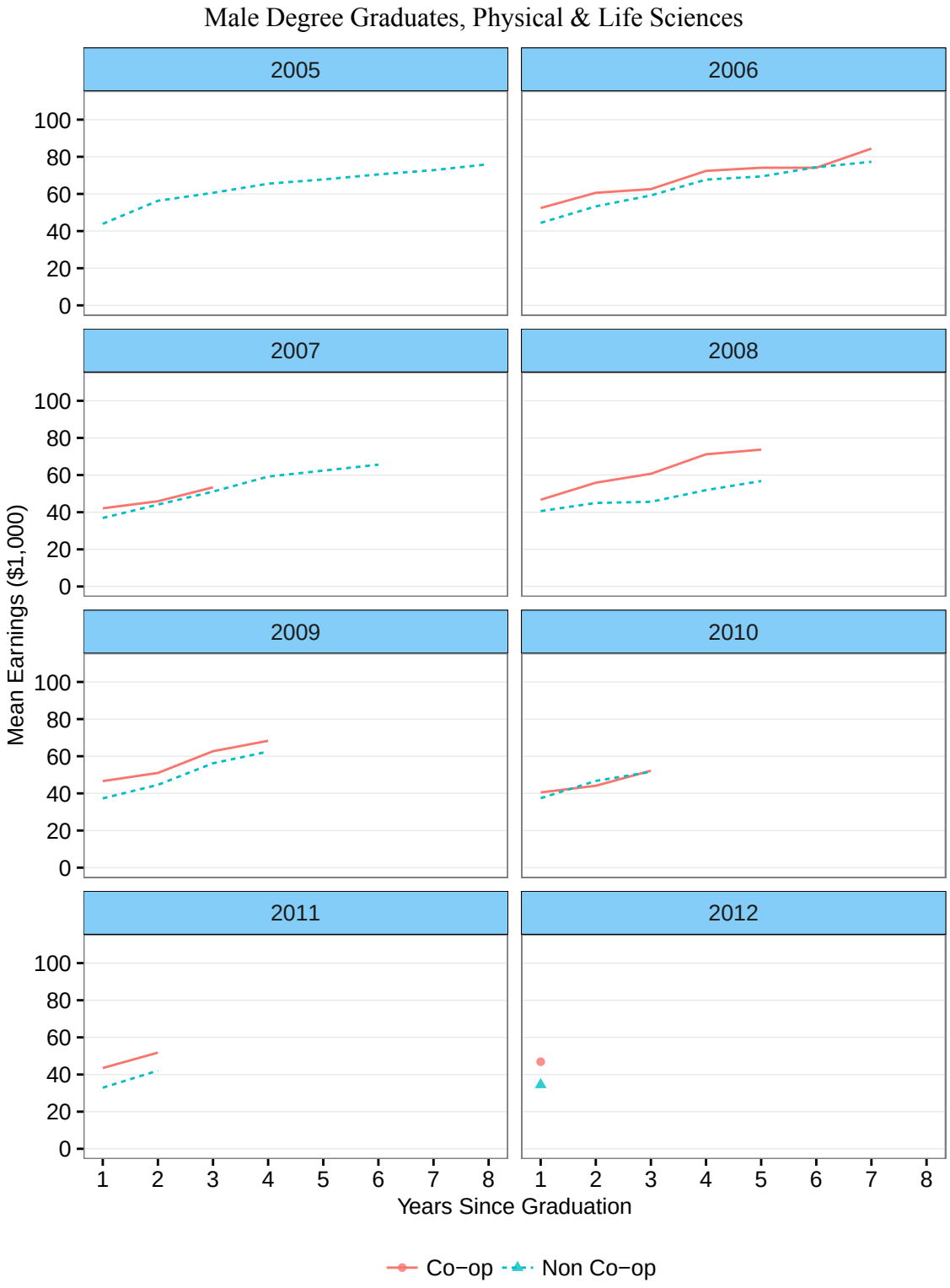


Figure 3.4.g: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

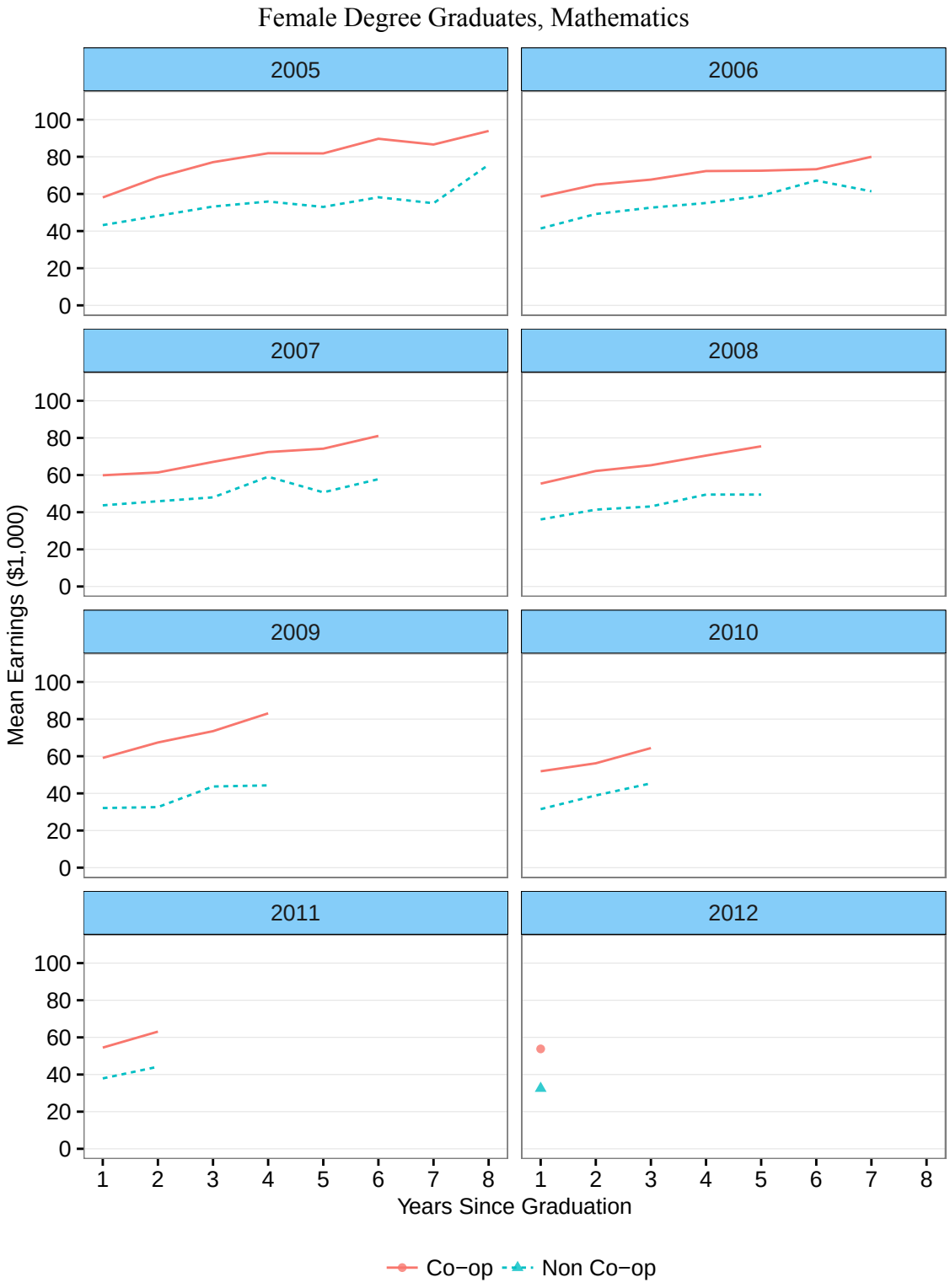


Figure 3.4.h: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

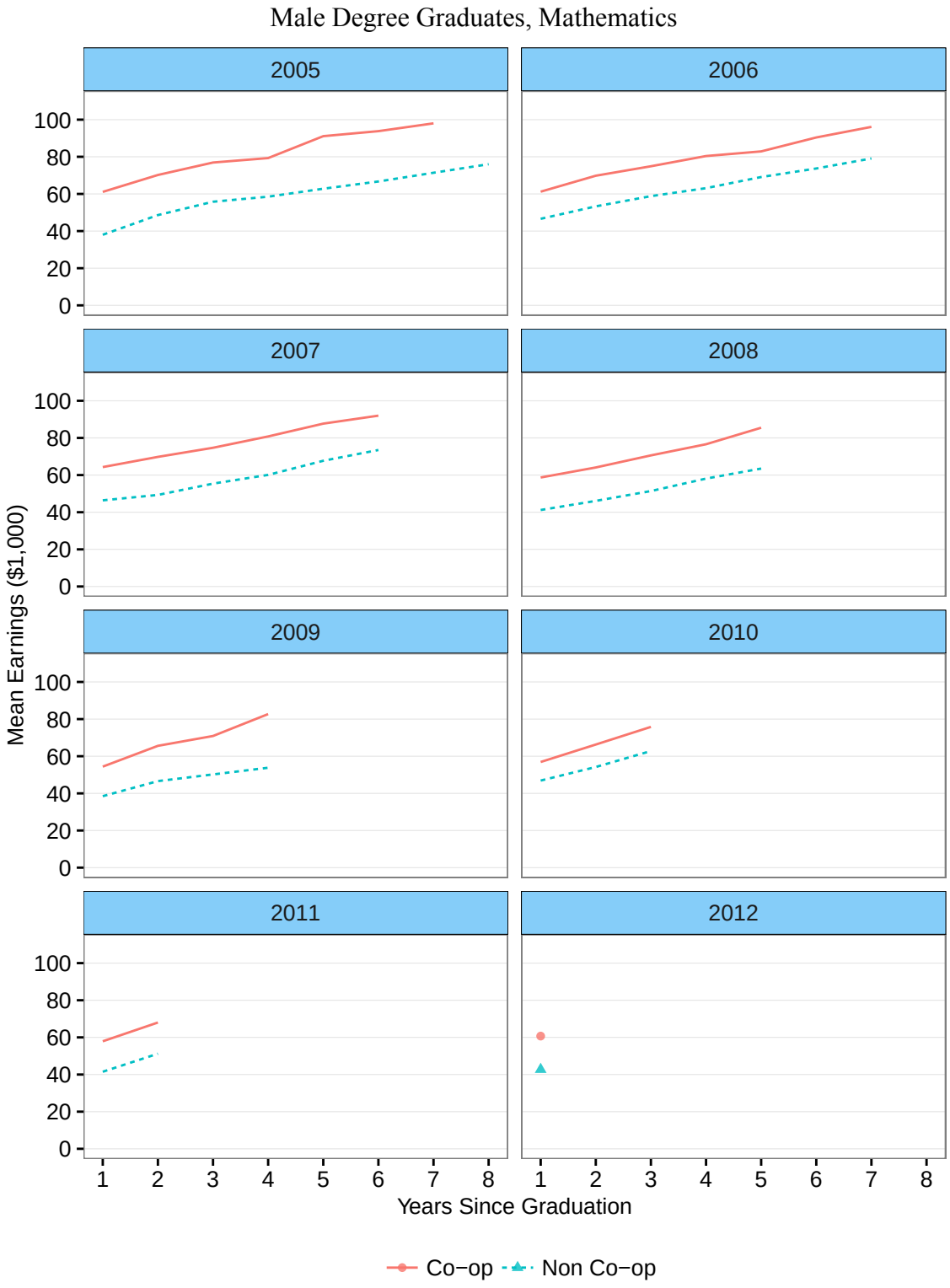


Figure 3.4.i: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

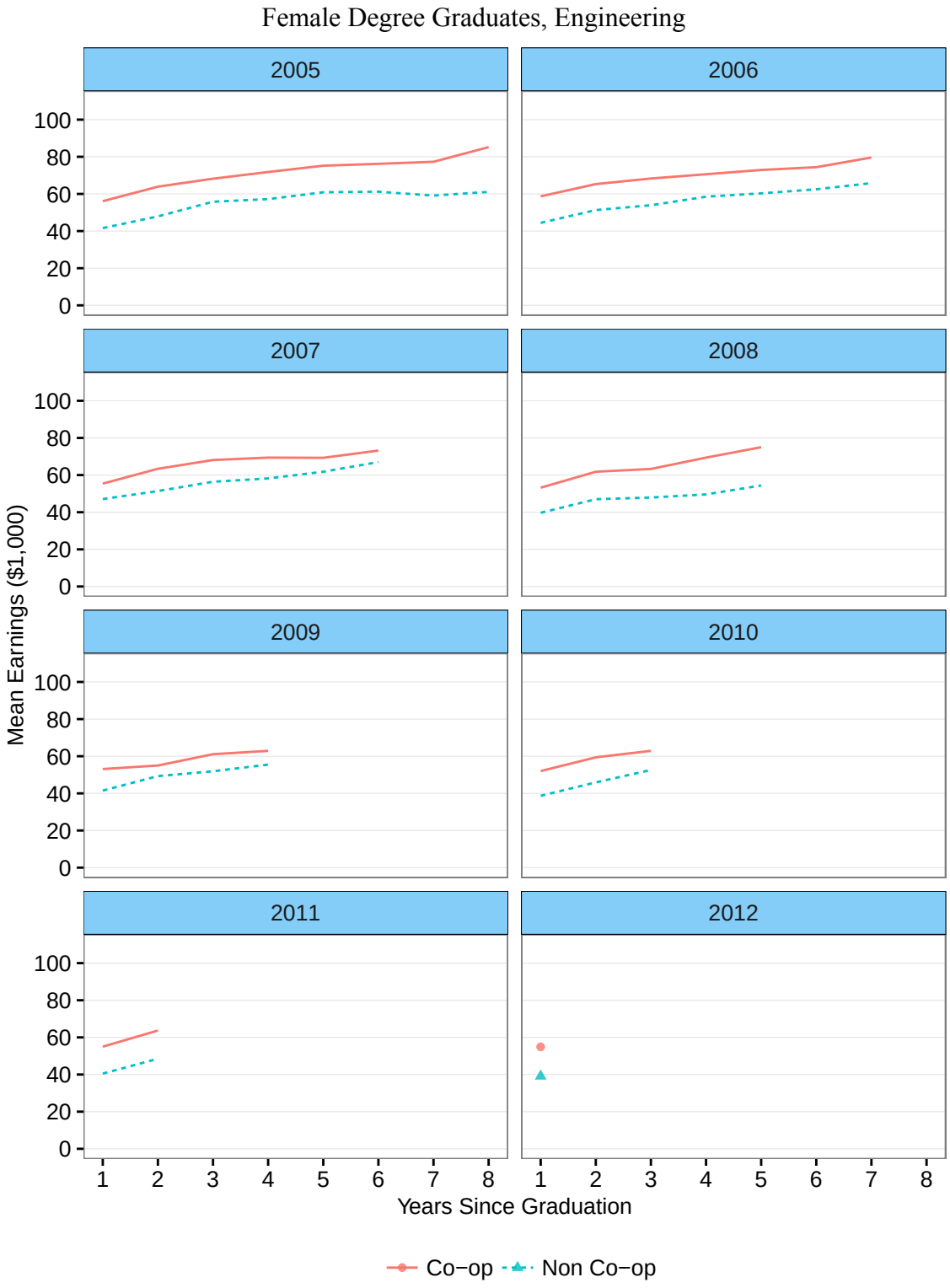


Figure 3.4.j: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

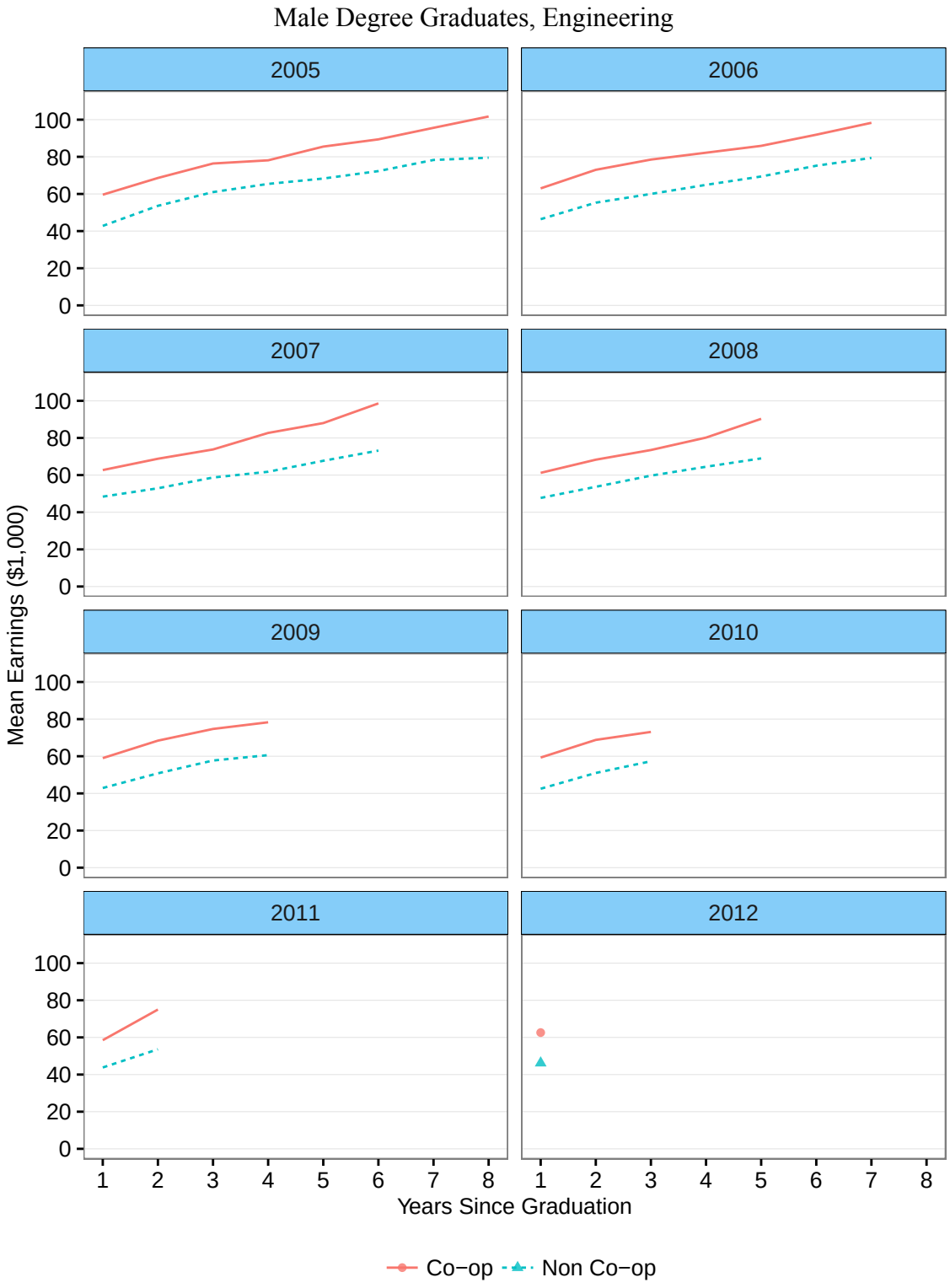


Table 4.1: Key Parameter Estimates

Dependent Variable: Earnings Level

Credential	Additional Controls	Coop	Coop×YSG
Degree		$14.961^{\dagger}$	$2.016^{\dagger}$
		(0.250)	(0.090)
Degree	FOS, Gender	$14.260^{\dagger}$	$1.219^{\dagger}$
		(0.279)	(0.101)
Diploma		$8.238^{\dagger}$	$0.771^{\dagger}$
		(0.354)	(0.138)
Diploma	FOS, Gender	$7.858^{\dagger}$	0.295^{*}
		(0.355)	(0.137)

Dependent Variable: Log Earnings

Credential	Additional Controls	Coop	Coop×YSG
Degree		$0.389^{\dagger}$	-0.001
		(0.006)	(0.002)
Degree	FOS, Gender	$0.352^{\dagger}$	$-0.011^{\dagger}$
		(0.006)	(0.002)
Diploma		$0.216^{\dagger}$	0.010^{*}
		(0.012)	(0.005)
Diploma	FOS, Gender	$0.205^{\dagger}$	-0.002
		(0.012)	(0.005)

Figure 4.1: Implied Earnings Differences between Co-op and Non Co-op graduates

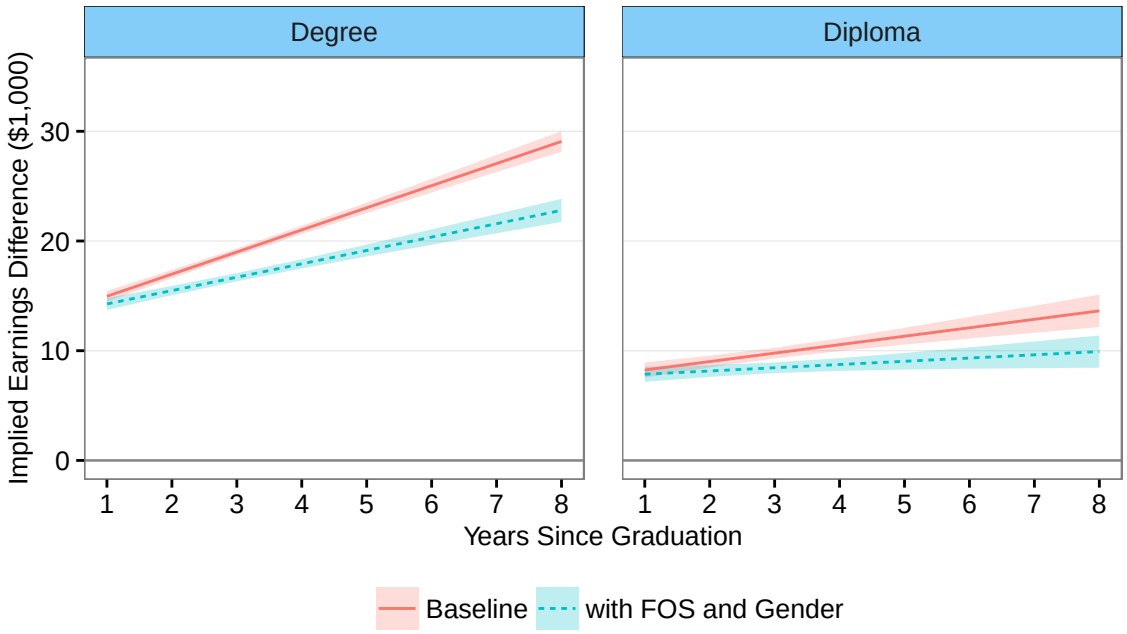


Figure 4.2.a: Implied Earnings Differences between Co-op and Non Co-op Graduates

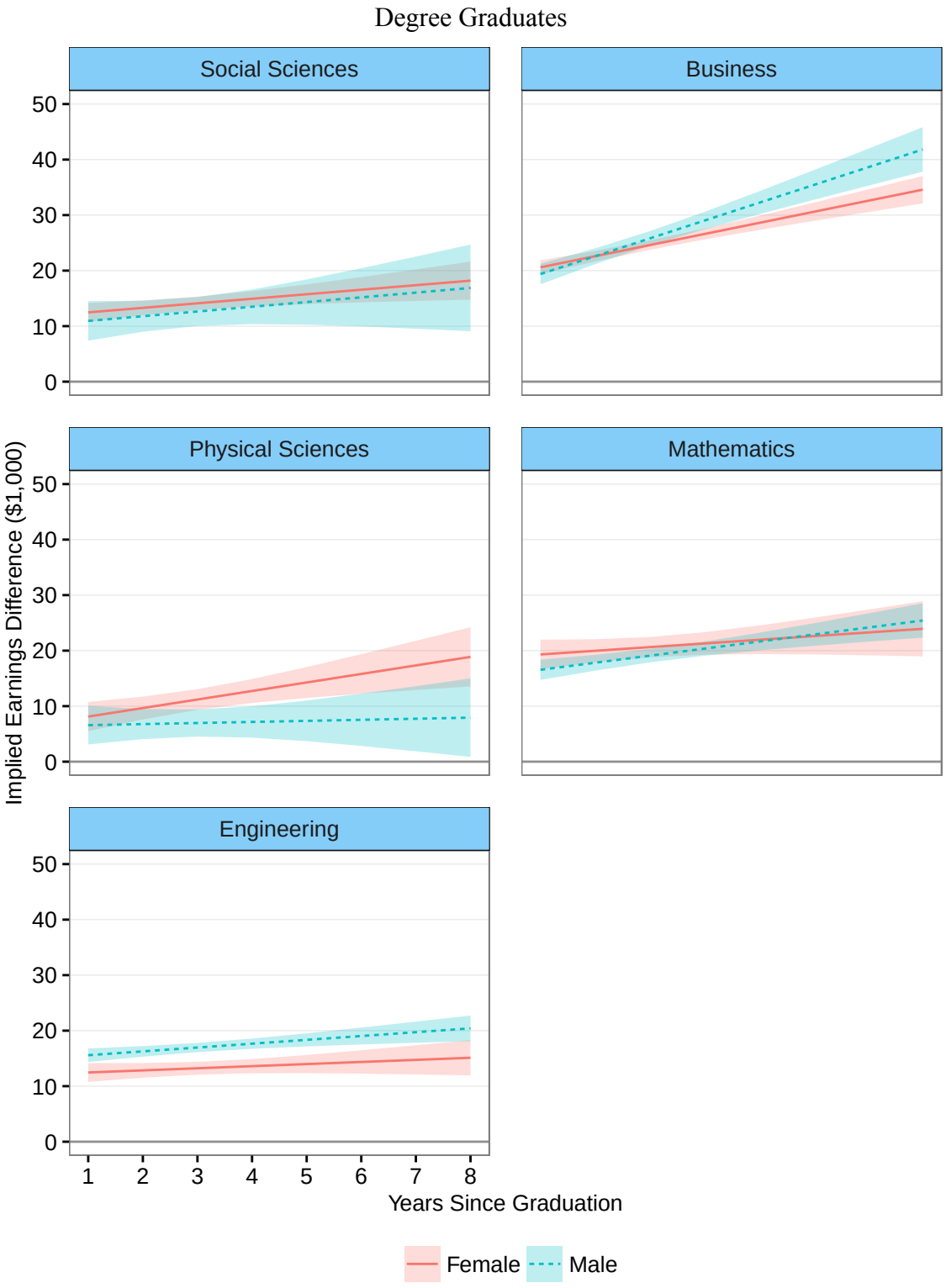


Figure 4.2.b: Implied Earnings Differences between Co-op and Non Co-op Graduates

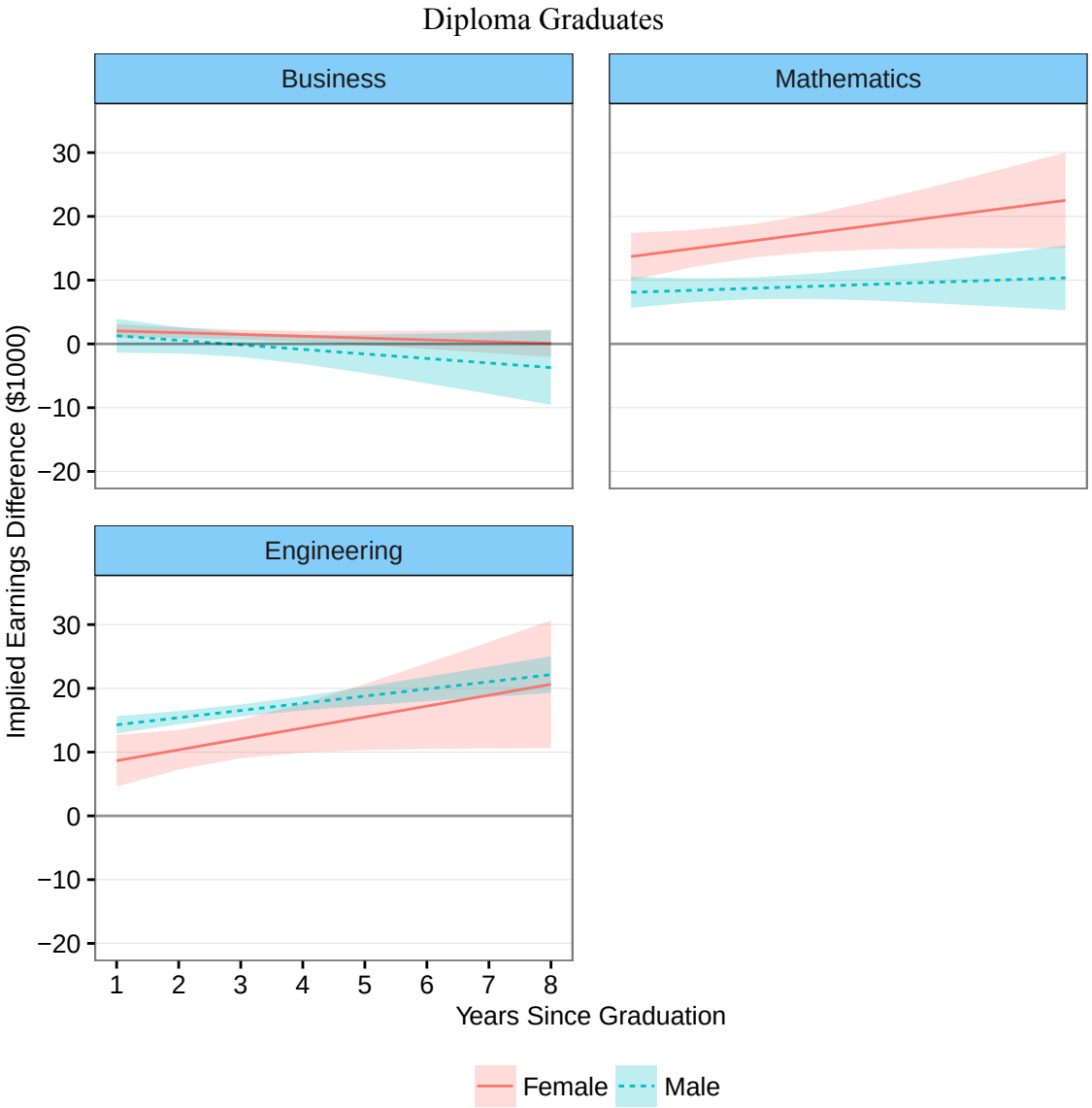


Figure 5.1.a: Implied Earnings Differences with Graduating Grades Controlled for Female Degree Graduates

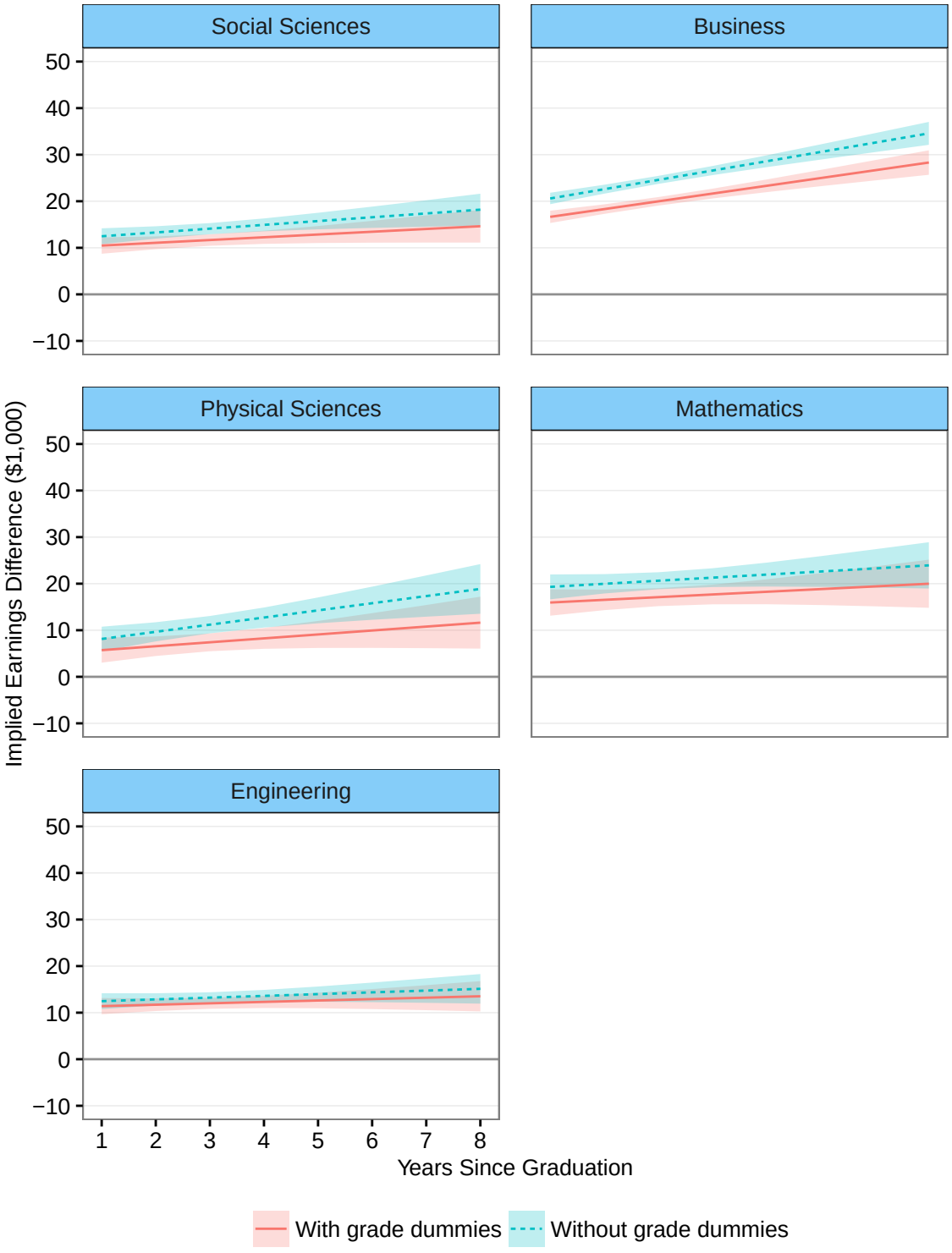


Figure 5.1.b: Implied Earnings Differences with Graduating Grades Controlled for

Male Degree Graduates

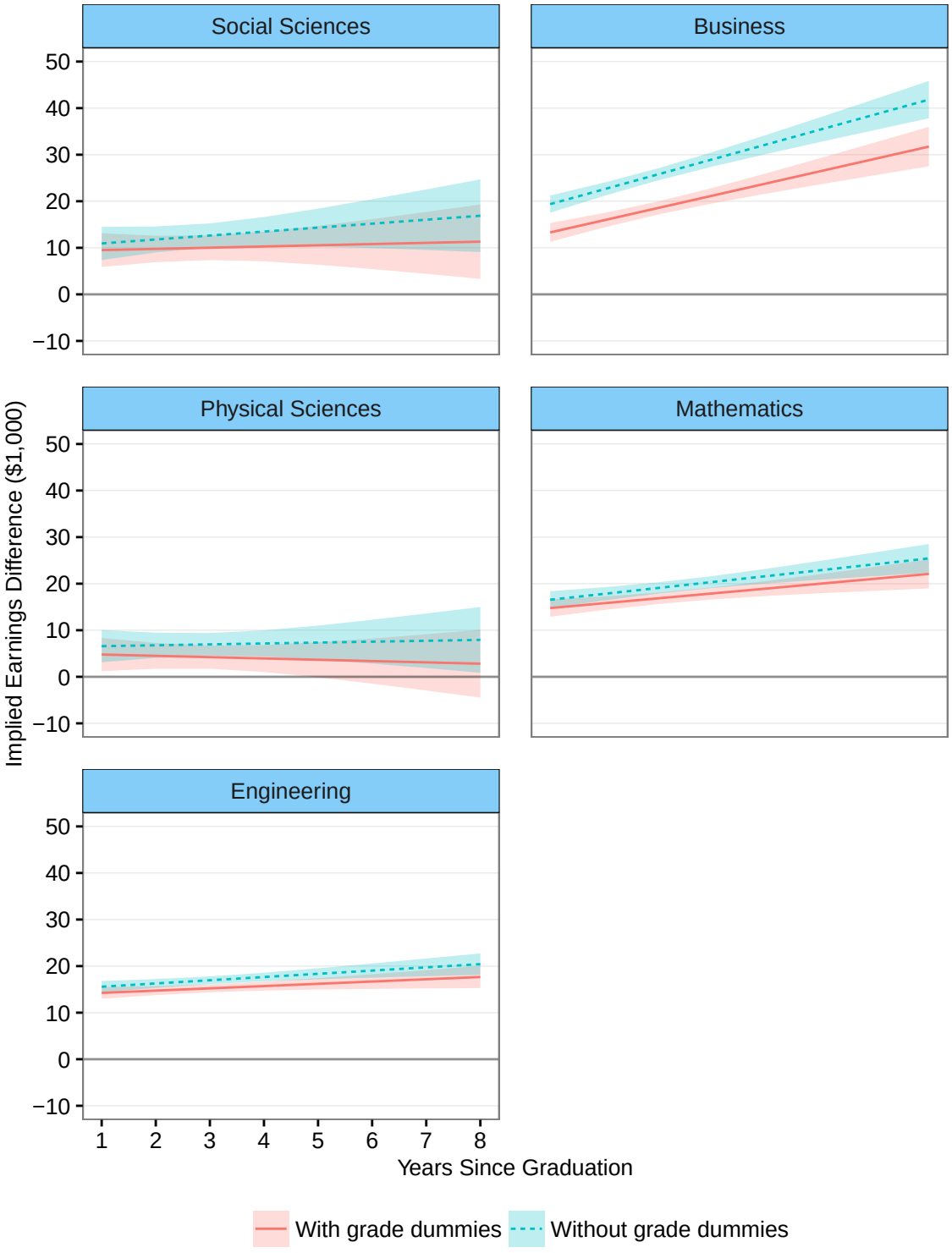


Figure 5.2.a: Implied Earnings Differences among Younger Graduates

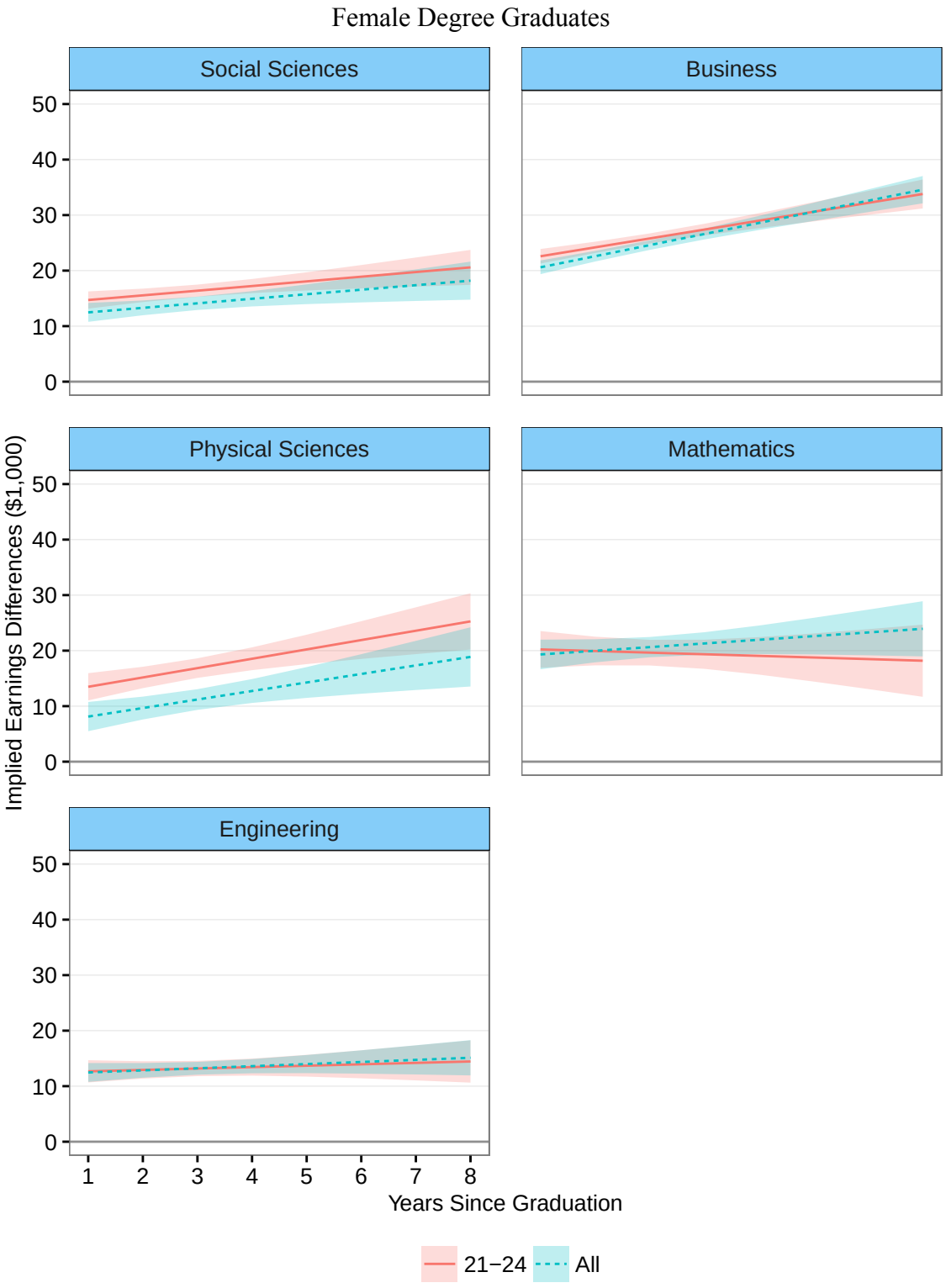


Figure 5.2.b: Implied Earnings Differences among Younger Graduates

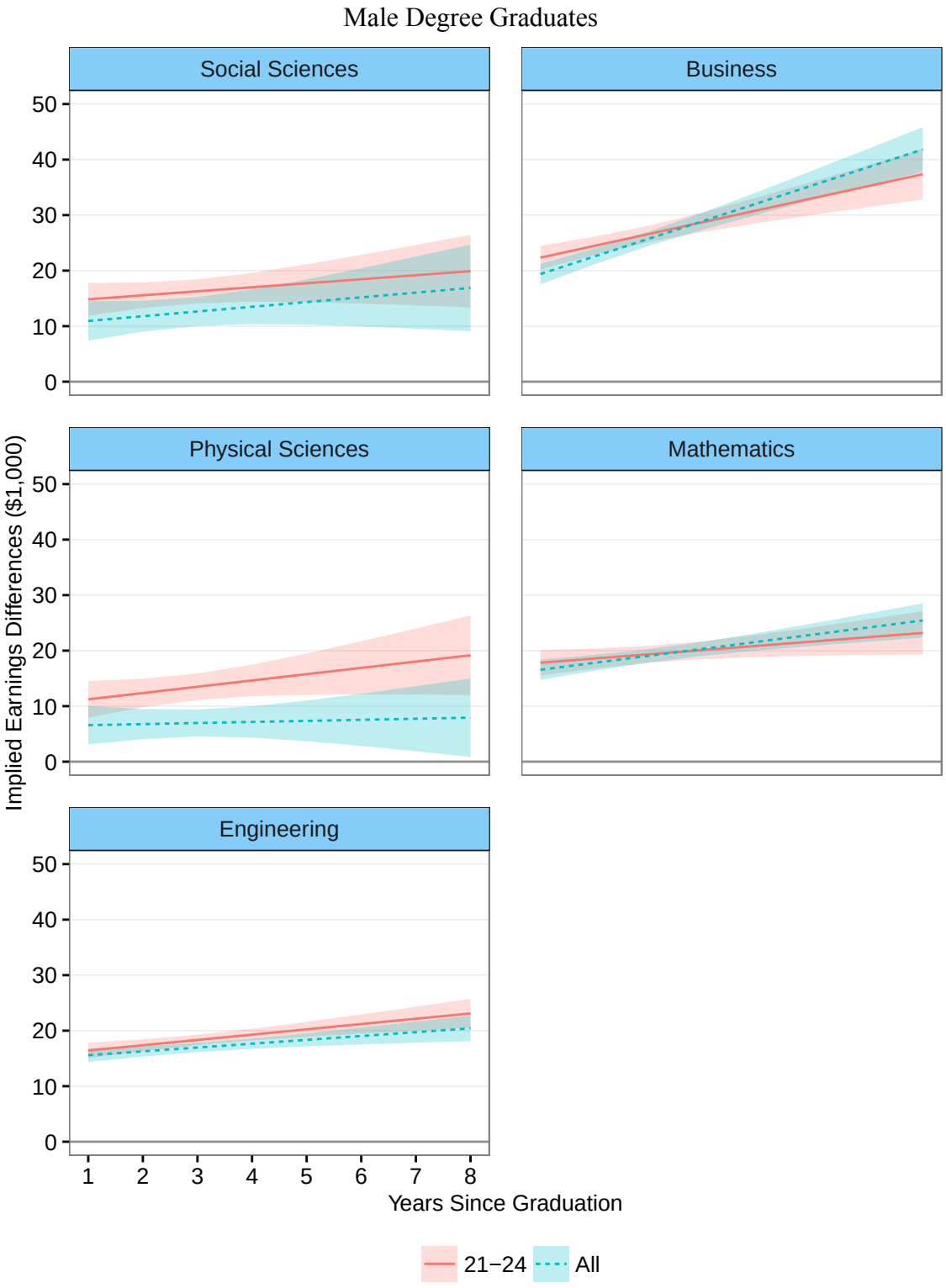


Figure 5.2.c: Implied Earnings Differences among Younger Graduates

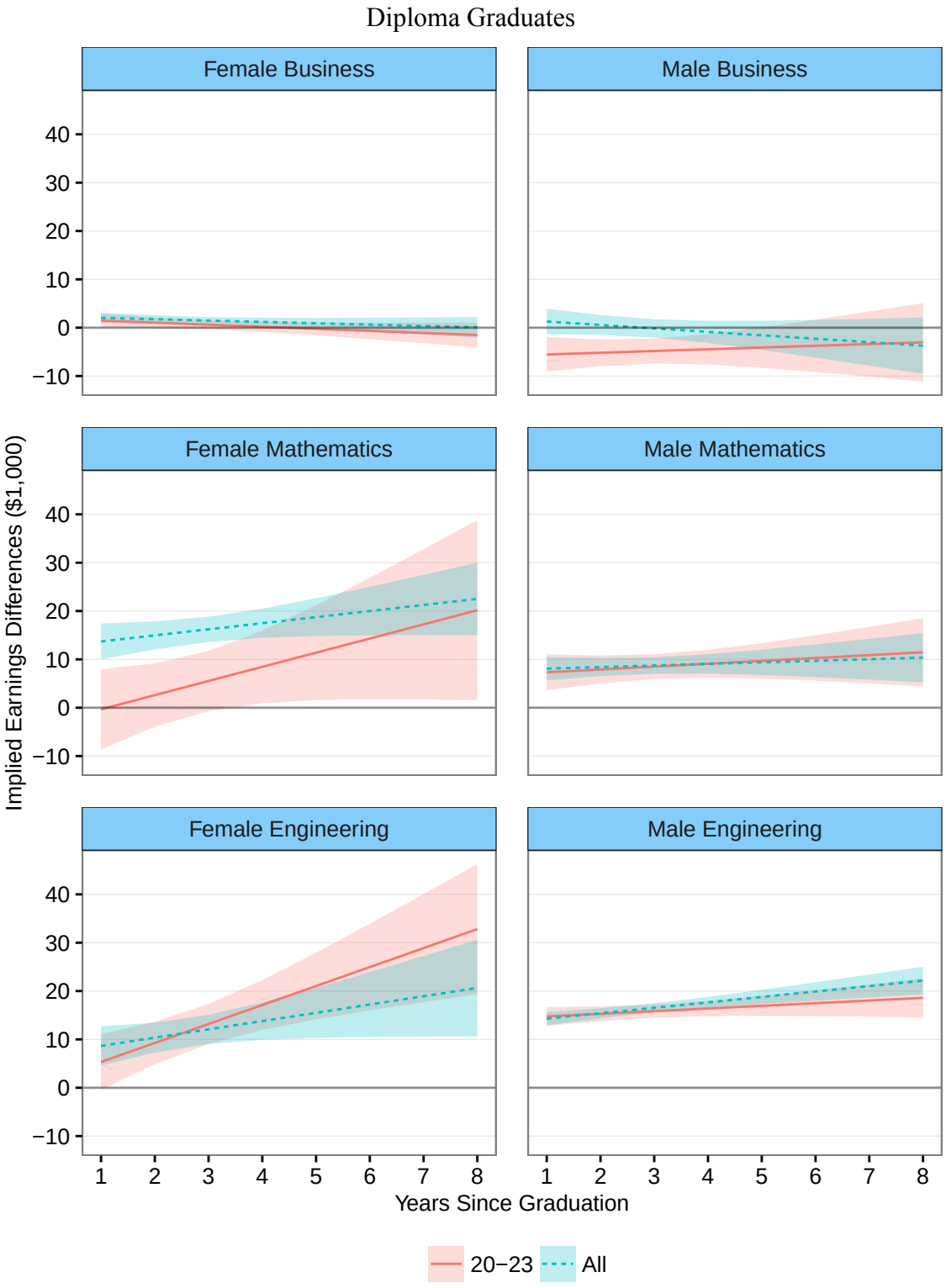


Figure 5.3.a: Implied Earnings Differences with Graduating Institutions Controlled for Female Degree Graduates

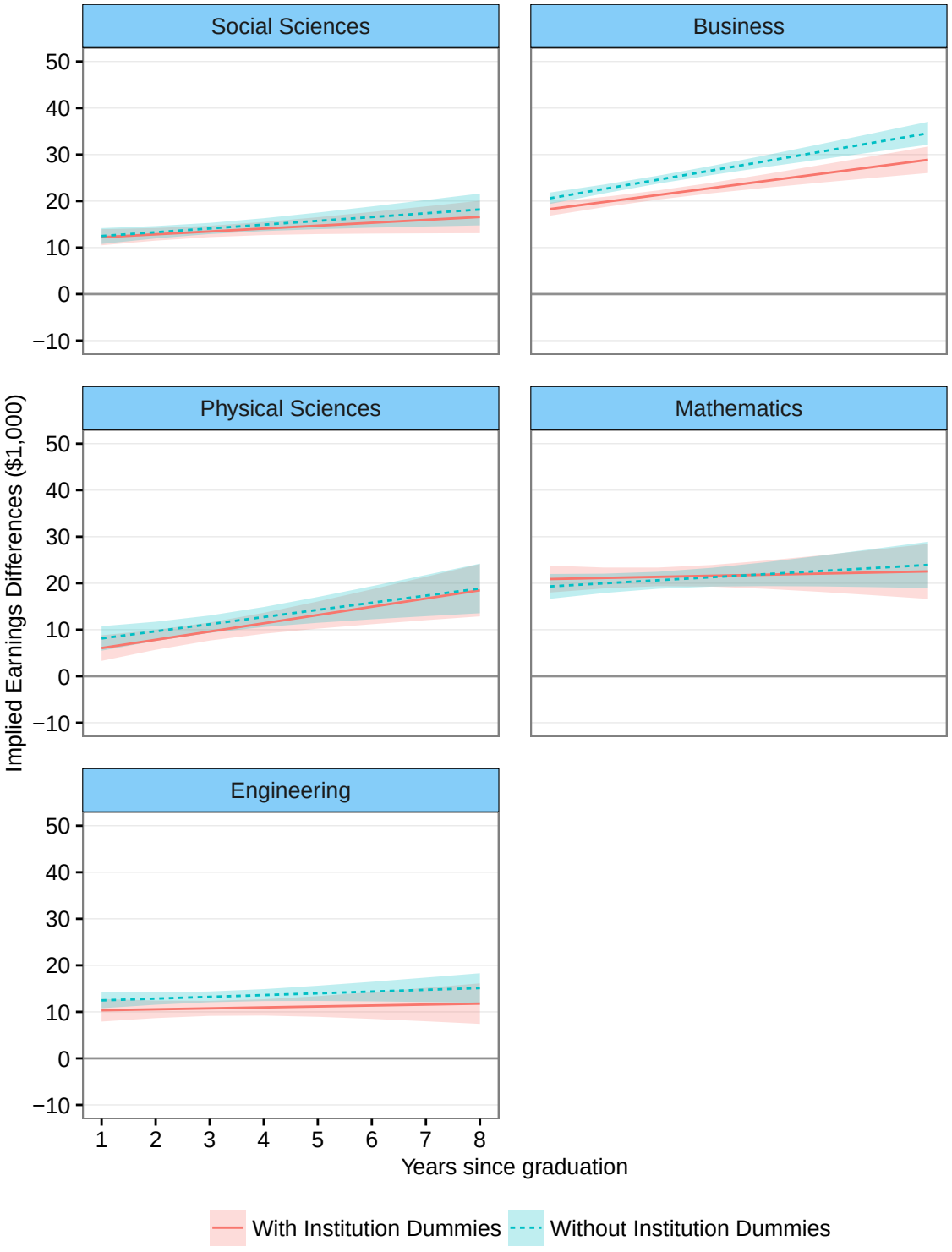


Figure 5.3.b: Implied Earnings Differences with Graduating Institutions Controlled for Male Degree Graduates

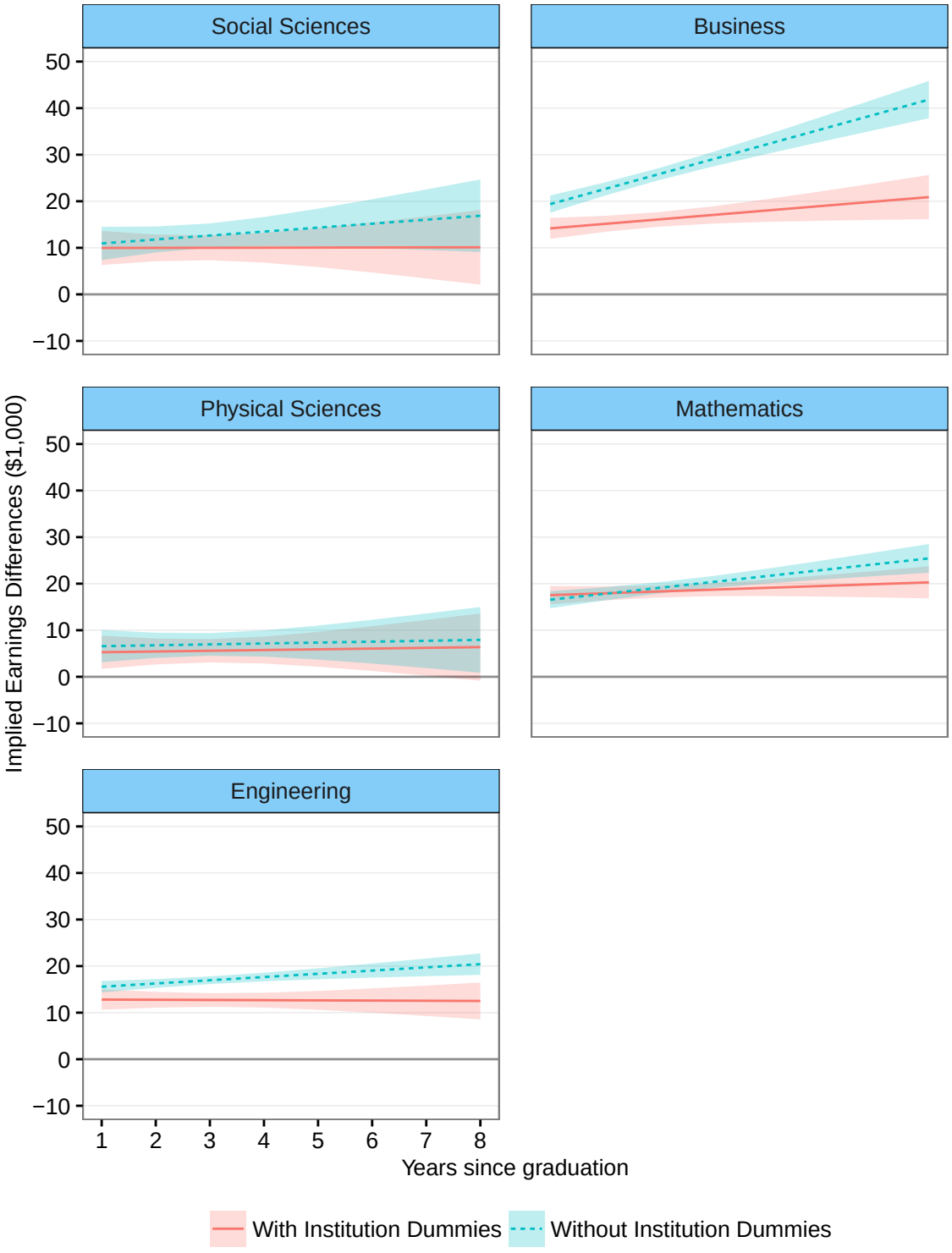
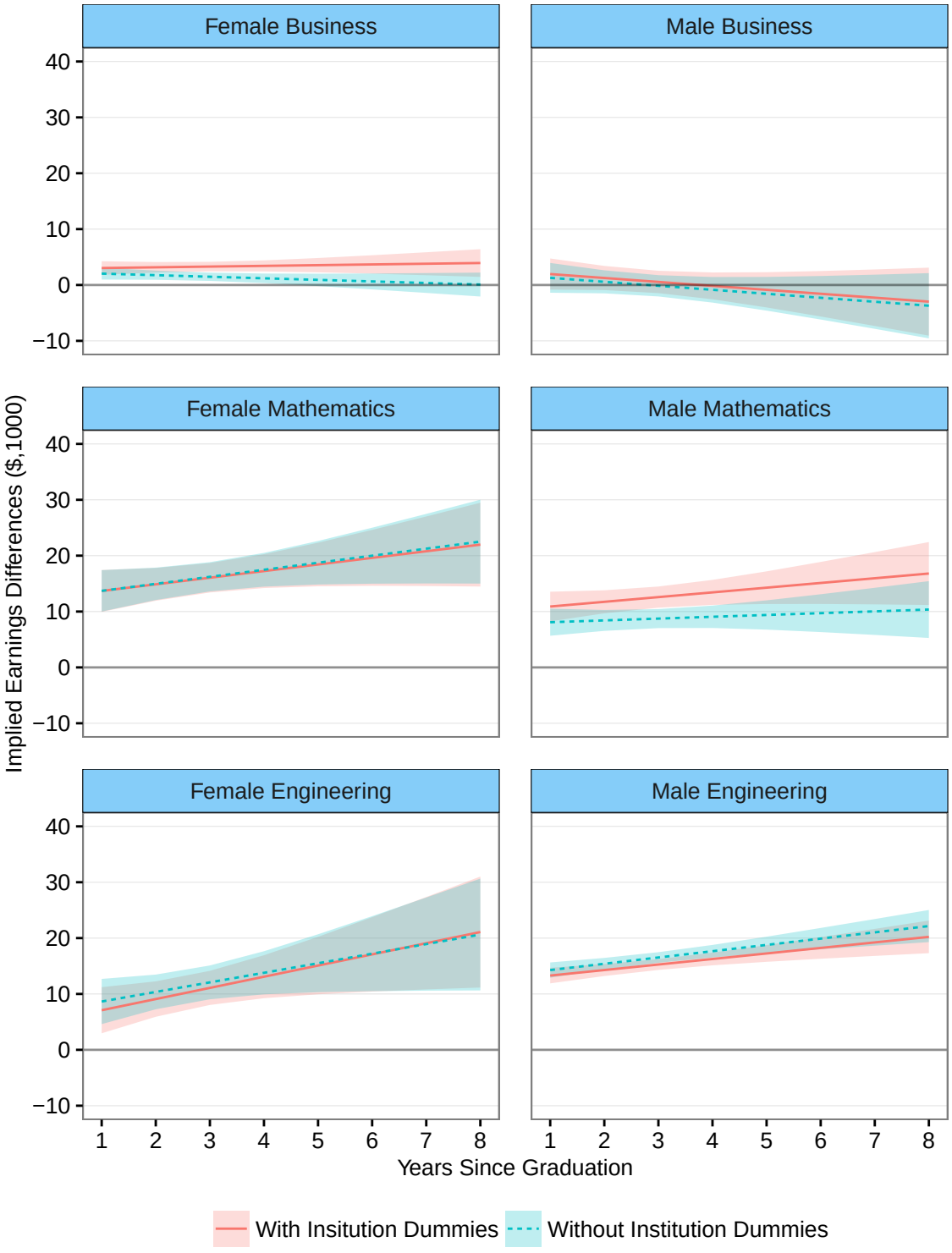


Figure 5.3.c: Implied Earnings Differences with Graduating Institutions Controlled for Diploma Graduates



9. Appendix B

Table S.1.a: Mean Earnings of Co-op and Non Co-op Graduates

All Degree Graduates

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	57.4	66.7	73.2	76.9	82.5	86.5	90.8	97.3
	2006	59.3	67.9	73.2	77.9	81.6	86.0	91.4	
	2007	59.9	66.3	72.3	78.2	82.6	89.2		
	2008	57.2	63.9	69.9	76.1	83.8			
	2009	55.0	63.4	70.0	76.0				
	2010	54.9	64.4	70.6					
	2011	54.1	66.0						
	2012	55.2							
Non Co-op	2005	42.2	49.4	54.1	57.6	59.2	61.9	63.7	67.1
	2006	44.8	51.6	56.0	58.3	60.7	63.2	65.8	
	2007	44.3	49.3	52.5	55.8	58.6	62.0		
	2008	43.8	48.1	52.3	55.9	59.4			
	2009	41.3	46.7	50.5	53.8				
	2010	40.5	46.0	50.3					
	2011	39.7	45.7						
	2012	38.5							
Difference	2005	15.2	17.3	19.1	19.3	23.3	24.6	27.1	30.2
	2006	14.5	16.3	17.2	19.6	20.9	22.8	25.6	
	2007	15.6	17.0	19.8	22.4	24.0	27.2		
	2008	13.4	15.8	17.6	20.2	24.4			
	2009	13.7	16.7	19.5	22.2				
	2010	14.4	18.4	20.3					
	2011	14.4	20.3						
	2012	16.7							

Note: Earnings figures are in thousand 2014 dollars.

Table S.1.b: Mean Earnings of Co-op and Non Co-op Graduates

All Diploma Graduates

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	38.6	43.8	48.1	48.9	52.3	54.5	58.1	58.1
	2006	36.6	41.3	45.2	46.4	49.0	53.3	56.9	
	2007	41.1	43.7	49.0	50.4	53.7	57.5		
	2008	40.2	46.2	49.3	52.0	56.3			
	2009	36.7	42.1	44.9	49.9				
	2010	37.9	43.8	49.4					
	2011	36.5	44.8						
	2012	36.1							
Non Co-op	2005	30.6	35.3	38.8	40.6	42.5	43.5	45.9	46.9
	2006	31.7	35.5	38.4	39.9	41.9	43.3	45.4	
	2007	32.1	36.0	37.8	40.0	41.3	43.7		
	2008	31.8	35.2	37.0	39.1	40.7			
	2009	29.7	32.7	35.8	37.9				
	2010	29.4	33.8	36.2					
	2011	29.7	33.6						
	2012	28.4							
Difference	2005	8.0	8.5	9.3	8.3	9.8	11.0	12.2	11.2
	2006	4.9	5.8	6.8	6.5	7.1	10.0	11.5	
	2007	9.0	7.7	11.2	10.4	12.4	13.8		
	2008	8.4	11.0	12.3	12.9	15.6			
	2009	7.0	9.4	9.1	12.0				
	2010	8.5	10.0	13.2					
	2011	6.8	11.2						
	2012	7.7							

Note: Earnings figures are in thousand 2014 dollars.

Table S.2.a: Mean Earnings of Co-op and Non Co-op Graduates by Gender

Female Degree Graduates

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	54.4	63.4	68.5	74.5	74.9	78.3	79.3	83.4
	2006	56.0	62.4	66.3	69.6	71.7	74.0	77.4	
	2007	55.7	62.5	67.8	71.0	73.0	75.9		
	2008	53.3	59.4	63.8	68.9	72.9			
	2009	51.7	57.8	63.7	68.9				
	2010	50.0	58.9	63.7					
	2011	50.3	59.1						
	2012	48.7							
Non Co-op	2005	42.7	48.8	52.8	55.9	56.1	57.9	58.5	61.3
	2006	44.7	50.5	54.2	55.7	56.6	57.3	58.8	
	2007	44.4	49.2	51.6	53.8	55.4	57.2		
	2008	44.5	47.8	50.5	53.1	56.0			
	2009	42.5	47.0	49.7	52.3				
	2010	41.1	46.1	49.3					
	2011	40.5	45.3						
	2012	38.6							
Difference	2005	11.7	14.6	15.7	18.6	18.8	20.4	20.8	22.1
	2006	11.3	11.9	12.1	13.9	15.1	16.7	18.6	
	2007	11.3	13.3	16.2	17.2	17.6	18.7		
	2008	8.8	11.6	13.3	15.8	16.9			
	2009	9.2	10.8	14.0	16.6				
	2010	8.9	12.8	14.4					
	2011	9.8	13.8						
	2012	10.1							

Note: Earnings figures are in thousand 2014 dollars.

Table S.2.b: Mean Earnings of Co-op and Non Co-op Graduates by Gender

Male Degree Graduates

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	59.2	68.5	75.6	78.2	86.4	90.5	96.5	104.4
	2006	61.3	71.1	77.0	82.4	86.9	92.3	98.7	
	2007	62.5	68.5	74.6	82.1	87.9	96.4		
	2008	59.4	66.4	73.2	80.0	89.6			
	2009	56.8	66.3	73.0	79.5				
	2010	57.4	67.0	73.6					
	2011	56.4	70.0						
	2012	58.8							
Non Co-op	2005	41.5	50.5	56.1	60.1	63.6	67.5	71.0	75.0
	2006	44.9	53.1	58.5	61.9	66.4	71.1	75.2	
	2007	44.1	49.5	53.9	58.6	63.0	68.5		
	2008	42.7	48.5	54.9	59.8	64.3			
	2009	39.4	46.3	51.7	56.1				
	2010	39.6	45.9	51.8					
	2011	38.5	46.2						
	2012	38.4							
Difference	2005	17.7	18.0	19.5	18.1	22.8	23.0	25.5	29.4
	2006	16.4	18.0	18.5	20.5	20.5	21.2	23.5	
	2007	18.4	19.0	20.7	23.5	24.9	27.9		
	2008	16.7	17.9	18.3	20.2	25.3			
	2009	17.4	20.0	21.3	23.4				
	2010	17.8	21.1	21.8					
	2011	17.9	23.8						
	2012	20.4							

Note: Earnings figures are in thousand 2014 dollars.

Table S.2.c: Mean Earnings of Co-op and Non Co-op Graduates by Gender

Female Diploma Graduates

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	29.9	30.8	33.7	35.7	35.5	37.6	40.0	40.3
	2006	30.3	33.6	34.1	35.3	35.2	39.1	42.7	
	2007	33.0	36.2	40.0	40.3	41.9	45.9		
	2008	38.3	37.4	40.7	38.7	40.4			
	2009	31.7	34.9	35.0	38.0				
	2010	30.3	32.1	34.9					
	2011	29.0	34.9						
	2012	30.0							
Non Co-op	2005	30.0	33.2	35.8	37.2	37.8	37.4	38.2	38.2
	2006	30.9	33.6	35.5	35.7	36.8	36.4	37.7	
	2007	31.5	34.2	35.3	36.2	36.1	37.1		
	2008	31.8	34.1	34.8	36.1	36.8			
	2009	29.5	31.3	33.5	34.5				
	2010	29.1	32.3	33.6					
	2011	28.6	31.2						
	2012	27.3							
Difference	2005	−0.1	−2.4	−2.1	−1.5	−2.3	0.2	1.8	2.1
	2006	−0.6	0.0	−1.4	−0.4	−1.6	2.7	5.0	
	2007	1.5	2.0	4.7	4.1	5.8	8.8		
	2008	6.5	3.3	5.9	2.6	3.6			
	2009	2.2	3.6	1.5	3.5				
	2010	1.2	−0.2	1.3					
	2011	0.4	3.7						
	2012	2.7							

Note: Earnings figures are in thousand 2014 dollars.

Table S.2.d: Mean Earnings of Co-op and Non Co-op Graduates by Gender

Male Diploma Graduates

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	48.0	56.4	61.4	60.5	66.9	69.9	74.5	73.3
	2006	41.9	47.5	53.5	55.4	59.1	63.9	68.3	
	2007	47.5	49.7	55.3	57.3	61.6	65.3		
	2008	41.3	51.5	54.4	59.9	65.3			
	2009	41.0	48.0	52.9	58.8				
	2010	41.9	49.4	55.8					
	2011	41.4	50.8						
	2012	40.3							
Non Co-op	2005	31.5	37.8	42.6	44.9	48.4	51.0	55.3	56.8
	2006	32.7	38.1	42.1	45.3	48.2	51.9	54.5	
	2007	33.0	38.6	41.4	45.3	48.2	52.7		
	2008	31.8	36.7	40.2	43.3	46.2			
	2009	30.0	34.6	39.0	42.8				
	2010	29.9	35.8	39.4					
	2011	31.0	36.3						
	2012	29.8							
Difference	2005	16.5	18.6	18.8	15.6	18.5	18.9	19.2	16.5
	2006	9.2	9.4	11.4	10.1	10.9	12.0	13.8	
	2007	14.5	11.1	13.9	12.0	13.4	12.6		
	2008	9.5	14.8	14.2	16.6	19.1			
	2009	11.0	13.4	13.9	16.0				
	2010	12.0	13.6	16.4					
	2011	10.4	14.5						
	2012	10.5							

Note: Earnings figures are in thousand 2014 dollars.

Table S.3.a: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

Degree Graduates, Social & Behavioural Sciences

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	46.9	57.7	61.2	70.5	69.6	74.3	82.4	80.8
	2006	51.3	53.8	63.3	63.2	70.2	76.7	67.3	
	2007	50.3	62.4	64.7	68.0	64.2	70.5		
	2008	46.9	54.5	62.8	65.3	69.3			
	2009	48.7	55.8	61.7	65.4				
	2010	47.6	58.1	65.1					
	2011	45.1	51.9						
	2012	39.7							
Non Co-op	2005	39.0	46.2	51.9	55.8	57.4	60.2	61.8	65.3
	2006	39.0	46.2	52.0	54.5	56.0	57.4	61.0	
	2007	38.2	44.4	47.2	50.7	53.7	58.0		
	2008	37.3	42.2	47.1	50.6	53.8			
	2009	35.7	41.9	45.2	48.7				
	2010	34.4	39.4	44.2					
	2011	33.6	39.9						
	2012	32.4							
Difference	2005	7.9	11.5	9.3	14.7	12.2	14.1	20.6	15.5
	2006	12.3	7.6	11.3	8.7	14.2	19.3	6.3	
	2007	12.1	18.0	17.5	17.3	10.5	12.5		
	2008	9.6	12.3	15.7	14.7	15.5			
	2009	13.0	13.9	16.5	16.7				
	2010	13.2	18.7	20.9					
	2011	11.5	12.0						
	2012	7.3							

Note: Earnings figures are in thousand 2014 dollars.

Table S.3.b: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

Degree Graduates, Business

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	60.9	72.1	77.7	83.6	85.6	90.2	95.6	97.3
	2006	65.7	75.3	81.8	88.8	95.5	96.1	102.3	
	2007	65.8	71.1	81.1	87.4	93.8	98.4		
	2008	62.2	69.0	78.0	84.7	94.1			
	2009	59.8	67.4	74.5	83.9				
	2010	58.2	67.9	75.8					
	2011	56.6	66.5						
	2012	57.0							
Non Co-op	2005	41.1	48.2	52.7	56.7	58.2	61.9	63.6	68.3
	2006	44.6	51.1	55.1	57.7	62.0	64.7	68.3	
	2007	43.0	48.9	52.0	56.5	59.5	63.0		
	2008	43.0	47.9	53.5	58.6	63.2			
	2009	39.1	45.2	49.9	54.0				
	2010	39.6	45.0	49.6					
	2011	39.4	45.5						
	2012	37.7							
Difference	2005	19.8	23.9	25.0	26.9	27.4	28.3	32.0	29.0
	2006	21.1	24.2	26.7	31.1	33.5	31.4	34.0	
	2007	22.8	22.2	29.1	30.9	34.3	35.4		
	2008	19.2	21.1	24.5	26.1	30.9			
	2009	20.7	22.2	24.6	29.9				
	2010	18.6	22.9	26.2					
	2011	17.2	21.0						
	2012	19.3							

Note: Earnings figures are in thousand 2014 dollars.

Table S.3.c: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

Degree Graduates, Physical & Life Sciences

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	48.2	56.8	60.9	77.2	74.3	78.8	81.6	80.9
	2006	48.2	57.0	62.5	71.0	76.5	76.4	83.2	
	2007	44.3	51.2	55.8	60.3	67.4	66.7		
	2008	51.0	57.0	62.2	70.1	69.9			
	2009	44.6	51.0	58.8	64.7				
	2010	44.9	53.1	57.9					
	2011	44.6	55.4						
	2012	42.4							
Non Co-op	2005	40.5	50.1	55.1	61.6	63.2	65.0	64.6	68.4
	2006	42.3	51.3	57.7	61.5	64.7	66.9	69.7	
	2007	38.4	44.3	48.7	54.9	58.5	59.5		
	2008	39.7	46.6	48.0	52.5	59.0			
	2009	39.0	46.7	55.2	60.7				
	2010	38.9	48.6	50.7					
	2011	32.9	40.1						
	2012	34.7							
Difference	2005	7.7	6.7	5.8	15.6	11.1	13.8	17.0	12.5
	2006	5.9	5.7	4.8	9.5	11.8	9.5	13.5	
	2007	5.9	6.9	7.1	5.4	8.9	7.2		
	2008	11.3	10.4	14.2	17.6	10.9			
	2009	5.6	4.3	3.6	4.0				
	2010	6.0	4.5	7.2					
	2011	11.7	15.3						
	2012	7.7							

Note: Earnings figures are in thousand 2014 dollars.

Table S.3.d: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

Degree Graduates, Mathematics

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	60.4	69.9	77.0	79.8	89.2	93.1	95.8	107.5
	2006	60.5	68.5	73.2	78.5	80.5	86.7	92.8	
	2007	63.1	67.6	72.9	78.8	84.6	89.4		
	2008	57.8	63.6	69.3	75.1	83.1			
	2009	55.6	66.0	71.5	82.8				
	2010	55.8	64.3	73.8					
	2011	56.9	66.5						
	2012	58.8							
Non Co-op	2005	39.3	48.5	55.3	58.1	61.1	65.1	68.6	75.9
	2006	45.6	52.6	57.8	61.9	67.6	72.8	76.2	
	2007	45.8	48.6	54.1	59.9	64.0	70.2		
	2008	40.0	45.1	49.6	56.2	60.9			
	2009	37.3	43.9	49.2	52.3				
	2010	43.8	51.1	58.7					
	2011	40.6	49.6						
	2012	40.1							
Difference	2005	21.1	21.4	21.7	21.7	28.1	28.0	27.2	31.6
	2006	14.9	15.9	15.4	16.6	12.9	13.9	16.6	
	2007	17.3	19.0	18.8	18.9	20.6	19.2		
	2008	17.8	18.5	19.7	18.9	22.2			
	2009	18.3	22.1	22.3	30.5				
	2010	12.0	13.2	15.1					
	2011	16.3	16.9						
	2012	18.7							

Note: Earnings figures are in thousand 2014 dollars.

Table S.3.e: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

Degree Graduates, Engineering

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	58.8	67.5	74.4	76.5	83.0	86.5	91.4	97.9
	2006	62.0	71.2	76.3	79.9	83.3	88.5	94.7	
	2007	60.7	67.4	72.4	79.5	83.4	92.4		
	2008	59.5	67.0	71.5	78.0	87.4			
	2009	57.8	65.8	72.2	75.5				
	2010	58.1	67.2	71.5					
	2011	57.8	72.9						
	2012	61.1							
Non Co-op	2005	42.5	52.2	59.7	63.4	66.5	69.7	73.7	75.3
	2006	46.0	54.4	58.7	63.7	67.7	72.8	76.8	
	2007	48.1	52.5	58.2	61.0	66.4	71.9		
	2008	45.9	52.3	57.2	61.4	66.1			
	2009	42.6	50.5	56.4	59.4				
	2010	41.7	50.0	56.4					
	2011	43.1	52.6						
	2012	44.5							
Difference	2005	16.3	15.3	14.7	13.1	16.5	16.8	17.7	22.6
	2006	16.0	16.8	17.6	16.2	15.6	15.7	17.9	
	2007	12.6	14.9	14.2	18.5	17.0	20.5		
	2008	13.6	14.7	14.3	16.6	21.3			
	2009	15.2	15.3	15.8	16.1				
	2010	16.4	17.2	15.1					
	2011	14.7	20.3						
	2012	16.6							

Note: Earnings figures are in thousand 2014 dollars.

Table S.3.f: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

Diploma Graduates, Business

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	29.5	31.5	33.3	33.7	35.0	35.9	38.4	37.2
	2006	29.4	33.1	34.4	37.1	36.1	39.1	x	
	2007	x	x	x	x	x	x		
	2008	33.9	33.2	35.6	37.7	38.9			
	2009	29.4	29.8	31.2	33.6				
	2010	29.2	31.7	35.9					
	2011	26.7	31.4						
	2012	26.3							
Non Co-op	2005	27.4	31.6	35.8	37.7	40.3	40.6	44.4	43.6
	2006	29.1	33.2	35.9	38.0	39.1	40.9	42.4	
	2007	29.3	32.3	34.8	37.0	37.8	40.9		
	2008	27.5	31.7	33.0	35.5	36.4			
	2009	27.3	30.2	33.3	35.2				
	2010	27.1	31.6	33.2					
	2011	28.6	31.6						
	2012	26.2							
Difference	2005	2.1	−0.1	−2.5	−4.0	−5.3	−4.7	−6.0	−6.4
	2006	0.3	−0.1	−1.5	−0.9	−3.0	−1.8	x	
	2007	x	x	x	x	x	x		
	2008	6.4	1.5	2.6	2.2	2.5			
	2009	2.1	−0.4	−2.1	−1.6				
	2010	2.1	0.1	2.7					
	2011	−1.9	−0.2						
	2012	0.1							

Notes: Earnings figures are in thousand 2014 dollars.
x This figure is not reported here to comply with the confidentiality rules of Statistics Canada

Table S.3.g: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

Diploma Graduates, Mathematics

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	37.3	48.9	49.7	53.7	59.4	61.1	65.7	66.4
	2006	38.5	44.0	53.4	56.4	52.5	61.2	x	
	2007	x	x	x	x	x	x		
	2008	48.6	55.4	57.2	57.0	60.9			
	2009	42.2	53.0	55.8	61.3				
	2010	39.5	46.8	51.7					
	2011	37.1	46.8						
	2012	41.3							
Non Co-op	2005	37.2	43.2	43.9	46.9	49.5	50.3	51.2	55.3
	2006	33.1	37.5	41.8	42.7	45.8	46.4	50.2	
	2007	34.8	37.5	38.0	40.3	44.9	48.3		
	2008	37.2	40.5	43.3	43.6	49.2			
	2009	31.2	36.4	39.9	45.1				
	2010	35.6	38.9	42.4					
	2011	30.5	35.7						
	2012	32.6							
Difference	2005	0.1	5.7	5.8	6.8	9.9	10.8	14.5	11.1
	2006	5.4	6.5	11.6	13.7	6.7	14.8	x	
	2007	x	x	x	x	x	x		
	2008	11.4	14.9	13.9	13.4	11.7			
	2009	11.0	16.6	15.9	16.2				
	2010	3.9	7.9	9.3					
	2011	6.6	11.1						
	2012	8.7							

Notes: Earnings figures are in thousand 2014 dollars.
x This figure is not reported here to comply with the confidentiality rules of Statistics Canada

Table S.3.h: Mean Earnings of Co-op and Non Co-op Graduates by Field of Study

Diploma Graduates, Engineering

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	58.2	62.5	70.1	69.1	72.6	77.5	81.5	82.4
	2006	49.9	55.9	60.7	61.5	69.7	74.2	x	
	2007	x	x	x	x	x	x		
	2008	43.9	55.4	58.6	63.1	70.3			
	2009	44.3	52.2	55.3	62.0				
	2010	44.4	53.0	59.6					
	2011	46.8	56.1						
	2012	44.6							
Non Co-op	2005	33.8	39.9	44.1	45.6	49.3	53.1	56.7	57.7
	2006	35.0	40.6	44.8	47.2	50.8	54.2	56.4	
	2007	34.8	40.6	43.7	47.6	49.9	53.5		
	2008	32.6	37.9	41.8	45.2	49.4			
	2009	31.9	37.3	42.9	47.2				
	2010	31.9	37.8	42.7					
	2011	32.7	38.8						
	2012	32.0							
Difference	2005	24.4	22.6	26.0	23.5	23.3	24.4	24.8	24.7
	2006	14.9	15.3	15.9	14.3	18.9	20.0	x	
	2007	x	x	x	x	x	x		
	2008	11.3	17.5	16.8	17.9	20.9			
	2009	12.4	14.9	12.4	14.8				
	2010	12.5	15.2	16.9					
	2011	14.1	17.3						
	2012	12.6							

Notes: Earnings figures are in thousand 2014 dollars.
x This figure is not reported here to comply with the confidentiality rules of Statistics Canada

Table S.4.a: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

Female Degree Graduates, Social & Behavioural Sciences

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	44.6	58.1	61.9	71.2	70.1	73.4	x	x
	2006	x	x	x	x	x	x	x	
	2007	49.8	x	x	x	x	x		
	2008	47.6	56.2	63.0	x	x			
	2009	47.2	52.4	58.9	62.9				
	2010	45.3	57.0	61.3					
	2011	46.3	52.7						
	2012	37.9							
Non Co-op	2005	36.9	43.2	49.0	52.5	52.5	55.3	56.4	58.6
	2006	37.5	43.7	49.0	51.6	52.5	51.7	54.4	
	2007	37.1	43.2	45.5	47.8	49.9	52.6		
	2008	37.3	41.1	45.0	47.9	50.8			
	2009	34.7	40.4	43.4	46.5				
	2010	33.7	38.1	42.4					
	2011	32.8	38.6						
	2012	31.5							
Difference	2005	7.7	14.9	12.9	18.7	17.6	18.1	x	x
	2006	x	x	x	x	x	x	x	
	2007	12.7	x	x	x	x	x		
	2008	10.3	15.1	18.0	x	x			
	2009	12.5	12.0	15.5	16.4				
	2010	11.6	18.9	18.9					
	2011	13.5	14.1						
	2012	6.4							

Notes: Earnings figures are in thousand 2014 dollars.
x This figure is not reported here to comply with the confidentiality rules of Statistics Canada

Table S.4.b: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

Male Degree Graduates, Social & Behavioural Sciences

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	51.6	57.0	60.0	69.1	68.6	76.3	x	x
	2006	x	x	x	x	x	x	x	
	2007	51.7	x	x	x	x	x		
	2008	45.2	50.2	62.4	x	x			
	2009	51.2	61.4	66.7	69.3				
	2010	52.5	59.9	73.5					
	2011	42.5	50.4						
	2012	42.8							
Non Co-op	2005	43.0	52.5	57.3	62.4	66.8	69.3	71.7	77.2
	2006	42.1	51.1	58.0	60.1	62.9	68.1	72.9	
	2007	40.3	46.8	50.2	56.2	61.0	68.2		
	2008	37.4	44.1	51.2	55.5	59.7			
	2009	37.7	44.7	48.5	52.9				
	2010	36.0	41.9	47.8					
	2011	35.1	42.0						
	2012	34.1							
Difference	2005	8.6	4.5	2.7	6.7	1.8	7.0	x	x
	2006	x	x	x	x	x	x	x	
	2007	11.4	x	x	x	x	x		
	2008	7.8	6.1	11.2	x	x			
	2009	13.5	16.7	18.2	16.4				
	2010	16.5	18.0	25.7					
	2011	7.4	8.4						
	2012	8.7							

Notes: Earnings figures are in thousand 2014 dollars.
x This figure is not reported here to comply with the confidentiality rules of Statistics Canada

Table S.4.c: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

Female Degree Graduates, Business

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	62.0	71.6	76.9	85.2	84.5	87.0	89.0	91.6
	2006	66.3	72.7	77.7	80.1	81.9	84.1	90.2	
	2007	64.0	69.3	77.1	83.3	88.9	89.6		
	2008	61.8	66.6	72.7	76.8	83.2			
	2009	59.5	66.8	71.5	79.2				
	2010	57.3	65.2	72.0					
	2011	54.4	64.7						
	2012	55.8							
Non Co-op	2005	40.7	47.0	50.9	54.4	54.4	56.0	57.3	61.1
	2006	43.4	48.4	51.6	53.4	56.0	57.9	60.1	
	2007	41.2	47.1	49.2	51.9	54.2	56.7		
	2008	42.1	45.5	49.1	53.4	56.3			
	2009	38.4	43.4	47.1	49.7				
	2010	38.6	43.9	47.0					
	2011	38.3	43.5						
	2012	36.2							
Difference	2005	21.3	24.6	26.0	30.8	30.1	31.0	31.7	30.5
	2006	22.9	24.3	26.1	26.7	25.9	26.2	30.1	
	2007	22.8	22.2	27.9	31.4	34.7	32.9		
	2008	19.7	21.1	23.6	23.4	26.9			
	2009	21.1	23.4	24.4	29.5				
	2010	18.7	21.3	25.0					
	2011	16.1	21.2						
	2012	19.6							

Note: Earnings figures are in thousand 2014 dollars.

Table S.4.d: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

Male Degree Graduates, Business

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	59.0	72.8	79.1	81.0	87.3	95.6	106.9	107.4
	2006	64.8	78.9	87.4	100.3	112.8	112.1	118.7	
	2007	67.7	72.8	84.9	91.2	98.9	107.1		
	2008	62.4	71.0	82.5	91.3	103.5			
	2009	60.1	68.0	77.2	88.5				
	2010	59.1	70.5	79.3					
	2011	59.1	68.7						
	2012	58.0							
Non Co-op	2005	41.6	49.8	55.2	59.8	63.0	69.3	71.7	77.0
	2006	46.0	54.0	58.8	62.4	68.5	72.2	77.1	
	2007	45.0	50.9	55.1	61.4	65.0	69.7		
	2008	44.0	50.6	58.4	64.2	70.4			
	2009	39.8	47.0	52.7	58.2				
	2010	40.5	46.2	52.1					
	2011	40.5	47.5						
	2012	39.1							
Difference	2005	17.4	23.0	23.9	21.2	24.3	26.3	35.2	30.4
	2006	18.8	24.9	28.6	37.9	44.3	39.9	41.6	
	2007	22.7	21.9	29.8	29.8	33.9	37.4		
	2008	18.4	20.4	24.1	27.1	33.1			
	2009	20.3	21.0	24.5	30.3				
	2010	18.6	24.3	27.2					
	2011	18.6	21.2						
	2012	18.9							

Note: Earnings figures are in thousand 2014 dollars.

Table S.4.e: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

Female Degree Graduates, Physical & Life Sciences

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	x	x	x	x	x	x	x	x
	2006	45.3	54.4	62.4	69.7	78.6	78.7	82.2	
	2007	45.9	55.8	58.0	x	x	56.1		
	2008	53.9	57.7	63.1	69.5	67.8			
	2009	43.1	50.9	55.1	61.1				
	2010	48.3	60.6	64.3					
	2011	45.4	58.1						
	2012	39.0							
Non Co-op	2005	36.8	43.4	48.6	56.7	58.2	59.4	55.6	60.5
	2006	40.1	49.3	56.3	56.6	60.8	59.8	62.4	
	2007	39.5	44.5	47.1	51.8	55.1	54.4		
	2008	39.1	47.9	49.8	53.1	60.9			
	2009	40.8	48.9	54.2	58.8				
	2010	40.3	50.5	49.9					
	2011	32.9	38.2						
	2012	34.9							
Difference	2005	x	x	x	x	x	x	x	x
	2006	5.2	5.1	6.1	13.1	17.8	18.9	19.8	
	2007	6.4	11.3	10.9	x	x	1.7		
	2008	14.8	9.8	13.3	16.4	6.9			
	2009	2.3	2.0	0.9	2.3				
	2010	8.0	10.1	14.4					
	2011	12.5	19.9						
	2012	4.1							

Notes: Earnings figures are in thousand 2014 dollars.
x This figure is not reported here to comply with the confidentiality rules of Statistics Canada

Table S.4.f: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

Male Degree Graduates, Physical & Life Sciences

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	x	x	x	x	x	x	x	x
	2006	52.4	60.6	62.6	72.4	74.1	74.1	84.4	
	2007	42.1	45.9	53.4	x	x	78.0		
	2008	46.7	55.9	60.7	71.2	73.7			
	2009	46.6	51.0	62.7	68.3				
	2010	40.5	44.1	52.2					
	2011	43.5	51.8						
	2012	46.9							
Non Co-op	2005	43.9	56.3	60.6	65.5	67.8	70.5	72.8	76.0
	2006	44.4	53.3	59.2	67.7	69.4	74.4	77.3	
	2007	36.9	44.1	51.1	59.2	62.4	65.6		
	2008	40.6	45.0	45.6	51.9	56.8			
	2009	37.3	44.6	56.2	62.5				
	2010	37.4	46.7	51.6					
	2011	32.9	42.1						
	2012	34.5							
Difference	2005	x	x	x	x	x	x	x	x
	2006	8.0	7.3	3.4	4.7	4.7	−0.3	7.1	
	2007	5.2	1.8	2.3	x	x	12.4		
	2008	6.1	10.9	15.1	19.3	16.9			
	2009	9.3	6.4	6.5	5.8				
	2010	3.1	−2.6	0.6					
	2011	10.6	9.7						
	2012	12.4							

Notes: Earnings figures are in thousand 2014 dollars.
x This figure is not reported here to comply with the confidentiality rules of Statistics Canada

Table S.4.g: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

Female Degree Graduates, Mathematics

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	58.1	69.0	77.1	81.9	81.8	89.7	86.6	93.9
	2006	58.5	65.0	67.7	72.3	72.5	73.3	80.0	
	2007	59.9	61.4	67.1	72.4	74.2	81.1		
	2008	55.4	62.2	65.3	70.5	75.5			
	2009	59.1	67.4	73.5	83.1				
	2010	51.9	56.2	64.4					
	2011	54.5	63.1						
	2012	53.8							
Non Co-op	2005	43.2	48.2	53.2	55.9	53.0	58.2	55.0	75.7
	2006	41.4	49.2	52.6	55.1	59.0	67.2	61.4	
	2007	43.7	45.9	48.0	59.1	50.7	57.8		
	2008	36.1	41.4	43.1	49.5	49.5			
	2009	32.1	32.6	43.7	44.3				
	2010	31.5	38.9	45.4					
	2011	37.9	44.2						
	2012	32.5							
Difference	2005	14.9	20.8	23.9	26.0	28.8	31.5	31.6	18.2
	2006	17.1	15.8	15.1	17.2	13.5	6.1	18.6	
	2007	16.2	15.5	19.1	13.3	23.5	23.3		
	2008	19.3	20.8	22.2	21.0	26.0			
	2009	27.0	34.8	29.8	38.8				
	2010	20.4	17.3	19.0					
	2011	16.6	18.9						
	2012	21.3							

Note: Earnings figures are in thousand 2014 dollars.

Table S.4.h: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

Male Degree Graduates, Mathematics

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	61.1	70.2	76.9	79.3	91.1	93.8	98.0	110.7
	2006	61.2	69.8	74.9	80.4	82.9	90.4	96.1	
	2007	64.3	69.8	74.7	80.8	87.7	92.0		
	2008	58.7	64.1	70.6	76.6	85.5			
	2009	54.4	65.6	70.9	82.7				
	2010	56.9	66.3	75.8					
	2011	57.9	68.0						
	2012	60.7							
Non Co-op	2005	38.0	48.6	55.8	58.5	62.8	66.7	71.4	76.0
	2006	46.6	53.3	58.8	63.1	69.1	73.7	79.1	
	2007	46.4	49.3	55.4	60.1	67.7	73.5		
	2008	41.2	46.1	51.4	58.1	63.5			
	2009	38.5	46.6	50.2	53.8				
	2010	46.9	54.2	62.8					
	2011	41.5	51.2						
	2012	42.7							
Difference	2005	23.1	21.6	21.1	20.8	28.3	27.1	26.6	34.7
	2006	14.6	16.5	16.1	17.3	13.8	16.7	17.0	
	2007	17.9	20.5	19.3	20.7	20.0	18.5		
	2008	17.5	18.0	19.2	18.5	22.0			
	2009	15.9	19.0	20.7	28.9				
	2010	10.0	12.1	13.0					
	2011	16.4	16.8						
	2012	18.0							

Note: Earnings figures are in thousand 2014 dollars.

Table S.4.i: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

Female Degree Graduates, Engineering

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	56.1	63.9	68.2	71.8	75.2	76.2	77.3	85.2
	2006	58.7	65.3	68.3	70.6	72.9	74.4	79.6	
	2007	55.4	63.4	68.1	69.4	69.3	73.2		
	2008	53.2	61.8	63.3	69.4	75.0			
	2009	53.1	55.0	61.1	62.9				
	2010	52.0	59.4	62.9					
	2011	55.0	63.7						
	2012	54.9							
Non Co-op	2005	41.6	47.9	55.8	57.2	60.9	61.2	59.1	61.1
	2006	44.4	51.3	53.9	58.5	60.3	62.5	65.8	
	2007	47.1	51.4	56.4	58.2	61.8	67.0		
	2008	39.7	47.0	47.9	49.6	54.4			
	2009	41.5	49.3	51.9	55.5				
	2010	38.7	45.9	52.6					
	2011	40.5	48.5						
	2012	39.1							
Difference	2005	14.5	16.0	12.4	14.6	14.3	15.0	18.2	24.1
	2006	14.3	14.0	14.4	12.1	12.6	11.9	13.8	
	2007	8.3	12.0	11.7	11.2	7.5	6.2		
	2008	13.5	14.8	15.4	19.8	20.6			
	2009	11.6	5.7	9.2	7.4				
	2010	13.3	13.5	10.3					
	2011	14.5	15.2						
	2012	15.8							

Note: Earnings figures are in thousand 2014 dollars.

Table S.4.j: Mean Earnings of Co-op and Non Co-op Graduates by Gender and Field of Study

Male Degree Graduates, Engineering

		Years since graduation							
	Cohort	1	2	3	4	5	6	7	8
Co-op	2005	59.6	68.6	76.4	78.1	85.5	89.4	95.6	101.7
	2006	63.0	73.0	78.5	82.2	85.9	91.9	98.3	
	2007	62.7	68.8	73.8	82.7	88.0	98.6		
	2008	61.2	68.3	73.5	80.2	90.3			
	2009	59.0	68.4	74.7	78.3				
	2010	59.3	68.8	73.1					
	2011	58.5	75.0						
	2012	62.6							
Non Co-op	2005	42.8	53.6	61.0	65.4	68.3	72.3	78.3	79.5
	2006	46.4	55.3	60.0	64.9	69.4	75.2	79.4	
	2007	48.4	52.9	58.7	61.8	67.7	73.2		
	2008	47.7	53.7	59.7	64.5	69.0			
	2009	42.9	50.8	57.7	60.6				
	2010	42.5	51.0	57.3					
	2011	43.8	53.6						
	2012	46.2							
Difference	2005	16.8	15.0	15.4	12.7	17.2	17.1	17.3	22.2
	2006	16.6	17.7	18.5	17.3	16.5	16.7	18.9	
	2007	14.3	15.9	15.1	20.9	20.3	25.4		
	2008	13.5	14.6	13.8	15.7	21.3			
	2009	16.1	17.6	17.0	17.7				
	2010	16.8	17.8	15.8					
	2011	14.7	21.4						
	2012	16.4							

Note: Earnings figures are in thousand 2014 dollars.

Table S.5.a: Parameter Estimates, Degree Graduates

	Estimates		Std. error	
	Baseline	Extended	Baseline	Extended
Co-op	14.96**	14.26**	0.25	0.28
Co-op × YSG	2.02**	1.22**	0.09	0.10
2006 Cohort	1.54**	1.17**	0.23	0.22
2007 Cohort	0.01	−0.24	0.24	0.23
2008 Cohort	−0.65**	−0.89**	0.25	0.24
2009 Cohort	−2.59**	−2.90**	0.27	0.26
2010 Cohort	−2.97**	−3.30**	0.29	0.28
2011 Cohort	−3.48**	−3.64**	0.32	0.31
2012 Cohort	−4.64**	−4.46**	0.40	0.39
YSG = 2	5.88**	7.63**	0.20	0.21
YSG = 3	9.87**	13.33**	0.22	0.26
YSG = 4	13.06**	18.20**	0.25	0.33
YSG = 5	15.83**	22.64**	0.28	0.40
YSG = 6	18.33**	26.78**	0.32	0.48
YSG = 7	20.38**	30.49**	0.40	0.59
YSG = 8	23.87**	35.49**	0.54	0.74
Education		−12.99**		1.02
Visual & performing arts		−13.54**		0.46
Humanities		−6.04**		0.41
Social & behavioural sciences		−5.51**		0.29
Physical & life sciences		−4.18**		0.50
Mathematics		0.52		0.43
Engineering		2.96**		0.33
Agriculture		−11.71**		0.97
Health		15.87**		0.32
Education × YSG		−1.60**		0.43
Visual & performing arts × YSG		−1.20**		0.17
Humanities × YSG		−0.47**		0.15
Social & behavioural sciences × YSG		0.11		0.11
Physical & life sciences × YSG		0.38*		0.19
Mathematics × YSG		0.00		0.15
Engineering × YSG		−0.39**		0.12
Agriculture × YSG		−0.42		0.37
Health × YSG		−1.75**		0.12
Female		−0.89**		0.21
Female × YSG		−2.13**		0.08
Constant	43.47**	43.90**	0.22	0.29

** Significant at 1% level. * Significant at 5 % level.

Table S.5.b: Parameter Estimates, Diploma Graduates

	Estimates		Std. error	
	Baseline	Extended	Baseline	Extended
Co-op	8.24**	7.86**	0.35	0.35
Co-op × YSG	0.77**	0.29*	0.14	0.14
2006 Cohort	−0.22	−0.33	0.23	0.22
2007 Cohort	0.10	0.07	0.24	0.23
2008 Cohort	−0.45	−0.59*	0.25	0.24
2009 Cohort	−2.33**	−2.29**	0.26	0.25
2010 Cohort	−1.86**	−2.01**	0.28	0.26
2011 Cohort	−1.94**	−1.97**	0.30	0.29
2012 Cohort	−3.25**	−3.13**	0.38	0.36
YSG = 2	3.94**	5.12**	0.20	0.20
YSG = 3	6.54**	8.93**	0.22	0.26
YSG = 4	8.43**	12.08**	0.24	0.34
YSG = 5	10.11**	14.92**	0.27	0.42
YSG = 6	11.89**	17.83**	0.31	0.50
YSG = 7	14.06**	20.94**	0.38	0.61
YSG = 8	15.08**	23.02**	0.54	0.76
Education		−2.45*		1.08
Visual & performing arts		−3.97**		0.49
Humanities		−3.82**		1.30
Social & behavioural sciences		0.83**		0.30
Physical & life sciences		−1.00		1.11
Mathematics		6.60**		0.45
Engineering		6.43**		0.31
Agriculture		0.38		0.81
Health		10.88**		0.29
PPT Services		0.08		0.33
Education × YSG		−0.19		0.67
Visual & performing arts × YSG		−0.75**		0.19
Humanities × YSG		−0.26		0.52
Social & behavioural sciences × YSG		−0.52**		0.11
Physical & life sciences × YSG		0.21		0.62
Mathematics × YSG		0.30		0.17
Engineering × YSG		0.46**		0.11
Agriculture × YSG		−0.48		0.30
Health × YSG		−0.68**		0.11
PPT Services × YSG		0.95**		0.12
Female		−2.25**		0.22
Female × YSG		−2.02**		0.08
Constant	31.64**	29.55**	0.22	0.30

** Significant at 1% level. * Significant at 5 % level.

Table S.6.a: Parameter Estimates, Social & Behavioural Sciences Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	12.48**	10.94**	0.87	1.82
Co-op × YSG	0.82*	0.85	0.32	0.72
2006 Cohort	−1.00*	−0.47	0.50	0.99
2007 Cohort	−2.05**	−4.29**	0.50	1.00
2008 Cohort	−2.54**	−6.12**	0.53	1.05
2009 Cohort	−4.36**	−6.78**	0.56	1.10
2010 Cohort	−5.52**	−8.08**	0.60	1.21
2011 Cohort	−5.78**	−9.13**	0.67	1.32
2012 Cohort	−7.64**	−9.93**	0.84	1.64
YSG = 2	5.56**	7.23**	0.42	0.85
YSG = 3	9.62**	12.62**	0.47	0.94
YSG = 4	12.48**	17.04**	0.52	1.04
YSG = 5	13.92**	21.53**	0.58	1.15
YSG = 6	15.58**	26.32**	0.67	1.32
YSG = 7	16.89**	28.88**	0.83	1.61
YSG = 8	19.86**	33.01**	1.13	2.16
Constant	38.76**	43.84**	0.46	0.92

** Significant at 1% level. * Significant at 5 % level.

Table S.6.b: Parameter Estimates, Business Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	20.60**	19.39**	0.63	0.95
Co-op × YSG	2.00**	3.21**	0.23	0.37
2006 Cohort	1.25*	4.97**	0.51	0.81
2007 Cohort	−0.28	2.19**	0.51	0.81
2008 Cohort	−0.47	3.55**	0.54	0.85
2009 Cohort	−3.27**	−1.51	0.59	0.90
2010 Cohort	−3.30**	−1.63	0.63	0.95
2011 Cohort	−3.88**	−1.11	0.68	1.04
2012 Cohort	−5.66**	−2.54*	0.86	1.29
YSG = 2	5.22**	6.80**	0.44	0.66
YSG = 3	8.52**	12.58**	0.49	0.74
YSG = 4	11.60**	17.89**	0.54	0.83
YSG = 5	13.46**	22.80**	0.61	0.93
YSG = 6	14.78**	26.40**	0.70	1.08
YSG = 7	16.12**	30.37**	0.86	1.35
YSG = 8	18.85**	34.37**	1.16	1.88
Constant	41.74**	41.57**	0.47	0.76

** Significant at 1% level. * Significant at 5 % level.

Table S.6.c: Parameter Estimates, Physical & Life Sciences Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	8.12**	6.58**	1.34	1.77
Co-op × YSG	1.54**	0.19	0.50	0.66
2006 Cohort	1.96	1.05	1.47	1.78
2007 Cohort	−2.96	−7.01**	1.52	1.88
2008 Cohort	0.36	−7.37**	1.53	1.96
2009 Cohort	0.50	−5.03*	1.70	1.99
2010 Cohort	1.37	−7.09**	1.76	2.11
2011 Cohort	−5.65**	−9.78**	1.91	2.31
2012 Cohort	−5.40*	−8.58**	2.34	2.91
YSG = 2	7.52**	8.03**	1.18	1.47
YSG = 3	10.89**	13.83**	1.34	1.67
YSG = 4	15.53**	21.70**	1.53	1.92
YSG = 5	19.00**	23.58**	1.74	2.17
YSG = 6	18.65**	27.35**	2.05	2.50
YSG = 7	20.21**	30.67**	2.54	3.02
YSG = 8	19.99**	32.94**	3.54	4.22
Constant	39.55**	44.06**	1.42	1.71

** Significant at 1% level. * Significant at 5 % level.

Table S.6.d: Parameter Estimates, Mathematics Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	19.31**	16.55**	1.36	0.93
Co-op × YSG	0.66	1.27**	0.48	0.31
2006 Cohort	−3.74**	1.46	1.40	0.91
2007 Cohort	−4.20**	1.27	1.51	1.01
2008 Cohort	−7.37**	−2.93**	1.57	1.07
2009 Cohort	−5.27**	−3.77**	1.89	1.24
2010 Cohort	−10.30**	1.40	2.11	1.38
2011 Cohort	−5.97**	−0.85	2.14	1.62
2012 Cohort	−9.33**	0.15	2.81	2.10
YSG = 2	5.71**	7.06**	1.39	0.97
YSG = 3	10.31**	12.36**	1.61	1.07
YSG = 4	14.95**	16.43**	1.84	1.20
YSG = 5	14.44**	22.24**	2.10	1.36
YSG = 6	19.20**	26.03**	2.46	1.55
YSG = 7	18.37**	29.95**	2.95	1.83
YSG = 8	29.08**	38.29**	3.93	2.39
Constant	42.94**	43.34**	1.56	1.05

** Significant at 1% level. * Significant at 5 % level.

Table S.6.e: Parameter Estimates, Engineering Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	12.47**	15.58**	0.87	0.63
Co-op × YSG	0.38	0.69**	0.31	0.22
2006 Cohort	1.07	2.14**	0.97	0.71
2007 Cohort	0.75	1.29	0.96	0.73
2008 Cohort	−3.41**	1.16	1.04	0.77
2009 Cohort	−3.84**	−1.24	1.15	0.84
2010 Cohort	−4.01**	−1.34	1.30	0.89
2011 Cohort	−1.44	1.04	1.46	1.03
2012 Cohort	−2.97	2.14	1.84	1.33
YSG = 2	6.72**	8.52**	0.90	0.65
YSG = 3	10.47**	13.59**	1.01	0.73
YSG = 4	12.99**	17.78**	1.14	0.83
YSG = 5	15.97**	23.22**	1.30	0.94
YSG = 6	17.71**	28.23**	1.52	1.10
YSG = 7	18.68**	32.45**	1.86	1.34
YSG = 8	22.05**	35.94**	2.41	1.80
Constant	43.70**	44.52**	1.00	0.75

** Significant at 1% level. * Significant at 5 % level.

Table S.6.f: Parameter Estimates, Business Diploma Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	2.03**	1.28	0.54	1.36
Co-op × YSG	−0.28	−0.71	0.20	0.54
2006 Cohort	2.28**	−2.63**	0.47	0.91
2007 Cohort	1.40**	−1.59	0.49	0.95
2008 Cohort	0.37	−3.43**	0.52	1.01
2009 Cohort	−0.15	−4.68**	0.54	1.07
2010 Cohort	−0.56	−3.11**	0.58	1.05
2011 Cohort	−0.80	−0.88	0.64	1.19
2012 Cohort	−2.07*	−4.01**	0.81	1.50
YSG = 2	2.78**	4.86**	0.40	0.76
YSG = 3	5.02**	8.05**	0.45	0.85
YSG = 4	6.67**	11.31**	0.50	0.97
YSG = 5	7.41**	13.65**	0.56	1.08
YSG = 6	8.39**	18.02**	0.65	1.24
YSG = 7	10.38**	21.02**	0.79	1.51
YSG = 8	9.52**	22.38**	1.14	2.13
Constant	26.54**	32.45**	0.46	0.87

** Significant at 1% level. * Significant at 5 % level.

Table S.6.g: Parameter Estimates, Mathematics Diploma Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	13.70**	8.09**	1.89	1.24
Co-op × YSG	1.26	0.32	0.70	0.48
2006 Cohort	−2.94*	−3.09*	1.35	1.51
2007 Cohort	−3.85**	−1.47	1.45	1.60
2008 Cohort	−1.60	1.98	1.47	1.56
2009 Cohort	−8.98**	2.78	1.54	1.66
2010 Cohort	−4.69**	0.40	1.72	1.65
2011 Cohort	−9.00**	−2.96	1.80	1.75
2012 Cohort	−8.36**	−0.01	2.15	2.18
YSG = 2	2.67*	6.66**	1.14	1.17
YSG = 3	3.91**	10.45**	1.26	1.34
YSG = 4	5.34**	13.27**	1.37	1.54
YSG = 5	7.07**	16.97**	1.55	1.76
YSG = 6	8.04**	20.53**	1.79	2.08
YSG = 7	7.61**	24.40**	2.15	2.53
YSG = 8	8.30*	26.61**	3.24	3.42
Constant	39.44**	33.17**	1.36	1.47

** Significant at 1% level. * Significant at 5 % level.

Table S.6.h: Parameter Estimates, Engineering Diploma Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	8.65**	14.28**	2.06	0.70
Co-op × YSG	1.71	1.13**	0.90	0.27
2006 Cohort	−1.82	0.46	1.85	0.63
2007 Cohort	−3.25	−0.61	2.04	0.68
2008 Cohort	−1.22	−2.01**	2.09	0.71
2009 Cohort	2.35	−2.77**	2.15	0.73
2010 Cohort	−0.78	−2.59**	2.26	0.76
2011 Cohort	−1.32	−1.41	2.55	0.82
2012 Cohort	−3.98	−2.44*	3.13	1.05
YSG = 2	4.98**	6.02**	1.59	0.54
YSG = 3	6.94**	10.43**	1.77	0.61
YSG = 4	9.08**	13.39**	1.97	0.68
YSG = 5	9.55**	16.79**	2.30	0.77
YSG = 6	10.42**	20.17**	2.55	0.88
YSG = 7	17.95**	22.55**	3.12	1.04
YSG = 8	16.20**	24.25**	4.69	1.50
Constant	32.59**	34.64**	1.83	0.62

** Significant at 1% level. * Significant at 5 % level.

Table S.7.a: Parameter Estimates with Graduating Grades Controlled for, Social & Behavioural Sciences Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	10.48**	9.50**	0.89	1.85
Co-op × YSG	0.59	0.26	0.33	0.73
2006 Cohort	−1.01*	−0.09	0.49	0.99
2007 Cohort	−1.97**	−4.10**	0.50	0.99
2008 Cohort	−2.46**	−5.78**	0.53	1.04
2009 Cohort	−4.27**	−6.44**	0.56	1.10
2010 Cohort	−5.51**	−7.97**	0.60	1.21
2011 Cohort	−5.73**	−8.84**	0.67	1.31
2012 Cohort	−7.56**	−9.58**	0.83	1.64
YSG = 2	5.46**	7.39**	0.43	0.86
YSG = 3	9.43**	12.92**	0.48	0.97
YSG = 4	12.19**	17.45**	0.55	1.10
YSG = 5	13.52**	22.08**	0.62	1.26
YSG = 6	15.02**	27.07**	0.73	1.47
YSG = 7	16.17**	29.69**	0.90	1.79
YSG = 8	18.98**	33.90**	1.20	2.36
CGPA=A	4.00**	5.15**	0.52	1.20
CGPA=C	−1.57**	−0.48	0.57	0.97
CGPA=A × YSG	0.55**	0.65	0.19	0.43
CGPA=C × YSG	0.02	−0.74*	0.21	0.35
Constant	38.17**	43.01**	0.48	0.99

** Significant at 1% level. * Significant at 5 % level.

Table S.7.b: Parameter Estimates with Graduating Grades Controlled for, Business Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	16.65**	13.30**	0.67	1.03
Co-op × YSG	1.67**	2.63**	0.25	0.40
2006 Cohort	0.94	4.64**	0.50	0.80
2007 Cohort	−0.79	1.70*	0.50	0.80
2008 Cohort	−0.63	3.07**	0.53	0.84
2009 Cohort	−3.56**	−1.73	0.58	0.89
2010 Cohort	−3.67**	−2.18*	0.62	0.94
2011 Cohort	−4.15**	−1.61	0.67	1.03
2012 Cohort	−5.89**	−3.16*	0.85	1.27
YSG = 2	5.24**	6.83**	0.44	0.66
YSG = 3	8.59**	12.60**	0.50	0.75
YSG = 4	11.72**	17.97**	0.56	0.86
YSG = 5	13.56**	23.00**	0.64	0.98
YSG = 6	14.95**	26.71**	0.74	1.15
YSG = 7	16.28**	30.74**	0.90	1.43
YSG = 8	19.04**	34.72**	1.20	1.95
CGPA=A	7.58**	11.90**	0.57	1.01
CGPA=C	−2.82**	−2.78**	0.60	0.79
CGPA=A × YSG	0.57**	1.75**	0.21	0.39
CGPA=C × YSG	−0.46*	−0.83**	0.22	0.29
Constant	41.32**	41.70**	0.49	0.79

** Significant at 1% level. * Significant at 5 % level.

Table S.7.c: Parameter Estimates with Graduating Grades Controlled for, Physical & Life Sciences Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	5.72**	4.78**	1.37	1.82
Co-op × YSG	0.84	−0.28	0.52	0.68
2006 Cohort	1.59	1.16	1.45	1.76
2007 Cohort	−2.91	−6.51**	1.49	1.86
2008 Cohort	0.39	−6.90**	1.51	1.94
2009 Cohort	−1.00	−5.23**	1.67	1.97
2010 Cohort	−0.09	−6.98**	1.73	2.09
2011 Cohort	−5.84**	−10.11**	1.88	2.29
2012 Cohort	−6.55**	−8.87**	2.30	2.89
YSG = 2	8.14**	8.18**	1.19	1.50
YSG = 3	12.11**	14.08**	1.39	1.81
YSG = 4	17.23**	21.96**	1.66	2.19
YSG = 5	21.12**	24.06**	1.95	2.60
YSG = 6	21.39**	28.11**	2.32	3.08
YSG = 7	23.11**	31.19**	2.79	3.68
YSG = 8	23.38**	33.41**	3.72	4.89
CGPA=A	9.13**	3.71	1.49	2.10
CGPA=C	−3.83**	−4.72**	1.35	1.60
CGPA=A × YSG	0.36	2.06*	0.60	0.84
CGPA=C × YSG	−1.42**	−0.42	0.52	0.60
Constant	39.87**	45.81**	1.51	1.95

** Significant at 1% level. * Significant at 5 % level.

Table S.7.d: Parameter Estimates with Graduating Grades Controlled for, Mathematics Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	15.95**	14.76**	1.44	0.95
Co-op × YSG	0.58	1.05**	0.50	0.31
2006 Cohort	−2.11	1.23	1.39	0.90
2007 Cohort	−3.82*	1.50	1.49	1.00
2008 Cohort	−6.79**	−3.01**	1.55	1.06
2009 Cohort	−4.33*	−3.46**	1.87	1.23
2010 Cohort	−8.87**	1.57	2.09	1.36
2011 Cohort	−5.12*	−0.76	2.11	1.60
2012 Cohort	−9.18**	0.21	2.77	2.07
YSG = 2	6.24**	7.27**	1.40	0.97
YSG = 3	11.38**	12.71**	1.69	1.11
YSG = 4	16.53**	16.89**	2.01	1.28
YSG = 5	16.63**	22.87**	2.38	1.48
YSG = 6	21.73**	26.71**	2.81	1.72
YSG = 7	21.13**	30.65**	3.34	2.03
YSG = 8	31.90**	39.02**	4.21	2.58
CGPA=A	6.42**	5.79**	1.62	1.22
CGPA=C	−5.13**	−4.13**	1.65	1.07
CGPA=A × YSG	−0.49	1.21**	0.56	0.39
CGPA=C × YSG	−1.29*	−0.97**	0.59	0.36
Constant	43.90**	44.32**	1.72	1.14

** Significant at 1% level. * Significant at 5 % level.

Table S.7.e: Parameter Estimates with Graduating Grades Controlled for, Engineering Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	11.40**	14.25**	0.89	0.64
Co-op × YSG	0.30	0.49*	0.31	0.23
2006 Cohort	0.81	2.29**	0.96	0.71
2007 Cohort	0.24	1.27	0.95	0.73
2008 Cohort	−3.55**	1.10	1.03	0.76
2009 Cohort	−3.93**	−1.02	1.14	0.84
2010 Cohort	−4.53**	−1.16	1.29	0.89
2011 Cohort	−1.68	1.30	1.45	1.02
2012 Cohort	−3.31	2.26	1.83	1.33
YSG = 2	7.05**	8.57**	0.89	0.65
YSG = 3	11.15**	13.62**	1.02	0.74
YSG = 4	13.97**	17.82**	1.17	0.86
YSG = 5	17.29**	23.22**	1.36	0.99
YSG = 6	19.26**	28.30**	1.60	1.17
YSG = 7	20.64**	32.40**	1.95	1.44
YSG = 8	24.54**	35.88**	2.50	1.90
CGPA=A	4.50**	5.19**	1.05	0.77
CGPA=C	−1.68	−4.73**	1.23	0.84
CGPA=A × YSG	0.09	0.47	0.38	0.27
CGPA=C × YSG	−1.82**	−0.13	0.42	0.30
Constant	43.61**	44.72**	1.03	0.78

** Significant at 1% level. * Significant at 5 % level.

Table S.8.a: Parameter Estimates with the Younger Graduate Sample, Social & Behavioural Sciences Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	14.70**	14.83**	0.79	1.50
Co-op × YSG	0.84**	0.72	0.30	0.60
2006 Cohort	−0.83	3.23**	0.52	0.93
2007 Cohort	−0.03	−0.40	0.52	0.92
2008 Cohort	−1.33*	−1.73	0.55	0.95
2009 Cohort	−2.96**	−1.94	0.58	1.01
2010 Cohort	−4.60**	−5.09**	0.62	1.11
2011 Cohort	−4.68**	−4.82**	0.67	1.18
2012 Cohort	−6.27**	−3.90**	0.84	1.45
YSG = 2	5.94**	7.10**	0.42	0.77
YSG = 3	10.01**	13.25**	0.47	0.86
YSG = 4	13.09**	18.14**	0.53	0.95
YSG = 5	15.02**	23.22**	0.59	1.06
YSG = 6	17.29**	27.23**	0.69	1.23
YSG = 7	17.83**	29.86**	0.88	1.51
YSG = 8	20.90**	36.33**	1.24	2.01
Constant	35.32**	35.26**	0.48	0.84

** Significant at 1% level. * Significant at 5 % level.

Table S.8.b: Parameter Estimates with the Younger Graduate Sample, Business Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	22.59**	22.34**	0.67	1.08
Co-op × YSG	1.60**	2.15**	0.25	0.42
2006 Cohort	−0.58	2.43*	0.63	1.11
2007 Cohort	−0.39	1.12	0.62	1.08
2008 Cohort	−1.97**	3.80**	0.67	1.11
2009 Cohort	−3.84**	−3.79**	0.73	1.23
2010 Cohort	−3.25**	−2.29	0.77	1.25
2011 Cohort	−4.98**	−2.39	0.82	1.39
2012 Cohort	−6.22**	−3.40*	1.03	1.67
YSG = 2	5.68**	7.81**	0.54	0.88
YSG = 3	9.71**	14.54**	0.61	0.99
YSG = 4	13.54**	20.25**	0.68	1.11
YSG = 5	15.68**	26.48**	0.76	1.24
YSG = 6	17.25**	29.98**	0.87	1.47
YSG = 7	18.87**	35.76**	1.07	1.87
YSG = 8	21.62**	39.77**	1.43	2.53
Constant	40.82**	39.92**	0.59	1.02

** Significant at 1% level. * Significant at 5 % level.

Table S.8.c: Parameter Estimates with the Younger Graduate Sample, Physical & Life Sciences Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	13.49**	11.23**	1.25	1.69
Co-op × YSG	1.68**	1.13	0.47	0.66
2006 Cohort	1.98	2.64	1.49	1.96
2007 Cohort	−0.30	−6.68**	1.49	2.01
2008 Cohort	0.98	−3.64	1.53	2.06
2009 Cohort	−3.53*	−2.83	1.70	2.12
2010 Cohort	2.06	−1.71	1.78	2.19
2011 Cohort	−4.55*	−5.77*	1.88	2.34
2012 Cohort	−5.56*	−5.37	2.25	2.95
YSG = 2	7.75**	7.38**	1.17	1.46
YSG = 3	11.51**	13.71**	1.33	1.70
YSG = 4	15.34**	22.36**	1.53	1.99
YSG = 5	19.15**	24.55**	1.76	2.27
YSG = 6	19.65**	30.03**	2.05	2.70
YSG = 7	21.59**	36.22**	2.60	3.31
YSG = 8	18.57**	37.03**	3.52	4.75
Constant	34.73**	36.35**	1.43	1.84

** Significant at 1% level. * Significant at 5 % level.

Table S.8.d: Parameter Estimates with the Younger Graduate Sample, Mathematics Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	20.22**	17.82**	1.69	1.17
Co-op × YSG	−0.29	0.77*	0.62	0.39
2006 Cohort	−5.00**	−0.58	1.67	1.11
2007 Cohort	−5.20**	0.88	1.84	1.24
2008 Cohort	−6.98**	−2.97*	1.87	1.33
2009 Cohort	−1.72	−5.62**	2.26	1.60
2010 Cohort	−10.92**	−1.15	2.38	1.67
2011 Cohort	−5.59*	−1.99	2.42	1.95
2012 Cohort	−10.49**	−0.66	3.15	2.43
YSG = 2	7.03**	8.18**	1.64	1.20
YSG = 3	12.61**	14.14**	1.96	1.34
YSG = 4	19.02**	19.39**	2.33	1.53
YSG = 5	20.56**	25.26**	2.72	1.73
YSG = 6	23.38**	30.75**	3.26	1.99
YSG = 7	22.59**	35.02**	3.87	2.34
YSG = 8	33.51**	46.07**	5.06	3.06
Constant	42.57**	42.92**	1.97	1.33

** Significant at 1% level. * Significant at 5 % level.

Table S.8.e: Parameter Estimates with the Younger Graduate Sample, Engineering Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	12.68**	16.42**	1.02	0.71
Co-op × YSG	0.25	0.95**	0.37	0.25
2006 Cohort	0.31	0.94	1.17	0.82
2007 Cohort	−1.11	−0.55	1.13	0.82
2008 Cohort	−4.59**	0.81	1.24	0.85
2009 Cohort	−5.37**	−2.78**	1.38	0.95
2010 Cohort	−5.90**	−2.75**	1.51	1.00
2011 Cohort	−3.00	0.29	1.68	1.15
2012 Cohort	−4.33*	0.77	2.19	1.48
YSG = 2	6.82**	8.66**	1.06	0.72
YSG = 3	11.72**	13.65**	1.21	0.82
YSG = 4	15.23**	18.21**	1.37	0.94
YSG = 5	17.78**	23.93**	1.58	1.08
YSG = 6	19.47**	27.55**	1.84	1.27
YSG = 7	18.37**	33.39**	2.26	1.58
YSG = 8	23.54**	36.56**	2.91	2.10
Constant	45.26**	45.24**	1.20	0.86

** Significant at 1% level. * Significant at 5 % level.

Table S.8.f: Parameter Estimates with the Younger Graduate Sample, Business Diploma Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	1.47*	−5.54**	0.72	1.83
Co-op × YSG	−0.43	0.36	0.25	0.75
2006 Cohort	1.51**	−1.77	0.57	0.99
2007 Cohort	0.45	−3.39**	0.60	1.03
2008 Cohort	0.64	−3.92**	0.62	1.10
2009 Cohort	0.16	−5.28**	0.66	1.14
2010 Cohort	−0.23	−4.23**	0.71	1.19
2011 Cohort	−0.74	−2.36	0.82	1.37
2012 Cohort	−1.04	−4.75**	1.06	1.72
YSG = 2	3.10**	5.44**	0.50	0.85
YSG = 3	5.37**	8.70**	0.56	0.94
YSG = 4	7.16**	12.05**	0.61	1.06
YSG = 5	8.50**	14.37**	0.69	1.17
YSG = 6	9.47**	18.26**	0.81	1.35
YSG = 7	11.58**	22.23**	0.97	1.65
YSG = 8	10.73**	21.71**	1.35	2.26
Constant	25.90**	31.90**	0.56	0.94

** Significant at 1% level. * Significant at 5 % level.

Table S.8.g: Parameter Estimates with the Younger Graduate Sample, Mathematics Diploma Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	−0.33	7.32**	4.24	1.89
Co-op × YSG	2.93	0.59	1.69	0.67
2006 Cohort	2.01	−7.83**	2.82	2.01
2007 Cohort	−0.13	−5.47*	3.31	2.19
2008 Cohort	−3.58	−2.95	3.39	2.22
2009 Cohort	−6.18	−1.57	4.02	2.27
2010 Cohort	−8.17*	−5.54*	4.01	2.32
2011 Cohort	−7.41	−6.01*	4.13	2.41
2012 Cohort	−8.00	−6.53*	4.58	3.26
YSG = 2	1.94	6.94**	2.53	1.65
YSG = 3	6.86*	10.91**	2.81	1.87
YSG = 4	7.55*	14.44**	3.08	2.14
YSG = 5	10.66**	19.03**	3.36	2.43
YSG = 6	10.32**	23.04**	3.68	2.81
YSG = 7	10.26*	26.10**	4.27	3.38
YSG = 8	4.14	28.03**	7.31	4.63
Constant	30.14**	34.85**	2.99	2.02

** Significant at 1% level. * Significant at 5 % level.

Table S.8.h: Parameter Estimates with the Younger Graduate Sample, Engineering Diploma Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	5.33	14.74**	2.95	1.00
Co-op × YSG	3.93**	0.55	1.23	0.38
2006 Cohort	3.81	2.07*	2.91	0.89
2007 Cohort	1.16	0.16	2.55	0.94
2008 Cohort	−2.06	−1.80	2.91	0.98
2009 Cohort	6.04*	−2.39*	2.69	1.01
2010 Cohort	2.53	−1.99	3.37	1.05
2011 Cohort	−1.36	−2.32	3.75	1.20
2012 Cohort	−7.71	−2.69	4.28	1.45
YSG = 2	4.22	6.70**	2.28	0.77
YSG = 3	7.03**	11.23**	2.53	0.85
YSG = 4	8.90**	14.71**	2.73	0.96
YSG = 5	7.52*	18.52**	3.31	1.08
YSG = 6	11.02**	22.86**	3.53	1.25
YSG = 7	17.88**	25.03**	4.86	1.47
YSG = 8	9.46	27.25**	6.72	2.07
Constant	29.51**	32.85**	2.48	0.86

** Significant at 1% level. * Significant at 5 % level.

Table S.9.a: Parameter Estimates with Graduating Institution Controlled for, Social & Behavioural Sciences Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	12.22**	9.97**	0.89	1.87
Co-op × YSG	0.62	0.02	0.33	0.74
2006 Cohort	−1.20*	−0.08	0.49	0.99
2007 Cohort	−2.45**	−4.08**	0.50	0.99
2008 Cohort	−2.82**	−5.94**	0.52	1.04
2009 Cohort	−4.73**	−6.60**	0.55	1.10
2010 Cohort	−5.80**	−7.76**	0.60	1.21
2011 Cohort	−5.96**	−8.77**	0.67	1.31
2012 Cohort	−7.95**	−9.66**	0.83	1.63
YSG = 2	5.58**	7.05**	0.43	0.86
YSG = 3	9.62**	12.24**	0.49	0.98
YSG = 4	12.52**	16.50**	0.56	1.11
YSG = 5	13.96**	20.84**	0.65	1.27
YSG = 6	15.63**	25.44**	0.76	1.48
YSG = 7	16.95**	28.00**	0.94	1.79
YSG = 8	20.08**	31.73**	1.25	2.33
Constant	41.64**	45.43**	0.50	0.99

Notes: Coefficient estimates on the constant and institution-specific terms are not reported here to protect institution's privacy. ** Significant at 1% level. * Significant at 5 % level.

Table S.9.b: Parameter Estimates with Graduating Institution Controlled for, Business Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	18.27**	14.17**	0.72	1.15
Co-op × YSG	1.52**	0.96*	0.27	0.44
2006 Cohort	1.10*	4.51**	0.50	0.80
2007 Cohort	−0.54	1.93*	0.51	0.80
2008 Cohort	−0.86	2.96**	0.54	0.84
2009 Cohort	−3.59**	−1.94*	0.58	0.89
2010 Cohort	−3.67**	−2.01*	0.62	0.94
2011 Cohort	−4.26**	−1.59	0.68	1.03
2012 Cohort	−5.93**	−3.20*	0.86	1.27
YSG = 2	5.71**	8.00**	0.46	0.69
YSG = 3	9.50**	15.07**	0.57	0.86
YSG = 4	13.06**	21.61**	0.71	1.07
YSG = 5	15.38**	27.78**	0.85	1.30
YSG = 6	17.20**	32.76**	1.02	1.58
YSG = 7	19.07**	38.01**	1.25	1.93
YSG = 8	22.33**	43.73**	1.57	2.48
Constant	44.16**	43.17**	0.63	0.98

Notes: Coefficient estimates on the constant and institution-specific terms are not reported here to protect institution's privacy. ** Significant at 1% level. * Significant at 5 % level.

Table S.9.c: Parameter Estimates with Graduating Institution Controlled for, Physical & Life Sciences Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	6.05**	5.28**	1.40	1.82
Co-op × YSG	1.78**	0.16	0.53	0.68
2006 Cohort	1.89	1.29	1.46	1.78
2007 Cohort	−3.62*	−7.18**	1.50	1.87
2008 Cohort	0.40	−6.90**	1.52	1.96
2009 Cohort	1.28	−4.58*	1.69	1.99
2010 Cohort	1.37	−6.32**	1.74	2.11
2011 Cohort	−4.91**	−9.05**	1.90	2.31
2012 Cohort	−5.04*	−8.07**	2.32	2.91
YSG = 2	7.72**	7.58**	1.20	1.52
YSG = 3	11.28**	12.93**	1.41	1.83
YSG = 4	16.12**	20.39**	1.69	2.24
YSG = 5	19.73**	21.96**	1.99	2.67
YSG = 6	19.69**	25.21**	2.39	3.22
YSG = 7	21.31**	28.08**	2.93	3.88
YSG = 8	21.29**	29.75**	3.93	5.11
Constant	38.67**	42.73**	1.57	2.00

Notes: Coefficient estimates on the constant and institution-specific terms are not reported here to protect institution's privacy. ** Significant at 1% level. * Significant at 5 % level.

Table S.9.d: Parameter Estimates with Graduating Institution Controlled for, Mathematics Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	20.90**	17.54**	1.48	1.00
Co-op × YSG	0.23	0.39	0.56	0.34
2006 Cohort	−3.50*	1.52	1.40	0.90
2007 Cohort	−3.74*	1.05	1.52	1.01
2008 Cohort	−6.92**	−2.82**	1.58	1.07
2009 Cohort	−4.73*	−3.66**	1.90	1.24
2010 Cohort	−9.51**	1.44	2.13	1.37
2011 Cohort	−5.13*	−0.71	2.15	1.62
2012 Cohort	−8.47**	0.36	2.82	2.09
YSG = 2	5.55**	6.77**	1.50	1.08
YSG = 3	9.99**	11.81**	1.98	1.44
YSG = 4	14.54**	15.67**	2.51	1.87
YSG = 5	14.00**	21.30**	3.09	2.33
YSG = 6	18.70**	24.94**	3.71	2.81
YSG = 7	17.95**	28.75**	4.37	3.34
YSG = 8	28.71**	37.03**	5.40	4.04
Constant	46.18**	47.29**	2.41	1.86

Notes: Coefficient estimates on the constant and institution-specific terms are not reported here to protect institution's privacy. ** Significant at 1% level. * Significant at 5 % level.

Table S.9.e: Parameter Estimates with Graduating Institution Controlled for, Engineering Degree Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	10.34**	12.81**	1.24	1.12
Co-op × YSG	0.20	−0.04	0.43	0.39
2006 Cohort	1.12	2.19**	0.97	0.71
2007 Cohort	0.88	1.39	0.96	0.73
2008 Cohort	−3.04**	1.05	1.04	0.76
2009 Cohort	−3.37**	−1.07	1.15	0.84
2010 Cohort	−3.72**	−1.17	1.30	0.89
2011 Cohort	−1.17	1.28	1.46	1.03
2012 Cohort	−2.56	2.36	1.84	1.33
YSG = 2	5.72**	8.83**	0.97	0.68
YSG = 3	8.50**	14.21**	1.24	0.85
YSG = 4	10.10**	18.71**	1.56	1.05
YSG = 5	12.15**	24.50**	1.92	1.28
YSG = 6	13.04**	29.89**	2.30	1.54
YSG = 7	13.34**	34.41**	2.75	1.85
YSG = 8	15.83**	38.10**	3.38	2.33
Constant	49.97**	48.35**	1.46	0.98

Notes: Coefficient estimates on the constant and institution-specific terms are not reported here to protect institution's privacy. ** Significant at 1% level. * Significant at 5 % level.

Table S.9.f: Parameter Estimates with Graduating Institution Controlled for, Business Diploma Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	3.04**	1.96	0.62	1.42
Co-op × YSG	0.13	−0.71	0.23	0.56
2006 Cohort	1.96**	−2.78**	0.47	0.92
2007 Cohort	1.07*	−1.82	0.49	0.96
2008 Cohort	0.25	−3.67**	0.51	1.01
2009 Cohort	−0.29	−4.84**	0.54	1.08
2010 Cohort	−0.78	−3.34**	0.58	1.06
2011 Cohort	−0.97	−0.97	0.63	1.19
2012 Cohort	−2.19**	−4.03**	0.80	1.50
YSG = 2	2.94**	4.85**	0.41	0.77
YSG = 3	5.32**	8.03**	0.46	0.87
YSG = 4	7.11**	11.29**	0.52	1.02
YSG = 5	7.95**	13.62**	0.59	1.16
YSG = 6	9.06**	17.97**	0.68	1.35
YSG = 7	11.24**	20.99**	0.84	1.67
YSG = 8	10.69**	22.34**	1.20	2.32

Notes: Coefficient estimates on the constant and institution-specific terms are not reported here to protect institution's privacy. ** Significant at 1% level. * Significant at 5 % level.

Table S.9.g: Parameter Estimates with Graduating Institution Controlled for, Mathematics Diploma Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	13.69**	10.89**	1.91	1.35
Co-op × YSG	1.18	0.84	0.71	0.52
2006 Cohort	−2.73*	−4.65**	1.35	1.50
2007 Cohort	−3.42*	−3.71*	1.45	1.60
2008 Cohort	−1.32	−0.80	1.48	1.57
2009 Cohort	−8.72**	0.43	1.54	1.66
2010 Cohort	−4.43*	−1.33	1.72	1.65
2011 Cohort	−8.76**	−4.67**	1.81	1.74
2012 Cohort	−8.11**	−1.67	2.15	2.16
YSG = 2	3.22**	6.78**	1.16	1.16
YSG = 3	4.97**	10.64**	1.32	1.33
YSG = 4	6.89**	13.75**	1.50	1.55
YSG = 5	9.18**	17.64**	1.77	1.78
YSG = 6	10.56**	21.54**	2.06	2.14
YSG = 7	10.45**	25.61**	2.43	2.62
YSG = 8	11.53**	28.63**	3.49	3.58

Notes: Coefficient estimates on the constant and institution-specific terms are not reported here to protect institution's privacy. ** Significant at 1% level. * Significant at 5 % level.

Table S.9.h: Parameter Estimates with Graduating Institution Controlled for, Engineering Diploma Graduates

	Estimates		Std. error	
	Female	Male	Female	Male
Co-op	7.09**	13.29**	2.10	0.71
Co-op × YSG	2.00*	0.99**	0.90	0.27
2006 Cohort	−0.35	0.92	1.85	0.63
2007 Cohort	−1.98	−0.36	2.04	0.68
2008 Cohort	−0.11	−1.77*	2.09	0.70
2009 Cohort	3.75	−2.56**	2.15	0.73
2010 Cohort	−0.37	−2.53**	2.24	0.75
2011 Cohort	0.21	−1.51	2.55	0.82
2012 Cohort	−2.95	−2.62*	3.11	1.04
YSG = 2	4.53**	5.83**	1.59	0.54
YSG = 3	5.90**	10.05**	1.82	0.62
YSG = 4	7.77**	12.85**	2.07	0.70
YSG = 5	7.45**	16.07**	2.48	0.80
YSG = 6	8.28**	19.31**	2.79	0.92
YSG = 7	15.38**	21.52**	3.42	1.09
YSG = 8	12.40*	22.80**	5.12	1.56

Notes: Coefficient estimates on the constant and institution-specific terms are not reported here to protect institution's privacy. ** Significant at 1% level. * Significant at 5 % level.