employment in larger, more bureaucratic organizations (Abbott 1991; Freidson 1984).

Professionals increasingly work in multi-professional environments, and are divided from each

other at competing firms; some professionals are placed in positions of power over others

(Abbott 1991; Leicht and Fennell 1997). Stratification within professions appears to be on the

rise (Abel 1986; Freidson 1984; Waring 2014; Noordegraaf 2013).

The changing structure of organizations employing professionals

Professionals in Organizations

The classic image of a nineteenth or early twentieth century professional is the private practitioner, serving clients or treating patients from his office, which might very well be located in his family home. The professional man was linked to a broader community of professionals through loose networks of consultation, social interaction, and membership in professional associations. Professionals were self-employed and autonomous, but they were guided by informal oversight from their colleagues, as well as oaths promising to uphold professional standards and practise according to ethical codes. This classic image is somewhat apocryphal; by the late nineteenth and early twentieth centuries many professionals, including lawyers, engineers, and doctors worked in organizations. Nonetheless, their employment conditions were typically better than most other workers. Even in organizations, many professionals exercised considerable control over their own work.[i]

By the late twentieth century, employment was the norm for most professional groups. This raised concerns. Could regulated professionals uphold their legal responsibility to act in the public interest if they were employed by private interests seeking profit? Even employm3(y)20(be)49cBT1 nm

argued that "professional organizations" were generally

consultation. Thus, professionals in organizations were not managed like other employees (see also, Freidson 1984).

Many professionals were employed in smaller organizations, such as professional partnerships; organizations scholars call this the P2 form

professional values are being challenged by new managerial and business approaches" (Brock 2006: 160).

division, less autonomy, more managerial control (whether exerted by peer managers or not), more competition and rationalization, and a different orientation towards clients, patients, and consumers. New organizational forms may result in better and safer service: certainly that is the goal of new public management in health care organizations (Waring and Currie 2009; Kitchener 2000

Some professionals are more vulnerable than others, and professionals seeking greater job security and promotion, may have less ability to resist managerial infringements. Research has shown that the vulnerable are more likely to compromise their professional ethics to benefit their employers and clients (Dinovitzer et al. 2013; Parker and Rostain 2012).

To sum up, organizational change appears to be increasing professional divisions, and internal stratification. Practice experiences, professional values, and professional identity may vary by organizational position and role.

Hybrid professionalism

To capture shifts in professional identity and control with organizational change, scholars have drawn on the concept of "hybrid professionalism" (Noordegraaf 2007, 2014; Correia and Denis 2016). For Noordegraaf (2007, 2014) what it means to be professional is changing in certain organizational contexts, especially in the public domain. Professionalism and managerialism previously represented two different strategies for controlling labour, but in some contexts these modes of control are merging. While traditionally professionalism was thought to represent a logic distinct from the market (Freidson 2001), increasingly professional logics and market logics are merging (Noordegraaf 2015). The result is that professional work increasingly combines "professional and managerial principles" (Noordegraaf 2015: 192). These combinations can be seen particularly amongst professionals who are managers, and managers who are professional, and they create new professional practices and identities (Noordegraaf 2007, 2015). Noordegraaf (2007, 2015) sees these developments as positive: they establish new roles for professionals and enable them to navigate new domains and cope with rising demands, while raising organizational efficiency and providing quality services. However, in his more recent work, Noordegraaf (2015) identifies some limitations of hybrid professionalism, as it

maintains elements of traditional professionalism. He advocates for a move towards "organizing professionalism," which is "aimed at going beyond hybridity, especially by embedding organizing and organizing roles and capacities within professional action" (Noordegraaf 2015: 201). Here the drive for efficiency becomes not simply an organizational or capitalist imperative, but a professional value as well.

Although Noordegraaf (2007) draws attention to professionals in management positions, there is a sense, especially in his later work, that social change is altering the very nature of professionalism. Thus, all professionals are potentially hybrid professionals or organizing professionals. Nonetheless, most research on hybrid professionalism has focused on professionals in managerial roles, and the impact of these roles on identity. For example, McGivern et al. (2015: 412) define "hybrids" as "professionals engaged in managing professional work, professional colleagues and other staff." These roles can be challenging because they are "framed by both professional and managerial logics" (Ibid). In the last decade a number of researchers have studied professional hybrids to explore their identities, their work, and their relations with their professional colleagues (Correia and Denis 2016; Joffe and MacKenzie-Davey, 2012; Kippist and Fitzgerald. 2009). This literature shows that organizational change has the potential to create new tensions within professions, but that professional values and identities are nonetheless persistent.

Much of the literature on hybrid professions focuses on medical doctors in clinical director or other leadership positions within hospitals (Correia and Denis 2016; McGivern et al., 2015; Joffe and MacKenzie-Davey, 2012; Kippist and Fitzgerald. 2009; Kitchener 2000). Regulatory change and New Public Management schemes have combined to expand the number of managerial roles open to medical leaders in hospital settings. These hybrid

professional/managers are put in positions of authority over their professional colleagues and

required to implement organizational policies and reach institutional targets. Is this a source of

division and conflict within professions? Not necessarily. McGivern et al. (2015) show that it is

The emergence of hybrid professional/managers has implications for professional unity and stratification. Hybrid professionals may distance themselves from their colleagues and adopt identities that prioritize managerial concerns over professional values, leading to intra-professional divisions and potentially conflicts. The literature, thus far, does not provide extensive evidence of intra-professional conflict between manager/professionals and practising professionals, but differences in identity and values are sometimes evident (McGivern et al. 2015; Waring and Currie 2009). Moreover, there is certainly evidence of professionals resisting and co-opting managerial initiatives, suggesting that the goals and interests of practitioners and their managers are diverging (Muzio and Kirkpatrick 2011; Waring and Currie 2009; Kitchener 2000). With organizational and structural change, rank and file professionals may increasingly hold distinct values and interests from their professional colleagues in positions of authority.

Other divisions

Research has identified other sources of stratification and division within professions. In a recent review, Waring (2014) identifies several different kinds of professional elites, each with potential allegiances to actors and institutions outside of professions. Not only are there managerial elites with allegiance to their organizational setting, but political elites who are tied to the political process, corporate elites, knowledge elites tied to research organizations, and governance elites linked with regulatory bodies. Practice elites – those with special expertise or skills – might also emerge. For Waring these are all sources of stratification within professions that could spur division and conflict (see also Freidson 1984).

Others have identified divisions along the lines of nationality, race-ethnicity and gender (Abel 1986; Noordegraaf 2013). In multi-

minority of professionals are foreign-trained, differences in professional values, identities, and practices may emerge. However, Canada's strict guidelines for professional entry ensure that very few foreign-trained professionals can practice without further training, education, or supervised practice experience here in Canada. These latter requirements provide opportunities for professional socialization and may foster shared values. Nonetheless, both the foreign trained and the racially marginalized report experiences of discrimination and disadvantage (Basran and Li 1998; Boateng 2015; Gorman and Kay 2016). These different experiences may foster professional concerns and interests that could become a source of division within professions.

Gender differences within professions are another source of division. Professions are internally sex segregated, and women in male-dominated professions tend to cluster in certain specializations and roles. This sex segregation has been remarkably persistent over time. Women in male-dominated professions report different practice experiences than men, and identify fewer opportunities for promotion (Pierce 1995; Seron et al. 2016; Hinze 1999; Kay, Alarie and Adjei 2016). Gender divisions may be particularly important in professions like engineering, where the percentage of women has been low for some time (Engineers Canada 2012, 2015). Recent research by Seron et al (2016) shows how professional socialization in schooling encourages gender divisions, by steering women into specific engineering roles viewed as more gender appropriate. These early socialization experiences are exacerbated by interaction experiences and discrimination in early work experience, which combine to make women feel unwelcome, especially in certain professional roles. These trends discourage women from staying in the profession, and lead to gender divisions within the profession.

While there is a sizeable literature looking at divisions in professions between elites and

rank and file practitioners, and/or between managers and workers, the professions literature has

Overall, the literature on recent changes to professional employment highlights emerging

illustrates that a profession can persist despite divisions and organizational employment.

Perhaps recent organizational change is undermining professional unity in engineering.

<u>Methods</u>

Between October 2016 and February 2017, Ontario engineers were invited to participate in an on-line survey respecting their working conditions, professional and educational experiences, and their attitudes on a variety of topics. The survey was hosted by Qualtrics, and ethics approval for the research was obtained from two university research ethics boards. Invitations to participate went out to all members of the Ontario Society of Professional Engineers (OSPE). The survey link was also circulated to other engineers not affiliated with OSPE through a variety of networks and email list serves. Several reminders were sent out to encourage a higher response rate. In total, about 780 engineers answered some parts of the survey, although the entire survey was completed by only 620. The survey was designed to parallel the Changing Workplaces in the New Economy (CWKE) national survey, conducted in 2015-16.

This paper presents only preliminary analyses of the data, in the form of bivariate cross-tabular analyses. To assess stratification in engineering I focus on a few specific dimensions highlighted in the literature: manager / non-manager, professional class, gender, visible minority status, and Canadian versus foreign-trained. The survey had a few different measures of managerial status. For this analysis I used a measure that impli   ã

question was open-ended, asking participants to provide their gender. All answers corresponded to a gender binary, and hence were recoded as male or female. Visible minority status was determined from a question asking people if they self-identified as a member of a visible minority or not. Lastly, respondents were asked where they received their bachelor's degree in engineering, and responses were coded as "Canada" and "other".

The dependent variables presented here fall into two main groupings. The first is a set of questions touching on professional concerns. The second set of questions address working conditions, particularly autonomy and decision-making authority.

The research questions driving the analysis are as follows:

1) Do managers and non-managers differ in their professional concerns and attitudes, and their working conditions?

2) To what extent do professional attitudes and working conditions vary by class, gender, minority status, and location of training?

After assessing the extent of difference and stratification within the engineering profession, I discuss the implications for professional unity.

Results

Before exploring the significance of status and demographics for the engineering profession, it is helpful to provide a brief overview of survey respondent characteristics (see Table 1). As in the profession more generally, m-6(f(s)-10BT1(ne)4(r)-6(a)4(ll)-13(y)20(,7(ss(int)-3(ET3e)4(a)

make up only about 14% of all Ontario engineers. Twenty-one percent of respondents indicated

they considered themselves members of a visible minority, and 17.5 percent of respondents

received their engineering bachelor's degree outside of Canada. Just under half of all survey

respondents (48%) indicated that they considered themselves management.

Table 1: Profile of Survey Respondents

Gender
	Male	81.3%

Those seeking engineering expertise too often employ non-Canadian firms whose work does not meet Ontario standards	**27.4% (72)**	**25.6% (73)**	**26.4% ***
Global competition puts pressure on Canadian companies to lower their standards.	**31.6%(83)**	**42.1% (120)**	**37% ****
It is difficult to balance employer expectations with a commitment to professional ethics.	**22.4% (59)**	**27.3% (78)**	**25% ****
Work-family balance is difficult to achieve in the Engineering field	49.4% (130)	51.5% (147)	50.6%
I consider my engineering degree to have been a good career investment.	**94.7% (249)**	**83.6% (238)**	**88.9% *****
Total N			**548**

Bolded rows show statistically significant differences (chi-square): *** p<.001; ** p<.01, * p<.05

On almost every measure, those who identify as managers differ from other engineers – but only to a degree. Engineers who are not managers are more likely to believe there are fewer opportunities for steady work, and less likely to believe that there are labour market shortages, than managers. Non-managers believe globalization creates fewer opportunities for Ontario engineers, and that business practices lead to the hiring of non-Canadian firms. They are also more likely to fear that global competition is forcing Canadian firms to lower their standards, and that employer expectations might lead them to compromise their professional ethics. While the vast majority of engineers consider their engineering degree to be a good career investment, managers are more likely to do so than non-managers. On all attitude measures, except work-family conflict, statistically significant differences are observed. Nonetheless, the differences on most measures are small in magnitude. These are differences of degree, only. For the most part, members of the two groups have similar opinions on professional issues.

More substantial differences are evident if we consider working conditions between the two groups. Table 3 presents the findings pertaining to autonomy and decision-making authority.

Table 3. **Autonomy and Decision-**

	Managers % (N)	Others % (N)	Total % (Total N)
Can you decide your own working hours?	**74.1% (195)**	**49.3% (140)**	**61.2% (547) *****
Do you meaningfully participate in decision making?	**72.5% (190)**	**82.6% (096)**	**76.3% (545) *****

Bolded rows show statistically significant differences (chi-square): *** p<.001

As Table 3 shows, those who identify as managers are much more likely than other engineers to determine their own working hours, and to participate in decision making. Table 4 demonstrates that engineering managers are more likely than their counterparts to say they can plan their own work all or most of the time (81.4% versus 64.9

Professional Class

The sociological literature on professions has recently focused on hybridization, but perhaps the major source of division is not simply organizational position, but professional class. I compared professional classes on the same attitudinal and working conditions measures, to ascertain if engineers vary by class position.

Table 5: Professional Class by Professional Attitudes

	Owner % (N)	Self-Employed % (N)	Manager % (N)	Employee % (N)	Overall %
It's getting harder to find steady work in the Engineering field in Ontario.	20% (3)	52% (37)	44% (83)	53% (161)	51.8%
There is a shortage of qualified people to fill the engineering jobs available in Ontario.	26.7% (4)	32.4 (23)	34% (64)	25% (76)	28.4%
Globalization is opening up more opportunities for professional engineers	46.7% (7)	31% (22)	30.8% (58)	27.3 (83)	28.3%
Those seeking engineering expertise too often employ non-Canadian firms whose work does not meet Ontario standards	26.7% (4)	31% (22)	28.2% (53)	22% (302)	26.7%
Global competition puts pressure on Canadian companies to lower their standards.	46.7% (7)	36.6% (26)	35.1% (66)	36.1 (109)	37.1%
It is difficult to balance employer expectations with a commitment to professional ethics.	13.3% (2)	26.7% (19)	23.9% (45)	24.8% (75)	25.7%
Work-family balance is difficult to achieve in the Engineering field	40% (6)	52.1% (37)	52.1% (98)	48.8% (147)	50.6%
I consider my engineering degree to have been a good career investment.	100% (14)	91% (63)	93.6 (175)	85.5% (247)	87.7%

Some cell counts too low for Chi-Square, so significance tests were not conducted.

Looking at a fuller range of organizational and class positions reveals a more complex picture and greater diversity within professions. The small number of professional employers in the study makes generalizations about their experiences difficult, but they appear to be notably more concerned with globalization, fearing that global competition puts pressure on companies to lower standards, while also being more likely to see globalization as opening up opportunities. On many dimensions they differ from the other categories of engineers. Particularly interesting – because they receive little attention in recent professions literature – are the self-employed. Table 5 suggests that self-employed engineers are quite similar to managers on several attitude dimensions (work-family balance, engineering degree a good investment, impact of

globalization). However, they are closer to employees in their belief that it is getting harder to find a good job in Ontario, and they are more likely than others to report that it can be difficult to balance expectations with ethical values, and that non-Canadian firms sometimes cannot meet provincial standards. While the differences between managers and professional employees are evident in Table 5, as they were in Table 2, bringing professional owners and the self-employed into the picture reveals more intra-professional differences of opinion.

Table 6. **Autonomy and Decision-**

	Owners % (N)	Self-Employed % (N)	Managers % (N)	Employees % (N)	Overall % (Total N)
Can you decide your own working hours?	100% (14)	87.9% (58)	65.3% (115)	51% (133)	60.5% (567)
Do you feel you meaningfully participate in decision making?	100% (14)	66.7% (44)	66.5% (117)	24.7% (64)	46.4% (565)

Table 7. Ability to Plan Work and Knowledge Complexity by Class

	Owners % (N)

decision

There is a lot of information in Table 6, but a quick scan reveals that visible minority engineers differ from non-visible minority engineers on most attitudinal measures. Most notably, visible minority engineers are more likely to agree that it is getting harder to find work in engineering. Members of visible minorities may be impacted disproportionately by a poor labour market. Visible minority engineers are also less likely to believe there is a shortage of qualified engineers. They are more likely to agree it is difficult to balance employer expectations with a commitment to professional ethics. They are also more likely to agree that work-family balance is difficult to achieve in engineering. Visible minority engineers are somewhat less likely than others to see their engineering degree as a good investment. Differences between foreign-trained engineers and Canadian trained engineers are also evident. Again, the most notable difference is that the foreign-trained are much more likely than the Canadian-trained to agree that it is difficult to find steady work in engineering right now. Furthermore, the foreign-trained are more optimistic about globalization than their Canadian-trained counterparts: they are less likely to believe international firms cannot meet Ontario standards, and less likely to believe that global competition leads Canadian firms to lower their standards. The internationally educated are also much less likely to report that work-family balance is difficult to achieve, than Canadian-trained engineers.

Table 8 also reveals a few gender differences in attitudes. Female engineers are less

	Vis Min % (N)	Majority % (N)	Male % (N)	Female % N	Foreign-Trained % (N)	CDN-Trained
Can you decide your own working hours?	41.1 (46)	66.2% (280)***	61.5 (284)	57.1 (91)	46.9 (45)	63.4% (295) ***
Do you feel you meaningfully participate in decision making?	32.1% (36)	50.4% (213)***	50 (230)	30.8 (28)**	37.9 (36)	46.5 (224)***

Chi-square is significant if bolded: *** p<.001; ** p<.01, * p<.05

Table 10. **Ability to Plan Work and Knowledge Complexity**

Vis Min % (N)	Majority % (N)	Male % (N)	Female

Overall, it seems clear that gender, race, class, location of training, and organizational position are potential sources of division and stratification within the engineering profession.

Do these divisions have implications for professional unity? Differences in attitudes may not necessarily result in professional fissures. Where they become particularly significant is when attitudes shape organizational and/or professional policy. If employers are more likely to believe there is a shortage of engineers, they may continue to push the government to increase immigration in this area, leading to poorer job opportunities and career prospects for rank and file engineers. If (non-visible minority) men experience less work-