

**The Behavioural Economics of Organizational Inefficiency:
The Example of the New Zealand Fitness Industry**

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Abstract

The focus of this thesis is to determine the quality of exercise practitioners in the New Zealand fitness industry given concerns expressed over quality by public policy pundits and other concerned individuals in the public domain. To achieve this end, we develop an original data set from publicly available information on the qualifications and certifications of exercise professionals and their gyms as well as an information set of on human capital formation in this industry. We find that there appears to be a significant deterioration in the quality of practitioners engaged in the New Zealand fitness industry. The aim of this research is to explain why this is the case and then explore the possible inefficiencies within the industry that these issues with quality we identify have given rise to. We argue that this is because potential clients as decision-makers live within an environment of abundant, imperfect and asymmetric information and are driven by both the supply and demand sides of the market which interact dynamically. In this environment, the quality of signalling, or how exercise practitioners signal their capabilities to prospective clients and how gyms signal the quality of their exercise practitioners, plays a critical role in determining the demand for exercise professionals and gyms. This incentivizes an underinvestment in higher quality human capital formation in this industry. We argue that the principle quality signalling device in New Zealand, the Register of Exercise Professionals (REPs), appears to be highly inadequate and thus the identified deterioration in the quality of exercise practitioners in New Zealand is a product of the weakness of this signal given imperfect and asymmetric information. These findings suggest that there is a market failure and that there is a role for government regulation and intervention in New Zealand's fitness industry.

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List of Abbreviations

| | |
|------------|---|
| ACC | Accident Compensation Corporation |
| ExerciseNZ | The Exercise Association of New Zealand |
| ICREPS | Confederation of Registration of Exercise Professionals |
| NZ | New Zealand |
| NZIHf | New Zealand Institute of Health and Fitness |
| NZQA | New Zealand Qualifications Authority |
| REPS | Register of Exercise Professionals |
| SE&NZ | Sports & Exercise Science New Zealand |

For my mother, Louise Lamontagne and my father, Professor Morris Altman, who instilled in me a love of economics as a child that has never left me and the belief that the written word could have a lasting impact on society.

Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

[QUT Verified Signature](#)

Hannah Altman

March 12, 2020

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1.0 Introduction

The focus of this thesis is to examine the quality of exercise practitioners in the New Zealand fitness industry. Since quality is an unobservable variable, we use as our proxy the practitioner's level of education, or human capital, as a measure of quality. We then explore the possible inefficiencies within the industry given the issues with quality we identify. To achieve this end, we develop an original data set from publicly available information on the qualifications and certifications of exercise professionals and their gyms as well as an information set of human capital formation in this industry.

We investigate the hypothesis that the quality of fitness practitioners in the New Zealand industry has been falling over time. This hypothesis is confirmed in this thesis. We further aim to explain why this is the case. We argue that quality has deteriorated given that decision-makers live within an environment of abundant, imperfect and asymmetric information and are driven by both the supply and demand sides of the market which interact dynamically. In this environment, the quality of signaling, or how exercise practitioners signal their ability to prospective clients, plays a critical role in determining the demand for exercise professionals and gyms. We argue that the principle quality signaling device in New Zealand, the Register of Exercise Professionals (REPs), is inadequate and thus the identified deterioration in the quality of exercise practitioners in New Zealand is a product of the weakness of this signal given imperfect and asymmetric information. This has serious ramifications for the overall health and welfare of customers or clients serviced by the fitness industry.

Understanding this process, and the causes underlying the inadequacy of REPs as a signaling device, can contribute to making the New Zealand fitness industry more efficient. By so doing, we can reduce the extent to which imperfect asymmetric information confuses consumers and thus generates sub-optimal choices when choosing a fitness practitioner. We also argue that having a better understanding of the structure and incentives within the industry has the potential to reduce the number of gym injuries that have been increasing steadily over the past decade. Preventing or minimizing such injuries can help improve New Zealanders' overall health outcomes by reducing involuntary periods of sedentary activity due to injury. As well, another key spillover, will be the costs savings generated for New Zealand's system of government funded no-fault accident insurance, known as the Accident Compensation Corporation (ACC). Any reduction in gym injuries will decrease the costs to this program thereby helping make the

ACC more sustainable in the long run. Currently, the present fitness architecture in New Zealand serves to incentivize moral hazard behavior amongst exercise professionals.

Consequently, we find that the New Zealand industry is caught in a race to the bottom with respect to the quality of exercise professionals. This is taking place despite the emergence of well-intentioned industry training organizations and industry led accreditation bodies who are interested in ensuring that this does not happen. Their legitimacy is grounded in their concern with protecting the interests of all stakeholders in the industry, be they potential fitness clients, gym owners, the New Zealand health and fitness sector at large and the people of New Zealand, from the consequences of a deterioration in practice standards within the industry (ExeciseNZ, 2019; REPs “What we do,” 2019; NZIHF, 2019). But why the opposite is happening, we postulate, may be a tale as old as time itself, namely, simple regulatory capture, or in this case, self-regulatory capture given the weak regulatory and highly competitive environment which characterizes the industry presently. This makes it nearly impossible for gym owners and other interested organizations to reverse this trend without government intervention.

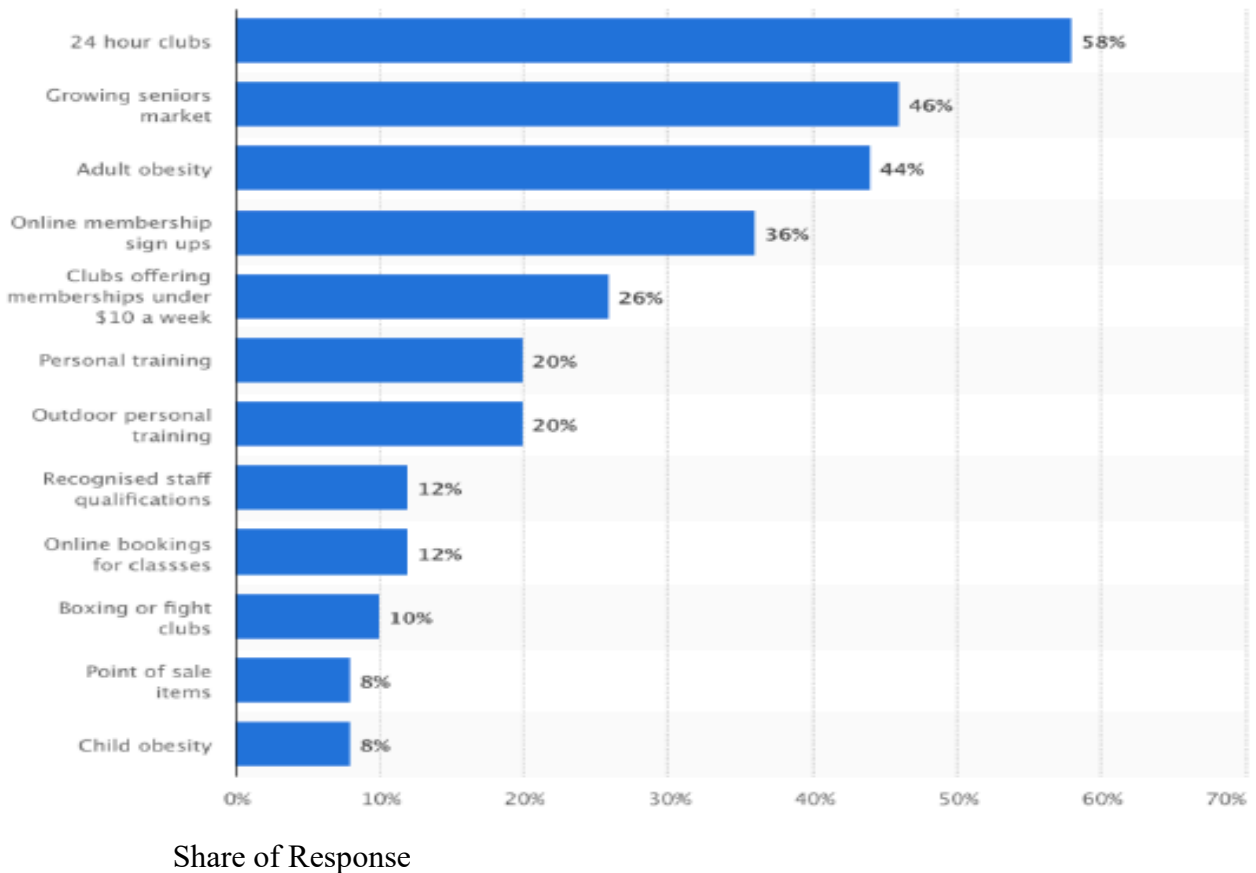
The New Zealand fitness industry exists within a relatively weak regulatory environment. No minimum standard of education is required to work within the industry (Ministry of Business, Innovation & Employment, “Occupational Outlook, Sports and Fitness Professionals,” 2019). The principle self-regulatory body that has emerged to insure some practitioner standards are created and maintained is controlled by gym owners who are concerned with minimizing labour costs, which is most easily achieved by hiring lower quality workers. What is lacking in the New Zealand industry, we conclude, is a set of minimum standards of qualification for practice that are transparent and legally enforceable. Such standards will make it easier, in the long run, for the fitness industry to remain fit for purpose and meet the needs of its diverse client base. In other words, the New Zealand industry should consider accepting minimal occupational licensure laws for their industry as this would stimulate the hiring of higher quality exercise professionals and make standards clear to clients so their choices would further incentivize the hiring of higher quality exercise professionals.

1.1 The Growth of the Fitness Industry

Demand for services from the fitness industry in New Zealand has exploded in the past two decades. This has been driven by people seeking ‘wellness’ as well as innovations, such as the 24-hour gym and lower cost wearable technologies like smart watches and heart and pulse monitors, which have made it easier to train. (Statista, “Fitness industry growth area,” 2016). The Exercise Association of New Zealand, the industry’s premiere lobby group for facility owners which claims to have over 85% of facility owners as members (ExerciseNZ, “A little about us,” 2019) points out there has been uninterrupted growth for their industry over the past 10-15 years, with growth ranging between 2-5% per annum (RNZ, Fitness industry in New Zealand raking big profits,” 2019). This growth appears to be estimated in terms of gross revenue. The gross output of the New Zealand fitness industry was estimated to be \$567 million in 2018 (NZIHF, 2019). Moreover, the industry association proudly heralds the fact that these *companies are taking the costs out of the healthcare system*” (emphasis ours), helping the governments trim (*their*) healthcare budget (Ibid, par. 3). This argument follows a similar line forwarded by Fitness Australia nearly a decade ago when they sought to emphasize such terms as ‘avoided health care costs’ and ‘increased workforce participation rates and increased productivity’ as important, albeit indirect, contributions made by their fitness industry (Access Economics, 2009).

But despite this growth, industry surveys produced by private research firms like Statista (“Fitness industry growth area,” 2016) or Ibisworld (“Gyms and Fitness Centres,” 2019) suggest that while demand for fitness services are increasing, the industry is facing a tightening in revenue growth because of falling average membership fees as a result of consumer preference for 24-hour gyms and increased competition (Ibid.) (Figure 2.1). In a study of the Australian industry, Ibisworld describes the effect of 24 hour gyms on reducing wage costs in “Great Shape: The lower wage costs of budget 24-hour gyms have boosted profitability” (“Lower wage costs boost profitability,” 2016).

Diagram 1.1. Statista Survey (2014): Areas of growth for demand within the NZ fitness industry



Source: Retrieved from <https://www.statista.com/statistics/689966/new-zealand-growth-areas-of-fitness-industry/>

The rapid growth within the fitness industry over the past decade is not unique to New Zealand. It appears to be a global trend, as more and more emerging economies are producing a growing middle class which finds itself with both the desire and the ability to engage the services provided by the industry. In China, for example, the fitness industry has witnessed a 4.9 % growth rate in the demand for services and has an estimated 280 million users (Shu Han, 2019). India, a relatively late rapidly developing economy, has an even more impressive 10.2 % growth rate, with nearly 130 million users (Statista, India, 2019). Even in the USA, where the fitness craze began some forty years ago, the market has yet to be saturated (Midgley, 2018). What lies behind this exploding demand, however, is complex and varied in each country, but the desire to be healthier and live fitter, longer lives, appears to be a driving force globally (Ibid).

What makes the New Zealand case so compelling, however, is the unique relationship between its fitness industry and the institutional infrastructure it finds itself operating within.

Fitness in New Zealand is marketed as medicine, specifically in government programs like Green Prescription, wherein doctors can prescribe exercise as a required ‘medicine’ and the costs are covered or subsidized by the state (Harris et al, 2016; Ministry of Health, NZ, “How the Green Prescription Works”, 2019), or, as with the case of the Ministry of Health sanctioning programs offered by or recommended by specific private organizations and providers (Ministry of Health, NZ, 2019). Despite this, it bears repeating that there are, in New Zealand, no regulatory minimum standards of practice for practitioners within the fitness industry. Rather, the Ministry of Business, Innovation and Employment states that an “NCEA Level 2 (high school) biology, science and physical education is *recommended* (*emphasis ours*) for those wanting to become a fitness instructor (Ministry of Business, Innovation & Employment, “Occupational Outlook, Sports and Fitness Professionals,” par. 9, 2019). The corollary would be, for all practical purposes, not requiring nurses or doctors to meet set minimum standards of training.

All of this takes place within a context of a no-fault insurance scheme, administered by the Accident Compensation Corporation of New Zealand (ACC), which guarantees that all injuries taking place in the gym or when exercising are covered by a universal cover available to all people living and working within New Zealand. Moreover, this no-fault scheme removes the right of the client to sue the practitioner for malpractice if injured while training (see ACC below; see also, Ebrahim et al, 2013).

What immediately comes to the mind of an economist is if, in the absence of any minimum standard of training, this situation presents the industry with a problem of moral hazard. Moral hazard exists when an individual who makes a risky choice benefits from positive consequence of this choice, but does not bear the costs of any negative outcome. In this scenario, practitioners may be incentivized to take greater risks in the choices that they make. For example, they might practice beyond their scope and skill set in search of greater income, even when this might result in injuring their clients, given that they don’t bear the cost of injuring their clients (Arrow, 1963,1965). The same can be said of the gyms that engage the services of exercise professionals.

In the absence of minimum standards of qualification in the fitness industry, nothing precludes a completely untrained fitness practitioner from setting up shop in New Zealand and ‘filling out’ green prescriptions by developing and offering training programs to unsuspecting clients. The ability to do so has been facilitated by the advent of social media where costs to practitioners to advertise their wares and establish online ‘credentials’ have collapsed and where ‘sexy heuristics’ (what you look like) appear to dominate—personal trainers are considered amongst the sexiest occupations for both men and women on Tinder (Independent, 2016). Hence

the gate keeping functions that any form of regulatory body might have has been left solely to the industry itself.

The appearance of self-regulatory bodies in New Zealand, like the Register of Exercise Professionals or REPs, may be viewed as an attempt by industry to deal with ‘cowboy like’ behaviour in the absence of adequate formal regulations introduced into the industry’s space. New Zealand is not alone in dealing with this phenomenon. Different countries have established different approaches to regulating their fitness industry, however few appear to be as *laissez-faire* as New Zealand. Australia, for example, requires registration by Fitness Australia or Physical Activity Australia which requires minimum certification, which aside from First Aid and CPR and Year 10 leaving, would be a Certificate 111 in Fitness (Good Universities Guide, 2019). Similarly, in the US, minimum requirements are a high school leaving certificate, completed CPR and AED (automated external defibrillator) certificate programs, and a training certification of some kind. For example, a group fitness instructor requires a 80-100 hours or a 3-4 months certification program, (ACE, 2019).

1.2 Definitions and Data

In this thesis we make reference to the New Zealand fitness industry. Others might refer to this as the exercise industry although this is not an especially popular term. Specifically, the fitness industry is best taken to a part of the larger sports, recreation or wellness industry, or as others refer to it, as the health and fitness industry. Statistics New Zealand and New Zealand government bodies and organizations like the ACC, the New Zealand Qualifications Authority (NZQA), the Ministry of Health, the Ministry of Business, Innovation and Enterprise, all employ a variety of terms to refer to the industry. Statistics NZ, for example, counts employees within the sector under various categories depending on the role they play within a workplace or how they self-identify (Statistics, NZ, 2001).

The industry itself makes use of a variety of terms. Skills Active, a not for profit, private but predominantly government funded industry training organization “responsible for setting and quality assuring academic standards in the line with the fitness industry’s needs” (NZIHF, “Skills Active”, par, 2019) refers to the fitness industry. On the other hand, the Exercise Association of NZ, founded by the former Skills Active Chairman and CEO, Richard Bessie, refers to the exercise industry (ExerciseNZ, 2019). These terms are catch all terms which essentially refer to

the same thing. Hence, to avoid confusion we use one term, the fitness industry, to refer to the exercise and fitness sector of the economy.

Given the objectives of this thesis, we must examine the specific types of qualifications practitioners who direct exercise, either working in gyms or as independent contractors, hold. This refers to practitioners engaged in the fitness industry. To this end, data are drawn from their publicly accessible social media accounts. No data with respect to individuals are drawn for this purpose from Statistics NZ or the Ministry of Education. No private or personal data were accessed for this thesis. Hence there are no ethical issues over the data is being counted and analyzed.

1.3 Hypotheses and Aims

This thesis provides a detailed description of New Zealand's fitness industry inclusive of its accreditation agency and its no-fault insurance scheme. Relatedly, this thesis examines why there appears to be a decrease in the quality of labor supply in the New Zealand personal training industry.

An original data set is constructed from publicly available data on accreditation of gyms and exercise professionals in New Zealand. These are used to test the hypothesis that accreditation of exercise professionals as it is practiced in New Zealand is a signal of the quality of gyms and exercise professionals. In a world of imperfect and asymmetric information, signalling is a vital instrument to inform customers of the quality of service that can be expected from a provider. We find that in New Zealand accreditation does not provide a useful signal of quality.

We hypothesize that signalling affects not only the demand for particular gyms and exercise professionals, it also affects human capital with regards to the quality of exercise professionals as measured by the level of certificate or degree obtained by the exercise professional. Since accreditation in New Zealand does not clearly signal quality, we hypothesize that this should disincentivize the supply of the relatively higher quality exercise professionals. We find that this hypothesis is affirmed by the available data. This hypothesis is grounded in economic theory, particularly labour economics and behavioural economics.

Failures in New Zealand's accreditation system, by providing poor signals on gym and exercise professional's quality and, thereby, negatively impacting on quality human capital formation with respect to exercise professionals, contributes to an explanation of the relatively

high injury rates experienced by customers in New Zealand's fitness industry. This situation is exacerbated by New Zealand's no-fault insurance scheme (ACC) that acts to incentivize practitioners to minimize their training, thus lowering the overall quality of labour supply available in the industry.

This thesis reinforces the perspective that, in a world of imperfect and asymmetric information, the quality of signals is critically important. Failures in the provision of quality signals, especially when combined with a no-fault insurance scheme, generates unnecessary harm to customers and unnecessarily high cost to society at large.

1.4 Short Overview of Key Literature

Gary Becker (1962,1964) in his ground-breaking analysis argued that people make choices in investing in developing their human capital, their skill set, based on perceived rational benefits which include a return on their investment. Over the next five decades his insights have informed tens of thousands of studies on the economics of education and training where education and training are investments which improve productivity but are also expected to generate a return. For an example of more general empirical analyses see, Card (2001), Mincer (1958, 1974) and Psacharopoulos (1973).

Acemoglu (2002) and Goldin and Katz (2008) detail the expansion of higher education since the 1980's and the increase in the college wage premium that accompanied this expansion in the United States as evidence of this relationship. Other recent studies (Lechner & Sari, 2015; Lloyd & Payne, 2018) have affirmed this relationship in the sports and exercise industry in Canada and in Europe.

While quality of training may be subjective, a number of studies, Malek et al (2002), Waryasz, et al (2016a), Waryasc, et al, (2016b), detail the very strong positive relationship between higher education of trainers, particularly those with a bachelor's degree, and lower rates of injuries amongst training clients as evidence of the higher quality product on offer by those trainers willing to invest in their skill sets. Thus, education or qualifications have often been a marker or signal to clients to assist them in sorting through their options when choosing a trainer.

Just how consumers may make this choice is a purview of behavioural economics. Choice and decision-making cover a complex and substantive area of this field of study. Herbert Simon (1959) and his intellectual successors, many of whom have been awarded the Nobel Prize in Economics, have given rise to a formidable and diverse block of literature dealing with this topic.

At the heart of this literature is the recognition that while reality is complex, human cognition is limited. Therefore, it is impossible for decision makers, such as the proverbial client seeking to employ a trainer, to have an exhaustive knowledge of all the possible alternatives before them, nor will the client ever be able to adequately rank these alternatives. Moreover, behavioural economics rejects the proposition, as forwarded by standard economics, that it is possible to calculate the respective costs and benefits inherent in this search process and find an optimal solution. Rather, the notion of bounded rationality holds that these clients instead will search to make a *satisficing choice*, or the best possible choice given all the constraints and opportunities they face. However, the quality of choices of potential trainers provided by the market may not be ideal because of what George Akerlof (1970) has termed ‘the market for lemons.’ The quality of goods traded in any market, he argued in his benchmark paper, may be seriously degraded by the existence of information asymmetry between buyers and sellers. Information asymmetry often results in buyers having only a choice between lower quality products, the so-called ‘lemons’, as lower prices drive away sellers of higher quality goods since consumers have difficulty in distinguishing between lemons and higher quality products.

This holds true unless there is some mechanism such as institutional regulation to prevent this from happening. Shiller (2008) further reinforces this point when discussing the impact of imperfect information on financial markets and the consequences of poor or deceitful information not only on the individual buyer, but on the larger economy and society. In the presence of incentives that drive down prices and/or allow the unscrupulous to invade or practice in a field, the need for some form of standards and regulation becomes paramount. Recent work by Whyte and Torgler (2017) demonstrates how there are built in limits to such deceptive practices such as lying even in an on-line dating form, meaning that it is possible to compensate for such practices. However, any recourse or regulations must be credible and enforceable. The REPs accreditation in New Zealand, which has become a popular ‘gold standard’ in the personal training industry, was an attempt to address deceptive practices within the system. However, instead it has served the opposite purpose in that it acts as a barrier in the labour market to those with higher levels of education by effectively levelling all credentials into a single measure of standard. This point is driven by consumers having the information to make a binary choice, either a REPs or non-REPs certified practitioner. And the REPs practitioner need not be the most qualified of the two.

Clients seeking the services of a personal trainer/exercise scientist are uninformed of this practice. They are commonly faced with making a choice between providers, armed with incomplete and asymmetrically distributed information, information often forwarded by said

providers. Economists make use of signaling theory to explain such inefficiencies, as signaling theory is fundamentally concerned with reducing information asymmetry between two such parties. It can be useful in describing how providers might adopt behaviors to reduce this asymmetry, for example, by advertising their accreditation to signal quality. Signaling theory follows on the work of Michel Spence (1973; but see the original contribution by Stigler, 1961). In Spence's seminal study, he demonstrated how signals affected job choice in the market but noted that these signals are only good if they enable signalers to set themselves apart from the rest. Spence's signaling theory has gained tremendous momentum in economics, as well as in other fields such as psychology, management and anthropology over the past four decades.

Davis (1991 as cited in Kirmani and Rao,2000) showed how brand names signal quality and reduce asymmetric information while Boulding and Kirmani (1993) illustrated how companies faced with asymmetric information can signal customers as to the superior quality of their products, for example, through warranties. Erdim et al (1998) demonstrate how signals for a product's superior position can increase perceived quality and decrease information costs and risk perception by customers. More recently, important work by Chan (2013) on signal jamming and Jordan et al (2017) on false signaling provide important insights into how signals, while effective in reducing information asymmetry, may at the same time hamper the effective decision making ability of consumers by reducing their trust in signals and thereby increasing their perception of the risk involved.

One of the arguments presented in this thesis is that the conventional model on the expected returns to the qualifications of exercise professionals, the predicted benefits accruing to customer and clients based on trainer qualifications, and predicted 'optimal' choices made by exercise professionals and clients, must be modified to take into consideration behavioural and institutional variables that affect decision making. The rates of return are affected by the bounded rational decisions made by both exercise professionals and clients, especially when signals are imperfect (noisy) or even misleading. In this case, choices can be expected to yield sub-optimal outcomes, that can be improved upon by repairing the imperfect decision making environment.

One of the objectives of this thesis is to explain is how the problems within the New Zealand personal training industry, are an amalgam of the issues addressed in this literature review. This thesis will be a first of its kind in offering such an analysis.

1.5 The Registry of Exercise Professionals (REPs) and the New Zealand Accident Compensation Corporation (ACC)

The organizational architecture fitness practitioners work within in New Zealand is relatively straight forward. Practitioners will work for themselves, for employers or work as contractors. Their place of work may be anywhere, a gym facility, a garage, a park, an office, a hospital etc. With few exceptions, nothing precludes them from training clients where needed or requested. Should a client be injured while training, either through accident or incompetence, they have access to ACC to cover some, or all, of their rehabilitation costs depending on the client's injury and personal circumstances. Thus there is no need for a practitioner to hold personal liability insurance for personal injuries as the client, in almost all cases, will have no recourse to the courts to sue for damages (see ACC below). Now, the same cannot be said should a practitioner drop a weight on the client's mobile phone. Here the client has recourse to the courts, but then REPs and the in-house insurance program they sell can help with that (REPs, "REPs Professional Insurance," 2019).

What is not as transparent are the relationships and associations between the various not-for-profit industrial training organizations, like Skill Active NZ- formerly Sports Fitness and Recreation Industry Training Organization or SFRITO (Australian Leisure Management, 2009a)- which was set up by the industry for industry and is funded by the Tertiary Education Commission (Skills Active, "Our Organization", 2019)- and other not-for-profit accreditation programs we discuss below, REPs or it's international version, ICREPS, and, further, not-for-profit industry associations like the Exercise Association of New Zealand and gym owners.

The voice and face of the fitness industry in New Zealand, since 2000, has been Richard Beddie, who helped found REPs NZ. He has been CEO of ExerciseNZ since 2000. He is also a founding director of the International Confederation of Registers for Exercise Professionals (ICREPs) in 2010, was Chairman of the Board from 2013-2016 and is presently the Board's Chief of Staff. Beddie was also the Chairman of Skills Active from 2001 until 2010 and a director until 2013 (Skills, Active, 2010, p.21; LinkedIn, 2019). It was not uncommon for all three organizations to provide joint but proprietary activities, like free admission to road show workshops for "managers and sales staff at Fitness NZ member clubs, trainees and graduate of Skills Active, and PTs registered with the NZ Register of Exercise Professionals "(Australian Leisure Management,, par. 4, 2009b).

1.5.1 REPs

The Registry of Exercise Professionals (REPs) is a not-for-profit registration body claiming to have between 3000-4000 or 70% of registered exercise professionals, exercise facilities and exercise providers in New Zealand (REPs, “A Guide,” 2019). Its stated purpose is to provide an independent verification process for the credentials held by its membership to ensure that exercise professionals and fitness facilities meet the ‘standards deemed required to provide safe and effective exercise advice’ (REPs, What we do’, 2019). It’s mission they write is “to serve a range of stakeholders, including the public, allied health professionals, and employers” (Ibid, par., 2019).

REPs is a wholly owned and privately held entity created by and maintained by the Exercise Association of New Zealand, the country’s fitness industry association. It was set up in 2001 as a partnership between ExerciseNZ and SFRITO, now Skills Active. Until April 2018, REPS operated as a separate entity, and while wholly owned by the Exercise Association, functioned as a separate corporate structure and was accountable to its own board. However, after April 1, 2018, the relationship between both organizations was streamlined and REPs became a division of the Exercise Association, now governed and fully accountable to the Exercise Association’s board (ExerciseNZ, 2018; Changes to REPs, 2018).

REPs offers its members a variety of services. First and foremost, it states, “ the majority of exercise facilities in New Zealand (are) only using the services of REPs Registered Exercise Professionals” (REPs, Benefits of REPS Registration, par. 1, 2019). Other services include additional public indemnity insurance packages, discounted ongoing education courses, as well as a host of discounted products and services. REPs NZ is also a member of the International Confederation of Registers for Exercise Professionals (ICREPS), an international partnership of registration bodies now found in 10 plus countries around the world and thus REPs NZ certification are internationally portable to member countries (REPs ‘Global Recognition, 2019), for a fee. It’s CEO and director is Richard Bessie. All member countries operate independent registration systems, and only one registration system per each member country is permitted to join ICREPS. ICREPS does not review courses nor does it set standards. Rather it acts as a clearing house for international accreditation transfers (ICREPS, 2019).

The Exercise Association of New Zealand is itself a not-for-profit representative organization whose mission is “to proactively support a sustainable exercise and fitness industry in NZ by growing participation ‘in structured exercise through advocacy, information and by setting industry standards.’ (ExerciseNZ, “A little about”, par. 1, 2019). This industry association is based in Christchurch, South Island, and was originally incorporated under the name Fitness New Zealand in 1993 but in 2014 rebranded itself as the Exercise Association of New Zealand (ExerciseNZ, “A little about”, 2019) and operating under an incorporated society structure Exercise NZ’s members are organisations that provide services within the health/fitness/exercise industry, the majority of which are organisations that operate fitness/exercise facilities (such as fitness centres and health clubs). Exercise NZ’s membership is wide and diverse, and includes commercial operators (e.g. Les Mills, CityFitness and Contours along with hundreds of single site independent operators), non-profit organisations (e.g. YMCA) and local government council facilities. Exercise NZ states it has over 250 members, which represents approximately 85% of the industry (ExerciseNZ, “A little about”, 2019).

REPs was created by the Exercise Association in New Zealand in its effort, it argues, to impose some quality control over the industry. On the REPs website and as part of its information package, it states:

The vast majority of those working in the exercise industry are reputable, honest and professional. Unfortunately, like any other industry, not all persons/facilities are up to the required standards or professionalism you may expect. Therefore, REPS registration gives independent verification that a registered individual/facility meets the industry standards on an ongoing basis (REPS, “What we do”, par. 3, 2019).

As a division of the Exercise Association of New Zealand Inc, REPs receives its strategic direction and governance from the Exercise New Zealand board. Even before the streamlining in 2018, the two ‘independent boards’ and staff were closely tied. According to its 2018 website, prior to the split, REPs employed four employees. Its not-for-profit financial filings for 2018, prior to the split, state it had a total payroll of \$287,000 per annum in 2018 (ExerciseNZ, Board/Staff, 2019). The four employees are listed as the CEO, Stephen Gascall, also sits as a director of the International Confederation of Registers for Exercise Professionals (ICREPS), a web specialist who runs the web pages and organizes the FitEx show, a registration secretary who handles registration applications, and an employee of Exercise New Zealand “who helps out during busy periods” (REPs, “Who we are”, 2018). On the 2019 Website, these same employees

are listed under the Exercise NZ REPSs team heading as part of the Exercise Association of NZ Board/Staff (ExerciseNZ, Board/Staff, 2019).

A REPs registration is advertised as an effective ‘warrant of fitness’ (see ACC and Moral Hazard below) or a de facto guarantee of quality of a registered fitness professional as “REPs registered trainers have the knowledge, up to date skills, and professionalism to help you reach your goals safely and effectively” (REPS, “Why use a REPs registered trainer?” par. 1, 2019). As part of a yearly registration process trainers must show that they have completed ongoing education courses or certificates. These are measured by a system of credits called Continuing Professional Development (CPD) points. Each year to reregister an exercise professional must complete 10 CPD points from “REPs recognized CPD providers” (REPs, “Continuing Professional Development, par. 2, 2019). These ten CPD credits are the equivalent, according to REPs, of one day education which includes an assessment of some sort (Ibid). The courses for credit on offer cover a gamut of things. Offerings for one credit include; MishFit- pregnancy and post-natal training for personal trainers; or for 5.5 credits, COM Marketing, Social Media Marketing; or for 13 credits, Fitness Education Online-Social Media for Personal Trainers: Instagram Essentials; or for 20 credits , Holistic Performance Institutes Graduate Certificate in Holistic Performance Nutrition (REPs, Continuing Education Providers, 2019). This can be compared to their stance on an exercise degree from a tertiary provider. *“Successful completion of a full higher education degree in exercise prescription/science or related subject degree (point allocation confirmation at the discretion of REPs)-10 CPD points”* (emphasis ours) (REPs, “Continuing Education Development Points”, par. 9, 2019).

1.5.2 Who gets REPs certified?

REPSs provides no clear information as to how fitness credentials are vetted, nor by whom within their organization. In the absence of any specified or transparent criteria for REPs accreditation, one need look at two prominent cases that suggest that it would be prudent to assume that credentials for practitioners are given REPs verification only if practitioners have completed courses offered by REPs approved training providers who by definition are REPs members. Take for example the case of graduates of university exercise science programs. Until recently, there is much anecdotal information concerning the fact that most university graduates with bachelor and post graduate exercise degrees found they were not able were get REPs certification without first completing a REPs accredited or sanctioned course, as their universities

were not REPs registered as education providers. Increasingly more university programs are becoming members of REPs (REPs, 2019).

Most university graduates are registered with Sport and Exercise Science New Zealand (SESNZ), where a minimum qualification for registration is a tertiary or level 7 qualification, or as in the case of the SESNZ Level 1 Strength and Conditioning Accreditation, the completion of two years of university in a sports and exercise program plus 16 hours of training SESNZ (SESNZ “Accreditation”, 2019). SESNZ has also seen fit to invest in Skills Active and has become the first equal shareholder together with the Exercise Association of New Zealand in an effort to improve and promote the proper use of exercise science and technology in the New Zealand fitness industry (Skills Active Shareholder Allocation, 2018).

These complaints about REPs, however are anecdotal. A more famous example is that of the public dispute between REPs and ICREPS Chair Richard Beddie and CrossFit International. In 2014, Beddie claimed programs like CrossFit and Zumba were responsible for a dramatic increase in gym injuries in New Zealand and up to six deaths internationally. CrossFit trainers, Beddie claimed, were bad for your health as they were not taught how to exercise correctly (Stevenson, 2014). It was reported, however, that Beddie allegedly offered to register all CrossFit trainers in the REPs registry for \$400.00 dollars a year per trainer without supplementary training. CrossFit responded by branding REPs NZ and ICREPs a ‘protection racket’ (CrossFit, 2019). In March of 2019, five years after the initial allegations, Beddie finally admitted there was no evidence that CrossFit instructors were responsible for rising injuries in New Zealand gyms or deaths internationally and issued an official apology to CrossFit International (Ibid). Despite these controversies, REPs has been making the case forcefully since 2016 that “making REPs registration mandatory ‘would provide the New Zealand public with safer exercise advice” (Cleaver, 2016).

1.5.3 New Zealand Accident Compensation Corporation (ACC)

In 1974, New Zealand introduced a world leading no fault accident injury compensation scheme, one rooted in the idea that the community ought to bear the responsibility for caring for the injured (Foley, 2006). It is not unlike the idea of universal health care, wherein the community bears the responsibility for looking after the sick.

The Accident Compensation Corporation (ACC) is the New Zealand Crown entity which administers the country's universal no fault accidental injury scheme. The scheme provides financial compensation and support to citizens, residents, and temporary visitors who have suffered personal injuries in New Zealand. The corporation was founded as the Accident Compensation Commission in 1974 and as a Crown entity, ACC is governed by a board responsible to the Minister. Since 1992 the ACC it has its own dedicated ministerial portfolio (ACC, "Our History", 2019).

ACC is the sole and compulsory provider of accident insurance in New Zealand for all work and non-work related injuries. The ACC Scheme is administered on a no-fault basis, so that anyone, regardless of the way in which they suffered their injury, is covered under the scheme. Due to the scheme's no-fault basis, people who have suffered personal injury do not have the right to sue an at-fault party, although in some very rare cases, putative damages have been allowed (Foley, 2006; ACC, "What We Do", 2019).

The scheme provides a range of entitlements to injured people but about 90% are for treatment costs only (Carse, 2016). The fund is primarily fed by levies and government contributions. The injured are paid from different accounts set up within the fund. There are four principal accounts, which are fed from levies that pay for injuries sustained in the related area. For example, the Work account, is fed by levies from employers and the self-employed and pays for work related injuries. Gym injuries are for the most part considered non-work related, unless one is a gym employee, and are paid for from the earner's and non-earner's accounts, which are primarily funded from a dedicated income tax levy for the former and by government general tax pool for the latter (ACC, "How levies work," 2018). In effect, if a client is injured by their trainer, the funding source is a function of whether *the client* is an income earner or not. If the client is employed, it comes from the earner's pool. So, in effect, the client is providing the practitioner with their own personal injury cover.

1.6 ACC and the Case for Moral Hazard in the Fitness Industry

As previously mentioned, moral hazard arises when there are inadequate incentives to guard against unusually risky behaviour. This typically is assumed to be the case when one is protected from the consequences of one's risky behaviour. One reaps the profits derived from risky behaviour, but one does not bear the costs of losses when incurred. Rewards are

asymmetrical. No fault insurance is generally taken to be the clearest example of incentivizing moral hazard behaviour (Ebrahim et al 2013). However, the insurance scheme does not exist in a vacuum and thus, one needs to look at other organizations or structures that would serve to mitigate the risk of such behaviour (Ibid). Such is the case with motor vehicle accidents in New Zealand. New Zealand has established a series of organizations and programs that try to mitigate motor vehicle accidents (Howell, Kavanaugh & Mariot, 2002). The most important is the Warrant of Fitness Program (WOF), a government administered quality assurance program which ensures that all motor vehicles on New Zealand roads meet minimum physical and structural standards, and pass compulsory periodic safety inspections, the frequency of which is a function of the age of the vehicle (NZTA, 2019). Not surprisingly, REPs bills itself as the WOF program for the Fitness industry, as they state, “Registration is like an annual warrant of fitness” (REPs, “What we do”, 2019).

1.6.1 Gym Related ACC Claims Keep Rising

It is well beyond the scope of this thesis or any master’s thesis to examine the nature of ACC injury claims put forward by people injured when accessing the services in the fitness industry in New Zealand. However, recently, increasing attention is being paid to rising injuries within the New Zealand fitness industry. In 2015, New Zealand’s Sunday Star-Times reported: “New statistics from Accident Compensation Corporation (ACC) show a staggering rise in the number of claims from injuries Kiwis have suffered while exercising.” (Stevenson, par. 4, 2015). The article continues that 23,325 exercise related claims were made to ACC in 2014, an increase of over 10,000 from the previous two years. The article also stated that ACC spent about \$330 million on sport and recreation claims annually, with gym and fitness related injuries accounting for the third highest total of claims behind full body contact sports like rugby and football (Ibid).

Richard Beddie, who was interviewed for the article, made the point that there had been a 35% increase in gym users in the past five years, but that the gym injury rate was growing faster than the participation rate. He then stated that he believed the drivers of these new injuries were programs like CrossFit and Zumba (Stevenson, 2015; CrossFit, 2019). He claimed that CrossFit was also responsible for numerous deaths in the United States (Stevenson, 2015). The rise in injuries in New Zealand was so alarming that it had prompted the ACC and Exercise New Zealand to launch a research program into these injuries. The results of such research have never

been made public, if it was indeed undertaken. It should be remembered, however, that recently Beddie apologized to CrossFit and their trainers stating that there was no evidence to back his claim that CrossFit was responsible for the increase in injuries in NZ nor for any deaths in the US (Crossfit, 2019).

In 2015, ACC reported 56,095 gym related claims lodged, in 2016 this rose to 61,493 claims, and 61,983 in 2017 and in a whopping 69,022 claims in 2018 (Clent, 2019). Increasingly it is being argued in New Zealand that gym injuries were not a fit use for public money as ACC and gym injuries are rapidly catching up with injuries sustained in full contact sports like rugby union (Caldwell, 2017; Bowron, 2018, Redi, 2018). By 2017 it was reported that ACC was spending over 540 million dollars a year on sports and gym related injury claims, more money in fact than they were spending on road crashes (Caldwell, 2017). ACC figures from 2016 onwards showed the gap closing between the numbers of claims from New Zealand's biggest contact sport – rugby – and claims related to fitness training accidents at the gym (Caldwell, 2017). Beddie has argued that these numbers reflect the use of internet and online training videos and such practices are partly responsible for the continued rise in gym injuries in New Zealand (Australian Leisure Management, 2019; Clent, 2019).

It was also reported that amongst the claims for gym injuries lodged in 2017, there were 783 for fractures and dislocations, 177 for dental injuries, 13 for hernias as well as 52 for brain injuries or concussions (RNZ, 2018). Claims in 2017 involving treadmills numbered 1514, weights numbered 6566, and crosstrainers and spin cycles slightly over 300 (Sargent, 2018). Such new claims represented an increase of 66% increase from 2011 (Ibid), while the cost of these new claims to the ACC rose a reported 156% (Sargent, 2018). Richard Beddie who was interviewed once again confirmed that while the number of people exercising and exercising in gyms during this time had increased, the rate of injury increased disproportionately. Once again, he stated the Exercise Association was working with the ACC to identify the causes as both organizations were equally concerned and baffled by the rapid rise of injuries (RNZ, 2018).

The case is being made with greater frequency in New Zealand that the gym is becoming a more dangerous place. This rise in injuries is argued to be the product of many factors, not least of which that this the industry was too lightly controlled-or regulated as “(a)nyone can call themselves a personal trainer” (Reid, par. 14, 2019; Press, 2018). There is a consensus that what is need are ‘good qualifications’. However, the questions must be asked if good qualifications can be conflated with REPs accreditation as the industry is wont to do. In the next chapter we will

examine this question, or, in other words, does REPs represent as a signal of quality in the New Zealand fitness industry.

Chapter 2: Is REPS a Positive or Negative Signal of Quality Using years of Education as a Proxy for Quality?

2.0 Introduction

In this chapter, we address the impact REPs has as a signalling device for the fitness industry in New Zealand. Remember that the Exercise Association of New Zealand stated they introduced REPs to give “independent verification that a registered individual/facility meets the industry standards on an ongoing basis” and thus act as a positive signal of quality (REPs, “What we do,” par. 2, 2019).

Trying to measure quality is always fraught with problems. But despite this, in the long run, measuring quality becomes central if one recognizes that poor quality trainers within the industry may not only account for higher rates of injury (see above) but can act as a barrier for clients accessing the services of the fitness industry, or indeed any industry (Melton, Katula & Mustian, 2008; Polyakova & Mizra, 2016). Perceptions of quality, which may or may not reflect actual quality, act as a driver of utilization. Provider practices can tend to vary despite the existence of guidelines or standards set by REPs, particularly when there is no formal enforcement mechanism to ensure adherence to standards.

One proxy of quality with a strong pedigree in human capital theory is years of education or level of educational attainment (United Nations, 2016). While other measures would also be closely related to the quality of practitioner within the fitness industry, such as learning by doing as measured by years in the business, for example, REPs is concerned with accrediting the credentials or paper qualifications of practitioners, thus, using years of education is our best proxy for this research, given that REPs is used as quality signal by customers or clients.

2.1 Signalling Theory and the Fitness Industry

In the real world of imperfect information, customers need a method with which to determine which trainer or gym to engage with to meet their specific health and fitness needs. In other words, when consumers don't have perfect information, and information is costly to acquire both in terms of time and money, consumers will locate least cost and perceived quality signals to help them along in their decision-making process. This relates to a point Akerlof (1970) makes in his seminal article “Market for Lemons” wherein he argues that there is a need for a private or public sector solution to imperfect information problems that potentially generate market failures.

For example, imperfect and costly information can lead to a race to the bottom with regards to the quality of product supplied. Decision-makers require the information to be able to distinguish between the different gradations in quality of the product on the market. A signalling device can serve to fill the information gap in the market, assisting consumers in making optimal choices given their preferences. In New Zealand, REPs registration is thought to provide such a signalling device.

If this signalling device reflects objective reality and therefore serves as a quality signalling device, then it would also represent a quality fast and frugal heuristic (decision-making shortcut). Gigerenzer (2007) makes the case that such heuristics, in a world of imperfect and costly information, generate best possible choices as it saves time and money in the decision-making process.

2.1.1 REPS as a Signalling Device and Our Core Hypothesis

If REPs provides a signal of quality of gyms and trainers, where in this thesis quality is measured by the level of trainer qualification in terms of the level of degree or certificate earned, then one would expect that there would be a strong positive correlation or statistical relationship between REPs registration of gyms and trainers and the measured level of quality of gyms and trainers.¹ The core hypothesis (what consumers and industry leaders typically assume to be true) to be tested here is that such a strong positive relationship exists. If this hypothesis is not supported by the evidence, then this challenges the argument that REPs registration is an accurate signal of gym and trainer quality. Our core hypothesis is tested using publicly available data on REPs registration. This data were collected in 2018 from across all major demographic areas in New Zealand, including Auckland, Hamilton, Wellington, Christchurch and Dunedin and is, therefore, geographically representative. These data are representative of most of the gyms in New Zealand.

¹ It should be noted that in some instances non-academic qualifications such as being a leading athlete or years as an exercise professional (trainer in this case), might substitute for a particular academic qualification. But this should not be a dominant variable. Learning-by-doing generates and perfects certain critical skill sets specifically related to a specific sport. But most clients of trainers and gyms are not seeking to improve their capacity to win Olympic gold. They are searching for trainers who can help them meet particular health and fitness objectives, which often requires specific academic qualifications as a prior which can, of course, be supplemented by non-academic qualifications. Moreover, being a former elite athlete does not mean that the skills learnt on the job, as it were, can be automatically or easily translated the skills required to be skilled exercise professional.

2.1.2 Issues with REPS a Quality Signal and Our Core Hypothesis

The main finding on this chapter is that the core hypothesis fails. In other words, REPs registration is not strongly positively correlated with the measured qualifications of gyms or trainers (see 2.8 Results, below, and Appendix 1). And, this correlation is even sometimes negatively correlated. Therefore, REPs registration should not be taken a strong signal for the measured quality of gyms and their exercise professionals. If consumers, however, believe that REPs provides a reliable signal of quality, then they can be expected to choose gyms and trainers, at least in part, based on a gym's and a trainer's REPs registration. A gym's and trainer's objective qualifications related to levels of certification may count for less or even very little in this decision-making environment. In this case, one would predict that the demand for higher quality exercise related labour or human capital would be less than it might otherwise be, in a world with a more robust signalling device. Hence, in this decision-making environment, consumers may not be making optimal choices given their preferences.

Poor signals result in relatively poor consumer choices. This can persist over time if consumers, on their own, can't easily (at low cost) identify a quality product or degree of quality product on the open market. One consequence of this possible error in decision-making can be health outcomes being sub-optimal and clients (customers) suffering unnecessary injuries, given the absence of the expected strong and positive relationships between REPs registration and measured gym and trainer (exercise professional) quality. This situation would be exacerbated by New Zealand's no-fault insurance system as it encourages moral hazard behaviour on the part of gyms and trainers (see Chapter One).

2.2 Who Can Be REPs Registered?

Any individual who has any level of qualification recognized by REPs can be REPs registered and therefore be a REPs certified exercise professional. But it is important to note that the organization that offers qualifications needs to pay REPS to have their qualification recognised by REPS. If the required fees are not paid, then one's qualification will not be REPs registered. Therefore, one can have a low-level qualification that is REPs registered whilst a higher-level qualification is not being REPs registered, if the lower level is gained from a REPs education provider and then registered simply on the basis of a fee payment, and not on the basis of the quality of the qualification. Moreover, there can be two equally qualified exercise professionals, but only one might REPs registered. Selecting a REPs registered trainer does mean

that one is selecting the most qualified exercise scientist or trainer. For an individual to pay for her or his REPs qualification, typically this person's qualification must originate from a REPs qualified organization. This is the prior to an individual being REPs registered (on REPs, 2019; NZIHF, 2019). In September 2018, the cost of a REPs registration varied from \$68.00 NZD for a group exercise leader in a REPs registered facility like Les Mills or City Fitness, or \$293.00 NZD for a personal trainer contractor in a REPS registered facility versus \$412.00 NZD for a PT contractor in a non-REPs registered facility (REPs, "Registration application," 2019).

2.3 Outline of Online Qualifications

Online qualifications typically service the demand from the lowest end of the qualification scale, levels one, two, and three, as well as providing an unending stream of continuing education courses that allow practitioners to maintain their REPs accreditation (see Chapter One).

New Zealand based online providers, like Fit Futures Academy, offer their own bespoke version of a 'Certificate in Personal Training, Level 1'. Offered as a 13-week online module, it is a purely theoretical course and can be completed at the client's pace (Fit Futures, NZ, n.d.). Similarly, City Fitness now offers an online course, a 'Certified Personal Trainer' or CPT under the "The NASM-CPT Premium Self-Study program...(which) can be completed in as few as 10 weeks" (CityFitness, par. 1, [2019](#)). The course holds the National Academy of Sports Medicine brand, one of the premiere institutional brands in health and fitness in the United States.

The space for New Zealand online providers of Level 3 to Level 5 Certificates in Exercise or Personal Training is mainly occupied by New Zealand's Polytechnics and Technical Institutes, see the Table 1 below, which offer most of their lower level certificate programs online. As well, numerous independent providers, such as the Exercise Academy or Fitlink, NZ, offer the most popular product for online fitness certification, the Certificate in Exercise, Level 4.

It should be noted, however, that New Zealanders are not restricted in acquiring their qualifications or accreditations from New Zealand providers. Rather, because there is no minimum requirement to becoming a 'fitness professional' in New Zealand, they can make use of any or all programs and certifications to be found on the internet. Once they have completed the certification of their choice, they can offer a form of credentialism when joining the fitness industry.

New Zealand consumers of online personal training courses and certifications, as in most other countries around the world, have a cornucopia of choices available to them. Online offerings from outside of New Zealand appear heavily weighted towards fitness and nutrition

certificates, and related products, such as sports nutrition certificates, group exercise leader certifications, specialist group certification certificates as in boxing, HITTT, etc., older adult instructor, children instructor, as well as online the ubiquitous ‘personal trainer’. Many of these certificates are completed wholly online and, therefore, run the risk of questioning who exactly is completing the course, while others are completed online under the supervision of a ‘mentor’, typically a gym employer or gym employee, or a combination of online and some onsite work. Courses like the International Career Institute from Australia, for example, offers a Diploma in Personal Training which is completed completely online and advertised with the caveat that it is a theoretical course and, as such, in Australia it is not adequate qualification to practice as a personal trainer without the Cert III or Cert IV, however, “(i)n other countries formal qualifications may not be needed” (Ici.net.au, n.d.). Such is the case in New Zealand.

2.4 Outline of Tertiary Qualifications

Tables 2.1 and 2.2 provide detailed information on the tertiary qualifications offered in New Zealand. Table 2.1 provides this information for the non-university tertiary sector, whereas Table 2.2 provides this information for the university sector. There are many options available to prospective exercise scientists in both sectors, with the non-university tertiary sectors specializing in the relatively lower level degrees. These are all quality assured, but only the university sector offers their qualifications rooted in a relatively deep research environment and culture. Of all New Zealand universities, only Victoria University of Wellington does not offer an exercise science related degree. The non-university sector offers all qualification options, inclusive of a Bachelor’s degree, including some which now offer post-graduate options through linked universities. Universities only offer the Bachelor’s and Post-Graduate options.

How much does it cost to get the qualification? One important cost component is the financial cost of obtaining a qualification. Many of the certificate and diploma options can be obtained at a very low cost. Bachelor’s degree and Post-Graduate degree options come at a much higher cost. But REPs does not *clearly* distinguish between the various options in their certification process. Hence, the immediate incentive for a purely REPs certification signalling perspective is to seek the least expensive qualification.

Table 2.1: Tertiary Programs: New Zealand Institutes or Technology and Polytechnics Offering Sports and Exercise Certificates, Diplomas and Degrees

| Number | Name | Location | Certificate Levels | Diploma | Bachelor |
|---------------|---|---|---|---|---|
| 1 | ARA Institute of Canterbury | Canterbury, South Island | Level 4- Certificate in Exercise | | Bachelor of Applied Science (Sports and Exercise Science) |
| 2 | EIT (Eastern Institute of Technology) | Hawke's Bay, North Island | Level 3- Sports Coaching; Multisector Sports, Recreation and Exercise Level 4- Exercise Level 5- Exercise | Level 5- Diploma in Sport, Recreation and Exercise, | Bachelor of Sport and Exercise Science |
| 3 | Manukau Institute of Technology | Manukau, Auckland, North Island | Level 4- Sport and Recreation | Levels 5&6 Diploma in Sport, Recreation and Exercise | Bachelor of Applied Sport and Exercise Science |
| 4 | NMIT (Nelson Marlborough Institute of Technology) | Nelson, South Island | | Levels 5- Multisector Sports, Recreation and Exercise | Bachelor of Applied Sport and Exercise Science |
| 5 | North Tec | Northland, North Island | | Levels 5- Sports, Recreation and Exercise | Bachelor of Sport and Education |
| 6 | Otago Polytechnic | Multiple campuses, Dunedin, South Island, Auckland, North Island | Level 4- Exercise Level 5- Exercise | | Bachelor of Applied Science (major in Sport, Exercise) |
| 7 | SIT (Southern Institute of Technology) | Multiple Campuses, Invercargill, Queenstown, Christchurch, South Island | Level 4- Sport and Recreation | Level 5 & 6- Diploma in Sport and Exercise Science- | Bachelor of Sport and Exercise |

| | | | | | |
|----|---|---------------------------------|---|--|--|
| 8 | Open Polytechnic | Distance Learning | Level 4- Exercise | | |
| 9 | Unitec Institute of Technology | Auckland, North Island | Level 5- Exercise Level 5-Sport and Recreation | Level 5- Diploma in Sport, recreation and Exercise (Multi-sector) Coaching and Community Sport Recreation pathways | |
| 10 | UCOL (Universal College of Learning) | Multiple Campuses North Island | Level 4- Exercise Level 7- Certificate in Physical Conditioning for Health | | Bachelor of Applied Science, Strength and Conditioning major |
| 11 | Toi Ohomai | Multiple Campuses, North Island | Level 4- Sports and Recreation | | Bachelor of Sport and Recreation |
| 12 | Wintec (Waikato Institute of Technology) | Multiple Campuses, North Island | Level 4- Exercise Level 5 - Exercise | | Bachelor of Sport and Exercise Science |
| 13 | Weltec (Wellington Institute of Technology) | Wellington, North Island | Level 4- Exercise | Level 5- Sport, Recreation and Exercise | |

Sources: ARA: <https://search.ara.ac.nz/study-options-search/?query=exercise&preferences=&qualifications=&interests=&locations=&durations=>

EIT: <https://www.eit.ac.nz/subject-areas/sport-and-exercise/>

Manukau:

<https://www.manukau.ac.nz/search?mode=results&query=s%5Bprts+and+exercise+&f.Search+for%7C3=Programmes>

NMIT: <https://www.nmit.ac.nz/study/filter/all?q=sport%20and%20exercise%20science>

Nortec: <https://www.northtec.ac.nz/programmes/sport-and-recreation>

Open Polytechnic: <https://www.openpolytechnic.ac.nz/qualifications-and-courses/nz3563-new-zealand-certificate-in-exercise-level-4/>

Otago Polytechnic: <https://www.op.ac.nz/study/physical-activity-and-wellbeing/programmes/sport-and-exercise/>

SIT: <https://www.sit.ac.nz/Courses/Sport-Exercise-Recreation>

Toi Ohamai: <https://toiohamai.ac.nz/study/subject/sport-and-recreation>

UCOL: <https://www.ucol.ac.nz/programmes/exercise-sport-science/new-zealand-certificate-in-exercise>

Unitec: <https://www.unitec.ac.nz/career-and-study-options/sport-exercise-and-recreation;>

[https://www.unitec.ac.nz/search?text=sport%20and%20exercise.](https://www.unitec.ac.nz/search?text=sport%20and%20exercise)

Weltec: <https://www.weltec.ac.nz/study-programmes/exercise-science>

Wintec: https://wintecprodpublicwebsite.blob.core.windows.net/sitefinity-storage/docs/default-source/study-at-wintec/programme-guides/wintec_prospectus.pdf?sfvrsn=947ee833_40

Table 2.2: New Zealand University Sports Related Qualifications

| University | Main City | Other Campuses Across New Zealand | Exercise Degree Yes/No | Number of Option | University Ranking QS Rankings |
|-----------------------------------|----------------------|-----------------------------------|------------------------|------------------|--------------------------------|
| University of Auckland | Auckland | No | Yes | 2 | 88 |
| AUT | Auckland North Shore | No | Yes | 7 | 442 |
| Waikato | Hamilton | Tauranga | Yes | 1 | 266 |
| Massey University of New Zealand | Palmerston North | Auckland Wellington | Yes | 6 | 287 |
| Victoria University of Wellington | Wellington | No | No | 0 | 215 |
| Canterbury | Christchurch | No | Yes | 6 | 227 |
| Lincoln University | Christchurch | No | Yes | 1 | 356 |
| Otago University | Dunedin | Wellington | Yes | 1 (7 Minors) | 176 |

Sources: QS Rankings 2019: Retrieved from <https://www.topuniversities.com/universities/country/new-zealand> on August 18th 2019.

University of Auckland data retrieved from: <https://www.auckland.ac.nz/en/study/study-options/find-a-study-option/exercise-sciences/undergraduate.html>

Lincoln Data: <http://www.lincoln.ac.nz/Study/Qualifications/Qualification/?QualCode=b.science>

Massey University data: https://www.massey.ac.nz/massey/explore/sport-exercise/sport-exercise_home.cfm.

Victoria University of Wellington: <https://www.victoria.ac.nz>

Otago University: <https://www.otago.ac.nz/courses/subjects/exss.html>

Canterbury: <https://www.otago.ac.nz/courses/subjects/exss.html>

AUT: <https://www.aut.ac.nz/study/study-options/sport-and-recreation>

Waikato: <https://www.waikato.ac.nz/study/qualifications/bachelor-of-health-sport-and-human-performance>

2.5 Time Cost for all Qualifications

Apart from the financial cost of obtaining a qualification, there are the time costs involved. These represent a significant aspect of the opportunity cost involved in obtaining any qualification. These costs are outline in Table 2.3. There is a very large difference in time costs involved, ranging from 2 to 6 weeks to almost 5 years for a Post Graduate option which requires a Bachelor’s degree as a pre-requisite. As per our discussion of financial costs, REPs does not *clearly* distinguish between the various certificates and degrees obtained by individuals who obtain REPs registration. Hence, the immediate incentive for a purely REPS certification

signalling perspective is for exercise professionals to seek the least expensive qualification from a time cost perspective (Akerlof 1970).

Table 2.3: Time Cost for Each Base Qualification a Fitness Professional Can Obtain

| Qualification | Time to Obtain | General Offering |
|------------------------------|---------------------------|-------------------------------|
| Certificate One-Three | 2 weeks-6 weeks | Online |
| Certificate Four-Six | 2 – 6 months | Online and Face-to face |
| Diploma | 1.5-2 years | Practical Placements Required |
| Bachelor’s Degree | 3 years | Face-to-Face |
| Postgraduate | Post Bachelor’s 1-5 years | Face-to-Face |

2.6 Fitness Professional Ranking System

For analytical purposes, we develop a unique ranking system of all possible exercise science qualifications available in New Zealand, presented in Table 2.4. These are ranked 0 through to 5 based on the level of quality these qualifications represent. An exercise professional with a rank of 0 has no qualification whereas the rank of 5 is assigned to an exercise professional with a Post -Graduate qualification.

Table 2.4: The Ranking System for Qualifications

| Ranking | Qualification |
|----------------|-----------------------------|
| 0 | No Qualification |
| 1 | Certificate One-Three |
| 2 | Certificate Four-Six |
| 3 | Diploma |
| 4 | Bachelor’s Degree |
| 5 | Post-Graduate Qualification |

2.7 Definition of a Base Qualification

In the health and fitness industry one can obtain any number of different types of certificates, such as certificates in rehab, kettle-bells, reformer, TRX etc. (see IDEA, 2019). The list is seemingly infinite. These qualifications, however, do not qualify one to work in the sector as they are qualifications that one obtains above a base qualification, such as those listed above. If one is registered with a body such as REPs, one must do these types of certificates, and pay extra money to the REPs certified certificate providers, to obtain enough Continuing Professional Development (CPD) points in order to be able to renew the registration (“REPs, “Education”, 2019).

2.8 Ethics and Data Storage

Data was collected entirely from publicly available sources. Moreover, although the data was collected in this manner, no data on individual exercise professionals will be published to protect the identity of individual trainers. Hence, this chapter’s methodology is not subject to an ethics review. All detailed data are available upon request. Data are stored in a locked file and is backed up on a QUT hard drive.

2.9 Data on Qualifications and Certification

The data set in this chapter comprises information on the qualifications of exercise professionals, which are then ranked using our ranking system discussed above. We also collect data on the REPs qualification on these same exercise professionals. This allows us to correlate the level of qualifications with REPs certification. These are also used to rank the gyms where the exercise professionals provide their services. All these data are obtained from publicly available sources.

2.9.1 How Data Were Collected

These data set was collected using only freely accessible data available to anyone interested in combing the world-wide web. No contact was made with industry or any concerned individuals throughout this process. Therefore, to reiterate, no ethics approval was required for this research project.

The data was collected twice. It was gathered over two, separate one-week periods, with a six-month gap between each collection. The first collection period occurred in the 15-20 June, Behavioural Economics of Organizational Inefficiency: The Example of the New Zealand Fitness Industry

2018, period, while the second took place in the 8-15 November, 2018, period. These two collection periods were used to determine if there were any substantial changes in the data over time given that there is apparently a very high turnover rate for exercise professionals (Fitness Australia, 2018). No such changes were found. The purpose of the data set is to give us a large enough sample such that our results are reliable (not a chance event) and provide insight into the qualifications held by exercise and health professionals practicing in New Zealand. For this reason, we endeavor to collect as much data as possible (given public availability of the data). Related to this, we are also most concerned that our data is representative of the population of exercise professionals in New Zealand. Having a large sample, such as ours, (which could be deemed to be statistically significant) that is not representative would not be scientifically valid or robust for our purposes (Altman 2019; Ziliak 2008, 2011).

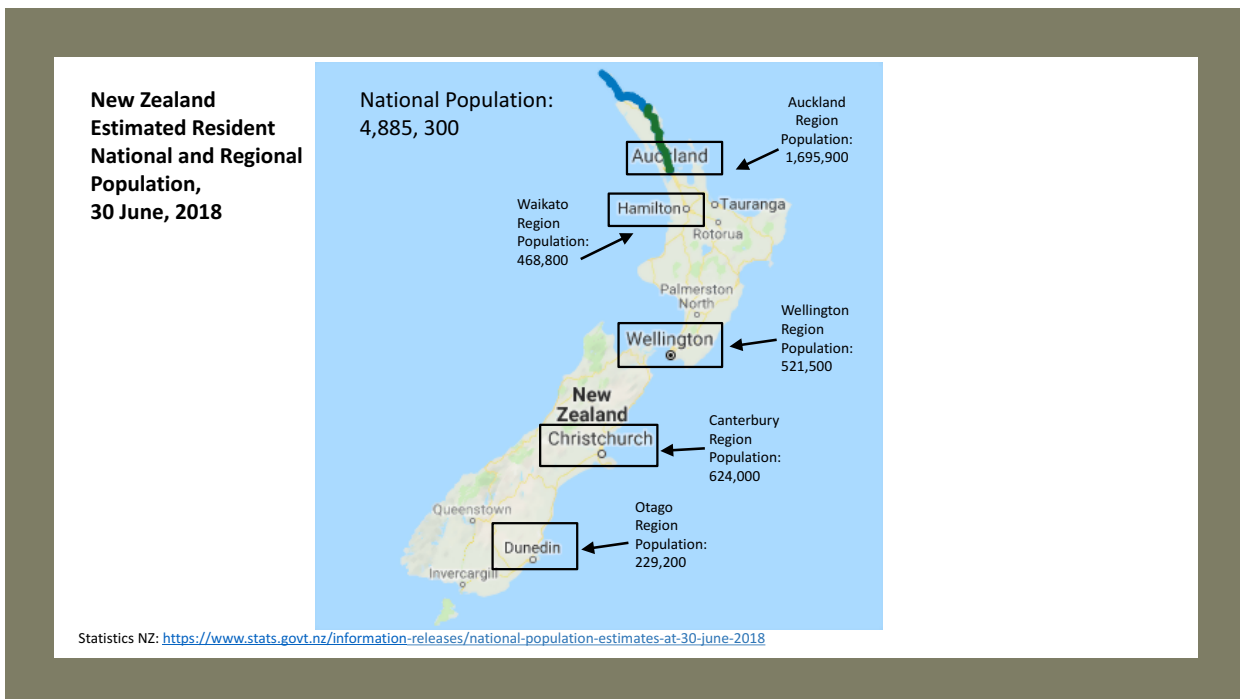
We gather as much information that is available for the largest population centers in New Zealand. Therefore, our sample does not incorporate information on exercise professionals and gyms in the smallest population centers. But our data captures the pertinent information for the gyms serving the vast majority of the New Zealand population, that is gyms servicing 73 percent of the country's total population (see Diagram 2.1 and Table 2.5 below).

We are interested determining whether exercise professionals currently have a REPs registration, if they have ever held a REPs registration, or if they have a probationary REPs registration. Finally, we also want to establish whether the gyms they work for are REPs registered to determine what percentage of practitioners working for a REPs registered gym are themselves REPs registered, and vice versa, and what percentage of REPs practitioners are in non-REPs registered facilities.

To ensure the validity of this research project, we pulled our sample from across multiple regions of New Zealand (see Figure 1). We selected 5 major regions in both the North and South Island to get a representative sample (see Table 2 below). We began by gathering information for 159 self-identified or self-described personal trainers and exercise professionals online in the Auckland Region, New Zealand's largest metropolitan area, located on the North Island. The region has a population of 1,695,900. Next, we looked at New Zealand's third largest region, its capital region (the Wellington region), also located in the North Island, with a population of 521,500, which yielded 100 self-described personal trainers and exercise professionals. The number of exercise professionals and gyms relative to the rest of the country is exceptionally high. This can be explained by the fact that demand for such services is very strong in Wellington, fuelled by the fact that the Wellington region is one of the highest per capita income regions with

the highest educated population in New Zealand (Statistics NZ 2018) We then retrieved data for the Waikato Region, also on the North Island, which is comprised of the cities of Hamilton and Cambridge, and has slightly smaller population of 468,800. We only obtained data for 29 individuals, which is a relatively small number given the population of this region. But demand within this region is highly dispersed within a predominantly agricultural region and therefore appears limited (Statistics NZ 2018).

Diagram 2.1: Distribution of Major Population Centres and Location of Sample Gyms in New Zealand



We next retrieved data for the South Island of New Zealand and its two major cities in this more scarcely populated island. The quake ravaged Christchurch and the Canterbury Region, with an estimated of population 624,000, the second most populated region of our five regions. This yielded data on only 50 self-identified personal trainers and exercise professionals. This number for this area is considerably smaller than that retrieved from the smaller region of Wellington. However, this can be explained by the social and economic distress that has marked this region since a series of earthquakes and other natural disasters after 2010. A series of major earthquakes in 2010 and 2011, coupled with a very troubled and prolonged earthquake recovery program, has meant that there has been a shortage of disposable income in this region. This decrease in disposable income has been accompanied by an increase in personal savings due to

the fear of another imminent disaster and the lack of trust in the central government’s response (Kachali, 2015; Reserve Bank, NZ, 2016). These facts account for the smaller estimated number of exercise professionals in the area given its size, and this is reflected in the smaller number of exercise professionals identified here as compared to other regions of similar size. The final region that we examined is the Otago Region, and the city of Dunedin with a population of 229,200, which yielded data on 31 practisers.

Table 2.5: New Zealand Population for Key Regions, 30 June, 2018

| Region | Population | Percentage of NZ Population |
|--|-------------------|------------------------------------|
| Greater Auckland (North Island) | 1,695, 900 | 34% |
| Greater Wellington (North Island) | 521,500 | 11% |
| Greater Canterbury (South Island) | 624,000 | 13% |
| Waikato (North Island) | 468,000 | 10% |
| Otago (South Island) | 229,200 | 5% |

Source: Statistics NZ: <https://www.stats.govt.nz/information-releases/national-population-estimates-at-30-june-2018>

For the data in hand, we ranked each exercise professional or trainer based on the original ranking system that we developed for this thesis (Table 2.4 above). We ranked them based on their qualification level from a scale of 0 to 5. We then used the REPs NZ data base to determine if they were registered as well with REPS at that time, or if they had previously been registered with REPs or if they had provisional registration with REPS. We recorded this data for each trainer at the gym and then we calculated the average qualification levels for their gyms and the REPs registration percentage for exercise professions or trainers for each gym. We also used the REPs registration website to determine if the gym was REPs registered and we recorded this

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information. This was done to determine if gyms were registered despite having a low level of reps registered practitioners.

2.9.2 Data Collection Strategy

All data collected are publicly available. The largest gap in the data relates to the unavailability of public data for certain commercial gyms during the time-period of which the data collection was done. We estimate that these commercial franchise gyms represent 50-60% percent of New Zealand's exercise professionals. According to the Exercise Association of New Zealand, there are approximately 2400 practising exercise professionals in New Zealand, but these numbers are inflated as they include even people working solely only the reception desks, walking the floor. (Harris, 2015; Reps, 2016). But there is no way to know for sure how many these were operating under the table and are off the radar. We also note that these gyms offer their own qualifications programs and advertise jobs that require no qualifications. From this one can hypothesize that they contract and employ relatively low-quality staff. These gyms choose not to make information on their trainers and their (gyms') qualifications publicly available (Cleaver, 2016). But there is no evidence to suggest that this data would paint a different picture from what is generated from the available data.

From the perspective of economic theory, if gyms do not make their data publically available this would suggest that they are not vested with the most qualified exercise professionals. From a marketing and profit maximizing perspective in a world of imperfect information, one would expect gyms to make public their trainers' qualifications and REPs standing if this information provides customers with a selling point. In this case, our sample would be comprised of the most qualified trainers and bias our finding in favour of the hypothesis that New Zealand gyms are serviced by relatively highly qualified exercise professionals. This would add robustness to any finding that the level of qualification amongst New Zealand's exercise professionals are relatively low.

As already mentioned, our data are derived from gyms from all New Zealand's major urban centres, Auckland, Hamilton, Wellington, Christchurch, and Dunedin.

2.9.3 Robustness of the Data

We collect data from as many gyms as possible given their public accessibility. This is a form of convenience sampling. Given our limited research resources we only focus on publicly

available information and that which is available in New Zealand's largest population centres. But given that we draw data from New Zealand's largest population centres our sample should be a geographically representative one, which is critical this study as our results need to be pertinent throughout New Zealand. As mentioned above (section 2.7.3) the main gap in our sample is for exercise professionals in gyms that do not make their data publicly available. This biases our sample. But also as mentioned above (section 2.7.3), it does so in a manner that would support the hypothesis that New Zealand gyms are serviced by relatively highly qualified exercise professionals—the missing gyms would tend to have less qualified exercise professionals than the gyms in our sample. Recall, that our core hypothesis is that New Zealand gyms are serviced by relatively highly qualified exercise professionals.

2.10 Results

Recall our core hypothesis, that one should find a strong and positive relationship REPs registration and the measured qualifications of trainers and gyms. Note that the higher the level of certification (degrees or certificates) the higher is the level of qualification. For example, post-graduate qualifications are coded 5 and undergraduate qualifications are coded 4, and so on. Also, recall that one can only be REPs registered or not. Being REPS registered is coded 2 and not being registered is coded 1.

Table 2.6 summarises our data for all New Zealand with respect to trainers and REPs registration. Detailed data are found in the appendix to this chapter. In terms of percentage distribution there is no evident relationship between REPs registration and the level of qualifications (a proxy for quality) of trainers. Level 5s are 19 percent of REPs certified compared 31 percent for Level 2s, for example. Being more qualified does not appear to increase the probability of being REPs registered. But it should be noted that Level 1s (the least qualified by level of certification) are only 14 percent REPs certified. These estimates do not support the hypothesis of a strong and positive relationship between REPs certification and the measured qualifications of trainers and gyms.

Table 2.7 presents similar summary data for the gyms of New Zealand. Detailed data are found in the appendix to this chapter. We classify gyms in terms of median levels of qualification or certification. Here too, there is no evident relationship between level of qualification (reflected in the qualifications of their exercise professionals or trainers) and REPs registration. The very top gyms have no REPs registration (at least by 2018). But the gym with the least qualified trainers are 26 percent REPs registered. If anything, this descriptive data, suggests a negative

relationship between quality and REPs registration. Our data also speaks against our core hypothesis.

Diagram 2.2 presents a more detailed analysis of the relationship between the REPs registration and trainers' professional qualifications. As mentioned above, being REPs registered is coded as 2, whilst not being REPs registered is coded as 1. This diagram is derived from data presented in Appendix One of this thesis. There are 363 trainers in our sample. As discussed in Chapter One, these represent gyms a large percentage of the gyms that serve three quarters of New Zealand and is also a representative sample of the larger urban centres in the country. And, these data are what's publicly available as well. To get a statistical sense of the relationship between REPs registration and trainers' professional qualifications we use basic correlation analysis. We are estimating the correlation (correlation coefficient) between our five-scale grading for qualifications with a two scale or binary code for REPs registration. In New Zealand, you can only be registered or not registered. There does not exist any intermediate forms of registration. In effect, we are using Likert scale data in terms of the ranking of trainer qualification. We employ a five-point continuous scale for trainer qualification. This correlated with a two-point Likert scale.

This is regarded as a legitimate statistical approach (Thorpe, Easterby-Smith, and Paul Jackson 2012), used largely in non-economics disciplines in the social sciences given the type of questions addressed, questions that require a Likert scale. This is also the case in this thesis. The correlation coefficient is used to indicate whether or not there is a statistical relationship to be expected, given our core hypothesis.

To provide more clarity to our analysis, we run three 'simulations' on the relationship between between REPs registration and trainers' professional qualifications (see Appendix Two for details). We use the same number of trainers as one has in the real sample. Ideally, the most qualified trainers should be REPs registered and the least qualified should not, *ceteris paribus*. Therefore, in simulation 1, we code trainers with level 5 and 4 qualification as being REPs registered. The others we code as not registered. This yields a correlation coefficient of 0.85. The real data correlation should approach this value if the core hypothesis holds and REPs accreditation is a signal for high quality in terms of level of qualification. In this case, joining a REPs trainer dominated gym would mean working with the most qualified trainers. In Simulation 2, we code the most qualified (levels 5 and 4) as not being REPs registered whereas the other trainers are coded as being REPs registered. This yields a correlation coefficient of -0.85. Joining a REPs trainer dominated gym would mean working with poorly qualified trainers. This

correlation coefficient is as one would expect if REPs only registered the least qualified trainers. In the third simulation, we assume a type of random REPs registration process. In this case, there should be no relationship between REPs registration and the level of trainer qualification. And, in this case, joining a REPs dominated gym would mean nothing much at all, since you would not really know the quality of the trainer. In this scenario, the correlation coefficient is 0.003, which is what one would expect.

Viewing Diagram 2.2, it is difficult to discern a relationship between the level of exercise professional or trainer level of qualification and REPs registration. This is confirmed by a simple correlation analysis which yields a correlation coefficient of only 0.047. The expected positive correlation is present, but it is so small that it is not analytically or substantively significant. This coefficient is similar to the correlation coefficient generated from our Simulation 3, where REPs registration was randomly distributed. For the core hypothesis to hold this correlation should be relatively large. The estimated coefficient of 0.047 certainly does not meet this criterion. Our simulation suggests that for substantive significance to obtain this coefficient should be in the mid-eighties. The small correlation suggests no relationship between the measured qualification of exercise professionals and REPs registration.

Diagram 2.3 presents a more detailed analysis of the relationship between the REPs registration and measured gym qualifications based on the qualifications of their exercise professionals. Being REPs registered is coded as 2, whilst not being REPs registered is coded as 1. This diagram is derived from data presented in Appendix One of this thesis. As with Diagram 2.2, and even more so with Diagram 2.3, it is not possible to discern the expected (core hypothesis) strong and positive relationship between a gym's REPs registration and the gym's qualifications. Indeed, a simple correlation analysis demonstrates a negative relationship, with a correlation coefficient of, -0.179. This negative correlation is the opposite of what would be expected from the core hypothesis..

The evidence presented in both Diagram 2.2 and 2.3 speak strongly against the hypothesis that REPs registration, per se, is strongly and positively related to quality as defined in this chapter, which is related to the measured qualifications of the exercise professional or trainer. Therefore, REPs registration, per se, does not provide a signal for trainer or gym quality. At least this is the case for 2018, the year for which our data was collected and processed.

Diagrams 2.4, 2.5, and 2.6, present a more nuanced analysis of the relationship between the qualifications of exercise professionals or trainers and REPs registration. In Diagram 2.4, we simply present results for level 5 qualifications. It is clear, for this highest level of qualification,

there is positive relationship between qualification and REPs certification. Most top gyms in terms of qualifications are not REPs certified. In Diagram 2.5, we examine the relationship between the qualifications of exercise professionals Levels 4 and 5 and REPs registration. These are most qualified measured exercise professionals. A visual analysis does not suggest evidence to support the core hypothesis of a strong positive relationship between these two variables. The correlation coefficient of -0.091 confirms the visual analysis. The negative correlation analysis demonstrates a negative relationship between the most qualified exercise professionals and REPs registration. REPs registration can't be taken as signal for highest quality with respect to the qualification of Level 4 and Level 5 exercise professionals in New Zealand. In Diagram 2.6, we add Level 3 qualified exercise professionals into the analytical mix. Here too, a visual analysis does not suggest evidence to support the core hypothesis of a strong positive relationship between exercise professionals' qualifications and REPs registration. This is confirmed by the correlation analysis that yields a negative correlation of, -0.085 . Here too the core hypothesis is strongly not supported.

It is important to reiterate that the correlation coefficient is the wrong sign when one uses data for Level 3 through 4 qualifications. When one adds Levels 1 and 2 into the analytical mix (Diagram 2.2), the coefficient becomes weakly positive. Basically, there is a very low probability that the least qualified exercise professionals are REPs registered. But overall, REPs registration is not a signal for the quality of exercise professionals where quality is measured by the level of qualifications of exercise professionals or trainers.

To reiterate our core correlation results for trainer qualifications and REPs registration:

| | | |
|---|---|--------|
| For trainers of all recorded qualifications | = | 0.047 |
| For trainers with level 4 and 5 qualifications | = | -0.091 |
| For trainers with level 3, 4 and 5 qualifications | = | -0.085 |
| For Gyms (median qualifications) & REPs | = | -0.179 |
| Simulation benchmark for a positive correlation when REPs registration for trainers based on qualifications | = | 0.085 |

Table 2.6 Trainers Percentage with REP Registration

| Level of Certification | Total | Rep Reg | % Rep Reg |
|------------------------|-------|---------|-----------|
| 5s | 16 | 3 | 18.8% |
| 4 | 95 | 31 | 32.6% |
| 3 | 64 | 17 | 26.6% |
| 2 | 136 | 42 | 30.9% |
| 1 | 50 | 7 | 14.0% |
| Total | 361 | 100 | 27.7% |

Table 2.7: Gyms Percentage with REP Registration

| Median Certification | Total | Rep Reg | % Rep Reg |
|----------------------|-------|---------|-----------|
| 4 | 4 | 0 | 0.0% |
| 3-3.7 | 12 | 2 | 16.7% |
| 2-2.7 | 19 | 5 | 26.3% |

Diagram 2.2: Trainer Qualifications 5,4,3,2,1, Ranking & REPs
 Yes REPs = 2; No REPs = 1

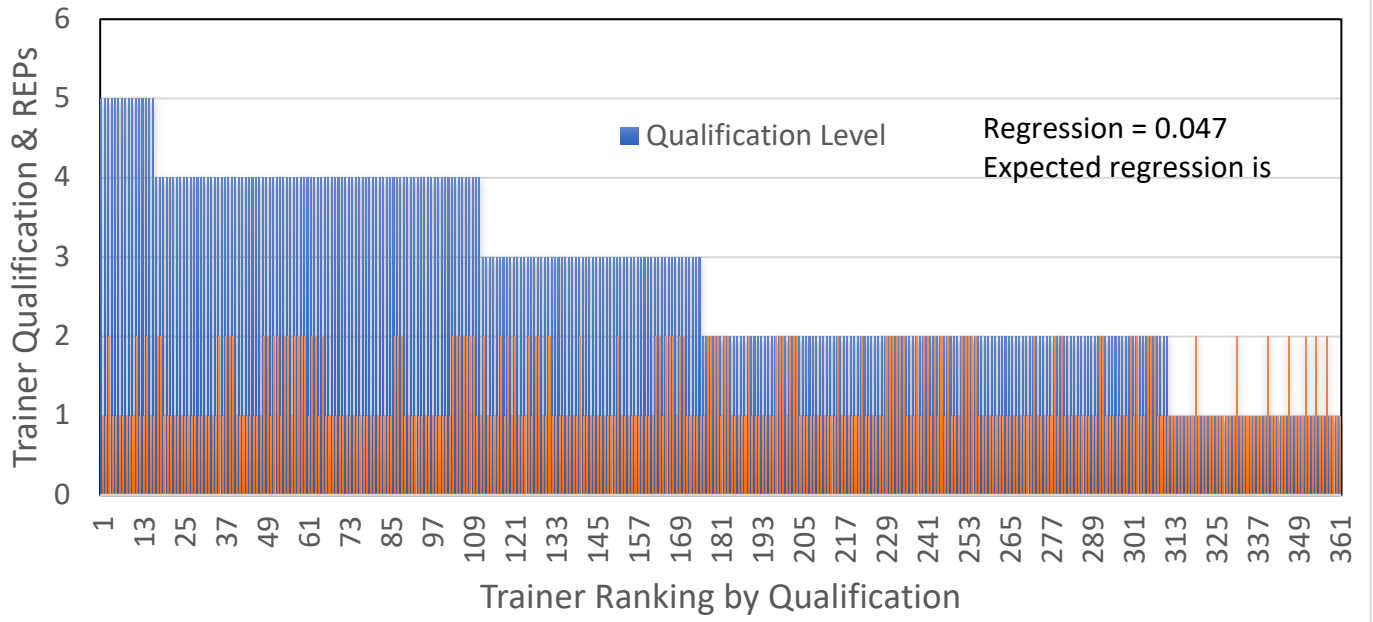


Diagram 2.3: Gym Ranking by Median Qualifications & REPs
 Yes REPs = 2; No REPs = 1

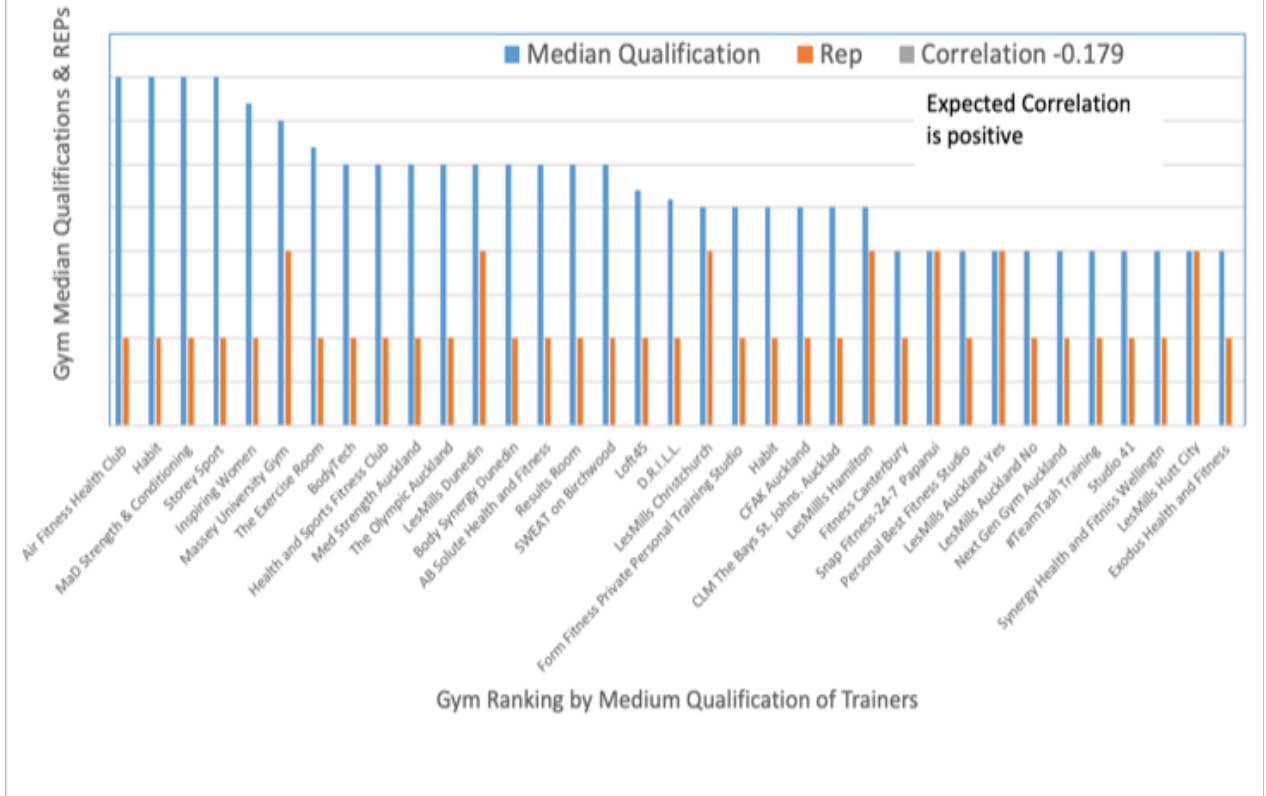


Diagram 2.4: Trainer Qualification Level 5 & REPs Registration
 Yes REPs = 2; No REPs = 1

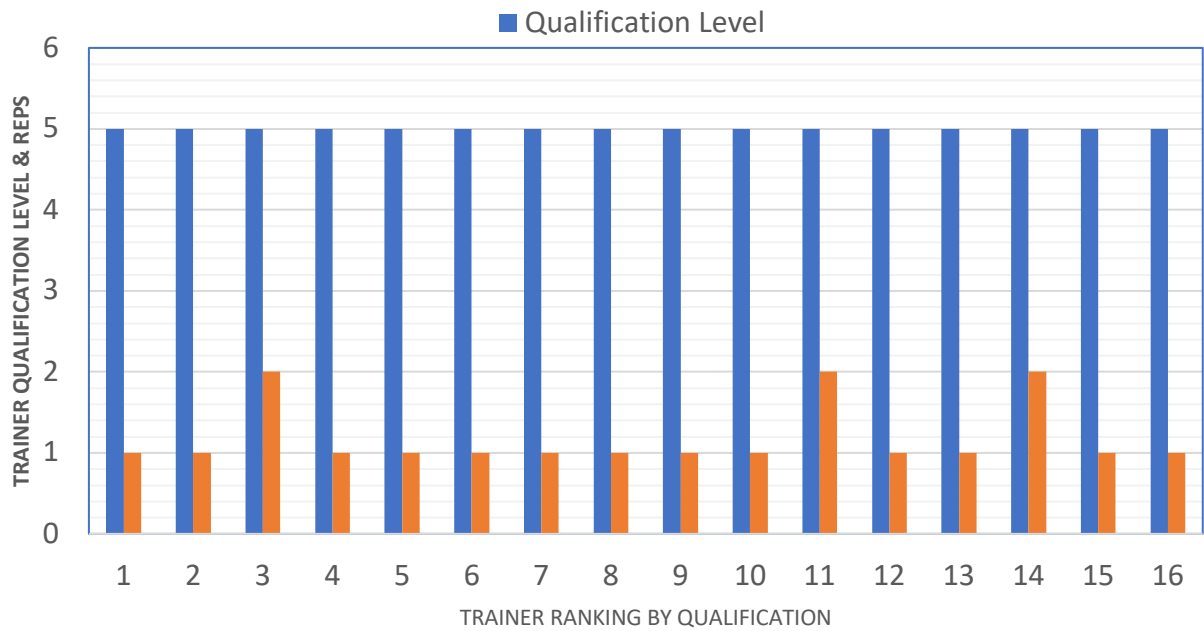


Diagram 2.5: Trainer Qualification Level 4 and 5 & REPs

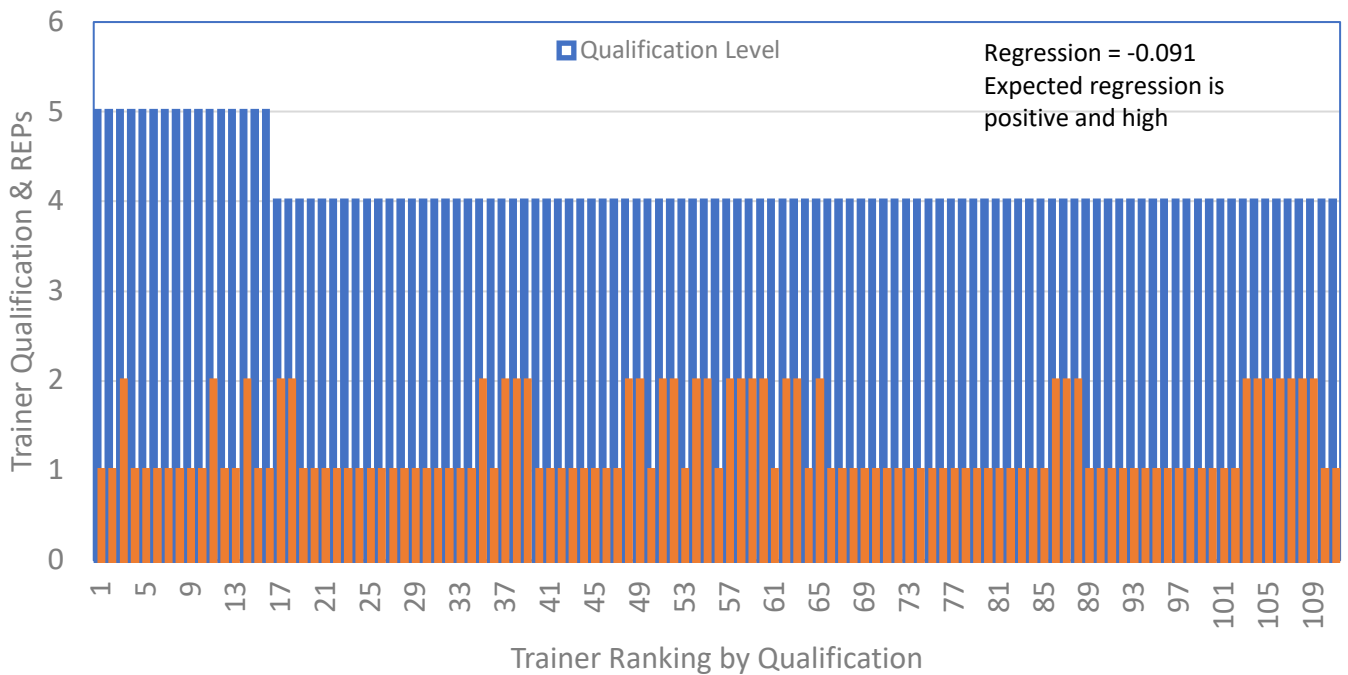
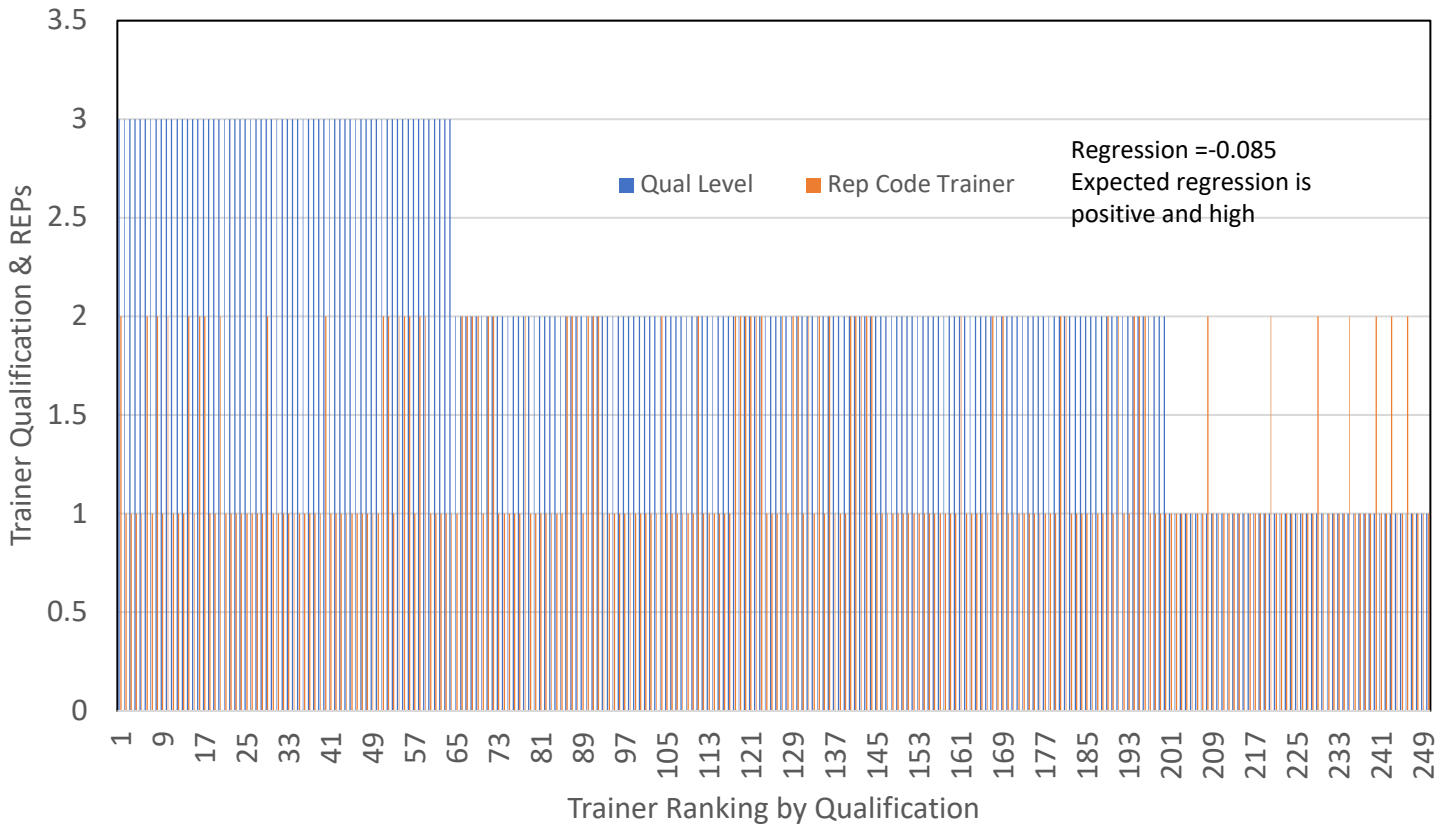


Diagram 2.6: Trainer Qualifications Level 3, 4 and 5 & REPs



2.11 Consequence of Results

The public available data do not support the hypothesis that REPs registration is positively and strongly correlated to the quality gyms and exercise professionals or trainers in New Zealand as measured by the objective qualifications of exercise professionals. Indeed, the data overwhelmingly are in support of rejecting the core hypothesis of such a positive and strong (analytically substantive) relationship. This finding suggests that REPs registration, per se, is not a strong signal to identify quality gyms and exercise professionals in New Zealand. REPs registration is, therefore, not an optimal fast and frugal heuristic to be used by customers to choose and gyms and exercise professionals for their level of measured quality. If they so choose, and this would be a rational choice, given the information that they have in hand, they would most probably end up making sub-optimal choices. These choices would most likely not match their preferences.

Given that the REPs signal is not an optimal measure of quality, far from it, this will affect the demand for exercise professionals as different levels of qualification. This is especially the case when the REPs signal, as it is currently constituted (2018), can be expected to be a disincentive for fitness related (exercise professional related) human capital formation at the higher gradations of qualification. Hence, one would expect that the REPs signalling device, acting as fast and frugal heuristic, will impact the supply side of the exercise professional labour market. This point is elaborated in detail in Chapter 3.

2.12 Externalities on Public Health

When signals are sub-optimal but, even more so if they are misleading, and lead to poor or sub-optimal choices, this can have negative health consequences when these choices relate to the health of the affected consumers. And, the fitness industry is one where poor choices, in terms of gyms or exercise professionals, can result in sub-optimal health consequences. In other words, consumer choice can result in the fitness outcomes being less than they would otherwise be had the information environment allowed for informed choices. Also, sub-optimal choices could result in avoidable injury. Both above outcomes could affect the wellbeing of consumers and, relatedly, the ability to work or to work well and even to their quality of life and life expectancy. This can also increase the cost to the public sector when this sector covers in whole or in part the cost of injury or poor health resulting from sub-optimal choices.

These points are illustrated in Diagram 2.7. We construct production possibility frontiers (PPF) for health and fitness outcomes. PPF ab represents the optimal frontier for an optimal information environment that would be, in part, a function, of the available signalling mechanism available to consumers. Given that there are no externalities (especially with regards to moral hazard behaviour), poor choices with regards to fitness providers results in sub-optimal fitness and fitness-related health outcomes (cf). Individuals aren't choosing the exercise professionals that provide them with the training that they prefer given their preferences. The situation is aggravated when this type of choice results in unnecessary or avoidable injuries to the customer, illustrated by a shift of the PPF to (gh). These outcomes should be expected to have negative consequences for the PPF related GDP person and the PPF related to wellbeing.

This already negative situation would be aggravated if there were incentives for moral hazard behaviour. Rational (smart, satisficing) individuals might engage in risky behaviour when they don't incur any negative costs (being sued for negligence, for example) that might be generated by such behaviour. Gyms can be predicted to hire less expensive, less qualified labour, even if customers might endure unnecessary injuries because of the qualification level of employees in a moral hazard environment. Also, inadequately qualified practitioners might perform services which they might not perform if they would have to bear the cost of engaging in such services. These type of moral hazard behaviours can take place when one has a no-fault insurance scheme, as one does in New Zealand, for the fitness industry. No-fault insurance can be expected to generate negative externalities with respect to the customer wellbeing and public expenditure, especially when customer can't easily identify the most qualified gyms and the most qualified exercise practitioners (see Chapter One).

This point is illustrated in Diagram 2.8. One can have demand curve of different sensitivities to price or price elasticity. But this will not change the main conclusion of the analysis. If service providers do not incur the cost of moral hazard behaviour (these costs are not internalized) and we have an over-supply of these services, given by supply curve SnoF and supply 0a. Here, service providers do not internalize the moral hazard costs of ed. But if these costs are internalized, given by supply curve SatF, where one has, for example, at fault insurance. This shifts the supply curve from SnoF to SatF. The demand for these services can also be predicted to fall consequently. This analysis helps to the explain the apparent excessively high injury rates in the New Zealand fitness industry, given its decision-making and incentive environment. With regards to Diagram 2.7, moral hazard behaviour would have the effect of

shifting the production possibility frontier further to the left, further reducing per capita GDP and the level of society's wellbeing.

Diagram 2.7: Sub-Optimal Signals and Health and Fitness Outcomes

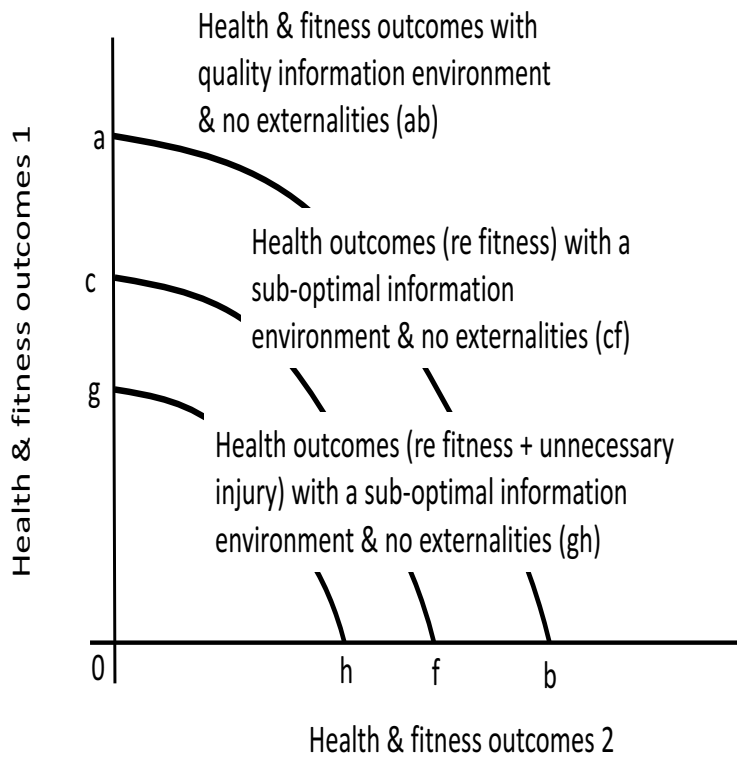
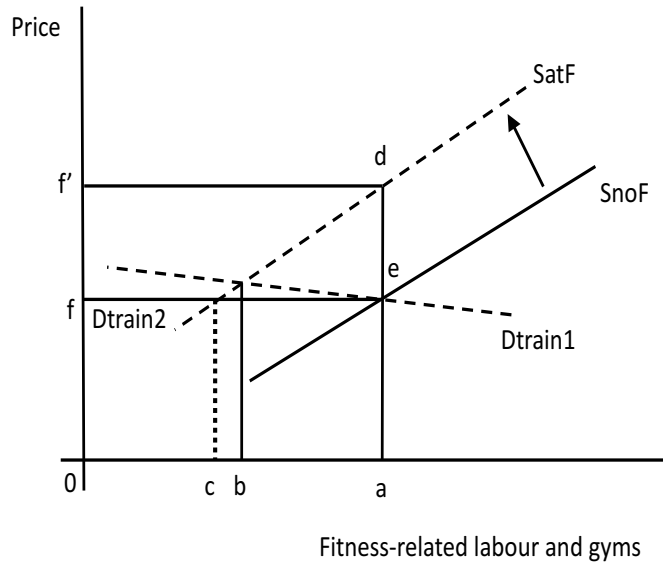


Diagram 2.8: Market Failure and No Fault Insurance



2.13 Conclusion

Representative publicly available data are collected for the qualifications of exercise professionals in New Zealand and for whether these individuals and their gyms are REPs certified or registered or not. This is the first such exercise in data collection conducted for the New Zealand fitness industry. These data are used to determine the extent to which REPs provides relatively accurate signals to customers on the level of qualifications of trainers or exercise professionals and their gym. In a world of imperfect and asymmetric information such signals are critical to consumer choice.

The data are categorized in a manner that makes it amenable to basic statistical analysis. We find that REPs registration does not positively correlate with the qualifications of exercise professionals or with their gyms. There are even negative correlations. This overthrows the core hypothesis that New Zealand’s fitness industry registration process is a definitive signal of quality. Fundamentally, selecting exercise professionals and gyms by REPs registration will more likely result in choosing a low-qualification gym and exercise professional than a relatively high-qualification gym and exercise professional. Hence, customer can end up with exercise

professional and gyms where their services will be sub-optimal and, given the objective level of qualifications of the trainers in an environment of no-fault insurance, can result in unnecessary injuries to the customer.

The fact that there is no substantive positive relationship between REPs registration and exercise professional qualification suggests a disincentive for individuals to invest in the human capital required for the fitness industry to provide quality services to its customers. We provide data on the availability of qualification and their costs. It is quite cheap to earn a low level of qualification. But it is possible to obtain REPs registration even with a low level and inexpensive qualification. So, this strongly suggests a disincentive to invest in further human capital formation. Moreover, in this scenario, there is no clear incentive for gyms to hire the most qualified exercise professionals unless they are absolutely required for certain specialized tasks. The human capital implications of our empirical findings are discussed in Chapter 3.

Chapter 3: REPs as a Misleading Signalling Device for Quality Fitness Professional-Related Human Capital Formation in New Zealand: Implications

3.0 Introduction

REPs (New Zealand Register of Exercise Professionals) provides a critically important signal to consumers of quality exercise professionals and gyms in New Zealand. In the real world of an abundant, imperfect and asymmetric information, signals play a vital role in affecting consumer choice with regards to exercise professionals and the gyms where they work (Akerlof 1970; Spence 1973, 2002; Stiglitz 1975). The impact of the demand side is impacted by the extent to which there is imperfect and asymmetric information, that is by noise within the system. This affects the ability of individuals to properly identify the quality of signals. For this reason, REPs as a signalling device can be expected to affect the employment opportunities of exercise professionals and, relatedly, which gyms are most likely to employ them, especially if we assume gym owners tend to be most interested in maximizing their profits.

The demand side therefore should affect the supply of exercise professional-related labour supply or human capital and the quality (measured by the level of qualification) supplied over time. And, we find in favour of this hypothesis. Related to this, we find that the demand for exercise professionals has increased over time which, given the supply side, must be filled by lesser qualified individuals. These are gap fillers. But given their lower qualifications, they could have contributed to the higher injury rates that have been widely reported in the New Zealand exercise industry. We therefore find that relatively poor signals for the quality of exercise professionals not only affects the type of demand for exercise qualifications, this also affects the supply side yielding a less than optimal level and rate of quality exercise professional related human capital formation.

3.1 Background

Evidence from the New Zealand fitness industry strongly suggests that the certification provided by New Zealand's primary officially sanctioned body to signal the quality of trainers and of gyms, REPs, New Zealand Register of Exercise Professionals, *is very, very weakly correlated, at best, with the actual level of qualifications of New Zealand's exercise professionals and the gyms that employ them* (see Chapter Two). In fact, in some instances, we have a negative correlation between REPs certification and the level of qualification of exercise professionals. Therefore, REPs certification, cannot be taken as a measure of uniform quality in New Zealand's

fitness industry. A REPs certified trainer can be at either a very low or relatively higher level of qualification. The same can be said for gyms that are REPs certified.

3.2 REPS and Human Capital Formation: Theoretical Perspectives

In the real world of imperfect (costly) and asymmetric information, clients or customers seeking the services of exercise professionals might take REPs certification as providing accurate signals of exercise professionals qualifications—a signal of quality. REPs can be considered akin to an accreditation body like the American College of Sports Medicine (ACSM), or to use an example in another industry, like Moody's or Standard and Poor's in financial markets, whose credit ratings are taken to be a gold standard for investors small and large, once again in the real world of imperfect and asymmetric information. Using ratings by a respected agency saves on the overall search costs (economic and non-economic) of locating a quality gym and a qualified exercise professional. In some cases, this would be a good example of the use of fast and frugal heuristics that Gigerenzer (1997) elaborates on. In this narrative, heuristics are decision-making shortcuts that smart or rational individuals employ to make best possible (satisficing) decisions in the most efficient way possible given the reality of bounded rationality.

Todd and Gigerenzer, (2003, pp. 147-148) argue:

... bounded rationality can be seen as emerging from the joint effect of two interlocking components: the internal limitations of the (human) mind, and the structure of the external environments in which the mind operates. This fit between the internal cognitive structure and the external information structure underlies the perspective of bounded rationality as ecological rationality – making good (enough) decisions by exploiting the structure of the environment... Heuristics that are matched to particular environments allow agents to be ecologically rational, making adaptive decisions that combine accuracy with speed and frugality.

Herbert Simon makes the point, in his discussion of bounded rationality, that rational individuals are constrained by their decision-making environment. Therefore, as a result, individuals develop sensible decision-making procedures in the face of these constraints. Simon states (1986, p. S211) that:

...if we accept the proposition that knowledge and the computational power of the decision maker are severely limited, then we must distinguish between the real world and the actor's perception of it and reasoning about it...we must construct a theory (and test it

empirically) of the processes of decision. Our theory must include not only the reasoning processes but also the processes that generate the actor's subjective representation of the decision problem, his or her frame... The rational person of neoclassical economics always reaches the decision that is objectively, or substantively, best in terms of the given utility function. The rational person of cognitive psychology goes about making his or her decisions in a way that is procedurally reasonable in the light of the available knowledge and means of computation.

A problem arises if a heuristic is flawed, as this yields rational (unbiased) errors in decision-making. A further problem emerges when clients or consumers aren't aware, *ex post*, that their decisions have been error prone. For example, if one's training outcomes aren't optimal, because of the selection of poorly qualified but REP certified exercise professionals, this might not be easily identified by clients given bounded rationality. Clients might want to blame the trainer, but this might be more difficult when the evidence (given bounded rationality) suggests that the trainer is well-qualified. So, there might not be opportunities for Bayesian updating in terms of switching to more appropriately trained exercise professionals. And, in this case, sub-optimal outcomes can persist over time (in equilibrium). Another problem presents itself if quality signals are too broad (such as with REPs), when certification does not clearly delineate amongst the more qualified exercise professionals, such as between those with a Bachelor's degree and those with levels 5, 6, and 7 certificates.

A trainer with a Bachelor's degree might not have a REPs certification, whilst a level 5 trainer might be REPs qualified. But the holder of a Bachelor's degree, *ceteris paribus*, is in reality more qualified. Or, you might have a REPs certified gym with mainly low-level certified trainers and a gym that is not REPs certified that is dominated by high level certified trainers. Rational customers might choose the REP certified trainer and facility even if these embody a lower level of qualification. With such a fuzzy signal the door is opened to rational errors in decision-making.

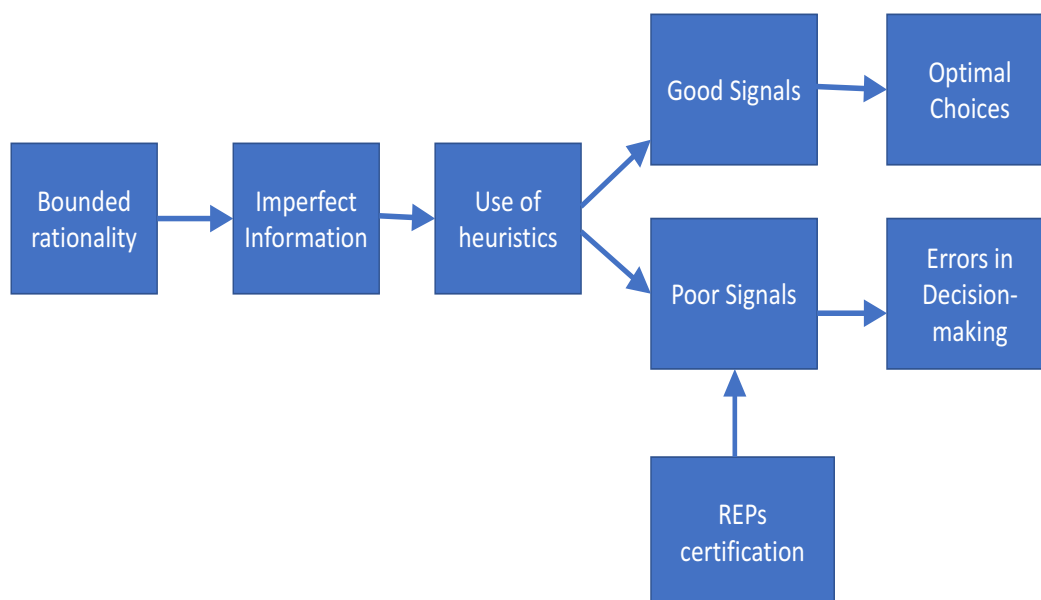
This point is illustrated in Diagram 3.1. With bounded rationality, one has imperfect information and this can result in the rational use and development of decision-making short-cuts or heuristics. This can involve the use of signals and similar indicators of meaningful characteristics such as beauty, attractiveness, qualifications and a trainer's demeanour of what one is interested in, in our case, as potential consumers of the services provided by the exercise industry. If the signals are accurate reflections of reality then they can generate optimal choice,

such the appropriate trainers and gyms which, in turn, generates quality fitness outcomes. However, if the signals are poor or misleading representations of reality, they can generate sub-optimal choices by way of errors in decision-making. In this sense, the demand functions of individuals become distorted and perverse as compared to what that would be, even in a world of bounded rationality, if the signals had been accurate reflections of reality.

These errors in decision-making can generate poor health outcomes such as unnecessary injury generated by not properly qualified exercise professionals who are REPs accredited, or who are employed by REPs accredited gyms. But in a world of imperfect information, and given that the accreditors are trusted by customers, customers may not be able to easily or readily identify the ultimate cause of their injuries. Therefore, a critical welfare implication of poor signalling in a world of bounded rationality is that this can result in avoidable injuries, injuries that can be repeated over time. And such, avoidable injuries can be inflicted on other customers over time in a persistent and sustainable manner given the flawed signalling environment, which in turn impacts on the choices that rational or smart consumers make, albeit these choices are sub-optimal and error-prone.²

² In some instances, customers might experience increases in utility because other deliverables from a trainer. They might be cute or sexy or they might be good conversationalists. But there is little evidence that customers intend to select trainers who would cause them physical harm because they are not properly qualified given the task at hand. Therefore, if individuals chose a sexy trainer who is not adequately qualified because they don't have quality information to inform their decision-making, I deem this an error in decision-making.

Diagram 3.1: Heuristics and Decision-Making



There is evidence that the fitness industry in New Zealand is increasingly injury prone (RNZ, 2018). But it is unclear why. Some would argue that the number of gym goers is increasing and these consumers are simply over doing it at the gym. The increase in gym goers appears to be an international phenomenon. And one would expect that there are those, all over the world, who do the same and ordo their workouts. It is not at all clear if New Zealanders are any different, on average, in preferences for over doing it at the gym than individuals in other countries. This is a hypothesis (New Zealanders are different on average with regards to their preferred behaviour in the gym and working with exercise professionals), that remains to be rigorously tested against the data. This is not the focus of this thesis. Rather we are more concerned with the suggestions that the problems in New Zealand have more to do with the quality, on average, of their exercise professionals given the loose regulatory infrastructure that exists in New Zealand.

Below is a quote from a Radio New Zealand report which summarizes some insights on the relationship between injuries in New Zealand’s fitness industry and the state of its gyms and exercise professionals:

“Essentially anyone can go out and start a fitness business and run boot camps and personal training sessions, we top even rugby now for claims - not for the money value, but for the number of claims.” People did not have to have any qualification to work in a gym, Ms. Austin said. “There’s a whole lot of people out there, we refer to them as cowboys, but they may have been to a fitness bootcamp or a weight loss challenge and they feel they have the knowledge to go out and do something, so they go out and start their own class.” But the problem is there is a science and knowledge behind knowing how the body works ... [and] if you don’t know what you’re doing it could cause an injury and have a big impact on their life” (Ibid, par.12).

As previously mentioned, the detailed evidence provided in Chapter Two shows that there is hardly any of the expected positive relationship between REPs certification and the quality of exercise professionals and between REPs certification and the quality of gyms in New Zealand. This is evidence that supports the hypothesis that the poor signals provided by REPs can result in smart consumers engaging in sub-optimal choices in the domain of exercise-related services. One can expect that rational consumers will select their exercise professionals and gyms based on REPs not upon the objective quality of these professionals and gyms. This would, of course, be controlling for price.

The REPs effect on demand might be illustrated by shifting the industry demand curve for gyms and exercise professionals outward. In the absence of any official signals, in a world of imperfect information, individuals would do their best (satisficing) to locate a gym and exercise professionals they believe worked for them. In this informational noisy world, their choice could be illustrated by D_{pi} in Diagram 3.2. But introducing a trusted signal, such as REPs, would shift the demand curve to D_r , even if this signal is not providing the most accurate information on quality.

Better, more accurate information about quality would shift the demand curve away from gyms and exercise professionals that are REPs accredited if such gyms and staff are not truly of the expected and hoped for level of quality. On the other hand, non-REPs accredited exercise professionals and gyms which are of high quality would experience a higher demand (further to the right) in a world of perfect information or one with better signalling heuristics, for example. This is illustrated in Diagram 3.3. Improved information would shift the demand curve for the non-REPs sector of the exercise industry to the right, such as from D_r to $D_{non-REP}$. On the other hand, the demand for REPs gyms would shift inward to D_r' . This could incentivize REPs exercise professional and gyms to improve the quality of their services to compete on the market, given an

improved signalling environment. This shift analysis is useful as it helps to isolate the impact of the belief about quality using REPs as a signalling heuristic on the demand for service generated in the exercise industry.

Diagram 3.2: The REP Effect on Demand—the REP Sector

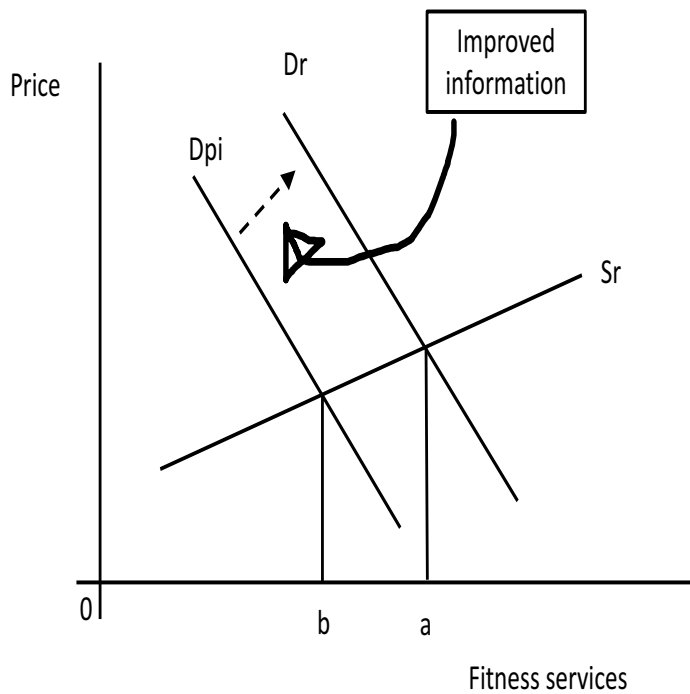
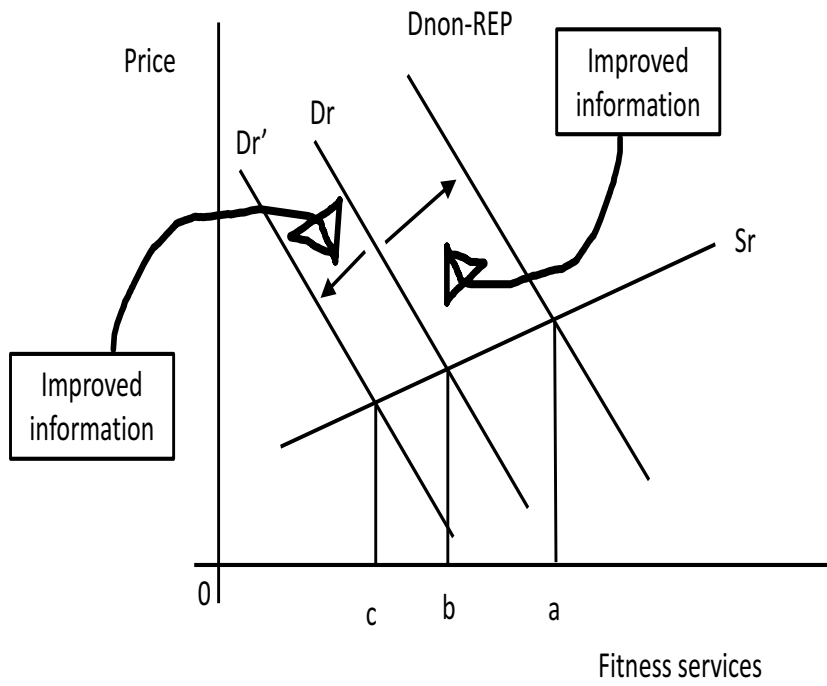


Diagram 3.3: The REP Effect on Demand—the non-REP Sector



Poor heuristics yield poor choices and generate unnecessary injuries. This results in an unnecessary low level of individual welfare (injuries lower the level of wellbeing or utility). The evidence, from Chapter Two, and the bounded rationality modelling with a focus on signalling and heuristics, provides one additional and robust explanation for the relatively high injury rates documented in New Zealand's fitness industry. Furthermore, we argue that these negative demand implications for consumer or client wellbeing can be expected to be reinforced on the supply side. In other words, there can be an expected dynamic relationship between the demand and supply side. Therefore, it is important not to engage in traditional static analysis where changes on the demand side and the structure of the demand and the same for the supply are analysed in isolation.

3.2 Perverse Demand Functions and its Distortionary Impact on the Supply Side

If REPs signals are fuzzy and even misleading, not only will customers engage in erroneous choices, but one can predict that this will also affect the supply of labour. On the consumer or demand side, consumers or clients will not necessarily be searching for top-end professionals if they have the same REP accreditation as the lower-end (qualifications) professionals. In this case, there won't be the same incentive for current exercise professionals to upgrade their skills and for potential exercise professionals to invest sufficiently in their human capital formation to acquire more advanced skills and, therefore, higher end accreditation such as a Bachelor's degree or even relatively, level 5, 6, 7 or even level 4 certification. This can cause a race to the bottom in terms of the supply of higher quality fitness related human capital (Akerlof 1970). This, in turn, can result in an undersupply of relatively higher quality exercise professionals. The gap in the market will, therefore, need to be filled with less qualified exercise professionals.

Given problems related to REPs certification as an accurate signal for the level of quality (proxied by the level of education—Bachelor's degree, certificates, diplomas, etc.) of exercise professionals and gyms, we hypothesize that this will negatively affect the supply of relatively higher quality fitness related labour supply. We hypothesize that the demand side, affected by flawed signalling, in a world of bounded rationality, will have substantive effects on the supply side of the market. It will impact on fitness related human capital formation. This is given how we

expect rational individuals to behave on the supply side (human capital formation) given the incentive environment created on the demand side. This is heavily affected by the REPs registration process in New Zealand. Given bounded rationality, institutions such as REPs, can have a significant impact on decisions on both the demand and supply side.

The importance of institutions in affected decision-making is reiterated by North (1990, 2016). North points out (1994, 359-360)

Institutions form the incentive structure of a society, and the political and economic institutions, in consequence, are the underlying determinants of economic performance. Time as it relates to economic and societal change is the dimension in which the learning process of human beings shapes the way institutions evolve. That is, the beliefs that individuals, groups, and societies hold which determine choices are a consequence of learning through time-not just the span of an individual's life or of a generation of a society, but the learning embodied in individuals, groups, and societies that is cumulative through time and passed on intergenerationally by the culture of a society.

REPs is a critical institutional parameter which impacts on the incentive environment of New Zealand's fitness industry. Critical here is the effect of REPs has given imperfect and asymmetric information wherein REPs signals levels of quality to consumers who rationally adopt a signalling heuristic to inform their choices. This institutional parameter, therefore, can be expected to affect both the demand and supply side of the market.

3.3 What the Data Tells Us: Evidence for Gaps in the Supply of Higher Level Exercise Professionals in New Zealand

Evidence presented below suggests that the supply of relatedly high level formal human capital-exercise professional related labour supply is not growing fast enough to keep up with the growth of this industry as measured by its employment of trainers and related exercise scientists. Indeed, there is trend decline on the number of trainers ranging from Certificate 4 to a Bachelor's Degree. This suggests a gap in the more qualified, higher qualified, exercise professionals. Table 3.1 presents data that we derive from a document located on a New Zealand government website (Ministry of Business, Innovation and Employment, 2019).

These data are only for the 2012-2017 period. However, these are the most pertinent data to answer the questions at hand. These data suggest a reduction in completions for the Certificate 4 and greater qualifications in the sports and exercise domain. This is more easily seen in Diagram 3.4 below. Diagram 3.5 presents a simple linear regression on total completions, which

is clearly and substantively negative. This is the most comprehensive of our analytical figures presented below. The regression coefficient of -110, suggests that, on average, for every year, the number of completions fall by 110. A similar narrative holds for different levels of completions. Another important finding is that whilst there has been a decline in completions, the percentage share of the different level of qualifications related to the level of certificate/degree earned does not change by much over time. The Bachelor's level is at about 25 percent, levels 5, 6, and 7 (the available data that we have are bundled into one group) is around 38 percent, and level 4 is at 36-37 percent. This suggests fixed complementarity across these groups of qualifications—a point that we'll come to later in this chapter. Note, that there are no data here for the lowest level of qualifications. What one would expect is that any gap in labour supply would be filled by the lower level (qualifications) of available labour supply. REPs certification creates the incentive for the lower level of labour qualification (below level 4) to increase relative to the higher level.

Table 3.1 Sports & Fitness Qualification Completions: Degrees, Certificates, and Diplomas

| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Bachelors degrees - sports & recreation | 480 | 520 | 500 | 480 | 405 | 400 |
| Certificates & diplomas 5, 6,7- sports & recreation | 890 | 720 | 795 | 720 | 620 | 595 |
| Certificates 4- sports & recreation | 790 | 650 | 780 | 790 | 580 | 580 |
| Total Completions | 2160 | 1890 | 2075 | 1990 | 1605 | 1575 |
| | | | | | | |
| Bachelors degrees - sports & recreation | 22.2% | 27.5% | 24.1% | 24.1% | 25.2% | 25.4% |
| Certificates & diplomas 5, 6,7- sports & recreation | 41.2% | 38.1% | 38.3% | 36.2% | 38.6% | 37.8% |
| Certificates 4- sports & recreation | 36.6% | 34.4% | 37.6% | 39.7% | 36.1% | 36.8% |

Source: Derived from <https://occupationoutlook.mbie.govt.nz/social-and-community/sports-and-fitness-professionals/>

Diagram 3.4: Sports & Fitness Qualification Completions

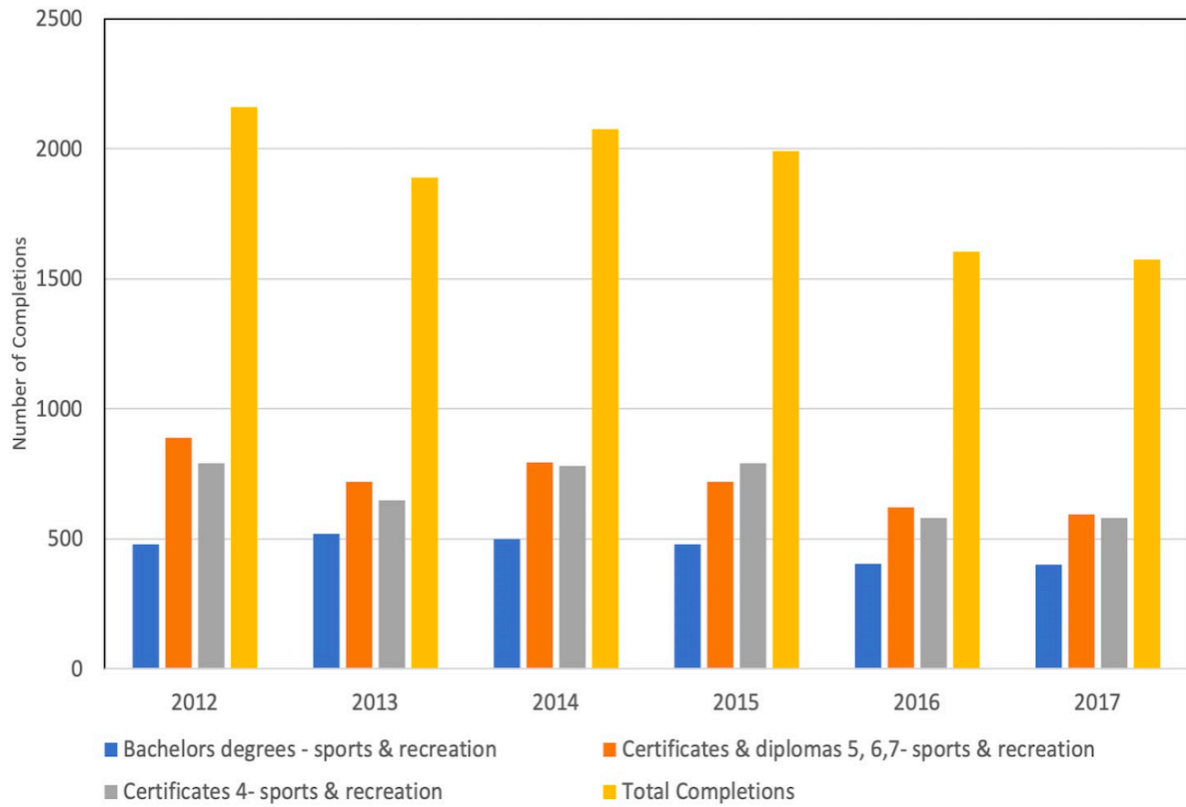
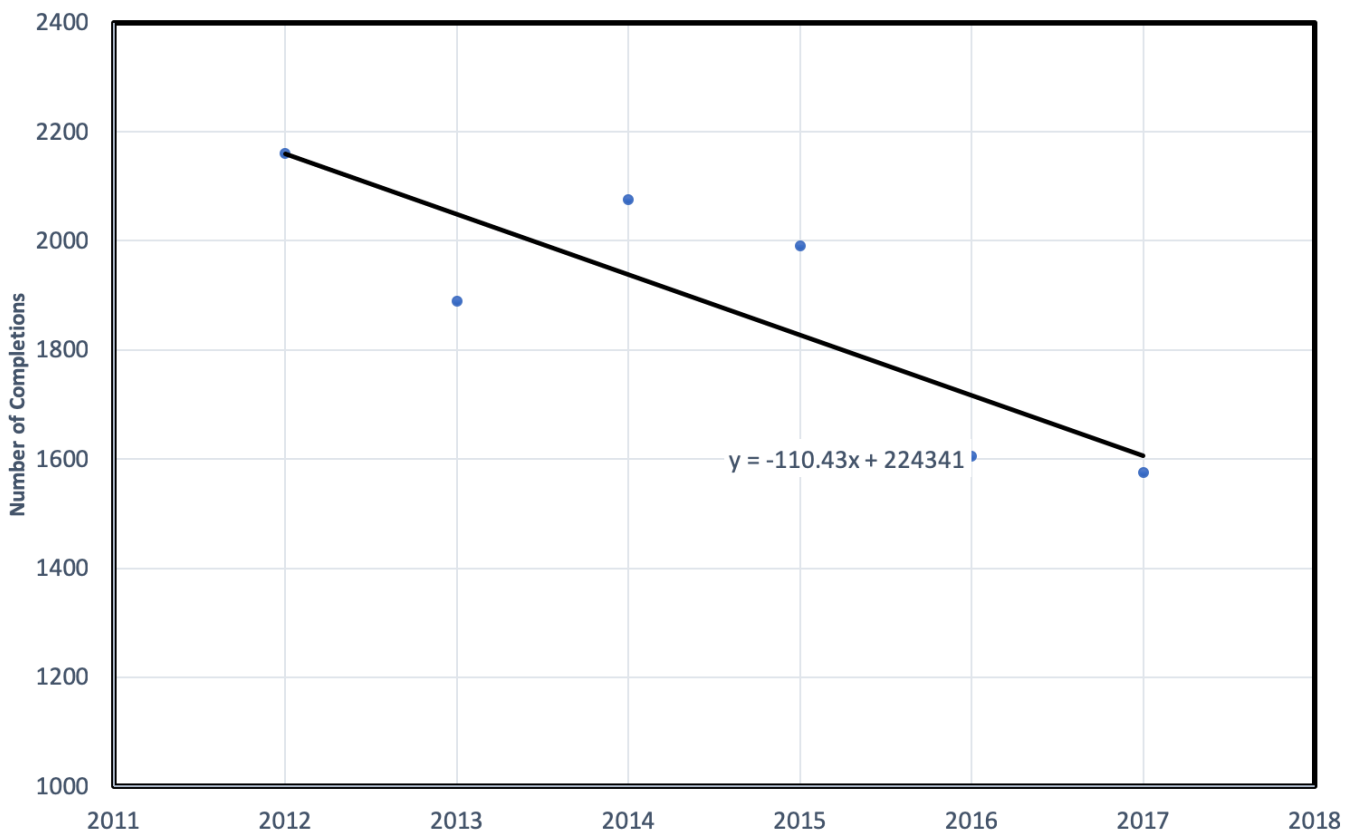


Diagram 3.5: Total Completions



From the available data, we next compute the annual average growth rate in completions for the 2012-2017 period. We do the same for the employment growth rate in the health and fitness industry in New Zealand, which incorporates the fitness industry. The annual growth rate for completions is -6.1 percent and for employment it is 3.5 percent per annum (derived from: <http://occupationoutlook.mbie.govt.nz/social-and-community/sports-and-fitness-professionals/>). These estimates are far from perfect as they are not based on data that can be refined enough. But these data are what are publicly available. Even if one takes these estimates with a grain of salt, it is clear (and as we discussed above) that the completion rate growth rate was negative whilst the employment growth rate was positive. The gap between the two growth rates is substantive. This is consistent with our demand-side analysis which suggests that individuals will not necessarily choose the most qualified exercise professionals if they use REPs certification as their signalling heuristic. One would expect that this would serve to act as a disincentive to individuals to invest less in the relatively more expensive form of exercise related human capital.

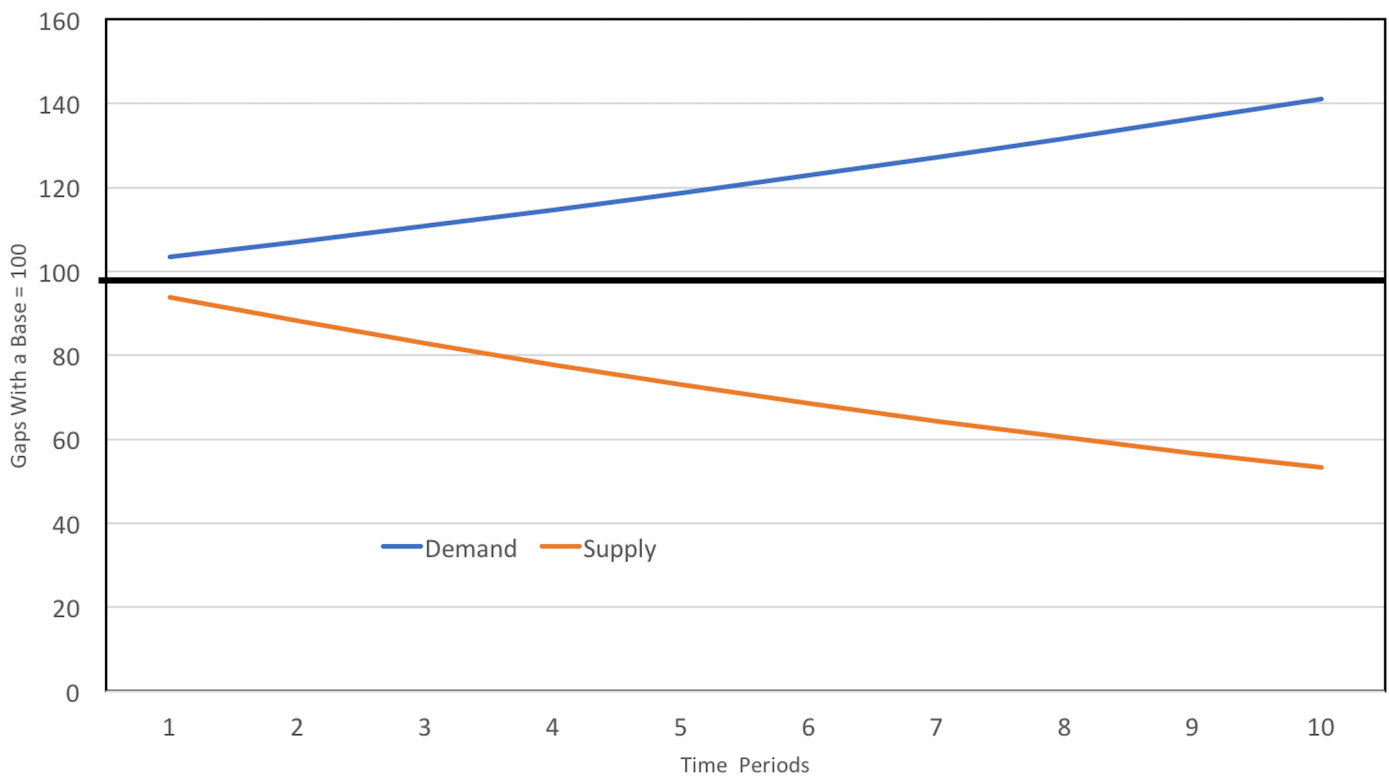
In this context, we conduct a very simple gap analysis. We simulate what the level of demand and supply would be given the growth rates for the recent past carried over for a ten-year period. We assume a base of 100 on both the demand and supply side. Table 3.2 summarizes our

gap results. We start off with no gap, given the assumption of a base of 100 for both demand and supply. But over 10 years, a gap of 88 emerges. This gap is mapped out in Table 3.2 and then illustrated in Diagram 3.6. We then introduce the assumption of zero decline in the supply of higher quality exercise professionals (given our proxy). Our results here are illustrated in Diagram 3.6. Of course, even with this alternative assumption, there is a growing gap, but not as severe as what would exist when the growth on the supply side is negative.

Table 3.2: Projected Demand and Supply Values & Gap

| Period | Demand | Supply |
|------------------|-----------|--------|
| 0 | 100 | 100 |
| 1 | 104 | 94 |
| 2 | 107 | 88 |
| 3 | 111 | 83 |
| 4 | 115 | 78 |
| 5 | 119 | 73 |
| 6 | 123 | 69 |
| 7 | 127 | 64 |
| 8 | 132 | 60 |
| 9 | 136 | 57 |
| 10 | 141 | 53 |
| GAP | 41 | 47 |
| Total GAP | 88 | |

Diagram 3.6: Projected Demand and Supply Values for Health and Fitness Professionals



What this gap analysis suggests is that given a projected gap in the labour market and, given bounded rationality and a problematic signalling heuristic, this gap is most likely to be filled by less qualified, less human capital intensive, exercise and related fitness professionals. As pointed out above, this would be consistent with the information on increasing and, still poorly explained, injury rates in New Zealand’s fitness industry. As we discuss below (see Table 3.3), it is much less expensive to invest in the lower levels of human capital in terms of both money and time. This is also the case across the different qualifications discussed above where we see a definite negative rate of growth across the board. The evidence is consistent with race to the bottom narrative articulated by Akerlof (1970; see also Akerlof and Shiller 2017) in his “Markets for Lemons,” given a world of bounded rationality where there can be considerable informational uncertainty and where, relatedly, information is asymmetric. On top of this, we have a sub-optimal signalling heuristic which does not correct for informational gaps that invariably results in sub-optimal choices and, thereby, in suboptimal outcomes in New Zealand’s fitness sector.

The below quote from Akerlof (1970, 488) from his “Markets for Lemons” paper is most relevant here:

There are many markets in which buyers use some market statistic to judge the quality of prospective purchases. In this case there is incentive for sellers to market poor quality

merchandise, since the returns for good quality accrue mainly to the entire group whose statistic is affected rather than to the individual seller. As a result there tends to be a reduction in the average quality of goods and also in the size of the market. It should also be perceived that in these markets social and private returns differ, and therefore, in some cases, governmental intervention may increase the welfare of all parties. Or private institutions may arise to take advantage of the potential increases in welfare which can accrue to all parties. By nature, however, these institutions are nonatomistic, and therefore concentrations of power—with ill consequences of their own—can develop.

Akerlof (1970, 500) concludes:

We have been discussing economic models in which "trust" is important. Informal unwritten guarantees are preconditions for trade and production. Where these guarantees are indefinite, business will suffer—as indicated by our generalized Gresham's law [race to the bottom]. ... But the difficulty of distinguishing good quality from bad is inherent in the business world; this may indeed explain many economic institutions and may in fact be one of the more important aspects of uncertainty.

In this chapter, but also in Chapter Two, the empirical evidence is consistent with Akerlof's narrative about a world with asymmetric information and of information uncertainty. From the perspective of New Zealand's exercise industry, REPs does not appear to have served the role of the institutional device required to prevent market failures that flow from market for lemons scenarios. We can only presume that REPs' preference function (those of its decision-makers) is not consistent with or focused upon solving the market for lemons problem that appears to have contributed to a reduction in the supply of relatively higher quality exercise professionals in New Zealand. Of fundamental importance, REPs has not served as an optimal signalling heuristic for those seeking fitness related services in New Zealand. REPs' behaviour would be consistent with a profit maximizing firm, one whose objective function does not internalize the negative externalities naturally generated in a world of information asymmetries and information uncertainties.

3.4 A Simple Modelling of Human Capital Formation in a World of Bounded Rationality

The basic human capital model can be utilized even in a bounded rationality framework. One does not need to assume that prospective exercise professionals or individuals seeking skill upgrades are hardwired utility maximizers carefully balancing the marginal costs and benefits of investing in another unit of human capital formation. What one needs to assume, more realistically, is that such individuals are interested in doing the best they can to maximize their wellbeing or utility given all the constraints they face in the real world. Simon (1959, 1987) refers to such behaviour as satisficing. One factor determining investment decisions would be individuals' expected lifetime earnings. Individuals with a lesser time horizon would be more concerned with expected income over a shorter time-span. But expected income would only be one consideration and this expected income need not be carefully calculated. Most humans won't and can't engage in such calculations. But, what is important here, is that individuals can be expected to approximate (satisfice).

The behavioural prediction here would be similar to the neoclassical one, *ceteris paribus*, less expected income will result in a lesser investment in and, therefore, supply of human capital. In Diagram 3.7, given the marginal benefit curve ad , an individual would satisfice at Of supply of human capital. But if REPs has a negative impact on marginal benefits of the higher level certificate or degree holding individuals, this would shift the marginal benefit curve to the right to cg . And, this would then generate a lower level of investment in fitness related human capital formation at Ok . This would be the REPs effect on the supply side. Remember that on the demand side REPs accreditation and the quality of exercise professionals are not closely related. So, the demand for fitness related services is not necessarily or clearly affected by the objective quality of the exercise professionals and gym. This affects the incentives related to fitness related human capital formation.

A REPs effect can be further illustrated in Diagram 3.8. The supply of higher quality exercise professionals can be expected to be greater on the market without REPs in existence, given by supply curve S_{noR} , or with a more effective and objectively reflective signalling heuristic. The supply curve here represents the higher quality or higher credentialed exercise professionals. This compares to the supply curve with REPs, S_{withR} . The market supply curve builds on the micro-individualized supply narrative illustrated in Diagram 3.7. But REPs can be expected to also have a demand side effect. The market demand curve can pivot to D_{withR} from D_{noR} . Here the demand curve become more sensitive to the price of fitness-related services for

the higher quality fitness related services. Given the REPs signalling heuristics, it is not self-evident that one should pay more for the more highly credentialed gym or exercise professional given that less credentialed professionals and gyms could very well be REPs accredited. Diagram 3.8 further illustrates some of the above points. Basically, REPs increases the returns to lower quality human capital formation whilst reducing the returns to higher quality human capital formation. There might also be increasing overlap between the rates of return, at least on the margin, between lower and higher quality human capital formation. The information in Table 3.3 reinforces these points. It is very expensive to earn the higher degree. The higher the degree, the more expensive they are. The lowest level certificates are most often done for free, apart from the time costs which are relatively not that great, compared to the time costs for the relatively higher degrees. Utility maximizing (or satisficing) individuals can be expected invest *less* in fitness-related human capital in this environment. There might be individuals who will continue to invest in the higher-level certificates and degrees. There are a multitude of factors driving individuals' preference functions and these differ across individuals. But the 'average' REPs effect can be predicted to reduce the supply of higher quality/credentialed fitness related human capital. This prediction is consistent with the evidence.

3.5 Summary Remarks on the REPs Effect on Fitness-Related Human Capital Formation in New Zealand

We present a case that, especially in a world of bounded rationality, the demand and supply side of the human capital market interact synergistically. When markets are incomplete, such as when there are information asymmetries, rational or smart individuals, people use heuristics to help them make informed choices on the market. But whether these choices are 'optimal' or 'efficient' very much depends on the reliability of heuristics developed and used. We refer to this type of heuristic as a signalling heuristic. In the New Zealand fitness industry this heuristic takes the form of REPs certification. If this certificate is inadequate or misleading then the choices made by individuals (the demand side) can be expected to be sub-optimal. This can result in a type of race to the bottom such as that articulated by Akerlof in his markets for lemons narrative. We find that given that REPs certification does not correlated well with the objective qualifications of exercise professionals and gyms (Chapter Two) this is expected to give rise to a demand for more lower quality human capital on the market. This relates to what is a sub-optimal signalling heuristic given by REPs. This, in turn, can be expected to give rise to an underinvestment in higher level fitness-related human capital formation (the supply side), which

matches the evidence. The lower quality human capital formation can in turn also be expected to generate unnecessary high levels on fitness and sports related injuries.

But this seeming inevitability can be corrected by improving the signalling heuristic used in New Zealand. This might require government intervention so that the accreditation matrix better matches the quality of qualifications, thus creating the basis for a more effective signalling heuristic. Heuristics can be highly effective and efficient, as the fast and frugal narrative suggest. But this can only be the case if existing and prevailing heuristics are efficient and effective.

Diagram 3.7: Static Analysis of the Effect of REPs on Fitness-Related Human Capital Formation

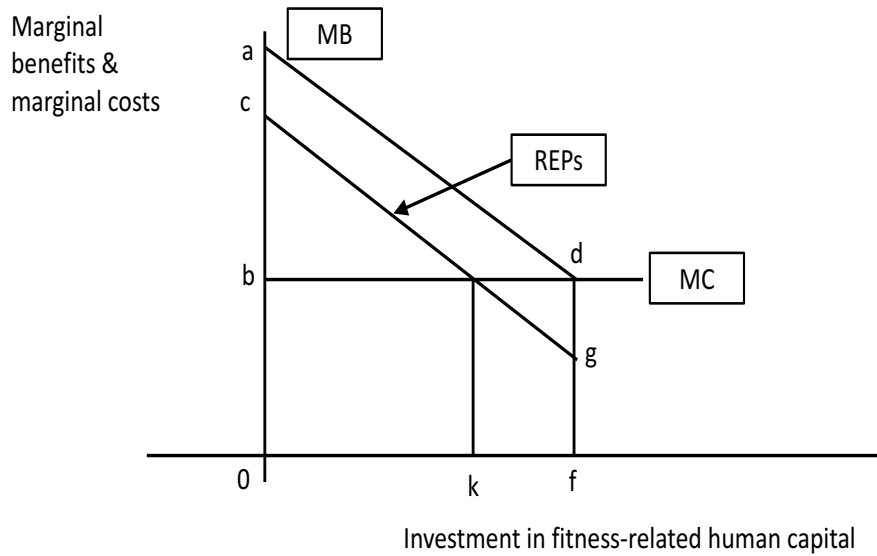


Diagram 3.8: Supply and Demand for Higher Level Qualified Fitness Professionals

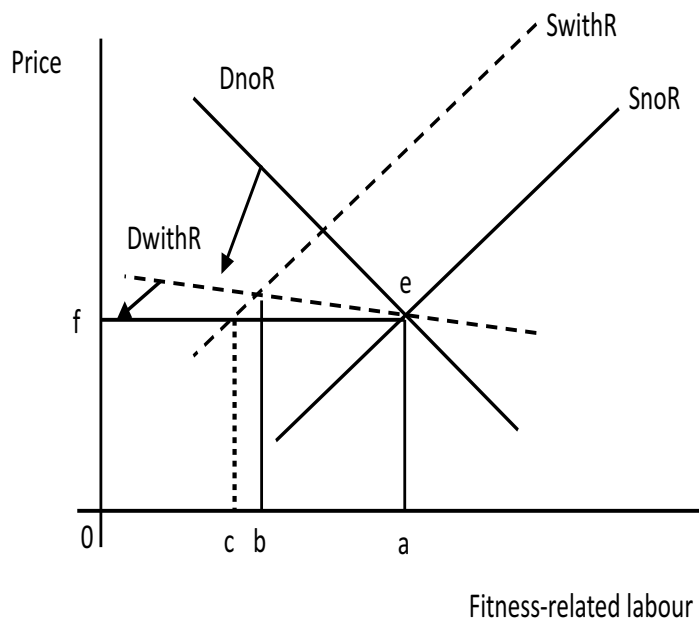


Table 3.3: Cost of Education

Bachelor of Sports Science

\$21,800 over three years

Level 5 certificate or diploma courses

\$6,000 over one to two years

Level 4 certificate

NZ Certificate in Exercise

\$2,850 over one to two years

Level 3 certificate

(some) can be earned for free, 10-12 hours per week

Level 2 certificate

New Zealand Certificate in Foundation Skills

Free (NZMA), 4.5 months.

Cost of REPs Registration

\$300 per annum irrespective of qualification if qualification recognized REPs.

If REPs does not recognize your institutional degree, ie BA from a particular university, initial one-off costs for recognition of prior learning could be high—no info publicly available.

Source: <https://occupationoutlook.mbie.govt.nz/social-and-community/sports-and-fitness-professionals/>

Chapter 4: Concluding Remarks

4.1 Summary of Findings

The focus of this thesis is to examine the quality of practitioners in the New Zealand fitness industry. We use as our proxy or measure for quality, the practitioner's level of education. We then explore the inefficiencies that the issues with quality we identify give rise to within the industry. To this end, we collected representative, publicly available data to ascertain the qualifications of exercise professionals in New Zealand, the first such exercise in data collection we know of conducted for the New Zealand fitness industry. We find that the structure of the New Zealand industry is not efficient and increasingly not fit for purpose and is contributing to negative health outcomes in New Zealand. We make the case that the institutional architecture that the industry works within, particularly the combination of a lack of formal regulations, in conjunction with REPS (Register of Exercise Professionals) and ACC (Accident Compensation Corporations), has contributed to what we label as a 'race to the bottom' with regards to the quality of labour working in New Zealand's fitness industry. We argue that the lack of enforceable regulation leverages an increase in moral hazard because fitness professionals do not have to bear the costs of injuring their clients. These inefficiencies contribute to a growing number of injuries to clients and thus, overall, to an increasing number of New Zealander's sedentary activity which, over time, will, one could argue, correlate to an increasingly unhealthy population.

We present a case where, particularly in a world of bounded rationality, the demand and supply side of the human capital market interact synergistically. When markets are incomplete, such as when there are information asymmetries and abundant information, rational or smart people use heuristics to help them make informed choices on the market. But whether these choices are 'optimal' or 'efficient' very much depends on the reliability of the heuristics developed and used. We refer to this type of heuristic as a signalling heuristic. In the New Behavioural Economics of Organizational Inefficiency: The Example of the New Zealand Fitness Industry

Zealand fitness industry, this signalling heuristic takes the form of REPs registration. The data we collect on levels of education of exercise professionals is supplemented with data on whether these professionals or the gyms they work in are REPs registered. We then use this information to determine the extent to which REPs provides relatively accurate signals to customers on the level of qualifications of trainers or exercise professionals and their gym. We find this form of certification to be inadequate, or misleading, so that the choices made by individuals (the demand side) can be expected to be sub-optimal. This, we argue, has resulted in a type of race to the bottom such as that articulated by Akerlof in his markets for lemons narrative since in a world of imperfect and asymmetric information, such signals are critical to consumer choice.

The data we present are categorized in a manner that makes them amenable to basic statistical analysis. We find that REPs registration strongly *does not* correlate positively with the qualifications of exercise professionals or with their gyms. There are even negative correlations. This correlation overthrows our core hypothesis that in New Zealand's fitness industry registration process, REPs, is a definitive signal of quality. Fundamentally, selecting exercise professionals and gyms guided principally by REPs registration will more likely result in a client choosing a lower-qualification gym and exercise professional than a relatively high-qualification gym and exercise professional. Hence, the customer can end up with exercise professionals and gyms whose services will be sub-optimal and, given the objective level of qualifications of the trainers in an environment of no-fault insurance, can result in unnecessary injuries to the customer.

The fact that there is no substantive positive relationship between REPs registration and exercise professional qualification suggests that there is a disincentive for individuals to invest in the human capital required for the fitness industry to provide quality services to its customers. We provide data on the availability of qualifications and their costs. It is quite inexpensive to earn a low level of qualification and one is able then to obtain REPs registration even with a very low

level and inexpensive qualification. At present, there is no quality hierarchy in the certification process; the lowest level of certification bears the same REPS seal as a doctoral degree in exercise science does for REPs. This strongly suggests a disincentive to invest in further human capital formation. We find in our analysis that the overall level of education or human capital within the industry has fallen over time. This may be because there is no clear incentive, in the present highly competitive environment, for gyms to hire the most qualified exercise professionals, unless they are absolutely required for certain specialized tasks, and even then, it is not at all clear that they do so.

We make the case, well grounded in economic theory, that since REPs certification does not correlate well with the objective qualifications of exercise professionals and gyms, that this as expected is giving rise to a demand for more lower quality human capital on the market. This in turn relates to what is the sub-optimal signalling heuristic REPs is providing, and can be expected to give rise to an underinvestment in higher level fitness-related human capital formation (the supply side). The evidence we present supports this scenario. The lower quality human capital formation in turn is expected to generate unnecessary high levels on fitness and sports related injuries, a problem the New Zealand fitness industry is presently grappling with.

But this seeming inevitability can be corrected by improving the signalling heuristic used in New Zealand. It might be as simple as REPs varying their seal of approval, offering variations in the REPS brand. However, given their present business model, this may prove too onerous. Or, it might require government intervention so that an accreditation matrix better matches the quality of qualifications. This action, in and of itself, will halt the present race to the bottom. Adopting minimal licensure laws will provide a stronger more effective signal than REPs registration variations alone. Heuristics can be highly effective and efficient, as the fast and frugal narrative suggests. But this can only be the case if existing and prevailing heuristics are efficient and effective.

4.2 Limitations

The main limitation of this project rests with the fact that we only use publically accessible information and we did not have contact with any exercise professionals or their organizations. This means that we were not able to collect a fuller data set as not all gyms in New Zealand provide public information on the quality and the skill level of their exercise professionals. We estimate that we have only dealt with approximately 50% of the population. However, as we discuss in chapter 3 above, the gyms not publically disclosing more detailed information are gyms that appear to advertise for trainers with very low level of qualifications. Also, consumer theory suggests that firms should publicly disclose information if they have positive information that would tend to attract clients. This would support the hypothesis that the information at hand biases our results in favour of the hypothesis that REPs provides an accurate signal on quality of service.

4.3 Future Perspectives

We hope to continue this line of research for a doctoral dissertation. A better understanding of why people in the fitness industry behave the way they do would be valuable. This would include getting a more comprehensive understanding of what incentivizes fitness professionals to upskill, as well as developing a better understanding of how consumers choose their exercise practitioner. Further exploring the role of the ‘sexy heuristic’ plays in the industry, the idea that perceptions of ‘beauty’ or attraction are important drivers in the selection of practitioners, would be a fruitful avenue of future research. We would also wish to compare how these different heuristics or mechanisms play out in different labour markets with clearly different regulatory architecture, for example, comparing Chile whose fitness industry is more highly regulated to that of New Zealand’s.

This research agenda would involve going beyond the scope of data collection offered in this thesis and would necessitate contacting practitioners, and multiple organizations within the industry and hence ethical issues would arise. Moreover, we would wish to design choice experiments, for as students of experimental economics, we believe this will further our understanding of why the fitness market works the way it does.

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Appendix One

Exercise Professional Qualifications and REPs Registration

Yes=2; No=1

| | REPs Code Trainer | Qualification Level |
|--------------|-------------------|---------------------|
| Auckland | 1 | 5 |
| Hamilton/Cam | 1 | 5 |
| Auckland | 2 | 5 |
| Wellington | 1 | 5 |
| Wellington | 1 | 5 |
| Wellington | 1 | 5 |
| Auckland | 1 | 5 |
| Auckland | 1 | 5 |
| Auckland | 1 | 5 |
| Wellington | 1 | 5 |
| Wellington | 2 | 5 |
| Auckland | 1 | 5 |
| Auckland | 1 | 5 |
| Hamilton/Cam | 2 | 5 |
| | | |
| Dunedin | 1 | 5 |
| Auckland | 1 | 5 |
| | | |
| Hamilton/Cam | 2 | 4 |
| Auckland | 2 | 4 |
| Wellington | 1 | 4 |
| Wellington | 1 | 4 |
| Christchurch | 1 | 4 |
| Auckland | 1 | 4 |
| Auckland | 1 | 4 |
| Hamilton/Cam | 1 | 4 |
| Hamilton/Cam | 1 | 4 |
| Dunedin | 1 | 4 |
| Wellington | 1 | 4 |
| Wellington | 1 | 4 |
| Wellington | 1 | 4 |
| Wellington | 1 | 4 |
| Wellington | 1 | 4 |

REPs Code Trainer**Qualification Level**

| | | |
|--------------|---|---|
| Wellington | 1 | 4 |
| Wellington | 1 | 4 |
| Wellington | 1 | 4 |
| Wellington | 2 | 4 |
| Wellington | 1 | 4 |
| Wellington | 2 | 4 |
| Wellington | 2 | 4 |
| Wellington | 2 | 4 |
| Wellington | 1 | 4 |
| Christchurch | 1 | 4 |
| Christchurch | 1 | 4 |
| Christchurch | 1 | 4 |
| Christchurch | 1 | 4 |
| Christchurch | 1 | 4 |
| Christchurch | 1 | 4 |
| Christchurch | 1 | 4 |
| Christchurch | 2 | 4 |
| Auckland | 2 | 4 |
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| | REPs Code Trainer | Qualification Level |
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| Auckland | 1 | 4 |
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| Auckland | 1 | 4 |
| Auckland | 2 | 4 |
| Hamilton/Cam | 2 | 4 |
| Hamilton/Cam | 2 | 4 |
| Hamilton/Cam | 1 | 4 |
| Hamilton/Cam | 1 | 4 |
| Hamilton/Cam | 1 | 4 |
| Dunedin | 1 | 4 |
| Dunedin | 1 | 4 |
| Dunedin | 1 | 4 |
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| Dunedin | 1 | 4 |
| Wellington | 1 | 4 |
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| Wellington | 2 | 4 |
| Wellington | 2 | 4 |
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| Wellington | 2 | 4 |
| Wellington | 1 | 4 |
| Auckland | 1 | 4 |
| Dunedin | 2 | 3 |
| Wellington | 1 | 3 |
| Wellington | 1 | 3 |

| | REPs Code Trainer | Qualification Level |
|--------------|--------------------------|----------------------------|
| Wellington | 1 | 3 |
| Wellington | 1 | 3 |
| Wellington | 1 | 3 |
| Wellington | 1 | 3 |
| Wellington | 2 | 3 |
| Wellington | 2 | 3 |
| Wellington | 1 | 3 |
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| Wellington | 1 | 3 |
| Auckland | 1 | 3 |
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| Auckland | 1 | 3 |
| Wellington | 1 | 2 |
| Auckland | 2 | 2 |
| Christchurch | 2 | 2 |
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| Wellington | 1 | 2 |
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| Wellington | 1 | 2 |

| | REPs Code Trainer | Qualification Level |
|--------------|--------------------------|----------------------------|
| Wellington | 2 | 2 |
| Wellington | 2 | 2 |
| Wellington | 2 | 2 |
| Wellington | 1 | 2 |
| Wellington | 1 | 2 |
| Wellington | 1 | 2 |
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| Christchurch | 1 | 2 |
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| Auckland | 2 | 2 |

| | REPs Code Trainer | Qualification Level |
|--------------|--------------------------|----------------------------|
| Auckland | 1 | 2 |
| Auckland | 1 | 2 |
| Auckland | 1 | 2 |
| Hamilton/Cam | 1 | 2 |
| Hamilton/Cam | 2 | 2 |
| Hamilton/Cam | 2 | 2 |
| Hamilton/Cam | 1 | 2 |
| Dunedin | 1 | 2 |
| Dunedin | 1 | 2 |
| Dunedin | 1 | 2 |
| Dunedin | 1 | 2 |
| Wellington | 1 | 2 |
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| Wellington | 2 | 2 |
| Wellington | 2 | 2 |
| Wellington | 2 | 2 |
| Wellington | 1 | 2 |
| Wellington | 1 | 2 |
| Auckland | 1 | 2 |
| Hamilton/Cam | 1 | 2 |
| Christchurch | 1 | 1 |
| Christchurch | 1 | 1 |
| Christchurch | 1 | 1 |
| Wellington | 1 | 1 |
| Wellington | 1 | 1 |
| Wellington | 1 | 1 |
| Wellington | 1 | 1 |
| Wellington | 2 | 1 |
| Wellington | 1 | 1 |
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| Wellington | 1 | 1 |
| Christchurch | 1 | 1 |
| Christchurch | 1 | 1 |
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| Christchurch | 1 | 1 |

| | REPs Code Trainer | Qualification Level |
|--------------|--------------------------|----------------------------|
| Christchurch | 1 | 1 |
| Christchurch | 2 | 1 |
| Christchurch | 1 | 1 |
| Christchurch | 1 | 1 |
| Christchurch | 1 | 1 |
| Auckland | 1 | 1 |
| Auckland | 1 | 1 |
| Auckland | 1 | 1 |
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| Auckland | 1 | 1 |
| Auckland | 2 | 1 |
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| Auckland | 2 | 1 |
| Auckland | 1 | 1 |
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| Auckland | 1 | 1 |
| Auckland | 1 | 1 |
| Hamilton/Cam | 2 | 1 |
| Hamilton/Cam | 1 | 1 |
| Hamilton/Cam | 1 | 1 |
| Hamilton/Cam | 2 | 1 |
| Hamilton/Cam | 1 | 1 |
| Hamilton/Cam | 1 | 1 |
| Hamilton/Cam | 2 | 1 |
| Dunedin | 1 | 1 |
| Dunedin | 1 | 1 |
| Dunedin | 1 | 1 |
| Dunedin | 1 | 1 |
| Auckland | 1 | 0 |
| Wellington | 1 | 0 |

| REPs Code Trainer | Qualification Level | REPs Code Trainer | Qualification Level | REPs Code Trainer | Qualification Level |
|----------------------|------------------------|-------------------------|------------------------|----------------------|------------------------|
| 1 | 1 | 2 | 1 | 2 | 1 |
| 1 | 1 | 2 | 1 | 1 | 1 |
| 1 | 1 | 2 | 1 | 2 | 1 |
| 1 | 1 | 2 | 1 | 1 | 1 |
| 1 | 1 | 2 | 1 | 2 | 1 |
| 1 | 1 | 2 | 1 | 1 | 1 |
| 1 | 1 | 2 | 1 | 2 | 1 |
| 1 | 1 | 2 | 1 | 1 | 1 |
| 1 | 1 | 2 | 1 | 2 | 1 |
| 1 | 1 | 2 | 1 | 1 | 1 |
| 1 | 1 | 2 | 1 | 2 | 1 |
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| 1 | 1 | 2 | 1 | 2 | 1 |
| 1 | 1 | 2 | 1 | 1 | 1 |
| 1 | 1 | 2 | 1 | 2 | 1 |
| 1 | 1 | 2 | 1 | 1 | 1 |
| 1 | 1 | 2 | 1 | 2 | 1 |
| 1 | 1 | 2 | 1 | 1 | 1 |
| 1 | 0 | 2 | 0 | 2 | 0 |
| 1 | 0 | 2 | 0 | 1 | 0 |

