Country Universities Centre
SOUTHERN DOWNS

Commencing a Successful

UNIVERSITY JOURNEY

Introduction

There are numerous pathways that lead new students to commence a university course of study.

The common perception holds that the typical student 'simply progresses' from school to technical and/or tertiary education, and then seamlessly into a life-long, single-focus career. However, 'real life experience' is quite different and almost always more complicated than that. In fact, less than half of first year students enrol directly from school – particularly when international students enrolments are also considered (Australian Government, Department of Education 2023). Although school-leavers represent an important component of first-year tertiary students, the critical point is that entry to and progress through the tertiary education sector is truly open to a much wider cohort than just that group. No one should feel inhibited because they differ from the 'normal new student'. Increasingly and as will be discussed later in this paper, there is no longer a 'normal' nor 'average' student. Each enrolment represents a step by that student on their own, unique 'life and career journey'.

Remember, too, that this journey is set against a backdrop of compounding change – for individuals (as we mature and see new opportunities and challenges) and, more widely, in the rapid evolution of science, technology, business, society and the professions. All fairly exciting stuff!

Given that scenario, tertiary (and any other form of training and education, for that matter!) should be seen as part of life-long learning, adding to and deepening our store of intellectual knowledge, wisdom, ethics and practical skills. The overall objective is to improve both our own lives and experiences and those of our communities.

Sometimes this tertiary education process is expressed as an evolving continuum of (observed) data – (collected) information – (deduced) knowledge – (accumulated) wisdom.

'Success' in tertiary education is not simply a matter of obtaining a better job, more security and accumulating wealth (as important as those may be!). Tertiary education opens a deeper understanding of fields of interest and, very importantly, exposes those involved to more rational and structured ways of thinking. These in turn, create an environment conducive to sound decision-making across all our endeavours. The acquired skills of learning and research have never been more important, given the huge volume of often inaccurate (and sometimes purposely misleading!) information that continually confronts us all through ICT, social media etc.

It is often argued that a key benefit of advanced education is that it is a humbling experiencing – often exposing how little any of us really know about anything…. there is always plenty to learn!

No education or acquisition of knowledge is ever wasted and it is reasonable to expect that some changes in interest and priorities might occur as the student progresses through their time at university. Nevertheless, it is very time consuming (and expensive!) to frequently change career or study plans. Take the time up front to consider your real capacities and interests/ambitions – not just now but, as best you can assess, across, say, the next five or ten years.

Related to that is the consideration of the reasonable prospects for long-term employment and success (however one wants to measure that) in that chosen area. Additionally, as is often possible in undergraduate programs, students should choose general ('foundation'), transferable subjects in the first instance, leaving more esoteric or specialised subjects for later semesters when they may be in a better position to decide if they still suit evolving career objectives.

At this point, mention should be made of the recent emergence of the 'gap year' concept. This paper emphasises the importance of freedom of choice and that there is no such thing as 'one size fit all' in making such choices. That aside, students should carefully consider the appropriateness of following that model. The concept is too recent to produce longitudinal study results at this time. On the face of it, that additional year of 'life experiences' may produce more mature, undergraduate students. Importantly, it may allow the student time to secure some additional funding for the costly path ahead.

However, there are early indications that those pursuing a 'gap year' path may, in fact, not always return to tertiary education – at least not in the foreseeable future.

Given all of this, it is not possible to give students currently finishing high school definitive advice except to suggest that very close consideration be given to the possible long-term impacts of that 'time away'. Be careful not to waste time nor momentum.

In recent years, the concept of a 'full time university student', at least at under-graduate level, has largely disappeared. Most students take on a significant academic workload and, are also employed part-time, ideally in an area related to their degree but often, simply to 'make ends meet'!

Fortunately, online access to lecture and research material has made study time more flexible. However, physical interaction with academic staff and fellow students should remain a core aspect of university studies and relationships. Centres such as CUC Southern Downs and its sister centres elsewhere also help provide that type of interface. Online, in person and support centres such as CUC's facilities can hopefully act seamlessly to provide students with the full complement of support, regardless of their location.

Two points need to be highlighted here:
Firstly, there is no suggestion here that one must have a tertiary qualification to be successful – (however one might want to define 'success'). Such a path is not for everyone. Many enjoy fulfilling careers and life experiences without additional study. However, the fact remains that, in our increasingly complex work and physical environment, the best, most challenging and most rewarding careers and professions have a minimum of a degree qualification as entry point.

Secondly, while there are, no direct, up-front charge for tertiary education in Australia for most, it is certainly not free. Support loans available from the Commonwealth Government must eventually be repaid. More importantly, the time and effort the student will need to 'invest' in achieving those further qualifications should not be underestimated.

For all these reasons, be careful about program and course selection – always aligning your choices with your own ambitions and goals, not just for now but for, say, for the five or so years into the future.

Take the time to talk directly with 'key informants' – that is, those who understand and in some way involved in your likely study/employment area. Depending on the nature of your enquiry, this group might include lecturing and administrative staff from your home university and practicing professionals working in that field within your region. The regional CUC's can often assist with making those local links and hold occasional events/activities for that purpose. Also, just be a little cautious here - there will be those who will genuinely try to help you but probably do not possess the detailed, quality advice you need through that phase. Target your questions to those who do indeed have that contemporary knowledge.

Sometimes, you might find it necessary to amend your course or study program. Good early planning should however limit that need, which will almost always delay completion of the degree and involve additional expense.

Whatever the plan and path, you must finish what you start - there is very limited value in a half-finished qualification!

There is some good news in all of this. Firstly, and particularly at first degree level, students are, in effect, selecting the areas of study and careers that interest them. That makes study much easier!

Typically, studies at first year level are not conceptually difficult and are well within the intellectual capabilities of the average student. As will be discussed below, the challenges are more related to ongoing student motivation, organisation and workload rather than to intelligence per se.

Some specific observations/guides

The University in which you are enrolled will no doubt provide you with detailed orientation information for your institution, programs and subjects. These will be comprehensive, and it is essential that you take the time to read and fully understand them – asking questions as you need to lecturing staff, tutors or those in the university's services support areas. Many issues and frustrations can be avoided by taking your time through that phase.

The CUC Southern Downs, headquartered in Warwick and with outreach services across the Southern Downs Region, provides a range of free support services to enrolled tertiary students. Details are available on website: cucsoutherndowns.edu.au

In addition, below are some observations which summarise and reinforce the information from those other sources and place particular emphasis of tertiary student support in the Southern Downs region. They highlight some of the issues that can typically impede students from excelling in their chosen program and suggest pathways to avoid them.

A different approach and environment

Tertiary education is quite different from experiences at school which are much more structured and formal, typically delivered in a 'teacher-to-class' environment. Whilst still based on a curriculum and required outcomes for success, the tertiary approach emphasises individual progress and development within specific, chosen disciplines. This is a mature and more fulfilling approach for post-school adults but, with it, comes with much greater responsibility on the student to become directly involved and not simply learn and repeat facts.

The first year is invariably challenging, and the highest attrition occurs during those initial two semesters, as students may not easily adapt to the new environment, approach, and the volume of work required. Engaging in transitional ('Head Start' – type) programs represent an excellent innovation to help smooth that transition and participation should be closely considered where available.

Fortunately, enrolment retention typically improves in later sections of the degree as students become immersed in areas which truly attract and hold your interest, compounding over time.

Even at this early stage, students should recognise that an initial task at university is to learn through a range of mediums - how to critically read, work alone or in teams, and prepare and present analytical research, findings, conclusions and opinions based on fact. That research is not simply reading; it involves critically assembling information from acknowledged, quality sources (not relying on Google nor social media!) and integrating that into a coherent and logical piece of work. (These matters are further discussed later in this paper.) In other words, education at this level is not only about understanding that specific topic but also about the process of learning which can be applied much more widely than the course at hand.

The work you present in your university work and assessments must be your own. Where other information is drawn upon, quoted, or forms the basis of your work (which will typically be the case in undergraduate tasks), those sources must be fully acknowledged in quotations and referencing and/or in a bibliography.

Progress through your program/choosing subjects

Your program of study will typically recommend a certain progress and sequencing of work from semester to semester, reflecting the increasing level of skill required. In many cases, prerequisite subjects will, in effect, enforce that order. Students should attempt to adhere to that suggested program, not only because of the compounding nature of academic units but also because losing sequencing can leave subjects out of order and isolated. The outcome can be extending the duration of a degree by one, and sometimes two semesters!

An integral part of all of this is the networks you need to develop with academic staff, your fellow students, and even students from other disciplines, through CUC and regional events etc.

Your task at university will be much easier if you learn some 'tools of the trade' in the first few weeks and strictly apply them thereafter. Much of the work will require the ability to read critically, accurately analyse information, keep good records and be able to present and reference your work.

It is relatively easy to reference and cross-reference your work (probably using the Harvard Referencing System and Endnote software) and you should learn to use and always apply them in your work from the beginning.

Research is not a matter of word count nor is about simple description or narrative. Assignments (which typically represent the bulk of course assignments) must be well-presented and develop up an argument or presentation that concisely addresses the questions asked ('Truth well told'). Correct English usage and a sound, logical layout is essential.

Even though the subject matter may become complex, expression used should provide a balance emphasising simplicity but, at the same time, not 'dumbing down' important concepts or issues. (As Einstein himself put it: 'Everything should be made as simple as possible, but no simpler'.)

Go steady – a long haul

Your tertiary education journey will extend over several years. New students often underestimate the amount of work involved and over commit initially. It is much more important in the early semesters to establish an appropriate approach of research and study and to progress through your program under a 'small steps forward, no steps back' mantra. Being over-ambitious through these early stages can often lead to failure in subjects, making it difficult to recover.

If you are truly committed to achieving academic goals, you must be willing to commit the time and effort over a longer period, making that study a priority task and striving to excel at it.

Simply 'scraping through with just passes' is not good enough to get the most out of your education, get full value for your money and effort and, eventually, to secure the best career opportunities available.

This requires self-discipline and organisation regarding where and when you study, how you develop your study habits, and how you seek support available from your university and CUC and other available networks.

As noted above, many students find the first one or two semesters (i.e. Year 1) the most challenging due to the different environment, workload and self-organisation required. Unfortunately, attrition rates are highest during this period. You must ensure that you are not one of those who lose touch early, fall behind and dropout. That is not a matter of intelligence but rather a lack of organisation and ability to 'get going from day 1'.

Newly enrolled students often allow their enthusiasm to outpace their understanding of workloads involved and the family, financial and other work commitments they will encounter as their studies continue. It is far better to undertake a smaller number of subjects and complete them to a high level. Personal anxiety, poor results and failures almost invariably results from taking on too much.

Remember that you are paying for your participation, and it is remarkable that some students simply 'don't attend' many of the study activities. This is despite significant studies and research showing a direct correlation between involvement in all manner of student participation and the achievement of substantially higher grades.

For the most part, time at university for undergraduates is 'a hard grind' of active study, attending lectures (in person or via the internet), tutorials, assignments, work placements, and field experience.. Settling into a routine - regular study pattern and timetables early will be vital – it is about consistent effort with work commencing at, or even before, the first lecture and proceeding in a steady, timely way.

A positive observation for students is that, even though the subject matter and level of difficulty is likely to increase in second and later years, attrition rates typically fall dramatically. This suggests that the initial challenge largely relates to understanding the university environment and working hard within it. Do not allow yourself to fall behind to become 'a drop-out statistic' during that first stage - you are the only one who can prevent that.

There is a huge range of attractive activities available to those enrolled in such institutions and through networks that emerge at CUC's and elsewhere. Remember, however, the primary purpose you have decided to commit to tertiary education in the first case. A useful adage here runs: "What are the two loneliest places on earth? One is sitting for an exam for which you have not undertaken enough study; the second is, at a graduate interview for that job you really want, you now realise that your GPA is non-competitive!"

Success in tertiary education is, like most undertakings, is about choices, organisation and persistence!

Integrating with work

Even from the initial enrolment, it is essential to look to the future and consider where you will get practical experience in your chosen field. Later in your degree, there will almost certainly be opportunities for work placements and other activities. To make your endeavours meaningful, you should strive to integrate your studies with that profession or career. Even in the early stages, this might simply involve talking and engaging with practitioners and reading as widely as possible in the discipline. (The CUC should be able to assist with links there.)

If you are unsure about either institutional (administrative) or academic matters – never hesitate to ask and always be willing to be involved and go that bit further to truly understand -that is a fundamental element of education at this level!

It might be jokingly quipped that 'threes get degrees' – but in the contemporary environment, that sort of approach simply does not suffice and will not get you to the level of understanding you require nor the quality job and career you seek.

Challenging times

Particularly at under-graduate level, you will go through periods where your studies are not going well and there is a temptation to simply 'give up' or defer. That may be the final outcome but do not take that step lightly. There may be consolation in the fact that almost all students experience such times. The question is what you do about it.

Firstly, do not do anything rash or irreversible without giving yourself time to consider all options. Solutions often lie in applying some of the techniques identified above, particularly in breaking down the current problems into level of priorities and 'bite-size bits' to be addressed. Importantly, discuss the problems with others who can assist – obviously your lecturing and tutorial staff but also local links through CUC Southern Downs and others.

Plagiarism

As observed earlier in this paper, tertiary education is all about the acquiring and expanding knowledge. Even at this initial stage, students need to be aware of the ownership rights and the recognition that must always be ascribed to the owner of any text, research outcomes, published material or other forms of knowledge.

The recent emergence of artificial intelligence (AI) and the black market in research and assignments has highlighted these issues. This is a fairly complex area and beyond the scope of this paper. Suffice to say, however, that stealing the work and ideas of another is as serious as an offence as there is in academia. A significant breach can easily see the offending student expelled from the program. Just don't go there! Universities now have very sophisticated detection programs, and the risk to you and your career simply are not worth it.

Equally important is that you protect your own work from theft. You can understand that to allow your work to be used or stolen can lead to a challenge as to the real owner of the work.

Good luck with your studies.... they are invariably worth the effort!

Paper by:

Emeritus Professor Michael Hefferan PhD. January 2025.

Some further readings:

- *Davis J. How to study effectively as a first year at university. https://theuniguide.com.au/campus/how-to-study-effectively-as-a-first-year-at-uni*
- *University of Southern Downs. Advice for first year students on how to study at university. https://www.unisq.edu.au/study/why-unisq/unisq-stories/testimonials/advice-for-first-year-students-on-how-to-study-at-university*
- *Australian Government. Department of Education. Canberra (2024): Tips to thrive while studying at University. https://www.education.gov.au/newsroom/articles/tips-thrive-while-studying-university*
- *University of New South Wales. Learn to Study at University. https://www.student.unsw.edu.au/learn-study-university*

NOTES ON REVIEW OF PUBLISHED MATERIAL

ABRIDGED EXTRACT : Hefferan M.J. (2021) Real Property in Australia, third edition. Routledge. Oxford. UK.

[This abridged extract is included to assist in a wider understanding of the use of existing academic and professional literature . Certain relevant additions/alterations have been included by the author for the purpose of generalising findings.]

1. Critiquing information

A thorough, critical approach to the review of existing information, sources and publications is essential in providing the evidence base for academic work. This is not simply matters of research interest for academics, but are fundamental to commercial, legal or governmental decision-making. Today, the access to vast amounts of information through the internet and other data platforms makes 'information dumping' very simple. However, these are only random facts, data or information – not knowledge nor true research.

When reviewing existing literature and publications, the following issues need to be taken into account (Cooper & Schindler 2001; Hair et al 2007; Saunders et al 2009; Maylor & Blackmon 2005):

Currency of information

Given the rapid rate of contemporary change, currency of information is critical. With the exception of foundational theory and principles, publications more than a few years' old may not reflect current knowledge. The 'shelf life' of some knowledge may be even shorter, depending on the subject material. While some seminal works may be decades old, generally speaking, the older a work, the more careful and critical the researcher must be regarding its contemporary value.

It needs to be remembered, too, that published material is usually based on research undertaken well before the date of publication. Thus, the time taken to publish hardcopy makes obsolescence a real threat in today's research environment. Further, a check needs to be made of the list of references of a research paper or the bibliography of a book to confirm the quality and depth of the research, and the age of the wider research upon which the publication is based.

Quality

Clearly, not everything published represents research, nor should it be relied upon as such. Before accepting material, critical regard must be paid to the qualifications and experience of the author, the methodology employed, its currency and its research and statistical base. In this context, 'critical' does not mean being negative or dismissive, rather, it is about being careful. Prior findings require confirmation and the opinions given must be accepted as sound before incorporating them into future work.

Newspapers (and their advertising components) and various commercial and industry magazines, newsletters and so forth, fulfil a valuable and important role in recording current events and in presenting opinion. An academic or professional must realise, however, that they normally do not provide the level of research required to provide an evidence base for complex projects and tasks. Caution must always be exercised in relying on these resources, which are often little more than single-source opinion.

For more substantial published articles, the purpose and quality of the publication, the approach taken, the reputation and known stance of the author and, particularly, whether the article is well referenced, are all important indicators of the value, or otherwise, of that work.

Breadth and depth

Sound research is normally broadly based and, quality notwithstanding, the over-reliance on a particular source can limit the overall perspective.

Even reputable journals will often exhibit a particular culture or commonality of opinion. For example, articles on 'buildings' published in an architecture journal will typically approach the topic differently from, say, an article on buildings in journals that relate to economics, published for valuers and property economists. Neither publication is wrong or misleading; nor, however, will either, alone, provide a comprehensive research base.

Also, be careful not to accept any single paper as definitive in a particular area. Verification, or at least the use of more than one reliable source, is essential before making deductions.

Published versus unpublished data

Some material uncovered during a search will be published (i.e. printed and circulated as a text, journal article or similar); others will be unpublished (e.g. an individual's private notes, or discussion or conference papers and reports that have not been widely circulated).Though both sources may provide quality information, publication usually signifies that the work has been previously peer-reviewed and then exposed to wide professional or public critique. This process normally confers a higher level of intellectual rigor and validity on published rather than unpublished material.

The Australian environment

The volume and breadth of available Australian studies into many topics and issues, while improving, is normally small compared with international research, particularly from the United States, the United Kingdom and Europe.

Although the internet provides relatively easy access to much overseas research, beware of various pertinent differences – legal, governance, scale, and so on – between Australia and other countries, particularly the US. Notably, the US differs in terms of management, legal and political systems and, in some areas, the approach taken to research, statistical analysis and modelling. (Overall, simple 'Google', and even 'Google Scholar' searches need to be accepted only after detailed verification following the parameters outlined in this paper.)

Obviously, quality research into Australian issues and cases is preferred. Overseas works are useful, provided that the inherent differences are recognised. Research on law and legal structures, government structures, economic variables and scale are all matters of major difference that require careful interpretation.

Finally, it should be noted that the recommended rigorous approach to research may sometimes need to be tempered depending on the particular topic or field involved. Some topics are well researched and yield a breadth and depth of quality information. However, quality prior research on lesser known topics may be limited, which makes the researcher's task more difficult. In the latter case, less comprehensive or reliable sources may be necessary to build an evidence base. Nevertheless, the attendant risks need to be recognised and managed and suspect sources discarded. If not, the basis of further research will be prejudiced.

2. About the numbers

As noted previously, mathematics and statistics represent a critical component in understanding and interpreting how all manner of things work – obviously in areas such as economics, business, science and technology – but, in reality, much wider than even that.

The challenge is that, for many, early experiences with 'maths and stats' were probably confusing and, as a result, the real value of such analysis was misunderstood – and actually avoided! As academic students and researchers, it is essential that we use appropriate numeric analysis, recognising the wide benefits and assistance that it can provide across a range of endeavours.

At their most basic, these methodologies are simply about counting – what is in, what is out – and what number patterns, history and trends can do in helping us interpret the past and, to some extent, predict and plan for the future. Such studies might be done at a 'micro' (individual or firm) level or 'macro' aggregate level (i.e. sectors, regions, country or global). At any level, quality input data (economic, demographic, social, environmental political etc) is essential. From there, correct and robust interpretation of the data needs to be undertaken to arrive at the best possible decisions, allocation of available resources etc.

As valuable (and often as under-rated!) as any such analysis may be, note that one set of data or series cannot reflect the full complexity of 'real world' situations. As well as those statistical facts and projections therefore, regard must be had to the various and sometimes unexpected outcomes produced by the interaction of all of those factors applied in the subject case. In other words, the researcher must be respectful of factual data but, at the same time be cognisant of the dynamic and interrelated nature of 'real world', holistic environments.

Statisticians are the first to recognise that while figures are by nature neat and precise, the real world is simply not like that. Rather it is dynamic, continually changing and 'messy'. The undertaking of any statistical analysis involves, obviously enough, counting. But counting implies the ability to adequately define those things being counted – some things will be included and some things excluded – and that is where the 'messiness' of real life becomes important (Blastland & Dilnot 2009).

An economist may, for example, wish to investigate housing demand and supply in a particular area. That, on the face of it, and with access to past data, may seem a reasonably straightforward task. But definitional issues soon emerge: what is 'a house'?; is it the same as 'a residence'?; should a demountable structure, caravan or tent be included if currently occupied?; should the definition include a guesthouse, hotel or serviced apartment?; how is a 'household' to be defined?

This is not to imply that statistical analysis is somehow worthless – far from it – in fact, its worth in the verification of observations is often underestimated. Problems arise, however, where the intrinsic limitations of statistics are forgotten, where definitions (i.e. of what is being counted and why) are unclear or where numbers are taken out of context. Numbers help enormously in building knowledge of the real world, but they are not, and do not purport to be, the real world.

It is only through a combination of a sound statistical analytical base and wider qualitative observations of the particular case (particularly by those with expert, professional experience) that reliable scenarios can be developed.

There is a continual need for professionals to analytically and critically assess the huge array of statistical and trend data readily available through the press, internet and other formal and informal sources. Some of this data will prove correct and of great value, but much will be shown to be incorrect, incomplete, misleading and, in some cases, simply deceptive.

Very high quality statistical information is available in Australia through the Australia Bureau of Statistics (ABS), state statisticians and treasuries and other reputable bodies. Even in these cases, however, 'raw figures' should never be accepted without establishing exactly what was being counted, the timing of the survey, the context of the research and, where possible, comparisons with other available data sets.

Some simple rules which can help in these assessment are as follows:

- No statistical analysis can ever explain everything. Researchers must recognise the critical role that statistics and calculations play but must not expect them to provide a full resolution or definitive recommendations. This is particularly true in a sector as large and as complex as real property where numbers alone cannot explain the qualitative characteristics encountered. Further, it needs to be understood that, within practically any event or investigation or sampling, there will be a natural and inherent level of randomness often based on the interaction of complex forces or influences occurring at a particular point in time. The larger the sample, the more probable that random clusters and patterns may (and almost certainly, will!) emerge (Blastland & Dilnot 2009).

- Consequently, care needs to be taken not to attempt to deduce conclusions or to attempt to force 'rational explanations' onto every piece of statistical information that, in fact, may be little more than an interesting aberration. Longer-term analysis may well be required to establish real and sustainable trends (Kaplan & Kaplan 2006).

- Many research works or statistical analysis will, quite reasonably, include projections or predictions of future events or outcomes. Such estimates need to be carefully considered before being relied upon. Sometimes they will be simple extensions of existing observed trends. There are inherent dangers because any number of new influences could significantly change these simple estimates. Other estimates, however, may be based on more sophisticated predictive modelling and sensitivity analysis and, therefore, are probably of greater reliability.

- Before accepting any statistical information, it must be confirmed that the information is accurate, current and has been properly collected and competently analysed. Be particularly wary of arguments and analysis put forward by those with vested interests. This is not to imply that this information be dismissed, but simply that care needs to be taken to ensure that preconceived ideas did not prejudice the research direction.

- Note also, that even very high quality data, such as that provided by the ABS, will become dated and less reliable over time.

- The perceptions and predispositions of those receiving the information/figures are also important considerations. Depending on the prevailing economic and political mood, as well as the confidence levels within the community or target group, the reaction to certain information (good or bad) can result in quite varied outcomes (Ropeik 2010).

- Raw or abstract figures, particularly percentages, are meaningless unless placed in context. It is therefore essential to always ask: 'Is the figure or percentage being presented a big number?' Where a percentage is provided or some overall increase or decrease is claimed, the question must immediately be asked: 'A percentage of what?' A particular quoted figure should not be considered as either 'large' or 'small' until it is placed in the scale or context of the whole matter under consideration, including the time frames and historical trends involved. For example, a figure of one million dollars would be considered an extraordinarily large amount in the context of a household budget; but same amount considered as part of the study of the national economy would be considered of little consequence.

- It is common that many summaries of data include the use of averages (the sum of all of the results divided by the number of responses) and medians (the responses provided by the respondent exactly halfway along the responses, ranked in order). Both of those are of value, but it needs to be recognised that such simple analyses can hide great variations and a spread of results. Common examples include data referring to 'average household incomes', 'average house price' or even 'average age'. These figures are of some value and are concepts to which the public can readily relate. However, in reality, they present a less than comprehensive picture and can, in practice, prove to be misleading (Fung 2010).

- Important for many sectors is the statistical truism that, simply because one event occurs simultaneously or at about the same time as another event (even on a number of occasions), it does not follow that the two events depend on each other or that one represents a cause of the other. While that may be the case, those conclusions depend on further investigation.

- Finally, surprising or sensational figures, such as those that sometimes provide headlines in newspapers, are a reason for caution rather than concern or action. The reports may well be valid, but, before further consideration, it would need to be established that the findings were correct, in context, statistically meaningful and properly interpreted. Again, the possibility of naturally occurring random, short-term aberrations should not be overlooked.

- The emphasis placed on statistics in the media and by contemporary business interests is a good thing. Political and economic environments are complex and it is natural to interpret and translate that complexity into something that makes sense and gives comfort in providing predictability. Issues arise, however, when very basic analyses, such as averages of raw data, are accepted as definitive and 'the full story'. This can lead to an anticipated, but often unconfirmed, 'bell' curve around an average that becomes a basis for policy and/or decision-making. That is a potentially dangerous, but not an uncommon event (Kaplin & Kaplin 2006; Ropeik 2010).

- The inclusion in reports of relatively simple, additional statistical interpretation techniques, such as standard deviations, would help greatly in providing a more realistic appraisal. Unfortunately, the typical understanding of, or tolerance for, statistical analysis by the media, and probably the general public, does not allow this. Worse still, are clichéd expressions such as 'middle Australia' or 'average households' that are so lacking in definition they are of little or no use in analytical assessment.

[end]

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