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BETTER DATA FOR GREATER SAFETY

A Submission to the National Workers Compensation and Occupational Health and Safety Frameworks

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ABSTRACT

It is here suggested that any modem system of compensation should have, as at least one of its major objectives, measures designed to encourage the prevention of accidental injury. The use of more effective injury data (not necessarily compensation data) to achieve that objective is the sole thrust of this submission

It addresses items 7 and 9(a) of the terms of reference. Item 7 includes a goal to "facilitate improved workplace safety" and item 9 (a) proposes, inter alia "a consistent definition of work-related injury". It is here suggested that implementation of the latter would provide major opportunities for occupational health and safety research that would greatly improve the former.

As the word "research" is not prominent in the terms of reference, a letter of request concerning the content of this submission was sent to the Commission on 1/4/03. The response was that this proposed submission was relevant since "it illustrates why a national framework is desirable".

This submission does not address any of the organisational and institutional arrangements implicit in the administration of the present system. Instead it proposes the use of a comprehensive nation-wide compensation data set, covering all States and all categories of insured persons to act as the basis for an expanded scientific approach to occupational injury control.

This author declares his interest. He holds the degree of Doctor of Applied Science from the University of Melbourne, awarded on the basis of his thesis "Towards the Applied Science of Injury Control". This submission is based on that philosophy.

RESEARCH AND HEALTH

In Australia, the most successful reduction in mortality in the twentieth century has been in the category of infectious and parasitic diseases. Between 1905 and 1909 there was an annual average of 6,478 deaths from such scourges as tuberculosis, polio, smallpox, malaria, diphtheria, and a host of others with an overall death rate of close to 150 per 100,000 population per annum.

In the most recent quinquennium from 1995 to 1999. there was an annual average of 1,427 deaths from these diseases at the substantially lower rate of 8 per 100,000 population per annum. There can be absolutely no doubt that this improvement was due to the application of medical research findings. It follows that money spent on health research has brought major health benefits to the Australian community. As one consequence of this success, life expectancy for males and females in Australia increased by about 40%.

Table 1
Changes in life expectancy during the twentieth century for Australian males and females

Year	Expectation of life (years)	
	Males	Females
1900	55	58
2000	75	81

Unfortunately, whilst medical research has substantially reduced the toll of infectious disease, there has been no similar reduction in deaths from accidental injury. In fact, the opposite has occurred. In 1905-09, for each five deaths from infectious disease, there were just two from accidental injury. In 1995-9, for each five deaths from infectious disease there were sixteen deaths from accidental injury

The infectious diseases have been controlled by applied scientific method, based on extensive and fundamental programs of research, and incorporating derived methods of control and prevention. The advocacy of a similar approach to the reduction of occupational injury is the thrust of the submission offered here.

RESEARCH AND OCCUPATIONAL INJURY

Unfortunately, there have been two major impediments to the acceptance of injury prevention as an appropriate topic for research. The first was the lack of any overall scientific conceptualisation, and the second was the poverty of the available data. The first deserves brief comment since, in the opinion of this author, one of its consequences has been a continuing reluctance to develop an appropriate data base.

Conceptualisation

Accidental injuries tend to occur at irregular and infrequent intervals. For this or other reasons, they are frequently conceptualised by the community in one of two ways. The first is the folklore that permits rational men and women, including many physicians and other scientists trained to adopt precise analytical techniques in their own disciplines, to accept accidents as acts of God or the inflictions of a malevolent Providence. In this framework, causation turns on the concepts of luck, chance and random events, with few if any prospects for any form of control. (Haddon, 1967)

The second view is the desire to "explain" causation by allocation of culpability. This approach is simplistic in the extreme: the "right" person is absolved from blame and the "wrong" one is blamed, censored and preferably punished. To determine culpability, we select from a series of emotive adjectives which are deemed to be adequate descriptors of injury causal sequences. Thus, a constructional worker who falls from a ladder is held to be "careless", the operator of a lathe in a factory is judged "inattentive", and his foreman probably "negligent". (Wigglesworth, 1978). Provided that the analysis is sufficiently shallow, almost any accident can be similarly emotively described. In most cases, these descriptors are then used as examples of breakdown in human behaviour and followed with measures designed to ensure that the offender is appropriately punished. Once again, there are few if any prospects for any form of control.

Taken together, these two conceptualisations imply that accidents have causal sequences that are somehow intrinsically different from those that lead to disease. This misunderstanding has been a major impediment to the acceptance of accidental injury as a legitimate area for research.

Even this is not the complete story. What has made the position worse is the fact that, because of the emphasis on faulty human behaviour as a prime cause of accident, most of what little research has been carried out has been directed at a phenomenon now discredited. The concept of "accident proneness" was a logical consequence of that framework and much research effort was dissipated in this unproductive area (Vernon, 1940). It bears emphasis that no successful program of injury reduction by identification and removal of a "prone" group has ever been reported. The effect of this failure has been devastating, and can be put very simply.

Career research workers are unlikely to enter a field where much previous work has been discredited.

LIMITATIONS OF THE AVAILABLE DATA

Scientific method depends in a quite fundamental way on the substitution of quantitative for qualitative value judgements. After this substitution, and after the counting or measuring of salient features, an investigator is able to state not only that the subject of his study differs from others in a particular way but also the direction and extent of this difference. This step is particularly important in accident prevention activity, for the provision of appropriate accident data is a necessary prerequisite of useful preventive work.

Although in the past two decades there have been several pleas for comprehensive data (Wigglesworth, 1970[b]; 1985), these have not yet resulted in an adequate data bank. One study (Wigglesworth, 1990) has gone further and suggested that there are major deficiencies even in the data for serious injury (i.e. absence from work for six months or more).

One problem is that the restrictive boundaries of the existing system prevent comprehensive coverage. Employers and self-employed persons are not included and therefore industrial accidents occurring to them will not appear in published statistics. The total extent of these exclusions is not known, but is particularly important in the construction and primary industries - two industries renowned internationally for their high risks. Moreover there are variations between the States as to the extent to which some lesser injuries (measured in duration of absence from work) are excluded from the overall data collection.

Hence a comprehensive data bank should include all cases of injury, including those who are self-insured or who are employed by companies who are self-insurers.

There is also a major problem of definition. This stems from the fact that, excluding death, the severity of an accidental injury can vary from an insignificant abrasion to permanent disability. As there is no obvious or simple cut-off point that can be used as a self-evident definition of injury for statistical purposes, the definitions are generally based not on a medical criterion but on some convenient administrative marker. This has strong implications for occupational injury research.

The essential problem is that different definitions of injury will produce different patterns of injury distribution. An illustrative example is that of eye injuries taken from the published Queensland occupational accident data.

These data for the triennium 1977-78 to 1979-80 were placed in the three categories of (i) accidents with duration of absence of I to 7 days, (ii) 8 days to 4 weeks, and (iii) more than 4 weeks. The data (given in Table 2) show a dear trend. The proportion of eye injuries was 17% in the first category, 2.2% in the second, and 0.6% in the third. Depending on the definition selected, the proportion of eye injuries can legitimately be described as being anywhere between a massive 17 per cent of all occupational injuries to a tiny one-half of 1 per cent!

Hence, if the proposed national data set were based on absence from work of (say) one day or more, not only would that be a major administrative task for industry, it would also produce a pattern of injuries that would differ from one based on a criterion of absence from work of (say) one week or more, or even one month or more. However, this author has consistently argued that any national occupational injury campaign should commence with an attack on major injuries . Consequently a criterion of absence from work of 8 days or more, would be less of an administrative burden, but would provide a useful basis for occupational injury research.

TABLE 2

Occupational *injuries* and eye *injuries: Males,* Queensland: 1977178 to 1979/80

Criterion (days absent)	Total injuries	Eye injuries	Per cent
1-7	70 077	11 959	17.1
8-28	59 390	1 295	**2.2**
28 or more	30 013	**182**	0.6
Overall	**159 480**	**13 436**	**8.4**

This would go far to reduce the problem that arises when the accident reporting system is based on reports to the various factory inspectorates. It is understandably but unfortunately true that when the act of reporting brings with it the threat of prosecution, then the occupier of a factory may be reluctant to notify injuries to the factory inspectorate.

Possibly the best example of under-reporting occurred in England when the Power Press Regulations were introduced in 1962, and were vigorously and very publicly enforced by the Factory Inspectorate. Between 1964 and 1969 the number of power press injuries was halved from 498 to 245, but the total number of injuries from *all causes reported to the Factory Inspectorate* **increased** *by almost 20% (from* 269,000 to 322,000). In other words, events that had previously not been reported were now being notified because of the deemed greater likelihood of detection and prosecution.

ADDITIONAL STRENGTHS OF THE POTENTIAL DATA SET

There is one final issue. Occupational injury data are currently collected at the level of the individual State or Territory and, at least superficially, this would seem to be a further limitation. However, it is here suggested that this situation could be of considerable value for research purposes.

It stems from the fact that the Federal system of government leaves scope for legislative and other innovations in the occupational health and safety field to be introduced at State level. This scenario permits innovations by one State to be evaluated using data from another (non-participating) State as a control. With this inbuilt advantage, (admirably exploited by many workers in the road safety field who evaluated the effect of seat-belt legislation), Australia could be well placed to make a significant and continuing contribution to the increasingly important problem of occupational injury reduction. It has to be stressed that this can only be achieved when there is a national (as compared to state-based) collection of comprehensive an compatible data.

An illustrative example in the broader context is given in Table 3. This is based on some recent USA data, analysed on a State basis. The first half of the Table ranks the ten States with the highest rates of road trauma deaths (per 100,000 of population) . It also lists their non-road death rates. (ie from other forms of transport, drowning, poisonings and occupational accidents)

Table 3
Highest and Lowest Accidental Death Rates[i]

States of America 1996 (Source NSCA Injury Facts)

State	**Road deaths**	**Non-road deaths**
Highest		
Mississippi	32.0	21.3
Alabama	27.4	23.8
New Mexico	25.9	34.5
Arkansas	25.4	22.8
Wyoming	24.6	32.6
Tennessee	24.6	29.4
Oklahoma	24.5	21.7
South Carolina	24.1	21.5
South Dakota	23.3	26.6
Arizona	22.5	26.7

(1) per 100,000 population

Lowest

Illinois	13.4	15.6
California	13.3	16.1
Maryland	12.9	14.0
Ohio	12.8	16.7
New Hampshire	11.6	13.5
New Jersey	10.4	17.5
Connecticut	10.0	161
New York	9.7	16.2
Rhode Island	7.9	13.4
Massachusetts	7.5	13.1

The second half of the Table lists the ten States with the lowest rates of roiad trauma, together with their non-road death rates . The emphasis here is that the States listed in part 2 of the table not only have lower rates of road trauma, they also have lower rates of non-road trauma. No explanation for that finding is given here.

What is known in Australia is that there are differences between the **States in the rates of occupational** injury. What is not known is the extent to which those variations are attributable to the variations in the types of industry, as compared with the variations in the types of administrative arrangements. Examples are the extent, scope and enforcement of legislation (as discussed by Robens, 1972); the role of safety representatives odor safety committees: the contribution of trained safety officers or risk managers, or even the dynamic effect of a single leader (eg Sir William Hudson's role in the Snowy Mountain Scheme).

What is suggested here is that comprehensive and compatible data between the various Australian States would enable Australia research workers to make a significant and continuing contribution to these important questions and to open a whole new vista of occupational injury research and reduction.

THE WAY AHEAD

This submission has urged an approach to the control of occupational injury that is similar in style to the approach taken by our community to the other major health problems of cancer and heart disease, ie based on research.

This necessitates the creation of an adequate data set, based on a common set of definitions, adopted Australia-wide, and also a recording system that includes all occupation injuries, irrespective of the compensation arrangements that are in place for the injured worker. This will revolutionise Australia research capabilities.

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Abbreviated Biography

Dr Wigglesworth holds the degrees of Bachelor of Science and Diploma of Education (University of Leeds), Master of Science and Doctor of Applied Science (University of Melbourne) and the honorary degree of Doctor of Medicine (University of Tasmania).

He has edited 5 books, and has published more than 120 scientific papers in refereed journals. In the Australia Day, 2000 Honours list, he was appointed a Member in the Order of Australia for services to public health and to accident prevention. He is currently an Honorary Senior Research Fellow at the Monash University Accident Research Centre.