

Assessing disablement under the IIDB scheme – a critical review and international comparison

A research report prepared for the Industrial Injuries
Advisory Council (IIAC)

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1. Summary

This review was commissioned by the Industrial Injuries Advisory Council (IIAC) with the overarching objective of ensuring that the assessment of the severity of injuries results in consistent and equitable benefit awards under the Industrial Injuries Disablement Benefit scheme (IIDB). The aim of the review was to draw systematic comparisons between the IIDB scheme and international comparator schemes:

- in relation to rankings of loss of function assessments,
- in relation to assessing interactions between multiple health problems,
- in relation to the arrangements for these assessments,

and to identify anomalies, insufficient clarity in definitions or processes, and gaps within these areas.

Seven suitable schemes from the European Economic Area (plus Switzerland) and the Commonwealth were included in the comparison. The main findings of this review are:

1. The organisational processes of and provisions for assessment used in the different comparator schemes are diverse, but share common principles. The UK processes and provisions for assessment do not appear to be unusual in this comparison.
2. The clarity of organisational processes, the definitions and, where appropriate, the diagnostic differentiation of the tabled injuries in the different comparator schemes are variable, but generally similar to the UK. The clarity of UK processes and of the UK definitions and diagnostics for the UK tabled injuries does not appear to be unusual in this comparison.
3. The methods of how disablement is assessed in the presence of multiple or sequential injuries of various causation are variable within the compared schemes. The UK methods do not appear to be unusual in this comparison.
4. All comparator schemes use detailed injury tables covering a range of organ systems and injury types. The UK IIDB scheme tables only a fraction of the number of injuries compared with other schemes, and the majority of the UK tabled injuries relates to one injury type (amputations). The UK IIDB scheme table appears to be unusual in this comparison, and an extension of the tabled assessments to other relevant injuries may need to be considered.
5. One injury tabled under the UK IIDB scheme, *incapacitating loss of vision* appears anomalous in that it is not measured by function but by occupational outcome. Occupational outcomes are not used for injuries in any other scheme assessing disablement for non economic loss compensation. This UK tabled assessment therefore appears to be unusual in this comparison.
6. Comparing the rank order of injuries tabled under the UK IIDB scheme with a consensus from equivalent injuries in other schemes, a number of anomalies can be identified. Some comparator schemes have a much better alignment with the consensus rank order than the UK IIDB scheme, but other schemes have a similar level of anomalies. Examining the UK anomalies more closely, the following four injuries appear most anomalous and may need a revision of their assessment levels to achieve a greater consistency with other schemes: *Severe facial disfigurement*, *Double amputation of the feet proximal to the MTP joint*, *Amputation of the toes bilaterally distal to the PIP joint*, and *Amputation of one foot resulting in end-bearing stump*. Revisions of the assessments for other injuries which appear anomalous to a lesser degree might also be considered.

2. Introduction

2.1. Objectives

The UK Industrial Injury Disablement Benefit Scheme (IIDB) provides benefits for workers who are ill or disabled from an accident or disease caused by work, provided that certain conditions are met. The Industrial Injuries advisory Council (IIAC) is an advisory body to the scheme.

This review was commissioned by IIAC with the overarching objective of ensuring that the assessment of the severity of injuries results in consistent and equitable benefit awards under the scheme. The aim of the review was to draw systematic comparisons between the IIDB scheme and international comparator schemes:

- in relation to rankings of loss of function assessments,
- in relation to assessing interactions between multiple health problems,
- in relation to the arrangements for these assessments,

and to identify anomalies, insufficient clarity in definitions or processes, and gaps within these areas.

IIAC specified key questions to be addressed with priority given to points 1 and 2, and including information under point 3 where this is available:

1. The main purpose will be to draw systematic comparisons with IIDB, in relation to tables of injury and relative rankings for entitlement to benefit.

- *Are they in line with other schemes internationally in terms of their coverage and clarity, or do they differ? (A mapping exercise is required as a key output.)*
- *To what extent do they rank individual claimants similarly for a similar degree of functional loss? (A mapping exercise is required.)*
- *Considering the relative rankings that other countries apply, are there any classes of disease or injury that appear to be treated differently in the UK relative to elsewhere? Do any rankings within IIDB look anomalous in this light?*
- *Do the schedules of schemes include scale points that are anchored by reference to objective independent measurement(s) of function or severity? If so, what measures are used, and at what scale points for which diseases or injuries?*

2. A second purpose is to review the system currently applied within IIDB (a) to offset pre-existing non-occupational health problems; (b) to allow for aggravation of such pre-existing conditions; and (c) to accommodate multiple occupational insults.

- *How does it compare with approaches adopted in other countries?*
- *Do other schemes allow aggregation? How is this achieved and how does it fit logically in relation to any ranked scheduled assessments?*

3. A third purpose, in relation to process, is to compare arrangements for assessment and review of claimants within the IIDB scheme and other countries.

- *What evidence is used and how is it collected?*
- *Is it documentary or involving client examination or interview?*
- *What is the role of the claimant, employer, department, agency? What is the role of*

the treating clinician, scheme's medical advisors, other health professionals, lay decision makers?

- *What are the background skills, qualifications and training of the decision-makers and medical advisors?*
- *Does assessment apply a national standard or are there regional variations?*
- *Are any standards statutory or voluntary?*
- *In what form are awards made (e.g. full and final or in instalments, opportunity for review)? If the latter, at whose behest (client, department) can reviews be instigated? Are the grounds of review specified? Are there limits to review?*
- *How is recurrence, aggravation, or worsening of a condition handled within the scheme?*
- *What is the ratio of adjudication costs to benefit costs (what proportion of total funds is available to claimants and what proportion used in administration and adjudication)?*
- *How long on average does it take from claim to notification of determination?*
- *Does the method of ranking disablement relate to the nature of the medical assessment or administration of the schemes in different countries?*

2.2. Background

2.2.1. Outline of the UK IIDB scheme

The industrial injuries disablement benefit scheme (IIDB) has its statutory basis in the Social Security Act 1975 and subsequent statutory instruments, as well as the Social Security Contributions and Benefits Act 1992. The scheme is administered by the Department of Works and Pensions (DWP). The benefit provides compensation for disablement due to loss of faculty. It does not take into account economic losses due to an injury when determining the level of compensation. To be eligible under the scheme, it needs to be demonstrated that the injury or disease is work related. This is achieved with a schedule of prescribed diseases for which work causation is assumed, provided pre-defined exposure criteria are met. Work relatedness can also be demonstrated by showing that a specific work related incident has resulted in the injury or the disease.

The levels of compensation for amputations, loss of vision, disfigurement and for noise induced hearing loss (NIHL) are defined by statutory instruments. Whilst there exists case law and guidance for other injuries, this is not based on statute law, and therefore considered not as robust as the statutory tables for the purpose of assessing disablement under the IIDB scheme.

2.2.2. Background on comparisons of worker compensation systems

Every year, almost 5 million people in Europe have an injury at work that leads to more than three days absence¹. However, systems of worker compensation are not new, and emerged during the industrial revolution as pragmatic, political and moral consequences of the human and societal cost of the rise in worker injuries brought on by factory work¹. Over time, work injury compensation systems have changed from ones which compensate for work injuries, to ones that provide a more holistic approach of prevention, compensation and rehabilitation². Kutzin argues that it is necessary to understand the background and contexts of national systems for compensating for industrial and worker injuries, as it helps inform comparative analysis³.

Whilst contextual factors make comparative analysis of worker injury compensation systems difficult (see below), there are two broad models into which most systems fall. One model is to have employers' contributions fund insurance organisations that are typically self-governed but which nonetheless provide prevention, rehabilitation and compensation. The second model is to have a state administered system funded by employer contributions and anchored in its wider social security system. However, in reality, worker injury compensation systems are found along a spectrum between the two typologies². In addition, all countries have a list of diseases that they recognise as occupational. Again, there are two broad models of occupational disease lists, with most countries falling in the spectrum of the two. One model is to have an 'open' system, exemplified by Sweden, where an occupational disease list relates only to infectious diseases with other diseases being determined based on their individual occupationally derived merit. Another system is exemplified by France, which has a list of 112 diseases and inclusion criteria that specifies symptoms, type of work and time limits for compensation claims; with any disease meeting those criteria being systematically accepted as occupational without needing proof².

2.2.3. Discussion on methodology

Comparative analysis can have three purposes. Firstly, it can illuminate learning opportunities even when contextual variations are great, helping to clarify national contexts without seeking to identify causality or to generalise. Secondly, it can help formulate causal explanations without seeking to generalise but nonetheless attempting to understand why policies develop the way they do (rather than a pure description of policy). Thirdly, when contexts are relatively similar, it can act as a quasi-natural experiment that can lead to the transplantation of policies⁴. It is important to note that this paper seeks to illuminate lessons learned, with the caveat that causality and generalisability are beyond given scope and resources. It is also important to note that comparative analysis can experience a number of obstacles and trade-offs.

One trade-off when undertaking comparative analysis is between depth and breadth. Comparison can look at merely a few elements but do so in-depth, or it can explore a number of different elements but may have to sacrifice detail or contextual exploration. The exact balance will depend on the objectives of analysis as well as resources and scope. Another trade-off that can occur in comparative analysis is between aggregation and granularity, both being in some part related to the previous mentioned trade-off. For example, aggregating several different types of industrial injury to the concept of 'occupational injury' may help with succinctness but can hide potentially important differences in different types of injuries. A final trade-off can occur between flexibility and consistency. For example, whilst consistency in definition and numerical indicators may increase methodological rigour, flexibility is important to accommodate practicalities and differing contexts⁵.

Cacace et al. argue that there are six criteria that can help focus the quality of comparative and cross-country analysis: 1) the effective use of theory, 2) development of explicit comparators, 3) rigorous study design, 4) acknowledgement of contextual factors, 5) rigorous research methods and 6) contribution to knowledge⁶. However, comparative analysis of national worker compensation systems is fraught with a number of methodological challenges. Each compensation system is entwined with legal and regulatory influences from social security, employment, insurance, equality, health and other areas. This complexity means that no worker compensation system is alike, and indeed some have argued that the worker injury compensation system in the UK is more different than most¹.

Except for Netherlands and for Greece, all other EU countries, Canada and Australia

provide legally mandated compensation for work injuries². However, each system has a number of contextual factors, and sometimes anomalies, that are entrenched in their socio-economic and historical context. These issues are not new in comparative analysis of international systems or institutions. Kutzin argues that a framework for analysis allows for the disaggregation of components, allowing for both a descriptive analysis of complex issues (such as health care financing and resource allocation) as well as identification and initial assessment of policy options⁷. In this regard, Parsons proposes that whilst comparing work injury compensation systems may be difficult due to the differences in a large number of variables, comparative analysis may be made manageable by focusing on differences in definitions of key terms, differences in insurance systems and the degree of integration between work injury compensation system and the system for compensating for other injuries¹. However, as one of the main objectives for this project is to compare different rates given to industrial injury benefits as well as highlight any differences in key variables, the method of comparative analysis suggested by Parsons would not be appropriate. Instead, we required a pragmatic methodology that was rigorous yet flexible, and importantly one that could identify key information and make systematic cross-sectional comparison possible.

3. Methods

3.1. Comparator scheme selection and data collection

Choosing the right methodology was particularly difficult as comparative analysis is resource intensive. The methodology used here had to balance rigour with project objectives whilst at the same time acknowledging resource constraints.

There were two main issues to consider:

- 1) Deciding the inclusion criteria for choosing what country schemes to compare
- 2) Deciding the inclusion criteria for the variables to use in comparing different schemes

3.1.1. Inclusion criteria for comparator schemes

Before beginning to research in detail the schemes of particular countries, we had to devise inclusion criteria to systematically decide which country schemes should be short-listed for our comparative analysis. One issue considered was that countries that have quite varied welfare states or GDP levels may have similar industrial injury schemes due to historical reasons, whilst countries that *prima facie* are similar, may have different schemes. Another issue considered was the extent to which the schemes should differ to one another in comparative analysis. If the schemes were too different to one another, it may not be possible to generalise findings due to the extent of contextual differences; whereas if the schemes were too similar, it may reduce the lessons learned that could be garnered from identifying differences.

It was not possible to include 'similarity of schemes' as an initial inclusion criterion because by nature most of the information was not known *a priori* to the research and benchmarking. Additionally, because the scheme information was not known *a priori*, the inclusion criteria had to be wide enough scope so as not to miss any potentially useful schemes, whilst not being too wide so that the benchmarking would be unmanageable and include inappropriate schemes.

Traditionally, welfare states have been used as inclusion criteria as they are seen as a proxy to sectoral services, such as health or education. In making comparisons, researchers would use welfare states with structural similarities (such as northern European social democratic-leaning states), or choose welfare states that differ from each other. However, industrial injury schemes appeared to be intrinsically linked not only to historical welfare structures, but also to legal precedents. For example, whilst it is often written that Netherlands has a similar welfare state to UK, its work injury scheme is entirely different and therefore would not be a good comparator. As such, using characteristics of welfare states as inclusion criteria for country schemes did not appear to be fruitful. Another criterion that was considered was to use work injury rates as a proxy (see for example, research by Lilley, Samaranayaka, and Weiss who sought to make international comparisons for occupational fatal injury rates⁸). However, using work injury rates as a variable is also not appropriate because occupational fatal injuries have no direct relation to the injury schemes that compensate for them.

Given the points above, we decided to use a stepped process to including country schemes, beginning with wide inclusion criteria and narrowing the criteria to reduce included schemes to a manageable number. The first criterion we used to include schemes was that they had to be Commonwealth and European Economic Area (plus Switzerland) nations (EEA+S). This was so that potential historical and legal (in the case of Commonwealth countries) as well as structural (in the case of EEA+S countries)

similarities could be included. From this list, we then only included jurisdictions which had sufficient information with regards to their scheme to make a decision on whether to include them in the next short-list. The information was gained from the International Social Security Association (ISSA) website or from respective country websites. The third criterion was that schemes should be state governed or regulated and, similarly to the IIDB scheme, use loss of function against a person of the same age and sex in normal health. Comparisons with schemes where the primary assessment is for loss of earnings was not appropriate. The final inclusion criterion was methodologically pragmatic, in that only the schemes in which we could obtain sufficiently detailed information were included. Below are the results of the inclusion criteria:

1. Commonwealth and EEA+S countries = 81 countries
2. Jurisdictions which had sufficient information available to make an initial decision on inclusion = 52 countries
3. Jurisdictions whose workers compensation schemes have loss of function as their end point and whose schemes are state governed or state regulated = 14 countries
4. Jurisdictions in which detailed information and data for the schemes is easily accessible given the project time line and resources (2 countries excluded); and restricting inclusion such that there was no duplication of identical assessment tables (2 countries excluded), and that the included schemes were comparable in respect to the wider context of administration and benefit payment (2 countries excluded) = 8 jurisdictions (UK plus 7 comparators)

In practice, steps three and four were more fluid rather than discrete stages. For example, we considered including the German and the French schemes until quite late, as they pay compensation for loss of function, regardless of economic loss⁹. However, as there is no additional economic loss compensation, their compensation is tied to the worker's salary rather than an absolute amount. Prior to step four, we contacted key informants (researchers, specialists in occupational medicine and independent experts) and experts of the jurisdiction scheme offices in the 14 short-listed countries (step 3), requesting further information. Communication was done by email and phone calls. Non respondents were followed up after roughly two weeks.

3.1.2. Scheme indicators included for the comparison

As with the inclusion criteria for the country schemes, we had to make decisions as to which indicators we wanted to include for our comparative analysis of schemes. The decision was based on the indicators felt by the IIAC as important components to the IIDB, but also included indicators that initial background reading revealed as interesting points of comparison. As with the inclusion criteria for country schemes, we were keen to balance breadth with depth. Through an iterative process, the final indicators for comparing country schemes were as follows:

Factors influencing the assessments

- Definition of disablement for non-economic loss compensation
- Descriptors of disablement in tables
- Source of anchor points
- Assessment time
- Period assessed for
- Adjustments for treatment effects

- Refusal of treatment
- Adjustments for dexterity
- Accounting for pre-injury
- Post injury aggravation
- Multiple injuries and mixed causation

Factors directly influencing the level of compensation

- Transformation of disablement assessment to compensation
- Adjustments for age
- Adjustments for gender
- Threshold of payment
- Steps versus continuous increase
- Lump sum versus regular payments
- Maximum payment
- Subject to income tax

Factors influencing eligibility and assessments processes

- Coverage
- Date exclusions
- Illness exclusions
- Decision making process, including role of worker, treating doctor, medical assessor and decision maker and qualifications if relevant .
- Are there standardised assessment methods some illnesses?
- Prescribed injuries and diseases
- Recognition of industrial diseases not on scheduled list
- Assessments for non tabled injuries

Scheme administrative information

- Administration body
- State versus insurance administered
- History of the scheme
- Other benefits under scheme
- Appeals and success of appeal

3.1.3.Data collection and entry

Completion of the scheme characteristics table was done through an iterative approach to take account of emerging information from correspondence with key informants and

scheme offices as a more detailed ‘picture’ began to emerge from each jurisdiction.

Scheme documents were collected on scheme websites for each jurisdiction, and through submissions by key informants and scheme offices. In addition, referenced legal documents were obtained from official online repositories. Scheme experts and key informants clarified the process documents where necessary. Injury tables were translated by professional translators when the authors were not proficient in the document language. The majority of the retrieved documents were legal documents or official published guidance.

3.2. Analysis of injuries with tabled disablement assessments in the UK

3.2.1. Determination of equivalent injuries

The tabled UK injuries (*Schedule 2, Social Security (General Benefit) Regulations 1982*), and 4 representative scheduled hearing impairments (*Schedule 3, Social Security (Industrial Injuries) (Prescribed Diseases) Regulations 1985*) are listed in table 1. The descriptors for these injuries were simplified to allow easier comparison across different schemes.

UK descriptors	Simplified descriptors
Upper limb	
1 Loss of both hands or amputation at higher sites	Amputation hands bil or higher
2 Loss of hand and a foot	Amputation hand and foot
3 Forequarter or hindquarter amputation	Amputation fore / hindquarter
4 Amputation through shoulder joint	Amputation shoulder joint
5 Amputation below shoulder with stump less than 20.5cms from tip of acromion	Amputation below shoulder
6 Amputation from 20.5cms from tip of acromion to less than 11.5 cms below tip of olecranon	Amputation elbow
7 Loss of hand or of the thumb and four fingers of one hand or amputation from 11.5 cms below tip of olecranon	Amputation hand or 5 fingers
8 Loss of thumb	Amputation thumb
9 Loss of thumb and its metacarpal bone	Amputation thumb + MC
10 Loss of four fingers of one hand	Amputation 4 fingers
11 Loss of three fingers of one hand	Amputation 3 fingers
12 Loss of two fingers of one hand	Amputation 2 fingers
13 Loss of terminal phalanx of thumb	Amputation thumb terminal phalanx
14 Loss of whole index finger	Amputation IF
15 Loss of two phalanges index finger	Amputation 2 phalanges IF
16 Loss of one phalanx index finger	Amputation 1 phalanx IF
17 Guillotine amputation of tip of index finger without loss of bone	Amputation soft tissue IF
18 Loss of whole middle finger	Amputation MF
19 Loss of two phalanges middle finger	Amputation 2 phalanges MF
20 Loss of one phalanx middle finger	Amputation 1 phalanx MF
21 Guillotine amputation of tip of middle finger without loss of bone	Amputation soft tissue MF
22 Loss of whole ring or little finger	Amputation RLF
23 Loss of two phalanges ring or little finger	Amputation 2 phalanges RLF
24 Loss of one phalanx ring or little finger	Amputation 1 phalanx RLF
25 Guillotine amputation of tip of ring or little finger without loss of bone	Amputation soft tissue RLF
Lower limb	
26 Double amputation through leg or thigh, or amputation through leg or thigh on one side and loss of other foot	Double amputation thigh + foot or higher

UK descriptors	Simplified descriptors
27 Amputation through both feet resulting in end-bearing stumps	Double amputation feet (endbearing)
28 Amputation through both feet proximal to the metatarso-phalangeal joint	Double amputation feet prox MTP
29 Loss of all toes of both feet through the metatarso-phalangeal joint	Amputation toes bil MTP
30 Loss of all toes of both feet proximal to the proximal inter-phalangeal joint	Amputation toes bil prox PIP
31 Loss of all toes of both feet distal to the proximal inter-phalangeal joint	Amputation toes bil dist PIP
32 Amputation at hip	Amputation hip
33 Amputation below hip with stump not exceeding 13cms in length measured from tip of great trochanter	Amputation below hip
34 Amputation below hip and above knee with stump exceeding 13 cms in length measured from tip of great trochanter, or at knee not resulting in end-bearing stump	Amputation above knee
35 Amputation at knee resulting in end-bearing stump or below knee with stump not exceeding 9 cms	Amputation knee
36 Amputation below knee with stump exceeding 9cms but not exceeding 13 cms	Amputation below knee short
37 Amputation below the knee with stump exceeding 13cms	Amputation below knee long
38 Amputation of one foot resulting in end-bearing stump	Amputation foot (endbearing stump)
39 Amputation through one foot proximal to the metatarso-phalangeal joint	Amputation foot prox MTP
40 Loss of all toes of one foot through the metatarso-phalangeal joint	Amputation toes MTP
41 Loss of great toe through metatarso-phalangeal joint	Amputation hallux MTP
42 Loss of part of great toe, with some loss of bone	Amputation hallux, part
43 Loss of any other toe through metatarso-phalangeal joint	Amputation other toe MTP
44 Loss of part of any other toe, with some loss of bone	Amputation other toe, part
45 Loss of two toes through metatarso-phalangeal joint	Amputation 2 toes MTP
46 Loss of part of two toes, with some bone loss	Amputation 2 toes, part
47 Loss of three toes through metatarso-phalangeal joint	Amputation 3 toes MTP
48 Loss of part of three toes, with some loss of bone	Amputation 3 toes, part
49 Loss of four toes through metatarso-phalangeal joint	Amputation 4 toes MTP
50 Loss of part of four toes, with some loss of bone	Amputation 4 toes, part
Other	
51 Loss of sight to such an extent as to render the claimant unable to perform any work for which eyesight is essential	Loss of vision , incapacitating
52 Loss of one eye, without complications, the other being normal	Loss of one eye
53 Loss of vision of one eye, without complications or disfigurement of eyeball, the other being normal	Loss of vision of one eye
54 Absolute deafness	Absolute deafness
55 Unilateral complete hearing loss, 50dB hearing loss in other ear	NIHL total vs 50dB
56 bilateral hearing loss 50dB	NIHL 50 vs 50dB
57 bilateral hearing loss 70dB	NIHL 70 vs 70dB
58 bilateral hearing loss 90dB	NIHL 90 vs 90dB
59 Very severe facial disfiguration	Severe facial disfigurement

Table 1: Descriptors of UK IIDB tabled injuries and simplified equivalent descriptors

Injuries equivalent to the UK injuries were identified – where available – from the selected seven comparison schemes. When an equivalent injury was listed but not with an equivalent severity, and details of a more severe and a less severe equivalent injury were available, a range covering the latter two was used as the disablement assessment for the equivalent injury. Some schemes do not have tabled assessments for specific injuries, including combined injuries, but use rules for assessing the disablement levels of these injuries. These rules were applied as necessary to identify assessments for equivalent

injuries. When for a given injury there were no tabled assessments and no specific rules applicable no equivalent assessment was identified from that scheme.

Additional methods apply to certain schemes: firstly, the Finnish scheme assigns disability levels to injuries, which can also be combined following specified rules. Once the overall disability level is known this is transformed to a percentage range from 0% to 60%. For the purpose of this comparison, the percentage was recalculated with a range from 0% to 100%.

Secondly, the Luxembourg scheme operates different compensation mechanisms for permanent physiological damages on one hand, and permanent disfigurement (and temporary pain and suffering) on the other hand. Whilst there are assigned percentages for physiological damages, the severity of disfigurement is assessed on a seven point ordinal scale which is directly translated into a lump sum payment. For the purpose of this comparison, a physiological injury percentage with an equivalent lump sum payment was taken to be representative for the disablement assessment for disfigurement.

Thirdly, the Danish schemes allows in exceptional circumstances an injury disablement assessment of 120%. For the purpose of this comparison the scales were not changed, and are displayed as 120%.

3.2.2. *Observational analysis*

Injuries were grouped into "upper limb injuries", "lower limb injuries" and "other injuries". For each injury the percentages of disablement were compared in a bar plot, giving the median and, where available, the specified ranges for each scheme. This allowed to assess patterns of assessments across different injuries and schemes.

3.2.3. *Pairwise rank comparisons*

To explore if assessments of certain injuries appear anomalous it was necessary to determine the relative ranking of the disablement assessments within a scheme. Separately for each scheme the assessment for each injury was compared with the assessment for each other injury of that scheme. For example, the tabled UK assessment for *Amputations of hands bilateral or higher* (100%) was compared with the tabled UK assessment for *Severe facial disfigurement* (100%). As schemes use single value assessments (i.e. 100%) as well as range assessments (i.e. 10-15%) for different injuries, the comparison of two assessments is complex. For each pair of injuries within a scheme the following constellations were distinguished:

1. Both assessments are single values and are equal.
2. At least one assessment is a range, and the medians are equal.
3. At least one assessment is a range, the medians are not equal, and one assessment is completely overlapped by the other assessment.
4. At least one assessment is a range, the medians are not equal, and there is no complete overlap between the two assessments.
5. There is no overlap between the assessments for the two injuries.

These pair wise constellations were used to determine if the assessments are compatible with disablement due to one injury of a pair being ranked higher, equal or lower than the other in a given scheme. The first and the last of these five constellations are rigid in that they are only compatible with an equal ranking (number 1), such as our example above, or a higher or lower ranking (number 5). To different degrees the other constellations are compatible with higher, equal, lower, or any ranking within the pair.

Deriving strict ranking criteria – forcing a distinction between higher, equal and lower – from these five constellations above would appear desirable to establish clear relative rank positions. However, because of the ambiguity of the middle constellations (numbers 2-4), such strict ranking criteria would potentially result in inconsistencies or conflicts between different injury rankings. Such conflicts between discrepant ranking results can of course be resolved, but this would usually be at the cost of losing information in the process, as a “compromise” between discrepant results needs to be found.

On the other hand, deriving lenient ranking criteria – avoiding a clear distinction between higher, equal and lower for the more ambiguous constellations (numbers 2-4) – would not help to establish clear relative rank positions.

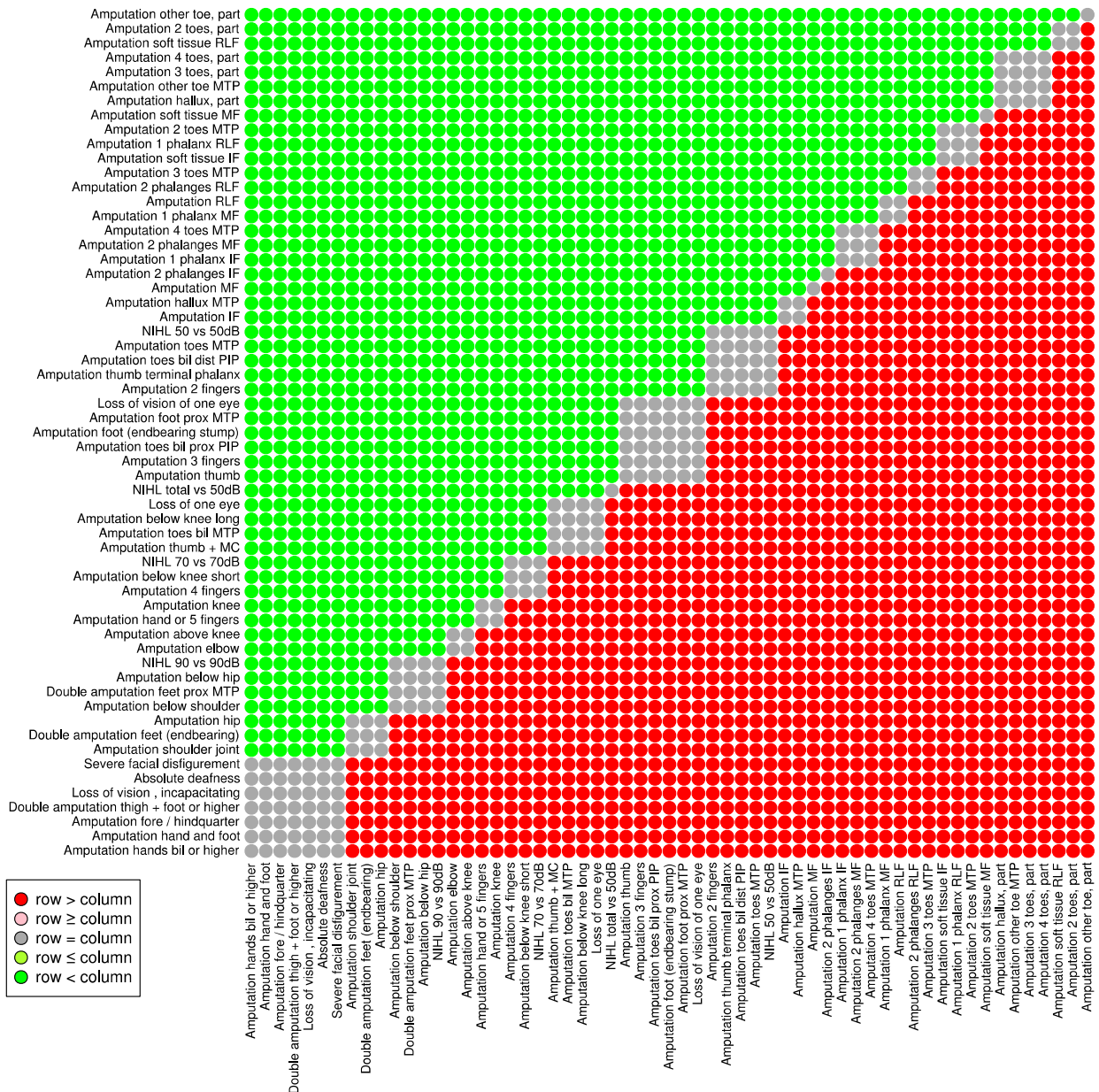


Table 2: relative rank comparisons of UK IIDB assessments of pairs of injuries, ordered by rank

Therefore ranking criteria with different levels of strictness were developed:

- According to the *strictest ranking criteria*, constellations 1 and 2 are compatible with an equal ranking of the two injuries. Constellations 3, 4 and 5 are compatible with a

higher, or lower ranking, depending on whether the median is higher or lower.

- According to *moderate ranking criteria*, constellations 1, 2, 3 and 4 are compatible with an equal ranking of the two injuries. Constellations 3, 4 and 5 are compatible with a higher, or lower ranking, depending on whether the median is higher or lower.
- According to the most *lenient ranking criteria*, constellations 1, 2, 3 and 4 are compatible with an an equal ranking of the two injuries. Constellations 2, 3, 4 and 5 are compatible with a higher, or lower ranking, depending on whether the median is higher or lower. In addition constellations 2, 3 and 4 are compatible with a higher, equal, and lower ranking, regardless of whether the median is higher or lower.

Table 2 shows all pairwise rank comparisons for the UK IIDB assessments, following *moderate ranking criteria*. The injuries are ordered by their rank (most severe injuries to least severe injuries). Red indicates that the injury specified in the row is assessed higher than the one in the column, green indicates the opposite. Grey indicates an equal assessment for both injuries. This table is symmetrical at the diagonal axis (albeit with inverted values), as pairs can be compared horizontally and vertically.

3.2.4. Consensus rankings

For each pair of injuries consensus relative rankings between different schemes were established. As a starting point *moderate ranking criteria* were used. The definition of a consensus was: the constellation of a pair of injuries is compatible with the same relative ranking (either *higher* or *equal*, or *lower*) in two or more schemes. Pair wise constellations 3 and 4 were compatible with more than one relative ranking (i.e. *higher AND equal*; or *lower AND equal*), so one scheme could be part of more than one consensus group for each pair wise rank comparison. Furthermore one group of schemes might form a consensus which is the opposite of a consensus formed by another group. The following results for consensus rankings for pairwise comparisons were possible:

- Only one scheme (UK IIDB) defines a relative ranking for this pairwise comparison. Or, two or three schemes define a relative ranking for this pairwise comparison, but there is no consensus. As the addition of a fourth scheme would invariably result in a consensus (higher, equal, or lower), the conclusion is that there are too few schemes defining this pairwise comparison and no comment on consensus relative ranking is possible.
- Two or more schemes define this pairwise comparison, and all schemes agree on at least one consensus relative ranking (if there is more than one).
- Two or more schemes define this pairwise comparison, and some schemes, but not all, agree on at least one consensus relative ranking (if there is more than one).

The results under the last bullet point could be split into pair wise rank comparisons where the UK IIDB scheme formed part of a consensus; and into pairwise comparisons where the UK IIDB scheme did not form part of a consensus.

These latter results describe apparent anomalies in the disablement assessments under the UK IIDB scheme, henceforth called "anomalies". Anomalies represent injuries with disablement assessments at a different level than expected from the international consensus, and might therefore be an indication of inequitable assessments within a scheme.

3.2.5. Ranking analysis

The next step was to determine if a consensus relative ranking could be adopted into the existing UK list for each anomaly, and how this would necessitate revisions of the current

UK IIDB disablement assessments. A rank imputation algorithm was developed for this purpose with the objectives of:

- Maximising the use of existing UK relative rankings where there is no anomaly
- Minimising the need to resolve conflicts, thereby minimising the possible loss of information
- Prioritising discriminative relative rankings (*higher* or *lower*) over equal rankings
- Giving higher weight to pairwise comparisons defined by at least 3 schemes

These were achieved by:

- Preserving all original UK relative rankings for injuries with no anomaly, and initially excluding all UK relative rankings for pairwise comparisons involving an anomalous injury; but subsequently including UK relative rankings for non anomalous pairs involving this injury
- Initially using consensus based on the most lenient ranking criteria, and gradually introducing consensus based on stricter criteria, with the strictest criteria being applied last (Four different graduations of strictness)
- Introducing stricter ranking criteria for discriminative relative rankings (*higher* or *lower*) first, before introducing stricter ranking criteria for equal relative rankings
- Introducing consensus for pairwise comparisons which are defined by at least 3 schemes first

The algorithm operated on the principle of logical inference. If injury A is ranked equal to injury B, and injury B is ranked equal to injury C it follows that injury A should also be ranked equal to injury C. This algorithm provided a revised rank order for the UK tabled assessments, resolving the identified anomalies as far as possible.

The revised rank order necessitated revisions of assessments for some injuries. These revised assessments were arbitrarily assigned in order to fit into the existing UK assessments.

3.3. Analysis of injuries not tabled under the UK IIDB scheme

3.3.1. Identification of gaps

To identify whether there were substantial gaps in the injuries with tabled disablement assessments under the UK IIDB scheme, the total number of tabled injuries for each scheme, as well as the numbers of tabled injuries for different organ systems were established.

The DWP provided a list of diagnostic entities which are commonly assessed under the UK IIDB scheme but for which there are no tabled disablement assessments:

- mental health problems, in particular depression, anxiety and post traumatic stress disorder (PTSD)
- respiratory disease
- manual dexterity
- spinal function
- brain function after head injury

We explored how these injuries would fit best into the disablement assessments under the

UK IIDB scheme. All injuries relating to these diagnostic entities tabled in the selected international comparison schemes were extracted. Equivalent injury types and severities were identified. When there were equivalent types but not equivalent severities between schemes, adjacent severities were combined to achieve best equivalence. Only injuries and severities defined by at least two schemes were used for this comparison.

3.3.2. Ranking of relevant injuries not tabled under the UK IIDB scheme

The next step was to determine if a consensus relative ranking could be adopted for each relevant untabled injury under the UK IIDB scheme. Consensus pair wise rankings for these additional assessments were calculated. These were combined with the international consensus rankings for the UK tabled assessments. In order to maximise the use of existing UK relative rankings, a similar consensus approach as above was followed. Pairwise rank comparisons, consensus rankings and ranking analyses were performed as described under subheadings 3.2.2, 3.2.3, 3.2.4, and 3.2.5. The algorithm provided a ranking list for the previously untabled injuries alongside a revised rank order for the existing UK assessments.

3.4. Economic aspects

The relation between an injury and the eventual socio-economic impact is complex for all industrial injury compensation schemes. This is partly due to the wider context of benefit systems within which the injury compensation schemes are placed. But it is also partly due to different steps in the process from assessing the severity of an injury to determining the amount of an eventual financial benefit. A full analysis of the economic aspects was beyond the scope of this report, but it was useful to consider how different assessment levels of disablement eventually result in financial benefit payments for the different schemes.

Information on the conversion of disablement levels to the amount of paid financial benefits was extracted from scheme documents. Calculations of hypothetical cumulative benefits over time were performed for different levels of disablement and different age groups where relevant.

3.5. Tools

All analyses were performed with the Comprehensive R Architectural Network (CRAN) statistical programming language¹⁰. Analysis routines using logical inference were developed, scripted, tested and applied specifically for this study.

4. Results

4.1. Comparator schemes

The following schemes were included in the comparison:

- United Kingdom – IIDB scheme
- Denmark – Workers Compensation for Permanent Injury
- New South Wales, Australia (NSW) – WorkCover compensation for permanent impairment
- Italy – Insurance for Employment Injuries
- Alberta – Workers Compensation for Permanent Clinical Impairment
- Switzerland – Swiss Accident Insurance
- Finland – Employment Accidents Insurance
- Luxembourg – Accident Insurance

4.2. Comparative analysis

Tables 14, 15, 16 and 17 show the cross-sectional results of the data gathering exercise. The results of the eight jurisdictions are split into four thematic areas:

1. Factors influencing the assessments
2. Factors directly influencing the level of compensation
3. Factors influencing eligibility and assessments processes
4. Scheme administrative information

4.2.1. Factors influencing assessments (Table 14)

There are some noteworthy similarities and differences across the case studies, some of which were unexpected. For example, whilst academic literature continues to debate the definition and scope of disability and disablement, most of the definitions across countries were broadly similar, with some form of permanent impairment or permanent injury being the central factor in the definition. Nevertheless, definitions become more nuanced, with Italy and Switzerland including psychological factors and Denmark including the nuisance and inconvenience of a permanent injury to a person's daily life. Despite these nuances, all schemes used recognised medical diagnostic categories as their descriptors of injuries, with Denmark, Italy and Finland additionally using functional descriptors to assess severity.

The examined schemes provide varying levels of detail in their injury lists for different injury types and diagnostic entities, as shown in Table 3. The number of injury assessments tabled under UK IIDB scheme is much lower than in any comparator scheme. It is also obvious that the tabled injuries do not cover all organ systems. There are no provisions for cardiovascular, abdominal, respiratory or mental health injuries. Even within the organ systems covered, the UK IIDB scheme does not cover the range of diagnoses addressed in many other schemes. Some of these gaps are covered by DWP guidance documents for medical examiners, but these documents do not have statutory weight.

Injuries		UK	Denmark	NSW	Italy	Alberta	Switzerland	Finland	Luxembourg
Organ system	Details	n	n	n	n	n	n	n	n
Head	Vision	✓ 4	✓ 82	✓ 107	✓ 65	✓ 25	✓ 96	✓ 74	✓ 114
	ENT	✓	✓	✓	✓	✓	✓	✓	✓
	Cranial nerves		✓	✓	✓	✓	✓	✓	✓
	Brain Injury		✓	✓	✓	✓	✓	✓	✓
	Hearing table	✓	✓	✓	✓	✓	✓	✓	✓
	Vision table		✓	✓	✓	✓	✓	✓	✓
Thorax, spine, pelvis	Spinal cord	1	✓ 33	✓ 34	✓ 38	30	✓ 57	✓ 8	✓ 31
	Degenerative		✓		✓	✓	✓		✓
	Trauma	✓	✓				✓		✓
	Functional Pain						✓		✓
Extremities	Amputations	✓ 49	✓ 247	✓ 930	✓ 113	✓ 83	✓ 269	✓ 107	✓ 143
	Neurological		✓	✓	✓	✓	✓	✓	✓
	Muscles, tendons, ligaments		✓	✓	✓	✓	✓	✓	✓
	Vibration injuries		✓	✓	✓	✓	✓	✓	✓
	Carpal tunnel syndrome		✓	✓	✓	✓	✓	✓	✓
	Fractures and complications		✓	✓	✓	✓	✓	✓	✓
	Pain		✓	✓	✓	✓	✓	✓	✓
	Joint mobility		✓	✓	✓	✓	✓	✓	✓
	Vascular disease		✓	✓	✓	✓	✓	✓	✓
	Strength		✓	✓	✓	✓	✓	✓	✓
	Gait		✓	✓	✓	✓	✓	✓	
Respiratory	General respiratory	0	✓ 7	✓ 13	16	5	✓ 2	11	17
	Asthma		✓	✓	✓	✓	✓	✓	✓
	Cancer		✓	✓	✓	✓	✓	✓	✓
	Pulmonary vascular		✓	✓	✓	✓	✓	✓	✓
	Lung injury		✓	✓	✓	✓	✓	✓	✓
	Functional limitations		✓	✓	✓	✓	✓	✓	✓
	Lung resection		✓	✓	✓	✓	✓	✓	✓
	Tracheal pathology		✓	✓	✓	✓	✓	✓	
Vascular	Cardiac	0	✓ 4	✓ 42	✓ 35	4	✓ 5	4	8
	Thrombotic		✓	✓	✓	✓	✓	✓	✓
	Hypertension		✓	✓	✓	✓	✓	✓	✓
	Peripheral vascular		✓	✓	✓	✓	✓	✓	✓
	Raynauds		✓	✓	✓	✓	✓	✓	✓
	Functional limitations		✓	✓	✓	✓	✓	✓	✓
	Phlebitis		✓	✓	✓	✓	✓	✓	
Abdominal and general	Digestive tract	0	✓ 41	✓ 107	✓ 115	4	✓ 19	✓ 38	✓ 93
	Genitourinary tract		✓	✓	✓	✓	✓	✓	✓
	Haematology		✓	✓	✓	✓	✓	✓	✓
	Endocrine		✓	✓	✓	✓	✓	✓	✓
	Cancer		✓	✓	✓	✓	✓	✓	✓
	Surgical		✓	✓	✓	✓	✓	✓	✓
	Infections		✓	✓	✓	✓	✓	✓	✓
	General abdominal		✓	✓	✓	✓	✓	✓	✓
	Organs		✓	✓	✓	✓	✓	✓	✓
	Functional limitations		✓	✓	✓	✓	✓	✓	
Skin	Disfigurement	✓ 1	✓ 47	✓ 17	✓ 8	✓ 19	✓ 13	✓ 8	✓ 11
	General dermatology		✓	✓	✓	✓	✓	✓	✓
Mental health	PTSD	0	✓ 13	5	✓ 5	5	6	4	✓ 10
	Anxiety		✓		✓				✓
	Depression		✓		✓				✓
	Functional limitations		✓	✓	✓	✓	✓	✓	✓
	Psychosis		✓		✓				✓
Total		55	474	1255	395	175	467	254	427

Table 3: Injury types and numbers for the different schemes. Ticks (✓) represent injury types covered in each scheme.

In the context of this international comparison the lack of breadth and depth of the statutory UK tabled assessments appears to be quite extraordinary. The number of severity levels for limb amputation injuries and for NIHL as tabled under the UK IIDB scheme appear to be in line with the assessment tables in other schemes.

All schemes are based on statute law. For some schemes anchor points or the full assessment table – including all types of injuries and severities – are laid down in statute law and regulations (UK, Italy, Switzerland, Finland, Luxembourg). Other schemes have published administrating body guidance including the full assessment table which appears to have statutory weight (Denmark, NSW, Alberta, Switzerland). For the UK, case law is also a source of anchor points for assessments. No information on the role of case law was available for the comparator schemes.

Countries differed on how treatment modified benefits available under the schemes. For example, in Alberta and Switzerland the effects of medical treatment or prosthetic devices – apart from corrections for visual acuity – are not taken into account for disablement assessments, whereas the other jurisdictions consider prosthetic limb function or medical treatment to varying degrees. The effect on benefits if someone refuses reasonable treatment advice is equally varied. For example, Luxembourg does not take refusal of treatment into account, whereas in Finland disqualification from benefits is possible if treatment advice is not followed. In Switzerland, the expected success of treatment will be the basis of assessment. In Italy, a worker has the right to decide the place and type of treatment but if the worker unjustifiably refuses prescribed treatment there may be a reduction in the annuity. There are no regulations on treatment refusal in the UK, but legal provisions exist that would allow putting these regulations in place.

Schemes in all jurisdictions account for the presence of pre-injuries, by limiting compensation to the part of the disablement that can be attributed to the current injury. Conceptually the attributable disablement is usually calculated as the difference between the post injury global disablement, and the pre-injury disablement. There are, however, differences in the approach and some exceptions. For example, in New South Wales, deductions of 10% are made if the extent of pre-injury is unknown. In Alberta, whilst adjustments are made for pre-existing conditions, severe accidents resulting in permanent disability and respiratory diseases with only partial work causation are still compensated fully. Italy uses a special formula to calculate attributable disablement in the presence of a pre-injury. In Finland, compensation is increased based on the nature and severity of the pre-existing injury particularly if the organ or function is important to the worker. However, this rule is rarely applied, raising pertinent questions as to the material difference between codified regulation and policies applied in practice. There were similar levels of difference with regards to the jurisdictions' approach to post-injury aggravation. For example, in New South Wales and Finland, subsequent non-occupational injuries do not lead to re-assessments. The same applies to Alberta (with the exception of the subsequent loss of vision to the second eye). Italy only reconsiders subsequent non-occupational injuries to the same organ system. In contrast, post-injury aggravation is taken into account in the UK, in Denmark and in Luxembourg, resulting in a reassessment above certain thresholds, and compensating for the fraction attributable to the occupational injury. This is expressed as an interaction term in the UK and in Denmark.

Differences were found in the way multiple injuries are assessed. The UK, Alberta, Finland and Luxembourg list pre-defined assessments for some combinations of multiple injuries. In all other cases assessments for multiple injuries need to be determined case by case. There are two main conceptual approaches: the simple addition of multiple and subsequent injuries, and the calculation of residual capacity. Most schemes have a global

assessment ceiling at 100%, and global disablement cannot exceed this value. Alberta and – for successive injuries – Luxembourg tend to follow the simple addition approach whereas NSW and Finland adopted the residual capacity approach. NSW very closely follows the American Medical Association Guides for assessment of impairment 5th edition (AMA guides). The AMA guides set ceiling levels for disablement in different anatomic groups and within these groups. In conjunction with a residual capacity approach this minimises the risk of inconsistent assessments for multiple injuries. Italy, the UK, and – for concurrent injuries – Luxembourg evaluate combined injuries as a global assessment, without the use of addition rules. Luxembourg sets ceiling levels for the assessment of functional groups. This approach is different from the AMA guides approach in that ceiling levels do not apply to anatomical groups (i.e. one leg) but to functional groups (i.e. locomotion). All schemes allow individual assessments to deviate from the statutory tables, requiring the assessor to take into account the clinical evaluation of each case, and to make reference to the listed assessments. This is a common strategy to reduce inconsistency in the assessment levels for multiple injuries in all schemes. **The UK approach in relation to assessments for multiple injuries does not appear anomalous in this comparison, albeit alternative and in some respect more methodical strategies exist.**

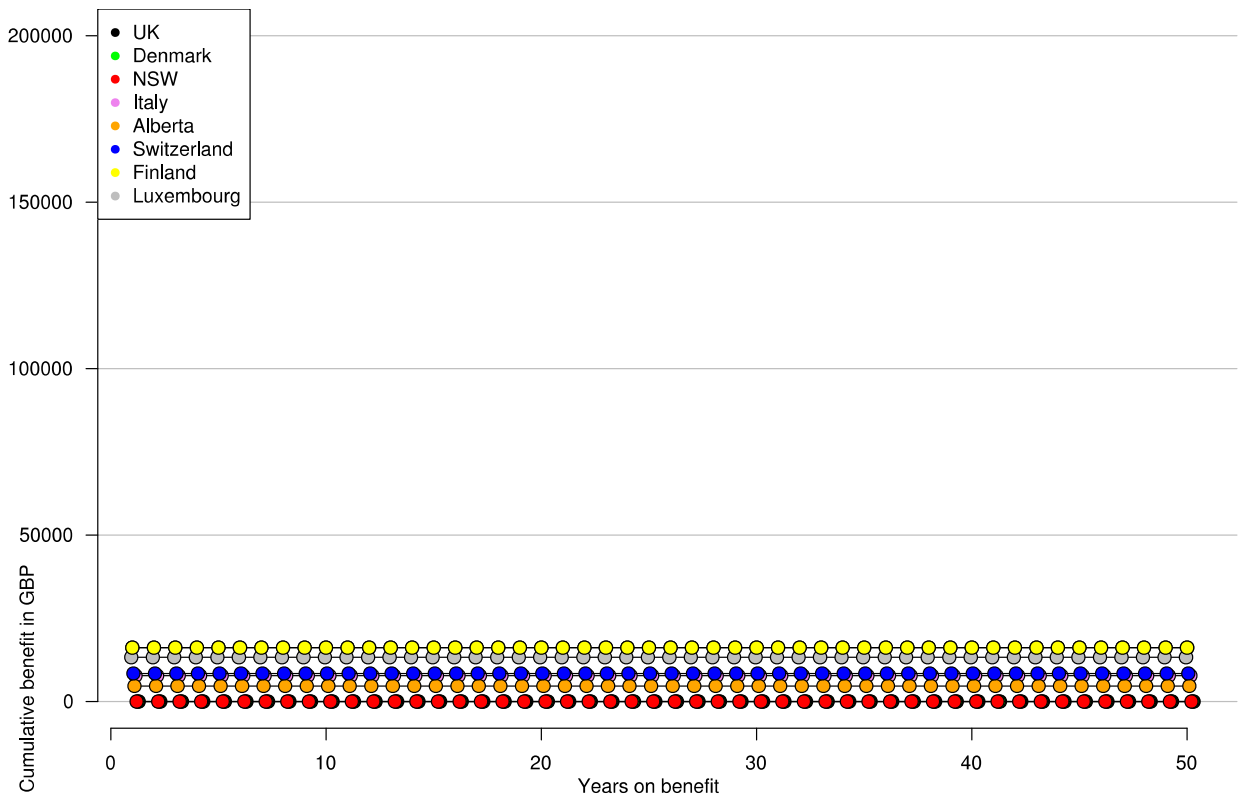
One of the most pronounced differences between the UK and other jurisdiction schemes were found in the assessment time. Whilst in the UK the assessment can be made after 90 days for all injuries, other countries generally have an assessment time for when medical treatment is not expected to provide further improvements or when maximum recovery is considered to have occurred. There is also variation in the period being assessed. Whilst the UK, Alberta, Denmark, New South Wales and to a certain extent Luxembourg and Finland all allow for reassessments and readjustments at the claimants request, Switzerland and Italy only allow reassessments in exceptional circumstances. Conditions for these reviews are set out in varying detail in the different schemes.

4.2.2. Factors directly influencing the level of compensation (Table 15)

For some schemes the assigned percentage of disablement does not directly translate into an equivalent amount of compensation. The effect is that 100% injury does not necessarily yield twice the benefits of a 50% injury. This transformation from the percentage given to the injury to the compensation differed between countries in terms of method. Italy, NSW and Luxembourg use non-linear tables to convert disablement percentages into benefits. In New South Wales benefits reach a ceiling at 75% (Table 5). Finland's assessments are not expressed in percentages but in Handicap Classes, which are then transformed into discrete benefit levels.

There are differences in terms of whether payment is made regularly or by lump sums. Whilst in the UK all benefits are paid as regular payments, the payments in Denmark, New South Wales, Alberta and Switzerland are all made as lump sums. Italy, Finland and Luxembourg use lump sums for low assessments and regular payments for higher assessments, with a choice for lump sum payments in Finland. Table 4 highlights the clear differences between lump sum and regular payments at different thresholds. The differences in these methods of payment have consequences on the total benefits received for conditions limiting survival times compared to conditions that do not. For example, claimants with shorter survival will likely benefit more from lump sum payments than from regular payments. Some schemes providing lump sum payments make adjustments for age and gender, presumably for actuarial reasons.

Age at injury: 40 yrs.
Injury assessment: 10 %



Age at injury: 40 yrs.
Injury assessment: 50 %

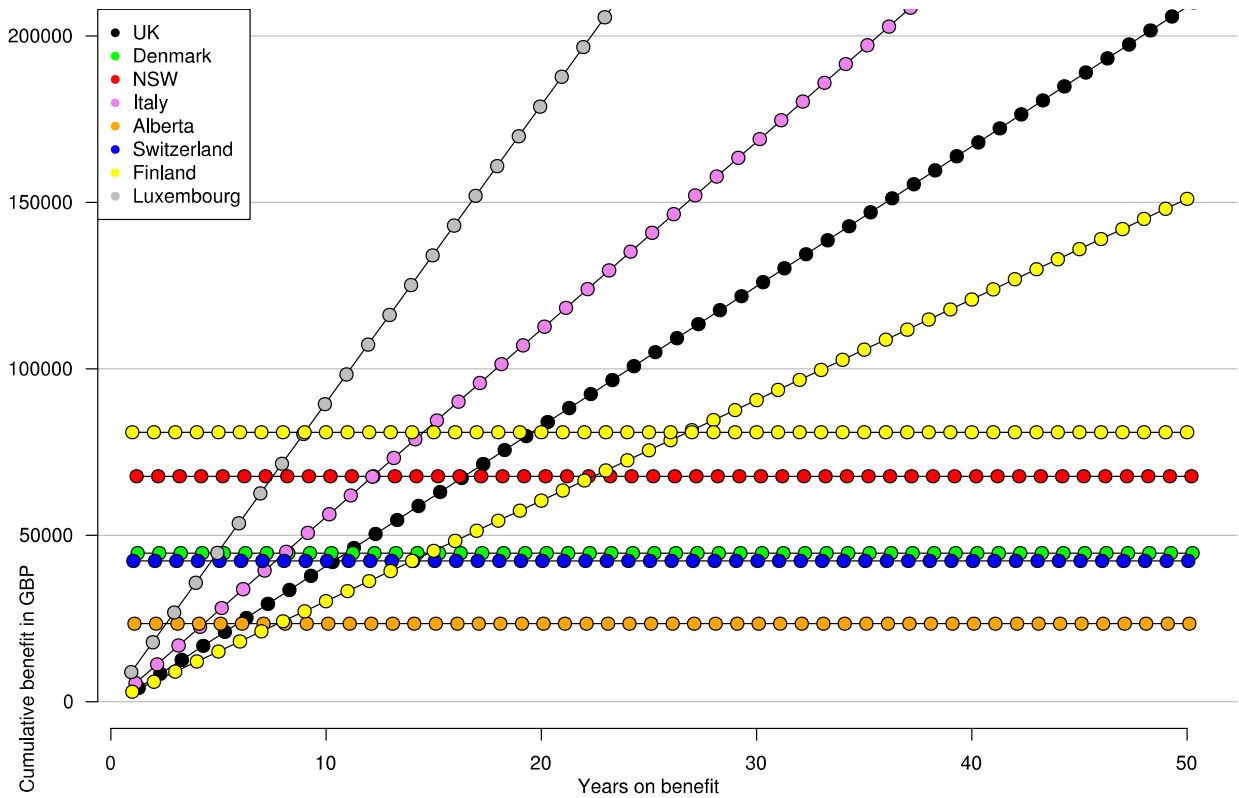


Table 4: Benefits received by time on benefits. Top: disablement assessment of 10%. Bottom: disablement assessment of 50%

The graphs in Table 4 compare the hypothetical benefits given between different jurisdiction schemes. In the top graph, some schemes are below the threshold of any payment, the others are above a lump sum threshold and below the threshold of paying regular payments. In the bottom graph, all schemes are above payment threshold, and schemes like Italy, Luxembourg and Finland are above the threshold when they start regular payments rather than just a lump sum.

It should be noted that Finland allows a choice of lump sum versus regular payment above handicap class 10 (translating into above 16% of maximal payment).

The next graph (Table 5) shows varying degrees of non-linearity when converting hypothetical assessments into payments. This is largely due to non-linear conversion tables (as in the case of Italy, New South Wales and Luxembourg), and the transitions from lump sum to regular payments at around 10-20% (as in the case of Italy, Luxembourg and Finland). In the last point, transitions become smoother after 20-30 years, as regular payments "catch up" with lump sums.

It should be noted that Finland is a special case because the original disablement assessment is expressed as a disability group rather than a percentage. Since the percentages shown in these graphs are already converted to capital economic value, the relationship is linear (whereas the original "disability-class – capital-value" relation is not linear). It should also be noted that Italy, Luxembourg and Finland do make actuarial adjustments for gender for the lump sum payments. For simplification purposes, the mean between payable benefits for men and women was used in these graphs.

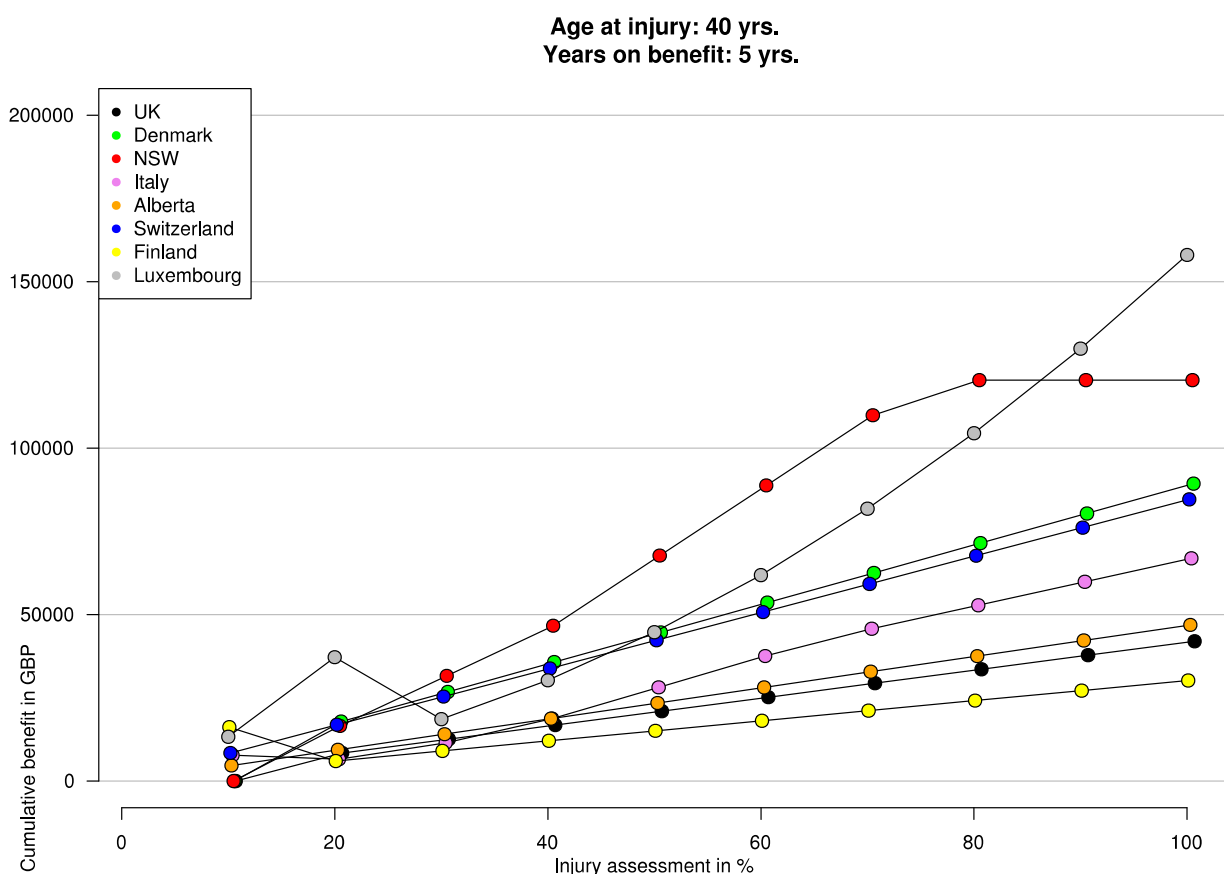


Table 5: Benefits received after 5 years, by level of disablement assessment

The threshold for payment of compensation was one of the most marked differences out of the schemes, with the UK being over 10% above some of the other schemes. For

example, the thresholds for compensation range from 0.4% in Alberta and 1% in Luxembourg to the UK with 14% and New South Wales with 10% for physical injuries and 15% for primary psychological injuries. There were also marked differences between the UK and other jurisdictions in terms of whether compensation payment increases were done by steps or continuous increase. Assessments in Alberta are made at 0.1% increases, whereas assessments in the Denmark and the UK are rounded to discrete levels (10% steps in the UK). Finland expresses assessments as Handicap Classes ranging from Class 1 to Class 20. Differences are also naturally found in the maximum payment awarded. However, it was not possible to ascertain the purchasing power parity, making like-for-like comparison difficult. All schemes have a ceiling assessment of 100%, with the exception of Denmark (here, in extraordinary circumstances an assessment of 120% is possible), and NSW (where 5% can be added for back injuries).

4.2.3. Factors influencing eligibility and assessments processes (Table 16)

There were fewer differences in the factors potentially influencing the level of compensation indirectly. However, nuances still exist. For example, in terms of coverage, Italy, New South Wales and Luxembourg cover commuting injuries whilst Alberta excludes school teachers, councils, school trustees and other areas in the service sector. It was not possible to ascertain the date exclusions for most schemes, though the ones we found data for showed large variations ranging from a claim needing to be made within six months of the injury or diagnosis (as in the case of New South Wales) to 3 and a half years after incident or after symptoms severe enough to be eligible for a claim (as in the case of Italy). However, there are broad similarities between countries in terms of excluding wilful negligence and self-harm from compensation.

There are broad similarities in the decision making process across the examined schemes, in that medical evidence is necessary for the decision maker within the scheme to determine the eligibility and severity of the claim. In this respect the roles of the claimant and the decision maker and – in principle – the medical examiner are largely comparable. The details of these processes, however, differ quite markedly. The UK, Denmark, NSW, Italy and Luxembourg use independent or in house medical assessors to examine the claimant, assemble the medical evidence and make recommendations on causation and severity. In Alberta and Switzerland not all claims require an independent medical examination. This is decided on a case by case basis. In Finland medical information is gathered from the treating physician. The qualifications and training of the independent medical assessors are again variable, ranging from no special qualifications (Luxembourg) to occupational or forensic medicine experts (Italy) and relevant clinical specialists (Denmark, NSW, Alberta). Some schemes have a formal paper review of the medical evidence by scheme employed doctors built into the process (Denmark, Alberta, Finland). The final decision on the claim rests with lay decision makers, legal or insurance experts (UK, Denmark, Alberta, Switzerland, Finland, Luxembourg), or medical and medico-legal experts (Italy). For most schemes the documented processes allow or require evidence to be submitted by treating doctors for consideration of the claim. NSW scheme documents did not comment on this specifically.

In summary, all examined schemes require medical evidence which is reviewed in scheme, and most schemes rely for this on independent medical examinations. The assessment criteria and level of sophistication for the assessments are not widely dissimilar within the compared injuries. It appears that for similar injuries – as far as administrative processes are concerned – the assessment principles should be easily transferable from one jurisdiction to another. **It does therefore not appear that the method of ranking disablement relates to the nature of the medical assessment or to administrative processes within the examined schemes.**

Schemes provide variable levels of detail in their statutory documents on how to establish the diagnosis and the severity of work related injuries and diseases. When we found standards for the assessments these were set out in regulations or guidance with jurisdiction wide applicability. For the amputation injuries the level of detail provided is similar across the different schemes. For diseases such as noise induced hearing loss or respiratory disease some schemes set out specific standards for investigations (i.e. specific audiometry protocols) whilst others only require a general investigation (i.e. any audiometry). Whilst most jurisdiction schemes use some form of standardised assessment for some illnesses, particularly in terms of audiometry and assessing visual acuity, the diseases and investigations vary and the methods are not always prescriptive. **The clarity of UK statutory assessments (in particular in relation to audiometry) is in line with some of the more detailed descriptions as for example in NSW or Alberta.** The clarity of the assessment methods given in the UK Industrial Injuries Handbook 1 and 2 for Medical Advisers (2011/2010) also matches the clarity provided by the NSW and Alberta documents. The authors would however not necessarily have been provided access to similar not formally published documents in other jurisdictions, so a comparison on that level is not possible.

All schemes have lists of prescribed diseases which are presumed to be work related. However the role of the prescribed diseases tables for workers compensation varies from scheme to scheme. All schemes make provisions for the recognition of non prescribed diseases under certain conditions. In some jurisdictions (i.e. Finland, NSW) this route appears to be the norm rather than the exception. The examined schemes also use similar provisions for disablement assessments of injuries which are not listed in the assessment tables. These provisions are 1) interpolation between two injuries of adjacent severity levels, and 2) read across from other injuries which are expected to have a similar effect. In addition the need for 3) clinical judgement is emphasised in NSW and Alberta. Alberta refers additionally to the *AMA guides to the evaluation of permanent impairment*. Luxembourg uses a dual system of diagnosis based and function based assessments, with the latter being employed in cases of uncertainty.

4.2.4. Scheme administrative information (Table 17)

The point of main interest is the information on appeals rates within each jurisdiction scheme and the success of these appeals. Whilst all schemes have provisions for appeals, the processes differed noticeably. For example, in Finland the appeals process involves the insurance company, Accidents Appeals Board and the insurance court whereas the process in Denmark rests with the National Social Appeals Board and in New South Wales the appeals process includes dispute conciliation. There was no data on appeals in Italy, Alberta, Switzerland and Luxembourg. Interestingly, the annual appeals rate in UK, Denmark, Finland and New South Wales are very similar, at around 8-15%, though the success of appeals differs markedly from only around 3% in Denmark to around 52% in New South Wales.

There was no information on the speed of processing claims, or the ratio of adjudication to benefit costs.

4.3. Comparison of UK tabled assessments with assessments for equivalent injuries in other jurisdictions

The tabled disablement assessments for each injury and scheme are given in Table 6. It is divided into Upper Limb, Lower Limb, and Other injuries.

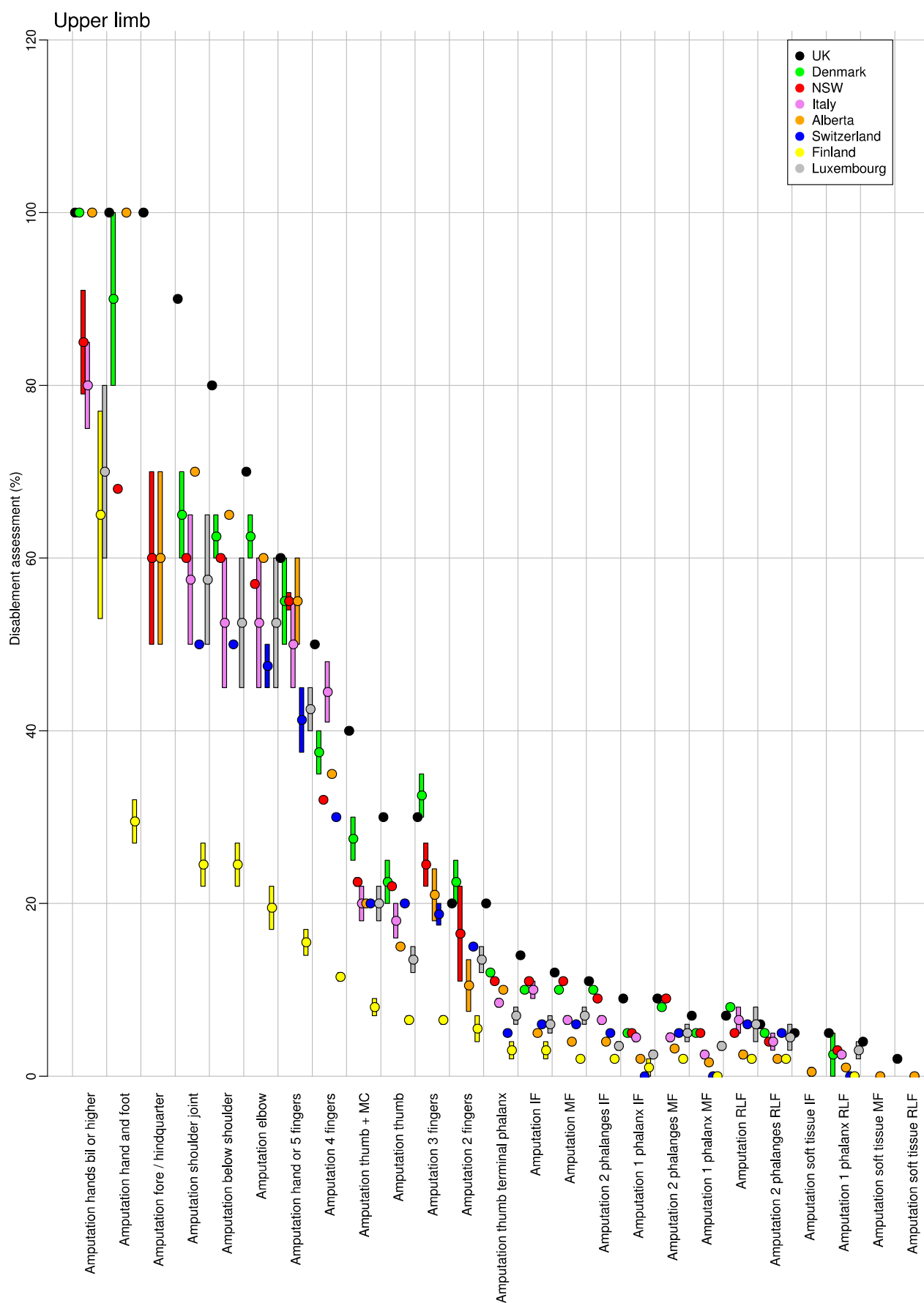


Table 6: Disablement assessments of UK tabled injuries – by scheme and by injury

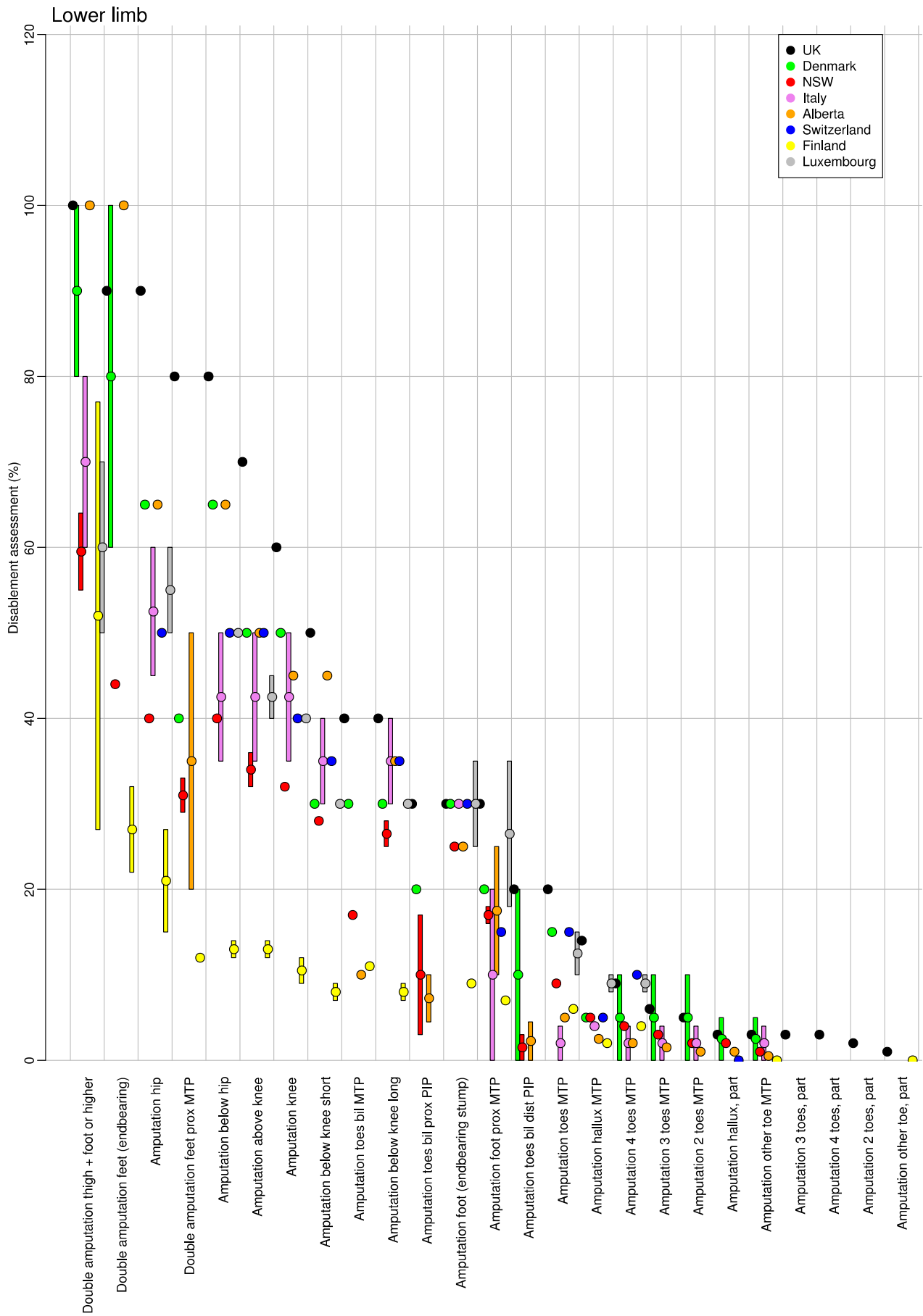
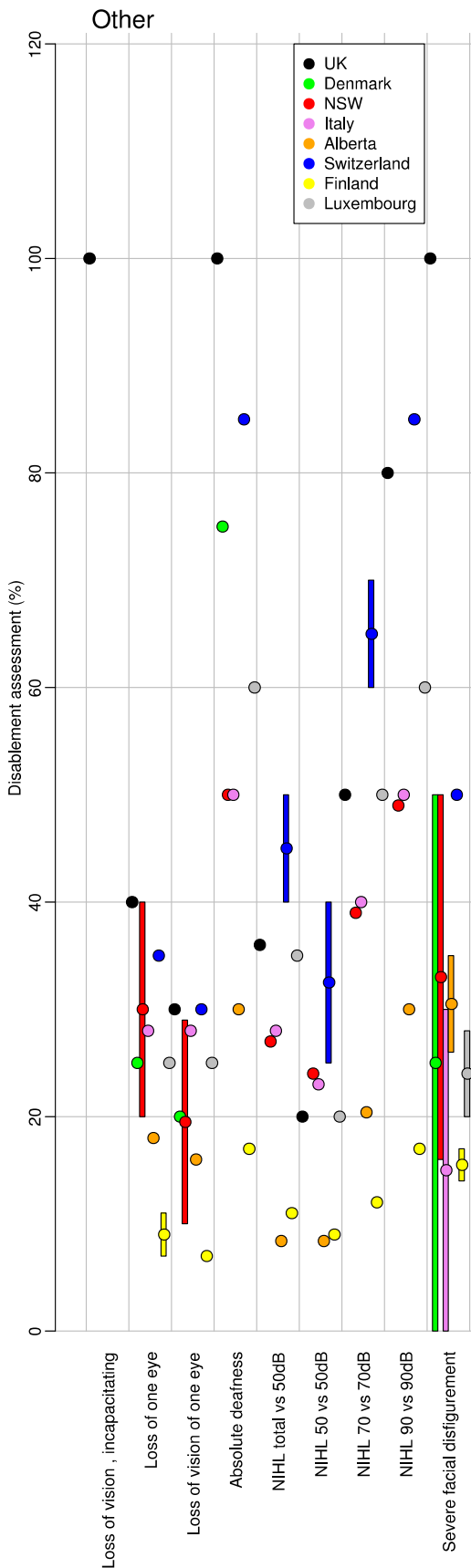


Table 6 (continued)



The main observations from this table are:

- In very general terms the assessment levels of different schemes tend to follow a similar pattern for the given injuries (i.e. unilateral upper and lower limb injuries).
- At the same time there can be considerable variation for the assessments of some injuries (i.e. facial disfigurement).
- Some injuries are not tabled by any scheme apart from the UK: *Amputation distal to the MCP joint of two or more toes; and loss of vision which is incapacitating for any work.* For the first group of injuries some comparator schemes will make off-table assessments, by using combination rules and clinical judgement. The second example reflects a UK peculiarity, in that the definition used by the UK IIDB scheme is defined by an occupational outcome rather than an objective clinical or functional measurement. All comparator schemes table objectively measurable degrees of visual loss.
- Some schemes have a higher (or a lower) absolute assessment level for the majority of the injuries compared to the other schemes. For example, the UK assessments are higher than almost all other schemes' assessments.

Because of the last finding a direct comparison of the assessments tabled in different schemes was not possible. Instead it was necessary to compare the relative rankings of the injuries within each schemes.

Table 6 (continued)

4.4. Rankings of pairs of injuries in the UK and internationally

4.4.1. UK rankings and consensus rankings

The relative rankings of the UK IIDB scheme assessments for pairs of injuries as described in the methods section are given in Table 2. Consensus rankings with *moderate consensus criteria* were calculated for the included international comparator schemes. The consensus for relative ranks of pairs of those injuries tabled under the UK IIDB scheme are given in Table 7. The light blue colour indicates either no consensus, or opposite consensus assessments for these injury pairs. Differences between this plot and Table 2 are visible: Whereas the red (*higher*) and green (*lower*) beads are neatly separated by the grey (*equal*) beads in Table 2, the red beads in Table 7 infiltrate the green region and green beads stray into red territory. Each of these transgressions is evidence of an anomaly in the UK IIDB assessments.

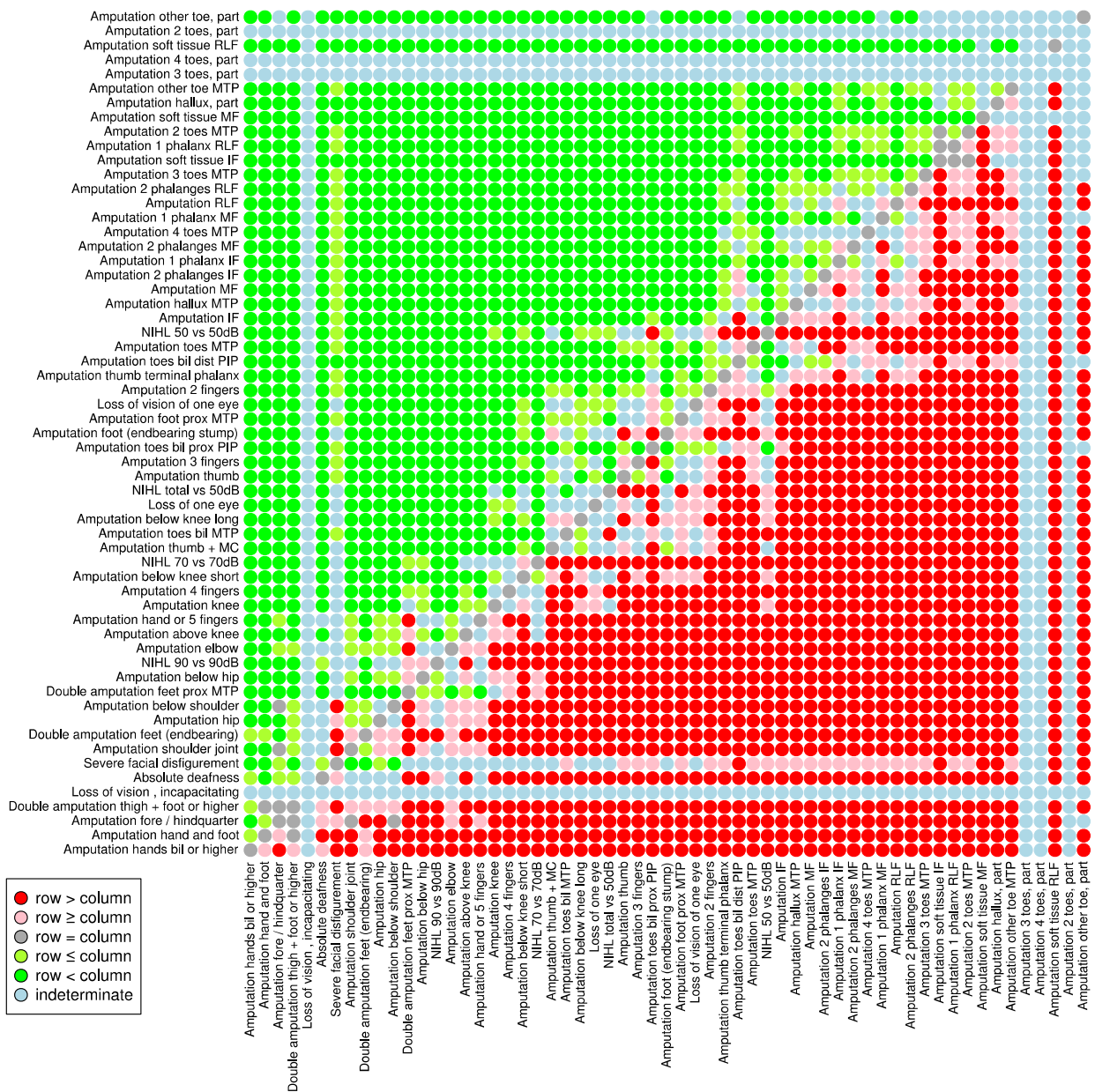
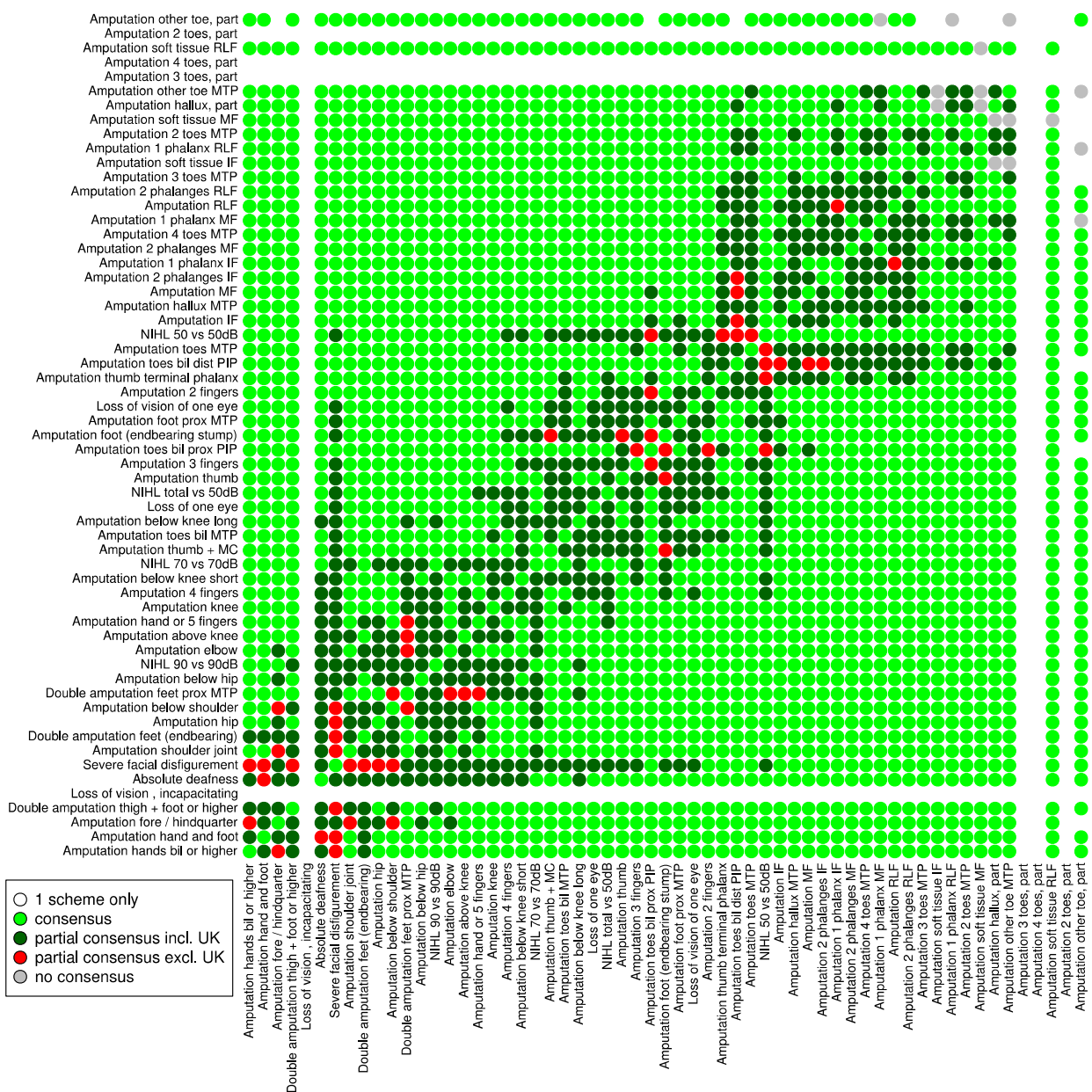


Table 7: Consensus among international schemes (including UK) on relative rankings of pairs of injuries tabled under the UK IIDB scheme

The further the diagonal is crossed by red or green beads, the greater the difference is between the consensus and the UK relative ranks of this pair of injuries.

4.4.2. Anomalies

Table 8 shows these identified UK IIDB scheme anomalies. Grey and white indicate that too few schemes define the relative ranking of this particular pair of injuries. Light green and dark green indicate consensus on pairwise relative rankings across all schemes, or some of the schemes including the UK. Red indicates a consensus on pairwise relative rankings between other schemes but not including the UK. These are anomalies. The greater the distance is of these anomalies from the diagonal, the greater will be the difference between the international consensus rank and the actual UK IIDB rank for this injury. Again, this table is symmetrical at the diagonal axis, as pairs can be compared horizontally and vertically. Therefore the 56 red coloured beads relate to a total of 28 distinct anomalies.



It should be noted that more than one consensus relative ranking is possible for the pairs indicated by the green colours. Whilst there is consensus with the UK relative ranking for these pairs (for example, a *higher* assessment), there may in parallel exist a consensus for a different relative ranking (for example, an *equal* assessment), and possibly even an opposite relative ranking (for example a *lower* assessment) for some of these injury pairs.

At this point it is worthwhile considering anomalies in the other schemes which are forming this consensus, and also to what extent these schemes disagree individually with the UK IIDB scheme. Table 9 shows the numbers of anomalies for each scheme, compared with the international consensus, and the discrepancies for each scheme compared with the UK IIDB assessments. For better comparability these are also expressed in relation to the total number of available strict pairwise rank comparisons within a scheme. For the UK tabled injuries, NSW and Italy present a similar proportion of anomalous assessments as the UK, whereas the proportion is slightly higher in Alberta and Switzerland. The proportion is substantially lower in Denmark, Finland and Luxembourg, suggesting that assessments under these schemes have a much better alignment with the international consensus assessment than the other schemes. All schemes have a similar level of agreement (or disagreement) with the UK IIDB pair wise rank comparisons. **This indicates that the UK anomalies are not an extraordinary finding *per se*, but that better alignment with international consensus is possible.**

	UK	Denmark	NSW	Italy	Alberta	Switzerland	Finland	Luxembourg
Anomalies (n)	56	4	34	20	64	32	8	6
Anomalies (%)	1.6	0.22	1.4	1.4	2.3	2.2	0.43	0.48
Discrepancies with UK (n)	0	210	300	220	310	220	220	170
Discrepancies with UK (%)	0	11	13	16	11	15	12	13

Table 9: Absolute counts and proportions of anomalous pair wise rank comparisons in relation to the international consensus, and of discrepancies with the UK IIDB scheme

4.4.3. Revised rank order of disablement assessments.

For injuries with anomalous relative rankings the possibility of adopting a consensus relative ranking was explored. Using the described algorithm for logical inference, no conflicting pairwise relative rankings needed to be resolved. All resulting rank assignments were unambiguous. 26 out of 28 anomalies could be resolved by revised rank positions. To accommodate these changes an additional 33 non-anomalous pairwise relative rankings required revision. Two anomalies remained unresolved, and the original assessments prevailed, due to strong logical inference from other, non anomalous UK assessments.

Details of the anomalies and the consensus on assessments for relevant pairs of injuries are given in Table 18. The original UK disablement assessments are given, as well as revised assessments, in line with the international consensus rankings. The exact values of these revised assessments are arbitrarily chosen to fit in between the other existing assessments, but other percentage numbers are possible, as long as they are consistent with the rank order. The revised ranking within the UK injuries table is shown in Table 10. The original rank order on the left is transposed to the revised rank order on the right, by the rank changes indicated by the connecting lines. Notably the assessments for the UK tabled injuries

- *Severe facial disfigurement,*
- *Double amputation of the feet proximal to the MTP joint, and*
- *Amputation of the toes bilaterally distal to the PIP joint*

would be decreased by at least three rank positions, whereas assessments for the injury

- *Amputation of one foot resulting in end-bearing stump*

would increase by three rank positions. Assessments for the injuries

- *Amputation of fore- or hindquarter,*
- *Double amputation of thigh and foot or higher levels,*
- *Incapacitating loss of vision,*
- *Absolute deafness,*
- *Amputation below the shoulder,*
- *Amputation of one hand or all fingers of one hand,*
- *Amputation of the thumb and its metacarpal bone,*
- *Amputation of toes bilaterally proximal to the PIP joint,*
- *Amputation of 2 fingers of one hand,*
- *Noise induced hearing loss bilaterally at 50dB,*
- *Amputation of one phalanx of the index finger, and*
- *Amputation of the whole ring or little finger*

would decrease or increase to a lesser extent.

A “ceiling effect” is evident for the top six UK IIDB injuries, which are all originally assessed at 100%. Although these 6 injuries remain at the top of the list, a further rank differentiation into two groups is possible with revised assessments of 95% and 100%. a similar differentiation is also seen for several other rank changes of two positions. These are caused by a revised rank “splitting” groups of equal rank positions. An example is the revised rank position for *Amputation below shoulder* (originally 80%) due to the rank change of *Severe facial disfigurement* (originally 100%). Some of these two position rank changes only affect adjacent original ranks, as seen with the switched positions of *Amputation of ring or little finger* (originally 7%) and *Amputation of 1 phalanx of index finger* (originally 9%). These revised rank positions may be important for considerations of the equitability of the assessments, although the resultant absolute changes in the assessments will be small. A change of three positions or more indicates a more substantial rank change, with a greater change in the assessments. **Therefore the UK assessments for the injuries in the list above ought to be considered as genuinely anomalous in the context of this international comparison, with the first four listed injuries being more anomalous than the others.**

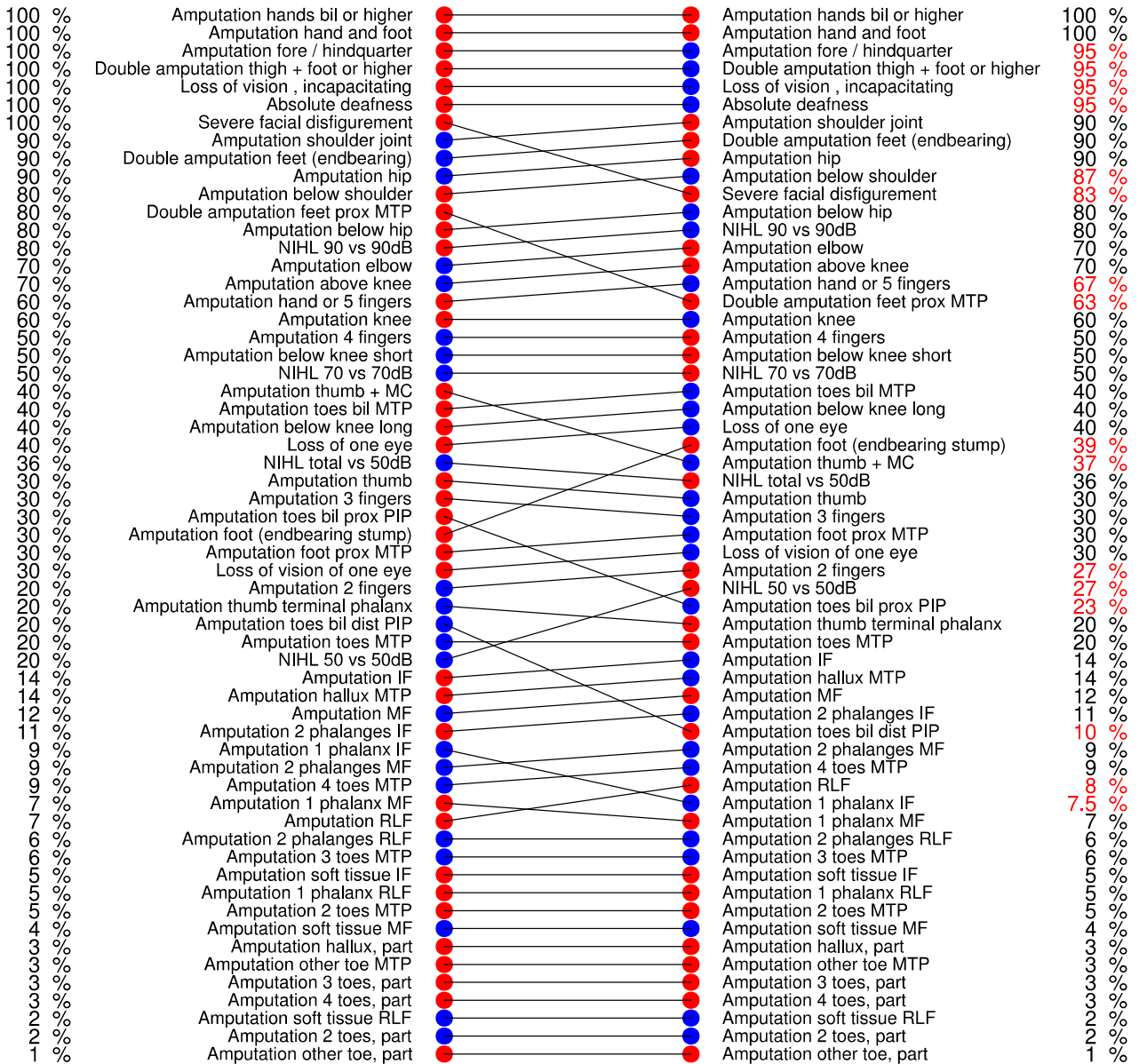


Table 10: Bipartite graph of original UK IIDB disablement assessments, and alternative assessments, in line with the revised rank order

4.5. Gaps in the UK tabled assessments

4.5.1. Identification and description

Gaps in the UK IIDB scheme in comparison to other international schemes were described in 4.2.1. Table 11 shows 59 injuries, some with different levels of severity, that were identified in international comparator schemes as potentially relevant for assessments under the UK IIDB scheme. The tabled disablement assessments for these injuries in international schemes are given in Table 12.

International descriptors	Simplified descriptors
Psychological	
1 PTSD – mild	PTSD, mild
2 PTSD – moderate	PTSD, moderate
3 PTSD – severe	PTSD, severe
4 Depression, minimal	Depression, minimal
5 Depression, mild	Depression, mild
6 Depression, moderate	Depression, moderate
7 Depression, severe	Depression, severe
8 Depression, very severe	Depression, very severe
Respiratory	
9 Asthma, FEV1>80%	OA, FEV1>80%
10 Asthma, FEV1 60-80%	OA, FEV1 60-80%
11 Asthma, FEV1 40-60%	OA, FEV1 40-60%
12 Asthma, FEV1<40%	OA, FEV1<40%
13 Restrictive lung disease FVC 60-80%	Restr. LD FVC 60-80%
14 Restrictive lung disease FVC 40-60%	Restr. LD FVC 40-60%
15 Restrictive lung disease FVC <40%	Restr. LD FVC <40%
16 Pleural plaques	Pleural plaques
17 lung segment resection	Lung segm. resection
18 lung lobe resection	Lung lobe resection
19 pneumonectomy	Pneumonectomy
Dexterity	
20 Dexterity, mild deficiency	Dexterity, mild deficiency
21 Dexterity, moderate deficiency	Dexterity, moderate deficiency
22 Dexterity, severe deficiency	Dexterity, severe deficiency
23 Dexterity, very severe deficiency	Dexterity, very severe deficiency
Spine	
24 C-spine, mild pain and stiffness	C-spine, mild pain/stiffness
25 C-spine, moderate pain and stiffness	C-spine, moderate pain/stiffness
26 C-spine, severe pain and stiffness	C-spine, severe pain/stiffness
27 L-spine, mild pain and stiffness	L-spine, mild pain/stiffness
28 L-spine, moderate pain and stiffness	L-spine, moderate pain/stiffness
29 L-spine, severe pain and stiffness	L-spine, severe pain/stiffness
30 L-spine, very severe pain and stiffness	L-spine, very severe pain/stiffness
31 Complete tetraplegia	Complete tetraplegia
32 Incomplete tetraplegia	Incomplete tetraplegia
33 Complete paraplegia	Complete paraplegia
34 Partial paraplegia, moderate	Partial paraplegia, moderate
35 Partial paraplegia, mild	Partial paraplegia, mild
36 Flaccid complete hemiplegia	Flaccid complete hemiplegia

International descriptors	Simplified descriptors
37 Spastic hemiplegia, loss of UL function	Spastic hemiplegia, no UL function
38 Hemiplegia, severe impairment of UL	Hemiplegia, severe def. of UL
39 Hemiplegia, moderate impairment of UL	Hemiplegia, moderate def. of UL
Brain	
40 Post concussion syndrome	Post concussion syndr.
41 Dementia	Dementia
42 Severe dementia	Severe dementia
43 Mild to moderate Broca aphasia	Mild/moderate Broca aphasia
44 Severe Broca aphasia	Severe Broca aphasia
45 Wernicke Aphasia	Wernicke Aphasia
46 Severe global aphasia	Severe global aphasia
47 Frontal syndrome, moderate	Frontal syndrome, moderate
48 Frontal syndrome, moderate -severe	Frontal syndrome, moderate-severe
49 Frontal syndrome, severe	Frontal syndrome, severe
50 Dysarthria, mild	Dysarthria, mild
51 Dysarthria, moderate	Dysarthria, moderate
52 Dysarthria, severe	Dysarthria, severe
53 Epilepsy, isolated seizures	Epilepsy, isolated seizures
54 Epilepsy, symptomatic on treatment	Epilepsy, controlled seizures
55 Epilepsy, uncontrolled seizures	Epilepsy, uncontrolled seizures
56 Brain injury, mild impairment	Brain injury, mild impairment
57 Brain injury, moderate impairment	Brain injury, moderate impairment
58 Brain injury, severe impairment	Brain injury, severe impairment
59 Brain injury, very severe impairment	Brain injury, very severe impairment

Table 11: Descriptors of relevant injuries not tabled under UK IIDB, and simplified equivalent descriptors

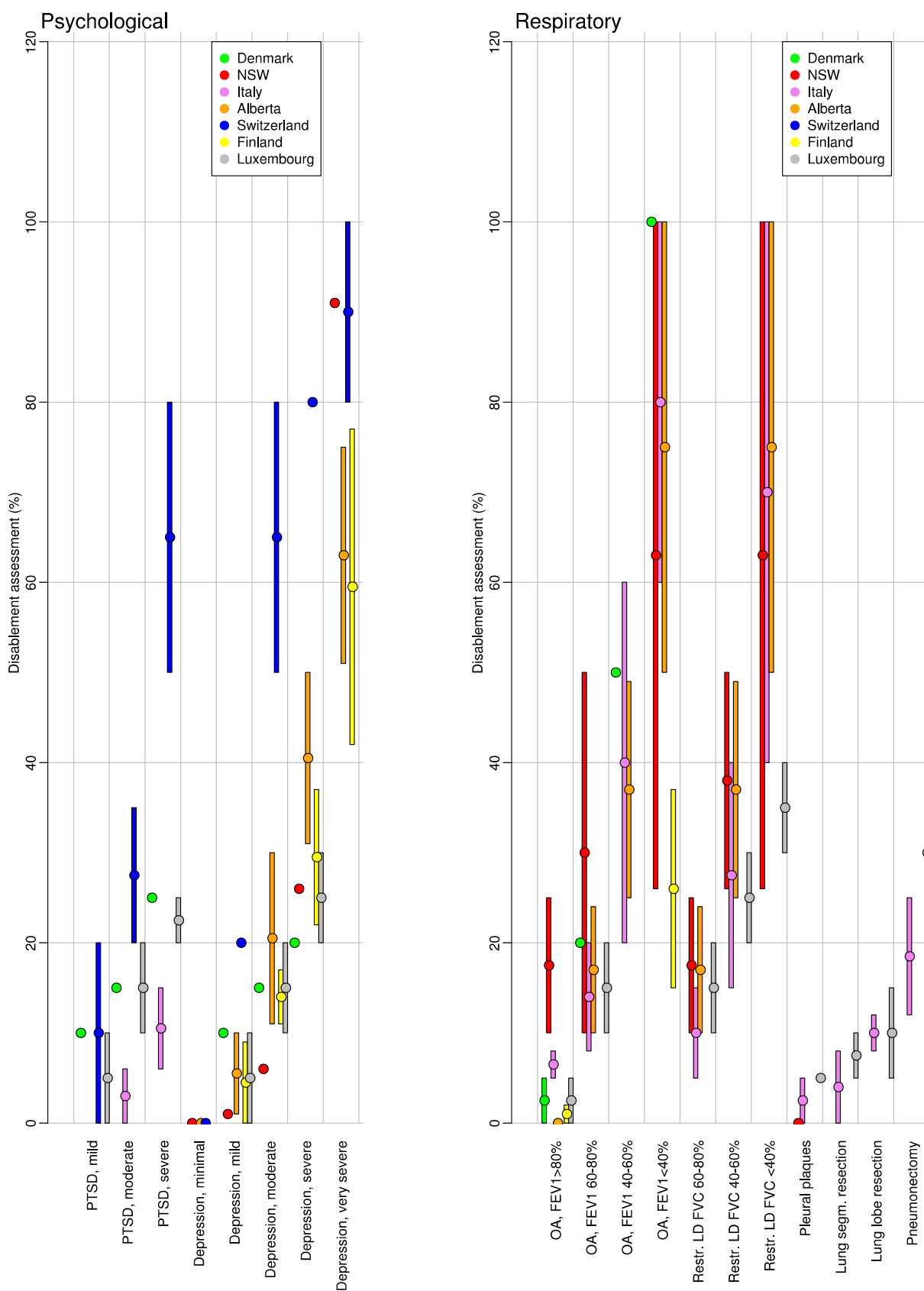


Table 12: Disablement assessments of injuries not tabled in the UK – by scheme and by injury

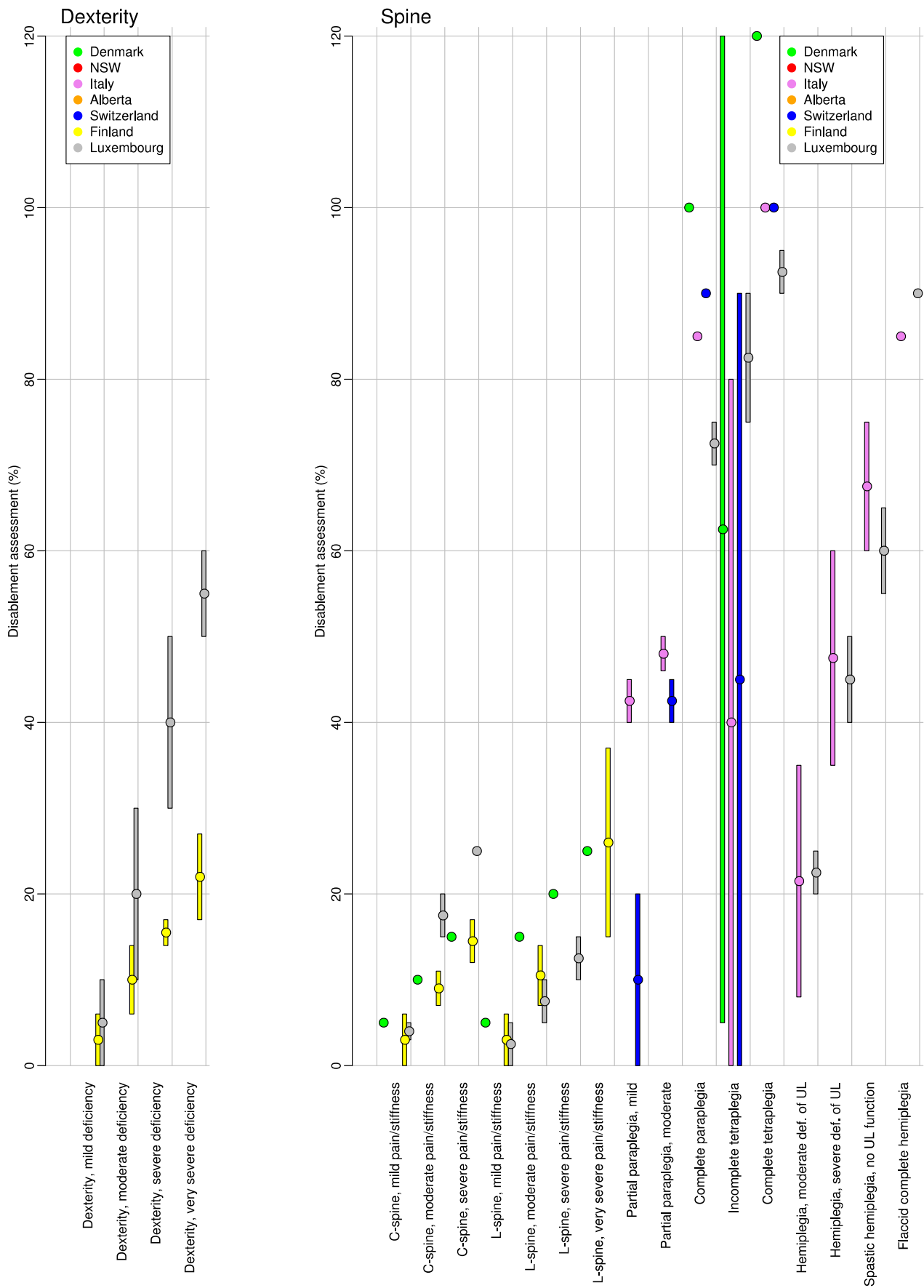


Table 12 (continued)

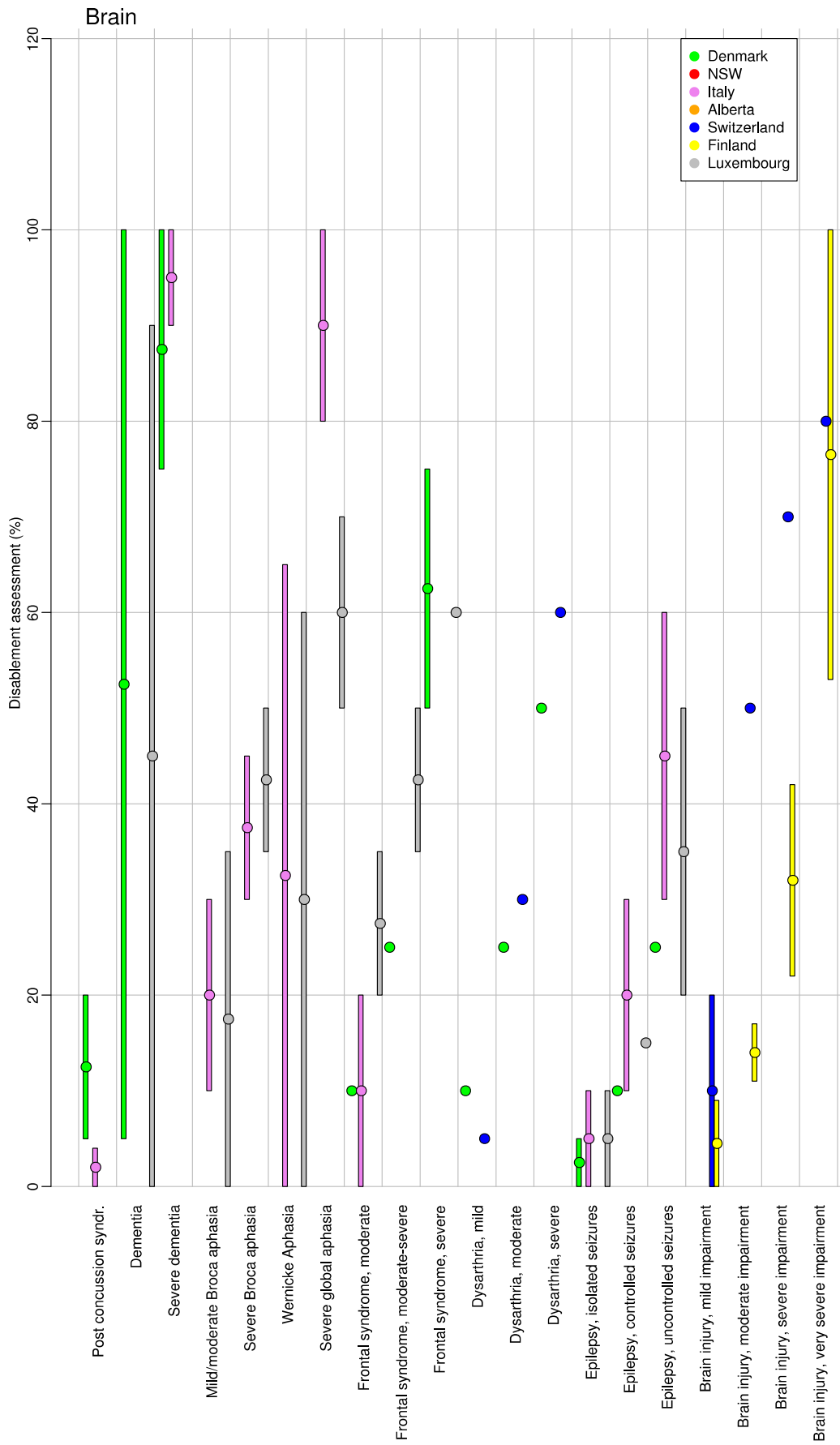


Table 12 (continued)

All these injuries cover organ systems and ranges of diagnoses which have currently no statutory assessments under the UK IIDB scheme. For some of these injuries there was only limited detail in the official international scheme documents on the criteria for diagnosis and severity. The presented table aims to provide consensus descriptors for similar injury types and severities, as far as this could be established from the available information. Notably, there were no consensus descriptions of anxiety disorders or other specific mental health disorders apart from *PTSD* and *depression* in the examined schemes.

Similar to the description of the international assessments of the UK tabled injuries, these injury assessments also tend to follow a similar pattern in the different schemes. This is mostly due injury severity descriptions ranging from mild to severe and assessments following these gradients. More assessments are given as wide ranges, although there is often no overlap. Danish assessments for tetraplegia are up to 120%. Each injury or severity is tabled by 2 to 3 schemes in most cases, only a minority of these additional injuries has tabled assessments in 4 schemes or more. Different schemes seem to set different priorities in terms of which injuries to include in their tabled assessments.

4.5.2. Ranks for previously untabled assessments within the UK IIDB scheme

In the next step a possible rank position of these currently untabled injury assessments within the UK IIDB scheme was determined. As done previously with the UK tabled assessments, this was based on finding a consensus on the rank positions of these additional injuries within all schemes.

The algorithm resolved 12 conflicts. These conflicts arose when logical inference required a pair wise rank comparison of two injuries to be higher, equal, or lower, but the pair wise rank comparison was already established (either through initial direct international consensus or through previous logical inference) to be different to this requirement. Unique rank assignments were possible for 21 out of 118 assessments, the remainder of assessments were assigned rank ranges. The most plausible ranks and rank ranges of untabled injuries alongside disablement assessments tabled under the UK IIDB scheme are given in Table 13.

When comparing the given ranks and rank ranges of the UK tabled injuries with the ranks calculated under 4.4.3, some discrepancies become noticeable. For example, the assessment for *Amputations of hands bilateral or higher* is now above of (and not equal to) *Amputation of hand and foot*. This is because the additional injuries in this calculation introduced more discriminative pair wise rank comparisons from the international comparator schemes, and fewer of the existing relative UK rankings could be preserved. There are a number of similar differences between other pairs of injuries. It is noteworthy that the main rank changes (3 ranks or more) as outlined under 4.4.3 remain stable in both analyses.

This analysis shows that some of the additional injuries are ranked above *Amputations of hands bilateral or higher* and even more injuries ranked above *Amputation of fore or hindquarter*, *Amputation of hand and foot*, *Double amputation of thigh and foot or higher*, *Incapacitating loss of vision*, and *Absolute deafness*, all assessed at 100% under the UK IIDB scheme. The untabled injuries which are ranked above the highest UK tabled injuries are relating to severe mental health problems, severe spinal injury and severe brain injury. This rank table provides a good indication on the consensus ranking of a range of injuries with no current statutory assessment in the UK. **If the inclusion of further statutory assessments for the UK IIDB scheme were considered, this table might help to establish suitable levels of assessment.**

Assessing disablement under the IIDB Scheme – a critical review and international comparison

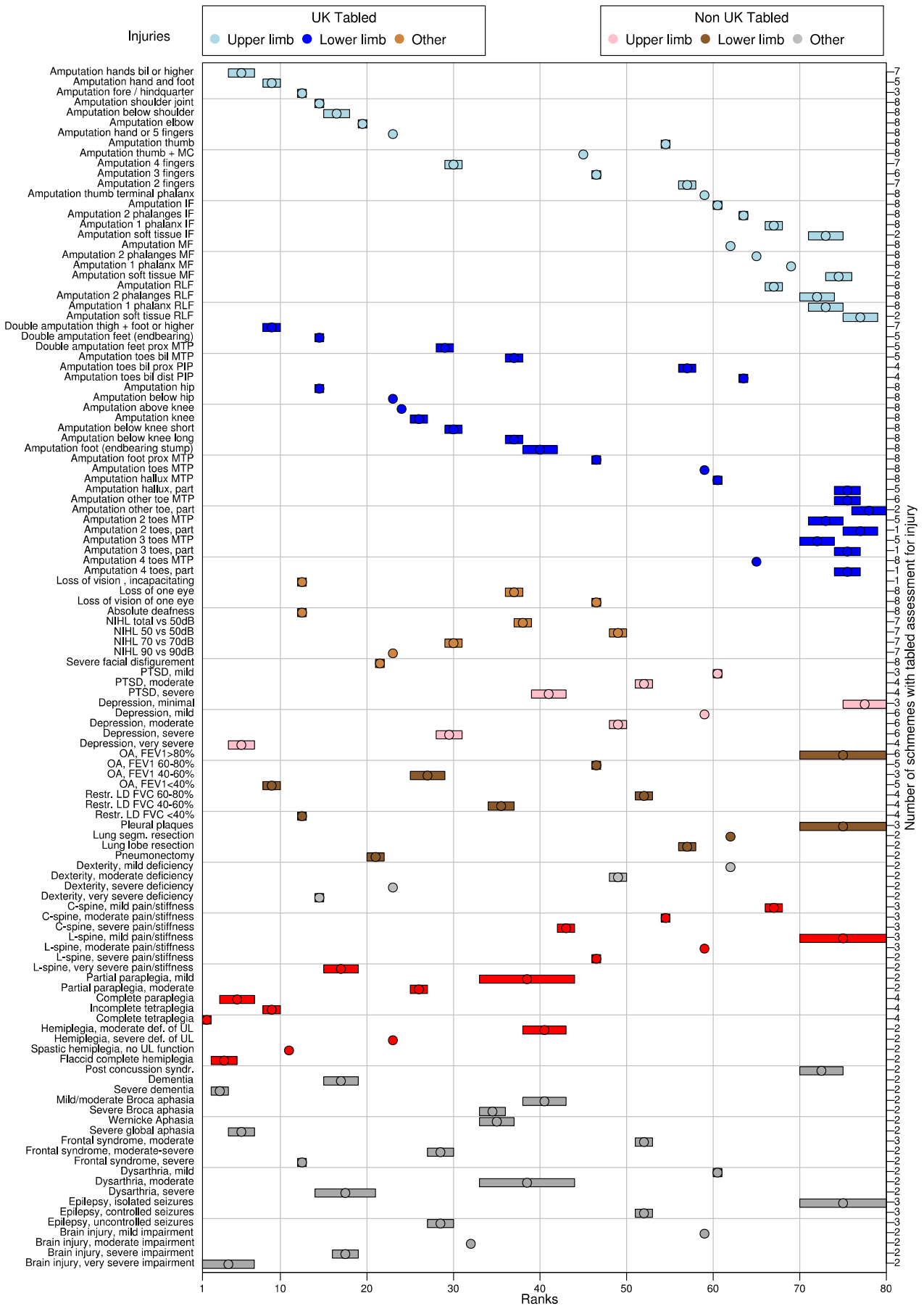


Table 13: Ranks and rank ranges of assessments not tabled under that UK IIDB scheme alongside ranks and rank ranges of UK tabled injury assessments.

5. Discussion

The findings of this study need to be interpreted having regard to the limitations and strengths of the methodology and the wider contexts within which worker compensation schemes operate.

1. The comparability of the schemes is limited by their respective socio-economic context, which will undoubtedly impact on disability models and the use of disease classifications which in turn will affect injury definitions. The predicament between contextual similarity as a condition for comparability and contextual heterogeneity as a source of discovery is outlined in the introduction. Schemes from diverse contexts, representative of different approaches were included, all with a history of scheme development within the jurisdiction. Parallel development and mutual influences between schemes over time are likely but there remain many jurisdiction specific characteristics. We suspect that the similarities seen represent fundamental similarities in the respective populations' approach to measuring non economic loss through occupational injury. In the key features the included schemes are comparable to the UK scheme.
2. Whilst the inclusion of schemes followed our predefined criteria, the response of schemes to our requests, how easily scheme information was available, and whether there had been previous research on these schemes affected whether or not schemes could be considered for inclusion. Whilst we aimed to have schemes representing different socio-geographical areas within the EEA+S and the Commonwealth, Eastern European schemes are not represented in our selection.
3. There remain gaps in the information we were able to obtain on the included schemes and use for this analysis. Sufficient information however was available for the analysis of the available tabled disablement assessments and their rankings.
4. The inclusion of distinct schemes with unique assessment tables will invariably include "outliers", schemes with anomalies compared to the other schemes. Because of a minimum of two schemes being required to form consensus in this study, a single outlier will not influence the group consensus. But it is conceivable that including more schemes will eventually duplicate anomalous assessments and thus "normalise" outliers by forming opposing consensus groups. This would eliminate clear consensus on some relative rankings and render these non informative. In this context it is noticeable that the consensus from eight unrelated schemes with different socio-geographic backgrounds from the EEA+S and the Commonwealth still results in informative consensus rankings on most pair wise rank comparisons, with only few pairs where the consensus is "indeterminate" (Table 7; please note that "indeterminate" pair wise comparisons for *Partial multiple toe amputations* and *Incapacitating loss of vision* in this table are due to these injuries being unique to the UK IIDB and not due to non informative opposing consensus groups). Whilst it is impossible to predict, it appears unlikely that this picture will change dramatically for example with the inclusion of an Eastern European scheme. In addition, the absolute number of other schemes which are relevant for a comparison with the UK, and which have unique assessment tables is limited, and therefore the international consensus from EEA+S and Commonwealth presented in this study is probably a good approximation to the actual consensus.
5. Assessment tables in the included schemes differ in how discriminative the assessments are. Some schemes set out discrete single value assessments for injuries, some table narrow, and others wide ranges of possible assessment values. The wider the range, the less discriminative and the less informative the

assessment will be – for the medical assessor in practice, as well as for informing the consensus in this study. The consensus calculations in this study gave higher priority to discriminative rank comparisons. This increased the number of distinct ranks, and reduced the number of equal ranks. The level of differentiation between adjacent injury assessments (“granularity”) may therefore be higher than desired or practical. In practice, there will always be a degree of clinical uncertainty on the severity of an injury (leaving the diagnostic uncertainty aside). One could argue that tabled single values need to be seen as a guidance, but will only result in fair assessments if the clinicians can use their judgement and adjust the assessments given in the tables. Conversely one could argue that this flexibility can be taken account of by providing ranges which give a more realistic representation of the possible assessments. It may well be that there are advantages using one system rather than the other, but this was not examined in this study.

6. This study was limited to examining the rules governing the assessments of disablement in different schemes. The implementation of these rules into practice may be incomplete and vary for different jurisdictions and even within jurisdictions. These aspects were not considered in this study but may have a significant impact on the performance of the benefit schemes as a whole.
7. This study compares medico-legal rules and from these tries to establish what needs to be considered a social, rather than a scientific consensus. The results can at best be hypothesis generating for the scientific basis of disability assessments. The scientific basis of disability assessments was not scope of this study. It is interesting to note that the AMA guides (5th ed.)– represented here by the NSW scheme – which arguably benefit from the most comprehensive scientific input into their development and regular update, display a similar degree of anomalies in relation to the consensus formed out of the included schemes, as the UK does. This raises the question of which principles of disability assessment are universally applicable and which “principles” are merely a reflection of jurisdictional context. It should be noted that whereas most scheme assessment tables are statically built into statute law, schemes using the AMA guide often have provisions for updating their reference assessment tables. This may be a sensible concept for taking into account medical and scientific advances without undue delay. There may however be practical limitations in sustainably establishing such a framework with a large body of scientific contributors, unless there is a sufficiently large user base.
8. Workers compensation schemes operate in a wider context of benefit systems. This study only attempted to account for this as far as it would affect the direct comparability of the scheme processes in question. However, this context can not be ignored as the main stakeholders – the body administering the benefit systems and the contributors to these systems on one hand, and the benefit recipients on the other hand – will not see the parts of the system in isolation. Adjunctive benefits outside the examined scheme aspects can complement the received benefit which is what the claimant ultimately sees as their due entitlement.
9. Another discrepancy between the medical and the socio-economic evaluation of an individual in respect to their entitlement for benefits becomes evident in the transformations discussed earlier. Whilst the medical assessment allocates a percentage of disablement, this is not proportionally reflected in the benefits received, materially so because of a) payment thresholds, b) discrete “classes” of compensation levels, c) non linear increase of payments, and d) ceiling effects at the maximum payment level. These apply to a varying degree to the different schemes examined.

10. Whilst this study examined the ranking order of tabled injuries from low to high, and anomalies in that order, it did not examine how much lower or higher the assessments should be in absolute terms. The aforementioned transformations resulting in the paid benefits being not proportional to the disablement assessments would in their own right make this a challenging analysis, unless the socio-economic part of the evaluation can be more clearly defined and its justification separated from the medical evaluation. It is also not clear if the commonly assigned percentages as a measure of disablement suggest a level of linearity and interval spacing in the disablement scales that is not, or cannot be, reflected reliably in other measures of functional ability. Again, a review on the scientific base of functional disability assessments might shed more light on this.

6. Conclusions

1. The organisational processes of and provisions for assessment used in the different comparator schemes are diverse, but share common principles. The UK processes and provisions for assessment do not appear to be unusual in this comparison.
2. The clarity of organisational processes, the definitions and, where appropriate, the diagnostic differentiation of the tabled injuries in the different comparator schemes are variable, but generally similar to the UK. The clarity of UK processes and of the UK definitions and diagnostics for the UK tabled injuries does not appear to be unusual in this comparison.
3. The methods of how disablement is assessed in the presence of multiple or sequential injuries of various causation are variable within the compared schemes. The UK methods do not appear to be unusual in this comparison.
4. All comparator schemes use detailed injury tables covering a range of organ systems and injury types. The UK IIDB scheme tables only a fraction of the number of injuries compared with other schemes, and the majority of the UK tabled injuries relates to one injury type (amputations). The UK IIDB scheme table appears to be unusual in this comparison, and an extension of the tabled assessments to other relevant injuries may need to be considered.
5. One injury tabled under the UK IIDB scheme, *incapacitating loss of vision* appears anomalous in that it is not measured by function but by occupational outcome. Occupational outcomes are not used for injuries in any other scheme assessing disablement for non economic loss compensation. This UK tabled assessment therefore appears to be unusual in this comparison.
6. Comparing the rank order of injuries tabled under the UK IIDB scheme with a consensus from equivalent injuries in other schemes, a number of anomalies can be identified. Some comparator schemes have a much better alignment with the consensus rank order than the UK IIDB scheme, but other schemes have a similar level of anomalies. Examining the UK anomalies more closely, the following four injuries appear most anomalous and may need a revision of their assessment levels to achieve a greater consistency with other schemes: *Severe facial disfigurement*, *Double amputation of the feet proximal to the MTP joint*, *Amputation of the toes bilaterally distal to the PIP joint*, and *Amputation of one foot resulting in end-bearing stump*. Revisions of the assessments for other injuries which appear anomalous to a lesser degree might also be considered.

7. Glossary

7.1. Definitions

"assessment" is the allocation of a disablement or functional loss rating in percent to a specific injury.

"disablement" is used to describe the non-economic impact of the injury on the individual, which forms the basis of the non-economic loss compensation. It is the UK term, but in this document is equally applied to the corresponding concept in other schemes (which use a different terminology).

"injury" describes accidental injury as well as industrial disease, as listed in the assessment tables. Each item listed in the comparator schemes' assessment tables is a separate injury, even if it is the same diagnosis as there may be a different level of severity.

"jurisdiction" means the geographical area which is covered by the scheme.

"scheme" reflects the legal framework and the organisational provisions in relation to non-economic loss compensation for industrial injury.

"pair wise rank comparison" describes the comparison of assessments of two injuries, and determining if the first injury is ranked higher than, lower than, or equal to the second.

"tabled assessments" are assessments which are predefined by schemes for certain injuries and specified by statute law, or official regulations, or legally endorsed assessment frameworks, and therefore have statutory weight.

7.2. Abbreviations

AMA – American Medical Association

DWP – Department of Work and Pensions (UK)

EEA – European Economic Area

EEA+S – European Economic Area plus Switzerland

GDP – Gross domestic product

NIHL – noise induced hearing loss

IIDB – Industrial Injuries Disablement Benefit scheme (UK)

ISSA – International Social Security Association

NSW – New South Wales (Australia)

UK – United Kingdom

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8.2. Scheme specific documents

UK:

Social Security Contributions and Benefits Act 1992

Social Security (Industrial Injuries) (Prescribed Diseases) Regulations 1985

Social Security (General Benefit) Regulations 1982

Social Security Act 1975

DWP Decision maker's guide Vol 11 (internet 2013)

Industrial Injuries Handbook 1 and 2 for Medical Advisers (2011/2010)

Denmark:

Permanent injury rating list 1st January 2012, 1st edition

Information on Compensation for Permanent Injury 2009 7th ed.

information material: What to do if you were injured on 1 January 2004 or later (2010)
Guide to Occupational Diseases Reported on or after 1st January 2005 (July 2012, 8th edition)

Consolidated Workers' Compensation Act No. 848 of September 7, 2009

Guide to Recognition of Accidents Injuries occurring on 1st January 2004 or later (4th edition 2006)

New South Wales:

Workers Compensation Act 1987

Workplace Injury Management and Workers Compensation Act 1998

NSW WorkCover Guides Evaluation Of Permanent Impairment 3rd ed. 2009

Workers Compensation Regulation 2010

WorkCover Guidelines for claiming compensation benefits 2012

American Medical Association Guides to the Evaluation of Permanent Impairment, 5th ed. 2000

Italy:

Decreto Ministeriale del 12 luglio 2000: "tabella delle menomazioni"; "tabella indennizzo danno biologico"; "tabella dei coefficienti"

Decreto Legislativo n. 38 del 23 febbraio 2000

Decreto Ministeriale del 9 aprile 2008

The INAIL website on <http://www.inail.it/internet/default>

Alberta:

Workers Compensation Act 2000

Workers' Compensation Board Policy Manual

Alberta Permanent Clinical Impairment Guide 1996

Workers Compensation Regulation 2002

Switzerland:

Bundesgesetz über die Unfallversicherung (UVG 832.20) 20/3/1981 (2013);

Verordnung über die Unfallversicherung (UVV 832.202) 20/12/1982 (2014)

SUVA Tables 1 to 22, in relation to Integritätsschäden

Finland:

Employment Accidents Insurance Act (20.8.1948/608)

classification of degree of disability 1649 (2009)

Luxembourg:

Code de la Sécurité Sociale Livre II (version 2013)

Barème Médical applicable à l'assurance accident 10 juin 2013

AAA leaflet: "Die Unfallversicherung – Leitfaden für den Versicherten"

9. Contributors

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10. Tables

	UK	Denmark	NSW	Italy	Alberta	Switzerland	Finland	Luxembourg
Definition of disablement for non-economic loss compensation	Disablement resulting from relevant loss of physical or mental faculty (this is interpreted in non-statutory documents); Comparator is person of same age and gender	Permanent injury: medical assessment of the nuisance, inconvenience in a person's daily life caused by an injury; assessed on the basis of the consequences of an injury	Degree of permanent impairment	Biological damage; lesion of the psychophysical integrity, accessible to medico-legal evaluation. Independent of earning capacity	Permanent clinical impairment; the loss of, loss of use of, or derangement of any body part, system or function. To compensate the worker for the impact the injury has on the worker's life outside the workplace	Damaged integrity: permanent damage of physical, cognitive or psychological integrity	General permanent handicap	Physiological damage: restriction of actions and movements; functional incapacity; Compensation for loss of quality of life
Descriptors of injuries in tables	Mostly recognised diagnostic medical categories	Recognised diagnostic medical categories for injuries and illnesses, with additional functional descriptors for severity assessment	Recognised diagnostic medical categories for injuries, functional or mixed categories for illnesses	Recognised diagnostic medical categories for injuries and illnesses, with additional functional descriptors for severity assessment	Recognised diagnostic medical categories for injuries, functional or mixed categories for illnesses	Recognised diagnostic medical categories for injuries, detailed functional tables for brain and psychological injuries	Recognised diagnostic medical categories for injuries and illnesses, with additional functional descriptors for severity assessment	Dual system: by diagnosis, closely linked to international consensus descriptions (i.e. NYHA), and by functional descriptors; both systems to be used as guidance
Source of anchor points	Regulation (statute), case law and handbook	Permanent injury rating list (Compensation Board)	AMA 5, WorkCover guides (Compensation Board)	Tabella delle menomazioni (statute)	Permanent Clinical Impairment guide AMA (latest) (Compensation Board)	Regulation (statute), SUVA documents	Classification of degree of disability (statute)	Bareme medical (statute)
Assessment time	90 days	When stable, based on assessment	Maximal medical improvement (stable 3 months, less than 3% injury change over 12 months)	After clinical stabilisation; capital can be paid prospectively, whilst awaiting final assessment	Assessed at maximal medical recovery (usual healing time); standardised healing times	When medical treatment not expected to result in further improvement	When stable, or after 1 year when temporary benefits stop	At the moment of medical stabilisation
Period assessed for	Temporary or permanent	Case may be resumed if circumstances change	Moment in time (at maximal medical improvement), later re-evaluations possible	Permanent except silicosis and asbestosis; annuities can be reviewed and up or downgraded	May be periodically reassessed as the condition deteriorates	Permanent (re-assessments exceptional)	Permanent	Decisions can be reviewed after 1 year. Adjusted if new assessment at least 10% higher

Table 14: Factors influencing the assessments.

	UK	Denmark	NSW	Italy	Alberta	Switzerland	Finland	Luxembourg
Adjustments for treatment effects	Disablement is assessed taking into account availability of artificial aids.	Visual acuity is assessed corrected. For amputations there are different ratings dependent on amenability to prosthetic devices. Asthma is assessed on treatment as needed.	Only visual acuity is assessed in the presence of medical aids. Impairment is assessed on medication, but 3% can be added if symptoms likely to recur if medication is stopped.	Only visual acuity is assessed in the presence of medical aids. The assessment table adjusts for internal fixation and endoprostheses, and effectiveness of exoprostheses.	Only visual acuity is assessed in the presence of medical aids. Effects of medication not taken into account.	Only visual acuity is assessed in the presence of medical aids.	Visual acuity is assessed corrected. Effectiveness of medication and prostheses is considered for some injuries in the table: amputations, dental prosthesis, cochlear implant, respiratory and cardiovascular system pathology on medications.	Visual acuity is assessed corrected. Good prosthetic limb function results in lower assessments. Implicitly disablement is assessed on medication.
Refusal of treatment	Regulations on benefit suspension are possible but not implemented by legislator.	May affect compensation payment	The actual impairment will be assessed	Annuity will be reduced	Refusal of treatment is not taken into account in the assessment of actual current impairment.	Expected success with treatment will be the basis of assessment.	Can result in suspension of benefits	Refusal of treatment is not taken into account when assessing the degree of damage.
Adjustments for dexterity	No	Yes, dominant vs. Non-dominant	No	Yes, dominant vs non-dominant	No	No	Yes, dominant vs non-dominant	Yes, dominant vs non-dominant
Accounting for pre-injury	Pre-injury is discounted, by subtracting the expected pre-injury disablement from the current global disablement.	Interaction of unrelated previous illness with current injury is considered in the assessment, and may be positive (if combined effect worse) or negative (if overlapping symptoms). Paired organ rule for pre-existing injuries; Compensation is paid for the difference.	Deduction of pre-existing impairment (if unknown 10% of the assessment)	For paired organs loss of the second organ will be counted as loss of both organs. For partial loss (when the pre-existing damage is non compensable) the Gabrielli formula is used (pre-injury state considered = 100%; attributable injury = 1 minus residual Capacity / Pre-Injury Capacity).	Adjustments for pre-existing injuries are made. New compensable injury equals total injury minus pre-existing injury. Exception: full compensation regardless of pre injury for severe accidents resulting in permanent disability, and respiratory disease with partial work causation	Pre-injury will be accounted of for. Previous benefits for damaged integrity will be deducted from benefit calculation.	The handicap supplement shall be increased taking into account the severity of the injuries if the injury compensated relates to a function which was important to the worker prior the accident because of a pre-existing injury. However, this is rarely applied.	The compensable loss is the difference between the assessments pre and post injury.

Table 14: (continued)

	UK	Denmark	NSW	Italy	Alberta	Switzerland	Finland	Luxembourg
Post injury aggravation	Aggravation taken into account if relevant injury assessed 11% or more. The interaction of the new injury with the pre-existing injury is established and added to the compensable injury assessment.	Subsequent non-industrial injury may increase the severity of previous compensation (i.e. loss of second eye makes loss of first eye more severe). This is on a case by case assessment.	Subsequent non occupational injuries do not lead to re-assessment.	Subsequent non occupational injuries to a different organ do not lead to re-assessment. New injuries to the same organ system are recalculated with the Gabrielli formula.	Subsequent non occupational injuries do not lead to re-assessment. The only exception to this is if work-related loss of vision in one eye is followed by a non-compensable loss of vision to the other eye.	No information available	Subsequent non occupational injuries do not lead to re-assessment.	The insured can request a reassessment, provided the aggravation is permanent, is in relation to the accident, and exceeds the previous assessment by at least 10%.
Multiple injuries and mixed causation	Global assessment of multiple or combined injuries; guidance stipulates that comparable injuries need to be taken into account.	Simple addition for independent injuries (1+1=2), addition plus interaction for injuries with enhancing symptoms (1+1>2), and overlapping symptoms (1+1<2)	Combined values chart of the American Medical Association (AMA) Guides to the Evaluation of Permanent Impairment (currently 5th ed.)	Explicitly no addition, but estimate of overall loss of function in question	Multiple impairments are added, but cannot exceed 100%. When assessments are taken from the AMA guide for injuries not tabled in Alberta, the AMA combined values chart is applied. Physical and psychological injuries from different incidents are added. If psychological and physical injuries arise from the same incident they can not be added, and the more severe injury determines compensation.	Multiple injuries are assessed by overall damage to integrity. No specific guidance exists, but an official online tool suggests additive and residual capacity models. It is not clear how injuries to paired organs (apart from vision and hearing) are assessed, and how multiple injuries rated at 0% (because they are below the 5% threshold) would be added.	Combination table of handicap classes	Successive injuries can be accumulated without limit. Concurrent injuries explicitly not to be assessed with calculation rules but by overall assessment of functional group; Disfigurement is compensated for separately. Some multiple injuries are predefined.

Table 14: (continued)

	UK	Denmark	NSW	Italy	Alberta	Switzerland	Finland	Luxembourg
Transformation of disablement assessment to compensation	Linear, percentage of fixed benefit base rate	Linear, rounded to nearest 500 DKK	Non linear table; ceiling at 75%	Non-linear table	Linear	Linear	Handicap classes are linked to discrete fractions up to 60% of a pre-specified sum.	Non-linear table; different tables for disfigurement and for physiological damage
Adjustments for age	None	Reduction of 1% per year over 39, 2% per year over 59, max. 40%	None	For lump sums	None	None	For lump sums	For lump sums
Adjustments for gender	No	No	No	For lump sums	No	No	For lump sums	For lump sums
Threshold of payment	14%, except pneumoconiosis, mesothelioma, byssinosis	5%	10% for physical injury, 15% for primary psychological injury	Lump sum 6%, regular payments 16%	Min assessment 0.4%, min. payment 2% (payable for 0.4%)	5%	Lump sum Handicap class 1, regular payments class 11 (~2% and 22% of maximal payment)	lump sum 1%, regular payments 21%
Steps vs continuous increase	Steps of 10%	Discrete levels (5,8,10,12,15,18,20,25,30,...), and sums of these; assessment for one organ always as discrete level	Steps of 1%	Steps of 1%	Steps of 0.1%	Continuous (for damage to psychological integrity 5% steps)	Steps by handicap classes (~2, 4, 6, 7, 9, 11, 12, 14, 15, 17, 22, 27, 32, 37, 42, 53, 65, 77, 88, 100% of maximal payment)	Steps of 1%
Lump sum vs regular payments	Regular payment	Lump sum	Lump sum	Lump sum up to 15%, regular payment above	Lump sum	Lump sum	Lump sum up to handicap class 10, regular payment or lump sum above	Lump sum up to 20%, and for disfigurement; regular payments above 20%
Maximum payment	GBP 162/week	DKK 817 500 (2014); Max 100%, but exceptionally discrete assessment of 120%	AUD 220,000+5% for back injuries	EUR 15,997 per year	Max payment 2014 CAD 86,588.79	Maximally insurable annual income (revised by council): CHF 126,000 (2014)	60% of EUR 12,440 (2014) per year; rapidly deteriorating injury attracts lump sum of class 10 + full regular pension	100% equates EUR 41,000 per year (2013); total payment can be above with repeated injuries
Subject to tax	No	No	“Unlikely”	No	No	No	No	No

Table 15: Factors directly influencing the level of compensation.

	UK	Denmark	NSW	Italy	Alberta	Switzerland	Finland	Luxembourg
Coverage	Employed earners (can include illegal employment), including work related travel; excludes work outside UK	Persons who are engaged by an employer to carry out work; includes children, acquiring disease through parental exposure; voluntary participation of self-employed	Injuries arising in connection with employment. Includes commuting injuries	All work related accidents (activity in the course and for the purpose of work); covers commuting injuries with public transport; includes certain types of self-employed work, e.g. farmers, artisans	Work related injuries; exclusions: service sector, school teachers, sports at work, councils, school trustees, directors or partners, students, prisoners, sheltered work	Compulsory for all employed earners, voluntary for the self-employed, and for voluntary work	Diseases which are probably and primarily due to physical, chemical or biological exposure factors associated with work; employees commuting are covered. Trainees, sports and farmers come under separate legislation. Excludes state employed, small employers and self employed	Covers work and commuting injuries; employed earners, apprentices, seafarers, workers for the "general good", international organisation employees, teachers, school children and students, agriculture, volunteers
Date exclusions	Pre 1948	No specific date exclusion	Usually claim needs to be made within 6 months of injury or diagnosis.	More than 3.5 years after incident or after symptoms severe enough to be eligible for a claim	Fatality within 30 days	No specific date exclusion	No specific date exclusion	Needs to be reported within 1 year after incident or knowledge of occupational origin of illness
Illness exclusions	No specific illness exclusions; negligence not excluded if accident would have arisen anyway	Reduction or lapse of entitlement if wilfully or unlawfully provoked injury	Serious wilful misconduct, intentional self injury, psychological distress due to reasonable actions of the employer, secondary psychological injury, concomitant psychological and physical injury, pain. Some dust diseases are under different legislation	Activities not related to work. Injuries under the influence of alcohol and drugs	Serious and wilful misconduct. commuting accidents	Gross negligence, wilful self harm; non-accident related psychological illnesses are not assessed.	Psychological or social exposure factors; special rules for lateral epicondylitis, tendovaginitis and carpal tunnel syndrome; no compensation for deliberately caused injuries. Reduction or denial if grossly negligent, criminal act, rule contravention	Intentionally provoked illness or accidents, or sustained in pursuit of criminal activity

Table 16: Factors influencing eligibility and assessments processes

	UK	Denmark	NSW	Italy	Alberta	Switzerland	Finland	Luxembourg
Decision making process, including role of worker, treating doctor, medical assessor and decision maker and qualifications if relevant	No details in statute law; DWP guidance details specific requirements: the examining health care professional (qualified health care professional with special training for disability assessments) assembles medical evidence on behalf of DWP and advises the lay decision maker on causation, severity and prescribed disease status.	Information is assembled from claimant, employer, doctor and local authority. Medical information is obtained from a medical specialist, who will not comment on the claim, but on the medical facts. Decision makers within the board (lawyers), in conjunction with board employed medical consultant specialists, assess medical evidence, and decide on injury and eligibility.	On maximal medical improvement either party may organise a single independent medical examination with an appointed approved specialist in the relevant field, with requisite WorkCover training. The assessor reports on presence and degree of permanent impairment, the proportion due to injury and maximal medical improvement.	Assessment of biological damage by INAIL doctors with specialisation in forensic or occupational medicine; information from treating doctors or other experts can be considered. The final decision rests with the INAIL doctors.	The Board decides if an examination is required. Examinations are conducted by independent medical specialists instructed by the Board. The report is reviewed by a Board medical consultant to assign impairment ratings. Benefits are determined by the claims adjudicator. Scheduled injuries often do not require medical examination.	Initial information is obtained from the treating physician (who has a legal duty to report truthfully to SUVA). SUVA can then request an independent expert opinion (including medical examination).	Insurance doctors base their decision on reports by the treating doctor. The Insurance can request special assessments. Benefit decisions are an administrative legal process. The insurance company makes the decision on the benefits, including the handicap class. Insurance doctors are working inside the companies and they take part in the decision making along with other experts (e.g. lawyers).	The accident insurance determines how to investigate claims and examines each case. Advice from treating doctors may be taken into consideration. A medico legal assessor (a medical doctor with no specialist qualifications) instructed by the insurance provides medical advice on which the final decision on eligibility for and level of compensation is based.
Are there standardised assessment methods some illnesses	No details in statute law, except for hearing loss; DWP guidance details specific requirements for a range of investigations.	No specific test types are stipulated for: goniometry, visual acuity, perimetry, FEV1, audiometry.	Specific standard for audiometry (NAL standards)	Specific standard for audiometry (Marelo 0.5-1-2-3- 4 kHz); no specific test types are stipulated for: lung function, perimetry, haematology, goniometry.	Specific standards for audiometry (ISO audiometry at 0.5-1 3 kHz), x-ray (ILO),perimetry (Esterman); no specific test types are stipulated for: goniometry, lung function, ergometry, 2-point discrimination.	Specific standards for audiometry (0.5 1 2 3 kHz), spinal injury (ASIA); no specific test types are stipulated for: goniometry, visual acuity.	Specific standard for audiometry (0.5 1 2 4 kHz); no specific test types are stipulated for: goniometry, lung function, ergometry, kidney function.	Specific standard for audiometry (0.5 1 2 4 kHz, vocal audiometry), Schober test, chemistry; No specific test types are stipulated for: goniometry, visual acuity, perimetry, lung function.

Table 16: (continued)

	UK	Denmark	NSW	Italy	Alberta	Switzerland	Finland	Luxembourg
Prescribed injuries and diseases	List of recognised occupational diseases with detailed exposure and assessment criteria and presumed causation	List of recognised occupational diseases with detailed exposure and assessment criteria and presumed causation	List of recognised Occupational Disease with detailed exposure and assessment criteria; Causation is not any more presumed.	List of recognised occupational diseases with detailed exposure and assessment criteria and presumed causation	List of prescribed diseases; also fire fighters rules. presumed causation	Short list of exposures and work situations	List exists, but presumed causality is not applied. Each case is individually investigated.	Yes, exposure criteria kept general, causality presumed if exposed.
Recognition of industrial diseases not on scheduled list	Yes, but only if caused by identifiable incident or incidents	Yes, case by case recommendation by Occupational Diseases Committee on non scheduled diseases	Scheduled list is rarely used. Employment as main factor has to be established in all cases.	Yes, evidence needs to be provided.	Yes, with evidence for "arises out of" and "occurs in the course of employment"; Board decision	Yes, on evidence; this is only relevant for insurance charging arrangements, as all accidents of employed earners are compensable.	List exists, but presumed causality is not applied. Each case is individually investigated.	Yes, insured person needs to submit proof.
Assessments for non tabled injuries	Interpolation and cross read with schedule 2	Interpolation and cross read for similar effects	Interpolation, cross read and clinical judgement	Interpolation and cross read	AMA guidance, or clinical judgement	Interpolation	Cross read	By functional loss assessment

Table 16: (continued)

	UK	Denmark	NSW	Italy	Alberta	Switzerland	Finland	Luxembourg
Adminis- tration body	Department of Work and Pension	National Board of Industrial Injuries (Arbejds-skadestyrelsen)	WorkCover New South Wales	National Insurance Institute for Employment Injuries (INAIL)	Workers Compensation Board	Swiss Accident Insurance (SUVA), or other insurers	Finnish Federation of Accident Insurance Institutions (TVL)	Association d'assurance accident (AAA)
State vs insurance administered	State	Insurance, but occupational diseases compensated by Labour Market fund	State	State	State	Insurance	Insurance	Insurance
History	Former Workmen's Compensation Act	Accident insurance 1898, rating list since 1979	Origin 1910, major change 1987, small changes in 2012	No information	Origin 1913	Integrity damage since 1901; conceptual change 1984	Employment Accident Insurance Act 1895, revised 1948	AAA since 1901
Other benefits under scheme	Reduced earnings allowance; retirement allowance; industrial death benefit; industrial injuries sickness benefit; constant attendance allowance; unemployability supplement; pneumoconiosis etc (Workers Compensation) Act	Permanent Injury; Loss of earning capacity; medical aids (e.g. glasses); certain curative treatment; medication; training; treatment related travel; future expenses; death; loss of breadwinner; survivor pension	Death; income support; medical; hospital; rehabilitation; property damage	Economic loss (uses same assessment for annuity injuries); Also death benefits; prostheses; rehabilitation; temporary injury benefits	Permanent loss of earnings; compensation; temporary injury benefits; return-to-work services; health care; services for severe injuries; other home services; death payments	Treatment; medical aids; transport and evacuation costs; funeral; material damage; temporary payments; permanent loss of earnings; special needs assistance; death and survivor benefits	Loss of income; daily allowance; disability pension; necessary costs and expenses; medical treatment and examination; supplementary handicap benefit; clothing allowance; rehabilitation (medical and vocational); family benefits; funeral allowance	Medical treatment; medical aids; material damage; temporary and permanent loss of earnings
Appeals and success of appeal	Adjudication process including medical appeals tribunal; annual appeals rate ~14-15%; Appeals success ~35%	Complaint process National Social Appeals Board; annual appeals rate ~14-15%; Appeals success ~3%	Appeals procedure, including dispute conciliation; annual appeals rate ~14%; Appeals success ~52%	Appeals within 3.5 years No data on appeals available	Appeals process No data on appeals available	Appeals procedure with mediation and judicial resolution No data on appeals available.	Insurance company, accidents appeals board, insurance court; annual appeals rate ~8%; Appeals success ~10%	AAA, then Conseil arbitral de la securite sociale; No data on appeals available.

Table 17: Scheme administrative information

Injury A	Injury B	UK ranking	Consensus:		Revised ranking	UK %	Revised %	
			Strict	Lenient				
Severe facial disfigurement	Amputation hands bil or higher	A = B			A < B *	100 %	83 %	
			A > B			100 %	100 %	
			A = B	UK	UK			
	Amputation hand and foot	A = B	A < B	Den NSW Ita Alb Fin Lux	Den NSW Ita Alb Fin Lux	A < B *	100 %	100 %
			A > B					
			A = B	UK	UK			
	Amputation shoulder joint	A > B	A < B	Den NSW Alb Fin	Den NSW Alb Fin	A < B *	90 %	90 %
			A > B	UK	UK			
			A = B	Swi	Swi			
	Amputation below shoulder	A > B	A < B	Den NSW Ita Alb Fin Lux	Den NSW Ita Alb Fin Lux	A < B *	80 %	87 %
		A > B	UK	UK				
		A = B	Swi	Swi				
Double amputation thigh + foot or higher	A = B	A < B	Den NSW Ita Alb Fin Lux	Den NSW Ita Alb Fin Lux	A < B *	100 %	95 %	
		A > B						
		A = B	UK	UK				
Double amputation feet (endbearing)	A > B	A < B	Den NSW Ita Alb Fin Lux	Den NSW Ita Alb Fin Lux	A < B *	90 %	90 %	
		A > B	UK	UK NSW				
		A = B	NSW	NSW				
Amputation hip	A > B	A < B	Den NSW Alb Fin	Den NSW Alb Fin	A < B *	90 %	90 %	
		A > B	UK	UK NSW				
		A = B	NSW Swi Fin	NSW Swi Fin				
		A < B	Den NSW Ita Alb Fin Lux	Den NSW Ita Alb Fin Lux				

Table 18: Details of anomalies, pair wise ranking comparisons, and different consensus levels. Original UK disablement assessments (%) and revised assessments (%) in line with revised ranking (*). UK = United Kingdom; Den = Denmark; NSW = New South Wales; Ita = Italy; Alb = Alberta; Swi = Switzerland; Fin = Finland; Lux = Luxembourg

Injury A	Injury B	UK ranking	Consensus:	Strict	Lenient	Revised ranking	UK %	Revised %	
Double amputation feet prox MTP	Amputation below shoulder	A = B	A > B				A < B *	80 %	63 %
			A = B	UK	UK		80 %	87 %	
			A < B	Den NSW Alb Fin	Den NSW Alb Fin				
	Amputation elbow	A > B	A > B	UK	UK		A < B *	70 %	70 %
			A = B						
			A < B	Den NSW Alb Fin	Den NSW Alb Fin				
	Amputation hand or 5 fingers	A > B	A > B	UK	UK		A < B *	60 %	67 %
			A = B	Alb	Alb				
			A < B	Den NSW Alb Fin	Den NSW Alb Fin				
	Amputation above knee	A > B	A > B	UK	UK		A < B *	70 %	70 %
A = B			NSW Alb Fin	NSW Alb Fin					
A < B			Den NSW Alb Fin	Den NSW Alb Fin					
Amputation toes bil prox PIP	Amputation 3 fingers	A = B	A > B				A < B *	30 %	23 %
			A = B	UK	UK		30 %	30 %	
			A < B	Den NSW Alb	Den NSW Alb				
	Amputation 2 fingers	A > B	A > B	UK	UK Den		A < B *	20 %	27 %
			A = B	Den NSW Alb	Den NSW Alb				
			A < B	Den NSW Alb	Den NSW Alb				
	Amputation foot (endbearing stump)	A = B	A > B				A < B *	30 %	39 %
			A = B	UK	UK				
			A < B	Den NSW Alb	Den NSW Alb				
	NIHL 50 vs 50dB	A > B	A > B	UK	UK Alb		A < B *	20 %	27 %
A = B			Alb	Alb					
A < B			NSW Alb	NSW Alb					

Table 18 (continued)

Injury A	Injury B	UK ranking	Consensus:		Strict	Lenient	Revised ranking	UK %	Revised %
Amputation toes bil dist PIP	Amputation IF	A > B	A > B	UK		UK Den	A < B *	20 %	10 %
			A = B	Den		Den	14 %	14 %	
			A < B	NSW Alb		Den NSW Alb			
	Amputation 2 phalanges IF	A > B	A > B	UK		UK Den Alb	A < B *	11 %	11 %
			A = B	Den Alb		Den Alb			
			A < B	NSW Alb		Den NSW Alb			
	Amputation MF	A > B	A > B	UK		UK Den Alb	A < B *	12 %	12 %
			A = B	Den Alb		Den Alb			
			A < B	NSW Alb		Den NSW Alb			
	NIHL 50 vs 50dB	A = B	A > B				A < B *	20 %	27 %
A = B			UK		UK				
A < B			NSW Alb		NSW Alb				
NIHL 50 vs 50dB	A = B	A > B				A > B *	20 %	27 %	
		A = B	UK		UK	20 %	20 %		
		A < B	NSW Ita Swi Fin Lux		NSW Ita Swi Fin Lux				
Amputation thumb terminal phalanx	A = B	A > B	NSW Ita Swi Fin Lux		NSW Ita Swi Fin Lux				
		A = B	UK		UK				
		A < B	Alb		Alb				
Amputation toes bil prox PIP	A < B	A > B	NSW Alb		NSW Alb	A > B *	30 %	23 %	
		A = B	Alb		Alb				
		A < B	UK		UK Alb				
Amputation toes bil dist PIP	A = B	A > B	NSW Alb		NSW Alb	A > B *	20 %	10 %	
		A = B	UK		UK				
		A < B			UK Alb				
Amputation toes MTP	A = B	A > B	NSW Alb		NSW Alb	A > B *	20 %	10 %	
		A = B	UK		UK				
		A < B			UK Alb				
		A = B	A > B	NSW Ita Alb Swi Fin Lux		NSW Ita Alb Swi Fin Lux	A > B *	20 %	20 %
			A = B	UK		UK			
			A < B			UK			

Table 18 (continued)

Injury A	Injury B	UK ranking	Consensus:		Strict	Lenient	Revised ranking	UK %	Revised %	
Amputation fore / hindquarter	Amputation hands bil or higher	A = B					A < B *	100 %	95 %	
			A > B							
			A = B	UK		UK				
		Amputation shoulder joint	A > B	A < B	NSW Alb		NSW Alb	A > B	90 %	90 %
			A > B	UK		UK NSW Alb				
			A = B	NSW Alb		NSW Alb				
		Amputation below shoulder	A > B	A < B	Alb		NSW Alb	A > B	80 %	87 %
			A > B	UK		UK NSW Alb				
			A = B	NSW Alb		NSW Alb				
		Amputation below shoulder		A < B	Alb		NSW Alb		80 %	87 %
	A > B		UK		UK NSW Alb					
	A = B		NSW Alb		NSW Alb					
	Amputation fore / hindquarter	A < B				UK NSW Alb	A < B	100 %	95 %	
		A > B	Alb		NSW Alb					
		A = B	NSW Alb		NSW Alb					
	Double amputation feet prox MTP	A = B	A < B	UK		UK NSW Alb	A > B *	80 %	63 %	
		A > B	Den NSW Alb Fin		Den NSW Alb Fin					
		A = B	UK		UK					
	Severe facial disfigurement	A < B	A < B				A > B *	100 %	83 %	
		A > B	Den NSW Ita Alb Fin Lux		Den NSW Ita Alb Fin Lux					
		A = B	Swi		Swi					
		A < B	UK		UK					

Table 18 (continued)

Injury A	Injury B	UK ranking	Consensus:		Strict	Lenient	Revised ranking	UK %	Revised %
Amputation foot (endbearing stump)	Amputation thumb	A = B	A > B	Den NSW Ita Alb Swi Fin Lux	Den NSW Ita Alb Swi Fin Lux	A > B *	30 %	39 %	
			A = B A < B	UK	UK		30 %	30 %	
	Amputation thumb + MC	A < B	A > B	Den NSW Ita Alb Swi Fin Lux	Den NSW Ita Alb Swi Fin Lux	A > B *	40 %	37 %	
			A = B A < B	Den Fin UK	Den Fin UK Den Fin				
	Amputation toes bil prox PIP	A = B	A > B	Den NSW Alb	Den NSW Alb	A > B *	30 %	23 %	
			A = B A < B	UK	UK				
Amputation hands bil or higher	Amputation fore / hindquarter	A = B	A > B	NSW Alb	NSW Alb	A > B *	100 %	100 %	
			A = B A < B	UK	UK		100 %	95 %	
	Severe facial disfigurement	A = B	A > B	Den NSW Ita Alb Fin Lux	Den NSW Ita Alb Fin Lux	A > B *	100 %	83 %	
			A = B A < B	UK	UK				
Amputation hand and foot	Absolute deafness	A = B	A > B	Den NSW Alb Fin	Den NSW Alb Fin	A > B *	100 %	100 %	
			A = B A < B	UK	UK		100 %	95 %	
	Severe facial disfigurement	A = B	A > B	Den NSW Alb Fin	Den NSW Alb Fin	A > B *	100 %	83 %	
			A = B A < B	UK	UK				

Table 18 (continued)

Injury A	Injury B	UK ranking	Consensus:		Strict	Lenient	Revised ranking	UK %	Revised %
Amputation shoulder joint	Amputation fore / hindquarter	A < B	A > B	Alb	NSW Alb		A < B	90 %	90 %
			A = B	NSW Alb	NSW Alb		100 %	95 %	
Amputation elbow	Double amputation feet prox MTP	A < B	A > B	Den NSW Ita Alb Fin Lux	Den NSW Ita Alb Fin Lux		A > B *	100 %	83 %
			A = B	Swi	Swi				
			A < B	UK	UK				
Amputation hand or 5 fingers	Double amputation feet prox MTP	A < B	A > B	Den NSW Alb Fin	Den NSW Alb Fin		A > B *	70 %	70 %
			A = B	Alb	Alb				
Amputation thumb	Amputation foot (endbearing stump)	A = B	A > B	Den NSW Ita Alb Swi Fin Lux	Den NSW Ita Alb Swi Fin Lux		A > B *	80 %	63 %
			A = B	UK	UK				
Amputation thumb + MC	Amputation foot (endbearing stump)	A > B	A > B	Den NSW Ita Alb Swi Fin Lux	Den NSW Ita Alb Swi Fin Lux		A < B *	30 %	30 %
			A = B	UK	UK				
			A > B	Den NSW Ita Alb Swi Fin Lux	Den NSW Ita Alb Swi Fin Lux				
			A = B	Den Fin	Den Fin				
			A < B	Den NSW Ita Alb Swi Fin Lux	Den NSW Ita Alb Swi Fin Lux				
			A > B	UK	UK Den Fin				
			A = B	Den Fin	Den Fin				
			A < B	Den NSW Ita Alb Swi Fin Lux	Den NSW Ita Alb Swi Fin Lux				

Table 18 (continued)

Injury A	Injury B	UK ranking	Consensus:		Strict	Lenient	Revised ranking	UK %	Revised %
Amputation 3 fingers	Amputation toes bil prox PIP	A = B	A > B	Den NSW Alb		Den NSW Alb	A > B *	30 %	30 %
			A = B	UK		UK		30 %	23 %
			A < B						
Amputation 2 fingers	Amputation toes bil prox PIP	A < B	A > B	Den NSW Alb		Den NSW Alb	A > B *	20 %	27 %
			A = B	Den NSW Alb		Den NSW Alb		30 %	23 %
			A < B	UK		UK Den			
Amputation thumb terminal phalanx	NIHL 50 vs 50dB	A = B	A > B	Alb		Alb	A < B *	20 %	20 %
			A = B	UK		UK		20 %	27 %
			A < B	NSW Ita Swi Fin Lux		NSW Ita Swi Fin Lux			
Amputation IF	Amputation toes bil dist PIP	A < B	A > B	NSW Alb		Den NSW Alb	A > B *	14 %	14 %
			A = B	Den		Den		20 %	10 %
			A < B	UK		UK Den			
Amputation 2 phalanges IF	Amputation toes bil dist PIP	A < B	A > B	NSW Alb		Den NSW Alb	A > B *	11 %	11 %
			A = B	Den Alb		Den Alb		20 %	10 %
			A < B	UK		UK Den Alb			
Amputation 1 phalanx IF	Amputation RLF	A > B	A > B	UK		UK Alb Fin	A < B *	9 %	7.5 %
			A = B	NSW Ita Alb Fin		NSW Ita Alb Fin		7 %	8 %
			A < B	Den Ita Alb Swi Fin Lux		Den Ita Alb Swi Fin Lux			

Table 18 (continued)

Injury A	Injury B	UK ranking	Consensus:		Revised ranking	UK %	Revised %
			Strict	Lenient			
Amputation MF	Amputation toes bil dist PIP	A < B	A > B A = B A < B	NSW Alb Den Alb UK	Den NSW Alb Den Alb UK Den Alb	12 % 20 %	12 % 10 %
Amputation RLF	Amputation 1 phalanx IF	A < B	A > B A = B A < B	Den Ita Alb Swi Fin Lux NSW Ita Alb Fin UK	Den Ita Alb Swi Fin Lux NSW Ita Alb Fin UK Alb Fin	7 % 9 %	8 % 7.5 %
Double amputation thigh + foot or higher	Severe facial disfigurement	A = B	A > B A = B A < B	Den NSW Ita Alb Fin Lux UK	Den NSW Ita Alb Fin Lux UK	100 %	95 % 83 %
Double amputation feet (endbearing)	Severe facial disfigurement	A < B	A > B A = B A < B	Den NSW Alb Fin NSW UK	Den NSW Alb Fin NSW UK NSW	90 %	90 % 83 %
Amputation hip	Severe facial disfigurement	A < B	A > B A = B A < B	Den NSW Ita Alb Fin Lux NSW Swi Fin UK	Den NSW Ita Alb Fin Lux NSW Swi Fin UK NSW	90 % 100 %	90 % 83 %
Amputation above knee	Double amputation feet prox MTP	A < B	A > B A = B A < B	Den NSW Alb Fin NSW Alb Fin UK	Den NSW Alb Fin NSW Alb Fin UK Alb Fin	70 % 80 %	70 % 63 %

Table 18 (continued)

Injury A	Injury B	UK ranking	Consensus: Strict	Lenient	Revised ranking	UK %	Revised %
Amputation toes MTP	NIHL 50 vs 50dB	A = B	A > B A = B UK A < B NSW Ita Alb Swi Fin Lux	UK NSW Ita Alb Swi Fin Lux	A < B *	20 % 20 %	20 % 27 %
Absolute deafness	Amputation hand and foot	A = B	A > B A = B UK A < B Den NSW Alb Fin	UK Den NSW Alb Fin	A < B *	100 % 100 %	95 % 100 %

Table 18 (continued)