



“IP11” Series claim inception and termination rates

September 2020

Summary

This note provides an overview of the “IP11” Series **claim inception** and **claim termination** (by recovery or death) **rates**, a summary of the underlying dataset, and an overview of the methodology.

The “IP11” Series rates, produced by the Continuous Mortality Investigation (CMI), are based on sickness experience of individual income protection (IP) business for the period 2007-2016.

Actuaries need assumptions about inception and termination rates in order to manage the finances of insurance companies that commit to pay policyholders an income throughout their period of sickness, subject to pre-defined conditions, such as being sick for at least the duration of the **deferred period** (DP, in weeks) of their policy. The sickness experience for such policyholders is different to that of the general population and insurers are interested in the rate of claim inception, as opposed to sickness inception.

Many UK life insurance companies use the CMI’s rates as the basis for their assumptions, and adjust these to be suitable to their particular business. Anyone using the “IP11” Series claim inception and termination rates should exercise judgement on their suitability for their particular purpose.

The “IP11” Series rates relate to base claim inception and termination rates; there is no consideration for how these may change over time. They update previous CMI rates, in particular, the “IP06” inception rates and the “IPM1991-98” termination rates, to reflect more recent claims experience.

Notes

This briefing note is intended for use by those who are presented with results where “IP11” Series claim inception and/or termination rates have been used as part of the morbidity assumptions, such as Non-Executive Directors of insurance companies with portfolios of IP business.

The note aims to provide some background to the “IP11” Series of rates and highlight key considerations for:

- Interested parties, who may not have access to the relevant CMI Working Papers
- Subscribers, that do have access to the CMI Working Papers, but wish to obtain an overview before reading the detail.

We strongly encourage actuaries using the “IP11” claim inception and termination rates to also refer to CMI Working Papers 131 and 136 and their associated outputs.

While we frequently refer to just IP11 in the interests of brevity in this note, this should be understood as “final “IP11” Series claim inception and termination rates for individual income protection.” We similarly refer to previous rates simply as IPM1991-98 and IP06.

Some background about the CMI and the IP11 Series claim inception and termination rates is included at the end of this note. A definitions section may also be found there. Defined terms are indicated in **bold italics** where they first occur.

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Data

Table 1: Summary of data for different IP Series' of rates

Series of rates	Period of underlying data	Range of IP business
IP11	2007-2016	<ul style="list-style-type: none">Males and femalesDeferred periodOccupation class
IP06 (only claim inceptions)	2003-2010	<ul style="list-style-type: none">Males and femalesDeferred periodOccupation class
IPM1991-98	1991-1998	<ul style="list-style-type: none">MalesDeferred periodOccupation class 1

The key drivers for producing the IP11 Series claim inception and termination rates are:

- They are based on data covering the ten years 2007-2016. This data is more recent than that used for the IP06 claim inception rates (IP06 claim termination rates were not produced) and considerably more up to date than the data for the previous IPM1991-98 claim termination rates.
- The range of IP business is the same as that covered by the IP06 claim inception rates but is broader than for the IPM1991-98 claim termination rates.

An important point to note about the underlying dataset, which is not unique to the IP11 Series, is that it is reliant on a small number of data contributors. In particular:

- The data for DP1 is dominated by a small number of occupations, and as such does not represent a well-diversified pool.
- Data volumes for females in OC3 and OC4 are limited. Hence, care is needed when using the rates in practice for these sub-populations.

Graduation of the rates

The IP11 Series claim inception and termination rates employ a typical CMI approach:

- We used data for a number of years, in this case ten, to avoid volatility that can arise from year to year -- for example, as a result of a particularly harsh winter. This is a longer period than is typically used for mortality tables, because of the lower data volumes.
- Data was graduated over age ranges for which we consider the data to be reliable --- in this case ages 17 to 65 for males and ages 17 to 60 for females.
- Mathematical formulae were used for the **graduations**; the formula for each set of rates was selected using a combination of statistical tests and pragmatic judgement.
- The graduated rates were extended to higher ages, to produce a complete set of rates from age 17 to 70.

Results

Key trends of the final claim inception rates are set out below:

- Claim inception rates generally increase with age.
- Claim inception rates for females tend to be higher than those for males.



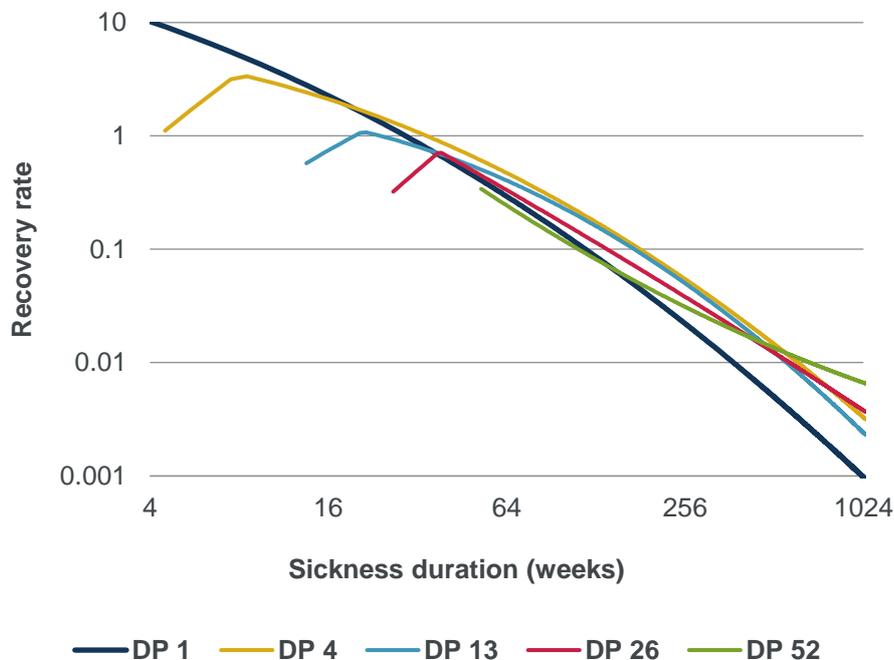
- Claim inception rates are generally ordered by occupation class, with OC1 (typically white-collar occupations) experiencing the lowest claim rates.
- Claim inception rates tend to be ordered by deferred period, with DP1 experiencing the highest claim rates.

There were a few cases that were exceptions to the trends. These were considered specifically by the Committee and, in the majority of cases, it was concluded that they appear to reflect the observed experience and so were retained in the IP11 rates.

The claimant recovery rates are two-dimensional, varying by age and by duration of sickness, although they are not available for durations shorter than the relevant deferred period.

Claimant recovery rates generally decrease with duration of sickness. A key feature of the final claimant recovery rates is that, for early durations of sickness, for DP4, DP13 and DP26, the recovery rates increase with duration of sickness. The corresponding observed periods of increasing recovery rates at early sickness durations are referred to as **run-in periods** - see Chart 1.

Chart 1: Fitted claimant recovery rates for a male aged 40 at sickness (log scale)



The claimant mortality rates are also two-dimensional, varying by age and by duration of sickness, and are not available for durations shorter than the relevant deferred period. The mortality rates do not vary by occupation class.

A key feature of the claimant mortality rates is that they have been derived based on sickness duration and age, for durations up to 5 years, but by age only after sickness durations of 5 years, reflecting the observed experience for the most credible datasets.

Using the IP11 Series rates

The naming convention for the IP11 Series rates is of the form IP11 {M/F} DP{d} OC{n} {Inc/Rec/Dth} for sex M/F, deferred period d, occupation class n and decrement Inc/Rec/Dth, e.g. IP11 M DP4 OC2 Rec.

Other factors that may affect the claims experience, such as smoker status and policy duration, are not reflected in the IP11 rates.

Actuaries using the IP11 Series rates should consider both the choice of rates and how they are adjusted, to ensure the assumptions are appropriate to their portfolio.



The impact of using the IP11 Series of rates, as opposed to previous Series' of rates, will differ for different insurance companies. For companies with more significant IP portfolios, the assumptions may be driven more by their own experience, with adjustments to the IP11 Series reflecting this, and the ultimate impact of the change in IP Series may be immaterial. Conversely, for companies with smaller IP portfolios, where their own experience is less credible, the assumptions may be more reliant on the underlying IP Series that is used and a change to this could be more material.

A version of the CMI IP Rate Table Tool, incorporating the IP11 Series rates, will be released in the coming months, this will help actuaries assess the impact of using the new rates.

About the CMI

The CMI Income Protection Committee is responsible for overseeing the analysis of experience of income protection business. The Committee consists of volunteers from a variety of employers, including several of the leading insurance companies. Vacancies for new members are widely advertised in the actuarial community when they arise. A key area of the Committee's work is to produce claim inception and termination base rates that reflect the most recently available data. The IP11 Series rates are the latest CMI claim inception and termination rates for UK individual income protection business, at the time of writing, and are the focus of this note.

The Continuous Mortality Investigation (CMI) provides authoritative and independent mortality and sickness rate tables for actuaries advising UK life insurers and pension funds.

The CMI operates as a private company which is wholly owned by the Institute and Faculty of Actuaries (IFoA). The company has a board of two directors, appointed by the IFoA, and an Executive Committee that oversees the CMI's work. The CMI is funded by subscriptions from commercial users. Subscribers have access to all of the outputs produced by the CMI; these are also made available to academics and researchers for non-commercial use¹.

Definitions

A **claim inception rate** is the probability that a policyholder falls sick and remains sick for the duration of the deferred period and goes on to claim an income for the remaining duration of sickness.

A **claim termination rate** is the probability that an income paid to a policyholder ceases as a result of the policyholder recovering or dying.

A **deferred period** is the period of time that an individual must be sick for before the income protection benefit will be paid.

Occupation class is a CMI classification. There are four CMI occupation classes, these range from Class 1, which includes professional, managerial, executive, administrative and clerical classes not engaged in manual labour, to Class 4, which includes skilled and semi-skilled operatives engaged in heavy manual work or subject to special hazard. The experience of the different occupation classes is often significantly different, with Class 1 tending to experience the lightest claim inception rates, highest recovery rates and lowest mortality rates.

Graduation is a form of smoothing, to produce rates that progress smoothly between ages or other variables of interest, such as sickness duration. Graduation usually uses a mathematical formula to represent the shape and level of the rates, with parameters for the formula chosen to fit the underlying data.

A **run-in period** is the period of increasing recovery rates for early durations of sickness. It is thought to be attributed to individuals choosing not to claim if they recover shortly after the end of the **deferred period** and therefore their recovery is not present in the claims data, resulting in the number of recoveries observed being lower than expected. This feature also can sometimes be observed in the mortality rates.

¹ Details of how to access the final “IP11” Series rates, Working Paper 136 and the CMI's other research can be found on the [CMI section of the IFoA's website](#). The website also sets out current subscription fees which vary according to the size of the organisation, currently starting at £325 pa per qualified actuary for a small consultancy.

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