



The Actuarial Profession

making financial sense of the future

IP trends by cause of disability

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CMI IP Cause of Disability Working Party

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Background

- **IP Cause of Disability working party formed in October 2004**
 - **Current members:**
 - **Graham Clark (Chair), Rajeev Shah (Sec), Bill Baker, David Leach, Jamie Marshall, Gerry Kennedy, David Wilkie**
 - **Terms of reference:**
 - **Stage 1 - Publish an initial analysis of inceptions / recoveries data in a manner that would be useful or interesting to practitioners**
 - **Stage 2 - Conduct, later, a statistically robust analysis of the data and publish the key results**
 - **Progress – Stage 1 working paper 2006 Q2**
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Background

- **Why analyse by cause?**
 - Insight into past trends
 - Projecting future trends?
 - Reserving more reliably for claims in payment
 - Underwriting
 - Claims control
 - Product design
- **Therefore focus on terminations**

Background

- **CMIR8 (1986)**
 - 1975-1978 data, 14 sickness groups
 - Inceptions and terminations
- **Health & Care Conference 2001**
 - Wilkie analysis of inceptions by cause, no grouping
- **Health & Care Conference 2005**
 - CMI IP cause of disability working party update

Data

- **Complexity**
 - 12 years (1991 – 2002) - see Note below
 - 72 causes plus cause unknown
 - 5 deferred periods (1, 4, 13, 26 & 52 weeks)
 - 4 occupational classes plus class unknown
 - 2 sexes
 - Age or age group
 - Duration of claim (for terminations)
- **Grouping required**

Note: data available from 1975, but not on the preferred Standard* data set

Data

- **Grouping of causes**
 - “Medically similar” (broadly)
 - “Statistically similar” (generally)
 - Pragmatic approach
- **Resulting groups**
 1. Infections & acute respiratory
 2. Neoplasms
 3. Mental illness
 4. Nervous system & sensory organs
 5. Circulatory
 6. Digestive (non-infectious)
 7. Genito-urinary
 8. Arthritis
 9. Musculoskeletal
 10. Injuries
 11. All other known causes
 12. Unknown

Data – inceptions

Cause Group	No. Claim Inceptions	% of Total
Musculoskeletal	4,765	17%
Mental illness	4,488	16%
Injuries	4,168	15%
Circulatory	3,928	14%
Neoplasms	2,212	8%
Arthritis	1,473	5%
Nervous system & sensory organs	1,377	5%
Digestive (non-infectious)	1,320	5%
Infections & acute respiratory	719	3%
Genito-urinary	392	1%
All others	2,150	8%
Unknown	837	3%
Total	27,829	100%

Data – terminations

Cause Group	No. Recoveries	% of Total	No. Deaths	% of Total
Musculoskeletal	2,759	21%	42	3%
Mental illness	1,477	11%	94	6%
Injuries	3,052	23%	32	2%
Circulatory	1,500	11%	203	13%
Neoplasms	599	5%	796	51%
Arthritis	444	3%	32	2%
Nervous system & sensory organs	384	3%	83	5%
Digestive (non-infectious)	967	7%	37	2%
Infections & acute respiratory	457	3%	27	2%
Genito-urinary	234	2%	22	1%
All others	964	7%	88	6%
Unknown	467	4%	93	6%
Total	13,304	100%	1,549	100%

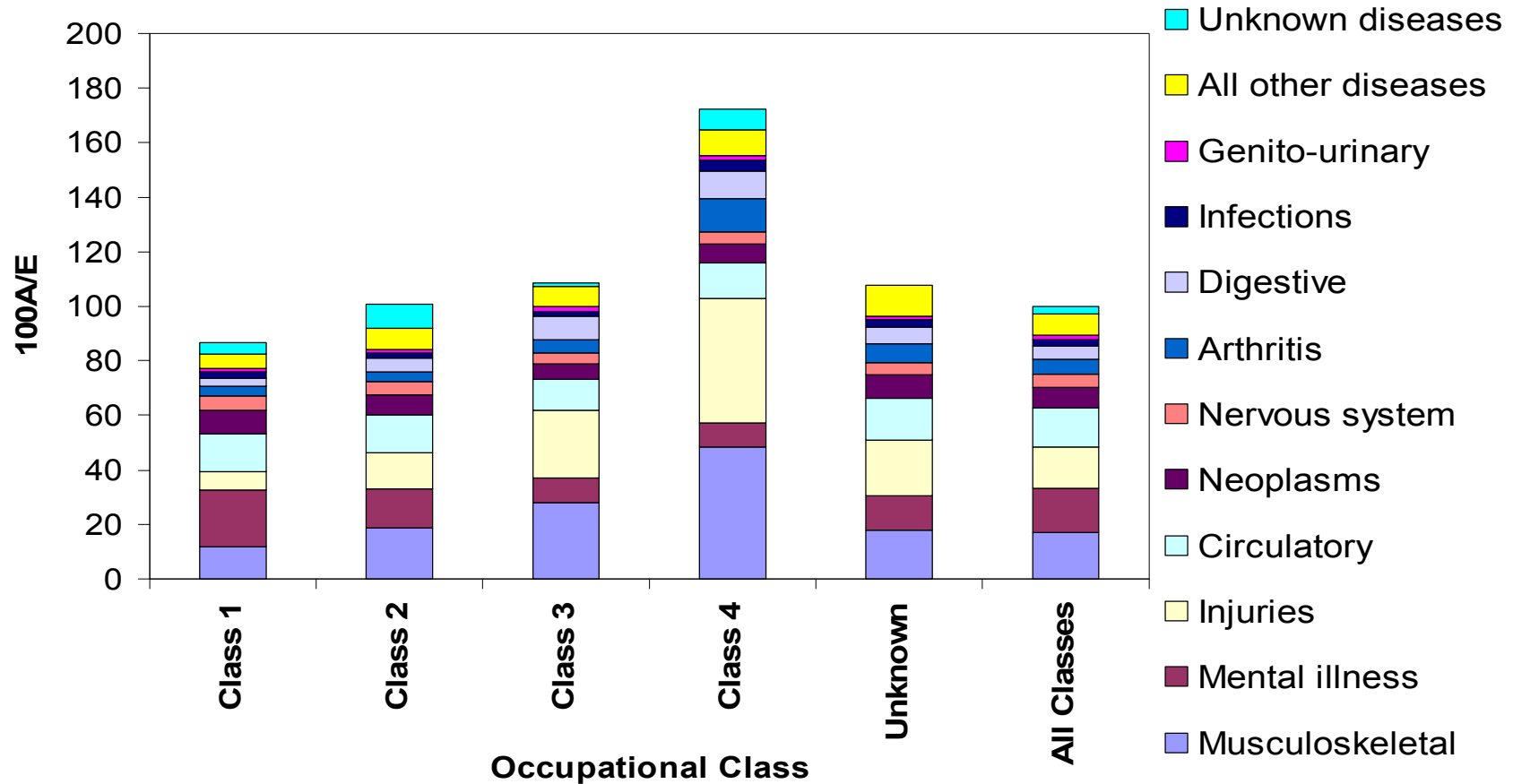
Methodology

- **Cut data in different ways**
- **Group data for factors not being considered (beware of pitfalls)**
- **Not GLM!**

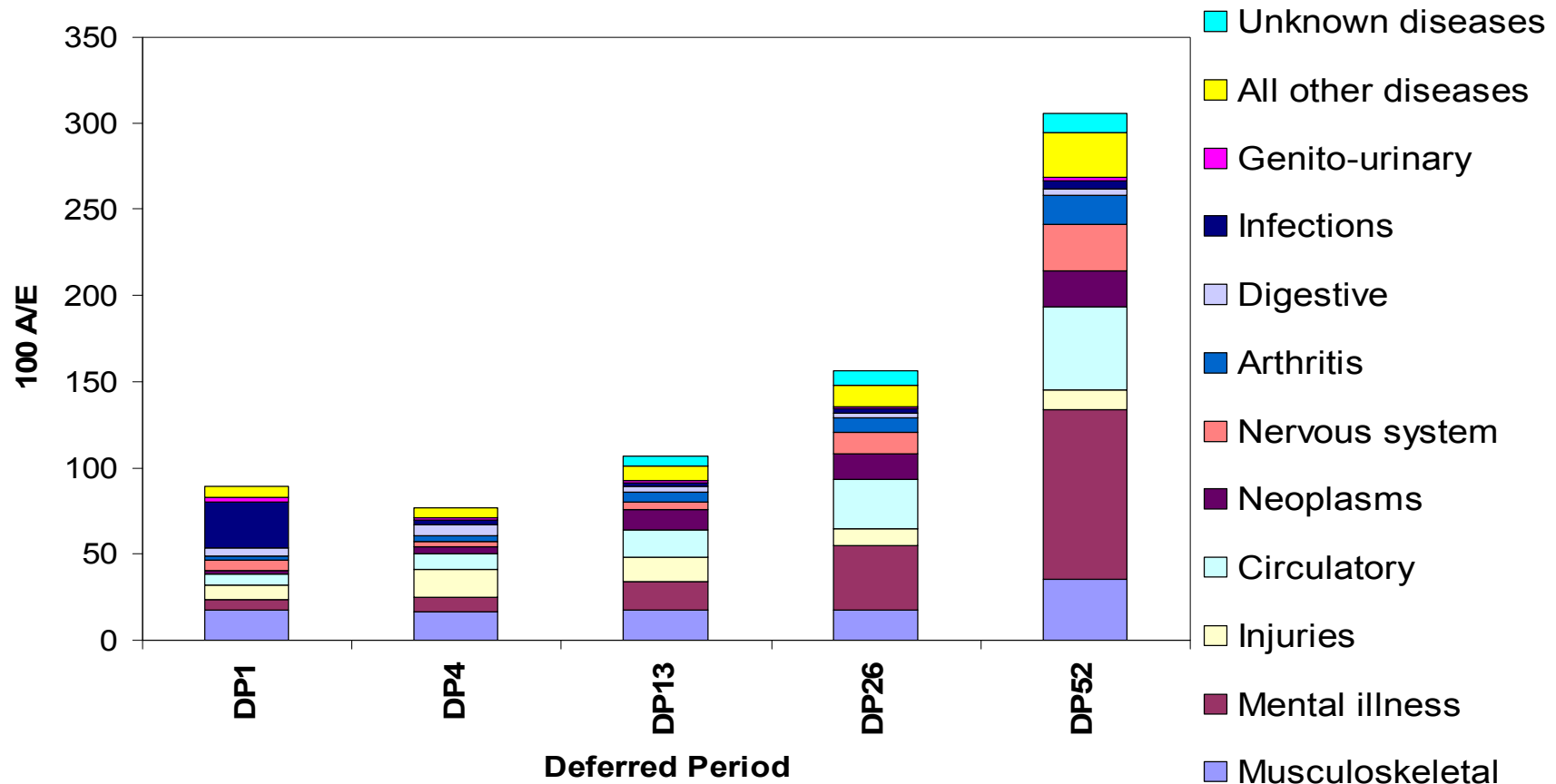
Results

- **Results shown as 100 A/E with E in accordance with CMIR15 i.e. based on CMIR12:**
 - 1975-78 individual, male data
 - Standard dataset, with rating = 0
 - No special benefit types
 - No identifiable underwriting exclusions
- **E varies by age and deferred period (and duration sick for terminations)**
- **Inception factor = sickness inception intensity x probability of remaining sick throughout deferred period and deciding to claim**
- **D52 sickness inception intensity = 0.68926 x D26 sickness inception intensity**

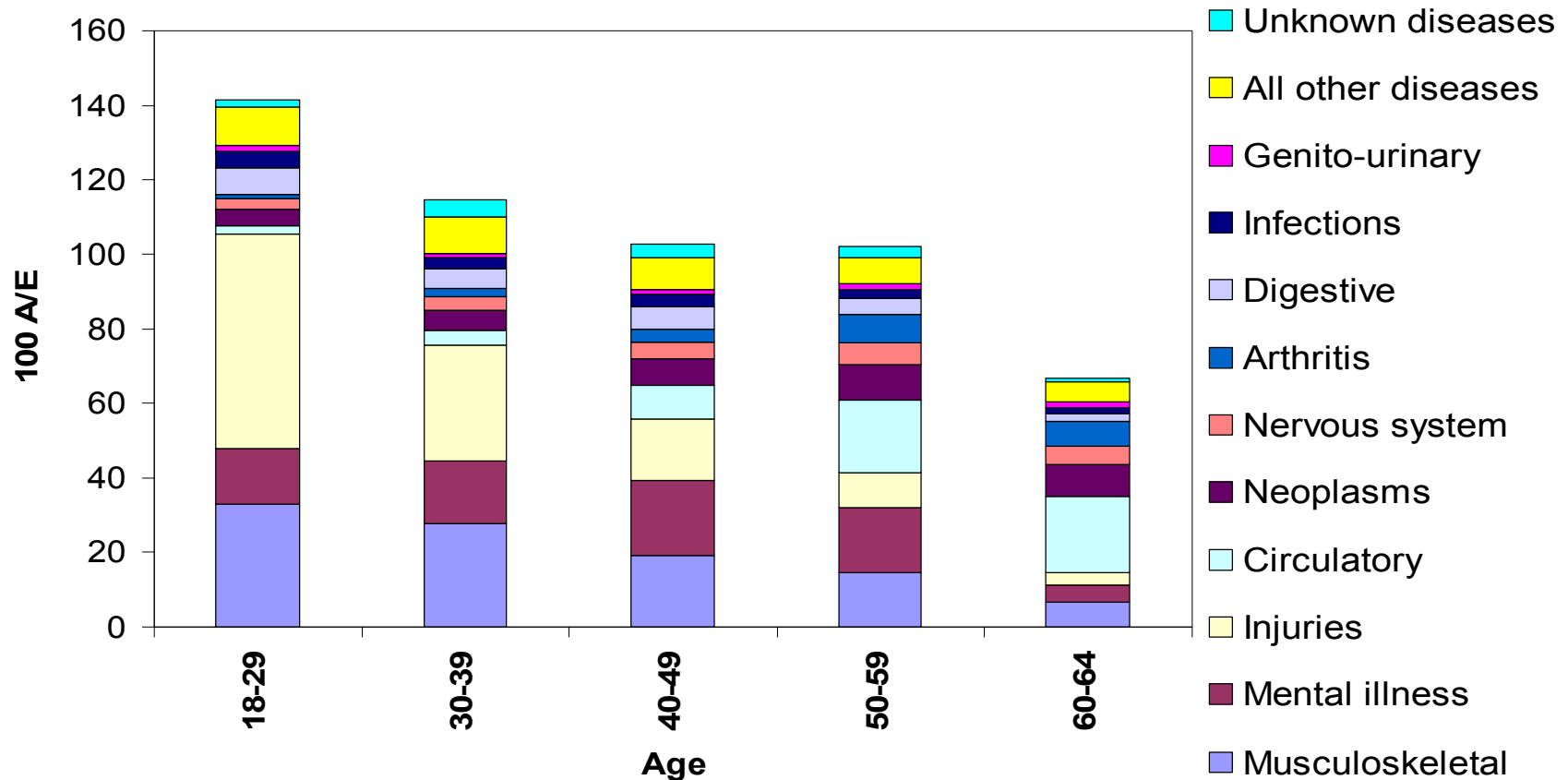
Results – inceptions (males)



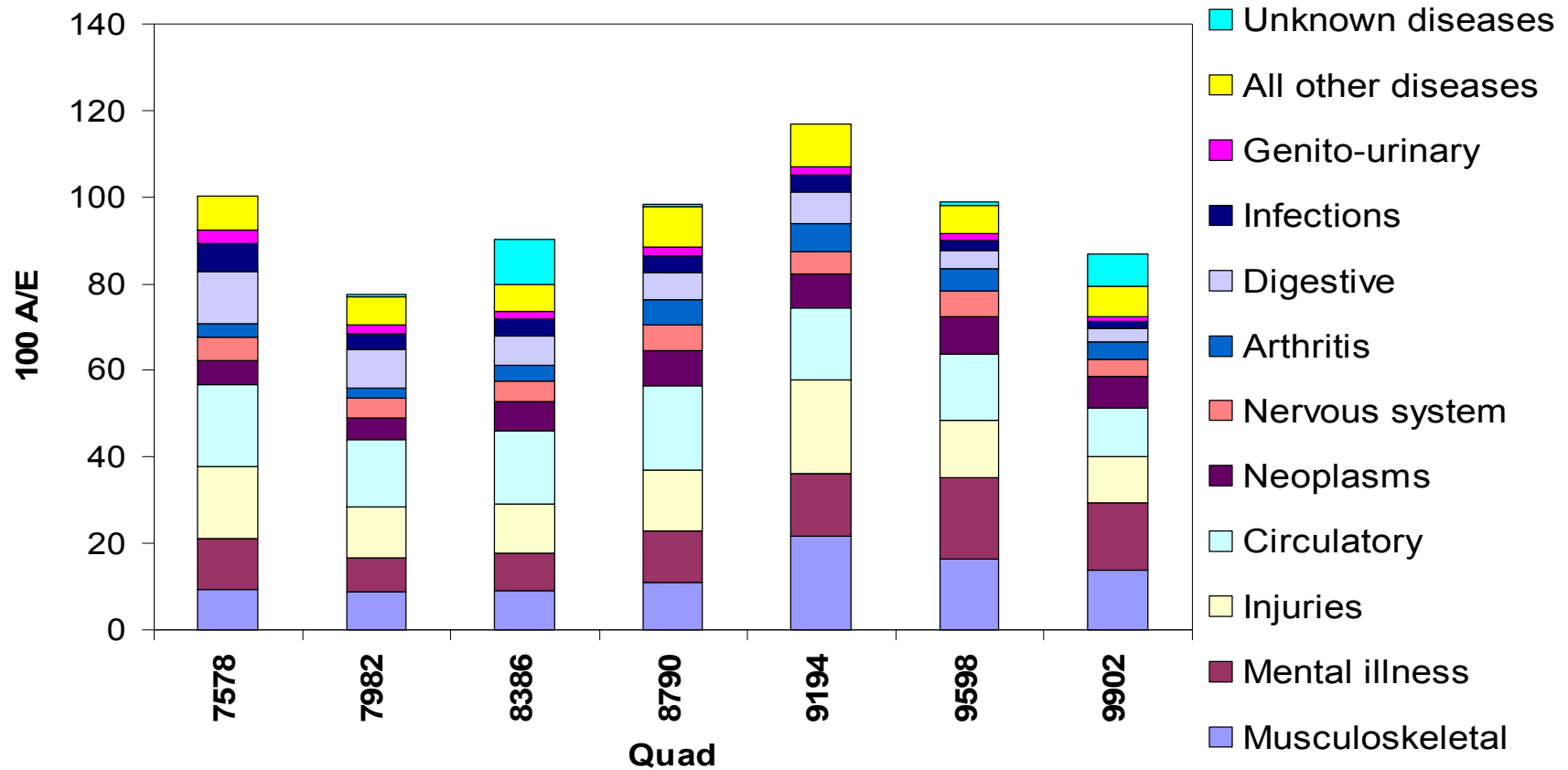
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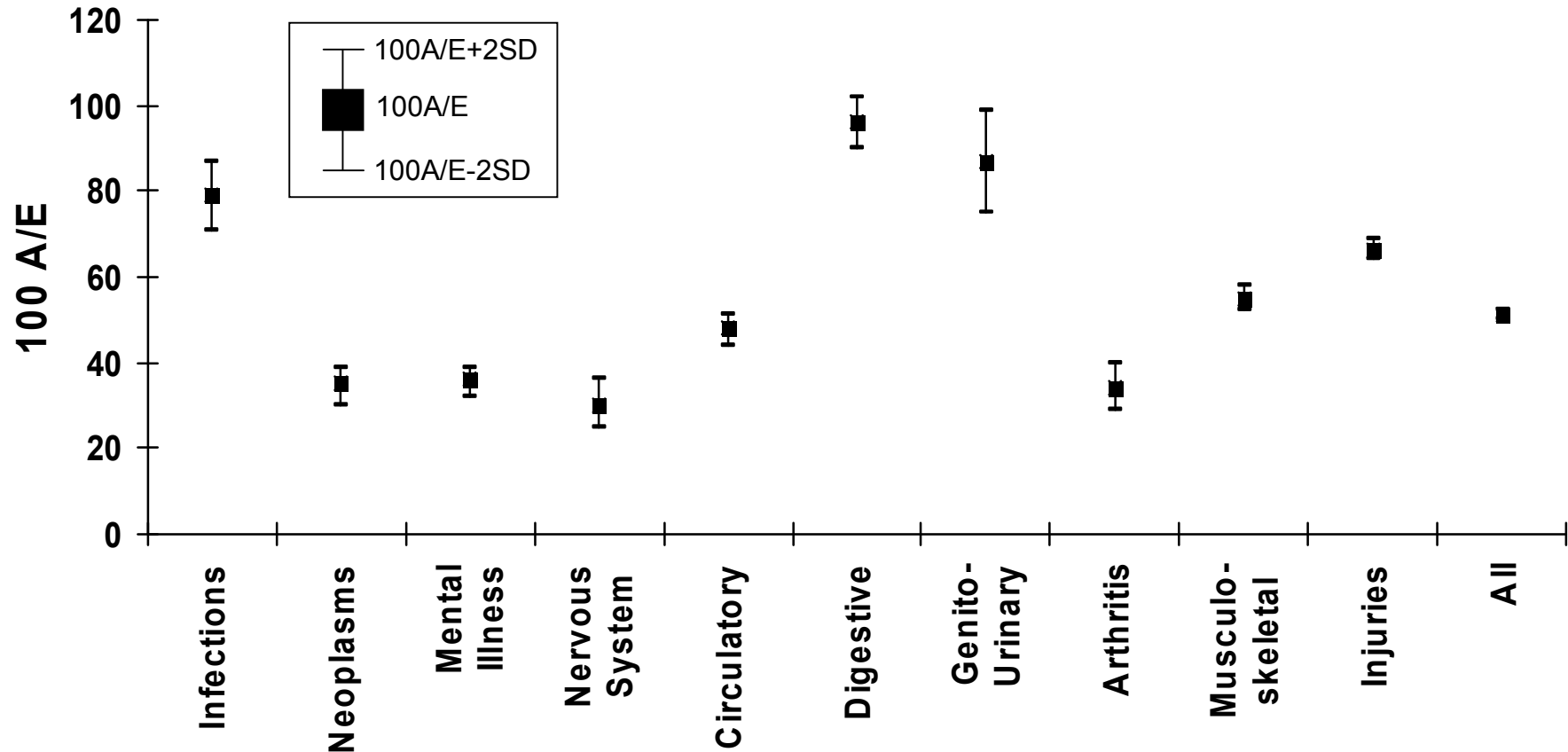
Results – inceptions (males)



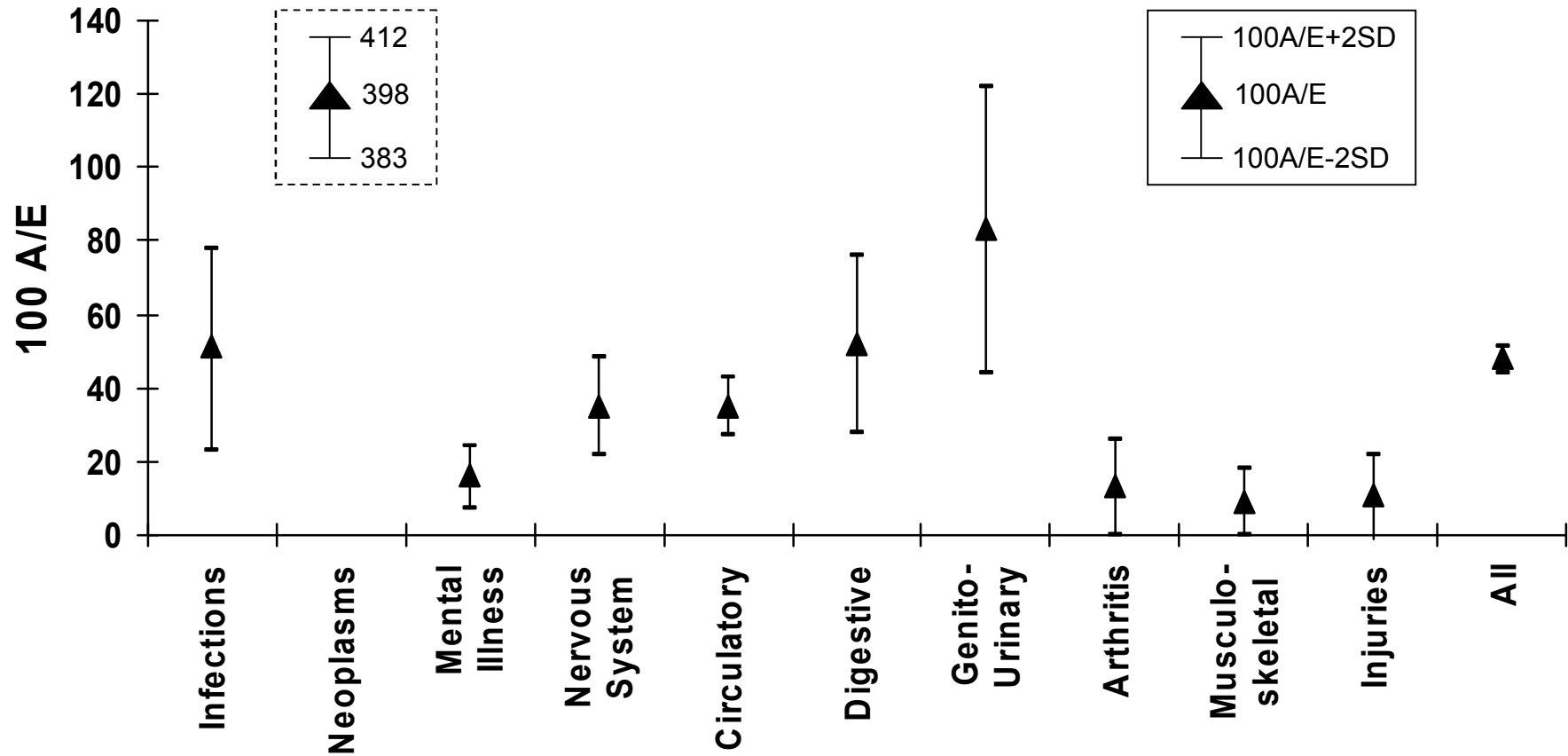
Results – inceptions (males)



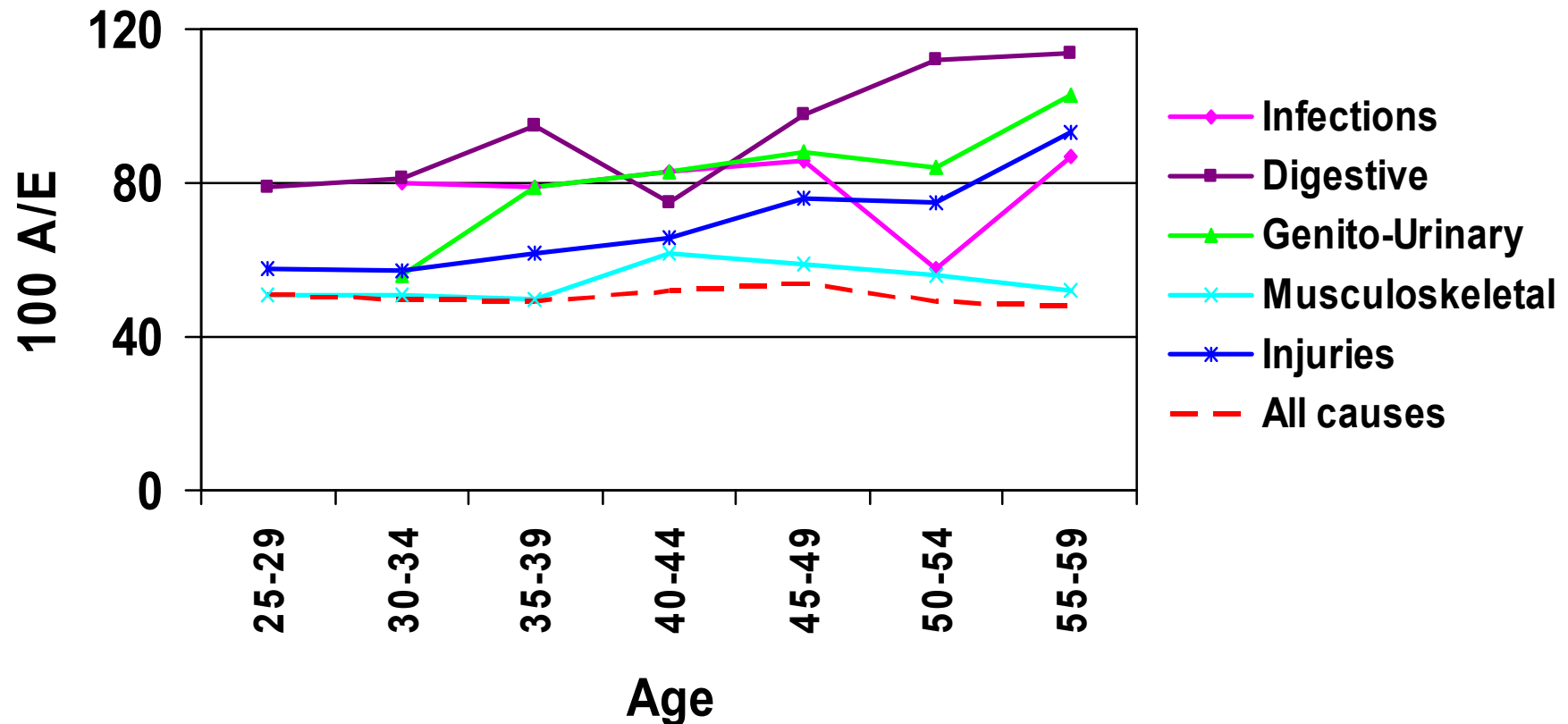
Results – recoveries (males)



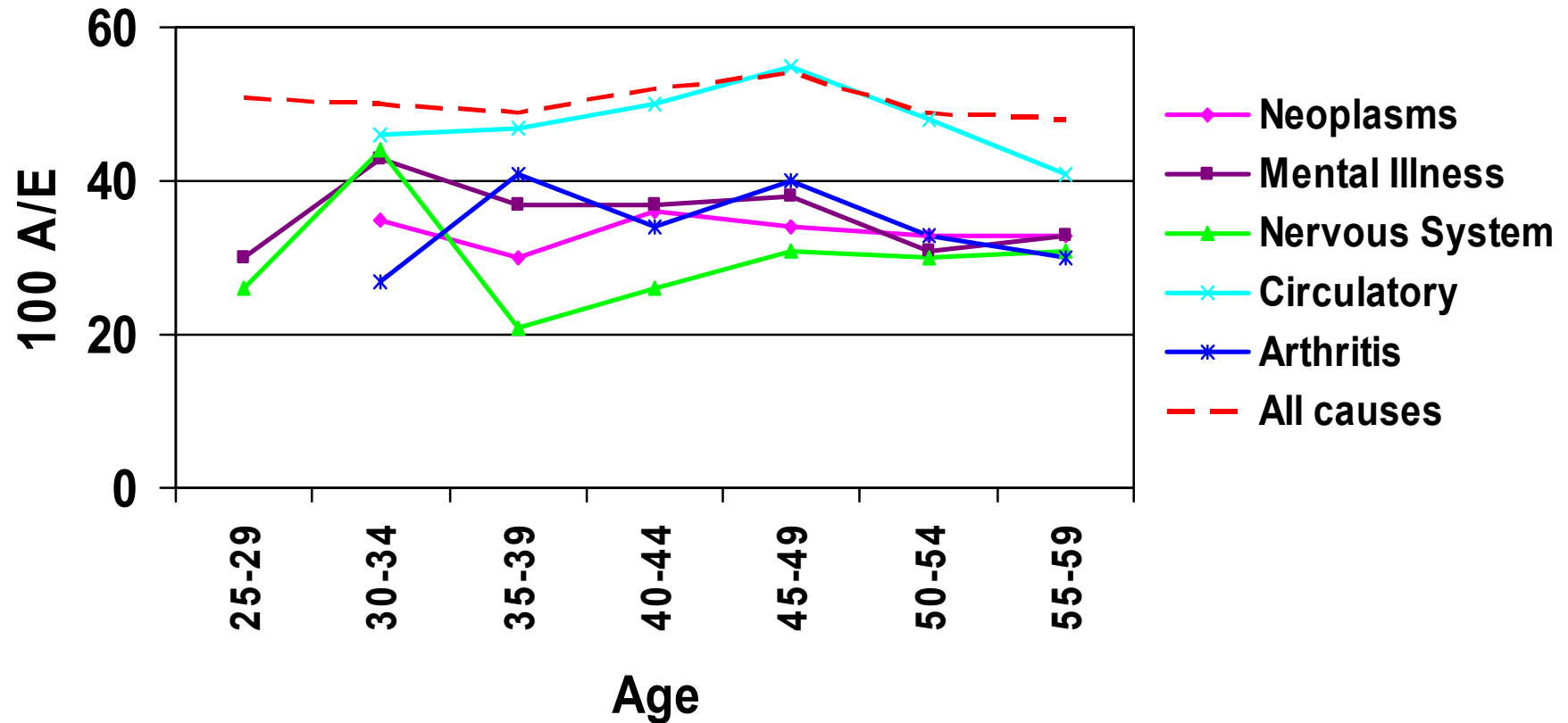
Results – deaths (males)



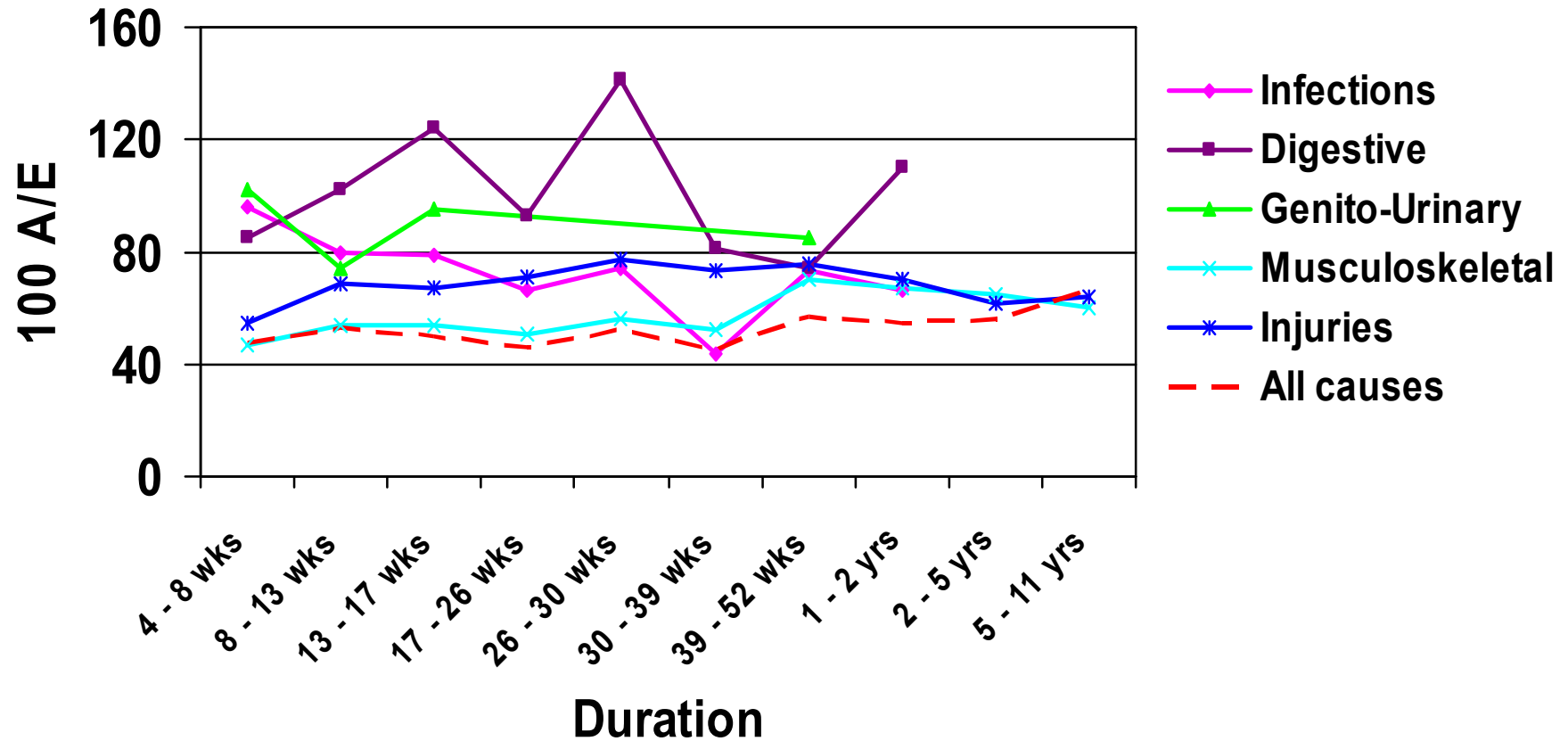
Results – high recoveries (males)



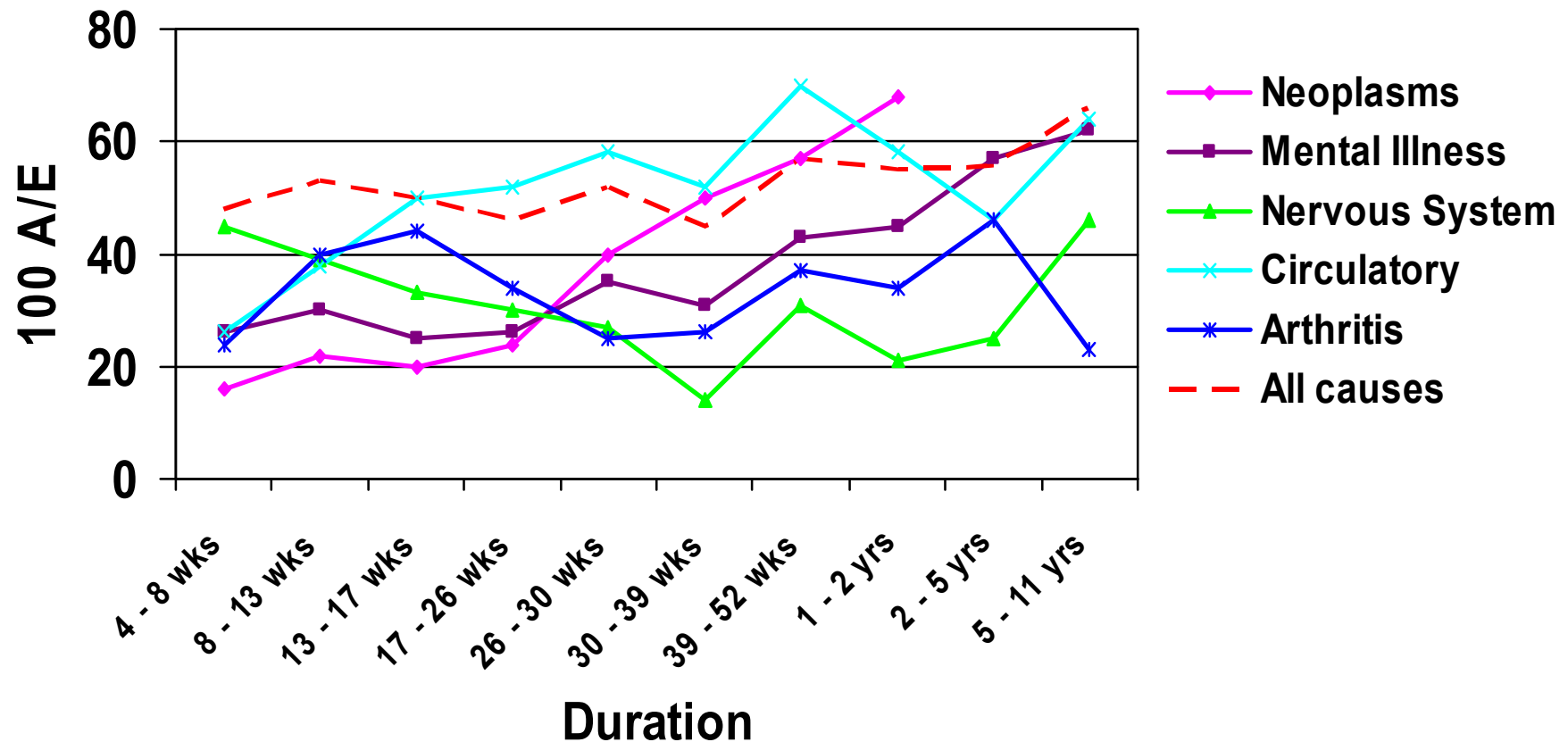
Results – low recoveries (males)



Results – high recoveries (males)

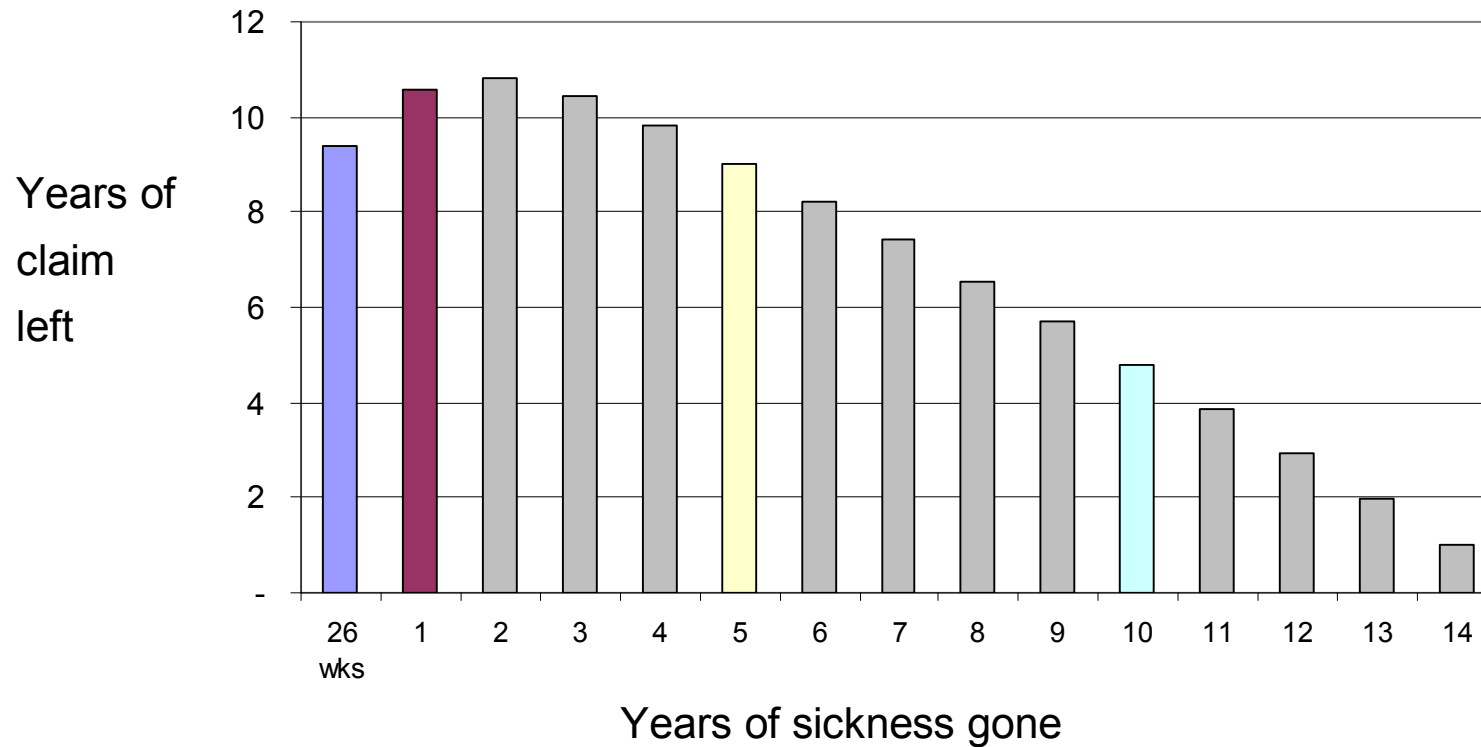


Results – low recoveries (males)

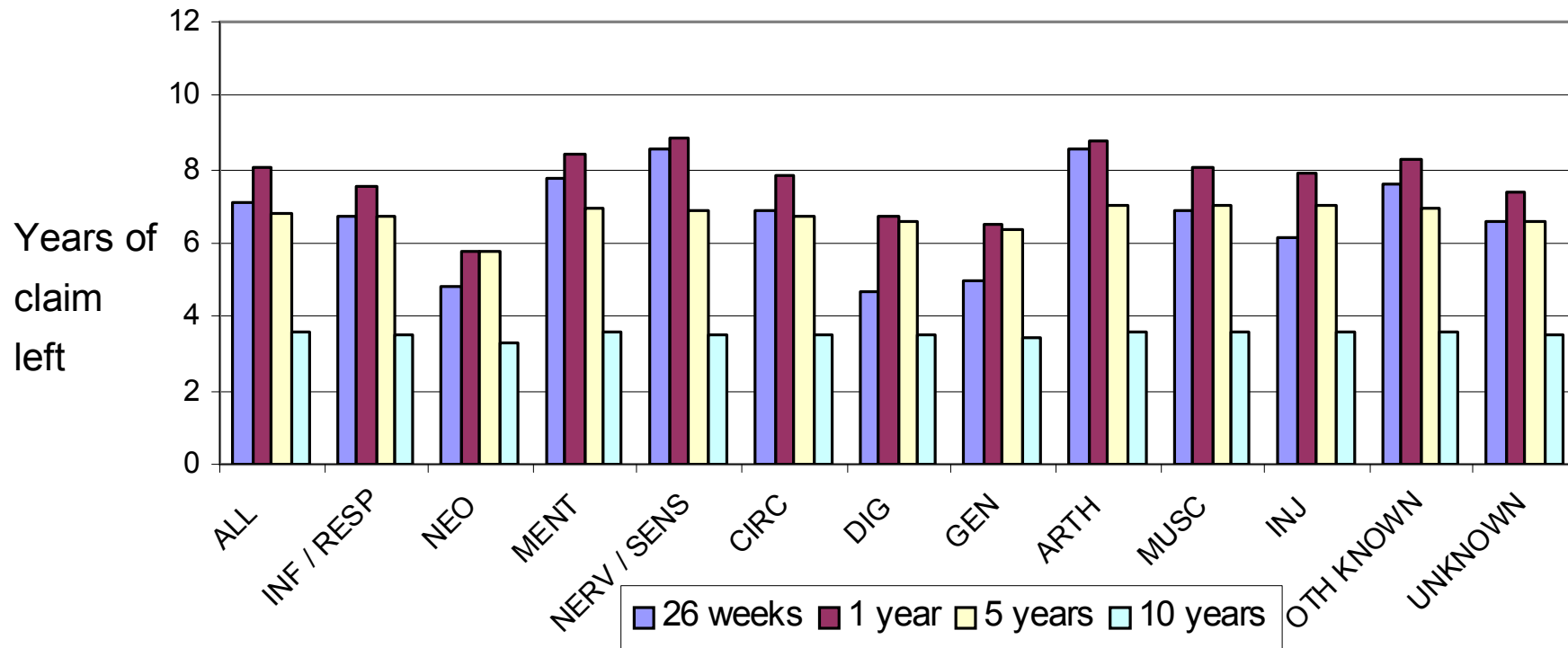


Applications – reserving

Indicative claim profile (based on D26 male aged 50, retirement age 65)



Applications – reserving



Questions and feedback

- **Is the grouping of causes appropriate?**
- **Would alternative grouping be preferred?**
- **Would further analysis of terminations experience be useful?**
 - **Address in some way changes in mix (eg “loyal office”)?**
 - **Extend to group IP data?**
- **Would 100 A/E factors to apply to the all causes termination rates be appropriate for reserving?**
 - **2 way (proposed): cause / duration and cause / age**
 - **3 way (not proposed): cause / duration / age**
- **Would further analysis of inceptions experience be useful?**
- **Would other methodologies be preferred eg GLM?**
- **In what format would practitioners prefer to receive the results?**
 - **Number of recoveries / deaths along with 100 A/E in Excel?**



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