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

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%**

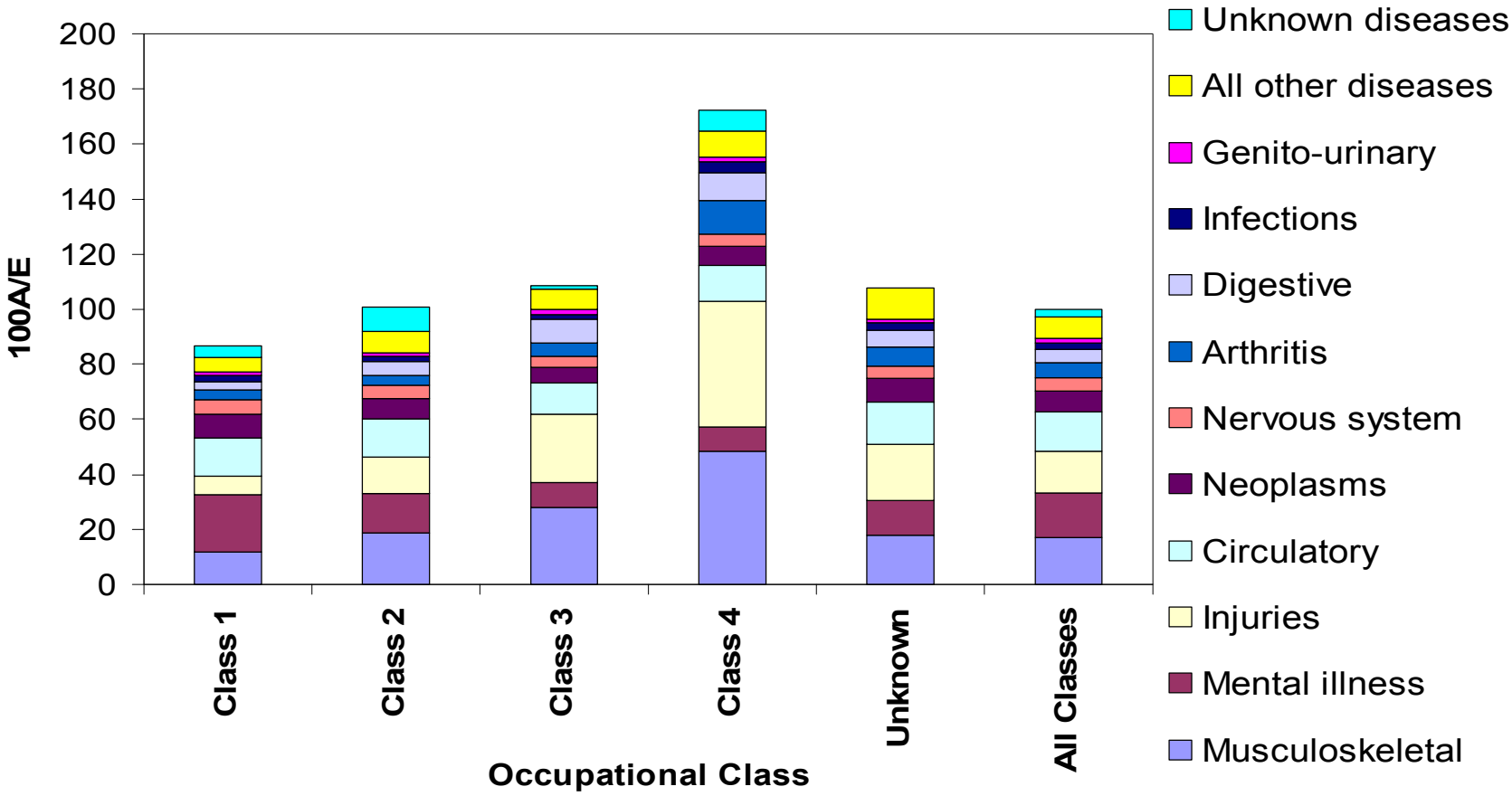
Methodology

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

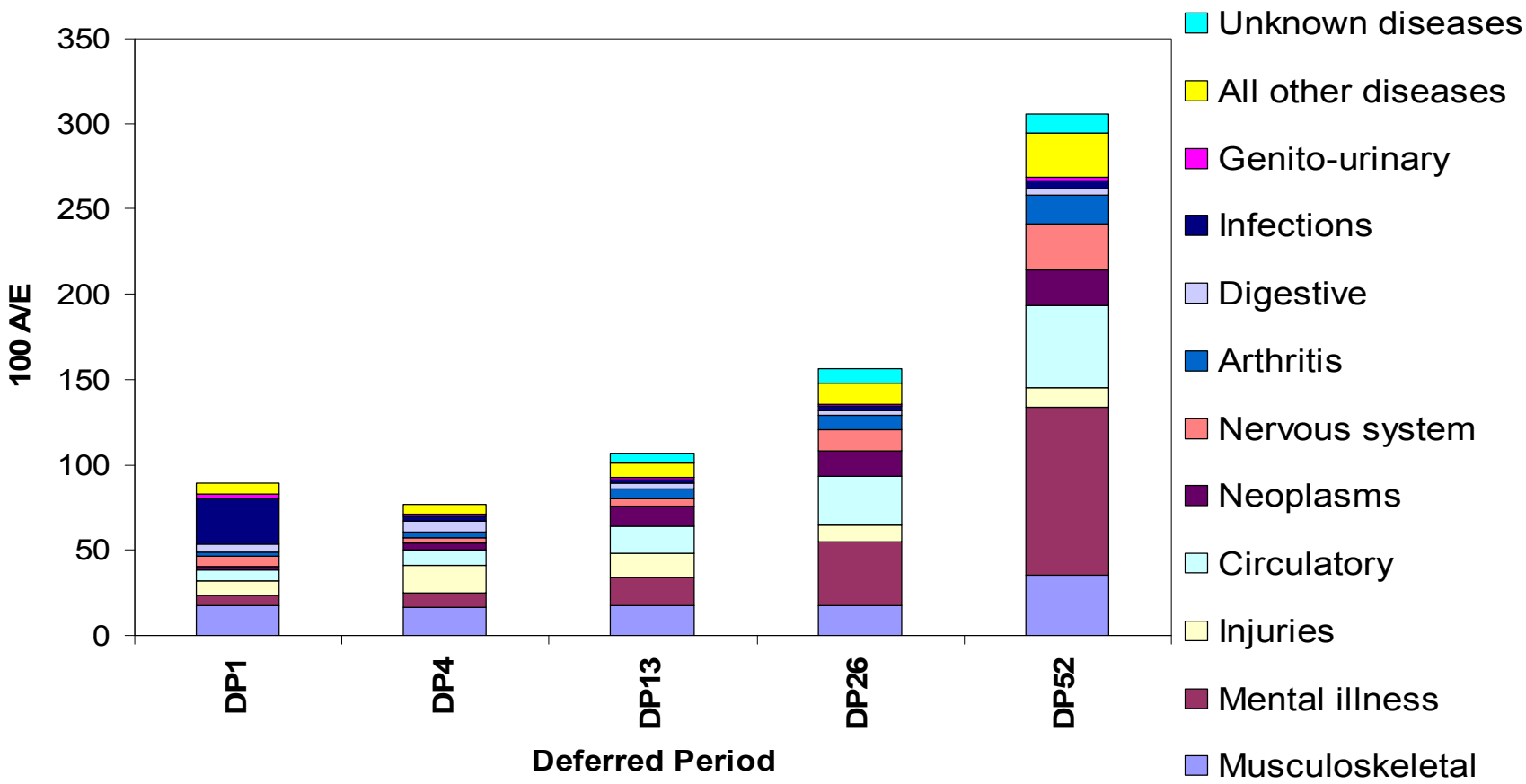
Results

- 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

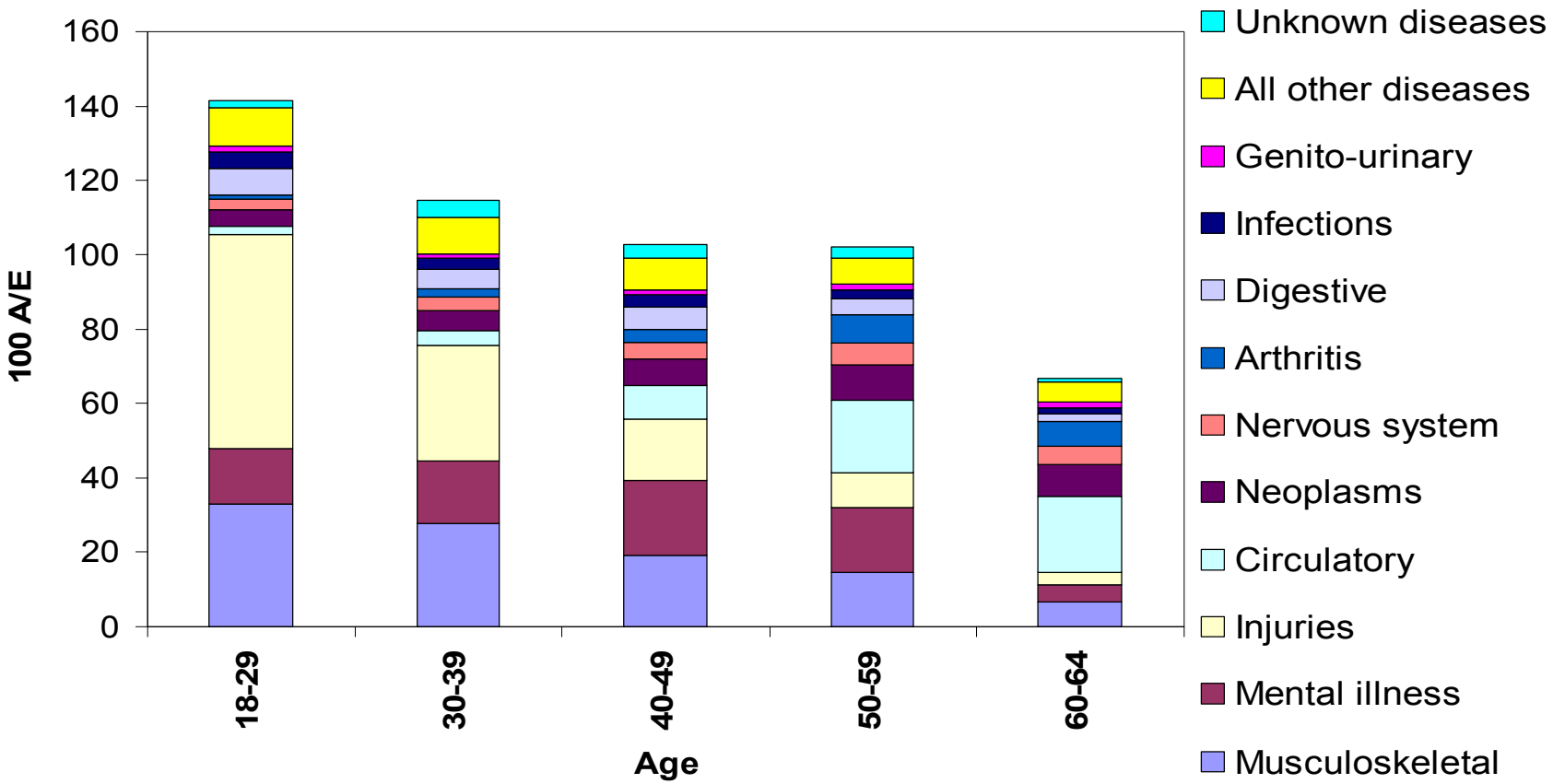
Results – inceptions (males)



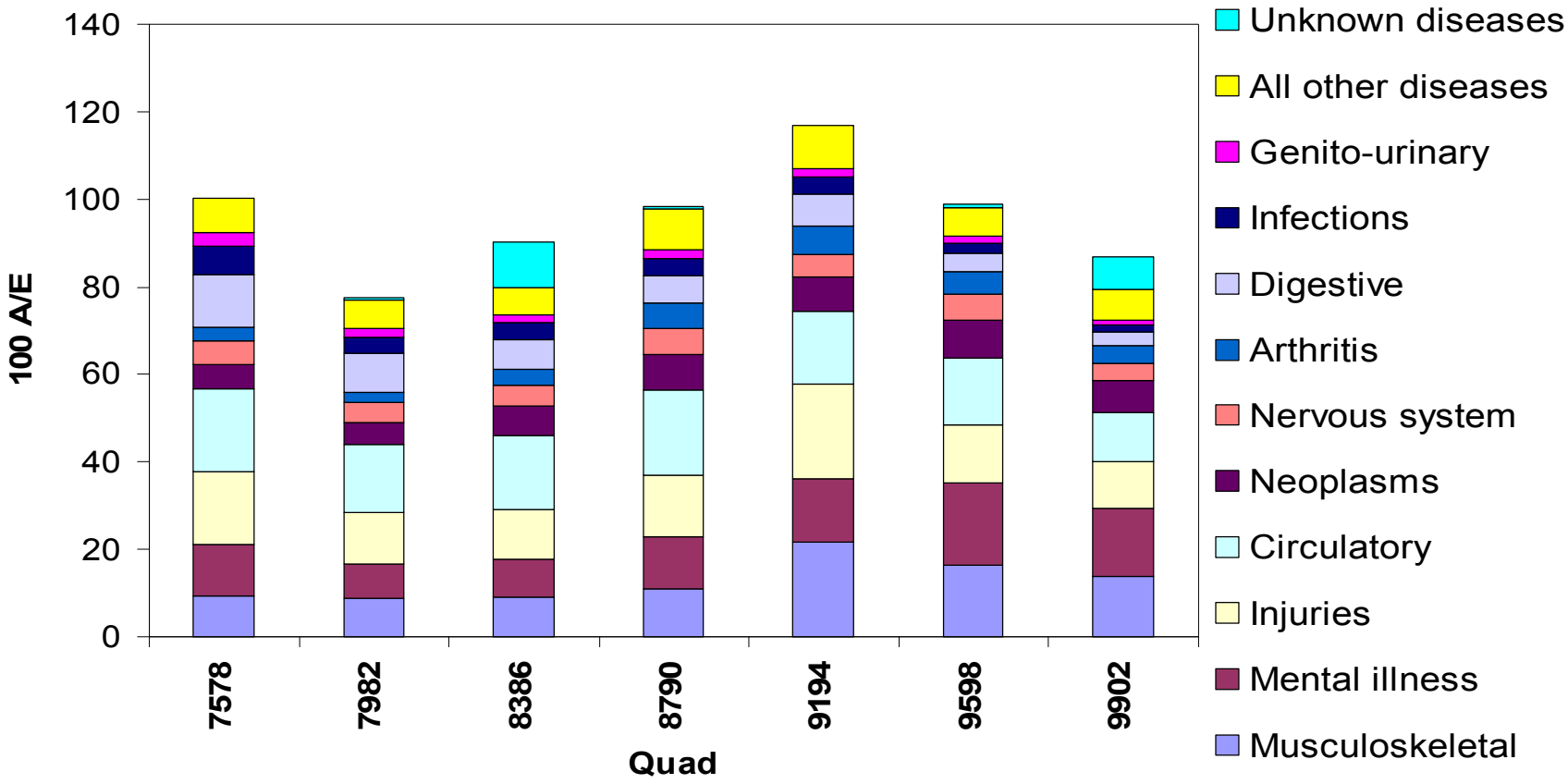
Results – inceptions (males)



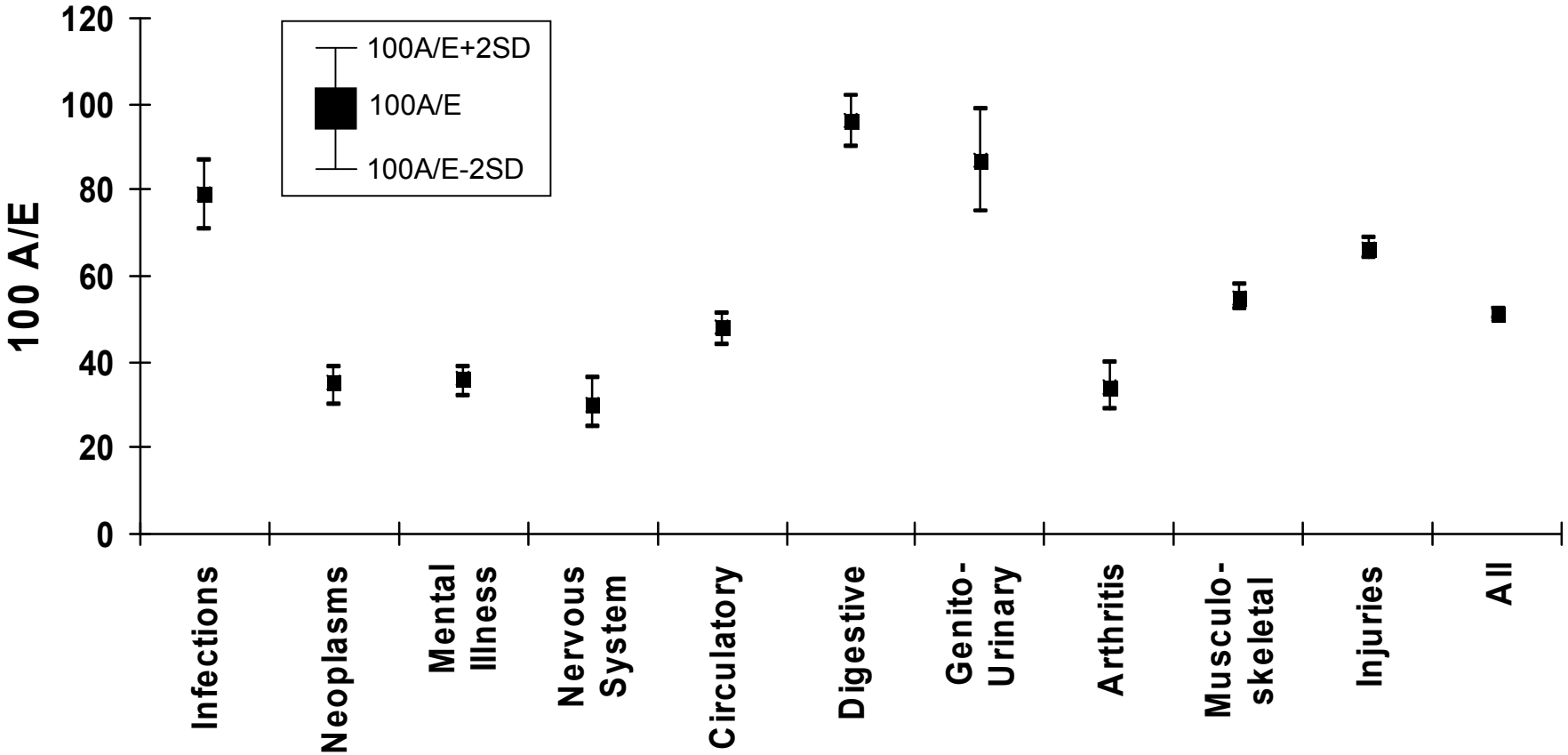
Results – inceptions (males)



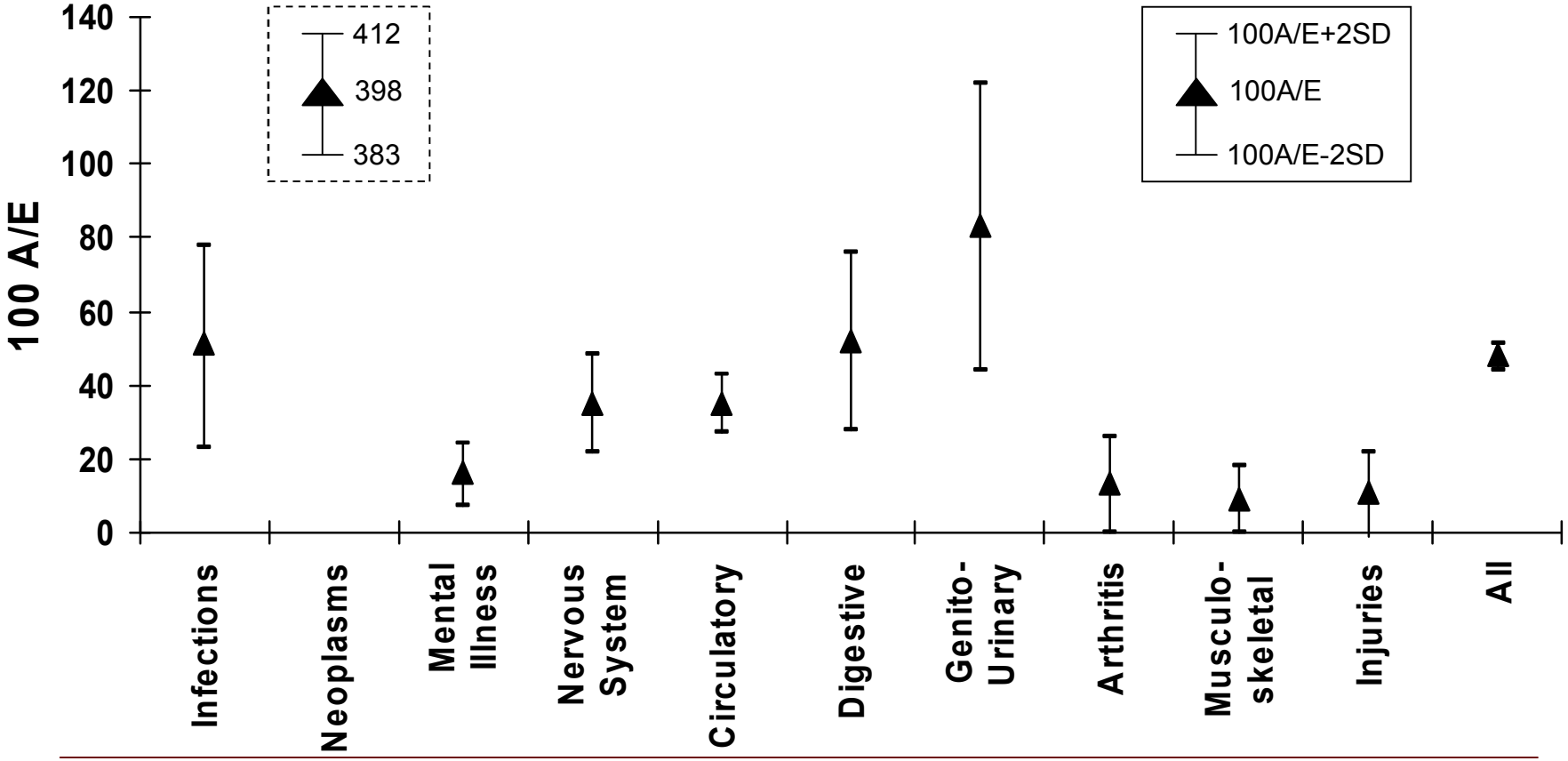
Results – inceptions (males)



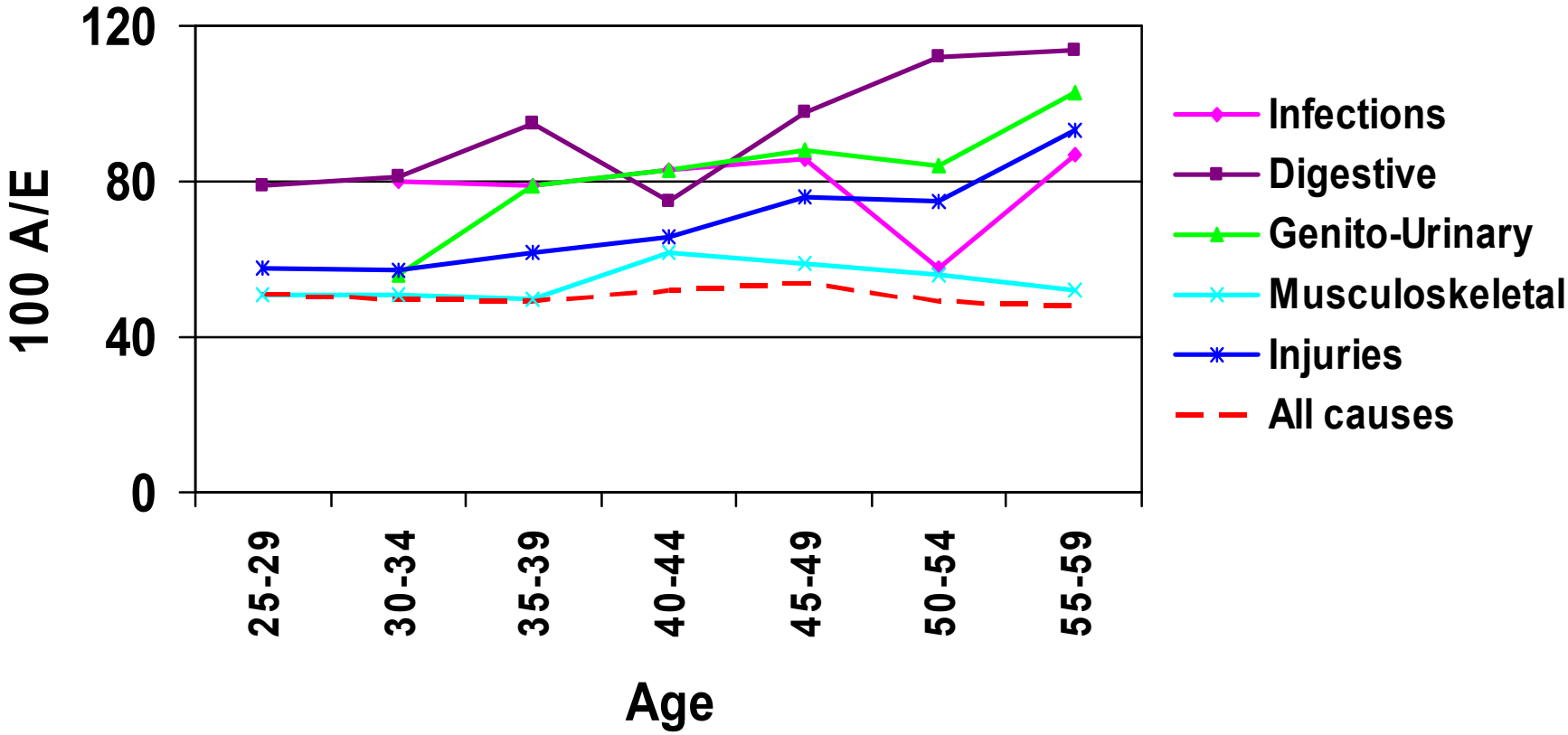
Results – recoveries (males)



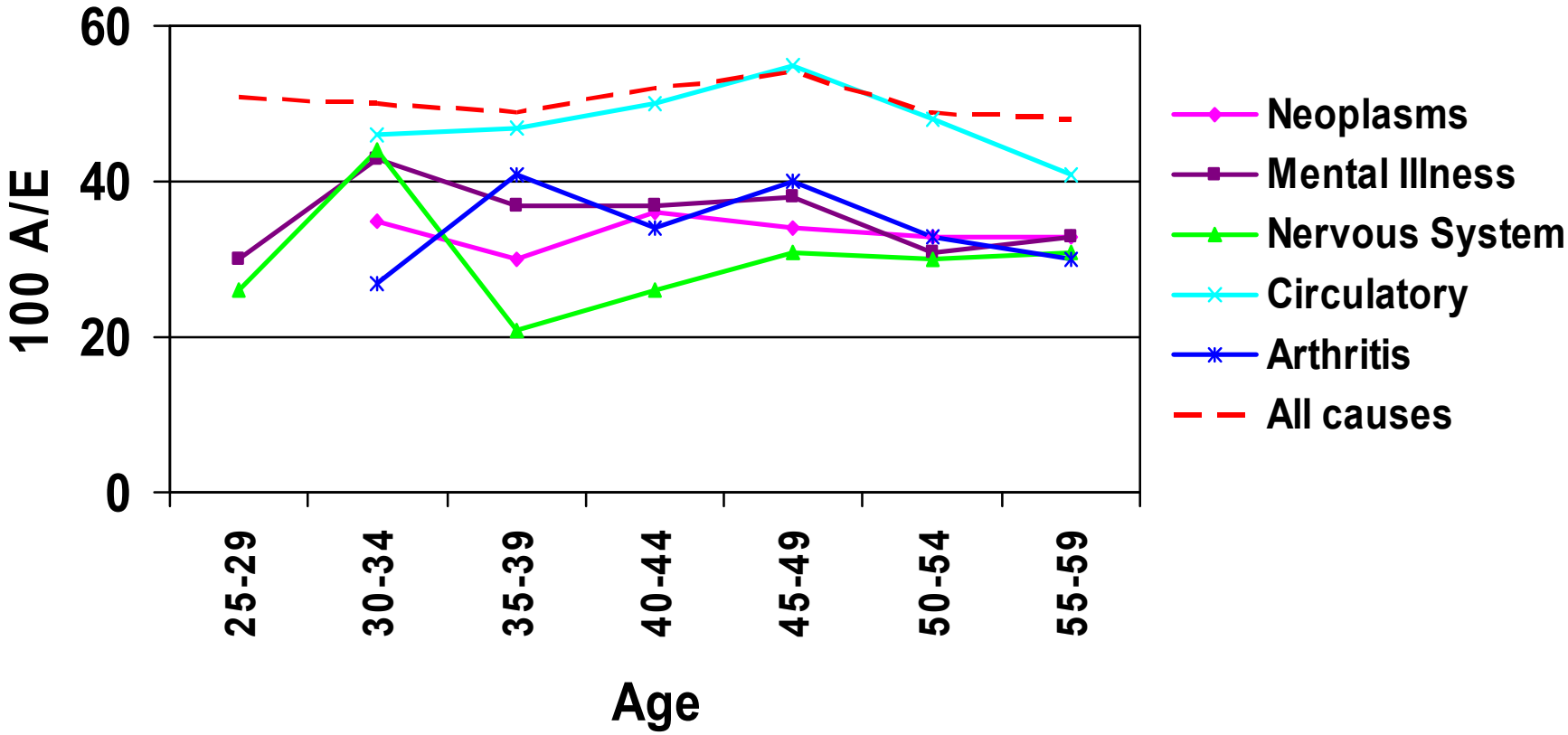
Results – deaths (males)



Results – high recoveries (males)



Results – low recoveries (males)



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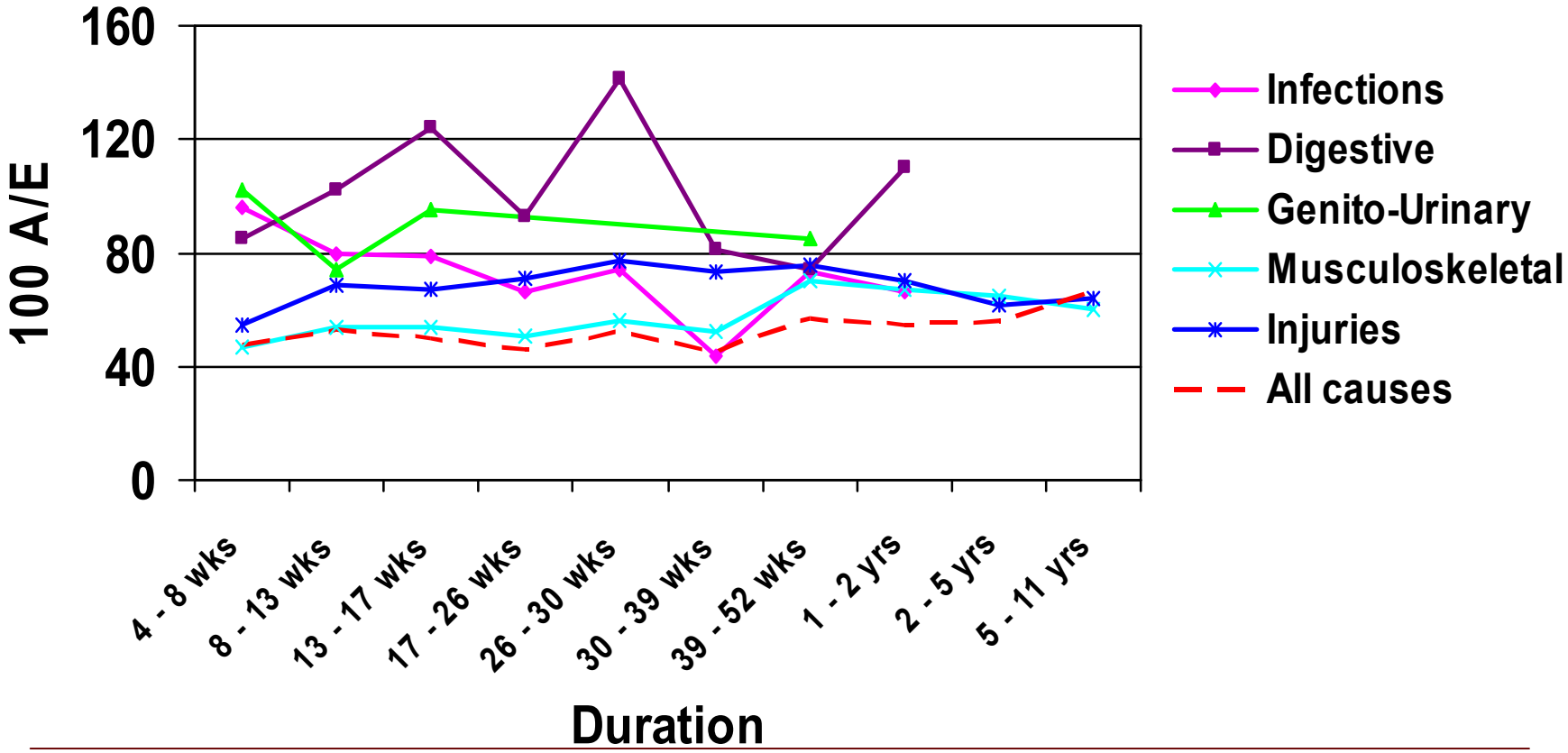
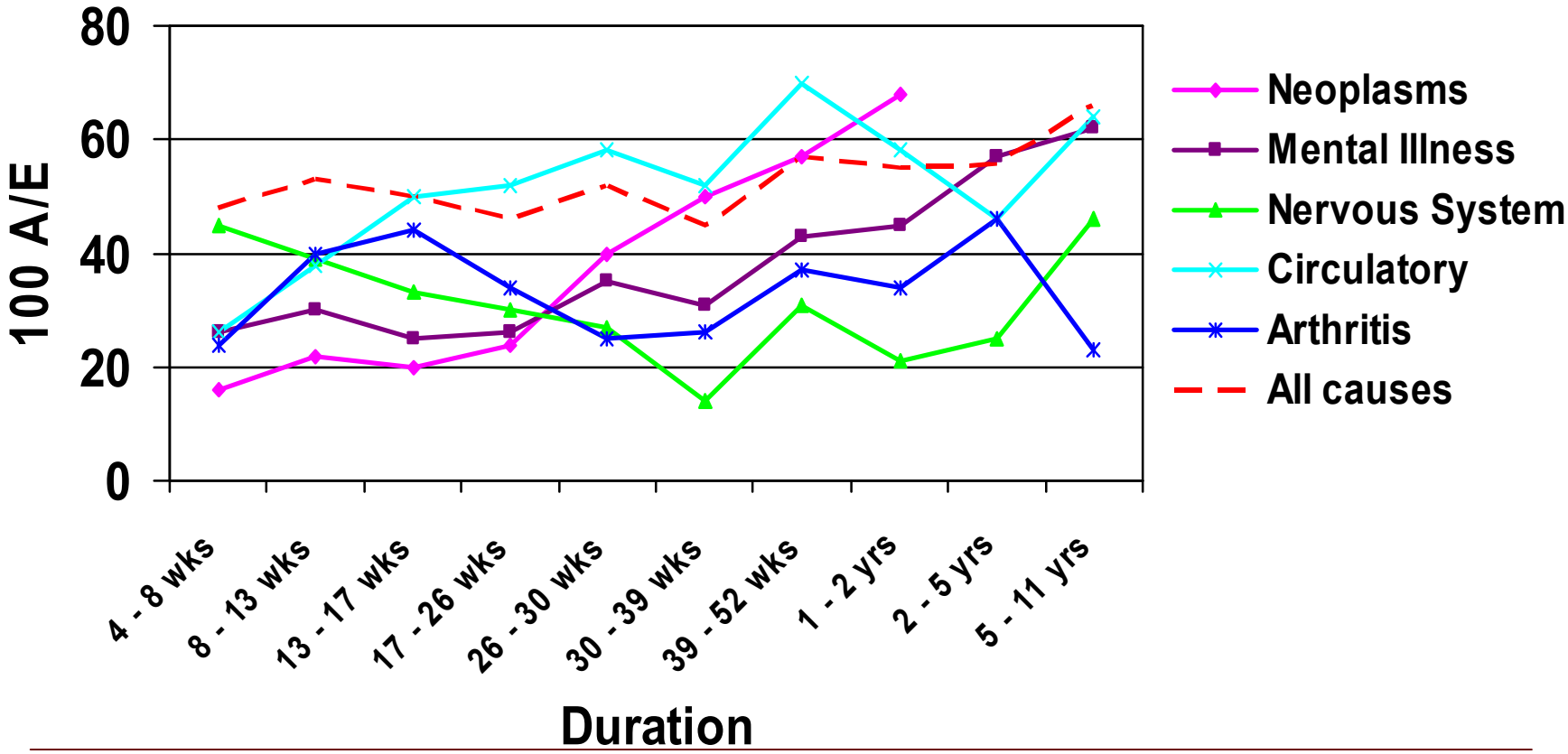
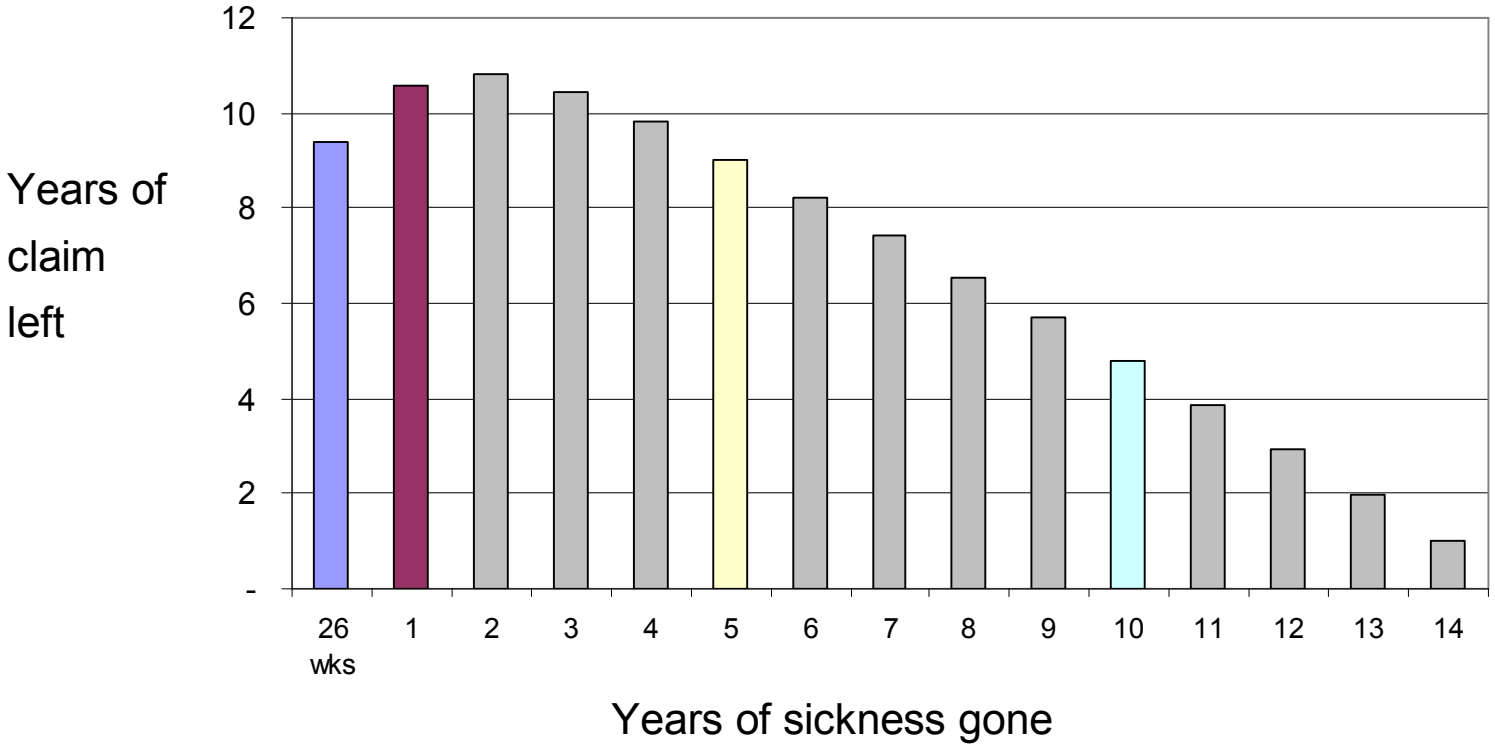


Results – low recoveries (males)

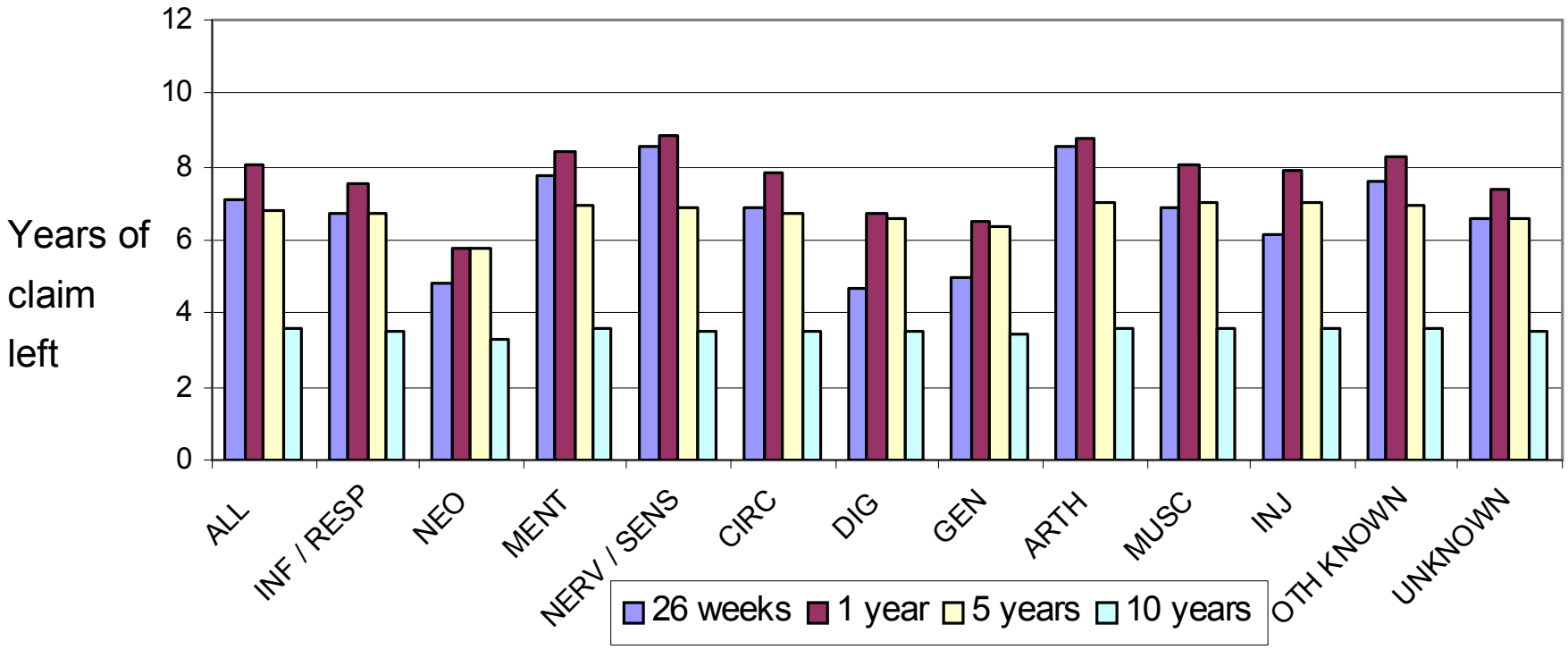


Applications – reserving

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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