Session 60OF, Group Life Waiver Study

Moderator/Presenter:

Presenters:
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Thanks to everyone working on 2018 SOA Group Life Waiver Experience Study!

**2018 Group Life Waiver Experience Committee**

<table>
<thead>
<tr>
<th>Chair</th>
<th>Vice Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amy Whinnett</td>
<td>Jennifer Fleck</td>
</tr>
<tr>
<td>Jacob McCoy</td>
<td>Georgia Nykorczuk</td>
</tr>
<tr>
<td>John Bettano</td>
<td>Ryan Ouellette</td>
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<tr>
<td>Dave Ferrari</td>
<td>Steve Rulis</td>
</tr>
<tr>
<td>Jeremy Fleischer</td>
<td>Sue Sames</td>
</tr>
<tr>
<td>Patrick Hurley</td>
<td>John Schwegel</td>
</tr>
<tr>
<td>Andrew Jenkins</td>
<td>Bram Specter</td>
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<tr>
<td>Michael Jiang</td>
<td>Matthew Swenson</td>
</tr>
<tr>
<td>John Kaspar</td>
<td>Patrick Wallner</td>
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<tr>
<td>Mike Krohn</td>
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**Medical Information Bureau**

<table>
<thead>
<tr>
<th>Jaron Arboleda</th>
<th>Society of Actuaries</th>
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<tbody>
<tr>
<td>Jeff Curry</td>
<td>Mervyn Kopinsky</td>
</tr>
<tr>
<td>Leo DiAngelo</td>
<td>Cindy MacDonald</td>
</tr>
<tr>
<td>Scott Fritsche</td>
<td>Korrel Rosenberg</td>
</tr>
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</table>
2018 Group Life Waiver Study Overview

• Study of group life waiver terminations
• Participant-specific results and publicly available data on SOA website
• Potential update to Waiver Valuation table
• Results include
  • New data splits
  • Count and amount based rates (not graduated tables)
  • A/E death and recovery rates (“E” = 2005 waiver study and Kreiger)
  • Confidence Intervals
# History of Group Life Waiver Studies

<table>
<thead>
<tr>
<th></th>
<th>2018 Table</th>
<th>2005 Table</th>
<th>Kreiger Table</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year Published</strong></td>
<td>2018</td>
<td>2005</td>
<td>1970</td>
</tr>
<tr>
<td><strong>Study Years</strong></td>
<td>2000-2016</td>
<td>1993-2002</td>
<td>1955-1965</td>
</tr>
<tr>
<td><strong>Companies Included</strong></td>
<td>20</td>
<td>18 (24 submitted)</td>
<td>12</td>
</tr>
<tr>
<td><strong>Life Years Exposure</strong></td>
<td>4,500,000</td>
<td>750,000</td>
<td>125,000</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>M and F (50% F)</td>
<td>M and F (39% F)</td>
<td>Unisex (Est 15% F)</td>
</tr>
<tr>
<td><strong>Elimination Period</strong></td>
<td>0, 1-3, 4-6, 7-9, 10-12, 13+ Months</td>
<td>9 Months</td>
<td>9 Months</td>
</tr>
</tbody>
</table>
Methodology

• Source data collected from companies by MIB

• Audited through a self-audit guide, MIB follow-up, and a sub-committee

• No carrier dampening needed

• MIB provided committee with pivot tables similar to publicly available table
Audit Process

• If you are submitting data, please audit data before submitting!

• Several issues could have been found earlier to speed up the experience study process.
  • Death benefits paid on claims that are still open
  • Negative or 0 for group size
  • Negative death benefit amounts
  • Birthdates: Over 3000 claimants over 100 years old
  • Claims approved before they were reported
Confidence Intervals

• Dynamically calculated 95% confidence intervals
• On death rates and recovery rates (count basis only)
• The confidence interval is calculated as:

\[
\text{calculated rate} \pm \frac{1.96 \times \sigma}{\text{policies exposed}}
\]

Where \( \sigma \) represents the standard deviation of the estimate of the rate being calculated
Confidence Interval Example – All Data

Death Rates
All Data
Confidence Interval Example - Females

Death Rates
Females

Death Rate CI Lower Bound
Death Rate by Count
Death Rate CI Upper Bound
Confidence Interval Example – Female Blue Collar

Death Rates
Female, Blue Collar

Y03 Y04 Y05 Y06 Y07 Y08 Y09 Y10

Death Rate CI Lower Bound
Death Rate by Count
Death Rate CI Upper Bound
2018 Waiver Study Data Elements

Claimant Level Data
- Age at Disability
- Gender
- Face Amount
- Duration
- Diagnosis
- LTD Claim Linking

Plan Design Data
- Coverage Type (Basic/Voluntary)
- Definition of Disability
- EP
- Benefit Period

Group/Company Level Data
- # of Lives
- Industry
- LTD Coverage
- Carrier Size Segment
# Waiver Study High Level Results

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaths</td>
<td>150,996</td>
</tr>
<tr>
<td>Recoveries</td>
<td>199,110</td>
</tr>
<tr>
<td>Expirations</td>
<td>60,110</td>
</tr>
<tr>
<td>Mortality Rate</td>
<td>33.6 per 1,000</td>
</tr>
<tr>
<td>Recovery Rate</td>
<td>44.1 per 1,000</td>
</tr>
<tr>
<td>A/E Mortality</td>
<td>104.9%</td>
</tr>
<tr>
<td>A/E Recovery</td>
<td>205.1%</td>
</tr>
</tbody>
</table>
Comparison of Rates to Past Studies
7-9 Month EP Plans, by Count

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Deaths</td>
<td>A/E</td>
</tr>
<tr>
<td>Select</td>
<td>21,410</td>
<td>34.4</td>
</tr>
<tr>
<td>Ultimate</td>
<td>16,606</td>
<td>64.0</td>
</tr>
<tr>
<td>Total</td>
<td>38,016</td>
<td>43.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recoveries</td>
<td>A/E</td>
</tr>
<tr>
<td>Select</td>
<td>24,826</td>
<td>39.8</td>
</tr>
<tr>
<td>Ultimate</td>
<td>3,929</td>
<td>15.5</td>
</tr>
<tr>
<td>Total</td>
<td>28,755</td>
<td>32.8</td>
</tr>
</tbody>
</table>
Comparison of Mortality Rates to Past Studies
by Years Disabled, 7-9 Month EP
Comparison of Recovery Rates to Past Studies
by Years Disabled, 7-9 Month EP

Recovery Rate Per Thousand

- M - Actual 2018
- F - Actual 2018
- M - Fitted 2005
- F - Fitted 2005
- Unisex - Krieger
Comparison of Mortality Rates to Past Studies
by Age of Disability Onset, 7-9 Month EP

Death Rate Per Thousand

Disability Onset - Age Band Center Age
Comparison of Recovery Rates to Past Studies
by Age of Disability Onset, 7-9 Month EP
A/E to 2005 Table
By Amount, 7-9 month EP

- Mortality
- Recovery
A/E to 2005 Table - Male
By Amount, 7-9 month EP

Mortality
Recovery

Q04 Q05 Q06 Q07 Q08 Y03 Y04 Y05 Y06 Y07 Y08 Y09 Y10 Y11 Y12 Y13 Y14 Y15 Y16 Y17 Y18 Y19 Y20
A/E to 2005 Table - Female
By Amount, 7-9 month EP

Mortality
Recovery
2018 Waiver Segmentation Variables
## Waiver Study Segmentation Variables

<table>
<thead>
<tr>
<th>2005 Study</th>
<th>2018 Study – same as 2005 plus 13 new variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Study Year</td>
</tr>
<tr>
<td></td>
<td>Elimination Period</td>
</tr>
<tr>
<td>Age at Disability</td>
<td>Definition of Disability</td>
</tr>
<tr>
<td></td>
<td>Benefit Period</td>
</tr>
<tr>
<td>Duration Since Disability</td>
<td>Group Size</td>
</tr>
<tr>
<td></td>
<td>Initial Face Amount Band</td>
</tr>
<tr>
<td>2 Digit SIC</td>
<td>Industry Grouping</td>
</tr>
<tr>
<td>Collar Color</td>
<td>Coverage Type (Basic, Supp or Combined)</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>LTD Coverage Indicator</td>
</tr>
<tr>
<td>Carrier Size</td>
<td>(Small, Medium or Large based on # of claims in study )</td>
</tr>
</tbody>
</table>

Many of the same segmentation variables as SOA 2018 LTD Study
Warning!

- It’s an ongoing study
- Results by segmentation variables still a work in progress
- Consider these graphs as preliminary – to be finalized in upcoming 2018 GLW Report
- X axis may use Quarters for first two years and then Years thereafter
- Y axis uses varying scales
- Q1 and Q2 Waiver results may be unreliable due to sparse data
Key Takeaways of Segmentation

Comparison to LTD
- Gap between 2018 LTD and 2005 Waiver recoveries cut roughly in half

Study Year
- Waiver recovery rates increasing over time – even steeper than LTD increases

Carrier Size
- 3 distinct tiers in Waiver recoveries, while LTD large and medium quite similar

Diagnosis and Case Size material predictors of Waiver terminations
From 2018 LTD Study – comparison to 2005 Waiver
2018 Waiver Study – comparison to LTD recoveries

Recovery Rates, Quarters 3-8

Recovery Rates, Years 3-10
2018 Waiver recoveries with/without LTD

2018 Recovery Rate Comparisons

- LTD Recoveries
- Waiver Recoveries (LTD Coverage)
- Waiver Recoveries (No LTD Coverage)
2018 Waiver Study – comparison to LTD deaths

Death Rates, Quarters 3-8

Death Rates, Years 3-10
The 2018 LTD Study showed a pronounced upward trend in A/E recovery rates by calendar year. Specifically, the A/E ratio graded steadily upward from nearly 100% in 2004 to more than 125% in 2012.
Trends by Calendar Year – actual recoveries

Change in Recovery Rate, Standardized


Waiver LTD
2018 LTD Recoveries by Carrier Size

Recovery Rates by Carrier Size, LTD

Recovery Rates by Carrier Size, LTD
2018 Waiver Recoveries by Carrier Size
2018 LTD deaths by diagnosis

LTD Death Rates: Cancer vs. Other

- **Cancer**
- **Other**

Y-axis labels:
- Q01, Q02, Q03, Q04, Q05, Q06, Q07, Q08

X-axis labels:
- Y03, Y04, Y05, Y06, Y07, Y08, Y09, Y10
2018 Waiver deaths by diagnosis

Durational Death Rates by Diagnosis:
Duration Years 1-2

Number of Deaths Per Thousand

Duration Years 3-10

Number of Deaths Per Thousand

- Total
- Circulatory
- Infectious Diseases
- Mental/Nervous
- Respiratory
- Cancer
- Diabetes
- Digestive
- Injury (not back)
- Nervous System
- Other
- Maternity
- Mental/Nervous
- Nervous System
- Other musculoskeletal
- Respiratory
- Other
- Missing/Invalid

Duration

Q01 Q02 Q03 Q04 Q05 Q06 Q07 Q08

Y03 Y04 Y05 Y06 Y07 Y08 Y09 Y10

36
2018 Waiver recoveries by diagnosis

Durational Recovery Rates by Diagnosis:
Duration Years 1-2

Durational Recovery Rates by Diagnosis:
Duration Years 3-10
2018 LTD terminations by case size  (deaths + recoveries)
2018 Waiver recoveries by case size

Durational Recovery Rates by Group Size:
Duration Years 1-2

Durational Recovery Rates by Group Size:
Duration Years 3-10
## LTD recoveries by collar color

”Generally speaking, Blue and Grey collar had higher LTD A/E claim recoveries than White”

<table>
<thead>
<tr>
<th>Collar Color</th>
<th>Exposure</th>
<th>A/E Recoveries</th>
<th>A/E Deaths</th>
<th>A/E Terminations</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>15,509,343</td>
<td>107%</td>
<td>94%</td>
<td>104%</td>
</tr>
<tr>
<td>Grey</td>
<td>9,105,458</td>
<td>123%</td>
<td>90%</td>
<td>115%</td>
</tr>
<tr>
<td>Blue</td>
<td>6,683,018</td>
<td>119%</td>
<td>86%</td>
<td>111%</td>
</tr>
<tr>
<td>Unknown</td>
<td>6,689,624</td>
<td>117%</td>
<td>87%</td>
<td>108%</td>
</tr>
<tr>
<td>Total</td>
<td>37,987,443</td>
<td>114%</td>
<td>91%</td>
<td>109%</td>
</tr>
</tbody>
</table>
Waiver recoveries by collar color

Durational Recovery Rates by Collar:
Duration Years 1-2

Durational Recovery Rates by Collar:
Duration Years 3-10
Waiver deaths by collar color

Durational Death Rates by Collar:
Duration Years 1-2

Duration Years 3-10
LTD recovery rate by salary

<table>
<thead>
<tr>
<th>Indexed Monthly Salary</th>
<th>Recovery Rate</th>
<th>Death Rate</th>
<th>Settlement Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; $2,500</td>
<td>1.99%</td>
<td>0.38%</td>
<td>0.13%</td>
</tr>
<tr>
<td>$2,500 - $4,999</td>
<td>1.67%</td>
<td>0.39%</td>
<td>0.10%</td>
</tr>
<tr>
<td>$5,000 - $7,499</td>
<td>1.42%</td>
<td>0.43%</td>
<td>0.08%</td>
</tr>
<tr>
<td>$7,500 +</td>
<td>1.08%</td>
<td>0.48%</td>
<td>0.07%</td>
</tr>
<tr>
<td>Grand Total</td>
<td>1.69%</td>
<td>0.40%</td>
<td>0.11%</td>
</tr>
</tbody>
</table>
Waiver recoveries by face amount

Recovery Rates By Face Amount

Low (<25K)  Medium (50-75K)  High (75-500K)  Very High (500K+)

Recovery Rates By Face Amount

Low (<25K)  Medium (50-75K)  High (75-500K)  Very High (500K+)
LTD recoveries by EP

Recoveries by EP showed consistently better experience as EPs increase. (This should be subjected to predictive analysis to see if there were factors that contributed to the patterns.)
2018 Waiver recoveries by EP
Waiver recoveries by definition of disability

![Graph showing durational recovery rates by definition of disability for durations 1-2 and 3-10.](Image)

**Durational Recovery Rates by Definition of Disability:**
Duration Years 1-2

- Total
- Any Occ
- 2-yr Own Occ
- Other
- Unknown
- Missing/Invalid

**Durational Recovery Rates by Definition of Disability:**
Duration Years 3-10

- Total
- Any Occ
- 2-yr Own Occ
- Other
- Unknown
- Missing/Invalid
Illustrative Waiver Reserves and Next Steps
Illustrative Waiver Reserves

- Valuation Table is outside the scope of 2018 Waiver Experience Report
- Experience Report presents raw data and A/E comparisons
- Valuation Table would need to be graduated with appropriate margins
- But the Experience Report will include a section on illustrative Waiver reserves
  - Comparisons to 2005 GLW reserves and 1970 Krieger reserves
  - 4.5% discount rate with no decrement margins (to facilitate comparisons)
  - 95% two-tailed confidence intervals to create range of reserve impacts by age, gender, duration cells
  - Typical results are 75% - 85% of 2005 Table at Duration 1; 85% to 105% at Duration 5
Next Steps

• Waiver Committee aiming to submit final Experience Report to SOA in Q3

• SOA does final review

• SOA releases Experience Report and Pivot Tables on website

• Participating carriers will also receive individual company pivot tables and a flat file with more granular data

• Parallel process: SOA and Waiver Committee will correspond with AAA and LATF of NAIC to consider development of new Waiver valuation tables

• Jennifer, Steve and Mervyn Kopinsky present final findings at October 2018 SOA Annual Meeting