



Florida Office of Insurance Regulation

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Insurance Commissioner

Florida Birth-Related Neurological Injury Compensation Association

Actuarial Review of Loss Reserves as of December 31, 2017,
Including Additional Costs of the 2018 Birth/Accident Year

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Table of Contents

Part I: General Information	1
Overall Funding of Liabilities, Including those of 2018	1
Uncertainty	2
Comparison to Reserves Estimated by NICA's Consulting Actuary	3
Going Forward Adequacy of NICA—2018 Birth Year	3
Part II: Background	5
Structure of NICA's Claim Process	5
Claim Progression	5
Class Action on Prior Nursing Care Provided by Family Members	6
Primary Data Available for Analysis	6
Reinsurance Commutation	6
Part III: Highlights of Reserving Approach	7
Claim Classes Analyzed Separately	7
Future Payments for Loss Dollars on 2017 and Prior Claims with Worksheets	7
Future Payments for Loss Dollars Claims Awarded but not Evaluated and Claims Projected to be Awarded	7
Future Payments for Defense Costs on Claims Expected to be Dismissed in the Future	8
Future Payments for Loss and Defense Costs on All Other Claims (Adjudicated, Dismissed, and Closed)	8
Payments for Claims from the 2018 Birth Year (NICA's 2018 Year of Operation)	8
Anticipated Reinsurance Recoveries	8
Part IV: Highlights of Determination of Percentiles	10
Why are Percentiles Needed?	10
Conceptual Approach	10
Components of the Variance	10
Part V: Actuarial Opinion	12
Statement of Qualifications and Methodology of Preparer Joseph Boor	12
Statement of Reliance on Others	12
Limitation on Partial Dissemination from Preparer	12
Suggested Retention of Records	13
OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017	14
Summary Page 1- Computation of Net Discounted Reserve Indication for 2018 and Prior Birth Year Claims at 12/31/2017	14
Summary Page 2 - Confidence Levels Associated with Various Asset Levels	15
Exhibit 1 - Payout of Loss on Awarded and Evaluated Claims (with Defense Cost Shown)	16
Exhibit 2 - Computation of Anticipated Costs of Claims from 2018 Birth Year	17
Exhibit 3	
Development of Awarded Claims with Projection of Ultimate Number of Awarded Claims	18
Triangle of Incremental Claims Awarded by Division of Administrative Hearings (DOAH) with Annual Award Percentage	19
Development of Adjudicated Claims and Projection of Claims to be Awarded in the Future	20
Triangle of Incremental DOAH Adjudicated Claims	21

Development and Estimation of Ultimate Number of All Claims by Birth Year	22
Triangle of Incremental Reported Claims	23
Percentage of Claims Adjudicated that Result in Awards with Projected Award Ratios for Claims Remaining at Various Stages	24
Cumulative Ratios of Percentage of Adjudicated Claims Resulting in Award	25
Development of Dismissed Claims	26
Incremental Dismissed Claims and Annual Percentage of Adjudicated Claims that are Dismissed	27
Exhibit 4 - Anticipated Average Payout Pattern of Claims Paying in the Future (Future Awarded and Pipeline) (with Defense Cost Shown)	28
Exhibit 5	
Defense Incurred Per To 12/31/2015 and 12/31/2017 Awarded Claims	29
Defense Paid Per To 12/31/2015 and 12/31/2017 Awarded Claims	30
Defense Incurred Per To 12/31/2015 and 12/31/2017 Dismissed Claims	31
Defense Paid Per To 12/31/2015 and 12/31/2017 Dismissed Claims	32
Exhibit 6 - Computation of Estimated Reinsurance Recoveries for 2018 and Prior Birth Year Claims at 12/31/2017	33
Exhibit 7 - Computation of Variance of Possible Eventual Costs of NICA Unpaid as of 12/31/2017 for 2018 and Prior Claims	34
Exhibit 8 - Estimate of Variance and Coefficient of Variation of Effects of Varying Interest and Inflation	35
Exhibit 9 - Anticipated Average Payout Pattern of Total Pre-Reinsurance Liabilities Including 2018 Birth Year	36
Exhibit 10 - Evaluation of Inflation and Investment Income Rates	37
Technical Appendix	38
Background—Data	38
Background—Claim Categories within Claim Lifetimes	39
Background—Inflation	39
Background—Interest Rates	39
General Reserving Approach—Workbooks for Open and Evaluated Claims	40
General Reserving Approach—Best Estimate Overall 2017 Plus to be Awarded Claims	41
General Reserving Approach—Defense Costs for Claims to be Dismissed in the Future	42
General Reserving Approach—2018 Loss and Defense Costs	42
Estimation of Reinsurance Recoverables	43
Estimation of Percentile Ranges	43
Sensitivity Testing	45

Part I. General Information

Overall Funding of Liabilities, Including those of 2018:

Pursuant to s. 766.314(7)(a), Florida Statutes, the Office of Insurance Regulation (“Office”) has undertaken an actuarial valuation of the assets and liabilities of the Florida Birth-Related Neurological Injury Compensation Association (“NICA”). The results of the review pertaining to the loss and defense costs from 2017 and prior years, as well as those estimated for 2018, of NICA provide best estimates of the needed loss and defense reserves at 12/31/2017 of \$648 million and the expected 2018 claims costs of \$48 million. The 2017 and prior costs compare favorably to the approximately \$879 million that NICA carried at 12/31/2017. The \$48 million of new liabilities does not compare as favorably to the OIR estimated \$27 million of assessments collected by NICA. These results are very closely mitigated by the best estimate anticipated investment income beyond that backing discount of \$27 million. The overall loss costs are significantly higher than those of last year’s study, with deterioration in the expected interest/inflation off-balance and a projection that fewer of the future awarded claims will be minor.

Those results are statistically-derived predictions of NICA’s future claim payouts. The actual results should be expected to vary from those predictions. As a guide to the ability of NICA to withstand worse-than-expected losses that might materialize during the next twelve months, the 65th, 75th, 85th, 90th, 95th, 98th, and 99th percentiles of the possible costs (values which the actual costs would not be expected to exceed in 65%, 75%, 85%, etc. of all possible cost scenarios) are listed in the table below:

Various Percentiles of Possible 12/31/2017 Unpaid Loss and Defense Costs for 2018 and All Prior Years

Percentage	Aggregate Costs
65%	\$ 750 million
75%	\$ 900 million
85%	\$ 1,100 million
90%	\$ 1,300 million
95%	\$ 1,650 million
98%	\$ 2,050 million
99%	\$ 2,350 million

NICA’s funds at 12/31/2017 (plus 2018 assessments) of approximately \$1.24 billion held and \$27 million in assessments, would anticipate funding to an approximate 89% confidence level, the same as the 89% level in the previous study.

However, it must be noted that currently a very high percentage of physicians that are eligible to participate in NICA do so. Further, the credits offered by most medical malpractice insurers for NICA participation generally suggest that the insurers perceive participation in NICA to be a bargain. Therefore, should losses turn adverse; it is likely that some limited price increases in future years would

be accepted by physicians. So, NICA has some, but not unlimited, flexibility to buttress their ability to pay claims with future price increases. This suggests that policymakers might begin to plan how they will fund any gap between receipts and costs that could arise in the future.

Uncertainty:

Actuarial uncertainty is high (as noted in the difference between the percentiles and the best estimate) with any group of claims that both pay over an extended period of time and whose payments increase with inflation. This body of liabilities is a clear example of that situation. Although a diligent attempt to identify and address all current and potential cost drivers was made, it is possible that some unusual event or series of events might cause costs to vary more significantly than anticipated. Within this study, no provision has been made for such events, beyond the projections by NICA. In particular, although the staff of NICA has made a significant effort (beyond industry standards, in the opinion of the Office) to account for this, it is possible that significant additional costs will arise as the parents of children¹ benefiting from NICA become unable to care for the children and nursing home care becomes necessary. Further, a certain number of children are in wheelchairs and other children may have health concerns that lead to health complications which would create unexpected additional nursing care and medical expenses. As noted earlier, NICA appears to have used better-than-industry standard methods to estimate the future lifespans of the children, but it is possible the lifespans will be generally longer or shorter in the aggregate due to remaining limitations of their methodology. Those risk factors are not susceptible to actuarial analysis and as such are not reflected in the computations of the percentiles.

¹ "Children" and "child" are used herein for the persons receiving injuries at birth which lead to claims, although some of those individuals are past the age of majority at present.

Comparison to Reserves Estimated by NICA's Consulting Actuary:

As the previous item shows, there is an exceptionally wide range of possible eventual costs for NICA. Again, that uncertainty is magnified by the likely long duration (over forty years on some claims) of benefits and the consequential highly leveraged impact of inflation, interest, medical technology, and life expectancy on future claim costs. Since inflation, interest, and life expectancy must be estimated, that creates a significant uncertainty in the present value of the claim costs. Further, the impact of any changes in medical technology is not estimable at present. Because of that uncertainty, any given specific point or local range has a fairly low probability of representing the actual cost that ultimately occurs. Since NICA's consulting actuary, George Turner, uses a different actuarial approach, it would not be unusual for him to obtain a significantly different best estimate. Due to the extreme uncertainties involved, this should not be taken as an indication that his work is improper. Rather, it may be more appropriate to consider the percentile in this report that his indication falls in and review whether both views are reasonable alternative approaches. However, this study does suggest a significantly wider range than that which has historically been suggested by NICA's consulting actuary. In light of the unexpected but possible scenarios of, say, very high inflation without matching interest rates (which were seen in the United States around roughly 1980), it would appear that such a range is valid.

Going Forward Adequacy of NICA—2018 Birth Year:

As noted earlier, the review of NICA's 2018 loss costs suggests an actuarial central estimate of approximately \$48 million of costs on a present value (discounted) basis. That compares to current assessment levels of approximately \$27 million per year. Further, NICA typically has operating, etc. expenses of approximately \$2 million. This strongly suggests that the Association is encountering an operating loss on a birth year basis. However, the strength of NICA's assets is expected, on average, to generate approximately \$26 million beyond that needed to fund one year of the discount built into our estimates, roughly offsetting the difference. Considering how closely the costs and revenue are now as well as the prospect of future inflation, it is conceivable that the additional investment income will end at some point. Considering the adequacy of NICA's assets, it would likely, but cannot be guaranteed to, be some time before the assets become inadequate to fund the loss liabilities. However, the data suggests that if present trends continue that will eventually happen, perhaps far in the future. However, it is important to consider this and plan corrective actions some time before a problem arises.

NICA provided the following response:

"Although NICA's outside actuaries employ different methodologies than those used in your report, the difference in the estimated loss and LAE reserves is not material using similar assumptions for inflation and investment income. As mentioned in your report, we recognize that the actuarial estimate of 2018 loss costs exceeds the current assessment level of approximately \$27 million. However, to date, the actual investment income / inflation differential has exceeded the differential assumed by NICA's actuaries to a degree that net assets have increased over time.

We recognize the potential variability in both investment income and NICA expense inflation and NICA continues to monitor its actuarial position and investment structure closely. Claims data is reported to outside consulting actuaries and actuarial reserve evaluations are completed on a quarterly basis. In addition, a separate actuary performs a peer review of each quarterly evaluation.

NICA, with the assistance of its outside investment consultants, completes an asset allocation review and study approximately every two years. Revisions to the investment policy are made as necessary to satisfy the primary goal of earning sufficient investment return to ensure payment of all current and future liabilities. Actual investment results are monitored closely by NICA, its outside consultants and the Board of Directors.

While NICA recognizes that it may be necessary to increase the level of assessments at some point in the future, the current net assets and favorable investment results indicates that no increase is needed at present. NICA will continue to monitor its position closely.”

The Office will continue to review the adequacy of the going-forward funding of the Association in future studies.

Part II. Background

Structure of NICA's Claim Process:

NICA coverage is elected by obstetric physicians and midwives. Should a child meeting the eligibility requirements as set forth in Sections 766.301-316, Florida Statutes, suffer damage at birth as a result of a "birth-related neurological injury," when the treating obstetrician has elected NICA coverage the child's parents may bring a claim through NICA's protocols (via an administrative law judge system). Under the statutes, certain preconditions, such as the obstetrician having posted his/her NICA election for parents, and the timeliness of the claim presentation, must be met. An award of \$100,000, plus necessary medical and maintenance (e.g., modified vans, housing modifications) expenses for the lifetime of the claimant, may be made by a Division of Administrative Hearings ("DOAH") administrative law judge. Parties involved in the hearing may include the petitioner family, hospital and other entities involved in the birth, treating obstetrician, and NICA. The administrative law judge may determine that the claim is compensable or dismiss the claim. Potentially, the claim may be consequently appealed by any of the parties. The data shows evidence of all these scenarios. However, the data suggests that a relatively small percentage of claims are revised on appeal.

Claim Progression:

Given the claim process discussed earlier, one may augment the process with the corresponding actions by NICA. A potential claim event initially occurs at the birth of a child. At that time, the claim has occurred, but has not yet been reported to NICA. So, the claim is referred to as "unreported." At some point, the claim is reported to NICA and a hearing date is presumably requested. After that, the claim is reported, but is considered a "pending" claim until it is "adjudicated" and an administrative law judge holds a hearing. During the hearing, the administrative law judge will either determine that benefits should be "awarded," or "dismiss" the claim. Subsequently, the claim moves into either awarded (the Office's terminology is "compensable") or dismissed status. Either way, it may be regarded as adjudicated. If the benefits are awarded, the costs are not always evaluated immediately, but are done as soon as practicable. Generally, soon after the year's end, NICA management has reviewed all the claims and projected the future payments of each one in a worksheet. Therefore, the claim is initially awarded, but is not "awarded and evaluated" or "pipeline" (both the Office's terminology) until the corresponding worksheet is prepared. Depending on the particulars of the claim and the type of dismissal, claims may be appealed. Claims are closed on either the final payout at the death of the child covered by an awarded claim, or a definite finding of dismissal and final payment of legal defense costs.

Class Action on Prior Nursing Care Provided by Family Members:

NICA officials informed the Office during a previous (2012) review that a class action had been brought against NICA. The class action related to the amount of loss that was paid or could have been paid as reimbursement to family members for care provided to children covered by NICA benefits. This case was resolved some time ago. This affected payment rates for nursing care rendered in the past and for nursing care provided in the future. In conversations with NICA staff, the Office was told that on the vast majority of the affected claims this had been resolved. Therefore, no special analysis of this issue was performed.

Primary Data Available for Analysis:

The primary data provided was an inception-to-date data extract, listing key paid-to-date and incurred-to-date, adjudication date, birth (accident) year, current status at DOAH, and other relevant coding as of 12/31/2017. The report included breakdowns between loss and defense (legal other than payments to claimant attorneys). The coding in those files was used to synthesize other information such as whether adjudicated claims were then classed as awarded or dismissed.

The second primary class of data was the worksheets prepared after 12/31/2017, in the Spring of 2018, on claims classed as awarded. Sufficient detail for an estimate of the stream of future payments (after 2017) by calendar year was present in the worksheets. However, it was necessary to supplement the worksheets with inflation after 2018 cost levels and discounting for the investment income to be earned between 12/31/2017 and the time each payout is to be made.

Reinsurance Commutation:

The Office was informed that NICA had purchased reinsurance on claims from the 2003 and prior years. However, the actuary preparing this report was told that much reinsurance had been commuted. Due to its small size, the estimation of the amount recoverable made by NICA's actuary was used in lieu of an independent analysis. However, a special event occurred recently in the commutation process. During the commutation arbitration a loss amount of roughly \$20 million was selected by the arbitrators based presumably on the loss values on the long past commutation date specified in the contract. However, this would at least suggest that interest should be paid between then and now, giving rise to a range of possible outcomes corresponding to different interest rates. Therefore, we used the value contained in Mr. Turner's 9/30/2018 report to represent a value within that range.

Part III. Highlights of Reserving Approach

Claim Classes Analyzed Separately:

Due to data limitations and the desire to provide the best estimates possible, different classes and categories of loss dollars required separate analysis. Those classes were:

1. Loss and defense dollars on awarded 2017 and prior claims (those with worksheets).
2. Loss and defense dollars on 2017 and prior birth year claims that are projected to be awarded².
3. Defense costs on claims expected to be dismissed in the future.
4. Costs of claims anticipated during the 2018 birth year.
5. "Unallocated loss expense" or claims handling costs associated with all the claims above.
6. Anticipated reinsurance recoveries on claims from older years where reinsurance was purchased.

The worksheets driving much of the analysis reflect streams of future payments made in successive future calendar years (at 2018 cost levels). All the analysis was done by projecting a payments stream in future calendar years, then applying inflation to (if needed) 2018 and beyond to the payment date and the amount of inflation/investment discount offset beyond 2018.

Future Payments for Loss Dollars on 2017 and Prior Claims with Worksheets:

Since the payouts are specified in the worksheets, the information in each worksheet was simply converted to the payments by calendar year it specified. Defense costs were included at the amount of remaining defense case reserves at 12/31/2017. The average yearly payouts after adjudication across all open and awarded (worksheet) claims was prepared for use in estimating the costs and payout pattern of the other large reserve classes.

Future Payments for Loss Dollars Claims Awarded but not Evaluated and Claims Projected to be Awarded:

The first step in this analysis was to estimate how many claims are projected to be in this category. That is performed in Exhibit 3 by first projecting the number of total claims that occurred in 2017 and prior years on Page 5 of the exhibit. Using historical ratios of the percentages of claims awarded at adjudication, the ultimate number of claims to be awarded for 2017 and prior birth years was estimated on Page 1 of the exhibit. Then, all ultimate awarded claims are either in this category, have a current worksheet, or are closed. So, the number of claims in this category was computed as the number of ultimate awarded claims minus the number of claims with worksheets, minus the number of closed and awarded claims. For the last step, the estimated future awarded claims are separated into awarded claims from claimants dying before or soon after the award ("DA" or non-serious claims) and serious

² Including the "pipeline" claims mentioned in a prior footnote.

claims. The projected number of serious claims in this class was multiplied by the average payout stream and cost computed in the previous section (adjusted to begin in 2019³).

Future Payments for Defense Costs on Claims Expected to be Dismissed in the Future:

These were reserved using an average severity method. The average defense cost incurred per claim dismissed and average defense cost paid per claim dismissed in the 12/31/2015-12/31/2017 period were computed in Exhibit 5 Pages 3 and 4, along with the average defense costs of claims closed prior to that. Per the review, an ultimate defense cost per claim of \$7,500 in 12/31/2017 dollars was selected. That was multiplied by the number of claims projected to be dismissed in the future. Since that amount was only under \$1 million (prior to inflation and discount), it was deemed to be immaterial to the analysis and excluded for convenience.

Future Payments for Loss and Defense Costs on All Other Claims (Adjudicated, Dismissed, and Closed):

As defense costs on closed claims have historically been well under \$1 million, these were not explicitly included in the analysis.

Payments for Claims from the 2018 Birth Year (NICA's 2018 Year of Operation):

Claims costs and the future payment stream for this year were estimated using a frequency and severity approach. The awarded claims frequency per physician or midwife insured for 2012-2016 was calculated. NICA's staff provided the historical and 2018 numbers of physicians and midwives it covered. Multiplying the two produced the projected numbers of awarded claims and dismissed claims for the 2018 year. A further adjustment for serious vs. "DA" (language from the NICA actuary denoting claims that only pay for a short duration) claims was performed using the claims closed during the 2007-2016 period. The computations involved computing the percentage of claims that were open in more than two calendar years and the percentage that were only open in two calendar years or fewer. That replaced the values previously provided by the NICA actuary. The loss severity and its payout pattern used the average payout of historical claims with worksheets (essentially, those that were still open at 12/31/2017), adjusted for inflation and discount to begin paying in 2020. A lump sum defense payment of \$13,000 adjusted upward to 2020 cost levels was also included on all claims, awarded or dismissed.

Anticipated Reinsurance Recoveries:

As noted earlier, considering the size of the apparent collectible amount, we merely accepted the conclusion of NICA's consulting actuary. However, as noted earlier, we used the 9/30/2018, not the year end value, to reflect a median position of the likely recoveries. This is not expected to produce a

³ The average adjudication and payment start date of 2019 was determined in rough (considering the dollar amount) accordance with a judgmental review of historical claim count patterns and consideration of simplicity.

material misunderstanding of the financial condition of NICA. It should be noted that it may also be difficult for NICA to collect the full amount. Though the amount of reinsurance recoverable is substantial in absolute terms, it is nonetheless only about five percent of the total reserve.

Part IV. Highlights of Determination of Percentiles

Why are Percentiles Needed?

The best estimate reserves computed per the previous section represent an average or midrange outcome. However, the actual results will vary, at least somewhat, from that value. For a variety of reasons, it is even possible a very high number of Florida residents give birth in a year. This may lead to problems with an obstetrician's ability to serve them all, which could result in actual 2018 claims costs that are far larger than the projected 2018 costs. However, that occurrence is very unlikely. More to the point, loss cost inflation could exceed investment returns for some extended period. Since the range of all possible loss payout scenarios is virtually unlimited, it is not practical⁴ for NICA to fund all possible costs that might emerge as claims are paid. Providing a range allows one to determine what level of funds is needed to fully cover 65%, 75%, 95%, etc. of all possible payout scenarios. Then, one may determine the level of certainty provided by a certain amount of funds. Policymakers should consider the degree of certainty provided by NICA's available funds. They should also consider the ability (although limited) of NICA to help fund any shortfall through increased assessments⁵.

Conceptual Approach:

The general approach used is to estimate a key statistical quantity, specifically the variance of the possible discounted loss payouts. Using the best estimate as the statistical "mean" and the variance so determined, one may construct a mathematical curve of the likelihood the final loss payments on 2016 and prior birth year claims will be less than various possible loss funding levels ("percentiles"). The curve used was from the most common probability distribution family with no negative values, the lognormal distribution family. The resulting percentiles then follow as standard mathematical computations.

Components of the Variance:

Key items considered in estimating the variance were:

- The fact that the estimated future lifespans entered in the worksheets prepared by NICA were estimates⁶ and the actual lifespans of the children benefitting from NICA will be different than those estimates. A judgmental estimate of the variance as 16% of the projected loss squared on each claim was used. This assumption was unchanged from the previous analysis.
- Many of the quantities included in the reserves are based on projected claim counts. The actual counts that emerge in each class are likely to be different.

⁴ For a detailed discussion of why this is impractical for society, see the author's dissertation at <http://proquest.umi.com/pqdlink?did=2789658261&Fmt=7&clientI d=79356&RQT=309&VName=PQD>

⁵ As noted in Part I., participation in the Association is generally viewed favorably by many physicians and malpractice insurers. This suggests there may be some room to raise assessments if need be, but likely the amount of room is limited.

⁶ Per standard industry practice, these were treated as averages.

12/31/2017 OIR Actuarial Review of Unpaid NICA Loss and Defense Costs

- The values based on claim counts use average severity, or cost per claim values. The actual average costs will likely be different.
- The values based on average severity are also affected by uncertainty in the historical severity arising from the uncertainty in the lifespans of covered children.
- The fact that inflation and investment income, especially their ratio, may vary widely from their projected values.

The contributions of each of these are shown in Exhibit 7. As one may see, the last variance source (inflation and investment uncertainty) dominates the others.

Part V. Actuarial Opinion

Statement of Qualifications and Methodology of Preparer Joseph Boor:

This report was prepared by me personally and at my personal direction. I am a Fellow of the Casualty Actuarial Society and have been so for over thirty years. I also have a Doctor of Philosophy degree in Financial Mathematics from Florida State University and am a Chartered Enterprise Risk Analyst. I have over ten years of experience in medical malpractice, especially within the Southeastern United States. Further, I have extensive experience with long term medical claims and experience with claims involving special adjudication processes such as are involved with NICA's claims. I attest that the methodologies, techniques, and assumptions employed in this study, as well as the opinions and validation of assumptions were, in my opinion, all done per or consistent with generally accepted actuarial practices, all applicable guidance and standards of practice⁷, and with a perspective of obtaining the most accurate estimates possible given the time and data limitations.

Statement of Reliance on Others:

In the course of the analysis, explanations, data, and general perspective on the data and claims environment were provided by Tim Daughtry and Kenny Shipley, employees of NICA. Further perspective and information on the construction of the data was provided by George Turner, FCAS, (NICA's consulting actuary) during prior reviews. The review and feedback provided by all three during this review and prior reviews was helpful in providing perspective. A previous reviewer employed by the Office, Leigh Halliwell, FCAS, expressed that, except for inflation and discounting, the cash flows projected by NICA in their claim worksheets were reasonable predictions of the ultimate losses on each claim. This review implicitly contains a similar conclusion.

Limitation on Partial Dissemination from Preparer:

To avoid the misunderstandings associated with partial disclosures, I would request that a full copy of this report be provided on request to any party receiving portions of the documents.

⁷ These are promulgated by the Casualty Actuarial Society and the Actuarial Standards Board and should be taken to include key literature published or used by the Casualty Actuarial Society.

Suggested Retention of Records:

The basis for portions of this report is a set of worksheets with projected payments for a number of claims. Such individual claim reserve detail could potentially be used against NICA in court or elsewhere by claimants. Therefore, individual claim detail is not included within this report. It is recommended that the Office retain that detail in protected format for some length of time.

Signature:



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December 31, 2018

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Computation of Net Discounted Reserve Indication for 2018 and Prior Birth Year Claims at 12/31/2017

Category	Indicated Reserve	
Claims Awarded and Evaluated (with worksheets) (loss+defense)	\$510,865,003	(Exhibit 1)
Pipeline and Future Awarded Claims (loss+defense)		
-Ultimate awarded claims	432	(Exhibit 3 - Page 1)
-Effect of unusual closed claims (\$0)	-7	Data
-Awarded and closed claims	197	Data
-Worksheet claims	179	Data
-Future and pipeline claims	63	(Exhibit 3 - Page 1)
Approx. % Claims Turner Titled "DA"	15%	(Exhibit 2)
Estimated # "DA" Claims	10	
Cost per "DA" Claim	\$282,186	(Exhibit 2)
Total Cost "DA" Claims	2,744,210	
Approx. % Claims Estimated to be Serious	85%	
Estimated # Serious Claims	53	
Cost per Serious Claim	\$3,025,840	(Exhibit 4)
Total Disc. Cost Serious Claims	161,202,118	
2018 Costs		
ULAE (claims handling)	48,829,884	(Exhibit 2)
(used NICA actuary's 9/30/17 value due to small size)	12,749,810	Data
Reinsurance Recoverable on Future Loss Payments (minus)	\$38,834,104	(Exhibit 6)
Total Indicated Reserve for Loss and Defense (incl. ULAE)	\$697,556,922	
2017 and Prior Total Indicated Reserve for Loss and Defense (incl. ULAE)	\$648,727,038	

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Confidence Levels Associated with Various Asset Levels

Simulation with Lognormal Distribution with Mean

\$697,556,922 and Variance

259,783,812,763,689,000

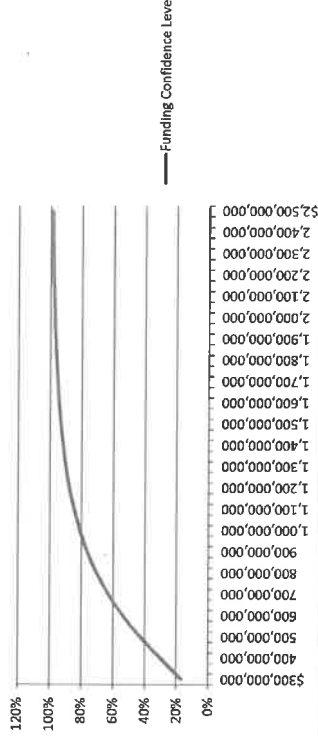
(Loss Summary and Exhibit 7)

Confidence
in Ability to
Fund Loss
Payouts

Asset
Amounts

\$300,000,000	17%
350,000,000	23%
400,000,000	30%
450,000,000	37%
500,000,000	43%
550,000,000	49%
600,000,000	54%
650,000,000	59%
700,000,000	63%
750,000,000	67%
800,000,000	70%
850,000,000	74%
900,000,000	76%
950,000,000	79%
1,000,000,000	81%
1,050,000,000	83%
1,100,000,000	85%
1,150,000,000	86%
1,200,000,000	88%
1,250,000,000	89%
1,300,000,000	90%
1,350,000,000	91%
1,400,000,000	92%
1,450,000,000	93%
1,500,000,000	93%
1,550,000,000	94%
1,600,000,000	94%
1,650,000,000	95%
1,700,000,000	95%
1,750,000,000	96%
1,800,000,000	96%
1,850,000,000	97%
1,900,000,000	97%
1,950,000,000	97%
2,000,000,000	97%
2,050,000,000	98%
2,100,000,000	98%
2,150,000,000	98%
2,200,000,000	98%
2,250,000,000	98%
2,300,000,000	98%
2,350,000,000	99%
2,400,000,000	99%
2,450,000,000	99%
\$2,500,000,000	99%

12/31/2017 Loss and Defense Reserve Funding Confidence Level of Different Possible Fund Asset Amounts (incl. 2018 Premium and Losses)



Approximate NICA Position with Funds on Hand 12/31/2017 and 2018 Assessment Revenue is boxed

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Payout of Loss on Awarded and Evaluated Claims (with Defense Cost Shown)
(in 2018 \$\$\$)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Loss Payout	\$18,109,793	18,271,221	24,330,057	24,607,182	25,167,425	23,239,483	23,830,376	24,120,243	24,408,838	24,725,056
Defense	-	-	-	-	-	-	-	-	-	-
Total Payout	18,109,793	18,271,221	24,330,057	24,607,182	25,167,425	23,239,483	23,830,376	24,120,243	24,408,838	24,725,056
Total Payout	23,668,128	23,743,473	24,089,160	24,346,948	24,186,922	22,407,613	22,875,231	23,270,402	22,471,096	21,329,628
Total Payout	2,038	2039	2040	2041	2042	2043	2044	2045	2046	2047
	19,601,127	19,709,428	19,883,762	19,915,301	19,507,982	18,015,244	17,709,734	17,541,014	13,879,860	12,390,192
Total Payout	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057
	10,709,325	10,092,222	10,092,222	10,092,222	9,814,323	8,661,075	8,505,641	5,469,290	5,221,530	4,488,585
Total Payout	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067
	3,724,040	3,724,040	3,724,040	3,289,351	3,251,501	2,945,484	2,331,871	1,793,671	1,511,405	692,157
Total Payout	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077
	443,654	443,654	443,654	443,654	356,492	112,082	112,082	-	-	-
Total Payout	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087
	\$0	-	-	-	-	-	-	-	-	-

Discounted and Inflation corrected to 12/31/2017 at
(Rates are from Exhibit 10)

4.5% investment return.

\$510,865,003

Average inflation and discount effect

68%

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Computation of Anticipated Costs of Claims From 2017 Birth Year

Year	Obstetricians Participating	Midwives Participating	Total Participants	Projection of Awarded Claims	Projection of Dismissed Claims	Total Cost
2001	676	114	790			
2002	731	130	861			
2003	786	129	915			
2004	841	146	987			
2005	891	134	1,025			
2006	896	139	1,035			
2007	962	151	1,113			
2008	987	157	1,144			
2009	1,044	166	1,210			
2010	1,071	177	1,248			
2011	1,091	183	1,274			
2012	1,119	192	1,311	17	40	
2013	1,143	190	1,333	13	26	
2014	1,208	206	1,414	16	39	
2015	1,273	207	1,480	23	42	
2016	1,318	216	1,534	17	40	
2017	1,356	232	1,588			
2018*	1,335	239	1,574			
Note: 2018 data is as of 5/1/2018						
(OB and Midwife data per NICA)						
5 Year Frequency						
				1.22%	2.64%	
Projected 2018 Counts						
				19	42	
Approx. % "DA" Claims						
				15%		(% of claims awarded 2007 through 2016 with the death date within 1 year of award or earlier)
Estimated # "DA" Claims						
				3		
Cost per "DA" Claim						
				\$282,186		(Average cost of above claims inflated at 2%, 1.1 factor for discounting)
Total Cost "DA" Claims						
				846,558		
Estimated # Serious Claims						
				16		(Projected Total Awarded Claims less Projected DA Claims)
Cost per Serious Claim						
				2,953,451		(Exhibit 4)
Total Disc. Cost Serious Claims						
				47,671,175		
Cost per Dismissed Claim						
					\$7,500	(Exhibit 5)
Total Discounted Cost (loss and defense)						
				\$48,517,732	\$312,151	\$48,829,884

Overhead	\$2,047,654	(Copy from 2017 Income Statement)
Estimated Total 2018 Birth Year Economic Cost	\$50,877,538	
2018 Revenue	\$27,042,600	
2018 Est. Investment Income Over Amount of One Year's Discount in 12/17 Costs	\$26,781,357	(Investments Provided by T. Daugherty - Best Estimate Reserve 2017 and prior)*0.045
Go Forward Adequacy at Best Estimate	\$2,946,419	(Note: Less than one serious claim)

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017**Development of Awarded Claims with Projection of Ultimate Number of Awarded Claims**DOAH Awarded Claim Counts

	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192
1989																
1990																
1991																
1992																
1993															15	14
1994															16	15
1995														11	11	11
1996													16	16	17	17
1997												17	17	17	17	17
1998											17	17	17	17	17	17
1999										18	18	18	18	18	18	18
2000									13	13	13	13	13	13	13	13
2001								13	13	13	13	13	13	13	13	13
2002								22	22	22	22	22	22	22	22	22
2003						18	9	9	9	9	9	9	9	9	9	9
2004					6	9	11	12	13	13	14	14	14	14	14	14
2005				6	9	10	13	13	13	13	13	13	13	13	13	13
2006			3	4	8	11	13	13	13	13	13	13	13	13	13	13
2007	1	4	7	10	11	11	13	13	13	13	13	13	13	13	13	13
2008	0	2	7	10	11	11	13	13	13	13	13	13	13	13	13	13
2009	2	5	11	14	15	15	15	16	17	17	17	17	17	17	17	17
2010	1	6	8	12	12	12	12	12	12	12	12	12	12	12	12	12
2011	0	1	8	9	11	13	14	14	14	14	14	14	14	14	14	14
2012	0	2	8	13	15	16	16	16	16	16	16	16	16	16	16	16
2013	1	5	9	10	11	11	11	11	11	11	11	11	11	11	11	11
2014	1	5	8	10	11	11	11	11	11	11	11	11	11	11	11	11
2015	0	3	9	10	11	11	11	11	11	11	11	11	11	11	11	11
2016	0	3	9	10	11	11	11	11	11	11	11	11	11	11	11	11
2017	0	3	9	10	11	11	11	11	11	11	11	11	11	11	11	11

DOAH Awarded Claim Count Link Ratios

	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180
1989															
1990															
1991															
1992															
1993															
1994															1.000
1995														1.000	1.000
1996														1.000	1.000
1997														1.000	1.000
1998											1.000		1.000	1.063	1.000
1999										1.000	1.000	1.000	1.000	1.000	1.000
2000									1.000	1.000	1.000	1.000	1.000	1.000	1.000
2001							1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2002						1.222	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2003					1.500	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2004				1.000	1.222	1.091	1.083	1.000	1.077	1.000	1.000	1.000	1.000		
2005			1.500	1.111	1.300	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
2006		1.333	2.000	1.375	1.182	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
2007	4.000	1.750	1.714	1.083	1.077	1.000	1.000	1.000	1.000	1.000	1.000				
2008	-	3.500	1.428	1.100	1.000	1.182	1.000	1.000	1.000						
2009	2.500	2.200	1.273	1.071	1.000	1.000	1.067	1.063							
2010	6.000	1.333	1.500	1.000	1.000	1.000	1.000								
2011	-	8.000	1.125	1.222	1.182	1.077									
2012	-	4.000	1.625	1.154	1.067										
2013	5.000	1.800	1.111	1.100											
2014	5.000	1.600	1.250												
2015	-	3.000													
2016	-														

	All Time Dollar Weighted Average Link Ratios	6.000	2.194	1.408	1.113	1.124	1.062	1.015	1.007	1.007	1.000	1.000	1.000	1.000	1.007	1.000	1.000	Prior Years	Total
Selected Link		6.000	2.194	1.408	1.113	1.124	1.062	1.015	1.007	1.007	1.000	1.000	1.000	1.000	1.007	1.000	1.000		
LDFs		25.518	4.253	1.938	1.377	1.237	1.100	1.036	1.021	1.014	1.007	1.007	1.007	1.007	1.007	1.000	1.000		
Interpolated LDFs		25.518	4.253	1.938	1.377	1.237	1.100	1.036	1.021	1.014	1.007	1.007	1.007	1.007	1.007	1.000	1.000		
Awarded To-Date		0	3	9	10	11	16	14	12	17	13	14	13	13	14	9	22	184	374
Initial Estimate Ultimate Awarded Claims		0	13	17	14	14	18	15	12	17	13	14	13	13	14	9	22	184	402
Estimated Future Awarded Claims (per Adjudication Page[3])		20	14	14	6	2	1	0	0	1	0	0	0	0	0	0	0	0	58
Final Estimate Total Awarded Claims (sum of Current and Future)		20	17	23	16	13	17	14	12	18	13	14	13	13	14	9	22	184	432

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Triangle of Incremental Claims Awarded by DOAH by Birth Year with Annual Award Percentage

Incremental DOAH Awarded Claim Counts

	<u>12</u>	<u>24</u>	<u>36</u>	<u>48</u>	<u>60</u>	<u>72</u>	<u>84</u>	<u>96</u>	<u>108</u>	<u>120</u>	<u>132</u>	<u>144</u>	<u>156</u>	<u>168</u>	<u>180</u>	<u>192</u>
1989																
1990																
1991																
1992																
1993																0
1994															0	0
1995															0	0
1996													0		0	0
1997												0	0		0	0
1998											0	0	0		0	0
1999										0	0	0	0		0	0
2000									0	0	0	0	0		0	0
2001								0	0	0	0	0	0		0	0
2002							4	0	0	0	0	0	0		0	0
2003						3	0	0	0	0	0	0	0		0	0
2004					0	2	1	1	0	1	0	0	0		0	0
2005				3	1	3	0	0	0	0	0	0	0		0	0
2006			1	4	3	2	0	0	0	0	0	0	0		0	0
2007		3	3	5	1	1	0	0	0	0	0	0	0		0	0
2008	0	2	5	3	1	0	2	0	0	0	0	0	0		0	0
2009	2	3	6	3	1	0	0	1	1	0	0	0	0		0	0
2010	1	5	2	4	0	0	0	0	1	0	0	0	0		0	0
2011	0	1	7	1	2	2	1	0	0	0	0	0	0		0	0
2012	0	2	6	5	2	1	0	0	0	0	0	0	0		0	0
2013	1	4	4	1	1	0	0	0	0	0	0	0	0		0	0
2014	1	4	3	2	0	0	0	0	0	0	0	0	0		0	0
2015	0	3	6	0	0	0	0	0	0	0	0	0	0		0	0
2016	0	3	0	0	0	0	0	0	0	0	0	0	0		0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0

Awarded in

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
14	14	22	18	8	16	14	15	12	15

Annual Awarded Percentage

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
40%	47%	54%	41%	22%	32%	26%	33%	27%	33%

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017**Development of Adjudicated Claims and Projection of Claims to be Awarded in the Future****DOAH Adjudicated Claim Counts**

	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192
1989																
1990																
1991																
1992																
1993															40	48
1994															36	40
1995														26	36	36
1996													39	39	26	26
1997												45	46	46	40	40
1998											41	41	41	41	41	41
1999										40	40	40	40	40	40	40
2000								38	38	38	38	38	38	38	38	38
2001							39	39	39	40	40	40	41	41	41	41
2002						41	50	50	50	50	50	50	50	50	50	50
2003					14	21	21	22	23	23	23	23	23	23	23	23
2004				15	17	21	23	26	30	31	31	31	31	31	31	31
2005			14	22	29	37	38	39	41	41	41	41	41	41	41	41
2006		6	10	17	22	28	32	32	33	33	33	33	33	33	33	33
2007	1	5	11	21	26	29	31	34	35	35	35	35	35	35	35	35
2008	0	3	10	20	23	29	35	38	41	41	41	41	41	41	41	41
2009	2	8	17	26	32	38	43	46	48	48	48	48	48	48	48	48
2010	1	10	15	27	33	35	38	38	38	38	38	38	38	38	38	38
2011	0	5	17	28	35	37	40	40	40	40	40	40	40	40	40	40
2012	0	6	20	35	41	47	47	47	47	47	47	47	47	47	47	47
2013	3	8	14	24	27	27	27	27	27	27	27	27	27	27	27	27
2014	1	7	17	29	29	29	29	29	29	29	29	29	29	29	29	29
2015	0	4	19	19	19	19	19	19	19	19	19	19	19	19	19	19
2016	3	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DOAH Adjudicated Claim Count Link Ratios

	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180
1989															
1990															
1991															
1992															
1993															1.000
1994														1.000	1.000
1995														1.000	1.000
1996													1.000	1.000	1.000
1997													1.000	1.000	1.000
1998													1.000	1.000	1.000
1999													1.000	1.000	1.000
2000													1.000	1.000	1.000
2001													1.000	1.000	1.000
2002													1.000	1.000	1.000
2003													1.000	1.000	1.000
2004													1.000	1.000	1.000
2005													1.000	1.000	1.000
2006													1.000	1.000	1.000
2007													1.000	1.000	1.000
2008													1.000	1.000	1.000
2009													1.000	1.000	1.000
2010													1.000	1.000	1.000
2011													1.000	1.000	1.000
2012													1.000	1.000	1.000
2013													1.000	1.000	1.000
2014													1.000	1.000	1.000
2015													1.000	1.000	1.000
2016													1.000	1.000	1.000

	5.818	2.419	1.717	1.213	1.184	1.111	1.040	1.041	1.003	1.000	1.005	1.000	1.000	1.003	1.003	1.000	Prior Years	Total
All Time Dollar Weighted Average Link Ratios																		
Selected Link																		
LDFs																		
Interpolated LDFs																		
Adjudicated To-Date	0	8	19	29	27	47	40	38	48	41	35	33	41	31	23	50	109	619
Estimated Ultimate Counts	0	58	57	51	39	57	44	40	49	41	35	33	41	31	23	50	109	759
Selected Ultimate Counts (above and page 5)	50	45	59	51	37	53	42	40	50	42	36	33	41	31	23	50	109	792
Implied Adj. Pattern	0.00%	13.76%	33.28%	57.16%	69.32%	82.06%	91.15%	94.80%	98.70%	98.97%	98.97%	99.49%	99.49%	99.49%	99.75%	100.00%		
Implied Unadj. Claims	50	37	40	22	10	6	2	2	2	1	1	0	0	0	0	0	0	173
Estimated % of Unadjudicated to be Awarded (Page 7)	39.98%	37.58%	33.95%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%		
Note: Above figure is from incremental awarded to Adjudicated page																		
Estimated Claims Occurred to be Awarded in the Future	14	14	6	2	1	0	0	1	0	0	0	0	0	0	0	0		58
Note: Above = Unadj. Claims times % to be Awarded																		
Estimated Claims Occurred to be Dismissed by DOAH in the Future	30	23	26	16	8	5	2	2	1	1	1	0	0	0	0	0		115

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017**Triangle of Incremental DOAH Adjudicated Claims**Incremental DOAH Adjudicated Claim Counts

	<u>12</u>	<u>24</u>	<u>36</u>	<u>48</u>	<u>60</u>	<u>72</u>	<u>84</u>	<u>96</u>	<u>108</u>	<u>120</u>	<u>132</u>	<u>144</u>	<u>156</u>	<u>168</u>	<u>180</u>	<u>192</u>
1989																
1990																
1991																
1992																0
1993															0	0
1994															0	0
1995													0	0	0	0
1996												0	0	0	0	0
1997											0	1	0	0	0	1
1998										0	0	0	0	0	0	0
1999									0	0	0	0	0	0	0	0
2000								0	0	0	0	0	0	0	0	0
2001							0	0	1	0	0	1	0	0	0	0
2002						0	9	0	0	0	0	0	0	0	0	0
2003					0	7	0	1	1	0	0	0	0	0	0	
2004				0	2	4	2	3	4	1	0	0	0	0	0	
2005			0	8	7	8	1	1	2	0	0	0	0	0		
2006		0	4	7	5	6	4	0	1	0	0	0				
2007	0	4	6	10	5	3	2	3	1	0	0					
2008	0	3	7	10	3	6	6	3	3	0						
2009	2	6	9	9	6	6	5	3	2							
2010	1	9	5	12	6	2	3	0								
2011	0	5	12	11	7	2	3									
2012	0	6	14	15	6	6										
2013	3	5	6	10	3											
2014	1	6	10	12												
2015	0	4	15													
2016	3	5														
2017	0															

Adjudicated In

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
35	30	41	44	36	50	53	45	44	46

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017**Development and Estimation of Ultimate Number of All Claims by Birth Year**Reported Claim Counts

	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192
1989																
1990																
1991																
1992																48
1993																40
1994															36	40
1995														26	36	36
1996													40	40	26	26
1997												40	40	40	40	40
1998											42	47	47	47	47	47
1999										40	42	42	42	42	42	42
2000								38	38	40	40	40	40	40	40	40
2001							41	41	41	41	41	41	38	38	38	38
2002						50	50	50	50	50	50	50	50	50	50	50
2003					18	21	21	23	23	23	23	23	23	23	23	23
2004					20	23	29	30	31	31	31	31	31	31	31	31
2005				21	30	35	39	40	41	41	41	41	41	41	41	41
2006		9	16	24	28	32	32	32	33	33	33	33	33	33	33	33
2007	4	12	22	26	31	32	33	36	36	36	36	36	36	36	36	36
2008	1	9	18	24	29	37	37	41	42	42	42	42	42	42	42	42
2009	5	15	26	34	39	47	48	48	50	50	50	50	50	50	50	50
2010	4	13	25	32	36	39	39	39	39	39	39	39	39	39	39	39
2011	6	14	24	37	38	40	40	40	40	40	40	40	40	40	40	40
2012	5	17	36	44	46	50	50	50	50	50	50	50	50	50	50	50
2013	5	12	23	27	31	31	31	31	31	31	31	31	31	31	31	31
2014	2	14	32	38	38	38	38	38	38	38	38	38	38	38	38	38
2015	0	13	34	34	34	34	34	34	34	34	34	34	34	34	34	34
2016	7	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
2017	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Reported Claim Count Link Ratios

	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180
1989															
1990															
1991															
1992															
1993															
1994															1.000
1995														1.000	1.000
1996														1.000	1.000
1997														1.000	1.000
1998														1.000	1.000
1999														1.000	1.000
2000														1.000	1.000
2001														1.000	1.000
2002														1.000	1.000
2003														1.000	1.000
2004														1.000	1.000
2005														1.000	1.000
2006														1.000	1.000
2007														1.000	1.000
2008														1.000	1.000
2009														1.000	1.000
2010														1.000	1.000
2011														1.000	1.000
2012														1.000	1.000
2013														1.000	1.000
2014														1.000	1.000
2015														1.000	1.000
2016														1.000	1.000

All Time Dollar Weighted Average Link Ratios	3.385	2.000	1.300	1.128	1.133	1.011	1.027	1.013	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	Prior Years	Total
Selected Link	3.385	2.000	1.300	1.128	1.133	1.011	1.027	1.013	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
LDFs	11.830	3.495	1.748	1.344	1.192	1.052	1.040	1.013	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Interpolated LDFs	11.830	3.495	1.748	1.344	1.192	1.052	1.040	1.013	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Reported To-Date	3	13	34	38	31	50	40	39	50	42	36	33	41	31	23	50	109	663
Estimated Ultimate Counts	35	45	59	51	37	53	42	40	50	42	36	33	41	31	23	50	109	777
Estimated Ultimate Counts	50	45	59	51	37	53	42	40	50	42	36	33	41	31	23	50	109	792
Reporting Pattern	6.00%	28.61%	57.22%	74.41%	83.90%	95.07%	96.11%	98.70%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		

Notes: Selected slightly above recent years for 2013 and 2014 in light of high projection on dismissed count page and historic balance of early adjudications towards awards.

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017**Triangle of Incremental Reported Claims****Incremental Reported Claim Counts**

	<u>12</u>	<u>24</u>	<u>36</u>	<u>48</u>	<u>60</u>	<u>72</u>	<u>84</u>	<u>96</u>	<u>108</u>	<u>120</u>	<u>132</u>	<u>144</u>	<u>156</u>	<u>168</u>	<u>180</u>	<u>192</u>
1989																
1990																
1991																
1992																
1993																0
1994															0	0
1995														0	0	0
1996													0	0	0	0
1997												0	0	0	0	0
1998											0	0	0	0	0	0
1999										0	0	0	0	0	0	0
2000									0	0	0	0	0	0	0	0
2001								0	0	0	0	0	0	0	0	0
2002							0	0	0	0	0	0	0	0	0	0
2003						3	0	2	0	0	0	0	0	0	0	0
2004					3	6	1	0	1	0	0	0	0	0	0	0
2005				9	5	4	1	1	0	0	0	0	0	0	0	0
2006			7	8	4	4	0	0	1	0	0	0	0	0	0	0
2007		8	10	4	5	1	1	3	0	0	0	0	0	0	0	0
2008	1	8	9	6	5	8	0	4	1	0						
2009	5	10	11	8	5	8	1	0	2							
2010	4	9	12	7	4	3	0	0								
2011	6	8	10	13	1	2	0									
2012	5	12	19	8	2	4										
2013	5	7	11	4	4											
2014	2	12	18	6												
2015	0	13	21													
2016	7	6														
2017	3															

Reported in

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
31	42	38	42	41	48	57	40	47	46

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017**Percentage of Claims Adjudicated that Result in Awards with Projected Award Ratios for Claims Remaining at Various Stages**DOAH Incremental Awarded to Incremental Adjudicated Percentage

	<u>12</u>	<u>24</u>	<u>36</u>	<u>48</u>	<u>60</u>	<u>72</u>	<u>84</u>	<u>96</u>	<u>108</u>	<u>120</u>	<u>132</u>	<u>144</u>	<u>156</u>	<u>168</u>	<u>180</u>	<u>192</u>
1989																
1990																
1991																
1992																
1993																
1994																
1995																
1996																
1997																
1998																
1999																
2000																
2001																
2002																
2003																
2004																
2005																
2006																
2007																
2008																
2009																
2010																
2011																
2012																
2013																
2014																
2015																
2016																
2017																
All Time																
Weighted Avg. Ratio	0.545	0.566	0.489	0.298	0.240	0.280	0.229	0.143	0.067	1.000	-	0.000	-	-	1.000	0.000
Three Stage Centered Average		53%	48%	38%	27%	25%	24%	18%	14%							
Selected Incre. Award Ratio	60%	55%	50%	50%	25%	25%	25%	25%	25%	25%						
Weighted Award Ratio for All Remaining Claims	0.400	0.376	0.339	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017**Cumulative Ratios of Percentage of Adjudicated Claims Resulting in Award****DOAH Cumulative Awarded to Cumulative Adjudicated Percentage**

	<u>12</u>	<u>24</u>	<u>36</u>	<u>48</u>	<u>60</u>	<u>72</u>	<u>84</u>	<u>96</u>	<u>108</u>	<u>120</u>	<u>132</u>	<u>144</u>	<u>156</u>	<u>168</u>	<u>180</u>	<u>192</u>
1989																
1990																
1991																
1992																29.2%
1993															37.5%	37.5%
1994														44.4%	44.4%	44.4%
1995													42.3%	42.3%	42.3%	42.3%
1996												41.0%	41.0%	41.0%	42.5%	42.5%
1997											37.8%	37.0%	37.0%	37.0%	37.0%	36.2%
1998										41.5%	41.5%	41.5%	41.5%	41.5%	41.5%	41.5%
1999									45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%
2000								34.2%	34.2%	34.2%	34.2%	34.2%	34.2%	34.2%	34.2%	34.2%
2001							33.3%	33.3%	32.5%	32.5%	32.5%	31.7%	31.7%	31.7%	31.7%	31.7%
2002						43.9%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%
2003					42.9%	42.9%	42.9%	40.9%	39.1%	39.1%	39.1%	39.1%	39.1%	39.1%	39.1%	39.1%
2004				60.0%	52.9%	52.4%	52.2%	50.0%	43.3%	45.2%	45.2%	45.2%	45.2%	45.2%		
2005			42.9%	40.9%	34.5%	35.1%	34.2%	33.3%	31.7%	31.7%	31.7%	31.7%	31.7%			
2006		50.0%	40.0%	47.1%	50.0%	46.4%	40.6%	40.6%	39.4%	39.4%	39.4%	39.4%				
2007	100.0%	80.0%	63.6%	57.1%	50.0%	48.3%	45.2%	41.2%	40.0%	40.0%	40.0%					
2008		66.7%	70.0%	50.0%	47.8%	37.9%	37.1%	34.2%	31.7%	31.7%						
2009	100.0%	62.5%	64.7%	53.8%	46.9%	39.5%	34.9%	34.8%	35.4%							
2010	100.0%	60.0%	53.3%	44.4%	36.4%	34.3%	31.6%									
2011	-	20.0%	47.1%	32.1%	31.4%	35.1%	35.0%									
2012		33.3%	40.0%	37.1%	36.6%	34.0%										
2013	33.3%	62.5%	64.3%	41.7%	40.7%											
2014	100.0%	71.4%	47.1%	34.5%												
2015	-	75.0%	47.4%													
2016	0.0%	37.5%														
2017																
All Time																
Weighted Avg. Ratio	0.545	0.557	0.518	0.439	0.415	0.399	0.385	0.376	0.377	0.385	0.391	0.390	0.392	0.404	0.399	0.387

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Development of Dismissed Claims

DOAH Dismissed Claim Counts

	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192
1989																
1990																
1991																
1992																34
1993															25	25
1994															20	20
1995														15	15	15
1996												23	23	23	23	23
1997											24	24	24	24	24	24
1998											22	22	22	22	22	22
1999											25	25	25	25	25	25
2000											27	27	27	27	27	27
2001											28	28	28	28	28	28
2002											26	26	26	26	26	26
2003											25	25	25	25	25	25
2004											24	24	24	24	24	24
2005											23	23	23	23	23	23
2006											22	22	22	22	22	22
2007											21	21	21	21	21	21
2008											20	20	20	20	20	20
2009											19	19	19	19	19	19
2010											18	18	18	18	18	18
2011											17	17	17	17	17	17
2012											16	16	16	16	16	16
2013											15	15	15	15	15	15
2014											14	14	14	14	14	14
2015											13	13	13	13	13	13
2016											12	12	12	12	12	12
2017											11	11	11	11	11	11

DOAH Dismissed Claim Count Link Ratios

	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180
1989															
1990															
1991															
1992															
1993															
1994															
1995															1.000
1996														1.000	1.000
1997													1.000	1.000	1.000
1998												1.000	1.000	1.000	1.034
1999											1.000	1.000	1.000	1.000	1.000
2000										1.000	1.000	1.000	1.000	1.000	1.000
2001									1.038	1.000	1.000	1.000	1.000	1.000	1.000
2002								1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2003							1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2004						1.250	1.000	1.083	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2005					1.462	1.268	1.042	1.040	1.077	1.000	1.000	1.000	1.000	1.000	1.000
2006			1.500	1.222	1.364	1.267	1.000	1.058	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2007		4.000	2.250	1.444	1.154	1.133	1.176	1.050	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2008		3.000	3.333	1.200	1.500	1.222	1.136	1.120	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2009		2.000	2.000	1.417	1.353	1.217	1.071	1.033	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2010		1.750	2.143	1.400	1.095	1.130	1.000								
2011		2.250	2.111	1.263	1.000	1.083									
2012		3.000	1.833	1.182	1.192										
2013	1.500	1.667	2.800	1.143											
2014		4.500	2.111												
2015		10.000													
2016	1.667														

All Time Dollar Weighted Average Link Ratios	5.600	2.731	2.058	1.295	1.226	1.144	1.056	1.062	1.000	1.000	1.009	1.000	1.000	1.000	1.004	1.000	Prior Years	Total
Selected Link	5.600	2.731	2.058	1.295	1.226	1.144	1.056	1.062	1.000	1.000	1.009	1.000	1.000	1.000	1.004	1.000		
LDFs	64.966	11.601	4.248	2.064	1.595	1.300	1.136	1.076	1.013	1.013	1.013	1.004	1.004	1.004	1.004	1.000		
Interpolated LDFs	64.966	11.601	4.248	2.064	1.595	1.300	1.136	1.076	1.013	1.013	1.013	1.004	1.004	1.004	1.004	1.000		
Dismissed To-Date	0	5	10	19	16	31	26	26	31	28	21	20	28	17	14	28	322	642
Estimated Ultimate Dismissed Counts	0	58	42	39	26	40	30	28	31	28	21	20	28	17	14	28	322	773
Selected Ultimate Dismissed Counts	30	28	36	35	24	36	28	28	32	29	22	20	28	17	14	28	322	757

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017**Incremental Dismissed Claims and Annual Percentage of Adjudicated Claims that are Dismissed****Incremental DOAH Dismissed Claim Counts**

	<u>12</u>	<u>24</u>	<u>36</u>	<u>48</u>	<u>60</u>	<u>72</u>	<u>84</u>	<u>96</u>	<u>108</u>	<u>120</u>	<u>132</u>	<u>144</u>	<u>156</u>	<u>168</u>	<u>180</u>	<u>192</u>
1989																
1990																
1991																
1992																
1993																
1994																
1995																0
1996														0	0	0
1997												1	0	0	0	0
1998											0	0	0	0	0	1
1999										0	0	0	0	0	0	0
2000									0	0	0	0	0	0	0	0
2001								0	1	0	0	0	0	0	0	0
2002							5	0	0	0	0	0	0	0	0	0
2003						4	0	1	1	0	0	0	0	0	0	0
2004					2	2	1	2	4	0	0	0	0	0	0	
2005				5	6	5	1	1	2	0	0	0	0	0		
2006			3	3	2	4	4	0	1	0	0	0	0			
2007		1	3	5	4	2	2	3	1	0	0					
2008	0	1	2	7	2	6	4	3	3	0						
2009	0	3	3	6	5	6	5	2	1							
2010	0	4	3	8	6	2	3	0								
2011	0	4	5	10	5	0	2									
2012	0	4	8	10	4	5										
2013	2	1	2	9	2											
2014	0	2	7	10												
2015	0	1	9													
2016	3	2														
2017	0															

Dismissed in

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
21	16	19	26	28	34	39	30	32	31

Annual Dismissed Percentage

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
60%	53%	46%	59%	78%	68%	74%	67%	73%	67%

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Anticipated Average Payout Pattern of Claims Paying in the Future (Future Awarded and Pipeline) (with Defense Cost Shown)
(in 2018 \$\$\$)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Loss Payout	\$146,878	92,169	90,168	89,854	89,807	91,904	91,698	94,413	96,782	100,647
Defense	13,000									
Total Payout	159,878	92,169	90,168	89,854	89,807	91,904	91,698	94,413	96,782	100,647
<hr/>										
Total Payout	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
	104,230	106,787	107,325	106,261	106,999	106,649	109,913	112,053	112,937	119,292
<hr/>										
Total Payout	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
	123,105	127,759	134,618	134,471	135,328	136,022	141,363	134,557	133,036	130,427
<hr/>										
Total Payout	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058
	127,433	121,785	116,230	110,490	103,952	98,239	89,195	86,246	86,327	84,313
<hr/>										
Total Payout	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068
	77,911	72,971	69,259	66,303	59,260	57,696	53,141	52,440	48,767	46,710
<hr/>										
Total Payout	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078
	41,587	37,091	34,417	27,731	24,180	21,342	20,159	16,123	10,625	7,769
<hr/>										
Total Payout	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088
	\$6,006	5,225	3,597	3,597	2,567	2,184	1,101	666	666	666

Discounted and inflation corrected to 12/31/2017 at
(Rates are from Exhibit 10)

4.5% investment return.

\$3,025,840

For 2018 birth year claims projected to begin in 2020

\$2,953,451

Average inflation and discount effect

57%

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Defense Incurred Per To 2015 and 2016-2017 Awarded Claims

Birth Year	(1) Data	(2) Data	(3) (1)/(2)	(4) Data	(5) Data	(6) ((4)-(1))/((5)-(2))
	Incurring Defense on Awarded at 12/31/2015	Claims Awarded at 12/31/2015	Average Incurred Defense on Awarded at 12/31/2015	Incurring Defense on Awarded at 12/31/2017	Claims Awarded at 12/31/2017	Total Incremental Defense Incurred 12/31/2015 - 12/31/2017
1989	\$715,650	15	\$47,710	\$715,971	15	-
1990	70,000	10	7,000	70,113	10	-
1991	1,018,807	8	127,351	1,018,885	8	-
1992	259,927	14	18,566	250,162	14	-
1993	257,042	15	17,136	257,274	15	-
1994	237,476	16	14,842	237,574	16	-
1995	1,100,559	11	100,051	1,167,847	11	-
1996	218,652	17	12,862	218,952	17	-
1997	1,225,468	17	72,086	1,220,585	17	-
1998	394,009	17	23,177	394,402	17	-
1999	279,341	18	15,519	279,672	18	-
2000	135,601	13	10,431	135,717	13	-
2001	193,581	13	14,891	193,658	13	-
2002	340,837	22	15,493	340,990	22	-
2003	140,185	9	15,576	140,220	9	-
2004	296,319	14	21,166	296,319	14	-
2005	151,153	13	11,627	151,153	13	-
2006	161,460	13	12,420	153,097	13	-
2007	152,625	14	10,902	152,648	14	-
2008	130,847	13	10,065	130,847	13	-
2009	88,663	16	5,541	146,668	17	58,005
2010	99,043	13	7,619	57,193	12	41,851
2011	144,346	13	11,104	105,083	14	(39,262)
2012	46,021	13	3,540	215,926	16	56,635
2013	76,900	9	8,544	55,135	11	(10,882)
2014	28,978	5	5,796	86,467	11	9,581
2015				84,947	10	8,495
2016				32,921	4	8,230
2017				3,853	1	3,853
Total	\$7,963,492	351	\$22,688	\$8,314,280	378	\$12,992
Average						

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Defense Paid Per To 2015 and 2016-2017 Awarded Claims

Birth Year	(1) Data	(2) Data	(3) (1)/(2)	(4) Data	(5) Data	(6) ((4)-(1))/((5)-(2))
	Paid Defense on Awarded at 12/31/2015	Claims Awarded at 12/31/2015	Average Paid Defense on Awarded at 12/31/2015	Paid Defense on Awarded at 12/31/2017	Claims Awarded at 12/31/2017	Total Incremental Defense Paid 12/31/2015 - 12/31/2017
1989	\$715,650	15	\$47,710	\$715,971	15	-
1990	69,996	10	7,000	70,113	10	-
1991	1,018,627	8	127,328	1,018,885	8	-
1992	248,526	14	17,752	250,162	14	-
1993	257,039	15	17,136	257,274	15	-
1994	237,476	16	14,842	237,574	16	-
1995	1,070,559	11	97,324	1,167,847	11	-
1996	218,652	17	12,862	218,952	17	-
1997	1,215,467	17	71,498	1,220,585	17	-
1998	394,003	17	23,177	394,402	17	-
1999	279,338	18	15,519	279,672	18	-
2000	135,601	13	10,431	135,717	13	-
2001	193,581	13	14,891	193,658	13	-
2002	340,835	22	15,492	340,990	22	-
2003	139,685	9	15,521	140,220	9	-
2004	295,303	14	21,093	296,319	14	-
2005	151,129	13	11,625	151,153	13	-
2006	153,097	13	11,777	153,097	13	-
2007	152,334	14	10,881	152,648	14	-
2008	130,761	13	10,059	130,847	13	-
2009	72,020	16	4,501	146,668	17	74,648
2010	58,934	13	4,533	57,193	12	1,741
2011	93,086	13	7,160	105,083	14	11,997
2012	43,021	13	3,309	215,926	16	57,635
2013	41,007	9	4,556	55,135	11	7,064
2014	17,978	5	3,596	58,126	11	6,691
2015				31,876	10	3,188
2016				5,002	4	1,250
2017				3,833	1	3,833
Total	\$7,743,704	351	\$22,062	\$8,204,927	378	\$17,082
Average						
OIR Selection						\$13,000

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Defense Incurred Per To 2015 and 2016-2017 Dismissed Claims

	(1) Data	(2) Data	(3) (1)/(2)	(4) Data	(5) Data	(6) ((4)-(1))/((5)-(2))
Birth Year	Incurred Defense on Dismissed at 12/31/2015	Claims Dismissed at 12/31/2015	Average Incurred Defense on Dismissed at 12/31/2015	Incurred Defense on Dismissed at 12/31/2017	Claims Dismissed at 12/31/2017	Total Incremental Defense Incurred 12/31/2015 - 12/31/2017
1989	\$249,832	17	\$14,696	\$249,832	17	-
1990	172,003	30	5,733	172,003	30	-
1991	222,488	30	7,416	222,488	30	-
1992	225,709	34	6,638	225,709	34	-
1993	180,550	25	7,222	180,550	25	-
1994	156,347	20	7,817	156,347	20	-
1995	153,545	15	10,236	153,545	15	-
1996	167,583	23	7,286	167,583	23	-
1997	586,503	30	19,550	587,272	30	-
1998	281,389	24	11,725	281,389	24	-
1999	267,044	22	12,138	267,049	22	-
2000	343,523	25	13,741	343,523	25	-
2001	867,501	28	30,982	867,997	28	-
2002	495,958	28	17,713	496,016	28	-
2003	109,401	14	7,814	109,463	14	-
2004	274,282	17	16,134	274,816	17	-
2005	256,778	28	9,171	257,246	28	-
2006	297,794	19	15,673	299,011	20	1,217
2007	207,168	21	9,865	207,379	21	-
2008	266,464	22	12,112	306,879	28	6,736
2009	218,427	24	9,101	277,860	31	8,490
2010	167,701	23	7,291	151,161	26	(5,514)
2011	216,204	21	10,295	195,772	26	(4,087)
2012	75,899	20	3,795	329,274	32	21,115
2013	74,956	8	9,369	97,073	16	2,765
2014	22,326	3	7,442	123,394	20	5,945
2015				100,010	11	9,092
2016				22,351	7	3,193
2017						
Total	\$6,557,376	571	\$11,484	\$7,122,991	648	\$7,346
Average						

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Defense Paid Per To 2015 and 2016-2017 Dismissed Claims

Birth Year	(1) Data	(2) Data	(3) (1)/(2)	(4) Data	(5) Data	(6) ((4)-(1))/((5)-(2))
	Paid Defense on Dismissed at 12/31/2015	Claims Dismissed at 12/31/2015	Average Paid Defense on Dismissed at 12/31/2015	Paid Defense on Dismissed at 12/31/2017	Claims Dismissed at 12/31/2017	Total Incremental Defense Paid 12/31/2015 - 12/31/2017
1989	\$249,832	17	\$14,696	\$249,832	17	-
1990	172,003	30	5,733	172,003	30	-
1991	222,488	30	7,416	222,488	30	-
1992	225,709	34	6,638	225,709	34	-
1993	180,550	25	7,222	180,550	25	-
1994	156,347	20	7,817	156,347	20	-
1995	153,545	15	10,236	153,545	15	-
1996	167,583	23	7,286	167,583	23	-
1997	586,503	30	19,550	587,272	30	-
1998	281,389	24	11,725	281,389	24	-
1999	267,044	22	12,138	267,049	22	-
2000	343,523	25	13,741	343,523	25	-
2001	867,106	28	30,968	867,997	28	-
2002	495,918	28	17,711	496,016	28	-
2003	109,361	14	7,811	109,463	14	-
2004	274,242	17	16,132	274,816	17	-
2005	256,658	28	9,166	257,246	28	-
2006	297,714	19	15,669	299,011	20	1,297
2007	207,128	21	9,863	207,379	21	-
2008	266,384	22	12,108	306,879	28	6,749
2009	218,347	24	9,098	277,860	31	8,502
2010	127,551	23	5,546	151,161	26	7,870
2011	176,708	21	8,415	195,772	26	3,813
2012	72,859	20	3,643	310,299	32	19,787
2013	39,023	8	4,878	97,073	16	7,256
2014	11,326	3	3,775	108,549	20	5,719
2015				66,234	11	6,021
2016				19,853	7	2,836
2017						
Total	\$6,426,841	571	\$11,255	\$7,052,897	648	\$8,131
Average						
OIR Selection						\$7,500

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Computation of Estimated Reinsurance Recoveries for 2018 and Prior Birth Year Claims at 12/31/2017

Total	\$38,834,104
9/30 report George Turner Estimate of \$38,834,104 accepted	

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Computation of Variance of Possible Eventual Costs of NICA Unpaid as of 12/31/2017 for 2018 and Prior Claims

	Calculations	Variance	Source
1. Variance of Costs of Awarded and Evaluated (worksheet) Claims			
a. Assumed coefficient of variation of a single lifespan	40%		Data
b. Number of such claims	179		Data
c. $(=a./\text{square root of } b.)$ Coefficient of variation of all such claims	2.99%		
d. Discounted reserve for such claims			
e. $([(c.*d.)^2]$ Estimated variance in this component	\$510,865,003	233,280,939,783,210	(Summary - Page 1)
2. Variance of to be Awarded and Pipeline Claims Costs for 2017 and Prior Years (Serious Claims only)			
a. Average squared claim size (2017 dollars)	9,155,705,964,015		Computed
b. Expected number of such claims	53		(Summary - Page 1)
c. $(=a.*b.)$ Estimated variance in 2017 dollars	487,771,771,425,190		Poisson Collective Risk (Exhibit 4)
d. Average inflation and discount factor	57%		Data
e. $(=c.*d.)$ Estimated process variance in this component	158,044,249,134,658		Data
f. % of 2015 claims costs that arise from unpaid costs on claims used to compute average	82%		Data
g. Assumed coefficient of variation of a single lifespan	40%		Data
h. Number of claims averaged in estimating average cost (1.b.)	179		Data
i. $(=f.*g./\text{square root of } h.)$ Coefficient of variation of projected average payout	2.46%		Data
j. Discounted reserve for such claims	\$161,202,118		
k. $(=(i.*j.)^2)$ Parameter variance for this class	15,765,329,938,070	173,805,579,072,728	(Summary - Page 1)
l. $(=(e.+k.)$ Estimated variance in this component			
3. Variance of 2018 Claims Costs (Serious Claims only)			
a. Average squared claim size (2017 dollars)	9,155,705,964,015		Data
b. Expected number of such claims	16		(Exhibit 2)
c. $(=a.*b.)$ Estimated variance in 2017 dollars	147,780,758,537,955		
d. Average inflation and discount factor	56%		
e. $(=c.*d.)$ Estimated process variance in this component	45,619,202,469,848		(Exhibit 4) Adj. 1 Year
f. % of 2017 claims costs that arise from unpaid costs on claims used to compute average	82%		Data
g. Assumed coefficient of variation of a single lifespan	40%		Data
h. Number of claims averaged	179		Data
i. $(=(f.*g./\text{square root of } h.)$ Coefficient of variation of projected average payout	2.46%		Data
j. Discounted reserve for such claims	\$48,829,884		(Summary - Page 1)
k. $(=(i.*j.)^2)$ Parameter variance for this class	1,446,548,359,151		
l. Variance of counts used in projecting frequency (number of projected counts per Poisson)	16		Data
m. $(=l./5.0)$ Parameter variance of expected counts	3.2282		
n. Square of average discounted severity of claim used	8,722,874,004,681		
o. $(=m.*n.)$ Addition for count parameter variance	28,158,997,677,780		Data
p. $(=(e.+k.+o.)$ Estimated variance in this component		75,224,648,506,779	
4. Variance Due to Inflation and Interest Uncertainty			
a. Best estimate of net reserve	\$697,556,922		(Summary - Page 1)
b. Coefficient of Variation from Interest rate simulation	73%		(Exhibit 8)
c. $(=(a.*b.)^2)$ Variance due investment and inflation uncertainty		259,301,497,596,326,000	
5. a. $(=1.e.+2.(+3.p.+4.c.)$ Total Variance		259,783,812,763,689,000	
b. $(=\text{square root of } a.)$ Standard Deviation of 2018 and Prior Discounted Costs		\$509,689,918	
6. a. $(=1.e.+2.(+4.b.*4.a.-3.))^{1/2}$ Variance of Just 2017 and Prior Costs		224,676,333,991,994,000	
b. $(=\text{square root of } a.)$ Standard Deviation of 2017 and Prior Discounted Costs		\$474,000,352	

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Estimate of Variance and Coefficient of Variation of Effects of Varying Interest and Inflation

Results of Simulation of 200 Future Interest Rate Path Scenarios

1. Arithmetic Mean Discount Factor	77%
2. Geometric Mean Discount Factor	68%
3. Best Estimate Discount Factor (Exhibit 9)	65%
4. Variance of Discount Factor	0.223
5. $(= (4.)^2)$ Standard Deviation of Discount Factor	0.472
6. Coefficient of Variation of Discount Factor	73%

Notes:

The arithmetic mean is significantly higher than the best estimate discount factor, while the geometric mean is reasonably close to the discount/inflation factor selected in the study. That is perceived to be a result of the heavily skewed distribution of interest rate paths. Decision was made to accept existing best estimate factor, implicting assigning less weight to mean because of skew It was nonetheless used in computing the coefficient of variation since the skew was so heavily associated with the variance.

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Anticipated Average Payout Pattern of Total Pre-Reinsurance Liabilities Including 2016 Birth Year
(in 2018 \$\$\$)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Total Payout	\$34,979,650	26,788,756	31,820,962	30,898,575	31,409,795	29,474,300	30,176,127	30,488,865	30,918,786	31,405,026
Total Payout	30,592,253	30,920,857	31,460,610	31,788,330	31,580,308	29,823,144	30,284,029	30,847,451	30,214,817	29,154,964
Total Payout	27,779,344	28,193,354	28,677,186	29,149,247	28,844,793	27,395,348	27,140,660	27,267,659	23,330,114	21,649,590
Total Payout	19,805,163	18,986,412	18,637,209	18,250,119	17,576,770	15,982,540	15,417,188	11,806,809	11,255,966	10,479,735
Total Payout	9,609,206	9,235,665	8,869,113	8,156,935	7,901,695	7,172,741	6,362,163	5,556,061	5,162,909	4,136,653
Total Payout	3,719,290	3,413,135	3,090,921	2,875,916	2,389,365	1,847,893	1,639,392	1,418,476	1,184,336	826,287
Total Payout	585,411	445,369	375,310	275,962	249,681	194,832	157,783	93,880	53,263	46,255
Total Payout	\$10,755									

Discounted and inflation corrected to 12/31/2017 at
(Interest and Inflation on ULAE removed-Although it was included in present value variance simulation)
(Rates are from Exhibit 10)

4.5% investment return.

2.0% inflation and
variance simulation)

\$736,391,026

Average inflation and discount effect

65%

OIR Analysis of Neurological Injury Compensation Association 2018 and Prior Year Reserves at 12/31/2017

Evaluation of Investment Income Premiums over Inflation Using Historical Earnings of NICIA

Calendar Year Ending 6/30 of	(1) (2) Previous	(2) Balance Sheets	(3) Data	(4) Inc. Statements	(5) Data	(6) Inc. Statements	(7) Data	(8) Inc. Statements	(9) Data	(10) Inc. Statements	(11) Data	(12) Inc. Statements	(13) Data	(14) Inc. Statements	(15) Data
		Assets	Income	Fees	Revenue	Net Return	NYSE Index 6/30	NYSE 6/30 to 6/30 Return	3 Month T-Bill Rate 6/30	Excess Returns of NICIA	Excess Returns of NYSE	Consumer CPI-U Increase	NICA Excess Return over CPI	Year-to-Year Volatility	Vol. Given Mean Revert
1995		\$148,069,099	\$7,470,376	\$165,357	\$7,305,019	5.5%	\$3,085.84		5.43%	0.09%	17.65%	2.8%			
1996	\$148,069,099	172,114,339	9,280,952	195,214	9,085,738	5.5%	3,798.08	23.1%	5.03%	0.09%	17.65%	3.0%	2.4%	2.35607E-05	5.11305E-07
1997	172,114,339	196,021,773	10,240,629	223,016	10,017,613	5.3%	4,889.72	28.7%	5.05%	0.27%	23.71%	2.3%	2.9%	0.000415188	0.000438653
1998	196,021,773	224,280,943	14,797,538	346,602	14,450,936	6.6%	6,119.34	25.1%	4.97%	1.60%	20.10%	1.6%	5.0%	0.000250745	2.01718E-05
1999	224,280,943	259,753,054	14,729,889	634,437	14,095,452	5.7%	6,853.15	12.0%	4.67%	0.69%	7.02%	2.2%	3.4%	0.00052948	0.000325406
2000	259,753,054	290,594,274	13,484,516	757,077	12,727,439	4.5%	6,798.17	-0.8%	5.70%	-0.15%	-5.47%	3.4%	1.1%	0.000513882	0.000508539
2001	290,594,274	322,448,433	26,492,391	898,720	25,593,671	8.0%	6,574.32	-3.3%	3.56%	2.32%	-8.99%	2.8%	5.1%	0.005874094	0.003058244
2002	322,448,433	346,096,030	(2,364,423)	1,069,770	(3,434,193)	-1.0%	5,636.54	-14.3%	1.66%	-4.59%	-17.82%	1.6%	-2.6%	0.001045452	0.000426178
2003	346,096,030	382,229,582	12,021,744	1,092,207	10,929,537	3.0%	5,505.17	-2.3%	0.84%	1.30%	-3.99%	2.3%	0.6%	0.00396806	0.001711319
2004	382,229,582	440,726,160	43,973,889	1,440,245	42,533,644	9.8%	6,602.99	19.9%	1.30%	8.99%	19.10%	2.7%	6.9%	0.000419898	0.000359736
2005	440,726,160	500,202,393	43,454,989	1,903,011	41,551,978	8.5%	7,217.78	9.3%	3.06%	7.16%	8.01%	3.4%	4.9%	0.000325468	0.001415923
2006	500,202,393	606,754,030	61,655,301	2,715,730	58,939,571	10.1%	8,169.07	13.2%	4.67%	7.05%	10.12%	3.2%	6.7%	0.000662755	0.003947077
2007	606,754,030	716,319,722	90,147,957	3,219,148	86,928,809	12.3%	9,873.02	20.9%	1.71%	-7.45%	-16.95%	3.8%	-6.3%	0.024373892	0.008850933
2008	716,319,722	705,135,858	(16,082,004)	3,421,872	(19,503,876)	-2.8%	8,660.48	-12.3%	0.18%	-21.00%	-33.52%	-0.4%	-19.0%	0.01595083	0.046500227
2009	705,135,858	563,808,849	(109,232,024)	2,418,989	(111,651,013)	-19.3%	5,905.15	-31.8%	0.17%	12.73%	9.38%	1.6%	11.1%	0.090627046	0.007962624
2010	563,808,849	652,202,115	86,478,251	2,558,749	83,919,502	12.9%	6,469.65	28.6%	0.02%	14.00%	28.42%	3.2%	10.6%	2.50435E-05	0.005640218
2011	652,202,115	762,134,527	111,039,225	3,167,414	107,871,811	14.2%	8,319.10	-6.2%	0.08%	1.86%	-6.23%	2.1%	-0.2%	0.011771974	0.001105271
2012	762,134,527	890,516,517	17,678,775	2,863,323	14,815,452	1.9%	7,801.84	16.8%	0.09%	7.92%	16.72%	1.5%	6.4%	0.004388571	0.001317543
2013	890,516,517	1,024,478,268	73,775,304	3,263,491	70,511,813	8.0%	9,112.89	20.5%	0.02%	13.66%	20.45%	1.6%	11.9%	0.003011726	0.007950987
2014	890,786,400	1,024,478,268	144,560,808	3,865,431	140,695,377	13.7%	10,979.42	-1.6%	0.01%	0.48%	-1.61%	0.1%	0.4%	0.013217111	0.000754126
2015	1,024,478,268	1,030,522,152	8,795,827	3,644,655	5,151,172	0.5%	10,805.20	-2.9%	0.25%	3.01%	-2.93%	1.3%	1.7%	0.00168651	0.000120757
2016	1,030,522,152	1,072,391,046	35,854,078	3,618,760	32,245,318	3.0%	10,489.76	12.1%	0.99%	7.68%	11.88%	2.1%	5.7%	0.00160631	0.000823466
2017	1,072,391,046	1,158,494,820	95,128,890	3,070,049	92,058,841	7.9%	11,761.70		2.2%						
Geometric Average						5.1%		6.3%	2.2%						
Geometric Average Last 10 Years						3.5%		1.8%	0.3%						

Variance or Average Volatility	0.0044
Standard Deviation	0.0086
Beta	0.0926
10 Year Beta	0.0926

Summary of Indicators	
Selected Long-Term Investment Return	4.5%
Selected Inflation Rate	2.0%
Selected Long-Term Return over Inflation	2.5%
Selected Year-to-Year Standard Deviation of Volatility	7.0%
Mean Reversion Factor	90.0%

Notes: All accounting statements used are as of 6/30 of the relevant year.

Technical Appendix

Background—Data:

The primary data presented to the OIR for analysis consisted of two types of components, although secondary data was provided as well. The first component was a set of claim status reports as of 12/31/2017 and several prior years. These contained the paid and case incurred loss (payments to claimants and claimants' attorneys) and defense costs for each claim reported to NICA as of the valuation date. The most recent report contained a field with the date of final adjudication of each claim, and a related field indicating whether the Division of Administrative Hearings, "DOAH," awarded (deemed compensable) or dismissed each claim. It also contained fields such as the date of birth of the subject child and the date the claim was reported.

The second major data element provided by NICA was a set of individual claim worksheets. These provide a projection of all the costs: dollar awards, medical expenses, nursing expenses (the primary costs), etc. for each future year. They provide for all expenses through an estimated future lifetime as estimated by NICA in conjunction with medical personnel. These are reviewed annually (in this case, during the following Spring) by NICA, and form the basis for the case reserves established as of 12/31 of each year. The future payments generally are not updated throughout the year. As an important note, these worksheets were reviewed by the consulting actuary used by the Office in its 2010 review of NICA, and, except for discounting and inflation, he found them to be acceptable. The Office concurs with his assessment, other than it might be desirable to have an understanding⁸ of how any skew in claimant actual lifetimes (vs. the expected lifetimes) might impact the average costs. The Office previously used the 2011 and subsequent versions of these worksheets in all prior reports.

Additional data was presented in the form of financial statements of NICA as of 6/30/2017 and prior years. The actual investment return in each of the prior years was determined from these. This was used in the construction of Exhibit 10.

Lastly, information for projecting 2018 costs and premium was provided. Premium was provided, as was information on the historical count of live births and on the obstetricians and midwives covered. Noting that some of the premium comes from physicians that do not deliver babies, the premium was deemed not desirable for estimating 2018 costs. So, the number of physicians and midwives electing coverage through NICA was used to project the costs arising from 2018 births which will be borne by NICA. The calculation is contained in Exhibit 2.

⁸ In the end, the Office was unable to identify any data that could be used to evaluate this.

Background—Claim Categories within Claim Lifetimes:

Claims of NICA may be thought of as having several stages of life. Initially, the child is born and suffers some potentially compensable condition for which the parents will eventually bring a claim. At that time, the claim has occurred, but it has not yet been reported to NICA, so the claim is considered “unreported.” At some point the claim is presented (“reported”) to NICA, at which time the claim becomes a “pending” claim. During that time NICA forms an impression of the claim as whether it is valid or not, but they are not allowed to make a binding decision on the compensability of the claim. So, pending claims may be also referred to as “unadjudicated.”

The first entity with power to assess compensability is the DOAH administrative law judge. Following this decision, and any final appeals, the claim is said to be “adjudicated.” Should the DOAH judge determine the claim to be compensable (and, if the claim is appealed, the appellate court agrees), it then may be considered to be “compensable” or “awarded” in the parlance of this report. It is specifically considered “awarded and pipeline” once the claim has been awarded, but NICA has not yet prepared a worksheet evaluating the cost of the claim. As soon as the key information is then obtained (about two to six months later on the average), a worksheet is prepared and the claim may be thought of as “evaluated and open.” When payments cease, the claim is “closed.” Should the DOAH judge determine that the claim is not compensable (and, if the claim is appealed, the appellate court agrees), the claim is considered “dismissed.” A claim may be “dismissed and pipeline” until the related defense costs are paid and it is “dismissed and closed.”

Background—Inflation:

Medical cost inflation is generally perceived to be significantly higher than broad, general inflation in the United States. However, the vast majority of future costs anticipated by NICA are nursing costs. Further, NICA officials indicated that many of those expenses are limited or related to a Medicaid reimbursement rate which has been relatively flat for some time. Consequently, the Exhibit 10 analysis uses the overall Consumer Price Index as a proxy for cost inflation NICA experiences.

Background—Interest Rates:

Recognizing that interest rates have been currently been low for some time, but the investment horizon of the Association is very long, a compromise was made between the all-time and more recent average returns. The all-time average was correspondingly assigned slightly more weight.

General Reserving Approach—Workbooks for Open and Evaluated Claims:

NICA officials generally prepare claim-by-claim worksheets for use in case reserving following the end of each year for all the claims they expect to be making payments on in the following year. The majority of the projections on most of the worksheets were actually prepared using information as of the Spring following 12/31/2017. Therefore, these were done using a cost level between calendar year 2017 and calendar year 2018. This was considered to be sufficiently close to the midpoint (12/31/2017) to treat them as being at the 12/31/2017 cost level. These worksheets combine the costs of various types of payments to be made over the course of the claim. They include projections of both loss and defense. Key data values that were obtained from the worksheet were as follows:

1. Up to four future periods of base expenses (primarily nursing care—the largest cost item), beginning in 2018, with the amount of expenses payable annually in each period, that together comprise the entire future lifetime of the child per physician estimates. These contemplate how nursing expenses change throughout a child's life as insurance and similar arrangements change. For example, for an individual with an estimated life expectancy of twenty years, the reserve worksheet might show the estimated expense by major expense category for each of the next five years (after 2017), the five years following that, and then the remaining ten years of a twenty-year life expectancy beginning in 2018. Although expenses are projected for each year of the life expectancy of the individual claimant, the expenses were deemed to be expressed at current (12/31/2017) cost levels to simplify the process.
2. One-time expenses (expected to be incurred once throughout a child's remaining lifetime), broken down between home remodeling (to facilitate care) and other expenses.
3. Total of periodic expenses, such as purchases of handicap ramp-equipped vans, etc. expected to be required over a child's future lifetime.

Item 1. was assigned to calendar years using the assignment specified by the future periods (beginning in 2018). The one-time expenses were prorated over the projected lifetime. The periodic expenses were also rotated over the child's projected remaining lifetime. These worksheets were used to construct the stream of payments underlying Exhibit 1.

For subsequent portions of this analysis, the full payout pattern from inception of payments was constructed for each claim. The stream of payments by calendar year through 2017 was constructed by pro-rating⁹ the paid loss to-date at 12/31/2017 among the years starting with the year of final adjudication. These from-inception payout streams for each claim were adjusted to a common 12/31/2017 beginning cost level, and the amount and pattern of the payouts on a 12/31/2017 cost basis were determined for Exhibit 4.

⁹ This approximation of the payout pattern of the paid loss to-date is imperfect, but is unlikely to generate material error in the overall approximation of the expected reserve need and percentile ranges.

General Reserving Approach—Best Estimate Overall 2015 Plus Prior Pipeline and to be Awarded Claims:

The first step in estimating the costs of the claims that are the subject of this report involves computing the unpaid costs as of 12/31/2017 for all 2017 and prior year claims. Generally, the approach involves first estimating the ultimate number of claims in each birth year in Exhibit 3 using a standard reported count development count technique. Then, ratios of claims awarded to claims adjudicated for various lags between birth and adjudication (noting that claims that take longer are somewhat more prone to be dismissed) and a development process were used to estimate the number of the unadjudicated (at 12/31/2017) claims that would eventually be awarded at the time of the final adjudication. The prior year estimates were heavily considered in the estimates for the more recent years. Then the process for determining the 12/31/2017 reserve was as follows:

1. Estimate the post-2017 payout of evaluated and open claims using worksheet information, and adjust the payouts to the present value of inflated future costs. Sum all those payouts together to obtain the future aggregate payout stream for all evaluated and open claims. This payout stream will eventually form part of an aggregate reserve. The last part of this step is to convert to the corresponding present value using the excess of the selected interest rate over full Consumer Price Index ("CPI") inflation.
2. Determine the number of pipeline and to be awarded claims (63) by subtracting the number of claims with worksheets (179) and the number of closed awarded claims (197) from the total expected ultimate number of awarded claims for 2017 and prior (432 claims from Exhibit 3 + a set of 7 unusual claims that did not meet the criteria for Exhibit 3). This result (63) represents all claims that are expected to ultimately be awarded and are not presently (as of 12/31/2017) in worksheet status. Further, there were some claims with unusual features such as no determinable birth year, no adjudication date when parents abandon the system, etc. that became reconciling items. Further, 5 pipeline awarded claims without worksheets were found.
3. Determine the percentage of claims that are expected to be serious (85%) using the percentage of claims awarded in the 2007-2016 period that were open and awarded in at least three calendar years.
4. Determine the average payout levels of all evaluated and open claims. Those are projected for future payouts that begin in many different years, but at this point are adjusted to the 12/31/2017 cost level. Sum all the payments from inception of payout streams and divide by the number of claims to get the average payout stream at 2017 levels of a single future awarded claim. Payments on the future evaluated and future awarded claims were assumed to have payments begin on an assumed average year of 2019. Lastly, the average payout stream was multiplied by the number of pipeline and future awarded claims, and combined with the results of Item 1.
5. In Exhibit 5, the incremental 12/31/2015-12/31/2017 paid and incurred defense costs for awarded claims divided by the number of claims awarded within the same period are shown. A cost of \$13,000 in 12/31/2017 dollars was also selected, based on the cost for awarded claims, and \$7,500 for dismissed claims.

6. The aggregate payout stream from Item 3 (with the enhancements to include defense costs) was discounted to 12/31/2017 using the off-balance of interest over inflation. Of note, in Exhibit 10, the future inflation was estimated at 2.0% and future investment income at an average of 4.5%. Hence, the anticipated investment rate net of inflation was approximately 2.5%. Discounting the various payment streams produced the final best estimate of the direct unpaid loss and defense liabilities as of 12/31/2017.

General Reserving Approach—Defense Costs for Claims to be Dismissed in the Future:

The Office analyzed (Exhibit 5) the incremental 12/31/2015-12/31/2017 paid and incurred defense costs for dismissed claims divided by the number of claims adjudicated as dismissed within the 12/31/2015-12/31/2017 period. Similarly, the Office calculated the inception-to-date average defense costs on dismissed claims. The data indicated a value of \$7,500 (see Exhibit 5) in 12/31/2017 dollars for dismissed claims. This value, when multiplied by the number of expected future dismissed claims (approximately 115), produces a non-material cost of approximately \$1 million, so it was not reflected in the indicated reserves.

General Reserving Approach—2018 Loss and Defense Costs:

2018 loss and defense costs were computed using a frequency/severity approach. In Exhibit 2, the total number of projected awarded claims for 2012-2016 was divided by the total count of obstetrician-years and midwife-years in the same period (obstetricians + midwives insured in each of 2012, 2013, ..., 2016 years). The result was the anticipated awarded claim frequency. The anticipated dismissed claim frequency was estimated similarly in Exhibit 2. The expected number of obstetricians and midwives insured in 2018 was provided by NICA. The projected awarded claims for 2018 births and dismissed claims for 2018 births were estimated by multiplying the projected frequencies by the number of obstetricians and midwives insured in 2018. The average awarded claim loss severity was estimated by applying the average 12/31/2017 loss cost level severity (computed by adjusting the average payout of awarded claims by the inflation associated with a payments start year of 2020). Similarly, a defense cost per claim of \$13,000 in 12/31/2017 dollars was used for all claims. The loss was assumed to begin paying on an assumed average year of 2020, and the defense was assumed to be paid in an assumed average year of 2020. The final values were then discounted to 12/31/2017 using the selected average net discount rate.

Since the statutes governing NICA specify that the assessments are to be paid (essentially) at the beginning of the year, the costs in the payment stream so computed were discounted to 12/31/2017. The sum of this present value and the present value of the unpaid liabilities forms the Office's best estimate of the aggregate operational liabilities as of 12/31/2017.

Estimation of Reinsurance Recoverables:

Due to the small size of this contra-liability, we simply accepted an estimate provided by NICA's actuary as noted in the main report.

Estimation of Percentile Ranges:

The last step in our analysis was the estimation of the percentile ranges. In this process, the Office first estimated the variance in the payouts at 12/31/2017 cost and interest levels. The result was used to estimate the variance in future costs given that the exact inflation and interest assumptions used by the Office in computing present values hold until each claim is closed. Then, the total variance was estimated by adding that derived variance of values at the 12/31/2017 cost level to the variance in present values due to volatility in the inflation/discount relationship from year to year. As part of the first goal of estimating the 12/31/2017 cost level values, it must be recognized that the variance in the 2017 and prior birth years will create parameter variance in the estimate of the 2018 costs. The variances accounted for are as follows:

1. Variance between the actual future lifetimes of claimants and the expected future lifetimes. This is assumed (no reliable reference could be found) to be represented as a standard deviation of ten years on a twenty five-year expected future lifetime, or a coefficient of variation of 0.4 on a single claim reserve. The calculations are slightly more complex on a set of claims with different payout amounts, but the Office used the simplified coefficient of variation of $0.4/\sqrt{n}$ for the coefficient of variation of the total 12/31/2015 level reserve on " n " claims.
2. For the number of future awarded claims (the cost of dismissed claims is minimal), a Poisson distribution was assumed, hence the process variance of the aggregate of a random number of counts and a random value for each one is equal to (under the compound Poisson version¹⁰ of the collective risk model) the expected number of claims times the expected value of the severity squared ($E[X^2]$). That expected value (at 12/31/2017 levels) may be computed by simply computing X^2 of the individual claims' costs at 12/31/2017 levels using all worksheet (award and evaluated) claims.
3. The results of Item 2. must be compounded by the parameter variance associated with the uncertainties of claimants' lifetimes. That is computed using the ratio of post-2017 projected claims payments to the all-year total claims payments. Multiplying that ratio by the 0.4 coefficient of variation of future lifetimes and dividing by the square root of the number of claims in worksheet status yields the coefficient of parameter variation.
4. The parameter variance in the 2018 count distribution is approximately equal to the number of projected awarded claims for 2012-2016 divided by 5.

¹⁰ The Compound Poisson distribution is, to some actuaries, the most basic distribution for modeling aggregate loss costs. It assumes that the number of expected claims is known (the Office added some uncertainty at a later step, but this served as a starting point), and whether each claim happens is not related to whether or not any other claims happen. It assumes that the costs of each claim are not related to those of any claim, other than that all the claims are subject to the same set of potential costs.

5. The process variance of the 2018 aggregate costs at 12/31/2017 calendar year cost levels is equal to the result of the collective risk formula using count parameter variance (Item 4.). That is to say, it is equal to the expected count times the expected squared individual cost per the formula from Item 2., plus the count parameter variance from Item 4. times the square of the average severity (at 12/31/2017 levels) used in projecting the cost (12/31/2017 basis) of future claims.
6. The parameter coefficient of variation from Item 3. also applies to the 2018 year.
7. The aggregate future payout streams for all claims combined for 2018, 2017, and prior years are combined into a single set of future payments (using Brownian Motion¹¹ with “mean reversion” [in this case, 90% of the difference between the prior rate and the baseline 2.5% off-balance of interest and inflation] derived¹² from the off-balance of investment and inflation costs in Exhibit 10). Two hundred different simulations¹³ of the future evolution of that discount factor over the future periods were run, and the ratios of the resulting present value for each scenario were computed. The standard deviation of those values, divided by the mean value, represents the process variance coefficient of variation for net discount.
8. The aggregate variance was estimated as:
 - a. The square of (Item 1. times the present value of the open and evaluated claims).
 - b. Plus Item 2. times the square of the discount factor for claims projected to begin paying in 2019 (generally, future awards on existing claims).
 - c. Plus the square of (Item 3. times the discount factor for future claims projected to begin paying in 2019, times the cost at 12/31/2017 levels of the average future claim).
 - d. Plus Item 5.
 - e. Plus the square of (Item 3. times the discount factor for future claims projected to begin in 2020 (generally, claims from 2018 births), times the cost at 12/31/2017 levels of the average future claim).
 - f. Plus the square of (Item 7. times the best estimate of the net discounted liabilities from 2018 and prior as computed elsewhere in the report).
 - g. Equals the variance of possible direct aggregate results.

The percentile ranges were then computed using a lognormal distribution fit to the mean (best estimate) and variance (Item 8.) computed by the above process. The results were graphed in Summary Page 2.

¹¹ Brownian Motion is the most common “stochastic process” for modeling the range that a given numerical item or set of items will take as they change over time. The mean reversion aspect corrects the Brownian so that items tend to revert to their starting value over time.

¹² A drift standard deviation of 7% and a mean reversion factor of 90% were used, as shown in Exhibit 10.

¹³ Since these were relatively long stepwise paths, the NtRand plug-in from Numerical Technologies was used in lieu of the standard random number generator. A standard cumulative normal distribution inversion method was used to obtain the stochastic portion of the paths.

Sensitivity Testing:

Although considerable effort has been expended on the lifespans used in the worksheets, they nonetheless represent a process that relies heavily on opinion. So, an effort was made to evaluate what could occur to increase the lifespans and consequently the costs. The children involved are all disabled in some form, but some believe that institutionalized disabled individuals may have near normal lifespans. Likely it depends on the type of disability.

The ten-year (ten years cumulative, not annualized over ten years) mortality in various age bands implied by the projected lifespans in the data is shown below. Comparable standard mortality and disabled mortality using the most recent applicable tables from the Society of Actuaries website are shown as well.

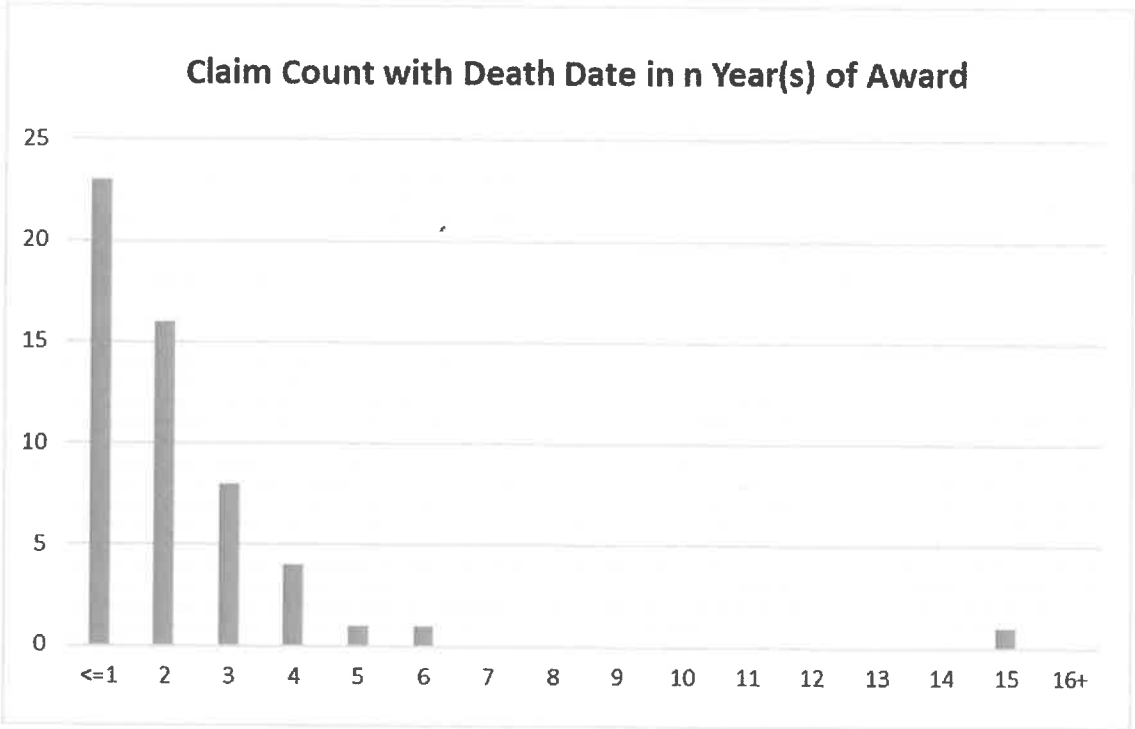
Estimation of Mortality Underlying Spreadsheet Claims

Age Range	Remaining Lives	Mortality	Standard Mortality	Disabled Mortality
31-40	146	31.5%	2.1%	10.9%
41-50	100	35.0%	4.6%	15.2%
51-60	65	73.8%	10.6%	23.2%
61+	17	100.0%		

As one may see, the spreadsheets contemplate much higher mortality (hence lower costs) than the other tables. However, the individuals are all disabled, and the disabled mortality likely includes those with moderate lifespan effects such as back injuries and the spreadsheets suggest a significant number of vans that accommodate wheelchairs are needed, so the spreadsheet results are plausible.

Recognizing this uncertainty, a crude test was performed. One could evaluate the effect of, say, a ten-year increase in the spans of all individuals over the age of 20. There are 128 such individuals presently in spreadsheet status. Crude estimates (random sample of 5 claims) suggest an average remaining lifespan of twenty years and an average cost in the last year (at 12/31/2017 levels) of about \$200,000. The annuity factor for such a situation, at the net interest rate in the study, is about 5.0. Those combine for an additional cost of \$128 million, excluding the impact on future awarded claims and 2018 claims. So, this does not appear so far to present a solvency concern, but is somewhat meaningful.

The conclusions in this report are also sensitive to the number of claims that projected to close quickly and consequently for lower amounts than the worksheet claims (DA claims). In the report, the percentage of those claims were estimated by taking the ratio of all claims that were opened and closed within the same calendar year or within two adjacent calendar years. To test whether these were reasonably representative of the short-term claims, a frequency chart of the number of distinct calendar years claims closed, but awarded in 2007-2016, were open is shown on the next page.



The claims from of the first two columns are included in the DA count. This strongly supports the selected percentage of DA claims.



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