

An Incremental Approach to Estimating Ultimate Claim Counts and Future Claim Payments

Michael D. Green, ACAS, MAAA and Michelle L. Iarkowski, FCAS, MAAA

Abstract

Traditional chain ladder development methods to estimate ultimate claim counts are challenged when the insurer experiences shifts in the speed of claim closure and/or the proportion of claims closed with payment. Similarly, changes in these metrics can impact the estimation of ultimate losses when claims that linger open longer cost more to close. This paper presents an approach to estimate ultimate claim counts by allowing the actuary to explicitly estimate incremental closure rates by age and subsequently apply an inflationary assumption to estimate ultimate losses. The method may also be used as a tool to provide insight into how a change in the speed of claim closures, a shift in the proportion of claims closed with payment and changing inflationary factors may impact the ultimate losses.

Keywords: reserving; internal operational changes; external environmental changes; inflation; claim counts.

1. INTRODUCTION

Actuaries spend much of their time performing calculations to project future activity. These calculations range from simple to complex, and in some cases may be difficult to explain to stakeholders who are not trained in technical actuarial approaches. When the operating environment changes and the assumptions underlying many traditional techniques are violated, the actuary's job becomes even more challenging.

This paper presents an approach that allows the actuary to infuse judgment into the process of estimating both ultimate claim counts and future claim payments, in a manner that is easily relatable to non-technical audiences. The "incremental method" that we present allows the actuary to break claim closures into component pieces for claims closed both with and without payment. This approach allows the actuary to examine and separately project not only the overall speed of claim closures, but also the proportion of claims that will close with payment in any given time interval. The actuary may then apply an inflationary assumption to future claim payments, with a key underlying premise: Claims that close later tend to cost more to close.

As we write this paper in 2020, the insurance industry is operating in unprecedented times. There are several phenomena that may impact insurance operations, and in turn lead to calls for actuaries to help management and clients understand the impact of these phenomena on ultimate claims payments. The incremental method is useful to project future payments in which the actuary can explicitly make assumptions related to the impact of changes in claim closure rates, shifts in the

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proportion of claims closed with payment, and variation in future inflationary assumptions. The method may also be used as a diagnostic tool to examine the presence of these metrics in historical data. Scenarios in which this approach may be useful include:

- Social inflation. There has been extensive discussion of this issue, which is credited with leading to increased attorney involvement in claims, more plaintiff-friendly juries, and larger settlements.¹ As social inflation may lead to claims staying open longer, higher severities for indemnity and defense costs, and/or a higher proportion of claims closed with payment, how can the actuary reflect these changes in the unpaid claims analysis?
- Advancements in technology. We have seen the insurance industry embrace technology, particularly as it relates to claims investigation and settlement.² Where an auto insurance claim previously required visual inspection, a picture submitted through an app is now common practice. Roof damage that led to an inspector on a ladder has been replaced with inspection by drone. As advances in technology may lead to a faster rate of claims settlement, how can the actuary quantify this impact?
- COVID-19. It remains to be seen what the long-term effects of COVID-19 will be on the insurance industry and the broader economy. But even a few months into the pandemic, we know that there have already been impacts on claims operations as insurers shift to a work-from-home model, inspectors may be limited in their ability to access accident sites, and court closures delay litigation proceedings.³ To the extent the pandemic drives a slowdown in claim closures, the actuary will need to consider how this impacts the projection of unpaid claims.

The phenomena discussed above are broad, industry-wide events. These phenomena aside, individual insurers may experience internal operational changes, such as a slowdown in claim closures due to turnover in the claims department or a lower proportion of claims closed with payment due to a more aggressive defense strategy. A more active pursuit of claim settlements may also impact the speed with which claims are closed and the ultimate value paid on those claims.

All the aforementioned examples present challenges to one of the key assumptions underlying traditional development methods: that the historical development is predictive of future

¹ https://www.insurance-research.org/sites/default/files/news_releases/IRCSocialInflation2020.pdf

² <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/human-capital/us-future-of-claims-pov.pdf>

³ <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/financial-services/us-COVID-19-impact-property-casualty-insurance.pdf>

development. The incremental method presents a framework in which the actuary can examine the impact of these changes on projecting unpaid claims estimates. This framework can be applied in many contexts for property and casualty insurance claims, including an insurer, self-insured, or portfolio of third-party administrator's claims.

The remainder of the paper proceeds as follows:

Section 2 will discuss the mechanics of the incremental method, and then present constructed scenarios in which the incremental method is compared to traditional actuarial methods. An additional scenario will be presented with private passenger auto liability data as an exercise in applying the incremental method in practice. Finally, we discuss considerations in projecting future severities.

Section 3 discusses potential uses of the incremental method, as well as limitations of the method.

2. BACKGROUND AND METHODS

We begin this section by discussing the mechanics of the incremental method. We then present three scenarios in which the incremental method is compared to traditional actuarial methods. The methods included are the reported loss development method, the paid loss development method, and the disposal rate frequency-severity method. Readers unfamiliar with these approaches may refer to “Estimating Unpaid Claims Using Basic Techniques” by Jacqueline Friedland.⁴ A final scenario will be presented with private passenger auto liability data as an exercise in applying the incremental method in practice.

2.1 Mechanics of the Incremental Method

The incremental method can be classified as a frequency-severity approach, as claim counts and severities are estimated separately and then multiplied together to arrive at an estimate of ultimate losses. This section lays out the steps to perform the incremental method, applied to a simplified “base case” data set where we have defined development factors and trend rates, as well as the ultimate counts and ultimate losses. The data and diagnostics are displayed on Appendix 1, Exhibits 1-2. We note that calculations may not tie exactly due to additional decimals in the spreadsheet vs.

⁴ https://www.casact.org/library/studynotes/Friedland_estimating.pdf

the sample calculations. To provide additional precision in the sample calculations, we show claim counts to the first decimal, acknowledging that in practice, claim counts will be whole numbers.

2.1.1 Definitions

We define the following data elements for use in performing the incremental method to estimate ultimate loss. In this context, we assume that “loss” relates to indemnity payments and that defense and cost containment payments are estimated separately.

- Open counts: claim counts that have been reported to the insurer and are open pending future activity at a given point in time.
- Counts closed with payment: claim counts that have been closed with a loss payment.
- Counts closed without payment: claim counts that have been closed without a loss payment.
- Closed counts: all claim counts that have been closed. Closed counts = closed with payment counts + closed without payment counts.
- Reported counts: all claim counts reported to the insurer. Reported counts = open counts + closed with payment counts + closed without payment counts.
- Non-zero counts: all claim counts reported to the insurer, excluding counts closed without payment. Non-zero counts = open counts + closed with payment counts. Some companies may refer to this as incurred counts.
- Active counts: the claims available to close in a given period
- Ultimate counts: the ultimate number of claim counts closed with payment.
- Paid severity: claim payments divided by counts closed with payment.

All triangles are presented on an accident year basis, with annual evaluations beginning at 12 months maturity.

2.1.2 Projection of Ultimate Claim Counts

In many cases, the actuary can project ultimate claim counts by utilizing a development method applied to non-zero counts. This approach assumes that historical development is predictive of future development. To the extent there have been changes in claim closure rates and/or shifts in the proportion of claims closed with payment, the results of a straightforward development method

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may be distorted. The approach below requires more intermediate steps than a development method, but it allows the actuary to incorporate the impact of such changes.

The steps for projecting ultimate claim counts are discussed below.

Step 1: Calculate incremental count triangles for reported counts, closed with payment counts, closed without payment counts, and closed counts. The incremental count is the change in the cumulative count triangle from one age to the next. The incremental count triangles are displayed on Appendix 1, Exhibits 3-6.

Step 2: Calculate a triangle of active counts for each incremental period. Active counts for an incremental period are defined as the counts available to close in that period. They are calculated as the counts that were open at the beginning of the period plus newly reported counts during the period. The active count triangle and sample calculations are displayed on Appendix 1, Exhibit 7.

Step 3: Project future reported counts. This step is accomplished through application of the traditional development technique, where the age-to-age factors are utilized to “square the triangle.” The underlying assumption is that while there may be changes to the closure rate or proportion of counts closed with payment, the overall reporting pattern of claims to the insurer is relatively stable. The projection of future reported counts is displayed on Appendix 1, Exhibits 8-9.

Step 4: Select the incremental closure rate at each age. The incremental closure rate is defined as the percentage of claims closed within a period of the total claims available to close in that period. It is calculated as the counts closed in a period divided by the active counts for that period. In this simplified dataset, there is no variation in the data by accident year, so our selection is equal to the historical data. We note that the “tail” closure rate should be 100%, as all counts must ultimately close. The incremental closure rate triangle and sample calculations are displayed on Appendix 1, Exhibit 10.

Step 5: Select the incremental closed with payment rate at each age. The incremental closed with payment rate is defined as the percentage of claims closed with payment within a period of the total claims available to close in that period. It is calculated as the counts closed in a period with payment divided by the active counts for that period. Similar to step 4, there is no variation in this data, so our selection is equal to the historical data. The tail selection for this step should equal the actuary’s best estimate of the proportion of counts that will close with payment after the last point in the triangle. In this simplified data set where we know by definition what the ultimate counts are, we set the tail equal to our known closed with payment rate for 120 months to ultimate. Section 2.4 will

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discuss how the tail may be selected in a more realistic data set. The incremental closed with payment rate triangle and sample calculations are displayed on Appendix 1, Exhibit 11.

Step 6: Calculate the implied selected incremental closed without payment rate at each age. The incremental closed without payment rate is defined as the percentage of claims closed without payment in a period of the total claims available to close in that period. It is calculated as the counts closed in a period without payment divided by the active counts for that period. It can also be calculated as the incremental closure rate less the incremental closed with payment rate at each age. In this simplified dataset, the implied selection is equal to the historical data. When working with actual data, the actuary should perform this step to see how the implied pattern aligns to the actual closed without payment rates.⁵ The incremental closed without payment rate triangle is displayed on Appendix 1, Exhibit 12.

Step 7: Project future active counts for the next diagonal. To project the next diagonal of active counts, start with open counts at the beginning of the incremental period and add projected newly reported counts (from step 3). The projected active count triangle and sample calculations are displayed on Appendix 1, Exhibit 13.

Step 8: Project future closed with payment counts for the next diagonal. To project the next diagonal of counts closed with payment, multiply the selected incremental closed with payment rate by the active counts for each incremental period. The projected closed with payment triangle and sample calculations are displayed on Appendix 1, Exhibit 14.

Step 9: Project future closed without payment counts for the next diagonal. To project the next diagonal of counts closed without payment, multiply the selected incremental closed without payment rate by the active counts for each incremental period. The projected closed without payment triangle and sample calculations are displayed on Appendix 1, Exhibit 15.

Step 10: Project future open counts for the next diagonal. To project the next diagonal of open counts, start with open counts in the prior diagonal, add newly reported counts (from step 3), subtract incremental counts closed with payment (from step 8), and subtract incremental counts closed without payment (from step 9). The projected open count triangle and sample calculations are displayed on Appendix 1, Exhibit 16.

Steps 7 through 10 are repeated for each subsequent diagonal until the “square” is completed to

⁵ This check is conceptually similar to calculating a ground-up trend and a primary limits trend, then examining the implied excess trend for reasonability.

ultimate. The completed triangles are displayed on Appendix 1, Exhibit 17. The sum of the incremental closed with payment triangle represents the projected ultimate claim counts from the incremental method.

2.1.3 Projection of Future Severities

For exposures where claim severity does not vary by age, the actuary could estimate ultimate losses by taking the ultimate claim counts from the results above and multiply by an ultimate severity. However, many property and casualty exposures experience a paid severity that increases over time, where smaller, simpler claims are closed at earlier ages, and larger, more complex claims are closed at later ages. To incorporate this observation in the method, we project future paid severities by age and calendar period.

Step 11: Calculate incremental paid severities. Incremental paid severities are calculated as incremental paid losses divided by incremental closed with payment counts. The incremental paid severity triangle and sample calculations are displayed on Appendix 1, Exhibit 18.

Step 12: Trend incremental paid severities to current calendar year dollars. In this simplified example, we use a single trend rate of 4% per year applied to all historical periods. If desired, the actuary can vary the prior calendar period trend rates. The trended incremental paid severity triangle and sample calculations are displayed on Appendix 1, Exhibit 19.

Step 13: Select an incremental paid severity at each age in current calendar year dollars. There is no variation in this simplified data, so our selection is equal to the historical trended data. The tail selection for this step should equal the actuary's best estimate of the severity for counts that will close with payment after the last point in the triangle. In this simplified data set, we know by definition what the ultimate counts and ultimate losses are; consequently, we set the tail equal to our known paid severity for 120 months to ultimate. Section 2.4 will discuss how the tail may be selected in a more realistic data set. The trended incremental paid severity triangle and selections are displayed on Appendix 1, Exhibit 20.

Step 14: Trend selected incremental severities to future calendar years. Our simplified example again uses a trend rate of 4% per year applied to all future periods. If desired, the actuary can vary the future calendar period trend rates. The trended incremental paid severities and sample calculations are displayed on Appendix 1, Exhibit 21.

2.1.4 Projection of Ultimate Losses

Step 15: To determine ultimate losses, the incremental counts closed with payment are multiplied by the incremental severities, resulting in incremental payments for each period. The sum of the incremental payments across the periods for each accident year result in the estimate of ultimate losses for that accident year. The incremental paid losses, ultimate losses and sample calculations are displayed on Appendix 1, Exhibit 22.

2.2 Scenario 1: Base Case

Now that we have established the mechanics of the incremental method, we will compare the results to traditional methods in a few scenarios. The first scenario is a base case scenario using the simplified data presented in the previous section.

2.2.1 Scenario Description

The simplified data used in this scenario uses the same claim counts in each accident year, with a 4% annual trend in the paid severities. Given the structure of the data, we “know” the value of the ultimate counts and ultimate losses.

2.2.2 Results of Traditional Methods

Appendix 1, Exhibit 23 displays the results of the reported loss development method.

Appendix 1, Exhibit 24 displays the results of the paid loss development method.

Appendix 1, Exhibits 25-27 display the results of the disposal rate frequency-severity method with the same calendar year severities described in section 2.1.3.

We see that with this simplified dataset, the result of all methods is identical to our defined ultimate counts and ultimate losses.

2.2.3 Results of the Incremental Method

Appendix 1, Exhibit 22 displays the results of the incremental method. We see that the result is equal to the other methods for this simplified dataset. We have included this scenario to demonstrate that in a scenario with data structured such that we “know” the value of the ultimate counts and ultimate losses, the mechanics of the incremental method produce a result that is equivalent to traditional approaches.

2.3 Scenario 2: Shift in the proportion of claims closed with payment

In Scenario 2, we take the original dataset and modify the latest diagonal to represent an increase in the proportion of claims closed with payment. While still a simplified dataset, this scenario may be representative of the impacts of a phenomenon such as social inflation, where increased attorney involvement may lead to more claims closing with payment.

2.3.1 Scenario Description

The data and diagnostics for this scenario are displayed on Appendix 2, Exhibits 1-2. The assumptions we make are as follows:

- Total closure rates do not change from the base case. The same number of counts close at each point in time, but 10% more close with payment at each age beginning with calendar year 2020. This is a permanent increase that remains in future calendar years.
- Incremental paid severities do not change from the base case. The revised paid loss triangle is calculated by applying the base case incremental paid severities to the revised closed with payment count triangle. We acknowledge that in practice, an increase in the proportion of claims closed with payment could impact incremental paid severities. The actuary should examine how changes in the proportion of claims closed with payment impact incremental paid severities and consider this in the selection of the incremental paid severity for each age. For example, if the shift in proportion of claims closed with payment has been observed in the most recent three to four calendar years, a severity selection incorporating this data may be most appropriate to reflect the expected severity in the new environment.
- Case reserves do not change from the base case. The number of open counts is the same at each point in the triangle. The revised reported loss triangle is calculated by applying the base case average case reserves per open claim to the revised open claim count triangle and adding this to the revised paid loss triangle. Similar to the above, we acknowledge that in practice, an increase in the proportion of claims closed with payment could impact case reserves. While case reserves are not directly utilized in the incremental method, the actuary should examine how average case reserve levels may impact the results of other methods.
- For simplicity, tail factors are unchanged from the base scenario. In practice, the actuary should consider how changes in operations may impact tails.

2.3.2 Results of Traditional Methods

We examine the results of traditional methods in this scenario. As has been established in actuarial literature, a key underlying assumption of these methods is that the historical development is representative of future development. The shift in the proportion of counts closed with payment violates this assumption.

The reported loss development method is displayed on Appendix 2, Exhibit 3. There is an increase in the latest diagonal where the additional counts are closed with payment. We know that due to the multiplicative nature of this method, utilizing the latest diagonal as the “new normal” will overstate the ultimate losses. Conversely, using the prior development factors may not correctly project the ultimate losses as the prior factors do not account for the increased proportion of counts closing with payment in future development periods.

The paid loss development method is displayed on Appendix 2, Exhibit 4. Similar to the reported loss development method, the increase in the latest diagonal will distort the results of this method, overstating the ultimate losses.

The disposal rate frequency-severity method is displayed on Appendix 2, Exhibits 5-8. Estimating ultimate counts closed with payment using a non-zero count triangle will overstate ultimate counts, similar to the loss development methods. A similar issue would exist if ultimate counts were estimated using closed with payment counts. The severity portion of the method is not impacted; where paid severities are unchanged, the projected severities remain the same as the base case. Multiplying overstated claim counts by “correct” severities results in an overstated ultimate loss.

2.3.3 Results of the Incremental Method

The incremental method is displayed on Appendix 2, Exhibits 9-15. The incremental closed with payment closure rate is 10% higher in the current diagonal, offset by a decrease in the closed without payment closure rates. Selecting this diagonal as the “new normal” projects future closed with payment counts that are 10% higher than the base case. Applying the same approach to project paid severities results in paid severities that remain the same as the base case (shown in Appendix 2, Exhibit 7). A comparison to the base case projected incremental counts is shown on Appendix 2, Exhibit 16. The resulting ultimate losses incorporate the higher proportion of counts closed with payment without overstating the ultimate claim counts.

2.4 Scenario 3: Shift in the rate of claim closures

In Scenario 3, we take the original dataset and modify the latest diagonal to represent a slowdown in closures for counts closed both with and without payment. This scenario may be representative of the impacts of a phenomenon such as COVID-19, where operational limitations may lead to a slowdown in claim closures. Alternatively, this scenario may be representative of an insurer who has experienced a change in staffing in the claims department or has taken a more aggressive approach in defending claims.

2.4.1 Scenario Description

The data and diagnostics for this scenario are displayed on Appendix 3, Exhibits 1-2. The assumptions we make are as follows:

- Total closure rates decline to 85% of the base case in the 2020 diagonal through 60 months. The slowdown impacts both closed with payment counts and closed without payment counts. We assume that the total proportion of claims that will ultimately close with payment is unchanged (i.e., the inherent nature of if a claim has merit is unchanged). However, some of these claims will now close later than they historically would have due to the slowdown in calendar year 2020.
- Incremental paid severities do not change from the base case. The revised paid loss triangle is calculated by applying the base case incremental paid severities to the revised closed with payment count triangle. As in the prior scenario, we acknowledge that in practice, incremental paid severities may change in this scenario, and the actuary should examine such impacts in making selections.
- Average case per open claim does not change from the base case. The revised reported loss triangle is calculated by applying the base case average case reserves to the revised open claim count triangle and adding this to the revised paid loss triangle. Similar to the prior scenario, in practice, the actuary should examine average case reserves to see if there has been any impact from the shift in the rate of claim closures.
- For simplicity, tail factors are unchanged from the base scenario. In practice, the actuary should consider how changes in operations may impact tails.

2.4.2 Results of Traditional Methods

We examine the results of traditional methods in this scenario. As has been established in

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actuarial literature, a key underlying assumption of these methods is that the historical development is representative of future development. The slowdown in claim closures violates this assumption.

The reported loss development method is displayed on Appendix 3, Exhibit 3. The latest diagonal is distorted compared to the base case, with the 12-month point increasing due to the additional volume of open counts, and subsequent points decreasing due to the lower rate of claim closures. Due to the multiplicative nature of this method, applying historic loss development factors to the latest diagonal will distort the ultimate losses.

The paid loss development method is displayed on Appendix 3, Exhibit 4. The latest diagonal is understated given the slowdown in claim closures, such that applying historic loss development factors to the latest diagonal will understate the ultimate losses.

The disposal rate frequency-severity method is displayed on Appendix 3, Exhibits 5-8. The non-zero count triangle is distorted due to the additional volume of open counts. Estimating ultimate counts using the non-zero count triangle will overstate ultimate counts closed with payment. This occurs because the latest diagonal of the non-zero count triangle contains open counts that would previously have closed without payment and left the non-zero count triangle under claims operations prior to the slowdown; the historic development factors do not account for these claims now leaving the triangle at a later age. Conversely, estimating ultimate counts using the closed with payment count triangle will understate ultimate claim counts due to the slowdown. The distorted claim counts will lead to distorted ultimate losses.

2.4.3 Results of the Incremental Method

The incremental method is displayed on Appendix 3, Exhibits 9-15. The incremental closed with payment closure rate and incremental closed without payment closure rates have both declined from prior diagonals. In this scenario, the actuary must use his or her knowledge of claims operations to determine an appropriate selection. For example, if the actuary believes that claim closure rates will return to normal after a one-time slowdown in calendar year 2020, the actuary may select the historic diagonals, as displayed in this example. If the slowdown is expected to continue, the actuary may select the closure rates in the current diagonal. We recommend that the actuary conduct discussions with the claims department to make these assumptions based on informed judgment. Applying the same approach to project paid severities results in paid severities that remain the same as the base case (shown in Appendix 3, Exhibit 7).

A comparison to the base case projected incremental counts is shown on Appendix 3, Exhibit 16.

In this example, we see that the incremental method produces projected counts that increase over the base case to “make up” for the calendar year 2020 slowdown. Whether the historic closure rates are appropriate to project future closure rates will depend on the driver of the slowdown and how future operations are expected to be impacted; in other words, the actuary must understand the implications of his or her selections on the projected incremental counts.

2.4.4 Comparison to the Berquist-Sherman Approach

Readers may note that there is already a widely accepted actuarial approach to adjust for changes in claim closure rates: the paid Berquist-Sherman method. We note that to apply the paid Berquist-Sherman method, the actuary must first estimate ultimate claim counts closed with payment, prior to adjusting the closed claim count triangle for the change in claim disposal rates. In a scenario where the non-zero count triangle is not distorted, the actuary may estimate the ultimate counts by applying the development method to the non-zero claim count triangle, and then proceed with the paid Berquist-Sherman method. However, in the scenario presented here, the slowdown in claim closures distorts all count triangles other than the reported claim count triangle, such that the actuary may not have a reliable approach to estimate ultimate claim counts closed with payment. The incremental method provides a framework in which the actuary can estimate ultimate claim counts without needing to apply a traditional development approach to the non-zero count triangle.

Additionally, the paid Berquist-Sherman method typically relies upon the selection of a cumulative disposal rate at each age to “square the triangle” of counts closed with payment. It is assumed that the selected cumulative disposal rates are appropriate for all future periods at each age. While it is possible for the actuary to incorporate anticipated changes in future incremental closure rates and/or the proportion of claims closed with payment into the paid Berquist-Sherman approach by calculating the impact of these assumptions on future cumulative disposal rates, the incremental method allows the actuary to approach these assumptions more directly.

Finally, the paid Berquist-Sherman approach utilizes regression between the successive pairs of cumulative paid losses and cumulative closed with payment claims to “restate” the paid loss triangle. While this approach is understood by actuaries who study such methods as part of the credentialing process, it may be difficult to explain to a non-technical audience. The approach to estimating incremental paid severities discussed here may be easier to demonstrate and explain.

2.5 Scenario 4: Private Passenger Auto Data

Scenario 4 presents auto liability data from a private passenger auto insurer. The data and diagnostics are displayed on Appendix 4, Exhibits 1-2.

2.5.1 Scenario Diagnostics

Examining the diagnostics for this data shows:

- There does not appear to be a clear trend in the total incremental closure rates.
- There appears to be a shift to close more claims with payment, particularly at the earlier maturities.
- There appears to be a positive trend in the paid severities.

2.5.2 Selecting Incremental Assumptions

The mechanics of the incremental method operate as presented in section 2.1, and are displayed on Appendix 4, Exhibits 3-10. We select 3-year weighted averages for the incremental selections to reflect recent claims operations.

2.5.3 Selecting the Tail

The data becomes very volatile by 72 months. Rather than continuing to select incremental closure rates, we select a tail.

For the incremental closure rates, we examine the data to estimate approximately how many counts will close at each incremental age. A selection of 50% seems representative of the data observed after 72 months. The tail closure rate for 120 months to ultimate should be 100%, as all counts must ultimately close.

For the incremental closed with payment closure rates, we examine “tail” closure rates at each age by dividing total counts closed with payment by total counts closed for all subsequent maturities. We elect to place the tail at 72 months, where the data becomes thin and volatile. However, the tail selected here includes all future counts closed with payment. To project incremental closed with payment closure rates, we multiply our selected tail by the selected incremental closure rate for each incremental period.

In this example, although we expect 69% of counts that close to close with payment, we need to reflect that at the incremental ages, only about 50% of active counts are closing each period.

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Therefore, at the incremental ages, we close 50% of our active counts, 69% of those with payment. $69\% * 50\% = 35\%$ of active counts close with payment at each incremental age.

The distribution of closures to incremental period matters because we believe that paid severity varies by age. If we were solely trying to project ultimate claim counts, the actuary could simply calculate the tail at 72 months as 69% of remaining active counts. However, because we want to project ultimate losses by applying incremental severities that vary by age, we must project when those counts close.

We may calculate a tail for the severities in a similar manner, electing to place the tail at 72 months.

2.5.4 Results of the Incremental Method

The results of the incremental method are displayed on Appendix 4, Exhibit 10.

2.6 Considerations in Projecting Future Severities

We have discussed that we trend severities to calendar year because claims that linger open longer tend to cost more to close. The flexibility of projecting claim closures by calendar year allows the actuary to easily modify trend rates by calendar year, both historically and prospectively.

However, what should the actuary do if there is a significant impact on the accident year severities, due to a change to reinsurance terms or tort reform with an accident year impact? One option is to run the method on data gross of reinsurance and separately estimate the impact of reinsurance, such as by applying a net-to-gross ratio for each accident period. This may be most appropriate where the impact of reinsurance is relatively small.

If the actuary wishes to examine the impact on net data directly, the actuary can run the severity portion of the method twice. For example, if the actuary expects a significant change in severities beginning in accident year 2019 due to a change in reinsurance terms, the actuary may run the severity triangle twice – once at the pre-2019 reinsurance levels, and once at the 2019 reinsurance levels. The severity triangle at the 2019 reinsurance levels can be estimated by applying the 2019 reinsurance terms to historical data as if those terms had been in place in the prior years. When multiplying projected future severities by the projected future closed with payment counts, the severities for accident years 2018 and prior would be taken from the first triangle, while the severities for accident years 2019-2020 would be taken from the second triangle. This allows the actuary to incorporate accident year impacts on severities while also accounting for calendar year

trends.

3. RESULTS AND DISCUSSION

It is important to understand that, like all actuarial methods, the incremental method does not automatically result in the “right” answer for the actuary. It is the actuary’s responsibility to understand the insurer’s historic operations and anticipated future operations and make selections accordingly. We believe that an advantage of the incremental method is that the nature of relating the incremental closure rates to incremental active claims allows the actuary to explicitly project future closure rates by calendar year based on information from the claims department. For example, in the scenario where there is a slowdown in claim closure rates, the actuary may use his or her knowledge from claims department management to modify the future closure rates by calendar year if it may take multiple years for the closure rates to return to “normal”.

3.1 Potential Uses of the Incremental Method

The incremental method may be used as a diagnostic tool along with other methods to estimate ultimate claim counts and ultimate losses. The flexible nature of the assumptions by calendar year allows the actuary to make explicit assumptions about how many claims will close each period, how many of those claims will close with payment, and future inflationary levels. Given this framework, the incremental method may also be used as a sensitivity test to understand the impact of changing these metrics on ultimate loss estimates.

The mechanics of the incremental method also make it easy to describe to a non-technical audience. The major inputs to the method require the actuary to understand and explain assumptions around how fast claims close, what portion of those claims close with payment, and what inflationary impacts will be. The calendar year nature of these assumptions can be more relatable than the traditional age-to-ultimate concept. This may make the method a useful tool for the claims department or a third-party administrator to measure the potential impacts of different claims handling strategies.

Finally, given the incremental nature of the method, it may be helpful in measuring actual versus expected emergence for subsequent calendar periods.

3.2 Limitations of the Incremental Method

As with all approaches for estimating ultimate claim counts and ultimate losses, the actuary must understand the limitations of any method he or she applies. We include limitations of the incremental method below:

- The method relies on a consistent definition of claim counts. If the insurer changes how claims are recorded, historical data may need to be restated to the new definition of claim counts for the method to work.
- If the insurer has made significant changes to the book of business being analyzed that are not yet reflected in the historical data (such as an acquisition or entering a new market), the historic incremental closure rates may not be reflective of future closure rates. The actuary may be able to adjust for this through inquiry with management.
- The assumption that claims that linger open longer cost more to close makes the method very sensitive to the trend assumption. We recommend that the actuary understand the impact of changing the trend assumption on the results of the method.
- The method is sensitive to where the tail is placed and the volume of data underlying the tail selection. We recommend that the actuary understand the impact of changing the tail assumption on the results of the method.
- Given the manner in which paid severities are calculated, the estimation of severities is closely tied to claim closures. Therefore, the severity portion of the method generally will not work well on exposures with significant partial payments, although it can still be used to examine claim closure activity and estimate ultimate claim counts. This may be a consideration for coverages such as workers compensation or liability coverages with significant defense and cost containment payments where indemnity and defense data are not examined separately. When determining if the method may be appropriate for such exposures, the actuary should consider the materiality of the incremental payments in relation to total payments, as well as how closely the incremental payments relate to claim closures.
 - For example, the incremental method may be more useful for a portfolio of workers compensation claims in which many claims are settled with a lump sum payment than a long-tailed workers compensation book with decades of incremental payments.

- Similarly, examining indemnity and defense data on a combined basis with this method may be more appropriate if incremental defense payments occurring prior to claim closure do not make up a significant portion of the ultimate claim payment.

4. CONCLUSIONS

The incremental method allows the actuary to break claim closures into component pieces for claims closed both with and without payment. The flexible nature of the assumptions by calendar year allows the actuary to make explicit assumptions about how many claims will close each period, how many of those claims will close with payment, and future inflationary levels. Given this framework, the incremental method may also be used as a sensitivity test to understand the impact of changing these metrics on ultimate loss estimates. The method may also serve as an actual versus expected tool to measure calendar year activity. Finally, the nature of closure rates by calendar year and inflation rates may be easily related to a non-technical audience.

Acknowledgment

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Biographies of the Authors

Michael D. Green is a Principal at Deloitte Consulting LLP. Michael has 35 years of experience including consulting and audit related engagements for all P&C lines of business for both insurance companies and self-insured entities. He holds a Bachelor of Arts in Economics & Business Administration from Knox College. He is an Associate of the CAS and a Member of the American Academy of Actuaries. He also co-authored a paper “Reserving for Construction Defects” which was published in the 2001 Fall CAS E-Forum.

Michelle L. Iarkowski is a consulting actuary at Risk & Regulatory Consulting LLC. Michelle’s experience includes consulting engagements for both commercial and regulatory clients, as well as audits of property and casualty reserves for both insurance and self-insured entities. She holds a Bachelor of Science in Economics with honors from The Wharton School at the University of Pennsylvania. Michelle is a Fellow of the CAS and a Member of the American Academy of Actuaries. She serves as a General Officer on the CAS Syllabus and Examination Committee, a member of

An Incremental Approach to Estimating Ultimate Claim Counts and Future Claim Payments

the Academy's Committee on Property and Liability Financial Reporting, and a faculty instructor at the Academy's annual Seminar on Effective P/C Loss Reserve Opinions.

An Incremental Approach to Estimating Ultimate Claim Counts and Future Claim Payments

Scenario 1: Base Case
Data

Appendix 1
Exhibit 1

Cumulative Reported Counts											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	815.0	1,018.0	1,046.0	1,063.0	1,064.0	1,065.0	1,065.0	1,065.0	1,065.0	1,065.0	1,065.0
2012	822.8	1,027.8	1,056.1	1,073.2	1,074.2	1,075.2	1,075.2	1,075.2	1,075.2	1,075.2	1,075.2
2013	830.7	1,037.7	1,066.2	1,083.5	1,084.6	1,085.6	1,085.6	1,085.6	1,085.6	1,085.6	1,085.6
2014	838.7	1,047.6	1,076.5	1,094.0	1,095.0	1,096.0	1,096.0	1,096.0	1,096.0	1,096.0	1,096.0
2015	846.8	1,057.7	1,086.8	1,104.5	1,105.5	1,106.6	1,106.6	1,106.6	1,106.6	1,106.6	1,106.6
2016	854.9	1,067.9	1,097.3	1,115.1	1,116.1	1,117.2	1,117.2	1,117.2	1,117.2	1,117.2	1,117.2
2017	863.2	1,078.2	1,107.8	1,125.8	1,126.8	1,127.9	1,127.9	1,127.9	1,127.9	1,127.9	1,127.9
2018	871.5	1,088.5	1,118.5	1,136.5	1,137.5	1,138.8	1,138.8	1,138.8	1,138.8	1,138.8	1,138.8
2019	879.8	1,099.0	1,129.0	1,147.0	1,148.0	1,149.7	1,149.7	1,149.7	1,149.7	1,149.7	1,149.7
2020	888.3	1,109.3	1,139.3	1,157.3	1,158.3	1,160.8	1,160.8	1,160.8	1,160.8	1,160.8	1,160.8

Cumulative Closed without Payment Counts											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	275.0	375.0	390.0	402.0	411.0	417.0	421.0	424.0	426.0	427.0	432.0
2012	277.6	378.6	393.8	405.9	415.0	421.0	425.0	428.1	430.1	432.0	436.2
2013	280.3	382.2	397.5	409.8	418.9	425.1	429.1	432.2	434.0	436.0	440.3
2014	283.0	385.9	401.4	413.7	423.0	429.1	433.3	435.0	436.0	437.0	441.6
2015	285.7	389.6	405.2	417.7	427.0	433.3	435.0	436.0	437.0	438.0	442.9
2016	288.5	393.4	409.1	421.7	431.1	437.4	440.0	441.0	442.0	443.0	447.9
2017	291.3	397.2	413.0	425.8	435.3	441.6	444.0	445.0	446.0	447.0	451.9
2018	294.1	401.0	417.0	429.8	439.3	445.6	448.0	449.0	450.0	451.0	455.9
2019	296.9	404.8	420.8	433.6	443.1	449.4	452.0	453.0	454.0	455.0	459.9
2020	299.7	408.6	424.6	437.4	446.9	453.2	456.0	457.0	458.0	459.0	463.9

Cumulative Reported Loss											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	3,750,000	7,500,000	10,500,000	12,600,000	13,860,000	14,970,000	15,720,000	16,030,000	16,190,000	16,270,000	17,500,000
2012	3,937,500	7,875,000	11,025,000	13,230,000	14,553,000	15,718,500	16,506,000	16,831,500	16,999,500	17,079,500	18,375,000
2013	4,134,375	8,268,750	11,576,250	13,891,500	15,280,650	16,504,425	17,331,300	17,673,075	17,811,500	17,950,000	19,293,750
2014	4,341,094	8,682,188	12,155,063	14,586,075	16,044,683	17,329,646	18,197,865	18,539,640	18,678,000	18,816,500	20,258,438
2015	4,558,148	9,116,297	12,762,816	15,315,379	16,846,917	18,196,129	19,064,356	19,406,129	19,544,500	19,682,900	21,271,359
2016	4,786,056	9,572,112	13,400,956	16,081,148	17,689,262	18,927,427	19,805,656	20,147,427	20,286,000	20,424,500	22,334,927
2017	5,025,359	10,050,717	14,071,004	16,885,205	18,323,427	19,561,674	20,440,000	20,781,674	20,920,500	21,059,500	23,451,674
2018	5,276,627	10,553,253	14,774,554	17,885,205	19,323,427	20,561,674	21,440,000	21,781,674	21,920,500	22,059,500	24,624,257
2019	5,540,458	11,080,916	15,474,554	18,885,205	20,323,427	21,561,674	22,440,000	22,781,674	22,920,500	23,059,500	25,855,470
2020	5,817,481	11,634,962	16,174,554	19,885,205	21,323,427	22,561,674	23,440,000	23,781,674	23,920,500	24,059,500	27,148,244

Cumulative Closed with Payment Counts											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	375.0	555.0	585.0	600.0	609.0	616.0	622.0	625.0	627.0	628.0	633.0
2012	378.6	560.3	590.6	605.8	614.9	621.9	628.0	631.0	633.0	635.0	639.1
2013	382.2	565.7	596.3	611.6	620.8	627.9	634.0	637.1	639.1	641.0	645.2
2014	385.9	571.2	602.0	617.5	626.7	633.9	640.1	642.1	644.0	646.0	651.4
2015	389.6	576.7	607.8	623.4	632.8	640.0	642.0	644.0	646.0	648.0	657.7
2016	393.4	582.2	613.7	629.4	638.8	646.0	648.0	650.0	652.0	654.0	664.0
2017	397.2	587.8	619.6	635.5	644.9	652.1	654.0	656.0	658.0	660.0	670.4
2018	401.0	593.5	625.5	641.2	650.6	657.8	660.0	662.0	664.0	666.0	676.9
2019	404.8	599.2	631.2	646.9	656.3	663.5	666.0	668.0	670.0	672.0	683.4
2020	408.7	604.9	637.0	652.7	662.1	669.3	672.0	674.0	676.0	678.0	689.9

Open Counts											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	165.0	88.0	71.0	61.0	44.0	32.0	22.0	16.0	12.0	10.0	0.0
2012	166.6	88.8	71.7	61.6	44.4	32.3	22.2	16.2	12.1	10.0	0.0
2013	168.2	89.7	72.4	62.2	44.9	32.6	22.4	16.3	12.1	10.0	0.0
2014	169.8	90.6	73.1	62.8	45.3	32.9	22.6	16.4	12.2	10.0	0.0
2015	171.4	91.4	73.8	63.4	45.7	33.2	22.7	16.5	12.3	10.0	0.0
2016	173.1	92.3	74.5	64.0	46.2	33.5	22.8	16.6	12.4	10.0	0.0
2017	174.8	93.2	75.2	64.6	46.6	33.8	22.9	16.7	12.5	10.0	0.0
2018	176.4	94.1	75.9	65.2	47.0	34.1	23.0	16.8	12.6	10.0	0.0
2019	178.1	95.0	76.6	65.8	47.4	34.4	23.1	16.9	12.7	10.0	0.0
2020	179.8	95.9	77.3	66.4	47.8	34.7	23.2	17.0	12.8	10.0	0.0

Cumulative Paid Loss											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	1,500,000	3,750,000	6,750,000	9,450,000	11,225,000	12,725,000	14,150,000	14,900,000	15,450,000	15,760,000	17,500,000
2012	1,575,000	3,937,500	7,087,500	9,922,500	11,786,250	13,361,250	14,857,500	15,645,000	16,222,500	16,532,500	18,375,000
2013	1,653,750	4,134,375	7,441,875	10,418,625	12,375,563	14,029,313	15,600,375	16,427,250	16,811,250	17,121,250	19,293,750
2014	1,736,438	4,341,094	7,813,969	10,939,556	12,994,341	14,730,778	16,380,394	17,200,000	17,590,000	17,980,000	20,258,438
2015	1,823,259	4,558,148	8,204,667	11,486,534	13,644,058	15,467,317	17,300,000	18,120,000	18,510,000	18,900,000	21,271,359
2016	1,914,422	4,786,056	8,614,901	12,060,861	14,326,261	16,250,000	18,140,000	19,060,000	19,450,000	19,840,000	22,334,927
2017	2,010,143	5,025,359	9,045,646	12,663,904	15,150,000	17,100,000	19,020,000	20,040,000	20,430,000	20,820,000	23,451,674
2018	2,110,651	5,276,627	9,497,928	13,266,904	16,040,000	18,000,000	20,000,000	21,020,000	21,410,000	21,800,000	24,624,257
2019	2,216,183	5,540,458	9,950,211	13,871,904	17,000,000	19,000,000	21,000,000	22,020,000	22,410,000	22,800,000	25,855,470
2020	2,326,992	5,817,481	10,402,694	14,503,904	18,000,000	20,000,000	22,000,000	23,020,000	23,410,000	23,800,000	27,148,244

An Incremental Approach to Estimating Ultimate Claim Counts and Future Claim Payments

Scenario 1: Base Case Diagnostics

Appendix 1 Exhibit 2

Case Reserves per Open Count

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	13,636	42,614	52,817	51,639	59,886	70,156	71,364	70,625	61,667	51,000
2012	14,182	44,318	54,930	53,705	62,282	72,963	74,218	73,450	64,133	
2013	14,749	46,091	57,127	55,853	64,773	75,881	77,187	76,388		
2014	15,339	47,935	59,412	58,087	67,364	78,916	80,274			
2015	15,953	49,852	61,788	60,411	70,059	82,073				
2016	16,591	51,846	64,260	62,827	72,861					
2017	17,254	53,920	66,830	65,340						
2018	17,945	56,077	69,503							
2019	18,662	58,320								
2020	19,409									

Closed Counts / Reported Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	79.8%	91.4%	93.2%	94.3%	95.9%	97.0%	97.9%	98.5%	98.9%	99.1%
2012	79.8%	91.4%	93.2%	94.3%	95.9%	97.0%	97.9%	98.5%	98.9%	
2013	79.8%	91.4%	93.2%	94.3%	95.9%	97.0%	97.9%	98.5%		
2014	79.8%	91.4%	93.2%	94.3%	95.9%	97.0%	97.9%			
2015	79.8%	91.4%	93.2%	94.3%	95.9%	97.0%				
2016	79.8%	91.4%	93.2%	94.3%	95.9%					
2017	79.8%	91.4%	93.2%	94.3%						
2018	79.8%	91.4%	93.2%							
2019	79.8%	91.4%								
2020	79.8%									

Paid Loss per Closed with Payment Count

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	4,000	6,757	11,538	15,750	18,432	20,657	22,749	23,840	24,641	25,096
2012	4,160	7,027	12,000	16,380	19,169	21,484	23,659	24,794	25,627	
2013	4,326	7,308	12,480	17,035	19,936	22,343	24,606	25,785		
2014	4,499	7,600	12,979	17,717	20,733	23,237	25,590			
2015	4,679	7,904	13,498	18,425	21,563	24,166				
2016	4,867	8,221	14,038	19,162	22,425					
2017	5,061	8,549	14,600	19,929						
2018	5,264	8,891	15,184							
2019	5,474	9,247								
2020	5,693									

Closed with Payment Counts / Closed Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	57.7%	59.7%	60.0%	59.9%	59.7%	59.6%	59.6%	59.6%	59.5%	59.5%
2012	57.7%	59.7%	60.0%	59.9%	59.7%	59.6%	59.6%	59.6%	59.5%	
2013	57.7%	59.7%	60.0%	59.9%	59.7%	59.6%	59.6%	59.6%		
2014	57.7%	59.7%	60.0%	59.9%	59.7%	59.6%	59.6%			
2015	57.7%	59.7%	60.0%	59.9%	59.7%	59.6%				
2016	57.7%	59.7%	60.0%	59.9%	59.7%					
2017	57.7%	59.7%	60.0%	59.9%						
2018	57.7%	59.7%	60.0%							
2019	57.7%	59.7%								
2020	57.7%									

**Scenario 1: Base Case
Step 1**

Cumulative Reported Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	815.0	1,018.0	1,046.0	1,063.0	1,064.0	1,065.0	1,065.0	1,065.0	1,065.0	1,065.0
2012	822.8	1,027.8	1,056.1	1,073.2	1,074.2	1,075.2	1,075.2	1,075.2	1,075.2	
2013	830.7	1,037.7	1,066.2	1,083.5	1,084.6	1,085.6	1,085.6	1,085.6		
2014	838.7	1,047.6	1,076.5	1,094.0	1,095.0	1,096.0	1,096.0			
2015	846.8	1,057.7	1,086.8	1,104.5	1,105.5	1,106.6				
2016	854.9	1,067.9	1,097.3	1,115.1	1,116.1					
2017	863.2	1,078.2	1,107.8	1,125.8						
2018	871.5	1,088.5	1,118.5							
2019	879.8	1,099.0								
2020	888.3									

Incremental Reported Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120
2011	815.0	203.0	28.0	17.0	1.0	1.0	0.0	0.0	0.0	0.0
2012	822.8	205.0	28.3	17.2	1.0	1.0	0.0	0.0	0.0	
2013	830.7	206.9	28.5	17.3	1.0	1.0	0.0	0.0		
2014	838.7	208.9	28.8	17.5	1.0	1.0	0.0			
2015	846.8	210.9	29.1	17.7	1.0	1.0				
2016	854.9	212.9	29.4	17.8	1.0					
2017	863.2	215.0	29.7	18.0						
2018	871.5	217.1	29.9							
2019	879.8	219.2								
2020	888.3									

**Scenario 1: Base Case
Step 1**

Cumulative Closed with Payment Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	375.0	555.0	585.0	600.0	609.0	616.0	622.0	625.0	627.0	628.0
2012	378.6	560.3	590.6	605.8	614.9	621.9	628.0	631.0	633.0	
2013	382.2	565.7	596.3	611.6	620.8	627.9	634.0	637.1		
2014	385.9	571.2	602.0	617.5	626.7	633.9	640.1			
2015	389.6	576.7	607.8	623.4	632.8	640.0				
2016	393.4	582.2	613.7	629.4	638.8					
2017	397.2	587.8	619.6	635.5						
2018	401.0	593.5	625.5							
2019	404.8	599.2								
2020	408.7									

Incremental Closed with Payment Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120
2011	375.0	180.0	30.0	15.0	9.0	7.0	6.0	3.0	2.0	1.0
2012	378.6	181.7	30.3	15.1	9.1	7.1	6.1	3.0	2.0	
2013	382.2	183.5	30.6	15.3	9.2	7.1	6.1	3.1		
2014	385.9	185.2	30.9	15.4	9.3	7.2	6.2			
2015	389.6	187.0	31.2	15.6	9.4	7.3				
2016	393.4	188.8	31.5	15.7	9.4					
2017	397.2	190.6	31.8	15.9						
2018	401.0	192.5	32.1							
2019	404.8	194.3								
2020	408.7									

Scenario 1: Base Case
Step 1

Cumulative Closed without Payment Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	275.0	375.0	390.0	402.0	411.0	417.0	421.0	424.0	426.0	427.0
2012	277.6	378.6	393.8	405.9	415.0	421.0	425.0	428.1	430.1	
2013	280.3	382.2	397.5	409.8	418.9	425.1	429.1	432.2		
2014	283.0	385.9	401.4	413.7	423.0	429.1	433.3			
2015	285.7	389.6	405.2	417.7	427.0	433.3				
2016	288.5	393.4	409.1	421.7	431.1					
2017	291.3	397.2	413.0	425.8						
2018	294.1	401.0	417.0							
2019	296.9	404.8								
2020	299.7									

Incremental Closed without Payment Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120
2011	275.0	100.0	15.0	12.0	9.0	6.0	4.0	3.0	2.0	1.0
2012	277.6	101.0	15.1	12.1	9.1	6.1	4.0	3.0	2.0	
2013	280.3	101.9	15.3	12.2	9.2	6.1	4.1	3.1		
2014	283.0	102.9	15.4	12.3	9.3	6.2	4.1			
2015	285.7	103.9	15.6	12.5	9.4	6.2				
2016	288.5	104.9	15.7	12.6	9.4					
2017	291.3	105.9	15.9	12.7						
2018	294.1	106.9	16.0							
2019	296.9	108.0								
2020	299.7									

**Scenario 1: Base Case
Step 1**

Cumulative Closed Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	650.0	930.0	975.0	1,002.0	1,020.0	1,033.0	1,043.0	1,049.0	1,053.0	1,055.0
2012	656.3	938.9	984.4	1,011.6	1,029.8	1,042.9	1,053.0	1,059.1	1,063.1	
2013	662.6	948.0	993.8	1,021.4	1,039.7	1,053.0	1,063.2	1,069.3		
2014	668.9	957.1	1,003.4	1,031.2	1,049.7	1,063.1	1,073.4			
2015	675.4	966.3	1,013.0	1,041.1	1,059.8	1,073.3				
2016	681.9	975.6	1,022.8	1,051.1	1,070.0					
2017	688.4	985.0	1,032.6	1,061.2						
2018	695.0	994.4	1,042.5							
2019	701.7	1,004.0								
2020	708.5									

Incremental Closed Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120
2011	650.0	280.0	45.0	27.0	18.0	13.0	10.0	6.0	4.0	2.0
2012	656.3	282.7	45.4	27.3	18.2	13.1	10.1	6.1	4.0	
2013	662.6	285.4	45.9	27.5	18.3	13.3	10.2	6.1		
2014	668.9	288.2	46.3	27.8	18.5	13.4	10.3			
2015	675.4	290.9	46.8	28.1	18.7	13.5				
2016	681.9	293.7	47.2	28.3	18.9					
2017	688.4	296.5	47.7	28.6						
2018	695.0	299.4	48.1							
2019	701.7	302.3								
2020	708.5									

**Scenario 1: Base Case
Step 2**

**Appendix 1
Exhibit 7**

Active Counts										
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120
2011	815.0	368.0	116.0	88.0	62.0	45.0	32.0	22.0	16.0	12.0
2012	822.8	371.5	117.1	88.8	62.6	45.4	32.3	22.2	16.2	
2013	830.7	375.1	118.2	89.7	63.2	45.9	32.6	22.4		
2014	838.7	378.7	119.4	90.6	63.8	46.3	32.9			
2015	846.8	382.4	120.5	91.4	64.4	46.8				
2016	854.9	386.0	121.7	92.3	65.0					
2017	863.2	389.7	122.9	93.2						
2018	871.5	393.5	124.0							
2019	879.8	397.3								
2020	888.3									

Accident year 2019 active counts from 0 to 12 months = counts reported from 0 to 12 months = 879.8

Accident year 2019 active counts from 12 to 24 months = open counts at 12 months + counts reported from 12 to 24 months = 178.1 + 219.2 = 397.3

An Incremental Approach to Estimating Ultimate Claim Counts and Future Claim Payments

**Scenario 1: Base Case
Step 3**

**Appendix 1
Exhibit 8**

Cumulative Reported Counts

Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	815.0	1,018.0	1,046.0	1,063.0	1,064.0	1,065.0	1,065.0	1,065.0	1,065.0	1,065.0	1,065.0
2012	822.8	1,027.8	1,056.1	1,073.2	1,074.2	1,075.2	1,075.2	1,075.2	1,075.2	1,075.2	1,075.2
2013	830.7	1,037.7	1,066.2	1,083.5	1,084.6	1,085.6	1,085.6	1,085.6	1,085.6	1,085.6	1,085.6
2014	838.7	1,047.6	1,076.5	1,094.0	1,095.0	1,096.0	1,096.0	1,096.0	1,096.0	1,096.0	1,096.0
2015	846.8	1,057.7	1,086.8	1,104.5	1,105.5	1,106.6	1,106.6	1,106.6	1,106.6	1,106.6	1,106.6
2016	854.9	1,067.9	1,097.3	1,115.1	1,116.1	1,117.2	1,117.2	1,117.2	1,117.2	1,117.2	1,117.2
2017	863.2	1,078.2	1,107.8	1,125.8	1,126.9	1,127.9	1,127.9	1,127.9	1,127.9	1,127.9	1,127.9
2018	871.5	1,088.5	1,118.5	1,136.6	1,137.7	1,138.8	1,138.8	1,138.8	1,138.8	1,138.8	1,138.8
2019	879.8	1,099.0	1,129.2	1,147.6	1,148.7	1,149.7	1,149.7	1,149.7	1,149.7	1,149.7	1,149.7
2020	888.3	1,109.6	1,140.1	1,158.6	1,159.7	1,160.8	1,160.8	1,160.8	1,160.8	1,160.8	1,160.8

Age-to-Age Factors

Accident Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	1.249	1.028	1.016	1.001	1.001	1.000	1.000	1.000	1.000	
2012	1.249	1.028	1.016	1.001	1.001	1.000	1.000	1.000		
2013	1.249	1.028	1.016	1.001	1.001	1.000	1.000			
2014	1.249	1.028	1.016	1.001	1.001	1.000				
2015	1.249	1.028	1.016	1.001	1.001					
2016	1.249	1.028	1.016	1.001						
2017	1.249	1.028	1.016							
2018	1.249	1.028								
2019	1.249									
Age-to-Age	1.249	1.028	1.016	1.001	1.001	1.000	1.000	1.000	1.000	
Age-to-Ult	1.307	1.046	1.018	1.002	1.001	1.000	1.000	1.000	1.000	1.000

Scenario 1: Base Case
Step 3

Appendix 1
Exhibit 9

Cumulative Reported Counts											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	815.0	1,018.0	1,046.0	1,063.0	1,064.0	1,065.0	1,065.0	1,065.0	1,065.0	1,065.0	1,065.0
2012	822.8	1,027.8	1,056.1	1,073.2	1,074.2	1,075.2	1,075.2	1,075.2	1,075.2	1,075.2	1,075.2
2013	830.7	1,037.7	1,066.2	1,083.5	1,084.6	1,085.6	1,085.6	1,085.6	1,085.6	1,085.6	1,085.6
2014	838.7	1,047.6	1,076.5	1,094.0	1,095.0	1,096.0	1,096.0	1,096.0	1,096.0	1,096.0	1,096.0
2015	846.8	1,057.7	1,086.8	1,104.5	1,105.5	1,106.6	1,106.6	1,106.6	1,106.6	1,106.6	1,106.6
2016	854.9	1,067.9	1,097.3	1,115.1	1,116.1	1,117.2	1,117.2	1,117.2	1,117.2	1,117.2	1,117.2
2017	863.2	1,078.2	1,107.8	1,125.8	1,126.9	1,127.9	1,127.9	1,127.9	1,127.9	1,127.9	1,127.9
2018	871.5	1,088.5	1,118.5	1,136.6	1,137.7	1,138.8	1,138.8	1,138.8	1,138.8	1,138.8	1,138.8
2019	879.8	1,099.0	1,129.2	1,147.6	1,148.7	1,149.7	1,149.7	1,149.7	1,149.7	1,149.7	1,149.7
2020	888.3	1,109.6	1,140.1	1,158.6	1,159.7	1,160.8	1,160.8	1,160.8	1,160.8	1,160.8	1,160.8

Incremental Reported Counts											
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	815.0	203.0	28.0	17.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0
2012	822.8	205.0	28.3	17.2	1.0	1.0	0.0	0.0	0.0	0.0	0.0
2013	830.7	206.9	28.5	17.3	1.0	1.0	0.0	0.0	0.0	0.0	0.0
2014	838.7	208.9	28.8	17.5	1.0	1.0	0.0	0.0	0.0	0.0	0.0
2015	846.8	210.9	29.1	17.7	1.0	1.0	0.0	0.0	0.0	0.0	0.0
2016	854.9	212.9	29.4	17.8	1.0	1.0	0.0	0.0	0.0	0.0	0.0
2017	863.2	215.0	29.7	18.0	1.1	1.1	0.0	0.0	0.0	0.0	0.0
2018	871.5	217.1	29.9	18.2	1.1	1.1	0.0	0.0	0.0	0.0	0.0
2019	879.8	219.2	30.2	18.4	1.1	1.1	0.0	0.0	0.0	0.0	0.0
2020	888.3	221.3	30.5	18.5	1.1	1.1	0.0	0.0	0.0	0.0	0.0

**Scenario 1: Base Case
Step 4**

Incremental Closure Rate											
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	80%	76%	39%	31%	29%	29%	31%	27%	25%	17%	
2012	80%	76%	39%	31%	29%	29%	31%	27%	25%		
2013	80%	76%	39%	31%	29%	29%	31%	27%			
2014	80%	76%	39%	31%	29%	29%	31%				
2015	80%	76%	39%	31%	29%	29%					
2016	80%	76%	39%	31%	29%						
2017	80%	76%	39%	31%							
2018	80%	76%	39%								
2019	80%	76%									
2020	80%										
Selected	80%	76%	39%	31%	29%	29%	31%	27%	25%	17%	100%

Accident year 2019 incremental closure rate from 0 to 12 months = incremental closures / active counts = 701.7 / 879.8 = 80%

Accident year 2019 incremental closure rate from 12 to 24 months = incremental closures / active counts = 302.3 / 397.3 = 76%

Scenario 1: Base Case
Step 5

Incremental Closed with Payment Rate

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	46%	49%	26%	17%	15%	16%	19%	14%	13%	8%	
2012	46%	49%	26%	17%	15%	16%	19%	14%	13%		
2013	46%	49%	26%	17%	15%	16%	19%	14%			
2014	46%	49%	26%	17%	15%	16%	19%				
2015	46%	49%	26%	17%	15%	16%					
2016	46%	49%	26%	17%	15%						
2017	46%	49%	26%	17%							
2018	46%	49%	26%								
2019	46%	49%									
2020	46%										
Selected	46%	49%	26%	17%	15%	16%	19%	14%	13%	8%	50%

Accident year 2019 incremental closed with payment rate from 0 to 12 months = incremental closures with payment / active counts = 404.8 / 879.8 = 46%

Accident year 2019 incremental closed with payment rate from 12 to 24 months = incremental closures with payment / active counts = 194.3 / 397.3 = 49%

120-Ult tail calculated using defined ultimates:

(Ultimate closed with payment counts - closed with payment counts at 120 months) / active counts from 120 months to ultimate = (633.0 - 628.0) / 10.0 = 50%

**Scenario 1: Base Case
Step 6**

Incremental Closed without Payment Rate											
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	34%	27%	13%	14%	15%	13%	13%	14%	13%	8%	
2012	34%	27%	13%	14%	15%	13%	13%	14%	12%		
2013	34%	27%	13%	14%	15%	13%	12%	14%			
2014	34%	27%	13%	14%	15%	13%	12%				
2015	34%	27%	13%	14%	15%	13%					
2016	34%	27%	13%	14%	15%						
2017	34%	27%	13%	14%							
2018	34%	27%	13%								
2019	34%	27%									
2020	34%										
Closure Rate	80%	76%	39%	31%	29%	29%	31%	27%	25%	17%	100%
Closed with Payment Rate	46%	49%	26%	17%	15%	16%	19%	14%	13%	8%	50%
Closed without Payment Rate	34%	27%	13%	14%	15%	13%	13%	14%	13%	8%	50%

Scenario 1: Base Case
Step 7

Active Counts											
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	815.0	368.0	116.0	88.0	62.0	45.0	32.0	22.0	16.0	12.0	10.0
2012	822.8	371.5	117.1	88.8	62.6	45.4	32.3	22.2	16.2	12.1	
2013	830.7	375.1	118.2	89.7	63.2	45.9	32.6	22.4	16.3		
2014	838.7	378.7	119.4	90.6	63.8	46.3	32.9	22.6			
2015	846.8	382.4	120.5	91.4	64.4	46.8	33.2				
2016	854.9	386.0	121.7	92.3	65.0	47.2					
2017	863.2	389.7	122.9	93.2	65.7						
2018	871.5	393.5	124.0	94.1							
2019	879.8	397.3	125.2								
2020	888.3	401.1									

Accident year 2019 active counts from 24 to 36 months = open counts at 24 months + counts reported from 24 to 36 months = 95.0 + 30.2 = 125.2

Scenario 1: Base Case
Step 8

Incremental Closed with Payment Counts											
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	375.0	180.0	30.0	15.0	9.0	7.0	6.0	3.0	2.0	1.0	5.0
2012	378.6	181.7	30.3	15.1	9.1	7.1	6.1	3.0	2.0	1.0	
2013	382.2	183.5	30.6	15.3	9.2	7.1	6.1	3.1	2.0		
2014	385.9	185.2	30.9	15.4	9.3	7.2	6.2	3.1			
2015	389.6	187.0	31.2	15.6	9.4	7.3	6.2				
2016	393.4	188.8	31.5	15.7	9.4	7.3					
2017	397.2	190.6	31.8	15.9	9.5						
2018	401.0	192.5	32.1	16.0							
2019	404.8	194.3	32.4								
2020	408.7	196.2									

Accident year 2019 incremental closed with payment counts from 24 to 36 months = incremental closed with payment rate * active counts = 26% * 125.2 = 32.4

Scenario 1: Base Case
Step 9

Incremental Closed without Payment Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	275.0	100.0	15.0	12.0	9.0	6.0	4.0	3.0	2.0	1.0	5.0
2012	277.6	101.0	15.1	12.1	9.1	6.1	4.0	3.0	2.0	1.0	
2013	280.3	101.9	15.3	12.2	9.2	6.1	4.1	3.1	2.0		
2014	283.0	102.9	15.4	12.3	9.3	6.2	4.1	3.1			
2015	285.7	103.9	15.6	12.5	9.4	6.2	4.2				
2016	288.5	104.9	15.7	12.6	9.4	6.3					
2017	291.3	105.9	15.9	12.7	9.5						
2018	294.1	106.9	16.0	12.8							
2019	296.9	108.0	16.2								
2020	299.7	109.0									

Accident year 2019 incremental closed without payment counts from 24 to 36 months = incremental closed without payment rate * active counts = 13% * 125.2 = 16.2

Scenario 1: Base Case
Step 10

Open Counts											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	165.0	88.0	71.0	61.0	44.0	32.0	22.0	16.0	12.0	10.0	0.0
2012	166.6	88.8	71.7	61.6	44.4	32.3	22.2	16.2	12.1	10.1	
2013	168.2	89.7	72.4	62.2	44.9	32.6	22.4	16.3	12.2		
2014	169.8	90.6	73.1	62.8	45.3	32.9	22.6	16.5			
2015	171.4	91.4	73.8	63.4	45.7	33.2	22.9				
2016	173.1	92.3	74.5	64.0	46.2	33.6					
2017	174.8	93.2	75.2	64.6	46.6						
2018	176.4	94.1	75.9	65.2							
2019	178.1	95.0	76.6								
2020	179.8	95.9									

Accident year 2019 open counts at 36 months:

Open counts at 24 months + counts reported - counts closed with payment - counts closed without payment from 24 to 36 months
 = 95.0 + 30.2 - 32.4 - 16.2 = 76.6

An Incremental Approach to Estimating Ultimate Claim Counts and Future Claim Payments

Scenario 1: Base Case
Steps 7-10

Appendix 1
Exhibit 17

Active Counts													
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate	
2011	815.0	368.0	116.0	88.0	62.0	45.0	32.0	22.0	16.0	12.0	10.0	0.0	
2012	822.8	371.5	117.1	88.8	62.6	45.4	32.3	22.2	16.2	12.1	10.1	0.0	
2013	830.7	375.1	118.2	89.7	63.2	45.9	32.6	22.4	16.3	12.2	10.2	0.0	
2014	838.7	378.7	119.4	90.6	63.8	46.3	32.9	22.6	16.5	12.3	10.3	0.0	
2015	846.8	382.4	120.5	91.4	64.4	46.8	33.2	22.9	16.6	12.5	10.4	0.0	
2016	854.9	386.0	121.7	92.3	65.0	47.2	33.6	23.1	16.8	12.6	10.5	0.0	
2017	863.2	389.7	122.9	93.2	65.7	47.7	33.9	23.3	16.9	12.7	10.6	0.0	
2018	871.5	393.5	124.0	94.1	66.3	48.1	34.2	23.5	17.1	12.8	10.7	0.0	
2019	879.8	397.3	125.2	95.0	66.9	48.6	34.5	23.8	17.3	13.0	10.8	0.0	
2020	888.3	401.1	126.4	95.9	67.6	49.0	34.9	24.0	17.4	13.1	10.9	0.0	

Incremental Closed without Payment Counts													
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate	
2011	275.0	100.0	15.0	12.0	9.0	6.0	4.0	3.0	2.0	1.0	5.0	432.0	
2012	277.6	101.0	15.1	12.1	9.1	6.1	4.0	3.0	2.0	1.0	5.0	436.2	
2013	280.3	101.9	15.3	12.2	9.2	6.1	4.1	3.1	2.0	1.0	5.1	440.3	
2014	283.0	102.9	15.4	12.3	9.3	6.2	4.1	3.1	2.1	1.0	5.1	444.6	
2015	285.7	103.9	15.6	12.5	9.4	6.2	4.2	3.1	2.1	1.0	5.2	448.9	
2016	288.5	104.9	15.7	12.6	9.4	6.3	4.2	3.1	2.1	1.0	5.2	453.2	
2017	291.3	105.9	15.9	12.7	9.5	6.4	4.2	3.2	2.1	1.1	5.3	457.5	
2018	294.1	106.9	16.0	12.8	9.6	6.4	4.3	3.2	2.1	1.1	5.3	461.9	
2019	296.9	108.0	16.2	13.0	9.7	6.5	4.3	3.2	2.2	1.1	5.4	466.4	
2020	299.7	109.0	16.3	13.1	9.8	6.5	4.4	3.3	2.2	1.1	5.4	470.9	

Incremental Closed with Payment Counts													
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate	
2011	375.0	180.0	30.0	15.0	9.0	7.0	6.0	3.0	2.0	1.0	5.0	633.0	
2012	378.6	181.7	30.3	15.1	9.1	7.1	6.1	3.0	2.0	1.0	5.0	639.1	
2013	382.2	183.5	30.6	15.3	9.2	7.1	6.1	3.1	2.0	1.0	5.1	645.2	
2014	385.9	185.2	30.9	15.4	9.3	7.2	6.2	3.1	2.1	1.0	5.1	651.4	
2015	389.6	187.0	31.2	15.6	9.4	7.3	6.2	3.1	2.1	1.0	5.2	657.7	
2016	393.4	188.8	31.5	15.7	9.4	7.3	6.3	3.1	2.1	1.0	5.2	664.0	
2017	397.2	190.6	31.8	15.9	9.5	7.4	6.4	3.2	2.1	1.1	5.3	670.4	
2018	401.0	192.5	32.1	16.0	9.6	7.5	6.4	3.2	2.1	1.1	5.3	676.9	
2019	404.8	194.3	32.4	16.2	9.7	7.6	6.5	3.2	2.2	1.1	5.4	683.4	
2020	408.7	196.2	32.7	16.3	9.8	7.6	6.5	3.3	2.2	1.1	5.4	689.9	

Open Counts													
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate		
2011	165.0	88.0	71.0	61.0	44.0	32.0	22.0	16.0	12.0	10.0	0.0		
2012	166.6	88.8	71.7	61.6	44.4	32.3	22.2	16.2	12.1	10.1	0.0		
2013	168.2	89.7	72.4	62.2	44.9	32.6	22.4	16.3	12.2	10.2	0.0		
2014	169.8	90.6	73.1	62.8	45.3	32.9	22.6	16.5	12.3	10.3	0.0		
2015	171.4	91.4	73.8	63.4	45.7	33.2	22.9	16.6	12.5	10.4	0.0		
2016	173.1	92.3	74.5	64.0	46.2	33.6	23.1	16.8	12.6	10.5	0.0		
2017	174.8	93.2	75.2	64.6	46.6	33.9	23.3	16.9	12.7	10.6	0.0		
2018	176.4	94.1	75.9	65.2	47.0	34.2	23.5	17.1	12.8	10.7	0.0		
2019	178.1	95.0	76.6	65.9	47.5	34.5	23.8	17.3	13.0	10.8	0.0		
2020	179.8	95.9	77.4	66.5	48.0	34.9	24.0	17.4	13.1	10.9	0.0		

**Scenario 1: Base Case
Step 11**

Incremental Paid Severity										
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120
2011	4,000	12,500	100,000	180,000	197,222	214,286	237,500	250,000	275,000	310,000
2012	4,160	13,000	104,000	187,200	205,111	222,857	247,000	260,000	286,000	
2013	4,326	13,520	108,160	194,688	213,316	231,771	256,880	270,400		
2014	4,499	14,061	112,486	202,476	221,848	241,042	267,155			
2015	4,679	14,623	116,986	210,575	230,722	250,684				
2016	4,867	15,208	121,665	218,998	239,951					
2017	5,061	15,816	126,532	227,757						
2018	5,264	16,449	131,593							
2019	5,474	17,107								
2020	5,693									

Accident year 2019 paid severity from 0 to 12 months = paid loss / counts closed with payment = \$2,216,183 / 404.8 = \$5,474

Accident year 2019 paid severity from 12 to 24 months = paid loss / counts closed with payment = (\$5,540,458 - \$2,216,183) / 194.3 = \$17,107

Scenario 1: Base Case
Step 12

Trended Incremental Paid Severity

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120
2011	5,693	17,107	131,593	227,757	239,951	250,684	267,155	270,400	286,000	310,000
2012	5,693	17,107	131,593	227,757	239,951	250,684	267,155	270,400	286,000	
2013	5,693	17,107	131,593	227,757	239,951	250,684	267,155	270,400		
2014	5,693	17,107	131,593	227,757	239,951	250,684	267,155			
2015	5,693	17,107	131,593	227,757	239,951	250,684				
2016	5,693	17,107	131,593	227,757	239,951					
2017	5,693	17,107	131,593	227,757						
2018	5,693	17,107	131,593							
2019	5,693	17,107								
2020	5,693									

Trend Rate: 4%

Accident year 2019 trended paid severity from 0 to 12 months = nominal severity * (1 + trend rate) ^ trend period = \$5,474 * (1.04)^1 = \$5,693

Accident year 2019 trended paid severity from 12 to 24 months = nominal severity * (1 + trend rate) ^ trend period = \$17,107 * (1.04)^0 = \$17,107

Trend Period to Calendar Year 2020

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120
2011	9	8	7	6	5	4	3	2	1	0
2012	8	7	6	5	4	3	2	1	0	
2013	7	6	5	4	3	2	1	0		
2014	6	5	4	3	2	1	0			
2015	5	4	3	2	1	0				
2016	4	3	2	1	0					
2017	3	2	1	0						
2018	2	1	0							
2019	1	0								
2020	0									

Scenario 1: Base Case
Step 13

Trended Incremental Paid Severity

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	5,693	17,107	131,593	227,757	239,951	250,684	267,155	270,400	286,000	310,000	
2012	5,693	17,107	131,593	227,757	239,951	250,684	267,155	270,400	286,000		
2013	5,693	17,107	131,593	227,757	239,951	250,684	267,155	270,400			
2014	5,693	17,107	131,593	227,757	239,951	250,684	267,155				
2015	5,693	17,107	131,593	227,757	239,951	250,684					
2016	5,693	17,107	131,593	227,757	239,951						
2017	5,693	17,107	131,593	227,757							
2018	5,693	17,107	131,593								
2019	5,693	17,107									
2020	5,693										
Selected	5,693	17,107	131,593	227,757	239,951	250,684	267,155	270,400	286,000	310,000	334,615

120-Ult tail in calendar year 2020 dollars calculated using defined ultimates:

(Ultimate paid loss - paid loss at 120 months) / counts closed with payment 120 months to ultimate / (1 + trend factor)

= (\$17,500,000 - \$15,760,000) / (633.0 - 628.0) / (1.04) = \$334,615

Scenario 1: Base Case
Step 14

Incremental Paid Severity

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	4,000	12,500	100,000	180,000	197,222	214,286	237,500	250,000	275,000	310,000	348,000
2012	4,160	13,000	104,000	187,200	205,111	222,857	247,000	260,000	286,000	322,400	361,920
2013	4,326	13,520	108,160	194,688	213,316	231,771	256,880	270,400	297,440	335,296	376,397
2014	4,499	14,061	112,486	202,476	221,848	241,042	267,155	281,216	309,338	348,708	391,453
2015	4,679	14,623	116,986	210,575	230,722	250,684	277,841	292,465	321,711	362,656	407,111
2016	4,867	15,208	121,665	218,998	239,951	260,711	288,955	304,163	334,580	377,162	423,395
2017	5,061	15,816	126,532	227,757	249,549	271,140	300,513	316,330	347,963	392,249	440,331
2018	5,264	16,449	131,593	236,868	259,531	281,985	312,534	328,983	361,881	407,939	457,944
2019	5,474	17,107	136,857	246,342	269,912	293,265	325,035	342,142	376,356	424,256	476,262
2020	5,693	17,791	142,331	256,196	280,709	304,995	338,037	355,828	391,411	441,227	495,313

Trend Rate: 4%

Accident year 2019 paid severity from 24 to 36 months = selected severity * (1 + trend rate) ^ trend period = \$131,593 * (1.04)^1 = \$136,857

Trend Period from Calendar Year 2020 to Future Calendar Years

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011											1
2012										1	2
2013									1	2	3
2014								1	2	3	4
2015							1	2	3	4	5
2016						1	2	3	4	5	6
2017					1	2	3	4	5	6	7
2018				1	2	3	4	5	6	7	8
2019			1	2	3	4	5	6	7	8	9
2020		1	2	3	4	5	6	7	8	9	10

Scenario 1: Base Case
Step 15

Appendix 1
Exhibit 22

Incremental Paid Loss												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	1,500,000	2,250,000	3,000,000	2,700,000	1,775,000	1,500,000	1,425,000	750,000	550,000	310,000	1,740,000	17,500,000
2012	1,575,000	2,362,500	3,150,000	2,835,000	1,863,750	1,575,000	1,496,250	787,500	577,500	325,500	1,827,000	18,375,000
2013	1,653,750	2,480,625	3,307,500	2,976,750	1,956,938	1,653,750	1,571,063	826,875	606,375	341,775	1,918,350	19,293,750
2014	1,736,438	2,604,656	3,472,875	3,125,588	2,054,784	1,736,438	1,649,616	868,219	636,694	358,864	2,014,268	20,258,438
2015	1,823,259	2,734,889	3,646,519	3,281,867	2,157,524	1,823,259	1,732,096	911,630	668,528	376,807	2,114,981	21,271,359
2016	1,914,422	2,871,634	3,828,845	3,445,960	2,265,400	1,914,422	1,818,701	957,211	701,955	395,647	2,220,730	22,334,927
2017	2,010,143	3,015,215	4,020,287	3,618,258	2,378,670	2,010,143	1,909,636	1,005,072	737,053	415,430	2,331,766	23,451,674
2018	2,110,651	3,165,976	4,221,301	3,799,171	2,497,603	2,110,651	2,005,118	1,055,325	773,905	436,201	2,448,355	24,624,257
2019	2,216,183	3,324,275	4,432,366	3,989,130	2,622,483	2,216,183	2,105,374	1,108,092	812,600	458,011	2,570,772	25,855,470
2020	2,326,992	3,490,488	4,653,985	4,188,586	2,753,608	2,326,992	2,210,643	1,163,496	853,231	480,912	2,699,311	27,148,244

Accident year 2019 paid loss from 24 to 36 months = incremental severity * incremental counts closed with payment = \$136,857 * 32.4 = \$4,432,366

Scenario 1: Base Case
Reported Loss Development Method

Cumulative Reported Loss											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	3,750,000	7,500,000	10,500,000	12,600,000	13,860,000	14,970,000	15,720,000	16,030,000	16,190,000	16,270,000	17,500,000
2012	3,937,500	7,875,000	11,025,000	13,230,000	14,553,000	15,718,500	16,506,000	16,831,500	16,999,500	17,083,500	18,375,000
2013	4,134,375	8,268,750	11,576,250	13,891,500	15,280,650	16,504,425	17,331,300	17,673,075	17,849,475	17,937,675	19,293,750
2014	4,341,094	8,682,188	12,155,063	14,586,075	16,044,683	17,329,646	18,197,865	18,556,729	18,741,949	18,834,559	20,258,438
2015	4,558,148	9,116,297	12,762,816	15,315,379	16,846,917	18,196,129	19,107,758	19,484,565	19,679,046	19,776,287	21,271,359
2016	4,786,056	9,572,112	13,400,956	16,081,148	17,689,262	19,105,935	20,063,146	20,458,793	20,662,998	20,765,101	22,334,927
2017	5,025,359	10,050,717	14,071,004	16,885,205	18,573,726	20,061,232	21,066,303	21,481,733	21,696,148	21,803,356	23,451,674
2018	5,276,627	10,553,253	14,774,554	17,729,465	19,502,412	21,064,293	22,119,619	22,555,820	22,780,956	22,893,524	24,624,257
2019	5,540,458	11,080,916	15,513,282	18,615,939	20,477,532	22,117,508	23,225,600	23,683,611	23,920,004	24,038,200	25,855,470
2020	5,817,481	11,634,962	16,288,946	19,546,736	21,501,409	23,223,383	24,386,880	24,867,791	25,116,004	25,240,110	27,148,244

Age-to-Age Factors										
Accident Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	2.000	1.400	1.200	1.100	1.080	1.050	1.020	1.010	1.005	
2012	2.000	1.400	1.200	1.100	1.080	1.050	1.020	1.010		
2013	2.000	1.400	1.200	1.100	1.080	1.050	1.020			
2014	2.000	1.400	1.200	1.100	1.080	1.050				
2015	2.000	1.400	1.200	1.100	1.080					
2016	2.000	1.400	1.200	1.100						
2017	2.000	1.400	1.200							
2018	2.000	1.400								
2019	2.000									
Age-to-Age	2.000	1.400	1.200	1.100	1.080	1.050	1.020	1.010	1.005	
Age-to-Ult	4.667	2.333	1.667	1.389	1.263	1.169	1.113	1.092	1.081	1.076

Scenario 1: Base Case
Paid Loss Development Method

Cumulative Paid Loss											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	1,500,000	3,750,000	6,750,000	9,450,000	11,225,000	12,725,000	14,150,000	14,900,000	15,450,000	15,760,000	17,500,000
2012	1,575,000	3,937,500	7,087,500	9,922,500	11,786,250	13,361,250	14,857,500	15,645,000	16,222,500	16,548,000	18,375,000
2013	1,653,750	4,134,375	7,441,875	10,418,625	12,375,563	14,029,313	15,600,375	16,427,250	17,033,625	17,375,400	19,293,750
2014	1,736,438	4,341,094	7,813,969	10,939,556	12,994,341	14,730,778	16,380,394	17,248,613	17,885,306	18,244,170	20,258,438
2015	1,823,259	4,558,148	8,204,667	11,486,534	13,644,058	15,467,317	17,199,413	18,111,043	18,779,572	19,156,379	21,271,359
2016	1,914,422	4,786,056	8,614,901	12,060,861	14,326,261	16,240,683	18,059,384	19,016,595	19,718,550	20,114,197	22,334,927
2017	2,010,143	5,025,359	9,045,646	12,663,904	15,042,574	17,052,717	18,962,353	19,967,425	20,704,478	21,119,907	23,451,674
2018	2,110,651	5,276,627	9,497,928	13,297,099	15,794,702	17,905,353	19,910,471	20,965,796	21,739,702	22,175,903	24,624,257
2019	2,216,183	5,540,458	9,972,824	13,961,954	16,584,437	18,800,621	20,905,995	22,014,086	22,826,687	23,284,698	25,855,470
2020	2,326,992	5,817,481	10,471,465	14,660,052	17,413,659	19,740,652	21,951,294	23,114,790	23,968,021	24,448,933	27,148,244

Age-to-Age Factors										
Accident Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	2.500	1.800	1.400	1.188	1.134	1.112	1.053	1.037	1.020	
2012	2.500	1.800	1.400	1.188	1.134	1.112	1.053	1.037		
2013	2.500	1.800	1.400	1.188	1.134	1.112	1.053			
2014	2.500	1.800	1.400	1.188	1.134	1.112				
2015	2.500	1.800	1.400	1.188	1.134					
2016	2.500	1.800	1.400	1.188						
2017	2.500	1.800	1.400							
2018	2.500	1.800								
2019	2.500									
Age-to-Age	2.500	1.800	1.400	1.188	1.134	1.112	1.053	1.037	1.020	
Age-to-Ult	11.667	4.667	2.593	1.852	1.559	1.375	1.237	1.174	1.133	1.110

Scenario 1: Base Case
 Disposal Rate Frequency-Severity Method

Cumulative Non-Zero Counts											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	540.0	643.0	656.0	661.0	653.0	648.0	644.0	641.0	639.0	638.0	633.0
2012	545.2	649.2	662.3	667.4	659.3	654.2	650.2	647.2	645.1	644.1	639.1
2013	550.4	655.4	668.7	673.8	665.6	660.5	656.4	653.4	651.3	650.3	645.2
2014	555.7	661.7	675.1	680.3	672.0	666.9	662.8	659.7	657.6	656.6	651.4
2015	561.1	668.1	681.6	686.8	678.5	673.3	669.1	666.0	663.9	662.9	657.7
2016	566.5	674.5	688.2	693.4	685.0	679.8	675.6	672.4	670.3	669.3	664.0
2017	571.9	681.0	694.8	700.1	691.6	686.3	682.1	678.9	676.8	675.7	670.4
2018	577.4	687.5	701.4	706.8	698.2	692.9	688.6	685.4	683.3	682.2	676.9
2019	583.0	694.2	708.2	713.6	705.0	699.6	695.2	692.0	689.8	688.8	683.4
2020	588.6	700.8	715.0	720.5	711.7	706.3	701.9	698.7	696.5	695.4	689.9

Age-to-Age Factors										
Accident Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	1.191	1.020	1.008	0.988	0.992	0.994	0.995	0.997	0.998	
2012	1.191	1.020	1.008	0.988	0.992	0.994	0.995	0.997		
2013	1.191	1.020	1.008	0.988	0.992	0.994	0.995			
2014	1.191	1.020	1.008	0.988	0.992	0.994				
2015	1.191	1.020	1.008	0.988	0.992					
2016	1.191	1.020	1.008	0.988						
2017	1.191	1.020	1.008							
2018	1.191	1.020								
2019	1.191									
Age-to-Age	1.191	1.020	1.008	0.988	0.992	0.994	0.995	0.997	0.998	
Age-to-Ult	1.172	0.984	0.965	0.958	0.969	0.977	0.983	0.988	0.991	0.992

Scenario 1: Base Case
Disposal Rate Frequency-Severity Method

Disposal Rate (Closed with Payment Counts)

Accident Year	12	24	36	48	60	72	84	96	108	120	120-Ult
2011	59%	88%	92%	95%	96%	97%	98%	99%	99%	99%	
2012	59%	88%	92%	95%	96%	97%	98%	99%	99%		
2013	59%	88%	92%	95%	96%	97%	98%	99%			
2014	59%	88%	92%	95%	96%	97%	98%				
2015	59%	88%	92%	95%	96%	97%					
2016	59%	88%	92%	95%	96%						
2017	59%	88%	92%	95%							
2018	59%	88%	92%								
2019	59%	88%									
2020	59%										
Selected	59%	88%	92%	95%	96%	97%	98%	99%	99%	99%	100%

Incremental Closed with Payment Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	375.0	180.0	30.0	15.0	9.0	7.0	6.0	3.0	2.0	1.0	5.0	633.0
2012	378.6	181.7	30.3	15.1	9.1	7.1	6.1	3.0	2.0	1.0	5.0	639.1
2013	382.2	183.5	30.6	15.3	9.2	7.1	6.1	3.1	2.0	1.0	5.1	645.2
2014	385.9	185.2	30.9	15.4	9.3	7.2	6.2	3.1	2.1	1.0	5.1	651.4
2015	389.6	187.0	31.2	15.6	9.4	7.3	6.2	3.1	2.1	1.0	5.2	657.7
2016	393.4	188.8	31.5	15.7	9.4	7.3	6.3	3.1	2.1	1.0	5.2	664.0
2017	397.2	190.6	31.8	15.9	9.5	7.4	6.4	3.2	2.1	1.1	5.3	670.4
2018	401.0	192.5	32.1	16.0	9.6	7.5	6.4	3.2	2.1	1.1	5.3	676.9
2019	404.8	194.3	32.4	16.2	9.7	7.6	6.5	3.2	2.2	1.1	5.4	683.4
2020	408.7	196.2	32.7	16.3	9.8	7.6	6.5	3.3	2.2	1.1	5.4	689.9

Scenario 1: Base Case
Disposal Rate Frequency-Severity Method

Incremental Paid Loss												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	1,500,000	2,250,000	3,000,000	2,700,000	1,775,000	1,500,000	1,425,000	750,000	550,000	310,000	1,740,000	17,500,000
2012	1,575,000	2,362,500	3,150,000	2,835,000	1,863,750	1,575,000	1,496,250	787,500	577,500	325,500	1,827,000	18,375,000
2013	1,653,750	2,480,625	3,307,500	2,976,750	1,956,938	1,653,750	1,571,063	826,875	606,375	341,775	1,918,350	19,293,750
2014	1,736,438	2,604,656	3,472,875	3,125,588	2,054,784	1,736,438	1,649,616	868,219	636,694	358,864	2,014,267	20,258,438
2015	1,823,259	2,734,889	3,646,519	3,281,867	2,157,524	1,823,259	1,732,096	911,630	668,528	376,807	2,114,981	21,271,359
2016	1,914,422	2,871,634	3,828,845	3,445,960	2,265,400	1,914,422	1,818,701	957,211	701,955	395,647	2,220,730	22,334,927
2017	2,010,143	3,015,215	4,020,287	3,618,258	2,378,670	2,010,143	1,909,636	1,005,072	737,053	415,430	2,331,766	23,451,674
2018	2,110,651	3,165,976	4,221,301	3,799,171	2,497,603	2,110,651	2,005,118	1,055,325	773,905	436,201	2,448,355	24,624,257
2019	2,216,183	3,324,275	4,432,366	3,989,130	2,622,483	2,216,183	2,105,374	1,108,092	812,600	458,011	2,570,772	25,855,470
2020	2,326,992	3,490,488	4,653,985	4,188,586	2,753,608	2,326,992	2,210,643	1,163,496	853,231	480,912	2,699,311	27,148,244

Accident year 2019 paid loss from 24 to 36 months = incremental severity * incremental counts closed with payment = \$136,857 * 32.4 = \$4,432,366

An Incremental Approach to Estimating Ultimate Claim Counts and Future Claim Payments

Scenario 2: Shift in proportion of claims closed with payment
Data

Appendix 2
Exhibit 1

Cumulative Reported Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	815.0	1,018.0	1,046.0	1,063.0	1,064.0	1,065.0	1,065.0	1,065.0	1,065.0	1,065.0
2012	822.8	1,027.8	1,056.1	1,073.2	1,074.2	1,075.2	1,075.2	1,075.2	1,075.2	
2013	830.7	1,037.7	1,066.2	1,083.5	1,084.6	1,085.6	1,085.6	1,085.6		
2014	838.7	1,047.6	1,076.5	1,094.0	1,095.0	1,096.0	1,096.0			
2015	846.8	1,057.7	1,086.8	1,104.5	1,105.5	1,106.6				
2016	854.9	1,067.9	1,097.3	1,115.1	1,116.1					
2017	863.2	1,078.2	1,107.8	1,125.8						
2018	871.5	1,088.5	1,118.5							
2019	879.8	1,099.0								
2020	888.3									

Cumulative Closed without Payment Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	275.0	375.0	390.0	402.0	411.0	417.0	421.0	424.0	426.0	426.9
2012	277.6	378.6	393.8	405.9	415.0	421.0	425.0	428.1	429.9	
2013	280.3	382.2	397.5	409.8	418.9	425.1	429.1	431.9		
2014	283.0	385.9	401.4	413.7	423.0	429.1	432.6			
2015	285.7	389.6	405.2	417.7	427.0	432.5				
2016	288.5	393.4	409.1	421.7	430.2					
2017	291.3	397.2	413.0	424.2						
2018	294.1	401.0	413.8							
2019	296.9	385.4								
2020	258.9									

Cumulative Reported Loss

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	3,750,000	7,500,000	10,500,000	12,600,000	13,860,000	14,970,000	15,720,000	16,030,000	16,190,000	16,301,000
2012	3,937,500	7,875,000	11,025,000	13,230,000	14,553,000	15,718,500	16,506,000	16,831,500	17,057,250	
2013	4,134,375	8,268,750	11,576,250	13,891,500	15,280,650	16,504,425	17,331,300	17,755,763		
2014	4,341,094	8,682,188	12,155,063	14,586,075	16,044,683	17,329,646	18,362,827			
2015	4,558,148	9,116,297	12,762,816	15,315,379	16,846,917	18,378,455				
2016	4,786,056	9,572,112	13,400,956	16,081,148	17,915,802					
2017	5,025,359	10,050,717	14,071,004	17,247,031						
2018	5,276,627	10,553,253	15,196,685							
2019	5,540,458	11,413,343								
2020	6,050,180									

Cumulative Closed with Payment Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	375.0	555.0	585.0	600.0	609.0	616.0	622.0	625.0	627.0	628.1
2012	378.6	560.3	590.6	605.8	614.9	621.9	628.0	631.0	633.2	
2013	382.2	565.7	596.3	611.6	620.8	627.9	634.0	637.4		
2014	385.9	571.2	602.0	617.5	626.7	633.9	640.7			
2015	389.6	576.7	607.8	623.4	632.8	640.8				
2016	393.4	582.2	613.7	629.4	639.8					
2017	397.2	587.8	619.6	637.0						
2018	401.0	593.5	628.7							
2019	404.8	618.6								
2020	449.6									

Open Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	165.0	88.0	71.0	61.0	44.0	32.0	22.0	16.0	12.0	10.0
2012	166.6	88.8	71.7	61.6	44.4	32.3	22.2	16.2	12.1	
2013	168.2	89.7	72.4	62.2	44.9	32.6	22.4	16.3		
2014	169.8	90.6	73.1	62.8	45.3	32.9	22.6			
2015	171.4	91.4	73.8	63.4	45.7	33.2				
2016	173.1	92.3	74.5	64.0	46.2					
2017	174.8	93.2	75.2	64.6						
2018	176.4	94.1	75.9							
2019	178.1	95.0								
2020	179.8									

Cumulative Paid Loss

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	1,500,000	3,750,000	6,750,000	9,450,000	11,225,000	12,725,000	14,150,000	14,900,000	15,450,000	15,791,000
2012	1,575,000	3,937,500	7,087,500	9,922,500	11,786,250	13,361,250	14,857,500	15,645,000	16,280,250	
2013	1,653,750	4,134,375	7,441,875	10,418,625	12,375,563	14,029,313	15,600,375	16,509,938		
2014	1,736,438	4,341,094	7,813,969	10,939,556	12,994,341	14,730,778	16,545,355			
2015	1,823,259	4,558,148	8,204,667	11,486,534	13,644,058	15,649,643				
2016	1,914,422	4,786,056	8,614,901	12,060,861	14,552,801					
2017	2,010,143	5,025,359	9,045,646	13,025,730						
2018	2,110,651	5,276,627	9,920,058							
2019	2,216,183	5,872,885								
2020	2,559,692									

An Incremental Approach to Estimating Ultimate Claim Counts and Future Claim Payments

Scenario 2: Shift in proportion of claims closed with payment
Diagnostics

Appendix 2
Exhibit 2

Case Reserves per Open Count

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	13,636	42,614	52,817	51,639	59,886	70,156	71,364	70,625	61,667	51,000
2012	14,182	44,318	54,930	53,705	62,282	72,963	74,218	73,450	64,133	
2013	14,749	46,091	57,127	55,853	64,773	75,881	77,187	76,388		
2014	15,339	47,935	59,412	58,087	67,364	78,916	80,274			
2015	15,953	49,852	61,788	60,411	70,059	82,073				
2016	16,591	51,846	64,260	62,827	72,861					
2017	17,254	53,920	66,830	65,340						
2018	17,945	56,077	69,503							
2019	18,662	58,320								
2020	19,409									

Closed Counts / Reported Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	79.8%	91.4%	93.2%	94.3%	95.9%	97.0%	97.9%	98.5%	98.9%	99.1%
2012	79.8%	91.4%	93.2%	94.3%	95.9%	97.0%	97.9%	98.5%	98.9%	
2013	79.8%	91.4%	93.2%	94.3%	95.9%	97.0%	97.9%	98.5%		
2014	79.8%	91.4%	93.2%	94.3%	95.9%	97.0%	97.9%			
2015	79.8%	91.4%	93.2%	94.3%	95.9%	97.0%				
2016	79.8%	91.4%	93.2%	94.3%	95.9%					
2017	79.8%	91.4%	93.2%	94.3%						
2018	79.8%	91.4%	93.2%							
2019	79.8%	91.4%								
2020	79.8%									

Paid Loss per Closed with Payment Count

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	4,000	6,757	11,538	15,750	18,432	20,657	22,749	23,840	24,641	25,141
2012	4,160	7,027	12,000	16,380	19,169	21,484	23,659	24,794	25,710	
2013	4,326	7,308	12,480	17,035	19,936	22,343	24,606	25,903		
2014	4,499	7,600	12,979	17,717	20,733	23,237	25,823			
2015	4,679	7,904	13,498	18,425	21,563	24,423				
2016	4,867	8,221	14,038	19,162	22,746					
2017	5,061	8,549	14,600	20,447						
2018	5,264	8,891	15,778							
2019	5,474	9,494								
2020	5,693									

Closed with Payment Counts / Closed Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	57.7%	59.7%	60.0%	59.9%	59.7%	59.6%	59.6%	59.6%	59.5%	59.5%
2012	57.7%	59.7%	60.0%	59.9%	59.7%	59.6%	59.6%	59.6%	59.6%	
2013	57.7%	59.7%	60.0%	59.9%	59.7%	59.6%	59.6%	59.6%		
2014	57.7%	59.7%	60.0%	59.9%	59.7%	59.6%	59.7%			
2015	57.7%	59.7%	60.0%	59.9%	59.7%	59.7%				
2016	57.7%	59.7%	60.0%	59.9%	59.8%					
2017	57.7%	59.7%	60.0%	60.0%						
2018	57.7%	59.7%	60.3%							
2019	57.7%	61.6%								
2020	63.5%									

**Scenario 2: Shift in proportion of claims closed with payment
Reported Loss Development Method**

**Appendix 2
Exhibit 3**

Cumulative Reported Loss											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	3,750,000	7,500,000	10,500,000	12,600,000	13,860,000	14,970,000	15,720,000	16,030,000	16,190,000	16,301,000	17,533,344
2012	3,937,500	7,875,000	11,025,000	13,230,000	14,553,000	15,718,500	16,506,000	16,831,500	17,057,250	17,174,196	18,472,552
2013	4,134,375	8,268,750	11,576,250	13,891,500	15,280,650	16,504,425	17,331,300	17,755,763	17,993,909	18,117,277	19,486,930
2014	4,341,094	8,682,188	12,155,063	14,586,075	16,044,683	17,329,646	18,362,827	18,812,552	19,064,873	19,195,583	20,646,755
2015	4,558,148	9,116,297	12,762,816	15,315,379	16,846,917	18,378,455	19,474,164	19,951,108	20,218,699	20,357,320	21,896,318
2016	4,786,056	9,572,112	13,400,956	16,081,148	17,915,802	19,544,512	20,709,741	21,216,945	21,501,514	21,648,930	23,285,573
2017	5,025,359	10,050,717	14,071,004	17,247,031	19,214,698	20,961,489	22,211,197	22,755,173	23,060,374	23,218,478	24,973,777
2018	5,276,627	10,553,253	15,196,685	18,626,793	20,751,874	22,638,408	23,988,093	24,575,587	24,905,204	25,075,956	26,971,680
2019	5,540,458	11,413,343	16,435,214	20,144,877	22,443,152	24,483,438	25,943,122	26,578,498	26,934,978	27,119,646	29,169,871
2020	6,050,180	12,463,371	17,947,254	21,998,206	24,507,922	26,735,915	28,329,889	29,023,719	29,412,996	29,614,654	31,853,500

Age-to-Age Factors										
Accident Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	2.000	1.400	1.200	1.100	1.080	1.050	1.020	1.010	1.007	
2012	2.000	1.400	1.200	1.100	1.080	1.050	1.020	1.013		
2013	2.000	1.400	1.200	1.100	1.080	1.050	1.024			
2014	2.000	1.400	1.200	1.100	1.080	1.060				
2015	2.000	1.400	1.200	1.100	1.091					
2016	2.000	1.400	1.200	1.114						
2017	2.000	1.400	1.226							
2018	2.000	1.440								
2019	2.060									
Age-to-Age	2.060	1.440	1.226	1.114	1.091	1.060	1.024	1.013	1.007	
Age-to-Ult	5.265	2.556	1.775	1.448	1.300	1.191	1.124	1.097	1.083	1.076

Scenario 2: Shift in proportion of claims closed with payment
Paid Loss Development Method

Appendix 2
Exhibit 4

Cumulative Paid Loss											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	1,500,000	3,750,000	6,750,000	9,450,000	11,225,000	12,725,000	14,150,000	14,900,000	15,450,000	15,791,000	17,534,423
2012	1,575,000	3,937,500	7,087,500	9,922,500	11,786,250	13,361,250	14,857,500	15,645,000	16,280,250	16,639,575	18,476,685
2013	1,653,750	4,134,375	7,441,875	10,418,625	12,375,563	14,029,313	15,600,375	16,509,938	17,180,307	17,559,497	19,498,173
2014	1,736,438	4,341,094	7,813,969	10,939,556	12,994,341	14,730,778	16,545,355	17,510,014	18,220,991	18,623,150	20,679,259
2015	1,823,259	4,558,148	8,204,667	11,486,534	13,644,058	15,649,643	17,577,408	18,602,240	19,357,565	19,784,810	21,969,174
2016	1,914,422	4,786,056	8,614,901	12,060,861	14,552,801	16,691,965	18,748,126	19,841,215	20,646,848	21,102,549	23,432,399
2017	2,010,143	5,025,359	9,045,646	13,025,730	15,717,025	18,027,322	20,247,977	21,428,512	22,298,596	22,790,753	25,306,991
2018	2,110,651	5,276,627	9,920,058	14,284,883	17,236,337	19,769,963	22,205,281	23,499,935	24,454,127	24,993,859	27,753,333
2019	2,216,183	5,872,885	11,041,025	15,899,075	19,184,043	22,003,969	24,714,478	26,155,428	27,217,444	27,818,165	30,889,460
2020	2,559,692	6,783,183	12,752,383	18,363,432	22,157,570	25,414,584	28,545,222	30,209,519	31,436,147	32,129,981	35,677,326

Age-to-Age Factors										
Accident Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	2.500	1.800	1.400	1.188	1.134	1.112	1.053	1.037	1.022	
2012	2.500	1.800	1.400	1.188	1.134	1.112	1.053	1.041		
2013	2.500	1.800	1.400	1.188	1.134	1.112	1.058			
2014	2.500	1.800	1.400	1.188	1.134	1.123				
2015	2.500	1.800	1.400	1.188	1.147					
2016	2.500	1.800	1.400	1.207						
2017	2.500	1.800	1.440							
2018	2.500	1.880								
2019	2.650									
Age-to-Age	2.650	1.880	1.440	1.207	1.147	1.123	1.058	1.041	1.022	
Age-to-Ult	13.938	5.260	2.798	1.943	1.610	1.404	1.250	1.181	1.135	1.110

Scenario 2: Shift in proportion of claims closed with payment
 Disposal Rate Frequency-Severity Method

Appendix 2
 Exhibit 5

Cumulative Non-Zero Counts

Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	540.0	643.0	656.0	661.0	653.0	648.0	644.0	641.0	639.0	638.1	633.1
2012	545.2	649.2	662.3	667.4	659.3	654.2	650.2	647.2	645.3	644.4	639.4
2013	550.4	655.4	668.7	673.8	665.6	660.5	656.4	653.7	651.9	650.9	645.8
2014	555.7	661.7	675.1	680.3	672.0	666.9	663.4	660.6	658.7	657.8	652.7
2015	561.1	668.1	681.6	686.8	678.5	674.0	670.5	667.7	665.8	664.9	659.6
2016	566.5	674.5	688.2	693.4	685.9	681.4	677.9	675.0	673.1	672.2	666.9
2017	571.9	681.0	694.8	701.7	694.1	689.5	685.9	683.1	681.1	680.2	674.8
2018	577.4	687.5	704.7	711.6	704.0	699.4	695.7	692.8	690.8	689.9	684.4
2019	583.0	713.6	731.3	738.6	730.7	725.8	722.0	719.0	717.0	716.0	710.4
2020	629.4	770.5	789.7	797.5	788.9	783.7	779.6	776.3	774.2	773.1	767.0

Age-to-Age Factors

Accident Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	1.191	1.020	1.008	0.988	0.992	0.994	0.995	0.997	0.999	
2012	1.191	1.020	1.008	0.988	0.992	0.994	0.995	0.997		
2013	1.191	1.020	1.008	0.988	0.992	0.994	0.996			
2014	1.191	1.020	1.008	0.988	0.992	0.995				
2015	1.191	1.020	1.008	0.988	0.993					
2016	1.191	1.020	1.008	0.989						
2017	1.191	1.020	1.010							
2018	1.191	1.025								
2019	1.224									
Age-to-Age	1.224	1.025	1.010	0.989	0.993	0.995	0.996	0.997	0.999	
Age-to-Ult	1.219	0.995	0.971	0.962	0.972	0.979	0.984	0.988	0.991	0.992

**Scenario 2: Shift in proportion of claims closed with payment
Disposal Rate Frequency-Severity Method**

Disposal Rate (Closed with Payment Counts)

Accident Year	12	24	36	48	60	72	84	96	108	120	120-Ult
2011	59%	88%	92%	95%	96%	97%	98%	99%	99%	99%	
2012	59%	88%	92%	95%	96%	97%	98%	99%	99%		
2013	59%	88%	92%	95%	96%	97%	98%	99%			
2014	59%	88%	92%	95%	96%	97%	98%				
2015	59%	87%	92%	95%	96%	97%					
2016	59%	87%	92%	94%	96%						
2017	59%	87%	92%	94%							
2018	59%	87%	92%								
2019	57%	87%									
2020	59%										
Selected	59%	87%	92%	94%	96%	97%	98%	99%	99%	99%	100%

Incremental Closed with Payment Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	375.0	180.0	30.0	15.0	9.0	7.0	6.0	3.0	2.0	1.1	5.0	633.1
2012	378.6	181.7	30.3	15.1	9.1	7.1	6.1	3.0	2.2	1.1	5.0	639.4
2013	382.2	183.5	30.6	15.3	9.2	7.1	6.1	3.4	2.2	1.1	5.1	645.8
2014	385.9	185.2	30.9	15.4	9.3	7.2	6.8	3.4	2.3	1.1	5.2	652.7
2015	389.6	187.0	31.2	15.6	9.4	8.0	6.8	3.4	2.3	1.1	5.2	659.6
2016	393.4	188.8	31.5	15.7	10.4	8.0	6.9	3.5	2.3	1.2	5.3	666.9
2017	397.2	190.6	31.8	17.5	10.4	8.1	7.0	3.5	2.3	1.2	5.3	674.8
2018	401.0	192.5	35.3	17.4	10.5	8.2	7.1	3.5	2.4	1.2	5.4	684.4
2019	404.8	213.8	34.0	18.0	10.9	8.5	7.4	3.7	2.5	1.2	5.6	710.4
2020	449.6	218.3	36.7	19.5	11.8	9.2	7.9	4.0	2.7	1.3	6.1	767.0

Scenario 2: Shift in proportion of claims closed with payment
Disposal Rate Frequency-Severity Method

Appendix 2
Exhibit 7

Incremental Paid Severity

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	4,000	12,500	100,000	180,000	197,222	214,286	237,500	250,000	275,000	310,000	348,000
2012	4,160	13,000	104,000	187,200	205,111	222,857	247,000	260,000	286,000	322,400	361,920
2013	4,326	13,520	108,160	194,688	213,316	231,771	256,880	270,400	297,440	335,296	376,397
2014	4,499	14,061	112,486	202,476	221,848	241,042	267,155	281,216	309,338	348,708	391,453
2015	4,679	14,623	116,986	210,575	230,722	250,684	277,841	292,465	321,711	362,656	407,111
2016	4,867	15,208	121,665	218,998	239,951	260,711	288,955	304,163	334,580	377,162	423,395
2017	5,061	15,816	126,532	227,757	249,549	271,140	300,513	316,330	347,963	392,249	440,331
2018	5,264	16,449	131,593	236,868	259,531	281,985	312,534	328,983	361,881	407,939	457,944
2019	5,474	17,107	136,857	246,342	269,912	293,265	325,035	342,142	376,356	424,256	476,262
2020	5,693	17,791	142,331	256,196	280,709	304,995	338,037	355,828	391,411	441,227	495,313

Trend Rate: 4%

Trended Incremental Paid Severity

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	5,693	17,107	131,593	227,757	239,951	250,684	267,155	270,400	286,000	310,000	
2012	5,693	17,107	131,593	227,757	239,951	250,684	267,155	270,400	286,000		
2013	5,693	17,107	131,593	227,757	239,951	250,684	267,155	270,400			
2014	5,693	17,107	131,593	227,757	239,951	250,684	267,155				
2015	5,693	17,107	131,593	227,757	239,951	250,684					
2016	5,693	17,107	131,593	227,757	239,951						
2017	5,693	17,107	131,593	227,757							
2018	5,693	17,107	131,593								
2019	5,693	17,107									
2020	5,693										
Selected	5,693	17,107	131,593	227,757	239,951	250,684	267,155	270,400	286,000	310,000	334,615

Scenario 2: Shift in proportion of claims closed with payment
 Disposal Rate Frequency-Severity Method

Appendix 2
 Exhibit 8

Incremental Paid Loss												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	1,500,000	2,250,000	3,000,000	2,700,000	1,775,000	1,500,000	1,425,000	750,000	550,000	341,000	1,739,727	17,530,727
2012	1,575,000	2,362,500	3,150,000	2,835,000	1,863,750	1,575,000	1,496,250	787,500	635,250	356,940	1,827,285	18,464,475
2013	1,653,750	2,480,625	3,307,500	2,976,750	1,956,938	1,653,750	1,571,063	909,563	665,054	374,962	1,919,548	19,469,501
2014	1,736,438	2,604,656	3,472,875	3,125,588	2,054,784	1,736,438	1,814,577	949,998	698,958	394,077	2,017,403	20,605,791
2015	1,823,259	2,734,889	3,646,519	3,281,867	2,157,524	2,005,585	1,897,385	998,576	734,698	414,228	2,120,561	21,815,091
2016	1,914,422	2,871,634	3,828,845	3,445,960	2,491,940	2,092,182	1,995,000	1,049,950	772,496	435,538	2,229,658	23,127,625
2017	2,010,143	3,015,215	4,020,287	3,980,084	2,585,889	2,201,776	2,099,504	1,104,949	812,962	458,353	2,346,454	24,635,616
2018	2,110,651	3,165,976	4,643,431	4,115,962	2,727,600	2,322,437	2,214,560	1,165,502	857,514	483,472	2,475,044	26,282,149
2019	2,216,183	3,656,702	4,648,125	4,442,742	2,944,154	2,506,824	2,390,382	1,258,036	925,595	521,856	2,671,546	28,182,145
2020	2,559,692	3,883,976	5,219,457	4,988,829	3,306,039	2,814,954	2,684,200	1,412,669	1,039,366	586,001	2,999,923	31,495,108

**Scenario 2: Shift in proportion of claims closed with payment
Incremental Method**

**Appendix 2
Exhibit 9**

Cumulative Reported Counts											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	815.0	1,018.0	1,046.0	1,063.0	1,064.0	1,065.0	1,065.0	1,065.0	1,065.0	1,065.0	1,065.0
2012	822.8	1,027.8	1,056.1	1,073.2	1,074.2	1,075.2	1,075.2	1,075.2	1,075.2	1,075.2	1,075.2
2013	830.7	1,037.7	1,066.2	1,083.5	1,084.6	1,085.6	1,085.6	1,085.6	1,085.6	1,085.6	1,085.6
2014	838.7	1,047.6	1,076.5	1,094.0	1,095.0	1,096.0	1,096.0	1,096.0	1,096.0	1,096.0	1,096.0
2015	846.8	1,057.7	1,086.8	1,104.5	1,105.5	1,106.6	1,106.6	1,106.6	1,106.6	1,106.6	1,106.6
2016	854.9	1,067.9	1,097.3	1,115.1	1,116.1	1,117.2	1,117.2	1,117.2	1,117.2	1,117.2	1,117.2
2017	863.2	1,078.2	1,107.8	1,125.8	1,126.9	1,127.9	1,127.9	1,127.9	1,127.9	1,127.9	1,127.9
2018	871.5	1,088.5	1,118.5	1,136.6	1,137.7	1,138.8	1,138.8	1,138.8	1,138.8	1,138.8	1,138.8
2019	879.8	1,099.0	1,129.2	1,147.6	1,148.7	1,149.7	1,149.7	1,149.7	1,149.7	1,149.7	1,149.7
2020	888.3	1,109.6	1,140.1	1,158.6	1,159.7	1,160.8	1,160.8	1,160.8	1,160.8	1,160.8	1,160.8

Age-to-Age Factors										
Accident Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	1.249	1.028	1.016	1.001	1.001	1.000	1.000	1.000	1.000	
2012	1.249	1.028	1.016	1.001	1.001	1.000	1.000	1.000		
2013	1.249	1.028	1.016	1.001	1.001	1.000	1.000			
2014	1.249	1.028	1.016	1.001	1.001	1.000				
2015	1.249	1.028	1.016	1.001	1.001					
2016	1.249	1.028	1.016	1.001						
2017	1.249	1.028	1.016							
2018	1.249	1.028								
2019	1.249									
Age-to-Age	1.249	1.028	1.016	1.001	1.001	1.000	1.000	1.000	1.000	
Age-to-Ult	1.307	1.046	1.018	1.002	1.001	1.000	1.000	1.000	1.000	1.000

**Scenario 2: Shift in proportion of claims closed with payment
Incremental Method**

**Appendix 2
Exhibit 10**

Active Counts										
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120
2011	815.0	368.0	116.0	88.0	62.0	45.0	32.0	22.0	16.0	12.0
2012	822.8	371.5	117.1	88.8	62.6	45.4	32.3	22.2	16.2	
2013	830.7	375.1	118.2	89.7	63.2	45.9	32.6	22.4		
2014	838.7	378.7	119.4	90.6	63.8	46.3	32.9			
2015	846.8	382.4	120.5	91.4	64.4	46.8				
2016	854.9	386.0	121.7	92.3	65.0					
2017	863.2	389.7	122.9	93.2						
2018	871.5	393.5	124.0							
2019	879.8	397.3								
2020	888.3									

**Scenario 2: Shift in proportion of claims closed with payment
Incremental Method**

Incremental Closed Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	650.0	280.0	45.0	27.0	18.0	13.0	10.0	6.0	4.0	2.0	
2012	656.3	282.7	45.4	27.3	18.2	13.1	10.1	6.1	4.0		
2013	662.6	285.4	45.9	27.5	18.3	13.3	10.2	6.1			
2014	668.9	288.2	46.3	27.8	18.5	13.4	10.3				
2015	675.4	290.9	46.8	28.1	18.7	13.5					
2016	681.9	293.7	47.2	28.3	18.9						
2017	688.4	296.5	47.7	28.6							
2018	695.0	299.4	48.1								
2019	701.7	302.3									
2020	708.5										

Incremental Closure Rate

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	80%	76%	39%	31%	29%	29%	31%	27%	25%	17%	
2012	80%	76%	39%	31%	29%	29%	31%	27%	25%		
2013	80%	76%	39%	31%	29%	29%	31%	27%			
2014	80%	76%	39%	31%	29%	29%	31%				
2015	80%	76%	39%	31%	29%	29%					
2016	80%	76%	39%	31%	29%						
2017	80%	76%	39%	31%							
2018	80%	76%	39%								
2019	80%	76%									
2020	80%										
Selected	80%	76%	39%	31%	29%	29%	31%	27%	25%	17%	100%

**Scenario 2: Shift in proportion of claims closed with payment
Incremental Method**

**Appendix 2
Exhibit 12**

Incremental Closed with Payment Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	375.0	180.0	30.0	15.0	9.0	7.0	6.0	3.0	2.0	1.1	
2012	378.6	181.7	30.3	15.1	9.1	7.1	6.1	3.0	2.2		
2013	382.2	183.5	30.6	15.3	9.2	7.1	6.1	3.4			
2014	385.9	185.2	30.9	15.4	9.3	7.2	6.8				
2015	389.6	187.0	31.2	15.6	9.4	8.0					
2016	393.4	188.8	31.5	15.7	10.4						
2017	397.2	190.6	31.8	17.5							
2018	401.0	192.5	35.3								
2019	404.8	213.8									
2020	449.6										

Incremental Closed with Payment Rate

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	46%	49%	26%	17%	15%	16%	19%	14%	13%	9%	
2012	46%	49%	26%	17%	15%	16%	19%	14%	14%		
2013	46%	49%	26%	17%	15%	16%	19%	15%			
2014	46%	49%	26%	17%	15%	16%	21%				
2015	46%	49%	26%	17%	15%	17%					
2016	46%	49%	26%	17%	16%						
2017	46%	49%	26%	19%							
2018	46%	49%	28%								
2019	46%	54%									
2020	51%										
Selected	51%	54%	28%	19%	16%	17%	21%	15%	14%	9%	50%

**Scenario 2: Shift in proportion of claims closed with payment
Incremental Method**

Incremental Closed without Payment Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	275.0	100.0	15.0	12.0	9.0	6.0	4.0	3.0	2.0	0.9	
2012	277.6	101.0	15.1	12.1	9.1	6.1	4.0	3.0	1.8		
2013	280.3	101.9	15.3	12.2	9.2	6.1	4.1	2.8			
2014	283.0	102.9	15.4	12.3	9.3	6.2	3.5				
2015	285.7	103.9	15.6	12.5	9.4	5.5					
2016	288.5	104.9	15.7	12.6	8.5						
2017	291.3	105.9	15.9	11.1							
2018	294.1	106.9	12.8								
2019	296.9	88.5									
2020	258.9										

Incremental Closed with Payment Rate

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	34%	27%	13%	14%	15%	13%	13%	14%	13%	7%	
2012	34%	27%	13%	14%	15%	13%	12%	14%	11%		
2013	34%	27%	13%	14%	15%	13%	13%	12%			
2014	34%	27%	13%	14%	15%	13%	11%				
2015	34%	27%	13%	14%	15%	12%					
2016	34%	27%	13%	14%	13%						
2017	34%	27%	13%	12%							
2018	34%	27%	10%								
2019	34%	22%									
2020	29%										
Implied	29%	22%	10%	12%	13%	12%	11%	12%	11%	7%	50%

An Incremental Approach to Estimating Ultimate Claim Counts and Future Claim Payments

Scenario 2: Shift in proportion of claims closed with payment
Incremental Method

Appendix 2
Exhibit 14

Active Counts												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	815.0	368.0	116.0	88.0	62.0	45.0	32.0	22.0	16.0	12.0	10.0	0.0
2012	822.8	371.5	117.1	88.8	62.6	45.4	32.3	22.2	16.2	12.1	10.1	0.0
2013	830.7	375.1	118.2	89.7	63.2	45.9	32.6	22.4	16.3	12.2	10.2	0.0
2014	838.7	378.7	119.4	90.6	63.8	46.3	32.9	22.6	16.5	12.3	10.3	0.0
2015	846.8	382.4	120.5	91.4	64.4	46.8	33.2	22.9	16.6	12.5	10.4	0.0
2016	854.9	386.0	121.7	92.3	65.0	47.2	33.6	23.1	16.8	12.6	10.5	0.0
2017	863.2	389.7	122.9	93.2	65.7	47.7	33.9	23.3	16.9	12.7	10.6	0.0
2018	871.5	393.5	124.0	94.1	66.3	48.1	34.2	23.5	17.1	12.8	10.7	0.0
2019	879.8	397.3	125.2	95.0	66.9	48.6	34.5	23.8	17.3	13.0	10.8	0.0
2020	888.3	401.1	126.4	95.9	67.6	49.0	34.9	24.0	17.4	13.1	10.9	0.0

Incremental Closed with Payment Counts												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	375.0	180.0	30.0	15.0	9.0	7.0	6.0	3.0	2.0	1.1	5.0	633.1
2012	378.6	181.7	30.3	15.1	9.1	7.1	6.1	3.0	2.2	1.1	5.0	639.4
2013	382.2	183.5	30.6	15.3	9.2	7.1	6.1	3.4	2.2	1.1	5.1	645.8
2014	385.9	185.2	30.9	15.4	9.3	7.2	6.8	3.4	2.3	1.1	5.1	652.7
2015	389.6	187.0	31.2	15.6	9.4	8.0	6.9	3.4	2.3	1.1	5.2	659.7
2016	393.4	188.8	31.5	15.7	10.4	8.1	6.9	3.5	2.3	1.2	5.2	667.0
2017	397.2	190.6	31.8	17.5	10.5	8.2	7.0	3.5	2.3	1.2	5.3	675.0
2018	401.0	192.5	35.3	17.6	10.6	8.2	7.1	3.5	2.4	1.2	5.3	684.7
2019	404.8	213.8	35.6	17.8	10.7	8.3	7.1	3.6	2.4	1.2	5.4	710.7
2020	449.6	215.8	36.0	18.0	10.8	8.4	7.2	3.6	2.4	1.2	5.4	758.4

Incremental Closed without Payment Counts												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	275.0	100.0	15.0	12.0	9.0	6.0	4.0	3.0	2.0	0.9	5.0	431.9
2012	277.6	101.0	15.1	12.1	9.1	6.1	4.0	3.0	1.8	0.9	5.0	435.9
2013	280.3	101.9	15.3	12.2	9.2	6.1	4.1	2.8	1.8	0.9	5.1	439.7
2014	283.0	102.9	15.4	12.3	9.3	6.2	3.5	2.8	1.9	0.9	5.1	443.3
2015	285.7	103.9	15.6	12.5	9.4	5.5	3.5	2.8	1.9	0.9	5.2	446.9
2016	288.5	104.9	15.7	12.6	8.5	5.6	3.6	2.8	1.9	0.9	5.2	450.2
2017	291.3	105.9	15.9	11.1	8.6	5.6	3.6	2.9	1.9	1.0	5.3	453.0
2018	294.1	106.9	12.8	11.2	8.7	5.7	3.6	2.9	1.9	1.0	5.3	454.1
2019	296.9	88.5	13.0	11.3	8.7	5.7	3.7	2.9	1.9	1.0	5.4	439.1
2020	258.9	89.4	13.1	11.4	8.8	5.8	3.7	2.9	2.0	1.0	5.4	402.4

Open Counts												
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate	
2011	165.0	88.0	71.0	61.0	44.0	32.0	22.0	16.0	12.0	10.0	0.0	
2012	166.6	88.8	71.7	61.6	44.4	32.3	22.2	16.2	12.1	10.1	0.0	
2013	168.2	89.7	72.4	62.2	44.9	32.6	22.4	16.3	12.2	10.2	0.0	
2014	169.8	90.6	73.1	62.8	45.3	32.9	22.6	16.5	12.3	10.3	0.0	
2015	171.4	91.4	73.8	63.4	45.7	33.2	22.9	16.6	12.5	10.4	0.0	
2016	173.1	92.3	74.5	64.0	46.2	33.6	23.1	16.8	12.6	10.5	0.0	
2017	174.8	93.2	75.2	64.6	46.6	33.9	23.3	16.9	12.7	10.6	0.0	
2018	176.4	94.1	75.9	65.2	47.0	34.2	23.5	17.1	12.8	10.7	0.0	
2019	178.1	95.0	76.6	65.9	47.5	34.5	23.8	17.3	13.0	10.8	0.0	
2020	179.8	95.9	77.4	66.5	48.0	34.9	24.0	17.4	13.1	10.9	0.0	

Scenario 2: Shift in proportion of claims closed with payment
Incremental Method

Appendix 2
Exhibit 15

Incremental Paid Loss												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	1,500,000	2,250,000	3,000,000	2,700,000	1,775,000	1,500,000	1,425,000	750,000	550,000	341,000	1,740,000	17,531,000
2012	1,575,000	2,362,500	3,150,000	2,835,000	1,863,750	1,575,000	1,496,250	787,500	635,250	358,050	1,827,000	18,465,300
2013	1,653,750	2,480,625	3,307,500	2,976,750	1,956,938	1,653,750	1,571,063	909,563	667,013	375,953	1,918,350	19,471,253
2014	1,736,438	2,604,656	3,472,875	3,125,588	2,054,784	1,736,438	1,814,577	955,041	700,363	394,750	2,014,267	20,609,777
2015	1,823,259	2,734,889	3,646,519	3,281,867	2,157,524	2,005,585	1,905,306	1,002,793	735,381	414,488	2,114,981	21,822,591
2016	1,914,422	2,871,634	3,828,845	3,445,960	2,491,940	2,105,865	2,000,571	1,052,932	772,150	435,212	2,220,730	23,140,261
2017	2,010,143	3,015,215	4,020,287	3,980,084	2,616,537	2,211,158	2,100,600	1,105,579	810,758	456,973	2,331,766	24,659,100
2018	2,110,651	3,165,976	4,643,431	4,179,088	2,747,364	2,321,716	2,205,630	1,160,858	851,296	479,821	2,448,355	26,314,185
2019	2,216,183	3,656,702	4,875,603	4,388,043	2,884,732	2,437,801	2,315,911	1,218,901	893,861	503,812	2,570,772	27,962,322
2020	2,559,692	3,839,537	5,119,383	4,607,445	3,028,968	2,559,692	2,431,707	1,279,846	938,554	529,003	2,699,311	29,593,137

**Scenario 2: Shift in proportion of claims closed with payment
Incremental Method**

Incremental Closed with Payment Counts: Base Case

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	375.0	180.0	30.0	15.0	9.0	7.0	6.0	3.0	2.0	1.0	5.0
2012	378.6	181.7	30.3	15.1	9.1	7.1	6.1	3.0	2.0	1.0	5.0
2013	382.2	183.5	30.6	15.3	9.2	7.1	6.1	3.1	2.0	1.0	5.1
2014	385.9	185.2	30.9	15.4	9.3	7.2	6.2	3.1	2.1	1.0	5.1
2015	389.6	187.0	31.2	15.6	9.4	7.3	6.2	3.1	2.1	1.0	5.2
2016	393.4	188.8	31.5	15.7	9.4	7.3	6.3	3.1	2.1	1.0	5.2
2017	397.2	190.6	31.8	15.9	9.5	7.4	6.4	3.2	2.1	1.1	5.3
2018	401.0	192.5	32.1	16.0	9.6	7.5	6.4	3.2	2.1	1.1	5.3
2019	404.8	194.3	32.4	16.2	9.7	7.6	6.5	3.2	2.2	1.1	5.4
2020	408.7	196.2	32.7	16.3	9.8	7.6	6.5	3.3	2.2	1.1	5.4

Incremental Closed with Payment Counts: Scenario 2

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	375.0	180.0	30.0	15.0	9.0	7.0	6.0	3.0	2.0	1.1	5.0
2012	378.6	181.7	30.3	15.1	9.1	7.1	6.1	3.0	2.2	1.1	5.0
2013	382.2	183.5	30.6	15.3	9.2	7.1	6.1	3.4	2.2	1.1	5.1
2014	385.9	185.2	30.9	15.4	9.3	7.2	6.8	3.4	2.3	1.1	5.1
2015	389.6	187.0	31.2	15.6	9.4	8.0	6.9	3.4	2.3	1.1	5.2
2016	393.4	188.8	31.5	15.7	10.4	8.1	6.9	3.5	2.3	1.2	5.2
2017	397.2	190.6	31.8	17.5	10.5	8.2	7.0	3.5	2.3	1.2	5.3
2018	401.0	192.5	35.3	17.6	10.6	8.2	7.1	3.5	2.4	1.2	5.3
2019	404.8	213.8	35.6	17.8	10.7	8.3	7.1	3.6	2.4	1.2	5.4
2020	449.6	215.8	36.0	18.0	10.8	8.4	7.2	3.6	2.4	1.2	5.4

Comparison of Scenarios

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	100%	100%	100%	100%	100%	100%	100%	100%	100%	110%	100%
2012	100%	100%	100%	100%	100%	100%	100%	100%	110%	110%	100%
2013	100%	100%	100%	100%	100%	100%	100%	110%	110%	110%	100%
2014	100%	100%	100%	100%	100%	100%	110%	110%	110%	110%	100%
2015	100%	100%	100%	100%	100%	110%	110%	110%	110%	110%	100%
2016	100%	100%	100%	100%	110%	110%	110%	110%	110%	110%	100%
2017	100%	100%	100%	110%	110%	110%	110%	110%	110%	110%	100%
2018	100%	100%	110%	110%	110%	110%	110%	110%	110%	110%	100%
2019	100%	110%	110%	110%	110%	110%	110%	110%	110%	110%	100%
2020	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	100%

An Incremental Approach to Estimating Ultimate Claim Counts and Future Claim Payments

Scenario 3: Shift in rate of claim closure
Data

Appendix 3
Exhibit 1

Cumulative Reported Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	815.0	1,018.0	1,046.0	1,063.0	1,064.0	1,065.0	1,065.0	1,065.0	1,065.0	1,065.0
2012	822.8	1,027.8	1,056.1	1,073.2	1,074.2	1,075.2	1,075.2	1,075.2	1,075.2	
2013	830.7	1,037.7	1,066.2	1,083.5	1,084.6	1,085.6	1,085.6	1,085.6		
2014	838.7	1,047.6	1,076.5	1,094.0	1,095.0	1,096.0	1,096.0			
2015	846.8	1,057.7	1,086.8	1,104.5	1,105.5	1,106.6				
2016	854.9	1,067.9	1,097.3	1,115.1	1,116.1					
2017	863.2	1,078.2	1,107.8	1,125.8						
2018	871.5	1,088.5	1,118.5							
2019	879.8	1,099.0								
2020	888.3									

Cumulative Closed without Payment Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	275.0	375.0	390.0	402.0	411.0	417.0	421.0	424.0	426.0	427.0
2012	277.6	378.6	393.8	405.9	415.0	421.0	425.0	428.1	430.1	
2013	280.3	382.2	397.5	409.8	418.9	425.1	429.1	432.2		
2014	283.0	385.9	401.4	413.7	423.0	429.1	433.3			
2015	285.7	389.6	405.2	417.7	427.0	433.3				
2016	288.5	393.4	409.1	421.7	429.7					
2017	291.3	397.2	413.0	423.9						
2018	294.1	401.0	414.6							
2019	296.9	388.6								
2020	254.8									

Cumulative Reported Loss

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	3,750,000	7,500,000	10,500,000	12,600,000	13,860,000	14,970,000	15,720,000	16,030,000	16,190,000	16,270,000
2012	3,937,500	7,875,000	11,025,000	13,230,000	14,553,000	15,718,500	16,506,000	16,831,500	16,999,500	
2013	4,134,375	8,268,750	11,576,250	13,891,500	15,280,650	16,504,425	17,331,300	17,673,075		
2014	4,341,094	8,682,188	12,155,063	14,586,075	16,044,683	17,329,646	18,197,865			
2015	4,558,148	9,116,297	12,762,816	15,315,379	16,846,917	18,196,129				
2016	4,786,056	9,572,112	13,400,956	16,081,148	17,555,819					
2017	5,025,359	10,050,717	14,071,004	16,622,733						
2018	5,276,627	10,553,253	14,643,010							
2019	5,540,458	13,226,584								
2020	7,530,993									

Cumulative Closed with Payment Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	375.0	555.0	585.0	600.0	609.0	616.0	622.0	625.0	627.0	628.0
2012	378.6	560.3	590.6	605.8	614.9	621.9	628.0	631.0	633.0	
2013	382.2	565.7	596.3	611.6	620.8	627.9	634.0	637.1		
2014	385.9	571.2	602.0	617.5	626.7	633.9	640.1			
2015	389.6	576.7	607.8	623.4	632.8	640.0				
2016	393.4	582.2	613.7	629.4	637.4					
2017	397.2	587.8	619.6	633.1						
2018	401.0	593.5	620.7							
2019	404.8	570.0								
2020	347.4									

Open Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	165.0	88.0	71.0	61.0	44.0	32.0	22.0	16.0	12.0	10.0
2012	166.6	88.8	71.7	61.6	44.4	32.3	22.2	16.2	12.1	
2013	168.2	89.7	72.4	62.2	44.9	32.6	22.4	16.3		
2014	169.8	90.6	73.1	62.8	45.3	32.9	22.6			
2015	171.4	91.4	73.8	63.4	45.7	33.2				
2016	173.1	92.3	74.5	64.0	49.0					
2017	174.8	93.2	75.2	68.9						
2018	176.4	94.1	83.1							
2019	178.1	140.3								
2020	286.1									

Cumulative Paid Loss

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	1,500,000	3,750,000	6,750,000	9,450,000	11,225,000	12,725,000	14,150,000	14,900,000	15,450,000	15,760,000
2012	1,575,000	3,937,500	7,087,500	9,922,500	11,786,250	13,361,250	14,857,500	15,645,000	16,222,500	
2013	1,653,750	4,134,375	7,441,875	10,418,625	12,375,563	14,029,313	15,600,375	16,427,250		
2014	1,736,438	4,341,094	7,813,969	10,939,556	12,994,341	14,730,778	16,380,394			
2015	1,823,259	4,558,148	8,204,667	11,486,534	13,644,058	15,467,317				
2016	1,914,422	4,786,056	8,614,901	12,060,861	13,986,451					
2017	2,010,143	5,025,359	9,045,646	12,121,165						
2018	2,110,651	5,276,627	8,864,733							
2019	2,216,183	5,041,817								
2020	1,977,943									

An Incremental Approach to Estimating Ultimate Claim Counts and Future Claim Payments

Scenario 3: Shift in rate of claim closure Diagnostics

Appendix 3
Exhibit 2

Case Reserves per Open Count

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	13,636	42,614	52,817	51,639	59,886	70,156	71,364	70,625	61,667	51,000
2012	14,182	44,318	54,930	53,705	62,282	72,963	74,218	73,450	64,133	
2013	14,749	46,091	57,127	55,853	64,773	75,881	77,187	76,388		
2014	15,339	47,935	59,412	58,087	67,364	78,916	80,274			
2015	15,953	49,852	61,788	60,411	70,059	82,073				
2016	16,591	51,846	64,260	62,827	72,861					
2017	17,254	53,920	66,830	65,340						
2018	17,945	56,077	69,503							
2019	18,662	58,320								
2020	19,409									

Closed Counts / Reported Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	79.8%	91.4%	93.2%	94.3%	95.9%	97.0%	97.9%	98.5%	98.9%	99.1%
2012	79.8%	91.4%	93.2%	94.3%	95.9%	97.0%	97.9%	98.5%	98.9%	
2013	79.8%	91.4%	93.2%	94.3%	95.9%	97.0%	97.9%	98.5%		
2014	79.8%	91.4%	93.2%	94.3%	95.9%	97.0%	97.9%			
2015	79.8%	91.4%	93.2%	94.3%	95.9%	97.0%				
2016	79.8%	91.4%	93.2%	94.3%	95.6%					
2017	79.8%	91.4%	93.2%	93.9%						
2018	79.8%	91.4%	92.6%							
2019	79.8%	87.2%								
2020	67.8%									

Paid Loss per Closed with Payment Count

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	4,000	6,757	11,538	15,750	18,432	20,657	22,749	23,840	24,641	25,096
2012	4,160	7,027	12,000	16,380	19,169	21,484	23,659	24,794	25,627	
2013	4,326	7,308	12,480	17,035	19,936	22,343	24,606	25,785		
2014	4,499	7,600	12,979	17,717	20,733	23,237	25,590			
2015	4,679	7,904	13,498	18,425	21,563	24,166				
2016	4,867	8,221	14,038	19,162	21,942					
2017	5,061	8,549	14,600	19,146						
2018	5,264	8,891	14,281							
2019	5,474	8,845								
2020	5,693									

Closed with Payment Counts / Closed Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	57.7%	59.7%	60.0%	59.9%	59.7%	59.6%	59.6%	59.6%	59.5%	59.5%
2012	57.7%	59.7%	60.0%	59.9%	59.7%	59.6%	59.6%	59.6%	59.5%	
2013	57.7%	59.7%	60.0%	59.9%	59.7%	59.6%	59.6%	59.6%		
2014	57.7%	59.7%	60.0%	59.9%	59.7%	59.6%	59.6%			
2015	57.7%	59.7%	60.0%	59.9%	59.7%	59.6%				
2016	57.7%	59.7%	60.0%	59.9%	59.7%					
2017	57.7%	59.7%	60.0%	59.9%						
2018	57.7%	59.7%	60.0%							
2019	57.7%	59.5%								
2020	57.7%									

Scenario 3: Shift in rate of claim closure
Reported Loss Development Method

Appendix 3
Exhibit 3

Cumulative Reported Loss											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	3,750,000	7,500,000	10,500,000	12,600,000	13,860,000	14,970,000	15,720,000	16,030,000	16,190,000	16,270,000	17,500,000
2012	3,937,500	7,875,000	11,025,000	13,230,000	14,553,000	15,718,500	16,506,000	16,831,500	16,999,500	17,083,500	18,375,000
2013	4,134,375	8,268,750	11,576,250	13,891,500	15,280,650	16,504,425	17,331,300	17,673,075	17,849,475	17,937,675	19,293,750
2014	4,341,094	8,682,188	12,155,063	14,586,075	16,044,683	17,329,646	18,197,865	18,556,729	18,741,949	18,834,559	20,258,438
2015	4,558,148	9,116,297	12,762,816	15,315,379	16,846,917	18,196,129	19,107,758	19,484,565	19,679,046	19,776,287	21,271,359
2016	4,786,056	9,572,112	13,400,956	16,081,148	17,555,819	18,961,804	19,911,794	20,304,457	20,507,121	20,608,454	22,166,438
2017	5,025,359	10,050,717	14,071,004	16,622,733	18,285,006	19,749,390	20,738,838	21,147,810	21,358,893	21,464,434	23,087,129
2018	5,276,627	10,553,253	14,643,010	17,571,612	19,328,774	20,876,749	21,922,678	22,354,996	22,578,127	22,689,693	24,405,017
2019	5,540,458	13,226,584	18,517,218	22,220,661	24,442,727	26,400,262	27,722,920	28,269,619	28,551,786	28,692,870	30,862,030
2020	7,530,993	15,061,987	21,086,781	25,304,138	27,834,551	30,063,725	31,569,924	32,192,486	32,513,809	32,674,470	35,144,636

Age-to-Age Factors										
Accident Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	2.000	1.400	1.200	1.100	1.080	1.050	1.020	1.010	1.005	
2012	2.000	1.400	1.200	1.100	1.080	1.050	1.020	1.010		
2013	2.000	1.400	1.200	1.100	1.080	1.050	1.020			
2014	2.000	1.400	1.200	1.100	1.080	1.050				
2015	2.000	1.400	1.200	1.100	1.080					
2016	2.000	1.400	1.200	1.092						
2017	2.000	1.400	1.181							
2018	2.000	1.388								
2019	2.387									
Age-to-Age	2.000	1.400	1.200	1.100	1.080	1.050	1.020	1.010	1.005	
Age-to-Ult	4.667	2.333	1.667	1.389	1.263	1.169	1.113	1.092	1.081	1.076

Scenario 3: Shift in rate of claim closure
Paid Loss Development Method

Appendix 3
Exhibit 4

Cumulative Paid Loss											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	1,500,000	3,750,000	6,750,000	9,450,000	11,225,000	12,725,000	14,150,000	14,900,000	15,450,000	15,760,000	17,500,000
2012	1,575,000	3,937,500	7,087,500	9,922,500	11,786,250	13,361,250	14,857,500	15,645,000	16,222,500	16,548,000	18,375,000
2013	1,653,750	4,134,375	7,441,875	10,418,625	12,375,563	14,029,313	15,600,375	16,427,250	17,033,625	17,375,400	19,293,750
2014	1,736,438	4,341,094	7,813,969	10,939,556	12,994,341	14,730,778	16,380,394	17,248,613	17,885,306	18,244,170	20,258,438
2015	1,823,259	4,558,148	8,204,667	11,486,534	13,644,058	15,467,317	17,199,413	18,111,043	18,779,572	19,156,379	21,271,359
2016	1,914,422	4,786,056	8,614,901	12,060,861	13,986,451	15,855,464	17,631,027	18,565,534	19,250,838	19,637,101	21,805,157
2017	2,010,143	5,025,359	9,045,646	12,121,165	14,397,892	16,321,886	18,149,681	19,111,678	19,817,143	20,214,768	22,446,602
2018	2,110,651	5,276,627	8,864,733	12,410,626	14,741,722	16,711,663	18,583,106	19,568,077	20,290,388	20,697,509	22,982,640
2019	2,216,183	5,041,817	9,075,270	12,705,378	15,091,838	17,108,565	19,024,455	20,032,818	20,772,285	21,189,075	23,528,478
2020	1,977,943	4,944,859	8,900,746	12,461,044	14,801,610	16,779,554	18,658,600	19,647,572	20,372,818	20,781,593	23,076,007

Age-to-Age Factors										
Accident Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	2.500	1.800	1.400	1.188	1.134	1.112	1.053	1.037	1.020	
2012	2.500	1.800	1.400	1.188	1.134	1.112	1.053	1.037		
2013	2.500	1.800	1.400	1.188	1.134	1.112	1.053			
2014	2.500	1.800	1.400	1.188	1.134	1.112				
2015	2.500	1.800	1.400	1.188	1.134					
2016	2.500	1.800	1.400	1.160						
2017	2.500	1.800	1.340							
2018	2.500	1.680								
2019	2.275									
Age-to-Age	2.500	1.800	1.400	1.188	1.134	1.112	1.053	1.037	1.020	
Age-to-Ult	11.667	4.667	2.593	1.852	1.559	1.375	1.237	1.174	1.133	1.110

Scenario 3: Shift in rate of claim closure
 Disposal Rate Frequency-Severity Method

Appendix 3
 Exhibit 5

Cumulative Non-Zero Counts											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	540.0	643.0	656.0	661.0	653.0	648.0	644.0	641.0	639.0	638.0	633.0
2012	545.2	649.2	662.3	667.4	659.3	654.2	650.2	647.2	645.1	644.1	639.1
2013	550.4	655.4	668.7	673.8	665.6	660.5	656.4	653.4	651.3	650.3	645.2
2014	555.7	661.7	675.1	680.3	672.0	666.9	662.8	659.7	657.6	656.6	651.4
2015	561.1	668.1	681.6	686.8	678.5	673.3	669.1	666.0	663.9	662.9	657.7
2016	566.5	674.5	688.2	693.4	686.4	681.2	677.0	673.8	671.7	670.7	665.4
2017	571.9	681.0	694.8	702.0	693.5	688.2	683.9	680.7	678.6	677.5	672.2
2018	577.4	687.5	703.9	709.2	700.6	695.3	691.0	687.8	685.6	684.5	679.2
2019	583.0	710.4	724.7	730.2	721.4	715.9	711.5	708.1	705.9	704.8	699.3
2020	633.5	754.4	769.6	775.5	766.1	760.2	755.5	752.0	749.7	748.5	742.6

Age-to-Age Factors										
Accident Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	1.191	1.020	1.008	0.988	0.992	0.994	0.995	0.997	0.998	
2012	1.191	1.020	1.008	0.988	0.992	0.994	0.995	0.997		
2013	1.191	1.020	1.008	0.988	0.992	0.994	0.995			
2014	1.191	1.020	1.008	0.988	0.992	0.994				
2015	1.191	1.020	1.008	0.988	0.992					
2016	1.191	1.020	1.008	0.990						
2017	1.191	1.020	1.010							
2018	1.191	1.024								
2019	1.219									
Age-to-Age	1.191	1.020	1.008	0.988	0.992	0.994	0.995	0.997	0.998	
Age-to-Ult	1.172	0.984	0.965	0.958	0.969	0.977	0.983	0.988	0.991	0.992

Scenario 3: Shift in rate of claim closure
Disposal Rate Frequency-Severity Method

Disposal Rate (Closed with Payment Counts)

Accident Year	12	24	36	48	60	72	84	96	108	120	120-Ult
2011	59%	88%	92%	95%	96%	97%	98%	99%	99%	99%	
2012	59%	88%	92%	95%	96%	97%	98%	99%	99%		
2013	59%	88%	92%	95%	96%	97%	98%	99%			
2014	59%	88%	92%	95%	96%	97%	98%				
2015	59%	88%	92%	95%	96%	97%					
2016	59%	87%	92%	95%	96%						
2017	59%	87%	92%	94%							
2018	59%	87%	91%								
2019	58%	82%									
2020	47%										
Selected	47%	82%	91%	94%	96%	97%	98%	99%	99%	99%	100%

Incremental Closed with Payment Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	375.0	180.0	30.0	15.0	9.0	7.0	6.0	3.0	2.0	1.0	5.0	633.0
2012	378.6	181.7	30.3	15.1	9.1	7.1	6.1	3.0	2.0	1.0	5.0	639.1
2013	382.2	183.5	30.6	15.3	9.2	7.1	6.1	3.1	2.0	1.0	5.1	645.2
2014	385.9	185.2	30.9	15.4	9.3	7.2	6.2	3.1	2.1	1.0	5.1	651.4
2015	389.6	187.0	31.2	15.6	9.4	7.3	6.2	3.1	2.1	1.0	5.2	657.7
2016	393.4	188.8	31.5	15.7	8.0	10.1	6.3	3.2	2.1	1.1	5.3	665.4
2017	397.2	190.6	31.8	13.5	10.9	10.2	6.4	3.2	2.1	1.1	5.3	672.2
2018	401.0	192.5	27.3	18.9	11.0	10.3	6.4	3.2	2.1	1.1	5.4	679.2
2019	404.8	165.2	69.1	19.5	11.3	10.6	6.6	3.3	2.2	1.1	5.5	699.3
2020	347.4	257.9	73.4	20.7	12.0	11.3	7.0	3.5	2.3	1.2	5.9	742.6

Scenario 3: Shift in rate of claim closure
Disposal Rate Frequency-Severity Method

Appendix 3
Exhibit 7

Incremental Paid Severity

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	4,000	12,500	100,000	180,000	197,222	214,286	237,500	250,000	275,000	310,000	348,000
2012	4,160	13,000	104,000	187,200	205,111	222,857	247,000	260,000	286,000	322,400	361,920
2013	4,326	13,520	108,160	194,688	213,316	231,771	256,880	270,400	297,440	335,296	376,397
2014	4,499	14,061	112,486	202,476	221,848	241,042	267,155	281,216	309,338	348,708	391,453
2015	4,679	14,623	116,986	210,575	230,722	250,684	277,841	292,465	321,711	362,656	407,111
2016	4,867	15,208	121,665	218,998	239,951	260,711	288,955	304,163	334,580	377,162	423,395
2017	5,061	15,816	126,532	227,757	249,549	271,140	300,513	316,330	347,963	392,249	440,331
2018	5,264	16,449	131,593	236,868	259,531	281,985	312,534	328,983	361,881	407,939	457,944
2019	5,474	17,107	136,857	246,342	269,912	293,265	325,035	342,142	376,356	424,256	476,262
2020	5,693	17,791	142,331	256,196	280,709	304,995	338,037	355,828	391,411	441,227	495,313

Trend Rate: 4%

Trended Incremental Paid Severity

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	5,693	17,107	131,593	227,757	239,951	250,684	267,155	270,400	286,000	310,000	
2012	5,693	17,107	131,593	227,757	239,951	250,684	267,155	270,400	286,000		
2013	5,693	17,107	131,593	227,757	239,951	250,684	267,155	270,400			
2014	5,693	17,107	131,593	227,757	239,951	250,684	267,155				
2015	5,693	17,107	131,593	227,757	239,951	250,684					
2016	5,693	17,107	131,593	227,757	239,951						
2017	5,693	17,107	131,593	227,757							
2018	5,693	17,107	131,593								
2019	5,693	17,107									
2020	5,693										
Selected	5,693	17,107	131,593	227,757	239,951	250,684	267,155	270,400	286,000	310,000	334,615

Scenario 3: Shift in rate of claim closure
Disposal Rate Frequency-Severity Method

Appendix 3
Exhibit 8

Incremental Paid Loss												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	1,500,000	2,250,000	3,000,000	2,700,000	1,775,000	1,500,000	1,425,000	750,000	550,000	310,000	1,740,000	17,500,000
2012	1,575,000	2,362,500	3,150,000	2,835,000	1,863,750	1,575,000	1,496,250	787,500	577,500	325,500	1,827,000	18,375,000
2013	1,653,750	2,480,625	3,307,500	2,976,750	1,956,938	1,653,750	1,571,063	826,875	606,375	341,775	1,918,350	19,293,750
2014	1,736,438	2,604,656	3,472,875	3,125,588	2,054,784	1,736,438	1,649,616	868,219	636,694	358,864	2,014,268	20,258,438
2015	1,823,259	2,734,889	3,646,519	3,281,867	2,157,524	1,823,259	1,732,096	911,630	668,528	376,807	2,114,981	21,271,359
2016	1,914,422	2,871,634	3,828,845	3,445,960	1,925,590	2,631,922	1,822,461	959,190	703,406	396,465	2,225,321	22,725,217
2017	2,010,143	3,015,215	4,020,287	3,075,519	2,721,635	2,765,327	1,914,837	1,007,809	739,060	416,561	2,338,116	24,024,509
2018	2,110,651	3,165,976	3,588,106	4,475,753	2,859,731	2,905,640	2,011,995	1,058,945	776,560	437,697	2,456,752	25,847,806
2019	2,216,183	2,825,634	9,457,409	4,792,734	3,062,262	3,111,422	2,154,488	1,133,941	831,557	468,696	2,630,744	32,685,070
2020	1,977,943	4,588,585	10,445,175	5,293,305	3,382,096	3,436,391	2,379,511	1,252,374	918,408	517,648	2,905,508	37,096,946

Scenario 3: Shift in rate of claim closure
Incremental Method

Appendix 3
Exhibit 9

Cumulative Reported Counts											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	815.0	1,018.0	1,046.0	1,063.0	1,064.0	1,065.0	1,065.0	1,065.0	1,065.0	1,065.0	1,065.0
2012	822.8	1,027.8	1,056.1	1,073.2	1,074.2	1,075.2	1,075.2	1,075.2	1,075.2	1,075.2	1,075.2
2013	830.7	1,037.7	1,066.2	1,083.5	1,084.6	1,085.6	1,085.6	1,085.6	1,085.6	1,085.6	1,085.6
2014	838.7	1,047.6	1,076.5	1,094.0	1,095.0	1,096.0	1,096.0	1,096.0	1,096.0	1,096.0	1,096.0
2015	846.8	1,057.7	1,086.8	1,104.5	1,105.5	1,106.6	1,106.6	1,106.6	1,106.6	1,106.6	1,106.6
2016	854.9	1,067.9	1,097.3	1,115.1	1,116.1	1,117.2	1,117.2	1,117.2	1,117.2	1,117.2	1,117.2
2017	863.2	1,078.2	1,107.8	1,125.8	1,126.9	1,127.9	1,127.9	1,127.9	1,127.9	1,127.9	1,127.9
2018	871.5	1,088.5	1,118.5	1,136.6	1,137.7	1,138.8	1,138.8	1,138.8	1,138.8	1,138.8	1,138.8
2019	879.8	1,099.0	1,129.2	1,147.6	1,148.7	1,149.7	1,149.7	1,149.7	1,149.7	1,149.7	1,149.7
2020	888.3	1,109.6	1,140.1	1,158.6	1,159.7	1,160.8	1,160.8	1,160.8	1,160.8	1,160.8	1,160.8

Age-to-Age Factors										
Accident Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	1.249	1.028	1.016	1.001	1.001	1.000	1.000	1.000	1.000	
2012	1.249	1.028	1.016	1.001	1.001	1.000	1.000	1.000		
2013	1.249	1.028	1.016	1.001	1.001	1.000	1.000			
2014	1.249	1.028	1.016	1.001	1.001	1.000				
2015	1.249	1.028	1.016	1.001	1.001					
2016	1.249	1.028	1.016	1.001						
2017	1.249	1.028	1.016							
2018	1.249	1.028								
2019	1.249									
Age-to-Age	1.249	1.028	1.016	1.001	1.001	1.000	1.000	1.000	1.000	
Age-to-Ult	1.307	1.046	1.018	1.002	1.001	1.000	1.000	1.000	1.000	1.000

**Scenario 3: Shift in rate of claim closure
Incremental Method**

**Appendix 3
Exhibit 10**

Active Counts										
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120
2011	815.0	368.0	116.0	88.0	62.0	45.0	32.0	22.0	16.0	12.0
2012	822.8	371.5	117.1	88.8	62.6	45.4	32.3	22.2	16.2	
2013	830.7	375.1	118.2	89.7	63.2	45.9	32.6	22.4		
2014	838.7	378.7	119.4	90.6	63.8	46.3	32.9			
2015	846.8	382.4	120.5	91.4	64.4	46.8				
2016	854.9	386.0	121.7	92.3	65.0					
2017	863.2	389.7	122.9	93.2						
2018	871.5	393.5	124.0							
2019	879.8	397.3								
2020	888.3									

Scenario 3: Shift in rate of claim closure
Incremental Method

Incremental Closed Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	650.0	280.0	45.0	27.0	18.0	13.0	10.0	6.0	4.0	2.0	
2012	656.3	282.7	45.4	27.3	18.2	13.1	10.1	6.1	4.0		
2013	662.6	285.4	45.9	27.5	18.3	13.3	10.2	6.1			
2014	668.9	288.2	46.3	27.8	18.5	13.4	10.3				
2015	675.4	290.9	46.8	28.1	18.7	13.5					
2016	681.9	293.7	47.2	28.3	16.0						
2017	688.4	296.5	47.7	24.3							
2018	695.0	299.4	40.9								
2019	701.7	256.9									
2020	602.2										

Incremental Closure Rate

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	80%	76%	39%	31%	29%	29%	31%	27%	25%	17%	
2012	80%	76%	39%	31%	29%	29%	31%	27%	25%		
2013	80%	76%	39%	31%	29%	29%	31%	27%			
2014	80%	76%	39%	31%	29%	29%	31%				
2015	80%	76%	39%	31%	29%	29%					
2016	80%	76%	39%	31%	25%						
2017	80%	76%	39%	26%							
2018	80%	76%	33%								
2019	80%	65%									
2020	68%										
Selected	80%	76%	39%	31%	29%	29%	31%	27%	25%	17%	100%

**Scenario 3: Shift in rate of claim closure
Incremental Method**

Incremental Closed with Payment Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	375.0	180.0	30.0	15.0	9.0	7.0	6.0	3.0	2.0	1.0	
2012	378.6	181.7	30.3	15.1	9.1	7.1	6.1	3.0	2.0		
2013	382.2	183.5	30.6	15.3	9.2	7.1	6.1	3.1			
2014	385.9	185.2	30.9	15.4	9.3	7.2	6.2				
2015	389.6	187.0	31.2	15.6	9.4	7.3					
2016	393.4	188.8	31.5	15.7	8.0						
2017	397.2	190.6	31.8	13.5							
2018	401.0	192.5	27.3								
2019	404.8	165.2									
2020	347.4										

Incremental Closed with Payment Rate

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	46%	49%	26%	17%	15%	16%	19%	14%	13%	8%	
2012	46%	49%	26%	17%	15%	16%	19%	14%	13%		
2013	46%	49%	26%	17%	15%	16%	19%	14%			
2014	46%	49%	26%	17%	15%	16%	19%				
2015	46%	49%	26%	17%	15%	16%					
2016	46%	49%	26%	17%	12%						
2017	46%	49%	26%	14%							
2018	46%	49%	22%								
2019	46%	42%									
2020	39%										
Selected	46%	49%	26%	17%	15%	16%	19%	14%	13%	8%	50%

Scenario 3: Shift in rate of claim closure
Incremental Method

Incremental Closed without Payment Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	275.0	100.0	15.0	12.0	9.0	6.0	4.0	3.0	2.0	1.0	
2012	277.6	101.0	15.1	12.1	9.1	6.1	4.0	3.0	2.0		
2013	280.3	101.9	15.3	12.2	9.2	6.1	4.1	3.1			
2014	283.0	102.9	15.4	12.3	9.3	6.2	4.1				
2015	285.7	103.9	15.6	12.5	9.4	6.2					
2016	288.5	104.9	15.7	12.6	8.0						
2017	291.3	105.9	15.9	10.8							
2018	294.1	106.9	13.6								
2019	296.9	91.8									
2020	254.8										

Incremental Closed with Payment Rate

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	34%	27%	13%	14%	15%	13%	13%	14%	13%	8%	
2012	34%	27%	13%	14%	15%	13%	12%	14%	13%		
2013	34%	27%	13%	14%	15%	13%	13%	14%			
2014	34%	27%	13%	14%	15%	13%	12%				
2015	34%	27%	13%	14%	15%	13%					
2016	34%	27%	13%	14%	12%						
2017	34%	27%	13%	12%							
2018	34%	27%	11%								
2019	34%	23%									
2020	29%										
Implied	34%	27%	13%	14%	15%	13%	13%	14%	13%	8%	50%

An Incremental Approach to Estimating Ultimate Claim Counts and Future Claim Payments

Scenario 3: Shift in rate of claim closure
Incremental Method

Appendix 3
Exhibit 14

Active Counts												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	815.0	368.0	116.0	88.0	62.0	45.0	32.0	22.0	16.0	12.0	10.0	0.0
2012	822.8	371.5	117.1	88.8	62.6	45.4	32.3	22.2	16.2	12.1	10.1	0.0
2013	830.7	375.1	118.2	89.7	63.2	45.9	32.6	22.4	16.3	12.2	10.2	0.0
2014	838.7	378.7	119.4	90.6	63.8	46.3	32.9	22.6	16.5	12.3	10.3	0.0
2015	846.8	382.4	120.5	91.4	64.4	46.8	33.2	22.9	16.6	12.5	10.4	0.0
2016	854.9	386.0	121.7	92.3	65.0	47.0	33.5	23.1	16.7	12.6	10.5	0.0
2017	863.2	389.7	122.9	93.2	65.2	47.2	33.7	23.2	16.8	12.7	10.6	0.0
2018	871.5	393.5	124.0	94.1	65.4	47.4	33.9	23.3	16.9	12.8	10.7	0.0
2019	879.8	397.3	125.1	95.0	65.6	47.6	34.1	23.4	17.0	12.9	10.8	0.0
2020	888.3	401.1	126.2	95.9	65.8	47.8	34.3	23.5	17.1	13.0	10.9	0.0

Incremental Closed with Payment Counts												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	375.0	180.0	30.0	15.0	9.0	7.0	6.0	3.0	2.0	1.0	5.0	633.0
2012	378.6	181.7	30.3	15.1	9.1	7.1	6.1	3.0	2.0	1.0	5.0	639.1
2013	382.2	183.5	30.6	15.3	9.2	7.1	6.1	3.1	2.0	1.0	5.1	645.2
2014	385.9	185.2	30.9	15.4	9.3	7.2	6.2	3.1	2.1	1.0	5.1	651.4
2015	389.6	187.0	31.2	15.6	9.4	7.3	6.2	3.1	2.1	1.0	5.2	657.7
2016	393.4	188.8	31.5	15.7	9.4	7.3	6.3	3.1	2.1	1.1	5.6	664.1
2017	397.2	190.6	31.8	15.8	9.5	7.4	6.3	3.1	2.1	1.1	5.6	670.3
2018	401.0	192.5	32.1	15.9	9.5	7.4	6.4	3.1	2.1	1.1	5.7	675.9
2019	404.8	194.4	32.4	16.0	9.6	7.5	6.4	3.1	2.1	1.1	5.7	681.5
2020	408.6	196.3	32.7	16.1	9.6	7.5	6.5	3.1	2.1	1.1	5.7	687.1

Incremental Closed without Payment Counts												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	275.0	100.0	15.0	12.0	9.0	6.0	4.0	3.0	2.0	1.0	5.0	432.0
2012	277.6	101.0	15.1	12.1	9.1	6.1	4.0	3.0	2.0	1.0	5.0	436.2
2013	280.3	101.9	15.3	12.2	9.2	6.1	4.1	3.1	2.0	1.0	5.1	440.3
2014	283.0	102.9	15.4	12.3	9.3	6.2	4.1	3.1	2.1	1.0	5.1	444.6
2015	285.7	103.9	15.6	12.5	9.4	6.2	4.2	3.1	2.1	1.0	5.2	448.9
2016	288.5	104.9	15.7	12.6	9.5	6.3	4.2	3.2	2.1	1.1	5.6	453.1
2017	291.3	105.9	15.9	12.7	9.6	6.4	4.3	3.2	2.1	1.1	5.6	457.7
2018	294.1	106.9	16.0	12.8	9.7	6.5	4.3	3.2	2.1	1.1	5.7	462.9
2019	296.9	107.9	16.1	12.9	9.8	6.6	4.4	3.2	2.1	1.1	5.7	468.1
2020	299.7	108.9	16.2	13.0	9.9	6.7	4.4	3.2	2.1	1.1	5.7	473.3

Open Counts												
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate	
2011	165.0	88.0	71.0	61.0	44.0	32.0	22.0	16.0	12.0	10.0	0.0	
2012	166.6	88.8	71.7	61.6	44.4	32.3	22.2	16.2	12.1	10.1	0.0	
2013	168.2	89.7	72.4	62.2	44.9	32.6	22.4	16.3	12.2	10.2	0.0	
2014	169.8	90.6	73.1	62.8	45.3	32.9	22.6	16.5	12.3	10.3	0.0	
2015	171.4	91.4	73.8	63.4	45.7	33.2	22.9	16.6	12.5	10.4	0.0	
2016	173.1	92.3	74.5	64.0	46.0	33.5	23.1	16.7	12.6	10.5	0.0	
2017	174.8	93.2	75.2	64.6	46.3	33.8	23.2	16.8	12.7	10.6	0.0	
2018	176.4	94.1	75.9	65.2	46.6	34.1	23.3	16.9	12.8	10.7	0.0	
2019	178.1	95.0	76.6	65.8	46.9	34.4	23.4	17.0	12.9	10.8	0.0	
2020	179.7	95.9	77.3	66.4	47.2	34.7	23.5	17.1	13.0	10.9	0.0	

Scenario 3: Shift in rate of claim closure
Incremental Method

Incremental Paid Loss												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	1,500,000	2,250,000	3,000,000	2,700,000	1,775,000	1,500,000	1,425,000	750,000	550,000	310,000	1,740,000	17,500,000
2012	1,575,000	2,362,500	3,150,000	2,835,000	1,863,750	1,575,000	1,496,250	787,500	577,500	325,500	1,827,000	18,375,000
2013	1,653,750	2,480,625	3,307,500	2,976,750	1,956,938	1,653,750	1,571,063	826,875	606,375	341,775	1,918,350	19,293,750
2014	1,736,438	2,604,656	3,472,875	3,125,588	2,054,784	1,736,438	1,649,616	868,219	636,694	358,864	2,014,268	20,258,438
2015	1,823,259	2,734,889	3,646,519	3,281,867	2,157,524	1,823,259	1,732,096	911,630	668,528	376,807	2,114,981	21,271,359
2016	1,914,422	2,871,634	3,828,845	3,445,960	1,925,590	2,029,288	1,927,823	1,014,644	744,072	419,386	2,353,974	22,475,637
2017	2,010,143	3,015,215	4,020,287	3,075,519	2,534,051	2,138,533	2,031,607	1,069,267	784,129	441,964	2,480,699	23,601,413
2018	2,110,651	3,165,976	3,588,106	4,090,585	2,686,091	2,266,396	2,153,076	1,133,198	831,012	468,389	2,629,020	25,122,499
2019	2,216,183	2,825,634	6,037,189	5,154,450	3,376,217	2,838,987	2,697,037	1,419,493	1,040,962	586,724	3,293,224	31,486,099
2020	1,977,943	4,415,278	5,589,404	4,867,828	3,192,944	2,690,012	2,555,512	1,345,006	986,338	555,936	3,120,414	31,296,616

Scenario 3: Shift in rate of claim closure
Incremental Method

Appendix 3
Exhibit 16

Incremental Closed with Payment Counts: Base Case

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	375.0	180.0	30.0	15.0	9.0	7.0	6.0	3.0	2.0	1.0	5.0
2012	378.6	181.7	30.3	15.1	9.1	7.1	6.1	3.0	2.0	1.0	5.0
2013	382.2	183.5	30.6	15.3	9.2	7.1	6.1	3.1	2.0	1.0	5.1
2014	385.9	185.2	30.9	15.4	9.3	7.2	6.2	3.1	2.1	1.0	5.1
2015	389.6	187.0	31.2	15.6	9.4	7.3	6.2	3.1	2.1	1.0	5.2
2016	393.4	188.8	31.5	15.7	9.4	7.3	6.3	3.1	2.1	1.0	5.2
2017	397.2	190.6	31.8	15.9	9.5	7.4	6.4	3.2	2.1	1.1	5.3
2018	401.0	192.5	32.1	16.0	9.6	7.5	6.4	3.2	2.1	1.1	5.3
2019	404.8	194.3	32.4	16.2	9.7	7.6	6.5	3.2	2.2	1.1	5.4
2020	408.7	196.2	32.7	16.3	9.8	7.6	6.5	3.3	2.2	1.1	5.4

Incremental Closed with Payment Counts: Scenario 3

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	375.0	180.0	30.0	15.0	9.0	7.0	6.0	3.0	2.0	1.0	5.0
2012	378.6	181.7	30.3	15.1	9.1	7.1	6.1	3.0	2.0	1.0	5.0
2013	382.2	183.5	30.6	15.3	9.2	7.1	6.1	3.1	2.0	1.0	5.1
2014	385.9	185.2	30.9	15.4	9.3	7.2	6.2	3.1	2.1	1.0	5.1
2015	389.6	187.0	31.2	15.6	9.4	7.3	6.2	3.1	2.1	1.0	5.2
2016	393.4	188.8	31.5	15.7	8.0	7.8	6.7	3.3	2.2	1.1	5.6
2017	397.2	190.6	31.8	13.5	10.2	7.9	6.8	3.4	2.3	1.1	5.6
2018	401.0	192.5	27.3	17.3	10.3	8.0	6.9	3.4	2.3	1.1	5.7
2019	404.8	165.2	44.1	20.9	12.5	9.7	8.3	4.1	2.8	1.4	6.9
2020	347.4	248.2	39.3	19.0	11.4	8.8	7.6	3.8	2.5	1.3	6.3

Comparison of Scenarios

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
2012	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
2013	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
2014	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
2016	100%	100%	100%	100%	85%	106%	106%	106%	106%	106%	106%
2017	100%	100%	100%	85%	107%	106%	106%	106%	106%	106%	106%
2018	100%	100%	85%	108%	108%	107%	107%	107%	107%	107%	107%
2019	100%	85%	136%	129%	129%	128%	128%	128%	128%	128%	128%
2020	85%	126%	120%	116%	116%	116%	116%	116%	116%	116%	116%

An Incremental Approach to Estimating Ultimate Claim Counts and Future Claim Payments

Scenario 4: Private Passenger Auto
Data (Losses in thousands)

Appendix 4
Exhibit 1

Cumulative Reported Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	13,285	14,107	14,278	14,334	14,343	14,345	14,347	14,348	14,348	14,348
2012	12,678	13,480	13,773	13,792	13,796	13,798	13,799	13,799	13,799	
2013	12,202	12,964	13,023	13,035	13,041	13,043	13,044	13,044		
2014	10,667	11,249	11,295	11,317	11,323	11,323	11,323			
2015	10,047	10,703	10,784	10,806	10,809	10,810				
2016	10,220	10,665	10,742	10,762	10,763					
2017	10,710	11,339	11,405	11,429						
2018	11,874	12,501	12,582							
2019	11,451	12,201								
2020	11,163									

Cumulative Closed without Payment Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	3,644	4,255	4,352	4,431	4,450	4,466	4,471	4,473	4,473	4,473
2012	3,426	4,513	4,801	4,847	4,861	4,865	4,868	4,868	4,870	
2013	3,800	4,954	5,021	5,049	5,057	5,064	5,065	5,068		
2014	3,055	3,476	3,530	3,563	3,582	3,587	3,589			
2015	2,447	2,980	3,130	3,167	3,182	3,184				
2016	2,447	2,913	2,994	3,010	3,021					
2017	2,536	3,174	3,228	3,235						
2018	3,432	3,935	3,999							
2019	2,694	3,239								
2020	2,594									

Cumulative Reported Loss

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	66,864	76,933	82,886	86,662	88,601	89,955	91,425	92,659	93,014	93,652
2012	60,073	67,591	73,451	76,387	77,888	78,630	79,979	81,325	81,549	
2013	58,942	67,331	71,312	73,425	74,761	76,133	77,341	78,456		
2014	57,367	66,125	71,359	74,392	75,449	76,455	77,592			
2015	57,332	66,381	69,709	71,923	73,014	74,372				
2016	60,238	73,707	78,662	82,592	83,763					
2017	68,251	81,617	88,106	90,787						
2018	74,885	90,847	97,546							
2019	85,308	97,740								
2020	90,649									

Cumulative Closed with Payment Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	6,954	9,392	9,736	9,789	9,833	9,851	9,867	9,872	9,873	9,874
2012	7,045	8,555	8,783	8,866	8,894	8,920	8,922	8,926	8,927	
2013	6,033	7,627	7,841	7,916	7,953	7,963	7,969	7,971		
2014	5,796	7,314	7,541	7,668	7,709	7,727	7,730			
2015	5,535	7,107	7,469	7,564	7,597	7,615				
2016	5,457	7,300	7,579	7,674	7,718					
2017	5,876	7,739	8,029	8,120						
2018	6,173	8,155	8,427							
2019	6,354	8,533								
2020	6,098									

Open Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	2,687	460	190	114	60	28	9	3	2	1
2012	2,207	412	189	79	41	13	9	5	2	
2013	2,369	383	161	70	31	16	10	5		
2014	1,816	459	224	86	32	9	4			
2015	2,065	616	185	75	30	11				
2016	2,316	452	169	78	24					
2017	2,298	426	148	74						
2018	2,269	411	156							
2019	2,403	429								
2020	2,471									

Cumulative Paid Loss

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	32,674	57,934	72,163	79,523	85,214	88,726	90,877	92,474	92,943	93,558
2012	30,560	53,919	64,638	71,485	75,567	77,868	79,506	80,871	81,390	
2013	28,678	50,761	62,774	69,745	72,641	74,754	76,498	78,015		
2014	27,887	50,158	62,104	69,473	72,672	75,469	77,215			
2015	26,989	49,006	59,694	66,587	70,861	73,706				
2016	29,853	56,665	69,892	76,127	81,361					
2017	33,071	59,463	76,720	84,844						
2018	35,733	70,594	86,043							
2019	39,503	74,123								
2020	41,245									

An Incremental Approach to Estimating Ultimate Claim Counts and Future Claim Payments

Scenario 4: Private Passenger Auto Diagnostics

Appendix 4 Exhibit 2

Case Reserves per Open Count

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	12,724	41,302	56,437	62,623	56,450	43,893	60,889	61,667	35,500	94,000
2012	13,372	33,184	46,630	62,051	56,610	58,615	52,556	90,800	79,500	
2013	12,775	43,264	53,031	52,571	68,387	86,188	84,300	88,200		
2014	16,233	34,786	41,317	57,198	86,781	109,556	94,250			
2015	14,694	28,206	54,135	71,147	71,767	60,545				
2016	13,120	37,704	51,893	82,885	100,083					
2017	15,309	52,005	76,932	80,311						
2018	17,255	49,277	73,737							
2019	19,062	55,051								
2020	19,994									

Closed Counts / Reported Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	79.8%	96.7%	98.7%	99.2%	99.6%	99.8%	99.9%	100.0%	100.0%	100.0%
2012	82.6%	96.9%	98.6%	99.4%	99.7%	99.9%	99.9%	100.0%	100.0%	
2013	80.6%	97.0%	98.8%	99.5%	99.8%	99.9%	99.9%	100.0%		
2014	83.0%	95.9%	98.0%	99.2%	99.7%	99.9%	100.0%			
2015	79.4%	94.2%	98.3%	99.3%	99.7%	99.9%				
2016	77.3%	95.8%	98.4%	99.3%	99.8%					
2017	78.5%	96.2%	98.7%	99.4%						
2018	80.9%	96.7%	98.8%							
2019	79.0%	96.5%								
2020	77.9%									

Paid Loss per Closed with Payment Count

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	4,699	6,168	7,412	8,124	8,666	9,007	9,210	9,367	9,414	9,475
2012	4,338	6,303	7,359	8,063	8,496	8,730	8,911	9,060	9,117	
2013	4,754	6,655	8,006	8,811	9,134	9,388	9,599	9,787		
2014	4,811	6,858	8,236	9,060	9,427	9,767	9,989			
2015	4,876	6,895	7,992	8,803	9,327	9,679				
2016	5,471	7,762	9,222	9,920	10,542					
2017	5,628	7,684	9,555	10,449						
2018	5,789	8,657	10,210							
2019	6,217	8,687								
2020	6,764									

Closed with Payment Counts / Closed Counts

Accident Year	12	24	36	48	60	72	84	96	108	120
2011	65.6%	68.8%	69.1%	68.8%	68.8%	68.8%	68.8%	68.8%	68.8%	68.8%
2012	67.3%	65.5%	64.7%	64.7%	64.7%	64.7%	64.7%	64.7%	64.7%	64.7%
2013	61.4%	60.6%	61.0%	61.1%	61.1%	61.1%	61.1%	61.1%	61.1%	61.1%
2014	65.5%	67.8%	68.1%	68.3%	68.3%	68.3%	68.3%			
2015	69.3%	70.5%	70.5%	70.5%	70.5%	70.5%				
2016	69.0%	71.5%	71.7%	71.8%	71.9%					
2017	69.9%	70.9%	71.3%	71.5%						
2018	64.3%	67.5%	67.8%							
2019	70.2%	72.5%								
2020	70.2%									

Scenario 4: Private Passenger Auto
Incremental Method

Appendix 4
Exhibit 3

Cumulative Reported Counts											
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate
2011	13,285	14,107	14,278	14,334	14,343	14,345	14,347	14,348	14,348	14,348	14,348
2012	12,678	13,480	13,773	13,792	13,796	13,798	13,799	13,799	13,799	13,799	13,799
2013	12,202	12,964	13,023	13,035	13,041	13,043	13,044	13,044	13,044	13,044	13,044
2014	10,667	11,249	11,295	11,317	11,323	11,323	11,323	11,323	11,323	11,323	11,323
2015	10,047	10,703	10,784	10,806	10,809	10,810	10,811	10,811	10,811	10,811	10,811
2016	10,220	10,665	10,742	10,762	10,763	10,764	10,764	10,765	10,765	10,765	10,765
2017	10,710	11,339	11,405	11,429	11,432	11,433	11,434	11,434	11,434	11,434	11,434
2018	11,874	12,501	12,582	12,607	12,611	12,612	12,613	12,613	12,613	12,613	12,613
2019	11,451	12,201	12,280	12,305	12,309	12,310	12,310	12,311	12,311	12,311	12,311
2020	11,163	11,821	11,898	11,922	11,925	11,926	11,927	11,927	11,927	11,927	11,927

Age-to-Age Factors										
Accident Year	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	1.062	1.012	1.004	1.001	1.000	1.000	1.000	1.000	1.000	
2012	1.063	1.022	1.001	1.000	1.000	1.000	1.000	1.000		
2013	1.062	1.005	1.001	1.000	1.000	1.000	1.000			
2014	1.055	1.004	1.002	1.001	1.000	1.000				
2015	1.065	1.008	1.002	1.000	1.000					
2016	1.044	1.007	1.002	1.000						
2017	1.059	1.006	1.002							
2018	1.053	1.006								
2019	1.065									
Age-to-Age	1.059	1.006	1.002	1.000	1.000	1.000	1.000	1.000	1.000	
Age-to-Ult	1.068	1.009	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.000

**Scenario 4: Private Passenger Auto
Incremental Method**

**Appendix 4
Exhibit 4**

Active Counts										
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120
2011	13,285	3,509	631	246	123	62	30	10	3	2
2012	12,678	3,009	705	208	83	43	14	9	5	
2013	12,202	3,131	442	173	76	33	17	10		
2014	10,667	2,398	505	246	92	32	9			
2015	10,047	2,721	697	207	78	31				
2016	10,220	2,761	529	189	79					
2017	10,710	2,927	492	172						
2018	11,874	2,896	492							
2019	11,451	3,153								
2020	11,163									

Scenario 4: Private Passenger Auto
Incremental Method

Appendix 4
Exhibit 5

Incremental Closed Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	10,598	3,049	441	132	63	34	21	7	1	1	
2012	10,471	2,597	516	129	42	30	5	4	3		
2013	9,833	2,748	281	103	45	17	7	5			
2014	8,851	1,939	281	160	60	23	5				
2015	7,982	2,105	512	132	48	20					
2016	7,904	2,309	360	111	55						
2017	8,412	2,501	344	98							
2018	9,605	2,485	336								
2019	9,048	2,724									
2020	8,692										

Incremental Closure Rate

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	80%	87%	70%	54%	51%	55%	70%	70%	33%	50%	
2012	83%	86%	73%	62%	51%	70%	36%	44%	60%		
2013	81%	88%	64%	60%	59%	52%	41%	50%			
2014	83%	81%	56%	65%	65%	72%	56%				
2015	79%	77%	73%	64%	62%	65%					
2016	77%	84%	68%	59%	70%						
2017	79%	85%	70%	57%							
2018	81%	86%	68%								
2019	79%	86%									
2020	78%										
Selected	79%	86%	69%	60%	65%	63%	50%	50%	50%	50%	100%

Scenario 4: Private Passenger Auto
Incremental Method

Incremental Closed with Payment Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	6,954	2,438	344	53	44	18	16	5	1	1	
2012	7,045	1,510	228	83	28	26	2	4	1		
2013	6,033	1,594	214	75	37	10	6	2			
2014	5,796	1,518	227	127	41	18	3				
2015	5,535	1,572	362	95	33	18					
2016	5,457	1,843	279	95	44						
2017	5,876	1,863	290	91							
2018	6,173	1,982	272								
2019	6,354	2,179									
2020	6,098										

Incremental Closed with Payment Rate

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	52%	69%	55%	22%	36%	29%	53%	50%	33%	50%	
2012	56%	50%	32%	40%	34%	60%	14%	44%	20%		
2013	49%	51%	48%	43%	49%	30%	35%	20%			
2014	54%	63%	45%	52%	45%	56%	33%				
2015	55%	58%	52%	46%	42%	58%					
2016	53%	67%	53%	50%	56%						
2017	55%	64%	59%	53%							
2018	52%	68%	55%								
2019	55%	69%									
2020	55%										
Tail Paid		19,692	3,193	977	358	131	41	14	3	1	
Tail Closed		26,889	4,432	1,361	496	183	59	21	5	1	
Tail		73%	72%	72%	72%	72%	69%	67%	60%	100%	
Selected Tail							69%	69%	69%	69%	69%
Closure Rate	79%	86%	69%	60%	65%	63%	50%	50%	50%	50%	100%
Selected	54%	67%	56%	49%	47%	48%	35%	35%	35%	35%	69%

Scenario 4: Private Passenger Auto
Incremental Method

Appendix 4
Exhibit 7

Incremental Closed without Payment Counts

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	3,644	611	97	79	19	16	5	2	0	0	
2012	3,426	1,087	288	46	14	4	3	0	2		
2013	3,800	1,154	67	28	8	7	1	3			
2014	3,055	421	54	33	19	5	2				
2015	2,447	533	150	37	15	2					
2016	2,447	466	81	16	11						
2017	2,536	638	54	7							
2018	3,432	503	64								
2019	2,694	545									
2020	2,594										

Incremental Closed with Payment Rate

Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	27%	17%	15%	32%	15%	26%	17%	20%	0%	0%	
2012	27%	36%	41%	22%	17%	9%	21%	0%	40%		
2013	31%	37%	15%	16%	11%	21%	6%	30%			
2014	29%	18%	11%	13%	21%	16%	22%				
2015	24%	20%	22%	18%	19%	6%					
2016	24%	17%	15%	8%	14%						
2017	24%	22%	11%	4%							
2018	29%	17%	13%								
2019	24%	17%									
2020	23%										
Implied	25%	19%	13%	11%	18%	15%	15%	15%	15%	15%	31%

An Incremental Approach to Estimating Ultimate Claim Counts and Future Claim Payments

Scenario 4: Private Passenger Auto
Incremental Method

Appendix 4
Exhibit 8

Active Counts												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	13,285	3,509	631	246	123	62	30	10	3	2	1	0
2012	12,678	3,009	705	208	83	43	14	9	5	2	1	0
2013	12,202	3,131	442	173	76	33	17	10	5	3	1	0
2014	10,667	2,398	505	246	92	32	9	4	2	1	1	0
2015	10,047	2,721	697	207	78	31	12	6	3	2	1	0
2016	10,220	2,761	529	189	79	25	10	5	3	1	1	0
2017	10,710	2,927	492	172	77	28	11	6	3	1	1	0
2018	11,874	2,896	492	181	76	27	11	6	3	1	1	0
2019	11,451	3,153	508	183	77	28	11	6	3	1	1	0
2020	11,163	3,129	518	186	78	28	11	6	3	1	1	0

Incremental Closed without Payment Counts												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	3,644	611	97	79	19	16	5	2	0	0	0	4,473
2012	3,426	1,087	288	46	14	4	3	0	2	0	0	4,871
2013	3,800	1,154	67	28	8	7	1	3	1	0	0	5,070
2014	3,055	421	54	33	19	5	2	1	0	0	0	3,590
2015	2,447	533	150	37	15	2	2	1	0	0	0	3,188
2016	2,447	466	81	16	11	4	2	1	0	0	0	3,028
2017	2,536	638	54	7	14	4	2	1	0	0	0	3,256
2018	3,432	503	64	19	14	4	2	1	0	0	0	4,039
2019	2,694	545	67	19	14	4	2	1	0	0	0	3,347
2020	2,594	588	68	20	14	4	2	1	0	0	0	3,291

Incremental Closed with Payment Counts												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	6,954	2,438	344	53	44	18	16	5	1	1	1	9,875
2012	7,045	1,510	228	83	28	26	2	4	1	1	1	8,928
2013	6,033	1,594	214	75	37	10	6	2	2	1	1	7,974
2014	5,796	1,518	227	127	41	18	3	1	1	0	0	7,733
2015	5,535	1,572	362	95	33	18	4	2	1	1	1	7,623
2016	5,457	1,843	279	95	44	12	3	2	1	0	0	7,737
2017	5,876	1,863	290	91	37	13	4	2	1	1	1	8,178
2018	6,173	1,982	272	90	36	13	4	2	1	1	1	8,574
2019	6,354	2,179	282	91	37	13	4	2	1	1	1	8,964
2020	6,098	2,100	288	92	37	13	4	2	1	1	1	8,636

Open Counts												
Accident Year	12	24	36	48	60	72	84	96	108	120	Ultimate	
2011	2,687	460	190	114	60	28	9	3	2	1	0	
2012	2,207	412	189	79	41	13	9	5	2	1	0	
2013	2,369	383	161	70	31	16	10	5	3	1	0	
2014	1,816	459	224	86	32	9	4	2	1	1	0	
2015	2,065	616	185	75	30	11	6	3	2	1	0	
2016	2,316	452	169	78	24	9	5	3	1	1	0	
2017	2,298	426	148	74	27	10	5	3	1	1	0	
2018	2,269	411	156	72	26	10	5	3	1	1	0	
2019	2,403	429	159	73	27	10	6	3	1	1	0	
2020	2,471	441	162	74	27	10	6	3	1	1	0	

Scenario 4: Private Passenger Auto
Disposal Rate Frequency-Severity Method

Incremental Paid Severity											
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	4,699	10,361	41,363	138,868	129,341	195,111	134,438	319,400	469,000	615,000	371,941
2012	4,338	15,470	47,013	82,494	145,786	88,500	819,000	341,250	519,000	371,941	394,258
2013	4,754	13,854	56,136	92,947	78,270	211,300	290,667	758,500	371,941	394,258	417,913
2014	4,811	14,671	52,626	58,024	78,024	155,389	582,000	371,941	394,258	417,913	442,988
2015	4,876	14,006	29,525	72,558	129,515	158,056	371,941	394,258	417,913	442,988	469,567
2016	5,471	14,548	47,409	65,632	118,955	188,588	394,258	417,913	442,988	469,567	497,741
2017	5,628	14,166	59,507	89,275	120,003	199,903	417,913	442,988	469,567	497,741	527,606
2018	5,789	17,589	56,798	84,793	127,203	211,897	442,988	469,567	497,741	527,606	559,262
2019	6,217	15,888	61,260	89,880	134,835	224,611	469,567	497,741	527,606	559,262	592,818
2020	6,764	17,812	64,935	95,273	142,926	238,087	497,741	527,606	559,262	592,818	628,387

Trend Rate: 6%

Trended Incremental Paid Severity											
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult
2011	7,938	16,514	62,195	196,987	173,087	246,323	160,117	358,878	497,140	615,000	
2012	6,914	23,260	66,689	110,396	184,051	105,405	920,228	361,725	519,000		
2013	7,148	19,652	75,122	117,343	93,221	237,417	308,107	758,500			
2014	6,825	19,633	66,439	69,107	87,668	164,712	582,000				
2015	6,525	17,682	35,165	81,526	137,286	158,056					
2016	6,906	17,327	53,268	69,569	118,955						
2017	6,703	15,917	63,077	89,275							
2018	6,504	18,644	56,798								
2019	6,590	15,888									
2020	6,764										
Tail Dollars		545,540,196	248,071,328	118,980,556	59,322,027	29,744,735	14,386,401	6,389,429	1,631,140	615,000	
Tail Counts		19,692	3,193	977	358	131	41	14	3	1	
Tail		27,704	77,692	121,782	165,704	227,059	350,888	456,388	543,713	615,000	
Selected	6,618	16,804	57,792	79,993	113,210	177,913	350,888	350,888	350,888	350,888	350,888

Scenario 4: Private Passenger Auto
Incremental Method

Appendix 4
Exhibit 10

Incremental Paid Loss												
Accident Year	0-12	12-24	24-36	36-48	48-60	60-72	72-84	84-96	96-108	108-120	120-Ult	Ultimate
2011	32,674	25,260	14,229	7,360	5,691	3,512	2,151	1,597	469	615	258	93,816
2012	30,560	23,359	10,719	6,847	4,082	2,301	1,638	1,365	519	258	274	81,922
2013	28,678	22,083	12,013	6,971	2,896	2,113	1,744	1,517	646	342	363	79,367
2014	27,887	22,271	11,946	7,369	3,199	2,797	1,746	552	293	155	164	78,380
2015	26,989	22,017	10,688	6,893	4,274	2,845	1,495	828	439	233	247	76,947
2016	29,853	26,812	13,227	6,235	5,234	2,252	1,357	757	401	213	225	86,567
2017	33,071	26,392	17,257	8,124	4,406	2,657	1,597	889	471	250	265	95,379
2018	35,733	34,861	15,449	7,602	4,597	2,783	1,684	942	500	265	281	104,696
2019	39,503	34,620	17,305	8,159	4,925	2,978	1,798	1,005	532	282	299	111,406
2020	41,245	37,404	18,699	8,757	5,275	3,185	1,919	1,070	567	301	319	118,739