24. (3.5 points)

The following information is available for an insurance company:

Age (Month)	Cumulative Paid Development Factors to Ultimate	Cumulative Reported Development Factors to Ultimate
12	2.44	1.69
15	2.00	1.46
18	1.65	1.38
21	1.49	1.30
24	1.38	1.22

Accident year 2017 as of March 31, 2018:

2,400	Reported claims ($)
1,820	Paid claims ($)
3,300	Selected ultimate claims ($)

Accident year 2017 as of May 31, 2018:

2,750	Reported claims ($)
2,050	Paid claims ($)

- Loss emergence between evaluation points is linear.

a. (1.25 points)

Considering the data through March 31, 2018, compare the cumulative expected reported claims to the actual reported claims as of May 31, 2018 for accident year 2017.

b. (1.25 points)

Considering the data through March 31, 2018, compare the cumulative expected paid claims to the actual paid claims as of May 31, 2018 for accident year 2017.

c. (0.5 point)

Describe a situation in which the actuary ***would*** revise the March 31, 2018 estimate of ultimate claims given the results calculated in parts a. and b. above.

d. (0.5 point)

Describe a situation in which the actuary ***would not*** revise the March 31, 2018 estimate of ultimate claims given the results calculated in parts a. and b. above.

END OF EXAMINATION

QUESTION 24

TOTAL POINT VALUE: 3.5 | **LEARNING OBJECTIVE(S): B3, B8**

SAMPLE ANSWERS

Part a: 1.25 points

Sample 1

cumul exp rep to actual
AY 2017 btw 15 & 17
losses occur uniformly – will use linear interpolation

% rep at 15 = 1/1.46 = 68.49%
% rep at 18 = 1/1.38 = 72.46%
% rep at 17 = 68.49% + (2/3)(72.46% - 68.49%) = 71.14%

AY 2017 exp rep emergence = (3300 - 2400)(71.14% - 68.49%)/(1 – 68.49%) = 75.66
cumul exp = 2400 + 75.66 = 2475.66
actual rep = 2750
actual is 274 higher

Sample 2

Cum actual rept claim = 2750
% rept at 15 = 1/1.46 = 0.685
% rept at 18 = 1/1.38 = .725
incremental expt rept claim from 15 to 17 = (3300 – 2400) x (.725 - .685)/(1 - .685) x 2/3 = 75.6
cum exp rept at 5/31/2018 = 2400 + 75.6 = 2475
cum expected rept claim is lower than cum actual rept claim

Part b: 1.25 point(s)

Sample 1

cumul paid btw 15 & 17

% paid at 15 = 1/2 = 50%
% paid at 18 = 1/1.65 = 60.6%
% paid at 17 = 50% + (2/3)(60.6% - 50%) = 57.07%

AY 2017 exp rep emergence = (3300 - 1820)(57.07% - 50%)/(1 – 50%) = 209.3
cumul exp = 1820 + 209.3 = 2029.3
actual paid = 2050
actual is only 21 greater. Quite close.

Sample 2

% paid at 15 = 1/2 = 0.5
% paid at 18 = 1/1.65 = .606
Incremental expt paid claim from 15 to 17 = (3300 – 1820) x (.606 - 0.5)/(1 – 0.5) x 2/3 = 209.293
cum expected paid at 5/31/2018 = 1820 + 209.293 = 2029.293

cum actual paid claim = 2050
cum expected paid claim is lower than actual paid claim, but it's still quite close

Part c: 0.5 point

Sample 1

You would revise ultimate claims in part a and b if caused by a large claim/cat which you expect to develop beyond current IBNR provisions

Sample 2

Paid is close so no comment. Actual rep is higher than expected. If this was due to a large unpaid claim, I would increase the est of ult claims.

Part d: 0.5 point

Sample 1

If the difference btw actual rep & expected reported was due to a recent increase in case reserve adequacy, I would not revise est of ult claims.

Sample 2

Increase case reserve adequacy. Because the cumulative paid claim is pretty close to the expected value, but the actual rept claim is much larger than the expected claim. If the case reserve adequacy increases, the ult claim will not change

EXAMINER'S REPORT

Candidates were expected to assess the estimate of ultimate claims by utilizing reporting and payment patterns to derive expected claim emergence and compare this expectation to actual claim emergence.

Areas where candidates struggled included recognizing the need to interpolate between quarters and performing the associated calculations.

-notes on failure to calc incremental/cumulative amount

Additionally, many candidates failed to draw appropriate conclusions or provide adequate detail for situations that would justify changing (or not changing) the estimate of ultimate claims based on the actual vs expected.

Part a

Candidates were expected to calculate expected cumulative reported claims for the given accident year and compare to actual cumulative reported claims. This required calculating

expected incremental reported emergence over a two month period based on an interpolated reporting pattern. Candidates were expected to derive the cumulative expected amount by adding the expected incremental amount to the latest inception to date reported amount. Candidates were expected to compare the actual and expected amounts.

Common mistakes include:

- Failing to recognize the need to interpolate between quarters
- Interpolating the cumulative LDFs rather than the percent reported
- Calculating the expected incremental emergence by multiplying expected emergence percentage by the selected ultimate instead of the unreported amount
- Leaving the expected amount as incremental, and not deriving the associated cumulative amount
- Failing to provide adequate comparison between the actual and expected amount

Part b

Candidates were expected to calculate expected cumulative paid claims for the given accident year and compare to actual cumulative paid claims. This required calculating expected incremental paid emergence over a two month period based on an interpolated payment pattern. Candidates were expected to derive the cumulative expected amount by adding the expected incremental amount to the latest inception to date paid amount. Candidates were expected to compare the actual and expected amounts.

Common mistakes include:

- Failing to recognize the need to interpolate between quarters
- Interpolating the cumulative LDFs rather than the percent paid
- Calculating the expected incremental emergence by multiplying expected emergence percentage by the selected ultimate instead of the un paid amount
- Leaving the expected amount as incremental, and not deriving the associated cumulative amount
- Failing to provide adequate comparison between the actual and expected amount

Part c

Candidates were expected to provide a situation in which the actuary would revise the estimate of ultimate claims given the results in parts a & b.

Common mistakes include:
Stating that the actual emergence being worse than expected is due to organizational changes such as case reserve strengthening or speed up in payment patterns is grounds for increasing the ultimate. If the driver of the actual vs expected amounts was due to organizational changes, this would only impact the timing of case revisions and payments, but would not necessarily change the ultimate claims.

Part d

Candidates were expected to provide a situation in which the actuary would not revise the estimate of ultimate claims given the results in parts a & b.

Common mistakes include:
Stating that the actual emergence being worse than expected is due to a large loss would not require an increase to the estimate of ultimate. If there is a one-time shock loss that is not expected to happen again, it may be appropriate to exclude this from estimates of ultimates for future accident years. However, the question being asked is in regard to the selected ultimate for accident year 2017, and so the impact of the large loss should be reflected through an increase to the selected ultimate.