GUY CARPENTER

The Insurance Cycle: Up, Down & Round & Round we Go

Jessica Leong, FCAS, FIAA, MAAA

Lead Casualty Specialty Actuary

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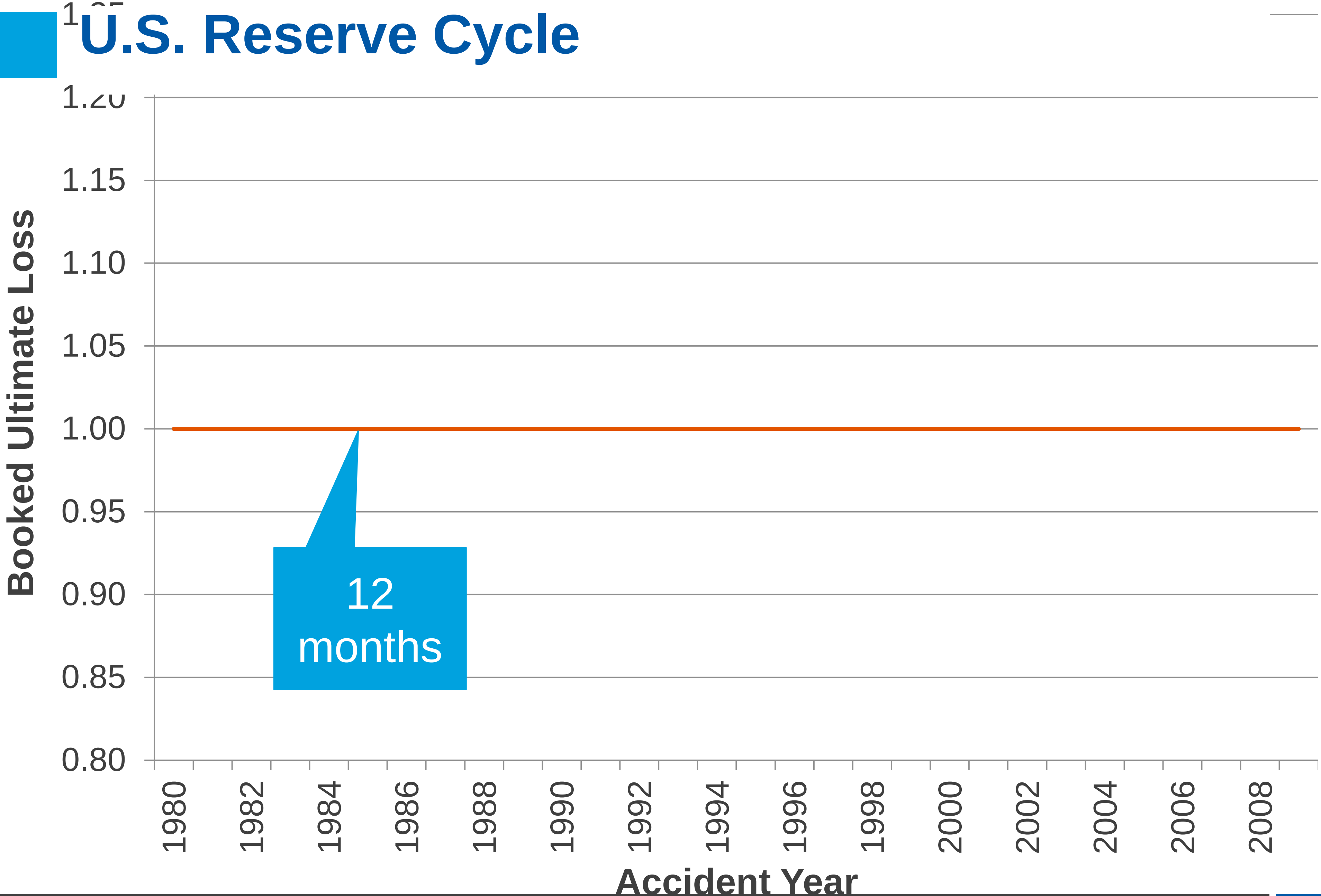
U.S. Reserve Cycle



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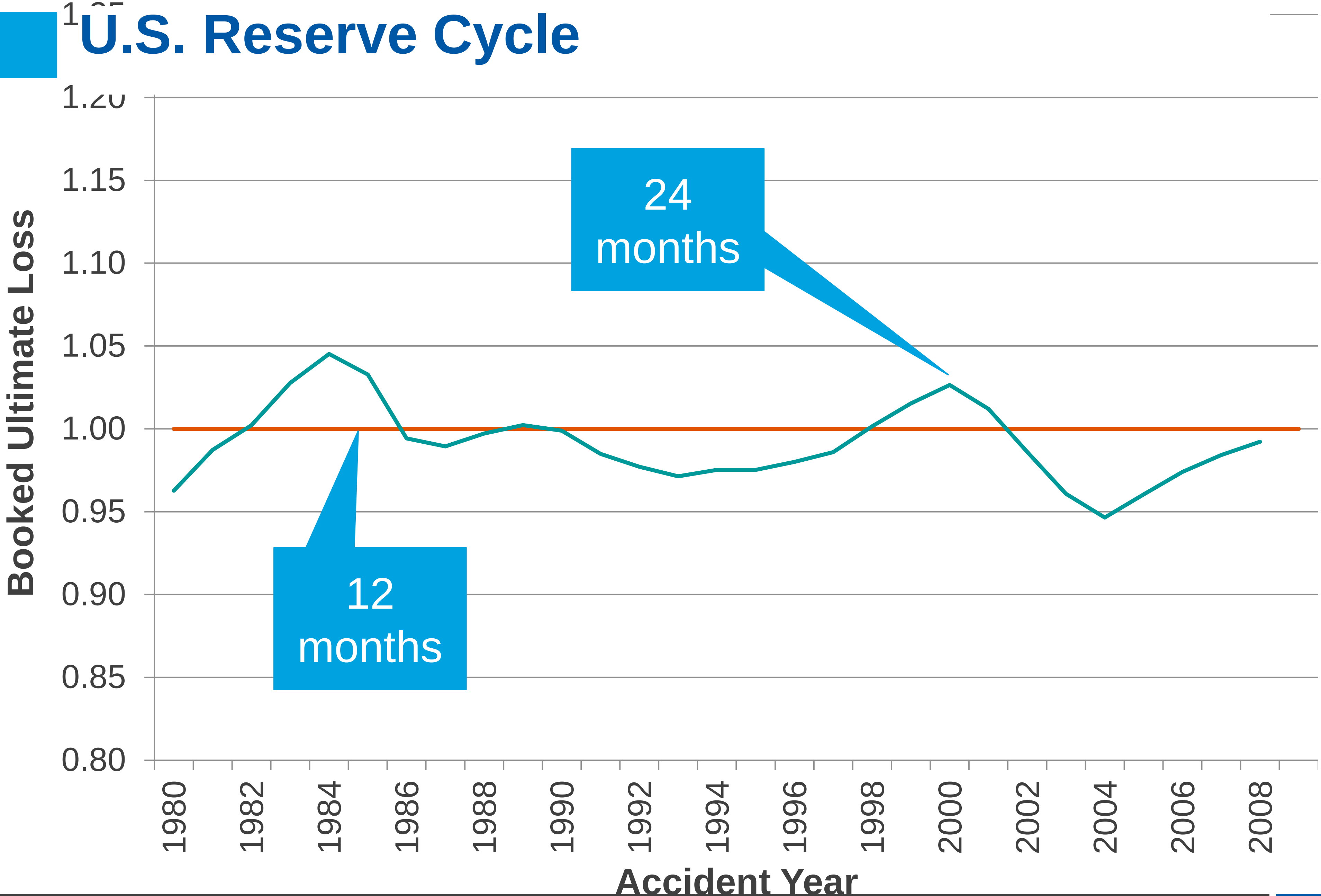

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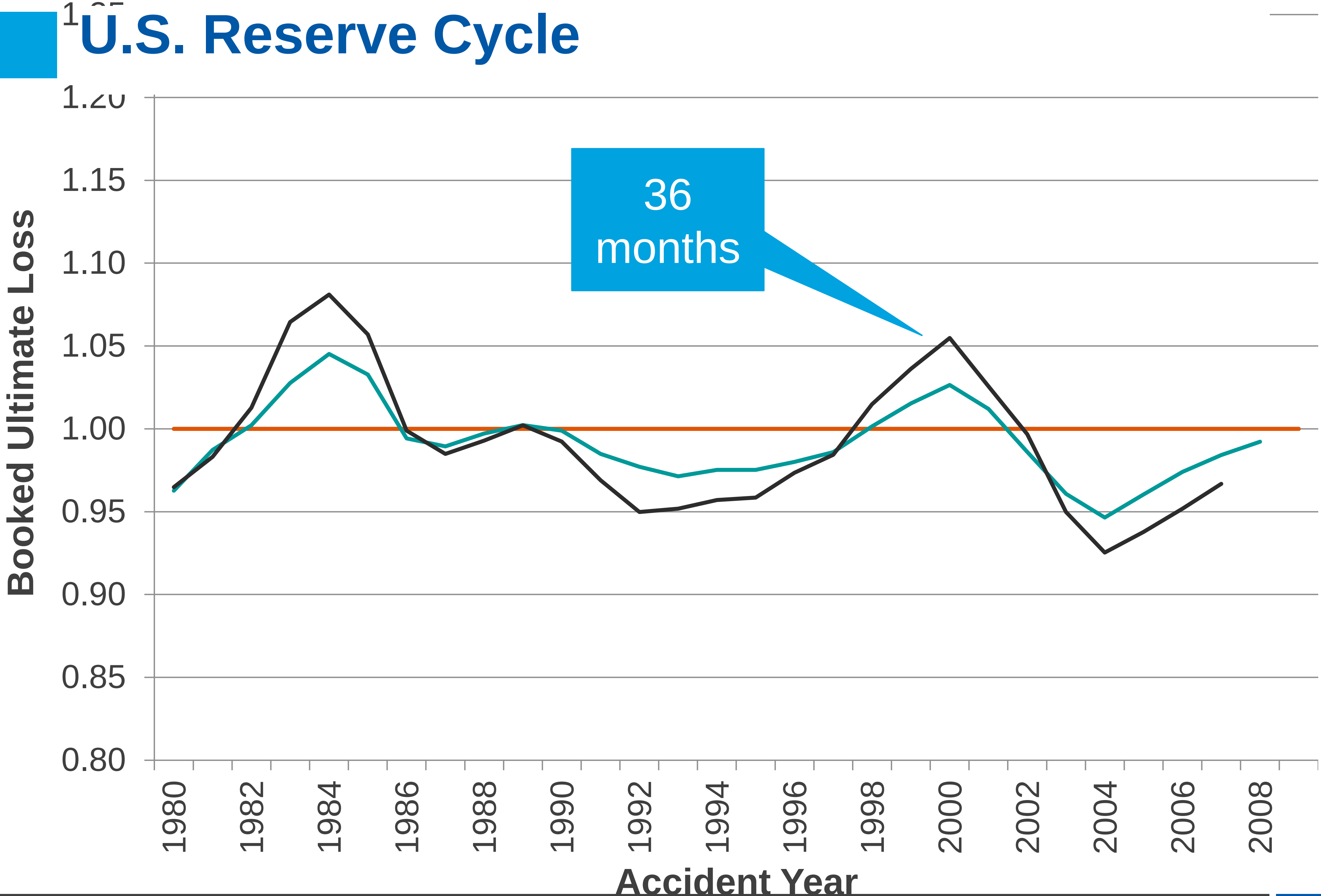

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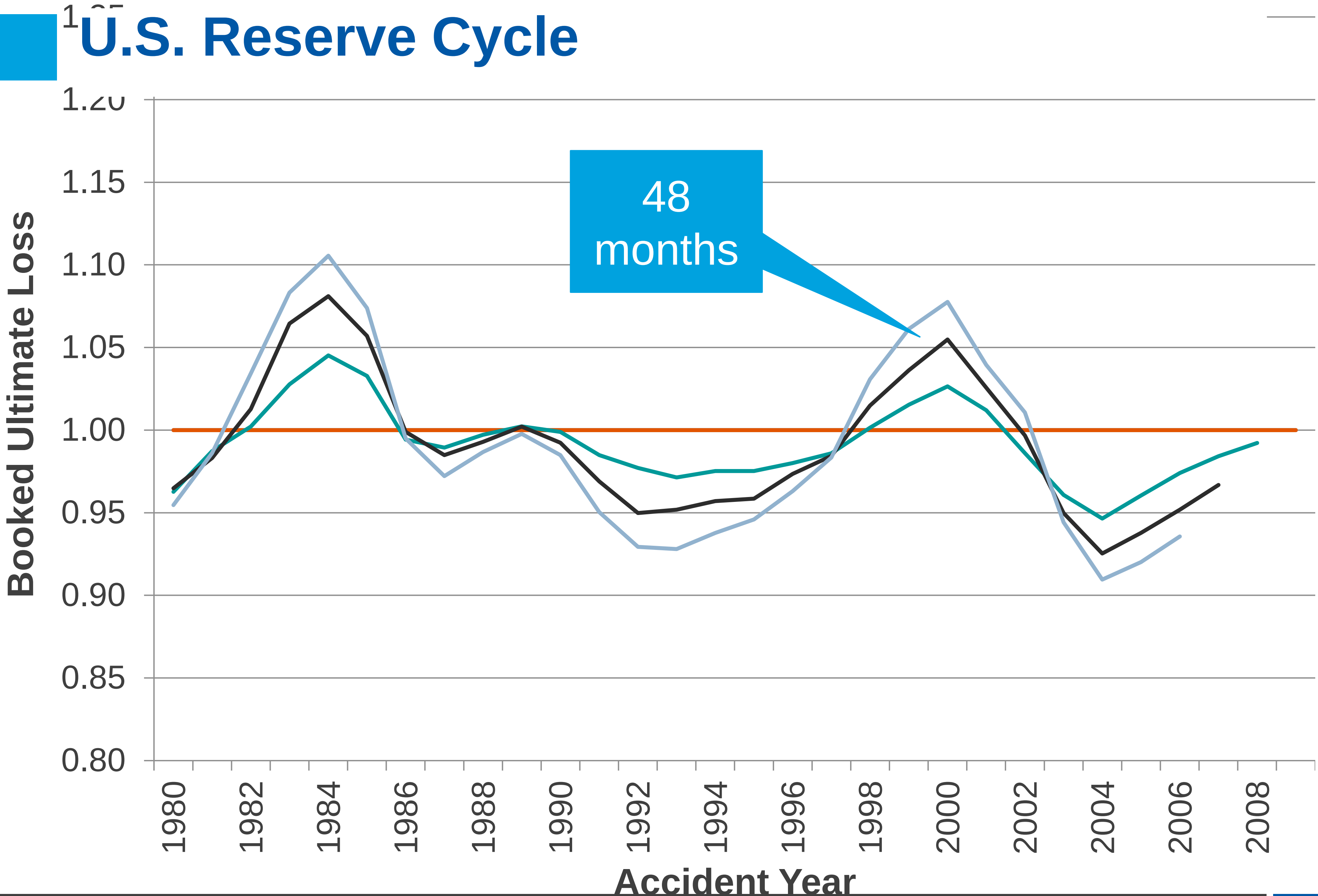

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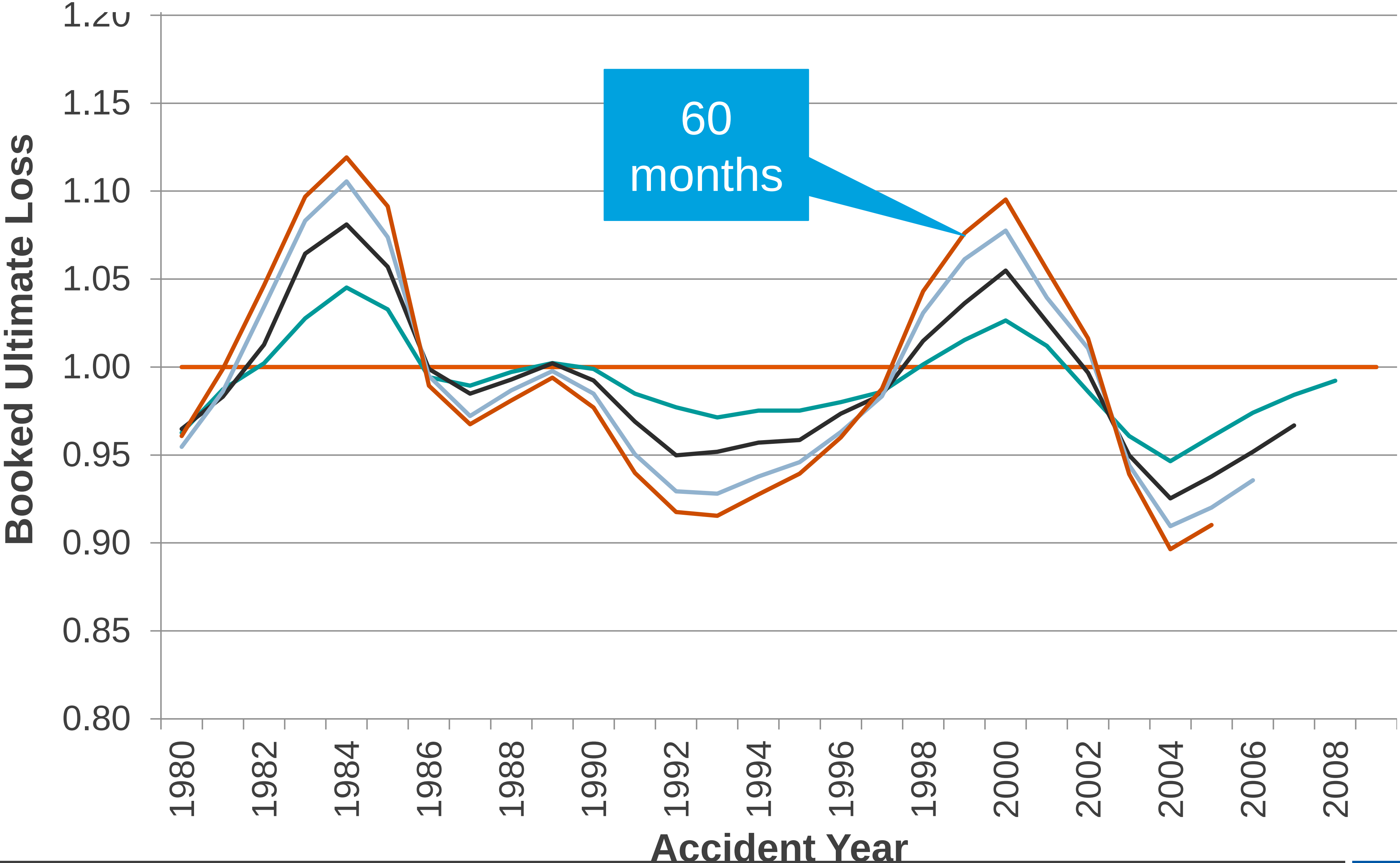

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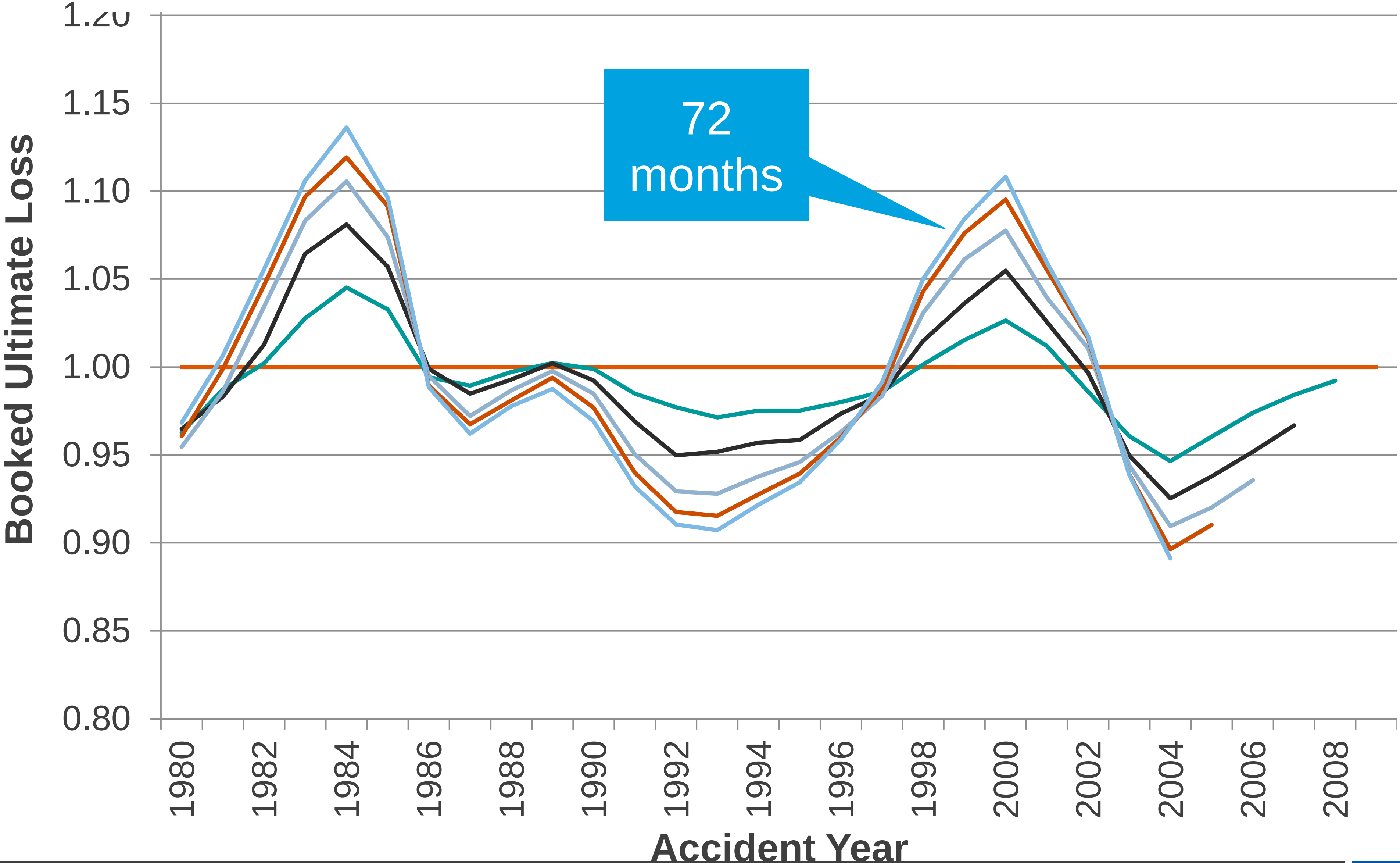

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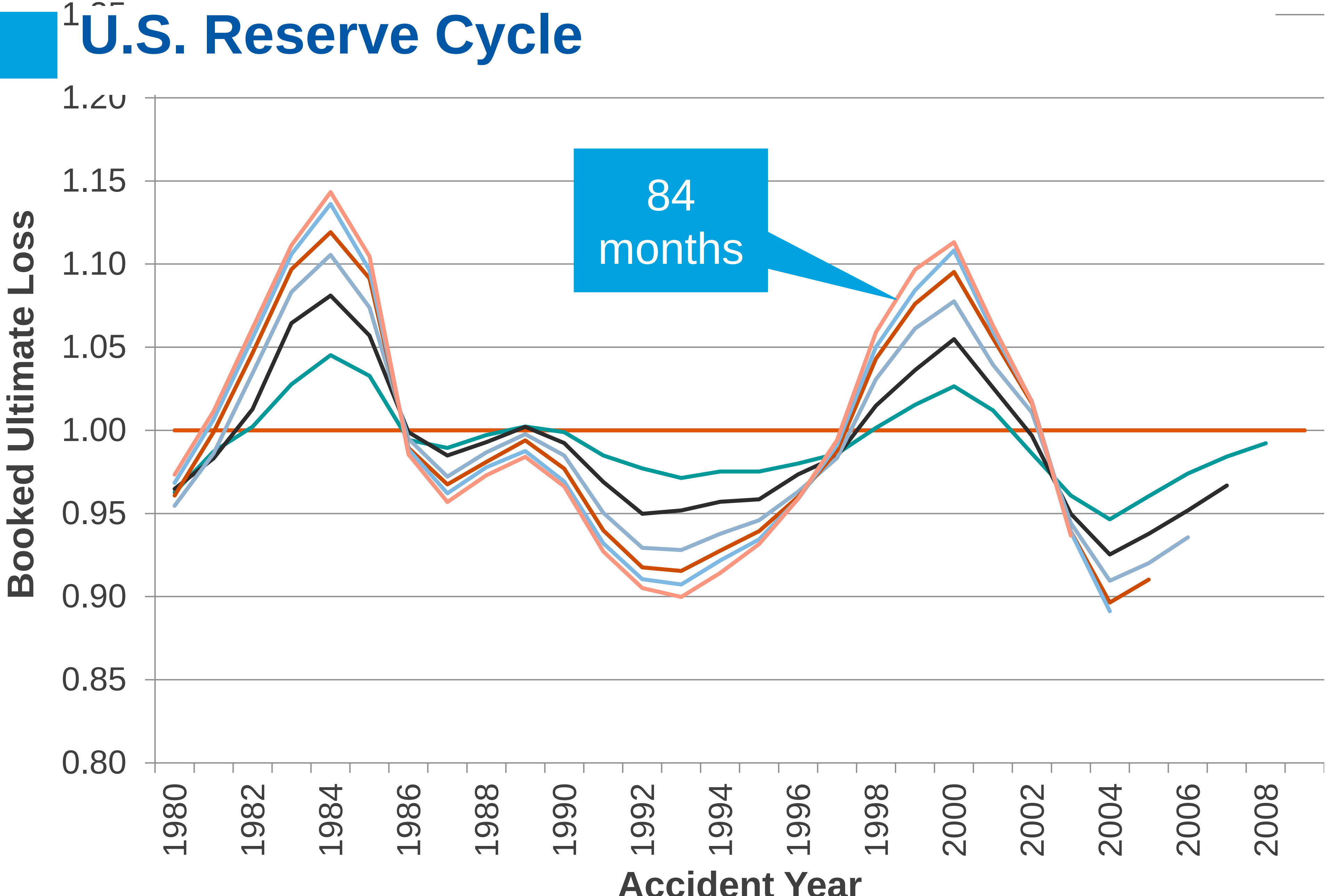

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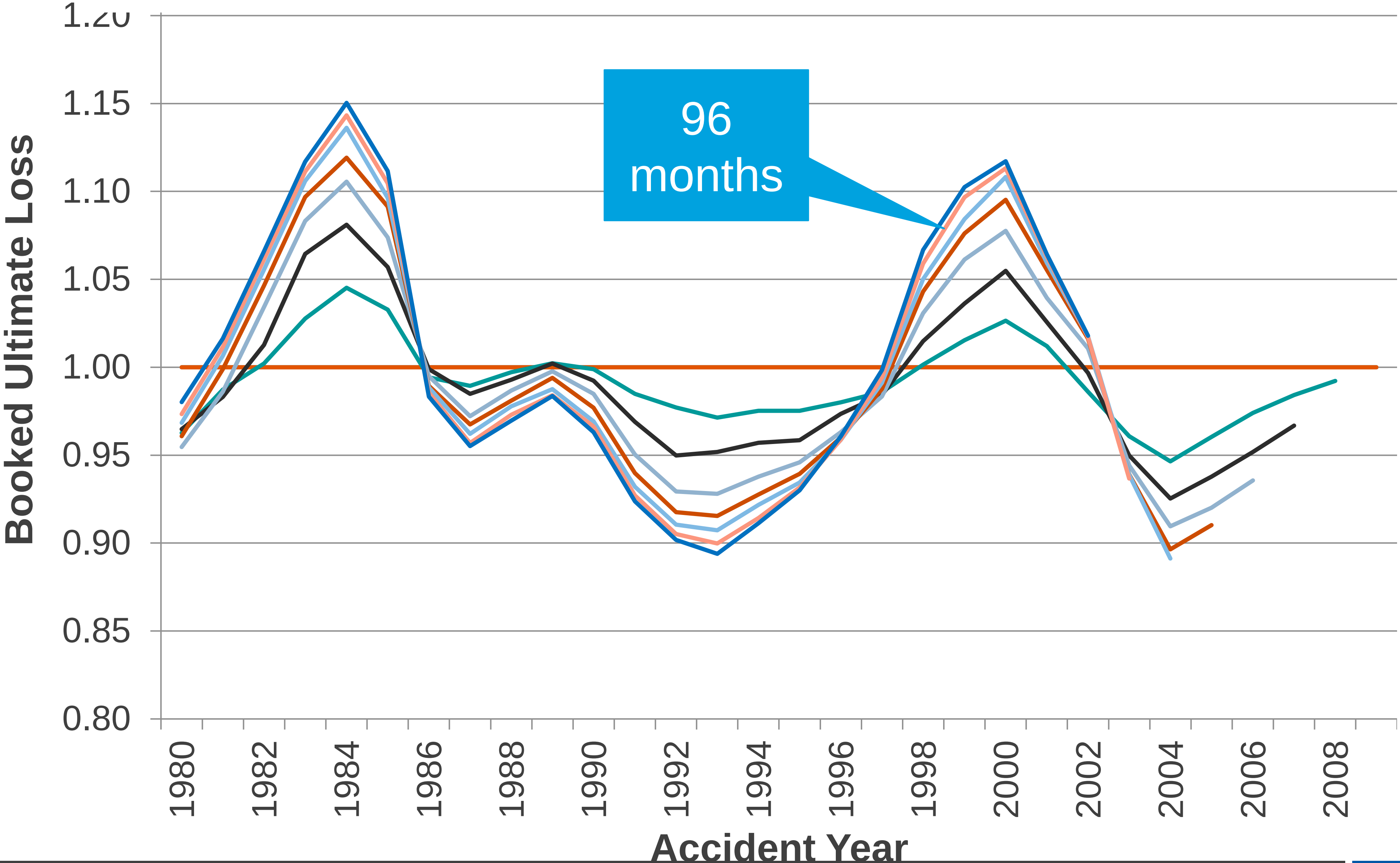

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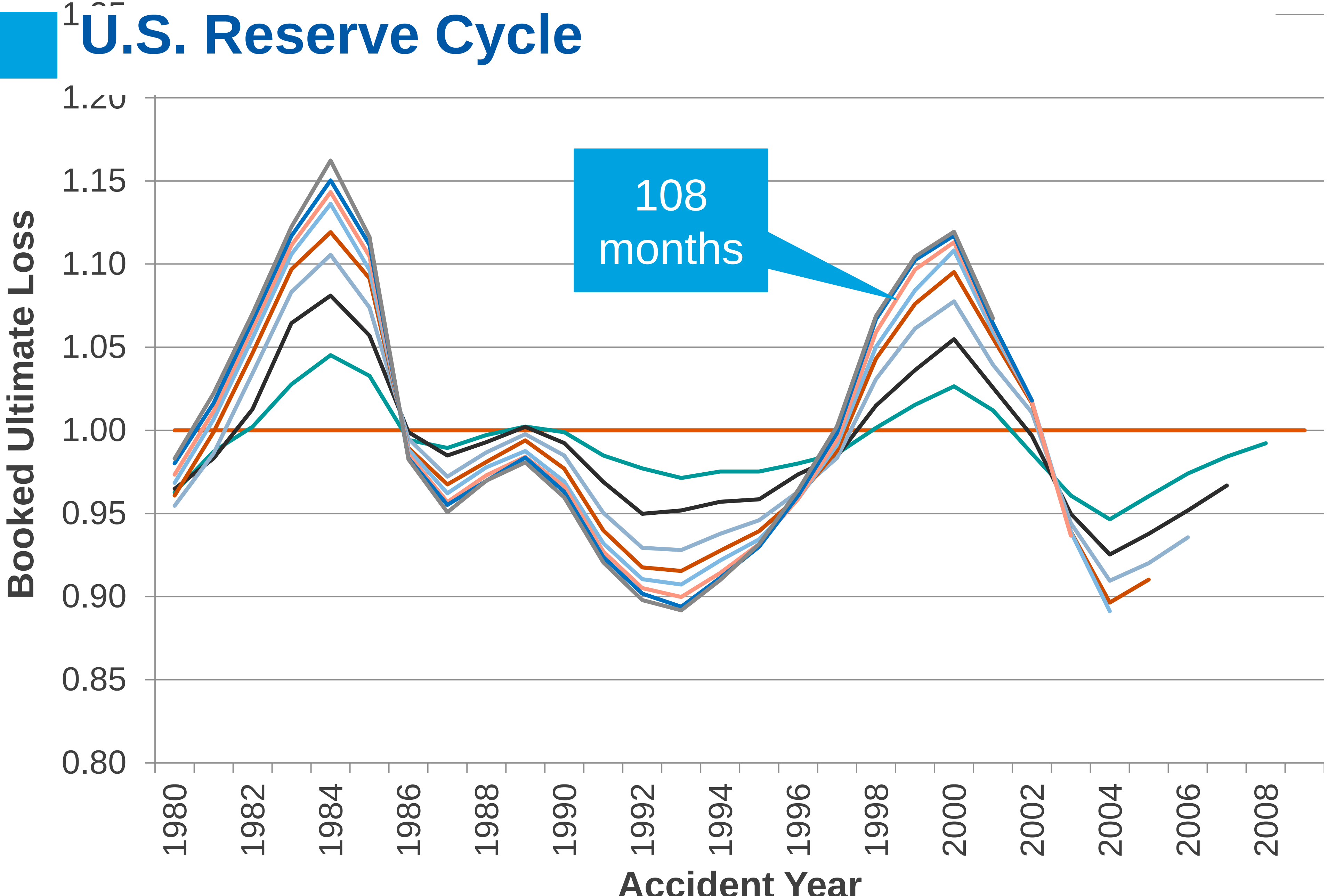

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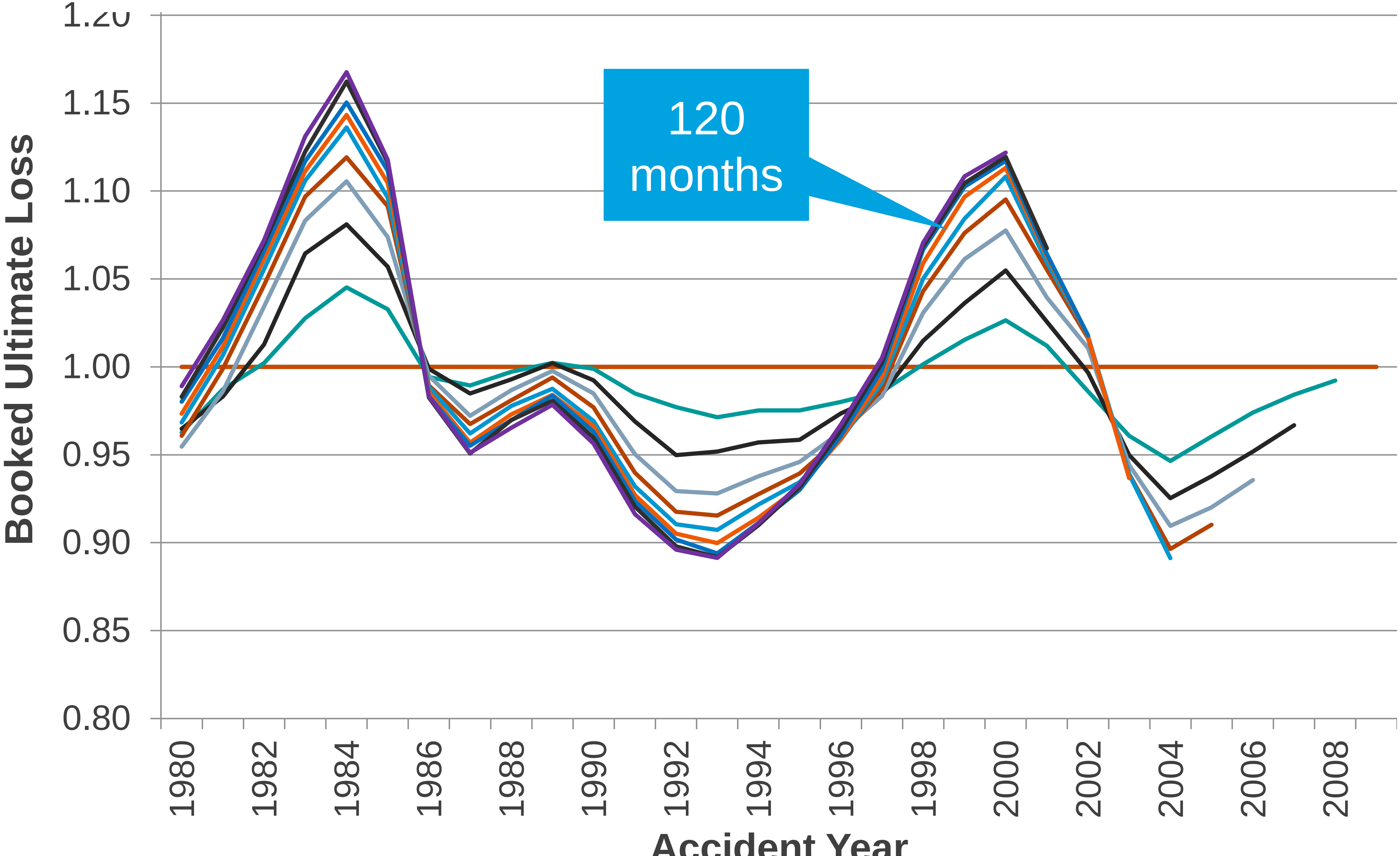

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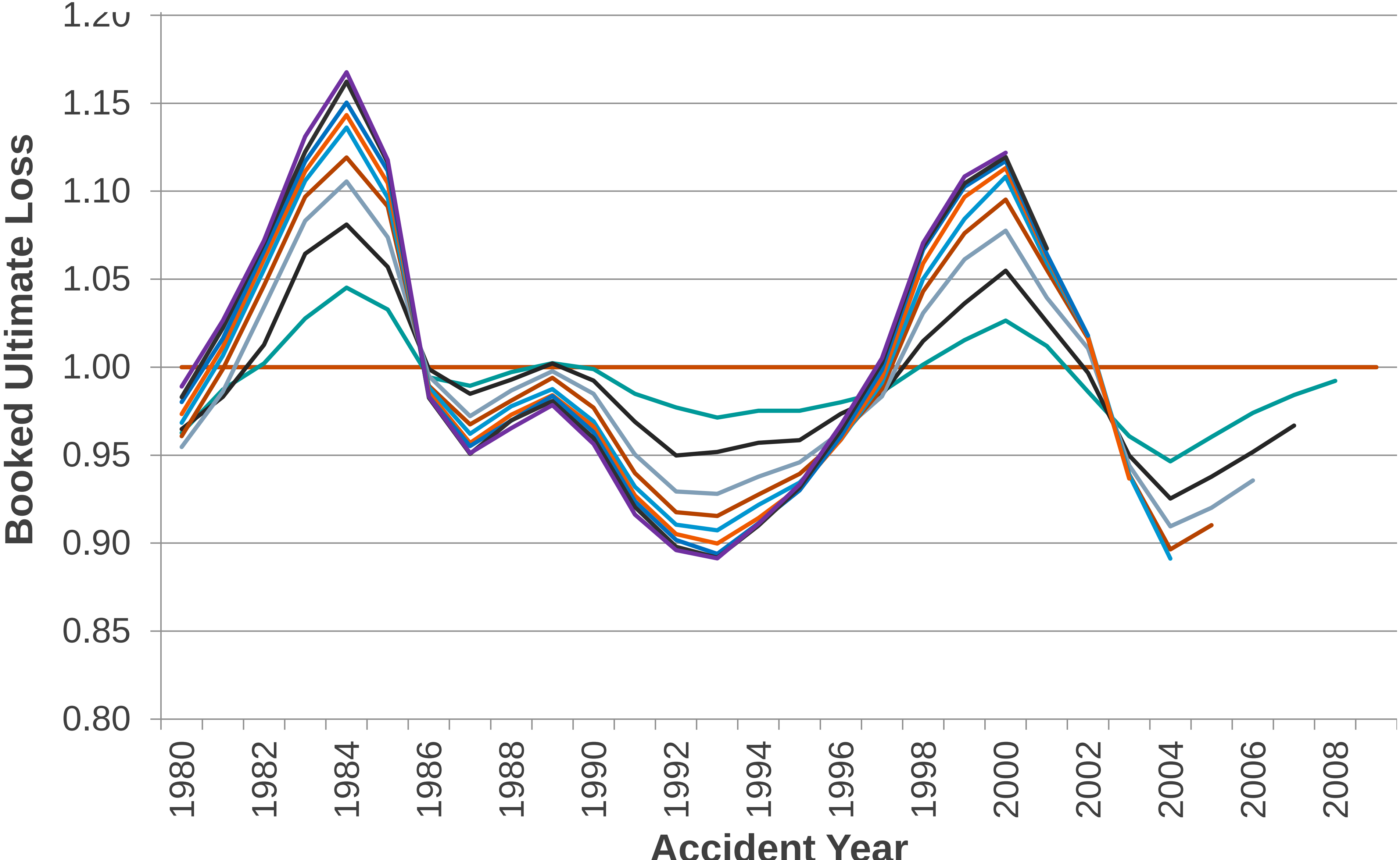
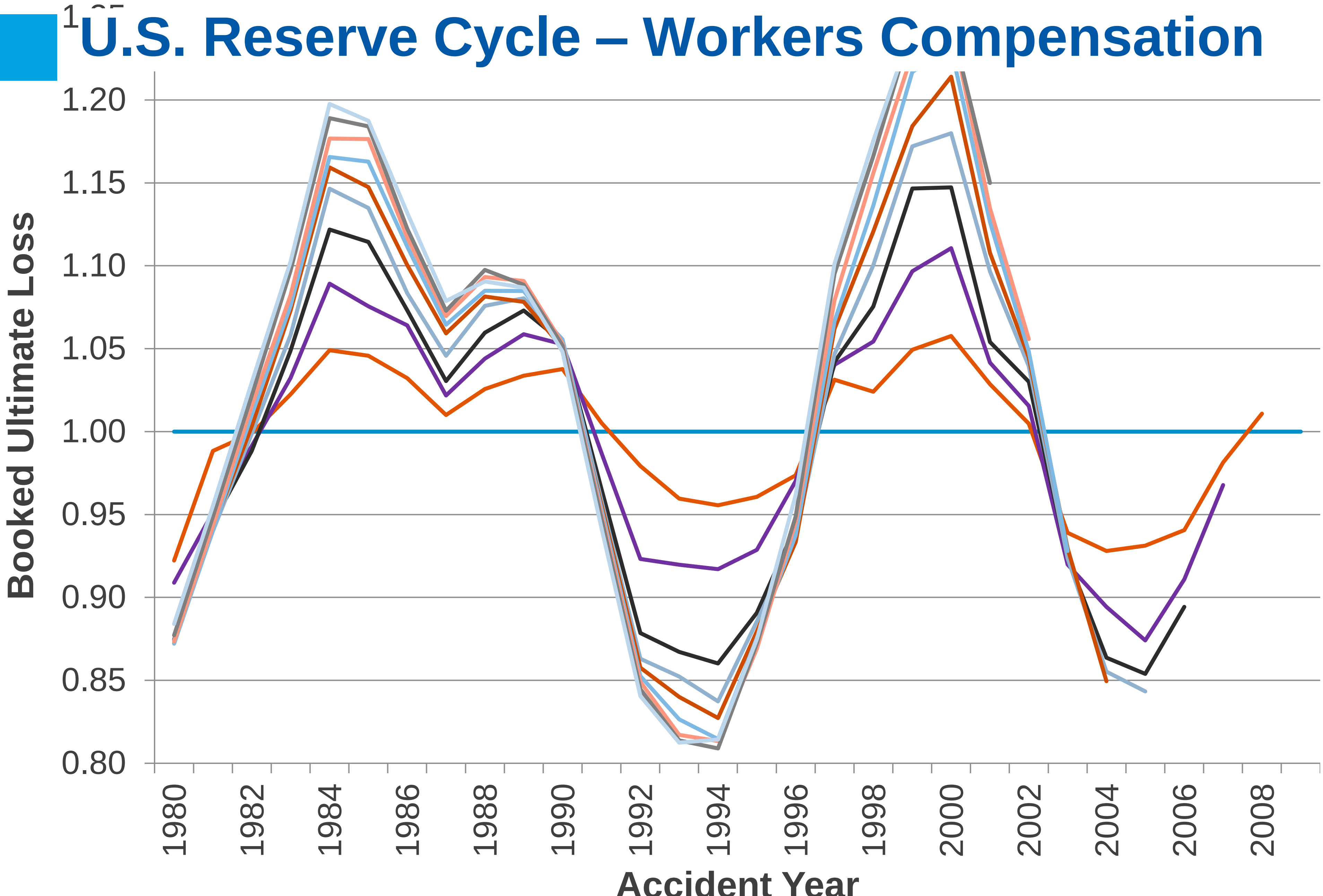
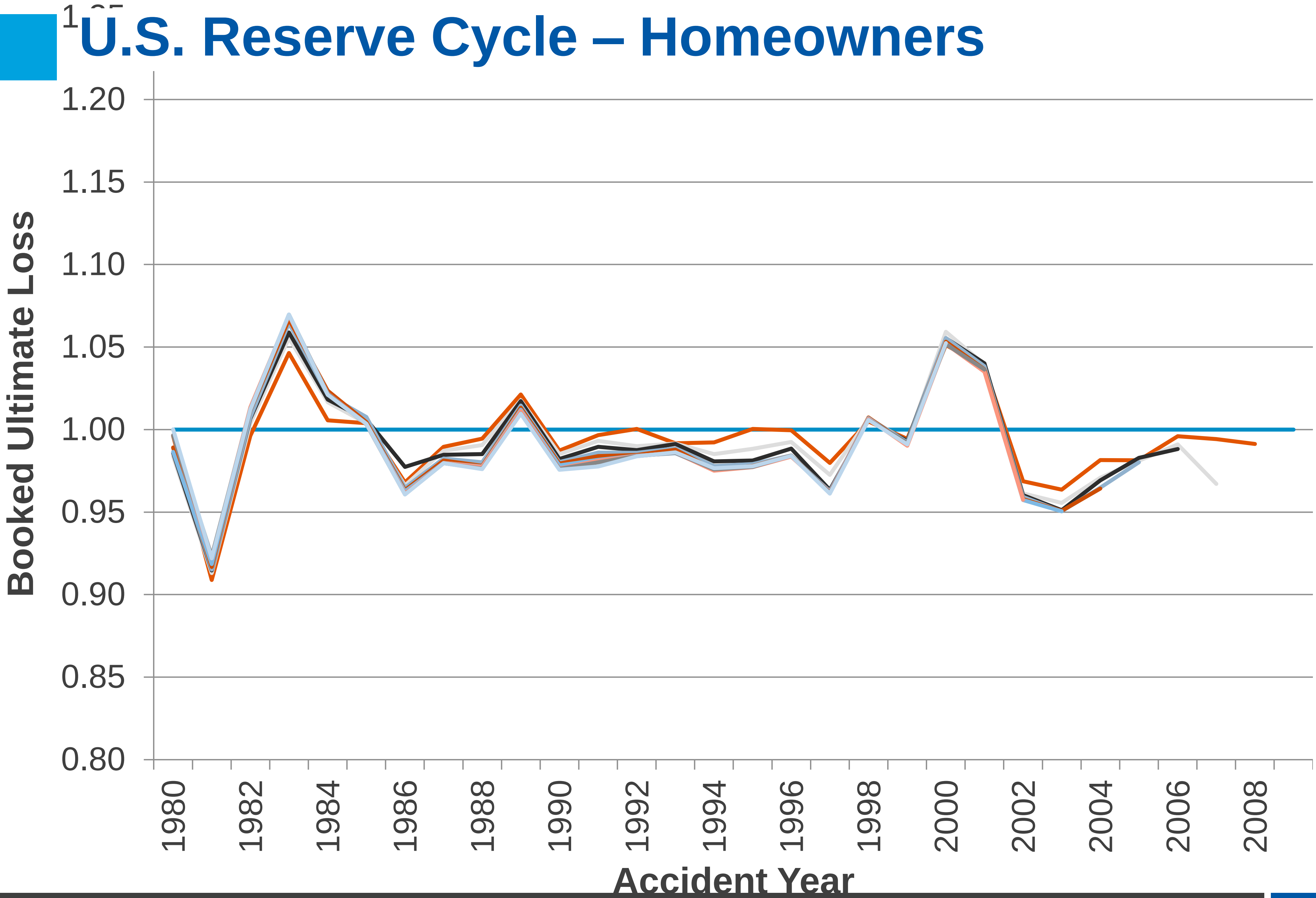


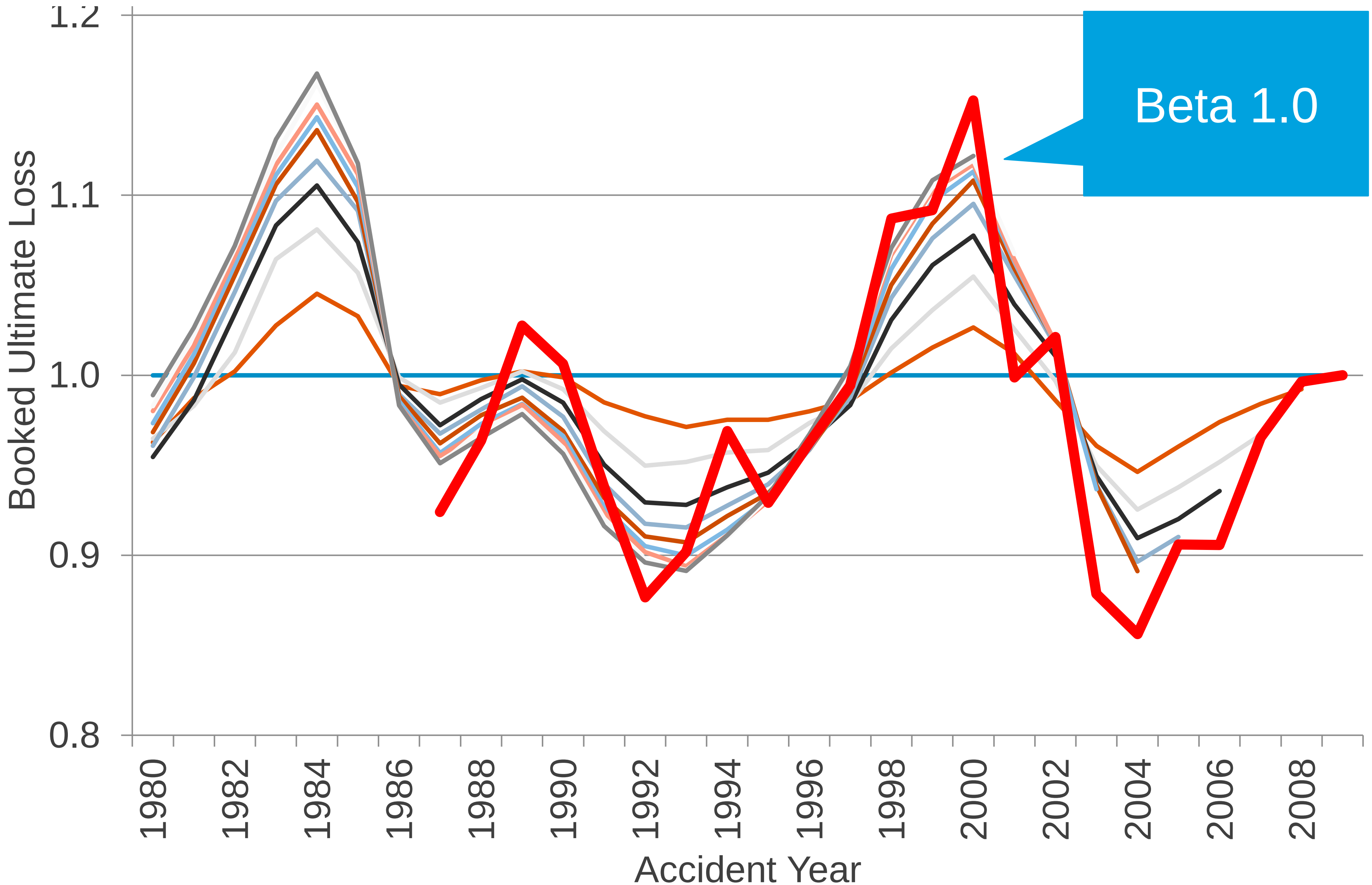
U.S. Reserve Cycle – Workers Compensation



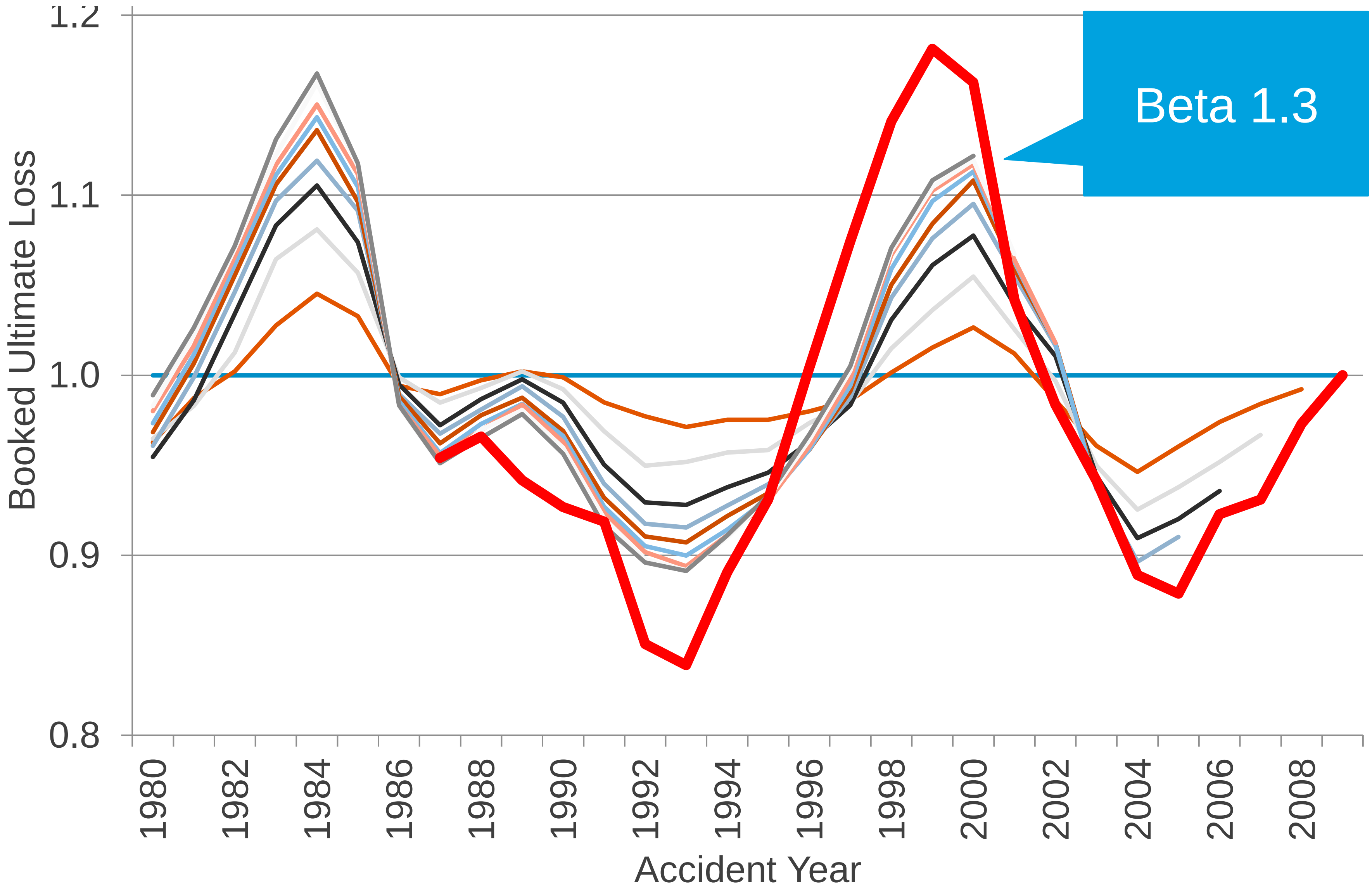
U.S. Reserve Cycle – Homeowners



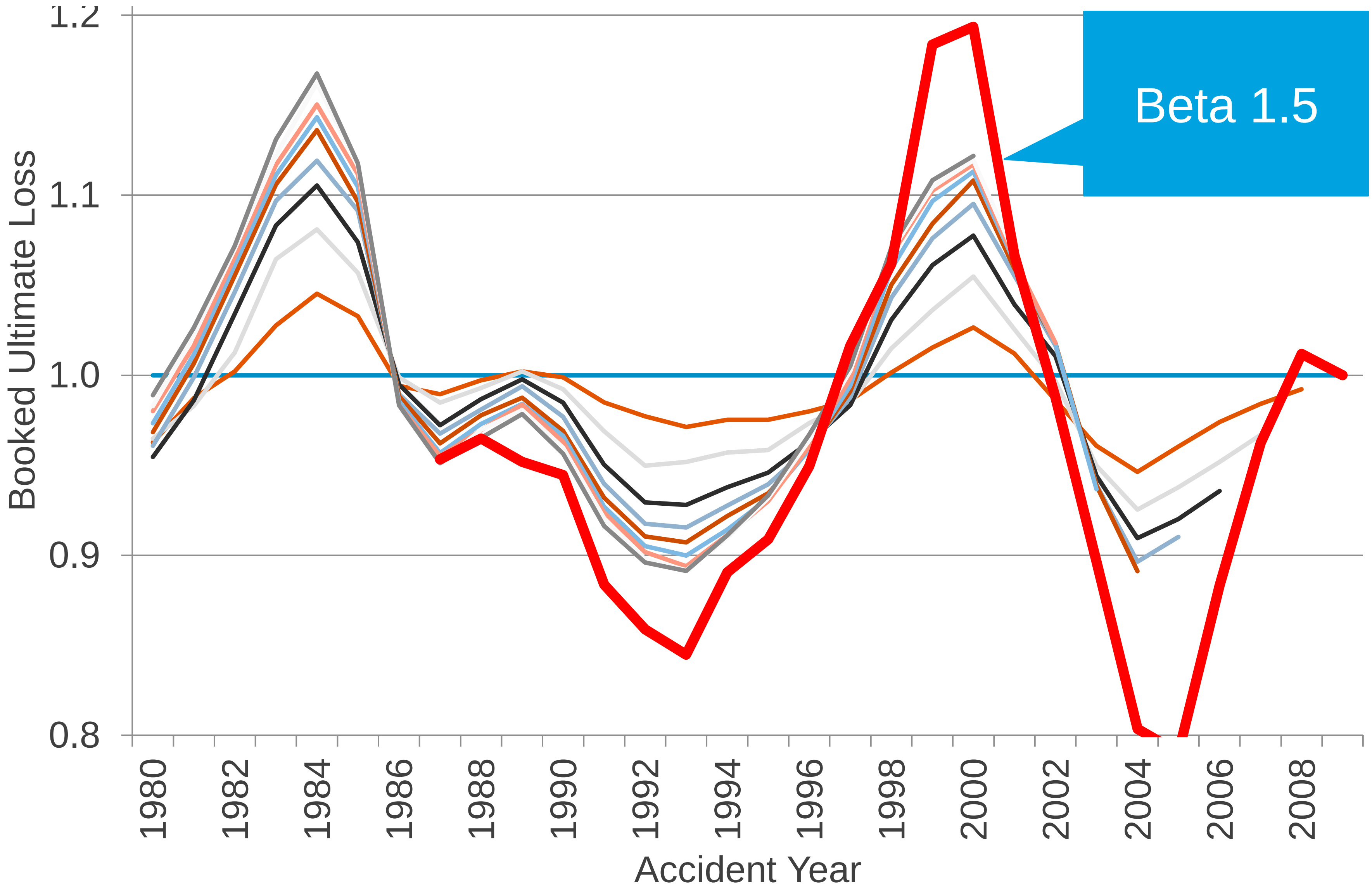
Reserve Cycle – Company A



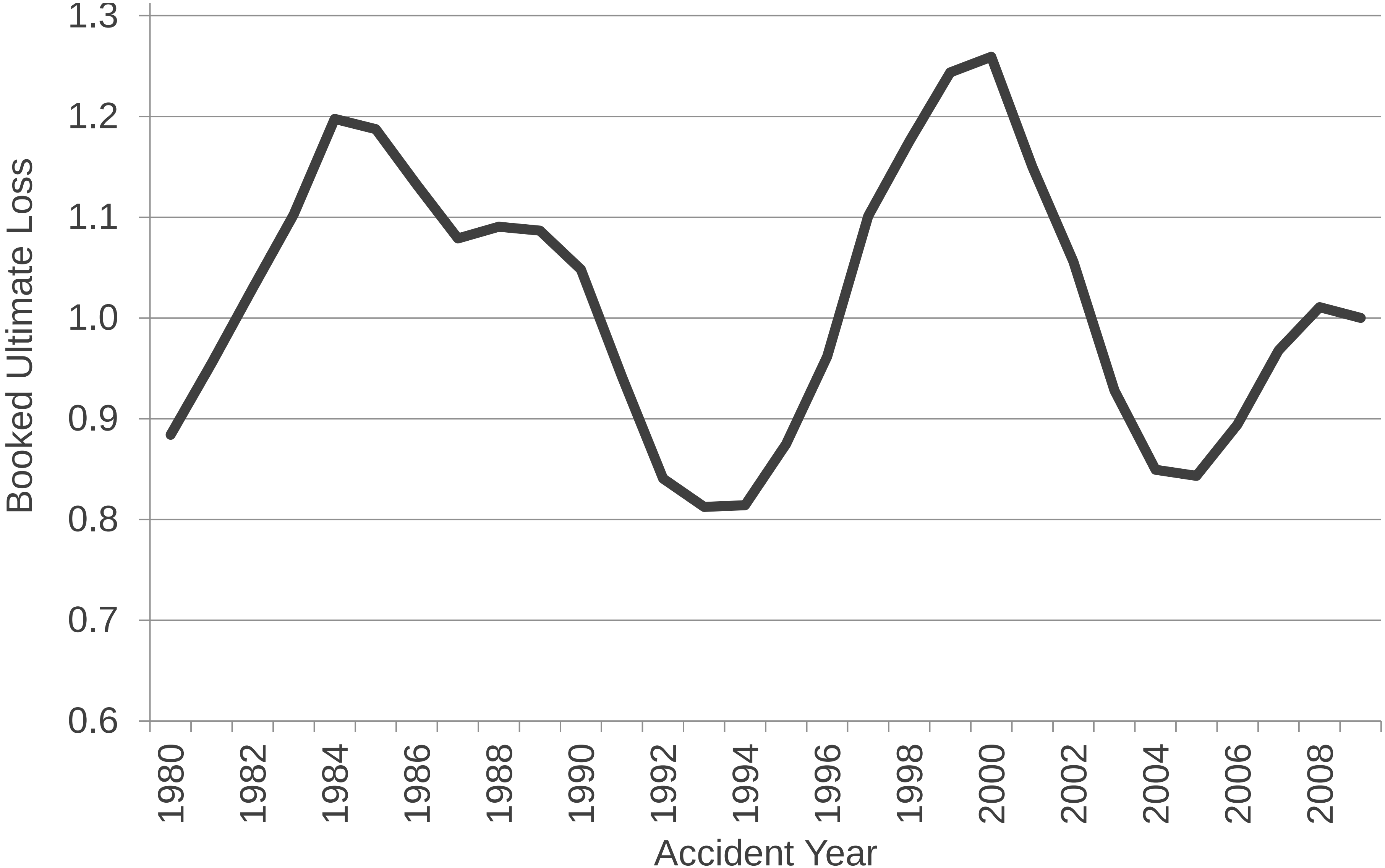
Reserve Cycle – Company B



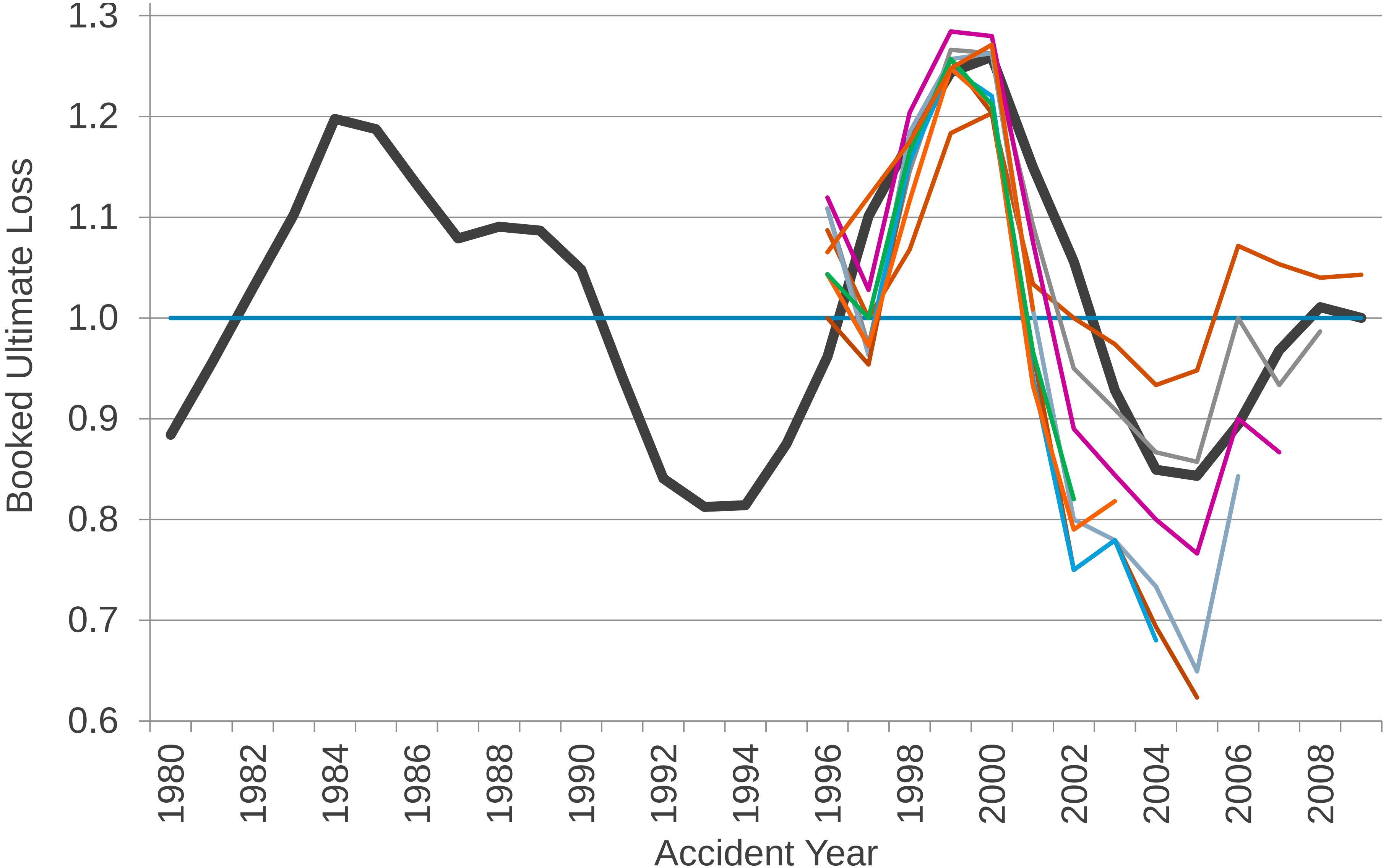
Reserve Cycle – Company C



Reserve Cycle – U.S. Workers Compensation



Reserve Cycle – U.K. Employers Liability



GUY CARPENTER

1. Why do we have a cycle?
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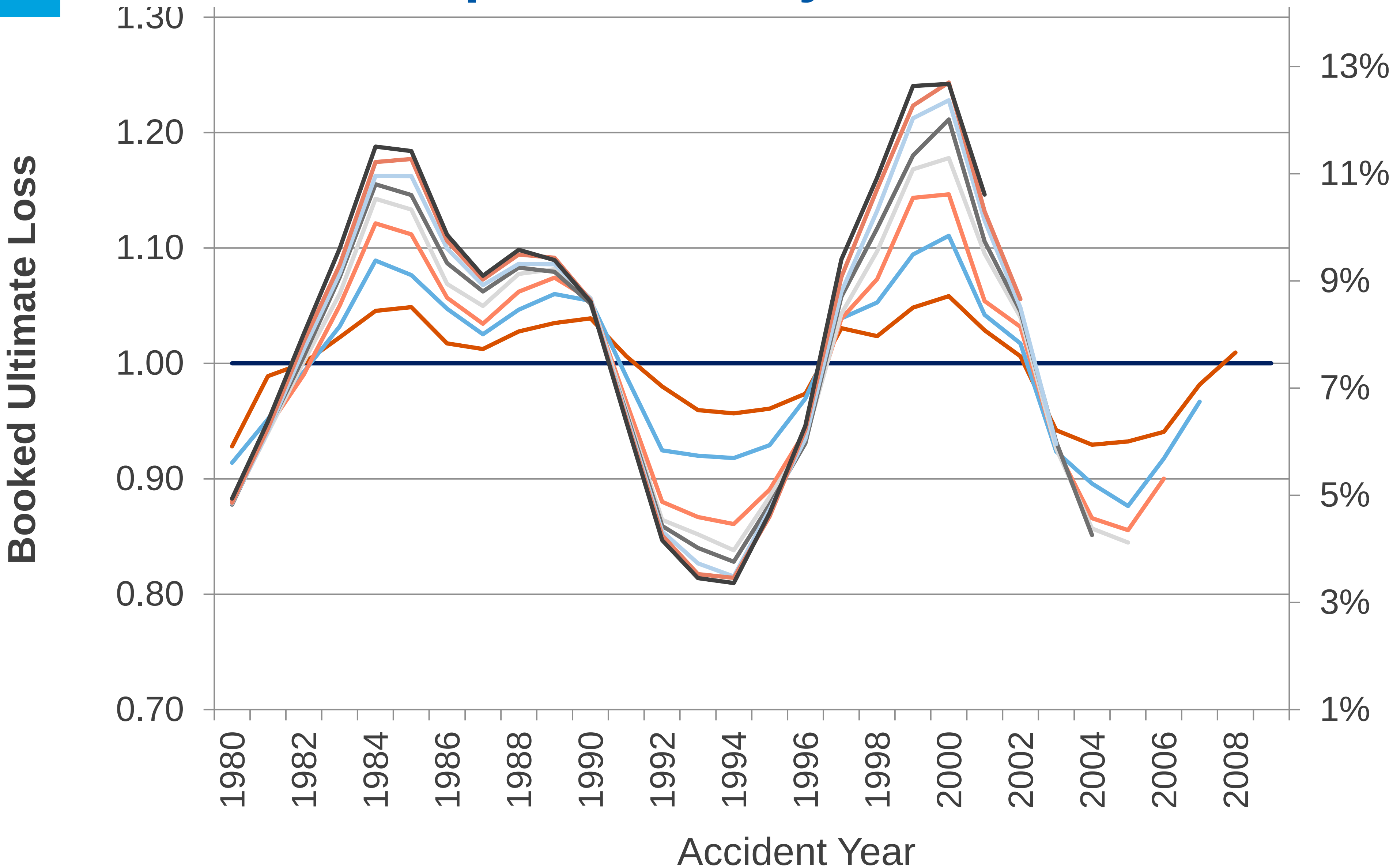
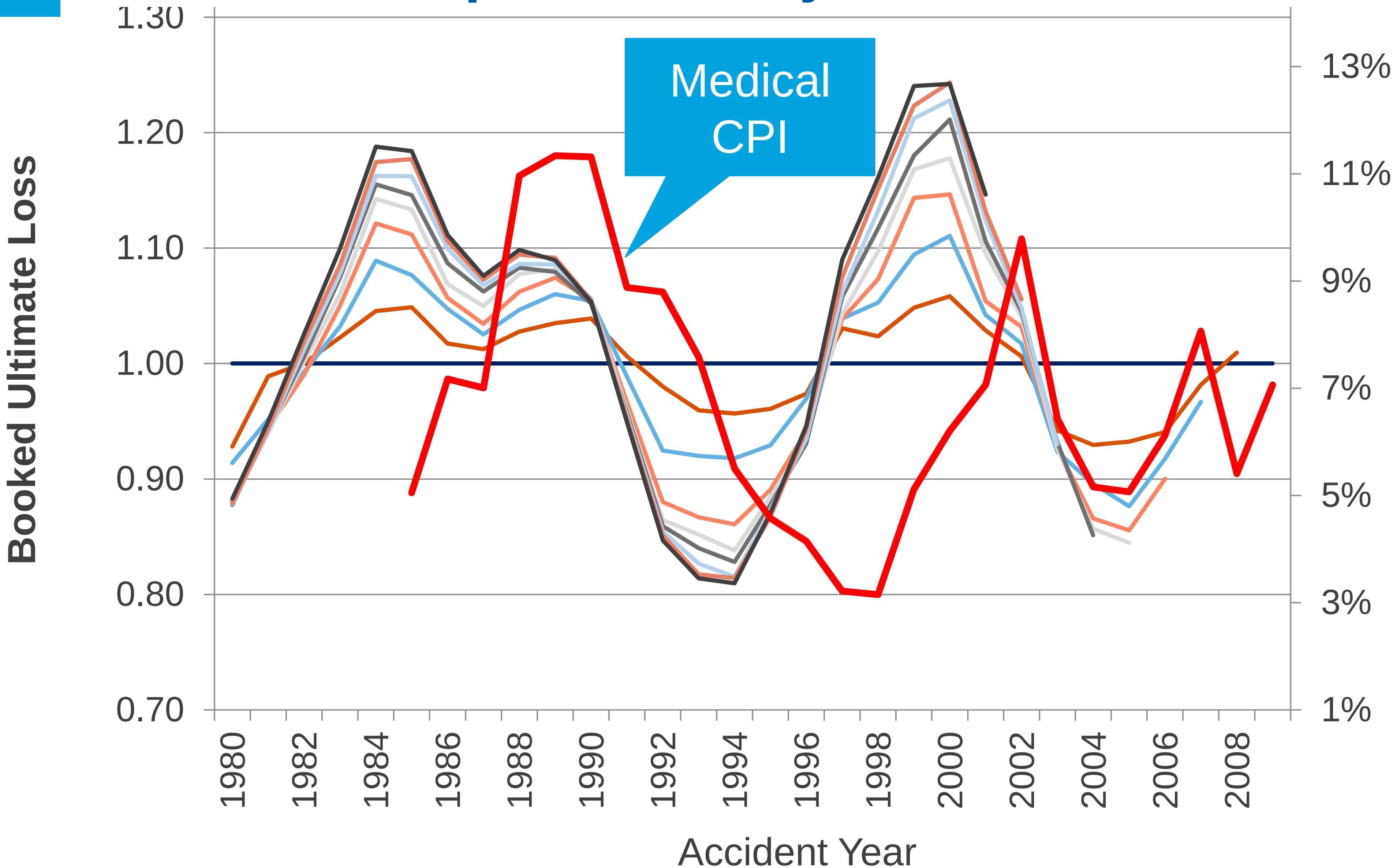
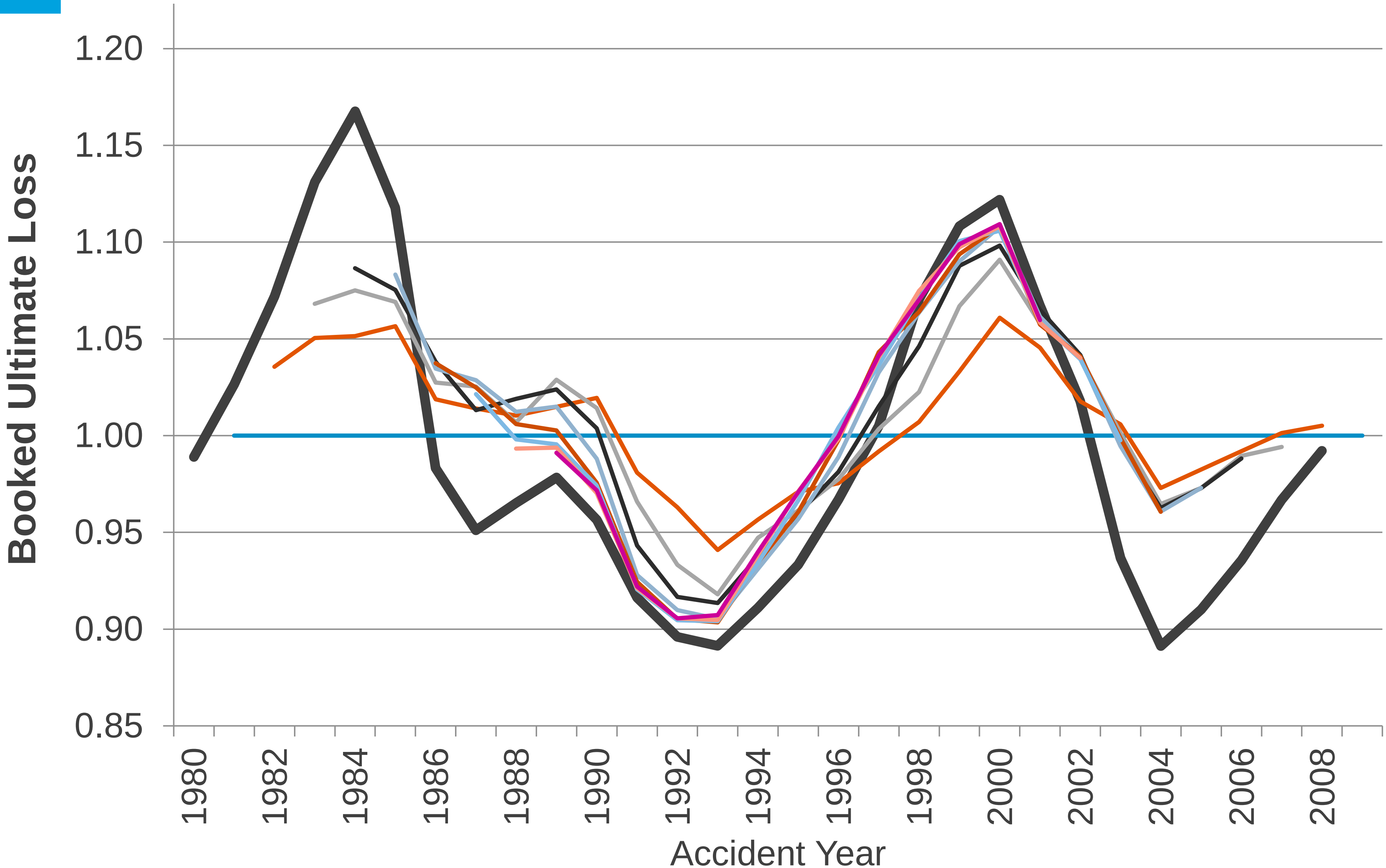
Workers Compensation Cycle & Inflation



Workers Compensation Cycle & Inflation



Incurred Chain ladder Cycle



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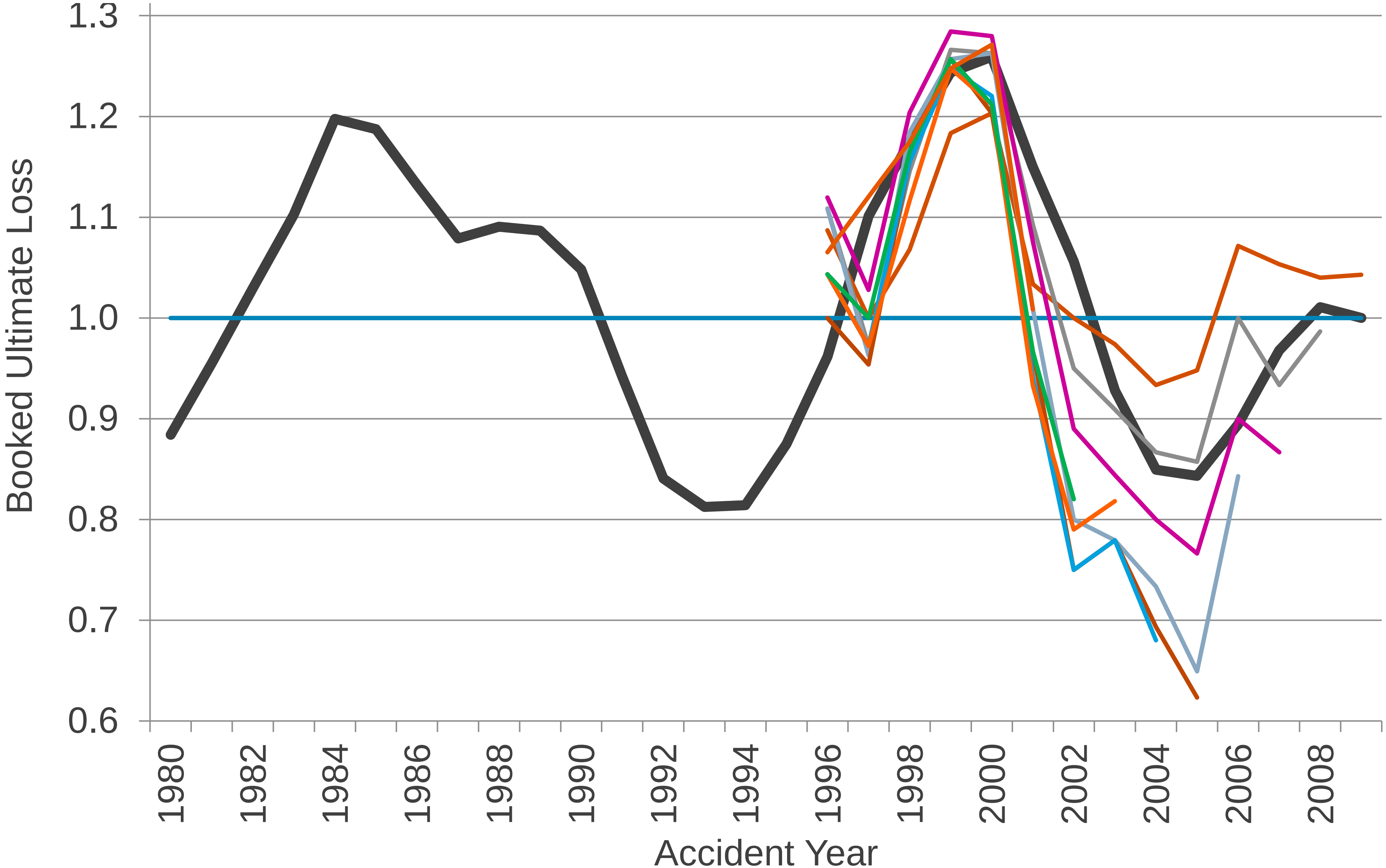

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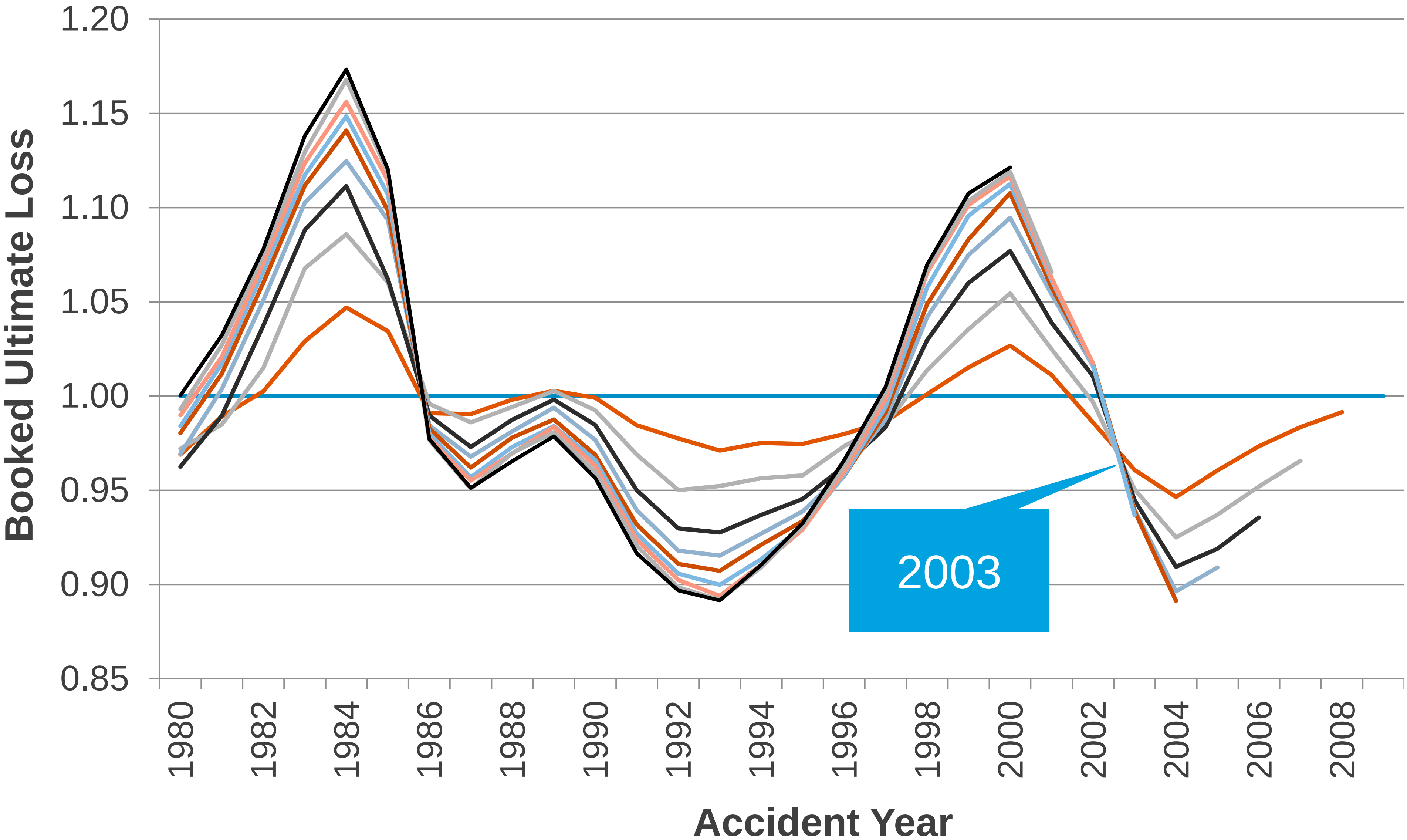
Reserving Cycle



Top stories for CAS actuaries 2003:

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2. **[L]evel of Reserve Deficiency…**
   – Despite substantial reserve increases by …insurers, during 2003 rating agencies estimate that the non-asbestos reserve shortfall …is between $30 billion and $60 billion.

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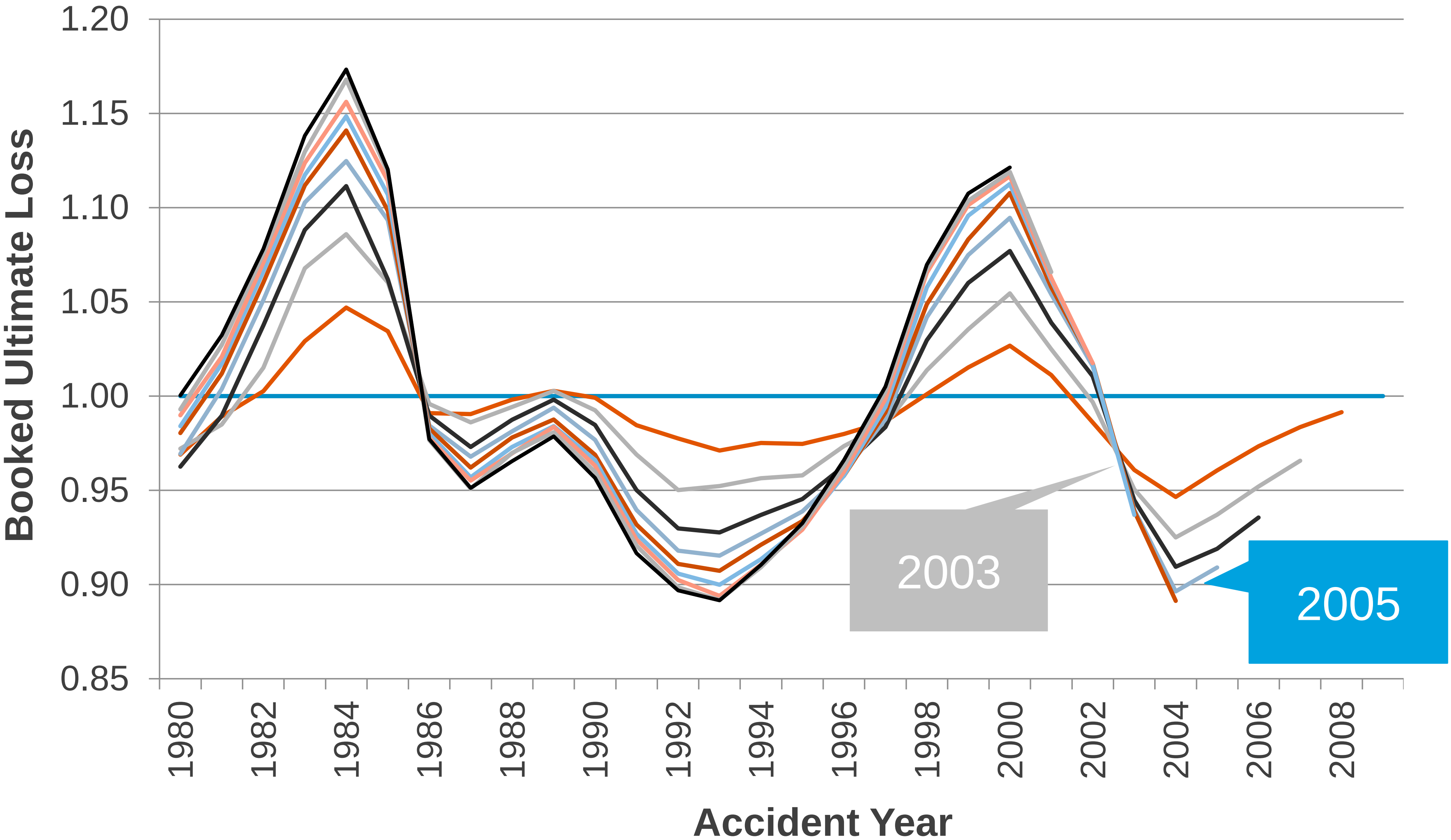
The profession must continue… its self-review, as these issues will not go away on their own.

Reserving Cycle



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- ?

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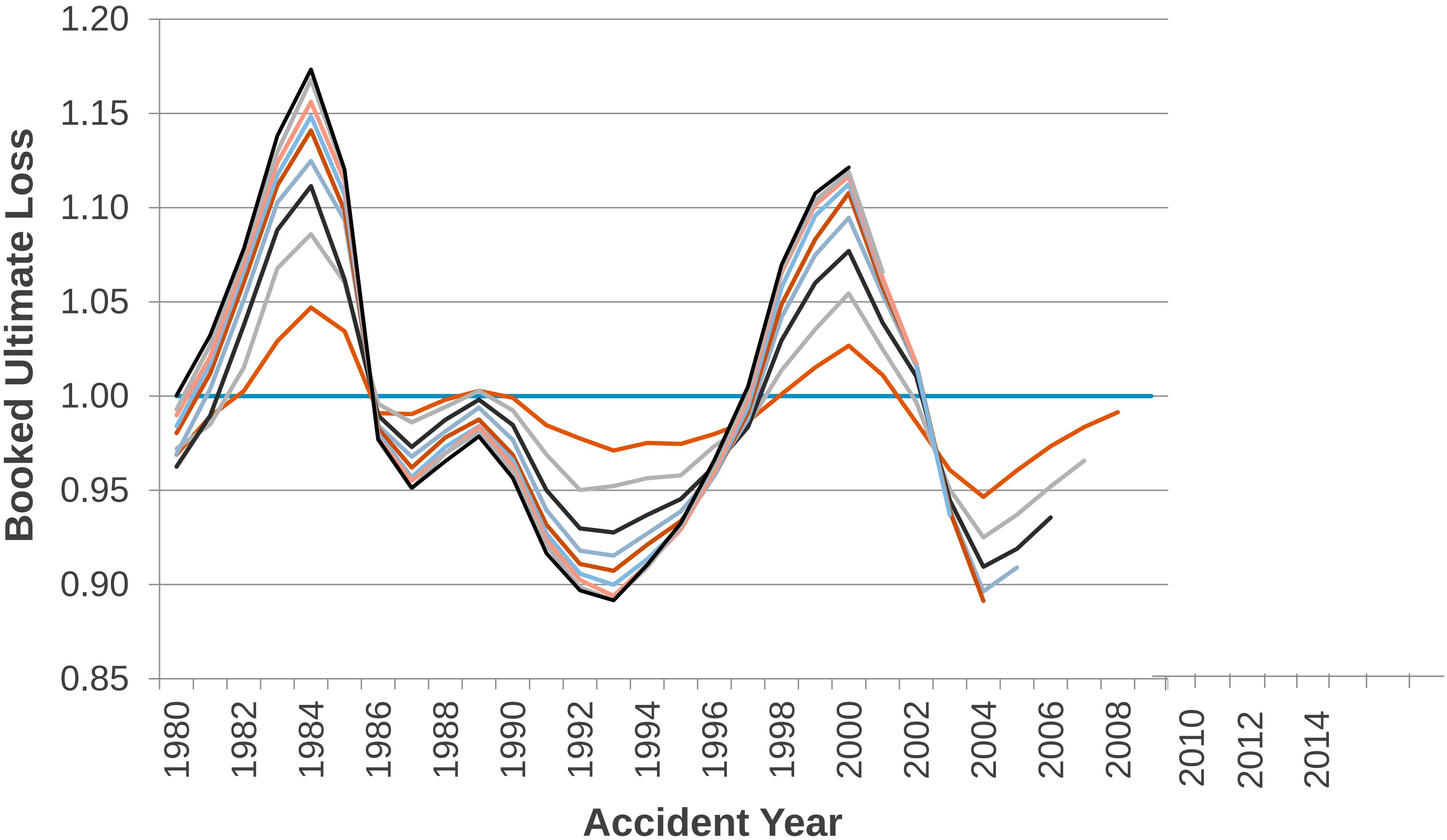
- ? What reserving problem ?

Reserving Cycle



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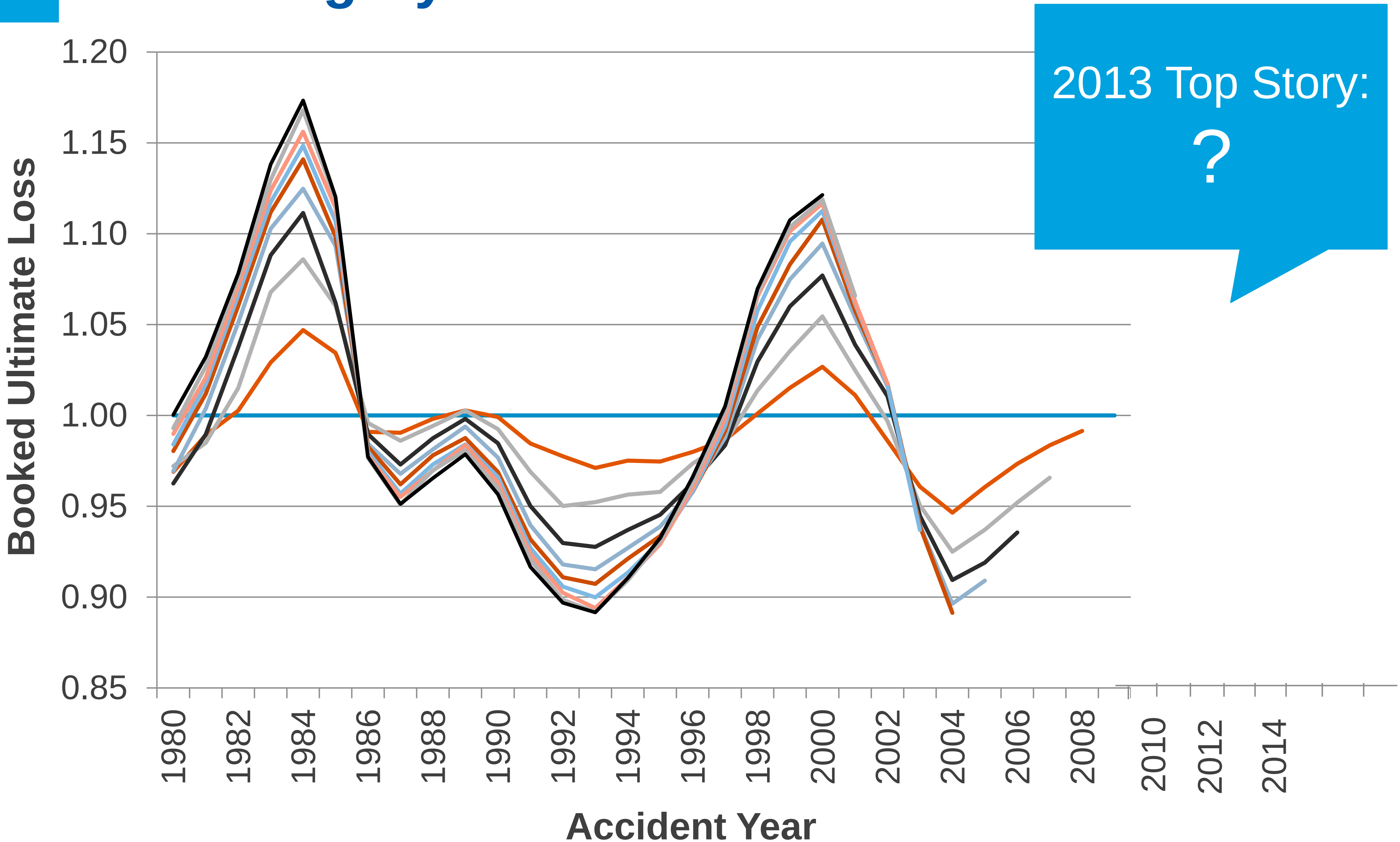

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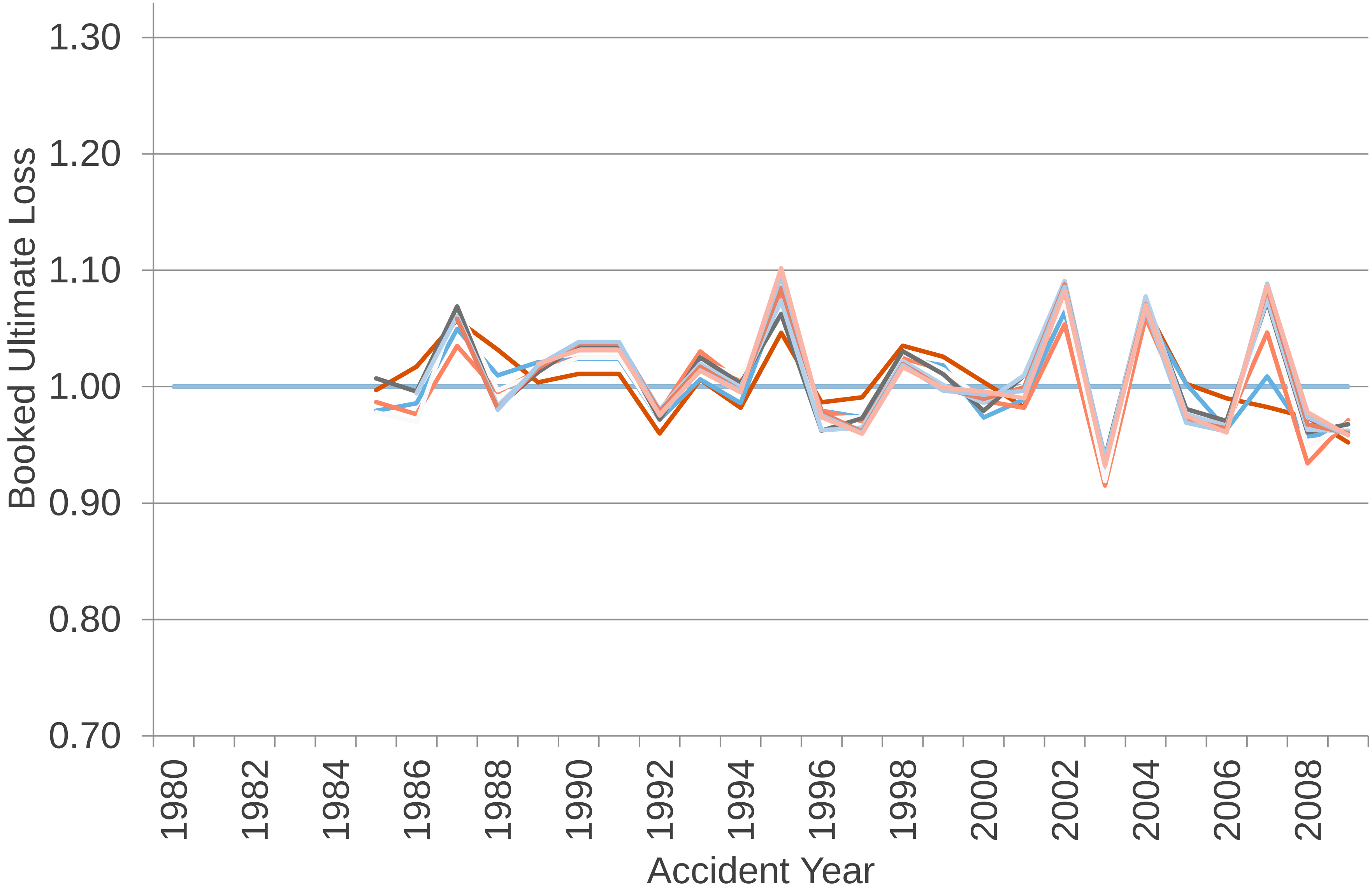
Reserve Cycle – WC using bootstrap model



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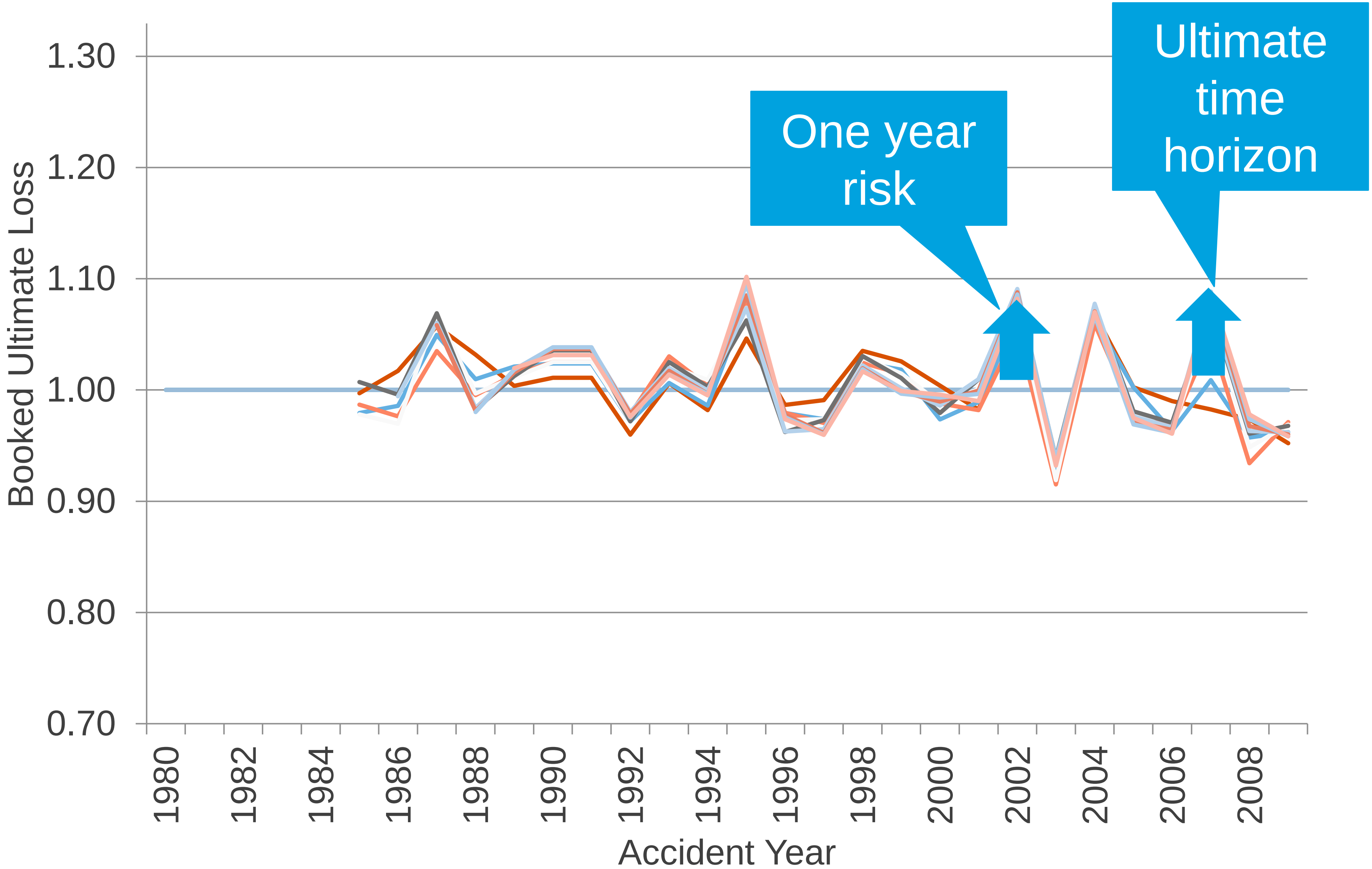

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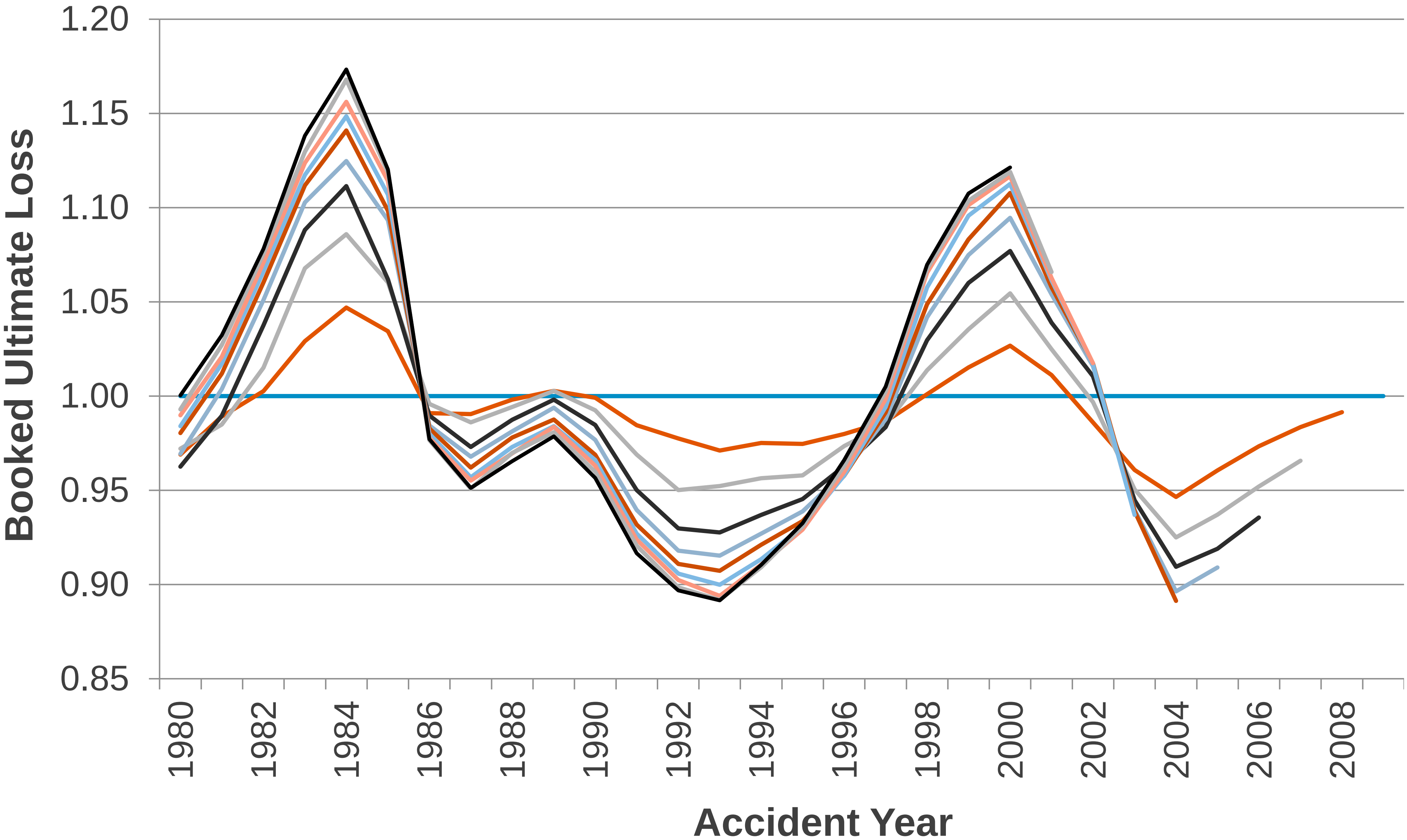

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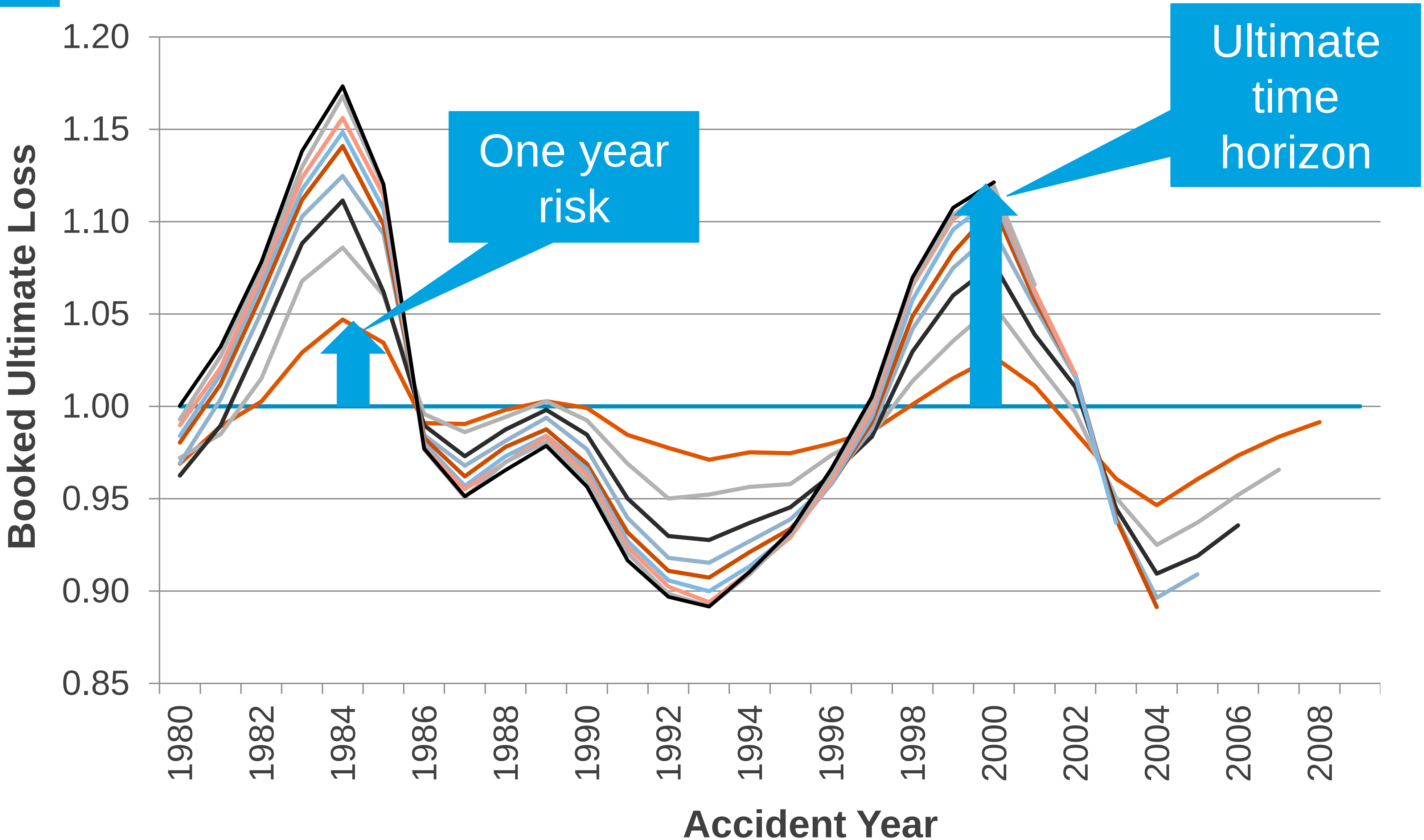

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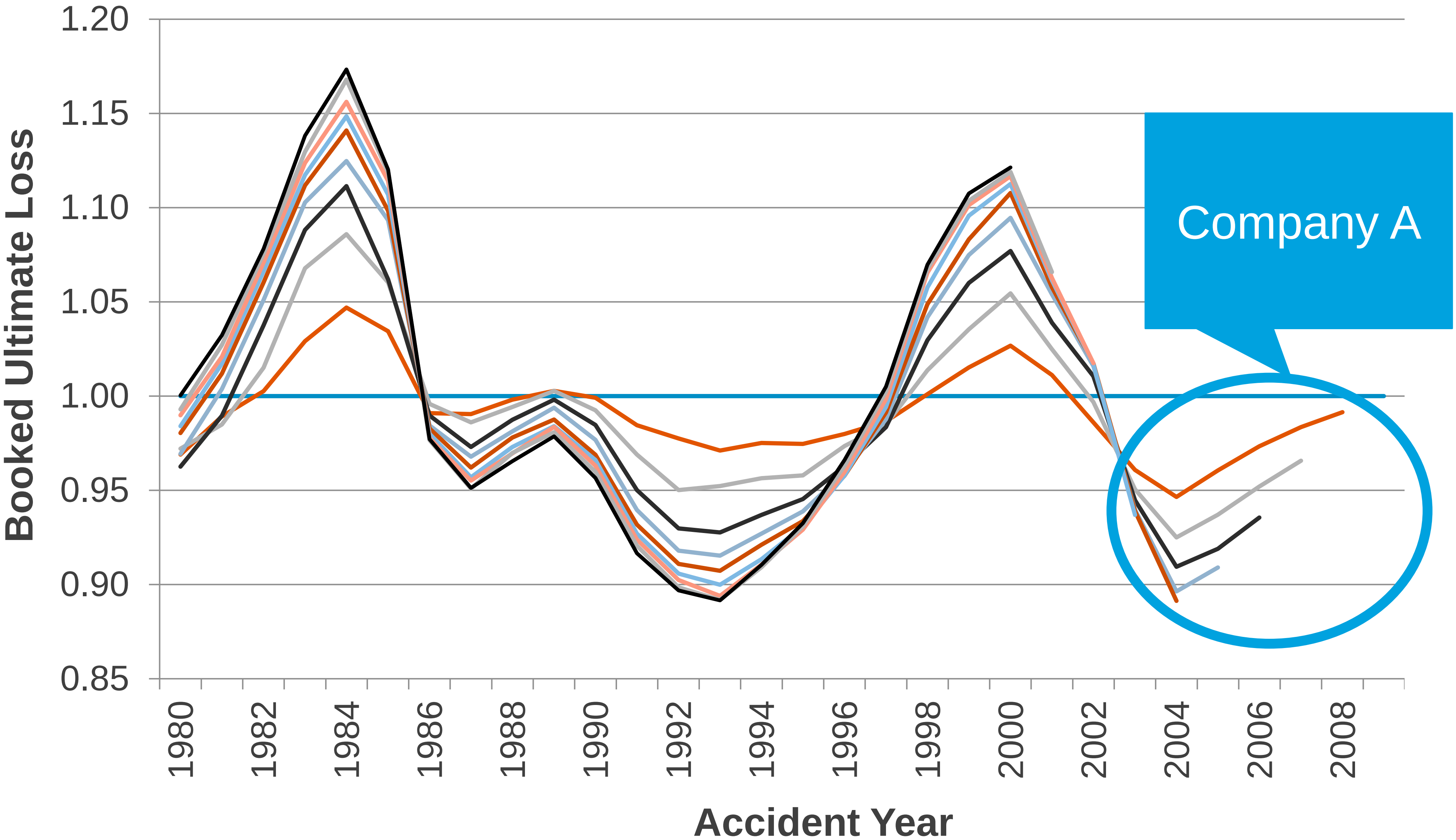
Company A's loss portfolio transfer



Conundrum

1. Best estimate is not our best estimate

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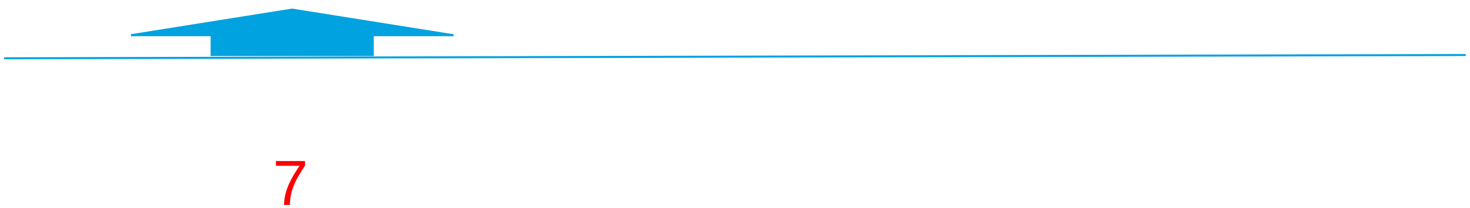

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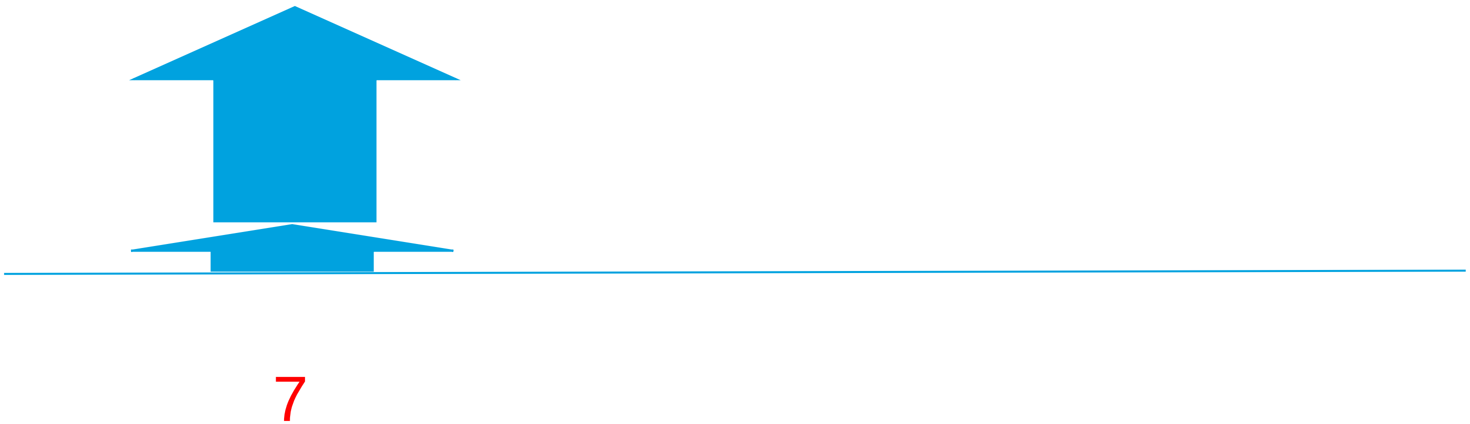

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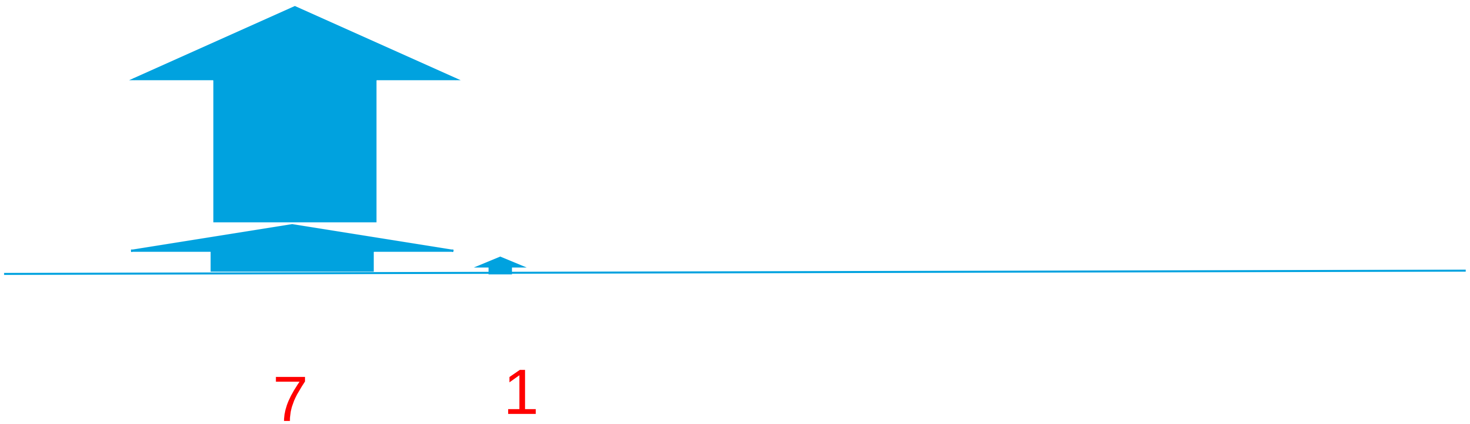

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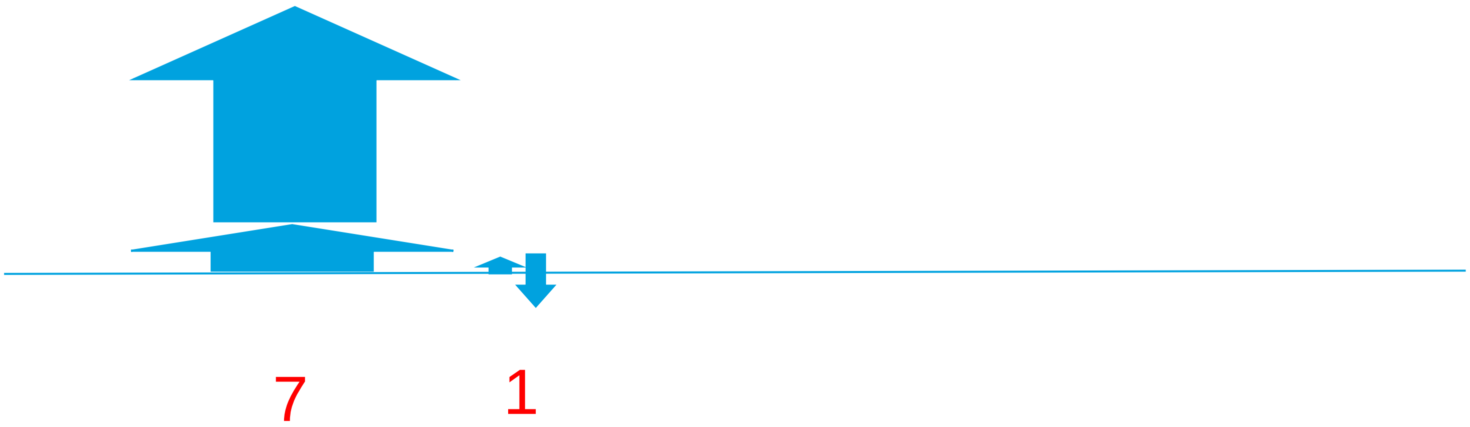

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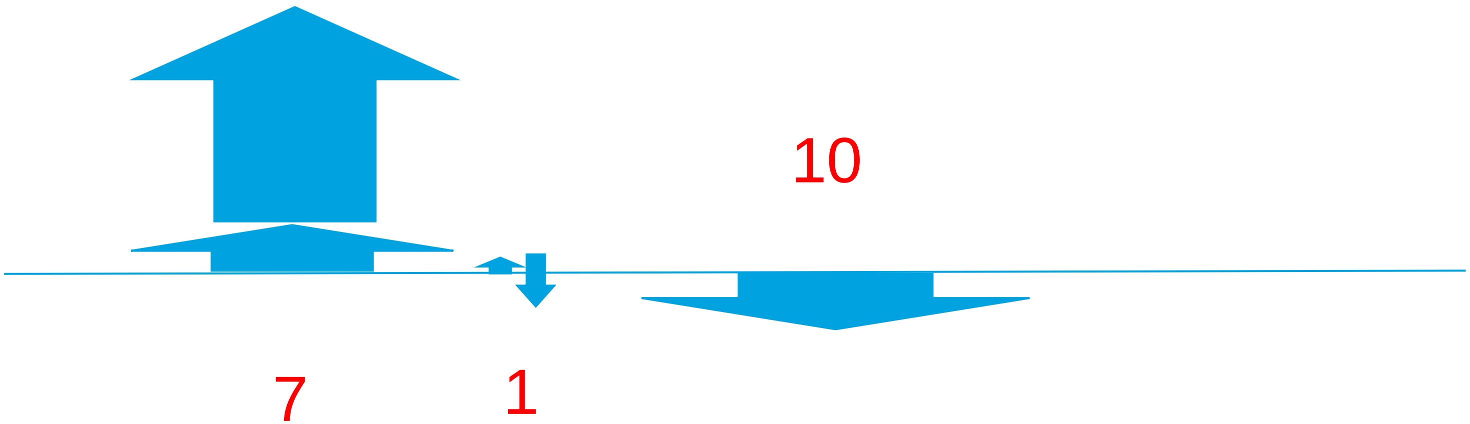

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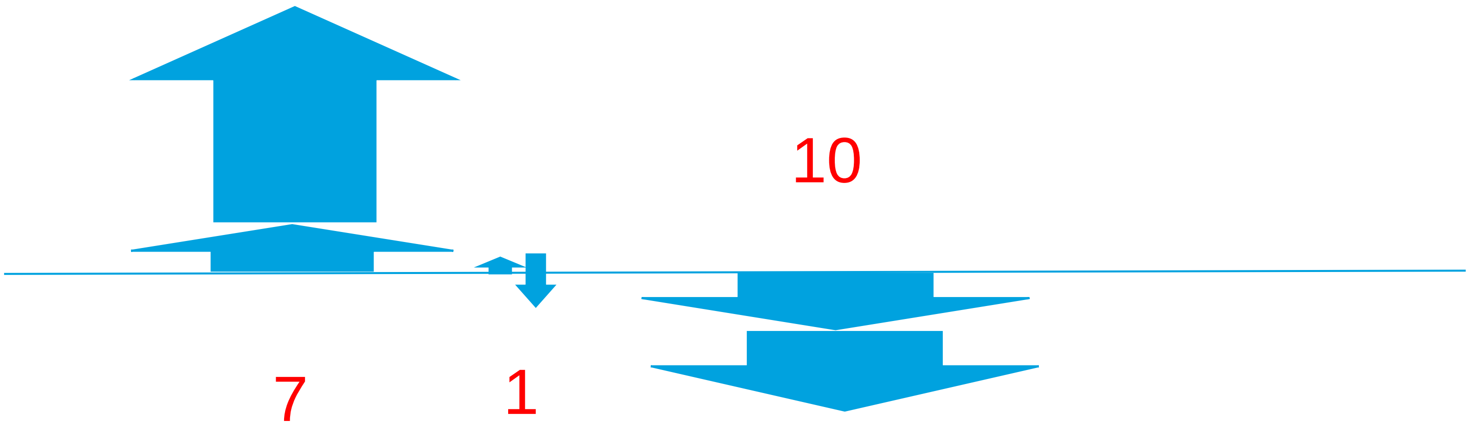

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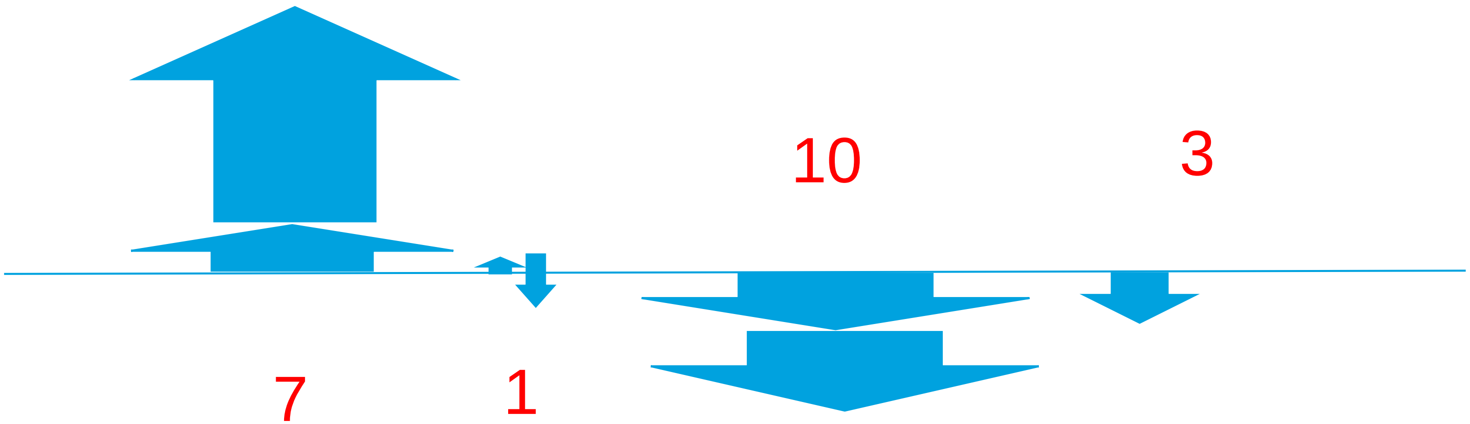

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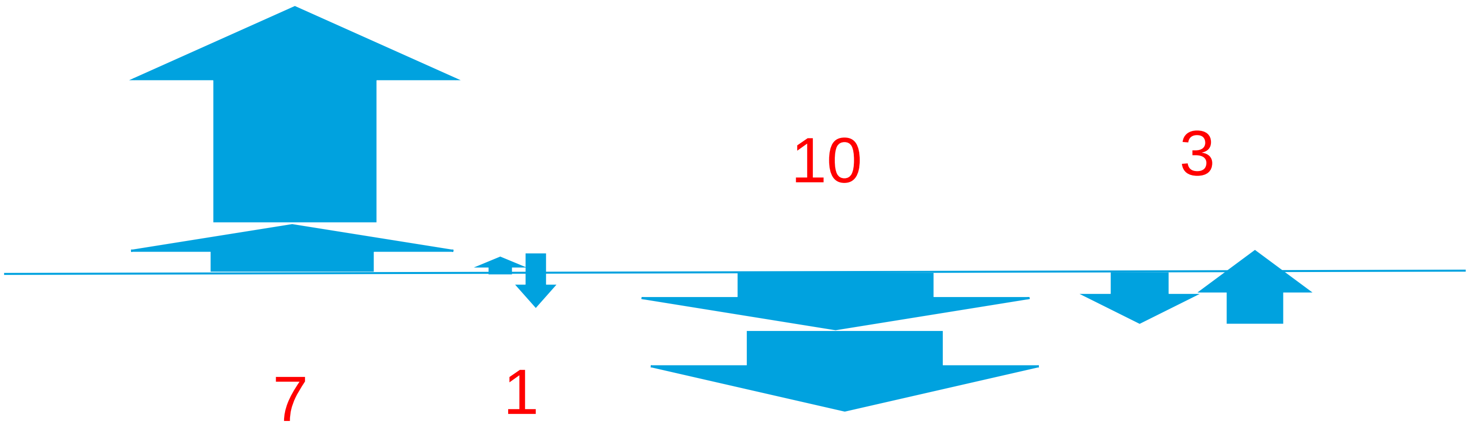

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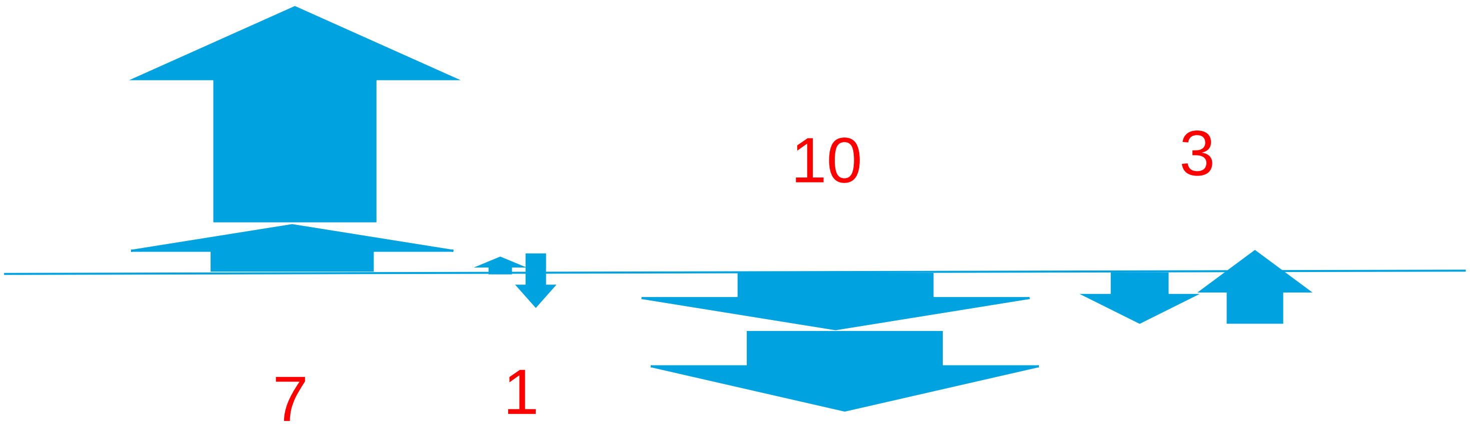

2. No incentive to do anything about it

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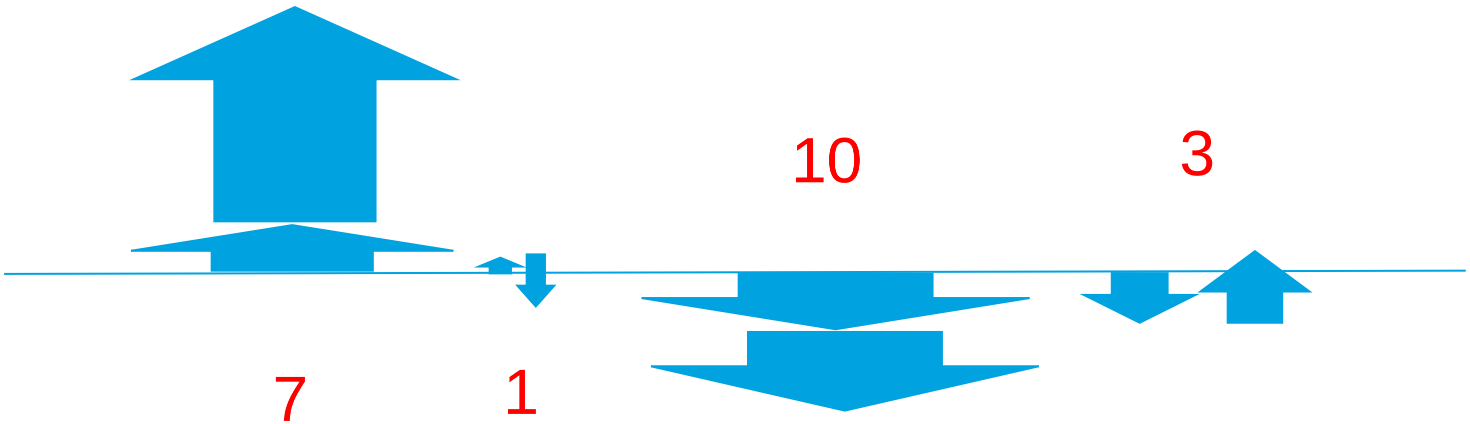

2. No incentive to do anything about it

3. Can’t model it

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What does this mean for reserve models?

1. Reserve best estimate
2. Reserve risk

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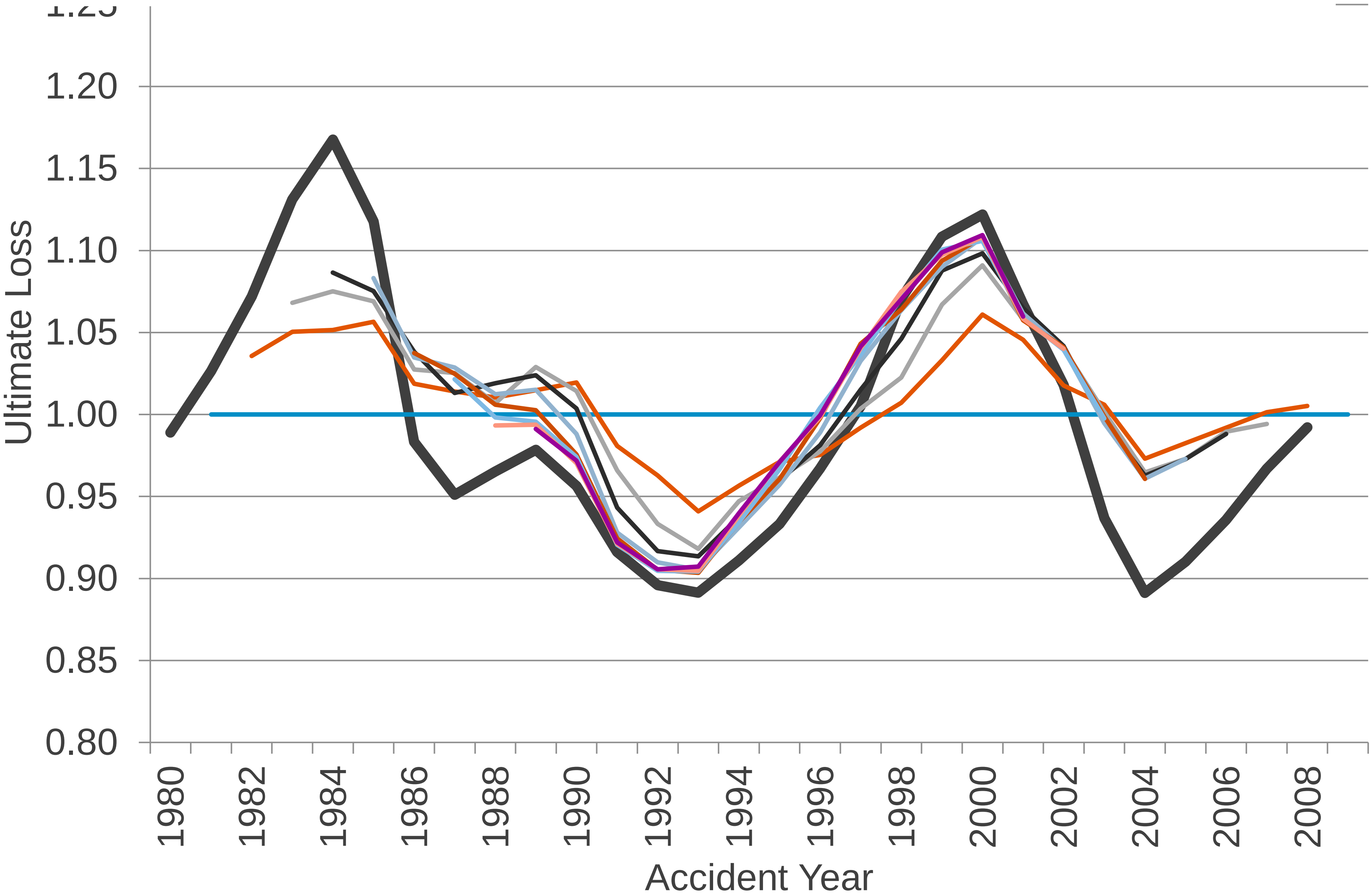
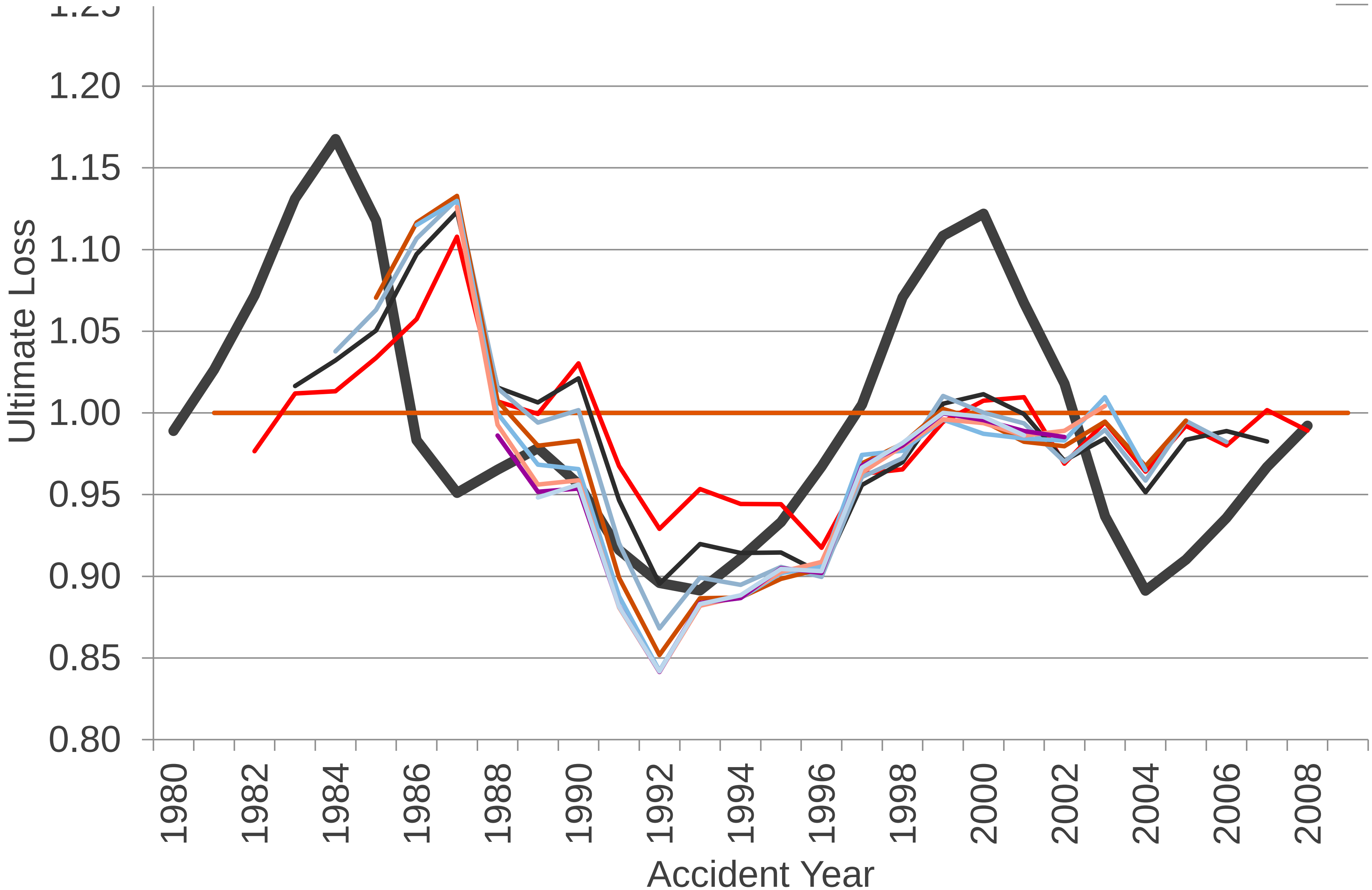
Incurred Chain ladder Cycle



Paid Chain ladder Cycle



What does this mean for reserve models?

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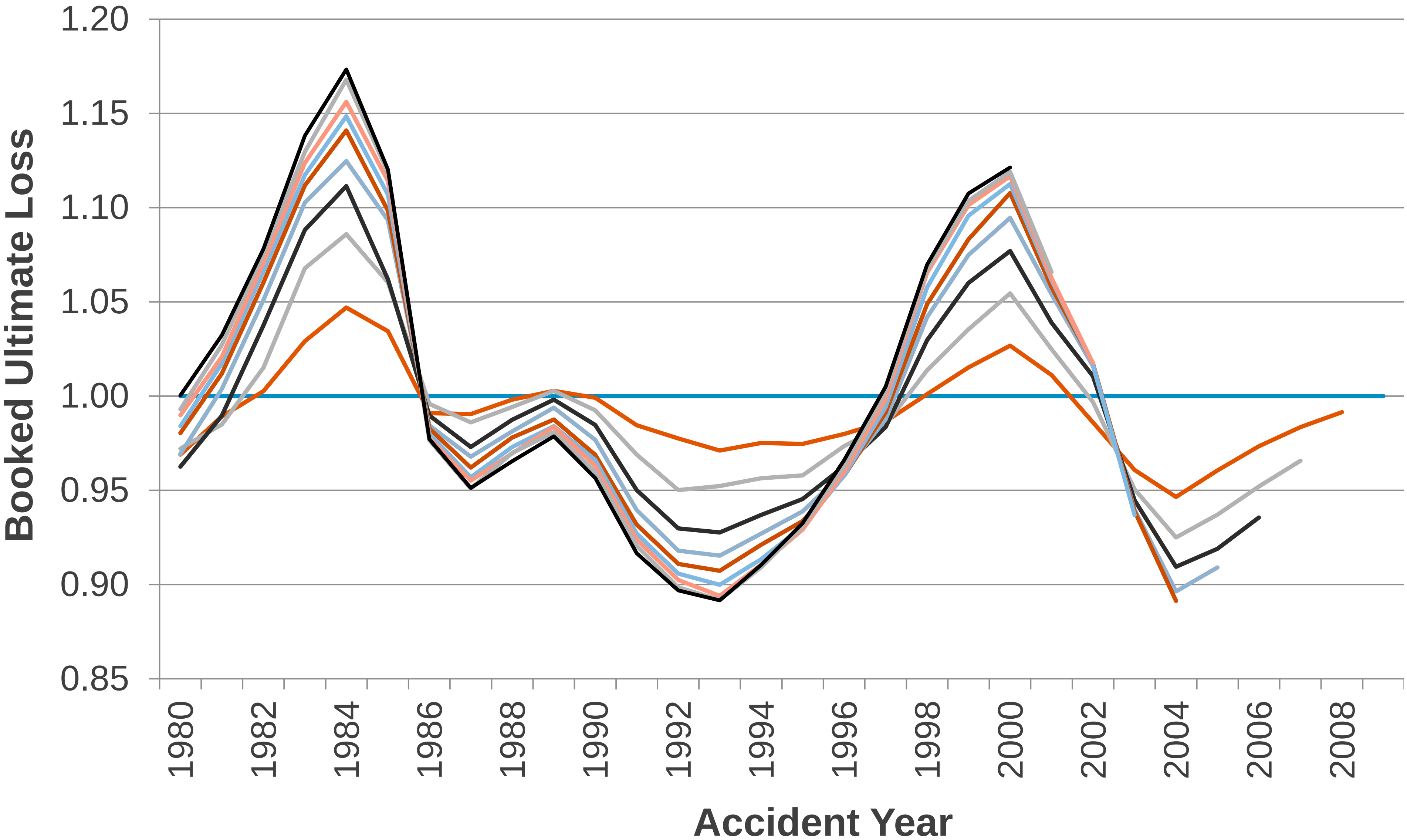
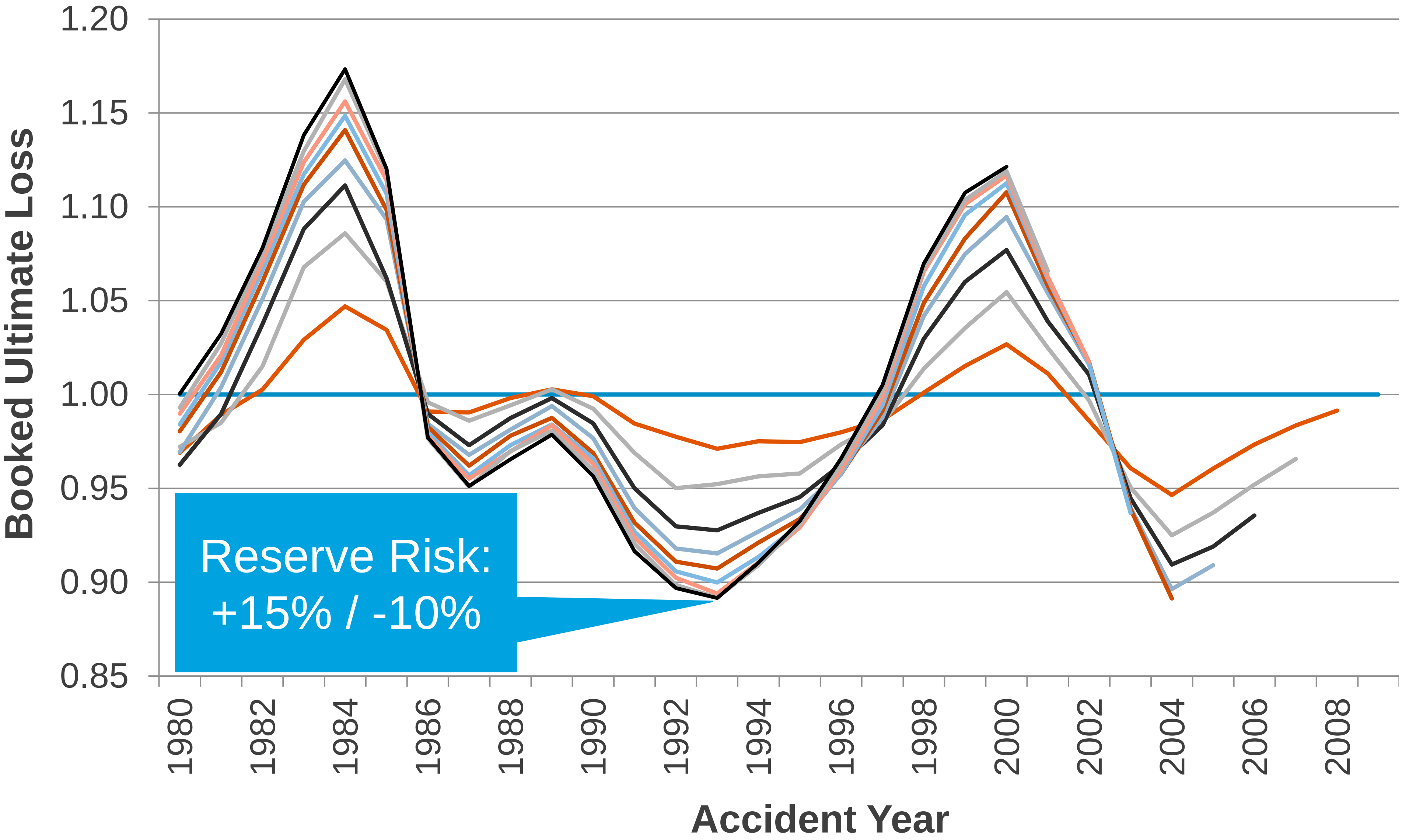
U.S. Reserve Cycle



Key features of the Reserve Cycle



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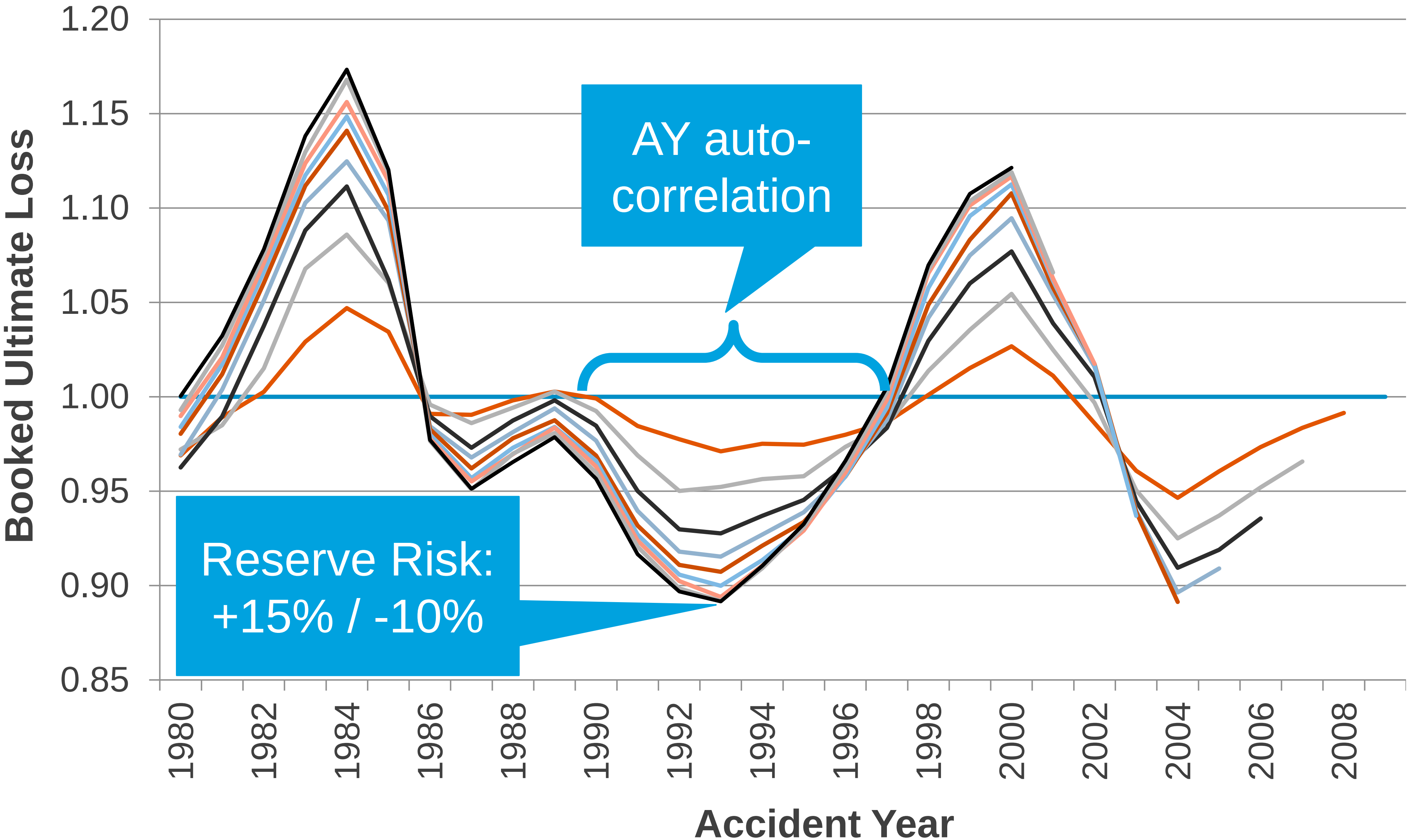

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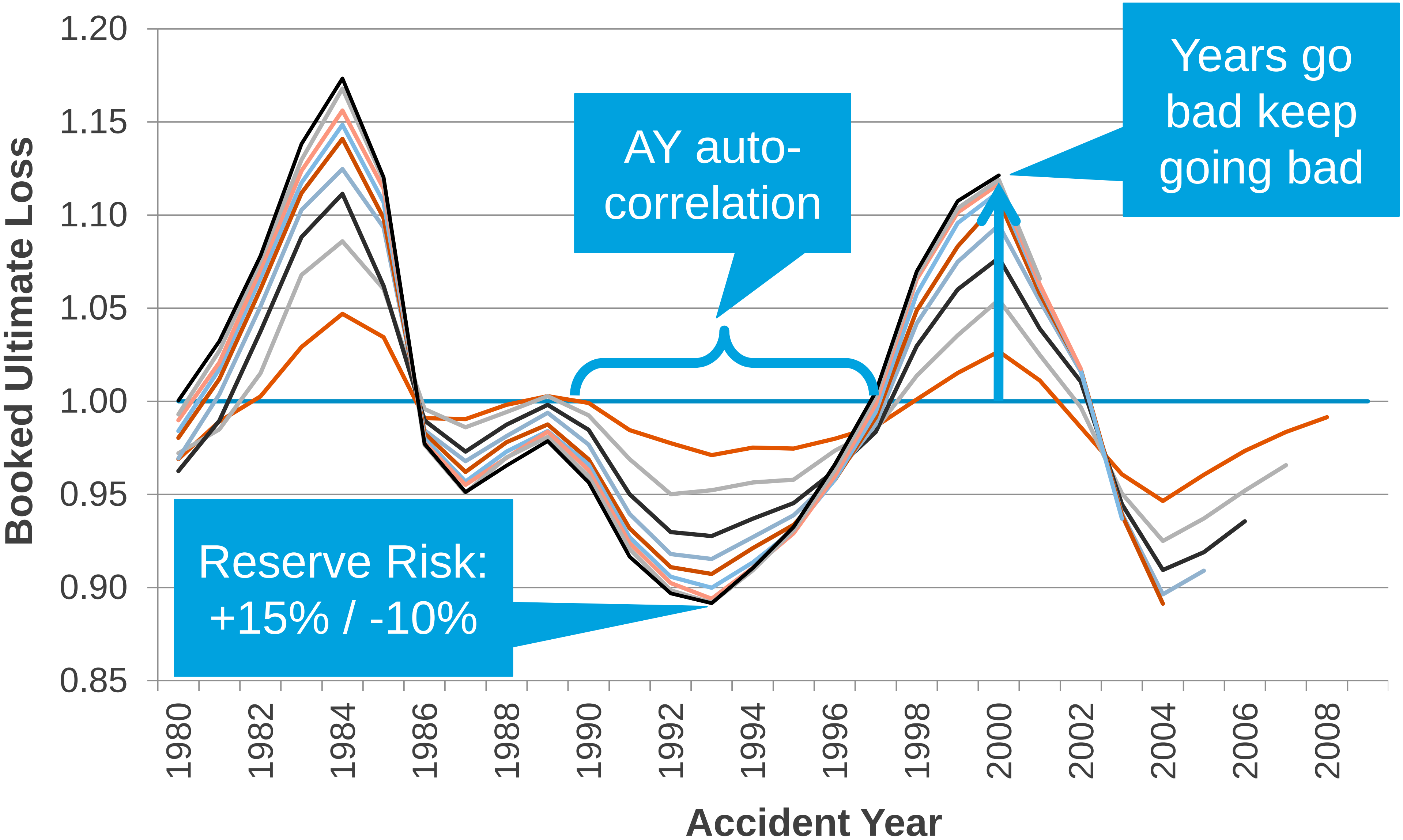

Modeling the key features of the Reserve Cycle

1. Reserve risk
2. Accident year auto-correlation
3. Years go bad keep going bad

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4. Correlation between LOBs

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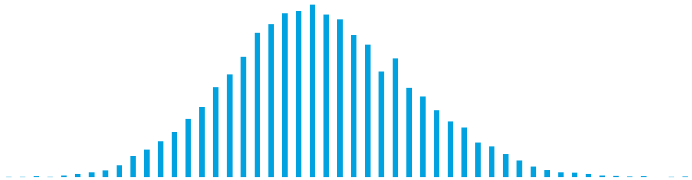

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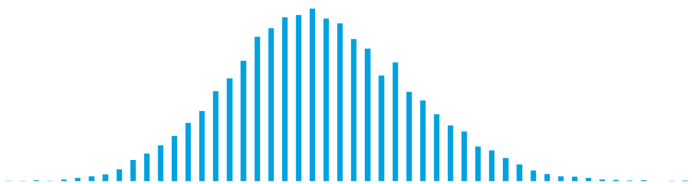

2. Accident year auto-correlation

1.0	0.2	0.5
0.2	1.0	…
0.5	…	1.0

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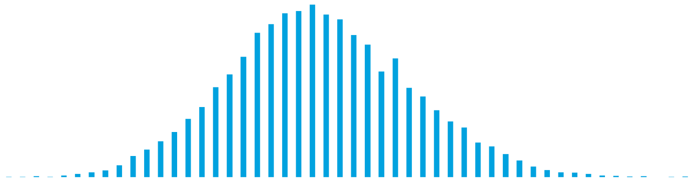

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3. Years go bad keep going bad

1.0	0.3	0.4
0.3	1.0	…
0.4	…	1.0

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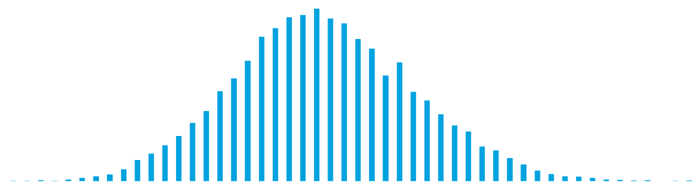

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3. Years go bad keep going bad

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4. Correlation between LOBs

1.0	0.7	0.1
0.7	1.0	…
0.1	…	1.0

Modeling the key features of the Reserve Cycle

1. Reserve risk

2. Accident year auto-correlation

3. Years go bad keep going bad

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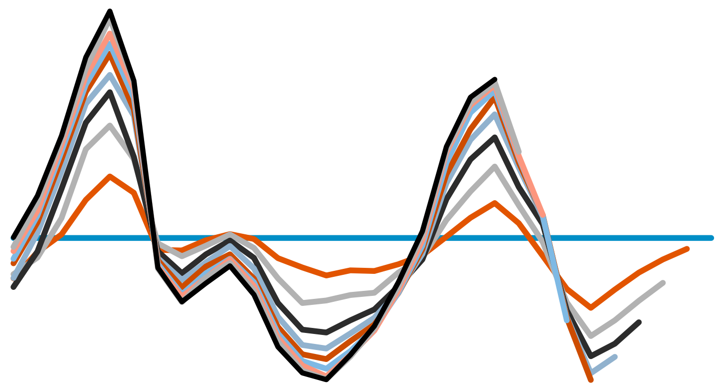
Time series model



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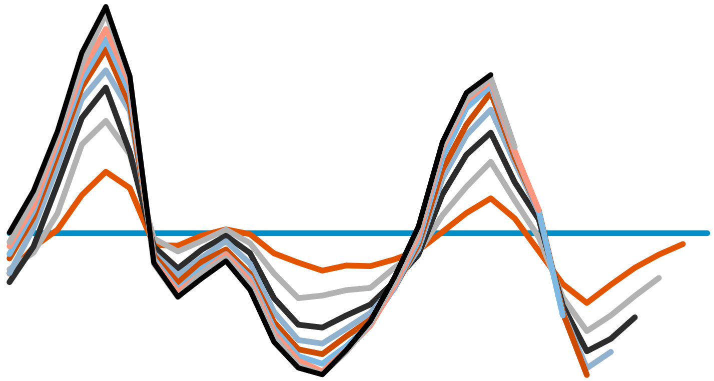

Pros:

- Death due to correlation:
  - Years that go bad keep going bad
  - Groups of AY’s go bad together
  - Lines of business go bad together

Cons

?

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