

*Segmenting Closed Claim Payment Data to Estimate Loss and
ALAE Reserves for Construction Defects*



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Actuarial Consideration Regarding CD Reserve Liability Projections

- Actuarial analysis overview
- Historical literature relatively sparse
- Often minor consideration, even at large carriers

Unusual Line of Business Resulting in Constant Review, Re-Review, Tinkering

- Many Movements in Mix of Business
- Changes in Laws
- Types of Endorsements
- Policy Caps
- Operational Changes
- Ever evolving payment pattern – likely caused by items listed above

Challenges Presented by CD Claims

- Normal Actuarial methods are usually not ideal
- CD is not an insurance coverage
- Earned Premium (EP) used by many as an exposure base
 - Rate changes
 - Shift in mix of business
 - Multiple earning patterns
- Consideration for ALAE (Expense) costs

Challenges Presented by CD Claims

- Long period of latency before claim is discovered
- Different groupings of data by
 - Policy year
 - Accident/loss year
 - Report year
- Constant changes to Assumptions above
- Difficulty benchmark to other companies or other programs

Challenges Presented by CD Claims

- Few similarities between different programs/MGAs
- Updating data elements in the claims application
- Unusual Line of Business (LOB) results in constant review, re-review, and perpetual re-evaluation

Call Paper is found at the Casualty Actuarial Society website:

<https://www.casact.org/sites/default/files/2021-08/efroumsum20.pdf>

- Regardless of Accident Year or Loss year, the longer a claim is open, the more it costs
- ALAE severity differed if the claim was closed without a loss payment or with a loss payment
- Data easier to create and follow with payments and closure date
- Future tail of new reports most problematic to estimate, but methodology gives ample opportunity to observe changes and readjust or resegment as needed



CONSTRUCTION DEFECT CLAIMS & LITIGATION

Construction Defect Claims & Litigation

- Home Building
 - Building Process
 - Contracting
 - National Building Trends
 - Lawsuits
 - Defects
- On What Basis do Insurers Defend CD Claims
 - Some basics on CGL coverage
 - Duty to Defend
 - Other Coverage Considerations
 - How does a claim end up on certain years
 - Difference in ALAE in books
- Claims Settlement Process
 - Who pays what? Allocation
 - Recording losses

Building Process

Design & Engineering

Permits & Approvals

Site Development & Foundations



Building Process

Building Construction

Site Restoration



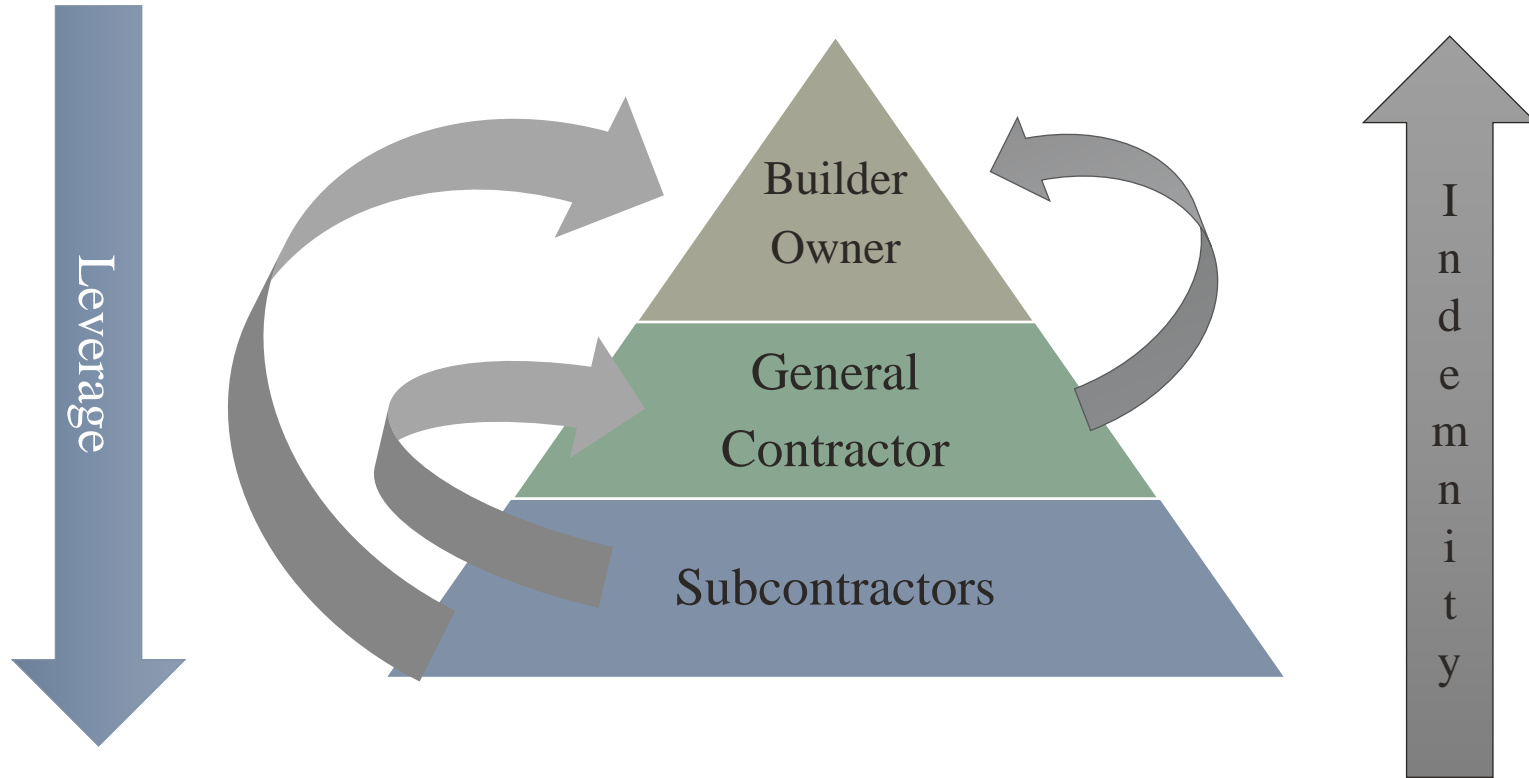
Structural/Envelope Subcontractors

- Foundation/Concrete Slab
- Framers
- Stucco
- Window installation
- Roofer
- Water proofer
- Sheet Metal
- Window/Door Manufacturers
- Geotechnical Engineers
- Mass Graders
- Balcony

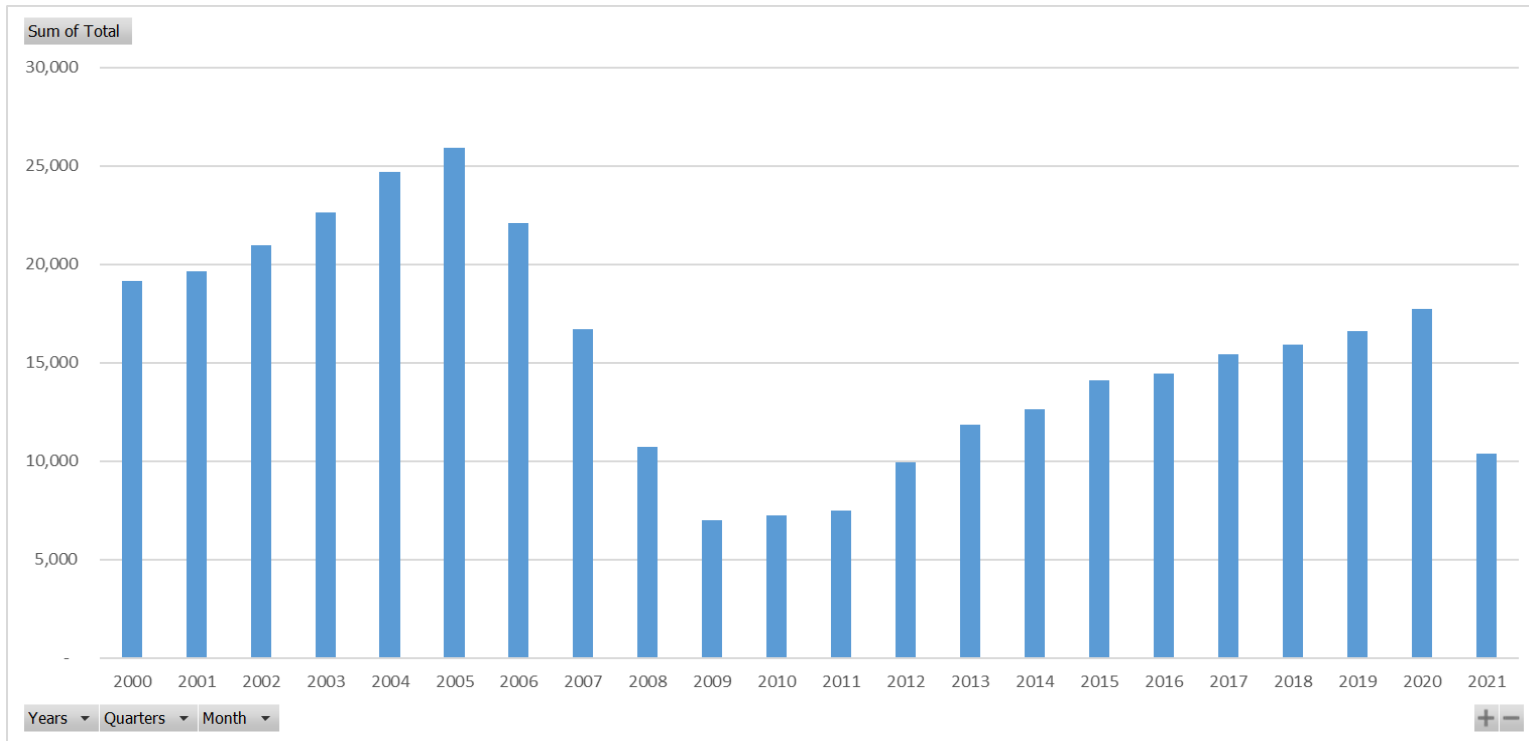
Minor Subcontractors

- Interior Finish Work
- Plumbers
- Tile/Flooring Installers
- Landscapers
- Electricians
- Closet Fixture Installers
- Painters
- HVAC Installers
- Overhead Garage Doors Installers
- Cabinet Installers
- Drywall Installers

Contracting



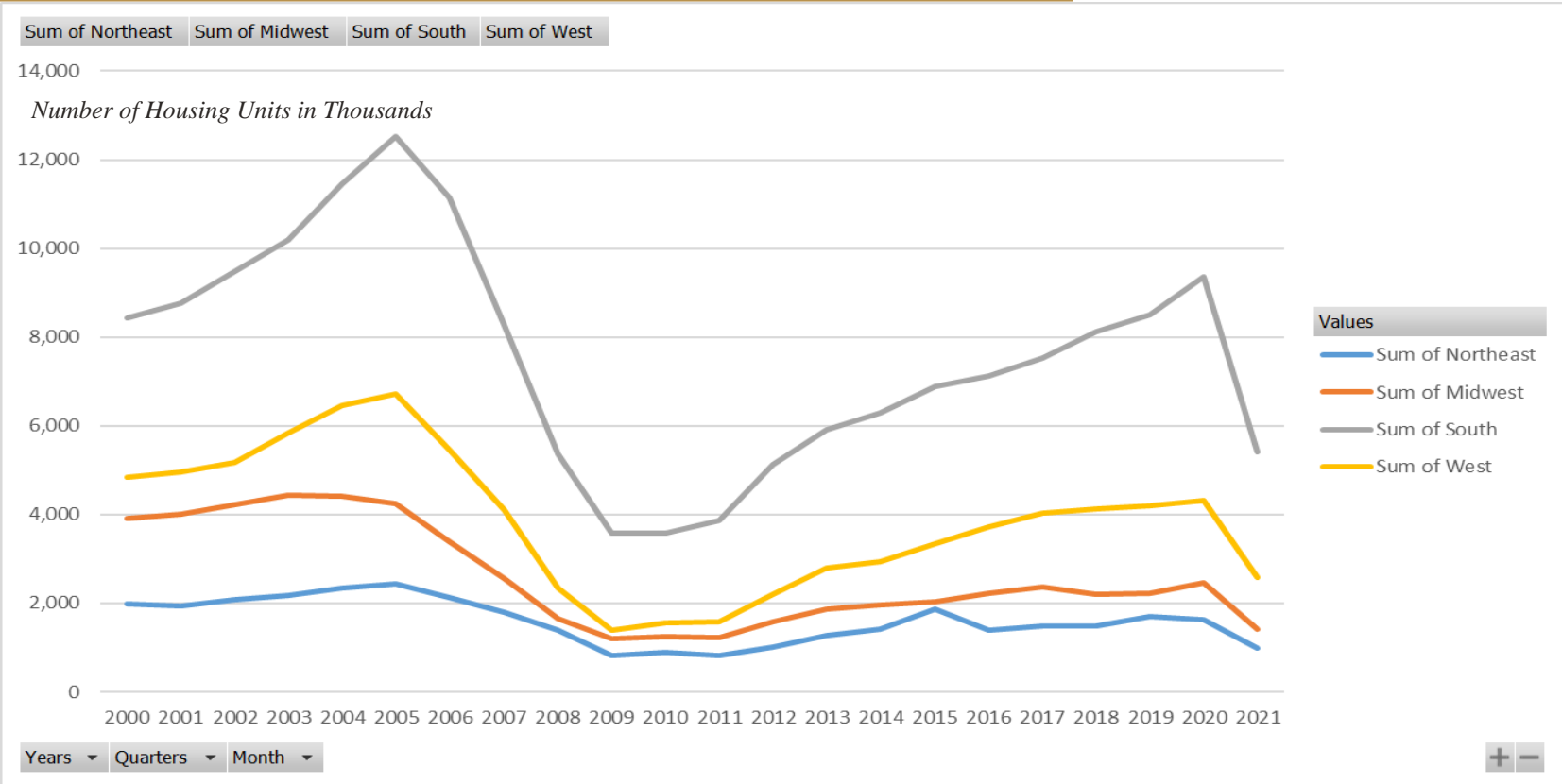
New Privately Owned Housing Units Authorized by Building Permits in Permit-Issuing Places



*Data
through
June 2021*

<https://www.census.gov/construction/bps/>

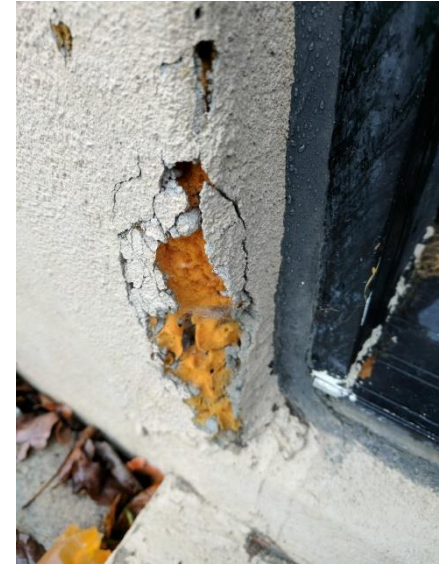
New Privately Owned Housing Units Authorized by Building Permits in Permit-Issuing Places -- Location



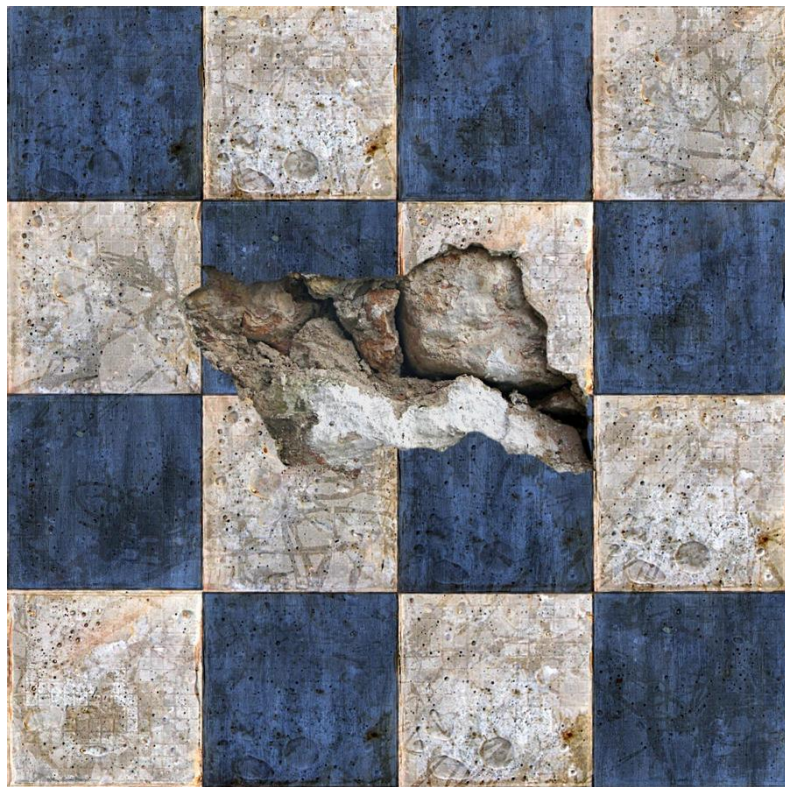
Defects



marble window ledge



Defects



Lawsuits

- Homeowners
- Homeowners Associations



Homeowner Allegations

- Breach of Contract
- Breach of Express Warranty
- Breach of Implied Warranty
- Breach of Implied Merchantability
- Violation of State Civil Codes

- Builders
- General Contractors
- Construction Managers



Third-Party Allegations

- Negligence
- Breach of Contract
- Express Indemnity
- Implied Contractual Indemnity
- Equitable Indemnity
- Breach of Written Contract to Defend
- Contribution/Appportionment

- Subcontractors
- Architects
- Engineers

Three Important Legal Concepts

Latent Claims

The damage is unknown or undiscoverable by the homeowner

There is a time lag between the occurrence and the discovery of the damage

Water intrusion, floor tile/stucco cracks

Statute of Limitations

The period of time in which a claim may be brought, commencing at the time of injury or damage

Statute of Repose

Serves as a bar on any claim, and usually runs from a date certain, such as COE

6 – 10 Years

Transfer of Risk

Additional Insured Endorsements

Immediate duty to defend
Continuously evolving

Contractual Indemnity

Typically strong language requiring a defense

Typically settled at end of claim

Right to Repair Acts

- Specify the rights and requirements of homeowner to bring a court action
- Outlines statute of limitations
- Specifies the Burden of Proof
- Damages recoverable
- Most provide for a pre-litigation procedure
- Defines the obligations of the homeowner
- Defines Standards for home construction
 - Every facet of the home is subject to a standard
 - CA has over 50 standards
 - Violations of the standard are not difficult for homeowners to discover

Negligence, breach of contract, warranty claims are essentially displaced and plaintiff's burden becomes only a violation of the standard and property damage

Why are Insurers Defending?

Commercial General Liability

Section I. Coverages

Coverage A – Bodily Injury and Property Damage

1. Insuring Agreement

a. We will pay those sums the insured becomes legally obligated to pay as damages because of BI or PD to which this insurance applies. We have the right and duty to defend any suit seeking those damages . . .

b. This insurance applies to BI and PD only if:

- (1) The BI or PD is caused by an occurrence . . .
- (2) The BI or PD occurs during the policy period



**The
Duty to
Defend
is
Greater
than the
Duty to
Indemnify**

Other Coverage Considerations

EXCLUSIONS

Damage to Property
J5 & J6

Damage to Your
Product

Damage to Your Work

Recall of Products,
Work or Impaired
Property

ENDORSEMENTS

Prior Damage

Prior Work

Condo/Apt. Exclusions

Subsidence Exclusions

Residential/Tract
Homes

Wrap or OCIPS

COMPLETED OPERATIONS

Start Date for
Construction

End Date

Certificate of Escrow

Discovery of Damage

Date Suit Brought

Allocation – Time on Risk by COE



Insured	ABC Stucco Inc.
Claim#	123456
Demand	\$100,000

	Policy Inception	Policy Expiration	Days on Risk	Tim on Risk	Share of Settlement
Insurer 1	7/1/2005	7/1/2006	8	0.04%	\$43.40
Insurer 2	7/1/2006	10/13/2009	8,560	46.44%	46,440.97
Insurer 3	10/13/2009	10/13/2010	3,285	17.82%	17,822.27
Insurer 4	10/13/2000	10/13/2012	6,579	35.69%	\$35,693.36



Plaintiff	Address	Tract	Lot#	NOC
Smith	24 Main St.	1	1	9/3/2006
Johnson	35 Belle Ct.	3	9	4/5/2007
Smithe	12 Pleasantville	4	2	1/25/2008
Smithy	30 Main St.	1	2	9/12/2006
Johns	26 Main St.	1	6	9/11/2006
Jon	55 main St.	1	11	6/23/2006
Jons	21 Pleasantville	4	7	2/19/2008
Jahn	2 Belle Ct.	3	1	2/15/2007
Jeosophat	42 Belle Ct.	3	5	4/23/2007



THE KAHN-TUMBLESTON-TOWNSEND METHODOLOGY

Interactions between Actuarial-Claims Team

Collaboration

- Changes in UW practices
- Amendments to existing endorsements
- Addition of new endorsements
- Change in risk appetite at underwriter
- Change in mix of business
- Trend in the claims

Final Estimate Recommendation

- Joint product of actuarial team and claims team
- Ultimate pick made by committee

KTT Paper Background

Important definitions used:

- CwPL = Closed with Paid Loss
- CwPAO = Closed with Paid ALAE Only
- CwoP = Closed without Payment

Data Elements are key to segmentation

- Claim ID
- Loss Year/Accident Year
- Report Year
- Close Year
- Inception-to-Date Paid Loss
- Inception-to-Date Paid ALAE
- Loss Case Reserves
- ALAE Case Reserves
- Additional Insured vs. Named Insured

- Regardless of Accident Year or Loss year, the longer a claim is open, the more it costs
- ALAE severity differed if the claim was closed without a loss payment or with a loss payment
- Future tail of new reports problematic to estimate
- Data easier to create and follow with payments and closure date

KTT Methodology Walkthrough

The valuation date for the data is December 31, 2019.

The selected Loss Limit is \$200,000.

In the following exhibits, all financial figures are displayed in thousands.

Data Requirements

Typical Data Fields

Claim_No	TIMING			FINANCIALS			
	Loss Year	Report Year	Close Year	Paid Loss	Paid ALAE	Case Loss	Case ALAE
CN001	2010	2010	2011	0	3	0	0
CN002	2010	2012	2014	584	22	0	0
CN003	2012	2012	2014	23	20	0	0
CN004	2015	2016	2018	0	0	0	0
CN005	2016	2017		0	0	59	48
CN006	2010	2017	2018	36	17	0	0
CN007	2015	2017		0	0	228	43

Derived Fields

Claim_No	LAGS		Reported Count	Open Count	COUNTS			FINANCIALS			
	Loss-to-Report Lag	Report-to-Close Lag			CwPL Count	CwPL XS Count	CwPAO Count	CwPL Ltd Paid Loss	CwPL XS Paid Loss	CwPL Paid ALAE	CwPAO Paid ALAE
CN001	12	24	1	0	0	0	1	0	0	0	3
CN002	36	36	1	0	1	1	0	200	384	22	0
CN003	12	36	1	0	1	0	0	23	0	20	0
CN004	24	36	1	0	0	0	0	0	0	0	0
CN005	24		1	1	0	0	0	0	0	0	0
CN006	96	24	1	0	1	0	0	36	0	17	0
CN007	36		1	1	0	0	0	0	0	0	0

Reported Count Projection

Cumulative Reported Counts by Age of Loss Year, Developed to Ultimate

Loss Yr	12	24	36	48	60	72	84	96	108	120
2010	12	22	35	43	52	69	80	86	90	91
2011	9	19	31	45	64	82	94	95	100	101
2012	9	22	32	48	64	81	85	88	92	93
2013	7	13	23	40	66	83	91	95	100	101
2014	15	30	48	74	100	133	148	154	162	164
2015	16	33	55	84	102	132	147	153	161	163
2016	11	22	34	47	64	83	92	96	101	102
2017	14	25	35	52	71	92	102	106	111	112
2018	8	15	24	36	49	63	70	73	77	78
2019	7	14	22	33	45	58	65	68	71	72

Incremental Reported Counts by Age of Loss Year, Developed to Ultimate

Loss Yr	12	24	36	48	60	72	84	96	108	120
2010	12	10	13	8	9	17	11	6	4	1
2011	9	10	12	14	19	18	12	1	5	1
2012	9	13	10	16	16	17	4	3	4	1
2013	7	6	10	17	26	17	8	4	5	1
2014	15	15	18	26	26	33	15	6	8	2
2015	16	17	22	29	18	30	15	6	8	2
2016	11	11	12	13	17	19	9	4	5	1
2017	14	11	10	17	19	21	10	4	5	1
2018	8	7	9	12	13	14	7	3	4	1
2019	7	7	8	11	12	13	7	3	3	1

Rept Yr	Ult Rptd Counts
2010	12
2011	19
2012	32
2013	40
2014	54
2015	93
2016	108
2017	134
2018	112
2019	105
2020	104
2021	85
2022	69
2023	50
2024	31
2025	16
2026	8
2027	4
2028	1

Close Ratio Derivation

Cumulative Closed Counts by Age of Report Year

Rept Yr	12	24	36	48	60	72	84	96	108	120	Ult Rptd Counts
2010	4	10	10	12	12	12	12	12	12	12	12
2011	6	10	12	15	18	19	19	19	19		19
2012	12	21	28	31	32	32	32	32			32
2013	15	29	33	37	40	40	40				40
2014	18	28	36	44	53	53					54
2015	42	62	76	88	91						93
2016	37	70	86	97							108
2017	39	76	103								134
2018	50	71									112
2019	45										105

Cumulative Closed Ratios (Closed / Ultimate Reported)

Rept Yr	12	24	36	48	60	72	84	96	108	120
2010	33%	83%	83%	100%	100%	100%	100%	100%	100%	100%
2011	32%	53%	63%	79%	95%	100%	100%	100%	100%	100%
2012	38%	66%	88%	97%	100%	100%	100%	100%		
2013	38%	73%	83%	93%	100%	100%	100%			
2014	33%	52%	67%	81%	98%	98%				
2015	45%	67%	82%	95%	98%					
2016	34%	65%	80%	90%						
2017	29%	57%	77%							
2018	45%	63%								
2019	43%									
Selected	37%	64%	78%	91%	98%	100%	100%	100%	100%	100%
Incmmntl	37%	27%	14%	13%	8%	1%	0%	0%	0%	0%

Closed Count Projection

Selected Incremental Close Ratios by Age of Report Year

12	24	36	48	60+
37%	27%	14%	13%	9%

Claim Counts

Rept Yr	Open Count	Future Reported Count	Yet-to-be-Closed Count
2016&Pr	14		14
2017	31		31
2018	41		41
2019	60		60
2020		104	104
2021		85	85
2022		69	69
2023		50	50
2024		31	31
2025		16	16
2026		8	8
2027		4	4
2028		1	1
Total	146	368	514

Future Closed Counts by Report-to-Close Lag

Rept Yr	12	24	36	48	60+	Total
2016&Pr					14	14
2017				18	13	31
2018			15	15	11	41
2019		26	13	12	9	60
2020	38	28	14	13	10	104
2021	31	23	11	11	8	85
2022	25	19	9	9	6	69
2023	18	14	7	6	5	50
2024	11	8	4	4	3	31
2025	6	4	2	2	2	16
2026	3	2	1	1	1	8
2027	1	1	1	1	0	4
2028	0	0	0	0	0	1
2029	136	126	78	93	81	514

CwPL Ratio Derivation

Incremental Closed Counts by Report-to-Close Lag

Rept Yr	12	24	36	48	60+
2010	4	6	0	2	0
2011	6	4	2	3	4
2012	12	9	7	3	1
2013	15	14	4	4	3
2014	18	10	8	8	9
2015	42	20	14	12	3
2016	37	33	16	11	
2017	39	37	27		
2018	50	21			
2019	45				

Incremental CwPL Counts by Report-to-Close Lag

Rept Yr	12	24	36	48	60+
2010	0	1	0	2	0
2011	0	1	1	2	4
2012	0	3	4	2	1
2013	0	4	4	4	3
2014	1	2	6	6	9
2015	1	8	8	10	3
2016	1	6	11	9	
2017	0	15	15		
2018	1	3			
2019	2				

Incremental CwPL Ratios (CwPL / Closed)

Rept Yr	12	24	36	48	60+
2010	0%	17%	0%	100%	0%
2011	0%	25%	50%	67%	100%
2012	0%	33%	57%	67%	100%
2013	0%	29%	100%	100%	100%
2014	6%	20%	75%	75%	100%
2015	2%	40%	57%	83%	100%
2016	3%	18%	69%	82%	
2017	0%	41%	56%		
2018	2%	14%			
2019	4%				
Selected	2%	28%	63%	81%	100%

CwPAO Ratio Derivation

Incremental Closed Counts by Report-to-Close Lag

Rept Yr	12	24	36	48	60+
2010	4	6	0	2	0
2011	6	4	2	3	4
2012	12	9	7	3	1
2013	15	14	4	4	3
2014	18	10	8	8	9
2015	42	20	14	12	3
2016	37	33	16	11	
2017	39	37	27		
2018	50	21			
2019	45				

Incremental CwPAO Counts by Report-to-Close Lag

Rept Yr	12	24	36	48	60+
2010	2	4	0	0	0
2011	2	3	1	1	0
2012	8	6	3	1	0
2013	8	3	0	0	0
2014	12	5	2	2	0
2015	24	10	5	1	0
2016	22	15	4	2	
2017	28	15	7		
2018	31	11			
2019	30				

Incremental CwPAO Ratios (CwPAO / Closed)

Rept Yr	12	24	36	48	60+
2010	50%	67%	0%	0%	0%
2011	33%	75%	50%	33%	0%
2012	67%	67%	43%	33%	0%
2013	53%	21%	0%	0%	0%
2014	67%	50%	25%	25%	0%
2015	57%	50%	36%	8%	0%
2016	59%	45%	25%	18%	
2017	72%	41%	26%		
2018	62%	52%			
2019	67%				
Selected	62%	47%	28%	16%	0%

CwPL and CwPAO Count Projections



Selected Incremental CwPL Ratios by Age of Report Year

12	24	36	48	60+
2%	28%	63%	81%	100%

Selected Incremental CwPAO Ratios by Age of Report Year

12	24	36	48	60+
62%	47%	28%	16%	0%

Future Closed Counts by Report-to-Close Lag

Rept Yr	12	24	36	48	60+	Total
2016&Pr					14	14
2017				18	13	31
2018			15	15	11	41
2019		26	13	12	9	60
2020	38	28	14	13	10	104
2021	31	23	11	11	8	85
2022	25	19	9	9	6	69
2023	18	14	7	6	5	50
2024	11	8	4	4	3	31
2025	6	4	2	2	2	16
2026	3	2	1	1	1	8
2027	1	1	1	1	0	4
2028	0	0	0	0	0	1
2029	136	126	78	93	81	514

Future CwPL Counts by Report-to-Close Lag

Rept Yr	12	24	36	48	60+	Total
2016&Pr					14	14
2017				15	13	28
2018			10	12	11	33
2019		7	8	10	9	34
2020	1	8	9	11	10	38
2021	1	6	7	9	8	31
2022	1	5	6	7	6	25
2023	0	4	4	5	5	18
2024	0	2	3	3	3	11
2025	0	1	1	2	2	6
2026	0	1	1	1	1	3
2027	0	0	0	0	0	1
2028	0	0	0	0	0	0
2029	3	35	49	75	81	244

Future CwPAO Counts by Report-to-Close Lag

Rept Yr	12	24	36	48	60+	Total
2016&Pr					0	0
2017				3	0	3
2018			4	2	0	7
2019		12	4	2	0	18
2020	24	13	4	2	0	43
2021	20	11	3	2	0	35
2022	16	9	3	1	0	29
2023	12	6	2	1	0	21
2024	7	4	1	1	0	13
2025	4	2	1	0	0	7
2026	2	1	0	0	0	3
2027	1	1	0	0	0	2
2028	0	0	0	0	0	0
2029	85	59	22	15	0	181

CwPL Limited Loss Severity Derivation

Incremental CwPL Counts by Report-to-Close Lag

Rept Yr	12	24	36	48	60+
2010	0	1	0	2	0
2011	0	1	1	2	4
2012	0	3	4	2	1
2013	0	4	4	4	3
2014	1	2	6	6	9
2015	1	8	8	10	3
2016	1	6	11	9	
2017	0	15	15		
2018	1	3			
2019	2				

Limited Paid Loss on CwPL Claims by Report-to-Close Lag

Rept Yr	12	24	36	48	60+
2010	0	38	0	137	0
2011	0	29	51	170	239
2012	0	108	297	239	69
2013	0	188	123	204	366
2014	11	50	220	466	843
2015	10	251	388	939	453
2016	8	193	742	534	
2017	0	652	554		
2018	27	108			
2019	26				

CwPL Limited Loss Severities

Rept Yr	12	24	36	48	60+
2010	0	38	0	68	0
2011	0	29	51	85	60
2012	0	36	74	120	69
2013	0	47	31	51	122
2014	11	25	37	78	94
2015	10	31	49	94	151
2016	8	32	67	59	
2017	0	43	37		
2018	27	36			
2019	13				
Selected	14	38	48	77	99

CwPL ALAE Severity Derivation

Incremental CwPL Counts by Report-to-Close Lag

Rept Yr	12	24	36	48	60+
2010	0	1	0	2	0
2011	0	1	1	2	4
2012	0	3	4	2	1
2013	0	4	4	4	3
2014	1	2	6	6	9
2015	1	8	8	10	3
2016	1	6	11	9	
2017	0	15	15		
2018	1	3			
2019	2				

Paid ALAE on CwPL Claims by Report-to-Close Lag

Rept Yr	12	24	36	48	60+
2010	0	9	0	72	0
2011	0	16	17	57	234
2012	0	73	78	94	103
2013	0	89	110	287	239
2014	3	89	125	197	654
2015	4	133	221	416	158
2016	4	121	264	423	
2017	0	329	418		
2018	3	60			
2019	11				

CwPL ALAE Severities

Rept Yr	12	24	36	48	60+
2010	0	9	0	36	0
2011	0	16	17	29	58
2012	0	24	20	47	103
2013	0	22	27	72	80
2014	3	45	21	33	73
2015	4	17	28	42	53
2016	4	20	24	47	
2017	0	22	28		
2018	3	20			
2019	5				
Selected	4	21	25	44	69

CwPL Limited Loss and ALAE Projections



Selected CwPL Limited Loss Severities by Age of Report Year

	12	24	36	48	60+
	14	38	48	77	99

Selected CwPL ALAE Severities by Age of Report Year

	12	24	36	48	60+
	4	21	25	44	69

Future CwPL Counts by Report-to-Close Lag

Rept Yr	12	24	36	48	60+	Total
2016&Pr					14	14
2017				15	13	28
2018			10	12	11	33
2019		7	8	10	9	34
2020	1	8	9	11	10	38
2021	1	6	7	9	8	31
2022	1	5	6	7	6	25
2023	0	4	4	5	5	18
2024	0	2	3	3	3	11
2025	0	1	1	2	2	6
2026	0	1	1	1	1	3
2027	0	0	0	0	0	1
2028	0	0	0	0	0	0
2029	3	35	49	75	81	244

Future CwPL Limited Paid Loss by Report-to-Close Lag

Rept Yr	12	24	36	48	60+	Total
2016&Pr					1,380	1,380
2017				1,123	1,285	2,408
2018			471	926	1,059	2,456
2019		272	391	769	881	2,313
2020	12	297	428	841	963	2,541
2021	10	243	350	688	787	2,077
2022	8	197	284	558	639	1,686
2023	6	143	206	404	463	1,222
2024	3	89	128	251	287	757
2025	2	46	66	129	148	391
2026	1	23	33	65	74	195
2027	0	11	16	32	37	98
2028	0	3	4	8	9	24
2029	41	1,324	2,376	5,795	8,011	17,547

Future CwPL Paid ALAE by Report-to-Close Lag

Rept Yr	12	24	36	48	60+	Total
2016&Pr					971	971
2017				645	905	1,550
2018			244	532	746	1,522
2019		155	203	442	620	1,420
2020	3	169	222	483	678	1,556
2021	3	138	181	395	554	1,271
2022	2	112	147	321	450	1,032
2023	2	81	107	232	326	748
2024	1	50	66	144	202	464
2025	1	26	34	74	104	239
2026	0	13	17	37	52	120
2027	0	7	9	19	26	60
2028	0	2	2	5	7	15
2029	12	753	1,233	3,330	5,639	10,967

CwPL Excess Loss Projection

Incremental CwPL Counts by Report-to-Close Lag

Rept Yr	12	24	36	48	60+
2010	0	1	0	2	0
2011	0	1	1	2	4
2012	0	3	4	2	1
2013	0	4	4	4	3
2014	1	2	6	6	9
2015	1	8	8	10	3
2016	1	6	11	9	
2017	0	15	15		
2018	1	3			
2019	2				

Incremental CwPL XS Counts by Report-to-Close Lag

Rept Yr	12	24	36	48	60+
2010	0	0	0	0	0
2011	0	0	0	0	0
2012	0	0	1	1	0
2013	0	0	0	0	0
2014	0	0	0	0	0
2015	0	0	0	2	1
2016	0	0	1	0	
2017	0	0	0		
2018	0	0			
2019	0				

Excess Paid Loss on CwPL Claims by Report-to-Close Lag

Rept Yr	12	24	36	48	60+
2010	0	0	0	0	0
2011	0	0	0	0	0
2012	0	0	384	125	0
2013	0	0	0	0	0
2014	0	0	0	0	0
2015	0	0	0	444	374
2016	0	0	166	0	
2017	0	0	0		
2018	0	0			
2019	0				

CwPL XS Frequency and Severity Selections

	Frequency	Severity
All-Year Weighted Average	3.9%	249
Wtd Avg of RYs 2015-2019	4.3%	246
Selection	4.1%	250

CwPL XS Load Development

Future CwPL Counts	244
Future CwPL XS Counts	10
Future CwPL Excess Paid Loss	2,500

CwPAO ALAE Severity Derivation

Incremental CwPAO Counts by Report-to-Close Lag

Rept Yr	12	24	36	48	60+
2010	2	4	0	0	0
2011	2	3	1	1	0
2012	8	6	3	1	0
2013	8	3	0	0	0
2014	12	5	2	2	0
2015	24	10	5	1	0
2016	22	15	4	2	
2017	28	15	7		
2018	31	11			
2019	30				

Paid ALAE on CwPAO Claims by Report-to-Close Lag

Rept Yr	12	24	36	48	60+
2010	2	19	0	0	0
2011	2	13	14	40	0
2012	8	40	34	32	0
2013	8	12	0	0	0
2014	13	12	36	22	0
2015	23	33	51	17	0
2016	25	44	24	30	
2017	27	69	58		
2018	35	36			
2019	30				

CwPAO ALAE Severities

Rept Yr	12	24	36	48	60+
2010	1	5	0	0	0
2011	1	4	14	40	0
2012	1	7	11	32	0
2013	1	4	0	0	0
2014	1	2	18	11	0
2015	1	3	10	17	0
2016	1	3	6	15	
2017	1	5	8		
2018	1	3			
2019	1				
Selected	1	4	10	20	30

Contrasting ALAE Severities

ALAE Severities

	12	24	36	48	60+
CwPL	4	21	25	44	69
CwPAO	1	4	10	20	30

CwPAO ALAE Projection

Selected CwPAO ALAE Severities by Age of Report Year

	12	24	36	48	60+
	1	4	10	20	30

Future CwPAO Counts by Report-to-Close Lag

Rept Yr	12	24	36	48	60+	Total
2016&Pr					0	0
2017				3	0	3
2018			4	2	0	7
2019		12	4	2	0	18
2020	24	13	4	2	0	43
2021	20	11	3	2	0	35
2022	16	9	3	1	0	29
2023	12	6	2	1	0	21
2024	7	4	1	1	0	13
2025	4	2	1	0	0	7
2026	2	1	0	0	0	3
2027	1	1	0	0	0	2
2028	0	0	0	0	0	0
2029	85	59	22	15	0	181

Future CwPAO Paid ALAE by Report-to-Close Lag

Rept Yr	12	24	36	48	60+	Total
2016&Pr					0	0
2017				59	0	59
2018			43	48	0	92
2019		47	36	40	0	123
2020	25	51	39	44	0	159
2021	20	42	32	36	0	130
2022	16	34	26	29	0	106
2023	12	25	19	21	0	76
2024	7	15	12	13	0	47
2025	4	8	6	7	0	24
2026	2	4	3	3	0	12
2027	1	2	2	2	0	6
2028	0	0	0	0	0	2
2029	87	228	218	304	0	836

Total Loss and ALAE Projection

Future CwPL Paid Limited Loss	17,547
Future CwPL Paid Excess Loss	2,500
Future CwPL Paid ALAE	10,967
Future CwPAO Paid ALAE	836
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Indicated Loss and ALAE Reserve	31,850
Case Reserve	9,385
Indicated IBNR	22,465

Enhancements and adjustments

- Further segmentation
- Additional data elements added to claim system
- Reopened claim estimates
- Known case reserve specifics
- Consideration for ALAE payments made prior to claim closing

Results

- Monitoring projected payments and claim counts in Actual vs. Expected reports
- Fewer adjustments year-over-year especially with the estimation of future newly reported claims
- Aligned Actuarial and Claims team on observations and trends