

PENNSYLVANIA COMPENSATION RATING BUREAU

State and Hazard Group Relativities

The attached exhibit pages present an analysis of Pennsylvania State and Hazard Group relativities.

The exhibit on page 24.1 shows the derivation of the April 1, 2021 proposed relativities. PCRB and countrywide average severities are shown by hazard group and in total. A credibility weight is calculated for each hazard group based on the number of claims. A credibility weighted average severity is then calculated and these average severities are related to the countrywide average severity for all hazard groups combined to generate the indicated (and selected) relativities. The bottom of the exhibit presents the approved April 1, 2020 relativities.

Page 24.2 shows the calculation of the overall countrywide average severity that is used in page 24.1.

**Derivation of State and Hazard Group Relativities
Pennsylvania April 1, 2021 Filing**

| Hazard Group | PCRB Average Severity (1) | Ratio to PCRB Total (2)=(1)All / (1)i | Ratio PCRB to Countrywide Total (3)=(5)All / (1)i | Ratio to NCCI Total * (4) | Countrywide Average Severity ** (5)=(5)All / (4)i | # Claims (6) | Credibility *** (7) | Credibility Weighted Average Severity **** (8) | Ratio to Countrywide Total (9)=(5)All / (8)i | Selected State & Hazard Group Relativity (10) |
|--------------|---------------------------|---------------------------------------|---|---------------------------|---|--------------|---------------------|--|--|---|
| A | 38,302 | 1.720 | 1.606 | 1.602 | 38,394 | 5,756 | 0.193 | 38,376 | 1.603 | 1.60 |
| B | 51,598 | 1.277 | 1.192 | 1.307 | 47,039 | 23,742 | 0.391 | 48,822 | 1.260 | 1.26 |
| C | 59,270 | 1.111 | 1.038 | 1.169 | 52,626 | 40,156 | 0.509 | 56,008 | 1.098 | 1.10 |
| D | 62,833 | 1.048 | 0.979 | 0.993 | 61,943 | 16,319 | 0.324 | 62,231 | 0.988 | 0.99 |
| E | 74,579 | 0.883 | 0.825 | 0.840 | 73,194 | 26,829 | 0.416 | 73,770 | 0.834 | 0.83 |
| F | 104,940 | 0.628 | 0.586 | 0.685 | 89,789 | 11,285 | 0.270 | 93,880 | 0.655 | 0.66 |
| G | 126,197 | 0.522 | 0.487 | 0.597 | 102,959 | 2,283 | 0.121 | 105,771 | 0.581 | 0.58 |
| All | 65,871 | | 0.934 | | 61,501 | 126,370 | 0.903 | 65,448 | | |

* From NCCI Item Filing R-1413 - 2017 Update to the Retrospective Rating Plan Parameters

The value for each hazard group = (Countrywide Average Severity for the Hazard Group / Countrywide Overall Average Severity)

** The value, (5) All, is calculated on page 24.2

*** Credibility = [# claims by TOI / 155,000]^0.5

**** [PCRB Average Severity * Credibility] + [Countrywide Average Severity * (1-Credibility)]

Pennsylvania April 1, 2020 Filing

| Hazard Group | Approved Relativity |
|--------------|---------------------|
| A | 1.66 |
| B | 1.19 |
| C | 1.06 |
| D | 0.99 |
| E | 0.82 |

Projected Countrywide Average Severity

| NCCI Effective Date | NCCI Countrywide Average Severity | Exponential Trends | |
|---------------------|-----------------------------------|--------------------|--------|
| | | 12 year | 1.70% |
| 1/1/2007 | 44,457 | 11 year | 1.00% |
| 1/1/2008 | 51,533 | 10 year | 0.60% |
| 1/1/2009 | 55,578 | 9 year | 0.50% |
| 1/1/2010 | 57,375 | 8 year | 0.60% |
| 1/1/2011 | 57,797 | 7 year (selected) | 0.90% |
| 1/1/2011 | 57,797 | 6 year | 1.50% |
| 1/1/2013 | 57,027 | 5 year | 2.10% |
| 1/1/2014 | 55,818 | 4 year | 2.10% |
| 1/1/2015 | 55,954 | 3 year | 0.40% |
| 1/1/2016 | 59,215 | 2 year | -0.50% |
| 1/1/2017 | 60,022 | | |
| 1/1/2018 | 59,736 * | | |

Selected Countrywide Average Severity = 59,736 * [(1.009) ^ 3.25 years] = 61,501
 where 3.25 years is the difference between one year past the filing effective date (4/1/2022) and one year past the latest NCCI effective date (1/1/2019).

* From NCCI Item Filing R-1413 - 2017 Update to the Retrospective Rating Plan Parameters