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Utilizing the Next Phase of Insights from Driving Data

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Utilizing the Next Phase of Insights from Driving Data

- Geography is one of the most important risk characteristics used in rating auto insurance, however the way it is used results in territories are not representative of current, granular level risk

- Real time traffic and vehicle usage data is available to address the concerns with the geographical risk assessment

- There are flexible implementation options to address regulatory, business and timeliness concerns

Use of Geography in Auto Insurance Rating

Geographic location is one of the most significant variables used in auto insurance rating

Drivers of geographical impact on auto insurance cost

Traffic density
Road design
Speed
Enforcement of traffic laws
Cost differences
Road maintenance

How Do Companies Determine Territory Rates?

Company Loss Experience

Typically tied to garaging location

Credibility Complements

"Industry" data

Census data (population density, population characteristics)

Competitor information

Usage Based Insurance

Can incorporate where a vehicle is being operated

Many UBI plans do not utilize location

Only applicable to policies that opt in

Issues with the Current Territory Process

Limited sample of the overall population

Lack of credibility limits the ability to establish granular territories that better reflect risk

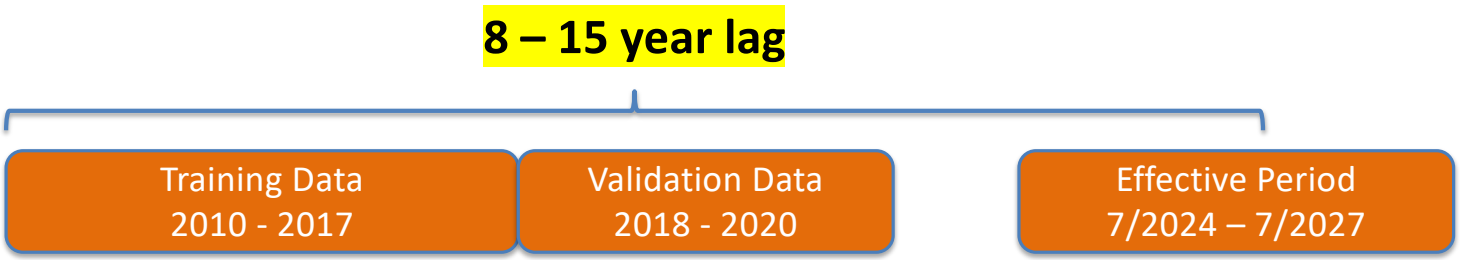
For policies not using UBI, the pace at which changes in geographic risk are reflected in rating is prehistoric

With UBI the pace of reflecting change could be faster, but even if location was being considered in UBI program it would still be slow relative to the pace of change

Missing completely –reflection of the environment within which the vehicles are being driven

New Territory Definitions Are Based on Loss Experience Up to 15 Years Old at Implementation

Extended experience-to-implementation lag undermines the relevance of geographic risk signals



At implementation, the territory framework is anchored to loss experience that predates current geographic risk conditions by up to 15 years.

What This Means for Territory Accuracy

- Territories rely on loss experience generated under **materially different geographic conditions**
- Implicitly assumes spatial risk stability over a **decade-plus horizon**
- Validation does not mitigate staleness, as even validation predates implementation by multiple years

TomTom Data Slides

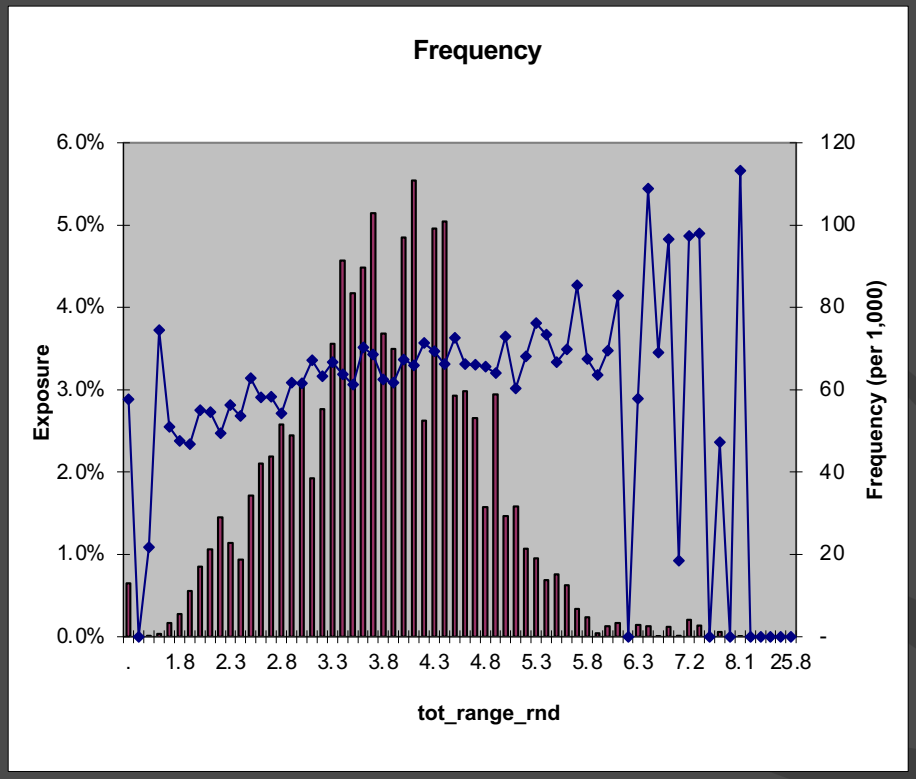
Road Usage Data

Collected at the road segment level

Available for specific dates and time of day

Can be aggregated to match basis of experience

Road Segment Data – Total Range



- Range of speeds in a ZIP code within an hour
- The more variation in speed, the higher the collision frequency
- Even small variations are significant

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Score Development Process

1

A traditional GLM was developed using traditional risk characteristics

2

More advanced machine learning techniques were used to analyze the impact of the TomTom variables

3

A road context score was developed based on the additional contribution of the road context variable

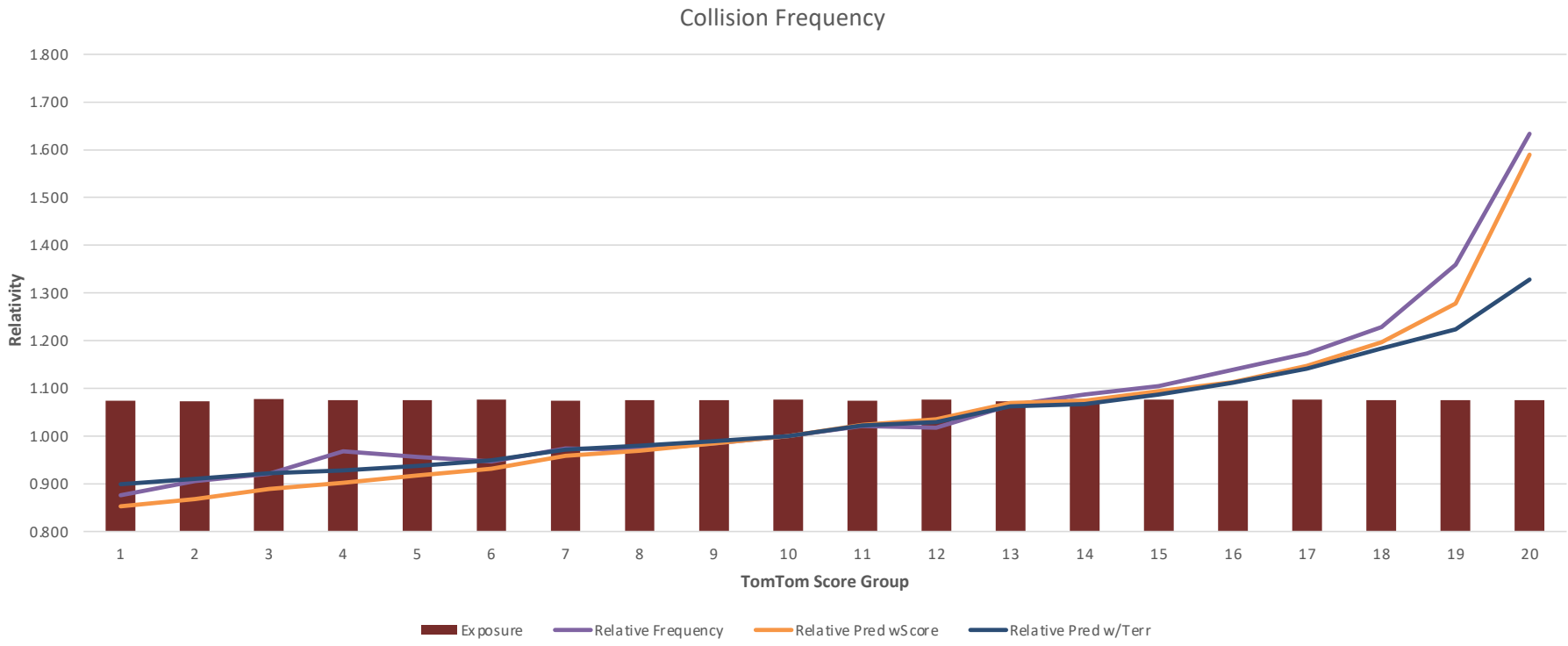
4

The final score was validated using the traditional rating factors and the new road context score

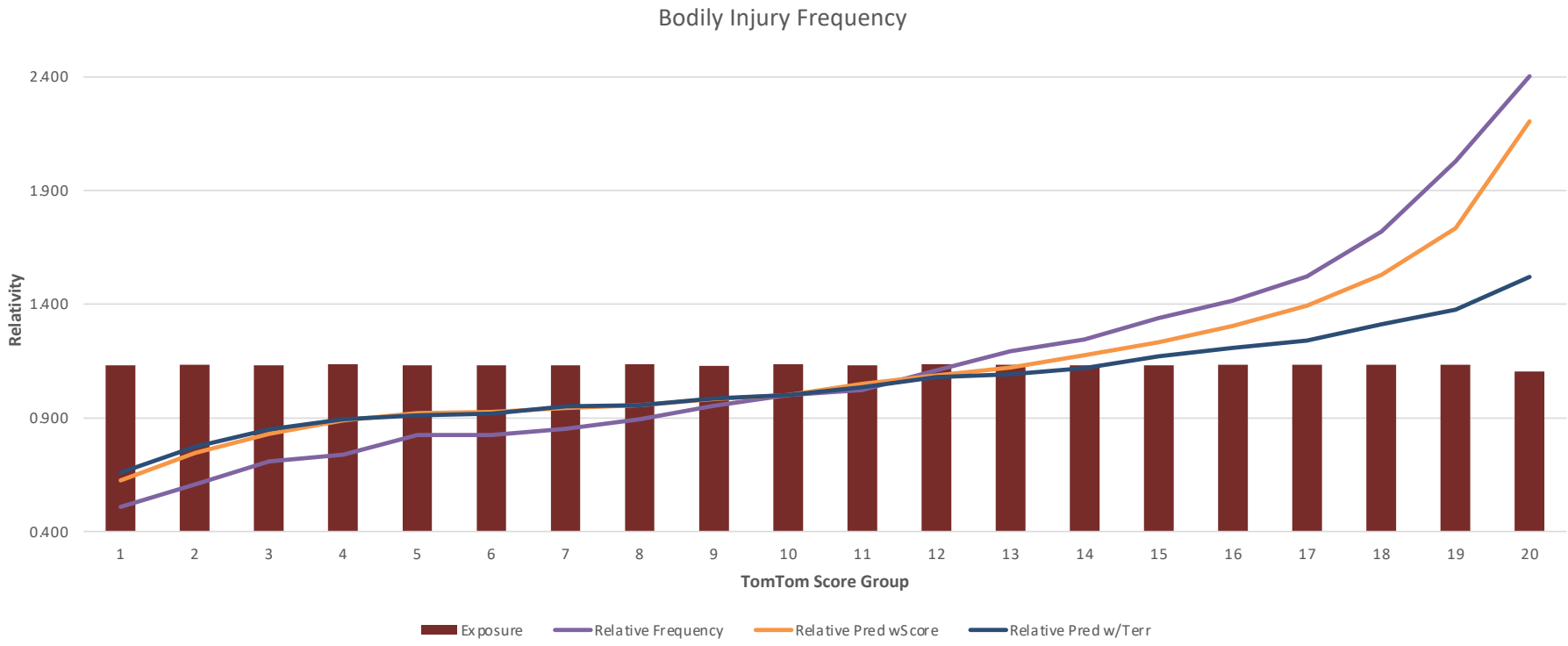
Examples of Key Road Context Variables

- Median travel time
- Road segment used more at certain times of day (6pm, 9pm, 8am, 8pm)
- Ratio of speed to speed limit
- Variability of speeds on a road segment

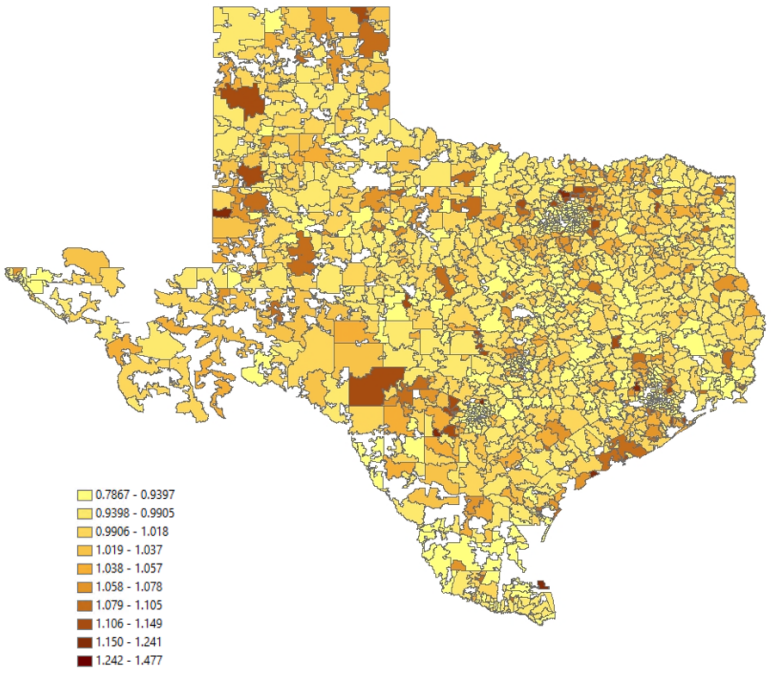
Pinnacle Precision Score – Collision Frequency Lift Charts

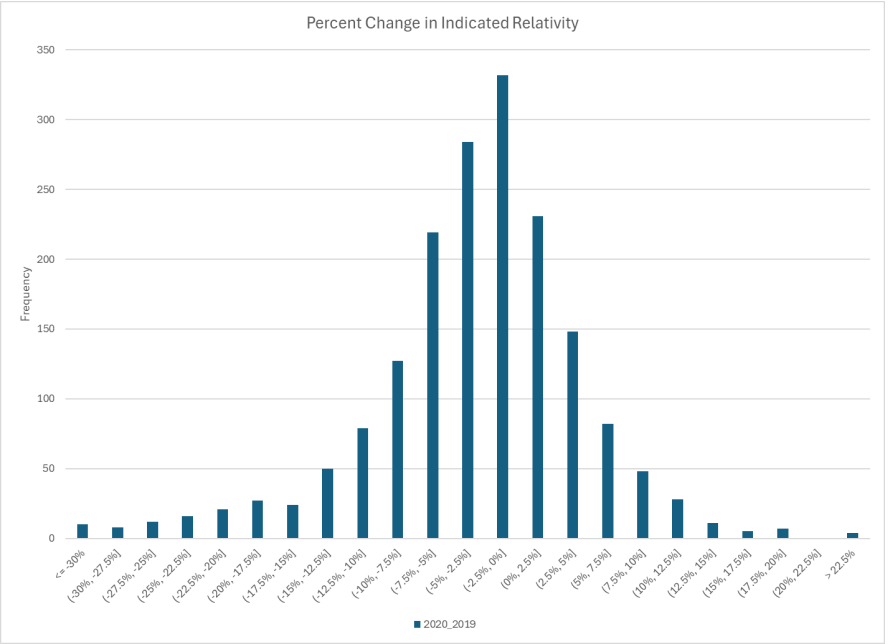


Pinnacle Precision Score – Bodily Injury Frequency Lift Charts

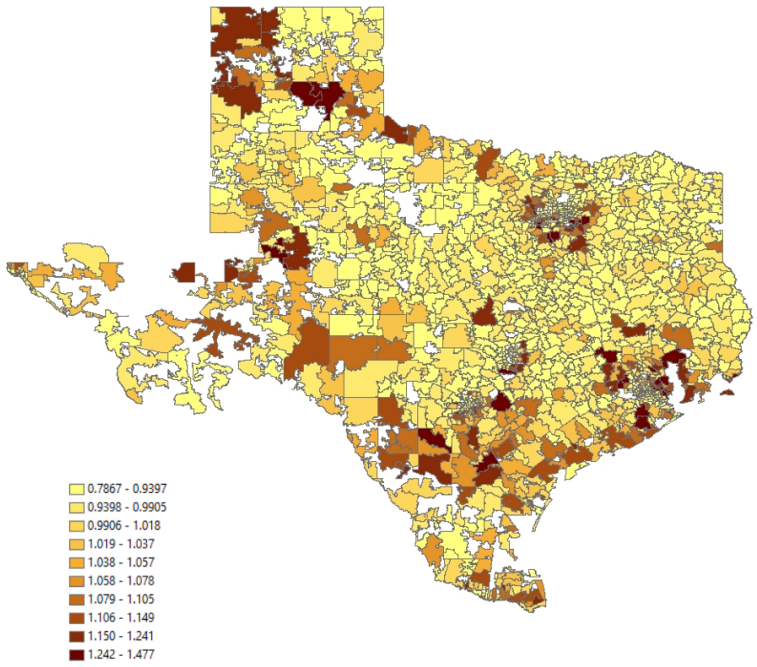


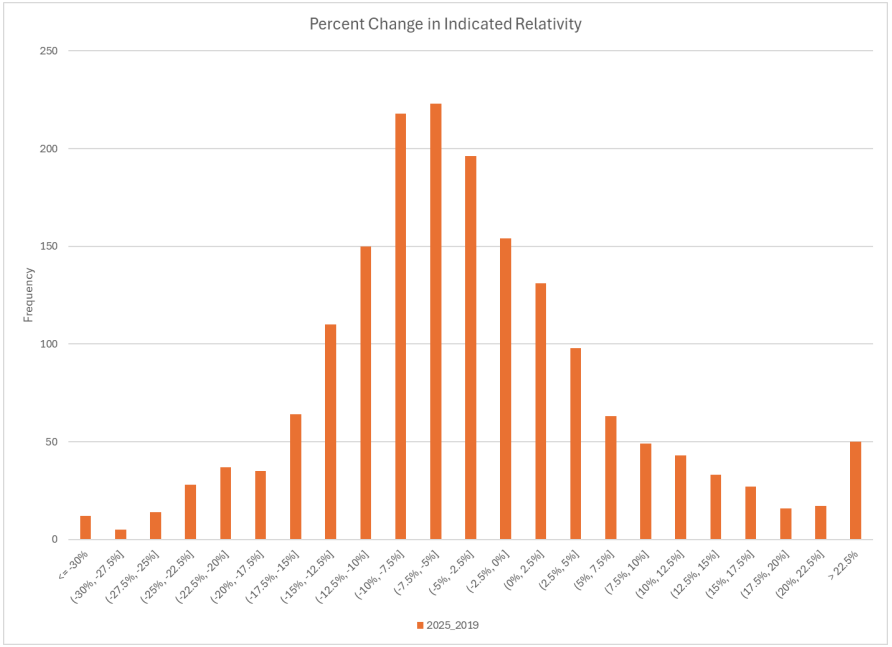
Changes Over Time – April 2019 to April 2020





Changes Over Time – April 2019 to April 2025





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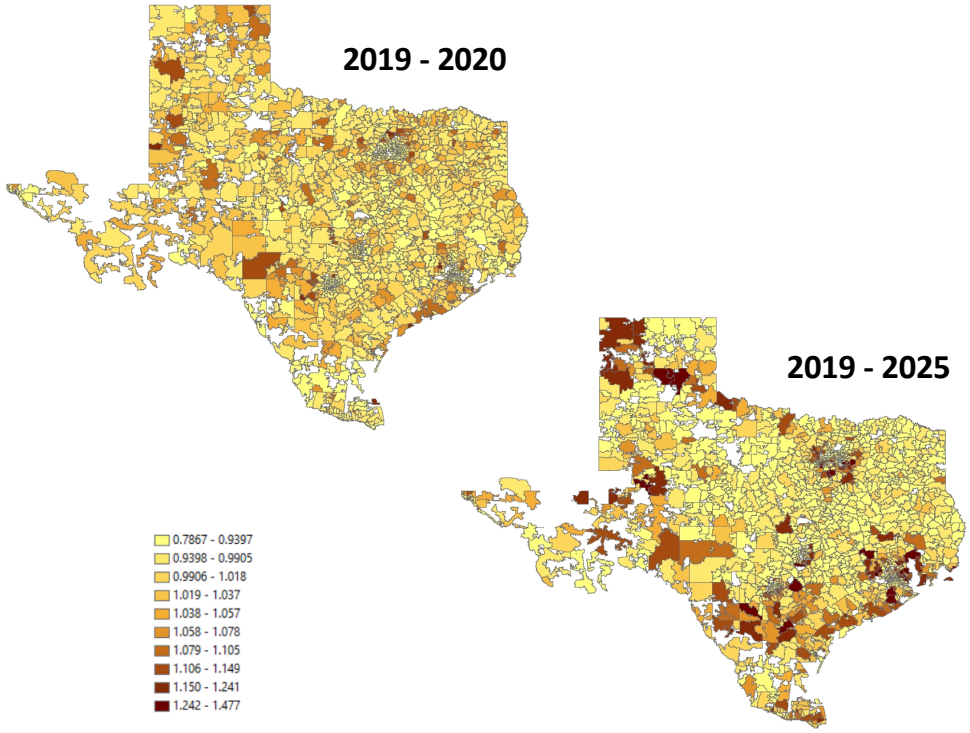

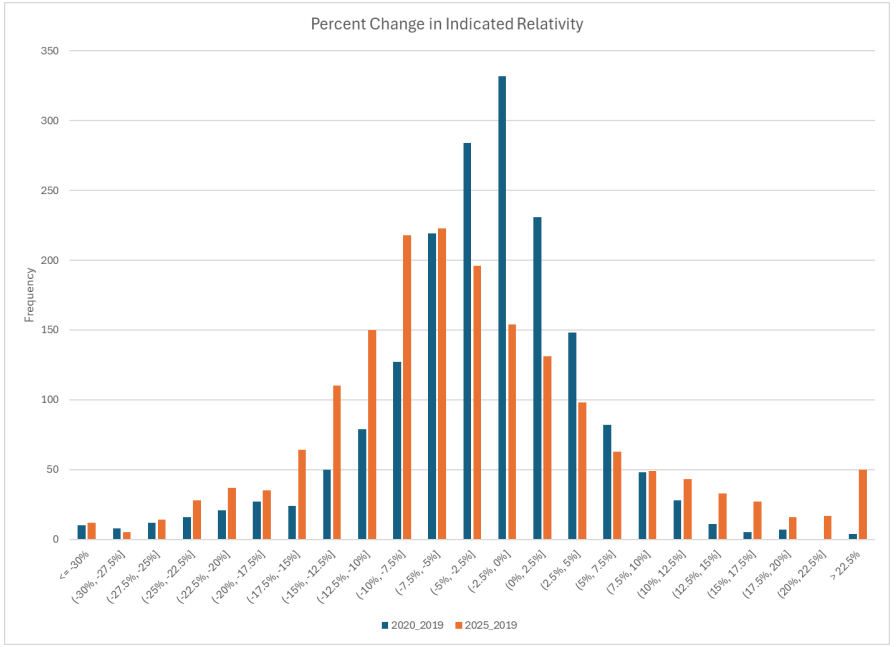

Implementation Options

Operationally

Revised territory definitions

As direct rating factor

- Could be updated dynamically at the time of policy rating
- Could be updated throughout the term of the policy

As part of a UBI score – places the driving behavior in context

Geographically

ZIP code

Census block

Road segment (UBI)

Frequency of updates

Every rate filing

At time of policy renewal

More frequently during policy period

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