

**PM-8:
Predictive Modeling: What Can We Learn From
Each Other?**

A Property/Casualty Perspective

2011 CAS Ratemaking and Product Management Seminar

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TOWERS WATSON 

Survey Background

Towers Watson recently completed a property & casualty industry survey on practical applications of predictive modeling techniques

- Towers Watson conducted a web-based survey of U.S. and Canadian property & casualty insurance executives from September 30 to November 16, 2010
- Chief actuaries, pricing officers, claim officers and other senior executives were asked to document their perspectives on how predictive modeling is being used to support rating/pricing and underwriting/risk selection plans at their companies
- A total of 97 U.S. and 12 Canadian executives responded, making this the insurance industry's largest and most comprehensive survey on predictive modeling practices
- Responding companies represent a significant market share of the U.S. property & casualty industry personal lines carriers (21%) and commercial lines carriers (28%)
 - Canadian market share information was not available at the time of the survey

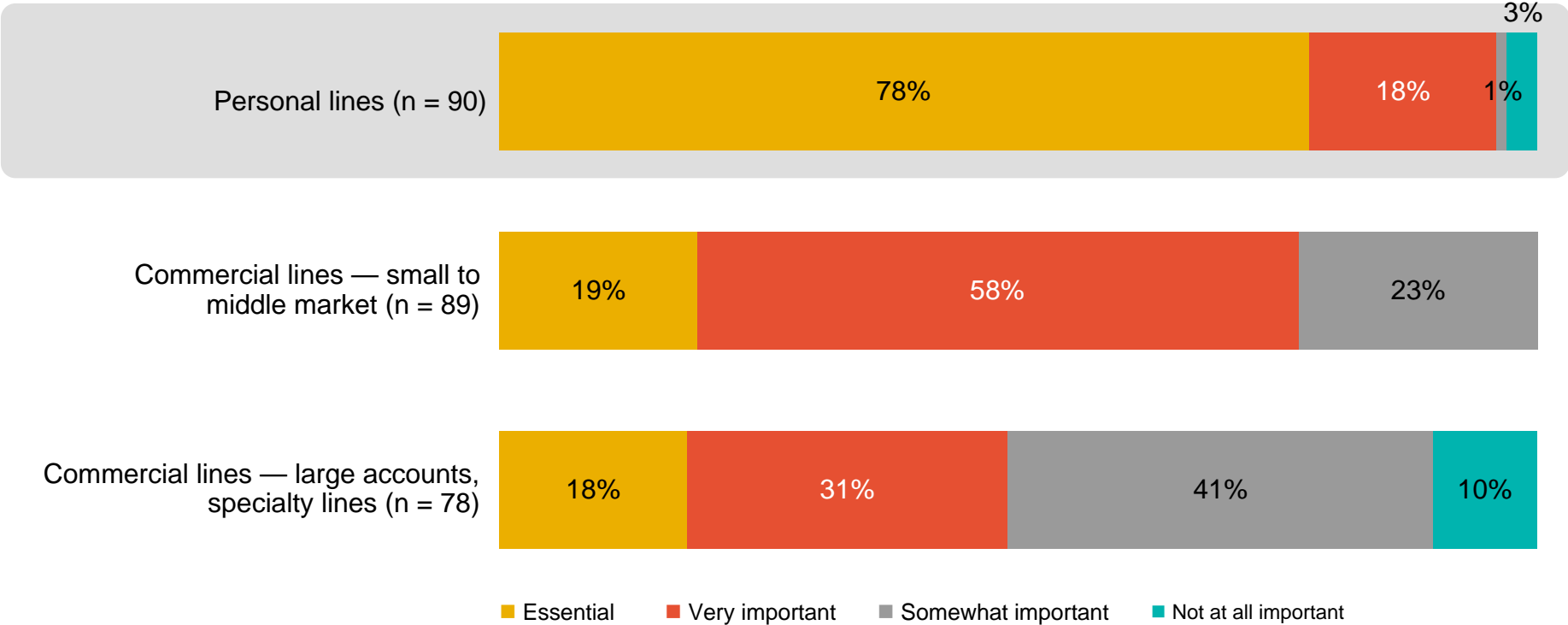
Key Survey Findings

The Survey Produced Key Findings With Respect to the Overall Value of Predictive Modeling

- Predictive modeling continues to grow in importance, with an increasing percentage of carriers already implementing or planning predictive modeling applications and seeing more favorable bottom-line and top-line impact on results
 - Predictive modeling is commonly viewed as essential for personal lines insurers and increasingly important for commercial lines carriers
 - Most personal lines carriers are investing in predictive modeling, and many carriers are expanding to commercial lines as well
 - Predictive modeling has already favorably impacted the bottom-line performance of a majority of responding carriers and the top line of roughly a third of responders

Predictive modeling is commonly viewed as essential for personal lines insurers and increasingly important for commercial lines carriers

How important do you consider sophisticated underwriting/risk selection and/or rating/pricing to be as a driver of performance or success in today's market for the following lines? (Q.1)

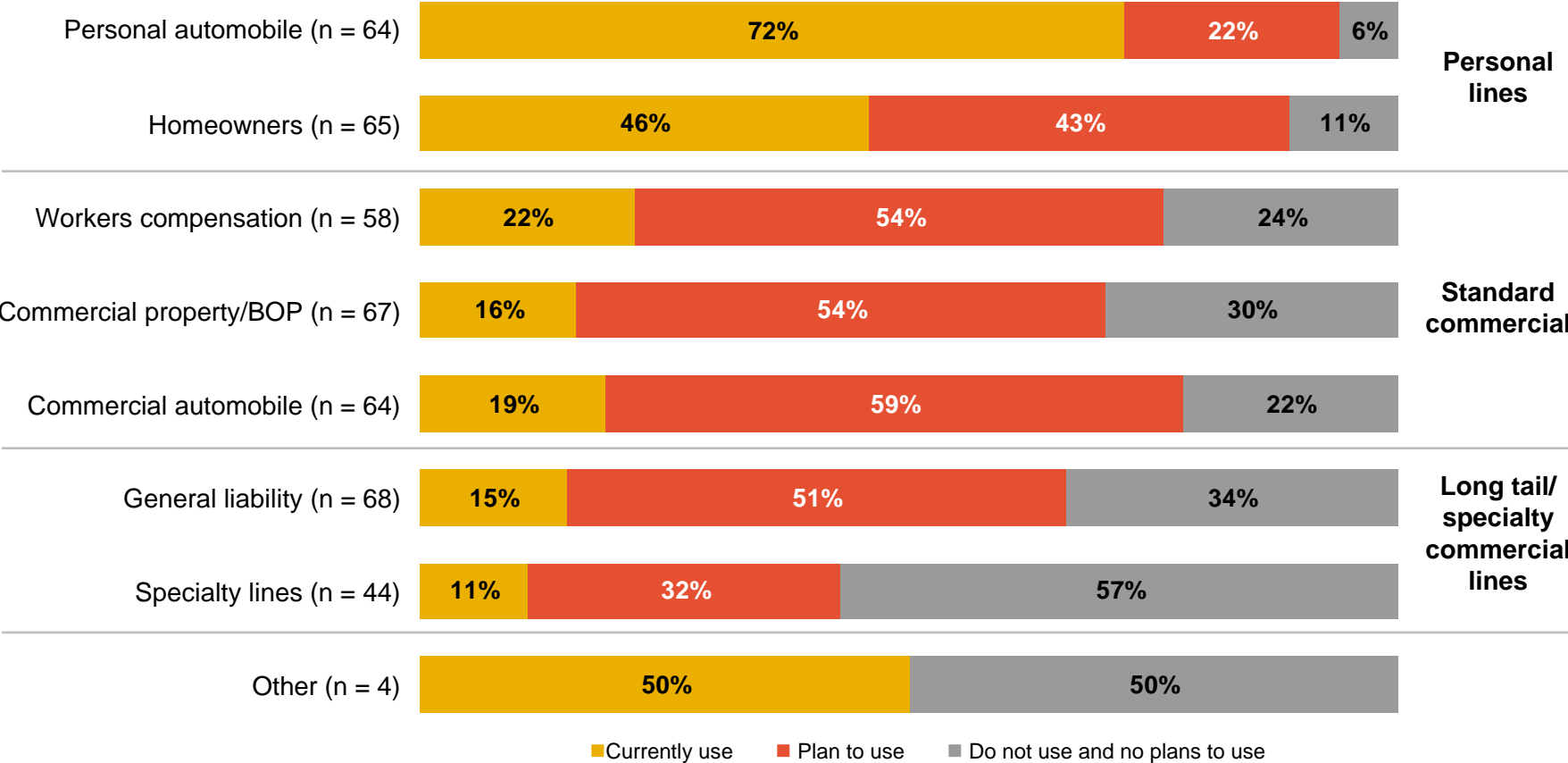


Base: U.S. respondents giving a valid response (percentages exclude "Don't know" responses)

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Most personal lines carriers are investing in predictive modeling, and many carriers are expanding to commercial lines as well

Does your company group currently use, or plan to use, predictive modeling in underwriting/risk selection and/or rating/pricing for the following lines of business? (Q.2)

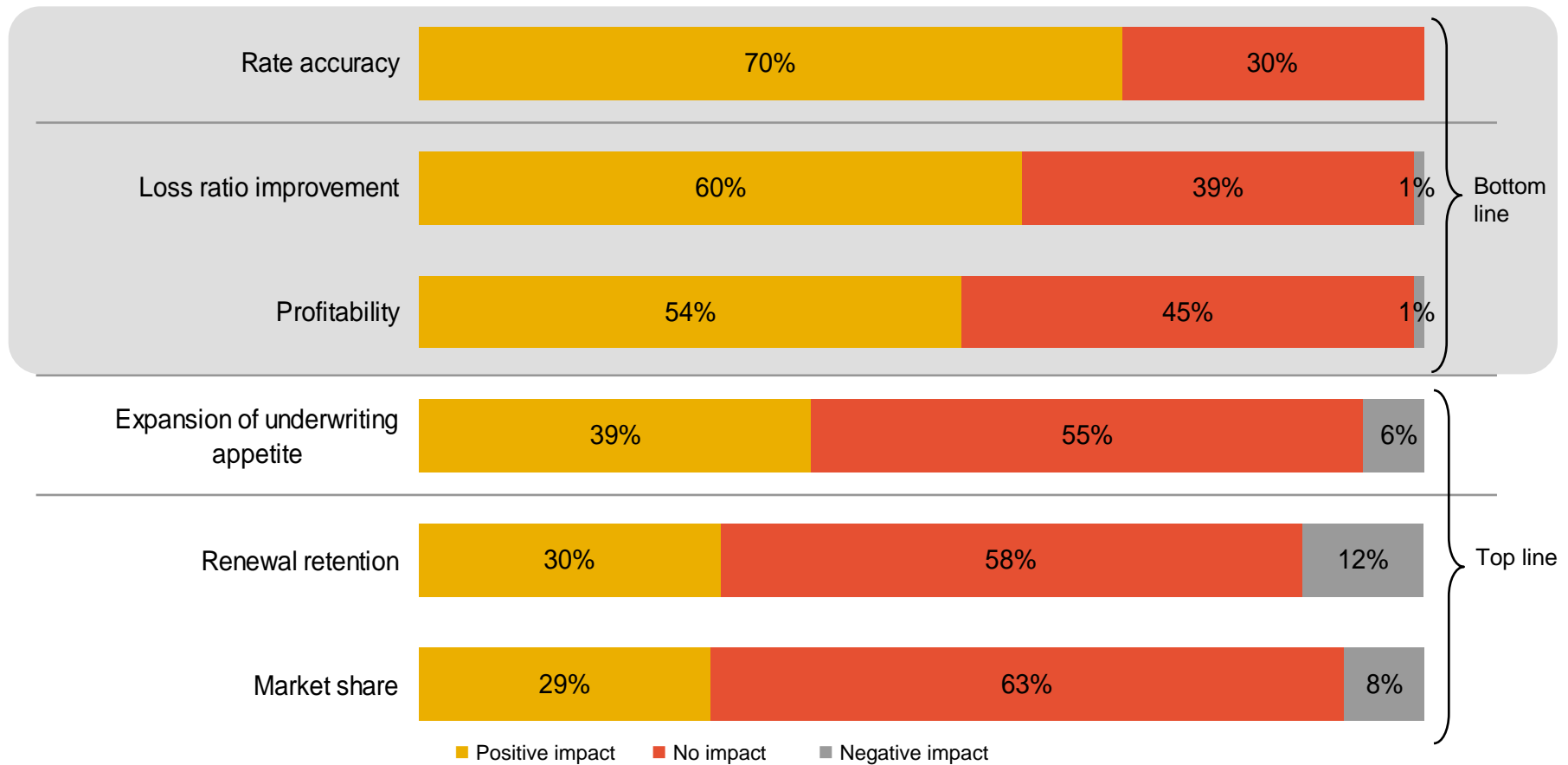


Base: U.S. companies writing the line of business (percentages exclude "Do not write this line of business")

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Predictive modeling has already favorably impacted the bottom-line performance of a majority of responding carriers and the top line of roughly a third of responders

What effect have these predictive modeling actions had in the following areas? (Q.13)



Base: U.S. companies taking predictive modeling action over the past two years (n = 93)

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Current Hot Topics in Predictive Modeling — Key Findings

Price Optimization — While price optimization is commonly used by the national personal lines carriers, it is currently uncommon with smaller carriers, although a majority of those carriers plan to be utilizing optimization within the next two years. Not surprisingly, “data” is most often identified as the biggest hurdle to successful price optimization.

Telematics — While a minority of carriers expect to be pricing using telematics information, those carriers who do plan to use telematics anticipate implementing a wide variety of applications over the next two years, particularly in commercial lines.

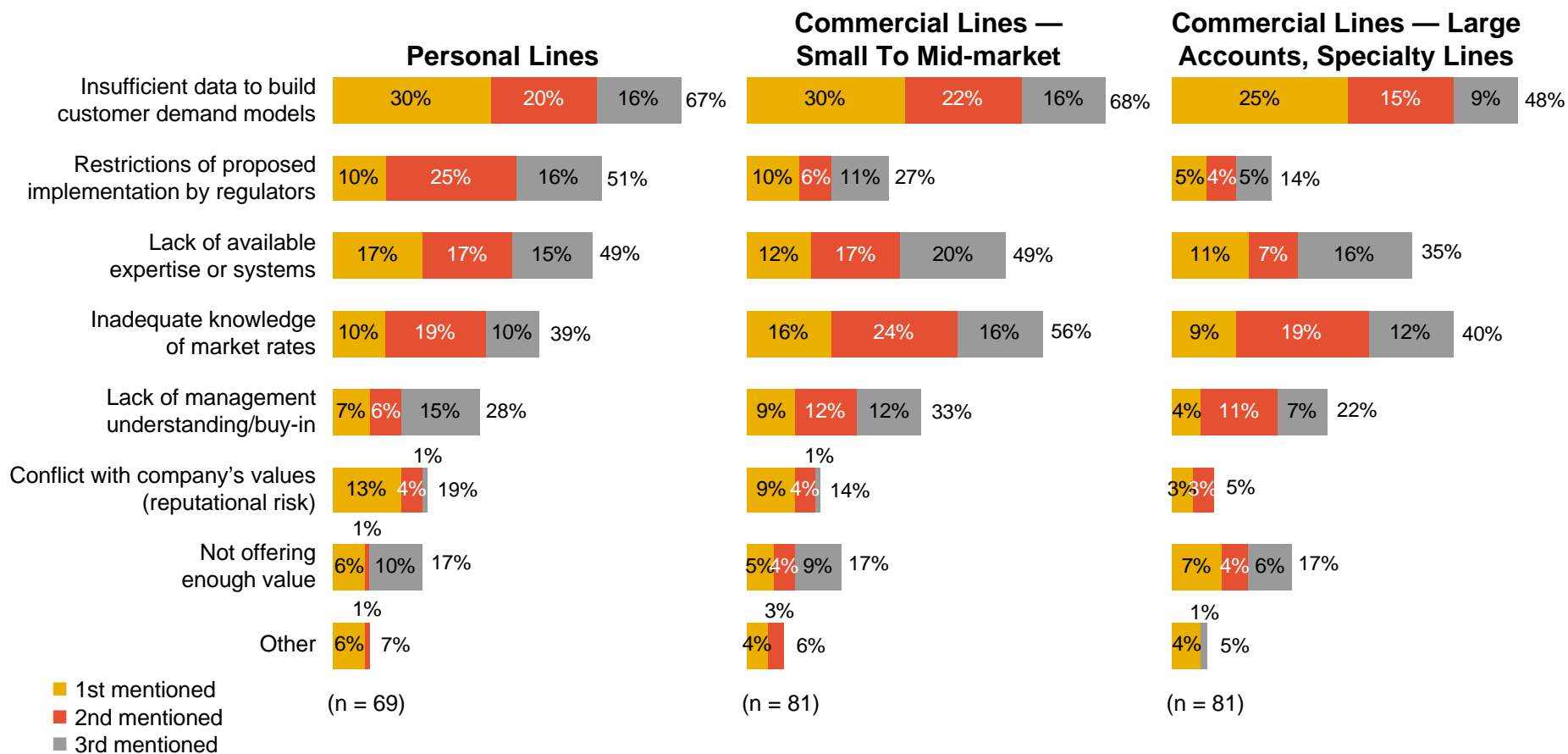
Competitive Market Analysis — Most carriers perform some type of competitive analysis, but only a minority of carriers prepare qualitative or quantitative analyses across their books of business to fully understand the competitive landscape by line of business.

Claim Applications — Within two years, nearly half of responding carriers expect to be applying predictive modeling to a variety of claim issues, with the most common application being individual and systemic potential fraud detection.

Regulatory/Implementation Issues — Responding carriers report that they have not encountered significant challenges in gaining regulatory approval, but that keeping their scoring algorithms proprietary has been more problematic. Carriers have taken a wide variety of approaches to implementing predictive models for new and renewal business.

All carriers view data issues as the biggest challenge in optimizing prices, followed by lack of expertise, systems and market knowledge; only personal lines carriers view regulatory restrictions as a major hurdle

What do you believe are the three most significant hurdles to implementing price optimization in personal/commercial lines? (Q.16A through Q.16C)

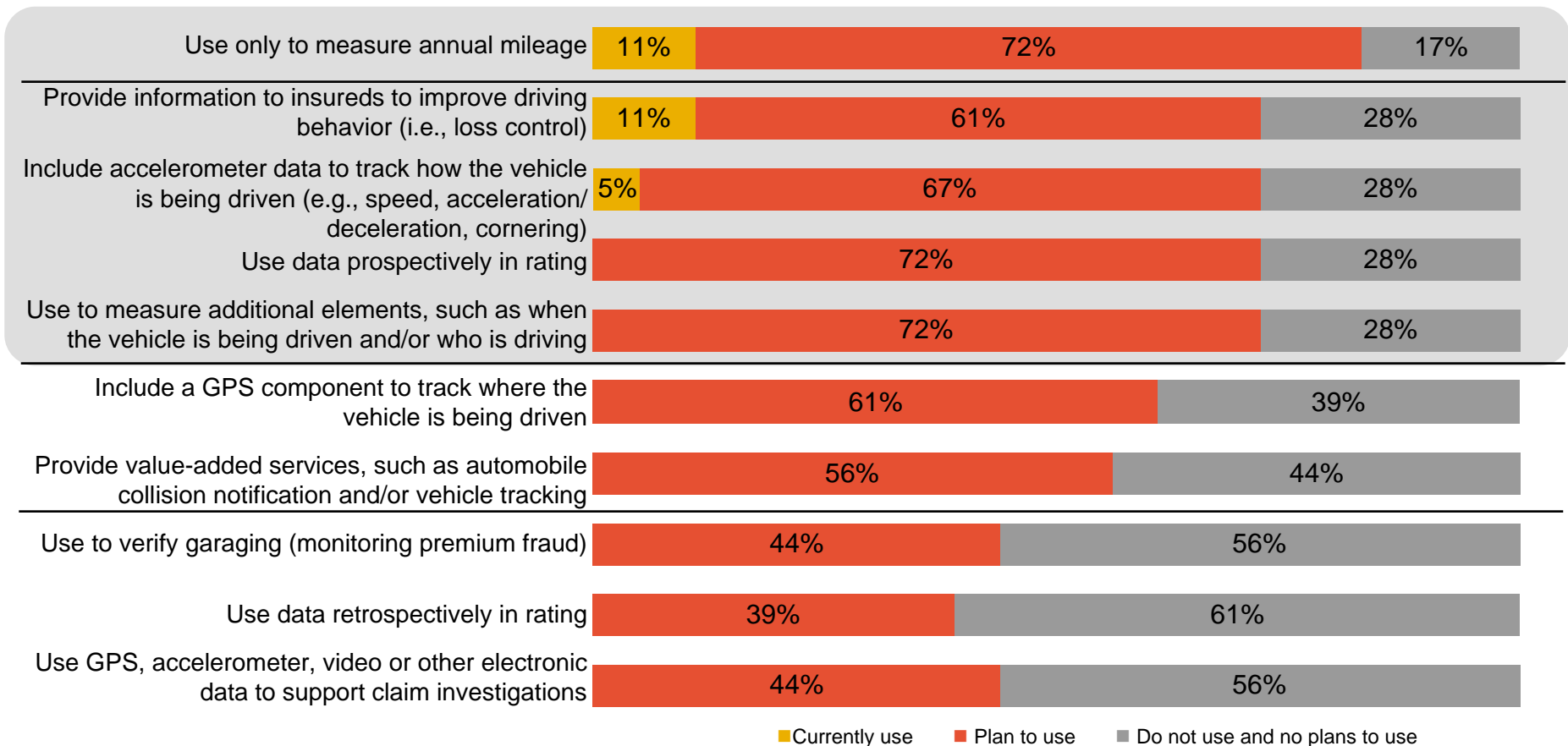


Base: U.S. companies writing personal and/or commercial lines of business.

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Personal and commercial automobile carriers plan to use telematics for a wide variety of rating and pricing applications

How have you implemented or plan to implement telematics in the next two years for your personal and/or commercial automobile line of business? (Q.18, Q.19)



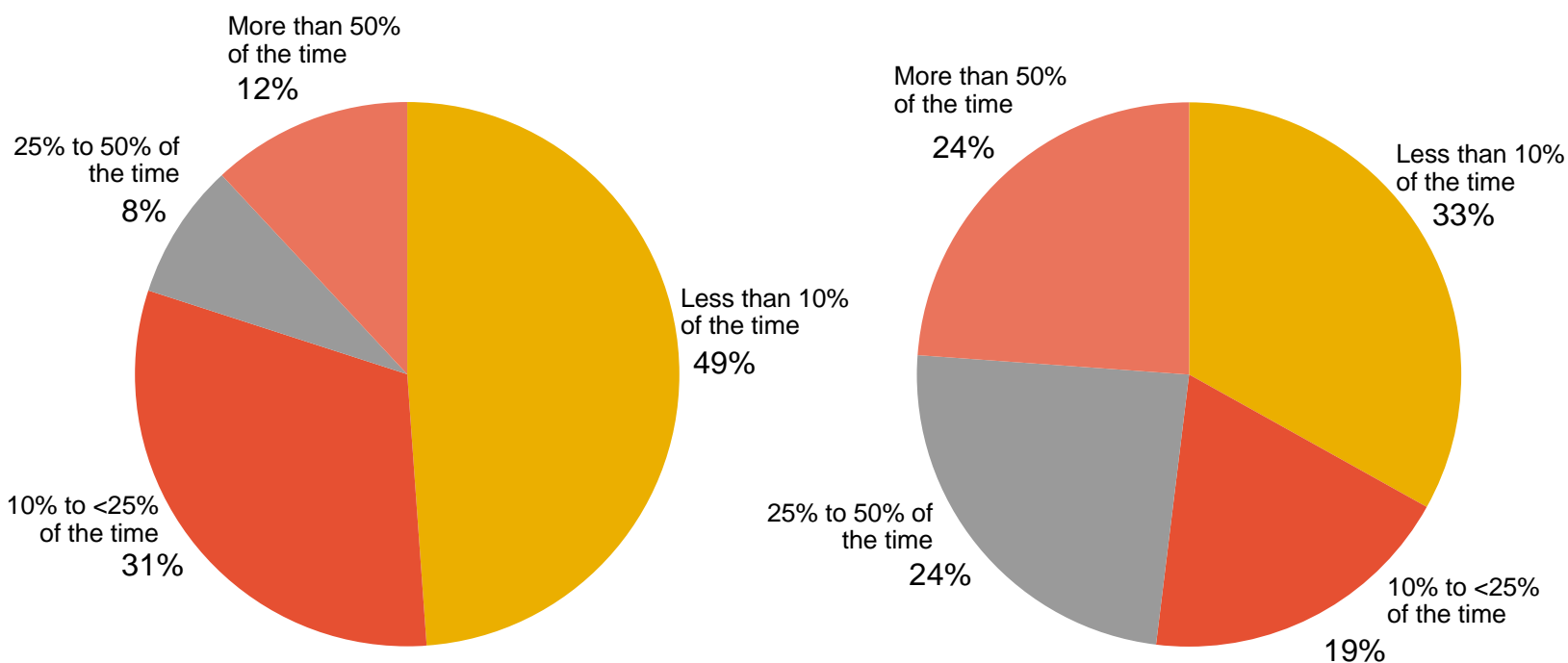
Base: U.S. companies currently using or planning to use telematics for personal and/or commercial automobile (n=18)

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Carriers have generally been successful in securing regulatory approval for their pricing predictive models — keeping them proprietary and confidential has been a bigger challenge

How often have you encountered difficulty securing regulatory approval for new iterations of your pricing predictive models? (Q.21)

When you file for regulatory approval, how often do you face challenges in keeping the details of your predictive models proprietary and confidential? (Q.22)



Q.21 Base: U.S. companies giving a valid answer (percentages exclude “No approval needed — we use predictive models only for risk selection” and “We have not yet filed predictive models for regulatory approval”) (n = 49)

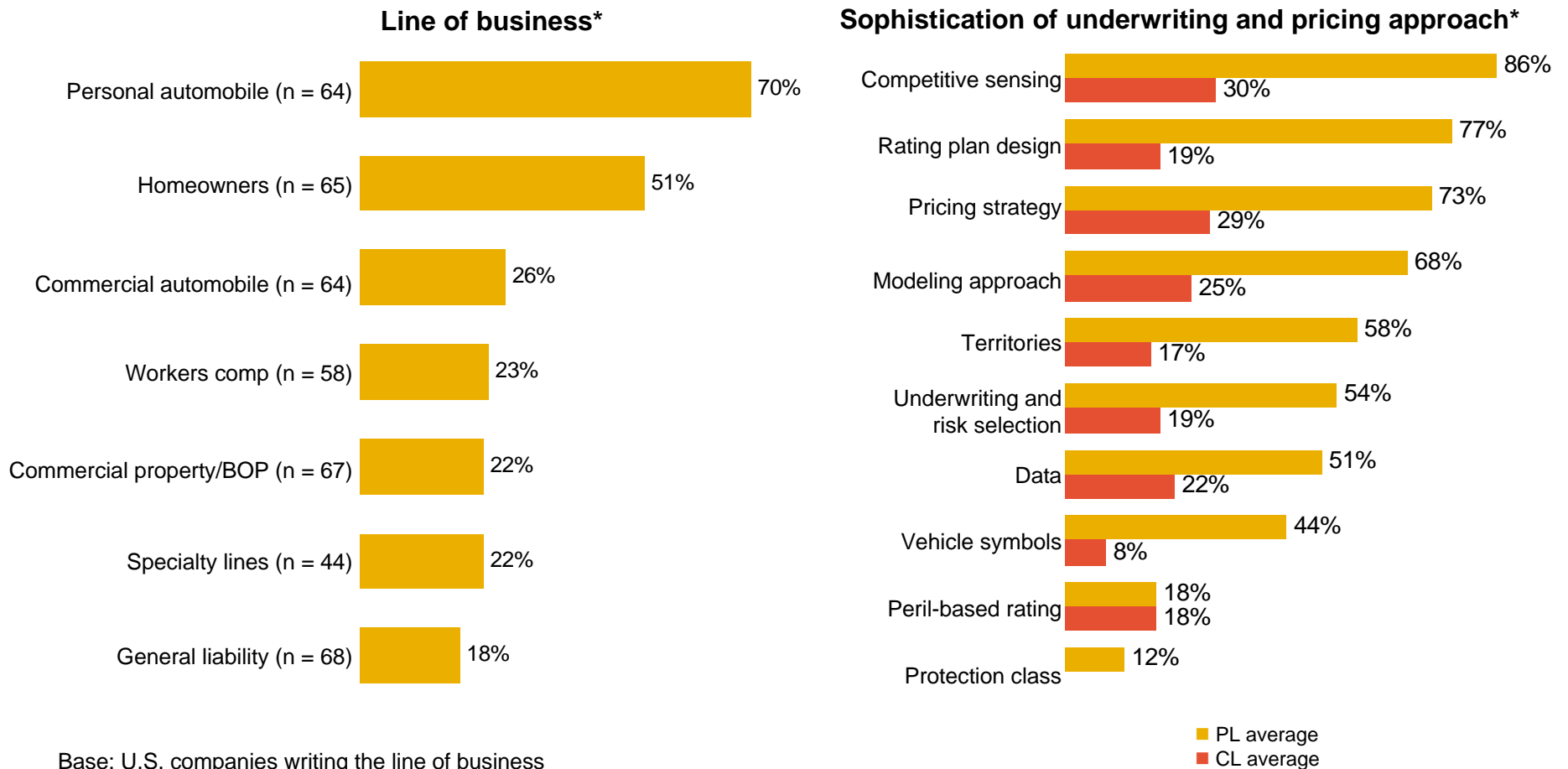
Q.22 Base: U.S. companies giving a valid answer (percentages exclude “This is not a concern for us”) (n = 37)

Current Level of Predictive Modeling Sophistication — Key Findings

- Personal lines carriers have continued to improve their sophistication in virtually all aspects from 2009 to 2010, with a majority of carriers achieving at least a medium level of sophistication in most aspects of risk selection and pricing
- Standard commercial carriers did not make substantial progress in pricing sophistication beyond core activities over the past year, but appear to be ramping up plans for the future
- Specialty/large account carriers also struggled to make substantial progress over the past year, but have built far more extensive plans for the future
- Personal lines carriers have focused on competitive sensing and rating plan design above other aspects, with modeling approach and pricing strategy receiving emphasis as well
- Standard commercial carriers have focused on competitive sensing and pricing strategy, emphasizing up front their pricing position relative to the marketplace
- Modeling approach and data are the next level of aspects that standard commercial carriers are emphasizing for risk selection and pricing sophistication
- As in standard commercial, specialty/large account carriers also place primary emphasis on competitive sensing and pricing strategy, with territorial analysis also appearing as a key area of emphasis in risk selection and pricing

Personal lines carriers are much more sophisticated in applying all aspects of predictive modeling to risk selection and pricing

How would you assess the sophistication of your company group's underwriting and pricing approach in the following lines of business? (Q.3 through Q.9)

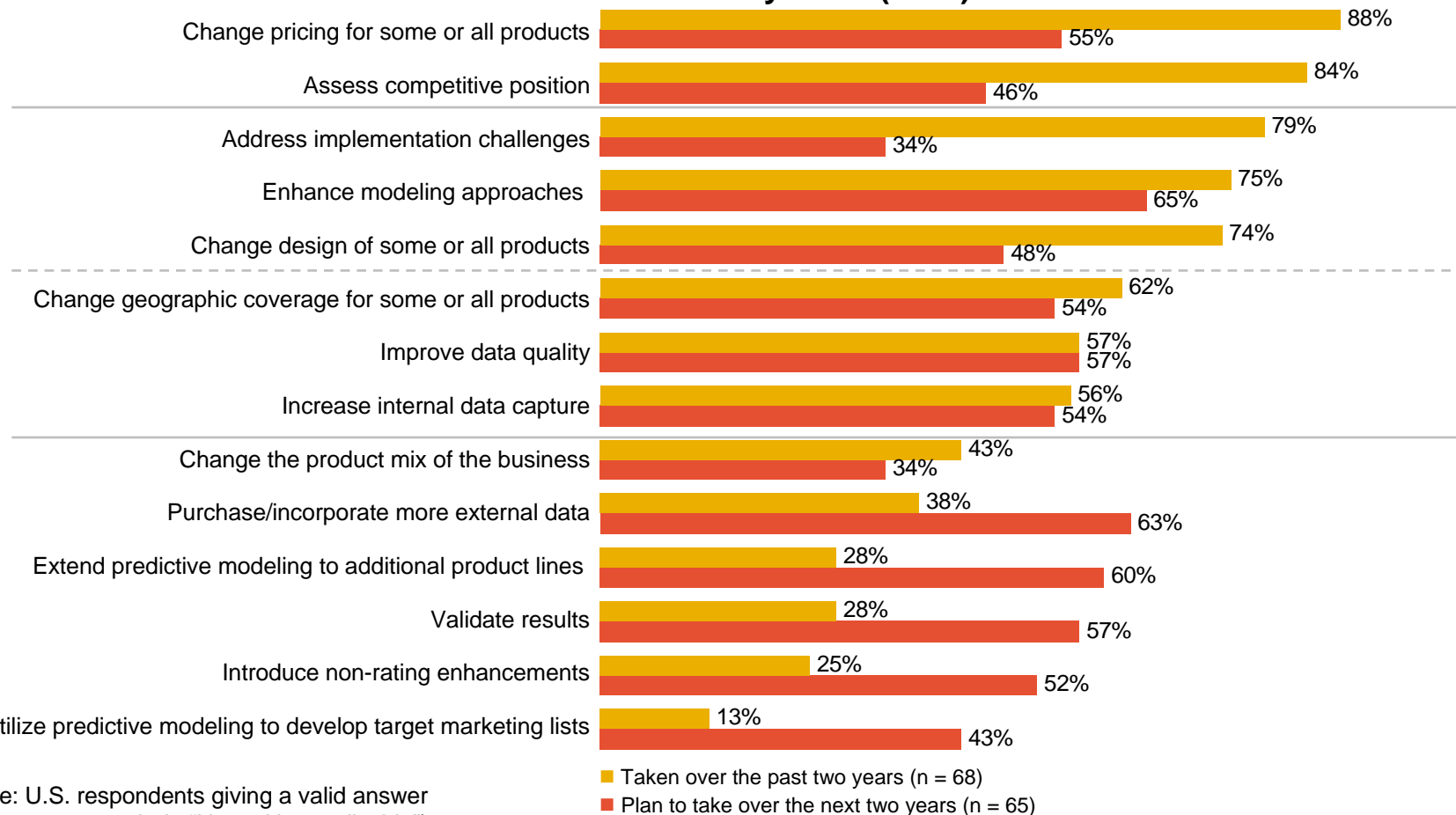


Base: U.S. companies writing the line of business
 *Percent giving a rating of Very High, High or Medium.

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Personal lines carriers plan to move from focusing on first-generation predictive modeling analyses (top five) to a much broader array of analyses

Which of the following actions, if any, has your company group taken for underwriting/risk selection and/or rating/pricing for personal lines over the past two years, and which are you planning to take over the next two years? (Q.10)

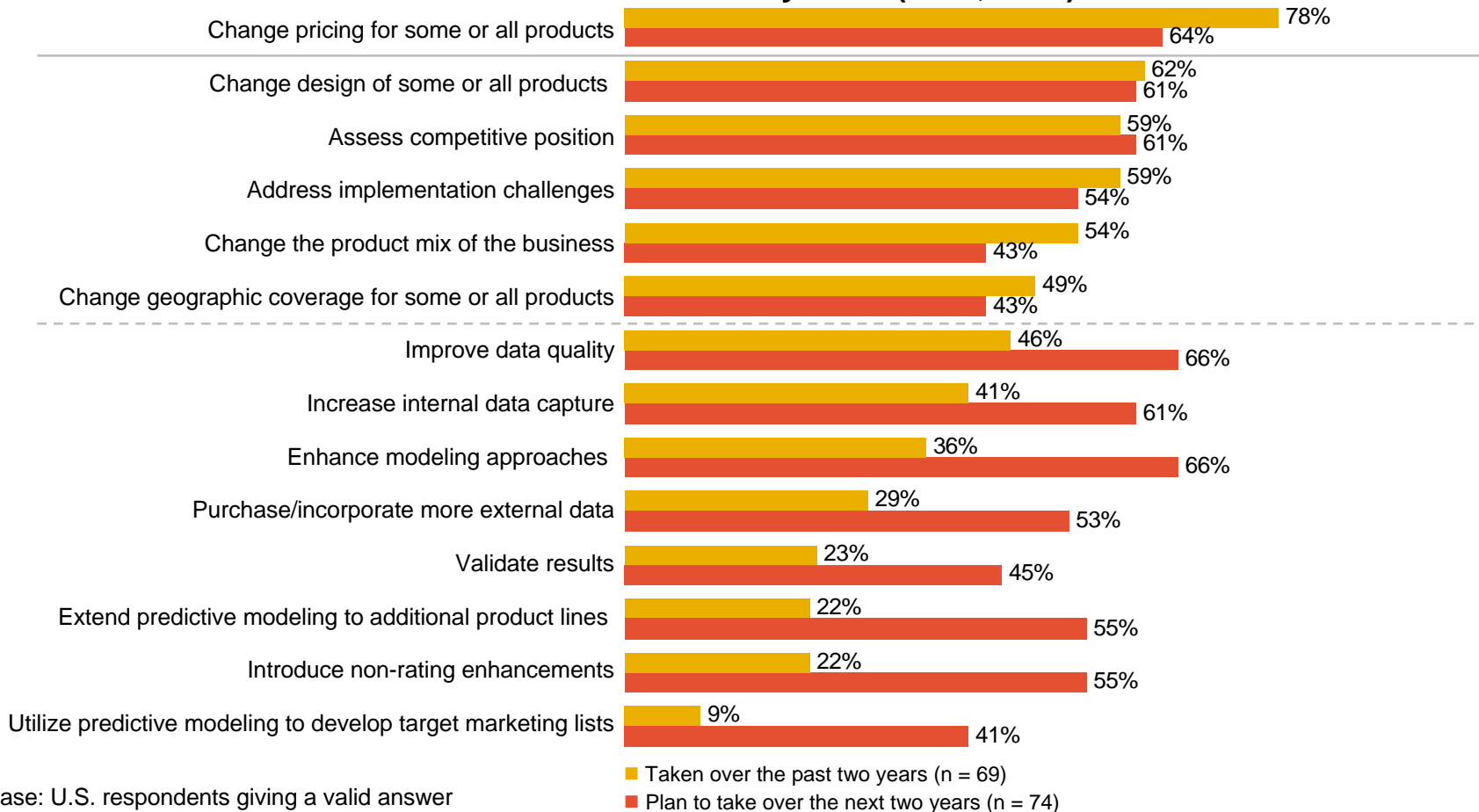


Base: U.S. respondents giving a valid answer (percentages exclude "None, Not applicable")

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While changing pricing has been the top priority for commercial insurers, their future plans and priorities are very broad and consistent across all aspects of predictive modeling

Which of the following actions, if any, has your company group taken for underwriting/risk selection and/or rating/pricing for commercial lines over the past two years, and which are you planning to take over the next two years? (Q.11, Q.12)



Base: U.S. respondents giving a valid answer (percentages exclude "None, Not applicable")

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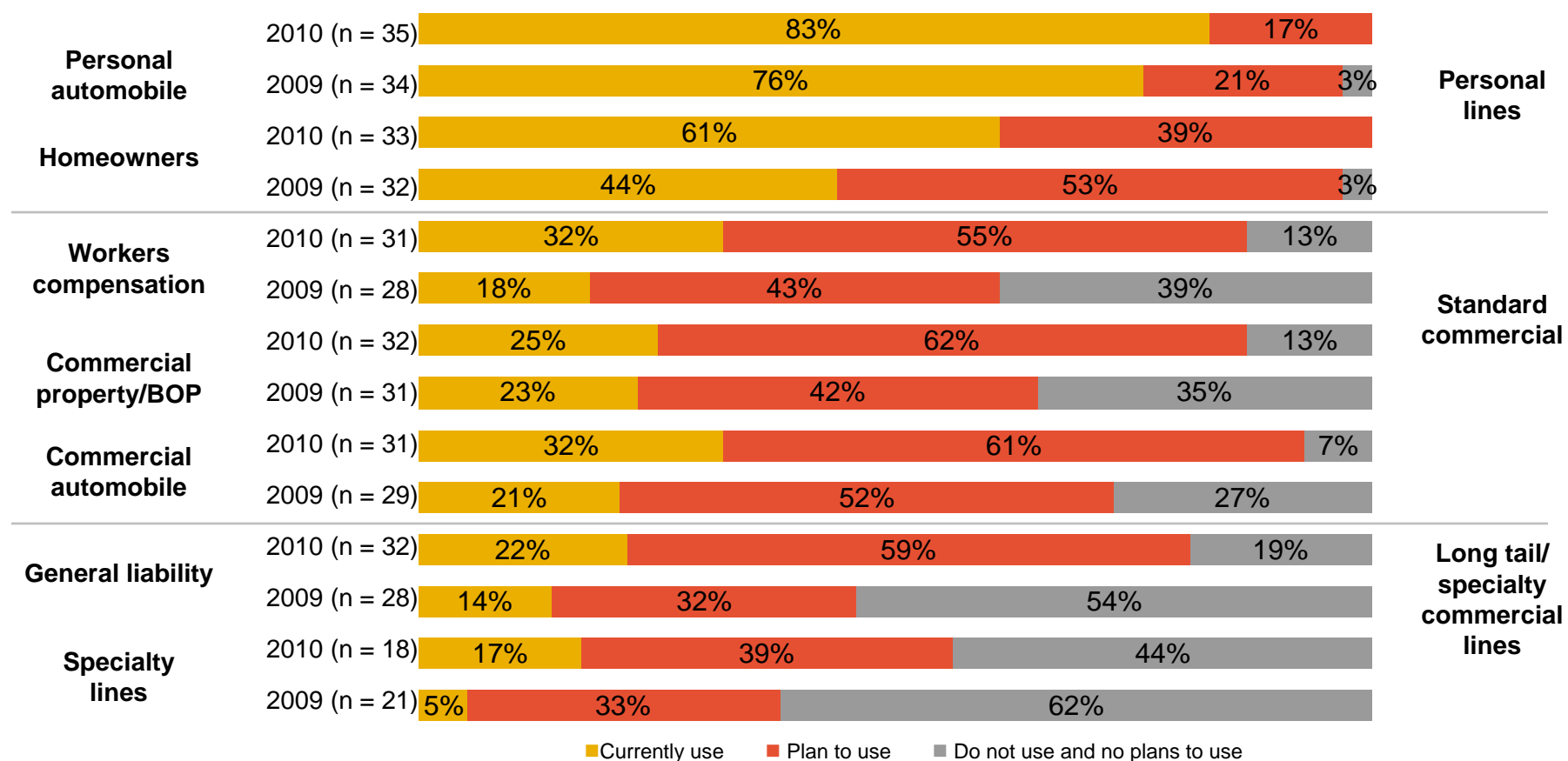
Carriers that responded to both annual surveys have made significant progress in expanding use of predictive modeling in risk selection and pricing

Forty-three carriers responded to both surveys, split roughly equally between personal and commercial lines

- While personal lines responses with respect to the importance of predictive modeling are stable, more commercial carriers (standard and specialty) now view predictive modeling as essential, and virtually all carriers regardless of coverage now view sophisticated risk selection and pricing as at least somewhat important
- Current use of predictive modeling is up roughly 10% across all lines of business; standard commercial skeptics are now planning to use predictive modeling
- Personal lines carriers have made huge progress in the last two years, and are planning to more aggressively broaden and deepen their analyses going forward
- Over the past two years, standard commercial carriers have made real strides in implementation, data quality/availability and geographic/product coverage expansion
- Specialty/large account carriers have progressed in most dimensions over the past two years, and have far more ambitious predictive modeling plans looking forward
- Carriers have simultaneously improved bottom-line modeling impact while reducing most negative top-line impact

Current use of predictive modeling is up roughly 10% across all lines of business; standard commercial skeptics are now planning to use predictive modeling

Does your company group currently use, or plan to use, predictive modeling in underwriting/risk selection and/or rating/pricing for the following lines of business? (Q.2)



Base: U.S. companies writing the line of business (percentages exclude "Do not write this line of business")

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Personal lines carriers have made tremendous strides over the past two years, and thus have shifted their plans going forward to broader enhancement and second-generation topics

Which of the following actions, if any, has your company group taken for underwriting/risk selection and/or rating/pricing for personal lines over the past two years, and which are you planning to take over the next two years? (Q.10)

Taken over the past two years		Risk Selection/Pricing Actions	Plan to take over the next two years	
2010 (n = 35)	2009 (n = 34)		2010 (n = 34)	2009 (n = 34)
94%	88%	Assess competitive position	41%	77%
92%	59%	Address implementation challenges	27%	43%
89%	97%	Change pricing for some or all products	53%	86%
86%	82%	Enhance modeling approaches	62%	77%
78%	74%	Change design of some or all products	41%	71%
72%	56%	Change geographic coverage for some or all products	41%	57%
64%	29%	Improve data quality	53%	60%
64%	50%	Increase internal data capture	56%	77%
61%	44%	Purchase/incorporate more external data	62%	60%
47%	41%	Change the product mix of the business	38%	34%
36%	41%	Extend predictive modeling to additional product lines	59%	57%
33%	29%	Introduce non-rating enhancements	50%	54%
31%	29%	Validate results	62%	66%
14%	9%	Utilize predictive modeling to develop target marketing lists	50%	40%

Base: U.S. respondents to both 2009 and 2010 surveys giving a valid answer (percentages exclude "None, Not applicable")

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Commercial lines carriers have accomplished a lot in predictive modeling over the past two years, but continue to plan for more aggressive investment and implementation going forward

Which of the following actions, if any, has your company group taken for underwriting/risk selection and/or rating/pricing for commercial lines over the past two years, and which are you planning to take over the next two years? (Q.11, Q.12)

Taken over the past two years		Risk Selection/Pricing Actions	Plan to take over the next two years	
2010 (n = 30)	2009 (n = 29)		2010 (n = 32)	2009 (n = 33)
83%	83%	Change pricing for some or all products	63%	73%
53%	38%	Change the product mix of the business	44%	30%
50%	41%	Improve data quality	63%	64%
67%	38%	Address implementation challenges	56%	49%
53%	62%	Change design of some or all products	56%	52%
57%	48%	Assess competitive position	59%	46%
50%	38%	Change geographic coverage for some or all products	38%	33%
53%	45%	Enhance modeling approaches	72%	52%
33%	28%	Extend predictive modeling to additional product lines	69%	49%
63%	35%	Increase internal data capture	59%	55%
23%	21%	Introduce non-rating enhancements	66%	61%
37%	31%	Purchase/incorporate more external data	69%	42%
13%	14%	Utilize predictive modeling to develop target marketing lists	53%	30%
27%	35%	Validate results	53%	42%

Base: U.S. respondents to both 2009 and 2010 surveys giving a valid answer (percentages exclude "None, Not applicable")

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Questions?