



# THE POWER OF COMBINING:

Medical and Behavior Data Sources in Predictive Modeling

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# Get the full picture of risk



A Quest Diagnostics Company



Integration of **near real-time data analytic tools** ...



This enables insurers to **make more precise underwriting decisions...**



with **personal history and clinical laboratory** collection capabilities.



all while improving the **consumer experience.**

# Future of LexisNexis® Risk Classifier Coming Soon



# Mortality Risk Performance - Combined Behavior and Medical Data

Get the Full  
Picture of Risk



Public record  
data



Motor vehicle  
records



Credit  
data

+



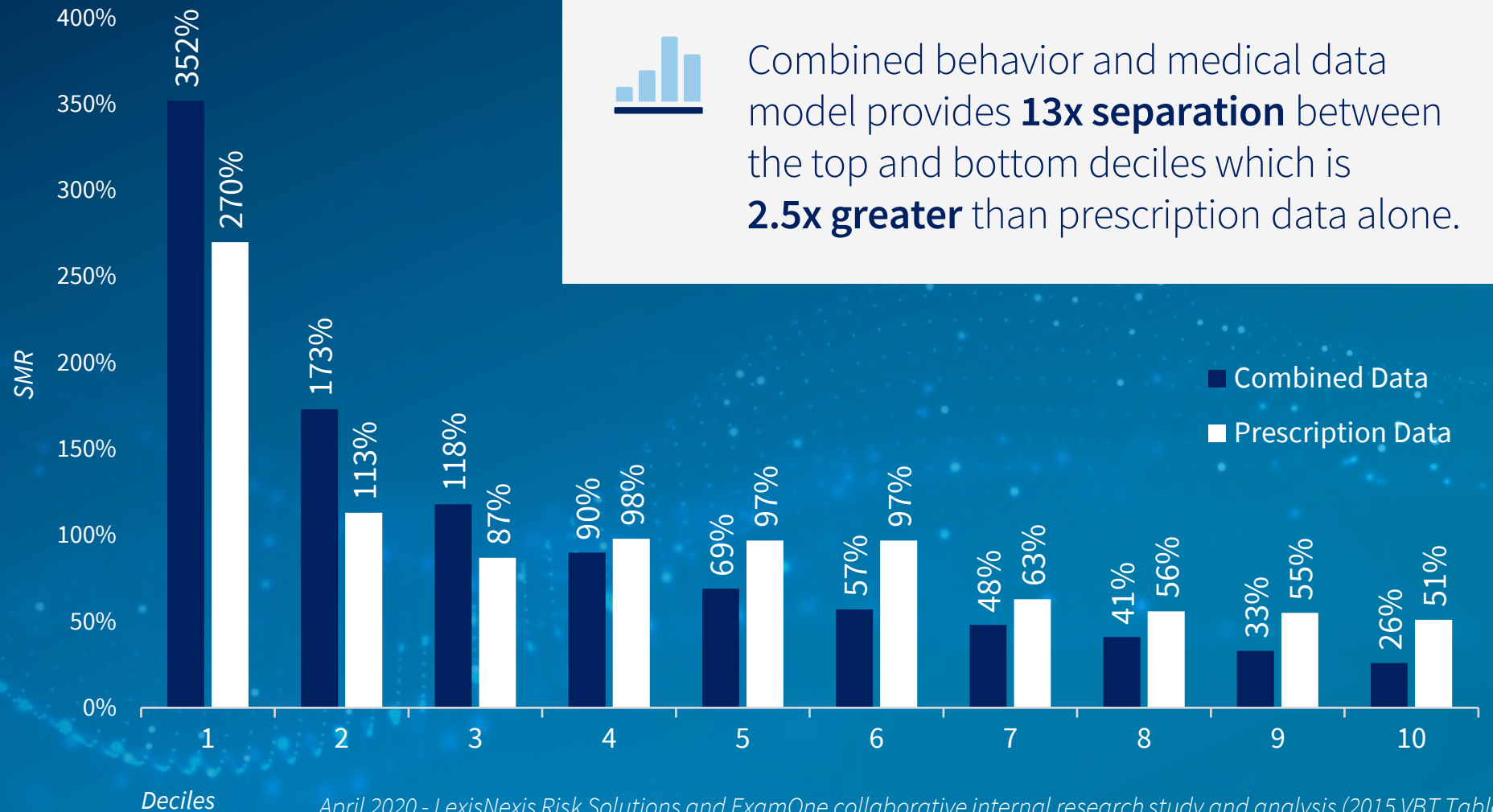
Lab  
data



Prescription  
data




Diagnosis  
data






# Mortality Risk Performance - Combined Behavior and Medical Data


Get the Full Picture of Risk



Public record data




Motor vehicle records




Credit data


+



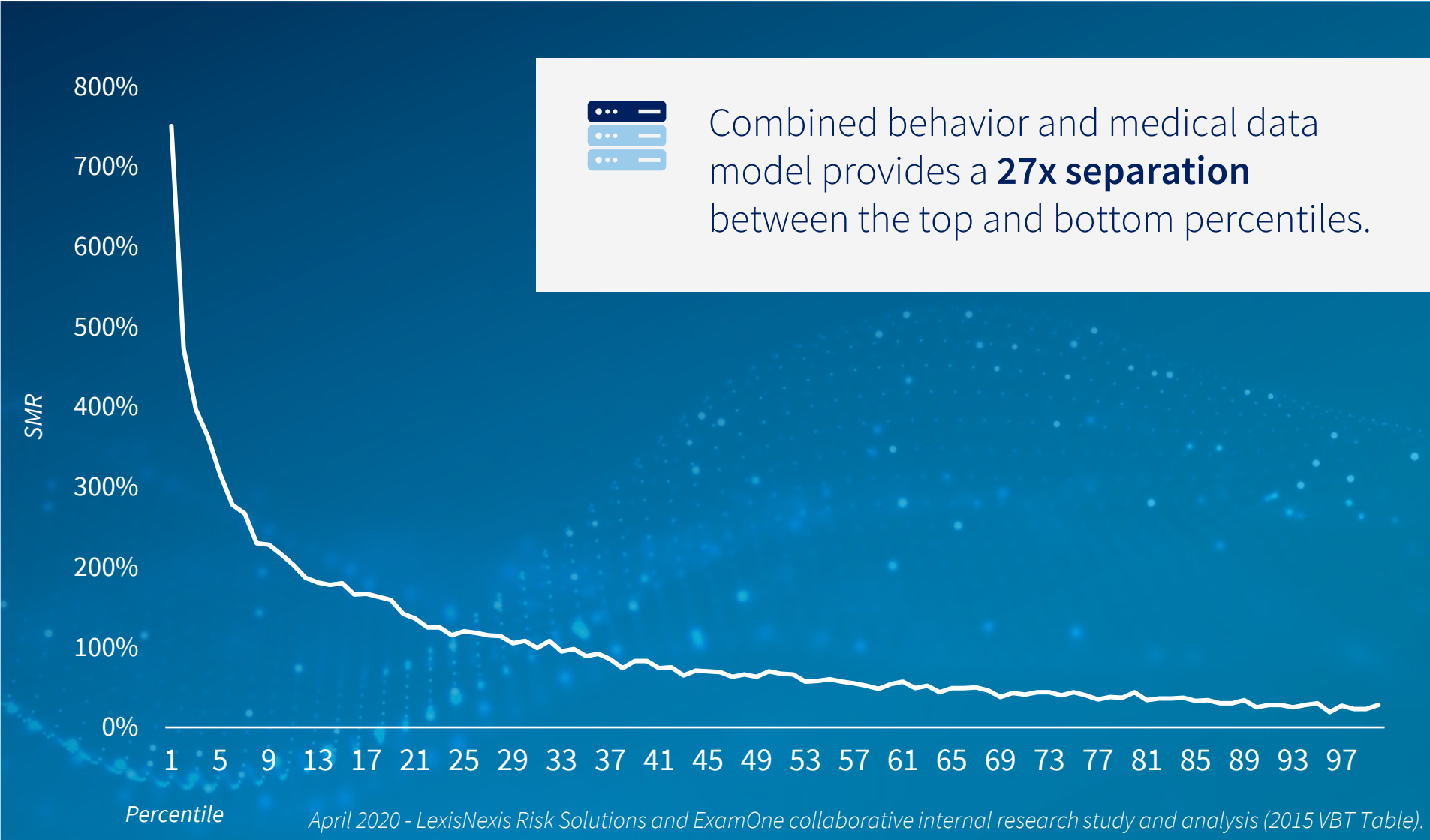
Lab data



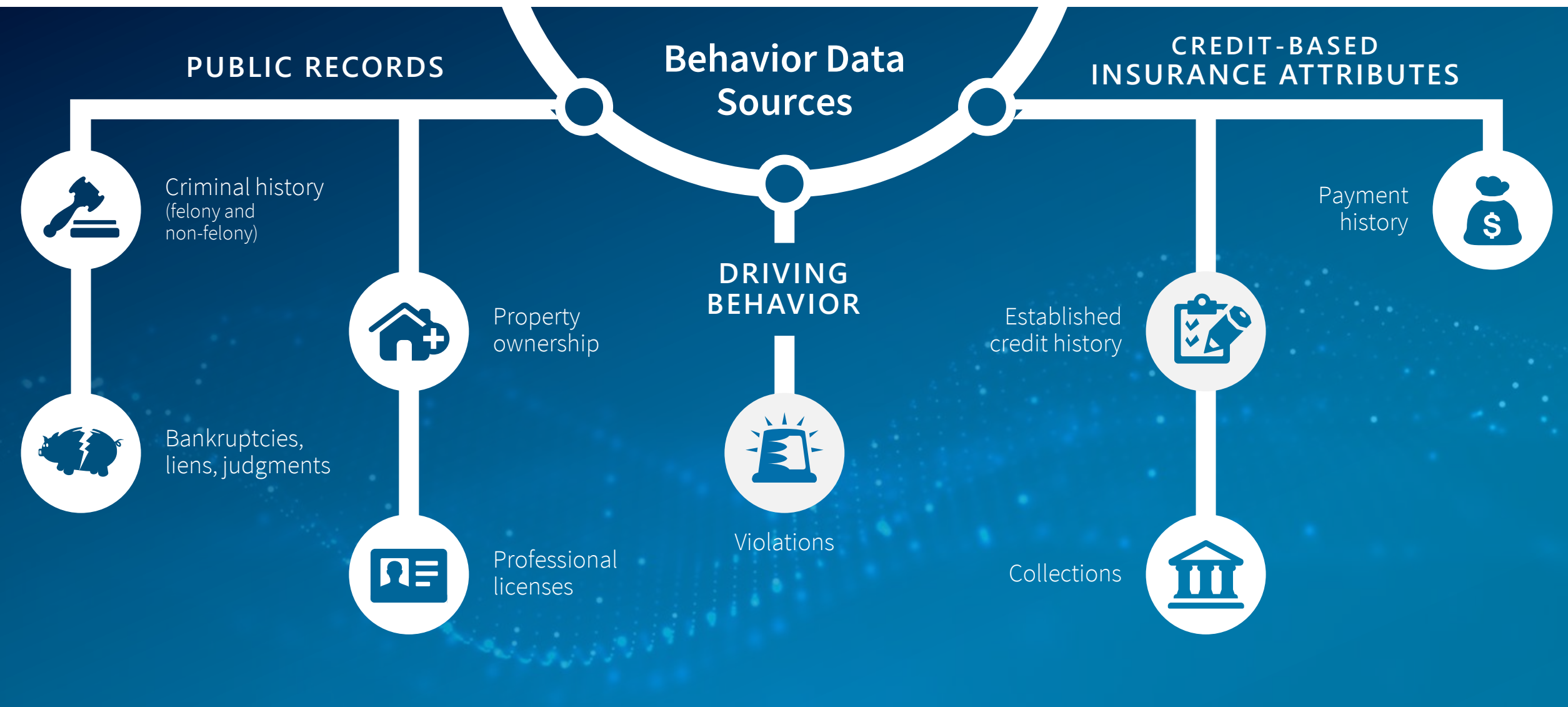
Prescription data



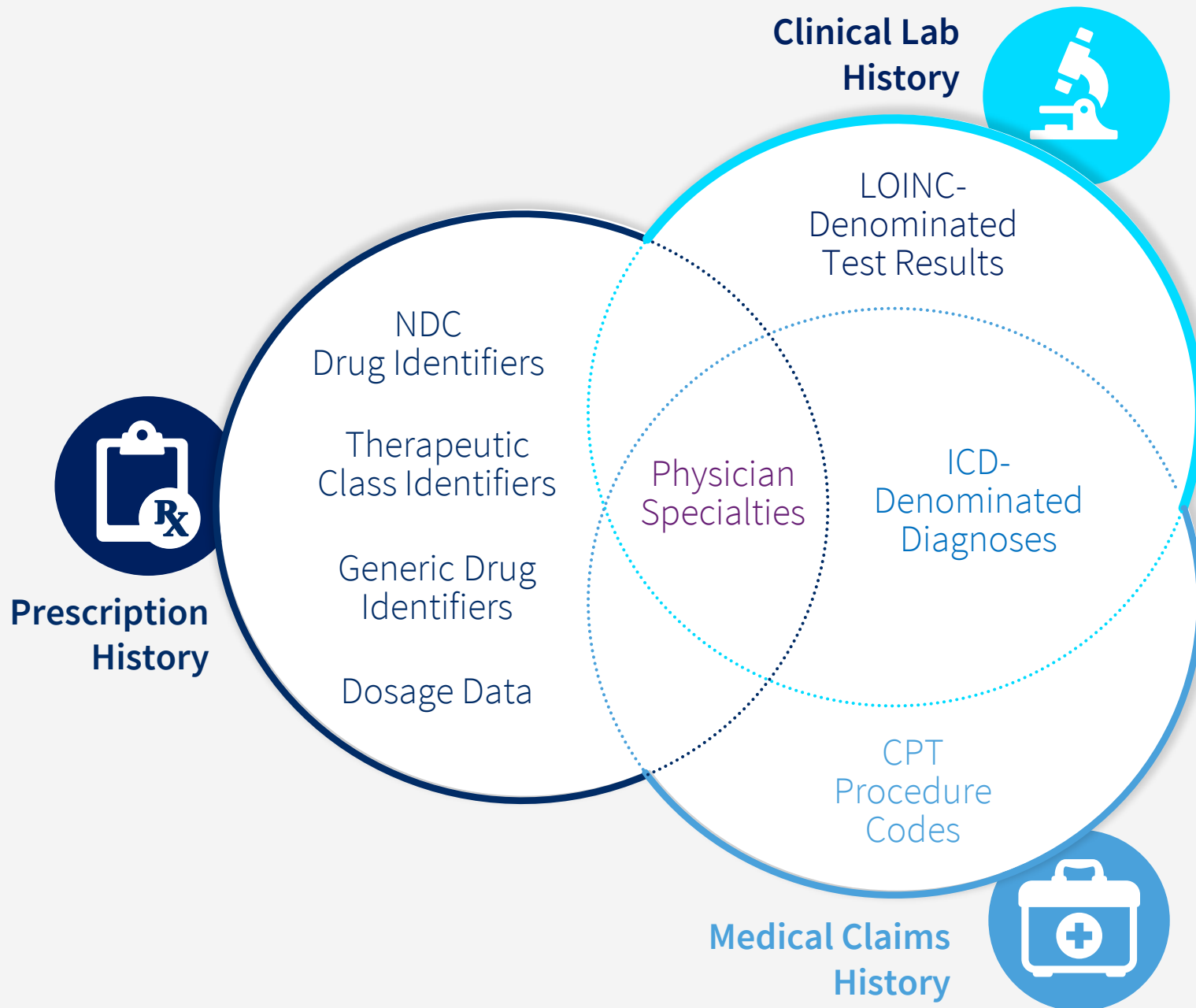
Diagnosis data



# LexisNexis® Risk Classifier



# HealthPiQture





A Quest Diagnostics Company

# Constructing an Integrated Medical History Model

**~140M** unique Quest Diagnostics patients

**2B+** discrete encounters

**44B+** individual laboratory results

**~3B** diagnoses

*Quest Diagnostics clinical laboratory  
data original research*



## Rx History Model

- 667 generic drug variables
- 744 dosage/frequency variables
- 50 specialty variables
- 435 interaction terms
- 2036 total variables



## Clinical Testing History Model

- Min, Max, frequency, CV, time-weighted average, and other transformations
- 183 distinct LOINCs evaluated
- 1292 total variables



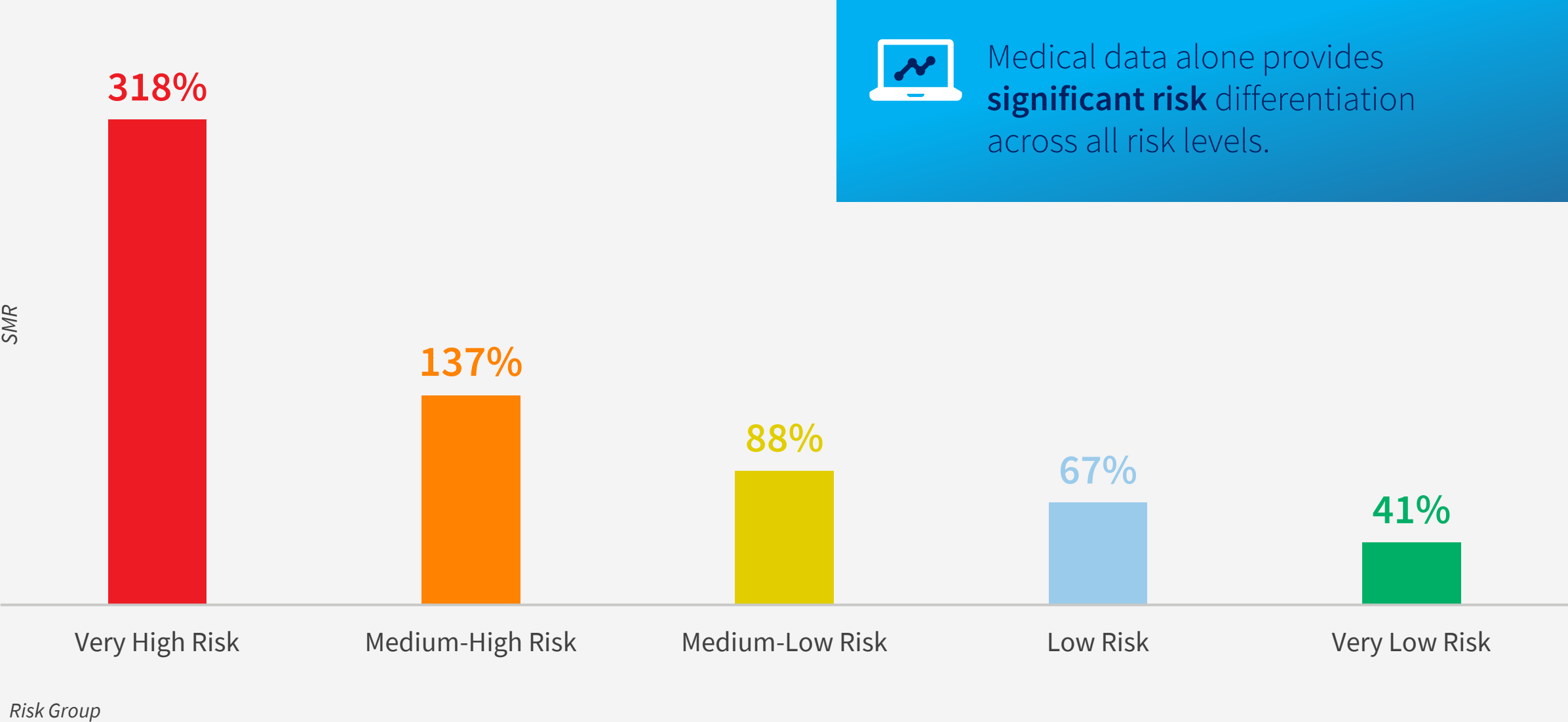
## Diagnosis History Model

- 135 distinct ICD-10 headers evaluated
- Presence/absence and frequency transformations
- 270 total variables

## Final HealthPiQture Model



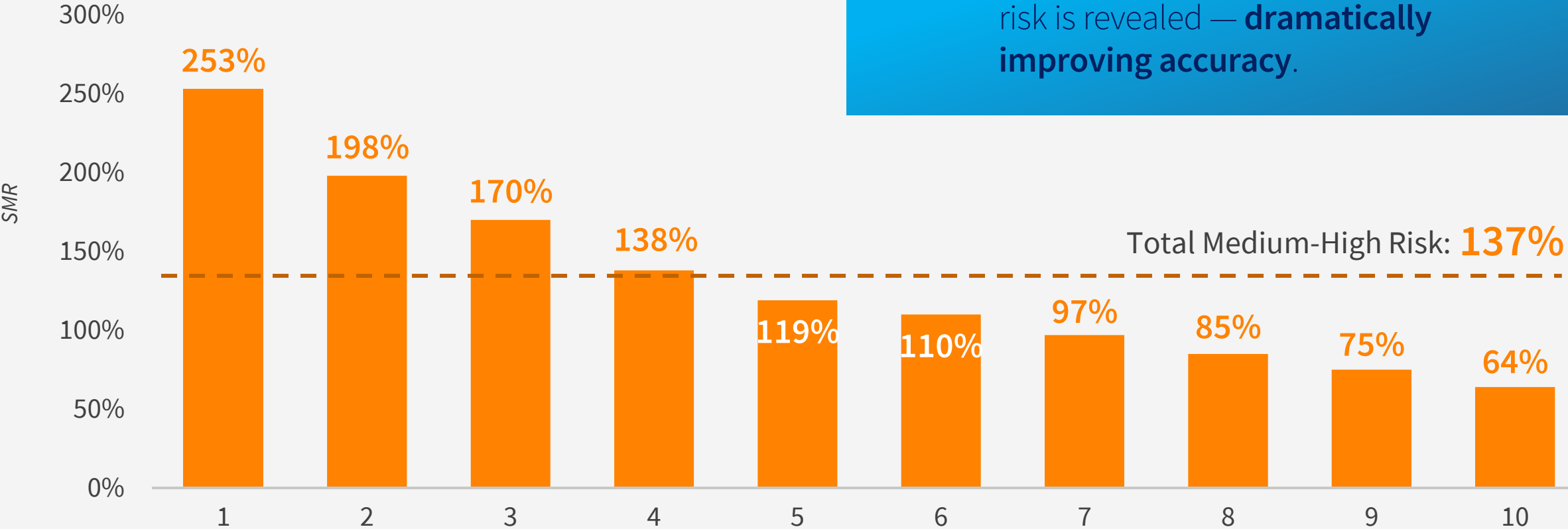
# Medical Risk Level performance



# Discovering unknown risk



When medical and behavior data is combined, additional unknown risk is revealed — **dramatically improving accuracy.**



Total Medium-High Risk: **137%**

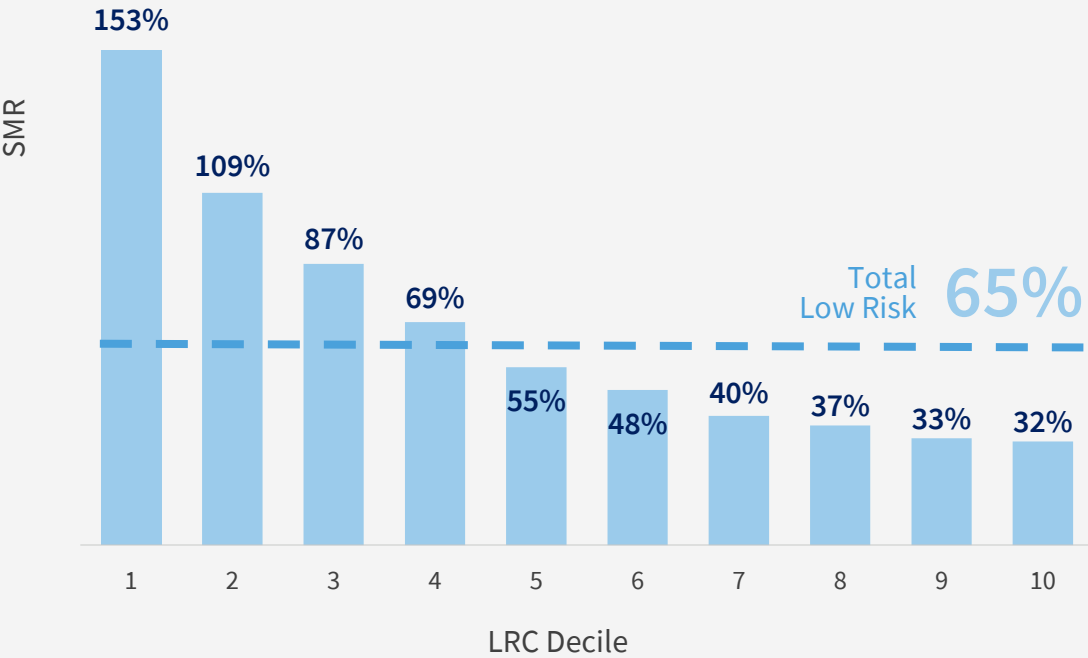
Deciles

Medium-High Medical Risk Decile Breakdown

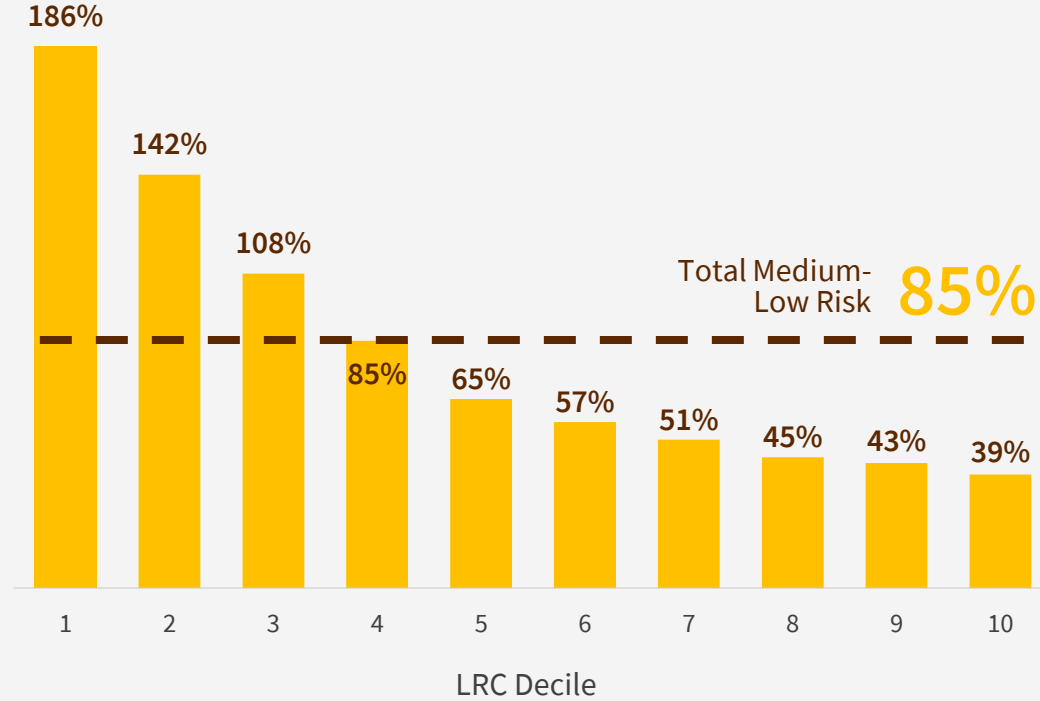
# Discovering unknown risk

## Combined model provides mortality separation across all risk levels (high, medium and low)

Low Medical Risk



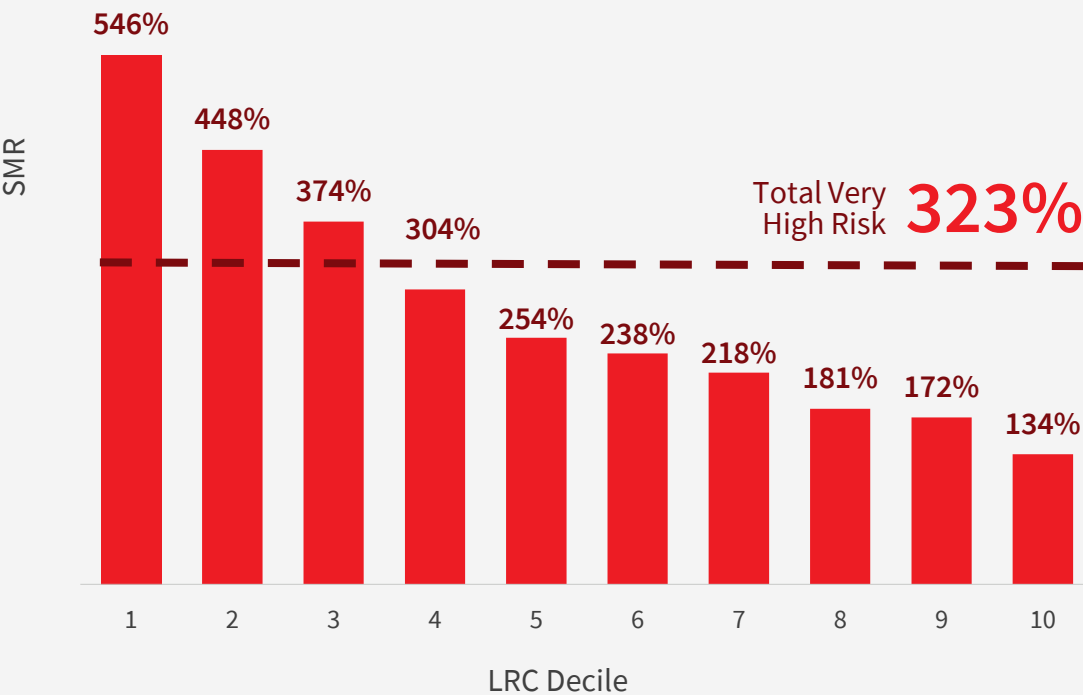
Medium-Low Medical Risk



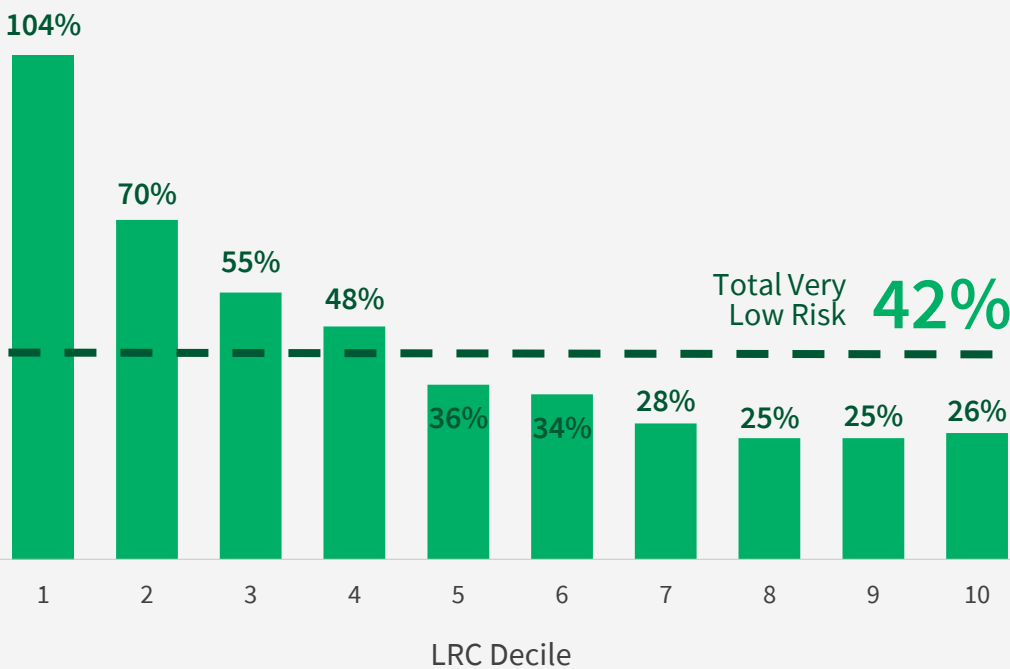
# Discovering unknown risk

## Combined model provides mortality separation across all risk levels (high, medium and low)

### Very High Medical Risk



### Very Low Medical Risk





# Executing on predictive modeling in a regulatory environment



FCRA Compliant  
Models



Modeling Best  
Practices

# Executing on predictive modeling in a regulatory environment



Listen to our  
customers and join  
them in a mutual  
journey to be  
innovators



Engage with  
regulators and  
insurance associations  
assuring products  
are socialized



20+ years of  
developing and  
executing insurance  
predictive models



Aware of what is  
important to  
regulators

# Takeaways

COMING SOON

## The Future of LexisNexis® Risk Classifier



Labs improve mortality scoring and lower underwriting cost — giving carriers a **unique advantage over Rx history alone**



Allows carriers to **drive better risk selection, segmentation**, improve management decisions and build a competitive advantage



Improves customer experiences by **simplifying, streamlining and accelerating** the underwriting process for life carriers



# The power of combined behavior and medical data insights

Q&A





# Thank You

## Patrick Sugent

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# APPENDIX

The Fair Credit Reporting Act (FCRA) defines a consumer report as “any written, oral, or other communication of any information by a consumer reporting agency bearing on a consumer’s credit worthiness (...) credit standing, credit capacity, **character, general reputation, personal characteristics, or mode of living** which is used or expected to be used or collected in whole or in part for the purpose of serving as a factor in **establishing the consumer’s eligibility** for (...) credit or **insurance** to be used primarily for personal, family, or household purposes.”

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Disclosable



Disputable



Correctable