Navigating the Obesity Epidemic Through Enhanced Risk Management Solutions

Perspectives on the impact of obesity

NOT IF, BUT HOW

Munich RE

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The ongoing obesity epidemic in North America has significant implications for mortality — and for our industry. As your risk management partner, Munich Re North America Life is working hard to develop the industry's most accurate, holistic view of metabolic risk as well as the best tools insurers can use to manage their exposure to that risk.

Rather than rely on older approaches, at Munich Re, we combine state-of-the-art predictive analytics and industry-leading underwriting and medical expertise to push the envelope. In this article, we share our view of the risks as well as innovative ways to assess and mitigate this growing concern to help carriers successfully position their businesses in a risk-informed way.

Obesity: addressing an underappreciated risk

It's no secret that we are in the midst of an obesity epidemic. Twelve states in the U.S. now have an adult obesity prevalence at or above 35%,[1] while 27% of adults in Canada were found to be obese in 2016-17.[2]

35%
United States
(as of 2019)

27%
Canada
(in 2016-2017)

These trends are not new. So why are we more focused than ever before on obesity risk and what it means for the insurance industry? Rather than rely on older approaches, at Munich Re, we combine state-of-the-art predictive analytics and industry-leading underwriting and medical expertise to push the envelope. We are identifying innovative ways to assess and mitigate this growing concern to help carriers successfully position their businesses in a risk-informed way.

COVID-19 has highlighted the profound impact of obesity on all aspects of health

The significant impact of obesity on COVID-19 mortality provides stark evidence of the myriad and underappreciated ways that obesity undermines health and heightens mortality.

Analyses have found that those with a body mass index (BMI) of 35 or more have fared significantly worse in the pandemic, with one study concluding that "obesity plays a profound role in risk for death from COVID-19, particularly in male patients and younger populations."[3] The increasing frequency of epidemics due to globalization and climate change suggests that the risk to those who are obese is similarly increasing.

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[1] Centers for Disease Control and Prevention. (2021 March). Obesity, race/ethnicity, and COVID-19. https://www.cdc.gov/obesity/data/obesity-and-covid-19.html

[2] Statistics Canada. (2018, October). Obesity in Canadian Adults, 2016 and 2017. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2018033-eng.htm

[3] Tartof SY, Qian L, Hong V, Wei R, Nadjafi RF, Fischer H, Li Z, Shaw SF, Caparosa SL, Nau CL, Saxena T, Rieg GK, Ackerson BK, Sharp AL, Skarbinski J, Naik TK, Murali SB. (2020, November). Obesity and Mortality Among Patients Diagnosed With COVID-19: Results From an Integrated Health Care Organization. Ann Intern Med. https://pubmed.ncbi.nlm.nih.gov/32783686/

Obesity is no longer an acute disease, but a chronic one

At the same time, BMI values continue to move upward for the population as a whole. According to the Centers for Disease Control and Prevention (CDC), the percentage of the U.S. population aged 40-69 defined as normal weight (BMI of 18.5-25) shrank from 41% to 32% between 1999-00 and 2015-16 while the percentage considered obese (BMI of 30+) grew from 27% to 36%. (see Figure 1.) And while almost 14% of adults in Canada were considered obese in 1978,[4] 27% were in 2017.[2] Obesity among adolescents has also increased, with severe implications for long-term health and the likelihood of complications such as diabetes and cardiovascular disease.

BMI at an individual level also continues to creep upward from early childhood through late middle age. A Canadian study measuring the average 5-year change in BMI for individuals in different age cohorts found that BMI increased for every age cohort, except for those over age 65. (see Figure 2.)

Both academic papers and our own research show an impact of between a quarter and half percent of worsening mortality each year because of these trends. This makes it more critical than ever to leverage the appropriate tools for identifying 'healthy obese' and accurately pricing those with heightened risk.
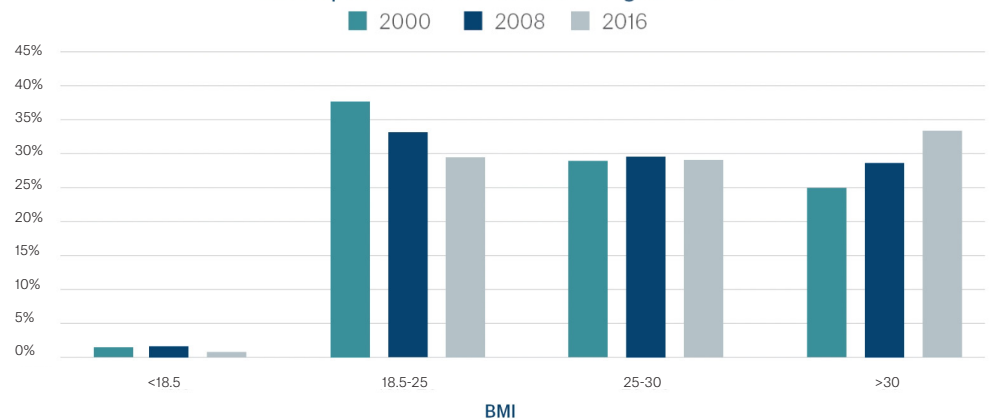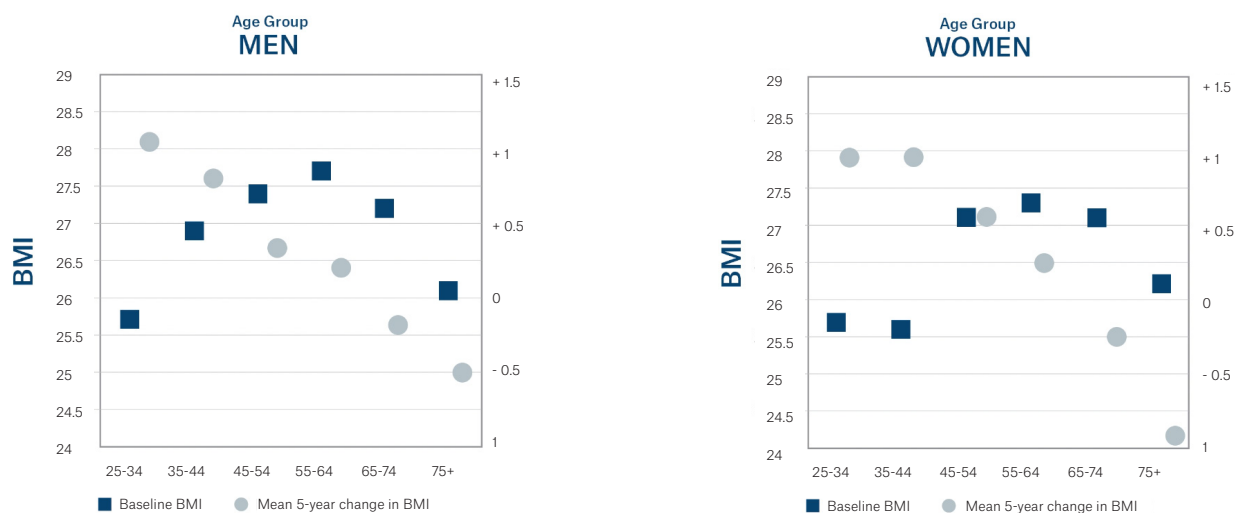

Figure 1. BMI prevalence over time

Numbers on the left axis represent body mass index (BMI). Solid squares represent the mean baseline BMI. Numbers on the right axis represent mean change in BMI. Circles represent the mean 5-year change in BMI.

2   Statistics Canada. (2018, October). Obesity in Canadian Adults, 2016 and 2017. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2018033-eng.htm

4   Public Health Agency of Canada, & Canadian Institute for Health Information. (2011). Obesity in Canada. https://www.canada.ca/content/dam/phac-aspc/migration/phac-aspc/hp-ps/hl-mvs/oic-oac/assets/pdf/oic-oac-eng.pdf

Metabolic Risk Calculator

Munich Re's new Metabolic Risk Calculator helps insurers gain a more nuanced view of obesity risk. Current underwriting that assigns the same level of risk to all individuals with a given BMI ignores the fact that metabolic health can vary considerably among those with the same BMI. By focusing on BMI in isolation, the industry is underpricing certain risks that will hurt profitability in the long term and missing the opportunity to find bright spots where a more favorable approach is warranted. The key is moving beyond imprecise measures like BMI in isolation to holistically consider multiple associated factors to more accurately assess metabolic health.

Munich Re has developed a multivariate, evidence-based Metabolic Risk Calculator that allows insurers to better assess metabolic risk by:

Relying on a multivariate analysis of multiple metabolic risk factors
Based on an analysis of multiple risk factors and actual outcomes for 1.5 million insurance applicants in the U.S., our metabolic risk calculator assesses mortality risk based not only on multiple factors such as build, blood pressure, cholesterol, and more, but also on the associations among these various factors. This will give users a much more nuanced picture of an applicant's actual mortality risk than can be determined by scoring each risk factor independently.

Better assessing the impact of age on metabolic risk
Adolescents with high BMIs are a worse risk than older people with the same BMIs, all other factors being equal, due to the increased length of time they have to develop comorbidities as a result. The metabolic risk calculator automatically assesses BMI in the context of age through its multivariate approach, appropriately weighting mortality risk for obese individuals in different age groups.

Simplifying the underwriting experience
Replacing separate individual calculators for various risk factors with one comprehensive calculator will also save insurers significant time and effort in assessing metabolic risk.

Addressing the fact that not all obesity poses the same risk
It is critical to identify the more metabolically healthy, even among obese applicants. Rather than downgrading risk for everyone with a BMI over 30, the calculator enables a more accurate assessment of risk on an individual basis, allowing insurers to be more precise and competitive.

To do this, our metabolic risk calculator:

Includes waist-to-height ratio. Although easy to calculate, BMI cannot distinguish between lean and fat mass or shed light on how fat is distributed in the body. Instead, body composition — a measure of the fat, muscle, water, and bone in the body — and how fat is distributed in the body are more closely correlated to adverse health outcomes than BMI. Our metabolic risk calculator incorporates a waist-to-height ratio to provide this more accurate view of body composition and better assess risk.

Adds exercise levels and Brain Natriuretic Peptide (NT-proBNP) as additional measures to estimate true risk: Cardiac function screening tests, such as an exercise tolerance test, echocardiogram, NT-proBNP, and a coronary calcium score, can uncover the presence of early changes that may impact an individual's metabolic risk. Our calculator allows for the assessment of those metabolic risks.

Digital Assessment Platform (DAP)

The vast expansion of accelerated underwriting programs demands a new perspective on obesity risk. In today's hyper-competitive landscape, accelerated underwriting approaches offer speed and simplicity for a better customer experience and lower acquisition costs. But driving high straight-through processing rates while also mitigating potentially greater mortality risk is critical to maintaining profitability.

Successfully balancing risk and pricing to maintain competitiveness and profitability requires robust risk monitoring, management, and mitigation tools. The transition toward fluidless programs has increased the urgency around discovering new ways to manage obesity risk. We are developing sophisticated tools and cutting-edge technology to enhance risk management.

Munich Re's Digital Assessment Platform (DAP), built on advanced machine learning, predictive analytics, and our underwriting expertise, helps insurers gain real-time insights to improve risk selection and identify areas of opportunity by:

Monitoring risk for improved risk selection and more profitable underwriting
DAP's predictive models make it possible to identify and measure relative mortality and BMI misrepresentation risk (as well as smoking misrepresentation and lapse risk) at both the individual applicant and distribution channel levels. This gives carriers insight into the applicants for whom additional evidence may be warranted. It also enables them to monitor and compare the type and amount of risk created by different segments of their distribution network. And DAP provides a view of risk over time so that insurers can track how risk is changing year over year.

Benchmarking BMI risk and ratings against competitors
DAP helps carriers understand their position in the marketplace by providing insight into how the BMI distribution of their applicants and their ratings of those applicants compare to that of their peers — and understand which factors (age, gender, education, income, lab values, etc.) are driving those differences. This can help identify opportunities for market expansion and ensure that premiums are optimal for maximum profitability.

Helping carriers optimize their programs
As carriers compete for new business and implement new accelerated underwriting programs, determining how much evidence to require, what data sources to tap, and what questions to ask applicants has become paramount. DAP's program optimization tools also help carriers understand, for their specific population, the best set of evidence to require to improve the customer experience and reduce costs while also controlling the mortality impact.

BMI Misrepresentation Predictive Model

Identify patterns of BMI misrepresentation proactively. BMI misrepresentation has emerged as one of the main drivers of misclassification — second only to smoking non-disclosure — in accelerated underwriting programs. With research confirming BMI misrepresentation rates of 20% or higher in fully underwritten programs, these rates are expected to increase in accelerated programs, imposing a material impact on mortality risk.[5]

But not all applicants have the same likelihood of misrepresenting their BMI and also vary in the magnitude of their underreporting.

Anticipating the probability and magnitude of this misrepresentation is key for identifying high-risk applicants and mitigating the extra mortality impact.

Munich Re's BMI misrepresentation predictive model helps to identify these patterns of BMI misrepresentation proactively. Using data from pre-existing, fully underwritten cases, the model is trained to identify discrepancies between applicants' reported and measured BMI. This enables it to flag those applicants likely to significantly understate their BMI to be handled appropriately to address the misrepresentation. The model also helps carriers identify patterns of misrepresentation in the distribution.

Effectively managing and mitigating metabolic risk

Despite the growing risks posed by increasing obesity in North America, new tools, predictive analytics, and disruptive technology solutions make it possible to develop fairer and more accurate pricing while potentially expanding the insured population. The key is moving beyond imprecise measures like BMI in isolation and holistically considering multiple associated factors to assess metabolic health more accurately.

As your risk management partner, Munich Re is committed to helping you develop the best understanding of metabolic risk and better assess, manage and mitigate it in your business. We also continue to study new third-party solutions with the potential to revolutionize underwriting programs. Partner with us to leverage our powerful tools and innovative solutions such as the metabolic risk calculator, DAP platform, and BMI misrepresentation model and help advance your business in this evolving insurance landscape.

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[5] Shahrawat. M. (2020, July) Predictive Analytics and BMI Misrepresentation. https://www.munichre.com/us-life/en/perspectives/predictive-analytics-mortality-impacts-bmi-misrepresentation.html

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