# Big Data, Wearables and EMR

## Where are we at today?

Dr. Christy Lane, Health Gorilla
Justin Fountain, ASA, WTW

November 18, 2022


- Heart rate
- Blood oxygen levels
- Breathing rate
- Muscle electrical activity
- Stress/emotion
- Cognitive function
- Movement patterns
- Sweat analysis
- Sleep

# Retrieve medical records on millions of patients

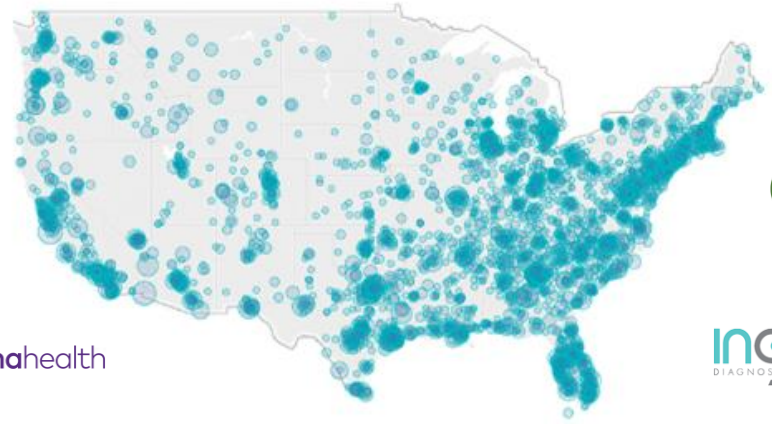
120,000+ connected care sites
750,000+ providers
Access to 220+ million patients

Connected to all major EMRs
- 90% of Acute
- 80% of Ambulatory

85%+ US geo-coverage and growing
100% API driven

commonwell HEALTH ALLIANCE
eHealth Exchange
carequality
LifeImage

Epic
Cerner
Allscripts
athenahealth
MEDITECH
eClinicalWorks
carin
LabCorp
Quest Diagnostics
incyte DIAGNOSTICS
UFHealth UNIVERSITY OF FLORIDA HEALTH
GENESIS DIAGNOSTICS
BioReference LABORATORIES

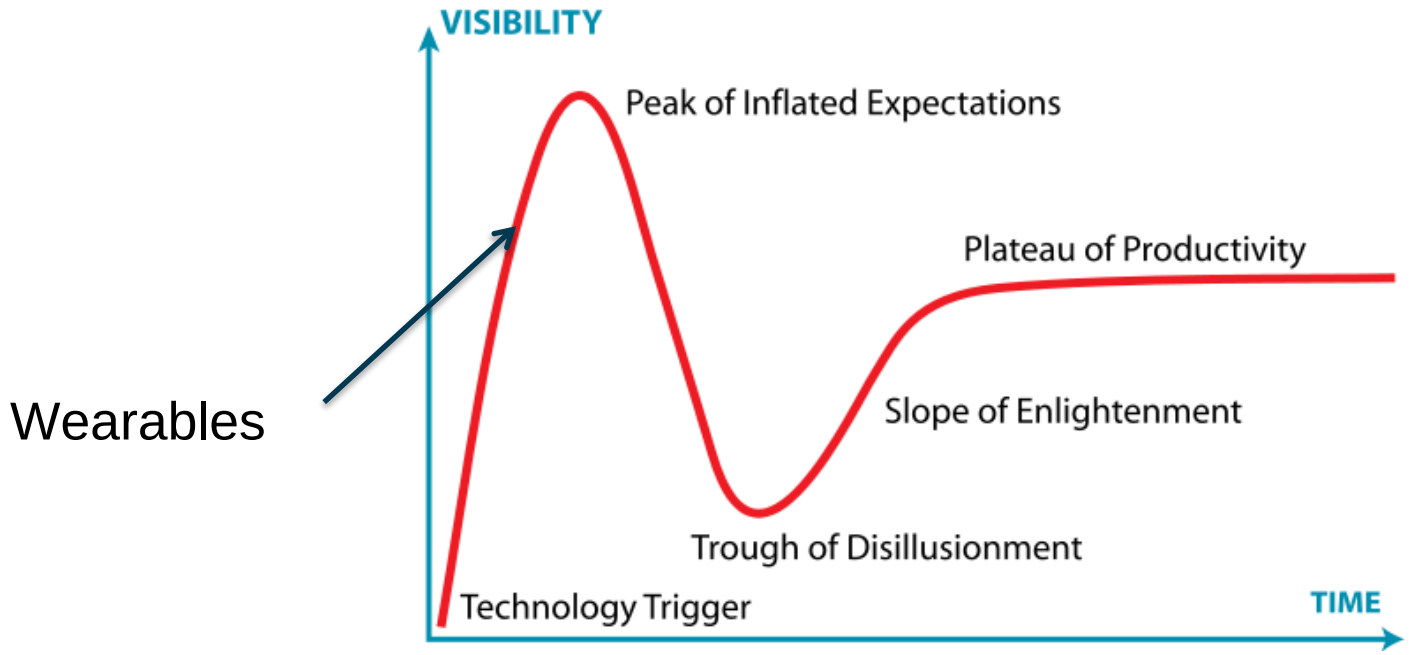




HEALTH GORILLA

# Impacts of Wearable Tech and EMR in Insurance?

- Opportunities for underwriting, engagement and health of policy holders



# Complete data for underwriting

**Search a patient**

eHealth Exchange · Epic · commonwell HEALTH ALLIANCE · Cerner · carequality · MEDITECH · HEALTH GORILLA · eClinicalWorks

| 92% | 750K+ | 10K+ |
|---|---|---|
| US geo-coverage | Providers | SDOH data points |

**Clinical & SDOH data is retrieved from 147,000+ care sites**

**Match using MPI/RLS**

**HG enriches data & delivers specific data elements of interest**

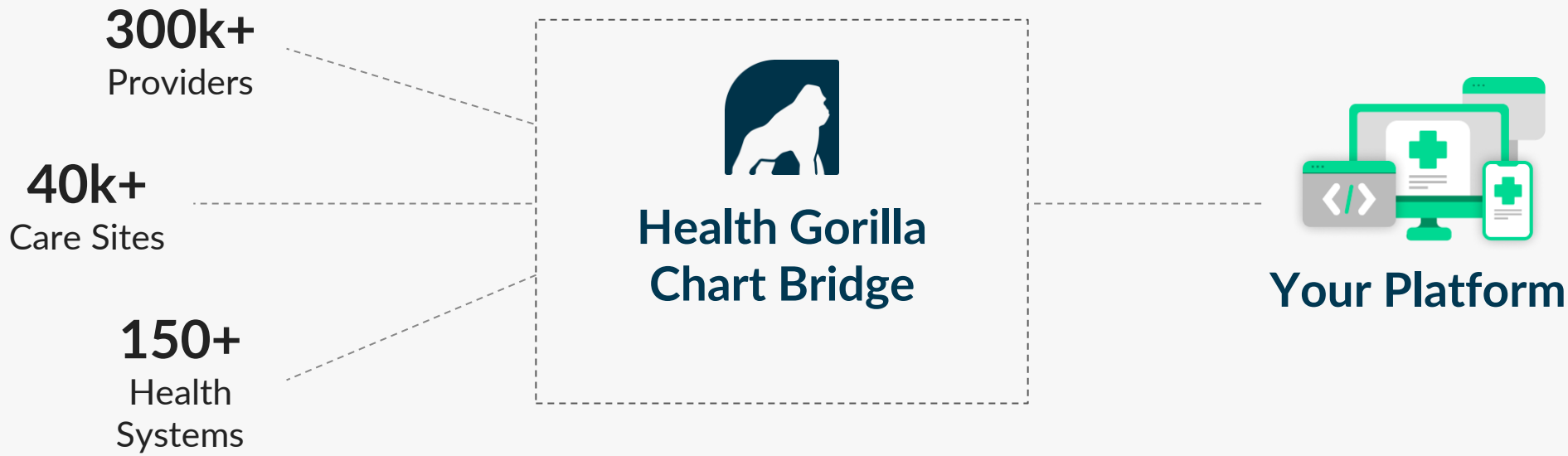
De-dupe · Normalize · Consolidate

**Access data in your product via API, web app, or iframe**

For compliance purposes, you must share new clinical information back to the network, improving continuity of care.

# Real-time medical record access for underwriting and claims.

Learn More About Chart Bridge



SOLUTIONS FOR INSURERS

# Telehealth visit for underwriting/claims

Telehealth visit generates important applicant/claimant-disclosed information that may be missing from the application.

## UNIQUE BENEFITS

Hit rates of 85%+ with more complete view of the applicant's health history

Fits multiple underwriting and claims workflows

Improve client engagement on the basis of a 1-on-1 connection with a clinician



HEALTH GORILLA™


# How can wearables be used for insurance underwriting?

< Back to list

09
Feb
18

SCOR LIVE BLOG

*Life*

## WEARABLES: A GAME CHANGER FOR DYNAMIC UNDERWRITING

Embracing the insurance opportunities offered by digital technology, SCOR Global Life partners with Vivametrica to develop a new risk model based on data from wearable devices.

As technology evolves, reliable data from wearable devices should streamline and accelerate life insurance underwriting, with multiple benefits for customers. In this regard, SCOR Global Life and Vivametrica, a Canadian Insuretech company specializing in health analytics, have signed a partnership agreement to co-develop an exclusive Mortality and Critical Illness risk model designed to assess the "biological age" of individuals, based on the continuous data provided by their wearable devices.


Stratifying mortality risk using physical activity as measured by wearable sensors

Munich RE

### Using wearables for insurance risk assessment

Wearable technology refers to electronic devices with sensors, typically worn on the body, that collect and deliver information about their surroundings. Generally, the wearable device is a wristband or watch, although the technology has expanded to jewelry, glasses, clothing, and shoes. The acceler-ometers in activity trackers are also found in smartphones, allowing phones to track user activity even without a separate wearable device. These devices can be simple tools for tracking metrics associated with physical activity: step count, speed,

from qualifying for the best risk classes, mitigating mortality risk.

- Traditional full underwriting: use physical activity as additional underwriting criteria, improving mortality experience.
- Customer engagement and awareness: develop rewards programs to cultivate healthy lifestyle choices, resulting in reduced healthcare expenses.

Companies interested in adopting a wearables-based program should be transparent about the use of data, including what information is captured, stored, and shared, and how the data is used. It is also

niques to evaluate the extent to which physical activity predicts mortality.

Wearable sensors measure the level of physical activity through step count and minutes of moderate to vigorous activity per day. Munich Re's analysis found that steps per day can effectively segment mortality risk even after controlling for age, gender, smoking status and various health indicators. Insurers

**Vivametrica**

*Vivametrica is a health analytics company that provides measurement of mortality and chronic disease risk using digital biomarkers developed*

Reinsurance › Life & Health › Business solutions

# "The Big Six" Lifestyle Factors

## The new frontier for risk assessment

Can lifestyle risk factors provide a more accurate – or alternative – risk assessment to create a better experience for your customers?

**We think so.**



HEALTH GORILLA™

# Life Underwriting Use Case

Real Time Analysis

Wearable Data
- Activity
- Sleep
- Nutrition
- Behaviour

Wearable-based mortality tables

Triage

Underwriting Decision

Policy Sale

# Stratifying mortality risk using physical activity as measured by wearable sensors

Munich RE

## Using wearables for insurance risk assessment

Wearable technology refers to electronic devices with sensors, typically worn on the body, that collect and deliver information about their surroundings. Generally, the wearable device is a wristband or watch, although the technology has expanded to jewelry, glasses, clothing, and shoes. The accelerometers in activity trackers are also found in smartphones, allowing phones to track user activity even without a separate wearable device. These devices can be simple tools for tracking metrics associated with physical activity: step count, speed,

from qualifying for the best risk classes, mitigating mortality risk.

- Traditional full underwriting: use physical activity as additional underwriting criteria, improving mortality experience.
- Customer engagement and awareness: develop rewards programs to cultivate healthy lifestyle choices, resulting in reduced healthcare expenses.

Companies interested in adopting a wearables-based program should be transparent about the use of data, including what information is captured, stored, and shared, and how the data is used. It is also

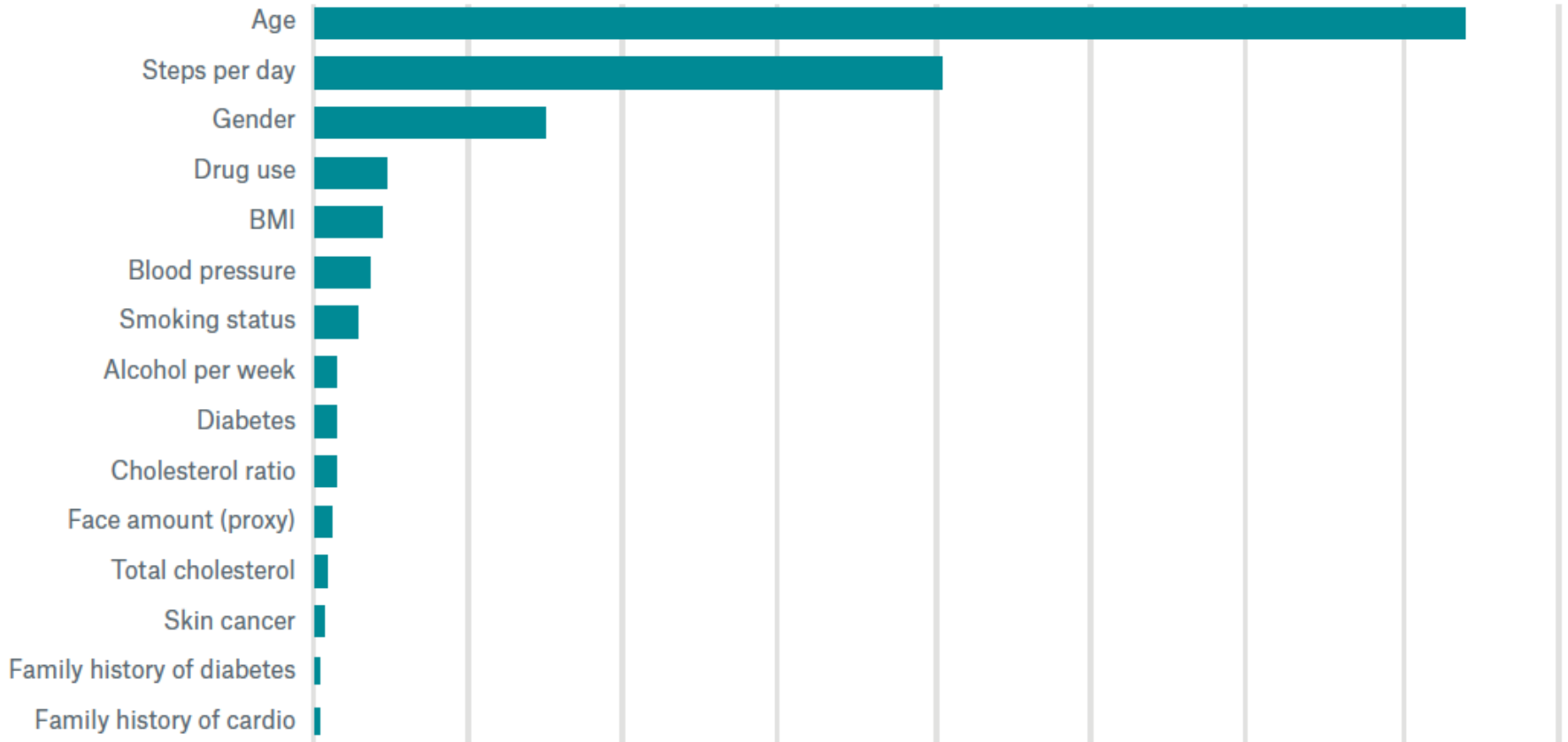
niques to evaluate the extent to which physical activity predicts mortality.

Wearable sensors measure the level of physical activity through step count and minutes of moderate to vigorous activity per day. Munich Re's analysis found that steps per day can effectively segment mortality risk even after controlling for age, gender, smoking status and various health indicators. Insurers

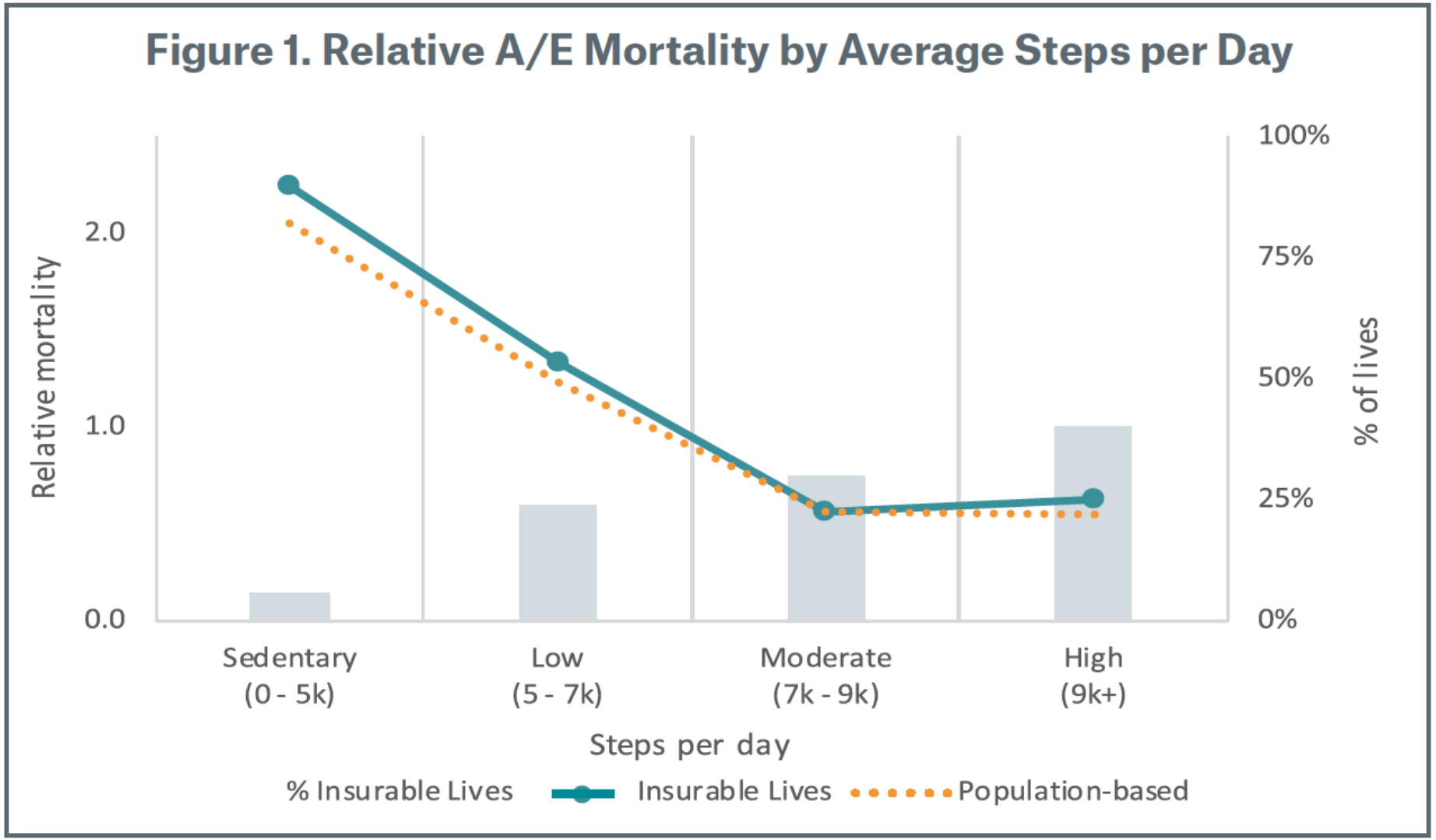
### Vivametrica

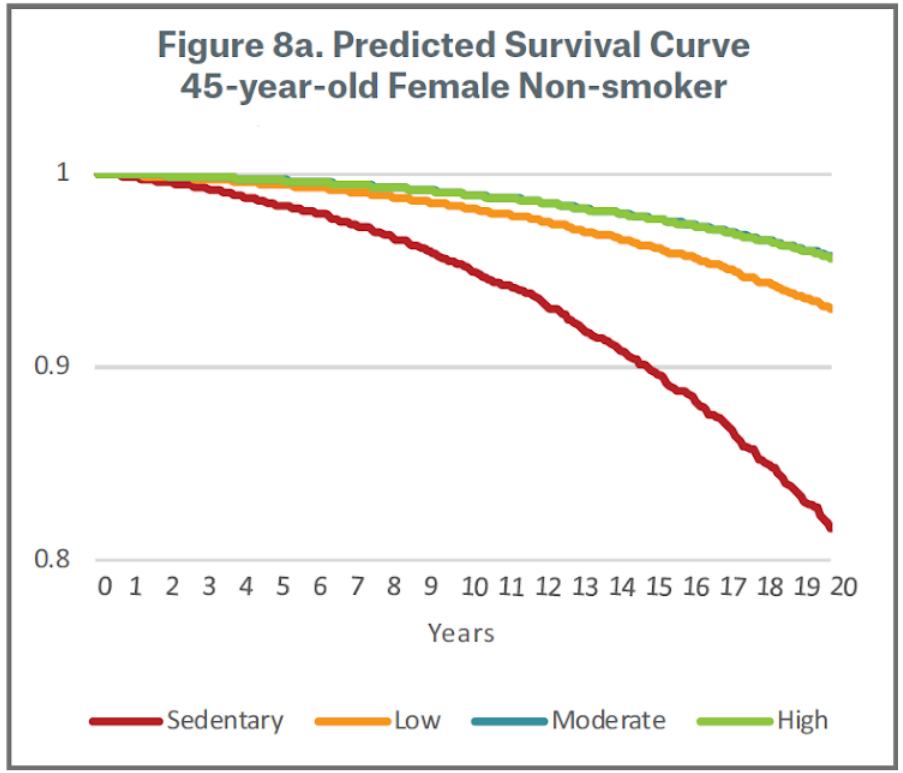
*Vivametrica is a health analytics company that provides measurement of mortality and chronic disease risk using digital biomarkers developed*

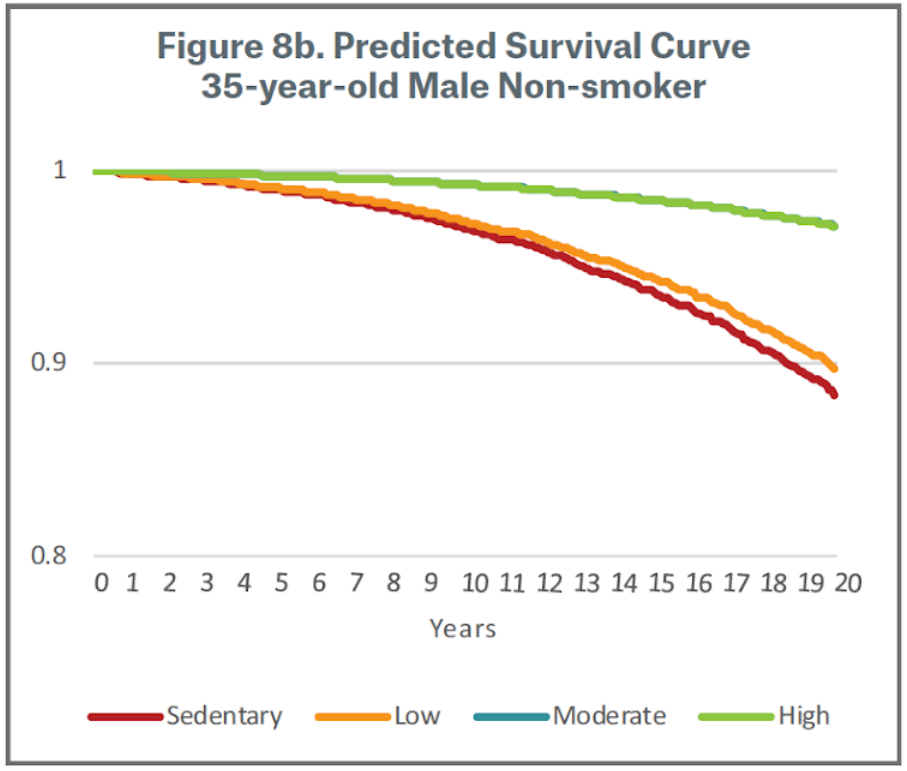
## Figure 6. Variable Importance



## Figure 1. Relative A/E Mortality by Average Steps per Day





# KEY FINDINGS

Primary high-level findings include the following:

- Physical activity as measured by steps per day effectively stratifies mortality risk.
- Steps per day is an important predictor of mortality risk, and may be especially effective in identifying high mortality risk for sedentary behavior.
- Steps per day provides additional segmentation of mortality even after consid-ering traditional underwriting attributes, such as smoking status, BMI, cholesterol, blood pressure and health history of diabetes, cardiovascular disease and cancer.

POWERFUL SOLUTION CAPABILITIES

# Dynamic Actionable Data Insights

State-of-the-art capabilities to collect data, analyze behaviors & create actionable flows.

Steps & Activities
+ Clinical Data

Optimity Health Grade™
& Financial Wellness Score

Dynamic Micro-Quizzes,
Assessments & Journeys

Life Events Insights

Product & Protection Needs

Client Dashboard &
Segmentation Engine

Personalize & Engage

Drive an Appropriate Outcome
(Underwriting, new sales
opportunities, retention
improvements,.)

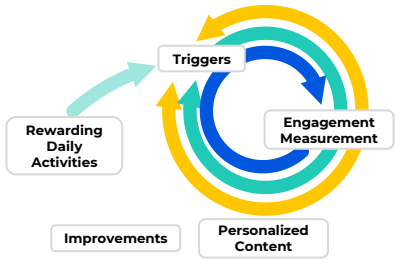
Optimity

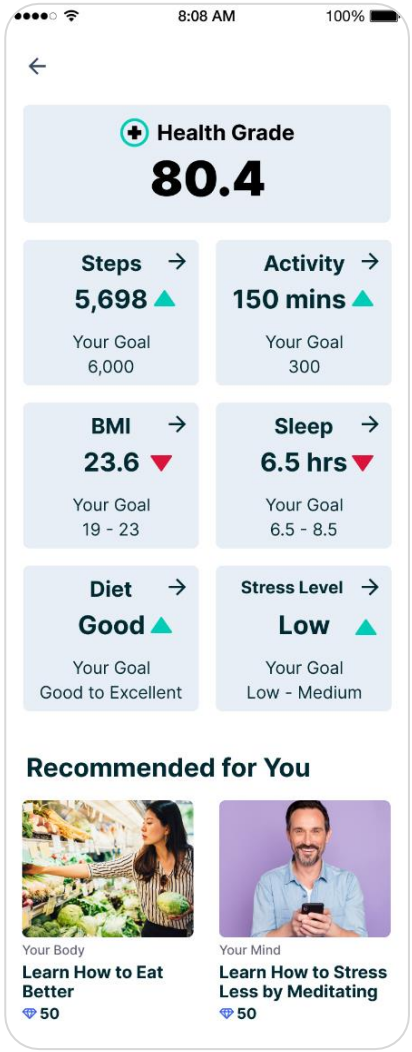
EXAMPLES

# Optimity Health Grade™

| **Optimity Health Grade ™** | 52.1 out of 100 |
|---|---|
| Input Variables | |
| Age | 19 |
| Gender | Female |
| BMI | 32.56 |
| Waist circumference | 101.6 cm |
| Physical Activity | 30 minutes |
| Steps | 5373 / week |
| Diet | Poor |
| Smoking | No |
| Mental Health | High |
| Sleep | 7 hours / week |

| **Subscores** | |
|---|---|
| Physical Activity | 1 / 4 |
| Steps | 10 / 20 |
| Diabetes | Yes |
| Sleep | 5 / 5 |
| Mental Health / Stress | 0 / 10 |



# Summary

Wearable and EMR data is valid and reliable

Longitudinal and real time insights

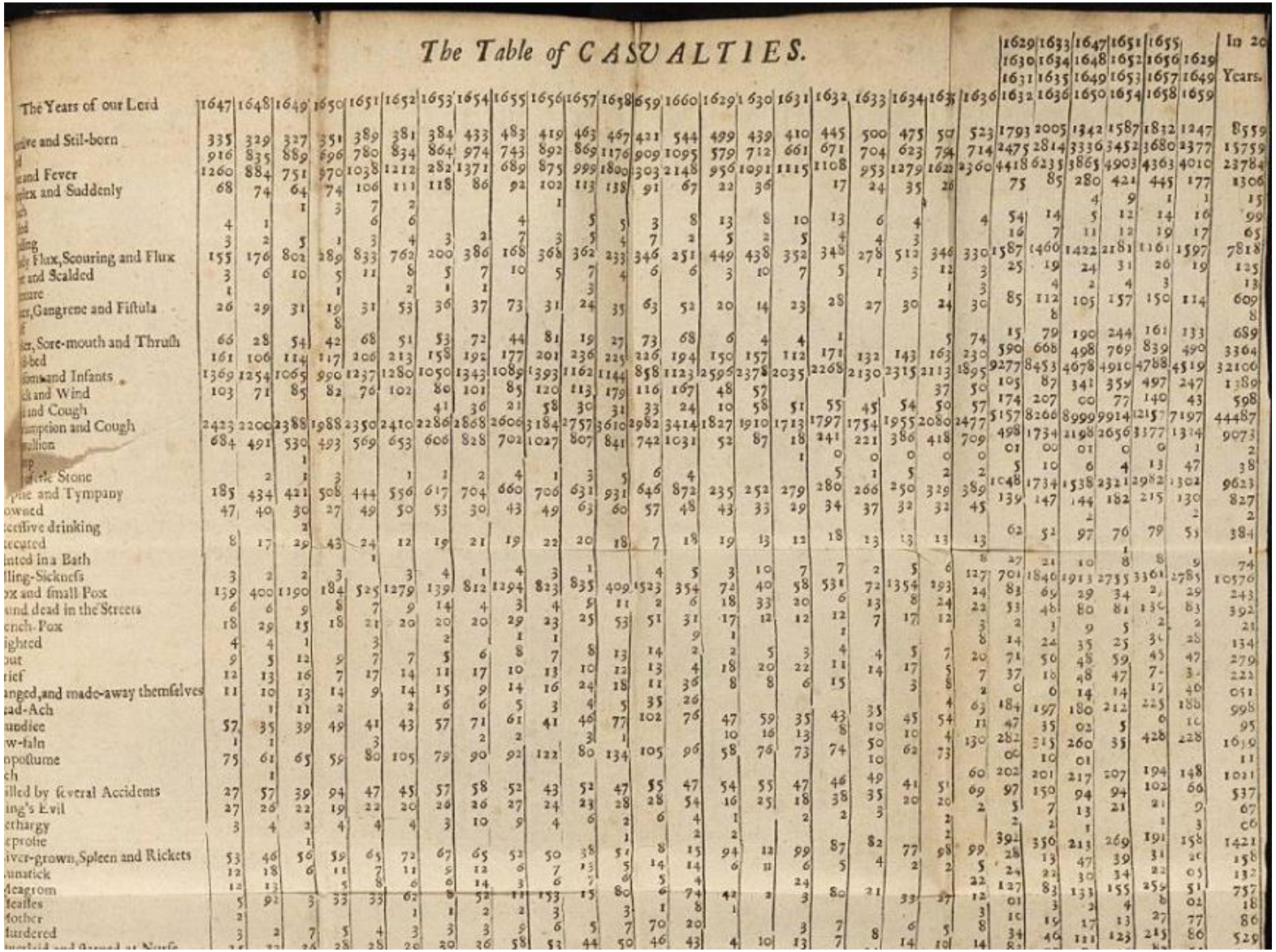
This type of data has to potential to enable continuous UW

Uses: Triage, AUW models, engagement, ongoing health maintenance of policy holders

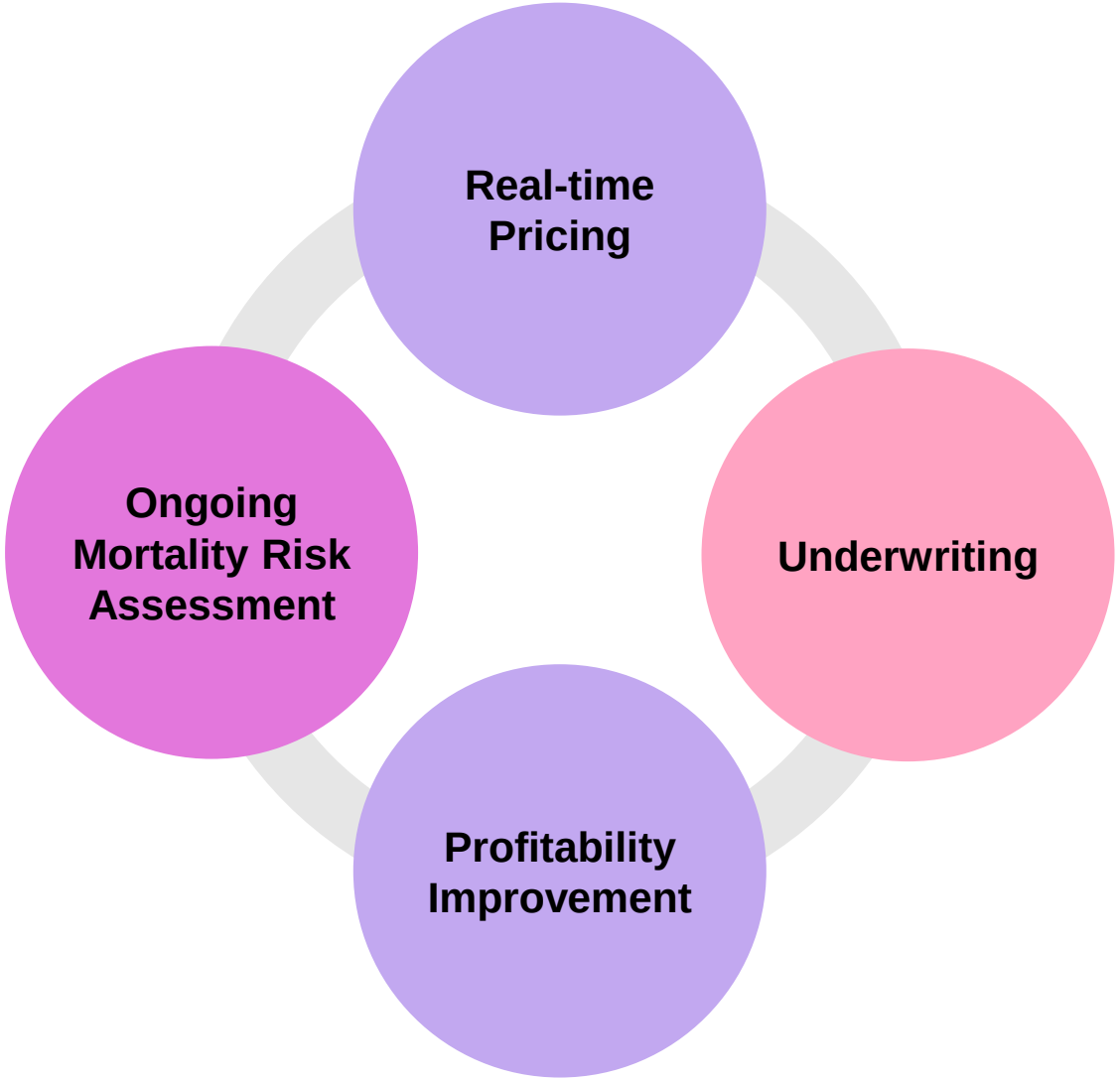
# A bit of history…

**Actuarial acceptance of new technologies**

- 1970s – robust relational databases in widespread use throughout various industries
- 1980 – spreadsheet software comes to the personal computer
- Early 1990s – actuaries begin adopting the use of computer-based spreadsheets
- Early 2010s – relational database use by actuaries begins
- Mid-2010s – predictive analytics for mortality
- Mid-2010s – accelerated underwriting takes off
- 2018 – John Hancock ceases traditional underwriting
- 2018 – SOA adds PA exam to curriculum



# Use cases



# What are the challenges?

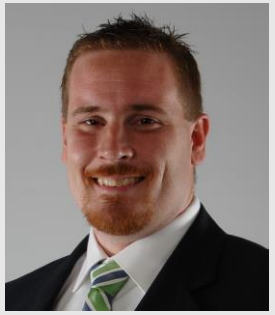
**Expertise**

**Computer/IT Systems**

**Privacy Laws**

**Acceptance**

# Q&A




**Justin Fountain, ASA, MAAA**

Consulting Actuary, WTW

T: +1 770 826 9339

E: justin.fountain@wtwco.com

5 Concourse Parkway | Atlanta, GA 30328



**Dr. Christy Lane**

VP Insurance Solutions, Health Gorilla

T: +1 825 438 4492

E: clane@healthgorilla.com