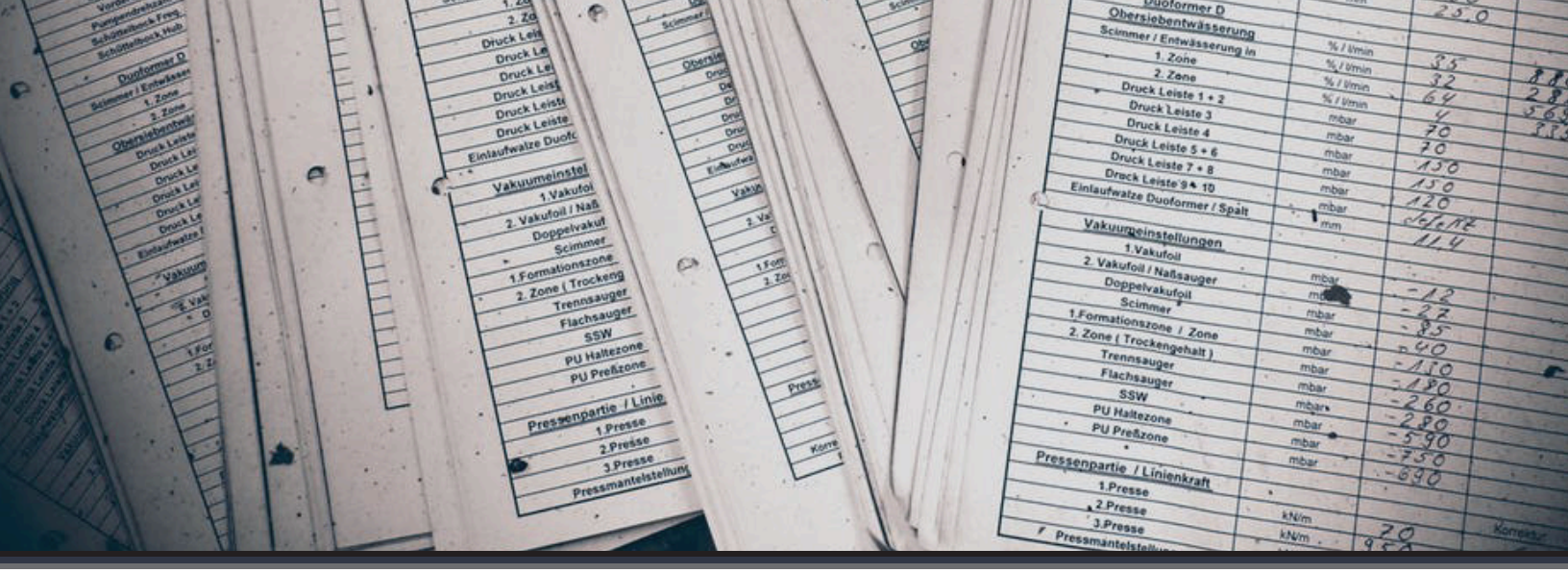
RISKCEDE

Healthcare



Introduction

The purpose of this healthcare software is to optimally manage members' health and wellness.

The system automates processes allowing for scalability, but uses dynamic content to ensure targeted communication and interventions on an individual patient level. In summary, the software allows in depth management of a large number of patients.

The software creates an ecosystem of programmes where patients and healthcare providers interact with each other and the actual system. Participants provide regular information using the app on their smartphones. The app is available for free on the Apple Store and Play Store.

This data is analysed and presented in a way to give a clear overview of the population risks and detailed insight for each individual patient.

Health & Wellness Cycle

The basic principal followed in most programmes consist of four key functions:

1. Assess risk. By applying various well researched health assessments it is possible to categorise participants into different risk categories for underlying morbidities. This creates homogenous groups, but also indicates the severity of risks on an individual level. In turn this allows for the application of different intervention strategies for each group.
2. Communicate results, both risks and mitigating strategies. It has been found that educating participants on their risks, the impact thereof on their future health and mitigating strategies, has an immediate positive impact on their health and willingness to live healthier.
3. Intervention programmes to assist in reducing specific risks. This is done either through consultations with a wide variety of healthcare providers, or through system interaction, mostly via the participant's mobile device.
4. Monitor progress. The final step is to continuously monitor the participant's health. This will indicate the effectiveness of the above interventions and when it is necessary to re-classify a participant.

The above process is only successful if each individual participant receives the necessary attention and time, and is continuously engaged to keep them from losing interest and energy. The following sections describe how this is achieved.

Programmes

Programmes are designed to manage and improve specific morbidities. RiskCede has a few core programmes, but clients can build up a library of their own programmes.

These programmes create an ecosystem where participants and providers interact with each other. The system allows for scalability of this ecosystem.

The three core programmes:

1. Once registered all participants qualify for a health risk assessment to assess their general wellness. This assessment is typically done once a year.
2. All participants are also linked to the stress programme. This is a regular assessment that the participant complete on their mobile device and provides them with immediate feedback. The assessment is based on the Perceived Stress Scale.
3. The third programme is specialised for diabetes management. This programme is assigned to participants by the healthcare provider, and is not automatically available to all participants.

The diabetes management programme consists of two parts, firstly the assessment and secondly regular glucose readings. The assessment, performed by the healthcare provider, is based on the Framingham study and predicts long term risks.

Based on the outcome, different intervention plans can be launced. The second part of the programme requires the participant to capture information (glucose, stress level, etc.) on their mobile app. This data is monitored and when abnormalities are observed, the participant is contacted immediately.

The above is supplemented with the healthcare provider admin programmes. These are used by the service provider to assist the participant to better manage their condition.

This admin programme allows providers to capture information during consultations, but more importantly it allows participants to upload information for the provider to take into consideration when deciding on treatment. It also includes various help functions the provider can use as a practice management system.

Software Framework

The software framework is designed from the database upwards, thus all front end application (mobile and web admin pages) are rendered dynamically based on the database.

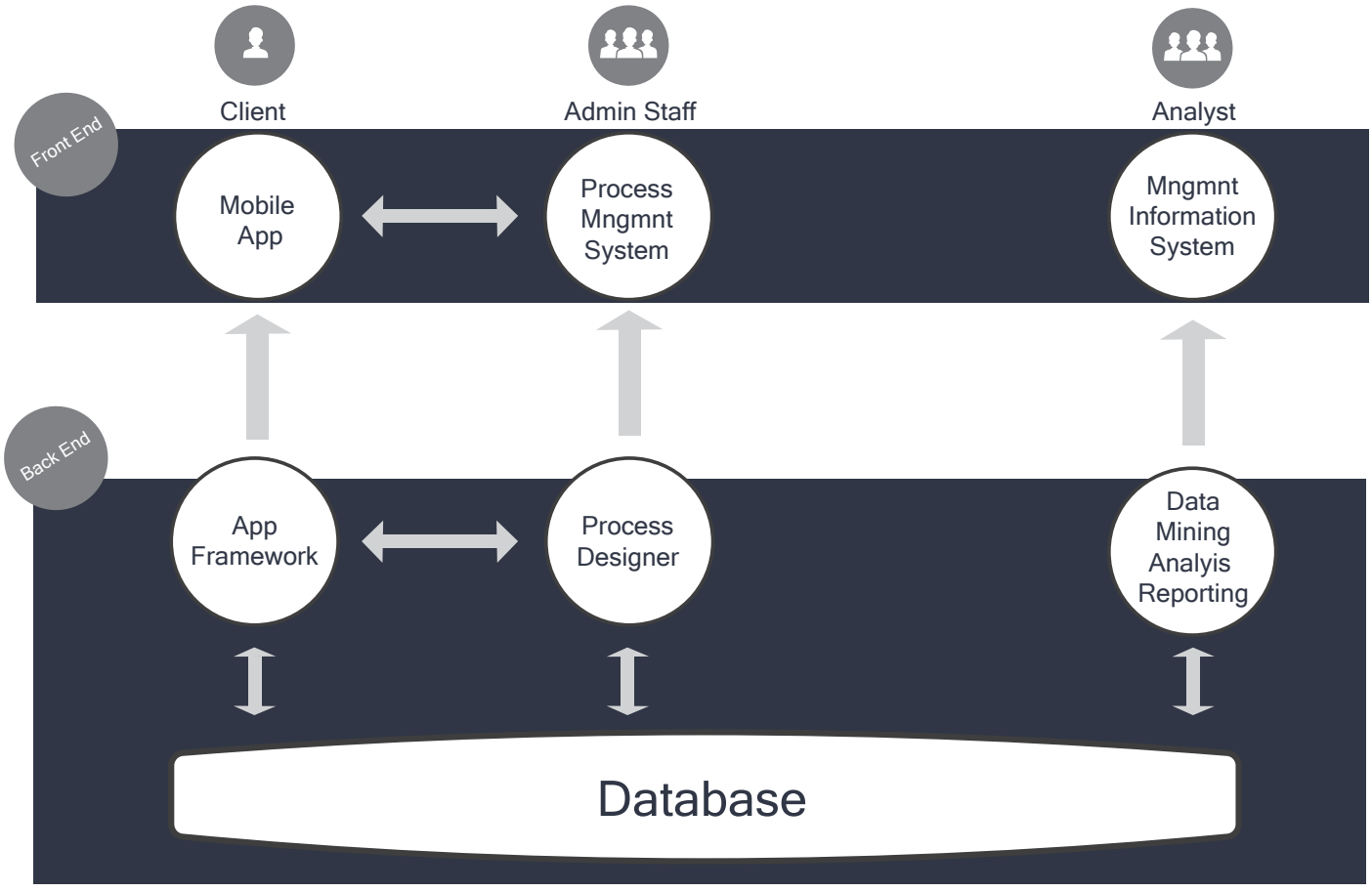
During design time the process flow designer is used to create projects with specific purposes/processes. At runtime the different instances follow these process patterns.

The reporting software uses this live data to report on, and to trigger warnings in predetermined outcomes.

Thanks to this design, adding projects is easily achieved and integrated to the existing front end projects.

There are three users of the final product, the participant (mostly on the mobile app) and then the admin users, both system admin and analyst.

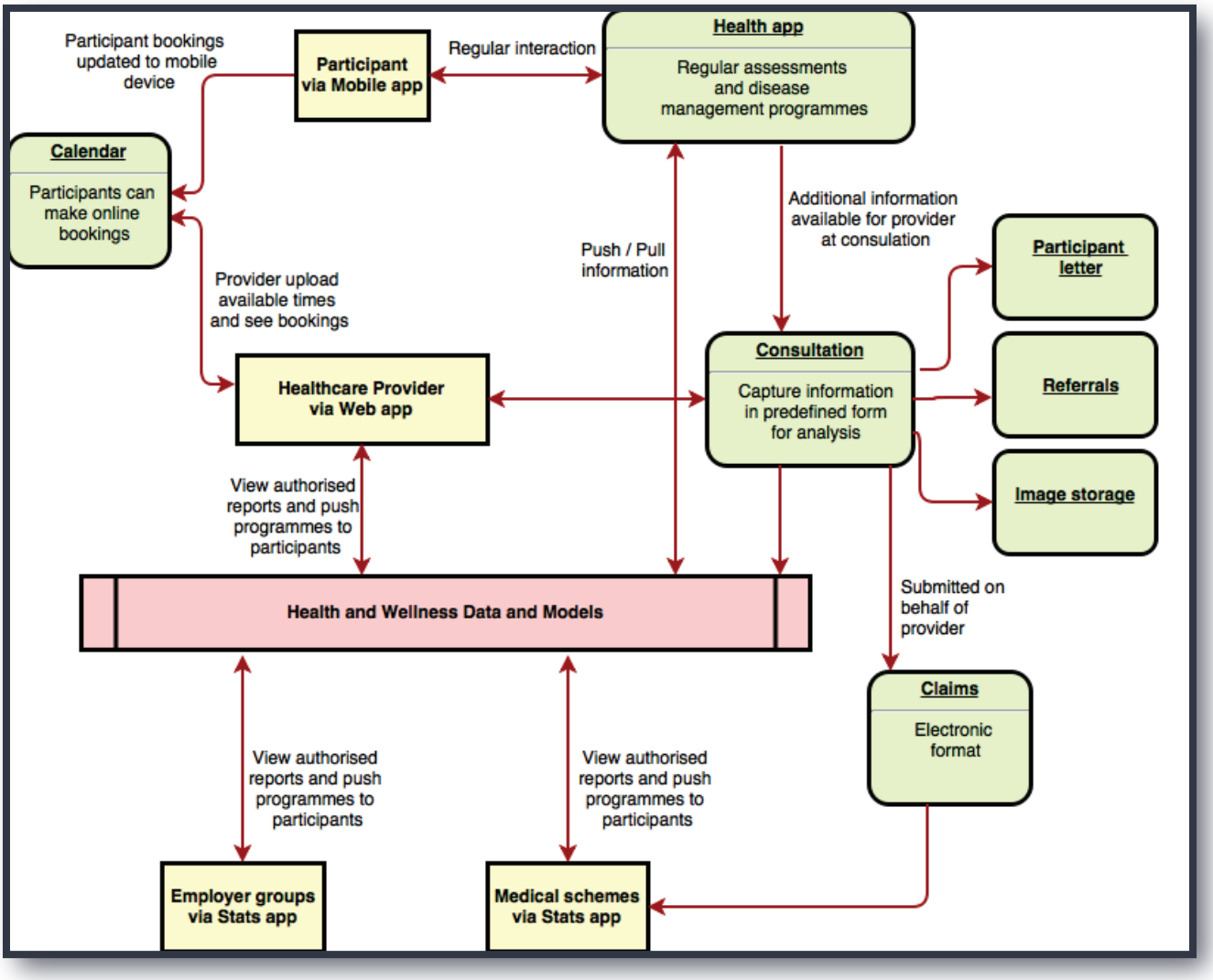
All solutions are online, thus no desktop installation is required.



Process Flow

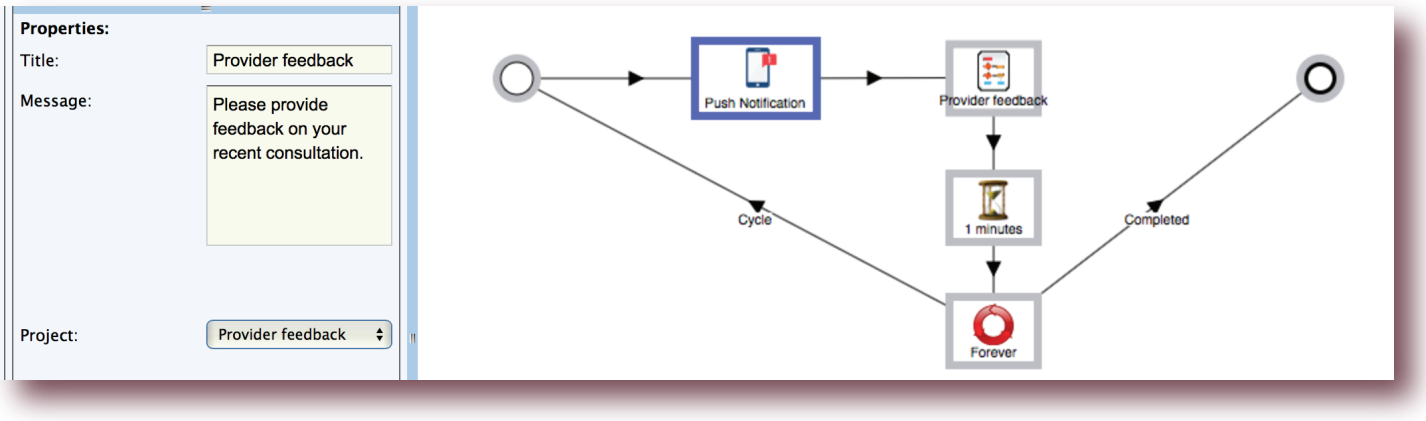
Once an instance is initiated for a participant there is a specific process flow to follow, this includes events and their outcomes, decisions based on these outcomes, targeted communications and other relevant information that the project requires to reach its goal. There are currently 44 of these step types and new ones are developed as necessary.

Below is a diagram to outline the basic process flow of the interaction between participants, providers and funders.



Process Flow (continued)

The mobile app allows for notifications, a feature that is especially useful in automated projects. The project specify the criteria for and content of the notification and is sent for each instance at the correct time. This can serve as automated reminders, new projects or targeted communication.

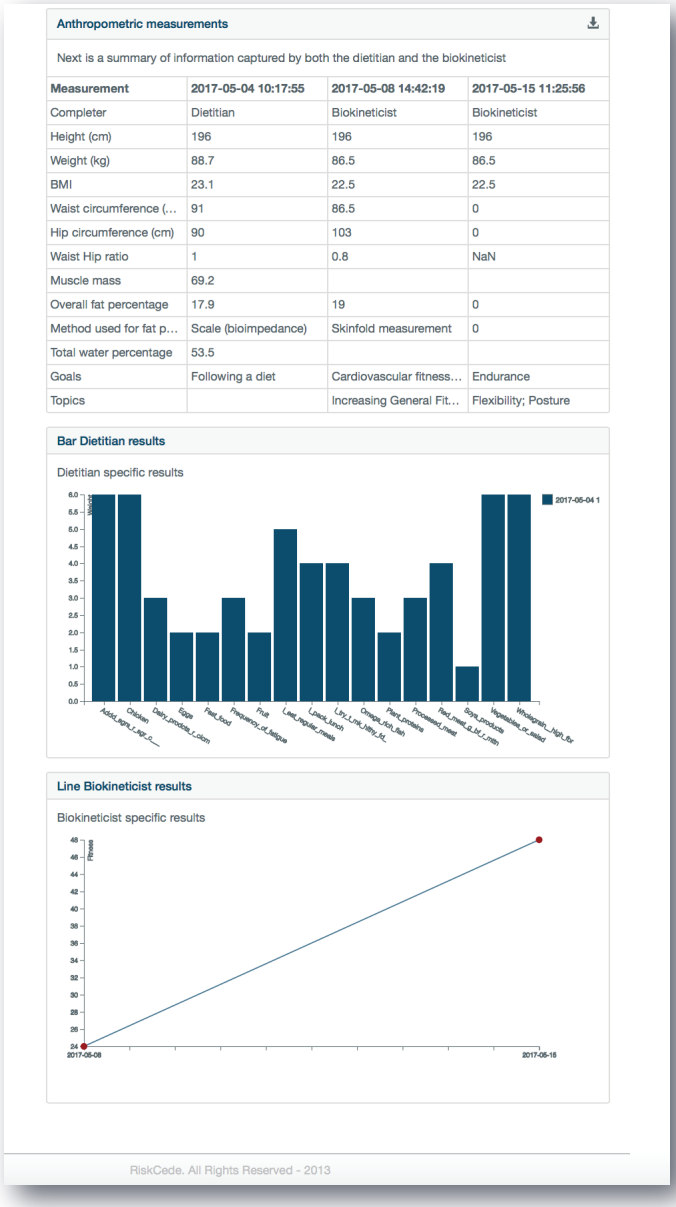


Healthcare Provider Administration

Healthcare providers can log in on the website.

User authentication is required as participants are assigned to specific providers and their details are not available to other providers.

Once logged in, providers will have an ‘in tray’ where they can capture participant information as well as a dashboard where they can view all programme statistics for a specific participant. This holistic view includes all information captured by other providers, the participant themselves and system calculations.



Anthropometric measurements

Next is a summary of information captured by both the dietitian and the biokineticist

Measurement	2017-05-04 10:17:55	2017-05-08 14:42:19	2017-05-15 11:25:56
Completer	Dietitian	Biokineticist	Biokineticist
Height (cm)	196	196	196
Weight (kg)	88.7	86.5	86.5
BMI	23.1	22.5	22.5
Waist circumference (…	91	86.5	0
Hip circumference (cm)	90	103	0
Waist Hip ratio	1	0.8	NaN
Muscle mass	69.2		
Overall fat percentage	17.9	19	0
Method used for fat p…	Scale (bioimpedance)	Skinfold measurement	0
Total water percentage	53.5		
Goals	Following a diet	Cardiovascular fitness…	Endurance
Topics		Increasing General Fit…	Flexibility; Posture

Bar Dietitian results

Dietitian specific results

Line Biokineticist results

Biokineticist specific results

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Mobile Application

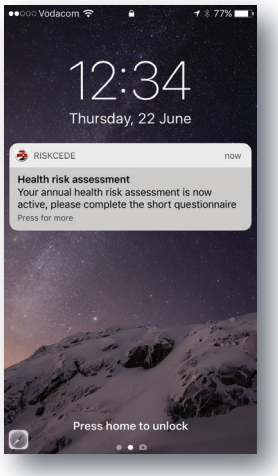
The mobile application builds up dynamically from the server workflow projects. This means that once a participant logs in, the application fetches all projects assigned to the participant and displays it in their intray.

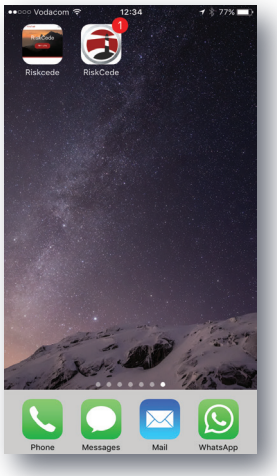
When a new project is launched, a notification is sent to the phone (notifications are set up in the process design and can be set to be sent at any stage).

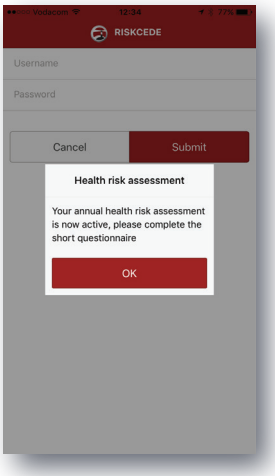
Some projects cycle continuously and are available again after completion, while others are removed from the intray once they are completed.

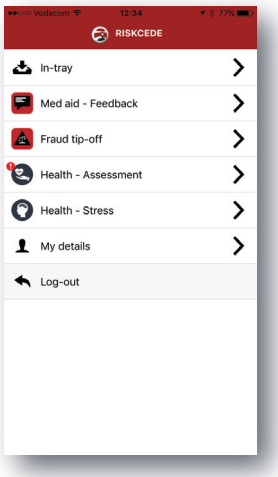
All data captured from the app contain information on the location, the time and the user.

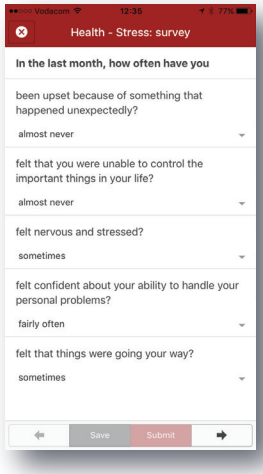
Lastly, the content of these projects can include any of the step types available on the server, such as questionnaires and messages, etc. This content is optimised to display on a small screen.

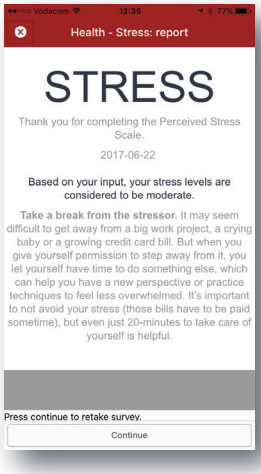












Data Analysis

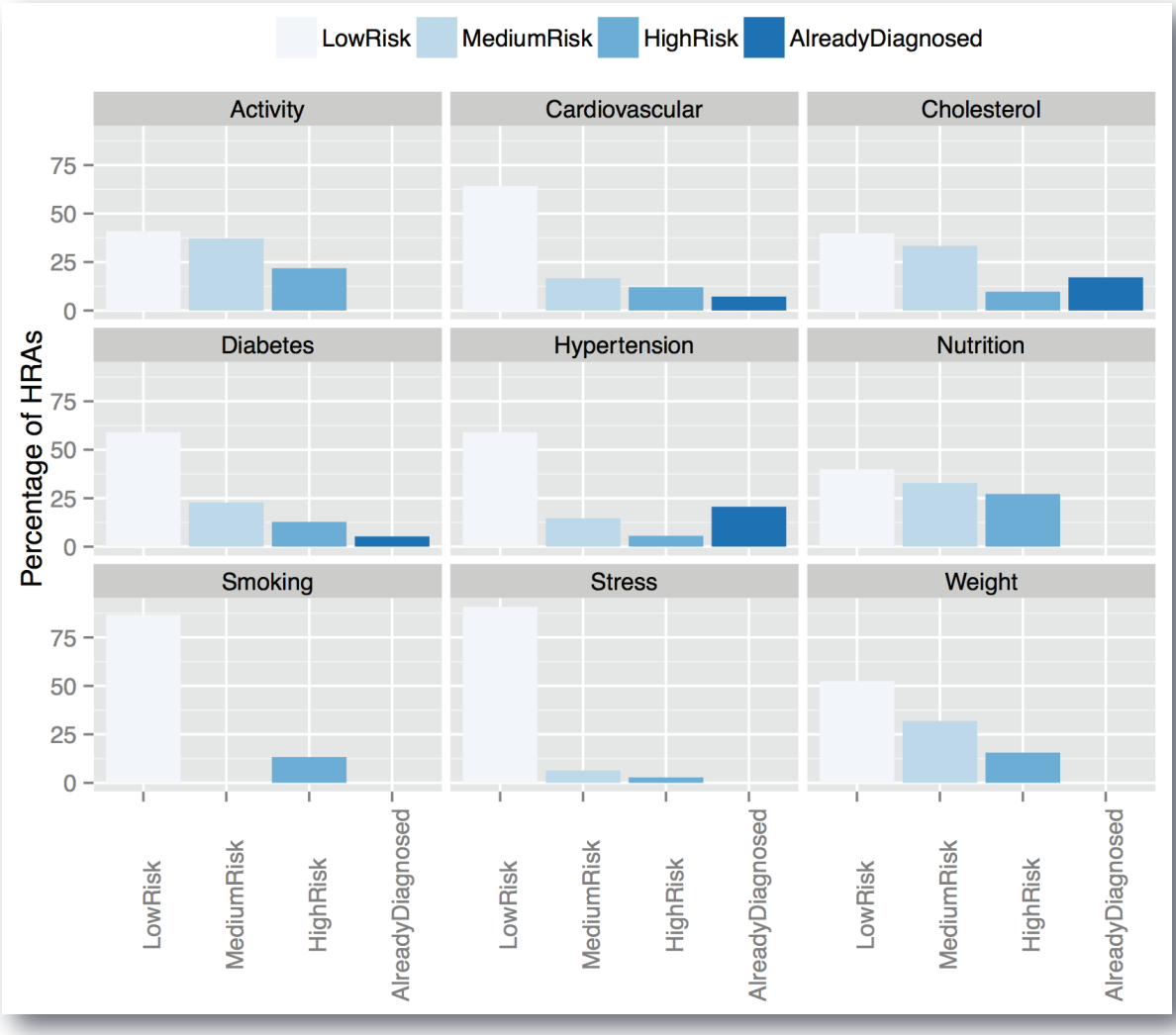
The statistics website uses user authentication to determine viewing rights and performs statistical modelling as well as graphical data analysis.

All data is analysed in real-time. Reports can be downloaded from the website for the latest findings, or can be scheduled to be emailed at regular intervals, or even when a certain event takes place.

Participants are categorised into homogenous groups in order to optimally apply interventions and other management strategies.

The effect of these different interventions and changes in relative risk rankings are monitored over time.

Below is a global view of the size of different risk categories.



Conclusion

All the above modules work together in one solution to manage participants' health and wellness. It is the only way to apply such in depth management and intervention to a large number of participants.

The statistical analysis gives insight into the overall population, indicating what areas are important to focus on and also provides a holistic view of each participant's wellbeing.

Finally the information gathered in these programmes is used to find correlations between interventions and risks, and can thus be used to optimise management programmes for each individual risk.

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