Swiss Re
Centre for Global Dialogue

SEARCH

Harvard School of Public Health – Swiss Re collaboration

Activity Report 2013–2014

In collaboration with
HARVARD
SCHOOL OF PUBLIC HEALTH

Executive summary

Harvard and Swiss Re have a history of collaboration that goes back more than a decade, leading to a conviction that our goals and strategy overlap and are synergistic. This report clearly documents the validity of that claim. With a modest investment, Swiss Re and Harvard were able to work together on topics of great interest and relevance to reinsurance, public health, and to public policy in Brazil, Mexico, India and China. These four countries are flagships for rapid development and rapid evolution of a variety of risk factors that will determine morbidity, mortality and longevity. Our interactions were productive and resulted in numerous conferences and publications.

In January 2013, Swiss Re and the Harvard School of Public Health (HSPH) created SEARCH, the Systematic Explanatory Analyses of Risk factors affecting Cardiovascular Health, with the goal of utilizing the strengths of all involved partners to develop data sources upon which new scientific findings can be based. The main focus for Swiss Re is to better quantify health and disease risk factors that contribute to our understanding of future mortality and longevity trends, particularly in high growth markets. The same data are used by HSPH to develop and test preventive health measures and health policies.

SEARCH was sponsored by Swiss Re Group Underwriting, the Swiss Re Centre for Global Dialogue, the Swiss Re Foundation and the Harvard School of Public Health. SEARCH fostered significant collaborations with other institutions including the World Health Organization, the Lown Institute and the Public Health Foundation of India.

All partners seek to connect risk factors to health outcomes. All partners require better quality data and a deeper understanding of how measurable parameters influence health care costs, longevity, and the quality of life as we age.

The initial focus of SEARCH was on the risk factors for cardiovascular disease and stroke. The collaboration focused on four countries: Brazil, China, India and Mexico. A total of 50 researchers and health experts were involved in SEARCH, consisting of 11 Harvard professors, 18 Swiss Re health experts, 11 senior SEARCH research fellows, a senior project team and other collaborators. All SEARCH Fellows were awarded grants to help them conduct research based on existing data sets and cohorts. They were supervised by Harvard professors and Swiss Re health experts.

All fellows have strong ties to the respective country and are mostly citizens thereof; hence they speak the local language, have access to country-specific data, and understand the cultural context of the risk factors they seek to quantify and interpret. The Swiss Re grant provided funding for travel, salary support, and other expenses to facilitate their analysis of data sets from these countries. This support also strengthened the fellows' connections with knowledge networks in their countries and lays the foundation for them to return to their home countries. This enabled a knowledge transfer from Harvard and Swiss Re that will shape public health policy globally.

Key SEARCH output in 2013-2014 included

- Publishing of 22 scientific academic papers published in peer reviewed journals
- Publishing of 17 research articles in the following co-branded Risk Dialogue Magazines (RDM) and Risk Dialogue Series (RDS) produced by the Swiss Re Centre for Global Dialogue:
  - RDM on health risk factors in emerging markets, March 2014
  - RDS on health risk factors in rapidly changing economies, October 2014
  - Four RDS on health risk factors in Brazil (English and Portuguese), China (English and Mandarin), India and Mexico
- Publication launch event in Rüschlikon in October 2014. China, Brazil, and India launch events in planning and to be expected in 2015
- Two co-branded research conferences in Cambridge, MA and Rüschlikon in 2013 with a total of 29 expert speakers of the partnering institutions and 270 attendees including insurance industry representatives
- Live web broadcasting of the events, two print conference reports, and 30 publicly accessible expert videos which guarantee a global outreach and visibility of SEARCH, all accessible through cgd.swissre.com
- The last two years have laid the foundation for continuing collaboration between Swiss Re and Harvard University

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1 / Collaboration overview

1.1 Memorandum of Understanding, timelines, objectives

2013–2014 marked the 100-year anniversary of HSPH and the 150-year anniversary of Swiss Re. We agreed that embarking on a joint research collaboration would be a fitting way to commemorate these shared events. Both institutions need to connect risk factors to health outcomes. Both require better quality data and a deeper under- standing of how measurable parameters influence health care costs, longevity, and the quality of life as we age.

Swiss Re and HSPH signed a Memorandum of Understanding in January 2013. HSPH recruited postdoctoral research fellows in spring 2013. Over 2013–2014, the SEARCH Fellows worked on their research which they presented at four conferences in the US, Switzerland and China. Over the course of 2014, the fellows – with support from their mentors – produced research papers. We published individual publications for each of the four countries, featuring at least one article by a Swiss Re mentor/R&D colleague, and several articles by SEARCH Fellows/HSPH mentors, highlighting key areas of their research. The project ended in 2014 with an option of both parties to discuss future paths for a continued collaboration. HSPH is convinced that the project was remarkably successful and that Swiss Re's investment was highly leveraged.

Our objective was to gather reliable data on cardiovascular disease risk factors and management in Brazil, China, India, and Mexico. We analysed this data in the context of requirements for healthy longevity. The study addressed risk factors, prevention and treatment practices, lifestyle choices and public health policy. SEARCH complemented the WHO Global Burden of Disease study with a focus on risk factor developments for non-communicable diseases. Specific subject areas we addressed included:

- Risk factors such as smoking, air pollution, diet, diabetes, obesity, hypertension, and physical inactivity
- Disease treatment and prevention practices for cardiovascular disease, diabetes, and metabolic syndrome

The project sought to understand and predict the future impact of cardiovascular disease on the well-being and longevity of humans in the four countries..

- How do government policies affect risk factors?
- How do risk factors such as smoking, pollution, diet, obesity, and hypertension affect outcomes?
- Finally, as we better understand risk factors and health outcomes, how does that shape health policy?

While we have considerable data about these trends in North America, the European Union and Japan, the four countries selected are changing rapidly and data is far more limited. At the same time, these rapidly changing and developing countries also represent emerging markets for Swiss Re. More accurate data and the integration of multiple risk factors into predictions will be important both from the perspective of reinsurance as well as public health.

We built on information and insights generated by the Global Burden of Disease (GBD) project, which moves forward at the Institute of Health Metrics and Evaluation in Seattle. Their strength and weakness is that they include all causes of morbidity and mortality as well as all countries. We focused on just four countries and on a single class of disease, cardiovascular disease and stroke. There is another major difference. Rather than looking backwards, the objective of SEARCH was to be forward looking. We sought to take data over the last 20 years and extrapolate it into likely trends and scenarios for coming decades.

- What future impact will current data changes have on future disease outcomes and mortality?
- How far can we influence future health trends?
- What will be the most effective public health policy measures?

Swiss Re seeks to better understand future health and longevity drivers and model them into Swiss Re's current and future business. Changes in health and longevity can have a significant influence on in-force and future life insurance business. HSPH would like to better understand public health challenges in different countries, and to make recommendations aimed at reducing morbidity and mortality.

1.2 Country working groups

In order to facilitate collaboration and the sharing of research, knowledge and resources, SEARCH Fellows were organized into country working groups for 1) Brazil, 2) China, 3) India, and 4) Mexico. The country groups collaborated through semi-regular meetings, conferences and through sharing information and documents via the Risk Connect website.

Each country group consisted of at least two SEARCH Fellows, their mentor from HSPH, collaborators from Swiss Re, and in some cases, collaborators from other organizations and institutions. Other institutions collaborating with the project included the Lown Institute, the Lown Scholars Program at Harvard School of Public Health, the World Health Organization and the Public Health Foundation of India.

1.3 SEARCH Fellows

Brazil working group
Gregore Mielke, Doctoral Student, Universidade Federal de Pelotas, Brazil
Marcia Otto, Research Fellow, Department of Epidemiology, HSPH
Claudia Suemoto, Assistant Professor, Geriatrics, University of Sao Paolo Medical School
Jennifer Nguyen, Research Fellow, Department of Environmental Health, HSPH

China working group
Yanping Li, Research Scientist, Department of Nutrition, HSPH
Hongyu Wu, Research Fellow, Department of Nutrition, HSPH

India working group
Shilpa Bhupathiraju, Research Fellow, Department of Nutrition, HSPH
Daniel Corsi, Research Fellow, Harvard Center for Population and Development Studies

Mexico working group
Hillel Alpert, Research Scientist, Department of Social and Behavioral Sciences, HSPH
Hiram Beltran-Sanchez, Research Fellow, Harvard Center for Population and Development Studies
Martin Lajous, Research Fellow, Department of Epidemiology, HSPH; National Institute of Public Health, Mexico

Fellow	% FTE	Mentors (uncompensated)
Hillel Alpert	62%	Greg Connolly
Hiram Beltran-Sanchez	34%	Subu Subramanian
Shilpa Bhupathiraju	16%	Frank Hu
Daniel Corsi*	13%	Subu Subramanian
Martin Lajous	10%	Joe Brain
Yanping Li	50%	Lu Qi
Gregore Mielke	75%	I-Min Lee
Jennifer Nguyen	39%	Doug Dockery
Marcia Otto*	48%	Dariush Mozaffarian
Claudia Suemoto	100%	Goodarz Danaei
Hongyu Wu	24%	Frank Hu, Qi Sun
Total	**4.81 FTEs**	

*Some funds are also being allocated towards travel and other expenses of the SEARCH Fellows

1.4 HSPH participants

Project management team
Joe Brain, Project Director, Cecil K. and Philip Drinker Professor of Environmental Physiology
Douglas Dockery, Project Co-Director, Chair, Department of Environmental Health
Michelle Williams, Project Co-Director, Chair, Department of Epidemiology
Frank Hu, Project Director, Professor, Department of Nutrition and Epidemiology
Nancy Long Sieber, Project Manager, Adjunct Lecturer on Physiology
Ted Henson, Associate Project Manager, Department of Environmental Health

Compensated administrative personnel	% FTE
Melissa Curran	25%
Ted Henson	20%
Nancy Long Sieber	20%
Total administrative FTEs	**0.65 FTEs**

Uncompensated executive leadership	% FTE
Joe Brain	20%
Doug Dockery	5%
Michelle Williams	5%
Frank Hu	5%
Total uncompensated administrative personnel	**0.35 FTEs**

Brazil working group, mentors
I-Min Lee, Professor of Epidemiology, HSPH; Professor of Medicine, Harvard Medical School; in collaboration with Pedro Hallal, Associate Professor, Universidade Federal de Pelotas, Brazil
Dariush Mozaffarian, Associate Professor, Department of Epidemiology
Goodarz Danaei, Assistant Professor of Global Health, Departments of Epidemiology, Global Health

China working group, mentors
Frank Hu, Professor of Nutrition and Epidemiology, Department of Epidemiology
Lu Qi, Assistant Professor, Department of Nutrition
Qi Sun, Assistant Professor, Department of Nutrition

India working group, mentors
Frank Hu, Professor of Nutrition and Epidemiology, Department of Epidemiology
Srinath Reddy, Adjunct Professor of Epidemiology, Department of Epidemiology; President, Public Health Foundation of India (PHFI)
Subu Subramanian, Professor, Department of Social and Behavioral Sciences

Mexico working group, mentors
Subu Subramanian, Professor, Department of Social and Behavioral Sciences
Joe Brain, Cecil K. and *Philip Drinker* Professor of Environmental Physiology

Risk factor leaders
Air pollution: *Doug Dockery,* Chair, Department of Environmental Health
Diet & metabolism: *Frank Hu,* Professor of Nutrition and Epidemiology, Department of Epidemiology
Health systems: *Vikas Saini,* President, Lown Foundation; Lecturer, Department of Medicine, Harvard Medical School
Physical activity: *I-Min Lee,* Professor of Epidemiology, HSPH, Professor of Medicine, Harvard Medical School
Smoking: *Greg Connolly,* Professor, Department of Social and Behavioral Sciences

Increasingly we realise that many risk factors do not act independently. Instead, like comorbidities and outcomes there are co-risk factors. For example, obesity is not an isolated risk factor but reflects national policies in regard to physical activity, diet and even factors such as urban and building design. These risk factor leaders will interact with specific country working groups as needed.

Other HSPH collaborators
Bernard Lown, Professor Emeritus, Harvard School of Public Health; Founder, Lown Cardiovascular Group; Chairman, Lown Institute
David Hunter, Dean for Academic Affairs; Vincent L. Gregory Professor in Cancer Prevention
Walter Willet, Fredrick John Stare Professor of Epidemiology and Nutrition; Chair Department of Nutrition

1.5 Swiss Re collaborators

The following 18 staff members from Swiss Re were involved in SEARCH:

Project management team
Christoph Nabholz, Head Business Development, Centre for Global Dialogue
Andreas Obrist, Business Development Manager, Centre for Global Dialogue
Daniel Ryan, Head R&D – Life&Health & Big Data, SEARCH sponsor

Brazil working group
Aspasia Angelakopoulou, Research Statistician, Life & Health R&D UK, Swiss Re
Ken Krause, Medical Director, Underwriting Medical R&D, Armonk
Alison McLean, Head of Behavioural Research, Life & Health R&D UK
Urs Widmer, Senior Medical Officer, Zurich

China working group
Hueyfang Chen, Actuary, Life & Health R&D Modelling, Armonk
Yommy Chiu, Analyst, Life & Health R&D Modelling, Armonk
David Lu, Deputy Regional Chief Medical Officer, Life & Health, Hong Kong
Alison McLean, Head of Behavioural Research, Life & Health R&D UK
Xioajie Wang, Actuarial Analyst, Life & Health R&D Modelling, Armonk

India working group
Himanshu Bhatia, Chief Medical Officer Asia, Mumbai
Brian Ivanovic, Manager & Senior Researcher Applied R&D, Life & Health, Fort Wayne

Mexico working group
Eduardo Lara, Senior Health Insurance Actuary Latin America, Mexico City
Monica Wilson, Medical Director, Toronto

Risk factor based collaborators
Aspasia Angelakopoulou, Research Statistician, Life & Health R&D UK, Swiss Re (smoking)
Séverine Rion, Senior Pharmacist, Life & Health R&D Europe, Zurich (physical activity)
Kevin Somerville, Medical Consultant, London (health systems)

1.6 World Health Organization & Global Burden of Disease liaisons

Thomas Zeltner, Special Envoy for Financing, World Health Organization
Dariush Mozaffarian, Chair, Global Burden of Diseases Nutrition and Chronic Diseases Expert Group (NutriCoDE)

We believe that we could benefit from and contribute to the Global Burden of Disease (GBD) efforts taking place both in Geneva and Seattle. We focused on just four countries and emphasized the major causes of morbidity and mortality, cardiovascular disease, stroke and major risk factors such as diabetes, obesity, inactivity, and smoking.

2 / Research overview

2.1 Overview

The SEARCH project was designed to better understand the impact of non-communicable diseases on healthy lifespan and mortality in Brazil, China, India and Mexico. The initial focus of the project is to study risk factors for cardiovascular disease and stroke. To conduct this research, eleven individuals were announced as SEARCH Fellows in May 2013. These fellows have received partial funding for their research. All fellows are postdoctoral students, researchers or scientists affiliated with HSPH. All already have ongoing research into the risk factors for chronic diseases in one of the four countries on which the SEARCH project is focused.

To facilitate collaboration and the sharing of research and resources, SEARCH Fellows have been organized into four country working groups for Brazil, China, India and Mexico. A majority of fellows are from the country where their research is focused. Each fellow has a mentor who is a member of the faculty at HSPH to help guide their research in addition to staff at Swiss Re. Importantly, these HSPH faculty members bring extensive portfolios of already funded research, which create the foundation for the fellows' activities. Fellows are examining a wide range of risk factors including diet, metabolism, diabetes, obesity, hypertension, physical inactivity, smoking, and air pollution. Two fellows are focused exclusively on one risk factor for cardiovascular disease and mortality, smoking and air pollution respectively; both of these fellows have self-selected a country group where they will focus their risk factor research.

For their research, all fellows are utilizing existing data sets and cohorts. Several of the fellows were chosen specifically to help conduct country-specific literature reviews or an analysis of existing data sets and cohort studies that could be accessed and analysed for future research. Fellows and mentors have identified nearly two-dozen data sets and cohort studies that could relevant sources of information for the project.

Even though the SEARCH Fellows were only announced in May 2013, preliminary findings have been already been produced and published as early as the summer of 2013. Furthermore, nearly all fellows presented their research and preliminary findings at the October conference in Cambridge, MA. Each fellow will present their findings at a conference to be held in September 2014 at the Harvard Medical School and Harvard School of Public Health campuses in Boston, Massachusetts. Discussions are currently underway around the continuation and expansion of funding in order to sustain the research of SEARCH Fellows.

2.2 Data sets & cohort studies

SEARCH Fellows were taking advantage of existing data sets and cohort studies in order to conduct their research and analysis. These resources ranged from country-based surveys on a wide range of factors to global studies on a specific risk factor such as smoking. Below is a list of the relevant data sets and cohort studies, listed by country:

Brazil
- Brain Bank of the Brazilian Aging Brain Study Group (BBBABSG)
- Brazilian Longitudinal Study of Adult Health (ELSA-Brazil)
- Companhia Estadual de Tecnologia em Saneamento Básico (CETESB)
- Department of Informatics (DATA) of the Unified Health System (SUS) — DATASUS
- Pelotas Birth Cohort
- PROAIM
- Vigitel (National telephone survey)
- Saude, Bem Estar, and Envelhecimento (SABE)

China
- China Health and Nutrition Survey (CNHS)
- China National Nutrition and Health Survey
- The Gut Microbiota and Obesity Case-Control Study
- The Nutrition and Health of Aging Population in China Study

India
- Andhra Pradesh Rural Health Initiative Survey
- Annual Health Survey (AHS)
- APCAPS
- District Level Household & Facility Survey (DLHS)
- India Human Development Survey (IHDS)
- India Migration Study
- Longitudinal Study of Aging (LASI)
- National Family Health Survey (NFHS)

Mexico
- Mexican Family Life Survey (MxFLS)
- Mexican Health and Aging Study
- National Health and Nutrition Survey

2.3 Findings

The SEARCH Fellows worked on their proposed research over the past two years. Nearly all of them presented their preliminary research findings during a poster session at the 15–16 October 2013 conference in Cambridge, MA (see the Appendix for each fellow's poster presentation), and several presented their work at the 10–12 November 2013 conference in Rüschlikon. Most submitted articles for the Risk Dialogue Magazine and the Risk Dialogue Series, as well as for scholarly journals. Many have manuscripts in preparations, which will be published in the months to come.

Brazil

Grégore Mielke

Grégore is based at the Universidade Federal de Pelotas in southern Brazil. He is working under the local supervision of Dr. Pedro Hallal, with additional guidance from Prof. I-Min Lee of HSPH. The focus of his work is to evaluate time trends in physical activity in people from different domains in Brazil. His first article, which has been accepted for publication, describes trends in physical activity levels of adults living in Pelotas by comparing data collected in 2002, 2007 and 2012. A second manuscript, which describes the time trends in physical activity and television viewing time in Brazil using data from the Risk Factor Surveillance for Non Communicable Diseases through Telephone Survey (VIGITEL) from 2006 to 2012, was published in International Journal of Behavioral Nutrition and Physical Activity (IJBNPA).

Jennifer Nguyen (Countries: Mexico & Brazil; Risk factor: Air Pollution)

Jennifer's research is focused on outdoor and indoor air pollution globally. For the purposes of the SEARCH project, she has focused her work on Brazil and Mexico. Jennifer conducted a systematic review of the literature assessing the association between air pollution and cardiovascular health in Brazil and Mexico using the electronic databases PubMed and Web of Science. Through this review, Jennifer found that the current state of the literature supports an adverse association between particulate pollution (i.e., PM10) and cardiovascular-related mortality in both Brazil and Mexico. Additionally, there is strong evidence for an adverse association between PM10 and cardiovascular-related hospital admissions and stroke in Brazil, and for an adverse association between ozone and cardiovascular-related mortality in Mexico. These countries are especially interesting locales to study the health effects of air pollution because Brazil is the only nation that extensively uses ethanol for fuel, and because Mexico City is prone to high ozone pollution levels.

Marcia C. de Oliveira Otto

Marcia recently completed her postdoctoral work at HSPH, and has accepted a position as assistant professor at the University of Texas School of Public Health in Houston. Marcia's research is focused on the impact of dietary and metabolic risk factors on cardiovascular disease and type 2 diabetes in Brazil. Her manuscript entitled "The Impact of Dietary and Metabolic Risk Factors on Cardiovascular Diseases and Type 2 Diabetes Mortality in Brazil" is currently in preparation.

Claudia Suemoto

Claudia's research is focused on the association of BMI, waist circumference and diabetes with mortality in a community-dwelling elderly population in Sao Paolo, Brazil. Her manuscript, "Effects of body mass index, abdominal obesity, and type 2 diabetes on mortality in community-dwelling elderly in Sao Paolo: analysis of prospective data from the SABE study," has been accepted for publication in the Journal of Gerontology Medical Sciences and it is currently in press. She is currently working on a mortality prediction model for the community-dwelling elderly. She and her colleagues have finished the internal validation and calibration of the model. Their next step will be test the model in an external cohort.

China

Yanping Li

Yanping has worked on a review that documents the transition in various lifestyle factors that contribute to cardiovascular disease (CVD) among the Chinese population. Specifically, she has examined changes in relevant lifestyle factors such as diet and exercise, between 1989 and 2011. In her work, she has analyzed data from the China Health and Nutrition Survey (CNHS) – an on-going prospective cohort that covers nine provinces in China. Briefly, she found that rapid urbanization and changes in dietary and lifestyle choices, cardiovascular and other chronic diseases have emerged as a critical public health issue in China. The prevalence of hypertension in 2010 reached 33.5% (an estimated 330 million hypertensive patients), and that the awareness and treatment of this condition was low. She also found that type 2 diabetes is an increasing epidemic in China with more than 100 million people affected. Although the Chinese population has a lower BMI than the global average level, abdominal obesity, a risk factor for diabetes, has become especially common in Chinese adults. Furthermore, despite tobacco control efforts, the prevalence of smoking in China remains at a high level and domestic production of cigarettes continues to rise. With unprecedented growth in urbanization, work and transportation-related physical activity levels have declined sharply, accelerating the epidemics of obesity and chronic diseases, which not only affect health and quality of life, but also have economic and social consequences. The findings were published in Risk Dialogue Magazine 17.

Following the review and time trend analysis of CVD risk factors, Yanping combined these findings with an estimation of disease burdens associated with the CVD risk factors. The findings will be submitted to the scientific journal Obesity Review for publication, and will be presented in the Clinical Event of Swiss Re China, which will be held in December 2014 at Shang Hai, China.

Hongyu Wu

Hongyu conducted research that prospectively evaluated body mass index (BMI), smoking status, physical activity, alcohol drinking, and diet quality in relation to the incidence of type 2 diabetes (T2DM) among 2050 Chinese adults aged 50–70 years, who were part of the Nutrition and Health of Aging Population in China study. After six years of follow-up, a total of 499 incident T2DM cases were documented. After mutual adjustment for the dietary and lifestyle factors of interest, as well as potential confounders, including age, sex, region (Beijing/Shanghai) and residence (urban/rural), and family history of diabetes, higher BMI was found to predict higher risk of T2DM, comparing participants with normal weight participants, obese men and women had 60% higher risk of diabetes. In addition, a better diet quality, as reflected by a higher nutrition related biomarkers score, was associated with lower risk of T2DM: compared extreme quartiles, those in the highest quartile had 23% lower risk of T2DM. In contrast, other risk factors, which have showed strong associations with T2DM in western population, including smoking, physical activity and alcohol drinking were not associated with risk of T2DM in Chinese population. Smoking status, physical activity and alcohol drinking were not significant predictors of T2DM risk. More prospective data are warranted to confirm these observations.

In addition, Hongyu and her mentor Qi Sun conducted a literature review entitled 'Type 2 diabetes in China: prevalence and risk factors'. China is currently the world's largest economy and the most populous country, with one-fifth of the global population. Along with dramatic economic growth, rapid urbanization and lifestyle westernization in the past decides, China has experienced a sharp increase in the prevalence of diabetes. Based on nationwide survey data, the estimated prevalence of diabetes among Chinese adults has increased from 0.67% in 1980 to 11.7% in 2010. It estimated that 113.9 million Chinese adults are currently suffering from

diabetes. As described in this review, several factors may contribute to this diabetes epidemic in China, including improved life expectancy, rapid urbanization, increased overall and abdominal obesity, decreased physical activity levels, high prevalence of cigarette smoking, and the increased adaptation of westernized diet. Some lifestyle intervention programs seeking to address these risk factors through behavioral education with the goals of improving diet and/or increasing exercise have been conducted among Chinese population, and these programs provided the best evidence of the effectiveness of lifestyle programs for diabetes prevention.

India

Shilpa Bhupathiraju

Shilpa has been working on understanding diet and lifestyle predictors of type 2 diabetes and cardiovascular disease. Her research objectives are 1) to explore the dietary and lifestyle factors behind the burgeoning diabetes epidemic in India, 2) to examine the association between changes in dietary factors and subsequent risk of CVD, and 3) to identify culturally appropriate intervention strategies. She is working with data from the India Migration Study (cross- sectional analysis) and the APCAPS (Andhra Pradesh Children and Parent Study).

She is currently working on data analysis and is finalizing the results on her study entitled, "Fruit and vegetable intake and cardiometabolic risk" using data from the India Migration Study. Preliminary results were presented at the Armonk meeting in May. Using these data, she wrote an article for the Risk Dialogue magazine entitled, "The Nutrition Transition in India: Trends in Dietary Intake and Associations with Cardiometabolic Outcomes." There have been delays in her gaining access to the data from the APCAPS study, but she plans to begin working with these numbers once they become available.

Daniel Corsi

Daniel's research has been focused on the socioeconomic patterning of cardiovascular risk factors (CVRF) and cardiovascular disease (CVD) in India. Daniel conducted a systematic review of the literature on the association between socioeconomic status (SES) and CVRF, CVD, and CVD-related mortality in India. With the exception of smoking and low fruit and vegetable intake, the literature clearly suggests that CVRF/CVD is more prevalent among high SES groups in India than among the low SES groups. Although CVD-related mortality rates appear to be higher among the lower SES groups, the proportion of deaths from CVD-related causes was found to be greatest among higher SES groups. Further, through analysis of the Longitudinal Study of Aging in India (LASI) dataset, Daniel has found that weighted prevalence rates of stroke, CHD, elevated lipids, diabetes and hypertension were higher among the better off socioeconomic (SES) groups with shallow gradients for CHD and stroke. For example, diabetes prevalence was 4.3% among those with no education compared to 10.2% among those with ten or more years.

Mexico

Hillel Alpert (Countries: Mexico & Brazil; Risk factor: smoking)
Hillel's research centers on tobacco use as a risk factor for cardiovascular disease and mortality. For the SEARCH project, Hillel is conducting three research studies: 1) the development of a global-based societal smoking propensity model, 2) a comparative analysis in Brazil and Mexico examining the relationship between marketing menthol in cigarettes and menthol policy versus onset of smoking among females in Brazil, and 3) a comparative analysis of the tobacco market, tobacco control policy, and tobacco use in Brazil and Mexico. During the first phase of the project, Hillel has reviewed and synthesized existing research and knowledge, developed a conceptual framework, and built a core, global database that will assist with investigating and modelling the societal and market determinants of smoking prevalence and consumption in selected nations and projecting future consumption, disease and mortality.

Hiram Beltran
Hiram utilized data from the longitudinal Mexican Health and Aging Study for older adults to examine changes in self-reported diabetes and hypertension and the use of medication between 2001 and 2012. Hiram has found that having health insurance is associated with higher probability of self-reporting the disease and with lower likelihood of being untreated. Seguro Popular – a universal health care program introduced in Mexico around 2004 – has emerged as an important health care resource with one-third of older adults reporting access to it by 2012. Hiram's findings indicate that females seem to be benefiting more from the program than males. In a subsequent study, Hiram also found that diabetes is the leading chronic disease condition among older adults in Mexico and that overweight/obesity and family medical history (genetic predisposition) are the primary drivers of diabetes incidence over a 10 year period.

Martin Lajous
Martin's work focuses on nutrition and other lifestyle factors and chronic disease. He serves as the Scientific Coordinator to the ESMaestras cohort study, an ongoing survey of 115 000 female elementary school teachers, which he helped establish in 2006. He is also working with several other data sets from Mexico. His recent results show the cost-savings associated with the reduction in cardiovascular disease as a result of the 2008 indoor smoking ban in Mexico City. His research showed that in the years since the ban went into effect Mexico has saved more than USD 17.8 million in health care expenses. Expanding the program to other cities would save far more. He has also reported on trends in CV disease in Mexico from 2006–2012, showing an improvement in levels of hypertension and worsening of smoking and BMI.
His ongoing work will examine the impact of smoke-free environments on health parameters. In addition, he will be carrying out a risk stratification project using biological data from the National Survey of Health and Nutrition, once they become publically available.

3 / Output

3.1 Conferences

First results of SEARCH were presented during the celebration months of both institutions at two major conferences:

Impact of cardiovascular risk factors on healthy lifespan and mortality in Brazil and Mexico
15–16 October 2013, Cambridge, MA, USA
11 speakers from HSPH, 6 speakers from Swiss Re, and 3 speakers from collaborating institutions such as the WHO and the Lown Institute. All keynote presentations were live web broadcasted and 15 expert video presentations were made available as video-on-demand to the public. Approximately 100 in-person attendees and 30 live webstream participants, including insurance industry representatives, followed the conference over the two days.

The future of human longevity: cardiovascular health, longer lives
10–12 November 2013, Rüschlikon, Switzerland
The second day of the conference was focused on cardiovascular disease and SEARCH in particular. 6 speakers from HSPH, 3 speakers from Swiss Re, 3 speakers from collaborating institutions such as the WHO and the Lown Institute, as well as 8 workshops on different aspects relating to risk factors and insurance in China and India. All keynote presentations were live web broadcasted and 11 expert video presentations were made available as video-on-demand to the public. Approximately 100 in-person attendees and 40 live webstream participants, including insurance industry representatives, followed the conference over the three days.

A workshop was organised in May 2014 at Swiss Re offices in Armonk, NY. It introduced Swiss Re-Harvard participants to new topics of common interest, including the needs of underwriting, actuarial methods, the impact of climate change, and medical risk assessment. Three country groups also met to discuss adjacent topics, including socioeconomic inequalities, urbanization, and strategies to increase exercise in Asia.

The launch event for the publication „Risk Dialogue Series on health risk factors in rapidly changing economies“ which marks the end of the two-year SEARCH collaboration took place on 15 October 2014 at the Swiss Re Centre for Global Dialogue. Launch events for the RDS editions on Brazil, China, India and Mexico are scheduled to take place in the respective countries in 2015.

Impressions from the Cambridge, MA conference, 15–16 October 2013

Eric Smith receives Harvard Marshal's Greetings from Dean Julio Frenk, HSPH

Michelle Williams, HSPH

Thomas Zeltner, WHO

I-Min Lee, HSPH

Greg Connolly, HSPH

Christoph Nabholz, Swiss Re

Impressions from the Rüschlikon conference, 10–12 November 2013

Christian Mumenthaler receives Harvard Marshal's Greetings from Joe Brain, HSPH

Frank Hu, HSPH

Srinath Reddy,
Public Health Foundation India

Daniel Ryan, Swiss Re

Doug Dockery, HSPH

Vikas Saini, Lown Institute

3.2 Reports

Conference reports of the two events mentioned above were published in Q1 2014, summarizing the most important points of the presentations and workshops that took place. These reports were featured at related events throughout 2014 and were distributed among clients in respective markets.

The following HSPH mentors contributed articles to the Risk Dialogue Magazine on health risk factors in emerging economies, published in March 2014:

Douglas W. Dockery, Professor of Environmental Epidemiology, Harvard School of Public Health and *C. Arden Pope,* Mary Lou Fulton Professor of Economics, Brigham Young University, Provo, Utah
Title: "Lost life expectancy due to air pollution in China"

Frank Hu, Professor of Nutrition and Epidemiology, Harvard School of Public Health
Title: "Time trends of cardiovascular disease risk factors in China"

Marcia Castro, Associate Professor of Demography, Harvard School of Public Health
Title: "Overview of health risk factor developments in Brazil"

Marcia Otto, Associate Professor of Demography, Harvard School of Public Health
Title: "Risk factors for cardiovascular disease in Brazil: Time trends and current status"

Srinath Reddy, President, Public Health Foundation of India (PHFI); President, World Heart Federation
Title: "Chronic diseases in India: Burden and implications"

3.3 Risk Dialogue Series

In autumn 2014, the Swiss Re Centre for Global Dialogue published 17 research articles in the following co-branded Risk Dialogue Series (RDS) editions:

RDS on health risk factors in rapidly changing economies
Christoph Nabholz, Swiss Re Centre for Global Dialogue
Simon Woodward, Swiss Re Centre for Global Dialogue
Title: "SEARCH – The search for health data and insights from high growth markets"

Xiaojie Wang, Swiss Reinsurance Company
David Lu, Swiss Reinsurance Company
Hueyfang Chen, Swiss Reinsurance Company
Title: "Closing the financial gap for cardiovascular disease in China"

Douglas W. Dockery, Harvard School of Public Health
C. Arden Pope III, Brigham Young University
Title: "Lost life expectancy due to air pollution in China"

Marcia C. Castro, Harvard School of Public Health
Title: "Overview of health risk factors in Brazil"

Hillel R. Alpert, Harvard School of Public Health
Title: "Understanding the global risk of the tobacco epidemic and its trajectory in an emerging market nation"

K. Srinath Reddy, Public Health Foundation of India
Sailesh Mohan, Public Health Foundation of India
Title: "Chronic diseases in India: Burden and implications"

Shilpa Bupathiraju, Harvard School of Public Health
Title: "The nutrition transition in India: Trends in dietary intake and associations with cardiometabolic outcomes"

Hiram Beltrán-Sánchez, University of Wisconsin-Madison
Title: "Health risk factors in the adult Mexican population"

RDS on health risk factors in Brazil (English and Portuguese)
Eduardo Lara di Lauro, Swiss Reinsurance Company
Rolf Steiner, Swiss Reinsurance Company
Title: "SEARCH – The search for health data and insights from Brazil"

Marcia C. Castro, Harvard School of Public Health
Title: "Overview of health risk factors in Brazil"

Marcia C. de Oliveira Otto, The University of Texas
Title: "Risk factors for cardiovascular disease in Brazil: Time trends and current status"

Jennifer L. Nguyen, Harvard School of Public Health
Douglas W. Dockery, Harvard School of Public Health
Title: "Two Decades of Research Linking Air Pollution to Cardiovascular Disease in Brazil: A Systematic Review"

Hillel R. Alpert, Harvard School of Public Health
Title: "Understanding the global risk of the tobacco epidemic and its trajectory in an emerging market nation"

Grégore I. Mielke, Universidade Federal de Pelotas
Pedro C. Hallal, Universidade Federal de Pelotas
I-Min Lee, Harvard School of Public Health
Title: "Time trends of physical activity practice in Brazil"

RDS on health risk factors in China (English and Mandarin)
Xiaojie Wang, Swiss Reinsurance Company
David Lu, Swiss Reinsurance Company
Hueyfang Chen, Swiss Reinsurance Company
Title: "Closing the financial gap for cardiovascular disease in China"

Frank Hu, Professor of Nutrition and Epidemiology, Harvard School of Public Health
Title: "Time trends of cardiovascular disease risk factors in China"

Hongyu Wu, Harvard School of Public Health
Qi Sun, Harvard Medical School
Title: "Type 2 Diabetes in China: Prevalence and Risk Factors"

Nancy Long Sieber, Harvard School of Public Health
Title: "Urbanisation in China and India: Impact on Cardiovascular Risk Factors"

Douglas W. Dockery, Harvard School of Public Health
C. Arden Pope III, Brigham Young University
Title: "Lost life expectancy due to air pollution in China"

Anne Lusk, Harvard School of Public Health
Yanping Li, Harvard School of Public Health
Title: "Bicycling, Health, and Weather-Related Disasters: Potential Data to Better Predict Risk"

RDS on health risk factors in India
Himanshu Bhatia, Swiss Reinsurance Company
Title: "SEARCH – The search for health data and insights from India"

K. Srinath Reddy, Public Health Foundation of India
Sailesh Mohan, Public Health Foundation of India
Title: "Chronic diseases in India: Burden and implications"

Nancy Long Sieber, Harvard School of Public Health
Title: "Urbanisation in China and India: Impact on Cardiovascular Risk Factors"

Brian Ivanovic, Swiss Reinsurance Company
Title: "Will Lessons Learned from the West During the Epidemic of Cardiovascular Disease Translate into Better Cardiovascular Disease Outcomes in Developing Countries?"

Shilpa Bupathiraju, Harvard School of Public Health
Title: "The nutrition transition in India: Trends in dietary intake and associations with cardiometabolic outcomes"

Daniel Corsi, Harvard School of Public Health
S V Subramanian, Harvard School of Public Health
Title: "Socioeconomic Inequalities in the Prevalence of Cardiovascular Disease and Risk Factors in India"

RDS on health risk factors in Mexico
Eduardo Lara di Lauro, Swiss Reinsurance Company
Title: "SEARCH – The search for health data and insights from Mexico"

Hiram Beltrán-Sánchez, University of Wisconsin-Madison
Title: "Health risk factors in the adult Mexican population

Jennifer L. Nguyen, Harvard School of Public Health
Douglas W. Dockery, Harvard School of Public Health
Title: "Air Pollution and Cardiovascular Disease Risk in Mexico City"

3.4 Scientific publications

SEARCH Fellows and their mentors had their research published in peer-reviewed journals over the past year. This section provides a snapshot of some of the studies that were published by the fellows and/or their mentors – organized by country – that directly relate to the countries, risk factors and themes of SEARCH. In some cases, the research was published prior to SEARCH' inception; in other cases, the research was published as a direct result of the SEARCH project funding.

Brazil

1. 10-year Trends in All Domains of Physical Activity among Brazilian adults: 2002–2012. Journal of Physical Activity and Health; in press (I-Min Lee, Gregore Mielke)
2. Hallal PC, Cordeira KL, Knuth AG, Mielke GI, Victora CG. Ten-year trends in total physical activity practice in Brazilian adults: 2002-2012. Journal of Physical Activity and Health. 2014;in press:
3. Mielke GI, Hallal PC, Malta DC, Lee I-M. Time trends of physical activity and television viewing time in Brazil: 2006-2012. International Journal of Behavioral Nutrition and Physical Activity 2014, 11:101 doi:10.1186/s12966-014-0101-4
4. Suemoto, C, Lebrao, ML, Duarte Y, Danaei, G. Effects of body mass index, abdominal obesity, and type 2 diabetes on mortality in community-dwelling elderly in Sao Paolo: analysis of prospective data from the SABE study," the Journal of Gerontology Medical Sciences In press. 2014.

China

1. Wu, Hongyu, Sun, Liang, Hu, Frank B. Sun, Qi, Lin, Zu. Diet, Lifestyle and risk of type 2 diabetes in middle-aged and elderly Chinese population (Manuscript in preparation).
2. Li Y , Hu FB. Time trends of cardiovascular disease risk factors in China. Experimental Biology 2014, San Diego, CA (poster and abstract)
3. Li Y , Hu FB. Disease burden and its time trends related with cardiovascular disease risk factors in China. In preparation to be submitted to Obesity Reviews.

India

1. Corsi DJ, Subramanian S, Lear SA, Teo KK, et al. Tobacco use, smoking quit rates, and socioeconomic patterning among men and women: a cross-sectional survey in rural Andhra Pradesh, India. European journal of preventive cardiology 2013 May 30.
2. Subramanian SV, Corsi DJ, Subramanyam MA, Davey Smith G. Jumping the gun: the problematic discourse on socioeconomic status and cardiovascular health in India. Int J Epidemiol 2013 Apr 5.
3. Corsi DJ, Subramanian MA, Davey Smith G, Subramanian SV. Authors' response to Gupta and Pednekar: importance of examining cause-specific proportions of deaths as well as mortality rates. <http://www.ncbi.nlm.nih.gov/pubmed/24374890> Int J Epidemiol. 2014 Feb;43(1):278-80. doi: 10.1093/ije/dyt245. Epub 2013 Dec 27. No abstract available. PMID: 24374890.
4. Corsi DJ, Subramanian SV. Divergent socio-economic gradients in smoking by type of tobacco use in India. <http://www.ncbi.nlm.nih.gov/pubmed/24365564> Int J Tuberc Lung Dis. 2014 Jan;18(1):122-4. doi: 10.5588/ijtld.13.0246. PMID: 24365564
5. Prospective Urban Rural Epidemiology (PURE) study: Baseline characteristics of the household sample and comparative analyses with national data in 17 countries. <http://www.ncbi.nlm.nih.gov/pubmed/24093842> Corsi DJ, Subramanian SV, Chow CK, McKee M, Chifamba J, Dagenais G, Diaz R, Iqbal R, Kelishadi R, Kruger A, Lanas F, López-Jaramilo P, Mony P, Mohan V, Avezum A, Oguz A, Rahman MO, Rosengren A, Szuba A, Li W, Yusoff K, Yusufali A, Rangarajan S, Teo K, Yusuf S. Am Heart J. 2013 Oct;166(4):636-646.e4. PMID: 24093842

6. Subramanian SV, Subramanyam MA, Corsi DJ, Smith GD. Rejoinder: Need for a data-driven discussion on the socioeconomic patterning of cardiovascular health in India. <http://www.ncbi.nlm.nih.gov/pubmed/24019422>. Int J Epidemiol. 2013 Oct;42(5):1438-43. PMID: 24019422
7. Corsi DJ, Subramanian SV. Revisiting the discourse on accomplishing MDG-4. <http://www.ncbi.nlm.nih.gov/pubmed/23918845> Int J Epidemiol. 2013 Jun;42(3):648-53. doi: 10.1093/ije/dyt104. No abstract available. PMID: 23918845
8. Corsi DJ, Subramanian S, Lear SA, Teo KK, Boyle MH, Raju PK, Joshi R, Neal B, Chow CK. Tobacco use, smoking quit rates, and socioeconomic patterning among men and women: a cross-sectional survey in rural Andhra Pradesh, India. <http://www.ncbi.nlm.nih.gov/pubmed/23723329> Eur J Prev Cardiol. 2013 May 30. [Epub ahead of print] PMID: 23723329.

Mexico

1. Beltrán-Sánchez, H., Andrade, F.C., and Riosmena, F. "A View of Health Care and Socioeconomic Disparities in the Awareness and Treatment of Diabetes and Hypertension among Older Mexican Adults." (Under review)
2. Beltrán-Sánchez, H., and Crimmins, E.M. (2013) "Biological Risk in the Mexican Population at the Turn of the 21st Century." Journal of Cross-Cultural Gerontology, 28(3): 299–316.
3. Beltrán-Sánchez, H., Duncan, T., Teruel, G., Wheaton, F. and Crimmins, E.M. (2013) "Links between Socio-Economic Circumstances and Changes in Smoking Behavior in the Mexican Population: 2002–2010."Journal of Cross-Cultural Gerontology, 28(3): 339–358.
4. Beltrán-Sánchez, H. and Andrade, F.C. (2013) "Educational and Sex Differentials on Life Expectancies and Disability-Free Life Expectancies in Sao Paulo, Brazil and Urban Areas in Mexico." Journal of Aging and Health, 25(5): 815–838.

Risk Factors

1. Alpert HR, Connolly GN, Biener L. A prospective cohort study challenging the effectiveness of population-based medical intervention for smoking cessation. Tobacco Control 2013; 22:32-7.
2. Connolly GN, Alpert HR. Has the Tobacco Industry Evaded the FDA's Ban on "Light" Cigarette Descriptors? Tobacco Control 2013; [Epub ahead of print]
3. Agaku I, Ayo-Yusuf O, Vardavas C, Connolly GN. Predictors and patterns of ciga- rette and smokeless tobacco use among adolescents in 32 countries, 2007–2011. Journal of Adolescent Health (in press).

3.5 Posters of SEARCH Fellows

Ten SEARCH Fellows – and one Lown Scholar – presented a combined twelve posters at the October 2013 conference in Cambridge, MA. The posters provided an overview of each fellow's research and preliminary findings where applicable. Below is a list of the fellows who presented a poster and the title of their research. See the appendix for each fellow's poster.

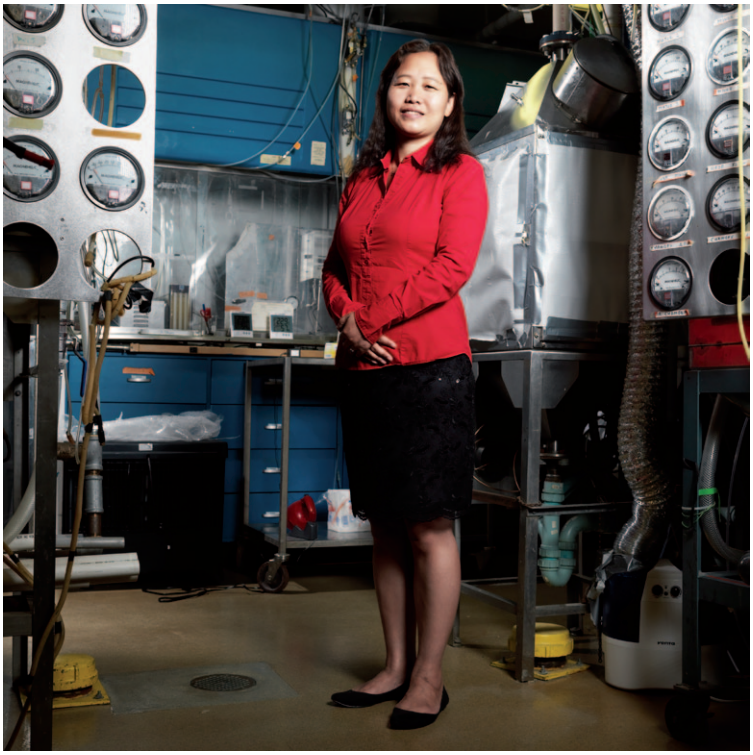
1. **Societal determinants of population tobacco use in Brazil and Mexico**
   Hillel Alpert, Research Scientist, Department of Social and Behavioral Sciences, Harvard School of Public Health
2. **Preventing cardiometabolic disease in Colombia**
   Carlos Mendivil Anaya, Associate Professor, Universidad de los Andes, Bogota, Colombia and Research Associate, Department of Nutrition, Harvard School of Public Health
3. **Health risk factors in the older adult Mexican population**
   Hiram Beltran-Sanchez, Research Fellow, Harvard Center for Population and Development Studies
4. **Socioeconomic patterning of cardiovascular disease and risk factors: baseline analysis of the Longitudinal Aging Study in India**
   Daniel Corsi, Research Fellow, Harvard Center for Population and Development Studies
5. **Cardiovascular disease health care costs avoided after implementing Mexico City's indoor smoking ban**
   Martin Lajous, Research Professor, National Institute of Public Health, Cuernavaca, Mexico, and Research Fellow in Epidemiology, Harvard School of Public Health
6. **Cardiovascular health in Mexico 2006 and 2012: Work in progress**
   Martin Lajous, Research Professor, National Institute of Public Health, Cuernavaca, Mexico, and Research Fellow in Epidemiology, Harvard School of Public Health
7. **Time trend of risk factors for cardiovascular disease in China**
   Yanping Li, Research Associate, Department of Nutrition, Harvard School of Public Health
8. **Time trends in physical activity levels in Brazil**
   Gregore Mielke, Doctoral Student, Universidade Federal de Pelotas, Brazil
9. **The impact of dietary and metabolic risk factors on the burden of cardiovascular disease and type II diabetes in Brazil**
   Marcia Otto, Research Fellow, Department of Epidemiology, Harvard School of Public Health
10. **Air pollution and cardiovascular disease risk in Latin America: A review of findings from Brazil and Mexico**
    Jennifer Nguyen, Research Fellow, Department of Environmental Health, Harvard School of Public Health
11. **BMI, waist circumference, diabetes and mortality: Results from the SABE study**
    Claudia Suemoto, Assistant Professor, Geriatrics, University of Sao Paulo Medical School, and Postdoctoral Fellow, Department of Global Health and Population, Harvard School of Public Health
12. **Diet, lifestyle and risk of type 2 diabetes in middle-aged and elderly Chinese population**
    Hongyu Wu, Research Fellow, Department of Nutrition, Harvard School of Public Health

3.6 Exhibitions Swiss Re 150-year anniversary

For its 150-year anniversary celebrations, Swiss Re wanted to honor its partners and clients and showcase the benefits of insurance and reinsurance solutions for societies and people worldwide to the wider public. For the photo exhibition which was presented to clients, business partners, politicians, employees and their families at different locations around the globe, three SEARCH Fellows from the Harvard School of Public Health volunteered to be portrayed as people who exemplify through their work a current societal challenge which they address.

Martin Lajous,
Department of Epidemiology;
National Institute of Public Health, Mexico
Fellowship Mentor: Dr. Joseph Brain
Country: Mexico

Yanping Li
Department of Nutrition
Fellowship mentor: Dr. Lu Qi
Risk factors: smoking, diet & metabolism, health systems
Country: China



Marcia Otto
Department of Epidemiology
Fellowship mentor: Dr. Dariush Mozaffarian
Risk factor: Diet & metabolism
Country: Brazil

4 / Finance

4.1 Swiss Re Group Underwriting

Swiss Re Group Underwriting (SRGU) made an initial commitment of USD 300 000 over the two years. In 2013, USD 50 000 was transferred to sponsor SEARCH Fellows. USD 100 000 was used to cover expenses for the two conferences. In addition to this commitment, SRGU spent USD 81 600 for other conference expenses and travel costs of the project management team. SRGU also contributed through eight staff members who acted as collaborators, directly interacting with the SEARCH Fellows. In 2014, USD 150 000 plus an additional USD 40 000 was transferred to sponsor SEARCH Fellows and HSPH administration costs. USD 10000 was spent on the May 2014 workshop at Swiss Re offices in Armonk, NY.

4.2 Swiss Re Foundation

Swiss Re Foundation committed USD 300 000 over the two years. In 2013, USD 200 000 was transferred and in 2014, USD 100 000 was transferred to sponsor SEARCH Fellows and HSPH administration costs.

4.3 Swiss Re Centre for Global Dialogue

The Centre for Global Dialogue is responsible for the project management of SEARCH on Swiss Re's side and contributes through two staff members: Christoph Nabholz, Head Business Development and Andreas Obrist, Business Development Manager. The Centre contributed an equivalent of USD 153 400 towards the realization of the two fall conferences in 2013 and produces and disseminated the corresponding conference reports. In 2014, it managed the publication of the Risk Dialogue Magazine as well as the various editions of the Risk Dialogue Series.

4.4 Swiss Re expense overview 2013

Issue	SEARCH	add-on GU	add-on CGD
Administration and R&D	USD 50 000		
Postdocs	USD 200 000		
Travel Swiss Re		USD 20 000	
Cambridge, MA conference October	USD 60 000	USD 39 600	USD 14 350
CGD conference November	USD 40 000	USD 22 000	USD 139 050
Subtotal	USD 350 000	USD 81 600	USD 153 400
Grand Total		**USD 585 000**	

4.5 Swiss Re expense overview 2014

Issue	SEARCH	add-on GU	add-on CGD
Administration and R&D	USD 50 000		
Postdocs	USD 200 000	USD 40 000	
Armonk workshop May		USD 10 000	
Subtotal	USD 250 000		
Grand Total		**USD 300 000**	

5 / Outlook

5.1 Potential activities for 2015/16

This activity report shall serve as basis for review of the current research collaboration and for discussion among Swiss Re senior management to decide on the development of proposals for future collaboration beyond 2014. Research activities can be extended to include other emerging economies besides Brazil, China, India and Mexico, or include other non-communicable diseases representing the leading causes of death. We also expect to include other non-communicable diseases, which represent important causes of disability and death, such as respiratory disease, mental health issues, accidents (especially traffic injuries), and cancer.

5.2 Synergies

The success of the SEARCH project bears witness to the strategy that Swiss Re and Harvard developed together. Postdoctoral fellows were not distracted by administrative responsibilities, teaching or clinical practice. Their goal was to be effective and productive researchers. What made this a strategic investment was that selected SEARCH Fellows came with appropriate mentors at Harvard and collaborators at Swiss Re. Support of the fellows had a catalytic effect. While postdocs received significant fractions of their salary, their mentors did not. Moreover, the faculty administrative team of Brain, Dockery, Williams, and Hu received no support but spent considerable time leading this enterprise. We recognize the enormous contribution of Swiss Re leadership, particularly Daniel Ryan, Christoph Nabholz and Andreas Obrist. The success of the past two years would not have occurred without their leadership, support and participation.

Other critical synergies abound. The Harvard School of Public Health has an endowment of more than $10 million to support Lown Scholars (www.hsph.harvard.edu/lownscholars). This program focuses exclusively on the prevention of cardiovascular disease in the developing world. Thus, it includes the four countries selected as the initial focus for the SEARCH project. Many of the participants at both conferences were funded by this Lown endowment. Examples include Vikas Saini and Carlos Mendivil. Furthermore, Martin Lajous is both a SEARCH fellow and a Lown Scholar in Mexico. Another valuable partner is the Lown Institute, which is a separate organization also created by Dr. Bernard Lown, a world-renowned cardiologist who developed the defibrillator and made many other important contributions to the diagnosis, prevention and treatment of cardiovascular disease. He and his colleague, Dr. Evgeni Chazov, accepted the Nobel Peace Prize in 1985 on behalf of the organization that they founded, International Physicians for the Prevention of Nuclear War (IPPNW). The Lown Institute works on the prevention and optimal treatment of cardiovascular disease. Vikas Saini, a collaborator with the SEARCH project, is president of the Lown Institute.

Important is the continuing support of the dean of the Harvard School of Public Health, Dr. Julio Frenk. He is a former Minister of Health of Mexico, and has worked with the WHO in Geneva, as well as with the Gates Foundation. He is committed to our agenda and sees it as consistent with his goals. The Swiss Re-Harvard relationship is a catalyst to success, but we know it is essential to find other sources to cover both administrative costs and to support research. The Harvard School of Public Health will continue to be aggressive in obtaining other funds. During the past year, more than 60% of the school's budget came from sponsored research. This produces a culture of research productivity and necessary infrastructure, which allows Swiss Re's participation to take advantage of relevant activities. In toto, the productivity of the collaboration between Swiss Re and HSPH were reinforced by these other sources of funds and by these other pre-existing programs.

5.3 Conclusions

2013-2014 was a turning point for both Swiss Re and Harvard. Harvard celebrated the 100th anniversary of its School of Public Health. It is the longest continuously operating school of public health in the world. Swiss Re celebrated its success over the past 150 years, which were marked by its emergence as a global company. The past two years have demonstrated that the goals and strategy of these two entities overlap and are synergistic. We both need high quality data. We both need access to information and health policy leaders in a variety of countries that have very different health systems and health threats. The products of the Swiss Re-Harvard Program, as outlined in this report, demonstrate the validity of our determination to work together.

With a modest investment, Swiss Re and Harvard are able to work together on topics of great interest and relevance to reinsurance, public health, and to public policy in both hemispheres. We look forward to continuing to emphasize Brazil, Mexico, India, and China while adding other topics and countries. These four countries all exemplify rapid development and evolution in risk factors. They are changing rapidly, and their trajectories will determine morbidity, mortality and longevity. Best of all, our interactions have been productive and enjoyable. We conclude that this relationship needs to be fostered. It should be continued and expand in the years ahead.

6 / Sponsors

Swiss Re

The Swiss Re Group is a leading wholesale provider of reinsurance, insurance and other insurance-based forms of risk transfer. Dealing direct and working through brokers, its global client base consists of insurance companies, mid-to-large-sized corporations and public sector clients. From standard products to tailor-made coverage across all lines of business, Swiss Re deploys its capital strength, expertise and innovation power to enable the risk taking upon which enterprise and progress in society depend.

HARVARD
SCHOOL OF PUBLIC HEALTH

Harvard School of Public Health brings together dedicated experts from a wide range of disciplines to educate new generations of global health leaders and produce powerful ideas through rigorous research that can transform the lives and health of people everywhere. Each year more than 400 faculty members at HSPH teach 1 200-plus full-time students from around the world, as well as train thousands more through online and executive education activities. Our educational programs and research efforts range from the molecular biology of AIDS to the epidemiology of cancer; from violence prevention to healthy lifestyles and nutrition; from maternal and children's health to environmental health; from US health policy to international health and human rights.

Swiss Re
Centre for Global Dialogue

The Swiss Re Centre for Global Dialogue is a platform for the exploration of key global issues and trends from a risk transfer and financial services perspective. Founded by Swiss Re, one of the world's largest and most diversified reinsurers, in 2000, this state-of-the-art conference facility positions Swiss Re as a global leader at the forefront of industry thinking, innovation and worldwide risk research. The Centre facilitates dialogue between Swiss Re, its clients and others from the areas of business, science, academia, and politics.

Swiss Re
Foundation

Swiss Re Foundation is a non-profit organisation committed to care and concern for society and the environment. Launched in 2012 by global re/insurer Swiss Re, the Foundation aims to make people more resilient towards natural hazards, climate change, population growth, water scarcity and pandemics, along with other challenges to society's security, health and prosperity. It also supports community projects and employee volunteering in locations where Swiss Re has offices.

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